START

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL NO 1042

MAY

1984

MICRO PHOTO DIVISION
BELL & HOWELL

Vol. 1042 Number 1

OFFICIAL GAZETTE

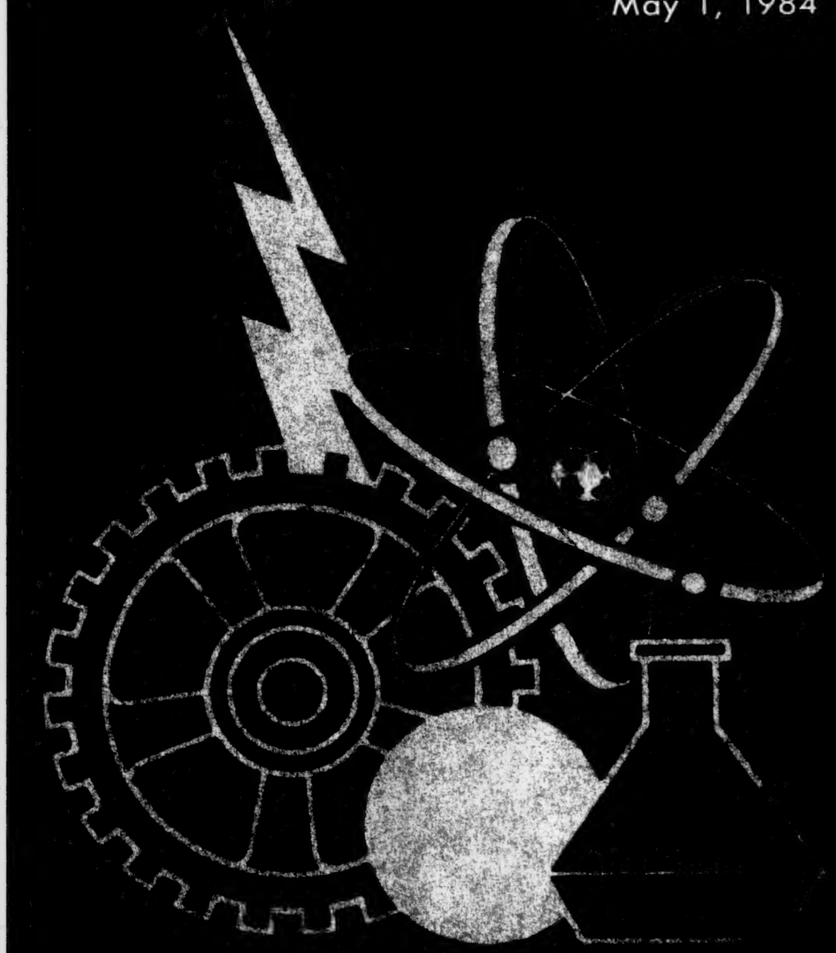
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

May 1, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

May 1, 1984 Volume 1042 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1042 OG 2
Board of Appeals Decisions	1042 OG 2
Reissue Applications Filed	1042 OG 2
Requests for Reexaminations Filed	1042 OG 2
Patent Terms Extended Under 35 U.S.C. 155A	1042 OG 2
Delegation of Authority	1042 OG 3
Revision of Foreign Filing License	1042 OG 3
Patent Certificates of Correction	1042 OG 11
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1042 OG 12
Condition of Patent Applications	1042 OG 13
Reexaminations	1
Defensive Patent Publication (104,201)	3
Reissue Patents Granted (31,569)	5
Plant Patents Granted (5,225)	11
Patents Granted	
General and Mechanical (4,445,231)	13
Chemical (4,445,901)	243
Electrical (4,446,330)	359
Design Patents Granted (273,624)	445
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 47
List of Defensive Publications	PI 50
Classification of	
Patents (Including Reissues and Reexaminations)	PI 51
Designs, Plants and Defensive Publications	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 55
Designs, Plants and Applicants of Defensive Publications	PI 57
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Jan. 30, 1984. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Mar. 1984

Affirmed	222
Affirmed in Part	27
Reversed	85
Total	334

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,075,056, Re. S.N. 578,693, Filed Feb. 9, 1984, Cl. 162/305, PRESS SECTION STRUCTURE, Donald E. Ely, et al., Owner of Record: *Beloit Corp., Beloit, Wis.*, Attorney or Agent: James Van Santen, et al., Ex. Gp.: 173

4,100,010, Re. S.N. 582,317, Filed Feb. 22, 1984, Cl. 156/242, METHOD FOR MAKING DECORATIVE EMBLEMS, Robert E. Waugh, Owner of Record: *D. L. Auld Co., Columbus, Ohio,* Attorney or Agent: Edwin M. Baranowski, Ex. Gp.: 161

4,388,324, Re. S.N. 581,671, Filed Feb. 16, 1984, Cl. 424/312, PHARMACEUTICAL AND DIETARY COMPOSITION, David F. Horrobin, Owner of Record: *Efamol Ltd., London, England,* Attorney or Agent: Paul N. Kokulis, et al., Ex. Gp.: 123

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 243,652, Reexam. No. 90/000,519, Requested: Mar. 2, 1984, Cl. 8/68, CORDLESS ELECTRIC TOOL, Donald W. Zurwelle, et al., Owner of Record: *Black & Decker Mfg. Co., Towson, Md.,* Attorney or Agent: Ronald B. Sherer, Ex. Gp.: 290, Requester: Owner

3,671,890, Reexam. No. 90/000,527, Requested: Mar. 19, 1984, Cl. 335/22, MANUALLY OPERABLE MOULDED CASE CIRCUIT BREAKER WITH SPECIAL TESTING MEANS, Keith W. Klein, et al., Owner of Record: *General Electric Co., Farmington, Conn.,* Attorney or Agent: Richard A. Menelly, Ex. Gp.: 210, Requester: Owner

3,947,241, Reexam. No. 90/000,533, Requested: Mar. 22, 1984, Cl. 432/121, FOOD TREATMENT APPARATUS AND PROCESS, Andrew A. Caridis, et al., Owner of Record: *Heat and Control, Inc., San Francisco, Calif.,* Attorney or Agent: Flehr, Hohbach, et al., Ex. Gp.: 340, Requester: Stein Assoc., Inc., Sandusky, Ohio

4,156,999, Reexam. No. 90/000,511, Requested: Feb. 27, 1984, Cl. 52/376, BEAM FOR CONCRETE FORMING STRUCTURES, Peter J. Avery, Owner of Record: *Aluma Systems, Inc., Downsview, Toronto, Ontario, Canada,* Attorney or Agent: None, Ex. Gp.: 350, Requester: Owner

4,166,465, Reexam. No. 90/000,531, Requested: Mar. 19, 1984, Cl. 128/303.15, ELECTROSURGICAL DISPERSIVE ELECTRODE, Janet M. Esty, et al., Owner of Record: *Nomed, Inc., Boulder, Colo.,* Attorney or Agent: John E. Reilly, Ex. Gp.: 330, Requester: Owner

4,395,832, Reexam. No. 90/000,535, Requested: Mar. 26, 1984, Cl. 34/92, GAS DUCT ARRANGEMENT FOR A VACUUM FURNACE, William R. Jones, et al., Owner of Record: *Vacuum Furnace Systems Corp., Souderton, Pa.,* Attorney or Agent: W. E. Cleaver, Ex. Gp.: 340, Requester: Abar Corp., Feasterville, Pa.

Patent Terms Extended Under 35 U.S.C. 155A

The patent term of each of the following patents has been extended under 35 U.S.C. 155A.

Patent No. 3,535,388, granted Oct. 20, 1970 to Ross C. Terrell, owner of record BOC, Inc. Term extended for a period of 1,923 days.

Patent No. 3,535,425, granted Oct. 20, 1970 to Ross C. Terrell, owner of record BOC, Inc. Term extended for a period of 1,923 days.

Patent and Trademark Office Delegation of Authority

Agency: Patent and Trademark Office. Commerce.

The following memorandum is a delegation of authority from Assistant Secretary for Trade Administration to Assistant Secretary and Commissioner of Patents and Trademarks under the Export Administration Act of 1979, as amended, and other statutes.

Feb. 17, 1984.

Memorandum to Gerald J. Mossinghoff.
Assistant Secretary and Commissioner of Patents and Trademarks

From: William Archey, Acting Assistant Secretary for Trade Administration

Subject: Delegation of Authority under the Export Administration Act of 1979, as amended, and other statutes.

You have requested our clearance of a final rule, entitled "Revision of Foreign Filing License Procedure" (37 CFR Parts 1 and 5) scheduled to become effective June 1, 1984. This rule, among other things, revises procedures for obtaining licenses authorizing the foreign filing of patent applications for U.S. inventions as requires under the patent laws (35 U.S.C. 184). In addition, it revises procedures under which the Patent and Trademark Office (PTO) authorizes the export of technical data for purposes related to the filing of a foreign patent application. The export of such data is normally subject to licensing under the Export Administration Regulations (EAR) (15 CFR Part 379), issued under the Export Administration Act of 1979 as amended (50 U.S.C. app section 2401 et seq.), and the Nuclear Non-Proliferation Act of 1978 (22 U.S.C. 3201 et seq.). However, the EAR delegates licensing authority to the PTO in instances where the patent regulations (37 CFR Part 5) are complied with.

We have reviewed the final rule referred to above and have no objections to its issuance.

Additionally, in order to assure that PTO has adequate authority to administer the licensing procedures set out in 37 CFR Part 5, you are hereby delegated any necessary authority under the Export Administration Act of 1979, as amended, and the Nuclear Non-Proliferation Act of 1978. This authority is delegated to me by Part VI, section 1.01, paragraph (q) and (t), of ITA Organization and Function Order No. 41-1 of Feb. 15, 1982, as amended.

DONALD J. QUIGG,
Mar. 30, 1984. *Deputy Commissioner of Patents and Trademarks.*

[FR Doc. 84-8887 Filed 4-2-84: 8:45 am]
BILLING CODE 35 10- 16-M

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 40227-18]
Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Parts 1 and 5 of 37 CFR, to establish a streamlined procedure for granting licenses for foreign filing. The changes simplify the obtaining of licenses for filing foreign patent applications and for filing amendments, modifications, and supplements in foreign patent applications. Under the revised rules (1) the export, but not actual filing, of technical data to a foreign country for purposes related to the filing and prosecution of a patent application may be done either under appropriate export agencies' rules or by a license issued by the Commissioner of Patents and Trademarks, (2) certain licenses issued by the Commissioner for filing foreign patent applications include a license to file amendments, modifications, and supplements, containing additional matter in foreign applications, (3) specific contents of a petition for retroactive license are established and (4) fees are set for expedited handling of requests for foreign filing licenses and for certain petitions. These changes will result in reduced work for both patent applicants and the Patent and Trademark Office and at the same time strengthen national security protections.

Effective Date: June 1, 1984.

For Further Information Contact: Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This rule change is designed primarily to simplify and expedite the granting of licenses under 35 U.S.C. 184. It contains a number of changes in practice designed to benefit both the Patent and Trademark Office in its handling of its mission and the public the Office serves. Notice of proposed rulemaking was published May 23, 1983, at 48 FR 23144 and corrected June 7, 1983, at 48 FR 26319.

Discussion of Specific Rules

Secton 5.11(a) has been substantially restructured and modified from the proposal. Under §5.11(a), a license from the Commissioner of Patents and Trademarks is always needed for the act of filing a patent application in a foreign patent office unless the six-month period has passed or the invention was not made in the United States.

Amended §5.11 (b) and (c) would clarify in the regulations that the export of technical data to a foreign country may be done under appropriate export agencies' rules controlling the export of technical data—Department of State (22 CFR Parts 121-130); Department of Commerce, International Trade Administration Office (15 CFR Part 379); or the Department of Energy (10 CFR Part 810)—or by license from the Commissioner. Compliance with the appropriate export agencies' rules or the license from the Commissioner is required before *exporting* technical data in the form of a patent application or data in any form if related to preparing, filing, and prosecuting a patent application in a foreign country, if the United States application has not been on file for six months at the time of export, or no application has been filed in the United States. It is optional from whom approval for export is obtained. In fact, for certain technical data being exported to certain countries, a specific request for a license or approval from any of the export agencies would not be necessary. However, a single license from the Commissioner would cover both export and filing and avoid any question whether a specific license or approval is required from any of the export agencies. Approval from the appropriate export agencies for export would require a separate additional license from the Commissioner for the filing of the foreign patent application. The rule changes will make the rules more closely conform with the regulations of other agencies which deal with the export of technical data to a foreign country.

The definition of export in these regulations will be controlled by the definition of export in the appropriate regulations of the export agencies having jurisdiction over the export of technical data related to the patent application. (15 CFR 379.1, 22 CFR 125.03 and 10 CFR 810.7).

The requirement of complying with the rules of the export agencies or the Commissioner before exporting an application to a foreign country is not intended to change long-standing Patent and Trademark Office interpretation of 35 U.S.C. 184 or in any way interpret the language in 35 U.S.C. 184 "file or cause or authorize to be filed" as requiring a license before technical data related to the filing or prosecution of an application is exported to a foreign country, such as to a foreign attorney or agent or corporation for review or revision for later filing. It does, however, reflect the delegations the

Commissioner has received from other agencies and which are referenced in §§5.18, 5.19 and new §5.20 and clarifies that a patent applicant must be licensed for export of technical data abroad for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application either by appropriate export agencies or by the Commission. The language "related to the preparation, filing or possible filing and prosecution of a foreign patent application" in §5.11(b) is used rather than "support a patent application" as used in §5.18 or "foreign filing" as used in §5.19 to make clearer that the latter two phrases include the export of technical data in the form of explanations or possible claim language or the like sent to a foreign agent or other person in relation to a foreign patent application. However, a license from the Commissioner would not substitute for approvals required by appropriate export agencies if technical data is exported for purposes not related to the filing or possible filing and prosecution of a foreign patent application. For example, a license from the Commissioner would not cover export of technical data in a U.S. patent application to a foreign research laboratory to support a research project.

Further, the rule is intended to reflect that every exportation of technical data related to filing or possible filing or prosecution within six months of a United States filing without a license from the Commissioner is prohibited unless the applicant complies with the rules of the appropriate export agencies. For example, where an application has been exported to a foreign agent with an authorization to file a foreign patent application, the export of the application may be under a general license from the International Trade Administration of the Department of Commerce. A license from the Commissioner is always necessary for the actual filing of the foreign patent application. In another example, where a validated license is needed under 15 CFR Part 379 to export technical data in the form of a patent application, applicants will need to obtain an International Trade Administration license or obtain a Commissioner's license prior to the act of export. Under either example, a license from the Commissioner is required before the application is filed in a foreign patent office. In the latter example, a single license from the Commissioner will permit both export and filing of the application.

This rule is promulgated under the authority of 35 U.S.C. 6 and delegations to the Commissioner by regulation (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7) or otherwise under the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978. Authority for this rule also exists under 35 U.S.C. 188.

The amended rule assures adequate protection of sensitive material under Title 35, United States Code and provides regulatory consistency with the Arms Export Control Act, as amended, the Export Administration Act, as amended, the Atomic Energy Act of 1954, as amended, the Nuclear Non-Proliferation Act of 1978, and their implementing regulations. The sanctions which apply for failure to obtain a license from either the Commissioner or the appropriate export agencies prior to export are the sanctions specified in the export acts. The sanctions which apply for failure to obtain a license from the Commissioner prior to the filing of a foreign application are the sanctions specified in Title 35, United States Code.

Section 5.11(d), proposed as §5.11(b), states that applications under secrecy order under §5.2 cannot be exported to an international agency or filed in a foreign country except in accordance with §5.5.

Section 5.11(e), proposed as §5.11(c), states that a license pursuant to paragraph (a) is not required where the invention was not made in the United States, or the United States application was on file for six months without a secrecy order being issued.

Section 5.11(f), proposed as §5.11(d), states that a license for foreign filing may be revoked at any time upon written notice. Similarly, an authorization for foreign filing resulting from the passage of six months from the filing of a United States patent application may be revoked by the imposition of a secrecy order. The revocation is effective as of the date of the notice and is not intended to be applicable to any prior acts by applicants relying in good faith on the grant of a license.

The language of §§5.12(b), 5.13, and 5.14 have been clarified from the proposal to reflect that the §1.17(h) requirement for a fee is for the expedited handling of a license. No fee is required for a routine, non-expedited request for a foreign filing license.

Section 5.15 has been changed from the form proposed. Amended §5.15 defines licenses for foreign export and filing of two different scopes. The §5.15(a) scope license, the grant of which is indicated on the filing receipt in accordance with §5.12(a) published at 48 FR 2696. (Jan. 20, 1983) and 1027 OG 9 (Feb. 1, 1983), permits the subsequent export and filing of technical data for purposes related to the preparation, filing or possible filing and prosecution of the foreign application and of any amendments or modifications to the application in a foreign country, even if "additional subject matter" were introduced; provided the additional subject matter does not change the general nature of the subject matter disclosed and does not pertain to certain categories of potentially sensitive material which are set forth in §5.15(a)(4).

The phrase "change the general nature of the subject matter disclosed" is intended to cover situations where the additional subject matter so alters the character of the disclosure that national security review is appropriate. This phrase is intended to permit a broad range of amendments, modifications and supplements, including additional subject matter. The following examples are intended to further clarify the meaning of the language "general nature of the subject matter disclosed" in §5.15(a):

Example 1—The physical data on a named compound. If a licensed disclosure gives the name and structure of a compound, the general nature of the subject matter disclosed includes physical data such as boiling point, melting point or specific gravity of the compound. If a name of a compound is disclosed, the structure of the compound is also within the general nature. If the licensed disclosure deals with the hardness of a claimed alloy, the disclosure of tensile strength is within the general nature.

Example 2—A known specie of a known genus. If the genus "lower alkyl" is disclosed, the inclusion of the species "methyl" is within the general nature, as would be homologs and isomers of that genus.

Example 3—Comparison data of the disclosed compound to data on prior art compounds. If the licensed disclosure contains a disclosure of the compounds of a pesticide invention, and pesticidal activities, the comparison of pesticidal data of a known compound representing the closest prior art is within the general nature.

Example 4—A specific optimum temperature within a specified temperature range. If a licensed disclosure has a range of 0°C to 120°C, the disclosure of an optimum temperature of 100°C is within the general nature.

Example 5—Activity data on compounds of the invention. If activity data on 30 of 50 named compounds is disclosed, the disclosure of activity data on other named compounds of the invention is within the general nature.

Example 6—Additional subject matter and utilities. If a licensed disclosure describes a chemical herbicide for weed control, the disclosure of chemical warfare uses or human toxic properties (other than to demonstrate safety or absence of such toxicity) *is not* within the general nature. If a licensed disclosure describes an analog computer for microwave telephone transmission, the addition of a cryptographic encoding or decoding device and utility *is not* within the general nature. If a licensed disclosure describes a battery power source for a satellite, the addition or substitution of a nuclear isotopic power source *is* within the general nature, but would be within the control of §5.15(a)(4)(ii).

A §5.15(b) scope license is limited to the original subject matter disclosed at the time the license was granted and does not cover "additional subject matter" as the phrase is currently interpreted (*In re Gaertner,* 202 USPQ 714 (CCPA 1979)).

Under §5.15(c), a license with the scope of §5.15(a) could also be granted pursuant to a §5.13 or §5.14 petition. If granted, the §5.15(a) scope of license will be indicated on the license grant. For instance, under §5.15(c) an applicant who filed a United States patent application before Feb. 27, 1983, when the filing receipt license practice became effective could request a §5.15(a) scope license which, if granted, will cover the subsequent filing of amendments, modifications or supplements, including additional matter in a corresponding foreign patent application. The licenses under §§5.12(b), 5.13, and 5.14 are normally limited in scope to the original subject matter disclosed at the time the license was granted unless a license of the §5.15(a) scope is indicated on the license grant. If a petition for a license under §5.12(b) is granted prior to the grant of the §5.12(a) filing receipt license, the former would merge into the latter and would be considered a §5.12(a) license for the purpose of §5.15.

A new §5.20, not included in the proposal, sets forth the specific authority of the Commissioner to license foreign filing, possible filing or prosecution of a patent application in a foreign country under 35 U.S.C. 184 regarding unclassified activities in foreign atomic energy programs. This change only reflects the existing relationship between 37 CFR 5.11 and 10 CFR §810.7 and alerts patent applicants in this technology to the Commissioner's authority. The term "sensitive nuclear technology" used in paragraph (b) of §5.20 is defined in 10 CFR §810.3(q).

A new §5.25, proposed initially as §5.20 and modified, sets forth in the regulations the requirements to be met for the granting of a retroactive license. The requirements include (1) a list of the foreign countries in which the patent application material was filed; (2) the date(s) of filing of the foreign application(s); (3) an oath or declaration which (i) states that the subject matter filed is not subject to a secrecy order under 35 U.S.C. 181, (ii) makes a showing of diligence in attempting to obtain the license upon discovery of the error, and (iii) makes a showing of facts which support a conclusion of inadvertence; and (4) includes the required fee. The section also provides in paragraph (b) for review from a denial of a petition for a retroactive license. The section further provides in paragraph (c) that the granting of a retroactive license pursuant to §5.25 does not excuse any violation of regulations of the export agencies which may have occurred because of the failure to obtain an appropriate license prior to export.

Sections 5.21, 5.22 and 5.23 have been redesignated to become §§5.31, 5.32 and 5.33, respectively.

Significant Differences Between Proposed and Final Rules

Section 1.17

Section 1.17(h) is amended to include a specific reference to §5.25 petitions for retroactive licenses for which the petition fee is charged, rather than having the present retroactive license fee under §1.182 petitions. The fee for §5.12(b) licenses is new and applies only where expedited handling of these license requests is sought. This fee for expedited handling is also referred to in §§5.13 and 5.14. Section 5.15(c) provides for a fee for changing the scope of a license.

Section 5.1

The proposed amendment to §5.1 is not being adopted and is withdrawn.

Section 5.11

Section 5.11 is amended to control the *export* of technical data in the form of an application or data in any form if related to preparing, filing, or prosecuting a patent application in a foreign country, if the United States application has not been on file for at least six months prior to the date of transmittal, or if no application has been filed in the United States. Export approvals, if required, may be provided by appropriate export agencies—Department of State; Department of Commerce, International Trade Administration or Department of Energy—or by the Commissioner. This will enable the Patent and Trademark Office and the export agencies to better reflect and exercise the export control functions set forth in the Arms Export Control Act, as amended, the Export Administration Act of 1979, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, respectively.

Under these Acts, the export of technical data is the activity to be controlled. The final rule differs from the proposed rule in that the Patent and Trademark Office will not be the sole export control authority over technical data in the form of an application, or data in any form, if related to preparing, filing, or prosecuting a patent application. Applications will have the option to obtain necessary export approvals either (1) from appropriate export agencies or (2) from the Commissioner. The Commissioner will continue to be the sole licensing authority for the act of filing an application in a foreign patent office.

Paragraphs (a), (b), and (c) of §5.11 control export activity by requiring either an export agency approval or a Commissioner's license for export of technical data in connection with foreign filing of an application and to that extent implement the Arms Export Control Act, the Export Administration Act, the Atomic Energy Act and the Nuclear Non-Proliferation Act. If a license is obtained from the Commissioner under §5.12, §5.13 or §5.14, no separate approval for the export of technical data to a foreign country in connection with a patent application is required from the export agencies.

It is emphasized that the scope of the Commissioner's license is limited to exporting and filing technical data in the form of an application, or in any form, if related to preparing, filing and prosecuting a patent application or for consideration of the filing of a patent application in a foreign country. A Commissioner's license does not authorize selling or using technical data in a foreign country or exporting data for other purposes. These latter acts continue to require separate approvals from the appropriate export agencies.

Also, the export of technical data in any form to a foreign country for purposes other than related to filing or supporting the filing of a patent application is not controlled by Title 35, U.S.C. or the regulations in Part 5. The exportation of data to a foreign country in such cases would be subject only to other laws and regulations such as the export and arms control regulations. Approval for the export of such technical data for purposes related to filing, possible filing, or supporting the filing of a patent application will be available from the appropriate export agencies or the Commissioner. On the other hand, the Commissioner will be the sole licensing authority for the act of filing the application in a foreign patent office.

Section 5.11(d), proposed as §5.11(b), states that an application cannot be exported to a foreign country when the corresponding United States application is under secrecy order except under §5.5

Section 5.11(e), proposed as §5.11(c), states that no license is required if the invention was not made in the United States, or the application was on file in the United States at least six months and is not under a secrecy order issued under §5.2

Section 5.11(f), proposed as §5.11(d), states that any license for foreign filing may be revoked at any time by written notification. It has been amended to further clarify that revocation also applies to authorizations resulting from the passage of six months from the filing date of a United States patent application when a secrecy order is imposed.

Section 5.12

Section 5.12(b) is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

Section 5.13

Section 5.13 is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

Section 5.14

Section 5.14(a) is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

The other changes in §5.14 make grammatical corrections and do not alter the intent of the section.

Section 5.15

Section 5.15(a) broadens the scope of licenses granted under §5.12(a). Section 5.15(a), as proposed, is changed to clarify the scope of a §5.15(a) license and delete certain of the exclusions originally proposed. This license permits exporting technical data to and filing corresponding subject matter in an application in any foreign country. The license also permits amendments, modifications, and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application, to be exported and filed in any foreign country. This license includes additional matter which does not change the general nature of subject matter disclosed and does not pertain to certain prohibited subjects or areas listed on various export restriction lists established by the Department of State and the Department of Energy.

These changes also permit an applicant to take action in the prosecution of the foreign or international application and submit supporting data such as affidavits, test data or the like as long as it directly relates to the filing, possible filing or prosecution of the application and does not pertain to the prohibited subjects or areas enumerated in §5.15(a)(4). The changes in §5.15(a) obviate the problems in *In re Gaertner,* supra, by providing a license scope which covers the type of activity involved in that case.

Amended paragraph (b) of §5.15 is the same as proposed paragraph (b) except for changes for consistency.

Amended paragraph (c) of §5.15 differs from §5.15(c) as proposed by including a reference to §5.14 and specifically permitting an applicant to petition for a change of the scope of a license.

New paragraph (d) of §5.15 is similar to proposed paragraph (d) with only changes for consistency.

New paragraph (e) of §5.15 is similar to proposed paragraph (e) with only changes for consistency.

Paragraph (f) of §5.15 is similar to proposed paragraph (f) with only changes for consistency.

Paragraph (g) is adopted essentially as proposed.

Section 5.17

Section 5.17 is similar to proposed §5.17 with only consistency changes.

Section 5.20

Section 5.20, not included in the proposal, is new and clarifies the existing authority of the Commissioner under the unclassified activities in foreign atomic energy programs. Under 10 CFR 810.7, the license of the Commissioner under 37 CFR 5.11 pursuant to 35 U.S.C. 184 constitutes information available to the public and generally authorized activity.

Section 5.25

Section 5.25, proposed initially as §5.20, is new and sets forth the requirements for petitioning for a retroactive license.

Section 5.31 and 5.32

Sections 5.21 and 5.22 are redesignated as §§5.31 and 5.32, respectively.

Section 5.33

Section 5.23 is redesignated as §5.33 and adopted as proposed.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony were considered.

Twenty-one letters presenting written comments were received and nine persons testified at the public hearing on July 20, 1983. Comments appear below along with the responses.

Comment: One comment objected to the amendment of §5.1 to include "transmittal for" filing.

Reply: This comment has been adopted by deleting the phrase from the final rule.

Comment: Three comments requested an explanation of the conditions when a license may be revoked under §5.11(d) be clearly set forth and asked whether, if revocation occurs, past acts are valid and whether there will be compensation for damages.

Reply: The section has been revised to further clarify the conditions under which a license may be revoked. The power to revoke licenses has been expressly included in all issued licenses for a number of years. Section 5.11(d) as proposed, merely recognizes in the rule the fact that licenses can be revoked. With the advent of the filing of a U.S. application becoming a request for a foreign filing license under §5.12(a), a regulatory procedure clarifying the revocation practice was appropriate. Revocation will be effective only as of the date of revocation and prior acts predicated on the license would be in compliance with 37 CFR Part 5. The rule as proposed has been clarified to indicate that revocation may apply either to a license specifically granted by the Commissioner or to an authorization to file a foreign application resulting from the passage of six months from the filing of a United States patent application. No compensation is available for revocation of a license.

Comment: Eighteen comments requested the amendment of §5.11 to eliminate the license requirement for "transmittal for filing" and substitute the requirement for "filing" only.

Reply: The proposal has been adopted by eliminating the requirement for a license from the Commissioner prior to transmitting or exporting an application abroad. The regulations have been clarified to emphasize the requirements for the export of technical data in the form of an application. An applicant has a choice of exporting such applications under authority of either (1) the appropriate export agencies controlling the export of technical data—Department of State; Department of Commerce, International Trade Administration; or Department of Energy or (2) a license from the Commissioner. While a license from the Commissioner is required only for filing an application abroad, the provisions of §§5.18, 5.19 and 5.20 reflect the Commissioner's authority to license the export of technical data in the form of an application for purposes related to filing in addition to the foreign filing of the application in a foreign country.

Comment: Six person objected to the transmittal license requirement and argued that the Patent and Trademark Office lacks authority under 35 U.S.C. 184 to require pre-filing (transmitting) licenses. It was also argued that foreign filing licensing is not the conduct of proceedings under 35 U.S.C. 6.

Reply: The final rules do not require a license from the Commissioner for export (or transmittal). The export provisions of §5.11 are issued under 35 U.S.C. 6 and pursuant to delegations under the regulations of the export agencies.

Comment: One comment argued that the constitutional right of freedom of speech would be impaired by requiring a license for published material.

Reply: A constitutional argument of prior restraint by export licensing of the International Traffic in Arms Regulations was reviewed by the Ninth Circuit in the case of *United States* v. *Edler,* 579 F. 2d 516 (9th Cir. 1978) cert. denied 449 U.S. 1084 (1981). No prior restraint within first amendment protection was found by the Court.

Comment: One comment stated that the $120 petition license fee under §5.12(b) is too high, and a $60 fee would be more reasonable.

Reply: The license fee under §5.12(b), §5.13 and §5.14 is not applicable to routine licensing requests. It is only applicable to expedited processing of license requests which require special efforts by the Patent and Trademark Office. The $120 petition fee better reflects the costs to the Patent and Trademark Office for providing expedited handling.

Comment: One comment proposed the deletion of the last sentence of paragraph §5.14(a) since under §5.12(a) only those cases having interest from a security standpoint are refused a license.

Reply: This suggestion has not been adopted because the provision may apply to petitions filed prior to receipt of a filing receipt license where expedited handling is requested.

Comment: One comment stated that §5.15(d) appears to be redundant since it applies only to cases on file for six months and on which no secrecy order has been imposed.

Reply: Under §5.15(d), a license is not needed for cases in this category if no additional subject matter is added. This section complements §5.15(b) where a license of narrow scope is granted.

Comment: One comment raised the question whether §5.15(a) as to amendments, supplements, and modifications includes continuation-in-part applications.

Reply: Continuation-in-part applications are included within the term "amendments, supplements, and modifications." *Beckman Instruments, Inc.* v. *Coleman Instruments,* 143 USPQ 278 (7th Cir. 1964).

Comment: Two comments requested that the express language in §5.15(a)(3) be amended to state that "Technical Data" relating to articles, materials and supplies be limited to the validated license requirements of §§379.4(c) and 379.4(d) of the Export Administration Regulations and no other sections, or alternatively, that paragraph (a)(3) be deleted in its entirety.

Reply: The final rules do not include §5.15(a)(3) as proposed.

Comment: Two comments proposed that the two-tier licensing structure of §5.15(a) and §5.15(b) be amended to reflect a broad one-tier system based on §5.15(a).

Reply: The two-tier system reflects different treatment for applications within the inspection scope of 35 U.S.C. 181 and those outside of its inspection scope. Security review occurs on all applications with inspection cases having a narrow license grant, and noninspection cases having a broad license grant. This inspection case treatment is necessary for the Patent and Trademark Office to meet its responsibilities under 35 U.S.C. 184 and particularly 37 CFR 5.18, 5.19, and 5.20 where the State, Commerce and Energy Departments accept the Commissioner's licenses in lieu of their own export approval.

Comment: One comment indicated that proposed §5.15(a)(3) was of such wide scope that licenses will always be needed. The example cited was that this section would require licenses for all amendments filed in North Korea and Cuba.

Reply: The comment is correct and the provisions of §5.15(a)(3) have been deleted. The country of destination restrictions did not provide a workable mechanism for technology review under the provisions of 35 U.S.C. 181.

Comment: Three comments recommended making a §5.15(a) scope license available pursuant to a §5.14 petition where an application was filed prior to Feb. 27, 1983, or where an initial automatic §5.12(a) petition was not granted after Feb. 27, 1983 or where the general nature of the invention changed but is still outside of the provisions of §5.15(a)(4).

Reply: This provision has been adopted to allow the Commissioner to issue broadened licenses upon a §5.14 petition in the above circumstances. New §5.15(c) allows the Commissioner to convert the scope of a license from §5.15(b) to a §5.15(a) license.

Comment: Two comments proposed the extension of a §5.15(a) license upon petition after one or more years after the United States filing date or after grant of a §5.15(b) license.

Reply: This suggestion has been adopted in §5.15(c) which will provide the mechanism by petition at any time to convert the scope of a license. This is promulgated since errors may occur in the denial of a §5.15(a) license. Also, the initial determination of the sensitive nature of technology may be altered by changes in the security classification guidelines. Procedurally, such petitions will be referred to the appropriate defense agencies for their review of the technology prior to the grant of any license.

Comment: One comment requested clarification on how and under what circumstances a §5.12(b) license granted under §5.15(c) has the same scope as a license granted under §5.12(a).

Reply: Licenses granted under §5.12(a) will have the §5.15(a) scope because the applications are not within the inspection scope of a 35 U.S.C. 181 referred to the defense agencies for security review. Under §5.15(c), applications which are not referred to defense agencies pursuant to petitions under §§5.12, 5.13 and 5.14 will have a license of the scope of §5.15(a).

Comment: Three comments suggested an amendment to proposed §5.20(4) to delete the "inadvertence" standard and substitute "through error without deceptive intent."

Reply: Inadvertence is a statutory standard which cannot be altered by rulemaking. Further, judge-made law has determined the metes and bounds of this term which further proscribes the rulemaking authority of the Commissioner. In *Barr Rubber Products Co.* v. *Sun Rubber Co.,* 149 USPQ 204, 209 (S.D.N.Y., 1966) inadvertence was defined as "lack of care or attentiveness: inattention" or "an effect of inattention: a result of carelessness; an oversight, mistake, or fault from negligence."

Inadvertence signifies want of attention, and an action which is deliberately taken with full knowledge of the law and facts is not inadvertent. *In re Application of Nov. 22, 1952,* 153 USPQ 410, 411 (Asst. Commr. 1967).

Implementation of Patent Procedure Revisions

The various sections will be implemented by the Commissioner on the effective date of the rules by the acceptance of petitions under the various sections. The broadened license scope of §5.15(a) will apply as of the effective date of these rules to all cases having filing receipt licenses under §5.12(a) which became effective on Feb. 27, 1983. The provisions of this broad license do not apply to acts of export or filing which occurred prior to the effective date of these rules. No other action will be required by an applicant to receive the benefits of this change.

Other Considerations

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The Acting General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354) for several reasons. Under this rulemaking, small entities would be able to obtain licenses without filing separate requests therefor. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, simplifying existing procedures where possible.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in cost or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

Paperwork Reduction Act. The collection of information requirement of this rule is included in a

PTO request for approval pending before the OMB. Upon assignment of a control number by OMB, we will publish an appropriate amendment of the affected rules.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Lawyers, Small businesses.

37 CFR Part 5

Classified information, Foreign relations, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 41 and 181–188 and by delegations to the Commissioner by regulation (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7) or otherwise under the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, the Patent and Trademark Office is amending Parts 1 and 5 of Title 37 of the Code of Federal Regulations as set forth below:

PART 1—[AMENDED]

1. Section 1.17 is amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of Part 1 or 5 listed below which refers to this paragraph $120.00

—§1.47—for filing by other than all the inventors or a person not the inventor
—§1.48—for correction of inventorship
—§1.182—for decision on questions not specifically provided for
—§1.183—to suspend the rules
—§1.268—for late filing of interference settlement agreement
—§§5.12, 5.13 & 5.14—for expedited handling of foreign filing license
—§5.15—for changing the scope of a license
—§5.25—for retroactive license

2. The table of contents and heading for Part 5 are revised to read as follows:

PART 5—SECRECY OF CERTAIN INVENTIONS AND LICENSES TO EXPORT AND FILE APPLICATIONS IN FOREIGN COUNTRIES

Secrecy Orders

Sec.
5.1 Defense inspection of certain applications.
5.2 Secrecy order.
5.3 Prosecution of application under secrecy orders; withholding patent.
5.4 Petition for rescission of secrecy order.
5.5 Permit to disclose or modification of secrecy order.
5.6 General and group permits.
5.7 Compensation.
5.8 Appeal to Secretary.

Licenses for Foreign Exporting and Filing

5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting international application.
5.12 Petition for license.
5.13 Petition for license; no corresponding appliction.
5.14 Petition for license; corresponding U.S. application.
5.15 Scope of license.
5.16 Effect of secrecy order.
5.17 Who may use license.
5.18 Arms, ammunition, and implements of war.
5.19 Export of technical data.
5.20 Export of technical data relating to sensitive nuclear technology.
5.25 Petition for retroactive license.

General

5.31 Effect of modification, rescission or license.
5.32 Papers in English language.
5.33 Correspondence.

Authority: 35 U.S.C. 6, 41, 181–188 and the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

3. The center heading preceding §5.11 and the text of §5.11 are revised to read as follows:

Licenses for Foreign Exporting and Filing

§5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting an international application.

(a) A license from the Commissioner of Patents and Trademarks under 35 U.S.C. 184 is required before filing any application for patent or for the registration of a utility model, industrial design, or model, in a foreign patent office or any foreign patent agency or any international agency other than the United States Receiving Office, if:

(1) An application on the invention has been on file in the United States less than six months prior to the date on which the application is to be filed, or

(2) No applicaltion on the invention has been filed in the United States.

(b) The license from the Commissioner of Patents and Trademarks referred to in paragraph (a) would also authorize the export of technical data abroad for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application without separately complying with the regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of the Office of Export Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy).

(c) Where technical data in the form of a patent application, or in any form is being exported for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application, without the license from the Commissioner of Patents and Trademarks referred to in paragraphs (a) or (b) of this section, or on an invention not made in the United States, the export regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of Office of Export Administration, International Trade Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy) must be complied with unless a license is not required because a United States application was on file at the time of export for at least six months without a secrecy order under §5.2 being placed thereon. The term "exported" means export as it is defined in 22 CFR Parts 121–130, 15 CFR Part 379 and 10 CFR Part 810.

(d) If a secrecy order has been issued under §5.2, an application cannot be exported to, or filed in, a foreign country (including an international agency in a foreign country), except in accordance with §5.5.

(e) No license pursuant to paragraph (a) of this section is required if:

(1) The invention was not made in the United States, or

(2) The United States application is not subject to a secrecy order under §5.2, and was filed at least six months prior to the date on which the application is filed in a foreign country.

(f) A license pursuant to paragraph (a) of this section can be revoked at any time upon written notification by the Patent and Trademark Office. An authorization to file a foreign patent application resulting from the passage of six months from the date of filing of a United States patent application may be revoked by the imposition of a secrecy order.

4. Section 5.12 is amended by revising paragraph (b) to read as follows:

§5.12 Petition for license.

* * * * *

(b) Petitions for license should be presented in letter form and must include the required fee (§1.17(h)), if expedited handling of the petition is also sought, the petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

5. Section 5.13 is revised to read as follows:

§5.13 Petition for license; no corresponding application.

If no corresponding national or international application has been filed in the United States, the petition for license under §5.12(b) must be accompanied by the required fee (§1.17(h)), if expedited handling of the petition is also sought, and a legible copy of the material upon which a license is desired. This copy will be retained as a measure of the license granted. For assistance in the identification of the subject matter of each license so issued, it is suggested that the petition be submitted in duplicate and provide a title and other description of the material. The duplicate copy of the petition will be returned with the license or other action on the petition.

6. Section 5.14 is amended by revising paragraphs (a) and (c) to read as follows:

§5.14 Petition for license; corresponding U.S. application.

(a) When there is a corresponding United States application on file, a petition for license under §5.12(b) must include the required fee (§1.17(h)), if expedited handling of the petition is also sought, and must identify this application by serial number, filing date, inventor, and title, but a copy of the material upon which the license is desired is not required. The subject matter licensed will be measured by the disclosure of the United States application. Where the title is not descriptive, and the subject matter is clearly of no interest from a security standpoint, time may be saved by a short statement in the petition as to the nature of the invention.

* * * * *

(c) When the application to be filed or exported abroad contains matter not disclosed in the United States application or applications, including the case where the combining of two or more United States applications introduces subject matter not disclosed in any of them, a copy of the application as it is to be filed in the foreign country or international application which is to be transmitted to a foreign international or national agency for filing in the Receiving Office, must be furnished with the petition. If however, all new matter in the foreign or international application to be filed is readily identifiable, the new matter may be submitted in detail and the remainder by reference to the pertinent United States application or applications.

7. Section 5.15 is revised to read as follows:

§5.15 Scope of license.

(a) Grant of a license under §5.12(a) authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency when the subject matter of the foreign or international application corresponds to that of the domestic application. This license includes authority

(1) To export and file all duplicate and formal papers to the foreign country or international agencies;

(2) To make amendments, modifications and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application;

(3) To take any action in the prosecution of the foreign or international application; and

(4) To add subject matter or take any action under paragraphs (a) (1)–(3) of this section which does not change the general nature of the subject matter disclosed at the time of filing, unless the subject matter added involves technical data pertaining to:

(i) Defense services or articles designated in the United States Munitions List applicable at the time of foreign filing, the unlicensed exportation of which is prohibited pursuant to the Arms Export Control Act, as amended, and 22 CFR Parts 121–130; or

(ii) Restricted Data, sensitive nuclear technology or technology useful in the production or utilization of special nuclear material or atomic energy, the dissemination of which is subject to restrictions of the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, as implemented by the regulations for Unclassified Activities in Foreign Atomic Energy Programs, 10 CFR Part 810, in effect at the time of foreign filing.

(b) Grant of a license under §5.12(b) authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency. Further, this license includes authority to forward all duplicate and formal papers to the foreign patent agency or international patent agency and to make amendments, modifications or supplements to and take any action in the prosecution of the foreign or international application, provided subject matter additional to that covered by the license is not involved.

(c) A license granted under §5.12(b) pursuant to §5.13 or §5.14 shall have the scope indicated in paragraph (a) of this section, if it is so specified in the license. A petition, accompanied by the required fee (§1.17(h)), may also be filed to change a license having the scope indicated in paragraph (b) of this section to a license having the scope indicated in paragraph (a) of this section. The change in the scope of a license will be as of the date of the grant of the change in scope.

(d) In those cases in which no license is required to file the foreign application or transmit the international application, no license is required to file papers in connection with the prosecution of the foreign or international application not involving the disclosure of additional subject matter.

(e) Any paper filed abroad or transmitted to an international patent agency following the filing of a foreign or international application which changes the general nature of the subject matter disclosed at the time of filing or which involves the disclosure of subject matter listed in paragraphs (a)(4) (i) or (ii) of this section must be separately licensed in the same manner as a foreign or international application. Further, if no license has been granted under §5.12(a) on filing the corresponding United States application, any paper filed abroad or with an international patent agency which involves the disclosure of additional subject matter must be licensed in the same manner as a foreign or international application.

(f) Licenses separately granted in connection with two or more United States applications may be exercised by combining or dividing the disclosures, as desired, provided:

(1) Subject matter which changes the general nature of the subject matter disclosed at the time of filing or which involves subject matter listed in paragraphs (a)(4) (i) or (ii) of this section is not introduced and,

(2) In the case where at least one of the licenses was obtained under §5.12(b), additional subject matter is not introduced.

(g) A license does not apply to acts done before the license was granted. See §5.25 for petitions for retroactive licenses.

8. Section 5.17 is revised to read as follows:

§5.17 Who may use license.

Licenses may be used by anyone interested in the export, foreign filing, or international transmittal for or on behalf of the inventor or the inventor's assigns.

9. A new §5.20 is added to read as follows:

§5.20 Export of technical data relating to sensitive nuclear technology.

(a) Under regulations (10 CFR 810.7) established by the United States Department of Energy, an application filed in accordance with the regulations (37 CFR 5.11–5.33) of the United States Patent and Trademark Office and eligible for foreign filing under 35 U.S.C. 184, is considered to be information available to the public in published form and a generally authorized activity for the purposes of the Department of Energy regulations.

(b) Inquiries concerning the export of sensitive nuclear technology other than related to the filing or prosecution of a foreign patent application should be made to the Attention: Secretary, United States Department of Energy, Office of International Security Affairs, Washington, D.C. 20858.

§5.21 [Redesignated as §5.31]

10. Section 5.21 is redesignated as §5.31.

§5.22 [Redesignated as §5.32]

11. Section 5.22 is redesignated as §5.32.

12. A new §5.25 is added to read as follows:

§5.25 Petition for retroactive license.

(a) A petition of retroactive license under 35 U.S.C. 184 shall be presented in accordance with §5.13 or §5.14, and shall include:

(1) A listing of the foreign countries in which the patent application material was filed,

(2) The dates on which the material was filed,

(3) A verified statement containing:

(i) An averment that the subject matter in question was not under a secrecy order at the time it was filed abroad, and that it is not currently under a secrecy order.

(ii) A showing that the license has been diligently sought after discovery of the proscribed foreign filing, and

(iii) An explanation of why the material was inadvertently filed abroad without the required license under §5.11 first having been obtained, and

(4) The required fee (§1.17(h)).

The above explanation must include a showing of facts rather than a mere allegation of inadvertence. The showing of facts should include statements by those persons having personal knowledge of the acts regarding filing in a foreign country and should be accompanied by copies of any necessary supporting documents such as letters of transmittal or instructions for filing. The acts which are alleged to constitute inadvertence should cover the period from the time of filing until actual filing of the petition under this section.

(b) If a petition for a retroactive license is denied, a time period of not less than thirty days shall be set, during which the petition may be renewed. Failure to renew the petition within the set time period will result in a final denial of the petition. A final denial of a petition stands unless a petition is filed under §1.181 within two months of the date of the denial. If the petition for a retroactive license is denied with respect to the invention of a pending application and no petition under §1.181 has been filed, a final rejection of the application under 35 U.S.C. §185 will be made.

(c) The granting of a retroactive license does not excuse any violation of the export regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of Office of Export Administration, International Trade Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy) which may have occurred because of the failure to obtain an appropriate license prior to export.

13. Section 5.23 is redesignated as §5.33 and revised to read as follows:

§5.33 Correspondence.

All correspondence in connection with this part, including petitions, should be addressed to "Commissioner of Patents and Trademarks (Attention Licensing and Review), Washington, D.C. 20231."

Feb. 24, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[FR Doc. 84-8884 Filed 4-3-84; 8:45 am]
BILLING CODE 3510-16-M

PATENT NOTICES

Certificates of Correction for the Week of May 1, 1984

PP. 5,127	4,396,845	4,415,691	4,423,908
3,940,747	4,398,233	4,416,933	4,423,968
4,185,995	4,399,126	4,417,604	4,423,986
4,244,281	4,399,188	4,418,000	4,424,071
4,258,689	4,399,271	4,418,118	4,424,421
4,292,710	4,399,323	4,418,416	4,424,529
4,292,787	4,399,676	4,418,838	4,424,540
4,309,420	4,399,736	4,419,534	4,424,681
4,322,341	4,402,214	4,419,743	4,424,887
4,357,056	4,402,805	4,419,813	4,424,948
4,357,617	4,404,246	4,419,964	4,425,041
4,362,275	4,408,060	4,420,333	4,425,542
4,368,209	4,408,490	4,420,416	4,425,855
4,368,891	4,408,975	4,420,587	4,425,893
4,369,307	4,409,599	4,421,162	4,426,031
4,374,882	4,409,947	4,421,431	4,426,236
4,377,759	4,411,011	4,421,618	4,426,400
4,380,903	4,411,179	4,422,049	4,426,520
4,382,381	4,412,059	4,422,102	4,428,218
4,384,932	4,412,101	4,422,281	4,428,292
4,385,894	4,412,133	4,422,319	4,428,337
4,390,350	4,412,237	4,422,338	4,428,797
4,391,016	4,412,584	4,422,370	4,429,473
4,391,535	4,412,796	4,422,728	4,429,515
4,393,060	4,414,339	4,422,939	4,430,527
4,394,220	4,414,423	4,423,205	4,430,706
4,394,278	4,414,648	4,423,491	4,431,291
4,394,986	4,415,315	4,423,539	4,431,400
4,395,810	4,415,432	4,423,637	4,431,591
4,396,618	4,415,533	4,423,892	4,433,374
4,396,745	4,415,578	4,423,902	4,434,591

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 31, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-28-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	5-12-76
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-18-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	1-26-81
DESIGN, GROUP 290—K. L. CAGE, Director	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-04-76
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,307,200 to 3,311,920, inclusive

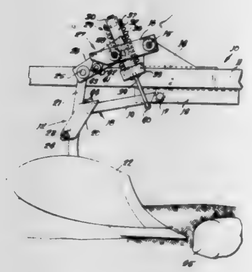
Plant Patents ..... Numbers 2,723 to 2,729 inclusive

REEXAMINATIONS

MAY 1, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,321,027 (189th)
SELF-RESTORING PLOW TRIP
Otto E. Johnson, Hinsdale; Roland J. Frase, Palatine, and James Morkoski, Clarendon Hills, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Reexamination Request No. 90/000,110, Nov. 13, 1981.
Reexamination Certificate for Patent No. 3,321,027, issued May 23, 1967, Ser. No. 482,704, Aug. 26, 1965.
Int. Cl.³ A01B *61/04*
U.S. Cl. 172—260.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2–11** is confirmed.

Claim **1**, having been finally determined to be unpatentable, is cancelled.

2. In a plowing implement having a traveling support adapted to be connected to and propelled by a tractor, a plow unit, means mounting the plow unit on the support for tripping thereof from a normal operating position below the surface of the ground to a tripped position above the ground when abnormal draft conditions are encountered while maintaining the vertical position of said traveling support substantially unimpaired, and means in the mounting of said plow unit on the support accommodating automatic return of the plow unit from its tripped position and effective to dispose the plow unit in an attitude conducive to penetration of the plow unit into the ground and return thereof to its normal operating position below the surface of the ground by the propulsive power of the tractor, and without interrupting the forward progress of the implement, said means mounting the plow unit on the support including link means having collapsible elements movable from an uncollapsed condition in the operating position of the plow unit to a collapsed condition in the tripped position of the plow, and means effective to return said collapsible elements to their uncollapsed condition prior to re-entry of the plow unit into the ground.

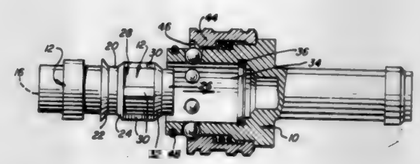
B1 3,549,540 (190th)
METHOD AND COMPOSITIONS FOR TREATING ALUMINUM SURFACES
David Y. Dollman, Doylestown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
Reexamination Request No. 90/000,414, Jul. 1, 1983.
Reexamination Certificate for Patent No. 3,549,540, issued Dec. 22, 1970, Ser. No. 692,725, Dec. 22, 1967.
Continuation-in-part of Ser. No. 590,487, Oct. 31, 1966, abandoned.
Int. Cl.³ C11D *7/54*
U.S. Cl. 252—105

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–21** is confirmed.

1. A method for preventing the formation of smut on the surface of copper-bearing aluminum alloys as a consequence of treatment of said surface with an aqueous acidic deoxidizing solution which deoxidizes aluminum comprising establishing and maintaining in said acidic deoxidizing solution an addition agent soluble therein and selected from the class consisting of ferricyanide and nitroprusside and mixtures thereof, and treating aluminum surfaces with said deoxidizing solution to remove therefrom oxide coating on said surface, wherein the amount of said addition agent in said deoxidizing solution is at least sufficient to reduce the tendency of smut to form on said surface as it is treated with said solution.

B1 4,198,080 (191st)
TELESCOPING-TYPE CONNECTOR
Walter L. Carpenter, Richmond, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Reexamination Request No. 90/000,320, Jan. 21, 1983.
Reexamination Certificate for Patent No. 4,198,080, issued Apr. 15, 1980, Ser. No. 907,520, May 19, 1978.
Int. Cl.³ F16L *27/00, 37/18*
U.S. Cl. 285—277



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended:

Claim **2**, dependent on an amended claim, is determined to be patentable.

New claims **3** and **4** are added and determined to be patentable.

1. In a telescoping-type connector comprising outer and inner *tubular* telescoping members, said inner telescoping member defining an outer circumferential groove and adapted to sealingly fit in telescoping relation within an aperture of the

said outer telescoping member, said outer telescoping member including retention means for releasably projecting a plurality of spaced retaining members into said outer circumferential groove to retain said inner and outer members in sealing, telescoping relation, the improvement comprising, in combination:

said inner telescoping member defining, between said circumferential [grooves] *groove* and the forward end of said inner member relative to said outer member, a recessed portion on its outer surface, and a plurality of circumferentially spaced, longitudinally extending rib members positioned within said recessed portion, said rib members being disposed in a position to prevent at least one of the [retention] *retaining* members of the retention means from being projected into said recessed portion in any rotational position of said inner telescoping member while positioned within the outer telescoping member, *the area occupied by said rib members in the recessed portion being less than the remaining area of said recessed portion which is free of said rib members.*

B1 4,315,798 (192nd)
DECAY RESISTANT SHEET MATERIAL WITH RETAINED FLEXIBILITY
Warren J. Bodendorf, Montgomery, Mass., assignor to Texon Inc., South Hadley, Mass.
Reexamination Request No. 90/000,296, Nov. 22, 1982.
Reexamination Certificate for Patent No. 4,315,798, issued Feb. 16, 1982, Ser. No. 177,778, Aug. 13, 1980.
Int. Cl.[3] **D21H** *5/22*
U.S. Cl. 162—161

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **5**, having been finally determined to be unpatentable, are cancelled.

Claim **2** is determined to be patentable as amended:

Claims **3** and **4**, dependent on an amended claim, are determined to be patentable.

New claims **6–25** are added and determined to be patentable.

2. A synthetic sheet material comprising:
an acrylic elastomeric binder;
fibers *consisting essentially of cellulosic fibers* uniformly distributed throughout said binder;
a sufficient amount of a metal-quinolinolate to render said sheet material resistant to decay by microbial organisms; and
said sheet material being resistant to flexural degradation upon aging.

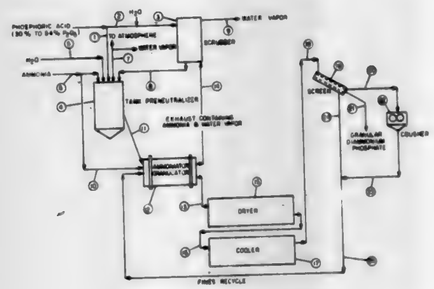
DEFENSIVE PUBLICATIONS

PUBLISHED MAY 1, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T104,201
PRESSURE REACTOR FOR PRODUCING DIAMMONIUM PHOSPHATE
David G. Salladay, 520 Line St., NE., Decatur, Ala. 35601, and Frank P. Achorn, Robbins Beach Rd., Killen, Ala. 35645
Filed Oct. 3, 1983, Ser. No. 538,714
Int. Cl.[3] **C05B** *7/00*
U.S. Cl. 71—34
2 Sheets Drawing. 26 Pages Specification



SHEET OF CONVENTIONAL PROCESS FOR PRODUCTION OF GRANULAR DIAMMONIUM PHOSPHATE

Process for producing diammonium phosphate (DAP) fertilizer from phosphoric and sulfuric acids, anhydrous ammonia and water in a specially designed reactor operated at high pressures to granulate diammonium phosphate at low recycle ratios and with either no, or relatively small, fossil fuel requirement drying per ton of product. By operating at elevated pressures, it is possible to force ammonia into a high temperature (250° to 300° F.) melt without exceeding the recovery capacity of the acid fed to the scrubber. The high pressure slurry from the reactor is forced into the bed of materials in a rotary granulator. Previously operated reactors employed pressures ranging from 0 to 10 psig pressures. This reactor operates at 40 to 80 psig. The process substantially increases production in existing DAP granulation plants and has helped reduce grade deficiencies. Also, use of this reactor for DAP production results in about the same levels of ammonia loss to the scrubber as the prior-art tank preneutralizer, higher operating factors, less maintenance and no transfer pump plugging. Operation is at a temperature of 250° F. to 300° F., or more, while the tank preneutralizer operates normally at 240° F.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

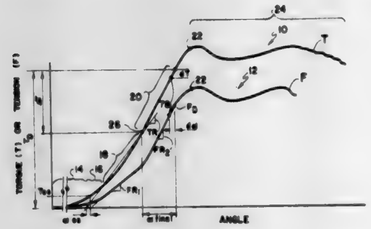
Re. 31,569
TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Original No. 4,179,786, dated Dec. 25, 1979, Ser. No. 912,151, Jun. 2, 1978. Continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. Application for reissue Dec. 21, 1981, Ser. No. 332,802

Int. Cl.³ B23P *19/06*

U.S. Cl. 29—407 55 Claims



51. A method of tightening a multiplicity of substantially identical joints having components including at least one threaded fastener to a final desired stress value below the yield point of all joint components that can be correlated with stress, including:

tightening the fastener with an instructable tool;

sensing torque at various angles of advance during tightening below the yield point of all joint components that can be correlated with stress;

calculating, while tightening below the yield point of all joint components that can be correlated with stress, the stress appearing in the fastener at least at one instant of tightening below the yield point of all joint components that can be correlated with stress from the sensed values of torque and angle;

determining the value of a tightening parameter sufficient to tighten the fastener to the final desired stress value below the yield point of all joint components that can be correlated with stress from the calculated stress;

instructing the tool to tighten the fastener to the determined parameter; and

terminating tightening in response to the attainment of the determined parameter.

Re. 31,570
FLUID FLOWMETER

Charles F. Drexel, Los Angeles County, Calif., assignor to Tylan Corporation, Carson, Calif.

Original No. 3,851,526, dated Dec. 3, 1974, Ser. No. 349,169, Apr. 9, 1973. Application for reissue Feb. 5, 1982, Ser. No. 346,422

Int. Cl.³ G01F *5/00*

U.S. Cl. 73—202 10 Claims

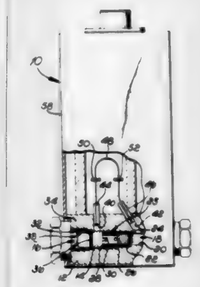
1. A flowmeter comprising:

a housing having a fluid inlet and a fluid outlet defining a first fluid path therebetween *and aligned along a first direction*;

a flow restrictor in said first fluid path comprising at least one disk having a front surface and a rear surface connected by a perimeter surface, an opening through said front and rear surfaces and at least one conduit through said perimeter surface to said opening, said conduit being of a length to diameter ratio to provide laminar flow;

means for supporting said restrictor in said first fluid path whereby the flow therethrough is directed radially in either direction, *normal to said first direction,* between the perimeter and the opening of said at least one disk;

an elongate conduit defining a laminar flow second fluid path;



means for measuring the rate of flow of fluid through said elongate conduit; and

means for connecting said second fluid path in parallel with said first fluid path on opposite flow sides of said flow element; *said housing being constructed to as to redirect said radially directed flow to flow parallel to said first direction.*

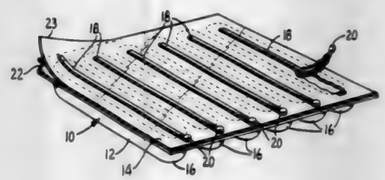
Re. 31,571
MULTIPLE COMPARTMENT PACKAGING

Anne V. Mann, 3154 Sawtell Blvd. #4, Los Angeles, Calif. 90066

Original No. 4,232,787, dated Nov. 11, 1980, Ser. No. 26,136, Apr. 2, 1979. Application for reissue Nov. 8, 1982, Ser. No. 439,929

Int. Cl.³ B65D *85/20, 75/58, 77/32*

U.S. Cl. 206—443 6 Claims



1. A sealed package for holding a plurality of [food] units comprising:

a base receptacle with compartments for holding individual [food] units;

a lid piece for covering said base receptacle and each of said compartments and for maintaining in an airtight state individual [food] units within individual ones of said compartments;

and opening means associated with each of said compartments and forming a part of said lid piece for individually opening each of said compartments to remove [food] units without disturbing the integrity of the remaining compartments and

wherein said opening means comprising a beaded strip formed in said lid and extending along each of said compartments.

Re. 31,572

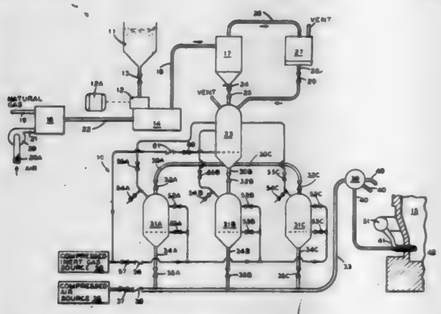
PULVERIZED FUEL DELIVERY SYSTEM FOR A BLAST FURNACE

Earl E. Coulter, Akron; Fritz L. Hemker, Wadsworth, and Elias A. Kazmierski, Akron, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Original No. 3,720,351, dated Mar. 13, 1973, Ser. No. 140,905, May 6, 1971. Division of Ser. No. 799,773, Feb. 17, 1969, abandoned, and a continuation of Ser. No. 248,377, Mar. 27, 1981, abandoned. Application for reissue Aug. 16, 1982, Ser. No. 408,142

Int. Cl.³ B67B 7/00

U.S. Cl. 222—1 9 Claims



5. [A method according to claim 1 including the steps of] *A method of supplying pulverized fuel to a blast furnace which comprises introducing a quantity of pulverized fuel into a tank, pressurizing the tank with an inert gas, communicating the tank with the furnace to allow flow of pulverized fuel thereto under the influence of the gas pressure in the tank, and adjusting said gas pressure in accordance with the flow rate of combustion air to the blast furnace to correspondingly the regulate flow rate of pulverized fuel thereto,* sensing the weight of said tank to determine the delivery rate of pulverized fuel into the furnace, converting raw fuel into pulverized fuel at a rate equal to said delivery rate, and storing the pulverized fuel resulting from such conversion for subsequent transfer into said tank to replenish the pulverized fuel supply thereof.

Re. 31,573

FILM CARTRIDGE ASSEMBLY WITH PRESSURE PLATE

Gurdip S. Sethi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 4,309,096, dated Jan. 5, 1982, Ser. No. 161,792, Jun. 23, 1980. Continuation of Ser. No. 372,851, Apr. 28, 1982, abandoned, and a continuation-in-part of Ser. No. 106,630, Dec. 26, 1979, abandoned. Application for reissue May 27, 1983, Ser. No. 497,220

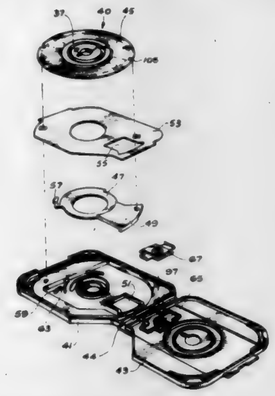
Int. Cl.³ G03B 1/48

U.S. Cl. 354—121 13 Claims

1. In a photographic film cartridge assembly having front and rear opposed walls between which film is movable [to align image areas with] *across* an exposure window in the front wall *to align image areas with the exposure window for exposure, the film remaining in said cartridge following such exposure,* and wherein the rear wall has an opening generally aligned with the exposure window through which the film's front surface can be pressed, by a force exerted against the rear surface of the film, against a film support surface of a camera in which the cartridge assembly is received to locate an image area in the camera's exposure plane; the improvement comprising:

a pressure plate;

means for retaining said pressure plate between the film and the rear wall in alignment with the exposure window and the opening *before and after exposure,* with a degree of freedom to permit movement of said pressure plate toward and away from the front wall, whereby a force is exerted against the rear surface of the film when said pressure plate is moved toward the front wall, *said retaining means comprising a pair of oppositely extending legs projecting from said pressure plate, one of said legs having a dimension which is less than the corresponding dimension of the other leg and discontinuity means of the rear wall of the*



cartridge assembly associated with said legs so as to inhibit orientation of said pressure plate relative to the rear wall in all but the proper orientation; and

baffle means on said pressure plate and the rear wall for forming a tortuous light path to prevent light which enters said cartridge assembly through the opening from reaching the film *before and after exposure.*

Re. 31,574

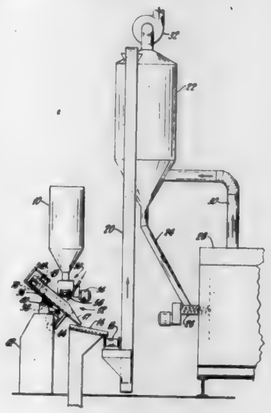
APPARATUS FOR HANDLING HEAT-SOFTENABLE BATCH MATERIAL

Stephen Seng, Frazeysburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Original No. 4,212,613, dated Jul. 15, 1980, Ser. No. 965,632, Dec. 1, 1978. Division of Ser. No. 809,595, Jun. 24, 1977. Application for reissue Jan. 27, 1982, Ser. No. 343,057

Int. Cl.³ B28B 17/00

U.S. Cl. 425—141 15 Claims



1. In an apparatus for pelletizing a batch of particulate material, said apparatus comprising pellet forming means having a movable surface comprising a slanted rotatable member, means for moving said surface, means for supplying particulate batch material to said pellet forming means, means for supplying liquid to said pellet forming means, said apparatus being so arranged and constructed that said liquid and particulate batch material combine to form pelletized batch material, the improvement comprising means for directly sensing the depth of the batch material on said pellet forming means, and means for changing the ratio of the liquid to the particulate material in response to a change in the depth which is sensed.

Re. 31,575

SULFUR COMPOUNDS AND METHOD OF MAKING SAME

Allen C. Ludwig; John M. Dale, and Henry F. Frazier, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Original No. 4,290,816, dated Sep. 22, 1981, Ser. No. 7,042, Jan. 29, 1979. Application for reissue May 6, 1983, Ser. No. 492,183

Int. Cl.³ C09K 3/00; C08L 101/00

U.S. Cl. 106—287.32 18 Claims

1. A process for modifying elemental sulfur to produce a [material] *sulfur reaction product* having properties such that it can be used as a substitute for asphalt or portland cement comprising reacting elemental sulfur:

(1) with from 5 to 20 weight percent of the sulfur *reaction product* of a first hydrocarbon containing from 4 to 20 carbon atoms;

(a) which is a diolefin or triolefin with the unsaturated portion being reactable with elemental sulfur; and

(b) which by itself when reacted with elemental sulfur forms a gel; and

(2) with from 5 to 20 weight percent of the sulfur *reaction product* of a second hydrocarbon containing from 2 to 20 carbon atoms;

(a) which is a monolefin reactable with elemental sulfur; and

(b) which by itself when reacted with sulfur does not form a gel but forms a brittle product; and

(c) which when the first and second hydrocarbons are so reacted with sulfur prevents said gel from forming;

(3) said reaction being initiated by heating the reactants to a temperature in the range of 120° to 200° C. and sufficiently high to cause an exothermic reaction between the reactants; and

(4) producing a *sulfur reaction* product having a viscosity curve substantially that of asphalt, a penetration of from 5 to 100, a softening point of from 10° C. to 70° C. and a ductility of at least 100.

Re. 31,576

COMPOSITIONS CONTAINING PRESERVATIVE METALS AND THEIR USE FOR THE PRESERVATION OF WOOD AND LIKE MATERIALS AND AS FUNGICIDES

Edward A. Hilditch, Frome, England, assignor to Cuprinol Limited, Somerset, England

Original No. 4,193,993, dated Mar. 18, 1980, Ser. No. 904,606, May 10, 1978. Application for reissue Mar. 11, 1982, Ser. No. 357,225

Claims priority, application United Kingdom, May 19, 1977, 20089/77

Int. Cl.³ A01N 55/02, 59/00, 59/16, 59/20

U.S. Cl. 424—141 58 Claims

1. In an aqueous ammoniacal preservative composition comprising: [p1]

(a) a composition of a preservative metal selected from the group consisting of copper, zinc, cobalt, iron, manganese and nickel;

(b) an organic acid; and

(c) an ammoniacal compound selected from the group consisting of ammonia, ammonia compounds, and mixtures thereof, the amount of ammoniacal compound being at least sufficient to solubilize said compound (a) and to neutralize said acid (b), the improvement wherein said organic acid is a branched chain carboxylic acid having 6 to 20 carbon atoms, a [dipentene] *dicyclopentadiene* monocarboxylic acid, a [dipentene] *dicyclopentadiene* dicarboxylic acid, or a mixture thereof present in a preserving amount.

Re. 31,577

REACTIVE TERMINALLY UNSATURATED LIQUID POLYMERS IN UNSATURATED POLYESTERS

Changkiu K. Riew, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Original No. 4,274,994, dated Jun. 23, 1981, Ser. No. 159,068, Jun. 13, 1980. Division of Ser. No. 73,160, Sep. 6, 1979, Pat. No. 4,256,904. Application for reissue Jun. 21, 1983, Ser. No. 506,558

Int. Cl.³ C08L 67/06

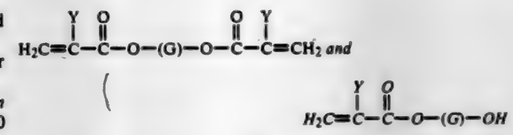
U.S. Cl. 523—514 13 Claims

1. An unsaturated polyester molding composition comprising:

(a) An unsaturated polyester resin,

(b) A polymerizable vinyl monomer, and

(c) From about 2 to about 30 weight parts of a terminally unsaturated liquid epihalohydrin polymer having the formula



wherein Y is hydrogen or methyl, and G is a polymeric backbone comprising polymerized units of at least one epihalohydrin.

Re. 31,578

α(SUBSTITUTED) AMINO-3-SUBSTITUTED-2-ISOXAZOLINE-5-ACETIC ACIDS (ESTERS)

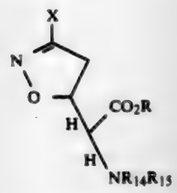
Robert C. Kelly, and Wendell Wierenga, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Original No. 4,256,898, dated Mar. 17, 1981, Ser. No. 62,857, Jul. 31, 1979. Continuation-in-part of Ser. No. 905,963, May 15, 1978, abandoned. Application for reissue Feb. 28, 1983, Ser. No. 470,743

Int. Cl.³ C07D 261/04

U.S. Cl. 548—240 21 Claims

1. Racemic mixtures and optically active isomers of compounds having the formula

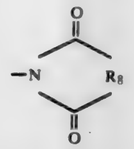


wherein R is selected from the group consisting of hydrogen, alkyl of from 1 to 8 carbon atoms, inclusive, halogenated alkyl of from 1 to 3 halogen atoms, and 1 to 5 carbon atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, and substituted aralkyl of from 7 to 20 carbon atoms, inclusive; X is selected from the group consisting of bromine, chlorine, [fluorine and iodine,]—OR_1, —SR_1, and —$NR'R''$ wherein R_1 is selected from the group consisting of alkyl of from 1 to 12 carbon atoms, inclusive, aryl of from 6 to 20 carbon atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive; R'

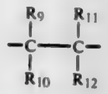
and R'' are the same or different and are selected from the group consisting of hydrogen and alkyl of from 1 to 8 carbon atoms, inclusive, R_{14} and R_{15} are selected from the group consisting of hydrogen,



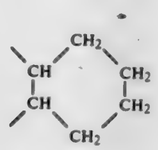
inclusive, or when taken together with the nitrogen atom form the group



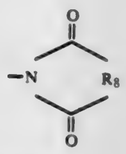
wherein R_6 is alkyl of from 1 to 8 carbon atoms, inclusive, halogenated alkyl of from 1 to 5 carbon atoms, inclusive, and 1 to 3 halogen atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, and substituted aralkyl of from 7 to 20 carbon atoms, inclusive, R_7 is selected from the group consisting of alkyl of from 1 to 12 carbon atoms, inclusive, aryl of from 6 to 20 carbon atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, substituted aralkyl of from 7 to 20 carbon atoms, inclusive, and R_8 is selected from the group consisting of (a)



where R_9, R_{10}, R_{11} and R_{12} are selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, inclusive, (b)



(c) orthointerphenylene, and (d) substituted orthointerphenylene, with the proviso that when R, R_{14} and R_{15} are all hydrogen, X cannot be chlorine, and with the further proviso that when X is chlorine and R is either hydrogen or lower alkyl of from 1 to 8 carbon atoms, inclusive, neither R_{14} nor R_{15} can be alkoxycarbonyl nor can R_{14} and R_{15} together with the nitrogen atom be the group



wherein R_8 is defined as above.

Re. 31,579

SHUTTERLESS FIBER OPTIC SWITCH

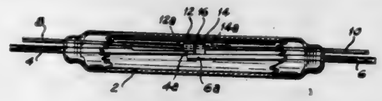
James R. Jaeschke, Waukesha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 4,146,856, dated Mar. 27, 1979, Ser. No. 865,435, Dec. 29, 1977. Application for reissue Apr. 7, 1980, Ser. No. 138,373

Int. Cl.³ H01H *51/06*

U.S. Cl. 335—151

6 Claims



4. [The switch according to claim **3**] *A shutterless fiber optic switch comprising: actuation means comprising first and second members at least one of which is movable between actuated and unactuated positions;*

first and second fiber optic cables;

alignment means comprising first and second support means mounting respectively said first and second fiber optic cables to said first and second members such that in said actuated positions said cables are colinearly aligned in facing end to end relation to permit transmission of light therebetween thus forming a closed optical circuit, and such that in said unactuated position said cables are misaligned to prevent transmission of light therebetween;

one of said first member and said first support means being stopped against one of said second member and said second support means when said at least one member is in said actuated position to afford accurate alignment of said fiber optic cables, the coaxis of said fiber optic cables being perpendicular to the line of travel of said at least one member, said first support means mounting said first fiber optic cable at a distance D1 spaced in the direction of said line of travel from said first member, said second support means mounting said second fiber optic cable at a distance D2 spaced in the direction of said line of travel from said second member such that in said actuated position the distance between said second fiber optic cable and said first member in the direction of said line of travel is substantially equal to D1, and wherein said first member is stopped against said second member in said actuated position, and wherein D2 substantially equals D1 plus the thickness of said first member.

Re. 31,580

INSULATED GATE FIELD-EFFECT TRANSISTOR COMPRISING A MESA CHANNEL AND A THICKER SURROUNDING OXIDE

Else Kooi, Los Altos, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

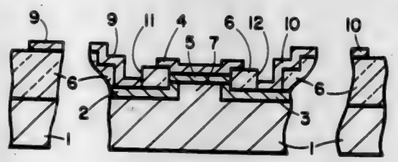
Original No. 3,544,858, dated Dec. 1, 1970, Ser. No. 727,563, May 8, 1968. Application for reissue Sep. 25, 1980, Ser. No. 191,031

Claims priority, application Netherlands, Jun. 8, 1967, 6707956

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23

7 Claims



1. An insulated gate field-effect transistor comprising a semi-

conductive body of silicon of one type conductivity having a surface portion comprising a silicon mesa standing a given height above the surface portion and comprising a channel region of said transistor, spaced source and drain regions of the opposite type conductivity adjacent the surface portion and the mesa and on opposite sides of the mesa, a first layer of an insulating material constituted at least in part of silicon oxide on and adherent to the body surface at least at portions overlying the source and drain regions and at adjacent portions of the body surrounding the source, drain and channel regions, the entire interface between said first insulating layer portions and the body lying below [tre] *the* mesa top, a second layer of an insulating material *directly* on the top surface of the mesa and adjoining the first insulating layer portions adjacent thereto, each of said insulating layers having a thickness in a direction corresponding to its smallest dimension, the portions of said first insulating layer at least overlying the source and drain regions and the said adjacent portions of the body having a thickness at least equal to the given height of the mesa such that the said insulating layer portions extend to a height in their thickness direction at least equal to that of the mesa and the top surfaces of said first insulating layer portions extend substantially parallel to said surface portion and at the level of or above the mesa top, said second insulating layer having a thickness substantially smaller than that of the first insulating layer portions, a gate electrode having a portion on the second insulating [layers] *layer*, a source electrode having a portion on the first insulating layer and electrically connected through an opening therein to the source region, and a drain electrode having a portion on the first insulating layer and electrically connected through an opening therein to the drain region, *the second insulating layer lying between the gate electrode and the silicon mesa top consisting entirely of silicon oxide.*

PLANT PATENTS

GRANTED MAY 1, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,225

CHRYSANTHEMUM PLANT NAMED SPLENDOR

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 31, 1982, Ser. No. 413,570
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name of Splendor as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; light lavender ray floret color; diameter across face of capitulum ranging from 145 to 160 mm. at maturity; uniform nine (9) week flowering response; medium plant height and upright branching pattern.

5,226

CHRYSANTHEMUM PLANT NAMED YELLOW CAMBRIA

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 31, 1982, Ser. No. 413,508
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium*, Ramat., known by the cultivar name of Yellow Cambria, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spider capitulum type; yellow ray floret color; diameter across face of capitulum ranging from 175 to 225 mm. at maturity; uniform nine (9) week flowering response; tall 90 to 95 cm. plant height when grown single stem with no long days and a low temperature tolerance of 13° C. (55° F.) for initiation and development under controlled short days with a continuous dark period of 12 to 14 hours.

5,227

CHRYSANTHEMUM PLANT NAMED FAVOR

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 31, 1982, Ser. No. 413,601
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name Favor, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; bronze red ray floret color; diameter across face of capitulum ranging from 80 to 120 mm. at maturity; uniform nine (9) week flowering response; medium plant height and spreading branching pattern.

PATENTS

GRANTED MAY 1, 1984

ERRATA

For CLASS	See PATENT NO.
114–355	4,445,244
502–355	4,446,057
428–648	4,446,156
346–216	4,446,209
315–111	4,446,403
368–048	4,446,491

PATENTS

GRANTED MAY 1, 1984

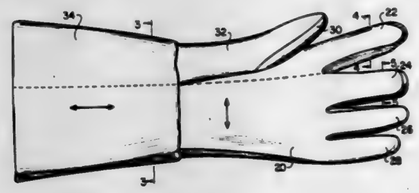
GENERAL AND MECHANICAL

4,445,231
BIB HAVING GRAVITATIONALLY OPENABLE POCKET
John R. Noel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 19, 1983, Ser. No. 486,573
Int. Cl.³ A41B *13/10*
U.S. Cl. 2—49 R **8 Claims**



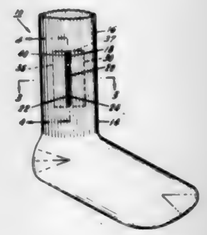
1. A bib comprising a top panel, a substantially full-width pocket panel disposed at the bottom end of said top panel, an apron panel, and means for securing said bib on a user, said pocket panel having a transverse upper edge and said apron panel having a transverse top edge which is coextensive with said transverse upper edge of said pocket panel so that said apron panel pendulously depends from said transverse upper part of said pocket, and said pocket panel having vertically extending side edges which are secured to adjacent edge regions of said top panel but for an unsecured zone of each said side edge disposed adjacent said transverse upper edge whereby said transverse upper edge is disposed at a higher elevation than the uppermost ends of the secured portions of said side edges, said bib further having a central surface portion of said pocket panel disposed adjacent said transverse upper edge secured in face-to-face relation to a central surface portion of said apron panel disposed adjacent said top edge thereof.

4,445,232
WELDERS GLOVE
Larry D. Nelson, 1341 Loch Lomond, Cardiff, Calif. 92007
Filed May 24, 1982, Ser. No. 381,204
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 R **8 Claims**



1. A welders glove for protecting the hand of a welder from burning during welding, said glove comprising:
a glove constructed of at least one panel of deer skin leather cut and shaped to define a hand covering with separate finger and thumb pockets, and a cuff extending over the wrist, wherein at least the portion of said panel covering the back of the hand is oriented with the stretch axis transverse to the longitudinal axis of the hand; and
a thermal lining covering the lower portion of the hand.

4,445,233
HOSIERY WITH INCLUDED POCKET
Robert Rubin, 39-24 213rd St., Bayside, N.Y. 11361
Filed Aug. 19, 1983, Ser. No. 524,925
Int. Cl.³ A41B *11/00*
U.S. Cl. 2—239 **10 Claims**



1. Hosiery with included pocket, comprising:
a hosiery piece including a foot portion and a tubular leg portion for covering at least part of the leg of a wearer;
a slit opening formed in the leg portion extending a first length therealong; the slit opening having first opposite sides, and closure means for selectively opening and closing the slit opening by respectively securing the first sides together and by releasing that securement;
a flexible pocket enclosure inside the leg portion and having a width greater than the distance between the opposite sides of the slit opening, with the closure means closing the slit opening;
the pocket being defined by a plurality of walls; an opening through one of the walls of the pocket; the pocket opening also being defined by second opposite sides thereof in the respective pocket walls; each of the pocket second opening opposite sides being secured to the leg portion generally at a respective one of the first opposite sides of the first opening in the hosiery piece.

4,445,234
PROSTHETIC NAIL FOR SURGICAL ATTACHMENT TO A FINGER OR TOE
E. Olayinka Ogunro, 625 Ray Ave., DeSoto, Tex. 75115
Filed Jul. 19, 1982, Ser. No. 399,477
Int. Cl.³ A61F *1/00, 1/24*
U.S. Cl. 3—1 **7 Claims**



1. A prosthetic nail adapted for use on one of the digits of a person's hand or foot, comprising the combination of:
(a) a nail plate comprising a slightly curved sheet having proximal and distal ends and a longitudinal axis extending therebetween, and the plate being adapted to be placed on top of the distal end of a digit so that the longitudinal axis extends in the same general direction as the distal philan-

geal bone of the digit, and said plate being slightly curved as viewed in a transverse plane so as to approach the generally cylindrical cross-sectional shape of a typical digit, and said plate having a thin edge at its proximal end that is adapted to be at least partially buried within the eponychial fold of the digit;

(b) an anchor member extending downwardly from the distal end of the nail plate, and there being a space in excess of 1 mm between the lower surface of said plate and a lower portion of the anchor member, whereby, at least some tissue of a person's digit may be wedged between a lower portion of the anchor member and the nail plate, and whereby the wedged tissue can resist the movement of the nail plate away from the distal phalangeal bone; and

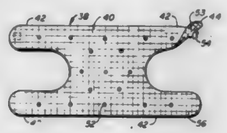
(c) means for providing lateral stability for the nail plate when it is mounted on a digit, and said means including at least one depending edge near its proximal end that is adapted to be covered by tissue of the digit.

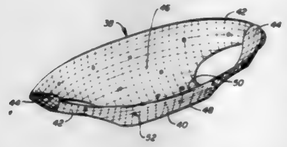
4,445,235

STOOL SPECIMEN COLLECTOR

Pearl Slover, 345 Sybil Ave., San Leandro, Calif. 94577, and Robert R. Moore, 1897 National Ave., Hayward, Calif. 94545

Filed Sep. 13, 1982, Ser. No. 417,197
Int. Cl.³ A47K *11/00*
U.S. Cl. 4—144.2 **3 Claims**





1. A stool specimen collector for use by a medical patient for collection of a stool specimen comprising:

a flat, flexible water-resistant material having a perforated central portion with four projecting, integral strap elements with two shaped parallel elements projecting in a pair from each opposite side of said central portion, said strap elements having distal ends with attachment means for attaching the strap elements to a toilet, wherein on use of said collector, said distal ends in each pair are connected and attached to opposite sides of the top of a conventional toilet, said central portion forming an open cradle receptacle with a depressed center and raised periphery, said receptacle being supported below the seat of the toilet, above the bowl water for receiving the feces of a user and wherein said center portion and said four projecting integral strap elements are formed from a one piece pattern.

4,445,236

PUSH-THROUGH PUMP

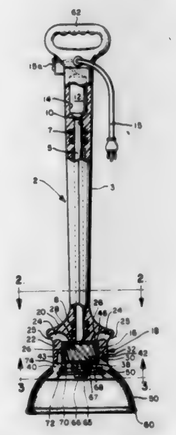
Henry Nadolny, and Henryka A. Nadolna, both of 5045 N. Mango Ave., Chicago, Ill. 60630

Filed Feb. 7, 1983, Ser. No. 464,388
Int. Cl.³ E03D *11/00*
U.S. Cl. 4—255 **6 Claims**

1. A combination pump and plunger for unplugging stoppages in toilets and the like comprising a housing forming a handle portion having a vacuum cup at one end,

a pump mounted at said one end of the handle portion within the upper end of the cup,

means providing selectively operable openable and closable passage means into said cup and through said pump and



out and into said housing for filling and exhausting the pump, and means for reversing said pump,

and means for reversing said pump comprising a reversible motor operably connected to the pump.

4,445,237

CLOSE COUPLED WATER-CLOSET COMBINATION AND ADADPTER

Robert M. Paul, Ambler, Pa., assignor to Partnership of Robert M. Paul, Amber, Pa.

Filed Aug. 30, 1982, Ser. No. 413,049
Int. Cl.³ E03D *11/00*
U.S. Cl. 4—417 **11 Claims**

1. A close coupled water-closet combination comprising:

a source of water under pressure,

a conduit connected at one end to said source, said conduit containing a time controlled valve for controlling the flow of water through said conduit, and

an adapter coupled to the other end of said conduit for coupling said conduit to a toilet bowl, said adapter including:

(a) a substrate having a hole therethrough;

(b) fasteners on opposite sides of the hole for attaching said substrate to said toilet bowl;

(c) a hollow fitting extending through the hole and attached to said substrate and extending both above and below the substrate, said fitting having threads on the outer surface thereof for at least that portion of said surface above said substrate, said other end of said conduit being connected to said fitting, said fitting below said substrate having a flared circumference; and

(d) a hollow, flexible gasket frictionally attached to said fitting circumference, said gasket forming an extension of said fitting, said gasket abuts an opening in the toilet bowl to allow water to pass from said source of water under pressure to said toilet bowl.

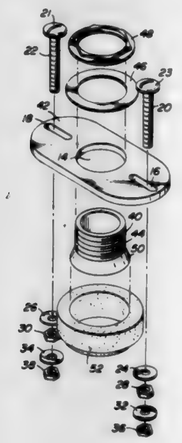
6. An adapter to couple a toilet bowl to a flush device comprising:

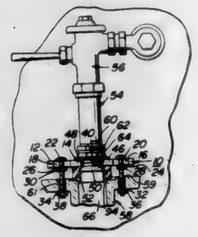
(a) a substrate having a hole therethrough;

(b) fasteners on opposite sides of said hole for attaching said substrate to a toilet bowl;

(c) a hollow fitting extending through the hole and attached to said substrate and extending both above and below the substrate, said fitting having a flared circumference for

that portion of said fitting disposed below said substrate; and





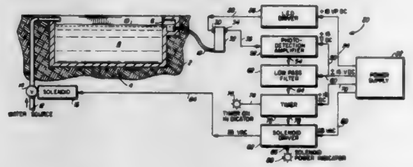
(d) a hollow, flexible gasket frictionally attached at the upper end thereof to said fitting circumference below said substrate to form an extension of said fitting.

4,445,238

SWIMMING POOL WATER LEVEL CONTROL APPARATUS

Monroe R. Maxhimer, 10202 N. 46th Ave., Glendale, Ariz. 85302

Filed Sep. 29, 1982, Ser. No. 426,988
Int. Cl.³ E04H *3/18*
U.S. Cl. 4—508 **6 Claims**



1. Swimming pool water level control apparatus, comprising, in combination:

means for sensing the water level in the swimming pool located remotely from the swimming pool, including

means for sensing a preferred water level in the pool and for sensing a water level less than the preferred water level; and

control means for controlling water flow to the swimming pool in response to the means for sensing the water level, including

means for providing a first output signal in response to the sensing of a water level less than the preferred water level,

timer means actuated by the first output signal for providing a second output signal for a predetermined time period,

valve means for controlling a flow of water to the swimming pool, and

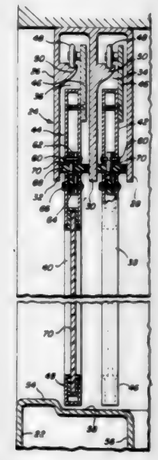
means activated by the second output signal for opening the valve means for the predetermined time period to allow water to flow to the swimming pool during the predetermined time period.

4,445,239

SUSPENDED SHOWER-TUB DOORS WITH UPPER STABILIZING MEANS

Ralph E. Jacobsen, 42 Afton Dr., Florham Park, N.J. 07932

Filed Aug. 24, 1982, Ser. No. 410,897
Int. Cl.³ A47K *3/14*; **A47H** *15/04*; **E03D** *15/06*
U.S. Cl. 4—607 **7 Claims**



1. A shower enclosure structure for the ingress and egress zone for and from a tub-shower area and disposed above the marginal edge of the outer wall of the lower tub portion of said area, said enclosure structure including an upper horizontal rail structure for stationary support in elevated positions spaced above said upper marginal edge, said rail structure defining depending laterally spaced inner, outer and intermediate flange portions with inner and outer downwardly opening channels defined between the inner side of the intermediate flange portion and the outer side of the inner flange portion and between the outer side of the intermediate flange portion and the inner side of the outer flange portion, the upper portions of said inner and outer flange portion, the upper portions of said inner and outer channels including upwardly facing inner and outer track means therein spaced appreciably above the lower marginal edges of said flange portions, a pair of upstanding inner and outer sliding doors having upper marginal edge portions slidingly received within said inner and outer channels and equipped with opposite end support roller means rollingly engaged with the corresponding track means at points spaced longitudinally there along for suspended support of said inner and outer doors from said inner and outer track means, the opposite ends of the upper marginal edge portion of each of said doors including inner and outer guide roller means journaled therefrom about upstanding axes and projecting outwardly from at least the inner and outer sides, respectively, of the upper marginal edge portion of the corresponding door below the corresponding support rollers and above the lower marginal edges of the corresponding flange portions, said inner and outer guide roller means of said inner door being disposed

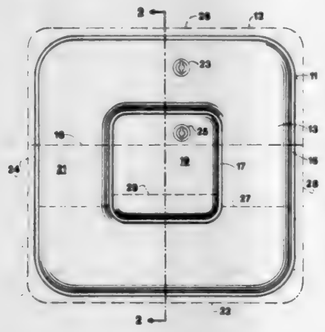
for guiding rolling contact with the outer and inner surfaces of said inner and intermediate flanges, respectively, and the inner and outer guide roller means of said outer door being disposed for guiding rolling contact with the outer and inner surfaces of said intermediate and outer flanges, respectively, said doors including lower marginal edge portion free of guide roller means for guiding engagement with a stationary guide structure.

4,445,240

LIQUID FILLED COMPARTMENTED CUSHION

John Voorhees, Wichita, Kans., assignor to Ideal Comfort, Inc., Wichita, Kans.

Filed Aug. 7, 1978, Ser. No. 931,842
Int. Cl.³ A47C 27/10
U.S. Cl. 5—451 **15 Claims**



1. A covered cushion having at least two compartments containing a liquid comprising

two pieces of flexible plastic sheet material of substantially the same shape,

said pieces being sealed together around their periphery to form a liquid-tight compartment and further having a joining seal in the form of a closed path in the central portion thereof dividing said compartment into two isolated portions, the first portion being centrally located in said cushion and the second portion completely surrounding the first portion,

a filler port with a closure therefor in one of said pieces of sheet material placed to give access to the said first portion of said compartment,

another filler port with a closure therefor in one of said pieces of sheet material placed to give access to the said second portion of said compartment.

4,445,241

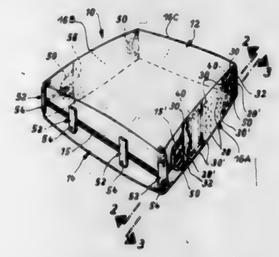
COVER FOR PILLOWS, MATTRESSES AND THE LIKE

Sigrid Ender, and Ottmar Ender, both of Stuttgarter Str. 125, D-7022 Leinfelden 1, Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,209
The portion of the term of this patent subsequent to Nov. 1, 2001, has been disclaimed.
Int. Cl.³ A47G 9/00; A47C 31/08
U.S. Cl. 5—468 **12 Claims**

1. An improved air-tight and fluid-tight cover for padded bodies, mattresses and the like, wherein the cover has at least one ventilation opening for regulating the temperature and humidity of the padded body which is enclosed by the cover, and including means for filtering the air circulating between the cover and the ambient atmosphere, said cover having a top part, a bottom part and a plurality of side parts, at least two side parts of said plurality of side parts being formed by means of a plurality of contiguous layers of material, comprising at least one inner, one outer and one middle layer, the inner and middle layer of said parts having air passage openings, which are offset with respect to each other, and at least one filter means being disposed between the middle and outer layers of said side parts, the improvement comprising in combination

said inner, middle and outer layers of material being connected to each other by means of a plurality of first con-



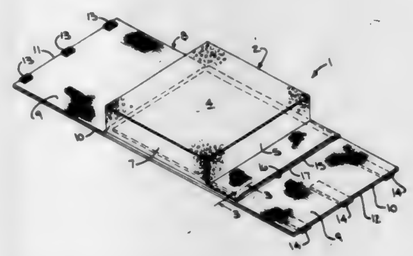
necting seams extending substantially transversely to the longitudinal extents of said side parts across a portion of their widths, at least two contiguous first connecting seams defining at least one pocket therebetween, said filter means being disposed in said pocket.

4,445,242

ABSORBENT PAD HOLDER

Charlotte M. Bowen, 2235 W. Club View Dr., Glendale, Wis. 53209

Filed Apr. 5, 1982, Ser. No. 365,178
Int. Cl.³ A47G 9/04; A61G 9/00
U.S. Cl. 5—484 **8 Claims**



1. A holder for an absorbent pad used to protect seat cushions or the like from body fluids, comprising:

a cover having first and second ends and defining oppositely disposed inner and outer surfaces, said cover having a sufficient length such that said first and second ends extend around to the underside of a cushion;

fastening means disposed adjacent said first and second ends for removably fastening said ends to one another; and

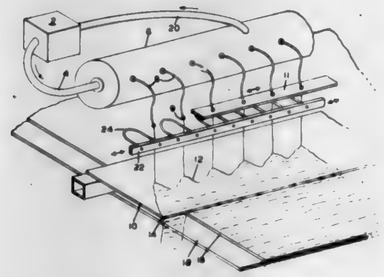
a panel attached to the inner surface of said cover along its periphery except for one side thereof to provide a pocket having an opening receiving an absorbent pad, said panel and pocket positioned so that the pad will substantially overlie the sitting portion of a cushion, said pad including an impervious layer disposed adjacent to said panel and an absorbent layer disposed adjacent to said inner surface.

4,445,243

PARTICLE INK APPLICATION

Walter J. Bohrn, and Peter J. Sydorko, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jul. 26, 1982, Ser. No. 401,922
Int. Cl.³ D06B 1/06
U.S. Cl. 8—151 **5 Claims**



1. A method of applying dye to a carpet comprising the steps of:

(a) supplying the dye from a supply tank to a manifold which has its length extending across the full width of the carpet to be dyed,

(b) removing the dye from the manifold by passing the dye through a plurality of nozzle tubes positioned along the length of the manifold,

(c) flowing the dye from the nozzle tubes onto a flood plane plate positioned above the carpet to be dyed,

(d) inclining the flood plane plate means towards the carpet to be dyed and passing the dye from the point where it drops on the flood plane plate means to the edge of the plate means above the carpet with the dye spreading out on the surface of the plate means whereby dye will flow over the total edge of the plate in a waterfall manner, and

(e) the improvement comprising:

(1) continuously circulating the dye between the supply tank and the manifold by supplying dye at a rate over three times that needed for the nozzle tubes to create turbulent flow in the manifold and to agitate the dye within the manifold to prevent separation of the dye particles and the dye carrier, and

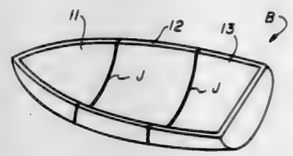
(2) positioning an oscillating bar with plural finger means between the ends of the nozzle tubes and the flood plane plate means whereby the finger means will break up the flow of dye from the nozzle tubes so that the dye falls non-uniformly onto the plate means.

4,445,244

SECTIONAL BOAT JOINT CONSTRUCTION

Stephen E. Wilce, P.O. Box 962, Winters, Calif. 95694

Filed Mar. 13, 1980, Ser. No. 130,085
Int. Cl.³ B63B 7/04
U.S. Cl. 114—355 C **4 Claims**



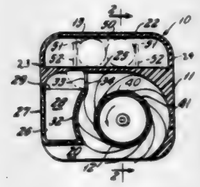
1. A joint construction for a sectional boat comprising, in combination, a plurality of boat hull sections adapted to be detachably connected together in an assembled condition to form a boat, each of said hull sections having a transversely extending edge portion for engagement in longitudinally aligned relationship with the edge portion of the adjacent hull section in the assembled condition of said boat, interlocking means on said hull edge portions for detachably retaining said hull sections together in said assembled condition, said interlocking means including outwardly extending flange means on each of said edge portions for mutual overlapping relationship in said assembled condition to define a transversely extending cavity therebetween, at least one inflatable bladder having an outer wall disposed within said cavity and means for inflating said at least one bladder to move said bladder outer wall into frictional gripping engagement with both of said flange means to retain said flange means in said overlapping relationship and to form a leakproof seam between said adjacent hull sections, said flange means, when forced into contact by the inflation of said bladder, acting as the primary structural connection between said adjacent hull sections wherein said interlocking means include at least one projection and at least one aperture in corresponding positions on said adjacent hull sections, the disposition of said projection and aperture being such that, the inflation of said bladder positioning said projection within said aperture, said projection and aperture lock said hull sections against relative motion.

4,445,245

SURFACE SWEEPER

Ning K. Lu, 31-29 Crescent St., Long Island City, N.Y. 11106

Filed Aug. 23, 1982, Ser. No. 410,530
Int. Cl.³ A47L 5/26
U.S. Cl. 15—23 **2 Claims**



1. A miniature surface sweeper comprising: a housing element having a wall defining a curvilinear inner surface; a dust receptacle disposed at a part of said housing element opposite said wall, said receptacle being removable for emptying; a rotary brush element including a cylindrical surface disposed between said wall and said dust receptacle, and having flexible bristles thereon in the form of a comblike member, the base of which is secured to said cyclindrical surface, said housing element having an intake opening through which the tips of bristles may project to directly engage collected particles; and means for driving said brush element to rotate the same in the direction delivering collected particles along said curvilinear surface to said dust receptacle; said driving means including an electric motor and a power source therefor; said dust receptacle having a closable trap, said power source including a manually movable electric switch coupled to said trap for simultaneous movement, wherein moving said switch to closed position serves to open said trap.

4,445,246

TENSIONING DEVICE FOR WRAPAROUND BRUSHING MECHANISM

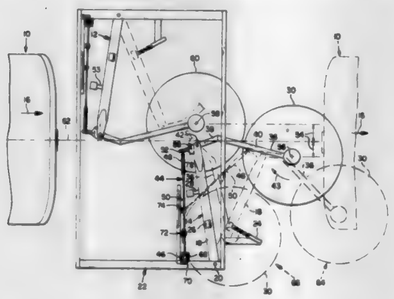
Daniel C. Hanna, 1133 SW. Rivington Dr., Portland, Oreg. 97201

Filed Aug. 2, 1982, Ser. No. 404,279
Int. Cl.³ B60S 3/06
U.S. Cl. 15—53 AB **4 Claims**

1. In a wraparound brushing device having a support structure positioned at one side of a path of a car advanced forwardly along the path; an inner arm and an outer arm, the inner

arm at one end thereof being pivotally mounted to the support structure about a fixed axis, and the outer arm being pivotally mounted intermediate its ends to the outer end of the inner arm; a rotary brush carried by the outer arm at its outer end; and a biasing mechanism for the brush forcibly to engage sequentially the front end, side, and rear end of the car as it advances along the path, the improvement comprising:

an adjustable tensioning means operatively coupled to the inner end of the outer arm and the biasing mechanism to provide adjustment means for varying the amount of leverage attainable to swing the outer arm about its pivot axis and for selecting a desired location on the car for application of a particular brush engagement force, the



adjustable tensioning means including an element mounted to and extending from the inner end of the outer arm, the element having separate first and second adjustment means,

the first adjustment means comprising means to receive the biasing mechanism and means to change the effective length of the element to vary the amount of leverage applied pivotally to move the outer arm; and

the second adjustment means comprising means selectably to mount the element in a plurality of positions lying in a plane generally parallel to the plane formed by the inner and outer arms to vary the point of maximum influence of the biasing mechanism and thereby fix the location on the car for application of maximum brush engagement force.

4,445,247

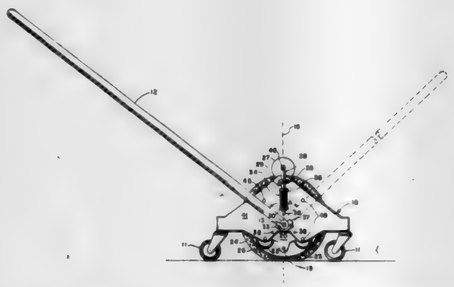
WATER COLLECTING DEVICE

R. L. Johannessen, Box 7040, Richmond, Va. 23221

Filed Jan. 7, 1983, Ser. No. 456,578

Int. Cl.³ E01H *1/00*; A47L *11/00*

U.S. Cl. 15—98 **6 Claims**



1. A device for removing water from a substantially flat surface comprising

(a) carriage means comprised of paired spaced-apart side members each having an outer face and inner face, and each supporting two caster wheels in horizontally spaced-apart juxtaposition, and spanning means interconnecting said side members in a manner such that said caster wheels, four in total in a rectangular array, are disposed to ride upon the same plane,

(b) handle means pivotably engaging each side member,

(c) an elongated collecting vessel extending between the inner faces of said side members and having a configuration which is substantially symmetrical about a vertical plane containing the axis of elongation of said vessel, said vessel having a collecting opening disposed adjacent its uppermost extremity which funnels down to a narrowed throat region entering the interior of said vessel, and drain means adjacent the lowermost extremity of said vessel,

(d) at least three idler wheels associated with each side member in a circular locus in a plane perpendicular to the axis of elongation of said collecting vessel,

(e) an apertured rigid circular cylindrical drum rotatively mounted upon said idler wheels and enveloping said collecting vessel,

(f) a porous resilient absorbent material of substantially uniform thickness releasably attached to the outer periphery of said drum, and positioned to ride upon substantially the same plane as said caster wheels,

(g) an elongated squeeze roll rotatively supported by said side members in a position above said absorbent material, the axis of said squeeze roll being within the plane of symmetry of said vessel and parallel to the axis of elongation of said vessel, and

(h) positioning means associated with the outer faces of said side members and interactive with said handle means to cause vertical movement of said squeeze roll, thereby causing said squeeze roll to either engage said absorbent material in a manner to exert compressive force thereupon, or disengage said absorbent material,

(i) whereby, rolling moving of the device enables said absorbent material to take up water from said ground surface, and the compressive action of the squeeze roll displaces water from said absorbent material, causing said displaced water to flow by gravity into said collecting vessel.

4,445,248

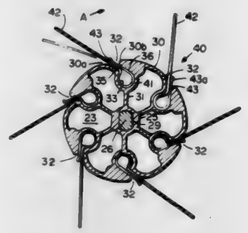
ROTARY STRIPPER

James M. Hait, San Jose, Calif., assignor to International Hardware, Inc., Bridgewater, N.J.

Filed Jun. 4, 1982, Ser. No. 384,978

Int. Cl.³ A46D *9/02*; A46B *7/10*; A47L *13/08*

U.S. Cl. 15—198 **15 Claims**



1. A rotary stripper, comprising:

a generally cylindrical housing which has a plurality of circumferentially spaced pheripheral openings, and which is rotatable in a predetermined angular direction;

a plurality of blades having arm portions projecting through said peripheral openings, each of said blades having a longer work contacting flexing arm and a shorter reaction arm, both composed of springy flexible material,

each longer arm having opposite leading and trailing sides,

each shorter reaction arm having a trailing surface in confronting relation with said leading side of said longer flexing arm of one of said blades and adapted to be contacted by the last named flexing arm during its forward movement in said direction,

said surface of said reaction arm being contoured to yieldingly resist the impact of the confronting longer flexing arm and to limit the stresses set up in said longer arm, to a range which avoids producing fatigue failure in said longer flexing arm upon impact on and rebound from said surface of said reaction arm; and

means defining a curved abutment surface on said housing at each of said peripheral openings on said trailing side of each adjacent longer flexing arm in position to be contacted by said flexing arm during its rearward movement upon contact with a work surface,

said abutment surface being contoured to progressively engage said flexing arm to limit the stresses set up therein upon contact with and rebound from said abutment surface, to a range of stress which will avoid producing fatigue failure in said longer flexing arm during impact with said abutment surface and rebound therefrom.

4,445,249

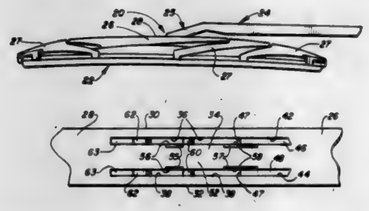
ROCK-TO-LOCK CONNECTION ARM-TO-BLADE

William H. Harbison, and Michael G. Mohnach, both of Valparaiso, Ind., assignors to The Anderson Company of Indiana, Gary, Ind.

Filed Mar. 30, 1982, Ser. No. 363,554

Int. Cl.³ B60S *1/40*

U.S. Cl. 15—250.32 **30 Claims**



1. An apparatus for connecting a wiper arm to a wiper blade, said blade having a pair of side walls and a top wall, comprising:

first and second parallel slots separated by a center portion having a predetermined width and extending through the wiper blade, the center portion being integral with the remainder of the wiper blade;

at least one means carried by the blade for retaining the blade on the arm;

a pin extending between the side walls of the wiper blade and traversing both of the slots;

first and second parallel tabs disposed on the wiper arm and separated by a predetermined distance equal to the width of the center portion, each of said tabs having a pin engaging means disposed at one end thereof; and

means on the wiper arm for coacting with said means on the blade for retaining the blade on the arm, whereby the first and second tabs extend into the first and second parallel slots respectively with the pin engaged by both of the pin engaging means and the means on the blade engaging with the means on the arm for retaining the blade on the arm.

4,445,250

PAINT CASE

Allen W. Seidl, South St. Paul, Minn., assignor to Thomas B. Tate, South St. Paul, Minn., a part interest

Filed Jan. 31, 1983, Ser. No. 462,409

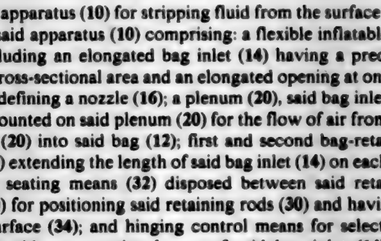
Int. Cl.³ B44D *3/12*

U.S. Cl. 15—257.06 **1 Claim**

1. A paint case comprising:

a first paint tray having a shallow front portion sloping gradually to a deeper back portion, said first paint tray also having a hinge pin mounted on its exterior back surface;

and a second paint tray of similar shape and depth as said first tray, aligned vertically and with its interior facing the interior of said first tray, said second tray having hinge pin



hook means mounted on its exterior back surface and capable of engaging said hinge pin mounted on said first tray so as to allow said paint case to be closed and opened and said paint trays to be separated;

said second tray also having a handle and lip catch release means mounted on its exterior front surface.

4,445,251

ADJUSTABLE CLAMP FOR FLUID STRIPPING BAG

Lucian G. McElroy, 3315 Brocker Rd., Metamora, Mich. 48455

Filed Sep. 28, 1982, Ser. No. 425,685

Int. Cl.³ B08B *1/00*

U.S. Cl. 15—316 R **8 Claims**

1. An apparatus (10) for stripping fluid from the surface of an object, said apparatus (10) comprising: a flexible inflatable bag (12) including an elongated bag inlet (14) having a predetermined cross-sectional area and an elongated opening at one end thereof defining a nozzle (16); a plenum (20), said bag inlet (14) being mounted on said plenum (20) for the flow of air from said plenum (20) into said bag (12); first and second bag-retaining rods (30) extending the length of said bag inlet (14) on each side thereof; seating means (32) disposed between said retaining rods (30) for positioning said retaining rods (30) and having an outer surface (34); and hinging control means for selectively varying said cross-sectional area of said bag inlet (14) and characterized by including a hinging control rod (50) and adjustable connecting means (52, 54) for connecting said hinging control rod (50) to said first retaining rod (30) and adjacent to said outer surface (34) of said seating means (32) and against an opposite side of said bag (12) relative to said first retaining rod (30) to vary the position of said hinging control rod (50) along said outer surface (34) of said seating means (32) to engage said bag (12) at varying degrees to selectively vary said cross-sectional area of said bag inlet (14).

4,445,252

DRAFTING APPARATUS IN SPINNING MACHINE

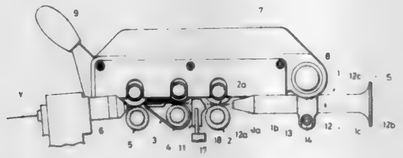
Toshifumi Morihashi, Shiga; Koshi Noda, Joyo; Teruo Nakayama; Shinichi Nishimura, both of Shiga, and Michiaki Fujiwara, Kameoka, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Nov. 13, 1981, Ser. No. 320,871

Claims priority, application Japan, Nov. 14, 1980, 55-161291; Oct. 9, 1981, 56-161868

Int. Cl.³ D01H 5/72, 5/86

U.S. Cl. 19—244 4 Claims



1. A drafting apparatus which comprises a pair each of upper and lower back rollers, apron-provided middle rollers and front rollers arranged in sequence along the advance direction of a sliver to be spun, characterized in that a substantially cylindrical elongated sliver guide having a sliver passageway gradually reducing in diameter thereof along the advance direction of sliver is disposed in front of the back rollers wherein an adjusting guide which provides with a sliver passageway at the top portion thereof and a setting groove at the bottom portion thereof is arranged between the back rollers and the middle rollers, said sliver passageway being formed to have an outlet being laterally narrower than an inlet to form a taper and said setting groove being slidably fitted and secured on a supporting plate.

4,445,253

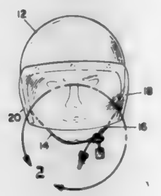
QUICK RELEASE HELMET AND STRAP ASSEMBLY

Thomas L. Howey, 1678 Hooke Oak Ave., Chico, Calif. 95926

Filed Jun. 21, 1982, Ser. No. 390,173

Int. Cl.³ A42B 7/00

U.S. Cl. 24—68 E 10 Claims



1. A quick release helmet and strap securing assembly comprising:

a helmet having a visor,

chin strap means for releasably holding said helmet in place, said chin strap means including a first strap secured to one side of said helmet and carrying a pair of adjacent D-rings, and a second strap secured to the other side of said helmet for threading through both of said D-Rings and then back through the outer one of said pair of D-rings to hold the chin straps in the tightened condition;

means for releasing said chin strap means with one hand, said releasing means including means for slidably engaging said second strap between the point where it goes through both of said D-rings and the point where it extends back through the outer D-ring, and holding means secured to said engaging means for exerting releasing force on said second strap using only one hand; and

means for retaining said releasing means to said chin strap means to prevent loss of said releasing means from said assembly,

whereby under emergency conditions, for example, when a wasp or a bee is trapped inside a motorcycle rider's helmet visor, the helmet may be easily released and removed with only one hand, with the other hand available to safely guide the motorcycle.

4,445,254

HOSE BAND CLIP

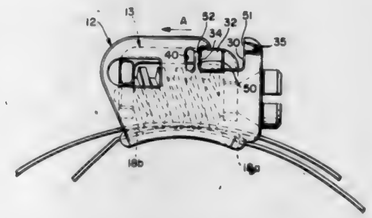
Kurt Allert, Panoramaweg 3, D-7238 Oberndorf/Neckar, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,332

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130007

Int. Cl.³ F16L 33/08; B65D 63/00

U.S. Cl. 24—274 R 7 Claims



1. Hose band clip with a tightening strap and a turnbuckle, the turnbuckle being secured to one end of the tightening strap and having a turnbuckle worm for cooperating with gearing of the tightening strap in order to exert a tension force for adjusting the tightening strap, said turnbuckle worm being connected to a housing of the turnbuckle, wherein narrow openings are formed in longitudinal sidewalls of the housing of the turnbuckle in such a manner that deformable wall portions are formed which are subjected to a force, corresponding to said tension force, that is transmitted by said turnbuckle worm to the turnbuckle housing during said adjusting of the tightening strap, whereby, when the tightening strap is tightened to a predetermined extent, said narrow openings are deformed by deformation of said deformable wall portions due to said force which is transmitted by the turnbuckle worm to said housing of the turnbuckle to provide an optical indication that the tension force is not to be increased any further in order to prevent overloading of the turnbuckle or the tightening strap.

4,445,255

HOSE CLAMP FOR SUPPORTING A VERTICALLY EXTENDING CONTROL LINE

Ingo W. V. Olejak, Houston, Tex., assignor to Koomey, Inc., Brookshire, Tex.

Filed May 19, 1982, Ser. No. 379,606

Int. Cl.³ F16L 3/08; B65D 63/00

U.S. Cl. 24—284 6 Claims

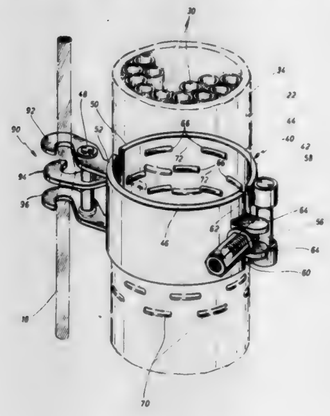
1. A hose clamp for supporting a vertically extending flexible control line having a plastic outer jacket containing a plurality of control lines from a vertical support comprising,

a circular body having semi-circular halves pivotally connected at one side and having coacting locking means at their second sides for encircling the control hose,

the interior of said body including a plurality of projections extending inwardly and positioned in a plan perpendicular to the longitudinal axis of the body,

said hose including matching and coacting acting preformed recesses on the exterior of the hose extending into but not through the plastic jacket for mating with the projections when the clamp is locked on the hose for providing vertical support of said hose,

means connected to the body for securing the body to the vertical support a plurality of circular rows of arcuate



projections vertically spaced with the projections of adjacent rows being rotationally offset relative to each other.

4,445,256

METHOD OF MANUFACTURING PIEZOELECTRIC RESONATOR COMPONENTS

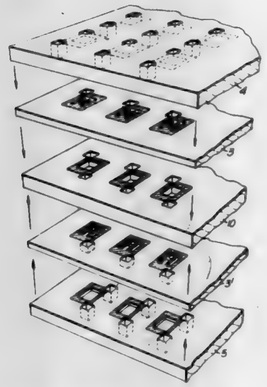
Raymond Huguenin, Preles, and Gottfried Kuechli, Bienne, both of Switzerland, assignors to Dryan-Fordahl Technologies S.A., Bienne, Switzerland

Division of Ser. No. 164,378, Jun. 30, 1980, abandoned. This application Feb. 3, 1982, Ser. No. 345,283

Claims priority, application Switzerland, Jul. 5, 1979, 6283/79

Int. Cl.³ H01L 41/22

U.S. Cl. 29—25.35 5 Claims



1. A manufacturing process for electric components each of which include at least one piezoelectric resonant element wherein

n layers of piezoelectric material are blanked so as to form on each layer m resonant elements and surrounding zones which constitute frame supports for said elements to which said elements remain attached (where m and n are integers and $m > n \geq 1$);

electrodes are deposited on the resonant elements and metallized tracks electrically coupled to the electrodes on each surface of the surrounding zones, said tracks being of a metal or alloy of low melting point;

n−1 intermediate layers are formed from piezoelectric material so as to have openings surrounded by frames of the same dimensions as the frame supports to place said frames in registry with said frame supports;

metal tracks are deposited on each surface of said intermediate layers;

two terminal layers are formed from piezoelectric material so as to have on inner surfaces thereof blind cavities and frame surfaces of the same dimensions as the frame supports to place said frames in registry with said frame supports;

metal tracks are deposited on the frame surfaces of the terminal layers;

openings are provided in at least said terminal-layer frames permitting access from the exterior to the metallized tracks on said frame supports;

the several layers are assembled under vacuum or partial vacuum in the presence of a noble or inert gas by bringing them into contact after correct positioning thereof with the two terminal layers sandwiching said layers of piezoelectric material separated by said intermediate layers therebetween;

the assembly is brought to a temperature above the melting point of the metal or alloy and then cooled until solidification of said metal or alloy;

only thereafter cutting through the layers between resonant elements for separating the assembled layers into various individual components each component being composed of portions of the assembled layer; and

the connection wires are then attached.

4,445,257

CONVEYOR SHAFT PROVIDED WITH RUBBER ROLLERS, AND METHOD AND APPARATUS FOR MAKING SAME

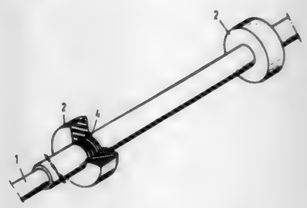
Johannes C. Delhaes, Voerendaal, Netherlands, assignor to Rubber-en Kunststoffabriek ENBI B.V., Netherlands

Filed Jan. 22, 1981, Ser. No. 227,186

Claims priority, application Netherlands, Aug. 29, 1980, 8004930; Jan. 5, 1981, 8100005

Int. Cl.³ B65G 39/04

U.S. Cl. 29—117 3 Claims



2. A driven conveyor shaft provided with rubber rollers driven along therewith, characterized in that each rubber roller is constructed as one unitary and integral component having a radially springing element vulcanized therein, by means of which the rollers are clamped on the shaft, said radially springing element being a helical spring.

4,445,258

METHOD OF SEALING INTERFACES OF BEARING SURFACES TO STEEL BARRELS OF PISTON PUMPS

George R. Caldwell, Black River, and Edward J. Gallagher, Watertown, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Jan. 26, 1982, Ser. No. 342,943

Int. Cl.³ B22D 19/00

U.S. Cl. 29—156.7 R 9 Claims

1. The method of contemporaneously sealing cylinder barrel inserts and valve face inserts of bearing material in a rotary cylindrical barrel for a reciprocal piston pump or motor wherein the cylinder barrel, after machine finishing, will have

a valving face at one end and an opposite end face from which pistons project from machined cylinder inserts comprising the steps of:

(a) fabricating a steel barrel blank having a series of longitudinal bores which extend through the blank longitudinally from one end to the other, said bores having an intermediate restricted diameter portion for connecting a valve face area at one end of the blank with a cylinder area at the other end thereof,

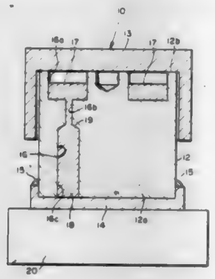
(b) inserting cylindrical inserts of bearing material within the cylinder area,

(c) inserting valve face bearing material in the valve face area,

(d) securing a metal cap over the cylinder area to prevent leakage of bearing material from the cylinder area,

(e) covering the valve face area with a carbon hot top for controlling the cooling of the valve area after removal of the barrel from a metallurgical furnace,

(f) heating the steel barrel blank, disposed vertically in the



furnace with the cylinder and valve bearing materials both inserted, and the metal cap at the bottom of the steel barrel and the hot-top on the top of the steel barrel, for a heating period of approximately 90 minutes at approximately 1925° F.,

(g) removing the steel barrel blank from the furnace at the end of the heating period when the cylinder and valve bearing materials are both in a molten state, with the barrel blank still assembled with the cap at the bottom and the hot top on top and placing it on a heat-sink pedestal to cool, and

(h) removing the hot top after the barrel has cooled to below 1000° F.,

(i) whereby the restricted portion in the bores connecting the valve area with the cylinder area allow for venting and out-gassing of the cylinder bores as well as feeding the cylinder bores with molten metal from the valve face area as solidification takes place gradually of the bearing material from the bottom to the top of the barrel at a controlled rate.

4,445,259

METHOD OF MANUFACTURING BLADED ELEMENTS FOR ROTARY FLUID MACHINES

Ragnar Ekbom, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Filed Aug. 13, 1982, Ser. No. 407,989

Claims priority, application Sweden, Aug. 27, 1981, 8105073

Int. Cl.³ B21K *3/04*; B23P *15/02, 15/04*

U.S. Cl. 29—156.8 B **5 Claims**

1. A method of manufacturing a bladed element of a rotary fluid machine, comprising the steps of:

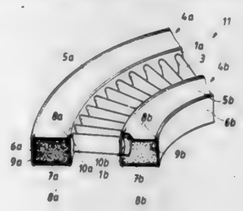
providing a first annular metal wall with blade receiving openings therethrough;

securing said first wall to at least one second metal wall to form a hollow casing;

securing a plurality of metal blades in gas-tight manner in respective openings in said first wall, with one end of each of said blades extending through and beyond said first wall;

filling said casing with metal powder which surrounds said one end of each of said blades within said casing;

hermetically sealing said casing with said one end of each of



said blades extending into the hollow interior of said casing; and

hot isostatically pressing said filled and sealed casing around said one end of each of said blades to form said casing, said powder and said one end of each of said blades into a bonded monolithic body.

4,445,260

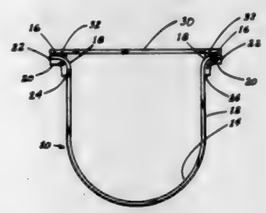
METHOD OF MANUFACTURE FOR METAL TROUGH

David L. Buss, 120 E. Kraus St., St. Louis, Mo. 63111

Division of Ser. No. 186,899, Sep. 15, 1980. This application May 5, 1983, Ser. No. 491,736

Int. Cl.³ B21D *19/14, 51/04*

U.S. Cl. 29—157 R **8 Claims**



1. A method of manufacturing a trough comprising welding a bar along each longitudinal edge of a metal sheet, forming the metal sheet into a trough, and bending the edges of the metal sheet and the bars welded thereto away from the body of the trough forming flanges having smooth curves along each side of the trough.

4,445,261

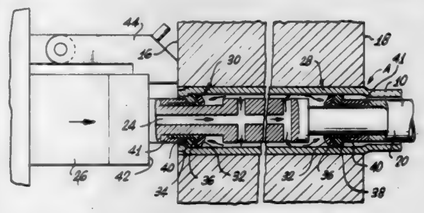
METHOD FOR INSTALLING TUBES IN A TUBE SHEET

John W. Kelly, Burbank, Calif., assignor to Haskel, Incorporated, Burbank, Calif.

Filed Jul. 28, 1980, Ser. No. 173,142

Int. Cl.³ B23P *15/26, 11/02*

U.S. Cl. 29—157.4 **8 Claims**



1. A method for installing a tube in a tube sheet comprising: inserting a tube into a bore that extends through said tube

sheet, said tube having an outside diameter slightly smaller than the diameter of said bore;

applying hydraulic pressure internally to said tube to expand said tube radially throughout a first pressure zone that extends axially along said tube, within said bore, at least up to one end of said bore; and

applying increased hydraulic pressure internally to said tube to expand said tube radially throughout a second pressure zone that overlaps said first pressure zone and extends axially along said tube, within said bore, but not to said end of said bore.

4,445,262

PROCEDURE FOR REBUILDING THE MOVABLE PLATE IN THE POURING VALVE OF A LADLE

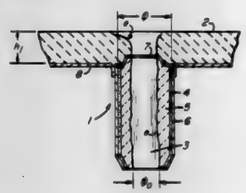
Romano Cappelli, Milan, Italy, assignor to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1982, Ser. No. 451,677

Claims priority, application Italy, Apr. 12, 1982, 25757 A/81

Int. Cl.³ B23P *7/04*

U.S. Cl. 29—402.08 **4 Claims**



1. Procedure for rebuilding a movable plate in the pouring valve of a ladle, according to which the portions around the pouring hole are removed and rebuilt using suitable prefabricated parts of refractory material, or packed directly "in situ" to replace the parts removed; characterized by the fact that it consists of the removal of an upper element of the flat part of the plate (1) over an area (ϕ, L) which is greater in width than the diameter that fits within the thickness (4) of the refractory putty placed between the nozzle (5) and its casing (6), and less than the minimum width (a) of the plate (1); removal of the nozzle (5); replacement of the nozzle thus removed (5) with a nozzle (5'), which is either prefabricated or packed "in situ", with a height less than that of the nozzle that was removed (5); replacement of the upper element that was removed with a stepped upper element (9, 9'') which has an upper width (ϕ_o, L') slightly smaller than the width (ϕ, L) of the upper element that was removed to allow for the interposition of a layer (10) of refractory putty, and with a lower annular part with an external diameter (ϕ_1) corresponding to the external diameter (ϕ_1) of the nozzle (5') and with a total height (h_2) greater than the height (h_1) of the flat part of the plate (1).

4,445,263

METHOD OF PREFORMING A BOOSTER CASING ELEMENT WITH ITS REINFORCEMENT

Jean-Jacques Carré, Le Raincy, and Roland Levrai, Stains, both of France, assignors to Societe Anonyme DBA, Paris, France

Filed Feb. 1, 1982, Ser. No. 344,277

Claims priority, application France, Feb. 19, 1981, 81 03271

Int. Cl.³ B21D *3/10*

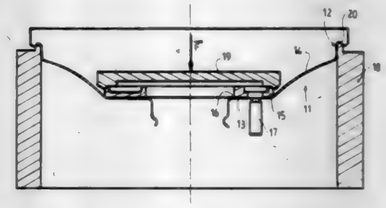
U.S. Cl. 29—445 **6 Claims**

1. A method of forming a casing element of a braking assistance booster, said casing element having a peripheral assembly sleeve portion, a flat annular central fixing base portion with an inner face axially spaced from said sleeve portion and an intermediate web portion integral with said sleeve portion and said base portion and interconnecting same, at least one annular reinforcement member being positioned adjacent the inner face of the base portion, the method comprising the following steps:

preforming the casing element to the required transverse dimensions;

positioning said casing element on a stationary annular frame, said casing element being supported on said frame by its said peripheral sleeve portion;

installing the annular reinforcement member on said inner face of said base portion; and



applying on said reinforcement member installed on said base portion a uniform controlled force in the direction perpendicular to said base portion and opposite said sleeve portion to stress said intermediate web portion to the desired final shape.

4,445,264

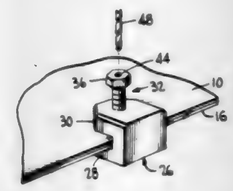
TOOL FOR A METHOD OF FORMING DIMPLES IN SHEET METAL FOR RECESSING RIVET HEADS

Carl Banerian, 25110 W. Chicago, Redford, Mich. 48239

Filed Mar. 9, 1982, Ser. No. 356,357

Int. Cl.³ B23P *9/00*

U.S. Cl. 29—445 **7 Claims**



1. A hand-operated device for forming a dimple in a workpiece to permit recessing of a head of a fastener and for permitting in a continuing operation the drilling of a hole centered in the formed dimple, said device comprising a forming member which is externally threaded having a dimple-forming end, mounting means mounting said forming member for axial movement, said mounting means including a workpiece support and a carrier for said forming member, and said workpiece support including a recessed seat aligned with said forming member for cooperation with said forming member to dimple said workpiece; and said forming member having a drill pilot bore extending axially therethrough whereby after a dimple has been formed in a workpiece a fastener receiving bore centered relative to the dimple may be drilled through the workpiece.

4,445,265

SHRINK GRIP DRILL PIPE FABRICATION METHOD

Wallace F. Olson, Eufaula, Okla., and Ned Rodgers, Midland, Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Dec. 12, 1980, Ser. No. 215,809

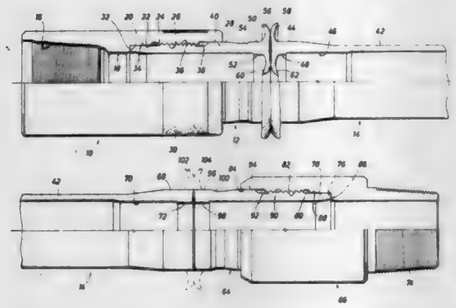
Int. Cl.³ B23P *11/02*

U.S. Cl. 29—447 **8 Claims**

1. A method of fabricating drill pipe comprising the steps of: forming a first tubular tool joint body having a threaded pipe connection formation at one end;

connecting the other threaded end of said first tool joint

body to one threaded end of a first tubular adapter member by a threaded shrink grip connection;
connecting the other end of said first adapter member to a first end of a tubular pipe body by welding;
forming a second tubular tool joint body having a threaded pipe connection formation at one end;



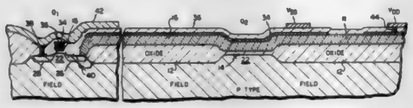
connecting the other threaded end of said second tool joint body to one threaded end of a second tubular adaptor member by a threaded shrink grip connection;
and welding the other end of said second adaptor member to a second end of said pipe body opposite said first end, whereby said drill pipe may be threadably connected to other threaded drill pipes.

4,445,266

MOSFET FABRICATION PROCESS FOR REDUCING OVERLAP CAPACITANCE AND LOWERING INTERCONNECT IMPEDANCE

Chuo C. Mai, Dallas; William M. Whitney, Plano; William M. Gosney, McKinney, and Donald J. Gulyas, Sanger, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Aug. 7, 1981, Ser. No. 290,833
Int. Cl.³ H01L *21/22, 21/28*
U.S. Cl. 29—571 **30 Claims**



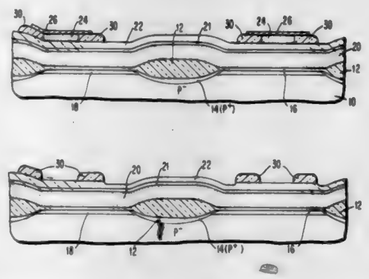
1. A method for fabricating a conducting structure for an integrated circuit comprising the steps of:
forming an insulating layer on a semiconductor substrate;
forming a polycrystalline silicon layer on said insulating layer, said layer having a propensity for oxidation;
forming an oxidation resistant layer on said polycrystalline silicon layer;
selectively etching said oxidation resistant layer, said polycrystalline silicon layer and said insulating layer in a pattern to define a plurality of conducting paths, said selective etching exposing the sidewalls of said first conducting layer;
selectively oxidizing the exposed sidewalls of said polycrystalline silicon layer, said selective oxidation perpendicular to the sidewalls of said polycrystalline silicon layer and subjacent to said oxidation resistant layer such that only a portion of said polycrystalline silicon layer is oxidized wherein the width of said polycrystalline silicon layer is reduced;
removing said oxidation resistant layer;
forming a conducting layer on said polycrystalline silicon layer, said conducting layer adhering only to the nonoxidized portion of said polycrystalline silicon layer wherein the nonoxidized portion of said polycrystalline silicon layer defines a template for a primary conductor path, said conducting layer having a higher conductivity than said polycrystalline silicon layer, wherein said conducting layer forms said primary conductor path; and
forming a protective layer over said conducting layer.

4,445,267

MOSFET STRUCTURE AND PROCESS TO FORM MICROMETER LONG SOURCE/DRAIN SPACING

Francisco H. De La Moneda, Tucson, Ariz., and Robert C. Dockerty, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,953
Int. Cl.³ H01L *21/265, 21/28*
U.S. Cl. 29—571 **24 Claims**



1. A method for fabricating a semiconductor integrated circuit structure having at least some field effect transistor devices having a sub-micrometer gate length, comprising:
providing a semiconductor substrate;
forming a surface isolation pattern in said semiconductor substrate which isolates regions of said semiconductor within said substrate from one another and which regions are designated to contain devices;
forming a silicon dioxide layer which is designated to be in part the gate dielectric upon the surface of said substrate having the surface isolation pattern therein;
depositing a conductive layer upon said silicon dioxide layer;
depositing an insulating layer on said conductive layer;
depositing a first silicon nitride layer on said conductive layer;
depositing a doped polycrystalline silicon layer upon said silicon nitride layer;
depositing a second silicon nitride layer on said polycrystalline silicon layer;
selectively etching said second silicon nitride layer and said polycrystalline silicon layer so as to provide remaining portions of said polycrystalline silicon layer having substantially vertical sidewalls, wherein portions of said remaining portions extend across certain of said regions designated to contain devices and onto the surrounding isolation pattern;
thermally oxidizing each of said sidewalls to form a silicon dioxide sidewall layer thereon;
etching said remaining portions of said polycrystalline silicon layer and overlying second silicon nitride layer;
removing the undesired portions of said silicon dioxide sidewall layer;
using said sidewall layer as a mask, etch said first silicon nitride layer, and said conductive layer to form the gate electrode of said field effect transistor devices in said conductive layer having the length of said sidewall coating;
ion implanting a conductivity imparting impurity adjacent to said gate electrode to form a source/drain element for said field effect devices in said regions designated to contain devices; and
forming an insulation layer over said device with openings

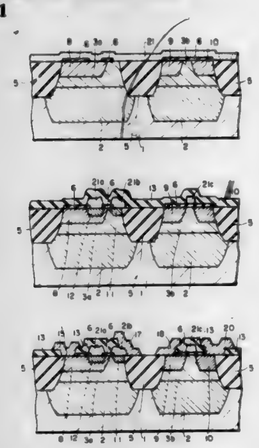
therein having electrical contacts to the various elements of said devices.

4,445,268

METHOD OF MANUFACTURING A SEMICONDUCTOR INTEGRATED CIRCUIT BI-MOS DEVICE

Tadashi Hirao, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,541
Claims priority, application Japan, Feb. 14, 1981, 56-20351; Mar. 5, 1981, 56-32981
Int. Cl.³ H01L *21/225, 21/76*
U.S. Cl. 29—571 **5 Claims**



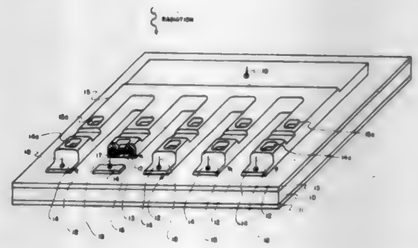
1. A method of manufacturing a BI-MOS semiconductor integrated device, comprising:
masking an epitaxial layer of a silicon substrate;
selectively oxidizing said epitaxial layer to form a first oxide film whereby element formation regions are defined and electrically isolated from one another in a pattern as defined by said masking;
forming a second oxide film on said epitaxial layer;
masking said second oxide film;
diffusing impurity ions through said second oxide film, whereby a base layer, a source layer and a drain layer are formed of a first dopant type;
removing said second oxide film at predetermined points, whereby said predetermined points correspond with points where emitter and collector diffusion is to be completed;
forming a silicon film on said epitaxial layer of a second dopant type;
diffusing said silicon film into said element formation regions, such that both an emitter layer and a collector extending layer are formed of said second dopant type;
removing said silicon film at predetermined points, whereby the remaining film forms a gate electrode, a collector electrode, and an emitter electrode, of said second dopant type; and
providing insulation and electrical contact means to electrically address the transistor elements.

4,445,269

METHODS OF MAKING INFRARED PHOTOCONDUCTORS WITH PASSIVATION CONTROL

John H. Pollard, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 27, 1981, Ser. No. 296,751
Int. Cl.³ H01L *21/368, 21/28*
U.S. Cl. 29—572 **2 Claims**



1. A method of making an infrared detector from a semiconductor substrate doped slightly conductive, which method includes the following steps:
(a) prepare the substrate and coat one side thereof with an ohmic contact metal;
(b) deposit a layer of semiconductor photoconductor material on the opposite side of said substrate from said metal;
(c) mask the photoconductor layer;
(d) remove the unmasked portion of the photoconductor layer;
(e) remove the mask;
(f) deposit an overlayer of the same material as the substrate atop the bared substrate and the remaining photoconductive layer;
(g) mask the overlayer for detector ohmic contacts;
(h) remove the unmasked portions of the overlayer and a portion of the photoconductor layer to form cavities therein;
(i) deposit ohmic contact material atop the mask and onto the bottoms of said cavities;
(j) remove the mask and the contact material thereon;
(k) coat the overlayer and the surfaces of the cavities with a Schottky barrier metal;
(l) mask the metal;
(m) remove the unmasked portions of the metal whereby read contacts remain atop the overlayer and connect to the ohmic contacts in said cavities;
(n) remove the mask; and
(o) apply bonding leads to the read contacts.

4,445,270

LOW RESISTANCE CONTACT FOR HIGH DENSITY INTEGRATED CIRCUIT

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

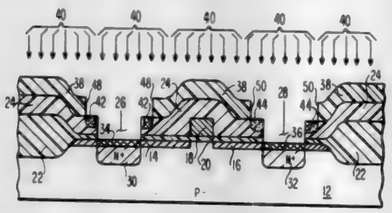
Filed Jun. 21, 1982, Ser. No. 390,782
Int. Cl.³ H01L *21/265;* B01J *17/00*
U.S. Cl. 29—576 B **7 Claims**

1. A process for forming low resistance metal contacts for a high density integrated circuit, the integrated circuit having shallow drain and source regions of a first conductivity type formed in a semiconductor body of a second conductivity type, a first oxide layer formed directly on the semiconductor body over the drain and source regions and a second oxide layer formed on the first oxide layer, comprising the steps of:
forming first contact openings through the first and second layers, the openings aligned with respect to the drain and source regions to expose contact areas thereon;
forming a layer of apertured masking material over the second oxide layer, the apertures of the masking material

being in corresponding registry with and larger than the corresponding contact openings in the first and second oxide layers;

implanting conductivity modifiers of the first conductivity type into both the exposed contact areas and into the unmasked regions of the second oxide layer surrounding the contact openings;

removing the layer of apertured masking material;



heating the semiconductor body to anneal any damage induced in the contact area and to flow the implanted unmasked regions of the second oxide layer surrounding the contact openings; and

forming metal lines on the second oxide layer in direct ohmic contact with the contact areas of the drain and source diffused regions.

4,445,271

CERAMIC CHIP CARRIER WITH REMOVABLE LEAD FRAME SUPPORT AND PREFORATED GROUND PAD

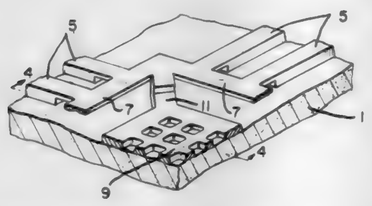
Dimitry G. Grabbe, Lisbon Falls, Me., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 14, 1981, Ser. No. 293,023

The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.

Int. Cl.³ H01L *23/50, 23/48;* H05K *5/02*

U.S. Cl. 29—589 **2 Claims**



1. A method of manufacturing a ceramic chip carrier comprising the steps of:

(a) providing a planar ceramic substrate;

(b) providing a planar copper-surfaced lead frame having a plurality of leads connected at the interior thereof by a copper-surfaced support rim coplanar with said lead frame, said rim being of a thickness less than said lead frame;

(c) providing a planar copper-surfaced ground pad within said support rim and connected thereto, said pad being coplanar with said lead frame, said pad having perforations therethrough;

(d) disposing said lead frame and said pad against said ceramic substrate with a layer of copper oxide at the interface, said rim being in non-contacting relation with said substrate;

(e) direct bonding said lead frame and padto said substrate.

4,445,272

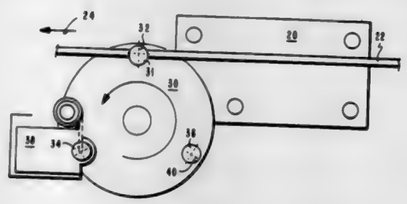
METHOD AND APPARATUS FOR STACKING ROTOR BLANKS ON A SHAFT

Peter H. Bruhn, Round Rock, and Rolf Wustrau, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 159,760, Jun. 16, 1980, abandoned. This application Nov. 2, 1982, Ser. No. 438,440

Int. Cl.³ H02K *15/02*

U.S. Cl. 29—598 **8 Claims**



1. A method of manufacturing a uniform stepper motor rotor of a predetermined stack height from laminae with apparatus including a lamina punch for punching laminae from sheet stock strip, a rotatable carousel having a plurality of rotatable work stations each carrying a rotor shaft, and a work station punch, said method comprising:

(a) punching a lamina from said stock strip with said lamina punch and returning said lamina to said stock strip;

(b) advancing said stock strip to one of said work stations;

(c) punching said previously punched lamina from said stock strip and forcing said lamina onto said shaft;

(d) rotating said shaft for each lamina forced onto said shaft;

(e) repeating steps a through d until said predetermined stack height is achieved; and

(f) rotating said carousel upon completion of said rotor stack.

4,445,273

DISPLACEMENT CONTROL DEVICE

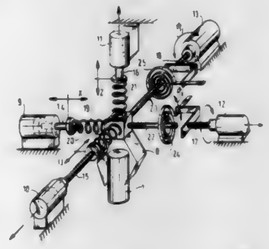
Hendrik M. Van Brussel, and Joseph A. G. Simons, both of Leuven, Belgium, assignors to Leuven Research and Development V.Z.W., Leuven, Belgium

Continuation of Ser. No. 128,586, Mar. 10, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 325,835

Claims priority, application Netherlands, Mar. 12, 1979, 7901956

Int. Cl.³ B23Q *7/00*

U.S. Cl. 29—714 **1 Claim**



1. An automatic assembly control apparatus comprising body means for holding an object which is to be moved relatively along one axis into assembled relation to another object; first means for resisting motion of said body means along said one axis to define one degree of freedom of said body means and to provide compliance along said one axis; second means for resisting motion of said body means to define a second degree of freedom thereof and to provide compliance in said second degree of freedom; first force measuring means for providing a first output signal proportional to motion of said body means along said one axis which is due to misalignment of said objects as they are being assembled; second force measuring means for providing a second output signal proportional to deformation of said second means which is due to motion of said body means in said second degree of freedom which is due to misalignment of said objects as they are being assembled; first actuator means for moving said body means along said one axis and second actuator means for effecting movement of said body means in said second degree of freedom thereof; first feedback means responsive to selected values of said first output signal for causing said first actuator means to move said body means selected distances along said one axis in that direction which decreases said first output signal and second feedback means responsive to a selected values of said second output signal for causing said second actuator means to move said body means selected amounts in the path of said second degree of freedom in that direction which decreases said second output signal and each feedback means being effective to selectively vary the compliance of the respective first and second means.

4,445,274

METHOD OF MANUFACTURING A CERAMIC STRUCTURAL BODY

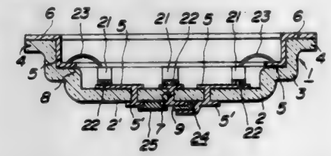
Go Suzuki, Nagoya, and Kazuo Michishita, Fujiyoshida, both of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 970,444, Dec. 18, 1978, abandoned. This application May 21, 1981, Ser. No. 265,848

Claims priority, application Japan, Dec. 23, 1977, 52-174414

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—832 **8 Claims**



1. A method of manufacturing a ceramic structural body comprising:

preparing a ceramic green sheet of substantially uniform thickness;

forming at least one through-hole through the thickness of the ceramic green sheet;

filling the through-hole with electrically conductive material;

selectively coating a surface of said ceramic green sheet with metallizing paste to achieve a desired pattern of print layers;

press-forming the coated ceramic green sheet to form a substantially concave-convex green ceramic member having

a plate portion,

a sidewall portion extending from said plate portion at substantially right angles thereof,

a flange portion extending from the free end of said sidewall portion at substantially right angles thereto,

wherein said print layers are on the concave side of said green ceramic member;

sintering said green ceramic member;

treating said sintering ceramic member to form electrically conductive metal layers from at least part of said print layers;

mounting at least one electronic component on said sintered ceramic member; and

electrically connecting said electronic component to said metal layers.

4,445,275

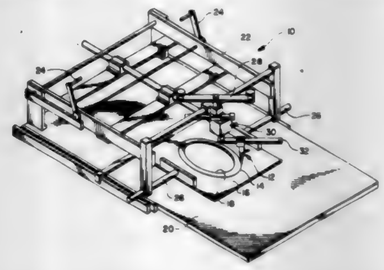
DRAWING ASSEMBLY

David Dubrow, 4018 Cedarbrook Ct., Bellingham, Wash. 98225

Filed Jun. 7, 1982, Ser. No. 386,009

Int. Cl.³ B43L *11/04*

U.S. Cl. 33—30 R **14 Claims**



1. A drawing assembly configured for outlining the margin of a mat having a generally elliptical-shaped cut therein in a pattern replicating that of said cut, adapted for attachment to the mat cutting apparatus employed to make said cut, said drawing assembly comprising:

a. carriage slide means for adjustably securing a pen member at a selected location in cooperative engagement on a guide arm of a mat cutting apparatus;

b. a pen member, including a reservoir and a nib, received in a stem means for outlining a cut formed in a mat board by said mat cutting apparatus;

c. pen holder means depending from said slide means receiving said pen member in axially reciprocable engagement therewith, said pen member being reciprocable between a lowered operating position and a raised non-operating position;

d. biasing means for biasing said pen member toward said operating position; and,

e. locating means in operative engagement with said carriage slide means, for guiding said nib when said pen member is in said operating position and said guide arm of said mat cutting apparatus is set in motion along a path replicating said outline.

4,445,276

STEPPED END-GAUGE BLOCK APPARATUS

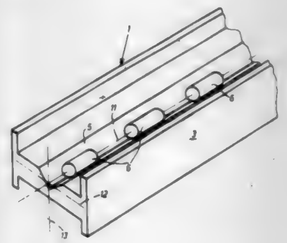
Geza Vöneky, Stuttgart, and Hans H. Schüssler, Korb, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1983, Ser. No. 495,942

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219713

Int. Cl.³ G01C *25/00*

U.S. Cl. 33—168 R **18 Claims**



1. Crenellated stepped end-gauge apparatus with an elongate supporting body and a plurality of end-gauge blocks which are secured, spaced by defined distances, along a straight line,

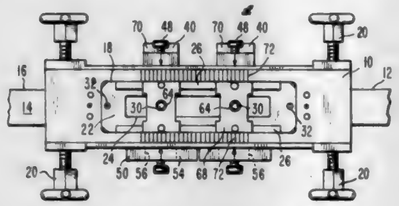
wherein the supporting body possesses a groove on its upper surface which runs longitudinally, the end-gauge blocks, which are preferably designed in the form of cylinders, being individually secured one behind another on the flanks of this groove.

4,445,277

UNIVERSAL PROGRAMMABLE LOCK INSTALLATION DEVICE

John Keefe, 1324 Parkside Ave., Trenton, N.J. 08638

Filed Oct. 29, 1982, Ser. No. 437,593
Int. Cl.³ B27G *17/08*; B23B *41/00*
U.S. Cl. 33—197 **13 Claims**



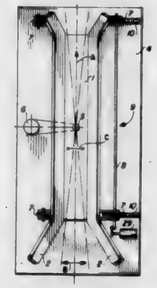
1. A universal programmable lock installation device, for use on doors, comprising:
(a) a body member positionable extending around the edge of the door and inwardly therefrom along each door face, said body member defining an aperture therein adjacent the door edge;
(b) a clamping means movably mounted within said body member to selectively secure said body member with respect to a door edge;
(c) a boring template selectively positionably mounted within said aperture and defining a boring slot therein, said boring template including guide rail means extending longitudinally along said boring slot;
(d) an edge boring alignment means movably secured with respect to said guide rail means to move longitudinally along said boring slot, said edge boring alignment means including edge boring guide hole means adapted to receive a boring tool therethrough for alignment through said boring slot of said boring template to bore out a section of a door edge to a desired depth;
(e) a first locking means adapted to fixedly secure said edge boring alignment means with respect to said body member;
(f) a securement means for selectively retaining said boring template within said aperture of said body member;
(g) a routing template selectively positionable within said aperture of said body member and adapted to be retained therein by said securement means, said routing template defining a routing slot therein to allow routing of the door edge to facilitate placement of a conventional lock face plate therein, the outer surface of said routing template providing a smooth surface to facilitate routing;
(h) a face boring alignment means movably secured with respect to one of the vertical edges of said body member to allow vertical longitudinal movement therealong, said face boring alignment means extending out over the door face and defining a face boring guide hole means oriented perpendicularly with respect to the door face and adapted to receive a boring tool extending therethrough to cut a face hole extending completely through the door;
(i) a second locking means adapted to fixedly secure said face boring alignment means with respect to said body member; and
(j) a face boring abutment means movably secured with respect to the opposite vertical edge of said body member from said face boring alignment means and being vertically movable along the opposite vertical edge, said face boring abutment means extending out over the opposite side door face and defining an abutment block means defining an abutment aperture slightly larger than the face hole bored through the door by the cutting means extending through said face boring alignment means, said block means being in abutting engagement with respect to the opposite door face surrounding the face hole to prevent splintering of the opposite door face upon boring of the face hole.

4,445,278

WHEEL ALIGNMENT MEASURING APPARATUS, MORE SPECIALLY FOR DYNAMIC OPERATION

Alfons Staudinger, Munich, Fed. Rep. of Germany, assignor to A. Rohe GmbH, Nordring, Fed. Rep. of Germany

Filed Jul. 1, 1982, Ser. No. 394,310
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126152
Int. Cl.³ G01B *5/255*
U.S. Cl. 33—203.12 **16 Claims**



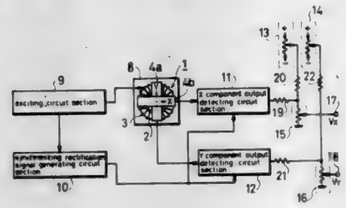
1. A wheel alignment measuring apparatus for dynamically measuring the track of vehicle wheels comprising:
(a) a first wheel channel having two open ends so that a vehicle wheel may be rolled therethrough;
(b) a second wheel channel being spaced from said first wheel channel at a distance corresponding to the track of the vehicle for taking up two wheels on an axle of the vehicle whose wheel alignment is to be tested;
(c) the first and second wheel channel having a length equal to at least between half and the full circumference of a wheel to be tested and being designed to engage the side faces of a tire on said wheels, wherein;
(d) one of said channels being supported on bearings so that it may be turned in a horizontal plane and cooperable with an angle transducer operably connected to the channel for sensing the angle in which the channel is oriented with respect to a reference line and wherein;
(e) at least one of said wheel channels being guided for motion parallel to itself and in a direction normal to the direction of rolling motion of a wheel along said channel by means of four support wheels having axes of turning parallel to said direction of wheel rolling, at least two of said support wheels having a common bearing shaft which shaft has the lowest degree of torsional stiffness necessary to keep motion of said channel parallel to itself when said channel is acted upon by a force at one end thereof.

4,445,279

MAGNETIC COURSE DETECTOR

Noboru Tsushima, Morioka; Masashi Fuse, Tamayama; Toshio Sasaki, Yokohama; Masayuki Ogata, Yokohama; Teruo Mimori, Yokohama, and Tadashi Mukai, Tokyo, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Aug. 13, 1982, Ser. No. 408,000
Claims priority, application Japan, Aug. 13, 1981, 56-127582
Int. Cl.³ G01C *17/38*
U.S. Cl. 33—356 **10 Claims**



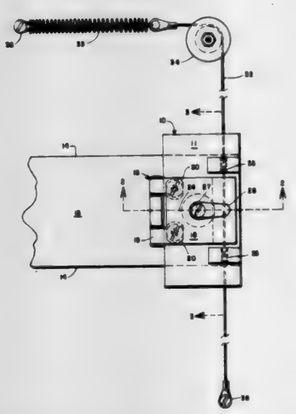
1. A magnetic course detector for detecting the bearing of the course of a traveling body, comprising: a magnetic bearing sensor mounted in the traveling body and adapted to detect the direction of terrestial magnetism and generate output voltages V_x, V_y proportional to the magnetic field intensity; an offset correcting means adapted to apply a bias to the said outputs of the magnetic bearing sensor so that the biased outputs V'_x and V'_y are $V'_x = V_x - O'_x$ and $V'_y = V_y - O'_x$ where O'_x and O'_y are respective offset correction components determined in a calibration mode for the magnetic course detector; a sensitivity correcting means adapted to regulate the output levels of the magnetic bearing sensor so that the absolute values of the biased outputs V'_x and V'_y are equal in all directions; and a sensor rotating means adapted for rotation of the magnetic bearing sensor such that the magnetic sensor coincides with the direction of the highest magnetic permeability of the traveling body.

4,445,280

BRAKE FOR DRAFTING PARALLEL

Jess W. Hayes, 9208 Farmington Dr., Richmond, Va. 23229

Filed Sep. 30, 1982, Ser. No. 431,208
Int. Cl.³ B43L *5/00, 13/00*
U.S. Cl. 33—443 **5 Claims**



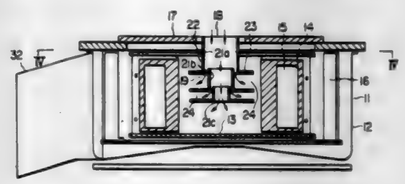
1. A brake assembly for use with a drafting parallel resting on an inclined drafting table comprising:
(a) a base member of substantially rectangular outer perimeter having a flat upper surface and an underside having a flat central region bounded by straight parallel retainer shoulders extending below said flat region and adapted to engage the straight edges of said drafting parallel,
(b) an arm, one extremity of which is attached to the upper surface of said base member in a manner to permit motion of said arm in an arc perpendicular to said base member, the free end of said arm being adapted to apply downward force upon said base member,
(c) a resilient pad affixed to the underside of said arm adjacent the free end thereof,
(d) holding means adapted to retain said arm in a position downwardly forced upon said base member,
(e) a pair of guides secured to the upper surface of said base member in coaxial alignment and disposed on either side of said arm in linear alignment with said resilient pad,
(f) a strong thin substantially non-elongated strand, one end of which is adapted to be secured to said table, the opposite end being joined to a coil spring adapted to be secured to said table, said strand passing through said pair of guides,
(g) whereby, when the flat underside of the base member is attached to the extremity of said drafting parallel, and said strand is affixed to said table to form a taut straight line passing through said guides, downward movement of said arm and retention thereof by said holding means causes said strand to be gripped between said resilient pad and the upper surface of said base member, thereby preventing movement of said drafting parallel.

4,445,281

DEHYDRATING DRIER

Seiichiro Aigoo, 15-13, Negishi 3-chome, Taito-ku, Tokyo 110, Japan

PCT No. PCT/JP81/00094, 371 Date Dec. 18, 1981, 102(e) Date Dec. 18, 1981
PCT Filed Apr. 21, 1981, Ser. No. 339,521
Claims priority, application Japan, Apr. 23, 1980, 55-52992; Jul. 30, 1980, 55-103639
Int. Cl.³ F26B *11/18*
U.S. Cl. 34—58 **11 Claims**



1. A dehydrating drier, comprising
a housing,
a plurality of water drop reflection preventing blades disposed in said housing,
means comprising a rotor rotatably mounted in said housing at a position inside of said blades for supporting a plurality of thin form objects and for producing a negative pressure upon rotation,
said rotor forms a ventilation channel communicating from an outside of said housing and said thin form objects and adapted for passage therethrough of a flow of drying gas from the outside to said thin form objects by said negative pressure produced upon rotation of said rotor,
deflectors disposed in said ventilation channel, each of said deflectors comprises a cylindrical portion disposed in an upstream direction of said ventilation channel and a flange portion in a downstream direction of said ventilation channel with respect to said flow of said drying gas, and
anti-static electricity means for generating a corona discharge into said ventilation channel and producing ions splattering into the flow of said drying gas, said anti-static electricity means is disposed on said flange portions of said deflectors.

4,445,282

COOLER FOR GRANULAR PRODUCTS

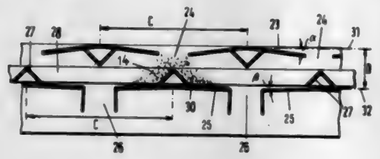
Henricus T. J. M. Heinemans, Narcisstraat 11, 6014 AK Ittervoort, Netherlands

Filed Oct. 21, 1981, Ser. No. 313,243

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139773

Int. Cl.³ F26B *17/14*

U.S. Cl. 34—168 **5 Claims**



1. A cooler for granular products, especially feed pellets and the like, including a mass of granules and fines, the mass of granules moving between a product inlet and a product outlet, comprising a cooling reservoir, at the same time being a storage hopper, a discharge grid for the discharge of the mass of granules, said discharge grid including a stationary grid and a movable grid, and a blower for generating an air current, characterized in that said movable grid is disposed above said stationary grid, and the air inlet (13) for the blower terminates in the top part of the cooling reservoir (5) adjacent the product inlet, which is formed as a granule inlet lock (2), the arrangement being such that the cooling air is drawn in through the discharge grid (7) and flows in a direction opposite to the direction of movement of the mass of granules (14) in the reservoir (5), the fines in the incoming mass of granules being directly exhausted by the blower, said movable grid (22) is of double construction and consists of two virtually parallel, spaced grid surfaces (31,32) built up from substantially horizontally extending elements (23,25) spaced uniform distances (24,26) apart, the elements (23) of the first grid surface (31) being offset by half the pitch distance (C) relatively to the elements (25) of the second grid surface (32), the distance (D) between the grid surfaces, the interspaces (24,26) between, and the width of elements (23,25) being so selected that the material discharged through openings (24) in the first grid surface (31) from the reservoir can keep lying on the elements (25) of the second grid surface (32), said stationary grid being disposed between the two grid surfaces of said movable grid (22) and comprising elements (27) extending vertically to said grid surfaces (31,32), the pitch distance (C) of said elements (27) being equal to the pitch distance of said substantially horizontally extending elements (23,25) of said double grid (22).

4,445,283

FOOTWEAR SOLE MEMBER

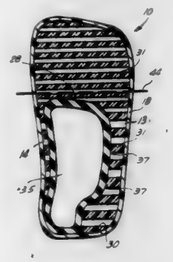
Stuart R. Meyers, Bronx, N.Y., assignor to Synapco Ltd., Bronx, N.Y.

Division of Ser. No. 970,010, Dec. 18, 1978, Pat. No. 4,297,797. This application Oct. 10, 1980, Ser. No. 196,020

Int. Cl.³ A43B *13/20*

U.S. Cl. 36—29 **6 Claims**

1. A footwear sole member formed essentially of material containing a plurality of compressible fluid-filled chambers and comprising toe, metatarsal head, remaining lateral and remaining medial portions, said toe, metatarsal head and remaining



lateral portions being generally more compressible than said remaining medial portion.

4,445,284

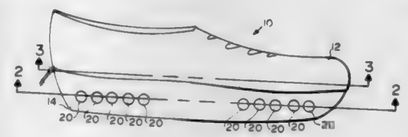
FOOTWEAR WITH INTEGRAL CUSHIONING AND VENTILATING APPARATUS

Eric M. Sakutori, 381 Waiehu Beach Rd., Wailuku, Hi. 96793

Filed Feb. 18, 1982, Ser. No. 350,082

Int. Cl.³ A43B *7/08, 7/06, 13/20*

U.S. Cl. 36—3 B **2 Claims**



2. A shoe which comprises:

an upper;

a sole having a plurality of elongated chambers disposed therein, each chamber communicating with at least the top face of the sole and the ambient surrounding the shoe;

a first check valve disposed substantially at the first axial extremity of each of said elongated chambers to limit the direction of flow in the elongated chamber in which it is disposed to a first direction; and

a second check valve in each of said elongated chambers substantially at a second axial extremity of and which is oriented to allow fluid flow in a direction which is opposite to said first direction.

4,445,285

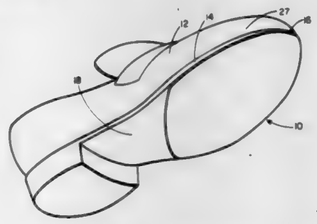
SHOE SOLE

Donald W. Phillips, Chateau Perigood 1 45 D, L Aceto St. Leon, Monte Carlo, Monaco

Filed Sep. 30, 1981, Ser. No. 307,250

Int. Cl.³ A43B *13/00, 13/04, 19/00, 13/22*

U.S. Cl. 36—25 R **15 Claims**



1. A wear portion for use in repairing a shoe having a toe portion, a waist portion and an existing sole with a ground engaging surface, comprising:

wear means having substantially convex upper and lower surfaces;

the wear means extending in an operative position thereof from the toe portion to a point at the beginning of the waist portion of the shoe; and

the upper surface of the wear means being attachable to the ground engaging surface of the shoe in said operative position so that the lower surface engages the ground.

4,445,286

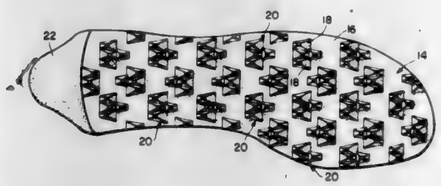
FOOTWEAR, SUCH AS ATHLETIC SHOE

Edward J. Norton, Kingston, N.H., assignor to New Balance Athletic Shoe, Inc., Boston, Mass.

Filed Oct. 19, 1981, Ser. No. 312,756

Int. Cl.³ A43B *13/04, 23/28*

U.S. Cl. 36—32 R **7 Claims**



1. Footwear of the type adapted for field sports, such as football, baseball, softball and the like comprising a sole portion, an upper portion attached to said sole portion providing a foot receiving opening, and wherein said sole portion is characterized by a plurality of raised elements integral with said sole portion extending from a base within substantially the plane of the outer surface of said sole portion, a substantial majority of said raised elements located in individual groups of interlocking raised elements in substantially mutually perpendicular orientation and spaced from other groups of interlocking raised elements within the area of said outer surface, said sole portion further characterized by being formed of a material capable of flexure during each step and repeated cycles of foot movement whereby collected debris between individual groups of raised elements and between said interlocking raised elements of each said group may release and separate from said sole portion.

4,445,287

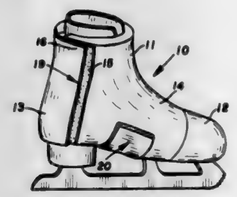
SKATE BOOT COVER

Mario C. Garcia, 1167 Ottawa Ave., West St. Paul, Minn. 55118

Filed Jul. 6, 1982, Ser. No. 395,489

Int. Cl.³ A43B *3/18, 5/00*

U.S. Cl. 36—106 **2 Claims**



1. A releasably attachable insulative covering for a skat shoe and comprising:

(a) covering means adapted to envelop the skate shoe and fabricated from thermally insulative material and including a toe covering portion, a heel covering portion, and an in-step covering portion, including right and left lateral covering panels, and flexible fastening means for releasably attaching the covering panel to the skate shoe;

(b) said heel covering portion being formed of adjoining extension panels from said right and left lateral covering portions; and

(c) said flexible fastening means including a plurality of individual mating pairs of fasteners, each pair including a hook fastener portion and a loop fastener portion, with each of said fastener portions being mounted on said covering panel means, and with one of each such mating pairs of fasteners being secured generally vertically along each of said lateral covering portions to form a heel closure, and with one such mating pair being secured generally medially along said right and left lateral covering portions to form a cross-strap tab fastener extending generally transversely across and beneath the underside of the arc portion of the skate shoe.

4,445,288

SPORT SHOE WITH A STUDDED SOLE

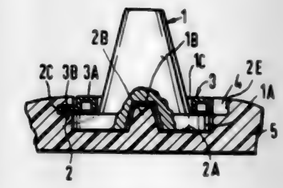
Werner Frör, Schornbaumstrasse 5, D-8520 Erlangen, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 360,949

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112390

Int. Cl.³ A43C *13/04, 15/16*

U.S. Cl. 36—134 **12 Claims**



1. In a short shoe having a sole with at least one pocket therein, a stud with a stud body in the form of an outward ground-gripping part, said stud being fixed to said sole by having a root part thereof infixed in said pocket, said root part having outward locking parts thereon to be overlapped by inward locking parts on an edge of said pocket, the invention residing in that said stud root is made up in two pieces, a base plate and a non-compressible, rigid keeper washer slipped onto said stud body and resting against a side of said base plate facing said stud body, said keeper washer having said outward locking parts thereon, which are taken up in grooves running next to said inward locking parts in a wall of said pocket, said keeper washer being designed for use with a key for turning its outward locking parts between a turned-home locked position, wherein they are locked and infixed by being overlapped by said inward locking parts, and a freed, uncovered position freeing said stud's base plate to take said stud out of said pocket.

4,445,289

PLASTIC SPIKE FOR SPORTS SHOE

Charles Benéteau, Pouzauges, France, assignor to Patrick S.A., France

Filed Jun. 7, 1982, Ser. No. 385,797

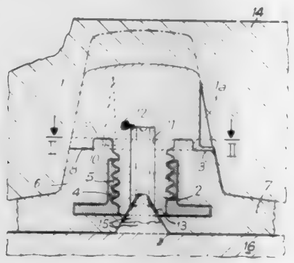
Claims priority, application France, Jun. 23, 1981, 81 12329

Int. Cl.³ A43C *15/16*

U.S. Cl. 36—134 **3 Claims**

1. A spike, preferably made entirely of plastic material, for a sport shoe having securing means in the sole thereof, which spike comprises a head portion, means carried by the head portion for rotating the head portion to lock same onto the securing means, a threaded stem extending from the head portion for engagement within the securing means, and the threaded stem being provided with a blind axial conduit having

a blind end and a free end, the axial conduit being of a polygonal cross-sectional configuration for engagement by a spanner



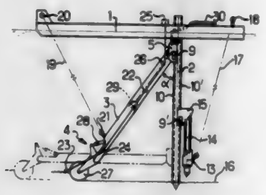
of corresponding configuration upon breakage of the spike and exposure of the blind end.

4,445,290

APPLIANCE FOR DREDGING THE BOTTOM OF A BODY OF WATER

Jacques Oules, Paris, France, assignor to Hydroconsult, S.A., France

Filed Dec. 14, 1981, Ser. No. 330,788
Claims priority, application France, Dec. 16, 1980, 80 26683
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—66 **14 Claims**



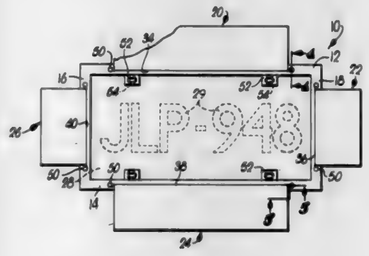
1. Dredging appliance, particularly for dredging at great water depths of up to 100 meters and more, comprising: a buoyant body adapted to float on the water surface; an anchoring device vertically movably mounted in said buoyant body between an anchoring position wherein its lower end is driven into the water bottom and a raised position withdrawn from said bottom; a first support carriage supporting a working head carrying arm, said first carriage being slidably mounted on said anchoring device for vertical movement on said anchoring device; a working head carrying arm hingedly mounted at one of its ends on said first support carriage so as to be rotatable about a substantially horizontal axis, said working head carrying arm having a constant length; a working head carried by the other free end of said arm, said working head being adapted to dredge said bottom by accomplishing successive parallel dredging movements, each movement being along a path in a form of an arc of circle; and control cables for moving said working head along each said dredging path; said first support carriage being vertically slidable along said anchoring device between an upper dredging position wherein the length of said working head carrying arm is such that said working head is in contact with said bottom with said working head carrying arm forming a relatively small angle with the vertical axis of said anchoring device, and a lower dredging position where said arm extends substantially horizontally, with said anchoring device remaining in its anchoring position driven in the water bottom and said working head being in contact with said bottom, said working head being movable in a direction perpendicular to the dredging paths by the vertical movement of said first carriage on said anchoring device from said upper dredging position to said lower dredging position corresponding thereby to a multitude of parallel dredging paths.

4,445,291

LICENSE PLATE FRAME WITH DETACHABLE DISPLAY PANELS

Robert E. Easley, 5704 Woodland, Kansas City, Mo. 64110

Filed Jan. 24, 1983, Ser. No. 460,155
Int. Cl.³ G09F *7/00*
U.S. Cl. 40—210 **2 Claims**



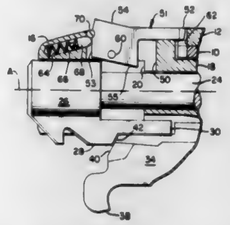
1. A frame for a license plate comprising:
an upper member and spaced apart lower member,
a pair of spaced apart side members interconnecting said upper and lower members,
at least one of said members including structure defining an elongated slot therein;
a display panel detachably received within said slot, said display panel having a display portion and a retaining portion, there being tabs on said retaining portion; and
means for releasably retaining said retaining portion within said slot, said retaining means including set screws threadably received within said slot for engaging said tabs and thereby removably positioning said retaining portion within said slot.

4,445,292

BOLT LATCH FOR BOLT-ACTION FIREARM

Fred E. Martin, Frankfort, N.Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Continuation of Ser. No. 290,693, Aug. 6, 1981. This application Jul. 7, 1983, Ser. No. 511,449
Int. Cl.³ F41C *11/06*
U.S. Cl. 42—16 **7 Claims**



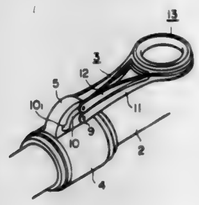
1. In a bolt-action firearm of the type having a substantially cylindrical bolt rotatably mounted for movement between open and closed positions; a bolt plug non-rotatably mounted and having threaded connection with said bolt; a firing pin mounted reciprocably in said bolt plug for movement between fired and cocked positions with respect to said bolt; the improved bolt latch mechanism which comprises;
a latch lever having a tooth; said bolt plug being formed with a recess receiving said latch lever; said bolt being formed with a locking notch opening onto an outer peripheral surface thereof at a location radially aligned with said tooth upon rotation of said bolt to said closed position; means mounting said latch lever in said recess for pivotal movement about an axis substantially perpendicular to the longitudinal axis of said cylindrical bolt between a first, latched position in which said tooth is engaged in said locking notch to latch said bolt against rotation with respect to said bolt plug, and a second, unlatched position in which said tooth is disengaged from said locking notch to release said bolt for rotation; spring-biased plunger means mounted in said bolt plug for biasing said latch lever toward said first position;
said latch lever having cam means arranged to project, upon pivotal movement of said latch lever into said first position, into the path of reciprocation of said firing pin, whereby movement of said firing pin to said fired position normally pivots said latch lever from said first to said second position to unlatch said bolt, and movement of said firing pin to said cocked position normally permits said spring-biased plunger means to pivot said latch lever from said second to said first position to latch said bolt;
said latch lever having a detent notch, and being manually pivotable in said recess to a third, disabled position in which said cam means is withdrawn from the path of reciprocation of said firing pin, said tooth is released from said locking notch and said detent notch engages said plunger means to interfere with rotation of said latch lever from said third position, and thereby render said plunger means inoperative to pivot said latch lever toward said first position thereof.

4,445,293

FOLDING GUIDE ASSEMBLY

Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan

Filed Sep. 23, 1981, Ser. No. 305,042
Claims priority, application Japan, Oct. 14, 1980, 55-144074
Int. Cl.³ A01K *87/04*
U.S. Cl. 43—24 **5 Claims**



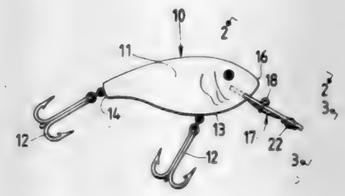
1. An improved folding line guide assembly for a fishing rod, said guide assembly comprising a guide ring, a pair of rear supporting legs and at least one front supporting leg depending from the guide ring, said rear and front legs being resiliently separable from each other at the lower ends thereof, and a mounting member having a guide slot for slidably receiving the lower end of said front supporting leg, said rear supporting legs being pivotally received in a pivot hole in the mounting member while said at least one front supporting leg is slidably fitted at its lower end in the guide slot of the mounting member.

4,445,294

FISHING LURE HAVING A PADDLE-LIKE MEMBER

James R. Gowing, Altus, Ark., assignor to EBSCO Industries, Inc., Birmingham, Ala.

Filed Sep. 13, 1982, Ser. No. 417,032
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.47 **5 Claims**



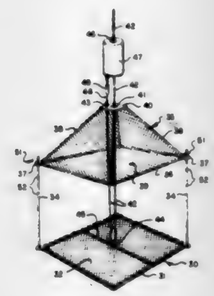
1. In a fishing lure having a generally planar, paddle-like member extending forwardly from the front end portion of the body of the fishing lure, the improvement comprising,
(a) there being at least one transverse, outwardly opening cavity in the front end portion of said paddle-like member and being generally round, as viewed in cross section,
(b) a weight of a size to be inserted into said cavity with a friction fit, and
(c) said cavity being positioned in said paddle-like member at a location so that upon insertion of said weight into said cavity the center of gravity of said lure is lowered to stabilize movement of the lure and control the rate and angle of descent of said lure as it moves through the water.

4,445,295

MARINE LIFE TRAPS

Biagio Litrico, P.O. Box 742, Fernandina Beach, Fla. 32034

Filed Nov. 15, 1982, Ser. No. 441,399
Int. Cl.³ A01K *71/00*
U.S. Cl. 43—102 **12 Claims**



1. A trap for catching marine life species which may be baited comprising a bottom planar member, vertical guide means attached to said bottom planar member, a top enclosure means slidably guided on said vertical guide means between a closed position in contact with the bottom planar member to an open position spaced from and above the bottom planar member, stop means limiting the open position of the enclosure means, buoyancy means spaced from the enclosure means, connecting means between the buoyancy means and enclosure means whereby the buoyancy means normally maintains the enclosure means in the open position in a water environment, a timed disengageable link means intermediate the ends of said connector means releasing at least a part of said buoyancy means from the enclosure means whereby the enclosure means is free to fall downwardly onto the bottom planar member

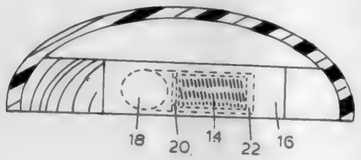
after a pre-selected time of immersion and lifting means connecting the bottom planar member and the enclosure means whereby the enclosure means may be moved to the closed position and held in the closed position and the trap and contents lifted whether the timed link has disengaged or not.

4,445,296

SPRING POWERED SAUCER WITH LAUNCHING TAB AND PLATFORM

James A. Lehman, 59 Reid Ter. (Apt. 14), Fond du Lac, Wis. 54935

Filed May 3, 1982, Ser. No. 374,007
Int. Cl.³ A63H 27/00
U.S. Cl. 46—74 D 6 Claims



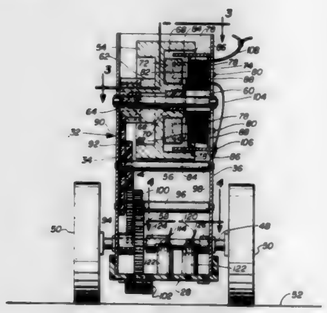
1. A toy flying saucer, comprising:
a. a central body portion having a curvi-linear air foil configured depending lip positioned around the periphery of said body portion, the lip having a chamber positioned perpendicular to the radius of the saucer;
b. a spring positioned in said lip chamber perpendicular to the radius of the saucer;
c. a compression member to be held in the hand and to be associated with said saucer body to compress a spring, said member being separate from said body;
d. latching means secured to said member and engaging the wall of said body at the rear end thereof for holding said member partly within said body to compress said spring;
e. said latching means having a resilient part laying outside said body and extending freely toward said body to be operated by manual pressure applied thereto when said member is held in the hand to release said body to the action of said spring, to cause said body to withdraw from said member while the latter is held in the hand as aforesaid.

4,445,297

TOY MOTORCYCLE WITH LIGHTING MECHANISM

Bruce M. D'Andrade, Whitehouse Station, N.J.; Ping F. Ng, and Tak M. Ma, both of Hong Kong, Hong Kong, assignors to ARCO Industries Ltd., Hong Kong, Hong Kong

Filed Apr. 30, 1982, Ser. No. 373,421
Int. Cl.³ A63H 17/28
U.S. Cl. 46—230 5 Claims



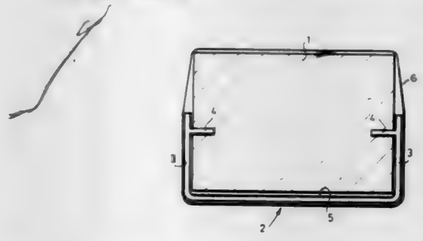
1. A toy motorcycle having at least one electric light bulb mounted thereon and comprising in combination an elongated frame having front and rear portions extending from a central enclosure and comprising complementary side plates shaped to form said enclosure, front and rear wheels supported by said front and rear portions of said frame for free rotation, a metal housing supported within said enclosure and containing: a gear train comprising interengaging gears supported upon shafts extending transversely through bearings in opposite side plates of said housing, a drive shaft extending through bearings in the lower portions of said side plates of said housing at opposite sides of said central enclosure and a pair of drive wheels having friction rims supported respectively upon opposite ends of said drive shaft and dispersed outwardly of the opposite sides of said side plates of said central enclosure and the rims of the wheels being in a plane slightly below a parallel plane engaging the lowest portions of said front and rear wheels, whereby said drive wheels can engage a supporting surface to prevent any appreciable side tilting of the motorcycle when all of said wheels engage said surface, said drive wheels also being rotatable by engagement with said surface when the motorcycle is pushed manually therealong, an inertia flywheel mounted upon a transverse shaft in said housing, electric generating means comprising an electric armature coaxially fixed to said flywheel for rotation therewith, an electric field coil and stator unit supported by one side of said metal housing coaxially with said armature, said stator comprises finger-like pole pieces spaced circumferentially around the perimeter of said armature and projecting laterally from one face of a wire field coil, half of said pole pieces comprise the outer ends of said fingers bent perpendicularly from radial fingers within a plane adjacent one side of said field coil and the other half of said pole pieces comprise fingers stamped from the metal side plate of the housing which supports said field coil and are bent perpendicularly to the plane of said side plate and interspersed between the first half of said pole pieces to form a circular pattern thereof surrounding the periphery of said electric armature, an electric circuit extending from one end of said coil and connected to said metal housing to serve as a ground and said circuit also extending from the other end of said coil to said electric light bulb, gears of said train respectively on said drive shaft and said transverse shaft of said armature, and intermediate gears mounted between and meshing with said aforementioned gears of said train operable to multiply the speed of said armature and inertia wheel relative to said drive shaft, whereby as the drive shaft is operated by said inertia wheel to propel the motorcycle forwardly by rotation of said drive wheels the armature and stator generate electric current to illuminate the electric light bulb through a circuit extending from said stator.

4,445,298

BASE FOR INSERTING FLOWERS, TWIGS AND SIMILAR ITEMS

Manfred Roder, Frankenthal, Fed. Rep. of Germany, assignor to Smithers Oassis GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,748
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 8026097[U]
Int. Cl.³ A47G 7/02, 7/00
U.S. Cl. 47—41.12 2 Claims



1. A base for the insertion of flowers, twigs, fruits and similar

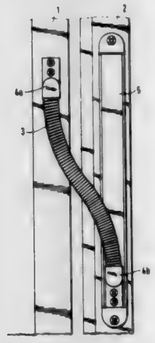
items, consisting of a mass of a plastic foam which is rigidly connected to a support of suitable material characterized in that the support is of trough-shape, into which is placed the plastic foam, a plastic foil surrounds all of the support and plastic foam, and is attached thereto by a shrink fit and said foil being provided with holes which are distributed generally over its surface, allowing wetting of the foam while impeding evaporation therefrom.

4,445,299

ARRANGEMENT IN DOORS

Keijo Lehikoinen, and Kyösti Nevalainen, both of Joensuu, Finland, assignors to Oy Wartsila Ab, Helsinki, Finland

Filed Feb. 19, 1981, Ser. No. 236,122
Claims priority, application Finland, Feb. 20, 1980, 800497
Int. Cl.³ B60J 1/08, 13/00
U.S. Cl. 49—167 10 Claims



1. An arrangement for obtaining an uninterrupted connection of an electric cable or the like between two elements pivotally hinged to each other, in particular, between a door frame element and a door connected thereto, said arrangement comprising:
at the position of the connection, a single hollow member arranged to enclose said cable in the form of a separate, turnable and longitudinally flexible protecting element, said element being arranged basically in the longitudinal direction of said door frame element;
a first connection element for connecting one end of said hollow member to said door frame element;
a second connection element for connecting the other end of said hollow member to an adjacent edge part of said door;
at least one recess in said door frame element and/or in said door edge part for said single hollow member, said first connection element and said second connection element, said at least one recess being so arranged that, when said door is closed, said protecting element and said cable are received in said recess; and said first and second connection elements each including:
a ball joint element having an enclosed passageway for the cable forming a continuous passageway with said single hollow member; and
said ball joint elements permitting said single hollow member to be swung and turned relative to said first and said second connection elements.

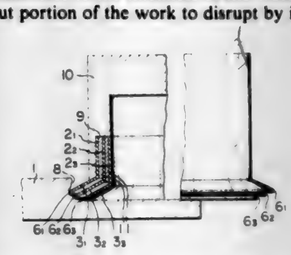
4,445,300

METHOD FOR GRINDING FLAT PLATES

Shinji Sekiya, Tokyo, and Takatoshi Ono, Nagareyama, both of Japan, assignors to Disco Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,669
Claims priority, application Japan, Feb. 1, 1980, 55-10887
Int. Cl.³ B24B 7/20
U.S. Cl. 51—283 R 2 Claims

1. In an improved method for grinding flat plates by rotating at high speed a grinding wheel attached to the open end of an inverted cup, comprising providing a thin grinding wheel of super hard crystalline material comprising a thin circumferential skirt of uniform thickness projecting outward aslant from the open end of the cup at an angle in the range of about 10 to 45 degrees to the work surface being ground, bringing the peripheral edge of said thin skirt into contact with the work, undercutting the work with the skirt peripheral edge in a direction transverse to the thickness of the work, and causing the undercut portion of the work to disrupt by itself, wherein



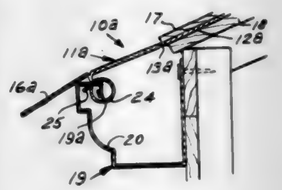
the improvement comprises providing the open end of the inverted cup with a multiplicity of said thin skirts with the edge thicknesses of the skirt being held constant in the range of about 0.1 mm to 0.5 mm thickness, and including spacing the respective thin skirts of said wheel one above another along the cup axis in partly overlapping relation so that a given skirt is supported radially outward of the cup from beneath by the skirt directly beneath it, said undercutting of the work occurs above the upper one of the skirts, and only the thin peripheral edge of each skirt is brought into contact with the work.

4,445,301

ROOF AND GUTTER SAVING DEVICE

James A. Tanski, 8621 Lochdale, Dearborn Heights, Mich. 48127

Filed Jul. 13, 1982, Ser. No. 397,844
Int. Cl.³ E04D 3/12
U.S. Cl. 52—11 1 Claim



1. A roof and gutter saving device, comprising, in combination, an elongated central main body, a tongue portion along one longitudinal edge of said central main body and an overhang portion and a stabilizing tab along an opposite longitudinal edge of said central main body, a non-rigid joint formed along said longitudinal edges pivotally hinging said tongue portion, said overhang portion and said stabilizing tab thereto; and said stabilizing tab being bent into a longitudinally extending open loop for snap clipping around a downwardly inner, rear lip formed along a front outer edge of a roof gutter.

4,445,302

BUILDING ROOF STRUCTURE

Charles Dean, 2444 McGregor Blvd., Fort Myers, Fla. 33901

Filed Jun. 8, 1982, Ser. No. 386,342
Int. Cl.³ E04B 7/00
U.S. Cl. 52—90 20 Claims

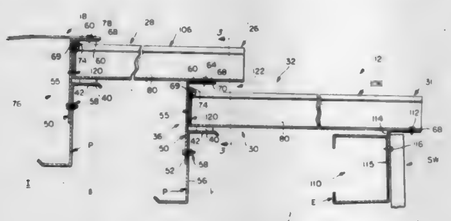
1. A roof structure for metal buildings comprising:
building support elements;
a plurality of elongate roof panels overlying said building

support elements, said panels each having a first end edge located nearer a building ridge than a panel second end edge, said panels having side edges which extend transversely of said building support elements and backstop means between the side edges at one end of each panel;

said plurality of panels including a plurality of first panels having said second end edges overlapping the first end edges of a plurality of second panels to define end laps;

a clip located adjacent to said end laps attaching each of said second panel first ends to one building support element;

an L-shaped bracket located adjacent to said end laps attaching said first panel second ends to said one building support element, said bracket including a first leg attached to said one building support element and a second leg extending longitudinally of said roof panels away from said one building support element toward said second panel second end edge;



attaching means attaching said bracket second leg to said first panel second end, said attaching means being located to be spaced from said second panel first end and said first panel resting on said bracket second leg; and

closure means interposed between said attaching means and said bracket first leg so that said attaching means is located outside of the area enclosed by the roof structure.

4,445,303

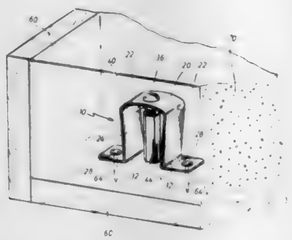
WEDGE-TYPE CONCRETE INSERT

Milton W. Judkins, 4606 Birch, Bellaire, Tex. 77401

Filed Apr. 26, 1982, Ser. No. 371,562

Int. Cl.³ E04C *1/00*

U.S. Cl. 52—98 **2 Claims**



1. A concrete anchor suitable for a concrete slab, comprising:

a first pair of generally aligned anchoring surfaces which include first and second ends, said anchoring surfaces being arranged to diverge such that said first ends are separated by a greater distance than said second ends;

a pair of generally flat, spaced, generally coplanar tabs suitable for positioning the anchor on a form or the like during installation, each tab being interconnected with a respective second end of said anchoring surfaces such that said tabs can be broken away from said anchoring surfaces;

an opening in each tab to receive a means for securing the anchor to a form or the like;

an additional anchoring surface interconnecting said first ends of said first pair of anchoring surfaces; and

means interconnected with said additional anchoring surface for coupling an object to said anchor such that the weight of said object is transmitted from said coupling means to said additional anchoring surfaces and then to said diverging first pair of anchoring surfaces.

4,445,304

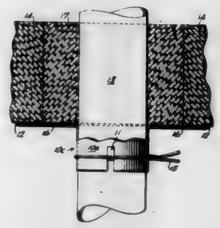
METHOD AND APPARATUS FOR SUPPORTING A VERTICAL CYLINDER OF WET CEMENT SURROUNDING A VERTICAL PIPE PASSING THROUGH A HORIZONTAL CONCRETE SLAB

Andrew Koda, 1238 14th Ave. N., Naples, Fla. 33940

Filed Mar. 19, 1981, Ser. No. 245,267

Int. Cl.³ E04B *5/48*; E04F *17/08*; E04G *23/00*

U.S. Cl. 52—127.3 **4 Claims**



1. A method of filling the space between a vertical pipe and a horizontal concrete slab with wet cement, comprising wrapping one leg of an L shaped piece around the vertical pipe just below the slab, the other leg of the piece being slit to form a series of slats radiating horizontally around the pipe, slipping a circular sheet of flexible moisture resistant material about the pipe just above the slats of the piece, pushing the piece upwardly on the pipe so as to press the sheet firmly against the lower face of the slab, securing the sheet and piece in position, and then pouring wet cement into the space between the pipe and the slab, which wet cement is supported while drying by the sheet and L-shaped piece.

4,445,305

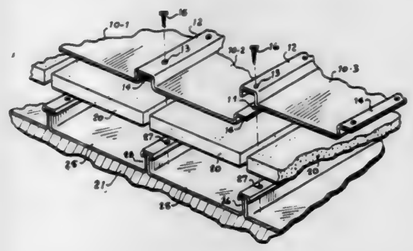
INSULATING SECONDARY ROOF SYSTEM

Thomas A. Orie, Sr., 3224 Heartwood Ave., Orlando, Fla. 32807

Filed Sep. 27, 1982, Ser. No. 424,852

Int. Cl.³ E04C *1/00*; E04B *1/74*; E04D *1/00*

U.S. Cl. 52—309.9 **5 Claims**



1. An insulative secondary roof system for installation over an existing metal roof having a plurality of structural roof panels, each panel having an elongate rectangular flat portion, the flat portion having an upturned edge along each longitudinal side thereof, the upturned edge being contiguous with an upturned edge of an adjacent panel and joined thereto, whereby each panel forms a rectangular channel, the secondary roof system comprising:

a plurality of elongate, rectangular insulating panels, each of said insulating panels having a width approximately equal to the width of the existing roof channel and a thickness approximately equal to the depth of the channel, said insulating panels disposed in the existing roof panels in total contact with the flat portion of the roof panels;

a plurality of elongate, rectangular secondary metal panels, one of said metal panels disposed over each of said insulation panels, each of said secondary metal panels having upturned edges, one of said edges having an inverted L-shaped portion and the other edge having an inverted U-shaped portion, said U-shaped portion of each of said secondary panels formed to fit over said L-shaped portion of its adjacent one of said secondary panels to thereby interlock with each other, said inverted U-shaped portion adapted to fit over and to contact the joints of said existing metal panels; and

a plurality of screws driven through said inverted U-shaped portions, said inverted L-shaped portions, and said existing metal panel joints for securing said secondary panels to said existing roof structure.

4,445,306

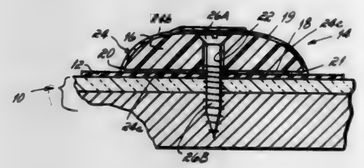
MECHANICALLY ATTACHED ROOFING SYSTEM

Roy F. Schauffele, Carlisle, Pa., assignor to Carlisle Corporation, Cincinnati, Ohio

Filed Jun. 4, 1982, Ser. No. 385,058

Int. Cl.³ E04B *5/00*

U.S. Cl. 52—410 **14 Claims**



1. A system for mechanically attaching a waterproof membrane to a roof structure upon which the membrane is positioned, comprising:

an elongated fastening bar having bottom and top surfaces separated by spaced parallel longitudinal edges, said bar being positionable above said membrane with said bottom surfae lowermost,

an elongated waterproof strip having a length coextensive with that of said bar, said strip having an elongated intermediate region disposed between elongated marginal regions, said strip being positioned with said intermediate region located between said bar and said membrane in underlying relation to said bottom surface and with said marginal regions at least partially overlapping each other above said top surface, whereby said bar is fully encircled by said strip, and

a plurality of fasteners each having an integral head and shank, said fasteners having their respective heads proximate said top surface of said bar in underlying relation to at least one of said encircling marginal regions and their respective shanks extending through said bar, intermediate region of said strip and membrane into said roof structure to anchor said bar to said roof structure with said intermediate region of said strip and underlying membrane sandwiched therebetween.

4,445,307

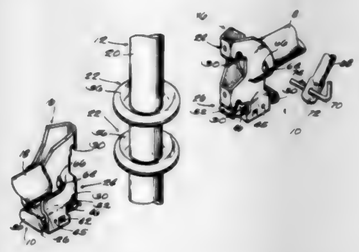
SCAFFOLD JOINT FOR A SCAFFOLD STRUCTURE

Joseph S. Puccinelli, and Paul J. Lukezich, both of Milwaukee, Wis., assignors to Figgie International Inc., Richmond, Va.

Filed Nov. 8, 1982, Ser. No. 439,824

Int. Cl.³ E04G *7/00*

U.S. Cl. 52—638 **18 Claims**



1. A scaffold joint for connecting the ends of a horizontal scaffold member to a vertical scaffold member comprising:

a pair of ring support members fastened to the vertical scaffold member in a vertically spaced relationship;

an end connector assembly fastened to the end of a horizontal scaffold member, said end connector assembly comprised of an end connector member and a locking member slidably mounted thereon, said end connector member having a pair of ring engagement portions adapted for removable engagement with said spaced ring support members, said locking member adapted when moved to its locked position to make tight contact with one of said ring support members to thereby cause said ring engagement portions to be forced into tight contact with said ring support members.

4,445,308

REINFORCEMENT SUPPORTS

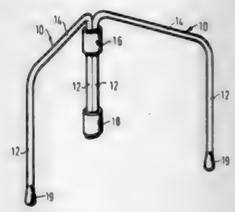
Leonard G. Taylor, St. Martins, New Zealand, assignor to Allied Steel and Wire Limited, Cardiff, Wales

Continuation of Ser. No. 134,006, Mar. 26, 1980, abandoned. This application Jan. 8, 1982, Ser. No. 339,656

Claims priority, application New Zealand, Mar. 26, 1979, 190004; Mar. 27, 1979, 191391

Int. Cl.³ E04C *5/16*

U.S. Cl. 52—687 **14 Claims**



1. A support for maintaining concrete reinforcement at a predetermined level during the pouring of concrete thereabout comprising an assembly of two adjacent inverted 'U' shaped metal yokes, each yoke having a pair of substantially parallel and vertical limbs and a bridge interconnecting the upper ends of the vertical limbs, and connection means interconnecting two adjacent limbs of the two adjacent yokes, characterized in that the interconnection means comprises two couplings mutually spaced along the limbs and each encircling and frictionally engaging both limbs whereby the two limbs are held positively in mutually parallel contacting relation to each other in a relatively rigid manner and the two yokes are

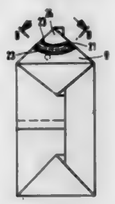
angularly displaceable relative to each other about an axis passing through the couplings between a storage position in which the respective bridges are maintained substantially parallel to each other by the friction of said couplings and an operational position in which the respective bridges are maintained at an angle relative to each other by the friction of said couplings for the support of reinforcement thereon during the pouring of concrete around the support and reinforcement.

4,445,309

METHOD OF MAKING A LIQUID PACKAGING CONTAINER WITH POURING SPOUT AND AIR INLET

Wilhelm Reil, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Fed. Rep. of Germany

Division of Ser. No. 179,331, Aug. 18, 1980, Pat. No. 4,367,828, This application Sep. 30, 1982, Ser. No. 431,412
Int. Cl.³ B65B *61/18*
U.S. Cl. 53—410 **3 Claims**



1. The method of making a packaging container of cardboard, paper or the like which has on at least one side thereof a double-thickness wall portion forming a spout from which the contents of said container can be poured when opened, the interior of which communicates with the interior of the container, which wall portion is provided with a strip of material which can be gripped by the fingers for opening said spout, comprising the steps of:

forming and filling with a liquid and closing such container to form such double-thickness wall portion so that facing sides of said wall portion are in mutual engagement across the area of said spout, and thereafter forming in said wall portion across the area of said spout at least one score line which penetrates through only one of said double-thicknesses of said wall portion along which said wall portion may be severed upon lifting of said strip of material with said fingers to form said spout,

forming in said double-thickness wall portion, closely adjacent to said score line across the area of said spout between the interior of said container and said score line, at least one fluid-tight weld seam of relatively narrow configuration adapted to be easily torn apart when said strip of material is lifted by said fingers, and

folding said double-thickness wall portion so that the facing sides of said double-thickness wall portion in the area of said score line and said at least one fluid-tight weld seam remain in mutual engagement during transportation prior to opening.

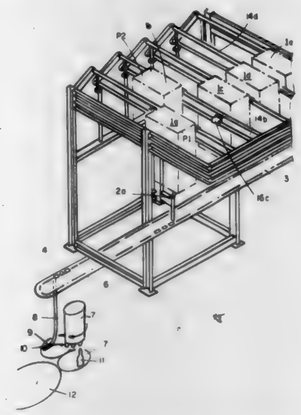
4,445,310

PROCESS AND INSTALLATION FOR SUPPLYING CAPS TO A CLOSURE MACHINE

Albert Scheidegger, Villeurbanne, France, assignor to Scal Societe de Conditionnements en Aluminium, Paris, France

Filed Nov. 6, 1981, Ser. No. 318,961
Claims priority, application France, Nov. 14, 1980, 80 24691
Int. Cl.³ B65B *57/00, 57/02;* **B67B** *3/26*
U.S. Cl. 53—485 **12 Claims**

10. A process for continuously supplying fragile caps, in a given orientation, to a closure machine operating at a high rate (C), from at least N+1 cells for producing said caps, N being the minimum number of cells necessary to comply with the nominal closure rate C, the caps being collected at the outlet of the cells and transferred towards the closure machine by an endless chain conveyor with successive cavities, comprising the steps of transferring the caps between each cell and the conveyor by an individual channel, detecting mini and maxi levels in each individual channel, each cell being operable at two rates, a normal rate $(C/N)+\epsilon$ and a lower rate $(C/(N+1))-\epsilon'$, varying the rate of each cell in accordance to the levels detected in the corresponding channel, each individual channel being provided with an outlet selector, and feeding



the caps from the outlet selectors into the successive cavities of the conveyor, each cavity thus being associated with one of the successive individual channels, transferring the caps between the conveyor and the machine by a main channel, detecting mini and maxi levels in the main channel, the conveyor being a two-speed cavity-type conveyor, the maximum rate of which is at a minimum equal to the rate of production of the N+1 cells and can be reduced to a lower rate corresponding at maximum to the nominal closure rate C, and causing the conveyor to go from one speed to the other speed in accordance with the levels detected in the main channel.

4,445,311

PORTIONING AND PACKING MACHINE

Jürgen Nentwig, Vienna, Austria, assignor to Asto Import- und Exportgesellschaft M.B.H. & Co. Kg., Vienna, Austria

Filed Jan. 27, 1982, Ser. No. 343,268
Int. Cl.³ B65B *49/08, 11/40*
U.S. Cl. 53—575 **6 Claims**

1. A portioning and packaging apparatus for a pasty substance, comprising:

a vertically extending feed tube continuously supplied with said pasty substance;

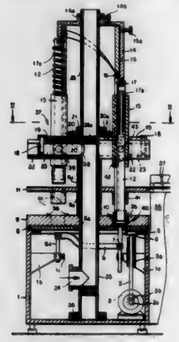
a metering head rotatable around said feed tube and formed with a plurality of angularly spaced generally radially extending metering cylinders communicating with said feed tube only over a portion of the angular displacement of said head about said feed tube, and respective pistons displaceable in said cylinders for metering said substance therefrom, said head being provided with a respective filling tube communicating laterally with each of said cylinders and vertically displaceable on said head;

a forming table rotatable about the axis of said feeding tube and formed with a plurality of forming cavities each aligned with a respective one of said filling tubes;

a layer-receiving table between said forming table and said head and rotatable with said head about said axis, said forming table being provided with a plurality of passages each aligned with the respective one of said cavities whereby respective layers of wrapping material can be applied to said layer-receiving table over a respective passage therein for entrainment into a respective cavity to form a package;

first cam means on said feeding tube operatively connected to said pistons for controlling the displacement thereof during rotation of said head; and

second cam means fixed to said feeding tube for controlling the vertical displacement of said filling tubes whereby said



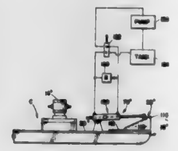
filling tubes deposite said substance in said packages in said cavities.

4,445,312

MOWER HEAD WITH MOVEABLE GUARD

Jack O. Cartner, 1005 N. 8th St., Cambridge, Ohio 43725

Filed Sep. 10, 1982, Ser. No. 416,580
Int. Cl.³ A01D *67/00, 75/20*
U.S. Cl. 56—15.5 **14 Claims**



6. A mower comprising:

a prime mover which is self-propelled in at least a forward and rearward direction;

an arm assembly operatively connected at a first end with the prime mover; and

a mower head operatively connected with a second end of the arm assembly, the mower head including:

a cutter which is positionable by the arm assembly to rotate in a circular cutting path;

a shield including: a deck extending above and substantially parallel to the cutting path, the deck defining a cutter exposing area along a forward side thereof between forward extending first and second deck extensions; a downward extending skirt which extends downward from the deck forward extensions, from a deck rear side, and from the deck between the forward and rear side; track means extending generally rearward along the first deck forward extensions;

a guard assembly which is disposed along the forward side of the shield and which is slidable parallel to the cutting path in the track means, along a generally forward to rearward path for selectively exposing and covering the cutter exposition area and,

a biasing means for biasing the guard assembly forward with a selected force such that upon encountering an object with greater than the selected force, the guard is rearwardly movable to expose the cutter.

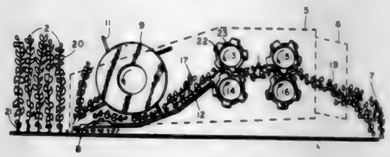
4,445,313

HAY CUTTING MACHINES

Thomas Elliott, and Todd Knecht, both of Rd. 5, Box 215, both of Towanda, Pa. 18848

Filed Aug. 19, 1982, Ser. No. 409,705
Int. Cl.³ A01D *49/00*
U.S. Cl. 56—16.4 **6 Claims**

1. In an improved hay cutting machine for promoting the drying of hay or other forage crops of the type having: means for supporting the hay cutting machine above the ground; means for propelling the hay cutting machine through the crop to be mowed; means for cutting the crop; conditioning means for crimping the crop stems comprising a pair of cylindrical rollers mounted transversely to the direction of crop movement through the conditioner at least one of said rollers having a plurality of longitudinal ribs disposed around the circumference of the roller; tensioning means for urging the pair of rollers toward each other; said cut crop being guided in a stream from the cutting means between the rollers, whereby



the crop stems are crimped at intervals along the stems; wherein the improvement comprises:

a plurality of additional pairs of rollers mounted parallel to the said first pair of rollers located such that the stream of cut crop moves immediately from the first pair of rollers through each additional pair of rollers in sequence;

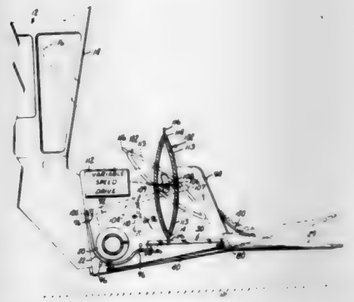
each additional pair of rollers being located along the stream of cut crop in synchronization with the earlier pairs of rollers, whereby the stems of the cut crop are crimped at different points along the stems than the points crimped by the first or earlier additional pairs of rollers.

4,445,314

SUNFLOWER HEADER ATTACHMENT

Jacob N. Gust, West Fargo, N. Dak., assignor to Concord, Inc., Fargo, N. Dak.

Filed Feb. 22, 1982, Ser. No. 351,292
Int. Cl.³ A01D *45/00*
U.S. Cl. 56—126 **2 Claims**



1. A sunflower header device for attachment on a combine having a reciprocating sickle bar assembly at a front end thereof and an auger trough positioned rearwardly of the sickle bar assembly, the device comprising:

a plurality of spaced apart and parallel pans, each pan having a forward end and a rearward end and being secured at its rearward end to the sickle bar assembly to extend forwardly from the combine;

a plurality of brackets secured to each pan at its forward end;

a plurality of adjustable pan supports, each pan support having a first end and a second end, the first end of each pan support being selectively secured to one of the brackets, the second end of each pan support being pivotally secured to the auger trough, and the pan supports being extensible and retractable so that the height of the forward end of each pan is adjustable relative to the combine;

a plurality of elongated snouts, each snout having a front end

and a rear end, each snout being pivotally mounted at its rear end on the forward end of each pan, and each snout having a plurality of opposing similar top and bottom smooth sides joined by rounded edges, said edges and sides being tapered to form a rounded tip at the front end of the snout;

a side divider mounted at each end of the sickle bar assembly on the front end of the combine, and each divider having smooth sides and rounded edges;

a reel rotatably mounted at its ends adjacent the side dividers to extend over the pans and rotate on a generally horizontal axis for urging sunflowers into the combine; and

means for driving the reel.

4,445,315

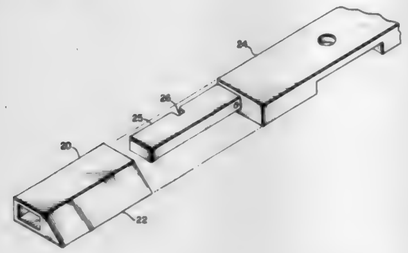
DISPOSABLE CUTTING EDGE

Gregory J. Roszkowski, 621 Tanglewood Rd., Derby, Kans. 67037

Filed Jun. 7, 1982, Ser. No. 385,901

Int. Cl.³ A01D *55/18, 75/18*

U.S. Cl. 56—295 **9 Claims**



1. In a system intended for use as a cutting rotary device comprised of a rotor and one or more detachable blades securely attached upon the rotor by a locking mechanism, said rotor having a universal mounting provision for attaching to the rotating output of a power source and containing an audible alarm mechanism effective any time the detachable blade having a disposable cutting edge is not properly installed and locked in position.

4,445,316

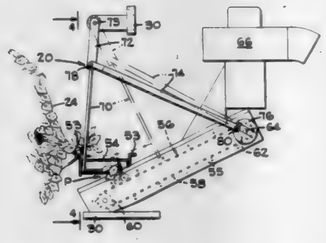
LOOSE VINE AND CANE ELIMINATOR

James T. Browning, Sunnyvale, and Franklin P. Orlando, Morgan Hill, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 31, 1983, Ser. No. 467,717

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—330 **14 Claims**



1. An apparatus for mechanically removing loose debris including long pieces of debris from a harvester, comprising;

means for moving the harvester along the row of living plants for removing fruit and loose debris therefrom,

first and second conveying means in said harvester with said first conveying means conveying fruit and loose debris longitudinally of the harvester to debris collecting point and said second conveying means then conveying the fruit and some debris away from said connecting point, and

finger means movable in a direction substantially perpendicular to said first conveying means for intercepting elongated pieces of debris at said collecting point and deflecting the elongated debris and other debris attached thereto transversely of the harvester into snagging engagement with the living plants being harvested for pulling the snagged debris from the harvester in response to the harvester moving away from the snagged debris.

4,445,317

SPLICING METHOD FOR SPUN YARNS

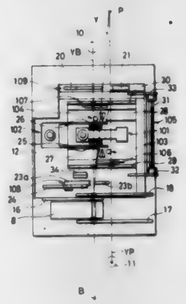
Hiroshi Mima, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Mar. 22, 1982, Ser. No. 360,062

Claims priority, application Japan, Mar. 26, 1981, 56-44967

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **6 Claims**



1. A splicing method for spun yarns which comprises sucking a yarn end on the package side by a first suction arm, gripping said yarn end on the package side between a turning lever and a supporting block of a yarn clamping device, then sucking a yarn end on the bobbin side by a second suction arm, gripping said yarn end on the bobbin side between a supporting plate and a supporting block of a clamping device, respectively, thereafter introducing the yarn ends into a splicing hole of a splicing apparatus by a yarn gathering lever, cutting the yarn ends by a yarn cutting device, then retreating the yarn gathering lever to adjust the length of each of the cut yarn ends, simultaneously untwisting both the yarn ends in a control nozzle, advancing the yarn gathering lever again to overlap both the yarn ends in the splicing holes and causing a compressed fluid to act on the overlapped portion of the yarn ends to effect splicing.

4,445,318

METHOD AND DEVICE FOR MAKING A KNOT-FREE THREAD CONNECTION BY SPLICING

Rolf Becker, Mönchen-Gladbach; Josef Bertrams; Franz Grabatsch, both of Wegberg; Gregor Kathke, Viersen; Wolfgang Kiesewetter, Willich; Herbert Knors, Mönchen-Gladbach; Jakob Leven, Wegberg; Erich Quack, Mönchen-Gladbach; Klaus Rautenberg, Erkelenz; Joachim Rohner, Mönchen-Gladbach; Klaus Rosen, Mönchen-Gladbach; Günter Wilms, Mönchen-Gladbach, and Heinz Zumfeld, Mönchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

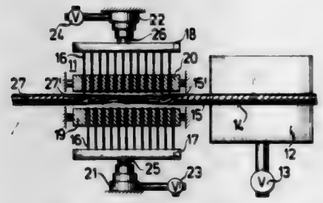
Filed Apr. 9, 1982, Ser. No. 367,118

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114790

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **16 Claims**

1. Method of producing a knot-free thread connection by splicing, which comprises mechanically mixing, alternately interlocking and anchoring individual fibers of the threads to



be joined to each other in a first pre-splicing operation, and subequently further and finally intertwining and anchoring the threads to each other in a separate finish-splicing operation.

4,445,319

DEVICE FOR TYING A FIRST THREAD TO A SECOND THREAD BY SPLICING WITH PRESSURE GAS

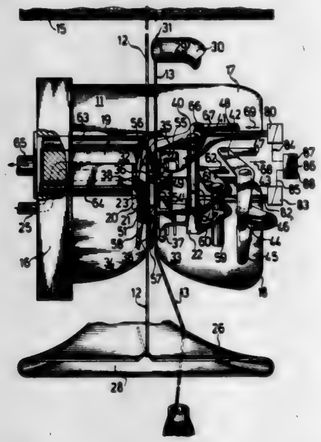
Joachim Rohner, and Heinz Zumfeld, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Aug. 19, 1982, Ser. No. 409,424

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132894

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **3 Claims**



1. Device for tying a first thread to a second thread by splicing with pressure gas, the device having a splicing chamber formed with an elongated slot for inserting and tying the threads, at least one pressure-gas channel terminating in an interior space of the splicing chamber, a thread regulator movable from a thread take-up position to thread delivery position for laying the thread into the elongated slot of the splicing chamber, and controllable parts including thread severing devices for separating ends of the threads, a controllable and adjustable pressure-gas dosing device connected to the pressure-gas channel, a device disposed above the splicing chamber for taking up the thread end of the second thread, a device disposed below the splicing chamber for taking up the thread end of the first thread, a controllable thread gripper for the first thread, and a controllable thread gripper for the second thread, comprising an opening device in the thread gripper of the first thread, said opening device having a temporal priority over a second opening device in the thread gripper of the second thread, and the pressure-gas channel terminating eccentrically in the interior space of the splicing chamber for forming a vortex.

4,445,320

SPINDLE BRAKE

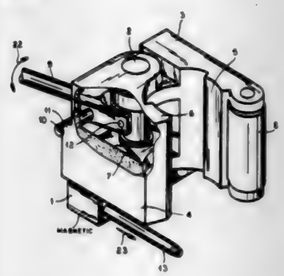
Günter Oppl, and Günther Schmitt, both of Hammelburg, Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Apr. 20, 1982, Ser. No. 370,054

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1981, 3116480

Int. Cl.³ D01H *1/241*

U.S. Cl. 57—88 **7 Claims**



1. A spindle brake for a spinning or twisting spindle of the type in which a tangential belt engages a whorl on a spinning or twisting machine, said brake comprising:

a pair of brake jaws juxtaposed with one another across said whorl;

respective arms carrying said jaws, said arms being connected at one end by a common pivot so that said arms are swingable toward and away from each other about said pivot;

means for actuating said brake to swing said arms toward each other and engage said jaws with said whorl;

a belt-lifting roller at the other end of one of said arms engageable with said belt upon actuation of the brake to lift said belt from said whorl; and

a spreading spring biasing said arms away from one another, said pivot and said arms being mounted upon a support plate removably attachable to said machine.

4,445,321

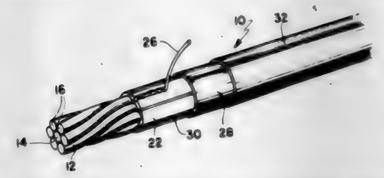
TENDON CONSTRUCTION FOR POSTTENSIONING PRESTRESSED CONCRETE AND THE METHOD OF MAKING SUCH TENDONS

Raymond E. Hutchinson, 51 Adelphi Ave., Providence, R.I. 02906

Filed Nov. 29, 1982, Ser. No. 445,278

Int. Cl.³ D07B *1/16, 1/14*

U.S. Cl. 57—223 **9 Claims**



1. A tendon for use in poststressing concrete comprising a multiple-wire strand wherein individual peripheral wires roughly abut each other to define a roughly geometric overall cross-sectional strand configuration having both internal and external interstices wherein said interstices are open ended crevices defined between adjacent wires, an encasement formed of a plastic completely surrounding the outside of said strand to form a smooth outer surface of circular cross-sectional configuration and having internal portions extending into said strand crevices, a thin friction reducing layer of grease-like material on the outer surface of said encasement

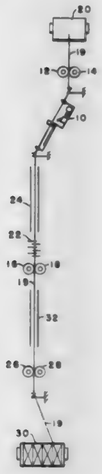
and a plastic jacket disposed over said encased strand whereby said strand may freely move longitudinally relative to said jacket.

4,445,322

APPARATUS TO MEASURE YARN TENSION

Larry S. Satterfield, Moore, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 236,966, Feb. 23, 1981, Pat. No. 4,393,725.
This application Nov. 17, 1982, Ser. No. 442,322
Int. Cl.³ D01H *13/32*; G01L *5/10*; G01H *13/00*
U.S. Cl. 57—264 2 Claims



1. Apparatus to provide a false twisted continuous filament, synthetic yarn comprising: a yarn supply means, a false twist mechanism, a primary heater means between said yarn supply means and said false twist mechanism, a yarn take-up means, a secondary heater means between said false twist mechanism means and said yarn take-up means and a means to measure the tension of the yarn being supplied from said yarn supply means, said means including a means to vibrate the yarn at its harmonic frequency and a means to measure the harmonic frequency of the yarn.

4,445,323

APPARATUS FOR THE CONJOINT GRIPPING OF BOBBINS ON A RING SPINNING OR RING-TWISTING MACHINE

Arthur Wuermli, Winterthur, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Oct. 4, 1982, Ser. No. 432,558
Claims priority, application Switzerland, Oct. 29, 1981, 6911/81
Int. Cl.³ D01H *9/08*; B66C *1/46*
U.S. Cl. 57—275 7 Claims

1. An apparatus for the conjoint gripping of empty or wound bobbins on a textile machine, especially ring-spinning or ring-twisting machines, comprising:

pin members formed of a rigid material and insertable into the bobbins which are to be gripped;

a support member extending along the textile machine;

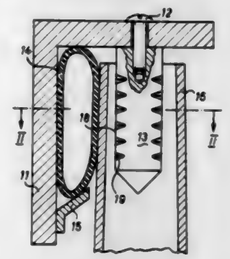
said pin members being carried by said support member;

an expansible hose member extending along said support member, wherein the internal pressure of said expansible hose member can be varied;

said expansible hose member extending in the direction of the bobbins for pressing the bobbins against the pin members inserted therein when the internal pressure of the expansible hose member is increased;

each pin member having a side surface at a side thereof facing the hose member;

said side surface being bounded by two substantially straight edges extending in the lengthwise direction of its pin member; and



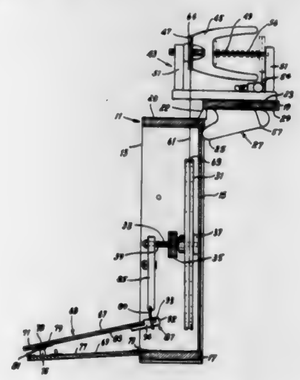
said substantially straight edges serving as abutment means for an internal surface of the related bobbin when such bobbin is pressed against the pin member.

4,445,324

COLLAPSIBLE SPINNING MACHINE

James S. Watkinson, Nannup, Western Australia, Australia

PCT No. PCT/AU81/00122, 371 Date Apr. 13, 1982, 102(e) Date Apr. 13, 1982, PCT Pub. No. WO82/00667, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 25, 1981, Ser. No. 375,034
Claims priority, application Australia, Aug. 25, 1980, PE5216
Int. Cl.³ D01H *3/00, 1/04*
U.S. Cl. 57—316 21 Claims



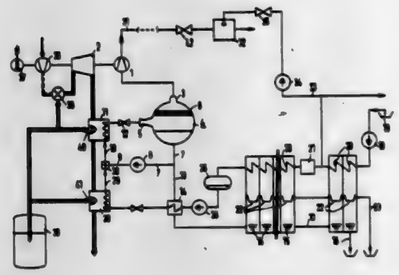
1. A manually operated spinning machine comprising a compartment having an open front and a lid at the top, the lid being movable between a closed position and an open position, a wheel housed within the compartment for rotation in a vertical plane substantially parallel to the front, a spinning head having a pulley, the spinning head being mountable on the inside of the lid so that when the lid is in the open position the spinning head can be positioned with the pulley aligned with the wheel, a transmission element for operatively coupling the wheel and the pulley when the pulley is aligned with the wheel, and treadle means connectable to the wheel through a crank for effecting rotation of the wheel.

4,445,325

INSTALLATION FOR GENERATING SUPERHEATED PROCESS STEAM FROM SALT-CONTAINING RAW WATER

Herbert Tratz, Ottensoos; Hermann Finckh, Nuremberg, and Konrad Künstle, Röttenbach, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim An der Ruhr, Fed. Rep. of Germany

Continuation of Ser. No. 265,627, May 20, 1981. This application Aug. 24, 1983, Ser. No. 526,213
Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020297
Int. Cl.³ F02G *1/02*; F01K *17/00*
U.S. Cl. 60—39.182 4 Claims



1. Apparatus for generating superheated process steam from raw water containing salt, using preheaters for heating comprising

(a) preheaters to impart sufficient heat to raw water containing salt flowing therethrough under pressure to permit subsequent evaporation of said water,

(b) a decompression chamber for collecting a body of unevaporated water and salt above which is a vapor space containing steam, said decompression chamber being free of cooling means to condense the steam therein and at a lower pressure than the raw water containing salt flowing through the preheaters to promote evaporation of water from the raw water

(c) said decompression chamber connected to said last preheater in the flow direction of the raw water flowing through the preheaters,

(d) a control interposed in the flow of raw water between said last preheater and said decompression chamber to regulate the flow of raw water to the decompression chamber, said water partially evaporating with the unevaporated water and salt collecting as said body in the decompression chamber and the evaporated water collecting in said vapor space above said body,

(e) a compressor with its suction side connected to the vapor space of the decompression chamber for withdrawal of steam therefrom and compression and heating of the withdrawn steam to produce superheated steam,

(f) a gas turbine coupled to the steam compressor,

(g) conduit means to flow hot exhaust gases from said gas turbine to said preheaters, the heat of the hot exhaust gases heating the raw water in the preheaters,

(h) a generator also coupled to said gas turbine for generating electricity,

(i) a blow-down line connected to the decompression chamber for passage therefrom of the unvaporized raw water containing salt, and

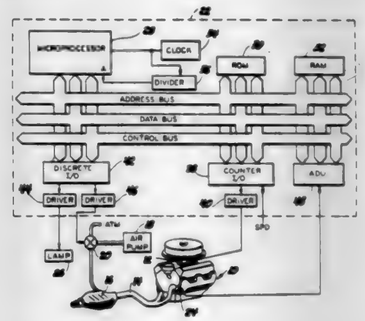
(j) a heat exchanger inserted into the blow-down line for preheating the flowing stream of raw water before the raw water is further heated by said hot exhaust gases.

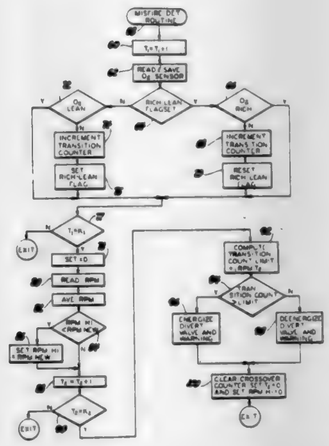
4,445,326

INTERNAL COMBUSTION ENGINE MISFIRE DETECTION SYSTEM

Harry H. Lyon, Farmington Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1982, Ser. No. 380,630
Int. Cl.³ F02B *75/10*
U.S. Cl. 60—277 4 Claims





4. A misfire detection and protection system for use with a motor vehicle internal combustion engine having cylinders into which an air-fuel mixture is drawn and ignited to undergo combustion, an exhaust passage, an oxidizing catalytic converter, air supply means for providing secondary air to the exhaust passage at an air intake point upstream of the converter to establish an oxidizing atmosphere to promote oxidation of certain exhaust gas constituents, and a closed loop air-fuel ratio controller including an oxygen sensor disposed in the exhaust passage upstream of the air intake point that provides a signal representing the oxidizing or reducing state of the exhaust gases, the oxygen sensor providing a signal representing an oxidizing state when the sensor is exposed to an unburned mixture of air and fuel, the system comprising:

means effective to detect the frequency of the changes between the oxidizing and reducing states of the exhaust gases as represented by the oxygen sensor signal, the detected frequency being substantially less than the frequency of the combustion events in one of the cylinders during normal engine operation;

means responsive to the speed of the engine effective to provide an engine cylinder combustion signal related to the cylinder combustion frequency;

means effective to provide an engine misfire signal when the

detected frequency of the changes between the oxidizing and reducing states of the exhaust gases represented by the oxygen sensor signal attains a predetermined relationship to the engine cylinder combustion signal; and

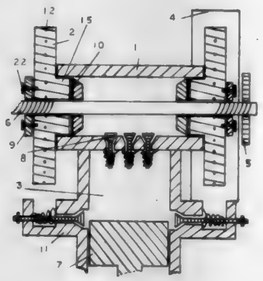
means responsive to the engine misfire signal effective to inhibit admission of air from the air supply means to the air intake point so as to prevent overheating of the oxidizing catalytic converter during the engine misfire condition.

4,445,327

HYDRAULIC CYCLO-JET ENGINE

Naeem B. Gabriel, 615 Greenwood Ave., Apt. #4, Trenton, N.J. 08609

Filed Dec. 23, 1981, Ser. No. 333,909
Int. Cl.³ F15B *7/08, 15/08, 15/18*
U.S. Cl. 60—325 **2 Claims**



1. A hydraulic cyclo jet engine which comprises: a master cylinder of the shape of the capital letter T, a compressing piston, said piston moves in the vertical line of that T shaped cylinder, two assembled sides for that master cylinder, the sides are fixed to the master cylinder by screws, each one of these sides has semi conical carvings in it, these semi conical carvings are carved in a regular manner around the circumference of said side and they lean to one circular direction,

two rotating discs, and each rotating disc has a center hole in it, the rotating disc is of two portions, one portion is small and the other portion is big, the small portion of the rotating disc has plurality of pockets on it, at the bottom of each pocket there is a draining duct, the end of each draining duct opens in the thickness of the bigger portion of the rotating disc with an angle,

each of the small portions of the rotating discs fits exactly inside the master cylinder next to its assembled sides,

an axle and nuts, that axle goes through holes in the sides and in the rotating discs, the nuts are screwed on the axle to lock the parts together,

plurality of one way valves, these valves are positioned at the junction of the pumping vertical line and the cylinder,

two collecting containers, with one collecting container for one rotating disc.

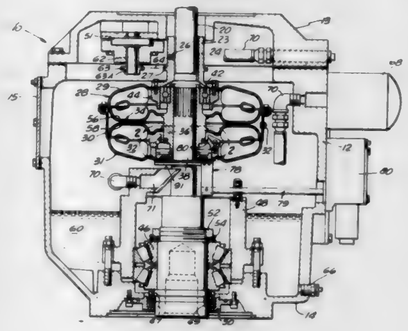
4,445,328

VARIABLE FILL FLUID COUPLING WITH CHARGING LIQUID COLLECTOR

Geoffrey H. Michels, Indianapolis, Ind., assignor to Indian Head Incorporated, New York, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,315
Int. Cl.³ F16D *33/06*
U.S. Cl. 60—351 **10 Claims**

1. In a variable fill-type liquid coupling having a housing, a driving impeller rotatably mounted in the housing, a driven runner rotatably mounted within the housing in liquid coupling relation with the impeller, an active liquid chamber between the runner and the impeller, a mouth for receiving charging liquid directed into the active liquid chamber, and means for directing charging liquid from a liquid source to produce a flowing stream of liquid to enter the mouth, the improvement comprising charging liquid collection means mounted in the mouth for forcing the flowing stream of liquid into the active



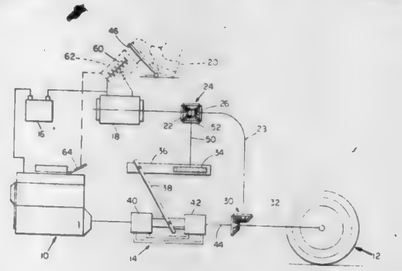
liquid chamber, the charging liquid collection means being mounted to rotate with the driving impeller.

4,445,329

FULL TORQUE TRANSMISSION CONTROL

Benjamin B. Drisko, P.O. Box 717, Camden, Me. 04843

Continuation-in-part of Ser. No. 148,163, May 8, 1980, abandoned. This application Mar. 17, 1982, Ser. No. 359,047
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—431 **2 Claims**



1. In a motor vehicle having an internal combustion engine with a throttle, a transmission with a variable output-to-input speed ratio, and drive wheels coupled to the engine through such transmission, the improvement comprising

a throttle control means connected to said throttle which puts said throttle in one of two positions, the first fully open and the second an idle position,

a throttle and transmission control system including

desired vehicle speed input means responsive to operator input producing a one time selected signal indicative of the drive wheel speed desired by the operator,

actual vehicle speed means connected to said drive wheels for generating a signal proportional to the drive wheel speed of the vehicle,

comparing means connected to said desired vehicle speed and actual vehicle speed means and to said transmission for comparing said desired speed means and said actual speed means and, responsive to results from such comparing, generating a control signal changing the output-to-input speed ratio of said transmission, said throttle control means being controlled automatically by the engine, and

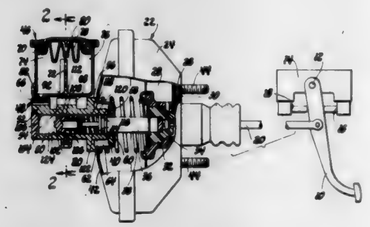
said transmission control system being arranged and connected to be effective independently of the one-time selected signal, when said throttle control means puts said throttle in full open position, to increase the output-to-input speed ratio of said transmission reducing the engine power output whenever said drive wheel speed is more than the indicated desired vehicle speed and to reduce the output-to-input speed ratio of said transmission increasing the engine power output whenever the drive wheel speed is less than the indicated desired speed.

4,445,330

MASTER CYLINDER ASSEMBLY AND BOOSTER

Wolfgang Melinat, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1981, Ser. No. 279,743
Int. Cl.³ F15B *7/00*
U.S. Cl. 60—545 **6 Claims**



1. A master cylinder assembly having the characteristic of a short overall axial length and including compensation valve mechanism actuatable without lost brake pedal travel in the axial direction normally required to move pressurizing pistons to close and open compensation valves, said master cylinder assembly comprising:

a housing having a bore section provided with a bore extending axially therein and containing first and second pressurizing chambers and first and second pressurizing pistons axially movable in said bore, each of said pistons having a single seal continuously reciprocably sealing said pistons relative to the wall of said bore so as to require a short overall piston axial length and consequently contribute to the short overall master cylinder length, first and second housing sections extending laterally outward from and transverse to said master cylinder assembly housing bore section so as not to extend the overall axial length of said master cylinder assembly, said first and second transverse housing sections respectively having first and second passages therein, each of said passages extending into said housing bore section and transversely intersecting one of said pressurizing chambers, each of said passages having one end adapted to be connected to a brake circuit, first and second reservoir mounting bosses respectively on said first and second transverse housing sections at laterally outward locations relative to said housing bore section and respectively having third and fourth passages transversely intersecting the other ends of said first and second passages within said first and second transverse housing sections, a brake fluid reservoir mounted on said bosses and having first and second ports in respective brake fluid communication with said third and fourth passages, and first and second normally closed valves respectively in said first and second passages fluidly between said pressurizing chambers and said third and fourth passages;

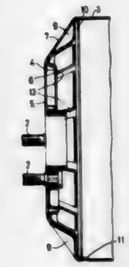
and means including first and second valve operator means respectively positioned externally on said first and second transverse housing sections and operable in response to brake pedal actuation and release for closing and opening said first and second valves in a manner that said valves are closed when said valve operator means operate in response to brake pedal actuation and are opened when said operator means operate in response to brake pedal release, the positioning of said valves and said valve operator means on said transverse housing sections instead of said bore section in cooperation with the response of said valves to brake pedal actuation and release rather than axial movement of said pistons further contributing to the short overall axial length of said master cylinder assembly.

4,445,331

LOW-PRESSURE CASING FOR A BRAKE BOOSTER

Rolf Weiler, Frankfurt-Sindlingen; Gilbert Bischoff, Hattersheim, and Rudolf Schlag, Frankfurt-Sossenheim, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 2, 1981, Ser. No. 307,703
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041883
Int. Cl.³ F16J *11/02*
U.S. Cl. 60—547.1 **17 Claims**



1. A low-pressure casing shell for a brake booster for use in an automotive vehicle adapted to mate with a second similarly shaped casing shell;

said two casing shells are designed to be sealingly interconnected, each of said casing shells including a substantially cylindrical casing section and a casing end wall section having a plane central end wall and a truncated-cone shaped section interconnecting said central end wall and said cylindrical casing section, the base of said truncated-cone shaped section being connected to said cylindrical casing section;

a circular reinforcement plate abutting against an inner surface of said central end wall, said plate being fastened to a selected one of a master brake cylinder and said vehicle by fastening bolts;

reinforcement elements disposed in a selected one of said truncated-cone shaped section and said reinforcement plate extending in the direction of the base of said truncated-cone shaped section; and

said reinforcement plate integrally including a prop ring disposed within said casing bearing against the inner surface of a circumferential edge of said casing at the transition from said truncated-cone shaped section into said cylindrical casing section.

4,445,332

HYDRAULIC HOSE ASSEMBLY AND METHOD

Jerome A. Thies, Geneseo, Ill., and Mark E. Tietje, Davenport, Iowa, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 24, 1982, Ser. No. 361,307
Int. Cl.³ F16L *39/02*
U.S. Cl. 60—455 **24 Claims**

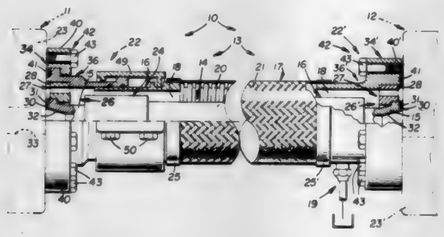
1. A hose assembly (13) comprising:

a flexible high-pressure hose (14),

an impervious flexible jacket (17) surrounding said hose (14) in out-of-contact relationship therewith to define a fluid chamber (18) therebetween, and

mounting means (22) for mounting each of said hose (14) and said jacket (17) on a support member (23) and maintaining them in out-of-contact relationship relative to each other, said mounting means (22) including first means (26) for mounting said hose (14) on said support member (23)

under a predetermined first sealing pressure and second means (**34**) for mounting said jacket (**17**) about said hose (**14**) and on said support member (**23**) under a predetermined second sealing pressure less than said first sealing pressure and for maintaining said jacket (**17**) in said out-of-



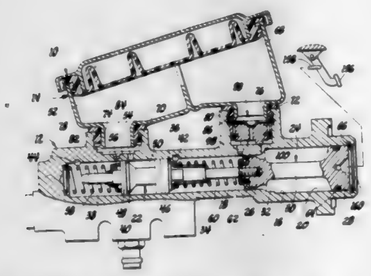
contact relationship relative to said hose (**14**), said first means (**26**) including clamping means (**27**) for applying said first sealing presure in response to simultaneous application of said second sealing pressure and having port means (**35**) for communicating fluid therethrough and to said chamber (**18**).

4,445,333

VALVE ASSEMBLY

John R. Coleman, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 16, 1981, Ser. No. 284,062
Int. Cl.³ B60T *11/08*
U.S. Cl. 60—578 **3 Claims**



1. In a master cylinder having a fluid reservoir, a master cylinder body with a stepped bore formed therein, a mating stepped piston received in said bore and actuatable therein in apply and release modes, said bore and said piston defining a large diameter low pressure high volume displacing pressurizing first chamber and a smaller diameter high pressure low volume displacing pressurizing second chamber, and a valve chamber formed in said master cylinder body with a side wall and a bottom surface and a top opening into said reservoir, said bottom surface having first and second compensation ports extending therethrough and into said bore, said first compensation port being continually connected only with said first chamber of said bore and said second compensation port being connected only with said second chamber of said bore when said piston is in the fully released position of said release mode, an improved compensation control and blow-off unit valve assembly operable during the apply mode of said piston to selectively vent said first chamber and comprising:

a valve body having a lip type compensating seal extending about the outer periphery thereof and in sealing contact with said valve chamber side wall to permit fluid flow between said valve body and said valve chamber side wall in one direction only;

said valve body having a passage extending axially therethrough and connecting said reservoir and the portion of said valve chamber between said valve body and said valve chamber bottom surface and having a normally closed check valve cooperating therewith which when closed prevents unrestricted flow from said reservoir through said passage to said compensation ports when said piston is in either apply or release modes;

and means comprising a unitary valve body retainer and a check valve spring and a valve member forming the movable part of said check valve, said means being formed respectively by a circumferentially closed annular retainer ring operatively engaging said valve body and said valve chamber side wall to hold said valve body in a fixed position in said valve chamber, a cantilevered spring extending radially inwardly from said ring and terminating with its free end positioned centrally within said ring, and said valve member being formed on the free end of said cantilevered spring and cooperating with a valve seat formed by the one end of said valve body passage opening toward said reservoir to define said check valve;

and a continuously open restricted flow passage formed through said valve member and bypassing said check valve between said reservoir and said first chamber and providing a controlled leak accommodating a delayed pressure equalization between said reservoir and said first chamber under static pressure conditions;

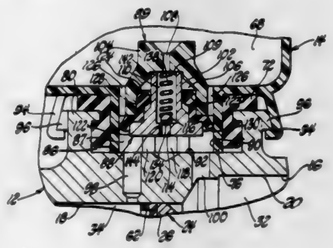
said check valve opening in response to a predetermined blow-off pressure generated in said first chamber during pressure generating actuation of said piston from said fully released position in said apply mode to vent said first chamber to said reservoir.

4,445,334

QUICK TAKE-UP MASTER CYLINDER

Dennis P. Derrick, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1981, Ser. No. 296,461
Int. Cl.³ B60T *11/26*
U.S. Cl. 60—585 **1 Claim**



1. In a master cylinder having a molded reservoir, a separate master cylinder body to which said reservoir is attached, and a quick take-up valve module, the improvement comprising:

said master cylinder reservoir having a bottom having a tubular spigot extending downwardly and integrally molded therewith to define a valve chamber, said spigot extending into a recessed boss formed as a part of said master cylinder body and engaging the bottom of the boss recess to define therewith the lower part of said valve chamber; integrally molded retainer means extending from said reservoir bottom and snapping over said boss to retain said reservoir on said master cylinder body, said boss having means cooperative with said retainer means for that purpose, and a valve body integrally molded with said reservoir bottom in the upper portion of said spigot and extending into the fluid chamber of said reservoir above the upper surface of said bottom, said valve body having a passage formed axially therein and opening into the reservoir fluid chamber at its upper end, and other passage means radially adjacent said spigot and connecting the reservoir fluid chamber and said valve chamber said valve body further having a shouldered recess opening downwardly into said valve chamber;

a valve seat member positioned within said valve chamber and having a flange operatively engaging the shoulder of said valve body shouldered recess and a valve-containing extension extending into said shouldered recess, a check valve passage extending from the lower portion of said valve chamber through said valve seat member and mating with said valve body passage and having check valve means therein acting to permit fluid flow only from the lower part of said valve chamber to said reservoir under control of a differential pressure exerted thereacross, valve seat support means extending downwardly from said flange and engaging the bottom of the boss recess while permitting fluid flow between the lower part of said valve chamber and said check valve passage, a valve seal sealingly engaging said valve seat member and said valve body at said shouldered recess to prevent fluid flow between said valve seat member and said valve body, said valve seal also having a flared lip extending generally radially outward and downward beyond said valve seat member and said valve body and engaging the inner wall of said spigot to close said other passage means against fluid flow from said valve chamber to said reservoir but permitting fluid flow through said other passage means from said reservoir to said valve chamber;

and a continuously open restricted flow passage bypassing said check valve means between the fluid chamber of said reservoir and said lower part of said valve chamber and providing a controlled leak accommodating a delayed pressure equalization between said reservoir and the lower portion of said valve chamber under static pressure conditions;

said check valve opening to a predetermined blow-off pressure generated in the lower portion of said valve chamber during a predetermined master cylinder actuation stage to vent the lower portion of said valve chamber to said reservoir.

4,445,335

MASTER CYLINDER ASSEMBLY

Wolfgang Melinat, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1981, Ser. No. 279,742
Int. Cl.³ B60T *11/28*
U.S. Cl. 60—589 **1 Claim**

1. In a master cylinder assembly:

a housing having a bore formed therein;

a pressurizing piston in said bore defining therewith a fluid pressurizing chamber, said piston movable between an active position to pressurize said chamber and an inactive position when said chamber is not pressurized, said master cylinder assembly having the characteristic of compactness along the axis of said bore;

a fluid reservoir in communication with said housing;

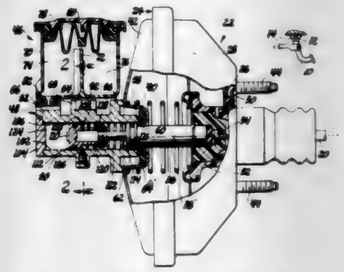
said housing also having a valve chamber formed therein, a first port connecting said reservoir and said valve chamber, a passage extending transversely skew to the axis of said bore to facilitate said characteristic of compactness and intersecting said pressurizing chamber;

said passage having one end defining a second port opening into said valve chamber and having another end defining a third port adapted to be connected to a pressurizable fluid circuit;

a valve in said valve chamber cooperating with said first port and having first means continuously urging said valve toward engagement with said first port to close said first port, and a cam ramp on said valve engageable for moving said valve;

a valve control member in said valve chamber having a cam thereon engaging said cam ramp and having a stem extending axially through said second port and into said passage where said passage intersects said pressurizing chamber so that one stem end is positioned in said pressurizing chamber to be cammingly engageable by said piston, said stem configured to permit fluid flow through said passage and second port, and second means acting on said valve control member and continuously urging said cam into engagement with said cam ramp;

said piston acting in a camming manner when moving to said inactive position to cause said valve control member to



move against said cam ramp and act to move said valve out of closing engagement with said first port, opening a fluid path between said reservoir and said pressurizing chamber;

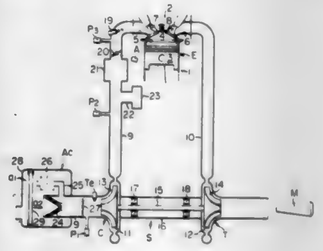
said piston acting when moving to said active position to disengage said valve control member and permit said first means to move said valve to close said first port and to move said valve control member against the force of said second means to reposition said valve control member for valve opening actuation when said piston again moves to said inactive position.

4,445,336

INTERNAL COMBUSTION ENGINE EQUIPPED WITH SUPERCHARGER

Kazuo Inoue, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1982, Ser. No. 346,379
Claims priority, application Japan, Feb. 6, 1981, 56-16340; Feb. 6, 1981, 56-16341; Feb. 10, 1981, 56-18557; Feb. 23, 1981, 56-25116
Int. Cl.³ F02B *33/44*; F02D *23/00*
U.S. Cl. 60—605 **6 Claims**



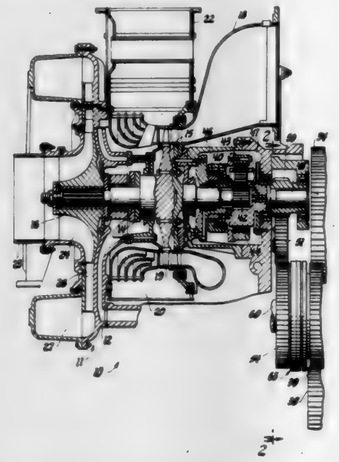
1. In an internal combustion engine equipped with a supercharger, including an intake port of the engine, an intake passage communicated with said intake port and atmosphere, and a compressor interposed in said intake passage for compressing the intake air from atmosphere flowing through said intake passage, the improvement wherein a control valve adapted for controlling backflow of intake air is disposed inside said intake passage upstream of and in series with said compressor in order to prevent backflow of the intake air flowing through said intake passage and a branch passage of smaller diameter than that of the intake passage branches from said intake passage between said control valve and said compressor and communicates with the atmosphere.

4,445,337

ENGINE WITH SPEED RESPONSIVE MULTI-RATIO TURBOCHARGER DRIVE

Charles H. McCreary, Oak Park, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 24, 1982, Ser. No. 422,545
Int. Cl.³ F02B 37/10
U.S. Cl. 60—608 4 Claims



1. In combination, an internal combustion engine having a turbocharger,

supplemental primary mechanical drive means in the engine for maintaining a minimum primary operating speed ratio of the turbocharger relative to engine speed when exhaust energy is insufficient to provide a higher turbocharger speed, said primary speed ratio providing charging air adequate for engine operation throughout its speed range, and the improvements comprising

secondary mechanical drive means in the engine for maintaining a minimum secondary operating speed ratio of the turbocharger relative to engine speed lower than the primary speed ratio and requiring reduced energy but capable of providing sufficient charging air for engine operation in a lower portion of its operating speed range, and

speed responsive means in the primary drive means and operative to maintain driving operation of the primary drive means at engine speeds above said lower portion of the engine speed range and to disengage the primary drive means to allow lower speed driving of the turbocharger by the secondary drive means during engine operation within said lower portions of its operating speed range,

whereby an energy efficient two speed supplemental turbocharger drive system is provided.

4,445,338

SWIRLER ASSEMBLY FOR A VORBIX AUGMENTOR

Stanley J. Markowski, East Hartford, Conn., and Richard S. Reilly, Lake Park, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

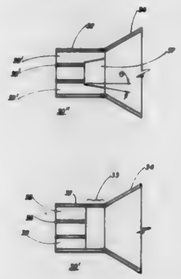
Filed Oct. 23, 1981, Ser. No. 314,285
Int. Cl.³ F02G 1/00; F02K 1/38
U.S. Cl. 60—748 4 Claims

1. A swirler assembly for a VORBIX augmentor comprising:

a swirler section having means for generating a swirling air flow and a linear air flow;

a diffuser section section; and

a constant area mixing section connected at one end to the



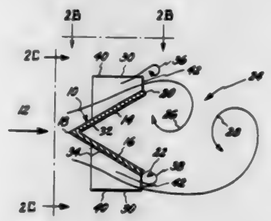
output of said swirler section and at the other end to the furthermost upstream end of said diffuser section wherein said airflows are intermixed prior to entering said diffuser section.

4,445,339

WINGTIP VORTEX FLAME STABILIZER FOR GAS TURBINE COMBUSTOR FLAME HOLDER

Lewis B. Davis, Jr., Schenectady, and Norman R. Dibellus, Ballston Spa, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,670
Int. Cl.³ F02C 3/14
U.S. Cl. 60—749 9 Claims



1. A flameholder arrangement for a gas turbine combustor or the like, said arrangement comprising:

a primary flameholder in the form of an elongated V-gutter extending across a main flow stream of gaseous components within the combustor, said V-gutter having a pair of elongated walls joined at a lineal vertex and diverging to respective trailing edges, and said V-gutter oriented with the vertex pointed upstream, said V-gutter being effective to shed first vortices from trailing edges of said V-gutter which circulate in essentially two-dimensional flow fields in planes normal to said elongated V-gutter to produce a downstream wake;

a plurality of winglets on outer surfaces of said V-gutter elongated walls;

said winglets being disposed at positions with respect to said trailing edges and at angles with respect to the main flow stream effective to shed second vortices rotating about axes generally parallel to the main flow stream; and

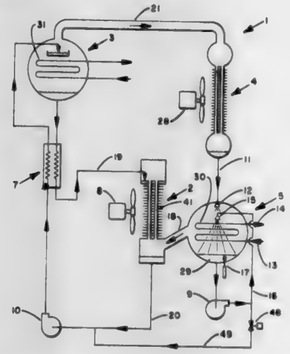
said first and second vortices producing a three-dimensional resultant flow in the wake downstream of said V-gutter effective to enhance mixing of the gaseous components.

4,445,340

DILUTION CYCLE CONTROL FOR AN ABSORPTION REFRIGERATION SYSTEM

Robert C. Reimann, Lafayette, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 6, 1983, Ser. No. 456,131
Int. Cl.³ F25B 15/00
U.S. Cl. 62—101 9 Claims



9. A method of operating an absorption refrigeration system having a generator, an evaporator, an absorber, and a heat exchanger, with a solution pump for circulating weak absorbent solution from the absorber through the heat exchanger to the generator, and with a refrigerant pump for circulating liquid refrigerant from a sump in the evaporator through a dilution cycle control valve to the inlet of the solution pump to provide a dilution cycle when the refrigeration system is shut down, said method comprising the steps of:

sensing shutdown of the absorption refrigeration system;

generating a control signal after expiration of a preselected time period measured from the sensed shutdown of the absorption refrigeration system, during which the absorption refrigeration system is not restarted;

turning on the refrigerant pump and the solution pump, and opening the dilution cycle control valve to provide a dilution cycle for the absorption refrigeration system in response to generation of the control signal;

sensing the amount of refrigerant in the evaporator; and

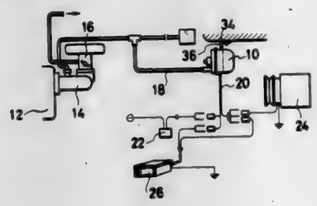
turning off the refrigerant pump and the solution pump, and closing the dilution cycle control valve, to end the dilution cycle when a preselected low amount of refrigerant is sensed in the evaporator.

4,445,341

AUTOMATIC SWITCHING SYSTEM FOR CAR COOLER

Mikio Hayashi, 26-5, Toyotama-minami 2-chome, Nerima-ku, Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,262
Int. Cl.³ B60H 3/04; H01H 35/40
U.S. Cl. 62—133 2 Claims



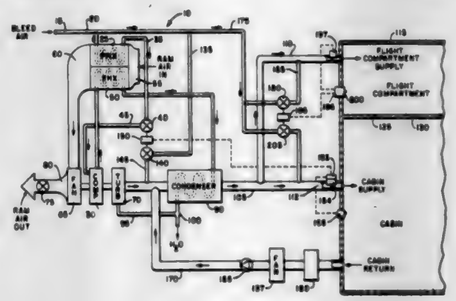
1. An automatic switching system for car cooler comprising a diaphragm room which is divided into two compartments by a diaphragm, a vacuum pressure which varies in accordance with the running conditions being introduced from an intake manifold of an engine into a first pressure compartment and the other open compartment being in air communication, a dielectric base plate which is provided adjacent to the open compartment and has a plurality of contacts to which a lead wire of an electric power source for a compressor of car cooler is connected, a center rod one end of which is attached perpendicular to the center of the diaphragm and the middle portion is reciprocably inserted into a center hole of the base plate, a switching member for making/breaking contacts attached to a spring member which is provided in the pressure compartment in compliance with the axial direction of the center rod for pressing the diaphragm to the direction of the base plate so that, when the vacuum pressure of the intake manifold is lowered in the acceleration period in which maximum engine power is needed, the diaphragm and the center rod is pressed by the spring member and the switching member is separated from the contacts to cut off the electric source of the compressor, and a slide member which is slidably fitted to the center rod side of the switching member and enforced by a slide spring whose center is fixed to a cover member of base plate and both ends are elastically in contact with the periphery of the slide member so as to prevent the surging of the center rod.

4,445,342

MULTI-ZONE TEMPERATURE CONTROL IN AIR CYCLE REFRIGERATION SYSTEMS

John L. Warner, Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 26, 1982, Ser. No. 412,046
Int. Cl.³ F28B 9/00
U.S. Cl. 62—172 2 Claims



1. An air cycle refrigeration system wherein pressurized air received by said system is expanded and cooled in a turbine and exhausted therefrom to first and second zones, said refrigeration system including control valve means for regulating the temperature of air exhausted from said turbine in response to the temperature of air supplied to said second zone, a first conduit providing uncooled air for mixture with said cooled air supplied to said first zone and a first trim valve communicating with said first conduit for regulating the flow of uncooled air to said first zone for regulation of the temperature thereof, said air cycle refrigeration system being characterized by:

a second conduit providing uncooled air for mixture with said cooled air supplied to said second zone;

a second trim valve communicating with said second conduit for regulating the flow of uncooled air to said second zone for the regulation of the temperature thereof; and

an actuator operating both said first and second trim valves in response to the temperature of said first zone, and effecting an opening of each of said trim valve while the other remains closed for maintenance of desired temperature in said first and second zones by direct control of said first and second trim valves to adjust the mixture of un-

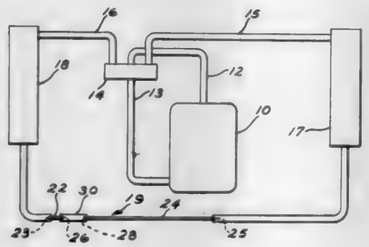
cooled air with cooled air admitted to said first and second zones and indirect control of said control valve means by adjustment of the temperature of air supplied to said second zone.

4,445,343

SONIC RESTRICTOR MEANS FOR A HEAT PUMP SYSTEM

William J. McCarty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 4, 1983, Ser. No. 464,048
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—324.1 **8 Claims**



1. A reversible refrigeration system adapted for heating and cooling, a compressor, an indoor heat exchanger and an outdoor heat exchanger connected in reversible refrigerant flow relationship, a valve for reversing the flow of refrigerant through said system to operate said system in a heating or cooling operation with each of said heat exchangers arranged interchangeably as a condenser or as an evaporator, restrictor means connected between said heat exchangers for expanding refrigerant from condenser pressure to evaporator pressure during both the heating and the cooling operation, said restrictor means dimensioned for interjecting greater flow restriction between said heat exchangers when flow of refrigerant is in one direction than when the flow of refrigerant is in the other direction, comprising:

a first member having a bore of predetermined length and diameter therethrough;

a second member having a bore of a greater predetermined length and diameter therethrough relative to said first member;

volume means connecting said first and second members in series flow arrangement;

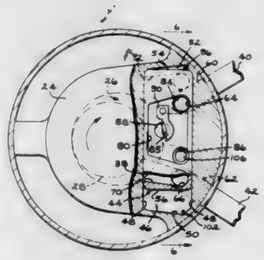
said diameter and length of each of said bores being dimensioned so that in said cooling operation, refrigerant, because of the length and diameter of the bore of said first member, flows therethrough in liquid state at below its sonic velocity and then, due to the length and diameter of the bore of said second member, emerges therefrom in a gaseous/liquid state at below its sonic velocity and at the cooling operating flow rate, and in said heating operation, refrigerant, because of the length and diameter of the bore of said second member, flows therethrough as a gaseous/liquid mixture and then, due to the length and diameter of said bore of said first member, emerges at its sonic velocity thereby limiting the flow of refrigerant to the heating operation flow rate.

4,445,344

REVERSIBLE REFRIGERATION SYSTEM ROTARY COMPRESSOR

William T. Ladusaw, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 7, 1982, Ser. No. 415,064
Int. Cl.³ F25B *13/00*; F04C *18/00*
U.S. Cl. 62—324.6 **5 Claims**



1. A reversible rotary refrigerant compressor comprising:

a hermetic casing containing a high pressure refrigerant gas;

a compressor unit positioned in said casing, including a cylinder having an annular chamber, spaced upper and lower end walls connecting with said cylinder and enclosing said annular cylinder, a rotor eccentrically rotatable within said cylinder with the peripheral surface of said rotor arranged to move progressively into sealing relation with successive portions of said annular cylinder;

a reversible motor in said casing having a shaft thereon extending into said unit for driving said rotor;

a radial slot in said cylinder communicating with said chamber;

a blade slidably positioned in said radial slot;

means biasing said blade against said rotor for following said rotor, thereby to divide said cylinder into interchangeable high and low pressure sides;

a valve chamber in said cylinder communicating with at least portions of said high and low pressure sides of said annular cylinder;

a first fluid passageway communicating between a first opening in said casing and said valve chamber;

a second fluid passageway communicating between a second opening in said casing and said valve chamber;

a switch-over member movable between end walls of said valve chamber, said switch-over member having a first low pressure cavity and a second low pressure cavity, means responsive to rotor rotation in one direction for moving said switch-over member to a first position during rotation of said rotor in said one direction wherein a passageway is established through said first cavity between said first fluid passageway and one side of said cylinder functioning as the low pressure side, and means responsive to rotor rotation in the other direction for moving said switch-over member to a second position during rotation of said rotor in said other direction wherein a passageway is established through said second cavity between said second fluid passageway and the other side of said cylinder functioning as the low pressure side;

a first high pressure port in said switch-over member communicating with said first fluid passageway when said switch-over member is in its first position;

a second high pressure port in said switch-over member communicating with said second fluid passageway when said switch over member is in its second position; and

a high pressure valved opening in said switch-over member being in communication with said other side of said cylinder functioning as the high pressure side when said switch-over member is in its first position to establish a high pressure passageway between said other side of said cylinder and said second fluid passageway during rotation of said rotor in said one direction, and being in communication with said one side of said cylinder functioning as the high pressure side when said switch-over member is in its second position to establish a passageway between said one side of said cylinder and said first fluid pasageway during rotation of said rotor in said other direction.

4,445,345

PANTY-HOSE WITH AN ELASTIC BELT INCORPORATED THEREIN AND METHOD

Pierre C. A. Bédier, Moreuil, France, assignor to Societe Breilly S.A., Moreuil, France

Filed Feb. 10, 1981, Ser. No. 233,115
Claims priority, application France, Feb. 20, 1980, 80 03672
Int. Cl.³ A41B *9/02*
U.S. Cl. 66—177 **7 Claims**



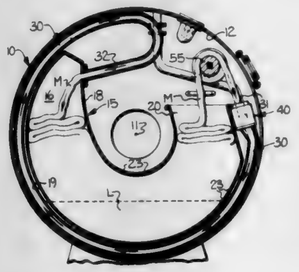
1. Mesh tights or panty-hose made from two knitted hose elements, slit and joined by a seam, with an elastic belt incorporated therein constituted by an elastic yarn added to the basic yarn, in which the elastic yarn is floated over a large fraction of its length, wherein before the slit and seam are made the elastic yarn is partially knitted one wale out of two at each course over the height of the elastic belt, in a strip a few centimeters wide, with the exception of the central wale where the elastic yarn is floated, at the centre of which strip is located the seam on the finished tights which corresponds to the location of the central wale.

4,445,346

APPARATUS FOR WET PROCESSING TEXTILE MATERIAL IN ENDLESS ROPE FORM

Fritz K. Witt, Charlotte, N.C., assignor to Keiltex Corporation, Charlotte, N.C.

Filed Feb. 7, 1983, Ser. No. 464,562
Int. Cl.³ D06B *3/26, 3/28*
U.S. Cl. 68—178 **7 Claims**



1. An improved apparatus for wet processing textile material in endless rope form and traveling in an endless path about a horizontal axis within a predetermined compact space comprising:

a compact vessel for containing a treating bath of processing liquid in a lower portion thereof and having a predetermined inside peripheral cross-sectional dimension about the horizontal axis;

an elongate accumulator section within said vessel in said lower portion thereof for receiving, accumulating and passing portions of the rope of material therethrough and through the treating bath about the horizontal axis, said accumulator section having a length at least one half of the inside peripheral dimension of said vessel;

a rope transport tube within said vessel for receiving at an entrance end thereof the rope of material from one end of said accumulator section and for passing the rope of material therethrough about the horizontal axis and for discharging the rope of material at an exit end thereof into the other end of said accumulator section, said transport tube having a length of at least two-thirds of the inside peripheral dimension of said vessel; and

jet means positioned generally at said entrance end of said transport tube for creating a turbulent flow of processing liquid through said transport tube for carrying the rope of material therethrough and for treating the rope of material with the processing liquid under turbulent conditions;

whereby, an endless path of travel for the rope of material is provided completely within said compact vessel which is longer than the inside peripheral cross-sectional dimension of said vessel allowing the travel of the rope of material through said transport tube to be maximized to in turn maximize treatment of the rope of material by the turbulent flow of processing liquid within said transport tube.

4,445,347

PADLOCK

Chih-Shan Tseng, No. 10-3, Cheng Shin, Pin Tung, Taiwan

Filed Jun. 29, 1981, Ser. No. 278,055
Int. Cl.³ E05B *67/22*
U.S. Cl. 70—38 B **15 Claims**



1. A padlock comprising

a lock body that includes

an internally located, axially extending guide bar and an annular bore through one end of said lock body, said bore being closed at its inner end and defined by said guide bar and inner walls of said lock body,

a first plurality of pin holes in said lock body inner wall axially spaced therealong and in communication with said annular bore,

a second plurality of pin holes in said lock body located radially spaced around said closed end of said annular bore and in communication therewith,

a slot located outside said bore adjacent said closed end thereof and in communication therewith, and

a first and second recess in the other end of said lock body;

a U-shaped lock bar having a shorter leg and a longer leg, said longer leg thereof being resiliently mounted in said first lock body recess and movable between an open, unlocked position and a closed, locked position, said shorter bar leg having a notch on the inward side near the end thereof;

a locking element movable in said lock body slot for engaging said lock bar notch when in the closed position;

a cylindrical lock barrel mounted for rotation in either direc-

tion in said lock body annular bore, said lock barrel including

a central bore completely therethrough and defined by inner walls, the diameters of said central bore and said guide bar being selected so as to provide an annular gap between said guide bar and said lock barrel inner walls for receiving a matching key having radially extending lock teeth,

an axially extending slot in radial communication along the inner side with said central bore, said lock barrel slot for receiving the lock teeth of the key,

a first plurality of pin holes extending radially completely through said lock barrel walls, and axially and radially located so as to be in communication between corresponding ones of said first plurality of lock pin holes and said barrel slot, and

a second plurality of pin holes extending axially in the barrel inner walls at the barrel end adjacent the closed end of said lock body, said second plurality of pin holes being in communication with corresponding ones of said second body pin holes when said barrel is in an aligned position;

a first set of resiliently mounted pins in corresponding ones of said first plurality of body and barrel pin holes; and

a second set of resiliently mounted pins in corresponding ones of said second plurality of body and barrel pin holes.

4,445,348

COMBINATION LOCK

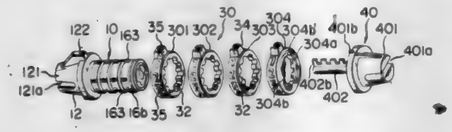
Hisashi Saitoh, Kasugai, Japan, assignor to Saikosha Works Ltd., Kasugai, Japan

Filed Jul. 22, 1981, Ser. No. 285,718

Claims priority, application Japan, Jul. 30, 1980, 55-109706[U]

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—312 **8 Claims**



7. A cylinder type combination lock comprising:

a first body having a head portion and a cylindrical core portion formed with a key bore,

a plurality of inner rings, each of said inner rings having a slot in its inner circumference and at least one protrusion on its outer circumference,

first mounting means for mounting said inner rings on said cylindrical core portion to provide for rotation of said inner rings on said cylinder core portion, said inner rings being mounted rotatably to a position where the slots thereof are in groove alignment with said key bore to form a key groove,

a second body having a head portion and a key-like projection provided with key teeth of the same number as said inner rings, said key-like projection being adapted to be inserted into said key groove and to be locked therein when at least one of said inner rings is turned to be out of said groove alignment,

dial rings of the same number as said inner rings, each of said dial rings having a plurality of indicia on its outer circumference,

second mounting means mounting said dial rings on said inner rings, said second mounting means comprising at least one notch on said dial ring for accommodating said protrusion on said inner ring such that said dial ring may be mounted on said inner ring at a desired relative angular position, one of said dial rings constituting an outermost dial ring, one of said inner rings constituting an outermost inner ring and,

third mounting means mounting said outermost dial ring on said outermost inner ring, said third mounting means comprising a biasing element which is manually positioned in a mounting disposition to biasingly mount said outermost dial ring on said outermost inner ring and which is manually positioned to a release disposition to release said outermost dial ring from said outermost inner ring, whereby said dial rings are thereby removable from said inner rings to permit changing the rotational position of each dial ring relative to its respective inner ring to thereby change the combination of said lock without requiring any tools, said biasing element being a wire spring having a bent portion and two leg portions, said two leg portions being substantially parallel to one another, said outermost inner ring having a groove for receiving said leg portions, said bent portion of said wire spring being manually movable to thereby spread said leg portions so that the latter disengages from said groove in said outermost inner ring.

4,445,349

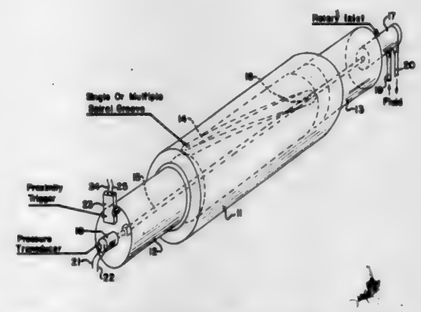
VARIABLE CROWN ROLL SHAPE CONTROL SYSTEMS

Werner W. Eibe, McCandless Township, Allegheny County, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 17, 1981, Ser. No. 322,196

Int. Cl.³ B21B *37/08*

U.S. Cl. 72—17 **9 Claims**



1. A rolling mill system for flat rolled products comprising a cylindrical roll body formed with at least one constant cross-section closed internal channel spaced uniformly from its working surface extending spirally as a fraction of a turn only around a portion of the cylindrical body surface from end to end thereof and adapted to contain hydraulic fluid under pressure and fluid pressure measuring means connected with that channel, thereby continuously measuring the pressure on the roll of that portion only of the moving flat rolled product immediately opposite that portion only of the channel at the work contact line of the rotating roll.

4,445,350

EXTRUSION METHOD USING HOT LUBRICANT

Masao Nishihara, Kyoto; Tomiharu Matsushita, Nishinomiya; Masataka Noguchi, Nishinomiya; Kazuo Arimura, Akashi; Akira Ohte, Kobe; Tetsuo Kimura, Kitakyushu; Akira Iwai, Kitakyushu, and Nobuo Hayashida, Kitakyushu, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

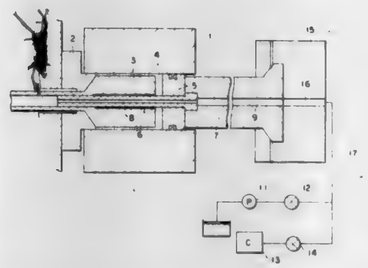
Filed Nov. 27, 1981, Ser. No. 325,552

Claims priority, application Japan, Nov. 29, 1980, 55-169908

Int. Cl.³ B21C *23/32*

U.S. Cl. 72—38 **4 Claims**

1. A method for hot lubricated metal extrusion in which a billet of a metal selected from the group consisting of copper and a copper alloy is extruded into a tubular form by means of a die and mandrel with an organic lubricant interposed between said billet and die and mandrel, said method comprising feeding air into the extruded tubular product through a feed passage in said mandrel to burn off the carbide of said lubricant



deposited on the inner surface of said extruded tubular product, said air being fed at a rate of Q falling in the range of $1.8d \times R \times V \leqq Q \leqq 14.2d \times R \times V$, wherein d is the inner diameter of the product in cm, R is the extrusion ratio, and V is the billet extruding speed in cm/sec.

4,445,351

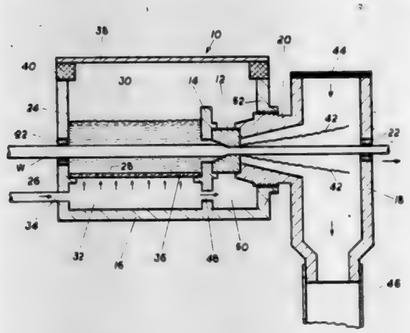
FLUIDIZED BED LUBRICANT CONTAINER

Gary J. Thompson, Akron, and C. H. Carey, Cuyahoga Falls, both of Ohio, assignors to Morgan Construction Company, Worcester, Mass.

Filed Mar. 15, 1982, Ser. No. 357,928

Int. Cl.³ B21C *9/00*

U.S. Cl. 72—43 **9 Claims**



1. In combination with a die assembly through which filamental material travels to be reduced, and which prior to said material entering said die assembly a dry granular lubricant compound is applied to said material upon its path of travel and when in said die assembly, heat is generated in the reduction process, a material lubricant assembly comprising:

a container means, comprising:

a first enclosure for retaining said lubricant and constructed to receive said material in a manner to cover a substantial portion of said material with said lubricant prior to its entry into said die assembly,

a second enclosure adjacent said first enclosure for housing said die assembly,

plenum chamber means associated with said first enclosure and communicating with said second enclosure around said die assembly for receiving pressurized fluid,

dividing means for forming said first and said second enclosures and said plenum chamber, including means between said plenum chamber and said first enclosure constructed and arranged to uniformly direct said pressurized fluid into said lubricant in a manner to fluidize said granules of said lubricant compound so as to cause said lubricant to adhere uniformly to said material, and further including means between said first enclosure and said second enclosure for supporting said die assembly and constructed and arranged in a manner to restrict the flow of said fluidized granules in said first enclosure, and

means for delivering said pressurized fluid into said plenum chamber where said pressurized fluid travelling into said second enclosure and circulating around said die assembly remains substantially free of said lubricant granules and acts to cool said die assembly.

4,445,352

RIM FORMER

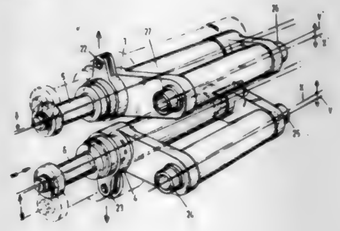
Pieter M. Pols, Maasland, Netherlands, assignor to Machinefabriek A. Fontijne B.V., Netherlands

Filed Feb. 16, 1982, Ser. No. 348,711

Claims priority, application Netherlands, Mar. 13, 1981, 8101240

Int. Cl.³ B21H *1/10*

U.S. Cl. 72—101 **6 Claims**



1. A rim forming apparatus, comprising a frame having upper and lower superimposed drivable and substantially vertically slidable spindles for applying thereon rim forming tools or rolls, the lower spindle being movable by means of a hydraulic cylinder relative to the upper spindle, while the upper spindle is tiltable in the plane through the two spindles for compensating for a deflection of the two spindles during the rim forming process, characterized by first and second swivelling arms, each having first and second ends, and each of the spindles carrying the rim forming rolls are received in the first end of a swivelling arm, with the second end of each swivelling arm being mounted in the frame, and each swivelling arm being rotationally supported in the frame by bearings, and the axis of the bearings of each swivelling arm being adjustable in the frame.

4,445,353

APPARATUS FOR MANUFACTURING HELICAL CORES

Alexander Taleff, Churchill Boro; Robert M. Brady, Salem Township, Westmoreland County, and Thaddeus E. Blaszczak, Indiana, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 17, 1981, Ser. No. 303,224

Int. Cl.³ B21D *11/08, 11/06*

U.S. Cl. 72—136 **36 Claims**

1. An apparatus for manufacturing magnetic cores for electrical machines by bending a continuous strip of material edgewise into a coil, said strip having a plurality of recesses therein, said apparatus comprising:

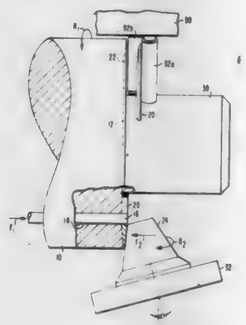
a rotatable mandrel having an axial surface, said axial surface having a plurality of holes therethrough;

a plurality of pins, each of said pins being slidably disposed in a preselected one of said plurality of holes, each of said pins being shaped to fit into one of said plurality of recesses in said continuous strip of material;

a raised portion of said axial surface, said raised portion being located at the radially outermost section of said

rotatable mandrel, said raised portion extending axially outward from said axial surface;

means for pressing said continuous strip of material against said axial face of said rotatable mandrel, said pressing means being shaped to cooperate with said raised portion to shape continuous strip of material into a predetermined cross section, said pressing means being associated with said raised portion of said mandrel to reduce the cross section of one edge of said continuous strip of material said predetermined cross section being generally uniform in shape along the length of said continuous strip of material;



means for rotating said rotatable mandrel;

means for forcing said pressing means toward said rotatable mandrel;

means for permitting movement of said pressing means relative to said axial face of said rotatable mandrel during deformation of said continuous strip therebetween to maintain a generally constant force on said continuous strip despite variations in strip thickness;

means for causing said pins to axially extend beyond said axial surface of said rotatable mandrel; and

means for retracting said pins from said axially extended position.

4,445,354

PROCEDURE AND EQUIPMENT FOR THE MANUFACTURE OF PIPES WITH EXTERNAL AND INTERNAL DIAMETERS VARYING IN STAGES

Gerd Pfeiffer, IM Look 55, D-4330 Mulheim; Horst Stinnertz, Knickelsdorf 89, D-4156 Willich 3, and Fritz Zeunert, Im Hag 2, D-4050 Monchen-Gladbach 2, all of Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,788

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129903

Int. Cl.³ B21B *17/10*

U.S. Cl. 72—208 **13 Claims**

1. A cooperative pair of ring rolls for use in a cold pilger rolling mill for producing a tube having an external extending portion that varies in diameter, for example an enlarged end portion;

said rolls each having at least two different cooperative varying diameter tube producing grooves formed circumferentially around the periphery of said rolls, and

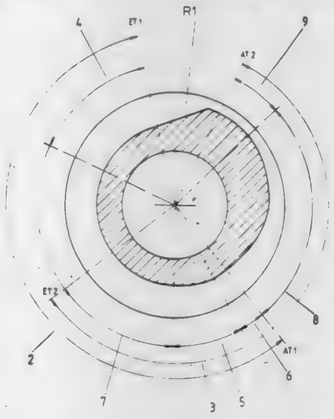
wherein said grooves are arranged in a common plane taken perpendicularly through the axis of rotation of said rolls, and

further wherein each of said grooves of a given diameter with reference to the processing sequence has after a deforming zone, a smoothing zone and as to at least one of said grooves an additional zone preceding the deforming zone for allowing movement of the tube relative to the roll.

7. A method for manufacturing a tube with varying external diameters by reducing a shell formed into a tube over a mandrel in a cold pilger rolling mill, which shell is worked between a set of driven ring rolls each having at least two different cooperative varying diameter tube producing grooves formed circumferentially around the periphery of said rolls, and each groove having a reducing range including a rotating and feeding zone, and a smoothing zone, the steps comprising:

(1) rolling a selected length of said shell in a first said groove to produce a desired first external diameter for said tube,

(2) rotating said rolls to bring a said second groove into operation for a continued working of said shell,



(3) rolling a selected length of said shell with said second groove to produce a second desired external diameter for said tube different than said first diameter,

said rolling in steps (1) and (3) being such as to subject said formed tube to said smoothing zones to effect final processing of said external diameters, and

(4) when said tube is in said first and second grooves rotating and selectively feeding said shell in said rotating and feeding zones.

4,445,355

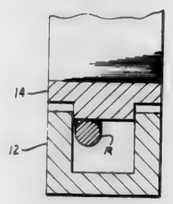
GUIDE TUBE

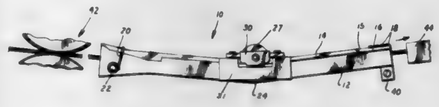
Mieczyslaw Budzich, Lexington, and Forest G. Fitz, Jr., West Columbia, both of S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,666

Int. Cl.³ B21B *39/14*

U.S. Cl. 72—250 **4 Claims**





1. A guide tube for guiding a hot metallic rod being advanced along a path of travel within a rod mill and with the guide tube comprising a channel member of substantially U-shaped cross-sectional configuration, an elongated cover member mounted to said channel member and having an elongated tongue slidably received within said channel member, and fastening means releasably holding said cover member to said channel member, whereby a hot metallic rod being advanced through the guide tube may create limited relative movement between the channel and cover members without the members becoming misaligned or an interior edge of the guide tube becoming exposed that would scratch or mar the rod.

4,445,356

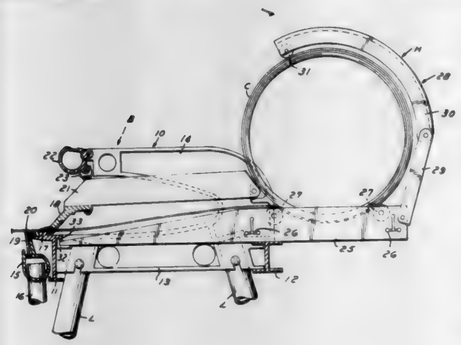
COMBINED PORTABLE SHEET BENDING BRAKE AND COIL HOLDER

Arthur B. Chubb, Wyandotte; Richard J. MacLeod, Milford, and James J. Rhoades, Garden City, all of Mich., assignors to Tapco Products Company, Inc., Detroit, Mich.

Filed Feb. 26, 1982, Ser. No. 352,893

Int. Cl.³ B21D *5/04*

U.S. Cl. 72—319 **19 Claims**



1. A combined portable sheet bending brake and coil support comprising

a frame having a fixed jaw and a movable jaw,

an anvil member secured to the fixed jaw and having a clamping surface,

said movable jaw having a clamping surface movable between workpiece clamping and non-clamping positions relative to the anvil member,

means for locking the movable jaw and workpiece in clamping position,

a bending member hinged about a hinge axis to the fixed jaw,

a coil holder having means for supporting a coil of sheet material, said coil holder being mounted on said frame so as to position the axis of the coil of sheet material substantially parallel to the hinge axis of the bending member,

said frame and said coil holder having interengaging means whereby said coil holder may be mounted and removed from said frame such that when the coil holder is in position, the coil is positioned such that the leading edge of the coil may be extended between the clamping surfaces of said anvil and movable jaw and clamped to permit cut off of a desired length of sheet material.

4,445,357

PIPE PRESS

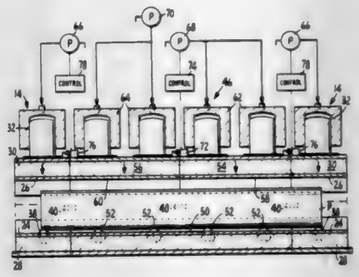
Joseph E. Powers; Ransldo H. Grimoldi; Calvin C. Williamson, and Alfred A. Bottini, all of Napa, Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.

Filed Nov. 3, 1980, Ser. No. 203,271

Int. Cl.³ B21D *5/00*

U.S. Cl. 72—399 **12 Claims**

1. A press for forming elongate heavy gauge steel pipe blanks into an arcuate cross-section, said press being adapted to accomodate blanks of different lengths within a predetermined range of maximum and minimum length and comprising: a main section of a length substantially equal to said minimum length, said section having complemental arcuate dies adapted to forceably engage therebetween an elongate heavy gauge steel pipe blank; an end section disposed to at least one end of and in alignment with said main section, and movable relative thereto, said end section being adapted to receive the end of a



blank extending beyond the main section and having complemental arcuate dies adapted to forceably engage said end therebetween; independently actuatable operating means for the main and end sections to separately force the complemental dies of said respective sections toward one another to form blanks engaged between said dies into an arcuate cross-section; and, control means for said operating means to advance the die of the main and end sections at the same rate.

4,445,358

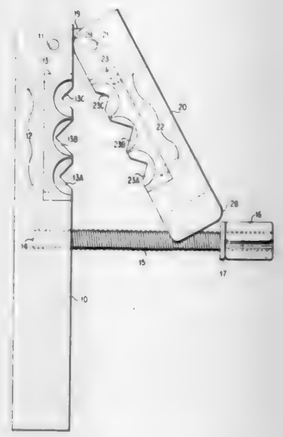
PORTABLE TOOL FOR AFFIXING TERMINALS ONTO BATTERY CABLES

Robert J. Gooding, Chester Springs, Pa., assignor to Action Concepts, Inc., Chester Springs, Pa.

Filed Jul. 26, 1982, Ser. No. 402,099

Int. Cl.³ B21D *37/10*

U.S. Cl. 72—416 **9 Claims**



1. Portable tool for affixing a terminal onto an electrical storage battery cable, comprising a handle member having a holding portion for supporting the tool manually and a clamping member juxtaposable thereto, each such member carrying along an adjacent edge and intermediate the ends thereof one of a pair of cooperating swaging jaws, pivot means carried by one end of the handle member and swingably carrying the clamping member at one of its ends, the other end of the clamp-

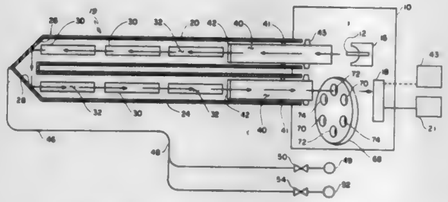
ing member having a slot therein, clamping screw means carried by and protruding from the handle member adjacent the holding portion and adapted to engage the sloted end of the clamping member, the clamping screw means being manipulatable to force the clamping member swingably against the handle member to close the swaging jaws.

4,445,359

SYSTEM AND PROCESS FOR CALIBRATING A COMBUSTION GAS ANALYZER

Vigo N. Smith, Saratoga, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Filed Aug. 7, 1981, Ser. No. 291,154
Int. Cl.³ G01N *21/17*
U.S. Cl. 73—1 G **7 Claims**



1. A process for calibrating a computer-based combustion gas analyzer, said process comprising:

(a) sequentially introducing into and removing from the analyzer, members of a series of calibration gases each having a different, known concentration (C_i) of the combustion gas;

(b) generating a series of measurement values (R_i) to correspond, one to each known concentration (C_i) of combustion gas;

(c) determining the coefficients A_j in the equation:

$$R_i = \frac{1}{N} \sum_{j=1}^{N} \exp(-A_j C_i)$$

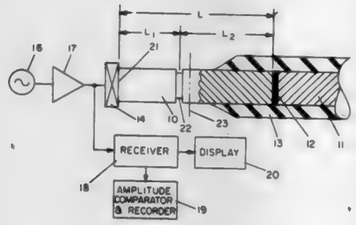
(d) entering the coefficients A_j into the computer of the analyzer.

4,445,360

METHOD FOR ULTRASONICALLY DETERMINING CHARACTERISTICS OF A BODY

Ralph A. Treder, Jr., Ewing, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,564
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—1 DV **1 Claim**



1. A method for remotely inspecting a brazed joint between a first elongated metal electrode and a second elongated metal electrode comprising the steps of:

generating ultrasonic signals into the metal electrodes by means of an ultrasonic transducer directly in contact with the first metal electrode;

forming a predetermined calibration notch substantially along the periphery of the first metal electrode at a predetermined distance from said transducer;

detecting two echo signals emanating from the electrodes, said echo signals consisting of a first ultrasonic signal reflected by said predetermined calibration notch and a second ultrasonic signal reflected by said joint; and

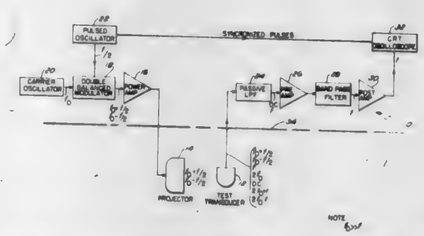
comparing said first and second detected signals thereby determining the quality of said joint independently of the transmission coefficient at the interface of the ultrasonic transducer and the first electrode.

4,445,361

SYSTEM FOR DETECTION OF TRANSDUCER DEFECTS

Mark B. Moffett, Waterford, and William L. Konrad, East Lyme, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 430,097
Int. Cl.³ H04B *13/00*; H04R *29/00*
U.S. Cl. 73—1 DV **7 Claims**



1. An apparatus for detecting defects in transducers under test, comprising:

frequency generating means for producing a synchronizing pulse and a dual-frequency signal at frequencies $f_o+f/2$ and $f_o-f/2$ where $f_o >> f/2$;

a projector, submerged in water and connected to said frequency generating means, for receiving said dual-frequency signal from said frequency generating means and projecting said dual-frequency signal a short distance through the water to said test transducer, said test transducer thereafter producing output frequencies $f_o+f/2$, $f_o-f/2$, $2f_o$, $2f_o+f$, $2f_o-f$, f, and a DC component in response thereto;

a linear, difference-frequency filtering means for receiving said output frequencies from said test transducer and producing as the output thereof only difference-frequency f; and

display means, connected to said difference-frequency filtering means and said frequency generating means, for receiving said difference-frequency f from said difference-frequency filtering means and said synchronizing pulse from said frequency generating means, and displaying said difference-frequency f thereon thus permitting observation and measurement of signal characteristics.

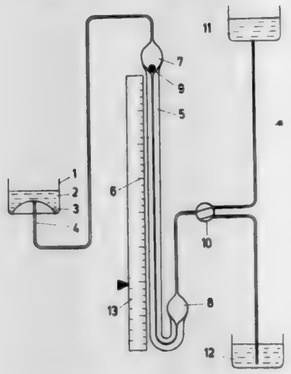
4,445,362

METHOD FOR MEASUREMENT OF THE CAVITY VOLUME OF SOFT CONTACT LENSES AND THE APPARATUS FOR THIS MEASURING METHOD

Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Mar. 25, 1982, Ser. No. 361,828
Int. Cl.³ G01F *17/00*
U.S. Cl. 73—37.5 **12 Claims**

1. The method of measuring the cavity volume of a soft contact lens comprising the steps of immersing the contact lens in a container of an aqueous media, causing said contact lens to freely rest on the bottom of said container within said media,



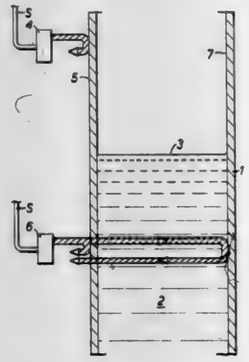
withdrawing the aqueous media from the area defined by the contact lens and the bottom of said container and thereafter measuring the amount of aqueous media thus withdrawn.

4,445,363

DEVICE FOR DETECTING FLOODING OF A HOLLOW STRUCTURE

Alan Bennett, Fenham, and Derek Brown, Whitley Bay, both of England, assignors to British Gas Corporation, London, England

Filed Feb. 18, 1982, Ser. No. 349,984
Claims priority, application United Kingdom, Mar. 6, 1981, 8107122
Int. Cl.³ G01M *3/24*
U.S. Cl. 73—40.5 A **15 Claims**



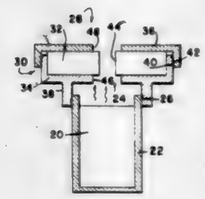
1. An inspection device for detecting flooding of a hollow structural member, comprising an ultrasonic transducer for emitting a pulsed beam of ultrasonic sound, means for mounting said transducer to the structural member at a spacing therebetween so that the beam path is directed to pass through opposing spaced walls or wall portions of the member, and indicating means responsive to time-spaced echoes of the ultrasonic pulsed beam reflected respectively from said opposing walls or wall portions and received by said transducer to indicate the presence or absence of flooding in the member, said mounting means comprising alginment means for aligning the beam with the structural member thereby to optimise the amplitude of the first received one of said echoes.

4,445,364

METHOD AND APPARATUS FOR MEASURING AIR INFILTRATION RATE INTO BUILDINGS

Lorin R. Stieff, Kensington, Md., and John C. Dempsey, Elliottville, N.Y., assignors to Taggents, Inc., Kensington, Md.

Filed Jan. 19, 1982, Ser. No. 340,589
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 **93 Claims**



1. Tracer emission apparatus adapted for use in a constant flow method for measuring air infiltration rate into an enclosure comprising;

a container,

tracer substance in the container, and

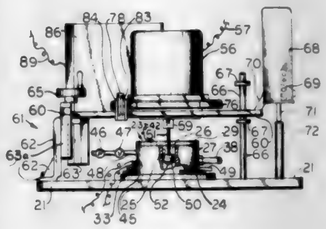
orifice means connected to the container for varying the diameter of an orifice in response to temperature in the vicinity of the container, said tracer substance escaping from the container through said orifice at a substantially constant rate independent of temperature in the vicinity of the container.

4,445,365

TAPERED BEARING SIMULATOR-VISCOMETER

Theodore W. Selby, 234 E. Larkin St., Midland, Mich. 48640

Filed May 17, 1982, Ser. No. 378,835
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—60 **15 Claims**



1. An elevated temperature variable-gap rotational viscometer comprising

a thermally-conductive stator block embedded in thermal insulation and having an inverted frustoconical vertical bore, an inlet passage for admitting sample liquid axially into the bore at its bottom, and an overflow passage for sample liquid to leave the bore at its upper end;

a thermal sensor recessed in the block;

an element for heating the block responsive to the sensor;

a matching rotor extending axially downward into the stator bore to define therebetween a thin annular measuring gap, the rotor having a flexible drive shaft extending axially upward from it;

a multi-speed synchronous AC motor coaxial with and directly driving the shaft;

a turntable fixed to and supporting the motor and having a torque arm projecting therefrom,

the turntable being supported on a low-friction bearing resting on a cantilevered platform vertically adjustable by

a fine screw, and being restricted in rotation to a limited arc; and

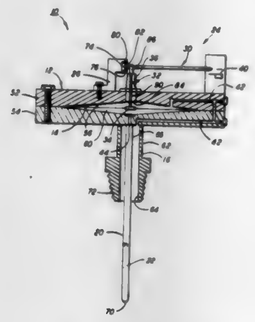
a stationary force-measuring element opposing movement of the torque arm.

4,445,366

PRESSURE DIFFERENTIAL GAGE AND A METHOD FOR DETECTING THE PRESENCE OF NONCONDENSIBLE GASES IN A REFRIGERATION SYSTEM

Kenneth P. Gray, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,899
Int. Cl.³ G01N *7/14*
U.S. Cl. 73—64.2 **11 Claims**



1. A pressure differential gage comprising:

a housing defining first and second fluid passages;

a pressure sensitive diaphragm secured within and extending across the interior of the housing, and separating the housing interior into a first chamber in fluid communication with the first fluid passage and a second chamber in fluid communication with the second fluid passage;

a first tube connected to the housing, and having a first end in fluid communication with the first fluid passage and the first chamber of the housing, and a second end open to receive a sample vapor, the pressure of the sample vapor determining the vapor pressure in the first tube and the first chamber of the housing;

a connecting fitting secured to the first tube for connecting the pressure differential gage to an external body;

a second tube connected to the housing and extending through the first tube, and having a first end in fluid communication with the second fluid passage and the second chamber of the housing, and a closed second end;

a supply of reference fluid located in the second tube, the vapor pressure of the reference fluid determining the vapor pressure in the second tube and the second chamber of the housing; and

indicator means connected to the housing and actuated by the diaphragm to indicate when the vapor pressure in the first chamber of the housing differs from the vapor pressure in the second chamber of the housing.

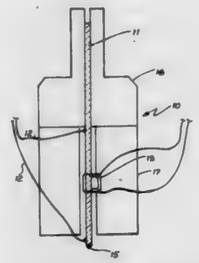
4,445,367

HARDNESS TESTER

Hiroshi J. Goldsmid, Epping, Australia, assignor to Unisearch Limited, Kensington, Australia

Filed Nov. 23, 1981, Ser. No. 323,911
Claims priority, application Australia, Nov. 25, 1980, PE6620; May 28, 1981, PE9073; Jul. 17, 1981, PE9787
Int. Cl.³ G01N *3/48*
U.S. Cl. 73—81 **22 Claims**

1. A thermal contact resistance hardness tester comprising a probe head of a relatively hard material so that the thermal contact resistance therebetween relates to the hardness of the



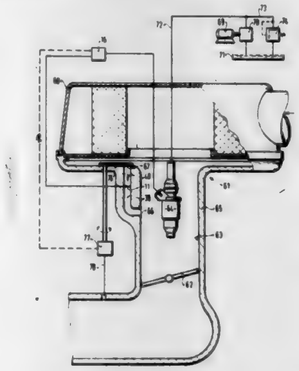
test material; means for supplying thermal energy to said probe head.

4,445,368

AIR FLOW RATE METER APPARATUS

Jaihind S. Sumal, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 25, 1982, Ser. No. 392,055
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130624
Int. Cl.³ G01F *1/68, 5/00*
U.S. Cl. 73—118.1 **5 Claims**



1. An air flow rate meter apparatus in an air intake of an internal combustion engine, comprising:

an air flow conduit having a restriction;

an air bypass line through which air flows which is at a predetermined proportion with respect to the mass of air flowing through the air flow conduit;

an air flow rate meter device disposed within the air bypass line, said air flow rate meter device including at least one temperature-dependent resistor, wherein:

at least one of temperature and resistance of said at least one temperature-dependent resistor is regulated in accordance with the mass of flowing air;

the air bypass line includes a mouth which opens into the air flow conduit at its restriction, closure means which prevents a flow of air through the air bypass line mouth toward said at least one temperature-dependent resistor and

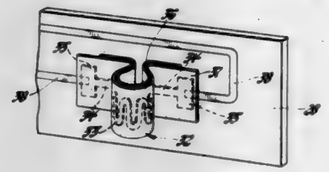
a servomotor adjustable by means dependent on negative pressure for actuating said closure means wherein the air bypass line is closeable at one of its ends by said closure means.

4,445,369

HOT FILM SENSOR FOR AIR FLOW METER

Donald D. Stoltman, Henrietta; Daniel F. Kabasin, Rochester, and Martin J. Field, Churchville, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1982, Ser. No. 437,038
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **6 Claims**



1. In an air mass flow meter for measuring air flow moving substantially axially through a passage, a hot film sensor in the passage comprising:

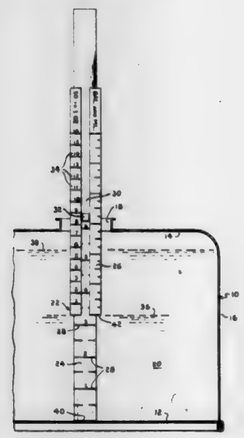
a support, a flexible insulating film having one surface dimension extending in the direction of the air flow and another surface dimension extending in a loop transversely of the passage, the film being attached at the ends of the loop to two spaced regions on the support, and a flexible resistance film supported on the looped insulating film whereby the resistance film describes a curved path extending transversely of the passage for intimate thermal coupling to the air flow.

4,445,370

OIL TO GASOLINE PROPORTIONING DEVICE FOR TWO CYCLE ENGINES

William E. Whitmire, Buckhead Ridge, Rte. 4, 118 20th St., Okeechobee, Fla. 33472

Filed Feb. 8, 1982, Ser. No. 346,905
Int. Cl.³ G01F *23/04*
U.S. Cl. 73—290 B **3 Claims**



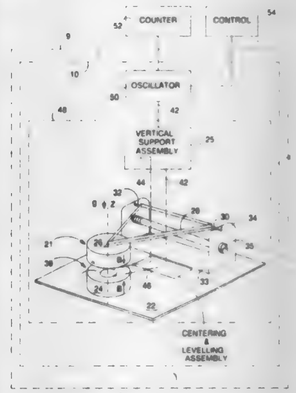
1. The method of determining the quantity of a second liquid to be added to a quantity of a first liquid to maintain a predetermined mixture ratio of the two liquids in a tank wherein a quantity of the first and second liquids having the desired mixture ratio is in the tank which comprises the steps of utilizing the first of a pair of relatively movable scale members to indicate the quantity of the first and second liquid mixture in the tank, aligning the end of the second of the pair of relatively movable scale members with the point on the first scale indicating the quantity of the mixture in the tank, adding a quantity of the first liquid in the tank and utilizing the second of the scale members to measure the quantity of the first liquid added to the contents of the tank and to indicating the quantity of the second liquid to be added to maintain the desired ratio.

4,445,371

GRAVITY METER AND METHOD

Theodore V. Lautzenhiser, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 30, 1982, Ser. No. 373,327
Int. Cl.³ G01V *7/00*
U.S. Cl. 73—382 R **10 Claims**



1. Apparatus for determining the magnitude of the acceleration of gravity at a location comprising:

a magnetic shield;

a temperature controlled housing;

a first magnet having a generally dipolar magnetic field;

a second magnet having a generally dipolar magnetic field;

support means for vertically supporting in a substantially vertical gravity field within the temperature controlled housing and within the magnetic shield the first magnet and the second magnet with opposed magnetic poles so as to form a magnetic vibrator;

first means for maintaining oscillation at a natural frequency of the magnetic vibrator formed by the first magnet and the second magnet in the substantially vertical gravity field, the natural frequency being representative of the acceleration of gravity at a location; and

second means responsive to said oscillation for generating a signal correlated to the natural frequency.

4,445,372

BALANCING MACHINE FOR BODIES OF ROTATION

Carlo Buzzi, Via Risorgimento, Mandello del Lario (Province of Como), Italy

Filed Feb. 9, 1982, Ser. No. 347,212
Int. Cl.³ G01M *1/16*
U.S. Cl. 73—459 **10 Claims**

1. A machine for simultaneously detecting static and dynamic unbalance of rotary bodies, comprising a rigid stand member, at least one carrying member in the form of a resiliently flexible plate having at least one end thereof fixed to said stand member and a longitudinal axis extending transverse to said stand, a rotation shaft for mounting thereon a body to be balanced, a supporting structure rigid with said plate and arranged at a distance from said one end of said plate, said supporting structure having formations for rotatively accommodating said shaft with an axis of rotation for said shaft parallel to said plate, thereby a static unbalance of said rotary body causing in use mainly resilient lateral bending of said plate and

a dynamic unbalance of said rotary body causing in use mainly twisting of said plate about its longitudinal axis, first detector means for detecting vibrations generated by the static unbalance of said body mainly in the direction transverse to said

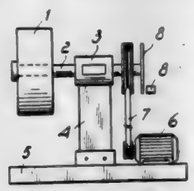


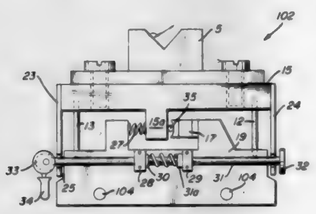
plate and second detector means for detecting vibrations generated by said dynamic unbalance mainly in a rotatory direction about said longitudinal axis of said plate and driving means for imparting rotation to said shaft.

4,445,373

BALANCING MACHINE AND SUPPORT STRUCTURES USABLE THEREWITH FOR MEASURING UNBALANCE IN A ROTOR

Richard Mueller, Lynchburg, Va., assignor to American Hofmann Corporation, Lynchburg, Va.

Filed Sep. 23, 1982, Ser. No. 422,285
Int. Cl.³ G01M *1/02*
U.S. Cl. 73—473 **4 Claims**



4. A support structure for use with a balancing machine comprising a pedestal; a yoke; means for interconnecting said pedestal and said yoke; and means for measuring forces acting on said yoke during measurement of unbalance of a rotating body,

said pedestal having a portion thereof shaped for guiding horizontal movement of said support structure with respect to a machine bed of a balancing machine and a portion thereof supporting said means for measuring forces;

said yoke comprising means for supporting bearings for a rotating body, means engageable with interconnection means of the balancing machine for interconnecting said yoke with another yoke, and means positioned in operative relationship with said means for measuring forces for transmitting forces acting on said yoke to said means for measuring forces;

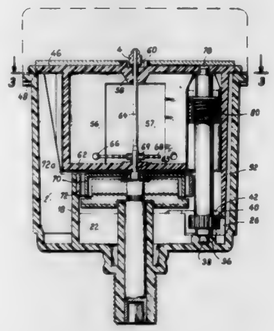
said means for interconnecting comprising a pair of round springs positioned between confronting surfaces of said yoke and said pedestal, a pair of flat springs carried by one of said yoke and said pedestal and selectively engageable with the other of said yoke and said pedestal, and means for selectively engaging said flat springs with the other of said yoke and said pedestal.

4,445,374

DISTANCE RECORDER FOR A TWO-WHEELED VEHICLE OR THE LIKE

Roger Huret, deceased, late of Nanterre, France, and by Alain P. B. Huret, heir, Bougival, France, assignors to Huret et SES Fils, Nanterre, France

Filed Mar. 4, 1982, Ser. No. 354,595
Claims priority, application France, Mar. 9, 1981, 81 04657
Int. Cl.³ G01P *1/02*
U.S. Cl. 73—490 **10 Claims**



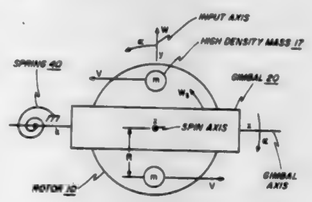
1. A recorder for a two-wheeled vehicle or the like, comprising a moulded cylindrical case having a longitudinally extending axis and a closed end wall, means defining a driving cable entrance in said end wall, and a mechanism support, the case having an inner surface which defines reinforcing ribs which extend longitudinally of the case and each terminate in an upper end which defines a bearing surface, said inner surface also defining at least two grooves extending longitudinally of the case, said mechanism support comprising a sheet which bears against said bearing surfaces at the upper ends of the ribs, closes the case and defines a centre aperture and at least one opening, the mechanism support further comprising two lateral flanges which depend from said sheet and fit exactly in the case and are provided with apertures for mounting shafts of counting means located between said flanges, and a partition wall extending diametrally of the case and carrying two bearings which bearings are coaxial with each other and with the center aperture of said sheet and are axially spaced apart from each other.

4,445,375

TUNED CORIOLIS ANGULAR RATE MEASURING DEVICE

Robert C. Wells, Endwell, N.Y., assignor to General Electric Company, Binghamton, N.Y.

Filed Feb. 27, 1981, Ser. No. 239,018
Int. Cl.³ G01C *19/06, 19/28, 19/42*
U.S. Cl. 73—504 **3 Claims**



1. An angular rate measuring device comprising:

(a) a statically and dynamically balanced, unsymmetrical rotor including means for spinning the rotor about the central axis thereof at a substantially constant high speed, the central axis thereby serving as the rotor spin axis;

(b) a gimbal rotatably securing the unsymmetrical rotor about the central axis thereof;

(c) a support base for rotatably coupling the gimbal about a gimbal axis perpendicular to the spin axis of the rotor, the gimbal axis being positioned to minimize gimbal inertia and static imbalance, the base including flexible means for coupling the gimbal to the base;

(d) an input axis perpendicular to the plane of the gimbal axis and the spin axis for receiving an input angular rate to be measured; and

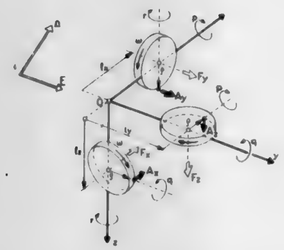
(e) means for sensing relative angular motion between the support base and gimbal, the relative angular motion being caused by torque being applied about the gimbal axis by oscillatory Coriolis forces being generated due to the input angular rate and the linear velocity of the spinnin gunsymmetrical rotor, the gimbal being tuned about the gimbal axis for increasing sensitivity to the generated Coriolis forces, the sensing means providing an output signal proportional to input angular rate, the means for sensing relative angular motion including a pair of piezoelectric crystals secured to the flexible coupling means at opposite sides thereof such that in the presence of relative angular motion between the gimbal and the support base, a first crystal will be in tension and a second crystal will be in compression, the outputs of the respective crystals being electrically connected in parallel for minimizing the effects of relative linear motion between the gimbal and the support base.

4,445,376

APPARATUS AND METHOD FOR MEASURING SPECIFIC FORCE AND ANGULAR RATE

Shmuel J. Merhav, Haifa, Israel, assignor to Technion Research and Development Foundation Ltd., Haifa, Israel

Filed Mar. 12, 1982, Ser. No. 357,714
Int. Cl.³ G01C *21/10;* **G01P** *15/08*
U.S. Cl. 73—510 **19 Claims**



1. Apparatus for measuring the specific force and angular rate of a moving body by means of a plurality of accelerometers mounted on mutually-perpendicular axes, characterized in that the apparatus includes:

(a) cyclic driving means for driving each accelerometer at a predetermined cyclic frequency "ω" to produce an output signal "a" from each accelerometer comprised of the angular rate vector "Ω" and the specific force vector "F;"

(b) means for deriving, from each of said accelerometer output signals "a," a signal corresponding to the angular rate vector "Ω" which means includes:

(1) multiplying means for multiplying said accelerometer output signal "a" by the function "sgn cos ωt" to produce the product signal "asgn cos ωt," and

(2) integrating means for integrating said product signal over the cyclic period; and

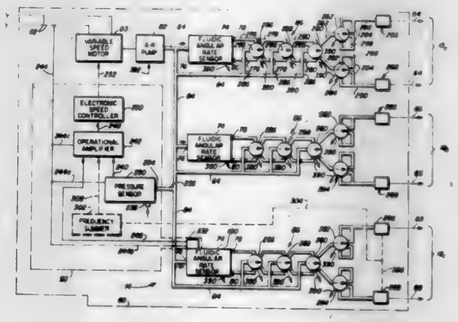
(c) means for deriving from each of said accelerometer output signals "a" a signal corresponding to the specific force vector "F," said latter means including integrating means for integrating said output signal "a" over the cyclic period.

4,445,377

PRESSURE-TO-ELECTRIC OUTPUT SYSTEM FOR AN ANGULAR RATE SENSOR OR THE LIKE

Thomas B. Tippetts, Mesa, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 12, 1980, Ser. No. 206,199
Int. Cl.³ G01P *15/00*
U.S. Cl. 73—516 LM **11 Claims**



1. An output system for use with a fluidic angular rate sensor of the type having a fluid jet and a pair of outlet passages for receiving portions of the jet to create in the outlet passages a duality of pressure signals having a relative pressure differential indicative of the rate and sense of rotation of the sensor about a control axis, said output system comprising:

(a) means for receiving and amplifying the pressure signals;

(b) means for receiving the amplified pressure signals and converting the same to a duality of pulsating pressure signals;

(c) means for receiving said pulsating pressure signals and converting the same to a duality of oscillating electrical signals having a relative frequency differential indicative of the rate and sense of rotation of the rate sensor about the control axis; and

(d) means for utilizing said oscillating electrical signals to generate a signal indicative of the pressure of the rate sensor jet.

4,445,378

ACOUSTIC GROUND IMPEDANCE METER

Allan J. Zuckerwar, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 24, 1982, Ser. No. 444,150
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—589 **9 Claims**

1. Apparatus for measuring the acoustic impedance of a surface over a continuous band of frequencies comprising:

a chamber having enclosed sides and first and second ends with the first end open and adapted to be fitted to said surface;

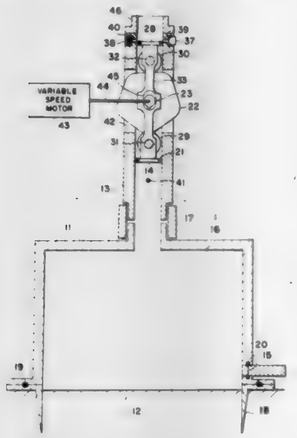
a neck having a smaller cross-sectional area than the ends of said chamber attached to said second end of said chamber such that the space inside said neck extends into the space inside said chamber wherein said chamber and said neck form a Helmholz resonator;

a piston inside said neck;

means for moving said piston back and forth inside said neck at selected frequencies;

means attached to a side of said chamber for measuring the

acoustic waves created inside said chamber by the back and forth movement of said piston; and



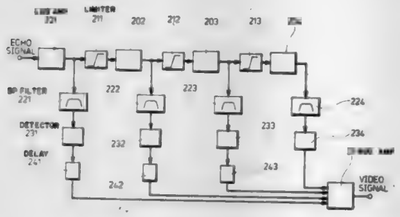
means for measuring the frequency of the back and forth movement of said piston whereby the acoustic impedance can be computed.

4,445,379

APPARATUS FOR RECEIVING REFLECTED ULTRASONIC WAVES IN ULTRASONOGRAPHY

Keiki Yamaguchi; Yasuhito Takeuchi; Shinichi Sano, and Takao Higashiizumi, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,736
Claims priority, application Japan, Mar. 4, 1982, 57-34364
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—631 **12 Claims**



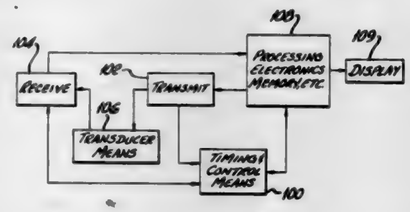
1. In an ultrasonographic system comprising means for emitting ultrasonic waves into a test body, said test body or parts thereof reflecting said ultrasonic waves as echo signals, apparatus for receiving said reflected echo signals, and means for displaying said echo signals as B-scan echograms; the improvement comprising said apparatus comprising a filter for processing said echo signals in response to instantaneous levels of said echo signals, so as to utilize higher frequency components of said echo signal when the instantaneous level of said echo signal is high, and so as to utilize lower frequency components of said echo signal when the instantaneous level of said echo signal is low, and also comprising means to detect said instantaneous level of said echo signal and to control said filter effectively on its partial or total contribution to said processing of of said echo signals.

4,445,380

SELECTABLE FOCUS SPHERICONE TRANSDUCER AND IMAGING APPARATUS

Perry Kaminski, Lewistown, Pa., assignor to Technicare Corporation, Solon, Ohio

Filed Jul. 21, 1982, Ser. No. 400,551
Int. Cl.[3] G01N *29/00*; G10K *11/00*
U.S. Cl. 73—642 **13 Claims**



1. An ultrasonic transducer for use with an ultrasonic diagnostic system, comprising piezoelectric material exhibiting a radiating surface having a generally circular, concave shape with a center point, said radiating surface in cross-section resembling two symmetrical arcuate surfaces symmetrically disposed on either side of said center point and canted toward each other at an angle which is less than the angle traversed by a spherical surface of the same curvature as said arcuate surfaces and the same diameter as said effective radiating surface.

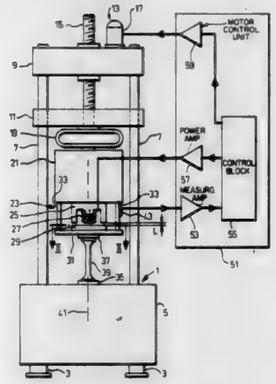
10. An ultrasonic transducer assembly for use with an ultrasonic diagnostic system, comprising a conical surface of piezoelectric material, and an acoustic lens affixed to said conical surface and having a spherical surface remote from said conical surface.

4,445,381

DEVICE FOR TESTING THE VIBRATION STRENGTH OF A TEST BODY

Max E. Russenberger, Bodman-Ludwigshafen, Fed. Rep. of Germany, assignor to Russenberger Prüfmaschinen AG, Schaffhausen, Switzerland

Filed Feb. 2, 1981, Ser. No. 230,897
Claims priority, application Switzerland, Feb. 11, 1980, 1065/80
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—666 **22 Claims**



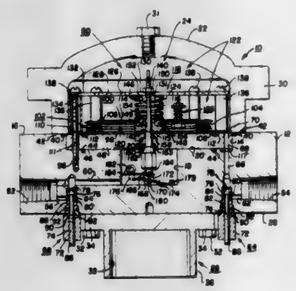
1. A device for testing the vibration strength of a test body, comprising:
- a framework;
- holding elements to hold the test body on opposite sides thereof,
- at least one vibration body operatively connected with one of said holding elements;
- at least one uncoupling spring for decoupling said at least one vibration body and said one holding element connected therewith from the framework so that said at least one vibration body and said one holding element are able to vibrate;
- at least one electromagnetic exciter having two parts that are movable in relation to one another for vibration excitation;
- at least one elastic member;
- supply means for supplying electrical energy to said at least one electromagnetic exciter, so that an oscillator comprising said at least one vibration body, said test body, and said at least one elastic member can be excited by said at least one electromagnetic exciter at its resonance frequency;
- one portion of said elastic member being connected to one of said holding elements in such a substantially direct manner that said at least one vibration body has a mass greater than the total mass of said test body, said at least one elastic member and movable members arranged between said at least one elastic member and the test body to be held; and
- said two parts of said at least one electromagnetic exciter are bridged by said at least one elastic member.

4,445,382

DIFFERENTIAL PRESSURE-RESPONSIVE DEVICE

Louis E. Reynolds, Richardson, and Michael D. Beall, Garland, both of Tex., assignors to Reynolds Equipment Company, Garland, Tex.

Filed Oct. 23, 1981, Ser. No. 314,215
Int. Cl.[3] G01L *13/02*
U.S. Cl. 73—716 **12 Claims**



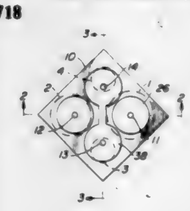
1. A differential pressure-responsive apparatus comprising:
- a primary base plate member;
- a cover member detachably attached to a first surface of said primary base plate and thereby forming a normally closed chamber;
- a first cavity formed in the first surface of said primary base plate within said closed chamber;
- a second cavity formed in the bottom surface of said first cavity;
- a bellows and range spring module operatively positioned in said first cavity and detachably attached to said primary base plate, said module comprising:
  - a secondary base plate member;
  - a bellows means with one end thereof detachably fixed to a surface of said secondary base plate member and having an opposite normally closed movable end thereof movable between extended and collapsed bellows positions in response to varying differential pressures thereacross, said bellows means dividing said chamber into separate inner and outer chamber portions communicating with the inner and outer sides, respectfully, of said bellows means;
  - means to operatively interconnect said inner chamber portion and said second cavity;
  - a first normally closed, one-way-opening valve means in said normally closed movable end of said bellows means, operable for interconnecting and disconnecting said inner and outer chamber portions when said first valve means is opened and closed respectfully, said first valve means moving with said movable end of said bellow means when in said closed position, whereby said bellows and range spring module is accessible for removal from said apparatus upon removing only said cover member;
  - first and second connector ports formed in said primary base plate member;
  - a first duct means in said primary base plate member interconnecting said first port with said outer chamber; and
  - a second duct means in said primary base plate member interconnecting said second port with said second cavity, whereby such differential pressures may be applied across said bellows means by way of said first duct means and by way of said second duct means, said second cavity and said interconnecting means.

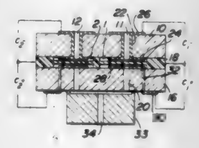
4,445,383

MULTIPLE RANGE CAPACITIVE PRESSURE TRANSDUCER

Paul B. Binder, North Wales, and Louis D. Di Napoli, Colmar, both of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Jun. 18, 1982, Ser. No. 389,657
Int. Cl.[3] G01L *9/12*
U.S. Cl. 73—718 **8 Claims**





1. A multi-range, variable capacitance pressure transducer, comprising:
- a pair of plates of non-conductive material;
- a diaphragm plate bonded between the plates of said pair, said diaphragm plate having a plurality of conductive deflecting areas of different diameters defined by cavities on opposite sides of said diaphragm plate;
- conducting areas deposited on the plates of said pair opposite the deflecting areas to form capacitors therewith;
- means providing fluid communication to the cavities so that opposing sides of the deflecting areas are exposed to fluid pressures to be measured; and
- means providing electrical connection to the conducting areas and said conductive deflecting areas of said diaphragm plate so that selected combinations of the capacitors formed between said conducting areas and associated conductive deflecting areas are connected to provide the same capacitance and capacitance change for pressure

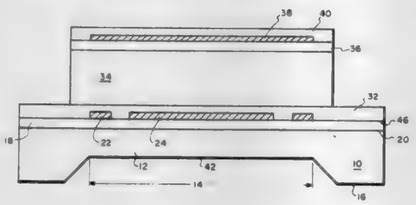
difference measurements of said fluid over different ranges.

4,445,384

PIEZOELECTRIC PRESSURE SENSOR

Michele Royer, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 30, 1982, Ser. No. 363,693
Int. Cl.³ G01L 9/08, 9/12
U.S. Cl. 73—724 **11 Claims**



1. A pressure sensor comprising:

piezoelectric means comprising a piezoelectric material for providing a piezoelectric output signal when subjected to a pressure and for providing an undesirable pyroelectric output signal, the piezoelectric means having first and second surfaces; and

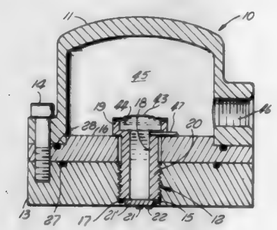
electrode means comprising a first contact covering at least a portion of the first surface, the electrode means further comprising a pair of contacts covering a portion of the second surface, the contacts having a geometry for enhancing the piezoelectric output signal and for substantially eliminating the pyroelectric output signal.

4,445,385

STATIC PRESSURE SENSOR WITH GLASS BONDED STRAIN GAUGE TRANSDUCERS

Teruyuki Endo, Covina, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,405
Int. Cl.³ G01L 9/04
U.S. Cl. 73—726 **1 Claim**



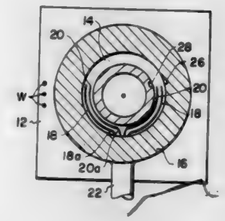
1. A transmitter comprising: a fluid housing having a wall; a fitting including an externally threaded hollow shank forming a cylindrical passageway about a central axis therein, said shank having a circular disc centered perpendicularly about said passageway axis, said disc being welded to said shank covering one end of said passageway, said fitting being threaded into and sealed in a fixed position in said wall, a central portion of said disc expanding outwardly of said housing when a fluid is held therein at a pressure inside said passageway higher than that on the outside of said disc; first and second strain gauges glass bonded to the same outside surface of said disc in positions to increase and to decrease in resistance as said disc expands outwardly, said first strain gauge being transversely and longitudinally centered symmetrically on a diametral line through the center of said central portion, said second strain gauge being transversely centered on the same said diametral line but longitudinally spaced from said first strain gauge; and means connected from said first and second strain gauges to produce an electrical output signal which is a first function of the resistances of said first and second strain gauges, said first function being a second function of the pressure within said passageway, each of said first and second strain gauges being approximately the same size, rectangular in top and bottom plan, substantially uniform in thickness, and glass bonded to the external circular surface of said disc, the center of said first strain gauge lying on the axis of said passageway, the longitudinal axis of said first strain gauge being the same as that of said second strain gauge, a line normal to said circular disc surface through the center of said second strain gauge being tangent to the cylindrical surface of said passageway.

4,445,386

HERMETICALLY SEALED HIGH TEMPERATURE STRAIN GAGE

John M. Nielsen, Alliance, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 8, 1982, Ser. No. 356,054
Int. Cl.³ G01B 7/16
U.S. Cl. 73—780 **10 Claims**



2. A hermetically sealed strain gage for measuring strains of high temperature parts, comprising an attachment shim plate, a first inner member having one end sealingly secured to said shim plate, a second outer member disposed over said inner member and having one end sealingly secured to said shim plate, said second outer member having an outer wall and said outer member having an inner wall spaced from said first inner member outer wall, first and second spaced capacitor plates disposed between said outer wall of said first innner member and said inner wall of said second outer member, a cover plate sealingly secured to the opposite ends of said inner and outer members closing the space between said inner and outer members, and sensing means associated with said capacitor plates responsive to change of movement of said plates to indicate stress of the part.

4,445,387

COMPRESSION SHEAR TEST JIG

Henry J. Hall, Arden Hills, and John G. Haygreen, Roseville, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

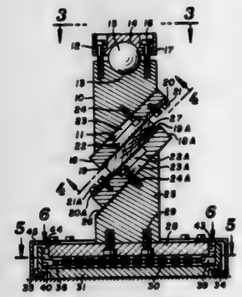
Filed Jun. 17, 1982, Ser. No. 389,292
Int. Cl.³ G01N 3/24
U.S. Cl. 73—845 **16 Claims**

1. A compression shear test jig for determining the internal strength of wood fiberboard and particleboard, said jig comprising:

(a) an upper loading head including a body having a bottom sample engaging face, said face being disposed at substantially a 45° angle from horizontal, said face having a sample restraining element at its upper end,

(b) a lower loading head disposed immediately below said upper head and including a body having a top sample engaging face, said face being disposed at substantially a

45° angle from horizontal, spaced from and substantially parallel to the bottom face of the upper head, said top face having a sample restraining element at its lower end, a wood fiberboard or particleboard sample being supportable on the face of the lower head in engagement with the sample restraining element, and the upper head being



supportable on the sample, the sample restaining element of the upper head being in engagement with the sample, and

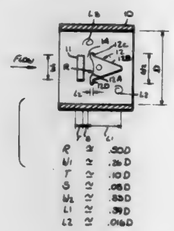
(c) a horizontal minimum friction surface supporting said lower loading head to permit easy relative horizontal movement of the lower head thereon.

4,445,388

DUAL-BODY VORTEX-SHEDDING FLOWMETER

Peter J. Herzl, Morrisville, and Warren O. Strohmeier, Warminster, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Jun. 28, 1982, Ser. No. 392,669
Int. Cl.³ G01F 1/32
U.S. Cl. 73—861.24 **9 Claims**



1. A vortex-shedding flowmeter for measuring the flow rate of fluids, said flowmeter comprising:

A. A flow tube through which flows the fluid stream to be metered, said tube having a longitudinal flow axis;

B. a dual-body shedder disposed in said tube symmetrically with respect to said flow axis, said shedder having a front section fixedly mounted across the tube, the long axis of the front section being normal to the flow axis, and a fluid-impermeable rear section behind the front section and independent thereof to define therewith an obstacle-free gap configured to produce a fluidic feedback path so that a strong hydraulic interaction takes place between the sections, the width of said gap being small relative to the width of the front section, both of which divide the fluid stream and contribute to the formation of periodic vortices which are alternately generated on either side of the dual-body shedder;

C. a shaft pivotally supporting said rear section on a pivot axis parallel to said long axis and normal to said flow axis, whereby said vortices induce oscillations in the rear section at a frequency depending on flow rate; and

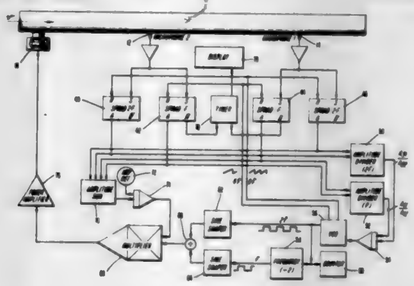
D. a torsion sensor operatively coupled to the shaft to convert the oscillations into a signal representing the flow rate.

4,445,389

LONG WAVELENGTH ACOUSTIC FLOWMETER

James E. Potzick, Potomac, and Baldwin Robertson, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Sep. 10, 1981, Ser. No. 300,830
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.27 **22 Claims**



16. An instrument for producing sound waves of a specified wavelength in an arbitrary fluid in a conduit having a cutoff wavelength, said instrument comprising:

means, responsive to an input signal, for producing sound waves in said fluid of at least one wavelength, said at least one wavelength being longer than said cutoff wavelength of said conduit;

first means for receiving said sound waves;

second means for receiving said sound waves, said second receiving means located a distance, in a direction of sound propagation, from said first receiving means;

means, responsive to said first and second receiving means, for producing said input signal of a frequency such that said distance is an integral number of half wavelengths of said specified wavelength, wherein said input signal producing means includes means, responsive to said first and second receiving means, for controlling the average amplitude of sound waves from said sound wave producing means.

4,445,390

SAMPLING TUBE AND APPARATUS

William L. Atwell, St. Joseph, Mich., assignor to Leco Corporation, St. Joseph, Mich.

Filed Dec. 2, 1982, Ser. No. 446,186
Int. Cl.³ G01N 1/12, 1/24
U.S. Cl. 73—864.52 **20 Claims**



1. A molten metal sampling device comprising:

an outer cylindrical tube sealably enclosed at one end and open at an opposite end; and

a cylindrical sampling tube coaxially and sealably fitted at least partially within said opposite end of said outer tube and having an extending end sealed with a fusible material and an opposite end positioned within said outer tube and including closure means for blocking the flow of molten

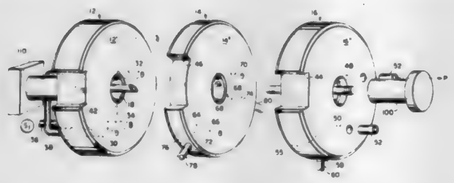
metal into said outer tube while permitting reverse direction flow of gases therein, and wherein the interior of said outer and sampling tube is evacuated to a negative pressure.

4,445,391

LIQUID METERING AND TRANSFER VALVE ASSEMBLY

Pedro P. Cabrera, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 19, 1981, Ser. No. 312,218
Int. Cl.³ B01L *3/02*
U.S. Cl. 73—864.12 **14 Claims**



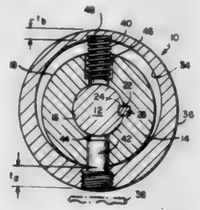
1. A liquid metering and transfer valve assembly for use in a diluting system for providing at least a pair of segmented precise samples from a single liquid sample source, the volume of one segmented sample being different than the volume of the other segmented sample of said pair, said valve assembly being operable between a load and a delivery condition and comprising means defining a first and second segmenting portion in series communication for receiving a continuous volume of sample from said source, means for isolating the contents of said first and second segmenting portions one from the other and means for combining each of said first and second isolated contents with a precise volume of diluent and delivering said isolated contents with their associated amount of diluent to respectively different preselected exterior locations, said first segmenting portion comprising internal segmenting passageway means having a precise internal volume and said second segmenting portion comprising an external hollow loop having a precise internal volume different from the volume of the segmenting passageway means.

4,445,392

OVERSPEED TRIP MECHANISM

Prem Pratap, Holden, Mass., assignor to Coppus Engineering Corporation, Worcester, Mass.

Filed Jan. 18, 1982, Ser. No. 340,197
Int. Cl.³ F16H *5/42*; G05G *17/00*
U.S. Cl. 74—3 **6 Claims**



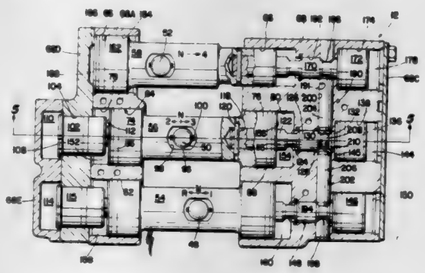
1. An overspeed trip mechanism for a rotating shaft, comprising:
- a collar having a cylindrical first axial bore arranged concentrically with respect to a cylindrical first external surface, said collar being arranged to be received coaxially on the shaft;
- means for fixing said collar relative to the shaft for rotation therewith;
- a ring surrounding and connected to said collar for rotation therewith, said ring having a cylindrical second axial bore and a cylindrical second external surface, the diameter of said second axial bore being greater than the diameter of said first external surface, said second axial bore being arranged eccentrically with respect to said second external surface to define diametrically opposed maximum and minimum ring wall thickness;
- a trip member arranged exteriorly of said ring;
- resilient means arranged between said ring and said collar on one side of said first axial bore for urging said ring radially in one direction into a first position at which said second external surface is spaced radially from said trip member and arranged concentrically with respect to said first axial bore and the shaft axis, said resilient means being adapted to yield to a selected level of centrifugal force developed during rotation of said ring and collar with the shaft and to accommodate a radial shifting of said ring relative to said collar in a direction opposite to said one direction to a second position at which said second external surface contacts said trip member; and
- guide means for radially directing the movement of said ring relative to said collar between said first and second positions, said guide means comprising a first radial bore in said collar and a pin member protruding radially inwardly from said ring to be slidably received in said first radial bore, said resilient means comprising a compression spring received in a second radial bore in said collar and protruding therefrom into contact with the interior of said ring.

4,445,393

FLUID ACTUATED SHIFT BAR HOUSING ASSEMBLY

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 18, 1982, Ser. No. 340,151
Int. Cl.³ G05G *9/12*; F16D *25/08*; F15B *15/17*
U.S. Cl. 74—346 **18 Claims**



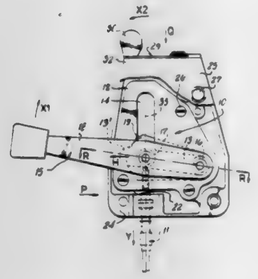
1. A pressurized fluid operated shift bar housing assembly for a change gear transmission, said assembly comprising:
- a shift bar housing having an axially extending bore therein;
- a shift bar slidably received in said bore, said shift bar having a first axial position and a second axial position relative to said housing;
- a shift fork associated with said shift bar, said shift fork associated with a transmission gear engaging clutch member and effective to hold said clutch member disengaged in the first axial position of said shift bar and effective to cause engagement of said clutch member in the second axial position of said shift bar;
- a first constantly pressurized fluid chamber defined by said housing, a first piston slidably and sealingly received in said first chamber, said first piston acted upon by pressurized fluid in said first chamber for applying a first axially directed force on said shift bar when said shift bar is axially displaced from said first axial position tending to bias said shift bar toward said first axial position;
- a second selectively pressurized fluid chamber defined by said housing, a second piston slidably and sealingly received in said second chamber, pressurization of said second chamber effective to cause said second piston to move said shift bar to said second axial position with a second axial force greater than and oppositely directed relative to said first axial force;
- valve means connectable to a source of pressurized fluid for constantly pressurizing said first chamber and for selectively pressurizing and exhausting said second chamber; and
- a detent mechanism effective to apply a resilient detent force to said shift bar in the second axial position thereof, said resilient detent force resisting axial movement of said shift bar, said resilient detent force having an axial component smaller than the magnitude of said first axial force.

4,445,394

CONTROL LEVER ARRANGEMENTS

Robert E. Yapp, Chillington, and Derek J. Smith, Curdworth, both of England, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Aug. 31, 1981, Ser. No. 297,886
Claims priority, application United Kingdom, Sep. 6, 1980, 8028849
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **2 Claims**



1. A control lever arrangement for longitudinally moving an actuating member along a line of action between first and second positions, the arrangement comprising a cam means with first and second mutually inclined portions, a control lever operatively connected with the actuating member and pivotally moveable between first and second stable lever positions corresponding to the first and second positions respectively of the actuating member, the control lever having a handle portion at one end and being mounted for said pivotal movement via a follower which engages the first portion of the cam means and by a guidance means which engages the second portion of the cam means, the arrangement being such that as the lever is pivoted from its first to its second position to longitudinally displace the actuating member, the guidance means moves along the second portion of the cam means and the follower moves along the first portion of the cam means so that the point of contact of the follower with the first portion of the cam means moves towards the line of action of the actuating member whereby the mechanical advantage of the lever increases, the lever also going overcenter thus executing a toggle action between its first and second stable positions.

4,445,395

APPARATUS FOR MEASUREMENT OF ICE MOVEMENT

Wayne C. Beckman, and Patrick E. Harwell, both of Santa Barbara, Calif., assignors to Global Marine Inc., Los Angeles, Calif.

Filed Oct. 30, 1981, Ser. No. 316,769
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **4 Claims**

1. A guide structure for affording axial movement of a cable therethrough, the guide structure comprising a guide tube having an inner diameter greater than the outer diameter of the cable and a seal carried by each end of the tube for intimately and slidably cooperating with the outer surface of the cable disposable through the guide structure, each seal including an inner cylindrical component having an inside diameter substantially equal to the diameter of the cable, and the inner component being secured to an outer cylindrical component having an inner diameter substantially equal to the outer diameter of



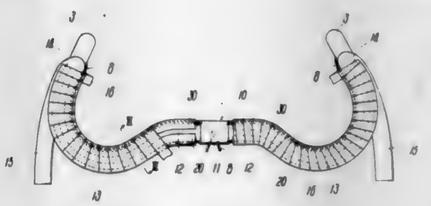
the inner component, and said outer component has an outer diameter substantially equal to the inner diameter of the guide tube and is secured therein to form a substantially oil-proof seal through which the cable can pass, and a quantity of lubricant compatible with the cable, the tube, and the seals disposed within the tube and substantially filling the same between the seals for lubricating the cable and the seals to thereby enable the cable to move lengthwise through the guide structure.

4,445,396

HANDLEBAR FOR A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Mar. 2, 1981, Ser. No. 239,537
Claims priority, application Japan, Mar. 6, 1980, 55-30114[U]
Int. Cl.³ B62K *21/12*
U.S. Cl. 74—551.1 **5 Claims**



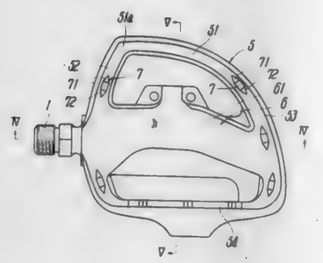
1. A bicycle handlebar for mounting on a handle stem of a bicycle receiving at an end a control lever, said handlebar comprising a bar body which has at its central portion a mounting portion through which said handlebar is mounted on said handle stem, and a pair of attaching members each having a concave surface of a circular arc cross section to fit an outer periphery of said bar body and each being formed to have a semielliptical cross section, each of said attaching members extending from said mounting portion along said bar body toward an end thereof, and being fixed to the outer periphery of said bar body along a rear side thereof in a forward moving direction of the bicycle, so that said concave surface thereof contacts with the rear side, at least one of said attaching members having an insertion bore extending along its entire longitudinal extent for housing a control wire extending from said control lever and along said bar body.

4,445,397

FOOT CONFORMING PEDAL FOR A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Aug. 17, 1981, Ser. No. 293,093
Claims priority, application Japan, Aug. 25, 1980, 55-121009[U]; Aug. 25, 1980, 55-121010[U]; Aug. 25, 1980, 55-121011[U]; Sep. 19, 1980, 55-134346[U]
Int. Cl.³ G05G 1/14
U.S. Cl. 74—560 6 Claims



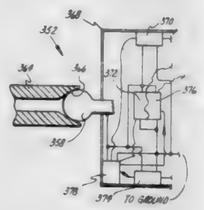
1. A pedal for a bicycle comprising a pedal shaft and a pedal body supported rotatable to said pedal shaft and having a shaft bore, said pedal body comprising a first foot bearing body having a frame-like shape and a front foot bearing surface, a rear foot bearing surface, and left-hand and right-hand foot bearing surfaces, said left-hand and right-hand foot bearing surfaces being curved around axes which are parallel to an axis of said pedal shaft; and a second foot bearing body having a middle foot bearing surface positioned at a longitudinally intermediate portion between said front foot bearing surface and said rear foot bearing surface and in continuation of said left-hand and right-hand foot bearing surfaces, said middle foot bearing surface being displaced toward the axis of said pedal shaft with respect to said front and rear foot bearing surfaces; said first and second foot bearing bodies being displaced radially upwardly on one side of the axis of said pedal shaft, said pedal body having a pair of support walls at opposite lateral sides of each of the first and second foot bearing bodies, and reflectors located between said support walls.

4,445,398

UNBALANCE COMPENSATOR CONTROL

Jack H. Kerlin, 1722 Sanford Pl., Ann Arbor, Mich. 48103

Filed Mar. 17, 1982, Ser. No. 358,999
Int. Cl.³ F16F 15/22; G01M 1/16; B24B 41/00
U.S. Cl. 74—573 R 4 Claims



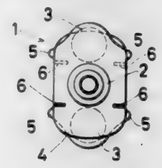
1. In a machine having a rotary mass requiring balancing, an unbalance compensator comprising a rotary portion adapted to be mounted on the rotary mass requiring balancing, balancing mass means on the rotary portion, distribution means for distributing the balance mass means on the rotary portion so as to correct for imbalance, and control means for the distribution means, the improvement in said control means which comprises a first contact on the unbalance compensator concentric with the axis of rotation of the rotary mass, a second contact stationarily arranged and biased against said first contact, a third contact on the rotary balance mass concentric with the axis of rotation and a fourth contact stationarily arranged and biased against the third contact, means for applying a composite waveform across the two stationary contacts with the waveform containing power and signal components, means coupling the first and third contacts with the distribution means comprising means responsive to the signal component of the composite waveform for controlling distribution of the balance mass means through the appropriate application of the power component of the composite waveform to the balance mass means.

4,445,399

PROCESS FOR BALANCING A CRANKSHAFT

Takeshi Sasaki, Tokorozawa; Kiyoshi Akiba, Hidaka, and Yoshio Takahashi, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 100,218, Dec. 4, 1979, abandoned. This application Jul. 30, 1981, Ser. No. 289,311
Claims priority, application Japan, Dec. 11, 1978, 53-151934
Int. Cl.³ B23K 1/20, 27/00
U.S. Cl. 74—603 4 Claims



1. In a crankshaft of the type having journal parts, eccentric pin parts, and balancing weight parts, each balancing weight part having an outer periphery said crankshaft being specifically intended for use in a weld-deposit method of final balancing of the crankshaft which includes depositing pads of weld metal on specific sites of the balancing weight parts in a manner known per se;

the improvement comprising each said balancing weight part having a recess extending radially inwardly from said outer periphery at a location intermediate said weld-deposit site and an adjacent journal of the crankshaft, said recess defining a complete air gap and effecting an increase in length of the thermal transmission path between said weld-deposit site and said adjacent journal.

4,445,400

DIFFERENTIAL SPEED LIMITING DEVICE

William C. Sullivan, Newark, Ohio, and Spencer M. Nimberger, Houston, Tex., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 28, 1981, Ser. No. 306,052
Int. Cl.³ F16H 1/44
U.S. Cl. 74—711 22 Claims

1. A differential speed limiting device for limiting the relative rotational speed between a first member and a second member capable of independent rotation about a common axis of rotation, said differential speed limiting device comprising:

first and second friction disc means respectively mounted for rotation with said first and said second members and capable of being compressed axially to generate frictional contact therebetween tending to reduce said relative rotational speed between said first and said second members;

an annular housing mounted for rotation with said first member;

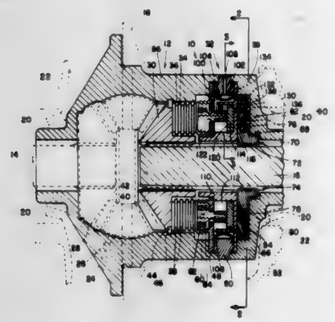
an annular bellows means mounted on said housing and having an extended end aligned with said first and said second friction disc means, said extended end being capable of axial movement toward and away from said first and said second friction disc means when a primary pressure of fluid within said bellows means is respectively increased and decreased;

said housing including therein a force multiplier having an input end capable of having an intermediate pressure of said fluid acting thereon and an output end which produces said primary pressure of said fluid within said bellows means, said primary pressure being directly proportional to and larger than said intermediate pressure;

said housing having a pump portion which includes an interior cylindrical surface located therein;

a length of collapsible tubing means having a first end and a second end and being formed into a single loop about said interior cylindrical surface, said loop lying in a plane which is normal to said common axis;

planetary roller means mounted in said plane for rotation with said second member and in frictional surface contact with said tubing means, said roller means being of such radial dimensions as to compress said tubing means against said interior cylindrical surface in a region of said contact;



said housing having a reservior for said fluid therein;

a first passage means for said fluid between said reservior and said first end of said tubing means;

a second passage means for said fluid between said second end of said tubing means and said input end of said force multiplier;

said second member rotating in a first direction relative to said first member causing said roller means to circumferentially travel along said tubing means from said first end to said second end to produce peristaltic pumping of said fluid from said reservior through said first passage means, said tubing means, and said second passage means to said input end of said force multiplier to produce said intermediate pressure fo said fluid therein; and

means for discharging said fluid from said input end of said force multiplier to said reservior to reduce said intermediate pressure of said fluid at said input end of said force multiplier when there is no rotation of said second member relative to said first member.

4,445,401

GEAR SHIFT SHOCK REDUCING APPARATUS FOR HYDRAULIC CONTROL SYSTEM OF AUTOMATIC TRANSMISSION

Wataru Ishimaru, No. 3-5-19, Ikego, Zushi City, Japan

Filed Oct. 10, 1980, Ser. No. 195,738
Claims priority, application Japan, Oct. 15, 1979, 54-131739
Int. Cl.³ B60K 41/06, 41/10
U.S. Cl. 74—869 8 Claims

1. A gear shift shock reducing apparatus of a hydraulic control system for an automatic transmission including a driving member operatively connected to the output shaft of an engine of an automotive vehicle, a driven member, and frictional units having fluid operated actuating means selectively made operative and inoperative for producing a plurality of gear ratios between the driving and driven members, comprising:

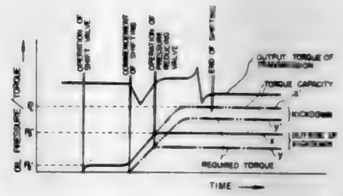
means for generating a line fluid pressure;

means for generating a kickdown fluid pressure under a kickdown condition;

a manual valve provided operatively between said line fluid pressure generating means and the respective fluid operated actuating means of the frictional units;

a shift valve provided operatively between said manual valve and at least one of the fluid operated actuating means of the frictional units, said shift valve having a valve spool movable into a position providing communication between said line fluid pressure generating means through said manual valve and said at least one of the fluid operated actuating means; and

a pressure reducing valve provided operatively between said at least one of the fluid operated actuating means and said manual valve and having a valve member movable into a



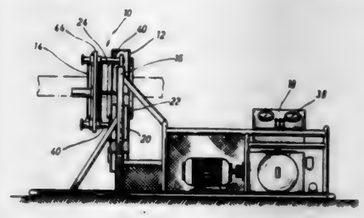
position providing communication between said at least one of the fluid operated actuating means and said manual valve through said shift valve, said pressure reducing valve communicating with said kickdown fluid pressure generating means for producing an actuating fluid pressure which is not higher than said line fluid pressure in response to the absence of said kickdown fluid pressure, said valve member of said fluid pressure reducing valve including a first pressure-acting area which is selectively exposed to said actuating said pressure to which said at least one of the fluid operated actuating means is selectively exposed and a second pressure-acting area, opposite to said first pressure-acting area, which is selectively exposed to said kickdown fluid pressure, said valve member of said pressure reducing valve being held in said position providing communication between said at least one of the fluid operated actuating means and said manual valve through said shift valve when said second pressure-acting area is exposed to said kickdown fluid pressure.

4,445,402

POWER TONG AND BACK-UP TONG ASSEMBLY

Garth M. Farr, Kingwood, and Patrick R. Callihan, Houston, both of Tex., assignors to Farr Oil Tool, Inc., Houston, Tex.

Filed Feb. 25, 1982, Ser. No. 352,244
Int. Cl.³ B25B 17/00
U.S. Cl. 81—57.16 18 Claims



1. An assembly for threadably joining or disjoining tubular members comprising:

a first tong adapted to receive and rotate a first tubular member in a first direction, said first tong being of the type

having a rotatable cam surface and a jaw assembly disposed between the cam surface and such a first tubular member in a manner that rotation of the cam surface acts to bring the jaw assembly into a gripping relationship with, and thereby rotate such a first tubular member;

a second tong adapted to receive and hold a second tubular member in a fixed position relative to a first tubular member, said second tong comprising:

a fixed cam ring having a cam surface, said cam ring being axially aligned with the rotatable cam surface of the first tong;

a second jaw assembly rotatable in said first direction which acts against the cam surface of the fixed cam ring so as to be urged into a gripping relationship with such a second tubular member; and

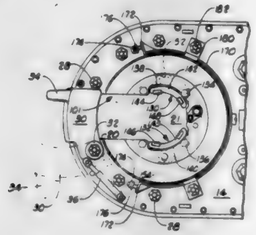
means for rotating the second jaw assembly until an initial gripping relationship is achieved with such a second tubular member.

4,445,403

POWER TONGS

Harlo W. Janzen, and Melvin J. Kliewer, both of Fairview, Okla., assignors to Larry D. Kliewer and Glenn A. Kliewer, both of Fairview, Okla.

Filed Mar. 29, 1982, Ser. No. 362,897
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.18 **22 Claims**



1. A power tong for gripping a pipe section to make up or break a threaded connection between pipe sections comprising:

a frame having a central opening therethrough, and a pipe-receiving throat opening at one side of the frame into the central opening;

a partial drive ring rotatably mounted on said frame and defining an opening at one side thereof adapted for alignment with said throat in one position during rotation;

a pair of arcuate bearing and guide segments mounted on said frame at opposite sides of said drive ring and each defining a raceway recess receiving and slidably supporting an outer peripheral portion of said drive ring, each of said bearing and guide segments having a generally rectangular cross-section, with said recess located at the concave, radially inner side thereof, and each of said segments being of a solid molded or cast polyurethane having from about three weight percent to about ten weight percent graphite dispersed therein;

driving means mounted on the frame and drivingly engaging the partial drive ring at a location between said bearing and guide segments for driving the drive ring in rotation;

a die carrier rotatably mounted on the frame for rotation relative to both the frame and the drive ring;

die means carried on the die carrier for gripping a pipe placed in the central opening through the frame; and

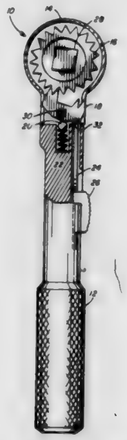
cam means between the die carrier and drive ring for actuating the die means into engagement with a pipe in said central opening upon partial rotation of the drive ring, and thereafter engaging said ring and die carrier with each other for concurrent rotation.

4,445,404

REVERSIBLE RATCHET WRENCH

David L. Parker, Nogales, Ariz., assignor to Bob Barber, Jr., Tucson, Ariz., a part interest

Filed Dec. 9, 1981, Ser. No. 328,931
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—62 **1 Claim**



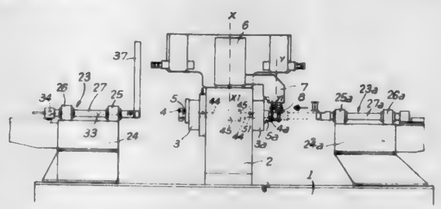
1. An improvement in reversible ratchet wrenches of the type having in its upper portion a ratchet wheel attached to the square shaped stud adapted to receive a socket, a double ended spring loaded ratchet reversing pivotal pawl adapted to pivot and thereby engage the ratchet wheel with one end or the other and thereby effect a reversal, a mid-section portion connecting to the upper portion, and having a handle to be held by the operator's hand connecting to the mid-section, the improvement comprising an extension rod pivotally connected at one end to the pivotal pawl and a direction reversing push-button assembly penetrating transversely the mid-section portion proximate the handle, said push-button assembly defining a ramp engaged by said extension rod second end, said ramp further including a notch situated mid-range, said notch adapted to be engaged by said extension rod mid-way in said extension rod's linear travel between reversing positions in order to effect a neutral position of the pivotal pawl not engaging the ratchet whereby the operator may reverse the ratchet direction with the same hand maintaining a grip on the handle.

4,445,405

LATHES WITH CENTRAL HEADSTOCK

Marcel Champeau, Niort, and Andre Tabutin, La Celle-Saint-Cloud, both of France, assignors to Ramo S.A., France

Filed Dec. 3, 1981, Ser. No. 327,086
Claims priority, application France, Dec. 11, 1980, 80 26336
Int. Cl.³ B23B *15/00*
U.S. Cl. 82—2.5 **8 Claims**



1. A workpiece transfer apparatus for a lathe with a headstock having two clamping chucks mounted on opposite sides of the headstock for rotation about a common axis, the transfer apparatus comprising:

transfer means pivotally mounted to the headstock for transferring a workpiece from one clamping chuck to the other clamping chuck; and

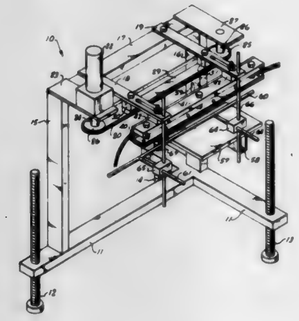
injecting means disposed co-axially with said one clamping chuck for transferring a workpiece from a workpiece loading station into said one clamping chuck and ejecting means disposed co-axially with said other clamping chuck for transferring a workpiece from said other clamping chuck to a workpiece unloading station.

4,445,406

SPIN TRIMMER FOR REMOVING FLASHING FROM THE TOPS OF PLASTIC BOTTLES

Alan J. Thatcher, 9386 La Gloria Dr., Alta Loma, Calif. 91701

Filed Sep. 29, 1982, Ser. No. 428,406
Int. Cl.³ B23B *3/04, 5/14*
U.S. Cl. 82—46 **6 Claims**



1. A spin trimmer for making a smooth cut at the top of a blow molded hollow plastic object such as a bottle, said spin trimmer comprising:

a support frame;

a drive belt support bar affixed to said frame;

a moveable belt positioned against the support bar, said belt having drive means for moving the belt against the support bar;

a bottle dome support bar having at least two grooves formed longitudinally therealong, said bottle dome support bar being supported by said frame and being held parallel to the drive belt support bar and positioned so that the upper groove is above the central axis of the moveable belt and the lower groove is below the central axis of the belt; and

horizontally positioned knife means held below said support bar and projecting in the direction of the drive belt support bar said knife means being heated to a temperature sufficient to soften the plastic material from which the object is blown.

4,445,407

METHOD AND APPARATUS FOR HANDLING BOOK TRIMMINGS

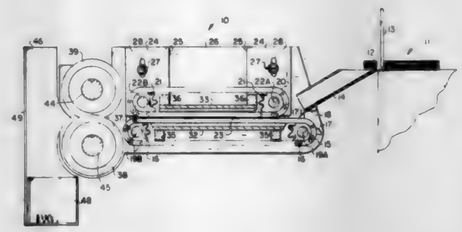
Anton V. Lucas, Long Prairie, Minn., assignor to Koenig & Bauer/Egenolf Machine, Inc., Indianapolis, Ind.

Filed Aug. 9, 1982, Ser. No. 406,576
Int. Cl.³ B26D *11/00*
U.S. Cl. 83—27 **14 Claims**

12. A trimming method for receiving from a book trimming apparatus the elongated glued book trimmings which have a glued end at one end in the elongated direction and for trimming the glued end, said method comprising the steps of:

a. receiving the elongated glued book trimmings from the book trimming apparatus and orientating the elongated glued book trimmings in a first orientation so that the elongated direction is in the first direction and the glued end is in a first plane perpendicular to said first direction;

b. transferring said elongated glued book trimmings in said first orientation to a cutting location while maintaining said trimmings in said first orientation;



c. cutting off said glued end with a cut in a second plane parallel to said first plane;

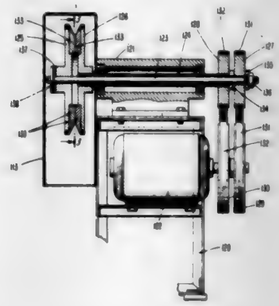
d. separating and collecting the cut glued ends separatly from the remainder of the elongated book trimmings.

4,445,408

METHOD AND APPARATUS FOR CUTTING CONTINUOUS FIBROUS MATERIAL

Garland B. Keith, 4822 Memorial Blvd., Kingsport, Tenn. 37664

Filed Sep. 24, 1979, Ser. No. 78,195
Int. Cl.³ D01G *1/04*
U.S. Cl. 83—37 **37 Claims**



25. A method of cutting funicular material into segments, comprising the steps of:

feeding said funicular material between first and second surfaces, each of said surfaces being defined by a plurality of knives with said pluralities of knives being arranged in at least partial sliding contact with one another, said knives of each of said first and second pluralities being spaced with respect to one another;

moving said first plurality of knives at a first linear speed in a first continuous path;

moving said second plurality of knives at a second linear speed, in the same direction as said first plurality of knives, in a second continuous path, said second linear speed being different than said first linear speed whereby said knives in sliding contact with one another advance with respect to one another;

cutting said funicular material between said knives in sliding contact with one another during said advancement of said knives.

4,445,409

DEVICE FOR CUTTING PAPER, CARDBOARD, AND SIMILAR MATERIALS

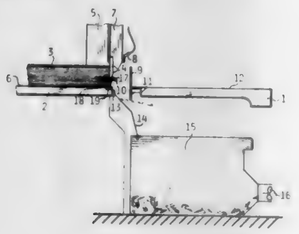
Karl Mohr, Hattersheimer Str. 11, and Wolfgang Mohr, Hundshager Weg 42, both of 6238 Hofheim, Fed. Rep. of Germany

Filed Jan. 4, 1982, Ser. No. 336,825

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101911

Int. Cl.³ B26D *5/00*

U.S. Cl. 83—157 **12 Claims**



1. Device for cutting paper, cardboard, and similar materials, comprising: a cutting table; feed means for advancing material to be cut to a desired extent along said cutting table, an intermediate cut being carried out both when the edges are trimmed and subsequent to at least one main cut; said cutting table comprising a front part for supporting trimmed material and a rear part for supporting material to be trimmed, said front and rear parts being slidable apart to leave a gap; a straightedge member being positioned under said front part of the table at a plane of separation between said two parts in a rest position when they are together, said straightedge member moving when the two parts separate from said rest position into an operating position, said straightedge lying in said operating position in contact with the total length of a rear edge of said front part of the table and at a right angle to the upper surface of said table.

4,445,410

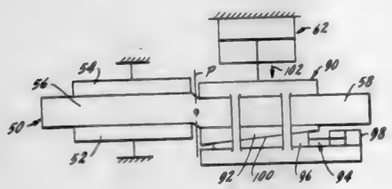
APPARATUS FOR SHEARING BARS, BILLETS, AND OTHER ELONGATED STOCK

John D. Lazar, Jr., and Benyamin Shvartsman, both of Munster, Ind., assignors to Bemcor, Inc., Hammond, Ind.

Continuation of Ser. No. 72,224, Sep. 4, 1979, abandoned. This application Aug. 3, 1981, Ser. No. 289,363

Int. Cl.³ B23D *15/04, 35/00*

U.S. Cl. 83—390 **14 Claims**



1. In shearing apparatus for elongate stock such as bars, which includes a relatively fixed shear and a movable shear for cooperation therewith along a shearing plane; a holding clamp movable generally toward the fixed shear to hold in shearing position across it stock from which a piece is to be sheared, said clamp engaging the stock at a point spaced from the shearing plane; a backing clamp movable relatively toward the movable shear for resisting, during shearing, the bending of the portion of the stock to be severed; a carrier carrying both the movable shear and the backing clamp; clamp actuating means also carried by the carrier; and main power means for moving the carrier and its shear through the shearing stroke; the cooperative improvements in which:

said carrier is a floating carrier, free before actuation of said main power means to accommodate itself to the position of the stock as held by the holding clamp while the backing clamp is firmly set, and then to be moved in shearing action with the firmly held stock portion being severed;

said clamp-actuating means includes low-slope wedging means with power actuation to continue its firm holding throughout the shearing action, the wedging means acting between the backing clamp and carrier;

the shears are restrained from spreading apart by restraining walls held by heavy bolsters at their ends which leave an access opening along one side through which the shears can be removed for servicing, the walls adjacent the access opening being thick and sturdy to resist by their strength and end connections alone the spreading forces during shearing stock corresponding to maximum rating whereby there may be easy access through the access opening; and the clamp actuating means extending out through said opening and being readily removable with the carrier;

the shears are removable inserts, for easy replacement or servicing, in slab-like holders to which they transmit their thrust;

the spreading forces are further resisted by lower side walls forming with a bottom wall a sturdy U-shaped unitary piece.

4,445,411

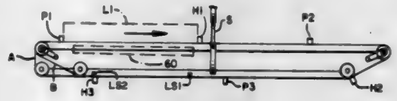
END DOGGING LOG FEEDER

Bill L. Purcell, Eureka, Mont., assignor to Hoff Companies, Inc., Boise, Id.

Filed Feb. 22, 1982, Ser. No. 350,438

Int. Cl.³ B27B *15/08, 25/04*

U.S. Cl. 83—403.1 **6 Claims**



1. In a sawmill apparatus having means to move a log lengthwise in a horizontal path through a pair of vertical saws to cut slabs off opposite sides of the log, said means comprising a single horizontal track frame having an upper side extending between said saws beneath said path of the log, a pair of guideways in side by side relation in said upper side of said track frame, a first endless chain having an upper reach disposed for travel in one of said guideways, an upstanding dog on said first chain to engage one end of the log, a second endless chain disposed for travel in the other of said guideways, an upstanding dog on said second chain to engage the opposite end of the log, and means to drive said chains, the space above said track frame being free of any obstruction that would limit the diameter of logs sawed by said saws, said track frame comprising a group of vertical plates secured together in face to face relation, said plates comprising a median plate, a pair of outside plates, and a spacer plate between said median plate and each outside plate, the spaces between said median plate and said outside plates defining said pair of guideways, a pair of chain support plates in each of said guideways on opposite sides of said spacer plates, each chain having outside links riding on the top edges of said chain support plates and having median links extending downward between said chain support plates, said outside plates serving as skid plates for the log, said outside plates being interrupted between said saws to reduce the width of said track frame between the saws, said dogs being links in said chains, the log engaging faces of said dogs being inclined away from the confronting log ends at a small angle.

4,445,412

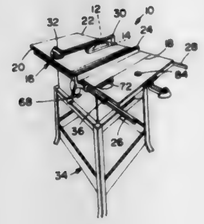
IMPROVED TABLE SAW ARRANGEMENT

Jerry M. Peters, P.O. Box 23692, San Jose, Calif. 95123

Filed Jul. 16, 1982, Ser. No. 398,974

Int. Cl.³ B27B *5/29;* B27C *9/04*

U.S. Cl. 83—477.2 **10 Claims**



1. In a table saw arrangement (10) which includes a generally vertically oriented generally circular rotatable saw blade (12) extending upwardly through a slot (14) in a work table (16) having an edge portion (18) generally parallel to the slot (16), a pair of parallel side edge portions (20,22) generally orthogonal to the first edge portion (18), and a fence (24) selectively positionable on the table (16) in parallel relation to the slot (14) between the slot (14) and the edge portion (18), the fence (24) being slidably mounted to a pair of rails (26,28) each of which is mounted to a different one of the pair of side edge portions (20,22), an improvement comprising:

a rigid rectangular member (36) having a generally planar portion (38) having a generally centrally located member opening (40) therethrough and first first (44), second (46), third (48) and fourth (50) peripheral portions (44,46,48,50), said first (44) and third (48) peripheral portions (44,48) being generally parallel to one another and said second (46) and fourth (50) peripheral portions (46,50) being generally parallel to one another, said peripheral portions (44,46,48,50) extending generally orthogonally downwardly from said planar portion (38), each of said peripheral portions (44,46,48,50) having edges (52,54,56,58,60,62,64,66), respective adjacent of which are fixed together;

means (68) for fastening said first peripheral portion (44) in adjacent fixed relation to said edge portion (18) of said work table (16);

a rigid generally planar adaptor plate (76) of smaller dimensions than said rectangular member (36), said adaptor plate (76) having a generally centrally located plate opening (78);

means (82) for mounting said adaptor plate (76) to any of a variety of power tools having an extending working member (84), said plate opening (78) being adapted to unobstructingly pass said extending working member (84) when said one of said tools is mounted to said adaptor plate (76); and

a plurality of fastener-spacers (92) attached between said planar portion (38) of said rectangular member (36) and said adaptor plate (76) and being adapted to fasten said adaptor plate (76) in rigid generally parallel relation to said planar portion (38) of said rectangular member (36) a spaced distance below said planar portion (38) with said member opening (40) generally coaxially aligned with said plate opening (78), said plate opening (78) being adapted to unobstructingly pass said extending work member (84).

4,445,413

SLICING CUTTER BLADE

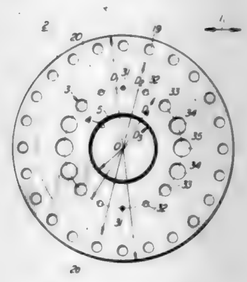
Kunio Ohwada, Tokyo, Japan, assignor to Kabushiki Kaisha Fujikoshi t/a Nachi-Fujikoshi Corp., Toyama, Japan

Filed Jan. 8, 1982, Ser. No. 338,130

Claims priority, application Japan, Mar. 23, 1981, 56-40477

Int. Cl.³ B23D *31/00;* B26D *7/26;* B28D *1/32*

U.S. Cl. 83—676 **3 Claims**



1. A slicing cutter blade, adapted for securing to a holder means having a tension ring provided with a protuberance thereon, comprising an annular sheet steel body having a central opening therein, said annular body being rolled in a predetermined direction and including:

a cutting edge formed at the inner circumferential edge of the central opening in said annular body;

an outer circumferential portion secured to said holder means;

a tension generating section adjacent said outer circumferential portion, said tension generating section being forced into contact with the protuberance on the tension ring of said holder means; and

a middle portion located between said cutting edge and said tension generating section, said middle portion having a plurality of circumferentially arranged and equidistantly spaced circular apertures disposed thereon for generating increased circumferential stress in said cutting edge, a first group of circular apertures being located on a first line parallel to said predetermined direction which passes through the center of the central opening in said annular body, said first group of circular apertures having a first diameter; a second group of circular apertures being located on a second line perpendicular to said first line which passes through the center of said central opening, said second group of circular apertures having a second diameter which is less than said first diameter; and a third group of circular apertures located intermediate said first and second lines having diameters greater than the diameter of the apertures on said second line, the diameters of said intermediately located apertures increasing as their distance from said second line increases.

4,445,414

DIGITAL, SIMULTANEOUS, DISCRETE FREQUENCY GENERATOR

Burrell Smith, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 24, 1982, Ser. No. 351,653

Int. Cl.³ G10H *7/00*

U.S. Cl. 84—1.01 **5 Claims**

1. An apparatus for generating simultaneous multiple frequencies comprising:

base frequency means for generating a plurality of base frequencies;

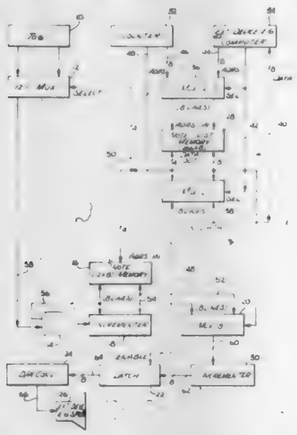
note memory for storing as many corresponding words as the number of said plurality of base frequencies;

comparison means for comparing the lowest order bit of each said word in said note memory to said corresponding

base frequencies, said comparing occurring at a higher rate than the highest base frequency; and

increment means for adding 1 to said corresponding word in said note memory if comparison by said comparison means indicates inequality between said base frequency and said lowest order bit;

wherein said comparison means includes an exclusive OR gate and said incrementing means includes an incrementer, one input of said exclusive OR gate being coupled to said base frequency means and the other input of said exclusive OR gate being coupled to the least significant bit



output line from said note memory, the output of said exclusive OR gate being coupled to one input of said incrementer, the other inputs of said incrementer being coupled to the outputs of said note memory,

whereby the output of said exclusive OR gate is added to the addressed contents of said note memory to create a word representative of the pitch of the base frequency where each higher order bit is a lower octave of said base frequency, and

octaves of each said base frequencies are generated for simultaneous output.

4,445,415

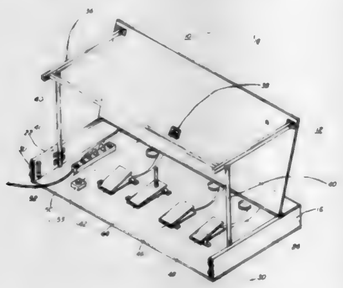
PORTABLE CASE AND STAND FOR PEDAL CONTROLS OPERATIONALLY FIXED THEREIN FOR USE WITH A KEYBOARD TEMPORARILY MOUNTABLE THEREON

George J. Izquierdo, 409 Elise Ave., Metairie, La. 70003

Filed Aug. 18, 1982, Ser. No. 409,195

Int. Cl.³ A45C *11/00*; G10G *5/00*

U.S. Cl. 84—177 **4 Claims**



1. A portable case and stand for effects control pedals used by a keyboard temporarily mountable thereon, comprising:

(a) a narrow elongated box defines a carrying and storage compartment when closed for said pedals and miscellaneous gear, and defines a keyboard stand when opened with said pedals operationally fixed and interconnected, said box having a removable narrow elongated side and a hinged part of a wide side cooperating for said opening and closing;

(b) a frame, pivoted adjacent an oppositely disposed edge from the hinged edge of said hinged part to said wide side, is adapted to pivot upwardly and outwardly orthogonal to said hinged part that is swung outwardly orthogonal to said box; and

(c) two legs, storable in said storage compartment, is adapted to vertically engage said box and frame to support said frame horizontally, with hinged part and said frame orthogonal to their respective supporting box structure, whereby a keyboard placed on said horizontally supported frame is operationally positioned above said operationally fixed and connected effects control pedals for immediate connection therewith.

4,445,416

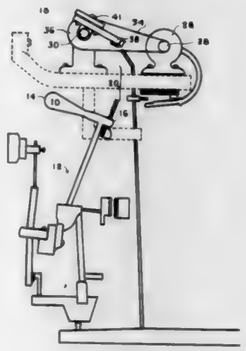
PLAYER PIANO DEVICES

Walter Quednau, 755 Ilex Ct., Lake Park, Fla. 33403

Filed Oct. 9, 1980, Ser. No. 195,327

Int. Cl.³ G10C *3/20*

U.S. Cl. 84—244 **5 Claims**



1. An apparatus for causing a piano hammer head to repeatedly strike its associated piano wire, attendant depression of its associated key, for the duration of such key depression, comprising,

a motor means having an output shaft,

an elongate rotatably mounted shaft connected in drive relation to said output shaft,

a first mounting block means fixedly secured to and conjointly rotatable with said rotatable shaft,

a plurality of flexible paddle means corresponding in number to the number of said piano wires and adjustably secured, in lateral relation to one another, to said rotatable first mounting block means,

a hammer head extension means attached to each of said hammer heads,

each of said hammer head extension means specifically disposed in path-interruptive relation to an associated one of said flexible paddle means attendant rotation thereof so that each rotation of said first mounting block means causes said flexible paddle means to impinge upon and momentarily displace said hammer head extension means and hence said hammer head into transient piano wire-impinging relationship,

means for disabling said paddle means from impinging upon said hammer head extension means when it is desired to play said piano in a conventional mode of operation, said disabling means also serving to de-activate said motor means so that said paddle means impinges upon said hammer head extension means only when said motor means is activated,

said disabling means at least in part comprising a second mounting block means fixedly secured to and hence conjointly rotatable with said elongate rotatable shaft,

said second mounting block means axially spaced a predetermined distance from said first mounting block means,

a spring stop lever means fixedly secured to said second mounting block means and specifically disposed to project outwardly therefrom in substantially co-planar relationship therewith,

a first, movably mounted, two position, link member,

means for moving said first link member from a first position to a second position,

said first position of said first link member disposing one end of said link member in path-interruptive relation to said rotatable spring stop lever means,

said spring stop lever means-carrying second mounting block means specifically oriented so that when rotation of said second mounting block means is terminated by said end of said first link member, disposed in path-interruptive relation thereto when said first link member is in said first position, the conjoint rotation of said paddle means is also terminated and said paddle members are collectively disposed in non-interfering relation to said hammer head extension means, thereby allowing said piano to be played in a conventional fashion.

4,445,417

METHOD AND MACHINE FOR MAKING SQUARE-MESHED NET

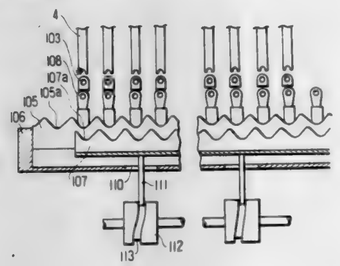
Toshikazu Iijima, 20, Shimogou, Isshiki-cho, Gamagouri-Shi, Aichi-ken, Japan, and Shuichi Ito, Yotsukaichi, Japan, assignors to Toshikazu Iijima, Aichi, Japan

Filed Jan. 9, 1981, Ser. No. 223,784

Claims priority, application Japan, Apr. 23, 1980, 55-52987

Int. Cl.³ D04G *1/08*

U.S. Cl. 87—12 **8 Claims**



1. Method for knotting a square-meshed net, comprising the steps of arranging warp strands and weft strands on the inside and outside of upper hooks arranged in circular form, each particular warp (or weft strand being opposite a particular upper hook and a particular weft (or warp) strand, knotting each particular warp (or weft) strand to the particular weft (on warp) strand by the particular upper hook, and transferring the particular weft (or warp) strand in one cycle of the knotting to a next adjacent upper hook in a prescribed direction and knotting it to the next adjacent warp (or weft) strand, by said next upper hook.

4,445,418

DRUM MAGAZINE FOR A GUN

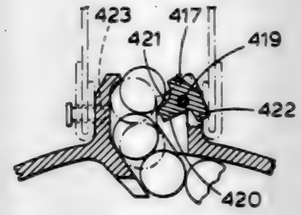
Leroy J. Sullivan, and Robert L. Waterfield, both of Singapore, Singapore, assignors to Chartered Industries Of Singapore Private Limited, Jurong Town, Singapore

Division of Ser. No. 280,177, Jul. 6, 1981, Pat. No. 4,384,508. This application Sep. 14, 1982, Ser. No. 417,946

Claims priority, application United Kingdom, Dec. 11, 1980, 8039745

Int. Cl.³ F41C *25/10*

U.S. Cl. 89—33 D **9 Claims**



1. A drum magazine for a gun including a housing having a peripheral wall defining a circularly cross-section interior, a feed throat extending through the said wall for releasing cartridges from the housing to provide an opening in said peripheral wall, said opening having a first side and a second side with an outer extremity of said first side of said opening being provided with a fixed lip extending over the feed throat and said second side of said opening being provided with a spring biassed movable lip biassed in a direction outwardly of the magazine, the spacing between the lips being dimensioned so that a cartridge leaving the feed throat can only be slid therefrom in the direction of the housing axis and in no other direction when the magazine is mounted on a gun.

4,445,419

AMMUNITION CONTAINER, ESPECIALLY DRUM MAGAZINE

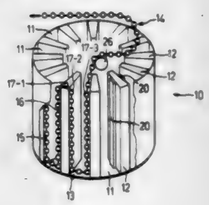
Pierre Fischer, Geneva, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Sep. 20, 1982, Ser. No. 419,763

Claims priority, application Switzerland, Oct. 14, 1981, 6560/81

Int. Cl.³ F41D *10/26*

U.S. Cl. 89—33 D **5 Claims**



1. An ammunition container arrangement, especially a drum magazine, comprising:

means defining a drum magazine;

side walls for dividing said drum magazine into a plurality of compartments for receiving loops of an ammunition belt;

each loop of the ammunition belt comprising two adjacently arranged loop portions;

each loop portion bearing against one of the side walls of its related compartment;

a respective magnet arranged between each loop portion of the cartridge belt and the related side wall of the compartment; and

each such magnet being secured to its related side wall and

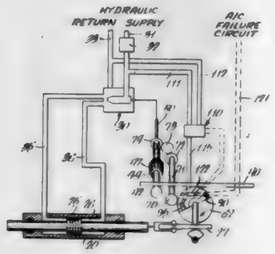
attracting the loop portion of the ammunition belt in order to secure the same against displacement towards the center of the drum magazine.

4,445,420

POWER BOOST MECHANISM

David J. Lang, and John Readman, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 36,133, May 4, 1979, Pat. No. 4,304,171.
This application May 11, 1981, Ser. No. 262,124
Int. Cl.³ F15B *9/12, 13/16*
U.S. Cl. 91—3 **19 Claims**



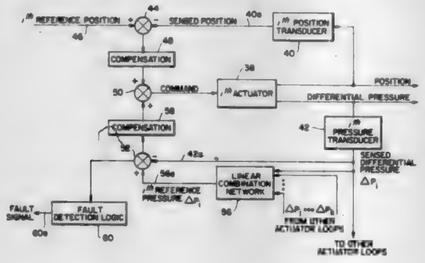
1. A power boost mechanism for converting pilot linear throttle input commands to rotary motion of an output shaft, said mechanism comprising:
an input member movable in response to a throttle input command;
power boost means responsive to movement of the input member for causing rotation of the output shaft;
feedback means associated with the output shaft and responsive to movement thereof for returning said power boost means to a null position independently of said input member;
means automatically enabling direct operation of the output shaft by said input member when said power boost means is inoperative; and
shift means responsive to a malfunction signal for imparting limited rotation to said output shaft without movement of said input member.

4,445,421

HELICOPTER SWASHPLATE CONTROLLER

Bruce K. Walker, Shaker Heights, Ohio; Mukund Desai, Needham, and Eliezer Gai, Somerville, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 6, 1981, Ser. No. 318,690
Int. Cl.³ F01B *3/02;* **F15B** *11/10, 13/16;* **B64C** *11/38*
U.S. Cl. 91—186 **5 Claims**



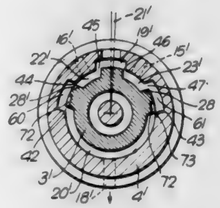
1. A control system for a helicopter swashplate, comprising:
A. five or more non-colinear hydraulic actuators coupled to said swashplate, each of said actuators including a ram responsive to a command signal for that ram and further including associated first transducer means for generating a ram position signal representative of the position of said ram, and second transducer means for generating a ram differential pressure signal representative of the differential pressure across said ram, and command signal generator means for generating said command signal,
B. a controller means including means responsive to the ram differential pressure signals from all of said actuators for generating a reference differential pressure signal for each of said actuators, wherein said reference differential pressure signals are linear combinations of said ram differential pressure signals,
wherein said command signal generator means includes means for generating said command signal for each ram whereby said command signal is representative of the sum of (1) the difference between the ram position signal for that ram and a signal representative of a reference position for that ram and (2) the difference between the ram differential pressure signal for that ram and said reference differential pressure signal for that ram.

4,445,422

POWER STEERING VALVE

Arthur E. Bishop, 17 Burton St., Mosman, N.S.W., Australia

Continuation of Ser. No. 115,412, Jan. 25, 1980, abandoned. This application Sep. 23, 1981, Ser. No. 304,643
Claims priority, application Australia, Jan. 26, 1979, PD7480
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—434 **5 Claims**



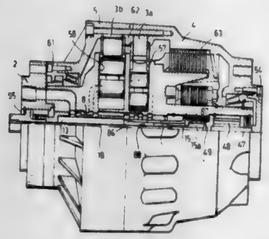
1. A hydraulic control valve for a vehicle power steering system comprising an inlet port and a return port for hydraulic fluid flow supplied by a pump, a hydraulic motor means for effecting a right or left turn force as a function of a pressure differential between right and left sides in said motor means, corresponding outlets formed in said valve for respective fluid flow connection to said right and left sides of said motor means, said motor means being connected to supplement turning forces transmitted from a steering wheel to vehicle wheel steering means, said valve having at least one pair of symmetrical passages connecting the inlet port to the return port, each passage having spaced therein a first variable area orifice adjacent said inlet port and a second variable area orifice adjacent said return port defined by relatively movable parts of the valve with one of said outlets respectively interposed in each said passage between said first and second orifices, said orifices being arranged in each said passage so that, by reason of relative movement between said parts, when the first orifice in the one passage is in the course of opening the second orifice is in the course of closing and when the first orifice in the one passage is in the course of closing the second orifice is in the course of opening according to the magnitude of turning forces applied to produce relative movement of said parts so that hydraulic fluid is directed towards the interposed outlet of the respective passage or away therefrom respectively to cause said motor means to produce a force supplementing said turning forces, the improvement comprising in that, in each of said at least one pair of passages, an additional orifice is added between the outlet in that passage and return port, which additional orifice is closing when the second orifice lying between the outlet in that passage and the return port is opening such that, when the turning forces transmitted from said steering wheel are small, the additional orifice restricts the flow of hydraulic fluid from the outlet to the return port providing a back pressure at the outlet in that passage whereby the turn force effected by said motor means is less than would have been the case in the absence of such additional orifice.

4,445,423

HYDRAULIC MOTOR

Ilmari Louhio, Helsinki, Finland, assignor to Oy Partek AB, Finland

Filed Mar. 31, 1981, Ser. No. 249,710
Claims priority, application Finland, Apr. 14, 1980, 801183
Int. Cl.³ F01B *13/06, 25/00*
U.S. Cl. 91—492 **9 Claims**



1. A hydraulic motor provided with two cylinder sets arranged around a shaft and having diameters of different sizes with a sliding spindle valve structure, having fluid pressure reactive surfaces thereon, controlled by the pressure medium being arranged in a bore formed in the motor shaft for directing the pressure medium alternatively to both cylinder sets, to the larger-diameter cylinder set only or to the smaller-diameter cylinder set only, characterized in that the valve spindle structure comprises means for connecting the pressure openings of the cylinder set remaining without pressure medium to a space in which return pressure prevails, and means for connecting the pressure openings in both cylinder sets to the return pressure when the working pressure of the motor approaches the return pressure, said connecting means including said sliding spindle valve which slides in response to a pressure differential thereacross, on fluid pressure reactive surfaces of the spindle valve, between the working pressure and the return pressure.

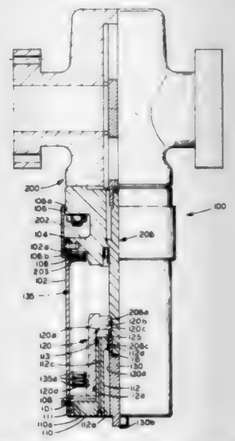
4,445,424

ACTUATOR HAVING BELLEVILLE WASHER CONFIGURATION OPERATING IN CONCERT WITH A PISTON CYLINDER MEMBER

Stephen R. Foster, Gretna, and Peter W. Austin, New Orleans, both of La., assignors to Baker Cac, Inc., Belle Chase, La.

Filed Oct. 2, 1981, Ser. No. 307,713
Int. Cl.³ F01B *31/12*
U.S. Cl. 92—5 R **1 Claim**

1. A fluid pressure actuator for a valve having a housing and an actuating stem comprising: an annular housing having one end attachable to the valve housing; a cylindrical piston element concentrically fixedly mounted in the other end of said annular housing and extending into the interior of said annular housing toward said one end; a cupshaped cylinder slidably and sealably mounted on the exterior of said cylindrical piston and defining an annular space between its exterior surface and an interior wall surface of said annular housing; a radially outwardly projecting flange on the open end of said cupshaped cylinder; conduit means for supplying pressured fluid to the interior of said cylinder to urge same toward the valve housing; resilient means mounted in said annular space and engaging said flange to oppose the fluid pressure produced movement of said cylinder; means for connecting said cylinder to the actuating stem of the valve; said cylindrical piston element having a central bore, an indicating stem slidably and sealingly co-operating with said central bore, and means for connecting the inner end of said indicating stem for co-movement with said cup-shaped cylinder, the length of said indicating stem being only slightly greater than the depth of said piston bore.

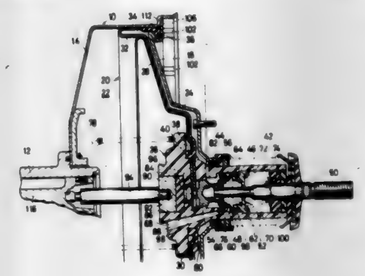


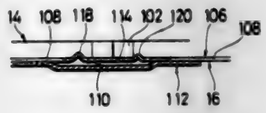
4,445,425

HOUSING SHELLS OF FLUID PRESSURE MOTORS

Atsushi Ohmi, Anjo, and Chiaki Ochiai, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 15, 1981, Ser. No. 283,547
Claims priority, application Japan, Jul. 29, 1980, 55-107790[U]
Int. Cl.³ F01B *19/02;* **F16J** *3/02*
U.S. Cl. 92—98 D **5 Claims**





1. A fluid pressure servomotor comprising:
a stamped open ended sheet metal shell forming an axially extending internal chamber of uniform cross section adjacent said open end;
a radially outwardly bent shoulder around the external periphery of said shell and spaced a distance from said open end thereof, said shell having a plurality of slots formed therein at generally regular intervals around the periphery

of said shell a predetermined distance axially outwardly of said shoulder;

a plurality of radially inwardly extending portions projecting radially inward from said shell between said slots and said open end of said shell;

an end cover having a radially outwardly opened channel formed on the outer periphery thereof and a flanged edge slidingly fitted with respect to an inside portion of a section of the shell located between said shoulder and said open end of said shell, said periphery of said end cover having a plurality of notches formed therein at regular intervals corresponding to said inwardly extending portions of said shell for receiving said inwardly extending portions;

a movable wall disposed in said chamber and having a diaphragm portion, an outer peripheral bead of said diaphragm compressed into said channel on said end cover in cooperation with said shell to thereby provide a fluid seal;

said shoulder of said shell including at least one dented portion facing one of said plurality of radially inwardly extending portions; and

at least first and second tabs extending from the peripheral edge of said flanged edge of said end cover and facing in opposite circumferential directions with respect to said radially inwardly extending portion such that upon rotation of said end cover with respect to said shell during assembling, disassembling or reassembling said peripheral edge of said flanged edge cooperates with at least one of said plurality of radially inwardly extending portions to resiliently deform into said at least one dented portion so that said at least one tab will slidably pass at least one of said plurality of radially inwardly extending portions.

4,445,426

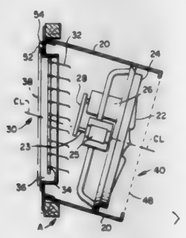
SLANTED HOUSING FAN ENCLOSURE

Hoy R. Bohanon, Sr., Muskogee, Okla., assignor to Acme Engineering & Manufacturing Corporation, Muskogee, Okla.

Continuation of Ser. No. 273,247, Jun. 12, 1981, abandoned. This application Feb. 1, 1983, Ser. No. 463,010

Int. Cl.³ F24F *13/06*

U.S. Cl. 98—116 **7 Claims**



1. A housing and fan for mounting at an opening in in a wall of a building, comprising

a housing lying along an axis and having an inlet opening and an outlet opening at respective ends thereof, said inlet opening of said housing being located in the vicinity of the opening within the wall of the building when said housing and fan are mounted in place; a first flange extending upwardly from the top of said housing at said inlet opening, said first flange lying along a plane which forms with said axis of said housing an angle greater than ninety degrees assisting in operatively connecting the top of said housing and the top of the opening in the wall; a second flange extending downwardly from the bottom of said housing at said inlet opening, said second flange lying along a plane which forms with said axis of said housing an angle less than ninety degrees assisting in operatively connecting the bottom of said housing and the bottom of the opening in the wall; said outlet opening of said housing being outside of the building and located a distance from the wall of the building when said housing and fan are mounted in place; and wherein the axis of said housing slants downwardly away from the building such that said outlet opening of said housing extends below said inlet opening of said housing;

a fan assembly mounted within said housing and having its axis generally aligned with said axis of said housing; and

a plurality of shutter elements positioned at said inlet opening of said housing and mounted to move between open and closed positions, the angles said shutter elements assume when in open position being generally aligned with the angles of said axis of said housing and said axis of said fan assembly.

4,445,427

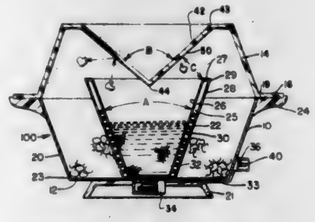
POPCORN POPPER

Casimir R. Kiczek, 27109 Kingswood Dr., Dearborn Heights, Mich. 48127

Filed Dec. 15, 1980, Ser. No. 216,158

Int. Cl.³ H23L *1/18*

U.S. Cl. 99—323.5 **9 Claims**



1. A device for heating oil and kernels of unpopped corn on a surface to make popcorn, said device comprising:

receptacle means, disposed on said surface, for receiving corn which has been popped;

a popping vessel mounted to said receptacle means, said popping vessel receiving the oil and the kernels of unpopped corn therein;

means, attached to said popping vessel, for heating the oil and the kernels of unpopped corn such that the kernels of unpopped corn are heated to the popping temperature to pop the kernels of unpopped corn to form popcorn; and

means, disposed above said heating means, for deflecting the corn which has been popped upward as a result of forming popcorn out of said popping vessel into said receptacle means so as to separate the corn which has been popped from the kernels of unpopped corn in said popping vessel, said deflecting means further having a deflector member disposed toward said popping vessel.

4,445,428

COOKING GRILL HEATED FROM DEEP FAT FRYER

J. Philip Buford, 513 N. Boston Ave., De Land, Fla. 32720

Continuation-in-part of Ser. No. 249,937, Apr. 1, 1981, abandoned. This application Nov. 3, 1982, Ser. No. 439,024

Int. Cl.³ A47J *37/00*

U.S. Cl. 99—340 **12 Claims**

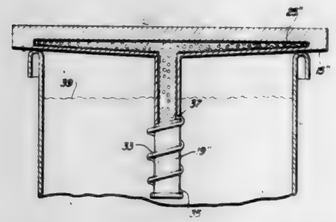
1. A cooking grill for use with deep fat frying containers holding a cooking oil comprising:

a generally flat grill plate; and

mounting means to support said grill plate adjacent the top of a deep fat frying container;

a heat pipe containing a liquid medium and extending from said grill plate into the cooking oil in the deep fat frying container to convey heat from the cooking oil to said grill plate; and

a flash boiler tube associated with said heat pipe, a first end of said tube being in fluid communication with the interior of said heat pipe at the bottom thereof, and a second end



of said tube being in fluid communication with the interior of said heat pipe above said first end.

4,445,429

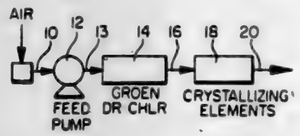
APPARATUS FOR CHILLING AND PLASTICIZING FATTY MATERIALS

Ted S. Czyzewski, Bloomingdale, and Bartley A. Greenwell, Crystal Lake, both of Ill., assignors to Groen Division - Dover Corporation, Elk Grove Village, Ill.

Division of Ser. No. 356,958, Mar. 11, 1982. This application Apr. 26, 1983, Ser. No. 488,700

Int. Cl.³ A23D *3/02, 5/02*

U.S. Cl. 99—455 **3 Claims**



1. Apparatus for chilling and plasticizing fatty materials which have 5–25% air or inert gas by volume added thereto so as to be white and opaque rather than translucent comprising a means for cooling and partially crystallizing said fatty material from approximately 130°–140° F. to within a range of 70°–86° F.; at least one crystallizing element which comprises a motionless mixer for applying a shearing action to said cooled and partially crystallized material to provide a material having a fine crystal structure by the rotational circulation of said material around its own hydraulic center to cause radial mixing of said material; means for conveying said cooled and partially crystallized material to said crystallizing element and means for conveying the output of said crystallizing element to a filler.

4,445,430

METHOD AND APPARATUS FOR SORTING, COUNTING AND FLATTENING CANS

Melvin L. Pyne, P.O. Box 997, Brookings, Oreg. 97415, and Robert B. Allsup, Box 2053, Harbor, Oreg. 97415

Filed Oct. 27, 1981, Ser. No. 315,554

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—35 **25 Claims**

1. A method of sorting, counting, and flattening a plurality of various brand name cans, each can having identifying indicia provided on a ring end thereof, comprising:

(a) providing a plurality of branded can tubes to receive the different can brand names;

(b) feeding the branded cans to correspondingly branded can tubes;

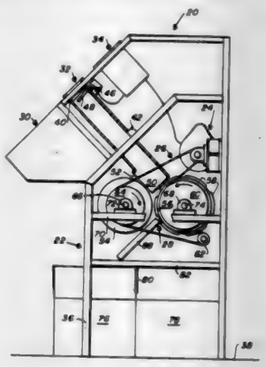
(c) counting each can as it passes through a branded can tube;

(d) providing a pair of juxtaposed flattening rollers at an outlet end of each of the branded can tubes, and providing one of the rollers with a surface configured to produce a gripping effect on the ring end of a can;

(e) rotating the rollers in opposite directions relative to each other;

(f) flattening the cans between the rotating rollers in a manner whereby the body of the can is folded over the back side of the ring end of the can so that all identifying indicia on the ring end are easily readable; and,

(g) collecting by brand name the sorted, counted and flattened cans in individual containers located downstream from the rotating rollers.



4,445,431

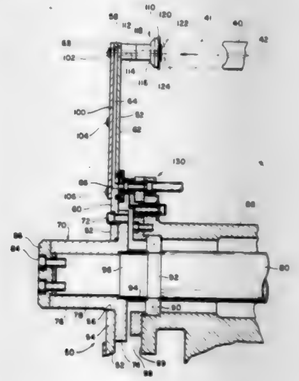
DISK TRANSFER SYSTEM

James S. Stirbis, Littleton, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Feb. 7, 1983, Ser. No. 464,555

Int. Cl.³ B65G *47/04*; B41F *17/20*

U.S. Cl. 101—40 **8 Claims**



1. Apparatus for continuously conveying decorated container members having wet ink images on the outer periphery thereof between a first continuously moving rotatable mandrel wheel type container carrying apparatus of a high speed container decorator or coater machine and a high speed second continuously linearly moving pin chain container carrying apparatus comprising:

a continuously rotatable disk type conveyor means rotatably movable in a predetermined endless path between the first and second continuously moving container carrying apparatus including a first path portion located in juxtaposition to the first continuously moving container carrying apparatus for receiving decorated container members there-

from and a second path portion located in juxtaposition to the second continuously moving container carrying apparatus delivering decorated container members thereto;

a plurality of individual circumferentially spaced vacuum cup means fixedly peripherally mounted in equally spaced relationship on and extending laterally outwardly of and being continuously movable with said disk type conveyor means in fixed relationship therewith for holding a single container member on each of said vacuum cup means, only by application of vacuum thereto during movement between the first and second continuously moving container carrying apparatus and for releasing container members therefrom only by removal of vacuum therefrom;

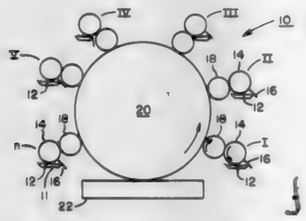
vacuum chamber means extending along the path of movement of and in substantially sealed relationship with said disk type conveyor means between the first and second continuously movable container carrying apparatus and being connected to each of said vacuum cup means adjacent to the first continuously moving container carrying apparatus for receiving and holding container members delivered therefrom and being disconnected from each of said vacuum cup means adjacent to the second continuously moving container carrying apparatus for releasing the container members for supportive engagement therewith and being continuously connected to each of said vacuum cup means during movement between the first continuously moving container carrying apparatus and the second continuously moving container carrying apparatus for holding the container members thereon solely by applied vacuum during non-supportive association with the second continuously moving container carrying apparatus.

4,445,432

ARTICLE DECORATING

Clarence E. Ford, Jr., Painted Post, N.Y., and Ronald E. Johnson, Tioga, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 28, 1980, Ser. No. 173,129
Int. Cl.³ B41F 9/02
U.S. Cl. 101—152 **16 Claims**



1. In combination, an apparatus for printing multicolored designs on a substrate and a thermoplastic pressure sensitive ink for each color thereof comprising:

a supply of each thermoplastic ink, the supply being heated to a temperature sufficient to melt the ink, said inks containing no volatile solvents which evaporate during the movement of the inks from the ink supply to the substrate, the composition of said inks remaining substantially unchanged during the printing operation;

an inking surface for each supply of ink, the inking surface being heated to a temperature above the melting point of the ink and engaging the supply for receiving thereon a selected amount of the ink in melted form;

an elastomeric transfer surface associated with each inking surface, the transfer surface operating at a temperature below that of the associated inking surface and contacting the associated inking surface for receiving thereon selected amounts of the ink from the inking surface in the form of a pattern, the ink becoming cooled to below its melt point upon contact with the transfer surface; and

an elastomeric collector surface operating at a temperature not greater than the temperature of the transfer surface, the transfer surfaces being positioned around the collector surface for contacting the same at spaced locations with synchronous movement to provide on the collector surface a total transfer of each ink pattern from each associated transfer surface in registration with the other ink patterns from the other associated transfer surface, to thereby form the multicolor design;

each transfer surface and the collector surface being formulated from silicone materials which exhibit progressively greater affinity for the ink but less affinity therefor than the substrate;

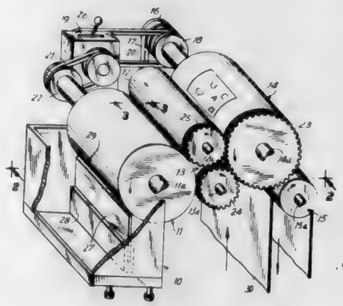
the ink being formulated to melt upon the application of heat and to form a cohesive film and become pressure sensitive upon cooling to below the melt point thereof, said cohesive film serving to hold said ink together to provide total transfer of said ink from the transfer surface to the collector and thence to the substrate without leaving behind any material.

4,445,433

METHOD AND APPARATUS FOR VARIABLE DENSITY INKING

Menashe Navi, 12 E. 18th St., New York, N.Y. 10003

Filed Apr. 2, 1982, Ser. No. 365,013
Int. Cl.³ B41F 31/06; B41L 27/08
U.S. Cl. 101—350 **8 Claims**



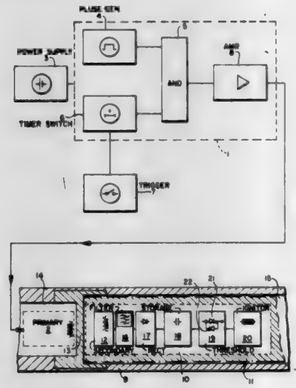
1. A variable density inking apparatus for a printing apparatus employing a celled ink metering roll such as a letter press or lithographic press comprising ink fountain means, an anilox roll mounted in ink receiving position relative to said fountain means, said anilox roll including a multiplicity of outwardly open cells on the periphery thereof, metering means wipingly engaging the surface of said anilox roll for removing therefrom ink film externally of said cells, a printing roll rotatable relative to said anilox roll, at least one resilient form roll interposed between said printing roll and said anilox roll, said form roll being in peripheral contact with said printing roll and being pressed against said anilox roll to indent into said cells of said anilox roll, said anilox, form, and printing rolls being rotatable about parallel axes, the contacting portions of said rolls rotating in the same direction, the combination including means for varying the relative peripheral speed of said form and anilox rolls in the range of from about 1:3 to 3:1.

4,445,434

ARRANGEMENT FOR THE CONTACTLESS TRANSMISSION OF ELECTRIC ENERGY TO MISSILES DURING FIRING THEREOF

Uwe Brede, Fürth, and Gerhard Kordel, Nuremberg, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jun. 26, 1981, Ser. No. 277,863
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024554
Int. Cl.³ F42C 19/12
U.S. Cl. 102—206 **20 Claims**



1. An arrangement for the contactless transmission of electrical energy to a missile during the firing thereof from a firing device, the arrangement comprising a transformer-like coil system including a primary coil system connected to the firing device and a secondary coil system connected to the missile, the primary coil system being supplied with electric energy and the secondary coil system being responsive to the electric energy developed in the primary coil system for developing electrical energy therein, partition means arranged between the primary coil system and the secondary coil system, the partition means comprising a non-magnetic material and being capable of withstanding thermal and mechanical stresses of repeated firings by the firing device, the partition means being fixedly connected with the firing device and disposed for sealing the primary coil system with respect to the missile at least during the firing of the missile from the firing device, and a housing having two opposed recesses and an intermediate bottom member for at least substantially separating the two recesses, a pin-shaped core extending from the intermediate bottom member so as to delimit an annular shape for one of the two recesses and the housing, the one of the two recesses and the housing forming a resonant cavity half shell for accommodating the secondary coil system therein, the other of the two recesses and the housing being arranged for accommodating electrical components connected to the output of the secondary coil system.

4,445,435

ELECTRONIC DELAY BLASTING CIRCUIT

Gerald L. Oswald, New Ringgold, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Continuation-in-part of Ser. No. 146,192, May 5, 1980, Pat. No. 4,328,751. This application Mar. 12, 1982, Ser. No. 357,483
Int. Cl.³ F42C 11/06
U.S. Cl. 102—215 **2 Claims**

1. A circuit for firing an ignition element following a time delay, comprising:

means for storing an electrical charge,

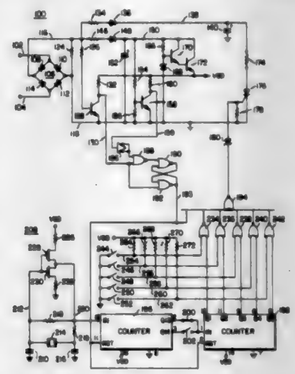
means for receiving an input signal to provide electrical energy therefrom to said means for storing,

means for storing a digital reference count to determine the duration of said time delay,

means responsive to an amplitude transition of said input signal for generating an initiating signal,

digital timing means connected to receive said digital reference count and said initiating signal for generating an ignition signal at the expiration of the period of said time delay following receipt of said initiating signal, and

means responsive to said ignition signal for connecting said means for storing an electrical charge to said ignition element for firing said ignition element.

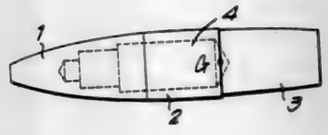


4,445,436

PROJECTILE FOR CENTRIFUGAL LAUNCHING DEVICE

Léon L. Rutten, 29, rue Duvivier, 4000 Liege, Belgium

Filed Nov. 30, 1981, Ser. No. 326,009
Claims priority, application Belgium, Dec. 4, 1980, PV2/58886
Int. Cl.³ F42B 11/02
U.S. Cl. 102—501 **2 Claims**



1. A projectile for a centrifugal gun having a gun vane for launching the projectile, comprising: (a) an ogival head portion; (b) a generally cylindrical body portion joined to the ogival head portion in a first transverse plane, the diameter of the cylindrical body portion being equal to the longest diameter of the ogival head portion; and (c) a tail portion joined to the cylindrical body portion in a second transverse plane, the center of gravity of the projectile being within 1.5 mm of the second transverse plane, the outer surface of the tail portion being curved, the curve being defined by a system of Cartesian axes located in an axial plane of the projectile wherein the x-axis coincides with the longitudinal axis of the projectile and the y-axis extends from the junction of the cylindrical body portion and the tail portion such that:

$$x = A(\alpha + \tfrac{1}{4}\sin 2\alpha) + B + C\sin\alpha - D\cos^2\alpha$$

$$y = D(\tfrac{1}{4}\sin 2\alpha - \alpha) + C\cos\alpha - A\sin^2\alpha$$

where:

α=angle (in radians) the gun turbine must cover to completely eject projectile

$$\left.\begin{aligned} A &= K \sin \mu \\ D &= K \cos \mu \end{aligned}\right\} K = \frac{30}{\pi} \cdot \frac{V_R}{N}$$

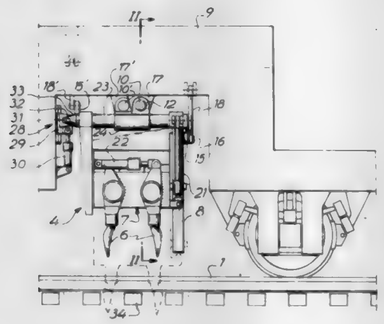
μ = arctan ν
v = radial ejection speed m/s
V = tangential speed
V_R = resulting speed
N in rpm
B = extreme radius of gun = r_2
C = $\frac{1}{3}$ calibre or radius of the calibre.

4,445,437

RAILWAY TRACK TAMPING MACHINE

Arne Nielsen, La Conversion, Switzerland, assignor to Sig Societe Industrielle Suisse, Schaffhausen, Switzerland

Filed Sep. 15, 1980, Ser. No. 186,908
Claims priority, application Switzerland, Oct. 5, 1979, 8998/79
Int. Cl.³ E01B *27/16, 31/00;* E02F *5/22*
U.S. Cl. 104—12 **6 Claims**



1. In a railway track tamping machine comprising a rolling chassis for rolling on a railway track, said rolling chassis being equipped with two independent tamping units arranged on opposite sides of each line of rails of said railway track, each of said tamping units comprising at least two pivoted tamping tools mounted in opposition on a tool holder which is mounted for vertical movement in a gantry which is, in turn, mounted movably on the rolling chassis in a vertical plane transverse to the railway track, the improvement of each gantry being mounted on the rolling chassis via a connecting device comprising means for effecting translation movement of the gantry transverse to the track, means for effecting pivotal movement of the gantry transverse to the track, coordinating means to combine said translation movement and said pivotal movement of the gantry transverse to the track, and motor means for driving one of said means for effecting translation movement, said means for effecting pivotal movement, and said coordinating means.

4,445,438

BALLAST TAMPING TOOL UNIT

Josef Theurer, Vienna, and Johann Hansmann, Klosterneuburg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 5, 1982, Ser. No. 346,226
Claims priority, application Austria, Mar. 9, 1981, 1084/81
Int. Cl.³ E01B *27/16*
U.S. Cl. 104—12 **5 Claims**

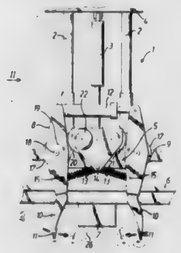
1. A tamping tool unit for a ballast tamping machine which comprises a frame and a tamping tool unit carrier vertically adjustably mounted on the frame, the unit comprising

(a) a pair of tamping tool holders, each holder having affixed thereto a tamping tool for immersion in the ballast adjacent a point of intersection of a track tie and rail where the track is supported on the ballast,

(b) an axle pivotally supporting each tamping tool holder on the carrier, the axle extending transversely to the track,

(c) a hydraulic reciprocating drive means for pivoting the tamping tool holders independently of each other and asynchronously towards and away from each other transversely of the track tie,

(d) eccentric means supporting each axle and imparting thereto a constant horizontal and vertical motion with respect to the carrier upon rotation of the eccentric means about an axis spaced from the axle,



(e) transmission means connecting the eccentric axle supporting means and arranged to cause the motions of the axles to be effected in opposite directions, and

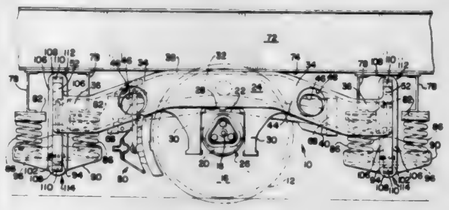
(f) a common vibrating drive connected to one of the eccentric axle supporting means for rotating the same about said axis to impart to the axles revolving motions in opposite directions, the axes of rotation of the eccentric axle supporting means being so spaced from the axles that the axles move in orbits downwardly in the portions of the orbits facing each other whereby the lower ends of the tamping tools are vibrated in elliptical paths downwardly with respect to the track support point.

4,445,439

RAILROAD VEHICLE TRUCK WITH SINGLE WHEELSET

Lynn K. Tilly, West Chicago, and John J. Sawa, Chicago, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Sep. 14, 1981, Ser. No. 302,217
Int. Cl.³ B61F *3/00, 5/22, 5/44*
U.S. Cl. 105—165 **6 Claims**



1. A truck for a railroad car, said truck having a pair of crosstie assemblies defined in part by a pair of endcaps, each of said endcaps having a center block operatively connected to a side frame of said truck by a swing arm and having at least two spring cups attached one each to each side of said center block, said spring cups operatively connected to a body of said railroad car by resilient means, an improvement in said endcap comprising:

inner and outer rib means joined to each said spring cup and extending from said center block above and below said cups respectively to resist bending forces transferring between said center block and said spring cups,

transverse rib means joined to and extending across each said spring cup and located between said center block and an outermost edge point of said spring cup to resist torsional forces transferring between the center block and the spring cups,

said inner rib means joined to an inner flange of each said spring cup and said outer rib means joined to an outer edge of each said spring cup,

said inner rib means having an outer end located near said outermost edge of said spring cup and a top edge sloping upwardly from said outer end to an inner end flush with a top wall of said center block.

2. A truck for a railway car, said truck having a pair of crosstie assemblies defined in part by a pair of endcaps, each of said endcaps having a center block operatively connected to a side frame of said truck by a swing arm and having at least two spring cups attached one each to each side of said center block, said spring cups operatively connected to a body of said railroad vehicle by resilient means, an improvement in said endcap comprising:

inner and outer rib means joined to each said cup and extending from said center block above and below said cups respectively to resist bending forces transferring between said spring cups,

transverse rib means joined to and extending across each said spring cup and located between said center block and an outer edge of said spring cup to resist torsional forces transferring between the center block and the spring cups,

said outer rib means having an outer end located near said outer edge of said cup and a bottom edge sloping downward from said outer end to an inner end substantially flush with a bottom wall of said center block.

6. An end cap particularly adapted for being part of a crosstie assembly in a railroad vehicle truck with a single wheelset, an improvement of said end cap comprising,

a center block having a bottom wall formed with a downward concave shaped groove to form in part a lower pivot connection with a swing arm of said truck, and a pair of horizontal platforms attached to and extending outwardly respectively from each side of said center block, each said platform including a narrow partition located adjacent to said center block and joined integrally thereto and a circular cup portion connecting with said narrow partition,

an inner flange joined to and extending upwardly from and about an inner edge of each said horizontal platform,

an outer flange joined to and extending upwardly from and about an outer edge of said horizontal platform,

an inner rib formed on each said inner flange, said inner ribs having an outer end proximate to an outermost edge point of each said horizontal platform and an inner end joined to a front and a rear vertical sidewall of said center block respectively with said inner ribs having a top edge sloping upwardly from said outer end to said inner end to be substantially flush with a top wall of said center block,

an outer rib joined to and extending downward from and about said outer edge of each said horizontal platform, said outer ribs having an outer end proximate to said outermost edge point of each said horizontal platform and an inner end joined to said front and rear sidewall of said center plate respectively with said outer ribs having a botom edge sloping downward from said outer end to said inner end to be substantially flush with a bottom wall of said center block, and

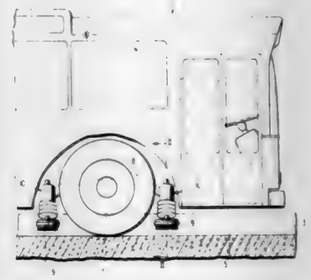
a transverse rib formed on and extending upward from each said platform, each said transverse rib being proximately aligned with a joinder of said platform narrow partition and said platform circular cup portion with a top edge of each said transverse rib being substantially flush with a top edge of said outer flange at an outer end of said transverse rib, said top edge of said transverse ribs sloping upward from said outer ends to be substantially flush with said top edge of said inner ribs at an inner end of each said transverse rib with a longitudinal axis of each said transverse rib intersecting a longitudinal axis of said center block at a point proximate an outer end wall of said center block.

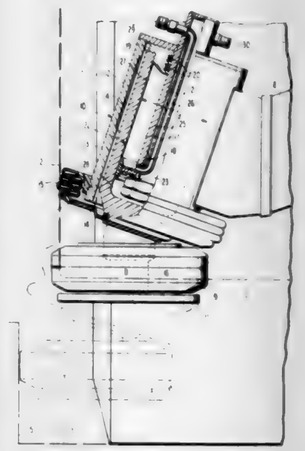
4,445,440

TRACK GUIDED VEHICLE

Sieghart Geiss, Remseck, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,667
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102094
Int. Cl.³ B61F *7/00;* F01B *7/20, 31/06*
U.S. Cl. 105—215 R **2 Claims**





1. A track guided vehicle comprising

at least one transverse guide roller means provided on respective lateral sides of the vehicle,

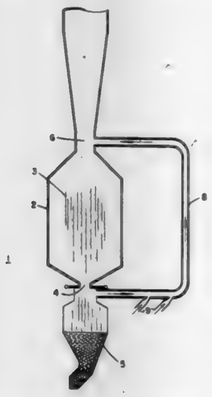
guiding means for mounting each of the transverse guide roller means for movement to and from a retracted position to an extended operating position laterally beyond an outside wall of the vehicle,

said guiding means including a first guide member and a hollow guide column axially displaceably and non-rotatably mounted in the first guide member and being connected by a bearing pin means to the transverse guide means associated therewith,

a bilaterally effective pneumatically operated cylinder and a piston accommodated in the cylinder accommodated in said hollow guide column for selectively displacing the

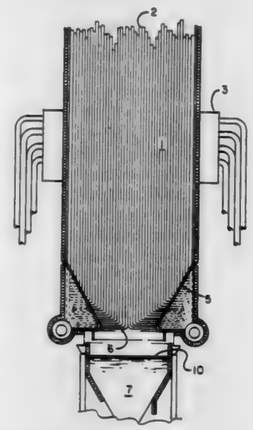
respective transverse guide roller means between the respective positions,
a support arm means being provided for mounting the respective guiding means at the vehicle,
said guiding means being mounted at an end of said support arm means so as to extend diagonally upwardly and in a direction towards an interior of the vehicle,
the first guide member being a guide bushing secured at the support arm means,
the cylinder being formed by a machined interior surface of the hollow guide column,
the interior of the hollow guide column having a round cross-sectional configuration,
removable cover means being provided for sealing an end of the hollow guide column opposite the transverse guide roller means,
the piston resting against a portion of said cylinder when the guide column is retracted to a lowest relative position,
the piston dividing the cylinder into an upper working chamber and a lower working chamber, said piston includes a hollow piston rod,
means being provided in the hollow rod for communicating the respective chambers with a pressure supply,
said means for communicating including individual channel means provided in the hollow rod,
the cylinder having an inside diameter generally between one-third to one-half of an outer diameter of the transverse guide roller means,
a further cover member being mounted on an upper end of the first guide member,
means being provided for axially fixing the piston with respect to the first guide member,
said means for axially fixing including the piston rod connected to the piston and extending through a central opening in the removable cover means,
seal means being provided for sealing the central opening in the removal cover means, whereby
upon pressurization of said working chambers with respect to each other, the guide column is axially displaced with respect to the first guide member so as to enable selective displacement between the respective positions.

4,445,441
SLAG TAP GAS FLOW INDUCEMENT IN WET-BOTTOM FURNACES
Michael C. Tanca, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jun. 1, 1983, Ser. No. 500,118
Int. Cl.³ F23J *1/00*
U.S. Cl. 110—165 R **2 Claims**



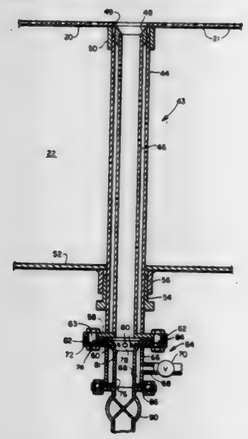
1. In a furnace space wherein combustion is sustained and from which the products of combustion primarily discharge upwardly through a throat with a high velocity which generates a low value of local pressure and from which a slag tap throat extends downward for draining molten slag from the furnace space,
a conduit connected at its first end with the low value local pressure area of the furnace throat and at its second end to the slag tap throat at a point below the entrance to the tap throat from the furnace space,
whereby the low pressure of the furnace throat causes a portion of the combustion products of high temperature to flow downwardly through the tap throat in contact with the slag draining through the tap throat to maintain the temperature of the slag high enough to preclude solidification which would impede flow of the slag from the furnace space.

4,445,442
FURNACE CONSTRUCTION HAVING AN ASH PIT WITH A RADIATION REFLECTING SURFACE
William H. Pollock, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Oct. 21, 1982, Ser. No. 435,782
Int. Cl.³ F23J *1/02*
U.S. Cl. 110—171 **2 Claims**



1. A solid fuel-burning furnace, including,
water walls forming a generating section,
at least one burner mounted through the water walls and arranged to sustain combustion of fuel and air in the generating section,
sloping sides depending from the generating section forming a Coutant transition section below the generating section to receive the residue from the combustion and terminating in a lower exit slot,
an ash pit mounted below the exit slot,
a body of water impounded in the ash pit with its surface below the exit slot,
and a plurality of hollow metallic balls having a specific gravity of less than 1 disposed in a layer over the surface of the impounded water providing a reflecting surface which will reflect incident radiation from the generating section back up into the generating section while permitting the passage of solid residue falling from the slot of the transition section into the body of impounded water.

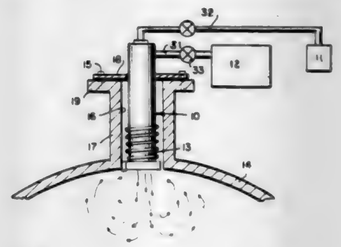
4,445,443
FLUIDIZED BED HEAT EXCHANGER HAVING SEPARATING DRAIN AND METHOD OF OPERATION THEREOF
Robert D. Stewart, Verona, and Thomas E. Taylor, Bergenfield, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.
Continuation of Ser. No. 364,163, Mar. 31, 1982, abandoned, which is a continuation-in-part of Ser. No. 190,299, Sep. 24, 1980, Pat. No. 4,335,661. This application Oct. 17, 1983, Ser. No. 542,093
Int. Cl.³ F23G *7/00*
U.S. Cl. 110—245 **9 Claims**



1. In a fluidized bed heat exchanger having a perforated support plate to support a bed of particulate material including a fuel material and an adsorbent material, means for introducing air through the perforations to fluidize said particulate material, means for starting combustion in said bed by which relatively heavy fuel ash particles are formed, means for introducing additional particulate material to said bed, and a drain having an inlet in said bed for discharging spent particulate material from said bed, the improvement comprising:
separating means for retaining the adsorbent material particles in the fluidized bed and for permitting the relatively heavy fuel ash particles to fall into the drain, the separating means comprising means for providing a flow of air through said drain and into said bed sufficient to retain the adsorbent material particles in the fluidized bed, but insufficient to prevent the relatively heavy fuel ash particles from falling into the drain, the air flow providing means including an element connected to and annularly arranged with respect to the drain, the element having at least one perforation in communication with said drain, directing the flow of air through said drain, and means for allowing the relatively heavy fuel ash particles to pass.

7. A method of operating a fluidized bed having a perforated support plate and a drain comprising:
supplying particulate material to the fluidized bed, including a fuel material and an adsorbent material;
supplying fluidizing air to the fluidized bed through the perforated support plate;
starting combustion in the fluidized bed by which relatively heavy fuel ash particles are formed;
providing an annular element having a central aperture and at least one perforation in communication with said drain; and
discharging the fuel ash particles through the drain while retaining the adsorbent material in the fluidized bed, said discharging step comprising providing a flow of air into said drain through said perforation, through said drain and into the fluidized bed sufficient to retain the adsorbent material in the fluidized bed, but insufficient to prevent the relatively heavy fuel ash particles from falling into said drain.

4,445,444
BURNER FOR COMBUSTING OXYGEN-COAL MIXTURE
Michael L. Espedal, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Aug. 12, 1982, Ser. No. 407,397
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—261 **5 Claims**

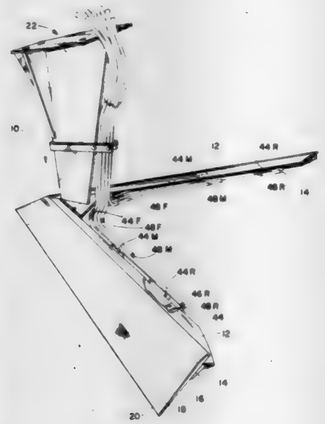


1. A burner (10) for combusting a mixture of powdered hydrocarbon and a combustion supporting medium, to form a stream of a produced gas which burner comprises;
an elongated burner body (21) defining a mixing chamber (26) therein,
means communicating said mixing compartment with discrete sources of the powdered hydrocarbon (12) and the combustion supporting medium (11),
a peripheral lip (23) at one end of said elongated body (21) defining a discharge nozzle (28) which communicates with said mixing compartment (26), and through which lip (23) said stream of produced bgas issues,
said elongated burner body (21) including a face (24) disposed adjacent to the peripheral lip (23),
a manifold (37) disposed contiguous with said burner body (21), being spaced radially outward of said discharge nozzle lip (23) and communicated with a source of a pressurized fluid (38),
a plurality of constricted ports (43) formed in said manifold (37), being spaced radially apart, adjacent to said face, and aligned toward said peripheral lip (23) to direct a plurality of jets of said fluid from the manifold (37) toward the said peripheral lip (23),
whereby to form a dynamic, fluid barrier which extends transversely of the burner face (24) to avoid the deposition of ash particles on the said face.

4,445,445
APPARATUS FOR FERTILIZING SOIL WITH A V-BLADE PLOW
Richard L. Sterrett, P.O. Box 339, Quinter, Kans. 67752
Filed May 28, 1982, Ser. No. 382,948
Int. Cl.³ A01C *23/02*
U.S. Cl. 111—7 **6 Claims**

1. For use in combination with a V-blade plow having downwardly and forwardly-inclined angularly-disposed blades with leading edges for plowing and trailing edges elevated therebehind, the improved distribution system for placing two different types of liquid fertilizer into the freshly plowed ground and mixing same "in situ" which comprises: a first tubular member having an inlet connectable to a pressurized source of nitrogen-bearing fertilizer in liquid form, a horizontally-disposed portion fastened to the trailing edge of each plow blade in shielded relation therebehind, means defining a closure for the end of said horizontal portion remote from the

inlet, and at least two downwardly-directed discharge orifices for dispensing said nitrogen-bearing liquid fertilizer received from the pressurized source thereof directly into the plowed ground in transversely-spaced rows; and, other tubular members corresponding to each of the discharge orifices in the first



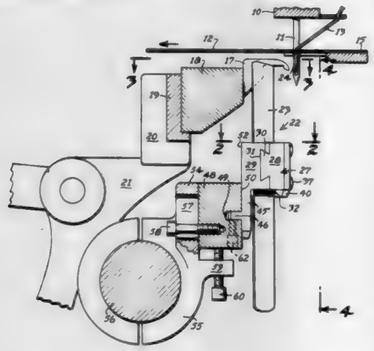
pipes connected alongside thereof in trailing relation thereto, said other tubular members each having an inlet connectable to an unpressurized source of phosphorous-bearing fertilizer in liquid form and a single outlet for dropping same onto the ground immediately behind and to the nitrogen-bearing fertilizer issuing from one of the orifices in the first tubular member.

4,445,446

KNIFE HOLDER MODULE FOR CUT PILE TUFTING MACHINE

Max M. Beasley, Lookout Mountain, Ga., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Jan. 26, 1983, Ser. No. 445,236
Int. Cl.³ D05C *15/00*
U.S. Cl. 112—79 R **13 Claims**



1. In a cut pile tufting machine having means for supporting a base fabric for longitudinal movement in a tufting direction through said machine, a plurality of transversely spaced reciprocal needles for introducing yarns through said base fabric to form loops, a looper hook for each needle on the opposite side of the base fabric from the needles and adapted to cooperate with a corresponding needle to seize and hold a yarn carried by the needle to form a loop, a cutting apparatus comprising:

(a) a knife holder module comprising a block member having front and rear portions and top and bottom faces,

(b) a plurality of elongated knife slots extending upright through said block member and opening through said top and bottom faces, each of said knife slots having a widthwise dimension extending front-to-rear of said block member,

(c) said block member comprising a front section and a rear section, said front section including front portions of said knife slots and having an extending locking member, said rear section including rear portions of said knife slots and having a cooperating locking member adapted to cooperate with said extending locking member in an operative position for securing said front and rear sections together to form a knife block member having corresponding knife slots, each of which completely surrounds and is in substantial solid contact with a corresponding knife received in said knife slot,

(d) a plurality of elongated knives, each knife being received in a corresponding knife slot for longitudinal slidable movement,

(e) adjustable securing means in said block member for engaging and holding each knife in said corresponding knife slot,

(f) a knife bar,

(g) means securing said block member on said knife bar,

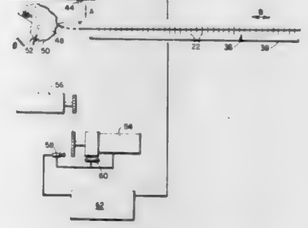
(h) drive means for reciprocably moving said knife bar so that said knives cooperate with corresponding looper hooks for cutting loops on the looper hooks to form cut pile tufts.

4,445,447

TUFTING MACHINE APPARATUS

Harold B. Bardsley, Euxton, Near Chorley, and Ian Beverley, Blackburn, both of England, assignors to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Dec. 17, 1982, Ser. No. 450,652
Claims priority, application United Kingdom, Jan. 7, 1982, 8200452
Int. Cl.³ D05C *15/00*
U.S. Cl. 112—79 R **20 Claims**



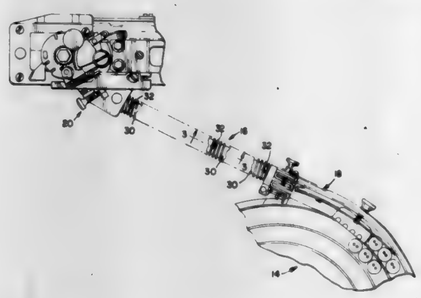
1. In a tufting machine having a reciprocable needle bar carrying a multiplicity of needles for penetrating a base material being fed through the machine and having means for mounting the needle bar for movement transverse to the direction the base material is fed, drive means for moving the needle bar transversely selectively to alter the location of the penetration of the base material by the needles, said drive means comprising, a peripheral cam having a plurality of discreet steps thereabout, means for operatively connecting said cam to said needle bar for drivingly moving said needle bar transversely in increments throughout a range of movements determined by said cam, cam drive means adapted selectively to drive said cam rotatably through a predetermined angle and in a selected direction, and first sensing means responsive to the cyclical position of the needles for energizing said cam drive means when said needles are in a retracted position relative to the base material.

4,445,448

APPARATUS FOR DELIVERING DISK-LIKE OBJECTS TO AN ATTACHING STATION

Roy W. Fletcher, Riverdale, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed Dec. 31, 1981, Ser. No. 336,158
Int. Cl.³ D05B *3/14*
U.S. Cl. 112—110 **10 Claims**



1. A button sewing station comprising:

a button hopper;

a button sewing machine having a receiving station;

a button chute disposed between said hopper and sewing machine, said chute having an open ended track defining a button delivery path, said track being heightwise dimensioned larger than the thickness of button being delivered to said button receiving station; and insertable means carried by said chute for restricting the heightwise dimension of said track thereby controlling the planar disposition of buttons as they travel along said track.

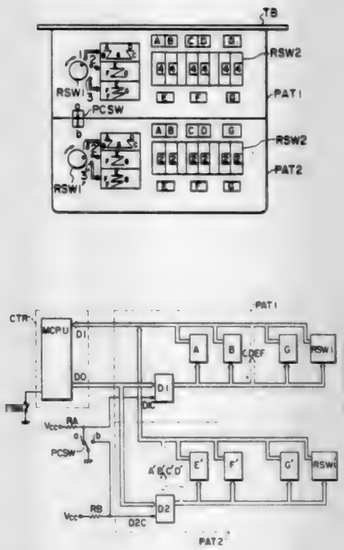
4,445,449

STITCH PATTERN SETTING APPARATUS FOR ELECTRICALLY DRIVEN SEWING MACHINE

Kaneharu Kuzuya, Anjo; Giichi Ishida, and Kosho Ishizaki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd. and Aisin Seiki Co., Ltd., both of Tokyo, Japan

Filed May 19, 1982, Ser. No. 379,916
Claims priority, application Japan, May 20, 1981, 56-74869
Int. Cl.³ D05B *19/00, 3/02*
U.S. Cl. 112—121.11 **2 Claims**

1. An electrically driven sewing machine provided with means for selecting one of a plurality of stitch patterns and setting the numbers of stitches for respective pattern elements constituting the selected stitch pattern, wherein said means includes a plurality of stitch pattern setting units, each of said stitch pattern setting units including means for selecting the stitch pattern and means for setting the numbers of stitches included, respectively, in the pattern elements constituting said selected stitch pattern, independent of the other pattern setting units and means for selectively switching between the pattern



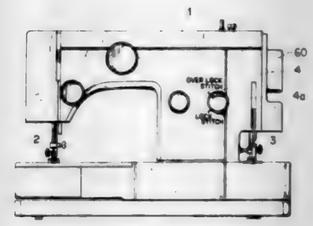
units during a sewing operation by the sewing machine so as to enable a change in the sewing patterns.

4,445,450

SWITCHING DEVICE OF DUAL FUNCTION SEWING MACHINE

Yoshikazu Ebata, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,815
Claims priority, application Japan, Aug. 5, 1981, 56-121889
Int. Cl.³ D05B *25/00*
U.S. Cl. 112—155 **6 Claims**



1. A switching device of a double-function sewing machine of the type including a machine frame, a flywheel having a shaft, a lock stitch forming mechanism having a main shaft and an overlock stitch forming mechanism, the device comprising a belt wheel bush which is notatable with respect to the machine frame and is driven by a driving source, said belt wheel bush having an end secured to the shaft of the flywheel; a ratchet guide member mounted on the main shaft of the lock stitch forming mechanism, said guide member being notatable with respect to the machine frame; a first sliding plate mounted on said ratchet guide member; a belt wheel for overlock stitching rotatably supported with respect to the machine frame and operatively connected to the overlock stitch forming mechanism; a second sliding plate mounted on said belt wheel; a switch lever which is operated from outside of the machine

frame; and a pair of switching arms operatively connected to said switch lever and operated thereby such that said first sliding plate and said second sliding plate are alternatively held on said belt wheel bush for selecting the lock stitch forming mechanism or the overlock stitching forming mechanism.

4,445,451

DOCK DEVICE

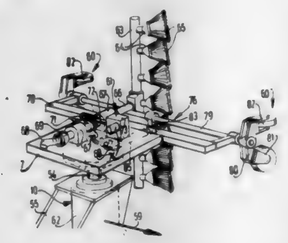
Bernardus C. van den Broek, Weert, Netherlands, assignor to Stork Services B.V., Hengelo, Netherlands

Filed Aug. 5, 1981, Ser. No. 290,251

Claims priority, application Netherlands, Aug. 14, 1980, 8004610

Int. Cl.³ B63B *59/00*

U.S. Cl. 114—222 **13 Claims**



1. A dock device comprising a bottom for supporting a ship or the like and longitudinal walls standing up from the bottom, a carriage adapted to be moved by driving means along a longitudinal wall, an arm pivotably and deflectably connected with the carriage, swinging and deflecting means for moving the arm with respect to the carriage, a head carrying a processing member and being rotatably and tiltably connected with the free end of said arm and tilting and rotating means for moving said head with respect to the arm, characterized in that horizontal and vertical guide wheels to be alternately actuated by setting means are connected with the head, each of said wheels being journalled on said head about an axis which is fixed relative to such head.

4,445,452

HYDROFOIL ASSEMBLY

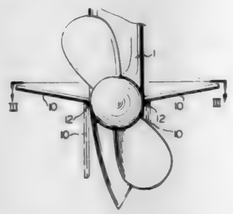
Joseph Loch, 823 Forest St., Ottawa, Ontario, Canada K2B 5P8

Filed Nov. 19, 1981, Ser. No. 323,134

Claims priority, application Canada, Dec. 19, 1980, 367168

Int. Cl.³ B63B *1/30*

U.S. Cl. 114—282 **11 Claims**



1. An hydrofoil assembly comprising: a pair of hydrofoils, and mounting structure for attaching said hydrofoils to a boat such that in an operative condition said hydrofoils are disposed below the working water line of the boat,

said mounting structure defining a pivotal mounting for each hydrofoil about a respective pivot axis which in the operative condition is disposed in a generally fore-and-aft orientation,

each hydrofoil being pivotable between a retracted position projecting downwardly from the respective pivot axis and an extended position projecting substantially laterally from the associated pivot axis and means preventing each said foil from pivoting upwardly beyond said extended position,

each said hydrofoil in the operative condition having a positive angle of attack with respect to the surrounding water such that in forward motion of the boat the water reacts with the hydrofoil to urge it towards said extended position,

said mounting structure being adapted to be connected to the boat to be pivotable about a transverse axis and displaceable rearwardly and upwardly from said operative condition upon encounter with an underwater obstacle, such displacement altering the attitude of said hydrofoils so that said angle of attack becomes negative and the reaction of the water urges the hydrofoils to the retracted position.

4,445,453

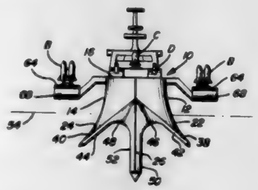
HIGH SPEED DISPLACEMENT TYPE HULL

Albert E. Morgan, Jr., Honolulu, Hi., assignor to Hiram L. Fong, Jr., Honolulu, Hi., a part interest

Filed Mar. 17, 1982, Ser. No. 359,185

Int. Cl.³ B63B *1/32*

U.S. Cl. 114—290 **9 Claims**



1. A high speed displacement-type hull including opposite longitudinal upstanding outer sides and a single central depending transversely narrow longitudinal keel, the forward end portions of said outer sides and keel being directed inwardly and upwardly, respectively, and merging together to form a forwardly tapering bow, the lower marginal portions of said sides, rearward of said bow, terminating minating downwardly in downwardly and equally oppositely outwardly inclined elongated longitudinally extending and transversely narrow displacement-type cutwaters whose outer lower marginal portions are substantially longitudinally straight and rearwardly, downwardly and outwardly inclined, said cutwaters including generally parallel inwardly and outwardly inclined outer and inner side surfaces extending longitudinally thereof and which are slightly inwardly and upwardly divergent, said keel, rearward of said bow, including a rearwardly and downwardly inclined lower extremity extending longitudinally of said hull throughout a major portion of the length of said hull rearward of said bow and upstanding opposite side surfaces spaced inwardly of said inner side surfaces of said cutwaters, and generally semi-cylindrical downwardly opening tunnel roof surfaces disposed on opposite sides of said keel and extending longitudinally of said hull bridging the upper marginal portions of the pairs of corresponding inner and outer side surfaces, the uppermost central portions of said tunnel roof surfaces extending longitudinally of said hull and being generally longitudinally straight, the included angle between said cutwaters being greater than 90° and said keel being centered and equally angularly spaced between said cutwaters, said hull including a static water line spaced above said roof surfaces and through which the forward end portions of said outer marginal portions of said cutwaters extend, at least major rear portions of the lower marginal portions of said cutwaters being disposed beneath said static water line, all longitudinally spaced portions of said keel being disposed at lower elevations than corresponding longitudinally spaced portions of said cutwaters.

4,445,454

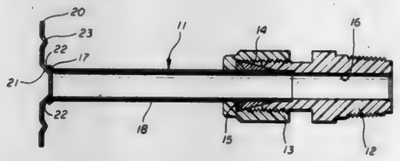
TEMPERATURE SENSOR

Henry W. Martin, Houston, Tex., assignor to T. F. Hudgins & Associates, Inc., Houston, Tex.

Filed Feb. 12, 1982, Ser. No. 348,594

Int. Cl.³ G08B *17/00*

U.S. Cl. 116—106 **2 Claims**



1. In a fusible solder temperature sensor adapted for use with a trapped fluid pressure header alarm system for sensing temperature in a gaseous atmosphere, comprising:

a thermally insulating plastic fitting having thread means at one end thereof and a bore therethrough for connection to and in fluid communication with said header system;

a thin-walled metal tube connected at one end to the other end of said insulating plastic fitting for fluid communication therewith, and said tube having a radially outwardly flared portion at the other end thereof;

a metal closure disc releasably attached to and closing said other end of said tube, said closure disc having a surface area substantially larger than the cross-section area of said tube, and said disc having a frustoconical portion matching said flared end portion of said tube; and

a thin frustoconical layer of fusible solder spaced between said flared end portion of said tube and said frustoconical portion of said disc for releasably attaching said disc to said tube, said solder being responsive to ambient temperature above a predetermined level;

whereby said disc and said tube collect and transmit heat to thereby melt said solder when subjected to ambient temperature above said determined level to thereby release said closure disc from said tube causing release of trapped pressure in said header system to thereby generate a heat alarm signal.

4,445,455

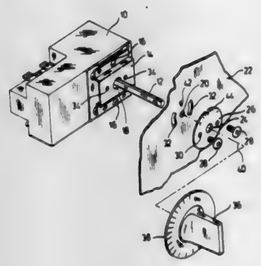
DIAL ADJUSTMENT AND CALIBRATION OF OVEN CONTROL DEVICES

Trever E. Cannon, Georgetown, Canada, assignor to Camco Inc., Weston, Canada

Filed Sep. 22, 1982, Ser. No. 421,565

Int. Cl.³ G01K *15/00*

U.S. Cl. 116—216 **8 Claims**



1. A temperature control device for regulating the operating temperature of a heating device to a predetermined temperature value, said temperature control device including an operating shaft adapted to pass through an aperture in a wall of said heating device and a knob attached to said operating shaft for adjusting by manipulation of said operating shaft said predetermined temperature value, cooperating indicating means on said wall and said knob, and means for mounting said temperature control device in a first fixed position relative to said wall, said means for mounting being adapted to be released to permit rotation of said temperature control device relative to said wall and for refixing said temperature control device in a second fixed position angularly displaced from said first position relative to said wall so as to provide for adjustment of the calibration of said temperature control device.

4,445,456

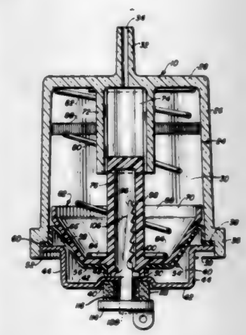
AIR FILTER RESTRICTION INDICATING DEVICE

Joseph N. Nelson, Waterloo, Iowa, assignor to Engineered Products Company, Waterloo, Iowa

Continuation of Ser. No. 131,456, Mar. 18, 1980, abandoned, which is a continuation of Ser. No. 11,410, Feb. 12, 1979, abandoned, which is a continuation of Ser. No. 916,776, Jun. 19, 1978, abandoned. This application Jun. 16, 1981, Ser. No. 273,699

Int. Cl.³ B01D *35/14*; G01L *7/08*

U.S. Cl. 116—268 **8 Claims**



1. An improved restriction indicating device for an air filter used with an internal combustion engine where the improved indicating device is in communication with the air flowing from the air filter to the air intake of the internal combustion engine, the improved indicating device comprising:

a housing having a first end, a second end, and a side wall that includes a transparent portion; the first end, the second end and the side wall defining an overall chamber in the housing;

a flexible diaphragm disposed within the housing, with the diaphragm having a central portion and having an edge portion secured to the housing so that the diaphragm divides the overall chamber into a first chamber, adjacent to the first end of the housing, and a second chamber, adjacent to the second end of the housing; the central portion of the diaphragm being movable between an infold position wherein it is more closely adjacent to the second end of the housing and an outfold position wherein it is more closely adjacent to the first end of the housing;

an indicating member that is disposed within the first chamber in the housing and that is carried by and movable with the diaphragm; the indicating member being visible through the transparent portion of the side wall of the housing at least as the diaphragm moves between its infold position and its outfold position;

means for permitting communication between the first chamber in the housing and the air flowing from the air filter to the air intake of the internal combustion engine;

means, including an opening in the second end of the hous-

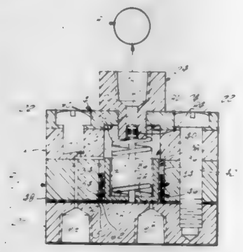
ing, for permittng communication between the atmosphere and the second chamber in the housing;

a coil compression spring disposed in the first chamber of the housing, the compression spring being biased between the first end of the housing and the indicating member, with the bias of the compression spring being sufficient to move the diaphragm to its infold position when the vacuum in the first chamber is relatively low, as when a new air filter is initially used, but permitting the diaphragm to move from its infold position toward its outfold position in response to increases in the vacuum in the first chamber;

lock-up means for progressively locking the indicating member in the various positions which it attains within the first chamber as the diaphragm moves from its infold position to its outfold position and for maintaining the indicating member in its last such position even though there may thereafter be a subsequent decrease in the vacuum in the first chamber, the lock-up means including a tubular member carried by and movable with the central portion of the diaphragm, with the tubular member having a closed end that is adjacent to the first end of the housing and having an open end that is adjacent to the second end of the housing and that is in open communication with the second chamber; the lock-up means also including an elongated locking member having a first end and a second end, the locking member being supported by the second end of the housing so as to permit movement of the first end of the locking member between a first position and a second position; the first end of the locking member being disposed, when the first end of the locking member is in its first position, adjacent to the open end of the tubular member; the second end of the locking member projecting from the second chamber through the opening in the second end of the housing; the first end of the locking member and the open end of the tubular member having interengagable notches thereon that are adapted to be engaged when the first end of the locking member is in its first position, with engagement between the notches permitting the diaphragm to move from its infold position to its outfold position but preventing the diaphragm from returning to its infold position; and

means for selectively disengaging the interengagable notches so as to permit the diaphragm to return to its infold position when the vacuum in the first chamber is relatively low.

4,445,457
DIFFERENTIAL PRESSURE INDICATOR
Ronald D. Bargman, 1517 Ferris, Royal Oak, Mich. 48067
Filed Oct. 15, 1981, Ser. No. 311,779
Int. Cl.³ G01L *1/02*
U.S. Cl. 116—268 **5 Claims**



1. A differential pressure indicator for providing an indication upon detecting a predetermined differential pressure in a fluid system, comprising:

a housing having a bore formed therein;

a piston mounted for movement in said bore between a first and second position with a clearance space between said piston and bore;

a diaphragm mounted across said bore, said diaphragm formed with a rolling lip disposed within said clearance space;

means for applying said differential pressure across said diaphragm;

said piston drivingly engaged with said diaphragm for movement together with the central portion of said diaphragm, said rolling lip received over the outside of said piston;

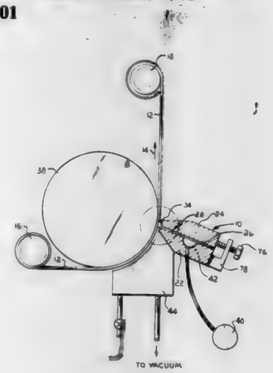
bias means urging said piston to said first position with a force corresponding to the force generated by said predetermined pressure acting across said diaphragm;

indicator means associated with said piston providing indication upon moving from said first to second position, said indicator means including valve means enabling communication of fluid pressure applied on one side of said diaphragm by said means applying said differential fluid pressure across said diaphragm to an outlet port upon movement of said piston to said second position; and,

a pressure responsive indicator device responsive to development of said pressure at said outlet port;

whereby movement of said piston from said first to second position provides said indication of said development of said predetermined differential pressure by said response of said indicator device.

4,445,458
BEVELED EDGE METERED BEAD EXTRUSION COATING APPARATUS
William G. O'Brien, Towanda, Pa., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.
Filed Jul. 21, 1982, Ser. No. 400,245
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—401 **7 Claims**



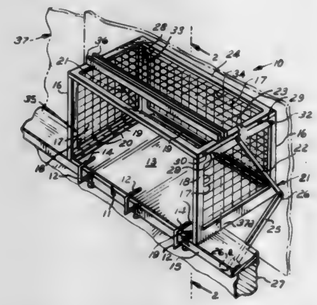
1. A metered bead extrusion coating apparatus for coating a fluid onto the surface of a web supported by a backing member comprising:

a wetdown die;

a drawdown die, the wetdown die being the first die in the direction of web travel while the drawdown die is the last die in the direction of web travel, the wetdown die and the drawdown die being spaced apart to define an extrusion slot therebetween, the slot having an axis extending therethrough which intersects the backing member, the slot terminating in a mouth such that fluid emanating therefrom forms a metered bead which bridges the gap between the mouth of the slot and the surface of the web;

the drawdown die having a beveled surface thereon, the beveled surface defining an obtuse angle with respect to the axis of the slot, the beveled surface being defined between a first edge adjacent to the mouth of the slot and a second edge, the shortest distance between the first edge and a reference line extending perpendicularly to the axis of the slot erected at the point on the axis where the axis intersects the backing member being greater than the shortest distance between the second edge and the reference line.

4,445,459
ANIMAL PET PORCH AND CONTAINER
Patricia Julie, 825 Harristown Rd., Glen Rock, N.J. 07452
Filed Apr. 20, 1983, Ser. No. 486,712
Int. Cl.³ A01K *1/03*
U.S. Cl. 119—1 **4 Claims**



1. In a portable and disassemblable porch for pets adapted to be removably attachable to the sill of a window frame and to interfit and project beyond the opening of a standard window within said frame whereby to extend said opening, the improvement comprising in combination: an enclosure comprised of a base, a pair of side walls and a rear wall, said walls each being pivotally secured to and collapsible on said base; a top wall removably securable to said side and rear walls providing an entrance opening and for maintaining each of said walls in vertical and operative position; clamping means attached to said base for adjustable and releasable securement to the sill of the window frame; a pair of braces each being collapsible intermediate the ends thereof and each being pivotally secured at one end to each of said pair of side walls and each having means at the other end adapted to frictionally engage the building exterior wall below said window sill for cooperating with said clamping means in rendering said porch stationary within the window opening.

4,445,460
CROWD GATE FOR MILKING PARLOR
Gerald R. Stencil, Rte. 3, Denmark, Wis. 54208
Filed Apr. 13, 1981, Ser. No. 253,310
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—20 **8 Claims**

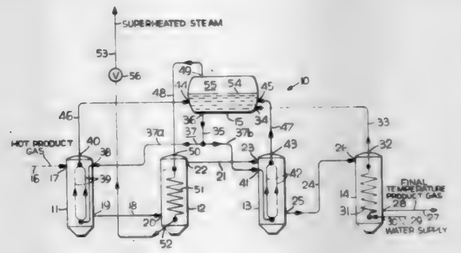


4. A crowd gate means for use in herding animals from an entry end of a holding area to the exit end of a holding area of the type in which a wheeled carriage, from which a pivoting gate is suspended into and generally spans the holding area, is moved along tracks above the holding area, the suspended gate herding the animals in the area before it, such gate being responsive to animal contact to stop movement of the carriage, such gate being adapted and used in association with gate raising means to raise the gate to a horizontal position for return of the carriage to the entry end of the herding area wherein the improvement comprises:

a gate mounting beam substantially spanning the holding area and pivotally mounted to the carriage;

a partially counterweighted gate, fixedly mounted to the gate mounting beam other than at the center of mass of the gate mounting beam and on that side of beam opposite of the direction of forward travel of the carriage so that the lower edge of gate extends forward of an imaginary line normal to the floor of the holding area and passing through the center of mass of the gate mounting beam.

4,445,461
WASTE HEAT RECOVERY METHOD AND APPARATUS
Khosrow Farnia, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jun. 14, 1982, Ser. No. 387,932
Int. Cl.³ F22D *1/00*
U.S. Cl. 122—7 R **9 Claims**



7. An apparatus for the recovery of heat from a flow of a gas having a first temperature in excess of a predetermined safety temperature at which a superheater is susceptible to damage from thermal shock when contacted by the gas at a time when said superheater is empty comprising, in operable combination:

(a) a first boiler operable to receive said flow of gas and flow of saturated water and further operable to indirectly heat said flow of saturated water with said flow of gas within said first boiler at a rate sufficient to convert and flow of saturated water to a flow of saturated steam and reduce the temperature of said gas flow to a secondary temperature below said safety temperature and above a temperature necessary to convert a flow of saturated steam to a flow of superheated steam within said superheater;

(b) said superheater operable to receive a flow of saturated steam and a flow of a gas of said secondary temperature and operable to indirectly heat said flow of saturated steam with said flow of secondary temperature gas within said superheater at a rate sufficient to convert said flow of saturated steam to a flow of superheated steam and reduce said temperature of said gas flow to a tertiary temperature;

(c) means for admitting a flow of said first temperature gas to said first boiler;

(d) means for supplying a flow of saturated water to said first boiler;

(e) means for passing said flow of saturated steam from said first boiler to said superheater;

(f) means for passing said flow of secondary temperature gas from said first boiler to said superheater;

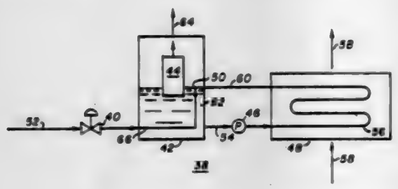
(g) means for discharging said flow of superheated steam from said superheater;

(h) means for discharging said flow of tertiary temperature gas from said superheater;

(i) a second boiler operable to receive a flow of saturated water and operable to receive a flow of said tertiary temperature gas; said second boiler further operable to indirectly heat said saturated water with said flow of tertiary temperature gas within said boiler at a rate sufficient to convert said saturated water to saturated steam and re-

duce the temperature of said gas flow to a fourth temperature;
(j) means for admitting to said second boiler said flow of tertiary temperature gas discharged from said superheater;
(k) means for supplying to said second boiler a flow of saturated water;
(l) means for passing said flow of saturated steam from said second boiler to said superheater;
(m) means for discharging said flow of fourth temperature gas from said second boiler; and
(n) means intermediate said first boiler and said superheater and intermediate said second boiler and said superheater for drying said flows of saturated steam.

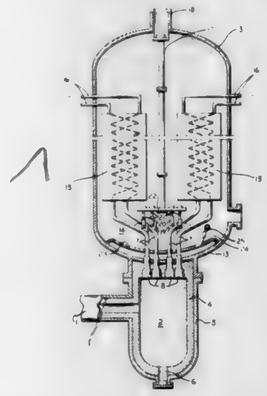
4,445,462
WASTE HEAT BOILER WITH FEED MIXING NOZZLE
Thomas P. Mastronarde, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Nov. 1, 1982, Ser. No. 437,983
Int. Cl.³ F22B *33/00*; F22D *1/00*
U.S. Cl. 122—7 R **6 Claims**



1. A device for attenuating cyclic thermal shrink and swell in the steam drum of a waste heat boiler embodying a steam drum, a steam generating bank and separating means all interconnected so as to collectively define a flow path through the waste heat boiler comprising a feed mixing nozzle including a first and a second inlet and an outlet, said first inlet being connected to the steam generating bank for receiving therefrom the output being discharged therefrom, said second inlet being connected in the path of flow of the input to the steam drum for receiving this input before the input is discharged into the steam drum, said feed mixing nozzle being operative to effect a combining therewithin of the input intended for the steam drum with the output discharged by the steam generating bank so as to effectuate a preheating of the input intended for the steam drum by the output from the steam generating bank, said outlet being connected to the separating means for discharging thereto the combined flow of the now preheated input intended for the steam drum and the output from the steam generating bank.

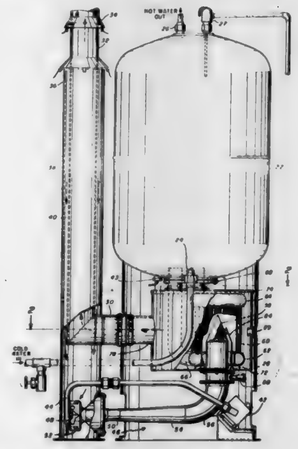
4,445,463
WASTE HEAT BOILER
James R. Casper, and Harvey J. Hauer, both of Wilmington, Del., assignors to Syngas Company, Deer Park, Tex.
Filed Apr. 6, 1983, Ser. No. 482,595
Int. Cl.³ F22B *1/18, 37/24*
U.S. Cl. 122—7 R **3 Claims**

1. In a vertical waste heat boiler having a vertical shell, extending through the bottom of the shell into the shell interior a plurality of entrance tubes, the entrance tubes connected to tubular means within the shell for heat exchange, the improvement comprising the entrance tubes having flared openings at their bottom end and a vertical support rod extended within the shell, the rod being attached at one end to the top of the shell and at the other end to the entrance tubes, at least part of the support rod being made of a material having a lower coeffi-



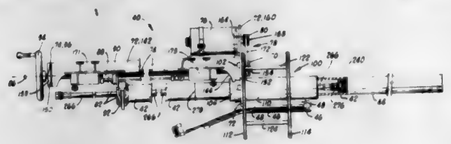
cient of thermal expansion than the material used for the boiler shell.

4,445,464
HIGH EFFICIENCY WATER HEATING SYSTEM
Joseph Gerstmann, Framingham, and Andrew D. Vasilakis, Bedford, both of Mass., assignors to Advanced Mechanical Technology, Inc., Newton, Mass.
Continuation-in-part of Ser. No. 149,937, May 14, 1980, Pat. No. 4,338,888. This application Jul. 12, 1982, Ser. No. 397,081
The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—16 **3 Claims**



1. A storage water heater of the type having an insulated water storage tank, a water inlet and a water outlet to and from the water heater, and a gas fueled combustion assembly in which gas initially at line pressure or less mixes with combustion air without power assist and is ignited in a combustion chamber to heat water in the storage tank, the water heater comprising:
aspirator/mixer assembly means comprising a venturi mixer tube a diffuser at the outlet of the mixer tube, an air inlet to the mixer tube and a fuel gas nozzle at the inlet for receiving fuel gas at line pressure of 6.5 mm Hg or less and forming a gas jet to draw air through the inlet to mix with the gas in the mixer tube, such that gas initially at line pressure of 6.5 mm Hg or less aspirates and mixes with an amount of air sufficient for complete combustion of the gas;
a combustion chamber substantially closed to the surrounding environment except through an exhaust flue and the aspirator/mixer assembly means such that all air combusted in the combustion chamber enters the combustion chamber with the fuel gas through the aspirator/mixer assembly; and
burner means within the combustion chamber for receiving the premixed gas/air mixture from the preceeding aspirator/mixer assembly to substantially completely combust the gas/air mixture within the chamber, the combustion chamber being in heat exchange relationship with the water in the storage tank.

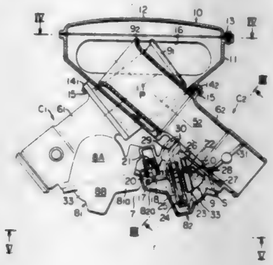
4,445,465
SLUDGE LANCE ADVANCING APPARATUS
Audis C. Byrd; Bradley L. Todd, and William W. Pattison, Jr., all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Mar. 24, 1983, Ser. No. 478,404
Int. Cl.³ F22B *37/52*
U.S. Cl. 122—392 **20 Claims**



1. A sludge cleaning lance advancing apparatus, comprising:
a frame;
a lead screw rotatably disposed in said frame;
an electric stepping motor connected to said frame;
drive means, connected between said stepping motor and said lead screw, for rotating said lead screw upon rotation of a shaft of said stepping motor;
a lance carrier having an internal screw thread engaging said lead screw, said lance carrier and said lead screw being so arranged and constructed that said lance carrier is moved longitudinally relative to said lead screw as said lead screw is rotated relative to said lance carrier;
a lance, carried by said lance carrier; and
a hand wheel means attached to said lead screw, for manually rotating said lead screw to initially position said lance.

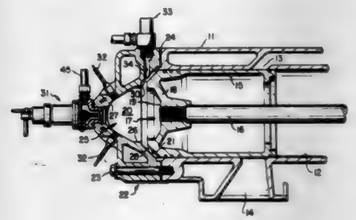
4,445,466
CARBURETION SYSTEM FOR V-TYPE INTERNAL COMBUSTION ENGINES
Katsuyuki Zaita, Kawagoe, and Suminari Iwao, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 12, 1982, Ser. No. 397,368
Claims priority, application Japan, Jul. 10, 1981, 56-103345[U]; Aug. 20, 1981, 56-130611; Dec. 28, 1981, 56-213220
Int. Cl.³ F02B *75/20*
U.S. Cl. 123—59 PC **13 Claims**

1. In a carburetion system for a V-type internal combustion engine having a first carburetor and a second carburetor disposed in a space between a first cylinder and a second cylinder arranged in a form like V and adapted for supplying air-fuel mixture to respective cylinders independently,
the improvement wherein said carburetors have intake barrels which define there intake passages communicating with the associated cylinders, said intake barrels being disposed in the close proximity of each other and extend substantially at right angle to the axes of the associated



cylinder into a common intake box in which inlet opening side portions of the intake barrels cross each other.

4,445,467
TWO-CYCLE STRATIFIED CHARGE GAS ENGINE
Howard G. Westerman, 743 Blue Lake Cir., Richardson, Tex. 75080, and Lewis E. Allsopp, Stafford, England, assignors to Howard Westerman, Richardson, Tex.
Filed Aug. 10, 1982, Ser. No. 406,826
Int. Cl.³ F02B *23/00, 75/02*
U.S. Cl. 123—65 R **8 Claims**



1. A two-cycle, stratified charge unthrottled air, gas-powered engine comprising:
an engine block;
at least one cylinder bore in said engine block;
a piston slidably mounted in said cylinder bore having a crown thereon;
a cup-shaped, flat-bottomed recess formed in said crown having a diameter substantially less than the diameter of said crown;
a head mounted on said engine block; and
a deep, ovate-shaped chamber formed in said head; said chamber having a diameter substantially less than the diameter of said cylinder bore whereby said recess and said chamber cooperate to form a combustion chamber therebetween when said piston is at top dead center in said cylinder bore wherein said combustion chamber is substantially as long as it is wide.

8. A head for a two-cycle, stratified charge, unthrottled air, gas-powered engine comprising:
a head adapted to be mounted on an engine block to close a cylinder bore therein;
a deep, ovate-shaped combustion chamber formed in said head at a position wherein said chamber will open into said cylinder bore when said head is in an operable position on said block, said combustion chamber having a diameter substantially less than the diameter of said cylinder bore and having a lower cylindrical portion and an integral upper ovate-shaped domed portion;
a tapered surface on said head extending downwardly and outwardly from the bottom periphery of said lower cylin-

drical portion of said ovate-shaped chamber to a point adjacent the periphery of said cylinder bore when said head is in an operable position on said block;

means on said head for mounting an injector valve into the uppermost point of said upper ovate-shaped domed portion of said chamber at a position as near to said uppermost point as is practical, and

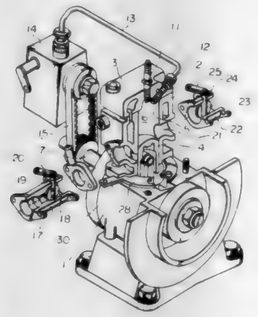
means on said head for mounting ignition means into said upper ovate-shaped domed portion of said chamber at a point as near said uppermost point as is practical.

4,445,468

2-STROKE INTERNAL COMBUSTION ENGINE AND AN IGNITION-COMBUSTION METHOD OF AN INTERNAL COMBUSTION ENGINE

Sigeru Onishi, Kanazawa, and Souk H. Jo, Tokyo, both of Japan, assignors to Nippon Clean Engine Research Institute Co., Ltd., Kanazawa, Japan

Filed Jul. 13, 1982, Ser. No. 397,788
Claims priority, application Japan, Oct. 23, 1981, 56-170475
Int. Cl.³ F02B *33/04*
U.S. Cl. 123—73 C **26 Claims**



1. An ignition-combustion method of an internal combustion engine comprising a combustion chamber, a fuel injector arranged in the combustion chamber, an air-inlet port for feeding fresh air into the combustion chamber, and an exhaust gas-outlet port for discharging exhaust gas from the combustion chamber, said method comprising the steps of:

discharging the exhaust gas from the combustion chamber via the exhaust gas-outlet port while retaining a large amount of residual gas, containing unburned components, incompletely burned components and oxygen therein, in the combustion chamber;

gently feeding the fresh air into the combustion chamber from the air-inlet port while suppressing disturbance of the residual gas for continuing the oxidizing reaction of the unburned components and the incompletely burned components;

injecting fuel into the combustion chamber from the fuel injector to form a combustible mixture consisting of fuel and fresh air; and

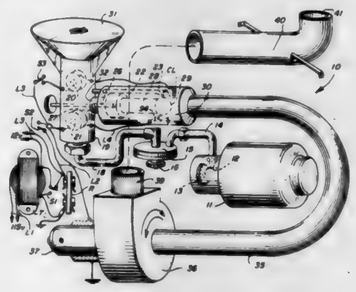
compressing the residual gas and said combustible mixture in the combustion chamber to accelerate the oxidizing reaction and bring about self-ignition of the residual gas, which self-ignited residual gas in turn ignites said combustible mixture.

4,445,469

ENGINE HEATER

Louis Suhayda, 1310 Park Dr., Montgomery, Ill. 60538

Filed Apr. 5, 1982, Ser. No. 365,375
Int. Cl.³ F02N *17/02*
U.S. Cl. 123—142.5 R **1 Claim**



1. An engine heater comprising:

A. heating means for producing a heated gas, said heating means being operable only on d.c.;

B. first connecting means, for making a connection to a first source of voltage which provides a d.c. electrical voltage not exceeding about 20 V.;

C. second connection means for making a connection to second source of a.c. electrical voltage;

D. coupling means, couple between (1) said heating means and (2) said first and second connecting means and having first and second configurations for providing electrical voltage at said particular time to set heating means (a) when said first configuration and when said first connecting means has made a connection to said first source of electrical voltage and (b) when said second configuration and when said second connecting means has made a connection to said second source of electrical voltage;

E. said first source of electrical voltage having a lesser absolute magnitude than said second source of electrical voltage and said coupling means, when in said first configuration, directly passing the electrical voltage from said first source to said heating means;

F. Said coupling means including rectifying means coupled, when said coupling means is in said second position, between said second connecting means and said heating means;

G. Said second source providing an a.c. electrical voltage having a magnitude greater than about 100 volts;

H. An internal battery capable of storing a voltage equal in magnitude to said first source of electrical voltage and said coupling means, when in said first position, providing the voltage from said internal battery to said heating means;

I. Charging means, coupled to said rectifying means for providing a d.c. voltage about equal to said electrical voltage of said first source, when said coupling means is in said second setting, to both said internal battery and to said first connecting means;

J. A pilot light operable upon a flammable fluid and an ignition coil operable on said particular type of voltage for selectively igniting said pilot light;

K. Igniting means for causing the ignition of a flammable fluid and fan means for moving the combustion products of the ignition of said flammable fluid to a desired location; and

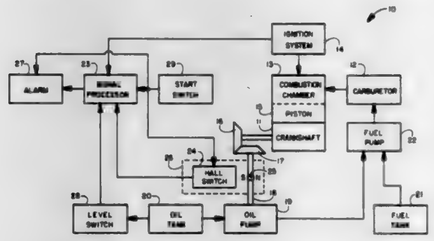
L. A first valve means, operable upon said electrical voltage of said particular type, for selectively permitting and prohibiting the passage of said flammable fluid to said pilot light and second valve means, operable upon said electrical voltage of said particular type, for selectively permitting and prohibiting the passage of said flammable fluid to said igniting means.

4,445,470

OIL INJECTION WARNING SYSTEM

Cary J. Chmielewski, North Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 27, 1982, Ser. No. 453,652
Int. Cl.³ F02B *77/08*
U.S. Cl. 123—196 S **10 Claims**



1. An alarm system for a two-cycle internal combustion engine using a mechanically driven oil pump to provide oil from an oil reservoir to said engine for engine lubrication, said alarm system comprising:

(A) an alarm means;

(B) a means to sense the operation of said oil pump and provide a signal indicative of the speed of operation of said pump;

(C) a means to sense to operation of said engine and provide a signal indicative of the speed of operation of said engine; and

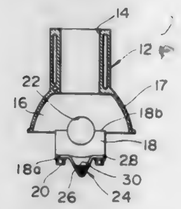
(D) a signal processing means connected to receive said pump signal and said engine signal and produce an alarm signal to activate said alarm if said pump and engine signals differ from a predetermined relationship.

4,445,471

LOW NOISE LEVEL AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 14, 1981, Ser. No. 302,236
Claims priority, application Japan, Sep. 17, 1980, 55-131883[U]
Int. Cl.³ F02F *7/00*; F02B *77/00*
U.S. Cl. 123—198 E **10 Claims**



1. An automotive internal combustion engine comprising:

a cylinder block having a plurality of mean bearing carrying sections;

a plurality of main bearing caps secured respectively to said main bearing carrying sections to define a cylindrical opening for receiving a crankshaft, and

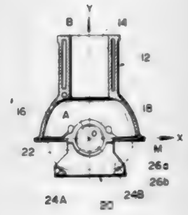
a beam member comprising a metal section secured to said bearing caps to rigidly connect said bearing caps, said beam member having a bend to improve the flexural rigidity of said beam member.

4,445,472

INTERNAL COMBUSTION ENGINE WITH BEARING BEAM STRUCTURE

Naoki Ogawa, Yokohama, and Toshiro Abe, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 10, 1981, Ser. No. 329,508
Claims priority, application Japan, Dec. 12, 1980, 55-175512
Int. Cl.³ F02F *7/00*; F02B *77/00*
U.S. Cl. 123—198 E **12 Claims**



1. An internal combustion engine comprising:

a cylinder block having a plurality or cylinder bores and a plurality of bearing sections located below said cylinder bores;

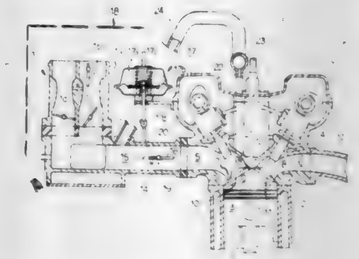
a bearing beam structure secured to the bottom part of said cylinder block and including a plurality of main bearing cap sections each of which is associated with a bearing section of said cylinder block to rotatably support the journal of a crankshaft, and first and second beam sections for securely connecting all said main bearing cap sections, said first and second beam sections extending parallel with the axis of the crankshaft and being located spacedly along the opposite side portions, respectively, of each bearing cap section.

4,445,473

CONTROL OF CARBURETOR-SUPPLIED INDUCTION SYSTEM

Hiromitsu Matsumoto, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 896,082, Apr. 13, 1978, abandoned, which is a continuation of Ser. No. 838,353, Sep. 30, 1977, abandoned. This application Nov. 13, 1979, Ser. No. 93,915
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—308 **68 Claims**



1. In combination with an internal combustion engine of the type which includes a variable volume chamber in which combustion occurs, a charge forming device adapted to issue an air/fuel mixture to said chamber, a principal induction passage for delivering a charge to said chamber, a principal throttle valve in said principal induction passage for controlling the flow therethrough, an auxiliary throttle valve in said principal induction passage between said principal throttle valve and said chamber, an auxiliary induction passage extend-

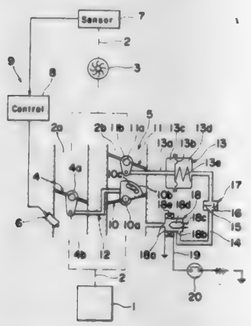
ing from a point in said principal induction passage between the said throttle valves and discharging a charge into said chamber to cause the said charge from said auxiliary induction passage to be turbulent in said chamber; the improvement comprising actuator means to control the position of said auxiliary throttle valve, closure of said auxiliary throttle valve means being effective to divert at least a portion of the charge to said chamber through said auxiliary induction passage, said actuator means being responsive to the pressure in said principal induction passage between said throttle valves, said closure occurring at low-load conditions whereby the substantial portion of air/fuel mixture for the chamber flows through said auxiliary induction passage at low load conditions, the effective cross-section of the auxiliary induction passage being smaller than the effective cross-section area of the principal induction passage.

4,445,474

AIR INTAKE SYSTEM FOR SUPERCHARGED AUTOMOBILE ENGINE

Masami Nakao; Haruo Okimoto; Yoshikuni Yada, and Junki Takeshita, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Dec. 3, 1982, Ser. No. 446,700
Claims priority, application Japan, Dec. 11, 1981, 56-200733
Int. Cl.³ F02M *11/04*
U.S. Cl. 123—336 **6 Claims**



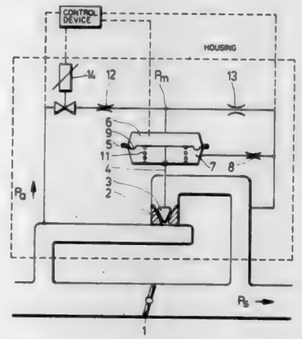
1. An air intake system for a supercharged internal combustion engine having a supercharger disposed on an air intake passage means, which system comprises, in combination:
- primary and secondary passages formed in a portion of the air intake passage means downstream of the supercharger;
- a primary throttle valve disposed in the primary passage and operatively coupled to an accelerator pedal such that the selective opening and closure of said primary throttle valve can be controlled by the accelerator pedal;
- a secondary throttle valve disposed in the secondary passage and operatively coupled to the primary throttle valve through a linkage mechanism;
- an auxiliary throttle valve disposed in the secondary passage; and
- an actuator for controlling the selective opening and closure of the auxiliary throttle valve in dependence on the suction pressure of air being sucked at a position downstream of the primary throttle valve or the throttle valves in the secondary passage, said actuator including means operable to gradually open the auxiliary throttle valve with increase of said suction pressure when and so long as the load on the engine is smaller than a predetermined medium load and to maintain the auxiliary throttle valve in a full open position when the load on the engine is equal to or larger than the predetermined medium load.

4,445,475

ENGINE IDLING SPEED CONTROL SYSTEMS

Hans Baumgartner, Viersen, and Eckehard Schmitz, Krefeld, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,829
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039613
Int. Cl.³ F02M *3/06*
U.S. Cl. 123—339 **17 Claims**



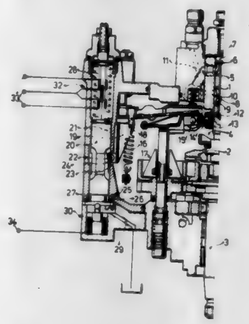
1. A system for controlling the idling rotational speed of a reciprocating internal combustion engine of the spark ignition type and having a throttle valve for controlling the air intake of the engine, said system comprising means defining a passage bypassing said throttle valve to allow a secondary flow of air to said engine, a valve disposed in said bypass passage for controlling the flow rate of the secondary air flow through said passage, and combined pneumatic and electronic control means for controlling the opening and closing of said bypass valve, said bypass valve comprising a Laval nozzle.

4,445,476

RPM GOVERNOR OF A FUEL INJECTION PUMP

Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 18, 1982, Ser. No. 379,405
Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121107
Int. Cl.³ F02D *1/06*
U.S. Cl. 123—387 **5 Claims**



1. In an rpm governor of a fuel injection pump for internal combustion engines, including a housing, an adjustable stop for limiting the maximum injection quantity (full load), a piston in said housing which is hydraulically displaceable counter to a restoring force for varying the position of the stop, said piston having only one end thereof which is exposed to fluid within a work chamber, an inflow conduit in said housing through which fluid from a fluid source flows into said work chamber and pressure control means for controlling the pressure of the fluid within the work chamber, the improvement including:
- a throttle disposed in the inflow conduit for restricting fluid flow into said work chamber from said fluid source;
- a fluid outflow conduit in said housing extending from said work chamber to a fluid return line for permitting fluid flow from said work chamber,
- said pressure control means for controlling the pressure in the work chamber is a magnetic valve which is disposed relative to said outflow conduit extending from said work chamber for controlling fluid flow from said work chamber in accordance with load and rpm of an engine to determine a full load injection quantity, and
- an electric travel path transducer which is connected with an electronic control unit for measuring the stroke of the piston.

4,445,477

METHOD AND APPARATUS FOR IGNITION SYSTEM SPARK TIMING CONTROL DURING NO-LOAD ENGINE OPERATION

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Division of Ser. No. 379,033, May 17, 1982, abandoned, which is a continuation of Ser. No. 136,996, Apr. 3, 1980, abandoned. This application Jun. 17, 1983, Ser. No. 504,245
Claims priority, application Japan, Apr. 9, 1979, 54-45281
Int. Cl.³ F02D *5/00*; F02B *3/00*
U.S. Cl. 123—416 **14 Claims**

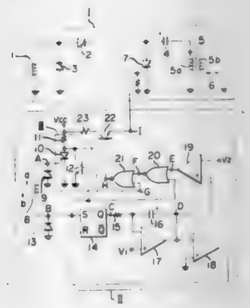
1. A method for the control of an ignition system spark timing for a spark ignition internal combustion engine for an automotive vehicle, said method comprising:
- a step of detecting a condition that the engine is under cranking to provide a cranking signal indicating that the engine is under cranking;
- a step of detecting a condition that said engine is in operation with no load to provide a no load indicative signal indicating that said engine is in operation with no load;
- a step of detecting the engine temperature of said engine to provide a temperature signal indicating that the engine temperature is higher than a predetermined engine temperature value;
- a step of detecting the vehicle speed of said automotive vehicle to provide a vehicle speed signal indicating that the vehicle speed is higher than a predetermined vehicle speed value;
- a step of determining a value of spark advance vs. engine speed from a first predetermined spark advance characteristic of a plurality of spark advance vs. engine speed values in response to the absence of said cranking signal, the presence of said no load indicative signal, the absence of said temperature signal, and the presence of said vehicle speed signal; and
- a step of determining a value of spark advance from a second predetermined spark advance vs. engine speed characteristic of a plurality of values of spark advance vs. engine speed values in response to to the absence of said cranking signal, the presence of said no load indicative signal, the presence of said temperature signal, and the absence of said vehicle speed signal,
- said second predetermined spark advance vs. engine speed characteristic being a delayed spark advance characteristic and distinct from said first predetermined spark advance vs. engine speed characteristic; and
- a step of producing a spark in accordance with that value of spark advance which has been determined for at least the detected temperature and vehicle speed of such vehicle by said determining steps.

4,445,478

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tsutomu Momoyama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 239,206, Mar. 3, 1981. This application Mar. 28, 1983, Ser. No. 479,798
Claims priority, application Japan, Mar. 3, 1980, 55-27060; Mar. 3, 1980, 55-27061; Apr. 9, 1980, 55-47723; Apr. 9, 1980, 55-47724
Int. Cl.³ F02P *5/08*
U.S. Cl. 123—418 **6 Claims**



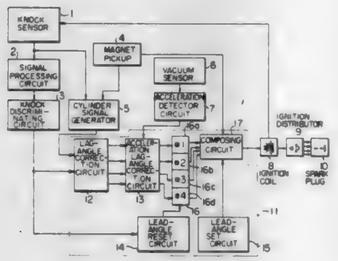
1. An ignition timing control system for internal combustion engines comprising:
- angular signal generating means for generating an angular signal in synchronism with the revolutions of the engine at a predetermined crank position;
- a single integrator means whose input is connected to said generating means for receiving said angular signal;
- means for initiating a discharge mode of said integrator means, with a constant current output;
- means for operating said integrator, with a constant current output, when the output of said integrator in the discharge mode reaches a first predetermined value thereby generating alternate charge and discharge outputs to form a triangular wave form output;
- circuit means for generating a trigger output signal when said charge output reaches a second predetermined value.

4,445,479

IGNITION TIMING CONTROL APPARATUS WITH KNOCK SENSOR

Eiji Takakuwa, Okazaki; Kazami Nakano, and Izumi Kizitani, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 14, 1982, Ser. No. 398,273
Claims priority, application Japan, Jul. 17, 1981, 56-111593
Int. Cl.³ F02P *5/14*
U.S. Cl. 123—425 **5 Claims**



1. An ignition timing control apparatus for a multi-cylinder engine comprising:

a setting device for setting a predetermined reference ignition timing common to all cylinders under a normal driving condition in which no knock occurs;

a knock sensor for producing an output signal when a knock occurs at least in one of said cylinders;

a cylinder discriminating device for discriminating a cylinder under combustion;

an ignition lead-angle correction device for calculating an ignition lead-angle correction amount in response to output signals from said knock sensor and said cylinder discriminating device such that each time said knock sensor generates an output signal, said ignition lead-angle correction device generates a signal for making a lag-angle correction by a certain amount of $\Delta\theta_1$ to an ignition timing of a knock-occuring cylinder and making a lag-angle correction by $K_1 \times \Delta\theta_1$ (K_1 is a constant correction coefficient, and $0 < K_1 < 1$) to the ignition timing of the other cylinders; and

an ignition timing device for calculating an ignition timing of each cylinder in response to output signals from at least said setting device and said ignition lead angle correction device and controlling a discharge timing of the ignition coil of each cylinder in response to the result of calculation.

4,445,480

INTAKE SYSTEM OF INTERNAL COMBUSTION ENGINE

Mitsumasa Inoue, Yokohama; Ken Nakamura, Kawasaki; Junichi Yokoyama, Ebina, and Atsushi Yonezawa, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

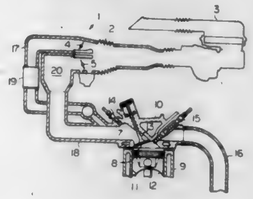
Filed Jan. 25, 1983, Ser. No. 460,899
Claims priority, application Japan, Feb. 15, 1982, 57-18545[U]
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—432 **4 Claims**

1. An intake system of an internal combustion engine including a power cylinder having an intake valve and a fuel injection nozzle, comprising

a throttle chamber upstream open to the atmosphere;

primary and secondary throttle valves provided in parallel with each other in said throttle chamber;

primary and secondary air passageways leading from the throttle chamber past the primary and secondary throttle valves, respectively, and conjoined together upstream of said intake valve, the secondary air passageway being larger in cross sectional area than the primary air passageway and having a reservoir chamber portion larger in cross sectional area than the remaining portion of the secondary air passageway; and



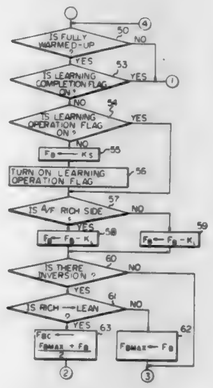
air heating means provided to the primary air passageway and operative to preheat the air to be passed through the primary air passageway.

4,445,481

METHOD FOR CONTROLLING THE AIR-FUEL RATIO OF AN INTERNAL COMBUSTION ENGINE

Keiji Aoki, and Toshiyuki Takimoto, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1981, Ser. No. 333,568
Claims priority, application Japan, Dec. 23, 1980, 55-181210
Int. Cl.³ F02M *17/00*
U.S. Cl. 123—440 **7 Claims**



1. A method for controlling an air-fuel ratio of an internal combustion engine having a sensor means for detecting whether the air-fuel ratio is rich or lean with respect to a stoichiometric condition and producing an air-fuel ratio signal indicative thereof, said method comprising the steps of:

detecting an operating condition of the engine and producing an engine parameter signal indicative thereof;

controlling, in response to the engine parameter signal and the air-fuel ratio signal, by a closed loop control operation, the fuel feeding rate to the engine only when the engine is operated under a first predetermined operating condition, said closed loop control step including the steps of: calculating a feedback correction factor related to the fuel feeding rate depending upon the air-fuel ratio signal; correcting the fuel feeding rate to the engine in accordance with the calculatd feedback correction factor, so as to control the air-fuel ratio condition of the engine substantially close to the stoichiometric condition and adjusting a learning control correction factor so as to settle said feedback correction factor within a predetermined range while at the same time maintaining the air-fuel ratio condition of the engine close to the stoichoimetric condition the adjusting of the learning control correction factor including the steps of calculating the mean value of the feedback correction factor; and adjusting a learning control correction factor so as to settle the mean va'ue within a predetermined range while at the same time maintaining the air-fuel ratio condition of the engine close to the stoichiometric condition; and

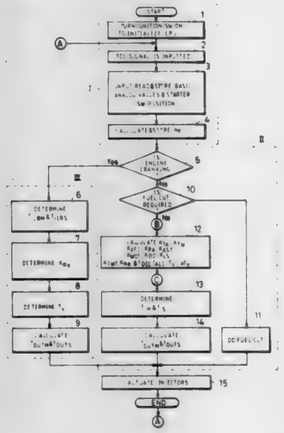
controlling, in response to the engine parameter signals and the adjusted learning control operation factor, by an open loop control operation, the fuel feeding rate of the engine, so as to maintain the air-fuel ratio condition of the engine at a desired condition which is different from the stoichiometric condition, after the closed loop control operation is completed.

4,445,482

AIRFUEL RATIO FEEDBACK CONTROL SYSTEM ADAPTED TO OBTAIN STABLE ENGINE OPERATION UNDER PARTICULAR ENGINE OPERATING CONDITIONS

Shumpei Hasegawa, Niiza, and Noriyuki Kishi, Itabashi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,106
Claims priority, application Japan, May 15, 1981, 56-72991
Int. Cl.³ F02M *51/00;* **F02D** *5/00*
U.S. Cl. 123—489 **22 Claims**



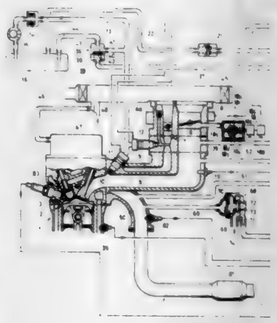
16. A control system for controlling the air/fuel ratio of an air/fuel mixture for an internal combustion engine having an exhaust system, comprising: a sensor arranged in said exhaust system for detecting the concentration of exhaust gases emitted from said engine; means for detecting a plurality of particular operating conditions of said engine; means for determining a basic value of the air/fuel ratio for at least one engine operating condition; and electric circuit means responsive to outputs of said exhaust gas concentration sensor and said particular operating condition detecting means to generate a first coefficient variable in response to the output of said exhaust gas concentration sensor and at least one second coefficient variable in response to the output of said particular operating condition detecting means, said first and second coefficients being applied for correction of said basic values, said electric circuit means including means operable when said engine is operating in an operating condition other than said particular operating conditions, to vary the value of said first coefficient in response to the output of said exhaust gas concentration sensor and simultaneously hold the value of said second coefficient at a first predetermined value, means for calculating a mean value of said varying first coefficient, and means operable when said engine is operating in one of said particular operating conditions, to hold the value of said second coefficient at a second predetermined value and simultaneously hold the value of said first coefficient at a third predetermined value being said mean value.

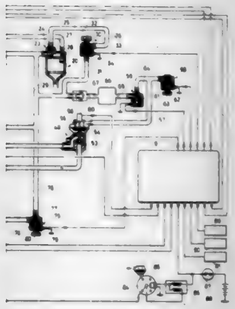
4,445,483

FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING A FUNCTION OF LEANING MIXTURE IN AN ENGINE LOW LOAD REGION

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,648
Claims priority, application Japan, Feb. 20, 1981, 56-023994
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—492 **10 Claims**





1. In a fuel supply control system including fuel quantity adjusting means for controlling the quantity of fuel being supplied to an internal combustion engine having an intake pipe, wherein said fuel quantity adjusting means is electrically controlled in response to operating conditions of said engine to obtain a desired quantity of fuel being supplied to said engine, the combination comprising a sensor for detecting the rotational speed of said engine, a sensor for detecting absolute pressure in said intake pipe of said engine, said absolute pressure sensor being operable independently of changes in atmospheric pressure surrounding said engine, and means responsive to outputs of said sensors to cause leaning of an air/fuel mixture being supplied to said engine, said mixture leaning means being adapted to cause said fuel quantity adjusting means to lean said mixture when said engine is operating in a predetermined low load condition where the actual rotational speed of said engine detected by said engine rotational speed sensor is higher than a predetermined rotational speed which is higher than a possible upper limit of idling rpm and the actual absolute pressure in said intake pipe detected by said absolute

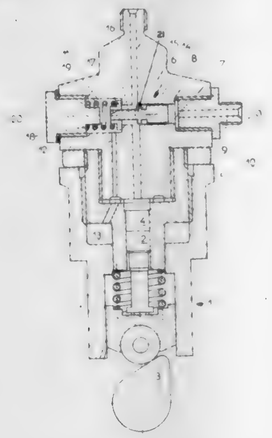
pressure sensor is lower than a predetermined absolute pressure which cannot be assumed during rapid acceleration of said engine from an idle state thereof when the actual rotational speed of said engine is higher than said predetermined rotational speed.

4,445,484

MECHANICAL FUEL INJECTION DEVICES, MAINLY FOR DIESEL ENGINES

Gerard Marion, Rhone, France, assignor to Renault Vehicules Industriels, Rhone, France

Filed Apr. 30, 1981, Ser. No. 259,282
Claims priority, application France, Apr. 30, 1980, 80 10121
Int. Cl.³ F02D *1/06*; F02M *47/00*
U.S. Cl. 123—502 **11 Claims**



1. An injection device for injecting a fluid, said injection device comprising:

housing means;

fluid supply means;

a first bore in said housing means, said first bore having a first end portion provided with a first opening and a second end portion opposite said first end portion and provided with a second opening, said second opening being adapted for interconnection with injection means;

a second bore in said housing means, said second bore being larger in diameter than said first bore, said second bore having a first end portion and a second end portion opposite said first end portion and further having a portion intermediate said first and second end portions of said second bore crossing said first bore at a predetermined location between the first and second end portions thereof;

a first port in said second bore proximate said predetermined location and in fluid communication with said first end portion of said first bore;

a second port in said second bore proximate said predetermined location and in fluid communication with said second end portion of said first bore;

piston valve means reciprocably and sealably disposed in said second bore such as to be reciprocable across said first bore to selectively open and close said first and second ports, said piston valve means sealingly dividing said second bore into a first chamber adjacent to said first end portion thereof and a second chamber adjacent to said second end portion thereof, said piston valve means further selectively sealing said first and second ports;

first passageway means through said piston valve means, said first passageway means being open to said first chamber selectively simultaneously registrable with said first and second ports to permit fluid flow between all of said first end portion of said first bore, said second end portion of said first bore and said first chamber of said second bore, in a first predetermined position of said piston valve means;

second passageway means through said piston valve means, said second passageway means being selectively registrable with said first and second ports to permit fluid flow therebetween without permitting fluid flow between said first chamber and said first bore, in a second predetermined position of said piston valve means;

third passageway means through said housing means interconnecting said fluid supply means with said first chamber of said second bore;

first selectively operable pressurizing means interconnected with said first end portion of said first bore to pressurize said fluid therein;

biasing means interposed said housing means and said piston valve means, said biasing means biasing said piston valve means into said first predetermined position; and

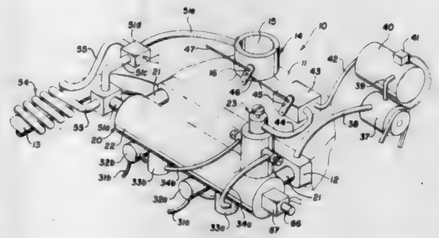
second selectively operable pressurizing means interconnected with said second chamber of said second bore to pressurize said fluid in said second chamber so as to generate a pressure differential between said first and second chambers and to thereby selectively overcome said biasing means and move said piston valve means into said second predetermined position said second selectively operable pressurizing means being operable independently of said first selectively operable pressurizing means such that, when said piston valve means is in said first predetermined position, said first selectively operable pressurization means is in fluid communication with said fluid supply and, thus, provides only minimal pressurization whereas when said piston valve means is in said second predetermined position, said first selectively operable pressurizing means pressurizes said fluid in said first bore.

4,445,485

ENGINE FUEL SYSTEM

Addison B. Chamness, Jr., 2231 W. Lovers La., Dallas, Tex. 75235

Filed Nov. 27, 1981, Ser. No. 325,367
Int. Cl.³ F02M *31/08*
U.S. Cl. 123—546 **21 Claims**



1. In an internal combustion engine having an intake manifold, an inlet air throat for said intake manifold, an air flow control in said inlet throat, and an exhaust manifold; a fuel system comprising:

a heat exchanger including a vaporizing flow path for a fuel mixture and a separate flow path for exhaust gases flowing from said exhaust manifold; means connecting the outlet of said vaporizing flow path to said inlet air throat;

a blending device, for mixing fuel and a substantially inert gas, connected to the inlet of said vaporizing flow path;

means for supplying a pressurized substantially inert gas to said blending device; and means for supplying one or more liquid fuel components to said blending device;

means for controlling the supply of said one or more fuel components to said blending device in relation to the flow of air in said inlet throat;

said substantially inert gas effecting the flow of the mixture of said gas and fuel components through said vaporizing chamber to said inlet throat.

18. A method for controlling an internal combustion engine comprising the steps

varying the air flow rate in an in air inlet throat in response to the engine power demand;

mixing one or more liquid fuel components with a pressurized substantially inert gas;

varying the flow of fuel components into said mixing chamber in direct relation to the flow of air in said inlet throat;

conveying the mixture of said substantially inert gas and fuel components to said inlet throat by means of said substantially inert gas;

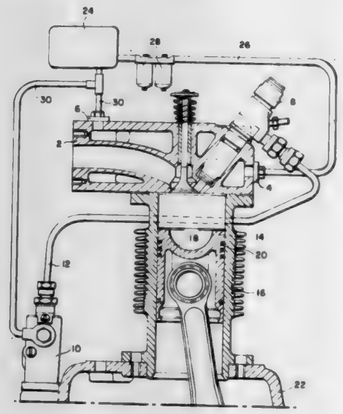
heating said mixture of substantially inert gas and fuel components in a heat exchanger to vaporize said mixture, prior to the conveying of said mixture to said inlet throat.

4,445,486

INTERNAL COMBUSTION ENGINE

Nidadavolu N. N. Rao, Pune, India, assignor to Kirloskar Oil Engines Limited, Khadki, Pune, India

Continuation of Ser. No. 392,653, Jun. 28, 1982, abandoned, which is a continuation of Ser. No. 40,431, May 18, 1979, abandoned. This application Sep. 28, 1983, Ser. No. 536,823
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **2 Claims**



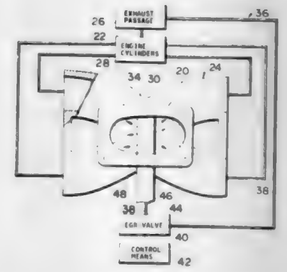
1. An improved internal combustion engine, comprising a fuel System, a cylinder, said cylinder including a cylinder liner portion and a cylinder head, said cylinder head including cooling passage therein, said cylinder head being cooled by a single fluid, a piston movable within said cylinder, the outer portion of said cylinder comprising an upper, a middle and a lower portion, cooling fins positioned on the middle portion only, the clearance between the piston and the cylinder liner being an amount which allows adequate cooling of the cylinder liner, engine lubricating oil, and piston solely by natural convection, said clearance being uniform around the confronting circumference of said piston and cylinder, said fuel system comprising a fuel source, a fuel injection pump, an injection nozzle mounted in the cylinder head, a first fuel line means extending between the pump and the fuel injection nozzle, and a second fuel line means providing fluid communication among the fuel source, said cooling passages, and said fuel injection pump for said fuel prior to its being supplied to said first fuel line means, whereby the fuel acts as a coolant to cool the cylinder head.

4,445,487

EXHAUST GAS RECIRCULATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Katunori Higashi, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Apr. 9, 1982, Ser. No. 367,222
Claims priority, application Japan, Apr. 11, 1981, 56-54727
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **17 Claims**



1. In an internal combustion engine having a intake passage for passing therethrough intake flow of air or an air-fuel mixture toward engine cylinders and an exhaust passage for passing therethrough exhaust gases discharged from the engine cylinders, said intake passage having therein a throttle valve for controlling the intake flow passing therethrough, an exhaust gas recirculation system comprising:

a communicating passage means extending into the intake passage and providing communication between the exhaust passage and the intake passage downstream of the throttle valve for conducting a portion of the exhaust gases from the exhaust passage into the intake passage downstream of the throttle valve, said communicating passage means having a first section outside of the intake passage and a second section within the intake passage;

an elongated substantially straight member provided in the intake passage downstream of the throttle valve and having therein said second section which is substantially straight and extends in the longitudinal direction of said elongated member, said elongated member having a continuous and unobstructed outlet for the exhaust gases at its side downstream of the intake flow through the throttle valve, said outlet communicating said second section with the intake passage at a side of said elongated member downstream of the intake flow through the throttle valve for introducing the exhaust gases into the intake passage in a direction substantially along the direction of the intake flow through the throttle valve; and

said elongated member arranged such that the exhaust gases are prevented from flowing upstream toward the throttle valve.

4,445,488

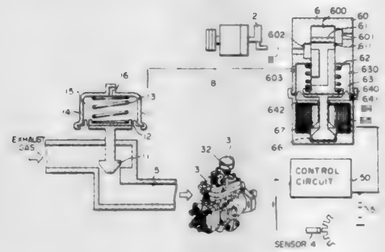
EXHAUST GAS RECIRCULATION CONTROL FOR DIESEL ENGINE

Takeshi Tanaka; Hisasi Kawai, both of Toyohashi; Toshihiko Igashira, Toyokawa; Kiyonori Sekiguchi, Aichi; Mitsumasa Yamada, Mishima; Michio Kawagoe, Susono, and Masaaki Tanaka, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 19, 1982, Ser. No. 435,301
Claims priority, application Japan, Oct. 20, 1981, 56-166424
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **8 Claims**

1. An apparatus for controlling exhaust gas recirculation in a diesel engine comprising:

sensors for detecting the operating condition of the diesel engine;
a control circuit for receiving the signal from said sensors and for generating the control signal to control the amount of EGR;
a pump for generating control pressure;
a pressure control valve for controlling the control pressure from said pump to a predetermined value, having a sleeve, a spool valve provided in said sleeve to slide along, a



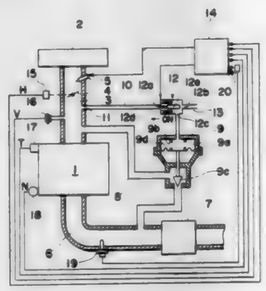
diaphragm for driving said spool valve in response to said control pressure, and an electromagnetic means for supplying the electromagnetic force to said spool valve, and said predetermined value being changed by the signal supplied to said electromagnetic means; and
an EGR valve for adjusting the amount of EGR, having a diaphragm chamber for receiving the control pressure from said pressure control valve, and changing the opening degree thereof in response to the control pressure.

4,445,489

AIR-FUEL MIXTURE CONTROL FOR AUTOMOBILE ENGINE HAVING FUEL INJECTION SYSTEM

Kazuo Kobayashi; Hideki Tanaka; Katsuyoshi Iida, and Junji Kamite, all of Aki, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Aug. 19, 1981, Ser. No. 294,352
Claims priority, application Japan, Aug. 25, 1980, 55-117225; Aug. 25, 1980, 55-117226; Aug. 27, 1980, 55-118894; Sep. 4, 1980, 55-123116
Int. Cl.³ F02D *37/00*
U.S. Cl. 123—571 **5 Claims**



1. An air-fuel ratio control system for an internal combustion engine of a type having a fuel injection system, said control system comprising, in combination:
a fuel intake passage means for the introduction of air into said engine;
a throttle valve disposed in said fuel intake passage means for regulating the flow of air flowing therethrough towards said engine;
a fuel injection nozzle disposed in said fuel intake passage means for injecting a mist of fuel thereinto for the preparation of a combustible mixture with said air flowing therethrough;
an exhaust passage means for the discharge of exhaust gases from said engine towards the atmosphere;
an EGR passage means communicating between said exhaust passage means and said intake passage means for recirculating a portion of said exhaust gases from said exhaust passage means into said intake passage means;
an EGR control valve means disposed in said EGR passage means for controlling the rate of recirculation of that portion of said exhaust gases which flow through said EGR passage means;
a detecting means for detecting the rate of flow of air through said intake passage means in dependence on at least two of signals which are respectively indicative of engine speed, an opening of said throttle valve and a negative pressure developed inside said intake passage means at a position downstream of said throttle valve with respect to the direction of flow of said mixture towards said engine;
a setting means operable during said recirculation of that portion of said exhaust gases and in response to an output signal from said detecting means for setting the rate of flow of fuel to be injected to a value which is required to lean said combustible mixture to such an extent as to be compensated for by the rate of flow of said exhaust gases recirculated into said engine in dependence on said detected rate of flow of said air;
a first means for controlling the rate of flow of fuel to be injected in response to an output from said setting means;
a composition sensor disposed in said exh ust gas passage means for detecting the concentration of a component of said exhaust gases which is a function of the air-fuel mixing ratio of said combustible mixture burned in said engine;
a second means for controlling the opening of said EGR control valve means in response to an output signal from said composition sensor, said output signal from said composition sensor being supplied only to said second controlling means so as to enable said second controlling means to control said EGR control valve means so as to allow the passage of said exhaust gases recirculated at a rate of flow which is required to adjust said mixing ratio to a required value; and
an EGR control means and a memory means for controlling said EGR control valve means in dependence on a control value which is stored in said memory means by detecting a transit operating condition of said engine, said transit operating condition including acceleration and deceleration of said engine.

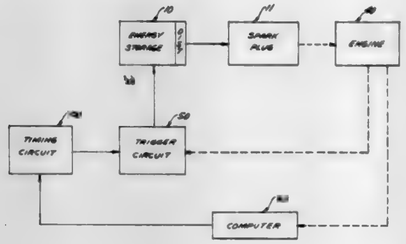
4,445,490

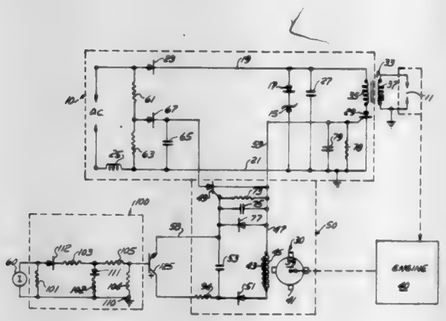
IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Howard E. Van Sicien, Jr., Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 20, 1982, Ser. No. 341,031
Int. Cl.³ F02P *5/00*
U.S. Cl. 123—602 **6 Claims**

1. In combination with a internal combustion engine ignition system having at least one spark plug; means for receiving and storing electrical energy including a first solid state electronic switching device for releasing the stored energy when switched; a triggering circuit for switching the first electronic switching device to release the stored energy through said spark plug, said triggering circuit including a second solid state electronic switching device, pulse generating means for generating a succession of electrical trigger pulses in timed relation to the speed of the engine crankshaft for switching the second switching device which switches the first switching device, and means for biasing the second switching device; and means for automatically controlling the bias means, said control means including a transistor connected in parallel with said biasing means and means for operating said transistor in the active region of its operating characteristics wherein its resistance is not substantially a constant value of resistance, the improvement wherein said transistor operating means comprises:
a resistor and diode network adapted to receive electrical current and provide an output current to the transistor, said network comprising:
a first resistor having one lead electrically connected to ground and the other lead adapted to receive the electrical current;
a second resistor electrically connected in series with a first diode and having one lead thereof electrically connected to ground;
a third resistor and second diode electrically connected together in series and electrically connected between the other leads of the first resistor and the second resistor and first diode;
a fourth resistor having one lead electrically connected to ground and its other lead electrically connected to the base of the transistor; and





a fifth resistor connected between the other leads of said first diode and second resistor and said fourth resistor.

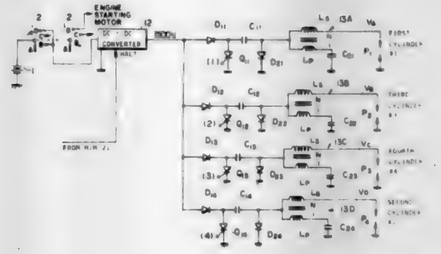
6. A circuit for controlling the output current to an ignition system from a computer analyzing at least one operating parameter of an internal combustion engine, said circuit comprising:
a transistor having its output electrically connected to said ignition system; and
a resistor and diode network adapted to receive the electrical current from said computer and provide an output current to the base of said transistor, said network comprising:
a first resistor having one lead electrically connected to ground and the other lead adapted to receive the electrical current;
a second resistor electrically connected in series with a first diode and having one lead thereof electrically connected to ground;
a third resistor and second diode electrically connected together in series and electrically connected between the other leads of the first resistor and the second resistor and first diode;
a fourth resistor having one lead electrically connected to ground and its other lead electrically connected to the base of the transistor; and
a fifth resistor connected between the other leads of said first diode and second resistor and said fourth resistor.

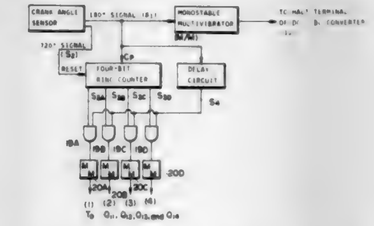
4,445,491

IGNITION SYSTEM FOR STARTING A DIESEL ENGINE

Yasuki Ishikawa; Hiroshi Endo, both of Yokosuka; Masazumi Sone, Tokyo, and Iwao Imai, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 16, 1982, Ser. No. 408,701
Claims priority, application Japan, Aug. 27, 1981, 56-134592
Int. Cl.³ F02P *5/00*
U.S. Cl. 123—605 **4 Claims**





1. An ignition system for auxiliarily starting a multi-cylinder diesel engine having a low DC voltage supply unit which includes a DC battery and ignition key switch connected to said DC battery, comprising:
(a) a plurality of plasma spark plugs, each installed within a corresponding combustion chamber so as to expose a discharge gap thereof to a spray of injected fuel from a corresponding injection valve;
(b) a DC—DC converter which boosts a low DC voltage from said low DC voltage unit into a high DC voltage when said ignition key switch is placed at a start position for actuating an engine starting motor and placed at an ignition position for continuously supplying the low DC voltage from said DC battery thereinto;
(c) a plurality of energy charging sections each having a first diode connected to said DC—DC converter, a first capacitor a first end thereof being connected to said first diode, and a second diode being connected between a second end of said first capacitor and ground and each of which charges the high DC voltage into said first capacitor;
(d) a plurality of switching elements, each connected between said first capacitor and ground which operatively turns on to ground the first end of said first capacitor so as to discharge the energy charged within said first capacitor therethrough;
(e) a plurality of voltage boosting sections, each connected

between said corresponding energy charging section and spark plug and having a transformer and second capacitor, one end of a primary winding of said transformer being connected to the second end of said first capacitor together with a first end of a secondary winding thereof, a second end of said primary winding being grounded via said second capacitor so as to generate a damping oscillation when said corresponding switching element turns on to apply the charged high DC voltage thereacross, and the second end of said secondary winding being connected to the corresponding spark plug thereof so as to supply a discharge energy into the corresponding spark plug; and

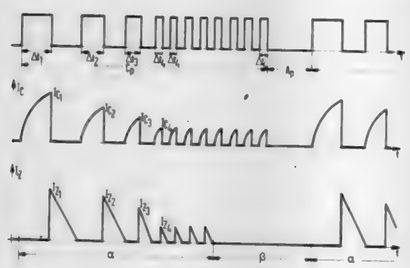
(f) an ignition signal generator which detects a fuel injection timing of each engine cylinder, generates and outputs an ignition pulse signal having a predetermined time of delay with respect to the fuel injection timing of the corresponding engine cylinder into said corresponding switching element to turn on said switching element and generates and outputs another pulse signal at the fuel injection timings of all engine cylinders having a predetermined pulsewidth to said DC—DC converter so as to temporarily halt the output of the boosted high DC voltage during each time interval predetermined by the pulsewidth of said pulse signal, whereby the engine starts immediately by turning said ignition key switch to the start position.

4,445,492

IGNITION SYSTEM FOR INTERNAL-COMBUSTION ENGINES

Phillipe Rouanes, Parempuyre, France, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,467
Claims priority, application France, Jul. 22, 1981, 81 14259
Int. Cl.³ F02P *3/02, 3/04, 1/00*
U.S. Cl. 123—606 **10 Claims**



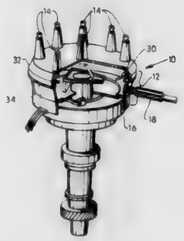
1. Ignition system for internal combustion engines, comprising a transformer having a primary side with a primary winding and a secondary side with at least one secondary winding, a chopper connected to said primary winding for addressing said primary winding, a d-c or rectified a-c voltage source connected to said chopper, said at least one secondary winding being selectively coupled to spark plugs of the internal combustion engine, and electronic control means connected to said chopper for driving said chopper with pulse sequences having individual width-modulated pulses and for supplying the spark plugs with ignition pulse sequences having corresponding individual ignition pulses with modulated energy.

4,445,493

DISTRIBUTOR WITH REDUCED RADIO FREQUENCY INTERFERENCE

Onorio J. Coletti, Roseville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1981, Ser. No. 327,008
Int. Cl.³ H01H *19/00;* **F02P** *1/00*
U.S. Cl. 123—633 **1 Claim**



1. A method for reducing radio frequency interference in an ignition distributor for use in a vehicle mounted internal combustion engine, including the steps of:

sealing an internal communtation cavity of the ignition distributor by applying a seal to a shaft coupling the engine to the distributor to provide a positive commutation cavity seal and to prevent ingestion of oil from the engine when vacuum is applied to the commutation cavity, and positioning an O-ring between components of the ignition distributor;

applying a vacuum source to the internal commutation cavity so as to reduce the pressure therein at least to a vacuum magnitude of 20 inches of mercury and reduce emissions of radio frequency interference during operation of the ignition distributor by connecting the internal commutation cavity to an intake manifold vacuum port of the engine; and

applying silicon grease to the commutation cavity so as to provide a further additive reduction of radio frequency interference.

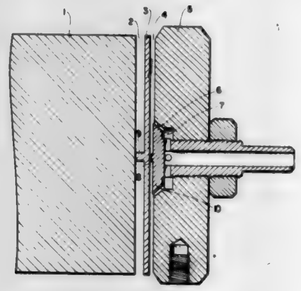
4,445,494

APPARATUS FOR SUPPORTING CRYSTALLINE WAFERS

Bernd Schiele, Burghausen, and Johann Niedermeier, Burgkirchen, both of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Sep. 23, 1981, Ser. No. 304,941
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036829
Int. Cl.³ B28D *7/04*
U.S. Cl. 125—35 **8 Claims**

1. A holding tool which comprises a holding plate having a surface which faces an article being held, an annular nozzle, in the holding plate, formed by a conical hole and a conical guide cone, having a base, mounted in the conical hole with the base of the conical guide cone facing the article being held, a point-like projection, protroding from the center of the base of the conical guide cone, for contacting the article being held and



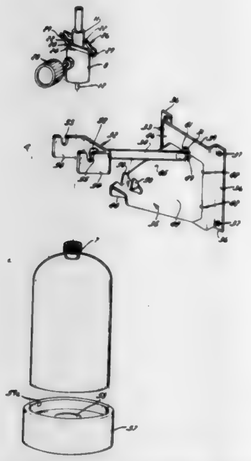
means for providing a controlled flow of gas from the annular nozzle.

4,445,495

PORTABLE STOVE WITH GIMBAL MOUNTING

John W. Frost, DePere, Wis., assignor to Jax Products Inc., DePere, Wis.

Filed Dec. 22, 1982, Ser. No. 439,055
Int. Cl.³ F24C *15/30*
U.S. Cl. 126—24 **6 Claims**



1. Gimbal mounting means for a portable stove of the type that comprises a pressurized fuel container having an outlet nipple at an upper end thereof, a burner spaced above said nipple and coaxially connected therewith, and means for supporting a cooking vessel over said burner to be heated by a flame thereat, said gimbal mounting means providing for detachable connection of said stove to a structural member such as a boat bulkhead and enabling the stove to remain upright notwithstanding substantial tilting of the structural member, said mounting means being characterized by:

A. a shaft having a head on a rear end thereof;

B. a plate-like member securable to a structural member and having front and rear surfaces, and further having

(1) a hole through which said head can pass for engagement against said rear surface and through which the shaft can project forwardly with its rear end confined against upward and sideward movement by edge portions that said hole defines, and

(2) a plurality of vertically elongated hook receiving apertures;

C. a bracket cooperable with said plate-like member to support the shaft in rotatable forwardly projecting relation to said plate-like member, said bracket having

(1) a top surface upon which the shaft rests,

(2) a pair of opposing abutments projecting above said top surface and between which the shaft is closely receivable, and

(3) a plurality of rearwardly and downwardly projecting hooks that are receivable in said apertures and engageable with said plate-like member to detachably connect the bracket thereto;

D. a pivot member having an aperture that provides for its coaxial securement to said nipple and having a pair of trunnions which are spaced to opposite sides of said aperture and are coaxial with one another; and

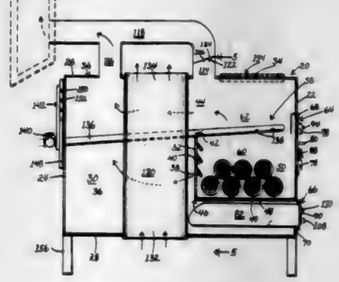
E. a substantially U-shaped yoke on the front end of the shaft having forwardly projecting legs which are spaced laterally in opposite directions from the shaft axis and in each of which there is an upwardly opening transversely extending groove wherein one of said trunnions is receivable for supporting the stove to swing about the mutually perpendicular axes of said trunnions and of the shaft.

4,445,496

WOOD BURNING HEATER PROVIDING IMPROVED UNIFORM TEMPERATURE OUTPUT

George F. Crain, Rte. 2, Elmwood, Ill. 61529

Filed May 10, 1982, Ser. No. 376,668
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—61 **6 Claims**



1. A solid fuel burning heater comprising:

a housing having front, back, top, bottom, and side walls;

a louvered internal upstanding divider wall intermediate the front and back walls dividing the housing into front and back sections having combustion and heating chambers respectively therein, the louvered wall terminating a substantial distance below the top wall to provide internal overhead crossover space for combusted gases;

the front wall having draft control means including separately controllable primary and secondary air inlets to the combustion chamber;

a fuel-supporting grate between the front and louvered walls in the lower portion of the front section;

the combustion chamber comprising a primary combustion zone above the grate substantially co-extensive with the louvered wall, and a secondary combustion zone above the primary combustion zone and in communication with the crossover space above the louvered wall;

a vertical heat transfer duct in the heating chamber extending through the top and bottom walls of the housing and having open ends in free communication with external ambient air;

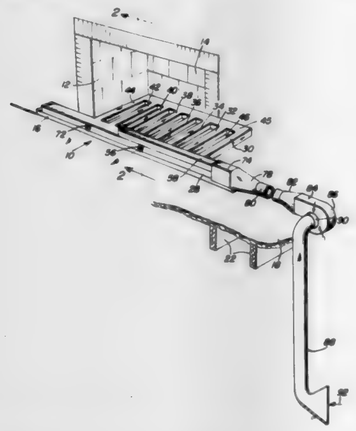
front and rear flues connected with upper portions of the combustion and heating chambers respectively;
a main flue interconnecting the front and rear flues and adapted to provide an outlet connection to a chimney;
damper means for the front flue adjustable to control flow of combusted gases therethrough and effective when opened to direct combusted gases to the main flue and bypass the heating chamber and rear flue;
a draft tube extending from a position externally of the housing into the combustion chamber between the primary and secondary combustion zones, the draft tube having air exit means in the combustion chamber; and
control valve means in the draft tube enabling regulation of secondary air to the combustion chamber;
whereby a fire in the combustion chamber can be banked for long term, limited heat output by closing the secondary air inlet at the front wall and adjusting the control valve means to limit the inflow of secondary air through the draft tube to match the inflow of primary air through the primary air inlet.

4,445,497

FIREPLACE HEATING UNIT

Glen W. Kilday, Sr., 448 Sunset Dr., SW., Winston-Salem, N.C. 27103

Filed Oct. 22, 1981, Ser. No. 313,979
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **6 Claims**



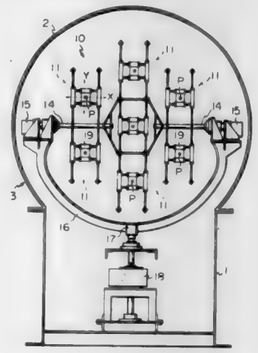
1. A fireplace heating unit comprising:
a first set of hollow tubing structures forming a first essentially zigzag heat exchange path with at least three path reversals horizontally disposed in a fireplace and having an air entry area and an air exit area,
a further set of hollow tubing structures forming a second essentially zigzag heat exchange path with at least three path reversals horizontally disposed in a fireplace heating means in side-by-side relation to the first set of tubing structures and having an air entry area and an air exit area with the heat exchange paths being isolated from each other,
air blower means for each set of the hollow tubing structures and coupled to each of the air entry areas thereof,
said tubing structures extending from front to rear of the fireplace and supported from the hearth of the fireplace with the tubing structures being in surface contact with the hearth to form a grate to support wood logs or the like having spaces for draft air between adjacent tubing structures, said air exit areas being located at the front of the tubing structures with the air exit areas communicating with a space to be heated, the tubing structures being disposed in coplanar relation and each structure having a separate supply tube for supplying air to the air entry area thereof from the blower means, the supply tubes extending from a common adaptor attached to the blower means adjacent one side of the unit.

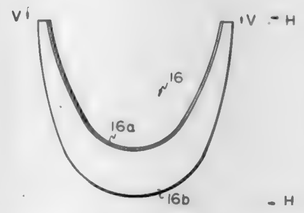
4,445,498

SUPPORT ARM FOR A SUNLIGHT CONCENTRATING AND COLLECTING APPARATUS

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Aug. 27, 1982, Ser. No. 412,206
Claims priority, application Japan, Aug. 31, 1981, 56-136293
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **8 Claims**





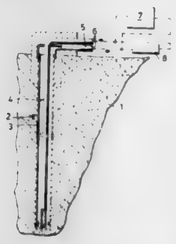
1. A support arm for a sunlight concentrating and collecting apparatus, said apparatus enclosing a plurality of lenses integrally connected with each other, light conductor cables having light receiving ends thereof arranged at each focal point of said lenses, a first rotatable shaft for turning said integrated lenses around the horizontal axis, a support arm for rotatably supporting the ends of said first rotatable shaft, and a second rotatable shaft for turning said support arm around the vertical axis perpendicular to said horizontal axis, whereby the turning of said first and second shafts is controlled to cause said lenses to face the position of the sun so as to collect sunlight into said light conductor cables, characterized in that said support arm comprises a first member having a curved plate formed substantially in the shape of circular arc, a second member having an inverted saddle-shaped plate or plates, said second member being firmly fixed along the outer surface of said first member, and lies on at least one plane containing the axis of first rotatable shaft and is symmetrical with respect to the neutral plane of said first member.

4,445,499

GROUND-STORAGE OF HEAT SUCH AS SOLAR HEAT

Ove B. Platell, Sigtuna, Sweden, assignor to Sunstore Kommanditbolag, Malmo, Sweden

Continuation-in-part of Ser. No. 866,719, Jan. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 841,818, Oct. 13, 1977, abandoned. This application Jan. 16, 1980, Ser. No. 112,518
Claims priority, application Sweden, Nov. 1, 1976, 7612143; Sep. 26, 1977, 7710748
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **8 Claims**



6. A method of establishing a heat-storage zone in the earth which can be supplied with heat from heat-absorbing means during one season of the year and from which heat can be taken in another season of the year for distribution to heat-emitting means in a building or similar structure with the heat storage zone having sufficient capacity to store all of the heat necessary for the building during said another season without raising the temperature at the periphery of the storage zone in the earth above about 35° C. with the variation of the temperature at the periphery of the storage zone not to exceed 10° C. during the year, said method including the steps of:
forming a plurality of channels in the earth with the channels spaced a distance s from the periphery of the storage zone and a distance not exceeding 2s from one another,
said distance s being approximately one (1) meter in the case of earth rich in water to approximately three (3) meters in earth which is relatively dry and rock such as granite,
providing a liquid conduit between said heat-absorbing devices, said heat-emitting devices and said channels, and
circulating said liquid between said heat-absorbing devices and said channels during one season of the year to store heat in said heat storage zone and circulating said fluid between said channels and said heat-emitting devices during another season of the year to remove heat from said heat storage zone.

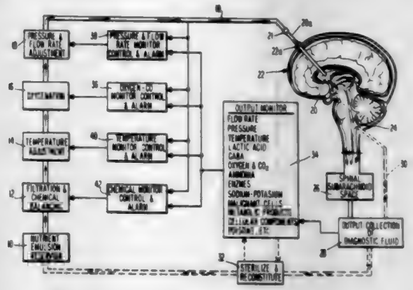
4,445,500

STROKE TREATMENT UTILIZING EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

Jewell L. Osterholm, Radnor Township, Delaware County, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 354,346, Mar. 3, 1982, which is a continuation-in-part of Ser. No. 275,117, Jun. 18, 1981, Ser. No. 275,116, Jun. 18, 1981, Pat. No. 4,393,863, and Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, said Ser. No. 275,117, and Ser. No. 275,116, each is a division of Ser. No. 139,886,. This application Sep. 30, 1982, Ser. No. 428,850
The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.
Int. Cl.³ A61K *31/00*; A61M *5/14*
U.S. Cl. 128—1 R **6 Claims**

1. A method of treating hypoxic-ischemic central nervous system tissue comprising:
(a) providing a physiologically acceptable oxygenated fluorocarbon emulsion as treatment fluid;
(b) establishing a circulation of said fluid through an oxygenator at a first preselected flow rate to oxygenate said fluid;
(c) injecting said oxygenated fluid into the cerebrospinal pathway at a first injecting point and at a second preselected rate;
(d) substantially continuously withdrawing fluid from said



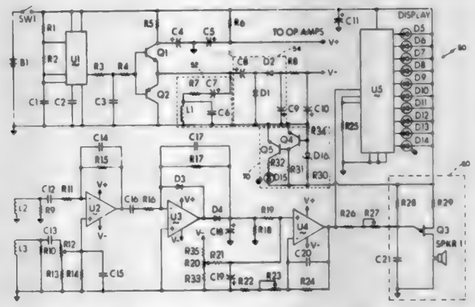
cerebrospinal fluid pathway at a second point which is selected to create a circulation of said oxygented fluid in the vicinity of said hypoxic-ischemic tissue sufficient to support significant aerobic respiration of a portion of said tissue,
whereby said portion of said tissue will be metabolically sustained during said treatment.

4,445,501

CIRCUITS FOR DETERMINING VERY ACCURATELY THE POSITION OF A DEVICE INSIDE BIOLOGICAL TISSUE

Robert G. Bresler, Watertown, Mass., assignor to McCormick Laboratories, Inc., Belmont, Mass.

Filed May 7, 1981, Ser. No. 261,521
Int. Cl.³ A61B *6/12*
U.S. Cl. 128—1.5 **8 Claims**



1. A circuit for determining very accurately the position of a device in biological tissue, comprising:
a detector circuit,
said detector circuit having a field coil which, when activated, generates a field, said detector circuit also having a first receiving coil and a second receiving coil which are both disposed in the field generated by said field coil,
whereby said first receiving coil produces a first output signal and said second receiving coil produces a second output signal when the field is generated,
a variable resistor having a wiper, a differential amplifier having first and second inputs and an output,
a first side of said first receiving coil and a first side of said second receiving coil being connected to a common reference, a second side of said first receiving coil being

connected to said first input of said amplifier, a second side of said second receiving coil being connected to said variable resistor, said wiper of said resistor being connected to said second input of said amplifier so that the magnitude of said second output signal may be varied so as to make it equal to the magnitude of said first output signal when no device is detected in the field,

whereby said amplifier provides an output signal when there is a difference between said first and said second output signals from said first and said second receiving coils, and

an alarm,

said alarm being connected to receive the signal from said amplifier output to produce an alarm signal when there is an output signal, as would be caused by the presence of the device inside the field.

4,445,502

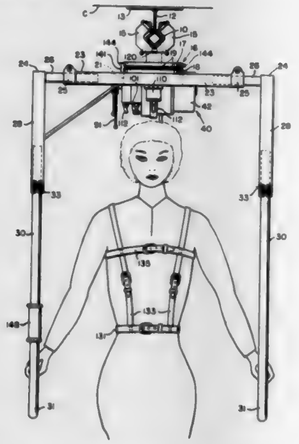
SAFETY RESTRAINT SYSTEM AND INERTIAL REEL THEREFOR

Algernon G. Swan, 2533 Woodlake Dr., Albilene, Tex. 79606; Eugene A. Stead, Jr., Rte. 1, Box 135, Clarksville, Va. 23927; William P. Thompson, 6315 Scatterfield Rd., Anderson, Ind. 46015, and David P. Colvin, Rte. 5, Box 67, Apex, N.C. 27502

Continuation-in-part of Ser. No. 216,559, Dec. 15, 1980, abandoned, which is a division of Ser. No. 92,568, Nov. 8, 1979, Pat. No. 4,256,098. This application Apr. 21, 1982, Ser. No. 370,468

Int. Cl.³ A61H *1/02*

U.S. Cl. 128—25 R **11 Claims**



1. In a safety restraint system having an overhead rail, an inertial reel mounted on said rail, and a retractable, patient-supporting cord wound at one end on a rotatable spool in said reel and disposed to be connected at its opposite end to an ambulatory patient, the improvement comprising

means connecting said inertial reel to said rail for movement longitudinally thereof, and for rotational adjustment relative thereto about a vertical axis, and

means for releasably securing said reel against rotation relative to said rail, and selectively in one of at least two different operating positions angularly spaced approximately 180° from each other about said vertical axis.

4,445,503

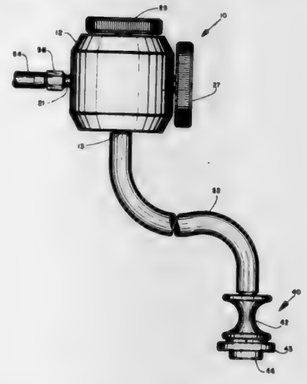
PERCUSSOR ASSEMBLY

Harold R. Havstad, Eagle Point, Oreg., assignor to Hudson Oxygen Therapy Sales Company, Temecula, Calif.

Continuation-in-part of Ser. No. 50,685, Jun. 21, 1979, abandoned. This application Jan. 8, 1981, Ser. No. 223,355

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—40 **3 Claims**



1. A percussor assembly comprising:

a rigid body member having a gas inlet passageway and a single gas outlet passageway,

a stationary valve seat and a single moveable diaphragm and biasing means cooperating therewith for urging said diaphragm against said valve seat to provide a gas tight seal between said passageways,

a gas pressure chamber between said gas inlet passageway and said valve seat,

a single remote applicator pneumatically connected to said gas outlet passageway with a flexible gas supply tubing for receiving bursts of gas therefrom, said applicator having a percussion chamber and an expandable diaphragm exposed thereto, and

means for delivering pressurized gas to said gas pressure chamber sufficient to overcome the biasing force of said biasing means whereby said gas tight seal is temporarily broken and a burst of gas passes from said gas pressure chamber through said gas outlet passageway to said percussion chamber causing expansion of said diaphragm.

4,445,504

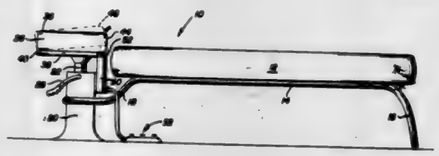
CHIROPRACTIC ADJUSTMENT TABLE

Fred H. Barge, 322 Cameron Ave., LaCrosse, Wis. 54601

Filed Dec. 2, 1981, Ser. No. 326,744

Int. Cl.³ A61H *5/00*

U.S. Cl. 128—70 **20 Claims**



1. A chiropractic examination table apparatus comprising a support table including a separate vertically adjustable cushion generally registered horizontally herewith actuating means to abruptly, suddenly and rapidly raise the cushion means a controlled vertical distance.

4,445,505

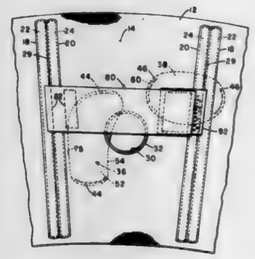
KNEE BRACE FOR PREVENTING LATERAL DISPLACEMENT OF THE PATELLA

Donald Labour, 82 Wellsmere Rd., Roslindale, Mass. 02167; James R. Cannon, 22 Karen Dr., Randolph, Mass. 02368, and Alfred Klugman, 187 Woodward St., Newton, Mass. 02168

Filed Dec. 28, 1981, Ser. No. 335,197

Int. Cl.³ A61F *3/00*

U.S. Cl. 128—80 C **17 Claims**



1. A knee brace for preventing patella displacement comprising:

a tubular sleeve made of an elastic webbing material, said sleeve being designed to fit over the leg and extend from below the knee upwardly to the thigh,

a relatively firm elongated first pad attached to the sleeve, said pad being positioned on the sleeve to lie just laterally of the patella when the sleeve is worn on the leg overlying the knee so as to prevent lateral displacement of the patella when the sleeve is in place,

and a second pad attached to the sleeve and positioned to engage the medial femoral epicondyl and condyl notch when the sleeve is in place and prevent the sleeve from turning on the leg and displace the first pad from the patella.

4,445,506

BONE ALIGNING APPARATUS

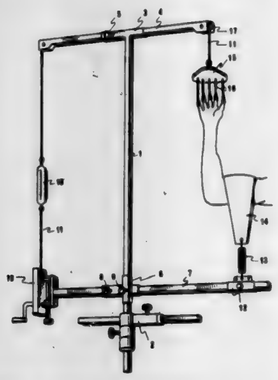
Kjell Johansson, and Hermino Duarte-Martins, Jr., both of Sundsvall, Sweden, assignors to Landstingens Inkopscentral, LIC, Solna, Sweden

Filed May 13, 1982, Ser. No. 377,954

Claims priority, application Sweden, May 13, 1981, 8103017

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—84 R **6 Claims**



1. Bone aligning apparatus comprising,

a vertically oriented member having a lower end including means for attaching said member to a desired supporting structure and an upper end including a first cross piece;

an upper beam slidingly attached to said member at said first cross piece and extending longitudinally relative to said member, said upper beam including a first roller at one end and a second roller at the other end;

a second cross piece slidingly attached to said member and spaced from said first cross piece;

a lower beam slidingly attached to said member at said second cross piece and extending longitudinally relative to said member, said lower beam including a crank device at one end and a holder slidingly attached to the other end;

a rope one end of which is operatively attached to said crank device, said rope being supported by said first and second rollers, the other end of said rope extending from said second roller towards said other end of said lower beam;

a limb retaining means attached to said holder; and,

a repositioning disc attached to said other end of said rope and including means adapted to hold the extreme portions of a limb in a physiologically correct position whereby actuation of said crank device causes said rope to pull said repositioning disc away from said retaining means.

4,445,507

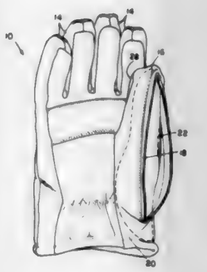
GLOVE WITH THUMB RESTRAINT ELEMENT

Joel H. Eisenberg, 53A Blackhawk La., Stratford, Conn. 06497

Filed Dec. 23, 1980, Ser. No. 219,481

Int. Cl.³ A61F *13/00, 5/04*

U.S. Cl. 128—133 **10 Claims**



1. A glove for preventing injury to the thumb's ulnar collateral ligament comprising:

a hand covering having a thumb portion,

said thumb portion having a retainer means disposed at least in part on the radial side of said thumb portion,

said retainer means being inflexible in the radial direction, and when the wearer's thumb is in place in said thumb portion of said glove, said retainer means is disposed to extend over the thumb's metacarpal phalangeal joint and is of sufficient length to also extend over substantial portions of the adjacent bones which form the joint so as to generally immobilize the bones with respect to the joint in the radial direction whereby radial movement of the thumb which might injure the ulnar collateral ligament of the thumb is prevented.

4,445,508

NASAL PROTECTIVE METHOD AND DEVICE

Norman M. Lake, 1705 Newport Dr., Lancaster, Pa. 17602

Continuation of Ser. No. 183,214, Sep. 2, 1980, abandoned. This application Jun. 7, 1982, Ser. No. 385,789

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—201.18 **1 Claim**

1. A new process of employing an improved nasal splint for helping the human nose maintain its mucous membranes in good condition, said splint comprising a U-shaped wire spring for straddling the nose and having two nubs each of ellipsoidal-like shape of circular outline with two convex side faces, each leg of the U-shaped spring being embedded in the longitudinal

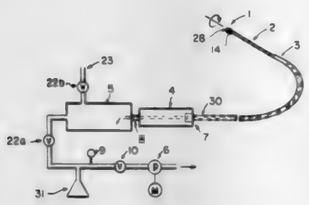
axis of a different one of the nubs and employing the improvement of each leg holding the nubs only by friction to allow the same to be rotatable and slidable on the legs of the spring, and said process comprising locating the splint such that the spring of the splint presses the nubs in on the sides of the nose in an appropriate area defined by the portion above the alae and by the upper portion of the alae, this being done to the extent of closing off the nasal passages by exerting a firm pressure on the septum and wherein the improvement comprising closing off the nasal passages for a period of 30 minutes or more thereby causing the nasal temperature to increase from its normal 91° F. to about 98° F. then relocating said splint such that its spring presses the nubs in on the sides of the nose in the area defined by the portion just above the alae, this being done to a degree sufficient to trap and minimize inhalation of airborne irritants entering the nose but insufficient to block breathing and watery secretions therefrom thus enhancing the nasal filtering system and helping the nose protect against the numerous irritants breathed into the nose during certain seasons of the year.

4,445,509

METHOD AND APPARATUS FOR REMOVAL OF ENCLOSED ABNORMAL DEPOSITS

David C. Auth, 4739 Somerset Ave. Southeast, Bellevue, Wash. 98006

Filed Feb. 4, 1982, Ser. No. 345,656
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **32 Claims**



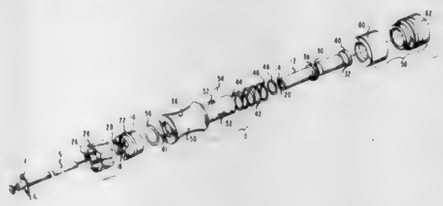
1. A cutting tool for removing abnormal deposits, comprising a cylindrically symmetric body having a center cavity and a nose , at least one cutting flute extending along the outer surface of said body each cutting flute having a circumferentially facing cutting face formed thereon, and a radial fluid port extending from in front of a respective face of a flute into said center cavity, each port having a circumferential component extending into said cavity away from said cutting face whereby rotation of said cutting tool within a blood vessel about the major axis of said body has a tendency to force blood inwardly through said port.

4,445,510

AUTOMATIC INJECTOR FOR HYPODERMIC SYRINGES OR THE LIKE AND LANCET HOLDER FOR USE IN CONJUNCTION WITH AN AUTOMATIC INJECTOR

Ronald F. Rigby, P.O. Box 341 R.D. 6, Latrobe, Pa. 15650

Filed Sep. 13, 1982, Ser. No. 417,607
Int. Cl.³ A61B *17/34*
U.S. Cl. 128—329 R **14 Claims**



1. An apparatus for propelling a needle bearing device into biological tissue comprising:

an inner sleeve forming an open-ended longitudinal chamber therein for removably receiving said needle bearing device, said inner sleeve having first and second spaced apart recesses disposed in the outer surface thereof, said first recess being of a greater depth than said second recess;

an outer sleeve forming an open-ended longitudinal chamber therein for receiving and for permitting the movement therein of said inner sleeve between first and second positions, said outer sleeve having at least one aperture disposed therethrough;

biasing means for biasing said inner sleeve into said first position relative to said outer sleeve;

ball bearing means dimensioned to reside within said at least one aperture and to selectively reside within said second recess when aligned with said aperture when said inner sleeve is in said second position relative to said outer sleeve; and

locking sleeve means forming an open-ended longitudinal chamber therein for receiving and for permitting the movement therein between first and second positions of a portion of said outer sleeve adjacent to said at least one aperture disposed therein, said locking sleeve including an inner wall surface for forcing said ball bearing means into said second recess, when said outer sleeve is in said second position relative to said locking sleeve means, so as to lock the position of said inner sleeve relative to said outer sleeve, when said inner sleeve is in said second position thereof relative to said outer sleeve, longitudinal force on said locking sleeve means in a direction urging the same from said second position relative to said outer sleeve causing said ball bearing means to disengage said raised surface and said inner sleeve to shift position from said second position to said first position relative to said outer sleeve as a result of the action of said biasing means thereon, said first recess being provided to accept said ball bearing means during assembly of said apparatus, said first recess being of sufficient depth to permit the passage of said locking sleeve means over said ball bearing means during said assembly.

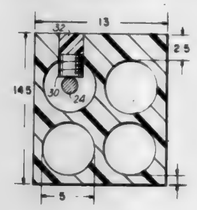
4,445,511

PACER ELECTRODE CONNECTOR ASSEMBLY

David Cowdery, East Ballina, and John R. Cooper, Five Dock, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Jun. 24, 1982, Ser. No. 391,519
Int. Cl.³ A61M *1/36*
U.S. Cl. 128—419 P **37 Claims**

1. A connector assembly for connecting two bipolar electrode lead proximal terminations to four terminals extending through the case of a heart pacer; each of said bipolar electrode lead proximal terminations having a forward pin and a rearward annular ring; comprising four metallic termination blocks each for electrical connection to a respective one of said terminals; and at least two secured fluid-insulating metal-free plastic parts which make slidable engagement with each other and at



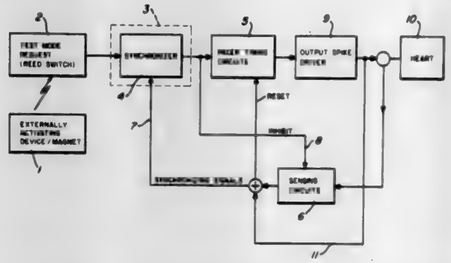
least one of which makes slidable engagement with said four metallic termination blocks and said case; pairs of said metallic termination blocks having aligned bores therein and said at least two secured plastic parts forming respectively aligned bores to accommodate the insertion of two bipolar electrode lead proximal terminations.

4,445,512

METHOD AND APPARATUS FOR EVALUATING PACER BATTERY STATUS AND STIMULATION EFFECTIVENESS

Yaakov Krupka, Rehovot; Salomon Feldman, Givatayim, and Shmuel Yerushalmi, Rehovot, all of Israel, assignors to Omikron Scientific Ltd., Rehovot, Israel

Continuation of Ser. No. 123,045, Feb. 20, 1980, abandoned. This application Aug. 17, 1982, Ser. No. 408,742
Claims priority, application Israel, Feb. 20, 1979, 56700
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT **3 Claims**



1. A method for evaluating the battery status and stimulating effectiveness of an inhibited type cardiac pacemaker system which issues periodic stimulating pulses between basic pacemaker intervals, said pacemaker system including magnet test means for performing said evaluating in a number of magnetic test intervals, means for activating said magnet test means, a synchronizer for coordinating the timing and sensing circuits of the pacemaker system, said system being capable of sensing periodic R-waves of a heart, which method comprises the step of:

(a) applying magnetic means to actuate said magnetic test means;

(b) sensing one of a first natural R-wave and the end of a first basic pacemaker interval;

(c) applying a predetermined number of consecutive asynchronous stimulation pulses, said asynchronous pulses being applied after a magnetic test interval which is shorter in duration than the basic pacemaker interval;

(d) sensing one of the next R-waves and end of a basic interval;

(e) applying again a sequence of a predetermined number of consecutive asynchronous stimulating pulses during the magnetic test intervals; and

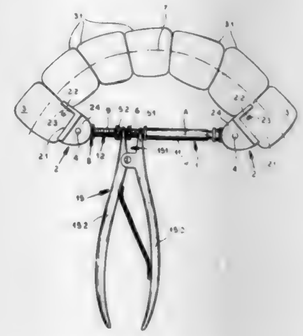
(f) repeating steps (a) through (e) for the duration of the magnet test, whereby the length of the magnet interval and the heart response to the stimulating pulses being indicative of battery status and stimulation effectiveness, respectively.

4,445,513

DEVICE FOR STRAIGHTENING SPINAL COLUMN

Bernhard Ulrich, Ulm, Fed. Rep. of Germany, and Gys H. Slot, Nijmegen, Netherlands, assignors to Max Bernhard Ulrich, Ulm, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,169
Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121271
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—69 **12 Claims**



1. A device for straightening a spinal column having a succession of vertebrae extending along a nonstraight line lying generally in a plane, said device comprising:

an elongated bar lying generally in said plane of said line and having a pair of relatively longitudinally displaceable bar parts in turn having respective bar ends;

a pair of connectors at said ends and each having two generally penpendicular flanges one of which is provided with projecting points and is shaped to fit onto a vertebra end surface with said points engaged therein and the other of which is shaped to fit simultaneously onto a vertebra side surface and is provided with the respective pivot;

means for securing said connectors to respective vertebrae of said succession;

respective pivots between said connectors and the respective ends and defining therebetween respective generally parallel axes transverse to said plane; and

means including a main abutment movable along and fixable on one of said parts and longitudinally engageable with the other of said parts for limiting relative longitudinal displacement of said parts toward each other, whereby said main abutment can be moved along said one part to increase the spacing between said ends and thereby can straighten the succession of vertebrae between said connectors.

4,445,514

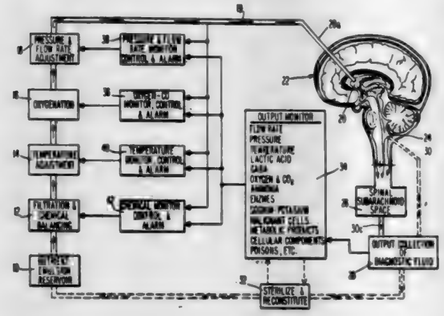
EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

Jewell L. Osterholm, Radnor, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797. This application Jun. 18, 1981, Ser. No. 275,117

Int. Cl.³ A61K *31/00*; A61M *5/14*

U.S. Cl. 128—632 **26 Claims**



1. A method of diagnosing the condition of suspected hypoxic-ischemic central nervous sytem tissue of a mammal, comprising:

(a) providing an oxygenated fluorocarbon emulsion synthetic spinal fluid;

(b) injecting said synthetic spinal fluid into at least a first portion of the cerebrospinal pathway of said mammal to contact said tissue to become a diagnostic fluid;

(c) withdrawing said diagnostic fluid from a second portion of said pathway to create a circulation of said fluid through at least a portion of said pathway;

(d) monitoring the composition of said diagnostic fluid; and

(e) comparing constituents of said fluid for at least a selected difference in the compositions of said synthetic spinal and diagnostic fluids;

whereby said selected differences in said compositions are at least diagnostic of the condition of said suspected hypoxic-ischemic tissue disposed along said portion of said cerebrospinal pathway.

4,445,515

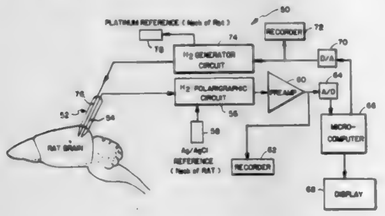
APPARATUS FOR PERFORMING TISSUE PERFUSION MEASUREMENTS

Gene R. DiResta, 4 Hudson View Dr., Yonkers, N.Y. 10701

Filed Nov. 2, 1981, Ser. No. 317,515

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—632 **6 Claims**



1. Apparatus for measuring the perfusion rate of fluid through animal tissue comprising probe means adapted to be contacted with the tissue to be measured for generating a detectible substance, such as hydrogen, in situ in said tissue responsive to an applied electrical current, first sensor means spaced a first distance from such probe means adapted to be contacted with said tissue for sensing the concentration of said substance, control means operatively associated with said sensor means for applying a current to said probe means at a value to maintain the concentration of said substance at said first sensor means at a selected level, and measuring means for determining the value of electrical current required to be applied to said probe means to maintain the concentration of said substance at said first sensor means at said selected level whereby the perfusion rate may be determined as a function of the value of said current.

4,445,516

PROCESS FOR THE DIGITIZATION AND DISPLAY OF THERMOGRAPHIC RECORDS

Hermann Wollnik, Fernwald; Rudiger Haas, Altenkirchen, and Folkert Kassen, Lahnau-Atzbach, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen Wiertemberg, Fed. Rep. of Germany

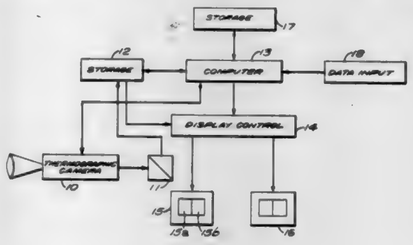
PCT No. PCT/DE81/00076, 371 Date Dec. 18, 1981, 102(e) Date Dec. 18, 1981, PCT Pub. No. WO81/03418, PCT Pub. Date Dec. 10, 1981

PCT Filed May 26, 1981, Ser. No. 336,397

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020352

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—736 **10 Claims**



1. A method of digitizing and displaying thermographic records of biological or technical structures in which the temperature values at each image point of a thermogram are digitized, evaluated and displayed, comprising the steps of: calculating the temperature-gradient value for each image point by determining the slope of the local temperature change on the basis of each image point temperature value and the measured temperature values of neighboring image points; and displaying the local distribution of the temperature-gradient values for a selected image region.

4,445,517

SUCTION DISSECTOR

James R. Feild, 2254 N. Parkway, Memphis, Tenn. 38112

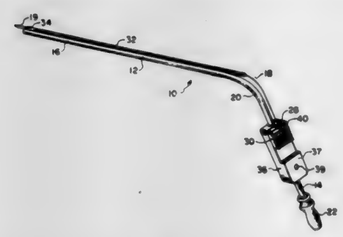
Filed Sep. 28, 1981, Ser. No. 306,563

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—752 **12 Claims**

1. In a hand-held surgical device having an elongated housing defining a passageway between open-ended proximal and distal end portions; a suction connecting means disposed at said proximal end portion of the housing for applying suction to the passageway; a rectangular platform disposed at the proximal end portion of said housing and distal to the suction connecting means; said platform having a substantially flat upper surface, a bottom surface, side walls depending downwardly from said upper surface and extending to the bottom surface, and forward and rearward end walls depending downwardly from said top surface through which the passageway extends; and a suction adjusting means disposed in said platform, said adjusting means comprising an opening in the upper surface of said platform, and a second passageway extending from the opening in the surface of the platform to the passageway of the elongated housing, said opening communicating with the interior of the suction housing such that the reversible occlusion of said opening proportionately adjusts the magnitude of suction within the passageway of the housing; the improvement comprising a means for controlling the bi-directional movement of a surgical instrument longitudinally along the elongated housing, said controlling means comprising:

a recess in the forward upper surface of said platform adapted to receive a portion of the surgical instrument,



said recess having an upper surface substantially parallel to the upper surface of the platform, a forward end adjacent the forward wall of the platform, and a downwardly depending rear wall extending from the upper surface of the platform to the upper surface of the recess; and

a guide member disposed adjacent the forward end of the recess in the platform, said guide member having a passageway for allowing longitudinal movement of the surgical instrument therethrough, and a retaining means for preventing the outward deviation of said instrument from the platform.

4,445,518

METHOD OF APPLYING AN AREAL FLEXIBLE ELECTRODE TO A SPOT OF THE BODY COVERED BY A PLASTIC CAST AS WELL AS A DEVICE FOR EXECUTING THIS METHOD

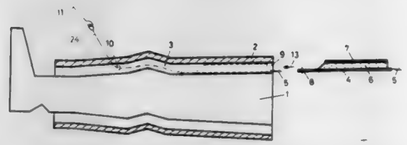
Danièle Eggli, Dübendorf; Dieter von Ow, Zürich, and Gregor Hüni, Dübendorf, all of Switzerland, assignors to Hans Leuenberger, Wallisellen, Switzerland

Filed May 8, 1981, Ser. No. 262,205

Claims priority, application Switzerland, May 5, 1980

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—783 **10 Claims**



1. The method for applying an areal flexible electrode on a spot of the body covered by a plaster cast comprising:

drawing the electrode in along the inside surface of the plastic case to position said electrode on said body spot; and

elastically supporting said electrode at the respective body spot against the inside surface of the plaster cast.

4. A device for stimulating a spot on the body encased by a plaster cast comprising:

a flexible areal electrode adapted to be deposed between the cast and the body, said electrode having one conductive surface defining an electrode for contacting and stimulating said body spot, another surface to engage the inside of said cast and means between said surfaces acting against the cast to urge the conductive surface against the body spot;

wires connected to said electrode conductive surface to transmit stimulating electric current thereto; and

means for locating said areal electrode within said cast against said body spot.

4,445,519

METHOD AND APPARATUS FOR JOINING COAXIAL ROD-SHAPED ARTICLES

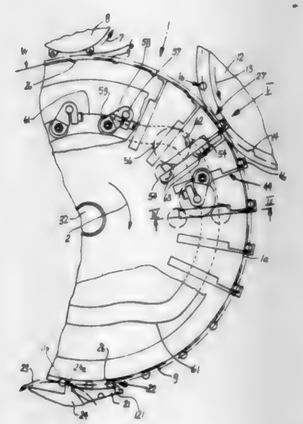
Werner Hinz, Lauenburg, and Gerhard Tolasch, Wentorf, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,760

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1981, 3104505

Int. Cl.³ A24C *5/08*, *5/10*

U.S. Cl. 131—94 **20 Claims**



1. A method of joining groups of coaxial rod-shaped articles by means of adhesive-coated uniting bands at a rolling station, particularly of joining groups of articles which constitute or form part of smokers' products, comprising the steps of subdividing a web of wrapping material into a series of discrete uniting bands; conveying the uniting bands of said series in a predetermined direction and along a predetermined path toward the rolling station; contacting successive uniting bands in said path by discrete groups of articles at a location which is spaced apart from the rolling station; biasing at least one article of each group against the respective uniting band during transport toward the rolling station; and rolling successive groups about their respective axes at the rolling station so that the respective uniting bands are convoluted around such groups of articles.

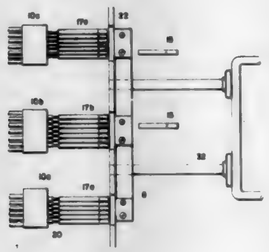
7. Apparatus for joining groups of coaxial rod-shaped articles by means of adhesive-coated uniting bands, particularly for joining groups of articles which constitute or form part of smokers' products, comprising a conveyor arranged to travel in a predetermined direction and having a supporting surface; means for supplying to said conveyor uniting bands and groups of articles so that each band overlies a portion of said surface and the corresponding group overlies the band; a rolling device located downstream of said supplying means, adjacent to the path of movement of groups in said direction and defining with said surface a gap having a width such that successive groups are rotated about their respective axes during travel through said gap with attendant convolution of the associated uniting bands therearound; and means for biasing at least one article of each group against the respective uniting band during transport of groups toward said gap.

4,445,520

CIGARETTE DETECTION AND REJECTION DEVICE

Raymond J. Knight, Richmond; Robert T. Mitten, Mechanicsville, and Robert L. Ripley, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,808
Int. Cl.[3] A24C 5/00, 5/60
U.S. Cl. 131—282 8 Claims



1. A cigarette testing device for cigarette packaging machines located at a point in the manufacturing process just before the cigarettes are placed into cigarette packages, for simultaneously testing the ends of cigarettes disposed in a group, said device comprising:

a support housing;

a plurality of tappets slidably disposed in said housing;

means for positioning said tappets against the ends of cigarettes in said group;

biasing means acting on said tappets for positioning said tappets in said housing;

detector means for detecting the position of each of said tappets; and

rejection means for removing individual faulty cigarettes from a group.

4,445,521

COMPOSITION AND PROCESS FOR THE TREATMENT OF KERATIN MATERIALS WITH POLYMERS

Jean-Francois Grollier; Claire Fiquet; Chantal Fourcadier, all of Paris; Claude Dubief, Versailles, and Daniele Cauwet, Crosne, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 886,554, Mar. 14, 1978, Pat. No. 4,240,450. This application Aug. 22, 1980, Ser. No. 180,443
Claims priority, application Luxembourg, Mar. 15, 1977, 76955
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.[3] A45D 7/00; A61K 7/06, 7/08, 7/09
U.S. Cl. 132—7 74 Claims

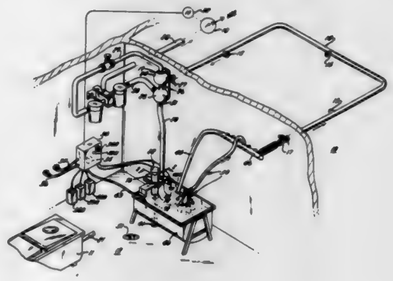
1. Process for the treatment of keratin material which comprises applying thereto a composition comprising an anionic polymer containing at least one of a sulfonic acid, carboxylic acid and phosphoric acid unit and having a molecular weight of from about 500 to 5 million together with at least one cationic polymer in a solvent medium wherein said anionic and said cationic polymers are each present in an amount from about 0.01 to 10% relative to the total weight of the composition, and subsequently rinsing the material.

4,445,522

APPARATUS FOR CLEANING LIQUID CONVEYING SYSTEM AND CONTROL VALVE ASSEMBLY THEREFOR

Rolyn A. Schmid, Hayward, Wis., assignor to Bender Machine Works, Inc., Hayward, Wis.

Filed Sep. 23, 1982, Ser. No. 422,360
Int. Cl.[3] B08B 9/06
U.S. Cl. 134—58 R 11 Claims



1. Apparatus for cleaning a liquid conveying system comprising:

a tank having a tank drain port;

supply means for periodically supplying fresh cleaning liquid from a source to said tank;

delivery means for delivering cleaning liquid from said tank to said system;

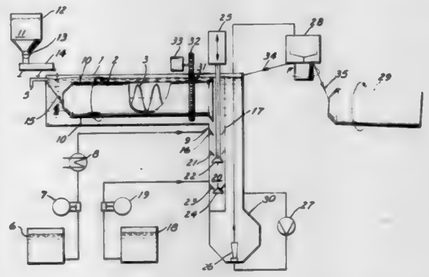
and control valve means on said tank for receiving used cleaning liquid returning from said system and operable for closing said tank drain port and directing used cleaning liquid from said system into said tank whereby the used cleaning liquid is available for recirculation and, alternatively, for opening said tank drain port to empty said tank and directing used cleaning liquid from said system elsewhere than into said tank.

4,445,523

APPARATUS FOR THE SURFACE CLEANING OF QUARTZ-CRYSTAL PIECES

Rolf Brüning, Bruchköbel, and Klaus Reimann, Rodenbach, both of Fed. Rep. of Germany, assignors to Heraeus Quarzschmelze GmbH, Hanau am Main, Fed. Rep. of Germany

Division of Ser. No. 312,470, Oct. 19, 1981. This application Apr. 29, 1983, Ser. No. 489,929
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040385
Int. Cl.[3] B08B 3/06
U.S. Cl. 134—65 4 Claims



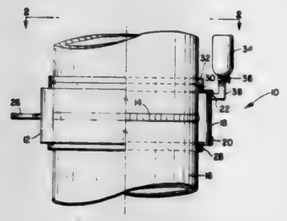
1. An apparatus for cleaning the surface of small quartz crystal pieces comprising a trough (1) formed at least on its inside of a plastic and having an inlet (9) for introduction of pure aqueous hydrofluoric acid and an overflow (5) for removal of spent hydrofluoric acid, said trough containing therein a rotary-cylinder conveyor (2) made of plastic feeding means disposed in proximity to said overflow (5) for feeding quartz-crystal pieces into said trough (9) and discharge means (17) in proximity to said inlet of said trough (1) and said rotary-cylinder conveyor (2) being sealed relative to each other by means of a seal (10).

4,445,524

AUTONOMOUS CLEANING INSPECTION DEVICE

Thomas M. Angel, Houma, La., assignor to Santa Fe International Corporation, Orange, Calif.

Filed Feb. 24, 1983, Ser. No. 469,285
Int. Cl.[3] B08B 3/08
U.S. Cl. 134—113 10 Claims



1. A device for removing marine growth from submerged structures prior to the application of non destructive testing inspection procedures comprising:

A flexible transparent housing, means carried by said housing for engaging a predetermined area of a submerged structure to define with the surface of said area a chamber, said means including clamp means for clamping said housing to at least a portion of said structure and seal means carried by said housing for engagement between the periphery thereof and the adjacent surface of said area;

A reservoir carried by said housing and conduit means extending between the reservoir and the housing for selectively admitting liquid from the reservoir to the interior of the housing whereby a corrosive liquid from the reservoir can be admitted to the chamber to dissolve the marine growth.

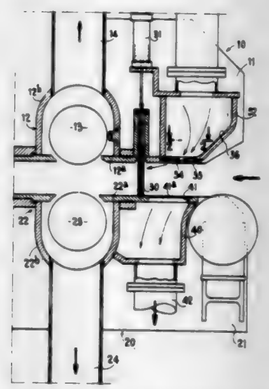
4,445,525

ARRANGEMENT OF THE INPUT AND OUTPUT ENDS OF A COOLING MACHINE FOR METAL SHEETS

Stéphane Viannay, Trappes; Alfred Germain, Dunkerque-Malo-Les-Bains, and Jack Sebbah, Trith-Saint-Leger, all of France, assignors to Union Siderurgique du Nord et de l'Est de la France, Paris, France

Filed Jan. 11, 1982, Ser. No. 338,512
Claims priority, application France, Jan. 9, 1981, 81 00287
Int. Cl.[3] B08B 3/02
U.S. Cl. 134—122 R 8 Claims

1. A machine for cooling metal sheets or like products, which machine comprises an upper frame and a lower frame, each of said frames comprising two lateral walls and case means interconnecting the two walls and defining an enclosure having an input end and an output end for receiving a cooling liquid circulating therein, said enclosure having means defining a lower surface over which surface said sheet travels through the machine, and the machine further comprising, adjacent said input end and adjacent said output end, a sump for collecting the cooling liquid and carried by the lower frame and having a liquid receiving opening extending throughout the width of said enclosure and located substantially at the level of said surface of said enclosure, liquid projecting means carried by the upper frame and liquid contained in said projecting means, the liquid projecting means having outlet means oriented at 10°–20° to the horizontal from the projecting means downwardly toward said enclosure so as to project a jet of liquid in a downwardly inclined direction toward the interior



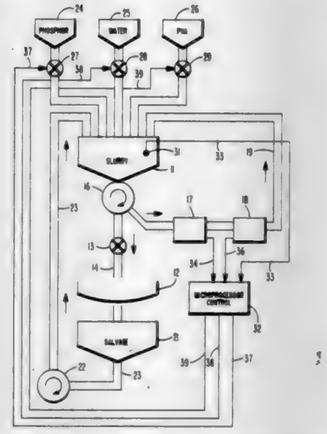
of said enclosure so that said jet is directed in counter-current fashion against the cooling liquid in said enclosure which tends to issue from said enclosure, said sump opening being located substantially vertically below said outlet means of said liquid projecting means.

4,445,526

SYSTEM AND METHOD FOR CONTROLLING THE SPECIFIC GRAVITY AND VISCOSITY OF THE SLURRY APPLIED TO TELEVISION PICTURE TUBE FACEPLATES

John W. Woestman, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,295
Int. Cl.[3] G05D 11/06; G06F 15/46
U.S. Cl. 137—3 12 Claims



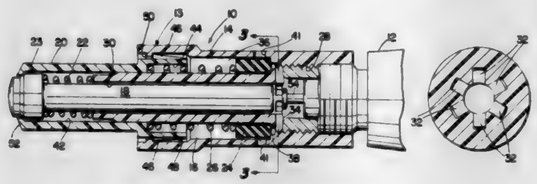
10. A method of continuously controlling the specific gravity and viscosity of a slurry to which additional slurry having unknown specific gravity and viscosity is frequently added comprising the steps of:

dispensing said slurry from a first container onto an object to be coated with slurry and returning excess slurry from said object to said first container;

monitoring the level of slurry in said first container after said

excess slurry is returned to said container to determine the change of level from a predetermined level;
sensing the specific gravity and viscosity of the slurry dispensed to said object;
comparing the sensed specific gravity and viscosity to predetermined values;
generating error signals representative of the differences between said sensed values and said predetermined values;
providing calculated error signals, and comparing said generated error signals with a previous error signal and using the difference between said generated and said previous error signals when said generated error signal exceeds said previous error signal, and using the difference between said generated error signal and a calculated error signal when said previous error signal exceeds said generated error signal;
providing a supply of a first material having a specific gravity greater than the predetermined specific gravity of said slurry, providing a supply of a second material having a viscosity greater than the predetermined viscosity of said slurry, and providing a supply of a third material; and
utilizing said error signals to add said first, second and third materials to said first container in amounts necessary to bring the specific gravity, viscosity and level of said slurry to values approximately equal to said predetermined values.

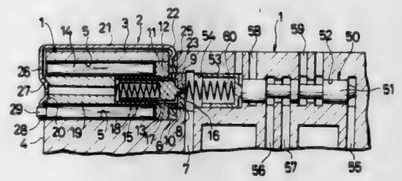
4,445,527
VALVE EXTENSION
Richard C. Leimbach, Durham, N.C., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jul. 16, 1982, Ser. No. 399,065
Int. Cl.³ F16K *15/20*
U.S. Cl. 137—226 **9 Claims**



1. An extension adapted for attachment to the valve stem assembly of a pneumatic tire comprising a housing having a longitudinal bore and an enlarged bore adjacent to one end thereof, threads formed in said enlarged bore for attachment to said valve stem, an elongated valve actuating member received in said elongated bore and engageable with said valve stem assembly, an annular recess formed in said housing coaxial with said longitudinal bore, a wall defined by the intersection of said longitudinal bore with said enlarged bore, one or more ports formed through said wall, a channel formed at the end of said recess and intersecting said one or more ports to define a flow path between said enlarged bore and said annular recess, a valve element received within said annular recess, and means received within said recess for biasing said valve element into a position closing said flow path.

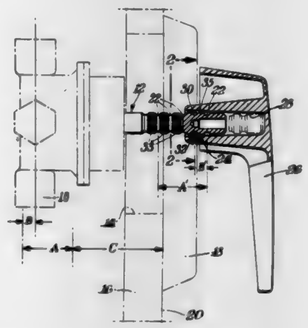
4,445,528
ELECTROMAGNETIC VALVE AND METHOD FOR ASSEMBLY
Nobuaki Miki, and Shoji Yokoyama, both of Anjo, Japan, assignors to Aisin Warner Kabushiki Kaisha, Aichi, Japan
Filed Jul. 8, 1981, Ser. No. 281,446
Claims priority, application Japan, Jul. 14, 1980, 55-96007
Int. Cl.³ F16K *11/07, 31/02*
U.S. Cl. 137—315 **16 Claims**

1. An electromagnetic valve, comprising:
a housing of a hydraulic control system in which said electromagnetic valve is incorporated for operation, said housing having a portion defined by intersecting first and second wall surfaces, and a fluid conduit in said housing;
a cavity, said cavity being formed into said second wall surface and opening onto said second wall surface;
a groove formed into said first wall surface and opening onto said first wall surface and intersecting said cavity and cavity communicating with a portion of the cross-sectional area;
components of an electromagnetic valve, said components being functionally arranged within said cavity and adapted for opening and closing a pathway of communication with said fluid conduit when said valve is actuated, the interior surfaces and walls of said cavity being the casing for said valve components;



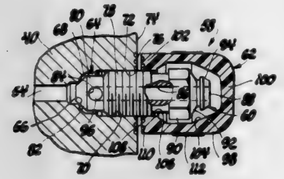
a retainer, said retainer being formed in a U-shaped bracket from a spring material and having two ends and an intermediate portion, one said end having wavy undulating portions, said one end being inserted and resiliently held in said groove by means of said wavy undulating portions and engaging at least one said functionally arranged valve component, the other said end covering at least in part the entrance of said cavity at said second wall surface and engaging at least one said functionally arranged valve component, said valve components being retained between said two ends of said retainer by the resilient force thereof and at least in part within said cavity, by the resiliency of said bracket said bracket both holding said valve components together and also holding said valve in place on said housing.

4,445,529
ADJUSTABLE VALVE HANDLE
Carmen J. Lagarelli, Clayton, Del., assignor to Speakman Company, Wilmington, Del.
Filed Aug. 31, 1981, Ser. No. 297,735
Int. Cl.³ F16L *5/02*
U.S. Cl. 137—360 **3 Claims**



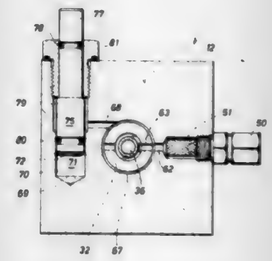
1. An adjustable valve operator for use with a valve recessed in a wall, comprising a valve body capable of being located inside the wall at varying distances from the outer surface of the wall, a valve stem extending from the valve body at varying distances beyond the outer surface of the wall depending upon the location of the valve body, the valve stem having splines along its length and non-frangible, spaced circumferential grooves thereon which interrupt the splines at regular spaced intervals on the stem, a handle slidable onto said stem having an elongated bore therein to facilitate substantial movement of the handle relative to the stem and placement of the handle close to the outer surface of the wall and threaded securing means located in a threaded bore in the handle aligned transverse of the stem, the securing means having an inner tapered surface arranged for mating engagement with the outer surface of one of the circumferential grooves on the stem whereby the handle can be affixed to the stem in close proximity to the outer wall.

4,445,530
CORROSION PROTECTOR FOR WHEEL BRAKE ASSEMBLY BLEEDER VALVE
Richard D. Meixell, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 3, 1982, Ser. No. 374,405
Int. Cl.³ F16K *27/08*
U.S. Cl. 137—381 **4 Claims**



1. In a vehicle brake assembly occasionally exposed to corrosive agents and having a housing defining a hydraulic fluid chamber adapted to communicate with atmosphere through a bleed passage, the improvement comprising:
means coacting with said housing at said bleed passage in a manner to facilitate the bleeding of air from said chamber while preventing corrosion by said corrosive agents, said means including
a bleeder valve unit threaded into said bleed passage and having threads positioned outside as well as inside said bleed passage, said bleeder valve unit having a head outwardly adjacent said threads in axially spaced relation thereto, said head having a larger lateral dimension than the lateral dimension of said threads;
and a protection cap having a flexible body defining an open-ended cavity for receiving therein said bleeder valve unit head and outside threads, the body of said cap at said open end having internal threads adapted to engage the threads of said bleeder valve unit positioned outside said bleed passage and external seal-enhancing land-and-groove means adapted to sealingly engage said housing when said bleeder valve unit is received in said cavity and after the internal threads of said cap engage the outside threads of said bleeder valve unit,
said cap being sufficiently flexible to be axially pushed over said bleeder valve unit head until the internal threads of said cap move past said head and then threadedly engage the outside threads of said bleeder valve unit, said cap thereafter being twistable in coaction with said outside threads to thereafter sealingly engage the land-and-groove means with the housing, said cap being removable for bleeding air and replaceable for preventing exterior corrosive agents from corroding said unit and particularly said threads.

4,445,531
PILOT FOR SAFETY VALVE
Walter W. Powell, Houston, Tex., assignor to Anderson, Greenwood & Co., Houston, Tex.
Filed Aug. 5, 1981, Ser. No. 290,231
Int. Cl.³ F16K *31/36*
U.S. Cl. 137—489 **13 Claims**



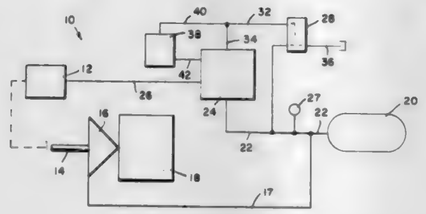
1. A pilot valve for control of a safety relief valve which safety relief valve exposed to an inlet pressure wherein the inlet pressure is selectively relieved by operation of the safety relief valve and wherein the pilot valve controls the safety relief valve by selectively applying control pressure to the safety relief valve to close the safety relief valve and by selectively reducing the control pressure to open the safety relief valve, the pilot valve comprising:
(a) a pilot valve body having a chamber therein;
(b) a valve seat in said valve body chamber;
(c) a movable piston means selectively closing against said valve seat in said valve body and incorporating a transverse face thereon adapted to be exposed to the inlet pressure and further incorporating a second and opposing face adapted to be acted against by a resilient means;
(d) first means for introducing fluid through an inlet line at a pressure determined by the inlet pressure for the safety relief valve, said first means placing pressure on said piston means in such a manner as to provide opposing forces acting on said piston means which forces tend to open or close said piston means relative to said valve seat;
(e) an outlet line from said pivot valve extending to the pressure relief valve to conduct control pressure to the pressure relief valve for control of opening and closing of said pressure relief valve; and
(f) indicator means responsive to pressure in said inlet line and said outlet line for forming an indication of the operative state of said piston means of said pilot valve wherein said indicator means includes:
(1) a cylinder formed in said valve body;
(2) a piston slidably in said cylinder;
(3) a first area on said piston adapted to be exposed to a first pressure;
(4) a second area on said piston, said second area opposing said first area and further being adapted to be exposed to a second pressure acting on said second area;
(5) first and second flow line means in said body for applying the pressures in the inlet line and the control pressure in the outlet line to the first and second areas of said piston respectively; and
(6) guide means for guiding said piston between first and second positions wherein the movement between said positions indicates the relative operative state of the pilot valve in a pressure dependent relationship.

4,445,532

PRESSURE REGULATOR SYSTEM

John D. Mitchell, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 15, 1979, Ser. No. 85,151
Int. Cl.³ F17K *31/124*
U.S. Cl. 137—495 **62 Claims**



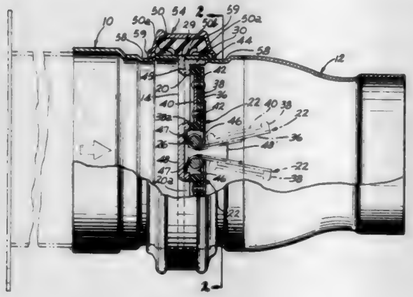
1. A pressure regulator system comprising a relatively high pressure fluid source; a pressure reduction regulator having a pressure reduction valve for controlling fluid flow between a high pressure inlet coupled to said fluid source and a low pressure outlet; pressure balancing means for controlling the position of said reduction valve for controlling the fluid pressure in said outlet, said balancing means including a balancing piston movably engaging said reduction valve and received in a complementary-formed cylinder, said piston having first end opposite said reduction valve with a surface area generally corresponding with the effective surface area of said reduction valve exposed to high fluid pressure, a second end with relatively enlarged surface area communicating with said low pressure outlet, and a radially expanding, axially sloping intermediate portion extending within said cylinder and interconnecting said first and second ends of said piston; means for applying pressure from said fluid source to said first end for pressure-balancing opposite ends of said reduction valve; and means for applying a controlled reference fluid pressure to said intermediate portion for urging said reduction valve only toward a position open to fluid flow, the fluid in said outlet serving to pressure-balance said intermediate portion and said second end of said piston whereby the fluid pressure in said outlet is related to said reference pressure in a predetermined manner.

4,445,533

AIR CHECK VALVE ASSEMBLY FOR POWDERED BULK PRODUCT TRANSPORT

Joseph H. DeFrees, Warren, Pa., assignor to Allegheny Valve Company, Warren, Pa.

Filed Aug. 13, 1981, Ser. No. 292,655
Int. Cl.³ F16K *15/00*
U.S. Cl. 137—512.1 **12 Claims**
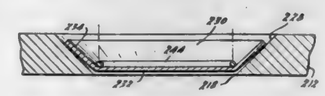


1. An air fluid check valve adapted for ready insertion therein and removal from the interior of a conduit assembly at a separable joint therein, the conduit assembly being adapted for use for instance on a bulk hauling transport vehicle for powdered solids, comprising a valve body having means thereon for locating the valve in generally centered condition in the interior of the conduit assembly at said joint, said body having an opening therethrough for the passage of fluid, a spring loaded valve plate pivotally mounted on said body and adapted to be urged in a direction to close said opening, but being pivotal to an open position upon application of predetermined fluid pressure in the conduit assembly to said valve plate, for permitting passage of fluid through said valve opening, resilient seal means adapted to coact in sealing relation with said valve body, for sealing the separable joint of the conduit assembly and for preventing leakage of fluid from interiorly of the conduit assembly externally of the valve, and wherein said seal means comprises a seal member adapted to encompass the conduit joint and to coact in sealing relation with said means on said valve body.

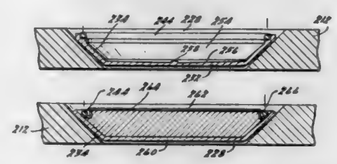
4,445,534

VALVE ASSEMBLY

Robert W. King, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Division of Ser. No. 219,849, Dec. 23, 1980, Pat. No. 4,368,755, which is a continuation of Ser. No. 971,309, Dec. 20, 1978, abandoned. This application Sep. 30, 1982, Ser. No. 430,322
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—512.3 **33 Claims**





1. A discharge valve element for use in a gas compressor having a valve plate equipped with an inner surface in part defining a compression chamber, a discharge port and valve seat extending through said valve plate and diverging outwardly from said inner surface, said valve element having an outwardly diverging seating surface and being formed from sheet metal of a thickness rendering it capable of distorting to conform to the valve seat with an inner surface of said valve element lying substantially in the plane of said inner surface of said valve plate when the discharge valve element is closed, said distortion resulting in a reactive force tending to unseat said discharge valve element.

4,445,535

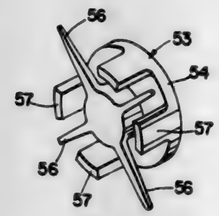
MEDICATION INFUSION PUMP

William B. Mayfield, Costa Mesa, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 252,779, Apr. 10, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,020
Int. Cl.³ F16K *15/00*
U.S. Cl. 137—535 **2 Claims**

1. An integral one-piece check valve for use with a cooperating valve surface, said check valve comprising:

a generally disk shaped base;
an annular valve seat on one side of said base;
a plurality of spring fingers that extend radially from a central hub disposed on the other side of said base; and



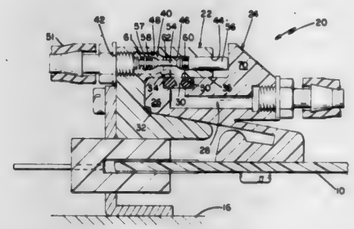
a plurality of axially extending stop members disposed on said other side of said base, said stop members extending axially between adjacent ones of said radially extending spring fingers.

4,445,536

ELECTRONIC-PNEUMATIC CIRCUIT BOARD COUPLING

John G. Willis, Chelmsford, Mass., assignor to Linear Dynamics, Inc., East Pepperell, Mass.

Filed May 21, 1982, Ser. No. 380,526
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—560 **1 Claim**



1. In a coupling for effecting pneumatic connection between a rack and a circuit board carrying both electrical and pneumatic control elements where concurrent connection is made of electric and pneumatic circuits as the circuit board is inserted in the rack, the coupling comprising a male unit with a wedge shaped insertion probe penetrated by a flow channel terminating in an interconnection port and a female unit with an opening for receiving the insertion probe of the male unit and an interconnection port mating across an interface surface with the male interconnection port, the interface surface between the male and female units being approximately parallel to the direction of motion as the male unit is inserted into the female unit, the improvement wherein

said female coupling unit has a tunnel passing therethrough, open at both ends, and oriented to be approximately parallel to said interface surface, said tunnel having a uniform bore in a region adjacent its distal end and having an enlarged bore near its proximal end, said tunnel having at its proximal end means for connection to a pneumatic channel, said female coupling unit having an internal channel communicating between its interconnection port and the uniform bore portion of the tunnel,

said female coupling unit including a shuttle with axial symmetry having an actuator shaft of a diameter, to slide within the uniform bore portion of the tunnel at one end, a stop that cannot enter the uniform bore portion of the tunnel at the other end, two spaced apart seals of a diameter to make a sealing fit to the uniform bore portion of the tunnel positioned intermediately, a portion of the shuttle between the seals being of a diameter less than that of the uniform bore portion of the tunnel, said shuttle being, when the coupling is disengaged, positioned in said tunnel by biasing means with its actuator shaft extending out the distal end of the tunnel and both seals within and engaging the uniform bore portion of the tunnel, the proximal seal being positoned between the internal communicating channel and the enlarged bore portion of the tunnel, and the distal seal being positioned between the internal communicating channel and the distal end of the tunnel, and

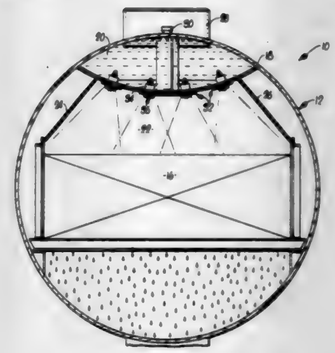
said male coupling unit including affixed thereto a projection positioned to engage the actuator shaft of the shuttle and as the coupling units are coupled press the shuttle against the biasing means in the proximal direction along the tunnel so that when the coupling units are fully coupled the shuttle is positioned with the proximal seal in the enlarged portion of the tunnel and the distal seal is positioned between the internal communicating channel and the proximal end of the tunnel.

4,445,537

BOILER FEED WATER DEAERATOR SPRAY VALVE TURBULENCE SHIELD

Roderick E. Athey, Overland Park, Kans., and Alan G. Furnish, Kansas City, Mo., assignors to Marley Company, Mission Woods, Kans.

Continuation-in-part of Ser. No. 307,330, Oct. 1, 1981. This application Sep. 30, 1982, Ser. No. 424,878
Int. Cl.³ E03B *11/00*; B01D *19/00*
U.S. Cl. 137—572 **11 Claims**



1. A boiler feed water deaerator, comprising:
an elongated, generally horizontally disposed tank;
feed water receiving structure within said tank and extending along the length thereof;
elongated wall means within said tank and extending along the length thereof above said water receiving structure for defining, with proximal wall surfaces within said tank, an incoming feed water box above the wall means, and a feed water spray region beneath the plate and above the water receiving structure,
said wall means including structure defining a series of rows of apertures therethrough extending along the length of the wall means, said apertures serving to communicate said box and region;
means defining a feed water inlet in communication with said box, at least certain of said apertures being horizontally spaced from said inlet;
a valve for each of said apertures for regulating water flow therethrough, each of said valves including
an elongated, generally tubular and upright turbulence shield defining a passageway therethrough, and an inlet and an outlet adjacent respective ends of the passageway;
means mounting said turbulence shield on the face of said

wall means remote from said region with the longitudinal axis of the shield being substantially aligned with the axis of the associated adjacent aperture;

a valve plug;

a stem secured to said plug and at least partially disposed within said shield and extending along the length thereof;

means mounting the valve plug within said shield and adjacent said outlet thereof for movement of the plug between a flow-blocking position blocking communication between said box and region, and an open position communicating said box and region and permitting flow of water from the box, through the shield and associated aperture and into said region,

said valve mounting means comprising structure adjacent said inlet end of said shield for supporting said plug and stem for reciprocal movement thereof axially of the shield, and for supporting the stem and plug for pivoting movement thereof about an axis transverse to the longitudinal axis of said shield and proximal to the inlet end of the shield; and

means for biasing said plug to said flow-blocking position thereof,

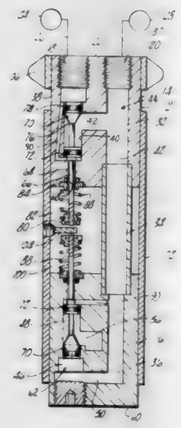
the ratio of the axial length of said shield to the internal diameter thereof being at least 1 for protecting said valve plug and stem from the effects of the horizontal component of incoming feed water from said inlet, and for directing water entering said shield inlet substantially axially along said passageway prior to discharge of water through said outlet, in order to lessen turbulence and valve plug vibration.

4,445,538

BIDIRECTIONAL CONTROL VALVE

Gerard W. Bilski, Livonia, Mich., assignor to Tri-Motion Industries, Inc., Dearborn, Mich.

Filed Jun. 29, 1981, Ser. No. 278,731
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—596.2 **8 Claims**



1. A fluid control valve comprising:

an elongated housing, said housing having an inlet port, outlet port and exhaust port formed on at least one of its axial ends,

first fluid passage means formed in said housing for fluidly connecting said inlet port to said outlet port,

second fluid passage means formed in said housing for fluidly connecting said outlet port to said exhaust port,

a first valve operatively disposed in said first fluid passage means and movable between an open and a closed position,

means for resiliently urging said first valve towards its closed position,

a second valve operatively disposed in said second fluid passage means and movable between an open and a closed position,

means for resiliently urging said second valve towards its closed position,

means for selectively and independently moving said first valve and said second valve to their respective open positions comprising a sleeve longitudinally slidably mounted to said housing and an actuating member secured to and extending radially inwardly from said sleeve, said actuating member abutting against and moving said first valve to its open position when said sleeve is slid in one direction and said actuating member abutting against and moving said second valve to its open position as said sleeve is slid in the opposite direction and wherein and first and second valves can be opened only mutually exclusively,

wherein said first and second valves are elongated and slidably received in valve bores formed in the housing, and

wherein said first and second valves each have at least two axially spaced lands, one side of one first valve land being open to said inlet port so that pressure at said inlet port urges said one first valve land in one axial direction and a first fluid passageway for fluidly connecting said inlet port to one side of the other first valve land so that pressure at said inlet port urges said other first valve land in an axial direction opposite from said one axial direction, one side of one second valve land being open to the outlet port so that pressure at said outlet port urges said one second valve land in a predetermined axial direction and a second fluid passageway formed in said housing for fluidly connecting said outlet port to one side of the other second valve land so that pressure at said outlet port urges said other second valve land in a direction opposite from said predetermined axial direction,

whereby said inlet port pressure on said sides of said first valve lands exert equal and opposite forces on said first valve and

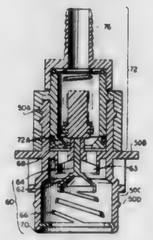
whereby said outlet port pressure on said sides of said second valve lands exert equal and opposite forces on said second valve.

4,445,539

DIP TUBE AND VALVE WITH QUICK-DISCONNECT COUPLING FOR A COLLAPSIBLE CONTAINER

William S. Credle, Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 58,866, Jul. 19, 1979, Pat. No. 4,286,636.
This application Apr. 23, 1981, Ser. No. 256,696
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—614.03 **9 Claims**



1. In a system for dispensing syrup from a container, said container including a fitment for defining an opening through which said syrup passes, the improvement comprising:

a first coupling member having first and second open ends connected by a central bore, said second open end being connected to said fitment;

a first self-sealing valve disposed in said central bore including means in said bore defining a valve seat, a valve member movable into or out of sealing engagement with said valve seat, spring means for normally biasing said valve member into sealing engagement with said valve seat, and a first actuating stem coupled to said valve member and extending toward said first open end of said first coupling member;

a second actuating stem rigidly affixed in said bore inboard of the walls thereof adjacent said first actuating stem and extending toward said first open end of said first coupling member, said second actuating stem being supported at the center of a plurality of radial spokes extending from and affixed to said bore walls, said radial spokes defining fluid flow openings therebetween, said second actuating stem having a channel therethrough for guiding and supporting said first actuating stem; and

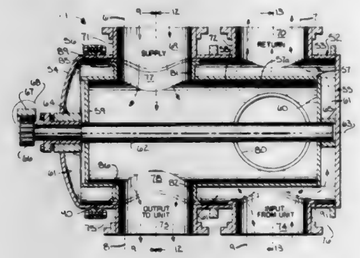
a second coupling member for engaging said first open end of said first coupling member, said second coupling member including means for engaging said first actuating stem to move said valve member out of engagement with said valve seat when said first and second coupling members are fully engaged and a second self-sealing valve which is opened by said second actuating stem when said first and second couplings are fully engaged.

4,445,540

SLEEVE-TYPE FLUID FLOW DIVERTER

Walter J. Baron, and Laird C. Cleaver, both of Milwaukee, Wis., assignors to Water Services of America, Inc., Milwaukee, Wis.

Filed Oct. 27, 1981, Ser. No. 315,290
Int. Cl.³ F17D *1/00*
U.S. Cl. 137—625.43 **24 Claims**



1. A diverter valve for connection between a source of pressurized fluid and a process device, comprising, in combination:

(a) an enclosing housing having a longitudinally extending generally cylindrical wall and end walls,

(b) a sleeve disposed concentrically within said housing and with said sleeve having a longitudinally extending generally cylindrical wall and end caps,

(c) means mounting said sleeve coaxially within said housing,

(d) motive means for rotating said sleeve between a pair of operative normal and reverse fluid flow positions,

(e) a pair of upstream supply and return ports disposed in said housing for connection to the fluid source,

(f) a pair of downstream output and input ports disposed in said housing for connection to the process device,

(g) multiple port means disposed in the said generally cylindrical wall of said sleeve for selectively connecting said housing supply and return ports to one or the other of said housing output and input ports depending upon the operative position of said sleeve,

(h) said sleeve forming a single internal chamber connecting said multiple port means for flow of fluid through said internal chamber when at least some of said multiple port means register with one of said upstream and one of said downstream housing ports,

(i) said housing and sleeve being spaced to form a single external chamber therebetween, and with said external chamber extending about said wall and end caps of said sleeve,

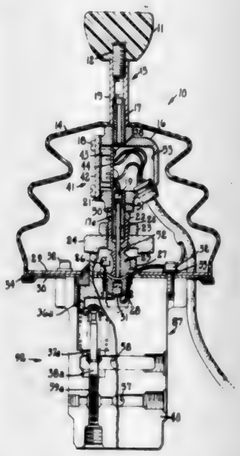
(j) and said external chamber providing for flow of fluid therethrough between one of said upstream and one of downstream housing ports in both normal and reverse fluid flow operative positions of said sleeve.

4,445,541

HYDRAULIC REMOTE CONTROL JOYSTICK

Herbert H. Schmiel, Fridley, Minn., assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 6, 1981, Ser. No. 280,473
Int. Cl.³ F16K *31/02, 31/44*
U.S. Cl. 137—636.2 **13 Claims**



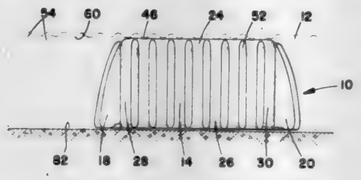
1. A joystick controller having a handle which has an axis with respect to which it is pivoted about a point and a means for transmitting a movement in the handle to a plurality of auxilary spools, the auxiliary spools actuating a plurality of remote direction control spools to remotely control hydraulic directional control valves and the movement controlling a device for actuating a pressure build-up in an actuator circuit comprising:

(a) radiant energy means carried by the handle and emitting radiant energy generally parallel to a longitudinal axis of the handle;

(b) means for receiving said radiant energy and providing a control signal dependent upon a relative movement of the handle, thereby controlling the device that is operable by said control signal; and

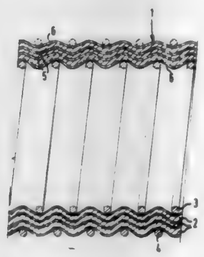
(c) a receptacle positioned between said radiant energy means and said receiving means, said receptacle having a hole to allow the radiant energy to be received by said receiving means when said handle is in a neutral position and said receptacle to block said radiant energy when the handle moves off the neutral position.

4,445,542
ARCH END CAP
James L. Fouss, and John J. Parker, both of Findlay, Ohio, assignors to Hancor, Inc., Findlay, Ohio
Filed Nov. 20, 1981, Ser. No. 323,410
Int. Cl.[3] F16L *55/10*; E02B *11/02*
U.S. Cl. 138—94 22 Claims



1. An end cap for an arch conduit comprising:
a first arcuate side wall having a first apex area, a first base area, a first one terminal end area and a first other terminal end area;
a second arcuate side wall having a second apex area, a second base area, a second one terminal end area and a second other terminal end area, said first apex area and said second apex area being joined to form an end cap apex;
a one end wall joined to said first one terminal end area, said second one terminal end area, and said end cap apex, said one end wall having a one end wall base area; and,
an open-ended base defined adjacent the first base area, the second base area, and the one end wall base area, whereby said end cap is adapted to be received into said arch conduit for obstructing said arch conduit.

4,445,543
FLEXIBLE HOSE FOR LIQUEFIED GASES
Howard B. Mead, Tarporley, England, assignor to Shell Research Limited, London, England
Filed Sep. 20, 1982, Ser. No. 419,952
Claims priority, application United Kingdom, Oct. 2, 1981, 8129791
Int. Cl.[3] F16L *11/11*
U.S. Cl. 138—122 12 Claims



1. Flexible hose for liquified gases, with improved fatique-resistance, which remains flexible at cryogenic temperatures, and which is impermeable to liquids and gases, comprising a tubular body of biaxially oriented polypropylene film arranged between an inner helically wound wire and an outer helically wound wire, said wires being wound at the same pitch but having the windings displaced by half a pitch width from each other.

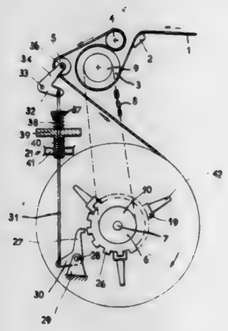
4,445,544
LENO-SELVAGE FORMING DEVICE
Valentin Krumm, Hergensweiler, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany
Filed Feb. 16, 1982, Ser. No. 348,686
Int. Cl.[3] D03C *7/00*
U.S. Cl. 139—54 8 Claims



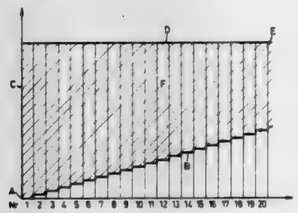
1. In a device for forming a leno selvage on fabrics made on shuttleless weaving machines, comprising a rail-like leno body mounted to upper and lower heddle slide bars and acting as a support means for pairwise arranged needles pointing toward each other and with eyelets for pairwise provided standard threads, further comprising a control means displaceable parallel to the needles and provided with control apertures for pairwise provided leno yarns,
the improvement which comprises fastener means at the upper rail end of the leno body fixing the position of the device on an upper heddle slide bar, and quick-fit fastener means securing the remaining ends of the device to be fastened to the heddle slide bars, whereby a displacement along the heddle slide bars is permitted.

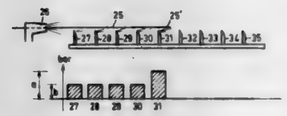
4,445,545
DEVICE FOR WINDING A PIECE OF FABRIC UNDER CONSTANT TENSION, ESPECIALLY FOR A WEAVING LOOM
Yves Juillard, and Christian Varloud, both of Mulhouse, France, assignors to Societe Alsacienne de Constructions Mecaniques de Mulhouse, France
Filed May 3, 1982, Ser. No. 373,863
Claims priority, application France, May 12, 1981, 81 09395; Oct. 27, 1981, 81 20126
Int. Cl.[3] D03D *49/20*
U.S. Cl. 139—311 10 Claims

1. A device for automatically regulating the winding tension of a fabric produced by a weaving loom, in which the winding roller or drum is driven in rotation from the fabric take-up roller by means of a friction coupling, wherein said regulating device comprises a tensioning roller which is displaceable under the action of the tension of the fabric, and a mechanism for transmitting the displacement of said roller to a device for locking a nut which tightens-up the friction coupling when the tension of the fabric has decreased.



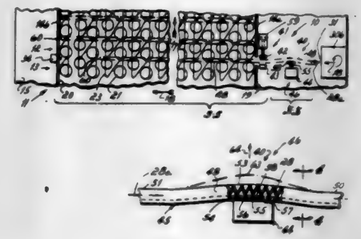
4,445,546
METHOD OF OPERATING A WEAVING MACHINE
Otto Hintsch, Wallisellen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Dec. 15, 1981, Ser. No. 330,797
Claims priority, application Switzerland, Dec. 17, 1980, 9296/80
Int. Cl.[3] D03D *47/30*
U.S. Cl. 139—435 4 Claims





1. A method of picking a weft yarn through a yarn travelling zone defined by a sequence of fluid discharge nozzles, and disposed across the weaving width of a weaving machine, said method comprising the steps of
sequentially actuating each nozzle in said zone to eject a fluid medium into said zone for propelling the weft yarn along said zone; and
thereafter de-activating the nozzles simultaneously upon termination of picking of the weft yarn through said zone.

4,445,547
LACING WIRE STOP MECHANISM FOR A COIL SPRING ASSEMBLY MACHINE
Terry L. Aronson, Pell Lake, Wis., assignor to Leggett & Platt, Incorporated, Carthage, Mo.
Filed Sep. 10, 1981, Ser. No. 300,813
Int. Cl.[3] B21F *21/00*
U.S. Cl. 140—92.3 14 Claims



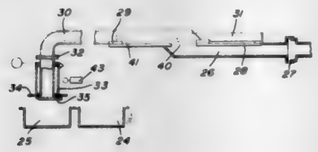
1. Coil spring assembly apparatus for lacing coil spring end loops together to form a coil spring assembly, said apparatus comprising
lacing wire feeding apparatus adapted to feed a spiral lacing wire along a linear axis into lacing relation with adjacent coil spring end loops in adjacent coil spring rows to form said coil spring assembly,
a lacing wire stop mechanism comprising a guide element interposed between said lacing wire feeding apparatus and said coil spring rows for guiding said spiral lacing wire from said feeding apparatus into lacing relation with said adjacent spring rows, said guide element having a guide section through which said spiral lacing wire is guided, said guide section defining a normal path of travel of said spiral lacing wire which is bowed out of axial linearity with said lacing wire as it moves between said feeding apparatus and said spring assembly, and said lacing wire normally being in contact with and guided by said bowed guide section so as to establish a continuous bowed configuration of said lacing wire within said bowed guide section as said lacing wire laces adjacent coil spring rows together, and
sensing means operatively connected with said guide element and with said lacing wire feeding apparatus, said sensing means being operative to sense when said lacing wire bows outwardly away from said normal bowed path of travel defined by said guide element's guide section in response to an obstacle encountered by the leading end of said lacing wire as said lacing wire is being wound in lacing fashion about the coil spring end loops, said feeding apparatus being stopped in response to the sensing of said obstacle.

4,445,548
FOOD PORTIONING MACHINE
Franz Neumann, 138 Dieppe Ave., Pointe Claire, Quebec, Canada (H9P 1X6)
Filed Jan. 25, 1982, Ser. No. 342,201
Int. Cl.[3] B65B *1/04*
U.S. Cl. 141—1 7 Claims

1. In a portioning machine for filling containers with food material, the machine having at least two filling stations, and a pumping means to supply food material, each filling station adapted to hold a container, the improvement comprising, a supply conduit leading to a filling tube, said supply conduit being comprised of a sliding portion and a stationary portion, said sliding portion horizontally and externally overlapping said stationary portion to form a non-coaxial telescoping joint, said sliding portion having a slot which connects and overlaps with an aperture in the stationary portion, such that food material is pumped from pumping means through the station-

ary portion to the slide portion when the filling tube is positioned in either filling station,

a telescopic nozzle at the end of the filling tube to extend downwards into a container in the filling station, and



a combined knife and flap at the end of the nozzle to cut the food material and close the nozzle.

4,445,549

ARRANGEMENT FOR A BOTTLE HANDLING MACHINE

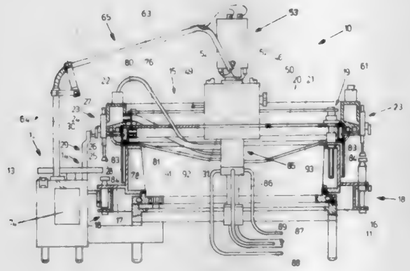
Herbert Bernhard, Wolfsheim, Fed. Rep. of Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

Filed Feb. 5, 1982, Ser. No. 346,243

Claims priority, application Fed. Rep. of Germany, Feb., 1981, 3104187

Int. Cl.³ B67C *3/28*

U.S. Cl. 141—148 **8 Claims**



1. A bottle filling machine, comprising:

a lower machine part;

an upper machine part rotatably mounted on said lower machine part;

a circular ring machine table connected to said upper machine part;

uniformly spaced apart, vertical lift elements for bottles to be filled, said lift elements being associated with said machine table;

a traverse connected to said machine table in such a way as to be adjustable in height relative thereto, said traverse being provided with a pan-shaped recessed portion arranged concentric to the axis of rotation of said upper machine part, said recessed portion being part of a receiving chamber for a control device, which is in the form of a digital computing system, and for the power supply and terminals associated with said control device; said receiving chamber, as an extension of said recessed portion of said traverse, being further delimited by a protective shell, which is mounted on said recessed portion in such a way as to be movable up and down, and by a plate mounted on said protective shell and having a central opening;

a column supported by said plate over said central opening thereof;

a circular ring liquid container connected to said traverse and provided with filling elements respectively associated with respective ones of said lift elements;

a central inflow fitting connected to said recessed portion of said traverse and operatively connected to said liquid container for supplying liquid for filling bottles thereto;

control means associated with said liquid container for monitoring the filling process; and

a rotary distributor for supplying electrical energy to drive and control devices of said bottle filling machine, said distributor having a stationary part mounted on said column.

4,445,550

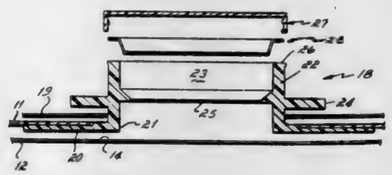
FLEXIBLE WALLED CONTAINER HAVING MEMBRANE FITMENT FOR USE WITH ASEPTIC FILLING APPARATUS

John C. Davis, Palatine; Ronald J. Reiss, Hoffman Estates, both of Ill., and Albert F. Rica, Stockton, Calif., assignors to Fran-Rica Mfg. Inc., Stockton, Calif. and Container Technologies, Inc., Barrington, Ill.

Filed Aug. 20, 1982, Ser. No. 409,903

Int. Cl.³ B65D *41/50*

U.S. Cl. 141—329 **18 Claims**



1. For use with an aseptic filling apparatus having a filling chamber adapted to be sterilized and provided with an opening for the passage of aseptic filling means, an aseptic container for the storage of flowable food product comprising: gas impermeable walls, a rigid fitment member sealed to one of said walls and detachably receptive in the opening of the filling chamber to effect sealed connection therebetween; a rupturable membrane closing said fitment member and located axially inwardly of the outer end thereof, and seal means to effect sealed connection with the filling means during the filling of said container, said membrane being rupturable by the filling means for the introduction of flowable food product to the container's interior, and said fitment member being capable of gamma ray sterilization without substantial embrittlement or loss of strength.

4,445,551

QUICK-DISCONNECT COUPLING AND VALVE ASSEMBLY

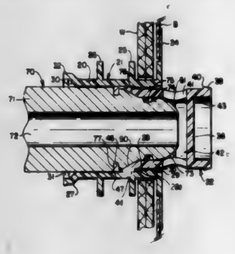
Curtis J. Bond, 4611 Donithen Rd., Marion, Ohio 43302, and John G. Ulm, Orchard Dr., Upper Sandusky, Ohio 43351

Filed Nov. 9, 1981, Ser. No. 319,580

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—349 **19 Claims**

1. A coupling and valve assembly comprising a spout having an annular tubular body open at its inner and outer ends, a valve member having an annular tubular body telescoped in the spout body and axially-slideable therein and having a closed inner end and an open outer end to provide an outwardly-opening socket for receiving a connector with the valve body having a dispenser outlet leading into the socket, a seal between the valve body and spout body axially inwardly of the dispenser outlet, one-way stop means between the valve body and spout body which prevents axial outward movement of the valve body in the spout body to keep the seal between the valve body and spout body but permits axial inward movement of the valve body relative to the spout body to move the dispenser outlet axially inwardly of the inner end of the spout body to permit dispensing through said outlet and said socket; a gripper arrangement at the outer end of the valve body and spout body for gripping the connector upon insertion into the socket and movement of the valve body axially inwardly into the spout body; said gripping arrangement comprising cam means at the outer end of said spout body and radially-movable yieldable gripping means at the outer end of the valve body



normally engaging said cam means in a radially-extended position but movable positively radially inwardly by the cam means to grip the connector upon movement of the valve body axially inwardly of the spout body by the connector so as to move the outlet inwardly beyond the inner end of the spout body and to pull the valve body axially-outwardly to move the outlet into the spout body outwardly of said seal upon retraction of the connector from the spout body.

4,445,552

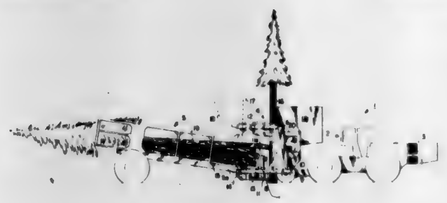
SAW BLADE CONSTRUCTION USEFUL IN THE CONTINUOUS HARVESTING OF TREES

Bruce Hyde; Wayne Tyndall; Dennis Abernethy, all of Prince Albert, and Per G. Mellgren, Pointe Claire, all of Canada, assignors to Prince Albert Pulp Company Limited, Prince Albert, Canada

Continuation-in-part of Ser. No. 90,832, Nov. 1, 1981, abandoned. This application Nov. 27, 1981, Ser. No. 325,250

Int. Cl.³ A01G *23/08*

U.S. Cl. 144—3 D **38 Claims**



1. An apparatus for felling and harvesting trees standing along the edge of a stand of trees which comprises a tree cutting device having (a) saw means including a power driven horizontally disposed rotating circular saw blade, (b) vehicular means carrying the saw means for of advancing the saw means along a path of trees standing at the edge of a stand of trees, said saw means engaging said trees without pushing the trees when cut forwardly in relation to the direction of advancement of the saw means, (c) power means for driving the saw blade to sever trees standing in the path from their roots without pushing the trees forwardly as the cutting device moves continuously forwardly along the path, (d) cut tree collecting and guiding means carried by the vehicular means substantially along one side thereof and located at least in part adjacent the saw means for collecting trees and guiding severed trees to move and topple rearwardly in relation to the direction of advancement of the saw means in a substantially uniform direction, and (e) at least one projection located on the upper surface of the saw blade for briefing engaging and guiding rearwardly in relation to the direction of advancement the butt ends of the cut trees.

4,445,553

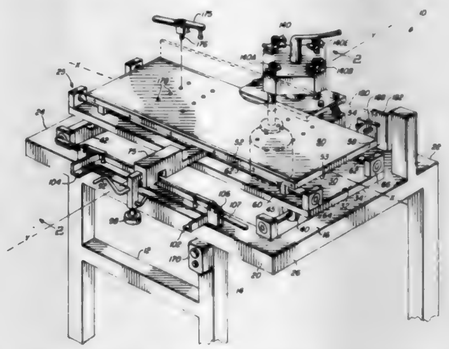
APPARATUS FOR SHAPING A WOODEN WORKPIECE

Eugene F. Hanyzewski, 8528 N. 37th Ave., Phoenix, Ariz. 85021; Kenneth A. French, 10926 N. 88th Dr., Peoria, Ariz. 85345, and Thomas S. Walker, 8741 W. Flower, Phoenix, Ariz. 85037

Filed Dec. 10, 1981, Ser. No. 329,304

Int. Cl.³ B27C *5/06*

U.S. Cl. 144—145 A **2 Claims**



1. An apparatus for shaping a workpiece to reproduce the configuration of the guide edge of a template, said apparatus comprising:

(a) a frame;

(b) a motion translating device on said frame including a carriage for said workpiece, said motion translating device including a first table slidable along bearing means in a first direction and a second table slidable along bearing means on said first table along an axis perpendicular to the direction of movement of said first table;

(c) a follower secured to said second table including means for adjusting the position of the follower with respect to the guide surface;

(d) a template holder on said frame for detachably securing a template therein, said template having a guide surface;

(e) a cutting tool including a rotatable turret having a plurality of cutting heads and means for engaging selected of the cutting heads in driven relationship with drive means, said cutting tool being positioned adjacent said carriage whereby a workpiece can be positioned on said carriage and the carriage manually manipulated with the follower in engagement with the guide surface of the template to cause the corresponding shape of the guide surface to be reproduced at the workpiece; and

(f) means for locking the said motion translating device in a fixed position.

4,445,554

LOG SPLITTER

Yasunori Suzuki, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

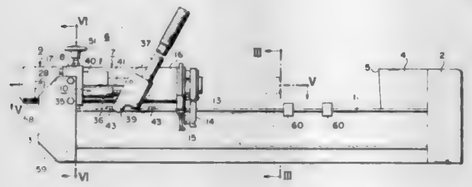
Filed Oct. 9, 1981, Ser. No. 309,940

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—193 A **2 Claims**

1. A log splitter wherein a wedge having a cutting edge and a hydraulic power unit are arranged on one end and the other ends of an I beam, and a log placed on the I beam between the wedge and the hydraulic power unit is split by pushing the log to the wedge by a ram of the hydraulic power unit, the improvement comprising,

a mechanically powered pump means and a manual group means operatively connected to each other and to said



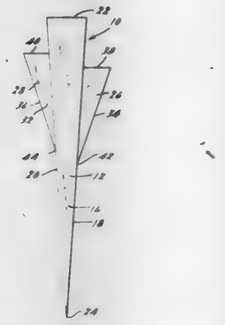
hydraulic power unit to actuate said hydraulic power unit so as to extend the ram towards said wedge.

4,445,555

WOOD SPLITTING TOOL

Victor L. Klempirik, 540 E. Bennington Rd., Owosso, Mich. 48867

Continuation-in-part of Ser. No. 292,197, Aug. 10, 1981, abandoned. This application Dec. 21, 1984, Ser. No. 332,540
Int. Cl.[3] B27L 7/00; B26B 23/00
U.S. Cl. 144—193 D 24 Claims



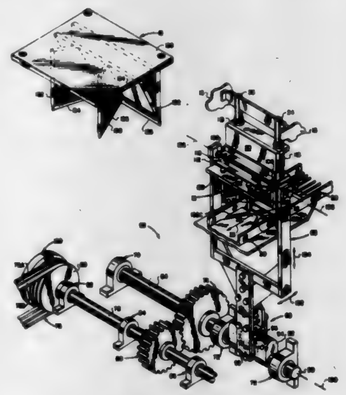
1. A wood splitting tool comprising, in combination, a body portion of generally wedge shaped configuration and including a top surface, a pair of spaced end surfaces and a pair of oppositely angularly inclined side surfaces, said oppositely angularly inclined side surfaces of said body portion terminating in a relatively sharp edge, said tool also including a pair of flank portions disposed on said oppositely angularly inclined side surfaces of said body portion intermediate said end surfaces of said body portion, each of said flank portions including a top surface, spaced substantially parallel end surfaces of generally obtuse triangular configuration and an angularly inclined side surface, the width of said angularly inclined side surface of each of said flank portions being less than the width of said side surfaces of said body portion, the junctions of said side surfaces of said flank portions with said side surfaces of said body portion extending in a direction substantially parallel to said sharp edge, one of said flank portions being longitudinally offset on said body portion with respect to the other flank portion whereby the apex of said one flank portion is spaced longitudinally of said body portion with respect to the apex of said other flank portion, said top surfaces of said flank portions projecting outwardly from said side surfaces of said body portion beyond said top surface of said body portion whereby said flank portions provide clearance for said top surface of said body portion permitting impact forces to be applied to said top surface of said body portion to drive said sharp edge through a log when said tool is disposed completely within such log.

4,445,556

KNIFE ASSEMBLY FOR PRODUCING WOOD CHUNKS

Ray J. Williams, P.O. Box 202029, Dallas, Tex. 75220

Division of Ser. No. 218,523, Dec. 22, 1980, Pat. No. 4,378,036. This application Feb. 1, 1983, Ser. No. 462,955
Int. Cl.[3] B27L 7/00
U.S. Cl. 144—193 R 1 Claim



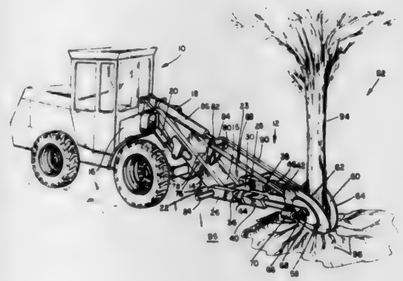
1. In a cutter assembly for producing wood chunks having a support platform, a shear plate mounted on said platform, a ram mounted for vertical reciprocal movement relative to said shear plate, and a power transmission assembly coupled to said ram for reciprocating said ram with respect to said shear plate, the improvement comprising a knife assembly carried by said ram for splitting a disc of wood on said shear plate, said knife assembly including a wedge cutting portion having a deflection face which converges to define a cutting edge, said deflection face being inclined relative to the plane of motion of the cutting edge, said knife assembly including a first shear blade having a cutting edge which extends transversely with respect to the cutting edge of said wedge cutting portion, a second shear blade having a cutting edge which extends tranversely with respect to the cutting edge of said wedge cutting portion and at an angle to said first shear blade, and said shear plate having first, second and third grooves aligned with the cutting edges of said wedge and first and second shear blades, respectively.

4,445,557

COLTER TREE CUTTING SYSTEM

Thomas Peters, III, Dublin, Ga., assignor to Tree Farmers International, Inc., Dublin, Ga.

Filed Mar. 19, 1982, Ser. No. 359,992
Int. Cl.[3] A01G 23/08
U.S. Cl. 144—336 14 Claims



1. A method of severing trees and other similar objects

extending at last partially above and at least partially below the surface of the ground, said method comprising the steps of moving a frame member in a substantially horizontal plane above the ground, said frame member including a pair of circular cutting disks having sharpened peripheral edges, said disks being laterally spaced from each other and rotatably mounted on said frame member such that the imaginary planes formed by said sharpened edges of said disks are inclined from said horizontal plane and intersect at a point below the surface of the ground, such that said inclined planes have opposite slopes and such that said sharpened edge of one of said disks is substantially adjacent said sharpened edge of said other disk, and guiding said frame so that relative to said cutting disks the portion of the tree extending below the surface of the ground passes between said adjacent sharpened edges of said disks whereby the portion of the tree extending above the surface of the ground is severed from a portion of the tree extending below the surface of the ground.

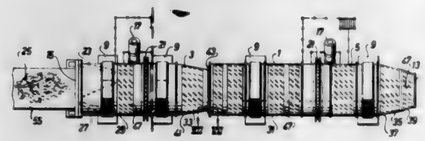
8. A method of severing trees and other similar objects having trunk portions extending at least partially above the surface of the ground and radially outwardly extended roots extending at least partially below the surface of the ground, said method comprising the steps of moving a frame member in a direction substantially parallel to the surface of said ground, said frame member including a pair of circular cutting disks having sharpened peripheral edges, said disks being laterally spaced from each other and rotatably mounted on said frame member such that said disks are tilted inwardly at the bottom edges thereof and said sharpened edge of one of said disks is substantially adjacent said sharpened edge of said other disk at a position below the surface of the ground, and guiding said frame member so that relative to said cutting disks the root portion of the tree extending below the surface of the ground passes between said adjacent sharpened edges of said disks, whereby said roots are substantially severed from said trunk below the surface of the ground.

4,445,558

BARKING DRUM AND METHOD

Kurt A. Banner, Gothenburg, and Sten-Ake Gustafsson, Edsvalla, both of Sweden, assignors to AB Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Feb. 28, 1983, Ser. No. 470,708
Claims priority, application Sweden, Mar. 19, 1982, 8201763
Int. Cl.[3] B27L 1/00
U.S. Cl. 144—341 13 Claims



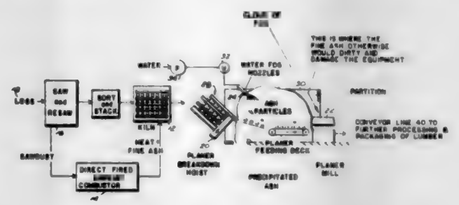
10. A method for removing waste material, such as limbs and bark, from forest raw material in a rotary barking drum, said method comprising feeding the forest raw material into a first treatment section of the barking drum while rotating the first treatment section so as to tumble the forest raw material and loosen waste material such as limbs and bark from the forest raw material, advancing the forest raw material from the first treatment section to a second treatment section of the barking drum while rotating the second treatment section so as to tumble the forest raw material and further loosen waste material therefrom, and while arresting the waste material removed from the forest raw material in the first treatment section and preventing its passage with the forest raw material to the second treatment zone, and discharging the thus arrested waste material from the barking drum through an outlet opening provided at the junction between the first and second treatment sections.

4,445,559

WATER FOG-TYPE ASH PRECIPITATOR FOR A KILNED LUMBER PILE BREAKDOWN HOIST

Cecil A. Coleman, Thomasville, Ga., assignor to Balfour Lumber Company, Thomasville, Ga.

Filed Apr. 18, 1983, Ser. No. 485,895
Int. Cl.[3] F26B 9/12, 7/00
U.S. Cl. 144—363 5 Claims



1. An improved timber processing system, comprising:
sawing timber to produce lumber and consequentially producing sawdust;
stacking the lumber in a multi-course pile with several generally parallel lengths in each course and at least some adjacent courses being spaced apart by a respective course of spacer sticks which run at generally right angles to the lengths of lumber in said adjacent courses;
placing the pile in a direct fired kiln;
collecting said sawdust and combusting the collected sawdust to produce an ash-laden hot gas stream, feeding the ash-laden hot gas stream to the kiln for kilning the lumber in said pile, whereby ash from the hot gas stream settles on the lumber during said kilning; and
removing the pile of kilned lumber from the kiln and breaking down said pile course-by-course and serially placing each course on a feeding deck running to a downstream work station; and
while breaking down the pile of kilned lumber course-by-course, atomizing a supply of water into a fog cloud enveloping said feeding deck adjacent said pile without substantially wetting the kilned lumber on the pile and feeding deck,
said breaking down causing much of the ash which had settled onto said kilned lumber to be jarred loose and become airborne within said fog cloud, whereby atomized water in said fog cloud attaches to said airborne ash, causing at least a substantial proportion of said airborne ash to become so heavy as to precipitate to the floor.

4,445,560

TIRE, PARTICULARLY FOR AIPLANES, WITH CROWN REINFORCEMENT OF TEXTILE CABLES AND PROCESS FOR THE MANUFACTURE THEREOF

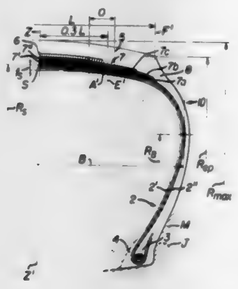
Jacques Musy, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Feb. 5, 1982, Ser. No. 346,127
Claims priority, application France, Feb. 12, 1981, 81 02789
Int. Cl.[3] B60C 9/00; B29H 5/02
U.S. Cl. 152—200 18 Claims

1. A tire for airplanes having a carcass reinforcement formed of at least one ply of radial cables which is anchored to at least one bead ring in each bead and a tripartite crown reinforcement radially outwards adjacent to the carcass reinforcement and having a median portion in contact, at each of its edges, with a lateral portion, each of these three portions being formed of at least one ply of textile cables which are parallel in each ply and inclined by an angle of between 0° and 30° to the circumferential direction of the tire, the carcass reinforcement of the tire when mounted on its service rim and inflated to its service pressure but not under load having a relative camber of convexity in the crown of at most 0.12, preferably between

0.04 and 0.10, and a relative camber of convexity in the sidewalls of at most 0.14, the tire thus having a quasi-rectangular meridian profile and being characterized by the fact that when it is mounted on its service rim but not inflated, its carcass reinforcement has a relative camber of convexity in the crown of at most 0.17, preferably between 0.055 and 0.15, and a relative camber of convexity in the sidewalls of at most 0.20, and a length such that after inflation its equilibrium curve at the level of the shoulders is located radially outwards of its curve in the uninflated tire, and by the fact that the median portion of the crown reinforcement is formed of cables whose extensibility is low, preferably close to zero, and which have a low, preferably zero, coefficient of contraction under the heat at the temperature of vulcanization of the tire, while the cables of the lateral portions of the crown reinforcement are very extensible and have a high coefficient of contraction under the heat at the temperature of vulcanization of the tire.

18. A method for manufacturing a tire for airplanes having a carcass reinforcement formed of at least one ply of radial cables which is anchored to at least one bead ring in each bead and a tripartite crown reinforcement radially outwards adjacent to the carcass reinforcement and having a median portion in contact, at each of its edges, with a lateral portion, each of these three portions being formed of at least one ply of textile cables which are parallel in each ply and inclined by an angle of between 0° and 30° in the circumferential direction of the tire,



comprising vulcanizing the tire in a vulcanization mold in which the carcass reinforcement and the crown reinforcement occupy approximately the same position as in the tire when mounted on its service rim and inflated to its service pressure but not under load, the curvature of the carcass reinforcement reaching a maximum at the shoulders and a minimum at the intersection of the carcass reinforcement with the equatorial plane of the tire, the carcass reinforcement in the tire in the vulcanization mold having a relative camber of convexity in the crown of at most 0.12, preferably between 0.04 and 0.10, and a relative camber of convexity in the sidewalls of at most 0.14; the tire thus having a quasi-rectangular meridian profile;

and further comprising using a crown reinforcement in which the cables of the median portion have a low extensibility, preferably close to zero, and have a coefficient of contraction under the heat at the temperature of vulcanization of the tire which is low, preferably zero, and in which the cables of the lateral portions are very extensible and have a high coefficient of contraction under the heat at the temperature of vulcanization of the tire;

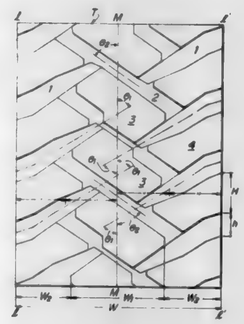
when the tire is mounted on its service rim but not inflated, its carcass reinforcement has a relative camber of convexity in the crown of at most 0.17, preferably between 0.055 and 0.15, and a relative camber of convexity in the sidewalls of at most 0.20, and a length such that after inflation its equilibrium curve at the level of the shoulders is located radially outwards of its curve in the uninflated tire.

4,445,561

LARGE SIZE PNEUMATIC RUBBER TIRE FOR ROUGH ROADS

Mitsutsugu Kono, Kodaira, and Osamu Inoue, Sayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 389,798
Claims priority, application Japan, Jul. 2, 1981, 56-103518
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 B **11 Claims**



1. A large size pneumatic rubber tire for rough roads comprising; a number of main grooves formed in a tread of the tire arranged in parallel with one another uniformly oblique in the same direction to and on both sides of a center circumferential line of the tread and opening at said tread and shoulders, a number of auxiliary grooves formed in the tread arranged substantially in parallel with one another oblique in a direction opposite to the direction of said main grooves with respect to the center circumferential line of said tire of connect said main grooves adjacent in a circumferential direction and opening at said tread, said main and auxiliary grooves having comparatively wide groove widths, respectively, and dividing said tread into a center zone and two side zones, said zones respectively consisting of circumferentially arranged respectively same shaped center blocks and side blocks defined by said main and auxiliary grooves, and side blocks having a circumferential length along tread edges, which is 120–210% of opening length of said main grooves defining said side blocks along said tread edges and 13–23% of a width of said tread.

4,445,562

SEALANT COMPOSITIONS HAVING, AS AN ESSENTIAL COMPONENT, HYDROGENATED POLYBUTADIENE AS NETWORK POLYMER

Georg G. A. Böhm, Akron; Mario DeTrano, Massillon, and James E. Hall, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 7, 1981, Ser. No. 261,426
Int. Cl.³ B60C *5/14*; C08F *299/00*
U.S. Cl. 152—347 **9 Claims**

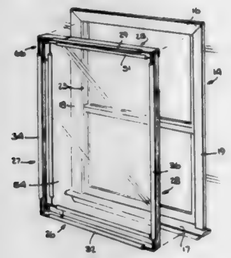
1. A pneumatic tire in combination with a sealant layer containing conventional additives and, as essential rubber components, a fully compatible blend of (1) a high molecular weight, hydrogenated polybutadiene homopolymer having a molecular weight of between 80,000 and 400 000, a vinyl content prior to hydrogenation of between 10 and 98% and a level of hydrogenation of between 40 and 98%, and (2) a low molecular weight liquid elastomer, said hydrogenated polymer providing a crosslinked network in said elastomer wherein the ratio of the polybutadiene (1) to elastomer (2) is 10–30 to 90–70.

4,445,563

ADJUSTABLE WINDOW STRUCTURE

Chester Meyeroff, 514 Waterview Dr., Cedarhurst, N.Y. 11516

Filed Jun. 30, 1982, Ser. No. 393,759
Int. Cl.³ A47H *3/00*
U.S. Cl. 160—369 **8 Claims**



1. An adjustable window structure to engage a window frame having a top frame member, a bottom frame member and two side frame members defining a window area, said structure comprising:

perimeter support means comprising a plurality of angle members;

attachment means to attach pairs of the angle members together to arrange the perimeter support means to have first and second pairs of opposite sides, the angle members that comprise at least the first pair of opposite sides being telescopically nested together, whereby the perimeter support means forming the first pair of opposite sides can be slidably adjusted to engage the frame members;

clamping means including resilient channel members extending longitudinally along substantially the entire length of each edge of the angle members forming the telescopically nested sides for exerting pressure thereon and for holding the nested sides in fixed relationship to engage the window frame members firmly;

flexible sheet material having top, bottom and side edges each folded over an edge of the angle members forming the respective sides of the perimeter support means, the clamping means embracing the respective edges of the sheet material and of the respective angle members for clamping the sheet material to the sides.

4,445,564

MACHINE FOR MAKING MOULD CORES FROM FLOWABLE CORE SAND MIXTURES IN HOT MULTIPLE CORE BOXES

Vitaly A. Zitser, Dolgoprudny Moskovskoi; Leonid V. Bachelis, Moscow; Alexandr V. Melnikov, Moscow; Eduard A. Stolyar, Moscow; Vladimir S. Kushelman, Moscow; Igor I. Dreishev, Moscow; Vladimir D. Abaskalov, Karaganda; Vladimir A. Levinson, Karaganda; Vladimir A. Ivanov, and Jury E. Morozov, both of Moscow, all of U.S.S.R., assignors to Tsentralnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro, Moscow, U.S.S.R.

Filed Nov. 10, 1981, Ser. No. 320,077
Int. Cl.³ B22C *11/04, 13/12*
U.S. Cl. 164—186 **2 Claims**

1. A machine for making mould cores from flowable sand mixtures in hot multiple core boxes, comprising:

a supporting frame;

a conveyance means provided on said supporting frame for carrying core boxes for transfer along a path of the core production process cycle;

mechanisms mounted on said supporting frame and arranged along the path of the core production process cycle, said conveyance means transferring said core boxes to said mechanisms, said mechanisms comprising:

a sand mixture preparation mechanism,

a mechanism for pressing a sand mixture in said core boxes,

a mechanism for splitting up said core boxes, and

a mechanism for discharge of finished cores;

each of said core boxes having:

a top piece,

a bottom piece,

said top piece having central core print openings provided therein,

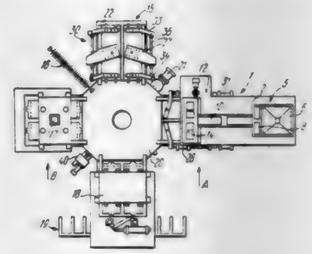
said top piece including peripheral core print openings therein on both sides of said central core print openings,

a first gate adapted to close or open said central core print openings and installed on said top piece, and

a means adapted to close or open said peripheral core print openings and comprising:

a second gate situated on said top piece and adapted to close or open said peripheral core print openings situated on one side of said central core print openings,

a third gate located on said top piece and mechanically interlinked with said second gate, and also adapted to



close or open peripheral core print openings situated on the other side of said central core print openings, and

a pullrod effecting mechanical interlinkage of the second and third gates;

a first individual drive means secured to said supporting frame at said pressing mechanism and adapted to engage said first gate for closing said central core print openings;

a second individual drive means secured to said supporting frame before said core box splitting-up mechanism and adapted to engage said first gate for opening said central core print openings;

a third individual drive means secured to said supporting frame at said pressing mechanism and adapted to engage one of said second and said third gates for opening said peripheral core print openings; and

a fourth individual drive means secured to said supporting frame before said core box splitting-up mechanism and adapted to engage one of said third and said second gates for closing said peripheral core print openings.

4,445,565

PROCESS FOR PREPARING CORES AND MOLDS

Charles E. Seeney, Brazil, and John F. Kraemer, Terre Haute, both of Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Division of Ser. No. 342,313, Jan. 25, 1982. This application Jul. 11, 1983, Ser. No. 512,252
Int. Cl.³ B22C *1/18*
U.S. Cl. 164—528 **6 Claims**

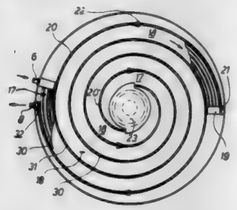
1. An improved process for preparing foundry cores and molds from a foundry aggregate, and a binder and hardener therefor comprising the steps of (a) mixing the aggregate with a metal polyphosphate, or an ammonium polyphosphate, thereby coating the aggregate, (b) mixing the coated aggregate with a hardener comprising a source of polyvalent cations and orthophosphoric acid, and (c) packing the aggregate and binder therefor into a core box or mold box for a length of time sufficient for the binder to cure and thereby form the core or mold.

4,445,566

LATENT HEAT STORAGE MEANS

Karsten Laing, Kaiserallee 51, 7500 Karlsruhe; Oliver Laing, Weissdornweg 14, 7400 Tübingen, and Inge Laing, Hofener Weg 35-37, 7148 Remseck 2, all of Fed. Rep. of Germany

Filed Mar. 16, 1982, Ser. No. 358,809
Claims priority, application Switzerland, Mar. 16, 1981, 1754/81
Int. Cl.³ F28D 17/00
U.S. Cl. 165—10 13 Claims



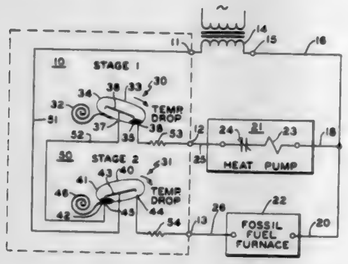
1. Latent heat storage means having a cylindrical housing, a heat storage mass in said housing, heat conveyor passages in said housing through which a heat carrier is adapted to flow to charge or discharge the storage mass, an inlet connector through which heat carrier flows into said housing and a discharge connector through which heat carrier flows out of said housing, characterized in that the heat conveyor passages comprise hollow bodies in the form of at least one converging spiral converging in the direction of heat carrier therethrough and at least one diverging spiral diverging in the direction of heat carrier therethrough, each said converging spiral communicating with each said diverging spiral at the center of said housing, all said spirals being concentric with said housing, a vertically extending manifold connecting all said converging spirals with one connector and a vertically extending header connecting all said diverging spirals with another connector.

4,445,567

THERMOSTAT FOR CONTROL OF AN ADD-ON HEAT PUMP SYSTEM

Lorne W. Nelson, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 26, 1982, Ser. No. 352,669
Int. Cl.³ F25B 29/00
U.S. Cl. 165—29 10 Claims



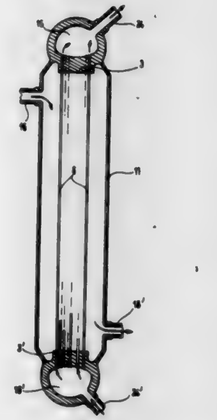
1. A thermostat to control the heating of a space with said thermostat adapted to be connected to control a furnace and a heat pump wherein the output heat from said furnace passes through a portion of said heat pump, including: two-stage thermostat means with a first stage including single pole switch means having a temperature control range smaller than a temperature control range of a second stage of said thermostat means; both of said stages being responsive to a temperature within said space to be heated; said switch means having contacts which are open circuited upon a temperature rise and closed circuited upon a temperature drop within said first stage temperature control range; said second stage having single pole, double throw switch means with said second stage switch means having contacts operated between open and closed positions on temperature changes within said second stage temperature control range; internal thermostat circuit means connecting said first stage switch means to said second stage switch means to allow said thermostat to complete a first electric circuit through said two switch means upon said first stage sensing a temperature drop to a limit of said first stage temperature range; said second stage switch means opening said first electric circuit and completing a second electric circuit upon a sufficient temperature drop; and terminal means connected to said two thermostat circuits with said terminal means adapted to connect said thermostat to said heat pump and said furnace; said heat pump and said furnace being controlled so that they can not operate at the same time.

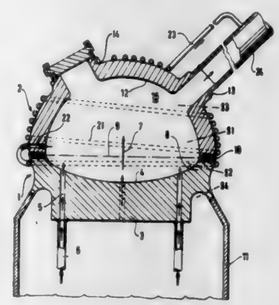
4,445,568

SUPERHEATED STEAM GENERATOR

Thong Nguyen-Thanh, Cernay-la-Ville, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 15, 1982, Ser. No. 358,181
Claims priority, application France, Mar. 20, 1981, 81 05643
Int. Cl.³ F28F 7/00
U.S. Cl. 165—81 3 Claims





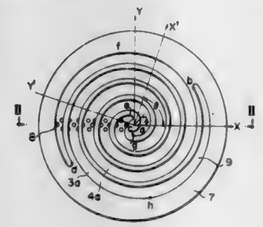
1. A superheated steam generator comprising an outer ferrule having at its opposite ends a chamber for the intake of water to be vaporized and superheated and a steam outflow chamber and a group of tubes connecting said chambers in which circulates the water to be vaporized and superheated by heat exchange with a hotter fluid circulating in counterflow around the tubes within the outer ferrule, wherein the steam outflow chamber comprises an outer wall surrounded by a coil linked with said chamber, in such a way that part of the superheated steam introduced into the outflow chamber circulates in the coil.

4,445,569

SCROLL TYPE LAMINATED HEAT EXCHANGER

Norihide Saho; Koji Koibuchi; Kenjiro Kasai, and Hiroshi Higaki, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,277
Claims priority, application Japan, Mar. 20, 1981, 56-39467
Int. Cl.³ F28D 7/02
U.S. Cl. 165—165 5 Claims



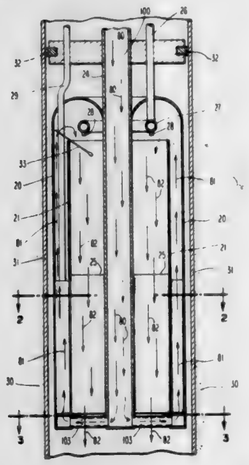
1. A scroll type laminated heat exchanger comprising a plurality of heat transfer plates having a multiplicity of holes and a plurality of spacers which are laminated alternatingly in layers to form a plurality of fluid passages so that heat is exchanged between different fluids flowing in different fluid passages by the transfer of heat through the heat transfer plates, wherein said spacers define a plurality of separate scroll-shaped fluid passages such that the passages are disposed in a side-by-side relation as viewed in the radial direction.

4,445,570

HIGH PRESSURE COMBUSTOR HAVING A CATALYTIC AIR PREHEATER

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19380

Filed Feb. 25, 1982, Ser. No. 352,216
Int. Cl.³ E21B 36/02, 43/24
U.S. Cl. 166—59 6 Claims



1. A catalytic combustor for generating a mixture of steam and combustion gas downhole in an oil well, comprising:

(a) a nest of three coaxial metal pipes that define inner and outer annular passages,
(b) the wall in the inner annulus being coated with catalyst,
(c) means for directing incoming air first through the central pipe, then through the outer annulus in the opposite direction, and then through the inner annulus in the first direction, and
(d) means for mixing fuel with the air after it has traversed the outer annulus and before it has traversed the inner annulus.

4. A catalytic combustor for generating a mixture of steam and combustion gas downhole in an oil well, comprising:
(a) a nest of three coaxial metal pipes that define inner and outer annular passages,
(b) the walls of the inner annulus being coated with catalyst,
(c) means for directing a mixture of gaseous fuel and oxidizing gas first through the central pipe, then through the outer annulus in the opposite direction, and then through the inner annulus in the first direction.

4,445,571

CIRCULATION VALVE

Donald F. Hushbeck, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 112,199, Jan. 15, 1980, Pat. No. 4,311,197. This application Aug. 20, 1981, Ser. No. 294,761
Int. Cl.³ E21B 34/08
U.S. Cl. 166—317 1 Claim



1. A circulation valve for use in a well, said circulation valve comprising:
a cylindrical housing having an open bore therethrough and a circulating port through a wall thereof, the cylindrical housing including:
a first housing portion, the circulating port being disposed through a wall of the first housing portion, the first housing portion having an externally threaded upper end;
a second housing portion having an internally threaded lower end releasably secured to the externally threaded upper end of the first housing portion forming a radially inwardly projecting ledge in the cylindrical housing defined by an annular end surface of the upper end of the first housing portion and an internally threaded upper end; and
a third housing portion having an internally threaded upper end and an externally threaded lower end releasably secured to the internally threaded upper end of the second housing portion forming a radially inwardly projecting ledge in the cylindrical housing defined by an annular end surface of the lower end of the third housing portion;
a valve mandrel slidably received in the cylindrical housing and movable from a closed position closing the circulating port to an open position opening the circulating port, the circulating port being in fluid communication through an

inner bore of the valve mandrel with the open bore of the cylindrical housing above the valve mandrel when the valve mandrel is in the open position, the valve mandrel including:

a first valve mandrel portion slidingly received within the first housing portion of the cylindrical housing; and

a second valve mandrel portion having the lower end thereof releasably connected to the upper end of the first valve mandrel portion, the second valve mandrel portion including means for limiting movement of the valve mandrel in a first direction toward its open position, the means for limiting movement of the mandrel comprising a radially outwardly projecting ledge on the upper end of the second valve mandrel portion, the radially outwardly projecting ledge adapted to abut the radially inwardly projecting ledge in the cylindrical housing defined by an annular end surface of the lower end of the third housing portion of the cylindrical housing when the valve mandrel is in the open position;

shear pin means for initially retaining the valve mandrel in the closed position within the cylindrical housing, the shear pin means releasably securing the first valve mandrel portion of the valve mandrel to the first housing portion of the cylindrical housing;

spring means for moving the valve mandrel to the open position upon the shearing of the shear pin means, the spring means being located between the shear pin means and the outwardly projecting ledge on the upper end of the second valve mandrel portion of the valve mandrel; and

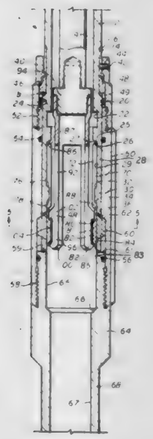
first and second seal means located between the second valve mandrel portion of the valve mandrel and the first housing portion of the cylindrical housing for sealing above and below the circulating port in the cylindrical housing when the valve mandrel is in the closed position, the first and second seal means having substantially identical diameters so that any longitudinal forces on the valve mandrel due to any external fluid pressure communicated to the valve mandrel through the circulating port in the cylindrical housing are balanced.

4,445,572

UNRESTRICTED BORE SAFETY JOINT

Douglas H. Fineberg, Tulsa, Okla., and Andrew Haynes, Missouri City, Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Aug. 17, 1981, Ser. No. 293,576
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—188 **32 Claims**



1. An apparatus incorporable on a conduit insertable into a subterranean well for severing said conduit at a predetermined location when subjected to a predetermined longitudinal load, said apparatus comprising:

first and second relatively telescoping members;

first connecting means for normally connecting said first to said second telescoping member and for disengaging and separating said first from said second telescoping members when subjected to said predetermined longitudinal load;

second connecting means for engaging said first telescoping member and laterally adjacently engaging said second telescoping member, said second connecting means being releasable and, when in an engaged position, retaining said first and said second telescoping members in an attached configuration when subjected to longitudinal loads in excess of said pre-determined longitudinal load, said second connecting means further comprising a member extending through a cooperating opening in said first telescoping member and engaging said second telescoping member on the exterior of said first telescoping member; and

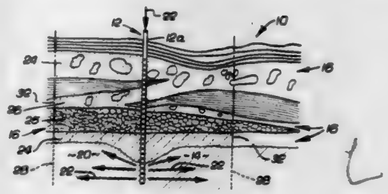
longitudinally shiftable means movable internally of said second connecting means and preventing inward movement of said second connecting means in a first position, and inwardly releasing said second connecting means when in a second longitudinally shifted position when said conduit is subjected to a longitudinal load in excess of said pre-determined force.

4,445,573

INSULATING FOAM STEAM STIMULATION METHOD

George E. McCaleb, Bakersfield, Calif., assignor to Thermal Specialties Inc., Bakersfield, Calif.

Filed Nov. 4, 1982, Ser. No. 439,126
Int. Cl.³ E21B *33/138, 43/24, 47/06*
U.S. Cl. 166—250 **18 Claims**



2. A method for recovering oil from a subterranean oil-bearing reservoir, utilizing a single well operated by steam stimulation, said reservoir having a permeable zone and an oil-bearing strata with a portion thereof to be stimulated by steam injection, which comprises:

(a) forming foam using a substantially non-condensible gas and a solution containing a sufficient amount of a surface active agent and a liquid, said formed foam being relatively stable, substantially non-condensible, thermally insulating and having said non-condensible gas as a gas phase,

(b) injecting said formed foam into said well until achieving a well bore injection pressure of said foam approaching a maximum stabilization injection pressure, but not exceeding the reservoir fracturing pressure, to position said foam in said permeable zone and substantially fill with said foam an expanse of said permeable zone which extends substantially radially from said well to the extent said permeable zone is in substantial proximity with said portion of said oil-bearing strata to be stimulated, to form a thermally insulating barrier to reduce loss of steam and heat from said oil-bearing strata to said permeable zone,

(c) injecting into said reservoir through said well after formation of said thermally insulating barrier a sufficient amount of steam to heat said portion of said oil-bearing strata to stimulate oil production therefrom, and

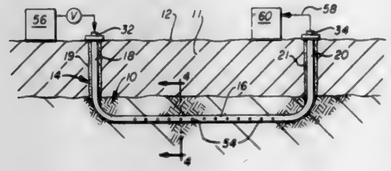
(d) withdrawing oil from said reservoir through said well.

4,445,574

CONTINUOUS BOREHOLE FORMED HORIZONTALLY THROUGH A HYDROCARBON PRODUCING FORMATION

Roy R. Vann, Houston, Tex., assignor to GEO Vann, Inc., Houston, Tex.

Continuation of Ser. No. 132,765, Mar. 24, 1980, Pat. No. 4,334,580. This application Jun. 7, 1982, Ser. No. 385,834
The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.
Int. Cl.³ E21B *7/04, 43/24, 43/117, 43/119*
U.S. Cl. 166—268 **5 Claims**



1. Method of producing hydrocarbons from a pay zone, comprising

forming a borehole from an entry at the surface of the ground to the pay zone,

deviating the borehole to form a substantially horizontal portion in the pay zone,

further deviating the borehole until it exits at the surface of the ground,

pulling a casing through the borehole from the exit to the entry,

perforating the casing in the pay zone, and

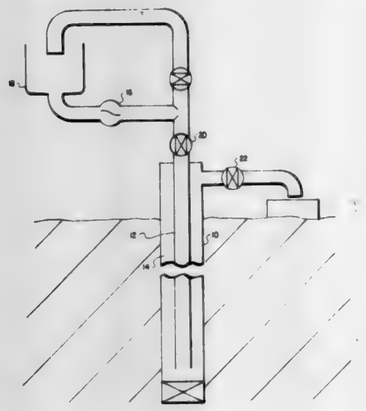
producing hydrocarbons through the perforations.

4,445,575

BOREHOLE CEMENTING OVER WATER

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 14, 1981, Ser. No. 330,061
Int. Cl.³ E21B *33/13*
U.S. Cl. 166—290 **3 Claims**



3. In a process of cementing a portion of a borehole where said borehole is filled, below the portion to be cemented, with drilling mud of lower density than the cement, the improvement comprising:

pumping a quantity of water-like fluid down an annulus between a casing in said borehole and the borehole wall, said quantity of water-like fluid being sufficient to fill at least about fifty feet of said annulus, and

pumping a quantity of cement down said annulus above said water-like fluid.

4,445,576

METHOD OF USING A SPACER FOR WELL CONTROL FLUID

Evelyn N. Drake, Plainfield, N.J., and Yuh-hwang Tsao, Houston, Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J. and Exxon Production Research Company, Houston, Tex.

Filed May 24, 1982, Ser. No. 381,226
Int. Cl.³ E21B *33/138*
U.S. Cl. 166—291 **28 Claims**

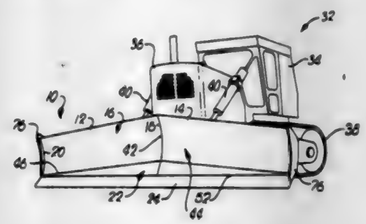
1. A process for plugging an underground formation penetrated by a well which comprises using a displacing fluid to transport a shear thickening fluid to said formation, under conditions of relatively low shear, through a conduit extending into said well and then subjecting the shear thickening fluid to conditions of relatively high shear at that point of the formation desired to be plugged to form a paste which plugs said formation, wherein said shear thickening fluid comprises a water-in-oil emulsion having particles of hydratable, water-expandable clay dispersed in the continuous oily phase thereof, said oily phase having a surfactant dissolved therein and wherein said shear thickening fluid is both preceded and followed by a liquid spacer as it proceeds through said conduit, said spacer comprising a water-in-oil emulsion having a surfactant dissolved in the continuous oily phase thereof and having a viscosity less than the viscosity of the shear thickening fluid, but greater than that of the displacing fluid.

4,445,577

BULLDOZER BLADE

Dean E. Russell, and Tom H. Russell, both of Eureka, Kans., assignors to Russell & Sons Construction Co. Inc., Eureka, Kans.

Filed Dec. 21, 1981, Ser. No. 332,459
Int. Cl.³ E02F *3/80*
U.S. Cl. 172—701.3 **3 Claims**



1. A blade suitable for attachment to an earth-moving machine, said blade comprising:

a pair of cross-sectionally arcuate blade portions joined together to form a common centerline and cooperatively defining a chevron-shaped load-bearing area, each of said portions presenting a concave earth-engaging forward face, said centerline being recessed in relation to the outermost lateral edges of said arcuate portions, the height of said blade at said centerline being greater than its height at said outermost lateral edges; and

a generally triangular plate secured to and depending from said load-bearing area, said plate including a lowermost generally horizontal edge.

4,445,578

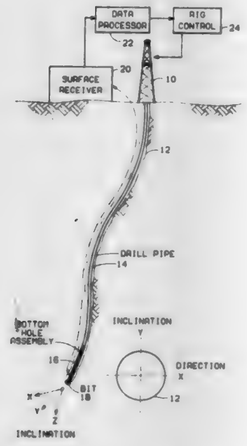
SYSTEM FOR MEASURING DOWNHOLE DRILLING FORCES

Keith K. Millheim, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 15,998, Feb. 28, 1979, abandoned. This application Jan. 5, 1982, Ser. No. 337,207

Int. Cl.³ E21B 7/06

U.S. Cl. 175—45 **35 Claims**



1. An apparatus connected to a drill string for use in drilling a borehole in the earth comprising:

a drill bit connected to said drill string;

a subunit connected to said drill string and said drill bit;

at least three circumferentially spaced means for measuring strain on said subunit to measure an indication of the force on said subunit perpendicular to its axis; and

means for processing the indications of force obtained by said means for measuring strain to obtain the sideforce on said drill bit.

4,445,579

PIPE CAROUSEL FOR WELL-DRILLING RIG

Paul Bello, 4756 Pullman St., Salem, Oreg. 97302

Filed Aug. 10, 1981, Ser. No. 291,669

Int. Cl.³ E21B 19/14

U.S. Cl. 175—52 **13 Claims**

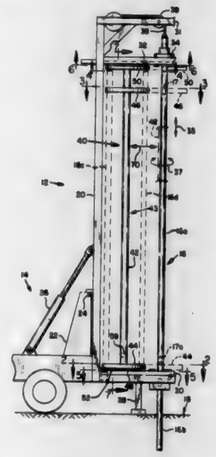
1. A well-drilling pipe carousel comprising:

a hollow central support tube having an opening extending lengthwise along one side thereof so as to provide the tube with a C-shaped cross section, the tube and opening being sized so that a section of drill pipe can be positioned in the tube;

support means for supporting the tube in a well-drilling mast for rotation about a vertical axis;

moving means for moving the support means and tube laterally relative to the drilling mast to envelop the uppermost pipe section of a drill string in nesting, substantially concentric relationship, the tube being rotationally positioned so as to admit the pipe section laterally through said opening;

pipe engaging means for engaging the pipe section against rotation inside the tube, and



rotating means connected to the support means for rotating the tube about said vertical axis to unscrew said section from the drill string.

4,445,580

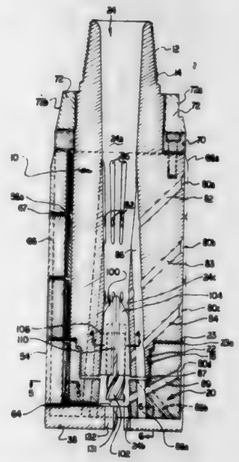
DEEP HOLE ROCK DRILL BIT

Lloyd W. Sahley, Mayfield Heights, Ohio, assignor to Syndrill Carbide Diamond Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 160,860, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 50,088, Jun. 19, 1979, abandoned. This application Jun. 30, 1982, Ser. No. 393,780

Int. Cl.³ E21B 10/04, 10/58

U.S. Cl. 175—404 **55 Claims**



41. A rock drill bit rotatable about an axis for drilling a hole comprising means on the leading end of the bit for drilling against the hole bottom and forming a core as the drilling proceeds, a core shaver having radially extending shaving edges for engaging said core mounted on the axis of said bit at the leading end thereof for shaving the top of the core on rotation of the bit, a central passage opening into the leading end face of the bit for delivering drilling mud to the bottom of the hole, said core shaver being mounted in said central passage and projecting into an enlarged portion of said central passage for receiving the core, a collet chuck for receiving and holding said core shaver in said central passageway, the diameter of said central passage downstream of said chuck being smaller than the diameter of the downstream end of said collet chuck.

4,445,581

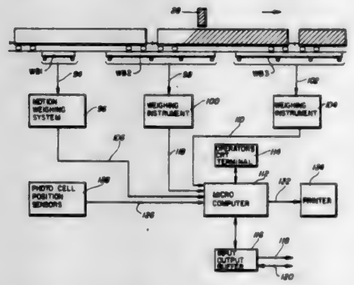
SYSTEM FOR LOADING RAILROAD CARS

Jack R. Caldicott, Barrington, Ill., assignor to Mangood Corporation, Chicago, Ill.

Filed Sep. 7, 1982, Ser. No. 415,164

Int. Cl.³ G01G 21/22, 19/52

U.S. Cl. 177—163 **16 Claims**



1. A method of loading railroad cars coupled in motion, which comprises the steps of:

selecting a railroad car to be loaded;

prior to loading, obtaining the composite weight of the front truck of the selected railroad car and the rear truck of the adjacent railroad car forward of the selected railroad car;

prior to loading, obtaining the composite weight of the rear truck of the selected railroad car and the front truck of the adjacent railroad car behind the selected railroad car;

selecting a desired predetermined net weight of the load; and

loading the selected railroad car in motion until a total composite weight is reached that is about equal to said composite weights plus said predetermined net weight of the load.

4,445,582

TRACK UNIT OF BOGIE TYPE

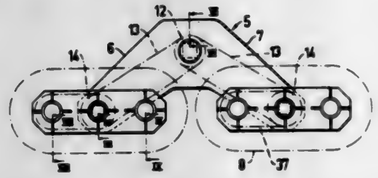
Albert Andersson, Frösön, Sweden, assignor to Skega AB, Ersmark, Sweden

Filed Feb. 16, 1982, Ser. No. 348,728

Claims priority, application Sweden, Feb. 17, 1981, 8101063

Int. Cl.³ B62D 55/00

U.S. Cl. 180—9.5 **6 Claims**



1. A track unit for an endless track driven vehicle having a driven axle, said unit comprising: a rocker arm freely pivoted between its ends on the driven axle; two track stands each including a frame, a forward track wheel and an aft track wheel rotatably mounted in said frame and an endless track supported on the track wheels, each track stand frame being freely pivotably mounted at a location between its respective track wheels on a track stand axle on one end of the rocker arm; and chain transmission means including a chain drive between said driven axle and said track stand axle and between said track stand axle and one wheel of the respective track wheel.

4,445,583

COOLING FAN CONTROL

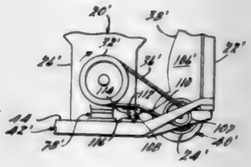
Jos[illegible]. Masur, Livonia, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 4, 1980, Ser. No. 183,890

The portion of the term of this patent subsequent to Mar. 15, 2000, has been disclaimed.

Int. Cl.³ B60H 01/24

U.S. Cl. 180—68.1 **11 Claims**



1. In a vehicle of the type including a frame, an engine having a crankshaft mounted therein for rotation about an axis, means mounting the engine on the frame such that the engine and crankshaft rock transverse to the crankshaft axis in response to varying engine load, and an engine cooling fan having an input shaft defining an axis about which the fan rotates, the improvement comprising:

means mounting the fan with the fan axis laterally spaced from and substantially parallel to the crankshaft axis and fixed against movement relative to the frame, whereby the spaced apart distance between the fan and crankshaft axes varies in response to varying engine load; and drive means connecting the input shaft with the crankshaft, said drive means including first and second drive pulleys respectively rotatable about the crankshaft and input shaft axes and moveable relative to each other when said spaced apart distance between the input shaft and crankshaft axes varies, a single drive belt drivingly interconnecting the pulleys, and tensioning means for maintaining a relatively constant tension on said belt as said spaced apart distance varies.

4,445,584

MOTOR VEHICLE EQUIPPED WITH ENGINE NOISE EMISSION PREVENTING DEVICE

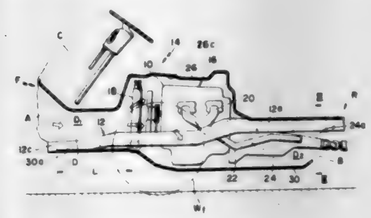
Akira Kimura, Kawasaki; Masao Ishihama, and Yoshikazu Hayakawa, both of Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 8, 1981, Ser. No. 300,061

Claims priority, application Japan, Apr. 12, 1978, 53-42074

Int. Cl.³ B60K 11/04

U.S. Cl. 180—69.22 **15 Claims**



1. A motor vehicle, comprising:

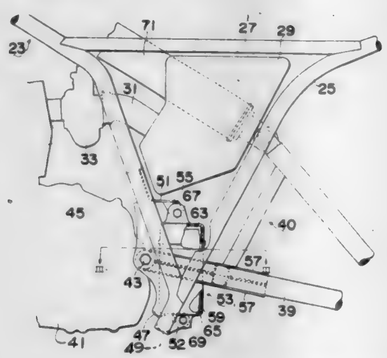
a vehicle body including lower opposite side wall sections;
a power unit elastically supported by the vehicle body and including an internal combustion engine;
a radiator fluidly connected to said engine;
a transmission mechanically connected to said engine;
said radiator positioned between said lower opposite wall sections so as to be generally vertical;
a sound insulating cover located below said power unit and extending away from said radiator in the vehicle forward direction by a length (L) not less than the distance $(b')/\pi$, where (b') is the distance between said lower opposite side wall sections of said vehicle body in the direction of the width of said radiator, said sound insulating cover further extending away from said radiator in the vehicle rearward direction at least to the rearward end of said transmission, said radiator positioned rearwardly from the front of said vehicle by at least the length (L); and
means for securely connecting said sound insulating cover with said vehicle body;
said vehicle body, sound insulating cover and connecting means constituting a noise insulating duct, generally longitudinal within which said radiator, said power unit and said transmission are longitudinally positioned in series so as to reduce engine noise emitted outside of the vehicle.

4,445,585

MOTORCYCLE CONFIGURATION

Yuichi Imani, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 24, 1982, Ser. No. 423,027
Int. Cl.³ B62D *25/00*
U.S. Cl. 180—68.5 **6 Claims**



1. A motorcycle of the type in which an engine having a crankcase is supported on a body frame, a pair of rear arm members is hinged to said body frame, and in which a battery is supported on said body frame, the improvement comprising: said battery being disposed and mounted in the vicinity of the back of said crankcase between said pair of rear arm members.

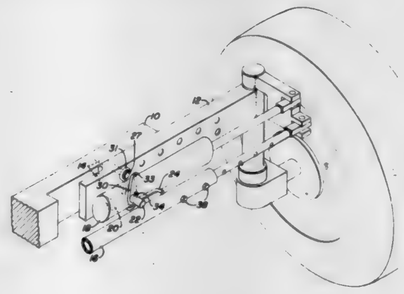
4,445,586

MOUNTING MEANS FOR A STEERING CYLINDER

Werner Schneider, Deidesheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Aug. 19, 1982, Ser. No. 409,387
Claims priority, application European Pat. Off., Aug. 27, 1981, 81106656.2
Int. Cl.³ B60B *35/10*; B62D *5/06*
U.S. Cl. 180—132 **4 Claims**

1. A mounting means for a hydraulic steering cylinder having substantially radially disposed hydraulic oil inlet and outlet connections which hydraulic steering cylinder is mounted by means of a ball joint in the region of an adjustable-track half axle of an agricultural machine, and extends substantially between and substantially parallel to the half axle and a track rod which is also adjustable in track, the hydraulic steering cylinder acting on a steering arm associated with an end of the axle, the mounting means comprising:
an anchoring member fixed in a bore provided in the adjustable-track half axle and projecting therefrom; and



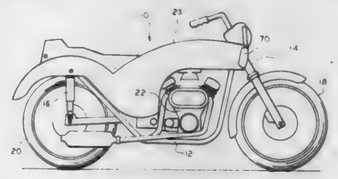
a spring member having an eye for engaging and receiving the anchoring member, an arm extending from the eye to a loop which engages and receives one of the oil inlet and outlet connections.

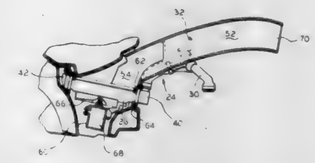
4,445,587

MOTORCYCLE COOLING SYSTEM

Michael J. Hillman, Fox Point, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Dec. 16, 1981, Ser. No. 331,132
Int. Cl.³ B62D *61/02*; B60K *11/04*
U.S. Cl. 180—229 **13 Claims**





1. A motorcycle including front and rear forks for mounting front and rear wheels respectively, a frame interconnecting said forks, a liquid cooled internal combustion engine and a radiator for said engine supporting on said frame and between said forks, the improvement comprising an air transport system for said radiator including:
means defining first and second air passages each having a forwardly facing inlet opening disposed respectively on the opposite sides of said front fork,
each air passage means extending rearwardly from its inlet,
means defining a plenum chamber disposed adjacent said radiator,
said air passages having an outlet opening into said plenum chamber,
the cross sectional area of each passage increasing gradually between its inlet and outlet ends,
an exhaust duct connected to said plenum chamber,

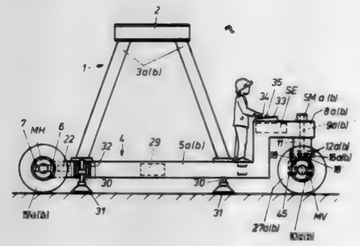
said radiator being disposed between said plenum chamber and said exhaust duct and creating a substantial resistance to air flow therebetween.

4,445,588

GUIDABLE BOGIE TRUCK FOR MOBILE CRANES

Thomas Truninger, Zurich, Switzerland, assignor to Adna AG, Vaduz, Liechtenstein

Filed Jun. 4, 1982, Ser. No. 385,118
Int. Cl.³ B60K *17/14, 41/28*
U.S. Cl. 180—233 **11 Claims**



1. A guidable bogie truck for use with a mobile crane, said guidable bogie truck comprising a frame; two pairs of wheel means, one pair being connected to one end of the frame and the second pair being connected to the opposite end of the frame, one of said two pairs of wheel means being respectively connected to pivotable wheel axles so as to enable this pair of wheel means to constitute guide wheel means; four support legs movably connected to the frame, each support leg being attached to the frame near a respective wheel means and each support leg including a footplate; lifting means connected to each of said four support legs so as to extend them towards the ground and enable their associated footplates to contact the ground or retract them upwardly towards the frame; at least one wheel drive means for turning said wheel means; at least one adjustment motor means connected to said pivotable wheel axles to cause them to pivot and thus the associated guide wheel means to turn, thereby steering the bogie truck; and a common control device to which each of said wheel drive means, each adjustment motor means and each lifting means is connected, said common control device including at least one shift element for controlling said wheel drive means and at least one direction-setting element for selecting the pivot position of said pivotable wheel axles, said common control device being constructed in such a manner that whenever the direction-setting element is actuated, it first guides at least the two support legs located nearest said pivotable wheel axles into an extended position by their associated lifting means such that the footplates thereof contact the ground and cause the guide wheels to be lifted away from the ground, then it causes said adjustment motor means to pivot said pivotable wheel axles such that the associated guide wheel means are aimed in the desired new direction of travel, and it then causes said adjustment motor means to discontinue operation.

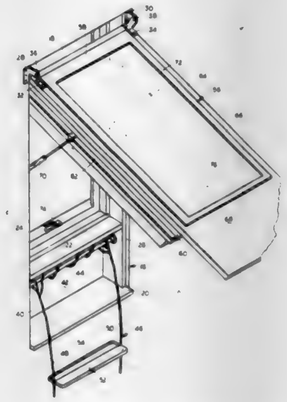
4,445,589

WINDOW ASSEMBLY INCLUDING A STORABLE FIRE ESCAPE

Bruce A. Longenecker, 4034 Newport Ave., Omaha, Nebr. 68112

Filed May 4, 1983, Ser. No. 491,601
Int. Cl.³ E06C *9/14*
U.S. Cl. 182—76 **5 Claims**

1. In combination with a building including an outside wall, comprising,
a vertically disposed rectangular first frame means mounted in the wall of the building including upper intermediate, lower and opposite side frame portions,
said intermediate, lower and side frame members defining a storage compartment therebetween having an open outer end,
a vertically disposed window support frame means positioned within said first frame means including upper, lower and opposite side frame portions,
said window support frame means being pivotally secured to said first frame means whereby said window support frame means may be pivotally moved outwardly relative to the building wall and said first frame means,
said window support frame means being pivotally movable between closed and escape positions relative to said building wall and said first frame means,



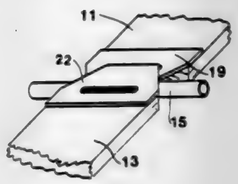
a window means mounted in said window support frame means,
a panel means provided on said window support frame means extending downwardly from the lower end of said window means which covers the open outer end of said storage compartment when said window support frame means is in its closed position,
a foldable escape ladder stored within said storage compartment which may be lowered towards the ground when said window support frame means is moved to its escape position,
and releasable locking means normally maintaining said window support frame means in its closed position.

4,445,590

SCAFFOLD PLANK CONNECTING ARRANGEMENT

Carl-Bertil Ihrman, Jönköping, Sweden, assignor to Floby Durk, Floby, Sweden

Filed Mar. 26, 1982, Ser. No. 362,052
Claims priority, application Sweden, Mar. 30, 1981, 8102009
Int. Cl.³ E04G *5/08, 7/20*
U.S. Cl. 182—222 **12 Claims**



1. A scaffold plank connection arrangement comprising:
a pair of substantially identical connector members, each member for attachment to the end of a scaffold plank;

each connector member comprising: a plate with opposed longitudinal edges having a flat portion disposed in a first plane; a flat tongue portion integrally formed with said plate portion and sharing a common edge therewith, said tongue portion disposed in a second plane substantially perpendicular to said first plane; and an elongated slit being centrally located with respect to said flat portion and extending in said flat plate portion in a dimension parallel to said second plane, said slit being spaced from said common edge and extending parallel to, and substantially co-extensively, with said common edge; and

in use said first plane being substantially horizontal, and the width of said flat plate portion corresponding to the width of a plank to which it is to be attached, with said second plane being generally vertical and said flat tongue portion extending downwardly from said common edge; said tongue having a smaller width than, and being centrally located with respect to, said horizontal plate portion so that in use when said connector members are placed in overlapping relationship said tongue portion of the upper of said connector members protrudes through the slit of the lower of said connector members whereby said connector members, and the planks to which they are attached, are inter-connected.

4,445,591

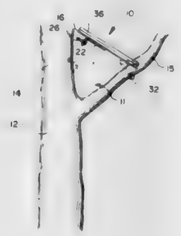
LIGHTWEIGHT, PORTABLE HUNTER'S TREE STAND

Paul M. Mitchell, 1044 Marine Dr., Bellingham, Wash. 98225

Filed Jan. 13, 1983, Ser. No. 457,573

Int. Cl.³ E04G *5/08*; A01M *31/02*; A45F *3/26*; A47C *9/10*

U.S. Cl. 182—222 **8 Claims**



1. A lightweight, portable hunter's tree stand comprising, in combination:

(a) a rigid planar seat member having opposed ends;

(b) first and second V-shaped notches formed in respective ones of said opposed ends of said planar seat member for mounting in partially surrounding face-to-face engagement with the facing sides of a pair of diverging tree branches;

(c) means secured to said planar seat member and defining a sharp knife-like edge projecting laterally beyond the edge of said first V-shaped notch formed in one end of said seat member for biting engagement with one of the pair of divergent tree branches for securely holding one end of said tree stand in stable engagement therewith;

(d) laterally extending bracket defining means releasably secured to said planar seat member adjacent said second V-shaped notch with freedom for movement into engagement with the other of the pair of divergent tree branches;

(e) first means for releasably locking said bracket defining means to said planar seat member in any desired preselected position where one portion of said bracket defining means is in generally face-to-face relation with the other of the pair of divergent tree branches; and,

(f) second means extending through said bracket defining means for fixedly securing said seat member to the other of the pair of divergent tree branches so that said planar seat member is securely and stably fixed in position between the divergent tree branches and capable of supporting the weight of a hunter thereon.

4,445,592

LUBRICATION SYSTEM

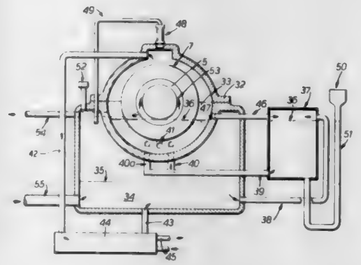
Nigel H. New, Harrow, and John B. O'Rourke, Uxbridge, both of England, assignors to The Glacier Metal Company, Limited, Middlesex, England

Filed Jul. 2, 1981, Ser. No. 279,799

Claims priority, application United Kingdom, Jul. 3, 1980, 8021803

Int. Cl.³ F16N *7/40*

U.S. Cl. 184—6.13 **11 Claims**



1. A lubrication system for supplying a liquid lubricant to at least one bearing, said system comprising:

(a) a casing;

(b) a thrust collar located within said casing;

(c) a viscosity pump freely supported on said thrust collar and having an inlet and an outlet;

(d) a main sump which serves as a main lubricant reservoir; and

(e) a closed auxiliary reservoir which serves as a priming reservoir for said viscosity pump,

wherein:

(f) the outlet of said pump is arranged to supply lubricant to said at least one bearing;

(g) the inlet of said pump is connected to said closed auxiliary reservoir at a first level;

(h) said closed auxiliary reservoir is in communication with said casing at a second level such that the level of the lubricant in said closed auxiliary reservoir and the level of the lubricant in said casing are the same when said viscosity pump is not in operation, said level of the lubricant being such that a substantial portion of said thrust collar is immersed in the lubricant;

(i) said main sump is in communication with said closed auxiliary reservoir at a level at or above said second level;

(j) said main sump is in communication with said casing at a level above said second level; and

(k) the free surface of the lubricant in said main sump is at a third level which is below said second level.

4,445,593

FLAT TYPE FEEDER CABLE

John D. Coleman; Donald L. Obst, and Heinrich A. Kraft, all of Hickory, N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Oct. 15, 1982, Ser. No. 434,507

Int. Cl.³ H01B *7/08*; B65B *9/00*

U.S. Cl. 187—1 R **10 Claims**

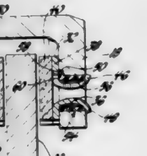
1. A flat type feeder cable useful for transmitting electrical energy from a stationary source to a moving apparatus comprising:

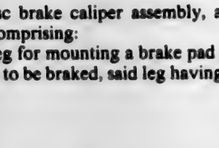
(a) a plurality of spaced apart strength members each with their respective axes arranged in a line and in substantially coplanar relationship with one another;

(b) a plurality of strand members stranded together about each of said strength members to form a core, said strand members comprising a plurality of electrical conductors circumscribed by a sheath and forming first and second alternatingly repeating, substantially equal length, first and second sections, each of said first sections having a common direction and degree of lay and each of said second sections also having a common direction and degree of lay substantially equal to but opposite to that of the first sections; and

(c) a jacket of flexible material circumscribing said core members.

6. An elevator system comprising a car, a feeder cable and a stationary terminating means, the feeder cable connected to the car and said stationary terminating means, the improvement wherein said feeder cable comprises:





(a) a plurality of spaced apart strength members each with their respective axes arranged in a line and in substantially coplanar relationship with one another;

(b) a plurality of strand members stranded together about each of said strength members to form a core, said strand members comprising a plurality of electrical conductors circumscribed by a sheath and forming first and second alternatingly repeating, substantially equal length, first and second sections, each of said first sections having a common direction and degree of lay and each of said second sections also having a common direction and degree of lay substantially equal to but opposite to that of the first sections; and

(c) a jacket of flexible material circumscribing said core members.

4,445,594

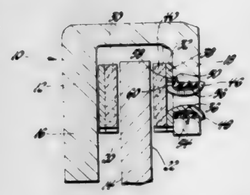
DISC BRAKE NOISE REDUCTION

Charles T. Hoffman, Jr., Waynesville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1981, Ser. No. 316,636

Int. Cl.³ F16D *65/02*

U.S. Cl. 188—73.37 **2 Claims**



1. In a disc brake caliper assembly, a noise reduction arrangement comprising:

a caliper leg for mounting a brake pad assembly on one side of a disc to be braked, said leg having a plurality of spaced openings each having an arcuately extending enlarged shoulder recess opening toward the disc;

a brake pad assembly including a brake shoe having a plurality of clench tabs formed thereon in matching relation with said plurality of spaced openings;

a plurality of rubber-like grommets respectively received in said openings, each of said grommets having a cylindrical body received through an opening and an arcuately extending flange head fitting in and occupying said arcuately extending shoulder recess and engaging said brake shoe so as to retain each grommet in its opening;

said shoe clench tabs extending through said openings and said grommets so that said grommet flange heads are axially trapped in said recesses between said leg and said shoe to assure axial and rotational retention of said grommets, said clench tabs being clenched tightly on said grommets and said leg to retain said brake pad assembly tightly on said leg, said grommets only providing a noise dampening action during braking to reduce brake noise.

4,445,595

DISC BRAKE PAD ASSEMBLIES

Heinz W. Baum, Saarbrucken Dudweiler, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

Division of Ser. No. 71,497, Aug. 31, 1979, Pat. No. 4,290,508. This application Jun. 29, 1981, Ser. No. 278,472

Claims priority, application United Kingdom, Sep. 14, 1978, 36802/78; Nov. 27, 1978, 46110/78

Int. Cl.³ F16D *65/00*

U.S. Cl. 188—73.38 **4 Claims**



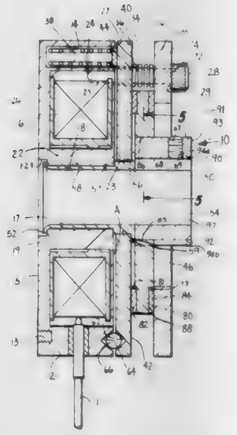
1. A friction pad assembly comprising: a flat unitary backing plate having front and rear faces, a top edge, and two lateral edges; a projection integral with and extending upwardly from the top edge of the backing plate and in the plane thereof which projection has front and rear faces, and lateral edges, and is formed with laterally facing undercuts in the lateral edges and extending from face to face of said projection; an anti-rattle spring having a bent portion wrapped around the projection and seated in and extending directly between the undercuts to retain the anti-rattle spring in position on the projection and at least one arm portion integral with the bent portion and extending from the bent portion away from said top edge and towards one said lateral edge and terminating in a free end laterally spaced from said projection; and friction material secured to the front face of the backing plate and terminating below the level of the projection; the vertical extent of said projection above the said top edge being the minimum required to provide undercuts of a size to retain the anti-rattle spring in position against accidental displacement while at all times enabling said bent portion of said spring seated in said undercuts to be moved laterally into and out of said undercuts when said spring is applied to or removed from said projection.

4,445,596

ELECTROMAGNETICALLY RELEASED SPRING APPLIED FRICTION BRAKE WITH TORQUE BOOSTER AND DRIVING FORCE DISTRIBUTOR

Paul E. Waters, Montecito, Calif.; David S. Vaughan, Erin, and Carmen J. Mustico, Jr., Elmira Heights, both of N.Y., assignors to Facet Enterprises, Inc., Tulsa, Okla.

Filed Sep. 8, 1981, Ser. No. 300,342
Int. Cl.³ B60T *13/74*; H02K *7/102*
U.S. Cl. 188—171 **17 Claims**



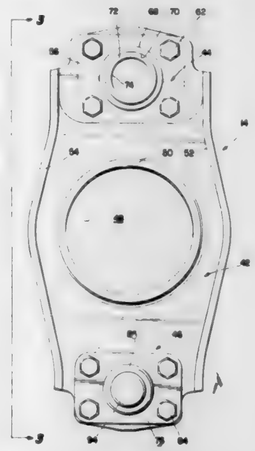
1. A friction braking device comprising:
an annular rotatable member to be braked;
a first frictional surface on said annular rotatable member;
a stationary ferromagnetic housing mounted adjacent to said annular rotatable member;
an annular ferromagnetic armature interposed said annular rotatable member and said stationary ferromagnetic housing;
means for mounting said ferromagnetic armature to said stationary ferromagnetic housing to permit relative axial movement therebetween while restraining said ferromagnetic armature against free relative rotation relative to said stationary ferromagnetic housing;
a second frictional surface on said annular ferromagnetic armature, said second frictional surface being selectively engageable with said first frictional surface to generate therebetween a frictional braking force;
first biasing means, interposed said annular ferromagnetic armature and said stationary ferromagnetic housing, for generating a first predetermined biasing force biasing said annular ferromagnetic armature axially away from said stationary ferromagnetic housing and, thereby, biasing said second frictional surface into engagement with said first frictional surface;
electromagnetic means, mounted in said stationary ferromagnetic housing and selectively energized to generate a second predetermined biasing force larger than said first predetermined biasing force, said second predetermined biasing force being larger than and in the opposite direction from said first predetermined biasing force such that, upon energization of said electromagnetic means, said annular ferromagnetic armature moves axially towards said stationary ferromagnetic housing and disengages said first and second frictional surfaces;
torque booster means comprising non-self-energizing camming means reacting to the torque reaction generated by the engagement of said first and second frictional surfaces to supplement the axial engagement force of said first biasing means on said ferromagnetic armature only when said electromagnetic means is de-energized, whereby the axial engagement force provided by said torque booster means increases the torque capacity of said friction braking device;
a hub member mounted concentrically with said annular rotatable member;
a plurality of slots contiguous with the inner diameter of said annular rotatable member; and
a plurality of radial bosses on the periphery of said hub member, said plurality of bosses engaging said plurality of slots such that said hub member drives said annular rotatable member through said slots and said bosses.

4,445,597

SPIDER ASSEMBLY FOR DRUM BRAKE

Gunnar Baltare, Portage, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 17, 1982, Ser. No. 389,526
Int. Cl.³ F16D *65/09*
U.S. Cl. 188—206 A **6 Claims**



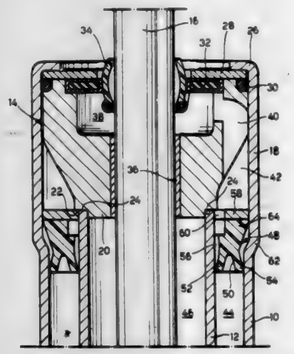
1. An improved spider-anchor pin assembly for a drum brake of the type having a spider mountable to an axle housing, a pair of generally arcuate brake shoes each having a pair of radially inwardly extending generally parallel webs straddling said spider and pivotably supported on anchor pin means fixed to the spider, and means to selectively pivot said brake shoes radially outwardly on said anchor pin means into frictional contact with a brake drum, said improved spider-anchor pin assembly comprising:
a stamped metallic spider body mountable to an axle housing, said spider body provided with a first through bore located generally at the pivot axis of said brake shoes, said spider body defining a generally flat surface extending generally normally to the axis of said first through bore and surrounding said first through aperture, a plurality of second bores opening on said flat surface and defining a given bolt hole pattern,
an anchor pin piece formed from a one-piece metallic forging, said anchor pin piece comprising a generally flat flange section defining a generally flat flange surface on at least one side thereof, said flange section provided with a plurality of third bores defining said given bolt hole pattern, and an anchor pin section extending axally outwardly from each side of said flange section, said flange surface abutting said generally flat surface with said second and that third bores in alignment and one of said anchor pin sections extending through and beyond said first through bore; and
an externally threaded fastener extending through each of said aligned second and third bores and threadably receiving a nut on the free ends thereof to removably attach said anchor pin piece to said spider body.

4,445,598

TWO-TUBE TELESCOPIC HYDRAULIC SHOCK ABSORBERS

Guido Brambilla, Turin, Italy, assignor to Societa Impianti Elettrici Telefonici Telegrafici e Costruzioni Edili S.p.A., Italy

Filed May 7, 1982, Ser. No. 376,166
Claims priority, application Italy, May 8, 1981, 67627 A/81
Int. Cl.³ F16F *9/06*
U.S. Cl. 188—322.16 **8 Claims**



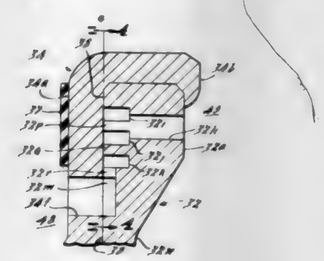
1. A two-tube hydraulic shock absorber comprising coaxial inner and outer tubes or cylinders which define an interspace therebetween, wherein a piston is slidable in the inner cylinder and includes a rod which projects from an upper end of the shock absorber through an annular head common to both cylinders, the head having an annular radial lower shoulder which engages axially a rim at the upper end of the inner cylinder, wherein the head includes a bushing in which the rod is slidable and the head is formed with an annular reservoir overlying the bushing for receiving hydraulic fluid which is drawn between the rod and the bushing from the chamber of the internal cylinder, radial passages interconnecting the reservoir and the upper part of the interspace, and wherein the interspace contains gas under pressure, one-way sealing means being provided to prevent the gas under pressure from reaching the passages and at the same time to allow oil to descend into the interspace through the passages, wherein said sealing means comprises an annular gasket (**48**; **148**; **248**) of elastomeric or similar material which has an inverted U- or V-shaped cross section and is arranged in the upper part of the interspace (**44**) so as to form a channel (**50**) which opens downwardly and is defined by two annular lips (**52**, **54**; **252**, **254**) engaged with the inner cylinder (**12**) and the outer cylinder (**10**) respectively, one (**52**; **252**) of which deforms elastically to separate from the respective cylinder and enable the oil to descend into the interspace (**44**), the deformable lip (**52**; **252**) engaging the respective cylinder in an annular zone below the rim at the upper end (**24**) of the inner cylinder (**12**), wherein the deformable lip (**52**; **252**) has an external face with a longitudinal profile which diverges upwardly relative to the respective cylinder so as to define, between the lip and the cylinder, an annular passage (**56**; **256**) normally closed at its lower end by the contact between the lip and the cylinder, wherein an upper reinforcing washer (**58**; **158**; **258**) is connected to the gasket (**48**; **148**; **248**), wherein the radial shoulder (**22**) of the head (**14**) projects radially outwards relative to the inner cylinder (**12**), wherein the washer has a radially internal flat annular edge which engages the projecting part of the shoulder (**22**), and wherein said washer includes at least one notch which exposes at least a part of the upper mouth of said annular passage (**56**; **256**).

4,445,599

COOLING MEANS FOR TORQUE CONVERTER BYPASS

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 27, 1981, Ser. No. 315,567
Int. Cl.³ F16D *13/72*
U.S. Cl. 192—3.29 **19 Claims**



1. An apparatus comprising:
A. A housing for containing a liquid;
B. Means defining a partition dividing said housing into first and second liquid chambers sealed from each other by said partition, said partition having a generally planar configuration and including a first surface area on one side thereof in wetting juxtaposition to the liquid in said first liquid chamber and a second surface area on the other side thereof in wetting juxtaposition to the liquid in said second liquid chamber;
C. Means defining a single entrance opening in said first surface area and a single exit opening in said second surface area, and
D. Means defining a plurality of elongated narrow passages each extending circuitously through said partition between said single entrance opening and said single exit opening, each of said passages having an effective length at least several times greater than the effective distance between said surfaces to provide a plurality of long and narrow but large surface area flow paths between said chambers to provide a rate of liquid flow through said passages between said chambers that varies significantly with variations in the viscosity and thereby the temperature of the liquid.

4,445,600

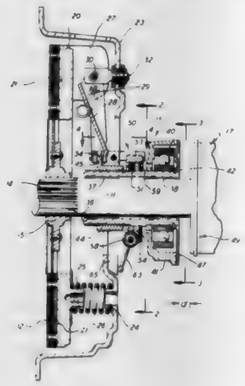
SELF ADJUSTING RELEASE MECHANISM FOR CLUTCH

Frederick C. Schmidt, Syracuse, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.

Filed May 15, 1981, Ser. No. 264,073
Int. Cl.³ F16D *13/75*, *13/54*
U.S. Cl. 192—18 R **11 Claims**

1. A self adjusting clutch release mechanism that includes
a sleeve slidably mounted upon a drive shaft behind a clutch disc,
a spider threaded upon the front end of the sleeve for receiving therein biased clutch release arms that operatively connect the spider to the clutch to urge the sleeve into a full forward position when the clutch disc is engaged,
a release bearing housing secured to the back of the sleeve for movement therewith,
a clutch brake mounted upon the shaft behind the housing,
actuating means for moving the release bearing housing rearwardly a first distance whereby the release arms disengage the clutch disc and a second greater distance whereby the housing engages the clutch brake,
sensing means for sensing the full forward position of the sleeve and thereby detecting clutch disc wear, and
a worm gear secured to the sleeve and a worm in meshing engagement with the gear that is connected to said sensing

means for advancing the spider upon the threaded end of the sleeve to compensate for clutch wear whereby the



travel distance between the housing and the clutch brake remains relatively constant.

4,445,601

VEHICLE HAVING A MAIN CLUTCH AND AN AUXILIARY CONTROLLABLE CLUTCH

Peter Hofbauer; Paulus Heidemeyer, and Romanus Scholz, all of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

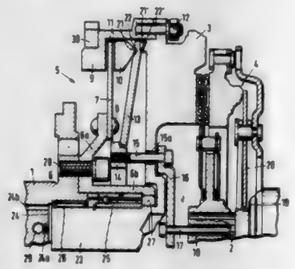
Division of Ser. No. 45,757, Jun. 5, 1979, Pat. No. 4,366,887. This application Mar. 1, 1982, Ser. No. 353,478

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824730

The portion of the term of this patent subsequent to Jan. 4, 1999, has been disclaimed.

Int. Cl.³ F16D *13/44, 25/08*

U.S. Cl. 192—48.8 **7 Claims**



1. A clutch arrangement for a motor vehicle having an internal combustion engine for driving said vehicle comprising a flywheel means interposed between a drive tansmission of said vehicle and said engine for equalizing the non-uniformity of the engine output torque and providing a driving connection between the engine and the transmission, a main clutch means arranged between said flywheel means and said transmission for providing a driving connection therebetween when engaged and for interrupting said driving connection for shifting gears when disengaged, and an auxiliary controllable clutch means, arranged between said engine and said flywheel means, for providing a driving connection therebetween when engaged and for automatically disengaging and interrupting said driving connection between the flywheel means and the engine at predetermined operating states of said vehicle, wherein said controllable clutch means comprises a disc clutch means for producing engagement free from rotational play between said engine and said flywheel means, when said disc clutch means are engaged, and wherein the direction of force for actuating said main clutch for interrupting said driving connection is opposed to the direction of force for actuating said controllable clutch.

4,445,602

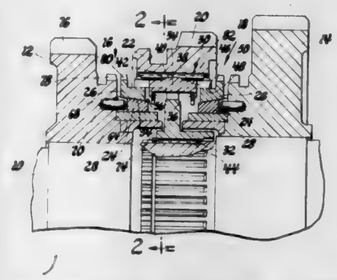
GEAR SYNCHRONIZER FOR A POWER TRANSMISSION

Howard E. Chana, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1981, Ser. No. 323,415

Int. Cl.³ F16D *13/28*; F16H *3/38*

U.S. Cl. 192—53 F **3 Claims**



2. A synchronizer and gear assembly comprising; a gear member including a hub portion; a split cone ring rotatable with said gear member and having an outer conical surface, an inner cylindrical surface, and an axially extending slot permitting radial contraction of the split cone ring when a radial force is applied to the conical surface; a synchronizer ring having a conical surface disposed for controlled abutment with said split cone ring conical surface; a split bearing ring rotatably supporting said split cone ring, journalled on said hub portion and being rotatable with said synchronizer ring, including an axial split permitting radial contraction in the presence of a radial force imposed by contraction of said split cone ring; and means for moving said synchronizer ring axially relative to said split cone ring and said split bearing ring for providing controlled abutment of said conical surfaces for transmitting a synchronizing radial force to said split cone ring for inducing an accelerating synchronizing torque at said gear member, said radial force being communicated to said split cone ring and said split bearing ring to impose accelerating synchronizing torques on said gear member at the abutment of said synchronizer ring and said split cone ring and at the bearing surfaces between said split cone ring and said split bearing ring and between said split bearing ring and said hub portion whereby the synchronizing torque is increased for a given synchronizer force.

4,445,603

SAFETY CIRCUIT FOR AN ELECTRONIC THROTTLE CONTROL OF INTERNAL COMBUSTION ENGINES

Reinhard Filsinger, Wernau, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

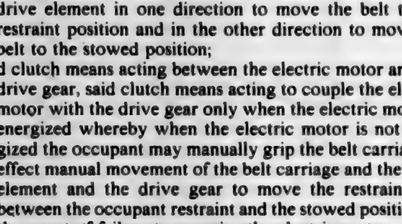
Filed Sep. 14, 1981, Ser. No. 301,948

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3034424

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.055 **12 Claims**

1. A safety circuit for an electronic throttle control for internal combustion engines in motor vehicles having a brake pedal means, an accelertor means, a stepping motor, electronic means for controlling the stepping motor, a throttle means actuated by the stepping motor, and a clutch means interposed between the stepping motor and throttle means, characterized in that the safety circuit includes means for engaging the clutch means when the accelerator means and brake pedal means are not actuated simultaneously and when the accelerator means is actuated alone or together with the brake pedal means and for



disengaging the clutch means when the brake pedal means is actuated alone.

4,445,604

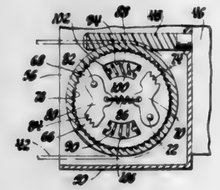
CLUTCH DRIVE FOR POWER BELT SYSTEM

Lloyd W. Rogers, Jr., Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 16, 1982, Ser. No. 348,916

Int. Cl.³ F16D *43/16*; B60R *21/10*

U.S. Cl. 192—71 **3 Claims**



1. In combination with a motor vehicle passive occupant restraint belt system having a belt carriage movable along a track by a motor-driven drive element to move the belt between an occupant restraint position and a stowed position permitting occupant ingress and egress, a motor drive mechanism for driving the drive element comprising:

an electric motor;

a drive gear coupled with the drive element for driving the drive element in one direction to move the belt to the restraint position and in the other direction to move the belt to the stowed position;

and clutch means acting between the electric motor and the drive gear, said clutch means acting to couple the electric motor with the drive gear only when the electric motor is energized whereby when the electric motor is not energized the occupant may manually grip the belt carriage to effect manual movement of the belt carriage and the drive element and the drive gear to move the restraint belt between the occupant restraint and the stowed positions in the event of failure to energize the electric motor.

4,445,605

SPRING ENGAGED FLUID RELEASED FAN CLUTCH FOR A LIVE SHAFT

Hugh K. Schilling, St. Paul, Minn., assignor to Horton Industries, Inc., Minneapolis, Minn.

Continuation of Ser. No. 180,846, Aug. 25, 1980, Pat. No. 4,355,710. This application Sep. 29, 1982, Ser. No. 426,591

Int. Cl.³ F16D *13/44, 25/063*

U.S. Cl. 192—91 A **14 Claims**

1. Apparatus for rotatably relating a first member and a second member comprising, in combination: means for rotatably mounting the first member with respect to the second member, with the first member including a friction disc; a disc-like cylinder plate having a perimeter; means for connecting the cylinder plate to the second member; means for rotatably mounting the cylinder plate to the friction disc of the first member; an annular piston having an axial hole, with the axial hole of the annular piston being slideably mounted on the connecting means, with the piston being reciprocal between the second member and the disc-like cylinder plate, with a piston chamber being defined between the disc-like cylinder

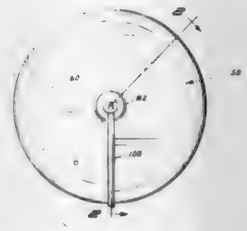


plate and the annular piston; friction facing operatively attached to the piston for engagement contact with the friction disc for rotatably relating the first and second members; means for introducing air pressure into the piston chamber for separating the disc-like cylinder plate and the annular piston; and means for biasing the annular piston towards the disc-like cylinder plate.

4,445,606

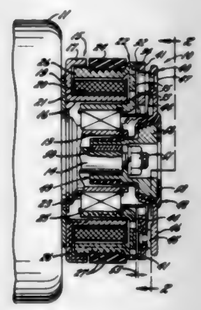
ARMATURE ASSEMBLY FOR ELECTROMAGNETIC COUPLING

Kalvin G. Van Laningham, Rockton, Ill., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Dec. 14, 1981, Ser. No. 330,610

Int. Cl.³ F16D *47/02, 27/00*

U.S. Cl, 192—106.1 **9 Claims**



1. An armature assembly for an electromagnetic coupling, said assembly comprising a forwardly disposed mounting plate and a rearwardly disposed armature, means connecting said armature and said plate for rotation in unison while permitting said armature to move toward and away from said plate, a hole extending axially through said plate, the periphery of said hole being defined by a first set of circumferentially spaced teeth and by a first set of circumferentially spaced valleys which alternate with the teeth, a hub having a second set of circumferentially spaced teeth and having a second set of circumferentially spaced valleys which alternate with the second teeth, said hub being telescoped into said hole with the teeth of each set being disposed within the valleys of the other set, elastomeric material disposed between said first and second teeth and coupling said plate and said hub for rotation in unison, the tips of the teeth of one of said sets and the bottoms of the valleys of the other of said sets being shaped so as to be engageable with

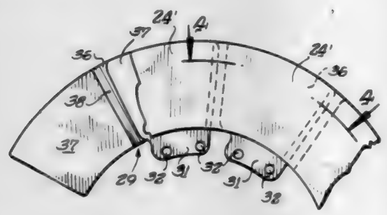
one another with a wedging action upon forward shifting of said plate relative to said hub thereby to captivate said plate against forward separation from said hub.

4,445,607

CLUTCH DRIVEN PLATE ASSEMBLY

Kerry G. Knight, Washington, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 2, 1981, Ser. No. 326,787
Int. Cl.³ F16D *13/64*
U.S. Cl. 192—107 C **4 Claims**



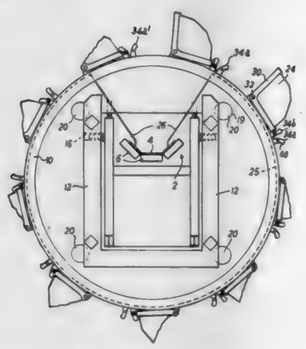
1. A clutch driven plate assembly including a hub, a clutch plate and a pair of annular friction facings carried by the clutch plate, the improvement comprising a plurality of cushion springs secured to the clutch plate adjacent the periphery thereof, each cushion spring including an inwardly extending anchoring portion and a body portion formed by a pair of offset flat areas joined by an intermediate offset portion, the anchoring portion of each cushion spring being generally radially aligned with one flat area of the body portion and the offset flat area trailing said one flat area, said offset area of each cushion spring substantially completely overlapping the opposite flat area of the next adjacent cushion spring, each friction facing being adhesively joined to substantially the entire surface extent of one flat area of each cushion spring.

4,445,608

BUCKET WHEELS AND BUCKET WHEEL RECLAIMERS

David A. Evans, and Paul J. Dowden, both of Bristol, England, assignors to DRG (UK) Limited, Bristol, England

Filed Jul. 22, 1981, Ser. No. 285,331
Claims priority, application United Kingdom, Jul. 22, 1980, 8023945
Int. Cl.³ B65G *17/36*
U.S. Cl. 198—509 **11 Claims**



1. A bucket wheel comprising:

a wheel structure including means on said structure for mounting the wheel for rotation about a central axis;

a series of buckets at the periphery of said structure;

respective pivot mounting means between the structure and the buckets for permitting pivotal movement of the buckets relative to the structure between first and second opposite end positions in which each bucket has an open entry facing in respective opposite directions peripherally of the wheel;

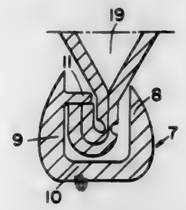
latching means on said structure for engaging and retaining the buckets in said first or second end positions in dependence upon the rotational direction of said wheel, said latching means being displaceable between engagement and release positions, said buckets being freely pivotable when released from the latching means to be displaceable between said first and second end positions, said latching means operating in response to reversal of the direction of rotation of said wheel so as to be sequentially displaced from said engagement position to said release position to permit said buckets to be sequentially pivotally moved from said first end position to said second end position and said latching means being sequentially displaced during continued rotation of said wheel in said reverse direction from said release position to said engagement position to retain said buckets in said second position, whereby the open entries of the buckets face in the direction of rotation of the wheel for either of said directions of rotation.

4,445,609

REFILLABLE SOFT TUBE FOR PACKAGING LIQUID OR PASTE PRODUCTS SUCH AS TOOTHPASTE, POLISH, SHAVING CREAM OR THE LIKE

Jacques Benarrouch, Villeurbanne, France, assignor to Sasson Jeans, Inc., New York, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,778
Int. Cl.³ B65D *85/14, 35/02*
U.S. Cl. 206—277 **6 Claims**



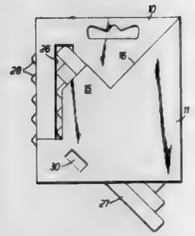
1. A soft tube for packaging a liquid or paste product, comprising a hollow tubular body of deformable material, the top end of which will accept a screw cap, while the bottom end, open before the tube is filled, is intended to be closed, flattened, then rolled upon itself after filling, characterized by comprising a third part, namely a transverse clip of U-shaped cross section having a bottom web, a pair of arms and a ledge extending from one arm, said clip being adapted to be slipped across the bottom end of the body of the tube which has been flattened and folded upon itself and the wall of the tube comprises, near its bottom end a peripheral groove locally thinning the said wall to facilitate and determine its folding upon itself in preparation for placement of the transverse clip, the distance between the peripheral groove and the bottom free edge of the wall of the tube before folding is substantially equal to the height of the clear space bounded inside the clip between the web thereof and the projecting ledge.

4,445,610

PACKAGE OF RAZORS

Richard D. Richards, Liphook, England, assignor to Wilkinson Sword Limited, England

Filed Apr. 5, 1982, Ser. No. 365,740
Claims priority, application United Kingdom, Apr. 11, 1981, 8111470; Jun. 12, 1981, 8118174
Int. Cl.³ B65D *85/62, 5/04, 5/44;* A45D *27/29*
U.S. Cl. 206—349 **11 Claims**



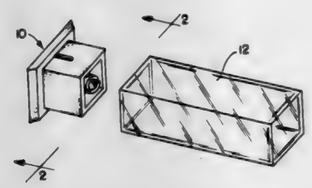
1. A package of razors including a pack, and a nested stack of razors retained within said pack in a side-by-side staggered array, said pack comprising a first panel for forming one side of the pack and having a slot therein for receiving part of each handle of said stack of razors, and for supporting the heads of the razors, and a second panel secured along one side thereof to one side of the first panel for forming the opposite side of the pack, and adapted to be secured along its opposite side to the adjacent side of the first panel to close the pack and extend across the handles of the razors so that the handles are held between the two panels, and means being provided on at least one of said panels to limit the lateral movement of said handles.

4,445,611

PACKAGE FOR DENTAL DRILLS AND THE LIKE

Koichi Shofu, Marina Del Rey, Calif., assignor to Design Applications Incorporated, Marina del Rey, Calif.

Filed Mar. 26, 1982, Ser. No. 362,395
Int. Cl.³ B65D *85/24, 6/02, 1/24*
U.S. Cl. 206—369 **9 Claims**



1. A package for the distribution of dental drills, and the like, comprising: a rigid base defining an interior space and having at least one side wall and a bottom; a single elongated split socket member mounted on said bottom at the center thereof and extending upwardly in said interior space in spaced relationship with respect to the interior surface of said side wall; and a rigid cover having at least one side wall and a closed end and an open end, said cover having its open end fitted to said base to support said cover in coaxial relationship with said base to form an enclosure for a drill, or the like, mounted in said socket member and extending upwardly from the base into the interior of the cover in spaced relationship with the side wall and closed end of the cover, the open end of said cover extending over the exterior surface of the side wall of said base when said cover is fitted to said base in friction fit therewith.

4,445,612

SELF-LOCKING BOX FOR TAPE CASSETTES AND INFORMATION FLAP

Warren R. Shepherd, 4310 Greenbush Ave., Sherman Oaks, Calif. 91423

Continuation-in-part of Ser. No. 168,763, Jul. 11, 1980, abandoned. This application Apr. 22, 1982, Ser. No. 370,787
Int. Cl.³ B65D *5/72, 5/50, 25/10, 85/67*
U.S. Cl. 206—387 **8 Claims**



1. A reusable box for releasably holding an article such as a standard cassette cartridge of the type having engageable ridge means facing outwardly from its exterior walls comprising front and rear walls connected by a bottom and side walls and having an open top forming a slot by which said article may be inserted into said box in such an orientation that said ridge faces out toward said slot, said front and rear walls and said side walls being continuous about the top of said box with their upper edges terminating in a common plane, at least one locking flap wall connected from the top of one of the front and back walls and depending downwardly therefrom into the box, said flap wall being formed and joined integrally with the front or rear wall to which it is associated and being creased thereto to lie within said box so as to naturally and freely move toward the other of said front or rear walls by a pivoting motion about the crease, said flap wall including having a dimension to the edge away from the crease so as to engage said ridge of said cartridge, said flap further extending laterally from side wall to side wall and lying within said box, and having sufficient width and structure to resist end-to-end compression as a unitary column structure by being pivotally supported on the one side by being joined to said front or rear wall, so that squeezing on the side walls of the box along the upper top half thereof by the user causes a compression to develop in both the front and rear walls and on the flap wall, the flap and associated front or rear wall flexing and buckling outwardly in response to squeezing, causing the flap to close up to the wall so that the flap and associated wall move outwardly away upon such squeezing after which the cartridge is freely slideable out of the box, the latter, after release, returning to its original shape for reuse and the flap returning to a relaxed state at a ridge engaging angle with the wall, so that when said cassette is reinserted, it is reengaged by the flap.

4,445,613

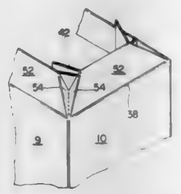
PROTECTIVE SHIPPING AND DISPLAY CARTON

Benjamin J. Cassidy, Waldwick, N.J., assignor to International Paper Company, New York, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,885
Int. Cl.³ B65D *85/42*
U.S. Cl. 206—418 **15 Claims**

1. A one piece blank of foldable and resilient sheet material, such as paperboard, the blank being adapted to be folded to form a container, such as a container for a light bulb, the blank being of generally rectangular form and having a plurality of main rectangular panels, the outer two of which have free edges, the inner and remaining panels each being joined by a main fold line and being joined to each of the outer two panels by a main fold line, to thereby define a plurality of main fold lines, a lower portion of each of the main fold lines being cut to thereby define a plurality of bottom closure forming panels, an

upper portion of each of main fold lines being cut to define a plurality of uppermost top closure flaps, a fold line running at right angles to the main fold lines and below the uppermost top flaps, to define a plurality of lowermost top closure flaps, the ends of the uppermost top closure flaps being cut from the adjacent lowermost top closure flaps to form free ears on the



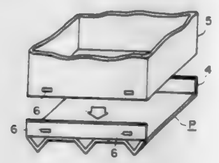
uppermost top closure flaps, a fold line on each of the two ends of each lowermost top closure flap, the lowermost top closure fold lines extending from the lowermost corners of the lowermost top closure flap to the lowermost corners of the corresponding uppermost top closure flap, whereby a carton formed from the blank exhibits a duality of final forms each of which is useful as a container.

4,445,614

PACKAGING BOX WITH PALLET

Mitsugi Mitsumori; Hiroaki Hosaka; Hiroshi Sato, and Kouichi Kondou, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 3, 1981, Ser. No. 299,260
Claims priority, application Japan, Oct. 14, 1980, 55-143328
Int. Cl.[3] B65D *19/00*
U.S. Cl. 206—599 **5 Claims**



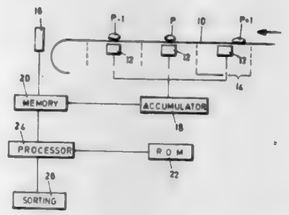
1. A packaging box with a pallet comprising a substantially one-piece rectangular foldable member including a main rectangular panel defining a loading surface region having top and bottom surfaces, two end edges and two side edges, end cleats extending along said two side edges of said loading surface region, a plurality of foldable panels extending parallel to each of said two end edges defining a V-shaped support beam on the bottom surface of said main panel adjacent each end edge and two end panels being bonded to the lower surface of said main panel and said end cleats being disposed perpendicular to the upper surface of said main panel; a bottomless container disposed on said pallet in such a manner that a lower end portion of the container is disposed between said end cleats and means for connecting said lower end portion to said end cleats whereby the upper surface of said main panel forms an interior bottom surface of said container.

4,445,615

SORTING SYSTEM CALIBRATION

Rolf C. Böhme, Kyalami, and Max M. Lazerson, Northcliff, both of South Africa, assignors to General Mining Union Corporation Limited, South Africa

Filed Dec. 3, 1980, Ser. No. 212,514
Claims priority, application South Africa, Dec. 4, 1979, 79/6566; Jul. 15, 1980, 80/4247
Int. Cl.[3] B07C *5/346*
U.S. Cl. 209—555 **5 Claims**



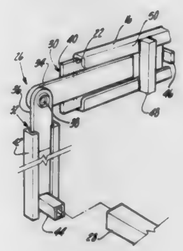
1. A method of sorting which includes the steps of causing a plurality of particles to move sequentially past at least one detector which is responsive to the presence of a desired property in the particles, for each particle, producing from the detector's response an output signal which is dependent on the degree to which the desired property is present in the particle, determining the spacing between the particle and at least one adjacent particle, and applying to the output signal at least one calibration factor which is dependent at least on the spacing and on the output signal of the adjacent particle.

4,445,616

CARGO CONTAINER WITH ADJUSTABLE RETAINING MECHANISM

Fred Mancusi, Kenosha, Wis., assignor to American Motors Corporation, Southfield, Mich.

Filed Jun. 7, 1982, Ser. No. 385,366
Int. Cl.[3] A47F *1/00*
U.S. Cl. 211—13 **7 Claims**



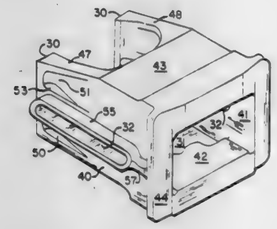
6. A cargo container for carrying one or more articles in stored positions comprising:
a frame structure;
a support structure connected to the frame structure, for supporting the articles in their stored positions; and
an adjustable retaining rail structure connected to the frame structure and movable between an access position for loading and unloading of the articles, and a retaining position for retaining the articles in their stored positions, the retaining rail structure including,
a retaining bar which in the retaining position limits displacement of the articles from their stored positions, and in the access position permits free movement of the articles from their stored positions,
at least one slide member, interconnecting the retaining bar and the frame structure for providing sliding movement of the retaining bar in travel between the access position and the retaining position, wherein said slide member is supported and retained on said frame structure in both of said access and retaining positions, and
at least one hinge mechanism cooperative with the slide member for providing pivotal movement of the retaining bar in travel between the access position and the retaining position.

4,445,617

STRIKER FOR A RAILWAY COUPLER

William O. Elliott, Pittsburgh, Pa., assignor to McConway & Torley Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 302,772, Sep. 16, 1982, abandoned. This application Aug. 25, 1982, Ser. No. 410,080
Int. Cl.[3] B61G *9/20*
U.S. Cl. 213—60 **14 Claims**



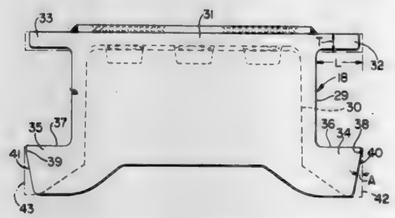
1. A striker for attachment to a sill of a railway vehicle to transmit forces from a draft key engaged with the shank of a coupler, said striker comprising top, bottom and side walls projecting from a front striker face defining a pocket opening for receiving a shank portion of a coupler, said bottom wall extending between a forward lower part of said side walls for supporting the shank portion of the coupler while extending into said pocket opening, said side walls having aligned horizontal key slots to receive portions of said draft key, front draft lugs on end portions of said side walls facing opposite said striker face for arrangement in a force-transmitting relation with a coupler draft gear, rib sections projecting outwardly from said side walls for attachment to said sill of a railway vehicle, and side wall sections projecting inwardly into said pocket opening above and below the rib sections on each side wall to define recesses therein to inwardly shift the neutral axis of the wall section under an imposed load.

4,445,618

SPRING BIASED ROTARY RAILWAY CAR COUPLER CARRIER

Frederick C. Kulieke, Jr., Tallmadge, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 30, 1981, Ser. No. 335,828
Int. Cl.[3] B61G *5/00, 7/10, 9/22*
U.S. Cl. 213—61 **5 Claims**



1. A railroad car coupler assembly comprising:
a yoke;
a car coupler having a coupler head and a coupler shank;
means for mounting a butt end of said coupler shank within said yoke;
a striker having a central aperture through which said coupler shank extends, said striker also having an elongated chamber including a pair of sidewalls and a pair of opposing stops which extend inwardly from said sidewalls into said chamber; and,
a carrier for resiliently supporting said coupler shank, said carrier being slidably received within said striker chamber and being spring loaded against said coupler shank, said carrier including a pair of aligned oppositely outward extending lugs for engaging the underside of said chamber stops to maintain said carrier in said chamber and a pair of aligned oppositely outward extending wings disposed in spaced parallel relation to said lugs, said lugs each having a sloping side portion which slopes away from a respective adjacent chamber sidewall in a direction away from said coupler shank, said lugs extending further outwardly from said carrier than said wings so as to be spaced closer to said chamber sidewalls and said side portions of said lugs being sloped at sufficient angles for allowing limited tilting of said carrier within said chamber around an axis longitudinally bisecting said car coupler.

5. A carrier adapted to be received in a vertically elongated chamber of a striker in a rotary railroad car coupler assembly when the striker is disposed in a normal horizontal operating position, said carrier comprising:
a body portion;
a top plate covering said body portion and having a pair of oppositely extending wings which are in cantilevered relation to the opposite sides of said body portion; and,
a pair of lugs which extend oppositely outward from the opposite sides of said body portion in spaced parallel relation to and a distance greater than said top plate wings, whereby said lugs are adapted to be more closely spaced toward the opposed sidewalls of an associated striker chamber when said carrier is inserted thereinto, said lugs further including flat side portions which slope toward each other in a direction away from said top plate, whereby said carrier is adapted to have the capability of limited tilting within an associated striker chamber around an axis longitudinally bisecting the associated railroad car coupler assembly, said tilting serving to accommodate the rotation of the car coupler assembly and preventing a binding of said carrier within the chamber.

4,445,619

PEDAL BIN

Nick Kubic, Dollard des Ormeaux; Claude Bell, Boucherville, and Serge Seguin, Fabreville, all of Canada, assignors to Les Produits Menagers Culinaire (Baie d'Urfe) Inc., Baie d'Urfée, Canada

Filed Feb. 16, 1983, Ser. No. 466,954
Claims priority, application Canada, Dec. 23, 1982, 418422
Int. Cl.[3] B65D *43/26*
U.S. Cl. 220—263 **6 Claims**



1. In a pedal bin of the type comprising a removable basket

eccentrically suspended about an axis inside a rigid upwardly opened box provided with a lid pivotably mounted on one upper flange of said box, in parallel relationship with respect to the suspension axis of the basket, opening of said lid being achieved by action of a pedal against the bottom of the basket to swing it around its suspension axis, said swinging moving upwardly the end of the basket diagonally opposed to the pedal, said end being provided with means for tilting up the lid, the improvements wherein:

the pedal forms an integral part of the basket and the box is provided with an opening giving free access to the pedal from the outside of said box;

the basket is suspended about two pivots located in its forward upper part, each pivot engaging a hinge integral to the box; and

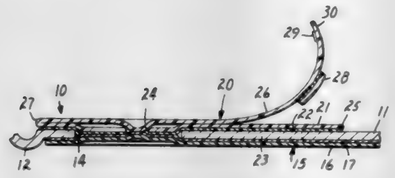
said means for tilting up the lid comprises a finger integral to the basket, said finger projecting upwardly from the upper flange of the basket adjacent the upper flange of the box where the lid is mounted, and having a rounded end coming into contact and following the profile of a cam fixed to the lower part of the lid, said cam being provided, at one end with a stopper to avoid too great opening of the lid.

4,445,620

TAMPER-PROOF CLOSURE FOR CONTAINER

Wilfred R. Brochman, Oakdale, and Richard A. Patterson, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 21, 1982, Ser. No. 380,517
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—271 **4 Claims**



1. A container end assembly comprising:

a container end having a preformed pour opening, an interior and exterior surface, and an easy-opening closure system covering said pour opening comprising:

an interior tape having an adhesive on one surface adhered to the interior surface of the container end and covering said pour opening,

an exterior tape covering said pour opening and adhered to said interior tape in the area of said pour opening and being adhered to the exterior surface circumjacent said pour opening,

a pull tab secured to said exterior tape at one end thereof which extends over said exterior tape, and

rupturable means for holding said pull tab to the exterior tape to define a tamper-proof seal for the pull tab.

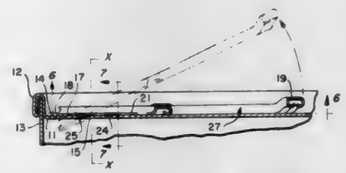
4,445,621

EASY-OPEN CONTAINER WALL

William T. Saunders, Weirton, W. Va., assignor to Stoffel Technologies, Inc., Tuckahoe, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,160
Int. Cl.³ B65D *17/36, 17/34*
U.S. Cl. 220—273 **10 Claims**

1. An easy-open container wall comprising a line of weakness in said container wall defining a tear portion at least partially removable from said container wall, a tab having a line of weakness severing nose end and a lifting end and having hinge means for permitting hinged movement of one portion of said tab relative to another portion of said tab along a hinge line to bring said nose end into forceable engagement with said container wall to rupture said line of weakness and bend a segment of the tear portion inwardly upon lifting said lifting end of the tab, and attachment means for attaching said tab to said tear portion at locations on both sides of said hinge line.

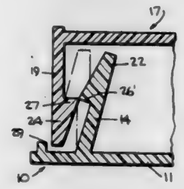


4,445,622

SELF-LOCKING PILFER PROOF CONTAINER

Leonardo Sideri, 47 East 44th St., New York, N.Y. 10017

Filed Jul. 9, 1982, Ser. No. 396,722
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 **9 Claims**



1. A non-reusable self-locking container comprising:

a first panel including side wall means extending from a surface thereof and provided with a tab defining cam means and a locking surface;

a second panel including a wall means extending from a surface thereof and provided with a tab defining cam means and a locking surface;

said sidewall means and said wall means being adapted to be telescopically disposed relatively to one another to close said container, said cam means of said first and second panel tabs engaging one another during telescoping movement of said sidewall means and said wall means resiliently to flex at least one of said sidewall means and said wall means away from the other, said locking surfaces assuming a condition of mutual engagement to permanently lock said panels against separation upon completion of said telescoping movement;

said first and second panels once closed being locked against entry to the container until the permanent and visible destruction of the container.

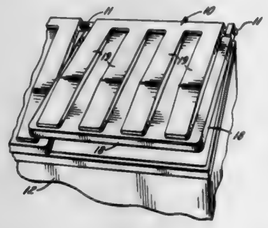
4,445,623

MOLDED TRASH CONTAINER COVER

Byron M. Kolling, 23W040 Seneva Rd.; Jack Bergbreiter, 410 Evergreen Ave., both of Glen Ellyn, Ill. 60137, and Roy Hunn, 21W179 Woodview, Itasca, Ill. 60143

Filed Sep. 30, 1982, Ser. No. 430,278
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—343 **3 Claims**

1. A container cover comprising a one-piece body formed of plastic and shaped to have peripheral side flanges to stiffen the outer shape of the cover, said cover also having a plurality of rigs spaced across the body to stiffen the cover into a substantially planar configuration, and said cover having a pair of cylindrical aligned bosses in two of said flanges near one edge of said body adapted to receive a hinge rod and thus serve as reinforced hinges for the cover.

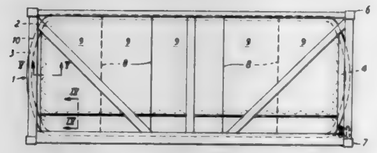


4,445,624

TANKS FOR TRANSPORTING LIQUIDS

Martin S. Gill, 37B Tomlins Grove, London E3, England

Filed Jun. 1, 1982, Ser. No. 383,430
Claims priority, application United Kingdom, May 29, 1981, 8116548
Int. Cl.³ B65D *90/06*
U.S. Cl. 220—449 **12 Claims**



1. A tank structure for transporting liquid, said structure comprising an elongate tank with closed ends, framework supporting said tank, said framework including tank-bearer members attached to said tank at attachment positions, and a detachable insulating cover for said tank, said cover being detachably securable in position for covering the surface area of the tank, said cover being formed of panel-like sections, each said section comprising a sealed envelope having moisture-impervious inner and outer skins, said inner and outer skins being sealingly interconnected around the peripheries of the respective envelopes, a filling of insulating material within each said envelope, edges of adjacent sections coinciding with said attachment positions of said bearer members to said tank.

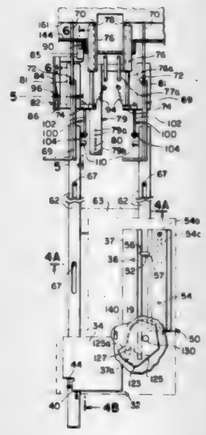
4,445,625

VENDING MACHINE HAVING ACCESS BLOCKING MEMBERS

Evelyn Friedman, and William R. Carswell, both of P.O. Box 149, Whitehall, N.Y. 12887

Continuation-in-part of Ser. No. 284,330, Jul. 17, 1981, Pat. No. 4,410,104. This application Sep. 2, 1982, Ser. No. 414,381
Int. Cl.³ B65H *31/20*
U.S. Cl. 221—241 **5 Claims**

1. A vending apparatus having an enclosure with an access opening formed therein for removal of an article therethrough from one side thereof by a customer on payment of a fee, means for supplying articles to be vended to the other side of said access opening, access opening control means including gating means and gating actuating means, said gating means being movable between a first position blocking removal of any articles through said access opening and a second position in which at least one article can be removed through said access opening, said gating actuating means being operable from a starting condition to an intermediate condition to shift said gating means from its first position to its second position and releasably retain said gating means in its said second position, said gating actuating means being responsive to removal of an article through said access opening to release said gating means, and resilient means for shifting said gating means from its second position to its first position following release thereof by said gating actuating means, wherein the improvement comprises, said gating means including at least two blocking members, and support means movably supporting said blocking members for mutually independent movement between said first and second positions with said blocking members in said first position extending across said access opening and blocking the same.

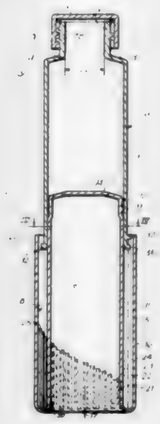


4,445,626

METERING DEVICE FOR DISPENSING SELECTED AMOUNTS OF VISCOUS MATERIAL

Cliff Steffen, Bethel, Conn., and Nicholas P. Cappelli, Wappingers Falls, N.Y., assignors to The Purdue Frederick Company, Norwalk, Conn.

Filed Feb. 10, 1982, Ser. No. 347,506
Int. Cl.³ B67D *5/32*
U.S. Cl. 222—39 **12 Claims**



1. A metering device for dispensing selected amounts of viscous material, said device comprising

a substantially cylindrical container for viscous material having a first open base end of a first diameter and a spaced opposite second closed base end with an opening

therethrough of a second diameter smaller than said first diameter;

a substantially cylindrical plunger of a third diameter slightly smaller than said first diameter and coaxially slidably mounted in said container in a substantially snug manner, said plunger having an axis and a closed plunger head substantially perpendicular to said plunger axis; and

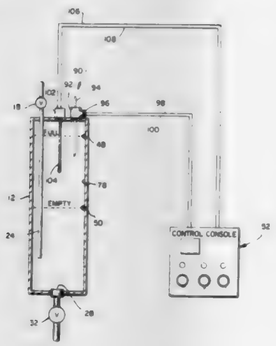
positioning means for selectively positioning said plunger and said container relative to each other at a plurality of different axial positions, said positioning means including a measuring member having an axis, a substantially cylindrical inner surface of a fourth diameter greater than said first diameter, a first base end, a spaced opposite second open base end and a plurality of ribs extending laterally and radially from said inner surface substantially parallel to said member axis, beginning at said first base end and having different lengths from said first base end, said plunger at each of said axial positions forcing a predetermined measured amount of said viscous material out of said opening of said container.

4,445,627

APPARATUS AND METHOD FOR ADJUSTMENT OF VOLUMETRIC CAVITIES FOR GRAVIMETRIC METERING OF LIQUIDS

Vladimir Horak, 353 High St., Closter, N.J. 07624

Filed Oct. 5, 1981, Ser. No. 308,585
Int. Cl.³ B67D *5/06*
U.S. Cl. 222—54 **8 Claims**



1. In a metering tank containing adjustable means for varying the volumetric capacity of a liquid metering cavity within said tank to contain a selected volumetric charge of liquid to be dispensed,

gravimetric adjustment apparatus for varying the selected internal volumetric capacity of said liquid metering cavity to compensate for density changes in said liquid resulting from variations in temperature, said adjustment apparatus comprising

liquid displacement means comprising a solid elongated member positioned to extend into the interior of said metering cavity and to be immersed in the liquid charge therein, for reducing the volumetric capacity of said cavity by an amount equal to the volume of said elongated member which is immersed in said liquid,

and fine precision adjustment means mounting said liquid displacement means for movement relative to said liquid metering cavity whereby said elongated member may be selectively advanced into the withdrawn from said cavity in uniform fractional increments,

said liquid displacement means having a fully-inserted position in which it reduces the capacity of said liquid metering cavity by an amount sufficient to contain a precise selected adjusted volumetric charge of the liquid to be dispensed at the temperature of maximum density of said liquid,

said mounting means being adapted to withdraw said liquid displacement means from its fully-inserted position by selected amounts determined by decrease in density of the fluid at ambient temperature, whereby to increase the volumetric capacity of said cavity to contain a charge of liquid weighing the same as the selected volumetric charge of said liquid at its temperature of maximum density,

microcomputer means having a memory storing the temperature/density characteristics of said liquid,

means for measuring the ambient temperature of the liquid in said cavity and for feeding temperature measurement information to said microcomputer,

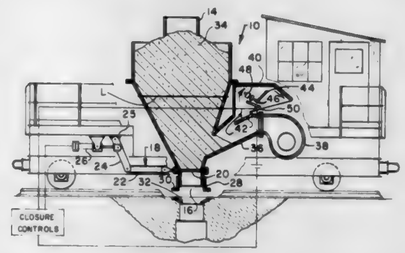
and means operatively coupling said microcomputer means to the mounting means for said liquid displacement means.

4,445,628

APPARATUS FOR SENSING EMPTY HOPPERS

George R. Cain, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 24, 1981, Ser. No. 334,128
Int. Cl.³ F27D *3/00*
U.S. Cl. 222—66 **9 Claims**



1. In a gravity operated hopper for granular material having a top charging opening, sidewalls converging downwardly to form a bottom discharging opening, closure means for said bottom discharging opening, control means for deactivating said closure means to allow discharge of granular material and control means for activating said closure means, wherein the improvement comprises:

(a) means for generating an air current;

(b) an air current conveying duct connected at one end to said means for generating an air current and at its other end connected exteriorly to the sidewalls of the hopper adjacent the bottom discharging opening to surround a lateral opening in said sidewalls and extending upwardly and outwardly therefrom so that air is exhausted primarily into the hopper when the hopper is emptied of granular material;

(c) an air exhausting duct extending from said air conveying duct between said means for generating an air current and the hopper so that air is exhausted through said air exhausting duct when the hopper contains granular material;

(d) a vane interposed across said air exhausting duct and pivotally mounted so as to pivot to a first position when air is primarily exhausted into said air exhausting duct and to a second position when air is primarily exhausted through the hopper; and

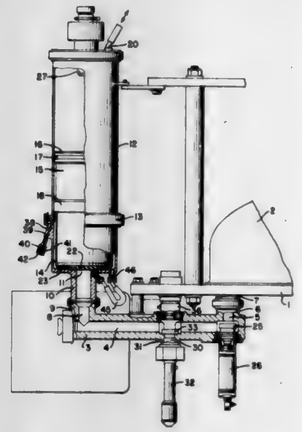
(e) switching means connected in electrical circuit with the control means for activating the closure means and interacting with said vane, such that after the control means for deactivating the closure means has been employed to begin discharge of, then entirely empty the hopper of granular material, the vane is pivoted from its first position to its second position so that the closure means will be activated.

4,445,629

CONTAINER FILLING MACHINE PRODUCT DISPENSING CYLINDER

Frederick B. Doerfler, Pittsburgh, Pa., assignor to Horix Manufacturing Company, Pa.

Filed Nov. 26, 1980, Ser. No. 210,832
Int. Cl.³ B67D *5/58*
U.S. Cl. 222—148 **2 Claims**



1. In a pressure-fill container filling machine, a vertical dispensing cylinder having an inlet and outlet port in its lower end for liquid product, a piston in the cylinder, the piston being movable upwardly in the cylinder by liquid product forced up through said port, the space in the cylinder below the raised piston forming a volume chamber, the upper part of the cylinder being provided with an inlet for air under pressure to move the piston downwardly to expel liquid product from said volume chamber through said port, the side of the cylinder at the upper end of the volume chamber being provided with a bleed passage for air, and manually operable means normally closing the bleed passage, the improvement comprising a tubular member extending outwardly from said port, said tubular member being provided with a by-pass outlet opening, said cylinder having an inlet opening spaced from said port, a by-pass passage connecting said by-pass outlet opening with said inlet opening, and a check valve in said by-pass passage permitting flow of liquid product from said tubular member only toward said inlet opening for flushing air out through said bleed passage while the piston is held in its lowest position.

4,445,630

EMERGENCY RECOVERY SYSTEM

Rayburn L. Gartman, 9217 Scranton, Houston, Tex. 77075; Donald L. Gartman, 519 Eastlake, Houston, Tex. 77034, and Kenneth T. Kimmons, 855 Regal, Houston, Tex. 77034

Filed Feb. 25, 1982, Ser. No. 352,375
Int. Cl.³ B67D *5/60*
U.S. Cl. 222—464 **5 Claims**

1. An emergency fluid removal system for transport tanks comprising in combination:

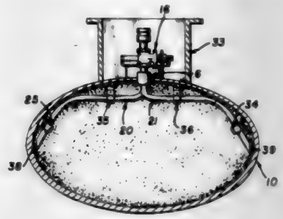
a fluid transport tank having an elongated horizontal configuration in normal upright position, having an opening therein located on the upper surface in the normal upright position for loading and unloading fluids and cover means for closing said opening,

a first valve mounted on said tank, having a conduit extending therefrom, adjacent to a first interior surface of said tank and spaced away therefrom to a point along said surface, and bracket means attached to said interior surface and to said conduit to hold said conduit in place,

a second valve mounted on said tank, having a conduit extending therefrom adjacent to a second interior surface of said tank opposite to said first surface and bracket means attached to said interior surface and to said conduit to hold said conduit in place,

each conduit and said valve attached thereto being in fluid communication with the interior of said tank, and

said valves being located along the upper surface of said tank in said normal upright position and said conduits terminating at the sides at approximately the widest point of said tank cross section, whereby fluids in said tank may be removed through said valves and conduits when said tank is capsized on one side thereof and said upper surface in the normal position is generally on a horizontal axis through said tank such that fluids in said tank can be safely removed therefrom.

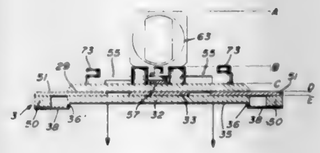


4,445,631

PATCH POCKET-FORMING, FOLDING AND SETTING APPARATUS

Fernando del Castillo-Olivares, 555 Blackwood St., Greenfield Park, Canada J4V 1H4

Filed May 28, 1982, Ser. No. 383,366
Int. Cl.³ A41H *43/00*; D05C *9/04*
U.S. Cl. 223—1 **12 Claims**



1. A patch pocket-forming, folding and setting apparatus comprising:

(a) a holding blade for holding a precut pocket patch with the folding margin of said pocket patch extending beyond the edge of said holding blade, all around except for the pocket opening;

(b) a patch-forming and folding assembly comprising a lower plate having a substantially flat underface and a downwardly-extending rim at the periphery of said lower plate, except in the region of said pocket opening, to define a cavity at said underface, the contour of said holding blade and of the inside of said rim of said lower plate corresponding to a folded pocket;

(c) means to support said holding blade and said assembly one below the other, with said holding blade and underface substantially parallel, horizontal and in register, from the end corresponding to said pocket opening;

(d) means to raise and lower said holding blade and said assembly while in registry independently of one another, said holding blade insertable within said cavity upon rela-

tive movement of said blade and assembly toward each other, thereby the folding margin of said pocket patch is caused to be shaped and creased downwardly by said rim, with the main portion of said pocket patch sandwiched and clamped between said underface and said holding blade;

(e) folding blades carried by said forming and folding assembly for inward and outward movement relative to the same between a retracted outward position clearing the inside of said rim and inward position underlying the underface of said holding blade; and

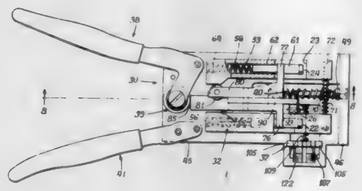
(f) means to cause inward and outward movement of said folding blades to fold the downwardly-extending margin of said pocket patch inwardly around the edge of said holding blade and under the latter during said inward movement.

4,445,632

FIBER OPTIC SCRIBE AND CLEAVE TOOL AND METHOD

Mark Margolin, Lincolnwood, and David Margolin, Skokie, both of Ill., assignors to East-West Precision, Inc., Chicago, Ill.

Filed Dec. 28, 1981, Ser. No. 334,531
Int. Cl.³ C03B *37/16*; B26F *3/00*
U.S. Cl. 225—2 **22 Claims**



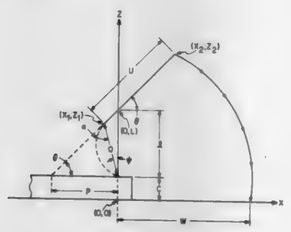
15. A method for scribing and cleaving optical fibers comprising the steps of: supporting and holding a rectilinear section of fiber to be scribed and cleaved at laterally spaced locations without any support therebetween, scribing the exterior contour of said fiber section along an arcuate path in and along a plane located intermediate said spaced locations and lying normal to the longitudinal axis of said section, and selectively tensioning said fiber section with substantially axially applied tension forces to effect cleavage of said section in and along said plane.

4,445,633

AUTOMATIC BONDER FOR FORMING WIRE INTERCONNECTIONS OF AUTOMATICALLY CONTROLLED CONFIGURATION

Harry B. Bonham, Jr., Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 11, 1982, Ser. No. 348,108
Int. Cl.³ B23K *31/02*; H01L *21/90*
U.S. Cl. 228—102 **11 Claims**



1. An automatic bonder for bonding at least one wire between a first location on a workpiece and a second location on a substrate on which the workpiece is carried, comprising:

a wire feeding head,

means for determining a height measurement between the first and second locations,

means using at least the height measurement for producing a desired wire configuration after the wire has been bonded to the first location and prior to when the wire is bonded to the second location, including:

a computer programmed to move said wire feeding head along a predetermined path relative to the workpiece to form the wire,

said path being from the first location:

upwardly to dispense a sufficient amount of wire to form an arcuate shaped portion,

away from the second location,

downwardly to bend the dispensed wire into an arcuate configuration,

upwardly to dispense a sufficient amount of wire to form a straight line configuration to reach the second location,

and circularly to bring said head to the second location,

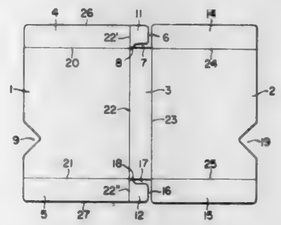
and means for bonding the wire at the first and second locations.

4,445,634

BLANK SHEET OF PACKAGING CASE FOR VIDEO TAPE CASSETTE

Yoshihiro Sato, Tokyo, Japan, assignor to Dai Nippon Insatsu K.K., Tokyo and Victor Company of Japan, Ltd., Kanagawa, both of, Japan

PCT No. PCT/JP82/00040, 371 Date Sep. 17, 1982, 102(e) Date Sep. 17, 1982, PCT Pub. No. WO82/02791, PCT Pub. Date Aug. 19, 1982
PCT Filed Feb. 12, 1982, Ser. No. 420,239
Claims priority, application Japan, Feb. 13, 1981, 56-18177[U]
Int. Cl.³ B65D *5/02*, *85/672*
U.S. Cl. 229—40 **2 Claims**



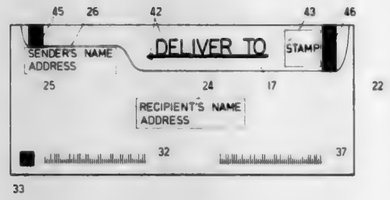
1. A blank sheet of a case for packaging a video tape cassette, comprising a back panel (3) of elongated rectangular shape having two long edges and two short edges, a first main panel (1) connected to one long edge of the back panel (3) by way of a folding crease line (22), a second main panel (2) connected to the other long edge of the back panel by way of a folding crease line (23), a pair of first side panels (4, 5) connected to both side edges of the first main panel (1) in directions perpendicular to the lengthwise direction of the back panel (3) by way of folding crease lines (20, 21), a pair of second side panels (14, 15) connected to both side edges of the second main panel (2) in directions perpendicular to the lengthwise direction of the back panel (3) by way of folding crease lines (24, 25), and a pair of side flaps (11, 12) connected respectively to edge parts of the first side panels (4, 5) on the side of the back panel (3) by way of folding crease lines (22', 22''), said side flaps (11, 12) having respectively recesses formed along said short edges of the back panel (3) so that gaps (7, 17) are respectively formed between the side flaps and the short edges of the back panel (3), said side flaps (11, 12) having integral projections (8, 18) disposed respectively at proximal parts thereof and protruding to reach respectively said short edges of the back panel (3) without being connected to the short edges thereby to cause said recesses to terminate short of the folding crease lines (22', 22'') between the first side panels and the side flaps, surfaces to be opposed to each other of the first and second side panels being formed as heat bondable surfaces.

4,445,635

TWO WAY MAILING ENVELOPE

Arthur C. Barr, 1714 Yahara Pl., Madison, Wis. 53704

Continuation-in-part of Ser. No. 259,574, May 1, 1981, abandoned. This application May 19, 1982, Ser. No. 379,658
Int. Cl.³ B65D *27/06*
U.S. Cl. 229—73 **8 Claims**



1. A two way postal envelope comprising:

(a) a front panel and a rear panel peripherally joined except along one edge of each panel, the unjoined edges of each panel being adjacent to one another;

(b) a first flap extending from the front panel along the one edge not joined to the rear panel, the first flap folded over and sealed to the rear panel;

(c) a second flap extending from the rear panel along the one edge not joined to the front panel, the second flap being folded over and disposed between the front and rear panels, the second flap having a portion thereof of uniform width that is narrower in width than the remainder of the flap and which is positioned at one end of the flap, the second flap having activatible adhesion on at least part of the side of the flap that faces the rear panel when the second flap is disposed between the front and rear panels, whereby, after the envelope has been opened by cutting along the intersection between the first flap and the front panel, the second flap may be pulled out of the envelope by a user and folded over and sealed to the front panel;

(d) return address markings on the outward side of the front panel in a return address position such that the markings will coincide with the position of the narrower portion of the second flap and will not be covered by the second flap when it is pulled out and sealed to the front panel, and wherein the wider portion of the second flap will cover the upper right hand portion of the face of the front panel wherein the original postage and cancellation markings are placed;

(e) an optical scanner readable blanking code marking and a return address bar code both imprinted in the lower left hand corner of the outward face of the front panel; and

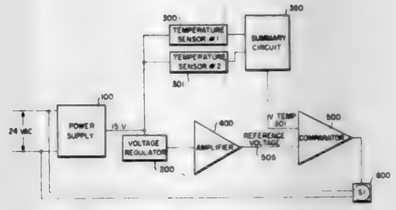
(f) an optical scanner readable key marking on the narrow portion of the second flap which will be exposed when the second flap is sealed ot the front panel whereby the key marking can be utilized ot key an optical scanner to read the return address in the return address block of the face of the front panel rather than the direct address or to a key a bar code reader to read the bar code in the lower left hand corner of the front panel.

4,445,636

TEMPERATURE COMPARISON APPARATUS AND METHODS

Donald Peters, Westfield, Mass., assignor to American Stabilis, Inc., Lewiston, Me.

Filed Aug. 25, 1982, Ser. No. 411,284
Int. Cl.³ F24D *3/00*
U.S. Cl. 236—20 R **12 Claims**



1. A temperature comparison apparatus comprising:

first temperature-sensing means for supplying a current proportional to the temperature of a first source;

second temperature-sensing means for supplying a current proportional to the temperature of a second source;

summing means for providing a first signal proportional to the sum of the currents from said first temperature-sensing means and said second temperature-sensing means; and

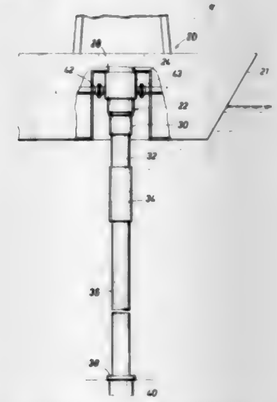
comparator means connected to a preset reference level for producing a second signal indicating the relationship between said first signal from said summing means and said preset reference level.

4,445,637

AIR REGISTER WITH AUTOMATIC ZONE CONTROL

Warren R. Hedrick, Holland, Mich., assignor to Interpace Corporation, Parsippany, N.J.

Filed Dec. 14, 1982, Ser. No. 449,593
Int. Cl.³ F24F *13/14*
U.S. Cl. 236—49 **8 Claims**



1. In an air register adapted to be positioned on the floor of a room in abutting relationship to a wall for distributing air to the room, the air register comprising:

a back housing having a back wall and a bottom wall with openings therein to pass heated air therethrough;

a front housing comprising a front wall and a plurality of louvers to direct heated air passing through said back housing opening in said bottom wall upwardly along the wall of the room;

closure means mounted for pivotable movement between a first position wherein the flow of heated air through the

bottom wall opening is at least substantially restricted and a second position wherein the flow of heated air through the bottom wall opening is substantially unimpeded; and

means for mounting said front housing assembly to said back housing;

the improvement which comprises:

an opening in the front wall of the front housing spaced beneath the louvers;

venturi means in said front housing communicating with said front wall opening and aligned with the back housing opening to draw ambient air through the front wall opening; and

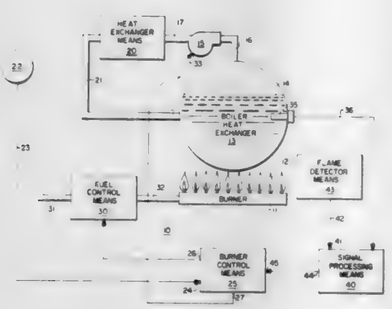
thermal actuator means mounted in the front wall opening and having an actuator element which is extendible and retractable responsive to temperature variations of said thermal actuator, said actuator element being in direct contact with said closure means to close down said closure means as said thermal actuator is heated.

4,445,638

HYDRONIC ANTITRUST OPERATING SYSTEM

John C. Connell, Minneapolis, and Stephen L. Serber, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 20, 1982, Ser. No. 419,647
Int. Cl.³ F24D *3/00*; F28F *19/00*
U.S. Cl. 237—8 R **6 Claims**



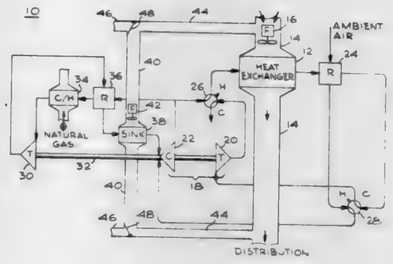
1. A burner control system adapted to control a burner for a boiler in an antirust mode with said boiler having water circulator means which moves hot water through the heat exchanger of said boiler and through heat exchanger means of space to be heated, including: ambient temperature control means for supplying a signal responsive to ambient temperature changes; burner control means having first input means connected to said ambient temperature control means; said burner control means having at least two output means with a first of said output means connected to fuel control means for said burner; a second of said output means connected to said water circulator means to control the movement of heated boiler water through said heat exchanger means; flame detector means responsive to the presence or absence of flame at said burner; boiler temperature sensor means responsive to the temperature of the boiler water and having signal output means; and signal processing means connected to said flame detector output means and said boiler temperature sensor output means and having signal output means connected to said burner control means; said burner control means responding to said ambient temperature control means and measuring the rate of rise of temperature of said boiler water to determine when to energize said water circulator means in the event that said rate of rise is adequate thereby indicating proper operation of said burner; said burner control means energizing said water circulating means only after the boiler water temperature has risen to a level sufficient to reduce condensation on said boiler heat exchanger thereby preventing rust from forming on said boiler heat exchanger.

4,445,639

HEAT PUMP SYSTEMS FOR RESIDENTIAL USE

Robert C. Kinsell, Los Angeles, and James C. Noe, Canoga Park, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 172,631, Jul. 25, 1980, Pat. No. 4,347,714. This application Sep. 2, 1982, Ser. No. 414,201
Int. Cl.³ F25B *9/00*; F25D *9/00*
U.S. Cl. 237—81 **2 Claims**



1. The method of heating an enclosed space comprising the steps of:

drawing in ambient air to a regenerator for heating by transferring heat from conditioned air from a load heat exchanger;

directing the heated ambient air to the compressor element of a turbo-compressor for conditioning by compressively heating therein;

directing the heated conditioned air to the load heat exchanger;

directing the conditioned air from the regenerator to the turbine element of the turbo-compressor for developing power to assist in driving the compressor before exhausting the air from the turbine to ambient;

driving the compressor with a Brayton turbine mounted on a common shaft and coupled to be driven by combustion heated gases from a combustor/heat exchanger;

directing the expanded gases from the Brayton turbine to a recuperator for inlet air to the combustor/heat exchanger, thence to a sink heat exchanger for transferring waste heat to ambient, and thereafter to the inlet of the compressor for combination with the conditioned air from the regenerator; and

directing a portion of the air from the compressor to the recuperator for inlet air to the combustor/heat exchanger.

4,445,640

HIGHWAY RAILWAY CROSSING AND CAP THEREFOR

Eugene Caillet, St. Marys, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 31, 1982, Ser. No. 364,161
Int. Cl.³ E01B *26/00*; E01C *5/18, 9/04*
U.S. Cl. 238—8 **10 Claims**

1. A highway railway crossing having:

(a) a railway comprising:

(i) two spaced-apart indefinite length rails fastened to

(ii) a plurality of cross-ties that are positioned perpendicular to the rails and spaced apart from one another along the indefinite length rails, the cross ties being supported by a

(iii) ballast layer, and

(b) a highway comprising a pavement extending at an angle to the railway and

(c) a crossing surface comprising:

(i) a center pad of reinforced rubber-like resilient material positioned between the two rails and in alignment with the highway,

(ii) a side pad positioned between the pavement and one of the rails and in alignment with the highway,

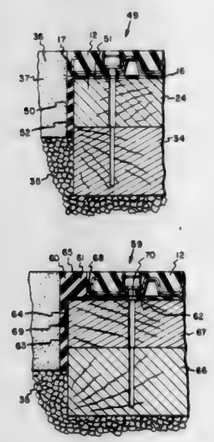
(iii) a shim having an outside end positioned on the uppermost surface of each cross-tie,

(iv) an abrasion pad of rubber-like resilient material positioned between each shim and the respective side pad, said crossing having the improvement which comprises the inclusion of

(v) a cap of rubber-like resilient material having a first leg that extends horizontally between the side pad and its associated shims, and a second leg that extends vertically downwardly over the outside ends of the associated shims.

5. A crossing construction for a railway including a plurality of spaced-apart cross-ties and two parallel rails positioned thereon at right angles thereto comprising:

(a) a plurality of shims positioned one each on said cross-ties, each of said shims having an outside end,



(b) a rubber-like resilient abrasion pad positioned on each shim,

(c) a side pad of resilient rubber-like material having a reinforcing member therein that extends in a direction parallel to the rails, the side pad having openings formed therein through which fasteners joining the side pad and the cross-ties may be positioned, and

(d) an integral cap of resilient rubber-like material having a first leg positioned between the side pad and its associated shims and a second leg covering the ends of the associated shims.

9. An integral cap for a railway crossing having a plurality of cross-ties, a plurality of shims, each having an outside end, positioned on the uppermost surface of each cross-tie, a side pad positioned on the uppermost surface of the shims, said cap being an elongated member formed of resilient rubber-like material having a first leg with openings formed therein and a second leg joined to the first leg at a right angle thereto, said cap being adapted for placement of the first leg between the pad and shims of the railway crossing with the second leg extending over the outermost end of the shims.

4,445,641

CONTROLLED-RELEASE DISPENSER

Richard W. Baker, Bend, Oreg., and Yasuo Ninomiya, Osaka, Japan, assignors to Bend Research, Inc., Bend, Oreg.

Filed Jan. 8, 1982, Ser. No. 338,166
Int. Cl.³ A01M *1/00*; A61L *9/04*
U.S. Cl. 239—6 **12 Claims**

1. A controlled-release dispenser capable of dispensing essentially all of an active ingredient at a zero-order rate of release comprising a membrane controlling the rate of release of said active ingredient by diffusion through said membrane and a microporous reservoir material which is highly permeable to said active ingredient and in which said active ingredient is essentially insoluble, said microporous reservoir material having interconnected pores capable of retaining said active ingredient by capillary forces.

4,445,642

Patent Not Issued For This Number

4,445,643

IRRIGATION SYSTEM

Grover A. Thorsby, Rte. 1, Box 115, and Mark E. Burgess, Rte. 1, Box 82B, both of Madison, Ga. 30650

Filed Jan. 4, 1982, Ser. No. 336,690
Int. Cl.³ B65H *75/00*
U.S. Cl. 239—197 **16 Claims**

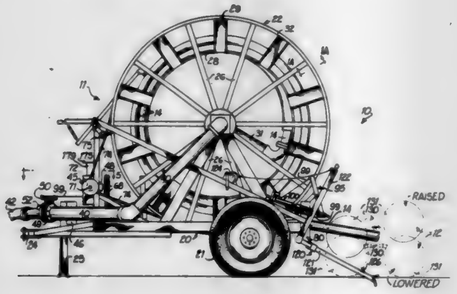
1. A reel type irrigation system adapted to be connected to a source of liquid under pressure to distribute the liquid on the ground comprising:

a reel unit including a support frame, a reel rotatably mounted on said support frame, and drive means mounted on said support frame and adapted to drivingly rotate said reel in a given direction when said drive means is connected to the source of liquid under pressure;

a carriage unit including support means movably supporting said carriage unit on the ground and a sprinkling gun

mounted thereon adapted to discharge the liquid therefrom onto the ground when said sprinkling gun is connected to the source of liquid under pressure;

a flexible pipe connected at one end to said reel and at the other end to said support means and said sprinkling gun on said carriage unit so that said pipe is wound around said reel as said reel is rotated to pull said carriage unit over the ground as said pipe is wound around said reel;



tachometer means for detecting the actual rate of movement of said flexible pipe toward said reel unit and thus the rate of movement of said carriage unit, said tachometer means generating an output signal indicative of the actual rate of movement of the carriage unit toward said reel unit; and

display means operatively connected to said tachometer means and responsive to said output signal for visually displaying the actual rate of movement of said flexible pipe and thus said carriage unit toward said reel unit.

4,445,644

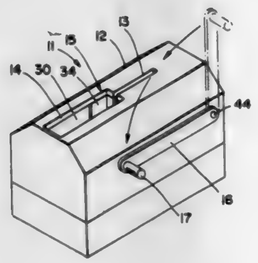
DEVICE FOR DESTROYING HYPODERMIC NEEDLES AND SYRINGES

Walter G. Lemke, 3206 May Rd., El Sobrante, Calif. 94803

Filed Jun. 15, 1981, Ser. No. 273,410

Int. Cl.³ B02C *19/14*

U.S. Cl. 241—99 **5 Claims**



1. A device for destroying hypodermic needle and syringe assemblies, comprising a housing, an intake opening in said housing adapted to receive a syringe assembly therein; a pivot shaft in said housing adjacent to said intake opening; a plurality of disc-like rotating blades secured to said pivot shaft and spaced therealong, each of said rotating blades including a slot extending radially inwardly from the periphery thereof, a plurality of fixed blades, each disposed directly adjacent to one of said rotating blades and including a shearing edge past which said slot is rotatable, means for rotating said shaft and blade assembly from a first position in which said slots open toward said intake opening, past a second position in which said slots intersect said shearing edges of said fixed blades, to a third position in which the sheared hypodermic assembly debris is discharged from said slots, and a plurality of cylindrical members assembled axially on said shaft, each secured adjacent to one of said disc-like blades and having substantially the same diameter, each of said cylindrical members including a slot extending into the periphery thereof and aligned with the slot of the respective blade, said slot adapted to receive and retain a portion of the syringe assembly.

4,445,645

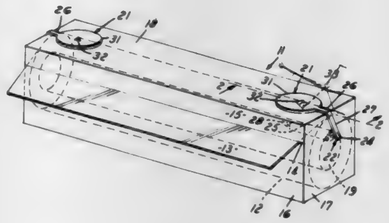
ROLL RETAINING MEANS FOR A DISPENSING BOX

Joseph I. Byer, 2896 Radisson Ave., Windsor, Canada

Filed Jan. 9, 1981, Ser. No. 223,681

Int. Cl.³ B65H *19/00*

U.S. Cl. 242—55.53 **12 Claims**



1. A roll retaining means adapted for retaining a roll of sheeting material in a box, wherein the roll has an inner peripheral surface and the box has end walls and side walls, said retaining means comprising:

(a) a rod having at least two segments,

(b) a piercing means provided on one of said segments for piercing an end wall,

(c) a sleeve provided on said one of said segments adjacent to said piercing means, said sleeve being insertable through an end wall after said piercing means has pierced said end wall so that said sleeve is positioned in a tangential relationship with the inner peripheral surface of said roll, and

(d) an attachment means on the other of said segments, said attachment means securing said roll retaining means to the box.

4,445,646

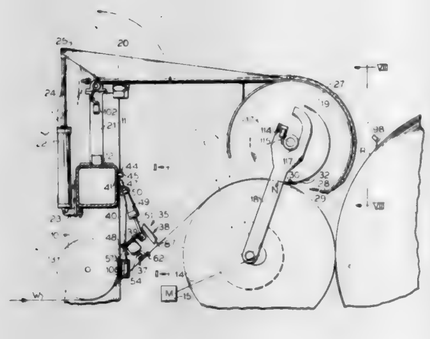
APPARATUS AND METHOD FOR STARTING SUCCESSIVE LEADING ENDS ON TRAVELLING WEB IN A WINDER

Gerald W. Karr, South Beloit, and George H. Wong, Roscoe, both of Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 5, 1982, Ser. No. 355,215

Int. Cl.³ B65H *19/20*

U.S. Cl. 242—56 R **17 Claims**



1. In apparatus for winding web running continuously in a machine direction into successive rolls, and including means for starting winding of a respective leading end of the web onto a respective fresh rotating core, driven by a nipping roll to attain web running speed, for each roll:

slitting means located upstream from said fresh rotating core;

means for operating said slitting means, after a preceeding roll has been wound to a desired diameter and is still turning at winding speed, for starting a fresh leading end on the continuously running web by first slitting the web a limited distance in the machine direction for defining an elongate leading starter tongue area attached at its ends to the web and then completing the remainder of the fresh leading end by slitting the web in cross machine direction from said tongue area;

means upstream from the nip of said core and said nipping roll for partially separating the leading end of said tongue area from the web but leaving said leading end of the tongue area still attached to the web until said leading end of the tongue area has passed through said nip;

and said winding starting means being adapted for tearingly completing separation of said partially separated leading end of said tongue area from said web after said partially separated leading end of said tongue area has passed through said nip and for then directing the tongue area and said remainder of said fresh leading end into winding relation onto a fresh rotating core for winding of the web into another roll.

4,445,647

SUPPLY ROLL HOLDING ARRANGEMENT

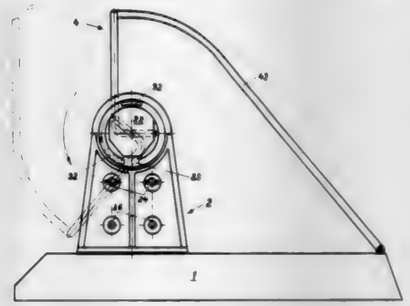
Reinhard Doeg, Keltern-Ellmendingen; Folker Galaske, Pforzheim, and Helmuth Kettenbach, Ettlingen, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,652

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136040

Int. Cl.³ B65H *17/52, 23/00*

U.S. Cl. 242—68.4 **5 Claims**



1. A holding arrangement for the supply roll of a tape-shaped recording medium, disposed on the cover of a printer, in which a roll carrier for taking up the supply roll, rests with its projecting ends in the upwardly open bearings of holding brackets capable of being locked by latch bodies rotatable from the outside, which each have an external latch knob characterized in that a paper-deflecting yoke is provided, said latch knobs being each provided with a receptacle having a slot to take up angled off ends of said paper-deflecting yoke, said receptacle extending vertically in relation to the axis of rotation, for taking up the ends of said yoke connecting said latch bodies rigidly with one another, said yoke having one arm inclined towards the printer, with which it rests on said cover and, in the unlocked position of said latch tongues is turned up, said latch tongues being swivelled out of a locked position into a limiting stop position.

4,445,648

SAFETY DEVICE FOR VEHICLES

Willi Bloch, Velpke, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 364,194

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116355

Int. Cl.³ B65H *75/48*; A62B *35/02*

U.S. Cl. 242—107.6 **3 Claims**

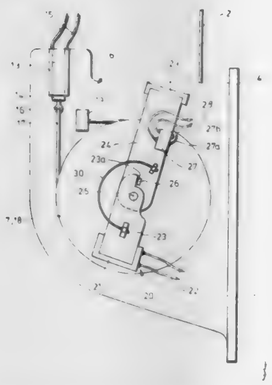
1. A safety device for a vehicle comprising:

(a) a safety belt for restraining a passenger in a normal posi-

tion in a seat and capable of being attached to a belt lock means;

(b) winding means, attached to one end of said safety belt, including a winding roller rotatable about an axis and means for rewinding said end of said belt onto said winding roller;

(c) detection means for detecting when a passenger is in said normal position in said seat and when said safety belt is coupled to said belt lock means;



(d) blocking means associated with said winding means and responsive to said detection means for blocking said winding means from rewinding said belt when said passenger remains in said normal position in said seat; and

(e) release means including means for detecting when a predetermined length of said belt is unwound from said winding means for disabling said blocking means when said predetermined length of said belt has been unwound, thereby permitting rewinding of said belt, wherein said release means includes:

a release switch for disabling said blocking means; and

means for actuating said release switch comprising a lever pivotable about said roller axis; means for selectively coupling said lever to said winding roller when said blocking means is in a blocking condition for rotating with said roller, wherein the coupling means comprises electromagnet means connected to said lever for coupling said lever to said blocking means; and means responsive to the rotation of said lever through a predetermined angle for actuating said release switch.

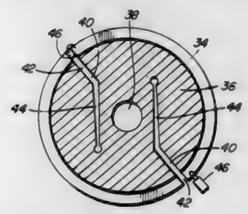
4,445,649

ADJUSTABLE REEL

Masamichi Yataki, Ottawa; Glen W. D. Dack, Almonte, and Paul S. Ertl, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 17, 1981, Ser. No. 274,470
Int. Cl.³ B65H *75/14, 75/24*
U.S. Cl. 242—118.2 **7 Claims**

1. A reel comprising a one-piece molding having a cylindrical barrel portion extending between two flanges, the barrel portion having an outer wrapping surface, each flange extending in a plane perpendicular to an axis of the reel, the reel having at least one slot extending throughout its length, the slot being of uniform cross section through the length of the reel and tapering uniformly from respective flange peripheries to a position radially within the wrapping surface, and wherein the slot has radially outward part extending substantially radi-



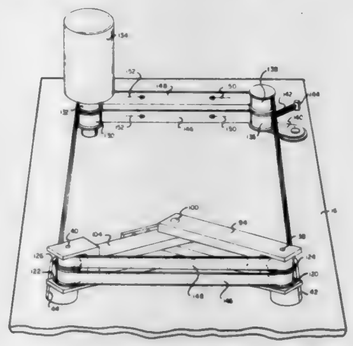
ally and a second part extending from said radially outward part to a position radially inward of the wrapping surface, the radially inward part extending non-radially, the slot normally open but closeable on pressing parts of the reel on opposite sides of the slot together whereby to reduce the circumference of the barrel portion.

4,445,650

HIGH SPEED BIDIRECTIONAL MAGNETIC TAPE TRANSPORT WITH CONSTANT TENSION

Raymond E. Avra, and Lawrence Herrington, both of Fountain Valley, Calif., assignors to MegaTape Corporation, Duarte, Calif.

Filed Jul. 22, 1981, Ser. No. 285,756
Int. Cl.³ G11B *15/32*
U.S. Cl. 242—192 **12 Claims**



4. A transport for an elongated web member comprising the combination of:

an elongated web member;

first and second rotatably mounted reels having the elongated web member wound thereon and extended therebetween;

first and second rotatable capstans mounted adjacent the first and second reels respectively;

means for normally urging the first and second capstans toward the first and second reels respectively;

means for rotatably driving the first and second capstans in a first direction or in an opposite second direction, the means for rotatably driving including means for driving the second capstan at a greater speed than the first capstan when the first and second capstans are being driven in the first direction and including a first elongated drive member, first and second drive elements of different size engaging spaced-apart portions of the first elongated drive member and first and second unidirectional clutch elements respectively coupled between the first and second drive elements of different size and the first and second rotatable capstans, and means for driving the first capstan at a greater speed than the second capstan when the first and second capstans are being driven in the opposite second direction and including a second elongated drive member, third and fourth drive elements of different size engaging spaced-apart portions of the second elongated drive member and third and fourth unidirectional clutch elements respectively coupled between the third and fourth drive elements of different size and the first and second rotatable capstans; and

means for converting a difference in the speeds of the first and second capstans into tension in an elongated web member wound on and extended between the first and second reels.

4,445,651

TAPE CASSETTE

Masanori Kimizuka, Tokyo, and Yoshio Yamanishi, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 1, 1982, Ser. No. 394,134
Claims priority, application Japan, Jul. 8, 1981, 56-101319[U]
Int. Cl.³ G03B *1/04;* G11B *15/32, 23/04*
U.S. Cl. 242—199 **4 Claims**



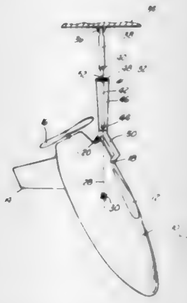
1. A tape cassette comprising, a cassette casing having a plurality of head inserting openings provided in its front surface, a tape path formed therein along the inside of said openings and a pair of hubs provided to wind therearound a tape transported along said tape path, a pair of pinch rollers mounted in said cassette at both end portions of said tape path, capstan engaging cut-out portions formed so as to oppose said pair of the pinch rollers across the surface on which said openings are formed and across at least one of the upper and lower surfaces adjacent thereto, a capstan receivable within at least one of said capstan engaging cut-out portions to drive said tape, driving gear portions formed on at least one end surface of each of said hubs, and driving gear means external to said cassette and engageable with said driving gear portions to drive them in a rotary direction, wherein at least one of said pair of pinch rollers is provided with a stripe pattern on the upper surface or the lower surface thereof, and wherein a through-hole is bored through at least one of the upper and lower halves of the cassette casing and opposed to said pinch roller and means for radiating and detecting said stripe pattern to detect the velocity of said tape mounted adjacent said through-hole.

4,445,652

ADJUSTABLE ROCKET THRUST ALIGNMENT DEVICE

Claude W. Engelke; Royal A. Power, and Dale W. Brees, all of Wichita, Kans., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 25, 1982, Ser. No. 361,849
Int. Cl.³ B64D *47/00;* B64F *5/00*
U.S. Cl. 244—1 R **5 Claims**



1. An alignment device for adjusting the takeoff assist thrust vector of a rocket booster in a desired relationship to the center of gravity of an autonomous missile or the like, the device comprising:

an adjustable rear support attached to the missile;

a front support attached to the missile, the front and rear support adapted for receiving the rocket booster thereon; and

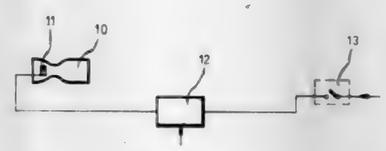
a hanging tool attached to the rear support and the front support for suspending the missile therefrom, by adjusting the rear support, the takeoff assist thrust vector of the booster is adjusted relative to the center of gravity of the missile.

4,445,653

METHOD FOR THE LANDING OF AIR AND SPACECRAFTS

Hans Schwaerzler, Taufkirchen, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 7, 1981, Ser. No. 251,894
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012789
Int. Cl.³ B64D *17/80*
U.S. Cl. 244—110 D **4 Claims**



1. A method for landing an aircraft or spacecraft by means of a paraglider and a braking thrust booster, comprising the following steps: providing the craft with a paraglider having a drag (D) to lift (L) ratio D/L corresponding substantially to one, providing the craft with propulsion means developing a given maximum thrust, constructing the craft and paraglider combination so that the drag of the combination corresponds to said given maximum thrust at least during a specific phase of a landing operation when the propulsion is at said maximum thrust, activating the paraglider to a deployed position having a drag to lift ratio corresponding substantially to one during the landing approach shortly before touchdown, and activat-

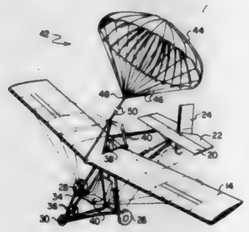
ing the braking thrust booster for cooperation with said paraglider only during a terminal braking phase of a landing operation.

4,445,654

AIRCRAFT RECOVERY CHUTE

James W. Handbury, and Dana Handbury, both of 44 East Hays St., Banning, Calif. 92220

Filed Jun. 21, 1982, Ser. No. 390,513
Int. Cl.³ B64D *17/80*
U.S. Cl. 244—139 **13 Claims**



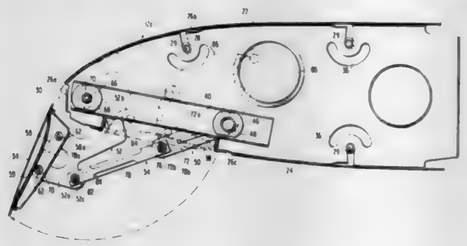
1. A parachute system for recovery of an ultralight aircraft and/or pilot, said system comprising:
- a parachute having a canopy with a plurality of shroud lines and a first elongated cable having a length to position the parachute clear of the engine of said aircraft and connected at one end to the ends of the shroud lines and including attachment means on the other end for attachment to an ultralight aircraft;
- a pilot harness to be worn by a pilot and releasably attached to an aircraft and including a chute pack positioned on the chest of the pilot for containing the parachute; and
- said attachment means includes quick release clamp means for selective attachment to said aircraft through said harness and directly to said aircraft for support of an aircraft for controlled substantially vertical descent of said aircraft and pilot.

4,445,655

KREUGER FLAP ACTUATING MECHANISM FOR DELTA WING, CANARD TYPE AIRCRAFT

Lawrence K. Hueberger, Reno, Nev., assignor to OMAC, Inc., Reno, Nev.

Filed Feb. 1, 1982, Ser. No. 344,843
Int. Cl.³ B64C *3/50*
U.S. Cl. 244—214 **4 Claims**



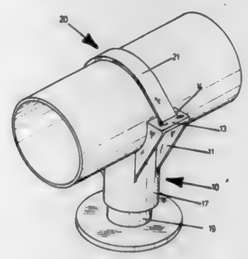
1. In an aircraft having wings extending outwardly from each side of an aircraft fuselage and being of transverse airfoil configuration to provide lift to the aircraft and having a frontal leading edge and a rear trailing edge, and wherein the airfoil configuration is formed by a generally convex upper wing surface and a lower wing surface at the leading edge of the wing, and wherein a leading edge flap is mounted to the wing adjacent the leading edge thereof for pivoting between a retracted position in line with the lower surface of the wing and a projected position where the leading edge flap forms an extension of the airfoil convex upper surface of the wing for added lift during aircraft take off and landing, the improvement comprising:
- a torque tube extending parallel to and generally the length of each wing portion bearing the leading edge flap and mounted for rotation about its axis internally within the wing and to the rear of the wing leading edge,
- a plurality of hinges rotatably mounted within the wing adjacent the leading edge, forward of the torsion tube, and fixed at one end to the rear surface of the leading edge flap at one end,
- means mechanically linking the torque tube to the hinges such that during rotation of the torque tube about its axis, the flap is pivoted from retracted position to projected position and vice versa,
- a motor operatively coupled to said torque tube for rotating said torque tube bidirectionally about its axis,
- biasing means connected to said torque tube for biasing said torque tube in a direction tending to retract the leading edge flap, said biasing means comprising
- a coil spring,
- a second arm fixed to said torque tube and projecting radially outwardly therefrom at an axial position spaced from said motor,
- and wherein said coil spring is fixed at one end to said wing and at its other end to the radially outboard end of said second arm,
- and wherein said second arm is angularly positioned on said torque tube and said coil spring is fixed at opposite ends to said wing and to said second arm at positions such that during rotation of said torque tube, the axis of said coil spring passes through the axis of rotation of said torque tube such that said coil spring and said second arm function as a first overcenter mechanism tending to maintain the leading edge flap at projected position when said leading edge flap is driven to projected positlon absent further operation of said motor tending to drive the leading edge flap towards retracted position.

4,445,656

STAND AND STRAP ARRANGEMENT FOR SUPPORTING AND SECURING PIPES

James K. Leitch, 37 Wanless Crescent; Raymond C. Newman, 197 Sheldrake Blvd., both of Toronto, Ontario, and Cameron B. Gray, 51 Thornbank Rd., Thornhill, Ontario, all of Canada

Filed Dec. 8, 1980, Ser. No. 192,866
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—49 **3 Claims**



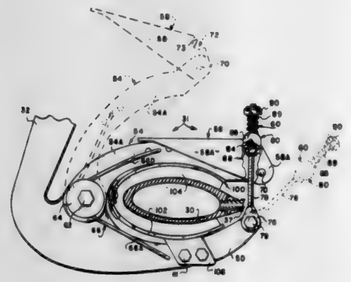
1. An apparatus for supporting and securing pipes and the like comprising:
- a stand having two arcuate arms extending outwardly and upwardly away from each other for supporting pipes and the like,
- means for securing said stand to floors and the like, said arcuate arms connected at one end to said securing means,
- ends of said arcuate arms distal from said securing means terminating in a first and second flanges respectively, said first and second flanges extending horizontally outwardly,
- said first flange having a rectangular opening therethrough,
- said second flange having locking teeth along the underside of said flange,
- a strap of generally inverted "U" shape for securing pipes and the like to said stand,
- one end of said strap having a first tail extending outwardly from and forming an acute angle with said strap, said first tail adapted to extend through said rectangular opening such that the upper surface of said first tail is juxtaposed to the underside of said first flange,
- the other end of said strap having a second tail extending inwardly and forming an obtuse angle with said strap,
- said second tail having teeth along the upper side of said second tail for mating with said locking teeth of said second flange the arrangement being such that when said first tail of said strap extends through said rectangular opening said teeth of said second tail does not mate with locking teeth of said second flange until downward pressure is applied to said second tail.

4,445,657

SPRAY BOOM MOUNTING ASSEMBLY

Gerald H. Breckenridge, Rte. 1, Box 169, McCroy, Ark. 72101

Filed Oct. 13, 1981, Ser. No. 310,463
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—73 **8 Claims**



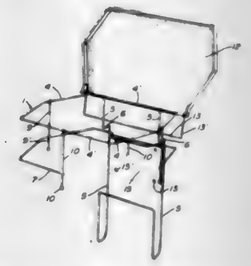
1. A clamping system for securely, removably mounting a spray boom assembly to an agrichemical applicator airplane, the clamping assembly comprising:
- a rigid elongated strut having a remote end adapted to be coupled to the wing of said airplane and an integral, spaced-apart jaw end;
- said strut jaw end being generally arcuate and having an innermost pivot connection point and an outermost pivot connection point;
- a rigid, generally arcuate moveable jaw portion pivotally coupled to said strut jaw end innermost pivot connection point for securing a spray boom between it and said strut jaw end, the jaw portion terminating in an outer pivot point;
- jaw locking handle pivotally coupled to said jaw portion at said outermost pivot point for releasably locking said jaw portion in boom holding relation relative to said strut jaw end; said jaw portion locking handle developing an overcenter action when rotated relative to said outer pivot point whereby to realasably lock said jaw portion relative to said strut jaw end; and,
- barrel connecting means extending between said outermost pivot connection point of said strut jaw end and adapted to be received within a suitable tracking aperture defined in said locking handle.

4,445,658

SUPPORT FOR GARBAGE BAGS

René Ferron, 60 de Brésoles St., Apt. No. 409, Montreal, Canada H2Y 1V5

Filed Jun. 28, 1982, Ser. No. 393,155
Int. Cl.³ B65B *67/04*
U.S. Cl. 248—99 **6 Claims**



1. A bag support, specifically adapted for bags of the type having integral handles which determine corresponding apertures within the walls of said bags; said bag support comprising an open frame and a close-fitting cover; said frame including:
- (A) a ring-like member, serving as bag support means, and determining an open mouth;
- (B) a rear support means, secured to the back portion of said ring-like member, for supporting the latter in substantially horizontal position; and
- (C) at least one pair of downwardly-depending bag handle catch members, secured to said ring-like member, each having a free lower end and a transverse stop member secured to said catch member at a zone spaced above said free lower end; said catch members being located at each lateral side of the frame; said cover being pivotally secured to the frame adjacent the back portion of said ring-like member, and being adapted to closely fit over the latter; whereby the rim portion of a bag inserted within said ring-like member is adapted to be folded over said ring-like member with said handles of said bag extending downwardly on the outside of said ring members hooked around the respective free ends of the catch members and retained by said stop members, said stop members being located a distance below said ring member sufficient to retain said bag in a position such that said bag apertures will extend downwardly on the outside of said ring member and said ring-like member will be completely covered by the walls of said bag, whereby the closing of said cover over said open mouth will seal off the content of said bag.

4,445,659

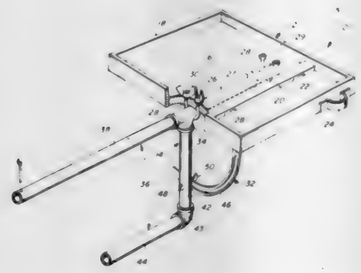
COMBINATION BRACKET AND ADJUSTABLE LADDER TRAY

Paul LaChance, 100 Division St., Rockland, Mass. 02370

Filed May 30, 1978, Ser. No. 910,382
The portion of the term of this patent subsequent to Apr. 1, 1996, has been disclaimed.
Int. Cl.³ E06C *7/14*
U.S. Cl. 248—210 **5 Claims**

1. A combination adjustable ladder tray and bracket for attachment to the hollow rungs of a ladder comprising in combination:
- a bracket means comprising two horizontally oriented pipes joined together by a threaded T-joint;
- the first of said horizontal pipe members serving as a ladder attachment means;
- the second of said horizontal pipe members serving as a tray support means, and terminating in a threaded pipe end fitting;
- a vertical pipe member joined to the open end of said T-joint and extending downward therefrom;
- a third horizontal pipe member joined to said vertical pipe

member by an elbow joint and extending horizontally under said first horizontal pipes;
said second and third horizontal pipes being spaced apart such that they fit within two adjacent hollow rungs of a ladder and form a ladder attachment means;
said second upper horizontal pipe member being of sufficient length to extend through the upper adjacent ladder rung;
said second upper horizontal pipe member having a hole therethrough at its extreme end to receive an elongated vertical member to prevent the accidental withdrawal of said pipe member through said ladder rung;
a tray of substantially rectangular shape having a base and 4 upward extending sides adjustably secured to said first upper horizontal pipe support member;
said first upper horizontal pipe member being secured to the



underside of a tray base by two U-shaped brackets, one positioned under said T-member and one positioned under a threaded pipe termination member;
both of said U-shaped brackets secured to said tray base by bolts and nuts such that the nuts of said inner bracket may be tightened and loosened to permit the plane of said tray base to pivot about said horizontal pipe support member;
said tray being contoured to hold and support various tools and supplies of a tradesman working on a ladder;
a bar extending laterally across the inside base of said tray, said bar being sized and positioned to support the upward inclining corrugated base of a roller paint tray base when a roller tray is placed in said tray;
a pair of slots in the base of said lateral bar to receive the inward extending portion of the L-shaped legs of a roller paint tray to secure said paint tray in said ladder tray.

4,445,660
ADJUSTABLE SUSPENSION SUPPORT
Alexander D. Karapita, 38 Robinter Dr., Willowdale, Ontario, Canada (M2M 3R2)
Filed Apr. 9, 1982, Ser. No. 366,915
Int. Cl.³ B42F *15/00*
U.S. Cl. 248—335 **10 Claims**

1. An adjustable suspension support comprising:
a vertical cylinder and means at the upper end of the cylinder for suspension thereof;
a shaft coaxially located in the cylinder;
brake means slidable in the cylinder and comprising a cylindrical collar coaxial with the shaft, the collar having a plurality of radial apertures located in a circumferential plane thereof, the upper end of the shaft carrying a plug located within the collar adjacent the apertures, the plug having an inverted frustro-conical side wall, a plurality of spherical bearings one located in each aperture of the collar and retained therein by the plug to bear laterally against the cylinder;
grip means carried by the lower end of the shaft and including lever means operable to move the grip means axially downward with respect to the shaft;
a spacer tube concentric with the shaft and freely slidable thereon, the lower end of the tube abutting the grip means and the upper end abutting the collar when the lever means is not operated; and
means connected with the support to carry an object;



whereby on operating the lever means and exerting an upward force on the grip means the plug is raised with respect to the collar and the brake means is thereby released.

4,445,661
VERTICAL SEAT ADJUSTER ARRANGEMENT FOR VEHICLE SEATS
Otto J. Langmesser, Jr., Fraser, and Richard W. A. Rees, West Bloomfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 12, 1982, Ser. No. 407,320
Int. Cl.³ F16M *11/24, 13/00*
U.S. Cl. 248—394 **4 Claims**



1. A seat support arrangement for mounting a vehicle seat on a vehicle for vertical adjustment thereof relative to the vehicle comprising, in combination,
a pair of laterally spaced elongate seat supports for supporting the seat,
first and second pivot means respective to each seat support,
vertical adjustment means interconnecting a first portion of each seat support and the first pivot means respective to such seat support,
means pivotally mounting a second portion of each seat support to a respective second pivot means,
means conjointly operating the vertical adjustment means to conjointly vertically adjust the first portions of the seat supports as the second portions of the seat supports rotate relative to respective second pivot means,
locking means respective to each seat support, each locking means including a series of detent means separated by abutment means, the detent means of one locking means being respective to an abutment means of the other locking means and collectively representing a vertical position of the seat supports,
means mounting each locking means on a respective seat support for movement therewith and movement relative thereto between: (1) a locked position wherein the detent

means of one locking means engages a respective first pivot means and the abutment means of the other locking means engages a respective first pivot means to lock both seat supports in the vertical position represented thereby, and
(2) a released position wherein both locking means are disengaged from respective first pivot means to permit movement of the seat supports to a different vertical position, the seat supports being located in such different position by the engagement of the detent means of one of the locking means and the abutment means of the other of the locking means with a respective first pivot means,
means biasing both locking means toward locked position, and
release means for conjointly moving both locking means to released position.

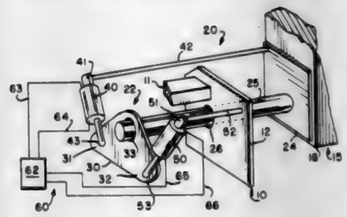
4,445,662
ENGINE MOUNTING STRUCTURE
Masao Fukushima, Fuchu, and Komei Yazaki, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Apr. 7, 1981, Ser. No. 251,854
Claims priority, application Japan, Apr. 17, 1980, 55-51349
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—559 **5 Claims**



1. An engine mounting structure for mounting an automotive engine on the body structure of an automotive vehicle, comprising at least one shock and vibration insulating unit which comprises:
a first coupling member to be connected to the body structure of the vehicle;
a second coupling member to be connected to the body structure of the engine and spaced apart from the first coupling member;
a main resilient block intervening directly between the first and second coupling members; and
vibration cancelling means comprising at least one combination of a mass member, a first auxiliary resilient block intervening directly between the first coupling member and the same member, and a second auxiliary resilient block intervening directly between the second coupling member and the mass member.

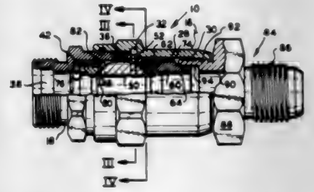
4,445,663
ROTATING DEVICE FOR DRILL MAST
Wynand M. Goyarts, Washington, Pa., assignor to Lee-Norse Company, Pittsburgh, Pa.
Filed Apr. 22, 1982, Ser. No. 371,007
Int. Cl.³ F16M *11/10*
U.S. Cl. 248—652 **8 Claims**

1. A rotator means for positioning at selected drilling angles a drill mast for a roof bolting mining machine having a drill mast assembly and a support structure, said rotator means comprising:
a pivot means for connecting the mast assembly to the support structure to be rotatable relative to the support structure about a pivot;
a second expandable cylinder having one end connected to the support structure;
a first expandable cylinder having one end connected to the mast assembly;
a lever arm having one end connected to the other end of the first cylinder, another end connected to the other end of



the second cylinder, and a pivot connection positioned between the first and second end connecting the lever arm to the support structure, and
a pressure means for selectively expanding the cylinders to thereby selectively rotate the mast assembly.

4,445,664
AXIAL FORCE OPERATED BALL VALVE
Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.
Filed Oct. 26, 1981, Ser. No. 314,754
Int. Cl.³ F16L *37/06*
U.S. Cl. 251—149.2 **7 Claims**



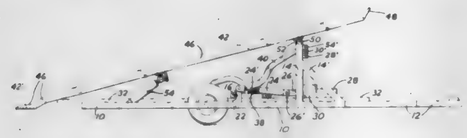
1. A conduit fitting utilizing a ball valve comprising, in combination, a body having a passage defined therein having a longitudinal axis, a ball valve within said passage having a spherical surface, a center and a bore defined within said ball valve extending therethrough having a longitudinal axis, an annular valve seat within said passage sealing engaging said ball valve spherical surface, means supporting said valve seat for axial displacement within said passage, stop means defined in said body passage limiting axial displacement of said valve seat within said passage, biasing means within said passage axially biasing said ball valve into sealing engagement with said valve seat and said valve seat toward said stop means, a pivot fixed upon said ball valve having an axis offset with respect to said ball valve center and transverse and offset with respect to said ball valve bore axis, and pivot retaining means defined upon said body maintaining the axis of said pivot transversely disposed to said passage axis preventing axial displacement of said pivot within said passage and permitting lateral radial displacement of said pivot whereby axial displacement of said ball valve and valve seat within said body passage rotates said ball valve about its center relative to said valve seat selectively establishing communication between said valve seat and ball valve bore to open and close said passage to fluid flow.

4,445,665

VEHICLE SERVICING LIFT

Donald L. Cray, 3737 SE. 36th Pl. Suite 11, Portland, Oreg. 97202

Filed Mar. 26, 1982, Ser. No. 362,300
Int. Cl.³ E02C 3/00
U.S. Cl. 254—88 7 Claims



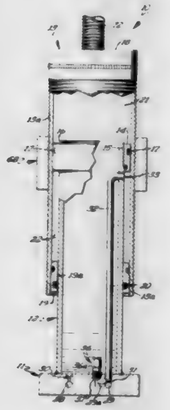
1. A vehicle servicing lift, comprising:
(a) a frame,
(b) a pair of laterally spaced vehicle support ramps each mounted at its forward portion to an elevated fixed pivot associated with the forward end of said frame, the ramps configured to extend rearwardly therefrom a spaced distance beyond the rear end of the frame,
(c) elevating means interconnecting the rear portions of the ramps and the frame for pivoting the ramps about the axis of said fixed pivot,
(d) carriage rail means mounted longitudinally on the frame below the level of the fixed pivot axis of the ramps, the rail means disposed on the frame centrally under the ramps, and
(e) a chair and chair support carriage assembly arranged for removable mounting on the carriage rail means for movement of the chair and carriage assembly longitudinally along the length of the frame centrally under said ramps for supporting a vehicle servicing person in the chair for movement longitudinally under a vehicle.

4,445,666

HYDRAULIC JACK DEVICE

Gertrude D. McDermott, Minneapolis, Minn., assignor to Hydra-Jack, Inc., Clear Lake, Iowa

Filed Nov. 16, 1981, Ser. No. 321,802
Int. Cl.³ B66F 3/24
U.S. Cl. 254—93 H 5 Claims



1. A hydraulic jack, comprising:
a base;
an elongate, vertically disposed, cylindrical, fixed member mounted on said base and having an open, upper end, an annular element affixed to said fixed member at the upper end thereof and projecting radially outwardly therefrom;
an elongate, cylindrical, vertically disposed, shiftable movable member having a diameter larger than said fixed member and positioned exteriorly around the latter and having a closed upper end, an annular element affixed to the lower end of said movable member to sealingly engage the fixed member, said annular element on said fixed member sealingly engaging said movable member;
a variable lifting chamber defined by the interior of said fixed member and by that portion of the movable member located above the annular element on said fixed member, a variable lowering chamber defined by the interior of said movable member located below said annular element on said fixed member;
a pair of primary passages in said base each being connected to a source of fluid under pressure, one of said passages being connected in communicating relation to said extension chamber and said other passage being connected in communicating relation with said retraction chamber whereby when fluid is directed into said extension chamber, said movable member will be shifted vertically upwardly and fluid will be evacuated from the retraction chamber, and when fluid is directed into said retraction chamber, the movable member will be shifted vertically downward and fluid will be evacuated from said extension chamber;
a pair of orifices each being disposed between one of said passages and one of said chambers and each orifice having a cross-sectional size substantially less than the associated passage to thereby reduce the volume flow of fluid between a primary passage and its associated chamber;
a control valve mechanism in said base including a chamber disposed in communicating relation with said primary passages;
said control valve mechanism including a pair of check valves each being positioned in flow-controlling relation with one of said primary passages and each being movable between opened and closed positions, yieldable means normally urging each check valve to the closed position to prevent the return of fluid through said passage, each valve being opened in response to fluid pressure exerted thereon from said source;
a shiftable valve actuator disposed in said primary passages and being shiftable in response to fluid pressure produced by fluid flowing through one of said primary passages from said source to cause the valve actuator to engage and unseat the check valve in the other primary passage to permit the return of fluid from the last-mentioned passage and permitting the other valve to be opened in response to the pressure of fluid flowing from said source;
a transfer passage in said base intercommunicating said extension chamber with the primary passage for said retraction chamber, a normally closed pressure-responsive valve disposed in flow controlling relation in said transfer passage whereby when the jack device is in a raised static condition and the pressure in the extension chamber exceeds a predetermined amount, the pressure-responsive valve will open and permit fluid to flow through the transfer passage into the retraction chamber.

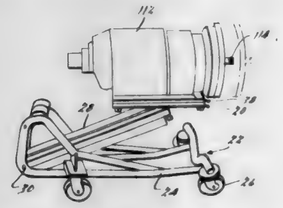
4,445,667

ALIGNMENT ADAPTER AND SUPPORT

Donald R. Webb, 3500 N. Royston Rd., Potterville, Mich. 48876

Filed Feb. 19, 1982, Ser. No. 350,212
Int. Cl.³ B66F 5/04
U.S. Cl. 254—134 12 Claims

1. An alignment adapter and support for use with a jack having a lifting head, said alignment adapter and support comprising, in combination, a base adapted to be fixed to said lifting head, a carrier, means mounting said carrier on said base, bearing means disposed between said carrier and said base, means limiting longitudinal, lateral and angular movement of said carrier relative to said base, a pair of elongate side rails mounted on opposite sides of said carrier, a pair of brackets, means adjustably mounting said brackets on said side rails, adjustable workpiece engaging means carried by each of said brackets and adapted to support one end portion of a workpiece, adjustable stanchion means supported by said side rails



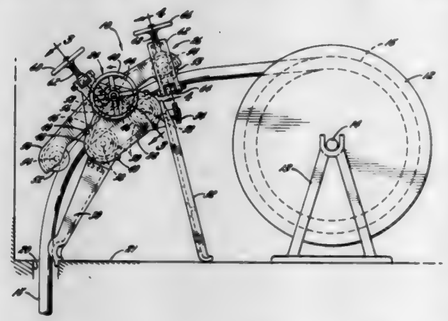
at a position remote from said brackets, and means carried by said stanchion means for supporting the other end portion of a workpiece.

4,445,668

CABLE FEEDING SYSTEM

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Filed Jul. 26, 1982, Ser. No. 401,866
Int. Cl.³ B65H 17/34, 17/22
U.S. Cl. 254—287 5 Claims



1. A cable feeding device such as may be used to controllably lower hanging cable in association with passage means between floors of a building, comprising in combination, a housing, leg means for supporting the housing on the floor in respect to the passage means of said floor, said housing carrying a plurality of rollers defining a guideway for the cable between the rollers disposed on opposite sides of the cable, means for positively manually rotating at least one of the rollers for driving the cable through the housing guideway, means for positively urging a roller on one side of the cable toward a roller on the other side of the cable to increase resistance against downward pulling of the cable through the guideway between the rollers, brake means associated with one of the rollers comprising support means carrying a brake shoe held spaced from a roller so that the cable passes between the shoe and said roller, and manually operated means for adjustably relatively moving said roller and brake shoe to clamp and hold the cable in a fixed position between the roller and brake shoe.

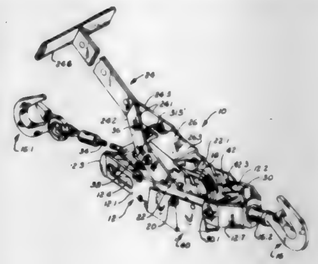
4,445,669

CABLE TENSIONING DEVICE

Richard C. Wilson, Champlin, Minn., assignor to Consolidated Cable and Rigging, Inc., Miami, Fla.

Filed Aug. 18, 1981, Ser. No. 293,889
Int. Cl.³ B66D 3/02, 1/34, 3/14
U.S. Cl. 254—369 7 Claims

3. A cable tensioning device comprising open frame means, a rotatable, cable-winding drum carried in the frame means, ratchet wheel means coaxially attached to and rotatable with the drum, holding pawl means in operative association with the ratchet wheel means for normally limiting rotation of the ratchet wheel means to a single direction, and a reciprocable handle including driving pawl means engageable with the ratchet wheel means for driving the drum in the single direction as the handle is reciprocated, the open frame means comprising generally coextensive, generally parallel rigid strap lengths each having generally parallel edges and having attachment means along said edges adjacent but spaced equally from coextensive ends of the strap lengths, and cable guide means comprising an apertured, rigid plate having attachment means at opposed ends thereof attached to the attachment means of the strap lengths to prevent movement of the plate longitudinally of the strap lengths and to maintain spacing between the strap lengths.

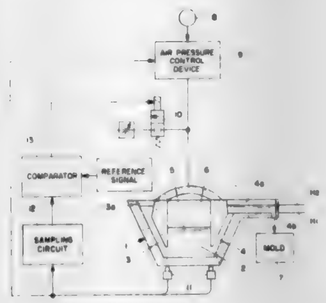


4,445,670

APPARATUS FOR CONTROLLING A PRESSURE-TYPE FURNACE FOR POURING MOLTEN ORES

Shizuo Hayashi, Suzuka, Japan, assignor to Fuji Electric Company, Ltd., Japan

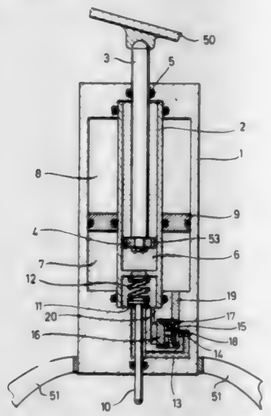
Filed Feb. 3, 1982, Ser. No. 345,223
Claims priority, application Japan, Feb. 24, 1981, 56-26276
Int. Cl.³ B22D 39/00
U.S. Cl. 266—80 3 Claims



1. A pressure-type furnace for pouring molten metal comprising:
a reservoir for storing said molten metal;
an inlet passage in fluid communication with said reservoir for replenishing said molten metal;
an outlet passage in fluid communication with said reservoir for pouring said molten metal;
an air pressure chamber disposed above said reservoir for adjusting the level of said metal in said reservoir;
a source of air pressure for supplying pressurized gas to said air pressure chamber;
means coupled to said air pressure source for controlling the supply of said pressurized gas to said air pressure chamber;
a load cell and a sampling circuit means for intermittently generating signals which are successively representative

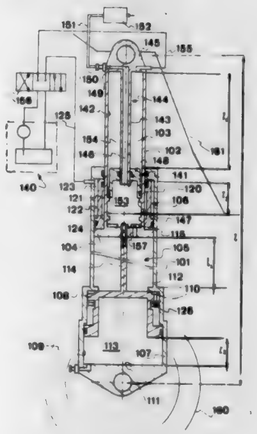
of the instantaneous amount of molten metal in said furnace;
circuit means responsive to differences between said successive signals for generating signals representative of the rate of variation in the amount of said molten metal in said furnace;
means for generating a reference signal representative of a specified rate of variation in the level of molten metal in said furnace;
solenoid valve means for controlling the release of air from the pressure chamber; and
comparator means responsive to said reference signal and said rate of variation signals for generating signals to operate said solenoid valve means when said rate of variation signals exceed said reference signal so that said molten metal is evenly poured when said metal is replenished.

4,445,671
GAS SPRING INCLUDING HYDRAULIC LOCKING MEANS
Hermann Reuscheabach, Roosbach, and Egon Sentinger, Koblenz, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany
Filed Oct. 14, 1981, Ser. No. 311,470
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040483
Int. Cl.³ F16F *9/06*; A47B *9/10*
U.S. Cl. 267—64.12 **11 Claims**



1. In a hydraulically lockable gas spring for continuous height adjustment of an object, in particular of drawing-tables, including hydrauylic locking means comprising a liquid-filled cylinder, a piston rod sealingly guided for movement inward and outward of said cylinder, a piston carried by said piston rod within said cylinder, said piston rod being connected to said object, the cavity of said cylinder being connected to a second liquid chamber via an externally controlled locking valve, and said second liquid chamber being subjected to the pressure of a pressurized gas contained in a gas chamber, the improvement comprising:
piston rod drop preventing means associated with said piston rod, comprising a liquid connection line between said cylinder cavity and said second liquid chamber, and pressure responsive valve means responsive to an excess of a predetermined pressure differential between said cylinder cavity and said second liquid chamber for controlling liquid flow through said connection line so as to prevent the sudden dropping of said piston rod, said pressure responsive valve means comprising
a piston valve acted upon on one side by the pressure of the cylinder cavity and upon the other side by the pressure of the second fluid chamber,
a biassing spring acting on said piston valve in opposition to the pressure within said cylinder cavity, and
a valve disc connected to said piston valve to close said connecting line in the presence of said excess pressure differential.

4,445,672
SHOCK ABSORBER-ACTUATOR
André Turiot, Morsang s/Orge, France, assignor to Messier-Hispano-Bugatti (S.A.), Montrouge, France
Filed Oct. 28, 1981, Ser. No. 316,020
Claims priority, application France, Oct. 30, 1980, 80 23190
Int. Cl.³ F16F *9/06*; B60G *17/00*
U.S. Cl. 267—64.16 **6 Claims**

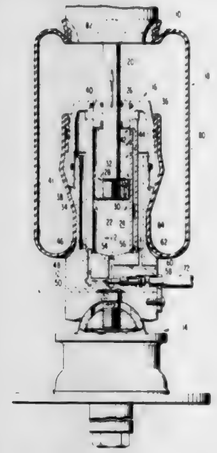


1. Shock absorber-actuator comprising:
a cylinder **101**,
a hollow rod **102** defining a first space **103** and sliding by means of a first separating piston **104** in said cylinder to define in said cylinder two variable volume chambers, a first chamber **105** between said first separating piston **104** and one head of said cylinder **101**, and a second annular chamber **106** between the first separating piston, the cylinder **101** and said rod **102**, and means for establishing communication between the first chamber **105** and said space **103**, a second separating piston **141** capable of sliding in a sealed manner in said space **103** to divide said space into an upper part **154** and a lower part **153**, the upper part **154** containing an compressible fluid and the lower part **153** containing compressible fluid, means **147** defining a lower limit position for said second separating piston **141** in said space **103**, and means **140**, **156**, **155** for varying as desired the volume of incompressible fluid in said upper part **154**.

4,445,673
SHOCK ABSORBER AND AIR SPRING ASSEMBLY
Ray Clark, Pewaukee, Wis., assignor to Applied Power Inc., Milwaukee, Wis.
Filed Jan. 15, 1982, Ser. No. 339,305
Int. Cl.³ F16F *9/04*
U.S. Cl. 267—64.24 **9 Claims**

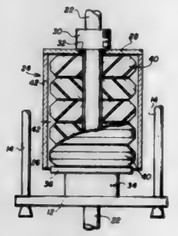
1. An integral shock absorber and spring assembly for remotely adjusting the amount of damping on an upstroke of the shock absorber comprising:
(a) a first base;
(b) a rod projecting from said first base;
(c) a second base;
(d) a cylinder projecting from said second base, said cylinder containing a first bore having a first end and a second end,

the first end being closed by a cap through which said rod slidably projects;
(e) a piston carried by said rod within said first bore;
(f) a reservoir for hydraulic fluid;
(g) a first path of fluid communication from the first end of said first bore to said reservoir, said first path including,
a first longitudinal conduit in said cylinder,
a second radial conduit leading from the first end of said bore to said first longitudinal conduit,
a second blind longitudinal bore in said second base in communication with said first longitudinal conduit,
a third radial bore in communication with said second blind longitudinal bore and containing an adjustable



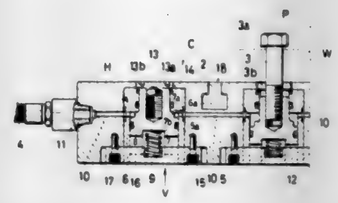
continuous flow control valve, said control valve connected to adjusting means which permit remote adjustment of the fluid flow across the valve, and a fourth longitudinal bore in said second base in communication with said third radial bore and said reservoir;
(h) a second path of fluid communication from said reservoir to the second end of said first bore;
(i) a one-way valve contained in said second path of fluid communication which permits fluid flow towards the second end of said first bore, but prevents it in the opposite direction; and
(j) a spring disposed to hold said piston at an intermediate position in said cylinder.

4,445,674
SHOCK ABSORBER FOR AN OIL WELL PUMPING UNIT
Donald H. Clayton, Jr., 4005 Kingswick, Arlington, Tex. 76016
Filed Apr. 29, 1982, Ser. No. 373,049
Int. Cl.³ F16F *1/36*; F16H *21/32*; G05G *3/00*
U.S. Cl. 267—141 **6 Claims**



1. A shock absorber for use with an oil well pumping unit having a horizontal hanger bar suspended by cables, and there being a vertical polished rod having its lower end connected to a string of sucker rods for actuation of a pump in the borehole, and the hanger bar having an opening through which the polish rod extends, comprising:
(a) a tubular body having a closed top and an open bottom, and the top having a central opening through which the polished rod passes;
(b) a rigid spool having a central opening which is significantly larger than the diameter of the polished rod, such that the polished rod may pass through said central opening without any risk of establishing rubbing contact with the inner surface of said spool, and the lower face of said spool being configured so as to rest on top of the hanger bar;
(c) a circular plate having a diameter slightly less than the internal diameter of the tubular body, and the plate having a central opening which is sufficiently large as to preclude interference with the polished rod, and the plate having an upper surface which is substantially flat and a lower surface which is configured to rest on top of the spool;
(d) a plurality of elastomeric discs positioned in a stack within said tubular body, and each disc having an external diameter slightly less than the internal diameter of the tubular body, and each disc having an axial opening for receiving the polished rod, and the height of the stack of elastomeric discs in their uncompressed condition being approximately the same as the height of the tubular body, and the combined height of the rigid spool and the stack of compressed discs being more than the height of the tubular body when the discs are fully compressed within said tubular body, whereby the bottom edge of the tubular body is prevented from making contact with the hanger bar when a downwardly directed load is placed on the top of the tubular body by the polished rod.

4,445,675
WORK-CLAMPING UNIT FOR USE IN MACHINE TOOLS
Ichiro Kitaura, Itamishi, Japan, assignor to AIOI Seiki Kabushiki Kaisha, Japan
Filed Nov. 18, 1981, Ser. No. 322,660
Claims priority, application Japan, Dec. 2, 1980, 55-173384[U]
Int. Cl.³ B23Q *7/00*
U.S. Cl. 269—20 **10 Claims**



1. A work-clamping unit for use in machine tools, said work-clamping unit comprising:
a base plate made of steel and provided with a top surface and a bottom surface;
said base plate including a plurality of separate and identical hydraulic cylinders totally embedded therein, and a stopper means provided on the bottom surface of the base plate in engagement with recesses in said hydraulic cylinders; said hydraulic cylinders being disposed in a given regular pattern, with each of said separate cylinders spaced a given regular distance longitudinally and transversely from each adjacent one of said separate cylinders, respectively;
each of said hydraulic cylinders including a piston vertically movable beneath said top surface of said base plate, and an

oil chamber for actuating said piston downward, said stopper means in engagement with recesses provided in said piston, said piston having means for enabling a clamping member to be secured thereto so as to effect a unitary movement of said piston and said clamping member;

said stopper means provided to prevent rotation of said piston when said clamping member is secured to said piston and to fasten said cylinder to said base;

said top surface having openings for said clamping members to pass through, each of said openings being concentric with each of said hydraulic cylinders; and

said base plate including an oil path for supplying each of said hydraulic cylinders with hydraulic pressure, said oil path being communicated with at least a hydraulic supply port, said oil path communicating in series with said oil chambers; hydraulic pressure from one cylinder to another.

4,445,676

FLUID-OPERATED BELL CRANK CLAMPING DEVICE WITH ELASTIC SPRING LINK AND RELEASABLE CLAMPING ARM

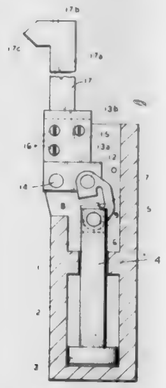
Josef-Gerhard Tünkers, Ratingen, Fed. Rep. of Germany, assignor to Tuenkers Maschinenbau G.m.b.H., Ratingen, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,455

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3130942

Int. Cl.³ B23Q *3/02*

U.S. Cl. 269—32 **9 Claims**



1. A fluid-operated clamping device comprising support means forming a cylinder; a piston reciprocatable in said cylinder; a piston rod fixed at one end to said piston and having opposite free end projecting beyond said cylinder; a bell crank mounted on said support means for tilting movement about a pivot axis substantially normal to said piston rod and having a first arm and a second arm extending transverse to said first arm; a clamping arm connected to the other arm of said bell crank readily releasably so as to allow removal of parts of the clamping device from said clamping arm for their replacement without removing said clamping arm from its working position; and spring link means formed at a central portion thereof with a slot extending from one side thereinto and partly dividing said spring means into two springy end portions pivotally connected with said free end of said piston rod and one of said arms of said bell crank respectively so as to allow clamping of workpieces with a substantially constant clamping force and also clamping of workpieces having different thicknesses.

4,445,677

CLAMPING APPARATUS FOR PLASTIC PIPE

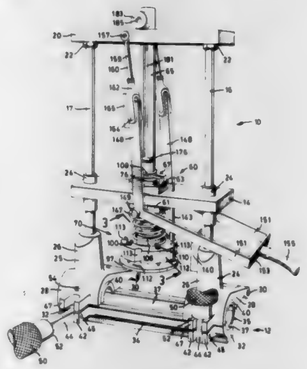
Bent J. Hansen, Caledon East, and Clifford F. Thompson, Weston, both of Canada, assignors to Cliffside Pipelayers, Scarborough, Canada

Filed Mar. 15, 1982, Ser. No. 358,359

Claims priority, application Canada, Feb. 1, 1982, 395274

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—41 **8 Claims**



1. An apparatus for clamping a plastic fitting against a plastic pipe and for holding them together with a predetermined clamping force, comprising:

a carriage,

guide means for guiding the carriage in vertical motion,

a fixed pipe support portion below the carriage,

a frame portion fixed with respect to said pipe support portion,

a first toggle link pivoted to the carriage at a first axis,

a second toggle link pivoted to said frame portion at a second axis, the two toggle links being pivoted to each other at a third axis,

first means to prevent the toggle links from going significantly past a dead center position in which the three axes are aligned in an approximately vertical direction, and the carriage is in its lowermost position,

second means connected to the carriage for holding said plastic fitting,

and lever means for rotating one of said toggle links, the lever means including a lever fixed with respect to said first toggle link and extending at an angle with respect to the first toggle link, so that when the three axes are in alignment the lever extends in a generally sidewards direction.

4,445,678

PRECISION ALIGNED SPLIT V-BLOCK

Irwin S. George, 3240 Siringo Rd., Santa Fe, N. Mex. 87501

Filed May 24, 1982, Ser. No. 381,453

Int. Cl.³ B25B *1/00*

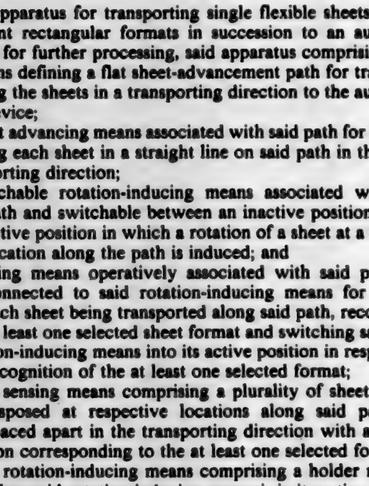
U.S. Cl. 269—88 **7 Claims**

1. A light-weight, precision aligned V-block clamping device comprising:

(1) two symmetrical and equal halves,

(2) means for securing together the halves to form essentially a V-notch,

(3) means for repeated and accurate alignment of the V-block device by using two, round key lugs in the base of one half of the V-block device, said key lugs being placed in T-slots of a mill table so as to form an angle selected from the class consisting of 30°, 45°, 60° and 180°, and



(4) means for attaching the V-block device to the mill table using the T-slot of said table.

4,445,679

APPARATUS FOR TRANSPORTING SINGLE SHEETS OF DIFFERENT RECTANGULAR FORMATS

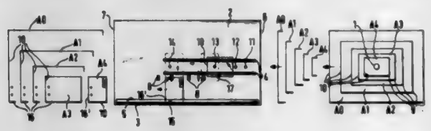
Otto Bay, Luzernstrasse 45, CH-4553 Subingen, Switzerland

Filed Dec. 18, 1981, Ser. No. 332,305

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048298

Int. Cl.³ B65G *47/24*; B65H *7/10, 9/08*

U.S. Cl. 271—227 **12 Claims**



1. Apparatus for transporting single flexible sheets having different rectangular formats in succession to an automatic device for further processing, said apparatus comprising:

means defining a flat sheet-advancement path for transporting the sheets in a transporting direction to the automatic device;

sheet advancing means associated with said path for advancing each sheet in a straight line on said path in the transporting direction;

switchable rotation-inducing means associated with said path and switchable between an inactive position and an active position in which a rotation of a sheet at a selected location along the path is induced; and

sensing means operatively associated with said path and connected to said rotation-inducing means for sensing each sheet being transported along said path, recognizing at least one selected sheet format and switching said rotation-inducing means into its active position in response to recognition of the at least one selected format;

said sensing means comprising a plurality of sheet sensors disposed at respective locations along said path and spaced apart in the transporting direction with a separation corresponding to the at least one selected format;

said rotation-inducing means comprising a holder movable when said rotation-inducing means is in its active position into contact with a sheet at the selected location for causing that sheet to have a stationary axis of rotation perpendicular to the plane of said path, and control means for maintaining said rotation-inducing means in its active position for a time sufficient to enable a sheet contacted by said holder to undergo a rotation by 90°; and

said sheet advancing means being constructed to permit slippage of a sheet at the selected location for permitting such rotation to occur.

4,445,680

SHEET DISTRIBUTION METHOD

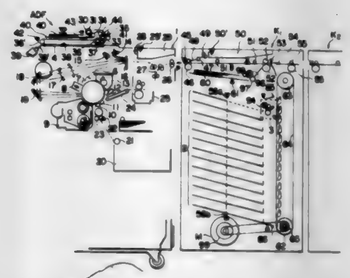
Hideo Kikuchi, and Tamaki Kaneko, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,287

Claims priority, application Japan, Sep. 28, 1979, 54-124873

Int. Cl.³ B65H *39/11*

U.S. Cl. 271—290 **4 Claims**



1. A sheet distribution method for collating a plurality of sets of copies produced by a copying machine into respective bins of a collating apparatus operatively connected to the copying machine, each set of copies consisting of one copy of each respective page of an original document, comprising the steps of:

(a) providing first display means;

(b) displaying a total number of sets of copies to be produced and collated on the first display means;

(c) computing whether the total number of sets is greater than a number of available bins in the collating apparatus;

(d) when the total number of sets is smaller than the number of available bins, collating the sets of copies into the respective bins in a single collation operation;

(e) when the total number of sets is greater than the number of available bins, collating the sets of copies into the respective bins in a plurality of successive collation operations;

(f) providing second display means;

(g) during collation of copies of a page of the document by the collating apparatus, computing a total number of copies of said page which have been collated; and

(h) displaying the total number of copies on the second display means.

4,445,681

APPARATUS FOR REMOVING FLEXIBLE FLAT PRODUCTS FROM A PRODUCT STREAM

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Aug. 28, 1981, Ser. No. 297,216

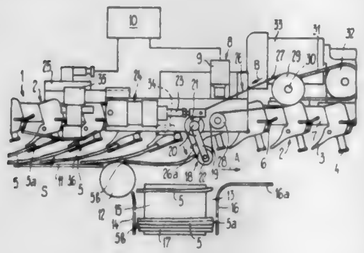
Claims priority, application Switzerland, Sep. 16, 1980, 6923/80; Apr. 9, 1981, 2388/81

Int. Cl.³ B65H *29/04*

U.S. Cl. 271—300 **35 Claims**

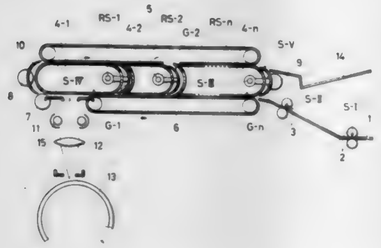
1. An apparatus for the removal of flexible, flat products, especially printed products, from a product conveying stream moving in a predetermined product conveying direction and defining a product conveying path, compriaing:

a conveyor device;
said conveyor device being provided with gripper elements arranged in spaced relationship from one another at said conveyor device;
at least one release device which can be selectively switched-on and switched-off;
said release device, when assuming its switched-on condition, opening the gripper elements moving therepast;
at least one stop means arranged at the region of the release



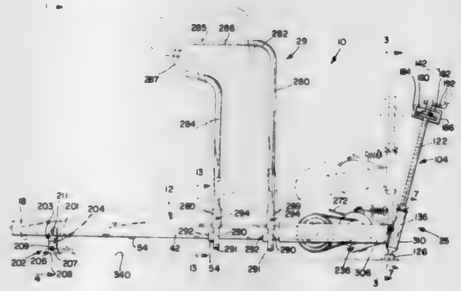
device which upon switching-on and switching-off the release device can be respectively introduced into and retracted from the product conveying path for the products;
each said stop means comprises an impact surface which is moved in a direction away from the gripper elements when said stop means is introduced into the product conveying path; and
said impact surface is defined by a portion of a revolvingly driven band.

4,445,682
ORIGINAL CIRCULATING AND CONVEYING DEVICE FOR COPYING MACHINE
Hiroyasu Uchida, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Apr. 8, 1982, Ser. No. 366,615
Claims priority, application Japan, Jun. 8, 1981, 56-86912
Int. Cl.³ B65H *29/58*
U.S. Cl. 271—301 **5 Claims**



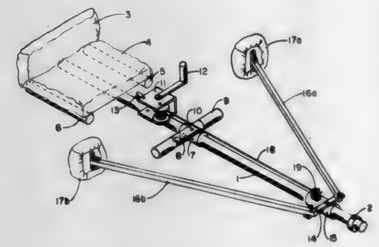
1. A recirculating document handling apparatus for a copying machine of the type wherein a plurality of copies of a document are obtained by repeatedly transporting said document past an exposure station until a desired number of exposures of said document have been made, said handling apparatus comprising:
conveying means for conveying a document from a document insertion position to a document discharge position along a conveying path past said exposure position;
detection means for detecting the size of said document; and
recirculating means for selectively recirculating said document back to said exposure station through a recirculation path before it reaches said discharge position until said desired number of copies have been made, said recirculating means being responsive to said measured document size to vary the length of said recirculation path, said recirculating means being disabled to thereby permit said document to be forwarded to said discharge position without recirculation after only one exposure has been made regardless of the number of exposures desired when said detection means detects that said document exceeds a predetermined size.

4,445,683
EXERCISE TREADMILL WITH ROCKABLE FEET
Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321
Continuation-in-part of Ser. No. 226,766, Jan. 21, 1981, Pat. No. 4,374,587, which is a continuation-in-part of Ser. No. 175,516, Aug. 5, 1980, Pat. No. 4,344,616. This application May 17, 1982, Ser. No. 378,627
Int. Cl.³ A63B *23/06*
U.S. Cl. 272—69 **9 Claims**



8. In an exercise treadmill including a generally planar slider bed having a head end, a tail end, and a top surfacing extending substantially between said ends thereof, an endless belt trained over said slider bed defining an upper belt run overlying said slider bed top surfacing and a lower run passing under said slider bed, means for driving said belt for movement of said belt upper run from said head end to said tail end of said slider bed, said slider bed having secured to same adjacent said head end thereof a cross member extending transversely thereof, a pair of screw members each defining a threaded portion that is threadedly mounted in said cross member in spaced apart relation and for rotation about upright axes that are in parallelism and that are at like acute angles with respect to the plane of said slider bed, with each of said screw members having a foot journaled thereon, and means for simultaneously rotating said screw members in the same direction in forward and reverse directions between retracted and extended positions thereof relative to said cross member for threading said cross member longitudinally of said screw members to raise and lower said slider bed head end,
the improvement wherein:
said slider bed has spaced rear feet adjacent its tail end that are rockably connected thereto,
said feet being proportioned to support said slider bed with said plane thereof horizontally disposed when said screw members are in their retracted positions relative to said cross member with the screw member threaded portions thereof being largely disposed above said cross member,
said screw member threaded portions being proportioned in length such that when said screw member threaded portions are in their extended positions relative to said cross member, with said screw member threaded portions thereof being largely disposed below said cross member, said slider bed is disposed at the acute angle that complements said acute angles, relative to the horizontal,
said screw members in their said retracted positions being at said acute angles relative to the horizontal and said screw members in their said extended positions being substantially vertically disposed, and said rear feet being moved by said slider bed toward said feet of said screw members when said screw members are moved to their said extended positions, and said rear feet being moved by said slider bed away from said feet of said screw members when said screw members are moved to their said retracted positions.

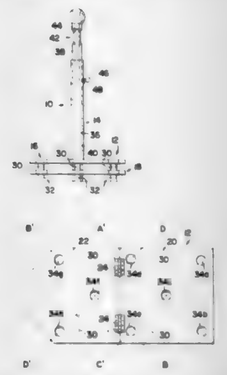
4,445,684
LEG STRETCHING MACHINE
Henry C. Ruff, One Crown St., Hyde Park, Mass. 02136
Filed Jul. 19, 1982, Ser. No. 399,475
Int. Cl.³ A63B *23/04, 21/12*
U.S. Cl. 272—134 **5 Claims**



1. A leg stretching machine comprising:
a shaft having a top side, a bottom side, a front end, and a back end;
a seat attached on the top side at the back end of the shaft;
a winch mounted on the shaft between the seat and the front end of the shaft;
a cross-bar having a pair of ends slideably mounted on the shaft between the winch and the front end of the shaft;
a flexible connecting means between the winch and the cross-bar;
a pair of rods each having two ends, one end of which is pivotally attached to the cross-bar; and
a pad means pivotally attached to the opposite end of each rod and each being adapted to engage a user's leg while seated on the machine whereby the user may operate the winch and draw the cross-bar toward him and thereby cause the pads to be forced against his legs.

4,445,685
BATTING TEE
Edward J. Cardieri, P.O. Box 2393, St. Leo, Fla. 33574
Continuation-in-part of Ser. No. 259,256, Apr. 30, 1981, Pat. No. 4,383,686. This application Mar. 19, 1982, Ser. No. 359,699
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 R **8 Claims**

1. A batting tee comprising a base and a substantially vertical adjustable tee member including an elongated hollow interconnecting element having an upper tee element telescopingly disposed therein, and a substantially flexible ball support member attached to the upper portion of said upper tee element and an adjustment means to selectively lock said upper tee element in a predetermined position relative to said elongated hollow interconnecting element and a plurality of apertures comprising a predetermined pattern formed in said base to selectively receive said elongated hollow interconnecting element to vary the ball hitting position relative to the batting tee, said predetermined pattern comprises at least two pair of substantially parallel diagonal rows of apertures wherein said two pairs of diagonal substantially parallel rows are inclined relative to each other to permit the batter to hit inside, over the center and outside pitcher from either of two positions according to the hitter's position in the batter's box on either side of said batting tee, said base comprises an upper base member comprising a



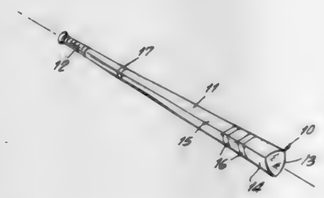
first and second base element hingedly coupled together normally disposed in co-planar relationship to each other.

4,445,686
TENNIS TEACHING DEVICE
James C. Daugherty, 2709 Cypress, Muncie, Ind. 47302
Filed Sep. 19, 1980, Ser. No. 188,933
Int. Cl.³ A63B *69/38*
U.S. Cl. 273—29 A **10 Claims**



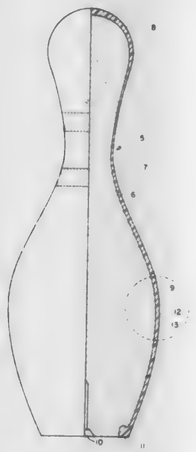
1. A tennis teaching device adapted to be removably secured to a tennis racket having a head portion, a throat portion and a hand grip comprising:
a substantially rigid strap having first and second end portions and an intermediate portion disposed between said first and second end portions;
first means for removably attaching said first end porion of said strap to said throat portion of said racket; and
second means for removably attaching said second end portion of said strap to the forearm of a player adjacent to the wrist of the player;
said intermediate portion being disposed at a predetermined angle relative to said first end portion along the longitudinal central axis of said strap, said predetermined angle being formed by bending said strap along said longitudinal central axis, said intermediate portion further being rotated a predetermined angular amount relative to said first end portion, said predetermined angular amount being formed by rotating said intermediate portion in a direction substantially perpendicular to said longitudinal central axis of said strap;
said second end portion of said strap being disposed at a predetermined angle relative to said intermediate portion along said longitudinal central axis of said strap, said predetermined angle being formed by bending said strap along said longitudinal central axis at another location along said strap;
said strap and said first and second attaching means cooperating to hold the forearm and the wrist of said player in a fixed position relative to said tennis racket throughout the stroke of said racket.

4,445,687
BASEBALL BAT
William H. Merritt, 350 First Ave., New York, N.Y. 10010
Filed Jun. 28, 1982, Ser. No. 392,386
Int. Cl.³ A63B 59/06
U.S. Cl. 273—72 R 4 Claims



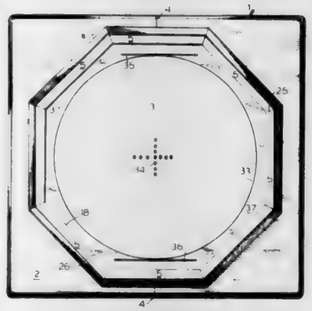
1. A ball bat comprising an elongated head portion at one end and an elongated substantially cylindrical handle at the other end; said head portion having a substantially triangular cross-sectional shape; said triangular cross-sectional shape comprised of a front arcuate ball striking face and two arcuate converging sides; said front arcuate ball striking face comprising a surface in the shape of a segment of a circle generated by a radius centered about a point substantially and rearwardly removed from the geometric center of the bat to provide a head portion having a ball striking surface of more gradual curvature than a conventional bat of circular cross-sectional shape and substantially the same cross-sectional area as said conventional bat of circular cross-section, said arcuate ball striking portion being defined by a chordal distance between the ends of the said segment substantially equal to the diameter of the head portion of said conventional bat.

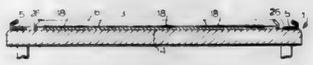
4,445,688
BOWLING PIN HAVING AN IONOMER RESIN CLADDING
Fernando V. Frillici, Fairfield, Conn., and Joseph R. Infantino, Chappaqua, N.Y., assignors to AMF Incorporated, White Plains, N.Y.
Filed Apr. 4, 1978, Ser. No. 893,369
Int. Cl.³ A63D 9/00
U.S. Cl. 273—82 R 10 Claims



1. A bowling pin comprising a wood core encased in a plastic cladding composition comprising a resinous layer composed of an ionomer resin, said pin having improved break-in performance, exhibiting in use a relatively high initial scoring level.

4,445,689
MARBLE PLAYING COURT
Judson C. Rainey, 2501 Haisel St., Rte. 7, Gulfport, Miss. 39503
Filed Feb. 11, 1980, Ser. No. 120,647
Int. Cl.³ A63F 7/00
U.S. Cl. 273—118 R 15 Claims



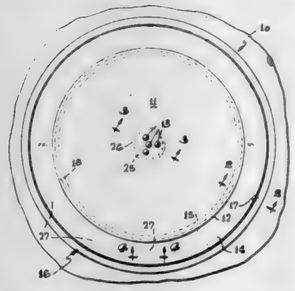


1. A marble playing court comprising:
a mat of a firm flexible material having a peripheral edge; and
a plurality of border members around the periphery of said mat, each border member having a base which has an upper surface at the inner edge thereof level with the upper surface of the mat at the periphery thereof and forming a continuation thereof and having an inner edge complementary in shape to and abutting a portion of the peripheral edge of said mat to define with said mat a marble playing surface, said marble playing surface having indicia for a marble game thereon, each border member further having an upwardly and inwardly extending marble blocking wall on the outer edge of said base, the ends of said border members abutting the ends of adjacent border members to form a frame completely enclosing the mat and having engaging means engaging complementary engaging means on the abutting ends of adjacent border members.

4,445,690
GAME APPARATUS
Frank D. Cairns, 3635 Artesia Blvd. #230, Torrance, Calif. 90504
Filed Feb. 22, 1982, Ser. No. 350,626
Int. Cl.³ A63F 7/00
U.S. Cl. 273—118 R 5 Claims

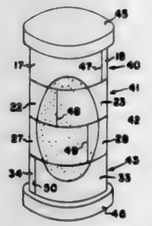
1. A game apparatus comprising a circular mat of plastic-like composition having a playing surface terminating in a circular peripheral edge;
a ring mat surrounding said circular mat having an outer barrier raised above said playing surface;
said barrier comprises a first and a second sheet of resilient material having opposite edges attached together;
said first sheet is of shorter width than the width of said second sheet so that an upwardly curved lip projects from said ring mat;
a plurality of rollable playing pieces adapted to be propelled across said playing surface;

a playing piece collection area defined on said ring mat between said circular mat peripheral edge and said outer barrier;
said circular mat and said ring mat of a composition characterized as being deformable and resilient and adapted to return to a substantially flat shape after deformation; and



said circular mat includes an edge marginal region adjacent said peripheral edge lapped over an inner portion of said ring mat; and
an annular spacer carried on said ring mat beneath said circular edge marginal region.

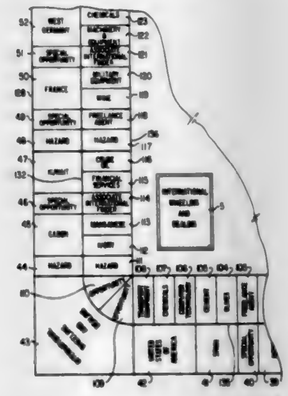
4,445,691
METHOD OF PRODUCING A PUZZLE
Martin H. Stark; George V. Pisani, both of Saginaw, and James J. Pauquette, Bloomfield Hills, all of Mich., assignors to Arrow Paper Products Company, Saginaw, Mich.
Filed Sep. 29, 1982, Ser. No. 426,796
Int. Cl.³ A63F 9/08
U.S. Cl. 273—155 8 Claims



1. A process of producing a puzzle comprising cutting a two-dimensional sheet bearing a selected design into a plurality of parallel strips; cutting each of a selected number of said strips transversely between its ends into at least two pieces; rearranging the pieces of each of said strips end-for-end to form a modified strip; forming each of said modified strips into an endless ring; and mounting each of said endless rings on a spindle for rotation independently of the remainder of said rings.

4,445,692
BOARD GAME INVOLVING INTERNATIONAL TRADE
Walter G. Boyle, 10 Centrepark Dr., Ottawa, Ontario, Canada (K1B 3C1)
Filed Mar. 2, 1982, Ser. No. 330,236
Int. Cl.³ H63F 3/00
U.S. Cl. 273—256 5 Claims

1. In a board game,
a. a board having a playing surface;
b. a plurality of playing spaces constituting a continuous path, said spaces having designations for various countries, commodities, financial services, special opportunities, international wheeling and dealing opportunities, hazards, free insurance, export-import tax, associate international finders, freelance agents and start;
c. a plurality of agency agreement cards, each of which displays the country, goods and services represented and coloring corresponding to the country locations on the game board, there being an agency agreement card for each commodity and/or service within each country on the board, each card also sets forth the cost of establishing the agency and setting up a trading house in that country;
d. a plurality of export enquiry cards, each of which has designations corresponding to a plurality of designated spaces;
e. a plurality of import file enquiry cards, each of which has designations corresponding to a plurality of designated spaces;
f. a plurality of special opportunity cards each of which displays data on international trade opportunities correlated to multiple designated spaces;



g. a plurality of wheeling and dealing opportunity cards each of which displays data on international trade opportunities correlated to multiple designated spaces;
h. a plurality of hazard cards, each of which displays data imposing penalties, both insurable and noninsurable, related to the many hazards and pitfalls of international trade;
i. a plurality of all risk insurance policy cards each of which displays data providing protection from all insurable risks of international trade and the cost of purchasing said insurance;
j. a plurality of playing pieces of different colors;
k. a plurality of agency agreement chips; a plurality of trading house flags;
m. a supply of playing money, and
n. chance device for determining the number of playing spaces over which a playing piece is moved.

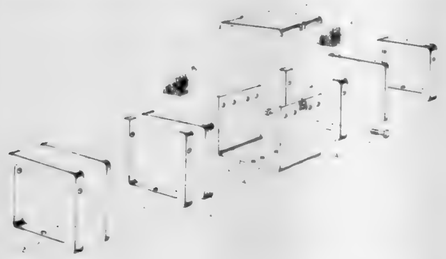
4,445,693
BULLET TRAP
Richard B. Angwin, Oshkosh, Wis., assignor to Laminations Corporation, Neenah, Wis.
Filed Sep. 24, 1981, Ser. No. 305,189
Int. Cl.³ F41J 1/12
U.S. Cl. 273—404 19 Claims

18. A portable bullet trap, comprising
a portable housing of superimposed substantially coplanar plies of sheet-like paper joined by intervening adhesive forming a first rigid laminate tube having an internal wall forming a central opening along a tubular axis disposed generally in the direction of the line of fire,
a second rigid laminate tube of superimposed subtantially

coplanar plies of sheet-like paper joined by intervening adhesive located at a first end of said housing opening and having an outer wall located adjacent to said internal wall of said first tube and a central opening aligned substantially along said tubular axis,

a first baffle of superimposed substantially coplanar plies of sheet-like paper joined by intervening adhesive forming a rigid laminate located within said housing opening and abutting said second tube to substantially enclose said central opening and permit the passage of the bullet therethough without shattering and splintering said first baffle,

a U-shaped member of superimposed substantially coplanar



plies of sheet-like housing opening and abutting said U-shaped bottom portion of said housing and abutting said first baffle,

a second baffle located within said housing opening and abutting said U-shaped member to substantially enclose said central opening, and

a column of pea gravel located within a cavity formed between said first and second baffles and said U-shaped member to engage and disintegrate the bullet after passing through said first baffle,

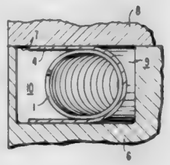
said top wall of said first tube selectively movable to remove said pea gravel to assist in transporting said trap without undue weight.

4,445,694

ALL-METAL EXPANDABLE ULTRA HIGH VACUUM SEAL

Robert Flaherty, Mt. Lebanon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1982, Ser. No. 450,583
Int. Cl.³ F16J *15/02*
U.S. Cl. 277—1 **5 Claims**



5. A process for sealing against passage of a fluid between high and low pressure regions which comprises:

(a) forming a spring member composed of a shapememory alloy into an expanded shape at a temperature at which said alloy is austenitic and therefore remembers said shape;

(b) installing said spring member within an expandable wrapper;

(c) chilling said spring member to a temperature at which said alloy converts to a martensitic phase;

(d) compressing said spring member to a reduced size;

(e) installing said spring member between a first and a second flange surface; and

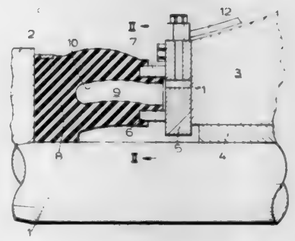
(f) warming said spring member to a temperature whereat said alloy converts back to the austenitic phase, remembers said expanded shape, and therefore elastically deforms the wrapper against said flange surfaces thereby sealing against fluid passage therebetween.

4,445,695

ROTARY MECHANICAL SEALS

Samuel C. Wilkinson, Chichester, England, assignor to Crane Packing Limited, Slough, England

Filed May 20, 1982, Ser. No. 380,467
Claims priority, application United Kingdom, Mar. 10, 1982, 8207021
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—65 **7 Claims**



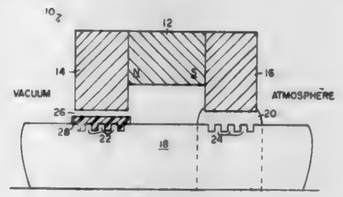
1. A rotary mechanical seal assembly for keeping apart two fluids comprising a rotatable shaft, a seat member and a mounting member both surrounding said shaft, said mounting member carrying a pair of spaced apart face seals in rubbing contact with said seat member and defining between them an annular void space, one of said seat and mounting members being rotatable with said shaft and the other of said members being stationary with respect to said shaft, passage means in one of said members defining a drain passage leading into said void space, and pumping means rotatable with the shaft to pump to said drain passage any fluid which enters said void space.

4,445,696

NONBURSTING MAGNETIC LIQUID SEALS FOR HIGH VACUUM APPLICATIONS

Kuldip Raj, Merrimack; Ronald Moskowitz, Hollis, and Raymond Rodier, Nashua, all of N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed Feb. 22, 1983, Ser. No. 468,339
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—80 **14 Claims**



1. A single pole, ferrofluid magnetic seal apparatus adapted to provide a ferrofluid pressure-type seal about a shaft extending between a first low-pressure and a second high-pressure environment, which seal apparatus comprises:

(a) an annular permanent magnet having poles of opposite polarity and adapted to surround the shaft to be sealed;

(b) first and second magnetically permeable pole pieces, each having a one and another end, the one end of each pole piece in a magnetic-flux relationship with the opposite poles of the permanent magnet, the other end of each pole piece adapted to extend into a close, noncontacting relationship with the surface of the shaft to be sealed, to define a radial gap at the end of each pole piece, the other end of the second pole piece forming, with the surface of the shaft to be sealed, a plurality of separate stages in the radial gap under the second pole piece;

(c) a ferrofluid retained in the radial gap under the second pole piece between the separate stages, the ferrofluid adapted to provide a plurality of separate O-ring ferrofluid seals about the surface of the shaft to be sealed in operation, and the radial gap under the other end of the first pole piece essentially free of ferrofluid; and

(d) the second pole piece adapted to be placed toward the high-pressure environment and the first pole piece adapted to be placed toward the low-pressure environment, and having a radial gap substantially less than the radial gap under the second pole piece,

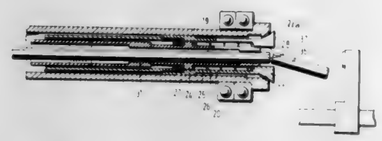
thereby providing a single pole, ferrofluid, pressure-type seal apparatus having a reduced tendency to permit air bursts, when installed about the shaft and between the first low- and the second high-pressure environments.

4,445,697

COLLET

Richard F. Evans, Birmingham, England, assignor to Kenmar Export Ltd., Birmingham, England

Filed May 5, 1981, Ser. No. 260,714
Claims priority, application United Kingdom, May 9, 1980, 8015340
Int. Cl.³ B23B *5/22, 5/34*
U.S. Cl. 279—1 A **8 Claims**



1. In a collet for an automatic machine tool, said collet including a spindle having an internally tapered portion, and an outer sleeve having a bore therethrough within said spindle, said outer sleeve having an externally tapered portion cooperating with the internally tapered portion of said spindle, the invention comprising an inner sleeve axially reciprocable between a retracted and an extended position within the externally tapered portion of the outer sleeve during operation of the machine tool, the inner sleeve being clamped in the outer sleeve when said inner sleeve is in its extended position and means for moving said inner sleeve to its axially retracted position during bar stock feeding, the arrangement being such that bar stock when clamped in the collet is clamped by the inner sleeve which is clamped in the bore of the tapered portion of said externally tapered portion of the outer sleeve and short bar stock ends are free to fall from the inner sleeve in its retracted position.

4,445,698

ROLLER SKATE WITH USER POWERED DRIVE MECHANISM

James R. Stillwell, 3069 W. 16th Ave., Vancouver, British Columbia, Canada

Filed Jan. 5, 1982, Ser. No. 337,111
Int. Cl.³ A63C *17/12*
U.S. Cl. 280—11.115 **5 Claims**

1. A skate adapted to derive motive power from the body weight of the user imposed thereon, comprising:

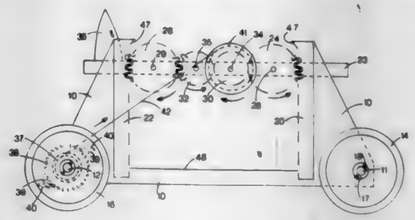
(a) a frame having axles and ground engaging wheels thereon, at least one of the wheels being a driving wheel,

(b) a foot support, adapted to hold one of the user's feet,

(c) a pair of front racks and a pair of rear racks, the racks of a pair being vertically connected to the frame and spaced apart transversely from the longitudinal axis of the frame,

(d) a pair of front gears rigidly connected to a front shaft, and a pair of rear gears rigidly connected to a rear shaft, the front and rear shafts being rotatably connected to the foot support, and the front and rear gears being adapted to mesh with the front and rear racks respectively,

(e) intermediate gears rotatably connected to the foot support and adapted to mesh with the front and rear gears so



that the foot support is maintained in a pre-determined support position and the front and rear gears are rotating in an opposite direction during vertical reciprocating movement of the foot support,

(f) driving means cooperating with the gears and each driven wheel,

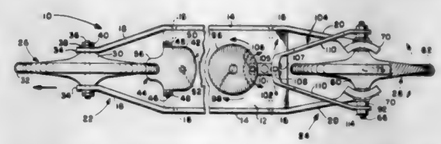
(g) restoring means for returning the foot support to its upward position after release of the downward pressure of the foot.

4,445,699

COASTER AND SWIVEL ASSEMBLY THEREFOR

Edward Darasko, 30 Northfield Rd. Apt. 211, Bedford, Ohio 44146

Filed Oct. 9, 1981, Ser. No. 309,928
Int. Cl.³ B62M *1/00*
U.S. Cl. 280—87.04 R **17 Claims**



1. A coaster comprising a foot platform, front and rear platform supporting wheels mounted on said platform for rotation about their respective rotational axes, one of said wheels further being mounted on said platform for pivotal steering movement, a foot steerable member supported on said platform for pivotal movement about a vertical axis, and linkage means connected to said foot steerable member and connected to said one of said wheels for effecting pivotal steering movement of said one of said wheels in response to pivoting of said foot steerable member.

4,445,700

HIGHWAY TRANSPORT TRUCK TIRE WATER SPLASH SHIELD

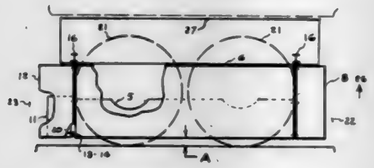
Warren C. Schroeder, 200 Cambridge Dr., Hagerstown, Md. 21740

Filed Oct. 23, 1981, Ser. No. 314,220
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **17 Claims**

1. A highway transport truck tire water splash shield for each group of two or more dual wheels of a transport tractor and each group of two or more dual wheels of a transport trailer connected to said tractor; said wheels mounted with

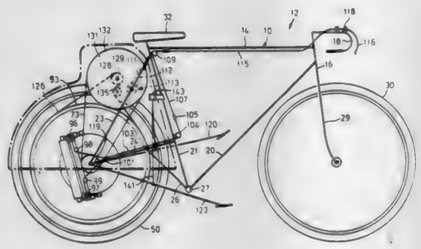
pneumatic tire communicating with a road bed, said tractor and trailer each equipped with encompassing structures forming removable enclosures with holes introducing an airflow through, disrupting the encased enclosure atmosphere reducing wheel water throw and splash, which comprises a tractor enclosure including:

(a) a straight front panel;
(b) a straight outside panel;
(c) a straight inside panel;
(d) a straight upper rear panel;
(e) a semi-circular rear panel;
(f) a semi-circular secondary rear panel;
(g) four independent corner posts with upper horizontal pads with a plurality of captive studs in said corner posts attached all said panels;
(h) a rear lower cross bar interconnecting said corner posts;
(i) a tractor frame mounted to the transport tractor which supports the tractor enclosure;
(j) tractor frame support pads attached by a connecting means to said corner posts; and



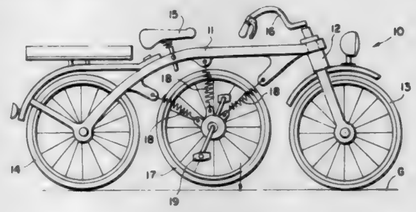
(k) a wing stud in each said tractor enclosure support pad and securing said corner post; and a trailer enclosure including:
(l) a semi-circular front panel;
(m) a straight outside panel;
(n) a straight inside panel;
(o) a semi-circular rear panel;
(p) a semi-circular lower secondary rear panel;
(q) four independent corner posts and upper horizontal pads with a plurality of captive studs in said corner posts attaching all said trailer enclosure panels;
(r) a rear lower cross bar interconnecting said corner posts;
(s) a frame mounted to the transport trailer which supports each trailer encosure;
(t) trailer frame support pads attached by a connecting means to said corner posts;
(u) a wing stud in each said trailer enclosure support pad and securing said corner post.

4,445,701
VEHICLE STRUCTURE
Edward A. Stroud, Toronto, Canada, assignor to Stroudex Industries Inc., Brampton, Canada
Filed Dec. 14, 1981, Ser. No. 330,707
Int. Cl.³ B62M *1/10*
U.S. Cl. 280—217 **10 Claims**



1. A vehicle comprising:
a frame,
a steerable wheel mounted on said frame,
two coaxial rear wheels mounted for free rotation in spaced-apart relation on said frame,
a flywheel mounted for rotation between said coaxial rear wheels,
means for imparting rotation to said flywheel,
a clutch plate rotatably mounted outwardly adjacent at least one rear wheel and coaxial therewith,
speed-change means for allowing rotation of the flywheel to rotate the clutch plate at a faster rate than said flywheel, said speed-change means including a freely turning first pulley wheel mounted for rotation about an axis beyond the rim of the rear wheels, the first pulley wheel being fixed with respect to a second pulley wheel of smaller diameter which turns therewith, first endless drive means entrained around said flywheel and said second pulley wheel, and second endless drive means entrained around said first pulley wheel and a small-diameter portion of a clutch plate assembly of which said clutch plate is a part,
and frictionless clutch means between the clutch plate and said at least one rear wheel.

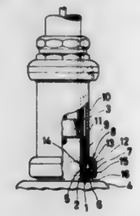
4,445,702
SUPER BIKE
Daniel Reyes, 233 Broadway, Room 3615, New York, N.Y. 10007
Filed Nov. 23, 1981, Ser. No. 324,049
Int. Cl.³ B62K *5/02*
U.S. Cl. 280—239 **1 Claim**



1. An improved super bike, comprising in combination, a bicycle having a frame, a fork, a front wheel supporting said fork, a rear wheel supporting a rear end of said frame, a third wheel carried by said frame and located between said front and rear wheels in combination with means mounted on said frame supporting said third wheel spaced from the ground, in further combination with pedals on said third wheel, a rider's seat on said frame, and a handle bar on said fork whereby the rider's weight on said third wheel pedals causes ground engagement.

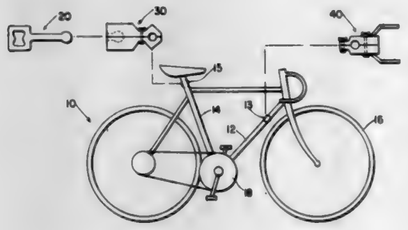
4,445,703
HEAD SET ARRANGEMENT FOR BICYCLE
Michiaki Tange, Osaka, Japan, assignor to Marui Ltd., Hyogo, Japan
Filed Jul. 8, 1982, Ser. No. 396,436
Claims priority, application Japan, Oct. 16, 1981, 56-154475[U]
Int. Cl.³ B62K *21/06*
U.S. Cl. 280—279 **7 Claims**

7. A head set arrangement for a bicycle, comprising a crown ball race inserted, through its central bore, over a fork stem and fixed to the upper part of a fork crown, and provided with an annular semi-circular groove in its outer periphery close to its bottom, a circular ring formed of synthetic rubber fitted into said groove, a bottom ball head cup formed of a light alloy, rotatably inserted over said fork stem through its central bore, and provided with an annular semi-circular groove in its inner periphery close to its bottom, an annular track member disposed within said bottom ball head cup, and a bearing ball interposed between the said crown ball race and said track



member, said circular ring being placed in the second-mentioned annular groove with a slight gap therebetween.

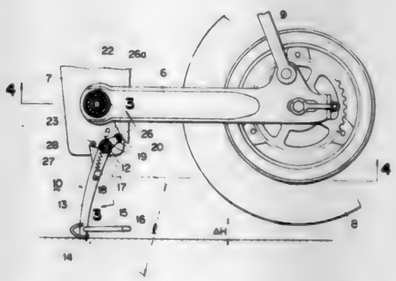
4,445,704
CONTROL ASSEMBLY FOR BICYCLES
A. Ray Troxler, 4801 Summit Ave., Greensboro, N.C. 47205
Filed Nov. 20, 1981, Ser. No. 323,308
Int. Cl.³ B62K *21/00, 21/10*
U.S. Cl. 280—292 **8 Claims**



1. In a two-wheel cycle having a forward steering wheel and a rear wheel and a pedal assembly located between said wheels, a control assembly mounted on said cycle enabling an ambulant person to push the cycle and maintain its stability when in motion, comprising:
means removeably attachable to said cycle for directly transferring momentum imparted to said cycle by the ambulant person,
and means for restraining pivotal movement of said steering wheel, said restraining means comprising opposing arm means for capturing a portion of said steering wheel therebetween, said arm means being pivotable between a first operative position wherein said steering wheel portion is captured therebetween, and a second inoperative position wherein said arm means are pivoted rearwardly of said first position and lateral movement of said steering wheel is unrestrained.

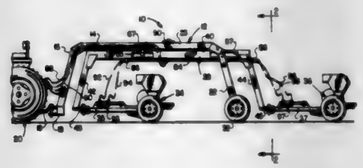
4,445,705
STAND DEVICE FOR TWO-WHEELED VEHICLES
Tsutomu Hayashi, Tokyo, and Akira Shigihara, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 25, 1982, Ser. No. 392,359
Claims priority, application Japan, Jun. 30, 1981, 56-102514
Int. Cl.³ B62H *1/02*
U.S. Cl. 280—302 **5 Claims**

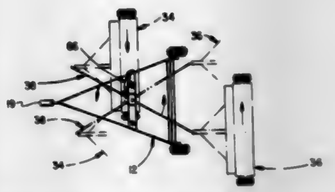
1. A stand device for two-wheeled vehicles, comprising:
a vehicle body frame;
a main stand member pivotally connected at a base end thereof to said vehicle body frame;
a rear wheel support member pivotally connected at a base end thereof to said vehicle body frame; and
urging means for moving said rear wheel support member pivotally upwardly in response to a pivotal downward movement of said main stand member, said urging means



being disposed between said main stand member and said rear wheel support member.

4,445,706
TANDEM HITCH APPARATUS
James P. Jarosek, Rte. 1, Box 326, Waco, Tex. 76710
Filed Mar. 11, 1982, Ser. No. 357,197
Int. Cl.³ B62D *53/00*; B60D *1/00*
U.S. Cl. 280—411 C **12 Claims**





1. A hitch apparatus for towing first and second implements spaced apart behind a towing vehicle in a laterally spaced echelon working formation and in a generally in-line tandem transport formation, said apparatus comprising:
an elongated frame including a tongue part at one end of said frame for connecting said apparatus to said towing vehicle, and ground engaging support wheel means disposed at the opposite end of said frame, said frame being normally supported generally above and bridging over said first implement and with said support wheel means being disposed between said first and second implements;
implement drawbar means comprising an elongated beam pivotally connected to said frame by pivot means on said beam between opposite ends of said beam, said beam including a pair of spaced apart hitch points on opposite sides of said pivot means for connecting said first implement and said second implement to said drawbar means, respectively, for towing said implements by said drawbar means;
actuator means connected to said drawbar means and said frame for pivotally moving said drawbar means to move

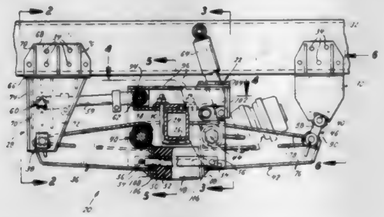
said first and second implements between respective laterally spaced positions in said working formation and substantially in-line tandem positions in said transport formation; and bearing support means on said frame and engageable with said beam at a point spaced from said pivot means for supporting said beam against deflection due to towing forces exerted on said implements.

4,445,707

SUSPENSION SYSTEM WITH PARALLELOGRAM AXLE STABILIZATION AND CENTRAL ELASTOMER SPRING

John E. Raidel, Rte. 1, Box 400-M, Springfield, Mo. 65804

Filed Jan. 21, 1982, Ser. No. 341,565
Int. Cl.³ B60G *5/00, 11/26;* B10K *23/00*
U.S. Cl. 280—687 **24 Claims**



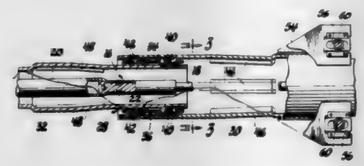
1. A vehicle suspension to support a chassis from at least one axle having an axle seat assembly for mounting the axle to the suspension, parallelogram means for extending between a chassis member and the axle seat assembly to stabilize same, said parallelogram means including a first torque arm, a second torque arm for pivotally connecting to and extending between the axle seat assembly and a chassis member, said torque arms being mounted in opposition to each other, and a central spring means disposed between said torque arms, each of said torque arms having a surface bearing against said central spring so that said spring is compressed thereby to resist axle loading.

4,445,708

ENERGY ABSORBING STEERING COLUMN FOR VEHICLES

Edmond G. Oakes, St. Charles; Frederick P. Arndt, and Leonard F. Grandel, both of Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 9, 1983, Ser. No. 492,606
Int. Cl.³ B62D *1/18*
U.S. Cl. 280—777 **3 Claims**



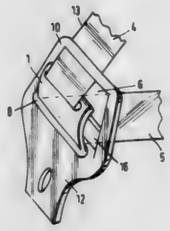
1. An energy absorbing steering column assembly for a vehicle having steerable road wheels comprising a pair of telescopically related mast jacket tubes having a plurality of balls adapted to roll between the walls of the tube during telescopic movement thereof and to plastically deform and form grooves in such walls in a first stage of energy absorption, the improvement comprising first ramp means operatively engaged by a predetermined complement of said balls after predetermined telescopic travel of said column to increase the energy absorbing capacity of said column in a second stage of energy absorption and second ramp means in another of said tubes subsequently operatively engaged by a second complement of said balls to further progressively increase the rate of energy absorption as said tubes relatively move toward the maximum telescoped position in a third stage of energy absorption.

4,445,709

THREE-POINT SAFETY BELT SYSTEM

Alois Bost, Leopoldstr. 102, D-6685 Schiffweiler 2, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 393,770, Jun. 30, 1982. This application Dec. 10, 1982, Ser. No. 448,606
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1982, 3215634
Int. Cl.³ A62B *35/00*
U.S. Cl. 280—801 **19 Claims**



1. In a three-point motorvehicle safety belt apparatus having a belt, a belt takeup unit and a belt runner at which lengths of said belt running across the hips and across the chest of a belt user come together, said runner being designed for gripping onto said belt and keeping its position between said chest and hip lengths of said belt, the invention residing in that said runner has an eye through which said belt is threaded, and a cross-bar on one side of said eye, said apparatus furthermore, having a belt guidepiece, said belt guidepiece comprising two eyes through which said belt is threaded, the two guidepiece eyes being placed on two sides of said cross-bar, a projection means formed on said guidepiece parallel to said eyes, said projection means engaging said runner to limit the relative movement of said guidepiece with respect to said runner, said guidepiece having a handle by which it may be turned in relation to said cross-bar.

4,445,710

MULTISHEET BINDER AND ASSEMBLY

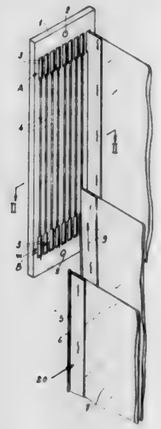
Pierre Borel, Saint Martin d'Heres, France, assignor to Jowa, Grenoble, France

Filed Sep. 28, 1982, Ser. No. 425,864
Int. Cl.³ B42D *17/00;* B42F *11/00*
U.S. Cl. 281—45 **6 Claims**

1. A binding for retaining a plurality of flat members comprising:

an elongated support formed with a plurality of longitudinally extending throughgoing slots in a spaced-apart parallel relationship and each closed at both opposite ends, each of said slots having an enlargement at one end thereof with a width greater than the width of an adjacent portion of the respective slot and a length less than that of the slot, each of said enlargements constituting a window in said support; and

a longitudinally extending bead formed on an edge of each of said members and insertable through a respective window whereby said bead underlies the respective slot, said bead



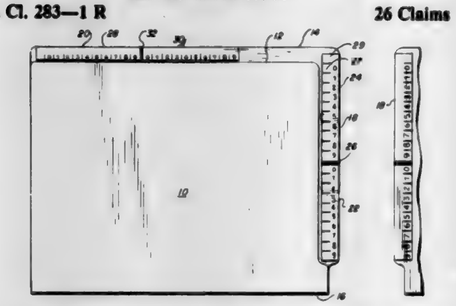
having a thickness less than the width of said window but greater than the width of said slot.

4,445,711

COLOR-CODED NUMERIC OR ALPHABETIC FILING SYSTEM

Walter F. Cunningham, 1370 W. Hampton Pl., Palatine, Ill. 60067

Filed Oct. 2, 1980, Ser. No. 193,438
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—1 R **26 Claims**



1. A document to be uniquely identified for filing and retrieval, said document being adapted for use with colored marker tabs having filing characters thereon in a first position, said document having a front surface and a back surface and a top edge and side edge, and said front surface having an elongated filing character field adjacent said top edge and a side edge and sequential filing characters being positively applied along the top edge and side edge in each of said fields, and said back surface having a filing character field associated with the same side edge as the field on the front surface, and sequential filing characters being positively applied along the side edge in said field;

the filing characters in all fields being arranged to cooperate with a marker tab to form a two-character code with the character on the document being in the second position of the code; and

wherein the field on the front surface, along the top edge extends inwardly from the edge at least two character heights;

the field on the front surface along the side edge extends inwardly of said edge at leaat two character widths; and said field on the back surface along the side edge extends inwardly at least two character heights;

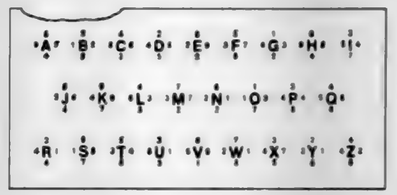
whereby the filing characters on a marker tab can be cooperatively and selectively positioned on said document along a top or side edge to define a two-character filing code.

4,445,712

IDENTIFICATION DEVICES AND METHODS

Edward A. Smagala-Romanoff, Palm Springs, Calif., assignor to ID Code Industries, Inc., Palm Springs, Calif.

Continuation of Ser. No. 111,908, Jan. 14, 1980, abandoned. This application Jun. 25, 1982, Ser. No. 392,297
Int. Cl.³ B42D *15/00;* G06K *19/06*
U.S. Cl. 283—75 **7 Claims**



1. A method of establishing the identity of an unknown client at a subscriber location comprising the steps of:

first, providing the client with a personal positional code consisting of a sequence of a plurality of letters of the alphabet, each of which locates a digit of a multi-digit number establishing the identity of the client;

thereafter, at a subscriber location, presenting the client one of a multiplicity of different grids of digits in which each digit is positionally associated with a letter of the alphabet;

obtaining a first response providing a pre-determined form of identification from the client;

receiving from the client a second response consisting of a multi digit number from the grid as derived from his previously obtained personal positional code; and

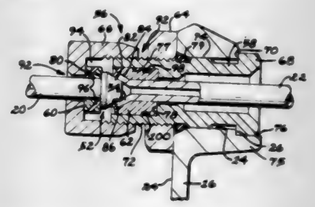
verifying the identity of the client by comparing the identification and number obtained from the client against a register.

4,445,713

BULKHEAD-FLUID-LINE CONNECTOR

E. Eugene Bruning, Normal, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 19, 1982, Ser. No. 399,626
Int. Cl.³ F02B *77/00;* F16L *5/02*
U.S. Cl. 285—14 **2 Claims**



1. A bulkhead-fluid-line connector (10) for joining and supporting a tubular fluid line assembly (12) adapted for passing through an aperature (14) of a housing wall (16), said housing wall (16) having outside and inside surfaces (24,26), said fluid line assembly (12) including first and second fluid lines (20,22), said bulkhead-fluid-line connector (10) comprising:

an enlarged end portion (52) integrally formed on the first

line (20) and having an externally disposed and frusto-conically shaped end surface (82);

another enlarged end portion (54) integrally formed on the second line (22) and having an internally disposed and frusto-conically shaped end surface (86) which is sealedly matedly complementarity with respect to said end surface (82) of the first line (20); and

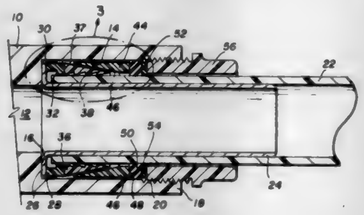
means (56) for releasably coupling said complementary end surfaces (82,86) of the fluid line end portions (52,54) in direct surface-to-surface sealed contact and thereby solely creating a single fluid path joint between the first and second fluid lines (20,22) generally where the fluid line assembly (12) is adapted to pass through the housing wall aperature (14), wherein said releasable coupling means (56) includes a fluid leakage path (92) extending adjacent the single joint of the sealedly contacting fluid line end surfaces (82,86) and adapted to be sealed from said inside surface (26) of the housing wall (16) and further adapted to lead only to the outside of said housing wall (16) said releasable coupling means (56) further includes a fitting (58), first and second retainers (64,66), and first and second collars (60,62), said fitting (58) adapted to slidably extend through said housing wall aperature (14) and defining a stepped longitudinal bore (77) having an internal shoulder (78) through which the fluid line assembly (12) passes, said fitting (58) having an enlarged head end portion (68) defining an external shoulder (70) and another end portion (72), said fitting shoulder (70) adapted to abut one of said inside or outside housing wall surfaces (26,24), said first retainer (64) releasably connected to said another end portion (72) of the fitting (58) and adapted to abut said other of the inside or outside housing wall surfaces (26,24), said second retainer (66) also releasably connected to said another end portion (72) of the fitting (58) and releasably coupling said complementary end surfaces (82,86) of the fluid line end portions (52,54) in direct surface-to-surface sealed contact, said second collar (62) sealedly positioned in said fitting bore (77) against said internal shoulder (78) of the fitting (58) and abutting said second line another end portion (54), said first collar (60) positioned between said first line end portion (52) and said second retainer (66).

4,445,714

COMPRESSION END PIPE COUPLING FOR PLASTIC PIPE

Stanley C. Kisiel, III, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 25, 1982, Ser. No. 361,326
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—23 3 Claims



1. A pipe coupling for connecting an end portion of non-metallic pipe and comprising in combination:

(a) a tubular body defining a central flow passage and including a counterbore communicating with said flow passage, said counterbore extending from a shoulder internal of the body to a distal end of the body for receiving the end of non-metallic pipe to be coupled;

(b) a tubular stiffener within said counterbore having an outwardly extending flange engaging said shoulder and sized to receive the pipe end in a slip fit thereover;

(c) an annular gripper ring having a toothed inner periphery and a tapered outer periphery arranged to surround the received pipe end and adapted to collapse inwardly in a toothed penetration gripping engagement of the pipe periphery in response to a radially inward force imposed thereon;

(d) a spacer ring positioned about the received pipe end at an axial location intervening between the inside face of said stiffener flange and said gripper ring;

(e) a locking ring having a tapered inner surface adapted to surround the tapered outer periphery of said gripper ring and effective when moved axially over said gripper ring in a ramping relation to impose a radial inward force thereon, said locking ring having an outer diameter less than the inner diameter of said counterbore so as to define a radial clearance therebetween and being axially dimensioned for its inward end face to engage and be arrested against further axial movement over said gripper ring by the back face of said spacer ring when a predetermined tooth penetration of said gripper ring into the received pipe end has been achieved;

(f) gasket means surrounding the received pipe end; and

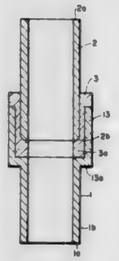
(g) nut means operative to thread inwardly of said body to compress said gasket means and displace said locking ring axially over said gripping ring in a ramp forced relation until the inward end face of said locking ring engages the back face of said spacer ring.

4,445,715

INSULATED JOINT AND METHOD FOR PRODUCING SAME

Takeo Inoue, and Takashi Shirazawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,778
Claims priority, application Japan, Apr. 14, 1980, 55-51151
Int. Cl.³ F16L *11/12*
U.S. Cl. 285—54 2 Claims



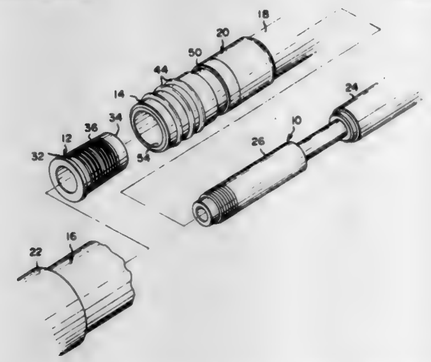
1. An insulated joint comprising: a first tubular member provided at one end of a cylindrical body with an outer circumferential portion having a larger internal diameter than the external diameter of said cylindrical body; a second tubular member having the same internal and external diameters as those of said cylindrical body of said first tubular member and fitted in said outer circumferential portion of said first tubular member with a gap therebetween; and an insulating member disposed in said gap hermetically coupling said first and second tubular members while insulating said first and second tubular members from each other wherein said insulating member comprises a glass-mica body molded in situ by the application of heat and pressure and formed from glass and mica powders with the glass powders constituting 30–50 percent of the powders by volume and wherein said glass powders are comprised of 1.0 molar part PbO, 0.4 molar parts B_2O_3, 0.4 molar parts SiO_2, and 0.2 molar parts AlF_3.

4,445,716

DEVICE AND METHOD FOR ANCHORING AN END OF A PLASTIC LINER INSIDE A PIPE

Joseph W. Hoffman, Liverpool, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 26, 1982, Ser. No. 371,831
Int. Cl.³ F16L *9/14, 55/00*
U.S. Cl. 285—55 4 Claims



1. A device for anchoring an end of a plastic liner to the inside surface of a pipe, the device comprising:

a. an elongated sleeve having first and second ends and a passage therethrough;

b. means for attaching a plastic liner to the second end of the sleeve; and

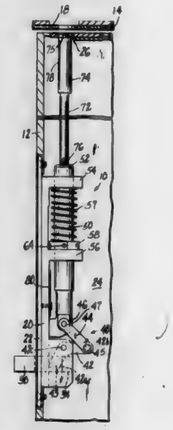
c. a hollow rigid tube with a tapered outer surface having teeth thereon for being forced into the passage at the first end of the sleeve to expand that end against the inside surface of a pipe in which the sleeve may be positioned and with the teeth biting into the passage wall to hold the tube in the passage.

4,445,717

FLUSH BOLT

William B. Imhoff, Springdale, Conn., assignor to Leigh Products, Inc., Grand Rapids, Mich.

Filed May 18, 1981, Ser. No. 264,358
Int. Cl.³ E05C *1/02*
U.S. Cl. 292—177 6 Claims



1. A flush bolt mechanism for use in conjunction with a pair of doors having free adjacent vertical edges when closed, said mechanism adapted to be mounted on one door substantially flush with the vertical edge thereof and to project a bolt from a horizontal edge of said door, said mechanism comprising:

a housing,

said housing defining first and second vertically spaced apart guide means,

a bolt assembly comprising a tubular member received in said guide means for vertical movement between a retracted position and an extended position, a bolt extending from said tubular member,

a trigger member slidably received in said housing and movable substantially perpendicular to said tubular member,

a drive member within said tubular member,

a first spring disposed within said tubular member between said bolt and said drive member and acting to transmit movement of said drive member to said tubular member,

a drive linkage directly connecting said trigger member to said drive member whereby movement of said trigger member inwardly of said housing extends said bolt assembly, said drive linkage comprising a first link having first and second ends and pivotally connected to said trigger at a first end thereof and pivotally connected to said housing intermediate the ends thereof, a second link connected at one end thereof to said drive member and connected at the other end thereof to said second end of said first link, and

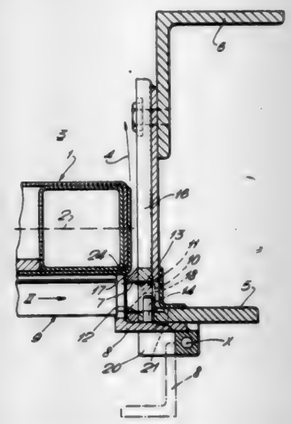
a second spring disposed about said tubular member acting on one of said guide means and biasing said bolt assembly towards a retracted position.

4,445,718

SECURITY DOORS

Brian Nuttall, Sheriffhales, and Charles F. Laxson, Tettenhall, both of England, assignors to Chubb & Son's Lock and Safe Company, London, England

Filed Mar. 29, 1982, Ser. No. 362,820
Claims priority, application United Kingdom, Apr. 22, 1981, 8112476
Int. Cl.³ E05C *13/00*
U.S. Cl. 292—341.17 4 Claims



1. A door arrangement comprising: a door frame; a security door which is hinged in relation to the said frame by hinge means adapted to permit the door to open both inwards to, and outwards from, an area which the door is adapted to close; abutment means associated with the door frame arranged normally to prevent the outward opening of the door, said abutment means being secured by releasable fastening means which are accessible only from outside said area, and are so accessible when the door is closed, whereby release of said fastening means permits the door to be opened outwardly when unlocked if the inward opening path of the door becomes blocked; and a lock for selectively locking the door to the frame, which normally is operable to unlock the door only

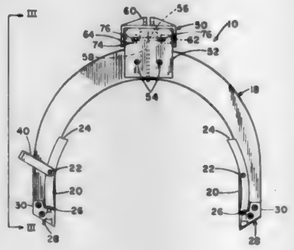
from outside said area and which can retain the door in engagement with the frame to resist opening of the door in both directions in the absence of said abutment means.

4,445,719

RELEASE MECHANISM FOR A CYLINDRICAL OBJECT RECOVERY DEVICE

Donald Miller, Del Mar, and Clark A. Bowers, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1981, Ser. No. 298,712
Int. Cl.³ B66C *1/66*
U.S. Cl. 294—88 **8 Claims**



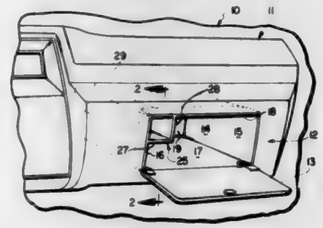
1. A release mechanism for a structural member which has top and bottom sides comprising:
- a block which is attachable to the structural member so as to extend thereabove;
- a piston mounted in the block and movable vertically between up and down positions;
- at least one rod connected to the piston and extending vertically downwardly beyond the bottom side of the structural member so as to be capable of moving the piston to the upward position when forcibly engaged by the object;
- a U-shaped holder fitted over the block with each leg of the holder having a recess;
- a pair of pistons laterally mounted in the U-shaped block in an opposing relationship and movable between inward and outward positions, the pistons being engageable with the holder within the recesses in the outward positions for retaining the U-shaped holder to the block, and clearing the recesses in the inward positions to release the U-shaped holder from the block;
- a rod connected to each lateral piston and extending inwardly for engagement and disengagement with the edge of the vertical piston as the vertical piston moves from its down position to its up position, respectively;
- means spring biasing the lateral pistons toward the inward positions; and
- each rod maintaining the respective lateral piston in its outward holder engaging position when the lateral piston rod is in engagement with the vertical piston, and allowing the lateral piston to be spring biased to its inward disengaged position with respect to the holder when the lateral piston rod is disengaged from the vertical piston;
- whereby upon the object forcibly engaging the bottom of the vertical rod the vertical piston will move upwardly to allow the lateral pistons to move inwardly and release the U-shaped holder from the block and the structural member.

4,445,720

UMBRELLA STORAGE TUBE IN AUTOMOBILE DASHBOARD

Sallie Leaf, 364 Charal La., Highland Park, Ill. 60035, and Arnold E. Rubin, 9217 Keystone Ave., Skokie, Ill. 60076

Filed Jul. 26, 1982, Ser. No. 402,050
Int. Cl.³ B60R *7/06*
U.S. Cl. 296—37.12 **5 Claims**



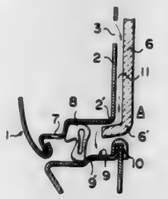
1. A storage device for a collapsible umbrella in an automobile having a compartment permanently mounted in a dashboard of said automobile and having an openable door controlling access from inside said automobile into said compartment, said device comprising:
- an elongated tube having internal dimensions sufficient to closely enclose said umbrella in a collapsed configuration, the tube being substantially closed at one end and open at an opposite end;
- said tube being permanently mounted in said compartment of said automobile and concealed behind said door and in a position slightly downwardly-inclined from the open end to the closed end; and
- water disposal means for passing liquid collected from the tube to a disposal zone.

4,445,721

DRAINING MECHANISM FOR AUTOMOTIVE DOOR

Kouichi Yaotani, Tokyo, and Yasuyuki Ogawa, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd. and Kato Hatsujo Kaisha Ltd., both of Yokohama, Japan

Filed Nov. 19, 1981, Ser. No. 322,957
Claims priority, application Japan, Nov. 19, 1980, 55-165898[U]
Int. Cl.³ B60J *5/04*
U.S. Cl. 296—154 **10 Claims**



1. A vehicle door structure comprising:
- (1) an exterior side panel,
- (2) an interior side panel having aperture sections therethrough for receiving, for example, window and lock mechanisms,
- (3) means for spacedly connecting said exterior and interior panels together along their lower ends thereby defining a space therebetween,
- (4) a weather strip member attached to said connecting means and extended to contact a portion of a doorway of said door, thereby forming a water barrier between said connecting means and said doorway,
- (5) a decorative plate spacedly disposed interiorly of said interior panel and defining a gap therebetween,
- (6) said decorative plate having a lower end portion bent outwardly, toward said weather strip member and disposed between said connecting means and said doorway for channeling water passing through said aperture section and said gap to a region between said connecting means and doorway and adjacent said weather strip member, and
- (7) drain means provided adjacent said weather strip member for draining water channeled thereto by said bent, lower end portion of said decorative plate to the exterior of said door structure

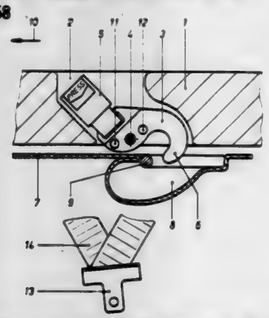
whereby water passing through said aperture sections and gap is channeled outside of the area defined between said interior and exterior panels and exteriorly of said door structure.

4,445,722

SEAT BELT LATCH FOR REAR SEATS

Dieter Schaper, Nauheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1982, Ser. No. 346,487
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110689
Int. Cl.³ B60R *21/00*; A47D *15/00*
U.S. Cl. 297—468 **7 Claims**



1. A safety belt arrangement for the rear seat of motor vehicles whose seat cushion and seat cushion frame of the seat bottom can be folded upwards relative the vehicle floor about a front edge, wherein for every kind of safety belt, the seat cushion has an opening for a belt buckle connected to the vehicle floor and with which there may be coupled a lock plate attached with a belt; characterized in that the belt buckle is arranged on one arm of a two-armed lever pivotally arranged on the seat cushion frame, which lever is provided at its other arm with a coupling member, and that the vehicle floor has an anchoring component and that between the seat cushion and the lever there is an actuating mechanism through which, during depression of the seat cushion by the occupant weight sitting thereon swings the lever into an anchoring position in which the coupling member automatically connects up with the anchoring component and when the occupant weight is removed from the seat cushion automatically disconnects the coupling member from the anchoring component.

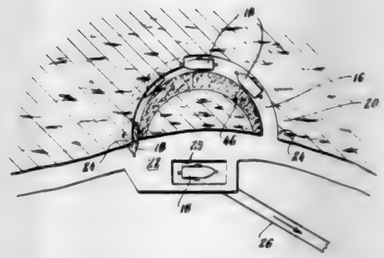
4,445,723

METHOD OF CIRCLE MINING OF ORE

Paul D. McQuade, 147 Woodside Dr., Greenwich, Conn. 06830

Filed Jul. 26, 1982, Ser. No. 402,093
Int. Cl.³ E21C *41/00*
U.S. Cl. 299—11 **5 Claims**

1. A method of deep mining ore comprising laterally cutting a curvilinear, advancing passageway against the continuous face of the mine in a mountain by implements on a vehicle traveling in one direction, providing a work area adjacent to the portals of said passageway at the entrance and exit thereof whereby said vehicle traverses a substantially circular path partially within the passageway in said mountain and partially outside of said mountain over said work area, and said implements on said vehicle being adapted to cut ore from the rock formation on one side wall of said passageway, and means to



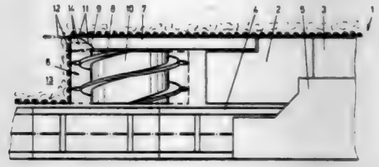
pack the excavated loose rock on the opposite retreating wall to form a support for the roof of the mine, when needed.

4,445,724

CUTTER-LOADER APPARATUS HAVING OVERHUNG SHEARER DRUM

Hans Gröger, Essen-Stelle-Horst, and Ernst E. Harms, Hattingen, both of Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Fed. Rep. of Germany

Filed Sep. 25, 1981, Ser. No. 305,442
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3036981
Int. Cl.³ E21C *25/60*
U.S. Cl. 299—81 **4 Claims**



1. In a drum cutter-loader and face conveyor mining apparatus having an overhung shearer drum rotatable about an axis parallel to the floor, said drum being mounted on a support arm and having helical whorls for removing loosened spoil from a mining area to the said face conveyor, the improvement comprising:
- support arms disposed on the face side of the said shearer drum, high pressure liquid jets for cutting the seam area to accommodate said support arm;
- wherein the end of said support arm adjacent to the said shearer drum is equipped with oscillating nozzles for directing the said high pressure liquid jets substantially in the direction of travel of the said apparatus, and the said support arm is positioned forwardly of the diameter of the said shearer drum; an inclined surface extending over the entire height of said support arm forwardly of said shearer drum and functioning as a cutting edge.

4,445,725

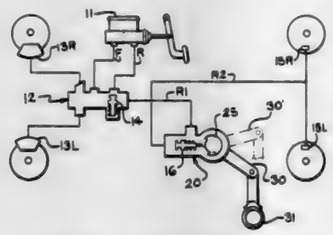
VEHICLE HYDRAULIC BRAKE SYSTEM AND APPARATUS

Gerald M. Sivulka, Ann Arbor, Mich., assignor to Kelsey Hayes Company, Romulus, Mich.

Continuation of Ser. No. 134,801, Apr. 11, 1980, abandoned. This application Jun. 4, 1981, Ser. No. 270,437
Int. Cl.³ B60T *8/22*
U.S. Cl. 303—6 C **6 Claims**

1. In a pressure regulating valve for a vehicle fluidic brake

system wherein said valve includes operable valve means for regulating the input to output pressure relationship and positionable cam means communicating with said operable valve means whereby the position of said cam means in relation to said operable valve means acts to selectively restrict the function of said operable valve means thereby modifying the input to output pressure relationship, the improvement wherein said



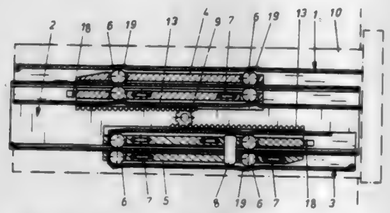
positionable cam means includes rotatable shaft means, coupling means between said cam means and said rotatable shaft means for driving said cam means in response to said rotatable shaft means, said coupling means including lost motion means whereby said rotatable shaft means functions independent of said cam means whenever said cam means exhibits a predetermined resistive force.

4,445,726

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS

Erich Röck, Höchst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Division of Ser. No. 169,195, Jul. 15, 1980, Pat. No. 4,351,575.
This application Jul. 19, 1982, Ser. No. 399,231
Claims priority, application Austria, Jul. 19, 1979, 4980/79; May 6, 1980, 2416/80
Int. Cl.³ F16C *29/04*
U.S. Cl. 308—3.8 **5 Claims**



1. A pull-out guide assembly for use on each of opposite sides of a drawer in an article of furniture of the type wherein the drawer is slidably insertable into and removable from a furniture body, said assembly comprising:

a supporting rail adapted to be connected to a side wall of a furniture body;

a first carriage mounted to run along said supporting rail, said first carriage having bearing supports;

a pull-out rail adapted to be connected to a side of a drawer;

a second carriage mounted to run along said pull-out rail, said second carriage having bearing supports;

a center rail having vertically spaced horizontal flanges extending between and supported by said bearing supports of said first and second carriages, such that said carriages are movable along said center rail and said center rail is movable with respect to said pull-out and supporting rails; and

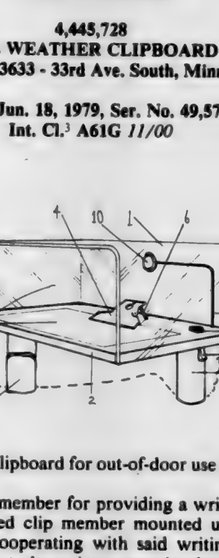
means for controlling relative movement of said center rail with respect to said first and second carriages, said controlling means comprising first and second racks on said first and second carriages, respectively, and a pinion mounted on said center rail and engaging said first and second racks.

4,445,727

METHOD OF ATTACHING A WEAR STRIP TO DOWNHOLE MEMBERS

Charles F. Funk, Gulfport, Miss., assignor to Metal Parts, Inc., Gulfport, Miss.

Filed Dec. 18, 1981, Ser. No. 332,105
Int. Cl.³ E21B *17/10*; F10C *43/02*
U.S. Cl. 308—4 A **1 Claim**



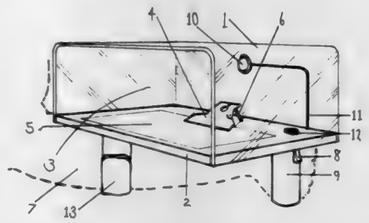
1. A method of encircling the outside surface of a tool joint with a band of wear resistant material comprising the steps of positioning end-to-end around the outside surface of a tool joint a plurality of strips of cast, relatively brittle, drillable material curved along their longitudinal axis with a radius of curvature approximately equal to the radius of curvature of the outside surface, clamping the strips in position on the tool joint, and puddling weld metal in first one opening and then another formed between the abutting ends of strips by notches in the ends of the strips that expose the surface of the tool joint for fusion with the weld metal and that have an increasing cross-sectional area away from the tool joint, puddling additional weld metal in said openings at brief intervals until a plug of weld metal has been formed that is fused to the surface to be protected but not to the strips to lock the strips on the tool joint while maintaining the temperature of the strips below that at which they will crack due to thrermal stress.

4,445,728

ALL WEATHER CLIPBOARD

Daniel W. Bratton, 3633 - 33rd Ave. South, Minneapolis, Minn. 55406

Filed Jun. 18, 1979, Ser. No. 49,575
Int. Cl.³ A61G *11/00*
U.S. Cl. 312—1 **5 Claims**



1. An all weater clipboard for out-of-door use comprising, in combination:

(a) a planar base member for providing a writing surface;

(b) a spring biased clip member mounted upon said base member and cooperating with said writing surface for holding a sheet to be written upon in place on said base member;

(c) a clear plastic shroud member having a top wall and at least three side walls depending generally at right angles to said top wall, said side walls being attached to the perimeter of said base member to space said top wall a predetermined distance above said planar base member;

(d) actuator means extending outside of said shroud for actuating said spring biased clip member;

(e) a tubular hand grip member extending generally normal from the underside of said planar base member; and

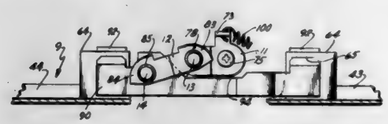
(f) a battery powered lamp contained within said shroud for illuminating said sheet to be written upon, the battery for said battery powered lamp being contained in said tubular hand grip member.

4,445,729

OVER-CENTERED LOCK ARRANGEMENT FOR OFFICE FURNITURE UNITS

Douglas Scheerhorn, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Mar. 26, 1982, Ser. No. 362,452
Int. Cl.³ F05B *65/46*
U.S. Cl. 312—219 **21 Claims**



1. A lock arrangement for office furniture units such as desks, credenzas, and the like, that include one or more pedestals having at least one closable compartment therein, such as a drawer, a cabinet or the like, with means for locking said compartment closed, said lock arrangement comprising:

a primary lock mounted in said unit, and having lock tumblers mounted in a cylinder rotatable between locked and unlocked positions;

at least one lock slide slidably supported in said unit, and connected with said compartment locking means, whereby reciprocation of said slide lock between locked and unlocked positions locks and unlocks said compartment;

a cam lock assembly comprising a crank arm extending radially of the axis of rotation of said tumbler cylinder, and rotating therewith; an actuator arm having a first end pivotally connected with said crank arm at a first pivot point, and a second end pivotally connected with said lock slide at a second pivot point, whereby rotation of said tumbler cylinder reciprocates said lock slide; said first and second pivot points being positioned to assume an over-centered relationship with respect to the axis of rotation of said tumbler cylinder in the locked position, whereby external forces applied to said lock slide in a direction to force said lock arrangement unlocked, rotatably urge said tumbler cylinder further into the locked position for improved security, and to prevent damage to said lock tumblers.

4,445,730

SPEAKER CABINET

Jimmie R. Cross, R.R. #1, Box 646, Shirley, Ind. 47384

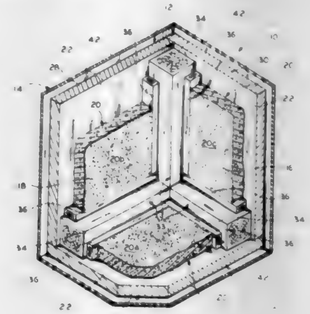
Filed Jul. 30, 1981, Ser. No. 288,306
Int. Cl.³ A47B *81/06*
U.S. Cl. 312—214 **10 Claims**

1. A speaker cabinet, comprising:

a cabinet having a substantially continuous outer surface defining the shape thereof, said cabinet having an opening therein in direct communication with a sound chamber defined by an inner surface of said cabinet, said sound chamber being designed to emit sound wave energy through said opening; and

means associated with said inner surface of said cabinet to substantially preclude resonance of said cabinet, said cabinet having a first resonance frequency and said resonance precluding means including a rigid reinforcing liner having a second, higher resonance frequency, said reinforcing liner being substantially coextensive with said inner surface of said cabinet;

said cabinet including at least one wall defining an enclosure, said reinforcing liner comprising a layer of resonance



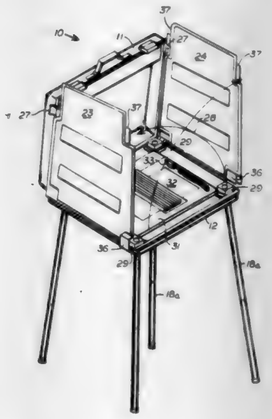
resistant material laminated to said wall, said resonance resistant material being a cement-like mixture that expands as it sets, said cabinet also including a plurality of braces defining a frame to support said wall, said braces being formed of a substantially incompressible material, said resonance resistant material being disposed on said wall between said braces.

4,445,731

PORTABLE VOTING BOOTH

John E. Ahmann, 1400 Duhig Rd., Napa, Calif. 94558

Filed Jan. 8, 1982, Ser. No. 337,967
Int. Cl.³ A47B *43/00*; G07C *13/00*; A47B *3/06*
U.S. Cl. 312—223 **10 Claims**



1. In a portable, self-contained voting booth apparatus having a foldable carrying case having an upper section hinged to a lower section, four multiple-section take-apart legs, a pair of side shields and a vote recorder to which may be secured a punch card type vote registering device, the improvement comprising:

four corner members mounted at the front and rear interior corners of the lower section of the carrying case, each having a leg socket oriented downwardly to receive and grip a leg inserted into the socket from below, through the bottom of the lower section, each corner member also

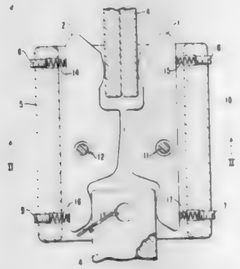
including a horizontal flange positioned to receive an edge of the vote recorder thereunder to lock the vote recorder in place, the corner members and flanges being spaced so that the vote recorder can be inserted obliquely under one pair of flanges, then swung down into position adjacent to and below the opposite pair of flanges and moved slidingly toward and under said opposite pair to retain the vote recorder down at all corners.

4,445,732

ELECTRICAL STAB CONNECTING MEANS UTILIZING EDDY CURRENT ELECTROMAGNETIC REPULSION

John A. Wafer, Brighton Township, Beaver County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 11, 1982, Ser. No. 347,824
Int. Cl.³ H01R *11/30*
U.S. Cl. 339—12 R **4 Claims**



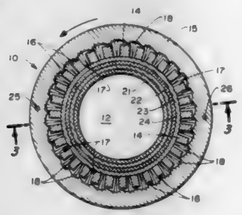
1. An electrical stab connector, comprising:
(a) a plurality of electrical contact fingers disposed to make contact with an electrical bus means for supplying electrical power thereto;
(b) an eddy-current bus means for carrying eddy-currents disposed in a position generally parallel with said plurality of electrical contact fingers;
(c) an air gap isolating said eddy-current bus means from said plurality of electrical contact fingers; and
(d) said eddy-current bus means is comprised of an electrical conducting material whereby eddy-currents are induced into said eddy-current bus means to create electromagnet forces that repel said plurality of electrical contact fingers into engagement with said electrical bus means.

4,445,733

GROUNDING RING FOR SHIELDED CABLE

Gary G. Deel, 1289 4th St., #B, Los Osos, Calif. 93402

Filed Jun. 17, 1982, Ser. No. 389,191
Int. Cl.³ H01R *4/24, 4/66*
U.S. Cl. 339—14 R **5 Claims**



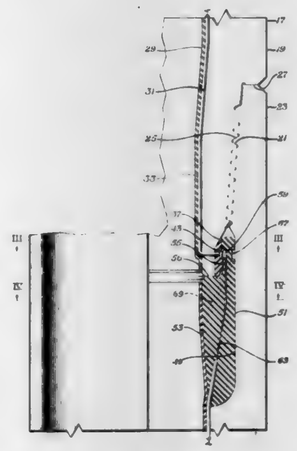
1. A grounding ring device for making 360° peripheral electrical continuity connection to the shielding of shielded electrical cable assemblies having one or more insulating layers and one or more shielding layers about the electrical cable, comprising:
a. an electrically conductive inner ring operable to fit contiguously about the outer surface of and electrically shielded cable assembly;
b. an electrically conductive outer ring in close electrical contact and concentric with said inner ring;
c. said inner ring provided with a multitude of radially aligned passageways closely spaced circumferentially there about and extending therethrough;
d. said outer ring provided with critically aligned cam grooves closely spaced circumferentially about the inner surface thereof, respective to and equal in number to the multitude of radial passageways in said inner ring;
e. separate individual electrically conductive needlelike grounding spike slideably positioned in each of the closely spaced radial passageways of said inner ring and having a drive end thereof extending into a respective one of said cam grooves;
f. each of said cam grooves providing a camming surface operable to bear against the drive end of a respective one of said needlelike grounding spikes; rotation of said outer ring concentrically about said inner ring for a distance approximately equal to the width of one of said cam grooves being operable to move the cam surface of each said cam groove against the drive end of each respective grounding spike and thereby move all said grounding spikes radially inward in their respective radial passageways forcing said grounding spikes to pierce the outer surface of said electrical cable assembly and provide peripheral electrical continuity connection with the electrical cable shielding for efficient grounding thereof.

4,445,734

TELEMETRY DRILL PIPE WITH PRESSURE SENSITIVE CONTACTS

Robert A. Cunningham, Bellaire, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 4, 1981, Ser. No. 327,524
Int. Cl.³ H01R *4/64*
U.S. Cl. 339—16 C **8 Claims**



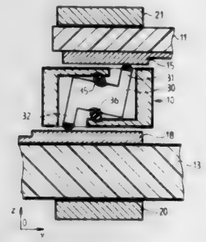
1. In a string of drill pipe having a plurality of sections adapted to be screwed together, and a conductor segment extending through each section, an improved means for electrically coupling each segment together when the string is made up, comprising:
a pair of electrical contacts, each connected to opposite ends of the conductor segment; and
mounting means for mounting the contacts to each of the sections of pipe so that when made up to other sections, one contact fits within the other in electrical engagement and insulated from the sections, and for positioning the contacts so that one is urged laterally toward the other in response to internal pressure in the drill string.

4,445,735

ELECTRICAL CONNECTION DEVICE FOR HIGH DENSITY CONTACTS

Jean Bonnefoy, Crespieres, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 2, 1981, Ser. No. 326,530
Claims priority, application France, Dec. 5, 1980, 80 25861
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—17 M **21 Claims**



1. An electrical connection device for connecting a first plurality of electrical terminals to corresponding second electrical terminals, the device comprising a housing extending in a predetermined direction, and a plurality of rigid conductor elements having first and second contact surfaces, the conductor elements being supported within the housing by elastically deformable means so as to enable the conductor elements to pivot independently, one from the other, in a plane substantially normal to said predetermined direction, the elastically deformable means biasing the conductor elements to a terminal-contacting position at which the first and second contact surfaces respectively contact corresponding first and second terminals.

4,445,736

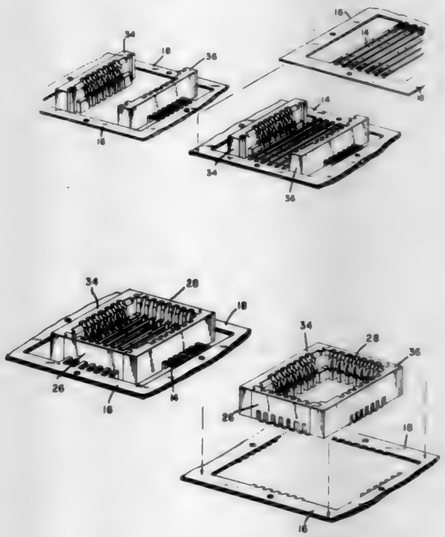
METHOD AND APPARATUS FOR PRODUCING A PREMOLDED PACKAGING

John R. Hopkins, Cambridge, Md., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,165
Int. Cl.³ H05K *1/00*; H01R *43/00*
U.S. Cl. 339—17 CF **4 Claims**

1. A package for supporting and interconnecting integrated circuit chips of the leadless type, said package being formed by the steps of:
forming first and second webs of conductive material;
stamping said webs to form ladders of terminals in a high density array of parallel spaced apart terminals;
molding first package portions on opposite ends of said terminals of said first web;
cutting said terminals substantially centrally of the ends and forming them with respect to said first package portions;
overlying said second web of terminals transversely to said first web and between said first package portions;
molding second package portions on opposite ends of said terminals of said second web with said second package portions integrally joining said first portions;
cutting said second terminals substantially centrally of their ends and forming them with respect to said second package portions; and
separating said package from said webs.

3. A method for forming a package for leadless integrated circuit chips comprising the steps of:
forming first and second webs of terminals from conductive materials with the terminals being in the form of a plurality of parallel spaced terminals extending transversely across the web in a ladder like configuration joined at their ends by carrier strips;
forming a partial package in a first molding operation by molding first housing members at opposite ends of the terminals of said first web;
cutting the terminals of the first web substantially centrally of their ends and forming them with respect to said first housing members;



overlying said second web of terminals transversely with respect to said first web and between said first housing members;
molding second housing members on opposite ends of said second terminals and integrally joining said first housing portions;
cutting said terminals of said second web substantially centrally of their ends and forming them with respect to said second housing members; and
cutting said formed package from said carrier strips.

4,445,737

ELECTRICAL DISTRIBUTION SYSTEM FOR LIGHTS AND CONNECTORS THEREFOR

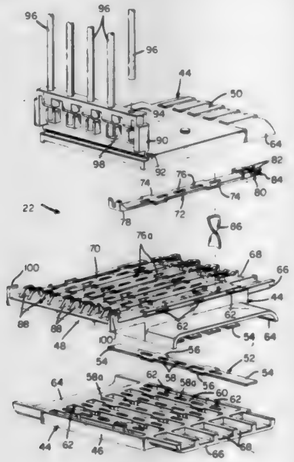
William B. Long, Camp Hill; Donald L. Metzger, Harrisburg, and John R. Shuey, Carlisle, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 19, 1981, Ser. No. 322,809
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—18 C **9 Claims**

1. An electrical distribution system for an electric lighting system comprising a plurality of electric lights, an electric power box for supplying electrical power to the electric lights, an electric switch for switching the electric lights on or off, and electric connectors for electrically interconnecting the electric lights, power box and switch characterized in that:
an electric light connector mountable on each of the electric lights and comprising an insulating housing having contact members therein for electrical connection with the electric leads of each of the electric lights;
a control connector electrically connectable with one of said electric light connectors and comprising an insulating housing having a first level of contact members and a second level of contact members insulated from each other, connection members extending between said first

and second levels of contact members and interconnecting them in a preselected manner, one of said first and second levels of contact members being electrically connectable with said contact members of said light connector and with electric leads connected to said electric switch;

a power-in connector including an insulating housing having contact members electrically connectable with electric power leads from said power box and electrically connectable with the other of said first and second levels of contact members;



an interconnection connector assembly comprising electric leads electrically connected to contact members in insulating housings, the contact members in one of the insulating housings being electrically connectable with the contact members in said light connector having said control connector connected therewith and the contact members of the other of the insulating housings being electrically connectable with the contact members of another of said electric light connectors.

4,445,738

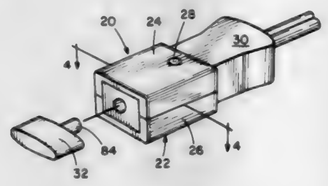
LOCKING DEVICE FOR ELECTRICAL PLUGS

Erich K. Wiencke, 458 Kent Rd., Riverside, Ill. 60546

Continuation-in-part of Ser. No. 283,949, Jul. 16, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,670

Int. Cl.³ H01R *13/44*

U.S. Cl. 339—37 **26 Claims**



1. A locking device for use with an electrical plug having two or more prongs, comprising a housing, a lock mechanism disposed within said housing, means for securing said lock mechanism in said housing, locking members movable translationally from an unlocking position to a locking position to lockingly engage at least two of said prongs when said plug is inserted into the housing camming means translationally coupling said locking members together, spring means for normally biasing said locking members into said locking position, manually operable means engageable with said camming means for moving said locking members to said unlocking position to obtain the release of said inserted plug.

4,445,739

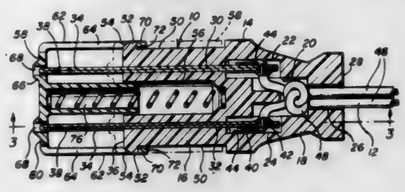
MALE PLUG WITH AUTOMATIC PRONG COVER

Norman W. Wooten, 5751 55th Ter. North, St. Petersburg, Fla. 33709

Filed May 4, 1982, Ser. No. 374,786

Int. Cl.³ H01R *13/44*

U.S. Cl. 339—42 **12 Claims**



1. An elongated body constructed of dialectric material, said body including opposite end portions, one of said end portions including a pair of parallel elongated terminals constructed of conductive material embedded therein and having one pair of ends thereof projecting endwise outwardly of said one end portion of the body, the other ends of said terminals being disposed in the other end portion of said body and being adapted for electrical connection with a pair of conductors, said one end portion of said body including a longitudinal bore formed therein intermediate and paralleling said terminals and opening endwise outwardly of said one end portion, said one body end portion including remote longitudinal side surfaces, the ends of said surfaces adjacent said one end portion including laterally outwardly projecting abutments, and a protective sleeve snugly slidably disposed over and shiftable longitudinally of said one end portion of said body and including remote longitudinal walls having slots formed therein in which said abutments are slidably received, the end of said sleeve corresponding to said one end portion of said body being closed by an end wall extending thereacross, said end wall having a pair of openings formed therethrough in which said terminals are slidably received, the ends of said slots remote from said end wall being closed and abuttingly engageable with said abutments to limit sliding movement of said sleeve away from said other end portion of said body to a position with the free ends of said terminals disposed in and spaced inwardly of the opposite ends of said openings, said end wall being abuttingly engageable with said one end portion of said body to limit sliding movement of said sleeve toward said other end portion of said body, and a coiled compression spring having one end seated in said bore and the other end abutted against said end wall.

4,445,740

CIRCUIT BOARD ASSEMBLY

Keith L. Wallace, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 26, 1982, Ser. No. 371,850

Int. Cl.³ H01R *13/62*

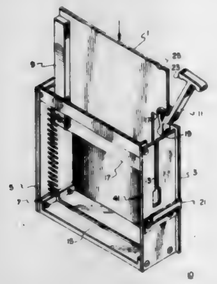
U.S. Cl. 339—45 M **7 Claims**

1. A circuit board coupling assembly comprising:

a circuit board receiving assembly having first and second planar sides in opposed spaced relation generally parallel to one another and coupled by a third planar side extending between said first and second side to form a generally U-shaped channel;

a plurality of first electrical terminals positioned along said first side within said channel;

a planar circuit board having first, second and third edges, said first and second edges being generally parallel to one another and said third edge extending generally perpendicular to said first and second edges, said first edge having a plurality of second electrical terminals extending therealong in a configuration matching that of said first electrical terminals along said first side, said circuit board being slidably received between said first and second sides such that said first and second edges slide parallel to and adjacent said first and second sides, respectively, and said



third edge slides into adjacent parallel abutting relationship with said third side; and

means for moving said circuit board in a direction perpendicular to the plane of said first and second sides to cause engagement and disengagement of said first and second electrical terminals.

4,445,741

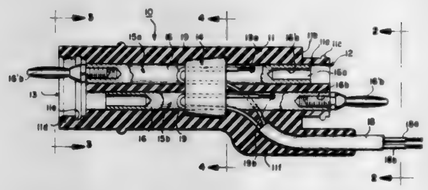
DOUBLE-PLUG SEISMIC CONNECTOR

Ira R. Annoot, Pasadena, Tex., assignor to Houston Geophysical Products, Inc., Houston, Tex.

Filed Oct. 13, 1981, Ser. No. 310,387

Int. Cl.³ H01R *19/56*

U.S. Cl. 339—49 R **5 Claims**



4. A double-ended, seismic takeout clip comprising:

an elongated unitary body made of an elastic insulating material;

a solid cylindrical male connector plug, having a pair of electric contacts, projecting outwardly from one end of said body, and an O-ring around the cylindrical body portion of said male plug;

a tubular female connector plug, having a pair of electric contacts, projecting outwardly from the opposite end of said body, and the tubular body portion of the female plug having an inner cylindrical wall defining an annular groove;

said body portions of said male and female plugs being dimensioned to allow, in use, said tubular female plug to snugly accept a male plug of a second like takeout clip, whereby said groove frictionally receives the male plug's O-ring for protecting against moisture penetration into the plugs and disconnection of the plugs;

an anchor embedded inside said body, said anchor having a pair of main longitudinal bores and two pairs of auxiliary longitudinal bores;

a pair of laterally-spaced apart longitudinal electric conductors embedded within said body, each conductor extending through one of said main bores and being connected to, for providing a conductive path between, an electric contact in the male plug and an electric contact in the female plug; and

a pair of insulated wires, each wire having an inner end which loops around one pair of said auxiliary bores and the bare metallic end portion of the wire making an electric connection with one of said conductors, and each wire having an outer end which projects outwardly of said body in a waterproof manner, whereby the pair of wires which project outwardly of said body are electrically connected across said pair of conductors and thus across the pair of contacts in each plug, and the interconnected electric contacts of the male and female plugs are sealed against moisture penetration therein.

4,445,742

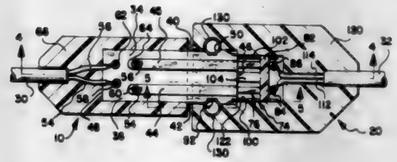
ELECTRICAL CABLE CONNECTOR

Philip S. Fullam, Springfield, Ohio, assignor to The Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

Filed Feb. 8, 1982, Ser. No. 346,447

Int. Cl.³ H01R *4/00, 11/00*

U.S. Cl. 339—61 M **5 Claims**



1. An electrical connector comprising:

a first connector member including a plate-like body of electrically non-conductive material having opposed relatively wide faces, relatively narrow edges, a connector end, and an attachment end,

at least one strip of electrically conductive material on at least one of said faces extending from said connector end toward said attachment end, and

a first lead wire anchored to said attachment end and attached to said strip,

said edges having retaining notches therein adjacent said connector end,

a second connector member including a housing of resilient electrically insulating material forming a socket with an open end dimensioned to receive said body of said first connector member,

a contact member located in said socket in position to contact said strip and having a portion adapted for attachment to a second lead wire,

rigid retainer pins incorporated in said housing extending across said socket and spaced apart to interfit with said notches,

said housing being deformable so as to permit displacement of said pins therein in response to insertion or withdrawal of said first connector member with respect to said second connector member.

4,445,743

QUICK DISCONNECT CONNECTOR WITH POSITIVE LOCKING DEVICE

Willem F. Bakker, Wyoming, Ill., assignor to Breeze Illinois, Incorporated, Wyoming, Ill.

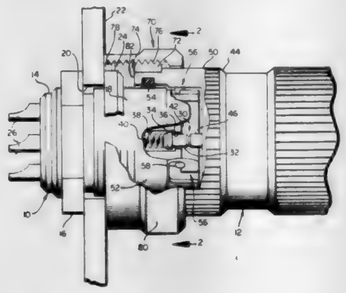
Filed Aug. 8, 1979, Ser. No. 64,780

Int. Cl.³ H01R *13/625*

U.S. Cl. 339—90 R **4 Claims**

1. For use with a quick-disconnect connector having plug and receptacle members which when locked together in mating relation establish electrical continuity through the connector, cooperating bayonet lock means including at least one

J-shaped groove formed in one of the plug and receptacle members, and at least one cooperating pin formed on the other of the plug and receptacle members and adapted to fit into said J-shaped groove, each said J-shaped groove having an axial recess portion and also a transverse recess portion having a seating area separated from the axial recess portion across detent hump means, said pin being adapted to seat against said seating area in the mated condition of the plug and receptacle members, movable spring-loaded contacts on one of said plug and receptacle members engaged and deflected by contacts on the other of said plug and receptacle members when said plug and receptacle members are in mated condition with said spring-loaded contacts serving to bias said pin in seated position in said seating area, the improvement comprising, an annular sleeve element having internal thread means, one of the plug and receptacle members having external thread means for cooperation with the internal thread means of said sleeve element, and the sleeve element being rotatable on one of the plug and receptacle members to move the sleeve axially toward the other of the plug and receptacle members, said sleeve element when bottomed relative to the opposite one of the plug and receptacle members being effective to maintain said pin positively seated in said seating area thereby preventing axial movement of the plug and receptacle members toward one another to provide a releasable positive lock against disengagement of said bayonet lock means.

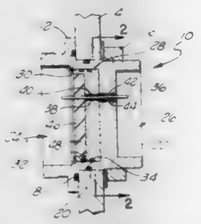


4,445,744

HIGH PRESSURE ELECTRICAL CONNECTOR

Albert R. Sedig, Buckeye, and Francis H. Ingham, Scottsdale, both of Ariz., assignors to ITT Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,707
Int. Cl.³ H01R *4/70*
U.S. Cl. 339—94 M **8 Claims**



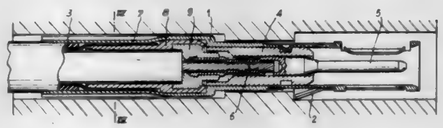
1. A high pressure withstanding electrical connector or penetrator comprising:
a shell adapted to be mounted in a bulkhead or the like;
said shell having an integral support web extending transversely across its interior dividing said shell into a high pressure side and a low pressure side;
a header mounted in said shell on said high pressure side, said header having an outer face and an inner face adjacent to said web;
said web providing support for said header across substantially its entire inner face;
aligned passages extending through said header and said web;
a conductor passing through said passages with one end extending into said high pressure side of said shell and the other end extending into said low pressure side; and
a glass ring in said header passage providing a glass-to-metal seal between said conductor and said header, said glass ring extending substantially the complete length of said header passage.

4,445,745

ELECTRICAL CONNECTORS FOR COAXIAL AND TWO-WIRE CABLES

Georges Cartesse, Le Blanc Mesnil, France, assignor to Societe Generale pour l'Industrie Electronique (S.O.G.I.E.), Rosny-sous-Bois, France

Filed Dec. 21, 1981, Ser. No. 332,712
Claims priority, application France, Dec. 24, 1980, 80 27447
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—177 R **4 Claims**



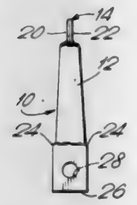
1. An electrical connector contact for coaxial cables or two-wire cables comprising, an outer pre-assembled assembly comprising a tubular electrically conductive body having a front electrical contact portion with a rearwardly opening sleeve portion, and an insulating sleeve within and fixed to said body, said sleeve portion having an open rearward end and said insulating sleeve being spaced axially from said rearward end, an inner pre-assembled assembly comprising, a contact body having a contact and a socket with an opening facing away from the contact for rearwardly receiving a conductive end of a first wire of a cable, an insulating bushing fixed to said contact body, and an electrically conductive barrel fixed to said insulating bushing in insulated relation to said contact body, said barrel having an open rearward end for receiving therein an insulated portion of the first wire whose conductive end is inserted in the socket of the contact, said barrel including a conductive surface for electrical connection of a second conductor of the cable, said socket of said contact body including means for electrically connecting the conductive end of the first wire inserted therein to the contact, said contact of said inner assembly being a close slidable fit in said outer assembly, and said barrel being receivable in said rearwardly opening sleeve portion of the outer assembly so that said inner assembly can be inserted forwardly into said outer assembly after connecting the cable to the inner assembly, said rearwardly opening sleeve comprising, means for electrically connecting said front electrical contact portion of the outer assembly to the second wire of the cable, and means for mechanically securing the inner assembly against axial separation from the outer assembly.

4,445,746

RESILIENT METAL CONTACT BRUSH

Chris Cosby, Leighton Buzzara, and Martin Heath, Dunstable, both of England, assignors to Delco Products Overseas Corporation, Detroit, Mich.

Filed Oct. 21, 1982, Ser. No. 435,637
Claims priority, application United Kingdom, Oct. 27, 1981, 8132396
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—252 R **2 Claims**



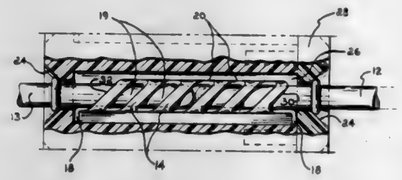
1. A resilient metal contact brush for use in an electric motor, which contact brush comprises a strip-like metal member having at one end thereof a fixing aperture and at the other end thereof a contact head protruding substantially normally to the plane of the strip-like member, said contact head comprising two flat ear-like protrusions integral with the strip-like member adjacent said other end thereof, said ear-like protrusions further projecting at right angles to the plane of the strip-like member and being in planar contact with one another of substantially the whole of their planar area.

4,445,747

RIB CAGE TERMINAL

Douglas A. Neidich, Harrisburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 21, 1982, Ser. No. 400,242
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—256 R **7 Claims**



1. A female electrical terminal comprising an electrically conducting rib cage mounted on a spine the rib cage having at least four pair of ribs in the form of curved cantilvered beams attached at one end to the spine and spaced apart at its other end from a corresponding beam, each beam being at an acute angle with respect to the spine, the rib cage having a diameter sufficient to accept a round or square pin for electrical termination.

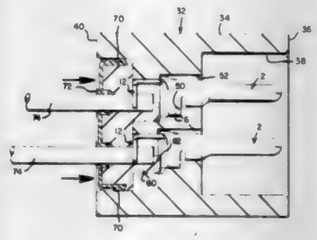
4,445,748

MASS TERMINATION OF DENSELY GROUPED CONDUCTORS

William R. Evans, Clemons, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 3, 1980, Ser. No. 136,852
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—94 M **7 Claims**

1. An electrical connector, comprising:
a housing having a first end and a wire receiving second end, one or more cavities extending through said housing from said first end to said second end,
an electrical terminal in each said cavity having an electrical contact portion projecting toward said housing first end, and a conductor connecting portion projecting toward said housing second end,
each said connecting portion being pivotally joined to the remainder of a respective said terminal and being provided with a slot, the opposite sides of which define conductor gripping jaws constructed for straddling a conductor which extends both into said housing second end and along a respective said cavity,



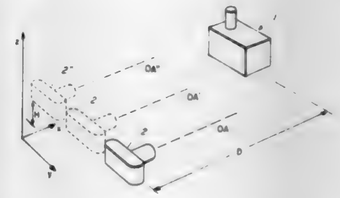
each said connecting portion being pivotable to a position transversely of the remainder of a respective said terminal to wedge forcefully said jaws into straddled gripped connection with a respective said conductor,
conductor support means mounted to said housing for supporting said conductors laterally of their lengths as said conductors are straddled by said jaws and as said connecting portions are pivoted to forcefully wedge said jaws into straddled gripped connection with said conductors, and
a web of resilient material radially compressibly encircling said conductors and compressibly sealing the interface of said housing and said conductor support means.

4,445,749

HOLOGRAPHIC PRODUCTS AND PROCESSES

Stephen A. Benton, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 6, 1980, Ser. No. 157,187
Int. Cl.³ G03H *1/26*
U.S. Cl. 350—376 **8 Claims**



1. A process for making an achromatic holographic stereogram, comprising the steps of: projecting a sequence of transparencies onto a predetermined projection plane; sequentially holographically recording each of the sequence of projected images on contiguous narrow elongated strips of a first photographic plate, said sequential holographic recording being made with a collimated reference beam, said photographic plate being inclined to a normal to said projection plane at an angle α of from 35° to 41°; illuminating the resulting hologram with a beam conjugate to said reference beam; and holographically recording the image produced by said illuminating beam onto a second photographic plate, said second photographic plate being in a position corresponding to the location of said projected images relative to said hologram, said second holographic recording being effected by using a second collimated

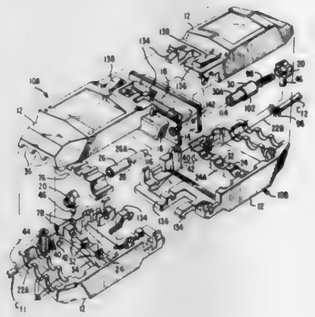
reference beam to illuminate said second photographic plate at an angle of incidence ϕ related to the angle α at which said first recited plate is inclined to said normal by $\phi=\sin^{-1}\tan\alpha$.

4,445,750

ARTICULATING FIBER OPTIC CONNECTORS WITH RESILIENT MOUNTING BLOCK

Igor Grois, Lincolnwood; Mark Margolin, Chicago, and Alan Berg, Wood Dale, all of Ill., assignors to TRW Inc., Elk Grove Village, Ill.

Filed Jun. 22, 1981, Ser. No. 275,844
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **17 Claims**



1. An optical fiber connector including a housing having a mating end, a mounting block in said housing movable relative to said housing toward and away from said mating end, at least one fiber clamp mounted on said block for gripping an optical fiber, and resilient means engaging said block and said housing for urging said block and fiber clamp toward said mating end and accomodating movement of said block and said fiber clamp away from said mating end against the force of said resilient means in response to an overriding opposing force.

4,445,751

METAL COATED, TAPERED, OPTICAL FIBER COUPLED TO SUBSTRATE AND METHOD OF FABRICATION

William C. Divens, Penn Hills, and Eugene G. Vaerewyck, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1981, Ser. No. 312,555
Int. Cl.³ G02B 5/174
U.S. Cl. 350—96.14 **6 Claims**

1. A single mode optical fiber coupling comprising:

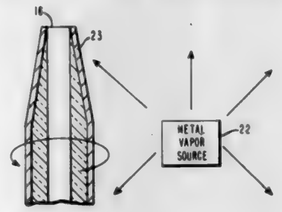
a section of single mode optical fiber including a cone-shaped portion comprising a fiber optic core having a polished end surface, a tapered cladding terminating near said polished end surface, the terminal end of said cladding having a diameter substantially equal to the diameter of said core, said cladding substantially uniformally tapering to a diameter substantially equal to the outer diameter of said optical fiber core, and a metal layer affixed to the outer surface of said cone-shaped portion of said single mode optical fiber.

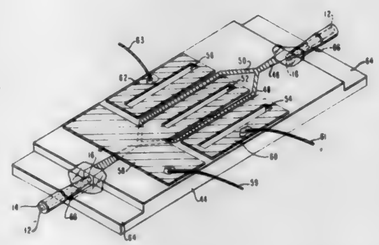
2. An optical device comprising:

(a) a substrate of electro-optically sensitive material;

(b) an optical waveguide formed in and extending to the surface of said substrate and terminating at first and second edges of said substrate and including two spaced apart central portions having their ends joined to surround a first portion of said substrate surface, said substrate including a first groove in said first portion of said substrate surface, and second and third grooves in the surface alongside said spaced apart central portions of said optical waveguide and exterior to said first portion of said substrate surface;

(c) a first electrode affixed to a first portion of the surface of said substrate between said central portions; and





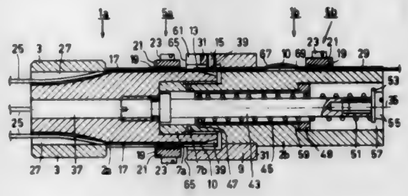
(d) second and third electrodes affixed to second and third portions of the surface of said substrate, alongside said central portions of said optical waveguide and exterior to said first portion of said substrate surface.

4,445,752

OPTICAL FIBER SWITCH WITH ROTARY GEAR MOVEMENT

Johannes W. Faber, Eindhoven, Netherlands, and Günter Weick, Eckental, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 183,601, Sep. 2, 1980, abandoned. This application Aug. 6, 1982, Ser. No. 405,828
Claims priority, application Netherlands, Sep. 3, 1979, 7906580
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **3 Claims**



1. A switch for optically coupling a first optical fiber to two or more other optical fibers, the first optical fiber being connected to one other optical fiber at a time, said switch comprising:

a first holder having a longitudinal axis and having an exterior surface, said holder having two or more V-shaped grooves on the exterior surface equidistant from and extending parallel to the longitudinal axis, said V-shaped grooves being situated around the longitudinal axis at either equal angular separations or angular separations which are a multiple of a given pitch angle, said V-shaped grooves in operation accommodating optical fibers, said holder having a first side at which the V-shaped grooves each transform into a funnel-shaped inlet opening, the first side of the holder having an end face on which is provided a first gear ring which is transverse to and concentric with the longitudinal axis;

a second holder having an exterior surface with at least one V-shaped groove on the exterior surface extending parallel to the longitudinal axis, said V-shaped groove in operation accommodating an optical fiber, said second holder having an end face on which is provided a second gear ring which is transverse to and concentric with the longitudinal axis; and

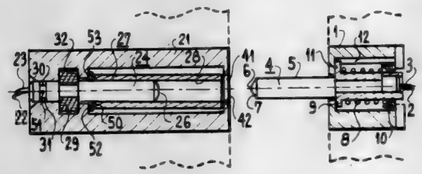
means for resiliently connecting the holders by engaging the first and second gear rings to each other, said means permitting displacement of the holders along the longitudinal axis against a spring force to disengage the gear rings, and said means permitting relative rotation of the holders around the longitudinal axis when the gear rings are disengaged, the magnitude of the relative rotation after the gear rings are reengaged being equal to the pitch angle or a multiple thereof.

4,445,753

END FITTING FOR OPTICAL FIBRE CONNECTOR AND CONNECTOR EQUIPPED WITH SUCH AN END FITTING

Roger Collignon, Suresnes, France, assignor to Socapex, Suresnes, France

Filed Oct. 26, 1981, Ser. No. 315,268
Claims priority, application France, Oct. 31, 1980, 80 23391
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **15 Claims**



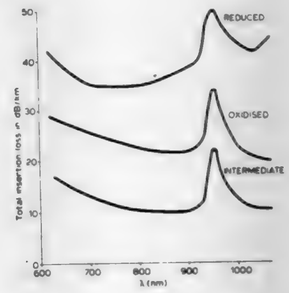
7. An optical fibre connector comprising two end fittings which, when joined, ensure the connection of at least one optical channel, at least one of the end fittings comprising at least one substantially cylindrical locating sleeve in which is fixed an optical fibre, said locating sleeve having at its front end a contact face at which the fibre issues and in the vicinity of its back end means for positioning the locating sleeve in the end fitting, as well as means for orienting said locating sleeve, wherein the means for orienting the locating sleeve includes ball joint means positioned between the positioning means of the locating sleeve and the back end of the end fitting for permitting pivotal movement of the locating sleeve within said end fitting and wherein the positioning means includes a disk having a central groove whose outer and inner base surfaces respectively cooperate with shoulders defined by the end fitting of the connector and the locating sleeve located therein, said disk defining a transverse clearance with the end fitting while being fixed to prevent translational movement thereof.

4,445,754

GLASS OPTICAL FIBRES AND GLASS COMPOSITIONS THEREFOR

Keith J. Beales, Ipswich; Sally Partington, Colchester, and Anthony G. Dunn, Felixstowe, all of Great Britain, assignors to Post Office, London, England

Filed Apr. 1, 1980, Ser. No. 136,325
Claims priority, application United Kingdom, Apr. 4, 1979, 7911765
Int. Cl.³ C03B 5/225, 37/075; C03C 3/08, 3/30
U.S. Cl. 350—96.34 **8 Claims**



1. A high numerical aperture optical fibre core glass comprising soda, silica, germania, boric oxide, optionally barium oxide, and a redox buffering agent, and having a composition selected from the range of glasses which comprise

(i) from 15 to 25 mole percent soda,

(ii) from 25 to 65 mole percent silica and germania, taken together, the content of germania not exceeding 42 mole percent,

(iii) up to 22.5 mole percent of boric oxide and barium oxide, taken together, the content of boric oxide not exceeding 20 mole percent and the content of barium oxide not exceeding 12 mole percent, and

(iv) from 0.01 to 1 weight percent of a redox buffering agent, said composition being selected such that the glass is not subject to devitrification or phase separation and such that the glass has a refractive index greater than 1.54, said glass being characterized by having a fictive partial oxygen pressure of 10^{-5} atmospheres produced by melting appropriate materials from which the glass is formed and controlling the partial oxygen pressure of the melt by bubbling pure dry carbon dioxide through the molten glass.

4,445,755

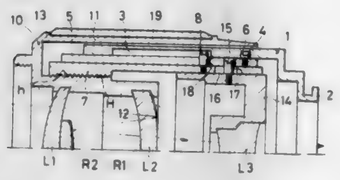
INFRARED TRANSMITTING OPTICAL WAVE GUIDE

Kazuya Ohsawa; Toshiaki Shibata, both of Yokohama, and Kenichi Takahashi, Tokyo, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,687
Claims priority, application Japan, Apr. 3, 1981, 56-49433
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.34 **2 Claims**

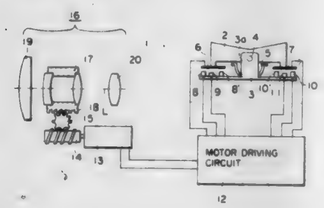
1. An infrared transmitting optical wave guide formed of a core glass and a cladding glass having a smaller refractive index than said core glass, wherein both core and cladding glass comprise 52 to 69 mol% of zirconium fluoride, 10 to 24 mol% of barium fluoride, 1 to 7 mol% of lanthanum fluoride, 9 to 25 mol% of sodium fluoride and 2 to 5 mol% of aluminum fluoride; the total content of said zirconium fluoride, barium fluoride, lanthanum fluoride and sodium fluoride is chosen to be over 90 mol%; and the cladding glass contains a larger amount of sodium fluoride than the core glass.

4,445,756
REFLEX ZOOM LENS BARREL
Shinsuke Komoto c/o Asahi Kogaku Kogyo K.K., 36-9, Maeno-cho 2-chome, Itabashi-ku, Tokyo, Japan (174)
Filed Feb. 17, 1982, Ser. No. 349,514
Claims priority, application Japan, Feb. 24, 1981, 56-25097[U]; Feb. 24, 1981, 56-25986
Int. Cl.³ G02B *15/16, 17/08, 7/10*
U.S. Cl. 350—429 **8 Claims**



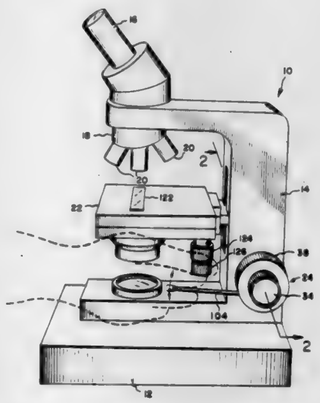
1. A reflex zoom lens barrel comprising a front frame which carries reflex optical lens means having a positive focal length, a rear frame which carries transmission optical lens means having a negative focal length, zooming means for moving the front and rear frames in directions of an optical axis, to vary the focal length of the combination of the reflex and transmission optical lens means, and focusing means for independently moving only the front frame in the optical axial directions.

4,445,757
ZOOMING DEVICE
Shigeo Enomoto; Hitoshi Hirobe, and Shinji Urata, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 23, 1982, Ser. No. 422,443
Claims priority, application Japan, Nov. 19, 1981, 56-171400
Int. Cl.³ G02B *7/11*
U.S. Cl. 350—429 **4 Claims**



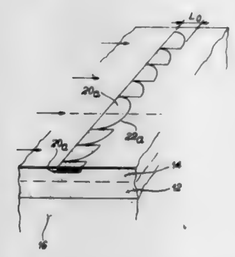
1. In combination, a zoom lens comprising a movable portion which controls the focal length of said lens, motor means for driving said movable lens portion to cause said lens to zoom, manually operable means and circuit means for controlling said motor means to cause said lens to zoom either in the focal distance shortening or the focal distance lengthening direction and to cause said zooming in each of said directions to occur at one of at least two predetermined speeds, said manually operable means comprising a rocker member, means to pivotally mount said rocker member at about its center portion for rocking motion to either side of a neutral position of said rocker member on said mounting means, spring means normally biasing said rocker member to said neutral position, said control circuit means comprising at least first and second switch means, said switch means comprising a contact member on each end of said rocker member; and said switch means, said contact member and said control circuit means being so arranged that rocking motion manually applied to said rocker member to one side of said neutral position to cause the corresponding one of said contact members to close a first one of said corresponding first and second switch means will cause said lens to zoom at a first predetermined speed in one of said directions, and continued motion of said rocker member to said one side will close the second one of said switch means to cause zooming of said lens in said one of said directions at a second predetermined speed; and motion of said rocker to the other side of said neutral position will cause similar zooming motions of said lens in the other of said directions.

4,445,758
MECHANISM FOR ACCOMPLISHING COARSE AND FINE ADJUSTMENTS IN A MICROSCOPE
Henry J. Emmel, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,424
Int. Cl.³ G02B *21/26*
U.S. Cl. 350—530 **8 Claims**



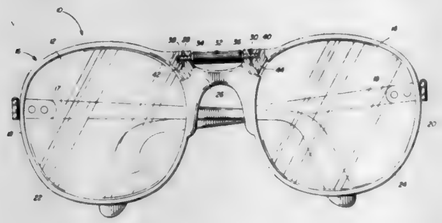
1. In a microscope having a support frame, a monoaxial coarse-fine adjustment focusing system, comprising:
(a) a fine adjustment shaft having a pinion proximate to one end thereof;
(b) a coarse adjustment shaft coaxially mounted about said fine adjusting shaft; and supported by said microscope frame;
(c) a fine adjusting knob mounted to said fine adjustment shaft at the pinion end thereof;
(d) a coarse adjusting knob cooperatively mounted to said coarse shaft and being frictionally engaged to said microscope frame, said knob having a ring gear formed therein;
(e) a cluster gear and pinion assembly comprising a cluster gear for engaging said pinion of said fine adjusting shaft, a shaft and a cluster pinion for engaging said coarse knob ring gear;
(f) means mounted to said coarse shaft for supporting said cluster gear and pinion assembly proximate to said pinion of said fine adjusting shaft and said coarse knob ring gear; and
(g) biasing means for holding said cluster gear in positive engagement with said pinion of said fine shaft, said cluster pinion in positive engagement with said coarse knob ring gear and said cluster gear shaft positively against said supporting means.

4,445,759
INTEGRATED FRESNEL LENS AND ITS PRODUCTION PROCESS
Serge Valette, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Oct. 5, 1981, Ser. No. 308,600
Claims priority, application France, Oct. 8, 1980, 80 21476
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.12 **15 Claims**



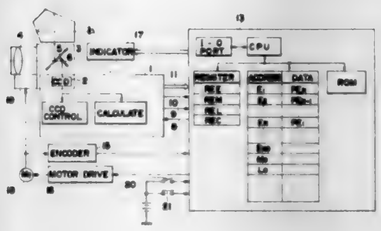
1. A Fresnel lens for integrated optics, wherein it comprises a light guide of effective index n_{eff} achieved in a substrate and incorporating a guiding layer and a number N of regions of length L(r) measured in the direction of the lens axis as a function of the distance r from the lens axis and disposed in the direction perpendicular to the lens axis, while having a refractive index such that to the right of these regions the effective index of the light guide has a value n'_{eff} which differs from n_{eff} in such a way that a light wave propagated to the right of these regions is given a phase displacement $\Delta\phi$ due to the effective index difference n'_{eff}-n_{eff} and making it possible to obtain constructive light interferences at the chosen image point.

4,445,760
PAIR OF EYEGLASSES
John T. Simms, 14259 Hatteras St., Van Nuys, Calif. 91401
Filed Feb. 24, 1982, Ser. No. 351,755
Int. Cl.³ G02C *1/08*
U.S. Cl. 351—95 **6 Claims**



1. An improved pair of eye glasses, said eyeglasses comprising, in combination:
(a) a first eyeglass lens,
(b) a first openable holder releasably holding said first lens,
(c) a second eyeglass lens,
(d) a second openable holder releasably holding said second lens,
(e) said first and second holders comprising a first annular openable rim and a second annular openable rim, respectively gripping substantially the entire periphery of said respective first and second lens,
(f) said first rim defining a first space intersecting said first rim,
(g) said second rim defining a second space intersecting said second rim,
(h) a nose bridge interconnecting said first and second holders and including closure means extending horizontally between and interconnecting said holders for closing said first and second spaces to releasably lock said first lens in said first holder and said second lens in said second holder, and
(i) a pair of ear retainers secured to said holders.

4,445,761
AUTOMATIC FOCUSING DEVICE FOR USE IN A CAMERA
Norio Ishikawa, Osaka, and Takanobu Omaki, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Oct. 1, 1982, Ser. No. 431,288
Claims priority, application Japan, Oct. 2, 1981, 56-157921
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—402 **15 Claims**

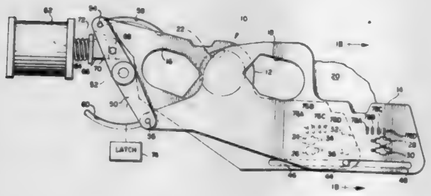


1. An automatic focusing system for use in a camera comprising:
means for successively driving an objective lens of said camera along its optical axis;
means for repeatedly detecting a focusing condition of the objective lens during the movement of the objective lens to produce a detecting signal which includes information of a defocus direction and a defocus amount of the objective lens with respect to a predetermind image plane;
means for monitoring an amount of axial movement of the objective lens between successive detections to produce a lens moving amount signal which represents the detected amount;
means for converting each detecting signal into a corresponding converted signal which would be produced from said detecting means upon the last detection in accordance with said lens moving amount signals;
means for producing a final signal in response to the converted signals in accordance with a predetermined statistic method; and
means for controlling said driving means in response to said final signal.

4,445,762
ENCODED SHUTTER BLADE APPARATUS
A. David Boccuti, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 28, 1982, Ser. No. 454,047
Int. Cl.³ G03B *7/14*
U.S. Cl. 354—437 **10 Claims**

1. In a photographic camera apparatus of the type including means for defining a film plane; means for transmitting light from a scene along an optical path to expose photosensitive film located in the film plane; and an exposure control system for allowing the passage of scene light along the optical path to the film plane for a period of time to define an exposure interval, wherein the exposure control system comprises at least two overlapping blade elements disposed for displacement in generally opposing directions with respect to each other, the improvement comprising:
means for sensing the position of the blade elements responsive to the displacement of the blade elements and for

providing an output representative of the instantaneous position of the blade elements, said position sensing means comprising a source of illumination on one side of the blade elements, a photoresponsive element on the other side of the blade elements opposite said source of illumination, a plurality of equally spaced apart like apertures in each of the blade elements located such that said apertures in one of the blade elements sequentially overlap the



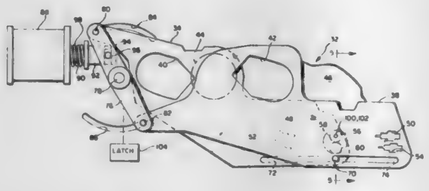
apertures in the other of the blade elements upon displacement of the blade elements so as to control the transmission of light from said source of illumination to said photoresponsive element, and means for converting the output of said photoresponsive element to said output representative of the instantaneous blade position by counting the number of times the apertures in one of the blade elements overlap the apertures in the other of the blade elements.

4,445,763

HYBRID CAMERA ARRANGEMENT

George D. Whiteside, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1982, Ser. No. 454,068
Int. Cl.[3] G03B 7/08
U.S. Cl. 354—417 16 Claims



1. In a hybrid photographic camera of the type wherein a source of artificial illumination is ignited at an aperture value related to a determined camera-to-subject distance in accordance with the inverse square law of light propagation and means are provided for detecting and integrating scene light to control an exposure determinating event subsequent to firing the source of artificial illumination, the improvement comprising:

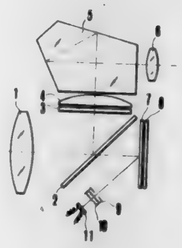
means for varying the aperture value at which the source of artificial illumination is fired such that the flash fire aperture is a predetermined number of stops larger than that aperture value which corresponds directly to the camera-to-subject distance determined in accordance with the inverse square law of light propagation and said predetermined number of stops difference progressively decreases in correspondence with increasing camera-to-subject distance.

4,445,764

LIGHT MEASURING DEVICE FOR A SINGLE LENS REFLEX CAMERA

Susumu Matsumura, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,284
Claims priority, application Japan, Dec. 2, 1980, 55-170622; Dec. 2, 1980, 55-170627
Int. Cl.[3] G03B 7/00
U.S. Cl. 354—480 4 Claims



1. A light measuring device for a single lens reflex camera comprising:

a photographic lens;

a photosensitive means and a shutter plane on the image forming plane of the photographing lens;

light sensing means for sensing the light from at least one of the photosensitive means and the shutter plane;

a multi-focal lens between the photosensitive means and the light sensing means;

said multi-focal lens having a plurality of area zones and having a different focal length for each area zone, and

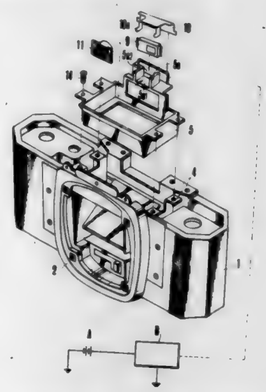
selection means for directing the light from each area zone of the multi-focal lens selectively to the light sensing means.

4,445,765

CAMERA INCORPORATING PHOTO-ELECTRO TRANSDUCER

Hiroshi Yamamoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,909
Claims priority, application Japan, Sep. 4, 1981, 56-131542
Int. Cl.[3] G03B 7/00, 13/02, 17/00, 19/12
U.S. Cl. 354—478 10 Claims



1. A camera incorporating a photo-electro transducer therein, comprising:

photo-electric converting means for measuring the brightness of an object to be photographed, said means including at least said photo-electro transducer;

a camera body containing said photo-electric converting means therein, said camera body including at least a part which is formed with an insulating synthetic resin material and is disposed in the vicinity of the photo-electric converting means; and

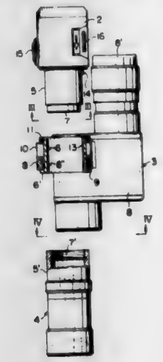
a shield member formed with an electrically conductive synthetic resin material, said shield member being arranged to house and/or carry said photo-electric converting means.

4,445,766

BINOCULARS WITH A DETACHABLE SMALL CAMERA

Shogo Yamazaki, Tokyo, Japan, assignor to Orinox Co., Ltd., Japan

Continuation of Ser. No. 159,866, Jun. 16, 1980, abandoned, which is a continuation of Ser. No. 196,372, Jun. 16, 1978, abandoned. This application Mar. 22, 1982, Ser. No. 360,760
Int. Cl.[3] G03B 17/48
U.S. Cl. 354—79 13 Claims



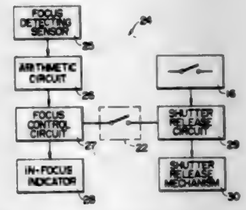
1. Binoculars with a detachable camera comprising a camera assembly having a camera body and camera lens means with an elongated camera barrel extending from the camera body, and a binoculars assembly having first and second binocular barrels with parallel optical axes and an elongated annular axle connected to the binocular barrels for adjusting relative positions of the barrels, the axle being positioned between the binocular barrels and being offset from a plane or planes containing the binocular optical axes, the axle being axially parallel to the binocular barrels and being hollow and having an inner size sufficient for selectively receiving the camera barrel and insufficient for receiving at least a part of the camera body, the camera barrel being removably received within the annular axle with an optical axis of the camera barrel parallel to the binocular optical axes, and wherein means are provided for selectively holding the camera barrel within the axle, thereby detachably connecting the camera assembly to the binoculars assembly, wherein the camera barrel comprises a camera-side barrel for joining to the camera and a remote barrel for detachably joining axially to the camera-side barrel remote from the camera body, the annular axle having annular inner bearing means for holding the camera-side barrel therein, the camera barrel having a distal end projecting through the axle and the distal end having first threaded joining means thereon, and the remote barrel having a proximal end with second threaded joining means thereon for joining the first threaded joining means on the camera side barrel portion extending from the axle, and the proximal end of the remote barrel having means for abutting the axle to firmly fix the barrels and the camera to the axle.

4,445,767

FOCUS DETECTING CAMERA

Mitsuo Kawazoe, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Jan. 12, 1983, Ser. No. 457,379
Claims priority, application Japan, Apr. 30, 1982, 57-63170[U]
Int. Cl.[3] G03B 13/02
U.S. Cl. 354—195.1 13 Claims



1. A focus detecting camera, comprising:

(A) an automatic focus detector for generating an in-focus detection signal when a moving object to be photographed reaches an in-focus position which is a preset distance from said camera;

(B) a human actuable switch which may be actuated by a user of said camera whenever said camera is to be operated in a moving object focus mode; and

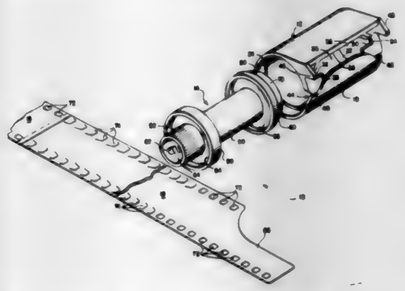
(C) shutter release means for releasing a shutter of said camera whenever said human actuable switch is actuated and said automatic focus detector generates said in-focus detection signal.

4,445,768

PHOTOGRAPHIC FILM ASSEMBLAGE WITH IMPROVED LEADER

Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 14, 1982, Ser. No. 388,421
Int. Cl.[3] G03B 17/26
U.S. Cl. 354—275 2 Claims



1. A photographic film assemblage comprising:

a housing for rotatably supporting a film spool having a length of photographic film coiled thereabout, said housing including means defining an opening through which the film may be advanced to the exterior of said housing;

a film spool rotatably mounted within said housing;

a length of unexposed photographic film coiled about said film spool, said film having trailing and leading ends; and

an opaque leader formed from a resilient material, said opaque leader having a trailing end secured to said leading end of said film, said leader extending from said leading end of said film and defining at least an inner convolution and an outer convolution about said coiled film, said leader including means defining a series of integral tabs in

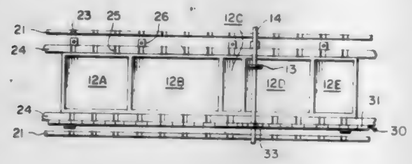
said inner and outer convolutions of said leader, said tabs in said inner convolution of said leader being substantially maintained in the plane of said inner convolution by said outer convolution of said leader thereby substantially preventing the passage of light through said inner convolution, said tabs being adapted for sequential movement out of the plane of said leader by an apparatus of a camera thereby leaving apertures in said leader for accommodating the apparatus, said tabs being tapered in the direction in which said leader is adapted to be uncoiled from said film spool such that when said tapered tabs in said outer convolution are located slightly out of the plane of said outer convolution thereby leaving tapered apertures in said outer convolution, at least one of said tapered tabs in said inner convolution may enter one of said tapered apertures in said outer convolution thereby deterring clockspringing of said leader and said film.

4,445,769

APPARATUS FOR PROCESSING FILM DISCS

Oscar Fisher, Box 949 Ohayo, Mountain Rd., Woodstock, N.Y. 12498

Filed Sep. 30, 1982, Ser. No. 430,787
Int. Cl.³ G03D *3/04, 3/08*
U.S. Cl. 354—322 **2 Claims**



1. An apparatus for processing film discs carried in stacked arrays on respective rods, which comprises a base means which supports a plurality of trays each containing a solution used in the processing, said trays being aligned along a given path extending from an input end to an output end; shift means operable to engage said rods and carry same with film discs thereon stepwise along said path, to correspondingly position in sequence the film discs in said solution-containing trays for processing thereby; and spinner means disposed to rotatably drive said rods and impart thereto a spinning motion whereby said film discs are wetted about their entire periphery when positioned in said trays; said shift means including at least one bar that extends lengthwise along said path and is disposed to engage a plurality of said rods to move same in unison along said path in spaced-apart relation therealong; said shift means bar being movable cyclically to carry said rods stepwise in a forward direction about said path during one portion of its movement cycle, and to return to a reference position in a backward direction about said path without said rods, to thereby progressively advance said rods and film discs along said path for sequential processing by the solutions contained in said trays, and wherein said trays are disposed in a row in adjoining relation along said path, and said trays have respective lengths along said path corresponding to the relative processing time for said film discs in the solutions contained in said trays.

4,445,770

FILM PROCESSOR

John B. Morse, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 2, 1983, Ser. No. 471,224
Int. Cl.³ G03B *5/06, 1/02*
U.S. Cl. 354—303 **9 Claims**

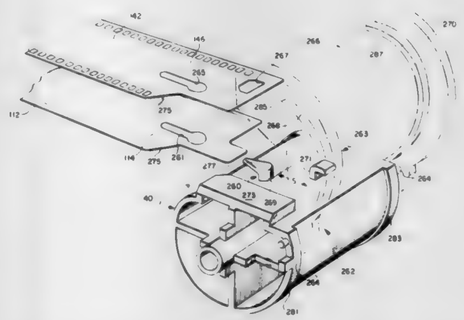
1. Processing apparatus for superposing a photographically exposed length of film having a leader containing two apertures therein with a length of sheet material having a leader so as to initiate the formation of a visible image, said apparatus comprising:

a housing defining a lighttight enclosure in which photographically exposed film is adapted to be processed, said housing including means providing access to said enclosure;

means for locating a container having a length of sheet material therein, the sheet material having a trailing end secured to a rotatable member located within the container and a leader having a first aperture therein;

means for supporting a cassette containing a roll of photographically exposed film, the film including a trailing end secured to a rotatable member located within the cassette and a leader having first and second apertures therein;

a spool rotatably supported within said enclosure, said spool including first means to which the leaders of the film and sheet material are to be attached via their first apertures, and second means to which the leader of the film is to be attached by its second aperture;



means for rotating said spool in a first direction so as to wind a laminate comprising the film and sheet material in superposition upon said spool with a layer of processing liquid located between the film and sheet material for a period of time sufficient for a visible image to form in the laminate, said rotating means being further constructed to subsequently drive the rotatable members in the sheet material container and the cassette so as to unwind the laminate from said spool thereby causing said spool to rotate in a second direction while simultaneously rewinding the sheet material into its container and the film into its cassette; and

said first means of said spool being constructed so as to move out of the first aperture in both the sheet material leader and the film leader when the laminate has been completely unwound from said spool while said second means is constructed to maintain its attachment with the film leader via the second aperture therein, whereby the sheet material is free to be completely returned to its container upon continued rotation of its rotatable member while the film is prevented from being completely returned to its cassette.

4,445,771

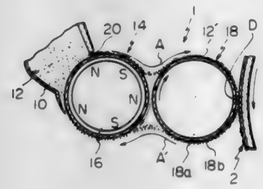
DEVELOPING APPARATUS FOR ELECTROSTATIC PHOTOGRAPHY

Koji Sakamoto, and Kazuo Kobayashi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 30, 1981, Ser. No. 326,098
Claims priority, application Japan, Dec. 5, 1980, 55-170846; Dec. 12, 1980, 55-174610; Dec. 30, 1980, 55-158726
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **11 Claims**

1. A developing apparatus for electrostatic photography which feeds a developer from a reservoir to a predetermined developing station to develop a latent image electrostatically formed on a moving photoconductive member into a visible image, comprising:

(a) a conveying means for conveying a roughly regulated volume of the developer from the reservoir toward the developing station, the developer being of a one component type which consists of a toner only; and



(b) a charging means for charging the toner to a predetermined polarity by frictional contact therewith while the toner is conveyed toward the developing station by the conveying means, whereby the charged toner is adhered to the charging means by electrostatic attraction to form an evenly charged toner layer having a relatively small uniform thickness.

discharger having an optical opening through which said photosensitive member is exposed to image light;

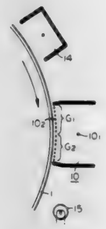
means for exposing said photosensitive member to image light through said optical opening so that a peak of light intensity distribution of the image light is aligned with the first control grid or with the area between said first control grid and said second control grid.

4,445,772

ELECTRONIC PHOTOGRAPHING DEVICE

Takao Aoki, Abiko, and Takahiro Inoue, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 141,918, Apr. 21, 1980, abandoned.
This application Jul. 28, 1982, Ser. No. 402,538
Claims priority, application Japan, Apr. 27, 1979, 54-52413
Int. Cl.³ G03G *15/02*
U.S. Cl. 355—3 CH **10 Claims**



3. An electrophotographic apparatus, comprising:

a movable photosensitive member essentially consisting of a conductive layer, a photoconductive layer and an insulating layer;

a primary corona discharger for applying corona of a predetermined polarity onto said photosensitive member;

a secondary corona discharger for applying corona having a component of the polarity opposite to the predetermined polarity, said secondary corona discharger having first and second control grids arranged side by side and in a face-to-face relation with said photosensitive member, said first grid being positioned upstream in relation to said second grid with respect to the direction of movement of said photosensitive member and having a first bias voltage applied thereto, and said second grid having a second bias voltage applied thereto which is different from said first bias voltage, wherein said corona wire is aligned with said first control grid or aligned in an area between the first and second control grids, and said secondary corona discharger having an optical opening through which said photosensitive member is exposed to image light;

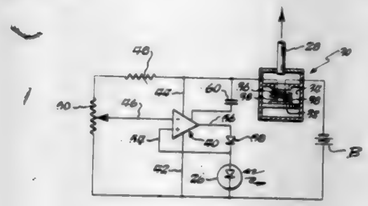
means for exposing said photosensitive member to image light through said optical opening so that a peak of light intensity distribution of the image light is aligned with the first control grid or with the area between said first control grid and said second control grid.

4,445,773

EXPOSURE INDICATOR

William B. Birkett, 42227 Sunnydale La., Northville, Mich. 48167

Filed Sep. 29, 1982, Ser. No. 428,265
Int. Cl.³ G03B *27/74;* **G01J** *1/42*
U.S. Cl. 355—68 **6 Claims**



1. In photographic plate makers of the type having a bed for supporting unexposed films or plates; a source of illumination for exposing said films or plates; the improvement of indicator means supported on said bed for signaling that an exposure has taken place, comprising:

comparator means for developing an output signal when a first input thereto exceeds a predetermined value;

a light emitting diode responsive to illumination from said source for developing a reverse current flow to provide said first signal and forward biased by said output signal to cause emission of radiation therefrom; and

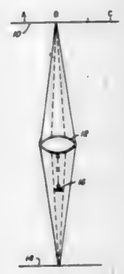
said output signal providing feedback to said first input to maintain the light emitting diode in a forward biased, light emitting state.

4,445,774

DOCUMENT IMAGING SYSTEM WITH IMPROVED EXPOSURE UNIFORMITY AT IMAGE PLANE

Richard A. Spinelli, Rochester, and Edwin F. Glab, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 30, 1982, Ser. No. 373,463
Int. Cl.³ G03B *27/72*
U.S. Cl. 355—71 **6 Claims**



1. An imaging system for projecting an image of a document lying in an object plane onto a photosensitive image plane, said system including:

a projection lens;

means for illuminating said document during an exposure

mode of operation and for directing images of said document along an optical axis towards the entrance pupil of said lens; and

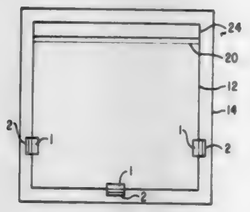
at least one uniformly opaque illumination corrector positioned between said object and image planes said corrector adapted to selectively vignette energy emanating from said field of view so as to provide a uniform exposure level at the image plane.

4,445,775

REGISTRATION BLOCKS FOR A PHOTOMASK ASSEMBLY

Richard R. Tongel, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1982, Ser. No. 362,693
Int. Cl.³ G03B *27/04*
U.S. Cl. 355—122 **20 Claims**



1. A precisely registerable assembly for use in a photolithographic imaging process which comprises:

a. a first rigid plate to which are affixed a plurality of registration blocks about the perimeter thereof; and

b. a second plate to which are affixed an equal number of block stops positioned to engage said registration blocks when said plates are brought into facing spaced relationship,

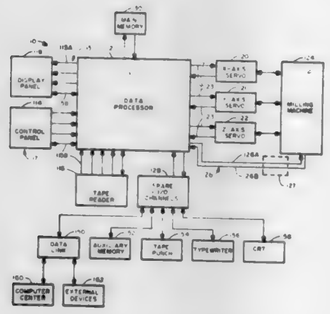
wherein the number of blocks and stops is sufficient to prevent relative lateral movement of the plates in their respective planes.

4,445,776

HIGH RESISTRATION PHOTOMASK MACHINE AND COMPUTERIZED NUMERICAL CONTROL SYSTEM

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Filed Sep. 29, 1980, Ser. No. 191,566
Int. Cl.³ G03B *27/02*
U.S. Cl. 355—78 **20 Claims**



1. A photographic exposure system comprising:

a command device for generating an input command signal;

an integrated circuit read only memory for storing command information;

an integrated circuit alterable memory for storing processed information;

a processor for processing the information stored in said alterable memory in response to the input command signal from said command device under control of the command information stored in said read only memory;

a control circuit for generating a control signal in response to the processing of information with said processor;

a machine for exposing an illumination sensitive medium in response to the control signal, said machine including

a. a photoplotter for generating a first plurality of images,

b. contact exposure high registration means for generating a second plurality of images having high registration therebetween in response to the first plurality of images generated with said photoplotter, and

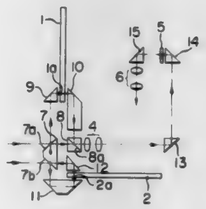
c. contact exposure duplication means for generating duplicate images in response to the second plurality of images.

4,445,777

OPTICAL SYSTEM OF A THEODOLITE

Yuzuru Ishikawa, and Masashi Tanaka, both of Kawasaki, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 215,342, Dec. 11, 1980, abandoned. This application Jan. 17, 1983, Ser. No. 458,707
Claims priority, application Japan, Dec. 27, 1979, 54-171446
Int. Cl.³ G01C *1/00*
U.S. Cl. 356—139 **9 Claims**



1. An optical system of a theodolite comprising:

(a) an altitude angle scale plate having an altitude angle scale;

(b) a horizontal angle scale plate having a horizontal angle scale;

(c) a light path combining member for combining the light paths from said two scale plates;

(d) a rectangular prism member provided between one of said two scale plates and said light path combining member and having slant faces orthogonal to each other, outer surfaces and inner surfaces of said two slant faces of said rectangular prism member being reflecting surfaces, a light beam reflected on the one of said outer reflecting surfaces illuminating said one of said two scale plates, and then being reflected by said inner reflecting surfaces and thereafter reaching said light path combining member;

(e) an objective lens for forming the images of the scales on said two scale plates; and

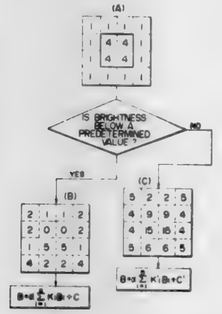
(f) a focusing screen on which the images of said scales by said objective lens are formed.

4,445,778

METHOD OF AND APPARATUS FOR MEASURING SCENE BRIGHTNESS

Kenji Nakauchi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 22, 1980, Ser. No. 218,566
Claims priority, application Japan, Dec. 21, 1979, 54-166692; Jan. 10, 1980, 55-1641; Jan. 11, 1980, 55-1921; Jan. 11, 1980, 55-1922; Jan. 21, 1980, 55-5445
Int. Cl.³ G01J *1/44*
U.S. Cl. 356—222 **3 Claims**



1. Apparatus for measuring the scene brightness of subject matter to be photographed, the apparatus comprising lens means for focusing an image of a scene including said subject matter; a plurality of photodetectors arranged over an area of the image of the scene focused by said lens means, with one or more of said photodetectors being arranged in a central portion and others thereof in a marginal portion of said image; weighting means including a plurality of groups of weighting resistors, the resistors of each of said groups being at least selectively coupled to receive associated outputs of said photodetectors, with said weighting resistors having values selected for differently weighting the outputs of the associated photodetectors in accordance with the relative positions of the latter; summing means having an input connected to the other ends of the resistors of at least a selected one of said groups thereof for summing the weighted outputs of said photodetectors to produce a scene brightness output; classifying means for classifying the scene into one of at least a normal light scene and a back light scene based on the difference between the weighted outputs of the photodetectors of said central portion and the weighted outputs of the photodetectors of said marginal portion, and providing a classification output; and selecting means for selecting, in response to said classification output, the scene brightness output as weighted by a selected one of said groups of weighting resistors.

4,445,779

DITHER SYSTEM FOR A SPRING MASS SYSTEM

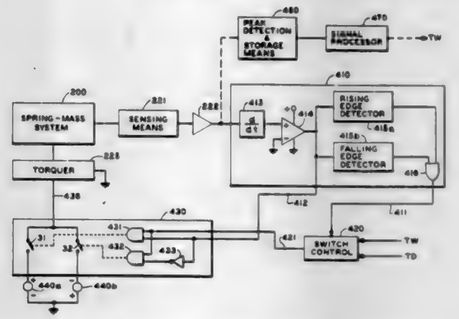
Allan P. Johnson, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 6, 1981, Ser. No. 280,954
Int. Cl.³ G01C *19/64*; G05B *13/02*
U.S. Cl. 356—350 **27 Claims**

1. A dither motor system for oscillating a spring-mass system in a rotational mode having controlled clockwise and counterclockwise peak amplitudes of rotation in response to an amplitude control signal, the dither motor system comprising:

pulsing means responsive to said amplitude control signal for providing torque command pulses synchronized to a selected condition of motion of said spring-mass system, said torque command pulses having a magnitude of electrical energy directly related to said amplitude control signal;

torquing means coupled to said spring-mass system for applying a controlled torque to said spring-mass system so as to separately control said clockwise and counterclockwise rotations of said spring-mass system, said torquing means



having input terminal means adapted to receive said torque command pulses wherefrom the magnitude of said controlled torque is substantially determined.

4,445,780

FIBER OPTIC ROTATION-SENSING GYROSCOPE WITH (3×2) COUPLER

William K. Burns, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1982, Ser. No. 353,677
Int. Cl.³ G01C *19/64*; G02B *5/14*
U.S. Cl. 356—350 **23 Claims**



1. A Sagnac rotation-sensing apparatus comprising:

an interferometer including an optical coupler with three input waveguides and two output waveguides wherein said input waveguides are disposed so that two outer input waveguides are positioned about a middle input waveguide, said interferometer also including a fiber-optic loop with the ends of said fiber-optic loop optically coupled between said output waveguides of said optical coupler;

means for introducing a light beam, into said middle input waveguide, to propagate toward the ends of said fiber-optic loop; and

means for measuring the intensity of light beams, propagating away from the ends of said fiber-optic loop, in said outer input waveguides.

4,445,781

POST MIX DISPENSING METHOD AND APPARATUS

Alan J. Arena, Chino; Edwin Pounder, LaCanada; Michael Pawlowski, Chino, and Adrian M. Totten, El Monte, all of Calif., assignors to Signet Scientific Co., El Monte, Calif.

Filed Feb. 26, 1982, Ser. No. 352,754
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—154 **17 Claims**

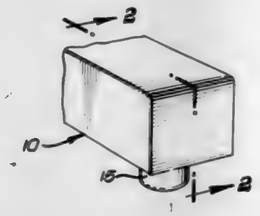
1. Post mix dispensing apparatus for dispensing a first, charged liquid and a second liquid comprising:

means defining a staging chamber;

means defining a plurality of ports spaced around the periphery of the staging chamber for injecting a first, charged

liquid into the staging chamber such that the liquid circulates turbulently in the chamber at substantially atmospheric pressure, a portion of the gases dissolved in the liquid therefore coming out of solution;

wherein the means defining a staging chamber includes a bottom wall and means defining a port in the bottom wall for porting the liquid circulating in the chamber substantially under the force of gravity alone, the port straightening the flow of the liquid and dissipating most of its kinetic energy;



means for forming a stream of a second liquid; and

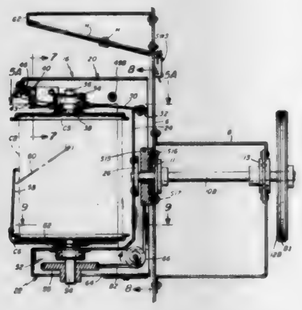
nozzle means having an opening for discharging the stream of the second liquid and the charged liquid ported from the staging chamber, the opening having a crosssectional area substantially larger than that of the means for forming the stream of the second liquid, the nozzle means directing the charged liquid to mix with the stream of the second liquid.

4,445,782

APPARATUS FOR SHAKING CONTAINED MIXTURES INCLUDING PAINT AND OTHER FLUID MATERIALS

Richard S. Sparrow, Jr., Norwell, Mass., assignor to Pecrless Pressed Metal, Inc., Watertown, Mass.

Filed Aug. 27, 1982, Ser. No. 412,436
Int. Cl.³ B01F *9/00*
U.S. Cl. 366—217 **6 Claims**



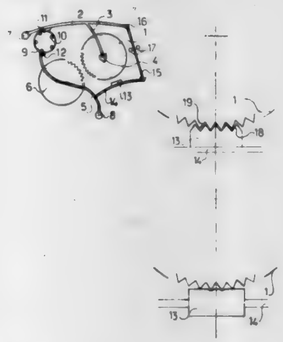
2. Apparatus for shaking a container provided with a bail and in which is received a fluid mixture including paint and other fluid materials, said apparatus including a housing having a vertical retaining wall rigidly secured at an intermediate portion thereof, a locking handle guide and stop structure fastened to the top of the retaining wall at one side thereof, a drive support structure mounted at an opposite side of the retaining wall at a lower point thereon, power driven motor and shaft means about a horizontal axis and having end portions extending through the vertical retaining wall, U-shaped holder frame means secured to the said end portions of the power driven shaft means for rotation therewith, said U-shaped holder frame means comprising a top section, a bottom section and a vertical rear side extending therebetween in which the said end portions of the shaft means is anchored, a lower clamping disk rotatably supported in the bottom section for receiving said container thereon, an adjustable upper clamping disk rotatable in the top section and movable into and out of resiliently maintained engagement with the said container supported on the said lower clamping disk, said adjustable clamping disk including a resilient suspension arm having a bearing member supported therein, a stub shaft fixed to the adjustable clamping disk freely rotatable in the bearing and means for moving the adjustable clamping disk into and out of engagement with the container.

4,445,783

SYSTEM FOR THE CONTROL OF A WHEEL FOR DRIVING IN ROTATION A CHRONOGRAPH HAND

Raymond Dodane, Besancon, France, assignor to Montres Dodane-Precia-Gete, France

Filed Apr. 20, 1982, Ser. No. 370,259
Claims priority, application France, Apr. 23, 1981, 81 08116
Int. Cl.³ G04F *3/00*
U.S. Cl. 368—105 **6 Claims**



1. A system for the control of a wheel for driving in rotation a chronograph hand, comprising a pivotally mounted lever for returning the hand wheel to zero and including a return-to-zero hammer adapted to co-operate with a heart-shaped cam jointly movable in rotation with the hand wheel, a pivotally mounted rocker for coupling an intermediate wheel rotatably mounted thereon with said hand wheel, a rotatable column wheel for controlling said lever and said rocker and a device for locking said hand wheel when said column wheel has rotated over a certain angle, wherein said locking device includes a locking shoe mounted on a support constituted by an arm attached at one end to the coupling rocker and connected at its other end to the return-to-zero lever by a releasing lever, so that the engagement of the locking shoe with the hand wheel results from the simultaneous movement of the rocker and the return-to-zero lever away from the hand wheel when said column wheel has rotated over said certain angle.

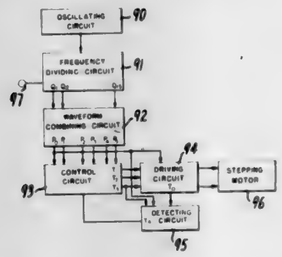
4,445,784

ELECTRONIC TIMEPIECE

Masaharu Shida; Makoto Ueda; Akira Torisawa; Shuji Owada, and Masaaki Mandai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Division of Ser. No. 966,115, Dec. 4, 1978, Pat. No. 4,326,278. This application Mar. 12, 1982, Ser. No. 357,577
Claims priority, application Japan, Dec. 2, 1977, 52-144651
Int. Cl.³ G04F *5/00*; G05B *19/40*
U.S. Cl. 368—157 **10 Claims**

1. In a driver circuit for a stepping motor having a coil, a stator and a rotor, and receptive of pulse signals from a pulse signal generator to rotationally drive said rotor, the improvement wherein said driver circuit comprises means for detecting a voltage induced in said coil by momentarily connecting said coil to a high impedance element soon after application of a pulse signal from said pulse signal generator, and means for comparing the induced voltage in said coil with a predetermined voltage and providing a corresponding output signal indicative of whether or not said rotor has undergone incremental rotation in response to the applied pulse signal.

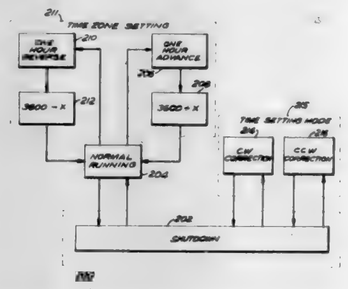


4,445,785

ELECTRONIC TIME SETTING FOR A QUARTZ ANALOG WATCH

Jean P. Chambon, Montfaucon; Jean-Francois Dufay; Paul Grand Chavin, both of Besancon; Georges J. Perrin, Thise, and Louis Vernay, Besancon, all of France, assignors to William C. Crutcher, Waterbury, Conn.

Filed Jul. 12, 1982, Ser. No. 397,638
Int. Cl.³ G04C *9/00*; G04F *5/00*
U.S. Cl. 368—187 **2 Claims**



1. An electronic analog timepiece having a plurality of time correction circuits each providing time correction signals for producing alternately clockwise and counterclockwise time correction rotation of at least one time indicating member when the timepiece is in one of a plurality of operating modes comprising:

(a) switch means for independently selecting one of said operating modes for controlling said time correction circuits for producing said time correction signals,

(b) motor control means responsive to said time correction signals for producing at least one series of impulse signals,

(c) a high speed stepping motor capable of operating at a speed of as high as 1,000 Hz electrically coupled to said switch means and responsive to said impulse signals from said motor control means for producing high frequency pulsed signals to provide time correction rotation of at least one time indicating member,

(d) deceleration ramp means electrically coupled to said stepping motor and responsive to said time correction signals for reducing the speed of said high speed motor, and

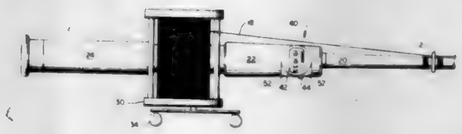
(e) counter means electrically coupled to said deceleration ramp means and responsive to said impulse signals from said motor control means for starting said deceleration ramp prior to the stopping of said high speed stepping motor.

4,445,786

ELAPSED TIME ROD AND REEL APPARATUS

Ronnie L. Jackson, DET 193-1, PSC Box #1348, APO New York, N.Y. 09289

Filed Sep. 30, 1982, Ser. No. 430,824
Int. Cl.³ G04B *47/00*
U.S. Cl. 368—10 **10 Claims**



1. In combination with fishing equipment including a fishing rod, a fishing reel with line, and a lure with hook at the free end of said line, the improvement comprising:

timing means for said fishing equipment;

means for mounting said timing means on said fishing equipment in a position which is easily viewable by the user of the equipment; and

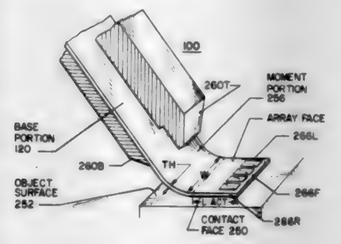
additional means for effecting starting and stopping of said timing means to indicate the elapsed time necessary to land a fish after hooking the fish by the lure with hook.

4,445,787

SURFACE TEMPERATURE MEASURING DEVICE WITH REVERSIBLE THERMOCHROMIC FILM

Robert Parker, 411 Rolling Hills La., Alamo, Calif. 94507

Filed Apr. 5, 1982, Ser. No. 365,763
Int. Cl.³ G01K *1/16, 11/12*
U.S. Cl. 374—141 **18 Claims**



1. A heat responsive device for measuring the surface temperature of an object, comprising:

a thermally conductive thin member formed by an end portion, having a contact side and an opposed indicator side, and a flexible resilient portion;

the contact side adapted to be placed into heat transfer engagement with the object surface defining an active heat transfer area on the contact side and a thin active volume within the portion of the thin member adjacent thereto, heat from the object simultaneously flows across each portion of the active area into each adjacent portion of the active volume for causing the entire active volume to uniformly increase in temperature and to simultaneously obtain an equilibrium temperature substantially equal to the temperature of the object surface;

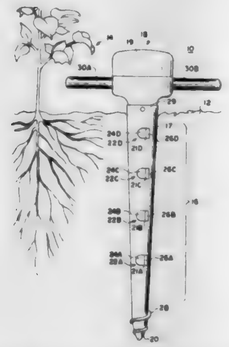
reversible thermochromic material forming a thin layer on the indicator side of the thin member end portion, and responsive to the heat within the thin member at a critical temperature determined by the composition of the material for indicating the temperature of the thin member end portion;

support means for supporting the thin member; and
the flexible resilient portion of the thin member extending between the end portion thereof and the support means, which bends as the end portion engages the object surface to provide a constant bending moment for urging the contact side of the end portion into engagement with the object surface, and for providing a constant heat transfer pressure therebetween.

4,445,788
SOIL PROBE AND METHOD OF OBTAINING MOISTURE, TEMPERATURE AND ROOT DISTRIBUTION OF A SOIL PROFILE

Marvin Twersky; William E. Splinter, and Bruce C. Sandhorst, all of Lincoln, Nebr., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Apr. 30, 1982, Ser. No. 373,447
Int. Cl.³ G01K *11/12*
U.S. Cl. 374—142 **25 Claims**



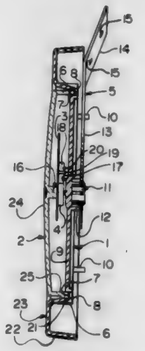
1. A method of determining characteristics of a substance at different locations in the substance comprising the steps of:
inserting a probe containing a plurality of sensors on it into the substance;
sensing a plurality of characteristics of the substance at a plurality of different locations with said sensors;
collecting the data from said sensors at predetermined locations;
the step of sensing said plurality of characteristics including the step of simultaneously sensing said characteristics with at least two of said sensors;
the step of collecting data from said sensors includes the step of transmitting data from said sensors to a location outside of said substance;
the step of sensing a plurality of characteristics further including the steps of sensing the temperature of said substance;
sensing the moisture of the substance; and
sensing the root growth of plant life in the substance.

4,445,789
THERMOMETER OR OTHER INSTRUMENT ASSEMBLY

Edward L. Peart, Arden, and Charlie J. Howard, Fairview, both of N.C., assignors to Sybron Corporation, Rochester, N.Y.

Filed May 28, 1982, Ser. No. 382,995
Int. Cl.³ G01K *5/68*
U.S. Cl. 374—198 **15 Claims**

1. An instrument assembly comprising a movement, case structure, crystal structure, and adjustment means said movement comprising condition responsive means, an indicator means having pointer means and scale means, said condition responsive means being responsive to said condition for moving one of said pointer means and said scale means with respect to the other thereof along a given path such that the relative positions thereof along said path indicate values of said condition;
said pointer means and said scale means being mounted one in said case structure and one on said crystal structure, and both said pointer means and said scale means being visible through said crystal structure such that said relative positions are exteriorly visible;

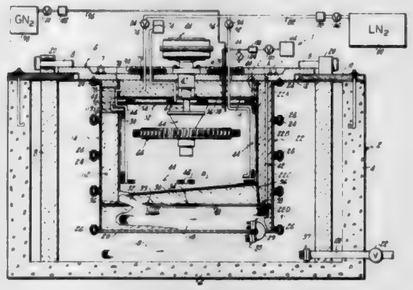


said crystal structure being movably mounted in said case structure by said adjustment means, said adjustment means including means having interdigitated digital elements normally fixing said crystal structure in position, but yielding to a sufficient quantum of force manually exerted on said crystal and along said path such as to constrain said crystal to move freely for only a discrete amount corresponding to one or several of said digital elements.

4,445,790
APPARATUS FOR CRYOGENIC PROOF TESTING OF ROTATING PARTS

John F. Schratt, Riviera Beach, and Joseph J. Weber, West Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 7, 1982, Ser. No. 366,115
Int. Cl.³ G01N *25/00*
U.S. Cl. 374—45 **7 Claims**

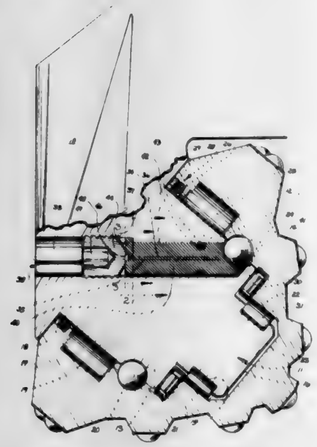


1. An apparatus for testing a spinning metal part at a desired cryogenic temperature, said apparatus having a container, said container having an inner container wall, cover means for said container, means for mounting a metal part for spinning within said inner container wall, a metal part mounted on said mounting means, means for filling said inner container wall above said metal part with a cryogenic liquid to bring said metal part mounted thereon to a desired cryogenic temperature, means located adjacent said inner container wall to maintain the desired cryogenic temperature within said inner container wall, means for draining said cryogenic liquid from said inner container wall when said metal part has reached the desired cryogenic temperature, means for placing a vacuum in said inner container wall around said metal part when said cryogenic liquid has been drained therefrom, means for spinning said metal part in said vacuum in said inner container wall to place a desired stress on said metal part when it is at the desired cryogenic temperature.

4,445,791
ROTARY DRILL BIT BALL PLUG

Frank J. Klima, 1401 W. Chestnut St., Virginia, Minn. 55792

Filed Sep. 30, 1982, Ser. No. 429,495
Int. Cl.³ F16C *33/30, 33/64;* E21B *10/22*
U.S. Cl. 384—96 **4 Claims**



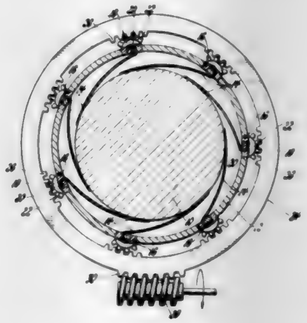
1. In a rotary drill bit of the class including a rotary cutter operable on a journal on a leg of the bit and rotatably retained thereon by a plurality of ball bearings disposed between complementary configured and disposed races in said cutter and said journal, a locking, removable ball bearing retaining plug comprising, in combination;
an access hole extending through the leg and journal of a drill bit into a ball bearing race in said journal, said access hole having an inner section of a first diameter disposed about a first center line and adjacent a ball bearing race and an outer section of larger diameter formed about a center line that is offset from the center line of said inner section; and
a ball plug having an inner portion of the same diameter as the inner portion of said access hole and an outer head portion of the same diameter as the outer portion of said access hole and offset from the inner portion of said ball plug.

4,445,792
VARIABLE PRELOAD FOIL BEARING

Richard J. Trippett, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1982, Ser. No. 443,196
Int. Cl.³ F16C *32/06, 23/02*
U.S. Cl. 384—103 **2 Claims**

1. In a hydrodynamic foil bearing of the type having an axial shaft rotatably supported with respect to a housing by a plurality of cantilevered foils bearing against the shaft surface, means for adjustably mounting the foils with respect to the housing to vary the preload of the foils against the shaft surface, comprising,
a plurality of axially extending foil mounts rotatably supported relative to the housing and concentrically arranged about the shaft, each mount having a foil attached thereto to cantilever the foils to the housing, each mount having a driven portion,
a drive mechanism rotatably supported relative to the housing and engageable with the driven portions of the foil

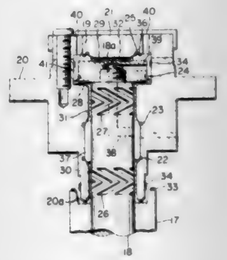


mounts to simultaneously rotate the mounts relative to the housing and vary the preload of the foils against the shaft surface,
and means for releasably holding the drive mechanism in any rotative position thereof relative to the housing.

4,445,793
BEARING

Kazuyoshi Shinohara, Okayama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 17, 1982, Ser. No. 419,582
Claims priority, application Japan, Sep. 18, 1981, 56-148567
Int. Cl.³ F16C *33/74*
U.S. Cl. 384—130 **20 Claims**



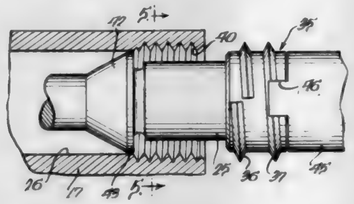
1. A bearing comprising:
two members having adjacent opposing surfaces which are movable relative to each other;
a plurality of grooves formed on at least one of said surfaces,
a lubricant held between said plurality of grooves and the other of said opposing surfaces, said plurality of grooves comprising a row of grooves oriented to cause said lubricant to flow in a desired direction when said surfaces move relative to each other,
there being a first gap between (i) a portion of said at least one of said surfaces having said plurality of grooves formed thereon and (ii) the other of said opposing surfaces, which is smaller than a second gap between (a) other portions of said at least one of said surfaces which do not have said plurality of grooves thereon and (b) opposing surface portions of said other of said opposing surfaces; and
an oil repellent layer applied to at least one of said surfaces adjacent said first gap.

4,445,794

SELF-LOCKING THREADED BEARING AND BEARING ASSEMBLY AND METHOD OF MAKING SUCH ASSEMBLY

Christopher T. Sandberg, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Jul. 16, 1982, Ser. No. 398,954
Int. Cl.³ F16C *35/02*; B23P *11/00*; E05F *11/00*; F16B *29/00*
U.S. Cl. 384—428 **9 Claims**



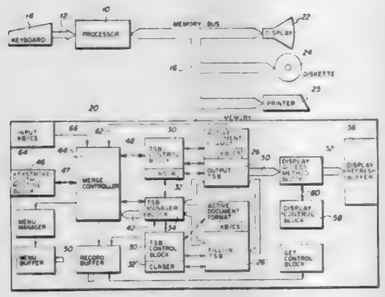
1. A self-locking threaded bearing assembly comprising, a housing having a bore with an internal thread extending along at least a part of the length of the bore, a bearing having an external thread, said threads being of the same pitch whereby the bearing can rotatably advance along the bore to a working position by interengagement of said threads, said housing threads being more ductile than the bearing threads, and the external thread of the bearing being discontinuous whereby rotation of the bearing at the working position without advance thereof causes partial stripping of the housing thread to lock the bearing axially in the housing with some of the stripped housing thread packed into the areas in which there is no bearing external thread and with parts of the external thread in contact with unstripped portions of the internal thread.

4,445,795

METHOD AND APPARATUS FOR MERGE PROCESSING IN A TEXT PROCESSING SYSTEM

Lewis J. Levine, and Kenneth O. Shipp, Jr., both of Austin, Tex., assignors to International Business Machines, Armonk, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,252
Int. Cl.³ B41J *5/30*
U.S. Cl. 400—63 **6 Claims**



1. In an interactive text processing system in which a document input by way of a keyboard is stored, displayed to an operator, and merged with other keyed data in accordance with directions supplied to said system by an operator interacting with the keyboard and a display unit, the combination which comprises:

means for signalling, by either a first or a second control code, the location in a document at which an insert of pre-stored text data is to be added to the document;

means for displaying a first menu of predetermined task selections selectable by an operator through said keyboard for selecting either a first type of merge operation operable in response to said first control code or for selecting a second type of merge operation in response to said second control code;

means for displaying, when said merge operation operable in response to said first control code is selected, a second menu of predetermined task selections for specifying the identification of a first insert of pre-stored text data;

means for displaying, when said merge operation operable in response to said second control code is selected, a third menu of predetermined task selections for specifying the identification of a second insert of pre-stored text data; and

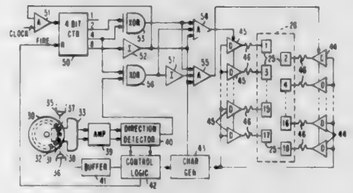
means for fetching in response to the specified identification the specified insert of pre-stored text data and merging said data into said document at the signalled location to produce a revised document.

4,445,796

PRINT ELECTRODE CONTROL CIRCUIT

Vincent M. Lisica, Vestal, and Charles O. Ross, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,804
Int. Cl.³ B41J *3/20*
U.S. Cl. 400—120 **10 Claims**



1. In a printer having a print head with at least two pluralities of print elements thereon and being movable along a print line on a record member with said pluralities moving in tandem, an energizing circuit for said print elements comprising:

data means for supplying data signals for recording to selected ones of said print elements when enabled;

means for generating sequencing signals, said generating means including a counter and means responsive to predetermined increments of motion of said print head along said print line for initiating said sequencing signals from said counter means;

enabling means responsive to predetermined ones of said sequencing signals for providing enabling signals for said data means to enable said pluralities of elements in succession with the lagging plurality being enabled first.

4,445,797

IMPACT CONTROL FOR CARRIER MOUNTED SERIAL PRINTERS

Gian P. Barozzi, and Giancarlo Horeschi, both of Tokyo, Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,074
Claims priority, application Japan, Jul. 11, 1980, 55-94939
Int. Cl.³ B41J *1/60*
U.S. Cl. 400—166 **8 Claims**

1. A printing device in a typewriter comprising:

a rocker bracket turnable in a direction of printing a letter by a cam rotated when a key is pressed;

a type head vertically movably and rotatably supported by said rocker bracket;

a vertically movable pulley and a rotatable pulley which are mounted on said rocker bracket and rotated by a predetermined value in accordance with a letter selected by the key;

a mechanism for transmitting a movement of the vertically movable pulley to the type head to vertically move the type head; and

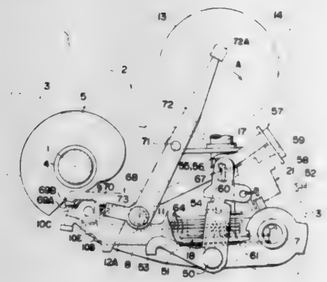
a mechanism for transmitting a movement of the rotatable pulley to the type head to rotate the type head;

wherein said printing device further comprises:

a printing arm for pivotally supporting a trigger detachably engageable with said rocker bracket and abutting against and being rotated by said cam to turn the rocker bracket;

vertical direction selecting means movable to a predetermined position in accordance with a value of rotation of the vertically movable pulley;

rotational direction selecting means provided on the rotatable pulley; and



a printing pressure control member movable in accordance with movements of the vertical direction selecting means and the rotational direction selecting means and having at least two abutting portions within a moving path of the trigger;

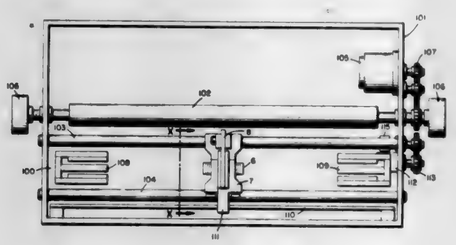
whereby the position of the printing pressure control member is set by said respective selecting means, and the trigger is caused to impinge on a portion selected out of the abutting portions, so that a position where the rocker bracket is to be released can be adjusted, thereby enabling the adjustment of the printing pressure.

4,445,798

SERIAL PRINTER WITH A LINEAR MOTOR PRINTER CARRIAGE

Hidehiko Munehiro, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 235,273
Claims priority, application Japan, Feb. 15, 1980, 55-17626; Feb. 27, 1980, 55-23550
Int. Cl.³ B41J *19/14, 19/30, 25/28*
U.S. Cl. 400—320 **5 Claims**



1. A serial printer comprising:

a printer carriage having a non-impact type print head mounted thereon,

guide means for guiding lateral reciprocation of said carriage,

roller means provided on said carriage for reducing sliding friction between said carriage and said guide means, and

a linear motor including a magnetic circuit for creating a magnetic field at an air gap, and a moving coil movable within said air gap in a direction perpendicular to said magnetic field, said moving coil being secured to said carriage,

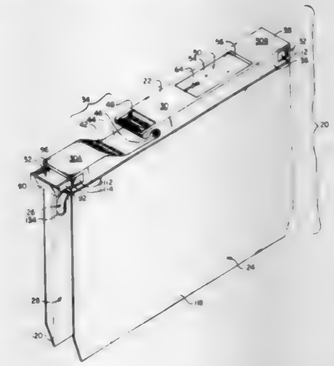
said magnetic circuit being provided only at both end portions of said carriage reciprocation, and said carriage sliding on said guide means at a substantially uniform sliding speed over a printing stroke.

4,445,799

DOCUMENT HOLDERS

David M. Wright, Shrewsbury, and Albert G. Ermanski, Auburn, both of Mass., assignors to Wright Line Inc., Worchester, Mass.

Filed Feb. 12, 1981, Ser. No. 234,072
Int. Cl.³ B42F *13/00, 15/00*; A47B *63/00*
U.S. Cl. 402—4 **13 Claims**



1. A loose-leaf binder for use in both single- and double-horizontal-rail filing systems said binder comprising in combination:

means for releasably securing marginally perforated stationary items;

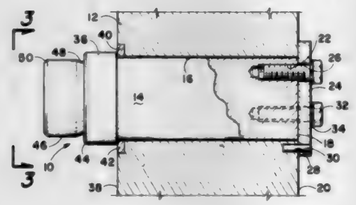
an articulated case comprising front and rear covers hinged to an included elongate spine, said spine terminating longitudinally in head- and tail- ends and being dimensioned to accommodate within said case said items securing means, and support means on said spine for aligning and laterally restraining said items securing means; and

an elongate hollow spine structure of similar length and width as said case spine and similarly terminating in head- and tail-ends, said spine structure comprising a pair of substantially parallel sides and an included back, hook means, and end means, said hook means comprising at least one hook formed in said back and said sides, and said end means including a pair of end pieces disposed at said head- and tail-ends of said spine structure with at least one of said end pieces being movable between a closed position and an opened position relative to said spine, when in said closed position said at least one end piece being fully recessed within said spine structure so as to not substantially extend beyond the associated head- or tail-end thereof, and when in said opened position said at least one end piece extending longitudinally beyond the associated head- or tail-end, said end means being further provided with means for releasably securing said end pieces in said opened position and said closed position; and means, separate from and operable independently of the end pieces, for securing the case to the spine structure;

whereby the binder may be suspended by said end pieces in

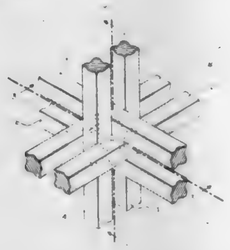
the double-horizontal-rail filing system or by said hook in the single-horizontal-rail filing system.

4,445,800
WRIST PIN
Raymond L. Walker, P.O. Box 1342, San Clemente, Calif. 92672
Filed Nov. 24, 1981, Ser. No. 324,619
Int. Cl.³ F16B *21/00*
U.S. Cl. 403—14 **4 Claims**



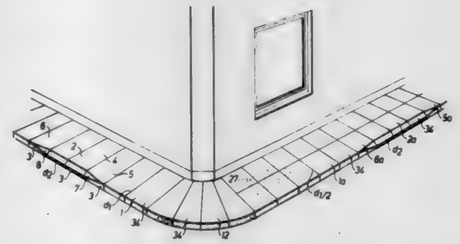
1. A wrist pin for a crank arm means having a transversely extending straight-walled bore provided therein, said wrist pin comprising an elongated straight-walled solid shank member adapted to be positioned within said bore, head means provided at one end of the shank member for engaging one face of the crank arm means for limiting the depth of insertion of the shank member in the bore, retaining plate means disposed against the opposite end of the shank member for engagement with the opposite face of the crank arm means, securing means extending through the retaining plate means and into the shank member for positively securing the shank member to the crank arm means for precluding accidental disengagement therebetween, and indexing means cooperating between the retaining plate means and crank arm means for proper orientation of the plate means with respect to the shank means and for anchoring the shank member against independent rotation thereof with respect to the crank arm.

4,445,801
DISMANTABLE JOINT ARRANGEMENT
Luc Trudeau, 880, Carleton St., Chambly, Quebec, Canada J3L 2X9
Filed Sep. 28, 1982, Ser. No. 425,856
Int. Cl.³ F16B *7/18*
U.S. Cl. 403—219 **14 Claims**



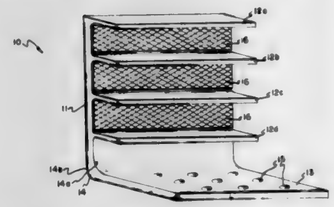
1. A dismantable joint arrangement comprising only three groups of only two members in each group, said two members of each of said groups being oriented as pairs of spaced-apart parallel members, said pairs of members being arranged relative to one another such that the members of each pair cross the members of the other pairs in abutting engagement therewith and any one pair of members has a respective second pair of members interposed therebetween and a respective third pair of members adjoined thereto and interposed between the members of said respective second pair, and at least two dowell-type coupling elements associated with each pair for positioning the members thereof against those interposed therebetween, said coupling elements being removably inserted in corresponding holes formed at the crossings of said members and being slidably frictionally engaged in said holes so as to be retained therein by frictional force while being slidably removable by the application of manual force, the members of said respective third pair cooperating with the members of said one pair and said respective second pair to stabilize the relative position of said members and the coupling elements associated with said respective second pair releasably locking the members of said respective third pair in place to thereby provide a rigid and secure joint for all said members, whereby said joint arrangement may be dismantled by slidably removing at least one of the coupling elements associated with said respective second pair so as to release at least one of the members of said respective third pair and thereby enable the remaining members to be taken apart.

4,445,802
SYSTEM OF PREFABRICATED CONCRETE ELEMENTS FOR CONSTRUCTING PATHS
Björn Lööv, Upsala, Sweden, assignor to Aktiebolaget S:t Eriks Betong, Uppsala, Sweden
Filed May 6, 1982, Ser. No. 375,567
Claims priority, application Sweden, May 25, 1981, 8103275
Int. Cl.³ E01C *5/06*
U.S. Cl. 404—40 **10 Claims**



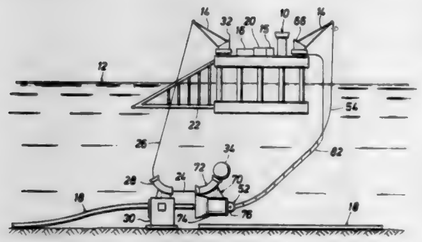
1. A combination of prefabricated concrete elements for constructing paths in the form of walks and cycle paths and the like for light traffic and having a predetermined width corresponding to normal minimal width N, the combination of prefabricated concrete elements adapted to rest on the ground and extend at least on part above the ground, comprising a first group of prefabricated concrete elements comprising flat, four-sided slabs for the straight sections of the path, and a second group of prefabricated concrete elements consisting of flat radius slabs for forming the curved sections of the path, said first group of elements comprising four sets of slabs each slab having at least one curb forming end surface, the end surface of the first set being vertical, the end surface of the second set being straight bevelled the end surface of the third set of slabs being obliquely bevelled towards a first opposite corner and the end surface of the fourth set being obliquely bevelled towards a second opposite corner; said second group comprising a first set of radius slabs and a plurality of sets of flat radius slabs each having a large arc and a small arc concentric with each other, the slabs in the first set of said second group having a predetermined radius which is equal to said normal width N, each of the remaining sets having slabs respectively which increase serially in radius equal to the radius of the immediately preceding set plus the normal minimal width N, the slabs of each set of said second group having edge portions at at least one of said arcs designed to form the outer contour of the path, providing a curb-forming effect.

4,445,803
RESILIENT MARKER
Byron P. Dixon, 4138 S. 570 East #25C, Salt Lake City, Utah 84107
Filed Dec. 17, 1982, Ser. No. 450,653.
Int. Cl.³ E01F *9/00*
U.S. Cl. 404—10 **3 Claims**



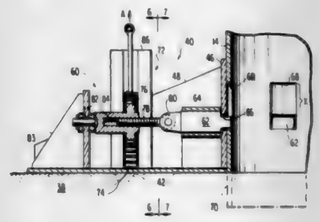
1. A reflective marker for delineating traffic control on a roadway and the like, said marker comprising:
- a top assembly of resilient material having a pair of faces
- a plurality of spaced apart protective flaps attached to said top assembly and cantilevered from at least one face thereof;
- a plurality of reflective surfaces on each face of the top assembly having said protective flaps extending therefrom and adjacent to said protective flaps;
- a base plate for attaching said marker to a road surface or the like, said base plate being integrally formed with the top assembly and extending substantially normal thereto.

4,445,804
METHOD AND APPARATUS FOR REMOTE RECOVERY OF SUBMERGED PIPELINES
Mohamed G. Abdallah, and William M. McDonald, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.
Filed May 28, 1982, Ser. No. 382,894
Int. Cl.³ F16L *1/04*
U.S. Cl. 405—173 **24 Claims**



9. A method for recovering a submerged pipeline, comprising the steps of:
- lowering a pipe alignment frame into an operational relationship with a substantially straight segment of said pipeline by paying out an alignment cable threadingly engaged with said pipe alignment frame, said alignment cable having a first end connected to a buoy, said alignment cable also having a second end controlled from the water surface to pay out and take in said alignment cable;
- paying out said second end of the alignment cable, after said pipe alignment frame is in an operational relationship with said pipeline, to enable said buoy to raise said first end of the alignment cable to the water surface;
- coupling said first end of the alignment cable to a lift head means, said lift head means having a lift head connected thereto for gripping a pipeline end upon the remote activation of said lift head, said lift head means having a first end of a retrieval cable connected thereto, said retrieval cable also having a second end controlled from the water surface to pay out and take in said retrieval cable;
- taking in said alignment cable while paying out said retrieval cable to lower said lift head means towards said pipe alignment frame until said lift head is in a position to grip said pipeline upon the activation of said lift head;
- gripping said pipeline by remotely activating said lift head until said lift head is in a gripping relationship with said pipeline; and
- taking in said retrieval cable while paying out said alignment cable to raise said lift head means and said pipeline towards the water surface.

4,445,805
JACK-UP PLATFORM VARIABLE BEARING ASSEMBLY
Donald R. Ray, Houston, Tex., and Eugene R. Facey, London, England, assignors to Sonat Offshore Drilling Inc., Houston, Tex.
Filed Nov. 17, 1982, Ser. No. 442,463
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—203 **15 Claims**

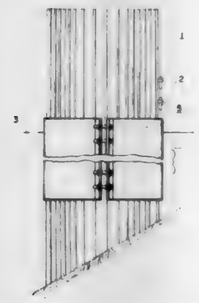


1. A variable bearing assembly for a jack-up platform having a hull, at least one support leg operable to extend from the hull to a seabed to support the hull above the surface of the sea and means to selectively effect relative vertical movement between the hull and leg, said variable bearing assembly comprising:
- bearing means, operable to surround the support leg at a distal end thereof remote from said hull when the support leg is in an extended position, for selective bearing engagement with the seabed;
- at least one longitudinally elongate recess fashioned into the support leg at a position above but adjacent to the distal end of the support leg;
- means, mounted on said bearing means, for engaging said at least one longitudinally elongate recess fashioned into the support leg for connecting said bearing means to the support leg and concomitantly permitting a degree of longitudinal relative motion between said bearing means and the support leg at the distal end of the support leg such that the support leg may extend into the seabed downwardly of the position of said bearing means; and
- means for releasing said means for engaging said at least one longitudinally elongate recess of the support leg such that the support leg may be selectively released from said bearing means on the seabed and withdrawn to the platform hull.

4,445,806
SHEET PILING OR MOORING CELL
Graydon H. Crain, Freedom Rd., R.D. #5, Mars, Pa. 16046
Filed Jul. 12, 1982, Ser. No. 397,556
Int. Cl.³ E02B *3/22*; E02D *5/60*
U.S. Cl. 405—216 **2 Claims**

1. In combination with a mooring cell structure having a corrugated cylindrical configuration; the combination therewith of a pair of arcuate metallic sheets of substantially equal length secured together in metallic contact with and directly

surrounding said cells to provide a direct mechanical reinforcing layer and extending only in the area immediately above and below a river water line, flanges secured to the ends of said sheets, a plurality of longitudinally spaced bolting means for holding together said flanges of said arcuate sheets so as to



tightly encircle the mooring cell structure and prevent loss of the contents thereof as well as to effect direct reinforcement of the cell together with vertically spaced mooring rings secured to said mooring cell structure at a position of about 90° away from said flanges to protect said flanges from damage by vessels.

4,445,807

DIVERLESS SUBSEA TEMPLATE LEVELLING SYSTEM AND/ METHOD

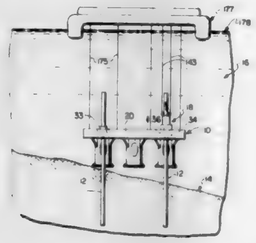
William S. Cowan, West University Place, Tex., assignor to Armco Inc., Middletown, Ohio

Continuation-in-part of Ser. No. 221,398, Dec. 30, 1980. This application Dec. 8, 1981, Ser. No. 328,791

The portion of the term of this patent subsequent to Oct. 11, 1983, has been disclaimed.

Int. Cl.[3] **E02B** *17/02*

U.S. Cl. 405—227 **23 Claims**



1. A subsea template levelling system for levelling a template adjacent the seabed on a plurality of piles implanted in a seabed, the combination comprising:

an open ended hub haviing a pile received therein;

means for pivotally coupling said hub to the template in a passageway in the template;

first gripping means, coupled to said hub, for releasably gripping the pile received in said hub, said first gripping means being fluid-pressure activated;

a housing;

means for releasably coupling said housing to said hub;

second gripping means, slidably received in said housing, for releasably gripping the pile received in said hub;

means on the exterior of said second gripping means and on the interior of said housing for limiting the slidable movement of said second gripping means relative to said housing;

means for unlocking and locking said first and second gripping means and for reciprocating said second gripping means relative to said housing to raise and lower the template relative to the pile received in said hub; and

means for remotely delivering fluid under pressure from a fluid reservoir at the sea surface to said first gripping means without the necessity for an underwater manual connection.

4,445,808

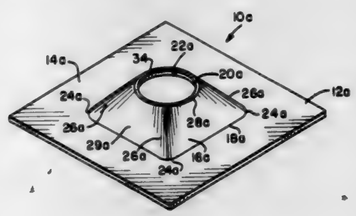
MINE ROOF PLATE

Satya P. Arya, Somerville, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 99,836, Dec. 3, 1979, abandoned. This application Sep. 10, 1981, Ser. No. 300,773

Int. Cl.[3] **E21D** *21/00*

U.S. Cl. 405—259 **8 Claims**



1. A mine roof plate, having a load-carrying capacity within a range of not less than 23,000 pounds (10432.8 kg.) to 35,000 pounds (12,247.2 kg.), comprising:

a rigid plate formed of steel;

said plate having a substantially-central portion thereof raised from, or in relief relative to, a generally flat, peripheral portion thereof; and

said central portion comprises a base, about which said peripheral portion subsists, and a dome elevated from said base, the uppermost portion of which dome is of circular configuration, with an aperture, having a diameter taken from a range of from 1.39 to 1.60-inch, formed in said dome substantially centrally thereof; wherein

said base has rectilinear sides which are joined at ends thereof through radiused, corner portions;

said plate is of a substantially uniform thickness;

said uniform thickness is not more than a maximum of approximately 0.158-inch (4.0132 mm.) to a minimum of approximately 0.121-inch (3.0734 mm.);

said central portion has sides, joining said base and said uppermost portion of said dome, which fair the linearity thereof, defined by said rectilinear sides of said base, to arcuate conformations thereof, defined by said circular configuration; whereby

successive cross-sections of said dome, from said base to said uppermost portion thereof, transform from a rectilinearly-sided, substantially square shape to a circular shape; and

said dome has a flat, terminal land surface, circumscribing said aperture, having a width dimension which is less than said maximum thickness dimension of said plate.

4,445,809

APPARATUS FOR EMPTYING CONTAINERS FILLED WITH POWDER

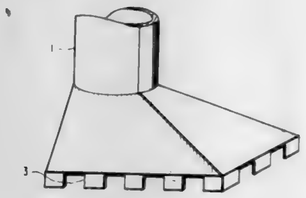
Werner Schmitz, Hasselroth, and Edgar Simon, Freigericht, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 225,821, Jan. 16, 1981, abandoned. This application Apr. 25, 1983, Ser. No. 488,552

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004945

Int. Cl.[3] **B65G** *53/50*

U.S. Cl. 406—152 **1 Claim**



1. In an apparatus for emptying containers filled with powder, the improvement comprising

providing a tube for emptying the powder in containers, which tube has an upper end and a lower end, the upper end having attached thereto a flexible tube, the lower end of the tube having an opening to permit entry of, and emptying of, the powder from the container,

a fluidizing device arranged near the opening at the lower end of the tube and arranged concentrically around the tube thereby defining a jacket creating a chamber between the tube and the device,

the jacket having bore holes associated therewith for introducing fluidizing air into the powder in the direction of said opening of the tube, said tube extending below the bore holes in the jacket,

the opening being of rectangular cross section with a crenelated edge and of larger cross section than the tube,

the said rectangular cross section of the opening decreasing in cross section in an upward direction toward the tube,

said fluidizing device consisting of a double conical jacket provided with a gas supply duct parallel to the tube, or a hollow spherical jacket having a gas supply duct arranged coaxially about the tube.

4,445,810

METHOD OF MAKING A CUTTING MEMBER AND ARTICLE PRODUCED THEREBY

Kurt A. Theilen, Cologne, Fed. Rep. of Germany, assignor to Lukas-Erzett Vereinigte Schleif und Fraswerkzeugfabriken, Engelskirchen, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,261

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132860

Int. Cl.[3] **B26D** *1/00*

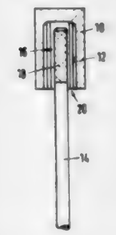
U.S. Cl. 407—118 **8 Claims**

1. A method of making a cutting member by assembling together a cutter body and an elongated shank, comprising the steps of:

providing a recess of a predetermined size in the cutter body coaxial with the shank, the recess being out-of-round in cross-section at least in part;

extending one end of the shank into the recess coaxial with the cutter body, the one end being out-of-round in cross-section at least in part and being of a size less than said predetermined size so as to define an annular gap therewith;

holding the cutter body and shank together to maintain said annular opening; and



injecting into said annular gap an alloy in a liquified condition for securely interconnecting the shank with the cutter body.

4,445,811

SETTING MECHANISMS ESPECIALLY FOR TOOLS FOR CARRYING OUT ROUTING AND LIKE OPERATIONS

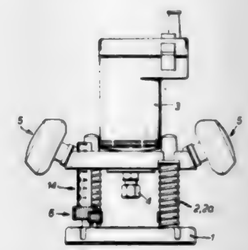
Anthony J. Sanders, Newton Aycliffe, England, assignor to Black & Decker Inc., Newark, Del.

Filed Nov. 19, 1981, Ser. No. 322,946

Claims priority, application United Kingdom, Nov. 24, 1980, 8037648

Int. Cl.[3] **B23C** *1/20*

U.S. Cl. 409—182 **5 Claims**



1. A tool for carrying out routing and like operations, comprising:

a base plate;

a depth stop extending upwardly from the base plate, and comprising a post including a surface in the form of a toothed rack;

a first collar of generally cylindrical form movable along said post and having a bore, one portion of the surface of said bore being formed to engage one or more teeth on said rack to lock said first collar in a selected one of a number of predetermined positions along said post;

means for resiliently biasing said one surface portion of said first collar into engagement with said toothed rack;

a screw thread on the outer surface of said first collar;

a second collar having a screw-threaded bore screwed over said first collar; and

a scale connected to said second collar for movement therewith along said post, said scale having a portion disposed between said post and said second collar, and said portion comprising said resiliently biasing means;

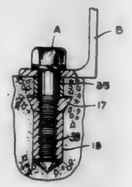
whereby said first collar is operable to set said depth stop approximately to a desired setting and said second collar is operable to adjust the approximate setting of said depth stop accurately to a required setting.

4,445,812

BOLT ANCHOR ESPECIALLY FOR USE IN HARD MATERIALS

John Giustino, 21 Willow Rd., Menlo Park, Calif. 94025

Continuation of Ser. No. 94,442, Nov. 15, 1979, abandoned. This application Nov. 3, 1981, Ser. No. 317,740
Int. Cl.[3] F16B *13/10*
U.S. Cl. 411—57 6 Claims



1. An expandable anchor for use in a blind hole having an annular ledge a predetermined distance from the blind end comprising,

an elongated cylindrical body for insertion in a blind hole with an annular ledge, and having an axial bore with axially facing screw threads in a lower portion of the bore and with an annular axially facing solid hump in an upper section of the bore, said annular solid hump extending inwardly further than said screw threads constricting the bore, denying entry of a screw therein, and segmented by a plurality of slits, said annular hump segments having a connection to said lower bore portion which permits rotation of said hump segments radially outwardly, the outside diameter of said cylindrical body snugly fitting within a ledged hole such that said hump segments may be disposed adjacent to the ledge of said ledged hole, the cross section of said rotated hump segments substantially filling the cross section of said ledge and having a pointed region which, after hump outward rotation, faces said ledge and may be forced against said ledge for opposing turning or withdrawal of the cylindrical body from the axial bore.

4,445,813

METHOD OF FORMING SEAMLESS CONTAINER

Surya K. Misra, Naperville, and Richard A. Openchowski, Woodridge, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Continuation of Ser. No. 851,856, Nov. 15, 1977, abandoned. This application Jun. 14, 1979, Ser. No. 48,667
Int. Cl.[3] B21D *51/02*
U.S. Cl. 413—1 9 Claims

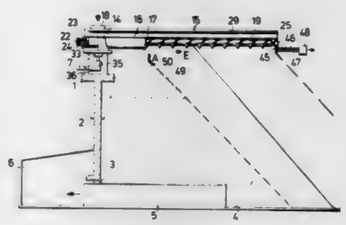
1. A method of forming a seamless drawn and ironed container having a bottom wall and an integral sidewall from a metal stock material, comprising the steps of applying a thin layer of a fatty acid ester lubricant in the range of about 1 to about 3 mg/in.^{2} thickness equivalent to one surface of said metal stock material, converting said stock material into a cup, and forming a drawn and ironed container from said stock material in a multi-staged ironing process while retaining at least some of said lubricant on said surface throughout said ironing process.

4,445,814

APPARATUS FOR DEPOSITING SOLID PARTICULATE MATERIAL IN A FRUSTOCONICAL PILE

Per-Ove Malmström, Harnosand, and Karl E. A. Dyrén, Ornskoldsvik, both of Sweden, assignors to KMW-Mekan AB, Ornskoldsvik, Sweden

Filed Mar. 1, 1982, Ser. No. 353,706
Claims priority, application Sweden, Mar. 25, 1981, 8101918
Int. Cl.[3] B65G *65/30*
U.S. Cl. 414—295 9 Claims



1. Apparatus for depositing solid particulate material in a frustoconical pile within a space of predetermined dimensions comprising, in combination:

(a) a screw conveyor for particulate material arranged substantially horizontally and at a predetermined height above the pile;

(b) means for feeding particulate material to the screw conveyor;

(c) the screw conveyor having a screw conveyor housing and a screw mounted at one end of the screw conveyor housing for driven rotation and operatively disposed in the screw conveyor housing for receiving and transporting particulate material therealong from said one end to an opposite end thereof;

(d) means at said opposite end of the screw conveyor housing for depositing particulate material conveyed by the screw conveyor along the housing as a pile below the conveyor up to a maximum height corresponding to the level of the screw;

(e) the screw extending beyond said opposite end of the screw conveyor housing so as to directly engage particulate material in the pile when the height of the pile reaches the screw so that when said height is reached the screw carries particulate material at its level along the top of the pile to an outer edge thereof for deposit there, thereby leveling off the top of the pile and maintaining a frustoconical shape in the pile, while ensuring spreading of the pile of particulate material throughout and within a space of predetermined dimensions.

4,445,815

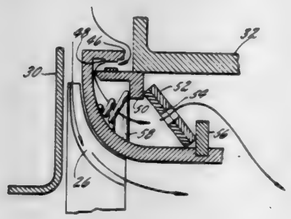
TEMPERATURE REGULATION OF AIR CYCLE REFRIGERATION SYSTEMS

William E. Fortmann, West Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 157,774, Jun. 9, 1980, Pat. No. 4,415,307. This application Sep. 30, 1982, Ser. No. 431,477
Int. Cl.[3] F01D *17/08*
U.S. Cl. 415—12 6 Claims

1. A turbine for an air cycle refrigeration system, said turbine comprising a rotor provided with a plurality of blades and a stator having fixed and adjustable portions thereof said stator receiving air through an inlet thereof, said air being expanded and cooled in said turbine and delivered from said turbine through an outlet thereof,

said turbine being characterized by an actuator disposed interiorly of said turbine, said actuator comprising a bimetallic annulus of truncated conical shape connected to said fixed and adjustable stator portions, flexure of said bimetallic annulus in response to the temperature of airflow through the turbine axially varying the geometry of said annulus to adjust the relative, axial disposition of said fixed



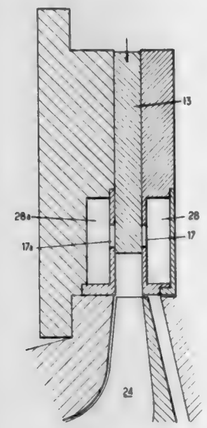
and adjustable stator portions for adjusting the airflow through said turbine, thereby varying the amount of heat removed from said airstream.

4,445,816

SUPERSONIC COMPRESSOR WITH IMPROVED OPERATION RANGE

Yves J. Ribaud, and Gilbert F. Kergreis, both of Palaiseau, France, assignors to Office National D'Etudes et de Recherches Aerospatiales, Sous-Bagneux, France

Filed Jul. 13, 1981, Ser. No. 282,608
Claims priority, application France, Jul. 16, 1980, 80 15716
Int. Cl.[3] F04D *29/44*
U.S. Cl. 415—181 8 Claims



1. A supersonic centrifugal compressor, comprising:

a bladed rotor arranged to deliver fluid at an absolute velocity at least equal to Mach 1.2 under rated conditions,

and an annular radial flow diffuser at the outer periphery of said rotor, having:

a casing including spaced sidewalls and vanes between said spaced sidewalls, cooperating therewith to define inter-vane channels distributed angularly about an axis of said diffuser and each having a throat section located downstream of the leading edges of the channel defining vanes,

a pair of common secondary spaces formed each in one of said sidewalls,

a pair of parietal slots per channel, symmetrically formed in said sidewalls, opening into said channel, located and dimensioned to overlap said throat section in the flow direction and to have a cross-sectional flow area at least equal to half the flow area of the channel at the throat thereof,

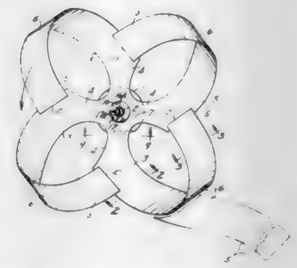
and passage means for communicating the slots formed in a same sidewall to a same one of said common secondary spaces, the cross-sectional flow area of said passage means being at least equal to that of the associated slot throughout its length whereby the flow range is substantially increased.

4,445,817

PROPELLER CONSTRUCTION

Richard J. Wethern, 13380 SW. Farmington Rd., Beaverton, Oreg. 97005

Filed Aug. 6, 1981, Ser. No. 290,608
Int. Cl.[3] B64C *11/16*
U.S. Cl. 416—227 4 Claims



1. A propeller formed from pliable sheet material and adapted for attachment to a motor output shaft, said propeller comprising,

a planer hub portion apertured for attachment to said motor output shaft, and

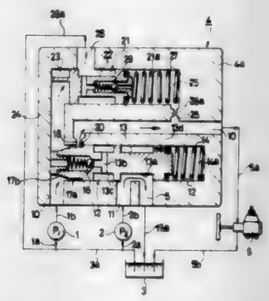
blades carried by said hub portion with each blade comprising a root integral with said hub portion, a blade end, an inner segment integral with and angularly orientated to said root, each blade being of generally folded configuration so as to locate said blade end proximate the inner segment of an adjacent blade, means attaching the blade end to the inner segment of the adjacent blade at a point offset from the root of the adjacent blade.

4,445,818

APPARATUS FOR SUPPLYING HYDRAULIC FLUID

Hiroshi Ohsaki, and Takeshi Ohe, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 349,412
Claims priority, application Japan, Mar. 13, 1981, 56-36031
Int. Cl.[3] F04B *49/08*
U.S. Cl. 417—288 9 Claims



1. An apparatus for supplying hydraulic fluid comprising a first and a second pump for separately discharging a hydraulic fluid, a main passage for supplying hydraulic oil from the first pump to a hydraulic unit, a flow path switching valve disposed

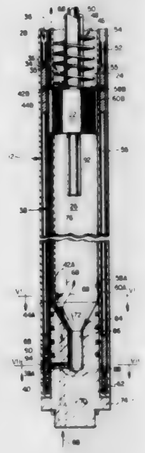
intermediate the main passage and normally connecting the second pump with a tank and responsive to an increased loading on the hydraulic unit by disconnecting the second pump from the tank and connecting the second pump to the main passage, and a flow control valve disposed intermediate the main passage for returning to the tank part of the hydraulic fluid from the first pump or part of the combined hydraulic fluid from the first and the second pumps, the flow control valve being controlled by a pressure differential across a variable orifice disposed intermediate the main passage and said variable orifice having a throttle opening which changes as the flow path switching valve operates.

4,445,819

SINGLE ACTION PNEUMATIC POWERED SPRING RETRACTABLE PUMP

John B. Walling, P.O. Box 16266, Fort Worth, Tex. 76133

Filed Feb. 1, 1982, Ser. No. 344,359
Int. Cl.³ F04B *47/08*
U.S. Cl. 417—318 **3 Claims**



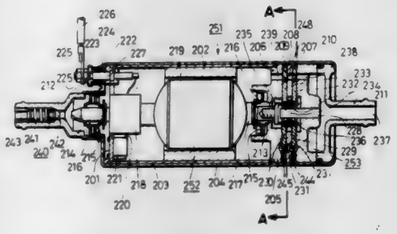
1. A pump for producing formation fluid from a well comprising, in combination:
- an elongated pump housing having an axially extending bore and means partitioning said bore thereby defining a power fluid reservoir and a pump chamber;
- a guide tube extending axially into said pump chamber;
- a piston rod received in slidable engagement within said guide tube;
- a piston mounted on said piston rod and received within the pump chamber in slidable engagement with said bore thereby partitioning the pump chamber into a power chamber and a production chamber, said piston being axially movable between a retracted position and an extended position;
- a helical spring for applying a yieldable bias force against said piston thereby urging said piston for movement from the extended position toward its retracted position, said spring encircling said guide tube and having one end attached to said partitioning means and having one end attached to said piston;
- first valve means connected in fluid communication with said production chamber forming a produced fluid inlet port for admitting formation fluid into the production chamber in response to movement of said piston to the retracted position, and forming a produced fluid outlet port for discharging formation fluid out of the production chamber in response to movement of said piston to the extended position;
- said second valve means opening and closing a first fluid flow path between the power fluid reservoir and the power chamber, and closing and opening a second fluid flow path between the power chamber and exhaust port means for alternately pressurizing and relieving the power chamber in response to movement of said piston to the retracted and extended positions, respectively;
- said pump housing including a sidewall enclosing said pump chamber;
- said sidewall having a first axially extending bore defining a power fluid charge bore, said charge bore having an inlet port communicating with the power fluid reservoir and having a delivery port communicating with the power chamber for pressurizing said power chamber during extension of said piston;
- said sidewall having a second axially extending bore defining a power fluid relief bore, said relief bore having a vent port communicating with the power chamber for relieving said power chamber during retraction of said piston;
- said first and second valve means including:
- a first shuttle rod received in slidable engagement within the charge bore and reciprocably movable through the charge bore between a first position opening the delivery port for pressurizing the power chamber and a second position blocking the delivery port;
- a second shuttle rod received in slidable engagement within the relief bore and reciprocably movable through the relief bore between a first position blocking the vent port and a second position opening the vent port for relieving the power chamber;
- means carried by said first and second shuttle rods for engaging said piston whereby said shuttle rods are reciprocated from their first positions to their second positions in response to movement of said piston to the extended and retracted positions, respectively; and,
- spring means received within said charge bore and said relief bore for applying a yielding bias force against the first and second shuttle rods thereby urging said shuttle rods for movement toward the open delivery port position and closed vent port position, respectively.

4,445,820

ELECTRICALLY POWERED PUMP

Kenji Hayashi, and Kiyoshi Kato, both of Aichi, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Dec. 22, 1981, Ser. No. 333,315
Claims priority, application Japan, Dec. 27, 1980, 55-185228; Apr. 8, 1981, 56-53641; May 30, 1981, 56-82618
Int. Cl.³ F04B *35/04;* F04D *5/00*
U.S. Cl. 417—366 **2 Claims**



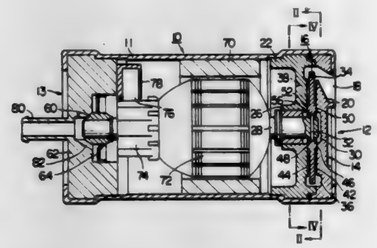
1. An electrically powered pump comprising:
- a cylindrical housing **204** provided with a field core **202** therein;
- a motor **252** mounted in said housing;
- a plug-like cover plate **212** attached to one end of said housing and formed with a fuel delivery line **243** passing therethrough;
- a pump casing **205** provided at the other end of said housing, said pump casing comprising an end plate **206** on the discharge side, a second sealing spacer **209**, an intermediate plate **208**, a first sealing spacer **207**, an end plate **210** on the suction side and a cover plate **211** on the suction side formed with a fuel suction line **237** passing therethrough;
- a first and a second pump chamber **229** and **230** defined on both sides of said intermediate plate;
- a first and a second impeller **232** and **233** rotatably mounted in said first and second pump chambers, respectively, said impellers being individually rotatably supported by a fixed shaft **228** fixed to said end plate;
- an armature **219** supported by said bearings and mounted in said housing; and
- a connector **235** fixed to the shaft end of said armature on said pump chambers side, said connector being adapted to connect said armature with said impellers in such a manner that the relative motion in a circumferential direction of said connector and said impellers is restricted and that the eccentricity of said armature and said impellers may be absorbed by said connector.

4,445,821

CENTRIFUGAL PUMP HAVING MEANS FOR COUNTERBALANCING UNBALANCED FLUID PRESSURE RADIAL FORCES ON ROTOR

Kiyohiko Watanabe, Chiryu; Kazuma Matsui, Toyohashi; Yoshiyuki Hattori, Toyoake; Toshihiro Takei, Kariya; Toshiaki Nakamura, Anjo, and Shunsaku Ohnishi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 26, 1982, Ser. No. 372,169
Claims priority, application Japan, Apr. 27, 1981, 56-63568
Int. Cl.³ F04B *39/06, 35/04;* F04D *5/00*
U.S. Cl. 417—366 **4 Claims**



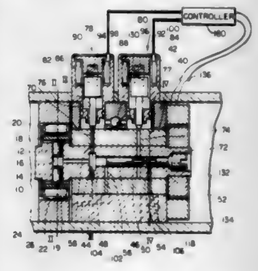
1. A pump apparatus comprising:
- a pump means including a pump housing, a shaft and a rotary pumping member rotatably disposed in said pump housing and mounted on said shaft for rotation therewith, said pump housing being formed with circumferential spaced suction and discharge ports;
- driving means drivingly connected to said shaft to rotate said rotary pumping member for pumping a fluid;
- bearing means rotatably supporting said shaft adjacent to said rotary pumping member;
- said rotary pumping member having an outer peripheral section formed with at least one circumferential row of vane grooves, said pump housing cooperating with said section to define therebetween a fluid passage circumferentially extending between and communicating with said suction and discharge ports with a seal between said housing and section circumferentially between the ends of said passage;
- the rotation of said rotary pumping member producing in said fluid passage a circumferentially unbalanced fluid pressure which increases along said fluid passage from said suction port toward said discharge port, the circumferentially unbalanced fluid pressure forming circumferentially unbalanced radially inward forces the resultant force of which is applied through said rotary pumping member to a first side of the peripheral surface of said shaft;
- counterbalancing means including a pressure introducing opening formed in said bearing means and having an inner end faced to a second side of the peripheral surface of said shaft substantially diametrically opposite to said first side of said shaft;
- said counterbalancing means further including means establishing a fluid-flow communication between said discharge port and said pressure introducing opening whereby the discharge pressure of said pump means is applied to said second side of said shaft to form a counterbalancing force.

4,445,822

INJECTION PUMP

Yoshikazu Hoshi, Tokai, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,359
Claims priority, application Japan, Sep. 22, 1980, 55-130684
Int. Cl.³ F04B *35/02, 19/22;* F02M *39/00*
U.S. Cl. 417—388 **4 Claims**



1. An injection pump suited for the delivery of liquid fuel under high pressure to the cylinders of an associated engine comprising:
- a housing;
- a sleeve mounted on said housing and having first and second stationary passages, each passage communicating with a liquid fuel supply;
- a rotor having a central axial bore and a radial bore formed therein, said rotor being inserted in said sleeve and rotated in timed relationship with the engine;
- a free piston reciprocally disposed in the central axial bore between first and second pressure chambers, the first chamber including a plurality of first radial passages and a radial spill port and being communicated with the radial bore of said rotor, the second pressure chamber including a plurality of second radial passages and a discharge passage;
- a first solenoid value for controlling the amount of liquid fuel sucked into the first pressure chamber through the first stationary passage;
- a second solenoid valve for controlling the amount of the liquid fuel sucked into the second pressure chamber through the secondary stationary passage;
- a pair of opposing plungers reciprocably disposed in the radial bore of said rotor, and being so constructed as to produce, in accordance with the revolution of said rotor, a compression period in which the liquid fuel is pressurized in the first pressure chamber to move the free piston to pressurize the fuel in the second pressure chamber to supply fuel in the second chamber to the engine through the discharge passage, and a suction period in which the liquid fuel is supplied to the pressure chambers;
- a pulser attached to said rotor and adapted to be rotated as a unit with said rotor;
- a detector arranged in relation to an outer periphery of said pulser for producing an electric signal in cooperation with said pulser when said rotor is in the timing for commencement of the fuel supply;

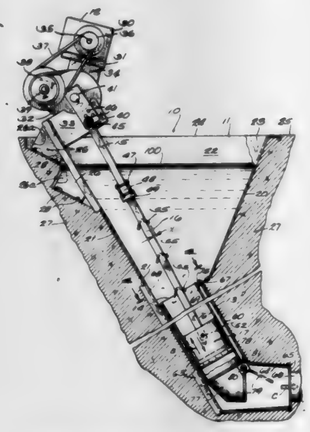
an electronic controller for determining an opening period of said first and second valve during a certain time of said suction period after receipt of said signal, whereby the timing of discharge of liquid fuel and the volume of discharge of the liquid fuel are controlled.

4,445,823

ANIMAL WASTE PUMPING SYSTEM

Ronald L. Zyduck, Mosinee, Wis., assignor to Acorn Equipment Corp., Stevens Point, Wis.

Filed Nov. 18, 1981, Ser. No. 322,490
Int. Cl.³ F04B *21/00*
U.S. Cl. 417—430 **8 Claims**



1. In an animal waste pumping system of the type including (1) a hopper for the collection of waste material, (2) a lower housing attached to the hopper, (3) a pumping chamber within the lower housing, (4) a hollow piston reciprocable within the pumping chamber, and (5) drive means for reciprocating the hollow piston (a) through a pumping stroke during which waste material is pumped out of the hopper into discharge piping connected to receive waste material from the pumping chamber and (b) through a return stroke during which waste material from the hopper enters into and flows through the hollow piston for subsequent pumping, the hollow piston having a first end with pivotable gate means extending thereacross that close during the pumping stroke and open during the return stroke and an open second end, and the drive means including a pair of spaced driving arms connected to the hollow piston through the open second end thereof,

the improvement comprising: a plurality of paddles connected across the spaced driving arms of the drive means and adapted to agitate waste material in the hopper and aid in transfer of waste material into the hollow piston.

4,445,824

VALVE FOR COMPRESSOR CLEARANCE OR BY-PASS CONTROL

Stuart E. Bunn, and Herbert B. Owsley, both of Shawnee Mission, Kans., assignors to Ball Value Co., Inc., Olathe, Kans.

Filed Nov. 2, 1981, Ser. No. 317,157
Int. Cl.³ F04B *23/00*
U.S. Cl. 417—440 **4 Claims**

1. A valve for by-pass control for a gas compressor having a compressor cylinder, a compressor frame with a suction chamber and a valve opening therein, a valve cover over said valve opening and a suction valve assembly with a central passage open to said compressor cylinder and positioned in said valve assembly, whic comprises:

(a) a tubular member which includes:

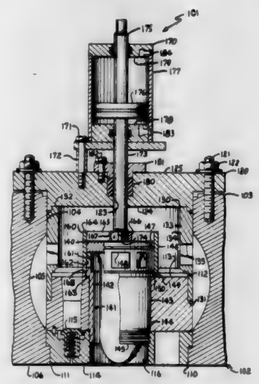
(1) an inner surface defining a bore communicating with said valve assembly central passage;

(2) an outer surface; and

(3) a port through said tubular member and selectively communicating said bore with said suction chamber;

(b) a hollow valve sleeve receiving said tubular member therein and slidable with respect thereto; and

(c) actuator means operably connected to said valve sleeve,



said actuator means being adapted for moving said valve sleeve between an open position whereat said port is uncovered and said compressor cylinder communcates with said suction chamber therethrough and a closed position whereat said port is closed and fluid flow therethrough between said compressor cylinder and said suction chamber is substantially prevented; and

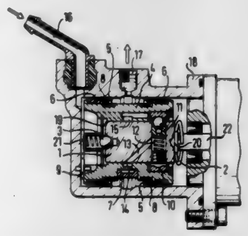
(d) a plug positioned in said bore and occupying a substantial volume of the space defined thereby.

4,445,825

RADIAL PISTON MACHINE

Ludwig Budecker, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,296
Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121529
Int. Cl.³ F01B *13/06*; F04B *15/00*
U.S. Cl. 417—462 **20 Claims**



1. A radial piston machine comprising;

a sealed rotor-stator unit received in a housing in an axially

located, radially elastic torsionally secured fashion, said unit having a rotor disposed within a stator and having at least one valued chamber located within said rotor and formed by piston means, said rotor being rotatable in said stator by a connecting shaft through a spring clutch engaging one end face of said rotor;

an elastic means disposed on the periphery of said stator to support said unit in said housing in said axially located, radially elastic and torsionally secured fashion;

a sealing means disposed on the periphery of said stator adjacent said elastic means to seal said unit to said housing, a ball-and-spring arrangement engaging the other end face of said rotor to axially elastically support said rotor in an axially slidable relationship with said stator wherein

said ball-and-spring arrangement includes a cup-type bushing secured to said stator adjacent said other end face of said rotor,

a compression spring received in said bushing having one end thereof bearing against the bottom of said bushing, and

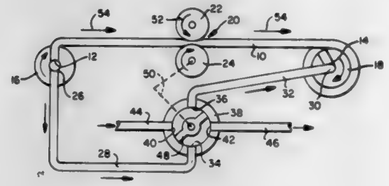
a bearing ball rotatably supported in the other end of said compression spring and in engagement with said other end face of said rotor.

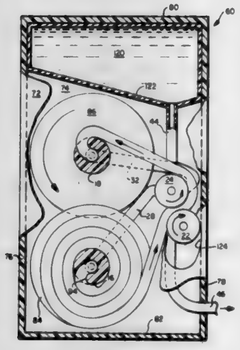
4,445,826

PERISTALTIC PUMP APPARATUS

Fred P. Tarr, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 22, 1982, Ser. No. 341,912
Int. Cl.³ F04B *43/12*
U.S. Cl. 417—476 **17 Claims**





1. A peristaltic pump comprising:

a pair of pinch rollers to define a nip;

a length of elastic tubing passing through said nip and being collapsed by said pinch rollers sufficiently to block passage fluid at said nip, said tubing having opposite ends;

selectively actuatable means for advancing said tubing in either one of two opposite directions through said nip;

means for defining a pump intake;

means for defining a pump discharge; and

means for coupling one end of said tubing with said pump intake and the other end of said tubing with said pump discharge while said tubing is advanced through said nip in one direction and for coupling said one end with said pump discharge and said other end with said pump intake while said tubing is advanced through said nip in the other direction.

4,445,827

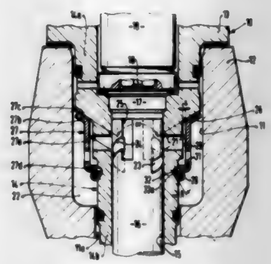
Patent Not Issued For This Number

4,445,828

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Karl Sontheimer, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 397,969
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136751
Int. Cl.³ F02M *59/44*
U.S. Cl. 417—490 **5 Claims**



1. A fuel injection pump for internal combustion engines having a cylinder bushing arranged to receive a pump piston, a pump piston in said bushing, said bushing further having at least one return flow opening for returning fuel flow controlled by said pump piston, and an impact protection ring positioned on said bushing, said impact protection ring being pressed by a holder means against an abutment shoulder located above said return flow opening in the pumping direction, said ring further having a cylindrical wall portion and an inner wall provided with means defining openings therethrough

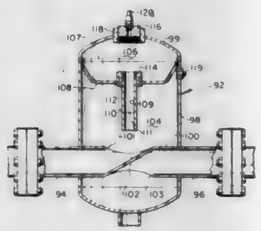
which enclose an annular chamber, said wall portion further having flowthrough openings in said inner wall arranged to connect said return flow opening with a return flow chamber, characterized in that said impact protection ring further includes adjacent to said cylindrical wall portion an at least approximately radially outwardly bent, circular-annular collar, which rests on said abutment shoulder and said collar has an end face enlarged in area by a multiple of the cross sectional area of said cylindrical wall portion.

4,445,829

APPARATUS FOR DAMPENING PUMP PRESSURE PULSATIONS

James D. Miller, 9218 Alta Oaks Dr., Dallas, Tex. 75243

Continuation-in-part of Ser. No. 216,161, Dec. 15, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,959
Int. Cl.³ F04B *11/00*
U.S. Cl. 417—543 **4 Claims**



1. In a hydraulic system including a positive displacement reciprocating plunger pump connected to a discharge flow line disposed to produce a static head at the pump due to a vertical change in elevation of said flow line, said head comprising a major portion of the liquid discharge back pressure imposed on said pump, the improvement comprising, a pressure pulsation dampener for reducing peak-to-peak hydraulic pressure pulsations in said flow line at least approximately 75% of peak-to-peak pressure pulsations observed without said dampener in said system resulting from flow variation of fluid discharged from said pump and from acceleration of said fluid through said flow line, said dampener including:

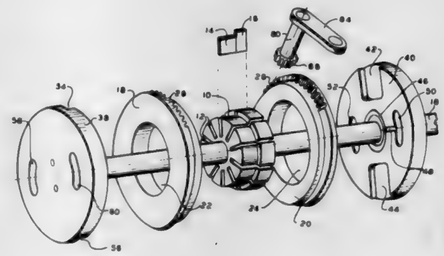
a generally cylindrical pressure vessel forming an enlarged volume chamber and interposed in the flow line immediately downstream of the pump discharge conduit, said pressure vessel including aligned inlet and discharge conduits opening into said enlarged volume chamber and including means interposed therebetween which together with the volume of said enlarged volume chamber reduces the flow velocity of liquid in said enlarged volume chamber by at least 85% of the average velocity in said flow line, a bulkhead disposed across the interior of said pressure vessel between at least a portion of a liquid volume chamber in said pressure vessel and a gas volume chamber in said pressure vessel, said gas volume chamber being defined in part by said pressure vessel, said liquid volume chamber having a volumetric capacity in the range of 5% to 10% of the liquid flow rate through said dampener wherein the units of volume of said liquid volume chamber and the flow rate are the same and the unit of time of the flow rate is one minute, and a tube elongated with respect to the thickness of said bulkhead extending through said bulkhead and being open to chamber portions formed in said enlarged volume chamber on both sides of said bulkhead, and said dampener is charged with pressure gas such that at the nominal working pressure of said system said gas volume chamber is maintained at 5% to 20% of said liquid volume chamber.

4,445,830

RADIAL VANE PUMP HAVING VARIABLE DISPLACEMENT

Frank Woodruff, New Hartford, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Aug. 17, 1982, Ser. No. 409,007
Int. Cl.³ F04C *2/00, 15/04*
U.S. Cl. 418—22 **21 Claims**



1. A variable displacement vane pump comprising:

a ported casing having a pair of relatively rotatable complementary cams, each having an annular shape and a surface shaped to provide an annular curvilinear track;

a rotor rotatably mounted in said casing, said annular shaped cams encircling said rotor;

a first and second plurality of vanes slidably mounted upon said rotor, each of said vanes being sized and positioned to engage a corresponding one of said pair of cams, said vanes being constrained in a radial direction by said cams as said rotor rotates, the vanes of the first plurality engaging one of the cams, the other one of the cams being engaged by the second plurality; and

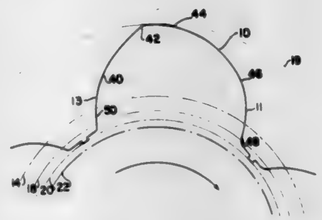
said vanes being grouped into a combined plurality of circumferentially spaced pairs, each of the pairs comprising one from each of the first and the second plurality of vanes, the vanes within each pair being sized differently and positioned adjacently.

4,445,831

SCREW ROTOR MACHINE ROTORS AND METHOD OF MAKING

Robert A. Ingalls, Springfield, Vt., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 15, 1982, Ser. No. 451,568
Int. Cl.³ F01C *1/16, 1/24*
U.S. Cl. 418—201 **9 Claims**



1. An improved screw compressor for the compression and axial displacement of gas, said compressor of the type having a

housing formed with an axially extending passage having at one axial end a gas inlet and at the other axial end a gas outlet, a one piece male rotor extending axially in said passage and formed with a plurality of helical ribs having generally convex flanks and root regions formed at least partially as involutes in cross section, wherein said improvement comprises:

each rib of said male rotor having a profile consisting of a leading flank formed at least partially as an involute generated from a first base circle and a trailing flank at least partially formed as an involute generated from a second base circle said second base circle having a diameter greater than said first base circle.

4,445,832

Patent Not Issued For This Number

4,445,833

SPINNERET FOR PRODUCTION OF COMPOSITE FILAMENTS

Yoshikazu Moriki, and Masafumi Ogasawara, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 17, 1982, Ser. No. 349,697
Claims priority, application Japan, Feb. 18, 1981, 56-21505
Int. Cl.³ D01D *3/00*
U.S. Cl. 425—131.5 **32 Claims**

1. In a spinneret for use in producing composite filaments, each filament consisting of at least first and second constituents extending axially, the spinneret having an axis and extruding composite melt streams, which are to become corresponding composite filaments, each respective composite melt stream comprising a predetermined number of first streams of the first constituent melt, and the same number of second streams of the second constituent melt, which second streams are embedded in the respective first streams, the spinneret having first passages formed therein, through which the first constituent melt is forced to pass to form the respective first streams, and having second passages formed therein, through which the second constituent melt is forced to pass to form the respective second streams, said first and second passages becoming partially combined to produce the respective primary composite streams, each primary composite stream having a first stream with a second stream embedded therein, as defined above, and then to produce respective secondary composite streams, referred to as "composite melt streams", the improvement being in that

(A) each of said first passages is comprised of:

(i) a common combining chamber for the first constituent melt, having upper and lower inner flat surfaces;

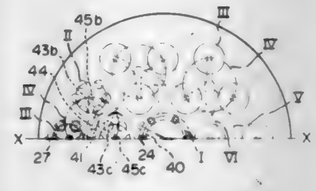
(ii) an upstream passage portion having substantially the same length as that of any other first passage from the first constituent melt provided outside of the spinneret to said combining chamber and forming a feeding hole at the same one of the surfaces of said combining chamber; and

(iii) a uniting chamber having an axis parallel to the axis of the spinneret and forming at least an inlet hole at its upper end for introducing the first and second constituent melts at the lower inner surface of said combining chamber and an extruding outlet at its lower end for extruding a composite melt stream;

(B) said extruding outlets contain at least a pair of outlets which are different radial distances from the axis of the spinneret;

(C) said extruding outlets are grouped so that each group consists of at least one extruding outlet and is paired with a respective one of said feeding holes; and

(D) the axis of each extruding outlet in each group is spaced radially apart from the paired feeding hole at substantially the same distance as that of any other extruding outlet in the same group and as that in any other group,



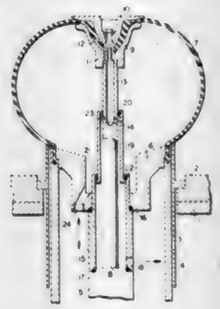
whereby said first passages, in combination with the second passages, allow each of the first constituent melts to travel substantially the same distance thereby to form, in combination with the second constituent melts, respective secondary composite streams while exerting substantially the same resistance against the flowing of the streams of each of the first constituent melts.

4,445,834

DRAIN DISCHARGE DEVICE IN A TIRE CURING MACHINE

Katsuyoshi Sakaguchi, and Akira Hasegawa, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1983, Ser. No. 511,293
Int. Cl.³ B29D *29/00;* B29H *5/00*
U.S. Cl. 425—36 **1 Claim**



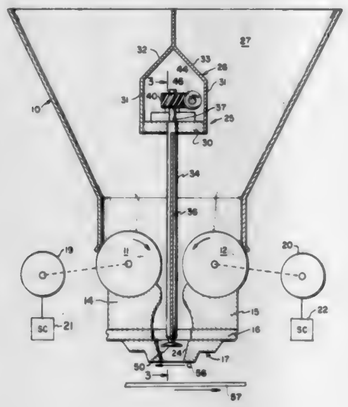
1. A drain discharge device in a tire curing machine, characterized in that a drain discharge blind bore communicating with drain discharge paths provided in an upper ring and a bladder fastener, respectively, both mounted at the top of a rod of a center cylinder and clamping the top end of a bladder therebetween and having a drain port at its lower end, is provided within the rod of said center cylinder, that said center cylinder is also provided with a spacer formed integrally with said center cylinder and having a drain discharge port at its lower end, and that between said spacer and said rod is provided a movable sleeve covering said drain port which sleeve is slidable relative to the respective ones of said spacer and said rod and has its sliding surfaces sealed.

4,445,835

METHOD AND APPARATUS FOR MARBLEIZING AN EXTRUDED DOUGH

Max L. Wasserbach, Summit, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Aug. 25, 1982, Ser. No. 411,408
Int. Cl.³ B29B 5/04
U.S. Cl. 425—131.1 **8 Claims**



1. Apparatus for producing spirally marbleized cookie dough pieces comprising a hopper having an outlet, a plurality of extrusion dies fed from said outlet, a pair of dough feeding rollers spaced from each other and interposed between said dies and said outlet to receive dough flow from said outlet and deliver the dough flow to said dies, a partition dividing said hopper and extending between said rollers to a point adjacent the inlets of said dies, said partition being spaced from each of said rollers whereby different doughs on opposite sides of said partition are independently fed by said rollers along said partition into said dies, an impeller within each die below said partition for larding portions of each dough into the flow of the other dough to produce a spirally marbleized extrudate, said partition including a hollow tube extending to the inlet of each die and plate members interconnecting said tubes, a shaft extending through each of said tubes, said impellers being mounted on said shafts, drive means at the upper ends of said shafts for rotating said shafts to drive said impellers, and means for slicing cookie dough pieces from said spirally marbleized extrudates.

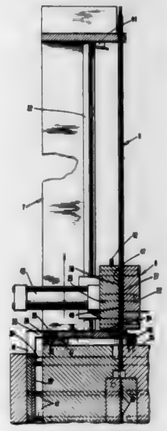
4,445,836

INTEGRATED PROCESS FOR PREPARING A CONTINUOUS STRING OF MOLDED ARTICLES WOUND IN A COIL

C. Bruce Dawson, Winchester, Va., assignor to O'Sullivan Corporation, Winchester, Va.

Filed Oct. 28, 1981, Ser. No. 316,033
Int. Cl.³ B29D 5/00; B29F 1/14
U.S. Cl. 425—135 **1 Claim**

1. An apparatus for forming and coiling a continuous string of molded items, the apparatus comprising a mold for molding an item such that the item has an integral trailing connector, advancing means for advancing the string to generally remove such item from the mold cavity while a portion of the trailing connector thereof remains in the cavity so that a subsequently molded item is connected to the trailing connector of a preceding item and is spaced from the preceding item and wherein the advancing means comprises a cam, means for inserting the cam into the space between two successive items, and means for moving the cam in the direction of advancement so that the cam pushes against one of the items and advances the string, the advancing means comprising two movable jaws which are movable together in the vertical direction and to one of which the cam is attached, and with at least one jaw being movable relative to the other jaw in the horizontal direction to thereby confine items therebetween upon inserting the cam in the space between two successive items,



tensioning means for imposing a constant tension on the string,

the tensioning means including at least one movable guide for the string, a first and second sensing means between which the guide moves, with the first sensing means activating a winder and the second sensing means deactivating the winder, and a bar with a guide at each end, said bar being rotatable about an axis disposed perpendicular to the bar and being resiliently biased so that the guide first contacted by the string is urged generally toward the direction of advancement of the string and the guide subsequently contacted by the string is urged generally away from the direction of advancement, and

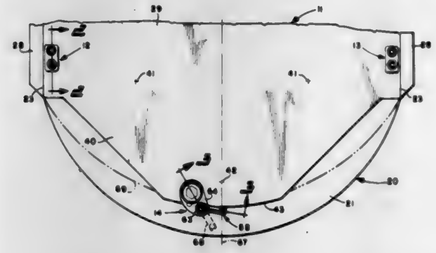
coiling means for periodically winding the string into coil form while a constant tension is imposed thereon.

4,445,837

FOAM EXTRUSION DIE AND MONITORING APPARATUS

James R. Cisar, Cuyahoga Falls, and Attila Grauzer, Akron, both of Ohio, assignors to U.C. Industries, Tallmadge, Ohio

Filed Sep. 24, 1982, Ser. No. 422,678
Int. Cl.³ B29D 27/00; B29F 3/04; G01B 5/14
U.S. Cl. 425—141 **38 Claims**



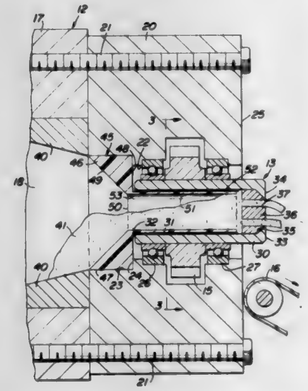
1. An extrusion die and monitoring apparatus comprising a pair of opposed die lips at least one of which is adjustable to vary the size and shape of a die orifice defined between said die lips, and plural sensor means located along the die lips for directly sensing the position of a die lip at respective locations to effect monitoring of the die orifice size and shape.

4,445,838

APPARATUS FOR EXTRUDING A COMESTIBLE

Edwin T. Groff, 120 S. 3rd Ave., West Reading, Pa. 19611

Filed Dec. 27, 1982, Ser. No. 453,145
Int. Cl.³ B29F 3/04
U.S. Cl. 425—319 **10 Claims**



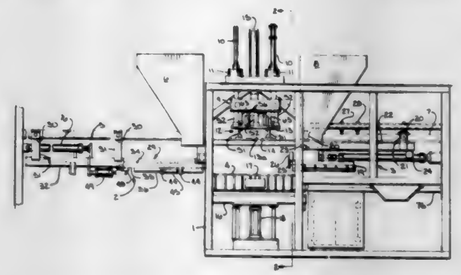
1. Apparatus for extruding a comestible, comprising a chamber for connection to a source of comestible under pressure, an outlet part on said chamber having an outlet opening, journal bearing means in said outlet opening, a hollow extrusion die journaled in said bearing means and having a discharge opening for discharging comestible extrudate while rotating the same, and a seal construction in said outlet opening and sealing the same against access by the comestible to the bearing means, said seal construction comprising an entry enlargement having a through opening and secured fast in said outlet opening upstream of said die to preclude the passage of comestible between said enlargement and the adjacent region of said outlet part, and a reduced tubular extension extending downstream from the through opening of said entry enlargement closely into said hollow die toward said discharge opening for sliding engagement with said die, said sliding engagement defining an effective rotary seal against access of comestible to said bearing means.

4,445,839

RECIPROCATING TAMPER FOR A CONCRETE MOLD PRESS

Julius Crane, Ft. Lauderdale, Fla., assignor to Metalfab, Inc., Beaver Dam, Wis.

Filed Sep. 16, 1982, Ser. No. 419,079
Int. Cl.³ B28B 21/12, 21/14
U.S. Cl. 425—421 **16 Claims**



1. A concrete mold press for a concrete molding machine, comprising:

a main frame;

a carriage slidably mounted for vertical movement on said frame above a mold for containing cement-mix;

a cement mix engaging compacting plate member carried by said carriage and having a press plate member receivable in said mold for engaging the surface of said cement-mix in the mold, said press plate member being moveable between an operating position in pressing contact with the cement mix surface and a position spaced from said cement mix surface, means for moving said carriage toward and away from said mold to move said engaging member between said positions and to compress the cement mix in the mold;

vibration-producing means operatively associated with said compacting and press plate members;

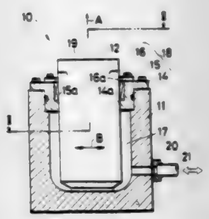
tamping means responsive to the vibrations of said compacting and press plates and disposed so as to strike said compacting plate member and impart an intermittant tamping action to said member in addition to said vibrations and to the compressing action of said member when said member is in contact with the cement mix.

4,445,840

PRESSURE CYLINDER APPARATUS AND HYDRAULIC PRESS INCORPORATING THE SAME

Takeji Kenmochi, Shizuoka, Japan, assignor to Kohtaki & Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1983, Ser. No. 456,207
Claims priority, application Japan, Jun. 11, 1982, 57-99186
Int. Cl.³ B30B 1/32, 11/02
U.S. Cl. 425—450.1 **11 Claims**



1. A pressure cylinder apparatus comprising a cylinder and

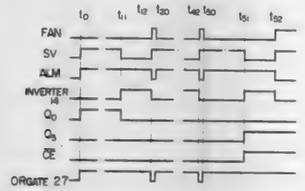
a slidable member adapted to be moved back and forth in the axial direction in said cylinder in response to a charging and discharging of a fluid into and out of said cylinder, wherein that the said slidable member has a polygonal cross-sectional shape and that a stopper assembly having an aperture slidable receiving said slidable member and having a polygonal shape substantially conforming with the cross-sectional shape of said slidable member is provided in the plane perpendicular to the direction of movement of said slidable member.

4,445,841

COMBUSTION CONTROL APPARATUS

Toshio Tanaka, Toride; Sumio Nakagawa, Matsudo, and Kenzi Toudo, Yanai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,714
Claims priority, application Japan, Aug. 24, 1981, 56-131518
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—27 **7 Claims**



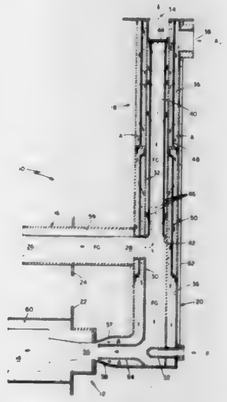
7. A combustion control apparatus, comprising:
a combustion control integrated circuit element including a first input terminal supplied with a flame detection signal representative of presence or absence of flame, a second input terminal supplied with a clock pulse signal, timer means for counting the clock pulses applied to said second input terminal to thereby clock a first time interval and a second time interval, and control means having inputs supplied with the signals from said first input terminal, said second input terminal and said timer means for energizing a blower during said first time interval for igniting operation, energizing said blower, an ignitor and a fuel valve for said second time interval following said first time interval, and producing continuously an output signal for energizing said fuel valve in response to said flame detection signal applied to said first input terminal, said combustion control integrated circuit further including a first output terminal, a second output terminal and a third output terminal for energizing said blower, said ignitor and said fuel valve, respectively;
a frequency divider circuit for dividing the first clock pulse signal to thereby produce a second clock pulse signal; and
a clock pulse signal change-over circuit having inputs supplied with the signal from said second output terminal or alternatively from said third output terminal, said first clock pulse signal and said second clock pulse signal to thereby produce said first clock pulse signal or alternatively said second clock pulse signal at said third input terminal, wherein said second clock pulse signal output is changed over to said first clock pulse signal output in response to a signal representing expiration of said first time interval and appearing at said second output terminal or alternatively at said third output terminal.

4,445,842

RECUPERATIVE BURNER WITH EXHAUST GAS RECIRCULATION MEANS

Andrew J. Syska, Marblehead, Mass., assignor to Thermal Systems Engineering, Inc., Woburn, Mass.

Filed Nov. 5, 1981, Ser. No. 318,372
Int. Cl.³ F23L *15/04*
U.S. Cl. 431—115 **8 Claims**



1. A recuperative burner for a furnace comprising
a housing having a combustion chamber in it,
said combustion chamber having an outlet for communication with said furnace and an inlet for receiving air, recirculated flue gas, and fuel,
a recuperative stack to preheat air supplied to said combustion chamber inlet to reduce fuel requirements of said burner,
said recuperative stack having
a recuperative flue gas conduit made of a heat conductive material and having one end for receiving flue gas from said furnace and another end for communication with the atmosphere, and
an air passage separated from flue gas by said recuperative flue gas conduit and having an inlet for connection to a pressurized source of air and an outlet in communication with said chamber inlet,
a fuel inlet nozzle in said housing for directing fuel to said chamber inlet, and
a recirculating flue gas conduit with one end for receiving flue gas from said furnace and another end connected to direct recirculated flue gas to said combustion chamber at a location causing mixing of said flue gas and fuel upstream of said air outlet so as to reduce the flame temperature, thereby reducing the NO_x content.

4,445,843

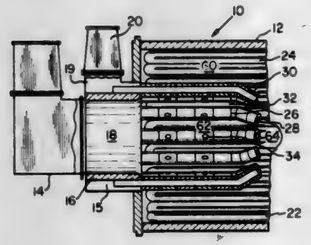
LOW NO_x BURNERS

Peter B. Nutcher, Venetia, Pa., assignor to Process Combustion Corporation, Pittsburgh, Pa.

Filed May 17, 1982, Ser. No. 379,086
Int. Cl.³ F23L *9/00*
U.S. Cl. 431—115 **4 Claims**

1. In a combustion system such as a fired heater or oilfield streamer including a heater radiant section and a burner capable of operating in a reducing mode for directing partially combusted products of combustion into one end of said section, the improvement comprising a combustion add-on unit for staged combustion having:
A. a precombustion chamber defined by a chamber wall and mounted between the burner and the heater radiant section;

B. a combustion air plenum surrounding said precombustion chamber and including a combustion sustaining gas inlet;
C. a plurality of spaced tubes defining a perforated combustion chamber extending from the air plenum axially into said section and terminating in line with said partially combusted products of combustion and in spaced relation-



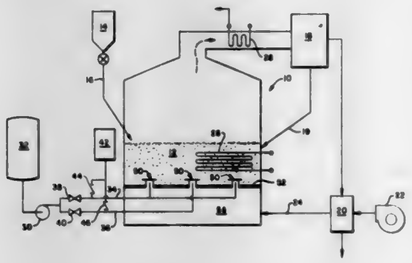
ship to said precombustion chamber, said tubes terminating in a converging section and mounted to an exterior of said wall; and
D. sections of protective refractory members positioned along each tube in abutting end to end relationship to protect said tubes within said section.

4,445,844

LIQUID FUEL AND AIR FEED APPARATUS FOR FLUIDIZED BED BOILER

Francis T. Matthews, Poquonock, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 20, 1982, Ser. No. 451,114
Int. Cl.³ F23D *19/02*
U.S. Cl. 431—170 **5 Claims**



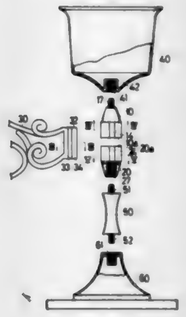
1. In combination, a fluidized bed furnace in which fluid fuel is burned including chamber means, a base plate forming the bottom of the chamber means, solid particles positioned above the base plate which forms the material making up the fluidized bed, a plurality of injector means extending up through the base plate, each injector means including a central vertical pipe means closed as its top, means for supplying fuel to the vertical pipe means, mean forming an open annular space surrounding the vertical pipe means, means for supplying air up into the annular space from beneath the base plate, said base plate being imperforate except for said means for supplying air to said annular spaces, means forming a plurality of radial passage means extending outwardly from the annular space, each radial passage means having a restricted flow portion near its outer end, and opening means in the vertical pipe means in alignment with said radial passage means for directing fuel into each of the radial passage means.

4,445,845

FLAMBEAU

Jiro Serizawa, Tokyo, Japan, assignor to Selon Co., Ltd., Japan

Filed Sep. 4, 1981, Ser. No. 299,285
Claims priority, application Japan, May 26, 1981, 56-75219[U]
Int. Cl.³ F21V *35/00*
U.S. Cl. 431—295 **6 Claims**



1. A flambeau comprising:
(a) a pair of upper and lower elongated connecting members having a pair of axial cavities formed in their respective portions disposed adjacent to each other, said cavities opening to the one ends of said connecting members, respectively, and being disposed in alignment with each other, each of said connecting members having a plurality of axial slots formed in said adjacent portion thereof and extending radially outwardly from said cavity and opening to the side thereof, said plurality of slots in said upper connecting member being disposed in alignment with said plurality of slots in said lower connecting member, said upper connecting member haivng a threaded portion at the other end thereof, and said lower connecting member having a threaded portion at the other end thereof;
(b) a plurality of support arms detachably connected at their inner ends to said upper and lower connecting members and extending radially therefrom, each support arm having a candle support portion at its outer end and a vertically extending connecting portion at its inner end, said connecting portion having a first section and a second section extending inwardly therefrom, said second section being greater in width than said first section, said first section being snugly received in said aligned slots of said upper and lower connecting members, said second section being snugly received in said aligned cavities of said connecting members, and said upper and lower connecting members being mated together at said one ends so that said connecting portions are completely covered by said connecting members;
(c) a base having at its upper end a threaded portion threadedly engaged with said threaded portion of said lower connecting member to detachably connect them together; and
(d) a central decorative member having at its lower end a threaded portion threadedly engaged with said threaded portion of said upper connecting member.

4,445,846

FLAME HOLDING LIGHTER FOR INDUSTRIAL GAS-FIRED OVENS

Owen M. Mattingly, 2241 Monocacy Rd., Baltimore, Md. 21221

Filed Jan. 28, 1982, Ser. No. 343,488
Int. Cl.³ F23D *15/02*
U.S. Cl. 431—352 **3 Claims**

1. In a torch for igniting industrial furnaces and the like and

having means for receiving gas, means for receiving air, baffle means, and flame outlet means,

the means for receiving gas including an inner pipe with a first end thereof proportioned for receiving gas as from a flexible hose and a second end thereof closed;

the means for receiving air comprising an outer pipe around the inner pipe with a space therebetween, said outer pipe having a free end and a butt end, and said flame outlet means comprising means for expulsion of burning gas-air mixture from said space including at least one opening at said free end of the outer pipe;

means for induction of ambient air into said space for mixing with and burning said gas, the improvement including:



the inner pipe having a gas-expulsion slot on a first side thereof opening within said space,

said outer pipe butt-end and the exterior of said inner pipe defining an air intake opening therebetween, said outer pipe further including an air intake slot at a position opposite said gas expulsion slot in the inner pipe; the baffle means being spaced apart longitudinally in said space, the baffle means being "C"-shaped with the open part of the "C"-shape coincident with the gas expulsion slot in the inner pipe, the outer pipe having first and second vent openings circumferentially therearound in longitudinal spacing from each other, said first and second vent openings being respectively beyond the ends of said air intake slot in the outer pipe, and a flame spreader on the free end of said outer pipe.

4,445,847

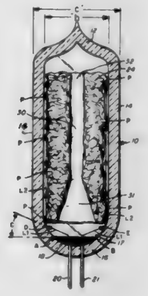
PHOTOFLASH LAMP

John A. Scholz, Danvers, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 26, 1982, Ser. No. 382,323

Int. Cl.³ F21K *5/02*

U.S. Cl. 431—362 **8 Claims**



1. An electrically-activated photoflash lamp comprising:

a hermetically sealed, light-transmitting substantially cylindrical envelope having a base portion with an inner, substantially concave surface, and opposed upstanding sidewalls extending therefrom;

a pair of spaced leads positioned within said base portion and having end portions each having access to the interior of said envelope;

a quantity of primer material positioned on said concave surface of said base portion in contact with said end portions of said leads; and

a combustible metal shred mass precompressed externally of said envelope to a diameter less than the inner diameter of the envelope and thereafter inserted within said envelope, said shred mass having resiliency whereby the precompressed mass only partially expands within the envelope to provide minimum contact support of the shred mass in the envelope while at the same time providing a relatively unobstructed clearance about the shred mass between the shred mass and internal surfaces of said upstanding sidewalls of said envelope for ignition of said mass along said sidewalls of the envelope, said shred mass including a substantially central void section extending longitudinally therethrough.

4,445,848

ASPHALT RECLAMATION SYSTEM AND UNIT

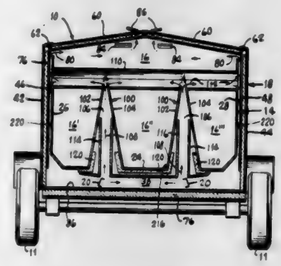
Anton H. Heller, Levittown, N.Y., assignor to Poweray Infrared Corporation, Amityville, N.Y.

Continuation-in-part of Ser. No. 268,661, Jun. 1, 1981, Pat. No. 4,418,682. This application Sep. 10, 1982, Ser. No. 416,629

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.³ F27B *14/00*; F23D *13/24*

U.S. Cl. 432—13 **10 Claims**



1. A method for reclaiming initially solid asphaltic material to provide asphaltic concrete, wherein the material is heated from ambient atmospheric temperature to an elevated temperature within a range of about 275°-300° F. and thereafter maintained at the elevated temperature such that the material is in a condition suitable for paving application or the like, comprising:

(a) placing asphaltic material in an inner enclosure having thermally conductive walls and a floor and arranged such as to enable delivery of the initially solid asphaltic material downwardly from the top of the inner enclosure toward the floor of the inner enclosure;

(b) intermittently producing a heated gas in accordance with a predetermined schedule;

(c) heating the asphaltic material from ambient atmospheric temperature by passing a first portion of the heated gas within a gas volume defined by the inner enclosure of an outer enclosure, such that the heated gas passing the walls and floor heats the portions of the asphaltic material in the inner enclosure adjacent the walls and floor until the material reaches a temperature within a range of about 275°-300° F.;

(d) further heating the asphaltic material by passing a second portion of the heated gas through at least one heating chamber communicating with and projecting upwardly from the gas volume into the inner enclosure, such that the heated gas passing through the heating chamber heats the interior portions of the asphaltic material in the inner enclosure adjacent the heating chamber from both the longitudinal and transverse directions until the material reaches a temperature within a range of about 275°-300° F.;

(e) passing all the heated gas through a plurality of small apertures spaced about the upper portions of the walls of the inner enclosure, such that the heated gas flows from the gas volume uniformly across the upper surface of the asphaltic material in the inner enclosure and the portions of the asphaltic material near the upper surface are heated until the material reaches a temperature within a range of about 275°-300° F.;

(f) venting the heated gas to the outside atmosphere after it has flowed across the upper surface of the asphaltic material; and

(g) sensing the temperature of the asphaltic material within the inner enclosure and maintaining the asphaltic material through intermittent heating thereof at a uniform temperature within a range of about 275°-300° F. for a long period of time.

4,445,849

DEVICE FOR THERMAL TREATMENT OF SCRAP

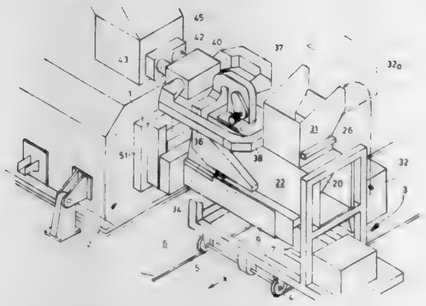
Bernard Bouillé, St. Florentin, France, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 18, 1982, Ser. No. 379,456

Claims priority, application Switzerland, May 25, 1981, 3401/81

Int. Cl.³ F27B *9/02, 3/04*

U.S. Cl. 432—128 **9 Claims**



1. An apparatus for pre-heating and feeding metal scrap to a furnace chamber comprising a heating chamber having a top wall, a bottom wall and a sidewall defining said chamber, a scrap metal inlet provided in said top wall at a location remote from said furnace chamber and a scrap metal outlet provided in said bottom wall at a location proximate to said furnace chamber, means provided in said heating chamber for moving said metal scrap from said scrap metal inlet to said scrap metal outlet, loading means positioned below said heating chamber adjacent to said scrap metal outlet for receiving said scrap metal from said scrap metal outlet, said loading facility including means for feeding said metal scrap to said furnace chamber and means associated with said furnace chamber and said heating chamber for communicating the heated waste gas from said furnace chamber to said heating chamber for pre-heating said metal scrap.

4,445,850

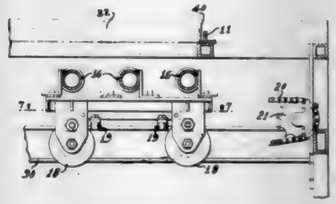
MACHINE FOR HEATING ELONGATED FLAT SURFACES

Axel E. Hansen, Jr., 5045 Lawnview St., Jacksonville, Fla. 32205, and James C. Richardson, 5212 Damascus Rd., Jacksonville, Fla. 32207

Filed Sep. 29, 1982, Ser. No. 427,788

Int. Cl.³ F24J *3/00*

U.S. Cl. 432—229 **14 Claims**



1. A machine for heating elongated flat surfaces comprising an elongated supporting framework having on its upper portion peripheral ledges for supporting the edges of an elongated flat plate to be heated, parallel tracks beneath said peripheral ledges running lengthwise of said framework, a wheeled carriage adapted to move in said tracks from one end of said framework to the other, heating means carried on said carriage to direct heat against the underneath surface of said plate, and driving means to move said carriage at a steady pace along said tracks.

4,445,851

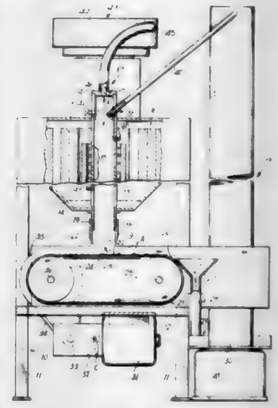
APPARATUS AND METHOD FOR FIRING CERAMIC ARTICLES OR THE LIKE

Dehart G. Scrantom, Shallotte, N.C., and Truman C. Rutt, Myrtle Beach, S.C., assignors to AVX Corporation, Great Neck, N.Y.

Filed May 8, 1981, Ser. No. 262,033

Int. Cl.³ F27D *3/00*; F27B *15/00*

U.S. Cl. 432—239 **8 Claims**



1. Apparatus for the firing of ceramic articles, such as capacitors or the like, suspended in a particulate mass of heat resistant material such as sand comprising an elongate, vertically arrayed tubular furnace member of refractory material having an upper entrance end and a horizontally arrayed lower exit end, heating means surrounding said furnace for heating at least a section of said furnace member, horizontally arrayed discharge conveyor means having an upper surface disposed beneath and in proximate spaced blocking (relating onto) relation to said exit end, said conveyor means being spaced from

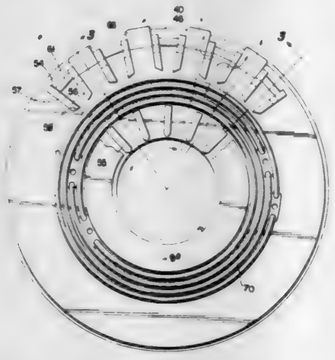
said exit end a distance adapted to be at least slightly greater than the smallest dimension of said articles, said conveyor means comprising a perforate belt member sized to permit said particulate material to pass therethrough but to retain said articles, infeed means at said entrance end for progressively introducing increments of said particulate mass and said articles at a controlled rate, and means for progressively advancing said conveyor means in a horizontal direction across said exit end, at a rate to continuously remove increments of said mass and articles at a rate corresponding substantially to said controlled rate.

4,445,852

DIFFUSERS

Reg D. Corbett, 30103 Clemens Rd., Westlake, Ohio 44145

Filed May 10, 1982, Ser. No. 376,265
Int. Cl.³ C21D *9/00, 1/06*; F24H *3/06*; F27B *11/00*
U.S. Cl. 432—260 **10 Claims**



1. A diffuser assembly for transmitting thermal energy by conduction across metallic members and convection of a heat-treating gas in an annealing furnace comprising:

(a) a diffuser member having a generally annular shape defined by inner and outer peripheries; and provided with a central eye within which a fan is disposed, said diffuser member comprising:

(i) a base plate;

(ii) a plurality of outer load support members secured to spaced portions of the outer periphery of said base plate, each outer load support member comprising a pair of spaced radial vertical wall members and a transverse vertical rear wall forming substantially U-shaped gas passages between said vertical wall members of said outer load support members;

(iii) a flow deflecting ramp disposed between each pair of adjacent spaced outer load support members;

(iv) a plurality of spaced vertical radial inner load support members spaced inwardly on the base place from the outer load support members, each inner load support member initiating at the inner periphery of the base plate and disposed in alignment with the center axis of one of said U-shaped gas flow passages;

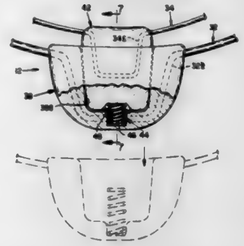
(v) a tubular ring-like cooling member disposed in an annular space provided in the diffuser between said outer and inner support members and transverse to the path of gas flow, the gas being circulated by the fan out of the eye of the diffuser and diverted by the inner load support members to cause flow of said gas on either side of the said inner load support members and about the cooling member into the U-shaped gas passages and over said ramps.

4,445,853

POSITIVE RELEASE FACE-BOW/MOUTH-BOW MECHANISM

Paul E. Klein, 928 Lake Shore Rd., Lake Oswego, Oreg. 97034

Filed May 25, 1983, Ser. No. 497,755
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—5 **18 Claims**



1. A safety release mechanism in the orthodontic combination of a curved mouth-bow device and a curved face-bow device which are separable from one another, where, during use, the face-bow device is designed to impart compressive force to the mouth-bow device, said mechanism comprising

a pair of compression-transmission couplings one for each of such two devices, operatively interactable with one another to transmit a compressive force between the two devices, and

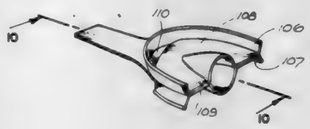
spring parting means operatively associated with said two couplings, functioning, with the couplings interacting to transmit such a compressive force between the devices, to urge the devices freely apart from one another.

4,445,854

APPARATUS FOR CONSTRUCTING REGISTERED TEETH CASTINGS

Ivan Bekey, 4624 Quarter Charge Dr., Annandale, Va. 22003, and Roger S. Wolk, 23716 Malibu Colony Dr., Malibu, Calif. 90265

Continuation of Ser. No. 166,435, Jul. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 960,381, Nov. 13, 1978, abandoned, which is a division of Ser. No. 745,712, Nov. 29, 1976, Pat. No. 4,161,067. This application Nov. 19, 1981, Ser. No. 362,426
Int. Cl.³ A61C *9/00*
U.S. Cl. 433—37 **1 Claim**



1. A dental tray for holding impression material, said dental tray being adapted to simultaneously obtain registered upper and lower dental impressions, comprising:

a first U-shaped peripheral retaining wall;

first dividing means, said first dividing means being attached to one of the U-shaped edges of said first wall, said first dividing means and first wall combination comprising an upper tray section;

a second U-shaped peripheral retaining wall;

second dividing means, said second dividing means being attached to one of the U-shaped edges of said second wall, said second dividing means and second wall combination comprising a lower tray section, said upper and lower tray sections being operatively movably placed back-to-back so that said first and second dividing means are in contact with each other,

said first and second dividing means being non-porous and deformable when bitten to conform to the contours of the biting surfaces without tearing or perforating while at the same time maintaining the deformed relationship after the biting surfaces are removed, said respective dividing means being thin enough to allow all upper and lower teeth to come to full occlusion, the attachment of said dividing means to the respective U-shaped walls combined with the rigidity of the respective dividing means being sufficient to enable said dividing means to support impression material contained in the dental tray;

means adapted to maintain said upper tray section in position with respect to said lower tray section once they have been positionally adjusted with respect to each other;

a handle secured to the anterior portion of the U-shaped wall of at least the one tray section adapted to receive overbiting or underbiting teeth, whereby impressions of teeth having overbite or underbite characteristics are obtained without said handle interfering with proper registration; and

a cavity formed in at least one tray section adjacent the anterior portion of the U-shaped peripheral retaining wall, said cavity extending below the plane of the dividing means of at least one tray section to accommodate a gross overbite or underbite condition.

4,445,856

METHOD AND DEVICE FOR DETERMINING THE RELATIVE POSITION OF THE UPPER JAW AND LOWER JAW FOR THE PRODUCTION OF DENTURES

Robert Sturtzkopf, Wilhelm-Hey-Str. 14, Munich 60, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,300
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3104721
Int. Cl.³ A61C *9/00*
U.S. Cl. 433—71 **8 Claims**



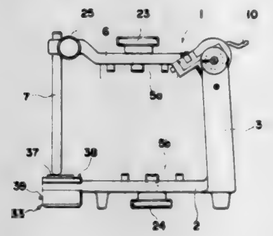
1. A device suitable for use with upper and lower jaw prostheses for determining the mutual alignment of dentally significant surfaces of the upper and lower jaws of a patient comprising: an arcuate bag, a wadding formed of a freely shapeable, hardenable material (14) contained in said bag; and holding means connected to said bag independently of the prostheses for inserting the bag between the prostheses, said holding means comprising tubular pockets (20) positioned on the exterior of said arcuate bag in a central plane of said bag lying generally parallel to the upper and lower jaws of the patient, said holding means further comprising a wire handle (24) having a central gripping portion and a pair of spaced shank portions (22) insertable in said pockets.

4,445,855

ARTICULATION DETECTOR CRT FOR ARTICULATORS

Sumiya Hobo, Tokyo, and Koji Okamoto, Suita, both of Japan, assignors to Shioda Dental Manufacturing Co., Ltd., Tochigi, Japan

Filed Sep. 7, 1982, Ser. No. 415,460
Claims priority, application Japan, Sep. 9, 1981, 56-143070
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—59 **2 Claims**



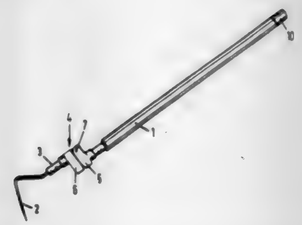
1. An articulation detector for adjustments of an arcon type semi-adjustable articulator, comprising a body having the same shape as an incisal guide of the articulator and having means for mounting on an anterior part of a lower jaw member of the articulator, a power source housed in the body, a luminous element so arranged in the body that the light emitted therefrom can be observed from the outside, and a pair of electrodes connected in series with said power source and said luminous element, one of said electrodes being mounted on the top of the body on which an incisal pin removably mounted in an upper jaw member of the articulator may rest, the other electrode being so arranged that it is connected with a lower jaw member of the articulator.

4,445,857

DENTAL CAVITY MEASURING INSTRUMENT

Arnoldus J. Borst, Waalwijk, Netherlands, assignor to Stichting Kennisexploitatie Nederland, Driebergen-Rijsenburg, Netherlands

Filed Mar. 8, 1982, Ser. No. 355,365
Claims priority, application Netherlands, Mar. 16, 1981, 8101279
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—75 **6 Claims**



1. An instrument for measuring the depth of a periodontal cavity comprising:

a probe needle,

a holder in which said needle is securable,

a handle,

a hinge having first and second hinge parts attached to said holder and handle respectively and pivotmeans about which said parts are pivotally connected to each other,

a spring having opposite ends engaged to said hinge parts respectively and an intermediate part situated generally adjacent and bridging said pivot means, said spring adapted to bias said hinge parts to a closed position of said

hinge, said spring having a substantially flat spring characteristic at least within the pivoting range of said hinge,

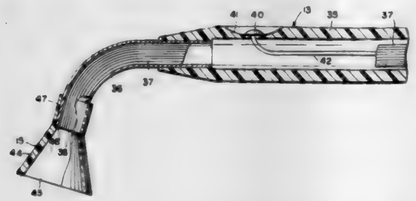
said needle and holder therefor being pivotable relative to said handle only when a predetermined force sufficient to overcome said spring is exerted on said needle relative to said handle.

4,445,858

APPARATUS FOR PHOTO-CURING OF DENTAL RESTORATIVE MATERIALS

Clifford C. Johnson, Arlington Heights, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 19, 1982, Ser. No. 350,241
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—141 **20 Claims**



1. An apparatus for use in directing high-intensity light to an operative site for polymerizing a light-sensitive dental restorative material; said apparatus including a light source, a light-directing wand adapted to be hand-held by a user, and means for transmitting light from said source to said wand; wherein the improvement comprises

spacing means for engaging a tooth and for spacing the light-emitting end of said wand a predetermined distance from the restorative material at an operative site; said spacing means consisting essentially of a frusto-conical shield having a proximal end defining a reduced opening and a tooth-engagable distal end defining an enlarged opening; means at said proximal end for coupling said shield to the light-emitting distal end of said wand; said enlarged opening of said shield having a diameter within the range of about 0.35 to 0.85 inches; said shield having an interior surface sloping from the shield's axis at an angle within the range of about 15° to 35°.

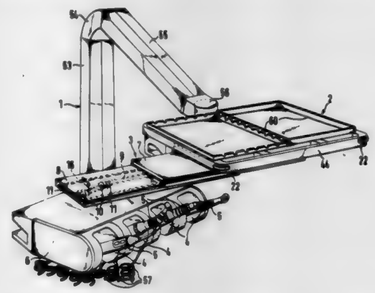
4,445,859

DENTAL EQUIPMENT STAND

Jürgen Hoffmeister, Genova-Nervi; Guiseppe Ravasini, Parma, both of Italy, and Franz-Xaver Boeckh, Schönebürg, Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Feb. 23, 1982, Ser. No. 351,431
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3108826
Int. Cl.³ A61C *19/00*
U.S. Cl. 433—79 **15 Claims**

1. A dental equipment stand including a mounting component defining a dental repository table; a carrier for dental instruments which are withdrawably retained in individual holders in said carrier, said carrier being linearly horizontally displaceably supported below said dental repository table so as to be movable sideways away from said dental repository table to allow the instruments to be moved to one side to allow the dental repository table to be placed closely adjacent to the mouth of a patient; and a holder carriage coupled between and moveably supporting said carrier relative to said dental repository table, said holder carriage being linearly horizontally displaceably supported below said dental repository table, and said carrier being independently displaceable relative to said



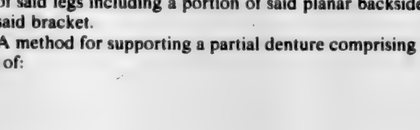
holder carriage, opposite the direction of displacement of said holder carriage.

4,445,860

RECHARGEABLE FLUID DRIVEN DENTAL TOOL

John H. Oehler, R.R. 15, Box 409, Brazil, Ind. 47834

Filed May 17, 1982, Ser. No. 378,886
Int. Cl.³ A61C *1/05*
U.S. Cl. 433—132 **1 Claim**



1. A dental hand piece including self-contained energy source comprising:

a main body with a hollow handle forming a rechargeable container to hold pressurized liquid, a head attached to said handle and a passage leading from said container to said head, said main body including an expansion chamber to allow said liquid from said container to expand to a gas;

a turbine mounted in said head next to said passage to receive gas therefrom with means extending outwardly from said turbine to mountingly receive a dental tool;

finger push lever means mounted to said main body and extendable into said passage to control the amount of fluid flow from said container to said turbine; and,

externally operable needle valve means mounted to said main body and extending into said passage means controllably allowing liquid within said container to expand to a gas as said liquid flows into said passage.

4,445,861

DENTURE SUPPORT SYSTEM AND METHOD

Michael A. Klepacki, 5403 Ellsworth, Dallas, Tex. 75206

Filed Nov. 8, 1982, Ser. No. 440,005
Int. Cl.³ A61C *13/22*
U.S. Cl. 433—181 **6 Claims**

1. A denture support bracket for use in supporting a denture frame or the like, said bracket comprising:

a member having a generally planar backside forming a surface bondable to a mating surface formed on the exterior of a tooth, a generally horizontal bottom edge, and a recess for receiving and supporting a projecting portion of a denture support frame, said recess defining, in part, a pair of spaced apart upstanding legs of said bracket, each of said legs including a portion of said planar backside of said bracket.

4. A method for supporting a partial denture comprising the steps of:

providing two denture support brackets, each of said brackets having a generally horizontal support edge and a generally planar backside forming a surface for mounting said brackets on respective lingual tooth surfaces of two spaced apart mandibular anterior teeth, each of said brackets including means forming a recess for engaging spaced apart portions of a denture support frame, respectively;

forming a generally planar surface in the enamel of the lingual surface of each of two spaced apart anterior mandibular teeth and delimited by a generally horizontal support ledge on each of said teeth, respectively;



bonding said brackets to said teeth, respectively, with said recesses in said brackets opening in a generally upward direction, and with said support edges and said horizontal ledges engaged with each other, respectively, to transfer forces applied to said brackets to said respective teeth;

forming a denture support frame including said portions projecting into respective ones of said recesses in said brackets; and

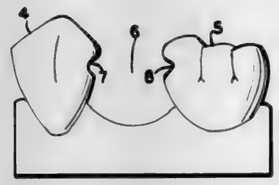
supporting said support frame by said brackets to retain said denture securely to minimize the transmission of forces of mastication between said support frame and the gingiva.

4,445,862

PRECISION PONTIC AND METHOD FOR MAKING IT

Vincent Chiaramonte, and Alice Barkow, both of Lindenhurst, N.Y., assignors to Mont-Cler Appliances Inc., Lindenhurst, N.Y.

Filed Nov. 25, 1981, Ser. No. 324,865
Int. Cl.³ A61C *13/10*
U.S. Cl. 433—191 **6 Claims**



1. Process of making a post for inserting a false tooth in a vacant space between first and second good teeth comprising the following steps:

cut first and second small indentations in the sides of each first and second good tooth facing the vacant space,

make a plaster model of the first and second good teeth,

insert wax in the gum saddle between the two existing teeth of the model,

insert pontic having interior and exterior portions, one portion having a first wing and the other portion having a second wing,

apply wax to the first wing so that it extends into the first indentation,

apply wax to the second wing so that it extends into the second indentation,

remove the pontic portions separately with the wax attached to them with the saddle wax adhering to one pontic portion,

cast each pontic portion separately by the lost wax process, whereby the two castings may be inserted separately in the first and second indentations and fastened together.

4,445,863

ARTIFICIAL TEETH

Brien R. Lang, 1415 Folkstone, Ann Arbor, Mich. 48105, and Michael E. Razzoog, 6020 Vreland, Ypsilanti, Mich. 48197

Filed Aug. 30, 1982, Ser. No. 412,470
Int. Cl.³ A61C *13/08*
U.S. Cl. 433—212 **6 Claims**



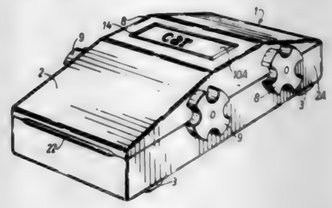
1. An artificial posterior denture tooth comprising a body shaped to conform generally to the shape of a natural posterior tooth and having wear surfaces, said body being formed of a plurality of resin materials varying in hardness, wear resistance, and strength, said resin materials being selectively distributed throughout said body to produce an uneven wear pattern on at least some of said surfaces.

4,445,864

READING AND SPELLING AID

John K. Price, 14 Pembridge Close, Charlton Kings, Cheltenham, England

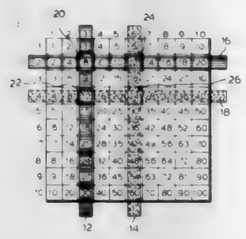
Filed Feb. 2, 1982, Ser. No. 345,013
Claims priority, application United Kingdom, Feb. 3, 1981, 8103221
Int. Cl.³ G09B *17/00*
U.S. Cl. 434—173 **10 Claims**



1. A reading and spelling aid comprising two rotatable spools mounted with their axes of rotation parallel and spaced apart, a flexible strip extending between the spools and bearing letters of the alphabet arranged in a series of lines parallel to the axes of rotation of the spools, a reading window through which the letters on the strip may be viewed, only one line at a time, and operating means for rotating the spools to cause the lines of letters on the strip to move past the reading window only one at a time, the arrangement of letters on the strip being such that, in operation as successive lines of letters are viewed, only one at a time, through the reading window, a word is progressively built up within the reading window, the flexible strip bearing a plurality of sets of lines of letters for building up

a corresponding number of words, said sets being arranged in a series lengthwise of the strip.

4,445,865
METHOD OF TEACHING MATHEMATICS
Jeffrey Sellon, Pound Ridge, N.Y., assignor to Cuisenaire Company of America, Inc., New Rochelle, N.Y.
Filed Jan. 14, 1983, Ser. No. 458,064
Int. Cl.³ G09B *19/02*
U.S. Cl. 434—207 **2 Claims**



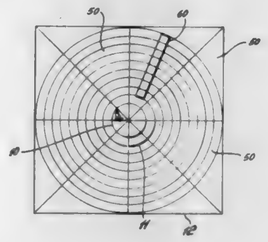
1. A method for teaching and learning multiplication comprising:
- assigning unit power of ten values to strips of transparent material, each unit value comprising a different color and the composite color formed by one colored strip overlying another colored strip comprising the product of the unit value of said strips;
- positioning said strips on a multiplication table array over the rows and columns representing the digits of the numbers to be multiplied and the color of the strip determining the unit values of said digits;
- multiplying the digit value of each array element under an intersection of two strips by the unit value of the composite color formed by the overlying of said two strips; and,
- summing the products of the digit values and the unit values to obtain the final value of the numbers being multiplied.

4,445,866
LEAD LINE BETWEEN AT LEAST TWO PERSONS, PARTICULARLY FOR CROSS COUNTRY SKIING OR SKI TOURING
Jaques Cillieres, 83, chemin des Fontanelles, 31500 Toulouse, France
Filed Feb. 23, 1979, Ser. No. 14,362
Claims priority, application France, Feb. 23, 1978, 78 05472
Int. Cl.³ A62B *35/00*
U.S. Cl. 434—253 **8 Claims**



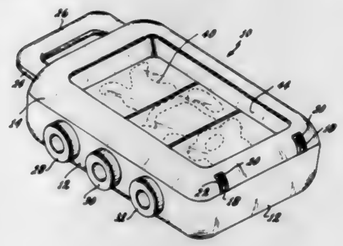
1. A device for connecting together at least two persons while skiing one behind another for facilitating the movement of the skier or skiers to the rear comprising at least two harnesses adapted to be worn by consecutive skiers, towline means connecting two consecutive harnesses in front to back relation, said towline means including safety coupling means adapted to disconnect the two skiers when a predetermined tension is exerted on said towline means.

4,445,867
EDUCATIONAL BOARD GAME
Ellie Berg, Chomedy, and Joseph Yowfoo, Montreal, both of Canada, assignors to Jeffrey Fishman, Montreal, Canada
Filed Oct. 23, 1981, Ser. No. 314,365
Int. Cl.³ H63F *9/18*; C09B *1/22*
U.S. Cl. 434—404 **7 Claims**



1. An educational game comprising in combination:
- at least one pivotally mounted segmented disc having first indicia in at least one of said segments;
- at least one spoke-like configuration arranged to extend radially outwardly of said disc whereby segments of said disc may be aligned with said spoke-like configuration, said spoke-like configuration having a plurality of areas extending in tandem radially outwardly of said disc;
- second indicia in one of said areas corresponding to that of said segment and further common indicia in said segment and said area;
- said game including a container, said spoke-like configuration appearing on a sheet or a like member removably mounted in said container, said container including a wall apertured in such manner said spoke-like configuration is visible therethrough and said disc being removably mounted exteriorly of said wall.

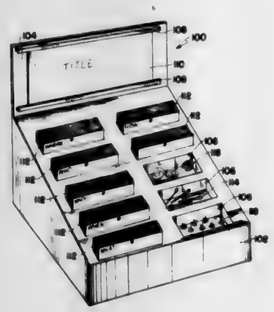
4,445,868
APPARATUS FOR PRODUCING RUBBINGS
Michael Nuttal, So. Pasadena, and Shoji Yamamoto, Westminster, both of Calif., assignors to Tomy Corporation, Carson, Calif.
Filed Aug. 2, 1982, Ser. No. 404,132
Int. Cl.³ B43L *13/00*
U.S. Cl. 434—88 **11 Claims**



1. An apparatus for producing rubbings which comprises:
- a housing divided into a first section and a second section, said second section movable with respect to said first section;
- at least two elements rotatably mounted in said first section, each of said elements having at least two independent surfaces with raised rubbing producing relief located on said surfaces, said elements rotatable in said first section so as to locate at any one time one of the surfaces in each of said elements in a working plane, said surfaces so located in said working plane capable of supporting a material capable of receiving a rubbing;

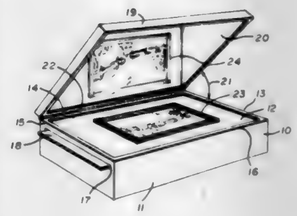
- said second section positionable on said first section in a holding position so as to hold said material against said surfaces in said working plane during production of a rubbing;
- each of said elements is triangular in cross section and includes three surfaces, each of said elements rotatably mounted in said first section such that said working surfaces are capable of each lying within said working plane;
- each of said elements includes three members, each of said members having an essentially planar rectangular shaped surface with said surface including said raised rubbing producing relief located thereon;
- each of said members having first and second triangular shaped side walls located on opposite sides of said rectangular shaped surface;
- said three members of each of said elements fitting together so as to form a triangular prism with said rectangular shaped surfaces of said members forming the lateral faces of said prism and the totality of said first side walls together forming one of the bases of said prism and the totality of said second walls together forming the other of the bases of said prism;
- each of said side walls including an elongated axle segment extending outwardly from said side walls with the axle segment on said first side wall coaxial with the axle segment on said second side wall, the totality of all of said axle segments in the first side wall of each of said three members of each of said elements fitting together to form a first axle when said members are fitted together, the totality of said axle segments on the second side wall of each of said three members of each of said elements fitting together to form a second axle when said members are fitted together, said first axle coaxial with said second axle;
- each of said elements rotatably mounted in said first section of said housing by said first and said second axles.

4,445,869
TEACHING METHOD AND APPARATUS
Myrna D. Wasserman, 6 Ronald Ter., Springfield, N.J. 07081
Filed Nov. 9, 1981, Ser. No. 319,470
Int. Cl.³ G09B *1/00, 19/00*
U.S. Cl. 434—156 **16 Claims**



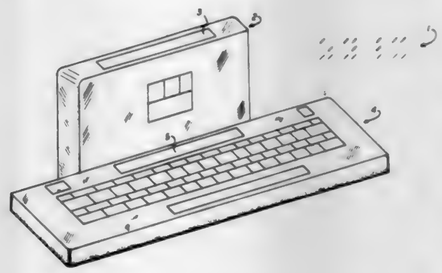
1. A teaching apparatus for developing an outline for the preparationn of a writing therefrom on a selected topic, said teaching apparatuus comprising means for stimulating in an individual the creation of a plurality of thoughts related to said topic, said stimulating means comprising a plurality of cards having a key word thereon for stimulating the creation of said thoughts related to said topic and said key word, said key word selected from the words comprising where, who, why, when, what and how, means for recording said created thoughts, and means for arranging said recorded thoughts into an outline for the development of a writing therefrom.

4,445,870
APPARATUS FOR OBSERVING FRAMED ITEMS
Gary G. Grana, 1224 N. Race, Arlington Heights, Ill. 60004
Filed Jun. 14, 1982, Ser. No. 388,018
Int. Cl.³ G09B *25/00*
U.S. Cl. 434—76 **1 Claim**



1. An apparatus for allowing purchasers of framed photographs, paintings or the like to observe how the framed photograph or painting will appear in its ultimate environment, said apparatus consisting essentially of:
- a base, said base having a stationary transparent table surface, essentially along a horizontal plane, for placing a framed item thereon, and said stationary transparent table surface terminating at side edges;
- means for changing the color or design of the table surface said means for changing the color or design of the table surface consisting essentially of a slotted section below the table surface for inserting various colored panels one at a time therein, and various colored panels of a size suitable for insertion therein;
- a reflecting mirrored surface, said reflecting mirrored surface connected to a side edge by a hinged connection and extending from one of the side edges of the table surface upward at an angle of from 40° to 50° in order to allow an object placed on the table surface to appear as if it were on a vertical surface.

4,445,871
TACTILE COMMUNICATION
John V. Becker, 280 Riverside Dr., New York, N.Y. 10025
Filed Nov. 12, 1981, Ser. No. 320,199
Int. Cl.³ G09B *21/00*
U.S. Cl. 434—114 **72 Claims**



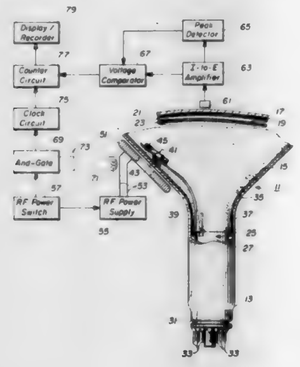
1. A tactile cell comprising:
- a number of one or more tactually perceptible indicia; and means for tactually conveying font information corresponding to the cell, said means being included in at least one of said indicia and corresponding to a first orientation of said one indicia which provides a first tactual sensation indicative of said font information.

4,445,872

METHOD OF DETECTING THE VAPORIZATION OF GETTER MATERIAL DURING MANUFACTURE OF A CRT

James G. Ottos, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,526
Int. Cl.³ H01J 9/42
U.S. Cl. 445—3 10 Claims



1. In a method of vaporizing getter material from a getter container inside a vacuum electron tube, said method including heating said container and getter material until getter material vaporizes, the steps for determining at least one characteristic of interest of said vaporization including

(a) sensing light emitted from said container and material from at least the onset of said heating,

(b) producing a time-dependent sample signal from said sensed light,

(c) comparing said sample signal with time-dependent criteria derived from vaporizations with known characteristics, and

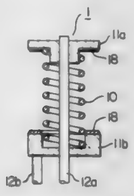
(d) deriving said characteristic of interest of said vaporization from said comparison.

4,445,873

METHOD OF PRODUCING MAGNETRONS

Mamoru Tsuzurabara, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,194
Claims priority, application Japan, Aug. 13, 1980, 55-110205
Int. Cl.³ H01J 9/38
U.S. Cl. 445—6 7 Claims



1. A method of producing a magnetron including a cylindrical anode and a cathode disposed on an axis of said cylindrical anode, said cathode having a first end shield connected to one input lead for said cathode, a second end shield connected to another input lead, a filament disposed between said first and second end shields, and a getter provided on at least one surface of opposed surfaces of said first and second end shields, said method comprising the steps of:

assembling said cathode;

coating a past containing a getter metal powder on at least one of the opposed surfaces of said first and second end shields, and drying the coated layer of paste;

carburizing said filament;

assembling a magnetron tube;

exhausting said magnetron tube; and

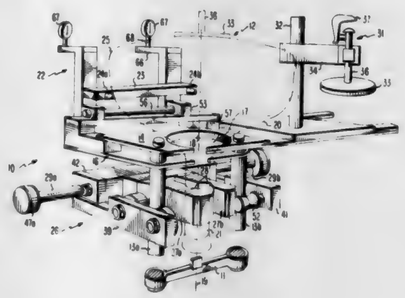
supplying said filament with a current for heating said filament during the exhausting step, whereby said coated layer of paste is sintered to produce a sintered substance of the getter metal powder.

4,445,874

APPARATUS AND METHOD FOR ALIGNING THE ENVELOPE AND ELECTRON GUN MOUNT ASSEMBLY OF A CRT

Frank T. D'Augustine, and Randal L. Berardi, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1982, Ser. No. 348,022
Int. Cl.³ H01J 9/18
U.S. Cl. 445—45 12 Claims



1. Apparatus for automatically aligning a cathode ray tube envelope with an electron gun mount assembly to be inserted into the neck of said envelope, wherein the position and orientation of said gun mount assembly are referenced to fixed reference means, said apparatus comprising:

means for supporting said envelope at a particular location with respect to said reference means;

means for engaging the neck of said envelope to orient said envelope with respect to said reference means; and

means for positioning said envelope in a particular disposition with respect to said reference means whereby said envelope and said gun mount are referenced to said reference means to align said envelope to said gun mount, said means for positioning including a plurality of bumpers equally spaced from a plane containing said reference means and being pivotable with respect to said reference means whereby the distance between said reference plane and each of said bumpers is equally variable to accommodate for dimesional variations in said envelope due to dimensional tolerances.

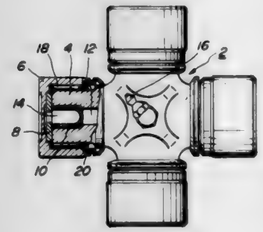
4,445,875

UNIVERSAL JOINT

Hironori Kosuda, Tokyo; Masaaki Takada, Kasukabe, and Hisashi Inoue, Tokyo, all of Japan, assignors to Matsui Universal Joint Manufacturing Company, Tokyo, Japan

Continuation of Ser. No. 212,508, Dec. 3, 1980, abandoned. This application Feb. 17, 1983, Ser. No. 467,313
Int. Cl.³ F16C 1/24; F16D 3/26
U.S. Cl. 464—14 5 Claims

1. A universal joint provided with a journal cross having a journal center and projecting journal arms, the end of each arm forming an elongate oil reservoir, and an oil supply aperture communicating each reservoir with the journal center, the joint further comprising an oil controller arranged in each oil reservoir, each controller being integrally formed and comprising an elongate cylindrical cup of one piece construction having a major portion of the length thereof snugly fitted within the corresponding reservoir, said elongate cylindrical cup including a closed hemispherical end arranged in the oil reservoir at said aperture and directed toward the center of the



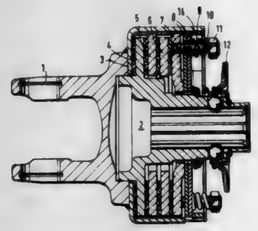
journal cross, said hemispherical end providing a reinforced and enlarged surface exposed to the journal center, at least said hemispherical end being formed of a porous plastic material, the pores of the porous material providing means for permitting foreign substance filtering and passage of high temperature grease from the oil supply aperture to the oil reservoir and generally precluding passage of high viscosity grease from the oil reservoir back through the oil supply aperture.

4,445,876

ADJUSTABLE FRICTION OVERLOAD CLUTCH

Hubert G. Entrup, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,528
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045070
Int. Cl.³ F16D 7/02
U.S. Cl. 464—48 5 Claims



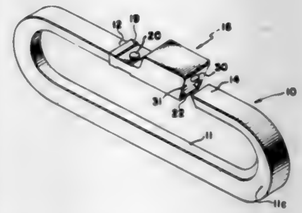
1. An adjustable friction overload clutch for protecting a drive-line, such as between a power take-off shaft on a tractor and an agricultural implement, comprising a plurality of parallel plates disposed in spaced relation to and extending transversely of and around an axis, friction discs located between said plates, means for supporting said plates, a Belleville spring washer assembly comprising at least one Belleville spring washer extending around the axis and having a radially inner edge closer to the axis and a radially outer edge more remote from the axis, said means including fixed stops for said at least one Belleville spring washer, one of said plates located adjacent said at least one Belleville spring washer, and bolts disposed radially outwardly from, generally parallel to and in angularly spaced relation about the axis, said bolts extend through said at least one Belleville spring washer and are attached to said plate located adjacent said at least one Belleville spring washer, wherein the improvement comprises that said one of said plates is in contact with said at least one Belleville spring washer adjacent the radially inner edge thereof and is in spaced relation from said at least one Belleville spring washer for the remainder of the radially outward extent thereof, said bolts extend through said at least one Belleville spring washer adjacent the radially outer edge thereof, a nut on each of said bolts adjacent the end of said bolts remote from the plate adjacent said at least one Belleville spring washer with said nut spaced from said at least one Belleville spring washer, springs held by said bolts between and in contact with said nuts and the opposite side of said at least one Belleville spring washer from the side in contact with the adjacent said one of said plates, and said nuts being adjustably positionable on said bolts for limiting the biasing force exerted by said at least one Belleville spring washer so that the adjustment of said nuts provides a reduced torque which is less than the maximum torque set when said at least one Belleville spring washer is initially assembled.

4,445,877

ADJUSTABLE LENGTH DRIVE BELT FOR VEHICLE BELT PULLEY SYSTEM

Michael Love, 2235 Arthur St., Merrick, N.Y. 11566, and Philip Forman, 39 Saratoga Dr., Jericho, N.Y. 11753

Filed Mar. 1, 1982, Ser. No. 353,362
Int. Cl.³ F16G 1/00, 5/00; F16L 3/08; B65D 63/00
U.S. Cl. 474—255 1 Claim



1. An adjustable length pulley drive belt comprising:

flexible elongate pulley drive means, having a male end and an opposite end, for driving a pulley;

said opposite end including receiver means for receiving said male end, comprising:

resilient receiver means mounted on said opposite end including first and second longitudinally spaced oppossite ends, said first end of said receiver means being coupled to said opposite end of said flexible elongate pulley drive means;

said receiver means including a passage there throughh extending between said longitudinally spaced ends for receiving said male; end;

said passage being outwardly inclined in a direction away from said second end toward said first end of said receiver means and including an internal recess;

releasable securing blade means swingably mounted on said resilient receiver means in said recess for movement in a path transverse to the plane of said male end, between an inoperative position, permitting movement of said male end relative to said receiver means, and an operative position in which said securing blade means bites said male end to prevent removal of said male end from said receiver means;

said securing blade means including a belt-gripping knife edge end portion normally disposed in the path of said male end as said male end moves into said passage for movement thereby to said inoperative position in which said belt-gripping knife edge end portion bears against said male end, said securing blade means being movable by said male end from said inoperative position to said operative position when male end moves in an opposite direction away from said receiver means;

said receiver means including resilient mount means mounting an upper end of said blade means to normally urge said

belt gripping end portion to said operative position, but permitting swinging movement thereof by said male end toward the inoperative position as said male end moves into said passage, and permitting limited movement of said male end in said opposite direction as said securing blade means moves from said inoperative position to said operative position such that said knife edge end portion grips said male end to inhibit further movement in said opposite direction when said securing blade means reaches said operative position;

the portion of said blade means between said upper end and said belt gripping end portion bearing against an end wall of said internal recess when said blade means is in said operative position;

a release aperture being provided in said receptacle means in communication with said internal recess, said release aperture extending from said second end of said receiver means to said end wall of said internal recess to permit access to said securing blade means and to move said securing blade means from said operative position to said inoperative position.

4,445,878

CHAIN STRIPPER DEVICES AND ASSEMBLIES FOR MINING MACHINES

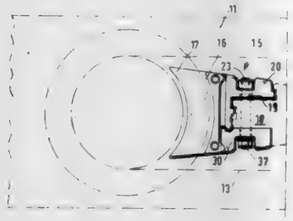
Horst Linke, Lunen; Josef Albers, Nordkirchen, and Helmut Erwien, Lunen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Oct. 2, 1981, Ser. No. 307,783

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037585

Int. Cl.³ F16H *57/00*

U.S. Cl. 474—92 **12 Claims**



1. In or for a mineral mining machine frame assembly employing a chain wheel disposed in a plough box at one side of the assembly and a chain stripper device detachably supported on a mounting flange extending across the plough box, wherein said device comprises a one-piece element provided with a blade for separating a chain from the chain wheel, the element having a projection opposite the blade which engages on a first face of the flange, a complementary locking member which makes a shape-locked connection with the element, the locking member engaging on a lower face of the flange, and a threaded connector extending through alignable bores in the projection of the element, the flange and the locking member.

4,445,879

TOOTHED BELT

Mario Cicognani, Milan, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy

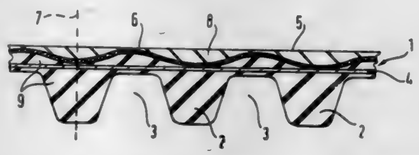
Filed Apr. 27, 1981, Ser. No. 257,586

Claims priority, application Italy, Jun. 5, 1980, 22557 A/80

Int. Cl.³ F16G *1/00, 5/00, 1/26*

U.S. Cl. 474—205 **11 Claims**

1. A toothed belt comprising an annular body of elastomeric material closed in the form of a ring, a tension-resistant insert member comprising a plurality of flexible and inextensible cords, parallel to and coplanar with one another and embedded in said annular body, said body having a first face for contacting a pulley and an opposite face, a toothing on said first face of the said body, and in that part of said body between said tension-resistant insert member and said opposite face an undulated surface dividing the elastomeric material of the annular body into two parts, the elastomer between the undulated surface and said first face being harder than the elastomer on the opposite side of the undulated surface.



4,445,880

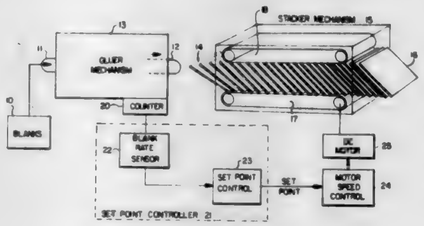
SPEED CONTROL FOR MANUFACTURING PROCESS

Loren C. Powers, Jr., Manchester, N.H., assignor to The International Paper Box Machine Co., Nashua, N.H.

Filed Jul. 20, 1981, Ser. No. 284,721

Int. Cl.³ B65G *47/26*

U.S. Cl. 493—28 **15 Claims**



8. In a system for manufacturing folded paper boxes, the system including a source of blanks, gluer means for folding and gluing the blanks thereby forming the folded paper boxes, stacker means for accumulating and transporting the folded paper boxes from the gluer means along a path in an overlapped configuration, the rate of travel of the folded boxes from the gluer means being independent of the rate of travel of the folded paper boxes transported by the stacker means, and motor means for driving the stacker means, the improvement of a motor control means for energizing the motor means and advancing the stacker means so that the overlapped boxes are evenly spaced in the stacker means along the path, said motor control means comprising:

A. sensing means mounted on said gluer means for indicating the passage of each box from the gluer means to the stacker means;

B. control signal means connected to said sensing means for converting the indication therefrom to a variable DC set point signal, the level of said variable DC set point signal being governed by the rate at which the articles pass from the gluer means to the stacker means; and

C. speed control means connected to said control signal means and the motor means for controlling the motor means in response to the transfer of each box from the gluer means to the stacker means, the rate of travel of the boxes transported by the stacker means is controlled by the motor means as a function of the level of said variable DC set point signal, said rate of travel being such that an even spacing is maintained between the boxes transported by the stacker means.

4,445,881

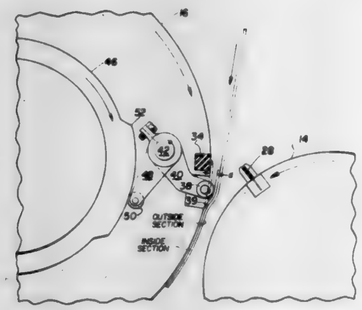
METHOD AND APPARATUS FOR IMPROVING NEWSPAPER FOLDING AND CUTTING MECHANISMS

Lee Bullen, Carrollton, Tex., and Carl J. Hermach, Gulfport, Fla., assignors to Publishers Equipment Corporation, Carrollton, Tex.

Filed Mar. 31, 1982, Ser. No. 363,900

Int. Cl.³ B65H *45/16*; B42C *1/04*

U.S. Cl. 493—424 **6 Claims**



1. In a folding and cutting mechanism for collecting, cutting and folding at least two web sections of a paper, the improvement comprising

a. a folding cylinder for receiving at least two web sections, an inner section and an outer section, one upon the other;

b. a cutting cylinder having blades for cutting the web sections into substantially equal lengths; and

c. intermittent expansion means within the folding cylinder having a first position and a second position, the effective radius of said folding cylinder being larger when said intermittent expansion means is in said second position than is said radius when said intermittent expansion means is in said first position, means for moving said intermittent expansion means between said first and second positions, said intermittent expansion means being disposed in said first position when said cutting blades are disposed to cut an inner web section from said web and disposed in said second position when said cutting blades are disposed to cut an outer section from said web, said positioning of said intermittent expansion means in said second position being adapted to lift the web sections off of the cylinder moving the previously cut end of the inner section a distance along the circumference of the cylinder thereby withdrawing the inner section from the path of the blades of the cutting cylinder.

4,445,882

TAG ATTACHER

Hideyuki Ueno, Yokohama, Japan, assignor to Ben Clements & Sons, Inc., South Hackensack, N.J.; Touka Co., Ltd. and Japan Bano'k Co., Ltd., both of Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,160

Claims priority, application Japan, Dec. 10, 1980, 55-174188

Int. Cl.³ B25C *1/00*

U.S. Cl. 493—376 **19 Claims**

1. A tag attacher for applying tag pins having a head portion, a body portion and a lateral rod base portion, said tag attacher comprising a tag attacher body, a longitudinally slitted hollow needle provided in a front portion of said tag attacher body, a push rod provided at the rear side of said hollow needle and capable of being moved in the direction of the axis of said hollow needle to thrust said lateral rod of a tag pin into, pass the same through, and force the same out of a front end of, said hollow needle, a movable lever for transmitting the force for moving said push rod, and a resilient member provided between said push rod and said lever, the resilient member being adapted to absorb a portion of the speed of moving of the lever after said push rod engages said tag pin and to, upon compression, apply the full speed of moving to said push rod.



4,445,883

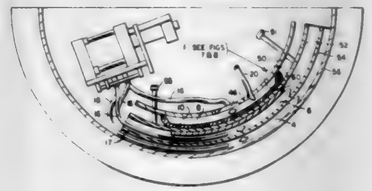
DEFORMABLE SUPPORT FOR FLUID PROCESSING CENTRIFUGE

Donald W. Schroendorfer, Brookline, Mass., assignor to Haemonetics Corporation, Braintree, Mass.

Filed Jan. 18, 1982, Ser. No. 339,910

Int. Cl.³ B04B *7/04, 7/12*

U.S. Cl. 494—21 **7 Claims**



1. Apparatus for processing fluids in a centrifugal force field to separate constituent components of such fluids comprising in combination:

(a) a centrifuge having a rotor adapted to rotate at a sufficient speed to cause said components to separate;

(b) a flexible bag adapted to contain a first fluid to be separated into constituent components;

(c) a receiver container adapted to receive at least one component of said first fluid;

(d) mass means for initiating a flow of component of said first fluid from said flexible bag to said container, said mass means being disposed nearer the center of rotation of the rotor than the flexible bag and adapted to move against a surface of said bag,; and

(e) deformable support means having a recess conforming to the desired shape of said flexible bag and at least partially enclosing a surface of said bag furthest removed from the surface against which the mass means moves.

4,445,884

AIR PURGE UNIT FOR AUTO TRANSFUSION APPARATUS

Leonard D. Kurtz, Woodmere, and Joseph LiCausi, Port Jefferson Station, both of, NY, assignors to BioResearch Inc., Farmingdale, N.Y.

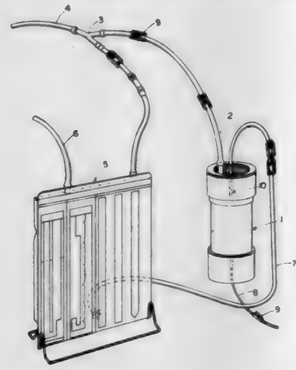
Filed Aug. 14, 1981, Ser. No. 292,425

Int. Cl.³ A61M *37/00, 1/00*

U.S. Cl. 604—4 **6 Claims**

1. In an autotransfusion apparatus, a collection chamber for blood, an air purge means directly mounted on said collection chamber for purging the air within the collection chamber when blood and air within the collection chamber is put under positive pressure said air purge means comprising a housing, a

passageway in said housing in fluid communication with the interior of said collection chamber and having an outlet, a filter disposed in said passageway, said filter having a pore size smaller than the size of red blood cells, a oneway valve disposed in said passageway in series with the filter between said



filter and said outlet, said oneway valve permitting air to pass therethrough from the interior of said collection chamber and preventing air from entering said collection chamber, said filter permitting air to pass therethrough until blood fills said passageway between the interior of said collection chamber and the filter.

4,445,885

INSULIN RELEASING SUPPLIER

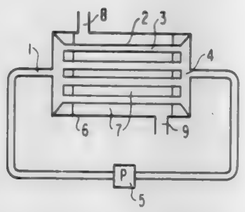
Koji Kifune, Nara, Japan, assignor to Unitika, Ltd., Magasaki, Japan

Continuation of Ser. No. 877,782, Feb. 14, 1978, abandoned. This application Sep. 25, 1979, Ser. No. 78,630

Claims priority, application Japan, Feb. 16, 1977, 52-17543; Feb. 24, 1977, 52-20024; Feb. 24, 1977, 52-20025; Mar. 23, 1977, 52-32587

Int. Cl.³ A61M *1/03*; B01D *13/00*

U.S. Cl. 604—28 **10 Claims**



1. A method for supplying insulin to a patient which comprises connecting the patient to an insulin supplier comprising a casing and at least one tubular structure, said tubular structure being formed of hollow fibers and constituting a polymeric semipermeable membrane comprising a polymer selected from a cellulose, polyvinyl alcohol or polyamide and having pores of 100 Å to 2μ in size to provide an internal chamber inside of the tubular polymeric semipermeable membrane and an external chamber outside of the tubular polymeric semipermeable membrane, either the internal chamber or the external chamber having at least one fluid-inlet and at least one fluid-outlet, said hollow fibers having a thickness of about 10 to 50μ and an inside diameter of about 50 to 400μ, introducing blood or another body fluid of said patient into that chamber which has said at least one fluid-inlet and at least one fluid-outlet and providing an aqueous solution or emulsion of insulin in the other chamber, whereby insulin in an amount required for metabolism within the body is supplied to the blood or the body fluid in response to the blood glucose level through the polymeric semipermeable membrane between the internal and external chambers continually over a period of time.

4,445,886

STROKE TREATMENT UTILIZING EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

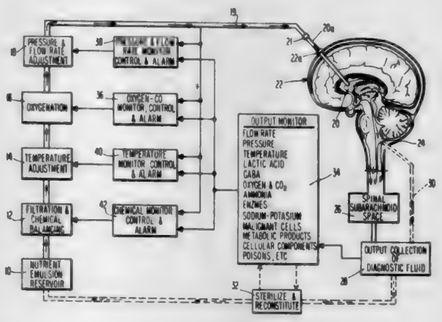
Jewell L. Osterholm, Radnor Township, Delaware County, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, Ser. No. 275,116, Jun. 18, 1981, Pat. No. 4,393,863, and Ser. No. 275,117, Jun. 18, 1981, said Ser. No. 275,116, and Ser. No. 275,117, each is a division of Ser. No. 139,886,. This application Mar. 3, 1982, Ser. No. 354,346

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ A61B *5/14*

U.S. Cl. 604—28 **4 Claims**



1. A method of treating spinal cord injury, comprising:

(a) providing a physiologically acceptable oxygenated fluorocarbon emulsion;

(b) injecting said oxygenated liquid substantially continuously into the spinal subarachnoid space at a first point; and

(c) withdrawing said fluid from said spinal subarachnoid space at a second point, said first and second points being selected to establish a fluid pathway for said liquid around the vicinity of said spinal cord injury to provide oxygen to neurologic tissue in said vicinity.

4,445,887

STROKE TREATMENT UTILIZING EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

Jewell L. Osterholm, Radnor Township, Delaware County, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 354,346, Mar. 3, 1982, which is a continuation-in-part of Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, and Ser. No. 275,116, Jun. 18, 1981, Pat. No. 4,393,863, and Ser. No. 275,117, Jun. 18, 1981, said Ser. No. 275,116, said Ser. No. 275,117, each is a division of Ser. No. 139,886,. This application Sep. 30, 1982, Ser. No. 428,682

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ A61B *5/14*

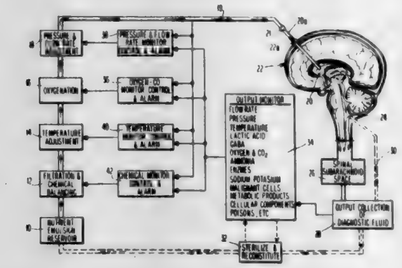
U.S. Cl. 604—28 **14 Claims**

1. A method of treating hypoxic-ischemic neurologic tissue, in mammals, comprising:

(a) providing a physiologically acceptable oxygenated fluorocarbon emulsion capable of transferring oxygen to hypoxic-ischemic neurologic tissue contacted thereby;

(b) injecting a substantially continuous stream of said fluid into the cerebrospinal fluid pathway at a first injection point;

(c) substantially continuously withdrawing fluid from said cerebrospinal fluid pathway at a second point which is



selected to create a circulation of said oxygenated fluorocarbon emulsion in the vicinity of said hypoxic-ischemic tissue, said circulation being sufficient to support significant aerobic respiration of a portion of said hypoxic-ischemic tissue;

whereby hypoxic-ischemic neurologic tissue will be oxygenated by said fluid.

4,445,888

STROKE TREATMENT UTILIZING EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

Jewell L. Osterholm, Radnor Township, Delaware County, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 354,346, Mar. 3, 1982, which is a continuation-in-part of Ser. No. 275,117, Jun. 18, 1981, Ser. No. 275,116, Jun. 18, 1981, Pat. No. 4,393,863, and Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, said Ser. No. 275,117, and Ser. No. 275,116, each is a division of Ser. No. 139,886,. This application Sep. 30, 1982, Ser. No. 428,898

Int. Cl.³ A61K *31/00*; A61M *5/14*

U.S. Cl. 604—28 **5 Claims**

1. A method of treating symptoms of stroke or of suspected stroke in mammals comprising:

(a) providing a cerebrospinal physiologically acceptable synthetic oxygenatable fluorocarbon emulsion exhibiting a range of efficient oxygen exchange between unsaturated minimum and saturated maximum values of pO_2;

(b) oxygenating said emulsified fluid prior to injection to achieve pO_2 level of at least about 60% of said saturated maximum pO_2 value to provide an oxygenated injection fluid;

(c) following the onset of symptoms of a suspected stroke, injecting a substantially continuous stream of said oxygenated injection emulsion into the cerebrospinal fluid pathway at a first injection point;

(d) substantially continuously withdrawing fluid from said cerebrospinal fluid pathway at a second point which is selected to create a circulation of said oxygenated fluid in the vicinity of cerebral tissues susceptible to damage by said suspected stroke; and

(e) performing steps (b), (c) and (d) by oxygenating said fluid to a predetermined pO_2 level and injecting said oxygenated injection emulsion at a rate which together ensure that the pO_2 value of oxygenated emulsion withdrawn from said cerebrospinal fluid pathway is at least about twice said unsaturated minimum value of pO_2;

whereby said treatment may minimize the adverse effects otherwise expected of said stroke.

4,445,889

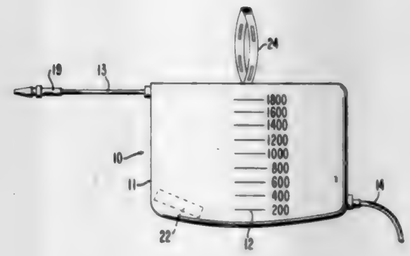
METHOD FOR DELIVERING AN AGENT WITH BIOCIDAL ACTIVITY IN A BODY FLUID RECEIVING CONTAINERS

Patrick S. Wong, Kowloon, Hong Kong; Jimmy B. Langston, San Jose, and Harold M. Leeper, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 137,538, Apr. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 78,507, Sep. 24, 1979, Pat. No. 4,241,733, which is a division of Ser. No. 804,962, Jun. 9, 1977, Pat. No. 4,193,403. This application Jul. 12, 1982, Ser. No. 397,507

Int. Cl.³ A61M *31/00*

U.S. Cl. 604—49 **1 Claim**



1. A method for substantially preventing the development of an infection in a patient introduced through an indwelling catheter connected to a fluid receiving and storing container receptacle, which method comprises:

1. introduce an indwelling catheter into a patient;

2. connect the indwelling catheter to a container means for receiving and storing body fluids;

3. admitting the fluid receiving and storing container receptacle a biocidal dispensing means device for releasing an agent into the fluid receiving and storing container that inhibits the growth of infectious organisms in fluid in the receiving and storing container, said device comprising;

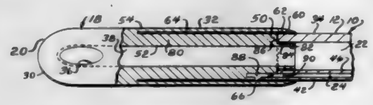
(a) a body shaped, sized device means for admittance and long term retention in the fluid receiving and storing container receptacle, and, the body device means formed of a polymeric material that maintains its physical and chemical integrity in fluid in the receiving and, storing container, said body means comprising;

(b) at least one surface for releasing from the device means an agent into the fluid receiving and storing container;

(c) an a chemoprophylactic biocidal agent dispersed in the polymeric body material that substantially prevents the growth of infectious organisms in the fluid receiving and storing container; and,

4. releasing the biocidal agent from the surface of the device, with the device continually dispensing the biocidal agent at a controlled rate in a biocidally effective amount into the receiving and storing container receptacle for inhibiting the growth of infectious organisms in the receiving and storing container receptacle and concomitantly their inhibiting the introduction of infectious organisms into the indwelling catheter, thereby preventing the development of a catheter induced infection in the patient.

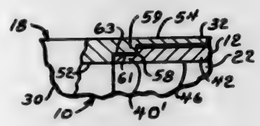
4,445,890
CATHETER
Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Walpole, Mass.
Division of Ser. No. 146,421, May 5, 1980, Pat. No. 4,361,152, which is a continuation of Ser. No. 930,386, Aug. 2, 1978, abandoned, which is a continuation of Ser. No. 767,425, Feb. 10, 1977, abandoned, which is a continuation of Ser. No. 581,251, May 27, 1975, abandoned. This application Aug. 25, 1982, Ser. No. 411,253
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—103 **1 Claim**



1. A retention catheter comprising:
an elongated shaft comprising an extruded tube having an outer surface, a distal end, a drainage lumen extending to the distal end of the tube, and an inflation lumen extending through the wall of the tube to the distal end of the tube;
a tip secured to the tube adjacent its distal end, said tip having a drainage channel communicating with said drainage lumen, a drainage eye communicating with the drainage channel of said tip, an axially-extending annular recess at the proximal end of said tip, and an annular tongue at the proximal end of the tip adjacent the inner surface of said tip, said tongue defining the radially-outwardly-facing surface of said recess and the axially-facing surface of said recess abutting against and being secured to the distal end of said tube;
an expansible annular sleeve of one-piece construction with said tip, said sleeve extending from the proximal end of said tip at its outer surface towards the distal end of said tip, the proximal end of said sleeve circumferentially surrounding the said tongue of said tip and defining the outer surface of said axially-facing annular recess; and,
opening means intermediate said sleeve distal and proximal ends communicating with the underside of said sleeve and with a passageway extending through a wall of the tip to said inflation lumen;
said tube being received within said axially-facing recess of said tip, and said sleeve proximal end being arranged to enshroud said tube,
the proximal end of said sleeve including an inner surface which is secured to the outer surface of the tube, the distal end of the sleeve being secured to the tip circumferentially around the tip, said tube distal end being secured to said axially-facing surface at the distal end of said tip recess and said axially-outwardly-facing surface of said tongue being secured to a radially-inwardly facing surface of said tube adjacent said tube distal end, thus to provide a catheter tip structure less likely to be separated from said tube during use.

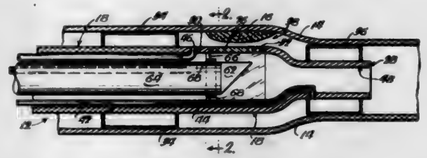
4,445,891
CATHETER
Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Walpole, Mass.
Division of Ser. No. 146,421, May 5, 1980, Pat. No. 4,361,152, which is a continuation of Ser. No. 930,386, Aug. 2, 1978, abandoned, which is a continuation of Ser. No. 767,425, Feb. 10, 1977, abandoned, which is a continuation of Ser. No. 581,251, May 27, 1975, abandoned. This application Aug. 25, 1982, Ser. No. 411,252
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—103 **1 Claim**

1. A retention catheter comprising:
and elongated shaft comprising an extruded tube having an outer surface, a distal end, a drainage lumen extending to the distal end of the tube, an inflation lumen extending through the wall of the tube to the distal end of the tube, an opening extending through the wall of the tube communicating between the inflation lumen and the outer surface of the tube, said opening being spaced from the distal end of the tube, and an annular tongue adjacent the inner surface of the tube and at the distal end of the tube, said tongue defining an annular recess adjacent the outer surface of the tube at the distal end of the tube;
a tip secured to the tube adjacent its distal end, said tip having an outer surface, a drainage eye communicating with the drainage lumen of said tube, and an annular ledge at the proximal end of the tip defining an inwardly-facing annular recess adjacent an inner surface of said tip; and,
and expansible annular sleeve of one-piece construction with said tip, said sleeve extending from the proximal end of the tip adjacent said ledge at the outer surface of the tip to proximal the opening between the inflation lumen and the outer surface of the tube, the distal end of said sleeve being located at the juncture between said tube and said ledge and being arranged to enshroud the portion of said tube abutting said ledge,



the distal end of said sleeve including an interior surface which circumferentially surrounds and is secured to the outer surface of the portion of the tube abutting said ledge, the proximal end of the sleeve being secured to the outer surface of the tube circumferentially around the shaft, the outwardly facing annular surface of said tube recess being secured to the inwardly facing annular surface of said tip recess, the distal end of said tube tongue abutting and being secured to an axially-facing surface of said tip at the distal end of said tip recess, and the distal end of said tube abutting and being secured to an axially-facing surface of said tip at the proximal end of said tip recess remote from said sleeve proximal end thus to provide a catheter tip structure less likely to be separated from said tube during use, and
said opening communicating between the inflation lumen and the outer surface of the tube being located intermediate said sleeve distal and proximal ends at a point remote from said tube distal end, whereby the patency of said opening will not be compromised during the assembly of said tip with said tube.

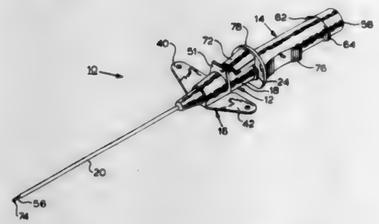
4,445,892
DUAL BALLOON CATHETER DEVICE
Hany M. G. Hussein, Lindenhurst; Marvin P. Loeb, Chicago, and Harvey S. Weiss, Buffalo Grove, all of Ill., assignors to Laserscope, Inc., Arlington Heights, Ill.
Filed May 6, 1982, Ser. No. 375,484
Int. Cl.³ A61M *29/02, 25/00*
U.S. Cl. 604—101 **28 Claims**



1. A catheter device for use within a blood vessel, comprising in operative association:

(a) an elongated tubular structure having a distal end and defining a window spaced from the distal end;
(b) first and second expandable balloons on the tubular structure and axially flanking the window;
(c) a first fluid passageway defined by the structure and in fluid communication with the first balloon;
(d) a second fluid passageway defined by the structure and in fluid communication with the second balloon;
(e) a first fluid channel defined by the tubular structure and having an exit aperture through the tubular structure between the first and second balloons;
(f) a second fluid channel defined by the tubular structure and providing a fluid passageway through the distal end; and
(g) an optic system carried by the tubular structure and operably associated with the window, the optic system being rotatable with respect to at least a portion of the tubular structure.

4,445,893
INFUSION APPARATUS
Raymond O. Bodicky, Oakville, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.
Filed May 13, 1982, Ser. No. 377,761
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—165 **5 Claims**



1. An intravenous catheter placement device comprising a catheter including a catheter hub having a relatively rigid proximal connector end portion for connecting the hub in fluid connection with another device, and a flexible cannula extending distally from the distal end of said catheter hub, said catheter hub having a frusto-conical portion intermediate the distal and proximal ends thereof and having an annular recess in the outer wall of said frusto-conical portion said recess having a distal wall and a proximal wall, said recess having first guide means thereon, and a catheter securing member of relatively resilient material having a hub portion and a pair of opposed wings integral with said hub portion, said securing member hub portion having having distal and proximal ends said securing member hub portion having an inner frusto-conical wall extending circumferentially continuously and having second guide means on the inner wall thereof complementary to said first guide means, said securing member being movable axially over said frusto-conical portion of said catheter hub and into said recess with said first and second guide means cooperating to orientate said wings in predetermined circumferential relation with said hub, the distal end of said securing member abutting the distal wall of the recess when the securing member is disposed in said recess to hold said securing member therein.

4,445,894
BAND FOR ANCHORING A CATHETER OR OTHER DEVICE TO THE BODY
Joseph Kovacs, Cranston, R.I., assignor to Baka Manufacturing Company, Inc., Plainville, Mass.
Filed Aug. 12, 1982, Ser. No. 407,456
Int. Cl.³ A61M *25/02*
U.S. Cl. 604—179 **7 Claims**

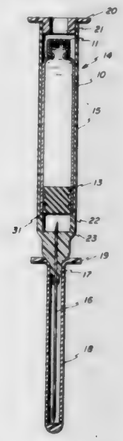


1. A band for anchoring a catheter or other tubular device to the body comprising an extendable primary strap adapted to encircle the portion of the body to which the device is to be anchored and having upper and inner surfaces, said upper surface including a length of material to which the hooks of Velcro-like material can operatively attach and said inner surface intended to lie against the body,
fastening means connected to the primary strap for securing it in place on the body,
a secondary strap made of a Velcro-type material and connected intermediate its ends to the central portion of the upper surface of the primary strap with the hooks of the Velcro-type material facing upwardly from the upper surface of the primary strap,
each end of the secondary strap being adapted to be looped over the tube in opposite directions and with the hooks of the Velcro-type material operatively attaching to the hook attaching material of the primary strap to hold the tubular device.

4,445,895
PREPACKAGED, DISPOSABLE HYPODERMIC SYRINGES
Herman Margulies, South Orange, N.J., assignor to Sterling Drug Inc., New York, N.Y.
Division of Ser. No. 284,054, Jul. 16, 1981. This application Oct. 18, 1982, Ser. No. 434,844
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—193 **30 Claims**

1. A hypodermic syringe package for use in combination with a cartridge ampoule, said ampoule being sealed at its upper end by a slidable piston and at its lower end by a pierceable diaphragm and containing an injectable fluid therein, said package being adapted to prevent communication between an associated hypodermic syringe needle and the contents of said ampoule when said package is in a storage or pre-use configuration, which package comprises:
a syringe holder having a barrel; an end closure cap removably attached to one end of said barrel, and a double-ended needle and needle hub removably attached to the other end of said barrel; and restraint means within said barrel adjacent the needle/needle hub end thereof when in said storage configuration, said restraint means comprising either an annular rim, a single tab or multiple tabs on the inside of said barrel adjacent the upper end thereof,
said restraint means serving to prevent communication between the inner end of said double-ended needle and the contents of a cartridge ampoule when held within said barrel and whereby, upon interchange of said end closure cap and said needle and needle hub on the ends of said barrel to thereby assemble said syringe and

cartridge ampoule into a use configuration, said restraint means no longer prevents communication be-



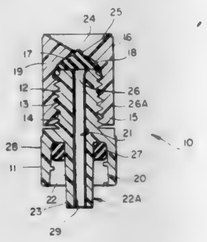
tween the inner end of said double-ended needle and the ampoule contents.

4,445,896

CATHETER PLUG

Cesare Gianturco, Champaign, Ill., assignor to Cook, Inc., Bloomington, Ind.

Filed Mar. 18, 1982, Ser. No. 359,218
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—238 **14 Claims**



1. A self-sealing catheter plug comprising:

(a) connector means having an end adapted to couple to a catheter and another end adapted for male-female coupling, said connector means having a passage therethrough;

(b) cap means having an end adapted for male-female coupling with the connector means at said another end, said cap means having an injection port therethrough aligned with said passage;

(c) septum means for sealing the port and adapted for piercing with a pointed instrument said septum means frictionally held and spatially compressed within a compression chamber between said connector means and said cap means.

4,445,897

CATHETER FOR POSTSURGICAL DRAINAGE

Fred V. G. Ekbladh, P1 178, Särö, Sweden, S-430 40 and Hans Tillander, Humlegåardsgatan 3, Göteborg, Sweden S-412 74

Filed May 28, 1982, Ser. No. 383,014
Claims priority, application Sweden, Jun. 9, 1981, 8103617
Int. Cl.³ A61M *27/00*
U.S. Cl. 604—280 **3 Claims**





1. A catheter for post-surgical drainage of a wound comprising a flexible tube having a distal end and a proximal end, and having a centrally arranged inner lumen extending longitudinally thereof, said catheter being adapted to be connected at its proximal end to a suction means for withdrawing drainage through said lumen and further being adapted for its distal end to be implanted in the wound area to be drained, in which catheter there is provided at least one longitudinal slot opening in the surface of the distal end of said catheter which connects to a second longitudinal lumen which is at least as long as said slot opening and has a maximum width which is larger than the width of said slot opening, and there further being a plurality of through-openings extending between the base of said second lumen into said first lumen, whereby drainage can pass from the wound area to said second lumen, then into said first lumen.

4,445,898

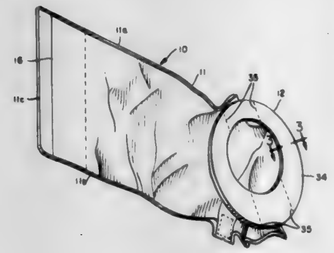
FECAL INCONTINENCE DEVICE WITH SEPARABLE RELEASE SHEETS

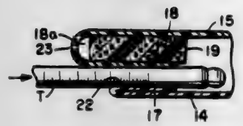
Marvin E. Jensen, Niles, Ill., assignor to Hollister Incorporated, Libertyville, Ill.

Filed Mar. 16, 1982, Ser. No. 358,690
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—337 **17 Claims**

1. A fecal incontinence device comprising a pair of panels of thermoplastic sheet material joined at their margins to define an elongated bag having an opening at one end thereof; an attachment ring of soft, pliable, stretchable and contractable plastic material having first and second opposite side surfaces and having outer and inner marginal edges; said inner edge defining an aperture corresponding generally in size and shape with said opening of said bag; said second surface of said ring being secured to said bag about the opening thereof and along a narrow zone adjacent to said inner marginal edge and spaced substantially from said outer marginal edge; said first surface of said ring being coated with a pressure-sensitive adhesive and being composed of a perineal portion, a coccygeal portion, and a pair of lateral portions; and protective release sheet means covering said adhesive coating of said ring; said means comprising a plurality of individually removable sections respectively covering the perineal, coccygeal, and lateral portions of said adhesive-coated surface; said perineal and coccygeal portions being diametrically disposed and extending between said

lateral portions; each of said lateral portions having a circumferential dimension substantially greater than each of said perineal and coccygeal portions; said individually removable sections of said protective release sheet means being separable from each other along lines of separation overlying the boundaries between said lateral portions and said perineal and coc-





cygeal portions; said release sheet means having two sets of said lines of separation; whereby, on removal of said perineal and coccygeal sections of said release sheet means, said perineal and coccygeal portions of said ring may be sealed to the perineal and coccygeal areas of a patient prior to removal of said lateral sections of said release sheet means and the sealing of said lateral portions of said ring to such patient.

4,445,899

HYGIENIC ARTICLE FOR BLOTTING THE RECTAL PERINEUM REGION

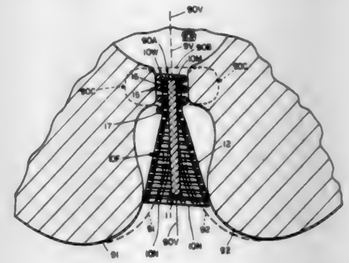
Helen I. Bond, 709 Olson Rd., Longview, Wash. 98632

Filed Jan. 21, 1982, Ser. No. 341,304
Int. Cl.³ A61B *19/00*
U.S. Cl. 604—385 **11 Claims**

1. Hygienic article for the rectal perineum region and including a blotter member flap, said article comprising:

A. a bundle of coherent hydrophilic fibers extending longitudinally along a central-axis and having a longitudinal-length from a lead-end to a trail-end, said fibrous bundle longitudinal-length including a relatively shorter leadward wick and a lengthier trailward blotter flap, said wick being positionable terminally within the anus so that the bundle lead-end is within the confines of the anal sphincter muscle to absorb rectal secretia and convey same along the bundle fibers toward the flap and which flap is nestably locatable immediately below the anus so as to conformably abut against the user's perineal walls, said bundle lengthier flap also being at least ten-fold more massive than the bundle shorter wick so as to reduce irritation and promote cleanliness at the perineal walls; and

B. a nodular button constrictably surrounding said blotter bundle portion and delineating the juncture of the bundle wick and flap, said nodular button comprising hydrophilic fibers compressed more closely together than are the



fibers of said bundle wick and flap, said hygienic article at the nodular button portion being removably emplaceable within the anus and surrounded by the anal sphincter muscle to maintain the article in place and providing a retarder that slows the rectal secretia being conveyed from the bundle wick toward the bundle flap.

4,445,900

TABLESS SANITARY NAPKIN

Robert J. Roeder, Outagamie County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 10, 1982, Ser. No. 376,484
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—389 **2 Claims**



1. A sanitary napkin having adhesive attachment means comprising fluid absorbent batt adapted to be in absorbent contact with the wearer and a fluid impermeable baffle to position toward the garment facing side said attachment means consisting of an adhesive attachment pattern in the form of an X with the crossing portion of the X located in the approximate center portion of the napkin.

4,445,901

FABRIC CONDITIONING COMPOSITION

Stuart W. Beavan, Birkenhead, and Edwin Willis, Wirral, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,506

Claims priority, application United Kingdom, Oct. 9, 1981, 8130556

Int. Cl.[3] **D06L** *3/04;* **D06M** *13/46*

U.S. Cl. 8—103 **5 Claims**

1. A fabric conditioning composition consisting essentially of:

(i) a cationic fabric softening agent;

(ii) a material yielding halite ions in aqueous media; and

(iii) optionally a liquid base, when said liquid base is present, the composition contains from 4% to 20% of said cationic fabric softening agent and from 0% to 25% by weight of an electrolyte;

the composition yielding a pH of at least 6.0 when dispersed in from about 10 to about 800 parts by weight of water.

4,445,902

VAPOR PROCESS FOR MINERAL DYEING CELLULOSIC FABRICS

David A. Yeadon, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 4, 1983, Ser. No. 491,151

Int. Cl.[3] **C09B** *67/00*

U.S. Cl. 8—474 **5 Claims**

1. A vapor process for mineral dyeing cotton textiles by:

(a) impregnating a cellulosic fabric with an alkaline chromate salt solution;

(b) exposing the yellow chromium wetted cellulosic fabric to sulfur dioxide vapors;

(c) drying and curing the now greenish colored cellulosic fabric;

(d) washing the mineral dyed fabric with a sufficient quantity of water to remove the residual and resultant unwanted salts, alkali, etc.

4,445,903

PROCESS FOR THE PREPARATION OF WOVEN FABRICS OF LOW AIR PERMEABILITY

Norihiro Minemura, Takatsuki, and Shigenobu Kobayashi, Toyonaka, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 26, 1983, Ser. No. 488,855

Claims priority, application Japan, Apr. 26, 1982, 57-68764; Aug. 12, 1982, 57-139122; Aug. 13, 1982, 57-139689; Feb. 14, 1983, 58-21618

Int. Cl.[3] **D06P** *7/00, 1/651;* **D06M** *7/02*

U.S. Cl. 8—492 **5 Claims**

1. A process for the preparation of a woven fabric of low air permeability comprising preparing a woven fabric by use of a composite fiber of a splitting and severing type consisting of polyester components and polyamide components, each of which is to be splitted and severed to form an extra fine fiber of 0.001 to 0.8 denier size, as a warp and/or a weft; treating said woven fabric with an aqueous emulsion of a swelling agent for polyester and nylon under the conditions where nylon is mainly allowed to swell and then shrink; scouring and dyeing the woven fabric; and after calendering the woven fabric with the use of heated rollers rotated under pressure.

4,445,904

PROCESS FOR CONTINUOUSLY DYEING IN THE GEL STATE FIBER MATERIAL OF ACRYLONITRILE POLYMERS SPUN FROM ORGANIC SOLVENTS WITH CARBINOL- OR ANHYDRO BASE OF BASIC DYE

Manfred Hähnke, and Wolfgang Teige, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 14, 1982, Ser. No. 434,374

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141082

Int. Cl.[3] **C09B** *11/10;* **D06P** *1/41*

U.S. Cl. 8—538 **9 Claims**

1. A process for the continuous dyeing of fiber material of one or more acid-modified polymers or copolymers of acrylonitrile in the gel state, said fiber material having been produced by wet spinning from a spinning solution containing one or more organic solvents, which process comprises dyeing the fiber material with a solution of a carbinol base or anhydro base of a carboxyl- or sulfo-free N-arylated triarylmethane dyestuff, a carboxyl- or sulfo-free N-arylated diarylindolylmethane dyestuff, a carboxyl- or sulfo-free N-arylated oxazine dyestuff, a carboxyl- or sulfo-free N-arylated xanthene dyestuff, or a carboxyl- or sulfo-free N-arylated azine dyestuff in a dye bath containing water and the organic spinning solvent or solvents.

4,445,905

PROCESS FOR TRICHROMATIC DYEING OR PRINTING OF POLYAMIDE

Harry Schaetzer, Wehr, Fed. Rep. of Germany; Helmut Raisin, Riehen; Dieter Mäusezahl, Biel-Benken, both of Switzerland, and Ciba-Geigy AG, 03, Basel, Switzerland

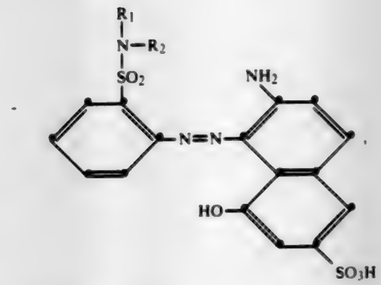
Filed Apr. 5, 1983, Ser. No. 482,168

Claims priority, application Switzerland, Apr. 8, 1982, 2206/82

Int. Cl.[3] **C09B** *1/34;* **D06P** *3/06*

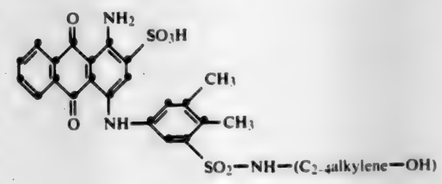
U.S. Cl. 8—641 **15 Claims**

1. In a process for the trichromatic dyeing and printing of natural and synthetic polyamide material with dyestuff mixtures, the improvement which comprises using a red dye of the formula



(1)

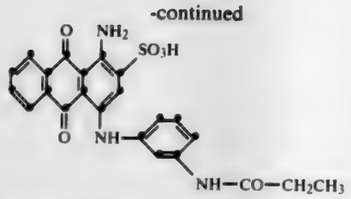
wherein R_1 is methyl or ethyl and R_2 is cyclohexyl or phenyl, together with a blue mixture of dyes of the formulae



(2)

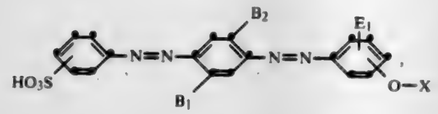
and

-continued



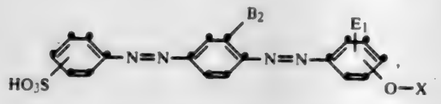
(3)

in the ratio of 90:10 to 10:90, and with a yellow or orange dye of the formula



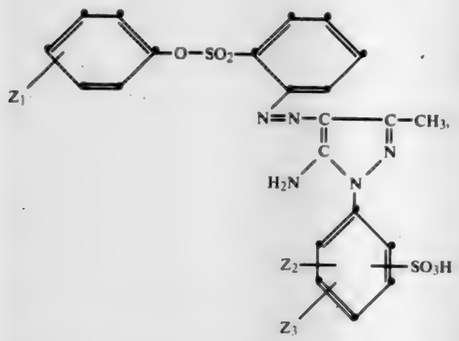
(4)

wherein B_1 is C_1-C_4alkyl or C_1-C_4alkoxy, each of B_2 and E_1 independently of the other is hydrogen, C_1-C_4alkyl or C_1-C_4alkoxy, and X is straight chain or branched C_1-C_4alkyl or straight chain or branched C_2-C_4hydroxyalkyl or a mixture of the yellow and orange dyes of the formulae (4) and



(5)

wherein B_2, E_1 and X independently of the other are as defined for formula (4), in the ratio of 80:20 to 20:80, or a mixture of the yellow and orange dyes of the formulae (4), (5) and



(6)

wherein each of Z_1, Z_2 and Z_3 independently of the other is hydrogen, halogen, C_1-C_4alkyl or C_1-C_4alkoxy, in the ratio of 8:10:10, 10:80:10 to 10:10:80.

4,445,906

PROCESS FOR THE TREATMENT OF THE COMBUSTIBLE PORTION OF DOMESTIC WASTE FOR BRIQUETTING AND APPARATUS THEREFOR

Hanns-Helmut Riemann, Bochum, and Hans Sonnenschein, Essen, both of Fed. Rep. of Germany, assignors to Mannesmann Veba Umwelttechnik GmbH, Herne, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,295

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1981, 3128560

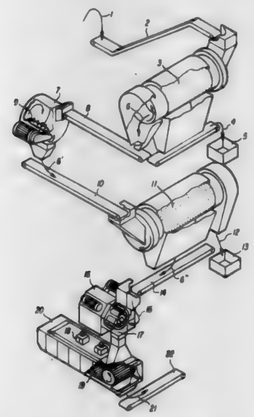
Int. Cl.³ C10L *5/00, 5/08*

U.S. Cl. 44—1 D **4 Claims**

1. A process for the treatment of a cellulose containing combustible portion of crushed domestic dried waste free from dense material, said process using a fine screening drum, a disintegrator, a coarse screening drum and a briquet press wherein said process comprises the steps of:

drying said waste to a residual moisture content of about 8–10%;

sifting fine inert material from said dried waste with said fine screening drum to form a combustible waste portion without fines;



introducing said combustible waste portion without fines into said disintegrator to shred and fray said combustible waste portion without fines; and

introducing said shredded and frayed combustible waste portion into said briquet press to form briquets having a high heating value.

4,445,907

ALCOHOL COMPOSITION STABILIZED AGAINST CORROSION BY THE USE OF AN AMINO TETRAZOLE

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,813

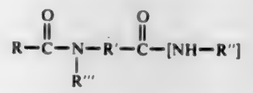
Int. Cl.³ C10L *1/22*

U.S. Cl. 44—53 **24 Claims**

1. A composition comprising

(i) a water-soluble alcohol; and

(ii) an effective corrosion-inhibiting amount of



wherein R is a C_{10}-C_{20} alkyl, alkeny, alkaryl, aralkyl, aryl, or cycloalkyl hydrocarbon group, R′ is a divalent C_1-C_5 lower alkylene hydrocarbon group, R‴ is alkyl, aryl, alkaryl, or aralkyl, and NH—R″ is an amino tetrazole group.

4,445,908

EXTRACTING ALCOHOLS FROM AQUEOUS SOLUTIONS

Alicia L. Compere, Knoxville; John M. Googin, and William L. Griffith, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 212,005, Dec. 1, 1980, abandoned. This application Dec. 2, 1981, Ser. No. 326,775

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—56 **13 Claims**

1. A method for obtaining a mixture of an alcohol and a petroleum type hydrocarbon, comprising:

mixing a fermentation solution containing water and one or more alcohols selected from the group consisting of ethanol, isopropyl alcohol and n-butyl alcohol with a mixture of a petroleum type of hydrocarbon and a compound containing a mixture of multiple polyoxyalkylene units for a time sufficient to extract said alcohol from said fermentation solution into said mixture;

and separating excess water of said fermentation solution from said mixture containing the extracted alcohol.

4,445,909

MOTOR FUEL

Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 24, 1980, Ser. No. 200,290

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—72 **10 Claims**

1. An internal combustion fuel composition consisting essentially of a major proportion of an unleaded motor fuel containing about 1 to about 10 weight percent of an ashless antiknock additive selected from the group consisting of 1,4-di-aminobutane and 1,3-diaminopropane.

4,445,910

GAS GENERATING SYSTEM AND PROCESS

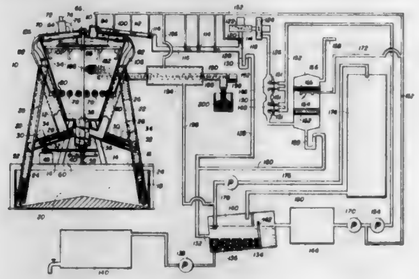
Edwin H. Zimmerman, R.D. #1, New Holland, Pa. 17557

Continuation-in-part of Ser. No. 231,987, Feb. 6, 1981, Pat. No. 4,348,211. This application Jul. 9, 1982, Ser. No. 396,869

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ C10J *3/30, 3/32*

U.S. Cl. 48—76 **35 Claims**



1. A system to generate gas products having useful B.T.U. values from waste cellulosic materials capable of being sintered and charred and comprising in combination:

a. a metallic generator shell comprising a cone free of permanent insulation, positioned vertically, and tapering downwardly at a diverging angle of not substantially less than 35°, said shell also having means in the upper portion thereof to discharge the said products of combustion,

b. a closure for the top of said generator shell which with the walls of the shell forms a gas accumulating chamber in the upper portion of the shell,

c. material inlet means in the bottom of said shell,

d. means to feed waste material compactly and progressively into said inlet means for gradual movement upwardly in a manner to permit the angle of divergence of the shell to cause loosening of the material as it moves upwardly in the shell.

e. controlled air inlet ports spaced circumferentially around said shell substantially adjacent the vertical midportion of said shell and adapted to form a sintering type combustion zone with waste material only in the portion thereof above the level of said ports,

f. gas outlet means communicating with and extending from the upper portion of said gas accumulating chamber,

g. suction means downstream from the gas accumulating chamber to said shell and operable adjustably to induce the inlet of ambient air into said combustion zone through said ports,

h. agitating means supported in the upper portion of said shell and engageable with the upper portion of the material in said combustion zone and operable to agitate it to facilitate discharge of said products of combustion from said discharge means therefor, and

i. means communicating with said gas outlet means to receive gas therefrom and operable to separate the same from solid products of combustion contained therein.

26. A system to generate gas products having useful B.T.U. values from waste cellulosic materials capable of being sintered and charred and comprising in combination:

a. a metallic generator shell comprising a cone positioned vertically and tapering downwardly at a diverging angle and having a gas accumulating chamber in the upper portion thereof,

b. a closure extending across the top of said cone and a second panel similar to said closure extending across said cone below said closure to provide a heating space separated from the interior of said cone and having air inlet means,

c. material inlet means in the bottom of said cone,

d. means to feed waste material progressively into said inlet means for gradual movement upwardly in a manner to permit the angle of divergence of the cone to cause loosening of the material as it moves upwardly in the cone,

e. air inlet ports spaced circumferentially around said cone substantially adjacent the vertical midportion thereof and adapted to form a sintering type combustion zone within waste material in said cone in the portion thereof above the level of said ports, said combustion zone effecting heating of air within said heating space,

f. gas outlet means communicating with and extending from said gas accumulating chamber,

g. air conduit means extending from said heating space to said air inlet ports to provide heated air for combustion to said combustion zone in said cone,

h. agitating means movably supported in the upper portion of said cone and engageable with the upper portion of the material in said combustion zone and operable to agitate it to facilitate sintering of the material and discharge of the products of combustion from the upper portion of said cone, and

i. suction means communicating with said gas accumulating chamber and operable to withdraw gas and entrained particles of material from said chamber.

4,445,911

METHOD OF CONTROLLING OPERATION OF AN ELECTROSTATIC PRECIPITATOR

Leif Lind, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Dec. 15, 1981, Ser. No. 331,012

Claims priority, application United Kingdom, Dec. 17, 1980, 8040463

Int. Cl.³ B03C *3/04, 3/68*

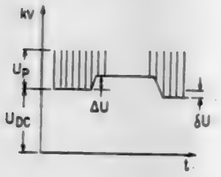
U.S. Cl. 55—2 **26 Claims**

1. A method of controlling the DC-voltage in an electro-

static precipitator having electrodes energized by pulses superimposed upon a preset DC-voltage, which comprises:

periodically eliminating said pulses and thereafter measuring a corona discharge current between said electrodes;

comparing said measured corona discharge current against a predetermined value; and



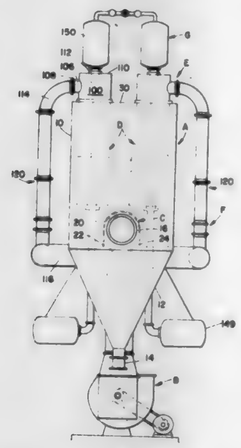
selectively adjusting the DC-voltage in accordance with said measured corona discharge current so as to maintain the DC-voltage at approximately the corona extinction voltage by increasing the DC-voltage when the measured discharge current is lower than said predetermined value and by decreasing the DC-voltage when the measured discharge current is higher than said predetermined value.

4,445,912

EFFLUENT AIR FILTRATION APPARATUS

Michael Volk; David A. Metzger, both of Mansfield, Ohio; Donald H. Ostby, and Robert R. Ostby, both of Muskegon, Mich., assignors to The Mike Volk Co., Inc., Mansfield, Ohio

Filed Feb. 4, 1982, Ser. No. 345,623
Int. Cl.³ B01D *46/04, 50/00*
U.S. Cl. 55—283 **17 Claims**



1. An air filtration system comprising:

an enclosed housing having an inlet aperture for receiving air to be filtered, a lower collection region for accumulating particles filtered from the received air, a top wall having a plurality of openings, and a mounting flange surrounding each top wall opening;

a filter cartridge extending downward from each top wall opening into the enclosed housing, and including:

an upper filter medium mounting ring which is operatively connnected with the mounting flange,

a lower filter medium mounting ring, disposed substantially parallel to the upper mounting ring,

a joint bar extending between the upper and lower mounting rings and generally perpendicular thereto, the joint bar having a first column of outward extending elongated mechanical fasteners disposed at intervals between the upper and lower mounting rings and a plurality of apertures therethrough spaced from said first column of elongated mechanical fasteners with said apertures disposed at intervals between the upper and lower mounting rings,

a filter medium support grid having a multiplicity of apertures therein, the filter medium support grid being generally tubular and connected at one end with the upper filter medium mounting ring and at its other end with the lower filter medium mounting ring,

a woven metal mesh filter medium having a height sufficient to extend between the upper and lower mounting rings and a length between first and second vertical edges to extend around the filter medium support grid from the joint bar elongated mechanical fasteners to the joint bar apertures, the filter medium defining a first plurality of apertures adjacent the first filter medium vertical edge in alignment with the joint bar elongated mechanical fasteners, the joint bar elongated mechanical fasteners extending through the first vertical edge apertures, and a second plurality of apertures adjacent the second filter medium vertical edge and in alignment with the joint bar apertures, and

a second column of mechanical fasteners extending through the aligned joint bar and filter medium second vertical edge apertures to fasten the filter medium to the joint bar; and,

a plenum means disposed in fluid communication with the top wall openings for receiving filtered air therefrom.

13. An air filtration system comprising:

an enclosed housing having an inlet aperture for receiving air to be filtered, a lower collection region for accumulating particles filtered from the received air, a top wall having a plurality of openings, and an annular mounting flange surrounding each top wall opening, the mounting flange being mounted displaced from and parallel to the top wall by a sleeve portion;

an annular cartridge mounting gasket disposed on the mounting flange;

a filter cartridge extending downward from each top wall opening into the enclosed housing, and including an upper filter medium mounting ring, an annular filter cartridge mounting plate extending outward from the upper mounting ring and being disposed on the cartridge mounting gasket such that the cartridge mounting gasket provides a seal between the filter cartridge mounting plate and the mounting flange, a lower filter medium mounting ring, a filter medium support grid having a multiplicity of apertures therein, the filter medium support grid being tubular and connected at one end with the upper filter medium mounting ring and at its other end with the lower filter medium mounting ring, and a woven filter medium surrounding the filter medium support grid;

an annular exhaust plenum mounting gasket disposed on the filter cartridge mounting plate;

a plenum adjacent each top wall opening for receiving filtered air from the filter cartridge, the plenum including an annular exhaust plenum mounting ring disposed on the exhaust plenum mounting gasket such that the plenum is sealingly mounted to the filter cartridge mounting plate and the housing mounting flange; and,

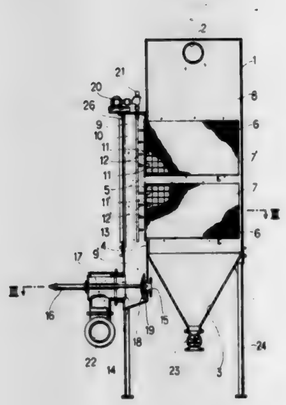
a plurality of mechanical fasteners extending through at least the exhaust plenum mounting ring, and the mounting flange such that the plenum and filter cartridge are selectively removable from the housing.

4,445,913

POWDERY DUST SEPARATING APPARATUS IN DUST COLLECTOR

Shinroku Nishiyama, 11-4, Komei-Cho, Takarazuka, Hyogo, Japan (665)

Filed Sep. 14, 1982, Ser. No. 418,169
Claims priority, application Japan, Feb. 26, 1982, 57-28098[U]
Int. Cl.³ B01D *41/00*
U.S. Cl. 55—302 **1 Claim**



1. A powdery dust separating apparatus, comprising:

a. a dust collector body, said body including:

(1) a vertically and longitudinally extending partition therein dividing the interior of said body into a filter chamber, and a gas chamber laterally spaced from said filter chamber,

(2) a suction pipe at the upper end thereof communicating with said filter chamber, for drawing powdery dust containing gas into said filter chamber, and

(3) a dust disposal passage at the lower end thereof communicating with said filter chamber, for discharging therethrough powdery dust separated from the gas;

b. mutually parallel, longitudinally spaced, vertically and laterally extending flat box-like filter members disposed in said filter chamber inserted into said partition, said filter members each having filter cloth spread over the outer faces thereof and having openings in ends thereof adjacent said partition;

c. a plurality of separators longitudinally separating said gas chamber into a plurality of gas passages, said gas passages each including a gas outlet at the lower end thereof and an atmospheric air inlet opposite said gas outlet;

d. compressed air pipes having air outlets protruding therefrom; each of said filter members having spaced apart venturi tubes attached to said openings, said air outlets of said compressed air pipes facing said venturi tubes; and

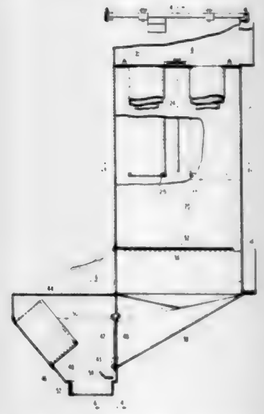
e. a valve arrangement in each of said gas passages, each valve arrangement including an air cylinder having a piston rod reciprocally longitudinally movable therein, an outlet closing valve and an atmospheric air inlet closing valve attached to an end of said piston rod so as to alternately respectively close said gas outlet while opening said atmospheric air inlet and close said gas inlet while opening said gas outlet with reciprocal movement of said piston rod.

4,445,914

INDUSTRIAL DUST FILTER WITH JET INDUCED REVERSE AIR CLEANING

Kenneth L. Richard, York, Pa., assignor to York-Shipley, Inc., York, Pa.

Filed May 28, 1982, Ser. No. 382,820
Int. Cl.³ B01D *46/04, 46/48*
U.S. Cl. 55—303 **3 Claims**



1. Industrial dust filter apparatus comprising:

a housing defining an upper clean air chamber and a lower dirty air chamber separated by a wall having at least a pair of openings therethrough, spaced from each other longitudinally of said chambers;

an elongated vertically positioned venturi in said dirty air chamber in fluid communication with said openings and extending downwardly therefrom;

at least two annular pleated cartridge type filters supported within the upper part of said venturi by said wall and each being aligned with one of said openings respectively, said filters extending downwardly to a point adjacent the upper end of the decreasing cross section of said venturi and being closed at their lower ends to expose the outer surface of said filters to the dirty air chamber;

means for positively venting clean air from said clean air chamber;

means for admitting dirty air to be filtered into said dirty air chamber so as to pass upwardly through said venturi, radially inwardly of said filters and axially out of said filters to said clean air chamber;

means defining a plurality of downwardly directed jet nozzles in said venturi and above the throat thereof;

means for supplying said nozzles with pressurized blasts of air to induce a reverse flow through said filters; and

means for removing particulate matter cleaned from said filters from the lower portion of said dirty air chamber.

4,445,915

DUST COLLECTOR FILTER CARTRIDGE AND STRUCTURE ATTACHMENT MEANS FOR SUSPENDING SAME FROM BAGHOUSE TUBE SHEET

James W. Robinson, Woodridge, Ill., assignor to Flex-Kleen Corporation, Chicago, Ill.

Filed Aug. 16, 1982, Ser. No. 408,250
Int. Cl.³ B01D *46/52*
U.S. Cl. 55—378 **6 Claims**

1. A combination of

A. a baghouse tube sheet having a plurality of holes therein;

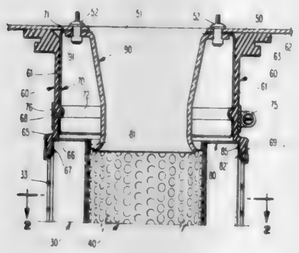
B. a small-diameter filter cartridge, said cartridge having an annular cap at its upper end, said cap having a depending outer flange having an exterior annular bead;

C. attachment means connected to said filter cartridge and

suspending said cartridge from said baghouse tube sheet and in flow communication with one of said holes, said attachment means being adapted for installation of the filter cartridge from either below or above the tube sheet, said attachment means comprising:

a. a boot having a hollow cylindrical body portion;

b. said boot having at the upper end of its body portion an outwardly extending flange having an annular groove in its exterior surface;



c. said boot having at the lower end of its body portion a skirt having a diameter larger than that of the cylindrical body portion and forming an annular shoulder receiving the peripheral edge portion of said cap of said filter cartridge;

d. said skirt having an annular groove in its inner surface receiving the annular bead of the cap of the filter cartridge; and

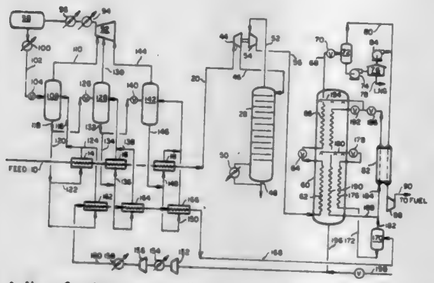
e. a steel band embracing said skirt and holding said bead in said annular groove of said skirt.

4,445,916

PROCESS FOR LIQUEFYING METHANE

Charles L. Newton, 3 Highland Ct., R.D. #7, Bethlehem, Pa. 18015

Filed Aug. 30, 1982, Ser. No. 412,686
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—17 **7 Claims**



3. A liquefaction process for natural gas including the separation in a scrub column of heavier hydrocarbons as a bottom stream from a methane-rich fraction as an overhead stream, comprising the steps of:

(a) introducing a natural gas feed stream into the liquefaction system at a pressure in the range of 600–2000 psia;

(b) cooling the feed stream in a series of heat exchangers in indirect heat exchange with a first refrigerant in a closed refrigeration system;

(c) reducing the pressure of the feed stream to a pressure which is below the critical pressure of both the overhead and bottom streams by a combination of isentropically expanding said feed stream while obtaining mechanical energy and intercooling at least a portion of the feed stream against the methane-rich overhead stream from the scrub column;

(d) introducing the intercooled and expanded feed stream as feed and as all of the reflux to the scrub column to separate the methane-rich fraction as an overhead stream and the heavier hydrocarbon fraction as a bottom stream;

(e) warming the methane-rich overhead stream in an intercooling heat exchange against the intercooling feed stream of step (c);

(f) compressing the warmed overhead stream to a high pressure in a compressor utilizing the mechanical energy derived from the expansion of step (c);

(g) cooling, liquefying and subcooling the methane-rich stream in a heat exchanger by indirect heat exchange with a second, multi-component, refrigerant in a closed refrigeration system;

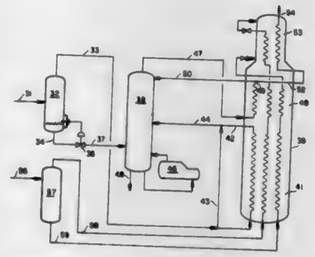
(h) withdrawing said liquefied and sub-cooled methane-rich stream as an LNG product.

4,445,917

PROCESS FOR LIQUEFIED NATURAL GAS

Chen-Hwa Chiu, Houston, Tex., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 10, 1982, Ser. No. 376,079
Int. Cl.³ F25J *1/02*
U.S. Cl. 62—25 **7 Claims**



2. In a process for purifying and liquefying a raw natural gas feed containing methane and hydrocarbon impurities of C_2 and higher against a refrigerant in a cryogenic main heat exchanger, which comprises cooling said raw natural gas feed to form a cold feed, distilling said cold feed in a distillation column to form a scrubbed overhead vapor rich in methane and a bottoms liquid rich in said hydrocarbon impurities, cooling said scrubbed overhead vapor against refrigerant in said heat exchanger, refluxing the distillation column with a portion of the cooled scrubbed overhead, and cooling the remainder of the cooled scrubbed overhead against refrigerant in said heat exchanger to form a purified liquefied natural gas, wherein the improvement comprises:

separating said cold feed to form a first feed vapor and a second feed liquid;

cooling said first feed vapor against said refrigerant in said heat exchanger;

after distilling, cooling said scrubbed overhead vapor against refrigerant in said heat exchanger to a temperature sufficient to condense and subcool the overhead vapor and form a subcooled methane-rich liquid; and

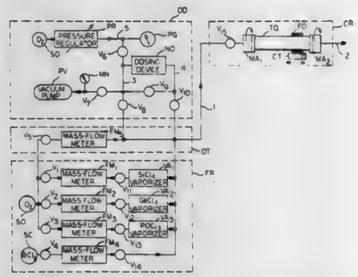
introducing a portion of said subcooled methane-rich liquid for said refluxing to the distillation column solely by a liquid/liquid separation of said subcooled methane-rich liquid.

4,445,918

PROCESS AND APPARATUS FOR ON-LINE DEHYDROGENATION OF FIBER-DRAWING PREFORMS

Eros Modone, Turin, and Giacomo Roba, Cogoleto, both of Italy, assignors to Cselt Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Jun. 21, 1982, Ser. No. 390,801
Claims priority, application Italy, Jun. 22, 1981, 67857 A/81
Int. Cl.³ C03B *37/07*
U.S. Cl. 65—3.12 **11 Claims**



1. A process for manufacturing fiber-drawing preforms of reduced hydrogen content, comprising the steps of:

(a) continuously entraining vapors of silicon compounds and doping agents by a flow of carrier gas to a high-temperature reaction chamber for deposition on a substrate;

(b) establishing a connection between the flow path of said carrier gas and a source of elemental deuterium under pressure for continuously admixing said elemental deuterium with said flow; and

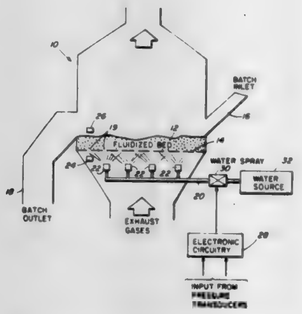
(c) inserting into said connection a gas-penetrable partition for controlling the rate of admixture to displace significant amounts of hydrogen by deuterium in a deposit of doped silica formed on said substrate.

4,445,919

IN SITU RAPID WASH APPARATUS AND METHOD

William E. Cole, Sudbury; Drew P. O'Connell, Townsend, and James L. Griffith, Newton, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Mar. 14, 1983, Ser. No. 474,769
Int. Cl.³ C03B *5/26, 3/00*
U.S. Cl. 65—27 **9 Claims**



1. In heat exchange apparatus for preheating glass batch supported in a fluidized bed on a perforate distributor plate exposed to flue gases from a glass-making furnace,

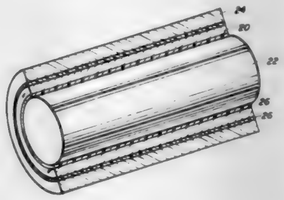
a method for cleaning deposits from said perforate distributor plate, in situ, comprising delivering a volume of solvent in liquid form to said distributor plate during a time interval, said volume of solvent and said time interval selected so that said solvent is in the liquid state when it contacts said distributor plate and the total time during which said solvent is delivered to said plate is less than one percent of the time said surfaces are exposed to flue gases.

4,445,920

METHOD OF MAKING GLASS-TO-METAL SEAL (HEADER)

Rex L. Smith, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 20, 1982, Ser. No. 450,861
Int. Cl.³ C03C *29/00*
U.S. Cl. 65—59.21 **8 Claims**



1. A method of forming a three-tier glass and metal component with mechanical and chemical bonds between the glass and metal comprising the steps of:

placing a glass rod between a metal sleeve and a metal pin, said glass rod having a coefficient of expansion that approximates said metal pin and metal sleeve;

heating said pin, rod, and sleeve to 1050° C. for five minutes in a furnace; and

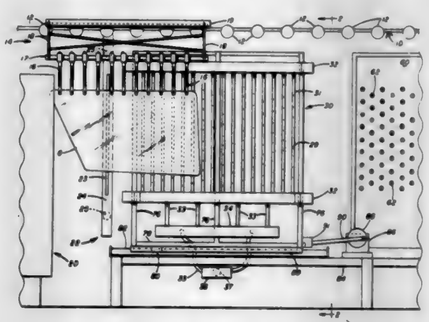
maintaining a dry hydrogen atmosphere in said furnace during said heating step.

4,445,921

TEMPERING GLASS SHEETS BY COOLING COMPRISING SUBLIMATION QUENCHING

Terry A. Bennett, Verona; Herbert W. Eilenfeld, Brackenridge, and Dewitt W. Lampman, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 24, 1983, Ser. No. 460,322
Int. Cl.³ C03B *27/00*
U.S. Cl. 65—114 **29 Claims**



1. A method of tempering a glass sheet comprising heating said sheet to an elevated temperature range sufficient for tempering and rapidly cooling said glass sheet from said elevated temperature range by directing a first tempering medium at a temperature significantly below said elevated temperature range at the opposite major surfaces of said glass sheet, said tempering medium having an initial heat transfer capacity

sufficient to cool said major surfaces at a rate such that said sheet develops a maximum temporary tensile stress insufficient to cause said glass sheet to fracture and gradually changing the composition of said cold tempering medium by mixing a second tempering medium at a temperature significantly below that of said glass sheet and having a greater heat transfer capacity than said initial heat transfer capacity in such a manner as to increase gradually the heat transfer capacity of the resulting mixture of cold tempering media directed toward said opposite major surfaces.

21. A method of tempering a glass sheet comprising heating said glass sheet to an elevated temperature range sufficient for tempering and moving said glass sheet in a given direction into a quenching position between a pair of sets of exit orifices while said exit orifices are stationary, and tempering medium is applied therethrough toward the opposite major surfaces of said glass sheet and, when the glass sheet decelerates as it approaches said quenching position, starting to reciprocate said exit orifices in unison with an initial stroke in the direction opposite said given direction and continuing to reciprocate said orifices after said glass sheet stops at said quenching position so as to insure continuous relative movement between the glass sheet and said exit orifices during both the entry of the glass sheet into said quenching position and its subsequent quenching at said quenching position.

23. Apparatus for tempering a glass sheet comprising glass sheet heating means, a cooling station including a source of dry, pressurized air, means to store a sublimable material under pressure at a temperature sufficiently cold to store said sublimable material in a liquid state, a delivery system comprising an uninsulated portion containing dry air, a pair of opposite sets of exit orifices and means to selectively deliver said dry air under pressure to said exit orifices for delivery toward said glass sheet, means to convey said glass sheet from said heating means into a quenching position between said sets of exit orifices in said cooling station while delivering said pressurized air through said exit orifices, valve means to discontinue the application of dry air to said delivery system, means to selectively deliver said sublimable material through said delivery system including valve means constructed and arranged to control the delivery of said sublimable material to said uninsulated portion to purge said dry air from said delivery system through said exit orifices and then deliver said sublimable material initially in gaseous form mixed with said dry air in increasing concentrations of said sublimable material in the gaseous state and finally to deliver a mixture of said sublimable material in a mixture of gas and soft, solid, cold, sublimable particles of increasing concentration of said particles.

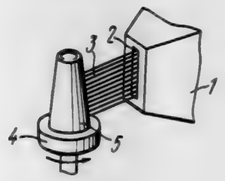
4,445,922

METHOD OF HEAT POLISHING PATTERN CUT GLASSWARE

Vadim V. Eremeev, and Jury A. Guloian, both of Gus-Khrustalny, U.S.S.R., assignors to Gusevsky Fulual Gosudarstvennogo Nauchno-Issledovatelskogo Insitut Stekla, Vladimir, U.S.S.R.

Continuation of Ser. No. 223,075, Jan. 7, 1981, abandoned. This application Feb. 23, 1982, Ser. No. 351,510
Claims priority, application U.S.S.R., Apr. 24, 1979, 2757714
Int. Cl.³ C03B *29/04*
U.S. Cl. 65—120 **3 Claims**

1. A method of heat polishing pattern cut glassware by subjecting the surface thereof to high heat, wherein the heat polishing is carried out in a single acting pass by a beam of concentrated heat flow with sequential movement thereof along the entire surface of the glassware being heat polished, the selectable effective width of the concentrated heat flow being such as to heat only a small portion of the space pattern of the ware being processed over its entire height at a time,



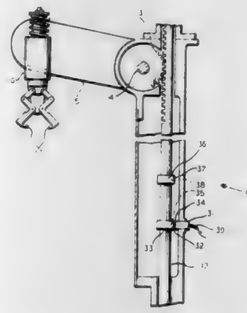
each element of the cut pattern being exposed to equal heat stress.

4,445,923

POSITION SENSING DEVICE

Donivan M. Shetterly, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 30, 1982, Ser. No. 454,513
Int. Cl.³ C03B *9/40*; G08C *21/00*
U.S. Cl. 65—158 **10 Claims**



1. In a glassware forming machine having mechanisms for forming articles of glassware from gobs of molten glass in a timed series of predetermined forming steps in response to a plurality of control signals, apparatus for sensing the position of a mechanism associated with one of the forming steps comprising:

an electrical load;

an oscillator having an input connectable in series with said load to a source of direct current;

an electromagnet electrically connected to the output of said oscillator and having a principal radiating surface from which a magnetic field emanates in a direction toward a fixed target position in proximity with a path traveled by the mechanism; and

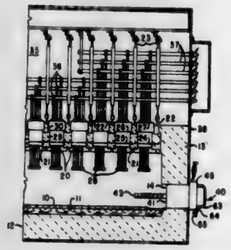
an electrically conductive target having a leading edge, a lagging edge, and a cutting face therebetween opposingly facing the principal radiating surface of said electromagnet, said target being mounted on the mechanism so that the leading edge of said target enters the magnetic field as the mechanism moves said target toward the target position and being shaped between the edges so that the cutting face of said target tapers from the leading edge to the lagging edge in a direction toward said electromagnet, the taper of said target being determined when the cutting face of said target opposingly faces the principal radiating surface of said electromagnet, whereby said oscillator becomes detuned as the cutting face of said target enters the magnetic field to reduce the measurable output voltage across said load.

4,445,924

AUXILIARY SIDE HEATER FOR A FLOAT GLASS FORMING CHAMBER

Earl L. May, Irwin, and William W. Baltzer, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 1, 1982, Ser. No. 383,414
Int. Cl.³ C03B *18/22*
U.S. Cl. 65—182.3 **10 Claims**



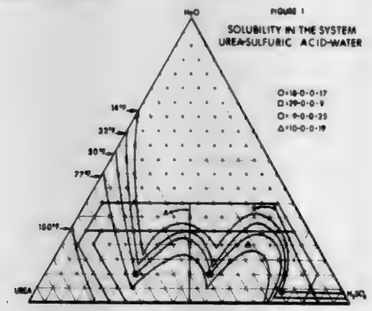
1. An apparatus for forming flat glass by the float process comprising an elongated basin containing a pool of molten metal, a roof and sidewalls supported over the basin defining an enclosed forming chamber, the sidewalls spaced above side portions of the basin so as to provide access openings along the sides of the chamber, portable side seal members removably inserted into the access openings to close the openings, means for delivering a stream of molten glass onto the molten metal at one end of the chamber, means at the opposite end of the chamber for withdrawing a formed glass ribbon from the chamber, and main heating elements in the upper portion of the chamber, the improvement comprising: at least one of the side seal members carrying an auxiliary electric heating element extending substantially horizontally into the chamber so as to extend into close proximity to edge portions of the ribbon of glass being formed, the heating element being provided with cantilever support by the side seal member so as to provide the portion of the heating element extending into the chamber with restricted horizontal width and with vertically open space adjacent thereto so that the edge portions of the glass ribbon are exposed to heat from both the auxiliary heating element and overlying portions of the main heating elements.

4,445,925

METHODS OF PRODUCING CONCENTRATED UREA-SULFURIC ACID REACTION PRODUCTS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 5, 1981, Ser. No. 318,629
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **52 Claims**



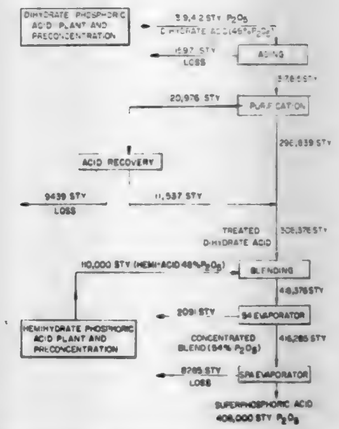
1. A method for producing concentrated solutions of urea and sulfuric acid of predetermined composition which method comprises the steps of: (i) simultaneously adding urea, concentrated sulfuric acid, and optionally water to a reaction zone at relative rates corresponding to the concentration of each respective component in said predetermihed composition and within the ranges of about 5 to about 75 weight percent urea, about 5 to 85 weight percent sulfuric acid, and 0 to about 35 weight percent water, in which said urea and sulfuric acid are introduced to said reaction zone separately of each other and, in combination, constitute at least about 65 weight percent of the feed to the reaction zone, (ii) continuously agitating said reacting liquid phase formed by the addition of said urea, sulfuric acid, and water to said reaction zone during the addition of said urea, acid and water to rapidly disperse said urea, acid, and water therein, (iii) cooling said reacting liquid phase during the addition of said urea, acid and water by an amount sufficient to maintain said liquid phase at a temperature of about 176° F. or less and below the incipient decomposition temperature of said predetermined composition, and (iv) recovering from said reaction zone a product solution having said predetermined composition.

4,445,926

PROCESS FOR BLENDING PHOSPHORIC ACIDS OF DIFFERING IMPURITY CONTENT

Harold E. Mills; David L. Murdock, both of Lake City; Richard M. Ramer, Gainsboro, and Francis M. Sale, Lake City, all of Fla., assignors to Occidental Chemical Co., Los Angeles, Calif.

Division of Ser. No. 215,885, Dec. 5, 1980, Pat. No. 4,376,756. This application Nov. 5, 1981, Ser. No. 318,502
Int. Cl.³ C05B *7/00*
U.S. Cl. 71—34 **8 Claims**



1. A liquid fertilizer produced by ammonation of a blended phosphoric acid having an R-value no greater than about 0.86, where the R-value of an phosphoric acid is one hundred times the ratio of the MgO analysis by weight divided by the P_2O_5 analysis by weight of said phosphoric acid, said blended phosphoric acid having been made by a process comprising blending a sufficient amount of at least one purified dihydrate process phosphoric acid having an R-value less than 0.86 with at least one phosphoric acid produced by a hemihydrate process and having an R-value greater than 0.86, to produce said blended phosphoric acid having an R-value no greater than about 0.86; wherein said purified dihydrate process phosphoric acid is purified by aging a dihydrate process phosphoric acid for sufficient time to allow at least some magnesium-containing solids to precipitate from said acid and separating at least some of said precipitated magnesium-containing solids from said dihydrate process phosphoric acid by filtration through a filter

aid to produce said purified dihydrate process phosphoric acid having an R-value less than 0.86; and producing a liquid fertilizer by a process comprising ammonating said blended phosphoric acid having an R-value less than 0.86.

4,445,927

HERBICIDAL COMPOSITIONS CONTAINING N-(PHOSPHONOMETHYL)-GLYCINE

Antal Gimesi, Budapest; József Baracskai, Balatonalmádi; Ferenc Fodor, Füzfögyártelep; Antal Gaál, Füzfögyártelep; András Horváth, Füzfögyártelep, and Zoltán Kolonics, Galatonalmádi, all of Hungary, assignors to Nitrokemia Ipartelepek, Füzfögyártelep and Növenyvedelmi Kutato Intezet, Budapest, both of, Hungary

PCT No. PCT/HU80/00012, 371 Date Aug. 25, 1981, 102(e) Date Aug. 25, 1981, PCT Pub. No. WO81/01787, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 23, 1980, Ser. No. 296,414

Claims priority, application Hungary, Dec. 28, 1979, NI 234

Int. Cl.³ A01N *37/10*

U.S. Cl. 71—86 **2 Claims**

1. Herbicidal compositions comprising a combination of N-(phosphonomethyl)-glycine and α-naphthylacetic acid in a ratio in the range from 2:1 to 5:1 or a non-phytotoxic salt of these compounds.

4,445,928

HERBICIDAL AMINOSULFENAMIDE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINE TRIESTERS

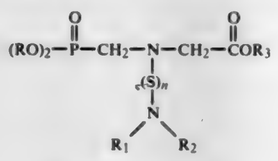
James A. Sikorski, Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 5, 1981, Ser. No. 309,327

Int. Cl.³ A01N *57/22, 57/24*; C07F *9/40, 9/65*

U.S. Cl. 71—87 **28 Claims**

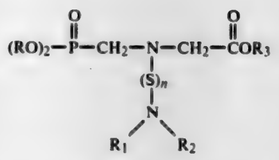
1. A method of controlling undesired plants which comprises applying to said plants or plant growth medium a herbicidally effective amount of a compound of the formula



(I)

wherein n is an integer 1 or 2 and wherein R is selected from the group consisting of phenyl, naphthyl, or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen; and wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, cycloalkyl, alkyl, alkyl substituted with 1 or 2 substituents independently selected from the group consisting of lower alkoxy, lower alkylthio, cyano, lower alkoxycarbonyl, bis(aryloxy)phosphinyl wherein said aryl portion thereof corresponds to a group selected from R; phenyl or phenyl substituted with 1 or 2 substituents independently selected from the group consisting of lower alkyl and lower alkoxy; acyl or aroyl; or R_1 and R_2 are independently selected from the aforerecited groups and joined together to form a cyclic structure having 4–8 atoms therein and R_3 is lower alkyl or aralower alkyl.

10. A compound of the formula



(I)

wherein n is an integer 1 or 2 and wherein R is selected from the group consisting of phenyl, naphthyl, or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen; and wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, cycloalkyl, alkyl, alkyl substituted with 1 or 2 substituents independently selected from the group consisting of lower alkoxy, lower alkylthio, cyano, lower alkoxycarbonyl, bis(aryloxy)phosphinyl wherein said aryl portion thereof corresponds to a group selected from R; phenyl or phenyl substituted with 1 or 2 substituents independently selected from the group consisting of lower alkyl and lower alkoxy; acyl or aroyl; or R_1 and R_2 are independently selected from the aforerecited groups and joined together to form a cyclic structure having 4–8 atoms therein and R_3 is lower alkyl or aralower alkyl.

4,445,929

HERBICIDAL ESTER DERIVATIVES OF N-ALKYLTHIO AND N-CYCLOALKYLTHIO-N-PHOSPHONOMETHYL-GLYCINONITRILE

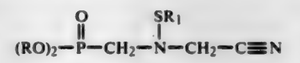
James A. Sikorski, West Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 5, 1981, Ser. No. 309,325

Int. Cl.³ A01N *57/22*; C07F *9/40*

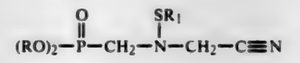
U.S. Cl. 71—087 **21 Claims**

1. A method of controlling undesired plants which comprises contacting said plants or plant growth medium with a herbicidal amount of a compound of the formula



wherein R is phenyl, naphthyl or biphenylyl or phenyl, naphthyl or biphenylyl substituted with from one to three substituents independently selected from the class consisting of lower alkyl, lower alkoxy, lower alkylthio, lower alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen; and R_1 is alkyl or cycloalkyl.

8. A compound of the formula



wherein R is phenyl, naphthyl or biphenylyl or phenyl, naphthyl or biphenylyl substituted with from one to three substituents independently selected from the class consisting of lower alkyl, lower alkoxy, lower alkylthio, lower alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen; and R_1 is alkyl or cycloalkyl.

4,445,930

HERBICIDAL 4-TRIFLUOROMETHYL-4-NITRODIPHENYL ETHERS

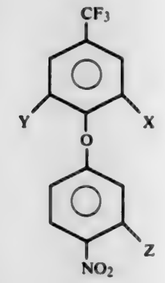
Horst O. Bayer, Levittown; Colin Swithenbank, Perkasie, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 939,086, Sep. 1, 1978, which is a division of Ser. No. 808,415, Jun. 20, 1977, Pat. No. 4,185,995, which is a division of Ser. No. 617,562, Sep. 29, 1975, Pat. No. 4,046,798, which is a division of Ser. No. 331,719, Feb. 12, 1983, Pat. No. 3,928,416, which is a continuation-in-part of Ser. No. 234,651, Mar. 14, 1982, Pat. No. 3,798,276. This application Sep. 16, 1981, Ser. No. 302,921

Int. Cl.³ A01N *9/20*

U.S. Cl. 71—105 **12 Claims**

1. A herbicidal composition comprising a compound of the formula



wherein

X is a cyano group,

Y is a hydrogen atom, a halogen atom, or a trifluoromethyl group, and

Z is a hydroxy group, an alkoxy group having up to 6 carbon atoms, an alkyl group having up to 4 carbon atoms, a halogen atom, an amino group, an alkylthio group having up to 4 carbon atoms, a cyano group, a carboxyalkyl group having up to 4 carbon atoms, or an agronomically-acceptable salt thereof, a carbalkoxyalkyl group having up to 6 carbon atoms, an alkanoyloxy group having up to 4 carbon atoms, or a carbamoyloxy group having up to 6 carbon atoms,

and an agronomically-acceptable carrier.

4,445,931

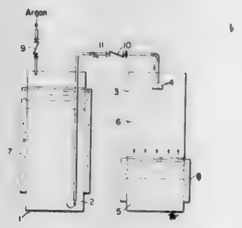
PRODUCTION OF METAL POWDER

Robert B. Worthington, Albany, Oreg., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 200,109, Oct. 24, 1980, abandoned. This application Jan. 20, 1982, Ser. No. 340,925

Int. Cl.³ B22F *9/28*

U.S. Cl. 75—0.5 B **9 Claims**



1. A process for production of metal powder comprising reacting a halide of the metal, in vapor form, with a fine spray of molten sodium, the temperature of the reaction being below the melting point of the metal.

4,445,932

METHOD OF RECOVERING FERRONICKEL FROM OXIDATED NICKEL ORES

Boris P. Onischin; Valery D. Linev, both of Leningrad; Alexandr E. Burochkin, Kirovogradskaya; Sergei G. Mitsev, Kirovogradskaya; Viktor R. Keller, Kirovogradskaya; Ivan S. Chernyshev, Kirovogradskaya; Viktor V. Lakisov, Kirovogradskaya; Valentin P. Moiseev, Kirovogradskaya; Jury A. Romanenkov, Leningrad, and Tamerlan G. Khakimov, Kirovogradskaya, all of U.S.S.R., assignors to Gosudarstvenny Proektny I Nauchno-Issledovatelsky Institut Gipronikel, Leningrad, U.S.S.R.

Filed Jul. 12, 1982, Ser. No. 397,415

Int. Cl.³ C22B *23/02, 4/04*; C21B *11/10*

U.S. Cl. 75—11 **20 Claims**

1. A method of recovering ferronickel from oxidated nickel ores, comprising the steps of:

preparing an initial charge of ore with a reducing agent,

roasting the initial charge and producing a hot cinder in one roasting furnace,

simultaneously and independently roasting flux in another roasting furnace,

mixing said hot cinder and said hot roasted flux, thus producing a ready-for-use charge, and

electrically smelting said charge.

4,445,933

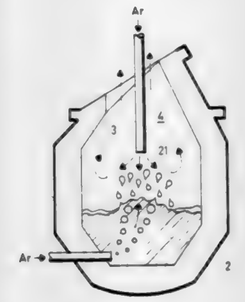
METHOD OF REFINING MOLTEN STEEL

Tetsuya Saito, and Hiroshi Mori, both of Aichi, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Aichi, Japan

Filed Nov. 30, 1982, Ser. No. 445,515

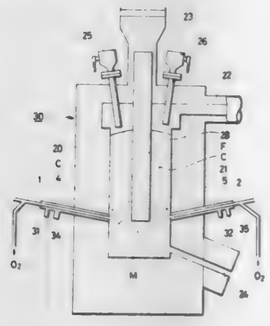
Int. Cl.³ C21C *5/34*

U.S. Cl. 75—59 **4 Claims**



1. A method of refining molten steel to obtain a steel of particularly low oxygen content characterized by injecting inert gas into molten steel in a refining vessel through the bottom of the vessel, and at the same time blowing inert gas from the top of the vessel so that atmosphere in the vessel may be kept almost completely inert during the refining.

4,445,934
METHOD OF MANUFACTURING ALUMINUM BY USING BLAST FURNACE
Masao Fujishige; Masayuki Dokiya; Tetsuya Kameyama; Harumi Yokokawa; Seiichi Ujiie; Kenzo Fukuda, and Akihiro Motoe, all of Yatabemachi, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan
Filed Feb. 3, 1983, Ser. No. 463,595
Claims priority, application Japan, Jun. 22, 1982, 57-107330
Int. Cl.³ C22B 21/02
U.S. Cl. 75—68 A 5 Claims



1. A method of smelting alumina using a blast furnace and comprising the steps of:
filling the blast furnace with a carbon material for combustion;
directing oxygen gas into said carbon material from the periphery of the furnace so as to form a plurality of combustion regions in which combustion of said carbon material takes place and which extend from the periphery of the furnace toward the center thereof and, at the same time, to form a high-temperature reduction zone in and about the center of the furnace, said high-temperature reduction zone being spaced apart from said combustion regions;
introducing into said high-temperature reduction zone and without contacting said combustion regions, a mixture of an alumina-containing material and a carbon material for reduction; and
reducing the alumina of said alumina-containing material to aluminum in said high-temperature reduction zone with said carbon material for reduction.

4,445,935
METHOD FOR THE RECOVERY OF SILVER FROM WASTE PHOTOGRAPHIC FIXER SOLUTIONS
Franz A. Posey, Concord, and Aloysius A. Palko, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Dec. 13, 1982, Ser. No. 449,312
Int. Cl.³ C22B 11/06
U.S. Cl. 75—118 P 8 Claims

1. A method for recovering metallic silver from a spent photographic fixer solution containing therein silver ions complexed by oxidizable complexing agents, comprising the steps of:
introducing the fixer solution into an aqueous alkaline solution containing an adequate amount of sodium hypochlorite to effect destruction by oxidation of the silver complexing agents,
contacting the resulting combined solution with an aqueous solution containing hydrazine in an effective amount to form a colloidal precipitate of silver; and
thereafter recovering the silver precipitate from the combined solution.

4,445,936
METHOD OF MAKING INELASTICALLY COMPRESSIBLE DUCTILE PARTICULATE MATERIAL ARTICLE AND SUBSEQUENT WORKING THEREOF
Raymond E. Wiech, Jr., San Diego, Calif., assignor to Witec Cayman Patents, Ltd., Cayman Islands
Continuation of Ser. No. 111,634, Jan. 14, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,637
Int. Cl.³ B22F 3/00
U.S. Cl. 75—228 8 Claims

1. A method of producing an article in the form of a fired powdered metal which is then crush formed and compressed to desired shape, comprising the steps of:
(1) mixing together predetermined amounts of particulate material and binder whereby said binder covers substantially all of the surfaces of the particles of said powdered metal, said particles of particulate material having a high degree of sphericity, the size range of said particles being kept to a minimum,
(2) forming said mixture from (1) into a desired configuration,
(3) removing the binder from said configuration in (2),
(4) sintering the stripped and formed material from (3) according to a time-temperature profile to provide predetermined pore volume to material volume ratio of hermetic pores,
(5) cooling said material, and
(6) crush forming by isostatically pressing said material to compress the material from (4), the volume of compression approaching but not exceeding the volume of said pores.

4,445,937
PNEUMATIC STOWING OF CONSTRUCTION MATERIAL COMPRISING CALCIUM ALPHA- AND BETA-SULPHATE HEMIHYDRATES
Friedr. Bassier, Duisburg; Fritz Adrian, Ratingen, and Dieter Deuster, Hilden, all of Fed. Rep. of Germany, assignors to Ruhrkohle AG and Steag AG, both of Essen, Fed. Rep. of Germany
Filed Sep. 18, 1981, Ser. No. 303,463
Int. Cl.³ C04B 11/10
U.S. Cl. 106—109 14 Claims

11. A construction material for underground tunnel construction, comprising 60% by weight selected from calcium alpha-sulphate hemihydrate and calcium beta-sulphate hemihydrate, 30% by weight of flue dust obtained burning mineral coal, and 10% by weight of an additive selected from natural forms of coarse grained anhydrous calcium sulphate, limestone or a mixture thereof.

4,445,938
HYDROGENATED STARCH HYDROLYSATE
Francoise Verwaerde, Lambersart; Serge Gosset, Lestrem, and Michel Huchette, Merville, all of France, assignors to Roquette Freres, Lestrem, France
Continuation of Ser. No. 109,066, Jan. 2, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,222
Claims priority, application France, Jan. 8, 1979, 79 00370
Int. Cl.³ C13K 1/06; C07G 3/00; C08B 31/00; C12N 9/28
U.S. Cl. 127—29 14 Claims

1. Hydrogenated starch hydrolysate characterized by a glucid spectrum corresponding to:
a content of monosaccharides (DP=1) less than 14%,
a content of disaccharides (DP=2) less than 35%,
a content of oligosaccharides of DP 4 to DP 10 ranging from 42% to 70%,
a content of polysaccharides of DP higher than 10 less than 32%, and
a content less than 3% of polyols of DP higher than 20.

4,445,939
STRIPPING AND CONDITIONING SOLUTIONS FOR TREATING COATED SUBSTRATES AND METHOD FOR THEIR USE
James V. Hodson, 1650 E. 500 South, Fruit Heights, Utah 84037
Filed Aug. 19, 1982, Ser. No. 409,544
Int. Cl.³ C23G 5/02
U.S. Cl. 134—2 20 Claims

1. A stripping and conditioning solution useful for removing coatings from coated substrate and conditioning the substrate for subsequent coating treating consisting essentially of a mixture of (1) a solvent composition comprising a chlorinated solvent and a liquid alcohol containing at least three carbon atoms, (2) a wetting composition comrising basic metal ammonium salt of an aromatic sulfonic acid, and a non-ionic surface active material, (3) a vapor suppressant.

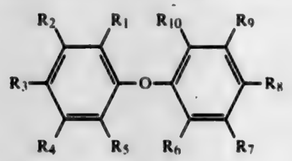
16. A process for stripping a coating from a substrate and conditioning the resulting substrate for subsequent treatment with another surface coating which comprises applying to the coated substrate a thin film of a stripping solution as defined in claim 1, allowing the solution to remain on the coating until substantially stripped and then removing the stripped coating from the substrate.

4,445,940
PROCESS TO REMOVE CORROSION DEPOSITS USING AQUEOUS-BASE FERROMAGNETIC FLUIDS
Karen F. Hulford, and Jerry W. Price, both of Bellingham, Wash., assignors to Georgia-Pacific Corporation, Atlanta, Ga.
Filed Nov. 30, 1982, Ser. No. 445,559
Int. Cl.³ C23G 1/00
U.S. Cl. 134—2 14 Claims

1. A process for the removal of corrosion deposits from corroded metal surfaces which comprises contacting said corroded metal surfaces with an aqueous-base ferromagnetic fluid in an amount effective to remove corrosion deposits and thereafter removing said aqueous-base ferromagnetic material and corrosion deposits from said metal surface.

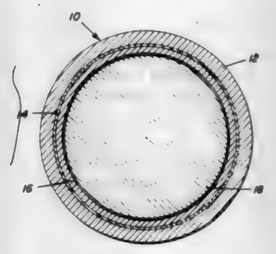
4,445,941
PROCESS FOR CLEANING METAL SURFACES
Ronald D. Mathis, and Jerry O. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 22, 1982, Ser. No. 401,033
Int. Cl.³ C23G 5/02
U.S. Cl. 134—3 9 Claims

1. A process for the removal of poly(arylene sulfide) deposits from metal surfaces comprising contacting the deposits with at least one diaryl ether, represented by the general formula



where R_1-R_{10} represents hydrogen or an alkyl radical having from 1 to 4 carbon atoms with the total number of carbon atoms present in R_1-R_{10} exceeding not more than about 20, under temperature conditions and for a period of time sufficient to remove said deposits.

4,445,942
METHOD FOR FORMING NUCLEAR FUEL CONTAINERS OF A COMPOSITE CONSTRUCTION AND THE PRODUCT THEREOF
Bo-Ching Cheng; Herman S. Rosenbaum, both of Fremont, and Joseph S. Armijo, Saratoga, all of Calif., assignors to General Electric Company, San Jose, Calif.
Filed Nov. 26, 1979, Ser. No. 97,378
Int. Cl.³ G21B 3/06
U.S. Cl. 148—6.3 11 Claims



1. A method of producing a container for nuclear fuel for service in nuclear fission reactors, comprising the steps of:
(a) providing a casing of a metal selected from the group consisting of zirconium and zirconium alloys;
(b) depositing a steam permeable, porous thin layer of copper superimposed over the inside surface of said metal casing;
(c) oxidizing the inside surface of said metal casing with de-aerated steam subsequent to depositing the thin layer of porous copper thereon to thereby provide a layer of oxide of the metal selected from the group consisting of zirconium and zirconium alloys intermediate said inside surface of the metal casing and the porous copper superimposed over said inside surface of the metal casing; and,
(d) thereafter depositing a second layer of copper on the initially deposited thin layer of porous copper.

4,445,943
HEAT TREATMENTS OF LOW EXPANSION ALLOYS
Darrell F. Smith, Jr., and Edward F. Clatworthy, both of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.
Filed Sep. 17, 1981, Ser. No. 302,974
Int. Cl.³ C21D 7/14; C22F 1/10
U.S. Cl. 148—12.3 15 Claims

1. The method for providing elevated temperature notch strength in wrought products made of an alloy consisting essentially of about 45% to about 55.3% nickel, up to about 5% cobalt, about 1.5% to about 5.5% columbium, about 1% to about 2% titanium, no more than 0.2% aluminum, up to about 0.1% carbon and the balance essentially iron, which comprises annealing said product at a temperature of about 1600° F. to about 1925° F. and then heating said solution treated product in the intermediate temperature range of about 1425° F. to about 1550° F. for a time sufficient to overage said product in the range of about 8 to 32 hours, with the proviso that said intermediate temperature and time are upwardly graduated as the annealing temperature is increased, and then heat treating said product in a lower temperature range of about 1100° F. to 1400° F. for at least about 8 hours to provide in said product a notch strength of at least about 20 hours at 1000° F. and 100 ksi.

4,445,944

HEAT TREATMENTS OF LOW EXPANSION ALLOYS

Darrell F. Smith, Jr., and Edward F. Clatworthy, both of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

Filed Sep. 17, 1981, Ser. No. 302,975
Int. Cl.[3] C21D *7/14*; C22F *1/10*
U.S. Cl. 148—12.3 18 Claims

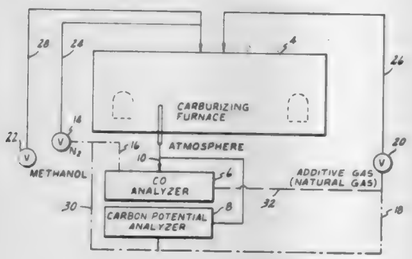
1. The method for providing elevated temperature notch strength in wrought products made of an alloy consisting essentially of about 34% to about 55% nickel, about 5% to about 25% cobalt, about 1.5% to about 5.5% columbium, about 1% to about 2% titanium, no more than 0.2% aluminum, up to about 0.1% carbon and the balance essentially iron, said columbium being replaceable by tantalum on the basis of two parts of tantalum for each part of columbium by weight, which comprises annealing said product at a temperature of about 1650° F. to about 1925° F. and then heating said annealed product in an intermediate temperature range of about 1375° F. to about 1550° F. for a time sufficient to overage said product, with the proviso that said intermediate temperature and time are upwardly graduated as the annealing temperature is increased, said temperature and time relationship being equivalent to at least 8 hours at the intermediate temperature of 1425° F. when the annealing temperature is 1900° F., and then heat treating said product in a lower temperature range of about 1100° F. to 1400° F. for at least 8 hours to provide in said product a notch strength of at least about 100 hours at 1000° F. and 100 ksi.

4,445,945

METHOD OF CONTROLLING FURNACE ATMOSPHERES

Donald J. Schwalm, Northville, Mich., assignor to Holcroft & Company, Livonia, Mich.

Continuation-in-part of Ser. No. 224,849, Jan. 14, 1981, abandoned. This application Apr. 4, 1983, Ser. No. 481,727
Int. Cl.[3] C21D *1/48*
U.S. Cl. 148—16 11 Claims



1. The method of maintaining a substantially stable gas analysis in the atmosphere of a furnace for controlling the carbon content of steel or cast iron to improve the effectiveness of a separate carbon potential control system, which comprises introducing into the furnace (a) a controlled mixture of methanol and nitrogen to produce a substantially neutral carrier gas atmosphere composed essentially of CO, H_2, and N_2, and (b) a minor amount of an additive gas to control the carbon potential of the atmosphere, characterized by the steps of maintaining the percentage of CO in the furnace substantially at a predetermined value without regard to the carbon potential thereof by controlling the ratio of methanol and nitrogen introduced into the furnace to form the substantially neutral carrier gas constituent of the furnace atmosphere without regard to the carbon potential of the furnace atmosphere, and controlling the carbon potential by controlling the addition of the additive gas to the furnace atmosphere.

4,445,946

HIGH STRENGTH COLD ROLLED STEEL STRIP HAVING AN EXCELLENT DEEP DRAWABILITY

Nobuyuki Takahashi; Masaaki Shibata, and Yoshikuni Furuno, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 26, 1981, Ser. No. 296,474
Claims priority, application Japan, Aug. 27, 1980, 55-117028
Int. Cl.[3] C21D *8/04*; C22C *38/14, 38/28*
U.S. Cl. 148—36 5 Claims

1. A high strength cold rolled, continuously annealed steel strip having an excellent deep drawability, consisting essentially of

less than 0.005% by weight of carbon;
0.5% by weight or less of silicon;
0.19% to 0.90% by weight of manganese;
0.05% to 0.12% by weight of phosphorus;
0.02% to 0.2% by weight of aluminum;
0.16% by weight or less of titanium;
and the balance of iron with unavoidable impurities, and satisfying the relationships (I) and (II):

$$\text{(Content (\%) of titanium)/Content (\%) of carbon)} \geqq 4 \quad \text{(I)}$$

and

$$\text{(Content (\%) of phosphorus)} \times \text{(Content (\%) of titanium)} \leqq 0.01 \quad \text{(II)},$$

and wherein

said steel strip has both a tensile strength of 35 kg/mm^2 or greater and an average plastic strain ratio r of 1.62 or greater.

4,445,947

LOW COST FLUOROCARBON FLARE COMPOSITIONS

Graham C. Shaw, III, Garland, Utah, and Russell Reed, Jr., Ridgecrest, Calif., assignors to Thiokol Corporation, Chicago, Ill.

Filed Mar. 18, 1983, Ser. No. 476,684
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.3 15 Claims

1. An infrared flare composition comprising:

(a) from about 35 to about 60 percent by weight of a reducing agent which is magnesium, aluminum, or a mixture thereof;

(b) from about 7 to about 20 percent by weight of a free radical polymerizable solvent;

(c) an effective amount of a free radical initiator;

and

(d) from about 26 to about 60 percent by weight of a two-part fluorocarbon polymer system comprising:

(i) a high molecular weight fluorocarbon polymer, said polymer containing between about 55 and about 76 percent by weight of fluorine and having a limited solubility in the polymerizing solvent; and

(ii) a low molecular weight fluorocarbon polymer, said polymer containing between about 55 and about 76 percent by weight of fluorine and being substantially completely soluble in the polymerizing solvent.

4,445,948

POLYMER MODIFIED TNT CONTAINING EXPLOSIVES

Horace D. Stanton, and Russell Reed, Jr., both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 155,877, Jun. 2, 1980, abandoned. This application Sep. 7, 1982, Ser. No. 415,495
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.91 10 Claims

1. A melt cast explosive composition consisting essentially of trinitrotoluene, a cyclic nitramine explosive selected from the group consisting of cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine, aluminum powder, and a polymer selected from the group consisting of ethylene vinyl acetate copolymer and an ethylene, vinyl acetate, vinyl alcohol terpolymer.

4,445,949

METHOD OF MAKING A FIBER-LOADED POLYMERIC SHEET

Gerald C. Hollaway, Jr., Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Jul. 7, 1981, Ser. No. 281,153
Int. Cl.[3] B31D *1/00*
U.S. Cl. 156—62.2 12 Claims

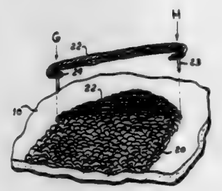
1. In a method of making a fiber-loaded polymeric sheet in a substantially continuous uninterrupted manner, said method comprising the steps of, disposing a quantity of discrete elongate fibers as a layer thereof on movable support means therefor which is movable along a rectilinear path and in a substantially horizontal plane, providing a quantity of liquid-containing polymeric material around said fibers during movement of said support means and fibers, and removing the liquid contained in said polymeric material to define said sheet, the improvement in which said disposing step comprises disposing said quantity of fibers with the longitudinal axes thereof in substantially parallel relation to each other and parallel to said rectilinear path, said providing step comprises providing said polymeric material so that it defines a substantially solid matrix for said fibers upon removing the liquid contained therein during said removing step, said disposing and providing steps comprise disposing said quantities so that following said removing step said quantity of fibers comprises between 40% and 70% of said sheet, and comprising the further step of stretching said sheet along said rectilinear path and parallel to the longitudinal axes of said fibers following said removing step to improve the parallelism of said fibers, said sheet having at least 70% of said fibers with the longitudinal axes thereof in said substantially parallel relation.

4,445,950

METHOD FOR PREPARING ARTISTIC WORKS WITH YARN

Andrea Browning, Orlando, Fla., assignor to Evelyn Thilmony, Orlando, Fla., a part interest

Filed Aug. 5, 1982, Ser. No. 405,617
Int. Cl.[3] B32B *5/08*
U.S. Cl. 156—63 11 Claims



1. A method of producing artistic pictures and designs on a flat, yieldable substrate with elements of the pictures and designs formed from colored yarns comprising the steps of:

(a) doubling a first length of yarn of a selected type and color;

(b) inserting a straight pin through the yarn at the point of doubling;

(c) pressing the pin into the substrate at a selected starting point of the design;

(d) twisting the double ends of the first length of yarn;

(e) inserting a pin through the first twisted length of yarn at a point a short distance from the first pin;

(f) pinning the yarn with the second pin at a second point adjacent to the first pin to form an upward standing loop of twisted yarn;

(g) looping the twisted length of yarn back to a third point adjacent the first pin;

(h) pinning the yarn at the third point thereby forming an upward standing loop contiguous with the first upward standing loop;

(i) continuing the steps of (g) and (h) for successive points so as to completely cover a first area of the design with a first layer of contiguous upward standing loops of twisted yarn; and

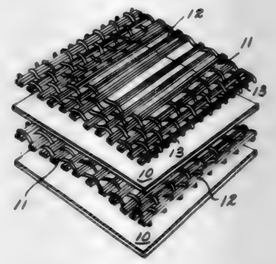
(j) repeating steps (a) through (i) for each additional area of the design thereby forming a first layer of looped yarn over each area of the design.

4,445,951

METHOD OF MANUFACTURING COMPOSITE MATERIALS

David J. Lind, Breadsall, and Joyce Richards, Belper, both of England, assignors to Rolls-Royce Limited, London, England

Filed Jun. 1, 1982, Ser. No. 383,619
Claims priority, application United Kingdom, Jul. 1, 1981, 8120321
Int. Cl.[3] B32B *7/08*
U.S. Cl. 156—93 7 Claims



1. A method of manufacturing a composite material comprising the successive steps of:

(1) stitching across at least one layer of reinforcing filaments with filaments of a thermoplastic polymer so that said thermoplastic polymer filaments maintain said reinforcing filaments in a given configuration,

(2) forming a structure of said at least one layer of the thus cross-stitched reinforcing filaments and sheets of the same thermoplastic polymer as that used in filament form to cross-stitch said reinforcing filaments so that one layer of cross-stitched filaments is interposed between two sheet of said thermoplastic polymer,

(3) compressing said structure at a temperature at which said thermoplastic polymer is mobile,

(4) maintaining said compression for sufficient time and temperature for the thermoplastic polymer of the sheets and filaments to impregnate said at least one layer of reinforcing filaments,

(5) cooling the thus formed composite material under compression in order to avoid any distortion thereof, and subsequently

(6) discontinuing said compression.

4,445,952

APPARATUS AND METHOD FOR FILLING HOLES IN A CIRCUIT BOARD

Frederick W. Reynolds, III, Mission Viejo; Robert E. Miranda, Brea, and Roger C. Fabian, Van Nuys, all of Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Nov. 3, 1981, Ser. No. 317,849
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—94 **60 Claims**



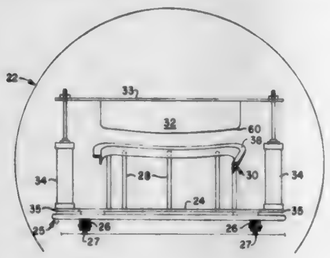
1. A method of filling selected holes in a circuit board with a sealing material, comprising the steps of:
covering the circuit board with masking means including a sealing sheet and a barrier sheet having holes formed therein in alignment with the selected holes in the board to expose the selected holes in the board through the masking means, said covering step comprising covering the circuit board with the sealing sheet to prevent contact between the sealing material and undesired portions of the board, and then covering the sealing sheet with the barrier sheet to prevent significant contact between the sealing material and the sealing sheet;
forcing the sealing material to flow through the holes in the masking means into the selected holes in the circuit board; and
stripping the masking means from the circuit board.

4,445,953

METHOD OF FORMING SHAPED LAMINATES

Thomas W. Hawk, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 25, 1982, Ser. No. 352,423
Int. Cl.³ B32B *17/00, 31/00*; B29C *17/04*; C03B *21/00*
U.S. Cl. 156—102 **12 Claims**



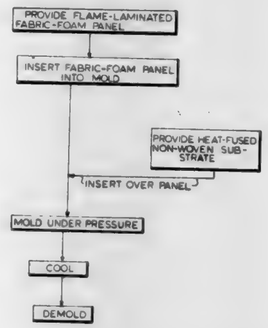
1. A method of forming a transparent laminate having a desired compound or complicated configuration, comprising the steps of:
supporting a plurality of relatively flat, rigid, transparent lites and soft interlayer sheets in an overlying relation one to another to form a flat assembly, having a plurality of interfacial surfaces;
removing gases from the interfacial surfaces between said overlying lites and sheets;
laminating said evacuated overlying flat lites and sheets together to form an assembly having a deformation temperature;
positioning marginal edge portions of the flat assembly in facing relation to portions of a supporting surface of a non-planar female skeleton ring;
biasing the assembly at a first temperature below the deformation temperature of the assembly toward the supporting surface of the female skeleton ring to conform the marginal edge portions of a first major surface of the assembly to the supporting surface of the female skeleton ring to convert said flat assembly into a preliminarily shaped assembly;
heating the preliminarily shaped assembly to a second temperature at least equal to the deformation temperature of the assembly; while
exposing the assembly to superatmospheric pressure sufficient to prevent outgassing from the sheets; and
urging a male form having a shaping surface of desired configuration toward a central portion of the second and opposite major surface of the assembly to impress the shaping surface configuration of the male form on the central portion of the assembly during said heating and elevated pressure exposing steps, thereby converting said preliminarily shaped assembly to a transparent laminate having said desired compound or complicated configuration.

4,445,954

METHOD OF MANUFACTURING MOLDED UPHOLSTERY PANELS

Ronald W. Adams, Auburn, Me.; Carl V. Leunig, Glenmont, N.Y., and Robert F. Kovar, Wrentham, Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Feb. 9, 1983, Ser. No. 465,101
Int. Cl.³ B29C *3/00*; B32B *31/20*
U.S. Cl. 156—148 **1 Claim**



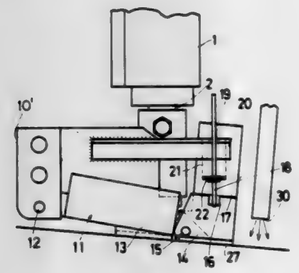
1. A method of manufacturing a padding upholstered, decorative panel having a decorative fabric surface and polymeric resin foam padding, which comprises;
(a) providing a panel base support which comprises; a core of non-woven, synthetic textile fibers; a base first layer of heat fusible, synthetic, thermoplastic textile melt fibers; a base second layer of heat fusible, synthetic, thermoplastic textile melt fibers; said first and second layers sandwiching the core, fibers of said first and second layers and the core being interengaged with each other, said interengagement being of the character obtained by needling;
(b) providing a panel intermediate layer of a synthetic, open or closed cell, thermoplastic polymeric resin foam;
(c) providing an outer, surface layer of a decorative, surface upholstery materials;
(d) assembling the intermediate layer (b) with the surface layer (c) and securing said layers (b) and (c) together;
(e) providing a mold adapted by size and configuration to receive the assembly, said mold including a means for applying heat and pressure along the peripheral edges of the assembled layers (a), (b) and (c) when the assembly is received in the mold;
(f) inserting the assembly (d) in the mold;
(g) heating the base support (a) to a temperature sufficient to fuse the melt fibers;
(h) inserting the heated base support (a) in the mold in a position wherein said support (a) contacts the exposed surface of the foam layer (b);
(i) applying heat and pressure on the assembly in the mold; whereby peripheral edge portions of the surface layer (c) are bonded to the base layer (a);
(j) cooling the molded panel; and
(k) demolding the molded panel.

4,445,955

WELDING OF PLASTICS MATERIAL

Friedrich Struve, Johannesburg, South Africa, assignor to Gundle Holdings (Proprietary) Limited, Edenvale, South Africa

Filed Mar. 20, 1981, Ser. No. 245,799
Claims priority, application South Africa, Mar. 4, 1981, 81/1427
The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.
Int. Cl.³ B29C *27/02*; B65H *69/08*
U.S. Cl. 156—153 **14 Claims**



1. A method of welding together two adjacent sheets of flexible thermoplastic plastics material, comprising:
(a) overlapping the edges of two sheets of plastics material such that they have a pair of adjacent surface areas to be welded on either side of a common boundary line;
(b) preheating by direct contact conduction with both sheets the adjacent surface areas of both sheets to above the melting point of the thermoplastic material using a suitable heated contact member;
(c) simultaneously physically damaging the molten surface areas of both sheets to form substantially new surfaces;
(d) depositing a continuous layer of molten thermoplastic material over the preheated and damaged surfaces of both sheets; and
(e) allowing the deposited material and the material of both surfaces to solidify as a continuous phase.

4,445,956

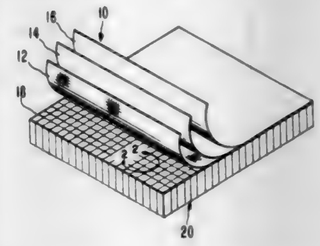
METHOD AND MATERIAL FOR SECURING STRUCTURE FOR MACHINING

Bob L. Freeman, and Peter W. Borris, both of Pleasanton, Calif., assignors to Hexcel Corporation, San Francisco, Calif.

Filed Feb. 14, 1983, Ser. No. 466,178
Int. Cl.³ B23P *17/00*; B32B *5/02, 7/12*
U.S. Cl. 156—154 **16 Claims**

1. A laminate for securing a structure for machining comprising: an assembly adapted to be secured to one side of the structure, said assembly including a first layer of perforate material impregnated with an adhesive, said first layer adapted to be bonded by the adhesive to one side of the structure, a second layer of fabric material bonded by the adhesive to the first layer, and a third layer of non-porous material bonded to the second layer, the structure adapted to be mounted by the assembly on a vacuum chuck for machining of the structure when the assembly is on said one side of the structure.

10. A method of securing a deformable structure to a support for handling comprising: bonding a laminate to one side of the structure with the laminate having a first layer of perforate material in engagement with the one side of the structure, a



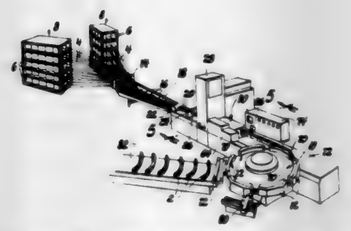
second layer of fabric material bonded by adhesive to the first layer, and a third layer of non-porous material coupled to the second layer; holding the assembly of the structure and the laminate on a support to permit processing of the structure; removing the assembly from the support; and separating the second layer from the first layer while the first layer remains bonded to said one side of the structure to stabilize the latter.

4,445,957

METHOD AND MEANS FOR MAKING CONSTANT CROSS SECTIONAL AREA PULTRUDED FIBER REINFORCED POLYMERIC ARTICLES.

Dennis L. Harvey, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1982, Ser. No. 443,240
Int. Cl.³ B32B *1/10*
U.S. Cl. 156—180 **4 Claims**



1. A method of molding an elongated, filament-reinforced, resinous, composite article having a substantially constant cross sectional area along its length but varying in width and thickness to optimize the strength characteristics of the article, the method comprising: impregnating a plurality of spaced apart elongated filaments with a liquid thermosetting resin; drawing said filaments together in substantially parallel side-by-side relationship to form an elongated coherent filament bundle in which the filaments are loosely bonded together by the liquid resin; heating the impregnated filament bundle to reduce curing time and decrease the viscosity of the resin for better wetting of the filaments; thereafter drawing the filament bundle lengthwise through a shaped die opening formed between adjacent first and second pairs of spaced apart die walls, said wall pairs being relatively movable with respect to each other, the spacing between the walls of the said first wall pair and the spacing between the walls of the said second wall pair respectively defining the thickness and width of a filament bundle drawn therethrough and the motion of the first and second wall pairs relative to each other being mechanically linked such that varying the spacing between the walls of the

wall pairs provides a said die opening of substantially constant cross sectional area; varying the said spacing between the walls of the first and second wall pairs of the die as the filament bundle is drawn therethrough such that the width and thickness of each portion of the bundle as it leaves the die substantially matches the desired width and thickness of the corresponding cross section of a compression die in which the bundle is being laid for final shaping of the article and cure of the resin.

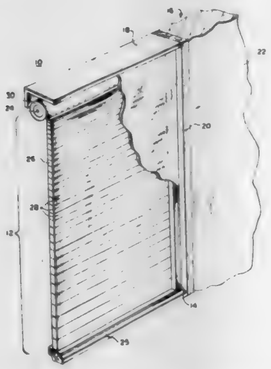
3. A pultrusion die for making resin bonded elongated filament reinforced articles having constant cross sectional area but varying cross sectional dimensions comprising a pair of edge forming die members for defining opposite edges of the die opening of said die; a pair of side forming die members for defining the opposing side edges of the die opening of said die; means for translating the motion of one of said edge forming members with the other edge forming pair members to regulate the distance therebetween; means for linking the motion of the said side forming die members with the motion of said edge members such that as the distance between the edge forming members is increased or decreased the distance between the side forming members is decreased or increased, respectively, such that the cross sectional area of the die opening formed between the edge and side member pairs remains constant; and means for continuously advancing a bundle of reinforcement through the die.

4,445,958

INSULATIVE STRUCTURE

Jerome F. Jaksha, 5900 Deerhaven Rd., Lincoln, Nebr. 68516

Filed Mar. 1, 1982, Ser. No. 353,849
Int. Cl.³ B31F *3/00*
U.S. Cl. 156—211 **12 Claims**



1. A method of insulating a window comprising the steps of:
cutting a flexible fabric into a substantially rectangular backing sheet having two parallel long sides and two parallel short sides with the two parallel long sides each having a different plurality of fingers of fabric extending therefrom;
cutting strips of solid stiff insulator having a length equal to said short sides and a width equal to the width of certain of said fingers of fabric;
applying an elastomeric cement between one side of each said plurality of solid insulative strips and said fabric;
fastening with said elastomeric cement said strips of solid insulator in parallel relationship to each other with their long sides adjacent to each other onto said flexible fabric with the ends of the insulators terminating at said extending fingers;
applying an adhesive to the fingers and folding them over the insulative strips, whereby each strip is held by elastomeric cement to the main body of the fabric and to the fingers;
the steps of cutting and fastening said strips of solid stiff insulators including the step of cutting insulators of different widths and fastening them in a relationship in which the smaller widths are at one end and the larger widths at the other of the flexible backing;
attaching the end of said flexible backing having the smaller width insulators to a curtain roller, whereby the fabric with insulators attached may be roller upon the curtain roller;
mounting said roller to a window;
pulling said backing strips down to form an insulator adjacent to the window; and
raising said backing and strips to permit light to pass through said window.

4,445,959

PROCESS FOR THE PRODUCTION OF SYNTHETIC RUBBER LATICES, THEIR USE AS A STARTING MATERIAL IN THE PRODUCTION OF PRESSURE-SENSITIVE ADHESIVES AND PRESSURE-SENSITIVE ADHESIVES

Rudolf Hombach; Wilfried Nolte, both of Leverkusen, Fed. Rep. of Germany; Peter J. Russell, Worchester, and Nigel G. Wall, Stourbridge, both of England, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 242,448, Mar. 11, 1981, abandoned. This application May 14, 1982, Ser. No. 378,278
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010429
Int. Cl.³ C09J *3/18*
U.S. Cl. 156—332 **5 Claims**

1. In the process of bonding a surface of one substrate to a surface of another substrate by applying a pressure-sensitive adhesive to at least one of said surfaces and then bringing said surfaces together in contact with each other under pressure, the improvement wherein said adhesive comprises a latex produced by emulsion polymerization of a monomer mixture containing
40 to 80 parts by weight of conjugated diene;
0 to 45 parts by weight of an aromatic vinyl compound;
0 to 30 parts by weight of (meth)acrylonitrile;
5 to 30 parts by weight of an acrylic acid ester containing from 4 to 8 carbon atoms in the alcohol component and
0.5 to 5.0 parts by weight of an α,β-unsaturated monocarboxylic or dicarboxylic acid,
the sum of the monomer components amounting to 100 parts by weight and from 0.5 to 2.0 parts by weight of a chain transfer agent being used per 100 parts by weight of monomer.

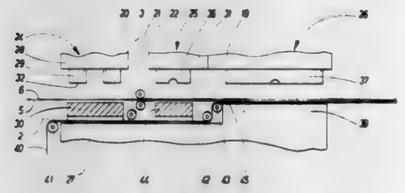
4,445,960

METHOD AND APPARATUS FOR MANUFACTURING OF ARTICLES FROM ONE OR SEVERAL FILM WEBS WELDED TO AND STRIPPED FROM A CONVEYOR BELT

Tage Niklasson, Lysekil, Sweden, assignor to FIAB System AB, Lysekil, Sweden

PCT No. PCT/SE81/00284, 371 Date May 28, 1982, 102(e) Date May 28, 1982, PCT Pub. No. WO82/01158, PCT Pub. Date Apr. 15, 1982
PCT Filed Oct. 1, 1981, Ser. No. 387,858
Claims priority, application Sweden, Oct. 2, 1980, 8006893
Int. Cl.³ B32B *31/20*
U.S. Cl. 156—344 **10 Claims**

1. A method of manufacturing an article from at least one continuous film web comprising: welding said at least one film web during transportation through at least one operating station in an apparatus, said welding including welding at least two film layers against each other along at least one welding seam at a predetermined location, said at least one film web being during at least a portion of said transportation supported by a movable conveyor belt, said welding at said welding seam also welding said at least one film web against the conveyor belt so that the film web adheres to and is releasably connected to the belt and is conveyed via a connection formed at the same location as said at least one welding seam, and after transportation releasing said web from the conveyor belt.

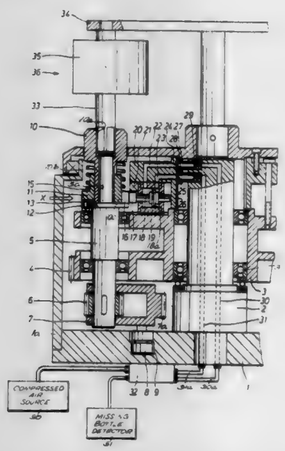


4,445,961

LABELING APPARATUS FOR BOTTLES OR THE LIKE

Hermann Kronseder, Donau, and Reiner Bischkopf, Neutraubling, both of Fed. Rep. of Germany, assignors to Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Apr. 27, 1983, Ser. No. 489,034
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216138
Int. Cl.³ B65C *9/16, 9/42*
U.S. Cl. 156—364 **9 Claims**



9. Apparatus for labeling a series of bottles and the like including a rotating turret, a glue applicator roll, a container for labels and a label transfer member arranged about the turret in that order of rotation, and a plurality of oscillatable curved glue pallets mounted on the turret on a common circle for said pallets to be coated with glue and pick up a label and deposit said label on said transfer member if a bottle is present to receive the label and for said pallets to pass by the label container and the cylinder and glue applicator roll if a bottle is not present, comprising:
means mounting said turret for rotation about a central axis,
means for rotating the turret continuously,
a plurality of drive shafts journaled for oscillating in the turret and in parallelism with said axis, said shafts being arranged in a circular pattern equidistant from said axis,
a cam contour arranged around said axis and over most of its length varying in distance from said axis,
a gear fixed on each of said shafts and a gear segment mounted for swinging on each of said shafts, the segment on one shaft being meshed with the gear on an adjacent shaft,
cam follower means on each gear segment engaged with said cam contour and attached to the segment to oscillate the segments through an angle depending on the contour as the turret rotates to thereby oscillate the shaft having the gear,
a drive member having one planar surface and mounted for free rotation on an end portion of each drive shaft and a pallet shaft on which a said curved pallet is fixed eccentrically and which is coupled to said drive member, said drive member having a recess in its periphery,
a clutch member slidable axially on said drive member and engaged with the drive member for joint rotation,
said drive shaft having a planar surface axially adjacent said planar surface on the drive member and one of said surfaces having recesses and the other having teeth registrable in the teeth for connecting the drive shaft and clutch member in driving relation,
a pneumatic cylinder fixed to said turret and having a piston therein and a piston rod comprising a locking member adapted to be registered in said recess in the periphery of the clutch member, said cylinder having ports communicating respectively, with opposite sides of the piston,
a cylinder rotating coaxially with said turret and having openings that communicate with said ports, respectively, only when the pallet associated with said cylinder is in radially retracted position under control of said cam members,
a control valve for supplying the openings with compresses air,
a missing bottle detector responsive to a missing bottle or bottles by causing said control valve to apply pressure to said piston to engage said locking member with said clutch member to stop its rotation and thereby disengage said teeth from said recesses so the drive shaft will not oscillate said pallet shaft drive member, as the drive shaft oscillates to a limited extent and said pallet remains locked in retracted position,
said detector causing said control valve to apply pressure to said piston in a direction that will disengage said locking member when said pallet returns to the said retracted position on the next revolution if said detector detects the presence of a bottle then.

4,445,962

TIRE BUILDING DRUM

Gregory F. Felder, Stow, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 1, 1982, Ser. No. 394,203
Int. Cl.³ B29H *17/16*
U.S. Cl. 156—398 **4 Claims**



1. A collapsible tire building drum comprising a support shaft having a longitudinal center line,
a plurality of circumferentially spaced arcuate drum segments spaced radially around said shaft,
power operated means mounted on said shaft and connected to said segments for expanding and contracting said drum segments, said drum segments in the expanded condition being cooperative to define a circumferentially extending cylindrical surface with two annular axially spaced edges,
an end forming ring abuttingly attached to the respective edges of said drum segments, each of said end forming rings having an off-set face portion, and each of said end forming rings having a circumferentially extending surface that tapers outwardly and upwardly away from said

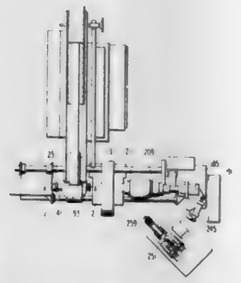
cylindrical surface thence curving downwardly into said off-set face portion.

4,445,963

BELT-TREAD STOCK ASSEMBLY DRUM

Karl W. Klose, Findlay, and Gary H. Benjamin, Ada, both of Ohio, assignors to Cooper Tire & Rubber Company, Findlay, Ohio

Division of Ser. No. 331,263, Dec. 16, 1981, Pat. No. 4,402,782. This application Mar. 29, 1983, Ser. No. 479,932
Int. Cl.³ B29H *17/10*; 156 *414, 417, 418, 420, 126, 427, 428*
U.S. Cl. 156—420 **3 Claims**



1. An expansible and contractable belt-tread stock assembly drum consisting of a rotatable supporting shaft extension having slots formed therein, a plurality of sleeve members coaxially and slidably positioned on said shaft extension, each sleeve having an enlarged stop portion formed thereon, a plurality of spider members slidably disposed on said sleeves, said spiders having a plurality of toggle members connected thereto, annular drum segments carried by said toggle members and having inwardly disposed yoke members, an annular disc member carried by said shaft extension intermediate said sleeve members, said annular disc member having radially extended slots arranged about its outer circumference, block members slidably disposed in said slots and being attached to said yoke members, a plurality of air cylinders secured to said annular disc member and having piston rods connected to said spiders for axial manipulation of said spiders, a threaded rod coaxially disposed within said shaft extension and having a portion thereof protruding from an end of said shaft extension, said rod portion being supported by a bearing assembly carried by said shaft extension, said bearing permitting rotation of said rod while preventing axial displacement of said rod with respect to said shaft extension, said rod having threaded end portions of opposite pitch, nut members positioned on said threaded rod portions, key members rigedly attached to each of said nut members and projecting through said slots in said shaft extension and engaging said sleeve members stop portion to limit the axial movement of said spiders on said sleeves upon the rotation of said threaded rod.

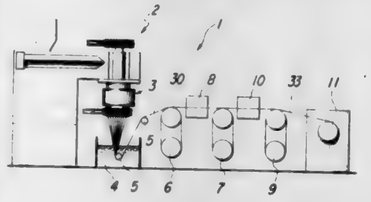
4,445,964

APPARATUS FOR MANUFACTURING A STRING CONSTRUCTION

Masaaki Nakamura, and Hisaaki Ueba, both of Tochigi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi and Kureha Gosen Kabushiki Kaisha, Mibu, both of, Japan

Division of Ser. No. 205,902, Nov. 12, 1980, abandoned. This application Nov. 29, 1982, Ser. No. 444,883
Claims priority, application Japan, Nov. 16, 1979, 54-147652; Oct. 15, 1980, 55-144136
Int. Cl.³ B29D *23/04*
U.S. Cl. 156—500 **10 Claims**

1. An apparatus for manufacturing a string having an extruding device comprising a main body, an outer spinneret rotatably mounted on the main body, an inner spinneret rotatably mounted on the outer spinneret and driving means for rotating at least one of the outer spinneret and the inner spinneret around the axis of the spinnerets as a center, the outer circumferential surface of the inner spinneret and the inner circumferential surface of the outer spinneret slidingly contacting each other and each having respectively formed therein at least one



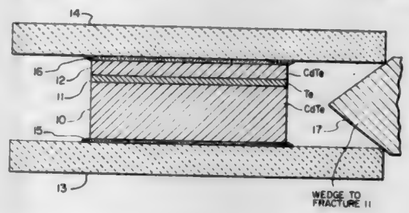
groove for extruding thread-like molten resin streams, the inner spinneret being provided with a through hole and with a recess communicating with the through hole, a single thread-like molten resin stream being extruded from the recess, and the groove and the through hole communicating with a passage for supplying the molten resin thereto.

4,445,965

METHOD FOR MAKING THIN FILM CADMIUM TELLURIDE AND RELATED SEMICONDUCTORS FOR SOLAR CELLS

Arthur G. Milnes, Pittsburgh, Pa., assignor to Carnegie-Mellon University, Pittsburgh, Pa.

Continuation of Ser. No. 215,079, Dec. 1, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 387,961
Int. Cl.³ C30B *19/12*
U.S. Cl. 156—624 **19 Claims**



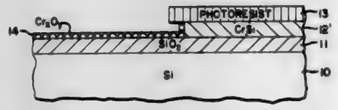
1. A method of producing a desired first thin semiconductor film for use in solar cells comprising:
(a) growing epitaxially a second semiconductor film on a third semiconductor the second semiconductor film having a lower fracture strength than the desired semiconductor film and the second semiconductor having a substantial lattice match with the desired semiconductor;
(b) growing epitaxially the desired semiconductor film on the second semiconductor film so that the second semiconductor film orients the desired semiconductor film;
(c) affixing a rigid substrate to the under surface of the third semiconductor and a rigid superstrate to the upper surface of the desired semiconductor film;
(d) applying stress to the rigid superstrate and rigid substrate so as to fracture the said second semiconductor film; and
(e) detaching the desired semiconductor film.

4,445,966

METHOD OF PLASMA ETCHING OF FILMS CONTAINING CHROMIUM

Robert J. Carlson, Brooklyn Park, and Daniel W. Youngner, Maple Grove, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 20, 1983, Ser. No. 505,624
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **22 Claims**



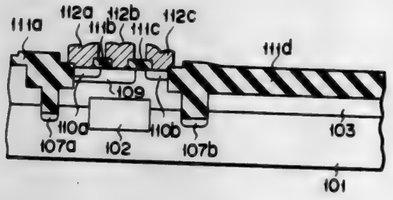
1. A method of etching a film containing chromium and silicon in an etching chamber, said method comprising:
preheating said film;
filling said etching chamber with an etchant gas including fluorine and oxygen while said film is contained therein; and
providing a radio frequency electrical excitation to said etchant gas.

4,445,967

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Shuichi Kameyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1982, Ser. No. 423,092
Claims priority, application Japan, Feb. 3, 1982, 57-14853
Int. Cl.³ H01L *21/306, 21/312*; B44C *1/22*; C03C *15/00*
U.S. Cl. 156—648 **13 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of:
forming a mask material pattern at least on a portion of a semiconductor layer which corresponds to a prospective element formation region;
etching said semiconductor layer, using said mask material pattern, to form a first groove which is wide and shallow;
burying a first isolating material in said first groove to a thickness substantially equal to the depth of said first groove;
etching a portion of said first isolating material film which is located in the vicinity of said prospective element formation region to partially expose a bottom of said first groove, thereby forming a second groove which is narrower than said first groove, a position of said second groove being defined by said mask material pattern;
forming a third groove which is deeper than said first and second grooves etching a bottom of said second groove; and
burying a second isolating material in said third groove.

4,445,968

SURFACE TREATMENT FOR CERAMICS TO ELIMINATE ALPHA PARTICLE EMITTING ELEMENTS

Herman S. Hoffman, Milton, and Robert T. Howard, Jr., Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 14, 1983, Ser. No. 513,580
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—657 **9 Claims**

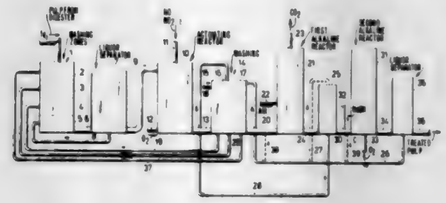
1. A method of reducing alpha particle emissions from a ceramic packaging material, wherein said ceramic material includes particles of metallic oxides bonded together by a siliceous material, and wherein alpha particle emitters are contained in said siliceous material, which method comprises removing from a surface layer of said ceramic material a predetermined amount of said siliceous material and thereby removing said alpha particle emitters contained therein.

4,445,969

PROCESS FOR THE DELIGNIFYING BLEACHING OF CELLULOSE PULP BY ACTIVATING THE PULP WITH NO_2 AND OXYGEN

Hans O. Samuelson, Gothenburg, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Dec. 16, 1982, Ser. No. 449,889
Claims priority, application Sweden, Dec. 30, 1981, 8107858
Int. Cl.³ D21C *1/04, 3/16, 9/10*
U.S. Cl. 162—40 **20 Claims**



1. A process for delignifying bleaching lignin-containing cellulose pulp which comprises:
(1) activating cellulose pulp by reacting the pulp with a gas comprising NO_2 and oxygen in the presence of water at a temperature within the range from about 30° to about 120° C. while so controlling the amount of nitrogen oxides, the pulp consistency, the temperature, and the residence time so that the reduction in intrinsic viscosity of the pulp at the end of this stage is limited to within the range from 2 to 35% less than at the beginning of the stage;
(2) washing the activated pulp with water or an aqueous solution;
(3) treating the activated washed pulp with an aqueous alkaline solution comprising an alkaline carbonate of which a major proportion is in the form of HCO_3^- at a temperature within the range from about 90° to about 170° C., in the presence of oxygen gas at an average oxygen partial pressure within the range from 0.001 to about 0.2 MPa, until the lignin content of the pulp is so reduced that the Kappa number of the pulp is within the range from about 10 to about 60% of the Kappa number of the pulp entering the activating stage (1), and releasing carbon dioxide gas liberated;
(4) treating the activated washed pulp from step (3) with an aqueous alkaline solution comprising an alkaline carbonate of which a major proportion is in the form of CO_3^{--} at a temperature within the range from about 90° to about 170° C., in the presence of oxygen gas at an average oxygen partial pressure within the range from about 0.1 to about 3 MPa;
(5) withdrawing from stage (4) alkaline liquor comprising HCO_3^- and recycling said liquor to stage (3) as a source of HCO_3^-.

4,445,970

HIGH MINERAL COMPOSITE FINE PAPER

Richard L. Post, Ridgway, and Robert G. Fort, St. Marys, both of Pa., assignors to Penntech Papers, Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 199,165, Oct. 22, 1980, abandoned. This application Jun. 1, 1981, Ser. No. 267,941

Int. Cl.³ D21F *11/00*

U.S. Cl. 162—135 28 Claims

1. A method of manufacturing fine paper containing mineral filler at a high speed comprising:

preparing an acidic paper furnish including paper-making fibers; an amount sufficient of mineral filler to retain internally in the fine paper web formed of 30–70% mineral filler, and wherein said mineral filler is system compatible; at least one retention aid agent which comprises a water soluble cationic polymer; and 3–7%, based on the dry furnish, of a cationic latex or amphoteric latex which is cationic at acid pH, said cationic or amphoteric latex being selected from latices which provide good mineral filler retention without substantial reduction in strength, which have a charge opposite to and less than the sum of the charges of the other ingredients of said furnish, and which precipitate on the fibers and fillers to exhaustion or near exhaustion;

forming a wet paper web from said furnish such as to produce fine paper of thickness 1.5–15 mils and weight 30–150 lbs/3300 ft² containing internally greater than 30% mineral filler up to 70% mineral filler, and having tensile and Z-directional strength sufficient to withstand high-speed offset or gravure printing;

drying said web; and surface treating the dried web to improve the printability thereof.

2. A method according to claim 1 wherein said wet paper web is formed on a Fourdrinier paper machine.

3. A method according to claim 1 wherein said furnish also comprises alum.

4,445,971

METHODS OF FOAM INHIBITION OR DEPRESSION

Susan C. Lappi, Lakeville, and James E. Maloney, Eagan, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Continuation of Ser. No. 162,315, Jun. 23, 1980, abandoned. This application May 19, 1982, Ser. No. 379,582

Int. Cl.³ D21H *3/02*

U.S. Cl. 162—158 28 Claims

1. A process for inhibiting foam in an aqueous liquid having a tendency to do so, the process comprising the step of adding to the liquid a defoamer in an amount effective to reduce or eliminate foam, the defoamer consisting essentially of polyether chain consisting essentially of polyethylene oxide block or chain comprising an average of about 9.5 to 12.5 moles of ethylene oxide, the polyethylene oxide chain having attached on one end thereof poly 1,2-propylene oxide block or chain comprising 20 to 50 moles 1,2-propylene oxide, the propylene oxide chain being hydroxyl-terminated, the remaining end of the polyethylene oxide chain being attached to an alkylphenol hydrophobe, wherein the ratio of moles of ethylene oxide to moles of 1,2-propylene oxide is no greater than about 0.42:1.

4,445,972

PROCESS FOR THE CONTINUOUS MANUFACTURE IN AN AQUEOUS MEDIUM OF SHEETS MADE OF FIBROUS MATERIAL AND CONTAINING LATEX OR SIMILAR AND/OR PHENOPLASTS OR AMINOPLASTS, SHEETS OBTAINED BY SAID PROCESS AND THEIR POSSIBLE RE-USE

René Bartelloni, Lisle en Rigault, France, assignor to Papeteries de Jean d'Heurs, Bar le Duc, France

Filed Feb. 16, 1982, Ser. No. 349,366

Claims priority, application France, May 12, 1981, 81 09400; Jun. 8, 1982, 82 00224

Int. Cl.³ D21H *3/32*

U.S. Cl. 162—164.1 12 Claims

1. A method for the continuous manufacture of fibrous paper-sheet material from an aqueous pulp containing latex, comprising:

(a) providing an aqueous suspension of fibers having an anionic charge,

(b) providing an aqueous suspension of finely divided latex particles, having an anionic charge stabilized at a pH between 4 and about 5, the amount of latex in the dry state being between 3 and 75% with respect to the total weight of fibrous material, the diameter of the latex particles being between 0.01 and 0.5 microns;

(c) adding to the aqueous suspension of fibers prepared in step (a), a polyelectrolyte having a molecular weight greater than 15,000, and a cationic charge, said polyelectrolyte being used in the form of a solution containing between 0.2 and 10% by weight of polyel ctrolyte and the amount of polyelectrolyte added to the aqueous suspension of fibers being between 0.1 and 3.5% with respect to the total dry weight of the latex, to be added later,

(d) avoiding the presence in the aqueous medium of substantial amounts of ions which will cause cleavage of bonds created by the polyelectrolyte between the latex particles and the fibers, said ions including chloride ions, sulfate ions and sulfamate ions,

(e) adjusting the pH of the obtained mixture to a value between 4 and 5.5,

(f) adding to the obtained mixture the aqueous suspension of latex prepared in step (b) thereby depositing the latex particles on the polyelectrolyte coated fibers while maintaining the particle size of the latex at approximately 0.01 to 0.5 microns, and

(g) forming the sheet from the aqueous mixture formed in step (f).

4,445,973

METHOD AND DEVICE FOR THE MANUFACTURE OF MECHANICAL PULP

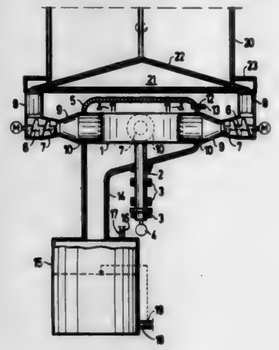
Hjalmar S. I. Bystedt, Enebyberg, Sweden, assignor to Sunds Defibrator AB, Stockholm, Sweden

Division of Ser. No. 193,708, Oct. 9, 1980, Pat. No. 4,406,734. This application Sep. 29, 1982, Ser. No. 428,082

Int. Cl.³ D21B *1/14*

U.S. Cl. 162—261 2 Claims

1. An apparatus for producing mechanical pulp in which chips of lignocellulosic material are ground in the presence of moisture while being forcibly retained against the circumferential surface of a grinding disc which rotates about an axis perpendicular to the opposite end faces of said grinding disc within means defining a pressurized housing having an inlet for the chips, steam inlet means for pressurizing said housing and outlet means for discharging the ground material from said housing, said apparatus being characterized by passage means for advancing said chips into continuous forced contact with one or more grinding areas located on said circumferential surface, said passage means comprising a portion tapering in the direction of advancement of the chips and means for advancing and compressing said chips in said tapering portion into a substantially steam-tight plug while being advanced therein, an outwardly flared portion for receiving said plug and allowing it to expand therein while being further advanced, and a cylindrical portion for receiving said expanded



plug and advancing the resultant cylindrical plug into contact with said grinding areas.

4,445,974

APPARATUS FOR FORMING A MULTILAYER JET OF PAPER MAKING STOCK

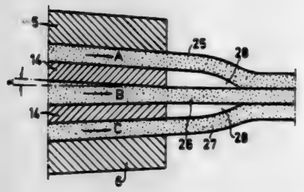
Erik G. Stenberg, Karlstad, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Continuation-in-part of Ser. No. 210,781, Nov. 26, 1980, abandoned, which is a continuation of Ser. No. 31,409, Apr. 19, 1979, abandoned. This application May 22, 1981, Ser. No. 266,174

Claims priority, application Sweden, Apr. 25, 1978, 7804729

Int. Cl.³ D21F *1/06*

U.S. Cl. 162—300 28 Claims



1. A multilayer headbox for delivering a stratified sheet-like jet to a forming surface of a paper making machine comprising spaced apart headbox walls defining an elongated, converging channel terminating in an exit opening, at least one partition member anchored in the headbox at its upstream end with its downstream end free and extending at least to the vicinity of said opening, said partition member extending from side to side in said channel and dividing the headbox into a plurality of shallow, converging channels extending to said opening for conveying a plurality of paper making stocks thereto and discharging a plurality of sheet-like jets of paper making stocks therefrom, in which the improvement comprises at least one partition member having a downstream end formed so that the jets of paper making stock are discharged from said opening in stacked, spaced apart relation, with a gap therebetween, together with means for maintaining a wedge-shaped body of gaseous fluid in the gap between said discharged jets of paper making stock at the downstream end of said partition member to keep the jets separated for a predetermined distance beyond said opening in the direction of said forming surface.

4,445,975

HEADBOX FOR A PAPERMAKING MACHINE

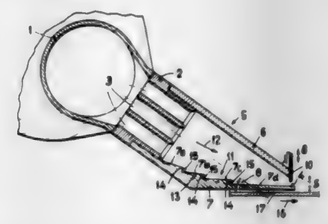
Rüdiger Kurtz, Immenstaad, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,676

Claims priority, application Switzerland, Nov. 26, 1980, 8744/80

Int. Cl.³ D21F *1/02*

U.S. Cl. 162—336 7 Claims



1. A headbox for a papermaking machine comprising:

a nozzle channel through which flows a stock suspension;

said nozzle channel having an outlet slice and converging in the direction of said outlet slice;

said nozzle channel being bounded by two lip members;

said two lip members extending in a primary flow direction of the stock suspension and each terminating substantially at the region of said outlet slice;

one of said lip members having a plurality of step portions at an inner surface thereof which extends substantially transversely with respect to said primary flow direction of the stock suspension;

each said step portion comprising an essentially flat partial surface of the inner surface of said lip member and an end surface disposed substantially transversely with respect to the primary flow direction of the stock suspension;

each said flat partial surface extending substantially in a lengthwise direction essentially in the primary flow direction of the stock suspension;

each said step portion being arranged at a portion of the inner surface of said lip member which is substantially concave with respect to the stock suspension;

said step portions producing turbulence at a boundary flow region of the stock suspension flowing along the step portions and at least partial detachment thereof at the region of said concave portion in order to substantially annihilate secondary flow of the stock suspension at the region of said concave portion caused by centrifugal forces effective at the stock suspension, in order to thus essentially preclude the formation of turbulence threads and thus streaking of a formed paper web;

said concave portion defining part of a flow path of the stock suspension which extends in a substantially curved configuration with respect to the primary flow direction of the stock suspension; and

a corner of said step portion being located essentially at the region of the flow path of the stock suspension which extends in said curved configuration with respect to the primary flow direction of the stock suspension.

4,445,976

METHOD OF ENTRAINED FLOW DRYING

Christopher LaDelfa, Calabasas Park, and John F. Nutter, Encino, both of Calif., assignors to Tosco Corporation, Santa Monica, Calif.

Filed Oct. 13, 1981, Ser. No. 310,650

Int. Cl.³ C10B *57/08, 57/10*

U.S. Cl. 201—41 17 Claims

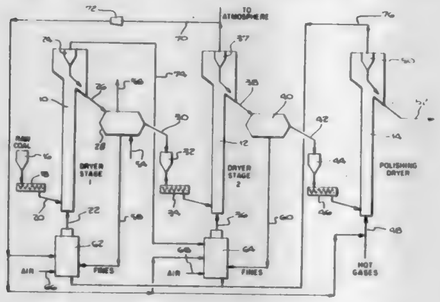
1. In a process for staged drying of moist particulate carbonaceous material wherein said carbonaceous material is en-

trained in a plurality of serially connected hot gas streams having temperatures above the devolatilization temperature of said carbonaceous material, said carbonaceous material while in said gas streams forming a solids blend of smaller relatively hot and dry particles and larger relatively cool and moist particles, wherein the improvement comprises:

entraining said solids blend within each said hot gas stream for a time sufficient to heat said smaller particles to a temperature below the devolatilization temperature of said carbonaceous material;

separating the solids blend from said gas stream and any moisture contained therein;

transferring the solids blend to a contactor zone prior to transfer to the next hot serially connected gas stream; and



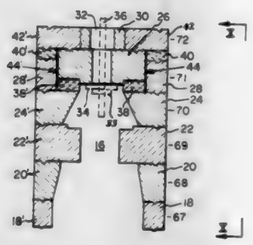
contacting said relatively hot smaller particles with said relatively cool larger particles for a sufficient amount of time to allow heat transfer from said smaller particles to said larger particles whereby said smaller particles are partially cooled and said larger particles are partially heated such that said smaller and larger particles obtain a final temperature within the contactor zone which is below the temperature of the smaller particles at the time the smaller particles enter the contactor zone to thereby prevent overheating and devolatilization of said smaller particles when the solids blend is passed to said next serially connected hot gas steam.

4,445,977

COKE OVEN HAVING AN OFFSET EXPANSION JOINT AND METHOD OF INSTALLATION THEREOF

Lee K. Husher, Bethel Park, Pa., assignor to Furnco Construction Corporation, Carnegie, Pa.

Filed Feb. 28, 1983, Ser. No. 470,610
Int. Cl.³ C10B *29/02, 29/04, 29/06*
U.S. Cl. 202—223 **5 Claims**



1. In a coke oven having brickwork in the horizontal flue area of a horizontal flue chamber which is subject to thermal expansion wherein the bricks forming the brickwork are arranged in tiers and the top of the flue chamber is defined by a fixed tier of brick at a fixed elevation relative to the roof of the oven, the improvement in an expansion joint for preventing the leakage of gas from the oven chamber into the flue chamber comprising:

A. brick in a lower tier of brickwork below and spaced from said fixed tier brick and forming an inner wall of the flue chamber and an outer wall of a coke oven chamber;

B. a first segment of ceramic fiber positioned on said lower tier brick and within the space between the fixed tier brick and the lower tier brick, the inner edge of said segment being generally aligned with the inner edge of the lower tier brick and the outer edge of said segment being generally aligned with the outer edge of said fixed tier brick forming the top of the flue chamber;

C. an outer brick in said fixed tier having an outer edge in alignment with and forming a portion of the wall of the coke oven chamber and having an inner edge in abutment with the outer edge of said first segment and the outer edge of said fixed tier brick forming the top of the flue chamber in said fixed tier;

D. a second segment of ceramic fiber positioned on said outer brick in said fixed tier, the inner edge of said second segment in abutment with the outer edge of said fixed tier brick and the outer edge of said second segment being aligned with and forming a portion of the wall of the coke oven chamber;

E. brick in an upper tier above said fixed tier brick positioned on said fixed tier brick and said second segment, the outer edge of said upper tier brick forming a portion of the coke oven wall;

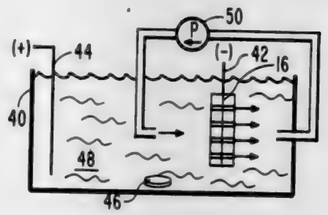
F. said first and second segments being offset from one another laterally and a common barrier composed of silica mortar extending along the outer edge of said first segment, the inner edge of said second segment, the outer edge of said fixed tier brick and the inner edge of said outer brick in said fixed tier to form a slip joint and said mortar being characterized by its ability, upon exposure to a temperature of about 2200° F. for sufficient time, to set up to prevent leakage of gas through said brickwork in the area of said expansion joint.

4,445,978

METHOD FOR FABRICATING VIA CONNECTORS THROUGH SEMICONDUCTOR WAFERS

James C. Whartenby, Trenton; Richard Brown, Berkeley Heights; Srinivas T. Rao, Kendall Park, all of N.J., and Raymond J. Menna, Jenkintown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1983, Ser. No. 473,551
Int. Cl.³ C25D *5/02, 7/04*
U.S. Cl. 204—15 **10 Claims**



1. A method for fabricating a via connector in a semiconductor wafer from a first surface of the wafer and extending to a second surface of the wafer which is opposite the first surface said method comprising the ordered steps of:

(a) forming an adherent metallic layer on the first surface of the wafer

(b) laser drilling an aperture through said metal layer and then through the wafer from the first surface to the second surface

(c) applying a layer of a photoresist over said metal layer

(d) exposing and developing the photoresist provide a passage through the layer of photoresist which is in axial alignment with the aperture.

(e) electrically connecting the metal layer to the cathode of an electroforming apparatus

(f) immersing the wafer in an electrolyte held by the electroforming apparatus; and

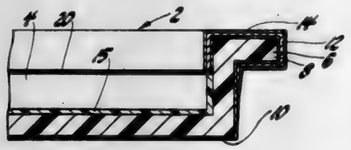
(g) electroforming a metallic via connector within said aperture extending from the first surface to the second surface of said wafer.

4,445,979

METHOD OF FORMING COMPOSITE SURFACE ON A DIELECTRIC SUBSTRATE

Joseph P. Lutfy, Highland; Thaddeus J. Grabowski, Taylor, and Robert G. Arnold, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1983, Ser. No. 520,477
Int. Cl.³ C25D *5/02, 5/56*
U.S. Cl. 204—15 **6 Claims**



1. A process for providing a dielectric substrate with a composite surface including a metal plated portion adjacent an unplated portion comprising the steps of:

(a) depositing a substantially continuous metallic film atop said substrate;

(b) removing a narrow band of said film so as to expose a correspondingly narrow strip of said substrate, said strip defining a first zone of said film which is substantially coextensive with said plated portion and serving to electrically isolate said first zone from a second zone of said film which is substantially coextensive with said unplated portion;

(c) immersing said zones in a metal electroplating bath which is capable of dissolving said film;

(d) cathodizing said first zone in said bath in such manner as to commence electrolytic deposition of at least part of said metal plated portion thereon before any significant dissolution of said first zone occurs; and

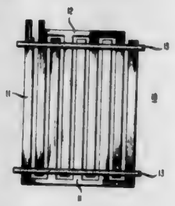
(e) concurrently with said cathodizing, dissolving said second zone in said bath to expose said substrate on said surface.

4,445,980

COPPER ELECTROPLATING PROCEDURE

Craig G. Smith, North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 25, 1983, Ser. No. 526,480
Int. Cl.³ C25D *5/02, 3/38, 17/00*
U.S. Cl. 204—15 **11 Claims**



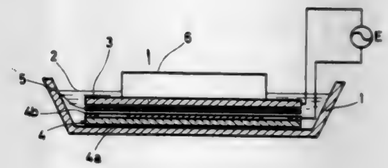
1. A process for electroplating copper using periodic reversing of the electroplating current comprising the step of passing current through a cathode, electroplating solution and nonconsumable dual anode system using a source of current which is periodically reversed in direction from a plating mode to a deplating mode characterized in that the nonconsumable dual anode system comprises metal-oxide anode which is electrically connected to the source of current during the plating mode and chemically inert anode which is connected to the source of current during the deplating mode.

4,445,981

METHOD OF FORMING COLORED PATTERN ON THE SURFACE OF ALUMINUM OR ALUMINUM ALLOY

Tetsuro Ishii; Tadanori Oyama; Masashi Yamashita; Kazuyuki Kzome; Tsutomu Ikeda, and Satoru Fujioka, all of Kagawa, Japan, assignors to Nihon Koki Kabushiki Kaisha, Kagawa, Japan

Filed Nov. 30, 1982, Ser. No. 445,633
Claims priority, application Japan, May 20, 1982, 57-87028
Int. Cl.³ C25D *5/02, 5/34*
U.S. Cl. 204—18.1 **9 Claims**



1. A method of forming a colored pattern on the surface of aluminum or aluminum alloy comprising the steps of: subjecting said surface to a first electrolytic treatment to form a background of anodic oxide film; placing a pattern-forming electrode against said surface in adjacent but spaced apart relation, and subjecting said surface to a second electrolytic treatment to electrochemically impress said pattern onto said background by applying a voltage between said surface and said pattern-forming electrode in an electrolytic bath containing a metallic salt, said bath containing a metallic salt being capable of electrochemically depositing color-forming particles such that said color-forming particles are deposited by said second electrolytic treatment; removing said pattern-forming electrode from said surface; and subjecting said surface having said background and said pattern to a third electrolytic treatment in an electrolytic bath containing a metallic salt also capable of electrochemically depositing colorforming particles thereby developing differences in color tones and intensities between said background and said pattern.

4,445,982

PROCESS FOR PRODUCING A DESIGN COMPOSED OF TWO DIFFERENT MATERIALS ON THE SURFACE OF AN OBJECT

Michel E. Royer, La Balme de Sillingy, France, assignor to S. T. Dupont, Paris, France

Filed Feb. 4, 1983, Ser. No. 463,770
Claims priority, application France, Feb. 8, 1982, 82 01992
Int. Cl.³ C25O *5/02*
U.S. Cl. 204—18.1 **6 Claims**

1. A process for producing on an object made of a base material a decoration including at least two different materials, said process including at least one cycle comprising the steps of:

applying a removable masking material to at least one region of the outer surface of said object;

simultaneously machining said masking material and said underlying base material over at least a portion of said region;

coating the machined portion of said underlying base mate-

rial with a second material differing from said base material; and

substantially completely removing said masking material.

4,445,983

SEALING ANODICALLY PRODUCED OXIDE LAYERS, ON ALUMINUM

Hans J. Gohausen, Langenfeld; Winfried Kirchhoff, Duesseldorf; Jurgen Lindener, Monheim, and Harald Wennemann, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

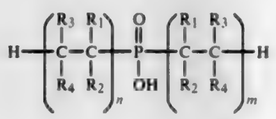
Filed Aug. 30, 1983, Ser. No. 527,906

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233411

Int. Cl.³ C25D *11/18*

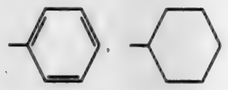
U.S. Cl. 204—35 N **15 Claims**

1. A process for sealing an anodically produced oxide layer on aluminum or an aluminum alloy comprising treating said anodically produced oxide layer with an aqueous solution at a temperature between about 90° C. and the boiling point thereof, wherein said aqueous solution has a pH of from about 4 to about 8 and contains from about 0.0005 to about 0.5 g/l of at least one phosphinocarboxylic acid or a water-soluble salt thereof in which the phosphinocarboxylic acid has the formula:



(I)

wherein n and m can be the same or different and are integers of from 0 to 8, provided that n+m=1 to 8; R_1 is hydrogen or one of the groups $-CH_3$, $-C_2H_5$, $-C_3H_7$, $-C_4H_9$,



$-COOH$, $-CH_2-COOH$, $-CH_2-CH_2-COOH$, or $-CH(COOH)-CH_2-COOH$, and R_2, R_3 and R_4 can be the same or different and are each hydrogen or one of the groups $-CH_3$, $-C_2H_5$, $-COOH$, $-CH_2-COOH$, or $-CH_2-CH_2-COOH$; and wherein at least one of the groups R_1 to R_4 is a $-COOH$ group or is a group that contains a $-COOH$ group.

4,445,984

PARASITIC ELECTRODIALYSIS RECOVERY OF DISSOLVED CHEMICALS FROM DILUTE SOLUTIONS DIRECTLY INTO A PLATING BATH

Richard P. Tison, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 21, 1982, Ser. No. 390,231

Int. Cl.³ C25D *3/12*; C02F *1/46*; B01D *13/02*

U.S. Cl. 204—49 **3 Claims**

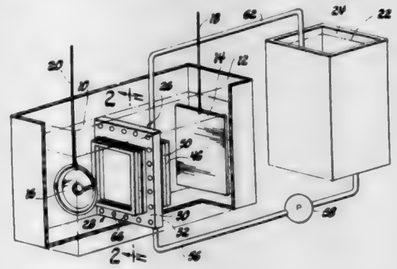
3. A method for electroplating a metal onto a workpiece temporarily immersed in an aqueous electroplating bath and concurrently recovering dissolved ionic electroplating chemicals from contaminated rinse water used to wash residual electroplating solution from prior plated workpieces, said electroplating bath having dissolved therein a platable metal cation and a related anion, said method comprising

immersing a workpiece into the electroplating bath spaced apart from an immersed anode,

immersing an electrodialysis recovery unit within the bath between the anode and the workpiece, said unit being defined by a first cathode-facing membrane selectively permeable to cations including said platable metal cation, but not to anions, and a second anode-facing membrane selectively permeable to anions, but not cations, said first and second membranes having outer bath-contacting surfaces, said unit being immersed such that a continuous path is formed between the anode and the cathode about the unit,

flowing contaminated rinse water into the unit so as to contact the inner surfaces of the membranes,

cathodically biasing the immersed workpiece with respect to the anode to electroplate the metal from the bath onto the workpiece, said biasing resulting in an electrical current



conducted through the bath such that a relatively minor portion is conducted through the unit and causes cations and anions in the rinse water to migrate through the cation-permeable and anion-permeable membranes, respectively, and to be recovered into the bath, said current through the unit combining with current conducted through the bath about the unit to produce a dense, high quality electroplate on the workpiece,

removing the electroplated workpiece from the bath, and

withdrawing purified water from the electrodialysis recovery unit.

4,445,985

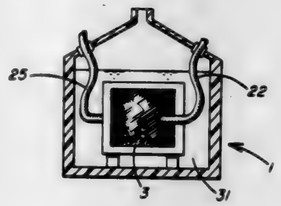
ELECTRO ORGANIC METHOD AND APPARATUS FOR CARRYING OUT SAME

Malcolm Korach, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1983, Ser. No. 478,930

Int. Cl.³ C25B *3/02, 3/04*

U.S. Cl. 204—72 **2 Claims**



1. In a method of reacting an organic reactant at an electrode of an anode-cathode electrode pair to form an organic product, comprising contacting one member of the electrode pair with the organic reactant and externally imposing an electrical potential across the electrode pair, the improvement wherein both electrodes of said electrode pair are in contact with gelled solid polymer electrolyte means therebetween, said organic reactant is gaseous, and water vapor is fed with the gaseous reactant whereby to maintain water of hydration within the solid polymer electrolyte.

4,445,986

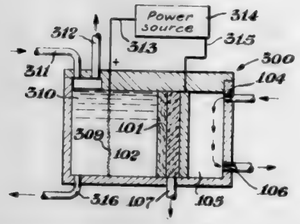
ELECTROCHEMICAL CELL HAVING A SEPARATOR-GAS ELECTRODE COMBINATION

James A. McIntyre, and Robert F. Phillips, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 3, 1982, Ser. No. 404,688

Int. Cl.³ C25B *1/16, 1/26*

U.S. Cl. 204—98 **12 Claims**



7. An electrochemical cell comprising:

(a) a first compartment adapted to contain a liquid electrolyte;

(b) a first electrode positioned in the first compartment;

(c) a separator adapted to permit the flow of fluids or ions therethrough and having at least a first and a second face wherein the second face of the separator is at least partially contiguous to the first compartment;

(d) a hydraulically permeable gas electrode adapted to permit a liquid and a gas to enter and exit the gas electrode and having at least a first and a second face;

(e) a self-draining member having a fluid outlet and at least two faces, at least a portion of a first face of the self-draining member being contiguous to at least a portion of a first face of the separator, and at least a portion of a second face of the self-draining member being contiguous to at least a portion of the first face of the gas electrode; said self-draining member having a plurality of interconnected passageways in fluid-transferring communication with the separator, the gas electrode and the fluid outlet and providing the major conduit therebetween;

(f) a gas chamber contiguous to at least a portion of the second face of the gas electrode.

4,445,987

ELECTROLYTIC PURIFICATION AND RECONCENTRATION OF WASH AND RINSE CAUSTIC SOLUTIONS RECOVERED FROM THE REGENERATION OF ION EXCHANGE RESINS

Enrico Benedetto, Domodossola, Italy, assignor to Oronzio de Nora S.A., Lugano, Switzerland

Filed Mar. 30, 1983, Ser. No. 480,618

Int. Cl.³ C25B *1/16, 1/00*; C02F *1/46*

U.S. Cl. 204—98 **11 Claims**

1. An electrolytic process for the purification of contaminated caustic solutions which comprises feeding the contaminated caustic solution to the anodic composition of an electrolysis cell separated from the cathodic compartment by a cation exchange membrane; feeding demineralized water to said cathodic compartment; recovering purified caustic solution from said cathodic compartment; conducting the electrolysis at a current density between 1500 and 3000 ampere per square meter until the caustic concentration in the anolyte is reduced to a value not lower than 10 grams per liter; and conducting the electrolysis at a current density between 1000 and 500 ampere per square meter to further reduce the caustic concentration in the anolyte to below 2 grams per liter while maintaining the caustic concentration constant in the catholyte by regulating the rate of feeding of the demineralized water to said cathode compartment.

4,445,988

MICROGRAPHIC DETECTION OF PLASTIC DEFORMATION IN NICKEL BASE ALLOYS

Arthur F. Steeves, Schenectady, and Albert E. Bibb, Clifton Park, both of N.Y., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 29, 1980, Ser. No. 426,448

Int. Cl.³ C25D *5/38*; G01N *27/61*

U.S. Cl. 204—129.2 **6 Claims**

1. A method of detecting low level plastic deformation in a metal alloy article consisting essentially of:

(a) polishing the surface of said article to obtain a substantially flow free surface;

(b) electrolytically etching said surface with nital at a current density of less than 0.1 amp/cm²; and

(c) microscopically examining said surface by interference contrast illumination to determine the presence of alternating striations, the presence of said striation indicating plastic deformation in said article.

4,445,989

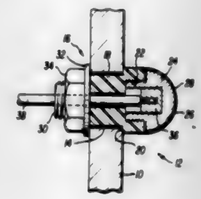
CERAMIC ANODES FOR CORROSION PROTECTION

Ashok Kumar, Champaign; Ellen G. Segan; John M. Bukowski, both of Urbana, and Jon L. Helgeland, Champaign, all of Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 11, 1982, Ser. No. 407,189

Int. Cl.³ C23F *13/00*

U.S. Cl. 204—147 **7 Claims**



1. An anode useful in corrosion protection of a metal structure wherein an electric current is passed between the anode and the metal structure, said anode comprising a metallic substrate having an applied layer thereon from which layer the current will flow from said anode, said layer being formed from lithium ferrite, and said layer having metallic electronic conductivity and a thickness of at least about 8 mils.

4,445,990

ELECTROLYTIC REACTOR FOR CLEANING WASTEWATER

Bang M. Kim, and Joseph L. Weininger, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,252

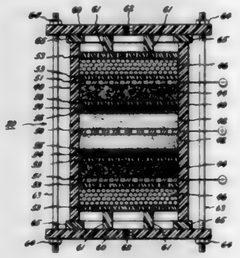
Int. Cl.³ C02F *1/46*

U.S. Cl. 204—151 **5 Claims**

1. A method for treating metal plating operation waste water, especially to remove metal and to break down toxic organics, chelating agents and cyanide, said method comprising the step of:

passing the waste water through a cathode and an anode of an electrochemical cell, from cathode to anode, said cathode comprising a porous, flow-through felt mass of conductive carbon fibers and said anode being a flow-through

anode comprising material selected from the group consisting of porous carbon, carbon fibers, and metal oxides,



said anode and cathode being separated by a porous nonconductive spacer.

4,445,991

ENHANCED WETTABILITY OF ORGANIC SURFACES

Harold A. Arbit, Highland Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 10, 1982, Ser. No. 440,651

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.³ C07C *3/24*

U.S. Cl. 204—168 **4 Claims**

1. A method for enhancing the wettability of an organic surface which is at least comparatively hydrophobic comprising subjecting said surface to a plasma surface treatment using a gaseous medium selected from the group consisting of oxygen, argon, nitrous oxide, air and mixtures thereof said plasma treatment including converting said gaseous medium into ionized gas composed of electrons and positive ions in such relative numbers that the gaseous medium is essentially neutral, at a temperature between ambient or standard room temperature and below the decomposition temperature or softening temperature of said organic surface.

4,445,992

PLATING APPARATUS

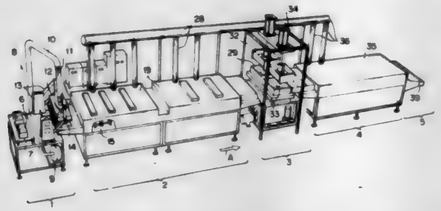
Kenji Yamamoto, Tokyo, Japan, assignor to Electroplating Engineers of Japan, Limited, Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 415,872

Claims priority, application Japan, Sep. 10, 1981, 56-141649

Int. Cl.³ C25D *17/06, 17/28*

U.S. Cl. 204—203 **8 Claims**



1. An apparatus for electroplating strip-form objects, comprising:

a loading apparatus for feeding a series of rows of the objects, in succession, in a longitudinal feeding direction, each row of the objects extending transversely to said longitudinal feeding direction and comprising a plurality of the objects arranged in side-by-side, laterally aligned relationship;

a pre-treatment apparatus for receiving said rows of the objects in succession from said loading apparatus and subjecting same to pre-treatments effective to prepare the objects for electroplating, said pre-treatment apparatus comprising a first group of aligning rollers for longitudinally aligning each object in a row with the corresponding object in the preceding row whereby the objects are arranged in rank and file order, said pre-treatment apparatus also comprising a first group of feed rollers for receiving the objects from said aligning rollers and moving the objects in rank and file order in said longitudinal feeding direction through said pre-treatment apparatus;

a plating apparatus for receiving the objects discharged from said pre-treatment apparatus one row at a time, said plating apparatus including a partial plating device for injecting electroplating liquid against a portion of the surface of each of the objects to effect electroplating of parts of said surfaces of the objects;

an after-treatment apparatus for receiving said rows of the objects in succession from said plating apparatus and subjecting same to after-treatments for cleaning the objects, said after-treatment apparatus comprising a second group of aligning rollers for longitudinally aligning each object in a row with the corresponding object in the preceding row whereby the objects are again arranged in rank and file order, said after-treatment apparatus also comprising a second group of feed rollers for receiving the objects from the second group of aligning rollers and moving the objects in rank and file order in said longitudinal feeding direction through said after-treatment apparatus;

and an unloading apparatus for unloading the objects from said after-treatment apparatus.

4,445,993

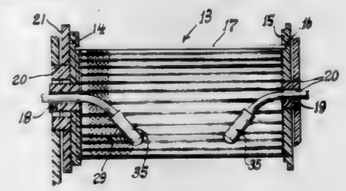
LASER PERFORATED PLATING BARREL AND METHOD OF CONSTRUCTING THE SAME

P. David Stutz, Burr Ridge, and George J. Kuchta, Stickney, both of Ill., ass'gnors to Stutz Company, Chicago, Ill.

Filed Oct. 29, 1981, Ser. No. 316,081

Int. Cl.³ C25D *17/20*

U.S. Cl. 204—213 **2 Claims**



1. An electro-plating barrel comprising:

(a) a thin continuous corrugated wall formed from a chemically inert high-tensile strength plastic having a thickness of less than 0.1875 of an inch,

(b) a multiplicity of laser-formed perforations formed therein with said perforations arranged in longitudinal lines parallel to said corrugations with each line horizontally staggered with respect to each other,

(c) each laser-formed perforation includes a slot-like oblong shaped opening formed on the exterior wall surface of said corrugations extending longitudinally thereof with the walls of said openings tapered inwardly to form a reduced oblong oppening on the interior wall surface of said corrugations resulting in a perforated area of not less than 15% and no greater than 30% of the total interior wall surface of the barrel.

4,445,994

ELECTROLYZER FOR ALKALINE WATER ELECTROLYSIS

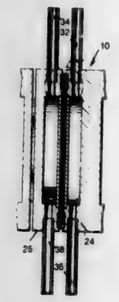
Jiri Divisek, and Heinz Schmitz, both of Julich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich GmbH, Fed. Rep. of Germany

Filed Feb. 23, 1982, Ser. No. 351,408

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108255

Int. Cl.³ C25B *9/00, 11/03, 11/06, 13/04*

U.S. Cl. 204—258 **11 Claims**



1. An electrolysis cell component unit for alkaline water electrolysis to generate hydrogen and oxygen gases comprising:

(a) A cathode portion and an anode portion, comprising a pair of electrically conductive separator plates,

(b) insulating means, said insulating means being located between said separator plates to prevent direct electrical contact therebetween,

(c) a porous diaphragm of electrically nonconductive material,

(d) a first metallic mesh and a second metallic mesh, said first metallic mesh being placed upon and in intimate contact with one side of said diaphragm and said second mesh being similarly placed upon the other side of said diaphragm, the interstices of both said meshes being filled with porous activated nickel,

(e) a first and a second lattice of rigid electrically conductive support elements said first lattice placed upon and over its whole surface being in repeating welded electro-conductive connection with said first metallic mesh, and said second lattice being similarly welded to and in electrically conductive relation with said second mesh,

said cathode portion comprising one of said separator plates being in physical contact with a portion of said first mesh and a portion of said first lattice, said physical contact providing electrically conductive connection between the components of said cathode portion, said second lattice, said second mesh and said other separator plate comprising the anode portion being similarly in physical and electrically conductive contact with each other.

4,445,995

CATHODE HEAD HAVING IMPROVED SEAL MEANS

Donald J. Wierschke, Brownsburg, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,560

Int. Cl.³ C25D *1/10;* **C25B** *17/08*

U.S. Cl. 204—281 **6 Claims**

1. In a cathode head for holding a flat circular matrix of a first diameter during electroforming of a replica of a second, smaller diameter on the surface of the matrix, wherein said cathode head is comprised of:

(a) a disc shaped member having an outer diameter at least as large as the first diameter, a flat face for holding said matrix to be replicated and a male thread defined on the outer edge thereof;

(b) a ring member having an integral outer cylindrical portion and a radially inwardly extending portion, said outer cylindrical portion having a female thread which mates with the male threads of the disc shaped member and the radially inwardly extending portion including seal holding means; and

(c) a circumferential seal positioned in said seal holding means

whereby when the ring member is threadably engaged with the outer edge of the disc member and screwed towards the disc member, the circumferential seal engages the outer flat surface of said matrix held on the flat face of the disc shaped member; said improvement comprising: using a circumferential seal having a cross-sectional configuration comprised of integral first and second portions, said first portion being of a shape so as to be held by the seal holding means of the ring member and said second portion being of a substantially right triangular configuration and extending downward from the first portion with a leg side of the triangular portion forming a substantially perpendicular cicumferential wall with respect to the flat surface of said matrix thereby defining an electroforming area of said second diameter, said leg side of the triangular portion extending to an apex where it meets the hypotenuse side of the triangular portion which hypotenuse side then extends upwardly towards the outer edge of the first portion of the seal; whereby the edge formed at the apex of the triangular portion provides an improved electrolyte tight engagement of the seal to said matrix to be replicated and the leg side of the right triangular portion of the seal provides a substantially perpendicular wall against which said replica having a perpendicular edge can be electroformed.



4,445,996

ANODE PASTE FOR USE IN SODERBERG-TYPE ELECTROLYTIC FURNACE FOR ALUMINUM

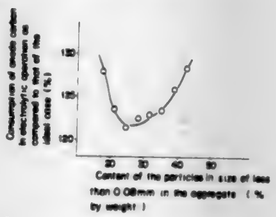
Yutaka Kawamata, Tokyo, and Shunkichi Katsuki, Kitakyushu, both of Japan, assignors to Mitsubishi Light Metal Industries Limited, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,988

Claims priority, application Japan, Jul. 9, 1981, 56-107391

Int. Cl.³ C25C *7/02*

U.S. Cl. 204—294 **5 Claims**



1. An anode paste for use in the fabrication of the self-baking anode of a Soderberg-type electrolytic furnace for the manufacture of aluminum, comprising:

a mixture of an aggregate selected from the group consisting of oil cake and pitch coke and a tar pitch binder, said aggregate being of a size less than 12 mm and containing 20 to 35 wt. % of coke particles of a size less than 0.08 mm, and the weight ratio of the coke particles of a size of 0.2 to

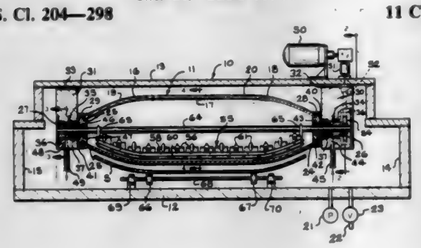
2 mm to the coke particles of a size less than 0.08 mm ranging 0.5 to 1.3, the amount of said binder ranging from 20 to 32% by weight of the total amount of said mixed aggregate and binder.

4,445,997

ROTATABLE SPUTTERING APPARATUS

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Aug. 17, 1983, Ser. No. 523,969
Int. Cl.[3] C23C *15/00*
U.S. Cl. 204—298 **11 Claims**



1. A sputtering cathode for sputter-coating non-planar substrates, comprising a rotatable elongated tubular member having a layer of coating material to be sputtered applied to the outer surface thereof, said tubular member being contoured longitudinally to provide a non-cylindrical sputtering surface.

4,445,998

METHOD FOR PRODUCING A STEEL LITHOGRAPHIC PLATE

Katsumi Kanda, Kudamatsu; Katsunobu Kunimoto, Yamaguchi; Keiji Yamane, and Yoshikazu Kondo, both of Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Japan

Filed Dec. 2, 1981, Ser. No. 326,747
Int. Cl.[3] C25D *5/36, 5/10, 5/12;* B41N *1/08*
U.S. Cl. 264—385 **12 Claims**

1. A method for producing a steel lithographic plate which consists essentially of:

(a) subjecting a steel substrate having a thickness in the range of 50 to 400 cm, to a graining treatment by (i) electroplating with iron, (ii) etching in a solution containing ferric ions or (iii) mechanical treatment with sand or marble, in order to impart to said substrate an average surface roughness in the range of 0.1 to 3 μm, .

(b) imparting improved corrosion resistance to the substrate of step (a) by plating with a metal, an alloy or multi-layer of metals, and then

(c) applying a hydrophilic coating with a suspension containing a water-dispersible sol of a metal compound to the treated substrate of step (b).

4,445,999

METHOD OF MANUFACTURING GEL ELECTRODE FOR EARLY DETECTION OF METAL FATIGUE

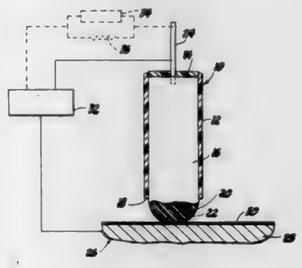
William J. Baxter, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 353,163, Mar. 1, 1982. This application Aug. 22, 1983, Ser. No. 525,097
Int. Cl.[3] G01N *27/30*
U.S. Cl. 204—414 **2 Claims**

1. A method for manufacturing an electrode comprising a housing having an opening and a gel body contained in the housing and protruding from the opening so as to form a rounded, pliant contact adapted for operatively and removably contacting a surface without adhering thereto, said method comprising

filling the housing with a warm, viscous liquid of a gel-forming material,

overfilling said housing with said liquid so as to form a convex meniscus at the opening,



cooling the liquid including the meniscus to form a gel, and dehydrating the surface of the gel meniscus to form a skin and to thereby form a pliant, nonadherent contact.

4,446,000

OXYGEN SENSOR AND METHOD FOR MAKING SAME

Daniel Cullinane, Jr., Tapsfield, Mass., assignor to Lynn Products Company, Incorporated, Lynn, Mass.

Filed May 13, 1983, Ser. No. 494,353
Int. Cl.[3] G01N *27/30*
U.S. Cl. 204—415 **12 Claims**



1. In an electro-chemical sensor for measuring concentrations of gas in accordance with the limiting current principle, said sensor comprising an electrolytic cell having a sensing electrode, a counter electrode and an electrolyte forming a current path between said electrodes, and a gas diffusion barrier member for restricting the rate of access of gas to said sensing electrode, the improvement wherein said restricting member is formed of wood generally aligned so the grain of the wood is parallel to the passage of said gas through said restricting member.

4,446,001

RECOVERY OF RETORTED SHALE FROM AN OIL SHALE RETORTING PROCESS

Roland F. Deering, Brea, and John H. Duir, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 451,597, Dec. 20, 1982. This application Dec. 30, 1982, Ser. No. 454,836
Int. Cl.[3] C10G *1/00*
U.S. Cl. 208—11 R **42 Claims**

1. A process for recovering retorted particulates containing combustible materials from a retort in a form suitable for delivery to a fluidized vessel, said process comprising:

(1) removing the particulates from the retort and passing them to a sealing zone;

(2) injecting sealing gas into the particulates within said sealing zone, with at least some of said sealing gas traveling countercurrently to the particulates into the retort;

(3) crushing particulates recovered from step (2) in a crushing zone to a size suitable for fluidization;

(4) holding in a fluidization zone, crushed particulates removed from step (3) as a fluidized bed under substantially non-combustive conditions; and

(5) removing particulates from said fluidization zone.

4,446,002

PROCESS FOR SUPPRESSING PRECIPITATION OF SEDIMENT IN UNCONVERTED RESIDUUM FROM VIRGIN RESIDUUM CONVERSION PROCESS

Charles W. Siegmund, Morris Plains, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 5, 1982, Ser. No. 405,314
Int. Cl.[3] C10C *1/00;* C10L *1/04, 1/06*
U.S. Cl. 208—23 **9 Claims**

1. A process for suppressing the precipitation of sediment in the unconverted residuum obtained from conversion of virgin residuum comprising blending with the unconverted residuum an effective amount of a virgin residuum having an asphaltene content of at least about 8% by weight of the virgin residuum at a temperature sufficient to maintain both the virgin and the unconverted residua during blending at a viscosity of no greater than 100 centistokes.

4,446,003

HEAT RECOVERY PROCESS AND APPARATUS

Stephen R. Burton, Kingsbury; Gary Horley, Walsall, and Ronald C. Hodrien, Solihull, all of England, assignors to British Gas Corporation, London, England

Filed Mar. 29, 1982, Ser. No. 362,594
Claims priority, application United Kingdom, Jun. 2, 1981, 8116905
Int. Cl.[3] C10G *9/12*
U.S. Cl. 208—48 Q **12 Claims**

1. A process for the recovery of heat from the gas leaving a unit for the thermal hydrogeneration of an oil feedstock, said process comprising:

providing a quench zone and a heat recovery zone, said heat recovery zone comprising a plurality of heat exchanger tubes having inlet and outlet ends and means for maintaining a body of quiescent quench liquid adjacent the inlet ends of said heat exchanger tubes, a space being present above said body of quiescent quench liquid in said heat recovery zone;

irrigating all of the internal surfaces of said quench zone with a quench liquid;

introducing gas from said thermal unit into said quench zone to quench the gas by contact with said quench liquid;

separating quenched gas from said quench liquid in said quench zone;

passing separated quench liquid from said quench zone through first conduit means to said heat recovery zone;

maintaining a quiescent body of quench liquid adjacent the inlet ends of said heat exchanger tubes, the outlet end of said first conduit means being located within said quiescent body of quench liquid whereby quench liquid passed from said quench zone to said heat recovery zone is introduced into said body of quiescent liquid;

maintaining the level of said quiscent body of quench liquid above the inlet end of said heat exchanger tubes whereby quench liquid flows into and irrigates all of said heat exchanger tubes; and

passing separated quenched gas from said quench zone through second conduit means to the space above said body of quiescent quench liquid in said heat recovery zone whereby the quenched gas flows with the quench liquid into and through said heat exchanger tubes.

12. A process for recovery of heat from the gas leaving a unit for the thermal hydrogenation of an oil feedstock, which process comprises:

maintaining a body of quench liquid in a lower portion of a quenching zone;

introducing quench liquid into a conduit having an outlet end submerged in said body of quench liquid in said quenching zone, said quench liquid irrigating the entire surface of said conduit;

irrigating all of the internal surfaces of said quenching zone with the quench liquid;

introducing gas from said thermal unit into said quenching zone through said conduit whereby the introduced gas flowing through the submerged outlet end of said conduit bubbles through said body of quench liquid whereby the gas is quenched by said quench liquid;

subsequently separating the quenched gas and the quench liquid in said quenching zone;

passing separated quench liquid from said quenching zone to a heat recovery unit having a heat recovery surface for recovery of heat from said quenched gas;

irrigating, with said separated quench liquid, all of said heat recovery surfaces of said heat recovery unit;

separately passing seperated quenched gas from said quenching zone to said heat recovery unit; and

recovering heat from said quenched gas in said heat recovery unit.

4,446,004

PROCESS FOR UPGRADING VACUUM RESIDS TO PREMIUM LIQUID PRODUCTS

Nai Y. Chen, Titusville; Lillian A. Rankel, Princeton, and Leslie R. Rudnick, Trenton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,529
Int. Cl.[3] C10G *69/06*
U.S. Cl. 208—57 **9 Claims**

1. A process for producing high yields of liquid in the gasoline boiling range and low yields of coke from asphaltene-containing residual oil feed of approximate CCR and asphaltene varying from 2 to 30 weight percent, said low coke yields being measured by a coke/CCR ratio of 0.5 to 1.3, comprising:

A. lightly hydrotreating said residual oils over a hydrotreating catalyst, the mols of hydrogen added per mol of average resid being about 0.1–3.0, while minimizing the deposition of metal contaminants on said hydrotreating catalyst and concentrating said contaminants within said coke;

B. fractionating said lightly hydrotreated residual oils and removing a fraction boiling at at least 800° F. at atmospheric pressure; and

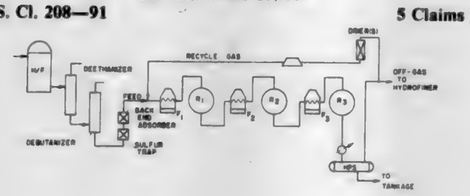
C. thermally cracking said 800° F.+ fraction during a period of 1 to 10 seconds to produce said high yields of liquid and low yields of coke.

4,446,005

GUARD BED FOR THE REMOVAL OF SULFUR AND NICKEL FROM FEEDS PREVIOUSLY CONTACTED WITH NICKEL CONTAINING SULFUR ADSORPTION CATALYSTS

Paul E. Eberly, Jr., and Judeth H. Brannon, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 17, 1982, Ser. No. 419,239
Int. Cl.[1] C10G *25/00*
U.S. Cl. 208—91 **5 Claims**



1. In a process which includes in combination a hydrofiner, sulfur trap, and reforming unit,

a hydrofiner located upstream of the reforming unit, for hydrofining a sulfur-containing naphtha to remove a major portion of the sulfur and form a low-sulfur naphtha,

a nickel catalyst-containing sulfur trap located downstream of said hydrofiner, the low-sulfur naphtha from the hydrofiner being passed therethrough and contacted with the nickel catalyst to remove sulfur from the naphtha,

a reforming unit for reforming, with hydrogen, the low-sulfur naphtha from the hydrofiner and nickel-containing sulfur trap, the reforming unit containing a plurality of catalyst-containing on-stream reactors connected in series, the hydrogen and low-sulfur naphtha feed flowing from one reactor of the series to another to contact the catalyst contained therein at reforming conditions,

the improvement comprising

a guard bed, containing an adsorption catalyst, located downstream of said nickel ctalyst-containing sulfur trap, and up-stream of the on-stream reactors of the reforming unit, through which said naphtha is passed,

whereby, when the sulfur concentration, flow rate and operating temperature of the naphtha feed entering said nickel catalyst-containing sulfur trap produce an organo-sulfur nickel complex which is dissolved within the naphtha, the organosulfur nickel complex formed in said nickel catalyst-containing sulfur trap is removed by the adsorption catalyst in said guard bed to suppress poisoning of the catalyst of the on-stream reactors of said reforming unit.

4,446,006

ARSENIC REMOVAL FROM HYDROCARBONS

Walter Albertson, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 13, 1982, Ser. No. 377,615
Int. Cl.[1] C10G *29/06*
U.S. Cl. 208—253 **19 Claims**

1. A process for reducing the arsenic content of an arsenic-containing hydrocarbon comprising contacting said hydrocarbon with aqueous sodium hydrogen phosphate and removing arsenic components from a product hydrocarbon of reduced arsenic content.

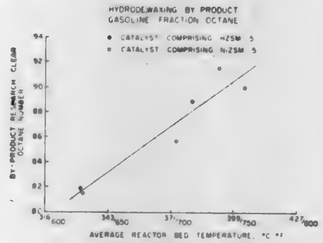
2. A process for reducing the arsenic content of an arsenic-containing hydrocarbon comprising contacting said hydrocarbon with elemental sulfur and aqueous sodium hydrogen phosphate and removing arsenic components from a product hydrocarbon of reduced arsenic content.

4,446,007

HYDRODEWAXING

Fritz A. Smith, Rye, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 8, 1982, Ser. No. 386,463
Int. Cl.[1] C10G *47/16*
U.S. Cl. 208—111 **18 Claims**



1. In the method for catalytically hydrodewaxing a petroleum or shale oil fraction in a reactor by contacting said fraction with hydrogen in the presence of a catalyst comprising a crystalline zeolite having a silica to alumina mole ratio of at least 12 at an average reactor temperature of from about 200° C. to about 712° C., a liquid hourly space velocity of from about 0.2 to about 10, a reactor pressure of from about 100 psig to about 3000 psig and a hydrogen to hydrocarbon mole ratio of from about greater than 0 to about 20, and wherein said reactor is started up at an average reactor temperature of from about 200° C. to about 310° C., the improvement which comprises increasing the average reactor temperature in a uniform manner to at least about 360° C. within about the first seven days after start-up of the reactor.

4,446,008

PROCESS FOR HYDROCRACKING OF HEAVY OILS WITH IRON CONTAINING ALUMINOSILICATES

Hajime Shimakawa, and Satoshi Nakai, both of Sodegaura, Japan, assignors to Research Association for Residual Oil Processing, Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,452
Claims priority, application Japan, Dec. 9, 1981, 56-196972; Feb. 10, 1982, 57-18917
Int. Cl.[1] C10G *47/20*; B01J *29/14, 29/24, 29/34*
U.S. Cl. 208—111 **13 Claims**

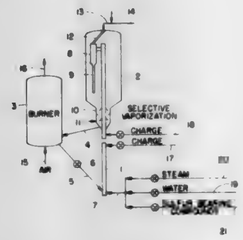
1. A process for hydrocracking heavy oils comprising contacting said heavy oil with a hydrocracking catalyst deposited on a carrier for hydrocracking said heavy oil, said catalyst deposited on a carrier comprising a carrier consisting of from 20 to 80% by weight of iron-containing aluminosilicate and from 80 to 20% by weight of an inorganic oxide, and (i) a catalyst comprising at least one member of the Group VI B metals and (ii) at least one member of the Group VIII metals of the Periodic Table deposited on the carrier, said iron-containing aluminosilicate having been prepared by steam-treating a crystalline aluminosilicate having a molar ratio of silica to alumina of 4.6 or more and a Na_2O content of not more than 2.4% by weight and contacting said steam-treated crystalline aluminosilicate with an aqueous iron salt solution having a pH of 1.5 or less to form said iron-containing aluminosilicate.

4,446,009

SELECTIVE VAPORIZATION PROCESS AND APPARATUS

David B. Bartholic, Watchung, N.J., assignor to Engelhard Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 155,736, Jun. 2, 1980. This application May 4, 1981, Ser. No. 260,145
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.
Int. Cl.[1] C10G *9/32*
U.S. Cl. 208—113 **4 Claims**



1. In a selective vaporization process for decarbonizing and demetallizing heavy petroleum fractions by contacting such fraction and an inert gas for reduction of hydrocarbon partial pressure in a rising confined vertical column with a finely divided inert solid contact material consisting essentially of an inert solid material having a microactivity for catalytic cracking not substantially greater than 20 at low severity, including a temperature of at least about 900° F. for a period of time less than 2 seconds and less than that which induces substantial thermal cracking in said charge, at the end of said period of time separating from said inert solid a decarbonized hydrocarbon fraction of reduced Conradson Carbon number as compared with said charge, reducing temperature of said separated fraction to a level below that at which substantial thermal cracking takes place to terminate said period of time, contacting said separated contact material with an oxidizing gas to burn said combustible deposit and heat the contact material to high temperature and returning the so heated contact material to the lower portion of said confined column for renewed contact with said heavy petroleum fraction; the improvement providing flexibility in rate of charging said fraction, or in control of said residence time or both which comprises introducing liquid water to the lower portion of said confined vertical column and injecting said heavy petroleum fraction to said column above the point of introduction of said liquid water.

4,446,010

FLUID CATALYTIC CRACKING

Randall H. Petty, Nederland, and Burton H. Bartley, Port Arthur, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 180,357, Aug. 22, 1980, Pat. No. 4,344,926. This application Jul. 29, 1982, Ser. No. 403,096
Int. Cl.[1] C10G *11/18, 25/09*
U.S. Cl. 208—120 **5 Claims**

1. In a fluid catalytic cracking process wherein a sulfur-containing hydrocarbon charge stock is contacted with a fluidized particulate cracking catalyst at a temperature in the range of from about 800° F. to about 1300° F. producing normally liquid hydrocarbon products of said cracking reaction and a sulfur-containing coke deposit on said catalyst, spend coke-contaminated catalyst is regenerated by contacting said spent catalyst with an oxygen-containing gas in a catalyst regeneration zone effecting burning of said sulfurcontaining coke and heating of said catalyst to a temperature in the range of about 1000° F. to about 1500° F. with the production of regeneration gases comprising oxides of carbon and sulfur, and resulting regenerated catalyst is returned to said cracking zone, the improvement which comprises incorporating a minor portion of a particulate solid composite of alumina and bismuth oxide containing 0.1 to 4 weight percent bismuth with said catalyst in an amount sufficient to provide 0.01 to 0.04 weight percent bismuth in the resulting mixture.

4,446,011

PROCESS FOR REGENERATING PEROVSKITE CATALYSTS AND HYDROCARBON TREATING PROCESSES UTILIZING THE REGENERATED CATALYST

Kenneth S. Wheelock, and Robert C. Schucker, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 25, 1982, Ser. No. 411,366
Int. Cl.[1] C10G *47/12*; B01J *23/92*
U.S. Cl. 208—121 **25 Claims**

1. A process for regenerating an at least partially deactivated composite catalyst having a carbonaceous deposit at an increased rate of combustion of said carbonaceous deposit, said composite catalyst comprising a perovskite having at least one transition metal cation selected from the group consisting of elements having atomic numbers ranging from 21 through 30, from 39 through 48, from 57 through 80 and from 89 through 92, and at least one other catalytic component, which comprises the steps of:

(a) contacting said deactivated composite catalyst with an oxidizing agent at a temperature of at least about 751° F. (400° C.) for a time sufficient to remove at least a portion of said carbonaceous deposit from said composite catalyst, and

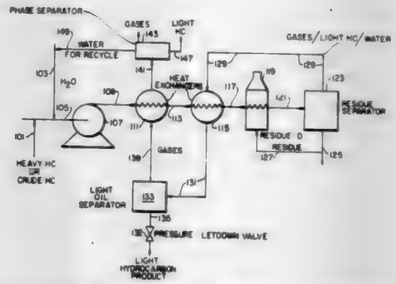
(b) recovering the resulting regenerated composite catalyst.

4,446,012

PROCESS FOR PRODUCTION OF LIGHT HYDROCARBONS BY TREATMENT OF HEAVY HYDROCARBONS WITH WATER

Andiappan K. S. Murthy, Lake Hiawatha; Kundanbhai M. Patel, Landing, and Alex Y. Bekker, Teaneck, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 450,710, Dec. 17, 1982, abandoned. This application Jul. 26, 1983, Ser. No. 517,311
Int. Cl.[3] C10G *29/02, 35/02*; C07C *4/04*
U.S. Cl. 208—130 **22 Claims**



1. A process for converting heavy hydrocarbons into light hydrocarbons which comprises:

(a) contacting, in a first zone, heavy hydrocarbons having an API gravity at 25° C. of less than about 20 with a liquid comprising water, in the absence of externally added catalyst and hydrogen, at a temperature between about 380° C.-480° C. and at a pressure between about 5000 kPa and about 5,000 kPa (about 2175 psig, about 148 atm), and for a time sufficient to form a uniform mixture;

(b) forwarding the uniform mixture to a second zone while

maintaining the temperature and pressure conditions of the first zone;

(c) maintaining the uniform mixture in the second zone under the temperature and pressure conditions of the first zone, in the absence of externally added catalyst and hydrogen, for a time sufficient to separate the uniform mixture into a residue and a phase comprising light hydrocarbons, gas and water;

(d) withdrawing the residue and said phase from the second zone;

(e) separating said phase into a gaseous product, a liquid comprising water and light hydrocarbon product having an API gravity at 25° C. of greater than about 20 and substantially free of vanadium and nickel values; and

(f) recovering said light hydrocarbon product.

4,446,013

CATALYTIC SKELETAL ISOMERIZATION

Arthur W. Aldag, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 22, 1982, Ser. No. 443,720
Int. Cl.³ C07C *5/373*
U.S. Cl. 208—135 **18 Claims**

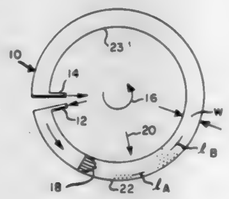
1. A process for the skeletal isomerization of a derivative of cyclopentane comprising the step of contacting said derivative of cyclopentane under suitable reforming conditions with a hydrogel of zinc titanate and an acid carrier.

4,446,014

SEDIMENTATION FIELD FLOW FRACTIONATION CHANNEL AND METHOD

Charles H. Dilks, Jr., 3 Halifax Rd., Newark, Del. 19711, and Wallace W. Yau, 3905 Ardleigh Dr. Greenville, Wilmington, Del. 19807

Filed Nov. 30, 1981, Ser. No. 326,157
Int. Cl.³ B03B *5/62*
U.S. Cl. 209—155 **17 Claims**



9. A method for separating particulates suspended in a fluid medium according to their effective masses by the steps of:

flowing the medium through an annular channel having an annulus axis,

immersing the channel in a liquid, and

rotating the channel and liquid together about the axis.

4,446,015

FIELD FLOW FRACTIONATION CHANNEL

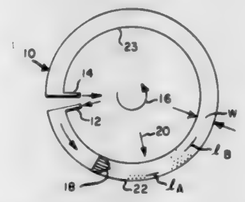
Joseph J. Kirkland, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1981, Ser. No. 326,158
Int. Cl.³ B03B *5/62*
U.S. Cl. 209—155 **2 Claims**

2. A channel assembly forming a channel for sedimentation field flow fractionation comprising:

a dislike hub having a smooth outer peripheral surface,

a continuous outer ring having a radially inner surface, defining a circumferential groove, mating with said hub outer peripheral surface to define an annular channel at the interface between said surfaces, and



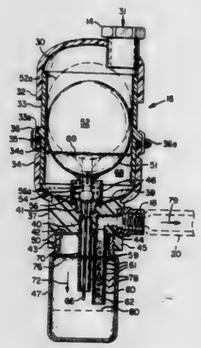
radial bores in said hub communicating with said channel, both said hub and said ring being formed of a plastic.

4,446,016

SOLIDS COLLECTING APPARATUS FOR A VACUUM DRAIN SYSTEM

Kenneth W. Stubbs, Portland, Oreg., assignor to Kenrod Enterprises, Portland, Oreg.

Filed Mar. 16, 1983, Ser. No. 475,886
Int. Cl.³ B01D *21/24*
U.S. Cl. 210—86 **14 Claims**



1. An apparatus for extracting solids from a mixture of liquid and solids flowing in a vacuum drain system, the apparatus comprising:

(a) separator means for separating said solids in said mixture from said liquid;

(b) drain means connected to said vacuum drain system for draining said liquid from said separator means;

(c) reservoir means for accumulating said mixture;

(d) aperture means for permitting said mixture to flow between said reservoir means and said separator means; and

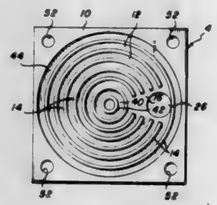
(e) valve means associated with said aperture means and disposed within said reservoir means for sensing the amount of said mixture in said reservoir means and for moving to an open position which permits said mixture to flow through said aperture means into said separator means when a predetermined amount of said mixture has accumulated in said reservoir means and to a closed position which prevents said mixture from flowing through said aperture means.

4,446,017

OIL FILTER ASSEMBLY HAVING A REMOVABLE FILTER MEMBER

Gordon D. Oberg, 1717 S. Lake Stickney Dr., Lynnwood, Wash. 98036

Filed Jun. 10, 1982, Ser. No. 387,151
Int. Cl.³ B01D *27/10*
U.S. Cl. 210—90 **7 Claims**



1. An oil filter assembly, comprising

(a) a sectional housing including base and cover members having adjacent facing planar faces defining a plurality of corresponding circular spaced concentric grooves and further defining a plurality of spaced circular concentric ribs, respectively, said base member planar face also defining a radial groove extending from an inner portion thereof through each of said base member ribs to an outer portion thereof to define a passage affording communication between said base member concentric grooves, said cover member planar face also defining a radial groove extending from an inner portion thereof through each of said cover member ribs to an outer portion thereof to define a passage affording communication between said cover member concentric grooves, said radial grooves of said base and cover members extending diametrically radially outwardly in opposite directions, respectively, said housing defining inlet and outlet openings communicating with said radial grooves adjacent said base and cover member planar face outer portions, respectively;

(b) a planar filter member having a circular configuration and removably mounted between said cover and base member planar faces and extending between said circular grooves defined thereby, respectively;

(c) outer sealing means arranged adjacent the circumference of said filter member for providing a seal between said filter member and said base and cover planar faces, respectively; and

(d) means connecting said base and cover members together on opposite sides of said filter member and for providing that when fluid to be filtered is supplied to said inlet opening, the fluid is distributed across said face of said member defining said inlet opening via said radial and circular grooves thereof, passes through said filter member, and is discharged from said housing via said circular and radial grooves contained in said member defining said outlet opening, and via said outlet opening.

4,446,018

WASTE TREATMENT SYSTEM HAVING INTEGRAL INTRACHANNEL CLARIFIER

Joel A. Cerwick, Lenexa, Kans., assignor to Armco Inc., Middletown, Ohio

Continuation of Ser. No. 145,707, May 1, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,699
Int. Cl.³ C02F *3/12*
U.S. Cl. 210—195.4 **39 Claims**

1. An intrachannel clarifier for clarifying waste liquid containing settlable solids for use in an aerobic wastewater treatement system of the type having means for retaining the waste liquid in a continuous substantially closed flow path, means for introducing wastewater influent into the flow path, means for removing waste sludge as mixed liquor from the flow path, and means for moving the waste liquor in a single direction in the flow path at sufficient velocity to prevent settling of the suspended solids, said clarifier comprising:

tank means positionable within said retaining means for creating a zone of relatively quiescent waste liquid in the upper portion of the tank means to permit suspended solids to settle downwardly by gravity within the quiescent zone to produce clarified waste liquid;

clarifier inlet means included in said tank means to permit entry of unclarified mixed liquor from the flow path in to the quiescent zone at a relatively slow rate; and

baffle means associated with said tank means for permitting the settled solids to return from the quiescent zone to the flowing mixed liquor within the retaining means but preventing movement of excessive quantities of flowing mixed liquor into the quiescent zone, said baffle means comprising a plurality of spaced parallel slightly overlapping inverted V-shaped angle members configured to extend across the retaining means transversely of the waste liquid flow direction, each of said angle members having a pair of angularly disposed legs configured to lie across the flow path when the clarifier is positioned within the retaining means, adjacent legs of adjoining angle members being spaced to permit the passage of settled solids therebetween, said angle members being configured such that settling of suspended solids occurs in the quiescent zone above said baffle means.

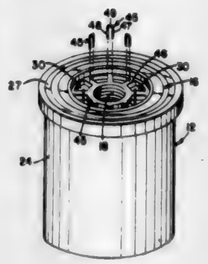


4,446,019

MAGNETIC FILTRATION IN A SPIN-ON FLUID FILTER

Harold L. Robinson, Minnetonka, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Sep. 16, 1982, Ser. No. 419,020
Int. Cl.³ B01D *25/06*
U.S. Cl. 210—223 **5 Claims**



1. In a spin-on fluid filter having a housing, means for securing said filter to a fluid source, and filter media contained in said housing, said securing means including an attachment plate having an upper surface area positioned towards said fluid source, a bottom surface area positioned towards said filter media, fluid outlet means and fluid inlet means for providing fluid flow communication between said fluid source and said filter media, and a plurality of fluid impervious web portions, wherein the improvement comprises:

means for providing magnetic filtration capability to said spin-on fluid filter, said fluid filter otherwise not having magnetic filtration capability, said means including

a plurality of clips each constructed and arrange to be removably attached to one of said web portions, each of said clips being constructed from a magnetizable material and including at least one magnetic force field, whereby fluid entering said housing from said fluid source passes through said at least one magnetic force field prior to contacting said filter media.

3. In a spin-on fluid filter having a housing, means for securing said filter to a fluid source, and filter media contained in said housing, said securing means including an attachment plate having an upper surface area positioned towards said fluid source, a bottom surface area positioned towards said filter media, and including fluid outlet means and fluid inlet means for providing fluid flow communication between said fluid source and said filter media, wherein the improvement comprises:

means for providing magnetic filtration capability to said spin-on fluid filter, said fluid filter otherwise not having magnetic filtration capability, said means including

said attachment plate being constructed from a magnetizable material and having at least one magnetic force field extending over substantially all of said surface area thereof, whereby fluid entering said housing from said fluid source passes through said at least one magnetic force field prior to contacting said filter media.

4,446,020

FILTER PRESS

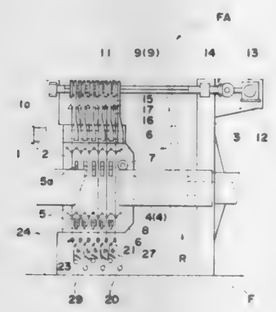
Tetsuya Kurita, Takarazuka, Japan, assignor to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Dec. 21, 1982, Ser. No. 451,931

Claims priority, application Japan, Dec. 28, 1981, 56-195950[U]; Feb. 10, 1982, 57-19989; Feb. 17, 1982, 57-25081

Int. Cl.³ B01D *25/34*

U.S. Cl. 210—225 **2 Claims**



1. A filter press for separating raw liquid into a filtrate and a filter residue, which includes:

a plurality of filter plates each having a pair of spaced support frames at the lower portion thereof,

a pair of filter cloths disposed between each set of the neighboring filter plates, movably mounted between support stands for selective spacing therebetween or clamping together to each other,

a winding up means arranged to be driven for forward or reverse rotation,

cord members directed around said winding up means and respectively connected to upper edges of said filter cloths for selective lowering of said filter cloths into space between the respective neighboring filter plates or lifting said filter cloths therefrom,

a filter cloth take-up roller journalled between the spaced support frames of each of said filter plates and engaged with the lower edges of said filter cloths which are to be wound thereonto and which hold each of said filter plates therebetween, said filter cloth take-up roller being provided therein with a torsion spring arranged to urge said filter cloth take-up roller in a direction to wind up said filter cloths thereonto,

the improvement comprising:

a pair of filter residue separating members each having a slit passage for passing the filter cloths therethrough so as to separate the filter residue adhering to said filter cloths and each being provided between said spaced support frames of each of said filter plates,

confronting members which define the slit passage between each of said filter residue separating members, and

a spring member expansible and contractible in a direction back and forth with respect to the filter plate being disposed between said filter residue separating members in pair,

whereby upon spacing of said filter plates, said slit passage is positioned along the downward travelling path of said filter cloth generally in a vertical direction, and upon clamping together to each other of said filter plates, said slit passage is accommodated within a thickness of said filter plate through contraction of said spring member.

4,446,021

FILTER-MEDIUM SUPPORT PLATE FOR CENTRIFUGAL FILTER

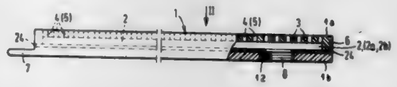
Erhard Aufderhaar, Unterschleissheim; Johannes Feller, Munich; Günther Hultsch, Oberschleissheim, and Walter Kisslinger, Munich, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 4, 1982, Ser. No. 405,089

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133474

Int. Cl.³ B01D *33/02*

U.S. Cl. 210—378 **15 Claims**



1. In a centrifugal filter:

a centrifuge drum rotatable about an axis;

a plurality of support plates lining the drum, each of the plates being generally flat and generally rectangular and having a radially inwardly directed inner face, the plates each being formed with

an array of flow grooves extending on and opening radially inwardly at the inner face and each having an upstream end and an opposite downstream end spaced along the plate from each other, the flow grooves each being of generally regularly increasing flow cross section generally parallel to the inner face from their upstream ends to their downstream ends;

means for draining liquid from the downstream ends; and

a filter medium overlying the inner face over the flow grooves.

4,446,022

VIBRATORY SCREENING APPARATUS FOR SCREENING LIQUIDS

Alan Harry, Royston, England, assignor to Thule United Limited a British Company, Aberdeen, Scotland

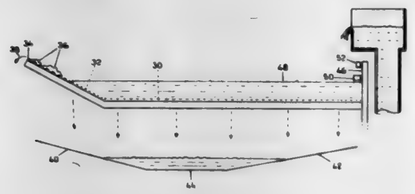
Continuation of Ser. No. 171,283, Jul. 23, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,109

Claims priority, application United Kingdom, Aug. 9, 1979, 7927830

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ B01D *23/24*

U.S. Cl. 210—388 **8 Claims**



1. A vibratory screening machine for separating solid particles from liquid, comprising means for introducing a liquid medium having said particles, a fine mesh first screen located within a vibratory basket, means for vibrating the basket, a frame surrounding the screen, the fine mesh screen being in the form of a shallow 'V' with one of the limbs of the 'V' being so inclined that it extends in an upward direction towards a discharge end having a first edge over which filtered particles are discharged due to vibration, the other limb of the 'V' being substantially horizontal and extending between the inclined limb and a weir or dam at the rear of the screen, horizontal bearers within the basket for supporting the frame at the sides of the substantially horizontal portion of the screen, and clamping means for securing the screen within the basket, the clamping means being removable to permit the entire screen and frame to be slidably removed from the basket.

4,446,023

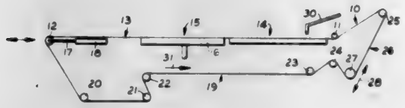
VACUUM BELT FILTER

Henri G. W. Pierson, London Rd., Bozeat, Wellingborough, Northamptonshire, NN9 7JR, England

Filed Aug. 11, 1982, Ser. No. 407,047

Int. Cl.³ B01D *33/04*

U.S. Cl. 210—400 **7 Claims**



1. A vacuum belt filter apparatus comprising: means for precluding the requirement of heavy tensioning rollers including, an endless filter belt, guide means guiding the filter belt in a substantially horizontal upper run and in a looped lower return run, drive means for moving the belt intermittently outboard toward a forward end in the upper run and inboard away from the forward end in the return run and including first and second displaceable stepping rolls engaging the belt at respective sides of the loop in the return run and being coupled for the alternating arrangement of one extending a respective bight in the belt while the other is reducing a respective bight, a first unidirectional mechanism located in the loop between the first and second displaceable stepping rolls, a second unidirectional mechanism engaging the lower return run downstream of the second displaceable stepping roll, the first and second unidirectional mechanisms being effective in preventing return movement of the belt, a feeding station for feeding slurry onto the belt upper run, vacuum chamber means positioned below the upper run and operative to exert a vacuum and thereby suck away liquid from the slurry for leaving a filter cake on the belt.

4,446,024

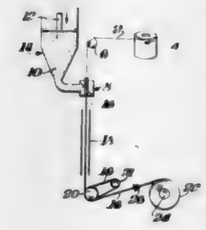
HOLLOW FILAMENT PRODUCT

Richard A. Baker, Newark, Del.; George D. Forsythe, Landenberg, Pa.; Kewal K. Likhyani, Wilmington, Del.; Robert E. Roberts, Kennett Square, Pa., and David C. Robertson, Bear, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation of Ser. No. 872,665, Jan. 22, 1978, abandoned, which is a division of Ser. No. 770,461, Feb. 22, 1977. This application Dec. 13, 1979, Ser. No. 103,201

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—500.2 **11 Claims**



1. A self-supporting, unitary cylindrical structure having a bore, consisting of rigid, porous, ceramic hollow filament having an outside diameter of at least 0.025 inch arranged in a three-dimensional network of criss-crossing hollow filament through the thickness dimension of the network, the criss-cross pattern of the hollow filament extending in the length-width dimensions, the three-dimensional network of said hollow filament defining tortuous paths for liquid communicating through the thickness dimension of the network.

4,446,025

METHOD OF AND APPARATUS FOR PRE-TREATING MAKE-UP WATER CONTAMINATED WITH NUTRIENTS

Gad Assaf, Rehovot, and Yehuda Cohen, Elat, both of Israel, assignors to Solmat Systems Ltd., Yavne, Israel

Filed Mar. 23, 1982, Ser. No. 361,112

Int. Cl.³ C02F *3/32*; F24J *3/02*

U.S. Cl. 210—602 **19 Claims**

1. A method for reducing nutrients in brackish water contaminated with nutrients comprising:

(a) establishing a three-layer stagnant pond having an upper, convective wind-mixed layer exposed to solar radiation and of relatively low, uniform salinity, an intermediate stratified, non-convective halocline whose salinity increases monotonically with depth, and a lower collection layer of relatively high, uniform salinity;

(b) adding the brackish water to the wind-mixed layer wherein the nutrients support the growth of photosynthetic microbes;

(c) providing, in the wind-mixed layer, aquatic life that feeds on said microbes and produce fecal pellets of a density in excess of the density of at least the upper layer of the pond, whereby such pellets sink to a level below the upper layer, from which upward diffusion is suppressed by reason of the stratified nature of the halocline; and

(d) using the water in the wind-mixed layer as make-up water in a ultilization device that requires nutrient free water.

7. Apparatus for reducing nutrients in brackish water contaminated with nutrients comprising:

(a) a three layer stagnant pond having an upper, convective wind-mixed layer exposed to solar radiation and of relatively low, uniform salinity, an intermediate, stratified, non-convective halocline whose salinity increases monotonically with depth, and a lower collection layer of relatively high, uniform salinity;

(b) means for adding the brackish water to the wind-mixed layer wherein the nutrients support the growth of photosynthetic microbes;

(c) aquatic life in the wind-mixed layer which feeds on said microbes and produces fecal pellets of a density in excess of the density of at least the upper layer of the pond, whereby such pellets sink to a level below the upper layer, from which upward diffusion is suppressed by reason of the stratified nature of the halocline;

(d) a utilization device requiring nutrient-free make-up water; and

(e) means for adding water from the wind-mixed layer of the stagnant pond to the utilization device.

4,446,026

PROCESS AND SOLVENT FOR EXTRACTION OF THE CHROMATES PRESENT IN AN AQUEOUS SOLUTION

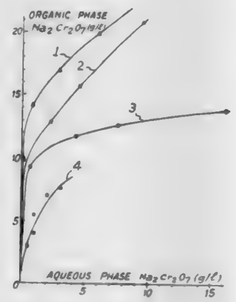
Didier Beutier, Paris; Claude Palvadeau, Breuillet; Gilles Pasquier, Paris, and March Dietrich, Auffargis, all of France, assignors to Krebs & Cie S.A., Paris, France

Filed Mar. 15, 1982, Ser. No. 358,053

Claims priority, application France, Mar. 18, 1981, 81 05413

Int. Cl.³ B01D *11/00*

U.S. Cl. 210—639 **7 Claims**



1. Process for extracting chromates present in an aqueous chlorides-chlorates brine solution comprising the steps of maintaining said solution at a pH lower than 6, bringing said solution into sufficient contact with a liquid organic phase to extract chromates into the organic phase in which the organic phase consists essentially of by volume a mixture of 2 to 10% of a solvent selected from the group of tertiary and quaternary amines and 15 to 40% of a solvent selected from the group of esters of phosphoric acid in a petroleum hydrocarbon system, and extracting said chromates from said organic phase by bringing it into contact with a alkaline removal solution.

4,446,027

BUOYANT MEDIA FILTER

Kathleen W. Simmers, Cockeysville, Md., assignor to Environmental Elements Corp., Baltimore, Md.

Continuation of Ser. No. 135,169, Mar. 20, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 421,816

Int. Cl.³ B01D *23/10, 23/24*

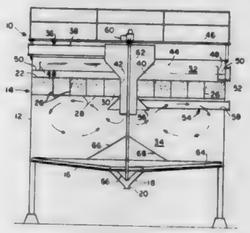
U.S. Cl. 210—661 **11 Claims**

1. A buoyant media containment structure for use in an upflow filter comprising:

(a) buoyant filter media;

(b) porous sheet means formed of a substantially porous material composition, said porous sheet means being constructed and arranged to be supported substantially horizontally in an upper portion of an upflow filter tank and to define with said tank an effluent reservoir above said porous sheet means and an influent reservoir below said porous sheet means; and,

(c) buoyant filter media support means for capturing said buoyant filter media therein and maintaining said influent reservoir substantially free of said buoyant filter media, said support means including a honeycomb-like gridwork of downwardly open cells having sidewalls extending from a lower surface of said porous sheet means, said cells containing said buoyant filter media and substantially preventing said passage of said buoyant filter media from within one of said cells to another of said cells, said cells



being substantially free of subjacent structure limiting free access of particulate waste solids, in turbid influent, to said buoyant filter media in said cells.

6. A method of upflow filtration comprising:

(a) feeding influent into an influent reservoir in the bottom of a tank;

(b) inducing a continuous rising and falling circular flow to said influent;

(c) passing said influent upwardly in said tank and through a buoyant filter media;

(d) maintaining said influent reservoir substantially free of said buoyant filter media;

(e) receiving the filtered influent into an effluent reservoir superposed above said buoyant filter media; and,

(f) passing said effluent from said tank.

4,446,028

ISOPROPENYL PHOSPHONIC ACID COPOLYMERS USED TO INHIBIT SCALE FORMATION

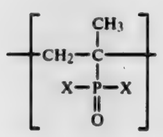
Larry W. Becker, Wilmington, Del., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Dec. 20, 1982, Ser. No. 451,644

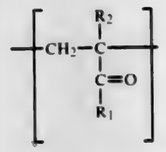
Int. Cl.³ C02F *5/14*

U.S. Cl. 210—697 **12 Claims**

1. Method of controlling the deposition of scale imparting precipitates on the structural parts of a system exposed to an aqueous medium comprising scale imparting precipitates under deposit forming conditions, said method comprising adding to said aqueous medium an effective amount for the purpose of a water soluble copolymer (I) consisting essentially of repeat unit moieties (a) and (b), said repeat unit moiety (a) having the structure



wherein X=OH′ or OM, wherein M is a cation, said repeat unit moiety (b) having the structure



wherein R_2 is H, or lower alkyl of from about 1–3 carbon atoms, and wherein R_1 comprises a member selected from the group consisting of hydroxy, hydroxylated alkoxy, and amide, and water soluble salt forms thereof, said copolymer having a molar ratio of a:b of from about 3:1 to about 0.5:1.

8. Method as defined in claim 1 further comprising adding to said system, an effective amount for the purpose, of a compound (II) selected from the group consisting of inorganic phosphoric acids and water soluble salts thereof, phosphonic acids and water soluble salts thereof, organic phosphoric acid esters and water soluble salts thereof, and polyvalent metal salts capable of being dissociated to polyvalent metal ions in water.

4,446,029

DESTRUCTION OF IRON CYANIDE COMPLEXES

Benedicte Betermier, Paris, France; Manuel Alvarez, East Brunswick, and Robert D. Norris, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Sep. 22, 1982, Ser. No. 421,601

Int. Cl.³ C02F *1/30, 1/72*

U.S. Cl. 210—748 **6 Claims**

1. A process for destroying cyanide in an aqueous solution of an iron cyanide complex consisting essentially of:

(a) adjusting the pH of the aqueous solution above 11,

(b) irradiating the solution from step (a) absent hydrogen peroxide with at least 35 kilojoules of 200 to 335 nanometer actinic radiation to destroy said iron cyanide complex and form free cyanide ions,

(c) adding to the solution from step (b) at least 1 gram of hydrogen peroxide per gram of the iron cyanide complex initially contained in the solution,

(d) reducing the pH of the solution from step (c) between 8 and 11, and

(e) reacting the solution from step (d) absent added 200 to 335 nanometer actinic radiation until substantially all of the free cyanide ion is destroyed.

4,446,030

LIQUID CIRCULATION AND PRESSURE TANKS

Henry Schmidt, Jr., Hinsdale, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Filed Jan. 25, 1980, Ser. No. 115,343

Int. Cl.³ B01D *29/42*

U.S. Cl. 210—805 **20 Claims**

11. A filter, comprising

a tank having a filter chamber therein,

liquid inlet means for supplying a liquid filtrate to said chamber,

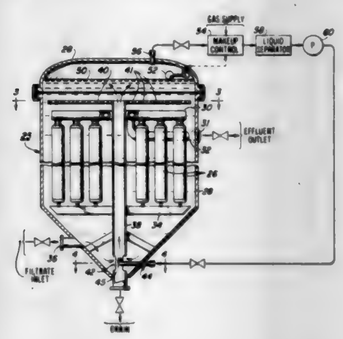
filter means disposed in said chamber for removing entrained particles from a liquid passed through said filter means,

effluent outlet means connected to said filter means,

an upstanding tube in said chamber,

said tube being open to said chamber above said filter means and also being open to said chamber below said filter means, and

means for supplying gas under pressure to the lower end portion of said tube to pump liquid from said chamber below said filter means up through said tube,



whereby the liquid in said chamber is recirculated within said tank.

4,446,031

SEWAGE TREATMENT COMPOSITION ITS MANUFACTURE AND USE

David E. List, Derby, England, assignor to Tioxide Group Limited, Cleveland, England

Filed May 4, 1982, Ser. No. 374,791

Claims priority, application United Kingdom, Jun. 30, 1981, 8120175

Int. Cl.³ C09K *3/00, 3/32*

U.S. Cl. 252—1 **4 Claims**

1. A composition for the treatment of sewage comprising an aqueous solution of ferric sulphate and ferric nitrate in amounts such that the molecular ratio of ferric sulphate to ferric nitrate is from 1:0.75 to 1:1.25 and, optionally nitric acid in an amount of up to 2.5 molecules per molecule of ferric sulphate.

4,446,032

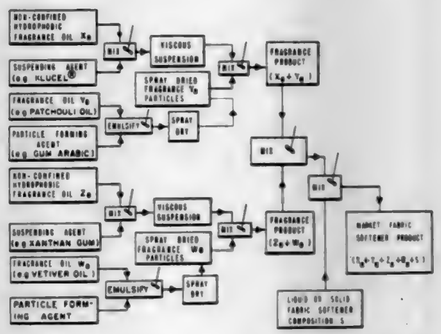
LIQUID OR SOLID FABRIC SOFTENER COMPOSITION COMPRISING MICROENCAPSULATED FRAGRANCE SUSPENSION AND PROCESS FOR PREPARING SAME

Marina A. Munteanu, New York; Christine Cseko, Purchase, both of N.Y.; Edward S. Oltarzewski, Mercerville, N.J.; Jerome I. Lindauer, Hillsdale, N.J., and Donald A. Withycombe, Lincroft, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 294,731, Aug. 20, 1981, Pat. No. 4,428,869. This application Feb. 11, 1982, Ser. No. 348,131

Int. Cl.³ D06M *13/34, 13/00*

U.S. Cl. 252—8.6 **12 Claims**



1. A fragranced fabric softener composition comprising (I)

particles of a composition consisting essentially of (a) from about 1 up to 10 parts by weight of a non-confined fragrance oil substance selected from the group consisting of non-confined hydrophobic fragrance oils and aqueous emulsions of fragrance oils; (b) from about 2 up to about 10 parts by weight of an entrapped fragrance oil capable of being released hydrolytically or by means of application of mechanical pressure, said fragrance oil being physically entrapped in a solid material selected from the group consisting of gelatin, dextrin, gum acacia, urea formaldehyde polymers, modified food starch and synthetic polymers capable of being dissolved or decomposed hydrolytically, said solid material having a particle size of from about 3 microns up to about 800 microns, said physically entrapped fragrance oil being organoleptically compatible with said non-confined hydrophobic fragrance oil or fragrance oil emulsion; and (c) from about 0.1 up to about 10 parts by weight of a suspending agent selected from the group consisting of hydroxypropyl cellulose having a molecular weight of from about 50,000 up to about 800,000; xanthan gum, ethyl cellulose, silica, suspensions of finely divided clay in water, suspensions of an aqueous fluid-absorbing composition comprising water in soluble alkali salts of aqueous alkali saponified, gelatinized-starch-polyacrylonitrile graft polymers which contain gelatinized starch (GS) and saponified polyacrylonitrile (HPAN) in molar ratios of from about 1:1.5 to about 1:9 GS:HPAN, and (II) a solid or liquid fabric softener composition of matter whereby after the fabric softener composition is intimately admixed with said particles and water, and the resulting fragranced fabric softener composition is used to treat a fabric, and the fabric is dried, on wearing, a fragrance is released at high fragrance intensity substantially evenly and uniformly over an extended period of time.

4,446,033

FABRIC CONDITIONING COMPOSITIONS CONTAINING AMINO-SILANES

Christian R. Barrat; John R. Walker, both of Brussels, and Jean Wevers, Strombeek-Bever, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

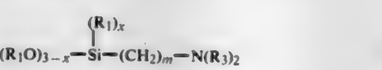
Filed Sep. 22, 1982, Ser. No. 421,182

Claims priority, application United Kingdom, Sep. 25, 1981, 8129070

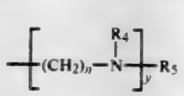
Int. Cl.³ D06M *13/34*

U.S. Cl. 252—8.6 **6 Claims**

1. A fabric conditioning composition, preferably a liquid rinse softener composition, suitable for use in washing machines comprising from 1% to 95% by weight of active fabric conditioning agents; and from 0.001% to 5% by weight of an amino-silane having the formula



wherein:
R_1=C_{1-4}-alkyl or C_{1-4}-hydroxyalkyl;
x is 0 or 1;
m is 1–6;
each R_3 is hydrogen, R_1, C_{1-6}-alkylamine, or



R_4 is hydrogen or R_1;
n is 1–6;
y is 0–6;
R_5=R_4,

p=1–6.

4,446,034

TEXTILE-TREATMENT AGENTS, AND THEIR USE FOR FINISHING TEXTILE MATERIALS

Joachim Kolbe, Leverkusen; Wilfried Kortmann, Hohenlimburg, and Josef Pfeiffer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,866

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138181

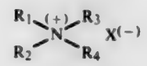
Int. Cl.³ D06M *13/46, 13/40*

U.S. Cl. 252—8.8 **5 Claims**

1. Textile-treatment agents which contain

A. 50–80% by weight of acylated alkanolamines formed from saturated or unsaturated fatty acids having 12–22 C atoms and alkanolamines containing 1 or 2 nitrogen atoms, 1–3 hydroxyl groups and 2–6 C atoms, in a molar ratio of 1:1 to 3:1,

B. 10–30% by weight of water-soluble quaternary ammonium salts of the general formula



wherein

R_1 denotes an alkyl or alkenyl radical having 14–25 C atoms which is interrupted by an amide or ester groups,

R_2 denotes a radical such as R_1 or an alkyl radical having 1–4 C atoms,

R_3 denotes an alkyl radical having 1–4 C atoms or an hydroxyethyl or hydroxypropyl radical,

R_4 denotes an alkyl radical having 1–4 C atoms or an hydroxyethyl, hydroxypropyl or benzyl radical and

$X^{(-)}$ denotes an anion,

C. 2–20% by weight of a fatty acid ester formed from saturated or unsaturated fatty acids having 12–22 C atoms or dicarboxylic acids having 4–10 C atoms and monohydric to tetrahydric alcohols having 3–20 C atoms,

D. 0–20% by weight of ethylene oxide adducts formed from fatty acids having 12–22 C atoms or from fatty alcohols having 8–18 C atoms or from alkylamines or dialkylamines having 12–36 C atoms or from alkylphenols having 10–24 C atoms and 3 to 50 mols of ethylene oxide and

E. 0–25% by weight of diorganopolysiloxanes having a viscosity of 1,000 to 100,000 cSt.

4,446,035

CLEANSING AGENTS AND THE LIKE WITH AMINO-SILANES

Christian R. Barrat; John R. Walker, both of Brussels, and Jean Wevers, Strombeek-Bever, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 22, 1982, Ser. No. 421,183

Claims priority, application United Kingdom, Sep. 25, 1981, 8129071

Int. Cl.³ C11D *3/08, 9/36*

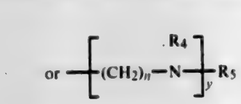
U.S. Cl. 252—8.8 **13 Claims**

1. A composition of matter, comprising:

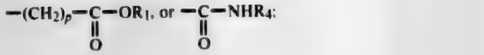
(A) an amino-silane ingredient of the formula:



wherein:
R_1=C_{1-4}-alkyl or C_{1-4}-hydroxyalkyl;
x is 0 or 1;
m is 1–6;
each R_3 is hydrogen, R_1, C_{1-6}-alkylamine,



R_4 is hydrogen or R_1
n is 1–6
y is 0–6
R_5=R_4,



p=1–6.

(B) an ingredient selected from the group consisting of:
(i) organic detersive surfactants;
(ii) fabric softeners;
(iii) bleaches;
(iv) caustics;
(v) metal sequestering and detergent builder agents; or
(vi) mixtures of the foregoing ingredients (i)–(v).

4,446,036

PROCESS FOR ENHANCED OIL RECOVERY EMPLOYING PETROLEUM SULFONATE BLENDS

Wen-Ching Hsieh, Chino Hills; June M. Bostich, Brea, and Jeffery W. Koepke, La Habra, all of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Jun. 9, 1982, Ser. No. 386,665

Int. Cl.³ C09K *7/02*; E21B *43/16*

U.S. Cl. 252—8.55 D **46 Claims**

1. In a method for recovering petroleum from a subterranean reservoir including the steps of injecting into said reservoir through an injection well a micellar displacement fluid comprising a micellar solution, a mobility buffer, and thereafter injecting an aqueous flooding medium to drive said micellar displacement system towards a spaced production well from which fluids are recovered, the improvement which comprises injecting into the reservoir a micellar solution comprising a liquid hydrocarbon, a C_3 to C_8 monohydric alcohol or a glycol ether, a brine and a blend of hydrocarbon sulfonates produced by the steps of:

(A) separately sulfonating two or more different hydrocarbon fractions boiling above 700° F. by contact with a sulfonating agent under reaction conditions; and

(B) neutralizing th sulfonated fractions obtained from step (A) with a neutralizing agent so as to produce petroleum sulfonates.

4,446,037

FRICTION REDUCING ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Clementon, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 267,105, May 26, 1981. This application Apr. 4, 1983, Ser. No. 481,706

Int. Cl.³ C10M *1/32, 1/38*

U.S. Cl. 252—47.5 **19 Claims**

1. A reaction product made by reacting hydrolyzed imidazoline with an aldehyde and a mercaptan, using a molar ratio of from about 1:1:05 to about 1:1:1, respectively, the reaction taking place at from about 110° C. to about 150° C.

4,446,038

CITRIC IMIDE ACID COMPOSITIONS AND LUBRICANTS CONTAINING THE SAME

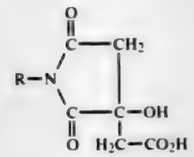
Raymond C. Schlicht, Fishkill, and Anthony P. Skrobul, Beacon, both of N.Y., assignors to Texaco, Inc., White Plains, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,938

Int. Cl.³ C10M *1/32*

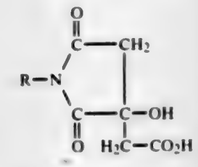
U.S. Cl. 252—51.5 A **12 Claims**

1. An oleaginous composition comprising a major proportion of a mineral or synthetic oil of lubricating viscosity and a minor friction reducing amount of the citric imide represented by the formula:



wherein R is a hydrocarbyl radical of about 5 to about 30 carbon atoms, or R'NHR'' in which R' is a divalent alkylene radical of 2 to 10 carbon atoms and R'' is a hydrocarbyl radical having from 5 to 30 carbon atoms.

12. A method for operating an internal combustion engine which comprises supplying to the crankcase and lubricating system of said engine, a lubricating oil composition comprising a major portion of a mineral or synthetic oil of lubricating viscosity and a minor friction reducing amount of the citric imide acid represented by the formula:



wherein R is a hydrocarbyl radical of about 5 to about 30 carbon atoms, or R'NHR'' in R' is a divalent alkylene radical of 2 to 10 carbon atoms and R'' is a hydrocarbyl radical having from 5 to 30 carbon atoms.

4,446,039

ORGANIC COMPOSITIONS CONTAINING HYDROXY-AROMATIC COMPOUNDS USEFUL AS ADDITIVES FOR FUELS AND LUBRICANTS

John F. Pindar, Euclid, and Jerome M. Cohen, University Heights, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 22,537, Mar. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 697,177, Jun. 17, 1976, Pat. No. 4,147,643, which is a continuation-in-part of Ser. No. 661,906, Feb. 26, 1976, abandoned. This application May 13, 1981, Ser. No. 263,254

Int. Cl.³ C10M *1/20*

U.S. Cl. 252—52 R **12 Claims**

1. A composition of matter made by reacting, at a temperature of about 30° to about 220° C.:

(A) one molar part of at least one aromatic compound having (i) one or more OH groups directly bonded to a carbon atom of an aromatic nucleus,

(ii) at least one aromatic hydrogen atom, and

(iii) at least one hydrocarbon-based aliphatic substituent of at least about 50 carbon atoms;

(B) 1-5 molar parts of at least one aldehyde of 1 to about 30 carbon atoms or reactive equivalent thereof; and

(C) 1-5 molar parts of at least one dihydroxy or trihydroxy benzene with at least one R′ substituent, said R′ being hydrogen or R″ and R″ being a C_{1-30} hydrocarbon-based group;

wherein (A) and (C) are not the same.

4,446,040

STRONG, HEAT STABLE, WATER REPELLENT, EXPANDED PERLITE/ALKALI METAL SILICATE INSULATION MATERIAL

Sudarsan C. Samanta, Plymouth Meeting, Pa., assignor to General Refractories Company, Bala Cynwyd, Pa.

Filed Oct. 1, 1982, Ser. No. 432,355

Int. Cl.³ C04B *43/00*; E04B *1/80*

U.S. Cl. 252—62 **30 Claims**

1. A thermal insulation material having an average maximum linear shrinkage of 2% or less at temperatures up to 1200° F. made by the process of:

(a) mixing expanded perlite, alkali metal silicate, water, up to 15 parts by weight of kaolin clay per 100 parts by weight of expanded perlite and up to 2 parts by weight of an organic fiber per 100 parts by weight of expanded perlite to form a mixture, the alkali metal silicate and water content of said mixture being between 60% and 140% by weight of the expanded perlite content of said mixture;

(b) pressing said mixture in a suitable mold to form a molded article; and

(c) curing and drying said molded article at a temperature of between about 140° F. and about 170° F.

4,446,041

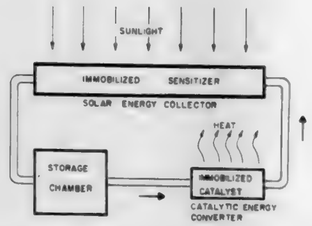
SOLAR ENERGY SYSTEM

Michael P. Neary, 409 E. Coronado #2, Santa Fe, N. Mex. 87501

Continuation of Ser. No. 74,422, Sep. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 894,826, Apr. 10, 1978, abandoned. This application Mar. 10, 1981, Ser. No. 242,182

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—70 **2 Claims**



1. A new composition of matter comprising Norbornadiene-Quadricyclene having reduced flammability by the addition of a halogenated hydrocarbon.

4,446,042

BRIGHTENER FOR DETERGENTS CONTAINING NONIONIC AND CATIONIC SURFACTANTS

Kenneth A. Leslie, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 18, 1982, Ser. No. 434,765

Int. Cl.³ C11D *1/835, 3/42, 17/08*

U.S. Cl. 252—102 **10 Claims**

1. A stable aqueous liquid laundry detergent composition comprising:

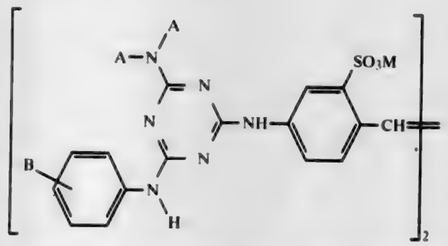
(a) from about 5% to about 95% by weight of a surfactant mixture consisting essentially of:

(i) an ethoxylated alcohol or ethoxylated alkyl phenol nonionic surfactant of the formula $R(OC_2H_4)_nOH$, wherein R is an aliphatic hydrocarbon radical containing from about 10 to about 18 carbon atoms or an alkyl pheny radical in which the alkyl group contains from about 8 to about 15 carbon atoms, and n is from about 2 to about 9, said nonionic surfactant having an HLB of from about 5 to about 14; and

(ii) a quaternary ammonium cationic surfactant having 2 chains which each contain an average of from about 12 to about 22 carbon atoms;

the weight ratio of said nonionic surfactant to said cationic surfactant being from about 2:1 to about 40:1; and

(b) from about 0.01% to about 3% by weight of an anionic brightener of the formula



wherein each A is hydrogen, methyl, ethyl, isopropyl, 2-hydroxyethyl, 2-hydroxypropyl, or propanamido, or taken together are morpholino or anilino; and each B is hydrogen or $-SO_3M$, wherein M is a compatible cation and the total number of $-SO_3M$ groups in the molecule is from 3 to 6 with no more than 2 $-SO_3M$ groups per anilino group;

the equivalent weight ratio of said cationic surfactant to said brightener being greater than about 3.

4,446,043

BUILT LIQUID DETERGENT COMPOSITIONS

Ho T. Tai, Santes, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,671

Claims priority, application United Kingdom, Sep. 1, 1981, 8126444

Int. Cl.³ C11D *3/06, 7/56*

U.S. Cl. 252—105 **6 Claims**

1. A low viscosity built liquid detergent composition comprising:

(i) from 22 to 32% by weight of sodium triphosphate;

(ii) from 6 to 15% by weight of an active detergent mixture of

(a) a water-soluble anionic sulphonate or sulphate detergent;

(b) an alkali metal soap of fatty acids having from 12 to 18 carbon atoms;

(c) a nonionic detergent; in a weight ratio of (a):(b):(c) of (4.5-8.5):(0-3):(1.5-4);

(iii) from 2 to 10% by weight of an alkali metal sulphite; and

(iv) from 0.2 to 2% by weight of a non-detergent short-chain alkyl-substituted benzene sulphonate having 1-4 carbon atoms in the alkyl substituent(s); the liquid detergent composition characterized by a viscosity of not more than 0.7 Pascal seconds when measured at 20° C. and at 21 seconds^{-1} shear rate.

4,446,044

AQUEOUS WATER-IN-OIL CLEANING EMULSION

Andrew F. Rutkiewic, West Chester, Pa., and James P. White, Pensauken, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 252,573, Apr. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 208,421, Nov. 19, 1980, abandoned. This application May 7, 1982, Ser. No. 376,232

Int. Cl.³ C11D *1/72, 3/43, 17/08*; C23G *5/02*

U.S. Cl. 252—170 **5 Claims**

1. A cleaning composition of a water-in-oil emulsion consisting essentially of:

(a) a dispersed phase of 70-85 percent by weight, based on the weight of the emulsion, of water;

(b) a continuous phase of 10-25 percent by weight, based on the weight of the emulsion, of oil, wherein said oil is a blend of aromatic organic solvents or aromatic and aliphatic organic solvents having a solvency parameter with a dispersion component value of 7.70-8.80, a polar component value of 0-0.70, and a hydrogen bonding component value of 0.005-1.42;

(c) 1.5-7.5 percent by weight, based on the weight of the emulsion, of at least one hydrophobic nonionic surfactant having an HLB value less than 3; and

(d) 1.5-7.5 percent by weight, based on the weight of the emulsion, of at least one hydrophilic nonionic surfactant having an HLB value greater than 10 and soluble in solvent blends having a solvency parameter with a polar component value less than 0.9 or a hydrogen bonding component value less than 1.

4,446,045

COMPOSITION FOR TREATING AQUEOUS MEDIUMS

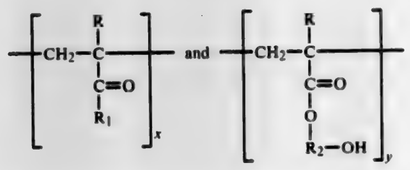
William R. Snyder, Warminster, and Diane Feuerstein, Bensalem, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 249,774, Apr. 1, 1981, Pat. No. 4,374,733. This application Dec. 13, 1982, Ser. No. 449,031

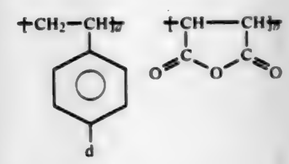
Int. Cl.³ C02F *5/10*

U.S. Cl. 252—180 **12 Claims**

1. Composition for controlling the deposition of scale imparting precipitates on the structural parts of a system exposed to an aqueous medium containing scale imparting precipitates under deposit forming conditions, said composition also being adapted for dispersing solids particulate matter, said scale imparting precipitates being selected from the group consisting of calcium carbonate, calcium phosphate, and calcium sulfate, said solids particulate matter being selected from the group consisting of iron oxide and clay, said composition comprising an effective amount for the purpose of a water soluble polymer (I) comprising moieties (a) derived from an acrylic acid or water soluble salt thereof, and moieties (b) of an hydroxylated lower alkyl acrylate, wherein the moieties of the polymer have the following formula



wherein R is hydrogen or a lower alkyl of from about 1 to 3 carbon atoms, R_1 is OH, OM, or NH_2 where M is a water soluble cation, R_2 is a lower alkyl group of from about 2-6 carbon atoms and the molar ratio of x:y is about 34:1 to 1:4, and an effective amount of a water soluble polymer (II) or water soluble salt or hydrolysate acid form thereof, said polymer (II) having the formula:



wherein a or b may be zero or a positive integer, with the proviso that (a+b) must be >1, d=H or HSO_3.

4,446,046

POLY (ALKENYL) PHOSPHONIC ACID AND METHODS OF USE THEREOF

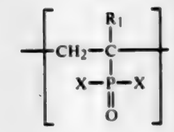
Larry W. Becker, Wilmington, Del., assignor to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 274,700, Jun. 17, 1981, abandoned. This application Dec. 20, 1982, Ser. No. 451,569

Int. Cl.³ C02F *5/14*

U.S. Cl. 252—181 **9 Claims**

1. Method of inhibiting corrosion of and deposit formation along metallic parts in contact with a boiler water system comprising adding to said system an effective amount of a water soluble polymer (I) having a repeat unit represented by the formula



wherein R_1 is a lower alkyl group of one to about six carbon atoms, and wherein X=OH or OM, where M is a cation.

4,446,047

PLEOCHROIC ANTHRAQUINONE DYES

David J. Thompson, Manchester, England, assignor to Imperial Chemical Industries PLC, London, England

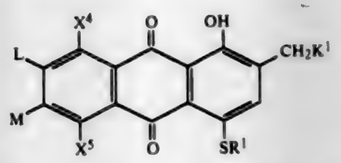
Continuation-in-part of Ser. No. 352,058, Feb. 24, 1982. This application Aug. 24, 1982, Ser. No. 411,094

Claims priority, application United Kingdom, Feb. 25, 1981, 8105888; Feb. 25, 1981, 8105890; Sep. 30, 1981, 8129518; Aug. 18, 1982, 8223718

Int. Cl.³ C09K *3/34*; G02F *1/13*; C09B *1/58, 1/60*

U.S. Cl. 252—299.1 **8 Claims**

1. An anthraquinone dye of the formula:



wherein L & M are H or CH_2K^1; X^4 & X^5 are OH or SR^2 provided that when X^4 is OH X^5 is SR^2, L is CH_2K^2 and M is H; and when X^5 is OH X^4 is SR^2, M is CH_2K^2 and L is H; K^1 & K^2 are C_{1-20}-alkyl; R^1 is mono- or bi-cyclic aryl; and R^2 is

different to R^1 and selected from C_{1-20}-alkyl, mono- or bicyclic aryl and C_{4-8}-cycloalkyl.

4,446,048

LUMINESCENT MATERIALS

Peter W. Ranby, Middlesex, and David R. Palowkar, London, both of England, assignors to Thorn Emi Limited, London, England

Filed Nov. 23, 1981, Ser. No. 324,026
Claims priority, application United Kingdom, Nov. 25, 1980, 8037726
Int. Cl.³ C09K *11/463*
U.S. Cl. 252—301.4 S **12 Claims**

1. A phosphor for use in a fluorescent lamp which comprises an alkaline earth sulphate of which at least 50% of the alkaline earth of said alkaline earth sulphate is calcium but wherein up to 50% of the alkaline earth of said alkaline earth sulfate may be strontium, with the balance of said alkaline earth being calcium, and which additionally contains the following percentages by weight of the alkaline earth sulphate

(a) from 0.5 to 10 of cerium,
(b) up to 10 of manganese,
(c) from 0.001 to 3 of an alkali metal selected from lithium, sodium and potassium, and
(d) from 0.001 to 8 of boron.

4,446,049

YELLOW-EMITTING HALOPHOSPHATE PHOSPHOR OF IMPROVED BRIGHTNESS AND METHOD

Romano G. Pappalardo, Sudbury, and Thomas E. Peters, Chelmsford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 21, 1982, Ser. No. 435,846
Int. Cl.³ C09K *11/435*
U.S. Cl. 252—301.6 P **11 Claims**

1. A yellow-emitting halophosphate luminescent material exhibiting characteristic peak emission at about 575 nanometers when excited by ultraviolet light, said luminescent material having a composition defined by the general formula:

$$Ca_{(5-v-w-x-y)}Me_vSn_wMn_x(PO_4)_3F_z$$

where Me is a divalent metal partially substituting for calcium, tin is in the stannous state, manganese is in the manganous state, and

$0.001 \leqq v \leqq 0.10$
$0.01 \leqq w \leqq 0.06$
$0.15 \leqq x \leqq 0.35$
$0.08 \leqq y \leqq 0.16$
$0.90 \leqq z \leqq 1.10$

4,446,050

Patent Not Issued For This Number

4,446,051

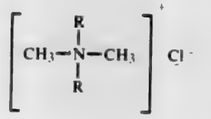
WATER-IN-OIL EMULSIONS

Daniel P. M. Berthod, Paris, and Simone Ferret, St. Denis, both of France, assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 2, 1981, Ser. No. 298,563
Claims priority, application European Pat. Off., Sep. 15, 1980, 80303230
Int. Cl.³ B01J *13/00*; A01N *61/02*; A61K *31/00, 47/00*
U.S. Cl. 252—309 **16 Claims**

1. A high internal phase water-in-oil emulsion stable through at least two freeze thaw cycles consisting essentially of:

(a) from 1.4 to 24.3% by weight of a branched chain non-polar oil;
(b) from 0.5 to 10% by weight of a non-anionic liquid emulsifier having an HLB value of from 1 to 7;
(c) from 0.1 to 5% by weight of a reaction product of a sodium magnesium-fluorolithosilicate trioctahedral montmorillonite clay and the quaternary ammonium salt having the formula:



where R represents hydrogenated tallow fatty acid radicals;
(d) from 0.1 to 5% by weight of a water-soluble magnesium salt; and
(e) from 0.1 to 97.9% by weight of water;
the aqueous phase forming from 75 to 98% by volume, and the oily phase forming from 25 to 2% by volume of the emulsion.

4,446,052

AQUEOUS GEL CONTAINING TRICALCIUM DI(1-HYDROXY-3-AMINOPROPANE-1,1-DIPHOSPHONATE

Richard J. Sunberg, Oxford, and James J. Benedict, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 17, 1982, Ser. No. 379,234
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—315.1 **2 Claims**

1. An aqueous gel containing from about 0.01% to about 3% tricalcium di(1-hydroxy-3-aminopropane-1,1-diphosphonate).

4,446,053

BETA-AMINO ACID DERIVATIVES AND FRICTION-MODIFIED LUBRICATING COMPOUNDS CONTAINING SAME

Anthony P. Skrobul, Beacon, and Benjamin J. Kaufman, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,160
Int. Cl.³ C10M *1/36, 1/54*
U.S. Cl. 252—33.6 **6 Claims**

1. A friction-reducing additive for lubricating oils having the formulas:

$$RNHCH_2CH_2CO_2^-X^+ \text{ and } RNHCH_2CH_2CONH_2$$

wherein R is a straight chain radical having from 10 to 30 carbon atoms and X is sodium or potassium.

4,446,054

DEMULSIFICATION OF SURFACTANT-PETROLEUM-WATER FLOOD EMULSIONS

Donald U. Bessler, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 713,707, Aug. 12, 1976, Pat. No. 4,089,803. This application Sep. 21, 1977, Ser. No. 835,390
Int. Cl.³ B01D *17/04*
U.S. Cl. 252—344 **4 Claims**

1. A composition comprising a demulsifier and an amine or salt thereof, said demulsifier being selected from the group consisting of oxyalkylated phenol-aldehyde resins, sulfonates, oxyalkylated alkylphenols, oxyalkylated alcohols and oxyalkylated esters, and said amine being a polyalkanol amine, the ratio of demulsifier to amine ranging from 0.12:1 to 125:1.

4,446,055

MODIFIER FOR EFFECTING PHYSICAL PROPERTIES OF FOOD AND FOOD GRADE COMPOSITIONS

Syed M. M. Shah; Anthony J. Luksas, both of Chicago, and Salah E. Ahmed, La Grange Park, all of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Mar. 6, 1979, Ser. No. 17,978
Int. Cl.³ B01F *17/00*
U.S. Cl. 252—351 **21 Claims**

1. A food-grade modifier comprising a water-insoluble substantially neutralized solid complex precipitate of calcium, phosphorous, and at least one amino acid selected from the group consisting of tyrosine, lysine and aspartic acid and mixtures thereof, and wherein the pH of the complex precipitate, as measured from the precipitating medium therefore, is at least 5.5 and less than 8.0, the ratio of calcium to amino acid in the complex precipitate is from 5:1 to 0.5:1, and the ratio of calcium to phosphorous in the complex precipitate is from 4:1 to 0.5:1.

4,446,056

PREPARATION OF MIXTURE OF NITROGEN AND SULFUR-NITROGEN HETEROCYCLICS AND USE IN CORROSION INHIBITING

Neil E. S. Thompson, Creve Coeur, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,953
Int. Cl.³ C23F *11/04, 11/16*
U.S. Cl. 252—391 **15 Claims**

1. A process of preparing sulfur-containing compositions which comprises reacting hexahydrotriazines in the presence of a Lewis acid at a temperature between 80° C. and 300° C. for a period of about 0.5 to 24 hours, or the precursors thereof, with a member from the group consisting of sulfur and sulfur-containing compounds, where the precursors are aldehydes, except for acetaldehyde, reacted with ammonia.

2. The product of claim 1.

3. A process of inhibiting corrosion which comprises treating a system with the product of claim 2.

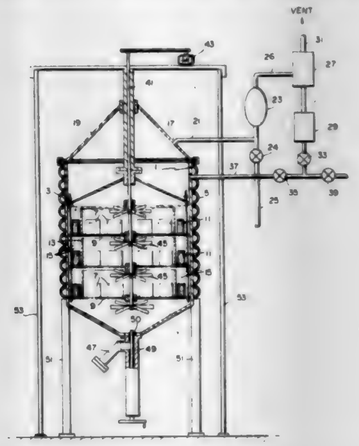
4,446,057

APPARATUS AND METHOD FOR THE MANUFACTURE OF GAS FILTERS

Kung-You Lee; Matthew A. McMahon, both of Wappingers Falls, N.Y., and Justin C. Powell, Fairfax, Va., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 8, 1982, Ser. No. 396,518
Int. Cl.³ B01J *23/08*
U.S. Cl. 502—355 **8 Claims**

1. A method for coating a plurality of substrates with an alumna hydrate film comprising the steps of contacting a caustic solution with in a coating vessel said substrates to be coated and with a plurality of porous containers having aluminum metal therein; reacting said aluminum metal with said caustic solution to form a coating solution; separating gas bubbles produced from said reaction of said aluminum metal with said caustic solution from said substrates through the use of a partition between said porous containers and said substrates, said partition guiding said gas bubbles away from said substrates to



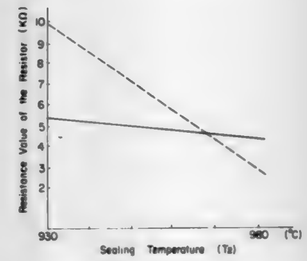
a position where said gas bubbles can be eliminated; and depositing alumina hydrate on said substrates.

4,446,058

RESISTOR COMPOSITION FOR RESISTOR-INCORPORATED SPARK PLUGS

Masao Sakai, Kasugai; Miyakazu Hashizume, Aichi; Yasuhiko Suzuki, Aichi, and Makoto Sugimoto, Aichi, all of Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jun. 29, 1982, Ser. No. 393,305
Claims priority, application Japan, Jul. 16, 1981, 56-109971
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—507 **12 Claims**



1. A resistor composition for resistor-incorporated spark plugs, consisting essentially of 100 parts by weight of a base mixture consisting essentially of 30 to 70% by weight of glass frit and the balance of an inorganic aggregate consisting essentially of one or more substances selected from the group consisting of alumina, zircon, mullite, silica, clay, silicon nitride, aluminum nitride and boron nitride;

0.1 to 7.0 parts by weight, calculated as carbon on sintering, of a carbonaceous material;
and 0 to 30 parts by weight of an agent for stabilizing the resistance of the resistor under load,
wherein the glass frit contains 10 to 100% by weight of lead glass having a PbO content of 30 to 88% by weight and a softening point of 300° to 600° C., the balance of the glass frit being a glass having a softening point which exceeds 500° C.

4,446,059

CONDUCTOR COMPOSITIONS

Albert L. Eustice, Lewiston, N.Y., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 15, 1982, Ser. No. 368,807
Int. Cl.³ H01B 1/06
U.S. Cl. 252—514 **10 Claims**

1. A metallization for printing conductor patterns upon a soda lime glass substrate comprising an admixture of finely divided particles of

(1) 60 to 98.5% wt. conductive metal selected from the group consisting of Ag, Au, Cu and alloys and mixtures thereof,

(2) 20 to 1% wt. inorganic binder, and

(3) 20 to 0.5% wt. of a colorant which is a mixture of 5 to 60% wt. of an oxide of or a precursor of an oxide of copper, silver or mixtures thereof and 95 to 40% wt. of B_2O_3 or precursor thereof, the colorant being comprised of no more than 40% wt. of oxide of silver or 60% wt. of oxide of copper.

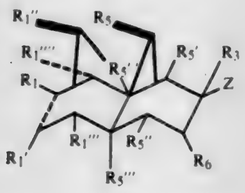
4,446,060

MONO-OXOMETHYL SUBSTITUTED POLYHYDRODIMETHANONAPHTHALENE DERIVATIVES, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING SAME

Mark A. Sprecker, Sea Bright; Marie R. Hanna, Hazlet; Richard J. Tokarzewski, Keyport; Robert P. Belko, Woodbridge; Hugh Watkins, Lincroft, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 354,387, Mar. 2, 1982, Pat. No. 4,391,284. This application Mar. 24, 1983, Ser. No. 478,353
Int. Cl.³ A61K 7/46; C11B 9/00
U.S. Cl. 252—522 R **12 Claims**

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of perfume compositions and, colognes, comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:

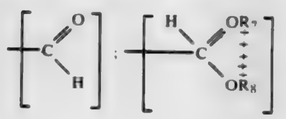


wherein the dashed line represents a carbon-carbon double bond or a carbon-carbon single bond; wherein R_1, R_1', R_1'', R_1''', R_1'''', R_3, R_5, R_5', R_5'', R_5''', R_5'''' and R_6 represent hydrogen or methyl; with the provisos:

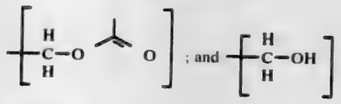
(i) at least four of R_1, R_1', R_1'', R_1''' and R_1'''' represents hydrogen; and

(ii) at leat four of R_5, R_5', R_5'', R_5''', R_5'''' represent hydrogen;

with Z being a moiety selected from the group consisting of:



-continued



with the line:

[++++]

representing a carbon-carbon single bond or no bond at all; and R_7 and R_8 being separately C_1-C_4 lower alkyl or, taken together, being C_2-C_4 alkylene.

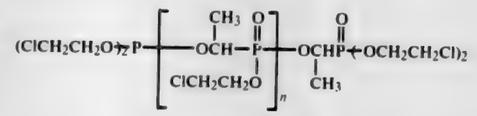
4,446,061

COMPOSITION CONTAINING REACTION PRODUCTS OF METAL OXIDES AND SALTS WITH PHOSPHORUS COMPOUNDS

Samuel F. Joyce, III, Ballwin, Mo.; Albert W. Morgan, Collinsville, Ill.; Norman W. Touchette, and William Vanderlind, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 88,308, Oct. 25, 1979, Pat. No. 4,260,542, which is a division of Ser. No. 898,590, Apr. 21, 1978, Pat. No. 4,206,133, which is a division of Ser. No. 724,192, Sep. 17, 1976, Pat. No. 4,133,823, which is a continuation-in-part of Ser. No. 553,947, Feb. 28, 1975, abandoned, which is a continuation of Ser. No. 223,295, Feb. 3, 1972, abandoned. This application Oct. 23, 1980, Ser. No. 199,809
Int. Cl.³ C09K 15/34
U.S. Cl. 252—602 **10 Claims**

1. A composition comprising a plasticizer and a reaction product of a phosphite/phosphonate of the formula



wherein n has a value from 0 to 4 and a compound selected from the group consisting of a metal oxide and a metal salt.

4,446,062

MIXED PHENYL/MESITYL PHOSPHATE ESTER COMPOSITION

Fui-Tseng H. Lee, Princeton; Charles V. Juelke, Belle Mead, and Joseph H. Finley, Metuchen, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 16, 1982, Ser. No. 348,636
Int. Cl.³ C09K 3/28
U.S. Cl. 252—609 **3 Claims**

1. A fire retardant composition comprising a polyphenylene ether-polystyrene resin and a mixed phenyl/mesityl phosphate ester fire retardant containing by weight about 20% triphenyl phosphate, about 40% diphenyl mesityl phosphate and about 40% phenyl dimesityl phosphate, said mixed ester having a viscosity at 65.5° C. no greater than about 0.000024 meter^2 per second and having a phosphorus analyses of from about 8.2% to about 8.4% made by:

(a) heating from about 1.02 to about 1.23 moles of distilled still bottom phenols containing more than 95 weight percent of mesitol, no more than about 2 weight percent 2,4-xylenol and no more than about 0.5 weight percent of total 2-methyl phenol isomers in the presence of a Friedel-Crafts catalyst to a temperature of about 120° C. to 130° C. and adding with agitation about 1.0 mole of phosphorus oxychloride over a period of time to form a reaction mixture;

(b) maintaining the temperature of the reaction mixture at 120° C. to 130° C. until the amount of unreacted mesitol is less than one weight percent of said distilled still bottom phenols;

(c) adding to the reaction mixture with agitation over a period of time from about 1.9 to about 2.12 moles of phenol while continuing to maintain said reaction mixture at 120° C. to 130° C.;

(d) heating said reaction mixture up to about 220° C. after addition of all of the phenol and maintaining said reaction mixture at that temperature with agitation for sufficient time to form a mixed phosphate ester composition; and

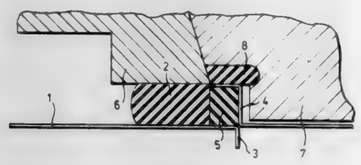
(e) distilling said mixed phosphate ester composition and collecting a product boiling at about 214° C. to 240° C./2 mm Hg.

4,446,063

DISPOSAL OF RADIOACTIVE WASTE

Richard J. Critchley, Chorley, and Roy J. Swindells, Stockport, both of England, assignors to British Nuclear Fuels Limited, Warrington, England

Filed Oct. 13, 1981, Ser. No. 310,842
Claims priority, application United Kingdom, Oct. 29, 1980, 8034763
Int. Cl.³ G21F 9/22, 5/00
U.S. Cl. 252—633 **4 Claims**



1. In a method of charging low activity waste into an upright disposal drum having a single closure plug which is an interference fit in the drum when the closure plug occupies its closure position wherein the drum is sealed to a waste dispenser by an interposed sealing member on the drum to form a closed extension thereof, drum and dispenser closures being withdrawn in back-to-back manner into the dispenser prior to charging waste into the drum, the steps comprising compressing the interposed sealing member on the drum in two stages, a first stage of movement of the drum relative to the dispenser and prior to withdrawing the drum and dispenser closure combination into the dispenser, and, subsequent to withdrawing said combination into the dispenser, a second stage of movement of the drum relative to the dispenser sufficient to enable full interference fit engagement of the closure plug in the drum when the drum and dispenser closure combination is restored to the dispenser closed position.

4,446,064

INSULIN MEDIATOR SUBSTANCE

Joseph Larner; Kang Cheng, both of Charlottesville, Va., and Gail Galasko, Johannesburg, South Africa, assignors to The University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Dec. 19, 1980, Ser. No. 218,075
Int. Cl.³ C07G 7/00
U.S. Cl. 260—112 R **10 Claims**

1. A process for producing an insulin mediator substance comprising:

contacting muscle tissue with insulin;

deproteinizing the muscle tissue;

removing the major nucleotides from the deproteinized muscle tissue;

chromatographing the so-treated product on a Sephadex G-25 column using 0.05 N formic acid; and recovering the fraction wherein the major 230 nm absorbance peak corresponds with the ninhydrin-positive peak.

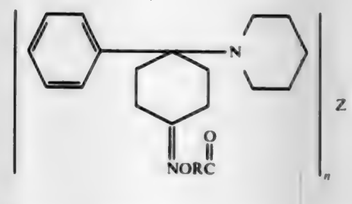
4,446,065

PHENCYCLIDINE COMPOUNDS AND ASSAYS FOR ITS DETERMINATION

Cheng-I Lin, San Jose, and Prithipal Singh, Sunnyvale, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Dec. 22, 1981, Ser. No. 333,344
Int. Cl.³ C12N 9/96; G01N 33/54; A61K 43/00
U.S. Cl. 260—112 R **9 Claims**

1. A compound of the formula:



wherein:

R is a saturated aliphatic linking group of from one to six carbon atoms;

Z is hydrogen, hydroxyl, alkoxyl having from one to six carbon atoms, a group forming an activated ester capable of amine formation in an aqueous medium, or a poly(amino acid) which is antigenic or an enzyme; and

n is one when Z is other than a poly(amino acid) and otherwise is the molecular weight of Z divided by 500.

4,446,066

PROCESS FOR THE MANUFACTURE OF GLOBIN OR BLOOD CELL PROTEIN AND HEME FROM HEMOGLOBIN

Jan H. Luijerink, Berghem, Netherlands, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Jun. 15, 1982, Ser. No. 388,665
Claims priority, application Netherlands, Jun. 15, 1981, 8102856
Int. Cl.³ A23J 1/06; C07C 103/52; C07G 7/00
U.S. Cl. 260—112 B **6 Claims**

1. In a process of preparing blood cell protein and haem in which (a) haemoglobin is contacted with a mixture of organic solvent, selected from the group consisting of methanol and a mixture of methanol and ethanol and/or water, and hydrochloric acid under turbulent conditions and (b) the dispersion obtained is separated by means of hydrocyclones into a phase rich in haem and a phase rich in blood cell protein, (c) after which the phase rich in blood cell protein thus obtained is neutralized and the blood cell protein is separated from the neutralized phase and the haem is separated from the phase rich in haem, the improvement which comprises: contacting the haemoglobin, before step (a) is carried out, with a non-acidified organic solvent, selected from the group consisting of methanol and methanol and ethanol and/or water, under turbulent conditions at a temperature of from 20° C. to 50° C.

4,446,067

AZO REACTIVE DYESTUFFS

Horst Jäger, and Klaus Wunderlich, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

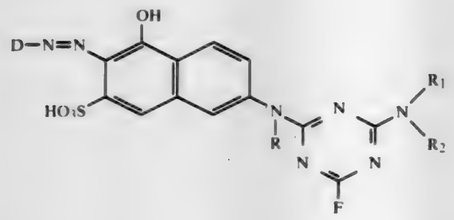
Continuation of Ser. No. 64,939, Aug. 8, 1979. This application Oct. 30, 1980, Ser. No. 202,230

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838271

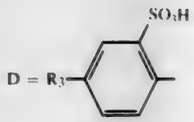
Int. Cl.³ C09B *29/00*

U.S. Cl. 260—153 8 Claims

1. Dyestuffs of the formula



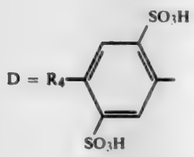
wherein



wherein

R_3 represents halogen selected from the group consisting of fluorine, chlorine and bromine; C_1–C_4-alkyl, C_1–C_4-alkoxy or a sulpho, carboxyl, acylamino or 4-sulphophenylazo group,

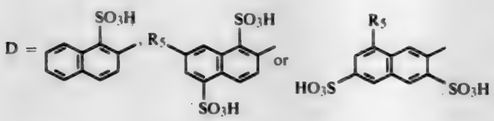
or wherein



wherein

R_4 represents hydrogen, methyl, ethyl or acylamino,

or wherein



wherein

R_5 represents hydrogen or a sulpho group,

and wherein

R=hydrogen or C_1–C_4-alkyl and

R_1 and R_2=hydrogen, unsubstituted or substituted alkyl or cycloalkyl or

R_1 and R_2 form a ring with the nitrogen atom including a further hetero-atom.

4,446,068

N-SUBSTITUTED FLUOROAZIRIDINES AND PROCESS FOR MAKING

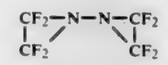
Ronald A. Mitsch, St. Paul, Minn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1967, Ser. No. 628,313

Int. Cl.³ C07D *203/22*

U.S. Cl. 260—239 E 1 Claim

1. A compound having the formula



4,446,069

PROCESS FOR THE PREPARATION OF β-LACTAM ANTIBIOTICS

Kong Luk, Horley, England, assignor to Beecham Group Limited of Beecham House, Brentford, England

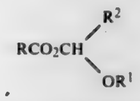
Filed Jun. 3, 1981, Ser. No. 269,897

Claims priority, application United Kingdom, Jun. 11, 1980, 8019073

Int. Cl.³ C07D *499/00, 501/04*

U.S. Cl. 260—245.2 R 20 Claims

1. A process for the preparation of a fused bicyclic β-lactam containing compound having an optionally salified free carboxylic acid group, which consists essentially of reacting an ester of the formula (I):



(I)

wherein R is a fused bicyclic β-lactam selected from the group consisting of a penicillin, penicillin derivative, carbapenem, cephalosporin, oxacephem, penam, and clavulanate derivative, wherein the carboxylic acid group is attached to the position adjacent to the nitrogen of the β-lactam ring, within the ring which is fused to the β-lactam ring; R^1 is alkyl of 1–6 carbon atoms unsubstituted or substituted by alkoxy of 1–4 carbon atoms; phenyl unsubstituted or substituted by one or more fluoro, chloro, bromo, alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl of 1 to 4 carbon atoms or nitro or alkyl group of 1–4 carbon atoms substituted by phenyl unsubstituted or substituted by one or more fluoro, chloro, bromo, alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl of 1 to 4 carbon atoms or nitro; and R^2 is hydrogen or alkyl of 1–4 carbon atoms or is joined to R^1 to form a tetrahydrofuranyl or tetrahydropyranyl ring, with a halide ion under neutral conditions.

4,446,070

CATALYTIC OXIDATION OF POLYNUCLEAR AROMATIC HYDROCARBONS

Derk T. A. Huibers, Pennington, and Cheng-Yih Jenq, Princeton, both of N.J., assignors to HRI, Inc., Gibbsboro, N.J.

Filed Jun. 10, 1981, Ser. No. 272,414

Int. Cl.³ C07C *50/18, 3/00*

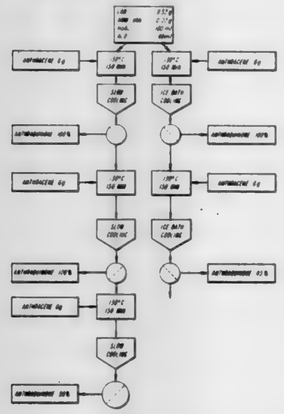
U.S. Cl. 260—369 6 Claims

1. A continuous process for the preparation of anthraquinone from anthracene which includes the steps of:

(a) oxidizing anthracene to anthraquinone in an oxygen-containing gas in the presence of a ceric ammonium nitrate catalyst system dissolved in an acetic acid solvent, said oxidation taking place in a series of reactors, and the reactor broth flowing from a first reactor of said series to a last reactor of said series wherein fresh ceric ammonium nitrate catalyst system is introduced;

(b) adding nitric acid to said oxidized anthracene;

(c) removing the anthraquinone from the oxidative reaction product by filtration; and



(d) recycling the filtrate remaining after the removal of the anthraquinone to catalyze the oxidation of fresh anthracene.

4,446,071

INTERMEDIATES USEFUL IN THE PREPARATION OF 17,17-BIS(SUBSTITUTED THIO) ANDROSTENES

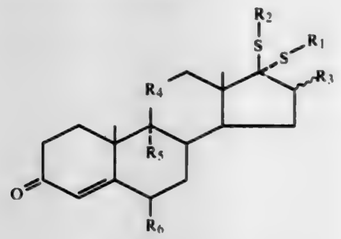
Ravi K. Varna, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 416,181, Sep. 9, 1982. This application May 27, 1983, Ser. No. 499,056

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.3 7 Claims

1. A steroid having the formula



or the 1,2-dehydro derivative thereof wherein

R_1 is alkanoyl or aroyl and R_2 is alkyl;

R_3 is hydrogen, hydroxy, alkoxy, aryloxy, oxo, methylene, alkylthio, arylthio, alkanoyl, alkanoyloxy, or halogen;

R_4 is carbonyl, β-hydroxymethylene or β-acetyloxymethylene;

R_5 is hydrogen or halogen; and

R_6 is hydrogen, methyl, hydroxy, alkanoyl or halogen.

4,446,072

PROCESS FOR DEGRADING THE 20-CARBOXYL GROUP OF Δ4-STEROID-20-CARBOXYLIC ACIDS

Wolfgang Preuss, Monheim, Fed. Rep. of Germany, assignor to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

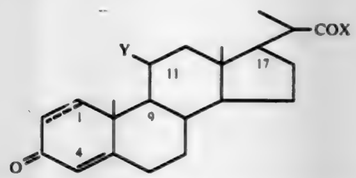
Continuation-in-part of Ser. No. 262,968, May 12, 1981, abandoned. This application Aug. 13, 1982, Ser. No. 407,751

Claims priority, application Austria, May 12, 1980, 2537/80; May 12, 1980, 2538/80

Int. Cl.³ C07J *5/00*

U.S. Cl. 260—397.45 11 Claims

1. A process for degrading the 20-carboxylic acid halide group of Δ4-steroid-20-carboxylic acid halides optionally containing at least one other double bond in the 1(2)- and/or 9(11)-position corresponding to formula I:



(I)

in which Y is a member selected from the group consisting of hydrogen, hydroxyl and, together with the C-atom substituted by Y, carbonyl, and a 9(11)-ene bond, and X represents a halide, characterized in that said Δ4-steroid-20-carboxylic acid halides are subjected to carboxy inversion degradation by reaction with an aromatic percarboxylic acid and hydrolysis of the reaction product under basic/alcoholic conditions and said 20-hydroxy and 20(21)-ene steroid compounds formed are recovered.

10. 20-Hydroxy-pregna-1,4-dien-3,11-dione.

4,446,073

PROCESS FOR THE REDUCTION OF UNSATURATED CARBOXYLIC ACIDS

Gail M. Qualeatti, Palatine, and Dalia Germanas, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 5, 1981, Ser. No. 290,120

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.³ C11C *3/12*

U.S. Cl. 260—409 11 Claims

1. A process for the reduction of an unsaturated carboxylic acid which comprises treating said acid in a reaction system in the presence of hydrogen and a reduction catalyst comprising cadmium and ruthenium-containing compounds, wherein said cadmium and ruthenium are present in a low valence oxidation state in an amount in the range of from about 1.0 to about 10.0 wt% cadmium and from about 0.1 to about 2.0 wt% ruthenium, composited on a solid support at a temperature in the range of from about 100° C. to about 500° C. and a pressure in the range of from about 100 to about 5000 lbs./sq. in., continuously bleeding said hydrogen from said system during the reaction period, and recovering the resultant unsaturated product.

4,446,074

PREPARATION OF RHODIUM COMPLEX COMPOUNDS

Jackie D. Jamerson; Ernst Billig, both of Charleston, and David R. Bryant, South Charleston, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 24, 1981, Ser. No. 334,198

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R 15 Claims

1. An organic one-phase process for preparing a hydridocarbonyltris(triorganophosphorus) rhodium compound which comprises reacting, at a temperature of from about 20° C. to about 120° C., an essentially non-aqueous homogeneous organic reaction solution consisting essentially of (a) a rhodium complex concentrate, (b) hydrogen gas or as a source of hydrogen an alkali metal or alkali earth metal hydroxide, (c) an alcoholic diluent containing from 1 to 10 carbon atoms, (d) carbon monoxide gas or a carbon monoxide source and (e) free triorganophosphorus ligand, for at least a sufficient period of time to form said hydridocarbonyltris(triorganophosphorus) rhodium compound; said rhodium complex concentrate consisting essentially of from about 0.1 to about 30 percent by

weight of a spent hydroformylation reaction medium and having been produced by concentrating a spent hydroformylation reaction medium that contains a partially deactivated soluble rhodium complex hydroformylation catalyst, aldehyde products, higher boiling aldehyde condensation by-products, and free triorganophosphorus ligand, so as to remove from said medium, while retaining a major amount of the rhodium values of said catalyst present in said medium, at least essentially all of said aldehyde products, at least 50 percent by weight of said higher boiling aldehyde condensation by-products that have a boiling point below that of said free triorganophosphorus ligand present in said medium and at least 50 percent by weight of said free triorganophosphorus ligand present in said medium.

4,446,075

SUBSTITUTED BROMOFLUOROBENZENE DERIVATIVES AND PROCESS FOR ITS MANUFACTURE

Kurt Eiglmeier, Seelze, and Reinhard Knieps, Hanover, both of Fed. Rep. of Germany, assignors to Riedel-de Haen AG, Seelze, Fed. Rep. of Germany

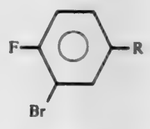
Filed Feb. 20, 1981, Ser. No. 236,546

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006685

Int. Cl.[3] **C07C** *120/00, 47/55*

U.S. Cl. 260—465 G **6 Claims**

1. A process for the manufacture of a substituted bromofluorobenzene of the formula



wherein R is a cyano or COR^1 group, with R^1 being a hydrogen atom or a lower alkyl or an aryl group, which comprises subjecting a substituted fluorobenzene of the formula



wherein R has the above-mentioned meaning, at a temperature of 20° to 200° C., to direct bromination with bromine in an amount of 0.9 to 1.3 mols per mol of said fluorobenzene in the presence of 0.02 to 0.3 mols of iodine or of 0.02 to 0.3 mols of a trivalent metal or of 1 to 1.2 mols of a halide of a trivalent metal, in each case per mol of said fluorobenzene.

4,446,076

METHOD OF PREPARING 1,2-DIBROMO-2-CYANO-(SUBSTITUTED)-ALKANE ANTIMICROBIAL COMPOUNDS

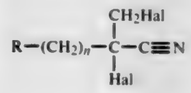
Marshall R. Angeles, Scotchplains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 22, 1981, Ser. No. 333,274

Int. Cl.[3] **C07C** *120/00, 121/16, 121/46, 121/66*

U.S. Cl. 260—465 G **1 Claim**

1. A method of preparing compounds of the formula:



(I.)

where

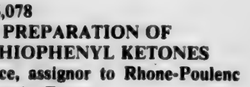
R is selected from the group consisting of C_{1-8}alkyl, straight or branched chain or phenyl;

Hal is bromine or chlorine; and

n is 1;

comprising the following steps:

(1) adding to magnesium a substituted propene of the formula:



in a solvent medium, selected from the group consisting of tetrahydrofuran, diethylether and diglyme, to form 3-(R-substituted)-2-(magnesium halide)-1-propene;

(2) reacting the 3-(R-substituted)-2-(magnesium halide)-1-propene with cyanogen in a reverse addition reaction in a solvent medium, selected from the group consisting of tetrahydrofuran, diethylether and diglyme, to form 3-(R-substituted)-2-cyano-1-propene; and

(3) halogenating with substantially equimolar amount of halogen the 3-(R-substituted)-2-cyano-1-propene to form the desired product.

4,446,077

SUBSTITUTED-CYCLOPROPYL SULFONES

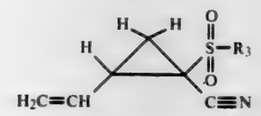
Richard G. Fayter, Jr., Fairfield, and Allen L. Hall, Amelia, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,875

Int. Cl.[3] **C07C** *121/48, 121/66*

U.S. Cl. 260—465 K **2 Claims**

1. A compound of the formula



wherein R_3 is C_{1-8} alkyl, C_{3-8} alkenyl, cyclohexyl, phenyl, benzyl or C_{1-4} alkyl-substituted cyclohexyl, phenyl or benzyl.

4,446,078

PROCESS FOR THE PREPARATION OF α,α-DIFLUOROALKYL-THIOPHENYL KETONES

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

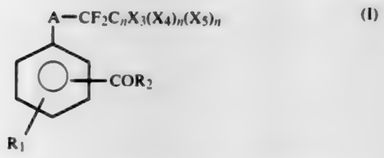
Filed Jun. 28, 1982, Ser. No. 393,121

Claims priority, application France, Jan. 21, 1982, 82 00876

Int. Cl.[3] **C07C** *121/75, 45/45, 149/30*

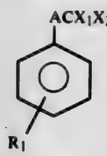
U.S. Cl. 260—465 F **9 Claims**

1. A process for the preparation of α,α-di-fluoroalkoxy or α,α-difluoroalkylthiophenyl ketones having the formula:



(I)

said process comprising reacting a polyhaloalkoxybenzene or a polyhaloalkylthiobenzene having the formula:



(II)

in a reaction vessel with a carboxylic acid, a derivative, or a precursor thereof having the formula:

$$R_2COX_6 \quad \text{(III)}$$

in the presence of boron trifluoride in an amount such that the absolute pressure of the boron trifluoride within the reaction vessel exceeds 1 bar, and in the presence of hydrofluoric acid as a solvent;

wherein

A represents O or S;

X_1 and X_2 are identical or different and represent Cl, Br, I, or F;

X_3, X_4, and X_5 are identical or different and represent H, Cl, Br, I, or F;

X_6 represents halogen, a group derived from the anion of an inorganic acid, OH, OR_3, $OCOR_4$, NH_2, NHR_5, or NR_6R_7, wherein each of R_3, R_4, R_5, R_6, and R_7 is an aromatic or aliphatic radical;

n is zero or an integer equal to or less than 5;

R_1 represents at least one element or moiety selected from hydrogen, OH, Cl, Br, I, F, alkyl and alkoxy radicals having from 1 to 6 carbon atoms, and phenyl and phenoxy radicals substituted by at least one group more deactivating than the $ACX_1X_2C_nX_3(X_4)_n(X_5)_n$ group; and

R_2 represents an aliphatic or aromatic radical.

4,446,079

LOW COST, BRINE TOLERANT SULFONATE AND SULFATE SURFACTANTS HAVING 1,3-DIHYDROCARBOXY-2-PROPYL HYDROPHOBIC TAILS

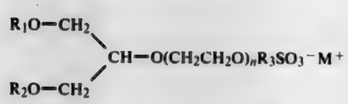
Dennis H. Hoskin, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 31, 1982, Ser. No. 413,591

Int. Cl.[3] **C07C** *143/02;* **C09K** *3/00*

U.S. Cl. 260—513 R **7 Claims**

1. A compound of the formula



(VI)

where R_1 and R_2 are the same or different and are C_1–C_{15} hydrocarbyl, R_3 is C_{0-5} alkyl, M is a cation and n is a rational number from 2 to 6.

4,446,080

CARBURETOR WITH STARTING SYSTEM

Kimiji Karino; Tokuo Kosuge, and Masahiro Souma, all of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., both of Tokyo, Japan

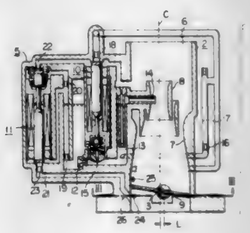
Filed Feb. 11, 1982, Ser. No. 348,017

Claims priority, application Japan, Feb. 16, 1981, 56-20042

Int. Cl.[3] **F02M** *5/02*

U.S. Cl. 261—39 D **6 Claims**

1. A carburetor for an engine, the carburetor comprising a main fuel system and a low-speed fuel system, characterized in that a throttle valve shaft is located in parallel to a row of cylinders of the engine disposed in side-by-side relationship substantially perpendicular to a direction of movement of a vehicle in which the engine is mounted, the carburetor is adapted to be connected to a suction manifold of the engine in such a manner that a float chamber of the carburetor is interposed between the throttle valve shaft and the row of cylinders, said throttle valve shaft is located in a position spaced apart from the axial center line of a suction conduit of said carburetor in a direction opposite to a direction in which the float chamber is located, a starting nozzle of a starting fuel system for supplying starting fuel to a suction conduit at an



engine start-up opens downstream of a throttle valve on a side of the float chamber at which an air flow through the suction conduit is the highest, and in that said starting system comprises an idle port constituting the low-speed fuel system opening in said suction conduit adjacent said starting nozzle, and a bypass port constituting said low speed fuel system opening immediately above said idle port and upstream of said throttle valve.

4,446,081

STEAM CONDENSING APPARATUS

Mutsuhiro Arinobu, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 187,488, Sep. 16, 1980, abandoned. This application May 9, 1983, Ser. No. 490,736

Claims priority, application Japan, Sep. 21, 1979, 54-121876

Int. Cl.[3] **G21C** *9/00*

U.S. Cl. 261—64 R **13 Claims**



1. A steam condensing apparatus comprising:

a container for holding a coolant in a liquid state;

a guide pipe having a first distal end connected through a safety valve to a source of a high pressure coolant in a gaseous state and a second distal end extending into said coolant in said container; and

a plurality of branch pipes extending from said second distal end of said guide pipe and having exhaust nozzles at the forward ends thereof, in which when said safety valve is in an inoperative state, said coolant and air in said container enter into the branch pipes and guide pipe with the air forming an upper layer and the coolant forming a lower layer, and when said safety valve is operated to permit the high pressure coolant of the gaseous state to flow into the guide pipe, said coolant and said air in the guide pipe and branch pipes and high pressure coolant of the gaseous state passed through the safety valve are ejected through the nozzles into the coolant in the container;

wherein said branch pipes are arranged in pairs, the exhaust

nozzles in each pair being spaced apart from one another by a degree sufficient to prevent a merger of bubbles formed by said ejected air in the coolant in the container and a merger of steam regions formed by said ejected coolant of the gaseous state in the coolant in the container, said steam regions forming gas-liquid interfaces where the coolant in the gaseous state condenses; and wherein

at least one of the measures including the diameter of the nozzle and length of the branch pipe being different for each of said branch pipes.

4,446,082

METHOD OF VENEERING BRICK LININGS OF FURNACES AND OTHER HIGH TEMPERATURE ENCLOSURES

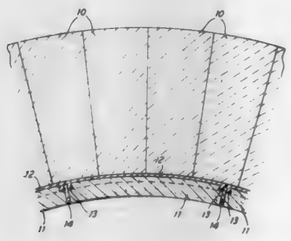
Barrie J. Harvey, Tyldesley, and Ian J. Mann, Southport, both of England, assignors to M. H. Detrick Company, Limited, Lancashire, England

Filed Feb. 9, 1982, Ser. No. 347,273

Claims priority, application United Kingdom, Feb. 9, 1981, 8103862

Int. Cl.³ C21B *7/06*

U.S. Cl. 264—30 **8 Claims**



1. A method of veneering a high temperature enclosure having a lining of refractory bricks, which method comprises the step of adhesively securing to the brick lining of a high temperature enclosure, blocks of ceramic fiber material which have been made by a vacuum-casting process such that the fibers are randomly oriented, and which have been pre-fired prior to installation.

4,446,083

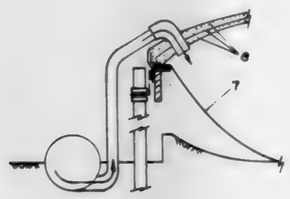
AIR-INFLATED FABRIC-REINFORCED CONCRETE SHELLS

Robert L. Nicholls, 302 Beverly Rd., Newark, Del. 19711

Filed Aug. 3, 1981, Ser. No. 289,469

Int. Cl.³ E04B *1/16*

U.S. Cl. 264—32 **1 Claim**



1. A method of constructing inflated shell enclosures in which alternate layers of a cementing matrix and a fabric reinforcing material are placed over an inflatable membrane and anchored at their common perimeter, followed by inflation of said membrane to form a shell shape, and subsequently by adding a final material component, a chemical reactant, required to harden said cementing matrix.

4,446,084

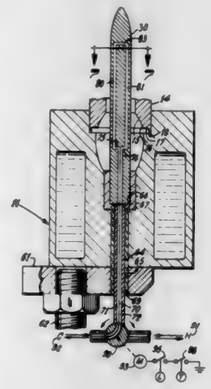
PLASTIC TUBE COUPLING AND APPARATUS FOR FORMING

William W. Rowley, 11524 Wilbert Rd., Chardon, Ohio 44024

Continuation-in-part of Ser. No. 157,395, Jun. 9, 1980, Pat. No. 4,316,870, which is a division of Ser. No. 912,743, Jun. 5, 1978, abandoned. This application Jan. 11, 1982, Ser. No. 338,303

Int. Cl.³ B29D *23/00*

U.S. Cl. 264—40.6 **26 Claims**



1. A method of reforming the end of a plastic tube between a pair of mating dies comprising the steps of controllng the temperature of a pin adapted to fit closely within the I.D. of an end of such tube independently of the temperature of the dies, placing a tube end on such pin, and then forming the tube end between the pair of mating dies to reform the tube end while maintaining the I.D. of the tube end.

4,446,085

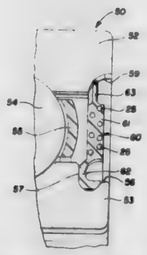
MOLDING OF SEAL RINGS

Melvin L. Earsley, 616 E. Slaton Rd., Lubbock, Tex. 79404

Filed Aug. 30, 1982, Ser. No. 412,589

Int. Cl.³ B29H *3/08*

U.S. Cl. 264—108 **8 Claims**



1. A method for fabricating a bearing seal for a frictionless bearing including the steps

designing a seal ring to have an axially thick body and to have an axially thin integral sealing lip;

designing a mold for said ring seal having at least one mold cavity for injection molding thereof;

forming said seal from an injection moldable material having dispersed particles therein with a minimum transverse dimension, which dimension is greater than the minimum thickness of said sealing lip;

introducing said injection moldable material with dispersed particles into the body portion of said mold cavity;

and effecting the setting of said moldable material to produce a ring with a molded body having embedded stiffening particles therein and with an integral sealing lip devoid of any of said stiffening particles.

4,446,086

PROCESS AND APPARATUS FOR EXTRUDING STABILIZERS

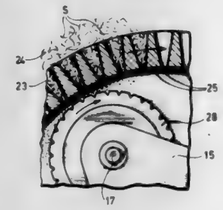
Maarten Molenaar, Schoonhoven, and Hermann A. Schreuder, Bilthoven, both of Netherlands, assignors to EnviroStrand, Inc., Leominster, Mass.

Filed Aug. 6, 1982, Ser. No. 406,048

Claims priority, application Netherlands, Oct. 30, 1981, 8104925; May 11, 1982, 8201928

Int. Cl.³ C09C *1/56*

U.S. Cl. 264—118 **20 Claims**



1. A process for the production of a granular blend of additives for use in manufacturing plastics by mixing such additives and subsequently processing them into granules, which includes the steps of providing a quantity of additive material, providing a thin perforated die plate having tapered die openings which are larger in diameter at their inlet ends than at their outlet ends, providing at the outlet side of said die plate a perforated die support plate having openings of a larger diameter than the die openings, causing the additive material to be introduced into and extruded through the openings in the die plate and discharging the extruded material as strand-like granules through said support plate openings.

4,446,087

CONTINUOUS EXTRUSION OF PARAFFIN WAX

Philip R. Templin, Oakmont, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 22, 1981, Ser. No. 333,306

Int. Cl.³ B29C *17/00*

U.S. Cl. 264—148 **6 Claims**

1. A method of extruding paraffin wax at a high rate into a continuous ribbon of wax of constant cross-section and good surface which comprises feeding a material consisting essentially of paraffin wax through an extrusion die at a temperature between about 2° C. below the solid state transition temperature and about 10° C. above the solid state transition temperature of said was, said paraffin wax being in the orthorhombic crystalline state during extrusion, said wax being pressured through said extrusion die at an extrusion rate of at least about ten linear feet per minute, said extrusion die defining a cross-sectional area of between about 0.5 and about 25 square inches and having its maximum dimension no greater than about ten times its small dimension, whereby a solid ribbon of wax having good surface and good die conformation is produced.

4,446,088

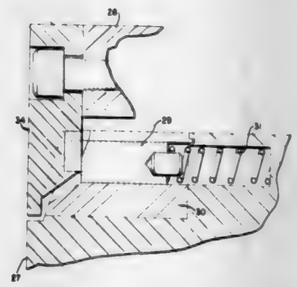
METHOD AND MOLD FOR MAKING AN IMPROVED EGG CARTON

John Daines, Rushville, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 299,683, Sep. 8, 1981. This application Sep. 23, 1982, Ser. No. 422,129

Int. Cl.³ B29D *27/00*; B29C *17/03, 17/08*

U.S. Cl. 264—155 **2 Claims**



1. A process for the production of a thermoformed thermoplastic carton comprising:

providing a relatively flat oriented sheet of polystyrene foam;

preheating said sheet to at least its forming temperature;

thermoforming said preheated sheet by bringing together a male mold member and a female mold member to form said carton including a cover having a surface which is inwardly offset with respect to the front wall of said cover;

shearing a hole in said surface while thermoforming by relative movement between a flat cutting surface of a male key mounted in said male mold member and a flat cutting surface of a female key mounted in said female mold member, said movement being parallel to the closing motion between said male and female members;

biasing said flat cutting surface of said male key against said flat cutting surface of said female key to produce shearing of said sheet between said keys; and

engaging an edge of said female cutting key with a beveled edge of said male cutting key to move said male key perpendicular to the closing motion between said male and female mold members whereby engagement between the flat surfaces of said male and female keys is obtained regardless of the alignment between said male and female mold members.

4,446,089

PROCESS AND APPARATUS FOR THE PRODUCTION OF PLASTIC STRANDS

Hugo Strehler, Frankenthal; Guenter Valentin, and Werner Hoerauf, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 461,744

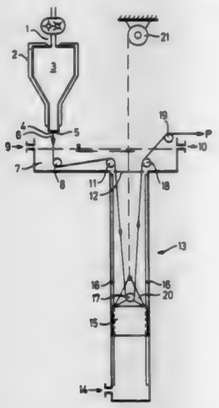
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3205645

Int. Cl.³ D01D *5/08*

U.S. Cl. 264—178 F **7 Claims**

1. A process for the production of strands of synthetic materials, in which the viscous melt flows through die orifices, and the resulting individual strands, to be regarded as filaments, are led in counter-current to a stream of cooling water, in order to solidify them, and are then led to a further processing stage, wherein the individual melt strands are first led along a short,

essentially horizontal path for minimum solidification and thereafter are led in an essentially vertical loop of variable



length through a cooling water bath for complete solidification.

4,446,090

HIGH VISCOSITY SILICONE BLENDING PROCESS

Eric M. Lovgren, Westerlo; Joseph C. Golba, Jr., Ballston Spa, and Randall A. Reed, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,636
Int. Cl.[3] C08K *5/54*
U.S. Cl. 264—211 **14 Claims**

1. A method of continuously producing a thermoplastic/silicone fluid blend comprising

(a) melting a solid thermoplastic composition comprising one or more thermoplastic polymers within an extruder;

(b) injecting a high viscosity silicone fluid having a viscosity of at least 90,000 centipoise at ambient temperature into the molten thermoplastic composition within the extruder; and

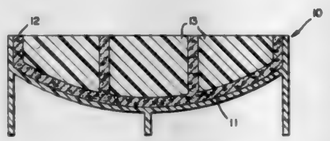
(c) blending said molten thermoplastic composition with said high viscosity silicone fluid within the extruder.

4,446,091

CARBON FIBER-REINFORCED CEMENT MOULD

Reginald D. Pairaudeau, Bristol, England, and David Turnbull, Mississauga, Canada, assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 190,830, Sep. 25, 1980, abandoned, which is a continuation of Ser. No. 954,589, Oct. 25, 1978, abandoned, which is a continuation of Ser. No. 867,122, Jan. 5, 1978, abandoned. This application Mar. 23, 1982, Ser. No. 361,105
Int. Cl.[3] B29D *3/02*; B28B *21/56*; B29G *7/00*
U.S. Cl. 264—225 **5 Claims**



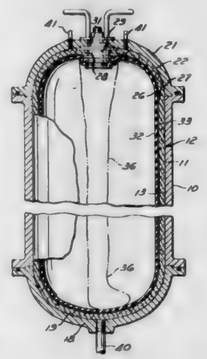
1. In a process for making and using a mold wherein a heat curable plastics composition is disposed in said mold and cured by heat, the improvement comprising: making said mold by combining carbon fibers with hydraulic cement and aggregate in the proportions of 1 to 6 parts by weight of said fibers to 100 parts by weight of said cement and aggregate and forming a coating, and mold surfaces to be in contact with said plastics composition such that said coating contains not more than 1-3 parts of carbon fibers by weight to 100 parts by weight of hydraulic cement and aggregate.

4,446,092

METHOD FOR MAKING LINED VESSELS

Ward L. Bliley, Chesterland, Ohio, assignor to Structural Fibers, Inc., Mentor, Ohio

Continuation of Ser. No. 917,939, Jun. 22, 1978, abandoned. This application Mar. 17, 1982, Ser. No. 359,045
Int. Cl.[3] B29C *11/00*; B29D *3/02*
U.S. Cl. 264—258 **6 Claims**



1. A method of making hollow fiber-reinforced resin articles having a resin-rich interior coating, comprising the steps of positioning a hollow lay-up of loosely felted reinforcing fibers against the inner surface of a rigid mold having a cylindrical wall portion and domed end portions, positioning a stretchable polyester fiber surfacing fabric against the entire inner surfaces of the reinforcing fibers including the cylindrical wall portion and the domed end portions, venting said mold, compressing said lay-up and said surfacing fabric with an internally pressurized, inflatable core to hold the surfacing fabric in place against the hollow lay-up and to hold the hollow lay-up in place against the inner surface of the mold, injecting a metered amount of a liquid thermosetting resin in said mold, increasing the pressure in said inflatable core to compress the lay-up and to evenly distribute the resin throughout the lay-up and the surfacing fabric and to form a resin-rich coating with said surfacing fabric having a fiber-to-resin ratio less than the fiber-to-resin ratio of the resin-impregnated lay-up to form a resin-rich barrier between the interior of the tank and the reinforcing fibers in the lay-up, curing said resin, and removing the molded article from the mold.

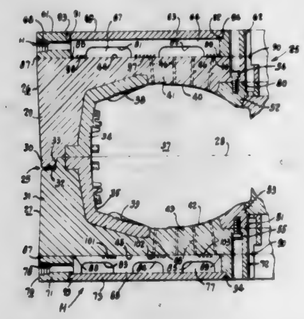
4,446,093

"PIGGYBACK" HEAT EXCHANGER FOR DOME PRESSES

William F. Mattson, Hinckley, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 1, 1983, Ser. No. 519,159
Int. Cl.[3] B29H *5/02*
U.S. Cl. 264—315 **5 Claims**

1. In a press of the steam-dome type for shaping and curing pneumatic rubber tires, said press having a fixed bottom assembly including a lower casing and a lower mold half and a movable top assembly including an upper mold half, an adjustable bolster, and an upper casing which fits the lower casing to form a seal and to provide a closed steam chamber surrounding the platen and the two mold halves, said mold halves fitting together to form a generally toroidal mold cavity and having a multiplicity of vent passages extending from said cavity to the steam chamber, and means for supplying high pressure steam to said steam chamber, the improvement which comprises a heat exchanger having an upper section located between said supporting platen and the upper surface of the upper mold half and a lower section located between the base portion of the press and the lower surface of the lower mold half, each section comprising a flat outer plate parallel to the outer face of the associated mold half and spaced therefrom by a series of narrow spacers to provide a shallow circumferential steam chamber in communication with said vent passages, and means for supplying high-pressure steam to said chamber to effect curing of a tire in the mold cavity.

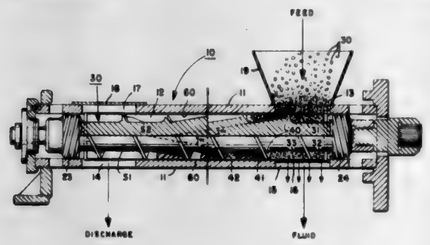


4,446,094

APPARATUS AND METHOD FOR EXTRACTING FLUID FROM AN EXTRUDED MATERIAL

Paul H. Rossiter, Royersford, Pa., assignor to Welding Engineers, Inc., King of Prussia, Pa.

Filed Sep. 23, 1982, Ser. No. 421,864
Int. Cl.[3] B29F *3/03*
U.S. Cl. 264—349 **12 Claims**



1. An apparatus for extracting a liquid from an elastomer comprising:

a. twin screw conveying means for screw conveying the elastomer in two side-by-side chambers in a revolving or figure-eight and forward direction;

b. means for alternately, with each rotation of the twin screw conveying means:

(i) wedging and compressing the elastomer between a forward face of a screw conveying thread, a screw shaft and a chamber wall; and

(ii) releasing the wedged and compressed elastomer;

c. means for conveying released fluid away from the wedged and compressed elastomer; and

d. means for impeding the revolving movement of the elastomer.

7. A method for extracting a liquid from an elastomer comprising:

a. twin screw conveying the elastomer in two side-by-side chambers in a revolving or figure-8 and forward direction;

b. alternately, with each rotation of the twin screw conveying means:

(i) wedging and compressing the elastomer between a forward face of a screw conveying thread, a screw shaft and a chamber wall; and

(ii) releasing the wedged and compressed elastomer;

c. conveying released fluid away from the wedged and compressed elastomer; and

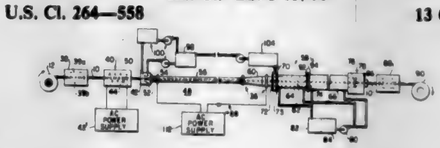
d. impeding the revolving movement of the elastomer.

4,446,095

METHOD FOR MANUFACTURING HEAT SHRINKABLE TUBING

Carlos Katz, Edison, N.J., and Amicam C. Zidon, Yorktown, N.Y., assignors to Cable Technology Laboratories, Inc., New Brunswick, N.J.

Filed Aug. 23, 1982, Ser. No. 410,443
Int. Cl.[3] B29C *13/00*
U.S. Cl. 264—558 **13 Claims**



1. A method of manufacturing long lengths of a heat-shrinkable sleeve for use in splicing electrical cables and the like, comprising the steps of

providing an elongated core and an elongated sleeve formed around the core, the core being permeable so that fluid within the core can flow along its length and can also escape from the core at a plurality of points along its length,

advancing the core and sleeve together in a generally axial direction,

hermetically seating the leading end of the advancing sleeve,

passing the core and sleeve through a heating station, thereby heating a portion of at least the sleeve,

introducing a fluid under pressure into the core, thereby internally pressurizing the sleeve to effect a radial expansion of the heated portion thereof, and

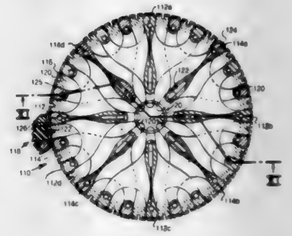
passing the core and sleeve through a cooling station, thereby cooling the expanded sleeve to stabilize it.

4,446,096

HIGH SPEED PLASMA FOCUS FUSION REACTOR

Richard C. Auchterlonie, 5701 N. Sheridan #29-q, Chicago, Ill. 60660

Filed Nov. 27, 1981, Ser. No. 325,321
Int. Cl.[3] G21B *1/00*
U.S. Cl. 376—145 **24 Claims**



1. A plasma focus fusion reactor having a reaction chamber containing material capable of fusion and having at least two electrodes, a high voltage power supply, means for receiving and storing charge supplied by the high voltage power supply,

means for conducting the charge from the means for receiving and storing the charge to the reaction chamber and having positive conductors conducting the charge to at least one of the electrodes designated as positive and negative conductors receiving the charge from at least one different electrode designated as negative and returning the charge to the means for storing the charge thereby defining a discharge circuit comprising the means for receiving and storing the charge and the reaction chamber and including a path through the reaction chamber between the positive and negative electrodes, switching means for providing a relatively high series resistance in the discharge circuit while the high voltage power supply is delivering charge to the means for receiving and storing the charge and for providing a relatively low series resistance in the discharge circuit after the means for receiving and storing the charge has received charge from the high voltage power supply, the rate of increase in the discharge current in the reaction chamber after the switching means closes and the maximum value of the discharge current being limited by the inductance associated with the discharge circuit, the discharge current in the reaction chamber ionizing said material capable of fushion thereby creating plasma and pinching the plasma at a focus point between the positive and negative electrodes and initiating fusion reactions, the total energy released by the fushion reactions being an increasing function of the rate of increase in the discharge current in the reaction chamber after the switching means closes and an increasing function of the maximum value of the discharge current, wherein the improvement comprises:

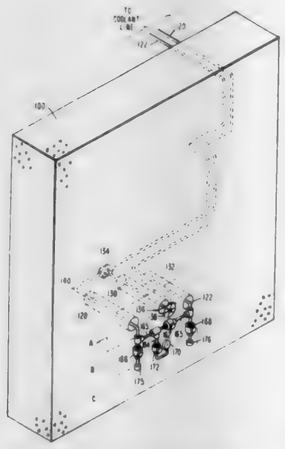
said means for conducting the charge comprises distribution circuit means, generally spherically surrounding the focus point, for conveying the discharge current so that the magnitude of the magnetic field intensity within the dielectric material and generated by the discharge current is generally proportional to the inverse square of the distance from the focus point so that the intital rate of increase in the discharge current in the reaction chamber after the switching means closes exceeds forty megaamperes per microsecond.

4,446,097

POST ACCIDENT ANALYSIS

Donald P. Calabrese, Louise La., R.D. 4, Hopewell Junction, N.Y. 12533; Matthew T. Kerns, 2 Raker Rd., Poughkeepsie, N.Y. 12603, and Dennis M. Quinn, Shadow La., R.D. 2, Hopewell Junction, N.Y. 12533

Filed Feb. 2, 1981, Ser. No. 230,623
Int. Cl.³ B01D *53/30*; G21C *17/00*
U.S. Cl. 376—256 **1 Claim**



1. Analysis apparatus for isolating liquid and gas samples from a pressurized liquid containing dissolved gas and for determining the amount of such dissolved gas which includes:

reversible pump means having first and second ports, said pump means being operable in a forward mode to draw fluid from said first port and to discharge such fluid through said second port, in a reverse mode to draw fluid from said second port and to discharge such fluid through said first port, and in a neutral mode in which communication between said first and second ports is open;

closed gas collection means having wall means defining a gas collection zone, a first opening in said wall means into said zone adjacent the upper end thereof and a second opening through said wall means into said zone adjacent the lower end thereof, and a septum in said wall means for permitting access to the interior of said zone;

expansion means including a receiver, an inlet at the lower end of said receiver, an opening to the exterior at the upper end of said receiver and means for determining the vertical position of a liquid in said receiver;

said expansion means being positioned with said inlet below the vertical level of said pump means, said pump means being positioned with said first port located below the vertical level of said second port, and said gas collection means being positioned with said second opening located above the vertical level of said second port of said pump means;

first and second connecting means located below the vertical level of said inlet to said receiver for external connection to a sampling vessel;

first conduit means interconnecting said first sample connecting means and said first port of said pump means, first and second valve means located serially in said first conduit means for controlling fluid flow therethrough;

second conduit means interconnecting said second port of said pump means and second sample connection means, third and fourth valve means serially connected in said second conduit means for controlling fluid flow therethrough;

third conduit means interconnecting said inlet to said receiver of said expansion means and said first conduit means at a point between said first and second valve means therein, fifth valve means connected in said third conduit means for controlling fluid flow therethrough;

fourth conduit means interconnecting said second opening in said gas collecting means and said second conduit means at a point between said third and fourth valve means, sixth valve means connected in said fourth conduit means for controlling fluid flow therethrough;

fifth conduit means interconnecting said first opening to said gas collection means and said second conduit means at a point therein between said third and fourth valve means, seventh valve means in said fifth conduit means for controlling fluid flow therethrough;

vent means for connection to the exterior located at a position above the level of said second opening of said gas collection means and said second port of said pump means and above the vertical level of said fourth conduit means, sixth conduit means interconnecting said second opening of said gas collection means and said vent means including eight valve means located in said sixth conduit means for controlling fluid flow therethrough;

liquid sample delivery means having a flexible delivery tube opening at its lower end at a position below the vertical level of the first port of said pump means, seventh conduit means interconnecting said first port of said pump means and said delivery tube, and ninth valve means located in said seventh valve means for controlling fluid flow therethrough; and

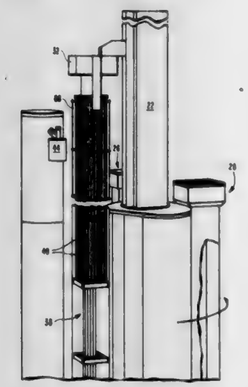
waste discharge means including a discharge connection for connection to a waste cask located at a level below the vertical level of said first port of said pump means including eighth conduit means interconnecting said waste connection and said first port of said pump means and tenth valve means in said eight conduit means for controlling fluid flow therethrough.

4,446,098

SPENT FUEL CONSOLIDATION SYSTEM

Paul Pomaibo, North Huntingdon, and Ralph W. Tolino, Wilkinsburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1981, Ser. No. 268,225
Int. Cl.³ G21C *19/32*
U.S. Cl. 376—261 **18 Claims**



1. Apparatus for remotely consolidating nuclear fuel rods comprising:

a vertical support;

a platform rotatably disposed around said vertical support;

a fuel assembly station attached to said platform for supporting a nuclear fuel assembly;

row ordering means arranged to accept a plurality of said fuel rods for rearranging said fuel rods into a different configuration;

first consolidation means associated with said row ordering means for compacting individual rows of said fuel rods;

second consolidation means associated with said row ordering means for compacting said fuel rods; and

a gripping mechanism slidably disposed on said vertical support and capable of gripping said fuel assembly and said fuel rods for removing said fuel rods from said fuel assembly and inserting said fuel rods in said row ordering means for closely packing said fuel rods.

4,446,099

DEVICE FOR PROTECTING CONTROL CLUSTER ACTUATING MECHANISMS DURING THE TESTING OF A NUCLEAR REACTOR

Jacques Schwind, Sucy-En-Brie, and Camille Le Feuvre, Paris, both of France, assignors to Framatome, Courbevoie, France

Filed Jul. 9, 1981, Ser. No. 281,742
Claims priority, application France, Jul. 31, 1980, 80 16881
Int. Cl.³ G21C *17/00, 9/00*
U.S. Cl. 376—277 **3 Claims**

1. A system of protecting control cluster actuating mechanisms by removing potentially harmful debris from a nuclear reactor coolant circulation system before loading the reactor with fuel assemblies and during pre-operational testing, comprising

(a) a pressure vessel having a cover secured in fluid-tight relationship therewith;

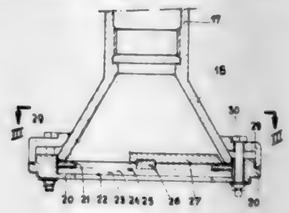
(b) a coolant inlet and outlet in said vessel for accommodating flow of coolant therethrough;

(c) spaced upper and lower core plates having coolant flow openings therein attached to support members in said pressure vessel, said upper and lower core plates providing an empty space therebetween otherwise occupied by said fuel assemblies;

(d) an upper structure mounted near the top of said pressure vessel and control rod guide tubes and support adapters mounted between said upper structure and said upper core plate;

(e) lower filter assemblies mounted on and covering the openings in said lower core plate; and

(f) upper filter assemblies removably fixed to the lower, flared ends of tubular sheaths connecting said control cluster actuating mechanisms with the interior of said vessel, said upper filter assemblies comprising a plurality of metal gauzes covering the entire open cross section of said sheaths and having mesh calibers smaller than those of said lower filter assemblies;



(g) whereby said upper filter assemblies prevent the flow of metal particles past said metal gauzes when a flushing liquid is circulated through said reactor during preoperational testing.

4,446,100

METHOD OF MANUFACTURING AN OBJECT OF METALLIC OR CERAMIC MATERIAL

Jan Adlerborn; Hans Larker; Bertil Mattsson, and Jan Nilsson, all of Robertsfors, Sweden, assignors to ASEA AB, Västerås, Sweden

Continuation of Ser. No. 102,336, Dec. 11, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 426,939
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—48 **7 Claims**



1. A method of manufacturing a silicon nitride object by the isostatic pressing of a body preformed of silicon nitride powder with a gaseous pressure medium while sintering said body, said method comprising:

placing said silicon nitride body and an embedding material therefor in an open top vessel which is resistant to the sintering temperature, said embedding material being in direct contact with said body and consisting of glass containing B_2O_3 or a material which forms glass containing B_2O_3 upon heating;

transforming said embedding material in the vessel into a B_2O_3 containing glass melt having a substantially horizonal upper surface limited by the walls of the vessel, said body being located beneath said surface, said melt presenting a casing that is impermeable to the gaseous pressure medium applied during said isostatic pressing, said transforming being accomplished prior to said isostatic pressing; and thereafter

isostatically pressing and sintering said body while applying

said gaseous pressure medium directly to said upper surface of said melt.

4,446,101

STORAGE MATERIAL FOR HYDROGEN

Otto Bernauer, Weinstadt, and Klaus Ziegler, Ostfildern, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,932

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139368

Int. Cl.³ C22C *30/00*

U.S. Cl. 420—424 **2 Claims**

1. A storage material for hydrogen, comprising an alloy with the following composition:

$Ti(V_{1-a-b}Fe_aAl_b)_xCr_yMn_{2-x-y}$, wherein:

x	= greater than 1, but less than 2
y	= 0 to approximately 0.2
x + y	= not greater than 2
a	= 0 to approximately 0.25
b	= 0 to approximately 0.33
a + b	= not greater than approximately 0.35
(1 − a − b) · x	= not less than 1.

4,446,102

YELLOW GOLD JEWELRY ALLOY

Randy L. Bales, 267 Lookwood Ave., Hamilton, Ohio 45011

Filed Jan. 27, 1982, Ser. No. 343,102

Int. Cl.³ C22D *5/02*

U.S. Cl. 420—507 **7 Claims**

1. A yellow gold metal alloy of less than about 6 karats having good tarnish and corrosion resistance, good workability and castability and a color, luster, shine and hue characteristic of at least 10 karat yellow gold consistinyg essentially of, by weight, about 17 to 25% gold, 10 to 27% silver, 40 to 60% copper, and 3 to 12% zinc.

4,446,103

METHOD OF DISINFECTING WATER WITH INSOLUBLE DISINFECTANT COMPOSITIONS

Ron Nudel, Brooklyn; Gilbert E. Janauer, Binghamton; Eugene E. Schrier, Vestal, and Ilona W. Figura, White Plains, all of N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

Division of Ser. No. 117,062, Jan. 31, 1982, Pat. No. 4,349,646. This application Jul. 28, 1982, Ser. No. 402,720

Int. Cl.³ A01N *00/00*

U.S. Cl. 422—37 **9 Claims**

1. A method of disinfecting water which comprises contacting the water to be disinfected with a water insoluble disinfectant composition comprising a quaternary ammonium salt of the formula:

$$[[Z]_{10}\text{—}[Q]]^{(+)n}\left(X_{\frac{a}{n}}\right)^{(-)n}$$

wherein

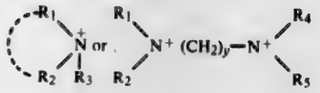
a is a positive integer,

n is an integer of 1-6,

Q is a water insoluble crosslinked resin of microporous or macroporous structure selected from the group consisting of polystyrene resins having methylene moieties attached to the backbone thereof, and methylated poly methyl acrylate resins,

X is the anion of any physiologically acceptable salts, and

Z is



wherein:

R_1 and R_2 are selected from the group consisting of straight or branch chain lower alkyl of one to eight carbon atoms, straight or branch chain lower alkenyl of two to eight carbon atoms, lower cycloalkyl of three to six carbon atoms and R_3, and R_1 and R_2 when taken together with the nitrogen to which they are attached, form a saturated or unsaturated heterocycle having five to seven carbon atoms in the ring,

R_3 is straight or branch chain midalkyl of ten to sixteen carbon atoms, phenyl, halo or lower alkyl substituted phenyl naphthyl lower alkyl and halo or lower alkyl substituted naphthyl lower alkyl wherein said lower alkyl moieties are of one to five carbon atoms and are substituted on from one to five positions on the phenyl nucleus and from one to seven positions on the naphthyl nucleus,

R_4 and R_5 are selected from the same group of values as R_1-R_3,

y is a positive integer of 1-20, provided that where R_1, N, and R_2 are joined to form a saturated or a unsaturated heterocycle, R_3 is absent, and

Z is bonded to the methylene moieties.

4,446,104

APPARATUS FOR TRANSFERRING SAMPLE VESSELS INTO COLLECTING VESSELS

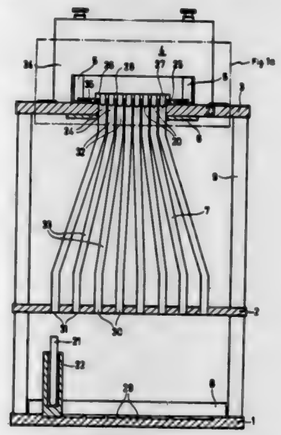
Günter Hämmerling, Heidelburg; Ingo Müller, Meckesheim, and Erich Menger, Walldorf, all of Fed. Rep. of Germany, assignors to Deutsches Krebsforschungszentrum, Heidelberg, Fed. Rep. of Germany

Filed Dec. 16, 1981, Ser. No. 331,305

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047265

Int. Cl.³ G01N *35/04*; B65G *47/26*; B01L *3/00*

U.S. Cl. 422—63 **6 Claims**



1. A device for transferring sample vessels permanently connected to a microtiter plate to collecting vessels which are carried in cassettes and are dimensioned to accommodate such sample vessels, comprising:

(a) a table provided with a distributor plate for receiving and supporting such microtiter plate and which is provided with openings corresponding in number to the number of such sample vessels, each opening being located to lie below a respective one of such sample vessels when such microtiter plate is supported by said distributor plate;

(b) an intermediate plate disposed below said distributor plate and provided with a plurality of openings equal in number to said openings in said distributor plate and each associated with a respective distributor plate opening;

(c) means defining a distributor system extending between said distributor plate and said intermediate plate for transferring a respective sample vessel from each distributor plate opening to its associated intermediate plate opening;

(d) a base plate disposed below said intermediate plate for the orderly accommodation of such cassettes in a manner such that each collecting vessel is located below a respective intermediate plate opening;

(e) guide means mounted on said table; and

(f) a cutting device which can be moved relative to such microtiter plate, when such microtiter plate is supported by said distributor plate, while being guided by said guide means, for severing such sample vessels from such microtiter plate.

4,446,105

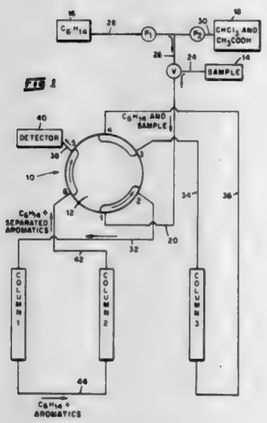
SYSTEM FOR ANALYZING COAL LIQUEFACTION PRODUCTS

Stanley R. Dinsmore, Norris, and John E. Mrochek, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 29, 1982, Ser. No. 437,782

Int. Cl.³ G01N *31/08*

U.S. Cl. 422—70 **4 Claims**



1. A system for analyzing components of a liquid sample containing a plurality of both aromatic and polar hydrocarbons, comprising:

detecting means for identifying said aromatic and polar hydrocarbons;

a first column containing a first adsorbent which adsorbs said aromatic and polar hydrocarbons;

a second column containing a second adsorbent which adsorbs said aromatic hydrocarbons;

a third column containing a third adsorbent which adsorbs said polar hydrocarbons, said first, second and third adsorbents differing chemically from one another,

means for introducing said sample into said first column, whereupon said aromatic and polar hydrocarbons therein are adsorbed on said first adsorbent;

means defining and providing a source of first eluent capable of differentially desorbing said aromatic hydrocarbons from said first and second adsorbents;

means defining and providing a source of second eluent capable of collectively desorbing said polar hydrocarbons from said first adsorbent and differentially adsorbing said polar hydrocarbons from said third adsorbent; and

flow control means for (1) passing a first stream of said first eluent through said first column and thence through said second column and to said detecting means, whereupon the aromatic hydrocarbons are differentially desorbed from said first and second adsorbents and thereby separated in said first stream before passing to said detecting means, while said polar hydrocarbons remain on said first adsorbent, and (2) subsequentially forming and passing a gradient stream comprising a gradually decreasing quantity of said first eluent and a gradually increasing quantity of said second eluent in the reverse direction through said first and second columns, relative to flow of said first stream therethrough, and thence through said third column and to said detecting means, whereupon the polar hydrocarbons adsorbed on said first adsorbent are collectively desorbed therefrom into said second stream and transferred therein to said third column and there differentially desorbed from said third adsorbent and thereby separated in said gradient stream before passing to said detecting means.

4,446,106

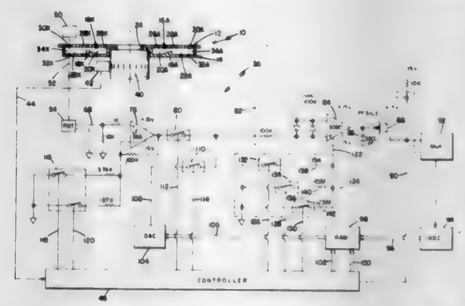
ANALYSIS SYSTEM

Larry A. Nelson, and Leon W. Schmidt, both of Spokane, Wash., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Jan. 15, 1982, Ser. No. 339,331

Int. Cl.³ G01N *9/30, 35/00*

U.S. Cl. 422—72 **9 Claims**



1. A chemical analysis system for analyzing a plurality of independent specimens that have time varying characteristics comprising:

a plurality of analysis regions, each said analysis region adapted to hold a corresponding specimen,

scanning means including a sensor for producing an analysis signal having a value proportional to a characteristic of the specimen in an analysis region, and means for causing sequential and repetitive sensing of said analysis regions by said sensor to produce analysis signals having values corresponding to the monitored specimen characteristics in the several analysis regions,

memory means for storing data values in locations corresponding to the analysis regions from which these data values were provided,

a signal transmission channel for applying data value signals to said memory means, said signal transmission channel including temporary signal storage means and variable response circuitry having a fast response mode and a slower response mode, and

control means connected to said variable response circuitry and operative during a first portion of an analysis region sensing interval for concurrently placing said variable response circuitry in said fast response mode and connecting said memory means to the imput of said signal trans-

mission channel to preset said temporary signal storage means to a data signal value from that analysis region that has been previously stored in said memory means,

and operative during a second portion of said analysis region sensing interval for concurrently placing said variable response circuitry in said slower response mode and connecting said sensor to said signal transmission channel to adjust the data signal value in said temporary signal storage means to the current analysis signal value provided by said sensor, and

means for transferring said adjusted data signal value from said temporary signal storage means to a location in said memory means corresponding to that analysis region.

4,446,107

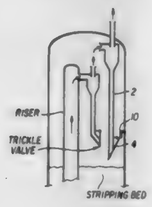
IMPROVED FCC VESSEL AND CYCLONE APPARATUS

Frank M. Buyan, Yardley, Pa., and James H. Haddad, Princeton Junction, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 26, 1982, Ser. No. 382,334

Int. Cl.³ B01J *8/26*; C10G *13/18*; B01D *45/12*

U.S. Cl. 422—107 **9 Claims**



1. In a fluid catalytic cracking vessel containing a cyclone means for separating solids from a solids-gas mixture, said cyclone means comprising a conduit means in open communication with said vessel, said conduit means conducting separated gases from the cyclone means to the outside thereof, a dipleg means in open communication with said vessel, said dipleg means conducting separated solids into the vessel, and a valve means at the exit end of said dipleg means, said valve means comprising a plate closing said exit of said dipleg means, the improvement wherein the plate of said valve means is inclined in the closed position at an angle of about 30° to about 60° with respect to the vertical axis of said dipleg means to substantially prevent solid materials from being wedged between said plate and the exit end of said dipleg means.

4,446,108

CARBON BLACK MANUFACTURE

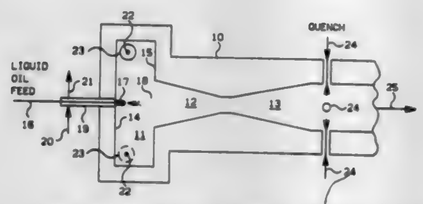
Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 197,455, Oct. 16, 1980, Pat. No. 4,339,422.

This application Feb. 24, 1982, Ser. No. 351,703

Int. Cl.³ B01J *10/00, 19/26*; C01B *31/02*; C09C *1/48*

U.S. Cl. 422—156 **4 Claims**



1. A carbon black furnace comprising a refractory lined heat insulated body having a generally cylindrical bore, said bore comprising in series

a generally cylindrical first chamber having a diameter at least about equal to its length forming a precombustion or combustion chamber,

means to introduce free oxygen-containing gas and fuel gas into said first chamber generally tangentially to the inner surface thereof to produce a vortex of combustion gases traveling axially in said cylindrical bore,

a second chamber comprising a venturi section, the length of which is greater than its throat diameter and the throat diameter of which is substantially less than that of said first chamber, said second chamber being axially aligned and communicating with said first chamber, and

injection means to introduce and direct a hydrocarbon feed generally axially along the longitudinal axis of said first chamber, said means being so constructed as to inject a solid jet liquid stream at essentially zero degree exit spray angle along the axis of said first chamber, the outlet end of said means for introducing hydrocarbon feed being positioned between the face of the upstream wall of said first chamber and the entrance to the venturi diverging section, and wherein said combustion gases and said hydrocarbon feed pass through the venturi section in a state of sufficient velocity to flow spirally inward in the combustion chamber and helically through the venturi section.

4,446,109

SYSTEM FOR DRY SCRUBBING OF FLUE GAS

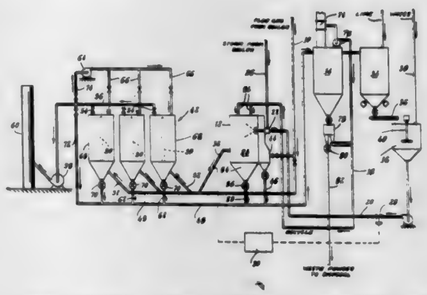
Even Bakke, Stamford, Conn., assignor to Peabody Process Systems, Inc., Stamford, Conn.

Division of Ser. No. 189,026, Sep. 22, 1980, Pat. No. 4,324,770.

This application Dec. 3, 1981, Ser. No. 327,116

Int. Cl.³ B01D *53/34*

U.S. Cl. 422—168 **2 Claims**



1. A system for dry scrubbing of flue gas containing sulfur dioxide comprising a dry scrubbing reactor, a spray dryer and a dust particle collector, means for conveying the flue gas through the spray dryer and collector, atomizing means for feeding a mist of alkali reagent to the spray dryer, means for removing particles from the dust collector, means for transporting particles to a splitter apparatus for separation into two streams, the splitter apparatus comprising a housing defining an internal compartment, partially upright wall means within the compartment dividing the compartment into a recycle particle section and a discharge particle section, means for feeding particle solids to the compartment, means for removing solid particles from the recycle section and means for removing solid particles from the discharge section, means comprising a screw feeder for feeding recycle solid particles to the dry scrubbing reactor, means for transporting one of the separated streams to the spray dryer and means for transporting the other separate stream to disposal discharge storage.

4,446,110

TREATING THE SURFACE OF ARTICLES BY ELECTRICAL BRUSH DISCHARGE

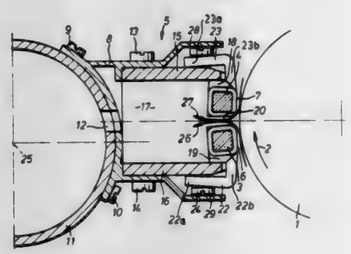
Andreas Ahlbrandt, 17 Uhlandstrasse, Lauterbach, Fed. Rep. of Germany (6420)

Filed Feb. 25, 1981, Ser. No. 237,969

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039951

Int. Cl.³ B01K *1/00*

U.S. Cl. 422—186.05 **7 Claims**



1. Apparatus for treating the surface of materials by electric brush discharge, said apparatus comprising a first electrode for guiding articles to be treated and at least one facing brush electrode having a coating, which can be connected to opposite potential and is arranged to be cooled by a cooling air flow flowing over the outside thereof, wherein guide means are provided for guiding the cooling air flow at least partly through the corona along the active discharging side of said brush electrode, and in which the brush electrode is a double electrode formed from two juxtaposed single electrodes and in which an air exhausting pipe is provided, said single electrodes forming part of a wall of said air exhausting pipe and air inlets being formed between the said brush electrodes and between said electrodes and the sides of said air exhausting pipe the cross-section of the air inlet between said brush electrodes being larger than the cross-sections of the air inlets located between the brush electrodes and the longitudinal sides of said air exhausting pipe.

2. Apparatus as claimed in claim 1, in which said air exhausting pipe has two insulators longitudinally covering the brush electrodes and further outwards in the vicinity of said single brush electrodes diaphragms made from an electrically conductive material which are spaced from said insulators and fixed to a header.

3. Apparatus as claimed in claim 2, in which said diaphragms form part of a shaped member which is open towards said brush electrodes.

4,446,111

VESSEL FOR USE IN HYDROGEN/HYDRIDE TECHNOLOGY

Clemens Halene, Dusseldorf; Karl-Ludwig Strack, Herne; Ernst Lange, Langenfeld, and Franz-Josef Henrichs, Verl, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Mannesmannufer, Fed. Rep. of Germany

Filed Jun. 25, 1982, Ser. No. 392,007

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3125276

Int. Cl.³ B01J *8/04, 20/06*

U.S. Cl. 422—200 **6 Claims**

1. Pressure vessel for use in hydrogen/hydride technology including storage and release of hydrogen on the basis of reaction with a solid metal or metal compound, comprising:

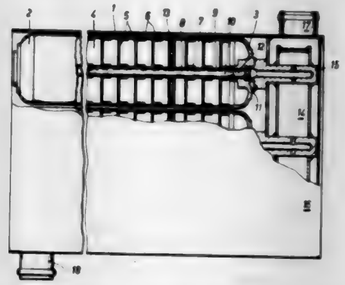
a tubular container having an inner wall and a central axis;

a gas tube disposed in and along the central axis and being continued beyond one end closure of the container, the tube having apertures; and

a plurality of bulk head like annular partitions each having a cylindrical inner flange and a cylindrical outer flange,

the partitions being arranged along the axis for compartmentizing the interior of the container and circumscribing the gas tubes;

the inner flanges tightly sitting on the gas tube, and



the outer flanges being tensioned for tightly engaging the inner wall of the container, so as to seal the several compartments as provided by the compartmentizing, the interior of the gas tube communicating with the respective compartments through the apertures.

4,446,112

APPARATUS FOR CONTACTING FLUID WITH PARTICULATE SOLID MATERIAL

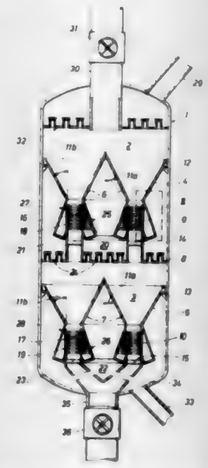
Arie P. Den Hartog, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed May 21, 1982, Ser. No. 380,587

Claims priority, application United Kingdom, Jul. 22, 1981, 8122652

Int. Cl.³ B01J *8/12*; C10G *35/12*

U.S. Cl. 422—216 **13 Claims**



1. An apparatus for contacting a fluid with a particulate solid comprising:

a vertical vessel having separate inlets for the fluid and solid particles disposed in the upper part of the vessel, both of said inlets communicating with a means defining a contact space located in the upper section of the vessel;

a means defining a separation section disposed in said vessel below said contact space, said separation section comprising inner and outer cylindrical walls mounted in said vessel to form an annular channel, said contact space

being connected to said annular channel by means of downwardly sloping conical surfaces;

a continuous cylindrical screen mounted in a portion of each cylindrical wall, said screen being formed by a plurality of circular rods spaced vertically to allow fluid passage and prevent passage of solid particles;

a means defining a fluid collecting space in the interior of said inner cylindrical wall and in the exterior of said outer cylindrical wall, said fluid collecting space communicating with said cylindrical screens; and

means positioned in said fluid collecting space for producing a pressure gradient along the separation section during operation of the apparatus so that said pressure along said separation section decreases in a downward direction.

4,446,113

BENZOPYRANS

John M. Evans, Roydon; Robin E. Buckingham, Welwyn Garden, and Kenneth Willcocks, Harlow, all of England, assignors to Beecham Group p.l.c., England

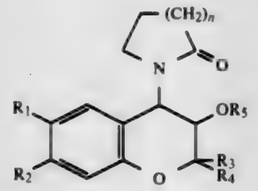
Filed Sep. 24, 1982, Ser. No. 423,450

Claims priority, application United Kingdom, Sep. 25, 1981, 8129064; Mar. 4, 1982, 8206400; Apr. 8, 1982, 8210490

Int. Cl.[3] **A61K** *31/35, 31/33;* **C07D** *405/04, 311/68*

U.S. Cl. 422—267 **25 Claims**

1. A compound of formula (I):



(I)

wherein:

one of R_1 and R_2 is hydrogen and the other is selected from the class of alkylcarbonyl, alkoxycarbonyl, alkylcarbonyloxy, alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, alkylsulphinyl, alkylsulphonyl, alkoxysulphinyl, alkoxysulphonyl, alkylcarbonylamino, alkoxycarbonylamino, or aminosulphinyl, aminosulphonyl or aminocarbonyl, the amino moiety being optionally substituted by one or two alkyl groups, or alkylsulphinylamino, alkylsulphonylamino, alkoxysulphinylamino or alkoxysulphonylamino, or ethylenyl terminally substituted by alkylcarbonyl, nitro or cyano or —C(alkyl)NOH or —C(alkyl)NNH_2, the alkyl groups or alkyl moieties of alkyl-containing groups having from 1 to 6 carbon atoms;

one of R_3 and R_4 is hydrogen or alkyl having from 1 to 4 carbon atoms and the other is alkyl having from 1 to 4 carbon atoms, or R_3 and R_4 together with the carbon atom to which they are attached are spiroalkyl having from 3 to 6 carbon atoms;

R_5 is hydrogen, alkyl having from 1 to 3 carbon atoms or carboxylic acyl having from 1 to 8 carbon atoms; and

n is 1 or 2; the lactam group being trans to the OR_5 group.

12. A pharmaceutical composition for treatment of hypertension in mammals, which comprises an anti-hypertensive effective amount of a compound of formula (I) according to claim 1, and a pharmaceutically acceptable carrier.

4,446,114

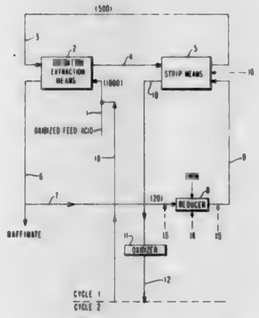
METHOD OF INCREASING THE STRIP COEFFICIENT OF THE STRIP SOLUTION STREAM IN A REDUCTIVE STRIPPING URANIUM RECOVERY OPERATION

Kenneth J. Jardine, and Robert A. Holleman, both of Lakeland, Fla., assignors to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Jul. 2, 1981, Ser. No. 279,930

Int. Cl.[3] **C01G** *43/00*

U.S. Cl. 423—10 **11 Claims**



1. In the method of recovering uranium from wet process phosphoric acid, where, in the first cycle, wet process phosphoric acid feed solution is passed through an extraction means to provide a uranium rich solvent stream containing dialkylphosphoric acid and trialkyl-phosphine oxide extractants, and a raffinate acid stream, wherein the uranium rich solvent stream is passed through a reductive stripping means and a portion of the raffinate acid to be used as a strip solution stream is passed through a reductive stripping means to contact the uranium rich solvent, said strip solution after exiting the reductive stripping means being oxidized and fed into a second cycle of the process to recover uranium; the improvement comprising adding sulfuric acid, at least once in the first cycle of the process, to the strip solution stream before the strip solution exits the reductive stripping means, said acid being added in an amount effective to increase the strip coefficient value of the strip solution.

4,446,115

METHOD OF RECOVERING TANTALUM FROM SILICON-CONTAINING TANTALUM SCRAP

Hiroshi Endo; Naoyuki Hirate, and Masao Tezuka, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 235,114, Feb. 17, 1981, abandoned. This application Mar. 2, 1982, Ser. No. 353,826

Claims priority, application Japan, Feb. 15, 1980, 55-16642

Int. Cl.[3] **C01G** *35/00*

U.S. Cl. 423—63 **14 Claims**

1. A method of recovering tantalum from tantalum-containing scrap containing at least silicon and niobium as impurities to produce a recovered tantalum product containing less than about 200 ppm of silicon, consisting essentially of the steps of:

dissolving in an inorganic acid a tantalum scrap containing at least silicon and niobium to form a solution;

contacting said solution with an anionic exchange resin;

first washing said contacted exchange resin with (a) a solution of about 3 to 10 mol/l of hydrofluoric acid or (b) a solution of a strongly acidic medium comprising from about 0.01 to 0.5 mol/l of hydrofluoric acid and from about 1 to 6 mol/l of a strong acid to remove the impurities;

further washing said exchange resin with an aqueous solution of a mixture comprising hydrofluoric acid, aqueous ammonia and an ammonium salt to produce a tantalum eluate; and

recovering tantalum from the tantalum eluate.

4,446,116

PROCESS FOR RECOVERING NIOBIUM AND/OR TANTALUM COMPOUNDS FROM SUCH ORES FURTHER CONTAINING COMPLEXES OF URANIUM, THORIUM, TITANIUM AND/OR RARE EARTH METALS

Bruno Krismer, and Axel Hoppe, both of Goslar, Fed. Rep. of Germany, assignors to Hermann C. Starck Bertin, Berlin and Uranerzbergbau-GmbH, Bonn, both of, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,275

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113335

Int. Cl.[3] **C22B** *34/24, 60/02*

U.S. Cl. 423—63 **5 Claims**

1. A process for recovering tantalum and/or niobium metal compounds from an ore containing one or more compounds of said metal or metals and further containing uranium, thorium, radium, titanium, and rare earth metals, wherein in a first step (I) the crushed ore is decomposed with a 0.5 to 6-fold amount of 70 to 96 percent sulfuric acid at elevated temperatures in the range of 200° to 350° C. for 0.5 to 3 hours with air as the oxidation agent, whereby the elements uranium, thorium and titanium are brought into solution by being converted to water soluble sulfates, the resulting solution being a solution of sulfuric acid comprising 30 to 100 grams H_2SO_4 per liter, while substantially all the transition metals remain together with radium in a water-insoluble residue, the residue then being decomposed within 6 to 20 hours in a second step (II) by leaching the residue of the first step (I) with a mixture of sulfuric acid and hydrofluoric acid at a temperature in the range of from 80° to 120° C., whereby there results a solution of transition metals wherein HF is between 8 and 30 normal and sulfuric acid is between 25 and 26 normal, and from which, by means of appropriate organic extraction agents, the transition metals are extracted as fluoro-complexes by liquid-liquid extraction, and the individual transition metals are recovered free from radioactive constituents as pure compounds in yields of more than 95 percent of the charge, while the refined products of the liquid-liquid extraction and wash water are further processed to eliminate the last traces of $RaSO_4$.

4,446,117

DOUBLE DIGESTION SYSTEM TO REDUCE FORMATION OF FERROUS IRON

James W. McDaniel, Baton Rouge, La., assignor to Alumina Development Corporation, Baton Rouge, La.

Filed Apr. 4, 1983, Ser. No. 481,821

Int. Cl.[3] **C01F** *7/06*

U.S. Cl. 423—121 **11 Claims**

1. A process to produce alumina hydrate containing less than 0.017% by weight of Fe_2O_3, which comprises:

(a) mixing a ground bauxite with a first spent caustic soda stream to form a bauxite slurry;

(b) reacting at 113° C. to 205° C. said bauxite slurry with a second spent caustic soda stream to form a first reactant product slurry comprising

(i) a first pregnant liquor stream having an alumina to NaOH weight ratio of 0.75 to 1.05,

(ii) a first granular residue stream, and

(iii) a first muddy substance stream;

(c) cooling said first reactant products slurry to 88° C. to 112° C.;

(d) removing said first granular residue stream;

(e) separating said first pregnant liquor stream from said first muddy substance stream;

(f) filtering said first pregnant liquor stream through a first paper, sand or synthetic cloth to produce a first filtrate stream having an Al_2O_3 to NaOH weight ratio of 0.75 to 1.05;

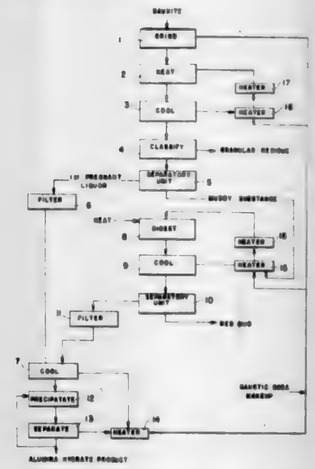
(g) reacting at 206° C. to 350° C. said first muddy substance stream with a third spent caustic stream to form a second reactant products slurry comprising:

(i) a second pregnant liquor stream having an Al_2O_3 to NaOH weight ratio of 0.75 to 1.05, and

(ii) a red mud stream;

(h) cooling said second reactant products slurry to 88° C. to 112° C.;

(i) removing said red mud stream;



(j) filtering said second pregnant liquor stream through a second paper, sand or synthetic cloth to produce a second filtrate stream having an Al_2O_3 to NaOH weight ratio of 0.75 to 1.05;

(k) combining said first and second filtrate streams and cooling same to 50° C. to 87° C.; and

(l) precipitating alumina hydrate from the cooled filtrate streams.

4,446,118

SCRUBBING HYDROGEN SULFIDE FROM A FUEL GAS

Stephen W. Nicksic, Brea, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 27, 1982, Ser. No. 382,460

Int. Cl.[3] **B01D** *53/34;* **C01B** *17/04*

U.S. Cl. 423—226 **3 Claims**

1. A method of removing hydrogen sulfide from fuel gas comprising:

contacting said fuel gas with an aqueous scrubber solution having at least 10 volume percent of a hydrogen sulfide scrubbing agent of the formula:



wherein R^1 and R^2 are substituents having between 1 and 12 carbon atoms; and

wherein said aqueous scrubber solution contains less than about 1 weight percent of a promoter comprising added organic acids having between 1 and 12 carbon atoms.

4,446,119

METHOD AND COMPOSITIONS FOR REDUCING CORROSION IN THE REMOVAL OF ACIDIC GASES FROM GASEOUS MIXTURES

Michael S. DuPart, Alvin; Billy D. Oakes, Lake Jackson, both of Tex., and David C. Cringle, Melbourne, Australia, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 224,365, Jan. 12, 1981, abandoned. This application Apr. 29, 1982, Ser. No. 372,869

Int. Cl.³ B01D 53/34; C23F 11/06

U.S. Cl. 423—228 17 Claims

16. In the method of separating acid gases from a hydrocarbon feed stream containing said acid gases by contacting said gaseous stream with an aqueous alkanolamine solution at elevated pressure followed by regeneration of said solution at a lower pressure, the improvement which comprises inhibiting the corrosion of ferrous equipment used therein by maintaining in said solution,

(A) a corrosion inhibiting amount of soluble compounds selected from the group consisting of thiocyanate compounds, and mixtures thereof,

(B) a corrosion inhibiting amount of one or more soluble trivalent bismuth compounds, and

(C) a corrosion inhibiting amount of soluble divalent compounds selected from the group consisting of one or more nickel compounds, one or more cobalt compounds, and mixtures thereof.

4,446,120

METHOD OF PREPARING SILICON FROM SODIUM FLUOSILICATE

Frederick A. Schmidt; David Rehbein, and Premo Chiotti, all of Ames, Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 29, 1982, Ser. No. 344,084

Int. Cl.³ C01B 33/02; C30B 29/02

U.S. Cl. 423—350 10 Claims

1. A process for preparing high purity silicon from Na_2SiF_6 comprising:

heating the Na_2SiF_6 to decomposition temperature to form NaF and gaseous SiF_4, whereby most impurities remain with the NaF,

feeding the gaseous SiF_4 into the cavity of a reduction bomb containing a suitable reductant to form a reaction mixture, the reductant being in a physical form having a packing density from about 0.1 gm/cc to about 0.3 gm/cc, and being dispersed throughout the bomb cavity,

igniting the reaction mixture to react the SiF_4 with the reductant to form silicon and a slag, and

recovering the silicon.

4,446,121

MATERIAL FOR HYDROGEN ABSORPTION AND DESORPTION

Takaharu Gamo, Fujiidera; Yoshio Moriwaki, Moriguchi, and Toshio Yamashita, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 819,510, Jul. 26, 1977, Pat. No. 4,358,432. This application Apr. 22, 1982, Ser. No. 370,997

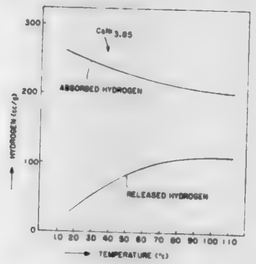
Claims priority, application Japan, Jul. 26, 1976, 51-89439; Aug. 5, 1976, 51-93643

The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.

Int. Cl.³ C01B 6/24

U.S. Cl. 423—644 6 Claims

1. Material for hydrogen absorption and desorption comprising an alloy represented by the formula AB_x in which A represents a metal comprising calcium, B represents an alloy consisting of nickel and one element selected from the group consisting of manganese, chromium, iron and copper and x is a value indicating the ration of B to A, and is between 3.8 and 6.3, the hydride of said alloy having a hydrogen dissociation equilibrium pressure of less than atmospheric pressure at room temperature and of several atmospheres at 35° to 100° C. and a hydrogen absorption capacity of more than 200 cc/g at room



temperature, said material having a single homogeneous hexagonal structure phase of the $CaCu_5$ type in more than 95% of the alloy.

4,446,122

PURIFIED HUMAN PROSTATE ANTIGEN

Tsann M. Chu; Ming C. Wang, both of Williamsville, and Lawrence Papsidero, Lackawanna, all of N.Y., assignors to Research Corporation, New York, N.Y.

PCT No. PCT/US80/01708, 371 Date Aug. 28, 1981, 102(e) Date Aug. 28, 1981, PCT Pub. No. WO81/01849, PCT Pub. Date Jul. 9, 1981

Continuation-in-part of Ser. No. 108,217, Dec. 28, 1979, abandoned. This PCT application Dec. 23, 1980, Ser. No. 316,954

Int. Cl.³ G01N 33/56, 33/54; C12N 5/00; A61K 37/02

U.S. Cl. 424—1.1 17 Claims

1. An in vivo composition of matter comprising an immunochemically effective concentration and amount of a purified human prostate specific antigen occurring in normal and cancerous prostatic tissue and purified to show a single protein band on analytical polyacrylamide gel electrophoresis and isoelectric focusing, said antigen having a molecular weight as determined by Sephadex G-75 gel of filtration of about 33,000 and by a molecular weight as determined by sodium dodecyl sulfate polyacrylamide gel electrophoresis of about 34,000 with no subunit and having an isoelectric point pI of 6.9, said antigen further being insoluble in perchloric acid and substantially free of normal serum protein components, water-insoluble cellular material and of prostatic acid phosphatases.

16. A continuous murine cell line capable of producing monoclonal antibodies of the IgM isotype to the specific antigen of claim 1 under nutrient growth conditions, consisting essentially of a fused cell hybrid of:

(a) primed antibody-producing cells with

(b) myeloma cells capable of producing a homogenous population of immunoglobulin in the fused hybridoma.

4,446,123

PROCESS OF RADIOIMAGING THE MYOCARDIUM OF MAMMALS UTILIZING RADIOLABELED LIPOPHILIC CATIONS

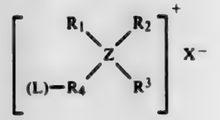
David V. Woo, Downingtown, Pa., assignor to Hahnemann University, Philadelphia, Pa.

Filed Oct. 13, 1982, Ser. No. 433,871

Int. Cl.³ A61K 43/00, 49/00

U.S. Cl. 424—1.1 18 Claims

1. A process of imaging the myocardium of mammals consisting of intravenously injecting radiolabeled lipophilic cations of quaternary ammonium, quaternary phosphonium or quaternary arsonium compounds having the general formula



where R_1 and R_2 are alkyl or aryl groups, R_3 is a phenyl or benzyl group, R_4 is a radiolabelled phenyl or benzyl group and X is Br^-, I^- or Cl^- and where L is I^{123}, I^{125}, I^{131}, Br^{77}, Br^{82} or F^{18} and Z is nitrogen, phosphorous or arsenic, and then radioimaging the myocardium.

4,446,124

WOUND DRESSING COMPRISING SILVER SULFADIAZINE INCORPORATED IN ANIMAL TISSUE

Charles L. Fox, Jr., Saw Mill Rd., Sherman, Conn. 06784; Shanta M. Modak, 184 Howland Ave., River Edge, N.J. 07761, and Paul Fox, New York Medical College, Valhalla, N.Y. 10029

Filed Mar. 31, 1983, Ser. No. 480,687

Int. Cl.³ A61K 9/70, 35/36, 31/625

U.S. Cl. 424—27 9 Claims

1. A method for preparing animal tissues for use as burn or wound dressings which comprise soaking animal tissue in an aqueous solution of ammoniated silver sulfadiazine to incorporate the ammoniated silver sulfadiazine to the animal tissue, and partially drying the thus-treated animal tissue.

4,446,125

USE OF ISOMERIC FARNESENE PRODUCT-BY-PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS, CHEWING GUMS, MEDICINAL PRODUCTS AND TOOTHPASTES

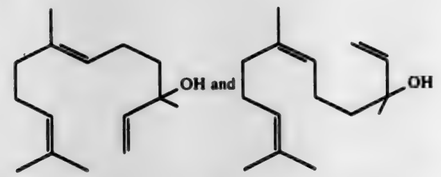
Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown, both of N.J.; Bernard J. Chant, Rye, N.Y.; Anton V. Ouwerkerk, Livingston, N.J.; Venkatesh Kamath, Red Bank, N.J., and Cynthia J. Mussinan, Bricktown, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 292,392, Aug. 13, 1981, Pat. No. 4,376,068. This application Jan. 27, 1983, Ser. No. 461,476

Int. Cl.³ A23L 1/226

U.S. Cl. 424—49 7 Claims

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of foodstuffs, chewing gums, toothpastes and medicinal products which comprises adding to said consumable material from about 0.02 ppm up to about 150 ppm based on the weight of said foodstuff of a farnesene isomer mixture produced according to the process of dehydrating a nerolidol isomer mixture containing nerolidol isomers defined according to the structures:



in the presence of a catalyst selected from the group consisting of potassium acid sulfate and paratoluene sulfonic acid at a temperature in the range of from 110° C. up to 200° C. and at a pressure in the range of from 1 mm/Hg pressure up to 200 atmospheres pressure, absolute during the reaction, simultaneously removing water of reaction from the reaction mass, and then distilling the resulting product at a temperature in the range of from 51° up to 103° C. and a pressure in the range of from 0.7 up to 2.0 mm/Hg, with the proviso that when a potassium acid sulfate catalyst is used, the temperature of reaction is in the range of 180°–200° C.; and with the further proviso that when using a paratoluene sulfonic acid catalyst, the reaction temperature is in the range of from 115° C. up to 200° C.

4,446,126

ANTITHROMBIN-HEPARIN COMPLEX AND METHOD FOR ITS PRODUCTION

Robert E. Jordan, Concord, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation of Ser. No. 192,170, Sep. 30, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,504

Int. Cl.³ A61Y 31/725, 35/14

U.S. Cl. 424—183 21 Claims

1. A method for preparing a composition having as its sole effective anticoagulant agent an antithrombin-heparin complex, comprising the steps of:

(a) reversibly binding antithrombin to a lectin-containing water-insoluble matrix;

(b) contacting said matrix and said antithrombin bound thereto with heparin, whereby an active portion of said heparin complexes with said antithrombin;

(c) washing said matrix to remove portions of heparin not complexed to said antithrombin;

(d) displacing said antithrombin-heparin complex from said matrix; and

(e) thereby recovering said antithrombin-heparin complex substantially free from uncomplexed antithrombin and uncomplexed heparin.

4,446,127

PROCESS FOR THE PREPARATION OF PHARMACEUTICAL AND COSMETIC DISPERSIONS

Manfred Bücheler, Overath; Bernd Klinksiek, Bergisch-Gladbach; Hans Gehringer, Cologne, and Hildegard Schnöring, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 280,615, Jul. 6, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,336

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3028005

Int. Cl.³ A61K 7/42

U.S. Cl. 424—59 3 Claims

1. A process for the preparation of a fine-particled, stable, pharmaceutical or cosmetic dispersion consisting of an aqueous phase and an organic phase which is insoluble or not completely soluble in water, which comprises dispersing the entire inner phase at a temperature between 40° and 180° C. to a particle size of 0.1 to 10 μm in only 5 to 40% by volume of the outer phase for the desired finished dispersion at a temperature above the liquefaction point of the inorganic phase and of the aqueous phase, and then diluting the resulting dispersion without changing the particle size, with the remaining 60 to 95% of the outer phase, the temperature of which is below the solidification point of the inner phase, the temperature and volume ratio of said two phases being adjusted so that a reversal of phases takes place during dispersion.

4,446,128

ANTIGEN DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Gerhard Baschang, Bettingen; Felix M. Dietrich, Basel; Roland Gisler, Binningen, all of Switzerland; Albert Hartmann, Grenzach, Fed. Rep. of Germany; Jaroslav Stanek, Birsfelden, Switzerland, and Lajos Tarcsay, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

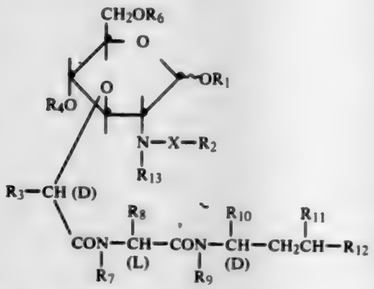
Continuation of Ser. No. 14,190, Feb. 22, 1979, abandoned. This application May 18, 1982, Ser. No. 379,404

Claims priority, application Switzerland, Feb. 24, 1978, 2035/78; Apr. 7, 1978, 3777/78; May 18, 1978, 5394/78

Int. Cl.[3] **A61K** *39/00, 37/00;* **C07C** *103/52;* **C07G** *7/00*

U.S. Cl. 424—88 **32 Claims**

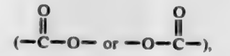
1. A novel antigen derivative, which comprises an antigen radical and one or more muramylpeptide radicals covalently bound thereto, directly or via a spacer, the antigen and muramylpeptide of those radicals each containing at least one functional group characterized in that upon reaction between antigen and muramylpeptide, antigen and spacer or muramylpeptide and spacer one of the below-mentioned covalent linking-structures is formed between the reactants, said muramylpeptide has the formula



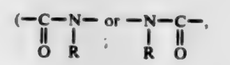
(II)

in which X is a carbonyl, carbonyloxy or sulfonyl group, R_1, R_4 and R_6 independently of one another represent hydrogen, alkyl having from 1 to 18 carbon atoms, benzyl which is unsubstituted or substituted in the aromatic nucleus by lower alkyl, hydroxyl, lower alkoxy, lower alkylenedioxy, mercapto, lower alkylmercapto, trifluoromethyl and/or halogen, or represent alkanoyl having from 2 to 18 carbon atoms, benzoyl or naphthoyl which are unsubstituted or substituted by halogen, lower alkyl, lower alkoxy, trifluoromethyl, hydroxyl or lower alkanoyloxy, or represent an acyl radical of a lower alkanesulfonic acid

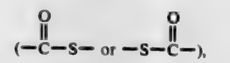
or of phenylsulfonic acid, which is unsubstituted or substituted by lower alkyl or halogen, or represent carbamoyl, lower alkyl-carbamoyl or phenyl-carbamoyl, R_2 represents alkyl having 1 to 18 carbon atoms which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylmercapto, lower alkanoylmercapto, carboxy, lower alkoxycarbonyl and/or carbamoyl, or represents phenyl which is unsubstituted or substituted by lower alkyl, hydroxy, lower alkoxy, lower alkanoyl, lower alkylenedioxy, halogen and/or trifluoromethyl, R_3, R_7, R_9 and R_{13} are independently of one another hydrogen or lower alkyl, R_8 is hydrogen, lower alkyl which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, mercapto, lower alkylmercapto, lower alkanoylmercapto, amino, lower alkanoylamino, carbamoylamino or cycloalkyl having 5 or 6 carbon atoms, or represents cycloalkyl-lower alkyl, the cycloalkyl radical of which contains 5 or 6 carbon atoms, phenyl or phenyl-lower alkyl, in which the phenyl radicals are unsubstituted or substituted as defined above, or heterocyclic radicals are 5- or 6-membered, contain one or two nitrogen atoms in the ring and may or may not contain a fused phenyl radical, R_7 and R_8 together can also represent alkylene having 3 or 4 carbon atoms, R_{10}, R_{11} and R_{12} independently of one another represent carboxyl, lower alkoxycarbonyl or carbamoyl which is unsubstituted or mono- or disubstituted at the nitrogen atom by unsubstituted or carboxy- or carbamoyl-substituted lower alkyl or by phenyl, benzyl, tetramethylene or pentamethylene and R_{11} can also be hydrogen, with the proviso that the muramylpeptide and the antigen are bonded together via the covalent linking structures carbonyloxy



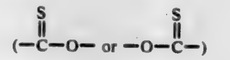
carbonylimino



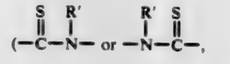
wherein R is hydrogen or lower alkyl), carbonylthio



thiocarbonyloxy



and/or thiocarbonylimino



wherein R′ is hydrogen or lower alkyl) directly or via a spacer, and with the further proviso that the antigen-muramylpeptide derivative may or may not be fixed to a high molecular weight carrier and that the antigen is not a constituent of a vaccine against tumour cells.

4,446,129

METHOD FOR TREATMENT OF ARTHROSIS DEFORMANS WITH ELASTASE

Tohru Sawada, Ibaragi, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1983, Ser. No. 529,070

Claims priority, application Japan, Sep. 17, 1982, 57-160837

Int. Cl.[3] **A61K** *37/48*

U.S. Cl. 424—94 **10 Claims**

1. A method for treating a subject suffering from arthrosis deformans which comprises administering to said subject a therapeutically effective amount of a composition comprising elastase and a pharmacologically acceptable carrier.

4,446,130

METHOD OF PREPARING DRIED GINSENG FOR DRUG

Iwao Hachiya, Yokohama; Keizo Mochizuki, Kawasaki, and Yukio Kuwada, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Apr. 8, 1981, Ser. No. 252,175

Claims priority, application Japan, Apr. 18, 1980, 55-50361

Int. Cl.[3] **A61K** *35/78*

U.S. Cl. 424—195 **5 Claims**

1. A method for dehydrating the raw root of a ginseng plant, which comprises the consecutive steps of:

(a) heating the raw ginseng root which has been packed in a sealed bag or container, at a temperature of 60°–100° C. until the tissue of the ginseng root has been softened to a hardness of from half to one tenth of the original hardness of the raw ginseng root as measured by a penetrometer,

(b) freezing the ginseng root so softened and then unpacked, in an inert gas which is under a gas pressure of 20–70 kg/cm^2, and

(c) freeze-drying the pressure-frozen ginseng root in vacuo.

4,446,131

CONTROLLED TEMPERATURE PROCESS FOR MANUFACTURING OF IMPROVED STABILIZED ALOE VERA

Rex G. Maughan, Tempe, Ariz., assignor to Aloe Vera of America, Inc., Dallas, Tex.

Filed Jun. 9, 1982, Ser. No. 386,702

Int. Cl.[3] **A61K** *35/78;* **C07G** *17/00*

U.S. Cl. 424—195 **8 Claims**

1. A process for stabilizing a clear gel which has been separated from the leaf of aloe vera comprising:

(a) heating said aloe vera gel to a temperature in the range of from about 35° C. to about 70° C.;

(b) adding to said heated aloe vera gel ascorbic acid in an amount from about 0.05% to 0.5% based on the weight of said gel;

(c) maintaining the admixed aloe vera gel and ascorbic acid at a temperature in the range of from about 35° C. to about 70° C. for a sufficient period of time to kill bacteria; and

(d) cooling the aloe vera gel to ambient temperature or lower in less than one hour.

4,446,132

NONTOXIC ASPIRIN COMPOSITION

Audrey L. Bender, Huntington Valley, Pa., assignor to Dynatech Laboratories Incorporated, Alexandria, Va.

Filed Mar. 11, 1982, Ser. No. 357,074

Int. Cl.[3] **A61K** *31/61, 31/615*

U.S. Cl. 424—233 **7 Claims**

1. A method of treating headaches and other disorders normally treated with aspirin, comprising the steps of providing an admixture comprising acetylsalicylic acid and glycine in water-free dosage form in which the glycine is unreacted with said acid, and orally administering the dosage form of said admixture while the glycine is still unreacted with said acid, the unreacted glycine in the administered admixture being present in an amount sufficient to suppress the in vivo breakdown of said acid in the acidic environment of the human stomach without substantially impairing the therapeutic effect of the acetylsalicylic acid.

4,446,133

1-PHENYL-4-CARBAMOYL PIPERAZINE COMPOUNDS, PROCESS FOR PREPARATION THEREOF AND UTILIZATIONS THEREOF

Yutaka Okazaki; Hiroshi Tokuda, both of Chiba; Shiyoichiro Miyahara, and Yoshitsugu Yamada, both of Fukuoka, all of Japan, assignors to Misuitoatsu Chemicals, Inc., Tokyo, Japan

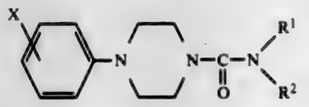
Filed Feb. 13, 1981, Ser. No. 235,112

Claims priority, application Japan, Feb. 15, 1980, 55-016561

Int. Cl.[3] **C07D** *241/04;* **A61K** *31/495*

U.S. Cl. 424—250 **5 Claims**

1. A piperazine compound represented by the following formula or its inorganic or oganic acid salt:



wherein X stands for a carboxy or alkoxycarbonyl group, R^1 stands for a hydrogen atom or an alkyl group, and R^2 stands for a hydrogen atom or an alkyl group.

4,446,134

PROCESS FOR HEAT TREATMENT OF AQUEOUS SOLUTION CONTAINING HUMAN BLOOD COAGULATION FACTOR VIII

Ryoichi Naito, Ibaraki; Tadakazu Suyama, Kyoto, and Yoshiro Iga, Nishinomiya, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Feb. 19, 1982, Ser. No. 350,150

Claims priority, application Japan, Oct. 28, 1981, 56-173585

Int. Cl.[3] **A61K** *35/14*

U.S. Cl. 424—101 **12 Claims**

1. A process for heat treatment to inactivate the hepatitis virus in a human blood coagulation factor VIII composition, which comprises carrying out the heat treatment at 50° to 80° C. of an aqueous solution containing the human blood coagulation factor VIII for a time sufficient to inactivate the hepatitis virus but to retain the activity of the blood coagulation factor VIII, said heat treatment conducted in the presence of 10% (W/V) or more of at least one principal stabilizer selected from the group consisting of neutral amino acids, monosaccharides, oligosaccharides, and sugar alcohols and 10% (W/V) or more of at least one auxiliary stabilizer selected from the group consisting of salts of hydrocarbon carboxylic acids and hydroxhydrocarbon carboxylic acids, which have 3 to 10 carbon atoms.

4,446,135

CHEWABLE ANTACID TABLETS

Harvey A. Fountaine, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,913

Int. Cl.[3] **A61K** *33/06, 33/08, 33/10*

U.S. Cl. 424—154 **5 Claims**

1. In a method of imparting good "mouthfeel" in chewable antacid tablets, said good "mouthfeel" being characterized by a non-chalky, non-gritty texture, said tablets being prepared from a primary granulation of tablet ingredients comprising from 45 to 50 weight percent of calcium carbonate and from 8 to 11 weight percent of magnesium hydroxide, as the effective antacid ingredients, along with from 30 to 40 weight percent of sucrose and from 8 to 11 weight percent of mannitol, said primary granulation, together with a flavoring agent and a tablet lubricating agent, being pressed into said chewable tablets, the improvement which comprises use of calcium carbonate having an average particle diameter from 5 to 50 microns to impart said good "mouthfeel" to said chewable tablets.

4,446,136

AGENTS FOR IMPROVEMENT OF PERIPHERAL BLOOD FLOW

Hiroshi Maeda, and Katsuhide Nishi, both of Kumamoto, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1981, Ser. No. 304,943

Claims priority, application Japan, Sep. 25, 1980, 55-132336

Int. Cl.[3] **A61K** *37/12*

U.S. Cl. 424—177 **17 Claims**

1. A method of improving the peripheral blood flow in a warm blooded animal comprising administering to said warm blooded animal by injection an effective amount of a composition comprising an active agent selected from the group consisting of gelatin and solubilized collagen, and a pharmaceutically acceptable carrier.

4,446,137

CEPHALOSPORIN DERIVATIVE AND PHARMACEUTICAL COMPOSITION CONTAINING THE DERIVATIVE

Shigeaki Muto, Tokyo; Kouichi Niimura, Sayama; Takao Ando, Tokyo; Masahiko Fujii, Komae; Takao Furusho, Machida, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

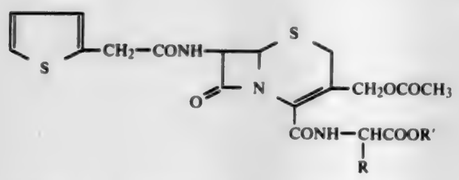
Filed Sep. 16, 1982, Ser. No. 419,076

Claims priority, application Japan, Sep. 18, 1981, 56-147578

Int. Cl.³ A61K *31/545*; C07D *501/34*

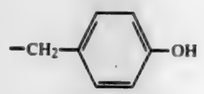
U.S. Cl. 424—246 **10 Claims**

1. A cephalosporin derivative having the general formula (I);



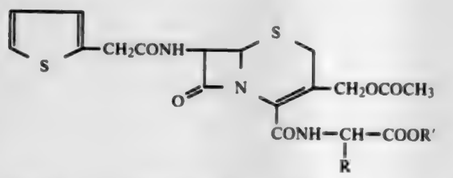
(I)

wherein R′ is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkali metal and R is $-CH_2COOR'$, $-CH_2CH_2SR'$,



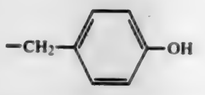
or $-CH_2CH_2COOR'$ wherein R′ is defined above.

6. A pharmaceutical composition in dosage unit form which comprises a dosage amount effective for the treatment of an infectious disease due to bacteria, of a cephalosporin derivative having the general formula (I);



(I)

wherein R′ is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkali metal and R is $-CH_2COOR'$, $-CH_2CH_2SR'$,



or $-CH_2CH_2COOR'$ wherein R′ is defined above, and a carrier, diluent or adjuvant therefor.

4,446,138

METHOD AND COMPOSITION FOR REDUCING WEIGHT

Howard M. Pack, 12 Herkimer Rd., Scarsdale, N.Y. 10583

Filed Feb. 10, 1982, Ser. No. 347,492

Int. Cl.³ A61K *27/00*

U.S. Cl. 424—248.57 **8 Claims**

1. A composition for use in the treatment of obesity comprising L-Dopa, a decarboxylase inhibitor in amounts of between about 6% and about 100% by weight of said L-Dopa, and Molindone in amounts of between 1.0 and 50 weight percent of said L-Dopa.

4,446,139

HEXAHYDROINDOLOQUINOLIZINIUM AND OCTAHYDROINDOLOQUINOLIZINE ESTERS, AND METHOD OF INCREASING BLOOD FLOW IN AN ANIMAL WITH HYDROXYAMINO-EBURNANE DERIVATIVES

Csaba Szantay; Lajos Szbao; György Kalaus; Janos Sapi; Lajos Dancsi, Tibor Keve, and Maria Gazdag, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Division of Ser. No. 154,329, May 29, 1980, Pat. No. 4,345,082. This application Feb. 23, 1982, Ser. No. 351,506

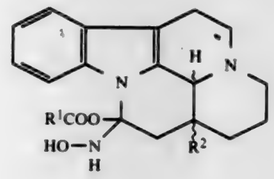
Claims priority, application Hungary, May 31, 1979, RI 713

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.³ A61K *31/435*; C07D *455/00*

U.S. Cl. 424—256 **10 Claims**

1. A method of increasing blood flow in an animal which comprises the step of administering to the animal a pharmaceutically effective amount of a compound of the formula (I)

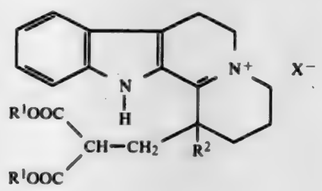


(I)

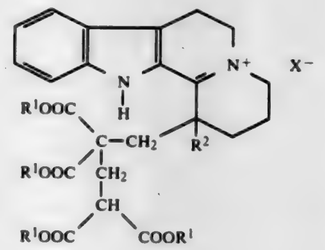
wherein

R^1 and R^2 are each C_1 to C_6 alkyl or a pharmaceutically acceptable acid addition salt thereof.

8. A pharmaceutically acceptable acid addition salt of the formula (IVa) or (IVb)



(IVa)



(IVb)

wherein R^1 and R^2 are each C_1 to C_6 alkyl and X is an acid residue, or a corresponding free base or an optically active isomer thereof.

4,446,140

METHOD AND COMPOSITION FOR TREATING MOUTH PAIN

Eric L. Nelson, Santa Ana, Calif., assignor to Nelson Research & Development Company, Irvine, Calif.

Continuation-in-part of Ser. No. 329,550, Dec. 10, 1981, which is a continuation of Ser. No. 140,493, Apr. 15, 1980, Pat. No. 4,316,888. This application Mar. 29, 1982, Ser. No. 362,933

Int. Cl.³ A61K *31/485*

U.S. Cl. 424—260 **6 Claims**

1. A method of temporarily reducing pain and discomfort associated with mouth pain comprising administering to a human having mouth pain an effective mouth pain reducing amount of dextromethorphan or a pharmaceutically acceptable salt thereof.

4,446,141

HYPOTENSIVE PIPERIDINE DERIVATIVES

Nobuhiro Nakamizo, 1704-22, Honmachida, Machida-shi, Tokyo, 194; Hiroyuki Obase, 9-9, Naka-machi 3-chome, Machida-shi, Tokyo, 194; Kazuhiro Kubo, 625-11, Kashiwakubo, Shuzenji-machi, Tagata-gun, Shizuoka, 410-24, and Yutaka Kasuya, 1-61, Komukainishi-machi, Saiwai-ku, Kawasaki-shi, Kanagawa, 210, all of Japan

PCT No. PCT/JP79/00141, 371 Date Feb. 2, 1980, 102(e) Date Jan. 31, 1980, PCT Pub. No. WO80/00024, PCT Pub. Date Jan. 10, 1980

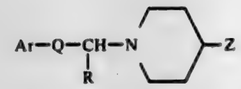
PCT Filed Jun. 1, 1979, Ser. No. 191,339

Claims priority, application Japan, Jun. 2, 1978, 53/66548

Int. Cl.³ A61K *31/445*; C07D *401/04*

U.S. Cl. 424—267 **13 Claims**

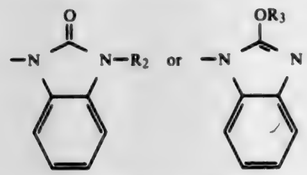
1. A compound represented by the formula:



wherein Ar represents a naphthyl, phenyl or substituted phenyl group having 1 to 5 substituents wherein the substituent is a straight or branched-chain alkoxy group having 1 to 6 carbon atoms, a hydroxy group, a benzyloxy group or an alkylenedioxy group having 1 to 3 carbon atoms; Q represents



wherein R_1 represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms or an alkanoyl group having 2 to 6 carbon atoms; R represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms; and Z represents



wherein R_2 is a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkanoyl group having 2 to 6 carbon atoms or an alkoxycarbonyl group having 2 to 6 carbon atoms and R_3 is an alkyl group having 1 to 5 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

11. A hypotensive composition which comprises an effective hypotensive amount of the compound defined in claim 1 and a pharmaceutically acceptable carrier.

4,446,142

SUBSTITUTED OXADIAZOLES AND THIADIAZOLES, AND METHODS OF PREPARATION AND USE THEREOF

Erich Cohnen, and Ben Armah, both of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

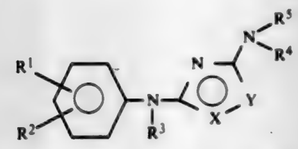
Filed Jun. 26, 1981, Ser. No. 277,535

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024187

Int. Cl.³ A61K *31/41*

U.S. Cl. 424—269 **23 Claims**

1. A method of treating hypertension comprising administering to a warm-blooded animal an effective amount of a compound of the formula



(I)

wherein R^1 is hydrogen, halogen, or alkyl, R^2 is halogen or alkyl, R^3 is hydrogen, alkanoyl, or aliphatic, R^4 and R^5 are individually hydrogen or alkyl, wherein said alkyl and said alkanoyl are branched or straight chain and each contains 1 to 4 carbon atoms, X is oxygen, nitrogen or sulfur, Y is oxygen or nitrogen, and —X—Y— is —O—N—, —N—O—, or —S—N—, and pharmaceutically acceptable acid addition salts thereof, except

3-amino-5-(4-methyl-phenylamino)-1,2,4-oxadiazole,
3-(4-methyl-phenylamino)-5-amino-1,2,4-oxadiazole
3-(4-chloro-phenylamino)-5-amino-1,2,4-oxadiazole
3-(3,4-dichloro-phenylamino)-5-amino-1,2,4-oxadiazole
3-(2,3-dimethyl-phenylamino)-5-amino-1,2,4-oxadiazole
3-(2,3-dichloro-phenylamino)-5-amino-1,2,4-oxadiazole
3-(2-methyl-phenylamino)-5-amino-1,2,4-oxadiazole
3-(4-fluor-phenylamino)-5-amino-1,2,4-oxadiazole
3-(2,6-dichloro-phenylamino)-5-amino-1,2,4-oxadiazole
3-(2-chloro-phenylamino)-5-amino-1,2,4-oxadiazole
3-(4-chloro-phenylamino)-5-methylamino-1,2,4-oxadiazole
3-(2-chloro-phenylamino)-5-methylamino-1,2,4-oxadiazole
3-(3,4-dichloro-phenylamino)-5-methylamino-1,2,4-oxadiazole
3-(2,6-dichloro-phenylamino)-5-methylamino-1,2,4-oxadiazole.

4,446,143

RHODANINE DERIVATIVES

Tadao Tanouchi, Takatsuki; Satoshi Shigeoka, Neyagawa; Masanori Kawamura, Ibaraki; Masaki Hayashi; Hiroshi Terashima, both of Takatsuki, and Fumio Hirata, Suita, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

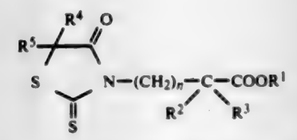
Filed Jul. 27, 1981, Ser. No. 286,839

Claims priority, application Japan, Jul. 28, 1980, 55-102410

Int. Cl.³ C07D *277/36*; A61K *31/425*

U.S. Cl. 424—270 **41 Claims**

1. A rhodanine derivative represented by the general formula:



(I)

(wherein R^1 represents a hydrogen atom or an alkyl group of 1-12 carbon atoms; R^2 and R^3, which may be the same or

different with each other, each represents a hydrogen atom, an alkyl group of 1–4 carbon atoms, or a phenyl group; R^4 represents an alkyl group of 1–4 carbon atoms, a cycloalkyl group of 4–7 carbon atoms which is unsubstituted or substituted by at least one alkyl group of 1–4 carbon atoms, a phenyl or benzyl group which is unsubstituted or substituted by halogen atom(s), a trifluoromethyl group, a phenyl group, a nitro group, a hydroxy group, a carboxyl group, an amino group which may be substituted by an alkyl group of 1–4 carbon atoms, or alkyl(s), an alkoxy or an alkylthio group of 1–4 carbon atoms, a naphthyl group, an anthracenyl group, or a 5- or 6-membered heterocyclic ring or a 9- or 10-membered bicyclic fused heterocyclic ring, each containing one nitrogen, oxygen or sulfur atom which is unsubstituted or substituted by halogen atom(s), a trifluoromethyl group, a phenyl group, a nitro group, a hydroxy group, a carboxyl group, an amino group which may be substituted by an alkyl group of 1–4 carbon atoms, or alkyl(s), an alkoxy or an alkylthio group of 1–4 carbon atoms; R^5 represents a hydrogen atom, an alkyl gorup of 1–4 carbon atoms, a cycloalkyl group of 4–7 carbon atoms which is unsubstituted or substituted by at least one alkyl group of 1–4 carbon atoms, a phenyl or benzyl group which is unsubstituted or substituted by halogen atom(s), a trifluoromethyl group, a phenyl group, a nitro group, a hydroxy group, a carboxyl group, an amino group which may be substituted by an alkyl group of 1–4 carbon atoms, or alkyl(s), an alkoxy or an alkylthio group of 1–4 carbon atoms, a naphthyl group, an anthracenyl group, or a heterocyclic group containing one of nitrogen, oxygen and sulfur atoms which is unsubstituted or substituted by halogen atom(s), a trifluoromethyl group, a phenyl group, a nitro group, a hydroxy group, a carboxy group, an amino group which may be substituted by an alkyl group of 1–4 carbon atoms, or alkyl(s), an alkoxy or an alkylthio group of 1–4 carbon atoms; n represents 0, 1 or 2; with the proviso that when R^5 represents a hydrogen atom or an alkyl group of 1–4 carbon atoms, R^4 does not represent an alkyl group of 1–4 carbon atoms) or when R^1 represents a hydrogen atom, a non-toxic salt of the acid.

4,446,144

DERIVATIVES OF PENICILLANIC ACID

Welf von Daehne, Rungsted Kyst, Denmark, assignor to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

Continuation-in-part of Ser. No. 145,880, May 1, 1980. This application Nov. 17, 1980, Ser. No. 207,614

Claims priority, application United Kingdom, May 21, 1979, 7917665; Sep. 5, 1979, 7930819; Nov. 29, 1979, 7941252; Feb. 27, 1980, 8006681

Int. Cl.³ C07D *499/08;* **A61K** *31/425*

U.S. Cl. 424—270 **7 Claims**

1. A pharmaceutically-acceptable amine salt selected from the group consisting of the pivampicillin salt of 6β-bromopenicillanic acid, the pivampicillin salt of 6β-iodopenicillanic acid, and bacampicillin salt of 6β-bromopenicillanic acid and the bacampicillin salt of 6β-iodopenicillanic acid.

4,446,145

ANTI-MICROBIAL COMPOSITIONS FOR THE TOPICAL TREATMENT OF ACNE VULGARIS

Willem F. M. Van Bever, Turnhout, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 114,813, Jan. 24, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 282,975

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **4 Claims**

1. A pharmaceutical anti-acne composition comprising a pharmaceutically acceptable inert carrier material and as active ingredients from 4% to 6% of benzoylperoxide and from 1.5% to 2.5% of at least one chemical compound selected from the group consisting of clotrimazole, miconazole, econazole, isoconazole and a pharmaceutically acceptable acid addition salt thereof.

4,446,146

β-LACTAM CONTAINING COMPOUNDS, THEIR PREPARATION AND USE

Robert Southgate, Warnham; Terence C. Smale, Epsom Downs, and Roger J. Ponsford, Horsham, all of England, assignors to Beecham Group Limited, England

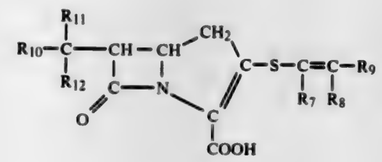
Filed Jul. 20, 1979, Ser. No. 59,463

Claims priority, application United Kingdom, Jul. 26, 1978, 31223/78; Jan. 6, 1979, 7900503

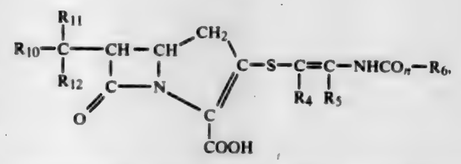
Int. Cl.³ A61K *31/40;* **C07D** *487/04*

U.S. Cl. 424—274 **74 Claims**

1. A compound of the formula:

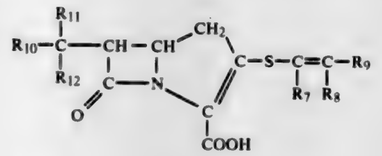


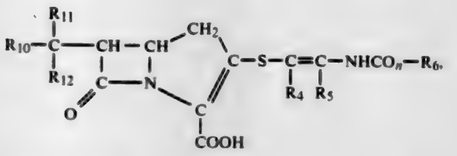
or



a pharmaceutically acceptable salt thereof or ester thereof, wherein each of R_4, R_5, R_7, R_8, R_{11} and R_{12}, independently of the others is hydrogen or lower alkyl; R_6 is ethyl, n-propyl or isopropyl, phenyl, fluorphenyl, chlorophenyl, bromophenyl or benzyl; R_9 is hydrogen, lower alkyl or phenyl; n is 1 or 2; and R_{10} is hydrogen, hydroxy, $R_{13}COO-$ *or* $R_{13}OCOO-$ in which R_{13} is lower alkyl, phenyl, benzyl, fluorobenzyl, chlorobenzyl, bromobenzyl, lower alkoxybenzyl or nitrobenzyl, and wherein the exocyclic double bond is in the Z configuration.

18. A pharmaceutical composition useful for treating bacterial infections in humans and domestic animals which comprises an antibacterially effective amount of a compound of the formula:





a pharmaceutically acceptable salt thereof or ester thereof, wherein each of R_4, R_5, R_7, R_8, R_{11} and R_{12}, independently of the others is hydrogen or lower alkyl; R_6 is ethyl, n-propyl or isopropyl, phenyl, fluorphenyl, chlorophenyl, bromophenyl or benzyl; R_9 is hydrogen, lower alkyl or phenyl; n is 1 or 2; and R_{10} is hydrogen, hydroxy, $R_{13}COO-$ or $R_{13}OCOO-$ in which R_{13} is lower alkyl, phenyl, benzyl, fluorobenzyl, chloro-

benzyl, bromobenzyl, lower alkoxybenzyl or nitrobenzyl, and wherein the exocyclic double bond is in the Z configuration, in combination with a pharmaceutically acceptable carrier.

4,446,147

AZAPROSTACYCLINS, THEIR PREPARATION AND PHARMACEUTICAL USE

Norbert Schwarz; Werner Skuballa; Helmut Vorbrueggen; Jorge Casals-Stenzel; Ekkehard Schillinger, and Michael H. Town, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

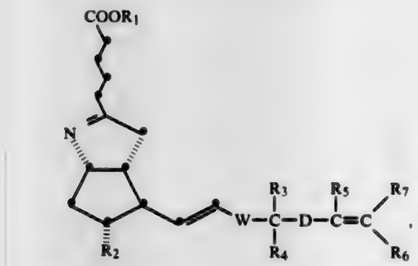
Filed Feb. 22, 1982, Ser. No. 350,674

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3107100

Int. Cl.³ C07D *209/52;* **A61K** *31/40*

U.S. Cl. 424—274 **20 Claims**

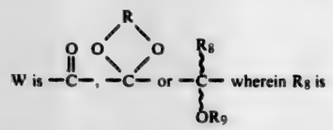
1. An azaprostacyclin of the formula



(I)

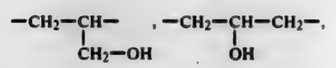
wherein

R_1 is (a) hydrogen, (b) C_{1-10} alkyl, (c) C_{1-10} alkyl substituted by halogen; C_{1-4} alkoxy; C_{6-10} aryl; C_{6-10} aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; di-C_{1-4}-alkylamino; or tri-C_{1-4}-alkylammonium; (d) C_{4-10} cycloalkyl, (e) C_{4-10} cycloalkyl substituted by C_{1-4} alkyl, (f) C_{6-10} aryl, (g) C_{6-10} aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group, (h) an aromatic heterocycle of 5 or 6 ring atoms one of which is O, N or S, the remainder being carbon atoms, (i) phenacyl, or (j) phenacyl substituted on the phenyl ring by bromine, phenyl, C_{1-4}-alkoxy, or di-C_{1-4}-alkoxy,

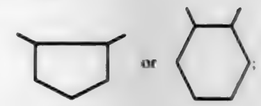


W is —C—, —C— or —C— wherein R_8 is

hydrogen or alkyl of 1-5 carbon atoms, R_9 is hydrogen, tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl, tribenzylsilyl or an acyl group of a C_{1-15}-hydrocarbon carboxylic or sulfonic acid, the OR_9-group can be in the α- or β-position, and R is $—(CH_2)_{2-5}—$,



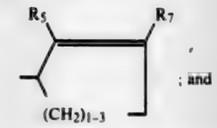
-continued



R_2 is OH or OR_9,

R_3 and R_4 each independently is hydrogen, alkyl of 1–5 carbon atoms, or fluorine,

D is $—(CH_2)_{1 \text{ or } 2}—$, $—(CH_2)_{1 \text{ or } 2}—$ substituted by C_{1-5}-alkyl or together with R_6 forms a ring of the formula



; and

(1) when D is optionally substituted alkylene as defined above, R_5 is H or C_{1-2}-alkyl and R_6 and R_7 each independently is H or C_{1-2}-alkyl or one is C_{1-2}alkyl and the other is halo; and

(2) when D forms a ring with R_6, $R_5$and R_7 each independently is H or C_{1-2}alkyl;

or for the compounds wherein R_1 is H, a physiologically compatible salt thereof.

4,446,148

BENZODIOXANYL IMIDAZOLINE COMPOUNDS, COMPOSITIONS AND USE

Michael R. Stillings, Hull, England, assignor to Reckitt & Colman Products Limited, Hull, England

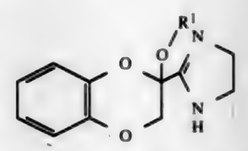
Filed Mar. 29, 1983, Ser. No. 480,370

Claims priority, application United Kingdom, Apr. 17, 1982, 8211205

Int. Cl.³ A61K *31/415;* **C07D** *405/04*

U.S. Cl. 424—273 R **11 Claims**

1. A compound of the formula



(I)

wherein R^1 is alkyl C_{1-4}, allyl, benzyl, phenethyl or hydroxyalkyl C_{2-4} and its non-toxic salts, having the RS or S configuration.

6. A pharmaceutical composition for presynaptic α_2-adrenoreceptor antagonist use comprising a compound as claimed in claim 1, or a non-toxic salt thereof in an amount effective for said use together with a pharmaceutically acceptable diluent or carrier.

4,446,149

MEDICINE FOR TREATMENT OF CERVICAL EROSION

Kineshiro Nagai, No. 22-2, Yoyogi 4-Chome, Shibuya-Ku, Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,650

Claims priority, application Japan, Dec. 14, 1981, 56-201345

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **5 Claims**

1. A method of treating cervical erosion in a human female suffering therefrom comprising the step of administering a preparation containing L-carnosine or physiologically accept-

able salts thereof in an effective amount for treating cervical erosion in said human female.

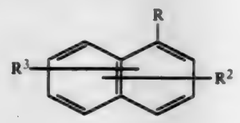
4,446,150

NAPHTHALENYLTHIAZOLE DERIVATIVES

Kazimir Sestanj, St. Laurent, and Francesco Bellini, Mount Royal, both of Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada

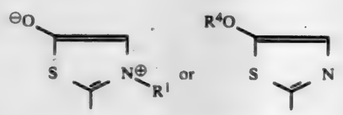
Filed Sep. 21, 1982, Ser. No. 420,776
Int. Cl.³ C07D *277/34*; A61K *31/425*
U.S. Cl. 424—270 **10 Claims**

1. A compound of formula I



(I)

wherein R is



wherein R^1 is lower alkyl; R^2 is a halo substituent on the naphthalene ring and R^3 is hydrogen, or R^2 and R^3 each is a substituent at positions 3, 4, 5 or 6 of the naphthalene ring selected from the group consisting of lower alkoxy, trihalomethyl and halo; and R^4 is lower alkyl.

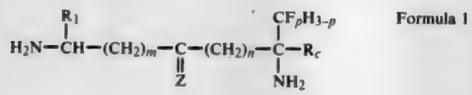
4,446,151

DECARBOXYLASE-INHIBITING FLUORINATED PENTANE DIAMINE DERIVATIVES

Fritz Gerhart, Kehl-Leutesheim, Fed. Rep. of Germany, and Viviane Van Dorsselaer, Strasbourg, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Aug. 11, 1982, Ser. No. 407,238
Int. Cl.³ A61K *31/195*; C07C *87/26*, *101/10*; A61K *31/13*
U.S. Cl. 424—319 **18 Claims**

1. A compound of the following general Formula I:



Formula I

wherein :
R_c represents hydrogen or carboxy;
R_1 represents hydrogen or C_1–C_6 alkyl;
Z represents methylene or oxygen;
m and n each represent 0 or 1 but m+n=1;
p represents 1 or 2,
or a pharmaceutically acceptable salt thereof.

18. A method of inhibiting ornithine decarboxylase in a patient in need thereof which comprises administering to said patient an effective ornithine decarboxylase inhibiting amount of a compound as defined in claim 1.

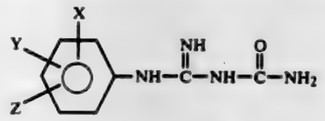
4,446,152

METHOD OF TREATING CONGESTIVE HEART FAILURE

Richard L. Riley, North Wales, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Filed Jun. 25, 1981, Ser. No. 277,148
Int. Cl.³ A61K *31/17*
U.S. Cl. 424—322 **6 Claims**

1. A method for the treatment of left ventricular heart failure in a patient wherein low cardiac output predominates, which comprises administering to said patient in need of treatment, in an amount effective to lower the peripheral resistance and to increase the cardiac output without any substantial change in blood pressure, of at least one compound of the formula:



where:
X is hydrogen or halo;
Y is hydrogen, halo, halologweralkyl, nitro loweralkyl or loweralkoxy;
Z is halologweralkyl, halologweralkoxy, hydroxy, loweralkylsulfonyl, halo, loweralkoxy, loweralkyl, nitro or cyano;
and the non-toxic acid addition salts thereof in a suitable pharmaceutically acceptable carrier.

4,446,153

SKIN SANITIZING COMPOSITION AND METHOD OF USING

Kim W. Yang, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Sep. 30, 1982, Ser. No. 430,089
Int. Cl.³ A61K *31/045*
U.S. Cl. 424—343 **22 Claims**

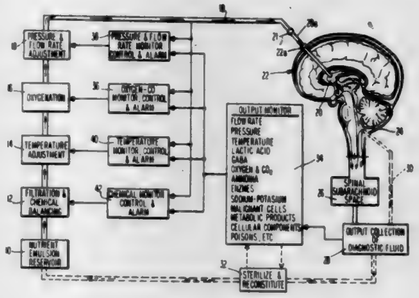
1. A teat sanitizing composition comprising an aqueous dispersion of a sanitizing mixture of benzyl alcohol and phenylethanol, in an amount effective to substantially reduce the bacteria population on a teat surface when said composition is applied thereto, an emulsifying amount of a surfactant to disperse said sanitizing mixture, said composition having a pH of between about 4 and 7.

4,446,154

STROKE TREATMENT UTILIZING EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

Jewell L. Osterholm, Radnor Township, Delaware County, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 354,346, Mar. 3, 1982, which is a continuation-in-part of Ser. No. 275,117, Jun. 18, 1981, Ser. No. 275,116, Jun. 18, 1981, Pat. No. 4,393,863, and Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, said Ser. No. 275,117, and Ser. No. 275,116, each is a division of Ser. No. 139,886,. This application Sep. 30, 1982, Ser. No. 428,685
Int. Cl.³ A61K *31/00*; A61M *5/14*
U.S. Cl. 424—350 **20 Claims**



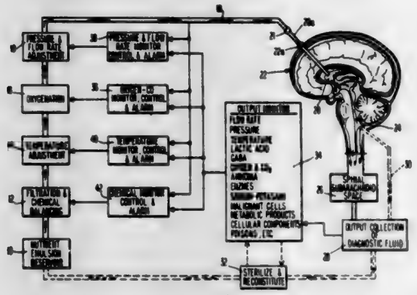
1. An artificial central nervous system, cerebrospinal pathway treatment liquid for treating hypoxic-ischemic cerebrospinal tissue, comprising, an aqueous emulsion containing:
(a) a non-aqueous fluorocarbon oxygen transfer component for selectively combining with oxygen and for transferring oxygen to said tissues to be treated;
(b) an aqueous nutrient component comprising at least essential electrolytes for said tissue; and
(c) an emulsification component for permitting the emulsification of said nutrient means with said oxygen transfer means; and at least one treatment agent selected from the group consisting of steroids and amino acids.

4,446,155

STROKE TREATMENT UTILIZING EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

Jewell L. Osterholm, Radnor Township, Delaware County, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 354,346, Mar. 3, 1982, which is a continuation-in-part of Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, Ser. No. 275,116, Jun. 18, 1981, Pat. No. 4,393,863, and Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, said Ser. No. 275,117, and Ser. No. 275,116, each is a division of Ser. No. 139,886,. This application Sep. 30, 1982, Ser. No. 428,686
Int. Cl.³ A61K *31/00*; A61M *5/14*
U.S. Cl. 424—350 **19 Claims**



1. A method of making an oxygenatable synthetic nutrient cerebrospinal treatment fluid for treating hypoxic-ischemic central nervous system tissue, comprising the steps of:
(a) emulsifying an oxygenatable fluorocarbon non-aqueous material with a synthetic electrolyte-containing cerebrospinal aqueous fluid to produce a physiologically acceptable emulsion;
(b) normalizing the electrolytes and adjusting the pH of said emulsion to produce an osmotically equilibrated and acid-base balanced emulsion;
(c) adding nutrients to said emulsion to produce said oxygenatable synthetic nutrient treatment fluid, said nutrients comprising at least one amino acid; and
(d) oxygenating said fluid.

4,446,156

MANUFACTURE OF TINPLATE AND TINPLATE CONTAINERS

Dietmar F. E. Salm, Bulli, Australia, assignor to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Continuation of Ser. No. 228,375, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 13,917, Feb. 22, 1979, abandoned. This application Apr. 12, 1982, Ser. No. 367,795
Claims priority, application Australia, Feb. 23, 1978, PD3490
Int. Cl.³ C25D *5/48*; B32B *15/18*
U.S. Cl. 428—648 **12 Claims**

1. A method of producing an unreflowed solderable electrolytic tinplate by the Halogen process, comprising electrodepositing coatings of tin on opposite faces of strip steel from an electrolyte containing stannous tin and fluoride ions and rinsing the coated strip in a rinsing agent containing a concentration of fluoride ions not less than 8 g/l and, due to carry-over of electrolyte on the coated strip, stannous tin ions; wherein



the tin is electrodeposited on at least one of said faces to a coating mass of at least about 0.95 and less than 2.5 g/m^2 and the ratio of fluoride ions to stannous tin ions (F^-:Sn^{++}) in the rinsing agent is not less than 10:1.

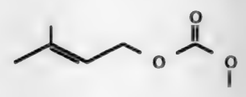
4,446,157

PRENYL METHYL CARBONATE AND ORGANOLEPTIC USES THEREOF

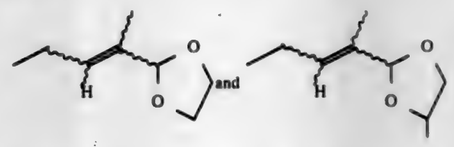
Richard M Boden, Ocean City; Manfred H. Vock, Locust, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 430,947, Sep. 30, 1982, Pat. No. 4,420,472. This application Sep. 1, 1983, Ser. No. 528,544
Int. Cl.³ A23L *1/226*, *1/235*
U.S. Cl. 426—3 **5 Claims**

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of foodstuffs and chewing gums comprising the step of adding to said consumable material from 0.5 parts per million up to about 100 parts per million based on the weight of said consumable material of prenyl methyl carbonate defined according to the structure:



5. A composition of matter comprising prenyl methyl carbonate and at least one cyclic acetal of 2-methyl-2-pentenal defined according to a structure selected from the group consisting of:



the weight ratio of prenyl methyl carbonate: cyclic acetal of 2-methyl-2-pentenal being from about 10:90 up to about 90:10.

4,446,158

APPARATUS FOR MAKING INDIVIDUAL BEVERAGE QUANTITIES

Philip H. English, 425-41 Hill Dr., Aurora, Ohio 44202, and Anthony D. Szpak, 6215 Jamestown Dr., Parma, Ohio 44134.

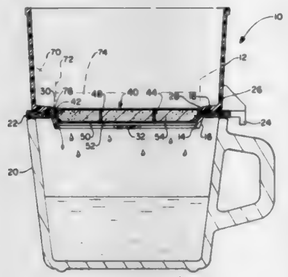
Filed Jun. 8, 1982, Ser. No. 386,284
Int. Cl.³ A47J *31/02*; B65B *29/02*
U.S. Cl. 426—79 **13 Claims**

4. A disposable individual coffee container and filter comprising:
a uniform heighth annular frame having a spider web-like center section;

filter paper layers covering the top and bottom of said frame and center section being secured thereto;

said spider web-like center section including a plurality of webs defining a plurality of areas in said annular frame;

said filter paper layers and said areas combining to form a plurality of separate compartments: and



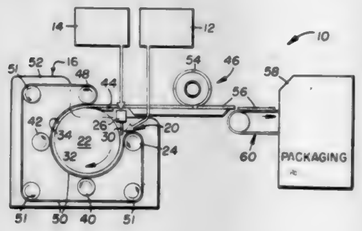
individual quantities of coffee received in said compartments, said webs being of the height of said annular frame and said compartments being filled with uniform heighth layer of ultra fine coffee particles, all areas of the coffee container and filter having substantially uniform water flow through characteristics.

4,446,159

METHOD FOR FORMING BACON-LIKE PRODUCTS

Eldon N. Roth, 14565 Quaker Hill Rd., Nevada City, Calif. 95959

Continuation-in-part of Ser. No. 168,542, Jul. 14, 1980, abandoned. This application Jun. 11, 1981, Ser. No. 272,511
The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
Int. Cl.³ A23L *1/31*; A23P *1/00*
U.S. Cl. 426—249 **16 Claims**



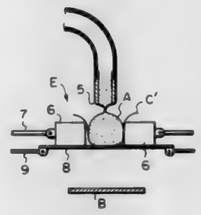
1. In a method for manufacturing a bacon-like product, the steps comprising forming first and second edible components to have a slurry or paste-like consistency, providing a refrigerated rotating drum to have a peripheral heat transfer surface, blending together and applying the first and second components onto the heat transfer surface of the drum as a sheet having an established initial thickness and generally continuous streaks of each component in a manner resembling natural bacon, the bacon-like sheet being placed in intimate contact with the heat transfer surface, cooling the bacon-like sheet upon the heat transfer surface of the drum and removing the bacon-like sheet from the drum.

4,446,160

PROCESS FOR MAKING A COMPOSITE EDIBLE PRODUCT

Tatsuo Shinriki, Chiba, Japan, assignor to Height, Inc., Matsudo, Japan

Division of Ser. No. 224,833, Jan. 13, 1981, Pat. No. 4,334,464. This application Mar. 11, 1982, Ser. No. 357,314
Claims priority, application Japan, Jan. 16, 1980, 55-3197
Int. Cl.³ A23P *1/00*
U.S. Cl. 426—297 **9 Claims**



1. A process of covering a ball of sticky edible paste material to form an edible product, comprising the steps of:

(1) depositing the ball onto a film of thin, flexible edible material and at least partially folding the film so as to partially encompass the ball sufficiently to help retain the shape of the ball and prevent the ball from undesirably sticking to other surfaces during said process;

(2) merging the ball and the film with a sheet of flattened glutinous dough by depositing the dough sheet on the ball and film so as to cover the ball and film, such that the dough sheet includes a skirt portion draped over the ball; and

(3) gathering the skirt of the dough sheet underneath the ball such that the margins of the skirt are brought together in contact with the film and the ball and film are enclosed without distorting the ball.

4,446,161

AROMATIC, MONOHYDRIC ALCOHOLS AS PRESERVATIVES FOR FOODS

Herman H. Friedman, Forest Hills; Frank Del Valle, Croton-on-Hudson, and Lisa A. Hofmann, Yonkers, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,720
Int. Cl.³ A23K *1/00*
U.S. Cl. 426—335 **14 Claims**

1. In a food product containing fat, proteinaceous and farinaceous ingredients, a moisture content of from 12% to 80% by weight and a preservation system which is effective to prevent microbial or mite growth, the improvement consisting essentially of said preservation system containing a monohydric, aromatic alcohol in an amount effective to prevent the growth of mites, said monohydric aromatic alcohol being selected from the group consisting of benzyl alcohol, 2-phenyl ethanol, sec-phenyl ethanol, 3-phenyl-1-propanol, 1-phenyl-1-propanol, 2-phenyl-1-propanol, 2-phenyl-2-propanol, 1-phenyl-2-butanol, 2-phenyl-1-butanol, 3-phenyl-1-butanol, 4-phenyl-2-butanol, dl-1-phenyl-2-pentanol, 5-phenyl-1-pentanol, 4-phenyl-1-butanol, and combination of these and said preservation system being free of antimite agents other than said monohydric alcohol.

4,446,162

DECAFFEINATION OF A COFFEE EXTRACT

Peter D. Malizia, Fish Kill, and Jerome F. Trumbetas, Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 31, 1982, Ser. No. 364,111
Int. Cl.³ A23F *5/22*
U.S. Cl. 426—424 **6 Claims**

1. A process for decaffeinating an aqueous coffee extract which comprises contacting said extract containing about 25% by weight coffee solids with a fatty solvent while concurrently vacuum distilling a portion of the water initially present from the aqueous coffee entract until the extract contains about 90% by weight coffee solids and subsequently separating decaffeinated coffee extract and caffeine-containing fatty solvent.

4,446,163

PROCESS OF MANUFACTURING A STARCH-BASED FOOD PRODUCT

Edward L. Galle, St. Paul; Roy G. Hyldon, Bloomington, and William P. Egar, Wayzata, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 294,876, Aug. 21, 1981. This application Jun. 29, 1982, Ser. No. 392,301
Int. Cl.³ A23L *1/10, 1/182*
U.S. Cl. 426—448 **44 Claims**

1. A process of manufacturing a starch-based food item comprising the steps of:

providing a mixture of ground material, with said material comprising at least about 20% starch by weight of mixture on a dry basis;

hydrating said mixture to form a blend, said mixture being hydrated sufficiently to provide pressure formability to said blend;

pressure forming said blend to form individual pieces; and

heating the pressure formed pieces by exposing said pieces to substantially saturated steam at a super atmospheric pressure above about 0.5 psig in an autoclave for a time sufficient to gelatinize a major portion of said starch.

4,446,164

WHEY BASED IMITATION MILK COMPOSITIONS

Roy A. Brog, 1600 N. Main, Logan, Utah 84321

Continuation-in-part of Ser. No. 361,761, Mar. 25, 1982, Pat. No. 4,397,927, which is a continuation-in-part of Ser. No. 185,534, Sep. 9, 1980, Pat. No. 4,337,278. This application May 4, 1983, Ser. No. 491,555
Int. Cl.³ A23C *11/04*
U.S. Cl. 426—583 **20 Claims**

1. An imitation milk composition having a solids content consisting essentially of 10 to 65 percent by weight sweet whey solids, 2 to 20 percent by weight of a water soluble protein, 5 to 40 percent by weight of an added sugar, 5 to 35 percent by weight of an edible vegetable oil, and 3 to 42 percent by weight of other milk solids not fat, wherein the weight ratio of water soluble protein to the protein in the whey may vary from about 0.2:1 to 1.5:1, and wherein the weight ratio of added sugar to the lactose in the whey and added milk solids not fat may vary from about 0.2:1 to 1.5:1.

4,446,165

OLEAGINOUS COMPOSITIONS

Bruce A. Roberts, Goshen, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 46,886, Jun. 8, 1979, abandoned. This application Oct. 19, 1981, Ser. No. 313,063
Int. Cl.³ A23D *5/00, 3/00*
U.S. Cl. 426—602 **27 Claims**

1. A composition of matter in the form of a water-in-oil emulsion, which comprises:

(a) from about 25% to about 95% by weight of said composition of a first oil phase selected from the group consisting of:

(i) solid fats and solidified oils; and

(ii) liquid oils containing at least about 0.5% by weight of said liquid oil of a water-in-oil emulsion stabilizing agent;

said first oil phase having substantially homogeneously distributed therethrough;

(b) from about 5% to about 75% by weight of said composition of an aqueous disperse phase;

(c) said composition having dispersed therethrough an effective amount of particles comprising a water-in-oil emulsion destabilizing surfactant in a passive state having an hydrophilic-lipophilic balance greater than about 6, said particles being in the form of encapsulated droplets of a second oil phase having said destabilizing surfactant as a component thereof;

(d) said destabilizing surfactant being capable of inverting said composition to an oil-in-water emulsion when released from said particles.

4,446,166

CHOCOLATE COMPOSITION FOR THE PREPARATION OF HEAT-RESISTANT CHOCOLATE ARTICLES AND PROCESS FOR ITS PREPARATION

Claude Giddey, Geneva, and Georges Dove, Carouge, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Continuation of Ser. No. 229,729, Jan. 29, 1981, abandoned. This application Mar. 17, 1983, Ser. No. 476,396
Claims priority, application Switzerland, Jan. 30, 1980, 731/80
Int. Cl.³ A23G *1/00*
U.S. Cl. 426—631 **17 Claims**

1. A chocolate composition for use in the preparation of a heat-resistant chocolate article comprising a chocolate mass containing cocoa butter, sugar, milk solids and cocoa solids, and dispersed throughout the mass, from 2 to 10% by weight of the composition of a water-in-fat emulsion, at least 20% of the fat being in solid form.

4,446,167

FOOD CASING WHICH WILL TRANSFER A SMOKE COLOR AND FLAVOR TO FOOD ENCASED THEREIN AND BASIC NATURAL LIQUID SMOKE FOR USE THEREWITH

Burl L. Smith, Danville, Ill., and Ronald S. Kearby, State Line, Ind., assignors to Teepak, Inc., Chicago, Ill.

Filed Jul. 8, 1982, Ser. No. 396,512
Int. Cl.³ A22C *13/00*; A23L *1/221*
U.S. Cl. 426—650 **18 Claims**

1. A method of forming a liquid smoke colorant and flavorant from an aqueous natural liquid smoke comprising providing a natural liquid smoke and alkalizing, to a pH of above about 10, said natural smoke with an alkaline material to the degree that precipitate materials are in solution.

4,446,168

METHOD OF FORMING AMORPHOUS SILICON

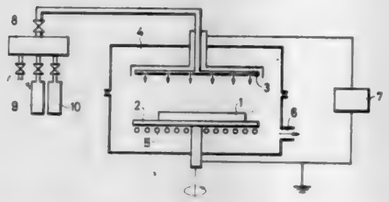
Kazuhisa Kato, Atsugi, and Hiroyuki Yagami, Machida, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 363,236
Claims priority, application Japan, Apr. 3, 1981, 56-49299
Int. Cl.³ H01L *45/00*
U.S. Cl. 427—39 **13 Claims**

1. For use in the production on a substrate of a semiconductor device through plasma chemical vapor deposition technique, a method of forming an amorphous silicon film, one side of this film being intended for ohmic contact with a metal electrode to provide an ohmic contact, comprising the steps of:

placing said substrate in an evacuated container;

introducing a starting gas containing at least a silicon-containing gas into said evacuated container; and



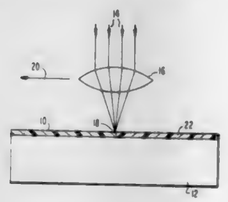
subjecting said gas in said chamber to a glow discharge at a power density of substantially 0.3W/cm^2 or greater, thereby causing an amorphous silicon film to deposit onto said substrate.

4,446,169

METHOD FOR MAKING SILICON CARBIDE COATINGS

Peter M. Castle; George G. Sweeney, both of Penn Hills, and Lymperios N. Yannopoulos, Churchill Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 16, 1982, Ser. No. 418,941
Int. Cl.^{3} B05D *3/06*
U.S. Cl. 427—53.1 **18 Claims**



1. A method of preparing a silicon carbide-coated article comprising the steps of:

placing a coating of a silicon carbide precursor polymer on a substrate; and

directing onto said coating a laser beam with energy sufficient to raise the temperature of said coating in the area of impingement of the laser beam to approximately 1200° C., to 1600° C., until said coating is converted into a silicon carbide ceramic material, wherein said coating in the area of impingement is located in an inert atmosphere or vacuum.

4,446,170

METHOD OF MANUFACTURING A MAGNETIC RECORDING FILM OF A THIN METALLIC FILM TYPE

Seizou Watanabe, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

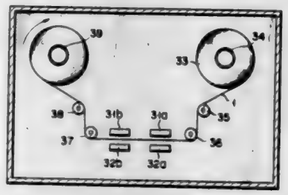
Filed Jul. 25, 1983, Ser. No. 516,943
Claims priority, application Japan, Aug. 2, 1982, 57-134884
Int. Cl.^{3} H01F *10/02*
U.S. Cl. 427—130 **9 Claims**

1. A method of manufacturing a magnetic recording film of a thin metallic film type, comprising:

a step of forming a magnetic layer in the form of a thin metallic film on a base film, while providing a predetermined level of tension in said base film;

a thermal treatment step of heating said film with said magnetic layer to a first temperature level, at which thermal shrinkage of the base film is caused, while providing said predetermined tension in said film; and, then, cooling said film, thereby removing any curls and wrinkles found therein; and

an additional thermal treatment step of heating said thermally treated film to a second temperature level, which is lower than said first temperature level, and cooling said



film, thereby removing thermal stress in said magnetic layer.

4,446,171

PROCESS OF MAKING GLASS ARTICLES HAVING ANTIREFLECTIVE COATING

Ian M. Thomas, Temperance, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 12, 1982, Ser. No. 348,622
Int. Cl.^{3} B05D *1/18, 5/06;* C03C *17/25;* G02B *1/10*
U.S. Cl. 427—160 **4 Claims**

1. A process of making a glass article containing a thin surface film antireflective coating comprising the steps of

(1) providing a noncolloidal dispersion containing at least one metallo-organic compound in solution and at least one organic polymer in solution,

(2) depositing a thin coating of such dispersion on the glass substrate,

(3) heating the film to drive off the solvent and to decompose and drive off the organic components and to eliminate or drive off the organic polymer,

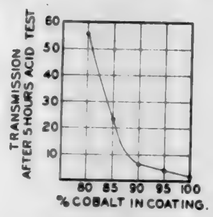
thus forming an inorganic oxide film from the remaining inorganic oxide components of such compound, said heating stopping short of causing consolidation of the oxide film, thus leaving a skeletonized, porous surface film having an effective refractive index less than that of a nonporous film of said inorganic oxide.

4,446,172

METHOD OF FORMING A HIGH PERFORMANCE REFLECTIVE FILM ON A GLASS SHEET

Narayandas Malani, Grosse Ile, and Thomas E. Boller, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1983, Ser. No. 491,146
Int. Cl.^{3} C03C *17/245*
U.S. Cl. 427—160 **6 Claims**



1. A method of forming a high performance reflective film on a glass sheet, said glass sheet being at a temperature sufficiently high to pyrolyze an organic based, metal containing glass coating composition coming into contact therewith, said method being characterized by the step of:

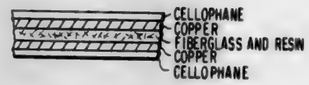
directing against a surface of said heated glass sheet an organic based, heat pyrolyzable, dual metal containing glass coating composition in which said dual metals are cobalt and iron, and in which said weight percentage of said dual metals are in a range from 97% cobalt/3% iron to 90% cobalt/10% iron.

4,446,173

COPPER-CLAD POLYESTER-GLASS FIBER LAMINATES USING ZINC-COATED COPPER

David Barrell, Temple City; Donald E. Kennedy, Baldwin Park; James J. Marino, Jr., Monrovia, and Donald C. Rollen, Railto, all of Calif., assignors to Glasteel Tennessee, Inc., Duarte, Calif.

Continuation-in-part of Ser. No. 291,929, Aug. 11, 1981. This application Feb. 17, 1982, Ser. No. 349,676
Int. Cl.^{3} B32B *15/00;* B05D *1/14*
U.S. Cl. 427—206 **23 Claims**



1. A continuous process for preparing a metal foil laminate having at least one sheet of an electrogalvanized zinc-coated metal foil directly bonded to a face of a sheet of a glass fiber reinforced linear polyester resin, comprising:

applying a coating of a polyester resin to a first electrogalvanized zinc-coated metal foil, selected from the group consisting of copper foil, aluminum foil, silver foil, gold foil, tantalum foil, and titanium foil,

uniformly distributing a glass mat on said linear polyester resin coating,

heating said glass fiber containing linear polyester resin coated metal foil to partially gel said resin,

applying pressure to said partially gelled linear polyester resin coated metal foil, and

curing said linear polyester resin.

4,446,174

METHOD OF INK-JET RECORDING

Masakazu Maekawa; Sukenori Nakamura, both of Shizuoka; Masatoshi Sugiyama, and Hideo Odawara, both of Tokyo, all of Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed Apr. 28, 1980, Ser. No. 144,115
Claims priority, application Japan, Apr. 27, 1979, 54-52114; May 14, 1979, 54-58788
Int. Cl.^{3} B41M *3/00*
U.S. Cl. 427—261 **8 Claims**

1. An ink-jet recording method for producing a recorded image on an image-receiving sheet with a jet of aqueous ink, wherein an ink-jet is projected onto an image-receiving sheet with a surface layer containing a pigment and an adhesive, and having an Rf value, which is the flow rate measured for a combination of said surface layer and a dye in said aqueous ink, of less than 0.59.

4,446,175

COATINGS FORMED FROM ISOCYANATE-FUNCTIONAL POLYMERS CONTAINING A TERMINAL MONOSULFIDE GROUP

Darryl W. Brixius, Grosse Ile, Mich., and John A. Simms, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 195,081, Oct. 8, 1980, Pat. No. 4,351,755, which is a continuation-in-part of Ser. No. 53,301, Jun. 29, 1979, abandoned, which is a division of Ser. No. 819,121, Jul. 26, 1977, abandoned. This application Dec. 7, 1981, Ser. No. 328,113
Int. Cl.^{3} B05D *3/02*
U.S. Cl. 427—385.5 **23 Claims**

1. The process of coating a substrate which comprises

(A) applying to a substrate an isocyanate-functional polymer of the number average molecular weight of 500–10,000 formed from at least 10% by weight of isocyanatoalkyl acrylate or isocyanatoalkyl methacrylate, polymerized alone or with a polymerizable comonomer,

any polymerizable comonomer being at least one member of the group consisting of alkyl acrylates and methacrylates; styrene, ethylene; vinyl acetate; and vinyl chloride,

in the presence of 1–20% by weight, based on the weight of the polymer, of a mercaptan chain-transfer agent, at least 10% by number of the polymer molecules having in terminal position a residue of the mercaptan chain-transfer agent, and

(B) curing the applied polymer upon the substrate.

4,446,176

FLUOROELASTOMER FILM COMPOSITIONS CONTAINING PHENOXY RESINS AND METHOD FOR THE PREPARATION THEREOF

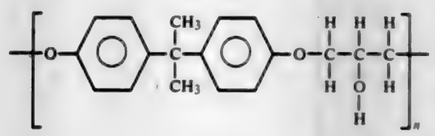
Donald Close, Stow, Ohio, assignor to David Hudson, Inc., Stow, Ohio

Continuation of Ser. No. 178,789, Aug. 18, 1980, Pat. No. 4,343,841. This application Jul. 23, 1982, Ser. No. 401,095
The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.
Int. Cl.^{3} B05D *3/02;* C08L *63/00*
U.S. Cl. 427—386 **14 Claims**

1. A method for preparing fluoroelastomer film compositions comprising the steps of:

dissolving a fluoroelastomer gum in a solvent; and

adding a phenoxy resin to said gum solution, having the general formula



where n is about 100; and

evaporating said solvent and baking the resulting film.

4,446,177

REINFORCED PLASTIC PRODUCT

George L. Munoz, 11352 James Grant, El Paso, Tex. 79936, and William J. Munoz, Lo 200 Sumatra, El Paso, Tex. 79925

Filed Mar. 12, 1982, Ser. No. 357,685
Int. Cl.^{3} B44F *9/04*
U.S. Cl. 428—15 **19 Claims**



1. A simulated stone composite formed of a reinforced plastic product comprising:

(a) a gelcoat layer comprised of a thermoplastic or thermoset resin;

(b) a resin matrix layer having dispersed therein fillers and colorants laid up on the inner side of said gelcoat layer; and

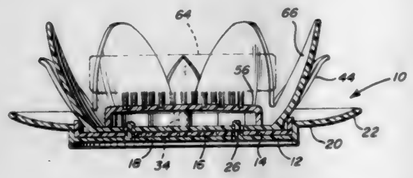
(c) a backup layer comprised of a polyester fiber sheet which has been impregnated with thermoplastic or thermoset resin laid up on said matrix layer.

4,446,178

DECORATIVE BAR SOAP HOLDER

Yvonne B. Daugherty, 567 Sea Pine La., Deer Creek, Deerfield Beach, Fla. 33441

Filed Sep. 22, 1982, Ser. No. 421,584
Int. Cl.³ A41G 1/00
U.S. Cl. 428—26 6 Claims



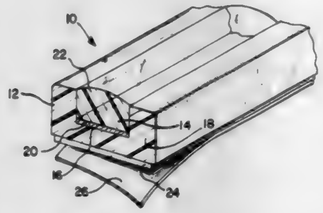
1. A decorative bar soap holder including an upwardly opening base assembly in which a bar of soap may be placed intermediate periods of bar soap usage, said base assembly including a first lower panel member including a plurality of upstanding locator pins and a plurality of upwardly projecting latching tongues whose upper end portions may be laterally flexed and include upper end downwardly facing laterally extending abutment shoulder portions spaced below the upper terminal ends thereof, a second panel member overlies said first panel member and including first and second sets of openings formed therethrough upwardly through which said pins and tongues project, at least one additional panel member overlying said second panel member and having latching tongue and locator pin openings formed therethrough upwardly through which the upper ends of said tongues and pins project, said shoulder portions overlying upwardly facing surface portions of said upper panel member adjacent said latching tongue openings and thereby serving to latch said panel members together against separation, a soap bar support body overlying said upper panel member and stationarily supported relative thereto, said support body including upwardly projecting soap bar support members for supporting a soap bar therefrom in elevated position relative to said support body, said lower, second and upper panel members including peripherally spaced decorative portions spaced thereabout.

4,446,179

TRIM STRIP FOR AUTOMOBILE BODIES

Robert E. Waugh, Columbus, Ohio, assignor to The D. L. Auld Company, Columbus, Ohio

Continuation-in-part of Ser. No. 380,783, May 21, 1982, abandoned. This application Feb. 28, 1983, Ser. No. 468,721
Int. Cl.³ B60R 13/04
U.S. Cl. 428—31 12 Claims



1. A trim strip comprising:
an elongate moulding, said moulding having a lower surface for receiving adhesive or otherwise attaching said trim strip to the body of a vehicle,
an elongate channel formed in the upper surface of said moulding having a floor and two side walls or shoulders,
an elongate decorative surface in said channel, and
a weather-resistant and impact-resistant clear plastic cap cast over said decorative surface and having radiused edges providing a lens effect to said decorative surface beneath and thereby optically enhancing the appearance of said decorative surface as viewed through said clear plastic cap.

4,446,180

ADHESIVE COMPOSITION, FILM LAMINATE AND PRODUCT POUCH OR TUBE THEREFROM

Frederick C. Schwab, Metuchen, N.J., assignor to Mobil Oil Corp., New York, N.Y.

Division of Ser. No. 386,458, Jun. 8, 1982. This application Aug. 4, 1983, Ser. No. 520,405
Int. Cl.³ B32B 27/08; C08L 53/00
U.S. Cl. 428—35 8 Claims

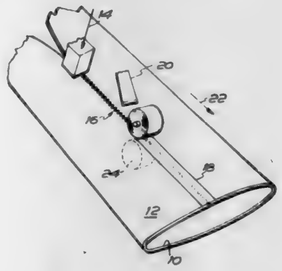
1. A film laminate comprising two or more polymeric films bonded together with an adhesive combination of:
(a) a styrene-butadiene block copolymer having a monomer parts by weight ratio of from about 1 to 3:3 to 1;
(b) a cyclopentadiene-styrene resin having a monomer parts by weight ratio of from about 1:2 to 1:4 respectively; and
(c) a random terpolymer of (1) 1,3-pentadiene, (2) a monocyclic terpene; and (3) alpha methylstyrene, wherein the monomers are in a parts by weight ratio of from about 3–4:3–4:2.5–3.5 respectively; said combination comprising a parts by weight ratio of from about 7–10 of (a), 0.5–1.5 of (b), and 2–4 of (c).

4,446,181

MANUFACTURE OF TUBULAR LAMINATES

Eric Wood, Wakefield, England, assignor to Insituform International Inc., Monrovia, Liberia

Continuation of Ser. No. 77,538, Sep. 21, 1979. This application Mar. 30, 1982, Ser. No. 363,625
Claims priority, application United Kingdom, Sep. 28, 1978, 37737/78
Int. Cl.³ B32B 7/08; F16L 7/00
U.S. Cl. 428—36 5 Claims



1. A method for the continuous production of tubular liner in long lengths which is for lining a passageway or pipeline when impregnated with curable synthetic resin, wherein the tubular liner is formed from a supply of a flat web laminate comprising a resin absorbent layer, on one side of which is bonded an impermeable layer, the method comprising the steps of feeding web continuously in the direction of its length and while the web is in said continuous motion effecting the step of (i) forming it to tubular configuration so that the impermeable layer lies to the outside, and so that the free edge faces come into butting relationship (ii) sewing the said edges together while they remain in edge face to edge face butting relationship by means of stitching which extends across the seam, and (iii) applying a sealing ribbon or coating on the outside of the moving tubular liner and over the stitching to prevent leakage of resin through the stitching holes when the liner is being installed.

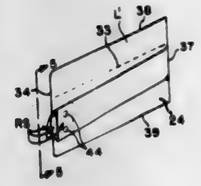
5. A tubular laminate produced by the method according to any one of claims 1, 2, or 3.

4,446,182

RECORD ASSEMBLY

Donald E. Cavender, Centerville, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 721,005, Sep. 7, 1976, Pat. No. 4,070,220, which is a division of Ser. No. 520,710, Nov. 4, 1974, Pat. No. 3,993,814. This application Jan. 6, 1978, Ser. No. 867,396
Int. Cl.³ G09F 3/10
U.S. Cl. 428—40 8 Claims



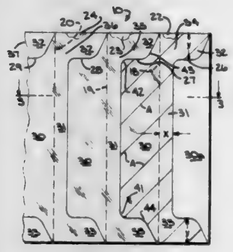
1. In a label-price tag composite, a shipping label having an adhesive on the back side thereof, a backing sheet adhered to the back side of the label,
and a price tag sheet secured at one edge thereof to one edge of the label with a fold line formed therebetween and having an adhesive on the back side thereof,
the price tag sheet being folded along said edges back under the label and the backing sheet and adhered to the backing sheet and peelable therefrom,
the price tag sheet and the backing sheet covering only a portion of the back side of the label and leaving uncovered at least a portion of the back side of the label, whereby the uncovered portion of the back side of the label can be adhered to an article to be shipped,
the backing sheet extending no farther under the price tag sheet than the fold line so that the price tag sheet is easily folded under the label.

4,446,183

TAG WITH ATTACHED FOLD-OVER TRANSPARENT COVER ELEMENT

Michael D. Savagian, Milwaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Aug. 30, 1982, Ser. No. 412,625
Int. Cl.³ B32B 3/18
U.S. Cl. 428—42 8 Claims



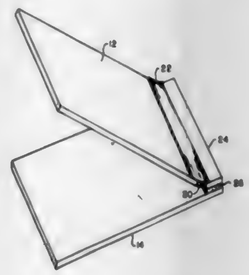
1. As assembly having a plurality of tag-cover element units in which the cover element associated with a tag includes a portion adapted to be adhered to a surface of the tag after the application of identification data thereto, the assembly including
(1) a web of tag material having an upper surface and a lower surface,
(2) a web of transparent cover element material carrying a layer of transparent pressure sensitive adhesive on one of its surfaces,
(3) the layer of transparent pressure sensitive adhesive on the web of cover element material being releasably joined to the lower surface of the web of tag material to form the assembly,
the improvement wherein:
(4) a series of spaced slits extend through the web of tag material to define a plurality of individual adjacent tags;
(5) a series of spaced slits extend through the web of cover element material and layer of pressure sensitive adhesive carried thereon to define a plurality of individual adjacent cover elements, there being one cover element associated with each tag,
the cover element associated with each tag having a connecting portion adhered to the lower surface of the tag and a flap adhered to the lower surface of an adjacent tag;
(6) each tag and its associated cover element being detachable from the assembly along the aforesaid slits to provide a tag-cover element unit including a flap extending beyond an edge of the tag and an exposed portion of the layer of pressure sensitive adhesive on the flap,
the flap being foldable over said edge of the tag and adherable to the upper surface of the tag for protection of identification data applied thereto.

4,446,184

FLEXIBLE NON-EXTENSIBLE HINGE FOR PHOTOMASK ASSEMBLY

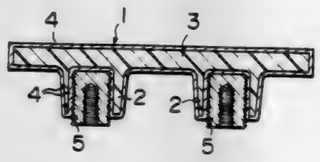
George H. Bowser, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 5, 1982, Ser. No. 355,040
Int. Cl.³ B32B 17/06; G03B 27/04
U.S. Cl. 428—57 19 Claims



1. In a method for making a hinged photomask assembly by joining two rigid plates, at least one of which comprises a photomask image, by means of a flexible polymeric hinge, the improvement which comprises positioning a flexible, non-extensible strip over said polymeric hinge and attaching said strip to adjacent coplanar surfaces of the two plates, thereby permitting flexing of the hinge while preventing lateral movement of the plates.

4,446,185
REACTION INJECTION MOLDED ARTICLE WITH THREADS AND METHOD OF MOLDING SAME
Kenichi Waragai, Fujisawa; Masao Gotoh, Yokosuka; Hitoshi Yokono, and Kazumi Iijima, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 8, 1982, Ser. No. 355,456
Claims priority, application Japan, Mar. 13, 1981, 56-35429; Apr. 28, 1981, 56-63348
Int. Cl.³ B32B 3/24
U.S. Cl. 428—67 15 Claims



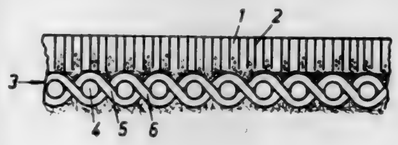
1. A reaction injection molded article of a foamed polyurethane resin material, formed by mixing and foaming an A liquid and B liquid, the A liquid comprising a polyol, a catalyst and a foaming agent, the B liquid comprising polyisocyanate, comprising:
a molded article of said foamed polyurethane resin material, having a surface layer of density of 0.5–1.1 g/cm³, said surface layer being a skin layer of the polyurethane resin material, with substantially no foaming action having taken place in said skin layer, said molded article body having holes enclosed by said surface layer; and
female threaded members each inserted in one of said holes, said members being held in place rigidly by said surface layer.

4,446,186
BUILDING ELEMENT
Lauritz B. L. Rasmussen, Lyngby, Denmark, assignor to Superfos Glasuld A/S (Superfos A/S), Vedbaek, Denmark
Division of Ser. No. 212,512, Dec. 3, 1980, Pat. No. 4,372,799. This application Dec. 29, 1982, Ser. No. 454,162
Claims priority, application Denmark, Dec. 12, 1979, 5283/79
Int. Cl.³ B32B 31/04; C09J 5/02
U.S. Cl. 428—74 5 Claims



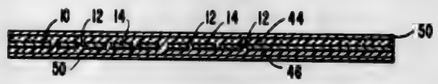
1. A building element comprising a pair of opposed air impermeable cover boards forming opposite major surfaces of the element, air impermeable edge strips separating and connecting said cover boards and constituting the side and end edges of the element, and a heat insulating core member positioned in the interior of the element, said insulating member being formed as a substantially rigid, formstable core plate of an insulating material having an air permeable internal structure and a size and shape so as to occupy substantially all of the space within the element, both major surfaces of said core plate being inseparably bonded to said cover boards by means of a moisture curing adhesive applied to said major surfaces and the internal surfaces of the cover board and by means of a partial vacuum established in the core plate to effect pressing of the cover boards onto said core plate during curing of the adhesive, said vacuum being achieved by means of applied suction through an opening located in the closed casing.

4,446,187
SHEET ASSEMBLY AND METHOD OF MANUFACTURING SAME
Nils O. Eklund, Halmstad, Sweden, assignor to Nordiskafilt AB, Halmstad, Sweden
Filed Mar. 26, 1981, Ser. No. 247,775
Claims priority, application Sweden, Apr. 1, 1980, 8002483
Int. Cl.³ B32B 3/10
U.S. Cl. 428—136 9 Claims



1. A sheet assembly for dewatering fiber webs comprising:
a layer of substantially liquid-impermeable material in contact with said webs; and a reinforcing structure;
said sheet having substantially vertical through-channels formed at least through said layer, said through-channels being adapted to lead water away from said fiber webs when the layer is placed in contact with said fiber webs.

4,446,188
MULTI-LAYERED CIRCUIT BOARD
Harshad K. Patel, Los Angeles, and Andjelko Illick, Downey, both of Calif., assignors to The Mica Corporation, Culver City, Calif.
Filed Dec. 20, 1979, Ser. No. 105,723
Int. Cl.³ B32B 3/10, 15/04
U.S. Cl. 428—138 5 Claims

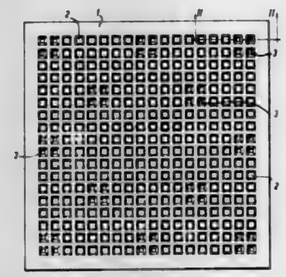


1. A layered clad laminate with universal center plane adapted for the manufacture of printed wiring board comprising an electrically conductive self-sustaining, integral metal center sheet having, in repetitive fashion a series of predetermined patterns of drilled, punched or photochemically developed openings therein, said sheet being pressed between electrical insulating layers of resin impregnated reinforcing material, said layers being adhered to said sheet and to each other through said openings, and on each of the outer surfaces of said laminate and adhered thereto a layer of electrically conductive metal foil which is essentially uniform and imperforate.

4,446,189
TEXTURED NONWOVEN TEXTILE FABRIC LAMINATE AND PROCESS OF MAKING SAID
Gerald A. Romanek, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed May 12, 1983, Ser. No. 493,832
Int. Cl.³ B32B 3/00, 5/06, 5/26
U.S. Cl. 428—152 28 Claims

1. A method of producing a laminated article of manufacture comprising:
(a) positioning in superposed relation a nonwoven textile fabric layer comprising a plurality of fibers and a layer of generally elastic material having inherent resilience to form superposed layers;
(b) needle punching said superposed layers to secure said fabric layer to said layer of generally elastic material at a plurality of needle punched locations each spaced a predetermined distance from the next adjacent needle punched location to secure said fabric layer to said layer of generally elastic material at said needle punched locations and thereby form needle punched superposed layers;
(c) drafting said superposed layers in at least one direction an amount within the elastic limit of said layer of generally elastic material to thereby permanently stretch said nonwoven textile fabric layer; and
(d) thereafter allowing said thus needle punched and drafted superposed layers to relax, thereby permitting said layer of generally elastic material to substantially return to its original dimensions in response to its inherent resilience whereby the bulk of said stretched nonwoven textile fabric layer is increased between said needle punched locations.
22. A laminated article of manufacture comprising:
an inner layer of generally elastic material of inherent resilience having opposite sides, said generally elastic material being capable of being drafted in response to a drafting force from a first relaxed condition defined be a first set of dimensions to a second drafted condition defined be a second set of dimensions within the elastic limit of said generally elastic material, and further being capable of retracting from said second condition to substantially said first position in response to its inherent resilience upon release of said drafting force;
a first outer layer comprising a first generally inelastic nonwoven textile fabric comprising a plurality of generally coherent nonwoven fibers and superposed on one of the opposite sides of said inner layer of generally elastic material, said first outer layer being capable of being drafted in response to a drafting force from a first relaxed condition defined by a first set of dimensions to a second drafting condition defined by a second set of dimensions beyond the elastic limit of said first generally inelastic nonwoven texiile fabric, and further being incapable of self-induced retraction from said second condition to said first condition upon release of said drafting force; and
said layers being secured together at a plurality of locations spaced a distance one from the other by means of a plurality of said nonwoven fibers extending from said first outer layer through said inner layer of generally elastic material at at least one penetration point at each of said locations when said inner and outer layers are in their second conditions, whereby said first outer layer exhibits increased bulk intermediate said plurality of locations when said inner layer retracts from its second condition to substantially its first position.

4,446,190
CERAMIC TILE WITH ITS REAR CONFIGURED AS UNIFORMLY DISTRIBUTED PROJECTIONS
Ermanno Pernici, Reggio Emilia, Italy, assignor to C.I.E.F. -Compagnia Immobiliare e Finanziaria S.p.A., Modena, Italy
Filed Mar. 1, 1983, Ser. No. 470,959
Claims priority, application Italy, Apr. 2, 1982, 46819 A/82
Int. Cl.³ B32B 3/30, 3/26
U.S. Cl. 428—156 6 Claims

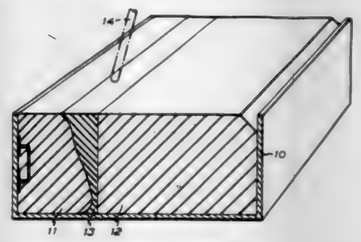


1. A ceramic tile having a front surface and a rear surface, said rear surface being uniformly covered with tapered frusto-conical or square based frusto-pyramidal shaped projections (2) of constant height, interspersed with groups of at least two projections (3) of greater height which have the same size base as the projections (2) of constant height and are distributed over the entire rear surface of the tile (1) to constitute resting feet.

4,446,191
LAMINATES COMPRISING PREPREGS METAL CLAD
Yasuo Miyadera; Atsushi Fujioka, both of Shimodate; Tetsuo Kumazawa, and Doi Hiroaki, both of Ibaraki, all of Japan, assignors to Hitachi Chemical Company, Ltd. and Hitachi, Ltd., both of Tokyo, Japan
Filed Oct. 23, 1981, Ser. No. 314,393
Claims priority, application Japan, Oct. 27, 1980, 55-149459; Oct. 27, 1980, 149460; Oct. 27, 1980, 55-149463
Int. Cl.³ B32B 5/08
U.S. Cl. 428—245 16 Claims

1. A metal-clad laminate produced by impregnating composite fabric comprising 30–95% by weight of aromatic polyamide fiber and 5–70% by weight of glass fiber arranged together, with a resin to form a prepreg, laminating a plurality of said prepregs together with at least one metallic foil, and molding the laminated metal-clad prepregs under heat and pressure.

4,446,192
WEAR-RESISTANT RUBBER PRODUCT AND A METHOD OF MAKING SAME
Bengt L. A. Dehlén, Trelleborg, Sweden, assignor to Trelleborg AB, Trelleborg, Sweden
PCT No. PCT/SE80/00266, 371 Date Jul. 16, 1981, 102(e) Date Apr. 27, 1981, PCT Pub. No. WO81/01253, PCT Pub. Date May 14, 1981
PCT Filed Oct. 30, 1980, Ser. No. 261,226
Claims priority, application Sweden, Jun. 11, 1979, 7909159
Int. Cl.³ B02C 17/22; B32B 25/08
U.S. Cl. 428—339 6 Claims



1. A wear-resistant rubber product adapted to be used as a lifter in grinding mills, said product comprising at least two prefabricated parts, one of said parts including a holder for mounting said product, the other said part being a prefabricated vulcanized wear-resistant rubber body having a profile corresponding to the intended profile of a portion of the rubber product, said parts being interconnected with one another by means of a binder, characterized in that the binder consists essentially of a layer of urethane rubber cast and vulcanized in situ between said prefabricated parts, said layer having a thickness of at least 2 mm.

4. A product as claimed in claim 1 wherein said holder for mounting the product includes means for attaching the product to a rotating drum of a grinding mill, and the other said part includes a lifter portion which has a profile operable as a lifter in a grinding mill.

4,446,193

PROCESS FOR CHEMICALLY BONDING LUBRICANT TO AN INFORMATION CARRIER AND PRODUCTS THEREOF

Ali Afzali-Ardakani, Ossining, N.Y.; John I. Crowley, Palo Alto, and Anthony W. Wu, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1983, Ser. No. 489,918
Int. Cl.[3] B32B 27/00
U.S. Cl. 428—422 6 Claims

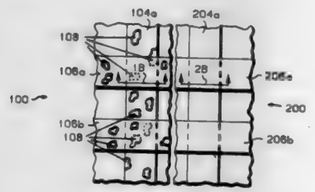
1. A process for chemically bonding a lubricant to an information carrying solid surface, said process characterized by contacting the surface with a diazoketone-terminated polymeric compound and decomposing said diazoketone-terminated polymeric compound to form a carbene which reacts with the solid surface.

4,446,194

DUAL LAYER PASSIVATION

Jon Candelaria, Mesa, Ariz., and Kurt S. Heidinger, Santa Clara, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1982, Ser. No. 391,047
Int. Cl.[3] B05D 3/14
U.S. Cl. 428—428 12 Claims



1. In a process for fabricating electronic devices wherein a first metal layer is formed on a first dielectric layer on a substrate, an interlayer dielectric is formed on said first metal layer, and a second metal layer is formed on said interlayer dielectric, the improvement comprising, forming said interlayer dielectric by depositing on said first metal layer a plasma derived oxide and overlying said plasma derived oxide with an other oxide formed by other means.

4,446,195

NOVEL POLYESTERS COATED ON CONDUCTIVE SUBSTRATE

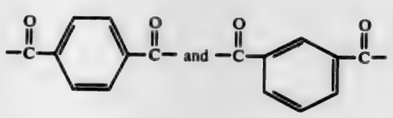
Werner Rieder, Vienna, Austria, and Martin Fehrle, Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria

Division of Ser. No. 375,204, May 5, 1982, Pat. No. 4,387,209. This application Mar. 2, 1983, Ser. No. 471,298
Claims priority, application Austria, Dec. 9, 1981, 5278/81; European Pat. Off., May 7, 1981, 81-890076.3
Int. Cl.[3] B32B 27/06, 27/36
U.S. Cl. 428—458 14 Claims

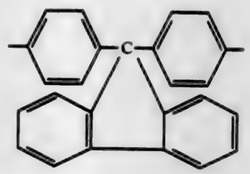
1. An electrical conductor provided with an electrically insulating layer of an organic, high-molecular weight polyester containing substantially chain members of the formula

—O—X—O—Y—

wherein X is at least one member of the group consisting of



and Y has the formula



having an inherent viscosity of at least 1.0 dl/g measured at 30° C. in a solution of 0.5 g of the polyester in 100 ml of a mixture of 60% by weight of phenol and 40% by weight of 1,1,2,2-tetrachloroethane and whose films cast from a chlorinated organic solution have an elongation at break of at least 10% measured according to ASTM D-882-75 b with the proviso that if the inherent viscosity is between 1.0 and 1.5 dl/g, Y is a mixture of 70 to 30% of terephthalic acid and 30 to 70% of isophthalic.

4,446,196

HARD FACING COMPOSITION FOR IRON BASE ALLOY SUBSTRATE USING VC, W, MO, MN, NI AND CU AND PRODUCT

Harry J. Brown, Utica, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1982, Ser. No. 393,227
Int. Cl.[3] B32B 9/04, 15/18; B22F 7/04
U.S. Cl. 428—544 6 Claims



1. In a method for hard facing a surface of an iron or iron base alloy substrate by forming a bond between said surface and a hard facing material, the improvement which comprises employing as a hard facing material a composition consisting essentially of grains of vanadium carbide having in solid solution from about 10 to 50% by weight tungsten and from about 1 to 4% by weight molybdenum, and containing from about 0.5 to 5% by weight manganese, from about 1 to 3% by weight nickel and from about 1 to 5% by weight copper in the grain boundaries.

4,446,197

ION BEAM DEPOSITION OR ETCHING RE RUBBER-METAL ADHESION

David A. Benko, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 23, 1982, Ser. No. 401,201
Int. Cl.[3] B32B 15/06
U.S. Cl. 428—625 11 Claims

1. A metal item having rubber adhered to a surface thereof, comprising:

the metal item, said metal surface treated by an ion beam treatment,
the rubber adhered to said treated metal surface.

4,446,198

COPPER-ZINC-IRON TERNARY ALLOY COATED STEEL WIRE REINFORCERS IN TIRES

Robert M. Shemenski, North Canton; Dong K. Kim, Akron, and Thomas W. Starinshak, Wadsworth, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 8, 1983, Ser. No. 530,281
Int. Cl.[3] B32B 15/18, 15/06
U.S. Cl. 428—625 17 Claims

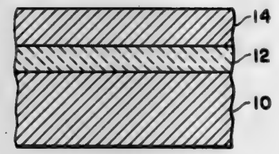
1. In a rubber article containing at least one steel reinforcing element wherein said steel reinforcing element is provided with an adhesive brass alloy coating, the improvement which comprises said brass alloy being a ternary iron-brass alloy consisting essentially of about 55 percent to about 75 percent copper by weight, about 0.1 percent to about 10 percent iron by weight, and about 15 percent to about 45 percent zinc by weight.

4,446,199

OVERLAY METALLIC-CERMET ALLOY COATING SYSTEMS

Michael A. Gedwill, North Olmsted; Stanley R. Levine, and Thomas K. Glasgow, both of Rocky River, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 30, 1982, Ser. No. 403,378
Int. Cl.[3] B32B 15/00
U.S. Cl. 428—639 8 Claims



1. A coated article of manufacture comprising
a substrate selected from the group consisting of nickel-base alloys and cobalt-base alloys,
a cermet layer of an oxide dispersed metallic alloy having nominal composition in weight percents of about 11% to about 17% chromium, about 6% to about 10% aluminum, about 0.3% to about 0.5% yttrium, and the remainder nickel containing about 9% to about 40% yttrium oxide covering said substrate, said dispersed oxide comprising between about 10 and about 75 volume percent of said cermet layer, and
a protective coating of an alloy selected from the group consisting of nickel-, cobalt-, and iron-base alloys covering said cermet layer.

4,446,200

METALLURGICAL COATING SYSTEM

Larry C. Daniels, and Gary S. Whittaker, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,491
Int. Cl.[3] B32B 15/04
U.S. Cl. 428—661 8 Claims

1. A metallurgical coating system which provides improved corrosion resistance comprising
(a) a first layer comprising tantalum which is deposited under a substrate; and
(b) a second layer comprising molybdenum disilicide which is deposited upon said first layer.

8. A metallurgical coating system which provides improved corrosion resistance comprising
(a) a nickel base alloy having a molybdenum content of at least about 5% by weight;
(b) a first coating layer deposited upon said substrate at a thickness less than about 5μ, said first layer comprising tantalum; and
(c) a second coating layer deposited upon said first layer at a thickness of about 10 to 25μ, said second layer comprising molybdenum disilicide.

4,446,201

TRANSITION METAL ALUMINATES SUPPORTED ON A SUBSTRATE

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 362,690, Mar. 29, 1982, Pat. No. 4,392,980. This application May 13, 1983, Ser. No. 494,192
Int. Cl.[3] B01D 15/04
U.S. Cl. 428—696 10 Claims

1. Crystalline transition metal aluminates conforming generally to the formula

$$MA_aZ_b.nAl(OH)_3.mH_2O$$

where M is at least one divalent transition metal selected from the group comprising Cu, Zn, Mn, Fe, Co, and Ni,
where AZ represents negative valence ions or radicals,
n is a value of from 1 to about 4,
v is a negative valence of 1, 2, or 3,
a and b are each values of from zero to 2,
with (va)+(vb) equal to 2, and with m being a value of zero or more,
said aluminate being supported on a substrate.

4,446,202

PROCESS FOR RENDERING NON-THERMOPLASTIC FIBROUS MATERIALS FLAME RESISTANT TO MOLTEN MATERIALS BY APPLICATION THERETO OF A FLAME RESISTANT COMPOSITION, AND RELATED ARTICLES AND COMPOSITIONS

Vladimir Mischutin, East Brunswick, N.J., assignor to White Chemical Corporation, Bayonne, N.J.

Continuation-in-part of Ser. No. 31,307, Apr. 18, 1979, Pat. No. 4,348,306, which is a division of Ser. No. 797,767, May 17, 1977, Pat. No. 4,158,073, which is a division of Ser. No. 538,896, Jan. 6, 1975, abandoned, which is a division of Ser. No. 300,732, Oct. 25, 1972, abandoned. This application May 21, 1981, Ser. No. 266,000
Int. Cl.[3] B32B 9/02
U.S. Cl. 428—254 42 Claims

1. A process for rendering a non-thermoplastic fiber or fibrous composition flame resistant when contacted with a hot molten material, that comprises applying to said fiber or fibrous compositions, a flame retardant composition comprising water, a water-insoluble, non-phosphorus containing brominated aromatic or cycloaliphatic containing organic compound, and a metal oxide, or mixtures of said oxide and a metal hydrate, and curing said flame retardant composition on said fibers or fabric.

4,446,203

ASBESTOS-FREE FRICTION MATERIALS

Howard S. Okubo, Chicago; Clarence E. Albertson, Villa Park, and Roger K. Nibert, Hoffman Estates, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 21, 1983, Ser. No. 477,195
Int. Cl.[3] B32B 5/16
U.S. Cl. 428—283 7 Claims

1. An asbestos-free friction material having good friction stability and wear properties consisting essentially of an aromatic polyamide fiber, a binder, from about 3 to about 15 parts of antimony sulfide and from about 7 to about 30 parts of copper oxide.

4,446,204

SECURITY PAPER WITH AUTHENTICITY FEATURES

Wittich Kaule, Gauting; Gerhard Schwenk, Puchheim, and Gerhard Stenzel, Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH., Munich, Fed. Rep. of Germany

PCT No. PCT/DE81/00082, 371 Date Oct. 23, 1981, 102(e) Date Oct. 23, 1981, PCT Pub. No. WO81/03511, PCT Pub. Date Dec. 10, 1981
PCT Filed May 29, 1981, Ser. No. 314,841
Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020653
Int. Cl.[3] B32B 5/16; G06K 9/74
U.S. Cl. 428—323 14 Claims

1. A security document with authenticity features, comprising: a carrier material having a known infra-red absorption characteristic; and a coloring agent having magnetic properties for enabling magnetic verification of said security document to be conducted, said coloring agent having an infra-red absorption characteristic such that in at least one given spectral region said coloring agent absorbs infra-red radiation less than or substantially to the same extent as said carrier material.

4,446,205

MAGNETIC RECORDING TAPE HAVING A LEADER TAPE

Chiaki Mizuno; Yasuo Tamai, and Nobuo Tsuji, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 7, 1982, Ser. No. 447,582
Claims priority, application Japan, Dec. 7, 1981, 56-196675
Int. Cl.[3] G11B 5/70; B32B 5/16
U.S. Cl. 428—327 11 Claims

1. A leader tape, comprising:
a support base; and
a cleaning layer coated on a surface of the support base, cleaning layer comprising a binder having dispersed therein an organic thermoplastic high molecular powder having a particle size of 0.1 to 20 μm and an organic thermosetting high molecular powder having a particle size of 0.1 to 10 μm, the leader tape having a light percent transmittance of 20% or more.

11. A magnetic recording tape having a leader tape at its end, the leader tape comprising a support base having on a surface thereof a cleaning layer comprising a binder having dispersed therein an organic thermoplastic high molecular powder having a particle size of 0.1 to 20 μm and an organic thermosetting high molecular powder having a particle size of 0.1 to 10 μm, the leader tape having a light percent transmittance of 20% or more.

4,446,206

SET POLYACRYLONITRILE FILAMENTS AND FIBERS, AND A PROCESS FOR THEIR PRODUCTION

Walter Fester, Königstein, and Bernd Huber, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,233
Claims priority, application Switzerland, Mar. 20, 1981, 1918/81
Int. Cl.[3] D02G 3/00; D01D 5/12
U.S. Cl. 428—364 1 Claim

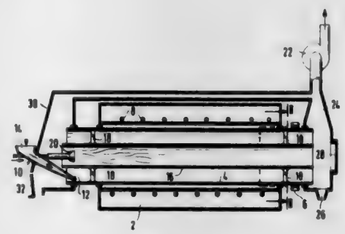
1. A filament or fiber of acrylonitrile polymers, comprising a filament-forming substance which is composed to at least 98% by weight of acrylonitrile units and the relative viscosity of which is within a range between 2.5 and 6.0, and having a tensile strength of more than 50 cN/tex, a shrinkage at the boil of less than 5%, an elongation at break of at most 15% and an initial modulus greater than 900 cN/tex after an aqueous alkaline treatment at 90° C. for 24 hours.

4,446,207

SPHERICAL BALLS AND THEIR MANUFACTURE

Jean Dewitte, Boulogne, and Pierre Aymard, Paris, both of France, assignors to Saint-Gobain Industries, France

Continuation of Ser. No. 126,116, Feb. 29, 1980, abandoned, which is a division of Ser. No. 24,090, Mar. 26, 1979, Pat. No. 4,201,560. This application Dec. 16, 1981, Ser. No. 331,390
Claims priority, application France, Mar. 31, 1978, 78 09544
The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.
Int. Cl.[3] B32B 5/16
U.S. Cl. 428—402 4 Claims



1. A product formed of a particulate ceramizable glass material having a granular dimension of about 1 to about 3.5 mm and a substantially rounded, spherical shape by a thermal treatment within a temperature range of from about 950° to about 1200° C., said material having a crystallization rate of at least 30%, essentially in the form of wollastonite α and β, and a resistance to crushing of at least 4,000 bars.

4,446,208

EXPANDABLE POLYSTYRENE COMPOSITION AND PROCESS

Richard A. Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 489,973, Apr. 29, 1983. This application Jul. 22, 1983, Ser. No. 516,070
Int. Cl.[3] B32B 5/16; C08J 9/22
U.S. Cl. 428—407 2 Claims

1. Expandable polystyrene beads exhibiting reduced adhesion to one another comprising expandable polystyrene beads containing a volatile blowing agent, said beads being coated with an anti-adhesion composition comprising effective amounts of magnesium stearate and zinc stearate respectively, wherein, (a) the effective amount of magnesium stearate is from about 50 gms. to about 40 gms. per 1,000 lbs. of expandable polystyrene beads; and (b) the effective amount of zinc stearate is from about 50 gms. to about 500 gms. per 1,000 lbs. of expandable polystyrene beads.

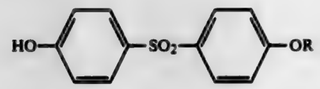
4,446,209

HEAT-SENSITIVE RECORDING MATERIALS

Ken Iwakura, Kanagawa, and Takekatsu Sugiyama, Shizuoka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 10, 1982, Ser. No. 440,659
Claims priority, application Japan, Nov. 11, 1981, 56-180634
Int. Cl.[3] B41M 5/18
U.S. Cl. 346—216 4 Claims

1. A heat-sensitive recording material, comprising:
an electron donating colorless dye; and
an electron accepting compound represented by the general formula (I):



(I)

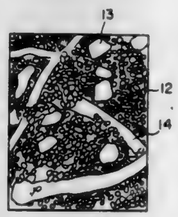
wherein R is an alkyl group having at least 4 carbon atoms, an aralkyl group, a aryl group, an alkylcarbonyl group, an arylcarbonyl group, an alkylsulfonyl group or an arylsulfonyl group.

4,446,210

FUEL CELL ELECTRODE

Hideo Okada; Jinichi Imahashi, both of Hitachi; Seizi Takeuchi, Hitachiota; Sigeru Okabe, Hitachi; Toshiki Kahara; Kenzo Ishii, both of Ibaraki; Masato Takeuchi, Katsuta; Shimpei Matsuda, Ibaraki; Kohki Tamura, Hitachi, and Hiroshi Tobita, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,768
Claims priority, application Japan, Apr. 8, 1981, 56-51816
Int. Cl.[3] H01M 4/86
U.S. Cl. 429—42 23 Claims



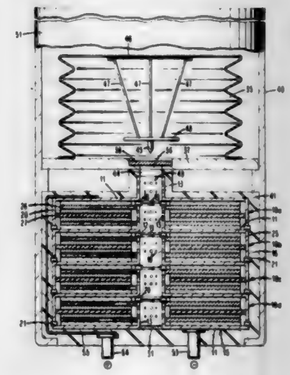
1. A fuel cell electrode, adapted to have a side thereof facing an electrolyte, which comprises a gas-diffusing electroconductive substrate in a sheet form with continued pores and a catalyst layer consisting essentially of a mixture of electroconductive submicron particles having a catalyst, electroconductive materials each having a volume 10^3–10^{10} as large as the volume of the largest particle of the submicron particles and a binder, the catalyst layer being provided at the electrolyte-facing side of the electroconductive substrate, the catalyst layer being made water-repellant at least at the electrolyte side, the electroconductive submicron particles and the electroconductive materials being provided in a mixing ratio by volume of the former to the latter of 95–50 to 5–50, whereby generation of cracks on the catalyst layer at drying or baking of the catalyst layer after application of catalyst to the electroconductive substrate is substantially prevented.

4,446,211

RESERVE ELECTROCHEMICAL BATTERY

Franz Goebel, Sudbury, and Morton A. Slavin, Marblehead, both of Mass., assignors to GTE Communications Products Corporation, Stamford, Conn.

Filed May 13, 1983, Ser. No. 494,132
Int. Cl.[3] H01M 6/36
U.S. Cl. 429—101 12 Claims



1. A reserve battery of electrochemical cells comprising
a plurality of similar housing sections of conductive material arranged in series;
each housing section being electrically insulated from adjacent housing sections;
each two adjacent housing sections forming a chamber between them;
each chamber containing
an anode electrode member of an electrochemical system, and
a cathode electrode member of an electrochemical system,
the anode electrode member being in electrical contact with the housing section of one of the housing sections forming the chamber, and
the cathode electrode member being in electrical contact with the housing section of the other of the housing sections forming the chamber;
portions of said housing sections forming a conduit;
each housing section having an opening in said portion providing passageways between the conduit and each of said chambers;
reservoir means containing a fluid constituent of an electrochemical system, said fluid constituent, a said anode electrode member, and a said cathode electrode member providing a complete electrochemical system of an electrochemical cell;
rupturable sealing means sealing said reservoir means from said conduit;
activating means operable when actuated to rupture said rupturable sealing means and force said fluid constituent in the reservoir means into said conduit and through said passageways into said chambers; and
valve means for sealing the fluid constituent within each chamber from the fluid constituent within each of the other chambers
whereby when said activating means is actuated a battery of active individual electrochemical cells arranged in series is provided with each housing section serving as the positive terminal for the electrochemical system within one chamber and the negative terminal for the electrochemical system within an adjacent chamber.

4,446,212

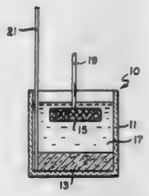
ELECTROCHEMICAL CELL

Thomas D. Kaun, New Lenox, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 287,857, Jul. 29, 1981, Pat. No. 4,358,513. This application Nov. 8, 1982, Ser. No. 440,203

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—103 **17 Claims**



1. A secondary electrochemical cell having a negative electrode of lithium aluminum, a positive electrode of iron sulfide, a molten electrolyte of lithium chloride and potassium chloride, the combination therewith of the negative and positive electrodes having quantities of the respective materials forming same in such proportions that the full charge theoretical capacity of the negative electrode being in the range of 0.5–1.0 of the full charge theoretical capacity of the positive electrode, whereby the cell capacity is limited by the negative electrode capacity during discharge cycling, and the negative electrode containing in the approximate range of 1–10 volume % of the electrode an additive from the group of materials including graphitized carbon, Raney iron and magnesium oxide.

4,446,213

ELECTROCHEMICAL STORAGE CELL

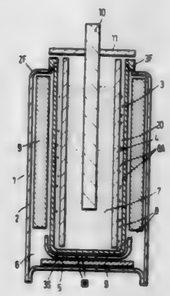
Günther Steinleitner, Schriesheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,239

Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117619

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—104 **17 Claims**



1. An electrochemical storage cell or battery of alkali metal and chalcogen comprising at least one anode space receiving the alkali metal anolyte and one cathode space receiving the chalcogen catholyte, an alkali ion-conducting solid electrolyte separating the said reactant spaces from each other, said cell bounded at least in some places by a metallic housing, and a safety space subdi ided into at least two safety zones adjoining said solid electrolyte, wherein a first safety zone of said two safety zones is arranged in the anode space parallel to the lateral boundary surfaces of the solid electrolyte and bounded by a support element shaped as a tube open at its bottom also arranged in the anode space, and a second safety zone of said two safety zones is arranged in the cathode space parallel to the closed end of the solid electrolyte and bounded by a casing shaped as a cap also arranged in the cathode space and that the distance between the solid electrolyte, the support element and the casing is at most 1 to 2 mm.

4,446,214

METHOD FOR FORMING A METAL CASTING EXTENDING THROUGH A PREFORMED STRUCTURE AND ARTICLES PRODUCED THEREBY

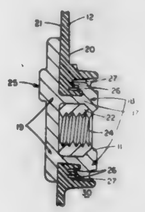
Verlin A. Mocas, Indianapolis, Ind., assignor to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 014,829, Feb. 26, 1979, Pat. No. 4,299,891, which is a continuation of Ser. No. 527,726, Nov. 27, 1974, Pat. No. 4,413,215, which is a division of Ser. No. 301,568, Oct. 27, 1972, Pat. No. 3,874,933. This application Nov. 5, 1981, Ser. No. 318,435

The portion of the term of this patent subsequent to Apr. 1, 1992, has been disclaimed.

Int. Cl.³ H01M *2/30*

U.S. Cl. 429—179 **10 Claims**



1. A method of forming a metal casting which extends within and through a wall of a preformed structure fabricated of a thermally deformable material, said casting extending between the interior and exterior of such preformed structure, which method comprises;

providing a wall of such preformed structure with a port of preformed configuration adapted for receiving and holding a metal casting;

injecting a molten metal into such port and within a die mold cavity positioned about the port to shape the molten metal into a metal casting of a unitary member having the desired shape, the port in conjunction with the die mold cavity initially acting as a mold for the molten metal;

controlling the temperature of the molten metal so that said molten metal freely flows to form the desired shape of the metal casting and solidifies without destroying the structure or composition of such port and wall and, upon cooling, acts as a mold for any molten portions of the thermally deformable material to preserve the preformed configuration of said port; and,

recovering the preformed structure with the solidified metal casting extending within and through the wall in the desired shape and providing a fluid tight seal about the metal casting between the interior and exterior of the preformed structure.

4,446,215

ELECTROCHEMICAL GENERATOR COMPRISING AN AMMONIATE

Janine Badoz, Paris; Michelle Bardin, Sucy-en-Brie; Claude Bernard, Saint Vit; Michel Herlem, Versailles; Guy Robert, Morre, and André Thiebault, Paris, all of, France, assignors to Electricite de France (Service National), Paris, France

Filed Jun. 15, 1983, Ser. No. 504,485

Claims priority, application France, Jun. 16, 1982, 82 10488; Feb. 22, 1983, 83 02849

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—190 **22 Claims**

1. An electrochemical generator of the type comprising an anode consisting of a highly reducing metal or a highly reducing metallic alloy, a cathode consisting of a reducible material, together with a practically water-free liquid or solid electrolyte, in which the anode and the cathode are immersed, characterised in that the said electrolyte consists of at least one ammoniate of at least one salt of a cation of the anode metal or of a salt of a cation of a more highly reducing metal than the anode metal or metals.

4,446,216

PHOTOGRAPHIC MATERIAL

Norman A. Smith, Hornchurch; Stephen R. Postle, and William E. Long, both of Brentwood, all of England

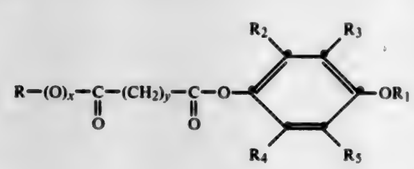
Filed Nov. 23, 1982, Ser. No. 444,022

Claims priority, application United Kingdom, Dec. 10, 1981, 8137239

Int. Cl.³ G03C *5/24, 1/02*

U.S. Cl. 430—405 **11 Claims**

1. Photographic material which comprises in at least one silver halide emulsion layer or a layer or layers adjacent thereto at least one substituted hydroquinone compound of the formula



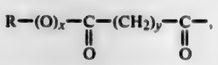
where

R is hydrogen or optionally substituted methyl or ethyl, aryl or a heterocyclic group, R_2, R_3, R_4 and R_5 are each hydrogen,

x is 0 or 1,

y is 0 or 1,

and R_1 is hydrogen or a group of the formula



with the proviso that if R is methyl only one of x and y can be 0.

4,446,217

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING A HYDRAZONE CONTAINING LAYER

Yoshio Takasu, Tama, and Shozo Ishikawa, Sayama, both of Japan, assignors to Canon Kabushiki Kaisha and Copyer Kabushiki Kaisha, both of Tokyo, Japan

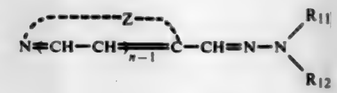
Filed Jan. 27, 1982, Ser. No. 343,187

Claims priority, application Japan, Feb. 3, 1981, 56-14515; Mar. 19, 1981, 56-40145; May 20, 1981, 56-75973

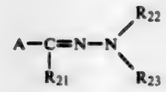
Int. Cl.³ G03G *5/06*

U.S. Cl. 430—58 **27 Claims**

1. An electrophotographic photosensitive member comprisng a layer containing a hydrazone compound represented by the following formula (1) or (2):



Formula (1)



Formula (2)

wherein, Z is an atomic group necessary to complete a substituted or unsubstituted heterocyclic ring; selected from the group consisting of thiazoline, oxazoline, imidazoline, thiazole, oxazole, imidazole, benzothiazole, benzoxazole, benzimidazole, naphthothiazole, naphthoxazole, naphthoimidazole, quinoline, isoquinoline, quinoxaline, pyridazine, pyrimidine, pyrazine, triazole, oxadiazole, and thiadiazole; R_{21}, R_{22} and R_{23} represent substituted or unsubstituted alkyl, substituted or unsubstituted aralkyl, or substituted or unsubstituted aryl, and the combinations of R_{11} with R_{12} and of R_{22} with R_{23} can form each a pyrrolidine ring, piperidine ring, or morpholine ring; n is 1 or 2, and A is a monovalent heterocyclic ring residue.

4,446,218

SULFUR AND/OR AMIDE-CONTAINING EXPOSURE ACCELERATORS FOR LIGHT-SENSITIVE COATINGS WITH DIAZONIUM COMPOUNDS

Major S. Dhillon, Hillsborough, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Mar. 18, 1982, Ser. No. 359,629

Int. Cl.³ G03C *1/58, 1/60, 1/54*

U.S. Cl. 430—175 **16 Claims**

1. A composition comprising a light sensitive diazonium compound and an accelerator selected from the group consisting of 1,1-thiobis(2-naphthol), diresorcinol sulfide, diphenyl sulfone, phenothiazine, dibenzothiophene sulfone, N-(3-hydroxyphenyl)-2-hydroxy-3-naphthamide, 2,3-dihydroxy naphthoic acid ethanolamide, N,N'-ethylene-bis-acetoacetamide, 4-bromo-3,5-resorcyclic acid ethanolamide, 3,5-resorcyclic acid ethanolamide 2,4-resorcyclic acid ethanol amide, acetoacetbenzylamide, 2-mercaptobenzothiazole, and 2-benzoxazolethiol, wherein said diazonium compound is selected from the group consisting of the condensation products of Formula I, Formula II and Formula IV as set forth herein such that said accelerator is present in said composition in an amount from about 0.005 to about 1.5 parts by weight of accelerator per part by weight of said diazonium compound.

4,446,219

PHOTOGRAPHIC MATERIAL COMPRISING A LAYER WITH NI COMPLEX OF 2,2'-BISPHENOL

Peter Bergthaller, and Jürgen Strauss, both of Cologne, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,307

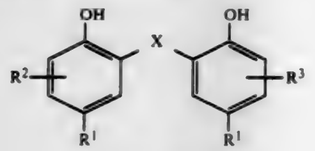
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 31323332

Int. Cl.³ G03C *1/40, 5/54, 7/00*

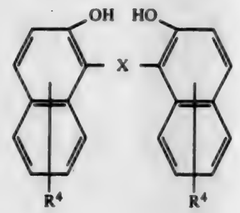
U.S. Cl. 430—216 **5 Claims**

1. A photographic material comprising a layer capable of being dyed by organic dyes and containing a metallizing agent for the formation of organic dye-metal complexes arranged on a layer support, said dyeable layer also containing a mordant for diffusible anionic dyes or being in direct contact with a mordant layer containing a mordant for diffusible anionic dyes, wherein said dyeable layer contains dispersed in a hydrophilic binder, as metallizing agent, a water-insoluble nickel complex

formed from a 2,2'-bisphenol corresponding to one of the following general formulae I and II:



I



II

wherein

X denotes —S—,

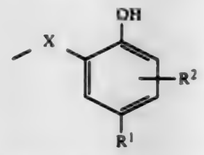


or $—SO_2—$;

R^1 denotes a hydrocarbon group having up to 18 C—atoms attached either directly or through —O—, or it denotes a halogen or a group R^4;

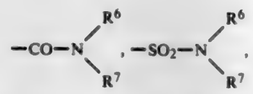
R^2 denotes hydrogen, halogen, alkyl or alkoxy with up to 18 C-atoms, alkenyl, a residue for completing a condensed benzene ring; or a group R^4 if R^1 does not denote a group R^4;

R^3 denotes a residue as defined for R^2 or a group corresponding to the formula



wherein X, R^1 and R^2 have the meaning indicated above;

R^4 denotes —CO—O—R^5,

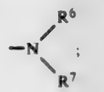


—NH—CO—R^8 or —NH—SO_2R^9;

R^5 denotes alkyl, aralkyl or cycloalkyl having up to 8 C-atoms;

R^6 and R^7 denote hydrogen, alkyl, aralkyl, aryl or cycloalkyl or together denote a residue for completing a 5-, 6- or 7-membered cyclic amino group;

R^8 denotes alkyl, aralkyl, aryl, OR^5 or



and

R^9 denotes alkyl, aryl or



4,446,220

METHOD OF MAKING A PHOTOSENSITIVE ELASTOMERIC COMPOSITION

Stephen Proskow, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 304,371, Sep. 21, 1981. This application Aug. 27, 1982, Ser. No. 412,090

The portion of the term of this patent subsequent to Dec. 4, 1996, has been disclaimed.

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—286 **6 Claims**

1. A method for preparing a photosensitive, elastomeric composition developable in aqueous base/organic solvent mixtures comprising, by total weight of the composition,

(i) about 40 to 90 percent of a heat workable mercaptocarboxylic acid-modified polymer of a diene selected from at least one member of the group butadiene and isoprene, said polymer characterized by having

(a) a number average molecular weight of about 15,000 to 1,000,000,

(b) a carboxyl content of about 1 to 15 percent by weight of polymer (i),

(c) at least about 0.7 percent of sulfur, by weight of polymer (i),

(ii) about 2 to 50 percent of a nonaqueous, ethylenically unsaturated compound containing at least one terminal ethylenic group, said compound being compatible with polymer (i) and polymerizable by the radical generating system of (iii), and

(iii) about 0.001 to 10 percent of a radical generating system activatable by actinic radiation; comprising

(A) heat mixing a heat workable polymer of a diene selected from at least one member of the group butadiene and isoprene having a number average molecular weight of about 15,000 to 1,000,000 with a mercaptocarboxylic acid for a time sufficient to modify the polymer so that it contains characteristics (a), (b) and (c); and

(B) mixing the modified polymer made in step (A) with a nongaseous, ethylenically unsaturated compound containing at least one terminal ethylenic group, said compound being compatible with the modified polymer and being polymerizable by a radical generating system, and a radical generating system activatable by actinic radiation, for a time sufficient to obtain a homogeneous composition.

4,446,221

ANODIZED SUPPORTS AND RADIATION SENSITIVE ELEMENTS THEREFROM

Hans P. Herting, Osterode, Fed. Rep. of Germany; Jen-Chi Huang, Ossining, and Eugene Golda, Monsey, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 263,961, May 15, 1981, abandoned. This application Dec. 21, 1982, Ser. No. 451,661

Int. Cl.³ G03F *7/02*

U.S. Cl. 430—302 **2 Claims**

1. In a method for preparing a lithographic printing plate comprising the steps of,

I. exposing a radiation-sensitive element comprising an improved anodized support material of aluminum or an aluminum alloy having coated thereupon a radiation-sensitive composition to radiation through a mask; and

II. developing the exposed element to remove the areas of greater solubility to produce the desired plate;

the improvement comprises treating an anodized support material with an aqueous solution of an alkali metal salt of a condensed arylsulfonic acid having an acidic pH prior to coating with said radiation-sensitive composition, said treatment being effected at a temperature of from about room temperature to 50° C. during or after anodization said arylsulfonic acid having two or more arylsulfonic acid nuclei joined by alkylene groups.

4,446,222

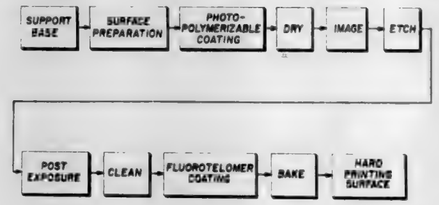
METHOD OF PREPARING PRINTING SURFACE FORMED OF POLYMERIC RESIN CONTAINING POLYAMIDE AND DICARBOXYLIC ACID DIESTER

David R. Kress, Rochester, N.Y., assignor to Matrix Unlimited, Inc., Rochester, N.Y.

Division of Ser. No. 249,070, Mar. 30, 1981, Pat. No. 4,345,022, which is a division of Ser. No. 93,622, Nov. 13, 1979, Pat. No. 4,269,930. This application Jun. 21, 1982, Ser. No. 390,175

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—307 **8 Claims**



1. A process for preparing a hard printing surface comprising:

a. coating a base with a mixture of alcohol and a photopolymerizable composition of matter comprising:

(1) from about 70–95% by weight of an alcohol-soluble linear polyamide;

(2) from about 0.5–15% by weight of a low molecular weight dicarboxylic acid diester selected from the group consisting of saturated and unsaturated dicarboxylic acid diesters having up to eight carbon atoms in the acid backbone and up to about four carbon atoms in the alcohol moiety appended at the ester linkage; and

(3) an effective amount of at least one photosensitizer and at least one polymerization inhibitor;

b. drying the coating;

c. exposing the coating to actinic light through a photographic element to selectively photopolymerize the coating; and

d. etching the unexposed portions of the coating.

4,446,223

RECORDING AND INFORMATION RECORD ELEMENTS COMPRISING OXOINDOLIZINE AND OXOINDOLIZINIUM DYES

Donald H. Wadsworth; Harold T. Thomas, both of Rochester; George L. Fletcher, Pittsford, and Charles H. Weidner, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,769

Int. Cl.³ G03C *1/52*

U.S. Cl. 430—338 **5 Claims**

1. An optical recording element comprising a support having coated thereon a layer of an amorphous composition (a) having an absorption factor of at least 20 and (b) comprising a binder and a dye selected from the group consisting of oxoindolizine and oxoindolizinium dyes.

4,446,224

TELLURIUM IMAGING COMPOSITION INCLUDING ALCOHOL

Terry T. Yu, Macomb County, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 28, 1982, Ser. No. 392,580

Int. Cl.³ G03C *5/24*

U.S. Cl. 430—346 **33 Claims**

1. A film for forming an image made from a composition applied to a substrate, which composition comprises:

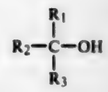
(a) a tellurium compound reactible with a diol and an alcohol to form an image forming tellurium compound;

(b) a reductant precursor which will abstract labile hydrogen from a hydrogen donor under the influence of activating energy to become a reducing agent with respect to the image forming tellurium compound;

(c) a diol reactible with said tellurium compound and an alcohol to form an image forming tellurium compound;

(d) a source of labile hydrogen for reaction with said reductant precursor, said source of labile hydrogen comprising said diol;

(e) an alcohol reactible with said tellurium compound and diol to form an image forming tellurium compound, said alcohol of the formula:



where R_1, R_2 and R_3 each and independently are selected from the group consisting of hydrogen, alkyl, alkenyl, phenyl, benzyl, alkylphenyl, alkylbenzyl, alkoxyphenyl, alkenylphenyl and alkenylbenzyl, said alcohol being of the type and present in an amount such that the speed of the film is improved; and

(f) a matrix in which said tellurium compound, reductant precursor, labile hydrogen, diol and alcohol are combined in amounts effective to form a composition which may be applied to a substrate.

4,446,225

METHOD FOR PROCESSING COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shinzo Kishimoto, and Kiyohiko Yamamuro, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

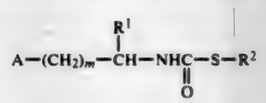
Filed Mar. 25, 1983, Ser. No. 478,942

Claims priority, application Japan, Mar. 25, 1982, 57-47821

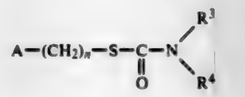
Int. Cl.³ G03C *7/00*

U.S. Cl. 430—393 **6 Claims**

1. A method for processing a color photographic light-sensitive material by subjecting an exposed silver halide color photographic light-sensitive material to a color development processing then to a bleaching processing and a fixing processing or to a bleach-fixing processing, which process comprises incorporating at least one compound represented by the following general formula (I-a) or (I-b) in a bath of said bleaching or bleach-fixing processing or in a pre-bath thereof:



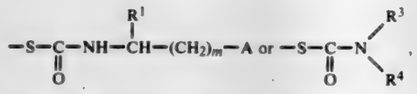
(I-a)



(I-b)

wherein A represents an amino group which is optionally

substituted or a nitrogen-containing hetero ring residue which may be optionally substituted, R^1 represents a hydrogen atom or a carboxy group, R^2 represents a monovalent metal atom, an ammonium group, an optionally substituted alkyl group or a group represented by



R^3 and R^4 each represents a hydrogen atom or an alkyl group which may be substituted by a hydroxy group, an alkoxy group, a halogen atom, a carboxyl group, $-SO_2H$, $-SO_3H$, or a group represented by A described above, m represents 1 or 2, and n represents an integer of 2 to 4.

4,446,226

LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Kiyoshi Yamashita, and Toshifumi Iijima, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,083

Claims priority, application Japan, Jul. 10, 1981, 56-106908; Dec. 11, 1981, 56-200477; Dec. 12, 1981, 56-200611; Dec. 13, 1981, 56-200552

Int. Cl.³ G03C *1/46, 7/26*

U.S. Cl. 430—506 **9 Claims**

1. A light-sensitive color photographic material having a support and, coated thereon, at least two light-sensitive silver halide emulsion layers respectively sensitive to light of a different spectral region, each of said emulsion layers comprising at least two light-sensitive emulsion sublayers having different sensitivity to light and containing negative type light-sensitive silver halide crystals consisting essentially of silver iodobromide containing silver iodide in an amount of from 1 to 3 mole %.

4,446,227

DYESTUFFS AND THEIR USE IN PHOTOGRAPHIC MATERIAL

William E. Long, Brentwood, United Kingdom, assignor to Ciba-Geigy AG, Basel, Switzerland

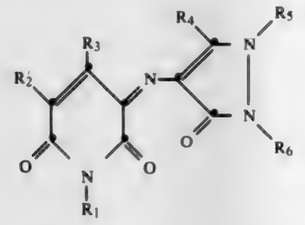
Division of Ser. No. 236,488, Feb. 23, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 420,538

Claims priority, application United Kingdom, Feb. 28, 1980, 8006849

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—513 **4 Claims**

1. A silver halide photographic material which comprises in at least one layer thereof at least one dyestuff of the formula



where R_1 is hydrogen, alkyl having 2 to 10 carbon atoms which is unsubstituted or substituted by chlorine, bromine, hydroxyl, alkoxy having 1 to 4 carbon atoms or a carboxylic acid (—COOH) group, or R_1 is cyclopentyl or cyclohexyl, R_2 and R_3 are each hydrogen, alkyl having 1 to 8 carbon atoms which is unsubstituted or substituted by hydroxyl, a carboxylic acid (—COOH) group, cyano or nitro, or R_2 and R_3 are each a carboxylic acid (—COOH) group, a carboxylic ester group having 2 to 5 carbon atoms, a carboxylic amide ($—CONH_2$) group or cyano, and R_4, R_5 and R_6 are each alkyl having 1 to 6 carbon atoms which is unsubstituted or substituted by chlorine, bromine, hydroxyl, alkoxy having 1 to 4 carbon atoms or a carboxylic acid (—COOH) group, or R_4, R_5 and R_6 are each phenyl which is unsubstituted or substituted by chlorine, bromine, hydroxyl, cyano, nitro or a carboxylic acid (—COOH) group.

4,446,228

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Chika Honda, Hino; Masatoshi Iwata, Akishima, and Takeo Koitabashi, Sagamihara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Apr. 27, 1982, Ser. No. 372,128

Claims priority, application Japan, Apr. 28, 1981, 56-63281

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—567 **4 Claims**

1. An X-ray silver halide photographic material comprising a base having formed thereon a silver halide emulsion layer substantially made of two or more monodispersed emulsions having silver halide grains with different average grain sizes in the range of about 0.2 to 3.0 μm, wherein the grain size distribution curve of the grains has two or more peaks, the distance between the highest peak and the second highest peak being at least 0.3 μm and wherein the number of the silver halide grains having a smaller grain size than the median of the grain size of all the grains incorporated in the monidispersed emulsions is larger than that of the silver halide grains having a grain size greater than the median.

4,446,229

METHOD OF TISSUE GROWTH

Robert B. Indech, 55 Pilgrim Rd., Melrose, Mass. 02176

Filed Dec. 30, 1982, Ser. No. 434,961

Int. Cl.³ A01N *1/02*; C12M *3/00*

U.S. Cl. 435—1 **7 Claims**

1. A method of growing tissue allowing vasular ingrowth whereby living tissue is grafted onto a non-immunoreactive mesentary, said mesentary having an arterial and venous system, said arterial and venous system is anastomosed to a tube completing a closed fluid circuit, said tube containing a solution allowing oxygen and carbon dioxide transport of a sufficient quantity for continued growth of said mesentary and said tissue, said tube is connected to a pump to unidirectionally propel said solution, said tube is connected to an artificial lung consisting substantially of a gaseous exchange membrane and a circulated supply of oxygen, said tube is connected to an artificial kidney consisting substantially of an exhange membrane and a circulated supply of dialysate, said tube is connected to an output port and an input port, and whereby a complete system comprising said mesentary, said tissue, said tube, said solution, said pump, said artificial lung, said artificial kidney, said output port, and said input port is contained in a temperature controlled, humidity controlled antiseptic housing.

4,446,230

TEST METHOD FOR THE LABORATORY DIAGNOSIS OF GONORRHEA AND TEST STRAIN OF *NEISSERIA GONORRHOEAE*

Leonard J. Zubrzycki, Pennsauken, N.J., assignor to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Oct. 30, 1981, Ser. No. 317,023

Int. Cl.³ C12Q *1/68, 1/04, 1/12*; C12N *1/20*

U.S. Cl. 435—6 **16 Claims**

1. A biologically pure culture of the microorganism *Neisseria gonorrhoeae* ATCC 31953 capable of taking up gonococcal DNA, but which microorganism is abnormal in that it has characteristically poor growth on common chocolate agar at a temperature within the range of from about 30° C. to about 37° C. in a CO_2 atmosphere suitable for growth of normal *Neisseria gonorrhoeae*, and said microorganism having resistance to naldixic acid and streptomycin at the 5–10 mcg/ml level and the 1000 mcg/ml level or greater, respectively.

4. The method for the laboratory diagnosis of gonorrhea by detecting DNA of *Neisseria gonorrhoeae* in a patient's specimen material, comprising the steps of (1) applying a non-toxic preparation of a patient's specimen material, directly to a culture of *Neisseria gonorrhoeae* ATCC 31953, which has abnormal growth characteristics, which is in or on a biological medium suitable for growth of normal *Neisseria gonorrhoeae*, and (2) observing for the restoration of normal growth to the abnormal growth strain *Neisseria gonorrhoeae* ATCC 31953, in or on the biological medium of step (1), under conditions normal for growth of *Neisseria gonorrhoeae*.

4,446,231

IMMUNOASSAY USING AN AMPLIFIED CYCLIC DETECTION SYSTEM

Colin H. Self, 46 Lensfield Rd., Cambridge, CB2 1EG, England

Continuation-in-part of Ser. No. 193,647, Oct. 3, 1980, abandoned. This application Oct. 1, 1981, Ser. No. 307,600

Claims priority, application United Kingdom, Oct. 3, 1979, 7934376

Int. Cl.³ G01N *33/54*

U.S. Cl. 435—7 **21 Claims**

1. In a method for determining a member of a ligand and receptor pair which comprises an assay wherein:

(a) a sample of a first member of the ligand and receptor pair is contacted with a matrix bound second member of the pair whereby said first member becomes bound to said second member:

(b) the thus produced matrix bound first member is contacted with a conjugate which binds specifically to the matrix bound first member which conjugate comprises a phosphatase whereby said phosphatase is bound to the matrix and

(c) the matrix bound and unbound conjugate are separated and the matrix bound or the unbound conjugate is assayed; the improvement which comprises:

(d) contacting the conjugate to be assayed with a precursor for NAD whereby NAD is produced, and

(e) contacting the thus produced NAD with the components of a secondary system which is activated by the NAD, said secondary system comprising a cyclic chemical reaction which interconverts NAD and NADH, neither of which is present until the production of NAD by the conjugate, and which secondary system maintains the increase in concentration of NAD produced by the conjugate and produces a determinable change, said components of the cyclic chemical reaction being present in sufficient quantity to maintain the cyclic chemical reaction and produce determinable product at each turn of the cycle whereby amplification of the determinable change occurs.

4,446,232

ENZYME IMMUNOASSAY WITH TWO-ZONED DEVICE HAVING BOUND ANTIGENS

Lance A. Liotta, 5621 Sonoma Rd., Bethesda, Md. 20817

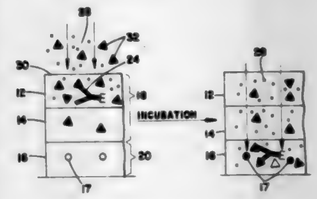
Filed Oct. 13, 1981, Ser. No. 310,801

Int. Cl.³ G01N *33/54, 33/58, 33/52, 33/76*

U.S. Cl. 435—7 **23 Claims**

13. A method for determining the presence of antigens in a biological fluid which comprises:

bringing a fluid which is to be tested for the presence of antigens into contact with a device having a matrix including a first zone containing (a) bound and immobilized antigens and (b) enzyme-linked antibodies which are capable of immunologically reacting with said antigens, said antibodies being positioned in said first zone such that they will be removed from said first zone but not removed from said first zone in the absence of such antigens, and a second zone removed from said first zone containing material capable of reacting with said enzyme-linked antibodies to produce a color forming reaction which indicates the presence of said antibodies;



allowing said fluid to permeate said device; and

observing the presence or absence of any color change in said second zone to thereby determine the presence or absence of the tested for antigen in said fluid.

4,446,233

HOMOGENEOUS IMMUNOASSAY USING COVALENT HYBRID ANTIBODIES

Karen Auditore-Hargreaves, and Frederick M. Miesowicz, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 5, 1982, Ser. No. 374,970

Int. Cl.³ G01N *33/54, 33/58*

U.S. Cl. 435—7 **4 Claims**

1. A homogeneous immunoassay for the measurement of analyte comprising the steps of incubating sequentially or simultaneously:

(A) a substantially pure covalent hybrid antibody consisting essentially of two different heavy chain-light chain half-molecules, wherein the first of said half-molecules provides a binding site for a first antigen and the second of said half-molecules provides a chemically different binding site for the first or a second antigen; wherein said half-molecules are bonded to each other through disulfide linkage;

(B) a biological sample containing analyte;

(C) an indicator capable of being bound by said hybrid antibody; and

(D) reagents for signal-generating reaction.

4,446,234

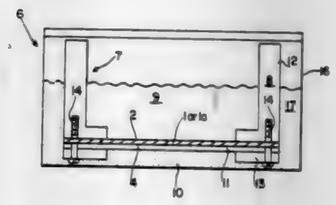
VITRO CELLULAR INTERACTION WITH AMNION MEMBRANE SUBSTRATE

Raimondo Russo, and Lance A. Liotta, both of Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Oct. 23, 1981, Ser. No. 314,477

Int. Cl.³ C12Q *1/29*; C12N *5/00*; C12M *3/00*

U.S. Cl. 435—29 **16 Claims**



1. In an in vitro assay method for evaluating cellular interac-

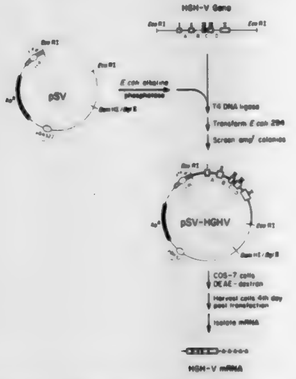
tion with natural barrier tissue of the type wherein living cells are interacted in vitro with a substrate tissue, the improvement comprising employing a mammalian amnion membrane as the substrate tissue.

4,446,235

METHOD FOR CLONING HUMAN GROWTH HORMONE VARIENT GENES

Peter H. Seeburg, San Francisco, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Filed Mar. 22, 1982, Ser. No. 360,517
Int. Cl.³ C12P *19/34, 21/00, 21/02*; C12N *15/00*
U.S. Cl. 435—91 **3 Claims**



1. A method of obtaining cDNA encoding a desired polypeptide which comprises the steps of:

a. probing cloned genomic DNA to obtain genomic sections containing gene for said polypeptide,

b. incorporating the genomic sections of step a. into host cells and incubating said host cells under conditions suitable for transcription and processing of the transcript into corresponding mRNA by said host cells,

c. creating a cDNA bank containing cDNA encoding said polypeptide from the mRNA of step b., and

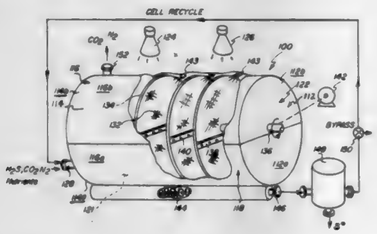
d. isolating the cDNA for said polypeptide from the cDNA bank of step c. by probing for the requisite DNA sequence of said polypeptide.

4,446,236

APPARATUS FOR A PHOTOCHEMICAL REACTION

Robert A. Clyde, P.O. box 983, Asheville, N.C. 28802

Filed Aug. 11, 1982, Ser. No. 407,299
Int. Cl.³ C12M *1/00*; B01D *33/34*; C10J *1/18*; B01J *16/00*
U.S. Cl. 435—287 **8 Claims**



1. Apparatus for photochemically reacting a selected fluid comprising:

(a) a hollow container, said container comprising a first lower section containing a volume of the selected fluid and a second upper section having at least one light transmitting wall;

(b) a shaft supported for rotation in said container;

(c) a plurality of porous support disks mounted on said shaft so that a first portion of each support disk extends into said lower container section and a second portion of each support disk extends into said upper container section;

(d) webbing means attached to each of said support disks, said webbing means comprising a multiplicity of high surface area fibers suitable for attaching said fluid and having a diameter of about $\frac{1}{4}$ inch or less;

(e) a light source located adjacent said light transmitting wall, said light source emitting radiation of a selected wave length for exciting selected molecules of said fluid; and

(f) means for rotating said shaft so that portions of said webbing means are sequentially immersed in the volume of fluid contained in said lower container section and then moved out of said fluid volume and into said upper container section whereat said fluid is exposed to radiation from said light source.

4,446,237

METHOD FOR DETECTION OF A SUSPECT VIRAL DEOXYRIBONUCLEIC ACID IN AN ACELLULAR BIOLOGICAL FLUID

Mark S. Berninger, Gaithersburg, Md., assignor to Life Technologies, Inc., Chagrin Falls, Ohio

Filed Mar. 27, 1981, Ser. No. 248,048
Int. Cl.³ G01N *33/58, 33/60*; C12N *15/00*
U.S. Cl. 436—504 **20 Claims**

1. A method for evaluating an acellular biological fluid as drawn from a subject for the presence of a suspect viral DNA thereby obviating in vivo or tissue culture techniques, consisting essentially of:

(a) treating said acellular biological fluid to immobilize on a solid substrate in denatured form said suspect viral DNA present in said acellular biological fluid;

(b) contacting said solid substrate with a radioisotopically-labeled suspect viral denatured DNA probe to renature said immobilized suspect viral DNA present on said substrate to form a radioisotopically-labeled renatured DNA; and

(c) evaluating the product of step (b) for the presence of said radioisotopically-labeled renatured DNA.

4,446,238

BRIGHT FIELD LIGHT MICROSCOPIC METHOD OF LOCALIZING TISSUE ANTIGENS

Jan R. De Mey, Turnhout, and Marc K. J. J. Moeremans, Mol, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Jan. 25, 1982, Ser. No. 342,552
Claims priority, application United Kingdom, Mar. 19, 1981, 8108606
Int. Cl.³ G01N *33/54, 33/74*
U.S. Cl. 436—527 **2 Claims**

1. A two step indirect bright field light microscopic method for the detection of antigens in tissue sections, which method comprises the steps of

(i) preparing the tissue sections;

(ii) reacting the tissue sections with primary antibodies specific to said antigens;

(iii) detecting the specific binding sites, where the primary antibodies are attached, with colloidal gold granules coated with secondary antibodies specific to said primary antibodies; and

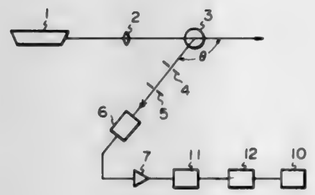
(iv) mounting the sections.

4,446,239

LIGHT SCATTERING IMMUNOASSAY INVOLVING PARTICLES WITH SELECTIVE FREQUENCY BAND APPARATUS

Yasuhiro Tsuji, and Kiyoshige Wakabayashi, both of Saitama, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,610
Claims priority, application Japan, Apr. 24, 1981, 56-62237
Int. Cl.³ G01N *33/54, 21/49*
U.S. Cl. 436—532 **11 Claims**



1. A method of measuring an antigen-antibody reaction comprising the steps of:

preparing a suspension of insoluble microscopic carrier particles which carry at least an antigen, an antibody or a hapten;

forming an agglutination promoting or agglutination inhibiting reaction system among said carrier particles based on an antigen-antibody reaction, using said suspension and one or more antigen, antibody or hapten;

irradiating said agglutination promoting or agglutination inhibiting reaction system with light having a limited frequency bandwidth;

detecting light scattered at one or more specific angles from said reaction system;

selecting signals representative of one or more specific frequency bands from a spectrum signal representative of said scattered light, said specific frequency bands comprising limited frequency portions of the entire bandwidth of said spectrum signal; and

analyzing the antigen, antibody or hapten in a specimen of interest based on one or more of said selected signals.

6. An apparatus for measuring an antigen-antibody reaction to determine the quantity of antigen, antibody or hapten in a specimen, which apparatus comprises:

a light scattering cell for receiving a suspension of insoluble microscopic carrier particles which carry at least an antigen, an antibody or a hapten, and a specimen solution which includes at least an antigen, an antibody or a hapten for inducing an antigen-antibody reaction with said suspension;

optical means for irradiating said scattering cell with light having a limited frequency bandwidth;

photodetection means for receiving light, scattered from said cell, at one or more scatter angles and for generating an electrical output signal in response to said light;

selection means for generating scatter spectrum intensity signals representative of one or more specific frequency bands of the electrical output signals of said photodetection means, said specific frequency bands comprising limited frequency portions of the entire bandwidth of said electrical output signals; and

indicating means for providing an indication of said scatter spectrum intensity signals.

4,446,240

PANCREAS SPECIFIC PROTEIN SYSTEMS

Samuel T. Nerenberg, 17931 Wellbank La., Huntington Beach, Calif. 92649

Filed Jan. 30, 1981, Ser. No. 230,298
Int. Cl.³ G01N *33/56, 33/60*
U.S. Cl. 436—542 **18 Claims**

1. Substantially immunologically pure Pan Ag, an isotonic saline soluble pancreatic acinar cell cytoplasmic glycoprotein having a molecular weight of about 2.25×10^5 daltons, a carbohydrate content of about 18 percent by weight, an antigenic stability in the range of from about pH 2.8 to about 8.5, an antigenic stability to incubation with deoxyribonuclease and ribonuclease, an antigenic instability to incubation with trypsin and neuraminidase and which precipitates at between about 245 and about 340 grams per liter of ammonium sulfate saturation.

12. A method for detecting the presence of Pan Ag in a biological sample, comprising the steps of contacting the sample with a labelled complex of a Pan Ag as claimed in claim 1 and a monospecific antibody for said Pan Ag, and measuring the amount of labelled Pan Ag released by contact with said sample.

4,446,241

LEAD-FREE AND CADMIUM-FREE GLASS FRIT COMPOSITIONS FOR GLAZING, ENAMELING AND DECORATING

Josef Francel, Toledo; Daniel R. Stewart, Maumee, and Uriah Horn, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 28, 1982, Ser. No. 392,974
Int. Cl.³ C03C *1/00*
U.S. Cl. 501—14 **14 Claims**

1. A lead-free, cadmium-free and zinc-free glass frit composition having a fiber softening point of about 535° C. to about 609° C. consisting essentially of the following components present in the indicated approximate weight percent ranges based on the total composition:

Component	Weight Percent
Al_2O_3	0–30
B_2O_3	16–32
SiO_2	11–40
Li_2O	4–12
ZrO_2	0–18
SnO_2	0–20
CeO_2	0–2
La_2O_3	0–15
CaO	0–16
SrO	0–13
BaO	0–7
Na_2O	0–3.5
F	0–2.6

and wherein

Σ SnO_2 + CaO	is	2–23
Σ ZrO_2 + La_2O_3	is	2–33
Σ ZrO_2 + Al_2O_3	is	0–26.5
Σ CaO + SrO + BaO	is	0–19.25

12. A colored enamel for decorating glass, glass-ceramic and ceramic ware comprising frit as defined in claim 1 and from 4% to 15% of a low expansion filler or pigment, based on the weight of the glass frit.

4,446,242

SYNTHESIS OF REFRACTORY MATERIALS

Joseph B. Holt, San Jose, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 28, 1983, Ser. No. 470,115
Int. Cl.[3] C04B 35/58
U.S. Cl. 501—96 20 Claims

1. A method of synthesizing refractory nitride compositions, comprising:
(a) mixing a metal azide with at least a stoichiometric amount of a transition metal of the IIIB, IVB groups, a rare earth metal or a mixture thereof;
(b) igniting the resulting mixture of step (a); and
(c) forming a refractory nitride composition.

4,446,243

CATALYSTS FOR OLEFIN POLYMERIZATION COMPRISING THE REACTION PRODUCT OF ORGANOTITANIUM AND ORGANOCHROMIUM WITH ZEOLITES

Arthur W. Chester, Cherry Hill, and James G. Murray, East Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 315,827, Oct. 27, 1981, Pat. No. 4,376,722. This application Dec. 20, 1982, Ser. No. 450,934
The portion of the term of this patent subsequent to Mar. 15, 2000, has been disclaimed.
Int. Cl.[3] C08F 4/76, 4/78
U.S. Cl. 502—62 10 Claims

1. A catalyst composition especially suitable for promoting polymerization of 1-olefins, said composition comprising the reaction product of
(A) a crystalline aluminosilicate zeolite having a silica to alumina molar ratio of at least about 12 and a Constraint Index within the approximate range of about 1 to 12; and
(B) an organometallic compound of the formula:

$$MY_nX_{m-n}$$

wherein
M is a metal selected from titanium and chromium;
Y is alkyl;
X is halogen;
n is 1–4; and
m is greater than or equal to n and is 3 or 4.

4,446,244

HYDROCARBONS HYDROPROCESSING WITH IMOGOLITE CATALYST

Robert A. Van Nordstrand, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 78,867, Sep. 26, 1979, Pat. No. 4,394,253. This application Apr. 22, 1983, Ser. No. 487,547
Int. Cl.[3] B01J 21/16
U.S. Cl. 502—84 7 Claims

1. A catalyst composition comprising shaped catalytic bodies including
(1) rods of dispersed fibrous form imogolite;
(2) at least one inorganic oxide gel, said gel bonding said rods together in substantially random mutual orientation in said catalytic bodies.

6. A catalyst composition according to claim 1 wherein said catalytic bodies further include from about 0.1 to about 10 weight percent of at least one metal selected from chromium, molybdenum, tungsten and vanadium.

7. A catalyst composition according to claim 1 wherein said catalytic bodies further include from about 0.1 to about 10 weight percent of at least one metal selected from iron, nickel and cobalt.

4,446,245

RECOATING OF ELECTRODES

Jean M. Hinden, Chambesy, Switzerland, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Mar. 8, 1982, Ser. No. 356,168
Claims priority, application United Kingdom, Apr. 6, 1981, 8110711
Int. Cl.[3] C25B 11/10, 11/08; B05D 5/12; B44D 1/18
U.S. Cl. 502—101 10 Claims

1. A method of recoating previously-used dimensionally stable electrodes having a valve metal base and an originally conductive and electrocatalytic coating containing at least one oxide of a platinum-group metal and at least one oxide of a valve metal optionally with at least one other metal oxide, which comprises cleaning the electrode surface by removing loose material and foreign matter without removing adhering portions of the coating, and applying a new electrocatalytic coating similar in composition to the old coating over the old coating in a number of layers with drying and baking of each layer, characterized by activating the electrode surface after the cleaning and before application of the new electrocatalytic coating by applying to the cleaned electrode surface one or more coats of an essentially valve-metal free solution containing at least one decomposable compound of a platinum-group metal not present in said old or new coatings, allowing each coat of said solution to impregnate the old coating, drying and baking each applied coat to enrich the old coating with platinum group metal and/or oxide, said solution also containing an agent which attacks valve metal oxide in the old coating and converts it into ions of the valve metal which mix with compound(s) of platinum group metal and form compound(s) of valve metal and platinum-group metal and/or oxide during the baking step.

4. The method of claim 1 wherein said solution also contains at least one decomposable compound of a non-valve metal, the amount of such non-valve metal compound(s) being less than the amount of platinum-group metal compound(s) therein.

5. The method of claim 4, wherein the activating solution contains at least one decomposition compound of cobalt, manganese, tin, bismuth, antimony, lead, iron or nickel.

4,446,246

CATALYST SYSTEMS FOR TWO-PACK ACRYLIC ADHESIVE FORMULATIONS

Vincent D. McGinniss, Delaware, Ohio, assignor to Three Bond Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,270
Int. Cl.[3] C08F 4/30, 4/32
U.S. Cl. 502—155 8 Claims

1. A catalyst system capable of effecting room temperature cure of a curable mixture comprising at least one ethylenically-unsaturated compound which comprises a Cu^{+1} activator and a peroxide initiator.

4,446,247

COMPOSITIONS AND PROCESS

Anthony F. Jacobine, Meriden, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 290,689, Aug. 6, 1981. This application Oct. 11, 1983, Ser. No. 540,224
Int. Cl.[3] B01J 31/02
U.S. Cl. 502—167 6 Claims

1. A liquid photoinitiator composition which comprises from about 20 to about 80 percent by weight of benzophenone the remainder of said composition being a tetra(lower-alkyl)urea.

4,446,248

HYDROTREATING CATALYST

Howard D. Simpson, Irvine; Ryden L. Richardson, Whittier, and Paul K. Angmorter, Pomona, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 16, 1982, Ser. No. 408,264
Int. Cl.[3] B01J 27/14
U.S. Cl. 502—211 24 Claims

1. A catalyst composition useful for denitrogenation and desulfurization of hydrocarbon feedstocks by reaction with hydrogen, said catalyst composition comprising molybdenum, nickel and phosphorous active components on support particles comprising gamma alumina, said catalyst having been prepared by a method comprising the steps of:
(a) contacting said support particles with an aqueous ammonia solution;
(b) subsequently impregnating the resultant support particles with molybdenum, nickel and phosphorous by contacting said support particles with an acidic impregnating solution; and
(c) calcining impregnated particles from step (b) at an elevated temperature in the presence of oxygen.

4,446,249

COPPER CATALYST COMPOSITIONS FOR FLUID-BED OXYHYDROCHLORINATION OF ETHYLENE

Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 274,995, Jun. 18, 1981, abandoned, which is a continuation of Ser. No. 91,288, Nov. 5, 1979, abandoned. This application May 17, 1982, Ser. No. 378,928
Int. Cl.[3] B01J 27/10; C07C 17/156
U.S. Cl. 502—225 12 Claims

1. A catalyst composition consisting essentially of 2% to 12% by weight of copper, as cupric chloride, on a fluidizable gamma alumina support having a surface area of about 60 to about 200 m^2g, wherein said support is modified prior to the deposit of copper by incorporating in it from 0.5% to 3.0% by weight based on the weight of the support of at least one added metal selected from the group consisting of potassium, lithium, rubidium, cesium, alkaline earth metals, rare earth metals and combinations thereof, by admixing a water soluble salt of the metal(s) with the gamma alumina support, drying the mix, and calcining the mix at 350° C. to 600° C. for about 4 to about 16 hours and before the copper is deposited.

9. The catalyst composition of claim 1 wherein the metals incorporated in the gamma alumina support are potassium and barium.

12. The catalyst composition of claim 1 wherein the metals incorporated in the gamma alumina support are barium and lanthanum.

4,446,250

PLATE CATALYST BODY FOR DENITRATION

Senji Niwa, Kakogawa; Takuji Sasaki, Hyogo; Masaaki Shinto, Akashi, and Noriaki Imamura, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Apr. 14, 1982, Ser. No. 368,319
Claims priority, application Japan, Apr. 20, 1981, 56-59952
Int. Cl.[3] B01J 21/06, 23/86, 35/02
U.S. Cl. 502—309 6 Claims

1. A foamed metallic plate catalyst body for denitration having pores with average pore diameters of about 0.1 mm to about 10 mm and a thickness of about 0.5 mm to about 20 mm and including a mixture of TiO_2 carrier and a catalytic substance supported by the foamed metallic plate body.

4,446,251

PROCESS FOR PRODUCING TWO-CARBON ATOM OXYGENATED COMPOUNDS FROM SYNTHESIS GAS WITH MINIMAL PRODUCTION OF METHANE

William J. Bartley, and Thomas P. Wilson, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 121,985, Feb. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,869, Jun. 28, 1979, abandoned. This application Mar. 17, 1982, Ser. No. 358,897
Int. Cl.[3] C07C 27/06
U.S. Cl. 518—716 5 Claims

1. In a process for the reaction of a synthesis gas containing carbon monoxide and hydrogen in the presence of a hydrogenation catalyst, the improvement for selectively producing two-carbon atom oxygenated hydrocarbon products while minimizing the production of methane which comprises continuously contacting said synthesis gas with a heterogeneous catalyst consisting of rhodium and sodium on a silica gel support at reaction conditions such that product efficiencies based on carbon consumption in excess of 10 percent are achieved and ethanol, acetic acid and acetaldehyde are formed in an amount which is at least about 50 weight percent of the two or more carbon atom compounds produced by the reaction, the concentration of sodium in said catalyst being at least 0.1 weight percent whereby the production of methane is reduced such that the carbon efficiency to methane is lower than the corresponding carbon efficiency when sodium is absent from said heterogeneous catalyst, which reaction conditions include a temperature within the range of from about 150°–450° C., a pressure within the range of from about 15–10,000 psig, and a mole ratio of hydrogen to carbon monoxide within the range of from about 20:1 to 1:200.

4,446,252

CHROMIUM OXIDE IN ION EXCHANGE RESIN

Alvin F. Beale, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 248,656, Mar. 27, 1981, Pat. No. 4,366,261. This application Jul. 30, 1982, Ser. No. 403,887
Int. Cl.[3] B01J 41/14
U.S. Cl. 521—28 6 Claims

1. A process for incorporating $Cr_2O_3.nH_2O$ into a porous resin, said process comprising
contacting the resin with an aqueous solution of water-soluble chromium III compound,
adding thereto a transient alkaline material to precipitate $Cr_2O_3.nH_2O$ in-situ in the pores of the resin, and
removing any excess soluble chromium compounds, alkaline material, and by-products from the resin.

4,446,253

PRODUCTION OF FINE-CELLED FOAMS FROM STYRENE POLYMERS

Klaus Hahn, Kirchheim; Heinz Weber, Gruenstadt; Wolfgang Guenther, Ludwigshafen; Bernhard Schillinger, Mannheim, and Reinhold Weber, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,347
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131446
Int. Cl.[3] C08J 9/00
U.S. Cl. 521—79 4 Claims

1. A process for the production of a foam by melting a styrene polymer, mixing the melt with a volatile blowing agent and a nucleating agent under superatmospheric pressure, letting the mixture down to atmospheric pressure, and cooling the foam, wherein from 0.02 to 2% by weight of the calcium salt of a long chain fatty acid, and from 0.01 to 1% by weight of a finely divided, inorganic substance having a mean pratical

size of from 0.01 to 200 μm and selected from the group consisting of magnesium oxide, zinc oxide, aluminum oxide, talc, silica or chalk, said inorganic substance being insoluble in the styrene polymer, are employed as the nucleating agent, the percentages being based on the styrene polymer.

4,446,254

CROSSLINKED POLYOLEFIN FOAM CONTAINING A HIGH CONCENTRATION OF AN INORGANIC MATERIAL AND PROCESS FOR PRODUCING THE SAME

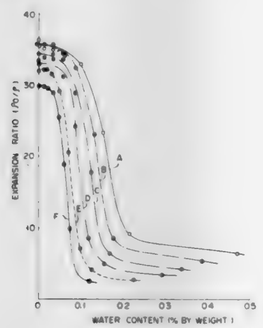
Hiroyuki Nakae, Kawasaki; Isamu Noguchi, Tokyo, and Masayuki Kondo, Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 222,153, Jan. 2, 1981, abandoned. This application Apr. 9, 1982, Ser. No. 367,045

Claims priority, application Japan, Feb. 21, 1980, 55-20763; Oct. 29, 1980, 55-151904

Int. Cl.³ C08J *9/06*

U.S. Cl. 521—92 **23 Claims**



1. A crosslinked foam having an expansion ratio of 25 to 60 comprising a composition containing 100 parts by weight of a resin component consisting of a non-crystalline ethylene-vinyl acetate copolymer having a vinyl acetate content in the range of 40 to 90% by weight or a mixture thereof with an amount not more than 80% by weight of a thermoplastic resin, and 50 to 500 parts by weight of an inorganic powder material which is at least one powder selected from the group consisting of aluminum hydroxide powder and magnesium hydroxide powder.

4,446,255

SIZED CARBON FIBERS SUITABLE FOR USE IN COMPOSITES OF IMPROVED IMPACT RESISTANCE

Lincoln Ying, Bridgewater, and Thomas P. Carter, Jr., Parsippany, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,326

Int. Cl.³ B32B *9/00;* **B05D** *3/02;* **C08K** *3/04*

U.S. Cl. 523—205 **12 Claims**

1. A carbon fiber having a coating on the surface thereof in a concentration of approximately 0.5 to 3.0 percent by weight based on the weight of the carbon fiber of a sizing composition which comprises as a first component an epoxy resin comprising the reaction product of epichlorohydrin and p-amino phenol and a second component consisting of an acrylonitrile butadiene-styrene graft copolymer.

6. A composite structure comprising a rigid polymeric matrix having carbon fibers incorporated therein which are coated on the surface thereof with approximately 0.5 to 3.0 percent by weight based on the weight of the carbon fibers of a sizing composition which comprises as a first component an epoxy resin comprising the reaction product of epichlorohydrin and p-amino phenol and a second component consisting of an acrylonitrile butadiene-styrene graft copolymer.

4,446,256

EPOXIDE RESIN AQUEOUS DISPERSANT COMPRISING THE REACTION PRODUCT OF DIISOCYANATE, DIOL AND POLYETHER GLYCOL MONOETHER

Darrell D. Hicks, Jeffersontown, Ky., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 403,897, Jul. 30, 1982, abandoned. This application May 12, 1983, Ser. No. 493,857

Int. Cl.³ C08G *18/30, 18/40, 18/58*

U.S. Cl. 523—402 **9 Claims**

1. An epoxide resin aqueous dispersant comprising the reaction product of about n+1 moles of a diisocyanate, n moles of an aromatic, aromatic-based or cycloaliphatic diol, and 2 moles of a long-chain, aliphatic polyether glycol monoether, wherein n is 1–10, and wherein the long-chain, aliphatic polyether glycol monoether is derived from an aliphatic polyether glycol having a molecular weight of about 1000 to about 14,000.

4,446,257

AQUEOUS COATING POWDER SUSPENSIONS AND THEIR PREPARATION

Petrus G. Kooijmans, and Wolfgang Kunze, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 241,152, Mar. 6, 1981, abandoned. This application May 27, 1982, Ser. No. 382,534

Claims priority, application United Kingdom, May 22, 1980, 8016917

Int. Cl.³ C08L *63/00*

U.S. Cl. 523—403 **9 Claims**

1. An aqueous coating powder suspension containing no surfactant and no addition of acid wherein the powder particles comprise an intimate mixture of binder components comprising:

(a) an epoxy resin/amine adduct which is essentially insoluble in water and having terminal amino groups and a plurality of alcoholic hydroxyl groups,

(b) a cross-linking component, and, optionally,

(c) a solid polyepoxide, said mixture having a softening point of at least 70° C. and a particle size in the suspension being essentially below 20 micrometers.

4,446,258

AQUEOUS COATING COMPRISING DISPERSIBLE EPOXY RESIN-ACID POLYMER ESTER AND DILUENT POLYMER, AND METHOD OF PREPARATION

Shaw C. Chu, Belle Mead, and Arthur T. Spencer, New Providence, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,818

Int. Cl.³ C09D *3/58*

U.S. Cl. 523—406 **33 Claims**

1. An aqueous dispersion comprising

A. an ionic polymer component containing sufficient carboxyl groups to render it self dispersible in water in neutralized form which is the reaction product of an epoxy resin containing 1,2-epoxy groups, and a preformed addition polymer containing carboxyl groups, said ionic polymer containing hydroxy ester groups from the reaction of 1,2-epoxy groups on said epoxy resin with carboxyl groups on said preformed addition polymer, and being substantially free of unreacted 1,2-epoxy groups;

B. an addition polymer different from said preformed addition polymer defined in (A) and;

C. ammonia or an organic amine neutralizing agent in an amount sufficient to render the composition stably dispersible in water.

4,446,259

COATING COMPOSITION OF A BLEND OF A GLYCIDYL ACRYLIC POLYMER AND A REACTIVE POLYSILOXANE

Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 30, 1982, Ser. No. 430,840

Int. Cl.³ C08L *27/10, 63/10, 83/06*

U.S. Cl. 523—408 **13 Claims**

1. A coating composition comprising about 10–80% by weight of a film forming binder and 20–90% by weight of a liquid carrier selected from the group consisting of organic solvent for the binder, aqueous liquid or a blend of solvent and nonsolvent for the binder; wherein the binder consists essentially of a blend of about

a. 20–90% by weight, based on the weight of the binder, of an acrylic polymer consisting essentially of about 10–50% by weight, based on the weight of the acrylic polymer, of polymerized glycidyl methacrylate or glycidyl acrylate and 50–90% by weight of other polymerized ethylenically unsaturated monomers selected from the group consisting of alkyl methacrylate having 1–12 carbon atoms, alkyl acrylate having 1–12 carbon atoms, styrene, alkyl substituted styrenes and mixtures thereof and wherein the acrylic polymer has a weight average molecular weight of about 10,000–100,000, a number average molecular weight of about 2,000–20,000 and a molecular weight distribution of about 2–5 and a glass transition temperature of about 20°–50° C.;

b. 10–80% by weight, based on the weight of the binder, of a crosslinkable polysiloxane having the following units:



where R and R^1 are individually selected from the group consisting of alkyl group having 1–6 carbon atoms, hydroxyl group and phenyl group and contains sufficient hydroxyl groups to provide a silanol content of about 0.5–7% by weight.

4,446,260

WATER DILUTABLE EPOXY COATING COMPOSITION

Richard A. Woods, Charlton, and Rajesh R. Mehta, Forest Gate, both of England, assignors to International Paint Public Limited Company, London, England

Filed Jun. 29, 1982, Ser. No. 393,512

Claims priority, application United Kingdom, Jul. 24, 1981, 8122992; Oct. 16, 1981, 8131231

Int. Cl.³ C08G *59/50, 59/68, 59/02*

U.S. Cl. 523—409 **10 Claims**

1. A process for preparing a water dispersible coating composition comprising:

(A) reacting together at elevated temperature (a) 40–90 percent by weight of an epoxy resin composition of average epoxy functionality 1.0 to 2.0 epoxide groups per molecule and average molecular weight 2000 to 12,000 and (b) 10–60 percent by weight of a polymer containing carboxylic acid groups which is an addition copolymer of 10–85 percent by weight of an olefinically unsaturated carboxylic acid and 90–15 percent by weight of at least one olefinically unsaturated comonomer, the ratio of carboxylic acid groups in (b) to epoxide groups in (a) being from 1.5:1 to 20:1, and

(B) carrying out said reaction in the presence of 0.5 to 3.0 percent by weight of an amine in a mixture of a water miscible organic solvent with 5 to 30 percent by weight of water, the percentages of amine and of water being based on the combined weight of epoxy resin (a) and copolymer (b).

4,446,261

PROCESS FOR PREPARATION OF HIGH WATER-ABSORBENT POLYMER BEADS

Harumasa Yamasaki, and Shoichiro Harada, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,496

Claims priority, application Japan, Mar. 25, 1981, 56-43488

Int. Cl.³ C08L *5/00;* **B01J** *31/06*

U.S. Cl. 524—40 **2 Claims**

1. A process for preparing beads consisting of water-insoluble, crosslinked polymer, which beads have a particle size of from 100 to 1000 microns and have an absorbent capacity for physiological saline in the range of from 30 to 150 grams per one gram of the dried polymer, which consists of the steps of: dispersing droplets of (1) an aqueous solution consisting of water-soluble, ethylenically unsaturated monomer, from 0.01 to 5% by weight, based on the weight of said monomer, of water-soluble crosslinking agent, a water-soluble radical polymerization initiator, and the balance is water, said aqueous solution containing from 30 wt.% up to the saturation concentration of said monomer, into (2) a liquid dispersion medium having a temperature of higher than 40° C., said liquid dispersion medium consisting of an oil material selected from the group consisting of hydrocarbons having from 6 to 10 carbon atoms and halogenated aromatic hydrocarbons, and said oil material having dissolved therein from 0.05 to 10% by weight, based on the weight of said oil material, of a protective colloid selected from the group consisting of cellulose esters and cellulose ethers which are not soluble in said oil material at room temperature but are soluble in said oil material at a temperature of higher than 40° C., whereby to form a W/O suspension of said droplets in said liquid dispersion medium, the volumetric ratio of said dispersion medium/said aqueous solution being in the range of 1:1 to 5:1; suspension polymerizing said monomer, at a temperature higher than 40° C. in the presence of said crosslinking agent and said radical polymerization initiator, whereby to form said beads; and then recovering said beads from said liquid dispersion medium.

4,446,262

PROTECTION FROM ULTRAVIOLET LIGHT BY USE OF NOVEL ULTRAVIOLET ABSORBER

Nobuya Okumura, Ehime; Tetsuo Ichihashi, Matsuyama; Shunichi Matsumura, and Hiroo Inata, both of Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

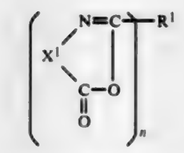
Filed Jun. 16, 1982, Ser. No. 389,117

Claims priority, application Japan, Jun. 19, 1981, 56-93722

Int. Cl.³ C08K *5/35*

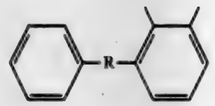
U.S. Cl. 524—89 **28 Claims**

1. A photo-stabilized polymer composition comprising a polymer and as an ultraviolet absorber, at least one compound selected from the group consisting of cyclic imino esters represented by the following formula (I)


(I)

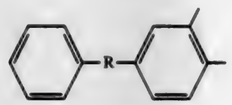
wherein X^1 represents 1,2-phenylene, 1,2-naphthylene, 2,3-naphthylene, a group represented by the formula (a)

(a)



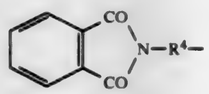
wherein R is —O—, —CO—, —S—, —SO_2—, —CH_2—, —$CH_2)_2$ or —$C(CH_3)_2$—,
or a group represented by the formula (b)

(b)



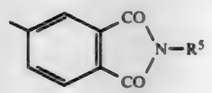
wherein R is as defined above,
n is 1, 2 or 3,
R^1 represents a hydrocarbon residue having a valence of n, or
when n is 1, R^1 further represents a residue selected from the group consisting of a group represented by the formula (c)

(c)



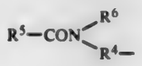
wherein R^4 represents an alkylene of 2 to 10 carbon atoms, phenylene or naphthylene,
a group of the formula (d)

(d)



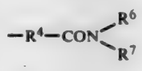
wherein R^5 represents an alkyl having 1 to 10 carbon atoms, a phenyl or a naphthyl,
a group of the formula (e)

(e)



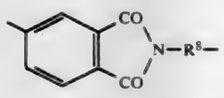
wherein R^4 and R^5 are as defined above, and R^6 is hydrogen atom or any one of the groups defined for R^5,
and a group represented by the formula (f)

(f)



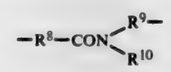
wherein R^4 and R^6 are as defined above, and R^7 is hydrogen atom or any one of the groups defined for R^5,
and when n is 2, R^1 further represents a direct bond, a residue selected from the group consisting of a group represented by the formula (g)

(g)



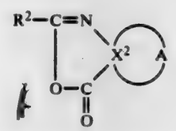
wherein R^8 is any one of the groups defined for R^4,
and a group represented by the formula (h)

(h)



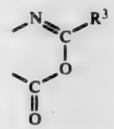
wherein R^8 is as defined above, R^9 is any one of the groups defined for R^4, and R^{10} is any one of the groups defined for R^6,
wherein each of the above groups defined for X^1 and R^1 may be substituted by a substituent selected from the group consisting of alkyl groups having 1 to 10 carbon atoms, aryl groups having 6 to 12 carbon atoms, cycloalkyl groups having 5 to 12 carbon atoms, aralkyl groups having 8 to 20 carbon atoms, alkoxy groups having 1 to 10 carbon atoms, carboacyl groups having 2 to 10 carbon atoms, halogen atoms and nitro groups,
and cyclic imino esters represented by the following formula (II)

(II)



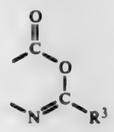
wherein A represents a group of the following formula (II)-a

(II)-a

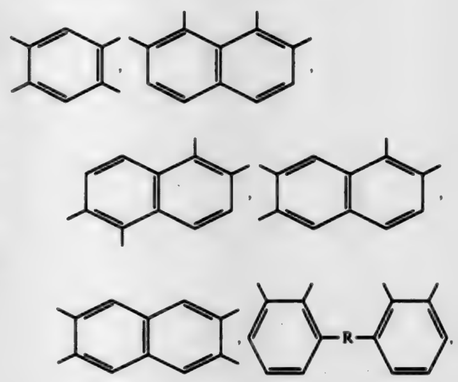


or a group of the following formula (II)-b

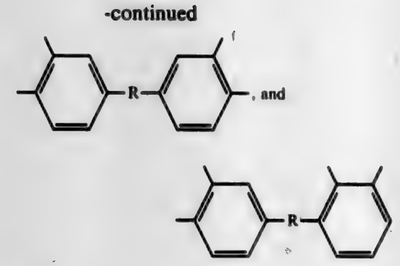
(II)-b



wherein R^2 and R^3 are identical or different and each represents a monovalent hydrocarbon residue; and
X^2 represents a tetravalent aromatic residue selected from the groups represented by the formulae:



-continued



wherein R is as defined above,
in the unreacted state.

4,446,263

UV-STABILIZATION OF OXYMETHYLENE COPOLYMERS

Walter R. Bryant, Bishop, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 28, 1982, Ser. No. 453,997
Int. Cl.[3] **C08K** *5/34, 5/48, 5/13*
U.S. Cl. 524—100 **7 Claims**

1. A molding composition which exhibits desirable weathering stability comprising, based on the total composition:
(a) an oxymethylene copolymer having a melting point of at least about 150° C. and having at least one chain containing from about 85 to 99.6 mole percent of oxymethylene units interspersed with about 0.4 to 15 mole percent of oxyethylene units;
(b) about 0.1 to 1.0 percent by weight of 1,6-hexamethylene bis-(3,5-di-tert-butyl)-4 hydroxy hydrocinnamate;
(c) about 0.015 to 0.4 percent by weight of 2,4,6-triamino-sym-triazine;
(d) about 0.1 to 0.75 percent by weight of bis(1,2,2,6,6-pentamethyl-4-piperidinyl) ((3,5-bis(1,1-dimethylethyl-4-hydroxyphenol)methyl)) butyl propanedioate; and
(e) about 0.25 to 1.0 percent by weight of 2-hydroxy-4-n-octoxy-benzophenone.

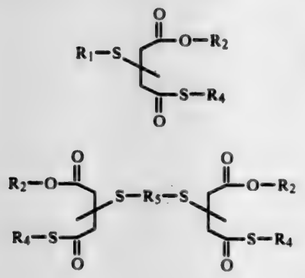
4,446,264

SYNERGISTIC ANTIOXIDANT MIXTURES

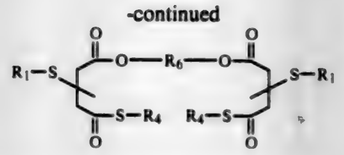
Kirkwood S. Cottman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 15, 1982, Ser. No. 368,604
Int. Cl.[3] **C07C** *153/07, 153/09;* **C08K** *5/37*
U.S. Cl. 524—109 **16 Claims**

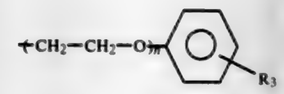
1. A composition of matter which comprises an organic material prepared by reacting maleic anhydride, maleic acid or their esters with thiols; said organic material being defined by one of the following structural formulae:



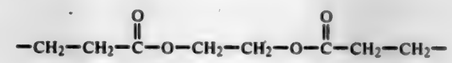
-continued



wherein R_1 is selected from the group comprising alkyl of 1 to 20 carbon atoms, aralkyl of 7 to 10 carbon atoms, and phenyl; R_2 is hydrogen or a radical of the formula:



wherein n is a real number from 1 to 30 and R_3 is hydrogen or an alkyl radical of 1 to 12 carbon atoms; R_4 is an alkyl radical of 1 to 20 carbon atoms; R_5 is an alkylene radical of 2 to 10 carbon atoms or the radical of the formula:



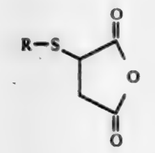
and R_6 is a radical selected from the group comprising alkylene of 2 to 10 carbon atoms and a radical of the formula:

$$—CH_2—CH_2—O)_mCH_2—CH_2—$$

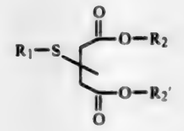
wherein n is 0 or a real number from 1 to 10.

4. A stable organic composition which is prepared by mixing an organic material selected from the group consisting of natural and synthetic polymers and oils with at least one compound expressed by the general formulae I through VII:

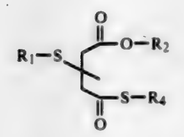
(I)



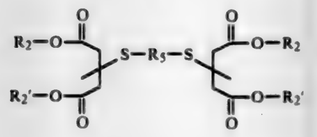
(II)



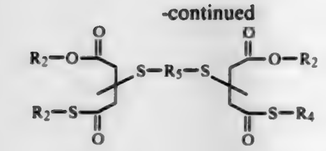
(III)



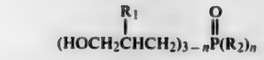
(IV)



-continued

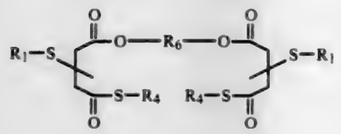


(V)

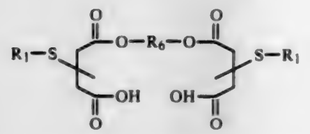


wherein R_1 may be the same or a different radical selected from the group consisting of hydrogen and the methyl radical, R_2 is a radical of 4 to 8 carbon atoms and n is either zero or one; and said polyphenylene ether-styrene resin having a UL-94 rating of V-1 or better, a heat distortion temperature greater than about 92° C. and a melt viscosity at 260° C. less than 200 pascal second.

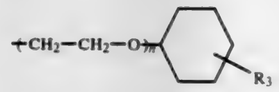
(VI)



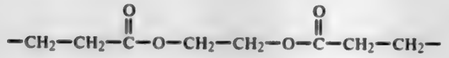
(VII)



wherein R is selected from the group comprising alkyl of 1 to 20 carbon atoms, aralkyl of 7 to 10 carbon atoms, phenyl; and R_1 is selected from the group comprising alkyl of 1 to 20 carbon atoms, aralkyl of 7 to 10 carbon atoms and phenyl; R'_2 is selected from the group comprising alkyl of 1 to 20 carbon atoms and a radical of the formula:



wherein n is a real number from 1 to 30 and R_3 is hydrogen or an alkyl radical of 1 to 12 carbon atoms; R_2 is selected from the group of R'_2 and hydrogen; and R_4 is an alkyl radical of 1 to 20 carbon atoms; and R_5 is an alkylene radical of 2 to 10 carbon atoms or the radical:



and R_6 is a radical selected from the group comprising alkylene of 2 to 10 carbon atoms and a radical of the formula:

$$-CH_2-CH_2-O)_mCH_2-CH_2-$$

wherein m is 0 or a real number from 1 to 10; together with at least one phenolic antioxidant.

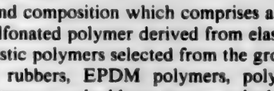
4,446,265

FLAME RETARDANT POLYPHENYLENE ETHER-STYRENE THERMOPLASTIC RESIN COMPOSITIONS

Diza P. Braksmayer, Cranbury, N.J., and Ronald F. Lovenguth, Doylestown, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 1, 1982, Ser. No. 344,458
Int. Cl.³ C08K 5/52, 5/53
U.S. Cl. 524—139 **14 Claims**

1. A polyphenylene ether-styrene resin composition containing from about 30 to about 40 weight percent of a polyphenylene ether and from about 70 to about 60 weight percent of a polystyrene, said polyphenylene ether-styrene resin composition being rendered flame retardant by having incorporated therewith about 100 parts thereof, from about 4 to about 7 parts by weight of a triaryl phosphate ester, and from about 0.5 to about 3 parts by weight of a 3-hydroxyalkyl phosphine oxide having the formula:



wherein R_1 may be the same or a different radical selected from the group consisting of hydrogen and the methyl radical, R_2 is a radical of 4 to 8 carbon atoms and n is either zero or one; and said polyphenylene ether-styrene resin having a UL-94 rating of V-1 or better, a heat distortion temperature greater than about 92° C. and a melt viscosity at 260° C. less than 200 pascal second.

4,446,266

N,N'-BIS-SALICYLOYL-HYDRAZINE AS A METAL DEACTIVATOR

Wolfgang von Gentzkow, Kleinsendelbach, and Roland Rubner, Röttenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,409
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2833870
Int. Cl.³ C08K 5/25
U.S. Cl. 524—193 **3 Claims**

1. In a method for stabilizing organic materials in contact with or containing copper or copper ions by including therein a metal deactivator, the improvement comprising utilizing as said metal deactivator N,N'-bis-salicyloyl hydrazine prepared by the reaction of a salicylic-acid alkyl ester and a compound selected from the group consisting of hydrazine and salicylic-acid hydrazide.

4,446,267

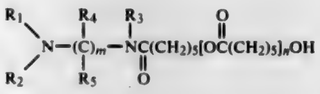
SULFONATED POLYMER AND COMPOSITIONS THEREOF

Robert D. Lundberg, Bridgewater, and Warren A. Thaler, Aberdeen, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 332,850, Dec. 21, 1981, Pat. No. 4,421,898. This application Sep. 29, 1982, Ser. No. 426,666
Int. Cl.³ C08K 5/09, 5/21; C08L 51/08, 53/00
U.S. Cl. 524—211 **5 Claims**

1. A blend composition which comprises a blend of:

(a) A sulfonated polymer derived from elastomeric or thermoplastic polymers selected from the group consisting of Butyl rubbers, EPDM polymers, polystyrene, poly-t-butylstyrene, polychlorostyrene, polyalpha methyl styrene and interpolymers of the aforementioned with acrylonitrile or vinyl toluene, which has about 10 to about 200 meq. of sulfonate groups per 100 grams of said sulfonated polymer, said sulfonated group being neutralized with a polycaprolactone polymer having the formula:



wherein n is 1 to 500, m is 1 to 20; R_1 or R_2 are selected from the group consisting of alkyl and cycloalkyl groups having about 1 to about 20 carbon atoms, and aryl groups; R_3 is selected from the group consisting of hydrogen, alkyl and cycloalkyl groups having about 1 to about 20 carbon atoms and aryl groups; R_4 and R_5 are selected from the group consisting of hydrogen, alkyl, cycloalkyl and aryl groups and wherein the polycaprolactone polymer has a number average molecular weight of about 200 to about 50,000 and a melting point from below room temperature to about 55° C.; and

(b) At least about 3 parts by weight to less than 60 parts by weight of a preferential plasticizer per 100 parts by weight of the sulfonated polymer, wherein the preferential plasticizer is selected from the group consisting of carboxylic acids having at least 8 carbon atoms, metallic salts of said carboxylic acids, urea, thioureas, amides, ammonium and amine salts of said carboxylic acids, amines, a combination of a carboxylic acid and a metallic salt of said carboxylic acid, wherein a metal ion of said metallic salt is selected from the group consisting of aluminum, antimony iron, lead and Groups I-A, II-A, I-B and II-B of the Periodic Table of Elements, and mixtures thereof.

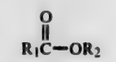
4,446,268

COMPOSITIONS

Garland G. Lee, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jul. 26, 1982, Ser. No. 402,209
Int. Cl.³ C08K 5/10; C08L 69/00
U.S. Cl. 524—315 **11 Claims**

1. A composition comprising a thermoplastic resin selected from the group consisting of aromatic carbonate, polysulfone, polyethersulfone, polyamide, polysulfide, polyurethane, polyvinylhalide, acrylonitrile butadiene styrene, butadiene styrene or methacrylate butadiene styrene in admixture with an injection mold releasing effective amount of an ester of the formula



wherein R_1 is alkyl of from one to about five carbon atoms, inclusive; and R_2 is alkyl of from about ten to about thirty carbon atoms, inclusive or monoalkenyl of from about ten to about thirty carbon atoms, inclusive, with the provisos that the unsaturation is not on the carbon attached to the oxygen and the ester is essentially non volatizable under processing conditions.

6. A composition in accordance with claim 1 wherein the thermoplastic resin is an aromatic carbonate polymer.

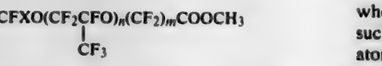
4,446,269

SOLVENTS OF CARBOXYL ESTER COMPOUNDS AND FLUOROPOLYMERS

Raimund H. Silva; Paul R. Resnick, both of Wilmington, Del., and Roger A. Smith, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 176,595, Aug. 8, 1980, Pat. No. 4,348,310, which is a continuation-in-part of Ser. No. 079,173, Sep. 26, 1979, abandoned. This application Mar. 3, 1982, Ser. No. 354,194
The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.
Int. Cl.³ C08K 5/10
U.S. Cl. 524—316 **8 Claims**

1. A solution of fluoropolymer in halogenated solvent wherein: the fluoropolymer is present in an amount greater than 0.5 percent, by weight, of the solution at 25° C.; the solvent is



wherein X is F, Cl, Br, and I; n is 0, 1, and 2; m is 1, 2, and 3; and the fluoropolymer is a copolymer of tetrafluoroethylene and perfluorinated sulfonyl fluoride- or carboxyl-containing vinyl monomer having an equivalent weight of greater than 1000.

4,446,270

VULCANIZING FLUOROCARBON ELASTOMERS WITH ONE OR A MIXTURE OF AROMATIC COMPOUNDS HAVING HYDROXYL AND OXYALLYL GROUPS

Richard A. Guenthner, White Bear Lake, and David A. Stivers, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 443,576, Nov. 22, 1982, abandoned. This application Aug. 8, 1983, Ser. No. 520,303
Int. Cl.³ C08L 27/22, 27/16
U.S. Cl. 524—433 **17 Claims**

1. A composition comprising fluorocarbon elastomer gum and as a vulcanizing agent therefor a composition comprising one or a mixture of aromatic compounds having hydroxyl and oxyallyl groups directly bonded to aromatic ring-carbon atoms.

4,446,271

BODY SOLDER OF POWDERED ALUMINUM AND A POLYESTER

Paul L. Heater, Jr., Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 1, 1982, Ser. No. 432,205
Int. Cl.³ C08K 3/08
U.S. Cl. 524—441 **1 Claim**

1. A body solder composed of a blend of 20 to 70 percent by weight of a powdered aluminum having a particle size of from 0.2 to 150 microns and a thermoplastic polyester having a melting point of 200° to 220° C., said polyester being a copolyester of the phthalates and contains from 10 to 35 percent by weight of dimerate.

4,446,272

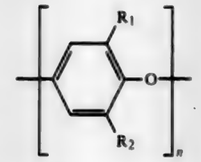
RESIN COMPOSITION HAVING NICE COLOR TONE AND HIGH CRACK-RESISTANCE

Kunio Fukuda; Kichiya Tazaki; Akihisa Takano, and Yuji Kusumi, all of Kanagawa, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 110,752, Jan. 8, 1980, abandoned. This application Sep. 10, 1981, Ser. No. 300,748
Claims priority, application Japan, Jan. 22, 1979, 54-4741
Int. Cl.³ C08K 5/03; C08L 71/04
U.S. Cl. 524—465 **6 Claims**

1. A resin composition having a nice color tone and high crack-resistance as well as flame-retardancy, consisting essentially of

(A) 100 weight parts of a resin consisting of (1) a graft-copolymer in which 20-200 weight parts of a vinyl aromatic compound are graft-copolymerized onto 100 weight parts of polyphenylene ether, represented by the formula



wherein each of R_1 and R_2 represents a monovalent residue such as the same or different alkyl group having 1 to 4 carbon atoms, aryl group, halogen and hydrogen, and n represents polymerization degree of about 50 to about 250 and (2) rubber-reinforced vinyl aromatic polymer, said polyphenylene ether content being 5-70 wt. % (based on the weight of the resin part),

(B) 1-30 weight parts of a halogenated aromatic compound and

(C) 0.5-20 weight parts of a non-crystalline ethylene-propylene copolymer.

4,446,273

AQUEOUS DISPERSIONS OF VINYLIDENE CHLORIDE RESINS

Kazuhiko Hiyoshi; Norio Matsuura; Michiharu Matsuguchi, all of Nobeoka; Norio Onofusa, and Tadao Nishikage, both of Yokohama, all of Japan, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 270,060, Jun. 3, 1981, abandoned. This application Sep. 8, 1982, Ser. No. 415,853

Int. Cl.³ C08L *31/00*

U.S. Cl. 524—556 **2 Claims**

1. An aqueous dispersion of a vinylidene chloride copolymer resin the copolymer resin consisting essentially of: (a) from about 83 to about 93 percent by weight, based on solid content of the aqueous dispersion, of vinylidene chloride; (b) from about 17 to about 7 percent by weight, based on the solid content of the aqueous dispersion, of one or more ethylenically unsaturated monomers copolymerizable therewith, the ethylenically unsaturated monomers being selected from the group consisting of methyl acrylate, ethyl acrylate, acrylonitrile, methyl methacrylate, ethyl methacrylate, and methacrylonitrile; and (c) from about 0.5×10^{-4} to about 4×10^{-4} mol of unsaturated carboxylic acid units in terms of the carboxyl group content per gram of solids in the aqueous dispersion, said unsaturated carboxylic acid having a partition coefficient of 1 or more in a vinylidene chloride-water system at 30° C. with the further limitation that out of said unsaturated carboxylic acid content the quantity of the unsaturated carboxylic acid existing in a form titratable with a 1/20 N aqueous solution of sodium hydroxide does not exceed either about 1.5×10^{-4} mol in terms of the carboxyl group content per gram of the solids in the aqueous dispersion or 60 percent of the total carboxyl group content in said aqueous dispersion, whichever is smaller.

4,446,274

VINYL ACETATE-ETHYLENE COPOLYMER EMULSION AND AQUEOUS EMULSION ADHESIVE COMPOSITION CONTAINING THE EMULSION

Haruo Okazaki, Ichihara, and Takashi Ohkubo, Chiba, both of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 277,451, Jun. 25, 1981, abandoned. This application Feb. 16, 1983, Ser. No. 467,057

Int. Cl.³ C08L *33/00*

U.S. Cl. 524—812 **7 Claims**

1. An emulsion of a quarterly vinyl acetate-ethylene copolymer emulsified in an aqueous medium, said quarterly copolymer consisting of

100 parts, by weight, of a vinyl acetate-ethylene copolymer prepared from 95 to 60 parts, by weight, of vinyl acetate monomer (I) and 5 to 40 parts, by weight, of ethylene monomer (II);

0.5 to 7 parts, by weight, of an acid monomer (III) selected from the group consisting of monobasic unsaturated carboxylic acids each having 3 to 17 carbon atoms, dibasic unsaturated carboxylic acids each having 3 to 17 carbon atoms, anhydrides of said dibasic unsaturated carboxylic acids and semi-esters of said dibasic unsaturated carboxylic acids each having an alkyl chain of the alcohol part having 1 to 10 carbon atoms, and mixtures thereof; and

0.5 to 15 parts, by weight, of a substantially water-insoluble acrylamide compound (IV) represented by the general formula of

$CH_2{=}CHCONHCH_2OR$; wherein R is an alkyl group having 4 to 10 carbon atoms.

4,446,275

SORBENT FOR SACCHARIDES, GLYCOPROTEINS AND POLYESTERS COMPRISING A LECTIN COVALENTLY BONDED WITH A VEHICLE AND METHOD FOR PREPARATION THEREOF

Karel Filka; Jiri Coupek, and Jan Kocourek, all of Prague, Czechoslovakia, assignors to Prirodovedecka fakulta University Karlovy, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 143,752, Apr. 25, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 369,232

Int. Cl.³ C12N *11/16, 11/12, 11/06*

U.S. Cl. 525—54.1 **1 Claim**

1. Sorbent for saccharides, glycoproteins and polymers comprising a lectin covalently bonded with a vehicle selected from the groups consisting of (a) oxidized glycosylated hydroxyethylacrylates, (b) oxidized glycosylated hydroxyalkyl methacrylates, and (c) oxidized glycosylated polyvinyl alcohol.

4,446,276

AGEING-RESISTANT, PROCESSING-STABLE, HIGH STRENGTH MIXTURES BASED ON THERMOPLASTIC POLYESTERS

Rudolf Binsack, Krefeld; Christian Lindner, Cologne; Dieter Rempel, and Karl-Heinz Ott, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,788

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117052

Int. Cl.³ C08L *67/02*

U.S. Cl. 525—64 **10 Claims**

1. A mixture comprising:

(A) from 55 to 99% by weight, based on the total of components A and B, of at least one thermoplastic polyester based on aromatic dicarboxylic acids, and

(B) from 1 to 45% by weight, based on the total of components A and B, of a pulverulent graft polymer having an average particle size of 0.01 to 10 mm and comprising

(a) from 80 to 98% by weight, based on B, of an acrylate rubber having a glass transition temperature of below 0° C. as the graft base, and

(b) from 2 to 20% by weight, based on B, of units of at least one polymerisable ethylenically unsaturated monomer which does not form a stable emulsion, the homo- or copolymers of which, produced in the absence of (a), have a glass transition temperature of above 25° C., as graft monomers,

characterised in that the graft polymer B is obtainable by grafting monomer (b) on the completely broken latex of (a) suspended in water, in the absence of a suspending agent.

4,446,277

THERMOPLASTIC MOLDING MATERIAL

Franz Brandstetter, Neustadt; Adolf Echte, Ludwigshafen; Franz Haaf, Bad Durkheim; Juergen Hambrecht, Heidelberg, and Herbert Naarmann, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 338,104, Jan. 8, 1982, abandoned. This application May 23, 1983, Ser. No. 497,150

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102251

Int. Cl.³ C08L *61/04*

U.S. Cl. 525—68 **2 Claims**

1. A thermoplastic molding material based on a mixture of an impact-resistant styrene polymer and a polyphenylene ether, wherein the impact-resistant styrene polymer contains, as its soft component, a graft copolymer consisting essentially of styrene grafted to a copolymer of an alkyl acrylate, where the alkyl is of 4 to 8 carbon atoms, and 0.5 to 10% by weight, based on total monomers, of a copolymerizable polyfunctional monomer containing at least two copolymerizable ethylenic double bonds which are not 1,3-conjugated, the soft component having a mean particle diameter of from 0.3 to 1.0 μm.

4,446,278

POLYPHENYLENE OXIDE BLENDS

George R. Loucks, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 440,908, Nov. 12, 1982, abandoned, which is a continuation of Ser. No. 264,484, May 18, 1981, abandoned. This application May 12, 1983, Ser. No. 493,862

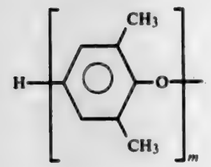
Int. Cl.³ C08L *53/00*

U.S. Cl. 525—92 **9 Claims**

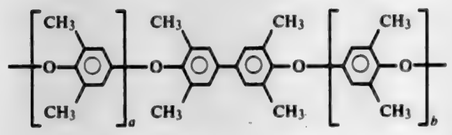
1. A polymer blend comprising:

(I) about 1-99 parts by weight of a block copolymer containing

(i) about 5-95 parts by weight of polyphenylene oxide segments having at least one of the formulas

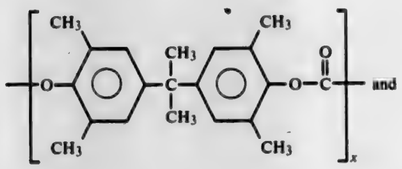


wherein m is at least 10, and

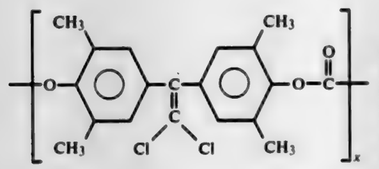


wherein either a or b is at least 1 and a+b is at least 10, and

(ii) about 95-5 parts of sterically hindered aromatic polycarbonate segments having at least one of the formulas



and



wherein x is at least 30; and

(II) about 99-1 parts of a vinyl aromatic resin.

4,446,279

COMPOSITIONS BASED ON A POLYSILOXANE AND AN ORGANO TITANATE AND THE USE THEREOF IN THE PREPARATION OF WATER CURABLE, SILANE MODIFIED ALKYLENE-ALKYL ACRYLATE COPOLYMERS

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

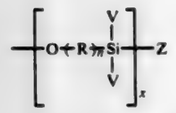
Continuation-in-part of Ser. No. 351,212, Feb. 22, 1982, which is a continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, Pat. No. 4,328,323, which is a continuation-in-part of Ser. No. 70,785, Aug. 19, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Feb. 23, 1983, Ser. No. 467,318

The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—106 **32 Claims**

11. A composition, capable of reaction to produce a water curable, silane modified alkylene-alkyl acrylate copolymer comprising an alkylene-alkyl acrylate copolymer, an organo titanate in an amount sufficient to inhibit the adverse effects of moisture and a polysiloxane containing the repeating unit:



wherein R is a hydrocarbon radical or an oxy substituted hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is a hydrolyzable group, n is an integer having a value of 1 to 18 inclusive and x is an integer having a value of at least 2.

4,446,280

CROSSLINKING COMPOSITION CONTAINING ACTIVATED CARBOXYLIC ESTER POLYMER AND AMINE-TERMINATED TRIAZINE RESIN

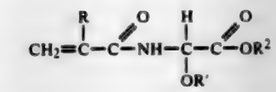
Susan M. Cady, Yardley, Pa.; Werner J. Blank, Wilton, and Peter J. Schirmann, Fairfield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 12, 1982, Ser. No. 377,504

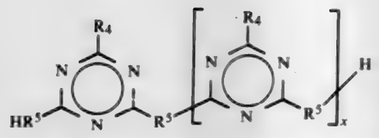
Int. Cl.³ C08F *20/58;* **C08L** *35/00*

U.S. Cl. 525—186 **17 Claims**

1. A crosslinking coating composition comprising (1) a vinyl polymer containing from about 1 to 100 weight percent of repeating units derived from a monomer of the formula



wherein the R group is selected from hydrogen and methyl, R′ is selected from hydrogen, alkyls of 1-6 carbon atoms, cycloalkyls of 5-6 carbon atoms, and 2-hydroxyalkyls of 2-6 carbon atoms, and R^2 is selected from alkyls of 1-6 carbon atoms, cycloalkyls of 5-6 carbon atoms, and 2-hydroxy alkyls of 2-6 carbon atoms, and the balance of repeating units from one or more copolymerizable ethylenically-unsaturated comonomers and (2) as crosslinking agent an effective amount of a mixture of amine-terminated triazine resins of the average formula



wherein R^4 is hydrogen, NH_2, R_5H, group an aromatic, or aliphatic group of 1–18 carbon atoms, a cycloaliphatic group of 5–6 carbon atoms, or hydroxyalkylamine, R^5 is individually, a bridging unit derived from primary diamines selected from aliphatic of 2–14 carbon atoms, aromatic of 6–15 carbon atoms, cycloaliphatic of 5–15 carbon atoms, or $—NH(CH_2)_3—O—(CH_2)_y—O(CH_2)_3NH—$, y is an integer of 2–12, and x is an integer of 0–10.

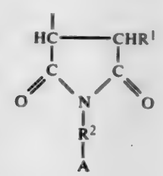
4,446,281

MODIFIED CIS-1,4-POLYISOPRENE RUBBER, A PROCESS FOR MANUFACTURING THE SAME, AND A COMPOSITION CONTAINING THE SAME

Hideo Takamatsu, and Shobu Minatono, both of Ibaraki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 19, 1982, Ser. No. 379,713
Claims priority, application Japan, May 26, 1981, 56-80641
Int. Cl.³ C08C *19/28*
U.S. Cl. 525—282 **10 Claims**

1. A modified cis-1,4-polyisoprene rubber, comprising: a solid synthetic cis-1,4-polyisoprene rubber having a side chain functional group of the formula (I) incorporated into said synthetic rubber, said modified rubber containing at least 0.01 mole of said functional group per 100 recurring units of isoprene monomer in said synthetic rubber:



(I)

wherein R^1 represents hydrogen, or a covalent bond with a rubber molecule, R^2 represents a hydrocarbon residue having not more than 20 carbon atoms, optionally containing an oxygen or sulfur atom in its principal chain, and A represents a dihydrocarbylamino residue having not more than 20 carbon atoms, or a heterocyclic residue having not more than 20 carbon atoms and containing at least one tertiary nitrogen atom alone as a hetero nitrogen atom.

5. A process for manufacturing modified cis-1,4-polyisoprene rubber, which comprises:

adding a compound selected from the group consisting of maleic anhydride, maleic acid, maleic acid monoesters and maleic acid diesters to solid synthetic cis-1,4-polyisoprene rubber having a molecular weight ranging from 200,000 to 2,000,000 in the quantity of at least 0.01 mole per 100 recurring units of isoprene monomer in said synthetic rubber;

reacting the resulting product with an amine of formula (II)

$$H_2N—R^2—A \quad \text{(II)}$$

wherein R^2 represents a hydrocarbon residue having not more than 20 carbon atoms, optionally containing an oxygen or sulfur atom in its principal chain, and A represents a dihydrocarbylamino residue having not more than 20 carbon atoms, or a heterocyclic residue having not more than 20 carbon atoms and containing at least one tertiary nitrogen atom alone as a hetero nitrogen atom; and

subjecting the reaction product to dehydration or dealcoholization to form an imide ring.

4,446,282

HIGH GREEN STRENGTH EMULSION RUBBERS BY THE USE OF HALF-ESTERS OF UNSATURATED DICARBOXYLIC ACIDS

George Jalics, Akron, Ohio, assignor to Goodyear Tire and Rubber Co., Akron, Ohio

Filed May 27, 1982, Ser. No. 382,543
Int. Cl.³ C08F *8/44*
U.S. Cl. 525—327.7 **17 Claims**

1. A process for improving the green strength of elastomers, comprising:

copolymerizing a monomer or monomers with from about 1 to 10 parts by weight per 100 parts of said monomer of a acid derivative, said monomer or monomers selected from the group consisting of (a) dienes having from 4 to 12 carbon atoms, (b) a diene having from 4 to 12 carbon atoms and a vinyl substituted aromatic having from 8 to 12 carbon atoms, (c) butadiene and acrylonitrile and optionally one or more monomers selected from the group consisting of acrylic, methacrylic and itaconic acids, and (d) polychloroprene, said derivative being a half ester or a half amide and being substantially hydrophobic, said derivative being the reaction product of (1) an alcohol or a saturated amine and (2) a dicarboxylic acid or acid anhydride; and

compounding said copolymer with between 1 and 5 parts of a divalent metallic salt selected from the group consisting of salts of zinc, magnesium and calcium.

4,446,283

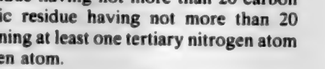
CROSSLINKABLE POLYETHYLENE RESIN COMPOSITION

Shuhei Doi; Tsutomu Isaka, both of Yokkaichi, and Shinichiro Iida, Mie, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,574
Claims priority, application Japan, Jun. 16, 1981, 56-92593
Int. Cl.³ C08G *77/20*
U.S. Cl. 525—344 **9 Claims**

1. A crosslinkable polyethylene resin composition which comprises:

a component (A) which is a copolymer consisting essentially of ethylene and an unsaturated silane compound represented by the following formula,



wherein, R is hydrogen or CH_3 and which has been prepared by copolymerization of monomers consisting essentially of ethylene and the unsaturated silane compound under a pressure of 500 to 4,000 kg./cm.² at a temperature of 100° to 400° C. in the presence of a radical initiator; and

a component (B) which is a silanol condensation catalyst, the quantity thereof being in the range of 0.001 to 10% by weight of the total weight of the components (A) and (B).

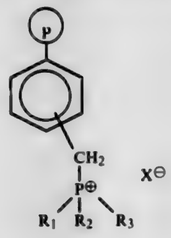
4,446,284

METHOD FOR PREPARING A POLYMER CONTAINING PENDANT UNSATURATION

Dane K. Parker, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 28, 1982, Ser. No. 383,046
Int. Cl.³ C08F *8/28, 8/40*
U.S. Cl. 525—383 **5 Claims**

1. A process for producing a polymer that contains pendant unsaturated functionality which comprises: (a) reacting a polymer of the general structural formula:



(I)

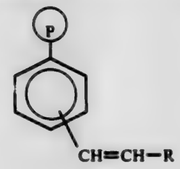
wherein

P is selected from the group consisting of homopolymers of vinylbenzylchloride, vinylbenzylchloride/styrene/-divinylbenzene terpolymers, butadiene/styrene/vinylbenzylchloride terpolymers, vinylbenzylchloride/-butadiene/acrylonitrile polymers, acrylonitrile/styrene/-vinylbenzylchloride terpolymers and isoprene/vinylbenzylchloride copolymers,

and wherein $X^{\ominus}$ is a halogen radical and R_1, R_2, and R_3 are the same or different radicals selected from the group comprised of phenyl or substituted phenyl radicals; (b) with an aldehyde of the structural formula:

$$R—CHO \quad \text{(II)}$$

wherein R is a hydrocarbon radical selected from the group consisting of aliphatic, cycloaliphatic, aromatic, aralkyl, heterocyclic, alkylene, polycyclic, cycloalkylene, alkylcycloalkylene, organometallic and polyaromatic radicals with the proviso that R may not contain an alkali ionizable functionality, (c) in the presence of an aqueous alkali metal base to yield a compound of the structural formula:



(III)

4,446,285

RUBBERY POLYCARBONATES

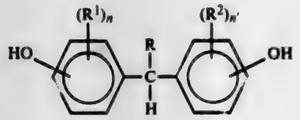
Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 6, 1982, Ser. No. 447,030
Int. Cl.³ C08L *69/00, 67/02*
U.S. Cl. 525—439 **95 Claims**

1. Thermoplastic resins exhibiting rubbery and elastomeric properties derived from:

(a) a carbonate precursor; and

(b) at least one dihydric phenol represented by the general formula



wherein:

R is selected from straight chain alkyl radicals containing from 12 to about 30 carbon atoms,

each R^1 is independently selected from halogen radicals, monovalent hydrocarbon radicals, and monovalent hydrocarbonoxy radicals,

each R^2 is independently selected from halogen radicals, monovalent hydrocarbon radicals, and monovalent hydrocarbonoxy radicals, and

n and n' are independently selected from whole numbers having a value of from 0 to 4 inclusive.

4,446,286

ELECTRON BEAM CURABLE POLYRETHANE COMPOSITIONS

Edmond G. Kolycheck, Lorain, and Laura L. Tolle, Richfield, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 2, 1982, Ser. No. 404,152
Int. Cl.³ C08F *283/06;* C08G *65/32;* C08L *75/04*
U.S. Cl. 525—455 **12 Claims**

1. Electron beam-curable polyurethane compositions comprising (A) 100 weight parts of the reaction product of (1) hydroxyl-terminated polyesters, polyethers, polylactones, polycarbonates, polyepihalohydrins or polyhydrocarbon macropolyols, (2) unsaturated polyethers having an average of ½ to 18 double bonds per molecule, selected from the group consisting of polyethers having one terminal hydroxyl group and one terminal double bond group in amount of up to 20 weight percent, and polyether glycols having pendant double bond groups, in amounts of 5 to 100 weight percent, each based on the total polyols, and (3) an organic diisocyanate, in about an equimolar ratio of diisocyanate to the total polyols used, and (B) 1 to 25 weight parts of an acrylate or alkacrylate terminated polyurethane.

4,446,287

PRODUCTION OF VINYL CHLORIDE POLYMERS

Peter V. Smallwood, and Erno L. Zichy, both of Hertfordshire, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jul. 12, 1982, Ser. No. 397,351
Claims priority, application United Kingdom, Jul. 20, 1981, 8122306
Int. Cl.³ C08F *2/24*
U.S. Cl. 526—81 **5 Claims**

1. A process for the production of a vinyl chloride polymer of high porosity and plasticiser absorption capacity which process comprises polymerising vinyl chloride in aqueous suspension in the presence of a suspension agent that is present in the polymerisation medium at the start of polymerisation and a free-radical yielding initiator wherein an effective surfactant which lowers the interfacial tension between 1,2-dichloroethylene and water to ≦8 dynes cm^{-1} (as measured at 20° C. on an aqueous surfactant solution containing 0.1% w/v surfactant) is injected into the polymerisation medium at a conversion of monomer to polymer within the range 15 to 65%.

4,446,288

POLYMERIZATION METHOD

Raymond E. Hoff, Palatine, Ill., assignor to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 260,802, May 5, 1981, Pat. No. 4,402,861. This application Jan. 4, 1982, Ser. No. 337,151
Int. Cl.³ C08F *4/02, 10/02*
U.S. Cl. 526—129 **5 Claims**

1. The method of polymerizing or copolymerizing ethylene which comprises polymerizing or copolymerizing said ethylene under polymerizing conditions in the presence of an alkyl aluminum cocatalyst and an olefin polymerization and copolymerization catalyst active in the presence of said cocatalyst, said catalyst being prepared by the consecutive steps of:

(a) preactivating and drying particles of silica by heating said particles at between about 200° C. and 900° C.;

(b) reacting said dry particles in the presence of a hydrocar-

bon solvent with butyl alcohol and a complex of the general formula $(MgR_2)_m(AlR_3)_n$ wherein R and R' are the same or different alkyl groups of 2 to 10 carbon atoms and m/n is between about 0.5 to 10, inclusive, to form a reaction mixture of said solvent and a first reaction product insoluble in said solvent, the molar ratio of said alcohol to said magnesium complex being in the range of about 0.5 to about 1.0;

(c) thereafter reacting said first reaction product in said reaction mixture with a halogen-containing titanium compound to form a second reaction product, the molar ratio of said magnesium compound to said titanium compound being about 1.0, and between about 2.25 and 2.50 mmoles of said titanium compound being present per gram of silica, said titanium compound comprising TiX_4 wherein X is a halogen atom; and

(d) removing said solvent from said second reaction product.

4,446,289

POLYMERIZING AND COPOLYMERIZING OLEFINICALLY UNSATURATED COMPOUNDS AND MEANS THEREFOR

Antonio Carbonaro, Milan; Cesare Ferrero, Monza, and Margherita Corbellini, Milan, all of Italy, assignors to Agip Petroli S.p.A., Rome, Italy

Filed Jul. 15, 1982, Ser. No. 398,649

Claims priority, application Italy, Jul. 29, 1981, 23212 A/81

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—142 **23 Claims**

1. A process for the polymerization of alpha olefins, ethylene included, and copolymerization of said alpha olefins with one or more conjugated diolefins, which comprises contacting the monomers concerned with a plural-component catalytic system comprised of:

(a) the reaction product obtained by causing vapors of an electropositive and reducing metal to condense on a mixture of a titanium compound selected from among the halides and the alcoholates, and a halogenated organic or inorganic compound optionally in the presence of an inert thinner, and then heating the slurry thus obtained to a temperature between about 50° C. and about 100° C. in the presence of an alcohol;

(b) an aluminum trialkyl corresponding to the formula AlR_3 wherein R is an alkyl or an alkaryl radical; and

(c) an aluminum halide corresponding to the formula AlR_nX_{3-n} wherein X is Cl or Br and n is between 0 and 2.

4,446,290

PROCESS FOR PRODUCING CONJUGATED DIENE POLYMER

Takeshi Ikematu, and Yasuo Hattori, both of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 25, 1982, Ser. No. 361,754

Claims priority, application Japan, Mar. 27, 1981, 56-43993

Int. Cl.³ C08F *136/08, 236/08, 4/46, 4/50*

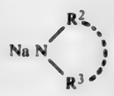
U.S. Cl. 526—174 **12 Claims**

1. A process for producing a conjugated diene polymer, a copolymer of a conjugated diene with at least one other conjugated diene, or a copolymer of a conjugated diene with an aromatic vinyl hydrocarbon comprising the step of polymerizing said monomer or monomers in the presence of an effective catalytic amount of a catalyst complex consisting essentially of the following components (a) and (b) or (a), (b) and (c):

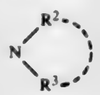
(a)(1) an organosodium compound, having the general formula

$$R'(Na)_m$$

wherein R' is an aliphatic group, desirably having 1 to 30 carbon atoms, an alicyclic group, desirably having 5 to 30 carbon atoms, or an aromatic group, desirably having 6 to 30 carbon atoms or an unsaturated hydrocarbon group having at least one allyl hydrogen and desirably having 3 to 30 carbon atoms, and m is an integer of 1 through 4, (2) metallic sodium or (3) a sodium amide compound having the general formula



wherein



represents either a cyclized structure or a non-cyclized structure and R^2 and R^3 represent, in combination, a methylene chain having 2 to 10 carbon atoms in the case of a cyclized structure and R^2 and R^3 independently represent an aliphatic group, desirably having 1 to 30 carbon atoms, an alicyclic group, desirably having 5 to 30 carbon atoms, or an aromatic group, desirably having 6 to 30 carbon atoms in the case of a non-cyclized structure of (4) a mixture of at least one of the above components (1), (2), and (3) with an organic compound of sodium other than said sodium amide compound;

(b) an organic or organometallic compound of barium, strontium, or calcium; and

(c) an organometallic compound of an electron deficient metal selected from lithium, beryllium, magnesium, zinc, cadmium, boron, aluminum, gallium or indium, the amount of component (a) being 0.01 to 50 m mol per 100 g of the total monomers, the amount of component (b) being from 0.01 to 10 times the molar amount of component (a) and the amount of component (c) being from 0 to 5 times the molar amount of component (a).

4,446,291

PROCESS FOR THE CONTINUOUS PRODUCTION OF ACRYLONITRILE-VINYL CHLORIDE COPOLYMERS

Joachim König, Berg.Gladbach; Karl-Erwin Schnalke, Cologne; Carlhans Süling, Odenthal, and Horacek: Götz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1977, Ser. No. 818,598

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1976, 2633592

Int. Cl.³ C08F *214/06, 220/44*

U.S. Cl. 526—209 **10 Claims**

1. A process for the continuous production of a chemically uniform copolymer having improved spinning properties comprising from 15 to 50% by weight of acrylonitrile and from 85 to 50% by weight of vinyl chloride and, optionally, up to 4% by weight of at least one other copolymerised ethylenically unsaturated comonomer containing acid groups by emulsion polymerisation, wherein the copolymerisation reaction is carried out with a monomer ratio of acrylonitrile to vinyl chloride of from 0.02 to 0.5 (ratio by weight), in the presence of a redox catalyst of compounds of sulphurous acid and peroxodisulphates in a molar ratio of reducing to oxidising component of from 8:1 to 100:1 and at a pH-value of from 2.5 to 4 wherein the total concentration of redox catalyst amounts to between 0.5 and 4% by weight, based on total monomer.

4,446,292

MOISTURE CURABLE COMPOSITIONS CONTAINING REACTION PRODUCTS OF HYDROPHOBIC POLYOLS AND MONOMER ORGANOSILICON-CONTAINING SUBSTANCES

Wen-Hsuan Chang; David T. McKeough, both of Gibsonia, and John R. Peffer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 31, 1983, Ser. No. 462,596

Int. Cl.³ C08G *77/04*

U.S. Cl. 528—29 **17 Claims**

1. A liquid composition comprising a reaction product prepared by reacting:

(A) at least one hydrophobic polyol; and

(B) an organosilicon-containing material comprising

(1) at least one organosilicon-containing substance free of functional groups attached to carbon and essentially free of alkali metal ions, having atoms bonded directly to Si, all of said atoms being selected from O, N, and/or Cl, said organosilicon-containing substance additionally having moieties directly bonded to Si which are displaceable by reaction with water and/or alcohol;

(2) optionally a nonfunctional organosilane, a hydrolyzed nonfunctional organosilane, or a mixture thereof; and

(3) optionally a functional organosilane, a hydrolyzed functional organosilane, or a mixture thereof;

wherein said reaction product has a ratio of milliequivalents of residual moieties from said organosilicon-containing material which are displaceable by reaction with water and/or alcohol to milliequivalents of hydroxyl moieties from said polyol greater than 1, is capable of self curing to a continuous film in the presence of moisture, and remains ungelled when subjected to a three-step gel test consisting of (1) heating a 10 gram sample of said reaction product in a glass jar covered with a cap at 149° C. for 240 minutes, followed by (2) heating said sample at 149° C. for 240 minutes in the presence of 0.5 grams of stannous octoate in said glass jar with a vent hole covered by a piece of masking tape in said cap, followed by (3) repeating step 2 except that no additional stannous octoate is introduced into said sample and said heating is conducted at a temperature of 204° C.

4,446,293

LOW-SOLVENT, THERMOSETTING REACTIVE POLYURETHANE COATING COMPOSITION, A PROCESS FOR ITS PRODUCTION AND ITS USE IN DIRECT AND REVERSE COATING PROCESSES

Eberhard König, Kronberg; Wilhelm Thoma, Leverkusen; Josef Pedain, Cologne, and Klaus König, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,152

Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120596

Int. Cl.³ C08G *18/10*

U.S. Cl. 528—45 **10 Claims**

1. A low-solvent thermosetting reactive polyurethane coating composition which hardens to form light-fast polyurethane ureas with improved resistance to light, oxidation, heat and hydrolysis, characterized in that the coating composition comprises the following components in the following molar ratios:

(A) a ketoxime-blocked NCO-prepolymer of

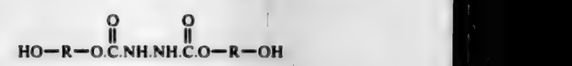
(1) 1 mole of 2- to 4-functional relatively high molecular weight polyhydroxyl compounds having a molecular weight in the range from about 1000 to 4000, wherein said 1 mole comprises

(a) from about 0.5 to 1.0 mole of a polyester carbonate having a molecular weight of from about 1000 to 4000 produced from diphenyl carbonate and ester glycols of ε-caprolactone and 1,6-hexane diol and

(b) up to about 0.5 mole of 2-functional to 4-functional relatively high molecular weight polyester polyols having a molecular weight of from about 1000 to 4000;

(2) from about 0.1 to 1.2 moles of low molecular weight polyols having molecular weights in the range from about 62 to 300, wherein said low molecular weight polyols comprise

(c) from about 0.1 to 0.8 mole of bis-carbazinic ester polyols corresponding to the following general formula



in which R is a straight-chain and/or branched-chain C_1-C_5 -alkylene or hydroxyl-substituted alkylene radical and

(d) up to about 1.1 mole of low molecular weight polyols;

(3) aliphatic and/or cycloaliphatic diisocyanates in an NCO-:OH ratio between the components



of from about 1.5:1 to 6:1, and

(4) quantities of ketoximes substantially equivalent to the NCO-content;

(B) a crosslinking agent which comprises aliphatic and/or cycloaliphatic polyamines containing at least two primary amino groups at an NCO/NH_2 ratio of (A) to (B) between about 1.2:1 and 0.8:1; and

(C) up to about 40% by weight based on the total weight of the coating composition, of at least one organic solvent said organic solvent being sufficient to obtain a viscosity for the mixture of (A), (B) and (C) of from about 20,000 to 50,000 mPa.s at 20° C.

4,446,294

AROMATIC ETHERKETONE/SULPHONE COPOLYMERS

John B. Rose, and Michael B. Cinderey, both of Hertfordshire, England, assignors to Imperial Chemical Industries PLC, London, England

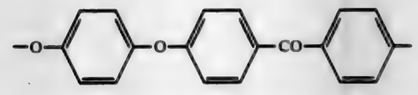
Filed Jun. 15, 1983, Ser. No. 504,476

Claims priority, application United Kingdom, Jul. 30, 1982, 8222063

Int. Cl.³ C08G *65/40*

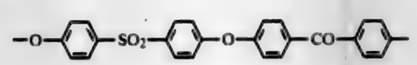
U.S. Cl. 528—128 **4 Claims**

1. An amorphous aromatic etherketone/sulphone copolymer containing 15 to 70 mole % of repeat units of formula



A

and correspondingly 85 to 30 mole % of repeat units of formula



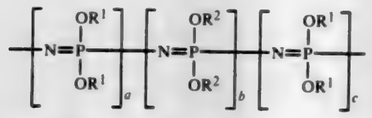
B

4,446,295
THERMISTOR USING ORGANOPHOSPHAZENE POLYMER

Osamu Shibuta; Masayoshi Suzue, both of Tokushima, and Tetuo Hasegawa, Naruto, all of Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Jul. 29, 1981, Ser. No. 288,030
Claims priority, application Japan, Sep. 13, 1980, 55-127626
Int. Cl.³ H01C 7/10, 7/13; C08G 73/00, 83/00
U.S. Cl. 528—168 1 Claim

1. A thermistor device comprising a body portion of a thermo-responsive material, said thermo-responsive material consisting essentially of an organophosphazene polymer of the following general formula:



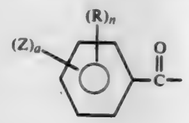
wherein R^1 and R^2 are the same or different and each is phenyl group, a halogenated aryl group, an alkylaryl group whose alkyl group has 1 to 12 carbon atoms, or a fluoroalkyl group having 1 to 12 carbon atoms, and a, b and c are 0 or a positive integer within the range of $15 \leqq a+b+c \leqq 15{,}000$, and respective recurring units are randomly distributed; and at least two spaced electrical conductors in electrical contact with said body portion.

4,446,296
ACYLOXY TERMINATED POLYCARBONATES

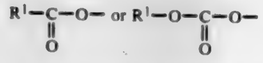
Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 17, 1982, Ser. No. 450,794
Int. Cl.³ C08G 63/62
U.S. Cl. 528—198 26 Claims

1. An aromatic polycarbonate resin chain terminated with at least one residue represented by the general formula



wherein:
each R is independently selected from monovalent hydrocarbon radicals, substituted monovalent hydrocarbon radicals, or halogen radicals;
a represents a whole number having a value of from 1 to 3 inclusive;
n represents a whole number having a value of from 0 up to the number of replaceable hydrogen atoms present on the ring carbon atoms of the aromatic nuclear residue; and
Z is independently selected from radicals represented by the general formulae



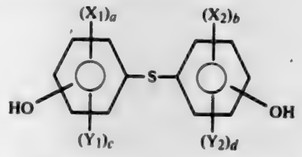
wherein R^1 is selected from bulky or rigid monovalent hydrocarbon radicals or bulky or rigid substituted monovalent hydrocarbon radicals.

4,446,297
THERMOPLASTIC COPOLYCARBONATE FROM HALOGEN FREE AROMATIC DIOL AND HALOGENATED THIODIPHENOL

Sivaram Krishnan, Moers, Fed. Rep. of Germany, and Arthur L. Baron, New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 232,470, Feb. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 110,273, Jan. 7, 1980, abandoned. This application Apr. 7, 1982, Ser. No. 366,453
Claims priority, application Japan, Dec. 26, 1980, 55-184165
Int. Cl.³ C08G 63/62
U.S. Cl. 528—204 11 Claims

1. In a thermoplastic polycarbonate based upon the reaction product of a halogen-free aromatic diol selected from the group consisting of
(i) dihydroxy diphenyl alkanes,
(ii) dihydroxy benzenes,
(iii) aromatic diols wherein the two aryl residues are linked by a sulfur-containing group, and
(iv) dihydroxy diphenyls
and a carbonic acid derivative, the improvement comprising:
a sufficient amount of a halogenated thiodiphenol co-reacted in said reaction product to impart flame retardant characteristics to said polycarbonate, said halogenated thiodiphenol being represented by the structural formula:



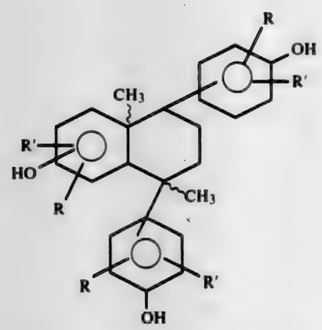
wherein X_1 and X_2 are halogen and Y_1 and Y_2 are alkyl radicals having 1 to 4 carbon atoms; and wherein a, b, c and d independently are integers from 0 to 4 with the proviso that the sum of said a and said b is from 1 to 8 and that the sum of said c and said d is from 0 to 7.

4,446,298
BRANCHED COPOLYCARBONATE FROM TRIPHENOL

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 17, 1982, Ser. No. 451,107
Int. Cl.³ C08G 63/62
U.S. Cl. 528—204 6 Claims

1. A high molecular weight, thermoplastic, randomly branched polycarbonate of an aromatic dihydric phenol a carbonate precursor and a chain branching component, said randomly branched polycarbonate having an intrinsic viscosity of 0.30 to 1.0 dl/g in methylene chloride at 25° C. wherein the branching component comprises one or more compounds of the formula



where R and R' are independently selected from hydrogen, C_1–C_5 alkyl, chloro, bromo or C_1–C_5 alkoxy.

4,446,299
MELT SPINNING OF SYNTHETIC FIBERS

Gunter Koschinek, Dietzenbach; Dietmar Wandel, Hanau; Bernd Kretschmann, Kahl, and Rolf Zinsser, Heusenstamm, all of Fed. Rep. of Germany, assignors to Davy McKee Aktienegesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 264,981, May 18, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 500,796
Int. Cl.³ C08G 63/02
U.S. Cl. 528—272 9 Claims

1. Improved synthetic spun fibers suitable for raw yarns for a friction unit texturing process or a gas jet turbulence process as well as for fabrication as "not drawn yarns" into fabrics and knits without the interpolation of a separate stretching operation, said synthetic fibers being characterized by a tension at 20 percent elongation (σ_{20}) of greater than or equal to 0.55 g/dtex, by a boiling shrinkage of less than 20 percent, by a permanent elongation of less than or equal to 10 percent, and by a modulus ($\sigma'(\delta)$), said modulus being characterized by $\sigma'(\delta)$ greater than or equal to zero for an elongation (δ) of greater than or equal to 10 percent, by a minimum value (σ'_{min}) in the elongation range of $\delta = 10$ to breaking extension f, said breaking extension f representing the elongation at the rupture of the first capillary, said minimum value (σ'_{min}) being greater than or equal to zero, and characterized by the difference $(\sigma'_{f\sigma'} - \sigma_{min}) \div \sigma'_f$ being greater than or equal to zero, wherein f is the value of the final modulus at said rupture.

5. Synthetic fibers, as claimed in claim 1, wherein said synthetic fibers are made from polyester.

4,446,300
ISOCYANURATE-TYPE POLYMERS

David W. Mabrey; Daniel J. Lange, and Daniel J. Lee, all of St. Louis, Mo., assignors to The P. D. George Company, St. Louis, Mo.

Filed Jun. 27, 1983, Ser. No. 507,867
Int. Cl.³ C08G 63/44, 69/44
U.S. Cl. 528—288 32 Claims

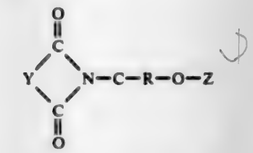
1. In a process of preparing polymers containing tris(2-hydroxyethyl)isocyanurate, the improvement which comprises reacting ethylene carbonate and cyanuric acid in situ, wherein the molar ratio of ethylene carbonate to cyanuric acid is at least about 3 to 1.

4,446,301
MODIFIED POLYESTERS

Stephen N. Belote; Don R. Leonard, both of Kingsport, Tenn., and Garrett C. Luce, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1983, Ser. No. 519,942
Int. Cl.³ C08G 63/54, 63/48
U.S. Cl. 528—295.3 33 Claims

1. A novel modified polyester resin comprising the reaction product of
(A) an imide derived from an alkanolamine and an imide-forming reactant selected from phthalic acid, trimellitic acid, pyromellitic acid, maleic acid, succinic acid, anhydrides of the foregoing, and mixtures thereof, said imide having the formula



whereln R represents a branched alkyl group having about 2 to 10 carbon atoms; Y represents the residue of said imide-forming reactant; and Z represents hydrogen or the residue of a carboxylic acid or derivative thereof, provided that said imide provides at least one hydroxyl or carboxyl group which is available for reaction;
(B) a polyester-forming polyol;
(C) a polyester-forming multifunctional acid or derivative thereof; and, optionally,
(D) a fatty oil or an unsaturated fatty acid having about 12 to 24 carbon atoms derived from said oil,
wherein said alkanolamine is provided in an amount of about 0.5 to 30 percent by weight, based upon the total weight of reactants, and wherein said fatty oil or acid, if present, comprises about 30 to 60 percent by weight of said resin.

4,446,302
ELECTROSTATOGRAPHIC DEVELOPERS COMPRISING TONERS CONTAINING A POLYESTER HAVING P-HYDROXYBENZOIC ACID RECURRING UNITS

M. Akram Sandhu, Kingsport, Tenn.; John F. Wright, Penfield, and Michel F. Molaire, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 398,138, Jul. 14, 1982, Pat. No. 4,416,965. This application Jul. 25, 1983, Ser. No. 517,142
Int. Cl.³ C08G 63/16
U.S. Cl. 528—302 8 Claims

1. A polyester having recurring units derived from diols and diacids and recurring units derived from p-hydroxybenzoic acid characterized in that from about 15-60 mole percent of the recurring units of said polyesters are derived from p-hydroxybenzoic acid.

4,446,303
PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT POLYESTERS

Louis D. Moore; Mark Rule, and Thomas H. Wicker, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1983, Ser. No. 517,485
Int. Cl.³ C08G 63/26, 63/70
U.S. Cl. 528—308.2 7 Claims

1. The process for solid-state polycondensing crystallizable, comminuted polyester comprising carrying out one or more times the intermediate step combination of removing said polyester from the reaction zone after a period of polycondensation, melting, recrystallizing, recomminuting the polyester,

and reintroducing the recomminuted polyester into said reaction zone and continuing said polycondensation until the desired I.V. is obtained.

4,446,304

HIGHLY STABLE NYLON 4,6 OBJECTS

Reinoud J. Gaymans, Boekelo, and Pieter J. van Asperen, Geleen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 247,547, Mar. 25, 1981, abandoned. This application Dec. 20, 1982, Ser. No. 451,337

Claims priority, application Netherlands, Mar. 26, 1980, 8001762; Canada, Mar. 25, 1981, 373813; Colombia, Mar. 25, 1981, 200472; European Pat. Off., Mar. 25, 1981, 81200325.9; Taiwan, Mar. 25, 1981, 7010850; European Pat. Off., Nov. 12, 1982, 82201432

Int. Cl.³ C08G *69/26*

U.S. Cl. 528—335 **10 Claims**

1. A shaped article formed by compression or injection molding a melt of a polyamide, consisting essentially of a molecular chain of units of

$$-NH-(CH_2)_4-NH-CO(CH_2)_4-CO-$$

and which polyamide in the molded article has a relative viscosity of at least 2.5,

measured at 20° C., on a solution in 96% sulfuric acid, containing 1 g of polyamide in 100 ml of solution,

and which article has

a heat distortion temperature value of at least 100° C., and an IZOD impact resistance value of at least 5 kilojoules per square meter.

4,446,305

OPTICAL DEVICE INCLUDING BIREFRINGENT POLYMER

Howard G. Rogers, Weston; Ruth C. Bilofsky, Lexington, both of Mass.; Russell Gaudiana, Merrimack, N.H., and Ronald A. Sahatjian, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 238,054

Int. Cl.³ C08G *69/32*

U.S. Cl. 528—348 **56 Claims**

1. An optical device comprising a transparent molecularly oriented highly birefringent polymer, said highly birefringent polymer comprising repeating molecular units exhibiting high electron density substantially cylindrically distributed about the long axes of the polymer and the repeating units thereof, said highly birefringent polymer being substantially optically uniaxial exhibiting only two indices of refraction.

4,446,306

OLIGOMER-CONTAINING MIXTURES USEFUL AS FIBER SURFACE TREATING AGENTS AND PROCESSES FOR THE PRODUCTION AND USE THEREOF

Bryce C. Oxenrider, Florham Park, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 20, 1982, Ser. No. 380,188

Int. Cl.³ C08G *63/68*

U.S. Cl. 528—366 **10 Claims**

1. A process for the production of an oligomer-containing mixture useful as a fiber surface treating agent which comprises:

(a) reacting pyromellitic dianhydride with fluorinated alcohol at a mole ratio of fluorinated alcohol to pyromellitic dianhydride between about 1:0.55 and about 1:1.0 to form a partially esterified product having fluorinated ester groups, free acid groups and anhydride groups; and

(b) reacting the partially esterified product with an oxirane compound selected from the group consisting of epichlorohydrin, epibromohydrin and propylene oxide in an amount sufficient to cause essentially all of the free acid groups and anhydride groups to be esterified.

4,446,307

TIRE CORD ADHESIVE COMPOSITION

James E. Shirk, Mantua, N.J., assignor to Wilmington Chemical Corporation, Wilmington, Del.

Filed Feb. 18, 1982, Ser. No. 349,851

Int. Cl.³ C08G *59/02, 59/62*

U.S. Cl. 528—406 **12 Claims**

1. A stable adhesive composition comprising:

a polyfunctional epoxide which is the reaction product of a polyglycidyl ether and a water soluble polyhydroxy compound, said polyfunctional epoxide having an epoxy equivalent weight of at least about 130 and being soluble in water at a level up to about 5 percent by weight and a catalyst at a level wherein the catalytic activity corresponds to that of up to about 0.5 to about 0.8 percent by weight triethylamine based on the weight of the polyfunctional epoxide.

4,446,308

POLYMER RESIDUE TREATMENT

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 29, 1982, Ser. No. 393,282

Int. Cl.³ C08F *8/50*

U.S. Cl. 528—481 **8 Claims**

1. A process for producing additional useful products by the treatment of polymeric residues formed upon reaction of a diolefin and a furfural which comprises subjecting said residue to pyrolysis at an elevated temperature in the range of about 500°–800° C. and for a period of time sufficient to convert said residue to additional quantities of diolefin, furfural, and desirable cotrimeric product.

4,446,309

METHOD AND APPARATUS FOR CONTINUOUSLY COAGULATING A RUBBERY POLYMER LATEX

Takashi Jiroumaru, Yokkaichi, and Mamoru Ito, Kuwana, both of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1982, Ser. No. 351,515

Claims priority, application Japan, Mar. 5, 1981, 56-31624

Int. Cl.³ C08F *6/22*

U.S. Cl. 528—486 **10 Claims**

1. A method for continuously coagulating a rubbery polymer latex to obtain a polymer solid, characterized in that into a coagulator consisting essentially of (a) a cylindrical body having at one end a nozzle for feeding rubbery polymer latex and a nozzle for feeding coagulant solution and having at the other end a discharging nozzle, (b) a stirrer mounted rotatably along the central axis of the cylindrical body, said stirrer having several stages of agitating blades, and (c) stationary blades fixed to the wall of the cylindrical body at the spaces between the stages of the agitating blades, are continuously fed the rubbery polymer latex and a coagulant solution through the above-mentioned respective nozzles in such proportions that the polymer solids content in the coagulator becomes 5–50% by weight based on the total weight of the latex and the coagulant solution so as to collide against each other, and subjected during their movement from the one end of the coagulator to the other end to highly fluidized state caused by a stirring power of at least 20 KW/m^3.

4,446,310

POLYACETYLENE WITH PYROGALLOL OR HYDROSULFITE SYSTEM

Robert D. Gleim, Newtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 219,405, Dec. 22, 1980, Pat. No. 4,356,301. This application May 20, 1982, Ser. No. 380,324

Int. Cl.³ C08F *6/00*

U.S. Cl. 528—487 **16 Claims**

1. A process for reducing polyacetylene oxidation and embrittlement comprising the steps of treating said polyacetylene with a solution having a pH greater than 7, of a material selected from the class consisting of pyrogallol, sodium hydrosulfite, and potassium hydrosulfite.

4,446,311

PROCESS FOR PREPARING PULVERULENT ETHYLENE POLYMERS

John Hobes, Dinslaken; Wolfgang Payer, Wesel, and Detlef Deymann, Essen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 216,224, Dec. 15, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 388,572

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951122

Int. Cl.³ C08F *8/22*

U.S. Cl. 528—493 **16 Claims**

1. A process for preparing pulverulent ethylene homo/copolymers with a grain size <200 μm, which comprises contacting coarse-particles ethylene homopolymers or copolymers with an aliphatic ketone selected from the group consisting of methyl ethyl ketone, methylisopropyl ketone, methylisobutyl ketone and mixtures thereof, heating the suspension to a temperature above the softening point range of the polymer and thereafter cooling the suspension.

4,446,312

C-β-D-XYLOPYRANOSIDE SERIES COMPOUNDS

Ryoji Noyori, Aichi; Sakaru Suzuki, and Minoru Okayama, both of Nagoya, all of Japan, assignors to Seikagaku Kogyo Co., Ltd., Tokyo, Japan

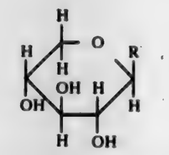
Continuation-in-part of Ser. No. 319,392, Nov. 9, 1981, abandoned. This application Feb. 14, 1983, Ser. No. 466,085

Claims priority, application Japan, Nov. 13, 1980, 55-158855

Int. Cl.³ C07H *7/02*

U.S. Cl. 536—1.1 **11 Claims**

1. C-β-D-xylopyranoside series compounds having the general formula:



in which R denotes a lower alkyl group having from 1 to 5 carbon atoms.

4,446,313

POLYETHER POLYOL PROCESS

Peter Dix; George A. Pogany, and Parminder Sangha, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 21, 1981, Ser. No. 285,653

Claims priority, application United Kingdom, Aug. 6, 1980, 8025696

Int. Cl.³ C07H *1/00*

U.S. Cl. 536—18.6 **9 Claims**

1. A process for the manufacture of a polyether polyol which process comprises reacting sucrose or sorbitol with ethylene oxide, propylene oxide or a mixture thereof at a temperature ranging from about 80° C. to about 120° C. and at a pressure of up to 6 bar in the presence of a catalyst which comprises: (a) a tertiary amine NRR'_2, in which R is a cycloalkyl or cycloalkenyl group and each R' may be an alkyl, cycloalkyl or cycloalkenyl group and (b) a nitrogen compound containing in the molecule at least one hydrogen atom which is capable of reacting with alkylene oxides.

4,446,314

FRACTIONATION OF HEPARIN

Robert E. Jordan, Concord, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Division of Ser. No. 192,286, Sep. 30, 1980, Pat. No. 4,386,025. This application Sep. 29, 1982, Ser. No. 426,541

Int. Cl.³ C08B *37/10*; A61K *31/725*

U.S. Cl. 536—21 **4 Claims**

1. A method of fractionating unfractionated heparin into components of differing activity, which comprises

(a) contacting the unfractionated heparin with a composition for fractionating heparin into components of differing activity by virtue of differing affinity for antithrombin which comprises a lectin-containing, water-insoluble gel matrix having reversibly bound thereto antithrombin specific for gradiently binding the components of differing activity in heparin, and

(b) selectively separating the components of differing activity from the composition.

4,446,315

ADENOSINE 5'-TRIPHOSPHATE-4-CARBOXAMIDE-RIBOFURANOSYLTHIAZOLE

Victor E. Marquez, Gaithersburg; David A. Cooney, Bethesda; Gullat Gebeyehu, Silver Spring, and Hiremagalur N. Jayaram, Gaithersburg, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 24, 1982, Ser. No. 423,241

Int. Cl.³ C07H *19/20*

U.S. Cl. 536—27 **1 Claim**

1. 2-β-D-Ribofuranosylthiazole-4-carboxamide 5'→5'-adenosine pyrophosphate and pharmaceutically acceptable acid addition salts.

4,446,316

DEXTRAN DERIVATIVE OF FIBRINOLYSIN

Evgeny I. Chazov; Vladimir N. Smirnov; Vladimir P. Torchilin, all of Moscow; Igor M. Tereshin; Boris V. Moskvichev, both of Leningrad; Grigory M. Grinberg, Moscow; Agris Z. Skuya, and Gersh I. Kleiner, both of Riga, all of U.S.S.R., assignors to Vsesojuzny Kardiologichesky Nauchny Tsentr, Moscow, U.S.S.R.

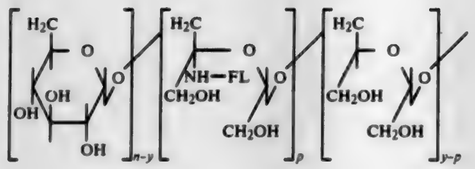
Filed Dec. 9, 1981, Ser. No. 329,025

Claims priority, application U.S.S.R., Dec. 31, 1980, 3230869

Int. Cl.³ C08B *37/02*

U.S. Cl. 536—112 **5 Claims**

5. A polysaccharide derivative of fibrinolysin which is water soluble and has prolonged thrombolytic activity, obtained by reacting fibrinolysin with dextran dialdehyde to form a covalent bond and reducing the product, said derivative being represented as follows:



wherein
FL is fibrinolysin
n is 100 mol % of glucopyranose units of dextran
y is 10–25 mol % of oxidized glucopyranose units of dextran
p is the molar percentage of NH_2 groups of fibrinolysin bonded to dextran, and
wherein the content of fibrinolysin is 10 to 30 mol % and the content of dextran 90 to 70 mol %.

4,446,317
CEPHALOSPORIN ANTIBIOTICS

Michael Gregson, Middlesex, and Richard B. Sykes, Chalfont St Giles, both of England, assignors to Glaxo Operations U.K. Limited, London, England

Continuation of Ser. No. 176,520, Aug. 8, 1980, abandoned, which is a continuation of Ser. No. 61,259, Jul. 27, 1979, abandoned, which is a continuation of Ser. No. 921,119, Jun. 30, 1978, abandoned, which is a continuation of Ser. No. 768,719, Feb. 15, 1977, abandoned. This application Jan. 27, 1982, Ser. No. 343,326

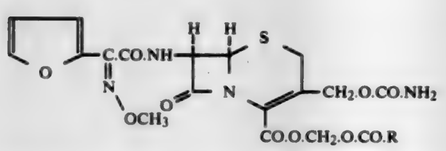
Claims priority, application United Kingdom, Feb. 16, 1976, 6010/76; Jul. 30, 1976, 27300/76

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.³ C07D *501/34*

U.S. Cl. 544—22 **6 Claims**

1. The syn isomer of a cephalosporin antibiotic of the formula



(I)

(where R is a primary or secondary alkyl group containing 1 to 4 carbon atoms).

4,446,318
METHOD FOR PRODUCING 7-AMINOCEPHEM COMPOUNDS

Kenzo Naito, Kyoto; Haruo Shinbo, Nishinomiya, and Kazuo Tsukamura, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

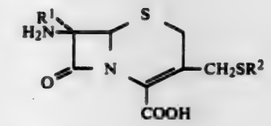
Filed Nov. 6, 1981, Ser. No. 318,960

Claims priority, application Japan, Nov. 11, 1980, 55-159208; Jun. 17, 1981, 56-93293

Int. Cl.³ C07D *501/04, 501/02*

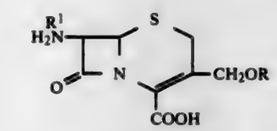
U.S. Cl. 544—26 **12 Claims**

1. In the method for producing a 7-aminocephem compound of the formula:



[II]

wherein R^1 is a hydrogen atom or methoxy group and R^2 is a residue of a thiol compound, or a salt or ester thereof which comprises reacting a compound of the formula:



[I]

wherein R^1 is as defined above and R is a carboxylic acid acyl group, or a salt or ester thereof with a thiol compound or a salt thereof, wherein the improvement comprises conducting said reaction in an organic solvent in the presence of a dihalophosphoric acid.

4,446,319
AMINOCYCLITOLS AND THEIR PRODUCTION

Satoshi Horii, Sakai, and Hiroshi Fukase, Osaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

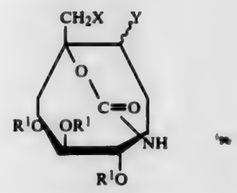
Filed Apr. 26, 1982, Ser. No. 371,988

Claims priority, application Japan, Apr. 28, 1981, 56-64370; Sep. 11, 1981, 56-144309

Int. Cl.³ C07D *265/18*

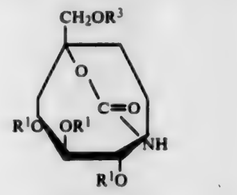
U.S. Cl. 544—92 **10 Claims**

1. A compound of the formula

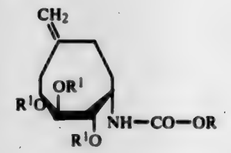


wherein X is hydroxyl group, a halogen or an acyloxy group; Y is hydrogen or a halogen; and OR^1 is an optionally protected hydroxyl group.

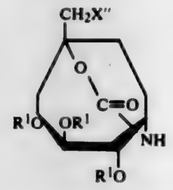
8. A process for producing a compound of the formula



wherein OR^1 is an optionally protected hydroxyl group, and OR^3 is an acyloxy group, which comprises reacting a compound of the formula



wherein R is an alkyl, aryl or aralkyl group; and OR^1 is as defined above:
with a halogenating agent to afford a compound of the formula



wherein X'' is a halogen; and OR^1 is as defined above; then reacting the resultant compound with an acyloxylating agent.

4,446,320
MORPHOLINE COMPOUNDS PREPARED VIA PHOSPHATE CATALYSTS

Victoria Eskinazi, Cleveland Heights, Ohio, and James E. Wells, Bryn Mawr, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 381,233, May 24, 1982. This application Dec. 20, 1982, Ser. No. 451,295

Int. Cl.³ C07D *295/02*

U.S. Cl. 544—106 **10 Claims**

1. A process which comprises converting a diglycolamine compound to a morpholine compound at a temperature in the range of about 285° C. to 420° C., a pressure in the range of about 0.1 to 150 atmospheres, a liquid hourly space velocity of about 0.05 to 1.5 in the presence of a catalyst selected from the group consisting of the pyrophosphate, the monohydrogen and dihydrogen phosphate of strontium and mixtures thereof.

4,446,321
4-ARYL-BIS 2,6-(AMINOPHENYL)PYRIDINES

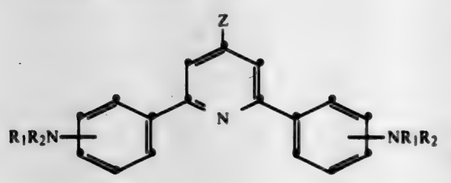
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 243,798, Mar. 16, 1981, Pat. No. 4,363,505. This application Jun. 3, 1982, Ser. No. 384,571

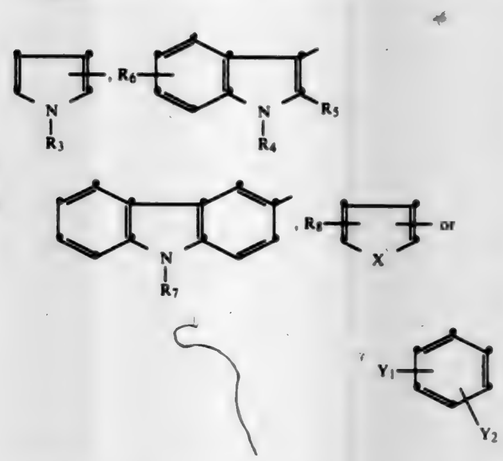
Int. Cl.³ C07D *213/38*

U.S. Cl. 544—124 **29 Claims**

1. A compound having the formula



wherein:
R_1 and R_2 are the same or different and are selected from the group consisting of lower-alkyl and benzyl, or
NR_1R_2 is pyrrolidinyl, piperidinyl, or morpholinyl;
Z is naphthyl, 9-julolidinyl or a substituent having the formula:



wherein
R_3, R_4, R_7 and R_8 are hydrogen or non-tertiary lower-alkyl;
R_5 is hydrogen, phenyl or non-tertiary lower-alkyl;
R_6 is hydrogen, non-tertiary lower-alkyl or non-tertiary lower-alkoxy;
X is O or S;
Y_1 and Y_2 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl, lower-alkoxy, halo, nitro, lower-alkoxycarbonyl, phenyl or NR_9R_{10};
R_9 is lower-alkyl or benzyl;
R_{10} is lower-alkyl, benzyl, cyano-lower-alkyl, or
NR_9R_{10} is pyrrolidinyl, piperidinyl, morpholinyl or isoindolinyl.

4,446,322
HYDROXYL PROTECTED 3-(2-HYDROXY-2-PHENYLETHYL)-N-[(PHENYLAMINO)CARBONYL]SYDNONE IMINE INTERMEDIATES

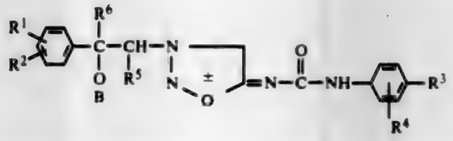
Reinhardt P. Stein, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 171,423, Jul. 29, 1980, Pat. No. 4,277,609, which is a continuation-in-part of Ser. No. 71,606, Aug. 31, 1979, abandoned. This application Oct. 2, 1980, Ser. No. 193,042

Int. Cl.³ C07D *295/10, 271/04*

U.S. Cl. 544—138 **9 Claims**

1. A hydroxyl protected 3-(2-hydroxy-2-phenylethyl)-N-[(phenylamino)carbonyl]sydnone imine derivative of the formula:



in which the enantiomeric form is d,l or l when R^5 is hydrogen and d,l-threo or l-threo when R^5 is other than hydrogen;
R^1 and R^2 are, independently, hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms halo, perfluoroalkyl of 1 to 3 carbon atoms, nitro, alkanoyl of 2 to 4 carbon atoms, or alkoxycarbonyl of 2 to 4 carbon atoms;
R^3 is hydrogen, halo, nitro or alkanoyl of 2 to 4 carbon atoms;

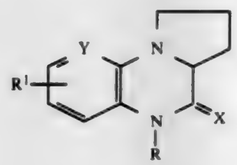
R^4 is hydrogen, halo, nitro or perfluoroalkyl of 1 to 3 carbon atoms;
R^5 and R^6 are, independently, hydrogen or methyl;
and B is a hydroxy protecting group.

4,446,323
TETRA- AND HEXA-HYDROPYRROLO(1,2-A)QUINOXALINE AND AZAQUINOXALINE DERIVATIVES

Meier E. Freed, Paoli, Pa., and Magid Abou-Gharbia, Wilmington, Del., assignors to American Home Products Corporation, New York, N.Y.

Filed May 23, 1983, Ser. No. 496,791
Int. Cl.³ C07D *471/14, 487/04;* A61K *31/495*
U.S. Cl. 544—344 **15 Claims**

1. A compound of the formula:



in which
X is O or H_2;
Y is CH or N;
R is hydrogen, alkyl of 1 to 6 carbon atoms, dialkylaminoalkyl in which each alkyl group contains 1 to 6 carbon atoms, arylalkyl of 7 to 16 carbon atoms, phenoxyalkyl of 7 to 12 carbon atoms, benzoyl, 4-pyridylalkyl of 6 to 11 carbon atoms, substituted phenylalkyl, substituted benzoyl or substituted phenoxyalkyl wherein the substitution on said phenylalkyl, benzoyl or phenoxyalkyl moieties is by 1, 2 or 3 substituents independently selected from alkyl, alkoxy, nitro, halo, trifluoromethyl, amino, alkylamino and dialkylamino substituents wherein each of said alkyl or alkoxy groups in said substituents contains from 1 to 6 carbon atoms;
with the proviso that when R is hydrogen, Y is N; and
R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, nitro, halo, trifluoromethyl, amino, alkylamino of 1 to 6 carbon atoms or dialkylamino in which each alkyl group contains from 1 to 6 carbon atoms;
or a pharmaceutically acceptable salt thereof.

4,446,324
PERYLENETETRACARBOXYLIC ACID DIIMIDES AND THEIR USE

Fritz Graser, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,073
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1980, 3049215; Sep. 17, 1981, 3136894
Int. Cl.³ C09B *3/16*
U.S. Cl. 546—37 **1 Claim**

1. Perylene-3,4,9,10-tetracarboxylic acid diimide of the formula

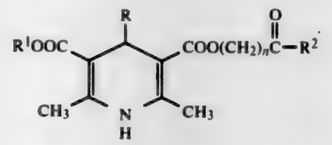


4,446,325
1,4-DIHYDROPYRIDINE COMPOUNDS

Sachio Ohno; Kiyoshi Mizukoshi; Osamu Komatsu, all of Aichi; Kenzi Ichihara, Gifu, and Takashi Morishima, Aichi, all of Japan, assignors to Maruko Seiyaku Co., Ltd., Nagoya, Japan

Filed Oct. 19, 1982, Ser. No. 435,183
Claims priority, application Japan, Oct. 19, 1981, 56-166963; Jan. 11, 1982, 57-2597; Feb. 25, 1982, 57-28391
Int. Cl.³ C07D *213/55, 405/12, 409/12*
U.S. Cl. 546—283 **9 Claims**

1. A 1,4-dihydropyridine compound represented by the formula



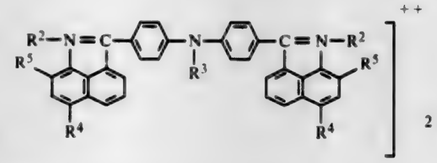
wherein R represents a 2- or 3-nitrophenyl group, R^1 represents a straight or branched chain alkyl group having 1 to 4 carbon atom, R^2 represents hydrogen or a methyl group, X represents an oxygen atom, an ethylenedioxy group, a propylenedioxy group, an ethylenedithio group, a propylenedithio group or an ethylene group, and n is an integer of 1 or 2.

4,446,326
CATIONIC NAPHTHOLACTAM DYESTUFFS

Alfred Brack, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

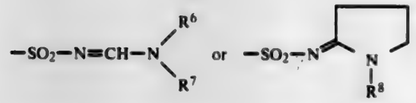
Filed Sep. 30, 1981, Ser. No. 307,255
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 3039116
Int. Cl.³ C09B *57/06*
U.S. Cl. 548—438 **4 Claims**

1. Cationic dyestuffs of the formula



wherein
R^2 represents hydrogen, C_1- to C_4-alkyl, which can be substituted by cyano, hydroxyl, C_1- to C_4-alkoxy, chlorine, C_1- to C_4-alkoxycarbonyl, aminocarbonyl, mono-C_1- to C_4-alkylaminocarbonyl or di-C_1- to C_4-alkylaminocarbonyl,
R^3 represents hydrogen or C_1- to C_4-alkyl and
R^4 represents hydrogen, chlorine, bromine, C_1- to C_4-alkylcarbonylamino, benzoylamino, methylsulphonylamino, phenylsulphonylamino, C_1- to C_4-alkylsulphonyl, phenylsulphonyl,

aminosulphonyl, mono-C_1- to C_4-alkylaminosulphonyl, di-C_1- to C_4-alkylaminosulphonyl, monophenylaminosulphonyl, diphenylaminosulphonyl, C_1- to C_4-alkylmercapto, in which the alkyl radical can be substituted by carboxyl, C_1- to C_4-alkoxycarbonyl, hydroxyl, methoxy or ethoxy, or represents phenylmercapto, carboxyl, cyano or a radical of the formulae



R^5 represents hydrogen, chlorine or bromine,
R^6 and R^7 represent C_1- to C_4-alkyl, phenyl or benzyl, or, together with the nitrogen, represent a pyrrolidine, piperidine or morpholine ring,
R^8 represents hydrogen, C_1- to C_4-alkyl, phenyl or benzyl and An^- represents an anion, and wherein
the phenyl radicals mentioned can be substituted with nonsterically hindering C_1- to C_4-alkyl, chlorine, bromine, hydroxyl or C_1- to C_4-alkoxy.

4,446,327
PROCESS FOR THE PREPARATION OF 3-CHLOROPHTHALIDE

Greger Weisgerber, Königswinter, and Klaus-Dieter Steffen, Hennef, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 154,736, May 30, 1980, abandoned, which is a continuation of Ser. No. 13,498, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 782,486, Mar. 29, 1977, abandoned. This application May 6, 1982, Ser. No. 375,637
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614449
Int. Cl.³ C07D *307/77*
U.S. Cl. 549—307 **7 Claims**

1. Process for the preparation of 3-chlorophthalide by hydrolysis of pentachloro-o-xylene, characterized in that pentachloro-o-xylene is hydrolyzed with 1.8–2.2 mols of water per mol of pentachloro-xylene at temperatures above 100° C., in the presence of a Lewis acid catalyst, by proportioning of the water into the reaction mixture at the rate at which it reacts to form HCl.

4,446,328
PROCESS FOR PRODUCING METHACROLEIN

Atsushi Aoshima, Yokohama, and Ryoichi Mitsui, Fuji, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 14, 1981, Ser. No. 263,667
Claims priority, application Japan, May 19, 1980, 55-66088; May 19, 1980, 55-66089
Int. Cl.³ C07C *45/32*
U.S. Cl. 568—479 **5 Claims**

1. A process for producing methacrolein by oxidizing isobutylene or tertiary butanol with molecular oxygen in the presence of a catalyst, characterized in that the oxidation is conducted at a temperature of 200° to 550° C. at a pressure of 9.5 to 10 atm at a space velocity of 100 to 5,000 hr^{-1} for a contact time of 0.1 to 15 sec and the catalyst has the general composition:

$$Mo_{12}Fe_aNi_bTe_cX_dZ_fY_gO_h$$

wherein a, b, c, d, f and g represent the numbers of atoms of the respective elements per 12 molybdenum atoms; X is Tl, Rb or Cs; Z is In or Ti; Y represents at least one element selected from the group consisting of Cu, Nd, Sm and Pb; a is a value of 0.2–6; b is a value of 0.2–6; a+b is a value of 1–10; c is a value of 0.1–4; d is a value of 0.1–3; f is a value of 0.1–3; g is a value of 0–5; and h is the number of oxygen atoms for satisfying the valencies of the existing elements.

4,446,329
ALKYLATION OR AROMATIC COMPOUNDS

Francis J. Waller, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 24, 1983, Ser. No. 478,543
Int. Cl.³ C07C *2/66*
U.S. Cl. 585—458 **15 Claims**

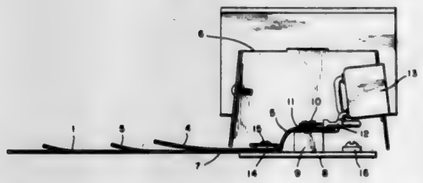
1. Improved catalytic process for the alkylation of aromatic substrates, the improved process characterized in that it is carried out at at least 200° C. and the catalyst is a metal cation salt of a perfluorosulfonic acid polymer having an equivalent weight of about 500 to about 20,000, the metal cation having a log K_{11} greater than -10.

4,446,330

ELECTRICAL SERVICE MODULE WITH STRAIN RELIEF MEMBER

Urs F. Nager, Jr., Bethel, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Oct. 26, 1981, Ser. No. 314,964
Int. Cl.³ H02G *3/10*
U.S. Cl. 174—51 4 Claims



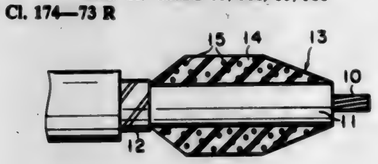
1. An electrical service module in a flat conductor cable wiring system, comprising:
a. a housing;
b. an insulating member within the housing for mounting a portion of a flat conductor cable thereon;
c. a wiring structure extending into the housing which comprises a flat conductor cable and a flat conductive grounding shield;
d. a clamping member attached to the inside of the housing;
wherein said wiring structure is confined between said clamping member and a portion of said housing;
wherein said cable extends from the clamping member to, and is mounted on said insulating member by fasteners which are electrically connected to said cable; and
wherein the flat conductive grounding shield is terminated within said housing and is at least partially wrapped around said clamping member in a direction opposite to that from which it enters said clamping member.

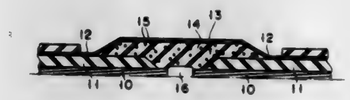
4,446,331

POWER CABLE JOINT STRUCTURE INCLUDING A REINFORCEMENT INSULATOR CONTAINING ELECTRODE SPHERICAL BODIES

Michio Takaoka, Chiba; Motoyuki Ono, Sakura; Isao Kaji, Ichikawa, and Shigeki Yagi, Yachiyo, all of Japan, assignors to The Fujikura Cable Works, Limited, Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 396,139
Claims priority, application Japan, Jul. 17, 1981, 56-106944[U]
Int. Cl.³ H02G *15/068, 15/188*
U.S. Cl. 174—73 R 3 Claims





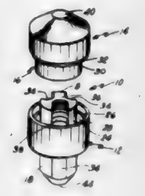
1. A power cable joint structure comprising:
conductor means;
cable insulator covering the conductor means;
cable shielding layer wound about the cable insulator; and
reinforcement insulator means covering an exposed portion of the cable insulator for controlling the voltage distribution between the conductor means and the cable shielding layer, said reinforcement insulator means containing electrode spherical bodies.

4,446,332

WIRE CONNECTOR

William C. Dauser, Jr., North Muskegon, Mich., assignor to Lloyd A. Heneveld, Grand Rapids, Mich., Trustee of Dauser Trust IV— Solderless Connector

Continuation-in-part of Ser. No. 99,624, Dec. 3, 1979. This application Sep. 14, 1981, Ser. No. 301,765
The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.
Int. Cl.³ H01R *11/00*
U.S. Cl. 174—87 11 Claims



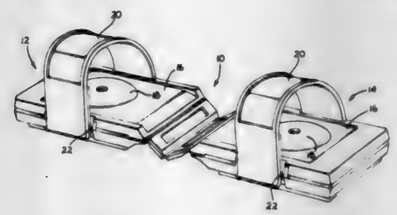
1. A self-stripping solderless electrical connector comprising:
an elongated body of insulating material having wire receiving channels formed along at least a portion of its length for receiving electrical wire covered with insulation;
support means of insulating material having a conductive member fixed thereto, said support means and said conductive member being adapted for linear movement along a portion of said elongated body and said channels in response to a linear force directed along the elongated axis of said body, said conductive member adapted to engage a plurality of insulated wire conductors positioned in said channels, cut through the insulation thereof, and engage wire conductors to provide an electrical connection therebetween upon said movement of said support means and conductive member along said elongated body;
and means including releasable fixing means for attaching one end of said support means in a predetermined position on said body, in which position the channels each can receive a separate insulation covered, electrical wire before said movement of said support means and conductive member relative to said body; said fixing means being releasable in response to said linear force moving said support means and said conductive member.

4,446,333

FLEXIBLE ACOUSTIC COUPLER

Bayard F. Kessler, Woodland Hills, Calif., assignor to Novation, Inc., Chatsworth, Calif.

Filed Oct. 14, 1981, Ser. No. 311,173
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 C 11 Claims



1. An acoustic coupler comprising:

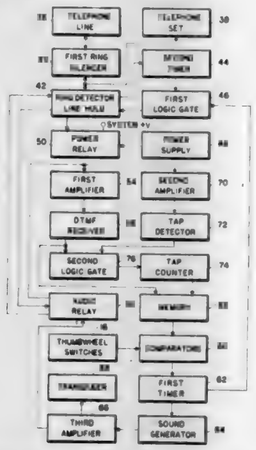
a first half member housing a speaker therewithin;
a second half member housing a microphone therewithin;
a flexible hinge means coupling said first half member to said second half member, said flexible hinge means having at least three substantially parallel predefined hinge axes, said flexible hinge means being a means for enabling the position and orientation of said first half member to be independently varied with respect to said second half member through a predetermined range of relative spatial positions and angular orientations with good flexibility with respect to the degrees of freedom required to mate said acoustic coupler with substantially all telephone handsets while providing substantial resistance to relative motion unnecessary to such proper mating and tending to make the use of said acoustic coupler inconvenient and cumbersome.

4,446,334

TELEPHONE NUMBER CODING DEVICE

James W. Groff, P.O. Box 38, Morgan Hill, Calif. 95037

Filed Jan. 31, 1983, Ser. No. 432,272
Int. Cl.³ H04M *1/21, 11/02*
U.S. Cl. 179—81 R **16 Claims**



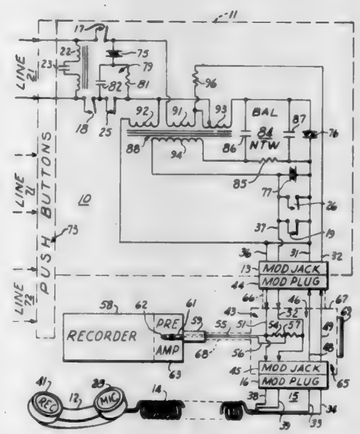
1. A telephone number coding device for eliminating unwanted telephone calls, intended to be connected between a telephone line and a telephone set, said coding device comprising in combination: a first ringer silencing means connected in series between said telephone line and telephone set for silencing a ringer mechanism of said telephone set; ring detector means connected in parallel with said telephone line, and line hold means connected in parallel with said telephone set, said ring detector means actuating said line hold means in response to ring signals appearing on said telephone line for automatically answering a telephone call and placing said call on hold; power relay means operatively associated with said line hold means for switching power to said coding device in response to actuation of said line hold means; audio relay means cooperating with said line hold means and telephone line for transferring sound to and from said telephone line; first and second amplifier means cooperating with said audio relay means for amplifying an audio signal comprising a special number code dialed by a caller to access said coding device; receiver and detector means cooperating with said first and second amplifier means for receiving and detecting the presence of said special number code on said telephone line; a memory associated with the outputs of said receiver and detector means for temporarily storing said special number code; a plurality of indicia bearing switching means for preselecting said special number code by the user of said coding device; comparator means cooperating with the outputs of said memory and said plurality of indicia bearing switching means for comparing a dialed special number code with a preselected special number code and providing a logic signal when both codes are identical; a first timing means actuated by said logic signal for providing a predetermined timed interval when said codes are identical; sound generator and third amplifier means actuated by said first timing means for generating and amplifying simulated ring signals in response to a correctly dialed special number code, said sound generator and third amplifier means further cooperating with said audio relay means, line hold means, and telephone line for transferring said simulated ring signals to said telephone line for the benefit of a caller accessing said coding device; a transducer operatively associated with said sound generator and third amplifier means for reproducing said simulated ring signals for the benefit of the coding device user; a second timing means cooperating with said first timing means, associated gating means, and said line hold means for automatically releasing said telephone line subsequent to a predetermined timed delay when said special number code is incorrectly dialed; and a second ringer silencing means connected in series between said telephone line and an extension telephone for silencing a ringer mechanism of an extension telephone cooperating with said telephone set.

4,446,335

TELEPHONE SIGNAL RECORDING METHODS AND APPARATUS

Charles E. Lee, Miller Place, N.Y., and C. Marlon Combs, Claremont, Calif., assignors to Dynametric, Inc., Pasadena, Calif.

Filed Jan. 25, 1982, Ser. No. 342,253
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 C **40 Claims**



1. A method of recording an audio signal at a telephone set having a housing and a handset connected to a first modular jack in said housing via a handset cord having at an end thereof a first modular plug fitting into said first modular jack, comprising in combination the steps of:
providing a second modular plug fitting into said first modular jack;
providing a second modular jack for receiving said first modular plug;
providing an electrical interconnection of said second modular jack with said second modular plug;
inserting said second modular plug into said first modular jack and said first modular plug into said second modular jack;
tapping said audio signal from said electrical interconnection of said second modular jack with said second modular plug; and

recording said tapped audio signal.

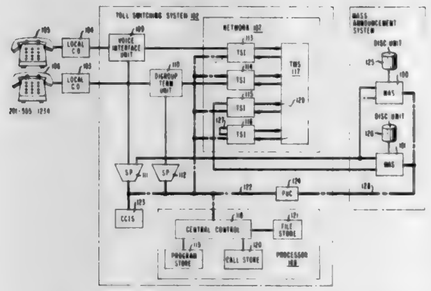
21. Apparatus for recording an audio signal at a telephone set having a housing and a handset connected to a first modular jack in said housing via a handset cord having at an end thereof a first modular plug fitted into said first modular jack, comprising in combination:
a second modular plug fitting into said first modular jack;
a second modular jack for receiving said first modular plug;
an electrical interconnection of said second modular jack with said second modular plug;
means connected to said interconnection for tapping said audio signal from said electrical interconnection of said second modular jack with said second modular plug; and
means connected to said tapping means for recording said tapped audio signal.

4,446,336

METHOD FOR RECORDING AND UPDATING STORED MESSAGES IN AN ANNOUNCEMENT SYSTEM

Leslie D. Bethel, Naperville; Howard A. Kerr, West Chicago; Frances B. Strebendt, Wheaton, all of Ill., and John E. Waninski, Jr., Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1981, Ser. No. 233,001
Int. Cl.³ H04M *1/64, 1/66*
U.S. Cl. 179—6.10 **7 Claims**



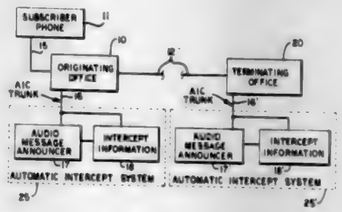
1. For use in a telephone network having announcement equipment for storing recorded announcements for transmittal over the network and a switching office for selectively interconnecting telephone stations with said equipment, a machine method operative from one of said stations for updating a particular stored one of said recorded announcements comprising the steps of
transmitting a new standby announcement over a first connection to said announcement equipment,
upon receipt of said standby announcement establishing a second connection from said office to a station designated by said office for verification of the standby announcement,
retransmitting said standby announcement over said second connection in response to a signal from said designated station, and
replacing the particular stored announcement with the standby announcement in the event the switching office interrupts the second connection before a second signal is received from said designated station.

4,446,337

METHOD AND APPARATUS FOR REVERTIVE AUTOMATIC INTERCEPT MESSAGE DELIVERY IN A TELEPHONE SYSTEM

Frank H. Cofer, Hoschton, Ga., assignor to The Audichron Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 59,646, Jul. 23, 1979, abandoned. This application Jun. 7, 1982, Ser. No. 385,497
Int. Cl.³ H04M *3/42, 7/06*
U.S. Cl. 179—18 B **5 Claims**



1. A method for delivering an audio intercept message at a call originating location in response to an intercept signal returned from a call terminating location, comprising the steps of:
recognizing an intercept condition occurring at the terminating location, in response to a call originated by a calling party at the originating location;
producing at said terminating location an intercept message control signal which corresponds to a desired audio intercept message;
returning said intercept message control signal from said terminating location to said originating location;
originating a selected audio intercept message at said originating location for delivery to the calling party at said originating location, in response to said intercept message control signal returned from said terminating location;
producing at the originating location an acknowledgement signal in response to said intercept message control signal and forwarding said acknowledgement signal to the terminating location, if and only if the originating location is capable of originating said audio intercept message in response to said intercept message control signal; and
originating an audio intercept message at the terminating location for audio transmission to the calling party at the originating location, if said acknowledgement signal is not received at the terminating location within a predetermined time after the intercept message control signal was returned to the originating location.

4,446,338

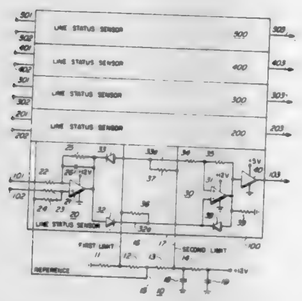
TELEPHONE LINES STATUS SENSOR

Reinhard W. Rosch, Richmond, Canada, assignor to Northern Telecom Limited, Montreal, Canada.

Filed Jul. 12, 1982, Ser. No. 397,567
Int. Cl.³ H04Q *5/20*
U.S. Cl. 179—18 FA **14 Claims**

1. A line status sensor for use in a telephone station apparatus including a pair of line terminals for connection to tip and ring leads of a telephone line, the line status sensor comprising:
first and second power terminals for connection across a power source;
first means being connected across the first and second power terminals, for generating a reference voltage, and first and second limit voltages of negative and positive polarities respectively in relation to the reference voltage;
a translation circuit being responsive to forward and reverse potential differences appearing across the line terminals and to the reference voltage, for generating voltage signals of corresponding polarity in relation to the reference voltage;
a detection circuit for generating an output signal being of

one binary state in response to the voltage signal being outside of a range defined in relation to the first and second limit voltages, and for generating the output signal



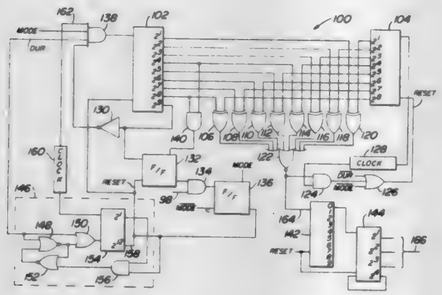
being of another binary state in response to the voltage signal being within said defined range, whereby said output signal is indicative of conditions of the telephone line.

4,446,339

ROTARY DIAL DECODER

Duane R. Bolgiano, Bala Cynwyd, Pa., assignor to International Mobile Machines Corporation, Bala Cynwyd, Pa.

Filed Apr. 26, 1982, Ser. No. 371,808
Int. Cl.³ H04M *3/38*
U.S. Cl. 179—84 R **6 Claims**



1. In a rotary dial actuated telephone system, means for detecting frequency transients produced by the rotation of a telephone dial, means for determining a fixed time period for passage of said transients from the dial to a telephone receiver network, means for counting the quantity of said transients passing to said receiver network within said fixed time period, means for translating the quantity of transients passed to said receiver network within said time period into an actuating signal, and generating means to utilize said actuating signal to generate a desired function.

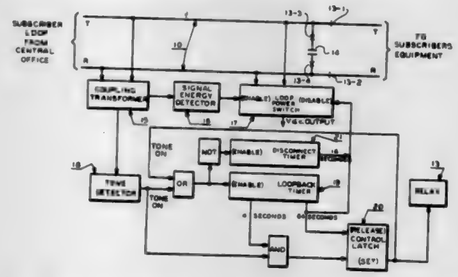
4,446,340

CUSTOMER PREMISES LOOP TEST UNIT POWERED FROM THE NORMAL CENTRAL OFFICE POWER SOURCE

Warren R. Fryer, New York, N.Y., assignor to Calculagraph Company, East Hanover, N.J.

Filed Apr. 23, 1982, Ser. No. 371,080
Int. Cl.³ H04B *3/46*
U.S. Cl. 179—175.3 R **4 Claims**

1. A telephone line loopback circuit for use in testing the line between the central office and a subscriber's equipment, which circuit is located at the subscriber's end of the line and adapted to be powered solely by the normal central office power supply, means normally maintaining the circuit disconnected from the office power supply, and means connecting the circuit to



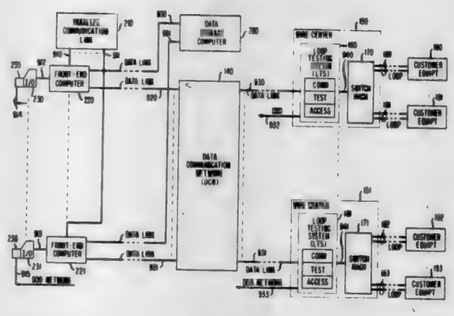
the office power supply as a result of receiving an a.c. signal transmitted over the telephone line.

4,446,341

MECHANIZED TESTING OF SUBSCRIBER FACILITIES

Harvey Rubin, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,177
Int. Cl.³ H04M *3/26*
U.S. Cl. 179—175.2 R **10 Claims**
MICROFICHE APPENDIX INCLUDED
(89 Microfiche, 5358 Pages)



1. In combination with a wire center (150) having test trunk means (940,170) for connecting to subscriber loops (180,181) and associated equipment (190,191) served by said wire center, a system for accessing said loops and said equipment comprising

processor means (200,210,220,221) having an interface (230 or 231) for receiving information (INFORMATION fields) provided by a system user,

controller means (160), collocated with said wire center, including means (2600,2650,2700,2801-2816,2950) for accessing one of said loops through said test trunk means as determined by said information, and

means (920,921,140,930) for transmitting said information from said processor means to said controller means,

said interface including circuitry (235,236) for establishing a communication path over the national dial network (914,915) terminating at said interface, and

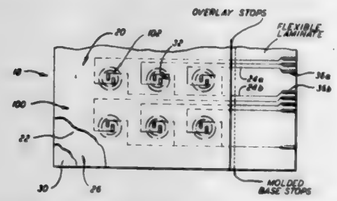
said controller means including means (2301-2306,2400) for calling said circuitry over the national dial network (932) originating from said wire center based on said information and means (2700) for connecting said one of said loops to said communication path, thereby providing a connection for interactive communication.

4,446,342

ELECTRICAL SWITCH ASSEMBLY AND METHOD OF MANUFACTURE

Joseph A. Roberts, Hudson, N.H., assignor to Advanced Circuit Technology, Nashua, N.H.

Continuation-in-part of Ser. No. 216,162, Dec. 15, 1980, abandoned. This application Aug. 5, 1981, Ser. No. 290,220
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 R **12 Claims**



1. An electrical switch assembly comprising in combination:

a dielectric carrier panel having at least one cavity formed in one face of said panel;

an electrically conductive circuit formed of a resiliently flexible conductive material fixed in part to said dielectric carrier panel, said electrically conductive circuit having an array of switch means, each of said switch means comprising a pair of contact members overlying said cavity, said pair of contact members comprising (a) integral extensions of such said conductive circuits and including (b) a pair of generally L-shaped fingers (1) disposed inwardly for a distance and (2) cantilevered from the edge of their associated cavity, said L-shaped fingers occupying the same plane adjacent the edge of their associated cavity, extending beyond the geometric center of said associated cavity, and extending, in part, above or below the plane of said one face; and

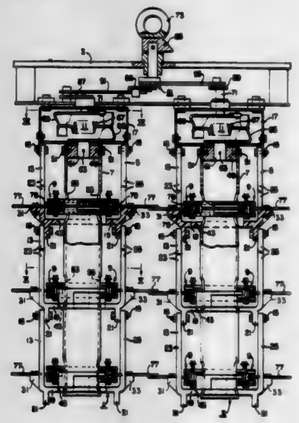
actuating means overlaying said contacts members.

4,446,343

SWITCH MECHANISM FOR TRANSFORMER

Gregory J. Golub, and Albert M. Jenkins, both of Athens, Ga., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 14, 1982, Ser. No. 417,964
Int. Cl.³ H01H *3/00, 19/00, 21/00*
U.S. Cl. 200—11 TC **4 Claims**



1. A switching device between two electrical supply lines for use with electrical inductive apparatus, comprising:

a tank having a side wall for containing electrical inductive apparatus;

a pair of open-close switches mounted on the side wall and electrically connected to said apparatus to provide three- and four-position switching;

each switch having an operating shaft, a movable contact structure on the shaft, and spaced stationary contact structures disposed on the switch for simultaneous open-close switching;

the operating shafts having separate shaft portions;

an operating handle external of the tank and connected to the separate shaft portions;

linkage means coupled between the operating shaft portions and the handle to provide

(a) four-position switching including

(1) transformer closed through both switches,

(2) transformer closed through the one switch,

(3) transformer closed through the other switch,

(4) transformer open through both switches, or

(b) three-position switching including transformer grounded, closed, or open, when one of the electrical supply lines is grounded;

means for connecting the operating handle to the linkage means and include a crank shaft extending through the side wall;

a crank arm fixedly mounted on the crank shaft;

a crank link fixedly mounted on the crank arm;

a rocker arm mounted on each operating shaft portion;

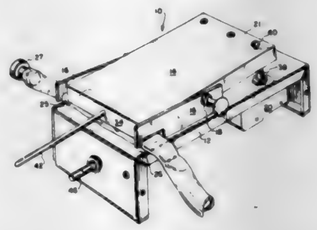
and a connecting link connected between the crank arm and each of the rocker arms.

4,446,344

PRESSURE OPERATED SWITCH INCLUDING AN EXPANDABLE FLAT TUBE

Armin Fiedler, Chicago, Ill., assignor to International Freezer Corp., Chicago, Ill.

Continuation of Ser. No. 123,198, Feb. 21, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 314,755
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 B **10 Claims**



6. A pressure operated device for providing an output signal in response to a predetermined pressure condition, said device comprising:

a tube having a segment of deformable material adapted to communicate with a source of varying pressure;

housing means;

a switch supported by the housing means;

said housing means defining a supporting surface for said tube;

a movable member supported by said housing means;

means releasably retaining said tube segment between said supporting surface and said movable member;

said movable member being coupled to said switch for operating the switch to provide an output signal in response to tube segment deformation resulting from the predetermined pressure condition;

and the improvement characterized by;

said tube segment lying between said supporting surface and said movable member being flat on at least an entire elon-

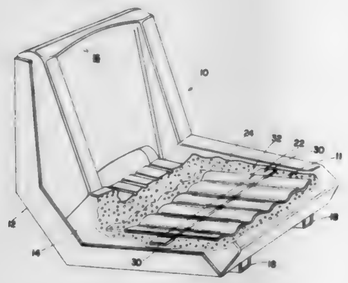
gated surface of said tube segment in contact with said movable member when said tube is in an unpressurized condition.

4,446,345

SEAT SWITCH ASSEMBLY

William G. Sheiry, Roanoke, Va., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 19, 1982, Ser. No. 379,593
Int. Cl.[3] H01H *3/02*
U.S. Cl. 200—85 R 4 Claims



1. In combination with a seat comprising a frame and a bottom cushion supported by said frame, a switch assembly including a ribbon switch disposed horizontally across said bottom cushion, the improvement wherein said switch assembly includes a substantially rigid actuating member disposed above said ribbon switch and substantially coextensive with the length of said ribbon switch in a direction parallel to the length of said ribbon switch and of substantially greater length than the width of said ribbon switch in a direction across said ribbon switch, said actuating member having a plurality of spaced apart contact areas extending across and engageable with said ribbon switch, said actuating member having a projected surface area which is only slightly smaller than the surface area of said cushion, said switch being connected in an electrical circuit including a power source and a warning device, said warning device being activated by actuation of said ribbon switch due to a weight equivalent to the weight of an operator applied to said cushion.

4,446,346

VACUUM INTERRUPTER

Yutaka Kashimoto, Tokyo; Shinzo Sakuma, Kanagawa, and Eiji Umeya, Shizuoka, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

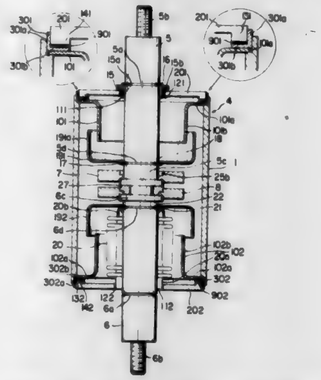
Filed Oct. 9, 1981, Ser. No. 310,397
Claims priority, application Japan, Oct. 21, 1980, 55-150277[U]
Int. Cl.[3] H01H *33/66*
U.S. Cl. 200—144 B 6 Claims

1. A vacuum interrupter comprising:

(a) a pair of fixed and movable electrode rods, each of said electrode rods being formed with a flange portion at one end thereof;

(b) a pair of fixed and movable electrodes of the magnetic arc driving type, each of said electrodes being formed with a central hole and two annular equal-depth recessed fitting portions on the upper and lower surfaces thereof, said flange portion of each of said fixed and movable electrode rods being fitted to one of said two central recessed fitting portions of each of said fixed and movable electrodes, respectively; and

(c) a contact member formed with a flange portion fitted to the other of said two annular recessed fitting portions of one of said two electrodes in such a way that the flange portion of the electrode rod fixed to the other electrode



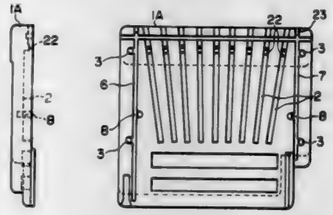
can be brought into contact with or separated from said contact member for current interruption.

4,446,347

ARC-SUPPRESSING APPARATUS FOR CIRCUIT BREAKER

Kiyoshi Eguchi; Takayoshi Ishikawa; Shigemi Tamaru; Yasushi Genba, and Toshihiko Kodera, all of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,939
Claims priority, application Japan, Apr. 6, 1981, 56-51064[U]
Int. Cl.[3] H01N *33/08, 9/34*
U.S. Cl. 200—144 R 8 Claims



1. An arc-suppressing apparatus for a circuit breaker, comprising:

at least one grid;

a pair of plates, each having at least one first groove located at a predetermined position and at least one second groove extending linearly from one end of said at least one first groove to an edge of each of said side plates, said second groove being shallower than said first groove;

said at least one grid having opposite side edges insertable into said at least one first groove by sliding said opposite side edges along said second groove on said pair of plates, said at least one grid being held by said pair of plates.

4,446,348

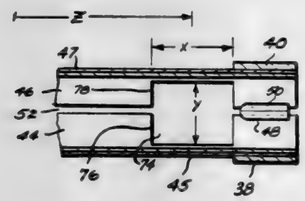
SERPENTINE MICROWAVE APPLICATOR

Hua-Feng Huang, Chadds Ford, Pa., and Walter A. Wallace, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1982, Ser. No. 363,282
Int. Cl.[3] H05B *9/06*
U.S. Cl. 219—10.55 A 9 Claims

1. In a serpentine microwave applicator having a plurality of

slotted waveguides and rectangular apertures between the waveguides for coupling them, the improvement comprising



providing each aperture with a width greater than its depth and at least half the guided wavelength of the applied energy.

4,446,349

MICROWAVE PHASE SHIFTING DEVICE

Peter H. Smith, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 3, 1983, Ser. No. 454,962
Int. Cl.[3] H05B *6/74*
U.S. Cl. 219—10.55 F 18 Claims

1. Apparatus for shifting the phase of microwave energy propagating in a hollow waveguide of generally rectangular cross-section comprising a pair of opposed parallel broad walls, joined by a pair of opposed parallel narrow walls, configured to support a predetermined microwave energy propagation mode therein and adapted at one end thereof to receive microwave energy from an external source to establish an electric field in the waveguide characterized by a standing wave field pattern, said apparatus comprising:

a septum formed in the waveguide remote from the one end thereof and extending parallel to the narrow walls and electrically connecting the broad walls, thereby dividing the waveguide into two sub-waveguides, the resultant width of each sub-waveguide being insufficient to support the predetermined propagating mode, said septum having a leading edge disposed toward the one end of the waveguide and defining a short circuit termination for the waveguide;

a pair of dielectric plugs, each mounted in a respective one of said sub-waveguides, for tandem longitudinal movement relative to said leading edge, the phase of the standing wave varying substantially linearly with forward displacement of said plugs toward the one end of the waveguide relative to said leading edge; and

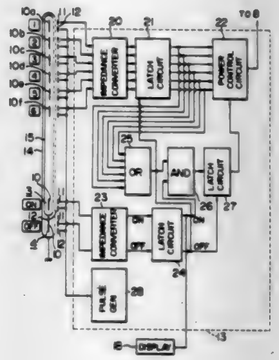
means for moving said plugs relative to said leading edge to shift the phase of the standing wave field pattern in the waveguide.

4,446,350

INDUCTION HEATING COOKING APPARATUS

Takumi Mizukawa, Neyagawa; Keizo Amagami, Takatsuki, and Yoshio Ogino, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 9, 1981, Ser. No. 272,032
Claims priority, application Japan, Jun. 17, 1980, 55-82613
Int. Cl.[3] H05B *6/12; G08C 9/02*
U.S. Cl. 219—10.77 4 Claims



1. An induction heating cooking apparatus comprising

a flat pan supporting plate made of a heat-resistant dielectric material for supporting a pan thereon, said plate having upper and lower surfaces;

a heating coil for induction heating of said pan, said heating coil being positioned under said pan supporting plate;

a power source for supplying a high frequency current to said heating coil;

a first touch pad for producing a first signal to effect turning on of said power source upon being touched with a finger;

a second touch pad for producing a second signal to effect turning off of said power source upon being touched with a finger;

a third touch pad for producing a third signal to effect setting of a power level of said power source to a predetermined level;

each of said first, second and third touch pads constituting a capacitor-pair formed by a first electrode attached to the upper surface of said pan supporting plate and second and third electrodes respectively mounted on the lower surface of said pan supporting plate, the capacitance of the capacitor-pair being varied when the first electrode is touched;

a control circuit connected to said first, second and third touch pads and said power source for controlling the supply of said high frequency current from said power source in response to said first, second and third signals from said first, second and third touch pads;

a first guard ring made of a conductive material formed on the upper surface of said pan supporting plate enclosing said first electrodes of said first, second and third touch pads, said first guard ring being connected to said first electrode of said second touch pad; and

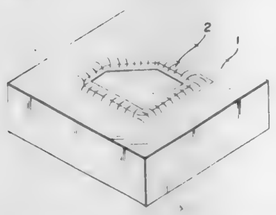
a second guard ring made of a conductive material formed on the upper surface of said pan supporting plate enclosing said first guard ring, said second guard ring being grounded.

4,446,351

PROCESS FOR PREPARING A PRESS DIE

Kenji Kawaguchi; Osamu Hamada; Seigo Hiramoto, all of Amagasaki; Yukio Kato, and Kozo Yamada, both of Nakatsugawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1981, Ser. No. 326,163
Claims priority, application Japan, Feb. 27, 1981, 56-28891; Apr. 7, 1981, 56-52029
Int. Cl.³ B23P *1/00*; B21K *5/20*
U.S. Cl. 219—69 W **8 Claims**



1. A process for preparing a press die, comprising:
forming a base metal piece having first and second surfaces;
overlaying an overlaid metal on a selected portion of said first surface, said overlaid metal being different in kind from said base metal; and
subsequently forming said die by cutting said base and overlaid metals into a predetermined shape in a single operation at said selected portion and by use of a wire cut electric discharging process, to form a die edge extending from said first surface towards said second surface.

4,446,352

FILTER LEAF

Theodore H. O'Cheskey, and Hugh T. Edwards, Jr., both of Whittier, Calif., assignors to United States Filter Fluid Systems Corp., Whittier, Calif.

Continuation of Ser. No. 177,265, Aug. 11, 1980, abandoned. This application Nov. 22, 1982, Ser. No. 443,670
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LC **15 Claims**



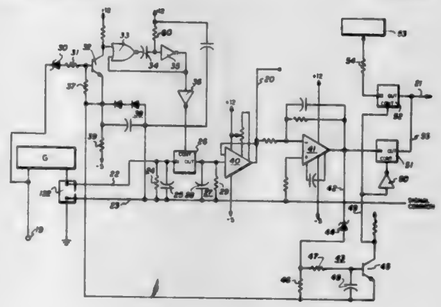
1. A filter leaf comprising:
a closed frame having an inner periphery defining an open space within the frame and an outer periphery, a first flat side surface extending between the peripheries, and a second flat side surface extending between the peripheries;
a first screen covering the open space such that the outer periphery of the first screen overlaps and abuts the first side surface of the frame;
a first bead made of the same material as the first screen bonding the edge of the first screen to the first side surface of the frame, the first bead having a flange extending into the frame from the edge of the first screen toward the inner periphery of the frame;
a second screen covering the open space such that the outer periphery of the second screen overlaps and abuts the second side surface of the frame; and
a second bead made of the same material as the second screen bonding the edge of the second screen to the second side surface of the frame the second bead having a flange extending into the frame from the edge of the second screen toward the inner periphery of the frame.

4,446,353

CENTER TRACKING WELDER UNIT WITH FLOATING REFERENCE

Talbert D. Connell, Spring, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 114,828, Jan. 24, 1980, abandoned. This application May 7, 1982, Ser. No. 375,974
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—125.12 **11 Claims**



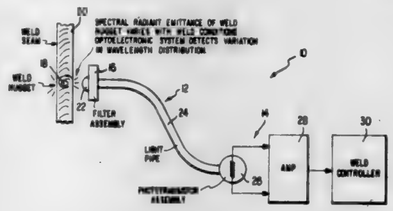
1. In the method of controlling movement of a welding torch device along a weld line in consumable electrode type arc welding where the welding torch is to weave along the weld line and wherein the weld current is integrated and compared against a reference for reversing the weaving direction when the integral of the weld current reaches a predetermined relation with respect to the reference, the improvement which comprises generating a floating reference voltage in response to the low frequency components of said weld current and reversing the direction of travel of the arc when said integral bears said predetermined relation to said floating reference voltage.

4,446,354

OPTOELECTRONIC WELD EVALUATION SYSTEM

Frank W. Kearney, Champaign, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 29, 1981, Ser. No. 268,224
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—130.01 **5 Claims**



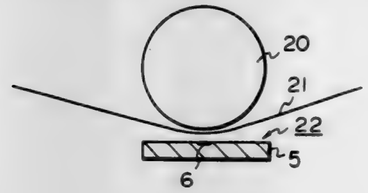
1. A weld quality sensing system for monitoring a weld bead, comprising:
(a) a first fiber optic light pipe, having first and second ends, disposed to receive radiation emitted from the weld bead at said first end;
(b) first photodetector means disposed at said second end of said fiber optic light pipe for generating an electrical signal in accordance with the spectral band amplitudes of said radiation;
(c) first means for driving said first photodetector means with a continuous bias sweep signal thereby controlling the received radiation; and
(d) first means for comparing said electrical signal with a reference value.

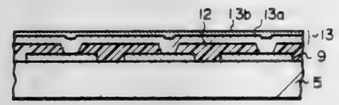
4,446,355

CROSSOVER CONSTRUCTION OF THERMAL-HEAD AND METHOD OF MANUFACTURING SAME

Kiyoshi Sato; Minoru Terashima, both of Kawasaki; Haruo Sorimachi, Yokohama; Toshiaki Naka, Machida; Takeo Kanno, Suzaka, and Fumiaki Yamada, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 22, 1982, Ser. No. 351,284
Claims priority, application Japan, Feb. 23, 1981, 56-24212
Int. Cl.³ H05B *3/00*; G01D *15/10*; B41J *3/20*
U.S. Cl. 219—216 **10 Claims**





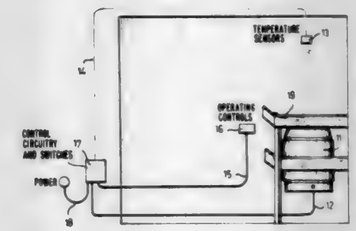
1. A crossover construction of a thermal-head in which the thermal-head comprises:
(a) a substrate of insulating material;
(b) a plurality of heat elements disposed side by side in one row on said substrate;
(c) a plurality of lower thin film conductor patterns, each of which connects to each of said heat elements and extends in direction X;
(d) an insulating layer disposed over said lower conductors;
(e) plurality of upper conductor patterns disposed in parallel in another direction Y on said insulating layer so as to form a crossover on said substrate, wherein said upper and lower conductors are selectively connected together through openings of said insulating layer, and wherein said insulating layer and said upper conductors comprise printed and cured paste of insulating material and conductive material, respectively, each paste being of the low temperature curing type which can be cured at a temperature low enough not to affect the resistance of said thin film lower conductors; and
(f) a metallic layer of low resistance coated on each of said upper conductors.

4,446,356

ELECTRIC SAUNA HEATER

Pentti I. Rimmi, Hanko, Finland, assignor to Oy Helo Tehtaat, Hanko, Finland

Filed Aug. 25, 1981, Ser. No. 296,160
Claims priority, application Finland, Sep. 12, 1980, 802863
Int. Cl.³ A61H *33/06*; F24H *9/20*; G05B *1/02*
U.S. Cl. 219—272 **10 Claims**



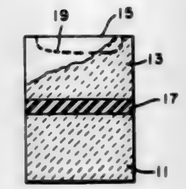
1. An electric sauna heater comprising:
a heater unit adapted to be disposed in a sauna room and including heating elements;
switching means coupled to said heating elements for connecting power to said heating elements;
controlling means coupled to said switching means for controlling operation of said switching means, said controlling means including circuitry operable at a low voltage relative to the voltage of the power connected to the heating elements;
operating controls for the sauna heater coupled to said circuitry operable at a low voltage of said controlling means, said operating controls being disposed as a separate unit from said switching means, said controlling means and said heater unit so that a low voltage is present at said separate unit for said operating controls; and
means for coupling said operating controls and said controlling means.

4,446,357

RESISTANCE-HEATED BOAT FOR METAL VAPORIZATION

Dennis W. Barshter, Grand Island, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio

Filed Oct. 30, 1981, Ser. No. 316,464
Int. Cl.³ C23C *13/12*
U.S. Cl. 219—275 **9 Claims**



1. A resistance-heated boat comprised of:
(a) an elongated heating portion comprised of a material selected from the group of refractory metal carbides, borides, nitrides, silicides, oxides and mixtures thereof.
(b) an elongated crucible portion comprised of a material selected from the group of refractory metal carbides, borides, nitrides, silicides, oxides, and mixtures thereof, said heating portion being substantially coextensive with said crucible portion.
(c) a heat conducting, substantially non-electrical conduct-

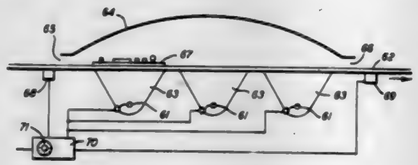
ing portion having a thermal conductivity between about 0.008 and about 0.500 cal-cm^2/sec/(°C./cm) and an electrical resistivity greater than 10^3 ohm-cm, said heat conducting portion being substantially coextensive with said crucible portion and being disposed between and in coextensive contact with said crucible portion and heater portion to form a high heat conductivity bridge therebetween.

4,446,358

PREHEATER FOR USE IN MASS SOLDERING APPARATUS

Matthias F. Comerford, Newton Highlands, Mass., and Michael G. McCallan, Windham, N.H., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Dec. 15, 1981, Ser. No. 330,909
Int. Cl.^{3} F27B *9/06*; F27D *11/00*; B23K *1/20*
U.S. Cl. 219—388 **6 Claims**



1. A preheater for a mass soldering apparatus comprising a plurality of rapid heat-up heaters, a parabolic reflector for directing the output from each heater toward a printed circuit board conveyor path and a detector responsive to a circuit board entering the preheater to turn on said heaters, the reflectors being directed to provide a substantially uniform distribution of heat from the heaters over a desired area of said circuit board conveyor path, said parabolic reflectors being arranged to direct heat from the heaters upwardly from underneath said circuit board conveyor path and a reflective cover being disposed over said desired area of the circuit board conveyor path to be heated, to reflect heat energy, passing through the conveyor path from the heaters, back toward the conveyor path, the heaters being quartz lamps of elongate cylindrical form disposed horizontally in parallel spaced relationship, the reflectors being disposed in parallel spaced apart relationship and said reflective cover defining a part cylindrical reflector having a longitudinal axis parallel to the cylindrical axis of said lamps, said quartz lamps having a response time to 90% of maximum heat of less than 5 seconds and further means arranged to detect or predict passage of a circuit board from the preheater and connected, in response to such passage, to turn off said heaters.

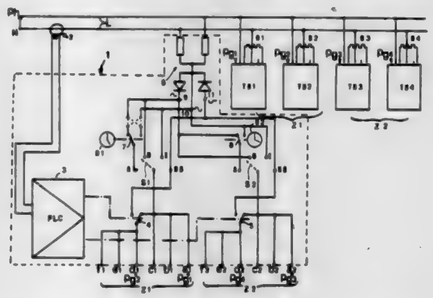
4,446,359

PEAK LOAD CONTROL FOR AN ELECTRIC HEATING SYSTEM

Cecilio Arribas, Laon, and Rene E. Blassiau, Nevers, both of France, assignors to Noirot-MT, Paris, France

Filed Nov. 24, 1981, Ser. No. 324,451
Int. Cl.^{3} H05B *1/02*
U.S. Cl. 219—485 **4 Claims**

1. A peak load control apparatus for use with an electric heating system comprising a plurality of electric heating units, said peak load control apparatus comprising detection means for detecting current to a feeder line for the electric heating units and providing a signal proportional to the current in the feeder line, a peak load trigger means connected to said detection means for delivering a signal when the signal provided by said detection means exceeds a predetermined adjustable value, first time control means comprising a flip-flop interposed between said peak load trigger means and a selected first group of the electric heating units for a predetermined adjustable period, second time control means comprising another flip-flop interposed between said peak load trigger means and a selected second group of electric heating units for cutting off power to the second group of electric heating units for a predetermined adjustable period substantially at the end of the predetermined period during which power to the first group of electric heating units is cut off, relay means for controlling each group of



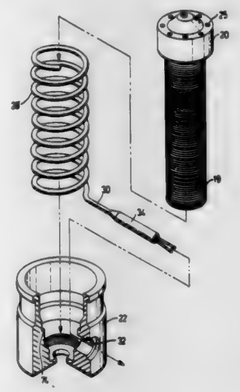
electric heating units energized from one of said time control means and actuating a switch arranged in pilot circuits of each of said groups of electric heating units, and an enabling circuit for simultaneously cutting off power to the first and second groups of electric heating units, said enabling circuit being connected to said peak load trigger means and third time control means for simultaneously energizing said relay means.

4,446,360

SPRUE BUSHING CONNECTOR ASSEMBLY

Jobst U. Gellert, 7A Prince St., Glen Williams, Canada

Division of Ser. No. 285,260, Jul. 20, 1981, Pat. No. 4,403,405.
This application Jun. 27, 1983, Ser. No. 508,080
Claims priority, application Canada, Jul. 15, 1981, 381799
Int. Cl.^{3} F27B *14/06*
U.S. Cl. 219—421 **4 Claims**



1. In an integral electrically heated sprue bushing having a hollow elongated inner core portion with a runner passage extending centrally therethrough, an electrical heating element with a helical portion encircling the inner core portion and a lead portion having an enlarged end portion, the lead portion extending out through an aperture in the sprue bushing which is considerably larger than the heating element lead portion, a highly conductive elongated portion around the helical portion of the heating element, and an elongated outer sleeve portion over the conductive portion, the improvement further comprising:

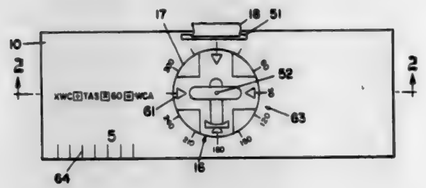
(a) the aperture having seat means therein,
(b) first split washer means with a central opening through which the heating element lead portion extends formed by fitting a first plurality of split washer portions in the seat means in the aperture around the heating element lead portion thereby substantially closing the space thereabout,
(c) second split washer means similar to the first split washer means formed adjacent thereto by fitting a second plurality of split washer portions in the seat means in the aperture around the heating element lead portion, and
(d) a hollow elongated connector sleeve rigidly fixed to the sprue bushing with one end received in the aperture adjacent the second split washer means, with the heating element lead portion extending therein for connection to external lead wires.

4,446,361

AIRCRAFT FLIGHT COMPUTER

Steven R. Riggin, 5315 E. Countryside, Wichita, Kans. 67218

Filed Jun. 11, 1979, Ser. No. 47,145
Int. Cl.^{3} G06C *27/00*
U.S. Cl. 235—78 N **3 Claims**



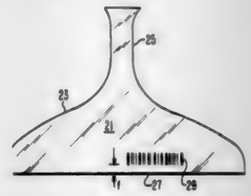
1. A laminated aircraft flight computer for use by aircraft pilots to plot courses, determine the effect of wind on the aircraft, determine headings for radio navigation, determine traffic pattern headings, and holding pattern headings assigned by the air traffic controller comprising:
A first structural member having a first substantially cylindrical opening, a planer bottom said opening having an axis of symmetry;
A second structural member fastened to said first structural member having a second substantially circular cylindrical opening coaxial with said first opening, said opening being larger than said first opening;
A first circular disk member having a radius substantially equal to the radius of said first opening for rotatable movement therein;
A second rotatable circular member having a radius substantially equal to the radius of said second opening, said second rotatable member positioned in said second opening substantially coaxial with said first rotatable member and overlaying the body thereof, said rotatable member adapted to permit access to said first rotatable member and is transparent;
A backplate member ridgidly attached to at least said first structural member, and preventing downward axial movement of said first rotatable member;
A retainer member rigidly attached to at least said second structural member, having a third circular opening therein for viewing predetermined indicia means imprinted on said first and second rotatable members; and said retainer member and said second structural member forming lip means for axially retaining said first and second rotatable members in their respective openings.

4,446,362

WORKPIECE WITH ABRADED MACHINE-READABLE MARKING THEREIN AND METHOD OF MAKING

Philip M. Heyman, Robbinsville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,092
Int. Cl.^{3} G06K *7/10*
U.S. Cl. 235—462 **5 Claims**



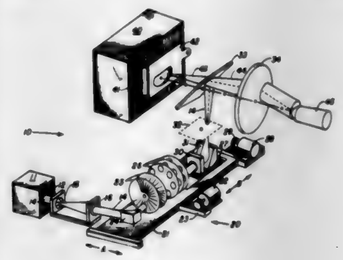
1. A method for producing a machine-readable coded marking in a surface of a rigid workpiece, said marking comprising a related sequence of substantially parallel bars of at least two different widths separated by substantially parallel spacings comprising
(a) providing means for abrading a single defined strip-like area of said surface, said defined area having about the width of the smaller of said two different widths of said bars,
(b) moving said abrading means along a particular substantially linear path with respect to said surface in the direction of the width of said defined area so as to selectively target a succession of contiguous defined areas of said surface,
(c) and, during step (b), either activating said abrading means to abrade at one time the entire targetted defined area of said surface or deactivating said abrading means to not abrade any part of said targetted defined surface area according to a prearranged program.

4,446,363

TARGET FOR OPTICALLY ACTIVATED SEEKERS AND TRACKERS

Charles T. Lakin, Fredericksburg, and Norman F. Willett, Colonial Beach, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1982, Ser. No. 353,682
Int. Cl.^{3} G01J *1/20*
U.S. Cl. 250—203 R **14 Claims**



1. A simulated target for a weapon having an optically activated seeker, comprising:
light source means generating a target light beam;
adjustable means for varying the cross-sectional area of the target light beam;
lens means for collimating the adjusted target light beam;
first movable platform means provided with means for di-

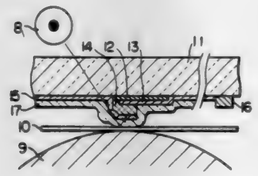
recting the collimated target light beam in a direction toward a second movable platform means;
the second movable platform means movably mounted on the first platform means, the second movable platform means being comprised of an output lens for focusing the directed and collimated target light beam at a position in the focal plane of the output lens;
means for selectively moving the first platform means relative to the collimating lens means and the second movable platform means relative to the first movable platform means so as to selectively position the focused target light beam on the focal plane of the output lens; and
an objective lens mounted in relation to the first and second movable platform means so as to project an image of the target light beam as selectively positioned on the focal plane to the optically activated seeker.

4,446,364

PHOTOELECTRIC CONVERTER ON A TRANSMISSIVE SUBSTRATE HAVING LIGHT SHIELDING

Seiichi Hayashi, and Eiichi Hara, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 25, 1981, Ser. No. 247,262
Claims priority, application Japan, Mar. 26, 1980, 55-37482
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 R **2 Claims**



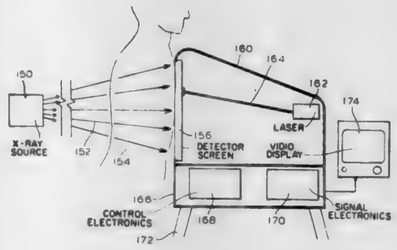
1. A photoelectric converter device comprising:
a light transmissive substrate;
an elongated stripe-like light intercepting film formed on one surface of said light transmissive substrate;
a light source disposed on an opposite side of said light transmissive substrate relative to said light intercepting film;
a group of separated first electrodes, each of said first electrodes extending across the light intercepting film in a manner covering more than half of said light intercepting film in the width direction thereof and continuing from a longitudinally extending edge of said light intercepting film in a direction away from said light intercepting film;
separated photoconductive films of a semiconductor material provided corresponding in number to said first electrodes, each of said photoconductive films being formed on a peripheral portion of a respective one of the first electrodes which covers said light intercepting film;
a second electrode of a light transmissive material formed at the other widthwise side of said light intercepting film in a manner so as to commonly cover said photoconductive films and so as to extend outwardly from said other side of said light intercepting film; and
a light transmissive protection film, of a type suitable for contacting an information carrying surface in use, formed on said first and second electrodes so as to cover them;
whereby, in use, light from said light source will reach an information carrying surface disposed in contact with said light transmissive substrate through said light transmissive substrate, said second electrode and said light transmissive protection film, and light reflected from said information carrying surface will reach said photoconductive films through said light transmissive protection film and said second electrode.

4,446,365

ELECTROSTATIC IMAGING METHOD

Poen S. Ong; Alfonso Zermeno; Lee M. Marsh, Jr., all of Houston, Tex., and James M. Hevezi, Tuscon, S. Dak., assignors to University of Texas System, Austin, Tex.

Division of Ser. No. 22,989, Mar. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 781,165, Mar. 25, 1977, abandoned. This application Jul. 6, 1981, Ser. No. 280,401
Int. Cl.³ H01J *31/50*
U.S. Cl. 250—213 R **3 Claims**



1. A method of impressing a uniform surface charge on a multilayered photon detector having sequentially stacked in plane parallel a first conducting layer, a junction layer, a photoconductive layer, an insulating layer, and a transparent conductive layer comprising:
connecting a high electric potential across the first conducting layer and the transparent conductive layer;
storing the detector in the dark;
disconnecting the source of external electric potential while said detector is in the dark;
electrically connecting said first conducting layer to said transparent conducting layer while said detector is in the dark; and
reapplying the potential with reversed polarity between said first conducting layer and said transparent conducting layer while said detector is in the dark.

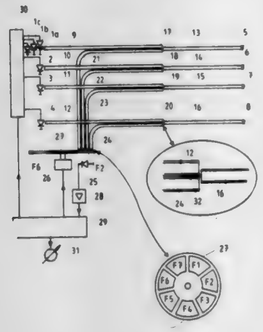
4,446,366

FIBER OPTIC MEASURING DEVICE WITH COMPENSATION FOR REFLECTIONS IN THE FIBER OPTIC AND WITH A POSSIBILITY OF SIMULTANEOUS MEASUREMENT OF SEVERAL QUANTITIES

Torgny Brogardh; Christer Ovren, and Lars Sander, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Sep. 28, 1981, Ser. No. 306,350
Claims priority, application Sweden, Sep. 30, 1980, 8006827
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **15 Claims**

1. A fiber optic measuring device for measuring physical and chemical quantities, comprising:
at least one measuring transducer adapted to influence the spectral composition of incident light such that emitted light from the measuring transducer includes a spectrum having at least one wavelength interval different than another wavelength interval of the incident light, said measuring transducer including a material having an optical absorption edge within at least one wavelength interval coinciding with the spectrum of said emitted light such that the dependence of the response spectrum of the emitted light on the measured quantity induces wavelength displacement of said absorption edge;
an evaluating electronic unit including at east one source of said incident light;
at least one light conducting fiber interconnecting said measuring transducer and said evaluating electronic unit for transmitting said incident light from said at least one source to said measuring transducer and emitted light from said measuring transducer to said evaluating electronic unit;
said evaluating electronic unit further including at least one photo-detector and an optical coupling device for coupling said incident light into said at least one



light conducting fiber and for coupling light from said at least one light conducting fiber to said photo-detector;
an optical filter means positioned in the light ray path between said at east one light conducting fiber and said photo-detector for analyzing the emitted light spectrum from said at least one measuring transducer, said optical filter means having filtering spectra dividing the emitted spectrum from said measuring transducer into at least three non-identical wavelength intervals;
said photo-detector being adapted to measure the emitted light to measure the filtered emitted light from said optical filter means and generating detector signals in the respective wavelength intervals; and
said evaluating unit further including means for multiplying the detector signals by constants including the constant unity, means for forming the difference between said detector signals multiplied by said constants, and means for forming the quotient therebetween.

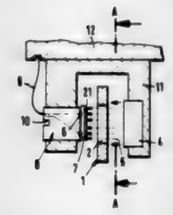
4,446,367

PULSE-PRODUCING TRÀNSDUCER

Alfred Babsch, Ulm-Söflingen, and Gerhard Lohrmann, Elchingen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 302,839
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014821
Int. Cl.³ G01D *5/38*
U.S. Cl. 250—231 SE **10 Claims**

1. A transducer station which includes an optical grating and a support member, the grating and the member being movable relative to each other along the direction of extension of the grating, there being a source of radiation on the member, the grating having a disposition so that the source illuminates the grating, permitting optical pickup, the station further comprising:
means associated with the support member for defining a bore of rotational symmetric contour;



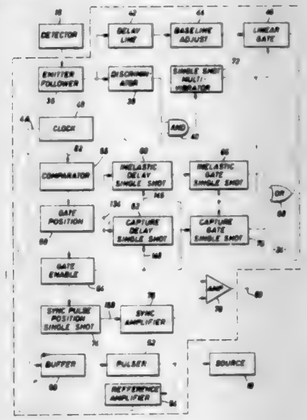
a carrier member rotatably disposed in said bore and having a front face;
a pair of detectors disposed on the front face, the bore and the carrier member being oriented so that the detectors of the pair can be aligned in directions transverse to said direction of extension; and
means defining a screwdriver slot and provided for permitting turning of the carrier member to affect aligning of the detectors.

4,446,368

METHOD AND APPARATUS FOR NEUTRON INDUCED GAMMA RAY WELL LOGGING

Lawrence D. Koenn, and David B. Drude, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 3, 1981, Ser. No. 326,862
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—262 **28 Claims**



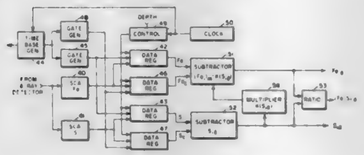
1. A method for logging formations surrounding a borehole, comprising the steps of:
irradiating said formations with a first series of bursts of high energy neutrons;
detecting radiation emanating from said formations during said first series of bursts of neutrons;
irradiating said formations with a second series of bursts of high energy neutrons; and
detecting radiation emanating from said formations subsequent to said second series of bursts of neutrons.

4,446,369

METHOD AND SYSTEM FOR RADIOACTIVE ASSAYING

Wyatt W. Givens, and Linus S. Allen, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,022
Int. Cl.[3] G01V 5/10
U.S. Cl. 250—270 2 Claims



1. A system for assaying a formation traversed by a borehole for pyrite comprising:

a. a borehole tool,

b. means for locating said borehole tool adjacent a zone of interest within said formation,

c. a neutron source located within said borehole tool for irradiating said zone of interest with bursts of neutrons of energy sufficient to produce gamma-rays from inelastic neutron scattering in sulfur and iron,

d. a gamma-ray detector located within said borehole tool for measuring gamma-rays returning to the borehole in response to irradiation of said zone of interest by said bursts of neutrons from said neutron source,

e. means for producing a first count of those gamma-rays measured by said detector during first time periods coinciding with the time periods of said bursts of neutrons from said source and which occur within a first energy band surrounding an energy level characteristic of sulfur, said first count being a count of inelastic scattering gamma-rays from sulfur present in said zone of interest and of capture gamma-rays from hydrogen and other background elements in said zone of interest,

f. means for producing a second count of those gamma-rays measured by said detector during said first time periods which occur within a second energy band surrounding an energy level characteristic of iron, said second count being a count of inelastic scattering gamma-rays from iron present in said zone of interest and of capture gamma-rays from hydrogen and other background elements in said zone of interest,

g. means for producing a third count of those gamma-rays measured by said detector during second time periods occurring between said first time periods which occur within said first energy band, said third count being a count of capture gamma-rays from hydrogen and other background element in said zone of interest,

h. means for producing a fourth count of those gamma-rays measured by said detector during said second time periods which occur within said second energy band, said fourth count being a count of capture gamma-rays from hydrogen and other background elements in said zone of interest,

i. means for determining a first differential in said first and third counts, said first differential being representative of sulfur present in said zone in interest,

j. means for determining a second differential in said second and fourth counts, said second differential being representative of iron present in said zone of interest,

k. means for determining a third differential of a multiple of said first differential representing the higher energy level of gamma-rays from sulfur and said second differential representing the lower energy level gamma-rays from iron, and

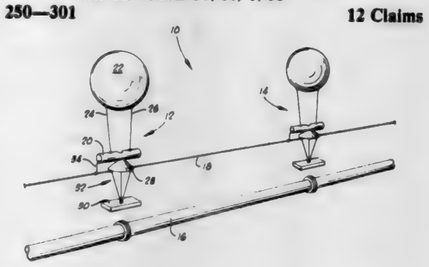
l. means for determining the ratio of said first and third differentials, said ratio being representative of the presence of pyrite in the formation, whereby an increase in said ratio during logging operations is indicative of excess iron in the form of an iron-bearing compound other than pyrite and a decrease in said ratio is indicative of excess sulfur in the form of a sulfur-bearing compound other than pyrite.

4,446,370

APPARATUS FOR DETECTING OIL IN WATER

John S. Gergely, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Dec. 28, 1981, Ser. No. 334,596
Int. Cl.[3] G08B 21/00, 1/08
U.S. Cl. 250—301 12 Claims



1. An apparatus for detecting oil in water comprising:

a plurality of oil sensors of the type having a limited wavelength light source for causing florescence of oil which may be present in the water, and having a light detector to detect resulting florescence;

means including suspension means attached to each of said sensors for maintaining each sensor at a selected position in the water;

computer means; and,

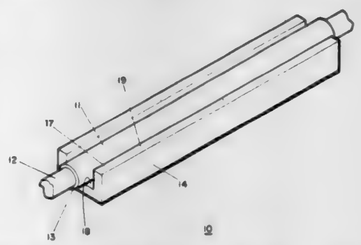
means for connecting each sensor to said computer means to permit said computer to receive and store information generated by each light detector.

4,446,371

CORONA CHARGING APPARATUS

Harold W. Cobb, Acton, Mass., assignor to Delphax Systems, Mississauga, Canada

Continuation-in-part of Ser. No. 244,833, Mar. 17, 1981, abandoned. This application May 24, 1982, Ser. No. 381,600
Int. Cl.[3] H01T 19/04
U.S. Cl. 250—324 17 Claims



1. Apparatus for generating ions, the apparatus comprising:

a corona electrode having an elongate conductor and a dielectric layer coating the conductor;

an elongate support structure defining a slot containing and supporting the corona electrode, the support structure including a base and electrically conductive sides having respective side walls which are substantially in contact with the corona electrode, a portion of the dielectric layer being exposed along the length of the slot; and

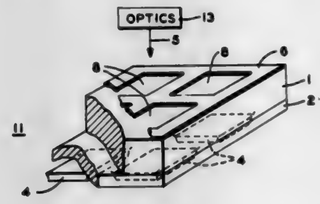
a time-varying potential between the corona electrode and the electrically conductive sides for creating a glow discharge to form ions in an air region adjacent the exposed portion of the dielectric layer and said side walls.

4,446,372

DETECTOR COLD SHIELD

Mark N. Gurnee, Framingham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 1, 1981, Ser. No. 279,297
Int. Cl.[3] H01J 31/49; G01J 1/00
U.S. Cl. 250—334 68 Claims



1. An electromagnetic radiation detection system comprising:

optics for viewing a scene emanating electromagnetic radiation, the optics providing a field of view of the scene;

an array of detectors mounted in the path of the field of view of the optics for producing electrical signals representative of the electromagnetic radiation impinging on the detectors;

a shield comprising a first member transparent to a predetermined spectrum of electromagnetic radiation, there being an opaque thin film deposited on a surface of the member, the thin film having apertures defined therein, the detectors viewing the optics through the member and the apertures, the thin film shielding the detectors from electromagnetic radiation generated outside the field of view of the optics to improve the sensitivity of the detector array;

cooling means for cooling the array of detectors and the shield; and

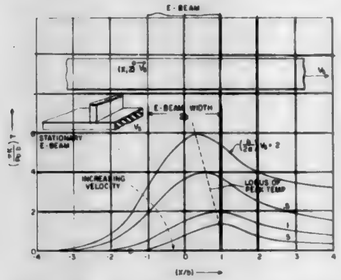
electro-optics coupled to the electrical output of the array for forming a display of the scene viewed by the optics; whereby virtually any desired thickness for the member may be used, thus allowing very close placement of the shield to the detectors and permitting use of very high density arrays.

4,446,373

PROCESS AND APPARATUS FOR CONVERGED FINE LINE ELECTRON BEAM TREATMENT OBJECTS

A. Stuart Denholm, Lincoln; William A. Frutiger, Beverly, and Kenneth E. Williams, Andover, all of Mass., assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 224,313, Jan. 12, 1981, Pat. No. 4,382,186. This application Jan. 3, 1983, Ser. No. 455,266
Int. Cl.[3] H01J 37/00
U.S. Cl. 250—492.2 34 Claims



1. A process for heat treatment of a solid object of solid material having a major surface by means of electron beam energy, that comprises:

generating and propagating electrons within a vacuum along a predetermined direction and in a linear beam that extends transverse to said direction;

converging the beam into a fine line of intense charge;

impacting the converged fine line beam upon said major surface of the object being treated;

relatively moving said beam and object so that said beam relatively scans said major surface in a direction at right angles to said fine line; and

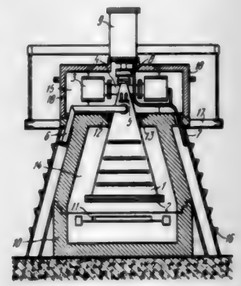
regulating the kinetic energy of said beam to limit the depth of penetration of said object by said electrons and the power density (flux) of said beam and the velocity with which the latter relatively scans said major surface such that a layer of said object at said major surface with a maximum depth of the order of several microns has its temperature raised sufficiently to effect said heat treatment of said layer while thermal diffusion to the solid material underlying said layer is substantially precluded by limiting the time that any given location on said major surface is impacted by said beam.

4,446,374

ELECTRON BEAM ACCELERATOR

Andrei S. Ivanov, ulitsa Kuznetsovskaya, 8, kv. 33; Leonid V. Komorin, poselok Metallostroi, ulitsa Pushkinskaya, 8, kv. 35; Vladimir I. Nikishkin, ulitsa Yaroslava Gasheka, 2, kv. 459; Mikhail P. Sviniin, poselok Metallostroi, ulitsa Bogaichuka, 4, kv. 25, and Mikhail T. Fedotov, poselok Metallostroi, ulitsa Polevaya, 22, kv. 58, all of Leningrad, U.S.S.R.

PCT No. PCT/SU80/00068, 371 Date Jan. 4, 1982, 102(e) Date Jan. 4, 1982, PCT Pub. No. WO81/03253, PCT Pub. Date Nov. 12, 1981
PCT Filed May 5, 1980, Ser. No. 336,353
Int. Cl.[3] C08J 7/10; G21K 1/00
U.S. Cl. 250—492.3 1 Claim



1. An electron beam accelerator comprising:

a radiation protection chamber;

a vacuum chamber having an exit window and positioned within said protection chamber;

an electron beam scanning system positioned adjacent the vacuum chamber opposite to the exit window of said vacuum chamber;

vacuum pumps connected to the vacuum chamber;

a vacuum monitoring device connected to the vacuum chamber;

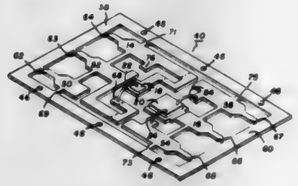
said protection chamber including a partition which divides the protection chamber into two compartments, one compartment accommodating the exit window of the vacuum chamber, and the other compartment accommodating the electron beam scanning system, the vacuum pumps and the vacuum monitoring device, said partition blocking X-ray radiation between said compartments and including sealing means to engage said vacuum chamber and provide a substantially air-tight seal between said compartments.

4,446,375

OPTOCOUPLER HAVING FOLDED LEAD FRAME CONSTRUCTION

Alanson D. Aird, No. Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Oct. 14, 1981, Ser. No. 311,308
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **10 Claims**



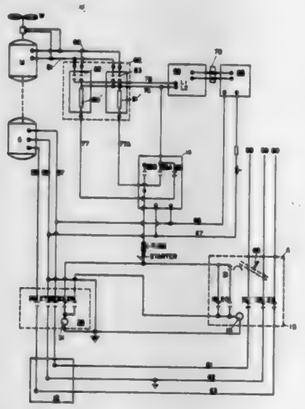
5. An optocoupler comprising:
a plurality of fingers of thin metallic sheet material having outer portions and substantially coplanar middle portions,
said fingers further having inner end portions providing spaced respective bonding sites on which are mounted respectively an emitter element and a detector element,
the emitter-carrying finger being bent approximately 180° relative to the bonding site of the detector-carrying finger such that said emitter element lies in a second plane at least approximately parallel to the plane defined by said middle portions and spaced therefrom and said emitter and detector elements are arranged in substantially confronting, proximately spaced relationship,
said opto-coupler further comprising a plurality of additional fingers providing respective additional bonding sites thereon, said additional sites having leads bonded thereto associated with said emitter and detector elements, at least one of said additional fingers being bent approximately 180° in the same direction as said emitter-carrying finger such that its bonding site lies approximately in said second plane.

4,446,376

AUXILIARY POWER SUPPLY SWITCHING SET

Carl R. Baker, 30 Gibson St., North East, Pa. 16428

Filed May 18, 1981, Ser. No. 264,931
Int. Cl.³ F03D *9/02*; H02P *9/04*
U.S. Cl. 290—44 **10 Claims**



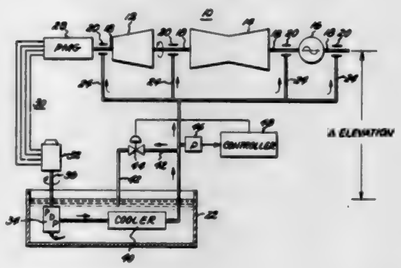
1. In combination, a main power supply,
an auxiliary supply,
a service panel,
and switching means for connecting the main power supply to the service panel and for selectively connecting the auxiliary power supply to the load when the voltage of the auxiliary power supply reaches a predetermined value,
said auxiliary power supply comprising a windmill,
a generator,
and a motor, all connected to a common shaft,
a battery,
means connecting the output of said generator to said battery,
a sensing means connected to the output of said battery and having means to selectively reverse connect said battery to the output of said motor depending on the voltage output of said generator thereby controlling the speed of said motor and said windmill.

4,446,377

LOW COLLAPSE SPEED LUBE OIL PUMPING SYSTEM FOR TURBOMACHINERY

Jens Kure-Jensen, and Robert A. Marshall, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 3, 1982, Ser. No. 374,416
Int. Cl.³ F01D *25/20*; F02C *7/06*
U.S. Cl. 290—52 **16 Claims**



1. In combination with a turbomachine having a central rotor driven shaft, a lubricating oil system for supplying lubricating oil to the turbomachine, comprising:
a lubricating oil reservoir;
a permanent magnet generator operatively coupled to said shaft and driven thereby to produce an electrical power output having a frequency porportional to the rotary speed of said shaft;
an induction motor connected to receive the electrical power output from said generator, said induction motor being driven thereby at a speed porportional to the frequency of said electrical power output; and
a positive displacement pump operatively coupled to said induction motor and driven thereby to pump oil from said reservoir at a flow rate and pressure sufficient to supply oil to said turbomachine during all operating phases of said turbomachine during which continuous lubrication is required.

4,446,378

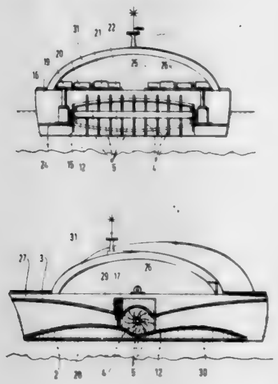
SYSTEM FOR THE GENERATION OF ELECTRICAL ENERGY BY UTILIZING THE KINETIC ENERGY OF SEAWATER

José Martinez Parra, Calle Salitre 33-1°, Edificio Juan XXIII Cartagena, Murcia, Spain

Filed Jul. 2, 1981, Ser. No. 280,125
Int. Cl.³ F03B *7/00, 13/10*
U.S. Cl. 290—54 **6 Claims**

1. A system for the generation of electrical energy by utilizing the kinetic energy of seawater, comprising a floating body having two floating supports, which are connected by a lower platform, a main deck and an impeller mounted on a horizontal

shaft arranged between the upper surface of the lower platform and the lower surface of the main deck for transmitting the motion of the impeller to an installation for converting the kinetic energy into electrical energy, wherein:
(a) the upper surface of the lower platform exhibits a profile which is curved upwards in the longitudinal direction between the bow of the floating body and the impeller and between the impeller and the stern of the floating body with said profile forming a tub-like trough at the location of the impeller wherein said profile between said impeller and said stern curves gradually upward from its formation of said trough with said gradual upward curvature extending in said longitudinal direction toward said stern, and the lower surface of the main deck descends both from the bow and from the stern of the floating body in the direction of the location of the impeller to form there an upward convex projection, the impeller being situated between the tub-like trough in the upper surface of the lower platform and the upward convex projection of the lower surface of the main deck with said impeller shaft extending transverse to said longitudinal direction;



(b) gate means are positioned for selectively closing the aperture between the inner side walls of the floating supports, the upper surface of the lower platform and the lower surface of the main deck approximately at its narrowest point in front of the impeller whereby when the gate is in said closed position the length of said gate extends substantially parallel to the length of said impeller shaft and said gate is located between said bow and the forward-most position of said impeller;
(c) vertical plate-like supports oriented in longitudinal direction of the floating body are located in the region of the impeller between the lower platform and the main deck which supports divide the vanes of the impeller along their width into several sections while being penetrated by the impeller shaft;
(d) the vanes of the impeller are mounted on the impeller shaft in each of the sectors formed by the plate-like supports in such a way that they are staggered with respect to the adjacent sectors; and wherein,
(e) the diameter of the impeller is greater at the middle than at the ends.

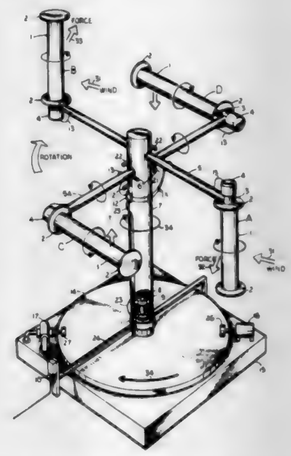
4,446,379

MAGNUS EFFECT POWER GENERATOR

John L. Borg, and Catherine J. Borg, both of 8200 Toro Creek Rd., Atascadero, Calif. 93422

Filed Feb. 17, 1983, Ser. No. 467,220
Int. Cl.³ F01D *1/36*; F03B *5/00*; F03D *9/02*
U.S. Cl. 290—55 **7 Claims**

1. A Magnus effect power generator for disposition in a fluid flow having a direction comprising:
(a) a rotatable hub having an axis of rotation;
(b) a shaft mounted on the hub that is freely rotatable about an axis and mounted in a radial direction to the hub axis and extending out opposite sides of the hub;
(c) a rotatable cylinder mounted on the shaft on each side of the hub and each having an axis of rotation at right angles to the fluid flow direction when the shaft is aligned with the fluid flow direction;



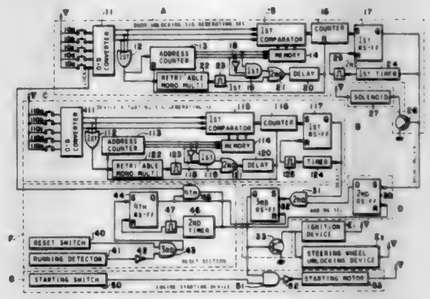
(d) means for limiting the rotation of the shaft to approximately 180°;
(e) and means for rotating the cylinders;
whereby a fluid flow in said direction creates a Magnus force at right angles to the fluid flow and thereby rotating the hub and whereby revolving the shaft more than 90° past alignment with the flow direction causes 180° rotation of said shaft to invert the cylinders upon the shaft revolving 180° from the fluid flow.

4,446,380

KEYLESS DEVICE ACTUATING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Makoto Moriya, Tokyo, and Haruo Mochida, Aiko, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Nov. 30, 1982, Ser. No. 445,555
Claims priority, application Japan, Feb. 15, 1982, 57-21302
Int. Cl.³ H02J *3/14*; H02G *3/00*
U.S. Cl. 307—10 AT **13 Claims**



1. A keyless device-actuating system for an automotive vehicle combined with an electronic vehicle door locking system, which comprises:

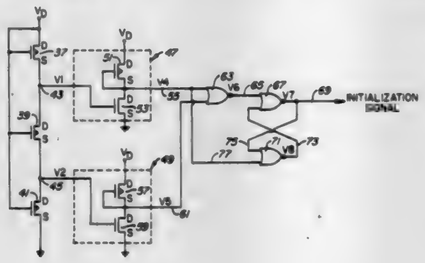
(a) means for inputting a sequence of vehicle door unlocking coded numbers and at least one vehicle door locking coded number and outputting signals corresponding thereto;
(b) means for inputting a sequence of vehicle device actuating coded numbers and outputting signals corresponding thereto;
(c) means for generating a vehicle door unlocking command signal in response to a sequence of the vehicle door unlocking coded numbers outputted from said means for inputting vehicle door unlocking coded numbers;
(d) means for generating a vehicle device actuating command signal in response to a sequence of the vehicle device actuating coded numbers outputted from said means for inputting vehicle device actuating coded numbers;
(e) means for unlocking the vehicle doors in response to the vehicle door unlocking command signal outputted from said means for generating a vehicle door unlocking command signal;
(f) means for ANDing the vehicle door unlocking command signal and the vehicle device actuating command signal and for outputting a vehicle device control command signal; and
(g) at least one device actuated in response to the vehicle device control command signal from said means for ANDing the two command signals.

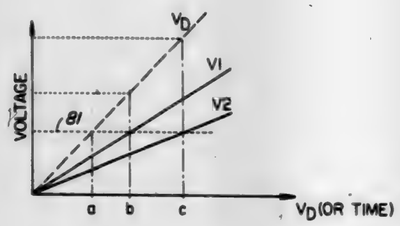
4,446,381

CIRCUIT AND TECHNIQUE FOR INITIALIZING THE STATE OF BISTABLE ELEMENTS IN AN INTEGRATED ELECTRONIC CIRCUIT

Monte J. Dalrymple, Fremont, Calif., assignor to Zilog, Inc., Campbell, Calif.

Filed Apr. 22, 1982, Ser. No. 370,601
Int. Cl.³ H03K *17/22, 17/30, 17/687*
U.S. Cl. 307—200 B **6 Claims**





1. For use with an integrated circuit having at least one bistable circuit characterized by assuming one of two stable states upon a voltage supply thereto rising from zero, through a threshold switching level of semiconductor elements in said circuit and upward to a maximum voltage supply level, an initiation circuit, comprising:

means associated with said bistable circuit for forcing said circuit to a pre-selected one of its two states in response to an initiation signal,

means connected to said voltage supply for providing a control voltage that rises concurrently with said supply voltage but at a reduced rate to a maximum control voltage that is a fraction of said supply voltage,

a control semiconductor element having substantially the same threshold switching level as those which are part of said bistable circuit and connected to the control voltage in a manner to switch states when the control voltage reaches its threshold switching level, and

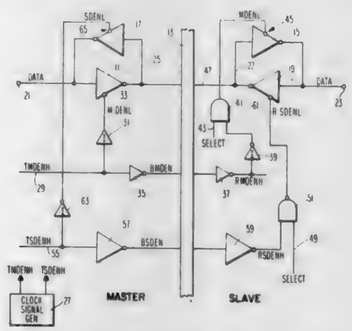
means responsive to the state of said control semiconductor element for maintaining said initiation signal until said control semiconductor element switches states upon the control voltage rising above said threshold switching level, whereby said initiation signal is maintained beyond the time that the semiconductor elements of said bistable circuit have assumed their initial states.

4,446,382

ARRANGEMENT TO TIME SEPARATE BIDIRECTIONAL CURRENT FLOW

Russell L. Moore, 21 Seneca Dr., Hudson, Middlesex County, Mass. 01749, and David J. Schanin, 5 July Rd., Sudbury, Middlesex County, Mass. 01776

Filed Feb. 24, 1982, Ser. No. 351,720
Int. Cl.³ H03K *17/56, 17/62, 17/66*
U.S. Cl. 307—241 **4 Claims**



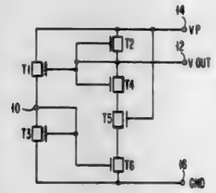
1. A circuit arrangement for driving electrical current signals, to and from, between a first and a second circuit, wherein said circuits are interconnected by a tri state bus device, comprising in combination: clock signal generating means formed to generate first enable signals and second enable signals, each of which types of enable signals is a gate-like type, and formed to so generate said signals (1) such that the end of any of said first enable signals occurs a predetermined time period before the beginning of a subsequent one of said second enable signals and (2) such that the end of any of said second enable signal occurs a predetermined time period before the beginning of a subsequent one of said first enable signals; first and second controllable current flow means each having a control element and disposed to be connected to each other through said tri state bus device to conduct current in a first direction in response to a first enable signal being applied to the respective control elements of each; third and fourth controllable current flow means, each having a control element and disposed to be connected to each other through said tri state bus device to conduct current in a second direction in response to a second enable signal being applied to the respective control element of each; first control circuit means connected to said clock signal generating means to receive said first enable signals and further connected to the respective control elements of said first and second controllable current flow means to cause current to be conducted therethrough during the presence of said first enable signal; and second control circuit means connected to said clock signal generating means to receive said second enable signals and further connected to the respective control elements of said third and fourth controllable current flow means to cause current to be conducted therethrough during the presence of said second enable signal, whereby the time period for current flow in said first direction is separated from the time period for current flow in said second direction, and vice versa, by said predetermined period of time.

4,446,383

REFERENCE VOLTAGE GENERATING CIRCUIT

Michael P. Concannon, Jericho, and Charles K. Erdelyi, Essex, both of Vt., assignors to International Business Machines, Armonk, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,609
Int. Cl.³ G05F *3/16*
U.S. Cl. 307—297 **5 Claims**



1. A reference voltage generating circuit comprising

a current source coupled between a source of input voltage and an output node;

a series circuit connected between said output node and a source of reference voltage,

said series circuit including a voltage offset means coupled to said output node, a first current controlling device coupled to said voltage offset means and a second current controlling device coupled between said first current controlling device and said source of reference voltage; said first and said second current controlling devices each having a control electrode,

means for coupling the control electrode of said first current controlling device to said source of input voltage;

a source follower circuit having input and output terminals,

means for coupling the input terminal of said source follower circuit to said output node; and

means for coupling the output terminal of said source follower circuit to said control electrode of said second current controlling device so that a constant reference voltage of a predetermined magnitude is produced at said output node.

4,446,384

MIS DEVICE INCLUDING A SUBSTRATE BIAS GENERATING CIRCUIT

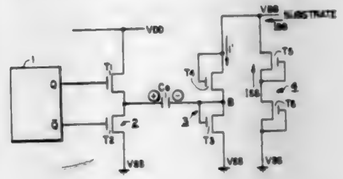
Shigenobu Taira, Aizuwakamatsu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 180,451, Aug. 22, 1980, Pat. No. 4,378,506. This application Jan. 10, 1983, Ser. No. 457,026
Claims priority, application Japan, Aug. 27, 1979, 54-108956
Int. Cl.³ H03K *5/08, 3/01*
U.S. Cl. 307—297 **1 Claim**

1. A MIS device including a substrate bias generating circuit for absorbing charges in a semiconductor substrate thereof, comprising:

a bias circuit, connected to said semiconductor substrate, which performs charging and discharging operations upon said semiconductor substrate in accordance with clock signals so as to absorb said charges in said semiconductor substrate, and

a clamp circuit connected between said semiconductor substrate and a predetermined reference power supply,



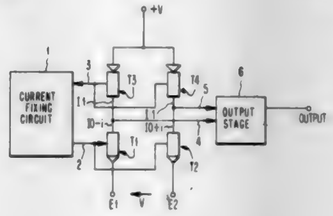
the conductance of said clamp circuit being determined so as to satisfy $I_{SS} >> I_{BB}$ where I_{BB} is a substrate current and I_{SS} is a current flowing through said clamp circuit.

4,446,385

VOLTAGE COMPARATOR WITH A WIDE COMMON MODE INPUT VOLTAGE RANGE

Gerard Orengo, Antibes, and Michel Verhaeghe, Vence, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1981, Ser. No. 327,865
Claims priority, application European Pat. Off., Dec. 18, 1980, 80430032.5
Int. Cl.³ H03K *5/24*
U.S. Cl. 307—355 **11 Claims**



1. A voltage comparator circuit having a wide common mode input voltage range, comprising:

a pair of input terminals for receiving the voltages to be compared:

input stage means including two input transistors each having a base, emitter and collector electrode with the emitter electrodes of said input transistors respectively coupled to said input terminals and with said collector electrodes respectively connected to two current sources;

current fixing circuit means coupled to said base electrodes and arranged to fix the direct current of said collector electrodes of said input transistors at a first value I0 and the currents supplied by the current sources at a second value k I0, with $k>2$; and

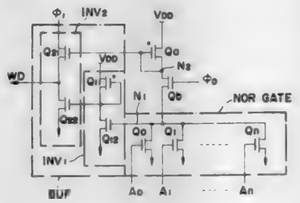
output stage means connected to the said collector electrodes, said output stage means producing a first binary logic level at the output thereof if the voltage at the first of said pair of input terminals is greater than the voltage at the second of said pair of input terminals, and producing a second binary logic level at the output thereof if the voltage at the second of said pair of input terminals is greater than the voltage at the first of said pair of input terminals.

4,446,386

MOS DECODER CIRCUIT USING PHASE CLOCKING FOR REDUCING THE POWER CONSUMPTION

Setsuo Kurafuji, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 26, 1980, Ser. No. 210,661
Claims priority, application Japan, Nov. 29, 1979, 54-154580
Int. Cl.[3] H03K *19/096, 19/20;* G11C *8/00*
U.S. Cl. 307—449 11 Claims



3. A decoder circuit, operatively connectable to a word line and first and second reference voltages, and operatively connectable to receive a chip select signal and to receive N address signals, said decoder circuit comprising:

a power supply circuit, operatively connectable to receive the chip select signal, for generating first and second voltage signals when the chip select signal is received;

a NOR gate, having a first input operatively connected to said power supply circuit for receiving the first voltage signal, having N address signal inputs for receiving the N address signals, and having an output for generating a first decoded output signal;

an OFF buffer circuit, having a first input operatively connected to the output of said NOR gate for receiving the first decoded output signal, having a second input, having a third input operatively connected to said power supply circuit for receiving the second voltage signal, and having an output operatively connected to the word line for generating a second decoded output signal which is used to select the word line; and

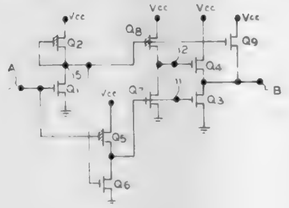
a signal generator circuit, having an input operatively connectable to receive the chip select signal and having an output operatively connected to the second input of said OFF buffer circuit, for generating a delayed chip select signal overlapping the chip select signal and delayed in phase with respect to the chip select signal.

4,446,387

MOS INVERTER-BUFFER CIRCUIT HAVING A SMALL INPUT CAPACITANCE

Tetsuo Misaizu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 39,850, May 17, 1979, Pat. No. 4,264,829. This application Dec. 12, 1980, Ser. No. 215,729
Claims priority, application Japan, May 22, 1978, 53-61491
The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.
Int. Cl.[3] H03K *19/017, 19/094, 19/20*
U.S. Cl. 307—450 10 Claims



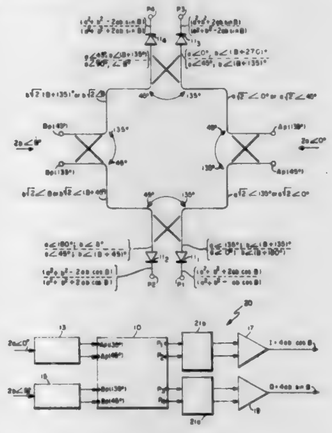
1. A logic circuit comprising an input terminal for receiving an input signal, a first inverter circuit means responsive to said input signal for producing a first signal having a phase which is opposite the phase to said input signal, a second inverter means responsive to said input signal and said first signal for producing a second signal having substantially the same phase as said input signal, a third inverter circuit means responsive to said first signal and said second signal for producing a third signal having substantially the same phase as said first signal and a buffer circuit means responsive to said second signal and said third signal for producing an output signal at its output terminal.

4,446,388

MICROWAVE PHASE DISCRIMINATOR

Francis J. O'Hara, Bedford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 6, 1982, Ser. No. 375,514
Int. Cl.[3] H01P *1/18*
U.S. Cl. 307—511 3 Claims



1. A microwave phase discriminator wherein microwave signals may be commutated to average errors, such discriminator comprising:

(a) a microwave bridge network having two pairs of input ports and two pairs of output ports, the phase shift of microwave signals passing from each one of the input ports in each pair thereof to each one of the output ports being different;

(b) a first set of two single-pole, double-throw switches connected, respectively, to each pair of input ports to apply microwave signals to selected ones of such input ports;

(c) two pairs of diode detectors connected, respectively, to each one of the output ports, the detected signal out of each such detector being related by a square-law relationship to the phase-shifted microwave signals combined at the corresponding output terminal;

(d) a second set of two double-pole, double-throw switches connected to the outputs of the diode detectors; and

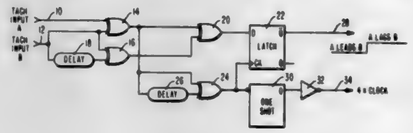
(e) a differential amplifier connected to each one of the two double-pole double-throw switches to produce signals indicative of the instantaneous phase difference between the microwave signals applied to the input ports of the microwave bridge network.

4,446,389

QUADRATURE TACH DECODER CIRCUIT

Marshall Williams, Fremont, and David C. O'Gwynn, San Mateo, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Mar. 15, 1982, Ser. No. 358,395
Int. Cl.[3] H03K *5/26;* H03D *13/00*
U.S. Cl. 307—515 7 Claims



1. Circuit for detecting movement of a member, comprising:

tach means for supplying two quadrature tach pulses in response to member movement;

gate means for receiving said tach pulses and generating tach sequence pulses indicative of which tach phase is leading, and a multiple tach frequency clock;

logic means for generating a logic state change having a first input coupled to receive said tach sequence pulses and a second input coupled to receive said clock, said first input of said logic means being in a first logic state when said clock occurs to indicate a first direction of member movement and being in a second logic state when said clock occurs to indicate a second direction; and

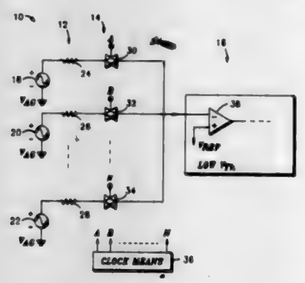
means external to said gate and logic means for delaying said multiple frequency clock so that a reference edge thereof always occurs after said logic state change generated by said logic means.

4,446,390

LOW LEAKAGE CMOS ANALOG SWITCH CIRCUIT

Allan A. Alaspa, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 28, 1981, Ser. No. 334,992
Int. Cl.[3] H03K *17/16, 17/693*
U.S. Cl. 307—579 9 Claims



1. A low leakage CMOS analog switch circuit comprising:

a plurality of switching means, each of which is coupled to a predetermined one of a plurality of control signals and each having first and second transistors of first and second conductivity types having a threshold voltage in a first range, each of which has an input coupled to a predetermined one of a plurality of analog input voltages, and all of which have an output coupled together, wherein a predetermined one of said analog input voltages is selectively coupled to the output in response to a predetermined one of the plurality of control signals; and

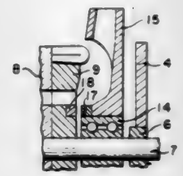
an interface circuit having an input coupled to the output of said plurality of switching means, comprising a plurality of transistors, each having a threshold voltage in a second range having voltages less than voltages of the first range, said interface circuit providing an interface to circuitry having low voltage thresholds.

4,446,391

ROTATING ELECTRIC MACHINERY

Yasuhiro Sekine; Masayuki Kuwayama, and Hiroshi Harada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1981, Ser. No. 314,029
Claims priority, application Japan, Oct. 24, 1980, 55-149584
Int. Cl.[3] H02K *9/06*
U.S. Cl. 310—62 3 Claims



1. A rotating electric machine, comprising:

an armature rotor fixed to a rotatable rotor shaft;

a stationary stator fixed adjacent said rotor;

fan means rotatably mounted via bearing means on said rotor shaft, said fan means including a first surface;

a rotor spider of said rotor spider having a second surface facing said first surface on an axis substantially perpendicular to said rotor shaft and separated therefrom by a predetermined gap;

magnet means having at least two poles and fixed to one of said first and second surfaces; and

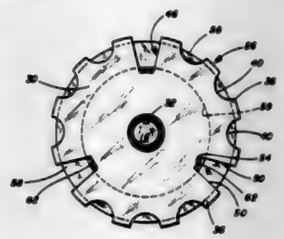
a magnetic material fixed to the other of said first and second surfaces, whereby said magnet means and said magnetic material face one another axially and are separated by said predetermined gap.

4,446,392

ELECTROMAGNETIC COUPLING DEVICE

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 13, 1982, Ser. No. 377,896
Int. Cl.[3] H02K *49/02*
U.S. Cl. 310—105 18 Claims



1. An electromagnetic coupling device comprising an input member and an output member rotatable relative to said input member, a pole assembly associated with one of said input and output members, said pole assembly including a pair of annular, oppositely disposed pole members, an annular core member disposed between said pole members and defining an annular cavity therebetween, an electrically energizable field coil element disposed in said cavity for electromagnetically coupling said input and output members, said pole members each including a plurality of circumferentially spaced, radially extending pole slot means disposed for communicating the exte-

rior of said pole assembly with said core member to provide substantially uninterrupted access thereto, said pole slot means being symmetrically oriented and opening outwardly onto the periphery of associated pole members, said pole slot means having a radial depth sufficient to extend beyond the corresponding radial dimension of said field coil element so as to provide direct access from the exterior of said pole assembly to said core member, and wherein the radial innermost extremity of said slot means and the confronting exposed surface of said core member together define clearance areas adapted to receive therein securement means for affixedly attaching said core member in sandwiched relation between said pole members.

4,446,393

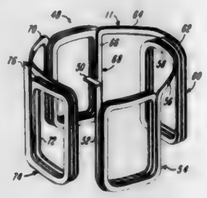
DYNAMOELECTRIC FIELD ASSEMBLY AND WINDING THEREFOR

Hyman B. Finegold, Dayton, Ohio, assignor to The Globe Tool & Engineering Company, Dayton, Ohio

Division of Ser. No. 736,880, Oct. 29, 1976, Pat. No. 4,131,988. This application Dec. 21, 1978, Ser. No. 971,686

Int. Cl.³ H02K 3/00

U.S. Cl. 310—184 **5 Claims**



1. A one-piece field winding for a dynamoelectric machine comprising a length of strapping edge wound into at least three laterally spaced coils, each coil having plural convolutions, and each coil connected to at least one other coil by an integral portion of said strapping, the portions of said strapping interconnecting said coils supporting said coils in a circular array of circumferentially spaced coils, and the portions of said strapping extending integrally between coils connected thereby each extend from a radially outermost convolution of one of the connected coils to a radially innermost convolution of the other of the connected coils.

4,446,394

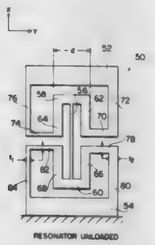
LINEARIZING MECHANISM FOR A VIBRATING BEAM FORCE TRANSDUCER

William C. Albert, Boonton, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Sep. 14, 1981, Ser. No. 301,622

Int. Cl.³ H01L 41/08

U.S. Cl. 310—321 **5 Claims**



1. A force transducer comprising a vibrating beam having a longitudinal axis and adapted to vibrate in a plane including the axis;

a supporting element secured to each end of the beam and extending in both directions tranversely of the axis;

a pair of end mounts;

axially complaint isolator spring means each having multiple sections of unbalanced spring rates and extending between each end mount and a corresponding support element for transmitting axial forces from the end mounts to the beam along the longitudinal axis thereof; and

a pair of parallel spaced isolator means connected between each respective support element and sections of a corresponding spring means;

whereby the unbalanced spring rates of the spring means induce precise beam bending due to applied vibrational forces thereby substantially cancelling undesirable nonlinear effects.

4,446,395

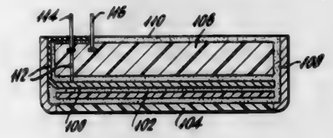
SHORT RING DOWN, ULTRASONIC TRANSDUCER SUITABLE FOR MEDICAL APPLICATIONS

Andreas Hadjicostis, North Brunswick, N.J., assignor to Technicare Corporation, Solon, Ohio

Filed Dec. 30, 1981, Ser. No. 335,920

Int. Cl.³ H01L 41/08; A61B 10/00

U.S. Cl. 310—327 **21 Claims**



1. A high efficiency, piezoelectric transducer suitable for medical imaging applications, having a 40 dB ring down time of less than 3 cycles at an emission frequency suitable for medical imaging use, comprising:

(a) a preformed backing material having a mating surface with a flatness of at least 0.0002 inches;

(b) a single crystal, lithium niobate active element bonded to said mating surface of said backing material;

(c) a first matching layer bonded to said active element having an acoustic impedance of between 6.8×16^6 Kg/m^2 sec and 7.4×10^6 Kg/m^2 sec; and

(d) a second matching layer bonded to said first matching layer having an impedance of between 1.8×10^6 Kg/m^2 sec and 2.4×10^6 Kg/m^2 sec.

4,446,396

ULTRASONIC TRANSDUCER WITH GAUSSIAN RADIAL PRESSURE DISTRIBUTION

Richard O. Claus, Christiansburg, Va., and Paul S. Zerwekh, Palm Bay, Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 2, 1982, Ser. No. 414,107

Int. Cl.³ H01L 41/08

U.S. Cl. 310—334 **7 Claims**

1. An ultrasonic transducer having a radial pressure distribution corresponding to a symmetrical function comprising:

means for supplying an AC voltage;

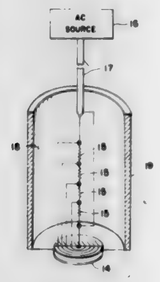
a piezoelectric crystal;

several concentric circular ring electrodes attached to one side of said piezoelectric crystal; and

means for applying a different amplitude of said AC voltage to each of said electrodes;

wherein a plot of said different amplitudes applied to said electrodes from the outermost to the innermost is a plot that fits one-half of said symmetrical function;

whereby any cross-section through the center of the ultrasonic signal emitted from the side of said piezoelectric crystal opposite said one side has a pressure distribution corresponding to said symmetrical function.



4,446,397

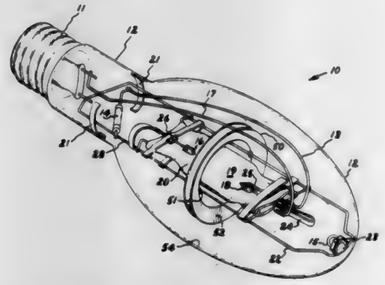
HIGH INTENSITY DISCHARGE LAMP WITH INFRARED REFLECTING MEANS FOR IMPROVING EFFICACY

Peter D. Johnson, and Seth D. Silverstein, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 28, 1981, Ser. No. 305,820

Int. Cl.³ H01J 61/35, 61/40, 61/52

U.S. Cl. 313—25 **3 Claims**



1. A high intensity discharge lamp comprising:

a gas-tight arc discharge tube having electrodes disposed at opposite ends thereof and containing an ionizable medium;

an outer gas-tight envelope surrounding said arc tube;

metal wire means for supporting said arc tube within said envelope and for supplying electric power to said electrodes; and

an infrared radiation reflector transparent to visible light, having an arcuate section at least partially surrounding the central portion of the arc tube and having a generally V-shape cross section with the base of the V-shape portion directed toward the arc tube, said reflector arranged to reflect infrared radiation from the central portion of the arc tube onto the end portions of the arc tube.

4,446,398

VIBRATION INHIBITING MESH ASSEMBLY FOR A PICK-UP TUBE

Elvin M. Musselman, Ronks, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,313

Int. Cl.³ H01J 29/02, 1/90

U.S. Cl. 313—390 **6 Claims**

1. In a pick-up tube having an evacuated envelope, a faceplate at one end of said envelope, a target electrode adjacent to said faceplate, a cathode in the other end of said envelope and a mesh assembly disposed in spaced relation adjacent to said target electrode, between said target electrode and said cathode, the improvement wherein said mesh assembly comprises

a mesh electrode disposed between an annular support ring having an inside diameter, d_1, and an outside diameter, d_2,



and an annular retaining ring having an inside diameter, d_3, wherein d_3 is greater than d_1 but less than d_2, said annular support ring having a support surface facing said mesh electrode, said support surface having a fusion-resistant material thereon in contact with said mesh electrode.

4,446,399

STRUCTURE OF THIN ELECTROLUMINESCENT DISPLAY PANEL SEALED BY GLASS SUBSTRATES

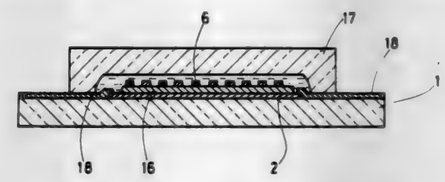
Yoshihiro Endo; Masashi Kawaguchi; Etsuo Mizukami, and Hiroshi Kishishita, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1981, Ser. No. 270,882

Claims priority, application Japan, Jun. 13, 1980, 55-80346

Int. Cl.³ H05B 33/04, 33/06

U.S. Cl. 313—505 **8 Claims**



1. A thin-film electroluminescent display panel comprising:

first and second substrates bonded together and sealed so as to define a cavity therebetween,

a composite comprising a thin-film electroluminescent layer interpositioned between a pair of dielectric layers, said composite being disposed within said cavity, at least one of said first and second substrates being transparent to light emitted by said electroluminescent layer when said layer is properly stimulated;

at least one pair of opposing electrodes positioned so as to sandwich said composite therebetween, each of said pair of opposing electrodes comprising a first transparent porous electrode material, adjacent said at least one transparent substrate, contained completely within said cavity so as not to extend into or beyond said seal between said first and second substrates thereby preventing moisture from penetrating into said cavity, and a second metallic counterelectrode;

a protective liquid provided within said cavity defined by said substrates and being in contact with said dielectric layers, and

terminal means connected within said cavity to said respective transparent electrodes for providing a lead connection for said electroluminescent layer to a power source means outside said cavity, said terminal means comprising

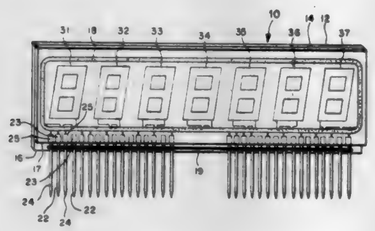
a metal and said respective transparent electrodes being longer than the length of said electroluminescent layer.

4,446,400

GASEOUS DISPLAY PANEL WITH WEBBED ANODE

Walter L. Cherry, Winnetka, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Dec. 16, 1980, Ser. No. 217,091
Int. Cl.³ H01J *61/12, 61/66*
U.S. Cl. 313—517 **5 Claims**



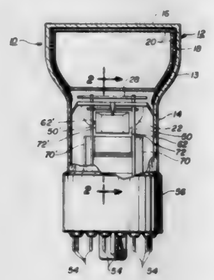
1. A gaseous display panel comprising:
a base plate sealed to a face plate;
a plurality of groups of cathode segments disposed on said base plate, each of said groups being displaced from one another, and being adapted to form any of a plurality of recognizable indicia; and
a plurality of anode means disposed on said face plate, each in facing relation to a corresponding one of said groups of cathode segments; each of said anode means having a first length of electrically conductive material located, at least in part, a spaced distance from one side of at least one of said segments, a second length of electrically conductive material located, at least in part, a spaced distance from an opposite side of said one of said segments, and a plurality of electrically conductive web portions extending across said one of said segments, and interconnecting said first length and said second length.

4,446,401

PHOTOMULTIPLIER TUBE HAVING IMPROVED COUNT-RATE STABILITY

Richard D. Faulkner, Lancaster; Daniel L. Thoman, Leola, and Arthur F. McDonie, Lancaster, all of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov, 20, 1981, Ser. No. 323,287
Int. Cl.³ H01J *40/00*
U.S. Cl. 313—533 **4 Claims**



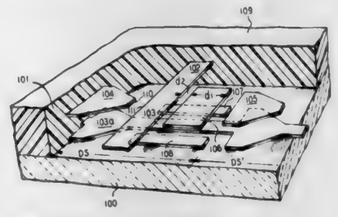
4. In a photomultiplier tube comprising an evacuated envelope, a photoemissive cathode within said envelope, an anode spaced from said photoemissive cathode, a plurality of dynodes disposed between said cathode and said anode for propagating and concatenating electrons along a path between said cathode and said anode, said dynodes comprising a primary dynode, a secondary dynode, a penultimate dynode and an ultimate dynode, and a pair of oppositely-disposed insulating support plates for supporting said dynodes and said anode, said plates having an interior and an exterior surface, the improvement wherein said support plates include
at least one aperture formed in each of said support plates, said aperture substantially conforming to the shape of the interelectrode region along the electron path extending from said secondary dynode to said penultimate dynode and at least partially along said path extending from said penultimate dynode to said ultimate dynode, and
focusing means spaced from said exterior surface of each of said support plates, said focusing means being disposed adjacent to said aperture in each of said plates, said focusing means extending longitudinally along said electron path for providing a transverse electrostatic focusing field to prevent substantially all of said electrons from impinging upon said interior surface of each of said support plates.

4,446,402

PLANAR AC PLASMA DISPLAY HAVING GLOW SUPPRESSOR ELECTRODE

George W. Dick, Sinking Springs, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 26, 1982, Ser. No. 362,097
Int. Cl.³ H01J *61/04*
U.S. Cl. 313—586 **25 Claims**



1. Display cell apparatus comprising
a dielectric layer having a planar surface,
an enclosed body of ionizable gas adjacent said surface,
first and second conductors embedded in said layer, and
a single glow suppression pad capacitively coupled to said first and second conductors biasing said glow suppression pad at a voltage intermediate the voltage on said first and second conductors.

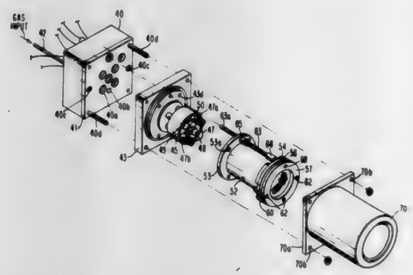
4,446,403

COMPACT PLUG CONNECTABLE ION SOURCE

Jerome J. Cuomo, Lincolndale; James M. E. Harper, Yorktown Heights, both of N.Y., and Harold R. Kaufman, Fort Collins, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1982, Ser. No. 382,266
Int. Cl.³ H01J *7/24*
U.S. Cl. 315—111.81 **8 Claims**

1. An ion generator comprising:
a socket member, said socket member having a plurality of apertures containing electrical connectors, and a further aperture for receiving a gas feed tube;
a mating base insulator including a plurality of electrical pins on one side thereof for mating with said electrical connectors, said insulator base pins extending through said base insulator to an opposite side thereof and including a gas feed aperture extending through said insulator to said opposite side facing said socket member further aperture;
a magnet assembly located on said base insulator opposite side including a center pole piece and an outer pole piece circumferentially surrounding said center pole piece, said pole pieces providing an arcuate extending magnetic fringe field between ends of said pole pieces;
a filament member connected between a pair of said pins extending into said magnetic field forming a cathode;
an anode member spaced apart from said cathode and connected to one of a remaining of said plurality of pins;
a source body for enclosing said cathode, anode, and magnet assembly having one end abutting said insulator and a remaining open end, said source body forming an ionization chamber;



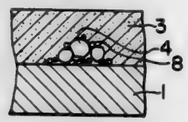
first and second grid members connected to said open end, said grid members each electrically connected to one of a pair of said electrical pins, said grid members forming exit apertures for ions within said ionization chamber, said base insulator, source body and grid members forming a detachable ion generator having electrical pins for mating with said socket whereby electrical voltages and an ionizing gas are provided to said ion generator.

4,446,404

DIRECTLY HEATED OXIDE CATHODE AND PRODUCTION THEREOF

Masaharu Kumada, and Akira Misumi, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,742
Claims priority, application Japan, Sep. 12, 1979, 54-116068; Jan. 23, 1980, 55-5672
Int. Cl.³ H01J *11/04*
U.S. Cl. 313—346 R **13 Claims**



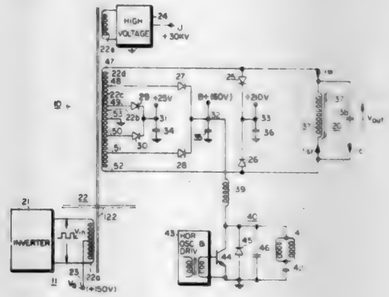
1. A directly heated type oxide cathode comprising a base made of an alloy containing Ni as a major component and Zr as a reducing agent, a coating of Co powders or Co-Ni alloy powders containing Co in the amount of 80% by weight or more, or a coating of a mixture of Ni powders or Ni alloy powders and Co powders wherein the average particle size of the Co powders is smaller than that of the Ni or Ni alloy powders, formed on the base and an electron emissive alkaline earth oxide layer formed on the coating of Co powders or Co-Ni alloy powders or the mixture of Ni or Ni alloy powders and Co powders.

4,446,405

TELEVISION RECEIVER FERRORESONANT LOAD POWER SUPPLY

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 220,847, Dec. 29, 1980, abandoned.
This application May 28, 1982, Ser. No. 383,056
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—411 **12 Claims**



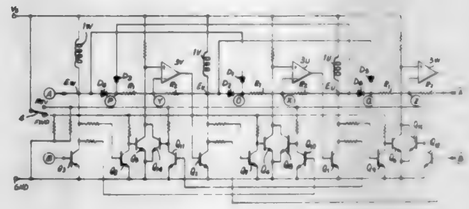
1. A television system with a ferroresonant load regulated high voltage power supply, comprising:
a source of unregulated alternating input voltage;
a transformer having primary, secondary and high voltage windings, said primary winding being coupled to said source for developing alternating polarity voltages across said secondary and high voltage windings that tend to undesirably vary with variations of said unregulated voltage;
a high voltage circuit coupled to said high voltage winding for developing an ultor voltage from the high voltage winding alternating polarity voltage; and
a ferroresonant saturable reactor core and a load coil wound on said core and conductively coupled to and magnetically isolated from said transformer secondary winding, said ferroresonant saturable reactor load coil being responsive to and providing regulation of the transformer secondary winding alternating polarity voltage for developing a regulated alternating polarity voltage across said high voltage winding.

4,446,406

BRUSHLESS DC MOTOR DRIVING CIRCUIT

Mitsuo Uzuka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 479,868
Claims priority, application Japan, Apr. 2, 1982, 57-54871
Int. Cl.³ H02K *23/00*
U.S. Cl. 318—254 **25 Claims**



1. A driving circuit for a brushless DC motor of the kind having a stator with a plurality of windings, comprising:
switching means connected to respective ones of said wind-

ings and to a power source for selectively supplying a driving current to said windings;

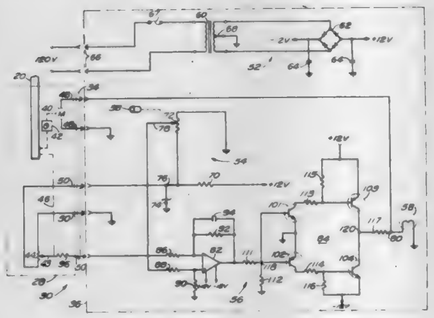
means for comparing predetermined ratios of voltages induced in said windings by said driving current with a reference voltage and producing control signals representing the results of said comparing, said control signals being fed to said switching means for controlling the operation thereof, whereby said windings are selectively energized by said power source to cause said motor to produce optimum torque.

4,446,407

ANTENNA ROTATOR APPARATUS

Martin Sperber, Santa Monica, Calif., assignor to Intercept Corporation, Clifton, N.J.

Filed Mar. 8, 1982, Ser. No. 355,401
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—282 **7 Claims**



1. An apparatus for driving an antenna rotator comprising:

(a) a circuit comprising:

(1) means for sensing the orientation of an antenna,

(2) means for commanding an orientation of said antenna,

(3) means for generating a drive signal, said generating means being responsive to a difference between a command signal of said commanding means and an orientation signal of said sensing means,

(4) a D.C. motor for rotating said antenna to a desired orientation as commanded by said commanding means, said motor being driven either clockwise or counterclockwise by said drive signal of said generating means to achieve said desired orientation,

(5) a multiple-conductor cable connecting said motor and said sensing means with said generating means, one conductor of said cable serving as a separate electrical ground return for said motor, and a second conductor of said cable serving as a separate electrical ground return for said sensing means for decoupling input and output terminals of said generating means, thereby insuring stable operation of said generating means; and

(6) an indicator means coupled to said generating means for indicating the movement or non-movement of said motor in response to said drive signal, said indicator means being illuminated during the clockwise and counterclockwise movement of said motor and extinguished during the non-movement of said motor; and

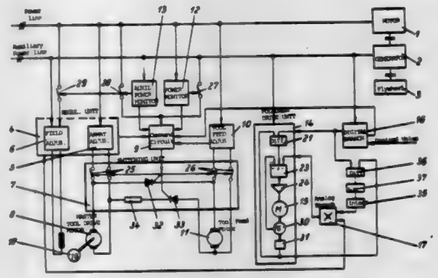
(b) a reduction gear train connecting said motor to said antenna, frictional forces of said motor and said gear train being scaled by a large gear ratio so as to prevent movement of said antenna when said motor is de-energized while permitting facile rotation of said antenna by said motor, said sensing means and said motor being located adjacent said antenna and distant from said generating means.

4,446,408

CONTROL CIRCUIT FOR MACHINE TOOLS

Joachim Ebermann; Heinz Gräf; Siegfried Schleicher, and Jürgen Uhlig, all of Karl-Marx-Stadt, German Democratic Rep., assignors to Veb Werkzeugmaschinenkombinat "7 Oktober" Berlin, Berlin, German Democratic Rep.

Filed Oct. 28, 1981, Ser. No. 315,988
Claims priority, application German Democratic Rep., Nov. 14, 1980, 225189[U]
Int. Cl.³ G05B *19/26*
U.S. Cl. 318—600 **24 Claims**



1. Control apparatus for machine tools comprising

a digital branch having an output;

a follower drive having an output;

a pulsed digital difference detector having one input connected to the digital branch and having a second input connected to the follower drive and having an output;

an adding register having its input connected to the output of the pulsed digital difference detector;

an analog nominal value source having its control input connected to the output of the adding register; and

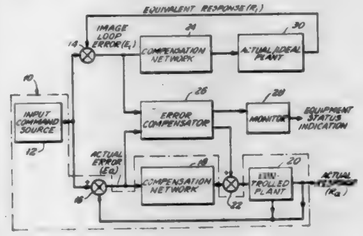
an analog branch having an input connected to the analog nominal value source and having its output connected to the input of the follower drive.

4,446,409

ELECTRONIC CONTROLLER APPARATUS

Harris C. Rawicz, Bridgewater; Vincent J. Rizzo, Basking Ridge, and William R. Buntemeyer, Washington, all of N.J., assignors to Lockheed Electronics Co., Inc., Plainfield, N.J.

Filed Mar. 22, 1982, Ser. No. 360,789
Int. Cl.³ G05D *23/275*
U.S. Cl. 318—632 **5 Claims**



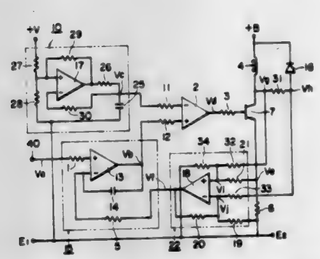
1. In combination in apparatus for controlling a controlled element; primary feed back loop means including feed back signal supplying means for supplying a signal representing the state of the controlled element, an input signal source, first difference means having inputs connected to said input signal source and to said feed back signal supplying means for providing a primary loop error signal, and forward gain means responsive to said primary loop error signal generated by said first difference means for driving the controlled element; image feed back loop means including controlled element simulating means, second difference means having inputs connected to said input signal source and to an output of said simulating means for providing an image loop error signal, and second forward gain means connecting said second difference means and said simulating means; and third difference means, having inputs connected to said first and second difference means for augmenting the drive applied to the controlled element responsive to the difference between said error signals in said primary and image feed back loop means, wherein said third difference means includes integrating steady state means responsive to the error signal difference in said primary and image feed back loop means, and multiplier means for multiplying the output of said steady state means and said primary feed back loop error signal determined by said first difference means.

4,446,410

CONTROL CIRCUIT FOR A SOLENOID-OPERATED ACTUATOR

Toshiaki Yagura; Kenichiro Satoyama, both of Kariya; Kazutoshi Morisada, Obu; Ryoichi Yamamoto, Aichi, and Seietsu Yoshida, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 21, 1982, Ser. No. 341,502
Claims priority, application Japan, Jan. 22, 1981, 56-8164
Int. Cl.³ G05B *11/00*
U.S. Cl. 318—687 **8 Claims**



1. A control circuit for controlling a solenoid-operated actuator having a coil in response to a control signal, comprising:

a switching element connected in series with said coil for generating a drive current in said coil when rendered conductive;

a drive current sensing resistor coupled in a series circuit with said switching element and said coil to develop a first voltage in response to said switching element being rendered conductive;

a surge current sensing resistor coupled in a parallel circuit including a unidirectionally conducting element with said coil to develop a second voltage in response to said switching element being rendered nonconductive;

a differential amplifier responsive to said first and second voltages to generate a difference signal;

a differential integrator having a first input responsive to said control signal and a second input responsive to said difference signal;

a ramp generator for generating a ramp voltage; and

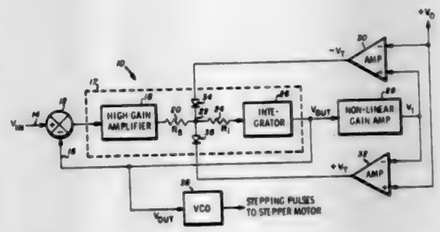
a comparator for comparing an output signal from said differential integrator with the instantaneous value of said ramp voltage to provide a pulse to said switching element to render the same conductive.

4,446,411

OPTIMUM ACCELERATION/DECELERATION CIRCUIT

Hubert Song, Sunnyvale, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Dec. 11, 1981, Ser. No. 329,715
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **5 Claims**



1. An acceleration/deceleration circuit for stepper motors, comprising:

mixing means responsive to an input voltage and a speed output voltage for generating an error signal having a voltage approximately equal to the difference between said input voltage and said speed output voltage;

a rate limiter for generating said speed output voltage and responsive to said error signal whereby said speed output voltage increases when an acceleration control voltage is received by the rate limiter and said speed output voltage decreases when a deceleration control voltage is received by the rate limiter;

a non-linear gain amplifier connected to the output of the rate limiter responsive to said speed output voltage for developing a complementary control voltage;

first summing means connected to the output of the non-linear gain amplifier responsive to said complementary control voltage for generating said acceleration control voltage; and

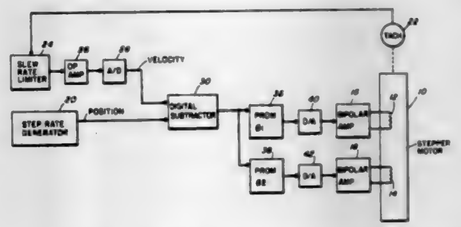
second summing means connected to the output of the non-linear gain amplifier responsive to said complementary control voltage for generating said deceleration control voltage.

4,446,412

METHOD AND APPARATUS FOR CONTROLLING STEPPER MOTORS

David Friedman, Bedford, and Philip Mandel, Burlington, both of Mass., assignors to Computervision Corporation, Bedford, Mass.

Filed Nov. 9, 1981, Ser. No. 319,665
Int. Cl.³ H02K *29/02*
U.S. Cl. 318—696 **12 Claims**



1. A method for critically damping the natural resonance of a stepper motor, said method comprising the steps of:

(a) generating position signals;

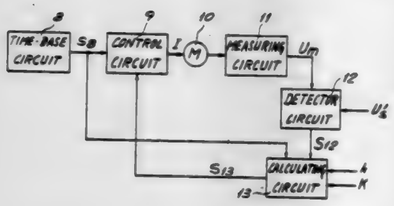
(b) generating a digital velocity signal representing the velocity of the stepper motor shaft;
(c) generating a digital error signal functionally related to said position signals and said digital velocity signal; and
(d) generating command currents for driving the stepper motor and critically damping the natural resonance of the stepper motor in response to said digital error signal.

4,446,413

METHOD FOR REDUCING THE CONSUMPTION OF A STEPPING MOTOR AND DEVICE FOR CARRYING OUT THE METHOD

Hans-Jürgen Rémus, St-Aubin, and Luciano-Marco Antognini, Lutry, both of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Feb. 4, 1982, Ser. No. 345,952
Claims priority, application Switzerland, Mar. 18, 1981, 1 826/81
Int. Cl.³ H02K *29/02*
U.S. Cl. 318—696 **16 Claims**



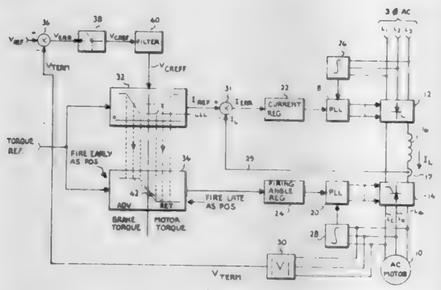
1. A method for reducing the power consumption of a stepping motor of the type having a coil and a rotor magnetically coupled to the coil and rotated in response to driving pulses applied to the coil, comprising the steps of:
measuring during each driving pulse the voltage induced in the coil by the rotation of the rotor;
measuring the time interval between the beginning of the driving pulse and the moment at which the induced voltage becomes equal to a reference voltage; and,
terminating the driving pulse according to said period of time whereby said driving pulses have a duration which relates to a load on said motor.

4,446,414

TERMINAL VOLTAGE LIMIT REGULATOR FOR A LOAD COMMUTATED INVERTER

Leland C. Tupper, Schenectady, N.Y., assignor to General Electric Company, Salem, Va.

Filed Nov. 19, 1981, Ser. No. 322,741
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—723 **13 Claims**



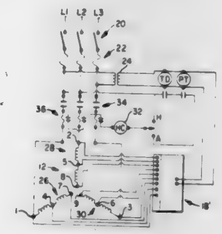
1. A method of controlling an AC motor load driven by a thyristor inverter which supplies a load current of varying magnitude and frequency to said motor load, comprising the steps of:
(a) varying the motor load current and the thyristor inverter firing angle according to a first firing angle strategy in response to a torque reference signal generated for a desired motor torque, said first firing angle strategy being that of firing at the commutation limit point and controlling motor torque as a function of motor current;
(b) sensing the terminal voltage of the motor load;
(c) comparing said terminal voltage against a preselected reference voltage; and
(d) in the event that said terminal voltage exceeds said reference voltage, increasing the minimum motor load current and changing the firing angle strategy from said first strategy to a second firing angle strategy, said second firing angle strategy acting to regulate motor load current to the desired minimum load current and controlling motor torque by controlling the thyristor firing angle.

4,446,415

AUTOMATIC LOAD SEEKING CONTROL FOR A PUMPJACK MOTOR

Noel R. Taylor, 2512 Bonham, and Paul A. Taylor, 1548 Tanglewood, both of Odessa, Tex. 79762

Continuation of Ser. No. 27,798, Apr. 6, 1979, Pat. No. 4,220,440, which is a continuation-in-part of Ser. No. 854,389, Nov. 23, 1977, abandoned. This application Jun. 5, 1980, Ser. No. 156,740
The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.
Int. Cl.³ H02P *5/28, 1/32*
U.S. Cl. 318—798 **30 Claims**



1. In an apparatus having a three phase motor which is subjected to a torque which varies from one time interval to another time interval, the stator of which can be connected in either of Y, ΔY, and Δ configuration, the improvement comprising:
first circuit means for connecting the stator in Y configuration; said circuit means includes a first sensor means for measuring the current flow through said Y connected stator and for disconnecting said Y connected stator upon the current flow through said Y connected stator exceeding a first maximum average value during a first time interval;
second circuit means for connecting the stator in ΔY configuration upon said first circuit means being disconnected by said first sensor means;
said second circuit means includes a first timer means by which said second circuit means disconnects said ΔY configuration and said first circuit means again connects said stator in Y configuration after a predetermined time interval has expired;
third circuit means and a second sensor means, said second sensor means measures the current flow through said ΔY connected stator and causes said second circuit means to disconnect said ΔY configuration while connecting said stator in Δ configuration upon the average current flow through said ΔY stator exceeding a second maximum average value during a second time interval;

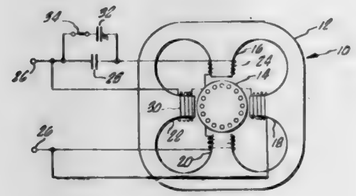
said third circuit means further includes a second timer by which said Δ connection is disconnected by said third circuit means and said second circuit means again connects the stator in ΔY configuration after a predetermined time interval has expired; and means by which the response rate of said first and said second sensor means is proportional to the severity of overload, so that at relatively low overloads the circuit means requires a relatively long time interval for changing the stator winding configuration, while at relatively high overloads the circuit means requires a relatively short time interval for changing stator winding configuration.

4,446,416

POLYPHASE ELECTRIC MACHINE HAVING CONTROLLED MAGNETIC FLUX DENSITY

Cravens L. Wanlass, 3739 Meadow Wood Rd., Carson City, Nev. 89701

Filed Aug. 14, 1979, Ser. No. 66,410
Int. Cl.³ H02P *1/44, 5/00*
U.S. Cl. 318—812 **56 Claims**



1. A polyphase electric machine comprising:
a stator including a core of magnetic material;
a rotor;
a main polyphase stator winding having a winding for each phase wound on said core and encompassing said magnetic material;
a plurality of input terminals adapted to be connected to a source of polyphase AC voltage;
a plurality of capacitors;
means connecting the main windings of each phase in a series circuit with one of said capacitors and said series circuits being connected with said input terminals; and
a polyphase control winding having a winding for each phase wound on said core to encompass said magnetic material and connected respectively to said plurality of input terminals at least partly in parallel with the respective main windings and the series connected capacitances of each respective phase, such that on low load current flows in opposite directions across radially adjacent windings of the main winding and the control winding and such current flow becomes increasingly in the same direction as the load increases, and wherein respectively different phases of the main windings and control windings are in substantially physical radial alignment.

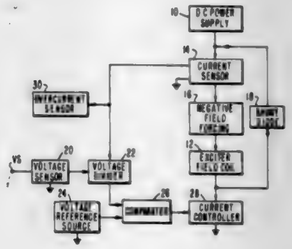
4,446,417

VOLTAGE REGULATOR FOR AIRCRAFT GENERATORS

David A. Fox, Shawnee Township, Allen County, and Lynn L. Tipton, American Township, Allen County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 12, 1982, Ser. No. 348,395
Int. Cl.³ H02P *9/00;* **H02H** *7/06*
U.S. Cl. 322—25 **6 Claims**

1. A voltage regulator circuit for a generator with an exciter field coil, said circuit comprising;
means for sensing current in said exciter field coil and for producing a first voltage signal proportional to said current;
means for sensing voltage derived from the output voltage of said generator and for producing a second voltage signal proportional to said voltage;
means for combining said first voltage signal and said second voltage signal and for producing a third voltage signal, wherein said means for combining the first voltage signal and the second voltage signal is a branch circuit including, the series connection of a first resistor, a capacitor, and a second resistor, with the capacitor being connected between said first and second resistors;



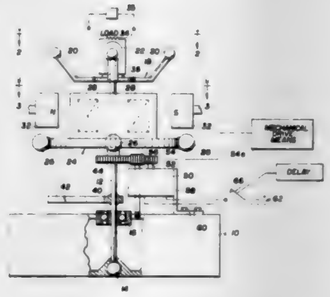
said first and second voltage signals being impressed on opposite ends of said branch circuit with said second voltage signal being impressed on one end of said second resistor, to produce said third voltage signal at the connection point between the capacitor and the second resistor;
a source of reference voltage;
means for comparing said third voltage signal with said reference voltage and for producing a fourth voltage signal;
means for controlling current in said excitier field coil, responsive to said fourth voltage signal.

4,446,418

GENERATOR AND DRIVE SYSTEM

Royest L. Richardson, 305 W. Home, Flint, Mich. 48505

Continuation-in-part of Ser. No. 100,952, Dec. 6, 1979, abandoned. This application Jan. 11, 1982, Ser. No. 338,506
Int. Cl.³ H02K *7/02*
U.S. Cl. 322—4 **10 Claims**



1. A generator system for providing an electrical power output, comprising:
a central shaft;
a support bearing for rotatably supporting said shaft at its lower end;
a flywheel mounted on said shaft intermediate its end;
an input means for providing a rotative drive to said shaft;
a gyro of the vibratory type mounted on said shaft proximate its upper end; said gyro including a plurality of relatively thin rods extending symmetrically from said shaft, each such rod including a weight mounted on its free end; and

means for periodically interrupting the drive to said shaft, said flywheel and said gyro operable to continue the rotation of said shaft during such periodic interruption.

4,446,419

CURRENT STABILIZING ARRANGEMENT

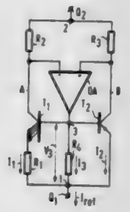
Rudy J. van de Plassche; Else C. Dijkmans, and Hendrikus J. Schouwenaars, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,170

Claims priority, application Netherlands, Aug. 14, 1981, 8103813

Int. Cl.³ G05F *3/20*

U.S. Cl. 323—316 **3 Claims**



1. A current stabilizing arrangement comprising a first and a second series circuit (A and B respectively), which are each connected between a first and a second junction point (1 and 2 respectively), which first series circuit (A) comprises the main current path of a first transistor (T_1) of a first conductivity type, a first resistor (R_1), and a second resistor (R_2), and which second series circuit (B) comprises the main current path of a second transistor (T_2) of the first conductivity type, having an emitter area which is smaller than that of the first transistor (T_1), and a third resistor (R_3), suitably having a value equal to that of the second resistor (R_2), which first resistor (R_1) is arranged between the emitter of the first transistor (T_1) and the first junction point (1), which second resistor (R_2) is arranged between the collector of the first transistor (T_1) and the second junction point (2), and which third resistor (R_3) is arranged between the collector of the second transistor (T_2) and the second junction point (2), the base connections of the first and the second transistor (T_1 and T_2 respectively) being connected to a third junction point (3), a fourth resistor (R_4) being arranged between the third junction point (3) and the first junction point (1), there being provided a differential amplifier (OA) having an inverting input (−), a non-inverting input (+), and an output, which inverting input (−) is connected to that terminal of the second resistor (R_2) which is remote from the second junction point (2), which non-inverting input (+) is connected to that terminal of the third resistor (R_3) which is remote from the second junction point, and which output is coupled to the third junction point (3), the current stabilizing arrangement comprising means (Q_1, Q_2) for applying a power-supply voltage thereto for maintaining a potential difference between the first and the second junction point (1 and 2 respectively) and for taking off a stabilized current from one of said points, characterized in that between the emitter of the first transistor (T_1) and the first junction point (1) there is arranged at least one third transistor (T_3) of the first conductivity type, arranged as a diode which is poled in the forward direction and is connected in series with the first resistor R_1, the emitter of the second transistor (T_2) is connected to the first junction point (1) via at least one fourth transistor (T_4) of the first conductivity type arranged as a diode and poled in the forward direction, and the series arrangement of a fifth resistor (R_5) and a first semiconductor junction is arranged between the first and the third junction point (3).

4,446,420

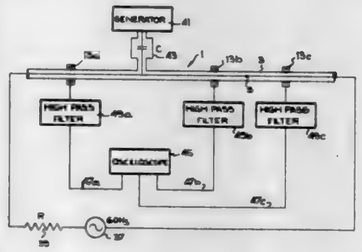
METHOD AND DEVICE FOR DETECTING AND LOCATING FAULT AND/OR PARTIAL DISCHARGES IN A GAS-INSULATED ELECTRICAL EQUIPMENT

Michel G. Drouet, St-Bruno, Canada, assignor to Hydro Quebec, Montreal, Canada

Filed Jan. 28, 1982, Ser. No. 461,870

Int. Cl.³ G01R *31/08*

U.S. Cl. 324—52 **15 Claims**



1. In a device for detecting and locating faults and partial discharges in a gas-insulated electrical equipment of the type comprising a closed wall housing containing an insulating gas for electrically insulating at least one conducting element centrally extending inside said housing, said device comprising:

a plurality of field coupled current sensors located at given intervals inside the housing for detecting any variation of the current flowing through the conducting element, each of said sensors giving a signal in correlation with said detected variation; and

a control circuit connected to each of the sensors for comparing their signals and measuring the time interval between all the signals given by the sensors of a given variation of current, and thereby determining where is located the fault and/or partial discharge causing said given variation of current

the improvement wherein:

each of said sensors comprises a toroidal helix pick up coil located in an annular cavity machined in the housing wall and extending all around the conducting element,

each of said annular cavities being connected along its entire length to the inner surface of the housing wall by a slit having opposed side walls sufficiently spaced apart to be insulated from each other.

4,446,421

APPARATUS AND METHOD FOR LOCATING FAULTS IN CABLES

Dennis W. Berde, Plainview, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jun. 22, 1981, Ser. No. 275,608

Int. Cl.³ G01R *31/08*

U.S. Cl. 324—52 **13 Claims**

1. An apparatus for locating a fault condition between first and second conductors disposed adjacent to one another, each conductor having a length L, said fault condition being a short or a high impedance leakage path between said conductors, comprising:

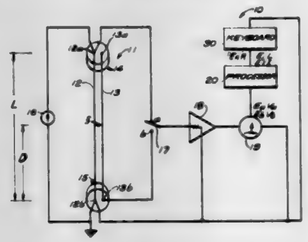
(a) means for grounding one end of said first conductor;

(b) means for applying a control signal to said first conductor such that a first voltage V_a exists between the ends of the first conductor, and thereupon a second voltage V_b exists between said second conductor and ground potential, there being a path to said second conductor through the fault condition;

(c) voltage detector means selectively connectable to the ends of said first conductor for providing a signal E_a which is representative of said first voltage V_a, said voltage detector means being further selectively connectable between said second conductor and ground potential for providing a signal E_b which is representative of said second voltage V_b;

(d) means for selectively connecting said voltage detector means to the ends of said first conductor and between said second conductor and ground potential;

(e) data input means for providing a signal E_L representative of the length L of said conductors; and



(f) processor means responsive to said voltage detector means and said data input means for processing said E_a, E_b and E_L signals to provide a signal E_D which is representative of the distance D between said fault condition and the grounded end of said first conductor said distance D being defined by the relationship:

$$D=(V_b/V_a)L$$

4,446,422

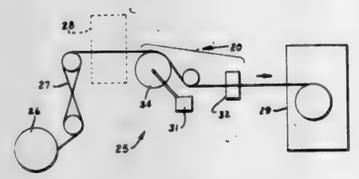
METHODS OF AND APPARATUS FOR DETECTING, MEASURING, AND CLASSIFYING INSULATION DEFECTS

Paul G. Koehler; Thomas P. Leahy, and Thomas P. Lichliter, all of Omaha, Nebr., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Nov. 24, 1981, Ser. No. 324,367

Int. Cl.³ G01R *31/12, 31/08*

U.S. Cl. 324—54 **20 Claims**



1. A method of detecting, measuring, and classifying defects in an insulation cover which encloses a metallic conductor, said method including the steps of:

advancing successive increments of the metallic conductor and its insulation cover along an axis past a probe;

generating a pulse train, the count of which is representative of the length of the conductor which is advanced past the probe;

impressing across the insulation cover a voltage having sufficient magnitude to cause electrical current to flow between the probe and the metallic conductor through an insulation defect, the current flow being initiated prior to and terminated subsequent to the defect being advanced past the probe;

counting a portion of the pulse train in response to current flow through the defect to provide a pulse count which is representative of the sum of a distance which is measured along the axis between points where the current flow is initiated and terminated and of the length of the defect;

subtracting a predetermined count from the pulse count to provide a corrected pulse count which is representative of the length of the defect, said predetermined count being representative of the distance between the points along the axis where the current flow is initiated and terminated to compensate for the current flow prior and subsequent to the defect being advanced past the probe; and

comparing the corrected pulse count to preset pulse counts which are proportional to defect length categories to classify the defect.

4,446,423

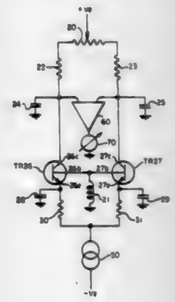
LINEAR SELF-EXCITED CAPACITANCE BRIDGE

Armik A. Hakhverdian, 1153 Janis Way, San Jose, Calif. 95125

Filed Sep. 29, 1982, Ser. No. 432,095

Int. Cl.³ G01R *27/26, 27/00*

U.S. Cl. 324—60 C **4 Claims**



1. An apparatus for comparing first and second capacitive elements, said apparatus comprising:

first and second semiconductor amplifying devices, each semiconductor device having an input terminal, a control terminal, and an output terminal;

an inductive element having a first terminal which is grounded and having a second terminal connected to said control terminals of said first and second semiconductor devices;

first and second reactive networks, respectively including said first and second capacitive elements and respectively connected to said input terminals of said first and second semiconductor devices;

a constant current source which is operatively electrically connected to said first and second reactive networks;

a resistive network having at least one adjustable resistance element, said resistive network operatively connected to said output terminals of said first and second semiconductor devices;

a measurement means operatively connected to said output terminals of said first and second semiconductor devices for measuring the relative voltage therebetween;

wherein the values of said resistance and reactive networks and inductive element and parameters of said semiconductor devices are selected such that said apparatus oscillates at a predetermined frequency;

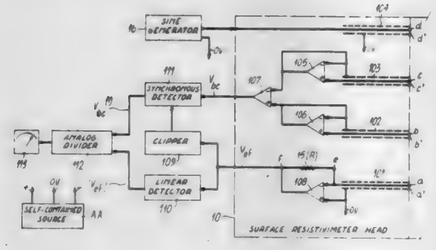
and wherein if said adjustable resistive element of said resistive network is first adjusted so as to cause said measuring means to determine that the voltage between said output terminals of said first and second semiconductor devices has a zero DC value when said inductive element is shorted out with respect to an alternating current, then said measuring means indicates a zero value of potential difference across said output terminals of said first and second semiconductor devices when said first and second capacitive elements are equal in their capacitive value.

4,446,424

SURFACE RESISTIVIMETER

Michel J. Chatanier, Saint Maur; Michel J. Portat, Villebon sur Yvette, and Alain E. Bruere, Chevilly-Larue, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon, France

Filed Sep. 15, 1981, Ser. No. 302,618
Claims priority, application France, Oct. 17, 1980, 80 22329
Int. Cl.³ G01R *27/02, 27/26*
U.S. Cl. 324—62 **3 Claims**



1. A resistivimeter device for measuring the surface resistance of a structure coated with an inner resistive layer and an outer insulating superficial layer, said device comprising:

a pick-up to be placed on said structure surface, formed of a central cylindrical electrode, two intermediary annular electrodes and an outer annular electrode coaxial with said central electrode;

annular arcing electrodes surrounding said intermediary electrodes except on the part thereof lying on the structure surface;

unit follower means bringing said arcing electrodes to a potential respectively equal to that of the surrounded intermediary electrodes;

annular sheathing electrodes surrounding said central and outer electrodes except on the part thereof lying on the structure surface, said sheathing electrodes being brought to a predetermined potential;

means for applying a supply alternating voltage between said central and outer electrodes, thereby producing a current between said electrodes;

means for applying said current to a load resistor and measuring the voltage across said load resistor;

means for measuring the inter-electrode voltage appearing between said intermediary electrodes;

means for forming the component of said inter-electrode voltage cophasal with said load resistor voltage; and

means for dividing said component voltage by said load resistor voltage.

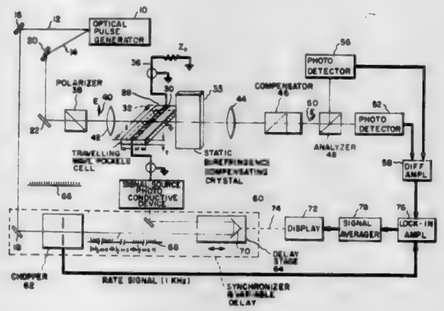
4,446,425

MEASUREMENT OF ELECTRICAL SIGNALS WITH PICOSECOND RESOLUTION

Janis A. Valdmanis, Columbus, Ind., and Gerard Mourou, Rochester, N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,127
Int. Cl.³ G01R *23/16*
U.S. Cl. 324—77 K **22 Claims**

1. A system for measurement of an electrical signal with picosecond resolution which comprises means including a traveling wave Pockels cell for electrooptically sampling successively occurring portions of said signal with optical pulses which propagate through the cell transversely to the direction



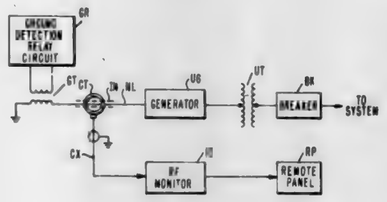
of the propagation of the electrical signal, and means for processing the samples to provide a display of said signal.

4,446,426

ON-LINE RF ARC MONITOR FOR LARGE ROTATING GENERATORS

Franklin T. Emery, Greentree, Pa.; Bruce N. Lenderking, Glen Burnie, Md., and Robert D. Couch, New Freedom, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 4, 1981, Ser. No. 318,225
Int. Cl.³ G01R *31/06, 31/02*
U.S. Cl. 324—158 MG **9 Claims**



1. Apparatus for detecting arcing conditions in an electrical generator, comprising,

first circuit means for monitoring the RF current present in the neutral grounding circuit of the generator and producing an RF level output indicative thereof, which first circuit means includes an RF frequency selector means for selecting a predetermined frequency component of the RF current present in the neutral grounding circuit of the generator, amplifier circuit means for amplifying the selected component of said RF current, and a peak detector circuit for supplying a peak RF level signal to said second circuit means corresponding to the peak level of the selected frequency component of the RF current present in the neutral grounding circuit of the generator,

second circuit means for comparing the RF level output of said first circuit means to a predetermined alarm level and producing an alarm indication output in the event the RF level exceeds the predetermined alarm level, and

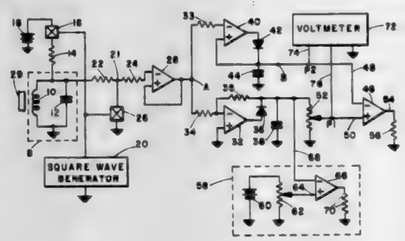
third circuit means for developing an indication of generator arcing conditions if the duration of said alarm indication output exceeds a predetermined time period.

4,446,427

MEASURING AND CONTROL DEVICE USING THE DAMPING EFFECT OF A RESISTIVE EFFECT ELEMENT ON THE INDUCTOR OF A TUNED CIRCUIT

Rodger T. Lovrenich, 209 Whispering Sands, Santa Teresa, N. Mex. 88063

Filed Mar. 23, 1981, Ser. No. 246,167
Int. Cl.³ G01B *7/00;* **G01N** *27/72;* **G01R** *33/12*
U.S. Cl. 324—207 **17 Claims**



1. A measuring and control device that measures or controls by detecting the energy absorbed by an energy absorbing resistive effect element in proximity to the magnetic field of an inductance means, comprising:

power supply means;

resonant circuit means including inductance means and capacitance means electrically coupled for oscillation and electrically connected to said power supply means;

detection and comparison circuit means electrically connected to said resonant circuit means for receiving an oscillating signal from said resonant circuit means when said resonant circuit means is oscillating and comparing the values of different parameters of the same oscillating signal to provide a ratio of said parameter values that indicates the damping effect upon said signal caused by the presence of said resistive effect element in the magnetic field of said inductance means for measurement and control purposes without using a separate reference value;

switching means electrically connected to said power supply means and said resonant circuit means for alternately completing the circuit between said resonant circuit means and said power supply means for energizing said resonant circuit means and then breaking the circuit between said power supply means and said resonant circuit means whereupon said resonant circuit means passes an oscillating signal to said detection and comparison circuit means; and

actuating means for actuating and deactuating said switching means at a frequency that is independent of the frequency of oscillation of said resonant circuit means.

4,446,428

MAGNETIC RESONANCE CELL

Tae M. Kwon, Thousand Oaks, and Charles H. Volk, Newbury Park, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 2, 1981, Ser. No. 307,996
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—304 **44 Claims**

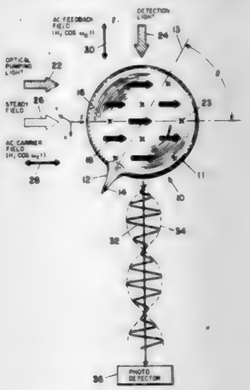
1. A nuclear magnetic moment alignment device comprising:

(a) a container for gas, said container having its inner surface substantially rotationally symmetric about an axis of symmetry;

(b) means for applying a steady magnetic field to said container;

(c) at least one nuclear magnetic moment gas selected from the group consisting of xenon-131, neon-21, krypton-85, and krypton-83, said magnetic moment gas being capable of being aligned in a predetermined direction to said magnetic field, said gas being enclosed in said container;

(d) means for orienting said container so that said axis of



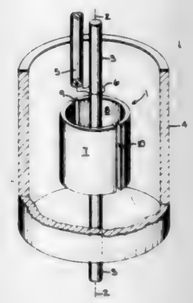
symmetry of said container is at an angle to said magnetic field so as to be capable of causing the relaxation time constant of the nuclear magnetic moment of said at least one nuclear moment gas to be substantially at a maximum.

4,446,429

MICROWAVE RESONATOR

Wojciech Froncisz, Cracow, Poland, and James S. Hyde, Dousman, Wis., assignors to Medical College of Wisconsin, Milwaukee, Wis.

Filed Oct. 9, 1981, Ser. No. 310,231
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—316 **14 Claims**



1. A lumped circuit resonator for gyromagnetic resonance spectrometers which comprises:

a loop formed from an electrically conductive material and being disposed around a central longitudinal axis, said loop having a length in the direction of the central longitudinal axis;

a plurality of gaps formed along the length of the loop to divide the loop into a plurality of separate pieces, wherein the number and size of the gaps are selected to tune the resonator to a desired resonant frequency; and

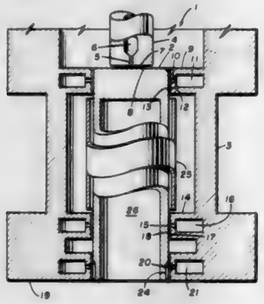
wherein electromagnetic energy is coupled to the lumped circuit resonator and a magnetic field is produced along the central longitudinal axis of the loop at the resonant frequency and is applied to a sample to be investigated.

4,446,430

SAMPLE SPINNER FOR NUCLEAR MAGNETIC RESONANCE SPECTROMETER

Edward O. Stejskal, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 31, 1981, Ser. No. 297,594
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—321 **10 Claims**



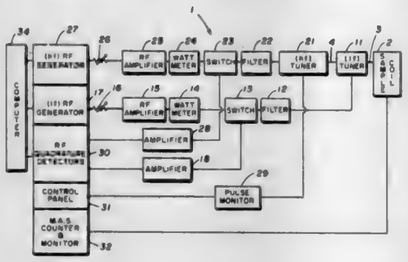
1. A NMR spectrometer sample spinner comprising a stator and a gas-driven rotor having a center cavity adapted to hold a sample, which stator and rotor contain a gas turbine portion, support gas bearing portions, and a thrust gas bearing portion, said stator having a chamber to accommodate the rotor and gas-carrying channels for feeding gas to the gas turbine portion, the support gas bearing portions and thrust gas bearing portion, said rotor comprising a cylindrical body which operatively fits the stator chamber and contains a plurality of flutes radially positioned around the outside surface of the body opposite the turbine drive gas channel of the stator, which rotor is supported at both ends by support gas bearings and is positioned by a thrust gas bearing, in which the thrust gas bearing comprises a gas stream fed through an orifice impinging against the end of the rotor, providing a space between the stator and rotor and holding the rotor in place whether spinning or motionless.

4,446,431

DOUBLE-TUNED SINGLE COIL PROBE FOR NUCLEAR MAGNETIC RESONANCE SPECTROMETER

Robert A. McKay, Ellis Ville, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 24, 1981, Ser. No. 295,940
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—318 **8 Claims**



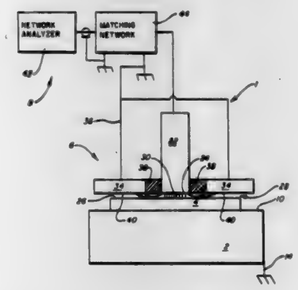
1. A double-tuned single coil probe for a nuclear magnetic resonance (NMR) spectrometer which probe comprises a sample coil connected to a double-tuned circuit means comprising a high frequency irradiation means and a low frequency irradiation means in which the two frequencies have a ratio of about at least three to one or more and are in the radio frequency (RF) range, in which the high frequency irradiation means is connected to the sample coil through a transmission line means comprising a transmission line of a length of about one half of the high frequency wavelength, and the low frequency irradiation means is connected to the sample coil through the aforesaid transmission line means through an inductor means connected to the transmission line at the point of about minimum impedance for the high frequency radiation.

4,446,432

METHOD FOR DETERMINING SURFACE CONTOUR OF PIEZOELECTRIC WAFERS

Lawrence N. Dworsky, Northbrook, and Garth R. Kennedy, Hinsdale, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed May 27, 1982, Ser. No. 382,425
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—71.5 **2 Claims**



1. A method of determining the radius of curvature, R, of the surface contour of a convex wafer of piezoelectric material, comprising:

applying a localized electrical field to an arbitrary location on a face of the wafer while monitoring the frequency response to determine the Oth order frequency of the wafer;

traversing the face of the wafer with said localized electrical field while monitoring the amplitude of the response at said Oth frequency until the location of maximum amplitude is found, said location corresponding to the point of maximum thickness, $2h_o$, of said wafer;

moving said localized electrical field from said location of maximum thickness along one of the planar axes of the wafer until an amplitude peak for the next mode is obtained, measuring the distance traversed, a, and solving the following equation for β:

$$0 = \frac{d}{da}\left[(e^{-\beta a 2/2})\,(2\beta^{\frac{1}{2}}a)\right],$$

and using the value obtained for β to solve one of the following equations for R:

$$\beta_N{}^2 = \frac{N^2\pi^2\bar{C}_{66}}{8Rh_o{}^3C_{55}}, \text{ if the field is moved along the } z \text{ axis, or}$$

$$\beta_N{}^2 = \frac{N^2\pi^2\bar{C}_{66}}{8Rh_o{}^3C_{11}}, \text{ if the field is moved along the } x \text{ axis,}$$

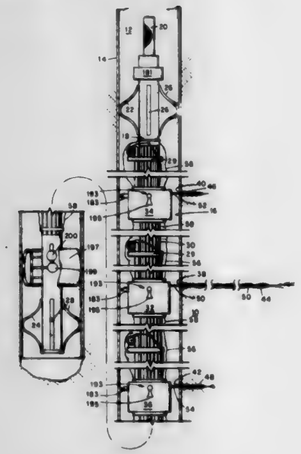
where N is the mode along the y thickness axis, $\bar{C}_{66}=C_{66}+e_{26}{}^2/\epsilon_{22}$ where C_{66} is an elastic coefficient of the piezoelectric material, e_{26} is a piezoelectric coupling coefficient and ϵ_{22} is a dielectric constant of the piezoelectric material in the thickness direction of the wafer, and C_{11}, C_{55} are elastic coefficients of the piezoelectric material.

4,446,433

APPARATUS AND METHOD FOR DETERMINING DIRECTIONAL CHARACTERISTICS OF FRACTURE SYSTEMS IN SUBTERRANEAN EARTH FORMATIONS

Lowell Z. Shuck, 401 Highview Pl., Morgantown, W. Va. 26505

Filed Jun. 11, 1981, Ser. No. 272,683
Int. Cl.³ G01V *3/30*; H01Q *1/04*
U.S. Cl. 324—338 **18 Claims**



1. An apparatus for determining the directional and length characteristics of a natural or hydraulically induced fracture in a subterranean earth formation penetrated by a wellbore in registry with said fracture, comprising signal transmitting means including extendable antenna means, means for movably supporting the signal transmitting means in the wellbore at a location contiguous to said fracture, drive means supported by the signal transmitting means and coupled to the antenna means for extending the antenna means from said wellbore into the fracture, signal-receiving means oriented in the wellbore, means for movably supporting the signal-receiving means in the wellbore, and said signal-receiving means having antenna means disposed in a signal-receiving location with respect to said earth formation for receiving a signal from said antenna means within said fracture.

4,446,434

HYDROCARBON PROSPECTING METHOD WITH CHANGING OF ELECTRODE SPACING FOR THE INDIRECT DETECTION OF HYDROCARBON RESERVOIRS

Ben K. Sternberg; Dale E. Miller, and Dhari S. Bahjat, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 971,177, Dec. 20, 1978, Pat. No. 4,295,096.
This application Mar. 20, 1981, Ser. No. 245,780
Int. Cl.³ G01V *3/06*
U.S. Cl. 324—363 **8 Claims**



1. A method of electrical hydrocarbon prospecting over an area on the surface of the earth to locate a subsurface polarizable stratum which is indicative of the presence of a hydrocarbon deposit lower than said stratum comprising:

(a) placing a first set of electrode means in the surface of the earth and having a preselected spacing, "a";

(b) placing a second set of electrode means in the surface of the earth having a spacing M (a) in line and symmetrically placed on each side of said first electrode means, where M is a constant;

(c) determining the presence of an electrical anomaly indication that is identifiable with said polarizable stratum;

(d) changing the spacing of said first and second electrode means in like proportion repeatedly while effecting step (c) for each said spacing to determine that spacing yielding a maximum value for said electrical anomaly; and

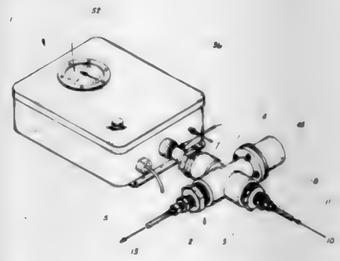
(e) proceeding with the electrical prospecting over said area on the surface of the earth using said spacing yielding said maximum value to determine the areal extent of said subsurface polarizable stratum.

4,446,435

ULTRASONIC STREAMING CURRENT DETECTOR

Anthony S. Canzoneri, Kenner, La., assignor to Process Development, Inc., Kenner, La.

Filed May 6, 1982, Ser. No. 375,577
Int. Cl.³ G01N *27/60*
U.S. Cl. 324—453 **18 Claims**



1. An ultrasonic streaming current detector apparatus for determining a function of a charge condition present in a system containing fluid with charge-influencing species, comprising:

a. a cross-shaped tubular member having cross-member and longitudinal elements adapted to being substantially filled with said fluid;

b. a piston receiving member being longitudinally coaxial with said longitudinal element;

c. a casing substantially surround said piston receiving member;

d. a pair of electrodes, the first electrode being disposed adjacent the bottom end of said piston receiving member and the second electrode being disposed in said piston receiving member above the first electrode;

e. a reciprocating piston element disposed in a central bore of said piston receiving member and said casing;

f. means for reciprocating said reciprocating element within the bore of said piston receiving member, so as to cause said fluid to flow to and from said bore, in a continuous, repetitive manner thereby generating electrical signals across said electrodes;

g. means for amplifying electrical signals generated across said electrodes, and means for utilizing said amplified signals;

h. means for conducting said electrical signals generated across said electrodes from said electrodes to said means for amplifying said electrical signals and said means for utilizing said amplified signals;

i. means for synchronizing said conduction of said electrical signals with the action of said reciprocating piston element;

j. an ultrasonic cleaning device disposed adjacent to said piston receiving member and said casing for generating

mechanical vibrations to prevent agglomeration of said charge-influencing species contained by said liquid in the area about said electrodes.

4,446,436

CIRCUIT FOR GENERATING ANALOG SIGNALS

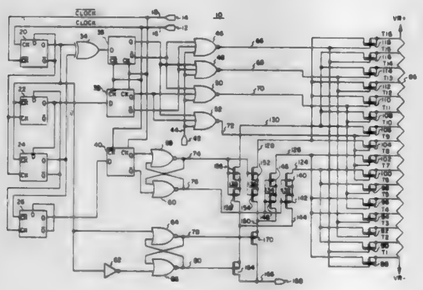
Jeffrey R. Ireland, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US81/00700, 371 Date May 18, 1981, 102(e) Date May 18, 1981, PCT Pub. No. WO82/04168, PCT Pub. Date Nov. 25, 1982

PCT Filed May 18, 1981, Ser. No. 278,906

Int. Cl.³ H03K *4/02, 6/00, 13/02*

U.S. Cl. 328—14 **6 Claims**



1. A circuit for producing an analog signal, comprising:

first and second power terminals;

a multi-tap resistor connected between said first and second power terminals;

a plurality of first switches formed into plural groups connected respectively to the taps of said resistor;

means responsive to a digital input signal for generating a plurality of first control signals each controlling a separate group of said first switches;

a plurality of second switches each connected to a plurality of said first switches wherein each second switch is connected to no more than one of said first switches within each of said groups of first switches, and each first switch is connected to no more than one of said second switches;

means responsive to said digital input signal for generating a plurality of second control signals each controlling a separate group of said second switches;

a plurality of third switches each connected to a plurality of said second switches and to an output terminal wherein each third switch is connected to no more than one of said second switches within each of said groups of second switches and each second switch is connected to no more than one of said third switches; and

means responsive to said digital input signal for generating a plurality of third control signals for controlling said third switches wherein the operation of said third switches connects said taps one at a time to said output terminal to produce said analog signal of said output terminal.

4,446,437

PULSE MONITOR CIRCUIT

Gerald M. Rinaldi, Mundelein, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 21, 1981, Ser. No. 333,220

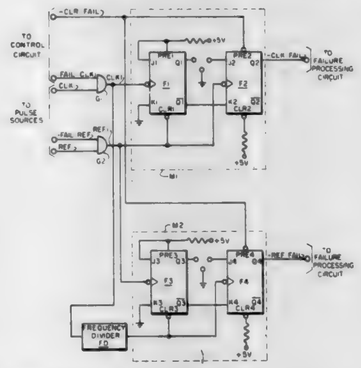
Int. Cl.³ H03K *5/19, 5/26*

U.S. Cl. 328—120 **14 Claims**

1. A pulse monitor circuit for use in a switching system, including a reference signal source which is normally operated to provide reference signal pulses of first and second polarities and of a first frequency, said reference signal source being abnormally operated to inhibit said reference signal pulses, and a clock signal source which is normally operated to provide clock signal pulses of first and second polarities and of a second frequency, said clock signal sources being abnormally operated to inhibit said clock signal pulses, said pulse monitor circuit comprising:

clock monitor means connected to said clock signal source and said reference signal source, operated in response to a reference signal pulse of said first polarity and an absence of a clock signal pulse to provide a clock failure signal;

frequency division means, connected to said clock signal source, operated to divide said first frequency of said



clock signal pulses by a predetermined amount, whereby said frequency division means provides frequency divided clock signal pulses having first and second polarities and a third frequency less than said first frequency of said reference signal; and

reference monitor means, connected to said reference signal source and said frequency division means, operated in response to a frequency divided clock signal pulse of said first polarity and an absence of a reference signal pulse to provide a reference failure signal.

4,446,438

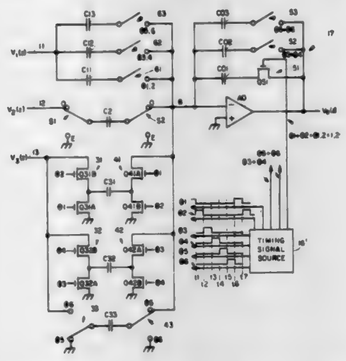
SWITCHED CAPACITOR N-PATH FILTER

Chieh Chang, Belmont, and Man S. Lee, San Mateo, both of Calif., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Oct. 26, 1981, Ser. No. 314,827

Int. Cl.³ G06G *7/18;* **H03K** *5/00;* **H03B** *1/00*

U.S. Cl. 328—127 **5 Claims**



1. In an N-path filter, a commutating switched capacitor integrator circuit comprising:

an active element having a first input terminal and an output terminal;

a first plurality of N capacitors each having the same value of capacitance;

first switch means selectively-sequentially connecting, at a commutating rate, individual ones of said first plurality of capacitors as integrating capacitors between said active elements' first input and output terminals only during associated pairs of adjacent time slots for storing charge; and

connecting means for selectively-sequentially connection at least one of: (1) individual ones of a second plurality of N-capacitors each having the same values of capacitance, at the commutating rate, between said first input terminal and a second input terminal only during associated pairs of adjacent time slots for selectively storing charge for an input voltage on said second input terminal; and (2) individual ones of a third plurality of capacitors of the same value of capacitance during associated pairs of adjacent time slots in a manner so as to alternately connect, at the commutating rate and during first and second time slots of each pair thereof, one and other sides of an individual one of said third plurality of capacitors to said first input terminal and a ground reference potential, respectively, and to ground and a third input terminal, respectively for alternately transferring charge between associated ones of said first and third pluralities of capacitors and storing charge on the associated one of said third plurality of capacitors for an input voltage on said third input terminal, respectively.

4,446,439

FREQUENCY/VOLTAGE CONVERSION CIRCUIT

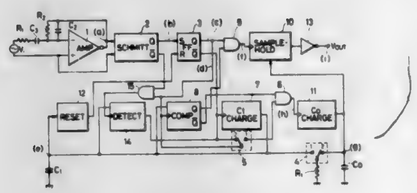
Kastuji Mizumoto, and Katsuhiko Yaguchi, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

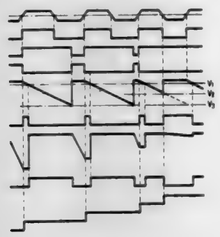
Filed Mar. 11, 1982, Ser. No. 357,130

Claims priority, application Japan, Mar. 13, 1981, 56-36964

Int. Cl.³ H03K *9/06*

U.S. Cl. 328—140 **9 Claims**





1. A frequency/voltage conversion circuit, comprising; a pulse generation circuit for generating a pulse signal having a period in accordance with a frequency of a given signal; a Flip-Flop being set by said pulse signal; a first charging/discharging circuit which discharges while said Flip-Flop is set, and which charges in response to a control signal; means for providing said control signal to said first charging/discharging circuit when said Flip-Flop is reset; means for resetting said Flip-Flop; and a detecting circuit for monitoring the charge level of said first charging/discharging circuit and for outputting a detection signal when the charge level of said first charging/discharging circuit does not reach a predetermined reference level at a predetermined time in each period of said pulse signal; means for providing said control signal in response to said detection signal, whereby said first charging/discharging circuit is forcedly charged in response to said detection signal.

4,446,440

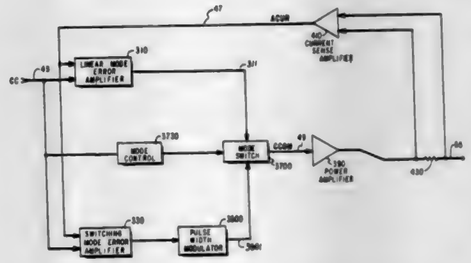
DUAL MODE AMPLIFIER

R. Frank Bell, Meridian, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 26, 1982, Ser. No. 342,942

Int. Cl.³ H03F *3/38*

U.S. Cl. 330—10 **8 Claims**



1. In an electrical circuit for amplifying an electrical signal received at an input node the combination comprising:

a first amplifier means coupled to said input node for amplifying said electrical signal and providing a first output signal;

a second amplifier means coupled to said input node for amplifying said electrical signal and providing a second output signal;

a mode selector means coupled to the first amplifier means and to the second amplifier means and to said input node responsive to said electrical signal to provide a power input signal selected from said first and second output signals;

a power amplifier means which operates in two modes coupled to the mode selector means and responsive to said power input signal, said power amplifier operating in a linear mode when the power input signal is said first output signal and in a switching mode when the power input signal is said second output signal.

4,446,441

TRANSIENT NOISE FREE TYPE AMPLIFIER CIRCUIT

Kenji Fujibayashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,698

Claims priority, application Japan, Sep. 22, 1980, 55-135035

Int. Cl.³ H03F *1/26, 3/30*

U.S. Cl. 330—149 **9 Claims**

1. A transient noise free amplifier circuit, comprising:

(a) first amplifier means having a noninverted input and a bias input, for receiving an input signal at the noninverted input and for supplying a first output signal corresponding to said input signal;

(b) inverter means having an inverted input and a bias input, for receiving said input signal at the inverted input and for phase-inverting said input signal to generate an inverted signal;

(c) second amplifier means having a noninverted input and a bias input, for receiving said inverted signal at the noninverted input and for supplying a second output signal corresponding to said inverted signal, said second output signal having an antiphase relation to said first output signal wherein said first and said second amplifier means perform a balanced transformerless amplifier operation;

(d) bias means having a bias terminal for generating a first bias potential at said bias terminal and for applying said first bias potential to the bias input of each of said first amplifier means, said second amplifier means, and said inverter means, wherein said first bias potential determines an operational bias of said first amplifier means, said second amplifier means and said inverter means;

(e) bias transfer means for transferring said first bias potential from the bias terminal of said bias means to the noninverted input of said first amplifier means and to the inverted input of said inverter means, so that said first amplifier means and said inverter means each receive a second bias potential corresponding to said first bias potential; and

(f) output means coupled to said first and said second amplifier means, for providing an output signal corresponding to a potential difference between said first and said second output signals.

4,446,442

AMPLIFIER CIRCUIT

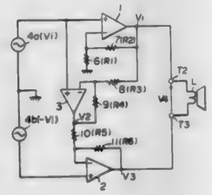
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 5, 1981, Ser. No. 308,578

Claims priority, application Japan, Nov. 19, 1980, 55-162884

Int. Cl.³ H03F *1/26, 1/34*

U.S. Cl. 330—149 **9 Claims**



1. An amplifier circuit comprising:

a first amplifier being supplied with an input signal from a signal source and amplifying the input signal to develop at an output thereof an output signal;

a second amplifier being supplied with the input signal from said input signal source and amplifying the input signal to develop at an output thereof an output signal having an opposite phase to the output signal of the first amplifier;

a load connected between the outputs of the first and second amplifiers; and

distortion detecting circuit means for detecting the distortion generated in said first amplifier and applying a detected distortion signal to said second amplifier;

the output of said second amplifier having a distortion with a same amplitude and phase as the distortion appearing at the output of said first amplifier.

4,446,443

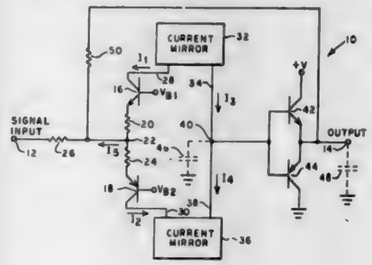
AMPLIFIER HAVING REDUCED POWER DISSIPATION AND IMPROVED SLEW RATE

Fred D. Johnson, Evanston; Michael D. Flasza, Schaumburg, and George J. Tzakis, Glenview, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 232,783, Feb. 9, 1981, abandoned. This application May 20, 1982, Ser. No. 379,838

Int. Cl.³ H03F *3/45, 3/26;* **H04N** *5/44*

U.S. Cl. 330—257 **12 Claims**



1. An amplifier comprising:

first circuit means receiving an input signal for generating a first signal current whose amplitude increases in response to input signal transitions of a given direction, and for generating a second signal current whose amplitude decreases in response to the same input signal transitions;

second circuit means comprising a first current mirror having an input and an output, wherein the input of the first current mirror receives the first signal current for establishing a third signal current in the output thereof which mirrors the first signal current;

a second current mirror receiving the second signal current for generating a fourth signal current which mirrors the second signal current;

an output stage receiving the third and fourth signal currents for developing an output signal corresponding to the difference between the third and fourth signal currents; and

a negative feedback path coupled between the input signal and the output signal to stabilize the gain of the amplifier;

said first circuit means comprising a first transistor having its collector coupled to the input of the first current mirror and its base coupled to a bias voltage, a first resistor coupled between a common node and the emitter of the first transistor, a second transistor having its collector coupled to an input of the second current mirror and its base coupled to a bias voltage, a second resistor coupled between the common node and the emitter of the second transistor and means for coupling the input signal to said common node.

4,446,444

CMOS AMPLIFIER

Raymond B. Patterson, III, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 5, 1981, Ser. No. 231,672

Int. Cl.³ H03F *3/18, 3/16*

U.S. Cl. 330—264 **10 Claims**

1. An amplifier circuit having a signal input terminal, a reference terminal and a signal output terminal comprising:

a complementary field effect transistor inverter having an N and P channel device connected between a pair of supply terminals with the input terminal of the circuit being the input of said inverter and the output terminal of said circuit being the output of said inverter;

a first complementary field effect transistor current mirror means connected between said pair of supply terminals and including an N channel device having its source-drain path connected in a controlling leg and said reference terminal being connected to its gate and said inverter N channel device having its source-drain path connected in a controlled leg of said first current mirror means; and

a second complementary field effect transistor current mirror connected between said pair of supply terminals and including a P channel device having its source-drain path connected in a controlling leg and said reference terminal being connected to its gate and said inverter P channel device having its source-drain path connected in a controlled leg of said second current mirror means.

4,446,445

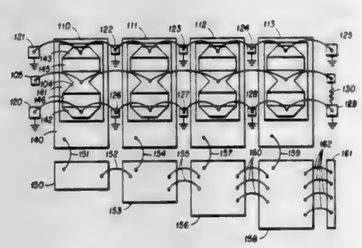
SINGLY TERMINATED PUSH-PULL DISTRIBUTED AMPLIFIER

Thomas R. Apel, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 24, 1982, Ser. No. 444,283

Int. Cl.³ H03F *3/60*

U.S. Cl. 330—269 **13 Claims**



1. A push-pull distributed amplifier having a singly terminated output comprising:

a. an integrated circuit substrate;

b. a plurality of active amplifier devices mounted on said substrate in two related sections, each section having electrical interconnection of that sections active amplifier devices, each to the others, to form a distributed amplifier; and having said sections interconnected to form a push-pull distributed amplifier; and

c. said electrical interconnection within said section having a reactance difference between said active devices resulting in substantially all of the amplifier power being output to said singly terminated output.

4,446,446

PROGRAMMABLE FREQUENCY SYNTHESIZER PRIMARILY FOR USE IN AN ATOMIC CLOCK

William R. Fowks, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 17, 1981, Ser. No. 284,039

Int. Cl.³ H03L *7/18, 7/26*

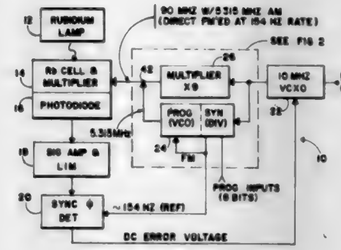
U.S. Cl. 331—3 **20 Claims**

1. An adjustable frequency synthesizer for receiving an input signal of a first frequency and for generating a carrier signal of a second frequency, the second frequency being offset from the first frequency by a selected offset frequency, comprising:

a programmable frequency divider having an input for receiving a signal derived from said input signal and operating therefrom a first divided signal having a frequency equal to said first frequency divided by a number selected in accordance with a programmed code applied to said programmable frequency divider,

a phase comparator connected to said programmable frequency divider for receiving said first divided signal, said phase comparator having means for comparing the frequency and phase of said first divided signal with the frequency and phase of a second divided signal and for generating a control signal by means of said comparing,

a controllable oscillator connected to said phase comparator for receiving said control signal and having means for generating at an output said carrier signal with a frequency determined in accordance with the magnitude of said control signal,



a mixer connected to the input of said programmable frequency divider and to the output of said controllable oscillator for receiving said signal derived from said input signal and at least said carrier signal, said mixer having means for generating a difference signal having a frequency equal to said selected offset frequency,

a fixed frequency divider connected to said mixer for receiving said difference signal and having means for generating said second divided signal with a frequency equal to said offset frequency divided by a fixed number, said fixed frequency divider including means for generating a third divided signal having a frequency equal to one half of the frequency of said second divided signal, said fixed frequency divider being connected to said phase comparator for applying said second divided signal to said phase comparator, and said fixed frequency divider being connected to said controllable oscillator for frequency modulating said carrier signal with said third divided signal,

whereby said offset frequency is selected in accordance with and controlled by said programmed code.

4,446,447

CIRCUIT FOR CONVERTING PRESSURE VARIATION TO FREQUENCY VARIATION

David A. McNamara, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 219,083, Dec. 22, 1980, abandoned. This application Feb. 25, 1983, Ser. No. 469,666

Int. Cl.³ G01L *9/12;* **H03B** *21/01*

U.S. Cl. 331—42 **7 Claims**

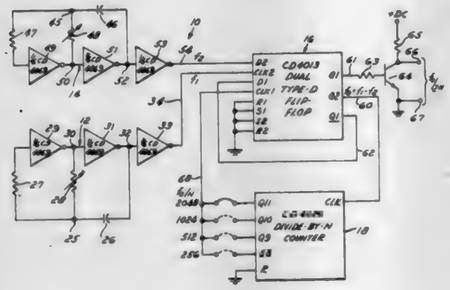
1. A transducer for converting a pressure variation to a variation in the frequency of a periodic function, said transducer comprising:

a reference oscillator means having a reference timing capacitor and a reference resistor for providing a reference periodic electrical signal having a frequency which is a function of the capacitance and resistance, respectively, of said reference timing capacitor and said reference resistor such that the frequency is inversely proportional to the

magnitude of the capacitance of the reference timing capacitor;

a sensor oscillator means having a variable sensor timing capacitor and a sensor resistor for providing a sensor periodic electrical signal having a frequency which is a function of the capacitance and resistance, respectively of said variable sensor timing capacitor and said sensor resistor such that the frequency is inversely proportional to the magnitude of the capacitance of the sensor timing capacitor so as to provide a linear transfer function between pressure input and frequency output;

said sensor timing capacitor being a type of capacitor wherein the capacitance change is produced by the displacement of one of the capacitor plates such that the capacitance is inversely proportional to pressure;



a digital mixer means responsive to said reference and sensor electrical signals for generating a mixed periodic electrical signal having a frequency proportional to the difference between said reference and sensor electrical signals;

a frequency divider means coupled to said digital mixer means, between an input and an output to said digital mixer means, for reducing substantially all harmonic frequencies introduced by said mixer; and

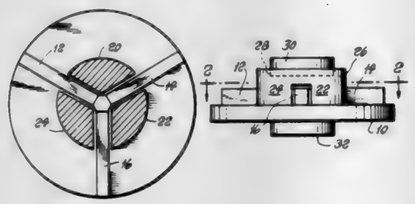
said transducer having a transfer function relating pressure and frequency which is substantially linear and adjustable by adjustment of the magnitude of said reference and sensor resistors.

4,446,448

BIASING MAGNET HOLDER-TUNING CAP FOR DIELECTRIC WAVEGUIDE CIRCULATOR

Richard A. Stern, Allenwood, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 13, 1982, Ser. No. 407,869
Int. Cl.[3] H01P 1/383
U.S. Cl. 333—1.1 **8 Claims**



1. A millimeter wavelength dielectric waveguide circulator comprising:

a dielectric support plate;

a ferrite junction having a plurality of sides with its bottom bonded to said support plate;

a plurality of dielectric waveguides bonded to said support plate;

each of said dielectric waveguides having one end bonded to a side of said ferrite junction;

at least one metal tuning leg positioned between but spaced from two adjacent dielectric waveguides;

a metal cap positioned above said junction supported by said at least one tuning leg and providing support for a first magnet; and

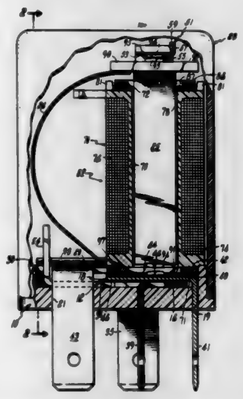
a second magnet bonded to the bottom of said dielectric support plate below said junction.

4,446,449

ELECTROMAGNETIC SOLENOID RELAY

Samuel J. Brown, South Lyon, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Oct. 22, 1982, Ser. No. 436,120
Int. Cl.[3] H01H 51/08
U.S. Cl. 335—131 **9 Claims**



1. An electromagnetic solenoid relay of the type comprising:

a base of insulation material;

a coil bobbin mounted on said base and having a bore extending axially therethrough;

an electrically energizeable coil wound on said bobbin;

a plunger armature guided in the bore of said bobbin for endwise reciprocatory motion between an at-rest position and an actuated position upon the energization and de-energization of said coil;

a substantially U-shaped ferromagnetic bracket embracing said coil bobbin and secured to said base, said bracket having a pair of parallel leg portions extending from said base alongside said bobbin and joined by a bight portion overlying one end of said bobbin, said bight portion having an opening therethrough in alignment with the bore of said bobbin through which an outer portion of said plunger projects;

an electrical terminal of a ferromagnetic material mounted on said base intermediate the free ends of said leg portions of said bracket beneath the other end of said bobbin for attraction of said armature endwise to its actuated position in response to the energization of said coil; and

a resilient spring for urging said armature to its at-rest position, said spring comprising a continuous length of spring strip metal and having an arcuate portion extending between one end secured to said outer portion of said armature and an opposite end fixed relative to said base, said electromagnetic solenoid relay being further characterized by the following:

said opening in said bight portion of said bracket being substantially larger than the portion of said armature projecting therethrough;

said outer portion of said armature including a flange of ferromagnetic material which has a surface of substantial area facing said bight portion of said bracket to provide a low reluctance magnetic flux path between said armature and said bight portion for attraction of said flange to said bight portion in a direction endwise of said armature in response to the energization of said coil;

the length of said armature being such that said flange comes into contiguous but not contacting relation with said bight portion upon movement of said armature to its actuated position; and

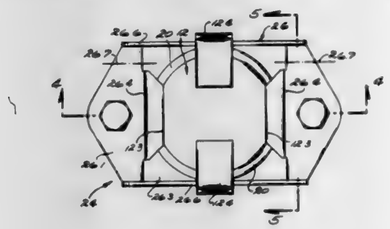
an armature stop secured to said bracket and engagable by means on said outer portion of said armature to define an at-rest position of said armature wherein said flange is spaced a predetermined distance from said bight portion.

4,446,450

THERMOSTAT DEVICE HAVING IMPROVED MOUNTING MEANS

Henry J. Boulanger, Nicolasville, Ky.; Andrew C. McGuirk, North Attleboro, and William J. LaPlante, Rehoboth, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 15, 1982, Ser. No. 449,942
Int. Cl.[3] H01H 37/04
U.S. Cl. 337—380 **3 Claims**



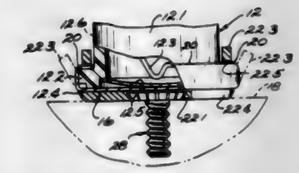
1. A thermostat device comprising a thermostat unit and bracket means for mounting the unit on an object whose temperature is to be monitored, characterized in that the thermostat unit has a generally cylindrical configuration, has a first surface at one end of the unit to be disposed in thermally-coupled heat-transfer relation to said object, and has a second surface extending around the circumference of the unit facing in an opposite direction, and in that the bracket means comprises a plate having a base portion extending in a plane, has stud means secured to said base portion to extend in one direction from the base portion for securing the base portion in thermally-coupled heat-transfer relation to said object, and has a pair of integral spring portions extending in an opposite direction from respective opposite sides of the base portion, the spring portions each having an opening therein fitted over a portion of the thermostat unit between said first and second surface portion and having a marginal part of said opening engaging a second surface portion of the unit for attaching the bracket means to the thermostat unit and for resiliently biasing said first thermostat unit surface against said base portion to be disposed in thermally-coupled heat-transfer relation to said object.

4,446,451

THERMOSTAT DEVICE HAVING IMPROVED MOUNTING MEANS

Henry J. Boulanger, Nicholasville, Ky., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 15, 1982, Ser. No. 449,943
Int. Cl.[3] N01H 37/04
U.S. Cl. 337—380 **5 Claims**



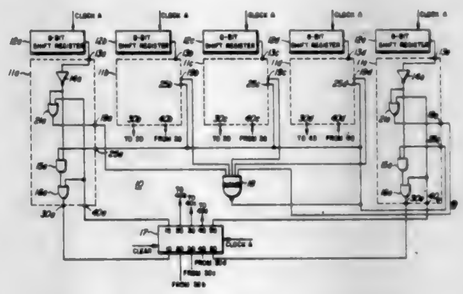
1. A thermostat device comprising a thermostat unit and bracket means for mounting the unit on an object whose temperature is to be monitored, characterized in that the thermostat unit has a first surface preferred to be disposed in thermally-coupled heat-transfer relation to said object and has second surface portions facing in an opposite direction, and in that said bracket means comprises a plate having an integral base portion extending in a plane to be secured to said object for mounting the plate on the object, having an opening in the base portion of the plate, and having a pair of integral spring portions of the plate upstanding from said plane at respective opposite sides of said opening, said spring portions having distal ends thereof folded to extend toward each other and back toward said plane to engage said second surface portions of the thermostat unit for detachably attaching the bracket means to the thermostat unit and for biasing said thermostat unit towards said object so that said first surface thereof extends through said base plate opening into thermally-coupled heat-transfer relation to the object, thereby to maintain desired thermal coupling of said first unit surface to the object during thermal expansion and contraction thereof.

4,446,452.

MAGNITUDE COMPARATOR CIRCUIT AND METHOD

Ernst A. Munter, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 13, 1981, Ser. No. 292,497
Claims priority, application Canada, Jun. 23, 1981, 380396
Int. Cl.[3] G06F 7/02
U.S. Cl. 340—146.2 **11 Claims**



1. A circuit for determining which serially received binary number, out of a plurality of binary numbers received bit-serially in parallel, has the largest magnitude, said circuit comprising:

a storage means having at least a one bit location corresponding to each said binary number; and

gating means, for each said number, for storing in a respective one of said locations in said storage means, in response to each bit of said number,

(a) the previous logic state stored in said location if said bit is a binary 1, or

(b) a first logic state if said bit is a binary 0 and is associated with a binary number that is a remaining candidate for having the largest magnitude and the corresponding bits of the other binary numbers, remaining candidates, are also binary 0's, or

(c) a second logic state if said bit is a binary 0 and either (i) said bit is not associated with a binary number that is a remaining candidate for having the largest magnitude, or (ii) said bit is associated with a binary number that is a remaining candidate for having the largest magnitude but the corresponding bits of the other binary numbers, remaining candidates, are not all binary 0's.

4,446,453

METHOD FOR THE REGISTRATION AND EVALUATION OF DENTAL FINDINGS AS WELL AS AN APPARATUS FOR THE IMPLEMENTATION OF THE METHOD

Algund Eenboom, Leer, and Edzard Müller, Hinte, both of Fed. Rep. of Germany, assignors to Fried. Krupp GmbH, Essen, Fed. Rep. of Germany

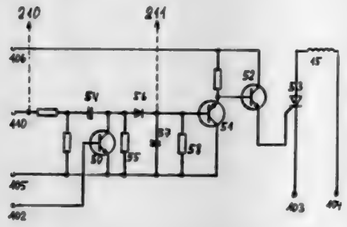
PCT No. PCT/DE80/00105, 371 Date Mar. 18, 1981, 102(e) Date Mar. 18, 1981, PCT Pub. No. WO81/00201, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 23, 1980, Ser. No. 247,301

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930142

Int. Cl.³ G09G *3/00*

U.S. Cl. 340—286 M **15 Claims**



1. An apparatus for recording and evaluating a number of dental findings each corresponding to a respective one of a given number of dental examination positions, said apparatus comprising:

a marking carrier imprinted with a dental scheme indicating the location of each examination position;

a marking device including a number of marking elements each arranged to correspond to a respective one of the examination positions for marking said marking carrier;

an input device for producing two different switching instructions each corresponding to a different dental finding;

a counter connected to receive the two different switching instructions from said input device, said counter having a plurality of counter outputs each corresponding to a respective one of the examination positions and said counter being operative to switch over an enabling signal from one said counter output corresponding to one examination position to a next counter output corresponding to the next examination position in the dental scheme upon receipt by said counter of either of said two different switching instructions;

a plurality of switching amplifiers each connecting a respective one of said counter outputs to a respective one of said marking elements corresponding to the same examination position as said respective counter output, wherein the switch over of the enabling signal to said next counter output enables the switching amplifier corresponding to the examination position associated with said next counter output, and each said switching amplifier includes exciting means responsive to said input device for causing that switching amplifier, when enabled by said counter, to excite the corresponding marking element unless a given one of said two different switching instructions is produced by said input device.

4,446,454

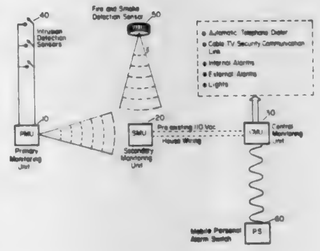
HOME SECURITY SYSTEM

Ronald E. Pyle, 13400 Wisterwood, Austin, Tex. 78729

Filed Jan. 21, 1981, Ser. No. 226,626

Int. Cl.³ G08B *1/08*; H04Q *1/30*

U.S. Cl. 340—538 **5 Claims**



1. A security system for a home having at least one entry point and pre-existing electrical wiring for distributing electrical power therein, the system comprising:

an intrusion detection sensor proximate said entry point, for sensing an intrusion at said entry point and providing an intrusion detection signal in electrical form in response to sensing said intrusion;

a primary monitoring unit near said intrusion detection sensor and electrically coupled thereto, and including means for selectively deactivating said primary monitoring unit, said primary monitoring unit receiving said intrusion detection signal and providing a primary alarm signal in human audible form a first predetermined time period after receiving said intrusion detection signal unless selectively deactivated within said first time period;

a secondary monitoring unit within the audible range of the primary monitoring unit and electrically coupled to said wiring, and including means for selectively deactivating said secondary monitoring unit, said secondary monitoring unit detecting said primary alarm signal and providing an alarm detection signal in electrical form via said wiring a second predetermined time period after detecting said primary alarm signal unless selectively deactivated within said second time period; and

a central monitoring unit electrically coupled to said wiring, and including means for selectively deactivating said central monitoring unit, said central monitoring unit receiving said alarm detection signal and providing a secondary alarm signal in human perceivable form a third predetermined time period after receiving said alarm detection signal unless selectively deactivated within said third time period.

4,446,455

STOVE ALARM SYSTEM

Ralph G. Nashawaty, 30 Ridgewood Dr., Norwood, Mass. 02062

Filed Feb. 27, 1981, Ser. No. 238,695

Int. Cl.³ H05B *1/02*

U.S. Cl. 340—568 **11 Claims**

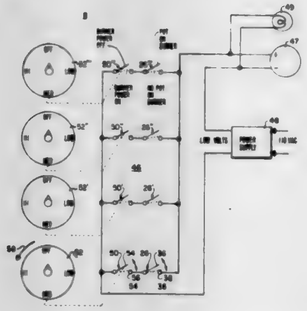
1. An alarm system for use in a stove having a burner and a control device for turning on and off the burner, the improvement comprising:

an alarm device;

an alarm circuit for activating said alarm device;

a low voltage power supply for energizing said alarm circuit independently of said burner;

sensor means for sensing the presence or absence of a utensil on said burner;



first switching means in said alarm circuit for closing a first set of contacts in said alarm circuit in response to said control device being in the burner-on condition; and

second switching means disposed in said alarm circuit and having a second set of contacts in series with said first set of contacts said second set of contacts closing in response to the sensing by said sensor means of the absence of a utensil on said burner to complete the alarm circuit and activate the alarm device when said control device is in the burner-on condition and no utensil is on the burner.

4,446,456

DENTAL TREATMENT APPARATUS

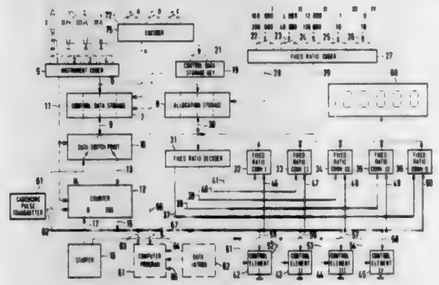
Stefan Beier, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Voight GmbH & Co., Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 318,067

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3045011

Int. Cl.³ G09G *3/00*; G06K *15/18*

U.S. Cl. 340—706 **8 Claims**



1. A dental treatment apparatus having a plurality of dental instruments, a control for each instrument, and a display means for displaying the magnitude of the operating parameter of the instrument, said treatment apparatus comprising:

(a) a data storage means having a plurality of registers for storing a plurality of predetermined control data words for each of said instruments,

(b) a preselection switch means for selecting one of said control data words for said instrument as it is initially withdrawn from said holding means, said preselection switch means also being operable to selectively retrieve a control data word for each of said instruments from a plurality of data words previously entered for each instrument,

(c) switch means operable to alter the selected control data word to a value different from said control data word value, and selectively store said value in said data storage means as a control data word,

(d) a control means for driving each of said instruments in response to the control data word selected by said preselection means,

(e) a display means to display the magnitude of the operating parameter derived from the control data word used to drive the dental instrument, said display means adapted to display variable values as said control data word is varied.

4,446,457

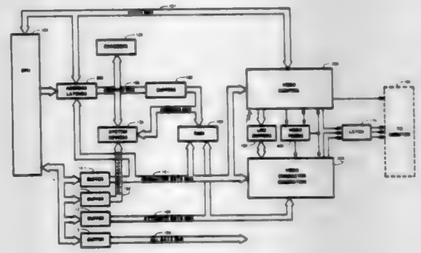
VIDEO TERMINAL CHARACTER GENERATOR

Michael C. Alexander, Austin, Tex., assignor to Data General Corporation, Westboro, Mass.

Filed Jul. 6, 1981, Ser. No. 280,612

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—745 **10 Claims**



1. Apparatus for generating raster line dot information for use in displaying character fields on a raster scan video display monitor, each character field consisting of a plurality of raster line segments, each raster line segment consisting of a portion for displaying a raster line character dot pattern and at least one portion for providing intercharacter spacing, said apparatus comprising:

means for supplying signals identifying the character to be displayed in each of said character fields;

means for supplying signals identifying which of said plurality of raster line segments within said character field is to be displayed;

memory means, containing at least a plurality of raster line character dot patterns, for supplying individual ones of said plurality of raster line character dot patters in response to said character identifying signals and said raster line segment identifying signals;

means for generating a first set of input signals;

means for generating a second set of input signals;

means for generating a selection signal for each of said raster line segments; and

means, responsive to said selection signal, for selecting between said first set and said second set, the selected set to be used as the dot pattern for said at least one intercharacter spacing portion.

4,446,458

MONITORING AND CONTROL SYSTEM

Donald Cook, 927 Mulford, Evanston, Ill. 60202

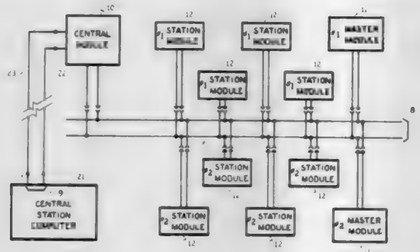
Filed Sep. 14, 1981, Ser. No. 302,094

Int. Cl.³ H04Q *9/00*; H04M *11/04*

U.S. Cl. 340—825.06 **16 Claims**

3. A monitoring and control system comprising; a full duplex central module and a plurality of full duplex station modules, means for continuously monitoring from the central module

the status conditions of said station modules utilizing an improved communications system comprising means for generating a synchronously gated sinusoidal carrier current signal located in each of said modules, said carrier current signals having first and second frequencies arranged in a full duplex two frequency transmission pair common to all modules, means for coupling said carrier current signals to an AC power distribution system, said central module including means for continuously and sequentially interrogating all of said station modules by selectively addressing each station module, said station modules having receiving means responsive to synchro-



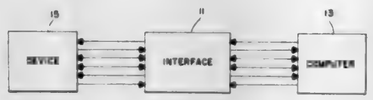
nously gated carrier current interrogation signals on one frequency of said duplex pair from said central module for rendering the carrier current signal generating means operative to provide a carrier current verification signal on the other frequency of said duplex pair to said central module, wherein said interrogation signals comprise a plurality of discrete, sequential synchronously gated carrier current signals, and have durations controlled by the receipt of the verification signals, said station modules also including means for sensing an off-normal condition and transmitting an off-normal condition indicative signal to said central module upon the occurrence of an off-normal condition.

4,446,459

DIGITAL INTERFACE FOR BI-DIRECTIONAL COMMUNICATION BETWEEN A COMPUTER AND A PERIPHERAL DEVICE

Hollis H. Bond, Jr., and Carl R. Franklin, both of League City, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Feb. 18, 1981, Ser. No. 235,472
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.21 **6 Claims**



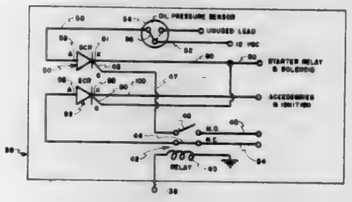
1. Apparatus for facilitating transfer of an information signal between a first device and a second device, comprising:
first switching means, receiving a selection signal and adapted to receive a first signal from the first device and a second signal from the second device, for producing the first signal or the second signal, in response to said selection signal, as a third signal;
first signal generating means receiving said third signal for generating a switching signal in response to said third signal;
second switching means, receiving said switching signal, and adapted to receive an initialization signal from the first device indicative of the direction of transfer of an information signal, for producing said selection signal indicative of said switching signal and the initialization signal; and
second generating means receiving said selection signal, adapted to receive the second signal, and adapted to provide an output signal to the second device or producing said output signal indicative of said selection signal and the second signal to inform the second device whether or not to receive or cease producing information signals.

4,446,460

REMOTE STARTING OF AN INTERNAL COMBUSTION ENGINE

Steven G. Tholl, Spanish Fork, and John C. Vonkohlar, IV, Springville, both of Utah, assignors to Transtart, Inc., Provo, Utah

Continuation-in-part of Ser. No. 129,931, Mar. 13, 1980, abandoned. This application Jul. 8, 1981, Ser. No. 281,523
Int. Cl.³ G08C *19/00*; F02N *11/06*
U.S. Cl. 340—825.69 **8 Claims**



1. A system for remotely starting an internal combustion engine comprising:
a transmitter from which predetermined coded signals are caused to selectively issue;
a receiver unconnected and separate from the transmitter, the receiver comprising circuit means comprising means insuring reception of correctly encoded signals of desired frequency and means operable only when correct signals have been received;
the receiver further comprising execution circuit means connected to and enabled when the operable means are caused to be operable by the correct signals, the execution circuit comprising (a) means actuated by the operable means, (b) first switch means connected to and closed by the actuated means causing electrical power to be selectively delivered to the starter of the engine, (c) second switch means connected to receive and be energized by electrical power issuing from the first switch means, the second switch means communicating electrical power to the ignition of the engine substantially simultaneously with delivery of electrical power to the starter and (d) means opening the first switch means to terminate delivery of electrical power to the starter after an interval of time.

4,446,461

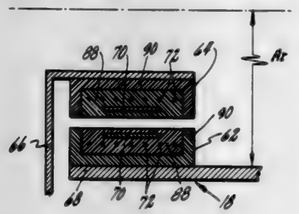
INSTRUMENTATION FOR A ROTARY MACHINE

Franklin G. Selleck, Portland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,632
Int. Cl.³ G08C *19/06*; H01F *15/02, 21/04*
U.S. Cl. 340—870.32 **10 Claims**

1. For a rotary machine of the type having a first member and a second member capable of rotational movement relative to each other, a device for transferring electrical energy between such members which comprises:
a first member;
a first electrical coil which is fixed to the first member and which is adapted to form with another coil a pair of coils for transferring electrical energy;
a second member which is spaced from the first member and

which is capable of relative rotational movement with respect to the first member, the second member having
a first layer of bonding agent, and,
a second layer of a bonding agent which has a magnetizable filler material disposed therein and which extends between the first layer and the second member to attach the first layer to the second member; and



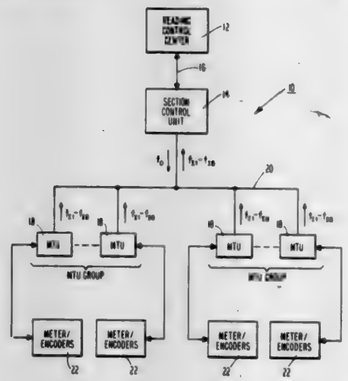
a second electrical coil which is held by the first layer and which is adapted to form with the first electrical coil a pair of coils for transferring electrical energy;
wherein the magnetizable material has a magnetic permeability greater than the magnetic permeability of the bonding agent of the second layer and wherein the second layer affects the coupling of the magnetic flux linkages between said electrical coils and spaces said second coil away from the second member to reduce eddy currents in the second member.

4,446,462

METHOD AND APPARATUS FOR MULTIPLE FREQUENCY TRANSMISSION OF INFORMATION IN A DIGITAL COMMUNICATION SYSTEM

Maurice J. Ouellette, North Berwick, Me., and William C. Hughes, Scotia, N.Y., assignors to General Electric Company, Somersworth, N.H.

Filed Mar. 1, 1982, Ser. No. 353,501
Int. Cl.³ H04Q *9/00*; H04M *11/04*; H04B *3/54*
U.S. Cl. 340—825.07 **21 Claims**



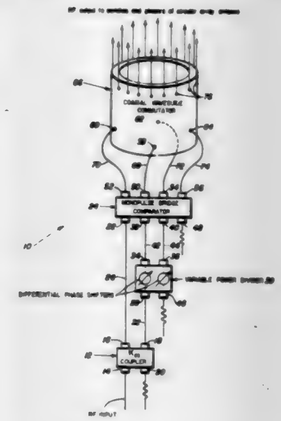
1. In an apparatus for for transmitting information, in the form of a modulated carrier frequency, through a communications medium in response to a received command, a method of minimizing errors in said information attributable to said communications medium, said method comprising the steps of:
a. providing means for transmitting said information using any one of at least two different selectable carrier frequencies;
b. transmitting said information at a first carrier frequency, selectable by a portion of a first received command; then
c. transmitting said information using at least one other carrier frequency; selectable by a portion of at least one additional received command.

4,446,463

COAXIAL WAVEGUIDE COMMUTATION FEED NETWORK FOR USE WITH A SCANNING CIRCULAR PHASED ARRAY ANTENNA

Edward P. Irzinski, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1982, Ser. No. 351,831
Int. Cl.³ H01Q *3/22, 3/24, 3/26*; H01P *5/12*
U.S. Cl. 343—371 **9 Claims**



1. A coaxial waveguide commutation feed network for generating a commutatable low-sidelobe amplitude distribution in response to an rf input signal suitable for feeding radiating elements of an associated circular phased array antenna comprising:
a K_{db} coupler for dividing the rf input signal into a TEM path signal and a TE_{11} path signal;
a variable power divider incorporating a pair of differential phase shifters operatively connected to said K_{db} coupler for dividing the TE_{11} path signal into a first variable amplitude TE_{11} path signal and a second variable amplitude TE_{11} path signal, the amplitude of one of the signals being proportional to the sine α and the amplitude of the other signal being proportional to the cosine α, α being derived from the phase settings of said pair of differential phase shifters;
a monopulse bridge comparator having four output ports for four-port balanced feeding, and operatively connected at its input to the TEM path signal of said K_{db} coupler, and the first and second variable amplitude TE_{11} path signals of said variable power divider; and
a coaxial waveguide commutator operatively connected at its inputs to the four output ports of said monopulse bridge comparator such that the TEM path signal excites the TEM mode and the first and second variable amplitude TE_{11} path signals excite a pair of spatially orthogonal TE_{11} modes in said coaxial waveguide commutator and at its outputs.

4,446,464

AIRBORNE TACAN EQUIPMENT UTILIZING A LOGARITHMIC AMPLIFIER

Jesse S. LeGrand, Titusville, Fla.; William Fockler, Wayne, and Mairice L. J. Jezo, Cedar Grove, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,347
Int. Cl.³ G01S *1/44*
U.S. Cl. 343—399 **9 Claims**

1. Airborne Tacan equipment comprising:
first means to receive Tacan signals and to provide an output

signal containing modulation components carrying bearing information, said first means including a first logarithmic amplifier to preserve amplitude modulation of said modulation compenents and to enable operation on input signals having large amplitude variations; and



second means coupled to said first means to at least partially compensate for the non-linearity of said logarithmic amplifier prior to extraction of said bearing information.

4,446,465

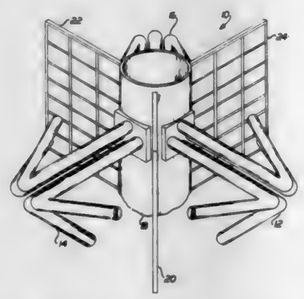
LOW WINDLOAD CIRCULARLY POLARIZED ANTENNA

Joseph A. Donovan, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 957,030, Nov. 2, 1978, abandoned, which is a continuation of Ser. No. 800,539, May 25, 1977, abandoned. This application May 2, 1982, Ser. No. 375,868

Int. Cl.³ H01Q *21/26*

U.S. Cl. 343—797 **9 Claims**



1. A circularly polarized antenna bay comprising a single vertically oriented support mast having a longitudinal axis, three generally planar reflectors, each disposed with respect to said mast such that said longitudinal axis of said support mast essentially lies within said plane of said reflector, whereby said reflectors extend radially from said support mast, said reflectors being equally spaced circumferentially about said mast so as to define three ground planes generally parallel to said mast and equally spaced circumferentially thereabout, said reflectors being wholly supported by said mast, three pairs of crossed dipoles, and means for feeding said pairs so that each radiates circularly polarized electromagnetic waves, said pairs each being located at circumferential positions intermediate said reflectors and each including radiating elements extending, generally across the corresponding said ground plane but with said radiating elements each extending towards said ground plane at angles selected so as to substantially equalize the E and H plane patterns thereof.

4,446,466

EXTENDIBLE TUBULAR BOOMS FOR REMOTE SENSORS

Ronald C. Maehl, Hamilton Square, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1981, Ser. No. 294,739

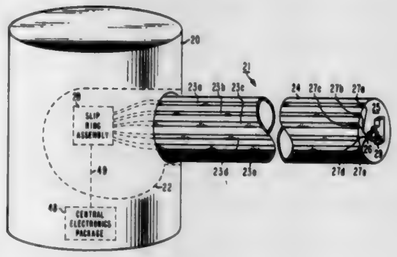
Int. Cl.³ H01Q *1/28*

U.S. Cl. 343—877 **9 Claims**

1. In a spacecraft a system for measuring particles of the local plasma which are sufficiently perturbed by the presence of the main body of said spacecraft to require sensing remote from said main body, said system comprising:

an extendible boom comprising an elongated electrically conductive ribbon attached at one end to said main body of said spacecraft said ribbon being prestressed to assume a rigid tubular shape when extended, and capable of being flattened and coiled about a spool;

said ribbon having a first flexible electrically insulating layer fixed to one surface thereof, a plurality of electrically conducting foil strips fixed to said first insulating layer and disposed generally longitudinally along said ribbon, and a second electrically insulating layer fixed to and covering said plurality of conducting strips, said conducting strips and said insulating layers being of a flexible material and of a thickness relative to said ribbon and its amount of



prestress to thereby permit said ribbon to coil without significant obstruction from said conducting strips and said insulating layers;

means for detecting charged particles in the local plasma, said detecting means attached to the end of said boom remote from said spacecraft body;

means coupled to said remote boom end for connecting said plurality of conducting strips to said detecting means;

utilization means within said main spacecraft body responsive to signals of said detecting means; and

a slip ring assembly having a plurality of spring contacts located within said spool, said slip ring assembly coupled to the end of said boom attached to said main spacecraft body for connecting said plurality of conducting strips to said utilization means.

4,446,467

HEAT-SENSITIVE RECORDING SHEET, AND A METHOD AND DEVICE FOR FIXING A RECORDED INFORMATION THEREON

Ryohei Takiguchi, Tokyo, and Masayoshi Nagashima, Chigasaki, both of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Division of Ser. No. 174,443, Aug. 1, 1980, abandoned. This application Feb. 9, 1982, Ser. No. 347,340

Claims priority, application Japan, Aug. 3, 1979, 54-107358; Aug. 3, 1979, 54-107359; Aug. 3, 1979, 54-107360; Aug. 3, 1979, 54-107361; Oct. 8, 1979, 54-128816; Oct. 8, 1979, 54-128817

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 PH **11 Claims**

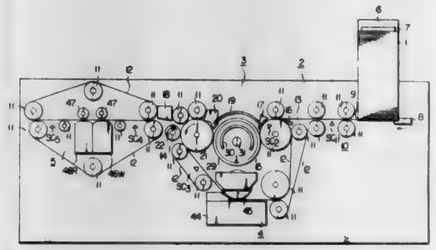
1. A heat-sensitive recording apparatus for performing heat-sensitive recording of information on a heat-sensitive recording sheet having on its surface a heat-sensitive layer containing a diazo compound and a coupling agent, which apparatus comprises:

a thermal head comprising a plurality of heating elements for selectively heating the heat-sensitive layer corresponding to given information to be recorded;

a photofixing system for photofixing the information recorded by the heating through the thermal head, which comprises a light emitting part for uniformly irradiating

light over all the surface of the heat-sensitive recording sheet;

a transporting means for passing the heat-sensitive recording sheet through a heating means including the thermal head



and through a light-irradiating means including the photofixing system; and

a preactivating system for optically activating said heat-sensitive layer before performing a heat recording.

4,446,468

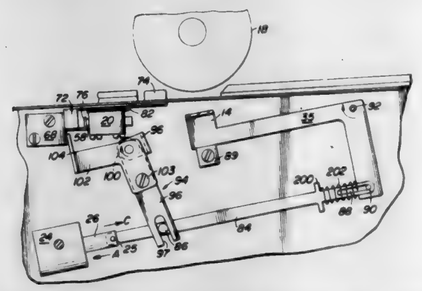
SINGLE PIECE TRIGGER AND KNOCK OFF MECHANISM

George Franke, Amherst, N.H., assignor to Simplex Time Recorder Co., Gardner, Mass.

Filed Aug. 20, 1982, Ser. No. 410,164

Int. Cl.³ G07C *1/06*

U.S. Cl. 346—82 **11 Claims**



1. Single piece trigger and knock off mechanism for a switch operable card printer and a moveable element operatively associated therewith comprising:

a first arm disposed to be contacted by a moving card,

a second arm disposed to be contacted by a moveable element operatively associated with a switch operable card printer,

a pivot member,

said first and second arms being integrally connected to each other and to said pivot member so that the arms are pivotably displaceable together in a first direction about a first pivot axis upon contact between the first arm and the moving card,

said second arm being constructed and arranged so that it is pivotably displaceable in a second direction about a second pivot axis upon contact with the moveable element of the card printer,

said second arm being disposed to contact a switch which operates the card printer upon displacement in said first direction and to release the switch upon displacement in the second direction.

4,446,469

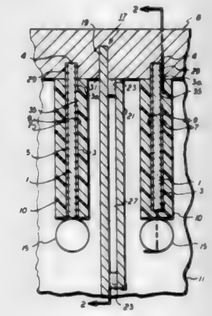
INK JET PRINTER ARRAY

Theodore P. Perna, Garland, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1982, Ser. No. 364,065

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **1 Claim**



1. A pulsed liquid droplet ejecting apparatus array comprising:

(a) at least two jets, each of said jets comprising a rectangular transducer arranged abaxially to a channel for containing a fluid;

(b) a rigid member comprising a rigid member having walls in spaced relationship located between said jets for reducing mechanical crosstalk between said jets; and wherein

a section of said transducer is held in a reaction member, and said section of said transducer is isolated from transducer activation.

4,446,470

INK-JET COLOR PRINTING SYSTEM

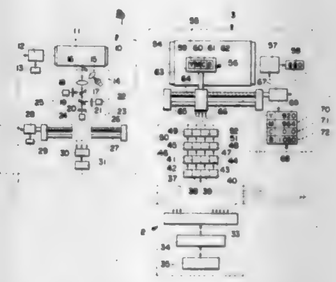
Masatoshi Sugiyama; Kazutaka Yoshida, and Akira Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 1, 1982, Ser. No. 384,086

Claims priority, application Japan, May 30, 1981, 56-82989

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **10 Claims**



1. An ink-jet color printing method for forming a color picture in the form of dot patterns with ink dots of a plurality of colors on a recording medium, comprising the following steps:

(1) utilizing ink-jet color printing apparatus comprising:

color image information input means for receiving color image information of picture elements in the form of digital signals;

memory means for memorizing the said digital signals of the color image information;

image processing means for masking said digital signals of the color image information;

head assembly means closely adjacent said recording medium, including at least a group of ink-jet heads for ejecting yellow ink drops, a group of ink-jet heads for ejecting magenta ink drops and a group of ink-jet heads for ejecting cyan ink drops;

two-dimension scanning means for scanning the surface of said recording medium by a continuous motion of said head assembly relative to said recording medium and an intermittent motion of said head assembly relative to said recording medium in the direction perpendicular to that of said continuous motion;

detecting means for detecting positions of said head assembly relative to said recording medium in the direction of said continuous motion to generate first signals;

a plurality of detecting means for detecting positions of said groups of ink-jet heads, respectively, in the direction of said intermittent motion to generate second signals;

information read-out means for reading the color image information from said memory means corresponding to said second signals; and

means for each group of ink-jet heads to convert color density signals of a single color of ink drops to be ejected by said ink-jet heads extracted from said color image information into analog signals and to feed said analog signals to said ink-jet heads corresponding to said first signals in order to drive them;

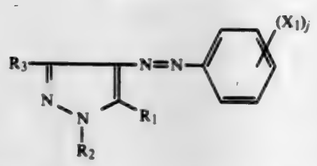
(2) utilizing a masking technique comprising carrying out a non-linear masking procedure;

(3) utilizing aqueous ink comprising yellow dye of the formula [I] hereinbelow supplied into the said yellow ink-jet head;

(4) utilizing aqueous ink comprising magenta dye of the formulae [II-a], [II-b] or [II-c] hereinbelow supplied into the said magenta ink-jet head; and

(5) utilizing aqueous ink comprising cyan dye of the formula [III] hereinbelow supplied into the said cyan ink-jet head;

[I] yellow dye:

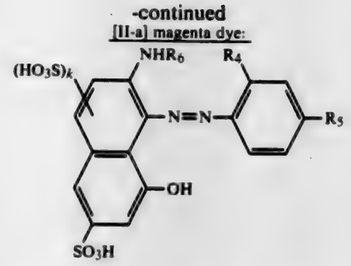


wherein R_1 is amino or acylamino, R_2 is phenyl, substituted phenyl, lower alkyl or substituted lower alkyl, R_3 is lower alkyl or phenyl, X_1 is halogen, lower alkyl, alkoxy, sulfo, carboxyl, amino, substituted amino, cyano, alkylsulfonyl, nitro, hydroxy, ureido or alkoxycarbonyl, j is 0, 1, 2 or 3, provided that when j is 2 or 3, X_1 can be the same or different and the number of sulfo groups is 1-3;

[II-a] magenta dye:

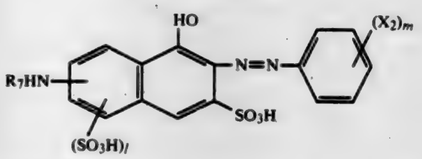
-continued

[II-a] magenta dye:



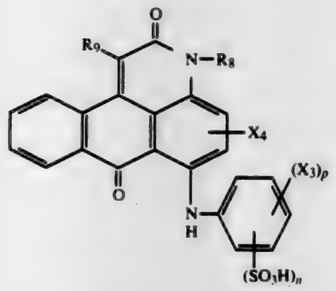
wherein R_4 is cyano, alkylsulfonyl, arylsulfonyl, trifluoromethyl, trichloromethyl, or halogen, R_5 is amino, acylamino, substituted ureido, alkoxy or acyloxy, R_6 is hydrogen, lower alkyl, phenyl or acyl, and k is 0 or 1;

[II-b] magenta dye:



wherein R_7 is hydrogen, acyl, lower alkyl or phenyl, X_2 is halogen, lower alkyl, alkoxy, sulfo, carboxyl, amino, substituted amino, cyano, alkylsulfonyl, nitro, hydroxy, ureido or alkoxycarbonyl, l is 0 or 1, m is 0, 1, 2 or 3, and when m is 2 or 3, X_2 may be the same or different;

[II-c] magenta dye:

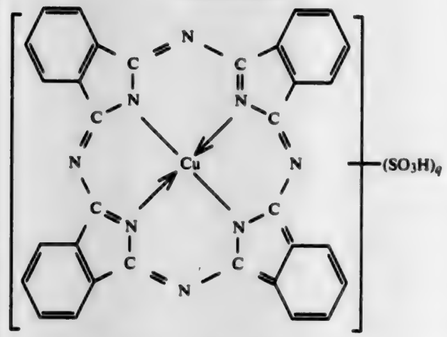


wherein R_8 is hydrogen, lower alkyl or phenyl, R_9 is hydrogen, lower alkyl, phenyl, alkoxycarbonyl, carboxyl or cyano, X_3 is lower alkyl, halogen, alkoxy, carboxyl, cyano, hydroxy or nitro, X_4 is hydrogen or lower alkyl, n is 1, 2 or 3, p is 0, 1, 2, 3 or 4, provided that when p is more than 2, X_3 may be the same or different.

[III] cyan dye:

-continued

[III] cyan dye:



wherein q is 1 to 4, and the metal salts, ammonium salts and organic amine salts of the sulfone groups in formulae [I], [II-a], [II-b], [II-c] and [III].

4,446,471

ELECTROSTATIC RECORDING METHOD AND APPARATUS THEREFOR

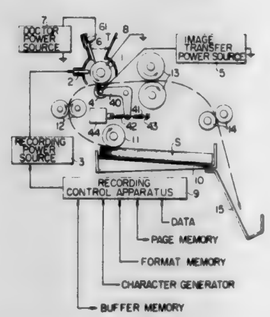
Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,832

Claims priority, application Japan, Dec. 20, 1978, 53-160643; May 29, 1979, 54-66621

Int. Cl.[3] G01D 15/06

U.S. Cl. 346—153.1 42 Claims



1. A recording method comprising the steps of:

bringing a multistylus electrode, to which a pattern signal is applied, into contact with toner having a charge retention property,

forming a charge distribution in said toner on a donor, corresponding to said pattern signal to be applied to said multistylus electrode, utilizing the charge injection into said toner by said multi-stylus electrode, and

forming said charge distribution into a visible pattern, wherein said charge distribution of said toner on said donor is formed by toner charged by said multi-stylus electrode, utilizing the charge injection of said multistylus electrode, and by uncharged toner, and said visible pattern is obtained on a recording sheet by selectively transferring said charged toner electrostatically to said recording sheet and fixing the same to said recording sheet.

4,446,472

ELECTROPHOTOGRAPHICALLY INFORMATION RECORDING METHOD

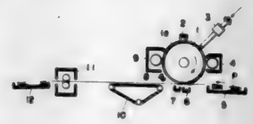
Hideaki Kato, and Hideyuki Handa, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 154,572, May 29, 1980, abandoned. This application Oct. 7, 1982, Ser. No. 433,351

Claims priority, application Japan, Jun. 2, 1979, 54-68209; Jun. 2, 1979, 54-68210

Int. Cl.[3] G01D 15/14

U.S. Cl. 346—153.1 6 Claims





4. Apparatus for recording information comprising:

(I) an external information source (13) for supplying information in the form of successive blocks of electric information signals, each block containing a start signal (S1) and an end signal (S2) and requiring an information transfer time period (t_1) for transfer;

(II) an electrophotographic recorder comprising:

(A) a member (1) operable to move at constant speed,

(B) a photosensitive element (1a) on the surface of said member,

(C) a charging electrode (2) adjacent said member and operable to electrostatically charge said photosensitive element,

(D) a scanning reproducer (3) operable to project an optical image onto said photosensitive element to provide a latent image,

(E) a developer (4) for developing said latent image,

(F) a transfer means (6) operable to transfer an image on said photosensitive element to a sheet of recording paper (P),

(G) a separating means (7) operable to separate a page of recording paper from said member,

(H) a discharge means (8) operable to remove a remaining charge from said photosensitive element,

(I) a cleaner (9) operable to remove residual toner from said photosensitive element,

(J) a toner fixer (11),

(K) paper feeding means operable to feed a sheet of paper from a paper feeding tray (5) to said member, to said toner fixer and to a receiving tray (12) within a paper feed time period (t_3),

(L) said recorder requiring an element travel time period (t_2) for said photosensitive element to reach said scanning reproducer, said recorder having a minimum treatment time period (T_1) for one cycle of operation commencing with introduction of one sheet of paper until introduction of the next successive sheet of paper;

(III) and an information transfer and control system for transferring information signals from said external information source to electrophotographic recorder for reproduction on said recording paper and comprising a data control block (14) and an electrophotographic treatment control block (15);

(A) said data control block (14) comprising:
(a) a means (16) operative to read a start signal (S1) and an end signal (S2) in each of said signal information blocks,
(b) a means (17) operative to count the minimum treatment time period (T_1) using a start signal (S1) as a reference,
(c) a means (18) operative to compare the information transfer time period (t_1) between the start signal (S1) and the end signal (S2) with the minimum treatment time period (T_1) for one cycle of operation and adapted to provide a recorder start signal to said treatment control block (15) when an end signal (S2) is detected,
(d) and a memory for receiving, storing and releasing blocks of electric information signals;
(B) said treatment control block (15) operable in response to said recorder start signal from said control data block (14);
(a) to initiate operation of said member,
(b) to initiate simultaneous operation of said charging electrode,
(c) and after lapse of an element travel timer period (t_2) during which said photosensitive element reaches said scanning reproducer,
(i) to provide an ON (write) signal to start operation of said scanning reproducer,
(ii) to release a block of electric information signals from said memory to said scanning reproducer for conversion to an image on said photosensitive element,
(iii) to initiate operation of said paper feeding means,
(iv) and to initiate synchronized sequential operation of said developer, transfer means, separating means, discharge means, cleaner and fixer;
(IV) said apparatus being operable in several modes including:
(A) a first mode wherein information transfer speed is high and wherein, when said time period (t_1) for transfer of a block of information is equal to or less than said minimum time period (T_1) for one cycle of operation, operation of said scanning reproducer and said paper feeding means by provision of said start signal are commenced subsequent to receipt of an end signal by said data control block;
(B) a second mode wherein information transfer speed is low and wherein, when said time period (t_1) for transfer of a block of information is greater than said minimum time period (T_1) for one cycle of operation, operation of all components of said recorder, except operation of said scanning reproducer and said paper feeding means, are continued so that formation of a latent image on said photosensitive element and operation of said paper feeding means can be started immediately upon receipt of a start signal by said electrophotographic treatment block from said data control block.

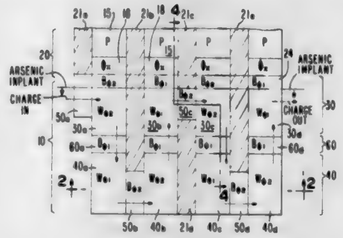
4,446,473

SERPENTINE CHARGE TRANSFER DEVICE

Joan Pendleton, Mountain View, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Apr. 30, 1981, Ser. No. 258,866
Int. Cl.³ H01L *29/78*; G11C *19/28*
U.S. Cl. 357—24 **24 Claims**

1. A charge transfer device comprising:
a first series of charge transfer wells arranged sequentially, each alternate well separated from the subsequent well by first electrically controllable barrier means for controllably restricting charge flow thereunder and separated from the preceding well by channel stop means for preventing charge flow thereunder;
a second series of charge transfer wells arranged sequentially and disposed adjacent the first series but separated therefrom by second electrically controllable barrier means for controllably restricting charge flow thereunder, each alternate well in the second series being separated from the subsequent well by the channel stop means and separated from the preceding well by the first electrically controllable barrier means; and
wherein a first clock signal controls alternate wells of the first and the second series of charge transfer wells, and the



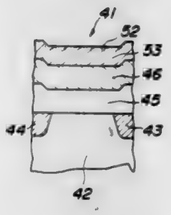
first clock signal controls the second electrically controllable barrier means and a second clock signal controls the remaining wells of each of the first and the second series of charge transfer wells, and the second clock signal controls the first electrically controllable barrier means.

4,446,474

ION SENSOR FET WITH SURFACE TREATED METAL GATE

Takashi Mizusaki, Tokyo; Tadayuki Matsuo, Sendai; Masayoshi Esashi, Sendai, and Hiroshi Abe, Sendai, all of Japan, assignors to Olympus Optical Co. Ltd., Japan

Filed Jun. 27, 1980, Ser. No. 163,792
Claims priority, application Japan, Mar. 19, 1980, 55-33898; Mar. 19, 1980, 55-33899
Int. Cl.³ H01L *29/78*; G01N *27/30*
U.S. Cl. 357—25 **3 Claims**



1. A field effect transistor type ion sensor comprising an inorganic film formed on a gate insulating film of a field effect transistor, and an impurity layer formed in at least the surface layer of said inorganic film, and containing an impurity sensitive to a given ion, said impurity layer being operative as an ion sensitive region when it makes contact with a test substance, and said inorganic film is formed of a composition selected from the group consisting of silver (Ag), copper (Cu), cadmium (Cd) and lead (Pb).

4,446,475

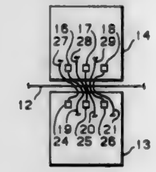
MEANS AND METHOD FOR DISABLING ACCESS TO A MEMORY

Anil Gercekci, Geneva, Switzerland, and Heinz B. Maeder, Taeby, Sweden, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 10, 1981, Ser. No. 282,197
Int. Cl.³ H01L *27/04*; G11C *11/40*
U.S. Cl. 357—40 **6 Claims**

5. A method of disabling direct access to at least a portion of a memory comprising: providing at least one contact pad on a semiconductor chip wherein the memory is located; providing coupling means to the at least one contact pad to couple the

contact pad to the at least a portion of the memory; providing lines as a portion of the coupling means, the lines extending off



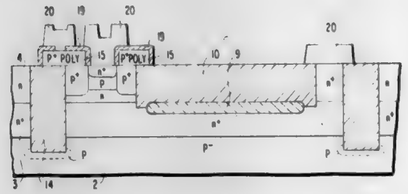
of the semiconductor chip; disabling the coupling means by severing the lines.

4,446,476

INTEGRATED CIRCUIT HAVING A SUBLAYER ELECTRICAL CONTACT AND FABRICATION THEREOF

Randall D. Isaac; Tak H. Ning, and Denny D. Tang, all of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 279,119
Int. Cl.³ H01L *23/48, 29/46, 29/62, 27/12*
U.S. Cl. 357—67 **8 Claims**



1. An integrated circuit containing a semiconductive substrate having field isolation regions and electrical conductive regions of active impurity dopants wherein the improvement comprises a refractory metallic silicide entirely located beneath field isolation regions and having its entire lower surface in direct electrical contact with electrical conductive regions of active impurity dopants.

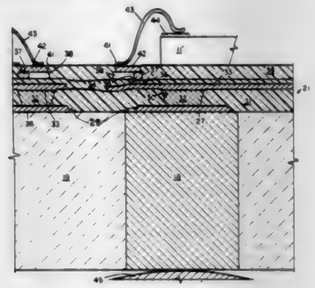
4,446,477

MULTICHIP THIN FILM MODULE

Thomas P. Currie, St. Paul, Minn., and Norman Goldberg, Dresher, Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 294,100
Int. Cl.³ H01L *23/48, 23/02, 39/02*
U.S. Cl. 357—74 **8 Claims**

1. A multichip thin film module for hybrid packaging of semiconductor devices, comprising:
a single layer ceramic base substrate,
an array of via holes extending through said base substrate,
sealed conductive vias in said array of via holes in said base substrate,
lead out pins connected to said vias in said base substrate,
a top cover sealed to said base substrate forming a closed package therewith,
a ceramic processing substrate adapted to be completed before being placed in said closed package,
said processing substrate having a uniform flat top surface,
an array of via holes extending through said processing substrate having the same array pattern as the via holes in said base substrate,
conductive vias in said array of via holes in said processing substrate forming an extension of said sealed conductive vias,
a conductive ground plane pattern formed on the top surface of said processing substrate leaving annular insulating rings around the top of said conductive vias,
a first insulating layer formed over said ground plane and said conductive vias in said processing substrate,
apertures in said first insulating layer forming a predetermined pattern of openings exposing contact areas of said ground plane and said conductive vias in said processing substrate,
a first plurality of thin film conductive pattern lines on said first insulating layer, said conductive pattern lines being photolithographically formed as a pattern of X-direction line closely spaced one to another, some of said X-direction lines being connected to said conductive vias in said processing substrate and some others of said lines being connected to said ground plane and yet others of said lines being adapted to form wiring interconnection lines between semiconductor devices,



a second insulating layer formed over said X-direction lines,
apertures in said second insulating layer forming access to some of said X-direction lines,
a second plurality of thin film conductive pattern lines on said second insulating layer, said conductive pattern lines being photographically formed as a pattern of Y-direction lines closely spaced one to another, some of said Y-direction lines being connected to said X-direction lines and some of Y-direction lines being adapted to form wiring interconnection lines between semiconductor devices,
pads connected to some of said X-direction lines and some of said Y-direction lines adapted to be connected to said semiconductor devices,
semiconductor devices connected to said pads to form a circuit therewith, and
means for connecting said vias in said processing substrate with said vias in said base substrate to connect said circuit to said lead out pins to form a module therewith.

4,446,478

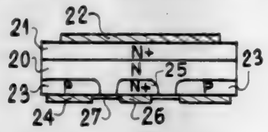
ASSEMBLY IN A SINGLE CASE OF A MAIN POWER-SWITCHING SEMICONDUCTOR COMPONENT AND A DESTORAGE DIODE

Pierre Bacuvier, Paris, France, assignor to Le Silicium Semiconducteur SSC, Paris, France

Filed Dec. 1, 1980, Ser. No. 211,945
Claims priority, application France, Dec. 7, 1979, 79 30125
Int. Cl.³ H01L *23/16*
U.S. Cl. 357—75 **11 Claims**

1. An assembly in a single case comprising:
a main power-switching semiconductor component of the Darlington or amplifying gate thyristor type and having at least first and second metallizations on one face thereof with said first metallization being centrally located and said second metallization extending around said first metallization; and
a three terminal auxiliary component defining at least a first

resistance and a destorage diode in series with a second resistance and having in monolithic form a substrate of a first type of conductivity, a uniform layer of said first type of conductivity and with a heavy doping level on the rear face of said substrate, a metallization coating said uniform layer on said rear face, a first layer of the second type of conductivity with a high doping level on the front face of said substrate at the periphery thereof, a second layer of the first type of conductivity with a high doping level on the front face of said substrate centrally thereof, said first layer extending around said second layer, the surfaces



occupied by said first and second layers being substantially complementary, first and second metallizations respectively disposed on said first and second layers so that said first resistance is formed between said rear face metallization and said second metallization and said diode in series with said first resistance is formed between said first and second metallizations;

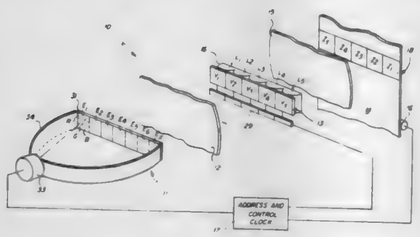
said first and second metallizations of said main component being brought into electrical contact with said first and second metallization of said auxiliary component, respectively, by the application of pressure.

4,446,479

LUMINESCENT DEVICE FOR HIGH RESOLUTION OPTICAL ADDRESS AND LIGHT VALVE IMAGING APPARATUS EMPLOYING SUCH DEVICE

Clark N. Kurtz, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,044
Int. Cl.³ H04N 1/46
U.S. Cl. 358—75 **9 Claims**



1. In a device for optically addressing a linear, optical-address region, and having (1) a linear array of discrete lens elements, each element adapted to focus incident collimated light from a plurality of different incidence directions respectively onto different pixel spots of its particular multi-spot address zone of the optical-address region; and (2) control means for directing collimated light onto all elements of said linear lens array sequentially from different ones of such plurality of different incidence directions, the improvement wherein said control means comprises:

(a) a strip of luminescent material having discrete light emission regions respectively for each of said different incidence directions;

(b) means for sequentially stimulating said discrete emission regions to emit light; and

(c) lens means, located between said luminescent material strip and said linear array, for collimating light from each of said light emission regions respectively along different directions onto said linear lens,

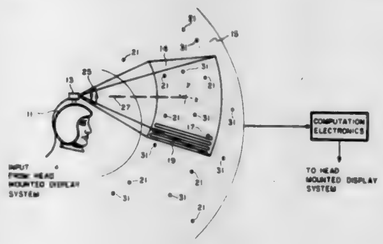
whereby a different pixel spot set, each set including one pixel spot in each of the address zones, is optically addressed in response to each sequential stimulation of said emission regions.

4,446,480

HEAD POSITION AND ORIENTATION SENSOR

Denis R. Breglia, Altamonte Springs, and Frank J. Oharek, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 14, 1981, Ser. No. 330,756
Int. Cl.³ H04M 7/18
U.S. Cl. 358—104 **10 Claims**



1. An apparatus for monitoring the head position and orientation of an observer while viewing a visual scene upon a spherical retroreflective screen, comprising:

means for projecting said visual scene mounted on said observer's head;

means for detecting said projected visual scene at a plurality of points on said spherical retroreflective screen, said detecting means having an electrical signal output corresponding to each of said points;

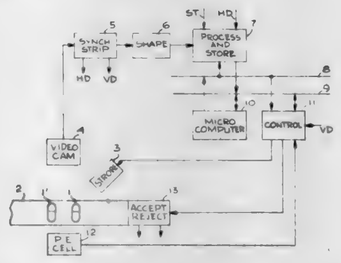
computational means for correlating said detecting means output to said visual scene temporally, and for solving for head position and orientation, receiving input from said detecting means and said projecting means, and outputting a signal based thereon.

4,446,481

AUTOMATIC PRODUCT INSPECTION SYSTEM

Kunihiko Edamatsu, and Takayoshi Makabe, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 4, 1980, Ser. No. 137,548
Claims priority, application Japan, Apr. 5, 1979, 54-41332
The portion of the term of this patent subsequent to Jan. 1, 2000, has been disclaimed.
Int. Cl.³ H04M 7/18
U.S. Cl. 358—106 **6 Claims**



1. Apparatus for automatically checking a product which has at least one element which, when viewed two-dimensionally, is normally a straight line, including;

a raster-scanned photo-electric converter for viewing said product;

synchronization-signal stripping means coupled to said converter and responsive to a composite signal therefrom to produce, separately, horizontal and vertical drive signals, and a video signal free of such drive signals;

signal-shaping means coupled to said stripping means and responsive to said video signal therefrom to produce a series of binary signals representative of said video signal;

signal processing means coupled to said signal-shaping means and responsive to shaped signals therefrom to detect binary transitions therein corresponding to lines viewed by said photo-electric converter;

first counting means coupled to said signal processing means and to said stripping means and responsive to signals from said processing means and to horizontal drive signals from said stripping means to evaluate the "Y" lengths and "Y" coordinates of said lines viewed by said photo-electric converter;

an "X"-pulse generator;

"X"-counting means coupled to said stripping means and to said "X" pulse generator for determining the "X" coordinates of said at least one element viewed by said photo-electric converter;

memory means having stored therein predetermined reference length information and being coupled to said first counting means and to said "X" counting means for storing the "Y" length, "Y"-coordinate and "X"-coordinate information therefrom, and,

automatic calculating means coupled to said memory means for calculating from said stored "Y"-length, "Y" coordinate, "X"-coordinate and predetermined reference length information whether the longest viewed line is at least of said predetermined reference length; and,

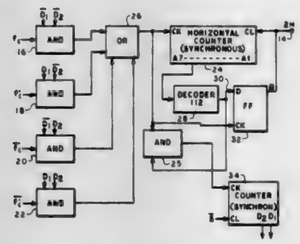
control means coupled to said automatic calculating means and responsive to a calculation that the longest viewed line is of at least said predetermined reference length to accept said product and responsive to a calculation that said longest viewed line is not of said predetermined reference length to reject said product.

4,446,482

SYSTEM FOR GENERATING 2H PULSES IN A TELEVISION RECEIVER

Gopal K. Srivastava, Buffalo Grove, and Stephen H. Lai, Streamwood, both of, assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 5, 1982, Ser. No. 365,421
Int. Cl.³ H04N 9/40, 5/06
U.S. Cl. 358—150 **12 Claims**



1. In a television receiver which develops a color subcarrier signal, a system for generating 2H pulses, comprising:

means providing a plurality of reference signals whose frequencies are related to the frequency for the color subcarrier;

means for counting cycles of the reference signals;

control means coupled to said counting means for generating an output pulse after each time the counting means reaches a preselected integral count, each of the output pulses being coupled for clearing the counting means so that the next successive count thereof occurs after a mixed number of reference signal cycles for generating successive ones of the output pulses at a rate equal to twice nominal horizontal scan rate; and

means for sequentially coupling the reference signals to the counting means such that the counting means receives a different reference signal in response to each of the output pulses,

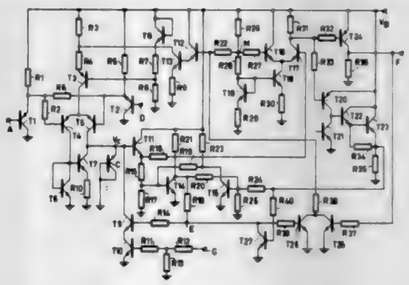
whereby the output pulses constitute said 2H pulses.

4,446,483

CIRCUIT ARRANGEMENT FOR DERIVING A FIELD SYNCHRONIZING SIGNAL FROM AN INCOMING SIGNAL

Peter A. Duijkers, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,692
Claims priority, application Netherlands, Mar. 12, 1981, 8101202
Int. Cl.³ H04N 5/10
U.S. Cl. 358—154 **12 Claims**



10. A circuit arrangement for deriving a field synchronizing signal from an incoming signal which contains at least line synchronizing and field synchronizing pulses, and line flyback pulses coincident with said line synchronizing pulses, comprising

first threshold detection means responsive to said incoming signal for determining when a magnitude of said input signal exceeds a predetermined first threshold,

second threshold detection means responsive to an output signal of said first threshold detection means for determining when the magnitude of said output signal exceeds a predetermined second threshold that differs from said first threshold and to generate said field synchronizing signal in response thereto,

gating means responsive to said line blanking pulses and operatively connected to said first threshold detection means for preventing the output of said first threshold detection means from being applied to said second threshold detection means during the occurence of said line synchronizing pulses, and

timing circuit means operatively connected to the output of said second threshold detection means for disabling said gating means for a predetermined time in response to the output of said second threshold detection means.

4,446,484

IMAGE GRADIENT DETECTORS OPERATING IN A PARTITIONED LOW-PASS CHANNEL

Philip G. Powell, Pinner, England, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/GB81/00074 § 371, Date Nov. 30, 1981, § 102, Date Nov. 30, 1981, PCT Pub. No. WO81/03097, PCT Pub. Date Oct. 29, 1981

This PCT application filed Nov. 30, 1981, Ser. No. 328,543

Int. Cl.³ H04N *5/14, 5/21*

U.S. Cl. 358—166 **9 Claims**

-1	2	-1
-1	2	-1
-1	2	-1

1. In electronic image processing apparatus of the kind in which an image signal representative of the brightness of a plurality of picture elements is applied to a low-pass filter operating in a low-pass channel and the output thereof is a filtered image signal representative of a low-frequency portion of an enhanced image, such apparatus having the additional feature that the low-pass channel is partitioned into a low-pass channel portion and a band-pass channel portion, the latter channel portion comprising a band-pass filter acting as a band-pass image feature detector, such band-pass feature further including (a) a subsidiary low-pass filter arranged to prefilter the image signal and (b) a sampling filter arranged to sample the prefiltered image signal and generate a band-pass feature signal, the improvement wherein said sampling filter comprises:

means responsive to said prefiltered image signal for generating first and second symmetrical gradient signals which are mutually inverted and offset by a time corresponding to the sampling time of at least one picture element.

4,446,485

SEMICONDUCTOR CIRCUIT WITH CLOCK-CONTROLLED CHARGE DISPLACEMENT DEVICES

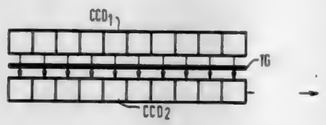
Artur Bardl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 137,604, Apr. 4, 1980, abandoned. This application Mar. 23, 1982, Ser. No. 361,030

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914517

Int. Cl.³ G06G *7/19;* **H01L** *31/00*

U.S. Cl. 358—213 **1 Claim**



1. Semiconductor circuit comprising at least two clock-controlled charge-displacement devices respectively having a multiplicity of storage cells with respective information content, each of the storage cells of a first one of said charge-displacement devices being operatively associated with a respective storage cell of a second one of said charge-displacement devices, respective comparator circuits disposed between the respective associated storage cells of said first and second charge-displacement devices, each of said comparator circuits comprising two field-effect transistors and a diode mutually connected so as to afford a comparison of the information content in the respective associated storage cells, means for transferring the information content of the storage cells of one of said first and second charge-displacement devices to the respective storage cells of the other of said first and second charge-displacement devices operatively associated therewith so as to combine the transfered information content of the storage cells of said one charge-displacement device with the information content of the respective storage cells of said other charge-displacement device, and means operatively associated with one of said at least two clock-controlled charge-displacement devices for serially reading-out therethrough information obtained as a result of the information transfer.

4,446,486

IMAGE SIGNAL PROCESSING CIRCUIT

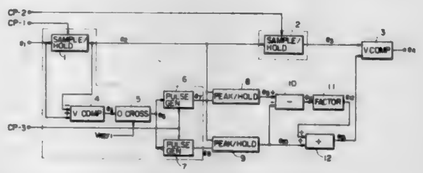
Satoru Itoh, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,129

Claims priority, application Japan, Mar. 13, 1981, 56-35401

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—280 **4 Claims**



1. An image signal processing circuit comprising:

first delaying means for delaying an input image signal for a first predetermined time period;

first comparing means for comparing said input image signal and a delayed signal provided at an output of said first delaying means for producing a binary signal having a first state when said input image signal has a level above a level of said delayed signal and a second state when said input image signal has a level below a level of said delayed signal;

first and second pulse generating means, operating in response to said binary signal, for producing pulses when said binary signal changes from first state to said second state and from said second state to said first state, respectively;

first and second means for holding a predetermined one of said input image signal and said delayed signal in response to said first and second pulse signals respectively;

means for providing a difference signal representing a difference between outputs of said first and second holding means, respectively;

means for scaling said difference signal by a predetermined scale factor; and

second comparing means, operating in response to said difference signal and a predetermined one of said input image signal and said delayed signal, for producing a binary output image signal in response thereto.

4,446,487

METHOD OF AND APPARATUS FOR READING OUT IMAGE INFORMATION

Kazuo Horikawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 5, 1982, Ser. No. 365,304

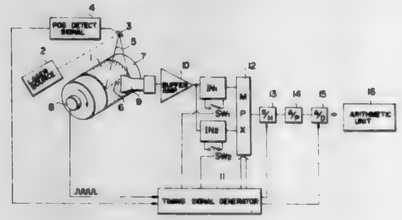
Claims priority, application Japan, Apr. 8, 1981, 56-52685

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—280 **9 Claims**

1. A method of reading out image information stored on a recording medium by detecting and photoelectrically converting emitted, transmitted or reflected light obtained from optical two-dimensional scanning of the image information on the recording medium, integrating the photoelectrically converted output signal according to a predetermined clock, and sampling the integration output, thereby reading out each picture element of the image information,

which method comprises using a plurality of integrators, sequentially switching said integrators to start integration each time a first clock pulse determining the size of said picture element is input, setting the integration periods of said integrators to a value not shorter than one clock length of said first clock pulse so as to partially overlap each other, actuating the sampling of a signal from the



started integrator by a second clock pulse at a point of time within the overlap region of the integration periods but outside the regions where the next integrator is in the switching transient state to integration start mode and where said started integrator is reset, and determining the reset state holding period of each integrator so that each integrator is sufficiently reset to prepare for the start of the next integration.

4,446,488

VIDEO FORMAT SIGNAL RECORDING/REPRODUCING SYSTEM

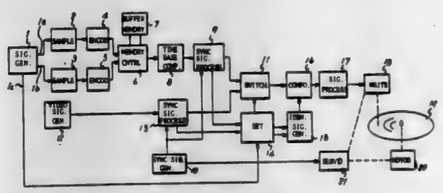
Tsutomu Suzuki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,096

Claims priority, application Japan, Sep. 8, 1980, 55-124284

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—342 **6 Claims**



1. A method for recording a composite voice and image signal on a recording medium of a type wherein a voice field representing audio information and an image field representing video information are combined to form a sequence including image fields and voice fields and are subsequently recorded, with each field being separated from an adjacent field by a vertical blanking interval, each vertical blanking interval including a plurality of horizontal scanning intervals, and each field including a vertical blanking interval followed by an audio or image information signal, the improvement comprising the step of inserting a voice identification signal into a horizontal scanning interval of each said vertical blanking interval which immediately precedes an audio information signal, said voice identification signal further containing information specifying the type of sound represented by said audio information signal as being one of monural, stereo and bilingual.

4,446,489

SIGNAL COPY DEVICE FOR DIGITAL RECORD/REPRODUCTION SYSTEM

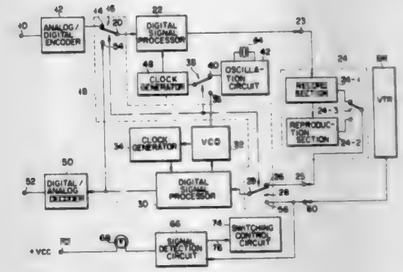
Tadashi Kojima, Yokosuka, and Shigeru Todokoro, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 21, 1981, Ser. No. 333,051

Claims priority, application Japan, Jan. 14, 1981, 56-4335

Int. Cl.³ G11B *27/02, 15/12*

U.S. Cl. 360—13 **9 Claims**



1. A signal record and copy device for a digital record/reproduction system having a record section and a reproduction section comprising:

encoding means for receiving analog signals to be recorded and converting them to first digital encoded signals corresponding thereto;

decoding means for receiving digital encoded signals and decoding them to produce analog signals corresponding thereto;

at least one signal reproducing section from which recorded second digital encoded signals can be reproduced for copying;

switching means selectively actuable to enable the device to operate in a record mode or a copy mode, the switching means being connected to receive the first and second digital encoded signals and, when actuated to the record mode, to supply the first digital encoded signals to the record section for recording, when actuated to the copy mode, to supply the second digital encoded signals to the record section for copying by recording them;

said switching means including a first switch section operable in the copy mode to connect the at least one signal reproducing section to the record section to record the second digital encoded signals and to connect the record section to the decoding means to provide analog monitoring signals corresponding to the recorded second digital encoded signals being recorded, and a second switch section connected to said first switched section and said encoding means and operative in cooperation with said first switched section in the record mode to supply the first digital encoded signals through said first switch section to the record section and to connect the record section to the decode means to provide analog monitoring signals corresponding to the second digital encoded signals being recorded.

4,446,490

PCM SIGNAL PROCESSING CIRCUIT

Susumu Hoshimi, Yokohama, and Tadashi Kojima, Yokosuka, both of Japan, assignors to Sony Corporation and Tokyo Shibaura Denki Kabushiki Kaisha, both of, Japan

Filed Nov. 17, 1981, Ser. No. 322,279

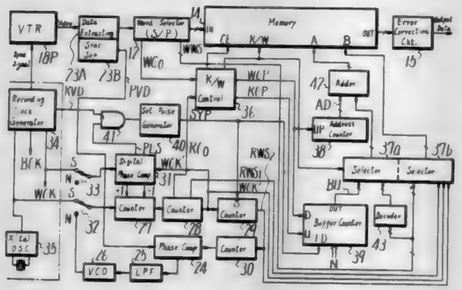
Claims priority, application Japan, Nov. 18, 1980, 55-162177

Int. Cl.³ G11B *5/00, 27/02*

U.S. Cl. 360—32 **14 Claims**

1. A PCM signal processing circuit comprising, a signal input terminal for receiving a PCM data signal from PCM data

signal reproducing apparatus, a memory for storing said PCM data signal and to be designated an address thereof to be written by an address signal being produced with regard to said PCM data signal, a standardized signal input terminal for receiving a standardized signal corresponding to a synchronizing signal for synchronizing said PCM data signal reproducing



apparatus, an address counter for designating an address of said memory to be read, and means for providing said address counter with preset data in response to said every standardized signal as a load signal so that said address counter begins counting read pulses synchronized with said standarized signal from said preset data.

4,446,491

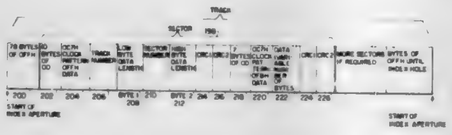
ULTRAHIGH RESOLUTION PHOTOCOMPOSITION SYSTEM EMPLOYING ELECTRONIC CHARACTER GENERATION FROM MAGNETICALLY STORED DATA

James A. Tidd, Northbrook, and Miles H. Tidd, Deerfield, both of Ill., assignors to Alphatype Corporation, Niles, Ill.

Division of Ser. No. 942,893, Sep. 15, 1978. This application Oct. 1, 1980, Ser. No. 192,846

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—48 **13 Claims**



1. A coded font for storing plural alphabet character designs described by groups of successive multi-bit translational commands with each group describing the entire boundary contour of a single alphabet character beginning at a starting coordinate position and successively describing translational movements around the character boundary contour, each successive command identifying either (1) a path selected from a first translational path set consisting of translational paths frequently required in order to describe a character boundary, and uniquely identified by a binary number of X bits or (2) a path selected from a second translational path set consisting of translational paths less frequently required to define a character boundary and uniquely identified by a binary number of 2 X bits, or (3) a large displacement translational path longer than any of the displacement paths of the first and second path sets uniquely identified by a binary number of 3 X bits, comprising

(a) a disc adapted to be mounted for rotation;

(b) a plurality of sequentially ordered, circumferentially spaced, magnetic storage cells formed of material magnetically alterable to store binary signals, said storage cells being arranged into plural circular storage tracks concentrically positioned around the center of said disc to permit the stored signals to be sensed sequentially as the disc is rotated; and

(c) a plurality of character sectors equal in number to the number of character designs stored on the coded font, one said character sector being uniquely associated with each character design, said character sectors being arranged end to end in a predetermined ordered sequence, each said character sector including

(1) a character data field formed of a plurality of said storage cells equal in number to the number of binary bits required to store the starting coordinates plus X times the total number of commands required to identify the associated character boundary contour plus X times the number of commands identifying paths from the second path set plus 2X times the number of commands identifying the large displacement translational path, said storage cells being magnetically altered to store in sequence the X, 2X, and 3X bit binary signals representing the successive translational commands describing the associated alphabet character, and

(2) a non-character data field formed of a number of storage cells preceding said character data field, each said non-character data field having the same number of said storage cells as all other non-character data fields, said storage cells of said non-character data field being magnetically altered to store binary signals identifying the position of the associated said character data field, whereby all of the signals descriptive of a particular character design stored within a track of the disc may be retrieved by rotating the font disc to cause all of the storage cells in which the corresponding character data field is stored to move past a magnetic pick-up succession without interruption.

4,446,492

INFORMATION RECORDING SYSTEM

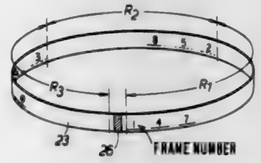
Tomohisa Yoshimaru, Yokohamashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 203,976, Nov. 4, 1980. This application Feb. 7, 1983, Ser. No. 464,372

Claims priority, application Japan, Nov. 6, 1979, 54-143720

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—48 **3 Claims**



1. In an information recording system for storing pages of document information as digital signals comprising:

an endless recording medium for recording digital signals thereon, said recording medium being divided, in the direction of its length, into at least a first and a second successive region;

information supply means for supplying successive units of information to be recorded on said medium including a first, second, third, etc. units of information, said information supply means requiring a first length of time to supply each unit of information, said information supply means including photoelectric scanning means for converting the document information into the digital signals, the digital signals representing one document page comprising one unit of information;

buffer means for accumulating the digital signals supplied by said information supply means until a unit of information has been accumulated; and

control unit means for transferring the accumulated unit of information from said buffer means to said recording medium, said control unit means requiring a second length of time to transfer each unit of information, the second length of time being extremely short compared to the first length of time;

the improvement comprising means within said control unit means for transferring into said first region the first, the n+1, the 2n+1, the 3n+1 . . . units of information supplied from said supply means, and further transferring into said second region the second, the n+2, the 2n+2, the 3n+2 . . . units of information supplied from said supply means, where n equals the total regions contained on the medium.

4,446,493

VARIABLE FREQUENCY-RESPONSE EQUALIZER

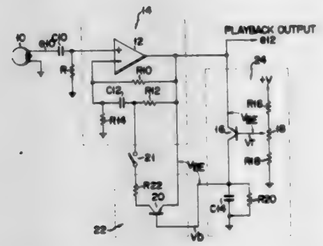
Nobuo Terui, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,482

Claims priority, application Japan, Nov. 26, 1980, 55-169361

Int. Cl.³ G11B *5/45*

U.S. Cl. 360—65 **6 Claims**



1. A variable frequency response playback equalizer, comprising:

playback amplifier means responsive to an unequalized input signal and having a given time constant regarding a frequency response characteristic thereof, for equalizing said unequalized input signal to produce an equalized playback output signal;

level sensor means coupled to said playback amplifier means for generating a time constant change signal when the signal level of said equalized output signal exceeds a given level; and

time constant change means coupled to said playback amplifier means and to said level sensor means for increasing said given time constant when said time constant change signal is generated to cause the signal level of said equalized playback output signal to be increased at high frequency regions.

4,446,494

UNIFORM SPEED CONTROL FOR A MULTI-CHANNEL DIGITAL RECORDER

Thomas G. Stockham, Jr., and Bruce C. Rothaar, both of Salt Lake City, Utah, assignors to Soundstream, Inc., Salt Lake City, Utah

Division of Ser. No. 55,689, Jul. 6, 1979, Pat. No. 4,328,580. This application Sep. 8, 1981, Ser. No. 299,838

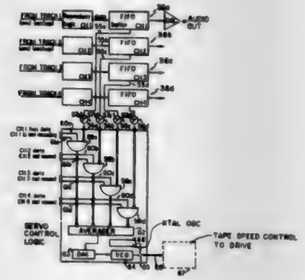
Int. Cl.³ G11B *15/46*

U.S. Cl. 360—73 **5 Claims**

1. In a multi-channel digital recorder that includes memory for each track of each channel a method for synchronizing playback of information recorded on different tracks on a tape media including the steps of,

measuring memory fullness of each track;

averaging memory fullness of tracks not recorded to provide an average fullness measurement; and



utilize that average fullness measurement to control tape speed.

4,446,495

TAPE PLAYER REPEAT REPRODUCTION WITH OVERLAP

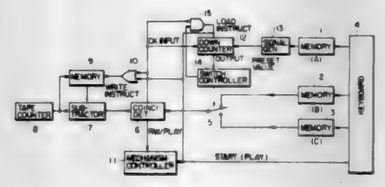
Akira Orimoto, and Kazuo Kamei, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 358,777

Claims priority, application Japan, Mar. 18, 1981, 56-39133

Int. Cl.³ G11B *15/20*

U.S. Cl. 360—74.1 **11 Claims**



1. A repeat reproduction control system for a tape recorder, comprising;

tape counter means;

reproduction length memory means for storing a signal corresponding to the length of a recorded part of a magnetic tape, which part should be repeatedly reproduced;

repeat frequency memory means for storing a signal corresponding to a number of reproduction repetitions;

overlap length memory means for storing a signal corresponding to a length of a recorded part of said magnetic tape, which part is reproduced with a first repeatedly reproduced recorded part of said magnetic tape and also with a second repeatedly reproduced recorded part in succession with the first recorded part, such that said parts overlap each other;

means for repeatedly reproducing said part to be repeatedly reproduced, using an output of said tape counter means and an output of said reproduction length memory means in response to a repeat reproduction instruction signal.

4,446,496

AUTOMATIC REVERSE TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 129,165, Mar. 10, 1980, abandoned. This application Jul. 2, 1982, Ser. No. 394,708

Claims priority, application Japan, Mar. 22, 1979, 54-33699

Int. Cl.³ G11B *15/02, 15/44*

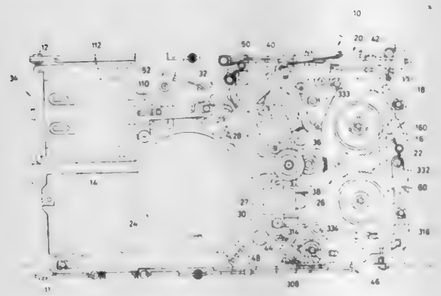
U.S. Cl. 360—74.1 **5 Claims**

1. In an automatic reverse cassette tape recorder wherein a playback mode is set by the loading of a cassette and, after the

ejection of the cassette by means of an ejection means, a new playback mode is set on a determined one side of the cassette, which comprises: a magnetic tape driving motor selectively for driving a magnetic tape in first and second running directions; an operator actuable recording mode-setting member; a pair of magnetic heads; support means for supporting said pair of magnetic heads spaced from each other; an automatic reverse circuit including an end of tape detecting means for detecting the terminal end of a tape and generating an electrical signal indicating detection of the end of the tape; means responsive to at least one of said end of tape detecting means and said recording mode-setting member for bringing one of the paired magnetic heads to a projected position suitable for contact with a magnetic tape; and cassette ejecting means for ejecting a cassette and for causing a prescribed magnetic head to be brought to said projected position only when the prescribed one of the paired magnetic heads is not in said projected position for contact with the tape, thereby always causing said prescribed magnetic head to be projected to a position suitable for contact with the tape when a cassette is ejected by said ejecting means; the improvement comprising:

means responsive to operation of said recording mode-setting device for causing said driving motor to operate in only one direction to drive a magnetic tape in said one direction to permit recording on only one side of said cassette;

means coupled to said end of tape detecting means for supplying said electrical signal to said magnetic tape driving



motor for selectively automatically causing said driving motor to run the magnetic tape in the direction opposite to the previous running direction;

an end alarm circuit coupled to said automatic reverse circuit and including a sounding device, said end alarm circuit being selectively actuated upon detection of the magnetic tape end so as to sound said sounding device;

an automatic stop circuit coupled to said automatic reverse circuit and being selectively actuated upon detection of the magnetic tape end so as to stop the magnetic tape driving motor; and

switch means included in said automatic reverse circuit, said switch means being coupled to said recording mode-setting device, to said automatic reverse circuit, to said end alarm circuit and to said automatic stop circuit, said switch means being always operated upon actuation of said recording mode-setting device to always disable said automatic reverse circuit and to always enable at least one of said end alarm circuit and said automatic stop circuit when the tape recorder is set in the recording mode by actuation of said recording mode-setting device, thereby permitting recording on the tape only when running in said one direction and always preventing recording on the tape when the tape runs in the reverse direction of running of the tape, and permitting playback of the tape in both of said first and second tape running directions under the control of said automatic reverse circuit when said recording mode-setting device is not actuated.

4,446,497

VIDEO HEAD DRIVING UNIT WITH NONLINEAR LEAF SPRING FORCE

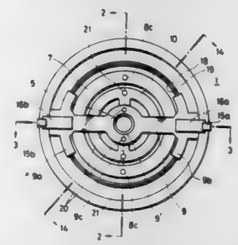
Hiromichi Hirayama, Yokosuka, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 8, 1981, Ser. No. 300,452

Claims priority, application Japan, Sep. 9, 1980, 55-128246[U]; Sep. 10, 1980, 55-128765[U]; Sep. 11, 1980, 55-129516[U]

Int. Cl.³ G11B *21/18, 5/52*

U.S. Cl. 360—109 **16 Claims**



1. A video tape recording and/or reproducing apparatus, comprising:

a rotary drum having a pair of openings at diametrically opposite positions and rotatable about a vertical axis;

a horizontal yoke elongated in a direction transverse to said vertical axis and carrying video transducer heads at opposite ends thereof in said openings respectively;

a leaf spring secured to said rotary drum at first diametrically opposite positions with respect to said vertical axis and further secured to said yoke at second diametrically opposite positions aligned with said first diametrically opposite positions along a line which is perpendicular to the direction of elongation of said yoke for tiltably supporting said yoke about a horizontal axis so that said video heads are vertically movable in said openings, the arrangement of said leaf spring being such that a nonlinear spring force is exerted against said yoke, the spring force being greater when the yoke is tilted within a predetermined range than when the yoke is tilted beyond said range; and

means for tilting said yoke against said spring about said horizontal axis in response to a signal applied thereto to displace said video heads from a horizontal position.

4,446,498

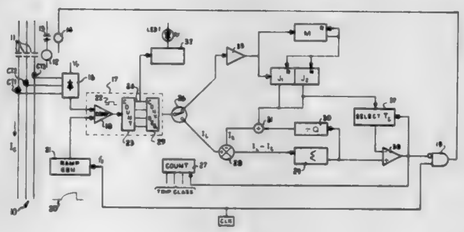
ELECTRONIC CONTROL SYSTEM FOR OVERLOAD RELAY OR THE LIKE

Frederick A. Stich, Milwaukee, Wis., assignor to Siemens-Allis, Inc., Atlanta, Ga.

Filed Apr. 5, 1982, Ser. No. 365,378

Int. Cl.³ H02H *3/08*

U.S. Cl. 361—87 **28 Claims**



1. An automatic control for a circuit protection device of the type having switch means for opening and closing an electrical

circuit, sensing means for sensing the current flow in the circuit, and an operator for operating the switch means in response to predetermined circuit current characteristics, comprising:

reference means for establishing a time-varying comparison signal;

timer means coupled to said reference means for initiating a comparison period at a sampling frequency fs which is not a harmonic of the frequency of current flowing in the circuit;

comparator means coupled to said reference means, to said timer means and to said sensing means for outputting a first signal in response to the comparison signal exceeding the sensed current flow signal; and

accumulator means coupled to said comparator means for accumulating representations of successive ones of said first signals and outputting a trip signal to cause said operator to automatically open said switch means in response to the accumulated values of said signals exceeding a preselected threshold value.

4,446,499

INPUT PROTECTION CIRCUIT

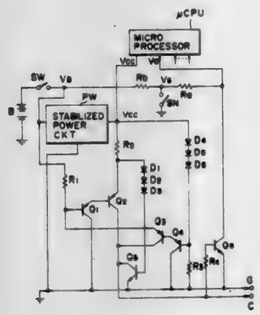
Satoru Kishimoto; Masaharu Atsumi, both of Kakogawa, and Yoshiaki Sano, Kawasaki, all of Japan, assignors to Fujitsu Ten Limited, Kobe and Fujitsu Limited, Kawasaki, both of, Japan

Filed Jun. 3, 1982, Ser. No. 384,634

Claims priority, application Japan, Jun. 5, 1981, 56-86451

Int. Cl.³ H02H *7/09*

U.S. Cl. 361—92 **6 Claims**



3. An input protection circuit, operatively connected to receive an external voltage, for a signal processing circuit having a power supply terminal and a first input terminal, comprising:

a power source switch operatively connected to receive the external voltage, said power source switch providing the external voltage when it is turned ON;

a stabilized power source circuit, operatively connected to said power source switch and the power supply terminal of the signal processing circuit, for providing an output voltage to the power supply terminal of the signal processing circuit;

a first sensor, operatively connected to said power source switch and operatively connected to the first input terminal of the signal processing circuit at a first node;

a first clamping transistor having a first terminal connected at the first node and having second and third terminals;

first means, operatively connected to the second terminal of said first clamping transistor and to said power source switch, for holding said clamping transistor in an ON state until the output voltage of said stabilized power source circuit rises up to a first predetermined value after said power source switch is turned ON;

second means, operatively connected to said stabilized power source circuit, said first clamping transistor, and said first means, for holding said first clamping transistor in an OFF state after the output voltage of said stabilized power source circuit exceeds the first predetermined value after said power source switch is turned ON and until the output voltage of said stabilized power source circuit becomes lower than a second predetermined value; and

third means, operatively connected to said second means, said power source switch, and said first clamping transistor, for placing said first clamping transistor in the ON state when the output voltage of said stabilized power source circuit becomes lower than the second predetermined value.

4,446,500

REMOTE CONTROL CIRCUIT BREAKER CIRCUIT

Aime J. Grenier, North Attleboro, and Hans G. Hirsbrunner, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 6, 1982, Ser. No. 395,532

Int. Cl.³ H01H *77/06*

U.S. Cl. 361—103 **13 Claims**



1. A remote control circuit breaker circuit comprising

a power supply terminal,

a control circuit having first and second paths coupled to the power supply terminal,

a thermally responsive switch connected between a path of the control circuit and ground, the thermally responsive switch adapted to be disposed in a location remote from the remainder of the circuit breaker circuit, an on-off switch serially connected to the path between the path and the power supply terminal, the circuit path having first and second branches in parallel circuit relation with each other, the first branch comprising a first positive temperature coefficient (PTC) of resistance element and an SCR serially connected thereto, a first set of relay contacts coupled to the gate circuit of the SCR to control its state of conduction, the second branch comprising a second positive temperature coefficient (PTC) of resistance whereby when the SCR is in the conductive state the first and second PTC elements are in parallel circuit relation and when the SCR is non-conductive only the second PTC element is adapted to conduct current passing through the on-off switch through the thermally responsive switch to ground,

the control circuit including a light emitting diode,

a logic circuit, signal generating means adapted to generate a signal when the light emitting diode is energized,
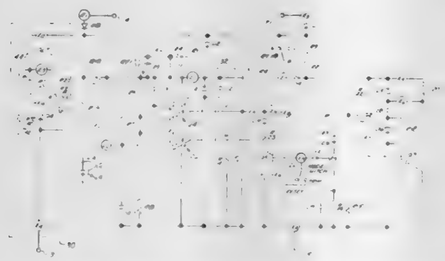
electromotive motor means including a solenoid and a serially connected solenoid switch, the signal generating means of the logic circuit coupled to solenoid switch and adapted to control its state of conductivity, current adapted to pass through the solenoid when the solenoid switch is rendered conductive by receiving a signal from the signal generating means.

4,446,501

CIRCUIT CONTROL SYSTEM

Robert W. Peterson; Aime J. Grenier, both of North Attleboro, and Hans G. Hirsbrunner, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 6, 1982, Ser. No. 395,535
Int. Cl.³ H02H 1/00; H01H 71/10
U.S. Cl. 361—114 8 Claims



1. A circuit control system comprising first and second load contact assembly means, the first load contact assembly means being movable between contacts reset engaged and contacts tripped disengaged positions with the second load contact assembly means,

motor means for causing movement of the first contact assembly means in a first direction to alternately effect contacts engagement and contacts disengagement,

means for latching the first contact assembly means in the contacts engaged position, and

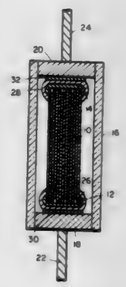
electrical circuit means for energizing the motor means for moving the first contact assembly in the first direction including a single pole, double throw mode switch, a reset circuit and a trip circuit, the mode switch adapted to electrically connect the reset circuit to the motor means in one position and the trip circuit to the motor means in the other position, alternate movement of the first contact assembly means between the contact reset engaged position and the contacts disengaged tripped position causing the mode switch to move from one position to the other.

4,446,502

METALLURGICAL CONTACTS IN HERMETICALLY SEALED GLASS ENCAPSULATED CERAMIC CAPACITORS

Otmar H. Boser, Scarsdale, and Richard C. Sweet, North Tarrytown, both of N.Y., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,041
Int. Cl.³ H01G 1/14, 4/10
U.S. Cl. 361—308 6 Claims



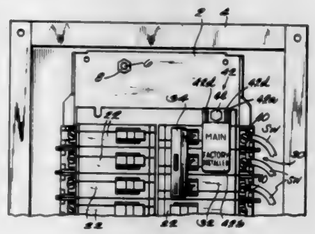
1. An improved hermetically sealed, glass-encapsulated capacitor assembly including a monolithic ceramic chip capacitor with conductive end terminations of silver, a pair of flexible metal leads each with an enlarged inflexible end cap having an end face in proximity with a respective conductive end termination of said capacitor, said proximate component ends and end caps being of dissimilar metals, a glass sleeve surrounding said component and end caps with direct physical glass-to-metal contact between said sleeve and the lateral surfaces of said end caps, said physically contacting glass and metal surfaces being positioned to be heat sealed, wherein the improvement comprises: a nickel coating over said silver end terminations; and a coating of silver over said nickel plating, said coatings selected to effect a brazing between said end terminations and said end caps when said assembly is heat sealed.

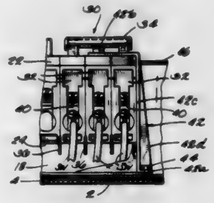
4,446,503

ELECTRICAL PANELBOARD WITH MAIN BREAKER HOLD-DOWN

Donald A. Link, Hubertus, and John A. Swessel, Jr., Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 11, 1982, Ser. No. 338,798
Int. Cl.³ H02B 1/02
U.S. Cl. 361—346 10 Claims





1. In an electrical panelboard having a plurality of plug-in circuit breakers, the combination comprising:

a panel;

a mounting rail on said panel for mounting one end of said circuit breakers;

insulating means mounted on said panel;

a plurality of bus bars supported by said insulating means, said bus bars being transversely spaced with respect to said mounting rail extending along said panel parallel to said mounting rail and said bus bars having first plug-in connector means spaced at intervals along their length;

a multi-pole main circuit breaker having a plurality of second plug-in connector means cooperably engagable with respective ones of said first plug-in connector means, one end of said multi-pole main circuit breaker being mounted to said mounting rail and said second plug-in connector means being engaged with respective ones of said first plug-in connector means, said main circuit breaker having wire receiving terminals for connecting said main circuit breaker to a source of electrical power; and

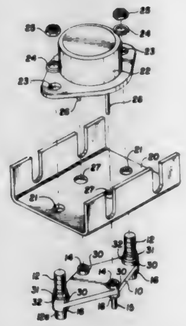
hold-down means secured to said panel and extending forwardly from said panel along a side of said main circuit breaker and overlying said main circuit breaker transversely of a line extending between said plug-in connector means and said mounting rail for preventing removal of said main circuit breaker to thereby disconnect said first and second plug-in connections.

4,446,504

MOUNTING MEANS WITH SOLDERABLE STUDS

William D. Jordan; Howard G. Hinshaw, both of Dallas, and Donald L. Clemens, The Colony, all of Tex., assignors to Thermalloy Incorporated, Dallas, Tex.

Continuation of Ser. No. 271,600, Jun. 8, 1981, abandoned. This application Sep. 13, 1983, Ser. No. 532,085
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 9 Claims



1. A device mounting a semiconductor package to a circuit board, the package having conductive pins extending from the package, the mounting device comprising:

a body formed of electrically insulating material having top and bottom surfaces;

said body including apertures receiving the conductive pins to provide electrical insulation between the pins and to allow the pins to be electrically connected to the circuit board; and

stud means having first and second ends mounting the semiconductor package to said body and mounting said body to the printed circuit board, such that the package is electrically connected to the circuit board, said stud means being carried by and secured to said body and extending through said body substantially transversely to said top and bottom surfaces, such that said first end of said stud means extends substantially perpendicularly from said top surface of said body and receives the semiconductor package and said second end of said stud means extends substantially perpendicularly from said bottom surface of said body and is electrically connected to the circuit board, such that said body insulates the semiconductor package from the circuit board while providing selective electrical connection between the circuit board and the semiconductor package through said stud means.

4,446,505

ELECTRICAL CONNECTOR FOR INTERCONNECTING PRINTED CIRCUIT BOARDS

William B. Long, Camp Hill, and Suel G. Shannon, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 22, 1982, Ser. No. 360,503
Int. Cl.³ H01R 23/68, 9/09
U.S. Cl. 361—413 5 Claims

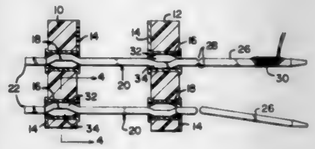
1. An electrical connector for electrical connection with aligned metal-lined holes in spaced printed circuit boards comprising:

a connector pin having contact sections defining a leading and one or more following compliant contact sections;

each of said compliant contact sections having two legs extending outwardly in opposite directions from each other along and on opposing sides of a plane associated with said each of said compliant contact sections extending through an axis of said connector;

each of said two legs of each said compliant contact section having a contact portion for contacting a surface of a metal-lined hole of a printed circuit board;

each of said associated planes having an orientation at an angle to others of said associated planes such that said



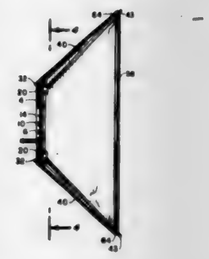
contact portion of each of said legs is not aligned with any other of said contact portions along the axis of said connector so that when each one of said following compliant contact sections is disposed to rest within an associated metal-lined hole of a printed circuit board after said connector is inserted into a plurality of spaced printed circuit boards, each said contact portion of each of said legs makes electrical connection with a virgin area of said metal-lined hole.

4,446,506

PHOTOGRAPHIC LIGHT DIFFUSER

Raymond G. Larson, Huntington Beach, Calif., assignor to Larson Enterprises, Inc., Fountain Valley, Calif.

Filed Nov. 12, 1982, Ser. No. 440,749
Int. Cl.³ G03B 15/02
U.S. Cl. 362—17 14 Claims



1. A photographic light diffusing device and the like comprising the combination:

a mounting member adapted for cooperative and releasable association with a light source;

a plurality of support members releasably supported from said mounting member; and

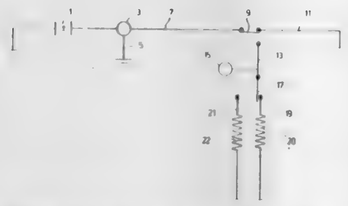
at least one segment panel adapted for releasable, supported engagement with said support members and said mounting member, said segment panel in the supported state forming selected polygonal configurations to direct and alter light emitting from a light source with which said device is utilized.

4,446,507

AUTOMOBILE HEADLIGHT CONTROL SYSTEM

Ronald M. Daniels, 112 Westhill Rd., Elliot Lake, Canada (P5A 1A7)

Filed Mar. 29, 1983, Ser. No. 442,009
Int. Cl.³ F21V *19/04*
U.S. Cl. 362—20 **8 Claims**



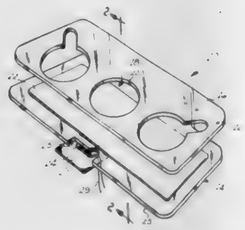
1. A lighting system for use on a vehicle, said system comprising a first and a second set of low beam driving lights, a set of high beam driving lights, first switching means for switching from said low beam driving lights to said high beam driving lights and second switching means for switching between said first and second sets of low beam driving lights in the event of failure of one of said low beam sets, and indicating means interiorly of the vehicle to indicate such failure.

4,446,508

EDGE LIGHTED ARTICLE HOLDER

Michael R. Kinzie, Mishawaka, Ind., assignor to Plast-Ad, Inc., Mishawaka, Ind.

Filed Jan. 17, 1983, Ser. No. 458,299
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—31 **9 Claims**



1. In an article holder having an upper wall and a lower wall connected by a web, opening means in said upper wall defined by an edge for receiving an article, said lower wall adapted to support said article when the article is placed within said opening means, said upper and lower walls and said web formed of light transmitting material, the improvement in said article holder comprising a lighting element means secured within the plane of one of said upper and lower walls and said web for transmitting light through said one wall or web to illuminate said opening means edge in the upper wall.

4,446,509

FLASHLIGHT WITH COMPASS MEANS INTEGRAL THERETO

Charles E. Thomas, 36954 Sugar Ridge Rd., North Ridgeville, Ohio 44039

Filed Feb. 28, 1983, Ser. No. 451,247
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—184 **1 Claim**

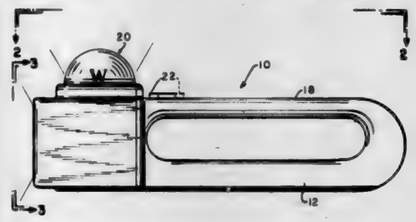
1. A combination of the class described involving an electric flashlight and magnetic compass, comprising:

a body structure preinjection molded from a material have shock resistant and electrical insulating characteristics;

an elongated tubular cavity for receiving a plurality of batteries;

a second cavity adopted to receive a bell type lens and a light emitting bulb;

a magnetic compass including an internal light emitting source connected in series with said light emitting bulb,



said compass position forward of said body structure and having a line of sight parallel to a light beam emitted by said light emitting bulb;

switch means for connecting said light emitting bulb and said light emitting source in series with said batteries; and

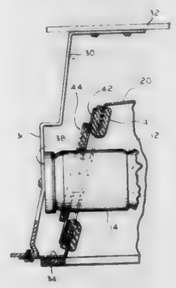
said body structure further defining handle means for holding said flashlight, said handle means and battery container being one continuous U-shaped tube.

4,446,510

REFLECTOR SEALING APPARATUS

George K. Wagner, Horn Lake, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,237
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **5 Claims**



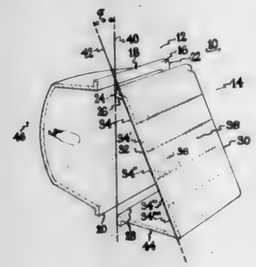
1. In an outdoor luminaire having a reflector with an elongated opening in the reflector adjacent one end thereof for receiving a generally cylindrical socket therethrough, sealing structure for said opening to seal the space between the socket and the reflector, said structure including a first grommet-like gasket enclosing the periphery of said opening, a sealing plate with its area greater than said opening, an aperture in said plate for receiving the socket therethrough with a clearance fit, said plate being otherwise imperforate, a gasket member affixed to said plate, said gasket member having a passage therethrough to receive said socket with a negative allowance fit, and said plate including a pair of spaced apart tabs for resiliently engaging said reflector adjacent said opening to grip and compress the gasket between the plate and the reflector whereby to cover and seal said opening with said gasket member externally of the socket.

4,446,511

AUTOMOTIVE LAMP UNIT

Robert W. Sands, Hudson, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 130,254, Mar. 14, 1980, abandoned. This application Jun. 9, 1982, Ser. No. 386,843
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **11 Claims**



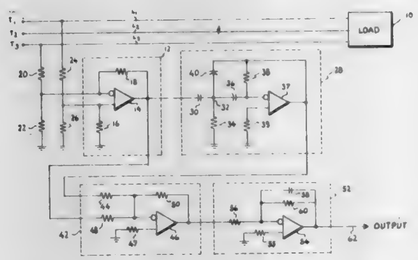
1. An improved all glass sealed beam vehicle headlamp having a glass reflector directly fusion sealed at an outer sealing rim to a corresponding sealing rim of a single glass lens member to produce a hermetically sealed enclosure, said single lens member having a smoother exterior surface with an inner surface utilizing a single prism element construction with rows of longitudinally extending prism elements to project light being transmitted directly from said reflector therethrough for a substantial distance from the vehicle, wherein the improvement comprises shaping the single lens member to lie in a non-vertical direction when sealed to said reflector member while extending the length of the prism elements by a distance related to the angle of inclination for said single lens member from the vertical direction in order to project approximately the same light beam pattern as obtained with a lens member aligned in the customary vertical direction.

4,446,512

CIRCUITRY FOR SINE WAVE RECONSTRUCTION

Willard B. Jarvinen, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Jan. 18, 1982, Ser. No. 340,400
Int. Cl.³ H02M *5/00*
U.S. Cl. 363—39 **4 Claims**



1. Circuitry for producing a sine wave output signal representative of a polyphase sine wave source voltage from signals representing line voltages taken from lines connecting the source to a load comprising:

(a) differential amplifier means to provide a first signal representing an actual voltage existing between two phases of the line voltages;

(b) means including an operational amplifier responsive to said first signal to provide a second signal representing only higher frequency components of said first signal;

(c) operational amplifier means to combine said first and second signals to develop a combined signal; and,

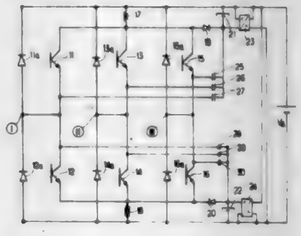
(d) means to filter said combined signal to provide said sine wave output signal.

4,446,513

DC/AC BRIDGE INVERTER INCLUDING A SWITCHING AID AND INDUCTIVE ENERGY RECOVERY CIRCUIT

Daniel Clénet, Grasse, France, assignor to La Telemecanique Electrique, France

PCT No. PCT/FR81/00074, 371 Date Feb. 9, 1982, 102(e) Date Feb. 9, 1982, PCT Pub. No. WO81/03722, PCT Pub. Date Dec. 24, 1981
PCT Filed Jun. 12, 1981, Ser. No. 359,712
Claims priority, application France, Jun. 13, 1980, 80 13146
Int. Cl.³ H02M *7/537, 7/515*
U.S. Cl. 363—132 **4 Claims**



3. A DC/AC inverter device comprising:

a supply source having first and second DC supply terminals;

a plurality of paired transistors mounted in a transistor bridge having first and second pole terminals, each pair of transistors having a junction point;

a load having phase input terminals, each connected to a junction point of one respective pair of transistors;

a plurality of paired recovery diodes mounted in a diodes bridge having first and second pole terminals, each pair of recovery diodes having a junction point connected to a junction point of a corresponding pair of transistors;

a first inductor mounted between said first pole terminal of the transistor bridge and said first pole terminal of the diodes bridge;

first connecting circuit means having an input terminal connected to the first terminal pole of the transistor bridge and an output terminal connected to the first DC supply terminal, said first connecting circuit means comprising in series a first diode having a first electrode connected to the first terminal pole of the thyristor bridge, and a second electrode, and a first storage capacitor having a first electrode connected to the first DC supply terminal and a second electrode connected to the second electrode of the said first diode;

a first plurality of switching aid capacitors, each comprising a first electrode connected to the second electrode of the first diode and a second capacitor connected to the junction point of a corresponding pair of transistors of the transistor bridge;

first low voltage-high voltage means having two input terminals respectively connected to the first and second capacitor electrodes of the first storage capacitor and two output terminals respectively connected to the first and second DC supply terminals;

a second inductor mounted between said second pole terminal of the thyristor bridge and said second pole terminal of the diodes bridge;

a second conducting circuit means having an input terminal connected to the second terminal pole of the transistor bridge and an output terminal connected to the second DC supply terminal, said second connecting circuit com-

prising in series a second diode having a first diode electrode connected to the second terminal pole of the thyristor bridge and a second diode electrode, and a second storage capacitor having a first capacitor electrode connected to the second DC supply terminal and a second capacitor electrode connected to the second diode electrode of the said second diode;

a second plurality of switching aid capacitors, each comprising a first capacitor electrode connected to the second diode electrode of the second diode and a second capacitor electrode connected to the junction point of a corresponding pair of transistors of the transistor bridges;

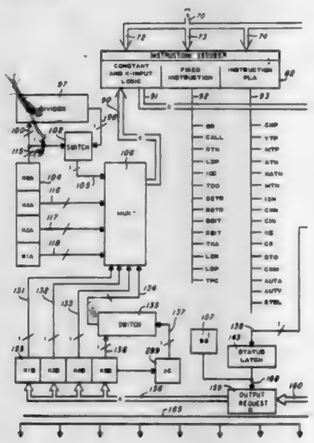
a second low voltage-high voltage having two input terminals respectively connected to the first and second capacitor electrodes of the second storage capacitor and two output terminals respectively connected to the first and the second DC supply terminals.

4,446,514

MULTIPLE REGISTER DIGITAL PROCESSOR SYSTEM WITH SHARED AND INDEPENDENT INPUT AND OUTPUT INTERFACE

Sammy K. Brown, Midland, Tex.; Duane Solimeno, Newington, Conn.; Peter L. Koeppen, Houston, and Gerald Rogers, Sugarland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1980, Ser. No. 217,480
Int. Cl.³ G06F *9/16*
U.S. Cl. 364—200 **13 Claims**



1. An electronic digital processor system comprising:

memory means for storage of data and commands which define operations on said data;

arithmetic and logic means for performing said operations on said data;

first and second independent and simultaneously operable processing units for executing said commands on said data;

control circuitry for obtaining from said memory said commands and said data and transferring said commands to said first and said second processing units;

first input means for providing external data to said first processing unit;

first output means for the external transmission of data from said first processing unit;

second input means for providing external data to said second processing unit;

second output means for the external transmission of data from said second processing unit;

third output means for the external transmission of data from said first and said second processing units;

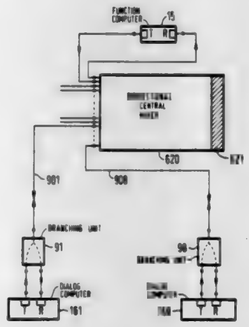
a plurality of data paths that couple said first processing unit to said memory means, said arithmetic and logic means, said first input means, said first output means, and said third output means; and couples said second processing unit to said memory means, said arithmetic and logic means, said second input means, said second output means, and said third output means.

4,446,515

PASSIVE BUS SYSTEM FOR DECENTRALLY ORGANIZED MULTI-COMPUTER SYSTEMS

Anton Sauer, Germering, and Hans H. Witte, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 31, 1980, Ser. No. 221,770
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001638
Int. Cl.³ G06F *3/04, 15/16;* G02B *5/14*
U.S. Cl. 364—200 **23 Claims**



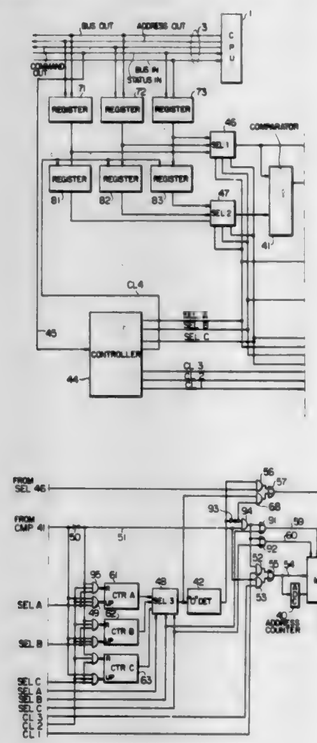
1. In a decentrally organized multi-computer system incorporating a plurality of function units, a passive bus communication system comprising an internal communication function unit for carrying on all data exchange operations between individual ones of said function units, said passive bus communications system employing exclusively optical transmission means, means associated individually with a plurality of said function units for the control of said bus system, a plurality of optical transmitter-receivers individually allocated to said function units and a light wave guide for optically connecting said optical transmitter-receivers to all other optical transmitter-receivers, said light wave guide being individually allocated to each said transmitter-receiver by means of an optical mixer, said optical mixer comprising a bidirectional mixer operating as the central mixer in a central level of the passive bus system, and including a plurality of transmission-reception lines each of which is respectively connected between the branching point of a branching unit and one of a plurality of terminals of a first group of terminals of the central mixer, a plurality of auxiliary computers, means for connecting said auxiliary computers to terminals of said branching units, and means for connecting at least one function unit directly to a plurality of terminals of a second group of terminals of the central mixer without using a branching unit.

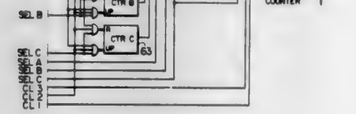
4,446,516

DATA COMPACTION SYSTEM WITH CONTIGUOUS STORAGE OF NON-REDUNDANT INFORMATION AND RUN LENGTH COUNTS

Toshifumi Nishimura, Minamiashigara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 25, 1981, Ser. No. 247,265
Claims priority, application Japan, Mar. 31, 1980, 55-42673
Int. Cl.³ G06F *3/00, 5/00, 7/02;* H03K *13/00*
U.S. Cl. 364—200 **5 Claims**





1. An information storing method for storing in a memory the past record of a plurality of information signals generated in time sequence, said method comprising the steps of:

generating a plurality of information signals in time sequence;

comparing a newly-generated information signal and the previously-generated information signal as each information signal is generated;

incrementing a count when coincidence is obtained at said comparing step;

writing each newly-generated information signal at a storage location in said memory next to the storage location of the previously-generated information signal when coincidence is not obtained at said comparing step at a time when said count is zero;

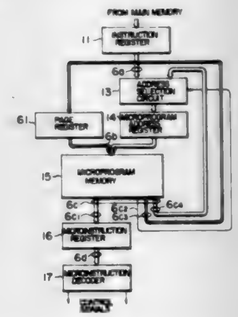
writing the value of said count at a storage location in said memory next to the storage location of said previously-generated information signal when coincidence is not obtained at said comparing step at a time when said count is not zero and then writing said newly-generated information signal at a storage location in said memory next to the storage location where the value of said count is stored; and clearing said count to zero when the value of the count has been stored in said memory.

4,446,517

MICROPROGRAM MEMORY WITH PAGE ADDRESSING AND ADDRESS DECODE IN MEMORY

Koyo Katsura, and Hideo Maejima, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,608
Claims priority, application Japan, Jun. 2, 1980, 55-72715; Dec. 5, 1980, 55-170942; Mar. 20, 1981, 56-39593
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **14 Claims**



1. A microprogram control method for use in a system in which a microinstruction of a microprogram is read out of a corresponding address of a microprogram memory in accordance with an instruction read out of a main memory or an externally-supplied instruction, and wherein said microinstruction is decoded to generate an operation control signal to control a processing unit, said method comprising the steps of;

dividing said microprogram memory into pages each consisting of a plurality of words;

designating a selected page of said microprogram memory on the basis of a signal from a page register;

controlling the content of said page register by a microprogram stored in said microprogram memory;

designating an address in the designated and selected page of said microprogram memory on the basis of a signal from an inner page address designating register into which the content of an instruction register containing said instruction can be read directly;

determining the designated and selected page as a decode area of a signal from the instruction register which stores said instruction read out of a main memory or an externally-supplied instruction; and

decoding the instruction in said microprogram memory.

4,446,518

MICROPROGRAMMED CONTROL UNIT WITH MULTIPLE BRANCH CAPABILITY

Angelo Casamatta, Cornaredo, Italy, assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 9, 1981, Ser. No. 319,811
Claims priority, application Italy, Dec. 18, 1980, 26746 A/80
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **4 Claims**

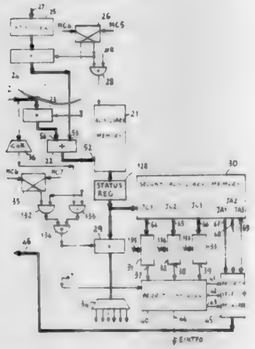
1. A microprogrammed control unit with multiple branch capability comprising a main control memory, an addressing register connected to the addressing inputs of said main control memory, a main output register connected to the outputs of said main control memory, a microcommand decoder connected to the outputs of said main output register, an addressing network for generating sequential addresses and absolute or relative, conditioned or unconditioned, jump addresses, said

addressing network being controlled by microcommands received from outputs of said decoder, said microprogrammed control unit further comprising:

a first auxiliary read/write memory having address inputs and outputs and addressed by output signals from said addressing register and storing first binary codes at addressable locations;

an auxiliary output register connected to the outputs of said first auxiliary memory and storing a first binary code read out from said first auxiliary memory;

a second auxiliary read/write memory having addressable locations and addressed by said first binary code stored in said auxiliary output register and storing at each addressable location a plurality of condition selection codes and a plurality of jump addresses;



a plurality of condition selection networks, each one having first inputs receiving a plurality of condition signals, second selection inputs receiving one of said condition selection codes read out from said second memory, and providing to an output one condition signal out of said plurality;

a priority selection network having a plurality of inputs, each one connected to the output of one of said condition selection networks and receiving said one condition signal, and providing to a plurality of outputs an address selection code; and

a jump address selection network having control inputs receiving said address selection code, a plurality of input sets connected to a plurality of output sets of said second auxiliary memory and receiving a plurality of jump addresses and an output set connected to said addressing network and providing a jump address selected out of said plurality received at said input sets.

4,446,519

METHOD AND APPARATUS FOR PROVIDING SECURITY FOR COMPUTER SOFTWARE

David C. Thomas, Mesa, Ariz., assignor to Corban International, Ltd., Anguilla

Filed May 26, 1981, Ser. No. 266,724
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—300 **2 Claims**

1. A method for providing security for software used in a computer, which includes

a working memory, and

a program stored in said memory,

which method includes, in combination, the steps of:

(a) loading a program into said working memory, which program includes instructions for

(i) generating preselected coded interrogation signals,

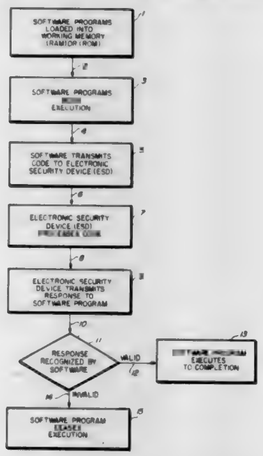
(ii) assessing response signals thereto, and

(iii) generating command signals according to preselected security criteria;

(b) commencing execution of said program;

(c) transmitting said coded interrogation signals from said memory to an electronic security device which automatically processes said received signals and generates a coded response thereto;

(d) transmitting said coded response to said memory; and



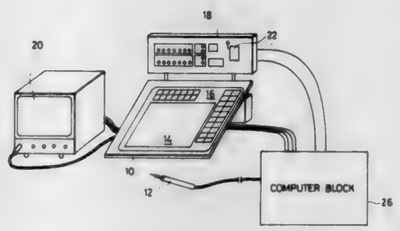
(e) generating a command signal from said memory which causes said computer to complete the execution of said program only if said response signal satisfies said preselected security criteria.

4,446,520

PROCESS OF PREPARING AND PROCESSING SEWING DATA FOR AN AUTOMATIC SEWING MACHINE

Katsunori Shigeta; Takashi Nakamura, both of Aichi; Hisaichi Maruyama, and Yasuji Matsumoto, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 287,831
Claims priority, application Japan, Jul. 30, 1980, 55-104557; Jul. 30, 1980, 55-104558; Jul. 30, 1980, 55-104559; Jul. 30, 1980, 55-104560; Jul. 30, 1980, 55-104561; Sep. 12, 1980, 55-126678
Int. Cl.³ G06F *15/46*; D05B *3/02*
U.S. Cl. 364—400 **5 Claims**



1. A method for preparing sewing data and performing sewing operations in accordance with the prepared data, comprising the steps of:

moving a hand-held stylus pen upon a data input board along a locus corresponding to a desired sewing pattern;

storing in a random-access memory incremental data values representing said locus;

displaying upon a cathode-ray tube monitor a pattern corresponding to said desired sewing pattern by reading out said incremental data values from said random-access memory in sequence and accumulating said incremental data values from a reference position upon a display surface of said cathode-ray tube monitor so that said pattern is clearly displayed for viewing by an operator;

editing said incremental data values stored in said random-access memory to correct any errors noted in the pattern displayed on said cathode-ray tube monitor;

transferring the edited incremental data values from said random-access memory to a nonvolitile data storing means along with incremental data values of other sewing patterns similarly prepared, each of said patterns being addressable only by a corresponding top address, said top addresses being stored sequentially in a predetermined portion of said nonvolitile data storing means;

positioning a needle of a sewing machine head at a predetermined start location of a selected one of said patterns on fabric to be sewn;

reading out from said nonvolatile data storing means in sequence incremental data values for said selected pattern by applying the top address corresponding to said selected pattern to said nonvolatile data storing means; and

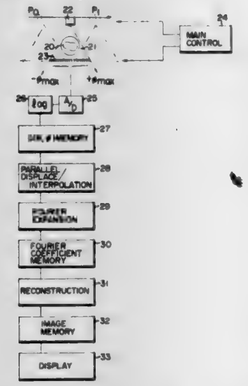
relatively positioning said fabric and said sewing needle in accordance with the incremental data values so read out to perform a sewing operation.

4,446,521

IMAGE RECONSTRUCTION APPARATUS AND PROCESS

Tamon Inouye, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 20, 1981, Ser. No. 245,758
Claims priority, application Japan, Mar. 28, 1980, 55-38871
Int. Cl.³ G06F *15/42*; G01N *23/00*
U.S. Cl. 364—414 **8 Claims**



1. In an image reconstruction system, the method for reconstructing a slice image of a subject within an area under examination comprising the steps of:

(a) projecting rays at a scan angle through a slice of the subject and detecting the rays penetrating through the slice to generate data signals representing the intensities of said detected rays;

(b) repeating step (a) for a plurality of different scan angles ϕ located in a sector scan of less than 180° centered about a point in said area to obtain projection data $G(R, \phi)$ representative of the intensity and direction of the detected data signals over the sector scan of less than 180°;

(c) performing a parallel displacement of the projectin data $G(R, \phi)$ in the direction of the original angles ϕ according to the equation $R' = R + \alpha \cos \phi$ to transfer the projection data $G(R, \phi)$ into displaced projection data $G(R', \phi)$ that represents data projected by a constant α to an area within a specified region spaced from the origin of the subject so that R' is greater than r, the radius of the area being scanned;

(d) calculating the Fourier coefficient $g_n(R')$ according to the equation

$$gn(R') = \frac{1}{2\pi} \int_{-\phi max}^{\phi max} g(R', \phi) e^{-in\phi} d\phi;$$

(e) calculating the Fourier coefficient $f_n(r')$ according to the equation

$$fn(r') = \frac{-1}{\pi} \frac{d}{dr'} \int_{r'}^{r'max} \frac{gn(R')\, Tn(R'/r')}{\sqrt{(R'/r')^2 - 1 \cdot R'}} dR';$$

(f) reconstructing a slice image representative of the entire subject according to the equation

$$f(r', \theta') = \sum_{n=-nmax}^{nmax} fn(r') e^{in\theta'}$$

where n is an integer denoting the order of the Fourier series expansion; and

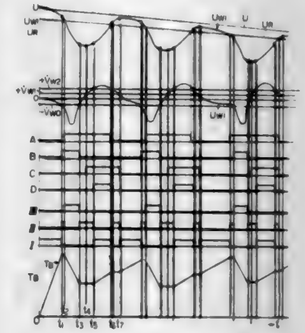
(g) displaying the reconstructed slice image.

4,446,522

METHOD OF PREVENTING SKID OF WHEELS OF A VEHICLE

Makoto Sato, Kamifukuoka; Taiji Ohmori, and Yoshikazu Tsuchiya, both of Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 1,213, Jan. 5, 1979. This application Oct. 16, 1980, Ser. No. 198,165
Claims priority, application Japan, Jan. 18, 1978, 53-3847; Jan. 18, 1978, 53-3850; Jan. 24, 1978, 53-6405; Mar. 15, 1978, 53-30192
Int. Cl.³ B60T *8/08*
U.S. Cl. 364—426 **11 Claims**



1. An anti-skid method of preventing skid of wheels of a vehicle comprising: detecting the peripheral speed of a wheel of a vehicle and picking it up as a wheel-speed signal (Uwi), detecting the speed of the vehicle, setting from the detected vehicle speed a first reference wheel-speed signal (U_R) and a second reference wheel-speed signal (Vwo) of a level lower than that of said first reference wheel-speed (U_R) for comparison with said wheel-speed signal (Uwi), deriving a wheel-acceleration signal (Uwi) from said wheel-speed signal (Uwi), setting a reference wheel-deceleration signal (−Vwo) representative of a negative wheel acceleration for comparison with said wheel-acceleration signal(Uwi), comparing, during braking, said wheel-speed signal (Uwi) with said first and second reference wheel-speed signals (U_R, Vwo) and also said wheel-acceleration signal (Uwi) with said reference wheel-deceleration signal (−Vwo), and controlling a braking torque (T_B)

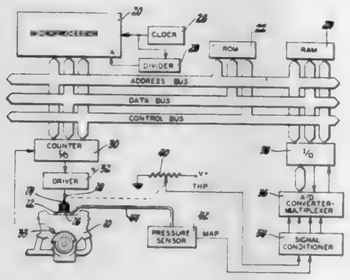
applied to said wheel such that said brake torque (T_B) is maintained constant from the time when the level of said wheel-acceleration signal (Uwi) falls below the level of said reference wheel-deceleration signal (−Vwo) if the level of said wheel-speed signal (Uwi) is higher than that of said first reference wheel-speed signal (U_R), and thereafter, said brake torque (T_B) is reduced from the first instant when the level of said wheel-speed signal (Uwi) falls below the level of said first reference wheel-speed signal (U_R) if the level of said wheel-acceleration signal (Uwi) remains below the level of said reference wheel-deceleration signal (−Vwo), or at the second instant when the level of said wheel-speed signal (Uwi) falls below the level of said second reference wheel-speed signal (Vwo), the reduction of said brake torque (T_B) taking place at an earlier one of said first and second instants.

4,446,523

MASS AIR FLOW METER

Paul E. Reinke, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1981, Ser. No. 321,117
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—431.05 **2 Claims**



1. An air meter for an internal combustion engine having an intake manifold, an induction passage opening from an air inlet to the intake manifold and including a throttle bore and a variable position throttle in the throttle bore for varying the effective area of the induction passage to regulate the air flow into the intake manifold, the air meter comprising, in combination:

means effective to measure the value P_1 of the pressure in the induction passage upstream of the throttle;

means effective to measure the value P_2 of the pressure in the induction passage downstream of the throttle;

means effective to measure throttle position;

circuit means responsive to the ratio P_2/P_1 effective to provide a schedule of values D that substantially satisfies the expression $C_{SS}\sqrt{1-P_2/P_1}$ for subsonic air flow through the induction passage opening defined by the throttle and substantially equal to C_S for sonic air flow through the induction passage opening defined by the throttle, where C_{SS} is a pressure ratio dependent discharge coefficient and C_S is the sonic flow discharge coefficient;

circuit means responsive to the measured throttle position effective to provide a schedule of values A representing the effective area of the induction passage defined by the throttle;

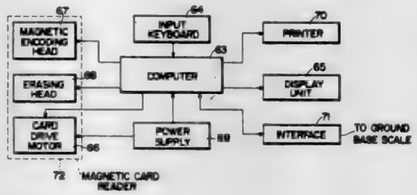
means responsive to the scheduled values of D and A and the measured value P_1 effective to provide an air flow signal that substantially satisfies the expression $A \cdot K_1 \cdot P_1 \cdot D$ where K_1 is a constant, the air flow signal being a substantial measure of the mass rate of air flow inducted into the intake manifold through the induction passage.

4,446,524

APPARATUS FOR LOADING AND UNLOADING AN AIRCRAFT

Hans-Joachim Wendt, Buxtehude, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 161,035, filed June 19, 1980, abandoned, which was a continuation-in-part of Ser. No. 002,062, filed Jan. 9, 1979, U.S. Pat. No. 4,225,926.
This application field Nov. 2, 1981. Ser. No. 317,143
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802003; Jul. 3, 1979, 2926870
Int. Cl.³ G01M *1/12*
U.S. Cl. 364—463 **9 Claims**



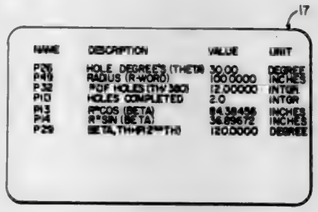
1. An apparatus for loading and unloading an aircraft and for ascertaining the weight of the load, comprising weighing station means arranged within the aircraft fuselage in such position that the weight of any item of payload to be added to the actual weight of the aircraft must operatively and individually pass said weighing station means for individually measuring the weight of each payload item entering the aircraft, load cell means in said weighing station means to provide weight data in the form of individual weight representing electrical signals, electronic logic circuit means, airborne digital computer means, conductor means operatively connecting said electronic logic circuit means to said load cell means and to said digital computer means for processing said individual weight representing electrical signals into respective control signals, said system further comprising ground based electronic data preparing means for preparing loading information data and transmission link means including ground based and airborne data link means operatively connected to said airborne digital computer means for also processing said loading information data received from said ground based data preparing means.

4,446,525

NUMERICAL CONTROL WITH PARAMACRO CAPABILITY

Thomas M. Hoch, Cleveland, Ohio, and Dennis R. Kullgren, Holliston, Mass., assignors to Allen-Bradley, Milwaukee, Wis.

Continuation of Ser. No. 284,528, Jul. 20, 1981. This application Oct. 7, 1983, Ser. No. 539,231
Int. Cl.³ G05B *19/04, 19/42*
U.S. Cl. 364—474 **6 Claims**



1. A numerical control system for directing a machine tool to machine a part which comprises:

means for storing a part program comprises of a first set of part program instructions;

processor means coupled to the part program storage means and being operable to execute the part program instructions to thereby direct the machining of a part;

means coupled to the processor for storing a macroprogram comprised of a second set of part program instructions containing parameters;

parameter table storage means coupled to the processor means for storing a set of parameter values;

wherein the processor means includes,

(a) parameter assignment means which interprets parameter assignment codes in part program instructions of either said first or second sets and which operates in response to such codes to designate a parameter and to store a value for the designated parameter in said parameter table storage means,

(b) macroprogram execution means which interprets macro call instructions in the first set of part program instructions to execute the second set of part program instructions as the part defined by the sets of part program instructions is being machined, and

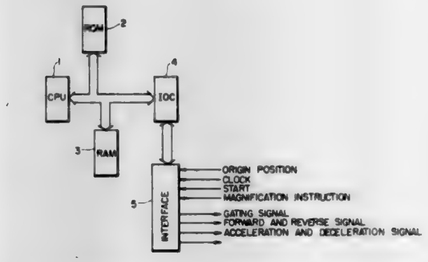
(c) parameter evaluation means which is responsive to a parameter contained in a part program instruction of either the first or second sets being executed by the processor means to read the value for that parameter from the parameter table storage means and substitute it for said parameter in said part program instruction as the part program instruction is being executed to machine a part.

4,446,526

CONTROL CIRCUIT FOR ZOOMING DEVICE

Hisao Iwanade, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,646
Int. Cl.³ G02B *7/11*
U.S. Cl. 364—525 **4 Claims**



1. A control circuit for a zooming device, comprising:

a microcomputer;

memory means coupled to said microcomputer for storing predetermined program steps;

an interface device coupled to said microcomputer;

a zooming operating circuit coupled to said interface device, said interface device operatively coupling an operating circuit to said microcomputer, said operating circuit comprising an integrator, an input of which is coupled to an acceleration/deceleration signal output of said interface device; a voltage controlled oscillator having a frequency-determining input coupled to an output of said integrator, an output of said voltage controlled oscillator forming a clock pulse signal which is coupled through said interface device to said microcomputer; an AND gate having a first input coupled to said output of said voltage controlled oscillator and a second input receiving a gating signal from said interface device; a driver having a direction input coupled to a forward/backward rotation signal from said interface device and a clock input coupled to an output of said AND gate; a pulse motor operated in response to an output of said driver; a potentiometer for setting a magnification specifying signal coupled to said interface device; a photosensor for determining a position of said zooming device for producing an origin position signal coupled to said interface device; and a start switch for producing a start signal coupled to said interface device;

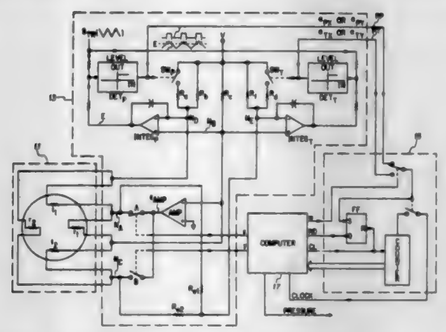
wherein, said predetermined program steps include steps of setting said zooming device in an initial state; sensing the presence of said start signal; after said start signal is sensed, reading said magnification specifying signal; comparing said magnification specifying signal with a present zoom position; determining a movement pulse number in accordance with a difference between said magnification indication value and said present value; determining a state of said forward/backward rotation signal in accordance with said difference; determining a state of said acceleration/deceleration signal in accordance with said movement pulse number; supplying said acceleration/deceleration signal, said forward/backward rotation signal and said gating signal to said interface; counting the number of pulses on said output of said voltage controlled oscillator; terminating said gating signal once a counted number of said pulses corresponds to said movement pulse number.

4,446,527

HIGH ACCURACY MEASURING APPARATUS

Wesley G. Runyan, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 128,334, Mar. 7, 1980, Pat. No. 4,321,832.
This application Nov. 2, 1981, Ser. No. 317,217
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—558 **5 Claims**



1. The electronic system comprising:

(a) a predetermined number j of variable value resistors, wherein j is an integer ≧1, and each of the j resistors is variable with one or more of two physical quantities, namely, QT_1 and QT_2,

(b) a predetermined number m of fixed value resistors, m being an integer ≧1,

(c) means for generating (1) a first output having a signal characteristic ϕ_1 which obeys a first function of one or more of the (j+m) resistors, and (2) a second output having a signal characteristic ϕ_2 which obeys a second function of one or more of the (j+m) resistors, dependent variables ϕ_1 and ϕ_2 thus being dependent on, and thus having functional relationships with, one or more of the following arguments, namely: QT_1; QT_2; one or more of said fixed value resistors;

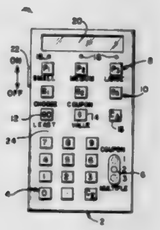
(d) memory means containing customized data derived from previously conducted measurements of said functional relationships,

(e) means for (1) receiving said customized data and said first and second outputs, and (2) using said customized data and ϕ_1 and ϕ_2 in a predetermined manner to provide output representative of at least one of QT_1 or QT_2,

(f) wherein, (i) all of the resistors upon which ϕ_1 and ϕ_2

depend and (ii) said memory means, are wedded together as a set, whereby, nothing in (i) or (ii) is easily replaced without the entire set of (i) and (ii) being replaced.

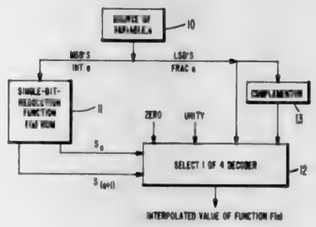
4,446,528
SHOPPERS CALCULATOR
Robert A. Marmon, 339 N. Latches La., Merion Station, Pa. 19066
Division of Ser. No. 147,002, May 6, 1980, Pat. No. 4,334,278. This application Feb. 18, 1982, Ser. No. 350,044
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—709 **9 Claims**



1. An apparatus for determining the most economical purchase among products available in at least two sizes, and at different prices, comprising:
(a) a first register for storing numerical values corresponding to the product prices and the product sizes;
(b) a keyboard connected to inputs of the first register for entering data corresponding to the numerical values;
(c) an arithmetic unit connected to outputs of the first register for calculating price/size ratios corresponding to each of the stored prices and the stored sizes, the arithmetic unit providing a numerical ratio for each of the product sizes which reflects a price divided by the corresponding product size;
(d) a second register connected to outputs of the arithmetic unit for storing the numerical ratios;
(e) a value comparator connected to outputs of the second register for determining the smallest of the numerical ratios;
(f) means connected to outputs of the value comparator for selecting the smallest numerical ratio as an output; and,
(g) an indicator corresponding to each product size, one of which indicators displays the selected output of the value comparator.

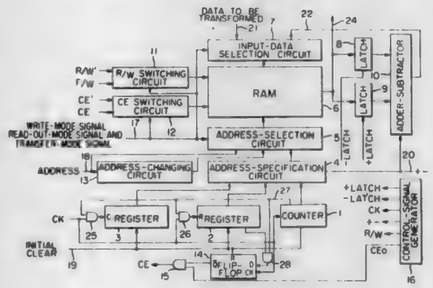
4,446,529
LINEAR INTERPOLATION BETWEEN REGULARLY SPACED DIGITAL SAMPLES
Christopher H. Strolle, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Sep. 23, 1981, Ser. No. 304,924
Claims priority, application United Kingdom, Jan. 26, 1981, 8102281
Int. Cl.³ G06F *15/353*
U.S. Cl. 364—723 **13 Claims**

1. In combination:
means for supplying binary numbers descriptive of a variable, each binary number having an integral portion and at least some of them, at times having fractional portions;
a memory, having storage locations addressable in terms of integral portions of said variable for storing plural-bit-binary-number digital samples of a function of said variable, and responding to the integral portion of each number descriptive of said variable to supply a pair of digital samples associated with that integral portion and with that integral portion as incremented by unity; and
means for accumulating a number of terms corresponding to the number of bits in said digital samples to generate a linear interpolation between each pair of samples, each successive term being shifted in all its places in the direction of increased significance by a number of bits equal to the power of two which is described by each successive place in both of said pair of digital samples, and each successive term being generated responsive to those places in said both of said pair of digital samples, said means for accumulating including
means for selecting zero for each term for which the corresponding places in both digital samples are ZEROs,
means for selecting unity for each term for which the corresponding places in both digital samples are ONEs,



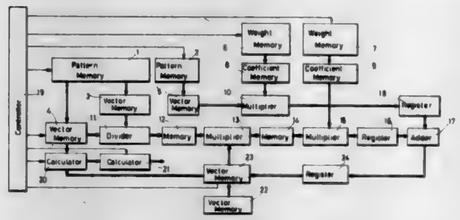
means for selecting the fractional portion of said variable for each term for which the corresponding place of the digital sample associated with the integral portion of said variable is a ZERO and the corresponding place of the digital sample associated with the integral portion of said variable as incremented by unity is a ONE,
means for generating the complements of the fractional portions of said binary numbers, and
means for selecting the complement of the fractional portion of said variable for each term for which the corresponding place of the digital sample associated with the integral portion of said variable is a ONE and the corresponding place of the digital sample associated with the integral portion of said variable as incremented by unity is a ZERO.

4,446,530
FAST HADAMARD TRANSFORM DEVICE
Eiichi Tsuboka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 5, 1981, Ser. No. 290,311
Claims priority, application Japan, Aug. 14, 1980, 55-111046
Int. Cl.³ G06F *15/332*
U.S. Cl. 364—725 **3 Claims**



1. In a fast Hadamard transform of order 2^m, where m=1, 2, . . . in which $X_k(i)=X_{k-1}(i)+X_{k-1}(j)$ and $X_k(j)=X_{k-1}(i)-X_{k-1}(j)$, where i and j=0, 1, . . . , 2^m-1 and $X_k(i)$ and $X_k(j)$ are i-th and j-th elements in the k-th transform step, a fast Hadamard transform device having an addressing means for reading intermediate transformed values into or out of a random-access memory, said device comprising:
(a) a binary counter with at least (m−1) bits;
(b) a register means for specifying the current transform step and a predetermined bit position of an address in said random access memory for the transform step; and
(c) an address specification means which, in the case of deriving the values of the k-th transform step from the results of the (k−1)-th transform step, holds a bit at said specified predetermined bit position of an address in said random-access memory in the logical state S (1 or 0) in the case of reading out of $X_k(i)$ but holds in the logical state $\bar{S}$, the negation of the logical state S, in the case of reading out of $X_{k-1}(j)$ or writing of $X_k(j)$ and which holds the bits at the remaining bit positions in the same pattern as that of the contents in said binary counter.

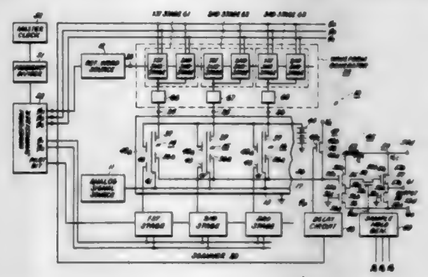
4,446,531
COMPUTER FOR CALCULATING THE SIMILARITY BETWEEN PATTERNS
Atsuo Tanaka, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 20, 1981, Ser. No. 255,497
Claims priority, application Japan, Apr. 21, 1980, 55-53322
Int. Cl.³ G06F *15/20*; G10L *1/00*
U.S. Cl. 364—728 **4 Claims**



1. A computer for calculating the similarity between first and second patterns, the first pattern being represented by a first sequence of successive feature vectors a_i(i=1, 2, . . . I), where I=the number of feature vectors, the second pattern being represented by a second sequence of successive feature vectors b_j (j=1, 2, . . . , J), where J=the number of feature vectors, comprising:
calculating means for calculating weighting factors from feature vectors a_i and $a_{(i+1)}$ of the first pattern;
weighting means for applying the weighting factors to the feature vectors of the second pattern to calculate estimated vectors for the second pattern; and
similarity calculating means for calculating and determining the similarity between the two patterns by comparing the feature vectors of the first pattern and of the estimated vectors of the second pattern.

4,446,532
SURFACE CHARGE SIGNAL PROCESSING APPARATUS
Richard D. Baertsch, and William E. Engeler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Feb. 3, 1982, Ser. No. 345,497
Int. Cl.³ G06G *7/19*; G11C *11/40*
U.S. Cl. 364—824 **7 Claims**

1. A waveform generator comprising:
a plurality of stages, each stage having an input terminal, a first output terminal and a second output terminal, the first output terminal of one stage being connected to the input terminal of a succeeding stage,
each stage including first and second substages, each substage including first, second, third and fourth transistors, each transistor including a source, drain and a gate,
first, second and third clocking lines,
the source-drain conduction paths of the first, second and third transistors of the first and second substages of each stage being connected in series between said first clocking line and the second output terminal of said stage,
the source-drain conduction path of said fourth transistor of each substage being connected in parallel with the source drain conduction path of said first transistor of said substage,
the gate of the fourth transistor of the first substage of a first stage of said plurality of stages being connected to the input terminal of said first stage,
an input terminal of said waveform generator being connected to said input terminal of said first stage,
a first nodal capacitance being provided between the conductive junction of said first and second transistors of each substage and ground,
a second nodal capacitance being provided between the conductive junction of said second and third transistors of each substage and ground,
a third nodal capacitance being provided between said second output terminal of each stage and ground,
the conductive junction of the second and third transistors of the first substage of each stage being connected to the gate of the fourth transistor of the second substage of said stage,
the conductive junction of the second and third transistors of



the second substage of each stage being connected to the first output terminal of said stage,
said first clocking line being connected to the gate of the first transistor of each of said substages,
said second clocking line being connected to the gates of the second and third transistors of the first substage of each of said stages,
said third clocking line being connected to the gates of the second and third transistors of the second substage of each of said stages,
means for applying a first clocking voltage between said first clocking line and ground, said first clocking voltage having a high level during a first subperiod of each period thereof and a low level during a second subperiod of each period thereof,
means for applying a second clocking voltage between said second line and ground, said second clocking voltage having a high level during the first subperiod of a period of said first clocking voltage extending from the initiation of said high level and terminating during the second subperiod of said first period of said first clocking voltage, said second clocking voltage having a low level during the remainder of said second subperiod and during a succeeding second period of said first clocking voltage,
means for applying a third clocking voltage between said third line and ground, said third clocking voltage having a high level during the first subperiod of a succeeding second period of said first clocking voltage extending from the initiation of said high level and terminating dur-

ing the second subperiod of said second period of said first clocking voltage, said second clocking voltage having a low level during the remainder of said second subperiod of said second period and during a succeeding third period of said first clocking voltage,

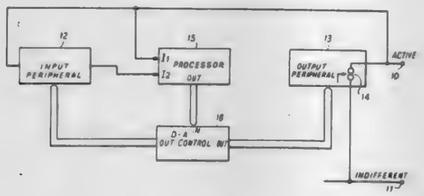
whereby when a high level of signal is applied to the input terminal of a stage during a first period of the first clocking voltage, an output signal is produced at the second output terminal of said stage which has a high level during the first subperiod of the first period of said first clocking voltage, a low level during the second subperiod of said first period and a high level during the succeeding second period of said first clocking voltage and when a low level of signal is applied to the input terminal of a stage during a first period and a succeeding second period of the first clocking voltage, an output signal is produced at the second output terminal of said stage which has a high level during the first period of said first clocking voltage, a high level during the first subperiod of the succeeding second period of said first clocking voltage and a low level during the second subperiod of the succeeding second period of said first clocking voltage.

4,446,533

STORED PROGRAM DIGITAL DATA PROCESSOR

Richard J. Backhouse, Kalamazoo, Mich., assignor to National Research Development Corporation, London, England

Division of Ser. No. 940,327, Sep. 7, 1978, Pat. No. 4,222,385. This application May 19, 1980, Ser. No. 151,013
Int. Cl.³ G06F 7/00, 9/00
U.S. Cl. 364—900 **5 Claims**



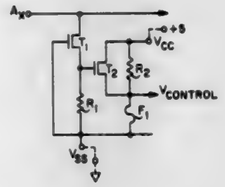
1. A stored program digital data processor comprising a store having independently addressable locations in two store portions defined by corresponding first and second random access memories, an address and data highway for simultaneously addressing locations independently in the store portions, an adder adapted to add the contents of two addressed locations in the two store portions respectively, a register arranged to receive the sum provided by the adder and interrupt signals, connections for writing the contents of two portions of the register in addressed locations in the two store portions respectively, a program counter arranged to count machine cycles and to address a read-only memory providing addresses and data on the highway and selectively providing control signals including a latch enable signal and a jump enable signal, and a latch arranged to store an output word from the highway in the presence of the latch enable signal and to supply said output word to output connections of the processor, and means responsive, in the presence of the jump enable signal, to one bit in the register for causing, when the said bit has a predetermined value, presetting of the program counter to a jump address determined by the address on the highway.

4,446,534

PROGRAMMABLE FUSE CIRCUIT

Frederick J. Smith, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 8, 1980, Ser. No. 214,400
Int. Cl.³ G11C 8/00
U.S. Cl. 365—96 **6 Claims**



1. A programmable fuse circuit for providing a control signal on a control terminal comprising:

means for providing a first voltage;

means for providing a second voltage;

means for providing an input signal;

a first transistor having a first terminal coupled to the means for providing an input signal, a gate coupled to the means for providing the first voltage, and a second terminal;

a first resistor coupled between the second terminal of the first transistor and the means for providing the first voltage;

a second transistor having a first terminal coupled to the means for supplying the second voltage, a second terminal coupled to the control terminal, and a gate coupled to the second terminal of the first transistor; and

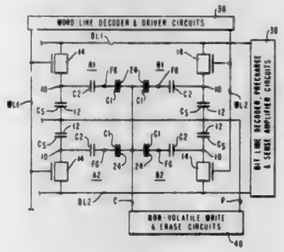
a fuse coupled between the second terminal of the second transistor and the means for providing the first voltage.

4,446,535

NON-INVERTING NON-VOLATILE DYNAMIC RAM CELL

Donald P. Gaffney, Williston; Gary D. Grise, Colchester, and Chung H. Lam, Williston, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,247
Int. Cl.³ G11C 11/24, 11/34
U.S. Cl. 365—149 **12 Claims**



1. A memory cell comprising;

a semiconductor substrate having a given type conductivity,

a floating gate and a conductive plate insulated from said substrate,

a control electrode, said floating gate being interposed between said control electrode and said substrate,

means for applying reference voltages to said plate and control electrode to produce first and second contiguous regions in said substrate of opposite conductivity type to that of said given type conductivity, said plate and said first region forming a storage capacitor and said floating gate and said second region forming a first capacitor,

a voltage divider circuit having serially-connected said first capacitor and a second capacitor including said floating gate connected to the common point between said first and second capacitors, said voltage divider circuit being disposed between said control electrode and said second opposite conductivity type region, said second capacitor being disposed between said floating gate and said control electrode, and said second capacitor including a first enhanced conduction insulator,

an input/output line, and

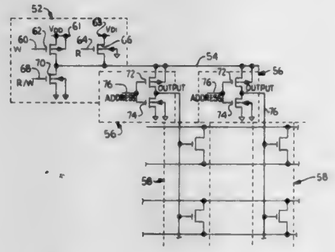
a transfer device disposed between said second opposite conductivity type region and said input/output line.

4,446,536

COMPLEMENTARY METAL OXIDE SEMICONDUCTORS ADDRESS DRIVE CIRCUIT

Richard W. Rodgers, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 21, 1982, Ser. No. 390,630
Int. Cl.³ G11C 8/00
U.S. Cl. 365—230 **12 Claims**



1. An address drive circuit for biasing a row of storage transistors in an electrically programmable memory during memory read and write operations, and during unselected quiescent conditions comprising:

a plurality of drivers, each including first and second transistors having a gate, a source, a drain and substrate, each said driver including an addressing terminal commonly connected to the gates of said first and second transistors for receiving an addressing signal, the drain of said second transistor and the source of said first transistor commonly connected to the gates of a plurality of said storage transistors, and the drain and substrate of said first transistor connected to a ground voltage;

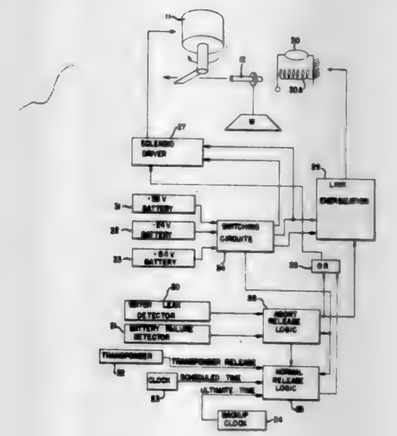
control means for providing an output voltage to said drivers, said control means having third, fourth and fifth transistors, each of said transistors having a gate, a source, a drain, and a substrate, said control means having an input control line connected to the gates of each said transistors to receive a first, second and third control signals respectively concurrently applied thereto, having the source and substrate of said fourth transistor coupled to a first supply voltage, having the source of said fifth transistor coupled to a second supply voltage, and having the drain and substrate of said third transistor and the substrate of said fifth transistor coupled to the ground potential; and means for interconnecting the source and substrate of said second transistor of each said drivers with the source and substrate of said third transistor and the drains of said fourth and fifth transistors.

4,446,537

ELECTRONIC SYSTEM FOR RELEASE OF ON-BOTTOM SEISMOMETER UNIT

Edgar A. Bowden, Arlington; Gordon R. Deline, Carrollton, and Gerard D. Koeijmans, Dallas, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 163,592, Jun. 27, 1980, abandoned. This application Jan. 17, 1983, Ser. No. 458,422
Int. Cl.³ G01V 1/38
U.S. Cl. 367—15 **11 Claims**



1. A system for releasing an underwater unit comprising:

a release mechanism for releasing a ballast weight from said unit;

a plurality of release condition sensors, each producing a release output upon the occurrence of a condition in which said unit is to be recovered;

logic circuitry responsive to said release condition sensors for producing a release signal;

driving circuitry responsive to said release signal for actuating said release mechanism;

two independent power sources connected to said logic circuitry and said driving circuitry both of said power sources providing power to said driving circuitry when both of said power sources are operable; and

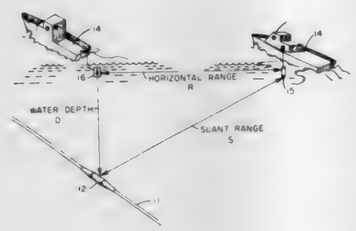
switching means for automatically disconnecting said logic circuitry and said driving circuitry from an inoperable one of said power sources.

4,446,538

MARINE CABLE LOCATION SYSTEM

Robert G. Zachariadis, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 16, 1982, Ser. No. 358,756
Int. Cl.³ G01V 1/38
U.S. Cl. 367—19 **4 Claims**



1. A method for locating hydrophones fixed in position at a known water depth along a seismic marine exploration line, comprising the steps of:
(a) traversing at least one predetermined path parallel to and offset horizontally from an estimated location for said hydrophones with a vessel having a sonar ranging unit for interrogating each of said hydrophones with a sonar pulse a plurality of times during each parallel and horizontally offset traverse of the vessel to provide a plurality of slant range recordings for each of said hydrophones;
(b) plotting the set of loci of said plurality of slant range recordings for each of said hydrophones,
(c) identifying the interesection point of said set of loci for each of said hydrophones as the location of said hydrophone at which the slant range from said hydrophone to the line of travel of said vessel is a minimum, and
(d) determining the horizontal range of each of said hydrophones from said predetermined path of said vessel utilizing the known water depth of the hydrophones and the identified minimum slant range values for each of said hydrophones to the predetermined path of said vessel.

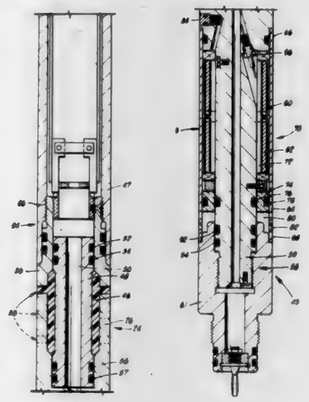
4,446,539

SONIC LOGGING TOOL

Robert J. von Bose, Arlington, Tex., assignor to Bell Petroleum Services, Inc., Midland, Tex.

Division of Ser. No. 165,553, Jul. 3, 1980, Pat. No. 4,365,321.
This application Sep. 13, 1982, Ser. No. 417,183
Int. Cl.³ G01V 1/40
U.S. Cl. 367—25 **14 Claims**

1. A logging tool comprising:
pressure wave generating means for generating and transmitting pressure waves;
receiver means for receiving a portion of the transmitted pressure waves;
connecting means for mechanically connecting said pressure wave generating means with said receiver means, said connecting means including a core element;
damping means for damping the transmitted pressure waves attempting to pass from said pressure wave generating means to said receiver means through said connecting means;
said pressure wave generating means including:
an electrical current conductive coil; and
an electromagnetically responsive member, disposed in spaced relation with said core element and within said coil, for producing at least one of the pressure waves when an appropriate actuating current flows through said coil; and



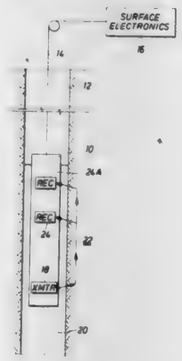
said connecting means further including structural means for providing a current conducting path around said electromagnetically responsive member.

4,446,540

ACOUSTIC WELL LOGGING WITH ENERGY LEVEL DETECTION

Mark D. Zimmer, Katy, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 2, 1981, Ser. No. 230,189
Int. Cl.³ G01V 1/40
U.S. Cl. 367—26 **10 Claims**



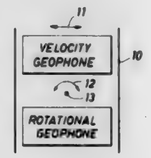
1. The method of processing a received acoustic well logging signal in a logging system having an acoustic transmitter and at least one acoustic receiver including the steps;
(a) amplifying the received signal by a constant amount, said constant amount selected sufficient to clip same at the largest expected signal amplitudes,
(b) converting the RMS value of the amplified signal to a DC level signal representative of the average noise level in the received signal;
(c) storing said average noise level signal for a given time period immediately after transmitter firing and before first expected arrival of the acoustic wave signal;
(d) comparing said stored DC average noise level signal with a DC level signal representative of the instant undelayed amplified received signal to provide a comparator output DC signal when said instant undelayed DC level signal has a predetermined increase in magnitude; and
(e) generating an output pulse of given amplitude and time duration when said comparator output DC signal has the predetermined increase in magnitude.

4,446,541

ROTATIONAL GEOPHONE

Christopher S. Cowles, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 23, 1981, Ser. No. 324,229
Int. Cl.³ G01V 1/18
U.S. Cl. 367—75 **3 Claims**



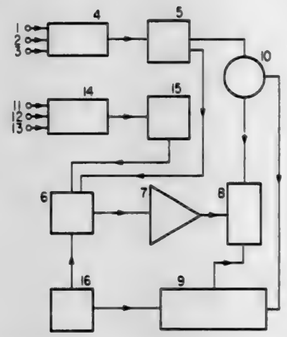
1. A method for obtaining seismic records representing shear waves preferentially detected in a given direction of propagation comprising:
measuring the instantaneous particle velocity in a direction perpendicular to the plane of rotation of the shear seismic wave;
measuring the instantaneous rate of rotation of the shear seismic wave;
integrating the rate of rotation measurement and adjusting the amplitudes of the measured particle velocity and rate of rotation; and,
adding and subtracting the measurements after integration and amplitude adjustment to obtain records representing shear waves propagating in a given direction.

4,446,542

OCEANOGRAPHIC MEASUREMENT SYSTEM

John C. Beckerle, 38 Two Ponds Rd., Falmouth, Mass. 02540

Filed Dec. 23, 1981, Ser. No. 334,071
Int. Cl.³ G01S 15/88, 15/96
U.S. Cl. 367—131 **3 Claims**



3. An oceanographic measurement system comprising
a plurality of sound sources located in an ocean area to be measured for emitting sound pulses,
at least two underwater sound receivers, each being responsive the reception of each of said sound pulses for generating a corresponding electrical signal,
means for establishing information indicating the location of said emitting means at the time of the reception of a sound pulse at each receiver,
means responsive to electrical signal from each of said receivers for determining the received intensity of the corresponding sound pulse,
means responsive to a set of intensity measurements for determining the peak intensity of said sound signals received at each receiver location,
means responsive to a set of peak intensities for each receiver location taken over a fixed period of time and responsive to corresponding location information for generating a prediction of the peak intensity from said location information for each receiver location, and
means responsive to a peak intensity signals received at each receiver location corresponding to a sound signal received after said fixed period for comparing said peak intensity signals to predictions of said peak intensity and for indicating the presence and parameters of an ocean anomaly when said received intensity differs substantially from said predicted peak intensity.

4,446,543

OPTICAL RESONATOR SINGLE-MODE FIBER HYDROPHONE

Matthew N. McLandrich, Carlsbad, and Donald J. Albares, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1979, Ser. No. 54,077
Int. Cl.³ H04R 23/00
U.S. Cl. 367—149 **4 Claims**



1. An apparatus for passively and remotely sensing the amplitude and frequency of impinging acoustic energy comprising:
means for providing a source of coherent light;
means orientated to receive coherent light from the coherent light providing means for bidirectionally transmitting the coherent light therethrough, the bidirectionally transmitting means is a single-mode fiber simultaneously transmitting a reference component of the coherent light and a reflected component of the coherent light; and
an optical resonator connected to the bidirectionally transmitting means having one portion displaceable in accordance with the impinging acoustic energy.

4,446,544

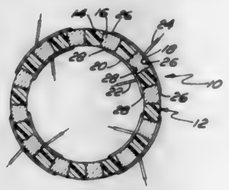
SMALL DIAMETER, LOW FREQUENCY MULTIMODE HYDROPHONE

George C. Connolly, Jr., East Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1981, Ser. No. 326,303
Int. Cl.³ H04R 17/00
U.S. Cl. 367—155 **8 Claims**

1. A small diameter, low frequency, multimode hydrophone for receiving relatively low frequency, plane-wave acoustic signals impinging thereon, comprising:
piezoelectric means, for converting each said relatively low frequency, plane-wave acoustic signal to a plurality of quadrantal electrical signals, each of said electrical signals being proportional to said plane-wave acoustic signal as received by separate quadrants of said hydrophone, said piezoelectric means further comprising a plurality of piezoelectric cylindrical segments;
inert means, bonded to said piezoelectric means, for reducing the propagation speed of sound within said multimode

hydrophone thereby permitting said small diameter hydrophone to be formed, said inert means being bonded to said piezoelectric means, said inert means further comprising a corresponding plurality of inert cylindrical segments of identical size and shape as said piezoelectric cylindrical segments, interspersed alternately between said plurality of piezoelectric cylindrical segments, each said inert cylindrical segment being bonded to adjacent piezoelectric cylindrical segments thereby forming a generally cylindrical thin wall tube of relatively small diameter having at least two piezoelectric cylindrical segments per quadrant;



electrical conductor means, connected to said piezoelectric means within each quadrant of said hydrophone, for producing and transmitting said quadrantal electrical signals; and

signal processing means, attached to said conductor means, for receiving said quadrantal electrical signals and producing an omnidirectional signal and two spatially orthogonal directional signals containing a decade range of frequency and bearing information therefrom.

4,446,545

APPARATUS FOR READING A DISK-SHAPED RECORD CARRIER

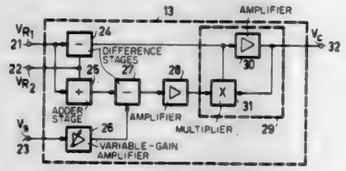
Ate Van Dijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,716

Claims priority, application Netherlands, Jan. 21, 1982, 8200208

Int. Cl.³ G11B *7/00, 21/10*

U.S. Cl. 369—44 **4 Claims**



1. An apparatus for reading a disk-shaped record carrier having substantially concentric information tracks, which apparatus comprises

an optical system for producing three radiation beams and projecting said radiation beams onto the record carrier as a first, second and third radiation spot, the second and third radiation spot being disposed on opposite sides of the first radiation spot in a direction transverse to the track direction and the distance between their respective centres and the axis which extends through the centre of the first radiation spot and parallel to the information tracks being at least substantially ¼ of the track pitch of the information tracks,

a first, second and third detector for detecting the amount of luminous energy in the emerging radiation beams corresponding to the first, the second and the third radiation spot respectively and for converting this luminous energy into corresponding electric output signals,

a tracking system, which co-operates with the radiation beams, for centring the first radiation spot at an information track, and

a control device, coupled to the second and the third detector, for generating a tracking-system control signal which depends on the difference between the output signals of the second and the third detector, characterized in that the control device is also coupled to the first detector and is adapted to supply a control signal V_c which complies with the formula:

$$V_c = \frac{V_{R1} - V_{R2}}{V_{R1} + V_{R2} - \alpha V_s} \cdot V_{ref}$$

where V_s, V_{R1} and V_{R2} are the output signals of the first, the second and the third detector respectively, α is an adjustment factor, and V_{ref} is a reference signal.

4,446,546

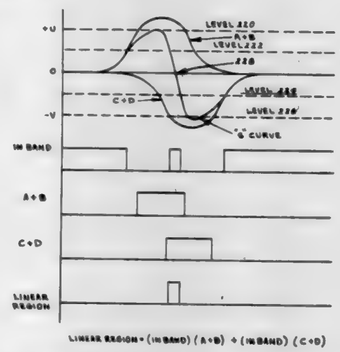
FOCUS INITIALIZATION SYSTEM FOR OPTICAL RECORDING

Christopher Miller, Colorado Springs, Colo., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Dec. 31, 1981, Ser. No. 336,245

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—45 **8 Claims**



1. A focusing initialization control system for an optical recording device having a movable objective lens disposed relatively near the recording media and the movement of said objective lens is controlled by a regular operation focusing control system having light detector elements in which said focusing initialization system is comprised of:

first signal receiving means for receiving as an input an "S" curve bipolar analog signal having peaks at near to focus conditions and a predetermined linear region between the peaks, said "S" curve signal being generated from the outputs of said light detector elements,

second signal receiving means for receiving as an input an A+B analog detector element signal,

third signal receiving means for receiving as an input a C+D analog detector element signal,

first and second comparator means connected with said first signal receiving means, said first comparator means determining that said input "S" curve signal is less than a certain predetermined value and said second comparator means determining that said "S" curve signal is greater than a predetermined value, said first and second comparator means having their outputs connected together in a wired OR circuit to produce a first logic output signal,

third comparator means connected with said second signal receiving means for producing an output logic signal indicative that said input A+B signal is within a predetermined range, said third comparator means producing a second logic output signal,

a fourth comparator means connected with said third signal receiving means for determining that said C+D input signal is within a predetermined range, said fourth comparator means a third logic output signal,

logic means for combining said first, second and third logic output signals to produce a fourth logic signal indicative that said objective lens is within the focusing region of the linear portion of said "S" curve signal, where said logic means requires said "S" curve input signal to be within predetermined limits and requires said C+D signal and said A+B signal to be within predetermined limits, and

control means responsive to said fourth logic signal from said logic means for controlling said regular focusing systems to be on when in focusing range.

4,446,547

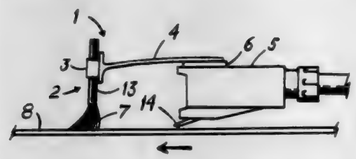
RECORD CLEANING DEVICE

Fernando Gonzalez, Burbank, Calif.

Continuation of Ser. No. 196,620, Oct. 14, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 339,843

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—74 **13 Claims**



1. Record cleaning apparatus comprising brush means for brushing undesirable material from the grooves of a phonograph record and having a predetermined flexibility when brought into contact with the record surface and suspension means for mounting said brush means to come in contact with the grooves of a phonograph record and pointed in a direction generally normal to its surface; said suspension means comprising an elongated strip of thin, lightweight and flexible material, brush attachment means for attaching said brush means to one end of said elongated strip, and strip attachment means for attaching the other end of said elongated strip to the tone arm of a record player with the strip extending lengthwise beyond the end of the tone arm in a direction in alignment with a tangent to the record grooves so that the brush is held outwardly from and beyond the arm, whereat it is supported solely by said strip, said strip and said attachment means being constructed and arranged so that the flat sides of the strip are horizontal and the width of the strip are transverse to the record grooves and tone arm, said strip having a comparable flexibility to the brush so that the deflection of the brush at the record surface and the deflection of the strip respond in comparable manner so as to exchange deflection with each other in accommodation of record warp.

4,446,548

APPARATUS FOR THE POINT-BY-POINT SCANNING OF AN OBJECT

Gijsbertus Bouwhuis, and Josephus J. M. Braat, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

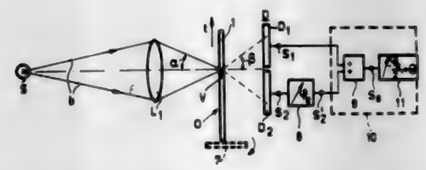
Filed Oct. 21, 1981, Ser. No. 313,418

Claims priority, application Netherlands, Jul. 24, 1981, 8103505

Int. Cl.³ G11B *11/00*

U.S. Cl. 369—109 **15 Claims**

1. An apparatus for point-by-point scanning of an object which may be a phase object, an amplitude object or a combined amplitude and phase object, said apparatus comprising means for producing a scanning beam, means for converging said beam to a spot on the object, means for detecting variations in the beam coming from the object as the object is scanned by said spot, said detecting means including at least two detectors which convert the variations in said beam into corresponding electrical signals, said detectors being disposed in the path of the beam coming from the object and being arranged after each other in the scanning direction, means for adding said electrical signals from said detectors so as to obtain



a further signal representative of the sum of said electrical signals and a variable phase shifter arranged between at least one of said detectors and said adding means for changing the phase of the electrical signal from said at least one detector so as to optimize said further signal for the type of object being scanned.

4,446,549

OPTICALLY READABLE INFORMATION DISC AND METHOD OF MANUFACTURING SAME

Gerardus J. M. Lippits; Johan G. Kloosterboer, and Godefridus Melis, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,131

Claims priority, application Netherlands, Mar. 27, 1981, 8101515

Int. Cl.³ B32B *15/08*; G11B *7/24*

U.S. Cl. 369—275 **3 Claims**

1. An optically readable information disc comprising a substrate plate on at least one surface of which there is present an information layer of a radiation cured lacquer, said information layer comprising an optically readable information track having information areas situated alternately at a higher and a lower level along the track, characterized in that, in addition to the usual auxiliary substances in a quantity by weight from 0.1 to 5%, the lacquer comprises only a single radiation curable monomeric compound in a quantity by weight from 95–99.9% and selected from the group consisting of alkendioldiacrylates, alkanedioldimethacrylates, alkeneglycoldiacrylates and alkeneglycoldimethacrylates having the acrylate or methacrylate groups in the end positions and in which the alkane radical and alkene moieties are of 4–12 carbon atoms, and in which the cured lacquer apart from the auxiliary substances comprises no or substantially no extractable material.

4,446,550

RELIABLE SIGNAL SYSTEM HAVING AT LEAST ONE TRANSMITTER FEEDING PLURAL SERIES-CONNECTED RECEIVER INPUTS

Antonio Brajder, and Christian Kublick, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 154,839, May 30, 1980. This application Jul. 23, 1982, Ser. No. 400,988

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923156

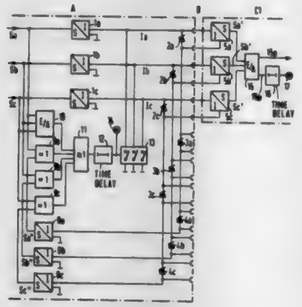
Int. Cl.³ H04B *3/00*

U.S. Cl. 370—14 **30 Claims**

1. A signalling apparatus for reliable communication between a transmitter and a plurality of receivers at locations which are distant from that of the transmitter, the signalling apparatus comprising:

a main transmitter having an input for a signal to be transmitted and having an output;

a plurality of receivers, each located at a distance from the transmitter, each receiver having an input;
a series circuit of threshold members connected across the output of the main transmitter at the location of the transmitter, there being a threshold member for each receiver;
a plurality of transmission lines, each transmission line having an input connected across one of the threshold members and an output connected to the input of a receiver;

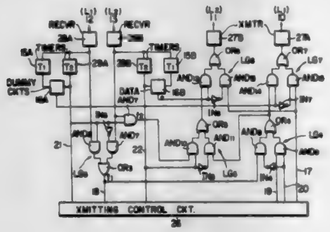


each threshold member including at least one Zener diode having a threshold voltage which is greater than the sum of the voltage drop across the input to the transmission line and the voltage drop across the input to the receiver when a signal is being received by the receiver; and
a control receiver having an input connected in series with the series circuit of threshold members to provide an output signal when a signal is transmitted to the receiver assembly.

4,446,551
DATA HIGHWAY SYSTEM WITH DUAL TRANSMITTING LOOP LINES

Toshiya Seo, Numazu, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Oct. 8, 1981, Ser. No. 309,807
Claims priority, application Japan, Oct. 9, 1980, 55-141253
Int. Cl.³ H04J *3/14*; H04B *3/46*
U.S. Cl. 370—16 **3 Claims**

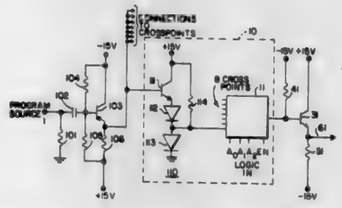


1. A data highway system comprising first and second unidirectional looped data transmission lines, n data stations connected by said two transmission lines so data are transmitted between the stations via said lines in opposite directions, where n is an integer greater than one,
data station K, where K is selectively every one of the n integers, including:
(a) line break or disconnect detecting means comprising first and second timers having different time periods T_1 and T_2, where T_1 is smaller than T_2, said first and second timers being connected to the lines connected to the station K to be responsive to data transmitted on the first transmission line to produce first and second outputs respectively having time intervals equal to periods T_1 and T_2, said second output indicating a break in the first transmission line,
(b) gate signal producing means connected to be responsive to said first and second outputs of said timers for deriving a dummy data gate signal,
(c) first means for selecting the data transmitted from the first transmission line in response to the output of said second timer,
(d) transmission control means for controlling transmission in response to the break indicating output derived as the output of said second timer and the output of said first means for deriving outputs including transmission data, a transmission gate signal and dummy data,
(e) second means for selecting the output of said first means and the transmission data at mutually exclusive times in response to the value of the transmission gate signal,
(f) third means for selectng the output of said second means and the dummy data at mutually exclusive times in response to value of the dummy data gate signal to transmit the signal thus selected to the first transmission line,
(g) fourth means responsive to the second output as derived from said second timer and data transmitted from the second transmission line to produce a gate signal indicating a break of the first transmission line, and
(h) fifth means for selecting the transmission data fed as the output of said second means in response to the output of said fourth means to transmit the signal thus selected to the second transmission line,
whereby when (1) there is no break in the first transmission line, the data transmitted on the first transmission line is routed to the first transmission line via a normal path including said third means, (2) a break on the first transmission line occurs, (i) the data station positioned downstream of the broken portion routes the dummy data to the first transmission line via said normal path and data transmitted from the second transmission line is routed to the first transmission line via the looped-back path including the third means, and (ii) at the data station positioned upstream of the broken portion, said data transmitted from the first transmission line are routed to the second transmission line via the looped-back path including said fifth means.

4,446,552
WIDEBAND SWITCH CROSSPOINT AND SWITCHING MATRIX

Ernest P. Tweedy, Lexington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 21, 1981, Ser. No. 332,983
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—58 **5 Claims**



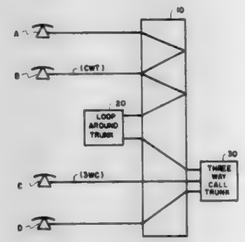
1. A wideband switch crosspoint comprising
an n-channel multiplex switching means having corresponding channel inputs thereto, an output, and controls therefor, said multiplex switching means having an attenuation between an "on" and an "off" condition in a range 30 dB to 40 dB at a frequency of 20 MHz;
an output transistor having a control electrode coupled to said output of said multiplex switching means;
a first resistor for coupling said output of said multiplex switching means to a voltage source of a first polarity;

an intermediate transistor having a collector adapted to be coupled to a voltage source of an opposite polarity, a base, and an emitter;
a first diode having a first electrode coupled to said emitter, and having a second electrode.
a second diode having a first electrode coupled to said second electrode of said first diode, and having a second electrode coupled to a point of reference potential,
said base-emitter, said first diode first electrode-second electrode, said second diode first electrode-second electrode, and said opposite polarity-reference potential being poled in a common direction;
a second resistor coupled between said collector and said first electrode of said second diode;
an initial transistor stage having an input adapted to be coupled to a program source, and having an output coupled to, and adapted to provide a small d.c. voltage at said first polarity to, said base; and
means for coupling said first electrode of said second diode to one of said channel inputs, whereby,
when said multiplex switching means is controlled "on" with respect to said one of said channel inputs, a voltage at said first polarity is applied from said output of said multiplex switching means to said first electrode of said second diode, providing for conduction through said intermediate transistor and said first diode, and providing for non-conduction through said second diode, thereby permitting a signal from said program source to pass through said initial transistor stage, said intermediate transistor, said first diode, said multiplex switching means, and said output transistor, and
when said multiplex switching means is controlled "off" with respect to said one of said channel inputs, said voltage source at said opposite polarity causes a current to flow through said second resistor and said second diode to said point of reference potential so that said first electrode of said second diode is maintained at a small voltage of said opposite polarity, turning off said first diode and causing nonconduction of said intermediate transistor, and
whereby said wideband switch crosspoint has an overall attenuation between an "on" and an "off" condition in excess of 80 dB at a frequency of 20 MHz, and
wherein n is a positive integer.

4,446,553
ARRANGEMENT FOR MULTIPLE CUSTOM CALLING

Robert C. Webber, Glendale, Ariz., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 29, 1981, Ser. No. 316,268
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—62 **4 Claims**

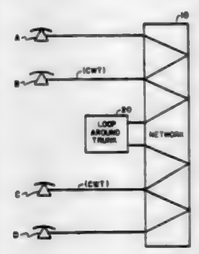


1. In a telephone switching office, an arrangement for multiple custom calling comprising:
a CPU;
a switching network connected to said CPU;
a plurality of telephone subscribers connected to said switching network including at least a first and a second custom calling subscriber and a third and a fourth telephone subscriber;
said first and second custom calling subscribers and said third telephone subscriber engaged in an active call waiting call with said first custom calling subscriber as the controlling party of said active call waiting call;
means for detecting a request for a three way call from said second custom calling subscriber to call said fourth subscriber, said means for detecting connected to said switching network and being operated to transmit said request to said CPU;
means for holding said connection of said second custom calling subscriber with said first custom calling subscriber and said third telephone subscriber, said means for holding being connected to said switching network and operated in response to said request to said CPU for said three way call;
means for temporarily disconnecting said second custom calling subscriber from said call waiting call, said means for temporarily disconnecting being connected to said switching network and operated in response to said request to said CPU for said three-way call;
first means for connecting a plurality of subscribers, said first means for connecting being connected to said switching network;
said second custom calling subscriber and said fourth subscriber, each connected to said first means for connecting via a separate talking path through said switching network;
second means for connecting two telephone subscribers within the same switching office, said second means for connecting being connected to said first custom calling subscriber via said switching network and further being connected to said first means for connecting via said switching network to establish an active three way call, said second means for connecting operated in response to said CPU request for said three way call to provide for connecting said first and said second custom calling subscribers while rendering said active call waiting call and said active three way call independently controlled.

4,446,554
ARRANGEMENT FOR MULTIPLE CUSTOM CALLING

Robert C. Webber, Glendale, Ariz., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 29, 1981, Ser. No. 316,377
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—62 **6 Claims**



1. In a telephone switching office, an arrangement for multiple custom calling comprising:
a CPU;
a switching network connected to said CPU;
a plurality of telephone subscribers connected to said switching network including at least a first and second custom calling subscriber and a third and a fourth telephone subscriber;
first means for connecting said second custom calling subscriber to said third telephone subscriber via said switching network in an active telephone call;
second means for connecting said second custom calling

subscriber to said first custom calling subscriber via said switching network in an active first call waiting call;

means for detecting a request for a second call waiting call from a fourth telephone subscriber to said first custom calling subscriber, said means for detecting connected to said switching network and being operated to transmit said second call waiting call request to said CPU;

means for temporarily disconnecting said first subscriber from said first call waiting call, said means for temporarily disconnecting being connected to said switching network and operated in response to said request to said CPU for said second call waiting call;

third means for connecting said fourth telephone subscriber to said first custom calling subscriber via said switching network, said third means for connecting operated in response to said means for temporarily disconnecting to render said second call waiting call an active telephone call; and

fourth means for connecting telephone subscribers within the same switching office, said fourth means for connecting being connected to said first custom calling subscriber via said switching network and connected to said second custom calling subscriber via said switching network, said fourth means for connecting operated in response to said means for temporarily disconnecting to provide for a talking path connection of said first and said second custom calling subscribers while rendering each of said first and said second active calling waiting calls independently controlled.

4,446,555

TIME DIVISION MULTIPLEX SWITCHING NETWORK FOR MULTISERVICE DIGITAL NETWORKS

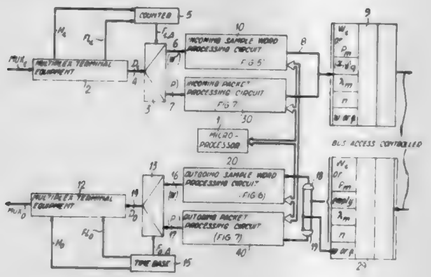
Michel Devault, 22, rue de Bourgogne, Lannion, France (22300); Jean-Paul Quinquis, Rue de Cornic, Perros Quirec, France (22700), and Yvon Rousaud, Les Fontaines A. 33, Lannion, France (22300)

Filed Feb. 22, 1982, Ser. No. 350,891

Claims priority, application France, Feb. 20, 1981, 81 03440

Int. Cl.³ H04J *3/02*

U.S. Cl. 370—94 **2 Claims**



1. Asynchronous time division multiplex switching network for multiservice digital network, comprising :

a plurality of time division multiplex bidirectional highways conveying digital data arranged in a hybrid frame including a time slot part and a packet channel part, said time slot part being formed of a plurality of time slots containing sample words having a variable number of bits and said packet channel part being formed of a plurality of channels for packets having a variable number of bits;

a plurality of data transmit and receive stations, connected to and associated with said bidirectional highways;

a plurality of buses connecting said transmit and receive stations therebetween and selectively interconnecting an originating bidirectional highway to a terminating bidirectional highway through an originating and a terminating transmit and receive stations;

means in each transmit station for converting the sample words in the time slot part of the hybrid frame and the packets in the packet channel part of said hybrid frame of an originating highway into a message including, for the sample word in each time slot, the said sample word, its number of bits, the address of the terminating highway, the number of the time slot in the hybrid frame of said terminating highway and a first sort-of-data indicator marking sample words and, for the packet in each packet channel, the said packet, its number of bits, the address of the terminating highway, the number of the packet channel in the hybrid frame of said terminating highway and a second sort-of-data indicator marking the packets;

means for transmitting said messages from said originating highway to said terminating highway;

means in each receive station for deleting from said messages the number of bits of the sample words and packets, the address of the terminating highway, the number of the time slots and packet channels and the first and second data indicators;

means for memorizing said time slot and packet channel numbers and said first and second data indicator; and

means for inserting in the hybrid frame of the terminating highway the sample words and packets depending on said time slot and packet numbers and data indicators.

4,446,556

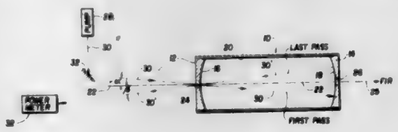
OFF-AXIS COHERENTLY PUMPED LASER

Gerhard A. Koepf, Seabrook, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 23, 1980, Ser. No. 199,766

Int. Cl.³ H01S *3/05, 3/08, 3/094*

U.S. Cl. 372—4 **14 Claims**



1. A coherent optically pumped laser system having controlled propagation of a pump beam, comprising:

cavity resonator means (**10**) including optical reflector means (**12, 14**) at each end of a resonator body (**20**) for providing multiple round trips of an injected pump beam (**30**) for exciting a laser medium contained in said resonator body (**20**) and thereby produce an output laser beam (**25**);

offset means (**24**) in one of said reflector means (**12**) for providing injection of said pump beam (**30**) at a location offset from the central axis (**22**) of said resonator body (**20**);

means (**32**) for injecting said pump beam (**30**) through said offset means (**24**) at a first angle (α) with respect to said central axis whereby following a predetermined number of round trips of said pump beam in said resonator body said pump beam emerges from said offset means as a beam (**30'**) skewed at a second angle (β) with respect to said injected pump beam (**30**) so that no overlap of the beam vertices occur at said offset means (**24**) and pump beam feedback is thereby eliminated; and

means (**32**) located external to said resonator means for receiving and utilizing the emergent pump beam (**30'**) for a selected purpose.

4,446,557

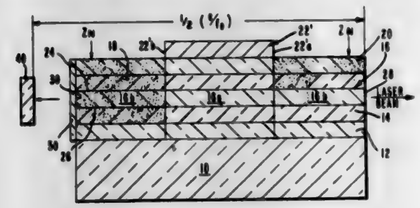
MODE-LOCKED SEMICONDUCTOR LASER WITH TUNABLE EXTERNAL CAVITY

Luis Figueroa, Raleigh, N.C., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Nov. 6, 1981, Ser. No. 319,014

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 **17 Claims**



1. A semiconductor crystal laser having a very high pulse repetition rate, comprising:

a semiconductor hole source layer and a semiconductor electron source layer overlying said substrate;

a semiconductor optical layer sandwiched between said hole source and electron source layers, said optical layer having a principal noise resonance frequency f_0, said optical layer being defined by a near facet and a far facet facing one another;

electrode means for applying an electric field across said optical layer; and

an external mirror facing said near facet and defining a laser cavity between said mirror and said far facet, said mirror being located such that the length L of said laser cavity is equal to $C/2mf_0$ where C is approximately the speed of light and m is an integer; an electrode of said electrode means partially overlying said electron source, hole source and optical layers so as to cover a partial region of said optical layer; and dopant substrate absorbing centers deposited in a remaining region of said optical layer, said remaining region of said optical layer being registered with said electrode.

4,446,558

CO_2 LASER WAVE GUIDE

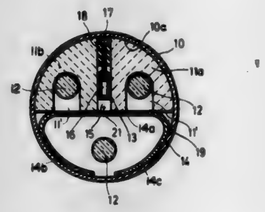
Gunther Sepp, Ottobrunn, and Peter Dyrna, Haar, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,706

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043574

Int. Cl.³ H01S *3/02*

U.S. Cl. 372—64 **12 Claims**



1. In a CO_2 laser a wave guide, comprising a longitudinal metal housing (**10**) having a housing wall with an inner surface (**10a**), first and second electrodes operatively supported (**13, 14; 114**) inside said housing opposite each other for defining a wave guide duct between said first and second electrodes, a boron nitride body (**11a, 11b; 111a, 111b**) located inside said housing (**10**), said body having a gap (**15**) therein for holding said first electrode (**13**) inside said gap (**15**), said second electrode having a shape forming three portions, one electrode portion resting against said boron nitride body and two electrode portions resting against said inner housing surface for holding said boron nitride body also against said inner surface of said housing wall, whereby the boron nitride body and said second electrode mutually support each other in said housing and said first electrode (**13**) is substantially supported in said gap (**15**) of the boron nitride body, and capillary duct means (**21**) operatively arranged in said waveguide duct.

4,446,559

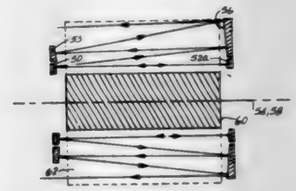
LASER WITH ANNULAR RESONATOR

Karlheinz von Bieren, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 21, 1981, Ser. No. 332,564

Int. Cl.³ H10S *3/00*

U.S. Cl. 372—95 **16 Claims**



1. A laser system comprising:

means for establishing an annular gain medium region disposed about an optical axis, the gain medium region having first and second opposite annular ends;

a first reflector centered on the optical axis closely adjacent to the first end of the gain medium region;

a second reflector centered on the optical axis closely adjacent to the second end of the gain medium region, the first and second reflectors shaped to magnify electromagnetic waves impinging thereon beyond the periphery of one of the reflectors; and

diffracting means for diffracting back on itself a portion of the energy which is directed upon the diffracting means from an interior region of one of said reflectors, said portion of diffracted energy being sufficiently large to sustain electromagnetic oscillations in the gain medium.

4,446,560

HIGH POWER ELECTRIC GENERATOR, ESPECIALLY ADAPTED FOR POWERING PROCESSES INVOLVING DISCHARGE IN A RARIFIED ATMOSPHERE

Gabriel Gabor, La Celle Saint Cloud, France, assignor to Jean Frager, France

Filed Dec. 16, 1981, Ser. No. 331,207

Claims priority, application France, Dec. 19, 1980, 80 27017

Int. Cl.³ H05H *1/24;* H02P *13/22*

U.S. Cl. 373—25 **6 Claims**

1. A high power electric generator for high powered ion discharge into a rarified atmosphere, said generator comprising:

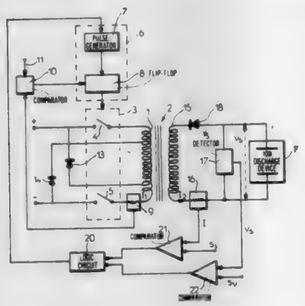
(a) pulse generator means for generating a rectified current having a constant frequency and a variable pulse width,

(b) an inductance means having a primary circuit for receiving said variable pulse width current and a secondary circuit connected across an ion discharge device used for treating materials in a rarified gaseous atmosphere,

(c) a first control circuit for varying the pulse width of the rectified current by superseding the pulse generator,

(d) arc protection means for preventing the formation of an

arc in said discharge device, said means including a secondary voltage detector, a secondary current detector and



means for terminating said rectified current in response to an over threshold current-under threshold voltage condition.

4,446,561

AXIALLY MOVABLE ELECTRODE HOLDER FOR USE IN ELECTRIC STEEL PRODUCTION

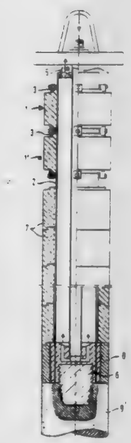
Dieter Zöllner, Schwaig/Nürnberg; Inge Lauterbach-Dammler, Nuremberg, and Friedrich Rittmann, Rückersdorf/Nürnberg, all of Fed. Rep. of Germany, assignors to Arc Technologies Systems, Ltd., Cayman Islands

Filed Aug. 26, 1982, Ser. No. 411,896

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135960

Int. Cl.³ H05B *7/101*

U.S. Cl. 373—93 **19 Claims**



1. In an axially movable metallic electrode holder having a threadable interconnection means for attaching active electrode parts of consumable material to the electrode holder, and a cooling means having a supply and a return coolant conduit pipe, and at least one contact means by which the electrode holder is mechanically engaged by clamping jaws and thereby electrically connected to a supply of electrical current, the improvement comprising the contact arrangement having at least an uppermost and a lowermost contact zone of a pressure-resistant material, each contact zone having an axial dimension sufficient to receive the clamping jaws, whereby a distance between the uppermost and the lowermost contact zone corresponds to at least a portion of an allowable length of consumption of the active electrode parts.

4,446,562

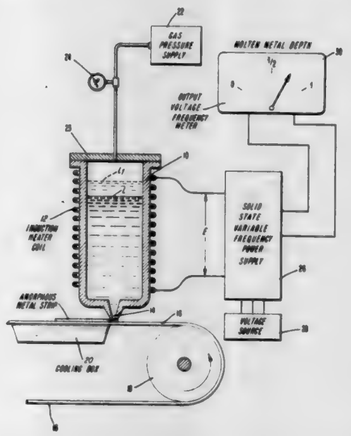
METHOD AND APPARATUS FOR MEASURING CRUCIBLE LEVEL OF MOLTEN METAL

Paul G. Friedmann, Madison; Frank N. Patris, Flemington, and Allan W. Tomalesky, Somerville, all of N.J., assignors to Electric Power Rsearch Institute, Inc., Palo Alto, Calif.

Filed Oct. 13, 1981, Ser. No. 311,025

Int. Cl.³ H05B *5/04*

U.S. Cl. 373—149 **11 Claims**



4. Apparatus for detection of the volume of molten level within a crucible comprising:

(a) induction coil heating means surrounding said crucible for heating said metal;

(b) power supply means for said induction coil, including:

(i) compensating means for compensating for power dissipation variations in said induction coil caused by variations in the volume of said molten metal;

(ii) frequency varying means for varying the frequency of power supplied to said induction coil thereby to compensate for said power dissipation variations; and

(c) frequency detecting means for detecting the frequency of said power supplied to said induction coil.

4,446,563

COMPOSITE CRUCIBLE

Gerard Willay, Ars sur Moselle, France, assignor to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-En-Laye, France

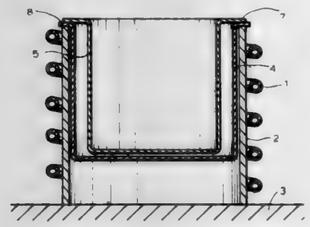
Filed Jun. 8, 1981, Ser. No. 271,179

Claims priority, application France, Jun. 12, 1980, 80 13111

Int. Cl.³ F27B *14/10*

U.S. Cl. 373—157 **5 Claims**

1. A composite crucible designed for the fusion of non metallic analytical samples by induction to be placed in an induction heating coil supplied with a high frequency electric current, comprising, two separate containers arranged in one another which can be separated, an outer container being made of a noble metal and a detachable inner container being made of a carbon material, said inner container having an upper end and said outer container having an opening with an edge; and means provided to form a closed space between the two containers, said conforming means comprising a flange disposed at said upper end of said inner container so that said inner container can bear against said edge of said opening of said outer container.



4,446,564

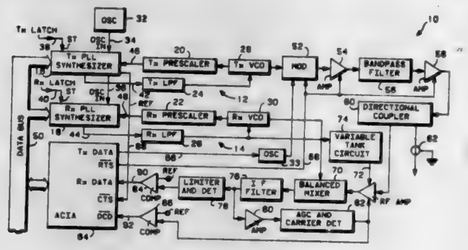
PHASE LOCKED LOOP FREQUENCY SYNTHESIZER CIRCUIT AND METHOD FOR INTERCOMPUTER COMMUNICATION ON A LOCAL NETWORK OF BROADBAND RF MODEMS

William D. Pierce, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 7, 1981, Ser. No. 328,276

Int. Cl.³ H04J *1/14*

U.S. Cl. 375—8 **3 Claims**



1. A method for the intertransmission of data between a plurality of modems each having its own unique receive frequency comprising the steps of:

monitoring at a first one of said modems for a first signal at said unique receive frequency of a second one of said modems,

transmitting said data including said unique receive frequency of said first modem on a carrier at said unique receive frequency of said second modem when no first signal is detected,

awaiting reception at said first modem for a second signal at the unique receive frequency of said first modem, and

retransmitting said data when said second signal is not received at said first modem.

4,446,565

CVSD TRANSMISSION WITH IMPROVED INTELLIGIBILITY OF VOICE SIGNALS

Charles A. Backof, Jr., Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 30, 1980, Ser. No. 221,187

Int. Cl.³ H03K *13/22*

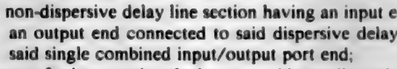
U.S. Cl. 375—32 **9 Claims**

1. A method of improving intelligibility in a system having as an input an electrical analog of a voice signal that is limited to a passband and that is subjected to CVSD modulation, the method matching characteristics of different speakers more closely to characteristics of CVSD modulation, the method comprising the steps of:

a. differentiating the electrical analog by applying same to a high pass filter having a crossover above the passband to produce a differentiated signal;

b. clipping the differentiated signal to produce a substantially symmetrical clipped differentiated signal;

c. integrating the clipped differentiated signal by applying



same to a low pass filter having a crossover below the passband to produce a preprocessed signal whose frequency components outside the passband are substantially attenuated relative the frequency components within the passband; and

d. applying the preprocessed signal to a CVSD modulator, of the type which produces a digitally encoded bit stream representative of an analog input, whereby said digitally encoded bit stream provides improved intelligibility.

4,446,566

DISPERSIVE DELAY LINES

Harrison W. Fuller, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Division of Ser. No. 39,230, May 14, 1979, Pat. No. 4,310,816.

This application May 11, 1981, Ser. No. 262,081

Int. Cl.³ H03H *7/30*

U.S. Cl. 375—96 **3 Claims**

1. A high dynamic range compressive delay line system comprising:

means for generating a frequency swept signal suitable for compression by a dispersive delay line;

a dispersive delay line terminated at one end and having a single combined input/output port at the other end thereof;

a non-dispersive delay line section having an input end, and an output end connected to said dispersive delay line at said single combined input/output port end;

means for interrupting the input to said non-dispersive delay line; and

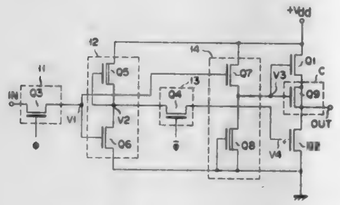
means for applying said frequency swept signal to the input end of said non-dispersive delay line section in timed relation to the sweep of said frequency swept signal such that the application of said frequency swept signal is interrupted by said interrupted means before compressive pulse output signals from said non-dispersive delay line appear at the input end of said non-dispersive delay line section, whereby isolation is established between input and output signals to and from said dispersive delay line.

4,446,567

DYNAMIC SHIFT REGISTER CIRCUIT

Tetsuya Iida, and Tatsuo Sakaue, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 25, 1981, Ser. No. 237,959
Claims priority, application Japan, Mar. 5, 1980, 55-27647
Int. Cl.³ G11C *19/28*; H03K *23/22*
U.S. Cl. 377—79 4 Claims



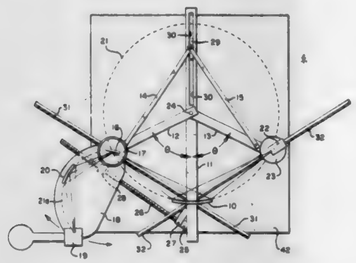
1. A dynamic shift register circuit comprising:
an input terminal;
an output terminal;
first transfer gate means connected to the input terminal for receiving an input signal and transferring the input signal under the control of a first clock signal;
inverter means for inverting the level of an output signal of the first transfer gate means;
second transfer gate means connected to the inverter means for receiving an output signal of the inverter means and transferring the output signal of the inverter means under the control of a second clock signal which has a level opposite to that of the first clock signal;
a signal follower circuit for producing an output signal having a level which follows the level of the output signal of the first transfer gate means; and
a logic circuit connected to first and second power source voltages, comprising capacitive bootstrapping means connected between an output terminal of said signal follower circuit and an output terminal of the logic circuit, said logic circuit being made operative by an output signal of the signal follower circuit and producing an inverter function at the output terminal of the logic circuit, in response to an output signal of the second transfer gate means.

4,446,568

VERSATILE FOCUSING RADIATION ANALYZER

Arthur R. Williams, and William L. Johnson, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jun. 5, 1981, Ser. No. 270,968
Int. Cl.³ G01N *23/02, 23/20, 23/22*
U.S. Cl. 378—3 12 Claims



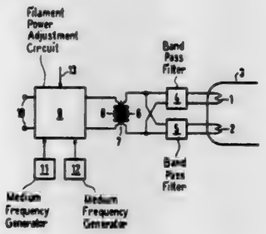
1. A focusing radiation analyzer comprising a concave element shaped so that its concave reflecting surface lies on the circumference of a circle,
means for supporting said concave element on said circumference of a circle,
two side arms pivoted at the center of said circle, one on each side of said concave element,
means carried by one side arm for directing radiation from a virtual point source on said circle to said concave element, with its beam axis intersecting the center of said concave element,
means carried by the other side arm for receiving at a point on said circle radiation from said concave element, with its beam axis intersecting the center of said concave element,
means for maintaining arcs on said circle between the center of said concave element and each side arm equal as the arc of one side arm is varied, and
means for simultaneously maintaining the beam axis of said radiation means and the beam axis of said receiving means intersecting the center of said concave element as said arc of one side arm is varied, wherein said concave element is a diffraction sample bent for focusing radiation from said virtual point source on said circle to said receiving point of the receiving means on said circle.

4,446,569

X-RAY DIAGNOSTIC GENERATOR FOR AN X-RAY TUBE COMPRISING SEVERAL FOCAL SPOTS

Kurt Franke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,215
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1980, 3001118
Int. Cl.³ H05G *1/30*
U.S. Cl. 378—115 1 Claim



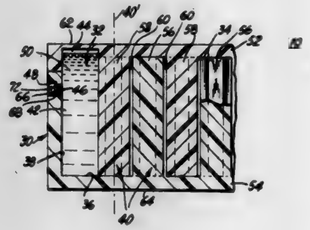
1. An x-ray diagnostic generator comprising:
an x-ray tube comprising a plurality of focal spots and a respective heating element for each of said focal spots;
a supply device comprising a single filament supply transformer including a primary winding and a secondary winding, a plurality of filament supply generators operable one at a time and each operable to generate a respective specific frequency and each assigned to a respective heating element, and a filament power adjustment circuit connected between said plurality of generators and said primary winding; and
a plurality of band pass filters, each of said band pass filters having a pass band for passing only the specific frequency of a respective generator and each connected across said secondary winding and across the heating filament assigned to the respective generator, for selective energization of said heating filaments.

4,446,570

COLLIMATOR FOR A RADIATION DETECTOR AND METHOD OF MAKING SAME

William R. Guth, Hoffman Estates, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Jul. 17, 1981, Ser. No. 284,226
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—149 9 Claims



1. A collimator having a plurality of septa and a plurality of apertures for channeling rays between a source of radiation and a transducer of a radiation detector after having positioned the collimator between the source of radiation and the radiation detector, comprising;
(a) a collimator housing comprising
(a1) a base member of radiation transmitting material having a lower and a side surface; and
(a2) a cover plate of radiation transmitting material having an upper and a side surface;
(b) a first plurality of spaced pins of radiation transmitting material formed integrally with the lower surface of the base member;
(c) a second plurality of spaced pins of radiation transmitting material formed integrally with the upper surface of the cover plate; and
(d) a normally fluid radiation opaque material;
wherein the base member and the cover plates are mated together such that the first plurality of pins of the base member is in sealing contact with the upper surface of the cover plate and the second plurality of pins of the cover plate is in sealing contact with the lower surface of the base member, thus forming a collimator housing having an internal cavity bounded by upper, lower and side internal surfaces; and having a plurality of spaced pins of radiation transmitting material located within the cavity, formed integrally with the housing and joining the upper and lower surfaces to form the collimator apertures; and wherein the normally fluid radiation opaque material fills the spaces of the cavity between adjacent pins and between the pins and the side surface to form the collimator septa.

273,624
WADE FISHING BOOT
Delos L. Finch, 519 Carolina, San Antonio, Tex. 78210
Filed Oct. 19, 1981, Ser. No. 312,793
Term of patent 14 years
U.S. Cl. D2—275



273,625
KNITTED SLIPPER
Anthony J. Marterie, 194 Knollwood Dr., San Rafael, Calif. 94901
Filed Oct. 5, 1981, Ser. No. 308,474
Term of patent 14 years
U.S. Cl. D2—279



273,626
KNITTED SLIPPER
Anthony J. Marterie, 194 Knollwood Dr., San Rafael, Calif. 94901
Filed Oct. 5, 1981, Ser. No. 308,475
Term of patent 14 years
U.S. Cl. D2—279



273,627
SNEAKER
Stephen Huberman, and Daniel Lasky, both of 500 Collins St., Melbourne 3000, Australia
Filed Nov. 24, 1981, Ser. No. 324,616
Term of patent 14 years
U.S. Cl. D2—282



273,628
SNEAKER
Stephen Huberman, and Daniel Lasky, both of 500 Collins St., Melbourne 3000, Australia
Filed Nov. 24, 1981, Ser. No. 324,617
Term of patent 14 years
U.S. Cl. D2—282



273,629
SLIPPER
Dieter H. G. Horn, 142 Coolgardie Ave., Redcliffe, Australia
Filed Sep. 15, 1981, Ser. No. 302,659
Claims priority, application Australia, Mar. 16, 1981, 83598
Term of patent 14 years
U.S. Cl. D2—282



273,630
SHOE
Pierre Bidegain, Pau, France, assignor to Bidegain S.A., France
Filed Sep. 3, 1981, Ser. No. 299,864
Claims priority, application France, Mar. 4, 1981, 810785
Term of patent 14 years
U.S. Cl. D2—309



273,631
SPORT SHOE
Noboru Ueda, Chikushino, Japan, assignor to Nippon Rubber Co., Ltd., Tokyo, Japan
Filed Jun. 10, 1982, Ser. No. 386,984
Claims priority, application Japan, Dec. 14, 1981, 56-55487
Term of patent 14 years
U.S. Cl. D2—310



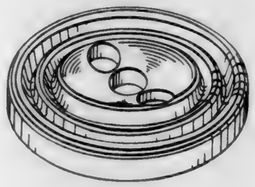
273,632
SPORT SHOE
Noboru Ueda, Chikushino, Japan, assignor to Nippon Rubber Co., Ltd., Tokyo, Japan
Filed Jun. 10, 1982, Ser. No. 387,032
Claims priority, application Japan, Dec. 14, 1981, 56-55488
Term of patent 14 years
U.S. Cl. D2—310



273,633
CUFF PORTION OF A KNITTED SOCK
Forrest E. Drum, Newton, N.C., assignor to Catawba Sox, Inc., Newton, N.C.
Filed Sep. 24, 1981, Ser. No. 305,185
Term of patent 14 years
U.S. Cl. D2—334



273,634
BUTTON
Rolf Hoffmann, Moenchengladbach, Fed. Rep. of Germany, assignor to Princeton Sportwear Corporation, Hopelawn, N.J.
Filed May 28, 1981, Ser. No. 267,772
Term of patent 14 years
U.S. Cl. D2—449



273,635
TOOTHBRUSH
Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy
Filed May 15, 1981, Ser. No. 263,867
Term of patent 14 years
U.S. Cl. D4—25



273,636
DOUBLE HOLE BRUSH HANDLE
Alan C. Chu, P.O. Box 640235, Miami, Fla. 33164
Filed Feb. 4, 1982, Ser. No. 345,928
Term of patent 14 years
U.S. Cl. D4—38



273,637
ACOUSTIC TELEPHONE ENCLOSURE AND CANOPY THEREFOR
Robert L. Benedetti, Clark, and Lajos Novak, Rivervale, both of N.J., assignors to Western Electric Co., Inc., New York, N.Y.
Filed Jan. 11, 1982, Ser. No. 338,720
Term of patent 14 years
U.S. Cl. D6—25



273,638
TABLE
Bruce Keiser, Philadelphia, Pa., assignor to Keiser Sterling Corporation, Phildelphia, Pa.
Filed Feb. 8, 1982, Ser. No. 346,820
Term of patent 14 years
U.S. Cl. D6—27



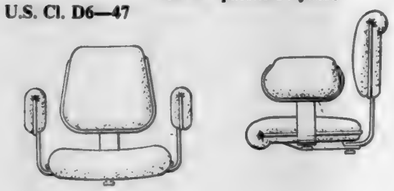
273,639
CHAIR
Vincent Caflero, Irvington, N.Y., assignor to Simmons Universal Corporation, New York, N.Y.
Filed Nov. 12, 1981, Ser. No. 320,779
Term of patent 14 years
U.S. Cl. D6—30



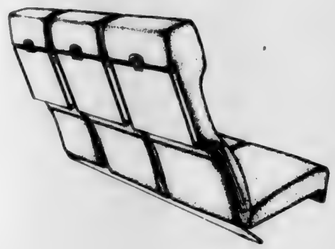
273,640
CLOSED ARM CHAIR
Donald C. Petitt, 207 W. 86th St., New York, N.Y. 10024
Filed Nov. 10, 1981, Ser. No. 320,039
Term of patent 14 years
U.S. Cl. D6—31



273,641
SEATING UNIT
William I. Stephens, Emmaus, Pa., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 38,124, May 11, 1979. This application Nov. 30, 1981, Ser. No. 325,998
Term of patent 14 years
U.S. Cl. D6—47



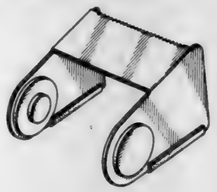
273,642
AIRCRAFT SEAT
Ralph G. Marrujo, Winston-Salem, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Jul. 9, 1981, Ser. No. 281,823
Term of patent 14 years
U.S. Cl. D6—48



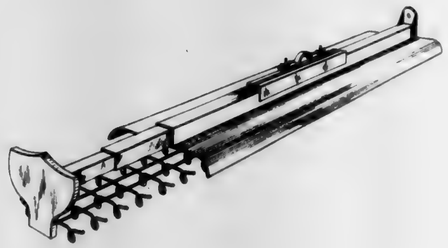
273,643
SLIDABLE BEDCLOTHES RACK FOR INSERTION BETWEEN A MATTRESS AND BOX SPRINGS
Edward F. Sanker, and Mary B. Sanker, both of 319 Beech Ave., Wyoming, Ohio 45215
Filed Jul. 13, 1981, Ser. No. 282,383
Term of patent 14 years
U.S. Cl. D6—84



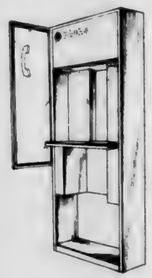
273,644
FOIL DISPENSER
Ann M. Colavito, and Alphonse Galizia, both of 11 La Fond La., Orinda, Calif. 94563
Filed Jul. 30, 1981, Ser. No. 288,670
Term of patent 14 years
U.S. Cl. D6—96



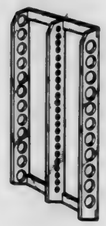
273,645
TIE RACK
Wilber C. McEvers, 655 Avenue C., SW., Winter Haven, Fla. 33880
Filed Sep. 18, 1981, Ser. No. 303,540
Term of patent 14 years
U.S. Cl. D6—117



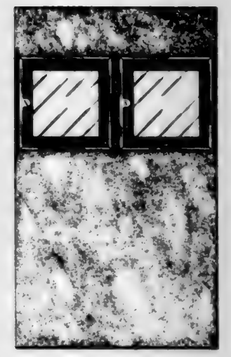
273,646
MODULAR TELEPHONE ENCLOSURE AND PRIVACY WING THEREFOR
Charles T. Avant, Somerset; Robert L. Benedetti, Clark; Donald M. Genaro, Haworth, all of N.J., and John N. McGarvey, Drexelhill, Pa., assignors to Western Electric Company, Inc., New York, N.Y.
Filed Sep. 21, 1981, Ser. No. 304,516
Term of patent 14 years
U.S. Cl. D6—181



273,647
WINE RACK
Richard Kandarian, 170 Cedarwald Ct., Rochester, Mich. 48063
Filed Aug. 24, 1981, Ser. No. 295,920
Term of patent 14 years
U.S. Cl. D6—188



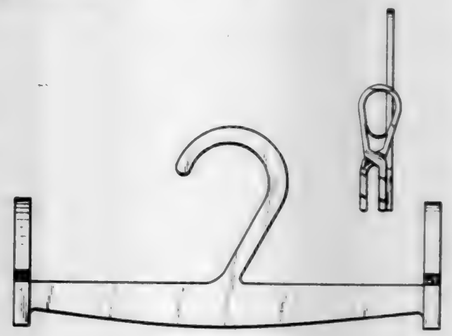
273,648
FRONT PANEL FACE FOR A WINDOWED EXHIBIT CASE
Gea Aulenti, Piazza San Marco, Milan, Italy
Filed Feb. 4, 1981, Ser. No. 231,507
Claims priority, application Italy, Aug. 18, 1980, 35963 B/80[U]
Term of patent 14 years
U.S. Cl. D6—192



273,649
ATTACHMENT RAIL FOR THE FRONT EDGE OF A DISPLAY SHELF
William S. Spamer, Roswell, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Aug. 27, 1981, Ser. No. 296,996
Term of patent 14 years
U.S. Cl. D6—192



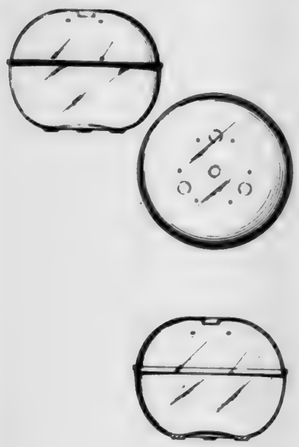
273,650
HANGER FOR SKIRTS, SLACKS OR TROUSERS
Dwight C. Brown, 1516 N. Nicholas St., Arlington, Va. 22205
Filed Sep. 30, 1982, Ser. No. 430,265
Term of patent 14 years
U.S. Cl. D6—252



273,651
BEVERAGE CUP
Tobin L. Emrick, Mason, Mich., assignor to Dart Container Corporation, Mason, Mich.
Filed Jul. 16, 1981, Ser. No. 284,015
Term of patent 14 years
U.S. Cl. D7—6



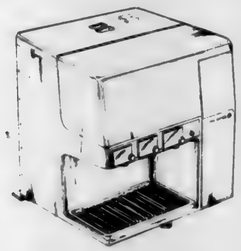
273,652
FRUIT RIPENER
Susan F. Lederman, and David M. Lederman, both of 1130 N. Bundy Dr., Los Angeles, Calif. 90049
Filed Apr. 19, 1982, Ser. No. 369,432
Term of patent 14 years
U.S. Cl. D7—17



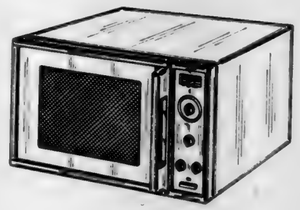
273,653
HERB GRINDER
Edwin A. Price, 1600 E. 11th Ave., Aurora, Colo. 80011
Filed Oct. 26, 1981, Ser. No. 314,998
Term of patent 14 years
U.S. Cl. D7—47



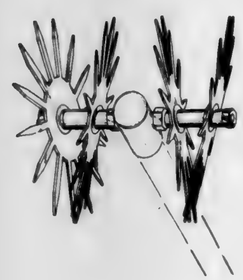
273,654
BEVERAGE DISPENSER
Jason K. Sedam, Dunwood; Richard J. Mueller, Atlanta; Andrew J. Holoubek, Stone Mountain, and Samuel C. Crosby, Decatur, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Nov. 12, 1981, Ser. No. 320,477
Term of patent 14 years
U.S. Cl. D7—307



273,655
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 29, 1982, Ser. No. 343,989
Claims priority, application Japan, Jul. 30, 1981, 56-33817
Term of patent 14 years
U.S. Cl. D7—351



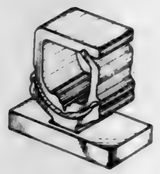
273,656
ROTARY CULTIVATING TOOL
Henry P. Dellinger, 1036 Pinegien Dr., Forest Park, Ga. 30050
Division of Ser. No. 213,189, Dec. 4, 1980, Pat. No. Des. 268,000. This application Jun. 5, 1981, Ser. No. 270,909
The portion of the term of this patent subsequent to Feb. 22, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—8



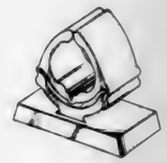
273,657
SCREW STARTER
Robert E. Hanks, 1026 West Vandeveer, Taylorville, Ill. 62568
Filed Jul. 9, 1981, Ser. No. 281,585
Term of patent 14 years
U.S. Cl. D8—82



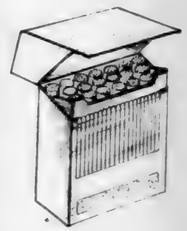
273,658
SNAP-ACTION CLIP
Keizaburo Sakaguchi, Tokyo, Japan, assignor to Sakaguchi Plastic Industrial Co., Ltd., Tokyo, Japan
Filed Jul. 22, 1981, Ser. No. 286,049
Claims priority, application Japan, Feb. 5, 1981, 56-4197
Term of patent 14 years
U.S. Cl. D8—396



273,659
SNAP-ACTION CLIP
Keizaburo Sakaguchi, Tokyo, Japan, assignor to Sakaguchi Plastic Industrial Co., Ltd., Shinjuku, Japan
Filed Jul. 22, 1981, Ser. No. 286,051
Claims priority, application Japan, Feb. 5, 1981, 56-4196
Term of patent 14 years
U.S. Cl. D8—396



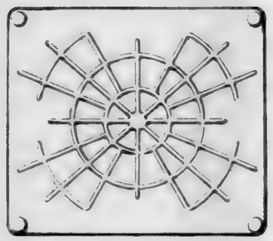
273,660
CIGARETTE PACKAGE
Jan M. Weinberg, 308 Bedford St., Stamford, Conn. 06901
Filed Nov. 2, 1981, Ser. No. 316,811
Term of patent 14 years
U.S. Cl. D9—337



273,661
BOTTLE
Fredi Widmer, Wil, Switzerland, assignor to Hart Chemical Limited, Guelph, Canada
Filed Dec. 2, 1981, Ser. No. 326,931
Claims priority, application Canada, Sep. 15, 1981, 15-09-81-9
Term of patent 14 years
U.S. Cl. D9—374



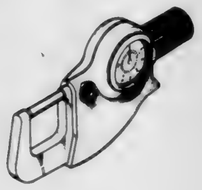
273,662
CONTAINER COVER
Denny Vasilash, 9719 - 84 Ave., Edmonton, Alberta, Canada (T6E 2E8)
Filed Nov. 23, 1981, Ser. No. 324,227
Claims priority, application Canada, Jul. 24, 1981, 24-07-81-7
Term of patent 14 years
U.S. Cl. D9—435



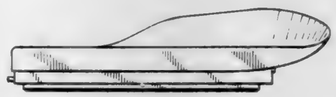
273,663
COMBINED CONTAINER CAP AND APPLICATOR
Evan R. Kahn, 16033 NE. 8th Ave., N. Miami Beach, Fla. 33162
Filed Dec. 17, 1981, Ser. No. 331,554
Term of patent 14 years
U.S. Cl. D9—447



273,664
MICROMETER
Hideo Sakata; Ichiro Mizuno; Masao Nakahara, and Takasi Sanpei, all of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Feb. 17, 1982, Ser. No. 349,562
Claims priority, application Japan, Aug. 27, 1981, 56-37786
Term of patent 14 years
U.S. Cl. D10—73



273,665
REMOTE READOUT FOOD SCALE
Eugene L. Sly, P.O. Box 19545, Portland, Oreg. 97219, and David C. English, 3822 - 59th Ave., SW., Seattle, Wash. 98116
Division of Ser. No. 82,618, Oct. 9, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 397,016
Term of patent 14 years
U.S. Cl. D10—91

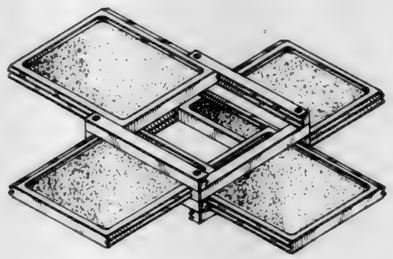


273,666
ORNAMENT FOR A FINGER NAIL
Keiko Hayashi, Tokyo, Japan, assignor to Masami Hayashi and Keiko Hayashi, both of Tokyo, Japan
Filed Feb. 16, 1982, Ser. No. 348,870
Term of patent 14 years
U.S. Cl. D11—1

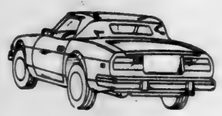




273,667
PLANTER
Bernard Vuarnesson, 1 Boulevard St-Michel, Paris, France (75005); Minh Luong, 31 rue de Charties, Orsay, France (91400), and Joel Rabinowitz, 5 rue Marmontel, Paris, France (75015)
Filed Dec. 20, 1982, Ser. No. 451,228
Claims priority, application France, Sep. 10, 1982, 823060
Term of patent 14 years
U.S. Cl. D11—155

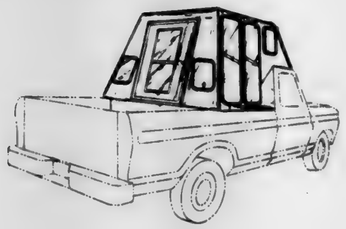


273,668
ROADSTER
Eugene R. Di Geronimo, III, 2323 SE. 18th St., Fort Lauderdale, Fla. 33316
Filed Jan. 26, 1981, Ser. No. 228,243
Term of patent 14 years
U.S. Cl. D12—92

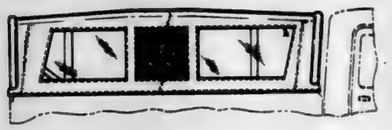




273,669
RECREATIONAL SHELL FOR MOUNTING IN THE BED OF A PICKUP TRUCK
David E. Forbis, 16211 E. Colfax Ave., Aurora, Colo. 80011
Filed Oct. 2, 1981, Ser. No. 307,747
Term of patent 14 years
U.S. Cl. D12—156



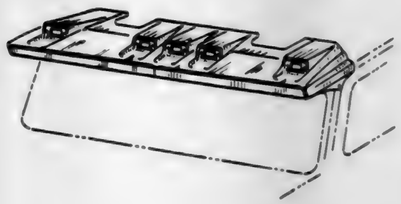
273,670
RETRACTABLE TRUCK BOX COVER
Richard E. Keil, 6250 Jefferson Rd., Clark Lake, Mich. 49234
Filed Jan. 7, 1982, Ser. No. 337,853
Term of patent 14 years
U.S. Cl. D12—156



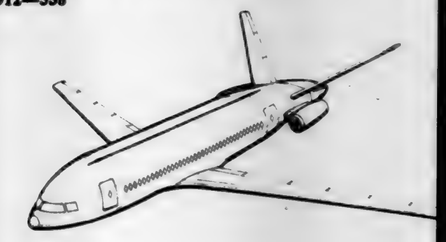
273,671
SPOILER FOR A VEHICLE AND THE LIKE
John B. M. Ford, 17 Moor End Close, Eaton Bray, Dunstable, Bedforshire LU6 2HP, England
Filed Nov. 12, 1981, Ser. No. 320,521
Term of patent 14 years
U.S. Cl. D12—181



273,672
WINDSHIELD VISOR FOR TRUCKS
Allan W. Lund, 2641-118th Ave. NW., Minneapolis, Minn. 55433
Filed Nov. 25, 1981, Ser. No. 324,775
Term of patent 14 years
U.S. Cl. D12—191



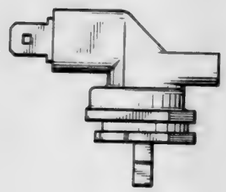
273,673
AIRPLANE
Ray Olason, and Philip C. Whitener, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Sep. 30, 1981, Ser. No. 307,343
Term of patent 14 years
U.S. Cl. D12—338



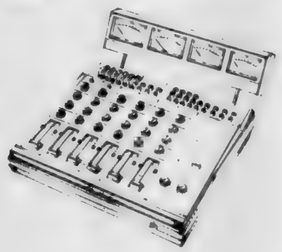
273,674
CABLE T.V. CONNECTOR FOR MARINE VESSEL HULLS OR THE LIKE
Larry L. Brandon, 1309 SW. 5th Ct., Ft. Lauderdale, Fla. 33312
Filed Feb. 23, 1981, Ser. No. 237,574
Term of patent 14 years
U.S. Cl. D13—24



273,675
HEATER END CAP
Eugene T. McKinnon, 16536 Chattanooga Pl., Pacific Palisades, Calif. 90272
Filed May 22, 1980, Ser. No. 152,508
Term of patent 14 years
U.S. Cl. D13—27



273,676
AUDIO MIXER
Masafumi Itoh; Sigeru Hasegawa; Haruki Takita, all of Musashino, and Kouzi Suzuki, Niza, all of Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Nov. 4, 1981, Ser. No. 318,249
Claims priority, application Japan, Jul. 14, 1981, 56-30928
Term of patent 14 years
U.S. Cl. D14—1

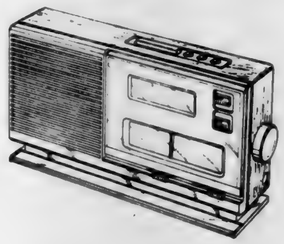


273,677
TELEPHONE SHOULDER REST
Lyle J. Martinsen, Murray, Utah, assignor to Softalk, Inc., Salt Lake City, Utah
Filed Aug. 31, 1981, Ser. No. 297,905
Term of patent 14 years
U.S. Cl. D14—65

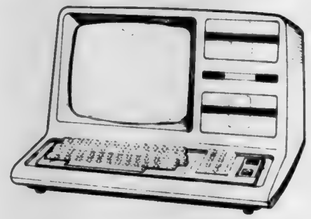




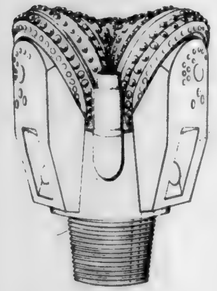
273,678
CLOCK RADIO
Teruyuki Nishimoto, Osaka; Kikuo Ohta, Nara, and Benito Mishiro, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 6, 1981, Ser. No. 309,138
Claims priority, application Japan, Apr. 8, 1981, 56-15028
Term of patent 14 years
U.S. Cl. D14—73



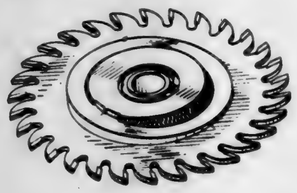
273,679
COMPUTER HOUSING
Bernard A. Grae, Fort Worth, Tex., assignor to Tandy Corporation, Fort Worth, Tex.
Filed Dec. 15, 1980, Ser. No. 216,544
Term of patent 14 years
U.S. Cl. D14—106



273,680
ROLLER BIT
Karl-Erik Kangas, Fagersta, Sweden, assignor to Fagersta AB, Fagersta, Sweden
Filed Apr. 27, 1981, Ser. No. 257,874
Claims priority, application Sweden, Nov. 18, 1980, 80 2298
Term of patent 14 years
U.S. Cl. D15—21



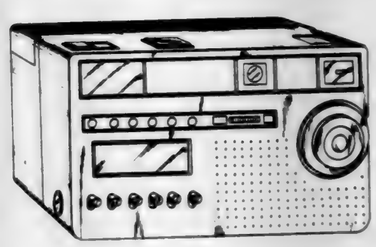
273,681
DADO SAW BLADE
Sotoya Ito, Nagoya, Japan, assignor to Ofuna Industry Co., Ltd., Nishikasugai, Japan
Filed May 14, 1981, Ser. No. 263,591
Claims priority, application Japan, Nov. 17, 1980, 55-48149
Term of patent 14 years
U.S. Cl. D15—133



273,682
CUTTING BIT
Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260
Division of Ser. No. 911,739, Jun. 2, 1978, Pat. No. Des. 262,219. This application Jan. 9, 1981, Ser. No. 223,917
Term of patent 14 years
U.S. Cl. D15—139



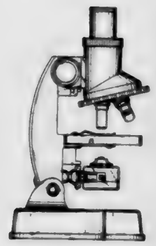
273,683
COMBINED CAMERA, FLASHLIGHT, AND CLOCK-RADIO
Connie D. Hendren, Rte. 4, Danville Rd., Harrodsburg, and C. Dalton Hendren, Rte. 1, Salvisa, both of Ky. 40330
Filed Oct. 28, 1981, Ser. No. 315,953
Term of patent 14 years
U.S. Cl. D16—1



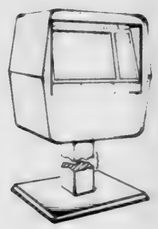
273,684
SPORT GLASSES
Franz Dianitsch, Linz, Austria, assignor to Carrera International Corporation, Norwood, N.J.
Filed Dec. 4, 1980, Ser. No. 212,901
Term of patent 14 years
U.S. Cl. D16—102



273,685
MICROSCOPE
Toshikatsu Yamada, 48-14 Heiwadai, 2-chome, Nerima-ku, Tokyo, Japan (176)
Filed Jul. 6, 1981, Ser. No. 280,666
Term of patent 14 years
U.S. Cl. D16—131



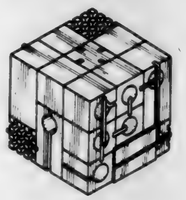
273,686
NEWSPAPER VENDING RACK OR SIMILAR ARTICLE
Fred M. Gore, Dallas, Tex., assignor to Gannett Co., Inc., Rochester, N.Y.
Filed May 12, 1982, Ser. No. 377,475
Term of patent 14 years
U.S. Cl. D20—6



273,687
PANTY HOSE SIZING FORM
Sam C. Safrit, Pfafftown, and William B. Cothran, Burlington, both of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.
Filed Mar. 15, 1982, Ser. No. 358,516
Term of patent 14 years
U.S. Cl. D20—32



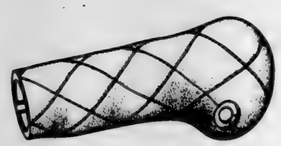
273,688
CHESS SET CUBE
Franco Rocco, Via Cappuccio 21, Milano, Italy
Division of Ser. No. 970,258, Dec. 18, 1978. This application Aug. 25, 1980, Ser. No. 181,194
Term of patent 14 years
U.S. Cl. D21—52



273,689
COMBINED FISHING ROD HOLDER AND BITS SIGNALLER
Daniel Rhodes, 84 Lincoln Ave., Dover, N.J. 07801
Filed Jun. 23, 1982, Ser. No. 391,484
Term of patent 14 years
U.S. Cl. D22—13



273,690
GRIP FOR FISHING ROD ASSEMBLY
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Sinzuoka, Japan
Filed Oct. 14, 1981, Ser. No. 311,240
Claims priority, application Japan, Jul. 29, 1981, 56-33654
Term of patent 14 years
U.S. Cl. D22—23



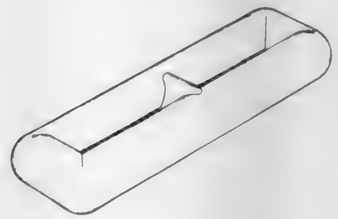
273,691
FISHING ROD GRIP
Masakazu Sakamoto, and Takeshi Shohoji, both of Chiba, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed May 5, 1982, Ser. No. 375,163
Term of patent 14 years
U.S. Cl. D22—23



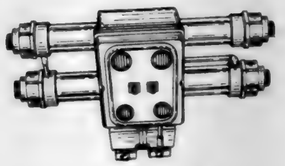
273,692
LINE GUIDE FOR FISHING ROD
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan
Filed Feb. 11, 1982, Ser. No. 348,153
Term of patent 14 years
U.S. Cl. D22—24



273,693
TANK FOR FLUIDS
Robin E. Fossey, Redhills, Ireland, assignor to Container Engineering (Ireland) Limited, Clones, Ireland
Filed Jun. 18, 1981, Ser. No. 275,043
Claims priority, application Ireland, Dec. 23, 1980, 308/80
Term of patent 14 years
U.S. Cl. D23—2



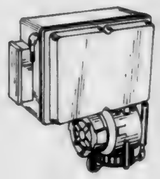
273,694
WATER PURIFICATION IONIC GAS GENERATOR
Dennis E. J. Johnson, and Scott J. Johnson, both of 1025 Garfield Ave., Aurora, Ill. 60506
Filed Feb. 10, 1982, Ser. No. 347,520
Term of patent 14 years
U.S. Cl. D23—3



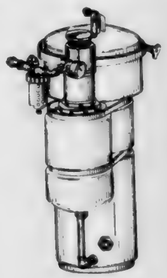
273,695
WATER PURIFICATION IONIC GAS GENERATOR
Dennis E. J. Johnson, and Scott J. Johnson, both of 1025 Garfield Ave., Aurora, Ill. 60506
Filed Mar. 22, 1982, Ser. No. 360,163
Term of patent 14 years
U.S. Cl. D23—3



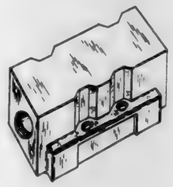
273,696
WATER PURIFICATION IONIC GAS GENERATOR
Dennis E. J. Johnson, and Scott J. Johnson, both of 1025 Garfield Ave., Aurora, Ill. 60506
Filed Apr. 5, 1982, Ser. No. 365,275
Term of patent 14 years
U.S. Cl. D23—3



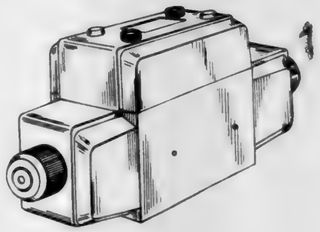
273,697
COMBINATION FILTER AND IONIC GAS GENERATOR ASSEMBLY FOR PURIFYING MACHINE TOOL COOLANTS
Dennis E. J. Johnson, and Scott J. Johnson, both of 1025 Garfield Ave., Aurora, Ill. 60506
Filed May 17, 1982, Ser. No. 378,891
Term of patent 14 years
U.S. Cl. D23—3



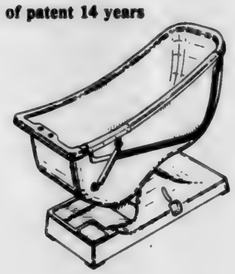
273,698
VALVE BODY
John Pace, Rochester, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Jan. 13, 1981, Ser. No. 224,741
Term of patent 14 years
U.S. Cl. D23—19



273,699
SOLENOID OPERATED VALVE
Ronald L. Loup, Clarkston; Curtis H. Day, Manchester, both of Mich., and George L. Schick, Easton, Conn., assignors to Double A Products Company, Manchester, Mich.
Filed Mar. 18, 1981, Ser. No. 244,888
Term of patent 14 years
U.S. Cl. D23—19



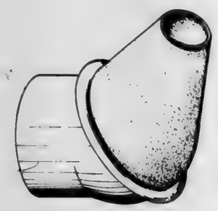
273,700
BATHTUB FOR INVALIDS OR THE LIKE
Roy Parker, New Milton, England, assignor to National Research Development Corporation, London, England
Filed Dec. 2, 1981, Ser. No. 326,758
Claims priority, application United Kingdom, Jun. 2, 1981, 1000773
Term of patent 14 years
U.S. Cl. D23—56



273,701
TOILET
Hertha A. Bengtson, Mölle, Sweden, assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 72,272, Aug. 27, 1979. This application May 26, 1981, Ser. No. 267,217
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 20AR250
Term of patent 14 years
U.S. Cl. D23—67



273,702
ADJUSTABLE VENTILATION NOZZLE
Lennart Widerby, and Sven H. Carlsson, both of Jönköping, Sweden, assignors to AB Svenska Flaktfabriken, Nacka, Sweden
Filed Jun. 16, 1981, Ser. No. 274,073
Claims priority, application Sweden, Dec. 17, 1980, 80-2551
Term of patent 14 years
U.S. Cl. D23—163



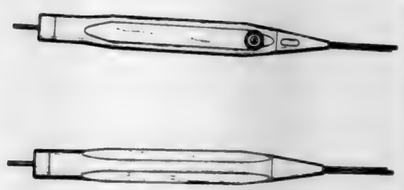
273,703
STACKED LIQUID CHEMICAL CONTAINERS
K. Robert Moyse, Doylestown, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.
Filed Jul. 27, 1981, Ser. No. 287,326
Term of patent 14 years
U.S. Cl. D24—1.1



273,704
ORTHOPEDIC SURGERY BRUSH
Joseph E. Miller, Westmunt, Canada; Andrea S. Mandel, Wayne, and Chris B. Lawler, Oakland, both of N.J., assignors to Pfizer, Inc., New York, N.Y.
Filed Oct. 14, 1981, Ser. No. 311,281
Term of patent 14 years
U.S. Cl. D24—26



273,705
SURGICAL ASPIRATION HANDPIECE
Robert F. Spetzler, Shaker Heights, Ohio, and Alfred A. Iversen, Minnetonka, Minn., assignors to PMT, Hopkins, Minn.
Filed Sep. 16, 1982, Ser. No. 419,041
Term of patent 14 years
U.S. Cl. D24—26



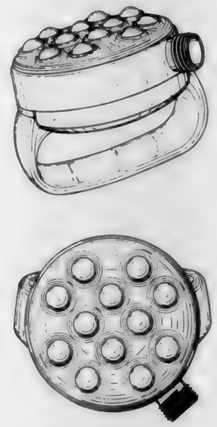
273,706
EAR MOUNTED ELECTRICAL PULSE ACUPRESSURE APPARATUS
Francis J. McCall, 19231 Victory Blvd., Reseda, Calif. 91335
Filed Dec. 17, 1981, Ser. No. 331,617
Term of patent 14 years
U.S. Cl. D24—35



273,707
ELECTRICALLY STIMULATED ACUPRESSURE APPARATUS TO BE LOCATED WITHIN THE EAR
Francis J. McCall, 19231 Victory Blvd., Reseda, Calif. 91335
Filed Dec. 17, 1981, Ser. No. 331,652
Term of patent 14 years
U.S. Cl. D24—35



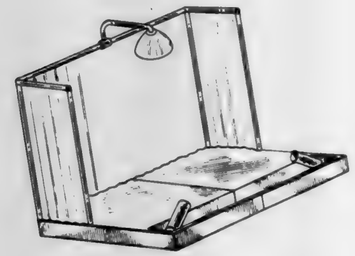
273,708
MASSAGE APPARATUS
Andreas Haug, Altensteig, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co., Fed. Rep. of Germany
Filed Jul. 9, 1981, Ser. No. 281,631
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 1016 08
Term of patent 14 years
U.S. Cl. D24—36



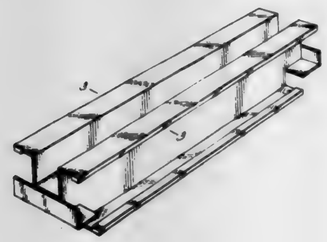
273,709
URINARY DRAINAGE BAG
Barry L. Schneider, Deerfield, Ill., assignor to Hollister Incorporated, Libertyville, Ill.
Filed Jun. 15, 1981, Ser. No. 273,755
Term of patent 14 years
U.S. Cl. D24—59



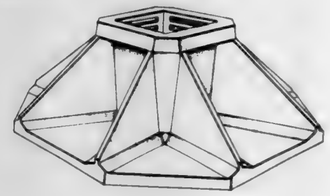
273,710
PORTABLE STAGE
Nathan J. LeBlanc, 3252 Anita Ct., Castro Valley, Calif. 94541
Filed Apr. 6, 1981, Ser. No. 251,384
Term of patent 14 years
U.S. Cl. D25—58



273,711
BEAM
George B. A. Young, Sturmer, near Haverhill, England, assignor to Acrow (Engineers) Limited, London, England
Filed Nov. 20, 1981, Ser. No. 323,451
Claims priority, application United Kingdom, Jun. 8, 1981, 1000861
Term of patent 14 years
U.S. Cl. D25—73



273,712
BASE FOR A COLUMN
Claes Ahlqvist, Mollevagen 11, S-282 00 Tyringe, Sweden
Filed Nov. 17, 1981, Ser. No. 322,308
Term of patent 14 years
U.S. Cl. D25—77



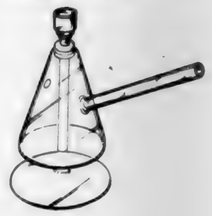
273,713
PIPE
Robert B. Sher, P.O. Box 5551, Walnut Creek, Calif. 94596
Filed Aug. 5, 1982, Ser. No. 405,353
Term of patent 14 years
U.S. Cl. D27—03



273,714
PIPE
Robert B. Sher, P.O. Box 5551, Walnut Creek, Calif. 94596
Filed Aug. 5, 1982, Ser. No. 405,356
Term of patent 14 years
U.S. Cl. D27—3



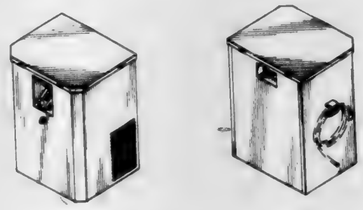
273,715
PIPE
Robert B. Sher, P.O. Box 5551, Walnut Creek, Calif. 94596
Filed Aug. 5, 1982, Ser. No. 405,532
Term of patent 14 years
U.S. Cl. D27—3



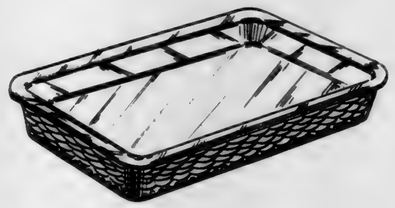
273,716
ADJUSTABLE COSMETIC APPLICATOR
Gino H. Cassai, 924 East 96th St., Brooklyn, N.Y. 11236, and Henry J. Cassai, 88-10 97th Ave., Ozone Park, N.Y. 11416
Filed Jun. 3, 1982, Ser. No. 384,653
Term of patent 14 years
U.S. Cl. D28—7

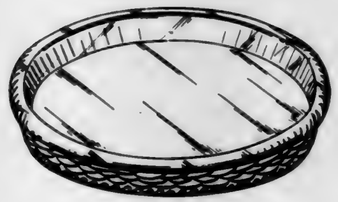


273,717
COMPACT MEDICAL OXYGEN CONCENTRATOR
Norman R. McCombs, Tonawanda, N.Y., assignor to Greene & Kellogg, Inc., Tonawanda, N.Y.
Filed Aug. 28, 1981, Ser. No. 297,362
Term of patent 14 years
U.S. Cl. D29—06



273,718
CAT LITTER BOX
Elizabeth Dugan, 132 Woodside Village, Apt. #1B, Stamford, Conn. 06905
Filed Oct. 3, 1980, Ser. No. 193,641
Term of patent 14 years
U.S. Cl. D30—99





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1st DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Rohe GmbH: *See*—
Staudinger, Alfons, 4,445,278, Cl. 33-203.120.
AB Karlstads Mekaniska Werkstad: *See*—
Banner, Kurt A.; and Gustafsson, Sten-Ake, 4,445,558, Cl. 144-341.000.
Abaskalov, Vladimir D.: *See*—
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.
Abdallah, Mohamed G.; and McDonald, William M., to Exxon Production Research Co. Method and apparatus for remote recovery of submerged pipelines. 4,445,804, Cl. 405-173.000.
Abe, Hiroshi: *See*—
Mizusaki, Takashi; Matsuo, Tadayuki; Esashi, Masayoshi; and Abe, Hiroshi, 4,446,474, Cl. 357-25.000.
Abe, Toshiro: *See*—
Ogawa, Naoki; and Abe, Toshiro, 4,445,472, Cl. 123-198.00E.
Abernethy, Dennis: *See*—
Hyde, Bruce; Tyndall, Wayne; Abernethy, Dennis; and Mellgren, Per G., 4,445,552, Cl. 144-3.00D.
Abou-Gharbia, Magid: *See*—
Freed, Meier E.; and Abou-Gharbia, Magid, 4,446,323, Cl. 544-144.000.
Acme Engineering & Manufacturing Corporation: *See*—
Bohanon, Hoy R., Sr., 4,445,426, Cl. 98-116.000.
Acorn Equipment Corp.: *See*—
Zyduck, Ronald L., 4,445,823, Cl. 417-430.000.
Action Concepts, Inc.: *See*—
Gooding, Robert J., 4,445,358, Cl. 72-416.000.
Adams, Ronald W.; Leunig, Carl V.; and Kovar, Robert F., to Albany International Corp. Method of manufacturing molded upholstery panels. 4,445,954, Cl. 156-148.000.
Adlerborn, Jan; Larker, Hans; Mattsson, Bertil; and Nilsson, Jan, to ASEA AB. Method of manufacturing an object of metallic or ceramic material. 4,446,100, Cl. 419-48.000.
Adna AG: *See*—
Truninger, Thomas, 4,445,588, Cl. 180-233.000.
Adolph Coors Company: *See*—
Stirbis, James S., 4,445,431, Cl. 101-40.000.
Adrian, Fritz: *See*—
Bassier, Friedr.; Adrian, Fritz; and Deuster, Dieter, 4,445,937, Cl. 106-109.000.
Advanced Circuit Technology: *See*—
Roberts, Joseph A., 4,446,342, Cl. 200-5.00R.
Advanced Mechanical Technology, Inc.: *See*—
Gerstmann, Joseph; and Vasilakis, Andrew D., 4,445,464, Cl. 122-16.000.
Aeroquip Corporation: *See*—
Allread, Alan R., 4,445,664, Cl. 251-149.200.
Afzali-Ardakani, Ali; Crowley, John I.; and Wu, Anthony W., to International Business Machines Corporation. Process for chemically bonding lubricant to an information carrier and products thereof. 4,446,193, Cl. 428-422.000.
Agency of Industrial Science and Technology: *See*—
Fujiahige, Masao; Dokiya, Masayuki; Kameyama, Tetsuya; Yokokawa, Harumi; Ujiie, Seiichi; Fukuda, Kenzo; and Motoe, Akihiro, 4,445,934, Cl. 75-68.00A.
Agfa-Gevaert Aktiengesellschaft: *See*—
Bergthaller, Peter; and Strauss, Jurgen, 4,446,219, Cl. 430-216.000.
Agip Petroli S.p.A.: *See*—
Carbonaro, Antonio; Ferrero, Cesare; and Corbellini, Margherita, 4,446,289, Cl. 526-142.000.
Ahlbrandt, Andreas. Treating the surface of articles by electrical brush discharge. 4,446,110, Cl. 422-186.050.
Ahmann, John E. Portable voting booth. 4,445,731, Cl. 312-223.000.
Ahmed, Salah E.: *See*—
Shah, Syed M. M.; Luksas, Anthony J.; and Ahmed, Salah E., 4,446,055, Cl. 252-351.000.
Aigoo, Seiichiro. Dehydrating drier. 4,445,281, Cl. 34-58.000.
AIOI Seiki Kabushiki Kaisha: *See*—
Kitaura, Ichiro, 4,445,675, Cl. 269-20.000.
Air Products and Chemicals, Inc.: *See*—
Chiu, Chen-Hwa, 4,445,917, Cl. 62-25.000.
Eskinazi, Victoria; and Wells, James E., 4,446,320, Cl. 544-106.000.
Air-Shields, Inc.: *See*—
Wenstrup, Jan F., 4,445,827, Cl. 417-477.000.
Aird, Alanson D., to General Electric Company. Optocoupler having folded lead frame construction. 4,446,375, Cl. 250-551.000.
Aisan Kogyo Kabushiki Kaisha: *See*—
Hayashi, Kenji; and Kato, Kiyoshi, 4,445,820, Cl. 417-366.000.
Aisin Seiki Co., Ltd.: *See*—
Kuzuya, Kaneharu; Ishida, Giichi; and Ishizaki, Kosho, 4,445,449, Cl. 112-121.110.
Aisin Seiki Kabushiki Kaisha: *See*—
Ohmi, Atsushi; and Ochiai, Chiaki, 4,445,425, Cl. 92-98.00D.
Aisin Warner Kabushiki Kaisha: *See*—
Miki, Nobuaki; and Yokoyama, Shoji, 4,445,528, Cl. 137-315.000.
Akiba, Kiyoshi: *See*—
Sasaki, Takeshi; Akiba, Kiyoshi; and Takahashi, Yoshio, 4,445,399, Cl. 74-603.000.
Aktiebolaget Karlstads Mekaniska Werkstad: *See*—
Stenberg, Erik G., 4,445,974, Cl. 162-300.000.
Aktiebolaget S:t Eriks Betong: *See*—
Lo v, Bjorn, 4,445,802, Cl. 404-40.000.
Alaspa, Allan A., to Motorola, Inc. Low leakage CMOS analog switch circuit. 4,446,390, Cl. 307-579.000.
Albany International Corp.: *See*—
Adams, Ronald W.; Leunig, Carl V.; and Kovar, Robert F., 4,445,954, Cl. 156-148.000.
Albares, Donald J.: *See*—
McLandrich, Matthew N.; and Albares, Donald J., 4,446,543, Cl. 367-149.000.
Albers, Josef: *See*—
Linke, Horst; Albers, Josef; and Erwien, Helmut, 4,445,878, Cl. 474-92.000.
Albert, William C., to Singer Company, The. Linearizing mechanism for a vibrating beam force transducer. 4,446,394, Cl. 310-321.000.
Albertson, Clarence E.: *See*—
Okubo, Howard S.; Albertson, Clarence E.; and Nibert, Roger K., 4,446,203, Cl. 428-283.000.
Albertson, Walter, to Union Oil Company of California. Arsenic removal from hydrocarbons. 4,446,006, Cl. 208-253.000.
Aldag, Arthur W., Jr., to Phillips Petroleum Company. Catalytic skeletal isomerization. 4,446,013, Cl. 208-135.000.
Alexander, Michael C., to Data General Corporation. Video terminal character generator. 4,446,457, Cl. 340-745.000.
Allegheny Valve Company: *See*—
DeFrees, Joseph H., 4,445,533, Cl. 137-512.100.
Allen-Bradley: *See*—
Hoch, Thomas M.; and Kullgren, Dennis R., 4,446,525, Cl. 364-474.000.
Allen, Linus S.: *See*—
Givens, Wyatt W.; and Allen, Linus S., 4,446,369, Cl. 250-270.000.
Allert, Kurt. Hose band clip. 4,445,254, Cl. 24-274.00R.
Allied Corporation: *See*—
Murthy, Andiappan K. S.; Patel, Kundanbhai M.; and Bekker, Alex Y., 4,446,012, Cl. 208-130.000.
Oxenrider, Bryce C., 4,446,306, Cl. 528-366.000.
Allied Steel and Wire Limited: *See*—
Taylor, Leonard G., 4,445,308, Cl. 52-687.000.
Allis-Chalmers Corporation: *See*—
Farnia, Khosrow, 4,445,461, Cl. 122-7.00R.
Allread, Alan R., to Aeroquip Corporation. Axial force operated ball valve. 4,445,664, Cl. 251-149.200.
Allsopp, Lewis E.: *See*—
Westerman, Howard G.; and Allsopp, Lewis E., 4,445,467, Cl. 123-65.00R.
Allsup, Robert B.: *See*—
Pyne, Melvin L.; and Allsup, Robert B., 4,445,430, Cl. 100-35.000.
Aloe Vera of America, Inc.: *See*—
Maughan, Rex G., 4,446,131, Cl. 424-195.000.
Alphatype Corporation: *See*—
Tidd, James A.; and Tidd, Miles H., 4,446,491, Cl. 360-48.000.
Alps Electric Co., Ltd.: *See*—
Tsushima, Noboru; Fuse, Masashi; Sasaki, Toshio; Ogata, Masayuki; Mimori, Teruo; and Mukai, Tadashi, 4,445,279, Cl. 33-356.000.
Alumina Development Corporation: *See*—
McDaniel, James W., 4,446,117, Cl. 423-121.000.
Alvarez, Manuel: *See*—
Betermier, Benedicte; Alvarez, Manuel; and Norris, Robert D., 4,446,029, Cl. 210-748.000.
ALZA Corporation: *See*—
Wong, Patrick S.; Langston, Jimmy B.; and Leeper, Harold M., 4,445,889, Cl. 604-49.000.
Amagami, Keizo: *See*—
Mizukawa, Takumi; Amagami, Keizo; and Ogino, Yoshio, 4,446,350, Cl. 219-10.770.
American Cyanamid Company: *See*—
Cady, Susan M.; Blank, Werner J.; and Schirmann, Peter J., 4,446,280, Cl. 525-186.000.

American Hoechst Corporation: *See—*
Dhillon, Major S., 4,446,218, Cl. 430-175.000.
American Hofmann Corporation: *See—*
Mueller, Richard, 4,445,373, Cl. 73-473.000.
American Home Products Corporation: *See—*
Freed, Meier E.; and Abou-Gharbia, Magid, 4,446,323, Cl. 544-344.000.
Stein, Reinhardt P., 4,446,322, Cl. 544-138.000.
American Hospital Supply Corporation: *See—*
Johnson, Clifford C., 4,445,858, Cl. 433-141.000.
American Motors Corporation: *See—*
Mancusi, Fred, 4,445,616, Cl. 211-13.000.
American Stabilis, Inc.: *See—*
Peters, Donald, 4,445,636, Cl. 236-20.00R.
AMF Incorporated: *See—*
Frillici, Fernando V.; and Infantino, Joseph R., 4,445,688, Cl. 273-82.00R.
AMP Incorporated: *See—*
Evans, William R., 4,445,748, Cl. 339-94.00M.
Grabbe, Dimitry G., 4,445,271, Cl. 29-589.000.
Hoffman, Joseph W., 4,445,716, Cl. 285-55.000.
Hopkins, John R., 4,445,736, Cl. 339-17.0CF.
Long, William B.; Metzger, Donald L.; and Shuey, John R., 4,445,737, Cl. 339-18.00C.
Long, William B.; and Shannon, Suel G., 4,446,505, Cl. 361-413.000.
Ampex Corporation: *See—*
Williams, Marshall; and O'Gwynn, David C., 4,446,389, Cl. 307-515.000.
AMSTED Industries Incorporated: *See—*
Tilly, Lynn K.; and Sawa, John J., 4,445,439, Cl. 105-165.000.
Anderson Company of Indiana, The: *See—*
Harbison, William H.; and Mohnach, Michael G., 4,445,249, Cl. 15-250.320.
Anderson, Greenwood & Co.: *See—*
Powell, Walter W., 4,445,531, Cl. 137-489.000.
Andersson, Albert, to Skega AB. Track unit of bogie type. 4,445,582, Cl. 180-9.500.
Ando, Takao: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,446,137, Cl. 424-246.000.
Angel, Thomas M., to Santa Fe International Corporation. Autonomous cleaning inspection device. 4,445,524, Cl. 134-113.000.
Angeles, Marshall R., to Merck & Co., Inc. Method of preparing 1,2-dibromo-2-cyano-(substituted)-alkane antimicrobial compounds. 4,446,076, Cl. 260-465.00G.
Angmorter, Paul K.: *See—*
Simpson, Howard D.; Richardson, Ryden L.; and Angmorter, Paul K., 4,446,248, Cl. 502-211.000.
Angwin, Richard B., to Laminations Corporation. Bullet trap. 4,445,693, Cl. 273-404.000.
Annoot, Ira R., to Houston Geophysical Products, Inc. Double-plug seismic connector. 4,445,741, Cl. 339-49.00R.
Antognini, Luciano-Marco: *See—*
Remus, Hans-Jurgen; and Antognini, Luciano-Marco, 4,446,413, Cl. 318-696.000.
Aoki, Keiji; and Takimoto, Toshiyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for controlling the air-fuel ratio of an internal combustion engine. 4,445,481, Cl. 123-440.000.
Aoki, Takao; and Inoue, Takahiro, to Canon Kabushiki Kaisha. Electronic photographing device. 4,445,772, Cl. 355-3.0CH.
Aoshima, Atsushi; and Mitsui, Ryoichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing methacrolein. 4,446,328, Cl. 568-479.000.
Apel, Thomas R., to Rockwell International Corporation. Singly terminated push-pull distributed amplifier. 4,446,445, Cl. 330-269.000.
Apple Computer, Inc.: *See—*
Smith, Burrell, 4,445,414, Cl. 84-1.010.
Applied Power Inc.: *See—*
Clark, Ray, 4,445,673, Cl. 267-64.240.
Arbit, Harold A., to Mobil Oil Corporation. Enhanced wettability of organic surfaces. 4,445,991, Cl. 204-168.000.
Arc Technologies Systems, Ltd.: *See—*
Zollner, Dieter; Lauterbach-Dammler, Inge; and Rittmann, Friedrich, 4,446,561, Cl. 373-93.000.
ARCO Industries Ltd.: *See—*
D'Andrade, Bruce M.; Ng, Ping F.; and Ma, Tak M., 4,445,297, Cl. 46-230.000.
Arena, Alan J.; Pounder, Edwin; Pawlowski, Michael; and Totten, Adrian M., to Signet Scientific Co. Post mix dispensing method and apparatus. 4,445,781, Cl. 366-154.000.
Arimura, Kazuo: *See—*
Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, 4,445,350, Cl. 72-38.000.
Arinobu, Mutsuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Steam condensing apparatus. 4,446,081, Cl. 261-64.00R.
Armah, Ben: *See—*
Cohnen, Erich; and Armah, Ben, 4,446,142, Cl. 424-269.000.
Armco Inc.: *See—*
Cerwick, Joel A., 4,446,018, Cl. 210-195.400.
Cowan, William S., 4,445,807, Cl. 405-227.000.
Armijo, Joseph S.: *See—*
Cheng, Bo-Ching; Rosenbaum, Herman S.; and Armijo, Joseph S., 4,445,942, Cl. 148-6.300.
Armstrong World Industries, Inc.: *See—*
Bohrn, Walter J.; and Sydorko, Peter J., 4,445,243, Cl. 8-151.000.
Arndt, Frederick P.: *See—*
Oakes, Edmond G.; Arndt, Frederick P.; and Grandel, Leonard F., 4,445,708, Cl. 280-777.000.
Arnold, Robert G.: *See—*
Lutfy, Joseph P.; Grabowski, Thaddeus J.; and Arnold, Robert G., 4,445,979, Cl. 204-15.000.
Aronson, Terry L., to Leggett & Platt, Incorporated. Lacing wire stop mechanism for a coil spring assembly machine. 4,445,547, Cl. 140-92.300.
Arribas, Cecilio; and Blassiau, Rene E., to Noirot-MT. Peak load control for an electric heating system. 4,446,359, Cl. 219-485.000.
Arrow Paper Products Company: *See—*
Stark, Martin H.; Pisani, George V.; and Pauquette, James J., 4,445,691, Cl. 273-155.000.
Arya, Satya P., to Ingersoll-Rand Company. Mine roof plate. 4,445,808, Cl. 405-259.000.
Asahi-Dow Limited: *See—*
Fukuda, Kunio; Tazaki, Kichiya; Takano, Akihisa; and Kusumi, Yuji, 4,446,272, Cl. 524-465.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Aoshima, Atsushi; and Mitsui, Ryoichi, 4,446,328, Cl. 568-479.000.
Ikematu, Takeshi; and Hattori, Yasuo, 4,446,290, Cl. 526-174.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Enomoto, Shigeo; Hirobe, Hitoshi; and Urata, Shinji, 4,445,757, Cl. 350-429.000.
Iwanade, Hisao, 4,446,526, Cl. 364-525.000.
ASEA AB: *See—*
Adlerborn, Jan; Larker, Hans; Mattsson, Bertil; and Nilsson, Jan, 4,446,100, Cl. 419-48.000.
ASEA Aktiebolag: *See—*
Brogardh, Torgny; Ovren, Christer; and Sander, Lars, 4,446,366, Cl. 250-227.000.
Assaf, Gad; and Cohen, Yehuda, to Solmat Systems Ltd. Method of and apparatus for pre-treating make-up water contaminated with nutrients. 4,446,025, Cl. 210-602.000.
Asto Import- und Exportgesellschaft M.B.H. & Co. Kg.: *See—*
Nentwig, Jurgen, 4,445,311, Cl. 53-575.000.
Asulab S.A.: *See—*
Remus, Hans-Jurgen; and Antognini, Luciano-Marco, 4,446,413, Cl. 318-696.000.
AT&T Technologies, Inc.: *See—*
Koehler, Paul G.; Leahy, Thomas P.; and Lichliter, Thomas P., 4,446,422, Cl. 324-54.000.
Athey, Roderick E.; and Furnish, Alan G., to Marley Company. Boiler feed water deaerator spray valve turbulence shield. 4,445,537, Cl. 137-572.000.
Atlantic Richfield Company: *See—*
Perkins, Thomas K., 4,445,575, Cl. 166-290.000.
Atlas Powder Company: *See—*
Oswald, Gerald L., 4,445,435, Cl. 102-215.000.
Atsumi, Masaharu: *See—*
Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, 4,446,499, Cl. 361-92.000.
Atwell, William L., to Leco Corporation. Sampling tube and apparatus. 4,445,390, Cl. 73-864.520.
Auchterlonie, Richard C. High speed plasma focus fusion reactor. 4,446,096, Cl. 376-145.000.
Audichron Company, The: *See—*
Cofer, Frank H., 4,446,337, Cl. 179-18.00B.
Auditore-Hargreaves, Karen; and Miesowicz, Frederick M., to Du Pont de Nemours, E. I., and Company. Homogeneous immunoassay using covalent hybrid antibodies. 4,446,233, Cl. 435-7.000.
Aufderhaar, Erhard; Feller, Johannes; Hultsch, Gunther; and Kisslinger, Walter, to Krauss-Maffei Aktiengesellschaft. Filter-medium support plate for centrifugal filter. 4,446,021, Cl. 210-378.000.
Austin, Peter W.: *See—*
Foster, Stephen R.; and Austin, Peter W., 4,445,424, Cl. 92-5.00R.
Auth, David C. Method and apparatus for removal of enclosed abnormal deposits. 4,445,509, Cl. 128-305.000.
Avra, Raymond E.; and Herrington, Lawrence, to MegaTape Corporation. High speed bidirectional magnetic tape transport with constant tension. 4,445,650, Cl. 242-192.000.
AVX Corporation: *See—*
Scrantom, Dehart G.; and Rutt, Truman C., 4,445,851, Cl. 432-239.000.
Ayerst, McKenna & Harrison, Inc.: *See—*
Sestanj, Kazimir; and Bellini, Francesco, 4,446,150, Cl. 424-270.000.
Aymard, Pierre: *See—*
Dewitte, Jean; and Aymard, Pierre, 4,446,207, Cl. 428-402.000.
B. F. Goodrich Company, The: *See—*
Eden, Jamal S., 4,446,249, Cl. 502-225.000.
Felder, Gregory F., 4,445,962, Cl. 156-398.000.
Kolycheck, Edmond G.; and Tolle, Laura L., 4,446,286, Cl. 525-455.000.
Mattson, William F., 4,446,093, Cl. 264-315.000.
Babcock & Wilcox Company, The: *See—*
Nielsen, John M., 4,445,386, Cl. 73-780.000.
Babech, Alfred; and Lohrmann, Gerhard, to Mannesmann AG. Pulse-producing transducer. 4,446,367, Cl. 250-231.0SE.
Bachelis, Leonid V.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.

Backhouse, Richard J., to National Research Development Corporation. Stored program digital data processor. 4,446,533, Cl. 364-900.000.
Beckof, Charles A., Jr., to Motorola, Inc. CVSD Transmission with improved intelligibility of voice signals. 4,446,565, Cl. 375-32.000.
Bacuvier, Pierre, to Le Silicium Semiconducteur SSC. Assembly in a single case of a main power-switching semiconductor component and a destorage diode. 4,446,478, Cl. 357-75.000.
Badoz, Janine; Bardin, Michelle; Bernard, Claude; Herlem, Michel; Robert, Guy; and Thiebault, Andre, to Electricite de France (Service National). Electrochemical generator comprising an ammoniate. 4,446,215, Cl. 429-190.000.
Baertsch, Richard D.; and Engeler, William E., to General Electric Company. Surface charge signal processing apparatus. 4,446,532, Cl. 364-824.000.
Bahjat, Dhari S.: *See—*
Sternberg, Ben K.; Miller, Dale E.; and Bahjat, Dhari S., 4,446,434, Cl. 324-363.000.
Baka Manufacturing Company, Inc.: *See—*
Kovacs, Joseph, 4,445,894, Cl. 604-179.000.
Baker Cac, Inc.: *See—*
Foster, Stephen R.; and Austin, Peter W., 4,445,424, Cl. 92-5.00R.
Baker, Carl R. Auxiliary power supply switching set. 4,446,376, Cl. 290-44.000.
Baker International Corporation: *See—*
Fineberg, Douglas H.; and Haynes, Andrew, 4,445,572, Cl. 166-188.000.
Baker, Richard A.; Forsythe, George D.; Likhyani, Kewal K.; Roberts, Robert E.; and Robertson, David C., to Du Pont de Nemours, E. I., and Company. Hollow filament product. 4,446,024, Cl. 210-500.200.
Baker, Richard W.; and Ninomiya, Yasuo, to Bend Research, Inc. Controlled-release dispenser. 4,445,641, Cl. 239-6.000.
Bakke, Even, to Peabody Process Systems, Inc. System for dry scrubbing of flue gas. 4,446,109, Cl. 422-168.000.
Bakker, Willem F., to Breeze Illinois, Incorporated. Quick disconnect connector with positive locking device. 4,445,743, Cl. 339-90.00R.
Bales, Randy L. Yellow gold jewelry alloy. 4,446,102, Cl. 420-507.000.
Balfour Lumber Company: *See—*
Coleman, Cecil A., 4,445,559, Cl. 144-363.000.
Ball Value Co., Inc.: *See—*
Bunn, Stuart E.; and Owsley, Herbert B., 4,445,824, Cl. 417-440.000.
Baltare, Gunnar, to Eaton Corporation. Spider assembly for drum brake. 4,445,597, Cl. 188-206.00A.
Baltzer, William W.: *See—*
May, Earl L.; and Baltzer, William W., 4,445,924, Cl. 65-182.300.
Banerian, Carl. Tool for a method of forming dimples in sheet metal for recessing rivet heads. 4,445,264, Cl. 29-445.000.
Banner, Kurt A.; and Gustafsson, Sten-Ake, to AB Karlstads Mekaniska Werkstad. Barking drum and method. 4,445,558, Cl. 144-341.000.
Baracskai, Jozsef: *See—*
Gimesi, Antal; Baracskai, Jozsef; Fodor, Ferenc; Gaal, Antal; Horvath, Andras; and Kolonics, Zoltan, 4,445,927, Cl. 71-86.000.
Barber, Bob, Jr.: *See—*
Parker, David L., 4,445,404, Cl. 81-62.000.
Bardin, Michelle: *See—*
Badoz, Janine; Bardin, Michelle; Bernard, Claude; Herlem, Michel; Robert, Guy; and Thiebault, Andre, 4,446,215, Cl. 429-190.000.
Bardl, Artur, to Siemens Aktiengesellschaft. Semiconductor circuit with clock-controlled charge displacement devices. 4,446,485, Cl. 358-213.000.
Bardsley, Harold B.; and Beverley, Ian, to Spencer Wright Industries, Inc. Tufting machine apparatus. 4,445,447, Cl. 112-79.00R.
Barge, Fred H. Chiropractic adjustment table. 4,445,504, Cl. 128-70.000.
Bargman, Ronald D. Differential pressure indicator. 4,445,457, Cl. 116-268.000.
Barkow, Alice: *See—*
Chiaramonte, Vincent; and Barkow, Alice, 4,445,862, Cl. 433-191.000.
Baron, Arthur L.: *See—*
Krishnan, Sivaram; and Baron, Arthur L., 4,446,297, Cl. 528-204.000.
Baron, Walter J.; and Cleaver, Laird C., to Water Services of America, Inc. Sleeve-type fluid flow diverter. 4,445,540, Cl. 137-625.430.
Barozzi, Gian P.; and Horeschi, Giancarlo, to Tokyo Juki Industrial Co., Ltd. Impact control for carrier mounted serial printers. 4,445,797, Cl. 400-166.000.
Barr, Arthur C. Two way mailing envelope. 4,445,635, Cl. 229-73.000.
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, to Procter & Gamble Company, The. Fabric conditioning compositions containing amino-silanes. 4,446,033, Cl. 252-8.600.
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, to Procter & Gamble Company, The. Cleansing agents and the like with amino-silanes. 4,446,035, Cl. 252-8.800.
Barrell, David; Kennedy, Donald E.; Marino, James J., Jr.; and Rollen, Donald C., to Glasteel Tennessee, Inc. Copper-clad polyester-glass fiber laminates using zinc-coated copper. 4,446,173, Cl. 427-206.000.
Barshter, Dennis W., to Kennecott Corporation. Resistance-heated boat for metal vaporization. 4,446,357, Cl. 219-275.000.
Bartelloni, Rene, to Papeteries de Jean d'Heurs. Process for the continuous manufacture in an aqueous medium of sheets made of fibrous material and containing latex or similar and/or phenoplasts or aminoplasts, sheets obtained by said process and their possible re-use. 4,445,972, Cl. 162-164.100.
Bartholic, David B., to Engelhard Corporation. Selective vaporization process and apparatus. 4,446,009, Cl. 208-113.000.
Bartley, Burton H.: *See—*
Petty, Randall H.; and Bartley, Burton H., 4,446,010, Cl. 208-120.000.
Bartley, William J.; and Wilson, Thomas P., to Union Carbide Corporation. Process for producing two-carbon atom oxygenated compounds from synthesis gas with minimal production of methane. 4,446,251, Cl. 518-716.000.
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, to Ciba-Geigy Corporation. Antigen derivatives and processes for their preparation. 4,446,128, Cl. 424-88.000.
BASF Aktiengesellschaft: *See—*
Brandstetter, Franz; Echte, Adolf; Haaf, Franz; Hambrecht, Juergen; and Naarmann, Herbert, 4,446,277, Cl. 525-68.000.
Graser, Fritz, 4,446,324, Cl. 546-37.000.
Hahn, Klaus; Weber, Heinz; Guenther, Wolfgang; Schillinger, Bernhard; and Weber, Reinhold, 4,446,253, Cl. 521-79.000.
Strehler, Hugo; Valentin, Guenter; and Hoerauf, Werner, 4,446,089, Cl. 264-178.00F.
Bassier, Friedr.; Adrian, Fritz; and Deuster, Dieter, to Ruhrkohle AG; and Steag AG. Pneumatic stowing of construction material comprising calcium alpha- and beta-sulphate hemihydrates. 4,445,937, Cl. 106-109.000.
Battelle Memorial Institute: *See—*
Giddey, Claude; and Dove, Georges, 4,446,166, Cl. 426-631.000.
Baum, Heinz W., to Lucas Industries Limited. Disc brake pad assemblies. 4,445,595, Cl. 188-73.380.
Bauman, William C.: *See—*
Lee, John M.; and Bauman, William C., 4,446,201, Cl. 428-696.000.
Baumgartner, Hans; and Schmitz, Eckehard, to Pierburg GmbH & Co. KG. Engine idling speed control systems. 4,445,475, Cl. 123-339.000.
Bausch & Lomb Incorporated: *See—*
Emmel, Henry J., 4,445,758, Cl. 350-530.000.
Baxter, William J., to General Motors Corporation. Method of manufacturing gel electrode for early detection of metal fatigue. 4,445,999, Cl. 204-414.000.
Bay, Otto. Apparatus for transporting single sheets of different rectangular formats. 4,445,679, Cl. 271-227.000.
Bayer Aktiengesellschaft: *See—*
Binsack, Rudolf; Lindner, Christian; Rempel, Dieter; and Ott, Karl-Heinz, 4,446,276, Cl. 525-64.000.
Brack, Alfred, 4,446,326, Cl. 548-438.000.
Bucheler, Manfred; Klinksiek, Bernd; Gehringer, Hans; and Schnoring, Hildegard, 4,446,127, Cl. 424-59.000.
Hombach, Rudolf; Nolte, Wilfried; Russell, Peter J.; and Wall, Nigel G., 4,445,959, Cl. 156-332.000.
Jager, Horst; and Wunderlich, Klaus, 4,446,067, Cl. 260-153.000.
Kolbe, Joachim; Kortmann, Wilfried; and Pfeiffer, Josef, 4,446,034, Cl. 252-8.800.
Konig, Eberhard; Thoma, Wilhelm; Pedain, Josef; and Konig, Klaus, 4,446,293, Cl. 528-45.000.
Konig, Joachim; Schnalke, Karl-Erwin; Suling, Carlhans; and Horacek: Gotz, 4,446,291, Cl. 526-209.000.
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., to Rohm and Haas Company. Herbicidal 4-trifluoromethyl-4-nitrodiphenyl ethers. 4,445,930, Cl. 71-105.000.
Beale, Alvin F., Jr., to Dow Chemical Company, The. Chromium oxide in ion exchange resin. 4,446,252, Cl. 521-28.000.
Beales, Keith J.; Partington, Sally; and Dunn, Anthony G., to Post Office. Glass optical fibres and glass compositions therefor. 4,445,754, Cl. 350-96.340.
Beall, Michael D.: *See—*
Reynolds, Louis E.; and Beall, Michael D., 4,445,382, Cl. 73-716.000.
Beasley, Max M., to Tuftco Corporation. Knife holder module for cut pile tufting machine. 4,445,446, Cl. 112-79.00R.
Beatrice Foods Co.: *See—*
Shah, Syed M. M.; Luksas, Anthony J.; and Ahmed, Salah E., 4,446,055, Cl. 252-351.000.
Beavan, Stuart W.; and Willis, Edwin, to Lever Brothers Company. Fabric conditioning composition. 4,445,901, Cl. 8-103.000.
Becker, John V. Tactile communication. 4,445,871, Cl. 434-114.000.
Becker, Larry W., to Betz Laboratories, Inc. Isopropenyl phosphonic acid copolymers used to inhibit scale formation. 4,446,028, Cl. 210-697.000.
Becker, Larry W., to Betz Laboratories, Inc. Poly (alkenyl) phosphonic acid and methods of use thereof. 4,446,046, Cl. 252-181.000.
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, to W. Schlafhorst & Co. Method and device for making a knot-free thread connection by splicing. 4,445,318, Cl. 57-22.000.
Beckerle, John C. Oceanographic measurement system. 4,446,542, Cl. 367-131.000.
Beckman, Wayne C.; and Harwell, Patrick E., to Global Marine Inc. Apparatus for measurement of ice movement. 4,445,395, Cl. 74-501.00R.
Bedier, Pierre C. A., to Societe Breilly S.A. Panty-hose with an elastic belt incorporated therein and method. 4,445,345, Cl. 66-177.000.
Beecham Group Limited: *See—*
Southgate, Robert; Smale, Terence C.; and Ponsford, Roger J., 4,446,146, Cl. 424-274.000.
Beecham Group Limited of Beecham House: *See—*
Luk, Kong, 4,446,069, Cl. 260-245.20R.

Beecham Group p.l.c.: *See—*
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,446,113, Cl. 422-267.000.
Beier, Stefan, to Kaltenbach & Voigt GmbH & Co. Dental treatment apparatus. 4,446,456, Cl. 340-706.000.
Beiersdorf Aktiengesellschaft: *See—*
Cohnen, Erich; and Armah, Ben, 4,446,142, Cl. 424-269.000.
Bekey, Ivan; and Wolk, Roger S. Apparatus for constructing registered teeth castings. 4,445,854, Cl. 433-37.000.
Bekker, Alex Y.: *See—*
Murthy, Andiappan K. S.; Patel, Kundanbhai M.; and Bekker, Alex Y., 4,446,012, Cl. 208-130.000.
Belko, Robert P.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,446,060, Cl. 252-522.00R.
Bell, Claude: *See—*
Kubic, Nick; Bell, Claude; and Seguin, Serge, 4,445,619, Cl. 220-263.000.
Bell Petroleum Services, Inc.: *See—*
von Bose, Robert J., 4,446,539, Cl. 367-25.000.
Bell, R. Frank, to Hewlett-Packard Company. Dual mode amplifier. 4,446,440, Cl. 330-10.000.
Bell Telephone Laboratories, Incorporated: *See—*
Bethel, Leslie D.; Kerr, Howard A.; Strebendt, Frances B.; and Waninski, John E., Jr., 4,446,336, Cl. 179-6.100.
Dick, George W., 4,446,402, Cl. 313-586.000.
Rubin, Harvey, 4,446,341, Cl. 179-175.20R.
Smith, Craig G., 4,445,980, Cl. 204-15.000.
Bellini, Francesco: *See—*
Sestanj, Kazimir; and Bellini, Francesco, 4,446,150, Cl. 424-270.000.
Bello, Paul. Pipe carousel for well-drilling rig. 4,445,579, Cl. 175-52.000.
Beloit Corporation: *See—*
Karr, Gerald W.; and Wong, George H., 4,445,646, Cl. 242-56.00R.
Belote, Stephen N.; Leonard, Don R.; and Luce, Garrett C., to Eastman Kodak Company. Modified polyesters. 4,446,301, Cl. 528-295.300.
Bemcor, Inc.: *See—*
Lazar, John D., Jr.; and Shvartsman, Benyamin, 4,445,410, Cl. 83-390.000.
Ben Clements & Sons, Inc.: *See—*
Ueno, Hideyuki, 4,445,882, Cl. 493-376.000.
Benarrouch, Jacques, to Sasson Jeans, Inc. Refillable soft tube for packaging liquid or paste products such as toothpaste, polish, shaving cream or the like. 4,445,609, Cl. 206-277.000.
Bend Research, Inc.: *See—*
Baker, Richard W.; and Ninomiya, Yasuo, 4,445,641, Cl. 239-6.000.
Bender, Audrey L., to Dynatech Laboratories Incorporated. Nontoxic aspirin composition. 4,446,132, Cl. 424-233.000.
Bender Machine Works, Inc.: *See—*
Schmid, Rolyn A., 4,445,522, Cl. 134-58.00R.
Bendix Corporation, The: *See—*
Van Siclen, Howard E., Jr., 4,445,490, Cl. 123-602.000.
Woodruff, Frank, 4,445,830, Cl. 418-22.000.
Benedetto, Enrico, to Oronzio de Nora S.A. Electrolytic purification and reconcentration of wash and rinse caustic solutions recovered from the regeneration of ion exchange resins. 4,445,987, Cl. 204-98.000.
Benedict, James J.: *See—*
Sunberg, Richard J.; and Benedict, James J., 4,446,052, Cl. 252-315.100.
Beneteau, Charles, to Patrick S.A. Plastic spike for sports shoe. 4,445,289, Cl. 36-134.000.
Benjamin, Gary H.: *See—*
Klose, Karl W.; and Benjamin, Gary H., 4,445,963, Cl. 156-420.000.
Benko, David A., to Goodyear Tire & Rubber Company, The. Ion beam deposition or etching re rubber-metal adhesion. 4,446,197, Cl. 428-625.000.
Bennett, Alan; and Brown, Derek, to British Gas Corporation. Device for detecting flooding of a hollow structure. 4,445,363, Cl. 73-40.50A.
Bennett, Terry A.; Eilenfeld, Herbert W.; and Lampman, Dewitt W., to PPG Industries, Inc. Tempering glass sheets by cooling comprising sublimation quenching. 4,445,921, Cl. 65-114.000.
Benton, Stephen A., to Polaroid Corporation. Holographic products and processes. 4,445,749, Cl. 350-376.000.
Berardi, Randal L.: *See—*
D'Augustine, Frank T.; and Berardi, Randal L., 4,445,874, Cl. 445-45.000.
Berde, Dennis W., to Grumman Aerospace Corporation. Apparatus and method for locating faults in cables. 4,446,421, Cl. 324-52.000.
Berg, Alan: *See—*
Grois, Igor; Margolin, Mark; and Berg, Alan, 4,445,750, Cl. 350-96.210.
Berg, Ellie; and Yowfoo, Joseph, to Fishman, Jeffrey. Educational board game. 4,445,867, Cl. 434-404.000.
Bergbreiter, Jack: *See—*
Kolling, Byron M.; Bergbreiter, Jack; and Hunn, Roy, 4,445,623, Cl. 220-343.000.
Bergthaller, Peter; and Strauss, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Photographic material comprising a layer with Ni complex of 2,2'-bisphenol. 4,446,219, Cl. 430-216.000.
Bernard, Claude: *See—*
Badoz, Janine; Bardin, Michelle; Bernard, Claude; Herlem, Michel; Robert, Guy; and Thiebault, Andre, 4,446,215, Cl. 429-190.000.
Bernauer, Otto; and Ziegler, Klaus, to Daimler-Benz Aktiengesellschaft. Storage material for hydrogen. 4,446,101, Cl. 420-424.000.
Bernhard, Herbert, to Seitz-Werke GmbH. Arrangement for a bottle handling machine. 4,445,549, Cl. 141-148.000.
Berninger, Mark S., to Life Technologies, Inc. Method for detection of a suspect viral deoxyribonucleic acid in an acellular biological fluid. 4,446,237, Cl. 436-504.000.
Berthod, Daniel P. M.; and Ferret, Simone, to Lever Brothers Company. Water-in-oil emulsions. 4,446,051, Cl. 252-309.000.
Bertrams, Josef: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.
Bessler, Donald U., to Petrolite Corporation. Demulsification of surfactant-petroleum-water flood emulsions. 4,446,054, Cl. 252-344.000.
Betermier, Benedicte; Alvarez, Manuel; and Norris, Robert D., to FMC Corporation. Destruction of iron cyanide complexes. 4,446,029, Cl. 210-748.000.
Bethel, Leslie D.; Kerr, Howard A.; Strebendt, Frances B.; and Waninski, John E., Jr., to Bell Telephone Laboratories, Incorporated. Method for recording and updating stored messages in an announcement system. 4,446,336, Cl. 179-6.100.
Betz Laboratories, Inc.: *See—*
Becker, Larry W., 4,446,028, Cl. 210-697.000.
Becker, Larry W., 4,446,046, Cl. 252-181.000.
Snyder, William R.; and Feuerstein, Diane, 4,446,045, Cl. 252-180.000.
Beutier, Didier; Palvadeau, Claude; Pasquier, Gilles; and Dietrich, March, to Krebs & Cie S.A. Process and solvent for extraction of the chromates present in an aqueous solution. 4,446,026, Cl. 210-639.000.
Beverley, Ian: *See—*
Bardsley, Harold B.; and Beverley, Ian, 4,445,447, Cl. 112-79.00R.
Bibb, Albert E.: *See—*
Steeves, Arthur F.; and Bibb, Albert E., 4,445,988, Cl. 204-129.200.
Billig, Ernst: *See—*
Jamerson, Jackie D.; Billig, Ernst; and Bryant, David R., 4,446,074, Cl. 260-429.00R.
Bilofsky, Ruth C.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell; and Sahatjian, Ronald A., 4,446,305, Cl. 528-348.000.
Bilski, Gerard W., to Tri-Motion Industries, Inc. Bidirectional control valve. 4,445,538, Cl. 137-596.200.
Binder, Paul B.; and Di Napoli, Louis D., to General Signal Corporation. Multiple range capacitive pressure transducer. 4,445,383, Cl. 73-718.000.
Binsack, Rudolf; Lindner, Christian; Rempel, Dieter; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. Ageing-resistant, processing-stable, high strength mixtures based on thermoplastic polyesters. 4,446,276, Cl. 525-64.000.
BioResearch Inc.: *See—*
Kurtz, Leonard D.; and LiCausi, Joseph, 4,445,884, Cl. 604-4.000.
Birkett, William B. Exposure indicator. 4,445,773, Cl. 355-68.000.
Bischkopf, Reiner: *See—*
Kronseder, Hermann; and Bischkopf, Reiner, 4,445,961, Cl. 156-364.000.
Bischoff, Gilbert: *See—*
Weiler, Rolf; Bischoff, Gilbert; and Schlag, Rudolf, 4,445,331, Cl. 60-547.100.
Bishop, Arthur E. Power steering valve. 4,445,422, Cl. 91-434.000.
Black & Decker Inc.: *See—*
Sanders, Anthony J., 4,445,811, Cl. 409-182.000.
Blank, Werner J.: *See—*
Cady, Susan M.; Blank, Werner J.; and Schirmann, Peter J., 4,446,280, Cl. 525-186.000.
Blassiau, Rene E.: *See—*
Arribas, Cecilio; and Blassiau, Rene E., 4,446,359, Cl. 219-485.000.
Blaszczak, Thaddeus E.: *See—*
Taleff, Alexander; Brady, Robert M.; and Blaszczak, Thaddeus E., 4,445,353, Cl. 72-136.000.
Bliley, Ward L., to Structural Fibers, Inc. Method for making lined vessels. 4,446,092, Cl. 264-258.000.
Bloch, Willi, to Volkswagenwerk Aktiengesellschaft. Safety device for vehicles. 4,445,648, Cl. 242-107.600.
Boccuti, A. David, to Polaroid Corporation. Encoded shutter blade apparatus. 4,445,762, Cl. 354-437.000.
Boden, Richard M; Vock, Manfred H.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Prenyl methyl carbonate and organoleptic uses thereof. 4,446,157, Cl. 426-3.000.
Bodicky, Raymond O., to Sherwood Medical Company. Infusion apparatus. 4,445,893, Cl. 604-165.000.
Boeckh, Franz-Xaver: *See—*
Hoffmeister, Jurgen; Ravasini, Guiseppe; and Boeckh, Franz-Xaver, 4,445,859, Cl. 433-79.000.
Boeing Company, The: *See—*
Engelke, Claude W.; Power, Royal A.; and Brees, Dale W., 4,445,652, Cl. 244-1.00R.
Bohanon, Hoy R., Sr., to Acme Engineering & Manufacturing Corporation. Slanted housing fan enclosure. 4,445,426, Cl. 98-116.000.
Bohm, Georg G. A.; DeTrano, Mario; and Hall, James E., to Firestone Tire & Rubber Company, The. Sealant compositions having, as an essential component, hydrogenated polybutadiene as network polymer. 4,445,562, Cl. 152-347.000.
Bohme, Rolf C.; and Lazerson, Max M., to General Mining Union Corporation Limited. Sorting system calibration. 4,445,615, Cl. 209-555.000.
Bohrn, Walter J.; and Sydorko, Peter J., to Armstrong World Industries, Inc. Particle ink application. 4,445,243, Cl. 8-151.000.

Bolgiano, Duane R., to International Mobile Machines Corporation. Rotary dial decoder. 4,446,339, Cl. 179-84.00R.
Boller, Thomas E.: *See—*
Malani, Narayandas; and Boller, Thomas E., 4,446,172, Cl. 427-160.000.
Bond, Curtis J.; and Ulm, John G. Quick-disconnect coupling and valve assembly. 4,445,551, Cl. 141-349.000.
Bond, Helen I. Hygienic article for blotting the rectal perineum region. 4,445,899, Cl. 604-385.000.
Bond, Hollis H., Jr.; and Franklin, Carl R., to United States of America, National Aeronautics & Space Administration. Digital interface for bi-directional communication between a computer and a peripheral device. 4,446,459, Cl. 340-825.210.
Bonham, Harry B., Jr., to Rockwell International Corporation. Automatic bonder for forming wire interconnections of automatically controlled configuration. 4,445,633, Cl. 228-102.000.
Bonnefoy, Jean, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Electrical connection device for high density contacts. 4,445,735, Cl. 339-17.00M.
Bopp, Warren G., to Eaton Corporation. Cooling means for torque converter bypass. 4,445,599, Cl. 192-3.290.
Borel, Pierre, to Jowa. Multisheet binder and assembly. 4,445,710, Cl. 281-45.000.
Borg, Catherine J.: *See—*
Borg, John L.; and Borg, Catherine J., 4,446,379, Cl. 290-55.000.
Borg, John L.; and Borg, Catherine J. Magnus effect power generator. 4,446,379, Cl. 290-55.000.
Borg-Warner Corporation: *See—*
Knight, Kerry G., 4,445,607, Cl. 192-107.00C.
Okubo, Howard S.; Albertson, Clarence E.; and Nibert, Roger K., 4,446,203, Cl. 428-283.000.
Borris, Peter W.: *See—*
Freeman, Bob L.; and Borris, Peter W., 4,445,956, Cl. 156-154.000.
Borst, Arnoldus J., to Stichting Kennisexploitatie Nederland. Dental cavity measuring instrument. 4,445,857, Cl. 433-75.000.
Boser, Otmar H.; and Sweet, Richard C., to U.S. Philips Corporation. Metallurgical contacts in hermetically sealed glass encapsulated ceramic capacitors. 4,446,502, Cl. 361-308.000.
Bost, Alois. Three-point safety belt system. 4,445,709, Cl. 280-801.000.
Bostich, June M.: *See—*
Hsieh, Wen-Ching; Bostich, June M.; and Koepke, Jeffery W., 4,446,036, Cl. 252-8.55D.
Bottini, Alfred A.: *See—*
Powers, Joseph E.; Grimoldi, Ranaldo H.; Williamson, Calvin C.; and Bottini, Alfred A., 4,445,357, Cl. 72-399.000.
Bouille, Bernard, to Swiss Aluminium Ltd. Device for thermal treatment of scrap. 4,445,849, Cl. 432-128.000.
Boulanger, Henry J.; McGuirk, Andrew C.; and LaPlante, William J., to Texas Instruments Incorporated. Thermostat device having improved mounting means. 4,446,450, Cl. 337-380.000.
Boulanger, Henry J., to Texas Instruments Incorporated. Thermostat device having improved mounting means. 4,446,451, Cl. 337-380.000.
Bouwhuis, Gijsbertus; and Braat, Josephus J. M., to U.S. Philips Corporation. Apparatus for the point-by-point scanning of an object. 4,446,548, Cl. 369-109.000.
Bowden, Edgar A.; Deline, Gordon R.; and Koeijmans, Gerard D., to Mobil Oil Corporation. Electronic system for release of on-bottom seismometer unit. 4,446,537, Cl. 367-15.000.
Bowen, Charlotte M. Absorbent pad holder. 4,445,242, Cl. 5-484.000.
Bowers, Clark A.: *See—*
Miller, Donald; and Bowers, Clark A., 4,445,719, Cl. 294-88.000.
Bowser, George H., to PPG Industries, Inc. Flexible non-extensible hinge for photomask assembly. 4,446,184, Cl. 428-57.000.
Boyle, Walter G. Board game involving international trade. 4,445,692, Cl. 273-256.000.
Braat, Josephus J. M.: *See—*
Bouwhuis, Gijsbertus; and Braat, Josephus J. M., 4,446,548, Cl. 369-109.000.
Brack, Alfred, to Bayer Aktiengesellschaft. Cationic naphtholactam dyestuffs. 4,446,326, Cl. 548-438.000.
Brady, Robert M.: *See—*
Taleff, Alexander; Brady, Robert M.; and Blaszczak, Thaddeus E., 4,445,353, Cl. 72-136.000.
Brajder, Antonio; and Kublick, Christian, to Siemens Aktiengesellschaft. Reliable signal system having at least one transmitter feeding plural series-connected receiver inputs. 4,446,550, Cl. 370-14.000.
Braksmayer, Diza P.; and Lovenguth, Ronald F., to FMC Corporation. Flame retardant polyphenylene ether-styrene thermoplastic resin compositions. 4,446,265, Cl. 524-139.000.
Brambilla, Guido, to Societa Impianti Elettrici Telefonici Telegrafici e Costruzioni Edili S.p.A. Two-tube telescopic hydraulic shock absorbers. 4,445,598, Cl. 188-322.160.
Brandstetter, Franz; Echte, Adolf; Haaf, Franz; Hambrecht, Juergen; and Naarmann, Herbert, to BASF Aktiengesellschaft. Thermoplastic molding material. 4,446,277, Cl. 525-68.000.
Brannon, Judeth H.: *See—*
Eberly, Paul E., Jr.; and Brannon, Judeth H., 4,446,005, Cl. 208-91.000.
Bratton, Daniel W. All weather clipboard. 4,445,728, Cl. 312-1.000.
Braun, Eugene R., to Eaton Corporation. Fluid actuated shift bar housing assembly. 4,445,393, Cl. 74-346.000.
Bray, Carl R.; and Cueni, Lee. Cotton candy accessory for blender. 4,445,832, Cl. 425-9.000.
Breckenridge, Gerald H. Spray boom mounting assembly. 4,445,657, Cl. 248-73.000.
Brede, Uwe; and Kordel, Gerhard, to Dynamit Nobel Aktiengesellschaft. Arrangement for the contactless transmission of electric energy to missiles during firing thereof. 4,445,434, Cl. 102-206.000.
Brees, Dale W.: *See—*
Engelke, Claude W.; Power, Royal A.; and Brees, Dale W., 4,445,652, Cl. 244-1.00R.
Breeze Illinois, Incorporated: *See—*
Bakker, Willem F., 4,445,743, Cl. 339-90.00R.
Breglia, Denis R.; and Oharek, Frank J., to United States of America, Navy. Head position and orientation sensor. 4,446,480, Cl. 358-104.000.
Bresler, Robert G., to McCormick Laboratories, Inc. Circuits for determining very accurately the position of a device inside biological tissue. 4,445,501, Cl. 128-1.500.
Bridgestone Tire Company Limited: *See—*
Kono, Mitsutsugu; and Inoue, Osamu, 4,445,561, Cl. 152-209.00B.
British Gas Corporation: *See—*
Bennett, Alan; and Brown, Derek, 4,445,363, Cl. 73-40.50A.
Burton, Stephen R.; Horley, Gary; and Hodrien, Ronald C., 4,446,003, Cl. 208-48.00Q.
British Nuclear Fuels Limited: *See—*
Critchley, Richard J.; and Swindells, Roy J., 4,446,063, Cl. 252-633.000.
Brixius, Darryl W.; and Simms, John A., to Du Pont de Nemours, E. I., and Company. Coatings formed from isocyanate-functional polymers containing a terminal monosulfide group. 4,446,175, Cl. 427-385.500.
Brochman, Wilfred R.; and Patterson, Richard A., to Minnesota Mining and Manufacturing Company. Tamper-proof closure for container. 4,445,620, Cl. 220-271.000.
Brog, Roy A. Whey based imitation milk compositions. 4,446,164, Cl. 426-583.000.
Brogardh, Torgny; Ovren, Christer; and Sander, Lars, to ASEA Aktiebolag. Fiber optic measuring device with compensation for reflections in the fiber optic and with a possibility of simultaneous measurement of several quantities. 4,446,366, Cl. 250-227.000.
Broken Hill Proprietary Company Limited, The: *See—*
Salm, Dietmar F. E., 4,446,156, Cl. 428-648.000.
Brown, Boveri & Cie AG: *See—*
Steinleitner, Gunther, 4,446,213, Cl. 429-104.000.
Brown, Derek: *See—*
Bennett, Alan; and Brown, Derek, 4,445,363, Cl. 73-40.50A.
Brown, Harry J., to Union Carbide Corporation. Hard facing composition for iron base alloy substrate using VC, W, Mo, Mn, Ni and Cu and product. 4,446,196, Cl. 428-544.000.
Brown, Richard: *See—*
Whartenby, James C.; Brown, Richard; Rao, Srinivas T.; and Menna, Raymond J., 4,445,978, Cl. 204-15.000.
Brown, Sammy K.; Solimeno, Duane; Koeppen, Peter L.; and Rogers, Gerald, to Texas Instruments Incorporated. Multiple register digital processor system with shared and independent input and output interface. 4,446,514, Cl. 364-200.000.
Brown, Samuel J., to Essex Group, Inc. Electromagnetic solenoid relay. 4,446,449, Cl. 335-131.000.
Browning, Andrea, to Thilmony, Evelyn, a part interest. Methd for preparing artistic works with yarn. 4,445,950, Cl. 156-63.000.
Browning, James T.; and Orlando, Franklin P., to FMC Corporation. Loose vine and cane eliminator. 4,445,316, Cl. 56-330.000.
Bruere, Alain E.: *See—*
Chatanier, Michel J.; Portat, Michel J.; and Bruere, Alain E., 4,446,424, Cl. 324-62.000.
Bruhn, Peter H.; and Wustrau, Rolf, to International Business Machines Corporation. Method and apparatus for stacking rotor blanks on a shaft. 4,445,272, Cl. 29-598.000.
Bruning, E. Eugene, to Caterpillar Tractor Co. Bulkhead-fluid-line connector. 4,445,713, Cl. 285-14.000.
Bruning, Rolf; and Reimann, Klaus, to Heraeus Quarzschmelze GmbH. Apparatus for the surface cleaning of quartz-crystal pieces. 4,445,523, Cl. 134-65.000.
Brunswick Corporation: *See—*
Chmielewski, Cary J., 4,445,470, Cl. 123-196.00S.
Bryant, David R.: *See—*
Jamerson, Jackie D.; Billig, Ernst; and Bryant, David R., 4,446,074, Cl. 260-429.00R.
Bryant, Walter R., to Celanese Corporation. UV-Stabilization of oxymethylene copolymers. 4,446,263, Cl. 524-100.000.
Bucheler, Manfred; Klinksiek, Bernd; Gehringer, Hans; and Schnoring, Hildegard, to Bayer Aktiengesellschaft. Process for the preparation of pharmaceutical and cosmetic dispersions. 4,446,127, Cl. 424-59.000.
Buckingham, Robin E.: *See—*
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,446,113, Cl. 422-267.000.
Budecker, Ludwig, to ITT Industries, Inc. Radial piston machine. 4,445,825, Cl. 417-462.000.
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., to Nassau Recycle Corporation. Guide tube. 4,445,355, Cl. 72-250.000.
Buford, J. Philip. Cooking grill heated from deep fat fryer. 4,445,428, Cl. 99-340.000.
Bukowski, John M.: *See—*
Kumar, Ashok; Segan, Ellen G.; Bukowski, John M.; and Helgeland, Jon L., 4,445,989, Cl. 204-147.000.
Bullen, Lee; and Hermach, Carl J., to Publishers Equipment Corporation. Method and apparatus for improving newspaper folding and cutting mechanisms. 4,445,881, Cl. 493-424.000.

Bunn, Stuart E.; and Owsley, Herbert B., to Ball Value Co., Inc. Valve for compressor clearance or by-pass control. 4,445,824, Cl. 417-440.000.

Buntemeyer, William R.: *See—*
Rawicz, Harris C.; Rizzo, Vincent J.; and Buntemeyer, William R., 4,446,409, Cl. 318-632.000.

Burgess, Mark E.: *See—*
Thorsby, Grover A.; and Burgess, Mark E., 4,445,643, Cl. 239-197.000.

Burndy Corporation: *See—*
Nager, Urs F., Jr., 4,446,330, Cl. 174-51.000.

Burns, Lyle D., to Phillips Petroleum Company. Motor fuel. 4,445,909, Cl. 44-72.000.

Burns, William K., to United States of America, Navy. Fiber optic rotation-sensing gyroscope with (3×2) coupler. 4,445,780, Cl. 356-350.000.

Burochkin, Alexandr E.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.

Burton, Stephen R.; Horley, Gary; and Hodrien, Ronald C., to British Gas Corporation. Heat recovery process and apparatus. 4,446,003, Cl. 208-48.00Q.

Buss, David L. Method of manufacture for metal trough. 4,445,260, Cl. 29-157.00R.

Buyan, Frank M.; and Haddad, James H., to Mobil Oil Corporation. Improved FCC vessel and cyclone apparatus. 4,446,107, Cl. 422-107.000.

Buzzi, Carlo. Balancing machine for bodies of rotation. 4,445,372, Cl. 73-459.000.

Byer, Joseph I. Roll retaining means for a dispensing box. 4,445,645, Cl. 242-55.530.

Byrd, Audis C.; Todd, Bradley L.; and Pattison, William W., Jr., to Halliburton Company. Sludge lance advancing apparatus. 4,445,465, Cl. 122-392.000.

Bystedt, Hjalmar S. I., to Sunds Defibrator AB. Method and device for the manufacture of mechanical pulp. 4,445,973, Cl. 162-261.000.

C.I.E.F. -Compagnia Immobiliare e Finanziaria S.p.A.: *See—*
Pernici, Ermanno, 4,446,190, Cl. 428-156.000.

Cable Technology Laboratories, Inc.: *See—*
Katz, Carlos; and Zidon, Amicam C., 4,446,095, Cl. 264-558.000.

Cabrera, Pedro P., to Coulter Electronics, Inc. Liquid metering and transfer valve assembly. 4,445,391, Cl. 73-864.120.

Cady, Susan M.; Blank, Werner J.; and Schirmann, Peter J., to American Cyanamid Company. Crosslinking composition containing activated carboxylic ester polymer and amine-terminated triazine resin. 4,446,280, Cl. 525-186.000.

Caillet, Eugene, to Goodyear Tire & Rubber Company, The. Highway railway crossing and cap therefor. 4,445,640, Cl. 238-8.000.

Cain, George R., to Koppers Company, Inc. Apparatus for sensing empty hoppers. 4,445,628, Cl. 222-66.000.

Cairns, Frank D. Game apparatus. 4,445,690, Cl. 273-118.00R.

Calabrese, Donald P.; Kerns, Matthew T.; and Quinn, Dennis M. Post accident analysis. 4,446,097, Cl. 376-256.000.

Calculagraph Company: *See—*
Fryer, Warren R., 4,446,340, Cl. 179-175.30R.

Caldicott, Jack R., to Mangood Corporation. System for loading railroad cars. 4,445,581, Cl. 177-163.000.

Caldwell, George R.; and Gallagher, Edward J., to General Signal Corporation. Method of sealing interfaces of bearing surfaces to steel barrels of piston pumps. 4,445,258, Cl. 29-156.70R.

California Institute of Technology: *See—*
Williams, Arthur R.; and Johnson, William L., 4,446,568, Cl. 378-3.000.

Callihan, Patrick R.: *See—*
Farr, Garth M.; and Callihan, Patrick R., 4,445,402, Cl. 81-57.160.

Camco Inc.: *See—*
Cannon, Trever E., 4,445,455, Cl. 116-216.000.

Candelaria, Jon; and Heidinger, Kurt S., to Motorola, Inc. Dual layer passivation. 4,446,194, Cl. 428-428.000.

Cannon, James R.: *See—*
Labour, Donald; Cannon, James R.; and Klugman, Alfred, 4,445,505, Cl. 128-80.00C.

Cannon, Trever E., to Camco Inc. Dial adjustment and calibration of oven control devices. 4,445,455, Cl. 116-216.000.

Canon Kabushiki Kaisha: *See—*
Aoki, Takao; and Inoue, Takahiro, 4,445,772, Cl. 355-3.0CH.
Matsumura, Susumu, 4,445,764, Cl. 354-480.000.
Takasu, Yoshio; and Ishikawa, Shozo, 4,446,217, Cl. 430-58.000.
Yamamoto, Hiroshi, 4,445,765, Cl. 354-478.000.

Canzoneri, Anthony S., to Process Development, Inc. Ultrasonic streaming current detector. 4,446,435, Cl. 324-453.000.

Cappelli, Nicholas P.: *See—*
Steffen, Cliff; and Cappelli, Nicholas P., 4,445,626, Cl. 222-39.000.

Cappelli, Romano, to USS Engineers and Consultants, Inc. Procedure for rebuilding the movable plate in the pouring valve of a ladle. 4,445,262, Cl. 29-402.080.

Carbonaro, Antonio; Ferrero, Cesare; and Corbellini, Margherita, to Agip Petroli S.p.A. Polymerizing and copolymerizing olefinically unsaturated compounds and means therefor. 4,446,289, Cl. 526-142.000.

Cardieri, Edward J. Batting tee. 4,445,685, Cl. 273-26.00R.

Carey, C. H.: *See—*
Thompson, Gary J.; and Carey, C. H., 4,445,351, Cl. 72-43.000.

Carl Zeiss-Stiftung: *See—*
Wollnik, Hermann; Haas, Rudiger; and Kassen, Folkert, 4,445,516, Cl. 128-736.000.

Carlisle Corporation: *See—*
Schauffele, Roy F., 4,445,306, Cl. 52-410.000.

Carlson, Robert J.; and Youngner, Daniel W., to Honeywell Inc. Method of plasma etching of films containing chromium. 4,445,966, Cl. 156-643.000.

Carnegie-Mellon University: *See—*
Milnes, Arthur G., 4,445,965, Cl. 156-624.000.

Carre, Jean-Jacques; and Levral, Roland, to Societe Anonyme DBA. Method of preforming a booster casing element with its reinforcement. 4,445,263, Cl. 29-445.000.

Carrier Corporation: *See—*
Gray, Kenneth P., 4,445,366, Cl. 73-64.200.

Carswell, William R.: *See—*
Friedman, Evelyn; and Carswell, William R., 4,445,625, Cl. 221-241.000.

Carter, Thomas P., Jr.: *See—*
Ying, Lincoln; and Carter, Thomas P., Jr., 4,446,255, Cl. 523-205.000.

Cartesse, Georges, to Societe Generale pour l'Industrie Electronique (S.O.G.I.E.). Electrical connectors for coaxial and two-wire cables. 4,445,745, Cl. 339-177.00R.

Cartner, Jack O. Mower head with moveable guard. 4,445,312, Cl. 56-15.500.

Casals-Stenzel, Jorge: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,446,147, Cl. 424-274.000.

Casamatta, Angelo, to Honeywell Information Systems Inc. Microprogrammed control unit with multiple branch capability. 4,446,518, Cl. 364-200.000.

Casper, James R.; and Hauer, Harvey J., to Syngas Company. Waste heat boiler. 4,445,463, Cl. 122-7.00R.

Cassidy, Benjamin J., to International Paper Company. Protective shipping and display carton. 4,445,613, Cl. 206-418.000.

Castle, Peter M.; Sweeney, George G.; and Yannopoulos, Lymperios N., to Westinghouse Electric Corp. Method for making silicon carbide coatings. 4,446,169, Cl. 427-53.100.

Caterpillar Tractor Co.: *See—*
Bruning, E. Eugene, 4,445,713, Cl. 285-14.000.
Thies, Jerome A.; and Tietje, Mark E., 4,445,332, Cl. 60-455.000.

Cauwet, Daniele: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,445,521, Cl. 132-7.000.

Cavender, Donald E., to Monarch Marking Systems, Inc. Record assembly. 4,446,182, Cl. 428-40.000.

Celanese Corporation: *See—*
Bryant, Walter R., 4,446,263, Cl. 524-100.000.
Hicks, Darrell D., 4,446,256, Cl. 523-402.000.
Ying, Lincoln; and Carter, Thomas P., Jr., 4,446,255, Cl. 523-205.000.

Cerwick, Joel A., to Armco Inc. Waste treatment system having integral intrachannel clarifier. 4,446,018, Cl. 210-195.400.

Ceskoslovenska akademie ved: *See—*
Wichterle, Otto, 4,445,362, Cl. 73-37.500.

Chambon, Jean P.; Dufay, Jean-Francois; Grand Chavin, Paul; Perrin, Georges J.; and Vernay, Louis, to Crutcher, William C. Electronic time setting for a quartz analog watch. 4,445,785, Cl. 368-187.000.

Chamness, Addison B., Jr. Engine fuel system. 4,445,485, Cl. 123-546.000.

Champeau, Marcel; and Tabutin, Andre, to Ramo S.A. Lathes with central headstock. 4,445,405, Cl. 82-2.500.

Chana, Howard E., to General Motors Corporation. Gear synchronizer for a power transmission. 4,445,602, Cl. 192-53.00F.

Chang, Chieh; and Lee, Man S., to GTE Automatic Electric Incorporated. Switched capacitor n-path filter. 4,446,438, Cl. 328-127.000.

Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., to PPG Industries, Inc. Moisture curable compositions containing reaction products of hydrophobic polyols and monomer organosilicon-containing substances. 4,446,292, Cl. 528-29.000.

Chant, Bernard J.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,446,125, Cl. 424-49.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Walker, Bruce K.; Desai, Mukund; and Gai, Eliezer, 4,445,421, Cl. 91-186.000.

Chartered Industries Of Singapore Private Limited: *See—*
Sullivan, Leroy J.; and Waterfield, Robert L., 4,445,418, Cl. 89-33.00D.

Chatanier, Michel J.; Portat, Michel J.; and Bruere, Alain E., to Office National d'Etudes et de Recherches Aerospatiales. Surface resistivimeter. 4,446,424, Cl. 324-62.000.

Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., to Vsesojuzny Kardiologichesky Nauchny Tsentr. Dextran derivative of fibrinolysin. 4,446,316, Cl. 536-112.000.

Chemplex Company: *See—*
Hoff, Raymond E., 4,446,288, Cl. 526-129.000.

Chen, Nai Y.; Rankel, Lillian A.; and Rudnick, Leslie R., to Mobil Oil Corporation. Process for upgrading vacuum resids to premium liquid products. 4,446,004, Cl. 208-57.000.

Cheng, Bo-Ching; Rosenbaum, Herman S.; and Armijo, Joseph S., to General Electric Company. Method for forming nuclear fuel containers of a composite construction and the product thereof. 4,445,942, Cl. 148-6.300.

Cheng, Kang: *See—*
Larner, Joseph; Cheng, Kang; and Galasko, Gail, 4,446,064, Cl. 260-112.00R.

Cheng, Paul J., to Phillips Petroleum Company. Carbon black manufacture. 4,446,108, Cl. 422-156.000.

Chernyshev, Ivan S.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.

Cherry Electrical Products Corporation: *See—*
Cherry, Walter L., 4,446,400, Cl. 313-517.000.

Cherry, Walter L., to Cherry Electrical Products Corporation. Gaseous display panel with webbed anode. 4,446,400, Cl. 313-517.000.

Chester, Arthur W.; and Murray, James G., to Mobil Oil Corporation. Catalysts for olefin polymerization comprising the reaction product of organotitanium and organochromium with zeolites. 4,446,243, Cl. 502-62.000.

Chevron Research Company: *See—*
Nicksic, Stephen W., 4,446,118, Cl. 423-226.000.
Van Nordstrand, Robert A., 4,446,244, Cl. 502-84.000.

Chiaramonte, Vincent; and Barkow, Alice, to Mont-Cler Appliances Inc. Precision pontic and method for making it. 4,445,862, Cl. 433-191.000.

Chiotti, Premo: *See—*
Schmidt, Frederick A.; Rehbein, David; and Chiotti, Premo, 4,446,120, Cl. 423-350.000.

Chiu, Chen-Hwa, to Air Products and Chemicals, Inc. Process for liquefied natural gas. 4,445,917, Cl. 62-25.000.

Chmielewski, Cary J., to Brunswick Corporation. Oil injection warning system. 4,445,470, Cl. 123-196.00S.

Chu, Shaw C.; and Spencer, Arthur T., to Mobil Oil Corporation. Aqueous coating comprising dispersible epoxy resin-acid polymer ester and diluent polymer, and method of preparation. 4,446,258, Cl. 523-406.000.

Chu, Tsann M.; Wang, Ming C.; and Papsidero, Lawrence, to Research Corporation. Purified human prostate antigen. 4,446,122, Cl. 424-1.100.

Chubb, Arthur B.; MacLeod, Richard J.; and Rhoades, James J., to Tapco Products Company, Inc. Combined portable sheet bending brake and coil holder. 4,445,356, Cl. 72-319.000.

Chubb & Son's Lock and Safe Company: *See—*
Nuttall, Brian; and Laxson, Charles F., 4,445,718, Cl. 292-341.170.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Tsuji, Yasshiro; and Wakabayashi, Kiyoshige, 4,446,239, Cl. 436-532.000.

Ciba-Geigy AG: *See—*
Long, William E., 4,446,227, Cl. 430-513.000.
Schaetzer, Harry; Raisin, Helmut; Mausezahl, Dieter; and Ciba-Geigy AG, 4,445,905, Cl. 8-641.000.

Ciba-Geigy Corporation: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,446,128, Cl. 424-88.000.

Cicognani, Mario, to Industrie Pirelli, S.p.A. Toothed belt. 4,445,879, Cl. 474-205.000.

Cillieres, Jaques. Lead line between at least two persons, particularly for cross country skiing or ski touring. 4,445,866, Cl. 434-253.000.

Cinderey, Michael B.: *See—*
Rose, John B.; and Cinderey, Michael B., 4,446,294, Cl. 528-128.000.

Cisar, James R.; and Grauzer, Attila, to U.C. Industries. Foam extrusion die and monitoring apparatus. 4,445,837, Cl. 425-141.000.

Clark, Ray, to Applied Power Inc. Shock absorber and air spring assembly. 4,445,673, Cl. 267-64.240.

Clatworthy, Edward F.: *See—*
Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,445,943, Cl. 148-12.300.
Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,445,944, Cl. 148-12.300.

Claus, Richard O.; and Zerwekh, Paul S., to United States of America, National Aeronautics and Space Administration. Ultrasonic transducer with Gaussian radial pressure distribution. 4,446,396, Cl. 310-334.000.

Clayton, Donald H., Jr. Shock absorber for an oil well pumping unit. 4,445,674, Cl. 267-141.000.

Cleaver, Laird C.: *See—*
Baron, Walter J.; and Cleaver, Laird C., 4,445,540, Cl. 137-625.430.

Clemens, Donald L.: *See—*
Jordan, William D.; Hinshaw, Howard G.; and Clemens, Donald L., 4,446,504, Cl. 361-386.000.

Clenet, Daniel, to La Telemecanique Electrique. DC/AC Bridge inverter including a switching aid and inductive energy recovery circuit. 4,446,513, Cl. 363-132.000.

Cliffside Pipelayers: *See—*
Hansen, Bent J.; and Thompson, Clifford F., 4,445,677, Cl. 269-41.000.

Close, Donald, to David Hudson, Inc. Fluoroelastomer film compositions containing phenoxy resins and method for the preparation thereof. 4,446,176, Cl. 427-386.000.

Clyde, Robert A. Apparatus for a photochemical reaction. 4,446,236, Cl. 435-287.000.

Cobb, Harold W., to Delphax Systems. Corona charging apparatus. 4,446,371, Cl. 250-324.000.

Coca-Cola Company, The: *See—*
Credle, William S., 4,445,539, Cl. 137-614.030.

Cofer, Frank H., to Audichron Company, The. Method and apparatus for revertive automatic intercept message delivery in a telephone system. 4,446,337, Cl. 179-18.00B.

Cohen, Jerome M.: *See—*
Pindar, John F.; and Cohen, Jerome M., 4,446,039, Cl. 252-52.00R.

Cohen, Yehuda: *See—*
Assaf, Gad; and Cohen, Yehuda, 4,446,025, Cl. 210-602.000.

Cohnen, Erich; and Armah, Ben, to Beiersdorf Aktiengesellschaft. Substituted oxadiazoles and thiadiazoles, and methods of preparation and use thereof. 4,446,142, Cl. 424-269.000.

Cole, William E.; O'Connell, Drew P.; and Griffith, James L., to Thermo Electron Corporation. In situ rapid wash apparatus and method. 4,445,919, Cl. 65-27.000.

Coleman, Cecil A., to Balfour Lumber Company. Water fog-type ash precipitator for a kilned lumber pile breakdown hoist. 4,445,559, Cl. 144-363.000.

Coleman, John D.; Obst, Donald L.; and Kraft, Heinrich A., to Siecor Corporation. Flat type feeder cable. 4,445,593, Cl. 187-1.00R.

Coleman, John R., to General Motors Corporation. Valve assembly. 4,445,333, Cl. 60-578.000.

Coletti, Onorio J., to Ford Motor Company. Distributor with reduced radio frequency interference. 4,445,493, Cl. 123-633.000.

Collignon, Roger, to Socapex. End fitting for optical fibre connector and connector equipped with such an end fitting. 4,445,753, Cl. 350-96.210.

Colvin, David P.: *See—*
Swan, Algernon G.; Stead, Eugene A., Jr.; Thompson, William P.; and Colvin, David P., 4,445,502, Cl. 128-25.00R.

Combs, C. Marlon: *See—*
Lee, Charles E.; and Combs, C. Marlon, 4,446,335, Cl. 179-2.00C.

Combustion Engineering, Inc.: *See—*
Mastronarde, Thomas P., 4,445,462, Cl. 122-7.00R.
Matthews, Francis T., 4,445,844, Cl. 431-170.000.
Pollock, William H., 4,445,442, Cl. 110-171.000.
Tanca, Michael C., 4,445,441, Cl. 110-165.00R.

Comerford, Matthias F.; and McCallan, Michael G., to Cooper Industries, Inc. Preheater for use in mass soldering apparatus. 4,446,358, Cl. 219-388.000.

Commissariat a l'Energie Atomique: *See—*
Nguyen-Thanh, Thong, 4,445,568, Cl. 165-81.000.
Valette, Serge, 4,445,759, Cl. 350-96.120.

Compagnie Generale des Etablissements Michelin: *See—*
Musy, Jacques, 4,445,560, Cl. 152-200.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Bonnefoy, Jean, 4,445,735, Cl. 339-17.00M.

Compere, Alicia L.; Googin, John M.; and Griffith, William L., to United States of America, Energy. Extracting alcohols from aqueous solutions. 4,445,908, Cl. 44-56.000.

Computervision Corporation: *See—*
Friedman, David; and Mandel, Philip, 4,446,412, Cl. 318-696.000.

Concannon, Michael P.; and Erdelyi, Charles K., to International Business Machines. Reference voltage generating circuit. 4,446,383, Cl. 307-297.000.

Concord, Inc.: *See—*
Gust, Jacob N., 4,445,314, Cl. 56-126.000.

Connell, John C.; and Serber, Stephen L., to Honeywell Inc. Hydronic antitrust operating system. 4,445,638, Cl. 237-8.00R.

Connell, Talbert D., to Crutcher Resources Corporation. Center tracking welder unit with floating reference. 4,446,353, Cl. 219-125.120.

Connolly, George C., Jr., to United States of America, Navy. Small diameter, low frequency multimode hydrophone. 4,446,544, Cl. 367-155.000.

Conoco Inc.: *See—*
Gergely, John S., 4,446,370, Cl. 250-301.000.
Sternberg, Ben K.; Miller, Dale E.; and Bahjat, Dhari S., 4,446,434, Cl. 324-363.000.

Consolidated Cable and Rigging, Inc.: *See—*
Wilson, Richard C., 4,445,669, Cl. 254-369.000.

Container Technologies, Inc.: *See—*
Davis, John C.; Reiss, Ronald J.; and Rice, Albert F., 4,445,550, Cl. 141-329.000.

Cook, Donald. Monitoring and control system. 4,446,458, Cl. 340-825.060.

Cook, Inc.: *See—*
Gianturco, Cesare, 4,445,896, Cl. 604-238.000.

Cooney, David A.: *See—*
Marquez, Victor E.; Cooney, David A.; Gebeyehu, Gulilat; and Jayaram, Hiremagalur N., 4,446,315, Cl. 536-27.000.

Cooper Industries, Inc.: *See—*
Comerford, Matthias F.; and McCallan, Michael G., 4,446,358, Cl. 219-388.000.

Cooper, John R.: *See—*
Cowdery, David; and Cooper, John R., 4,445,511, Cl. 128-419.00P.

Cooper Tire & Rubber Company: *See—*
Klose, Karl W.; and Benjamin, Gary H., 4,445,963, Cl. 156-420.000.

Copeland Corporation: *See—*
King, Robert W., 4,445,534, Cl. 137-512.300.

Coppus Engineering Corporation: *See—*
Pratap, Prem, 4,445,392, Cl. 74-3.000.

Copyer Kabushiki Kaisha: *See—*
Takasu, Yoshio; and Ishikawa, Shozo, 4,446,217, Cl. 430-58.000.

Corban International, Ltd.: *See—*
Thomas, David C., 4,446,519, Cl. 364-300.000.
Corbellini, Margherita: *See—*
Carbonaro, Antonio; Ferrero, Cesare; and Corbellini, Margherita, 4,446,289, Cl. 526-142.000.
Corbett, Reg D. Diffusers. 4,445,852, Cl. 432-260.000.
Corning Glass Works: *See—*
Ford, Clarence E., Jr.; and Johnson, Ronald E., 4,445,432, Cl. 101-152.000.
Cosby, Chris; and Heath, Martin, to Delco Products Overseas Corporation. Resilient metal contact brush. 4,445,746, Cl. 339-252.00R.
Cosden Technology, Inc.: *See—*
Schwarz, Richard A., 4,446,208, Cl. 428-407.000.
Cottman, Kirkwood S., to Goodyear Tire & Rubber Company, The. Synergistic antioxidant mixtures. 4,446,264, Cl. 524-109.000.
Couch, Robert D.: *See—*
Emery, Franklin T.; Lenderking, Bruce N.; and Couch, Robert D., 4,446,426, Cl. 324-158.0MG.
Coulter Electronics, Inc.: *See—*
Cabrera, Pedro P., 4,445,391, Cl. 73-864.120.
Coupek, Jiri: *See—*
Filka, Karel; Coupek, Jiri; and Kocourek, Jan, 4,446,275, Cl. 525-54.100.
Cowan, William S., to Armco Inc. Diverless subsea template levelling system and method. 4,445,807, Cl. 405-227.000.
Cowdery, David; and Cooper, John R., to Telectronics Pty. Ltd. Pacer electrode connector assembly. 4,445,511, Cl. 128-419.00P.
Cowles, Christopher S., to Shell Oil Company. Rotational geophone. 4,446,541, Cl. 367-75.000.
Crain, George F. Wood burning heater providing improved uniform temperature output. 4,445,496, Cl. 126-61.000.
Crain, Graydon H. Sheet piling or mooring cell. 4,445,806, Cl. 405-216.000.
Crane, Julius, to Metalfab, Inc. Reciprocating tamper for a concrete mold press. 4,445,839, Cl. 425-421.000.
Crane Packing Limited: *See—*
Wilkinson, Samuel C., 4,445,695, Cl. 277-65.000.
Cray, Donald L. Vehicle servicing lift. 4,445,665, Cl. 254-88.000.
Credle, William S., to Coca-Cola Company, The. Dip tube and valve with quick-disconnect coupling for a collapsible container. 4,445,539, Cl. 137-614.030.
Cringle, David C.: *See—*
DuPart, Michael S.; Oakes, Billy D.; and Cringle, David C., 4,446,119, Cl. 423-228.000.
Critchley, Richard J.; and Swindells, Roy J., to British Nuclear Fuels Limited. Disposal of radioactive waste. 4,446,063, Cl. 252-633.000.
Cross, Jimmie R. Speaker cabinet. 4,445,730, Cl. 312-214.000.
Crowley, John I.: *See—*
Afzali-Ardakani, Ali; Crowley, John I.; and Wu, Anthony W., 4,446,193, Cl. 428-422.000.
Crutcher Resources Corporation: *See—*
Connell, Talbert D., 4,446,353, Cl. 219-125.120.
Crutcher, William C.: *See—*
Chambon, Jean P.; Dufay, Jean-Francois; Grand Chavin, Paul; Perrin, Georges J.; and Vernay, Louis, 4,445,785, Cl. 368-187.000.
Cseko, Christine: *See—*
Munteanu, Marina A.; Cseko, Christine; Oltarzewski, Edward S.; Lindauer, Jerome I.; and Withycombe, Donald A., 4,446,032, Cl. 252-8.600.
Cselt Centro Studi E Laboratori Telecomunicazioni S.p.A.: *See—*
Modone, Eros; and Roba, Giacomo, 4,445,918, Cl. 65-3.120.
Cueni, Lee: *See—*
Bray, Carl R.; and Cueni, Lee, 4,445,832, Cl. 425-9.000.
Cuisenaire Company of America, Inc.: *See—*
Sellon, Jeffrey, 4,445,865, Cl. 434-207.000.
Cullinane, Daniel, Jr., to Lynn Products Company, Incorporated. Oxygen sensor and method for making same. 4,446,000, Cl. 204-415.000.
Cunningham, Robert A., to Hughes Tool Company. Telemetry drill pipe with pressure sensitive contacts. 4,445,734, Cl. 339-16.00C.
Cunningham, Walter F. Color-coded numeric or alphabetic filing system. 4,445,711, Cl. 283-1.00R.
Cuomo, Jerome J.; Harper, James M. E.; and Kaufman, Harold R., to International Business Machines Corporation. Compact plug connectable ion source. 4,446,403, Cl. 315-111.810.
Currie, Thomas P.; and Goldberg, Norman, to Sperry Corporation. Multichip thin film module. 4,446,477, Cl. 357-74.000.
Cutter Laboratories, Inc.: *See—*
Jordan, Robert E., 4,446,126, Cl. 424-183.000.
Jordan, Robert E., 4,446,314, Cl. 536-21.000.
Czyzewski, Ted S.; and Greenwell, Bartley A., to Groen Division - Dover Corporation. Apparatus for chilling and plasticizing fatty materials. 4,445,429, Cl. 99-455.000.
D. L. Auld Company, The: *See—*
Waugh, Robert E., 4,446,179, Cl. 428-31.000.
Dack, Glen W. D.: *See—*
Yataki, Masamichi; Dack, Glen W. D.; and Ertl, Paul S., 4,445,649, Cl. 242-118.200.
Dai Nippon Insatsu K.K.: *See—*
Sato, Yoshihiro, 4,445,634, Cl. 229-40.000.
Dai Nippon Printing Co., Ltd.: *See—*
Takiguchi, Ryohei; and Nagashima, Masayoshi, 4,446,467, Cl. 346-76.0PH.
Daido Tokushuko Kabushiki Kaisha: *See—*
Saito, Tetsuya; and Mori, Hiroshi, 4,445,933, Cl. 75-59.000.
Daimler-Benz Aktiengesellschaft: *See—*
Bernauer, Otto; and Ziegler, Klaus, 4,446,101, Cl. 420-424.000.
Filsinger, Reinhard, 4,445,603, Cl. 192-0.055.
Geiss, Sieghart, 4,445,440, Cl. 105-215.00R.
Voneky, Geza; and Schussler, Hans H., 4,445,276, Cl. 33-168.00R.
Daines, John, to Mobil Oil Corporation. Method and mold for making an improved egg carton. 4,446,088, Cl. 264-155.000.
Dalrymple, Monte J., to Zilog, Inc. Circuit and technique for initializing the state of bistable elements in an integrated electronic circuit. 4,446,381, Cl. 307-200.00B.
Dana Corporation: *See—*
Schmiel, Herbert H., 4,445,541, Cl. 137-636.200.
Dancsi, Lajos: *See—*
Szantay, Csaba; Szbao, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; and Keve, Tibor, 4,446,139, Cl. 424-256.000.
D'Andrade, Bruce M.; Ng, Ping F.; and Ma, Tak M., to ARCO Industries Ltd. Toy motorcycle with lighting mechanism. 4,445,297, Cl. 46-230.000.
Daniels, Larry C.; and Whittaker, Gary S., to Eastman Kodak Company. Metallurgical coating system. 4,446,200, Cl. 428-661.000.
Daniels, Ronald M. Automobile headlight control system. 4,446,507, Cl. 362-20.000.
Darasko, Edward. Coaster and swivel assembly therefor. 4,445,699, Cl. 280-87.04R.
Data General Corporation: *See—*
Alexander, Michael C., 4,446,457, Cl. 340-745.000.
Daugherty, James C. Tennis teaching device. 4,445,686, Cl. 273-29.00A.
Daugherty, Yvonne B. Decorative bar soap holder. 4,446,178, Cl. 428-26.000.
D'Augustine, Frank T.; and Berardi, Randal L., to RCA Corporation. Apparatus and method for aligning the envelope and electron gun mount assembly of a CRT. 4,445,874, Cl. 445-45.000.
Dauser, William C., Jr., to Heneveld, Lloyd A., Trustee of Dauser Trust IV— Solderless Connector. Wire connector. 4,446,332, Cl. 174-87.000.
David Hudson, Inc.: *See—*
Close, Donald, 4,446,176, Cl. 427-386.000.
Davis, John C.; Reiss, Ronald J.; and Rica, Albert F., to FranRica Mfg. Inc.; and Container Technologies, Inc. Flexible walled container having membrane fitment for use with aseptic filling apparatus. 4,445,550, Cl. 141-329.000.
Davis, Lewis B., Jr.; and Dibelius, Norman R., to General Electric Co. Wingtip vortex flame stabilizer for gas turbine combustor flame holder. 4,445,339, Cl. 60-749.000.
Davy McKee Aktienegesellschaft: *See—*
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,446,299, Cl. 528-272.000.
Dawson, C. Bruce, to O'Sullivan Corporation. Integrated process for preparing a continuous string of molded articles wound in a coil. 4,445,836, Cl. 425-135.000.
Dayco Corporation: *See—*
Hollaway, Gerald C., Jr., 4,445,949, Cl. 156-62.200.
De La Moneda, Francisco H.; and Dockerty, Robert C., to International Business Machines Corporation. MOSFET Structure and process to form micrometer long source/drain spacing. 4,445,267, Cl. 29-571.000.
Dean, Charles. Building roof structure. 4,445,302, Cl. 52-90.000.
Deeg, Reinhard; Galaske, Folker; and Kettenbach, Helmuth, to International Standard Electric Corporation. Supply roll holding arrangement. 4,445,647, Cl. 242-68.400.
Deel, Gary G. Grounding ring for shielded cable. 4,445,733, Cl. 339-14.00R.
Deere & Company: *See—*
Schneider, Werner, 4,445,586, Cl. 180-132.000.
Deering, Roland F.; and Duir, John H., to Union Oil Company of California. Recovery of retorted shale from an oil shale retorting process. 4,446,001, Cl. 208-11.00R.
DeFrees, Joseph H., to Allegheny Valve Company. Air check valve assembly for powdered bulk product transport. 4,445,533, Cl. 137-512.100.
Degussa Aktiengesellschaft: *See—*
Schmitz, Werner; and Simon, Edgar, 4,445,809, Cl. 406-152.000.
Dehlen, Bengt L. A., to Trelleborg AB. Wear-resistant rubber product and a method of making same. 4,446,192, Cl. 428-339.000.
del Castillo-Olivares, Fernando. Patch pocket-forming, folding and setting apparatus. 4,445,631, Cl. 223-1.000.
Delco Products Overseas Corporation: *See—*
Cosby, Chris; and Heath, Martin, 4,445,746, Cl. 339-252.00R.
Delhaes, Johannes C., to Rubber-en Kunststoffabriek ENBI B.V. Conveyor shaft provided with rubber rollers, and method and apparatus for making same. 4,445,257, Cl. 29-117.000.
Deline, Gordon R.: *See—*
Bowden, Edgar A.; Deline, Gordon R.; and Koeijmans, Gerard D., 4,446,537, Cl. 367-15.000.
Delphax Systems: *See—*
Cobb, Harold W., 4,446,371, Cl. 250-324.000.
Del Valle, Frank: *See—*
Friedman, Herman H.; Del Valle, Frank; and Hofmann, Lisa A., 4,446,161, Cl. 426-335.000.
De Mey, Jan R.; and Moeremans, Marc K. J. J., to Janssen Pharmaceutica N.V. Bright field light microscopic method of localizing tissue antigens. 4,446,238, Cl. 436-527.000.
Dempsey, John C.: *See—*
Stieff, Lorin R.; and Dempsey, John C., 4,445,364, Cl. 73-40.700.
Den Hartog, Arie P., to Shell Oil Company. Apparatus for contacting fluid with particulate solid material. 4,446,112, Cl. 422-216.000.

Denholm, A. Stuart; Frutiger, William A.; and Williams, Kenneth E., to Sony Corporation. Process and apparatus for converged fine line electron beam treatment objects. 4,446,373, Cl. 250-492.200.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Okazaki, Haruo; and Ohkubo, Takashi, 4,446,274, Cl. 524-812.000.
Derrick, Dennis P., to General Motors Corporation. Quick take-up master cylinder. 4,445,334, Cl. 60-585.000.
Desai, Mukund: *See—*
Walker, Bruce K.; Desai, Mukund; and Gai, Eliezer, 4,445,421, Cl. 91-186.000.
Desbois, Michel, to Rhone-Poulenc Specialites Chimiques. Process for the preparation of α,α-difluoroalkyl-thiophenyl ketones. 4,446,078, Cl. 260-465.00F.
Design Applications Incorporated: *See—*
Shofu, Koichi, 4,445,611, Cl. 206-369.000.
DeTrano, Mario: *See—*
Bohm, Georg G. A.; DeTrano, Mario; and Hall, James E., 4,445,562, Cl. 152-347.000.
Deuster, Dieter: *See—*
Bassier, Friedr.; Adrian, Fritz; and Deuster, Dieter, 4,445,937, Cl. 106-109.000.
Deutsches Krebsforschungszentrum: *See—*
Hammerling, Gunter; Muller, Ingo; and Menger, Erich, 4,446,104, Cl. 422-63.000.
Devault, Michel; Quinquis, Jean-Paul; and Rouaud, Yvon. Time division multiplex switching network for multiservice digital networks. 4,446,555, Cl. 370-94.000.
Dewitte, Jean; and Aymard, Pierre, to Saint-Gobain Industries. Spherical balls and their manufacture. 4,446,207, Cl. 428-402.000.
Deymann, Detlef: *See—*
Hobes, John; Payer, Wolfgang; and Deymann, Detlef, 4,446,311, Cl. 528-493.000.
Dhillon, Major S., to American Hoechst Corporation. Sulfur and/or amide-containing exposure accelerators for light-sensitive coatings with diazonium compounds. 4,446,218, Cl. 430-175.000.
Diamond Shamrock Corporation: *See—*
Hinden, Jean M., 4,446,245, Cl. 502-101.000.
Dibelius, Norman R.: *See—*
Davis, Lewis B., Jr.; and Dibelius, Norman R., 4,445,339, Cl. 60-749.000.
Dick, George W., to Bell Telephone Laboratories, Incorporated. Planar AC plasma display having glow suppressor electrode. 4,446,402, Cl. 313-586.000.
Dietrich, Felix M.: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,446,128, Cl. 424-88.000.
Dietrich, March: *See—*
Beutier, Didier; Palvadeau, Claude; Pasquier, Gilles; and Dietrich, March, 4,446,026, Cl. 210-639.000.
Dijkmans, Eise C.: *See—*
van de Plassche, Rudy J.; Dijkmans, Eise C.; and Schouwenaars, Hendrikus J., 4,446,419, Cl. 323-316.000.
Dilks, Charles H., Jr.; and Yau, Wallace W. Sedimentation field flow fractionation channel and method. 4,446,014, Cl. 209-155.000.
Di Napoli, Louis D.: *See—*
Binder, Paul B.; and Di Napoli, Louis D., 4,445,383, Cl. 73-718.000.
Dinsmore, Stanley R.; and Mrochek, John E., to United States of America, Energy. System for analyzing coal liquefaction products. 4,446,105, Cl. 422-70.000.
Director-General of Agency of Industrial Science and Technology: *See—*
Ohsawa, Kazuya; Shibata, Toshiaki; and Takahashi, Kenichi, 4,445,755, Cl. 350-96.340.
DiResta, Gene R. Apparatus for performing tissue perfusion measurements. 4,445,515, Cl. 128-632.000.
Disco Co., Ltd.: *See—*
Sekiya, Shinji; and Ono, Takatoshi, 4,445,300, Cl. 51-283.00R.
Divens, William C.; and Vaerewyck, Eugene G., to Westinghouse Electric Corp. Metal coated, tapered, optical fiber coupled to substrate and method of fabrication. 4,445,751, Cl. 350-96.140.
Divisek, Jiri; and Schmitz, Heinz, to Kernforschungsanlage Julich GmbH. Electrolyzer for alkaline water electrolysis. 4,445,994, Cl. 204-258.000.
Dix, Peter; Pogany, George A.; and Sangha, Parminder, to Shell Oil Company. Polyether polyol process. 4,446,313, Cl. 536-18.600.
Dixon, Byron P. Resilient marker. 4,445,803, Cl. 404-10.000.
Dockerty, Robert C.: *See—*
De La Moneda, Francisco H.; and Dockerty, Robert C., 4,445,267, Cl. 29-571.000.
Dodane, Raymond, to Montres Dodane-Precia-Gete. System for the control of a wheel for driving in rotation a chronograph hand. 4,445,783, Cl. 368-105.000.
Doerfler, Frederick B., to Horix Manufacturing Company. Container filling machine product dispensing cylinder. 4,445,629, Cl. 222-148.000.
Doi Hiroaki: *See—*
Miyadera, Yasuo; Fujioka, Atsushi; Kumazawa, Tetsuo; and Doi Hiroaki, 4,446,191, Cl. 428-245.000.
Doi, Shuhei; Isaka, Tsutomu; and Iida, Shinichiro, to Mitsubishi Petrochemical Company Limited. Crosslinkable polyethylene resin composition. 4,446,283, Cl. 525-344.000.
Dokiya, Masayuki: *See—*
Fujishige, Masao; Dokiya, Masayuki; Kameyama, Tetsuya; Yokokawa, Harumi; Ujiie, Seiichi; Fukuda, Kenzo; and Motoe, Akihiro, 4,445,934, Cl. 75-68.00A.
Donaldson Company, Inc.: *See—*
Robinson, Harold L., 4,446,019, Cl. 210-223.000.
Donovan, Joseph A., to Harris Corporation. Low windload circularly polarized antenna. 4,446,465, Cl. 343-797.000.
Dove, Georges: *See—*
Giddey, Claude; and Dove, Georges, 4,446,166, Cl. 426-631.000.
Dow Chemical Company, The: *See—*
Beale, Alvin F., Jr., 4,446,252, Cl. 521-28.000.
DuPart, Michael S.; Oakes, Billy D.; and Cringle, David C., 4,446,119, Cl. 423-228.000.
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,446,273, Cl. 524-556.000.
Lee, John M.; and Bauman, William C., 4,446,201, Cl. 428-696.000.
McIntyre, James A.; and Phillips, Robert F., 4,445,986, Cl. 204-98.000.
Dowden, Paul J.: *See—*
Evans, David A.; and Dowden, Paul J., 4,445,608, Cl. 198-509.000.
Drake, Charles A., to Phillips Petroleum Company. Polymer residue treatment. 4,446,308, Cl. 528-481.000.
Drake, Evelyn N.; and Tsao, Yuh-hwang, to Exxon Research and Engineering Co.; and Exxon Production Research Company. Method of using a spacer for well control fluid. 4,445,576, Cl. 166-291.000.
Dreishev, Igor I.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.
Dresser Industries, Inc.: *See—*
Kisiel, Stanley C., III, 4,445,714, Cl. 285-23.000.
Koenn, Lawrence D.; and Drude, David B., 4,446,368, Cl. 250-262.000.
DRG (UK) Limited: *See—*
Evans, David A.; and Dowden, Paul J., 4,445,608, Cl. 198-509.000.
Drisko, Benjamin B. Full torque transmission control. 4,445,329, Cl. 60-431.000.
Drouet, Michel G., to Hydro Quebec. Method and device for detecting and locating fault and/or partial discharges in a gas-insulated electrical equipment. 4,446,420, Cl. 324-52.000.
Drude, David B.: *See—*
Koenn, Lawrence D.; and Drude, David B., 4,446,368, Cl. 250-262.000.
Dryan-Fordahl Technologies S.A.: *See—*
Huguenin, Raymond; and Kuechli, Gottfried, 4,445,256, Cl. 29-25.350.
Duarte-Martins, Hermino, Jr.: *See—*
Johansson, Kjell; and Duarte-Martins, Hermino, Jr., 4,445,506, Cl. 128-84.00R.
Dubief, Claude: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,445,521, Cl. 132-7.000.
Dubrow, David. Drawing assembly. 4,445,275, Cl. 33-30.00R.
Dufay, Jean-Francois: *See—*
Chambon, Jean P.; Dufay, Jean-Francois; Grand Chavin, Paul; Perrin, Georges J.; and Vernay, Louis, 4,445,785, Cl. 368-187.000.
Duijkers, Peter A., to U.S. Philips Corporation. Circuit arrangement for deriving a field synchronizing signal from an incoming signal. 4,446,483, Cl. 358-154.000.
Duir, John H.: *See—*
Deering, Roland F.; and Duir, John H., 4,446,001, Cl. 208-11.00R.
Dunn, Anthony G.: *See—*
Beales, Keith J.; Partington, Sally; and Dunn, Anthony G., 4,445,754, Cl. 350-96.340.
DuPart, Michael S.; Oakes, Billy D.; and Cringle, David C., to Dow Chemical Company, The. Method and compositions for reducing corrosion in the removal of acidic gases from gaseous mixtures. 4,446,119, Cl. 423-228.000.
Du Pont de Nemours, E. I., and Company: *See—*
Auditore-Hargreaves, Karen; and Miesowicz, Frederick M., 4,446,233, Cl. 435-7.000.
Baker, Richard A.; Forsythe, George D.; Likhyani, Kewal K.; Roberts, Robert E.; and Robertson, David C., 4,446,024, Cl. 210-500.200.
Brixius, Darryl W.; and Simms, John A., 4,446,175, Cl. 427-385.500.
Eustice, Albert L., 4,446,059, Cl. 252-514.000.
Huang, Hua-Feng; and Wallace, Walter A., 4,446,348, Cl. 219-10.55A.
Kirkland, Joseph J., 4,446,015, Cl. 209-155.000.
Neidich, Douglas A., 4,445,747, Cl. 339-256.00R.
O'Brien, William G., 4,445,458, Cl. 118-401.000.
Proskow, Stephen, 4,446,220, Cl. 430-286.000.
Rutkiewic, Andrew F.; and White, James P., 4,446,044, Cl. 252-170.000.
Silva, Raimund H.; Resnick, Paul R.; and Smith, Roger A., 4,446,269, Cl. 524-316.000.
Vasta, Joseph A., 4,446,259, Cl. 523-408.000.
Waller, Francis J., 4,446,329, Cl. 585-458.000.
Dupont, S. T.: *See—*
Royer, Michel E., 4,445,982, Cl. 204-18.100.
Dworsky, Lawrence N.; and Kennedy, Garth R., to Motorola Inc. Method for determining surface contour of piezoelectric wafers. 4,446,432, Cl. 324-71.500.
Dynametric, Inc.: *See—*
Lee, Charles E.; and Combs, C. Marlon, 4,446,335, Cl. 179-2.00C.

Dynamit Nobel Aktiengesellschaft: *See—*
Brede, Uwe; and Kordel, Gerhard, 4,445,434, Cl. 102-206.000.
Weisgerber, Gregor; and Steffen, Klaus-Dieter, 4,446,327, Cl. 549-307.000.

Dynatech Laboratories Incorporated: *See—*
Bender, Audrey L., 4,446,132, Cl. 424-233.000.

Dyren, Karl E. A.: *See—*
Malmstrom, Per-Ove; and Dyren, Karl E. A., 4,445,814, Cl. 414-295.000.

Dyrna, Peter: *See—*
Sepp, Gunther; and Dyrna, Peter, 4,446,558, Cl. 372-64.000.

E. R. Squibb & Sons, Inc.: *See—*
Varna, Ravi K., 4,446,071, Cl. 260-397.300.

Earsley, Melvin L. Molding of seal rings. 4,446,085, Cl. 264-108.000.

Easley, Robert E. License plate frame with detachable display panels. 4,445,291, Cl. 40-210.000.

East-West Precision, Inc.: *See—*
Margolin, Mark; and Margolin, David, 4,445,632, Cl. 225-2.000.

Eastman Kodak Company: *See—*
Belote, Stephen N.; Leonard, Don R.; and Luce, Garrett C., 4,446,301, Cl. 528-295.300.
Daniels, Larry C.; and Whittaker, Gary S., 4,446,200, Cl. 428-661.000.
Kurtz, Clark N., 4,446,479, Cl. 358-75.000.
Moore, Louis D.; Rule, Mark; and Wicker, Thomas H., 4,446,303, Cl. 528-308.200.
Powell, Philip G., 4,446,484, Cl. 358-166.000.
Sandhu, M. Akram; Wright, John F.; and Molaire, Michel F., 4,446,302, Cl. 528-302.000.
Wadsworth, Donald H.; Thomas, Harold T.; Fletcher, George L.; and Weidner, Charles H., 4,446,223, Cl. 430-338.000.

Eaton Corporation: *See—*
Baltare, Gunnar, 4,445,597, Cl. 188-206.00A.
Bopp, Warren G., 4,445,599, Cl. 192-3.290.
Braun, Eugene R., 4,445,393, Cl. 74-346.000.
Jaeschke, Ralph L., 4,446,392, Cl. 310-105.000.
Leimbach, Richard C., 4,445,527, Cl. 137-226.000.
Link, Donald A.; and Swessel, John A., Jr., 4,446,503, Cl. 361-346.000.
Mazur, Joseph S., 4,445,583, Cl. 180-68.100.
Sheiry, William G., 4,446,345, Cl. 200-85.00R.

Ebata, Yoshikazu, to Janome Sewing Machine Co., Ltd. Switching device of dual function sewing machine. 4,445,450, Cl. 112-155.000.

Eberly, Paul E., Jr.; and Brannon, Judeth H., to Exxon Research and Engineering Co. Guard bed for the removal of sulfur and nickel from feeds previously contacted with nickel containing sulfur adsorption catalysts. 4,446,005, Cl. 208-91.000.

Ebermann, Joachim; Graf, Heinz; Schleicher, Siegfried; and Uhlig, Jurgen, to Veb Werkzeugmaschinenkombinat "7 Oktober" Berlin. Control circuit for machine tools. 4,446,408, Cl. 318-600.000.

EBSCO Industries, Inc.: *See—*
Gowing, James R., 4,445,294, Cl. 43-42.470.

Echte, Adolf: *See—*
Brandstetter, Franz; Echte, Adolf; Haaf, Franz; Hambrecht, Juergen; and Naarmann, Herbert, 4,446,277, Cl. 525-68.000.

Economics Laboratory, Inc.: *See—*
Lappi, Susan C.; and Maloney, James E., 4,445,971, Cl. 162-158.000.

Edamatsu, Kunihiko; and Makabe, Takayoshi, to Fuji Electric Co., Ltd. Automatic product inspection system. 4,446,481, Cl. 358-106.000.

Eden, Jamal S., to B. F. Goodrich Company, The. Copper catalyst compositions for fluid-bed oxyhydrochlorination of ethylene. 4,446,249, Cl. 502-225.000.

Edwards, Hugh T., Jr.: *See—*
O'Cheskey, Theodore H.; and Edwards, Hugh T., Jr., 4,446,352, Cl. 219-121.0LC.

Eenboom, Algund; and Muller, Edzard, to Fried. Krupp GmbH. Method for the registration and evaluation of dental findings as well as an apparatus for the implementation of the method. 4,446,453, Cl. 340-286.00M.

Egar, William P.: *See—*
Galle, Edward L.; Hyldon, Roy G.; and Egar, William P., 4,446,163, Cl. 426-448.000.

Eggli, Daniele; von Ow, Dieter; and Huni, Gregor, to Leuenberger, Hans. Method of applying an areal flexible electrode to a spot of the body covered by a plastic cast as well as a device for executing this method. 4,445,518, Cl. 128-783.000.

Eguchi, Kiyoshi; Ishikawa, Takayoshi; Tamaru, Shigemi; Genba, Yasushi; and Kodera, Toshihiko, to Mitsubishi Denki Kabushiki Kaisha. Arc-suppressing apparatus for circuit breaker. 4,446,347, Cl. 200-144.00R.

Eheim, Franz, to Robert Bosch GmbH. RPM Governor of a fuel injection pump. 4,445,476, Cl. 123-387.000.

Eibe, Werner W., to White Consolidated Industries, Inc. Variable crown roll shape control systems. 4,445,349, Cl. 72-17.000.

Eiglmeier, Kurt; and Knieps, Reinhard, to Riedel-de Haen AG. Substituted bromofluorobenzene derivatives and process for its manufacture. 4,446,075, Cl. 260-465.00G.

Eilenfeld, Herbert W.: *See—*
Bennett, Terry A.; Eilenfeld, Herbert W.; and Lampman, Dewitt W., 4,445,921, Cl. 65-114.000.

Eisai Co., Ltd.: *See—*
Sawada, Tohru, 4,446,129, Cl. 424-94.000.

Eisenberg, Joel H. Glove with thumb restraint element. 4,445,507, Cl. 128-133.000.

Ekbladh, Fred V. G.; and Tillander, Hans. Catheter for postsurgical drainage. 4,445,897, Cl. 604-280.000.

Ekbom, Ragnar, to Stal-Laval Turbin AB. Method of manufacturing bladed elements for rotary fluid machines. 4,445,259, Cl. 29-156.80B.

Eklund, Nils O., to Nordiskafilt AB. Sheet assembly and method of manufacturing same. 4,446,187, Cl. 428-136.000.

Electric Power Rsearch Institute, Inc.: *See—*
Friedmann, Paul G.; Patris, Frank N.; and Tomalesky, Allan W., 4,446,562, Cl. 373-149.000.

Electricite de France (Service National): *See—*
Badoz, Janine; Bardin, Michelle; Bernard, Claude; Herlem, Michel; Robert, Guy; and Thiebault, Andre, 4,446,215, Cl. 429-190.000.

Electroplating Engineers of Japan, Limited: *See—*
Yamamoto, Kenji, 4,445,992, Cl. 204-203.000.

Elliott, Thomas; and Knecht, Todd. Hay cutting machines. 4,445,313, Cl. 56-16.400.

Elliott, William O., to McConway & Torley Corporation. Striker for a railway coupler. 4,445,617, Cl. 213-60.000.

Emery, Franklin T.; Lenderking, Bruce N.; and Couch, Robert D., to Westinghouse Electric Corp. On-line RF arc monitor for large rotating generators. 4,446,426, Cl. 324-158.0MG.

Emmel, Henry J., to Bausch & Lomb Incorporated. Mechanism for accomplishing coarse and fine adjustments in a microscope. 4,445,758, Cl. 350-530.000.

Ender, Ottmar: *See—*
Ender, Sigrid; and Ender, Ottmar, 4,445,241, Cl. 5-468.000.

Ender, Sigrid; and Ender, Ottmar. Cover for pillows, mattresses and the like. 4,445,241, Cl. 5-468.000.

Endo, Hiroshi; Hirate, Naoyuki; and Tezuka, Masao, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of recovering tantalum from silicon-containing tantalum scrap. 4,446,115, Cl. 423-63.000.

Endo, Hiroshi: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,445,491, Cl. 123-605.000.

Endo, Teruyuki, to International Telephone & Telegraph Corporation. Static pressure sensor with glass bonded strain gauge transducers. 4,445,385, Cl. 73-726.000.

Endo, Yoshihiro; Kawaguchi, Masashi; Mizukami, Etsuo; and Kishishita, Hiroshi, to Sharp Kabushiki Kaisha. Structure of thin electroluminescent display panel sealed by glass substrates. 4,446,399, Cl. 313-505.000.

Energy Conversion Devices, Inc.: *See—*
Yu, Terry T., 4,446,224, Cl. 430-346.000.

Engeler, William E.: *See—*
Baertsch, Richard D.; and Engeler, William E., 4,446,532, Cl. 364-824.000.

Engelhard Corporation: *See—*
Bartholic, David B., 4,446,009, Cl. 208-113.000.

Engelke, Claude W.; Power, Royal A.; and Brees, Dale W., to Boeing Company, The. Adjustable rocket thrust alignment device. 4,445,652, Cl. 244-1.00R.

Engineered Products Company: *See—*
Nelson, Joseph N., 4,445,456, Cl. 116-268.000.

English, Philip H.; and Szpak, Anthony D. Apparatus for making individual beverage quantities. 4,446,158, Cl. 426-79.000.

Enomoto, Shigeo; Hirobe, Hitoshi; and Urata, Shinji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zooming device. 4,445,757, Cl. 350-429.000.

Entrup, Hubert G., to Jean Walterscheid GmbH. Adjustable friction overload clutch. 4,445,876, Cl. 464-48.000.

Environmental Elements Corp.: *See—*
Simmers, Kathleen W., 4,446,027, Cl. 210-661.000.

EnviroStrand, Inc.: *See—*
Molenaar, Maarten; and Schreuder, Hermann A., 4,446,086, Cl. 264-118.000.

Erdelyi, Charles K.: *See—*
Concannon, Michael P.; and Erdelyi, Charles K., 4,446,383, Cl. 307-297.000.

Eremeev, Vadim V.; and Guloian, Jury A., to Gusevsky Fulual Gosudarstvennogo Nauchno-Issledovatelskogo Insitut Stekla. Method of heat polishing pattern cut glassware. 4,445,922, Cl. 65-120.000.

Ermanski, Albert G.: *See—*
Wright, David M.; and Ermanski, Albert G., 4,445,799, Cl. 402-4.000.

Ertl, Paul S.: *See—*
Yataki, Masamichi; Dack, Glen W. D.; and Ertl, Paul S., 4,445,649, Cl. 242-118.200.

Erwien, Helmut: *See—*
Linke, Horst; Albers, Josef; and Erwien, Helmut, 4,445,878, Cl. 474-92.000.

Esashi, Masayoshi: *See—*
Mizusaki, Takashi; Matsuo, Tadayuki; Esashi, Masayoshi; and Abe, Hiroshi, 4,446,474, Cl. 357-25.000.

Escher Wyss GmbH: *See—*
Kurtz, Rudiger, 4,445,975, Cl. 162-336.000.

Eskinazi, Victoria; and Wells, James E., to Air Products and Chemicals, Inc. Morpholine compounds prepared via phosphate catalysts. 4,446,320, Cl. 544-106.000.

Espedal, Michael L., to Texaco Inc. Burner for combusting oxygen-coal mixture. 4,445,444, Cl. 110-261.000.

Essex Group, Inc.: *See—*
Brown, Samuel J., 4,446,449, Cl. 335-131.000.

Eustice, Albert L., to Du Pont de Nemours, E. I., and Company. Conductor compositions. 4,446,059, Cl. 252-514.000.

Evans, David A.; and Dowden, Paul J., to DRG (UK) Limited. Bucket wheels and bucket wheel reclaimers. 4,445,608, Cl. 198-509.000.

Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, to Beecham Group p.l.c. Benzopyrans. 4,446,113, Cl. 422-267.000.

Evans, Richard F., to Kenmar Export Ltd. Collet. 4,445,697, Cl. 279-1.00A.

Evans, William R., to AMP Incorporated. Mass termination of densely grouped conductors. 4,445,748, Cl. 339-94.00M.

Exxon Production Research Co.: *See—*
Abdallah, Mohamed G.; and McDonald, William M., 4,445,804, Cl. 405-173.000.
Drake, Evelyn N.; and Tsao, Yuh-hwang, 4,445,576, Cl. 166-291.000.

Exxon Research and Engineering Co.: *See—*
Drake, Evelyn N.; and Tsao, Yuh-hwang, 4,445,576, Cl. 166-291.000.
Eberly, Paul E., Jr.; and Brannon, Judeth H., 4,446,005, Cl. 208-91.000.
Lundberg, Robert D.; and Thaler, Warren A., 4,446,267, Cl. 524-211.000.
Siegmund, Charles W., 4,446,002, Cl. 208-23.000.
Wheelock, Kenneth S.; and Schucker, Robert C., 4,446,011, Cl. 208-121.000.

F. L. Smidth & Co.: *See—*
Lind, Leif, 4,445,911, Cl. 55-2.000.

Faber, Johannes W.; and Weick, Gunter, to U.S. Philips Corporation. Optical fiber switch with rotary gear movement. 4,445,752, Cl. 350-96.200.

Fabian, Roger C.: *See—*
Reynolds, Frederick W., III; Miranda, Robert E.; and Fabian, Roger C., 4,445,952, Cl. 156-94.000.

Facet Enterprises, Inc.: *See—*
Waters, Paul E.; Vaughan, David S.; and Mustico, Carmen J., Jr., 4,445,596, Cl. 188-171.000.

Facey, Eugene R.: *See—*
Ray, Donald R.; and Facey, Eugene R., 4,445,805, Cl. 405-203.000.

FAG Kugelfischer Georg Schafer & Co.: *See—*
Oppl, Gunter; and Schmitt, Gunther, 4,445,320, Cl. 57-88.000.

Fairchild Camera & Instrument Corporation: *See—*
Pendleton, Joan, 4,446,473, Cl. 357-24.000.

Farnia, Khosrow, to Allis-Chalmers Corporation. Waste heat recovery method and apparatus. 4,445,461, Cl. 122-7.00R.

Farr, Garth M.; and Callihan, Patrick R., to Farr Oil Tool, Inc. Power tong and back-up tong assembly. 4,445,402, Cl. 81-57.160.

Farr Oil Tool, Inc.: *See—*
Farr, Garth M.; and Callihan, Patrick R., 4,445,402, Cl. 81-57.160.

Faulkner, Richard D.; Thoman, Daniel L.; and McDonie, Arthur F., to RCA Corporation. Photomultiplier tube having improved count-rate stability. 4,446,401, Cl. 313-533.000.

Fayter, Richard G., Jr.; and Hall, Allen L., to National Distillers and Chemical Corporation. Substituted-cyclopropyl sulfones. 4,446,077, Cl. 260-465.00K.

Fedotov, Mikhail T.: *See—*
Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,446,374, Cl. 250-492.300.

Fehrle, Martin: *See—*
Rieder, Werner; and Fehrle, Martin, 4,446,195, Cl. 428-458.000.

Feild, James R. Suction dissector. 4,445,517, Cl. 128-752.000.

Felder, Gregory F., to B. F. Goodrich Company, The. Tire building drum. 4,445,962, Cl. 156-398.000.

Feldman, Salomon: *See—*
Krupka, Yaakov; Feldman, Salomon; and Yerushalmi, Shmuel, 4,445,512, Cl. 128-419.0PT.

Feller, Johannes: *See—*
Aufderhaar, Erhard; Feller, Johannes; Hultsch, Gunther; and Kisslinger, Walter, 4,446,021, Cl. 210-378.000.

Ferag AG: *See—*
Reist, Walter, 4,445,681, Cl. 271-300.000.

Ferrero, Cesare: *See—*
Carbonaro, Antonio; Ferrero, Cesare; and Corbellini, Margherita, 4,446,289, Cl. 526-142.000.

Ferret, Simone: *See—*
Berthod, Daniel P. M.; and Ferret, Simone, 4,446,051, Cl. 252-309.000.

Ferrofluidics Corporation: *See—*
Raj, Kuldip; Moskowitz, Ronald; and Rodier, Raymond, 4,445,696, Cl. 277-80.000.

Ferron, Rene . Support for garbage bags. 4,445,658, Cl. 248-99.000.

Fester, Walter; and Huber, Bernd, to Hoechst Aktiengesellschaft. Set polyacrylonitrile filaments and fibers, and a process for their production. 4,446,206, Cl. 428-364.000.

Feuerstein, Diane: *See—*
Snyder, William R.; and Feuerstein, Diane, 4,446,045, Cl. 252-180.000.

FIAB System AB: *See—*
Niklasson, Tage, 4,445,960, Cl. 156-344.000.

Fiedler, Armin, to International Freezer Corp. Pressure operated switch including an expandable flat tube. 4,446,344, Cl. 200-83.00B.

Field, Martin J.: *See—*
Stoltman, Donald D.; Kabasin, Daniel F.; and Field, Martin J., 4,445,369, Cl. 73-204.000.

Figgie International Inc.: *See—*
Puccinelli, Joseph S.; and Lukezich, Paul J., 4,445,307, Cl. 52-638.000.

Figueroa, Luis, to Hughes Aircraft Company. Mode-locked semiconductor laser with tunable external cavity. 4,446,557, Cl. 372-45.000.

Figura, Ilona W.: *See—*
Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., 4,446,103, Cl. 422-37.000.

Filka, Karel; Coupek, Jiri; and Kocourek, Jan, to Prirodovedecka fakulta University Karlovy. Sorbent for saccharides, glycoproteins and polyesters comprising a lectin covalently bonded with a vehicle and method for preparation thereof. 4,446,275, Cl. 525-54.100.

Filsinger, Reinhard, to Daimler-Benz Aktiengesellschaft. Safety circuit for an electronic throttle control of internal combustion engines. 4,445,603, Cl. 192-0.055.

Finckh, Hermann: *See—*
Tratz, Herbert; Finckh, Hermann; and Kunstle, Konrad, 4,445,325, Cl. 60-39.182.

Fineberg, Douglas H.; and Haynes, Andrew, to Baker International Corporation. Unrestricted bore safety joint. 4,445,572, Cl. 166-188.000.

Finegold, Hyman B., to Globe Tool & Engineering Company, The. Dynamoelectric field assembly and winding therefor. 4,446,393, Cl. 310-184.000.

Finley, Joseph H.: *See—*
Lee, Fui-Tseng H.; Juelke, Charles V.; and Finley, Joseph H., 4,446,062, Cl. 252-609.000.

Fiquet, Claire: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,445,521, Cl. 132-7.000.

Firestone Tire & Rubber Company, The: *See—*
Bohm, Georg G. A.; DeTrano, Mario; and Hall, James E., 4,445,562, Cl. 152-347.000.

Fischer, Pierre, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Ammunition container, especially drum magazine. 4,445,419, Cl. 89-33.00D.

Fischer & Porter Company: *See—*
Herzl, Peter J.; and Strohmeier, Warren O., 4,445,388, Cl. 73-861.240.

Fisher, Oscar. Apparatus for processing film discs. 4,445,769, Cl. 354-322.000.

Fishman, Jeffrey: *See—*
Berg, Ellie; and Yowfoo, Joseph, 4,445,867, Cl. 434-404.000.

Fitz, Forest G., Jr.: *See—*
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,445,355, Cl. 72-250.000.

Flaherty, Robert, to Westinghouse Electric Corp. All-metal expandable ultra high vacuum seal. 4,445,694, Cl. 277-1.000.

Flasza, Michael D.: *See—*
Johnson, Fred D.; Flasza, Michael D.; and Tzakis, George J., 4,446,443, Cl. 330-257.000.

Fletcher, George L.: *See—*
Wadsworth, Donald H.; Thomas, Harold T.; Fletcher, George L.; and Weidner, Charles H., 4,446,223, Cl. 430-338.000.

Fletcher, Roy W., to Union Special Corporation. Apparatus for delivering disk-like objects to an attaching station. 4,445,448, Cl. 112-110.000.

Flex-Kleen Corporation: *See—*
Robinson, James W., 4,445,915, Cl. 55-378.000.

Floby Durk: *See—*
Ihrman, Carl-Bertil, 4,445,590, Cl. 182-222.000.

FMC Corporation: *See—*
Betermier, Benedicte; Alvarez, Manuel; and Norris, Robert D., 4,446,029, Cl. 210-748.000.
Braksmayer, Diza P.; and Lovenguth, Ronald F., 4,446,265, Cl. 524-139.000.
Browning, James T.; and Orlando, Franklin P., 4,445,316, Cl. 56-330.000.
Lee, Fui-Tseng H.; Juelke, Charles V.; and Finley, Joseph H., 4,446,062, Cl. 252-609.000.

Fockler, William: *See—*
LeGrand, Jesse S.; Fockler, William; and Jezo, Mairice L. J., 4,446,464, Cl. 343-399.000.

Fodor, Ferenc: *See—*
Gimesi, Antal; Baracskai, Jozsef; Fodor, Ferenc; Gaal, Antal; Horvath, Andras; and Kolonics, Zoltan, 4,445,927, Cl. 71-86.000.

Fong, Hiram L., Jr.: *See—*
Morgan, Albert E., Jr., 4,445,453, Cl. 114-290.000.

Ford, Clarence E., Jr.; and Johnson, Ronald E., to Corning Glass Works. Article decorating. 4,445,432, Cl. 101-152.000.

Ford Motor Company: *See—*
Coletti, Onorio J., 4,445,493, Cl. 123-633.000.
Malani, Narayandas; and Boller, Thomas E., 4,446,172, Cl. 427-160.000.
McNamara, David A., 4,446,447, Cl. 331-42.000.

Forman, Philip: *See—*
Love, Michael; and Forman, Philip, 4,445,877, Cl. 474-255.000.

Forsythe, George D.: *See—*
Baker, Richard A.; Forsythe, George D.; Likhyani, Kewal K.; Roberts, Robert E.; and Robertson, David C., 4,446,024, Cl. 210-500.200.

Fort, Robert G.: *See—*
Post, Richard L.; and Fort, Robert G., 4,445,970, Cl. 162-135.000.

Fortmann, William E., to United Technologies Corporation. Temperature regulation of air cycle refrigeration systems. 4,445,815, Cl. 415-12.000.

Foster, Stephen R.; and Austin, Peter W., to Baker Cac, Inc. Actuator having Belleville washer configuration operating in concert with a piston cylinder member. 4,445,424, Cl. 92-5.00R.

Foster Wheeler Energy Corporation: *See—*
Stewart, Robert D.; and Taylor, Thomas E., 4,445,443, Cl. 110-245.000.
Fountaine, Harvey A., to Sterling Drug Inc. Chewable antacid tablets. 4,446,135, Cl. 424-154.000.
Fourcadier, Chantal: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,445,521, Cl. 132-7.000.
Fouss, James L.; and Parker, John J., to Hancor, Inc. Arch end cap. 4,445,542, Cl. 138-94.000.
Fowks, William R., to Rockwell International Corporation. Programmable frequency synthesizer primarily for use in an atomic clock. 4,446,446, Cl. 331-3.000.
Fox, Charles L., Jr.; Modak, Shanta M.; and Fox, Paul. Wound dressing comprising silver sulfadiazine incorporated in animal tissue. 4,446,124, Cl. 424-27.000.
Fox, David A.; and Tipton, Lynn L., to Westinghouse Electric Corp. Voltage regulator for aircraft generators. 4,446,417, Cl. 322-25.000.
Fox, Paul: *See—*
Fox, Charles L., Jr.; Modak, Shanta M.; and Fox, Paul, 4,446,124, Cl. 424-27.000.
Frager, Jean: *See—*
Gabor, Gabriel, 4,446,560, Cl. 373-25.000.
Framatome: *See—*
Schwind, Jacques; and Le Feuvre, Camille, 4,446,099, Cl. 376-277.000.
Francel, Josef; Stewart, Daniel R.; and Horn, Uriah, to Owens-Illinois, Inc. Lead-free and cadmium-free glass frit compositions for glazing, enameling and decorating. 4,446,241, Cl. 501-14.000.
Franke, George, to Simplex Time Recorder Co. Single piece trigger and knock off mechanism. 4,446,468, Cl. 346-82.000.
Franke, Kurt, to Siemens Aktiengesellschaft. X-Ray diagnostic generator for an X-ray tube comprising several focal spots. 4,446,569, Cl. 378-115.000.
Franklin, Carl R.: *See—*
Bond, Hollis H., Jr.; and Franklin, Carl R., 4,446,459, Cl. 340-825.210.
FranRica Mfg. Inc.: *See—*
Davis, John C.; Reiss, Ronald J.; and Rica, Albert F., 4,445,550, Cl. 141-329.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Hansmann, Johann, 4,445,438, Cl. 104-12.000.
Freed, Meier E.; and Abou-Gharbia, Magid, to American Home Products Corporation. Tetra- and hexa-hydropyrrolo(1,2-a)quinoxaline and azaquinoxaline derivatives. 4,446,323, Cl. 544-344.000.
Freeman, Bob L.; and Borris, Peter W., to Hexcel Corporation. Method and material for securing structure for machining. 4,445,956, Cl. 156-154.000.
French, Kenneth A.: *See—*
Hanyzewski, Eugene F.; French, Kenneth A.; and Walker, Thomas S., 4,445,553, Cl. 144-145.00A.
Fried. Krupp GmbH: *See—*
Eenboom, Algund; and Muller, Edzard, 4,446,453, Cl. 340-286.00M.
Friedman, David; and Mandel, Philip, to Computervision Corporation. Method and apparatus for controlling stepper motors. 4,446,412, Cl. 318-696.000.
Friedman, Evelyn; and Carswell, William R. Vending machine having access blocking members. 4,445,625, Cl. 221-241.000.
Friedman, Herman H.; Del Valle, Frank; and Hofmann, Lisa A., to General Foods Corporation. Aromatic, monohydric alcohols as preservatives for foods. 4,446,161, Cl. 426-335.000.
Friedmann, Paul G.; Patris, Frank N.; and Tomalesky, Allan W., to Electric Power Rsearch Institute, Inc. Method and apparatus for measuring crucible level of molten metal. 4,446,562, Cl. 373-149.000.
Frillici, Fernando V.; and Infantino, Joseph R., to AMF Incorporated. Bowling pin having an ionomer resin cladding. 4,445,688, Cl. 273-82.00R.
Froncisz, Wojciech; and Hyde, James S., to Medical College of Wisconsin. Microwave resonator. 4,446,429, Cl. 324-316.000.
Fror, Werner. Sport shoe with a studded sole. 4,445,288, Cl. 36-134.000.
Frost, John W., to Jax Products Inc. Portable stove with gimbal mounting. 4,445,495, Cl. 126-24.000.
Frutiger, William A.: *See—*
Denholm, A. Stuart; Frutiger, William A.; and Williams, Kenneth E., 4,446,373, Cl. 250-492.200.
Fryer, Warren R., to Calculagraph Company. Customer premises loop test unit powered from the normal central office power source. 4,446,340, Cl. 179-175.30R.
Fuiji Photo Film Company, Ltd.: *See—*
Maekawa, Masakazu; Nakamura, Sukenori; Sugiyama, Masatoshi; and Odawara, Hideo, 4,446,174, Cl. 427-261.000.
Fuji Electric Co., Ltd.: *See—*
Edamatsu, Kunihiko; and Makabe, Takayoshi, 4,446,481, Cl. 358-106.000.
Hayashi, Shizuo, 4,445,670, Cl. 266-80.000.
Fuji Kogyo Co., Ltd.: *See—*
Ohmura, Ryuichi, 4,445,293, Cl. 43-24.000.
Fuji Photo Film Co., Ltd.: *See—*
Horikawa, Kazuo, 4,446,487, Cl. 358-280.000.
Iwakura, Ken; and Sugiyama, Takekatsu, 4,446,209, Cl. 428-411.000.
Kishimoto, Shinzo; and Yamamuro, Kiyohiko, 4,446,225, Cl. 430-393.000.
Mizuno, Chiaki; Tamai, Yasuo; and Tsuji, Nobuo, 4,446,205, Cl. 428-327.000.
Nakauchi, Kenji, 4,445,778, Cl. 356-222.000.
Sugiyama, Masatoshi; Yoshida, Kazutaka; and Ogawa, Akira, 4,446,470, Cl. 346-140.00R.
Fuji Xerox Co., Ltd.: *See—*
Itoh, Satoru, 4,446,486, Cl. 358-280.000.
Uchida, Hiroyasu, 4,445,682, Cl. 271-301.000.
Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Transient noise free type amplifier circuit. 4,446,441, Cl. 330-149.000.
Fujii, Masahiko: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,446,137, Cl. 424-246.000.
Fujikura Cable Works, Limited, The: *See—*
Takaoka, Michio; Ono, Motoyuki; Kaji, Isao; and Yagi, Shigeki, 4,446,331, Cl. 174-73.00R.
Fujioka, Atsushi: *See—*
Miyadera, Yasuo; Fujioka, Atsushi; Kumazawa, Tetsuo; and Doi Hiroaki, 4,446,191, Cl. 428-245.000.
Fujioka, Satoru: *See—*
Ishii, Tetsuro; Oyama, Tadanori; Yamashita, Masashi; Kzome, Kazuyuki; Ikeda, Tsutomu; and Fujioka, Satoru, 4,445,981, Cl. 204-18.100.
Fujishige, Masao; Dokiya, Masayuki; Kameyama, Tetsuya; Yokokawa, Harumi; Ujiie, Seiichi; Fukuda, Kenzo; and Motoe, Akihiro, to Agency of Industrial Science and Technology. Method of manufacturing aluminum by using blast furnace. 4,445,934, Cl. 75-68.00A.
Fujitsu Limited: *See—*
Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, 4,446,499, Cl. 361-92.000.
Kurafuji, Setsuo, 4,446,386, Cl. 307-449.000.
Sato, Kiyoshi; Terashima, Minoru; Sorimachi, Haruo; Naka, Toshiaki; Kanno, Takeo; and Yamada, Fumiaki, 4,446,355, Cl. 219-216.000.
Taira, Shigenobu, 4,446,384, Cl. 307-297.000.
Fujitsu Ten Limited: *See—*
Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, 4,446,499, Cl. 361-92.000.
Fujiwara, Michiaki: *See—*
Morihashi, Toshifumi; Noda, Koshi; Nakayama, Teruo; Nishimura, Shinichi; and Fujiwara, Michiaki, 4,445,252, Cl. 19-244.000.
Fukase, Hiroshi: *See—*
Horii, Satoshi; and Fukase, Hiroshi, 4,446,319, Cl. 544-92.000.
Fukuda, Kenzo: *See—*
Fujishige, Masao; Dokiya, Masayuki; Kameyama, Tetsuya; Yokokawa, Harumi; Ujiie, Seiichi; Fukuda, Kenzo; and Motoe, Akihiro, 4,445,934, Cl. 75-68.00A.
Fukuda, Kunio; Tazaki, Kichiya; Takano, Akihisa; and Kusumi, Yuji, to Asahi-Dow Limited. Resin composition having nice color tone and high crack-resistance. 4,446,272, Cl. 524-465.000.
Fukushima, Masao; and Yazaki, Komei, to Nissan Motor Company, Limited. Engine mounting structure. 4,445,662, Cl. 248-559.000.
Fullam, Philip S., to Yellow Springs Instrument Company, Inc., The. Electrical cable connector. 4,445,742, Cl. 339-61.00M.
Fuller, Harrison W., to Sanders Associates, Inc. Dispersive delay lines. 4,446,566, Cl. 375-96.000.
Funk, Charles F., to Metal Parts, Inc. Method of attaching a wear strip to downhole members. 4,445,727, Cl. 308-4.00A.
Furnco Construction Corporation: *See—*
Husher, Lee K., 4,445,977, Cl. 202-223.000.
Furnish, Alan G.: *See—*
Athey, Roderick E.; and Furnish, Alan G., 4,445,537, Cl. 137-572.000.
Furukawa Electric Co., Ltd., The: *See—*
Nakae, Hiroyuki; Noguchi, Isamu; and Kondo, Masayuki, 4,446,254, Cl. 521-92.000.
Furuno, Yoshikuni: *See—*
Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, 4,445,946, Cl. 148-36.000.
Furusho, Takao: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,446,137, Cl. 424-246.000.
Fuse, Masashi: *See—*
Tsushima, Noboru; Fuse, Masashi; Sasaki, Toshio; Ogata, Masayuki; Mimori, Teruo; and Mukai, Tadashi, 4,445,279, Cl. 33-356.000.
Gaal, Antal: *See—*
Gimesi, Antal; Baracskai, Jozsef; Fodor, Ferenc; Gaal, Antal; Horvath, Andras; and Kolonics, Zoltan, 4,445,927, Cl. 71-86.000.
Gabor, Gabriel, to Frager, Jean. High power electric generator, especially adapted for powering processes involving discharge in a rarified atmosphere. 4,446,560, Cl. 373-25.000.
Gabriel, Naeem B. Hydraulic cyclo-jet engine. 4,445,327, Cl. 60-325.000.
Gaffney, Donald P.; Grise, Gary D.; and Lam, Chung H., to International Business Machines Corporation. Non-inverting non-volatile dynamic RAM cell. 4,446,535, Cl. 365-149.000.
Gai, Eliezer: *See—*
Walker, Bruce K.; Desai, Mukund; and Gai, Eliezer, 4,445,421, Cl. 91-186.000.
Galaske, Folker: *See—*
Deeg, Reinhard; Galaske, Folker; and Kettenbach, Helmuth, 4,445,647, Cl. 242-68.400.
Galasko, Gail: *See—*
Larner, Joseph; Cheng, Kang; and Galasko, Gail, 4,446,064, Cl. 260-112.00R.

Gallagher, Edward J.: *See—*
Caldwell, George R.; and Gallagher, Edward J., 4,445,258, Cl. 29-156.70R.
Galle, Edward L.; Hyldon, Roy G.; and Egar, William P., to Pillsbury Company, The. Process of manufacturing a starch-based food product. 4,446,163, Cl. 426-448.000.
Gamo, Takaharu; Moriwaki, Yoshio; and Yamashita, Toshio, to Matsushita Electric Industrial Co., Ltd. Material for hydrogen absorption and desorption. 4,446,121, Cl. 423-644.000.
GAO Gesellschaft fur Automation und Organisation mbH.: *See—*
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,446,204, Cl. 428-323.000.
Garcia, Mario C. Skate boot cover. 4,445,287, Cl. 36-106.000.
Garrett Corporation, The: *See—*
Kinsell, Robert C.; and Noe, James C., 4,445,639, Cl. 237-81.000.
Mitchell, John D., 4,445,532, Cl. 137-495.000.
Tippetts, Thomas B., 4,445,377, Cl. 73-516.0LM.
Gartman, Donald L.: *See—*
Gartman, Rayburn L.; Gartman, Donald L.; and Kimmons, Kenneth T., 4,445,630, Cl. 222-464.000.
Gartman, Rayburn L.; Gartman, Donald L.; and Kimmons, Kenneth T. Emergency recovery system. 4,445,630, Cl. 222-464.000.
Gaudiana, Russell: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell; and Sahatjian, Ronald A., 4,446,305, Cl. 528-348.000.
Gaymans, Reinoud J.; and van Asperen, Pieter J., to Stamicarbon B.V. Highly stable nylon 4,6 objects. 4,446,304, Cl. 528-335.000.
Gebeyehu, Gulilat: *See—*
Marquez, Victor E.; Cooney, David A.; Gebeyehu, Gulilat; and Jayaram, Hiremagalur N., 4,446,315, Cl. 536-27.000.
Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH: *See—*
Groger, Hans; and Harms, Ernst E., 4,445,724, Cl. 299-81.000.
Gedwill, Michael A.; Levine, Stanley R.; and Glasgow, Thomas K., to United States of America, National Aeronautics and Space Administration. Overlay metallic-cermet alloy coating systems. 4,446,199, Cl. 428-639.000.
Gehringer, Hans: *See—*
Bucheler, Manfred; Klinksiek, Bernd; Gehringer, Hans; and Schnoring, Hildegard, 4,446,127, Cl. 424-59.000.
Geiss, Sieghart, to Daimler-Benz Aktiengesellschaft. Track guided vehicle. 4,445,440, Cl. 105-215.00R.
Gellert, Jobst U. Sprue bushing connector assembly. 4,446,360, Cl. 219-421.000.
Genba, Yasushi: *See—*
Eguchi, Kiyoshi; Ishikawa, Takayoshi; Tamaru, Shigemi; Genba, Yasushi; and Kodera, Toshihiko, 4,446,347, Cl. 200-144.00R.
Genentech, Inc.: *See—*
Seeburg, Peter H., 4,446,235, Cl. 435-91.000.
General Electric Company: *See—*
Aird, Alanson D., 4,446,375, Cl. 250-551.000.
Baertsch, Richard D.; and Engeler, William E., 4,446,532, Cl. 364-824.000.
Cheng, Bo-Ching; Rosenbaum, Herman S.; and Armijo, Joseph S., 4,445,942, Cl. 148-6.300.
Davis, Lewis B., Jr.; and Dibelius, Norman R., 4,445,339, Cl. 60-749.000.
Jarvinen, Willard B., 4,446,512, Cl. 363-39.000.
Johnson, Peter D.; and Silverstein, Seth D., 4,446,397, Cl. 313-25.000.
Kim, Bang M.; and Weininger, Joseph L., 4,445,990, Cl. 204-151.000.
Kure-Jensen, Jens; and Marshall, Robert A., 4,446,377, Cl. 290-52.000.
Ladusaw, William T., 4,445,344, Cl. 62-324.600.
Lee, Garland G., 4,446,268, Cl. 524-315.000.
Loucks, George R., 4,446,278, Cl. 525-92.000.
Lovgren, Eric M.; Golba, Joseph C., Jr.; and Reed, Randall A., 4,446,090, Cl. 264-211.000.
Mark, Victor; and Hedges, Charles V., 4,446,285, Cl. 525-439.000.
Mark, Victor; and Hedges, Charles V., 4,446,298, Cl. 528-204.000.
McCarty, William J., 4,445,343, Cl. 62-324.100.
Ouellette, Maurice J.; and Hughes, William C., 4,446,462, Cl. 340-825.070.
Rosenquist, Niles R., 4,446,296, Cl. 528-198.000.
Sands, Robert W., 4,446,511, Cl. 362-267.000.
Smith, Peter H., 4,446,349, Cl. 219-10.55F.
Tupper, Leland C., 4,446,414, Cl. 318-723.000.
Wells, Robert C., 4,445,375, Cl. 73-504.000.
General Foods Corporation: *See—*
Friedman, Herman H.; Del Valle, Frank; and Hofmann, Lisa A., 4,446,161, Cl. 426-335.000.
Malizia, Peter D.; and Trumbetas, Jerome F., 4,446,162, Cl. 426-424.000.
General Mining Union Corporation Limited: *See—*
Bohme, Rolf C.; and Lazerson, Max M., 4,445,615, Cl. 209-555.000.
General Motors Corporation: *See—*
Baxter, William J., 4,445,999, Cl. 204-414.000.
Chana, Howard E., 4,445,602, Cl. 192-53.00F.
Coleman, John R., 4,445,333, Cl. 60-578.000.
Derrick, Dennis P., 4,445,334, Cl. 60-585.000.
Harvey, Dennis L., 4,445,957, Cl. 156-180.000.
Hoffman, Charles T., Jr., 4,445,594, Cl. 188-73.370.
Langmesser, Otto J., Jr.; and Rees, Richard W. A., 4,445,661, Cl. 248-394.000.
Lutfy, Joseph P.; Grabowski, Thaddeus J.; and Arnold, Robert G., 4,445,979, Cl. 204-15.000.
Lyon, Harry H., 4,445,326, Cl. 60-277.000.
McCreary, Charles H., 4,445,337, Cl. 60-608.000.
Meixell, Richard D., 4,445,530, Cl. 137-381.000.
Melinat, Wolfgang, 4,445,330, Cl. 60-545.000.
Melinat, Wolfgang, 4,445,335, Cl. 60-589.000.
Oakes, Edmond G.; Arndt, Frederick P.; and Grandel, Leonard F., 4,445,708, Cl. 280-777.000.
Reinke, Paul E., 4,446,523, Cl. 364-431.050.
Rogers, Lloyd W., Jr., 4,445,604, Cl. 192-71.000.
Schaper, Dieter, 4,445,722, Cl. 297-468.000.
Stoltman, Donald D.; Kabasin, Daniel F.; and Field, Martin J., 4,445,369, Cl. 73-204.000.
Tison, Richard P., 4,445,984, Cl. 204-49.000.
Trippett, Richard J., 4,445,792, Cl. 384-103.000.
General Refractories Company: *See—*
Samanta, Sudarsan C., 4,446,040, Cl. 252-62.000.
General Signal Corporation: *See—*
Binder, Paul B.; and Di Napoli, Louis D., 4,445,383, Cl. 73-718.000.
Caldwell, George R.; and Gallagher, Edward J., 4,445,258, Cl. 29-156.70R.
GEO Vann, Inc.: *See—*
Vann, Roy R., 4,445,574, Cl. 166-268.000.
George, Irwin S. Precision aligned split V-block. 4,445,678, Cl. 269-88.000.
Georgia-Pacific Corporation: *See—*
Hulford, Karen F.; and Price, Jerry W., 4,445,940, Cl. 134-2.000.
Gercekci, Anil; and Maeder, Heinz B., to Motorola, Inc. Means and method for disabling access to a memory. 4,446,475, Cl. 357-40.000.
Gergely, John S., to Conoco Inc. Apparatus for detecting oil in water. 4,446,370, Cl. 250-301.000.
Gerhart, Fritz; and Van Dorsselaer, Viviane, to Merrell Toraude et Compagnie. Decarboxylase-inhibiting fluorinated pentane diamine derivatives. 4,446,151, Cl. 424-319.000.
Germain, Alfred: *See—*
Viannay, Stephane; Germain, Alfred; and Sebbah, Jack, 4,445,525, Cl. 134-122.00R.
Germanas, Dalia: *See—*
Qualeatti, Gail M.; and Germanas, Dalia, 4,446,073, Cl. 260-409.000.
Gerstmann, Joseph; and Vasilakis, Andrew D., to Advanced Mechanical Technology, Inc. High efficiency water heating system. 4,445,464, Cl. 122-16.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Linke, Horst; Albers, Josef; and Erwien, Helmut, 4,445,878, Cl. 474-92.000.
Gianturco, Cesare, to Cook, Inc. Catheter plug. 4,445,896, Cl. 604-238.000.
Giddey, Claude; and Dove, Georges, to Battelle Memorial Institute. Chocolate composition for the preparation of heat-resistant chocolate articles and process for its preparation. 4,446,166, Cl. 426-631.000.
Gill, Martin S. Tanks for transporting liquids. 4,445,624, Cl. 220-449.000.
Gimesi, Antal; Baracskai, Jozsef; Fodor, Ferenc; Gaal, Antal; Horvath, Andras; and Kolonics, Zoltan, to Nitrokemia Ipartelepek; and Novenyvedelmi Kutato Intezet. Herbicidal compositions containing N-(phosphonomethyl)-glycine. 4,445,927, Cl. 71-86.000.
Gisler, Roland: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,446,128, Cl. 424-88.000.
Giustino, John. Bolt anchor especially for use in hard materials. 4,445,812, Cl. 411-57.000.
Givens, Wyatt W.; and Allen, Linus S., to Mobil Oil Corporation. Method and system for radioactive assaying. 4,446,369, Cl. 250-270.000.
Glab, Edwin F.: *See—*
Spinelli, Richard A.; and Glab, Edwin F., 4,445,774, Cl. 355-71.000.
Glacier Metal Company, Limited, The: *See—*
New, Nigel H.; and O'Rourke, John B., 4,445,592, Cl. 184-6.130.
Glasgow, Thomas K.: *See—*
Gedwill, Michael A.; Levine, Stanley R.; and Glasgow, Thomas K., 4,446,199, Cl. 428-639.000.
Glasteel Tennessee, Inc.: *See—*
Barrell, David; Kennedy, Donald E.; Marino, James J., Jr.; and Rollen, Donald C., 4,446,173, Cl. 427-206.000.
Glaxo Operations U.K. Limited: *See—*
Gregson, Michael; and Sykes, Richard B., 4,446,317, Cl. 544-22.000.
Gleim, Robert D., to Rohm and Haas Company. Polyacetylene with pyrogallol or hydrosulfite system. 4,446,310, Cl. 528-487.000.
Global Marine Inc.: *See—*
Beckman, Wayne C.; and Harwell, Patrick E., 4,445,395, Cl. 74-501.00R.
Globe Tool & Engineering Company, The: *See—*
Finegold, Hyman B., 4,446,393, Cl. 310-184.000.
Goebel, Franz; and Slavin, Morton A., to GTE Communications Products Corporation. Reserve electrochemical battery. 4,446,211, Cl. 429-101.000.
Gohausen, Hans J.; Kirchhoff, Winfried; Lindener, Jurgen; and Wennemann, Harald, to Henkel KGaA. Sealing anodically produced oxide layers, on aluminum. 4,445,983, Cl. 204-35.00N.
Golba, Joseph C., Jr.: *See—*
Lovgren, Eric M.; Golba, Joseph C., Jr.; and Reed, Randall A., 4,446,090, Cl. 264-211.000.
Gold, Nicholas, to Polaroid Corporation. Photographic film assemblage with improved leader. 4,445,768, Cl. 354-275.000.

Golda, Eugene: *See—*
Herting, Hans P.; Huang, Jen-Chi; and Golda, Eugene, 4,446,221, Cl. 430-302.000.
Goldberg, Norman: *See—*
Currie, Thomas P.; and Goldberg, Norman, 4,446,477, Cl. 357-74.000.
Goldsmid, Hiroshi J., to Unisearch Limited. Hardness tester. 4,445,367, Cl. 73-81.000.
Golub, Gregory J.; and Jenkins, Albert M., to Westinghouse Electric Corp. Switch mechanism for transformer. 4,446,343, Cl. 200-11.0TC.
Gonzalez, Fernando. Record cleaning device. 4,446,547, Cl. 369-74.000.
Gooding, Robert J., to Action Concepts, Inc. Portable tool for affixing terminals onto battery cables. 4,445,358, Cl. 72-416.000.
Goodyear Tire & Rubber Company, The: *See—*
Benko, David A., 4,446,197, Cl. 428-625.000.
Caillet, Eugene, 4,445,640, Cl. 238-8.000.
Cottman, Kirkwood S., 4,446,264, Cl. 524-109.000.
Heater, Paul L., Jr., 4,446,271, Cl. 524-441.000.
Parker, Dane K., 4,446,284, Cl. 525-383.000.
Shemenski, Robert M.; Kim, Dong K.; and Starinshak, Thomas W., 4,446,198, Cl. 428-625.000.
Googin, John M.: *See—*
Compere, Alicia L.; Googin, John M.; and Griffith, William L., 4,445,908, Cl. 44-56.000.
Gosney, William M.: *See—*
Mai, Chao C.; Whitney, William M.; Gosney, William M.; and Gulyas, Donald J., 4,445,266, Cl. 29-571.000.
Gosset, Serge: *See—*
Verwaerde, Francoise; Gosset, Serge; and Huchette, Michel, 4,445,938, Cl. 127-29.000.
Gosudarstvenny Proektny I Nauchno-Issledovatelsky Institut Gipronikel: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.
Gotoh, Masao: *See—*
Waragai, Kenichi; Gotoh, Masao; Yokono, Hitoshi; and Iijima, Kazumi, 4,446,185, Cl. 428-67.000.
Gowing, James R., to EBSCO Industries, Inc. Fishing lure having a paddle-like member. 4,445,294, Cl. 43-42.470.
Goyarts, Wynand M., to Lee-Norse Company. Rotating device for drill mast. 4,445,663, Cl. 248-652.000.
Grabatsch, Franz: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.
Grabbe, Dimitry G., to AMP Incorporated. Ceramic chip carrier with removable lead frame support and preforated ground pad. 4,445,271, Cl. 29-589.000.
Grabowski, Thaddeus J.: *See—*
Lutfy, Joseph P.; Grabowski, Thaddeus J.; and Arnold, Robert G., 4,445,979, Cl. 204-15.000.
Graf, Heinz: *See—*
Ebermann, Joachim; Graf, Heinz; Schleicher, Siegfried; and Uhlig, Jurgen, 4,446,408, Cl. 318-600.000.
Grana, Gary G. Apparatus for observing framed items. 4,445,870, Cl. 434-76.000.
Grand Chavin, Paul: *See—*
Chambon, Jean P.; Dufay, Jean-Francois; Grand Chavin, Paul; Perrin, Georges J.; and Vernay, Louis, 4,445,785, Cl. 368-187.000.
Grandel, Leonard F.: *See—*
Oakes, Edmond G.; Arndt, Frederick P.; and Grandel, Leonard F., 4,445,708, Cl. 280-777.000.
Graser, Fritz, to BASF Aktiengesellschaft. Perylenetetracarboxylic acid diimides and their use. 4,446,324, Cl. 546-37.000.
Grauzer, Attila: *See—*
Cisar, James R.; and Grauzer, Attila, 4,445,837, Cl. 425-141.000.
Gray, Cameron B.: *See—*
Leitch, James K.; Newman, Raymond C.; and Gray, Cameron B., 4,445,656, Cl. 248-49.000.
Gray, Kenneth P., to Carrier Corporation. Pressure differential gage and a method for detecting the presence of noncondensible gases in a refrigeration system. 4,445,366, Cl. 73-64.200.
Green Cross Corporation, The: *See—*
Naito, Ryoichi; Suyama, Tadakazu; and Iga, Yoshiro, 4,446,134, Cl. 424-101.000.
Greenwell, Bartley A.: *See—*
Czyzewski, Ted S.; and Greenwell, Bartley A., 4,445,429, Cl. 99-455.000.
Gregson, Michael; and Sykes, Richard B., to Glaxo Operations U.K. Limited. Cephalosporin antibiotics. 4,446,317, Cl. 544-22.000.
Grenier, Aime J.; and Hirsbrunner, Hans G., to Texas Instruments Incorporated. Remote control circuit breaker circuit. 4,446,500, Cl. 361-103.000.
Grenier, Aime J.: *See—*
Peterson, Robert W.; Grenier, Aime J.; and Hirsbrunner, Hans G., 4,446,501, Cl. 361-114.000.
Griffith, James L.: *See—*
Cole, William E.; O'Connell, Drew P.; and Griffith, James L., 4,445,919, Cl. 65-27.000.
Griffith, William L.: *See—*
Compere, Alicia L.; Googin, John M.; and Griffith, William L., 4,445,908, Cl. 44-56.000.
Grimoldi, Ranaldo H.: *See—*
Powers, Joseph E.; Grimoldi, Ranaldo H.; Williamson, Calvin C.; and Bottini, Alfred A., 4,445,357, Cl. 72-399.000.
Grinberg, Grigory M.: *See—*
Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., 4,446,316, Cl. 536-112.000.
Grise, Gary D.: *See—*
Gaffney, Donald P.; Grise, Gary D.; and Lam, Chung H., 4,446,535, Cl. 365-149.000.
Groen Division - Dover Corporation: *See—*
Czyzewski, Ted S.; and Greenwell, Bartley A., 4,445,429, Cl. 99-455.000.
Groff, Edwin T. Apparatus for extruding a comestible. 4,445,838, Cl. 425-319.000.
Groff, James W. Telephone number coding device. 4,446,334, Cl. 179-81.00R.
Groger, Hans; and Harms, Ernst E., to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH. Cutter-loader apparatus having overhung shearer drum. 4,445,724, Cl. 299-81.000.
Grois, Igor; Margolin, Mark; and Berg, Alan, to TRW Inc. Articulating fiber optic connectors with resilient mounting block. 4,445,750, Cl. 350-96.210.
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, to L'Oreal. Composition and process for the treatment of keratin materials with polymers. 4,445,521, Cl. 132-7.000.
Grumman Aerospace Corporation: *See—*
Berde, Dennis W., 4,446,421, Cl. 324-52.000.
GTE Automatic Electric Incorporated: *See—*
Chang, Chieh; and Lee, Man S., 4,446,438, Cl. 328-127.000.
GTE Automatic Electric Labs Inc.: *See—*
Rinaldi, Gerald M., 4,446,437, Cl. 328-120.000.
Webber, Robert C., 4,446,553, Cl. 370-62.000.
Webber, Robert C., 4,446,554, Cl. 370-62.000.
GTE Communications Products Corporation: *See—*
Goebel, Franz; and Slavin, Morton A., 4,446,211, Cl. 429-101.000.
GTE Laboratories Incorporated: *See—*
Pappalardo, Romano G.; and Peters, Thomas E., 4,446,049, Cl. 252-301.60P.
Tweedy, Ernest P., 4,446,552, Cl. 370-58.000.
GTE Products Corporation: *See—*
Scholz, John A., 4,445,847, Cl. 431-362.000.
Guenther, Wolfgang: *See—*
Hahn, Klaus; Weber, Heinz; Guenther, Wolfgang; Schillinger, Bernhard; and Weber, Reinhold, 4,446,253, Cl. 521-79.000.
Guenthner, Richard A.; and Stivers, David A., to Minnesota Mining and Manufacturing Company. Vulcanizing fluorocarbon elastomers with one or a mixture of aromatic compounds having hydroxyl and oxyallyl groups. 4,446,270, Cl. 524-433.000.
Gulf Research & Development Company: *See—*
Templin, Philip R., 4,446,087, Cl. 264-148.000.
Guloian, Jury A.: *See—*
Eremeev, Vadim V.; and Guloian, Jury A., 4,445,922, Cl. 65-120.000.
Gulyas, Donald J.: *See—*
Mai, Chao C.; Whitney, William M.; Gosney, William M.; and Gulyas, Donald J., 4,445,266, Cl. 29-571.000.
Gundle Holdings (Proprietary) Limited: *See—*
Struve, Friedrich, 4,445,955, Cl. 156-153.000.
Gurnee, Mark N., to Honeywell Inc. Detector cold shield. 4,446,372, Cl. 250-334.000.
Gusevsky Fulual Gosudarstvennogo Nauchno-Issledovatelskogo Institut Stekla: *See—*
Eremeev, Vadim V.; and Guloian, Jury A., 4,445,922, Cl. 65-120.000.
Gust, Jacob N., to Concord, Inc. Sunflower header attachment. 4,445,314, Cl. 56-126.000.
Gustafsson, Sten-Ake: *See—*
Banner, Kurt A.; and Gustafsson, Sten-Ake, 4,445,558, Cl. 144-341.000.
Guth, William R., to Siemens Gammasonics, Inc. Collimator for a radiation detector and method of making same. 4,446,570, Cl. 378-149.000.
Haaf, Franz: *See—*
Brandstetter, Franz; Echte, Adolf; Haaf, Franz; Hambrecht, Juergen; and Naarmann, Herbert, 4,446,277, Cl. 525-68.000.
Haas, Rudiger: *See—*
Wollnik, Hermann; Haas, Rudiger; and Kassen, Folkert, 4,445,516, Cl. 128-736.000.
Hachiya, Iwao; Mochizuki, Keizo; and Kuwada, Yukio, to Meiji Seika Kaisha, Ltd. Method of preparing dried ginseng for drug. 4,446,130, Cl. 424-195.000.
Haddad, James H.: *See—*
Buyan, Frank M.; and Haddad, James H., 4,446,107, Cl. 422-107.000.
Hadjicostis, Andreas, to Technicare Corporation. Short ring down, ultrasonic transducer suitable for medical applications. 4,446,395, Cl. 310-327.000.
Haemonetics Corporation: *See—*
Schroendorfer, Donald W., 4,445,883, Cl. 494-21.000.
Hahn, Klaus; Weber, Heinz; Guenther, Wolfgang; Schillinger, Bernhard; and Weber, Reinhold, to BASF Aktiengesellschaft. Production of fine-celled foams from styrene polymers. 4,446,253, Cl. 521-79.000.

Hahnemann University: *See—*
Woo, David V., 4,446,123, Cl. 424-1.100.
Hahnke, Manfred; and Teige, Wolfgang, to Hoechst Aktiengesellschaft. Process for continuously dyeing in the gel state fiber material of acrylonitrile polymers spun from organic solvents with carbinol- or anhydro base of basic dye. 4,445,904, Cl. 8-538.000.
Hait, James M., to International Hardware, Inc. Rotary stripper. 4,445,248, Cl. 15-198.000.
Hakhverdian, Armik A. Linear self-excited capacitance bridge. 4,446,423, Cl. 324-60.00C.
Halene, Clemens; Strack, Karl-Ludwig; Lange, Ernst; and Henrichs, Franz-Josef, to Mannesmann AG. Vessel for use in hydrogen/hydride technology. 4,446,111, Cl. 422-200.000.
Hall, Allen L.: *See—*
Fayter, Richard G., Jr.; and Hall, Allen L., 4,446,077, Cl. 260-465.00K.
Hall, Henry J.; and Haygreen, John G., to University of Minnesota, Regents of the. Compression shear test jig. 4,445,387, Cl. 73-845.000.
Hall, James E.: *See—*
Bohm, Georg G. A.; DeTrano, Mario; and Hall, James E., 4,445,562, Cl. 152-347.000.
Halliburton Company: *See—*
Byrd, Audis C.; Todd, Bradley L.; and Pattison, William W., Jr., 4,445,465, Cl. 122-392.000.
Hushbeck, Donald F., 4,445,571, Cl. 166-317.000.
Zimmer, Mark D., 4,446,540, Cl. 367-26.000.
Hamada, Osamu: *See—*
Kawaguchi, Kenji; Hamada, Osamu; Hiramoto, Seigo; Kato, Yukio; and Yamada, Kozo, 4,446,351, Cl. 219-69.00W.
Hambrecht, Juergen: *See—*
Brandstetter, Franz; Echte, Adolf; Haaf, Franz; Hambrecht, Juergen; and Naarmann, Herbert, 4,446,277, Cl. 525-68.000.
Hammerling, Gunter; Muller, Ingo; and Menger, Erich, to Deutsches Krebsforschungszentrum. Apparatus for transferring sample vessels into collecting vessels. 4,446,104, Cl. 422-63.000.
Hancor, Inc.: *See—*
Fouss, James L.; and Parker, John J., 4,445,542, Cl. 138-94.000.
Handa, Hideyuki: *See—*
Kato, Hideaki; and Handa, Hideyuki, 4,446,472, Cl. 346-153.100.
Handbury, Dana: *See—*
Handbury, James W.; and Handbury, Dana, 4,445,654, Cl. 244-139.000.
Handbury, James W.; and Handbury, Dana. Aircraft recovery chute. 4,445,654, Cl. 244-139.000.
Hanna, Daniel C. Tensioning device for wraparound brushing mechanism. 4,445,246, Cl. 15-53.0AB.
Hanna, Marie R.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,446,060, Cl. 252-522.00R.
Hansen, Axel E., Jr.; and Richardson, James C. Machine for heating elongated flat surfaces. 4,445,850, Cl. 432-229.000.
Hansen, Bent J.; and Thompson, Clifford F., to Cliffside Pipelayers. Clamping apparatus for plastic pipe. 4,445,677, Cl. 269-41.000.
Hansmann, Johann: *See—*
Theurer, Josef; and Hansmann, Johann, 4,445,438, Cl. 104-12.000.
Hanyzewski, Eugene F.; French, Kenneth A.; and Walker, Thomas S. Apparatus for shaping a wooden workpiece. 4,445,553, Cl. 144-145.00A.
Hara, Eiichi: *See—*
Hayashi, Seiichi; and Hara, Eiichi, 4,446,364, Cl. 250-211.00R.
Harada, Hiroshi: *See—*
Sekine, Yasuhiro; Kuwayama, Masayuki; and Harada, Hiroshi, 4,446,391, Cl. 310-62.000.
Harada, Shoichiro: *See—*
Yamasaki, Harumasa; and Harada, Shoichiro, 4,446,261, Cl. 524-40.000.
Harbison, William H.; and Mohnach, Michael G., to Anderson Company of Indiana, The. Rock-to-lock connection arm-to-blade. 4,445,249, Cl. 15-250.320.
Harley-Davidson Motor Co., Inc.: *See—*
Hillman, Michael J., 4,445,587, Cl. 180-229.000.
Harms, Ernst E.: *See—*
Groger, Hans; and Harms, Ernst E., 4,445,724, Cl. 299-81.000.
Harper, James M. E.: *See—*
Cuomo, Jerome J.; Harper, James M. E.; and Kaufman, Harold R., 4,446,403, Cl. 315-111.810.
Harris Corporation: *See—*
Donovan, Joseph A., 4,446,465, Cl. 343-797.000.
Patterson, Raymond B., III, 4,446,444, Cl. 330-264.000.
Harry, Alan, to Thule United Limited a British Company. Vibratory screening apparatus for screening liquids. 4,446,022, Cl. 210-388.000.
Hartmann, Albert: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,446,128, Cl. 424-88.000.
Harvey, Barrie J.; and Mann, Ian J., to M. H. Detrick Company, Limited. Method of veneering brick linings of furnaces and other high temperature enclosures. 4,446,082, Cl. 264-30.000.
Harvey, Dennis L., to General Motors Corporation. Method and means for making constant cross sectional area pultruded fiber reinforced polymeric articles. 4,445,957, Cl. 156-180.000.
Harwell, Patrick E.: *See—*
Beckman, Wayne C.; and Harwell, Patrick E., 4,445,395, Cl. 74-501.00R.
Hasegawa, Akira: *See—*
Sakaguchi, Katsuyoshi; and Hasegawa, Akira, 4,445,834, Cl. 425-36.000.
Hasegawa, Shumpei; and Kishi, Noriyuki, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio feedback control system adapted to obtain stable engine operation under particular engine operating conditions. 4,445,482, Cl. 123-489.000.
Hasegawa, Shumpei, to Honda Motor Co., Ltd. Fuel supply control system for internal combustion engines, having a function of leaning mixture in an engine low load region. 4,445,483, Cl. 123-492.000.
Hasegawa, Tetuo: *See—*
Shibuta, Osamu; Suzue, Masayoshi; and Hasegawa, Tetuo, 4,446,295, Cl. 528-168.000.
Hashizume, Miyakazu: *See—*
Sakai, Masao; Hashizume, Miyakazu; Suzuki, Yasuhiko; and Sugimoto, Makoto, 4,446,058, Cl. 252-507.000.
Haskel, Incorporated: *See—*
Kelly, John W., 4,445,261, Cl. 29-157.400.
Hattori, Yasuo: *See—*
Ikematu, Takeshi; and Hattori, Yasuo, 4,446,290, Cl. 526-174.000.
Hattori, Yoshiyuki: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,445,821, Cl. 417-366.000.
Hauer, Harvey J.: *See—*
Casper, James R.; and Hauer, Harvey J., 4,445,463, Cl. 122-7.00R.
Hauni-Werke Korber & Co. KG.: *See—*
Hinz, Werner; and Tolasch, Gerhard, 4,445,519, Cl. 131-94.000.
Havstad, Harold R., to Hudson Oxygen Therapy Sales Company. Percussor assembly. 4,445,503, Cl. 128-40.000.
Hawk, Thomas W., to PPG Industries, Inc. Method of forming shaped laminates. 4,445,953, Cl. 156-102.000.
Hayakawa, Yoshikazu: *See—*
Kimura, Akira; Ishihama, Masao; and Hayakawa, Yoshikazu, 4,445,584, Cl. 180-69.220.
Hayashi, Kenji; and Kato, Kiyoshi, to Aisan Kogyo Kabushiki Kaisha. Electrically powered pump. 4,445,820, Cl. 417-366.000.
Hayashi, Masaki: *See—*
Tanouchi, Tadao; Shigeoka, Satoshi; Kawamura, Masanori; Hayashi, Masaki; Terashima, Hiroshi; and Hirata, Fumio, 4,446,143, Cl. 424-270.000.
Hayashi, Mikio. Automatic switching system for car cooler. 4,445,341, Cl. 62-133.000.
Hayashi, Seiichi; and Hara, Eiichi, to Hitachi, Ltd. Photoelectric converter on a transmissive substrate having light shielding. 4,446,364, Cl. 250-211.00R.
Hayashi, Shizuo, to Fuji Electric Company, Ltd. Apparatus for controlling a pressure-type furnace for pouring molten ores. 4,445,670, Cl. 266-80.000.
Hayashi, Tsutomu; and Shigihara, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Stand device for two-wheeled vehicles. 4,445,705, Cl. 280-302.000.
Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Low noise level automotive internal combustion engine. 4,445,471, Cl. 123-198.00E.
Hayashida, Nobuo: *See—*
Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, 4,445,350, Cl. 72-38.000.
Hayes, Jess W. Brake for drafting parallel. 4,445,280, Cl. 33-443.000.
Haygreen, John G.: *See—*
Hall, Henry J.; and Haygreen, John G., 4,445,387, Cl. 73-845.000.
Haynes, Andrew: *See—*
Fineberg, Douglas H.; and Haynes, Andrew, 4,445,572, Cl. 166-188.000.
Heater, Paul L., Jr., to Goodyear Tire & Rubber Company, The. Body solder of powdered aluminum and a polyester. 4,446,271, Cl. 524-441.000.
Heath, Martin: *See—*
Cosby, Chris; and Heath, Martin, 4,445,746, Cl. 339-252.00R.
Hedges, Charles V.: *See—*
Mark, Victor; and Hedges, Charles V., 4,446,285, Cl. 525-439.000.
Mark, Victor; and Hedges, Charles V., 4,446,298, Cl. 528-204.000.
Hedrick, Warren R., to Interpace Corporation. Air register with automatic zone control. 4,445,637, Cl. 236-49.000.
Heidemeyer, Paulus: *See—*
Hofbauer, Peter; Heidemeyer, Paulus; and Scholz, Romanus, 4,445,601, Cl. 192-48.800.
Heidinger, Kurt S.: *See—*
Candelaria, Jon; and Heidinger, Kurt S., 4,446,194, Cl. 428-428.000.
Height, Inc.: *See—*
Shinriki, Tatsuo, 4,446,160, Cl. 426-297.000.
Heinemans, Henricus T. J. M. Cooler for granular products. 4,445,282, Cl. 34-168.000.
Helgeland, Jon L.: *See—*
Kumar, Ashok; Segan, Ellen G.; Bukowski, John M.; and Helgeland, Jon L., 4,445,989, Cl. 204-147.000.
Heller, Anton H., to Poweray Infrared Corporation. Asphalt reclamation system and unit. 4,445,848, Cl. 432-13.000.
Heneveld, Lloyd A.: *See—*
Dauser, William C., Jr., 4,446,332, Cl. 174-87.000.
Henkel KGaA: *See—*
Gohausen, Hans J.; Kirchhoff, Winfried; Lindener, Jurgen; and Wennemann, Harald, 4,445,983, Cl. 204-35.00N.
Preuss, Wolfgang, 4,446,072, Cl. 260-397.450.

Henrichs, Franz-Josef: *See—*
Halene, Clemens; Strack, Karl-Ludwig; Lange, Ernst; and Henrichs, Franz-Josef, 4,446,111, Cl. 422-200.000.
Heraeus Quarzschmelze GmbH: *See—*
Bruning, Rolf; and Reimann, Klaus, 4,445,523, Cl. 134-65.000.
Herlem, Michel: *See—*
Badoz, Janine; Bardin, Michelle; Bernard, Claude; Herlem, Michel; Robert, Guy; and Thiebault, Andre, 4,446,215, Cl. 429-190.000.
Hermach, Carl J.: *See—*
Bullen, Lee; and Hermach, Carl J., 4,445,881, Cl. 493-424.000.
Hermann C. Starck Bertin: *See—*
Krismer, Bruno; and Hoppe, Axel, 4,446,116, Cl. 423-63.000.
Herrington, Lawrence: *See—*
Avra, Raymond E.; and Herrington, Lawrence, 4,445,650, Cl. 242-192.000.
Herting, Hans P.; Huang, Jen-Chi; and Golda, Eugene, to Polychrome Corporation. Anodized supports and radiation sensitive elements therefrom. 4,446,221, Cl. 430-302.000.
Herzl, Peter J.; and Strohmeier, Warren O., to Fischer & Porter Company. Dual-body vortex-shedding flowmeter. 4,445,388, Cl. 73-861.240.
Hevezi, James M.: *See—*
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevezi, James M., 4,446,365, Cl. 250-213.00R.
Hewlett-Packard Company: *See—*
Bell, R. Frank, 4,446,440, Cl. 330-10.000.
Hexcel Corporation: *See—*
Freeman, Bob L.; and Borris, Peter W., 4,445,956, Cl. 156-154.000.
Heyman, Philip M., to RCA Corporation. Workpiece with abraded machine-readable marking therein and method of making. 4,446,362, Cl. 235-462.000.
Hicks, Darrell D., to Celanese Corporation. Epoxide resin aqueous dispersant comprising the reaction product of diisocyanate, diol and polyether glycol monoether. 4,446,256, Cl. 523-402.000.
Higaki, Hiroshi: *See—*
Saho, Norihide; Koibuchi, Koji; Kasai, Kenjiro; and Higaki, Hiroshi, 4,445,569, Cl. 165-165.000.
Higashi, Katunori, to Nissan Motor Company, Limited. Exhaust gas recirculation system for an internal combustion engine. 4,445,487, Cl. 123-568.000.
Higashiizumi, Takao: *See—*
Yamaguchi, Keiki; Takeuchi, Yasuhito; Sano, Shinichi; and Higashiizumi, Takao, 4,445,379, Cl. 73-631.000.
Hillman, Michael J., to Harley-Davidson Motor Co., Inc. Motorcycle cooling system. 4,445,587, Cl. 180-229.000.
Hinden, Jean M., to Diamond Shamrock Corporation. Recoating of electrodes. 4,446,245, Cl. 502-101.000.
Hinshaw, Howard G.: *See—*
Jordan, William D.; Hinshaw, Howard G.; and Clemens, Donald L., 4,446,504, Cl. 361-386.000.
Hintsch, Otto, to Sulzer Brothers Limited. Method of operating a weaving machine. 4,445,546, Cl. 139-435.000.
Hinz, Werner; and Tolasch, Gerhard, to Hauni-Werke Korber & Co. KG. Method and apparatus for joining coaxial rod-shaped articles. 4,445,519, Cl. 131-94.000.
Hiramoto, Seigo: *See—*
Kawaguchi, Kenji; Hamada, Osamu; Hiramoto, Seigo; Kato, Yukio; and Yamada, Kozo, 4,446,351, Cl. 219-69.00W.
Hirao, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing a semiconductor integrated circuit BI-MOS device. 4,445,268, Cl. 29-571.000.
Hirata, Fumio: *See—*
Tanouchi, Tadao; Shigeoka, Satoshi; Kawamura, Masanori; Hayashi, Masaki; Terashima, Hiroshi; and Hirata, Fumio, 4,446,143, Cl. 424-270.000.
Hirate, Naoyuki: *See—*
Endo, Hiroshi; Hirate, Naoyuki; and Tezuka, Masao, 4,446,115, Cl. 423-63.000.
Hirayama, Hiromichi, to Victor Company of Japan, Limited. Video head driving unit with nonlinear leaf spring force. 4,446,497, Cl. 360-109.000.
Hirobe, Hitoshi: *See—*
Enomoto, Shigeo; Hirobe, Hitoshi; and Urata, Shinji, 4,445,757, Cl. 350-429.000.
Hirsbrunner, Hans G.: *See—*
Grenier, Aime J.; and Hirsbrunner, Hans G., 4,446,500, Cl. 361-103.000.
Peterson, Robert W.; Grenier, Aime J.; and Hirsbrunner, Hans G., 4,446,501, Cl. 361-114.000.
Hitachi Automotive Engineering Co., Ltd.: *See—*
Karino, Kimiji; Kosuge, Tokuo; and Souma, Masahiro, 4,446,080, Cl. 261-39.00D.
Hitachi Chemical Company, Ltd.: *See—*
Miyadera, Yasuo; Fujioka, Atsushi; Kumazawa, Tetsuo; and Doi Hiroaki, 4,446,191, Cl. 428-245.000.
Hitachi, Ltd.: *See—*
Hayashi, Seiichi; and Hara, Eiichi, 4,446,364, Cl. 250-211.00R.
Hoshi, Yoshikazu, 4,445,822, Cl. 417-388.000.
Karino, Kimiji; Kosuge, Tokuo; and Souma, Masahiro, 4,446,080, Cl. 261-39.00D.
Katsura, Koyo; and Maejima, Hideo, 4,446,517, Cl. 364-200.000.
Kumada, Masaharu; and Misumi, Akira, 4,446,404, Cl. 313-346.00R.
Kuzuya, Kaneharu; Ishida, Giichi; and Ishizaki, Kosho, 4,445,449, Cl. 112-121.110.
Miyadera, Yasuo; Fujioka, Atsushi; Kumazawa, Tetsuo; and Doi Hiroaki, 4,446,191, Cl. 428-245.000.
Nishimura, Toshifumi, 4,446,516, Cl. 364-200.000.
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.
Saho, Norihide; Koibuchi, Koji; Kasai, Kenjiro; and Higaki, Hiroshi, 4,445,569, Cl. 165-165.000.
Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, 4,445,841, Cl. 431-27.000.
Tsuzurabara, Mamoru, 4,445,873, Cl. 445-6.000.
Waragai, Kenichi; Gotoh, Masao; Yokono, Hitoshi; and Iijima, Kazumi, 4,446,185, Cl. 428-67.000.
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, to Dow Chemical Company, The. Aqueous dispersions of vinylidene chloride resins. 4,446,273, Cl. 524-556.000.
Hobes, John; Payer, Wolfgang; and Deymann, Detlef, to Ruhrchemie Aktiengesellschaft. Process for preparing pulverulent ethylene polymers. 4,446,311, Cl. 528-493.000.
Hobo, Sumiya; and Okamoto, Koji, to Shioda Dental Manufacturing Co., Ltd. Articulation detector CRT for articulators. 4,445,855, Cl. 433-59.000.
Hoch, Thomas M.; and Kullgren, Dennis R., to Allen-Bradley. Numerical control with paramacro capability. 4,446,525, Cl. 364-474.000.
Hodrien, Ronald C.: *See—*
Burton, Stephen R.; Horley, Gary; and Hodrien, Ronald C., 4,446,003, Cl. 208-48.00Q.
Hodson, James V. Stripping and conditioning solutions for treating coated substrates and method for their use. 4,445,939, Cl. 134-2.000.
Hoechst Aktiengesellschaft: *See—*
Fester, Walter; and Huber, Bernd, 4,446,206, Cl. 428-364.000.
Hahnke, Manfred; and Teige, Wolfgang, 4,445,904, Cl. 8-538.000.
Hoerauf, Werner: *See—*
Strehler, Hugo; Valentin, Guenter; and Hoerauf, Werner, 4,446,089, Cl. 264-178.00F.
Hofbauer, Peter; Heidemeyer, Paulus; and Scholz, Romanus, to Volkswagenwerk Aktiengesellschaft. Vehicle having a main clutch and an auxiliary controllable clutch. 4,445,601, Cl. 192-48.800.
Hoff Companies, Inc.: *See—*
Purcell, Bill L., 4,445,411, Cl. 83-403.100.
Hoff, Raymond E., to Chemplex Company. Polymerization method. 4,446,288, Cl. 526-129.000.
Hoffman, Charles T., Jr., to General Motors Corporation. Disc brake noise reduction. 4,445,594, Cl. 188-73.370.
Hoffman, Herman S.; and Howard, Robert T., Jr., to International Business Machines Corporation. Surface treatment for ceramics to eliminate alpha particle emitting elements. 4,445,968, Cl. 156-657.000.
Hoffman, Joseph W., to AMP Incorporated. Device and method for anchoring an end of a plastic liner inside a pipe. 4,445,716, Cl. 285-55.000.
Hoffmeister, Jurgen; Ravasini, Guiseppe; and Boeckh, Franz-Xaver, to Kaltenbach & Voigt GmbH & Co. Dental equipment stand. 4,445,859, Cl. 433-79.000.
Hofmann, Lisa A.: *See—*
Friedman, Herman H.; Del Valle, Frank; and Hofmann, Lisa A., 4,446,161, Cl. 426-335.000.
Holcroft & Company: *See—*
Schwalm, Donald J., 4,445,945, Cl. 148-16.000.
Hollaway, Gerald C., Jr., to Dayco Corporation. Method of making a fiber-loaded polymeric sheet. 4,445,949, Cl. 156-62.200.
Holleman, Robert A.: *See—*
Jardine, Kenneth J.; and Holleman, Robert A., 4,446,114, Cl. 423-10.000.
Hollister Incorporated: *See—*
Jensen, Marvin E., 4,445,898, Cl. 604-337.000.
Holt, Joseph B., to United States of America, Energy. Synthesis of refractory materials. 4,446,242, Cl. 501-96.000.
Hombach, Rudolf; Nolte, Wilfried; Russell, Peter J.; and Wall, Nigel G., to Bayer Aktiengesellschaft. Process for the production of synthetic rubber latices, their use as a starting material in the production of pressure-sensitive adhesives and pressure-sensitive adhesives. 4,445,959, Cl. 156-332.000.
Honda, Chika; Iwata, Masatoshi; and Koitabashi, Takeo, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,446,228, Cl. 430-567.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Shumpei; and Kishi, Noriyuki, 4,445,482, Cl. 123-489.000.
Hayashi, Tsutomu; and Shigihara, Akira, 4,445,705, Cl. 280-302.000.
Inoue, Kazuo, 4,445,336, Cl. 60-605.000.
Sasaki, Takeshi; Akiba, Kiyoshi; and Takahashi, Yoshio, 4,445,399, Cl. 74-603.000.
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,446,522, Cl. 364-426.000.
Zaita, Katsuyuki; and Iwao, Suminari, 4,445,466, Cl. 123-59.0PC.
Honda Motor Co., Ltd.: *See—*
Hasegawa, Shumpei, 4,445,483, Cl. 123-492.000.
Honeywell Inc.: *See—*
Carlson, Robert J.; and Youngner, Daniel W., 4,445,966, Cl. 156-643.000.
Connell, John C.; and Serber, Stephen L., 4,445,638, Cl. 237-8.00R.
Gurnee, Mark N., 4,446,372, Cl. 250-334.000.
Johnson, Allan P., 4,445,779, Cl. 356-350.000.
Nelson, Lorne W., 4,445,567, Cl. 165-29.000.
Royer, Michele, 4,445,384, Cl. 73-724.000.

Honeywell Information Systems Inc.: *See—*
Casamatta, Angelo, 4,446,518, Cl. 364-200.000.
Hoobler, Mary A.: *See—*
Sikorski, James A.; and Hoobler, Mary A., 4,445,928, Cl. 71-87.000.
Sikorski, James A.; and Hoobler, Mary A., 4,445,929, Cl. 71-087.000.
Hopkins, John R., to AMP Incorporated. Method and apparatus for producing a premolded packaging. 4,445,736, Cl. 339-17.0CF.
Hoppe, Axel: *See—*
Krismer, Bruno; and Hoppe, Axel, 4,446,116, Cl. 423-63.000.
Horacek: Gotz: *See—*
Konig, Joachim; Schnalke, Karl-Erwin; Suling, Carlhans; and Horacek: Gotz, 4,446,291, Cl. 526-209.000.
Horak, Vladimir. Apparatus and method for adjustment of volumetric cavities for gravimetric metering of liquids. 4,445,627, Cl. 222-54.000.
Horeschi, Giancarlo: *See—*
Barozzi, Gian P.; and Horeschi, Giancarlo, 4,445,797, Cl. 400-166.000.
Horii, Satoshi; and Fukase, Hiroshi, to Takeda Chemical Industries, Ltd. Aminocyclitols and their production. 4,446,319, Cl. 544-92.000.
Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Method of and apparatus for reading out image information. 4,446,487, Cl. 358-280.000.
Horix Manufacturing Company: *See—*
Doerfler, Frederick B., 4,445,629, Cl. 222-148.000.
Horley, Gary: *See—*
Burton, Stephen R.; Horley, Gary; and Hodrien, Ronald C., 4,446,003, Cl. 208-48.00Q.
Horn, Uriah: *See—*
Francel, Josef; Stewart, Daniel R.; and Horn, Uriah, 4,446,241, Cl. 501-14.000.
Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Friction reducing additives and compositions thereof. 4,446,037, Cl. 252-47.500.
Horton Industries, Inc.: *See—*
Schilling, Hugh K., 4,445,605, Cl. 192-91.00A.
Horvath, Andras: *See—*
Gimesi, Antal; Baracskai, Jozsef; Fodor, Ferenc; Gaal, Antal; Horvath, Andras; and Kolonics, Zoltan, 4,445,927, Cl. 71-86.000.
Hosaka, Hiroaki: *See—*
Mitsumori, Mitsugi; Hosaka, Hiroaki; Sato, Hiroshi; and Kondou, Kouichi, 4,445,614, Cl. 206-599.000.
Hoshi, Yoshikazu, to Hitachi, Ltd. Injection pump. 4,445,822, Cl. 417-388.000.
Hoshimi, Susumu; and Kojima, Tadashi, to Sony Corporation; and Tokyo Shibaura Denki Kabushiki Kaisha. PCM Signal processing circuit. 4,446,490, Cl. 360-32.000.
Hoskin, Dennis H., to Mobil Oil Corporation. Low cost, brine tolerant sulfonate and sulfate surfactants having 1,3-dihydrocarboxy-2-propyl hydrophobic tails. 4,446,079, Cl. 260-513.00R.
Houston Geophysical Products, Inc.: *See—*
Annoot, Ira R., 4,445,741, Cl. 339-49.00R.
Howard, Charlie J.: *See—*
Peart, Edward L.; and Howard, Charlie J., 4,445,789, Cl. 374-198.000.
Howard, Robert T., Jr.: *See—*
Hoffman, Herman S.; and Howard, Robert T., Jr., 4,445,968, Cl. 156-657.000.
Howey, Thomas L. Quick release helmet and strap assembly. 4,445,253, Cl. 24-68.00E.
HRI, Inc.: *See—*
Huibers, Derk T. A.; and Jenq, Cheng-Yih, 4,446,070, Cl. 260-369.000.
Hsieh, Wen-Ching; Bostich, June M.; and Koepke, Jeffery W., to Union Oil Company of California. Process for enhanced oil recovery employing petroleum sulfonate blends. 4,446,036, Cl. 252-8.55D.
Hsu, Sheng T., to RCA Corporation. Low resistance contact for high density integrated circuit. 4,445,270, Cl. 29-576.00B.
Huang, Hua-Feng; and Wallace, Walter A., to Du Pont de Nemours, E. I., and Company. Serpentine microwave applicator. 4,446,348, Cl. 219-10.55A.
Huang, Jen-Chi: *See—*
Herting, Hans P.; Huang, Jen-Chi; and Golda, Eugene, 4,446,221, Cl. 430-302.000.
Huber, Bernd: *See—*
Fester, Walter; and Huber, Bernd, 4,446,206, Cl. 428-364.000.
Huchette, Michel: *See—*
Verwaerde, Francoise; Gosset, Serge; and Huchette, Michel, 4,445,938, Cl. 127-29.000.
Hudson Oxygen Therapy Sales Company: *See—*
Havstad, Harold R., 4,445,503, Cl. 128-40.000.
Hueberger, Lawrence K., to OMAC, Inc. Kreuger flap actuating mechanism for delta wing, canard type aircraft. 4,445,655, Cl. 244-214.000.
Hughes Aircraft Company: *See—*
Figueroa, Luis, 4,446,557, Cl. 372-45.000.
Hughes Tool Company: *See—*
Cunningham, Robert A., 4,445,734, Cl. 339-16.00C.
Hughes, William C.: *See—*
Ouellette, Maurice J.; and Hughes, William C., 4,446,462, Cl. 340-825.070.
Huguenin, Raymond; and Kuechli, Gottfried, to Dryan-Fordahl Technologies S.A. Method of manufacturing piezoelectric resonator components. 4,445,256, Cl. 29-25.350.
Huibers, Derk T. A.; and Jenq, Cheng-Yih, to HRI, Inc. Catalytic oxidation of polynuclear aromatic hydrocarbons. 4,446,070, Cl. 260-369.000.
Hulford, Karen F.; and Price, Jerry W., to Georgia-Pacific Corporation. Process to remove corrosion deposits using aqueous-base ferromagnetic fluids. 4,445,940, Cl. 134-2.000.
Hultsch, Gunther: *See—*
Aufderhaar, Erhard; Feller, Johannes; Hultsch, Gunther; and Kisslinger, Walter, 4,446,021, Cl. 210-378.000.
Hung, William M.: *See—*
Schmidt, Paul J.; and Hung, William M., 4,446,321, Cl. 544-124.000.
Huni, Gregor: *See—*
Eggli, Daniele; von Ow, Dieter; and Huni, Gregor, 4,445,518, Cl. 128-783.000.
Hunn, Roy: *See—*
Kolling, Byron M.; Bergbreiter, Jack; and Hunn, Roy, 4,445,623, Cl. 220-343.000.
Huntington Alloys, Inc.: *See—*
Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,445,943, Cl. 148-12.300.
Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,445,944, Cl. 148-12.300.
Huret, Alain P. B., heir: *See—*
Huret, Roger, deceased; and Huret, Alain P. B., heir, 4,445,374, Cl. 73-490.000.
Huret et ses Fils: *See—*
Huret, Roger, deceased; and Huret, Alain P. B., heir, 4,445,374, Cl. 73-490.000.
Huret, Roger, deceased; and by Huret, Alain P. B., heir, to Huret et ses Fils. Distance recorder for a two-wheeled vehicle or the like. 4,445,374, Cl. 73-490.000.
Hushbeck, Donald F., to Halliburton Company. Circulation valve. 4,445,571, Cl. 166-317.000.
Husher, Lee K., to Furnco Construction Corporation. Coke oven having an offset expansion joint and method of installation thereof. 4,445,977, Cl. 202-223.000.
Hussein, Hany M. G.; Loeb, Marvin P.; and Weiss, Harvey S., to Laserscope, Inc. Dual balloon catheter device. 4,445,892, Cl. 604-101.000.
Hutchinson, Raymond E. Tendon construction for posttensioning prestressed concrete and the method of making such tendons. 4,445,321, Cl. 57-223.000.
Hyatt, Gilbert P. High resistration photomask machine and computerized numerical control system. 4,445,776, Cl. 355-78.000.
Hyde, Bruce; Tyndall, Wayne; Abernethy, Dennis; and Mellgren, Per G., to Prince Albert Pulp Company Limited. Saw blade construction useful in the continuous harvesting of trees. 4,445,552, Cl. 144-3.00D.
Hyde, James S.: *See—*
Froncisz, Wojciech; and Hyde, James S., 4,446,429, Cl. 324-316.000.
Hydra-Jack, Inc.: *See—*
McDermott, Gertrude D., 4,445,666, Cl. 254-93.00H.
Hydro Quebec: *See—*
Drouet, Michel G., 4,446,420, Cl. 324-52.000.
Hydroconsult, S.A.: *See—*
Oules, Jacques, 4,445,290, Cl. 37-66.000.
Hyldon, Roy G.: *See—*
Galle, Edward L.; Hyldon, Roy G.; and Egar, William P., 4,446,163, Cl. 426-448.000.
Ichihara, Kenzi: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Ichihara, Kenzi; and Morishima, Takashi, 4,446,325, Cl. 546-283.000.
Ichihashi, Tetsuo: *See—*
Okumura, Nobuya; Ichihashi, Tetsuo; Matsumura, Shunichi; and Inata, Hiroo, 4,446,262, Cl. 524-89.000.
ID Code Industries, Inc.: *See—*
Smagala-Romanoff, Edward A., 4,445,712, Cl. 283-75.000.
Ideal Comfort, Inc.: *See—*
Voorhees, John, 4,445,240, Cl. 5-451.000.
Iga, Yoshiro: *See—*
Naito, Ryoichi; Suyama, Tadakazu; and Iga, Yoshiro, 4,446,134, Cl. 424-101.000.
Igashira, Toshihiko: *See—*
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,445,488, Cl. 123-569.000.
Ihrman, Carl-Bertil, to Floby Durk. Scaffold plank connecting arrangement. 4,445,590, Cl. 182-222.000.
Iida, Katsuyoshi: *See—*
Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, 4,445,489, Cl. 123-571.000.
Iida, Shinichiro: *See—*
Doi, Shuhei; Isaka, Tsutomu; and Iida, Shinichiro, 4,446,283, Cl. 525-344.000.
Iida, Tetsuya; and Sakaue, Tatsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Dynamic shift register circuit. 4,446,567, Cl. 377-79.000.
Iijima, Kazumi: *See—*
Waragai, Kenichi; Gotoh, Masao; Yokono, Hitoshi; and Iijima, Kazumi, 4,446,185, Cl. 428-67.000.
Iijima, Toshifumi: *See—*
Yamashita, Kiyoshi; and Iijima, Toshifumi, 4,446,226, Cl. 430-506.000.
Iijima, Toshikazu; and Ito, Shuichi, to Iijima, Toshikazu. Method and machine for making square-meshed net. 4,445,417, Cl. 87-12.000.
Ikeda, Tsutomu: *See—*
Ishii, Tetsuro; Oyama, Tadanori; Yamashita, Masashi; Kzome, Kazuyuki; Ikeda, Tsutomu; and Fujioka, Satoru, 4,445,981, Cl. 204-18.100.

Ikematu, Takeshi; and Hattori, Yasuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing conjugated diene polymer. 4,446,290, Cl. 526-174.000.
Ikeura, Kenji, to Nissan Motor Co., Ltd. Method and apparatus for ignition system spark timing control during no-load engine operation. 4,445,477, Cl. 123-416.000.
Illick, Andjelko: *See—*
Patel, Harshad K.; and Illick, Andjelko, 4,446,188, Cl. 428-138.000.
Imahashi, Jinichi: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.
Imai, Iwao: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,445,491, Cl. 123-605.000.
Imamura, Noriaki: *See—*
Niwa, Senji; Sasaki, Takuji; Shinto, Masaaki; and Imamura, Noriaki, 4,446,250, Cl. 502-309.000.
Imani, Yuichi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle configuration. 4,445,585, Cl. 180-68.500.
Imhoff, William B., to Leigh Products, Inc. Flush bolt. 4,445,717, Cl. 292-177.000.
Imperial Chemical Industries PLC: *See—*
Rose, John B.; and Cinderey, Michael B., 4,446,294, Cl. 528-128.000.
Smallwood, Peter V.; and Zichy, Erno L., 4,446,287, Cl. 526-81.000.
Thompson, David J., 4,446,047, Cl. 252-299.100.
Inata, Hiroo: *See—*
Okumura, Nobuya; Ichihashi, Tetsuo; Matsumura, Shunichi; and Inata, Hiroo, 4,446,262, Cl. 524-89.000.
Indech, Robert B. Method of tissue growth. 4,446,229, Cl. 435-1.000.
Indian Head Incorporated: *See—*
Michels, Geoffrey H., 4,445,328, Cl. 60-351.000.
Industrial Filter & Pump Mfg. Co.: *See—*
Schmidt, Henry, Jr., 4,446,030, Cl. 210-805.000.
Industrie Pirelli, S.p.A.: *See—*
Cicognani, Mario, 4,445,879, Cl. 474-205.000.
Infantino, Joseph R.: *See—*
Frillici, Fernando V.; and Infantino, Joseph R., 4,445,688, Cl. 273-82.00R.
Ingalls, Robert A., to Joy Manufacturing Company. Screw rotor machine rotors and method of making. 4,445,831, Cl. 418-201.000.
Ingersoll-Rand Company: *See—*
Arya, Satya P., 4,445,808, Cl. 405-259.000.
Ingham, Francis H.: *See—*
Sedig, Albert R.; and Ingham, Francis H., 4,445,744, Cl. 339-94.00M.
Inoue, Hisashi: *See—*
Kosuda, Hironori; Takada, Masaaki; and Inoue, Hisashi, 4,445,875, Cl. 464-14.000.
Inoue, Kazuo, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine equipped with supercharger. 4,445,336, Cl. 60-605.000.
Inoue, Mitsumasa; Nakamura, Ken; Yokoyama, Junichi; and Yonezawa, Atsushi, to Nissan Motor Company, Limited. Intake system of internal combustion engine. 4,445,480, Cl. 123-432.000.
Inoue, Osamu: *See—*
Kono, Mitsutsugu; and Inoue, Osamu, 4,445,561, Cl. 152-209.00B.
Inoue, Takahiro: *See—*
Aoki, Takao; and Inoue, Takahiro, 4,445,772, Cl. 355-3.0CH.
Inoue, Takeo; and Shirazawa, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Insulated joint and method for producing same. 4,445,715, Cl. 285-54.000.
Inouye, Tamon, to Tokyo Shibaura Denki Kabushiki Kaisha. Image reconstruction apparatus and process. 4,446,521, Cl. 364-414.000.
Insituform International Inc.: *See—*
Wood, Eric, 4,446,181, Cl. 428-36.000.
Institut de Recherches de la Siderurgie Francaise: *See—*
Willay, Gerard, 4,446,563, Cl. 373-157.000.
Instrumentation Laboratory Inc.: *See—*
Nelson, Larry A.; and Schmidt, Leon W., 4,446,106, Cl. 422-72.000.
Intercept Corporation: *See—*
Sperber, Martin, 4,446,407, Cl. 318-282.000.
International Business Machines: *See—*
Concannon, Michael P.; and Erdelyi, Charles K., 4,446,383, Cl. 307-297.000.
Levine, Lewis J.; and Shipp, Kenneth O., Jr., 4,445,795, Cl. 400-63.000.
International Business Machines Corporation: *See—*
Afzali-Ardakani, Ali; Crowley, John I.; and Wu, Anthony W., 4,446,193, Cl. 428-422.000.
Bruhn, Peter H.; and Wustrau, Rolf, 4,445,272, Cl. 29-598.000.
Cuomo, Jerome J.; Harper, James M. E.; and Kaufman, Harold R., 4,446,403, Cl. 315-111.810.
De La Moneda, Francisco H.; and Dockerty, Robert C., 4,445,267, Cl. 29-571.000.
Gaffney, Donald P.; Grise, Gary D.; and Lam, Chung H., 4,446,535, Cl. 365-149.000.
Hoffman, Herman S.; and Howard, Robert T., Jr., 4,445,968, Cl. 156-657.000.
Isaac, Randall D.; Ning, Tak H.; and Tang, Denny D., 4,446,476, Cl. 357-67.000.
Lisica, Vincent M.; and Ross, Charles O., 4,445,796, Cl. 400-120.000.
Orengo, Gerard; and Verhaeghe, Michel, 4,446,385, Cl. 307-355.000.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M; Vock, Manfred H.; and Tyszkiewicz, Theodore J., 4,446,157, Cl. 426-3.000.
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,446,125, Cl. 424-49.000.
Munteanu, Marina A.; Cseko, Christine; Oltarzewski, Edward S.; Lindauer, Jerome I.; and Withycombe, Donald A., 4,446,032, Cl. 252-8.600.
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,446,060, Cl. 252-522.00R.
International Freezer Corp.: *See—*
Fiedler, Armin, 4,446,344, Cl. 200-83.00B.
International Hardware, Inc.: *See—*
Hait, James M., 4,445,248, Cl. 15-198.000.
International Minerals & Chemical Corp.: *See—*
Seeney, Charles E.; and Kraemer, John F., 4,445,565, Cl. 164-528.000.
International Mobile Machines Corporation: *See—*
Bolgiano, Duane R., 4,446,339, Cl. 179-84.00R.
International Paint Public Limited Company: *See—*
Woods, Richard A.; and Mehta, Rajesh R., 4,446,260, Cl. 523-409.000.
International Paper Box Machine Co., The: *See—*
Powers, Loren C., Jr., 4,445,880, Cl. 493-28.000.
International Paper Company: *See—*
Cassidy, Benjamin J., 4,445,613, Cl. 206-418.000.
International Standard Electric Corporation: *See—*
Deeg, Reinhard; Galaske, Folker; and Kettenbach, Helmuth, 4,445,647, Cl. 242-68.400.
International Telephone & Telegraph Corporation: *See—*
Endo, Teruyuki, 4,445,385, Cl. 73-726.000.
LeGrand, Jesse S.; Fockler, William; and Jezo, Mairice L. J., 4,446,464, Cl. 343-399.000.
Wagner, George K., 4,446,510, Cl. 362-267.000.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Luijerink, Jan H., 4,446,066, Cl. 260-112.00B.
Interpace Corporation: *See—*
Hedrick, Warren R., 4,445,637, Cl. 236-49.000.
Ireland, Jeffrey R., to Mostek Corporation. Circuit for generating analog signals. 4,446,436, Cl. 328-14.000.
Irzinski, Edward P., to United States of America, Navy. Coaxial waveguide commutation feed network for use with a scanning circular phased array antenna. 4,446,463, Cl. 343-371.000.
Isaac, Randall D.; Ning, Tak H.; and Tang, Denny D., to International Business Machines Corporation. Integrated circuit having a sublayer electrical contact and fabrication thereof. 4,446,476, Cl. 357-67.000.
Isaka, Tsutomu: *See—*
Doi, Shuhei; Isaka, Tsutomu; and Iida, Shinichiro, 4,446,283, Cl. 525-344.000.
Ishida, Giichi: *See—*
Kuzuya, Kaneharu; Ishida, Giichi; and Ishizaki, Kosho, 4,445,449, Cl. 112-121.110.
Ishihama, Masao: *See—*
Kimura, Akira; Ishihama, Masao; and Hayakawa, Yoshikazu, 4,445,584, Cl. 180-69.220.
Ishii, Kenzo: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.
Ishii, Tetsuro; Oyama, Tadanori; Yamashita, Masashi; Kzome, Kazuyuki; Ikeda, Tsutomu; and Fujioka, Satoru, to Nihon Koki Kabushiki Kaisha. Method of forming colored pattern on the surface of aluminum or aluminum alloy. 4,445,981, Cl. 204-18.100.
Ishikawa, Norio; and Omaki, Takanobu, to Minolta Camera Kabushiki Kaisha. Automatic focusing device for use in a camera. 4,445,761, Cl. 354-402.000.
Ishikawa, Shozo: *See—*
Takasu, Yoshio; and Ishikawa, Shozo, 4,446,217, Cl. 430-58.000.
Ishikawa, Takayoshi: *See—*
Eguchi, Kiyoshi; Ishikawa, Takayoshi; Tamaru, Shigemi; Genba, Yasushi; and Kodera, Toshihiko, 4,446,347, Cl. 200-144.00R.
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, to Nissan Motor Company, Limited. Ignition system for starting a diesel engine. 4,445,491, Cl. 123-605.000.
Ishikawa, Yuzuru; and Tanaka, Masashi, to Nippon Kogaku K.K. Optical system of a theodolite. 4,445,777, Cl. 356-139.000.
Ishimaru, Wataru. Gear shift shock reducing apparatus for hydraulic control system of automatic transmission. 4,445,401, Cl. 74-869.000.
Ishizaki, Kosho: *See—*
Kuzuya, Kaneharu; Ishida, Giichi; and Ishizaki, Kosho, 4,445,449, Cl. 112-121.110.
Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: *See—*
Rieder, Werner; and Fehrle, Martin, 4,446,195, Cl. 428-458.000.
Ito, Mamoru: *See—*
Jiroumaru, Takashi; and Ito, Mamoru, 4,446,309, Cl. 528-486.000.
Ito, Shuichi: *See—*
Iijima, Toshikazu; and Ito, Shuichi, 4,445,417, Cl. 87-12.000.
Itoh, Satoru, to Fuji Xerox Co., Ltd. Image signal processing circuit. 4,446,486, Cl. 358-280.000.

ITT Corporation: *See—*
Sedig, Albert R.; and Ingham, Francis H., 4,445,744, Cl. 339-94.00M.
ITT Industries, Inc.: *See—*
Budecker, Ludwig, 4,445,825, Cl. 417-462.000.
Weiler, Rolf; Bischoff, Gilbert; and Schlag, Rudolf, 4,445,331, Cl. 60-547.100.
Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Sviniin, Mikhail P.; and Fedotov, Mikhail T. Electron beam accelerator. 4,446,374, Cl. 250-492.300.
Ivanov, Vladimir A.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.
Iwai, Akira: *See—*
Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, 4,445,350, Cl. 72-38.000.
Iwakura, Ken; and Sugiyama, Takekatsu, to Fuji Photo Film Co., Ltd. Heat-sensitive recording materials. 4,446,209, Cl. 428-411.000.
Iwanade, Hisao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Control circuit for zooming device. 4,446,526, Cl. 364-525.000.
Iwao, Suminari: *See—*
Zaita, Katsuyuki; and Iwao, Suminari, 4,445,466, Cl. 123-59.0PC.
Iwata, Masatoshi: *See—*
Honda, Chika; Iwata, Masatoshi; and Koitabashi, Takeo, 4,446,228, Cl. 430-567.000.
Izquierdo, George J. Portable case and stand for pedal controls operationally fixed therein for use with a keyboard temporarily mountable thereon. 4,445,415, Cl. 84-177.000.
Jackson, Ronnie L. Elapsed time rod and reel apparatus. 4,445,786, Cl. 368-10.000.
Jacobine, Anthony F., to Upjohn Company, The. Compositions and process. 4,446,247, Cl. 502-167.000.
Jacobsen, Ralph E. Suspended shower-tub doors with upper stabilizing means. 4,445,239, Cl. 4-607.000.
Jaeschke, Ralph L., to Eaton Corporation. Electromagnetic coupling device. 4,446,392, Cl. 310-105.000.
Jager, Horst; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Azo reactive dyestuffs. 4,446,067, Cl. 260-153.000.
Jaksha, Jerome F. Insulative structure. 4,445,958, Cl. 156-211.000.
Jalics, George. High green strength emulsion rubbers by the use of half-esters of unsaturated dicarboxylic acids. 4,446,282, Cl. 525-327.700.
Jamerson, Jackie D.; Billig, Ernst; and Bryant, David R., to Union Carbide Corporation. Preparation of rhodium complex compounds. 4,446,074, Cl. 260-429.00R.
Janauer, Gilbert E.: *See—*
Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., 4,446,103, Cl. 422-37.000.
Janome Sewing Machine Co., Ltd.: *See—*
Ebata, Yoshikazu, 4,445,450, Cl. 112-155.000.
Janssen Pharmaceutica N.V.: *See—*
De Mey, Jan R.; and Moeremans, Marc K. J. J., 4,446,238, Cl. 436-527.000.
Van Bever, Willem F. M., 4,446,145, Cl. 424-273.00R.
Janzen, Harlo W.; and Kliewer, Melvin J., to Kliewer, Larry D.; and Kliewer, Glenn A. Power tongs. 4,445,403, Cl. 81-57.180.
Japan Bano'k Co., Ltd.: *See—*
Ueno, Hideyuki, 4,445,882, Cl. 493-376.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
Jiroumaru, Takashi; and Ito, Mamoru, 4,446,309, Cl. 528-486.000.
Jardine, Kenneth J.; and Holleman, Robert A., to Wyoming Mineral Corporation. Method of increasing the strip coefficient of the strip solution stream in a reductive stripping uranium recovery operation. 4,446,114, Cl. 423-10.000.
Jarosek, James P. Tandem hitch apparatus. 4,445,706, Cl. 280-411.00C.
Jarvinen, Willard B., to General Electric Company. Circuitry for sine wave reconstruction. 4,446,512, Cl. 363-39.000.
Jax Products Inc.: *See—*
Frost, John W., 4,445,495, Cl. 126-24.000.
Jayaram, Hiremagalur N.: *See—*
Marquez, Victor E.; Cooney, David A.; Gebeyehu, Gulilat; and Jayaram, Hiremagalur N., 4,446,315, Cl. 536-27.000.
Jean Walterscheid GmbH: *See—*
Entrup, Hubert G., 4,445,876, Cl. 464-48.000.
Jenkins, Albert M.: *See—*
Golub, Gregory J.; and Jenkins, Albert M., 4,446,343, Cl. 200-11.0TC.
Jenq, Cheng-Yih: *See—*
Huibers, Derk T. A.; and Jenq, Cheng-Yih, 4,446,070, Cl. 260-369.000.
Jensen, Marvin E., to Hollister Incorporated. Fecal incontinence device with separable release sheets. 4,445,898, Cl. 604-337.000.
Jezo, Mairice L. J.: *See—*
LeGrand, Jesse S.; Fockler, William; and Jezo, Mairice L. J., 4,446,464, Cl. 343-399.000.
Jidosha Kiki Co., Ltd.: *See—*
Ohsaki, Hiroshi; and Ohe, Takeshi, 4,445,818, Cl. 417-288.000.
Jiroumaru, Takashi; and Ito, Mamoru, to Japan Synthetic Rubber Co., Ltd. Method and apparatus for continuously coagulating a rubbery polymer latex. 4,446,309, Cl. 528-486.000.
Jo, Souk H.: *See—*
Onishi, Sigeru; and Jo, Souk H., 4,445,468, Cl. 123-73.00C.
Johannessen, R. L. Water collecting device. 4,445,247, Cl. 15-98.000.
Johansson, Kjell; and Duarte-Martins, Hermino, Jr., to Landstingens Inkopscentral, LIC. Bone aligning apparatus. 4,445,506, Cl. 128-84.00R.
Johnson, Allan P., to Honeywell Inc. Dither system for a spring mass system. 4,445,779, Cl. 356-350.000.
Johnson, Clifford C., to American Hospital Supply Corporation. Apparatus for photo-curing of dental restorative materials. 4,445,858, Cl. 433-141.000.
Johnson, Fred D.; Flasza, Michael D.; and Tzakis, George J., to Zenith Radio Corporation. Amplifier having reduced power dissipation and improved slew rate. 4,446,443, Cl. 330-257.000.
Johnson, Lonnie G. Temperature responsive automatic sprinkler control. 4,445,642, Cl. 239-64.000.
Johnson, Peter D.; and Silverstein, Seth D., to General Electric Company. High intensity discharge lamp with infrared reflecting means for improving efficacy. 4,446,397, Cl. 313-25.000.
Johnson, Ronald E.: *See—*
Ford, Clarence E., Jr.; and Johnson, Ronald E., 4,445,432, Cl. 101-152.000.
Johnson, William L.: *See—*
Williams, Arthur R.; and Johnson, William L., 4,446,568, Cl. 378-3.000.
Jordan, Robert E., to Cutter Laboratories, Inc. Antithrombin-heparin complex and method for its production. 4,446,126, Cl. 424-183.000.
Jordan, Robert E., to Cutter Laboratories, Inc. Fractionation of heparin. 4,446,314, Cl. 536-21.000.
Jordan, William D.; Hinshaw, Howard G.; and Clemens, Donald L., to Thermalloy Incorporated. Mounting means with solderable studs. 4,446,504, Cl. 361-386.000.
Jowa: *See—*
Borel, Pierre, 4,445,710, Cl. 281-45.000.
Joy Manufacturing Company: *See—*
Ingalls, Robert A., 4,445,831, Cl. 418-201.000.
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlind, William, to Monsanto Company. Composition containing reaction products of metal oxides and salts with phosphorus compounds. 4,446,061, Cl. 252-602.000.
Judkins, Milton W. Wedge-type concrete insert. 4,445,303, Cl. 52-98.000.
Juelke, Charles V.: *See—*
Lee, Fui-Tseng H.; Juelke, Charles V.; and Finley, Joseph H., 4,446,062, Cl. 252-609.000.
Juillard, Yves; and Varloud, Christian, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Device for winding a piece of fabric under constant tension, especially for a weaving loom. 4,445,545, Cl. 139-311.000.
Julie, Patricia. Animal pet porch and container. 4,445,459, Cl. 119-1.000.
Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Mages, Bernhard, 4,445,726, Cl. 308-3.800.
Kabasin, Daniel F.: *See—*
Stoltman, Donald D.; Kabasin, Daniel F.; and Field, Martin J., 4,445,369, Cl. 73-204.000.
Kabushiki Kaisha Daini Seikosha: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,445,784, Cl. 368-157.000.
Kabushiki Kaisha Fujikoshi t/a Nachi-Rujikoshi Corp.: *See—*
Ohwada, Kunio, 4,445,413, Cl. 83-676.000.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, 4,445,350, Cl. 72-38.000.
Kabushiki Kaisha Meidensha: *See—*
Kashimoto, Yutaka; Sakuma, Shinzo; and Umeya, Eiji, 4,446,346, Cl. 200-144.00B.
Seo, Toshiya, 4,446,551, Cl. 370-16.000.
Kahara, Toshiki: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.
Kaiser Steel Corporation: *See—*
Powers, Joseph E.; Grimoldi, Ranaldo H.; Williamson, Calvin C.; and Bottini, Alfred A., 4,445,357, Cl. 72-399.000.
Kaji, Isao: *See—*
Takaoka, Michio; Ono, Motoyuki; Kaji, Isao; and Yagi, Shigeki, 4,446,331, Cl. 174-73.00R.
Kalaus, Gyorgy: *See—*
Szantay, Csaba; Szbao, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; and Keve, Tibor, 4,446,139, Cl. 424-256.000.
Kaltenbach & Voigt GmbH & Co.: *See—*
Beier, Stefan, 4,446,456, Cl. 340-706.000.
Hoffmeister, Jurgen; Ravasini, Guiseppe; and Boeckh, Franz-Xaver, 4,445,859, Cl. 433-79.000.
Kamath, Venkatesh: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,446,125, Cl. 424-49.000.
Kamei, Kazuo: *See—*
Orimoto, Akira; and Kamei, Kazuo, 4,446,495, Cl. 360-74.100.
Kameyama, Shuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing semiconductor device. 4,445,967, Cl. 156-648.000.
Kameyama, Tetsuya: *See—*
Fujishige, Masao; Dokiya, Masayuki; Kameyama, Tetsuya; Yokokawa, Harumi; Ujiie, Seiichi; Fukuda, Kenzo; and Motoe, Akihiro, 4,445,934, Cl. 75-68.00A.

Kaminski, Joan M.: *See—*
Horodysky, Andrew G.; and Kaminski, Joan M., 4,446,037, Cl. 252-47.500.

Kaminski, Perry, to Technicare Corporation. Selectable focus spherical cone transducer and imaging apparatus. 4,445,380, Cl. 73-642.000.

Kamite, Junji: *See—*
Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, 4,445,489, Cl. 123-571.000.

Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Method for producing a steel lithographic plate. 4,445,998, Cl. 264-385.000.

Kaneko, Tamaki: *See—*
Kikuchi, Hideo; and Kaneko, Tamaki, 4,445,680, Cl. 271-290.000.

Kanno, Takeo: *See—*
Sato, Kiyoshi; Terashima, Minoru; Sorimachi, Haruo; Naka, Toshiaki; Kanno, Takeo; and Yamada, Fumiaki, 4,446,355, Cl. 219-216.000.

Kao Soap Co., Ltd.: *See—*
Yamasaki, Harumasa; and Harada, Shoichiro, 4,446,261, Cl. 524-40.000.

Karapita, Alexander D. Adjustable suspension support. 4,445,660, Cl. 248-335.000.

Karino, Kimiji; Kosuge, Tokuo; and Souma, Masahiro, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Carburetor with starting system. 4,446,080, Cl. 261-39.00D.

Karr, Gerald W.; and Wong, George H., to Beloit Corporation. Apparatus and method for starting successive leading ends on travelling web in a winder. 4,445,646, Cl. 242-56.00R.

Kasai, Kenjiro: *See—*
Saho, Norihide; Koibuchi, Koji; Kasai, Kenjiro; and Higaki, Hiroshi, 4,445,569, Cl. 165-165.000.

Kashimoto, Yutaka; Sakuma, Shinzo; and Umeya, Eiji, to Kabushiki Kaisha Meidensha. Vacuum interrupter. 4,446,346, Cl. 200-144.00B.

Kassen, Folkert: *See—*
Wollnik, Hermann; Haas, Rudiger; and Kassen, Folkert, 4,445,516, Cl. 128-736.000.

Kasuya, Yutaka: *See—*
Nakamizo, Nobuhiro; Obase, Hiroyuki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,446,141, Cl. 424-267.000.

Kathke, Gregor: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.

Kato Hatsujo Kaisha Ltd.: *See—*
Yaotani, Kouichi; and Ogawa, Yasuyuki, 4,445,721, Cl. 296-154.000.

Kato, Hideaki; and Handa, Hideyuki, to Konishiroku Photo Industry Co., Ltd. Electrophotographically information recording method. 4,446,472, Cl. 346-153.100.

Kato, Kazuhisa; and Yagami, Hiroyuki, to Stanley Electric Co., Ltd. Method of forming amorphous silicon. 4,446,168, Cl. 427-39.000.

Kato, Kiyoshi: *See—*
Hayashi, Kenji; and Kato, Kiyoshi, 4,445,820, Cl. 417-366.000.

Kato, Yukio: *See—*
Kawaguchi, Kenji; Hamada, Osamu; Hiramoto, Seigo; Kato, Yukio; and Yamada, Kozo, 4,446,351, Cl. 219-69.00W.

Katsuki, Shunkichi: *See—*
Kawamata, Yutaka; and Katsuki, Shunkichi, 4,445,996, Cl. 204-294.000.

Katsura, Koyo; and Maejima, Hideo, to Hitachi, Ltd. Microprogram memory with page addressing and address decode in memory. 4,446,517, Cl. 364-200.000.

Katz, Carlos; and Zidon, Amicam C., to Cable Technology Laboratories, Inc. Method for manufacturing heat shrinkable tubing. 4,446,095, Cl. 264-558.000.

Kaufman, Benjamin J.: *See—*
Skrobul, Anthony P.; and Kaufman, Benjamin J., 4,446,053, Cl. 252-33.600.

Kaufman, Harold R.: *See—*
Cuomo, Jerome J.; Harper, James M. E.; and Kaufman, Harold R., 4,446,403, Cl. 315-111.810.

Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, to GAO Gesellschaft fur Automation und Organisation mbH. Security paper with authenticity features. 4,446,204, Cl. 428-323.000.

Kaun, Thomas D., to United States of America, Energy. Electrochemical cell. 4,446,212, Cl. 429-103.000.

Kawagoe, Michio: *See—*
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,445,488, Cl. 123-569.000.

Kawaguchi, Kenji; Hamada, Osamu; Hiramoto, Seigo; Kato, Yukio; and Yamada, Kozo, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing a press die. 4,446,351, Cl. 219-69.00W.

Kawaguchi, Masashi: *See—*
Endo, Yoshihiro; Kawaguchi, Masashi; Mizukami, Etsuo; and Kishishita, Hiroshi, 4,446,399, Cl. 313-505.000.

Kawai, Hisasi: *See—*
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,445,488, Cl. 123-569.000.

Kawamata, Yutaka; and Katsuki, Shunkichi, to Mitsubishi Light Metal Industries Limited. Anode paste for use in Soderberg-type electrolytic furnace for aluminum. 4,445,996, Cl. 204-294.000.

Kawamura, Masanori: *See—*
Tanouchi, Tadao; Shigeoka, Satoshi; Kawamura, Masanori; Hayashi, Masaki; Terashima, Hiroshi; and Hirata, Fumio, 4,446,143, Cl. 424-270.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Niwa, Senji; Sasaki, Takuji; Shinto, Masaaki; and Imamura, Noriaki, 4,446,250, Cl. 502-309.000.

Kawazoe, Mitsuo, to Olympus Optical Company Ltd. Focus detecting camera. 4,445,767, Cl. 354-195.100.

Kearby, Ronald S.: *See—*
Smith, Burl L.; and Kearby, Ronald S., 4,446,167, Cl. 426-650.000.

Kearney, Frank W., to United States of America, Army. Optoelectronic weld evaluation system. 4,446,354, Cl. 219-130.010.

Keefe, John. Universal programmable lock installation device. 4,445,277, Cl. 33-197.000.

Keiltex Corporation: *See—*
Witt, Fritz K., 4,445,346, Cl. 68-178.000.

Keith, Garland B. Method and apparatus for cutting continuous fibrous material. 4,445,408, Cl. 83-37.000.

Keller, Viktor R.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.

Kelly, John W., to Haskel, Incorporated. Method for installing tubes in a tube sheet. 4,445,261, Cl. 29-157.400.

Kelsey Hayes Company: *See—*
Sivulka, Gerald M., 4,445,725, Cl. 303-6.00C.

Kendall Company, The: *See—*
Patel, Bhupendra C., 4,445,890, Cl. 604-103.000.
Patel, Bhupendra C., 4,445,891, Cl. 604-103.000.

Kenmar Export Ltd.: *See—*
Evans, Richard F., 4,445,697, Cl. 279-1.00A.

Kenmochi, Takeji, to Kohtaki & Co., Ltd. Pressure cylinder apparatus and hydraulic press incorporating the same. 4,445,840, Cl. 425-450.100.

Kennecott Corporation: *See—*
Barshter, Dennis W., 4,446,357, Cl. 219-275.000.

Kennedy, Donald E.: *See—*
Barrell, David; Kennedy, Donald E.; Marino, James J., Jr.; and Rollen, Donald C., 4,446,173, Cl. 427-206.000.

Kennedy, Garth R.: *See—*
Dworsky, Lawrence N.; and Kennedy, Garth R., 4,446,432, Cl. 324-71.500.

Kenrod Enterprises: *See—*
Stubbs, Kenneth W., 4,446,016, Cl. 210-86.000.

Keogh, Michael J., to Union Carbide Corporation. Compositions based on a polysiloxane and an organo titanate and the use thereof in the preparation of water curable, silane modified alkylene-alkyl acrylate copolymers. 4,446,279, Cl. 525-106.000.

Kergreis, Gilbert F.: *See—*
Ribaud, Yves J.; and Kergreis, Gilbert F., 4,445,816, Cl. 415-181.000.

Kerlin, Jack H. Unbalance compensator control. 4,445,398, Cl. 74-573.00R.

Kernforschungsanlage Julich GmbH: *See—*
Divisek, Jiri; and Schmitz, Heinz, 4,445,994, Cl. 204-258.000.

Kerns, Matthew T.: *See—*
Calabrese, Donald P.; Kerns, Matthew T.; and Quinn, Dennis M., 4,446,097, Cl. 376-256.000.

Kerr, Howard A.: *See—*
Bethel, Leslie D.; Kerr, Howard A.; Strebendt, Frances B.; and Waninski, John E., Jr., 4,446,336, Cl. 179-6.100.

Kessler, Bayard F., to Novation, Inc. Flexible acoustic coupler. 4,446,333, Cl. 179-2.00C.

Kettenbach, Helmuth: *See—*
Deeg, Reinhard; Galaske, Folker; and Kettenbach, Helmuth, 4,445,647, Cl. 242-68.400.

Keve, Tibor: *See—*
Szantay, Csaba; Szbao, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; and Keve, Tibor, 4,446,139, Cl. 424-256.000.

Khakimov, Tamerlan G.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.

Kiczek, Casimir R. Popcorn popper. 4,445,427, Cl. 99-323.500.

Kiesewetter, Wolfgang: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.

Kifune, Koji, to Unitika, Ltd. Insulin releasing supplier. 4,445,885, Cl. 604-28.000.

Kikuchi, Hideo; and Kaneko, Tamaki, to Ricoh Company, Ltd. Sheet distribution method. 4,445,680, Cl. 271-290.000.

Kilday, Glen W., Sr. Fireplace heating unit. 4,445,497, Cl. 126-121.000.

Kim, Bang M.; and Weininger, Joseph L., to General Electric Company. Electrolytic reactor for cleaning wastewater. 4,445,990, Cl. 204-151.000.

Kim, Dong K.: *See—*
Shemenski, Robert M.; Kim, Dong K.; and Starinshak, Thomas W., 4,446,198, Cl. 428-625.000.

Kimberly-Clark Corporation: *See—*
Roeder, Robert J., 4,445,900, Cl. 604-389.000.

Kimizuka, Masanori; and Yamanishi, Yoshio, to Sony Corporation. Tape cassette. 4,445,651, Cl. 242-199.000.

Kimmons, Kenneth T.: *See—*
Gartman, Rayburn L.; Gartman, Donald L.; and Kimmons, Kenneth T., 4,445,630, Cl. 222-464.000.

Kimura, Akira; Ishihama, Masao; and Hayakawa, Yoshikazu, to Nissan Motor Co., Ltd. Motor vehicle equipped with engine noise emission preventing device. 4,445,584, Cl. 180-69.220.

Kimura, Tetsuo: *See—*
Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, 4,445,350, Cl. 72-38.000.

King, Robert W., to Copeland Corporation. Valve assembly. 4,445,534, Cl. 137-512.300.

Kinsell, Robert C.; and Noe, James C., to Garrett Corporation, The. Heat pump systems for residential use. 4,445,639, Cl. 237-81.000.

Kinzie, Michael R., to Plast-Ad, Inc. Edge lighted article holder. 4,446,508, Cl. 362-31.000.

Kirchhoff, Winfried: *See—*
Gohausen, Hans J.; Kirchhoff, Winfried; Lindener, Jurgen; and Wennemann, Harald, 4,445,983, Cl. 204-35.00N.

Kirkland, Joseph J., to Du Pont de Nemours, E. I., and Company. Field flow fractionation channel. 4,446,015, Cl. 209-155.000.

Kirloskar Oil Engines Limited: *See—*
Rao, Nidadavolu N. N., 4,445,486, Cl. 123-557.000.

Kishi, Noriyuki: *See—*
Hasegawa, Shumpei; and Kishi, Noriyuki, 4,445,482, Cl. 123-489.000.

Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, to Fujitsu Ten Limited; and Fujitsu Limited. Input protection circuit. 4,446,499, Cl. 361-92.000.

Kishimoto, Shinzo; and Yamamuro, Kiyohiko, to Fuji Photo Film Co., Ltd. Method for processing color photographic light-sensitive material. 4,446,225, Cl. 430-393.000.

Kishishita, Hiroshi: *See—*
Endo, Yoshihiro; Kawaguchi, Masashi; Mizukami, Etsuo; and Kishishita, Hiroshi, 4,446,399, Cl. 313-505.000.

Kisiel, Stanley C., III, to Dresser Industries, Inc. Compression end pipe coupling for plastic pipe. 4,435,714, Cl. 285-23.000.

Kissinger, Walter: *See—*
Aufderhaar, Erhard; Feller, Johannes; Hultsch, Gunther; and Kissinger, Walter, 4,446,021, Cl. 210-378.000.

Kitaura, Ichiro, to AIOI Seiki Kabushiki Kaisha. Work-clamping unit for use in machine tools. 4,445,675, Cl. 269-20.000.

Kizitani, Izumi: *See—*
Takakuwa, Eiji; Nakano, Kazumi; and Kizitani, Izumi, 4,445,479, Cl. 123-425.000.

Klein, Paul E. Positive release face-bow/mouth-bow mechanism. 4,445,853, Cl. 433-5.000.

Kleiner, Gersh I.: *See—*
Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., 4,446,316, Cl. 536-112.000.

Klempirik, Victor L. Wood splitting tool. 4,445,555, Cl. 144-193.00D.

Klepacki, Michael A. Denture support system and method. 4,445,861, Cl. 433-181.000.

Kliewer, Glenn A.: *See—*
Janzen, Harlo W.; and Kliewer, Melvin J., 4,445,403, Cl. 81-57.180.

Kliewer, Larry D.: *See—*
Janzen, Harlo W.; and Kliewer, Melvin J., 4,445,403, Cl. 81-57.180.

Kliewer, Melvin J.: *See—*
Janzen, Harlo W.; and Kliewer, Melvin J., 4,445,403, Cl. 81-57.180.

Klima, Frank J. Rotary drill bit ball plug. 4,445,791, Cl. 384-96.000.

Klinksiek, Bernd: *See—*
Bucheler, Manfred; Klinksiek, Bernd; Gehringer, Hans; and Schnoring, Hildegard, 4,446,127, Cl. 424-59.000.

Kloosterboer, Johan G.: *See—*
Lippits, Gerardus J. M.; Kloosterboer, Johan G.; and Melis, Godefridus, 4,446,549, Cl. 369-275.000.

Klose, Karl W.; and Benjamin, Gary H., to Cooper Tire & Rubber Company. Belt-tread stock assembly drum. 4,445,963, Cl. 156-420.000.

Klugman, Alfred: *See—*
Labour, Donald; Cannon, James R.; and Klugman, Alfred, 4,445,505, Cl. 128-80.00C.

KMW-Mekan AB: *See—*
Malmstrom, Per-Ove; and Dyren, Karl E. A., 4,445,814, Cl. 414-295.000.

Knecht, Todd: *See—*
Elliott, Thomas; and Knecht, Todd, 4,445,313, Cl. 56-16.400.

Knieps, Reinhard: *See—*
Eiglmeier, Kurt; and Knieps, Reinhard, 4,446,075, Cl. 260-465.00G.

Knight, Kerry G., to Borg-Warner Corporation. Clutch driven plate assembly. 4,445,607, Cl. 192-107.00C.

Knight, Raymond J.; Mitten, Robert T.; and Ripley, Robert L., to Philip Morris Incorporated. Cigarette detection and rejection device. 4,445,520, Cl. 131-282.000.

Knors, Herbert: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.

Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, to Toyo Kogyo Co., Ltd. Air-fuel mixture control for automobile engine having fuel injection system. 4,445,489, Cl. 123-571.000.

Kobayashi, Kazuo: *See—*
Sakamoto, Koji; and Kobayashi, Kazuo, 4,445,771, Cl. 355-3.0DD.

Kobayashi, Shigenobu: *See—*
Minemura, Norihiro; and Kobayashi, Shigenobu, 4,445,903, Cl. 8-492.000.

Kocourek, Jan: *See—*
Filka, Karel; Coupek, Jiri; and Kocourek, Jan, 4,446,275, Cl. 525-54.100.

Koda, Andrew. Method and apparatus for supporting a vertical cylinder of wet cement surrounding a vertical pipe passing through a horizontal concrete slab. 4,445,304, Cl. 52-127.300.

Kodera, Toshihiko: *See—*
Eguchi, Kiyoshi; Ishikawa, Takayoshi; Tamaru, Shigemi; Genba, Yasushi; and Kodera, Toshihiko, 4,446,347, Cl. 200-144.00R.

Koehler, Paul G.; Leahy, Thomas P.; and Lichliter, Thomas P., to AT&T Technologies, Inc. Methods of and apparatus for detecting, measuring, and classifying insulation defects. 4,446,422, Cl. 324-54.000.

Koeijmans, Gerard D.: *See—*
Bowden, Edgar A.; Deline, Gordon R.; and Koeijmans, Gerard D., 4,446,537, Cl. 367-15.000.

Koenig & Bauer/Egenolf Machine, Inc.: *See—*
Lucas, Anton V., 4,445,407, Cl. 83-27.000.

Koenn, Lawrence D.; and Drude, David B., to Dresser Industries, Inc. Method and apparatus for neutron induced gamma ray well logging. 4,446,368, Cl. 250-262.000.

Koepf, Gerhard A., to United States of America, National Aeronautics and Space Administration. Off-axis coherently pumped laser. 4,446,556, Cl. 372-4.000.

Koepke, Jeffery W.: *See—*
Hsieh, Wen-Ching; Bostich, June M.; and Koepke, Jeffery W., 4,446,036, Cl. 252-8.55D.

Koeppen, Peter L.: *See—*
Brown, Sammy K.; Solimeno, Duane; Koeppen, Peter L.; and Rogers, Gerald, 4,446,514, Cl. 364-200.000.

Kohtaki & Co., Ltd.: *See—*
Kenmochi, Takeji, 4,445,840, Cl. 425-450.100.

Koibuchi, Koji: *See—*
Saho, Norihide; Koibuchi, Koji; Kasai, Kenjiro; and Higaki, Hiroshi, 4,445,569, Cl. 165-165.000.

Koitabashi, Takeo: *See—*
Honda, Chika; Iwata, Masatoshi; and Koitabashi, Takeo, 4,446,228, Cl. 430-567.000.

Kojima, Tadashi; and Todokoro, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal copy device for digital record/reproduction system. 4,446,489, Cl. 360-13.000.

Kojima, Tadashi: *See—*
Hoshimi, Susumu; and Kojima, Tadashi, 4,446,490, Cl. 360-32.000.

Kolbe, Joschim; Kortmann, Wilfried; and Pfeiffer, Josef, to Bayer Aktiengesellschaft. Textile-treatment agents, and their use for finishing textile materials. 4,446,034, Cl. 252-8.800.

Kolling, Byron M.; Bergbreiter, Jack; and Hunn, Roy. Molded trash container cover. 4,445,623, Cl. 220-343.000.

Kolonics, Zoltan: *See—*
Gimesi, Antal; Baracskai, Jozsef; Fodor, Ferenc; Gaal, Antal; Horvath, Andras; and Kolonics, Zoltan, 4,445,927, Cl. 71-86.000.

Kolycheck, Edmond G.; and Tolle, Laura L., to B. F. Goodrich Company, The. Electron beam curable polyrethane compositions. 4,446,286, Cl. 525-455.000.

Komatsu, Osamu: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Ichihara, Kenzi; and Morishima, Takashi, 4,446,325, Cl. 546-283.000.

Komorin, Leonid V.: *See—*
Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,446,374, Cl. 250-492.300.

Komoto, Shinsuke. Reflex zoom lens barrel. 4,445,756, Cl. 350-429.000.

Kondo, Masayuki: *See—*
Nakae, Hiroyuki; Noguchi, Isamu; and Kondo, Masayuki, 4,446,254, Cl. 521-92.000.

Kondo, Yoshikazu: *See—*
Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, 4,445,998, Cl. 264-385.000.

Kondou, Kouichi: *See—*
Mitsumori, Mitsugi; Hosaka, Hiroaki; Sato, Hiroshi; and Kondou, Kouichi, 4,445,614, Cl. 206-599.000.

Konig, Eberhard; Thoma, Wilhelm; Pedain, Josef; and Konig, Klaus, to Bayer Aktiengesellschaft. Low-solvent, thermosetting reactive polyurethane coating composition, a process for its production and its use in direct and reverse coating processes. 4,446,293, Cl. 528-45.000.

Konig, Joachim; Schnalke, Karl-Erwin; Suling, Carlhans; and Horacek: Gotz, to Bayer Aktiengesellschaft. Process for the continuous production of acrylonitrile-vinyl chloride copolymers. 4,446,291, Cl. 526-209.000.

Konig, Klaus: *See—*
Konig, Eberhard; Thoma, Wilhelm; Pedain, Josef; and Konig, Klaus, 4,446,293, Cl. 528-45.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Honda, Chika; Iwata, Masatoshi; and Koitabashi, Takeo, 4,446,228, Cl. 430-567.000.
Kato, Hideaki; and Handa, Hideyuki, 4,446,472, Cl. 346-153.100.
Yamashita, Kiyoshi; and Iijima, Toshifumi, 4,446,226, Cl. 430-506.000.

Kono, Mitsutsugu; and Inoue, Osamu, to Bridgestone Tire Company Limited. Large size pneumatic rubber tire for rough roads. 4,445,561, Cl. 152-209.00B.

Konrad, William L.: *See—*
Moffett, Mark B.; and Konrad, William L., 4,445,361, Cl. 73-1.0DV.
Kooijmans, Petrus G.; and Kunze, Wolfgang, to Shell Oil Company. Aqueous coating powder suspensions and their preparation. 4,446,257, Cl. 523-403.000.
Koomey, Inc.: *See—*
Olejak, Ingo W. V., 4,445,255, Cl. 24-284.000.
Koppers Company, Inc.: *See—*
Cain, George R., 4,445,628, Cl. 222-66.000.
Korach, Malcolm, to PPG Industries, Inc. Electro organic method and apparatus for carrying out same. 4,445,985, Cl. 204-72.000.
Kordel, Gerhard: *See—*
Brede, Uwe; and Kordel, Gerhard, 4,445,434, Cl. 102-206.000.
Kortmann, Wilfried: *See—*
Kolbe, Joachim; Kortmann, Wilfried; and Pfeiffer, Josef, 4,446,034, Cl. 252-8.800.
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, to Davy McKee Aktienegesellschaft. Melt spinning of synthetic fibers. 4,446,299, Cl. 528-272.000.
Kosuda, Hironori; Takada, Masaaki; and Inoue, Hisashi, to Matsui Universal Joint Manufacturing Company. Universal joint. 4,445,875, Cl. 464-14.000.
Kosuge, Tokuo: *See—*
Karino, Kimiji; Kosuge, Tokuo; and Souma, Masahiro, 4,446,080, Cl. 261-39.00D.
Kovacs, Joseph, to Baka Manufacturing Company, Inc. Band for anchoring a catheter or other device to the body. 4,445,894, Cl. 604-179.000.
Kovar, Robert F.: *See—*
Adams, Ronald W.; Leunig, Carl V.; and Kovar, Robert F., 4,445,954, Cl. 156-148.000.
Kraemer, John F.: *See—*
Seeney, Charles E.; and Kraemer, John F., 4,445,565, Cl. 164-528.000.
Kraft, Heinrich A.: *See—*
Coleman, John D.; Obst, Donald L.; and Kraft, Heinrich A., 4,445,593, Cl. 187-1.00R.
Kraftwerk Union Aktiengesellschaft: *See—*
Tratz, Herbert; Finckh, Hermann; and Kunstle, Konrad, 4,445,325, Cl. 60-39.182.
Krauss-Maffei Aktiengesellschaft: *See—*
Aufderhaar, Erhard; Feller, Johannes; Hultsch, Gunther; and Kisslinger, Walter, 4,446,021, Cl. 210-378.000.
Krebs & Cie S.A.: *See—*
Beutier, Didier; Palvadeau, Claude; Pasquier, Gilles; and Dietrich, March, 4,446,026, Cl. 210-639.000.
Kress, David R., to Matrix Unlimited, Inc. Method of preparing printing surface formed of polymeric resin containing polyamide and dicarboxylic acid diester. 4,446,222, Cl. 430-307.000.
Kretschmann, Bernd: *See—*
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,446,299, Cl. 528-272.000.
Krishnan, Sivaram; and Baron, Arthur L., to Mobay Chemical Corporation. Thermoplastic copolycarbonate from halogen free aromatic diol and halogenated thiodiphenol. 4,446,297, Cl. 528-204.000.
Krismer, Bruno; and Hoppe, Axel, to Hermann C. Starck Bertin; and Uranerzbergbau-GmbH. Process for recovering niobium and/or tantalum compounds from such ores further containing complexes of uranium, thorium, titanium and/or rare earth metals. 4,446,116, Cl. 423-63.000.
Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik: *See—*
Kronseder, Hermann; and Bischkopf, Reiner, 4,445,961, Cl. 156-364.000.
Kronseder, Hermann; and Bischkopf, Reiner, to Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik. Labeling apparatus for bottles or the like. 4,445,961, Cl. 156-364.000.
Krumm, Valentin, to Lindauer Dornier Gesellschaft mbH. Leno-selvage forming device. 4,445,544, Cl. 139-54.000.
Krupka, Yaakov; Feldman, Salomon; and Yerushalmi, Shmuel, to Omikron Scientific Ltd. Method and apparatus for evaluating pacer battery status and stimulation effectiveness. 4,445,512, Cl. 128-419.0PT.
Kubic, Nick; Bell, Claude; and Seguin, Serge, to Les Produits Menagers Culinaire (Baie d'Urfe) Inc. Pedal bin. 4,445,619, Cl. 220-263.000.
Kublick, Christian: *See—*
Brajder, Antonio; and Kublick, Christian, 4,446,550, Cl. 370-14.000.
Kubo, Kazuhiro: *See—*
Nakamizo, Nobuhiro; Obase, Hiroyuki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,446,141, Cl. 424-267.000.
Kuchta, George J.: *See—*
Stutz, P. David; and Kuchta, George J., 4,445,993, Cl. 204-213.000.
Kuechli, Gottfried: *See—*
Huguenin, Raymond; and Kuechli, Gottfried, 4,445,256, Cl. 29-25.350.
Kulieke, Frederick C., Jr., to Midland-Ross Corporation. Spring biased rotary railway car coupler carrier. 4,445,618, Cl. 213-61.000.
Kullgren, Dennis R.: *See—*
Hoch, Thomas M.; and Kullgren, Dennis R., 4,446,525, Cl. 364-474.000.
Kumada, Masaharu; and Misumi, Akira, to Hitachi, Ltd. Directly heated oxide cathode and production thereof. 4,446,404, Cl. 313-346.00R.
Kumar, Ashok; Segan, Ellen G.; Bukowski, John M.; and Helgeland, Jon L., to United States of America, Army. Ceramic anodes for corrosion protection. 4,445,989, Cl. 204-147.000.
Kumazawa, Tetsuo: *See—*
Miyadera, Yasuo; Fujioka, Atsushi; Kumazawa, Tetsuo; and Doi Hiroaki, 4,446,191, Cl. 428-245.000.
Kunimoto, Katsunobu: *See—*
Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, 4,445,998, Cl. 264-385.000.
Kunstle, Konrad: *See—*
Tratz, Herbert; Finckh, Hermann; and Kunstle, Konrad, 4,445,325, Cl. 60-39.182.
Kunze, Wolfgang: *See—*
Kooijmans, Petrus G.; and Kunze, Wolfgang, 4,446,257, Cl. 523-403.000.
Kurafuji, Setsuo, to Fujitsu Limited. MOS Decoder circuit using phase clocking for reducing the power consumption. 4,446,386, Cl. 307-449.000.
Kuraray Co., Ltd.: *See—*
Takamatsu, Hideo; and Minatono, Shobu, 4,446,281, Cl. 525-282.000.
Kure-Jensen, Jens; and Marshall, Robert A., to General Electric Company. Low collapse speed lube oil pumping system for turbomachinery. 4,446,377, Cl. 290-52.000.
Kureha Gosen Kabushiki Kaisha: *See—*
Nakamura, Masaaki; and Ueba, Hisaaki, 4,445,964, Cl. 156-500.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,446,137, Cl. 424-246.000.
Nakamura, Masaaki; and Ueba, Hisaaki, 4,445,964, Cl. 156-500.000.
Kurita Machinery Manufacturing Company Limited: *See—*
Kurita, Tetsuya, 4,446,020, Cl. 210-225.000.
Kurita, Tetsuya, to Kurita Machinery Manufacturing Company Limited. Filter press. 4,446,020, Cl. 210-225.000.
Kurtz, Clark N., to Eastman Kodak Company. Luminescent device for high resolution optical address and light valve imaging apparatus employing such device. 4,446,479, Cl. 358-75.000.
Kurtz, Leonard D.; and LiCausi, Joseph, to BioResearch Inc. Air purge unit for auto transfusion apparatus. 4,445,884, Cl. 604-4.000.
Kurtz, Rudiger, to Escher Wyss GmbH. Headbox for a papermaking machine. 4,445,975, Cl. 162-336.000.
Kushelman, Vladimir S.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.
Kusumi, Yuji: *See—*
Fukuda, Kunio; Tazaki, Kichiya; Takano, Akihisa; and Kusumi, Yuji, 4,446,272, Cl. 524-465.000.
Kuwada, Yukio: *See—*
Hachiya, Iwao; Mochizuki, Keizo; and Kuwada, Yukio, 4,446,130, Cl. 424-195.000.
Kuwayama, Masayuki: *See—*
Sekine, Yasuhiro; Kuwayama, Masayuki; and Harada, Hiroshi, 4,446,391, Cl. 310-62.000.
Kuzuya, Kaneharu; Ishida, Giichi; and Ishizaki, Kosho, to Hitachi, Ltd.; and Aisin Seiki Co., Ltd. Stitch pattern setting apparatus for electrically driven sewing machine. 4,445,449, Cl. 112-121.110.
Kwon, Tae M.; and Volk, Charles H., to Litton Systems, Inc. Magnetic resonance cell. 4,446,428, Cl. 324-304.000.
Kzome, Kazuyuki: *See—*
Ishii, Tetsuro; Oyama, Tadanori; Yamashita, Masashi; Kzome, Kazuyuki; Ikeda, Tsutomu; and Fujioka, Satoru, 4,445,981, Cl. 204-18.100.
La Telemecanique Electrique: *See—*
Clenet, Daniel, 4,446,513, Cl. 363-132.000.
Labour, Donald; Cannon, James R.; and Klugman, Alfred. Knee brace for preventing lateral displacement of the patella. 4,445,505, Cl. 128-80.00C.
LaChance, Paul. Combination bracket and adjustable ladder tray. 4,445,659, Cl. 248-210.000.
LaDelfa, Christopher; and Nutter, John F., to Tosco Corporation. Method of entrained flow drying. 4,445,976, Cl. 201-41.000.
Ladusaw, William T., to General Electric Company. Reversible refrigeration system rotary compressor. 4,445,344, Cl. 62-324.600.
Lagarelli, Carmen J., to Speakman Company. Adjustable valve handle. 4,445,529, Cl. 137-360.000.
Lai, Stephen H.: *See—*
Srivastava, Gopal K.; and Lai, Stephen H., 4,446,482, Cl. 358-150.000.
Laing, Inge: *See—*
Laing, Karsten; Laing, Oliver; and Laing, Inge, 4,445,566, Cl. 165-10.000.
Laing, Karsten; Laing, Oliver; and Laing, Inge. Latent heat storage means. 4,445,566, Cl. 165-10.000.
Laing, Oliver: *See—*
Laing, Karsten; Laing, Oliver; and Laing, Inge, 4,445,566, Cl. 165-10.000.
Lake, Norman M. Nasal protective method and device. 4,445,508, Cl. 128-201.180.
Lakin, Charles T.; and Willett, Norman F., to United States of America, Navy. Target for optically activated seekers and trackers. 4,446,363, Cl. 250-203.00R.
Lakisov, Viktor V.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.

Lam, Chung H.: *See—*
Gaffney, Donald P.; Grise, Gary D.; and Lam, Chung H., 4,446,535, Cl. 365-149.000.
Laminations Corporation: *See—*
Angwin, Richard B., 4,445,693, Cl. 273-404.000.
Lampman, Dewitt W.: *See—*
Bennett, Terry A.; Eilenfeld, Herbert W.; and Lampman, Dewitt W., 4,445,921, Cl. 65-114.000.
Landstingens Inkopscentral, LIC: *See—*
Johansson, Kjell; and Duarte-Martins, Hermino, Jr., 4,445,506, Cl. 128-84.00R.
Lang, Brien R.; and Razzoog, Michael E. Artificial teeth. 4,445,863, Cl. 433-212.000.
Lang, David J.; and Readman, John, to Sundstrand Corporation. Power boost mechanism. 4,445,420, Cl. 91-3.000.
Lange, Daniel J.: *See—*
Mabrey, David W.; Lange, Daniel J.; and Lee, Daniel J., 4,446,300, Cl. 528-288.000.
Lange, Ernst: *See—*
Halene, Clemens; Strack, Karl-Ludwig; Lange, Ernst; and Henrichs, Franz-Josef, 4,446,111, Cl. 422-200.000.
Langmesser, Otto J., Jr.; and Rees, Richard W. A., to General Motors Corporation. Vertical seat adjuster arrangement for vehicle seats. 4,445,661, Cl. 248-394.000.
Langston, Jimmy B.: *See—*
Wong, Patrick S.; Langston, Jimmy B.; and Leeper, Harold M., 4,445,889, Cl. 604-49.000.
LaPlante William J.: *See—*
Boulanger, Henry J.; McGuirk, Andrew C.; and LaPlante, William J., 4,446,450, Cl. 337-380.000.
Lappi, Susan C.; and Maloney, James E., to Economics Laboratory, Inc. Methods of foam inhibition or depression. 4,445,971, Cl. 162-158.000.
Larker, Hans: *See—*
Adlerborn, Jan; Larker, Hans; Mattsson, Bertil; and Nilsson, Jan, 4,446,100, Cl. 419-48.000.
Larner, Joseph; Cheng, Kang; and Galasko, Gail, to University of Virginia Alumni Patents Foundation, The. Insulin mediator substance. 4,446,064, Cl. 260-112.00R.
Larson Enterprises, Inc.: *See—*
Larson, Raymond G., 4,446,506, Cl. 362-17.000.
Larson, Raymond G., to Larson Enterprises, Inc. Photographic light diffuser. 4,446,506, Cl. 362-17.000.
Laserscope, Inc.: *See—*
Hussein, Hany M. G.; Loeb, Marvin P.; and Weiss, Harvey S., 4,445,892, Cl. 604-101.000.
Lauterbach-Dammler, Inge: *See—*
Zollner, Dieter; Lauterbach-Dammler, Inge; and Rittmann, Friedrich, 4,446,561, Cl. 373-93.000.
Lautzenhiser, Theodore V., to Standard Oil Company (Indiana). Gravity meter and method. 4,445,371, Cl. 73-382.00R.
Laxson, Charles F.: *See—*
Nuttall, Brian; and Laxson, Charles F., 4,445,718, Cl. 292-341.170.
Lazar, John D., Jr.; and Shvartsman, Benyamin, to Bemcor, Inc. Apparatus for shearing bars, billets, and other elongated stock. 4,445,410, Cl. 83-390.000.
Lazerson, Max M.: *See—*
Bohme, Rolf C.; and Lazerson, Max M., 4,445,615, Cl. 209-555.000.
Le Silicium Semiconducteur SSC: *See—*
Bacuvier, Pierre, 4,446,478, Cl. 357-75.000.
Leaf, Sallie; and Rubin, Arnold. Umbrella storage tube in automobile dashboard. 4,445,720, Cl. 296-37.120.
Leahy, Thomas P.: *See—*
Koehler, Paul G.; Leahy, Thomas P.; and Lichliter, Thomas P., 4,446,422, Cl. 324-54.000.
Leco Corporation: *See—*
Atwell, William L., 4,445,390, Cl. 73-864.520.
Lee, Charles E.; and Combs, C. Marlon, to Dynametric, Inc. Telephone signal recording methods and apparatus. 4,446,335, Cl. 179-2.00C.
Lee, Daniel J.: *See—*
Mabrey, David W.; Lange, Daniel J.; and Lee, Daniel J., 4,446,300, Cl. 528-288.000.
Lee, Fui-Tseng H.; Juelke, Charles V.; and Finley, Joseph H., to FMC Corporation. Mixed phenyl/mesityl phosphate ester composition. 4,446,062, Cl. 252-609.000.
Lee, Garland G., to General Electric Company. Compositions. 4,446,268, Cl. 524-315.000.
Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Transition metal aluminates supported on a substrate. 4,446,201, Cl. 428-696.000.
Lee, Kung-You; McMahon, Matthew A.; and Powell, Justin C., to Texaco Inc. Apparatus and method for the manufacture of gas filters. 4,446,057, Cl. 502-355.000.
Lee, Man S.: *See—*
Chang, Chieh; and Lee, Man S., 4,446,438, Cl. 328-127.000.
Lee-Norse Company: *See—*
Goyarts, Wynand M., 4,445,663, Cl. 248-652.000.
Leeper, Harold M.: *See—*
Wong, Patrick S.; Langston, Jimmy B.; and Leeper, Harold M., 4,445,889, Cl. 604-49.000.
Le Feuvre, Camille: *See—*
Schwind, Jacques; and Le Feuvre, Camille, 4,446,099, Cl. 376-277.000.
Leggett & Platt, Incorporated: *See—*
Aronson, Terry L., 4,445,547, Cl. 140-92.300.
LeGrand, Jesse S.; Fockler, William; and Jezo, Mairice L. J., to International Telephone and Telegraph Corporation. Airborne tacan equipment utilizing a logarithmic amplifier. 4,446,464, Cl. 343-399.000.
Lehikoinen, Keijo; and Nevalainen, Kyosti, to Oy Wartsila Ab. Arrangement in doors. 4,445,299, Cl. 49-167.000.
Lehman, James A. Spring powered saucer with launching tab and platform. 4,445,296, Cl. 46-74.00D.
Leigh Products, Inc.: *See—*
Imhoff, William B., 4,445,717, Cl. 292-177.000.
Leimbach, Richard C., to Eaton Corporation. Valve extension. 4,445,527, Cl. 137-226.000.
Leitch, James K.; Newman, Raymond C.; and Gray, Cameron B. Stand and strap arrangement for supporting and securing pipes. 4,445,656, Cl. 248-49.000.
Lemke, Walter G. Device for destroying hypodermic needles and syringes. 4,445,644, Cl. 241-99.000.
Lenderking, Bruce N.: *See—*
Emery, Franklin T.; Lenderking, Bruce N.; and Couch, Robert D., 4,446,426, Cl. 324-158.0MG.
Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab): *See—*
von Daehne, Welf, 4,446,144, Cl. 424-270.000.
Leonard, Don R.: *See—*
Belote, Stephen N.; Leonard, Don R.; and Luce, Garrett C., 4,446,301, Cl. 528-295.300.
Les Produits Menagers Culinaire (Baie d'Urfe) Inc.: *See—*
Kubic, Nick; Bell, Claude; and Seguin, Serge, 4,445,619, Cl. 220-263.000.
Leslie, Kenneth A., to Procter & Gamble Company, The. Brightener for detergents containing nonionic and cationic surfactants. 4,446,042, Cl. 252-102.000.
Leuenberger, Hans: *See—*
Eggli, Daniele; von Ow, Dieter; and Huni, Gregor, 4,445,518, Cl. 128-783.000.
Leunig, Carl V.: *See—*
Adams, Ronald W.; Leunig, Carl V.; and Kovar, Robert F., 4,445,954, Cl. 156-148.000.
Leuven Research and Development V.Z.W.: *See—*
Van Brussel, Hendrik M.; and Simons, Joseph A. G., 4,445,273, Cl. 29-714.000.
Leven, Jakob: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.
Lever Brothers Company: *See—*
Beavan, Stuart W.; and Willis, Edwin, 4,445,901, Cl. 8-103.000.
Berthod, Daniel P. M.; and Ferret, Simone, 4,446,051, Cl. 252-309.000.
Tai, Ho T., 4,446,043, Cl. 252-105.000.
Levine, Lewis J.; and Shipp, Kenneth O., Jr., to International Business Machines. Method and apparatus for merge processing in a text processing system. 4,445,795, Cl. 400-63.000.
Levine, Stanley R.: *See—*
Gedwill, Michael A.; Levine, Stanley R.; and Glasgow, Thomas K., 4,446,199, Cl. 428-639.000.
Levinson, Vladimir A.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.
Levral, Roland: *See—*
Carre, Jean-Jacques; and Levral, Roland, 4,445,263, Cl. 29-445.000.
LiCausi, Joseph: *See—*
Kurtz, Leonard D.; and LiCausi, Joseph, 4,445,884, Cl. 604-4.000.
Lichliter, Thomas P.: *See—*
Koehler, Paul G.; Leahy, Thomas P.; and Lichliter, Thomas P., 4,446,422, Cl. 324-54.000.
Life Technologies, Inc.: *See—*
Berninger, Mark S., 4,446,237, Cl. 436-504.000.
Likhyani, Kewal K.: *See—*
Baker, Richard A.; Forsythe, George D.; Likhyani, Kewal K.; Roberts, Robert E.; and Robertson, David C., 4,446,024, Cl. 210-500.200.
Lin, Cheng-I; and Singh, Prithipal, to Syva Company. Phencyclidine compounds and assays for its determination. 4,446,065, Cl. 260-112.00R.
Lind, David J.; and Richards, Joyce, to Rolls-Royce Limited. Method of manufacturing composite materials. 4,445,951, Cl. 156-93.000.
Lind, Leif, to F. L. Smidth & Co. Method of controlling operation of an electrostatic precipitator. 4,445,911, Cl. 55-2.000.
Lindauer Dornier Gesellschaft mbH: *See—*
Krumm, Valentin, 4,445,544, Cl. 139-54.000.
Lindauer, Jerome I.: *See—*
Munteanu, Marina A.; Caeko, Christine; Oltarzewski, Edward S.; Lindauer, Jerome I.; and Withycombe, Donald A., 4,446,032, Cl. 252-8.600.
Lindener, Jurgen: *See—*
Gohausen, Hans J.; Kirchhoff, Winfried; Lindener, Jurgen; and Wennemann, Harald, 4,445,983, Cl. 204-35.00N.
Lindner, Christian: *See—*
Binsack, Rudolf; Lindner, Christian; Rempel, Dieter; and Ott, Karl-Heinz, 4,446,276, Cl. 525-64.000.
Linear Dynamics, Inc.: *See—*
Willis, John G., 4,445,536, Cl. 137-560.000.

Linev, Valery D.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.

Link, Donald A.; and Swessel, John A., Jr., to Eaton Corporation. Electrical panelboard with main breaker hold-down. 4,446,503, Cl. 361-346.000.

Linke, Horst; Albers, Josef; and Erwien, Helmut, to Gewerkschaft Eisenhutte Westfalia. Chain stripper devices and assemblies for mining machines. 4,445,878, Cl. 474-92.000.

Liotta, Lance A. Enzyme immunoassay with two-zoned device having bound antigens. 4,446,232, Cl. 435-7.000.

Liotta, Lance A.: *See—*
Russo, Raimondo; and Liotta, Lance A., 4,446,234, Cl. 435-29.000.

Lipe Rollway Corporation: *See—*
Schmidt, Frederick C., 4,445,600, Cl. 192-18.00R.

Lippits, Gerardus J. M.; Kloosterboer, Johan G.; and Melis, Godefridus, to U.S. Philips Corporation. Optically readable information disc and method of manufacturing same. 4,446,549, Cl. 369-275.000.

Lisica, Vincent M.; and Ross, Charles O., to International Business Machines Corporation. Print electrode control circuit. 4,445,796, Cl. 400-120.000.

List, David E., to Tioxide Group Limited. Sewage treatment composition its manufacture and use. 4,446,031, Cl. 252-1.000.

Litrico, Biagio. Marine life traps. 4,445,295, Cl. 43-102.000.

Litton Systems, Inc.: *See—*
Kwon, Tae M.; and Volk, Charles H., 4,446,428, Cl. 324-304.000.

Loch, Joseph. Hydrofoil assembly. 4,445,452, Cl. 114-282.000.

Lockheed Electronics Co., Inc.: *See—*
Rawicz, Harris C.; Rizzo, Vincent J.; and Buntemeyer, William R., 4,446,409, Cl. 318-632.000.

Loeb, Marvin P.: *See—*
Hussein, Hany M. G.; Loeb, Marvin P.; and Weiss, Harvey S., 4,445,892, Cl. 604-101.000.

Lohrmann, Gerhard: *See—*
Babsch, Alfred; and Lohrmann, Gerhard, 4,446,367, Cl. 250-231.0SE.

Long, William B.; Metzger, Donald L.; and Shuey, John R., to AMP Incorporated. Electrical distribution system for lights and connectors therefor. 4,445,737, Cl. 339-18.00C.

Long, William B.; and Shannon, Suel G., to AMP Incorporated. Electrical connector for interconnecting printed circuit boards. 4,446,505, Cl. 361-413.000.

Long, William E., to Ciba-Geigy AG. Dyestuffs and their use in photographic material. 4,446,227, Cl. 430-513.000.

Long, William E.: *See—*
Smith, Norman A.; Postle, Stephen R.; and Long, William E., 4,446,216, Cl. 430-405.000.

Longenecker, Bruce A. Window assembly including a storable fire escape. 4,445,589, Cl. 182-76.000.

L'Oreal: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,445,521, Cl. 132-7.000.

Loucks, George R., to General Electric Company. Polyphenylene oxide blends. 4,446,278, Cl. 525-92.000.

Louhio, Ilmari, to Oy Partek AB. Hydraulic motor. 4,445,423, Cl. 91-492.000.

Lo v, Bjorn, to Aktiebolaget S:t Eriks Betong. System of prefabricated concrete elements for constructing paths. 4,445,802, Cl. 404-40.000.

Love, Michael; and Forman, Philip. Adjustable length drive belt for vehicle belt pulley system. 4,445,877, Cl. 474-255.000.

Lovenguth, Ronald F.: *See—*
Braksmayer, Diza P.; and Lovenguth, Ronald F., 4,446,265, Cl. 524-139.000.

Lovgren, Eric M.; Golba, Joseph C., Jr.; and Reed, Randall A., to General Electric Company. High viscosity silicone blending process. 4,446,090, Cl. 264-211.000.

Lovrenich, Rodger T. Measuring and control device using the damping effect of a resistive effect element on the inductor of a tuned circuit. 4,446,427, Cl. 324-207.000.

Lu, Ning K. Surface sweeper. 4,445,245, Cl. 15-23.000.

Lubrizol Corporation, The: *See—*
Pindar, John F.; and Cohen, Jerome M., 4,446,039, Cl. 252-52.00R.

Lucas, Anton V., to Koenig & Bauer/Egenolf Machine, Inc. Method and apparatus for handling book trimmings. 4,445,407, Cl. 83-27.000.

Lucas Industries Limited: *See—*
Baum, Heinz W., 4,445,595, Cl. 188-73.380.

Luce, Garrett C.: *See—*
Belote, Stephen N.; Leonard, Don R.; and Luce, Garrett C., 4,446,301, Cl. 528-295.300.

Luijerink, Jan H., to Internationale Octrooi Maatschappij "Octropa" B.V. Process for the manufacture of globin or blood cell protein and heme from hemoglobin. 4,446,066, Cl. 260-112.00B.

Luk, Kong, to Beecham Group Limited of Beecham House. Process for the preparation of β-lactam antibiotics. 4,446,069, Cl. 260-245.20R.

Lukas-Erzett Vereinigte Schleif und Fraswerkzeugfabriken: *See—*
Theilen, Kurt A., 4,445,810, Cl. 407-118.000.

Lukezich, Paul J.: *See—*
Puccinelli, Joseph S.; and Lukezich, Paul J., 4,445,307, Cl. 52-638.000.

Luksas, Anthony J.: *See—*
Shah, Syed M. M.; Luksas, Anthony J.; and Ahmed, Salah E., 4,446,055, Cl. 252-351.000.

Lundberg, Robert D.; and Thaler, Warren A., to Exxon Research and Engineering Co. Sulfonated polymer and compositions thereof. 4,446,267, Cl. 524-211.000.

Lutfy, Joseph P.; Grabowski, Thaddeus J.; and Arnold, Robert G., to General Motors Corporation. Method of forming composite surface on a dielectric substrate. 4,445,979, Cl. 204-15.000.

Lynn Products Company, Incorporated: *See—*
Cullinane, Daniel, Jr., 4,446,000, Cl. 204-415.000.

Lyon, Harry H., to General Motors Corporation. Internal combustion engine misfire detection system. 4,445,326, Cl. 60-277.000.

M. H. Detrick Company, Limited: *See—*
Harvey, Barrie J.; and Mann, Ian J., 4,446,082, Cl. 264-30.000.

Ma, Tak M.: *See—*
D'Andrade, Bruce M.; Ng, Ping F.; and Ma, Tak M., 4,445,297, Cl. 46-230.000.

Mabrey, David W.; Lange, Daniel J.; and Lee, Daniel J., to P. D. George Company, The. Isocyanurate-type polymers. 4,446,300, Cl. 528-288.000.

Machinefabriek A. Fontijne B.V.: *See—*
Pols, Pieter M., 4,445,352, Cl. 72-101.000.

MacLeod, Richard J.: *See—*
Chubb, Arthur B.; MacLeod, Richard J.; and Rhoades, James J., 4,445,356, Cl. 72-319.000.

Maeda, Hiroshi; and Nishi, Katsuhide, to Yamanouchi Pharmaceutical Co., Ltd. Agents for improvement of peripheral blood flow. 4,446,136, Cl. 424-177.000.

Maeder, Heinz B.: *See—*
Gercekci, Anil; and Maeder, Heinz B., 4,446,475, Cl. 357-40.000.

Maehl, Ronald C., to RCA Corporation. Extendible tubular booms for remote sensors. 4,446,466, Cl. 343-877.000.

Maejima, Hideo: *See—*
Katsura, Koyo; and Maejima, Hideo, 4,446,517, Cl. 364-200.000.

Maekawa, Masakazu; Nakamura, Sukenori; Sugiyama, Masatoshi; and Odawara, Hideo, to Fuiji Photo Film Company, Ltd. Method of ink-jet recording. 4,446,174, Cl. 427-261.000.

Mages, Bernhard: *See—*
Rock, Erich; and Mages, Bernhard, 4,445,726, Cl. 308-3.800.

Magnetic Peripherals Inc.: *See—*
Miller, Christopher, 4,446,546, Cl. 369-45.000.

Mai, Chao C.; Whitney, William M.; Gosney, William M.; and Gulyas, Donald J., to Mostek Corporation. MOSFET Fabrication process for reducing overlap capacitance and lowering interconnect impedance. 4,445,266, Cl. 29-571.000.

Makabe, Takayoshi: *See—*
Edamatsu, Kunihiko; and Makabe, Takayoshi, 4,446,481, Cl. 358-106.000.

Malani, Narayandas; and Boller, Thomas E., to Ford Motor Company. Method of forming a high performance reflective film on a glass sheet. 4,446,172, Cl. 427-160.000.

Malizia, Peter D.; and Trumbetas, Jerome F., to General Foods Corporation. Decaffeination of a coffee extract. 4,446,162, Cl. 426-424.000.

Malmstrom, Per-Ove; and Dyren, Karl E. A., to KMW-Mekan AB. Apparatus for depositing solid particulate material in a frustoconical pile. 4,445,814, Cl. 414-295.000.

Maloney, James E.: *See—*
Lappi, Susan C.; and Maloney, James E., 4,445,971, Cl. 162-158.000.

Mancusi, Fred, to American Motors Corporation. Cargo container with adjustable retaining mechanism. 4,445,616, Cl. 211-13.000.

Mandai, Masaaki: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,445,784, Cl. 368-157.000.

Mandel, Philip: *See—*
Friedman, David; and Mandel, Philip, 4,446,412, Cl. 318-696.000.

Mangood Corporation: *See—*
Caldicott, Jack R., 4,445,581, Cl. 177-163.000.

Mann, Ian J.: *See—*
Harvey, Barrie J.; and Mann, Ian J., 4,446,082, Cl. 264-30.000.

Mannesmann AG: *See—*
Babsch, Alfred; and Lohrmann, Gerhard, 4,446,367, Cl. 250-231.0SE.
Halene, Clemens; Strack, Karl-Ludwig; Lange, Ernst; and Henrichs, Franz-Josef, 4,446,111, Cl. 422-200.000.

Mannesmann Veba Umwelttechnik GmbH: *See—*
Riemann, Hanns-Helmut; and Sonnenschein, Hans, 4,445,906, Cl. 44-1.00D.

Margolin, David: *See—*
Margolin, Mark; and Margolin, David, 4,445,632, Cl. 225-2.000.

Margolin, Mark; and Margolin, David, to East-West Precision, Inc. Fiber optic scribe and cleave tool and method. 4,445,632, Cl. 225-2.000.

Margolin, Mark: *See—*
Grois, Igor; Margolin, Mark; and Berg, Alan, 4,445,750, Cl. 350-96.210.

Margulies, Herman, to Sterling Drug Inc. Prepackaged, disposable hypodermic syringes. 4,445,895, Cl. 604-193.000.

Marino, James J., Jr.: *See—*
Barrell, David; Kennedy, Donald E.; Marino, James J., Jr.; and Rollen, Donald C., 4,446,173, Cl. 427-206.000.

Marion, Gerard, to Renault Vehicules Industriels. Mechanical fuel injection devices, mainly for diesel engines. 4,445,484, Cl. 123-502.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Rubbery polycarbonates. 4,446,285, Cl. 525-439.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Branched copolycarbonate from triphenol. 4,446,298, Cl. 528-204.000.

Markowski, Stanley J.; and Reilly, Richard S., to United States of America, Navy. Swirler assembly for a vorbix augmentor. 4,445,338, Cl. 60-748.000.

Marley Company: *See—*
Athey, Roderick E.; and Furnish, Alan G., 4,445,537, Cl. 137-572.000.

Marmon, Robert A. Shoppers calculator. 4,446,528, Cl. 364-709.000.

Marquez, Victor E.; Cooney, David A.; Gebeyehu, Gulilat; and Jayaram, Hiremagalur N., to United States of America, Health and Human Services. Adenosine 5'-triphosphate-4-carboxamide-ribofuranosylthiazole. 4,446,315, Cl. 536-27.000.

Marsh, Lee M., Jr.: *See—*
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevezi, James M., 4,446,365, Cl. 250-213.00R.

Marshall, Robert A.: *See—*
Kure-Jensen, Jens; and Marshall, Robert A., 4,446,377, Cl. 290-52.000.

Martin, Fred E., to Remington Arms Company, Inc. Bolt latch for bolt-action firearm. 4,445,292, Cl. 42-16.000.

Martin, Henry W., to T. F. Hudgins & Associates, Inc. Temperature sensor. 4,445,454, Cl. 116-106.000.

Martinez Parra, JoseCalle Salitre 33-1°, Edificio Juan XXIII. System for the generation of electrical energy by utilizing the kinetic energy of seawater. 4,446,378, Cl. 290-54.000.

Marui Ltd.: *See—*
Tange, Michiaki, 4,445,703, Cl. 280-279.000.

Maruko Seiyaku Co., Ltd.: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Ichihara, Kenzi; and Morishima, Takashi, 4,446,325, Cl. 546-283.000.

Maruyama, Hisaichi: *See—*
Shigeta, Katsunori; Nakamura, Takashi; Maruyama, Hisaichi; and Matsumoto, Yasuji, 4,446,520, Cl. 364-400.000.

Massey-Ferguson Services N.V.: *See—*
Yapp, Robert E.; and Smith, Derek J., 4,445,394, Cl. 74-501.00R.

Mastronarde, Thomas P., to Combustion Engineering, Inc. Waste heat boiler with feed mixing nozzle. 4,445,462, Cl. 122-7.00R.

Mathis, Ronald D.; and Reed, Jerry O., to Phillips Petroleum Company. Process for cleaning metal surfaces. 4,445,941, Cl. 134-3.000.

Matrix Unlimited, Inc.: *See—*
Kress, David R., 4,446,222, Cl. 430-307.000.

Matsuda, Shimpei: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.

Matsuguchi, Michiharu: *See—*
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,446,273, Cl. 524-556.000.

Matsui, Kazuma: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,445,821, Cl. 417-366.000.

Matsui Universal Joint Manufacturing Company: *See—*
Kosuda, Hironori; Takada, Masaaki; and Inoue, Hisashi, 4,445,875, Cl. 464-14.000.

Matsumoto, Hiromitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Control of carburetor-supplied induction system. 4,445,473, Cl. 123-308.000.

Matsumoto, Yasuji: *See—*
Shigeta, Katsunori; Nakamura, Takashi; Maruyama, Hisaichi; and Matsumoto, Yasuji, 4,446,520, Cl. 364-400.000.

Matsumura, Shunichi: *See—*
Okumura, Nobuya; Ichihashi, Tetsuo; Matsumura, Shunichi; and Inata, Hiroo, 4,446,262, Cl. 524-89.000.

Matsumura, Susumu, to Canon Kabushiki Kaisha. Light measuring device for a single lens reflex camera. 4,445,764, Cl. 354-480.000.

Matsuo, Tadayuki: *See—*
Mizusaki, Takashi; Matsuo, Tadayuki; Esashi, Masayoshi; and Abe, Hiroshi, 4,446,474, Cl. 357-25.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Gamo, Takaharu; Moriwaki, Yoshio; and Yamashita, Toshio, 4,446,121, Cl. 423-644.000.
Mizukawa, Takumi; Amagami, Keizo; and Ogino, Yoshio, 4,446,350, Cl. 219-10.770.
Shinohara, Kazuyoshi, 4,445,793, Cl. 384-130.000.
Tsuboka, Eiichi, 4,446,530, Cl. 364-725.000.

Matsushita, Tomiharu: *See—*
Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, 4,445,350, Cl. 72-38.000.

Matsuura, Norio: *See—*
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,446,273, Cl. 524-556.000.

Matthews, Francis T., to Combustion Engineering, Inc. Liquid fuel and air feed apparatus for fluidized bed boiler. 4,445,844, Cl. 431-170.000.

Mattingly, Owen M. Flame holding lighter for industrial gas-fired ovens. 4,445,846, Cl. 431-352.000.

Mattson, William F., to B. F. Goodrich Company, The. "Piggyback" heat exchanger for dome presses. 4,446,093, Cl. 264-315.000.

Mattsson, Bertil: *See—*
Adlerborn, Jan; Larker, Hans; Mattsson, Bertil; and Nilsson, Jan, 4,446,100, Cl. 419-48.000.

Maughan, Rex G., to Aloe Vera of America, Inc. Controlled temperature process for manufacturing of improved stabilized aloe vera. 4,446,131, Cl. 424-195.000.

Mauszahl, Dieter: *See—*
Schaetzer, Harry; Raisin, Helmut; Mauszahl, Dieter; and Ciba-Geigy AG, 4,445,905, Cl. 8-641.000.

Maxhimer, Monroe R. Swimming pool water level control apparatus. 4,445,238, Cl. 4-508.000.

May, Earl L.; and Baltzer, William W., to PPG Industries, Inc. Auxiliary side heater for a float glass forming chamber. 4,445,924, Cl. 65-182.300.

Mayfield, William B., to Parker-Hannifin Corporation. Medication infusion pump. 4,445,535, Cl. 137-535.000.

Mazur, Joseph S., to Eaton Corporation. Cooling fan control. 4,445,583, Cl. 180-68.100.

McCaleb, George E., to Thermal Specialties Inc. Insulating foam steam stimulation method. 4,445,573, Cl. 166-250.000.

McCallan, Michael G.: *See—*
Comerford, Matthias F.; and McCallan, Michael G., 4,446,358, Cl. 219-388.000.

McCarty, William J., to General Electric Company. Sonic restrictor means for a heat pump system. 4,445,343, Cl. 62-324.100.

McConway & Torley Corporation: *See—*
Elliott, William O., 4,445,617, Cl. 213-60.000.

McCormick Laboratories, Inc.: *See—*
Bresler, Robert G., 4,445,501, Cl. 128-1.500.

McCreary, Charles H., to General Motors Corporation. Engine with speed responsive multi-ratio turbocharger drive. 4,445,337, Cl. 60-608.000.

McDaniel, James W., to Alumina Development Corporation. Double digestion system to reduce formation of ferrous iron. 4,446,117, Cl. 423-121.000.

McDermott, Gertrude D., to Hydra-Jack, Inc. Hydraulic jack device. 4,445,666, Cl. 254-93.00H.

McDonald, William M.: *See—*
Abdallah, Mohamed G.; and McDonald, William M., 4,445,804, Cl. 405-173.000.

McDonie, Arthur F.: *See—*
Faulkner, Richard D.; Thoman, Daniel L.; and McDonie, Arthur F., 4,446,401, Cl. 313-533.000.

McDonnell Douglas Corporation: *See—*
Rodgers, Richard W., 4,446,536, Cl. 365-230.000.

McElroy, Lucian G. Adjustable clamp for fluid stripping bag. 4,445,251, Cl. 15-316.00R.

McGinniss, Vincent D., to Three Bond Co., Ltd. Catalyst systems for two-pack acrylic adhesive formulations. 4,446,246, Cl. 502-155.000.

McGuirk, Andrew C.: *See—*
Boulanger, Henry J.; McGuirk, Andrew C.; and LaPlante, William J., 4,446,450, Cl. 337-380.000.

McIntyre, James A.; and Phillips, Robert F., to Dow Chemical Company, The. Electrochemical cell having a separator-gas electrode combination. 4,445,986, Cl. 204-98.000.

McKay, Robert A., to Monsanto Company. Double-tuned single coil probe for nuclear magnetic resonance spectrometer. 4,446,431, Cl. 324-318.000.

McKelvey, Harold E., to Shatterproof Glass Corporation. Rotatable sputtering apparatus. 4,445,997, Cl. 204-298.000.

McKeough, David T.: *See—*
Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,446,292, Cl. 528-29.000.

McLandrich, Matthew N.; and Albares, Donald J., to United States of America, Navy. Optical resonator single-mode fiber hydrophone. 4,446,543, Cl. 367-149.000.

McMahon, Matthew A.: *See—*
Lee, Kung-You; McMahon, Matthew A.; and Powell, Justin C., 4,446,057, Cl. 502-355.000.

McNamara, David A., to Ford Motor Company. Circuit for converting pressure variation to frequency variation. 4,446,447, Cl. 331-42.000.

McQuade, Paul D. Method of circle mining of ore. 4,445,723, Cl. 299-11.000.

Mead, Howard B., to Shell Research Limited. Flexible hose for liquefied gases. 4,445,543, Cl. 138-122.000.

Measurex Corporation: *See—*
Smith, Vigo N., 4,445,359, Cl. 73-1.00G.

Medical College of Wisconsin: *See—*
Froncisz, Wojciech; and Hyde, James S., 4,446,429, Cl. 324-316.000.

MegaTape Corporation: *See—*
Avra, Raymond E.; and Herrington, Lawrence, 4,445,650, Cl. 242-192.000.

Mehta, Rajesh R.: *See—*
Woods, Richard A.; and Mehta, Rajesh R., 4,446,260, Cl. 523-409.000.

Meiji Seika Kaisha, Ltd.: *See—*
Hachiya, Iwao; Mochizuki, Keizo; and Kuwada, Yukio, 4,446,130, Cl. 424-195.000.

Meixell, Richard D., to General Motors Corporation. Corrosion protector for wheel brake assembly bleeder valve. 4,445,530, Cl. 137-381.000.

Melinat, Wolfgang, to General Motors Corporation. Master cylinder assembly and booster. 4,445,330, Cl. 60-545.000.

Melinat, Wolfgang, to General Motors Corporation. Master cylinder assembly. 4,445,335, Cl. 60-589.000.

Melis, Godefridus: *See—*
Lippits, Gerardus J. M.; Kloosterboer, Johan G.; and Melis, Godefridus, 4,446,549, Cl. 369-275.000.

Mellgren, Per G.: *See—*
Hyde, Bruce; Tyndall, Wayne; Abernethy, Dennis; and Mellgren, Per G., 4,445,552, Cl. 144-3.00D.

Melnikov, Alexandr V.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.

Menger, Erich: *See—*
Hammerling, Gunter; Muller, Ingo; and Menger, Erich, 4,446,104, Cl. 422-63.000.

Menna, Raymond J.: *See—*
Whartenby, James C.; Brown, Richard; Rao, Srinivas T.; and Menna, Raymond J., 4,445,978, Cl. 204-15.000.

Merck & Co., Inc.: *See—*
Angeles, Marshall R., 4,446,076, Cl. 260-465.00G.

Merhav, Shmuel J., to Technion Research and Development Foundation Ltd. Apparatus and method for measuring specific force and angular rate. 4,445,376, Cl. 73-510.000.

Merrell Toraude et Compagnie: *See—*
Gerhart, Fritz; and Van Dorsselaer, Viviane, 4,446,151, Cl. 424-319.000.

Merritt, William H. Baseball bat. 4,445,687, Cl. 273-72.00R.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Schwaerzler, Hans, 4,445,653, Cl. 244-110.00D.
Sepp, Gunther; and Dyrna, Peter, 4,446,558, Cl. 372-64.000.
Wendt, Hans-Joachim, 4,446,524, Cl. 364-463.000.

Messier-Hispano-Bugatti (S.A.): *See—*
Turiot, Andre , 4,445,672, Cl. 267-64.160.

Metal Parts, Inc.: *See—*
Funk, Charles F., 4,445,727, Cl. 308-4.00A.

Metalfab, Inc.: *See—*
Crane, Julius, 4,445,839, Cl. 425-421.000.

Metzger, David A.: *See—*
Volk, Michael; Metzger, David A.; Ostby, Donald H.; and Ostby, Robert R., 4,445,912, Cl. 55-283.000.

Metzger, Donald L.: *See—*
Long, William B.; Metzger, Donald L.; and Shuey, John R., 4,445,737, Cl. 339-18.00C.

Meyeroff, Chester. Adjustable window structure. 4,445,563, Cl. 160-369.000.

Meyers, Stuart R., to Synapco Ltd. Footwear sole member. 4,445,283, Cl. 36-29.000.

Mica Corporation, The: *See—*
Patel, Harshad K.; and Illick, Andjelko, 4,446,188, Cl. 428-138.000.

Michels, Geoffrey H., to Indian Head Incorporated. Variable fill fluid coupling with charging liquid collector. 4,445,328, Cl. 60-351.000.

Michishita, Kazuo: *See—*
Suzuki, Go; and Michishita, Kazuo, 4,445,274, Cl. 29-832.000.

Midland-Ross Corporation: *See—*
Kulieke, Frederick C., Jr., 4,445,618, Cl. 213-61.000.

Miesowicz, Frederick M.: *See—*
Auditore-Hargreaves, Karen; and Miesowicz, Frederick M., 4,446,233, Cl. 435-7.000.

Mike Volk Co., Inc., The: *See—*
Volk, Michael; Metzger, David A.; Ostby, Donald H.; and Ostby, Robert R., 4,445,912, Cl. 55-283.000.

Miki, Nobuaki; and Yokoyama, Shoji, to Aisin Warner Kabushiki Kaisha. Electromagnetic valve and method for assembly. 4,445,528, Cl. 137-315.000.

Miller, Christopher, to Magnetic Peripherals Inc. Focus initialization system for optical recording. 4,446,546, Cl. 369-45.000.

Miller, Dale E.: *See—*
Sternberg, Ben K.; Miller, Dale E.; and Bahjat, Dhari S., 4,446,434, Cl. 324-363.000.

Miller, Donald; and Bowers, Clark A., to United States of America, Navy. Release mechanism for a cylindrical object recovery device. 4,445,719, Cl. 294-88.000.

Miller, James D. Apparatus for dampening pump pressure pulsations. 4,445,829, Cl. 417-543.000.

Millheim, Keith K., to Standard Oil Company (Indiana). System for measuring downhole drilling forces. 4,445,578, Cl. 175-45.000.

Milliken Research Corporation: *See—*
Satterfield, Larry S., 4,445,322, Cl. 57-264.000.

Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., to Occidental Chemical Co. Process for blending phosphoric acids of differing impurity content. 4,445,926, Cl. 71-34.000.

Milnes, Arthur G., to Carnegie-Mellon University. Method for making thin film cadmium telluride and related semiconductors for solar cells. 4,445,965, Cl. 156-624.000.

Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Splicing method for spun yarns. 4,445,317, Cl. 57-22.000.

Mimori, Teruo: *See—*
Tsushima, Noboru; Fuse, Masashi; Sasaki, Toshio; Ogata, Masayuki; Mimori, Teruo; and Mukai, Tadashi, 4,445,279, Cl. 33-356.000.

Minatono, Shobu: *See—*
Takamatsu, Hideo; and Minatono, Shobu, 4,446,281, Cl. 525-282.000.

Minemura, Norihiro; and Kobayashi, Shigenobu, to Teijin Limited. Process for the preparation of woven fabrics of low air permeability. 4,445,903, Cl. 8-492.000.

Minnesota Mining and Manufacturing Company: *See—*
Brochman, Wilfred R.; and Patterson, Richard A., 4,445,620, Cl. 220-271.000.
Guenthner, Richard A.; and Stivers, David A., 4,446,270, Cl. 524-433.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ishikawa, Norio; and Omaki, Takanobu, 4,445,761, Cl. 354-402.000.

Miranda, Robert E.: *See—*
Reynolds, Frederick W., III; Miranda, Robert E.; and Fabian, Roger C., 4,445,952, Cl. 156-94.000.

Misaizu, Tetsuo, to Nippon Electric Co., Ltd. MOS Inverter-buffer circuit having a small input capacitance. 4,446,387, Cl. 307-450.000.

Mischutin, Vladimir, to White Chemical Corporation. Process for rendering non-thermoplastic fibrous materials flame resistant to molten materials by application thereto of a flame resistant composition, and related articles and compositions. 4,446,202, Cl. 428-254.000.

Misra, Surya K.; and Openchowski, Richard A., to National Can Corporation. Method of forming seamless container. 4,445,813, Cl. 413-1.000.

Misuitoatsu Chemicals, Inc.: *See—*
Okazaki, Yutaka; Tokuda, Hiroshi; Miyahara, Shiyoichiro; and Yamada, Yoshitsugu, 4,446,133, Cl. 424-250.000.

Misumi, Akira: *See—*
Kumada, Masaharu; and Misumi, Akira, 4,446,404, Cl. 313-346.00R.

Mitchell, John D., to Garrett Corporation, The. Pressure regulator system. 4,445,532, Cl. 137-495.000.

Mitchell, Paul M. Lightweight, portable hunter's tree stand. 4,445,591, Cl. 182-222.000.

Mitsch, Ronald A., to United States of America, Navy. N-Substituted fluoroaziridines and process for making. 4,446,068, Cl. 260-239.00E.

Mitsev, Sergei G.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Eguchi, Kiyoshi; Ishikawa, Takayoshi; Tamaru, Shigemi; Genba, Yasushi; and Kodera, Toshihiko, 4,446,347, Cl. 200-144.00R.
Hirao, Tadashi, 4,445,268, Cl. 29-571.000.
Inoue, Takeo; and Shirazawa, Takashi, 4,445,715, Cl. 285-54.000.
Kawaguchi, Kenji; Hamada, Osamu; Hiramoto, Seigo; Kato, Yukio; and Yamada, Kozo, 4,446,351, Cl. 219-69.00W.
Mitsumori, Mitsugi; Hosaka, Hiroaki; Sato, Hiroshi; and Kondou, Kouichi, 4,445,614, Cl. 206-599.000.
Momoyama, Tsutomu, 4,445,478, Cl. 123-418.000.
Sekine, Yasuhiro; Kuwayama, Masayuki; and Harada, Hiroshi, 4,446,391, Cl. 310-62.000.
Shigeta, Katsunori; Nakamura, Takashi; Maruyama, Hisaichi; and Matsumoto, Yasuji, 4,446,520, Cl. 364-400.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Sakaguchi, Katsuyoshi; and Hasegawa, Akira, 4,445,834, Cl. 425-36.000.

Mitsubishi Light Metal Industries Limited: *See—*
Kawamata, Yutaka; and Katsuki, Shunkichi, 4,445,996, Cl. 204-294.000.

Mitsubishi Petrochemical Company Limited: *See—*
Doi, Shuhei; Isaka, Tsutomu; and Iida, Shinichiro, 4,446,283, Cl. 525-344.000.

Mitsui, Ryoichi: *See—*
Aoshima, Atsushi; and Mitsui, Ryoichi, 4,446,328, Cl. 568-479.000.

Mitsumori, Mitsugi; Hosaka, Hiroaki; Sato, Hiroshi; and Kondou, Kouichi, to Mitsubishi Denki Kabushiki Kaisha. Packaging box with pallet. 4,445,614, Cl. 206-599.000.

Mitten, Robert T.: *See—*
Knight, Raymond J.; Mitten, Robert T.; and Ripley, Robert L., 4,445,520, Cl. 131-282.000.

Miyadera, Yasuo; Fujioka, Atsushi; Kumazawa, Tetsuo; and Doi Hiroaki, to Hitachi Chemical Company, Ltd.; and Hitachi, Ltd. Laminates comprising prepregs metal clad. 4,446,191, Cl. 428-245.000.

Miyahara, Shiyoichiro: *See—*
Okazaki, Yutaka; Tokuda, Hiroshi; Miyahara, Shiyoichiro; and Yamada, Yoshitsugu, 4,446,133, Cl. 424-250.000.

Mizukami, Etsuo: *See—*
Endo, Yoshihiro; Kawaguchi, Masashi; Mizukami, Etsuo; and Kishishita, Hiroshi, 4,446,399, Cl. 313-505.000.

Mizukawa, Takumi; Amagami, Keizo; and Ogino, Yoshio, to Matsushita Electric Industrial Co., Ltd. Induction heating cooking apparatus. 4,446,350, Cl. 219-10.770.

Mizukoshi, Kiyoshi: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Ichihara, Kenzi; and Morishima, Takashi, 4,446,325, Cl. 546-283.000.

Mizumoto, Kastuji; and Yaguchi, Katsuhiko, to Pioneer Electronic Corporation. Frequency/voltage conversion circuit. 4,446,439, Cl. 328-140.000.

Mizuno, Chiaki; Tamai, Yasuo; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Magnetic recording tape having a leader tape. 4,446,205, Cl. 428-327.000.

Mizusaki, Takashi; Matsuo, Tadayuki; Esashi, Masayoshi; and Abe, Hiroshi, to Olympus Optical Co. Ltd. Ion sensor FET with surface treated metal gate. 4,446,474, Cl. 357-25.000.

Mo och Domsjo Aktiebolag: *See—*
Samuelson, Hans O., 4,445,969, Cl. 162-40.000.

Mobay Chemical Corporation: *See—*
Krishnan, Sivaram; and Baron, Arthur L., 4,446,297, Cl. 528-204.000.

Mobil Oil Corporation: *See—*
Arbit, Harold A., 4,445,991, Cl. 204-168.000.
Bowden, Edgar A.; Deline, Gordon R.; and Koeijmans, Gerard D., 4,446,537, Cl. 367-15.000.
Buyan, Frank M.; and Haddad, James H., 4,446,107, Cl. 422-107.000.
Chen, Nai Y.; Rankel, Lillian A.; and Rudnick, Leslie R., 4,446,004, Cl. 208-57.000.
Chester, Arthur W.; and Murray, James G., 4,446,243, Cl. 502-62.000.
Chu, Shaw C.; and Spencer, Arthur T., 4,446,258, Cl. 523-406.000.
Daines, John, 4,446,088, Cl. 264-155.000.
Givens, Wyatt W.; and Allen, Linus S., 4,446,369, Cl. 250-270.000.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,446,037, Cl. 252-47.500.
Hoskin, Dennis H., 4,446,079, Cl. 260-513.00R.
Schwab, Frederick C., 4,446,180, Cl. 428-35.000.
Smith, Fritz A., 4,446,007, Cl. 208-111.000.
Zachariadis, Robert G., 4,446,538, Cl. 367-19.000.

Mocas, Verlin A., to Richardson Company, The. Method for forming a metal casting extending through a preformed structure and articles produced thereby. 4,446,214, Cl. 429-179.000.

Mochida, Haruo: *See—*
Moriya, Makoto; and Mochida, Haruo, 4,446,380, Cl. 307-10.0AT.

Mochizuki, Keizo: *See—*
Hachiya, Iwao; Mochizuki, Keizo; and Kuwada, Yukio, 4,446,130, Cl. 424-195.000.

Modak, Shanta M.: *See—*
Fox, Charles L., Jr.; Modak, Shanta M.; and Fox, Paul, 4,446,124, Cl. 424-27.000.

Modone, Eros; and Roba, Giacomo, to Cselt Centro Studi E Laboratori Telecomunicazioni S.p.A. Process and apparatus for on-line dehydrogenation of fiber-drawing preforms. 4,445,918, Cl. 65-3.120.

Moeremans, Marc K. J. J.: *See—*
De Mey, Jan R.; and Moeremans, Marc K. J. J., 4,446,238, Cl. 436-527.000.

Moffett, Mark B.; and Konrad, William L., to United States of America, Navy. System for detection of transducer defects. 4,445,361, Cl. 73-1.0DV.

Mohnach, Michael G.: *See—*
Harbison, William H.; and Mohnach, Michael G., 4,445,249, Cl. 15-250.320.

Mohr, Karl; and Mohr, Wolfgang. Device for cutting paper, cardboard, and similar materials. 4,445,409, Cl. 83-157.000.

Mohr, Wolfgang: *See—*
Mohr, Karl; and Mohr, Wolfgang, 4,445,409, Cl. 83-157.000.

Moiseev, Valentin P.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.

Molaire, Michel F.: *See—*
Sandhu, M. Akram; Wright, John F.; and Molaire, Michel F., 4,446,302, Cl. 528-302.000.

Molenaar, Maarten; and Schreuder, Hermann A., to EnviroStrand, Inc. Process and apparatus for extruding stabilizers. 4,446,086, Cl. 264-118.000.

Momoyama, Tsutomu, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing control system for internal combustion engine. 4,445,478, Cl. 123-418.000.

Monarch Marking Systems, Inc.: *See—*
Cavender, Donald E., 4,446,182, Cl. 428-40.000.

Monsanto Company: *See—*
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlind, William, 4,446,061, Cl. 252-602.000.
McKay, Robert A., 4,446,431, Cl. 324-318.000.
Sikorski, James A.; and Hoobler, Mary A., 4,445,928, Cl. 71-87.000.
Sikorski, James A.; and Hoobler, Mary A., 4,445,929, Cl. 71-087.000.
Stejskal, Edward O., 4,446,430, Cl. 324-321.000.

Mont-Cler Appliances Inc.: *See—*
Chiaramonte, Vincent; and Barkow, Alice, 4,445,862, Cl. 433-191.000.

Montres Dodane-Precia-Gete: *See—*
Dodane, Raymond, 4,445,783, Cl. 368-105.000.

Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., to International Flavors & Fragrances Inc. Use of isomeric farnesene product-by-process for augmenting or enhancing the aroma or taste of foodstuffs, chewing gums, medicinal products and toothpastes. 4,446,125, Cl. 424-49.000.

Moore, Louis D.; Rule, Mark; and Wicker, Thomas H., to Eastman Kodak Company. Process for preparing high molecular weight polyesters. 4,446,303, Cl. 528-308.200.

Moore, Robert R.: *See—*
Slover, Pearl; and Moore, Robert R., 4,445,235, Cl. 4-144.200.

Moore, Russell L.; and Schanin, David J. Arrangement to time separate bidirectional current flow. 4,446,382, Cl. 307-241.000.

Morgan, Albert E., Jr., to Fong, Hiram L., Jr., a part interest. High speed displacement type hull. 4,445,453, Cl. 114-290.000.

Morgan, Albert W.: *See—*
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlind, William, 4,446,061, Cl. 252-602.000.

Morgan Construction Company: *See—*
Thompson, Gary J.; and Carey, C. H., 4,445,351, Cl. 72-43.000.

Mori, Hiroshi: *See—*
Saito, Tetsuya; and Mori, Hiroshi, 4,445,933, Cl. 75-59.000.

Mori, Kei. Support arm for a sunlight concentrating and collecting apparatus. 4,445,498, Cl. 126-424.000.

Morihashi, Toshifumi; Noda, Koshi; Nakayama, Teruo; Nishimura, Shinichi; and Fujiwara, Michiaki, to Murata Kikai Kabushiki Kaisha. Drafting apparatus in spinning machine. 4,445,252, Cl. 19-244.000.

Moriki, Yoshikazu; and Ogasawara, Masafumi, to Toray Industries, Inc. Spinneret for production of composite filaments. 4,445,833, Cl. 425-131.500.

Morisada, Kazutoshi: *See—*
Yagura, Toshiaki; Satoyama, Kenichiro; Morisada, Kazutoshi; Yamamoto, Ryoichi; and Yoshida, Seietsu, 4,446,410, Cl. 318-687.000.

Morishima, Takashi: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Ichihara, Kenzi; and Morishima, Takashi, 4,446,325, Cl. 546-283.000.

Moriwaki, Yoshio: *See—*
Gamo, Takaharu; Moriwaki, Yoshio; and Yameshita, Toshio, 4,446,121, Cl. 423-644.000.

Moriya, Makoto; and Mochida, Haruo, to Nissan Motor Company, Limited. Keyless device actuating system for an automotive vehicle. 4,446,380, Cl. 307-10.0AT.

Morozov, Jury E.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.

Morse, John B., to Polaroid Corporation. Film processor. 4,445,770, Cl. 354-303.000.

Moskowitz, Ronald: *See—*
Raj, Kuldip; Moskowitz, Ronald; and Rodier, Raymond, 4,445,696, Cl. 277-80.000.

Moskvichev, Boris V.: *See—*
Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., 4,446,316, Cl. 536-112.000.

Mostek Corporation: *See—*
Ireland, Jeffrey R., 4,446,436, Cl. 328-14.000.
Mai, Chao C.; Whitney, William M.; Gosney, William M.; and Gulyas, Donald J., 4,445,266, Cl. 29-571.000.

Motoe, Akihiro: *See—*
Fujishige, Masao; Dokiya, Masayuki; Kameyama, Tetsuya; Yokokawa, Harumi; Ujiie, Seiichi; Fukuda, Kenzo; and Motoe, Akihiro, 4,445,934, Cl. 75-68.00A.

Motorola, Inc.: *See—*
Alaspa, Allan A., 4,446,390, Cl. 307-579.000.
Backof, Charles A., Jr., 4,446,565, Cl. 375-32.000.
Candelaria, Jon; and Heidinger, Kurt S., 4,446,194, Cl. 428-428.000.
Dworsky, Lawrence N.; and Kennedy, Garth R., 4,446,432, Cl. 324-71.500.
Gercekci, Anil; and Maeder, Heinz B., 4,446,475, Cl. 357-40.000.
Pierce, William D., 4,446,564, Cl. 375-8.000.

Mourou, Gerard: *See—*
Valdmanis, Janis A.; and Mourou, Gerard, 4,446,425, Cl. 324-77.00K.

Mrochek, John E.: *See—*
Dinsmore, Stanley R.; and Mrochek, John E., 4,446,105, Cl. 422-70.000.

Mueller, Richard, to American Hofmann Corporation. Balancing machine and support structures usable therewith for measuring unbalance in a rotor. 4,445,373, Cl. 73-473.000.

Mukai, Tadashi: *See—*
Tsushima, Noboru; Fuse, Masashi; Sasaki, Toshio; Ogata, Masayuki; Mimori, Teruo; and Mukai, Tadashi, 4,445,279, Cl. 33-356.000.

Muller, Edzard: *See—*
Eenboom, Algund; and Muller, Edzard, 4,446,453, Cl. 340-286.00M.

Muller, Ingo: *See—*
Hammerling, Gunter; Muller, Ingo; and Menger, Erich, 4,446,104, Cl. 422-63.000.

Munehiro, Hidehiko, to Nippon Electric Co., Ltd. Serial printer with a linear motor printer carriage. 4,445,798, Cl. 400-320.000.

Munoz, George L.; and Munoz, William J. Reinforced plastic product. 4,446,177, Cl. 428-15.000.

Munoz, William J.: *See—*
Munoz, George L.; and Munoz, William J., 4,446,177, Cl. 428-15.000.

Munteanu, Marina A.; Cseko, Christine; Oltarzewski, Edward S.; Lindauer, Jerome I.; and Withycombe, Donald A., to International Flavors & Fragrances Inc. Liquid or solid fabric softener composition comprising microencapsulated fragrance suspension and process for preparing same. 4,446,032, Cl. 252-8.600.

Munter, Ernst A., to Northern Telecom Limited. Magnitude comparator circuit and method. 4,446,452, Cl. 340-146.200.

Murata Kikai Kabushiki Kaisha: *See—*
Mima, Hiroshi, 4,445,317, Cl. 57-22.000.
Morihashi, Toshifumi; Noda, Koshi; Nakayama, Teruo; Nishimura, Shinichi; and Fujiwara, Michiaki, 4,445,252, Cl. 19-244.000.

Murdock, David L.: *See—*
Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., 4,445,926, Cl. 71-34.000.

Murray, James G.: *See*—
Chester, Arthur W.; and Murray, James G., 4,446,243, Cl. 502-62.000.

Murthy, Andiappan K. S.; Patel, Kundanbhai M.; and Bekker, Alex Y., to Allied Corporation. Process for production of light hydrocarbons by treatment of heavy hydrocarbons with water. 4,446,012, Cl. 208-130.000.

Musselman, Elvin M., to RCA Corporation. Vibration inhibiting mesh assembly for a pick-up tube. 4,446,398, Cl. 313-390.000.

Mussinan, Cynthia J.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,446,125, Cl. 424-49.000.

Mustico, Carmen J., Jr.: *See*—
Waters, Paul E.; Vaughan, David S.; and Mustico, Carmen J., Jr., 4,445,596, Cl. 188-171.000.

Musy, Jacques, to Compagnie Generale des Etablissements Michelin. Tire, particularly for aiplanes, with crown reinforcement of textile cables and process for the manufacture thereof. 4,445,560, Cl. 152-200.000.

Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cephalosporin derivative and pharmaceutical composition containing the derivative. 4,446,137, Cl. 424-246.000.

Naarmann, Herbert: *See*—
Brandstetter, Franz; Echte, Adolf; Haaf, Franz; Hambrecht, Juergen; and Naarmann, Herbert, 4,446,277, Cl. 525-68.000.

Nabisco Brands, Inc.: *See*—
Wasserbach, Max L., 4,445,835, Cl. 425-131.100.

Nadolna, Henryka A.: *See*—
Nadolny, Henry; and Nadolna, Henryka A., 4,445,236, Cl. 4-255.000.

Nadolny, Henry; and Nadolna, Henryka A. Push-through pump. 4,445,236, Cl. 4-255.000.

Nagai, Kineshiro. Medicine for treatment of cervical erosion. 4,446,149, Cl. 424-273.00R.

Nagashima, Masayoshi: *See*—
Takiguchi, Ryohei; and Nagashima, Masayoshi, 4,446,467, Cl. 346-76.0PH.

Nager, Urs F., Jr., to Burndy Corporation. Electrical service module with strain relief member. 4,446,330, Cl. 174-51.000.

Naito, Kenzo; Shinbo, Haruo; and Tsukamura, Kazuo, to Takeda Chemical Industries, Ltd. Method for producing 7-aminocephem compounds. 4,446,318, Cl. 544-26.000.

Naito, Ryoichi; Suyama, Tadakazu; and Iga, Yoshiro, to Green Cross Corporation, The. Process for heat treatment of aqueous solution containing human blood coagulation factor VIII. 4,446,134, Cl. 424-101.000.

Naka, Toshiaki: *See*—
Sato, Kiyoshi; Terashima, Minoru; Sorimachi, Haruo; Naka, Toshiaki; Kanno, Takeo; and Yamada, Fumiaki, 4,446,355, Cl. 219-216.000.

Nakae, Hiroyuki; Noguchi, Isamu; and Kondo, Masayuki, to Furukawa Electric Co., Ltd., The. Crosslinked polyolefin foam containing a high concentration of an inorganic material and process for producing the same. 4,446,254, Cl. 521-92.000.

Nakagawa, Sumio: *See*—
Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, 4,445,841, Cl. 431-27.000.

Nakai, Satoshi: *See*—
Shimakawa, Hajime; and Nakai, Satoshi, 4,446,008, Cl. 208-111.000.

Nakamizo, Nobuhiro; Obase, Hiroyuki; Kubo, Kazuhiro; and Kasuya, Yutaka. Hypotensive piperidine derivatives. 4,446,141, Cl. 424-267.000.

Nakamura, Ken: *See*—
Inoue, Mitsumasa; Nakamura, Ken; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,445,480, Cl. 123-432.000.

Nakamura, Masaaki; and Ueba, Hisaaki, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Kureha Gosen Kabushiki Kaisha. Apparatus for manufacturing a string construction. 4,445,964, Cl. 156-500.000.

Nakamura, Sukenori: *See*—
Maekawa, Masakazu; Nakamura, Sukenori; Sugiyama, Masatoshi; and Odawara, Hideo, 4,446,174, Cl. 427-261.000.

Nakamura, Takashi: *See*—
Shigeta, Katsunori; Nakamura, Takashi; Maruyama, Hisaichi; and Matsumoto, Yasuji, 4,446,520, Cl. 364-400.000.

Nakamura, Toshiaki: *See*—
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,445,821, Cl. 417-366.000.

Nakano, Kazumi: *See*—
Takakuwa, Eiji; Nakano, Kazumi; and Kizitani, Izumi, 4,445,479, Cl. 123-425.000.

Nakao, Masami; Okimoto, Haruo; Yada, Yoshikuni; and Takeshita, Junki, to Toyo Kogyo Co., Ltd. Air intake system for supercharged automobile engine. 4,445,474, Cl. 123-336.000.

Nakauchi, Kenji, to Fuji Photo Film Co., Ltd. Method of and apparatus for measuring scene brightness. 4,445,778, Cl. 356-222.000.

Nakayama, Teruo: *See*—
Morihashi, Toshifumi; Noda, Koshi; Nakayama, Teruo; Nishimura, Shinichi; and Fujiwara, Michiaki, 4,445,252, Cl. 19-244.000.

Nashawaty, Ralph G. Stove alarm system. 4,446,455, Cl. 340-568.000.

Nassau Recycle Corporation: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,445,355, Cl. 72-250.000.

National Can Corporation: *See*—
Misra, Surya K.; and Openchowski, Richard A., 4,445,813, Cl. 413-1.000.

National Distillers and Chemical Corporation: *See*—
Fayter, Richard G., Jr.; and Hall, Allen L., 4,446,077, Cl. 260-465.00K.

National Research Development Corporation: *See*—
Backhouse, Richard J., 4,446,533, Cl. 364-900.000.

National Semiconductor Corporation: *See*—
Smith, Frederick J., 4,446,534, Cl. 365-96.000.

Navi, Menashe. Method and apparatus for variable density inking. 4,445,433, Cl. 101-350.000.

Neary, Michael P. Solar energy system. 4,446,041, Cl. 252-70.000.

Neidich, Douglas A., to Du Pont de Nemours, E. I., and Company. Rib cage terminal. 4,445,747, Cl. 339-256.00R.

Nelson, Eric L., to Nelson Research & Development Company. Method and composition for treating mouth pain. 4,446,140, Cl. 424-260.000.

Nelson, Joseph N., to Engineered Products Company. Air filter restriction indicating device. 4,445,456, Cl. 116-268.000.

Nelson, Larry A.; and Schmidt, Leon W., to Instrumentation Laboratory Inc. Analysis system. 4,446,106, Cl. 422-72.000.

Nelson, Larry D. Welders glove. 4,445,232, Cl. 2-161.00R.

Nelson, Lorne W., to Honeywell Inc. Thermostat for control of an add-on heat pump system. 4,445,567, Cl. 165-29.000.

Nelson Research & Development Company: *See*—
Nelson, Eric L., 4,446,140, Cl. 424-260.000.

Nentwig, Jurgen, to Asto Import- und Exportgesellschaft M.B.H. & Co. Kg. Portioning and packing machine. 4,445,311, Cl. 53-575.000.

Nerenberg, Samuel T. Pancreas specific protein systems. 4,446,240, Cl. 436-542.000.

Neumann, Franz. Food portioning machine. 4,445,548, Cl. 141-1.000.

Nevalainen, Kyosti: *See*—
Lehikoinen, Keijo; and Nevalainen, Kyosti, 4,445,299, Cl. 49-167.000.

New Balance Athletic Shoe, Inc.: *See*—
Norton, Edward J., 4,445,286, Cl. 36-32.00R.

New, Nigel H.; and O'Rourke, John B., to Glacier Metal Company, Limited, The. Lubrication system. 4,445,592, Cl. 184-6.130.

Newman, Raymond C.: *See*—
Leitch, James K.; Newman, Raymond C.; and Gray, Cameron B., 4,445,656, Cl. 248-49.000.

Newton, Charles L. Process for liquefying methane. 4,445,916, Cl. 62-17.000.

Ng, Ping F.: *See*—
D'Andrade, Bruce M.; Ng, Ping F.; and Ma, Tak M., 4,445,297, Cl. 46-230.000.

NGK Insulators, Ltd.: *See*—
Suzuki, Go; and Michishita, Kazuo, 4,445,274, Cl. 29-832.000.

NGK Spark Plug Co., Ltd.: *See*—
Sakai, Masao; Hashizume, Miyakazu; Suzuki, Yasuhiko; and Sugimoto, Makoto, 4,446,058, Cl. 252-507.000.

Nguyen-Thanh, Thong, to Commissariat a l'Energie Atomique. Superheated steam generator. 4,445,568, Cl. 165-81.000.

Nibert, Roger K.: *See*—
Okubo, Howard S.; Albertson, Clarence E.; and Nibert, Roger K., 4,446,203, Cl. 428-283.000.

Nicholls, Robert L. Air-inflated fabric-reinforced concrete shells. 4,446,083, Cl. 264-32.000.

Nicksic, Stephen W., to Chevron Research Company. Scrubbing hydrogen sulfide from a fuel gas. 4,446,118, Cl. 423-226.000.

Niedermeier, Johann: *See*—
Schiele, Bernd; and Niedermeier, Johann, 4,445,494, Cl. 125-35.000.

Nielsen, Arne, to Sig Societe Industrielle Suisse. Railway track tamping machine. 4,445,437, Cl. 104-12.000.

Nielsen, John M., to Babcock & Wilcox Company, The. Hermetically sealed high temperature strain gage. 4,445,386, Cl. 73-780.000.

Nihon Koki Kabushiki Kaisha: *See*—
Ishii, Tetsuro; Oyama, Tadanori; Yamashita, Masashi; Kzome, Kazuyuki; Ikeda, Tsutomu; and Fujioka, Satoru, 4,445,981, Cl. 204-18.100.

Niimura, Kouichi: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,446,137, Cl. 424-246.000.

Nikishkin, Vladimir I.: *See*—
Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,446,374, Cl. 250-492.300.

Niklasson, Tage, to FIAB System AB. Method and apparatus for manufacturing of articles from one or several film webs welded to and stripped from a conveyor belt. 4,445,960, Cl. 156-344.000.

Nilsson, Jan: *See*—
Adlerborn, Jan; Larker, Hans; Mattsson, Bertil; and Nilsson, Jan, 4,446,100, Cl. 419-48.000.

Nimberger, Spencer M.: *See*—
Sullivan, William C.; and Nimberger, Spencer M., 4,445,400, Cl. 74-711.000.

Ning, Tak H.: *See*—
Isaac, Randall D.; Ning, Tak H.; and Tang, Denny D., 4,446,476, Cl. 357-67.000.

Ninomiya, Yasuo: *See*—
Baker, Richard W.; and Ninomiya, Yasuo, 4,445,641, Cl. 239-6.000.

Nippon Clean Engine Research Institute Co., Ltd.: *See*—
Onishi, Sigeru; and Jo, Souk H., 4,445,468, Cl. 123-73.00C.

Nippon Electric Co., Ltd.: *See*—
Misaizu, Tetsuo, 4,446,387, Cl. 307-450.000.
Munehiro, Hidehiko, 4,445,798, Cl. 400-320.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Yokoyama, Kenji, 4,446,442, Cl. 330-149.000.

Nippon Kogaku K.K.: *See*—
Ishikawa, Yuzuru; and Tanaka, Masashi, 4,445,777, Cl. 356-139.000.

Nippon Soken, Inc.: *See*—
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,445,488, Cl. 123-569.000.

Nippon Steel Corporation: *See*—
Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, 4,445,946, Cl. 148-36.000.

Nippondenso Co., Ltd.: *See*—
Takakuwa, Eiji; Nakano, Kazumi; and Kizitani, Izumi, 4,445,479, Cl. 123-425.000.
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,445,821, Cl. 417-366.000.
Yagura, Toshiaki; Satoyama, Kenichiro; Morisada, Kazutoshi; Yamamoto, Ryoichi; and Yoshida, Seietsu, 4,446,410, Cl. 318-687.000.

Nishi, Katsuhide: *See*—
Maeda, Hiroshi; and Nishi, Katsuhide, 4,446,136, Cl. 424-177.000.

Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, to Kabushiki Kaisha Kobe Seiko Sho. Extrusion method using hot lubricant. 4,445,350, Cl. 72-38.000.

Nishikage, Tadao: *See*—
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,446,273, Cl. 524-556.000.

Nishimura, Shinichi: *See*—
Morihashi, Toshifumi; Noda, Koshi; Nakayama, Teruo; Nishimura, Shinichi; and Fujiwara, Michiaki, 4,445,252, Cl. 19-244.000.

Nishimura, Toshifumi, to Hitachi, Ltd. Data compaction system with contiguous storage of non-redundant information and run length counts. 4,446,516, Cl. 364-200.000.

Nishiyama, Shinroku. Powdery dust separating apparatus in dust collector. 4,445,913, Cl. 55-302.000.

Nissan Motor Company, Limited: *See*—
Fukushima, Masao; and Yazaki, Komei, 4,445,662, Cl. 248-559.000.
Hayashi, Yoshimasa, 4,445,471, Cl. 123-198.00E.
Higashi, Katunori, 4,445,487, Cl. 123-568.000.
Ikeura, Kenji, 4,445,477, Cl. 123-416.000.
Inoue, Mitsumasa; Nakamura, Ken; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,445,480, Cl. 123-432.000.
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,445,491, Cl. 123-605.000.
Kimura, Akira; Ishihama, Masao; and Hayakawa, Yoshikazu, 4,445,584, Cl. 180-69.220.
Moriya, Makoto; and Mochida, Haruo, 4,446,380, Cl. 307-10.0AT.
Ogawa, Naoki; and Abe, Toshiro, 4,445,472, Cl. 123-198.00E.
Yaotani, Kouichi; and Ogawa, Yasuyuki, 4,445,721, Cl. 296-154.000.

Nitrokemia Ipartelepek: *See*—
Gimesi, Antal; Baracskai, Jozsef; Fodor, Ferenc; Gaal, Antal; Horvath, Andras; and Kolonics, Zoltan, 4,445,927, Cl. 71-86.000.

Niwa, Senji; Sasaki, Takuji; Shinto, Masaaki; and Imamura, Noriaki, to Kawasaki Jukogyo Kabushiki Kaisha. Plate catalyst body for denitration. 4,446,250, Cl. 502-309.000.

Noda, Koshi: *See*—
Morihashi, Toshifumi; Noda, Koshi; Nakayama, Teruo; Nishimura, Shinichi; and Fujiwara, Michiaki, 4,445,252, Cl. 19-244.000.

Noe, James C.: *See*—
Kinsell, Robert C.; and Noe, James C., 4,445,639, Cl. 237-81.000.

Noel, John R., to Procter & Gamble Company, The. Bib having gravitationally openable pocket. 4,445,231, Cl. 2-49.00R.

Noguchi, Isamu: *See*—
Nakae, Hiroyuki; Noguchi, Isamu; and Kondo, Masayuki, 4,446,254, Cl. 521-92.000.

Noguchi, Masataka: *See*—
Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, 4,445,350, Cl. 72-38.000.

Noirot-MT: *See*—
Arribas, Cecilio; and Blassiau, Rene E., 4,446,359, Cl. 219-485.000.

Nolte, Wilfried: *See*—
Hombach, Rudolf; Nolte, Wilfried; Russell, Peter J.; and Wall, Nigel G., 4,445,959, Cl. 156-332.000.

Nordiskafilt AB: *See*—
Eklund, Nils O., 4,446,187, Cl. 428-136.000.

Norris, Robert D.: *See*—
Betermier, Benedicte; Alvarez, Manuel; and Norris, Robert D., 4,446,029, Cl. 210-748.000.

Northern Telecom Limited: *See*—
Munter, Ernst A., 4,446,452, Cl. 340-146.200.
Rosch, Reinhard W., 4,446,338, Cl. 179-18.0FA.
Yataki, Masamichi; Dack, Glen W. D.; and Ertl, Paul S., 4,445,649, Cl. 242-118.200.

Norton, Edward J., to New Balance Athletic Shoe, Inc. Footwear, such as athletic shoe. 4,445,286, Cl. 36-32.00R.

Novation, Inc.: *See*—
Kessler, Bayard F., 4,446,333, Cl. 179-2.00C.

Novenyvedelmi Kutato Intezet: *See*—
Gimesi, Antal; Baracskai, Jozsef; Fodor, Ferenc; Gaal, Antal; Horvath, Andras; and Kolonics, Zoltan, 4,445,927, Cl. 71-86.000.

Noyori, Ryoji; Suzuki, Sakaru; and Okayama, Minoru, to Seikagaku Kogyo Co., Ltd. C-β-D-Xylopyranoside series compounds. 4,446,312, Cl. 536-1.100.

Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., to Research Foundation of State University of New York. Method of disinfecting water with insoluble disinfectant compositions. 4,446,103, Cl. 422-37.000.

Nutcher, Peter B., to Process Combustion Corporation. Low NO_x burners. 4,445,843, Cl. 431-115.000.

Nuttal, Michael; and Yamamoto, Shoji, to Tomy Corporation. Apparatus for producing rubbings. 4,445,868, Cl. 434-88.000.

Nuttall, Brian; and Laxson, Charles F., to Chubb & Son's Lock and Safe Company. Security doors. 4,445,718, Cl. 292-341.170.

Nutter, John F.: *See*—
LaDelfa, Christopher; and Nutter, John F., 4,445,976, Cl. 201-41.000.

Oakes, Billy D.: *See*—
DuPart, Michael S.; Oakes, Billy D.; and Cringle, David C., 4,446,119, Cl. 423-228.000.

Oakes, Edmond G.; Arndt, Frederick P.; and Grandel, Leonard F., to General Motors Corporation. Energy absorbing steering column for vehicles. 4,445,708, Cl. 280-777.000.

Obase, Hiroyuki: *See*—
Nakamizo, Nobuhiro; Obase, Hiroyuki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,446,141, Cl. 424-267.000.

Oberg, Gordon D. Oil filter assembly having a removable filter member. 4,446,017, Cl. 210-90.000.

O'Brien, William G., to Du Pont de Nemours, E. I., and Company. Beveled edge metered bead extrusion coating apparatus. 4,445,458, Cl. 118-401.000.

Obst, Donald L.: *See*—
Coleman, John D.; Obst, Donald L.; and Kraft, Heinrich A., 4,445,593, Cl. 187-1.00R.

Occidental Chemical Co.: *See*—
Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., 4,445,926, Cl. 71-34.000.

O'Cheskey, Theodore H.; and Edwards, Hugh T., Jr., to United States Filter Fluid Systems Corp. Filter leaf. 4,446,352, Cl. 219-121.0LC.

Ochiai, Chiaki: *See*—
Ohmi, Atsushi; and Ochiai, Chiaki, 4,445,425, Cl. 92-98.00D.

O'Connell, Drew P.: *See*—
Cole, William E.; O'Connell, Drew P.; and Griffith, James L., 4,445,919, Cl. 65-27.000.

Odawara, Hideo: *See*—
Maekawa, Masakazu; Nakamura, Sukenori; Sugiyama, Masatoshi; and Odawara, Hideo, 4,446,174, Cl. 427-261.000.

Oehler, John H. Rechargeable fluid driven dental tool. 4,445,860, Cl. 433-132.000.

Office National d'Etudes et de Recherches Aerospatiales: *See*—
Chatanier, Michel J.; Portat, Michel J.; and Bruere, Alain E., 4,446,424, Cl. 324-62.000.
Ribaud, Yves J.; and Kergreis, Gilbert F., 4,445,816, Cl. 415-181.000.

Ogasawara, Masafumi: *See*—
Moriki, Yoshikazu; and Ogasawara, Masafumi, 4,445,833, Cl. 425-131.500.

Ogata, Masayuki: *See*—
Tsushima, Noboru; Fuse, Masashi; Sasaki, Toshio; Ogata, Masayuki; Mimori, Teruo; and Mukai, Tadashi, 4,445,279, Cl. 33-356.000.

Ogawa, Akira: *See*—
Sugiyama, Masatoshi; Yoshida, Kazutaka; and Ogawa, Akira, 4,446,470, Cl. 346-140.00R.

Ogawa, Naoki; and Abe, Toshiro, to Nissan Motor Co., Ltd. Internal combustion engine with bearing beam structure. 4,445,472, Cl. 123-198.00E.

Ogawa, Yasuyuki: *See*—
Yaotani, Kouichi; and Ogawa, Yasuyuki, 4,445,721, Cl. 296-154.000.

Ogden, Ralph. Exercise treadmill with rockable feet. 4,445,683, Cl. 272-69.000.

Ogino, Yoshio: *See*—
Mizukawa, Takumi; Amagami, Keizo; and Ogino, Yoshio, 4,446,350, Cl. 219-10.770.

Ogunro, E. Olayinka. Prosthetic nail for surgical attachment to a finger or toe. 4,445,234, Cl. 3-1.000.

O'Gwynn, David C.: *See*—
Williams, Marshall; and O'Gwynn, David C., 4,446,389, Cl. 307-515.000.

O'Hara, Francis J., to Raytheon Company. Microwave phase discriminator. 4,446,388, Cl. 307-511.000.

Oharek, Frank J.: *See*—
Breglia, Denis R.; and Oharek, Frank J., 4,446,480, Cl. 358-104.000.

Ohe, Takeshi: *See*—
Ohsaki, Hiroshi; and Ohe, Takeshi, 4,445,818, Cl. 417-288.000.

Ohkubo, Takashi: *See*—
Okazaki, Haruo; and Ohkubo, Takashi, 4,446,274, Cl. 524-812.000.

Ohmi, Atsushi; and Ochiai, Chiaki, to Aisin Seiki Kabushiki Kaisha. Housing shells of fluid pressure motors. 4,445,425, Cl. 92-98.00D.

Ohmori, Taiji: *See*—
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,446,522, Cl. 364-426.000.

Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Folding guide assembly. 4,445,293, Cl. 43-24.000.

Ohnishi, Shunsaku: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,445,821, Cl. 417-366.000.

Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Ichihara, Kenzi; and Morishima, Takashi, to Maruko Seiyaku Co., Ltd. 1,4-Dihydropyridine compounds. 4,446,325, Cl. 546-283.000.

Ohsaki, Hiroshi; and Ohe, Takeshi, to Jidosha Kiki Co., Ltd. Apparatus for supplying hydraulic fluid. 4,445,818, Cl. 417-288.000.

Ohsawa, Kazuya; Shibata, Toshiaki; and Takahashi, Kenichi, to Director-General of Agency of Industrial Science and Technology. Infrared transmitting optical wave guide. 4,445,755, Cl. 350-96.340.

Ohte, Akira: *See—*
Nishihara, Masao; Matsushita, Tomiharu; Noguchi, Masataka; Arimura, Kazuo; Ohte, Akira; Kimura, Tetsuo; Iwai, Akira; and Hayashida, Nobuo, 4,445,350, Cl. 72-38.000.

Ohwada, Kunio, to Kabushiki Kaisha Fujikoshi t/a Nachi-Rujikoshi Corp. Slicing cutter blade. 4,445,413, Cl. 83-676.000.

Okabe, Sigeru: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.

Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, to Hitachi, Ltd. Fuel cell electrode. 4,446,210, Cl. 429-42.000.

Okamoto, Koji: *See—*
Hobo, Sumiya; and Okamoto, Koji, 4,445,855, Cl. 433-59.000.

Okayama, Minoru: *See—*
Noyori, Ryoji; Suzuki, Sakaru; and Okayama, Minoru, 4,446,312, Cl. 536-1.100.

Okazaki, Haruo; and Ohkubo, Takashi, to Denki Kagaku Kogyo Kabushiki Kaisha. Vinyl acetate-ethylene copolymer emulsion and aqueous emulsion adhesive composition containing the emulsion. 4,446,274, Cl. 524-812.000.

Okazaki, Yutaka; Tokuda, Hiroshi; Miyahara, Shiyoichiro; and Yamada, Yoshitsugu, to Misuitoatsu Chemicals, Inc. 1-Phenyl-4-carbamoyl piperazine compounds, process for preparation thereof and utilizations thereof. 4,446,133, Cl. 424-250.000.

Okimoto, Haruo: *See—*
Nakao, Masami; Okimoto, Haruo; Yada, Yoshikuni; and Takeshita, Junki, 4,445,474, Cl. 123-336.000.

Okubo, Howard S.; Albertson, Clarence E.; and Nibert, Roger K., to Borg-Warner Corporation. Asbestos-free friction materials. 4,446,203, Cl. 428-283.000.

Okumura, Nobuya; Ichihashi, Tetsuo; Matsumura, Shunichi; and Inata, Hiroo, to Teijin Limited. Protection from ultraviolet light by use of novel ultraviolet absorber. 4,446,262, Cl. 524-89.000.

Olejak, Ingo W. V., to Koomey, Inc. Hose clamp for supporting a vertically extending control line. 4,445,255, Cl. 24-284.000.

Olson, Wallace F.; and Rodgers, Ned, to Smith International, Inc. Shrink grip drill pipe fabrication method. 4,445,265, Cl. 29-447.000.

Oltarzewski, Edward S.: *See—*
Munteanu, Marina A.; Cseko, Christine; Oltarzewski, Edward S.; Lindauer, Jerome I.; and Withycombe, Donald A., 4,446,032, Cl. 252-8.600.

Olympus Optical Co., Ltd.: *See—*
Fujibayashi, Kenji, 4,446,441, Cl. 330-149.000.
Kawazoe, Mitsuo, 4,445,767, Cl. 354-195.100.
Mizusaki, Takashi; Matsuo, Tadayuki; Esashi, Masayoshi; and Abe, Hiroshi, 4,446,474, Cl. 357-25.000.
Osanai, Akira, 4,446,496, Cl. 360-74.100.
Terui, Nobuo, 4,446,493, Cl. 360-65.000.
Watanabe, Seizou, 4,446,170, Cl. 427-130.000.

OMAC, Inc.: *See—*
Hueberger, Lawrence K., 4,445,655, Cl. 244-214.000.

Omaki, Takanobu: *See—*
Ishikawa, Norio; and Omaki, Takanobu, 4,445,761, Cl. 354-402.000.

Omikron Scientific Ltd.: *See—*
Krupka, Yaakov; Feldman, Salomon; and Yerushalmi, Shmuel, 4,445,512, Cl. 128-419.0PT.

Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevezi, James M., to University of Texas System. Electrostatic imaging method. 4,446,365, Cl. 250-213.00R.

Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., to Gosudarstvenny Proektny I Nauchno-Issledovatelsky Institut Gipronikel. Method of recovering ferronickel from oxidated nickel ores. 4,445,932, Cl. 75-11.000.

Onishi, Sigeru; and Jo, Souk H., to Nippon Clean Engine Research Institute Co., Ltd. 2-Stroke internal combustion engine and an ignition-combustion method of an internal combustion engine. 4,445,468, Cl. 123-73.00C.

Ono, Motoyuki: *See—*
Takaoka, Michio; Ono, Motoyuki; Kaji, Isao; and Yagi, Shigeki, 4,446,331, Cl. 174-73.00R.

Ono Pharmaceutical Co., Ltd.: *See—*
Tanouchi, Tadao; Shigeoka, Satoshi; Kawamura, Masanori; Hayashi, Masaki; Terashima, Hiroshi; and Hirata, Fumio, 4,446,143, Cl. 424-270.000.

Ono, Takatoshi: *See—*
Sekiya, Shinji; and Ono, Takatoshi, 4,445,300, Cl. 51-283.00R.

Onofusa, Norio: *See—*
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,446,273, Cl. 524-556.000.

Openchowski, Richard A.: *See—*
Misra, Surya K.; and Openchowski, Richard A., 4,445,813, Cl. 413-1.000.

Oppl, Gunter; and Schmitt, Gunther, to FAG Kugelfischer Georg Schafer & Co. Spindle brake. 4,445,320, Cl. 57-88.000.

Orengo, Gerard; and Verhaeghe, Michel, to International Business Machines Corporation. Voltage comparator with a wide common mode input voltage range. 4,446,385, Cl. 307-355.000.

Orie, Thomas A., Sr. Insulating secondary roof system. 4,445,305, Cl. 52-309.900.

Orimoto, Akira; and Kamei, Kazuo, to Pioneer Electronic Corporation. Tape player repeat reproduction with overlap. 4,446,495, Cl. 360-74.100.

Orinox Co., Ltd.: *See—*
Yamazaki, Shogo, 4,445,766, Cl. 354-79.000.

Orlando, Franklin P.: *See—*
Browning, James T.; and Orlando, Franklin P., 4,445,316, Cl. 56-330.000.

Oronzio de Nora S.A.: *See—*
Benedetto, Enrico, 4,445,987, Cl. 204-98.000.

O'Rourke, John B.: *See—*
New, Nigel H.; and O'Rourke, John B., 4,445,592, Cl. 184-6.130.

Osanai, Akira, to Olympus Optical Co., Ltd. Automatic reverse tape recorder. 4,446,496, Cl. 360-74.100.

Ostby, Donald H.: *See—*
Volk, Michael; Metzger, David A.; Ostby, Donald H.; and Ostby, Robert R., 4,445,912, Cl. 55-283.000.

Ostby, Robert R.: *See—*
Volk, Michael; Metzger, David A.; Ostby, Donald H.; and Ostby, Robert R., 4,445,912, Cl. 55-283.000.

Osterholm, Jewell L., to Thomas Jefferson University. Stroke treatment utilizing extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,445,500, Cl. 128-1.00R.

Osterholm, Jewell L., to Thomas Jefferson University. Extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,445,514, Cl. 128-632.000.

Osterholm, Jewell L., to Thomas Jefferson University. Stroke treatment utilizing extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,445,886, Cl. 604-28.000.

Osterholm, Jewell L., to Thomas Jefferson University. Stroke treatment utilizing extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,445,887, Cl. 604-28.000.

Osterholm, Jewell L., to Thomas Jefferson University. Stroke treatment utilizing extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,445,888, Cl. 604-28.000.

Osterholm, Jewell L., to Thomas Jefferson University. Stroke treatment utilizing extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,446,154, Cl. 424-350.000.

Osterholm, Jewell L., to Thomas Jefferson University. Stroke treatment utilizing extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,446,155, Cl. 424-350.000.

O'Sullivan Corporation: *See—*
Dawson, C. Bruce, 4,445,836, Cl. 425-135.000.

Oswald, Gerald L., to Atlas Powder Company. Electronic delay blasting circuit. 4,445,435, Cl. 102-215.000.

Otsuka Chemical Co., Ltd.: *See—*
Shibuta, Osamu; Suzue, Masayoshi; and Hasegawa, Tetuo, 4,446,295, Cl. 528-168.000.

Ott, Karl-Heinz: *See—*
Binsack, Rudolf; Lindner, Christian; Rempel, Dieter; and Ott, Karl-Heinz, 4,446,276, Cl. 525-64.000.

Ottos, James G., to RCA Corporation. Method of detecting the vaporization of getter material during manufacture of a CRT. 4,445,872, Cl. 445-3.000.

Ouellette, Maurice J.; and Hughes, William C., to General Electric Company. Method and apparatus for multiple frequency transmission of information in a digital communication system. 4,446,462, Cl. 340-825.070.

Oules, Jacques, to Hydroconsult, S.A. Appliance for dredging the bottom of a body of water. 4,445,290, Cl. 37-66.000.

Ouwerkerk, Anton V.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,446,125, Cl. 424-49.000.

Ovren, Christer: *See—*
Brogardh, Torgny; Ovren, Christer; and Sander, Lars, 4,446,366, Cl. 250-227.000.

Owada, Shuji: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,445,784, Cl. 368-157.000.

Owens-Illinois, Inc.: *See—*
Francel, Josef; Stewart, Daniel R.; and Horn, Uriah, 4,446,241, Cl. 501-14.000.
Shetterly, Donivan M., 4,445,923, Cl. 65-158.000.
Thomas, Ian M., 4,446,171, Cl. 427-160.000.

Owsley, Herbert B.: *See—*
Bunn, Stuart E.; and Owsley, Herbert B., 4,445,824, Cl. 417-440.000.

Oxenrider, Bryce C., to Allied Corporation. Oligomer-containing mixtures useful as fiber surface treating agents and processes for the production and use thereof. 4,446,306, Cl. 528-366.000.

Oy Helo Tehtaat: *See—*
Rimmi, Pentti I., 4,446,356, Cl. 219-272.000.

Oy Partek AB: *See—*
Louhio, Ilmari, 4,445,423, Cl. 91-492.000.

Oy Wartsila Ab: *See—*
Lehikoinen, Keijo; and Nevalainen, Kyosti, 4,445,299, Cl. 49-167.000.

Oyama, Tadanori: *See—*
Ishii, Tetsuro; Oyama, Tadanori; Yamashita, Masashi; Kzome, Kazuyuki; Ikeda, Tsutomu; and Fujioka, Satoru, 4,445,981, Cl. 204-18.100.

P. D. George Company, The: *See—*
Mabrey, David W.; Lange, Daniel J.; and Lee, Daniel J., 4,446,300, Cl. 528-288.000.

Pack, Howard M. Method and composition for reducing weight. 4,446,138, Cl. 424-248.570.

Pairaudeau, Reginald D.; and Turnbull, David, to Union Carbide Corporation. Carbon fiber-reinforced cement mould. 4,446,091, Cl. 264-225.000.

Palko, Aloysius A.: *See—*
Posey, Franz A.; and Palko, Aloysius A., 4,445,935, Cl. 75-118.00P.

Palowkar, David R.: *See—*
Ranby, Peter W.; and Palowkar, David R., 4,446,048, Cl. 252-301.40S.

Palvadeau, Claude: *See—*
Beutier, Didier; Palvadeau, Claude; Pasquier, Gilles; and Dietrich, March, 4,446,026, Cl. 210-639.000.

Papeteries de Jean d'Heurs: *See—*
Bartelloni, Rene, 4,445,972, Cl. 162-164.100.

Pappalardo, Romano G.; and Peters, Thomas E., to GTE Laboratories Incorporated. Yellow-emitting halophosphate phosphor of improved brightness and method. 4,446,049, Cl. 252-301.60P.

Papsidero, Lawrence: *See—*
Chu, Tsann M.; Wang, Ming C.; and Papsidero, Lawrence, 4,446,122, Cl. 424-1.100.

Parker, Dane K., to Goodyear Tire & Rubber Company, The. Method for preparing a polymer containing pendant unsaturation. 4,446,284, Cl. 525-383.000.

Parker, David L., to Barber, Bob, Jr., a part interest. Reversible ratchet wrench. 4,445,404, Cl. 81-62.000.

Parker-Hannifin Corporation: *See—*
Mayfield, William B., 4,445,535, Cl. 137-535.000.

Parker, John J.: *See—*
Fouss, James L.; and Parker, John J., 4,445,542, Cl. 138-94.000.

Parker, Robert. Surface temperature measuring device with reversible thermochromic film. 4,445,787, Cl. 374-141.000.

Partington, Sally: *See—*
Beales, Keith J.; Partington, Sally; and Dunn, Anthony G., 4,445,754, Cl. 350-96.340.

Partnership of Robert M. Paul: *See—*
Paul, Robert M., 4,445,237, Cl. 4-417.000.

Pasquier, Gilles: *See—*
Beutier, Didier; Palvadeau, Claude; Pasquier, Gilles; and Dietrich, March, 4,446,026, Cl. 210-639.000.

Patel, Bhupendra C., to Kendall Company, The. Catheter. 4,445,890, Cl. 604-103.000.

Patel, Bhupendra C., to Kendall Company, The. Catheter. 4,445,891, Cl. 604-103.000.

Patel, Harshad K.; and Illick, Andjelko, to Mica Corporation, The. Multi-layered circuit board. 4,446,188, Cl. 428-138.000.

Patel, Kundanbhai M.: *See—*
Murthy, Andiappan K. S.; Patel, Kundanbhai M.; and Bekker, Alex Y., 4,446,012, Cl. 208-130.000.

Patrick S.A.: *See—*
Beneteau, Charles, 4,445,289, Cl. 36-134.000.

Patris, Frank N.: *See—*
Friedmann, Paul G.; Patris, Frank N.; and Tomalesky, Allan W., 4,446,562, Cl. 373-149.000.

Patterson, Raymond B., III, to Harris Corporation. CMOS Amplifier. 4,446,444, Cl. 330-264.000.

Patterson, Richard A.: *See—*
Brochman, Wilfred R.; and Patterson, Richard A., 4,445,620, Cl. 220-271.000.

Pattison, William W., Jr.: *See—*
Byrd, Audis C.; Todd, Bradley L.; and Pattison, William W., Jr., 4,445,465, Cl. 122-392.000.

Paul, Robert M., to Partnership of Robert M. Paul. Close coupled water-closet combination and adapter. 4,445,237, Cl. 4-417.000.

Pauquette, James J.: *See—*
Stark, Martin H.; Pisani, George V.; and Pauquette, James J., 4,445,691, Cl. 273-155.000.

Pawlowski, Michael: *See—*
Arena, Alan J.; Pounder, Edwin; Pawlowski, Michael; and Totten, Adrian M., 4,445,781, Cl. 366-154.000.

Payer, Wolfgang: *See—*
Hobes, John; Payer, Wolfgang; and Deymann, Detlef, 4,446,311, Cl. 501-14.000.

Peabody Process Systems, Inc.: *See—*
Bakke, Even, 4,446,109, Cl. 422-168.000.

Peart, Edward L.; and Howard, Charlie J., to Sybron Corporation. Thermometer or other instrument assembly. 4,445,789, Cl. 374-198.000.

Pedain, Josef: *See—*
Konig, Eberhard; Thoma, Wilhelm; Pedain, Josef; and Konig, Klaus, 4,446,293, Cl. 528-45.000.

Peerless Pressed Metal, Inc.: *See—*
Sparrow, Richard S., Jr., 4,445,782, Cl. 366-217.000.

Peffer, John R.: *See—*
Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,446,292, Cl. 528-29.000.

Pendleton, Joan, to Fairchild Camera & Instrument Corporation. Serpentine charge transfer device. 4,446,473, Cl. 357-24.000.

Penntech Papers, Inc.: *See—*
Post, Richard L.; and Fort, Robert G., 4,445,970, Cl. 162-135.000.

Perkins, Thomas K., to Atlantic Richfield Company. Borehole cementing over water. 4,445,575, Cl. 166-290.000.

Perna, Theodore P., to Xerox Corporation. Ink jet printer array. 4,446,469, Cl. 346-140.00R.

Pernici, Ermanno, to C.I.E.F. -Compagnia Immobiliare e Finanziaria S.p.A. Ceramic tile with its rear configured as uniformly distributed projections. 4,446,190, Cl. 428-156.000.

Perrin, Georges J.: *See—*
Chambon, Jean P.; Dufay, Jean-Francois; Grand Chavin, Paul; Perrin, Georges J.; and Vernay, Louis, 4,445,785, Cl. 368-187.000.

Peters, Donald, to American Stabilis, Inc. Temperature comparison apparatus and methods. 4,445,636, Cl. 236-20.00R.

Peters, Jerry M. Improved table saw arrangement. 4,445,412, Cl. 83-477.200.

Peters, Thomas, III, to Tree Farmers International, Inc. Colter tree cutting system. 4,445,557, Cl. 144-336.000.

Peters, Thomas E.: *See—*
Pappalardo, Romano G.; and Peters, Thomas E., 4,446,049, Cl. 252-301.60P.

Peterson, Robert W.; Grenier, Aime J.; and Hirsbrunner, Hans G., to Texas Instruments Incorporated. Circuit control system. 4,446,501, Cl. 361-114.000.

Petrolite Corporation: *See—*
Beasler, Donald U., 4,446,054, Cl. 252-344.000.
Thompson, Neil E. S., 4,446,056, Cl. 252-391.000.

Petty, Randall H.; and Bartley, Burton H., to Texaco Inc. Fluid catalytic cracking. 4,446,010, Cl. 208-120.000.

Pfeiffer, Gerd; Stinnertz, Horst; and Zeunert, Fritz. Procedure and equipment for the manufacture of pipes with external and internal diameters varying in stages. 4,445,354, Cl. 72-208.000.

Pfeiffer, Josef: *See—*
Kolbe, Joachim; Kortmann, Wilfried; and Pfeiffer, Josef, 4,446,034, Cl. 252-8.800.

Philip Morris Incorporated: *See—*
Knight, Raymond J.; Mitten, Robert T.; and Ripley, Robert L., 4,445,520, Cl. 131-282.000.

Phillips, Donald W. Shoe sole. 4,445,285, Cl. 36-25.00R.

Phillips Petroleum Company: *See—*
Aldag, Arthur W., Jr., 4,446,013, Cl. 208-135.000.
Burns, Lyle D., 4,445,909, Cl. 44-72.000.
Cheng, Paul J., 4,446,108, Cl. 422-156.000.
Drake, Charles A., 4,446,308, Cl. 528-481.000.
Mathis, Ronald D.; and Reed, Jerry O., 4,445,941, Cl. 134-3.000.
Romanek, Gerald A., 4,446,189, Cl. 428-152.000.

Phillips, Robert F.: *See—*
McIntyre, James A.; and Phillips, Robert F., 4,445,986, Cl. 204-98.000.

Pierburg GmbH & Co. KG: *See—*
Baumgartner, Hans; and Schmitz, Eckehard, 4,445,475, Cl. 123-339.000.

Pierce, William D., to Motorola Inc. Phase locked loop frequency synthesizer circuit and method for intercomputer communication on a local network of broadband RF modems. 4,446,564, Cl. 375-8.000.

Pierson, Henri G. W. Vacuum belt filter. 4,446,023, Cl. 210-400.000.

Pillsbury Company, The: *See—*
Galle, Edward L.; Hyldon, Roy G.; and Egar, William P., 4,446,163, Cl. 426-448.000.

Pindar, John F.; and Cohen, Jerome M., to Lubrizol Corporation, The. Organic compositions containing hydroxy-aromatic compounds useful as additives for fuels and lubricants. 4,446,039, Cl. 252-52.00R.

Pioneer Electronic Corporation: *See—*
Mizumoto, Kastuji; and Yaguchi, Katsuhiko, 4,446,439, Cl. 328-140.000.
Orimoto, Akira; and Kamei, Kazuo, 4,446,495, Cl. 360-74.100.
Suzuki, Tsutomu, 4,446,488, Cl. 358-342.000.

Pisani, George V.: *See—*
Stark, Martin H.; Pisani, George V.; and Pauquette, James J., 4,445,691, Cl. 273-155.000.

Plast-Ad, Inc.: *See—*
Kinzie, Michael R., 4,446,508, Cl. 362-31.000.

Platell, Ove B., to Sunstore Kommanditbolag. Ground-storage of heat such as solar heat. 4,445,499, Cl. 126-430.000.

Pogany, George A.: *See—*
Dix, Peter; Pogany, George A.; and Sangha, Parminder, 4,446,313, Cl. 536-18.600.

Polaroid Corporation: *See—*
Benton, Stephen A., 4,445,749, Cl. 350-376.000.
Boccuti, A. David, 4,445,762, Cl. 354-437.000.
Gold, Nicholas, 4,445,768, Cl. 354-275.000.
Morse, John B., 4,445,770, Cl. 354-303.000.

Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell; and Sahatjian, Ronald A., 4,446,305, Cl. 528-348.000.
Tarr, Fred P., 4,445,826, Cl. 417-476.000.
Whiteside, George D., 4,445,763, Cl. 354-417.000.

Pollard, John H., to United States of America, Army. Methods of making infrared photoconductors with passivation control. 4,445,269, Cl. 29-572.000.

Pollock, William H., to Combustion Engineering, Inc. Furnace construction having an ash pit with a radiation reflecting surface. 4,445,442, Cl. 110-171.000.

Pols, Pieter M., to Machinefabriek A. Fontijne B.V. Rim former. 4,445,352, Cl. 72-101.000.

Polychrome Corporation: *See—*
Herting, Hans P.; Huang, Jen-Chi; and Golda, Eugene, 4,446,221, Cl. 430-302.000.

Pomaibo, Paul; and Tolino, Ralph W., to Westinghouse Electric Corp. Spent fuel consolidation system. 4,446,098, Cl. 376-261.000.

Ponsford, Roger J.: *See—*
Southgate, Robert; Smale, Terence C.; and Ponsford, Roger J., 4,446,146, Cl. 424-274.000.

Portat, Michel J.: *See—*
Chatanier, Michel J.; Portat, Michel J.; and Bruere, Alain E., 4,446,424, Cl. 324-62.000.

Posey, Franz A.; and Palko, Aloysius A., to United States of America, Energy. Method for the recovery of silver from waste photographic fixer solutions. 4,445,935, Cl. 75-118.00P.

Post Office: *See—*
Beales, Keith J.; Partington, Sally; and Dunn, Anthony G., 4,445,754, Cl. 350-96.340.

Post, Richard L.; and Fort, Robert G., to Penntech Papers, Inc. High mineral composite fine paper. 4,445,970, Cl. 162-135.000.

Postle, Stephen R.: *See—*
Smith, Norman A.; Postle, Stephen R.; and Long, William E., 4,446,216, Cl. 430-405.000.

Potzick, James E.; and Robertson, Baldwin, to United States of America, Commerce. Long wavelength acoustic flowmeter. 4,445,389, Cl. 73-861.270.

Pounder, Edwin: *See—*
Arena, Alan J.; Pounder, Edwin; Pawlowski, Michael; and Totten, Adrian M., 4,445,781, Cl. 366-154.000.

Powell, Justin C.: *See—*
Lee, Kung-You; McMahon, Matthew A.; and Powell, Justin C., 4,446,057, Cl. 502-355.000.

Powell, Philip G., to Eastman Kodak Company. Image gradient detectors operating in a partitioned low-pass channel. 4,446,484, Cl. 358-166.000.

Powell, Walter W., to Anderson, Greenwood & Co. Pilot for safety valve. 4,445,531, Cl. 137-489.000.

Power, Royal A.: *See—*
Engelke, Claude W.; Power, Royal A.; and Brees, Dale W., 4,445,652, Cl. 244-1.00R.

Poweray Infrared Corporation: *See—*
Heller, Anton H., 4,445,848, Cl. 432-13.000.

Powers, Joseph E.; Grimoldi, Ranaldo H.; Williamson, Calvin C.; and Bottini, Alfred A., to Kaiser Steel Corporation. Pipe press. 4,445,357, Cl. 72-399.000.

Powers, Loren C., Jr., to International Paper Box Machine Co., The. Speed control for manufacturing process. 4,445,880, Cl. 493-28.000.

PPG Industries, Inc.: *See—*
Bennett, Terry A.; Eilenfeld, Herbert W.; and Lampman, Dewitt W., 4,445,921, Cl. 65-114.000.
Bowser, George H., 4,446,184, Cl. 428-57.000.
Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,446,292, Cl. 528-29.000.
Hawk, Thomas W., 4,445,953, Cl. 156-102.000.
Korach, Malcolm, 4,445,985, Cl. 204-72.000.
May, Earl L.; and Baltzer, William W., 4,445,924, Cl. 65-182.300.
Tongel, Richard R., 4,445,775, Cl. 355-122.000.

Pratap, Prem, to Coppus Engineering Corporation. Overspeed trip mechanism. 4,445,392, Cl. 74-3.000.

Preuss, Wolfgang, to Henkel KGaA. Process for degrading the 20-carboxyl group of Δ4-Steroid-20-carboxylic acids. 4,446,072, Cl. 260-397.450.

Price, Jerry W.: *See—*
Hulford, Karen F.; and Price, Jerry W., 4,445,940, Cl. 134-2.000.

Price, John K. Reading and spelling aid. 4,445,864, Cl. 434-173.000.

Prince Albert Pulp Company Limited: *See—*
Hyde, Bruce; Tyndall, Wayne; Abernethy, Dennis; and Mellgren, Per G., 4,445,552, Cl. 144-3.00D.

Prirodovedecka fakulta University Karlovy: *See—*
Filka, Karel; Coupek, Jiri; and Kocourek, Jan, 4,446,275, Cl. 525-54.100.

Process Combustion Corporation: *See—*
Nutcher, Peter B., 4,445,843, Cl. 431-115.000.

Process Development, Inc.: *See—*
Canzoneri, Anthony S., 4,446,435, Cl. 324-453.000.

Procter & Gamble Company, The: *See—*
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,446,033, Cl. 252-8.600.
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,446,035, Cl. 252-8.800.
Leslie, Kenneth A., 4,446,042, Cl. 252-102.000.
Noel, John R., 4,445,231, Cl. 2-49.00R.
Roberts, Bruce A., 4,446,165, Cl. 426-602.000.
Sunberg, Richard J.; and Benedict, James J., 4,446,052, Cl. 252-315.100.

Proskow, Stephen, to Du Pont de Nemours, E. I., and Company. Method of making a photosensitive elastomeric composition. 4,446,220, Cl. 430-286.000.

Publishers Equipment Corporation: *See—*
Bullen, Lee; and Hermach, Carl J., 4,445,881, Cl. 493-424.000.

Puccinelli, Joseph S.; and Lukezich, Paul J., to Figgie International Inc. Scaffold joint for a scaffold structure. 4,445,307, Cl. 52-638.000.

Purcell, Bill L., to Hoff Companies, Inc. End dogging log feeder. 4,445,411, Cl. 83-403.100.

Purdue Frederick Company, The: *See—*
Steffen, Cliff; and Cappelli, Nicholas P., 4,445,626, Cl. 222-39.000.

Pyle, Ronald E. Home security system. 4,446,454, Cl. 340-538.000.

Pyne, Melvin L.; and Allsup, Robert B. Method and apparatus for sorting, counting and flattening cans. 4,445,430, Cl. 100-35.000.

Quack, Erich: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.

Qualeatti, Gail M.; and Germanas, Dalia, to UOP Inc. Process for the reduction of unsaturated carboxylic acids. 4,446,073, Cl. 260-409.000.

Quednau, Walter. Player piano devices. 4,445,416, Cl. 84-244.000.

Quinn, Dennis M.: *See—*
Calabrese, Donald P.; Kerns, Matthew T.; and Quinn, Dennis M., 4,446,097, Cl. 376-256.000.

Quinquis, Jean-Paul: *See—*
Devault, Michel; Quinquis, Jean-Paul; and Rouaud, Yvon, 4,446,555, Cl. 370-94.000.

Raidel, John E. Suspension system with parallelogram axle stabilization and central elastomer spring. 4,445,707, Cl. 280-687.000.

Rainey, Judson C. Marble playing court. 4,445,689, Cl. 273-118.00R.

Raisin, Helmut: *See—*
Schaetzer, Harry; Raisin, Helmut; Mausezahl, Dieter; and Ciba-Geigy AG, 4,445,905, Cl. 8-641.000.

Raj, Kuldip; Moskowitz, Ronald; and Rodier, Raymond, to Ferrofluidics Corporation. Nonbursting magnetic liquid seals for high vacuum applications. 4,445,696, Cl. 277-80.000.

Ralston Purina Company: *See—*
Yang, Kim W., 4,446,153, Cl. 424-343.000.

Ramer, Richard M.: *See—*
Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., 4,445,926, Cl. 71-34.000.

Ramo S.A.: *See—*
Champeau, Marcel; and Tabutin, Andre, 4,445,405, Cl. 82-2.500.

Ranby, Peter W.; and Palowkar, David R., to Thorn Emi Limited. Luminescent materials. 4,446,048, Cl. 252-301.40S.

Rankel, Lillian A.: *See—*
Chen, Nai Y.; Rankel, Lillian A.; and Rudnick, Leslie R., 4,446,004, Cl. 208-57.000.

Rao, Nidadavolu N. N., to Kirloskar Oil Engines Limited. Internal combustion engine. 4,445,486, Cl. 123-557.000.

Rao, Srinivas T.: *See—*
Whartenby, James C.; Brown, Richard; Rao, Srinivas T.; and Menna, Raymond J., 4,445,978, Cl. 204-15.000.

Rasmussen, Lauritz B. L., to Superfos Glasuld A/S (Superfos A/S). Building element. 4,446,186, Cl. 428-74.000.

Rautenberg, Klaus: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.

Ravasini, Guiseppe: *See—*
Hoffmeister, Jurgen; Ravasini, Guiseppe; and Boeckh, Franz-Xaver, 4,445,859, Cl. 433-79.000.

Rawicz, Harris C.; Rizzo, Vincent J.; and Buntemeyer, William R., to Lockheed Electronics Co., Inc. Electronic controller apparatus. 4,446,409, Cl. 318-632.000.

Ray, Donald R.; and Facey, Eugene R., to Sonat Offshore Drilling Inc. Jack-up platform variable bearing assembly. 4,445,805, Cl. 405-203.000.

Raytheon Company: *See—*
O'Hara, Francis J., 4,446,388, Cl. 307-511.000.

Razzoog, Michael E.: *See—*
Lang, Brien R.; and Razzoog, Michael E., 4,445,863, Cl. 433-212.000.

RCA Corporation: *See—*
D'Augustine, Frank T.; and Berardi, Randal L., 4,445,874, Cl. 445-45.000.
Faulkner, Richard D.; Thoman, Daniel L.; and McDonie, Arthur F., 4,446,401, Cl. 313-533.000.
Heyman, Philip M., 4,446,362, Cl. 235-462.000.
Hsu, Sheng T., 4,445,270, Cl. 29-576.00B.
Maehl, Ronald C., 4,446,466, Cl. 343-877.000.
Musselman, Elvin M., 4,446,398, Cl. 313-390.000.
Ottos, James G., 4,445,872, Cl. 445-3.000.
Strolle, Christopher H., 4,446,529, Cl. 364-723.000.
Whartenby, James C.; Brown, Richard; Rao, Srinivas T.; and Menna, Raymond J., 4,445,978, Cl. 204-15.000.
Wierschke, Donald J., 4,445,995, Cl. 204-281.000.
Willis, Donald H., 4,446,405, Cl. 315-411.000.
Woestman, John W., 4,445,526, Cl. 137-3.000.

Readman, John: *See—*
Lang, David J.; and Readman, John, 4,445,420, Cl. 91-3.000.

Reckitt & Colman Products Limited: *See—*
Stillings, Michael R., 4,446,148, Cl. 424-273.00R.

Reed, Jerry O.: *See—*
Mathis, Ronald D.; and Reed, Jerry O., 4,445,941, Cl. 134-3.000.

Reed, Randall A.: *See—*
Lovgren, Eric M.; Golba, Joseph C., Jr.; and Reed, Randall A., 4,446,090, Cl. 264-211.000.

Reed, Russell, Jr.: *See—*
Shaw, Graham C., III; and Reed, Russell, Jr., 4,445,947, Cl. 149-19.300.
Stanton, Horace D.; and Reed, Russell, Jr., 4,445,948, Cl. 149-19.910.

Rees, Richard W. A.: *See—*
Langmesser, Otto J., Jr.; and Rees, Richard W. A., 4,445,661, Cl. 248-394.000.

Rehbein, David: *See—*
Schmidt, Frederick A.; Rehbein, David; and Chiotti, Premo, 4,446,120, Cl. 423-350.000.

Reil, Wilhelm, to Tetra Pak Developpement S.A. Method of making a liquid packaging container with pouring spout and air inlet. 4,445,309, Cl. 53-410.000.

Reilly, Richard S.: *See—*
Markowski, Stanley J.; and Reilly, Richard S., 4,445,338, Cl. 60-748.000.

Reimann, Klaus: *See—*
Bruning, Rolf; and Reimann, Klaus, 4,445,523, Cl. 134-65.000.

Reimann, Robert C., to United States of America, Energy. Dilution cycle control for an absorption refrigeration system. 4,445,340, Cl. 62-101.000.

Reinke, Paul E., to General Motors Corporation. Mass air flow meter. 4,446,523, Cl. 364-431.050.

Reiss, Ronald J.: *See—*
Davis, John C.; Reiss, Ronald J.; and Rica, Albert F., 4,445,550, Cl. 141-329.000.

Reist, Walter, to Ferag AG. Apparatus for removing flexible flat products from a product stream. 4,445,681, Cl. 271-300.000.

Remington Arms Company, Inc.: *See—*
Martin, Fred E., 4,445,292, Cl. 42-16.000.

Rempel, Dieter: *See—*
Binsack, Rudolf; Lindner, Christian; Rempel, Dieter; and Ott, Karl-Heinz, 4,446,276, Cl. 525-64.000.

Remus, Hans-Jurgen; and Antognini, Luciano-Marco, to Asulab S.A. Method for reducing the consumption of a stepping motor and device for carrying out the method. 4,446,413, Cl. 318-696.000.

Renault Vehicules Industriels: *See—*
Marion, Gerard, 4,445,484, Cl. 123-502.000.

Research Association for Residual Oil Processing: *See—*
Shimakawa, Hajime; and Nakai, Satoshi, 4,446,008, Cl. 208-111.000.

Research Corporation: *See—*
Chu, Tsann M.; Wang, Ming C.; and Papsidero, Lawrence, 4,446,122, Cl. 424-1.100.

Research Foundation of State University of New York: *See—*
Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., 4,446,103, Cl. 422-37.000.

Resnick, Paul R.: *See—*
Silva, Raimund H.; Resnick, Paul R.; and Smith, Roger A., 4,446,269, Cl. 524-316.000.

Retallick, William B. High pressure combustor having a catalytic air preheater. 4,445,570, Cl. 166-59.000.

Reuschenbach, Hermann; and Sentinger, Egon, to Stabilus GmbH. Gas spring including hydraulic locking means. 4,445,671, Cl. 267-64.120.

Reyes, Daniel. Super bike. 4,445,702, Cl. 280-239.000.

Reynolds Equipment Company: *See—*
Reynolds, Louis E.; and Beall, Michael D., 4,445,382, Cl. 73-716.000.

Reynolds, Frederick W., III; Miranda, Robert E.; and Fabian, Roger C., to TRW Inc.; and TRW Inc. Apparatus and method for filling holes in a circuit board. 4,445,952, Cl. 156-94.000.

Reynolds, Louis E.; and Beall, Michael D., to Reynolds Equipment Company. Differential pressure-responsive device. 4,445,382, Cl. 73-716.000.

Rhoades, James J.: *See—*
Chubb, Arthur B.; MacLeod, Richard J.; and Rhoades, James J., 4,445,356, Cl. 72-319.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Desbois, Michel, 4,446,078, Cl. 260-465.00F.

Ribaud, Yves J.; and Kergreis, Gilbert F., to Office National d'Etudes et de Recherches Aerospatiales. Supersonic compressor with improved operation range. 4,445,816, Cl. 415-181.000.

Rica, Albert F.: *See—*
Davis, John C.; Reiss, Ronald J.; and Rica, Albert F., 4,445,550, Cl. 141-329.000.

Richard, Kenneth L., to York-Shipley, Inc. Industrial dust filter with jet induced reverse air cleaning. 4,445,914, Cl. 55-303.000.

Richards, Joyce: *See—*
Lind, David J.; and Richards, Joyce, 4,445,951, Cl. 156-93.000.

Richards, Richard D., to Wilkinson Sword Limited. Package of razors. 4,445,610, Cl. 206-349.000.

Richardson Company, The: *See—*
Mocas, Verlin A., 4,446,214, Cl. 429-179.000.

Richardson, James C.: *See—*
Hansen, Axel E., Jr.; and Richardson, James C., 4,445,850, Cl. 432-229.000.

Richardson, Royest L. Generator and drive system. 4,446,418, Cl. 322-4.000.

Richardson, Ryden L.: *See—*
Simpson, Howard D.; Richardson, Ryden L.; and Angmorter, Paul K., 4,446,248, Cl. 502-211.000.

Richter Gedeon Vegyeszeti Gyar R.T.: *See—*
Szantay, Csaba; Szbeo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; and Keve, Tibor, 4,446,139, Cl. 424-256.000.

Ricoh Company, Ltd.: *See—*
Kikuchi, Hideo; and Kaneko, Tamaki, 4,445,680, Cl. 271-290.000.
Sakamoto, Koji; and Kobayashi, Kazuo, 4,445,771, Cl. 355-3.0DD.
Yano, Takashi, 4,446,471, Cl. 346-153.100.

Riedel-de Haen AG: *See—*
Eiglmeier, Kurt; and Knieps, Reinhard, 4,446,075, Cl. 260-465.00G.

Rieder, Werner; and Fehrle, Martin, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Novel polyesters coated on conductive substrate. 4,446,195, Cl. 428-458.000.

Riemann, Hanns-Helmut; and Sonnenschein, Hans, to Mannesmann Veba Umwelttechnik GmbH. Process for the treatment of the combustible portion of domestic waste for briquetting and apparatus therefor. 4,445,906, Cl. 44-1.00D.

Rieter Machine Works Limited: *See—*
Wuermli, Arthur, 4,445,323, Cl. 57-275.000.

Rigby, Ronald. Automatic injector for hypodermic syringes or the like and lancet holder for use in conjunction with an automatic injector. 4,445,510, Cl. 128-329.00R.

Riggin, Steven R. Aircraft flight computer. 4,446,361, Cl. 235-78.00N.

Riley, Richard L., to William H. Rorer, Inc. Method of treating congestive heart failure. 4,446,152, Cl. 424-322.000.

Rimmi, Pentti I., to Oy Helo Tehtaat. Electric sauna heater. 4,446,356, Cl. 219-272.000.

Rinaldi, Gerald M., to GTE Automatic Electric Labs Inc. Pulse monitor circuit. 4,446,437, Cl. 328-120.000.

Ripley, Robert L.: *See—*
Knight, Raymond J.; Mitten, Robert T.; and Ripley, Robert L., 4,445,520, Cl. 131-282.000.

Rittmann, Friedrich: *See—*
Zollner, Dieter; Lauterbach-Dammler, Inge; and Rittmann, Friedrich, 4,446,561, Cl. 373-93.000.

Rizzo, Vincent J.: *See—*
Rawicz, Harris C.; Rizzo, Vincent J.; and Buntemeyer, William R., 4,446,409, Cl. 318-632.000.

Roba, Giacomo: *See—*
Modone, Eros; and Roba, Giacomo, 4,445,918, Cl. 65-3.120.

Robert Bosch GmbH: *See—*
Eheim, Franz, 4,445,476, Cl. 123-387.000.
Sontheimer, Karl, 4,445,828, Cl. 417-490.000.
Sumal, Jaihind S., 4,445,368, Cl. 73-118.100.

Robert, Guy: *See—*
Badoz, Janine; Bardin, Michelle; Bernard, Claude; Herlem, Michel; Robert, Guy; and Thiebault, Andre, 4,446,215, Cl. 429-190.000.

Roberts, Bruce A., to Procter & Gamble Company, The. Oleaginous compositions. 4,446,165, Cl. 426-602.000.

Roberts, Joseph A., to Advanced Circuit Technology. Electrical switch assembly and method of manufacture. 4,446,342, Cl. 200-5.00R.

Roberts, Robert E.: *See—*
Baker, Richard A.; Forsythe, George D.; Likhyani, Kewal K.; Roberts, Robert E.; and Robertson, David C., 4,446,024, Cl. 210-500.200.

Robertson, Baldwin: *See—*
Potzick, James E.; and Robertson, Baldwin, 4,445,389, Cl. 73-861.270.

Robertson, David C.: *See—*
Baker, Richard A.; Forsythe, George D.; Likhyani, Kewal K.; Roberts, Robert E.; and Robertson, David C., 4,446,024, Cl. 210-500.200.

Robinson, Harold L., to Donaldson Company, Inc. Magnetic filtration in a spin-on fluid filter. 4,446,019, Cl. 210-223.000.

Robinson, James W., to Flex-Kleen Corporation. Dust collector filter cartridge and structure for attachment suspending same from baghouse tube sheet. 4,445,915, Cl. 55-378.000.

Rock, Erich; and Mages, Bernhard, to Julius Blum Gesellschaft m.b.H. Pull-out guide assembly for drawers. 4,445,726, Cl. 308-3.800.

Rockwell International Corporation: *See—*
Apel, Thomas R., 4,446,445, Cl. 330-269.000.
Bonham, Harry B., Jr., 4,445,633, Cl. 228-102.000.
Fowks, William R., 4,446,446, Cl. 331-3.000.
Runyan, Wesley G., 4,446,527, Cl. 364-558.000.
Sullivan, William C.; and Nimberger, Spencer M., 4,445,400, Cl. 74-711.000.
von Bieren, Karlheinz, 4,446,559, Cl. 372-95.000.
Wallace, Keith L., 4,445,740, Cl. 339-45.00M.

Roder, Manfred, to Smithers Oasis GmbH & Co. KG. Base for inserting flowers, twigs and similar items. 4,445,298, Cl. 47-41.120.

Rodgers, Ned: *See—*
Olson, Wallace F.; and Rodgers, Ned, 4,445,265, Cl. 29-447.000.

Rodgers, Richard W., to McDonnell Douglas Corporation. Complementary metal oxide semiconductors address drive circuit. 4,446,536, Cl. 365-230.000.

Rodier, Raymond: *See—*
Raj, Kuldip; Moskowitz, Ronald; and Rodier, Raymond, 4,445,696, Cl. 277-80.000.

Roeder, Robert J., to Kimberly-Clark Corporation. Tabless sanitary napkin. 4,445,900, Cl. 604-389.000.

Rogers, Gerald: *See—*
Brown, Sammy K.; Solimeno, Duane; Koeppen, Peter L.; and Rogers, Gerald, 4,446,514, Cl. 364-200.000.

Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell; and Sahatjian, Ronald A., to Polaroid Corporation. Optical device including birefringent polymer. 4,446,305, Cl. 528-348.000.

Rogers, Lloyd W., Jr., to General Motors Corporation. Clutch drive for power belt system. 4,445,604, Cl. 192-71.000.
Rohm and Haas Company: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,445,930, Cl. 71-105.000.
Gleim, Robert D., 4,446,310, Cl. 528-487.000.
Rohner, Joachim; and Zumfeld, Heinz, to W. Schlafhorst & Co. Device for tying a first thread to a second thread by splicing with pressure gas. 4,445,319, Cl. 57-22.000.
Rohner, Joachim: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.
Rollen, Donald C.: *See—*
Barrell, David; Kennedy, Donald E.; Marino, James J., Jr.; and Rollen, Donald C., 4,446,173, Cl. 427-206.000.
Rolls-Royce Limited: *See—*
Lind, David J.; and Richards, Joyce, 4,445,951, Cl. 156-93.000.
Romanek, Gerald A., to Phillips Petroleum Company. Textured nonwoven textile fabric laminate and process of making said. 4,446,189, Cl. 428-152.000.
Romanenkov, Jury A.: *See—*
Onischin, Boris P.; Linev, Valery D.; Burochkin, Alexandr E.; Mitsev, Sergei G.; Keller, Viktor R.; Chernyshev, Ivan S.; Lakisov, Viktor V.; Moiseev, Valentin P.; Romanenkov, Jury A.; and Khakimov, Tamerlan G., 4,445,932, Cl. 75-11.000.
Roquette Freres: *See—*
Verwaerde, Francoise; Gosset, Serge; and Huchette, Michel, 4,445,938, Cl. 127-29.000.
Rosch, Reinhard W., to Northern Telecom Limited. Telephone lines status sensor. 4,446,338, Cl. 179-18.0FA.
Rose, John B.; and Cinderey, Michael B., to Imperial Chemical Industries PLC. Aromatic etherketone/sulphone copolymers. 4,446,294, Cl. 528-128.000.
Rosen, Klaus: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.
Rosenbaum, Herman S.: *See—*
Cheng, Bo-Ching; Rosenbaum, Herman S.; and Armijo, Joseph S., 4,445,942, Cl. 148-6.300.
Rosenquist, Niles R., to General Electric Company. Acyloxy terminated polycarbonates. 4,446,296, Cl. 528-198.000.
Ross, Charles O.: *See—*
Lisica, Vincent M.; and Ross, Charles O., 4,445,796, Cl. 400-120.000.
Rossiter, Paul H., to Welding Engineers, Inc. Apparatus and method for extracting fluid from an extruded material. 4,446,094, Cl. 264-349.000.
Roszkowski, Gregory J. Disposable cutting edge. 4,445,315, Cl. 56-295.000.
Roth, Eldon N. Method for forming bacon-like products. 4,446,159, Cl. 426-249.000.
Rothaar, Bruce C.: *See—*
Stockham, Thomas G., Jr.; and Rothaar, Bruce C., 4,446,494, Cl. 360-73.000.
Rouanes, Phillipe, to Siemens Aktiengesellschaft. Ignition system for internal-combustion engines. 4,445,492, Cl. 123-606.000.
Rouaud, Yvon: *See—*
Devault, Michel; Quinquis, Jean-Paul; and Rouaud, Yvon, 4,446,555, Cl. 370-94.000.
Rowley, William W. Plastic tube coupling and apparatus for forming. 4,446,084, Cl. 264-40.600.
Royer, Michel E., to Dupont, S. T. Process for producing a design composed of two different materials on the surface of an object. 4,445,982, Cl. 204-18.100.
Royer, Michele, to Honeywell Inc. Piezoelectric pressure sensor. 4,445,384, Cl. 73-724.000.
Rubber-en Kunststoffabriek ENBI B.V.: *See—*
Delhaes, Johannes C., 4,445,257, Cl. 29-117.000.
Rubin, Arnold: *See—*
Leaf, Sallie; and Rubin, Arnold, 4,445,720, Cl. 296-37.120.
Rubin, Harvey, to Bell Telephone Laboratories, Incorporated. Mechanized testing of subscriber facilities. 4,446,341, Cl. 179-175.20R.
Rubin, Robert. Hosiery with included pocket. 4,445,233, Cl. 2-239.000.
Rubner, Roland: *See—*
von Gentzkow, Wolfgang; and Rubner, Roland, 4,446,266, Cl. 524-193.000.
Rudnick, Leslie R.: *See—*
Chen, Nai Y.; Rankel, Lillian A.; and Rudnick, Leslie R., 4,446,004, Cl. 208-57.000.
Ruff, Henry C. Leg stretching machine. 4,445,684, Cl. 272-134.000.
Ruhrchemie Aktiengesellschaft: *See—*
Hobes, John; Payer, Wolfgang; and Deymann, Detlef, 4,446,311, Cl. 528-493.000.
Ruhrkohle AG: *See—*
Bassier, Friedr.; Adrian, Fritz; and Deuster, Dieter, 4,445,937, Cl. 108-109.000.
Rule, Mark: *See—*
Moore, Louis D.; Rule, Mark; and Wicker, Thomas H., 4,446,303, Cl. 528-308.200.
Runyan, Wesley G., to Rockwell International Corporation. High accuracy measuring apparatus. 4,446,527, Cl. 364-558.000.
Russell, Dean E.; and Russell, Tom H., to Russell & Sons Construction Co. Inc. Bulldozer blade. 4,445,577, Cl. 172-701.300.
Russell, Peter J.: *See—*
Hombach, Rudolf; Nolte, Wilfried; Russell, Peter J.; and Wall, Nigel G., 4,445,959, Cl. 156-332.000.
Russell & Sons Construction Co. Inc.: *See—*
Russell, Dean E.; and Russell, Tom H., 4,445,577, Cl. 172-701.300.
Russell, Tom H.: *See—*
Russell, Dean E.; and Russell, Tom H., 4,445,577, Cl. 172-701.300.
Russenberger, Max E., to Russenberger Prufmaschinen AG. Device for testing the vibration strength of a test body. 4,445,381, Cl. 73-666.000.
Russenberger Prufmaschinen AG: *See—*
Russenberger, Max E., 4,445,381, Cl. 73-666.000.
Russo, Raimondo; and Liotta, Lance A., to United States of America, Health and Human Services. Vitro cellular interaction with amnion membrane substrate. 4,446,234, Cl. 435-29.000.
Rutkiewic, Andrew F.; and White, James P., to Du Pont de Nemours, E. I., and Company. Aqueous water-in-oil cleaning emulsion. 4,446,044, Cl. 252-170.000.
Rutt, Truman C.: *See—*
Scrantom, Dehart G.; and Rutt, Truman C., 4,445,851, Cl. 432-239.000.
Rutten, Leon L. Projectile for centrifugal launching device. 4,445,436, Cl. 102-501.000.
Sahatjian, Ronald A.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell; and Sahatjian, Ronald A., 4,446,305, Cl. 528-348.000.
Sahley, Lloyd W., to Syndrill Carbide Diamond Company. Deep hole rock drill bit. 4,445,580, Cl. 175-404.000.
Saho, Norihide; Koibuchi, Koji; Kasai, Kenjiro; and Higaki, Hiroshi, to Hitachi, Ltd. Scroll type laminated heat exchanger. 4,445,569, Cl. 165-165.000.
Saikosha Works Ltd.: *See—*
Saitoh, Hisashi, 4,445,348, Cl. 70-312.000.
Saint-Gobain Industries: *See—*
Dewitte, Jean; and Aymard, Pierre, 4,446,207, Cl. 428-402.000.
Saito, Tetsuya; and Mori, Hiroshi, to Daido Tokushuko Kabushiki Kaisha. Method of refining molten steel. 4,445,933, Cl. 75-59.000.
Saitoh, Hisashi, to Saikosha Works Ltd. Combination lock. 4,445,348, Cl. 70-312.000.
Sakaguchi, Katsuyoshi; and Hasegawa, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Drain discharge device in a tire curing machine. 4,445,834, Cl. 425-36.000.
Sakai, Masao; Hashizume, Miyakazu; Suzuki, Yasuhiko; and Sugimoto, Makoto, to NGK Spark Plug Co., Ltd. Resistor composition for resistor-incorporated spark plugs. 4,446,058, Cl. 252-507.000.
Sakamoto, Koji; and Kobayashi, Kazuo, to Ricoh Company, Ltd. Developing apparatus for electrostatic photography. 4,445,771, Cl. 355-3.0DD.
Sakaue, Tatsuo: *See—*
Iida, Tetsuya; and Sakaue, Tatsuo, 4,446,567, Cl. 377-79.000.
Sakuma, Shinzo: *See—*
Kashimoto, Yutaka; Sakuma, Shinzo; and Umeya, Eiji, 4,446,346, Cl. 200-144.00B.
Sakutori, Eric M. Footwear with integral cushioning and ventilating apparatus. 4,445,284, Cl. 36-3.00B.
Sale, Francis M.: *See—*
Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., 4,445,926, Cl. 71-34.000.
Salm, Dietmar F. E., to Broken Hill Proprietary Company Limited, The. Manufacture of tinplate and tinplate containers. 4,446,156, Cl. 428-648.000.
Samanta, Sudarsan C., to General Refractories Company. Strong, heat stable, water repellent, expanded perlite/alkali metal silicate insulation material. 4,446,040, Cl. 252-62.000.
Samuelson, Hans O., to Mo och Domsjo Aktiebolag. Process for the delignifying bleaching of cellulose pulp by activating the pulp with NO_2 and oxygen. 4,445,969, Cl. 162-40.000.
Sandberg, Christopher T., to Truth Incorporated. Self-locking threaded bearing and bearing assembly and method of making such assembly. 4,445,794, Cl. 384-428.000.
Sander, Lars: *See—*
Brogardh, Torgny; Ovren, Christer; and Sander, Lars, 4,446,366, Cl. 250-227.000.
Sanders, Anthony J., to Black & Decker Inc. Setting mechanisms especially for tools for carrying out routing and like operations. 4,445,811, Cl. 409-182.000.
Sanders Associates, Inc.: *See—*
Fuller, Harrison W., 4,446,566, Cl. 375-96.000.
Sandhorst, Bruce C.: *See—*
Twersky, Marvin; Splinter, William E.; and Sandhorst, Bruce C., 4,445,788, Cl. 374-142.000.
Sandhu, M. Akram; Wright, John F.; and Molaire, Michel F., to Eastman Kodak Company. Electrostatographic developers comprising toners containing a polyester having p-hydroxybenzoic acid recurring units. 4,446,302, Cl. 528-302.000.
Sands, Robert W., to General Electric Company. Automotive lamp unit. 4,446,511, Cl. 362-267.000.
Sangha, Parminder: *See—*
Dix, Peter; Pogany, George A.; and Sangha, Parminder, 4,446,313, Cl. 536-18.600.
Sano, Shinichi: *See—*
Yamaguchi, Keiki; Takeuchi, Yasuhito; Sano, Shinichi; and Higashiizumi, Takao, 4,445,379, Cl. 73-631.000.
Sano, Yoshiaki: *See—*
Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, 4,446,499, Cl. 361-92.000.

Santa Fe International Corporation: *See—*
Angel, Thomas M., 4,445,524, Cl. 134-113.000.
Sapi, Janos: *See—*
Szantay, Csaba; Szbao, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; and Keve, Tibor, 4,446,139, Cl. 424-256.000.
Sasaki, Takeshi; Akiba, Kiyoshi; and Takahashi, Yoshio, to Honda Giken Kogyo Kabushiki Kaisha. Process for balancing a crankshaft. 4,445,399, Cl. 74-603.000.
Sasaki, Takuji: *See—*
Niwa, Senji; Sasaki, Takuji; Shinto, Masaaki; and Imamura, Noriaki, 4,446,250, Cl. 502-309.000.
Sasaki, Toshio: *See—*
Tsushima, Noboru; Fuse, Masashi; Sasaki, Toshio; Ogata, Masayuki; Mimori, Teruo; and Mukai, Tadashi, 4,445,279, Cl. 33-356.000.
Sasson Jeans, Inc.: *See—*
Benarrouch, Jacques, 4,445,609, Cl. 206-277.000.
Sato, Hiroshi: *See—*
Mitsumori, Mitsugi; Hosaka, Hiroaki; Sato, Hiroshi; and Kondou, Kouichi, 4,445,614, Cl. 206-599.000.
Sato, Kiyoshi; Terashima, Minoru; Sorimachi, Haruo; Naka, Toshiaki; Kanno, Takeo; and Yamada, Fumiaki, to Fujitsu Limited. Crossover construction of thermal-head and method of manufacturing same. 4,446,355, Cl. 219-216.000.
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Method of preventing skid of wheels of a vehicle. 4,446,522, Cl. 364-426.000.
Sato, Yoshihiro, to Dai Nippon Insatsu K.K.; and Victor Company of Japan, Ltd. Blank sheet of packaging case for video tape cassette. 4,445,634, Cl. 229-40.000.
Satoyama, Kenichiro: *See—*
Yagura, Toshiaki; Satoyama, Kenichiro; Morisada, Kazutoshi; Yamamoto, Ryoichi; and Yoshida, Seietsu, 4,446,410, Cl. 318-687.000.
Satterfield, Larry S., to Milliken Research Corporation. Apparatus to measure yarn tension. 4,445,322, Cl. 57-264.000.
Sauber, Charles J. Cable feeding system. 4,445,668, Cl. 254-287.000.
Sauer, Anton; and Witte, Hans H., to Siemens Aktiengesellschaft. Passive bus system for decentrally organized multi-computer systems. 4,446,515, Cl. 364-200.000.
Saunders, William T., to Stoffel Technologies, Inc. Easy-open container wall. 4,445,621, Cl. 220-273.000.
Savagian, Michael D., to W. H. Brady Co. Tag with attached fold-over transparent cover element. 4,446,183, Cl. 428-42.000.
Sawa, John J.: *See—*
Tilly, Lynn K.; and Sawa, John J., 4,445,439, Cl. 105-165.000.
Sawada, Tohru, to Eissi Co., Ltd. Method for treatment of arthrosis deformans with elastase. 4,446,129, Cl. 424-94.000.
Scal Societe de Conditionnements en Aluminium: *See—*
Scheidegger, Albert, 4,445,310, Cl. 53-485.000.
Schaetzer, Harry; Raisin, Helmut; Mausezahl, Dieter; and Ciba-Geigy AG. Process for trichromatic dyeing or printing of polyamide. 4,445,905, Cl. 8-641.000.
Schanin, David J.: *See—*
Moore, Russell L.; and Schanin, David J., 4,446,382, Cl. 307-241.000.
Schaper, Dieter, to General Motors Corporation. Seat belt latch for rear seats. 4,445,722, Cl. 297-468.000.
Schauffele, Roy F., to Carlisle Corporation. Mechanically attached roofing system. 4,445,306, Cl. 52-410.000.
Scheerhorn, Douglas, to Steelcase Inc. Over-centered lock arrangement for office furniture units. 4,445,729, Cl. 312-219.000.
Scheidegger, Albert, to Scal Societe de Conditionnements en Aluminium. Process and installation for supplying caps to a closure machine. 4,445,310, Cl. 53-485.000.
Schering Aktiengesellschaft: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,446,147, Cl. 424-274.000.
Schiele, Bernd; and Niedermeier, Johann, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Apparatus for supporting crystalline wafers. 4,445,494, Cl. 125-35.000.
Schilling, Hugh K., to Horton Industries, Inc. Spring engaged fluid released fan clutch for a live shaft. 4,445,605, Cl. 192-91.00A.
Schillinger, Bernhard: *See—*
Hahn, Klaus; Weber, Heinz; Guenther, Wolfgang; Schillinger, Bernhard; and Weber, Reinhold, 4,446,253, Cl. 521-79.000.
Schillinger, Ekkehard: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,446,147, Cl. 424-274.000.
Schirmann, Peter J.: *See—*
Cady, Susan M.; Blank, Werner J.; and Schirmann, Peter J., 4,446,280, Cl. 525-186.000.
Schlag, Rudolf: *See—*
Weiler, Rolf; Bischoff, Gilbert; and Schlag, Rudolf, 4,445,331, Cl. 60-547.100.
Schleicher, Siegfried: *See—*
Ebermann, Joachim; Graf, Heinz; Schleicher, Siegfried; and Uhlig, Jurgen, 4,446,408, Cl. 318-600.000.
Schlicht, Raymond C.; and Skrobul, Anthony P., to Texaco, Inc. Citric imide acid compositions and lubricants containing the same. 4,446,038, Cl. 252-51.50A.
Schmid, Rolyn A., to Bender Machine Works, Inc. Apparatus for cleaning liquid conveying system and control valve assembly therefor. 4,445,522, Cl. 134-58.00R.
Schmidt, Frederick A.; Rehbein, David; and Chiotti, Premo, to United States of America, Energy. Method of preparing silicon from sodium fluosilicate. 4,446,120, Cl. 423-350.000.
Schmidt, Frederick C., to Lipe Rollway Corporation. Self adjusting release mechanism for clutch. 4,445,600, Cl. 192-18.00R.
Schmidt, Henry, Jr., to Industrial Filter & Pump Mfg. Co. Liquid circulation and pressure tanks. 4,446,030, Cl. 210-805.000.
Schmidt, Leon W.: *See—*
Nelson, Larry A.; and Schmidt, Leon W., 4,446,106, Cl. 422-72.000.
Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. 4-Arylbis 2,6-(aminophenyl)pyridines. 4,446,321, Cl. 544-124.000.
Schmiel, Herbert H., to Dana Corporation. Hydraulic remote control joystick. 4,445,541, Cl. 137-636.200.
Schmitt, Gunther: *See—*
Oppl, Gunter; and Schmitt, Gunther, 4,445,320, Cl. 57-88.000.
Schmitz, Eckehard: *See—*
Baumgartner, Hans; and Schmitz, Eckehard, 4,445,475, Cl. 123-339.000.
Schmitz, Heinz: *See—*
Divisek, Jiri; and Schmitz, Heinz, 4,445,994, Cl. 204-258.000.
Schmitz, Werner; and Simon, Edgar, to Degussa Aktiengesellschaft. Apparatus for emptying containers filled with powder. 4,445,809, Cl. 406-152.000.
Schnalke, Karl-Erwin: *See—*
Konig, Joachim; Schnalke, Karl-Erwin; Suling, Carlhans; and Horacek: Gotz, 4,446,291, Cl. 526-209.000.
Schneider, Werner, to Deere & Company. Mounting means for a steering cylinder. 4,445,586, Cl. 180-132.000.
Schnoring, Hildegard: *See—*
Bucheler, Manfred; Klinksiek, Bernd; Gehringer, Hans; and Schnoring, Hildegard, 4,446,127, Cl. 424-59.000.
Scholz, John A., to GTE Products Corporation. Photoflash lamp. 4,445,847, Cl. 431-362.000.
Scholz, Romanus: *See—*
Hofbauer, Peter; Heidemeyer, Paulus; and Scholz, Romanus, 4,445,601, Cl. 192-48.800.
Schouwenaars, Hendrikus J.: *See—*
van de Plassche, Rudy J.; Dijkmans, Eise C.; and Schouwenaars, Hendrikus J., 4,446,419, Cl. 323-316.000.
Schratt, John F.; and Weber, Joseph J., to United Technologies Corporation. Apparatus for cryogenic proof testing of rotating parts. 4,445,790, Cl. 374-45.000.
Schreuder, Hermann A.: *See—*
Molenaar, Maarten; and Schreuder, Hermann A., 4,446,086, Cl. 264-118.000.
Schrier, Eugene E.: *See—*
Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., 4,446,103, Cl. 422-37.000.
Schroeder, Warren C. Highway transport truck tire water splash shield. 4,445,700, Cl. 280-154.50R.
Schroendorfer, Donald W., to Haemonetics Corporation. Deformable support for fluid processing centrifuge. 4,445,883, Cl. 494-21.000.
Schucker, Robert C.: *See—*
Wheelock, Kenneth S.; and Schucker, Robert C., 4,446,011, Cl. 208-121.000.
Schussler, Hans H.: *See—*
Voneky, Geza; and Schussler, Hans H., 4,445,276, Cl. 33-168.00R.
Schwab, Frederick C., to Mobil Oil Corp. Adhesive composition, film laminate and product pouch or tube therefrom. 4,446,180, Cl. 428-35.000.
Schwaerzler, Hans, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Method for the landing of air and spacecrafts. 4,445,653, Cl. 244-110.00D.
Schwalm, Donald J., to Holcroft & Company. Method of controlling furnace atmospheres. 4,445,945, Cl. 148-16.000.
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., to Schering Aktiengesellschaft. Azaprostacyclins, their preparation and pharmaceutical use. 4,446,147, Cl. 424-274.000.
Schwarz, Richard A., to Cosden Technology, Inc. Expandable polystyrene composition and process. 4,446,208, Cl. 428-407.000.
Schwenk, Gerhard: *See—*
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,446,204, Cl. 428-323.000.
Schwind, Jacques; and Le Feuvre, Camille, to Framatome. Device for protecting control cluster actuating mechanisms during the testing of a nuclear reactor. 4,446,099, Cl. 376-277.000.
Scrantom, Dehart G.; and Rutt, Truman C., to AVX Corporation. Apparatus and method for firing ceramic articles or the like. 4,445,851, Cl. 432-239.000.
Sebbah, Jack: *See—*
Viannay, Stephane; Germain, Alfred; and Sebbah, Jack, 4,445,525, Cl. 134-122.00R.
Sedig, Albert R.; and Ingham, Francis H., to ITT Corporation. High pressure electrical connector. 4,445,744, Cl. 339-94.00M.
Seeburg, Peter H., to Genentech, Inc. Method for cloning human growth hormone varient genes. 4,446,235, Cl. 435-91.000.
Seeney, Charles E.; and Kraemer, John F., to International Minerals & Chemical Corp. Process for preparing cores and molds. 4,445,565, Cl. 164-528.000.
Segan, Ellen G.: *See—*
Kumar, Ashok; Segan, Ellen G.; Bukowski, John M.; and Helgeland, Jon L., 4,445,989, Cl. 204-147.000.
Seguin, Serge: *See—*
Kubic, Nick; Bell, Claude; and Seguin, Serge, 4,445,619, Cl. 220-263.000.

Seidl, Allen W., to Tate, Thomas B., a part interest. Paint case. 4,445,250, Cl. 15-257.060.

Seikagaku Kogyo Co., Ltd.: *See—*
Noyori, Ryoji; Suzuki, Sakaru; and Okayama, Minoru, 4,446,312, Cl. 536-1.100.

Seitz-Werke GmbH: *See—*
Bernhard, Herbert, 4,445,549, Cl. 141-148.000.

Sekiguchi, Kiyonori: *See—*
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,445,488, Cl. 123-569.000.

Sekine, Yasuhiro; Kuwayama, Masayuki; and Harada, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Rotating electric machinery. 4,446,391, Cl. 310-62.000.

Sekiya, Shinji; and Ono, Takatoshi, to Disco Co., Ltd. Method for grinding flat plates. 4,445,300, Cl. 51-283.00R.

Selby, Theodore W. Tapered bearing simulator-viscometer. 4,445,365, Cl. 73-60.000.

Self, Colin H. Immunoassay using an amplified cyclic detection system. 4,446,231, Cl. 435-7.000.

Selleck, Franklin G., to United Technologies Corporation. Instrumentation for a rotary machine. 4,446,461, Cl. 340-870.320.

Sellon, Jeffrey, to Cuisenaire Company of America, Inc. Method of teaching mathematics. 4,445,865, Cl. 434-207.000.

Selon Co., Ltd.: *See—*
Serizawa, Jiro, 4,445,845, Cl. 431-295.000.

Sentinger, Egon: *See—*
Reuschenbach, Hermann; and Sentinger, Egon, 4,445,671, Cl. 267-64.120.

Seo, Toshiya, to Kabushiki Kaisha Meidensha. Data highway system with dual transmitting loop lines. 4,446,551, Cl. 370-16.000.

Sepp, Gunther; and Dyrna, Peter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. CO_2 Laser wave guide. 4,446,558, Cl. 372-64.000.

Serber, Stephen L.: *See—*
Connell, John C.; and Serber, Stephen L., 4,445,638, Cl. 237-8.00R.

Serizawa, Jiro, to Selon Co., Ltd. Flambeau. 4,445,845, Cl. 431-295.000.

Sestanj, Kazimir; and Bellini, Francesco, to Ayerst, McKenna & Harrison, Inc. Naphthalenylthiazole derivatives. 4,446,150, Cl. 424-270.000.

Shah, Syed M. M.; Luksas, Anthony J.; and Ahmed, Salah E., to Beatrice Foods Co. Modifier for effecting physical properties of food and food grade compositions. 4,446,055, Cl. 252-351.000.

Shannon, Suel G.: *See—*
Long, William B.; and Shannon, Suel G., 4,446,505, Cl. 361-413.000.

Sharp Kabushiki Kaisha: *See—*
Endo, Yoshihiro; Kawaguchi, Masashi; Mizukami, Etsuo; and Kishishita, Hiroshi, 4,446,399, Cl. 313-505.000.
Tanaka, Atsuo, 4,446,531, Cl. 364-728.000.

Shatterproof Glass Corporation: *See—*
McKelvey, Harold E., 4,445,997, Cl. 204-298.000.

Shaw, Graham C., III; and Reed, Russell, Jr., to Thiokol Corporation. Low cost fluorocarbon flare compositions. 4,445,947, Cl. 149-19.300.

Sheiry, William G., to Eaton Corporation. Seat switch assembly. 4,446,345, Cl. 200-85.00R.

Shell Oil Company: *See—*
Cowles, Christopher S., 4,446,541, Cl. 367-75.000.
Den Hartog, Arie P., 4,446,112, Cl. 422-216.000.
Dix, Peter; Pogany, George A.; and Sangha, Parminder, 4,446,313, Cl. 536-18.600.
Kooijmans, Petrus G.; and Kunze, Wolfgang, 4,446,257, Cl. 523-403.000.

Shell Research Limited: *See—*
Mead, Howard B., 4,445,543, Cl. 138-122.000.

Shemenski, Robert M.; Kim, Dong K.; and Starinshak, Thomas W., to Goodyear Tire & Rubber Company, The. Copper-zinc-iron ternary alloy coated steel wire reinforcers in tires. 4,446,198, Cl. 428-625.000.

Shepherd, Warren R. Self-locking box for tape cassettes and information flap. 4,445,612, Cl. 206-387.000.

Sherwood Medical Company: *See—*
Bodicky, Raymond O., 4,445,893, Cl. 604-165.000.

Shetterly, Donivan M., to Owens-Illinois, Inc. Position sensing device. 4,445,923, Cl. 65-158.000.

Shibata, Masaaki: *See—*
Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, 4,445,946, Cl. 148-36.000.

Shibata, Toshiaki: *See—*
Ohsawa, Kazuya; Shibata, Toshiaki; and Takahashi, Kenichi, 4,445,755, Cl. 350-96.340.

Shibuta, Osamu; Suzue, Masayoshi; and Hasegawa, Tetuo, to Otsuka Chemical Co., Ltd. Thermistor using organophosphazene polymer. 4,446,295, Cl. 528-168.000.

Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,445,784, Cl. 368-157.000.

Shigeoka, Satoshi: *See—*
Tanouchi, Tsdao; Shigeoka, Satoshi; Kawamura, Masanori; Hayashi, Masaki; Terashima, Hiroshi; and Hirata, Fumio, 4,446,143, Cl. 424-270.000.

Shigeta, Katsunori; Nakamura, Takashi; Maruyama, Hisaichi; and Matsumoto, Yasuji, to Mitsubishi Denki Kabushiki Kaisha. Process of preparing and processing sewing data for an automatic sewing machine. 4,446,520, Cl. 364-400.000.

Shigihara, Akira: *See—*
Hayashi, Tsutomu; and Shigihara, Akira, 4,445,705, Cl. 280-302.000.

Shimakawa, Hajime; and Nakai, Satoshi, to Research Association for Residual Oil Processing. Process for hydrocracking of heavy oils with iron containing aluminosilicates. 4,446,008, Cl. 208-111.000.

Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,445,396, Cl. 74-551.100.
Shimano, Keizo, 4,445,397, Cl. 74-560.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Handlebar for a bicycle. 4,445,396, Cl. 74-551.100.

Shimano, Keizo, to Shimano Industrial Company Limited. Foot conforming pedal for a bicycle. 4,445,397, Cl. 74-560.000.

Shinbo, Haruo: *See—*
Naito, Kenzo; Shinbo, Haruo; and Tsukamura, Kazuo, 4,446,318, Cl. 544-26.000.

Shinohara, Kazuyoshi, to Matsushita Electric Industrial Co., Ltd. Bearing. 4,445,793, Cl. 384-130.000.

Shinriki, Tatsuo, to Height, Inc. Process for making a composite edible product. 4,446,160, Cl. 426-297.000.

Shinto, Masaaki: *See—*
Niwa, Senji; Sasaki, Takuji; Shinto, Masaaki; and Imamura, Noriaki, 4,446,250, Cl. 502-309.000.

Shioda Dental Manufacturing Co., Ltd.: *See—*
Hobo, Sumiya; and Okamoto, Koji, 4,445,855, Cl. 433-59.000.

Shipp, Kenneth O., Jr.: *See—*
Levine, Lewis J.; and Shipp, Kenneth O., Jr., 4,445,795, Cl. 400-63.000.

Shirazawa, Takashi: *See—*
Inoue, Takeo; and Shirazawa, Takashi, 4,445,715, Cl. 285-54.000.

Shirk, James E., to Wilmington Chemical Corporation. Tire cord adhesive composition. 4,446,307, Cl. 528-406.000.

Shofu, Koichi, to Design Applications Incorporated. Package for dental drills and the like. 4,445,611, Cl. 206-369.000.

Shuck, Lowell Z. Apparatus and method for determining directional characteristics of fracture systems in subterranean earth formations. 4,446,433, Cl. 324-338.000.

Shuey, John R.: *See—*
Long, William B.; Metzger, Donald L.; and Shuey, John R., 4,445,737, Cl. 339-18.00C.

Shvartsman, Benyamin: *See—*
Lazar, John D., Jr.; and Shvartsman, Benyamin, 4,445,410, Cl. 83-390.000.

Sideri, Leonardo. Self-locking pilfer proof container. 4,445,622, Cl. 220-306.000.

Siecor Corporation: *See—*
Coleman, John D.; Obst, Donald L.; and Kraft, Heinrich A., 4,445,593, Cl. 187-1.00R.

Siegmund, Charles W., to Exxon Research and Engineering Co. Process for suppressing precipitation of sediment in unconverted residuum from virgin residuum conversion process. 4,446,002, Cl. 208-23.000.

Siemens Aktiengesellschaft: *See—*
Bardl, Artur, 4,446,485, Cl. 358-213.000.
Brajder, Antonio; and Kublick, Christian, 4,446,550, Cl. 370-14.000.
Franke, Kurt, 4,446,569, Cl. 378-115.000.
Rouanes, Phillipe, 4,445,492, Cl. 123-606.000.
Sauer, Anton; and Witte, Hans H., 4,446,515, Cl. 364-200.000.
von Gentzkow, Wolfgang; and Rubner, Roland, 4,446,266, Cl. 524-193.000.

Siemens-Allis, Inc.: *See—*
Stich, Frederick A., 4,446,498, Cl. 361-87.000.

Siemens Gammasonics, Inc.: *See—*
Guth, William R., 4,446,570, Cl. 378-149.000.

Sig Societe Industrielle Suisse: *See—*
Nielsen, Arne, 4,445,437, Cl. 104-12.000.

Signet Scientific Co.: *See—*
Arena, Alan J.; Pounder, Edwin; Pawlowski, Michael; and Totten, Adrian M., 4,445,781, Cl. 366-154.000.

Sikorski, James A.; and Hoobler, Mary A., to Monsanto Company. Herbicidal aminosulfenamide derivatives of N-phosphonomethylglycine triesters. 4,445,928, Cl. 71-87.000.

Sikorski, James A.; and Hoobler, Mary A., to Monsanto Company. Herbicidal ester derivatives of N-alkylthio and N-cycloalkylthio-N-phosphonomethylglycinonitrile. 4,445,929, Cl. 71-087.000.

Silva, Raimund H.; Resnick, Paul R.; and Smith, Roger A., to Du Pont de Nemours, E. I., and Company. Solvents of carboxyl ester compounds and fluoropolymers. 4,446,269, Cl. 524-316.000.

Silverstein, Seth D.: *See—*
Johnson, Peter D.; and Silverstein, Seth D., 4,446,397, Cl. 313-25.000.

Simmers, Kathleen W., to Environmental Elements Corp. Buoyant media filter. 4,446,027, Cl. 210-661.000.

Simms, John A.: *See—*
Brixius, Darryl W.; and Simms, John A., 4,446,175, Cl. 427-385.500.

Simms, John T. Pair of eyeglasses. 4,445,760, Cl. 351-95.000.

Simon, Edgar: *See—*
Schmitz, Werner; and Simon, Edgar, 4,445,809, Cl. 406-152.000.

Simons, Joseph A. G.: *See—*
Van Brussel, Hendrik M.; and Simons, Joseph A. G., 4,445,273, Cl. 29-714.000.

Simplex Time Recorder Co.: *See—*
Franke, George, 4,446,468, Cl. 346-82.000.

Simpson, Howard D.; Richardson, Ryden L.; and Angmorter, Paul K., to Union Oil Company of California. Hydrotreating catalyst. 4,446,248, Cl. 502-211.000.

Singer Company, The: *See—*
Albert, William C., 4,446,394, Cl. 310-321.000.

Singh, Prithipal: *See—*
Lin, Cheng-I; and Singh, Prithipal, 4,446,065, Cl. 260-112.00R.

Sivulka, Gerald M., to Kelsey Hayes Company. Vehicle hydraulic brake system and apparatus. 4,445,725, Cl. 303-6.00C.

Skega AB: *See—*
Andersson, Albert, 4,445,582, Cl. 180-9.500.

Skrobul, Anthony P.; and Kaufman, Benjamin J., to Texaco Inc. Beta-amino acid derivatives and friction-modified lubricating compounds containing same. 4,446,053, Cl. 252-33.600.

Skrobul, Anthony P.: *See—*
Schlicht, Raymond C.; and Skrobul, Anthony P., 4,446,038, Cl. 252-51.50A.

Skuballa, Werner: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,446,147, Cl. 424-274.000.

Skuya, Agris Z.: *See—*
Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., 4,446,316, Cl. 536-112.000.

Slavin, Morton A.: *See—*
Goebel, Franz; and Slavin, Morton A., 4,446,211, Cl. 429-101.000.

Slot, Gys H.: *See—*
Ulrich, Bernhard; and Slot, Gys H., 4,445,513, Cl. 128-69.000.

Slover, Pearl; and Moore, Robert R. Stool specimen collector. 4,445,235, Cl. 4-144.200.

Smagala-Romanoff, Edward A., to ID Code Industries, Inc. Identification devices and methods. 4,445,712, Cl. 283-75.000.

Smale, Terence C.: *See—*
Southgate, Robert; Smale, Terence C.; and Ponsford, Roger J., 4,446,146, Cl. 424-274.000.

Smallwood, Peter V.; and Zichy, Erno L., to Imperial Chemical Industries PLC. Production of vinyl chloride polymers. 4,446,287, Cl. 526-81.000.

Smirnov, Vladimir N.: *See—*
Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., 4,446,316, Cl. 536-112.000.

Smith, Burl L.; and Kearby, Ronald S., to Teepak, Inc. Food casing which will transfer a smoke color and flavor to food encased therein and basic natural liquid smoke for use therewith. 4,446,167, Cl. 426-650.000.

Smith, Burrell, to Apple Computer, Inc. Digital, simultaneous, discrete frequency generator. 4,445,414, Cl. 84-1.010.

Smith, Craig G., to Bell Telephone Laboratories, Incorporated. Copper electroplating procedure. 4,445,980, Cl. 204-15.000.

Smith, Darrell F., Jr.; and Clatworthy, Edward F., to Huntington Alloys, Inc. Heat treatments of low expansion alloys. 4,445,943, Cl. 148-12.300.

Smith, Darrell F., Jr.; and Clatworthy, Edward F., to Huntington Alloys, Inc. Heat treatments of low expansion alloys. 4,445,944, Cl. 148-12.300.

Smith, Derek J.: *See—*
Yapp, Robert E.; and Smith, Derek J., 4,445,394, Cl. 74-501.00R.

Smith, Frederick J., to National Semiconductor Corporation. Programmable fuse circuit. 4,446,534, Cl. 365-96.000.

Smith, Fritz A., to Mobil Oil Corporation. Hydrodewaxing. 4,446,007, Cl. 208-111.000.

Smith International, Inc.: *See—*
Olson, Wallace F.; and Rodgers, Ned, 4,445,265, Cl. 29-447.000.

Smith, Norman A.; Postle, Stephen R.; and Long, William E. Photographic material. 4,446,216, Cl. 430-405.000.

Smith, Peter H., to General Electric Company. Microwave phase shifting device. 4,446,349, Cl. 219-10.55F.

Smith, Rex L., to United States of America, Navy. Method of making glass-to-metal seal (header). 4,445,920, Cl. 65-59.210.

Smith, Roger A.: *See—*
Silva, Raimund H.; Resnick, Paul R.; and Smith, Roger A., 4,446,269, Cl. 524-316.000.

Smith, Vigo N., to Measurex Corporation. System and process for calibrating a combustion gas analyzer. 4,445,359, Cl. 73-1.00G.

Smithers Oassis GmbH & Co. KG: *See—*
Roder, Manfred, 4,445,298, Cl. 47-41.120.

Snyder, William R.; and Feuerstein, Diane, to Betz Laboratories, Inc. Composition for treating aqueous mediums. 4,446,045, Cl. 252-180.000.

Socapex: *See—*
Collignon, Roger, 4,445,753, Cl. 350-96.210.

Societa Impianti Elettrici Telefonici Telegrafici e Costruzioni Edili S.p.A.: *See—*
Brambilla, Guido, 4,445,598, Cl. 188-322.160.

Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
Juillard, Yves; and Varloud, Christian, 4,445,545, Cl. 139-311.000.

Societe Anonyme DBA: *See—*
Carre, Jean-Jacques; and Levral, Roland, 4,445,263, Cl. 29-445.000.

Societe Breilly S.A.: *See—*
Bedier, Pierre C. A., 4,445,345, Cl. 66-177.000.

Societe Generale pour l'Industrie Electronique (S.O.G.I.E.): *See—*
Cartesse, Georges, 4,445,745, Cl. 339-177.00R.

Solimeno, Duane: *See—*
Brown, Sammy K.; Solimeno, Duane; Koeppen, Peter L.; and Rogers, Gerald, 4,446,514, Cl. 364-200.000.

Solmat Systems Ltd.: *See—*
Assaf, Gad; and Cohen, Yehuda, 4,446,025, Cl. 210-602.000.

Sonat Offshore Drilling Inc.: *See—*
Ray, Donald R.; and Facey, Eugene R., 4,445,805, Cl. 405-203.000.

Sone, Masazumi: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,445,491, Cl. 123-605.000.

Song, Hubert, to Verbatim Corporation. Optimum acceleration/deceleration circuit. 4,446,411, Cl. 318-696.000.

Sonnenschein, Hans: *See—*
Riemann, Hanns-Helmut; and Sonnenschein, Hans, 4,445,906, Cl. 44-1.00D.

Sontheimer, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,445,828, Cl. 417-490.000.

Sony Corporation: *See—*
Denholm, A. Stuart; Frutiger, William A.; and Williams, Kenneth E., 4,446,373, Cl. 250-492.200.
Hoshimi, Susumu; and Kojima, Tadashi, 4,446,490, Cl. 360-32.000.
Kimizuka, Masanori; and Yamanishi, Yoshio, 4,445,651, Cl. 242-199.000.
Uzuka, Mitsuo, 4,446,406, Cl. 318-254.000.

Sorimachi, Haruo: *See—*
Sato, Kiyoshi; Terashima, Minoru; Sorimachi, Haruo; Naka, Toshiaki; Kanno, Takeo; and Yamada, Fumiaki, 4,446,355, Cl. 219-216.000.

Souma, Masahiro: *See—*
Karino, Kimiji; Kosuge, Tokuo; and Souma, Masahiro, 4,446,080, Cl. 261-39.00D.

Soundstream, Inc.: *See—*
Stockham, Thomas G., Jr.; and Rothaar, Bruce C., 4,446,494, Cl. 360-73.000.

Southgate, Robert; Smale, Terence C.; and Ponsford, Roger J., to Beecham Group Limited. β-Lactam containing compounds, their preparation and use. 4,446,146, Cl. 424-274.000.

Sparrow, Richard S., Jr., to Peerless Pressed Metal, Inc. Apparatus for shaking contained mixtures including paint and other fluid materials. 4,445,782, Cl. 366-217.000.

Speakman Company: *See—*
Lagarelli, Carmen J., 4,445,529, Cl. 137-360.000.

Spencer, Arthur T.: *See—*
Chu, Shaw C.; and Spencer, Arthur T., 4,446,258, Cl. 523-406.000.

Spencer Wright Industries, Inc.: *See—*
Bardsley, Harold B.; and Beverley, Ian, 4,445,447, Cl. 112-79.00R.

Sperber, Martin, to Intercept Corporation. Antenna rotator apparatus. 4,446,407, Cl. 318-282.000.

Sperry Corporation: *See—*
Currie, Thomas P.; and Goldberg, Norman, 4,446,477, Cl. 357-74.000.

Spinelli, Richard A.; and Glab, Edwin F., to Xerox Corporation. Document imaging system with improved exposure uniformity at image plane. 4,445,774, Cl. 355-71.000.

Splinter, William E.: *See—*
Twersky, Marvin; Splinter, William E.; and Sandhorst, Bruce C., 4,445,788, Cl. 374-142.000.

Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., to International Flavors & Fragrances Inc. Mono-oxomethyl substituted polyhydrodimethanonaphthalene derivatives, organoleptic uses thereof and processes for preparing same. 4,446,060, Cl. 252-522.00R.

Srivastava, Gopal K.; and Lai, Stephen H., to Zenith Radio Corporation. System for generating 2H pulses in a television receiver. 4,446,482, Cl. 358-150.000.

Stabilus GmbH: *See—*
Reuschenbach, Hermann; and Sentinger, Egon, 4,445,671, Cl. 267-64.120.

Stal-Labal Turbin AB: *See—*
Ekbom, Ragnar, 4,445,259, Cl. 29-156.80B.

Stamicarbon B.V.: *See—*
Gaymans, Reinoud J.; and van Asperen, Pieter J., 4,446,304, Cl. 528-335.000.

Standard Oil Company (Indiana): *See—*
Lautzenhiser, Theodore V., 4,445,371, Cl. 73-382.00R.
Millheim, Keith K., 4,445,578, Cl. 175-45.000.

Stanek, Jaroslav: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,446,128, Cl. 424-88.000.

Stanley Electric Co., Ltd.: *See—*
Kato, Kazuhisa; and Yagami, Hiroyuki, 4,446,168, Cl. 427-39.000.

Stanton, Horace D.; and Reed, Russell, Jr., to United States of America, Navy. Polymer modified TNT containing explosives. 4,445,948, Cl. 149-19.910.

Starinshak, Thomas W.: *See—*
Shemenski, Robert M.; Kim, Dong K.; and Starinshak, Thomas W., 4,446,198, Cl. 428-625.000.

Stark, Martin H.; Pisani, George V.; and Pauquette, James J., to Arrow Paper Products Company. Method of producing a puzzle. 4,445,691, Cl. 273-155.000.

Staudinger, Alfons, to A. Rohe GmbH. Wheel alignment measuring apparatus, more specially for dynamic operation. 4,445,278, Cl. 33-203.120.

Stead, Eugene A., Jr.: *See—*
Swan, Algernon G.; Stead, Eugene A., Jr.; Thompson, William P.; and Colvin, David P., 4,445,502, Cl. 128-25.00R.

Steag AG: *See—*
Bassier, Friedr.; Adrian, Fritz; and Deuster, Dieter, 4,445,937, Cl. 106-109.000.
Steelcase Inc.: *See—*
Scheerhorn, Douglas, 4,445,729, Cl. 312-219.000.
Steeves, Arthur F.; and Bibb, Albert E., to United States of America, Energy. Micrographic detection of plastic deformation in nickel base alloys. 4,445,988, Cl. 204-129.200.
Steffen, Cliff; and Cappelli, Nicholas P., to Purdue Frederick Company, The. Metering device for dispensing selected amounts of viscous material. 4,445,626, Cl. 222-39.000.
Steffen, Klaus-Dieter: *See—*
Weisgerber, Greger; and Steffen, Klaus-Dieter, 4,446,327, Cl. 549-307.000.
Stein, Reinhardt P., to American Home Products Corporation. Hydroxyl protected 3-(2-hydroxy-2-phenylethyl)-N-[(phenylamino)carbonyl]aydnone imine intermediates. 4,446,322, Cl. 544-138.000.
Steinleitner, Gunther, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,446,213, Cl. 429-104.000.
Stejskal, Edward O., to Monsanto Company. Sample spinner for nuclear magnetic resonance spectrometer. 4,446,430, Cl. 324-321.000.
Stenberg, Erik G., to Aktiebolaget Karlstads Mekaniska Werkstad. Apparatus for forming a multilayer jet of paper making stock. 4,445,974, Cl. 162-300.000.
Stencil, Gerald R. Crowd gate for milking parlor. 4,445,460, Cl. 119-20.000.
Stenzel, Gerhard: *See—*
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,446,204, Cl. 428-323.000.
Sterling Drug Inc.: *See—*
Fountaine, Harvey A., 4,446,135, Cl. 424-154.000.
Margulies, Herman, 4,445,895, Cl. 604-193.000.
Schmidt, Paul J.; and Hung, William M., 4,446,321, Cl. 544-124.000.
Stern, Richard A., to United States of America, Army. Biasing magnet holder-tuning cap for dielectric waveguide circulator. 4,446,448, Cl. 333-1.100.
Sternberg, Ben K.; Miller, Dale E.; and Bahjat, Dhari S., to Conoco Inc. Hydrocarbon prospecting method with changing of electrode spacing for the indirect detection of hydrocarbon reservoirs. 4,446,434, Cl. 324-363.000.
Sterrett, Richard L. Apparatus for fertilizing soil with a V-blade plow. 4,445,445, Cl. 111-7.000.
Stewart, Daniel R.: *See—*
Francel, Josef; Stewart, Daniel R.; and Horn, Uriah, 4,446,241, Cl. 501-14.000.
Stewart, Robert D.; and Taylor, Thomas E., to Foster Wheeler Energy Corporation. Fluidized bed heat exchanger having separating drain and method of operation thereof. 4,445,443, Cl. 110-245.000.
Stich, Frederick A., to Siemens-Allis, Inc. Electronic control system for overload relay or the like. 4,446,498, Cl. 361-87.000.
Stichting Kennisexploitatie Nederland: *See—*
Borst, Arnoldus J., 4,445,857, Cl. 433-75.000.
Stieff, Lorin R.; and Dempsey, John C., to Taggents, Inc. Method and apparatus for measuring air infiltration rate into buildings. 4,445,364, Cl. 73-40.700.
Stillings, Michael R., to Reckitt & Colman Products Limited. Benzodioxanyl imidazoline compounds, compositions and use. 4,446,148, Cl. 424-273.00R.
Stillwell, James R. Roller skate with user powered drive mechanism. 4,445,698, Cl. 280-11.115.
Stinnertz, Horst: *See—*
Pfeiffer, Gerd; Stinnertz, Horst; and Zeunert, Fritz, 4,445,354, Cl. 72-208.000.
Stirbis, James S., to Adolph Coors Company. Disk transfer system. 4,445,431, Cl. 101-40.000.
Stivers, David A.: *See—*
Guenthner, Richard A.; and Stivers, David A., 4,446,270, Cl. 524-433.000.
Stockham, Thomas G., Jr.; and Rothaar, Bruce C., to Soundstream, Inc. Uniform speed control for a multi-channel digital recorder. 4,446,494, Cl. 360-73.000.
Stoffel Technologies, Inc.: *See—*
Saunders, William T., 4,445,621, Cl. 220-273.000.
Stoltman, Donald D.; Kabasin, Daniel F.; and Field, Martin J., to General Motors Corporation. Hot film sensor for air flow meter. 4,445,369, Cl. 73-204.000.
Stolyar, Eduard A.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.
Stork Services B.V.: *See—*
van den Broek, Bernardus C., 4,445,451, Cl. 114-222.000.
Strack, Karl-Ludwig: *See—*
Halene, Clemens; Strack, Karl-Ludwig; Lange, Ernst; and Henrichs, Franz-Josef, 4,446,111, Cl. 422-200.000.
Strauss, Jurgen: *See—*
Bergthaller, Peter; and Strauss, Jurgen, 4,446,219, Cl. 430-216.000.
Strebendt, Frances B.: *See—*
Bethel, Leslie D.; Kerr, Howard A.; Strebendt, Frances B.; and Waninski, John E., Jr., 4,446,336, Cl. 179-6.100.
Strehler, Hugo; Valentin, Guenter; and Hoerauf, Werner, to BASF Aktiengesellschaft. Process and apparatus for the production of plastic strands. 4,446,089, Cl. 264-178.00F.
Strohmeier, Warren O.: *See—*
Herzl, Peter J.; and Strohmeier, Warren O., 4,445,388, Cl. 73-861.240.
Strolle, Christopher H., to RCA Corporation. Linear interpolation between regularly spaced digital samples. 4,446,529, Cl. 364-723.000.
Stroud, Edward A., to Stroudex Industries Inc. Vehicle structure. 4,445,701, Cl. 280-217.000.
Stroudex Industries Inc.: *See—*
Stroud, Edward A., 4,445,701, Cl. 280-217.000.
Structural Fibers, Inc.: *See—*
Bliley, Ward L., 4,446,092, Cl. 264-258.000.
Struve, Friedrich, to Gundle Holdings (Proprietary) Limited. Welding of plastics material. 4,445,955, Cl. 156-153.000.
Stubbs, Kenneth W., to Kenrod Enterprises. Solids collecting apparatus for a vacuum drain system. 4,446,016, Cl. 210-86.000.
Sturtzkopf, Robert. Method and device for determining the relative position of the upper jaw and lower jaw for the production of dentures. 4,445,856, Cl. 433-71.000.
Stutz Company: *See—*
Stutz, P. David; and Kuchta, George J., 4,445,993, Cl. 204-213.000.
Stutz, P. David; and Kuchta, George J., to Stutz Company. Laser perforated plating barrel and method of constructing the same. 4,445,993, Cl. 204-213.000.
Sugimoto, Makoto: *See—*
Sakai, Masao; Hashizume, Miyakazu; Suzuki, Yasuhiko; and Sugimoto, Makoto, 4,446,058, Cl. 252-507.000.
Sugiyama, Masatoshi; Yoshida, Kazutaka; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Ink-jet color printing system. 4,446,470, Cl. 346-140.00R.
Sugiyama, Masatoshi: *See—*
Maekawa, Masakazu; Nakamura, Sukenori; Sugiyama, Masatoshi; and Odawara, Hideo, 4,446,174, Cl. 427-261.000.
Sugiyama, Takekatsu: *See—*
Iwakura, Ken; and Sugiyama, Takekatsu, 4,446,209, Cl. 428-411.000.
Suhayda, Louis. Engine heater. 4,445,469, Cl. 123-142.50R.
Suling, Carlhans: *See—*
Konig, Joachim; Schnalke, Karl-Erwin; Suling, Carlhans; and Horacek: Gotz, 4,446,291, Cl. 526-209.000.
Sullivan, Leroy J.; and Waterfield, Robert L., to Chartered Industries Of Singapore Private Limited. Drum magazine for a gun. 4,445,418, Cl. 89-33.00D.
Sullivan, William C.; and Nimberger, Spencer M., to Rockwell International Corporation. Differential speed limiting device. 4,445,400, Cl. 74-711.000.
Sulzer Brothers Limited: *See—*
Hintsch, Otto, 4,445,546, Cl. 139-435.000.
Sumai, Jaihind S., to Robert Bosch GmbH. Air flow rate meter apparatus. 4,445,368, Cl. 73-118.100.
Sunberg, Richard J.; and Benedict, James J., to Procter & Gamble Company, The. Aqueous gel containing tricalcium di(1-hydroxy-3-aminopropane-1,1-diphosphonate acid. 4,446,052, Cl. 252-315.100.
Sunds Defibrator AB: *See—*
Bystedt, Hjalmar S. I., 4,445,973, Cl. 162-261.000.
Sundstrand Corporation: *See—*
Lang, David J.; and Readman, John, 4,445,420, Cl. 91-3.000.
Sung, Rodney L., to Texaco Inc. Alcohol composition stabilized against corrosion by the use of an amino tetrazole. 4,445,907, Cl. 44-53.000.
Sunstore Kommanditbolag: *See—*
Platell, Ove B., 4,445,499, Cl. 126-430.000.
Superfos Glasuld A/S (Superfos A/S): *See—*
Rasmussen, Lauritz B. L., 4,446,186, Cl. 428-74.000.
Suyama, Tadakazu: *See—*
Naito, Ryoichi; Suyama, Tadakazu; and Iga, Yoshiro, 4,446,134, Cl. 424-101.000.
Suzue, Masayoshi: *See—*
Shibuta, Osamu; Suzue, Masayoshi; and Hasegawa, Tetuo, 4,446,295, Cl. 528-168.000.
Suzuki, Go; and Michishita, Kazuo, to NGK Insulators, Ltd. Method of manufacturing a ceramic structural body. 4,445,274, Cl. 29-832.000.
Suzuki, Sakaru: *See—*
Noyori, Ryoji; Suzuki, Sakaru; and Okayama, Minoru, 4,446,312, Cl. 536-1.100.
Suzuki, Tsutomu, to Pioneer Electronic Corporation. Video format signal recording/reproducing system. 4,446,488, Cl. 358-342.000.
Suzuki, Yasuhiko: *See—*
Sakai, Masao; Hashizume, Miyakazu; Suzuki, Yasuhiko; and Sugimoto, Makoto, 4,446,058, Cl. 252-507.000.
Suzuki, Yasunori, to Yasui Sangyo Co., Ltd. Log splitter. 4,445,554, Cl. 144-193.00A.
Sviniin, Mikhail P.: *See—*
Ivanov, Andrei S.; Komorin, Leonid V.; Nikishkin, Vladimir I.; Sviniin, Mikhail P.; and Fedotov, Mikhail T., 4,446,374, Cl. 250-492.300.
Swan, Algernon G.; Stead, Eugene A., Jr.; Thompson, William P.; and Colvin, David P. Safety restraint system and inertial reel therefor. 4,445,502, Cl. 128-25.00R.
Sweeney, George G.: *See—*
Castle, Peter M.; Sweeney, George G.; and Yannopoulos, Lymperios N., 4,446,169, Cl. 427-53.100.
Sweet, Richard C.: *See—*
Boser, Otmar H.; and Sweet, Richard C., 4,446,502, Cl. 361-308.000.
Swessel, John A., Jr.: *See—*
Link, Donald A.; and Swessel, John A., Jr., 4,446,503, Cl. 361-346.000.

Swindells, Roy J.: *See—*
Critchley, Richard J.; and Swindells, Roy J., 4,446,063, Cl. 252-633.000.
Swiss Aluminium Ltd.: *See—*
Bouille, Bernard, 4,445,849, Cl. 432-128.000.
Swithenbank, Colin: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,445,930, Cl. 71-105.000.
Sybron Corporation: *See—*
Peart, Edward L.; and Howard, Charlie J., 4,445,789, Cl. 374-198.000.
Sydorko, Peter J.: *See—*
Bohrn, Walter J.; and Sydorko, Peter J., 4,445,243, Cl. 8-151.000.
Sykes, Richard B.: *See—*
Gregson, Michael; and Sykes, Richard B., 4,446,317, Cl. 544-22.000.
Synapco Ltd.: *See—*
Meyers, Stuart R., 4,445,283, Cl. 36-29.000.
Syndrill Carbide Diamond Company: *See—*
Sahley, Lloyd W., 4,445,580, Cl. 175-404.000.
Syngas Company: *See—*
Casper, James R.; and Hauer, Harvey J., 4,445,463, Cl. 122-7.00R.
Syska, Andrew J., to Thermal Systems Engineering, Inc. Recuperative burner with exhaust gas recirculation means. 4,445,842, Cl. 431-115.000.
Syva Company: *See—*
Lin, Cheng-I; and Singh, Prithipal, 4,446,065, Cl. 260-112.00R.
Szantay, Csaba; Szbao, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; and Keve, Tibor, to Richter Gedeon Vegyeszeti Gyar R.T. Hexahydroindoloquinoliizinium and octahydroindoloquinolizine esters, and method of increasing blood flow in an animal with hydroxyamino-eburnane derivatives. 4,446,139, Cl. 424-256.000.
Szbao, Lajos: *See—*
Szantay, Csaba; Szbao, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; and Keve, Tibor, 4,446,139, Cl. 424-256.000.
Szpak, Anthony D.: *See—*
English, Philip H.; and Szpak, Anthony D., 4,446,158, Cl. 426-79.000.
T. F. Hudgins & Associates, Inc.: *See—*
Martin, Henry W., 4,445,454, Cl. 116-106.000.
Tabutin, Andre: *See—*
Champeau, Marcel; and Tabutin, Andre, 4,445,405, Cl. 82-2.500.
Taggents, Inc.: *See—*
Stieff, Lorin R.; and Dempsey, John C., 4,445,364, Cl. 73-40.700.
Tai, Ho T., to Lever Brothers Company. Built liquid detergent compositions. 4,446,043, Cl. 252-105.000.
Taira, Shigenobu, to Fujitsu Limited. MIS Device including a substrate bias generating circuit. 4,446,384, Cl. 307-297.000.
Takada, Masaaki: *See—*
Kosuda, Hironori; Takada, Masaaki; and Inoue, Hisashi, 4,445,875, Cl. 464-14.000.
Takahashi, Kenichi: *See—*
Ohsawa, Kazuya; Shibata, Toshiaki; and Takahashi, Kenichi, 4,445,755, Cl. 350-96.340.
Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, to Nippon Steel Corporation. High strength cold rolled steel strip having an excellent deep drawability. 4,445,946, Cl. 148-36.000.
Takahashi, Yoshio: *See—*
Sasaki, Takeshi; Akiba, Kiyoshi; and Takahashi, Yoshio, 4,445,399, Cl. 74-603.000.
Takakuwa, Eiji; Nakano, Kazumi; and Kizitani, Izumi, to Nippondenso Co., Ltd. Ignition timing control apparatus with knock sensor. 4,445,479, Cl. 123-425.000.
Takamatsu, Hideo; and Minatono, Shobu, to Kuraray Co., Ltd. Modified cis-1,4-polyisoprene rubber, a process for manufacturing the same, and a composition containing the same. 4,446,281, Cl. 525-282.000.
Takano, Akihisa: *See—*
Fukuda, Kunio; Tazaki, Kichiya; Takano, Akihisa; and Kusumi, Yuji, 4,446,272, Cl. 524-465.000.
Takaoka, Michio; Ono, Motoyuki; Kaji, Isao; and Yagi, Shigeki, to Fujikura Cable Works, Limited, The. Power cable joint structure including a reinforcement insulator containing electrode spherical bodies. 4,446,331, Cl. 174-73.00R.
Takasu, Yoshio; and Ishikawa, Shozo, to Canon Kabushiki Kaisha; and Copyer Kabushiki Kaisha. Electrophotographic photosensitive member having a hydrazone containing layer. 4,446,217, Cl. 430-58.000.
Takeda Chemical Industries, Ltd.: *See—*
Horii, Satoshi; and Fukase, Hiroshi, 4,446,319, Cl. 544-92.000.
Naito, Kenzo; Shinbo, Haruo; and Tsukamura, Kazuo, 4,446,318, Cl. 544-26.000.
Takei, Toshihiro: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,445,821, Cl. 417-366.000.
Takeshita, Junki: *See—*
Nakao, Masami; Okimoto, Haruo; Yada, Yoshikuni; and Takeshita, Junki, 4,445,474, Cl. 123-336.000.
Takeuchi, Masato: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.
Takeuchi, Seizi: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.
Takeuchi, Yasuhito: *See—*
Yamaguchi, Keiki; Takeuchi, Yasuhito; Sano, Shinichi; and Higashiizumi, Takao, 4,445,379, Cl. 73-631.000.
Takiguchi, Ryohei; and Nagashima, Masayoshi, to Dai Nippon Printing Co., Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Heat-sensitive recording sheet, and a method and device for fixing a recorded information thereon. 4,446,467, Cl. 346-76.0PH.
Takimoto, Toshiyuki: *See—*
Aoki, Keiji; and Takimoto, Toshiyuki, 4,445,481, Cl. 123-440.000.
Taleff, Alexander; Brady, Robert M.; and Blaszczak, Thaddeus E., to Westinghouse Electric Corp. Apparatus for manufacturing helical cores. 4,445,353, Cl. 72-136.000.
Tamai, Yasuo: *See—*
Mizuno, Chiaki; Tamai, Yasuo; and Tsuji, Nobuo, 4,446,205, Cl. 428-327.000.
Tamaru, Shigemi: *See—*
Eguchi, Kiyoshi; Ishikawa, Takayoshi; Tamaru, Shigemi; Genba, Yasushi; and Kodera, Toshihiko, 4,446,347, Cl. 200-144.00R.
Tamura, Kohki: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.
Tanaka, Atsuo, to Sharp Kabushiki Kaisha. Computer for calculating the similarity between patterns. 4,446,531, Cl. 364-728.000.
Tanaka, Hideki: *See—*
Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, 4,445,489, Cl. 123-571.000.
Tanaka, Masaaki: *See—*
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,445,488, Cl. 123-569.000.
Tanaka, Masashi: *See—*
Ishikawa, Yuzuru; and Tanaka, Masashi, 4,445,777, Cl. 356-139.000.
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Exhaust gas recirculation control for diesel engine. 4,445,488, Cl. 123-569.000.
Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, to Hitachi, Ltd. Combustion control apparatus. 4,445,841, Cl. 431-27.000.
Tanca, Michael C., to Combustion Engineering, Inc. Slag tap gas flow inducement in wet-bottom furnaces. 4,445,441, Cl. 110-165.00R.
Tang, Denny D.: *See—*
Isaac, Randall D.; Ning, Tak H.; and Tang, Denny D., 4,446,476, Cl. 357-67.000.
Tange, Michiaki, to Marui Ltd. Head set arrangement for bicycle. 4,445,703, Cl. 280-279.000.
Tanouchi, Tadao; Shigeoka, Satoshi; Kawamura, Masanori; Hayashi, Masaki; Terashima, Hiroshi; and Hirata, Fumio, to Ono Pharmaceutical Co., Ltd. Rhodanine derivatives. 4,446,143, Cl. 424-270.000.
Tanski, James A. Roof and gutter saving device. 4,445,301, Cl. 52-11.000.
Tapco Products Company, Inc.: *See—*
Chubb, Arthur B.; MacLeod, Richard J.; and Rhoades, James J., 4,445,356, Cl. 72-319.000.
Tarcsay, Lajos: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,446,128, Cl. 424-88.000.
Tarr, Fred P., to Polaroid Corporation. Peristaltic pump apparatus. 4,445,826, Cl. 417-476.000.
Tate, Thomas B.: *See—*
Seidl, Allen W., 4,445,250, Cl. 15-257.060.
Taylor, Leonard G., to Allied Steel and Wire Limited. Reinforcement supports. 4,445,308, Cl. 52-687.000.
Taylor, Noel R.; and Taylor, Paul A. Automatic load seeking control for a pumpjack motor. 4,446,415, Cl. 318-798.000.
Taylor, Paul A.: *See—*
Taylor, Noel R.; and Taylor, Paul A., 4,446,415, Cl. 318-798.000.
Taylor, Thomas E.: *See—*
Stewart, Robert D.; and Taylor, Thomas E., 4,445,443, Cl. 110-245.000.
Tazaki, Kichiya: *See—*
Fukuda, Kunio; Tazaki, Kichiya; Takano, Akihisa; and Kusumi, Yuji, 4,446,272, Cl. 524-465.000.
Technicare Corporation: *See—*
Hadjicostis, Andreas, 4,446,395, Cl. 310-327.000.
Kaminski, Perry, 4,445,380, Cl. 73-642.000.
Technion Research and Development Foundation Ltd.: *See—*
Merhav, Shmuel J., 4,445,376, Cl. 73-510.000.
Teepak, Inc.: *See—*
Smith, Burl L.; and Kearby, Ronald S., 4,446,167, Cl. 426-650.000.
Teige, Wolfgang: *See—*
Hahnke, Manfred; and Teige, Wolfgang, 4,445,904, Cl. 8-538.000.
Teijin Limited: *See—*
Minemura, Norihiro; and Kobayashi, Shigenobu, 4,445,903, Cl. 8-492.000.
Okumura, Nobuya; Ichihashi, Tetsuo; Matsumura, Shunichi; and Inata, Hiroo, 4,446,262, Cl. 524-89.000.
Telectronics Pty. Ltd.: *See—*
Cowdery, David; and Cooper, John R., 4,445,511, Cl. 128-419.00P.

Temple University of the Commonwealth System of Higher Education: *See—*
Zubrzycki, Leonard J., 4,446,230, Cl. 435-6.000.
Templin, Philip R., to Gulf Research & Development Company. Continuous extrusion of paraffin wax. 4,446,087, Cl. 264-148.000.
Terashima, Hiroshi: *See—*
Tanouchi, Tadao; Shigeoka, Satoshi; Kawamura, Masanori; Hayashi, Masaki; Terashima, Hiroshi; and Hirata, Fumio, 4,446,143, Cl. 424-270.000.
Terashima, Minoru: *See—*
Sato, Kiyoshi; Terashima, Minoru; Sorimachi, Haruo; Naka, Toshiaki; Kanno, Takeo; and Yamada, Fumiaki, 4,446,355, Cl. 219-216.000.
Tereshin, Igor M.: *See—*
Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., 4,446,316, Cl. 536-112.000.
Terui, Nobuo, to Olympus Optical Co., Ltd. Variable frequency-response equalizer. 4,446,493, Cl. 360-65.000.
Tetra Pak Developpement S.A.: *See—*
Reil, Wilhelm, 4,445,309, Cl. 53-410.000.
Texaco Inc.: *See—*
Espedal, Michael L., 4,445,444, Cl. 110-261.000.
Lee, Kung-You; McMahon, Matthew A.; and Powell, Justin C., 4,446,057, Cl. 502-355.000.
Petty, Randall H.; and Bartley, Burton H., 4,446,010, Cl. 208-120.000.
Schlicht, Raymond C.; and Skrobul, Anthony P., 4,446,038, Cl. 252-51.50A.
Skrobul, Anthony P.; and Kaufman, Benjamin J., 4,446,053, Cl. 252-33.600.
Sung, Rodney L., 4,445,907, Cl. 44-53.000.
Texas Instruments Incorporated: *See—*
Boulanger, Henry J.; McGuirk, Andrew C.; and LaPlante, William J., 4,446,450, Cl. 337-380.000.
Boulanger, Henry J., 4,446,451, Cl. 337-380.000.
Brown, Sammy K.; Solimeno, Duane; Koeppen, Peter L.; and Rogers, Gerald, 4,446,514, Cl. 364-200.000.
Grenier, Aime J.; and Hirsbrunner, Hans G., 4,446,500, Cl. 361-103.000.
Peterson, Robert W.; Grenier, Aime J.; and Hirsbrunner, Hans G., 4,446,501, Cl. 361-114.000.
Tezuka, Masao: *See—*
Endo, Hiroshi; Hirate, Naoyuki; and Tezuka, Masao, 4,446,115, Cl. 423-63.000.
Thaler, Warren A.: *See—*
Lundberg, Robert D.; and Thaler, Warren A., 4,446,267, Cl. 524-211.000.
Thatcher, Alan J. Spin trimmer for removing flashing from the tops of plastic bottles. 4,445,406, Cl. 82-46.000.
Theilen, Kurt A., to Lukas-Erzett Vereinigte Schleif und Fraswerkzeugfabriken. Method of making a cutting member and article produced thereby. 4,445,810, Cl. 407-118.000.
Thermal Specialties Inc.: *See—*
McCaleb, George E., 4,445,573, Cl. 166-250.000.
Thermal Systems Engineering, Inc.: *See—*
Syska, Andrew J., 4,445,842, Cl. 431-115.000.
Thermalloy Incorporated: *See—*
Jordan, William D.; Hinshaw, Howard G.; and Clemens, Donald L., 4,446,504, Cl. 361-386.000.
Thermo Electron Corporation: *See—*
Cole, William E.; O'Connell, Drew P.; and Griffith, James L., 4,445,919, Cl. 65-27.000.
Theurer, Josef; and Hansmann, Johann, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Ballast tamping tool unit. 4,445,438, Cl. 104-12.000.
Thiebault, Andre: *See—*
Badoz, Janine; Bardin, Michelle; Bernard, Claude; Herlem, Michel; Robert, Guy; and Thiebault, Andre, 4,446,215, Cl. 429-190.000.
Thies, Jerome A.; and Tietje, Mark E., to Caterpillar Tractor Co. Hydraulic hose assembly and method. 4,445,332, Cl. 60-455.000.
Thilmony, Evelyn: *See—*
Browning, Andrea, 4,445,950, Cl. 156-63.000.
Thiokol Corporation: *See—*
Shaw, Graham C., III; and Reed, Russell, Jr., 4,445,947, Cl. 149-19.300.
Tholl, Steven G.; and Vonkohlar, John C., IV, to Transtart, Inc. Remote starting of an internal combustion engine. 4,446,460, Cl. 340-825.690.
Thoma, Wilhelm: *See—*
Konig, Eberhard; Thoma, Wilhelm; Pedain, Josef; and Konig, Klaus, 4,446,293, Cl. 528-45.000.
Thoman, Daniel L.: *See—*
Faulkner, Richard D.; Thoman, Daniel L.; and McDonie, Arthur F., 4,446,401, Cl. 313-533.000.
Thomas, Charles E. Flashlight with compass means integral thereto. 4,446,509, Cl. 362-184.000.
Thomas, David C., to Corban International, Ltd. Method and apparatus for providing security for computer software. 4,446,519, Cl. 364-300.000.
Thomas, Harold T.: *See—*
Wadsworth, Donald H.; Thomas, Harold T.; Fletcher, George L.; and Weidner, Charles H., 4,446,223, Cl. 430-338.000.
Thomas, Ian M., to Owens-Illinois, Inc. Process of making glass articles having antireflective coating. 4,446,171, Cl. 427-160.000.
Thomas Jefferson University: *See—*
Osterholm, Jewell L., 4,445,500, Cl. 128-1.00R.
Osterholm, Jewell L., 4,445,514, Cl. 128-632.000.
Osterholm, Jewell L., 4,445,886, Cl. 604-28.000.
Osterholm, Jewell L., 4,445,887, Cl. 604-28.000.
Osterholm, Jewell L., 4,445,888, Cl. 604-28.000.
Osterholm, Jewell L., 4,446,154, Cl. 424-350.000.
Osterholm, Jewell L., 4,446,155, Cl. 424-350.000.
Thompson, Clifford F.: *See—*
Hansen, Bent J.; and Thompson, Clifford F., 4,445,677, Cl. 269-41.000.
Thompson, David J., to Imperial Chemical Industries PLC. Pleochroic anthraquinone dyes. 4,446,047, Cl. 252-299.100.
Thompson, Gary J.; and Carey, C. H., to Morgan Construction Company. Fluidized bed lubricant container. 4,445,351, Cl. 72-43.000.
Thompson, Neil E. S., to Petrolite Corporation. Preparation of mixture of nitrogen and sulfur-nitrogen heterocyclics and use in corrosion inhibiting. 4,446,056, Cl. 252-391.000.
Thompson, William P.: *See—*
Swan, Algernon G.; Stead, Eugene A., Jr.; Thompson, William P.; and Colvin, David P., 4,445,502, Cl. 128-25.00R.
Thorn Emi Limited: *See—*
Ranby, Peter W.; and Palowkar, David R., 4,446,048, Cl. 252-301.40S.
Thorsby, Grover A.; and Burgess, Mark E. Irrigation system. 4,445,643, Cl. 239-197.000.
Three Bond Co., Ltd.: *See—*
McGinniss, Vincent D., 4,446,246, Cl. 502-155.000.
Thule United Limited a British Company: *See—*
Harry, Alan, 4,446,022, Cl. 210-388.000.
Tidd, James A.; and Tidd, Miles H., to Alphatype Corporation. Ultra-high resolution photocomposition system employing electronic character generation from magnetically stored data. 4,446,491, Cl. 360-48.000.
Tidd, Miles H.: *See—*
Tidd, James A.; and Tidd, Miles H., 4,446,491, Cl. 360-48.000.
Tietje, Mark E.: *See—*
Thies, Jerome A.; and Tietje, Mark E., 4,445,332, Cl. 60-455.000.
Tillander, Hans: *See—*
Ekbladh, Fred V. G.; and Tillander, Hans, 4,445,897, Cl. 604-280.000.
Tilly, Lynn K.; and Sawa, John J., to AMSTED Industries Incorporated. Railroad vehicle truck with single wheelset. 4,445,439, Cl. 105-165.000.
Tioxide Group Limited: *See—*
List, David E., 4,446,031, Cl. 252-1.000.
Tippetts, Thomas B., to Garrett Corporation, The. Pressure-to-electric output system for an angular rate sensor or the like. 4,445,377, Cl. 73-516.0LM.
Tipton, Lynn L.: *See—*
Fox, David A.; and Tipton, Lynn L., 4,446,417, Cl. 322-25.000.
Tison, Richard P., to General Motors Corporation. Parasitic electrodialysis recovery of dissolved chemicals from dilute solutions directly into a plating bath. 4,445,984, Cl. 204-49.000.
Tobita, Hiroshi: *See—*
Okada, Hideo; Imahashi, Jinichi; Takeuchi, Seizi; Okabe, Sigeru; Kahara, Toshiki; Ishii, Kenzo; Takeuchi, Masato; Matsuda, Shimpei; Tamura, Kohki; and Tobita, Hiroshi, 4,446,210, Cl. 429-42.000.
Todd, Bradley L.: *See—*
Byrd, Audis C.; Todd, Bradley L.; and Pattison, William W., Jr., 4,445,465, Cl. 122-392.000.
Todokoro, Shigeru: *See—*
Kojima, Tadashi; and Todokoro, Shigeru, 4,446,489, Cl. 360-13.000.
Tokarzewski, Richard J.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P., Watkins, Hugh; and Vock, Manfred H., 4,446,060, Cl. 252-522.00R.
Tokuda, Hiroshi: *See—*
Okazaki, Yutaka; Tokuda, Hiroshi; Miyahara, Shiyoichiro; and Yamada, Yoshitsugu, 4,446,133, Cl. 424-250.000.
Tokyo Juki Industrial Co., Ltd.: *See—*
Barozzi, Gian P.; and Horeschi, Giancarlo, 4,445,797, Cl. 400-166.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Arinobu, Mutsuhiro, 4,446,081, Cl. 261-64.00R.
Endo, Hiroshi; Hirate, Naoyuki; and Tezuka, Masao, 4,446,115, Cl. 423-63.000.
Hoshimi, Susumu; and Kojima, Tadashi, 4,446,490, Cl. 360-32.000.
Iida, Tetsuya; and Sakaue, Tatsuo, 4,446,567, Cl. 377-79.000.
Inouye, Tamon, 4,446,521, Cl. 364-414.000.
Kameyama, Shuichi, 4,445,967, Cl. 156-648.000.
Kojima, Tadashi; and Todokoro, Shigeru, 4,446,489, Cl. 360-13.000.
Takiguchi, Ryohei; and Nagashima, Masayoshi, 4,446,467, Cl. 346-76.0PH.
Yoshimaru, Tomohisa, 4,446,492, Cl. 360-48.000.
Tolasch, Gerhard: *See—*
Hinz, Werner; and Tolasch, Gerhard, 4,445,519, Cl. 131-94.000.
Tolino, Ralph W.: *See—*
Pomaibo, Paul; and Tolino, Ralph W., 4,446,098, Cl. 376-261.000.
Tolle, Laura L.: *See—*
Kolycheck, Edmond G.; and Tolle, Laura L., 4,446,286, Cl. 525-455.000.

Tomalesky, Allan W.: *See—*
Friedmann, Paul G.; Patris, Frank N.; and Tomalesky, Allan W., 4,446,562, Cl. 373-149.000.
Tomy Corporation: *See—*
Nuttal, Michael; and Yamamoto, Shoji, 4,445,868, Cl. 434-88.000.
Tongel, Richard R., to PPG Industries, Inc. Registration blocks for a photomask assembly. 4,445,775, Cl. 355-122.000.
Toray Industries, Inc.: *See—*
Moriki, Yoshikazu; and Ogasawara, Masafumi, 4,445,833, Cl. 425-131.500.
Torchilin, Vladimir P.: *See—*
Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., 4,446,316, Cl. 536-112.000.
Torisawa, Akira: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,445,784, Cl. 368-157.000.
Tosco Corporation: *See—*
LaDelfa, Christopher; and Nutter, John F., 4,445,976, Cl. 201-41.000.
Toska Co., Ltd.: *See—*
Ueno, Hideyuki, 4,445,882, Cl. 493-376.000.
Totten, Adrian M.: *See—*
Arena, Alan J.; Pounder, Edwin; Pawlowski, Michael; and Totten, Adrian M., 4,445,781, Cl. 366-154.000.
Touchette, Norman W.: *See—*
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlind, William, 4,446,061, Cl. 252-602.000.
Toudo, Kenzi: *See—*
Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, 4,445,841, Cl. 431-27.000.
Town, Michael H.: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,446,147, Cl. 424-274.000.
Toyo Kogyo Co., Ltd.: *See—*
Kobayashi, Kazuo; Tanaka, Hideki; Iida, Katsuyoshi; and Kamite, Junji, 4,445,489, Cl. 123-571.000.
Nakao, Masami; Okimoto, Haruo; Yada, Yoshikuni; and Takeshita, Junki, 4,445,474, Cl. 123-336.000.
Toyo Kohan Co., Ltd.: *See—*
Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, 4,445,998, Cl. 264-385.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,445,488, Cl. 123-569.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Aoki, Keiji; and Takimoto, Toshiyuki, 4,445,481, Cl. 123-440.000.
Transtart, Inc.: *See—*
Tholl, Steven G.; and Vonkohlar, John C., IV, 4,446,460, Cl. 340-825.690.
Tratz, Herbert; Finckh, Hermann; and Kunstle, Konrad, to Kraftwerk Union Aktiengesellschaft. Installation for generating superheated process steam from salt-containing raw water. 4,445,325, Cl. 60-39.182.
Treder, Ralph A., Jr., to Western Electric Co., Inc. Method for ultrasonically determining characteristics of a body. 4,445,360, Cl. 73-1.0DV.
Tree Farmers International, Inc.: *See—*
Peters, Thomas, III, 4,445,557, Cl. 144-336.000.
Trelleborg AB: *See—*
Dehlen, Bengt L. A., 4,446,192, Cl. 428-339.000.
Trenkle, Robert W.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,446,125, Cl. 424-49.000.
Tri-Motion Industries, Inc.: *See—*
Bilski, Gerard W., 4,445,538, Cl. 137-596.200.
Trippett, Richard J., to General Motors Corporation. Variable preload foil bearing. 4,445,792, Cl. 384-103.000.
Troxler, A. Ray. Control assembly for bicycles. 4,445,704, Cl. 280-292.000.
Trudeau, Luc. Dismantable joint arrangement. 4,445,801, Cl. 403-219.000.
Trumbetas, Jerome F.: *See—*
Malizia, Peter D.; and Trumbetas, Jerome F., 4,446,162, Cl. 426-424.000.
Truninger, Thomas, to Adna AG. Guidable bogie truck for mobile cranes. 4,445,588, Cl. 180-233.000.
Truth Incorporated: *See—*
Sandberg, Christopher T., 4,445,794, Cl. 384-428.000.
TRW Inc.: *See—*
Grois, Igor; Margolin, Mark; and Berg, Alan, 4,445,750, Cl. 350-96.210.
Reynolds, Frederick W., III; Miranda, Robert E.; and Fabian, Roger C., 4,445,952, Cl. 156-94.000.
Reynolds, Frederick W., III; Miranda, Robert E.; and Fabian, Roger C., 4,445,952, Cl. 156-94.000.
Tsao, Yuh-hwang: *See—*
Drake, Evelyn N.; and Tsao, Yuh-hwang, 4,445,576, Cl. 166-291.000.
Tseng, Chih-Shan. Padlock. 4,445,347, Cl. 70-38.00B.
Tsentralnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,445,564, Cl. 164-186.000.
Tsuboka, Eiichi, to Matsushita Electric Industrial Co., Ltd. Fast hadamard transform device. 4,446,530, Cl. 364-725.000.
Tsuchiya, Yoshikazu: *See—*
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,446,522, Cl. 364-426.000.
Tsuji, Nobuo: *See—*
Mizuno, Chiaki; Tamai, Yasuo; and Tsuji, Nobuo, 4,446,205, Cl. 428-327.000.
Tsuji, Yasuhiro; and Wakabayashi, Kiyoshige, to Chugai Seiyaku Kabushiki Kaisha. Light scattering immunoassay involving particles with selective frequency band apparatus. 4,446,239, Cl. 436-532.000.
Tsukamura, Kazuo: *See—*
Naito, Kenzo; Shinbo, Haruo; and Tsukamura, Kazuo, 4,446,318, Cl. 544-26.000.
Tsushima, Noboru; Fuse, Masashi; Sasaki, Toshio; Ogata, Masayuki; Mimori, Teruo; and Mukai, Tadashi, to Alps Electric Co., Ltd. Magnetic course detector. 4,445,279, Cl. 33-356.000.
Tsuzurabara, Mamoru, to Hitachi, Ltd. Method of producing magnetrons. 4,445,873, Cl. 445-6.000.
Tuenkers Maschinenbau G.m.b.H.: *See—*
Tunkers, Josef-Gerhard, 4,445,676, Cl. 269-32.000.
Tufco Corporation: *See—*
Beasley, Max M., 4,445,446, Cl. 112-79.00R.
Tunkers, Josef-Gerhard, to Tuenkers Maschinenbau G.m.b.H. Fluid-operated bell crank clamping device with elastic spring link and releasable clamping arm. 4,445,676, Cl. 269-32.000.
Tupper, Leland C., to General Electric Company. Terminal voltage limit regulator for a load commutated inverter. 4,446,414, Cl. 318-723.000.
Turiot, Andre , to Messier-Hispano-Bugatti (S.A.). Shock absorber-actuator. 4,445,672, Cl. 267-64.160.
Turnbull, David: *See—*
Pairaudeau, Reginald D.; and Turnbull, David, 4,446,091, Cl. 264-225.000.
Tweedy, Ernest P., to GTE Laboratories Incorporated. Wideband switch crosspoint and switching matrix. 4,446,552, Cl. 370-58.000.
Twersky, Marvin; Splinter, William E.; and Sandhorst, Bruce C., to University of Nebraska, The Board of Regents of the. Soil probe and method of obtaining moisture, temperature and root distribution of a soil profile. 4,445,788, Cl. 374-142.000.
Tyndall, Wayne: *See—*
Hyde, Bruce; Tyndall, Wayne; Abernethy, Dennis; and Mellgren, Per G., 4,445,552, Cl. 144-3.00D.
Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M; Vock, Manfred H.; and Tyszkiewicz, Theodore J., 4,446,157, Cl. 426-3.000.
Tzakis, George J.: *See—*
Johnson, Fred D.; Flasza, Michael D.; and Tzakis, George J., 4,446,443, Cl. 330-257.000.
U.C. Industries: *See—*
Cisar, James R.; and Grauzer, Attila, 4,445,837, Cl. 425-141.000.
Uchida, Hiroyasu, to Fuji Xerox Co., Ltd. Original circulating and conveying device for copying machine. 4,445,682, Cl. 271-301.000.
Ueba, Hisaaki: *See—*
Nakamura, Masaaki; and Ueba, Hisaaki, 4,445,964, Cl. 156-500.000.
Ueda, Makoto: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,445,784, Cl. 368-157.000.
Ueno, Hideyuki, to Ben Clements & Sons, Inc.; Toska Co., Ltd.; and Japan Bano'k Co., Ltd. Tag attacher. 4,445,882, Cl. 493-376.000.
Uhlig, Jurgen: *See—*
Ebermann, Joachim; Graf, Heinz; Schleicher, Siegfried; and Uhlig, Jurgen, 4,446,408, Cl. 318-600.000.
Ujiie, Seiichi: *See—*
Fujishige, Masao; Dokiya, Masayuki; Kameyama, Tetsuya; Yokokawa, Harumi; Ujiie, Seiichi; Fukuda, Kenzo; and Motoe, Akihiro, 4,445,934, Cl. 75-68.00A.
Ulm, John G.: *See—*
Bond, Curtis J.; and Ulm, John G., 4,445,551, Cl. 141-349.000.
Ulrich, Bernhard; and Slot, Gys H., to Ulrich, Max Bernhard. Device for straightening spinal column. 4,445,513, Cl. 128-69.000.
Ulrich, Max Bernhard: *See—*
Ulrich, Bernhard; and Slot, Gys H., 4,445,513, Cl. 128-69.000.
Umeya, Eiji: *See—*
Kashimoto, Yutaka; Sakuma, Shinzo; and Umeya, Eiji, 4,446,346, Cl. 200-144.00B.
Union Carbide Corporation: *See—*
Bartley, William J.; and Wilson, Thomas P., 4,446,251, Cl. 518-716.000.
Brown, Harry J., 4,446,196, Cl. 428-544.000.
Jamerson, Jackie D.; Billig, Ernst; and Bryant, David R., 4,446,074, Cl. 260-429.00R.
Keogh, Michael J., 4,446,279, Cl. 525-106.000.
Pairaudeau, Reginald D.; and Turnbull, David, 4,446,091, Cl. 264-225.000.
Union Oil Company of California: *See—*
Albertson, Walter, 4,446,006, Cl. 208-253.000.
Deering, Roland F.; and Duir, John H., 4,446,001, Cl. 208-11.00R.
Hsieh, Wen-Ching; Bostich, June M.; and Koepke, Jeffery W., 4,446,036, Cl. 252-8.55D.

Simpson, Howard D.; Richardson, Ryden L.; and Angmorter, Paul K., 4,446,248, Cl. 502-211.000.
Young, Donald C., 4,445,925, Cl. 71-28.000.

Union Siderurgique du Nord et de l'Est de la France: *See—*
Viannay, Stephane; Germain, Alfred; and Sebbah, Jack, 4,445,525, Cl. 134-122.00R.

Union Special Corporation: *See—*
Fletcher, Roy W., 4,445,448, Cl. 112-110.000.

Unisearch Limited: *See—*
Goldsmid, Hiroshi J., 4,445,367, Cl. 73-81.000.

United States Filter Fluid Systems Corp.: *See—*
O'Cheskey, Theodore H.; and Edwards, Hugh T., Jr., 4,446,352, Cl. 219-121.0LC.

United States of America
Agriculture: *See—*
Yeadon, David A., 4,445,902, Cl. 8-474.000.
Yeadon, David A., 4,445,902, Cl. 8-474.000.
Army: *See—*
Kearney, Frank W., 4,446,354, Cl. 219-130.010.
Kumar, Ashok; Segan, Ellen G.; Bukowski, John M.; and Helgeland, Jon L., 4,445,989, Cl. 204-147.000.
Pollard, John H., 4,445,269, Cl. 29-572.000.
Stern, Richard A., 4,446,448, Cl. 333-1.100.
Commerce: *See—*
Potzick, James E.; and Robertson, Baldwin, 4,445,389, Cl. 73-861.270.
Energy: *See—*
Compere, Alicia L.; Googin, John M.; and Griffith, William L., 4,445,908, Cl. 44-56.000.
Dinsmore, Stanley R.; and Mrochek, John E., 4,446,105, Cl. 422-70.000.
Holt, Joseph B., 4,446,242, Cl. 501-96.000.
Kaun, Thomas D., 4,446,212, Cl. 429-103.000.
Posey, Franz A.; and Palko, Aloysius A., 4,445,935, Cl. 75-118.00P.
Reimann, Robert C., 4,445,340, Cl. 62-101.000.
Schmidt, Frederick A.; Rehbein, David; and Chiotti, Premo, 4,446,120, Cl. 423-350.000.
Steeves, Arthur F.; and Bibb, Albert E., 4,445,988, Cl. 204-129.200.
Health and Human Services: *See—*
Marquez, Victor E.; Cooney, David A.; Gebeyehu, Gulilat; and Jayaram, Hiremagalur N., 4,446,315, Cl. 536-27.000.
Russo, Raimondo; and Liotta, Lance A., 4,446,234, Cl. 435-29.000.
Interior: *See—*
Worthington, Robert B., 4,445,931, Cl. 75-0.50B.
National Aeronautics and Space Administration: *See—*
Claus, Richard O.; and Zerwekh, Paul S., 4,446,396, Cl. 310-334.000.
Gedwill, Michael A.; Levine, Stanley R.; and Glasgow, Thomas K., 4,446,199, Cl. 428-639.000.
Koepf, Gerhard A., 4,446,556, Cl. 372-4.000.
Zuckerwar, Allan J., 4,445,378, Cl. 73-589.000.
National Aeronautics & Space Administration: *See—*
Bond, Hollis H., Jr.; and Franklin, Carl R., 4,446,459, Cl. 340-825.210.
Navy: *See—*
Breglia, Denis R.; and Oharek, Frank J., 4,446,480, Cl. 358-104.000.
Burns, William K., 4,445,780, Cl. 356-350.000.
Connolly, George C., Jr., 4,446,544, Cl. 367-155.000.
Irzinski, Edward P., 4,446,463, Cl. 343-371.000.
Lakin, Charles T.; and Willett, Norman F., 4,446,363, Cl. 250-203.00R.
Markowski, Stanley J.; and Reilly, Richard S., 4,445,338, Cl. 60-748.000.
McLandrich, Matthew N.; and Albares, Donald J., 4,446,543, Cl. 367-149.000.
Miller, Donald; and Bowers, Clark A., 4,445,719, Cl. 294-88.000.
Mitsch, Ronald A., 4,446,068, Cl. 260-239.00E.
Moffett, Mark B.; and Konrad, William L., 4,445,361, Cl. 73-1.0DV.
Smith, Rex L., 4,445,920, Cl. 65-59.210.
Stanton, Horace D.; and Reed, Russell, Jr., 4,445,948, Cl. 149-19.910.

U.S. Philips Corporation: *See—*
Boser, Otmar H.; and Sweet, Richard C., 4,446,502, Cl. 361-308.000.
Bouwhuis, Gijsbertus; and Braat, Josephus J. M., 4,446,548, Cl. 369-109.000.
Duijkers, Peter A., 4,446,483, Cl. 358-154.000.
Faber, Johannes W.; and Weick, Gunter, 4,445,752, Cl. 350-96.200.
Lippits, Gerardus J. M.; Kloosterboer, Johan G.; and Melis, Godefridus, 4,446,549, Cl. 369-275.000.
van de Plassche, Rudy J.; Dijkmans, Eise C.; and Schouwenaars, Hendrikus J., 4,446,419, Cl. 323-316.000.
Van Dijk, Ate, 4,446,545, Cl. 369-44.000.

United Technologies Corporation: *See—*
Fortmann, William E., 4,445,815, Cl. 415-12.000.
Schratt, John F.; and Weber, Joseph J., 4,445,790, Cl. 374-45.000.
Selleck, Franklin G., 4,446,461, Cl. 340-870.320.
Warner, John L., 4,445,342, Cl. 62-172.000.

Unitika, Ltd.: *See—*
Kifune, Koji, 4,445,885, Cl. 604-28.000.

University of Minnesota, Regents of the: *See—*
Hall, Henry J.; and Haygreen, John G., 4,445,387, Cl. 73-845.000.

University of Nebraska, The Board of Regents of the: *See—*
Twersky, Marvin; Splinter, William E.; and Sandhorst, Bruce C., 4,445,788, Cl. 374-142.000.

University of Rochester, The: *See—*
Valdmanis, Janis A.; and Mourou, Gerard, 4,446,425, Cl. 324-77.00K.

University of Texas System: *See—*
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevezi, James M., 4,446,365, Cl. 250-213.00R.

University of Virginia Alumni Patents Foundation, The: *See—*
Larner, Joseph; Cheng, Kang; and Galasko, Gail, 4,446,064, Cl. 260-112.00R.

UOP Inc.: *See—*
Qualeatti, Gail M.; and Germanas, Dalia, 4,446,073, Cl. 260-409.000.

Upjohn Company, The: *See—*
Jacobine, Anthony F., 4,446,247, Cl. 502-167.000.

Uranerzbergbau-GmbH: *See—*
Krismer, Bruno; and Hoppe, Axel, 4,446,116, Cl. 423-63.000.

Urata, Shinji: *See—*
Enomoto, Shigeo; Hirobe, Hitoshi; and Urata, Shinji, 4,445,757, Cl. 350-429.000.

USS Engineers and Consultants, Inc.: *See—*
Cappelli, Romano, 4,445,262, Cl. 29-402.080.

Uzuka, Mitsuo, to Sony Corporation. Brushless DC motor driving circuit. 4,446,406, Cl. 318-254.000.

Vaerewyck, Eugene G.: *See—*
Divens, William C.; and Vaerewyck, Eugene G., 4,445,751, Cl. 350-96.140.

Valdmanis, Janis A.; and Mourou, Gerard, to University of Rochester, The. Measurement of electrical signals with picosecond resolution. 4,446,425, Cl. 324-77.00K.

Valentin, Guenter: *See—*
Strehler, Hugo; Valentin, Guenter; and Hoerauf, Werner, 4,446,089, Cl. 264-178.00F.

Valette, Serge, to Commissariat a l'Energie Atomique. Integrated Fresnel lens and its production process. 4,445,759, Cl. 350-96.120.

van Asperen, Pieter J.: *See—*
Gaymans, Reinoud J.; and van Asperen, Pieter J., 4,446,304, Cl. 528-335.000.

Van Bever, Willem F. M., to Janssen Pharmaceutica N.V. Antimicrobial compositions for the topical treatment of acne vulgaris. 4,446,145, Cl. 424-273.00R.

Van Brussel, Hendrik M.; and Simons, Joseph A. G., to Leuven Research and Development V.Z.W. Displacement control device. 4,445,273, Cl. 29-714.000.

van den Broek, Bernardus C., to Stork Services B.V. Dock device. 4,445,451, Cl. 114-222.000.

van de Plassche, Rudy J.; Dijkmans, Eise C.; and Schouwenaars, Hendrikus J., to U.S. Philips Corporation. Current stabilizing arrangement. 4,446,419, Cl. 323-316.000.

Vanderlind, William: *See—*
Joyce, Samuel F., III; Morgan, Albert W.; Touchette, Norman W.; and Vanderlind, William, 4,446,061, Cl. 252-602.000.

Van Dijk, Ate, to U.S. Philips Corporation. Apparatus for reading a disk-shaped record carrier. 4,446,545, Cl. 369-44.000.

Van Dorsselaer, Viviane: *See—*
Gerhart, Fritz; and Van Dorsselaer, Viviane, 4,446,151, Cl. 424-319.000.

Van Laningham, Kalvin G., to Warner Electric Brake & Clutch Company. Armature assembly for electromagnetic coupling. 4,445,606, Cl. 192-106.100.

Vann, Roy R., to GEO Vann, Inc. Continuous borehole formed horizontally through a hydrocarbon producing formation. 4,445,574, Cl. 166-268.000.

Van Nordstrand, Robert A., to Chevron Research Company. Hydrocarbons hydroprocessing with imogolite catalyst. 4,446,244, Cl. 502-84.000.

Van Siclen, Howard E., Jr., to Bendix Corporation, The. Ignition system for an internal combustion engine. 4,445,490, Cl. 123-602.000.

Varloud, Christian: *See—*
Juillard, Yves; and Varloud, Christian, 4,445,545, Cl. 139-311.000.

Varna, Ravi K., to E. R. Squibb & Sons, Inc. Intermediates useful in the preparation of 17,17-bis(substituted thio) androstenes. 4,446,071, Cl. 260-397.300.

Vasilakis, Andrew D.: *See—*
Gerstmann, Joseph; and Vasilakis, Andrew D., 4,445,464, Cl. 122-16.000.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Coating composition of a blend of a glycidyl acrylic polymer and a reactive polysiloxane. 4,446,259, Cl. 523-408.000.

Vaughan, David S.: *See—*
Waters, Paul E.; Vaughan, David S.; and Mustico, Carmen J., Jr., 4,445,596, Cl. 188-171.000.

Veb Werkzeugmaschinenkombinat "7 Oktober" Berlin: *See—*
Ebermann, Joachim; Graf, Heinz; Schleicher, Siegfried; and Uhlig, Jurgen, 4,446,408, Cl. 318-600.000.

Verbatim Corporation: *See—*
Song, Hubert, 4,446,411, Cl. 318-696.000.

Verhaeghe, Michel: *See—*
Orengo, Gerard; and Verhaeghe, Michel, 4,446,385, Cl. 307-355.000.

Vernay, Louis: *See—*
Chambon, Jean P.; Dufay, Jean-Francois; Grand Chavin, Paul; Perrin, Georges J.; and Vernay, Louis, 4,445,785, Cl. 368-187.000.

Verwaerde, Francoise; Gosset, Serge; and Huchette, Michel, to Roquette Freres. Hydrogenated starch hydrolysate. 4,445,938, Cl. 127-29.000.

Viannay, Stephane; Germain, Alfred; and Sebbah, Jack, to Union Siderurgique du Nord et de l'Est de la France. Arrangement of the input and output ends of a cooling machine for metal sheets. 4,445,525, Cl. 134-122.00R.

Victor Company of Japan, Limited: *See—*
Hirayama, Hiromichi, 4,446,497, Cl. 360-109.000.
Sato, Yoshihiro, 4,445,634, Cl. 229-40.000.

Vock, Manfred H.: *See—*
Boden, Richard M; Vock, Manfred H.; and Tyszkiewicz, Theodore J., 4,446,157, Cl. 426-3.000.
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,446,060, Cl. 252-522.00R.

Volk, Charles H.: *See—*
Kwon, Tae M.; and Volk, Charles H., 4,446,428, Cl. 324-304.000.

Volk, Michael; Metzger, David A.; Ostby, Donald H.; and Ostby, Robert R., to Mike Volk Co., Inc., The. Effluent air filtration apparatus. 4,445,912, Cl. 55-283.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Bloch, Willi, 4,445,648, Cl. 242-107.600.
Hofbauer, Peter; Heidemeyer, Paulus; and Scholz, Romanus, 4,445,601, Cl. 192-48.800.

von Bieren, Karlheinz, to Rockwell International Corporation. Laser with annular resonator. 4,446,559, Cl. 372-95.000.

von Bose, Robert J., to Bell Petroleum Services, Inc. Sonic logging tool. 4,446,539, Cl. 367-25.000.

von Daehne, Welf, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). Derivatives of penicillanic acid. 4,446,144, Cl. 424-270.000.

Voneky, Geza; and Schussler, Hans H., to Daimler-Benz Aktiengesellschaft. Stepped end-gauge block apparatus. 4,445,276, Cl. 33-168.00R.

von Gentzkow, Wolfgang; and Rubner, Roland, to Siemens Aktiengesellschaft. N,N'-Bis-salicyloyl-hydrazine as a metal deactivator. 4,446,266, Cl. 524-193.000.

Vonkohlar, John C., IV: *See—*
Tholl, Steven G.; and Vonkohlar, John C., IV, 4,446,460, Cl. 340-825.690.

von Ow, Dieter: *See—*
Eggli, Daniele; von Ow, Dieter; and Huni, Gregor, 4,445,518, Cl. 128-783.000.

Voorhees, John, to Ideal Comfort, Inc. Liquid filled compartmented cushion. 4,445,240, Cl. 5-451.000.

Vorbrueggen, Helmut: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,446,147, Cl. 424-274.000.

Vsesojuzny Kardiologichesky Nauchny Tsentr: *See—*
Chazov, Evgeny I.; Smirnov, Vladimir N.; Torchilin, Vladimir P.; Tereshin, Igor M.; Moskvichev, Boris V.; Grinberg, Grigory M.; Skuya, Agris Z.; and Kleiner, Gersh I., 4,446,316, Cl. 536-112.000.

W. H. Brady Co.: *See—*
Savagian, Michael D., 4,446,183, Cl. 428-42.000.

W. Schlafhorst & Co.: *See—*
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.
Rohner, Joachim; and Zumfeld, Heinz, 4,445,319, Cl. 57-22.000.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Schiele, Bernd; and Niedermeier, Johann, 4,445,494, Cl. 125-35.000.

Wadsworth, Donald H.; Thomas, Harold T.; Fletcher, George L.; and Weidner, Charles H., to Eastman Kodak Company. Recording and information record elements comprising oxoindolizine and oxoindolizinium dyes. 4,446,223, Cl. 430-338.000.

Wafer, John A., to Westinghouse Electric Corp. Electrical stab connecting means utilizing eddy current electromagnetic repulsion. 4,445,732, Cl. 339-12.00R.

Wagner, George K., to International Telephone and Telegraph Corporation. Reflector sealing apparatus. 4,446,510, Cl. 362-267.000.

Wakabayashi, Kiyoshige: *See—*
Tsuji, Yasuhiro; and Wakabayashi, Kiyoshige, 4,446,239, Cl. 436-532.000.

Walker, Bruce K.; Desai, Mukund; and Gai, Eliezer, to Charles Stark Draper Laboratory, Inc., The. Helicopter swashplate controller. 4,445,421, Cl. 91-186.000.

Walker, John R.: *See—*
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,446,033, Cl. 252-8.600.
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,446,035, Cl. 252-8.800.

Walker, Raymond L. Wrist pin. 4,445,800, Cl. 403-14.000.

Walker, Thomas S.: *See—*
Hanyzewski, Eugene F.; French, Kenneth A.; and Walker, Thomas S., 4,445,553, Cl. 144-145.00A.

Wall, Nigel G.: *See—*
Hombach, Rudolf; Nolte, Wilfried; Russell, Peter J.; and Wall, Nigel G., 4,445,959, Cl. 156-332.000.

Wallace, Keith L., to Rockwell International Corporation. Circuit board assembly. 4,445,740, Cl. 339-45.00M.

Wallace, Walter A.: *See—*
Huang, Hua-Feng; and Wallace, Walter A., 4,446,348, Cl. 219-10.55A.

Waller, Francis J., to Du Pont de Nemours, E. I., and Company. Alkylation or aromatic compounds. 4,446,329, Cl. 585-458.000.

Walling, John B. Single action pneumatic powered spring retractable pump. 4,445,819, Cl. 417-318.000.

Wandel, Dietmar: *See—*
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,446,299, Cl. 528-272.000.

Wang, Ming C.: *See—*
Chu, Tsann M.; Wang, Ming C.; and Papsidero, Lawrence, 4,446,122, Cl. 424-1.100.

Waninski, John E., Jr.: *See—*
Bethel, Leslie D.; Kerr, Howard A.; Strebendt, Frances B.; and Waninski, John E., Jr., 4,446,336, Cl. 179-6.100.

Wanlass, Cravens L. Polyphase electric machine having controlled magnetic flux density. 4,446,416, Cl. 318-812.000.

Waragai, Kenichi; Gotoh, Masao; Yokono, Hitoshi; and Iijima, Kazumi, to Hitachi, Ltd. Reaction injection molded article with threads and method of molding same. 4,446,185, Cl. 428-67.000.

Warner Electric Brake & Clutch Company: *See—*
Van Laningham, Kalvin G., 4,445,606, Cl. 192-106.100.

Warner, John L., to United Technologies Corporation. Multi-zone temperature control in air cycle refrigeration systems. 4,445,342, Cl. 62-172.000.

Wasserbach, Max L., to Nabisco Brands, Inc. Method and apparatus for marbleizing an extruded dough. 4,445,835, Cl. 425-131.100.

Wasserman, Myrna D. Teaching method and apparatus. 4,445,869, Cl. 434-156.000.

Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, to Nippondenso Co., Ltd. Centrifugal pump having means for counterbalancing unbalanced fluid pressure radial forces on rotor. 4,445,821, Cl. 417-366.000.

Watanabe, Seizou, to Olympus Optical Co., Ltd. Method of manufacturing a magnetic recording film of a thin metallic film type. 4,446,170, Cl. 427-130.000.

Water Services of America, Inc.: *See—*
Baron, Walter J.; and Cleaver, Laird C., 4,445,540, Cl. 137-625.430.

Waterfield, Robert L.: *See—*
Sullivan, Leroy J.; and Waterfield, Robert L., 4,445,618, Cl. 89-33.00D.

Waters, Paul E.; Vaughan, David S.; and Mustico, Carmen J., Jr., to Facet Enterprises, Inc. Electromagnetically released spring applied friction brake with torque booster and driving force distributor. 4,445,596, Cl. 188-171.000.

Watkins, Hugh: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,446,060, Cl. 252-522.00R.

Watkinson, James S. Collapsible spinning machine. 4,445,324, Cl. 57-316.000.

Waugh, Robert E., to D. L. Auld Company, The. Trim strip for automobile bodies. 4,446,179, Cl. 428-31.000.

Webb, Donald R. Alignment adapter and support. 4,445,667, Cl. 254-134.000.

Webber, Robert C., to GTE Automatic Electric Labs Inc. Arrangement for multiple custom calling. 4,446,553, Cl. 370-62.000.

Webber, Robert C., to GTE Automatic Electric Labs Inc. Arrangement for multiple custom calling. 4,446,554, Cl. 370-62.000.

Weber, Heinz: *See—*
Hahn, Klaus; Weber, Heinz; Guenther, Wolfgang; Schillinger, Bernhard; and Weber, Reinhold, 4,446,253, Cl. 521-79.000.

Weber, Joseph J.: *See—*
Schratt, John F.; and Weber, Joseph J., 4,445,790, Cl. 374-45.000.

Weber, Reinhold: *See—*
Hahn, Klaus; Weber, Heinz; Guenther, Wolfgang; Schillinger, Bernhard; and Weber, Reinhold, 4,446,253, Cl. 521-79.000.

Weick, Gunter: *See—*
Faber, Johannes W.; and Weick, Gunter, 4,445,752, Cl. 350-96.200.

Weidner, Charles H.: *See—*
Wadsworth, Donald H.; Thomas, Harold T.; Fletcher, George L.; and Weidner, Charles H., 4,446,223, Cl. 430-338.000.

Weiler, Rolf; Bischoff, Gilbert; and Schlag, Rudolf, to ITT Industries, Inc. Low-pressure casing for a brake booster. 4,445,331, Cl. 60-547.100.

Weininger, Joseph L.: *See—*
Kim, Bang M.; and Weininger, Joseph L., 4,445,990, Cl. 204-151.000.

Weisgerber, Greger; and Steffen, Klaus-Dieter, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of 3-chlorophthalide. 4,446,327, Cl. 549-307.000.

Weiss, Harvey S.: *See—*
Hussein, Hany M. G.; Loeb, Marvin P.; and Weiss, Harvey S., 4,445,892, Cl. 604-101.000.

Welding Engineers, Inc.: *See—*
Rossiter, Paul H., 4,446,094, Cl. 264-349.000.

Wells, James E.: *See—*
Eskinazi, Victoria; and Wells, James E., 4,446,320, Cl. 544-106.000.

Wells, Robert C., to General Electric Company. Tuned coriolis angular rate measuring device. 4,445,375, Cl. 73-504.000.

Wendt, Hans-Joachim, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for loading and unloading an aircraft. 4,446,524, Cl. 364-463.000.

Wennemann, Harald: *See*—
Gohausen, Hans J.; Kirchhoff, Winfried; Lindener, Jurgen; and Wennemann, Harald, 4,445,983, Cl. 204-35.00N.

Wenstrup, Jan F., to Air-Shields, Inc. Infusion pumping apparatus. 4,445,827, Cl. 417-477.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
Fischer, Pierre, 4,445,419, Cl. 89-33.00D.

Westerman, Howard: *See*—
Westerman, Howard G.; and Allsopp, Lewis E., 4,445,467, Cl. 123-65.00R.

Westerman, Howard G.; and Allsopp, Lewis E., to Westerman, Howard. Two-cycle stratified charge gas engine. 4,445,467, Cl. 123-65.00R.

Western Electric Co., Inc.: *See*—
Treder, Ralph A., Jr., 4,445,360, Cl. 73-1.0DV.

Westinghouse Electric Corp.: *See*—
Castle, Peter M.; Sweeney, George G.; and Yannopoulos, Lymperios N., 4,446,169, Cl. 427-53.100.
Divens, William C.; and Vaerewyck, Eugene G., 4,445,751, Cl. 350-96.140.
Emery, Franklin T.; Lenderking, Bruce N.; and Couch, Robert D., 4,446,426, Cl. 324-158.0MG.
Flaherty, Robert, 4,445,694, Cl. 277-1.000.
Fox, David A.; and Tipton, Lynn L., 4,446,417, Cl. 322-25.000.
Golub, Gregory J.; and Jenkins, Albert M., 4,446,343, Cl. 200-11.0TC.
Pomaibo, Paul; and Tolino, Ralph W., 4,446,098, Cl. 376-261.000.
Taleff, Alexander; Brady, Robert M.; and Blaszczak, Thaddeus E., 4,445,353, Cl. 72-136.000.
Wafer, John A., 4,445,732, Cl. 339-12.00R.

Wethern, Richard J. Propeller construction. 4,445,817, Cl. 416-227.000.

Wevers, Jean: *See*—
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,446,033, Cl. 252-8.600.
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,446,035, Cl. 252-8.800.

Whartenby, James C.; Brown, Richard; Rao, Srinivas T.; and Menna, Raymond J., to RCA Corporation. Method for fabricating via connectors through semiconductor wafers. 4,445,978, Cl. 204-15.000.

Wheelock, Kenneth S.; and Schucker, Robert C., to Exxon Research and Engineering Co. Process for regenerating perovskite catalysts and hydrocarbon treating processes utilizing the regenerated catalyst. 4,446,011, Cl. 208-121.000.

White Chemical Corporation: *See*—
Mischutin, Vladimir, 4,446,202, Cl. 428-254.000.

White Consolidated Industries, Inc.: *See*—
Eibe/Werner W., 4,445,349, Cl. 72-17.000.

White, James P.: *See*—
Rutkiewic, Andrew F.; and White, James P., 4,446,044, Cl. 252-170.000.

Whiteside, George D., to Polaroid Corporation. Hybrid camera arrangement. 4,445,763, Cl. 354-417.000.

Whitmire, William E. Oil to gasoline proportioning device for two cycle engines. 4,445,370, Cl. 73-290.00B.

Whitney, William M.: *See*—
Mai, Chao C.; Whitney, William M.; Gosney, William M.; and Gulyas, Donald J., 4,445,266, Cl. 29-571.000.

Whittaker, Gary S.: *See*—
Daniels, Larry C.; and Whittaker, Gary S., 4,446,200, Cl. 428-661.000.

Wichterle, Otto, to Ceskoslovenska akademie ved. Method for measurement of the cavity volume of soft contact lenses and the apparatus for this measuring method. 4,445,362, Cl. 73-37.500.

Wicker, Thomas H.: *See*—
Moore, Louis D.; Rule, Mark; and Wicker, Thomas H., 4,446,303, Cl. 528-308.200.

Wiech, Raymond E., Jr., to Witec Cayman Patents, Ltd. Method of making inelastically compressible ductile particulate material article and subsequent working thereof. 4,445,936, Cl. 75-228.000.

Wiencke, Erich K. Locking device for electrical plugs. 4,445,738, Cl. 339-37.000.

Wierschke, Donald J., to RCA Corporation. Cathode head having improved seal means. 4,445,995, Cl. 204-281.000.

Wilce, Stephen E. Sectional boat joint construction. 4,445,244, Cl. 114-355.00C.

Wilkinson, Samuel C., to Crane Packing Limited. Rotary mechanical seals. 4,445,695, Cl. 277-65.000.

Wilkinson Sword Limited: *See*—
Richards, Richard D., 4,445,610, Cl. 206-349.000.

Willay, Gerard, to Institut de Recherches de la Siderurgie Francaise. Composite crucible. 4,446,563, Cl. 373-157.000.

Willcocks, Kenneth: *See*—
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,446,113, Cl. 422-267.000.

Willett, Norman F.: *See*—
Lakin, Charles T.; and Willett, Norman F., 4,446,363, Cl. 250-203.00R.

William H. Rorer, Inc.: *See*—
Riley, Richard L., 4,446,152, Cl. 424-322.000.

Williams, Arthur R.; and Johnson, William L., to California Institute of Technology. Versatile focusing radiation analyzer. 4,446,568, Cl. 378-3.000.

Williams, Kenneth E.: *See*—
Denholm, A. Stuart; Frutiger, William A.; and Williams, Kenneth E., 4,446,373, Cl. 250-492.200.

Williams, Marshall; and O'Gwynn, David C., to Ampex Corporation. Quadrature tach decoder circuit. 4,446,389, Cl. 307-515.000.

Williams, Ray J. Knife assembly for producing wood chunks. 4,445,556, Cl. 144-193.00R.

Williamson, Calvin C.: *See*—
Powers, Joseph E.; Grimoldi, Ranaldo H.; Williamson, Calvin C.; and Bottini, Alfred A., 4,445,357, Cl. 72-399.000.

Willis, Donald H., to RCA Corporation. Television receiver ferroresonant load power supply. 4,446,405, Cl. 315-411.000.

Willis, Edwin: *See*—
Beavan, Stuart W.; and Willis, Edwin, 4,445,901, Cl. 8-103.000.

Willis, John G., to Linear Dynamics, Inc. Electronic-pneumatic circuit board coupling. 4,445,536, Cl. 137-560.000.

Wilmington Chemical Corporation: *See*—
Shirk, James E., 4,446,307, Cl. 528-406.000.

Wilms, Gunter: *See*—
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.

Wilson, Richard C., to Consolidated Cable and Rigging, Inc. Cable tensioning device. 4,445,669, Cl. 254-369.000.

Wilson, Thomas P.: *See*—
Bartley, William J.; and Wilson, Thomas P., 4,446,251, Cl. 518-716.000.

Witec Cayman Patents, Ltd.: *See*—
Wiech, Raymond E., Jr., 4,445,936, Cl. 75-228.000.

Withycombe, Donald A.: *See*—
Munteanu, Marina A.; Cseko, Christine; Oltarzewski, Edward S.; Lindauer, Jerome I.; and Withycombe, Donald A., 4,446,032, Cl. 252-8.600.

Witt, Fritz K., to Keiltex Corporation. Apparatus for wet processing textile material in endless rope form. 4,445,346, Cl. 68-178.000.

Witte, Hans H.: *See*—
Sauer, Anton; and Witte, Hans H., 4,446,515, Cl. 364-200.000.

Woestman, John W., to RCA Corporation. System and method for controlling the specific gravity and viscosity of the slurry applied to television picture tube faceplates. 4,445,526, Cl. 137-3.000.

Wolk, Roger S.: *See*—
Bekey, Ivan; and Wolk, Roger S., 4,445,854, Cl. 433-37.000.

Wollnik, Hermann; Haas, Rudiger; and Kassen, Folkert, to Carl Zeiss-Stiftung. Process for the digitization and display of thermographic records. 4,445,516, Cl. 128-736.000.

Wong, George H.: *See*—
Karr, Gerald W.; and Wong, George H., 4,445,646, Cl. 242-56.00R.

Wong, Patrick S.; Langston, Jimmy B.; and Leeper, Harold M., to ALZA Corporation. Method for delivering an agent with biocidal activity in a body fluid receiving containers. 4,445,889, Cl. 604-49.000.

Woo, David V., to Hahnemann University. Process of radioimaging the myocardium of mammals utilizing radiolabeled lipophilic cations. 4,446,123, Cl. 424-1.100.

Wood, Eric, to Insituform International Inc. Manufacture of tubular laminates. 4,446,181, Cl. 428-36.000.

Woodruff, Frank, to Bendix Corporation, The. Radial vane pump having variable displacement. 4,445,830, Cl. 418-22.000.

Woods, Richard A.; and Mehta, Rajesh R., to International Paint Public Limited Company. Water dilutable epoxy coating composition. 4,446,260, Cl. 523-409.000.

Wooten, Norman W. Male plug with automatic prong cover. 4,445,739, Cl. 339-42.000.

Worthington, Robert B., to United States of America, Interior. Production of metal powder. 4,445,931, Cl. 75-0.50B.

Wright, David M.; and Ermanski, Albert G., to Wright Line Inc. Document holders. 4,445,799, Cl. 402-4.000.

Wright, John F.: *See*—
Sandhu, M. Akram; Wright, John F.; and Molaire, Michel F., 4,446,302, Cl. 528-302.000.

Wright Line Inc.: *See*—
Wright, David M.; and Ermanski, Albert G., 4,445,799, Cl. 402-4.000.

Wu, Anthony W.: *See*—
Afzali-Ardakani, Ali; Crowley, John I.; and Wu, Anthony W., 4,446,193, Cl. 428-422.000.

Wuermli, Arthur, to Rieter Machine Works Limited. Apparatus for the conjoint gripping of bobbins on a ring spinning or ring-twisting machine. 4,445,323, Cl. 57-275.000.

Wunderlich, Klaus: *See*—
Jager, Horst; and Wunderlich, Klaus, 4,446,067, Cl. 260-153.000.

Wustrau, Rolf: *See*—
Bruhn, Peter H.; and Wustrau, Rolf, 4,445,272, Cl. 29-598.000.

Wyoming Mineral Corporation: *See*—
Jardine, Kenneth J.; and Holleman, Robert A., 4,446,114, Cl. 423-10.000.

Xerox Corporation: *See*—
Perna, Theodore P., 4,446,469, Cl. 346-140.00R.
Spinelli, Richard A.; and Glab, Edwin F., 4,445,774, Cl. 355-71.000.

Yada, Yoshikuni: *See*—
Nakao, Masami; Okimoto, Haruo; Yada, Yoshikuni; and Takeshita, Junki, 4,445,474, Cl. 123-336.000.

Yagami, Hiroyuki: *See*—
Kato, Kazuhisa; and Yagami, Hiroyuki, 4,446,168, Cl. 427-39.000.

Yagi, Shigeki: *See*—
Takaoka, Michio; Ono, Motoyuki; Kaji, Isao; and Yagi, Shigeki, 4,446,331, Cl. 174-73.00R.

Yaguchi, Katsuhiko: *See*—
Mizumoto, Kastuji; and Yaguchi, Katsuhiko, 4,446,439, Cl. 328-140.000.

Yagura, Toshiaki; Satoyama, Kenichiro; Morisada, Kazutoshi; Yamamoto, Ryoichi; and Yoshida, Seietsu, to Nippondenso Co., Ltd. Control circuit for a solenoid-operated actuator. 4,446,410, Cl. 318-687.000.

Yamada, Fumiaki: *See*—
Sato, Kiyoshi; Terashima, Minoru; Sorimachi, Haruo; Naka, Toshiaki; Kanno, Takeo; and Yamada, Fumiaki, 4,446,355, Cl. 219-216.000.

Yamada, Kozo: *See*—
Kawaguchi, Kenji; Hamada, Osamu; Hiramoto, Seigo; Kato, Yukio; and Yamada, Kozo, 4,446,351, Cl. 219-69.00W.

Yamada, Mitsumasa: *See*—
Tanaka, Takeshi; Kawai, Hisasi; Igashira, Toshihiko; Sekiguchi, Kiyonori; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,445,488, Cl. 123-569.000.

Yamada, Yoshitsugu: *See*—
Okazaki, Yutaka; Tokuda, Hiroshi; Miyahara, Shiyoichiro; and Yamada, Yoshitsugu, 4,446,133, Cl. 424-250.000.

Yamaguchi, Keiki; Takeuchi, Yasuhito; Sano, Shinichi; and Higashiizumi, Takao, to Yokogawa Hokushin Electric Corporation. Apparatus for receiving reflected ultrasonic waves in ultrasonography. 4,445,379, Cl. 73-631.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Imani, Yuichi, 4,445,585, Cl. 180-68.500.
Matsumoto, Hiromitsu, 4,445,473, Cl. 123-308.000.

Yamamoto, Hiroshi, to Canon Kabushiki Kaisha. Camera incorporating photo-electro transducer. 4,445,765, Cl. 354-478.000.

Yamamoto, Kenji, to Electroplating Engineers of Japan, Limited. Plating apparatus. 4,445,992, Cl. 204-203.000.

Yamamoto, Ryoichi: *See*—
Yagura, Toshiaki; Satoyama, Kenichiro; Morisada, Kazutoshi; Yamamoto, Ryoichi; and Yoshida, Seietsu, 4,446,410, Cl. 318-687.000.

Yamamoto, Shoji: *See*—
Nuttal, Michael; and Yamamoto, Shoji, 4,445,868, Cl. 434-88.000.

Yamamuro, Kiyohiko: *See*—
Kishimoto, Shinzo; and Yamamuro, Kiyohiko, 4,446,225, Cl. 430-393.000.

Yamane, Keiji: *See*—
Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, 4,445,998, Cl. 264-385.000.

Yamanishi, Yoshio: *See*—
Kimizuka, Masanori; and Yamanishi, Yoshio, 4,445,651, Cl. 242-199.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Maeda, Hiroshi; and Nishi, Katsuhide, 4,446,136, Cl. 424-177.000.

Yamasaki, Harumasa; and Harada, Shoichiro, to Kao Soap Co., Ltd. Process for preparation of high water-absorbent polymer beads. 4,446,261, Cl. 524-40.000.

Yamashita, Kiyoshi; and Iijima, Toshifumi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive color photographic material. 4,446,226, Cl. 430-506.000.

Yamashita, Masashi: *See*—
Ishii, Tetsuro; Oyama, Tadanori; Yamashita, Masashi; Kzome, Kazuyuki; Ikeda, Tsutomu; and Fujioka, Satoru, 4,445,981, Cl. 204-18.100.

Yamashita, Toshio: *See*—
Gamo, Takaharu; Moriwaki, Yoshio; and Yamashita, Toshio, 4,446,121, Cl. 423-644.000.

Yamazaki, Shogo, to Orinox Co., Ltd. Binoculars with a detachable small camera. 4,445,766, Cl. 354-79.000.

Yang, Kim W., to Ralston Purina Company. Skin sanitizing composition and method of using. 4,446,153, Cl. 424-343.000.

Yannopoulos, Lymperios N.: *See*—
Castle, Peter M.; Sweeney, George G.; and Yannopoulos, Lymperios N., 4,446,169, Cl. 427-53.100.

Yano, Takashi, to Ricoh Company, Ltd. Electrostatic recording method and apparatus therefor. 4,446,471, Cl. 346-153.100.

Yaotani, Kouichi; and Ogawa, Yasuyuki, to Nissan Motor Co., Ltd.; and Kato Hatsujo Kaisha Ltd. Draining mechanism for automotive door. 4,445,721, Cl. 296-154.000.

Yapp, Robert E.; and Smith, Derek J., to Massey-Ferguson Services N.V. Control lever arrangements. 4,445,394, Cl. 74-501.00R.

Yasui Sangyo Co., Ltd.: *See*—
Suzuki, Yasunori, 4,445,554, Cl. 144-193.00A.

Yataki, Masamichi; Dack, Glen W. D.; and Ertl, Paul S., to Northern Telecom Limited. Adjustable reel. 4,445,649, Cl. 242-118.200.

Yau, Wallace W.: *See*—
Dilks, Charles H., Jr.; and Yau, Wallace W., 4,446,014, Cl. 209-155.000.

Yazaki, Komei: *See*—
Fukushima, Masao; and Yazaki, Komei, 4,445,662, Cl. 248-559.000.

Yeadon, David A., to United States of America, Agriculture; and United States of America, Agriculture. Vapor process for mineral dyeing cellulosic fabrics. 4,445,902, Cl. 8-474.000.

Yellow Springs Instrument Company, Inc., The: *See*—
Fullam, Philip S., 4,445,742, Cl. 339-61.00M.

Yerushalmi, Shmuel: *See*—
Krupka, Yaakov; Feldman, Salomon; and Yerushalmi, Shmuel, 4,445,512, Cl. 128-419.0PT.

Yih, Roy Y.: *See*—
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,445,930, Cl. 71-105.000.

Ying, Lincoln; and Carter, Thomas P., Jr., to Celanese Corporation. Sized carbon fibers suitable for use in composites of improved impact resistance. 4,446,255, Cl. 523-205.000.

Yokogawa Hokushin Electric Corporation: *See*—
Yamaguchi, Keiki; Takeuchi, Yasuhito; Sano, Shinichi; and Higashiizumi, Takao, 4,445,379, Cl. 73-631.000.

Yokokawa, Harumi: *See*—
Fujishige, Masao; Dokiya, Masayuki; Kameyama, Tetsuya; Yokokawa, Harumi; Ujiie, Seiichi; Fukuda, Kenzo; and Motoe, Akihiro, 4,445,934, Cl. 75-68.00A.

Yokono, Hitoshi: *See*—
Waragai, Kenichi; Gotoh, Masao; Yokono, Hitoshi; and Iijima, Kazumi, 4,446,185, Cl. 428-67.000.

Yokoyama, Junichi: *See*—
Inoue, Mitsumasa; Nakamura, Ken; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,445,480, Cl. 123-432.000.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Amplifier circuit. 4,446,442, Cl. 330-149.000.

Yokoyama, Shoji: *See*—
Miki, Nobuaki; and Yokoyama, Shoji, 4,445,528, Cl. 137-315.000.

Yonezawa, Atsushi: *See*—
Inoue, Mitsumasa; Nakamura, Ken; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,445,480, Cl. 123-432.000.

York-Shipley, Inc.: *See*—
Richard, Kenneth L., 4,445,914, Cl. 55-303.000.

Yoshida, Kazutaka: *See*—
Sugiyama, Masatoshi; Yoshida, Kazutaka; and Ogawa, Akira, 4,446,470, Cl. 346-140.00R.

Yoshida, Seietsu: *See*—
Yagura, Toshiaki; Satoyama, Kenichiro; Morisada, Kazutoshi; Yamamoto, Ryoichi; and Yoshida, Seietsu, 4,446,410, Cl. 318-687.000.

Yoshikumi, Chikao: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,446,137, Cl. 424-246.000.

Yoshimaru, Tomohisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Information recording system. 4,446,492, Cl. 360-48.000.

Young, Donald C., to Union Oil Company of California. Methods of producing concentrated urea-sulfuric acid reaction products. 4,445,925, Cl. 71-28.000.

Youngner, Daniel W.: *See*—
Carlson, Robert J.; and Youngner, Daniel W., 4,445,966, Cl. 156-643.000.

Yowfoo, Joseph: *See*—
Berg, Ellie; and Yowfoo, Joseph, 4,445,867, Cl. 434-404.000.

Yu, Terry T., to Energy Conversion Devices, Inc. Tellurium imaging composition including alcohol. 4,446,224, Cl. 430-346.000.

Zachariadis, Robert G., to Mobil Oil Corporation. Marine cable location system. 4,446,538, Cl. 367-19.000.

Zaita, Katsuyuki; and Iwao, Suminari, to Honda Giken Kogyo Kabushiki Kaisha. Carburetion system for V-type internal combustion engines. 4,445,466, Cl. 123-59.0PC.

Zenith Radio Corporation: *See*—
Johnson, Fred D.; Flasza, Michael D.; and Tzakis, George J., 4,446,443, Cl. 330-257.000.
Srivastava, Gopal K.; and Lai, Stephen H., 4,446,482, Cl. 358-150.000.

Zermeno, Alfonso: *See*—
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevesi, James M., 4,446,365, Cl. 250-213.00R.

Zerwekh, Paul S.: *See*—
Claus, Richard O.; and Zerwekh, Paul S., 4,446,396, Cl. 310-334.000.

Zeunert, Fritz: *See*—
Pfeiffer, Gerd; Stinnertz, Horst; and Zeunert, Fritz, 4,445,354, Cl. 72-208.000.

Zichy, Erno L.: *See*—
Smallwood, Peter V.; and Zichy, Erno L., 4,446,287, Cl. 526-81.000.

Zidon, Amicam C.: *See*—
Katz, Carlos; and Zidon, Amicam C., 4,446,095, Cl. 264-558.000.

Ziegler, Klaus: *See*—
Bernauer, Otto; and Ziegler, Klaus, 4,446,101, Cl. 420-424.000.

Zilog, Inc.: *See*—
Dalrymple, Monte J., 4,446,381, Cl. 307-200.00B.

Zimmer, Mark D., to Halliburton Company. Acoustic well logging with energy level detection. 4,446,540, Cl. 367-26.000.

Zimmerman, Edwin H. Gas generating system and process. 4,445,910, Cl. 48-76.000.

Zinsser, Rolf: *See*—
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,446,299, Cl. 528-272.000.

Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Dreishev, Igor I.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Ivanov, Vladimir A.; and Morozov, Jury E., to Tsentralnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro. Machine for making mould cores from flowable core sand mixtures in hot multiple core boxes. 4,445,564, Cl. 164-186.000.

Zollner, Dieter; Lauterbach-Dammler, Inge; and Rittmann, Friedrich, to Arc Technologies Systems, Ltd. Axially movable electrode holder for use in electric steel production. 4,446,561, Cl. 373-93.000.

Zubrzycki, Leonard J., to Temple University of the Commonwealth System of Higher Education. Test method for the laboratory diagnosis of Gonorrhea and test strain of *neisseria gonorrhoeae*. 4,446,230, Cl. 435-6.000.

Zuckerwar, Allan J., to United States of America, National Aeronautics and Space Administration. Acoustic ground impedance meter. 4,445,378, Cl. 73-589.000.

Zumfeld, Heinz: *See*—
Becker, Rolf; Bertrams, Josef; Grabatsch, Franz; Kathke, Gregor; Kiesewetter, Wolfgang; Knors, Herbert; Leven, Jakob; Quack, Erich; Rautenberg, Klaus; Rohner, Joachim; Rosen, Klaus; Wilms, Gunter; and Zumfeld, Heinz, 4,445,318, Cl. 57-22.000.
Rohner, Joachim; and Zumfeld, Heinz, 4,445,319, Cl. 57-22.000.

Zyduck, Ronald L., to Acorn Equipment Corp. Animal waste pumping system. 4,445,823, Cl. 417-430.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

B. F. Goodrich Company, The: *See*—
Riew, Changkiu K., Re. 31,577, Cl. 523-514.000.

Babcock & Wilcox Company, The: *See*—
Coulter, Earl E.; Hemker, Fritz L.; and Kazmierski, Elias A., Re. 31,572, Cl. 222-1.000.

Coulter, Earl E.; Hemker, Fritz L.; and Kazmierski, Elias A., to Babcock & Wilcox Company, The. Pulverized fuel delivery system for a blast furnace. Re. 31,572, Cl. 222-1.000.

Cuprinol Limited: *See*—
Hilditch, Edward A., Re. 31,576, Cl. 424-141.000.

Dale, John M.: *See*—
Ludwig, Allen C.; Dale, John M.; and Frazier, Henry F., Re. 31,575, Cl. 106-287.320.

Drexel, Charles F., to Tylan Corporation. Fluid flowmeter. Re. 31,570, Cl. 73-202.000.

Eastman Kodak Company: *See*—
Sethi, Gurdip S., Re. 31,573, Cl. 354-121.000.

Eaton Corporation: *See*—
Jaeschke, James R., Re. 31,579, Cl. 335-151.000.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. Re. 31,569, Cl. 29-407.000.

Frazier, Henry F.: *See*—
Ludwig, Allen C.; Dale, John M.; and Frazier, Henry F., Re. 31,575, Cl. 106-287.320.

Hemker, Fritz L.: *See*—
Coulter, Earl E.; Hemker, Fritz L.; and Kazmierski, Elias A., Re. 31,572, Cl. 222-1.000.

Hilditch, Edward A., to Cuprinol Limited. Compositions containing preservative metals and their use for the preservation of wood and like materials and as fungicides. Re. 31,576, Cl. 424-141.000.

Jaeschke, James R., to Eaton Corporation. Shutterless fiber optic switch. Re. 31,579, Cl. 335-151.000.

Kazmierski, Elias A.: *See*—
Coulter, Earl E.; Hemker, Fritz L.; and Kazmierski, Elias A., Re. 31,572, Cl. 222-1.000.

Kelly, Robert C.; and Wierenga, Wendell, to Upjohn Company, The. α(Substituted) amino-3-substituted-2-isoxazoline-5-acetic acids (esters). Re. 31,578, Cl. 548-240.000.

Kooi, Else, to U.S. Philips Corporation. Insulated gate field-effect transistor comprising a mesa channel and a thicker surrounding oxide. Re. 31,580, Cl. 357-23.000.

Ludwig, Allen C.; Dale, John M.; and Frazier, Henry F., to Southwest Research Institute. Sulfur compounds and method of making same. Re. 31,575, Cl. 106-287.320.

Mann, Anne V. Multiple compartment packaging. Re. 31,571, Cl. 206-443.000.

Owens-Corning Fiberglas Corporation: *See*—
Seng, Stephen, Re. 31,574, Cl. 425-141.000.

Riew, Changkiu K., to B. F. Goodrich Company, The. Reactive terminally unsaturated liquid polymers in unsaturated polyesters. Re. 31,577, Cl. 523-514.000.

Rockwell International Corporation: *See*—
Eshghy, Siavash, Re. 31,569, Cl. 29-407.000.

Seng, Stephen, to Owens-Corning Fiberglas Corporation. Apparatus for handling heat-softenable batch material. Re. 31,574, Cl. 425-141.000.

Sethi, Gurdip S., to Eastman Kodak Company. Film cartridge assembly with pressure plate. Re. 31,573, Cl. 354-121.000.

Southwest Research Institute: *See*—
Ludwig, Allen C.; Dale, John M.; and Frazier, Henry F., Re. 31,575, Cl. 106-287.320.

Tylan Corporation: *See*—
Drexel, Charles F., Re. 31,570, Cl. 73-202.000.

U.S. Philips Corporation: *See*—
Kooi, Else, Re. 31,580, Cl. 357-23.000.

Upjohn Company, The: *See*—
Kelly, Robert C.; and Wierenga, Wendell, Re. 31,578, Cl. 548-240.000.

Wierenga, Wendell: *See*—
Kelly, Robert C.; and Wierenga, Wendell, Re. 31,578, Cl. 548-240.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Amchem Products, Inc.: *See*—
Dollman, David Y., B1 3,549,540, Cl. 252-105.000.

Baxter Travenol Laboratories, Inc.: *See*—
Carpenter, Walter L., B1 4,198,080, Cl. 285-277.000.

Bodendorf, Warren J., to Texon Inc. Decay resistant sheet material with retained flexibility. B1 4,315,798, 5-1-84, Cl. 162-161.000.

Carpenter, Walter L., to Baxter Travenol Laboratories, Inc. Telescoping-type connector. B1 4,198,080, 5-1-84, Cl. 285-277.000.

Dollman, David Y., to Amchem Products, Inc. Method and compositions for treating aluminum surfaces. B1 3,549,540, 5-1-84, Cl. 252-105.000.

Frase, Roland J.: *See*—
Johnson, Otto E.; Frase, Roland J.; and Morkoski, James, B1 3,321,027, Cl. 172-260.500.

International Harvester Company: *See*—
Johnson, Otto E.; Frase, Roland J.; and Morkoski, James, B1 3,321,027, Cl. 172-260.500.

Johnson, Otto E.; Frase, Roland J.; and Morkoski, James, to International Harvester Company. Self-restoring plow trip. B1 3,321,027, 5-1-84, Cl. 172-260.500.

Morkoski, James: *See*—
Johnson, Otto E.; Frase, Roland J.; and Morkoski, James, B1 3,321,027, Cl. 172-260.500.

Texon Inc.: *See*—
Bodendorf, Warren J., B1 4,315,798, Cl. 162-161.000.

LIST OF DESIGN PATENTEES

AB Svenska Flaktfabriken: *See*—
Widerby, Lennart; and Carlsson, Sven H., 273,702, Cl. D23-163.000.

Acrow (Engineers) Limited: *See*—
Young, George B. A., 273,711, Cl. D25-73.000.

Ahlqvist, Claes. Base for a column. 273,712, 5-1-84, Cl. D25-77.000.

American Standard Inc.: *See*—
Bengtson, Hertha A., 273,701, Cl. D23-67.000.

Aulenti, Gea. Front panel face for a windowed exhibit case. 273,648, 5-1-84, Cl. D6-192.000.

Avant, Charles T.; Benedetti, Robert L.; Genaro, Donald M.; and McGarvey, John N., to Western Electric Company, Inc. Modular

telephone enclosure and privacy wing therefor. 273,646, 5-1-84, Cl. D6-181.000.
Avantgarde S.p.A.: *See—*
Stocchi, Gabriele, 273,635, Cl. D4-25.000.
Benedetti, Robert L.; and Novak, Lajos, to Western Electric Co., Inc. Acoustic telephone enclosure and canopy therefor. 273,637, 5-1-84, Cl. D6-25.000.
Benedetti, Robert L.: *See—*
Avant, Charles T.; Benedetti, Robert L.; Genaro, Donald M.; and McGarvey, John N., 273,646, Cl. D6-181.000.
Bengtson, Hertha A., to American Standard Inc. Toilet. 273,701, 5-1-84, Cl. D23-67.000.
Betz Laboratories, Inc.: *See—*
Moyse, K. Robert, 273,703, Cl. D24-1.100.
Bidegain, Pierre, to Bidegain S.A. Shoe. 273,630, 5-1-84, Cl. D2-309.000.
Bidegain S.A.: *See—*
Bidegain, Pierre, 273,630, Cl. D2-309.000.
Boeing Company, The: *See—*
Olason, Ray; and Whitener, Philip C., 273,673, Cl. D12-338.000.
Brandon, Larry L. Cable T.V. connector for marine vessel hulls or the like. 273,674, 5-1-84, Cl. D13-24.000.
Brown, Dwight C. Hanger for skirts, slacks or trousers. 273,650, 5-1-84, Cl. D6-252.000.
Cafiero, Vincent, to Simmons Universal Corporation. Chair. 273,639, 5-1-84, Cl. D6-30.000.
Carlsson, Sven H.: *See—*
Widerby, Lennart; and Carlsson, Sven H., 273,702, Cl. D23-163.000.
Carrera International Corporation: *See—*
Dianitsch, Franz, 273,684, Cl. D16-102.000.
Cassai, Gino H.; and Cassai, Henry J. Adjustable cosmetic applicator. 273,716, 5-1-84, Cl. D28-7.000.
Cassai, Henry J.: *See—*
Cassai, Gino H.; and Cassai, Henry J., 273,716, Cl. D28-7.000.
Catawba Sox, Inc.: *See—*
Drum, Forrest E., 273,633, Cl. D2-334.000.
Chu, Alan C. Double hole brush handle. 273,636, 5-1-84, Cl. D4-38.000.
Coca-Cola Company, The: *See—*
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., 273,654, Cl. D7-307.000.
Colavito, Ann M.; and Galizia, Alphonse. Foil dispenser. 273,644, 5-1-84, Cl. D6-96.000.
Container Engineering (Ireland) Limited: *See—*
Fossey, Robin E., 273,693, Cl. D23-2.000.
Cothran, William B.: *See—*
Safrit, Sam C.; and Cothran, William B., 273,687, Cl. D20-32.000.
Crosby, Samuel C.: *See—*
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., 273,654, Cl. D7-307.000.
Dart Container Corporation: *See—*
Emrick, Tobin L., 273,651, Cl. D7-6.000.
Day, Curtis H.: *See—*
Loup, Ronald L.; Day, Curtis H.; and Schick, George L., 273,699, Cl. D23-19.000.
Dellinger, Henry P. Rotary cultivating tool. 273,656, 5-1-84, Cl. D8-8.000.
Dianitsch, Franz, to Carrera International Corporation. Sport glasses. 273,684, 5-1-84, Cl. D16-102.000.
Di Geronimo, Eugene R., III. Roadster. 273,668, 5-1-84, Cl. D12-92.000.
Double A Products Company: *See—*
Loup, Ronald L.; Day, Curtis H.; and Schick, George L., 273,699, Cl. D23-19.000.
Drum, Forrest E., to Catawba Sox, Inc. Cuff portion of a knitted sock. 273,633, 5-1-84, Cl. D2-334.000.
Dugan, Elizabeth. Cat litter box. 273,718, 5-1-84, Cl. D30-99.000.
Emrick, Tobin L., to Dart Container Corporation. Beverage cup. 273,651, 5-1-84, Cl. D7-6.000.
English, David C.: *See—*
Sly, Eugene L.; and English, David C., 273,665, Cl. D10-91.000.
Fagersta AB: *See—*
Kangas, Karl-Erik, 273,680, Cl. D15-21.000.
Fairchild Industries, Inc.: *See—*
Marrujo, Ralph G., 273,642, Cl. D6-48.000.
Finch, Delos L. Wade fishing boot. 273,624, 5-1-84, Cl. D2-275.000.
Forbis, David E. Recreational shell for mounting in the bed of a pickup truck. 273,669, 5-1-84, Cl. D12-156.000.
Ford, John B. M. Spoiler for a vehicle and the like. 273,671, 5-1-84, Cl. D12-181.000.
Fossey, Robin E., to Container Engineering (Ireland) Limited. Tank for fluids. 273,693, 5-1-84, Cl. D23-2.000.
Fuji Kogyo Co., Ltd.: *See—*
Ohmura, Ryuichi, 273,690, Cl. D22-23.000.
Ohmura, Ryuichi, 273,692, Cl. D22-24.000.
Galizia, Alphonse: *See—*
Colavito, Ann M.; and Galizia, Alphonse, 273,644, Cl. D6-96.000.
Gannett Co., Inc.: *See—*
Gore, Fred M., 273,686, Cl. D20-6.000.
Genaro, Donald M.: *See—*
Avant, Charles T.; Benedetti, Robert L.; Genaro, Donald M.; and McGarvey, John N., 273,646, Cl. D6-181.000.
Gore, Fred M., to Gannett Co., Inc. Newspaper vending rack or similar article. 273,686, 5-1-84, Cl. D20-6.000.
Grae, Bernard A., to Tandy Corporation. Computer housing. 273,679, 5-1-84, Cl. D14-106.000.
Greene & Kellogg, Inc.: *See—*
McCombs, Norman R., 273,717, Cl. D29-06.000.
Hanks, Robert E. Screw starter. 273,657, 5-1-84, Cl. D8-82.000.
Hans Grohe GmbH & Co.: *See—*
Haug, Andreas, 273,708, Cl. D24-36.000.
Hart Chemical Limited: *See—*
Widmer, Fredi, 273,661, Cl. D9-374.000.
Haruguchi, Kenichi; Miyake, Takao; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,655, 5-1-84, Cl. D7-351.000.
Hasegawa, Sigeru: *See—*
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, 273,676, Cl. D14-1.000.
Haug, Andreas, to Hans Grohe GmbH & Co. Massage apparatus. 273,708, 5-1-84, Cl. D24-36.000.
Hayashi, Keiko, to Masami Hayashi; and Hayashi, Keiko. Ornament for a finger nail. 273,666, 5-1-84, Cl. D11-1.000.
Hendren, C. Dalton: *See—*
Hendren, Connie D.; and Hendren, C. Dalton, 273,683, Cl. D16-1.000.
Hendren, Connie D.; and Hendren, C. Dalton. Combined camera, flashlight, and clock-radio. 273,683, 5-1-84, Cl. D16-1.000.
Hoffmann, Rolf, to Princeton Sportwear Corporation. Button. 273,634, 5-1-84, Cl. D2-449.000.
Hollister Incorporated: *See—*
Schneider, Barry L., 273,709, Cl. D24-59.000.
Holoubek, Andrew J.: *See—*
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., 273,654, Cl. D7-307.000.
Horn, Dieter H. G. Slipper. 273,629, 5-1-84, Cl. D2-282.000.
Huberman, Stephen; and Lasky, Daniel. Sneaker. 273,627, 5-1-84, Cl. D2-282.000.
Huberman, Stephen; and Lasky, Daniel. Sneaker. 273,628, 5-1-84, Cl. D2-282.000.
Ito, Sotoya, to Ofuna Industry Co., Ltd. Dado saw blade. 273,681, 5-1-84, Cl. D15-133.000.
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, to Teac Corporation. Audio mixer. 273,676, 5-1-84, Cl. D14-1.000.
Iversen, Alfred A.: *See—*
Spetzler, Robert F.; and Iversen, Alfred A., 273,705, Cl. D24-26.000.
Johnson, Dennis E. J.; and Johnson, Scott J. Water purification ionic gas generator. 273,694, 5-1-84, Cl. D23-3.000.
Johnson, Dennis E. J.; and Johnson, Scott J. Water purification ionic gas generator. 273,695, 5-1-84, Cl. D23-3.000.
Johnson, Dennis E. J.; and Johnson, Scott J. Water purification ionic gas generator. 273,696, 5-1-84, Cl. D23-3.000.
Johnson, Dennis E. J.; and Johnson, Scott J. Combination filter and ionic gas generator assembly for purifying machine tool coolants. 273,697, 5-1-84, Cl. D23-3.000.
Johnson, Scott J.: *See—*
Johnson, Dennis E. J.; and Johnson, Scott J., 273,694, Cl. D23-3.000.
Johnson, Dennis E. J.; and Johnson, Scott J., 273,695, Cl. D23-3.000.
Johnson, Dennis E. J.; and Johnson, Scott J., 273,696, Cl. D23-3.000.
Johnson, Dennis E. J.; and Johnson, Scott J., 273,697, Cl. D23-3.000.
Kahn, Evan R. Combined container cap and applicator. 273,663, 5-1-84, Cl. D9-447.000.
Kandarian, Richard. Wine rack. 273,647, 5-1-84, Cl. D6-188.000.
Kangas, Karl-Erik, to Fagersta AB. Roller bit. 273,680, 5-1-84, Cl. D15-21.000.
Kayser-Roth Hosiery, Inc.: *See—*
Safrit, Sam C.; and Cothran, William B., 273,687, Cl. D20-32.000.
Keil, Richard E. Retractable truck box cover. 273,670, 5-1-84, Cl. D12-156.000.
Keiser, Bruce, to Keiser Sterling Corporation. Table. 273,638, 5-1-84, Cl. D6-27.000.
Keiser Sterling Corporation: *See—*
Keiser, Bruce, 273,638, Cl. D6-27.000.
Knoll International, Inc.: *See—*
Stephens, William I., 273,641, Cl. D6-47.000.
Lasky, Daniel: *See—*
Huberman, Stephen; and Lasky, Daniel, 273,627, Cl. D2-282.000.
Huberman, Stephen; and Lasky, Daniel, 273,628, Cl. D2-282.000.
Lassiter, Will M. Cutting bit. 273,682, 5-1-84, Cl. D15-139.000.
Lawler, Chris B.: *See—*
Miller, Joseph E.; Mandel, Andrea S.; and Lawler, Chris B., 273,704, Cl. D24-26.000.
LeBlanc, Nathan J. Portable stage. 273,710, 5-1-84, Cl. D25-58.000.
Lederman, David M.: *See—*
Lederman, Susan F.; and Lederman, David M., 273,652, Cl. D7-17.000.
Lederman, Susan F.; and Lederman, David M. Fruit ripener. 273,652, 5-1-84, Cl. D7-17.000.
Loup, Ronald L.; Day, Curtis H.; and Schick, George L., to Double A Products Company. Solenoid operated valve. 273,699, 5-1-84, Cl. D23-19.000.
Lund, Allan W. Windshield visor for trucks. 273,672, 5-1-84, Cl. D12-191.000.
Luong, Minh: *See—*
Vuarnesson, Bernard; Luong, Minh; and Rabinowitz, Joel, 273,667, Cl. D11-155.000.

Mandel, Andrea S.: *See—*
Miller, Joseph E.; Mandel, Andrea S.; and Lawler, Chris B., 273,704, Cl. D24-26.000.
Marrujo, Ralph G., to Fairchild Industries, Inc. Aircraft seat. 273,642, 5-1-84, Cl. D6-48.000.
Marterie, Anthony J. Knitted slipper. 273,625, 5-1-84, Cl. D2-279.000.
Marterie, Anthony J. Knitted slipper. 273,626, 5-1-84, Cl. D2-279.000.
Martinsen, Lyle J., to Softalk, Inc. Telephone shoulder rest. 273,677, 5-1-84, Cl. D14-65.000.
Masami Hayashi: *See—*
Hayashi, Keiko, 273,666, Cl. D11-1.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Nishimoto, Teruyuki; Ohta, Kikuo; and Mishiro, Benito, 273,678, Cl. D14-73.000.
McCall, Francis J. Ear mounted electrical pulse acupressure apparatus. 273,706, 5-1-84, Cl. D24-35.000.
McCall, Francis J. Electrically stimulated acupressure apparatus to be located within the ear. 273,707, 5-1-84, Cl. D24-35.000.
McCombs, Norman R., to Greene & Kellogg, Inc. Compact medical oxygen concentrator. 273,717, 5-1-84, Cl. D29-06.000.
McEvers, Wilber C. Tie rack. 273,645, 5-1-84, Cl. D6-117.000.
McGarvey, John N.: *See—*
Avant, Charles T.; Benedetti, Robert L.; Genaro, Donald M.; and McGarvey, John N., 273,646, Cl. D6-181.000.
McKinnon, Eugene T. Heater end cap. 273,675, 5-1-84, Cl. D13-27.000.
Mead Corporation, The: *See—*
Spamer, William S., 273,649, Cl. D6-192.000.
Miller, Joseph E.; Mandel, Andrea S.; and Lawler, Chris B., to Pfizer, Inc. Orthopedic surgery brush. 273,704, 5-1-84, Cl. D24-26.000.
Mishiro, Benito: *See—*
Nishimoto, Teruyuki; Ohta, Kikuo; and Mishiro, Benito, 273,678, Cl. D14-73.000.
Mitutoyo Mfg. Co., Ltd.: *See—*
Sakata, Hideo; Mizuno, Ichiro; Nakahara, Masao; and Sanpei, Takasi, 273,664, Cl. D10-73.000.
Miyake, Takao: *See—*
Haruguchi, Kenichi; Miyake, Takao; Numano, Masafumi; and Tsujimoto, Kazuo, 273,655, Cl. D7-351.000.
Mizuno, Ichiro: *See—*
Sakata, Hideo; Mizuno, Ichiro; Nakahara, Masao; and Sanpei, Takasi, 273,664, Cl. D10-73.000.
Moyse, K. Robert, to Betz Laboratories, Inc. Stacked liquid chemical containers. 273,703, 5-1-84, Cl. D24-1.100.
Mueller, Richard J.: *See—*
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., 273,654, Cl. D7-307.000.
Nakahara, Masao: *See—*
Sakata, Hideo; Mizuno, Ichiro; Nakahara, Masao; and Sanpei, Takasi, 273,664, Cl. D10-73.000.
National Research Development Corporation: *See—*
Parker, Roy, 273,700, Cl. D23-56.000.
Nippon Rubber Co., Ltd.: *See—*
Ueda, Noboru, 273,631, Cl. D2-310.000.
Ueda, Noboru, 273,632, Cl. D2-310.000.
Nishimoto, Teruyuki; Ohta, Kikuo; and Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd. Clock radio. 273,678, 5-1-84, Cl. D14-73.000.
Novak, Lajos: *See—*
Benedetti, Robert L.; and Novak, Lajos, 273,637, Cl. D6-25.000.
Numano, Masafumi: *See—*
Haruguchi, Kenichi; Miyake, Takao; Numano, Masafumi; and Tsujimoto, Kazuo, 273,655, Cl. D7-351.000.
Ofuna Industry Co., Ltd.: *See—*
Ito, Sotoya, 273,681, Cl. D15-133.000.
Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Grip for fishing rod assembly. 273,690, 5-1-84, Cl. D22-23.000.
Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Line guide for fishing rod. 273,692, 5-1-84, Cl. D22-24.000.
Ohta, Kikuo: *See—*
Nishimoto, Teruyuki; Ohta, Kikuo; and Mishiro, Benito, 273,678, Cl. D14-73.000.
Olason, Ray; and Whitener, Philip C., to Boeing Company, The. Airplane. 273,673, 5-1-84, Cl. D12-338.000.
Pace, John, to Ross Operating Valve Company. Valve body. 273,698, 5-1-84, Cl. D23-19.000.
Parker, Roy, to National Research Development Corporation. Bathtub for invalids or the like. 273,700, 5-1-84, Cl. D23-56.000.
Petitt, Donald C. Closed arm chair. 273,640, 5-1-84, Cl. D6-31.000.
Pfizer, Inc.: *See—*
Miller, Joseph E.; Mandel, Andrea S.; and Lawler, Chris B., 273,704, Cl. D24-26.000.
PMT: *See—*
Spetzler, Robert F.; and Iversen, Alfred A., 273,705, Cl. D24-26.000.
Price, Edwin A. Herb grinder. 273,653, 5-1-84, Cl. D7-47.000.
Princeton Sportwear Corporation: *See—*
Hoffmann, Rolf, 273,634, Cl. D2-449.000.
Rabinowitz, Joel: *See—*
Vuarnesson, Bernard; Luong, Minh; and Rabinowitz, Joel, 273,667, Cl. D11-155.000.
Rhodes, Daniel. Combined fishing rod holder and bits signaller. 273,689, 5-1-84, Cl. D22-13.000.
Rocco, Franco. Chess set cube. 273,688, 5-1-84, Cl. D21-52.000.
Ross Operating Valve Company: *See—*
Pace, John, 273,698, Cl. D23-19.000.
Ryobi Ltd.: *See—*
Sakamoto, Masakazu; and Shohoji, Takeshi, 273,691, Cl. D22-23.000.
Safrit, Sam C.; and Cothran, William B., to Kayser-Roth Hosiery, Inc. Panty hose sizing form. 273,687, 5-1-84, Cl. D20-32.000.
Sakaguchi, Keizaburo, to Sakaguchi Plastic Industrial Co., Ltd. Snap-action clip. 273,658, 5-1-84, Cl. D8-396.000.
Sakaguchi, Keizaburo, to Sakaguchi Plastic Industrial Co., Ltd. Snap-action clip. 273,659, 5-1-84, Cl. D8-396.000.
Sakaguchi Plastic Industrial Co., Ltd.: *See—*
Sakaguchi, Keizaburo, 273,658, Cl. D8-396.000.
Sakaguchi, Keizaburo, 273,659, Cl. D8-396.000.
Sakamoto, Masakazu; and Shohoji, Takeshi, to Ryobi Ltd. Fishing rod grip. 273,691, 5-1-84, Cl. D22-23.000.
Sakata, Hideo; Mizuno, Ichiro; Nakahara, Masao; and Sanpei, Takasi, to Mitutoyo Mfg. Co., Ltd. Micrometer. 273,664, 5-1-84, Cl. D10-73.000.
Sanker, Edward F.; and Sanker, Mary B. Slidable bedclothes rack for insertion between a mattress and box springs. 273,643, 5-1-84, Cl. D6-84.000.
Sanker, Mary B.: *See—*
Sanker, Edward F.; and Sanker, Mary B., 273,643, Cl. D6-84.000.
Sanpei, Takasi: *See—*
Sakata, Hideo; Mizuno, Ichiro; Nakahara, Masao; and Sanpei, Takasi, 273,664, Cl. D10-73.000.
Schick, George L.: *See—*
Loup, Ronald L.; Day, Curtis H.; and Schick, George L., 273,699, Cl. D23-19.000.
Schneider, Barry L., to Hollister Incorporated. Urinary drainage bag. 273,709, 5-1-84, Cl. D24-59.000.
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., to Coca-Cola Company, The. Beverage dispenser. 273,654, 5-1-84, Cl. D7-307.000.
Sharp Corporation: *See—*
Haruguchi, Kenichi; Miyake, Takao; Numano, Masafumi; and Tsujimoto, Kazuo, 273,655, Cl. D7-351.000.
Sher, Robert B. Pipe. 273,713, 5-1-84, Cl. D27-03.000.
Sher, Robert B. Pipe. 273,714, 5-1-84, Cl. D27-3.000.
Sher, Robert B. Pipe. 273,715, 5-1-84, Cl. D27-3.000.
Shohoji, Takeshi: *See—*
Sakamoto, Masakazu; and Shohoji, Takeshi, 273,691, Cl. D22-23.000.
Simmons Universal Corporation: *See—*
Cafiero, Vincent, 273,639, Cl. D6-30.000.
Sly, Eugene L.; and English, David C. Remote readout food scale. 273,665, 5-1-84, Cl. D10-91.000.
Softalk, Inc.: *See—*
Martinsen, Lyle J., 273,677, Cl. D14-65.000.
Spamer, William S., to Mead Corporation, The. Attachment rail for the front edge of a display shelf. 273,649, 5-1-84, Cl. D6-192.000.
Spetzler, Robert F.; and Iversen, Alfred A., to PMT. Surgical aspiration handpiece. 273,705, 5-1-84, Cl. D24-26.000.
Stephens, William I., to Knoll International, Inc. Seating unit. 273,641, 5-1-84, Cl. D6-47.000.
Stocchi, Gabriele, to Avantgarde S.p.A. Toothbrush. 273,635, 5-1-84, Cl. D4-25.000.
Suzuki, Kouzi: *See—*
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, 273,676, Cl. D14-1.000.
Takita, Haruki: *See—*
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, 273,676, Cl. D14-1.000.
Tandy Corporation: *See—*
Grae, Bernard A., 273,679, Cl. D14-106.000.
Teac Corporation: *See—*
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, 273,676, Cl. D14-1.000.
Tsujimoto, Kazuo: *See—*
Haruguchi, Kenichi; Miyake, Takao; Numano, Masafumi; and Tsujimoto, Kazuo, 273,655, Cl. D7-351.000.
Ueda, Noboru, to Nippon Rubber Co., Ltd. Sport shoe. 273,631, 5-1-84, Cl. D2-310.000.
Ueda, Noboru, to Nippon Rubber Co., Ltd. Sport shoe. 273,632, 5-1-84, Cl. D2-310.000.
Vasilash, Denny. Container cover. 273,662, 5-1-84, Cl. D9-435.000.
Vuarnesson, Bernard; Luong, Minh; and Rabinowitz, Joel. Planter. 273,667, 5-1-84, Cl. D11-155.000.
Weinberg, Jan M. Cigarette package. 273,660, 5-1-84, Cl. D9-337.000.
Western Electric Company, Inc.: *See—*
Avant, Charles T.; Benedetti, Robert L.; Genaro, Donald M.; and McGarvey, John N., 273,646, Cl. D6-181.000.
Benedetti, Robert L.; and Novak, Lajos, 273,637, Cl. D6-25.000.
Whitener, Philip C.: *See—*
Olason, Ray; and Whitener, Philip C., 273,673, Cl. D12-338.000.
Widerby, Lennart; and Carlsson, Sven H., to AB Svenska Flaktfabriken. Adjustable ventilation nozzle. 273,702, 5-1-84, Cl. D23-163.000.
Widmer, Fredi, to Hart Chemical Limited. Bottle. 273,661, 5-1-84, Cl. D9-374.000.
Yamada, Toshikatsu. Microscope. 273,685, 5-1-84, Cl. D16-131.000.
Young, George B. A., to Acrow (Engineers) Limited. Beam. 273,711, 5-1-84, Cl. D25-73.000.

LIST OF PLANT PATENTEES

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Splendor. 5,225, 5-1-84, Cl. 74.000.

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Yellow Cambria. 5,226, 5-1-84, Cl. 78.000.

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Favor. 5,227, 5-1-84, Cl. 82.000.

Yoder Brothers, Inc.: *See*—
Duffett, William E., 5,225, Cl. 74.000.
Duffett, William E., 5,226, Cl. 78.000.
Duffett, William E., 5,227, Cl. 82.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 1ST DAY OF MAY, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Achorn, Frank P.: *See*—
Salladay, David G.; and Achorn, Frank P., T104,201, Cl. 71-34.000.

Salladay, David G.; and Achorn, Frank P. Pressure reactor for producing diammonium phosphate. T104,201, 5-1-84, Cl. 71-34.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 1, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
49 R 4,445,231
161 R 4,445,232
239 4,445,233

CLASS 3
1 4,445,234

CLASS 4
144.2 4,445,235
255 4,445,236
417 4,445,237
508 4,445,238
607 4,445,239

CLASS 5
451 4,445,240
468 4,445,241
484 4,445,242

CLASS 8
103 4,445,901
151 4,445,243
474 4,445,902
492 4,445,903
538 4,445,904
641 4,445,905

CLASS 15
23 4,445,245
53 AB 4,445,246
98 4,445,247
198 4,445,248
250.32 4,445,249
257.06 4,445,250
316 R 4,445,251

CLASS 19
244 4,445,252

CLASS 24
68 E 4,445,253
274 R 4,445,254
284 4,445,255

CLASS 29
25.35 4,445,256
117 4,445,257
156.7 R 4,445,258
156.8 B 4,445,259
157 R 4,445,260
157.4 4,445,261
402.08 4,445,262
407 Re.31,569
445 4,445,263
4,445,264
447 4,445,265
571 4,445,266
4,445,267
4,445,268
572 4,445,269
576 B 4,445,270
589 4,445,271
598 4,445,272
714 4,445,273
832 4,445,274

CLASS 33
30 R 4,445,275
168 R 4,445,276
197 4,445,277
203.12 4,445,278
356 4,445,279
443 4,445,280

CLASS 34
58 4,445,281
168 4,445,282

CLASS 36
3 B 4,445,284
25 R 4,445,285
29 4,445,283
32 R 4,445,286
106 4,445,287
134 4,445,288
4,445,289

CLASS 37
66 4,445,290

CLASS 40
210 4,445,291

CLASS 42
16 4,445,292

CLASS 43
24 4,445,293
42.47 4,445,294
102 4,445,295

CLASS 44
1 D 4,445,906
53 4,445,907
56 4,445,908
72 4,445,909

CLASS 46
74 D 4,445,296
230 4,445,297

CLASS 47
41.12 4,445,298

CLASS 48
76 4,445,910

CLASS 49
167 4,445,299

CLASS 51
283 R 4,445,300

CLASS 52
11 4,445,301
90 4,445,302
98 4,445,303
127.3 4,445,304
309.9 4,445,305
410 4,445,306
638 4,445,307
687 4,445,308

CLASS 53
410 4,445,309
485 4,445,310
575 4,445,311

CLASS 55
2 4,445,911
283 4,445,912
302 4,445,913
303 4,445,914
378 4,445,915

CLASS 56
15.5 4,445,312
16.4 4,445,313
126 4,445,314
295 4,445,315
330 4,445,316

CLASS 57
22 4,445,317
4,445,318
4,445,319
88 4,445,320
223 4,445,321
264 4,445,322
275 4,445,323
316 4,445,324

CLASS 60
39.182 4,445,325
277 4,445,326
325 4,445,327
351 4,445,328
431 4,445,329
455 4,445,332
545 4,445,330
547.1 4,445,331
578 4,445,333
585 4,445,334
589 4,445,335
605 4,445,336
608 4,445,337
748 4,445,338
749 4,445,339

CLASS 62
17 4,445,916
25 4,445,917
101 4,445,340
133 4,445,341
172 4,445,342
324.1 4,445,343
324.6 4,445,344

CLASS 65
3.12 4,445,918
27 4,445,919
59.21 4,445,920
114 4,445,921
120 4,445,922
158 4,445,923
182.3 4,445,924

CLASS 66
177 4,445,345

CLASS 68
178 4,445,346

CLASS 70
38 B 4,445,347
312 4,445,348

CLASS 71
28 4,445,925
34 4,445,926
86 4,445,927
87 4,445,928
087 4,445,929
105 4,445,930

CLASS 72
17 4,445,349
38 4,445,350
43 4,445,351
101 4,445,352
136 4,445,353
208 4,445,354
250 4,445,355
319 4,445,356
399 4,445,357
416 4,445,358

CLASS 73
1 DV 4,445,360
4,445,361
1 G 4,445,359
37.5 4,445,362
40.5 A 4,445,363
40.7 4,445,364
60 4,445,365
64.2 4,445,366
81 4,445,367
118.1 4,445,368
202 Re.31,570
204 4,445,369
290 B 4,445,370
382 R 4,445,371
459 4,445,372
473 4,445,373
490 4,445,374
504 4,445,375
510 4,445,376
516 LM 4,445,377
589 4,445,378
631 4,445,379
642 4,445,380
666 4,445,381
716 4,445,382
718 4,445,383
724 4,445,384
726 4,445,385
780 4,445,386
845 4,445,387
861.24 4,445,388
861.27 4,445,389
864.12 4,445,391
864.52 4,445,390

CLASS 74
3 4,445,392
346 4,445,393
501 R 4,445,394
4,445,395
551.1 4,445,396
560 4,445,397
573 R 4,445,398
603 4,445,399
711 4,445,400
869 4,445,401

CLASS 75
0.5 B 4,445,931
11 4,445,932
59 4,445,933
68 A 4,445,934
118 P 4,445,935
228 4,445,936

CLASS 81
57.16 4,445,402
57.18 4,445,403
62 4,445,404

CLASS 82
2.5 4,445,405
46 4,445,406

CLASS 83
27 4,445,407
37 4,445,408
157 4,445,409
390 4,445,410
403.1 4,445,411
477.2 4,445,412
676 4,445,413

CLASS 84
1.01 4,445,414
177 4,445,415
244 4,445,416

CLASS 87
12 4,445,417

CLASS 89
33 D 4,445,418
4,445,419

CLASS 91
3 4,445,420
186 4,445,421
434 4,445,422
492 4,445,423

CLASS 92
5 R 4,445,424
98 D 4,445,425

CLASS 98
116 4,445,426

CLASS 99
323.5 4,445,427
340 4,445,428
455 4,445,429

CLASS 100
35 4,445,430

CLASS 101
40 4,445,431
152 4,445,432
350 4,445,433

CLASS 102
206 4,445,434
215 4,445,435
501 4,445,436

CLASS 104
12 4,445,437
4,445,438

CLASS 105
165 4,445,439
215 R 4,445,440

CLASS 106
109 4,445,937
287.32 Re.31,575

CLASS 110
165 R 4,445,441
171 4,445,442
245 4,445,443
261 4,445,444

CLASS 111
7 4,445,445

CLASS 112
79 R 4,445,446
4,445,447
110 4,445,448
121.11 4,445,449
155 4,445,450

CLASS 114
222 4,445,451
282 4,445,452
290 4,445,453
355 C 4,445,244

CLASS 116
106 4,445,454
216 4,445,455
268 4,445,456
4,445,457

CLASS 118
401 4,445,458

CLASS 119
1 4,445,459
20 4,445,460

CLASS 122
7 R 4,445,461
4,445,462
4,445,463
16 4,445,464
392 4,445,465

CLASS 123
59 PC 4,445,466
65 R 4,445,467
73 C 4,445,468
142.5 R 4,445,469
196 S 4,445,470
198 E 4,445,471
4,445,472
308 4,445,473
336 4,445,474
339 4,445,475
387 4,445,476
416 4,445,477
418 4,445,478
425 4,445,479
432 4,445,480
440 4,445,481
489 4,445,482
492 4,445,483
502 4,445,484
546 4,445,485
557 4,445,486
568 4,445,487
569 4,445,488
571 4,445,489
602 4,445,490
605 4,445,491
606 4,445,492
633 4,445,493

CLASS 125
35 4,445,494

CLASS 126
24 4,445,495
61 4,445,496
121 4,445,497
424 4,445,498
430 4,445,499

CLASS 127
29 4,445,938

CLASS 128
1 R 4,445,500
1.5 4,445,501
25 R 4,445,502
40 4,445,503
69 4,445,513
70 4,445,504
80 C 4,445,505
84 R 4,445,506
133 4,445,507
201.18 4,445,508
305 4,445,509
329 R 4,445,510
419 P 4,445,511
419 PT 4,445,512
632 4,445,514
4,445,515
736 4,445,516
752 4,445,517
783 4,445,518

CLASS 131
94 4,445,519
282 4,445,520

CLASS 132
7 4,445,521

CLASS 134
2 4,445,939
4,445,940
3 4,445,941
58 R 4,445,522
65 4,445,523
113 4,445,524
122 R 4,445,525

CLASS 137
3 4,445,526
226 4,445,527
315 4,445,528
360 4,445,529
381 4,445,530
489 4,445,531
495 4,445,532
512.1 4,445,533
512.3 4,445,534
535 4,445,535
560 4,445,536
572 4,445,537
596.2 4,445,538
614.03 4,445,539
625.43 4,445,540
636.2 4,445,541

CLASS 138
94 4,445,542
122 4,445,543

CLASS 139
54 4,445,544
311 4,445,545
435 4,445,546

CLASS 140
92.3 4,445,547

CLASS 141
1 4,445,548
148 4,445,549
329 4,445,550
349 4,445,551

CLASS 144
3 D 4,445,552
145 A 4,445,553
193 A 4,445,554
193 D 4,445,555
193 R 4,445,556
336 4,445,557
341 4,445,558
363 4,445,559

CLASS 148
6.3 4,445,942
12.3 4,445,943
4,445,944
16 4,445,945
36 4,445,946

CLASS 149
19.3 4,445,947
19.91 4,445,948

CLASS 152
200 4,445,560
209 B 4,445,561
347 4,445,562

CLASS 156
62.2 4,445,949
63 4,445,950
93 4,445,951
94 4,445,952
102 4,445,953
148 4,445,954
153 4,445,955
154 4,445,956
180 4,445,957
211 4,445,958
332 4,445,959
344 4,445,960
364 4,445,961
398 4,445,962
420 4,445,963
500 4,445,964
624 4,445,965
643 4,445,966
648 4,445,967
657 4,445,968

CLASS 160
369 4,445,563

CLASS 162

40 4,445,969
135 4,445,970
158 4,445,971
161 B1 4,315,798
164.1 4,445,972
261 4,445,973
300 4,445,974
336 4,445,975

CLASS 164

186 4,445,564
528 4,445,565

CLASS 165

10 4,445,566
29 4,445,567
81 4,445,568
165 4,445,569

CLASS 166

59 4,445,570
188 4,445,572
250 4,445,573
268 4,445,574
290 4,445,575
291 4,445,576
317 4,445,571

CLASS 172

260.5 B1 43,321,027
701.3 4,445,577

CLASS 174

51 4,446,330
73 R 4,446,331
87 4,446,332

CLASS 175

45 4,445,578
52 4,445,579
404 4,445,580

CLASS 177

163 4,445,581

CLASS 179

2 C 4,446,333
4,446,335
6.10 4,446,336
18 B 4,446,337
18 FA 4,446,338
81 R 4,446,334
84 R 4,446,339
175.2 R 4,446,341
175.3 R 4,446,340

CLASS 180

9.5 4,445,582
68.1 4,445,583
68.5 4,445,585
69.22 4,445,584
132 4,445,586
229 4,445,587
233 4,445,588

CLASS 182

76 4,445,589
222 4,445,590
4,445,591

CLASS 184

6.13 4,445,592

CLASS 187

1 R 4,445,593

CLASS 188

73.37 4,445,594
73.38 4,445,595
171 4,445,596
206 A 4,445,597
322.16 4,445,598

CLASS 192

0.055 4,445,603
3.29 4,445,599
18 R 4,445,600
48.8 4,445,601
53 F 4,445,602
71 4,445,604
91 A 4,445,605
106.1 4,445,606
107 C 4,445,607

CLASS 198

509 4,445,608

CLASS 200

5 R 4,446,342
11 TC 4,446,343
83 B 4,446,344
85 R 4,446,345
144 B 4,446,346
144 R 4,446,347

CLASS 201

41 4,445,976

CLASS 202

223 4,445,977

CLASS 204

15 4,445,978
4,445,979
4,445,980
18.1 4,445,981
4,445,982
35 N 4,445,983
49 4,445,984
72 4,445,985
98 4,445,986
4,445,987
129.2 4,445,988
147 4,445,989
151 4,445,990
168 4,445,991
203 4,445,992
213 4,445,993
258 4,445,994
281 4,445,995
294 4,445,996
298 4,445,997
414 4,445,999
415 4,446,000

CLASS 206

277 4,445,609
349 4,445,610
369 4,445,611
387 4,445,612
418 4,445,613
443 Re.31,571
599 4,445,614

CLASS 208

11 R 4,446,001
23 4,446,002
48 Q 4,446,003
57 4,446,004
91 4,446,005
111 4,446,007
4,446,008
113 4,446,009
120 4,446,010
121 4,446,011
130 4,446,012
135 4,446,013
253 4,446,006

CLASS 209

155 4,446,014
4,446,015
555 4,445,615

CLASS 210

86 4,446,016
90 4,446,017
195.4 4,446,018
223 4,446,019
225 4,446,020
378 4,446,021
388 4,446,022
400 4,446,023
500.2 4,446,024
602 4,446,025
639 4,446,026
661 4,446,027
697 4,446,028
748 4,446,029
805 4,446,030

CLASS 211

13 4,445,616

CLASS 213

60 4,445,617
61 4,445,618

CLASS 219

10.55 A 4,446,348
10.55 F 4,446,349
10.77 4,446,350
69 W 4,446,351
121 LC 4,446,352
125.12 4,446,353
130.01 4,446,354
216 4,446,355
272 4,446,356
275 4,446,357
388 4,446,358
421 4,446,360
485 4,446,359

CLASS 220

263 4,445,619
271 4,445,620
273 4,445,621
306 4,445,622
343 4,445,623
449 4,445,624

CLASS 221

241 4,445,625

CLASS 222

1 Re.31,572

39 4,445,626
54 4,445,627
66 4,445,628
148 4,445,629
464 4,445,630

CLASS 223

1 4,445,631

CLASS 225

2 4,445,632

CLASS 228

102 4,445,633

CLASS 229

40 4,445,634
73 4,445,635

CLASS 235

78 N 4,446,361
462 4,446,362

CLASS 236

20 R 4,445,636
49 4,445,637

CLASS 237

8 R 4,445,638
81 4,445,639

CLASS 238

8 4,445,640

CLASS 239

6 4,445,641
64 4,445,642
197 4,445,643

CLASS 241

99 4,445,644

CLASS 242

55.53 4,445,645
56 R 4,445,646
68.4 4,445,647
107.6 4,445,648
118.2 4,445,649
192 4,445,650
199 4,445,651

CLASS 244

1 R 4,445,652
110 D 4,445,653
139 4,445,654
214 4,445,655

CLASS 248

49 4,445,656
73 4,445,657
99 4,445,658
210 4,445,659
335 4,445,660
394 4,445,661
559 4,445,662
652 4,445,663

CLASS 250

203 R 4,446,363
211 R 4,446,364
213 R 4,446,365
227 4,446,366
231 SE 4,446,367
262 4,446,368
270 4,446,369
301 4,446,370
324 4,446,371
334 4,446,372
492.2 4,446,373
492.3 4,446,374
551 4,446,375

CLASS 251

149.2 4,445,664

CLASS 252

1 4,446,031
8.55 D 4,446,036
8.6 4,446,032
4,446,033
8.8 4,446,034
4,446,035
33.6 4,446,053
47.5 4,446,037
51.5 A 4,446,038
52 R 4,446,039
62 4,446,040
70 4,446,041
102 4,446,042
105 4,446,043
B1 43,549,540
170 4,446,044
180 4,446,045
181 4,446,046
299.1 4,446,047
301.4 S 4,446,048
301.6 P 4,446,049
309 4,446,051

315.1 4,446,052
344 4,446,054
351 4,446,055
391 4,446,056
507 4,446,058
514 4,446,059
522 R 4,446,060
602 4,446,061
609 4,446,062
633 4,446,063

CLASS 254

88 4,445,665
93 H 4,445,666
134 4,445,667
287 4,445,668
369 4,445,669

CLASS 260

112 B 4,446,066
112 R 4,446,064
4,446,065
153 4,446,067
239 E 4,446,068
245.2 R 4,446,069
369 4,446,070
397.3 4,446,071
397.45 4,446,072
409 4,446,073
429 R 4,446,074
465 F 4,446,078
465 G 4,446,075
4,446,076
465 K 4,446,077
513 R 4,446,079

CLASS 261

39 D 4,446,080
64 R 4,446,081

CLASS 264

30 4,446,082
32 4,446,083
40.6 4,446,084
108 4,446,085
118 4,446,086
148 4,446,087
155 4,446,088
178 F 4,446,089
211 4,446,090
225 4,446,091
258 4,446,092
315 4,446,093
349 4,446,094
385 4,445,998
558 4,446,095

CLASS 266

80 4,445,670

CLASS 267

64.12 4,445,671
64.16 4,445,672
64.24 4,445,673
141 4,445,674

CLASS 269

20 4,445,675
32 4,445,676
41 4,445,677
88 4,445,678

CLASS 271

227 4,445,679
290 4,445,680
300 4,445,681
301 4,445,682

CLASS 272

69 4,445,683
134 4,445,684

CLASS 273

26 R 4,445,685
29 A 4,445,686
72 R 4,445,687
82 R 4,445,688
118 R 4,445,689
4,445,690
155 4,445,691
256 4,445,692
404 4,445,693

CLASS 277

1 4,445,694
65 4,445,695
80 4,445,696

CLASS 279

1 A 4,445,697

CLASS 280

11.115 4,445,698
87.04 R 4,445,699
154.5 R 4,445,700
217 4,445,701
239 4,445,702
279 4,445,703

292 4,445,704
302 4,445,705
411 C 4,445,706
687 4,445,707
777 4,445,708
801 4,445,709

CLASS 281

45 4,445,710

CLASS 283

1 R 4,445,711
75 4,445,712

CLASS 285

14 4,445,713
23 4,445,714
54 4,445,715
55 4,445,716
277 B1 4,198,080

CLASS 290

44 4,446,376
52 4,446,377
54 4,446,378
55 4,446,379

CLASS 292

177 4,445,717
341.17 4,445,718

CLASS 294

88 4,445,719

CLASS 296

37.12 4,445,720
154 4,445,721

CLASS 297

468 4,445,722

CLASS 299

11 4,445,723
81 4,445,724

CLASS 303

6 C 4,445,725

CLASS 307

10 AT 4,446,380
200 B 4,446,381
241 4,446,382
297 4,446,383
4,446,384
355 4,446,385
449 4,446,386
450 4,446,387
511 4,446,388
515 4,446,389
579 4,446,390

CLASS 308

3.8 4,445,726
4 A 4,445,727

CLASS 310

62 4,446,391
105 4,446,392
184 4,446,393
321 4,446,394
327 4,446,395
334 4,446,396

CLASS 312

1 4,445,728
214 4,445,730
219 4,445,729
223 4,445,731

CLASS 313

25 4,446,397
346 R 4,446,404
390 4,446,398
505 4,446,399
517 4,446,400
533 4,446,401
586 4,446,402

CLASS 315

111.81 4,446,403
411 4,446,405

CLASS 318

254 4,446,406
282 4,446,407
600 4,446,408
632 4,446,409
687 4,446,410
696 4,446,411
4,446,412
4,446,413
723 4,446,414
798 4,446,415
812 4,446,416

CLASS 322

4 4,446,418
25 4,446,417

CLASS 323

316 4,446,419

CLASS 324

52 4,446,420
4,446,421
54 4,446,422
60 C 4,446,423
62 4,446,424
71.5 4,446,432
77 K 4,446,425
158 MG 4,446,426
207 4,446,427
304 4,446,428
316 4,446,429
318 4,446,431
321 4,446,430
338 4,446,433
363 4,446,434
453 4,446,435

CLASS 328

14 4,446,436
120 4,446,437
127 4,446,438
140 4,446,439

CLASS 330

10 4,446,440
149 4,446,441
4,446,442
257 4,446,443
264 4,446,444
269 4,446,445

CLASS 331

3 4,446,446
42 4,446,447

CLASS 333

1.1 4,446,448

CLASS 335

131 4,446,449
151 Re.31,579

CLASS 337

380 4,446,450
4,446,451

CLASS 339

12 R 4,445,732
14 R 4,445,733
16 C 4,445,734
17 CF 4,445,736
17 M 4,445,735
18 C 4,445,737
37 4,445,738
42 4,445,739
45 M 4,445,740
49 R 4,445,741
61 M 4,445,742
90 R 4,445,743
94 M 4,445,744
4,445,748
177 R 4,445,745
252 R 4,445,746
256 R 4,445,747

CLASS 340

146.2 4,446,452
286 M 4,446,453
538 4,446,454
568 4,446,455
706 4,446,456
745 4,446,457
825.06 4,446,458
825.07 4,446,462
825.21 4,446,459
825.69 4,446,460
870.32 4,446,461

CLASS 343

371 4,446,463
399 4,446,464
797 4,446,465
877 4,446,466

CLASS 346

76 PH 4,446,467
82 4,446,468
140 R 4,446,469
4,446,470
153.1 4,446,471
4,446,472

CLASS 350

96.12 4,445,759
96.14 4,445,751
96.20 4,445,752
96.21 4,445,750
4,445,753
96.34 4,445,754
4,445,755
376 4,445,749
429 4,445,756
4,445,757

530 4,445,758
900 4,446,533

CLASS 351

95 4,445,760
96 4,446,534
149 4,446,535
230 4,446,536

CLASS 354

79 4,445,766
121 Re.31,573
195.1 4,445,767
275 4,445,768
303 4,445,770
322 4,445,769
402 4,445,761
417 4,445,763
437 4,445,762
478 4,445,765
480 4,445,764

CLASS 355

3 CH 4,445,772
3 DD 4,445,771
68 4,445,773
71 4,445,774
78 4,445,776
122 4,445,775

CLASS 356

139 4,445,777
222 4,445,778
350 4,445,779
4,445,780

CLASS 357

23 Re.31,580
24 4,446,473
25 4,446,474
40 4,446,475
67 4,446,476
74 4,446,477
75 4,446,478

CLASS 358

4,446,479
104 4,446,480
106 4,446,481
150 4,446,482
154 4,446,483
166 4,446,484
213 4,446,485
280 4,446,486
4,446,487
342 4,446,488

CLASS 360

13 4,446,489
32 4,446,490
48 4,446,491
4,446,492
65 4,446,493
73 4,446,494
74.1 4,446,495
4,446,496
109 4,446,497

CLASS 361

87 4,446,498
92 4,446,499
103 4,446,500
114 4,446,501
308 4,446,502
346 4,446,503
386 4,446,504
413 4,446,505

CLASS 362

17 4,446,506
20 4,446,507
31 4,446,508
184 4,446,509
267 4,446,510
4,446,511

CLASS 363

39 4,446,512
132 4,446,513

CLASS 364

200 4,446,514
4,446,515
4,446,516
4,446,517
4,446,518
300 4,446,519
400 4,446,520
414 4,446,521
426 4,446,522
431.05 4,446,523
463 4,446,524
474 4,446,525
525 4,446,526
558 4,446,527
709 4,446,528
723 4,446,529
725 4,446,530
728 4,446,531
824 4,446,532

259 4,445,808

CLASS 406

152 4,445,809

CLASS 407

118 4,445,810

CLASS 409

182 4,445,811

CLASS 411

57 4,445,812

CLASS 413

1 4,445,813

CLASS 414

295 4,445,814

CLASS 415

12 4,445,815
181 4,445,816

CLASS 416

227 4,445,817

CLASS 417

288 4,445,818
318 4,445,819
366 4,445,820
4,445,821
388 4,445,822
430 4,445,823
440 4,445,824
462 4,445,825
476 4,445,826
477 4,445,827
490 4,445,828
543 4,445,829

CLASS 418

22 4,445,830
201 4,445,831

CLASS 419

48 4,446,100

CLASS 420

424 4,446,101
507 4,446,102

CLASS 422

37 4,446,103
63 4,446,104
70 4,446,105
72 4,446,106
107 4,446,107
156 4,446,108
168 4,446,109
186.05 4,446,110
200 4,446,111
216 4,446,112
267 4,446,113

CLASS 423

10 4,446,114
63 4,446,115
4,446,116
121 4,446,117
226 4,446,118
228 4,446,119
350 4,446,120
644 4,446,121

CLASS 424

1.1 4,446,122
4,446,123
27 4,446,124
49 4,446,125
59 4,446,127
88 4,446,128
94 4,446,129
101 4,446,134
141 Re.31,576
154 4,446,135
177 4,446,136
183 4,446,126
195 4,446,130
4,446,131
233 4,446,132
246 4,446,137
248.57 4,446,138
250 4,446,133
256 4,446,139
260 4,446,140
267 4,446,141
269 4,446,142
270 4,446,143
4,446,144
4,446,150
273 R 4,446,145
4,446,148
4,446,149
274 4,446,146
4,446,147
319 4,446,151

322 4,446,152
343 4,446,153
350 4,446,154
4,446,155

CLASS 425

9 4,445,832
36 4,445,834
131.1 4,445,835
131.5 4,445,833
135 4,445,836
141 Re.31,574
4,445,837
319 4,445,838
421 4,445,839
450.1 4,445,840

CLASS 426

3 4,446,157
79 4,446,158
249 4,446,159
297 4,446,160
335 4,446,161
424 4,446,162
448 4,446,163
583 4,446,164
602 4,446,165
631 4,446,166
650 4,446,167

CLASS 427

39 4,446,168
53.1 4,446,169
130 4,446,170
160 4,446,171
4,446,172
206 4,446,173
261 4,446,174
385.5 4,446,175
386 4,446,176

CLASS 428

15 4,446,177
26 4,446,178
31 4,446,179
35 4,446,180
36 4,446,181
40 4,446,182
42 4,446,183
57 4,446,184
67 4,446,185
74 4,446,186
136 4,446,187
138 4,446,188
152 4,446,189
156 4,446,190
245 4,446,191
254 4,446,202
283 4,446,203
323 4,446,204
327 4,446,205
339 4,446,192
364 4,446,206
402 4,446,207
407 4,446,208
411 4,446,209
422 4,446,193
428 4,446,194
458 4,446,195
544 4,446,196
625 4,446,197
4,446,198
639 4,446,199
648 4,446,156
661 4,446,200
696 4,446,201

CLASS 429

42 4,446,210
101 4,446,211
103 4,446,212
104 4,446,213
179 4,446,214
190 4,446,215

CLASS 430

58 4,446,217
175 4,446,218
216 4,446,219
286 4,446,220
302 4,446,221
307 4,446,222
338 4,446,223
346 4,446,224
393 4,446,225
405 4,446,216
506 4,446,226
513 4,446,227
567 4,446,228

CLASS 431

27 4,445,841
115 4,445,842
4,445,843
4,445,844
170 4,445,845
295 4,445,846
362 4,445,847

CLASS 432

13 4,445,848
128 4,445,849
229 4,445,850
239 4,445,851
260 4,445,852

CLASS 433

5 4,445,853
37 4,445,854
59 4,445,855
71 4,445,856
75 4,445,857
79 4,445,859
132 4,445,860
141 4,445,858
181 4,445,861
191 4,445,862
212 4,445,863

CLASS 434

76 4,445,870
88 4,445,868
114 4,445,871
156 4,445,869
173 4,445,864
207 4,445,865
253 4,445,866
604 4,445,867

CLASS 435

1 4,446,229
6 4,446,230
7 4,446,231
4,446,232
4,446,233
29 4,446,234
91 4,446,235
287 4,446,236

CLASS 436

504 4,446,237
527 4,446,238
532 4,446,239
542 4,446,240

CLASS 445

3 4,445,872
6 4,445,873
45 4,445,874

CLASS 464

14 4,445,875
48 4,445,876

CLASS 474

92 4,445,878
205 4,445,879
255 4,445,877

CLASS 493

28 4,445,880
376 4,445,882
424 4,445,881

CLASS 494

21 4,445,883

CLASS 501

14 4,446,241
96 4,446,242

CLASS 502

62 4,446,243
84 4,446,244
101 4,446,245
155 4,446,246
167 4,446,247
211 4,446,248
225 4,446,249
309 4,446,250
355 4,446,057

CLASS 518

716 4,446,251

CLASS 521

28 4,446,252
79 4,446,253
92 4,446,254

CLASS 523

205 4,446,255
402 4,446,256
403 4,446,257
406 4,446,258
408 4,446,259
409 4,446,260
514 Re.31,577

CLASS 524

40 4,446,261
89 4,446,262
100 4,446,263

109 4,446,264
139 4,446,265
193 4,446,266
211 4,446,267
315 4,446,268
316 4,446,269
433 4,446,270
441 4,446,271
465 4,446,272
556 4,446,273
812 4,446,274

CLASS 525

54.1 4,446,275
64 4,446,276
68 4,446,277
92 4,446,278
106 4,446,279
186 4,446,280
282 4,446,281
327.7 4,446,282
344 4,446,283
383 4,446,284
439 4,446,285
455 4,446,286

CLASS 526

81 4,446,287
129 4,446,288
142 4,446,289
174 4,446,290
209 4,446,291

CLASS 528

29 4,446,292
45 4,446,293
128 4,446,294
168 4,446,295
198 4,446,296
204 4,446,297
4,446,298
272 4,446,299
288 4,446,300
295.3 4,446,301
302 4,446,302
308.2 4,446,303
335 4,446,304
348 4,446,305
366 4,446,306
406 4,446,307
481 4,446,308
486 4,446,309
487 4,446,310
493 4,446,311

CLASS 536

1.1 4,446,312
18.6 4,446,313
21 4,446,314
27 4,446,315
112 4,446,316

CLASS 544

22 4,446,317
26 4,446,318
92 4,446,319
106 4,446,320
124 4,446,321
138 4,446,322
344 4,446,323

CLASS 546

37 4,446,324
283 4,446,325

CLASS 548

240 Re.31,578
438 4,446,326

CLASS 549

307 4,446,327

CLASS 568

479 4,446,328

CLASS 585

458 4,446,329

CLASS 604

6 4,445,884
28 4,445,885
4,445,886
4,445,887
4,445,888
49 4,445,889
101 4,445,892
103 4,445,890
4,445,891
165 4,445,893
179 4,445,894
193 4,445,895
238 4,445,896
280 4,445,897
337 4,445,898
385 4,445,899
389 4,445,900

CLASSIFICATION OF DESIGNS

D2—	275	273,624		31	273,640	D8—	8	273,656		191	273,672	D21—	52	273,688		26	273,704
	279	273,625		47	273,641		82	273,657		338	273,673	D22—	13	273,689			273,705
		273,626		48	273,642		396	273,658	D13—	24	273,674		23	273,690		35	273,706
	282	273,627		84	273,643			273,659		27	273,675			273,691			273,707
		273,628		96	273,644	D9—	337	273,660	D14—	1	273,676		24	273,692		36	273,708
		273,629		117	273,645		374	273,661		65	273,677	D23—	2	273,693		59	273,709
	309	273,630		181	273,646		435	273,662		73	273,678		3	273,694	D25—	58	273,710
	310	273,631		188	273,647		447	273,663		106	273,679			273,695		73	273,711
		273,632		192	273,648	D10—	73	273,664	D15—	21	273,680			273,696		77	273,712
	334	273,633			273,649		91	273,665		133	273,681			273,697	D27—	3	273,714
	449	273,634		252	273,650	D11—	1	273,666		139	273,682		19	273,698			273,715
D4—	25	273,635	D7—	6	273,651		155	273,667	D16—	1	273,683			273,699		03	273,713
	38	273,636		17	273,652	D12—	92	273,668		102	273,684		56	273,700	D28—	7	273,716
D6—	25	273,637		47	273,653		156	273,669		131	273,685		67	273,701	D29—	06	273,717
	27	273,638		307	273,654			273,670	D20—	6	273,686		163	273,702	D30—	99	273,718
	30	273,639		351	273,655		181	273,671		32	273,687	D24—	1.1	273,703			

CLASSIFICATION OF PLANTS

P.—	74	5,225		78	5,226		82	5,227			

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

71—	34	T104,201									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4 :	4,445,744		4,445,719		4,445,507	15 :	4,445,284		4,446,482	23 :	4,445,271
	4,446,131		4,445,731		4,445,626		4,445,453		4,446,491		4,445,329
6 :	4,445,395		4,445,733		4,445,688	16 :	4,446,440		4,446,563		4,445,954
	4,445,535		4,445,776		4,445,717	17 :	4,445,236		4,446,570		4,446,462
	4,445,760		4,445,781		4,445,723		4,445,332		3,321,027	24 :	4,445,364
	4,445,952		4,445,787		4,445,815		4,445,337		4,198,080		4,445,389
	4,446,065		4,445,800		4,445,844		4,445,420	18 :	4,445,249		4,445,700
	4,446,140		4,445,812		4,446,109		4,445,429		4,445,328		4,445,736
	4,446,389		4,445,868		4,446,124		4,445,439		4,445,410		4,445,846
	4,446,559		4,445,920		4,446,247		4,445,448		4,445,565		4,446,027
	4,446,568		4,445,925		4,446,330		4,445,469		4,445,683		4,446,232
8 :	4,446,546		4,445,936		4,446,461		4,445,496		4,445,686		4,446,234
9 :	4,445,441		4,445,942		4,446,544		4,445,550		4,445,730		4,446,237
01 :	4,445,642		4,445,948	10 :	4,445,463		4,445,581		4,445,860		4,446,315
04 :	4,445,238		4,445,956		4,445,529		4,445,606		4,445,928		4,446,463
	4,445,267		4,445,976		4,446,014		4,445,623		4,445,929		4,446,556
	4,445,377		4,446,001		4,446,015		4,445,632		4,445,995	25 :	4,445,392
	4,445,404		4,446,006		4,446,024		4,445,646		4,446,214		4,445,464
	4,445,532		4,446,036		4,446,028		4,445,668		4,446,268		4,445,501
	4,445,553		4,446,118		4,446,046		4,445,711		4,446,285		4,445,505
	4,446,194		4,446,126		4,446,083		4,445,713		4,446,296		4,445,536
	4,446,519		4,446,159		4,446,220		4,445,720		4,446,298		4,445,636
	4,446,553		4,446,173		4,446,233		4,445,738		4,446,405		4,445,659
	4,446,554		4,446,188		4,446,259		4,445,743		4,446,425		4,445,684
	4,446,564		4,446,235		4,446,269		4,445,750		4,446,508		4,445,749
05 :	4,445,294		4,446,240		4,446,329		4,445,813	19 :	4,445,456		4,445,762
	4,445,657		4,446,242	12 :	4,445,295		4,445,858		4,445,740		4,445,763
06 :	Re.31,570		4,446,244		4,445,302		4,445,870		4,446,120		4,445,768
	Re.31,571		4,446,248		4,445,304		4,445,890		4,446,445		4,445,770
	Re.31,580		4,446,314		4,445,305		4,445,891		4,446,527		4,445,782
	4,445,232		4,446,333		4,445,370		4,445,892	20 :	4,445,240		4,445,799
	4,445,235		4,446,334		4,445,391		4,445,896		4,445,315		4,445,826
	4,445,244		4,446,352		4,445,416		4,445,898		4,445,445		4,445,842
	4,445,248		4,446,379		4,445,428		4,445,915		4,445,537		4,445,847
	4,445,253		4,446,381		4,445,685		4,445,989		4,445,577		4,445,883
	4,445,261		4,446,407		4,445,739		4,445,993		4,445,652		4,445,919
	4,445,316		4,446,411		4,445,790		4,446,030		4,445,824		4,446,000
	4,445,357		4,446,423		4,445,839		4,446,055		4,446,018		4,446,049
	4,445,359		4,446,428		4,445,850		4,446,073		4,446,361		4,446,211
	4,445,385		4,446,438		4,445,926		4,446,096	21 :	4,445,343		4,446,229
	4,445,406		4,446,446		4,445,950		4,446,167		4,445,344		4,446,305
	4,445,412		4,446,473		4,446,114		4,446,203		4,446,256		4,446,358
	4,445,414		4,446,506		4,446,178		4,446,212		4,446,349		4,446,371
	4,445,573		4,446,534		4,446,444		4,446,288		4,446,450		4,446,372
	4,445,596		4,446,536		4,446,464		4,446,336		4,446,451		4,446,373
	4,445,611		4,446,543		4,446,480		4,446,344	22 :	4,445,415		4,446,382
	4,445,612		4,446,547	13 :	4,445,446		4,446,354		4,445,424		4,446,388
	4,445,639	08 :	4,445,431		4,445,539		4,446,400		4,445,524		4,446,412
	4,445,644	09 :	4,445,338		4,445,557		4,446,432		4,445,902		4,446,455
	4,445,650		4,445,342		4,445,559		4,446,437		4,446,005		4,446,500
	4,445,654		4,445,361		4,445,643		4,446,443		4,446,011		4,446,501
	4,445,690		4,445,442		4,446,337		4,446,458		4,446,117		4,446,542
	4,445,712		4,445,462		4,446,343		4,446,465		4,446,435		4,446,552

	4,446,566	30 :	4,445,411		4,445,786		4,446,077		4,445,872		4,445,881
	4,315,798	31 :	4,445,589		4,445,796		4,446,084		4,445,874		4,445,917
26 :	Re.31,578		4,445,788		4,445,830		4,446,092		4,445,886		4,446,010
	4,445,251		4,445,958		4,445,848		4,446,093		4,445,887		4,446,085
	4,445,266		4,446,422		4,445,862		4,446,102		4,445,888		4,446,119
	4,445,301	32 :	4,445,655		4,445,865		4,446,158		4,445,910		4,446,177
	4,445,326		4,446,416		4,445,871		4,446,165		4,445,914		4,446,201
	4,445,356	33 :	4,445,286		4,445,877		4,446,176		4,445,916		4,446,208
	4,445,365		4,445,696		4,445,884		4,446,179		4,445,921		4,446,252
	4,445,390		4,445,880		4,445,907		4,446,182		4,445,924		4,446,263
	4,445,393		4,446,342		4,445,988		4,446,197		4,445,930		4,446,353
	4,445,398		4,446,468		4,445,990		4,446,198		4,445,953		4,446,365
	4,445,427	34 :	4,445,270		4,446,007		4,446,199		4,445,965		4,446,368
	4,445,457		4,445,277		4,446,032		4,446,241		4,445,970		4,446,369
	4,445,493		4,445,297		4,446,038		4,446,246		4,445,977		4,446,390
	4,445,538		4,445,327		4,446,053		4,446,249		4,446,040		4,446,415
	4,445,555		4,445,360		4,446,057		4,446,264		4,446,044		4,446,436
	4,445,583		4,445,443		4,446,059		4,446,271		4,446,045		4,446,434
	4,445,597		4,445,459		4,446,088		4,446,282		4,446,087		4,446,457
	4,445,599		4,445,576		4,446,090		4,446,284		4,446,094		4,446,459
	4,445,602		4,445,613		4,446,097		4,446,286		4,446,098		4,446,469
	4,445,604		4,445,627		4,446,103		4,446,320		4,446,107		4,446,504
	4,445,607		4,445,808		4,446,122		4,446,321		4,446,123		4,446,514
	4,445,637		4,445,835		4,446,135		4,446,393		4,446,132		4,446,537
	4,445,661		4,445,869		4,446,138		4,446,417		4,446,152		4,446,538
	4,445,664		4,445,895		4,446,161		4,446,509		4,446,154		4,446,539
	4,445,667		4,445,978		4,446,162		4,446,511		4,446,155		4,446,540
	4,445,691		4,445,980		4,446,193		4,446,525		4,446,169		4,446,541
	4,445,708		4,445,991		4,446,196	40 :	4,445,265		4,446,184	49 :	4,445,803
	4,445,725		4,446,002		4,446,222		4,445,371		4,446,280		4,445,939
	4,445,729		4,446,004		4,446,223		4,445,403		4,446,292		4,445,947
	4,445,773		4,446,009		4,446,278		4,445,426		4,446,310		4,446,164
	4,445,792		4,446,012		4,446,335		4,445,465		4,446,322		4,446,460
	4,445,863		4,446,037		4,446,340		4,445,571		4,446,323		4,446,494
	4,445,945		4,446,060		4,446,357		4,445,572		4,446,339	50 :	4,445,239
	4,445,957		4,446,062		4,446,375		4,445,578		4,446,348		4,445,831
	4,445,979		4,446,070		4,446,377		4,445,909		4,446,376		4,445,968
	4,445,984		4,446,071		4,446,397		4,445,941		4,446,398		4,446,383
	4,445,986		4,446,076		4,446,403		4,446,013		4,446,401		4,446,535
	4,445,997		4,446,079		4,446,414		4,446,108		4,446,402	51 :	4,445,247
	4,445,999		4,446,095		4,446,421		4,446,308		4,446,426		4,445,269
	4,446,171		4,446,125		4,446,476		4,446,370		4,446,505		4,445,280
	4,446,172		4,446,157		4,446,479		4,446,434		4,446,528		4,445,373
	4,446,175		4,446,180		4,446,502	41 :	4,445,246		4,446,529		4,445,378
	4,446,224		4,446,202		4,446,532		4,445,430		3,549,540		4,445,520
	4,446,332		4,446,218	37 :	4,445,346		4,445,503	44 :	4,445,321		4,445,780
	4,446,418		4,446,230		4,445,497		4,445,579		4,445,894		4,445,836
	4,446,447		4,446,243		4,445,527		4,445,641	45 :	4,445,322		4,445,854
	4,446,449		4,446,255		4,445,593		4,445,665		4,445,355		4,446,064
	4,446,523		4,446,258		4,445,704		4,445,817		4,446,189		4,446,345
	4,446,533		4,446,265		4,445,748		4,445,853	47 :	4,445,408		4,446,363
27 :	4,445,250		4,446,267		4,445,789		4,445,931		4,445,517		4,446,396
	4,445,287		4,446,279		4,445,851		4,446,016		4,445,908		4,446,512
	4,445,384		4,446,306		4,446,236	42 :	Re.31,569		4,445,935	53 :	4,445,275
	4,445,387		4,446,307		4,446,557		4,445,237		4,446,105		4,445,509
	4,445,407		4,446,341	38 :	4,445,314		4,445,243		4,446,200		4,445,591
	4,445,541		4,446,362	39 :	Re.31,572		4,445,306		4,446,301		4,445,899
	4,445,567		4,446,394		Re.31,574		4,445,313		4,446,302		4,445,940
	4,445,605		4,446,395		Re.31,577		4,445,349		4,446,303		4,446,017
	4,445,620		4,446,409		4,445,231		4,445,353	48 :	Re.31,575		4,446,106
	4,445,638		4,446,448		4,445,312		4,445,358		4,445,234	54 :	4,445,621
	4,445,666		4,446,486		4,445,330		4,445,380		4,445,255		4,445,943
	4,445,669		4,446,562		4,445,333		4,445,383		4,445,266		4,445,944
	4,445,728	35 :	4,445,678		4,445,334		4,445,388		4,445,272		4,446,074
	4,445,779		4,446,041		4,445,335		4,445,435		4,445,303		4,446,251
	4,445,791		4,446,427		4,445,351		4,445,458		4,445,382		4,446,433
	4,445,794	36 :	Re.31,573		4,445,386		4,445,500		4,445,402	55 :	Re.31,579
	4,445,966		4,445,233		4,445,400		4,445,508		4,445,444		4,445,242
	4,445,971		4,445,245		4,445,421		4,445,510		4,445,454		4,445,296
	4,446,019		4,445,258		4,445,530		4,445,514		4,445,467		4,445,307
	4,446,068		4,445,283		4,445,534		4,445,526		4,445,485		4,445,460
	4,446,163		4,445,292		4,445,542		4,445,533		4,445,502		4,445,461
	4,446,270		4,445,339		4,445,551		4,445,570		4,445,531		4,445,470
	4,446,477		4,445,340		4,445,562		4,445,617		4,445,556		4,445,495
28 :	4,445,689		4,445,366		4,445,580		4,445,628		4,445,574		4,445,504
	4,445,727		4,445,369		4,445,594		4,445,629		4,445,575		4,445,522
	4,446,510		4,445,375		4,445,618		4,445,663		4,445,630		4,445,540
29 :	4,445,260		4,445,432		4,445,640		4,445,694		4,445,633		4,445,547
	4,445,291		4,445,433		4,445,699		4,445,714		4,445,674		4,445,587
	4,445,707		4,445,490		4,445,742		4,445,716		4,445,706		4,445,616
	4,445,832		4,445,515		4,445,837		4,445,732		4,445,734		4,445,635
	4,445,893		4,445,563		4,445,852		4,445,737		4,445,741		4,445,673
	4,445,949		4,445,600		4,445,912		4,445,747		4,445,795		4,445,693
	4,446,054		4,445,622		4,445,923		4,445,751		4,445,804		4,445,823
	4,446,056		4,445,625		4,445,962		4,445,775		4,445,805		4,445,900
	4,446,061		4,445,687		4,445,963		4,445,806		4,445,807		4,446,183
	4,446,153		4,445,702		4,445,985		4,445,827		4,445,819		4,446,392
	4,446,300		4,445,758		4,446,039		4,445,838		4,445,829		4,446,498
	4,446,430		4,445,769		4,446,042		4,445,843		4,445,861		4,446,503
	4,446,431		4,445,774		4,446,052						

DESIGN PATENTS

06 :	273,625		273,715	13 :	273,649	26 :	273,647		273,640	42 :	273,638
	273,626	08 :	273,653		273,654		273,651		273,716		273,641
	273,644		273,669		273,656		273,670		273,717		273,703
	273,652	09 :	273,660	17 :	273,657		273,698	37 :	273,633	48 :	273,624
	273,675		273,718		273,694		273,699		273,642		273,679
	273,706	12 :	273,636		273,695	27 :	273,672		273,682		273,686
	273,707		273,645		273,696	34 :	273,637		273,687	49 :	273,677
	273,710		273,663		273,697		273,646	39 :	273,643	51 :	273,650
	273,713		273,668		273,709		273,689		273,705	53 :	273,673
	273,714		273,674	21 :	273,683	36 :	273,639	41 :	273,665		

06 :	5,225	5,226	5,227			

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

01 :	T104,201					

☆ U.S. GOVERNMENT PRINTING OFFICE : O—1984

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

(or) COUNTRY

PLEASE PRINT OR TYPE

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

Vol. 1042 Number 2

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

Route to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

Vol. 1042 Number 2

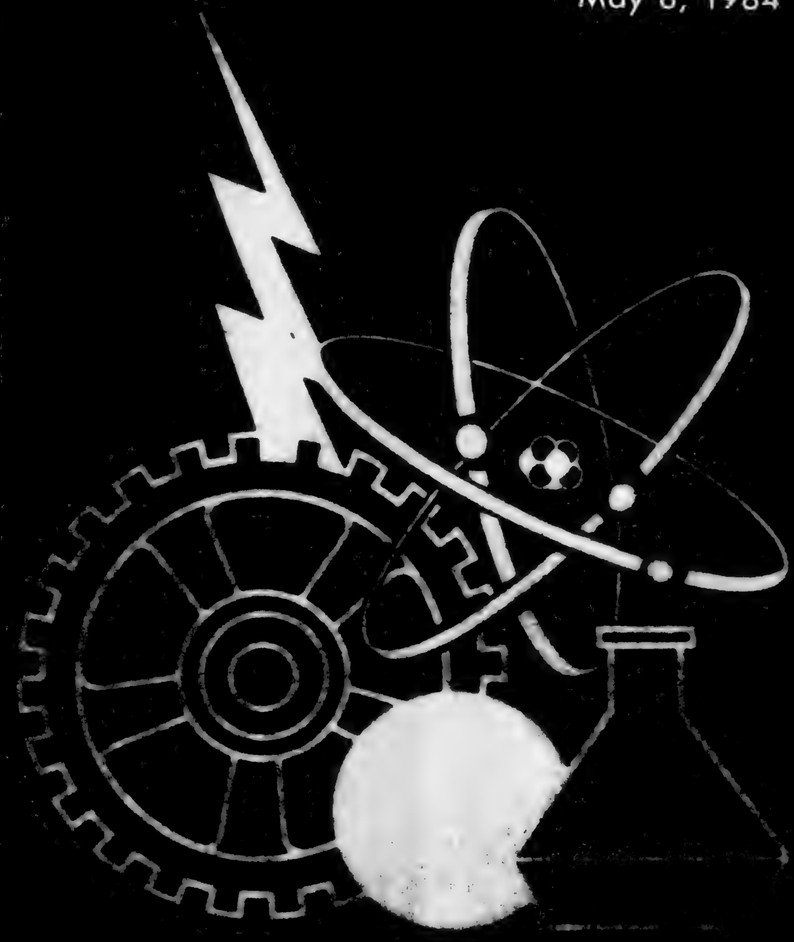
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 8, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

May 8, 1984 Volume 1042 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1042 OG 16
Reissue Applications Filed	1042 OG 16
Requests for Reexaminations Filed	1042 OG 16
Removal from Register	1042 OG 16
Filing of Patent Applications Pursuant to 37 CFR 1.60	1042 OG 18
Patent Suits	1042 OG 18
Proposed Rules for Patent Maintenance Fees	1042 OG 22
Patent Certificates of Correction	1042 OG 39
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1042 OG 40
Condition of Patent Applications	1042 OG 41
Reissue Patents Granted (31,581)	463
Plant Patents Granted (5,228)	465
Patents Granted	
General and Mechanical (4,446,571)	467
Chemical (4,447,241)	701
Electrical (4,447,670)	813
Design Patents Granted (273,719)	895
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 49
Classification of	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs and Plants	PI 58
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Jan. 30, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,330,357, Re. S.N. 586,209 Filed Mar. 5, 1984, Cl. 156/584, DISPENSER FOR LINER-WOUND TAPE, Philip W. Collins, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul Minn.* Attorney or Agent: Donald M. Sell, et al., Ex. Gp.: 161

4,335,838, Re. S.N. 587,343, Filed Mar. 8, 1984, Cl. 223/91, SKIRT AND TROUSER CLIP FOR HANGER, Leonard Bisk, et al., Owner of Record: *Independent Products Co., Inc., Lansdale, Pa.* Attorney or Agent: A.D. Caesar, Ex. Gp.: 353

4,355,372, Re. S.N. 587,315, Filed Mar. 7, 1984, Cl. 364/900, MARKET SURVEY DATA COLLECTION METHOD, Tod Johnson, et al., Owner of Record: *NPD Research, Inc., Floral Park, N.Y.,* Attorney or Agent: Lawrence G. Kurland, Ex. Gp.: 237

4,369,768, Re. S.N. 577,673, Filed Feb. 7, 1984, Cl. 128/6, ARTHROSCOPE, Marko Vukovic, Owner of Record: *Inventor,* Attorney or Agent: Sidney Wallenstein, et al., Ex. Gp.: 335

4,389,598, Re. S.N. 588,914, Filed Mar. 12, 1984, Cl. 315/291, DISCO LIGHT ASSEMBLY, Robert M. Smith, Owner of Record: *Inventor,* Attorney or Agent: Keith D. Beecher, Ex. Gp.: 251

4,412,621, Re. S.N. 589,483, Filed Mar, 14, 1984, Cl. 211/58, MAGAZINE ASSEMBLY FOR HOLDING INFORMATION BEARING CARDS AND THE LIKE, Falk-Jungen Eichner, Owner of Record: *Fellows Manufacturing Co., Itasco, Ill.,* Attorney or Agent: Talivaldis Cepuritis, et al., Ex. Gp.: 355

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue

Removal from Register

Pursuant to the provisions of 37 C.F.R. 1.347, a letter was directed on Nov. 18, 1983, to the last post office address furnished to the Office of Enrollment and Discipline[Committee on Enrollment] by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five (45) days therein set. Other letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address.

Accordingly, the names of the following persons have been removed from the Register of Patent Attorneys and Patent Agents.

WILLIAM FELDMAN,
Apr. 11, 1984. *Director, Office of Enrollment and Discipline.*

Joseph F. Padlon, 27 Broadview Ave., Bellport, N.Y., 11713
Alfred E. Page, 131 Neperan Rd., Tarrytown, N.Y., 10591
Robert Thomas Palmer, Sr., 15 Pleasant St., Sharon, Mass., 02067
Chris Papageorge, Jacoby & Meyers, 2285 Westwood Blvd., Los Angeles, Calif., 90064
Boris Parad, Pullman, Inc., Pat. Law Section, 200 S. Mich. Ave., Chicago, Ill., 60604
Albert M. Parker, American Flange & Mfg. Co., Inc., 1100 W. Blancke St., Linden, N.J., 07036
N. Douglas Parker, Jr., Scrivener, Parker, Scrivener & Clarke, 1030 15th St., N.W., Washington D.C., 20005
Ralph Elliott Parker, Burns, Doane, Swecker & Mathis, Geo. Mason Bldg., Wash. & Prince Sts., Alexandria, Va., 22313
Robert L. Parker, Christie, Parker and Hale, Union Bank Plz., 201 South Lake Ave. Pasadena, Calif. 91101
Walter J. Parker, 1059 Lake Ave., Apt. 66, Rochester, N.Y. 14613
George L. Parkhurst, 150 Val De Flores Dr., Burlingame, Calif., 94010
Roy L. Parsell, 609 Summer Hill Rd., Madison, Conn. 06443

Adriano Pasqualetti, Montedison S.P.A., Pat. & Lic. Dept., Largo Donegani, 1/2, Milano, Italy
Rowland Vermilye Patrick, Fish & Richardson, Suite 2100, 28 State St., Boston, Mass., 02109
Robert Ellsworth Patridge, E.I. Du Pont De Nemours and Co., 1007 Market St., Wilmington, Del., 19898
James H. Patterson, Schmidt, Johnson, Hovey & Williams, 1400 Mercantile Bank Tower, 1101 Walnut, Kansas City, Mo., 64106
Donald E. Payne, P.O. Box 957, Kamuela, Hi., 96743
Frank A. Peacock, P.O. Box 896, Carrollton, Ga., 30117
Edwin C. Pearson, 373 W. Mountain Rd., Ridgefield, Conn., 06877
Hilary E. Pearson, Rosenblum, Rabkin, Parish, Jack Bachli & Bacigalupi, P.C., 114 Sansome St., San Francisco, Calif., 94104
Victor A. Peckham, Brown, Murray, Flick and Peckman, 800 Benedum - Trees Bldg., 221-223 4th Ave., Pittsburgh, Pa. 15222
Anthony Pellicano, 4075 Jones Ave., Riverside, Calif., 92505
Veo Peoples, Jr., Ralston Purina Co., 835 Checkerboard Sq., 9th Floor, Tower Bldg., St. Louis, Mo. 63188
Ben Harrison Perkins, 9 Donsen Ln., Scotch Plains, N.J., 07076
Howard M. Peters, Hexcel Corp., Legal Dept.-Suite 1400, 650 Calif. St., San Francisco, Calif., 94108
John Donald Peterson, 12 King St., Onancock, Va., 23417
William S. Pettigrew, 10353 Prairie Hills Cir., Sun City, Ariz., 85351
David W. Pettis, Jr., Duckworth, Hobby, Allen and Pettis, P.A., 403 E. Kennedy Blvd., P.O. Box 1528, Tampa, Fla., 33601
James F. Phelan, Uniroyal, Inc., Spencer St., Naugatuck, Conn., 06770
Lewis H. Phelps, Jr., 56 Bramble Ln., Riverside, Conn., 06878
Donald James Piggott, Kearney & Trecker Corp., 11000 Theodore Trecker Way, Milwaukee, Wis., 53214
Maurice L. Pinel, 453 Gregory Ave., Weehawken, N.J., 07087
Paul C. Pink, 2449 Dale Ave., Columbus, Ohio, 43209
William Frank Pinsak, American Motors Corp. 27777 Franklin Rd., Southfield, Mich., 48076
Vincent P. Pirri, Eutectic Corp. 40-40 172nd St., Flushing, N.Y., 11358
Angelo M. Pisarra, 34 W. Lincoln St., Verona, N.J., 07044
David M. Pitcher, Finnegan, Henderson, Farabow & Garrett, 1775 K St., N.W., Washington, D.C., 20006
Leo A. Plum, Union Carbide Corp., 270 Park Ave., New York N.Y., 10017
Willard L.G. Pollard, The Firestone Tire and Rubber Co., 1200 Firestone Pkwy., Akron, Ohio, 44317
Michael J. Pollock, Envirotech Corp., 3000 Sand Hill Rd., Menlo Park, Calif., 94025
George J. Porter, 2007 Gallatin St., Suite C, Huntsville, Ala., 35801
George W. Porter, Rm. 335 District Bldg., 14th & E St., N.W., Washington, D.C., 20004
Met R. Poston, Akzona, Inc., P.O. Box 2930, Asheville, N.C., 28802
John Wilmer Poteet, Jr., 1210 Witaker Mill Rd., Joppa, Md., 21085
Dwight J. Potter, American Home Products Corp., 685 Third Ave., New York, N.Y., 10017
Newell Pottorf, 3832 S. Victor Ave., Tulsa, Okla., 74105
Frank B. Powell, Cohn, Powell & Hind, P.C. 7700 Clayton Rd., St. Louis, Mo., 63117
John R. Powell, Cornelius, Powell & Perkins, 391 Landa St., New Braunfels, Tex., 78130
Marvin J. Powell, Phillips Petroleum Co., 405 TRW Bldg., 4th & Dewey, Bartlesville, Okla., 74004
Bradford R. L. Price, Lee & Smith, Suite 330, 10 S. Riverside Plz., Chicago, Ill., 60606
Janet Errington Price, C P C International, Inc., International Plz., Englewood Cliffs, N.J., 07632
Charles Andrew Prudell, 1625 Greenway Terr., Elm Grove, Wis., 53122
Jack D. Puffer, The Garrett Corp., 9851-9951 Sepulveda Blvd. P.O. Box 92248, Los Angeles, Calif., 90009
Robert E. Pulfrey, Ziegler, Caldwell & Pulfrey, 1923 6th Ave. S.E., Aberdeen, S.D., 57401
Theodore V. Quarnstrom, II, 45 Almira Rd., South Yarmouth, Mass., 02664
Charles E. Quarton, 2921 Middlebury, Birmingham, Mich., 48010
Thomas Wallace Quinn, II, 831 Parkes Run La., Villanova, Pa., 19085
Richard P. Radke, Alberi & Radke, Roscoe - Topanga Bldg., 8399 Topanga Canyon Blvd., Canoga Park, Calif., 91304
Harry Radzinsky, 1323 Queens Rd., Charlotte, N.C., 28207
Charles C. Rainey, Sr., U.S. Army Natick Res. & Dev. Comm., Kansas St., Natick, Mass., 01762
Shyamala Rajender, Cetus Corp., Patent Dept., 600 Bancroft Way, Berkeley, Calif., 94710
John C. Randa, Rt. No 1, Box 104, Oostburg, Wis., 53070
Allan Ratner, Ratner & Prestia, 412 Leighton Bldg., 500 N. Gulph Rd., P.O. Box 980, Valley Forge, Pa., 19482
Norman Arnold Rautiola, Nartron Corp., 5000 N. U.S. 131, Reed City, Mich., 49677
Warren E. Ray, 440 Finch Dr., Satellite Beach, Fla., 32937
James R. Reck, 4 Bob White Way, Simsbury, Conn., 06070
James E. Reed, Exxon Co., P.O. Box 2180, Houston, Tex., 77001
Louis F. Reed, Fish & Neave, 277 Park Ave., New York, N.Y., 10017
Chessie E. Rehberg, Route 4, Box 215, Hendersonville, N.C., 28739
James A. Rich, Sybron Corp., Midtown Tower, Ste. 1100, Rochester, N.Y.. 14604
Gloria H. Richard, Lindgren & Zickert, P.C. Suite 800, 79 W. Monroe St., Chicago, Ill., 60603
Jean-Thomas Richard, II, Trust Bldg., 48 Sparks St., Ottawa, Canada
George M. Richards, Warner-Lambert Co., 201 Tabor Rd., Morris Plains, N.J., 07950
Edmunde David Riedl, Merck & Co., Inc., Pat. Dept., 126 E. Lincoln Ave., Rahway, N.J., 07065
Alexander N. Riedy, E.I. Du Pont De Nemours & Co., 1007 Market St., Wilmington Del., 19898
Furman Rinehart, 166 W. High St., Waynesburg, Pa., 15370
Robert Harvey Rines, Rines and Rines, 81 North State St., Concord, N.H., 03301
Andrew O. Riteris, Michael, Best & Friedrich, 250 E. Wisconsin Ave., Milwaukee, Wis., 53202
David Robbins, 5500 Friendship Blvd., Chevy Chase, Md., 20015
Eugene Joseph Roberts, Burns, Doane, Swecker & Mathis, Geo. Mason Bldg., Wash. & Prince Sts., Alexandria, Va., 22313
Kent B. Roberts, Merchant, Gould, Smith, Edell, Welter & Schmidt, Suite 1000, Northwestern Natl. Bk. Bldg., St. Paul, Minn., 55101
Frederick A. Robertson, U.S. Energy Res. & Dev. Admin., P.O. Box 808, Livermore, Calif., 94550
Raymond A. Robic, Robic, Robic & Assoc., 1514 McGregor Ave., Montreal, Que. H3G 1B9, Canada
George N. Robillard, Finnegan, Henderson, Farabow & Garrett, 1775 K St., N.W., Washington D.C., 20006
Arnold Robinson, Box 533, Cutchoque, N.Y., 11935
Walter M. Rodgers, Jr., 1918 Gas Light Tower, 235 Peachtree St., N.E., Atlanta, Ga., 30303
Phil L. Rodier, 152 Douglas Pl., Mount Vernon, N.Y., 10552
Edward Gaynor Roe, Collard, Roe & Malcolm, 1077 Northern Blvd., Roslyn, N.Y., 11576
John J. Rogan, 21 Bourndale Rd., N., Manhasset, N.Y., 11030

Howard H. Rogers, Jr., Gradolph and Rogers, Suite 2042, 230 W. Monroe St., Chicago, Ill., 60606
L. Lawton Rogers, III, Burns, Doane, Swecker and Mathis, Geo. Mason Bldg., Wash. & Prince Sts., Alexandria, Va., 22313
Harvey Mark Rogosin, 8 E. 96th St., Apt. 1D, New York, N.Y., 10028
Benita J. Rohm, Hopgood, Calimafde, Kalil, Blaustein & Judlowe, Lincoln Bldg. 60 E. 42nd St., New York N.Y., 10165
Stanley T. Rolfson, Monsanto Co., P.O. Box 12830, Pensacola, Fla., 32575
John R. Romig, Rd 2 Box 163, Millersburg, Ohio, 44654
Rita M. Rooney, 863 Osage Rd., Pittsburgh, Pa., 15243
Gerald Rose, Leydig, Voit, Osann, Mayer & Holt, Ltd., 1 IBM Plz., Suite 4600, Chicago, Ill., 60611
Leo A. Rosetta, 3504 Fitzhugh La., Silver Spring, Md., 20906
Philip J. Rosewarne, McGinty, Rosewarne & Halverson, P.C., Suite 103, 271 Woodland Pass, East Lansing, Mich., 48823
Charles D. Ross, 131 N. Jefferson St., Dayton, Ohio, 45402
Edmund C. Ross, Jr., 854 Brooklawn, Troy, Mich., 48084
Thomas S. Ross, 21 Milburn Dr., Bloomfield, Conn., 06002
S. Joseph Rotondi, 11403 Orleans Way, Kensington, Md., 20795
Donald A. Rowe, Lamson & Sessions Co., 5000 Tiedman Rd., Cleveland, Ohio, 44144
Charles E. Ruby, 2317 Alta Ave., Louisville, Ky., 40205
S.W. Russell, Suite 405 - Bldg. 1, 2001 Jefferson Davis Hwy., Arlington, Va., 22202
Matthew M. Russo, 550 Old Country Rd., Hicksville, N.Y., 11801
James Wm. Rustad, Johnson Thompson, Klaverkamp & James, P.A., 80 S. 8th St., 4444 IDS Center, Minneapolis, Minn., 55402
Daniel D. Ryan, III, Michael, Best & Friedrich 250 E. Wisconsin Ave., Milwaukee,Wis., 53201
Joseph C. Ryan, GTE Sylvania, Inc., 100 Endicott St., Danvers, Mass., 01923

Filing of Patent Applications Pursuant to 37 CFR 1.60

Applicants are reminded that 37 CFR 1.60 was amended effective Feb. 27, 1983 to require applicants to furnish a copy of the prior application upon filing.

Some applicants continue to request that the copy be made by the Patent and Trademark Office as was done under the practice prior to Feb. 27, 1983. Others are filing a copy of the specification of the prior application, but not a copy of the oath or declaration. The Office will no longer make such copies as part of processing the new application.

The requirements of 37 CFR 1.60 must be complied with before a filing date will be granted for the continuing application.

It should be noted that 37 CFR 1.60 has been amended effective Apr. 1, 1984 to divide the section into paragraph (a) and new paragraph (b). Paragraph (a) adds a reference to amended 37 CFR 1.78(a) to clarify the conditions under which continuation or divisional applications may be filed. New paragraph (b) requires that the prior application be complete as set forth in 37 CFR 1.51(a) in order to properly file an application under 37 CFR 1.60. A complete application under 37 CFR 1.51(a) includes a signed oath or declaration. If the prior application was not a complete application (37 CFR 1.51(a)), a continuation or divisional application cannot be filed utilizing the provisions of 37 CFR 1.60 and any continuation or divisional application must include new application papers and be filed in accordance with 37 CFR 1.53.

Paragraph (b) of 37 CFR 1.60 also requires that a true copy of the prior complete application be filed. The copy must include the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication (on the oath or declaration) that it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. See the final rulemaking published in the Jan. 4, 1984 Federal Register at 49 FR 548-556 and reprinted in the Jan. 24, 1984 Official Gazette at 1038 O.G. 275-283.

GERALD J. MOSSINGHOFF
Apr. 6, 1984. *Commissioner of Patents and Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,991,387, Burroughs Corp.; INDICATOR TUBE; **3,227,922, same,** ELECTRONIC INDICATOR CIRCUIT; **3,868,535, same,** MULTIPOSITION CHARACTER DISPLAY PANEL; **3,868,676, same,** DISPLAY PANEL ELECTRODE TERMINATION; **3,952,223, same,** MULTIPLE CHARACTER FLAT PANEL DISPLAY DEVICE, **filed** May 9, 1978, D.C.N.J. (Newark), Doc. 78-998, *Burroughs Corp. Beckman Instruments, Inc.* Order dismissing action filed July 15, 1980.

3,227,922. (See 2,991,387.)

3,591,483, Diamond Shamrock Corp., DIAPHRAGM-TYPE ELECTROLYTIC CELLS; **3,674,676, same,** EXPANDABLE ELECTRODES; **3,707,454, same,** ANODE AND BASE ASSEMBLY FOR ELECTROLYTIC CELLS, **3,793,163, same,** PROCESS USING ELECTROLYTE ADDITIVES FOR MEMBRANE CELL OPERATION; **3,928,166, same,** DIMENSIONALLY ADJUSTABLE ANODE-DIMENSIONALLY STABLE DIAPHRAGM COMBINATION FOR ELECTROLYTIC CELLS; **4,025,405, same,** ELECTROLYTIC PRODUCTION OF HIGH PURITY ALKALI METAL HYDROXIDE, **filed** Sept. 26, 1978, D.C., W.D.N.Y. (Buffalo), Doc. 79-714, *Hooker Chemicals & Plastics Corp., et al.* v. *Diamond Shamrock Corp., et al.*

3,674,676. (See 3,591,483.)

3,707,454. (See 3,591,483.)

3,793,163. (See 3,591,483.)

3,819,921, Texas Instruments Inc., MINIATURE ELECTRONIC CALCULATOR; **3,904,862, same,** CALCULATOR SYSTEM HAVING A CONSTANT MEMORY; **3,932,846, same,** ELECTRONIC CALCULATOR HAVING INTERNAL MEANS FOR TURNING OFF DISPLAY; **4,074,351, same,** VARIABLE FUNCTION PROGRAMMED CALCULATOR; **4,164,037, same,** ELECTRONIC CALCULATOR OR MICROPROCESSOR SYSTEM HAVING COMBINED DATA AND FLAG BIT STORAGE SYSTEM; **4,208,720, same,** CALCULATOR WITH ALGEBRAIC OPERATING SYSTEM, **filed** July 9, 1981, D.C.N.J. (Newark), Doc. 81-2157, *Casio Keisanki Kabushiki Kaisha* v. *Texas Instruments Inc.* Action transferred to Northern District of Texas on Mar. 17, 1982.

3,868,535. (See 2,991,387.)

3,868,676. (See 2,991,387.)

3,902,391, Hawker Siddeley Canada Ltd., BANDSAW APPARATUS AND DRIVE ASSEMBLY THEREPORE, **filed** Apr. 25, 1979, D.C. Ore. (Portland), Doc. 79-412, *Kockums Industries, Inc.* v. *Hawker Siddeley Canada Ltd.*

3,903,878, Donald C. Spann, DEVICE FOR SUPPORTING A LIMB AND ASSOCIATED EXTREMITY; **3,938,205, same,** BODY POSITIONER; **3,939,829, same,** RESTRAINING CUFF; **3,946,451, same,** LIMB SUPPORT; **4,108,170, same,** PATIENT SUPPORT STRAP; **4,135,504, same,** ORTHOPEDIC SUPPORT, **filed** May 2, 1980, D.C., M.D. Fla. (Jacksonville), Doc. 80-397-Civ-J-M, *Span-America, Inc. and Donald C. Spann* v. *National Medical Products, Inc., doing business as Posi-Block.* Defendants are hereby enjoined from further infringement of Plaintiff's patents per Order filed Aug. 30, 1982.

3,904,862. (See 3,819,921.)

3,905,341, Performance Industries, Inc.; ENGINE VALVE MEANS AND PORTING; **4,062,331, same,** TWO CYCLE INTERNAL COMBUSTION ENGINE; **4,161,163, same,** TWO CYCLE INTERNAL COMBUSTION ENGINE; **4,202,298, same,** FUEL PORTING FOR TWO CYCLE INTERNAL COMBUSTION ENGINE; **4,202,299, same,** TWO CYCLE INTERNAL COMBUSTION ENGINE; **4,388,895, same,** FUEL PORTING FOR TWO CYCLE INTERNAL COMBUSTION ENGINE, **filed** Oct. 6, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-4863, *Performance Industries, Inc.* v. *Honda Motor Co., Ltd., et al.*

3,915,290, Kimwood Corp., COOPERATING CONVEYOR CHAINS, **filed** Apr. 20, 1982, D.C. Minn. (Minneapolis), Doc. 4-82 Civ 638, *Kimwood Corp.* v. *Acrometal Co.'s, Inc., et al.* Consent Judgment filed on Aug. 12, 1983.

3,915,693, Robert T. C. Rasmussen, PROCESS, STRUCTURE AND COMPOSITION RELATING TO MASTER ALLOYS IN WIRE OR ROD FORM, **filed** Mar. 1, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-1028, *Societe Vallourec* v. *Pfixer, Inc. and Robert T. C. Rasmussen.*

3,918,788, Electronics Stamping Corp., BUS CLIP AND BUS STRIP; **3,985,414, same,** BUS CLIP AND BUS STRIP CONSTRUCTION, **filed** Dec. 20, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83-8288 RG (Bx), *Electronics Stamping Corp.* v. *ICC, Inc., et al.*

3,926,470, Prince Corp., VISOR ASSEMBLY; **4,227,241, same, filed** Dec. 11, 1981, D.C., W.D. Mich. (Grand Rapids), Doc. 81-0927, *Prince Corp.* v. *Toyota Motor Sales Co., Ltd.* **Same, filed** Dec. 11, 1981, D.C., W.D. Mich. (Grand Rapids), Doc. 81-0928, *Prince Corp.* v. *Daimler-Benz A.G.*

3,928,166. (See 3,591,483.)

3,930,769, Vereinigte Nahrungsmittelindustrie Aktiengesellschaft, PROCESS AND APPARATUS FOR PRODUCING A THIN DOUGH MATERIAL; **3,991,220, same,** PROCESS FOR PRODUCING A THIN DOUGH MATERIAL, **filed** Jan. 4, 1980, D.C. District of Columbia (Wash. D.C.), Doc. 80-0024, *Everex Corp.* v. *Vereinigte Nahrungsmittelindustrie Aktiengesellschaft.* Final Judgment by Consent dated Apr. 7, 1981.

3,932,846. (See 3,819,921.)

3,934,274, John H. Hartley, Jr., DEFLATABLE MAMMARY AUGMENTATION PROSTHESIS, **filed** Dec. 17, 1981, D.C., C.D. Calif. (Los Angeles), Doc. CV-81 6357 MML (JRx), *John H. Hartley, Jr., et al.* v. *Minnesota Mining & Mfg. Co., et al.* Stipulation and Order dismissing action, including all claims and counterclaims with prejudice pursuant to Rule 41 dated Mar. 9, 1984.

3,395,074, Syva Co., ANTIBODY STERIC HINDRANCE IMMUNOASSAY WITH TWO ANTIBODIES, **filed** Aug. 4, 1981, D.C., N.D. Ohio (Toledo), Doc. C81-513, *Syva Co.* v. *Westgate Laboratory of Pathology, Inc.* Plaintiff voluntarily dismisses, without prejudice, the Complaint filed on Aug. 4, 1981, per Stipulation filed Feb. 4, 1983. **Same, filed** Feb. 5, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 0592, *Syva Co.* v. *Miles Laboratories, Inc.* Judgment dismissing complaint entered for defendant, pursuant to Rule 58, on May 27, 1983.

3,938,205. (See 3,903,878.)

3,939,829. (See 3,903,878.)

3,941,926, Stewart-Warner Corp., VARIABLE INTENSITY DISPLAY DEVICE, **filed** May 28, 1981, D.C., N.D.N.Y. (Utica), Doc. 81-CV-556, *Stewart-Warner Corp.* v. *Conrac Corp., et al.*

3,943,974, ACF Industries, Inc., CONTROL VALVE FOR FLUID ACTUATOR; **4,074,702, same,** CONTROL VALVE FOR BLEEDING FLUID ACTUATOR; **4,194,529, same,** CONTROL VALVE HAVING INTEGRAL VISUAL INDICATOR FOR FLUID SAFETY SYSTEMS, **filed** Oct. 19, 1983, D.C., E.D. La. (New Orleans), Doc. 83-5150 M, *C.S.E. Automation Engineering and Services, Inc., doing business as Automation, USA and Wellcheck, Inc.* v. *ACF Industries, Inc., et al.*

3,946,451. (See 3,903,878.)

3,947,241, Heat & Control, Inc., FOOD TREATMENT APPARATUS AND PROCESS; **4,167,585, same,** METHOD FOR HEATING AND COOKING FOODS IN A CLOSED TREATMENT CHAMBER BY MAINTAINING THE TEMPERATURE AND MOISTURE CONTENT, **filed** Nov. 30, 1983, D.C., N.D. Calif. (San Francisco), Doc. C83 5734, *Stein Associates, Inc.* v. *Heat & Control, Inc.* (This case was transferred from the N.D. Ohio (Toledo), 83-575).

3,950,529, American Hospital Supply Corp., AMINO ACID FORMULATIONS FOR PATIENTS WITH LIVER DISEASE AND METHOD OF USING SAME, **filed** Apr. 28, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 2626, *American Hospital Supply Corp.* v. *Travenol Laboratories, Inc.*

3,952,223. (See 2,991,387.)

3,952,383, Chivas Products Ltd., STRAP FITTING FOR AUTOMOBILE INTERIOR AND OTHER USES; **3,977,054, same, filed** Nov. 12, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-74274, *Chivas Products Ltd.* v. *Voplex Corp.* Judgment filed Nov. 14, 1983.

3,952,776, Dresser Industries, Inc., FLUID FLOW DEVICE; **4,231,383, same,** METHOD FOR CONTROLLING MASS FLOW RATE, **filed** Nov. 5, 1980, D.C., N.D. Tex. (Dallas), Doc. CA-3-80-1470G, *Dresser Industries, Inc.* v. *Ford Motor Co., et al.* Order of Dismissal without prejudice and Modifying Protective Order filed Apr. 9, 1982.

3,960,664, Microlife Technics, Inc., BACTERIAL PRODUCT USEFUL FOR MAKING SAUSAGE, **filed** June 2, 1983, D.C., N.D. Fla. (Tallahassee), Doc. GCA 83-0053-MMP, *Microlife Technics, Inc.* v. *Miles Laboratories, Inc.*

3,961,877, Fluoroware, Inc., REINFORCED WAFER BASKET, **filed** Oct. 21, 1983, D.C. Minn. (St. Paul), Doc. #3-83-1316, *Fluoroware, Inc.* v. *Empak, Inc.*

3,964,479, Cobe Laboratories, Inc., EXTRACORPOREAL BLOOD CIRCULATION SYSTEM AND DRIP CHAMBER WITH ADJUSTABLE BLOOD LEVEL; **4,102,655, same,** BUBBLE TRAP, **filed** Jan. 28, 1983, D.C. Colo. (Denver), Doc. 83-Z-145, *Cobe Laboratories, Inc.* v. *Northern Colorado Kidney Center.* Order of Dismissal without prejudice filed Oct. 3, 1983.

3,964,479, Cobe Laboratories, Inc., EXTRACORPOREAL BLOOD CIRCULATION SYSTEM AND DRIP CHAMBER WITH ADJUSTABLE BLOOD LEVEL, **filed** Dec. 14, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-6008, *Cobe Laboratories, Inc.* v. *Extracorporeal Medical Specialties.*

3,968,600, National Utility Products Co., ADJUSTABLE MANHOLE COVER SUPPORT STRUCTURE, **filed** July 22, 1983, D.C., N.D. Ohio (Cleveland), Doc. C83-2994A, *National Utility Products Co.* v. *Raymond L. Fier, doing business as American Highway Products Co.* Dismissal with prejudice filed Oct. 6, 1983.

3,968,808, Nomadic Structures, Inc., COLLAPSIBLE SELF-SUPPORTING STRUCTURE; **4,290,244, same,** COLLAPSIBLE SELF-SUPPORTING STRUCTURES AND PANELS AND HUB THEREFOR, **filed** Nov. 10, 1981, D.C. Md. (Baltimore), Doc. Y-81-2897, *Nomadic Structures, Inc.* v. *John Goudie Associates, Inc., et al.* Plaintiff is the owner of Pat. Nos. 3,968,808 and 4,290,244 which are good and valid in law. Defendants are permanently enjoined against further infringing Plaintiff's patents. Consent Judgment filed Dec. 10, 1982.

3,968,824, John McLoughlin, PROTECTIVE COVER FOR EXTENDING SHAFTS, **filed** Feb. 24, 1984, D.C., M.D. Fla. (Tampa), Doc. 84-0046Civ-FTM-15, *John McLoughlin* v. *Edward A. Ewing, doing business as Ewing Industries.*

3,974,925, Girard J. McKenzie, LOADER AND TREE REMOVER, **filed** Aug. 8, 1979, D.C., M.D. Fla. (Tampa), Doc. 79-840-Civ-T.K., *Griffin Grove Service, Inc.* v. *Girard J McKenzie.* Defendant is the owner of the patent in suit. Plaintiff's suit seeking declaratory judgment of invalidity concerning Defendant's patent is hereby dismissed with prejudice per Final Consent Judgment filed Mar. 13, 1981.

3,977,054. (See 3,952,383.)

3,977,421, Burke R. Fallen, BUFFING MACHINE; **4,069,538, same,** DRIVE DISC AND PAD ASSEMBLY FOR FLOOR BUFFER; **4,155,138, same,** FLOOR BUFFING MACHINE; **4,307,480, same,** ROTATING PAD SUPPORT FOR FLOOR BUFFING MACHINE, **filed** Nov. 22, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-3499, *Innovative Floor Systems, Inc.* v. *Diamond Speed Buff Co. and Burke R. Fallen.*

3,985,414. (See 3,918,788.)

3,987,854, Baker Oil Tools, Inc., GRAVEL PACKING APPARATUS AND METHOD, **filed** Feb. 24, 1984, D.C., W.D. La. (Shreveport), Doc. 84-0513, Sec. L, *Baker Oil Tools, Inc.* v. *Texas Iron Works, Inc.*

3,990,767, Thomas & Betts Corp., ELECTRICAL CONTACT AND CONNECTOR MEANS EMPLOYING SAME, **filed** Dec. 27, 1978, D.C. Del. (Wilmington), Doc. 78-552, *Thomas & Betts Corp.* v. *Winchester Electronics Div. of Litton Systems, Inc.* Judgment order entered Oct. 8, 1982 is hereby vacated. Pat. No. 3,990,767 is valid and infringed by Defendant. Defendant is permanently enjoined from making, using, or selling Winchester's so-called "single strut" transition connectors, per Amended Judgment Order dated Jan. 19, 1984.

3,991,220. (See 3,930,769.)

3,993,372, Peter Mihos, OVERHEAD CIGARETTE RACK, **filed** Oct. 5, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 6108, *Peter Mihos* v. *Concept Communications Co.*

3,993,520, Frank D. Werner, WINDSHIELD REPAIR APPARATUS AND METHOD, **filed** May 13, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-2323, *Novus, Inc. and Frank D. Werner* v. *Glass Medic, Inc.*

3,995,102, Raceway Components, Inc., INSERT DEVICE FOR CABLES; **4,099,020, same,** APPARATUS FOR SEALING PASSAGES THROUGH A CONCRETE FLOOR AND ABOUT A CONDUCTOR, **filed** Oct. 20, 1983, D.C., S.D. W.Va. (Parkersburg), Doc. 83-A135, *Raceway Components, Inc.* v. *Butler Mfg. Co.* Action dismissed for failure to make service within 120 days on Mar. 8, 1984.

3,995,102, Raceway Components, Inc., INSERT DEVICE FOR CABLES, **filed** Nov. 15, 1983, D.C., S.D. W.Va. (Charleston), Doc. 83-A147, *Raceway Components, Inc.* v. *Butler Mfg. Co.*

3,995,443, Rudolf Iversen, AIR CONDITIONING SYSTEM, **filed** Oct. 13, 1982, D.C. Colo. (Denver), Doc. 82-F-1712, *Quantum Systems Corp., et al.* v. *Thermocycle Intl., Inc. and Rudolf Iversen.* Plaintiff dismisses Complaint agai Jan. 6, 1983.

4,024,330, B. F. Goodrich Co., INTERNALLY COATED REACTION VESSEL AND PROCESS FOR COATING THE SAME, **filed** Feb. 15, 1984, D.C., S.D. Tex. (Victoria), Doc. V-84-2, *B. F. Goodrich Co.* v. *Formosa Plastics Corp., U.S.A., et al.*

4,025,405. (See 3,591,483.)

4,057,704, Alexander Binzel Corp., GAS SHIELDED ARC WELDING TORCH, **filed** May 24, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 3558, *Alexander Binzel Corp.* v. *K & K Brothers Corp., et al.* Complaint and counterclaim are dismissed without prejudice, on motion by Plaintiff, on Mar. 16, 1984.

4,062,331. (See 3,905,341.)

4,069,538. (See 3,977,421.)

4,074,351. (See 3,819,921.)

4,074,702. (See 3,943,974.)

4,082,840, New England Nuclear Corp., BONE SEEKING TECHNETIUM 99M COMPLEX, **filed** Mar. 5, 1984, D.C., S.D. Ohio (Cincinnati), Doc. C-1-84-355, *New England Nuclear Corp.* v. *Mallinckrodt, Inc.*

4,099,020. (See 3,995,102.)

4,102,655. (See 3,964,479.)

4,108,170. (See 3,903,878.)

4,118,129, Qume Corp., ROTARY WHEEL PRINTING SYSTEM, **filed** Mar. 19, 1984, D.C.N.J. (Newark), Doc. 84-1042 S, *Olympia Werke Aktiengesellschaft, et al.* v. *Qume Corp.*

4,126,087, Willie J. McLamb, COOKER **filed** Feb. 15, 1983, D.C., W.D.N.C. (Statesville), Doc. ST-C-83-27, *National Kook-Rite Kooker Corp., et al.* v. *McLamb Enterprises, Inc. and Willie J. McLamb.* Voluntary Dismissal with prejudice filed Aug. 24, 1983.

4,135,504. (See 3,903,878.)

4,155,138. (See 3,977,421.)

4,161,163. (See 3,905,341.)

4,164,037. (See 3,819,921.)

4,167,585. (See 3,947,241.)

4,181,622, David C. Gavin, CLEANING COMPOSITION AND METHOD FOR REMOVING MARINE ACCUMULATIONS FROM SURFACES, **filed** Mar. 1, 1984, D.C., N.D. Miss. (Aberdeen), Doc. EC84-75-LS-P, *David C. Gavin* v. *Edwardian Enterprises, Inc., doing business as Buster's Marine.*

4,187,390, W. L. Gore and Associates, Inc., POROUS PRODUCTS AND PROCESS THEREFOR, **filed** Feb. 24, 1984, D.C.N.J. (Newark), Doc. 84-729, *W. L. Gore and Associates, Inc., et al.* v. *C. R. Bard, Inc.*

4,194,529. (See 3,943,974.)

4,202,298. (See 3,905,341.)

4,202,299. (See 3,905,341.)

4,208,720. (See 3,819,921.)

4,220,104, Paramount Textile Machinery Co., HOSIERY; **4,321,881, same,** METHOD AND APPARATUS FOR INSERTING GUSSET IN PANTIHOSE, **filed** Apr. 23, 1982, D.C., M.D.N.C. (Greensboro), Doc. C-82-445-G, *Paramount Textile Machinery Co.* v. *H. E. Crawford Co., Inc., et al.*

4,221,013, Angel M. Echevarria, FLUID FLOTATION SLEEP SYSTEM, **filed** Feb. 23, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84 1186 DWW (Bx), *Somma Mattress and Angel M. Echevarria* v. *Chappell of Calif., Inc., et al.*

4,222,318, Patton Electric Co., Inc., COMBINATION WINDOW AND FLOOR FAN, **filed** July 1, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-3160, *Patton Electric Co., Inc.* v. *Lasko Metal Products, Inc.* Claims 1-3, 9-12, 20-22, and 25-32 of Pat. No. 4,222,318 are invalid. Judgment is entered in favor of Defendant and against Plaintiff on Feb. 21, 1984.

4,227,241. (See 3,926,470.)

4,231,077, James E. Joyce and John P. Joyce, LIGHT TOY, **filed** Feb. 1, 1984, D.C., E.D. Mich. (Detroit), Doc. 84CV0468DT, *James E. Joyce and John P. Joyce* v. *K-Mart Corp.*

4,231,383. (See 3,952,776.)

4,258,250, Copar Corp., JAM DETECTOR, **filed** June 22, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 4316, *Copar Corp.* v. *Valco Cincinnati, Inc.* Plaintiff having disclaimed Pat. No. 4,258,250, the patent in suit, by agreement of the parties, this cause is dismissed with prejudice and without costs. Dated Feb. 8, 1984.

4,265,393, Orco Sales Co., Inc., BOX CONSTRUCTION, **filed** Mar. 7, 1984, D.C., E.D. Mo. (St. Louis), Doc. 84-0566C (2), *Orco Sales Co., Inc.* v. *Arvco Container Corp., et al.*

4,290,244. (See 3,968,808.)

4,300,287, Larry T. Tibbs, CUTTING TOOL, **filed** Apr. 7, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 2413, *Larry T. Tibbs, et al.* v. *Gerald P. Wivinis, doing business as Wivco Tool Design Ltd., et al.* Plaintiff is the owner of Pat. No. 4,300,287 which is valid and enforceable per Stipulated Final Judgment and Decree dated Mar. 1, 1984.

4,307,480. (See 3,997,421.)

4,308,872, Respitrace Corp., METHOD AND APPARATUS FOR MONITORING RESPIRATION; **4,373,534, same,** METHOD AND APPARATUS FOR CALIBRATING RESPIRATION MONITORING SYSTEM, **filed** Feb. 2, 1984, D.C., N.D. Calif. (San Francisco), Doc. C-84-0496-JPV, *Respitrace Corp.* v. *Vitalog Corp.*

4,315,763, Stoller Enterprises, Inc., HIGH ANALYSIS LIQUID FERTILIZERS, **filed** Feb. 16, 1984, D.C. Neb. (Omaha), Doc. 84-0-124, *Stoller Enterprises, Inc.* v. *Paul Damron, doing business as Interstate Fertilizer Co.*

4,321,881. (See 4,220,104.)

4,364,677, Ceres Electronics Corp., METHOD AND MEANS OF RAPIDLY DISTINGUISHING A SIMULATED DIAMOND FROM NATURAL DIAMOND, **filed** Dec. 21, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 6702, *Presidium, Inc., et al.* v. *Ceres Electronics Corp.* Stipulation and Order dismissing case with prejudice dated Apr. 29, 1983.

4,372,624, Smith Intl., Inc., DYNAMIC C-RING SEAL, **filed** Nov. 23, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83-7613 PAR (Mcx), *Smith Intl., Inc.* v. *Hughes Tool Co.* Order dismissing action on grounds that Smith is attempting to litigate issues already before this Ct. in CV 72-1231-MML dated Mar. 15, 1984.

4,373,534. (See 4,308,872.)

4,388,895. (See 3,905,341.)

4,389,133, Acorn Corrugated Box Co., PLASTIC CONNECTORS FOR CORRUGATED MATERIAL, **filed** Feb. 16, 1984, D.C.N.J. (Newark), Doc. 84-0621 D, *Acorn Corrugated Box Co.* v. *Schiffenhaus Packaging Corp.*

4,392,119, U.S. Computer Systems, Inc., APPARATUS AND METHOD FOR MONITORING THE ARRIVAL AND DURATION OF STAY OF A VEHICLE AT A DRIVE-IN WINDOW, **filed** Feb. 14, 1984, D.C. Neb. (Lincoln), Doc. 84-L-92, *U.S. Computer Systems, Inc.* v. *Automated Electronics.*

4,395,043, Keystone Bingo Products, Inc., GAME CHIP, **filed** Oct. 24, 1983, D.C., S.D.N.Y., Doc. 83-Civ-7756 EW, *Keystone Bingo Products, Inc.* v. *Winston Chen.* **Same, filed** Nov, 2, 1983, D.C.N.J. (Newark), Doc. 83-4206, *Keystone Bingo Products, Inc.* v. *Winston Chen (Winston Imports Corp.).* **Same, filed** Sept. 9, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-4385, *Keystone Bingo Products, Inc.* v. *Joseph A. Holko.* Plaintiff is the owner of Pat. No. 4,395,043 which is good and valid in law. Defendants hereby permanently enjoined against further infringing Plaintiff's patent. Final Judgment by Consent filed Nov. 18, 1983. **Same, filed** Sept. 14, 1983, D.C.N.J. (Trenton), Doc. 83-3451, *Keystone Bingo Products* v. *Two Jay's Bingo Supplies, Inc., et al.* Plainfiff is the owner of Pat. No. 4,395,043 which is good and valid in law. Defendants are hereby permanently enjoined against further infringing Plaintiff's patent. Final Judgment by Consent filed Feb. 9, 1984.

4,419,100, Hollister, Inc., OSTOMY APPLIANCE AND FACEPLATE ATTACHMENT THEREFOR, **filed** Mar. 6, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 1987, *Hollister, Inc.* v. *E. R. Squibb & Sons, Inc.*

4,420,053, Litco Intl., Inc., FORK LIFT WEIGHING APPARATUS, **filed** Feb. 17, 1984, D.C., N.D. Ohio (Youngstown), Doc. C84-562-Y, *Litco Intl., Inc.* v. *Frank Russo, doing business as High Teck Intl.*

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

Proposed Rules for Patent Maintenance Fees

AGENCY: Patent and Trademark Office

ACTION: Notice of proposed rulemaking

SUMMARY: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part I of Title 37, Code of Federal Regulations, to provide rules and procedures for the payment of patent maintenance fees. Public Law 96-517, enacted on December 12, 1980 and Public Law 97-247, enacted on August 27, 1982, provided for the payment of maintenance fees at intervals of 3½, 7½ and 11½ years from the date of grant of the patent for maintaining in force an original patent, a reissue patent of an invention, and under Public Law 96-517, a plant patent and reissues thereof. The proposed changes are intended to provide specific rules and procedures which will assist patentees in avoiding the inadvertent expiration of a patent for failure to pay the appropriate maintenance fee.

DATES: Comments must be submitted on or before June 26, 1984; a public hearing will be held on June 26, 1984, at 9:30 a.m., requests to present oral testimony should be received on or before June 19, 1984.

ADDRESS: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: R. Franklin Burnett, Room 3-11A13. The hearing will be held in Room 11C10, on the 11th floor of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 11A13 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This proposed rule change is designed primarily to 1) establish a set of rules and procedures for the payment of patent maintenance fees; and 2) effect the provisions of Public Laws 96-517 and 97-247 with respect to payment of maintenance fees.

DISCUSSION OF SPECIFIC RULES

Section 1.1, if amended as proposed, would add a proposed new paragraph (d) to provide a "Box M. Fee" in the Patent and Trademark Office to which all maintenance fee correspondence and payments should be directed. Changes in small entity status in patents and changes in the "fee address" under §1.363, as well as payments of maintenance fees should be directed to "Box M. Fee".

The proposed change in §1.9, paragraph (d) is a mere change in citation and title of the rule of the Small Business Administration which relates to the small business size standard for paying reduced patent fees. This change was published in the Federal Register as a final rule on February 9, 1984 at 49 Fed. Reg. 5024-5048. The wording of the rule itself was not changed. This change is proposed to bring the wording of title 37, Code of Federal Regulations into conformance with title 13, Code of Federal Regulations.

Section 1.17, if amended as proposed, would establish in paragraph (h) a fee of $120 for review of a decision refusing to accept and record payment of a maintenance fee filed prior to the expiration of a patent. Paragraph (h) of §1.17 is also proposed to be amended to establish a fee of $120 for reconsideration of a decision on petition refusing to accept the delayed payment of a maintenance fee in an expired patent.

Section 1.19, if amended as proposed, would add proposed new paragraphs (f) and (g). Proposed new paragraph (f) would provide for a $10.00 fee for a microfiche copy of a patent file wrapper record. Microfiche copies of these patent files have recently become available for patents issued after January 1, 1984. No fee had previously been set by rule for this service. This fee is not directly related to maintenance fees but is proposed here for convenience. Proposed new paragraph (g) would establish a $3.00 fee for providing an uncertified statement indicating either the status of payment of maintenance fees due on a patent or the expiration of a patent. This charge does not apply to the receipt normally provided to the fee addressee as a result of the payment of a maintenance fee, but would apply any other time written evidence of the status of payment of maintenance fees on a patent is requested, whether by the patentee or a member of the public.

Section 1.20, if amended as proposed, would add new paragraphs (k), (l) and (m). Proposed new paragraph (k) would provide for a $100.00 surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after December 12, 1980 and before August 27, 1982. Since Public Law 96-517 did not provide for small entities, the surcharge amount of $100 applies to all such patents. Proposed new paragraph (l) would provide for a $100 surcharge for patentees other than a small entity and a $50 surcharge for small entity patentees when paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant based on an application filed on or after August 27, 1982. This surcharge of $100 is subject to a 50% reduction for small entities pursuant to Public Law 97-247. Proposed new paragraph (m) would provide for a $500 surcharge for accepting payment of a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee. This $500 surcharge applies only under Public Law 97-247 where the patent is based on an application filed on or after August 27, 1982 and where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable. The requirement that the delay be "unavoidable" is the same as that for reviving an abandoned

application under 35 U.S.C. 133. However, the amount of evidence required will depend upon when the showing that the delay was "unavoidable" is made. This surcharge does not apply to patents based on applications filed prior to August 27, 1982 since acceptance of a maintenance fee after expiration of a patent for non-timely payment is not possible under Public Law 96-517. Since this surcharge is provided for under 35 U.S.C. 41(c), it is not subject to a 50% reduction for small entities. The surcharge in proposed paragraph (m) is not in addition to the surcharge in proposed paragraph (l), but is in lieu thereof.

Section 1.33, if amended as proposed, would add a new paragraph (d) which would allow a "correspondence address" or change thereto to be filed during the enforceable life of the patent. The "correspondence address" would be used in correspondence relating to maintenance fees unless a separate "fee address" has been specified. Proposed paragraph (d) would also include a reference to proposed §1.363 relating to the "fee address" to be used for maintenance fee purposes.

A new §1.362 is proposed to be added to provide for times for payment of maintenance fees. Proposed new paragraph (a) would set forth the requirement that maintenance fees as set forth in §1.20(e)-(j) must be paid in order to maintain a patent in force if the application maturing into a patent was filed on or after December 12, 1980 and is subject to the payment of maintenance fees. The maintenance fee amounts set in §1.20(e)-(g) are subject to adjustment in accordance with the provisions of Public Law 96-517. The maintenance fee amounts set in §1.20(h)-(j) are subject to adjustment in accordance with the provisions of Public Law 97-247 on October 1, 1985, and every third year thereafter, to reflect fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Other patent fees are also subject to similar adjustments.

Proposed new paragraph (b) of §1.362 would stipulate that no maintenance fees are due for plant patents if the plant patent application was filed on or after August 27, 1982 or for any design patents. Maintenance fees are not required for a reissue patent if the patent being reissued did not require maintenance fees. Proposed new paragraph (c) would define the pertinent application filing dates for purposes of determining whether maintenance fees are applicable. Paragraph (c)(1) would establish that for national applications not claiming benefit of an earlier application, the actual United States filing date controls. Paragraph (c)(2) would establish that for national applications claiming benefit of an earlier foreign application under 35 U.S.C. 119, the United States filing date controls. Paragraph (c)(3) would provide that for continuing national applications claiming benefit of a prior application under 35 U.S.C. 120, the actual United States filing date of the continuing application is the controlling date. Paragraph (c)(4) would provide that for a reissue application, the United States filing date of the application which matured into the original patent upon which the reissue application is based would control. Paragraph (c)(5) would establish that for an international application which has entered the United States as a designated office under 35 U.S.C. 371, the international filing date granted under Article 11(1) of the Patent Cooperation Treaty controls. This is consistent with 35 U.S.C. 363.

Paragraph (d) of proposed new §1.362 would set forth the time periods when maintenance fees could be paid without a surcharge. Those periods, referred to generally as the "window period," are the six month periods preceding each due date, i.e., 3 years through 3 years and six months, 7 years through 7 years and six months, and 11 years through 11 years and six months after grant of the patent. The "due dates" are defined in 35 U.S.C. 41(b). A maintenance fee paid on the last day of a window period could be paid without surcharge. The last day of a window period is the same date (anniversary date) the patent was granted 3 years and six months, 7 years and six months, or 11 years and six months after grant of the patent.

Paragraph (e) of proposed new §1.362 would set forth the grace periods during which maintenance fees, under either Public Law 96-517 or Public law 97-247, may be paid with the surcharge under §1.20(k) or (l). The grace periods are the six month periods immediately following each due date, i.e., after 3 years and six months and up to 4 years, after 7 years and six months and up to 8 years, and after 11 years and six months and up to 12 years after grant of the patent. A maintenance fee may be paid with the surcharge on the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant to prevent the patent from expiring.

Paragraph (f) of proposed new §1.362 would specify that where the last day for paying a maintenance fee falls on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee may be paid on the next succeeding day which is not a Saturday, Sunday, or federal holiday. For example, if the "window period" provided by proposed paragraph (d) for paying a maintenance fee without surcharge ended on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee could be paid without surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday. Likewise, if the grace period provided by proposed paragraph (e) for paying a maintenance fee with surcharge ended on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee could be paid with surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday. In the latter situation, the failure to pay the maintenance fee and surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday would result in the patent expiring on a date (4, 8, or 12 years after the date of grant) earlier than the last date on which the maintenance fee and surcharge could be paid. This situation results from the provisions of 35 U.S.C. 21, but those provisions do not extend the expiration date of the patent if the maintenance fee and any required surcharge are not paid when required. For example, if the grace period ended on Saturday, the maintenance fee and surcharge could be paid on the next succeeding business day, e.g. Monday, but the patent would have expired on Saturday if the maintenance fee and surcharge were not paid on the following Monday.

Paragraph (g) of proposed new §1.362 would establish that if the proper fees are not received within the time period specified in paragraphs (d), (e), or (f) the patent would expire at the end of the grace period set forth in paragraph (e). Paragraph (g) also specifies that a patent which expires for the failure to pay the maintenance fee will expire at the end of the same date

(anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant.

Proposed new §1.363, if added as proposed, would provide for a "fee address" for maintenance fee purposes. Proposed new paragraph (a) would specify that the correspondence address used during prosecution of the application would be used unless 1) a "fee address" is provided for maintenance fee purposes when submitting the issue fee, 2) a correspondence address change for all purposes is filed after payment of the issue fee, or 3) a "fee address" or a change in the "fee address" is filed after payment of the issue fee.

Paragraph (b) of proposed new §1.363 would specify that an assignment does not result in a change of address for maintenance fee purposes. Due to the possible expiration of a patent for failure to timely pay the appropriate maintenance fee, patentees should ensure that the Patent and Trademark Office is properly notified of the proper "fee address" to which all maintenance fee communications are to be directed. Under both Public Law 96-517 and Public Law 97-247 the burden is on the patentee to timely pay maintenance fees. The Patent and Trademark Office will attempt to assist patentees through appropriate courtesy notices. However, the failure to receive one or more notices will not relieve the patentee of the obligation to timely pay the appropriate maintenance fee to prevent the patent from expiring by operation of law if the appropriate maintenance fee is not paid. Proposed §1.363 does not provide for maintenance fee correspondence to be directed to more than one address.

Proposed new §1.366, if added as proposed, would establish the guidelines and procedures for submission of maintenance fees, including any necessary surcharges. Proposed new paragraph (a) would state that the patentee may pay maintenance fees or any person or organization may pay maintenance fees on behalf of the patentee without filing in the Patent and Trademark Office evidence of authorization by the patentee to pay maintenance fees. This will enable patentees to pay the maintenance fees themselves or authorize some person or organization to pay maintenance fees on their behalf. No verification of the authority to pay maintenance fees in a particular patent will be made by the Patent and Trademark Office. While anyone may pay the maintenance fees on a patent, any Patent and Trademark Office notices relating to maintenance fees will be mailed to the "fee address" set forth in proposed §1.363.

Paragraph (b) of proposed new §1.366 specifies that a maintenance fee and any necessary surcharge for a patent must be submitted in the proper amount and at the proper time, i.e., within the periods set forth in proposed §1.362. The maintenance fee and any necessary surcharge may be paid in the manner set forth in §1.23, i.e., it should be in United States specie, Treasury notes, national bank notes, post office money orders, or by certified check. As indicated in §1.23, if the maintenance fee payment is sent in any other form, the Office may delay or cancel the credit until collection is made. For example, a personal or other uncertified check drawn on a United States bank which is not immediately negotiable, e.g., because of lack of signature or insufficient funds, would not constitute payment of a maintenance fee. However, a personal check drawn on a United States bank can be used if it is immediately negotiable. Any remittances from

foreign countries must be payable and immediately negotiable in the United States for the full amount of the maintenance fee required.

Paragraph (b) of proposed new §1.366 also provides that maintenance fees may be paid by an authorization to charge a deposit account established pursuant to §1.25. The authorization to charge the deposit account must be submitted within the periods set forth in §1.362 and must be limited to maintenance fees payable on the date of submission. The authorization to charge the deposit account could not, under paragraph (b), be submitted prior to the third, seventh, or eleventh year after the grant of the patent. If an authorization to charge a deposit account were submitted to pay the maintenance fee due at three years and six months after grant, a new authorization to charge a deposit account or other form of payment would have to be submitted at the appropriate time for each of the maintenance fees due at 7 years and six months and 11 years and six months. Proposed paragraph (b) also specifies that any payment or authorization filed at any time other than that set forth in proposed §1.362(d) or (e) will not serve as a payment of the maintenance fee, except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner pursuant to proposed §1.378. Paragraph (b) as proposed also specifies that a payment of less than the required amount, a payment in a manner other than that set forth in §1.23, or the filing of an authorization to charge a deposit account having insufficient funds, will not constitute payment of a maintenance fee on a patent. The authorization is required to authorize the immediate charging of the fee to the deposit account. An authorization would be improper if it only authorized the fee to be charged at a later date, e.g., on the last possible day of payment without surcharge. Such an authorization would not serve as payment of the maintenance fee. Any payment which fails to result in the entire proper amount of the maintenance fee being present on the due date will not constitute payment of the maintenance fee. Paragraph (b) also specifies that the certificate of mailing procedures of §1.8 or the mailing by "Express Mail" provisions of §1.10 may be utilized in paying maintenance fees. The specific requirements of either §1.8 or §1.10 must be fully complied with if either is used.

Proposed paragraph (c) of new §1.366 would establish the data necessary and desired when submitting maintenance fee payments. Proposed new paragraph (c) would specify that maintenance fee payments must include at least the 1) patent number, 2) patent issue date, 3) United States application serial number and 4) United States application filing date. This information is necessary as a cross-check so that the fee will be credited to the proper patent. If less than the required information is submitted, the Office cannot ensure that proper credit will be made. Additionally, if notice is required that the proper identifying data has not been submitted, it would result in requiring the payment of a surcharge if the necessary data is submitted after the "window period" closes and was necessary to properly identify the patent for which the fee was being paid.

Paragraph (d) of proposed new §1.366 would specify that the following information should also be submitted: 1) whether it is the 3½, 7½, or 11½ year fee, 2) whether small entity status is being claimed with the payment and 3) the amount of the

maintenance fee and any surcharge being submitted. Although the submission of this information is not mandatory, it would expedite the processing of the maintenance fee payments.

Paragraph (e) of proposed new §1.366 would specify that maintenance fee payments and any surcharges relating thereto must be submitted separate from any other payments for fees or charges, whether submitted in the manner set forth in §1.23 or by an authorization to charge a deposit account. Maintenance fee payments and surcharge payments relating thereto which are co-mingled with payments for other fees or charges, e.g., application filing fees, issue fees, document supply fees, etc., will not be accepted. The maintenance fees require processing by a separate area of the Office and are not processed in the same manner as other fees and charges. Maintenance fees for a number of patents can be submitted together in one submission and one payment. Paragraph (e) specifies that if maintenance fee payments for more than one patent are submitted together, they should be submitted on as few sheets as possible, listing the patent numbers in increasing patent number order. If the payment submitted, which can be made as a single payment, is insufficient to cover the maintenance fees and surcharges for all the listed patents, the payment will be applied in the order the patents are listed. In such a circumstance where the fees are insufficient, the maintenance fee for one or more of the last listed patents will not be paid.

Paragraph (f) of proposed new §1.366 serves as a reminder to patentees of the necessity to check for the loss of small entity status prior to paying each maintenance fee on a patent. This is already a requirement of §1.28(b). Paragraph (f) provides that notification of any change in status resulting in loss of entitlement to small entity status must be filed in a patent prior to paying, or at the time of paying, the earliest maintenance fee due after the date on which status as a small entity is no longer appropriate. If status as a small entity has been previously established by filing a statement and such status is checked and is found to be proper, no notification is required. It is not necessary to file new verified statements claiming small entity status at this point if the status as a small entity is still proper even if rights have been transferred to a small entity who has not previously filed a verified statement. The requirement is to notify the Patent and Trademark Office of the loss of entitlement and to pay the maintenance fee in the proper amount for other than a small entity where appropriate. The refund provisions of §1.28(a) for later submitted small entity statements will apply to maintenance fees.

Paragraph (g) of proposed new §1.366 would provide that maintenance fees and surcharges relating thereto will not be refunded except in accordance with §§1.26 and 1.28(a). A patentee cannot obtain a refund of a maintenance fee which was due and payable on the patent.

Proposed new §1.377, if added as proposed, would provide a mechanism for review of a decision refusing to accept and record payment of a maintenance fee filed prior to the expiration of a patent. Paragraph (a) of proposed new §1.377 specifies that a patentee who is dissatisfied with the refusal of the Patent and Trademark Office to accept and record a maintenance fee which was

filed prior to the expiration of the patent may petition the Commissioner to accept and record the maintenance fee.

Paragraph (b) of proposed new §1.377 specifies that any petition under proposed new §1.377 must be filed within 2 months of the action complained of, or within such other time as may be set in the action complained of. The petition must be accompanied by the petition fee of $120 provided for in the proposed amendment to §1.17(h). Paragraph (b) also provides that the petition may include a request that the petition fee be refunded if the refusal to accept and record the maintenance fee is determined to have resulted from an error by the Patent and Trademark Office.

Paragraph (c) of proposed new §1.377 specifies that any petition filed under the section must comply with the requirements of paragraph (b) of §1.181 and must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. The petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

Proposed new §1.378, if added as proposed, would establish the procedures for acceptance of the delayed payment of a maintenance fee in an expired patent in order to reinstate that patent. This procedure is only available under Public Law 97-247 where the application on which the patent is based was filed on or after August 27, 1982. If the maintenance fee is due under Public Law 96-517, i.e., the application on which the patent is based was filed on or after December 12, 1980, and before August 27, 1982, the delayed payment of the maintenance fee cannot be accepted after expiration of the patent and the patent cannot be reinstated.

Paragraph (a) of proposed new §1.378 provides that the Commissioner may accept the payment of any maintenance fee due on a patent based on an application filed on or after August 27, 1982, after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable. The surcharge required by §1.20(m) must be paid as a condition of accepting payment of the maintenance fee. No separate petition fee is required for this petition. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but would be subject to the intervening rights provisions of 35 U.S.C. 41(c)(2).

Paragraph (b) of proposed new §1.378 specifies the requirements of a petition for acceptance of the delayed payment of a maintenance fee filed within six months of the expiration of the patent. Under proposed paragraph (b), the petition must include the required maintenance fee set forth in §1.20(h)-(j); the surcharge set forth in proposed §1.20(m); and a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee. In view of the requirement to enumerate the steps taken to ensure timely payment of the maintenance fee, an argument that the patentee was ignorant of the requirement to pay maintenance fees would not constitute a showing of unavoidable delay. Evidence that despite reasonable care on behalf of the

patentee and/or the patentee's agents, and reasonable steps to ensure timely payment, the maintenance fee was unavoidably not paid, could be submitted in support of an argument that the delay in payment was unavoidable. For example, an error in a docketing system could possibly result in a finding that a delay in payment was unavoidable if it were shown that reasonable care was exercised in designing and operating the system and if it were shown that the patentee took reasonable steps to ensure that the patent was entered into the system to ensure timely payment of the maintenance fees.

Paragraph (c) of proposed new §1.378 specifies the requirements of a petition for acceptance of the delayed payment of a maintenance fee filed more than six months after the expiration of a patent. These requirements are much more stringent in view of the heavy burden of proof that the delay was unavoidable. The legislative history of Public Law 97-247, House Report No. 97-542 (Committee on the Judiciary), indicates that "[a]fter the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable." The six month period provided for petition under proposed paragraph (b) is considered to be a reasonable period of time within which to seek reinstatement of a patent which expired for failure to pay the maintenance fee. Any petition filed more than six months after expiration must meet the more stringent requirements of proposed paragraph (c). Under proposed paragraph (c), the petition must include the same elements as in proposed paragraph (b) and, in addition, must demonstrate that the failure to pay the maintenance fee was unavoidable due to circumstances outside of the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee. The showing in a petition under paragraph (c) must be sufficient in scope and content to meet the heavy burden of proof required to show that a delay in payment of the maintenance fee of more than six months after expiration of the patent was unavoidable. In contrast to a petition under proposed paragraph (b), a showing in a petition under proposed paragraph (c) of an error in a docketing system would not be sufficient to find that the delay was unavoidable. Instead, a petition filed under paragraph (c) must demonstrate that the circumstances resulting in the delay were entirely outside the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee, e.g., serious efforts without success to raise the funds required to pay the maintenance fee.

Paragraph (d) of proposed new §1.378 would require that a petition filed under proposed new §1.378 be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Under proposed paragraph (d), the petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

Paragraph (e) of proposed new §1.378 provides a mechanism for obtaining reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a). This mechanism is a petition for reconsideration which may be filed within two months of, or such other time as set in the decision refusing to accept the delayed payment of the maintenance fee. In contrast to petitions filed under proposed paragraph (a), the petition for reconsideration filed under

proposed paragraph (e) of new §1.378 would require the separate petition fee set forth in the proposed amendment to §1.17(h). Proposed paragraph (e) also provides that after the decision on the petition for reconsideration, no further reconsideration or review of the matter will be undertaken by the Commissioner. Proposed paragraph (e) also provides for refund of the maintenance fee and the surcharge set forth in §1.20(m) if the delayed payment of the maintenance fee is not accepted. The refund would be made following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. Proposed paragraph (e) specifies that the fee for filing the petition for reconsideration will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). Public Law 96-517 and 97-247 have both taken into consideration the impact they may have on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change does not contain a collection of information requirement for the purpose of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 96-517 and Pub. L. 97-247, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

It is proposed to amend 37 CFR, Part I, as follows with deletions indicated by brackets and additions by arrows.

1. Section 1.1 is proposed to be amended by adding a new paragraph (d) to read as follows:

§1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

* * * * *

▶(d) Payments of maintenance fees in patents and other communications relating thereto should be additionally marked "Box M. Fee."◀

2. Paragraph (d) of §1.9 is proposed to be amended by changing the citation "13 CFR 121.3-18, published on September 30, 1982 at 47 FR 43273." to "13 CFR 121.12." and by changing the words "§121.3-18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code" to "§121.12 Small business for paying reduced patent fees."

3. Section 1.17 is proposed to be amended by adding to the end of paragraph (h) the following:

§1.17 Patent application processing fees.

* * * * *

(h) * * *

▶- §1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent

- §1.378(e) - for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent◀

4. Section 1.19 is proposed to be amended by adding new paragraphs (f) and (g) to read as follows:

§1.19 Document supply fees.

* * * * *

▶(f) Microfiche copy of patent file record----------$10.00

(g) Uncertified statement as to status of the payment of maintenance fees due on a patent or expiration of a patent----------$ 3.00◀

5. Section 1.20 is proposed to be amended by adding new paragraphs (k), (l) and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

▶(k) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after December 12, 1980 and before August 27, 1982----------$100.00

(l) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after August 27, 1982:

By a small entity (§1.9(f))----------$ 50.00

By other than a small entity----------$100.00

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after August 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable----------$500.00◀

6. Section 1.33 is proposed to be amended by adding a new paragraph (d) to read as follows:

§1.33 Correspondence respecting patent applications, reexamination proceedings, and other proceedings.

* * * * *

▶(d) A "correspondence address" or change thereto may be filed with the Patent and Trademark Office during the enforceable life of the patent. The "correspondence address" will be used in any correspondence relating to maintenance fees unless a separate "fee address" has been specified. See §1.363 for "fee address" used solely for maintenance fee purposes.◀

7. A new §1.362 is proposed to be added to read as follows:

▶§1.362 Time for payment of maintenance fees.

(a) Maintenance fees as set forth in §1.20(e)-(j) are required to be paid in all patents based on applications filed on or after December 12, 1980, except as noted in paragraph (b) of this section, to maintain a patent in force beyond 4, 8 and 12 years after the date of grant.

(b) Maintenance fees are not required for plant patents based on applications filed on or after August 27, 1982 or for any design patents. Maintenance fees are not required for a reissue patent if the patent being reissued did not require maintenance fees.

(c) The application filing dates for purposes of payment of maintenance fees are as follows:

(1) For an application not claiming benefit of an earlier application, the actual United States filing date of the application.

(2) For an application claiming benefit of an earlier foreign application under 35 U.S.C. 119, the United States filing date of the application.

(3) For a continuing (continuation, division, continuation-in-part) application claiming the benefit of a prior patent application under 35 U.S.C. 120, the actual United States filing date of the continuing application.

(4) For a reissue application, the United States filing date of the original non-reissue application on which the patent reissued is based.

(5) For an international application which has entered the United States as a designated Office under 35 U.S.C. 371, the international filing date granted under Article 11(1) of the Patent Cooperation Treaty which is considered to be the United States filing date under 35 U.S.C. 363.

(d) Maintenance fees may be paid in patents without surcharge during the periods extending respectively from:

(i) 3 years through 3 years and 6 months after grant for the first maintenance fee,

(ii) 7 years through 7 years and 6 months after grant for the second maintenance fee,

(iii) 11 years through 11 years and 6 months after grant for the third maintenance fee,

(e) Maintenance fees may be paid with the surcharge set forth in §1.20(k) or (l) during the respective grace periods after:

(i) 3 years and 6 months and through the day of the 4th anniversary of the grant for the first maintenance fee,

(ii) 7 years and 6 months and through the day of the 8th anniversary of the grant for the second maintenance fee, and

(iii) 11 years and 6 months and through the day of the 12th anniversary of the grant for the third maintenance fee.

(f) If the last day for paying a maintenance fee without surcharge set forth in paragraph (d) of this section, or the last day for paying a maintenance fee with surcharge set forth in paragraph (e) of this section, falls on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee may be paid under paragraph (d) or paragraph (e) respectively on the next succeeding day which is not a Saturday, Sunday, or federal holiday.

(g) Unless the maintenance fee and any applicable surcharge is paid within the time periods set forth in paragraphs (d), (e) or (f) of this section, the patent will expire as of the end of the grace period set forth in paragraph (e) of this section. A patent which expires for the failure to pay the maintenance fee will expire at the end of the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant. ◀

8. A new §1.363 is proposed to be added to read as follows:

▶ §1.363 Fee address for maintenance fee purposes.

(a) All notices, receipts, refunds, and other communications relating to payment or refund of maintenance fees will be directed to the correspondence address used during prosecution of the application as indicated in §1.33(a) unless:

(1) a "fee address" for purposes of payment of maintenance fees is set forth when submitting the issue fee, or

(2) a change in the correspondence address for all purposes is filed after payment of the issue fee, or

(3) a "fee address" or a change in the "fee address" is filed for purposes of receiving notices, receipts and other correspondence relating to the payment of maintenance fees after the payment of the issue fee, in which instance, the latest such address will be used.

(b) An assignment of a patent application or patent does not result in a change of the "correspondence address" or "fee address" for maintenance fee purposes. ◀

9. A new §1.366 is proposed to be added to read as follows:

▶ §1.366 Submission of maintenance fees.

(a) The patentee may pay maintenance fees, or any person or organization may pay maintenance fees on behalf of a patentee. Authorization by the patentee need not be filed in the Patent and Trademark Office to pay maintenance fees on behalf of the patentee.

(b) A maintenance fee and any necessary surcharge submitted for a patent must be submitted in the proper amount and may be paid in the manner set forth in §1.23 or by an authorization to charge a deposit account established pursuant to §1.25. Payment of a maintenance fee and any necessary surcharge or the authorization to charge a deposit account must be submitted within the periods set forth in §1.362(d) or (e). Any payment or authorization of maintenance fees and surcharges filed at any other time will not be accepted and will not serve as a payment of the maintenance fee except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner in an expired patent pursuant to a petition filed under §1.378. Any authorization to charge a deposit account must authorize the immediate charging of the maintenance fee and any necessary surcharge to the deposit account. Payment of less than the required amount, payment in a manner other than that set forth in §1.23, or the filing of an authorization to charge a deposit account having insufficient funds will not constitute payment of a maintenance fee or surcharge on a patent. The certificate of mailing procedures of either

§1.8 or §1.10 may be utilized in paying maintenance fees and any necessary surcharges.

(c) In submitting maintenance fees, identification of the patents for which maintenance fees are being paid must include the following:

(i) the patent number

(ii) the patent issue date

(iii) the United States application serial number, and

(iv) the application filing date

(d) Payments of maintenance fees should identify the fee being paid for each patent as to whether it is the 3½, 7½ or 11½ year fee, whether small entity status is being changed or claimed, and the amount of the maintenance fee and any surcharge being paid.

(e) Maintenance fee payments and surcharge payments relating thereto must be submitted separate from any other payments for fees or charges, whether submitted in the manner set forth in §1.23 or by an authorization to charge a deposit account. If maintenance fee and surcharge payments for more than one patent are submitted together, they should be submitted on as few sheets as possible with the patent numbers listed in increasing patent number order. If the payment submitted is insufficient to cover the maintenance fees and surcharges for all the listed patents, the payment will be applied in the order the patents are listed, beginning at the top of the listing.

(f) Notification of any change in status resulting in loss of entitlement to small entity status must be filed in a patent prior to paying, or at the time of paying, the earliest maintenance fee due after the date on which status as a small entity is no longer appropriate. See §1.28(b).

(g) Maintenance fees and surcharges relating thereto will not be refunded except in accordance with §§1.26 and 1.28(a). ◀

10. A new §1.377 is proposed to be added to read as follows:

▶ §1.377 Review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.

(a) Any patentee who is dissatisfied with the refusal of the Patent and Trademark Office to accept and record a maintenance fee which was filed prior to the expiration of the patent may petition the Commissioner to accept and record the maintenance fee.

(b) Any petition under this section must be filed within 2 months of the action complained of, or within such other time as may be set in the action complained of, and must be accompanied by the fee set forth in §1.17(h). The petition may include a request that the petition fee be refunded if

the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

(c) Any petition filed under this section must comply with the requirements of paragraph (b) of §1.181 and must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Such petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office. ◀

11. A new §1.378 is proposed to be added to read as follows:

▶ §1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent based on application filed on or after August 27, 1982.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent based on an application filed on or after August 27, 1982, after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but would be subject to the conditions set forth in 35 U.S.C. 41(c)(2).

(b) Any petition to accept the delayed payment of a maintenance fee filed under paragraph (a) of this section within six months of the expiration of the patent must include:

(1) the required maintenance fee set forth in §1.20(h)-(j);

(2) the surcharge set forth in §1.20(m); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee.

(c) Any petition to accept the delayed payment of a maintenance fee filed under paragraph (a) of this section more than six months after the expiration of the patent must include:

(1) the required maintenance fee set forth in §1.20(h)-(j);

(2) the surcharge set forth in §1.20(m); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely and the failure to timely pay the maintenance fee was due entirely to circumstances outside of the control of the patentee. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee and the circumstances which were outside of the control of

the patentee and those acting on behalf of the patentee in paying the maintenance fee. The showing must be sufficient in scope and content to meet the heavy burden of proof required to show that a delay in payment of the maintenance fee of more than six months after expiration of the patent was unavoidable.

(d) Any petition under this section must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Such petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

(e) Reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a) of this section may be obtained by filing a petition for reconsideration within two months of, or such other time as set in, the decision refusing to accept the delayed payment of the maintenance fee. Any such petition for reconsideration must be accompanied by the petition fee set forth in §1.17(h). After decision on the petition for reconsideration, no further reconsideration or review of the matter will be undertaken by the Commissioner. If the delayed payment of the maintenance fee is not accepted, the maintenance fee and the surcharge set forth in §1.20(m) will be refunded following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. The fee set forth in §1.17(h) for filing the petition for reconsideration will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office. ◀

April 2, 1984
Date

Commissioner of Patents and Trademarks

(Published as Part V in the Federal Register on April 24, 1984)

PATENT NOTICES

Certificates of Correction for the Week of May 8, 1984

Re. 30,238	4,392,812	4,418,104	4,426,480
Re. 31,136	4,394,321	4,418,105	4,426,503
Re. 31,493	4,394,871	4,418,336	4,426,532
Re. 31,494	4,397,408	4,419,386	4,426,609
D. 261,823	4,397,993	4,419,405	4,427,295
D. 270,276	4,398,513	4,419,453	4,427,492
D. 271,699	4,403,526	4,419,528	4,427,956
4,242,885	4,405,908	4,419,980	4,428,831
4,306,541	4,407,822	4,420,045	4,429,113
4,323,466	4,408,459	4,420,303	4,429,238
4,342,942	4,410,085	4,420,549	4,429,386
4,344,589	4,410,176	4,420,626	4,429,547
4,352,694	4,410,532	4,420,631	4,429,969
4,360,544	4,410,596	4,421,139	4,430,098
4,361,560	4,410,658	4,421,165	4,430,152
4,369,631	4,410,957	4,421,398	4,430,388
4,373,527	4,411,815	4,421,714	4,430,707
4,373,549	4,412,319	4,422,002	4,431,305
4,375,162	4,413,731	4,422,394	4,431,344
4,378,535	4,414,252	4,423,126	4,431,837
4,380,480	4,414,596	4,423,127	4,431,847
4,380,580	4,414,707	4,424,369	4,432,053
4,381,664	4,414,808	4,424,487	4,432,111
4,381,867	4,415,064	4,424,721	4,432,326
4,387,272	4,415,190	4,424,806	4,432,451
4,388,2 60	4,415,433	4,425,230	4,432,505
4,389,614	4,415,506	4,425,306	4,432,631
4,389,970	4,416,864	4,425,776	4,432,882
4,390,779	4,416,937	4,425,954	4,433,855
4,391,207	4,417,326	4,425,995	4,434,059
4,392,286	4,417,705	4,426,454	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 31, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-28-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	5-12-76
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-18-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	1-26-81
DESIGN, GROUP 290—K. L. CAGE, Director	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-04-76
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,307,200 to 3,311,920, inclusive

Plant Patents ..... Numbers 2,723 to 2,729 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,581

APPARATUS FOR DETECTING FORCES DIRECTING THE MOVEMENT OF A MANIPULATING INSTRUMENT

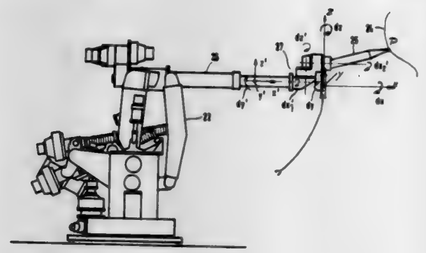
Hans Richter, Augsburg, Fed. Rep. of Germany, assignor to Gesellschaft fur digitale Automation mbH, Munich, Fed. Rep. of Germany

Original No. 4,298,308, dated Nov. 3, 1981, Ser. No. 78,280, Sep. 24, 1979. Application for reissue Aug. 6, 1982, Ser. No. 405,779

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841284

Int. Cl.³ G05B *19/42;* B25J *9/00*

U.S. Cl. 414—730 33 Claims



1. In combination with a motor driven manipulating arm capable of movement along mutually perpendicular axes, an apparatus for programming said manipulating arm to precisely repeat a sequence of movements, said apparatus comprising:

a handle assembly including a center part rigidly attached to said manipulating arm for joint movement therewith, said handle assembly further including an outer sleeve portion surrounding said center part;

flexible coupling means for joining said outer sleeve to said center part while allowing limited relative movement therebetween; and,

data transducer means mounted on said handle assembly for detecting forces acting on said outer sleeve and generating output signals indicative of the magnitude and direction of said forces, whereby said signals are employed to create a playback program directing said motor driven manipulating arm to repeatedly perform the same sequence of movements.

Re. 31,582

AUTOMATIC CONTROL SYSTEM FOR METHOD AND APPARATUS FOR CHECKING DEVICES OF AN AUTOMOTIVE VEHICLE IN USE WITH A MICROCOMPUTER

Akio Hosaka, Yokohama, and Kazuhiro Higashiyama, Atsugi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Original No. 4,339,801, dated Jul. 13, 1982, Ser. No. 132,647, Mar. 21, 1980. Application for reissue Sep. 29, 1982, Ser. No. 424,628

Claims priority, application Japan, Mar. 23, 1979, 54-33880

Int. Cl.³ G06F *11/00*

U.S. Cl. 364—431.04 9 Claims

1. In a control system for an automotive vehicle for controlling various devices in response to sensor signals fed from sensors, said system having a microcomputer for receiving and processing said sensor signals and for controlling said devices, said microcomputer including an input unit, an output unit, a CPU, and a memory storage device including a ROM and a RAM, a method of controlling said vehicle and checking operation of said microcomputer comprising steps of:

(a) operating a control program in said microcomputer in response to said sensor signals for controlling said vehicle devices,

(b) determining in said CPU and in response to said sensor signals at least a first and a second engine condition,

(c) in response to said first determined engine condition, operating a first checking program for checking operation of said memory storage device, operation of said first checking program including the steps of:

(i) in said RAM, feeding into said RAM a first plurality of data signals corresponding to a first set a data values,

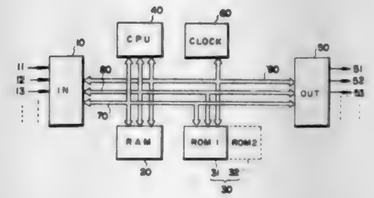
(ii) reading out of said RAM said fed-in data signals,

(iii) comparing each of said read out data signals with each of said first plurality of data signals and generating a first error signal upon non-equivalence of same,

(iv) providing an indication of said first error signal,

(v) in said ROM, reading a second plurality of data values from storage locations of said ROM,

(vi) comparing at least the least significant bits of the sum of said read data values with a reference sum and generating a second error signal upon non-equivalence thereof,



(vii) providing an indication of said second error signal,

(d) in response to said second determined engine condition, operating a second checking program for checking operation of at least one of said input and output units, said second checking [progrom] *program* including the steps of:

(i) for said input unit, feeding into said input unit a third plurality of data signals corresponding to a third set of data values,

(ii) comparing in said CPU said third set of data values with one set of reference values stored in said memory storage device,

(iii) generating a third error signal if each of said third set of data values is not equal to each of said one set of reference values,

(iv) providing an indication of said third error signal,

(v) for said output unit, feeding a fourth plurality of data signals corresponding to a fourth set of data values from said memory device to said output unit,

(vi) comparing said fourth set of data values with another set of reference values,

(vii) generating a fourth error signal if each of said a fourth set of data values is not equal to each of said other set of reference values, and

(viii) providing an indication of said fourth error signal.

Re. 31,583

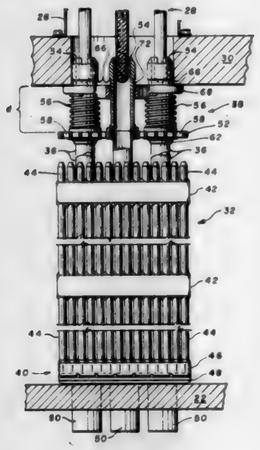
FUEL ASSEMBLY HOLD-DOWN DEVICE

Ralph H. Klumb, Simsbury, and John J. Hutchinson, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Original No. 3,770,583, dated Nov. 6, 1973, Ser. No. 145,374, May 20, 1971. Application for reissue Dec. 29, 1980, Ser. No. 220,591

Int. Cl.³ G21C *19/02*

U.S. Cl. 376—364 4 Claims



1. In a nuclear fuel assembly including, *a plurality of* longitudinally extending rigid support [means] *tubes*; upper and lower end fittings supported by said support [means] *tubes* at opposite ends thereof; a plurality of elongated fuel elements in parallel relationship and extending substantially between said upper and lower end fittings and supported by said support [means] *tubes*, hold-down apparatus for said fuel assembly in which said upper end fitting comprises:

an end plate supported by said support [means] *tubes* against downward motion relative thereto and extending transversely thereof;

[alignment means] *a plurality of hollow cylindrical posts* projecting longitudinally upward from and supported against upward motion relative to said end plate, *each of* said [alignment means] *posts* having an outwardly enlarged shoulder affixed thereto and spaced upwardly from said end plate[;], *said posts and end plate including passageways extending vertically therethrough in registry with said tubes whereby a control element may be inserted therewithin into said fuel assembly;*

force transmitting means slidably mounted on said [alignment means] *posts* and movable therealong between said shoulder and said end plate, *and including a hold-down plate having at least one hub portion, an aperature in and extending through said hub portion for relative slidable passage therethrough of said posts,* and [having a portion thereof] *leg portions* extending laterally beyond said [shoulder] *shoulders* for receiving a downward force applied to said *leg* [portion] *portions*; and

spring means *coaxially disposed about a plurality of said posts and being* interposed *in compression* between said force transmitting means and said end plate for biasing said force transmitting means upwardly from said plate whereby a said downward force on said force transmitting means is yieldably transmitted to said fuel assembly.

PLANT PATENTS

GRANTED MAY 8, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,228

NECTARINE TREE—2W68C

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Dec. 13, 1982, Ser. No. 439,223

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—41 1 Claim

1. A new and distinct variety of nectarine tree of large size, upright growth and a regular and productive bearer of large, yellow flesh, clingstone fruit with excellent eating and shipping quality and the tree is further characterized by the uniform distribution of large size fruit throughout the tree with relatively uniform ripening of the fruit, ripening 3 to 4 days later than Zee Gold nectarine (U.S. Plant Pat. No. 3,087).

5,229

LEUCOTHOE PLANT—ZEBONARD VARIETY

Alex J. Zebehazy, Perry, Ohio, assignor to Conard-Pyle Company, West Grove, Pa.

Filed Jun. 22, 1981, Ser. No. 276,062

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of Leucothoe substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

(a) a dense, compact, symmetrical habit of growth which is much more attractive and compact than that of the *Leucothoe fontanesiana* parent,

(b) highly unique winter coloration which ranges from green to a greenish bronze making the new variety an outstanding source of color in the landscape year-round,

(c) outstanding tolerance to shade, making the new variety an important addition to that small group of plants that does well in reduced sunlight,

(d) the substantial absence of dead branches which are commonly found with *Leucothoe fontanesiana*,

(e) increased tolerance to cold when compared to *Leucothoe axillaris*, as is evidenced by the fact that the new variety has survived temperatures of −15° F. with little to no damage, whereas *Leucothoe axillaris* is listed as hardy to 0° F., and

(f) foliage which is considerably smaller and less lanceolate, as well as winter foliage which is considerably less glossy and of a darker coloration than that of the Zeblid variety of the same cross.

5,230

CHRYSANTHEMUM PLANT NAMED YELLOW LIMELIGHT

Peter S. Hesse, Bradenton, Fla., assignor to Pan American Plant Company, Parrish, Fla.

Filed Aug. 11, 1982, Ser. No. 407,102

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of chrysanthemum plant named Yellow Limelight, as described and illustrated, and particularly characterized by its flat capitulum form, daisy capitulum type, bright yellow ray floret color, diameter of 35–40 mm. across the face of the capitulum, medium pot plant height, and semi-upright branching pattern.

PATENTS

GRANTED MAY 8, 1984

ERRATA

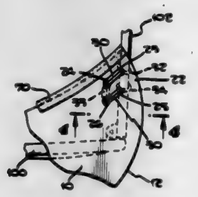
For CLASS	See PATENT NO.
346–213	4,447,075
358–075	4,447,113
346–200	4,447,487
329–126	4,447,772
328–233	4,447,773
328–150	4,447,774
324–438	4,447,775
324–253	4,447,776
324–220	4,447,777
324–213	4,447,778
324–207	4,447,779
324–132	4,447,780
324–083	4,447,781
324–056	4,447,782
323–275	4,447,783
323–226	4,447,784
320–025	4,447,785
377–055	4,447,798
343–783	4,447,811
091–369	4,447,897

PATENTS

GRANTED MAY 8, 1984

GENERAL AND MECHANICAL

4,446,571
VISOR
Gary Ross, 1128 24th St., Apt. B, Santa Monica, Calif. 90403
Filed Nov. 27, 1981, Ser. No. 325,334
Int. Cl.³ A61F 9/04
U.S. Cl. 2—13 4 Claims



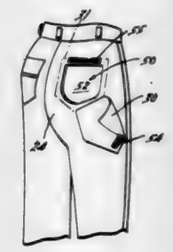
1. An improved visor comprising:
a. a flat body portion in the shape of an arcuate partial disc containing an upper surface, a lower surface, a curved forward edge and a curved rear edge;
b. four left holes extending transversely through the body portion and located adjacent the left rear corner of said flat body portion so as to form a pair of left outer holes and a pair of left inner holes;
c. four right holes extending transversely through the body portion and located adjacent the right rear corner of said flat body portion so as to form a pair of right outer holes and a pair of right inner holes;
d. a left elastic attaching means extending through said four left holes so as to form a pair of left receiving loops extending through said pair of left outer holes and extending from the lower surface of the improved visor; and
e. a right elastic attaching means extending through such four right holes so as to form a pair of right receiving loops extending through said pair of right outer holes and extending from the lower surface of the improved visor;
f. whereby the improved visor can be removably attached to a pair of eyeglasses by placing the left temple of the eyeglasses through the left pair of receiving loops and by placing the right temple of the eyeglasses through the right pair of receiving loops and whereby the tension on the temples can be adjusted by pulling on the portion of the left attaching means extending through the left inner holes and by pulling on the portion of the right attaching means extending through the pair of right inner holes.

4,446,572
CAMOUFLAGED NURSING DRESS
Rosaland O. Lindquist, 4084 W. 7th St., Los Angeles, Calif. 90005
Filed Aug. 12, 1983, Ser. No. 522,509
Int. Cl.³ A41D 1/20
U.S. Cl. 2—104 3 Claims



1. A camouflaged nursing dress, including, in combination:
(a) an outer dress portion covering the torso and of a given color and design;
(b) an under dress portion covering the front of the torso from the inside upper front margin of the outer dress portion and extending downwardly over the top areas of the breasts to within a short distance of the nipples and of the same color and design as said outer dress portion;
(c) attachment means securing the shoulders and side arm portions of the under dress portion to corresponding parts of the inside of the outer dress portion; and
(d) exposing means on the front of said outer dress portion for removing an area of said outer dress portion from in front of the torso to expose said under dress portion and uncovered areas of the breasts for nursing a child, the same color and design on the under dress portion blending in with the remaining front of the outer dress portion to camouflage the fact that an area of the outer dress portion has been removed.

4,446,573
TROUSERS HAVING MODIFIED POCKET
William M. Green, P.O. Box 357, Acme, Mich. 49610
Filed Nov. 22, 1982, Ser. No. 443,858
Int. Cl.³ A41D 27/20
U.S. Cl. 2—252 15 Claims



1. In a pair of trousers having front and rear portions defining a waist portion and a pair of trouser leg members, said rear portions being provided with a hip portion disposed between said waist portion and said leg members, wherein the improvement comprises:
pocket means having cover portion disposed on said hip portion to define a first opening along the top of said pocket for accessing the interior of said pocket;
said hip portion defining a second opening communicating with the interior of said trousers between said front and rear portions, said second opening being completely covered by said cover portion of said pocket means and communicating directly with the interior of said pocket.

4,446,574
BELTS WITH CONCEALED POCKETS
Mary Kalomeris, 303 W. 66th St., New York, N.Y. 10023
Filed Apr. 29, 1982, Ser. No. 373,192
Int. Cl.³ A41F 19/00; A41D 27/20
U.S. Cl. 2—338 6 Claims

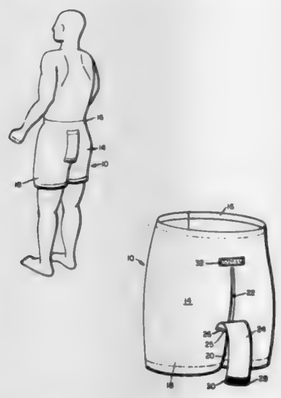
1. Belt apparatus comprising a decorative facial shell of soft pliable material having similarly curved upper and lower edges and having inward tapered first and second opposite ends, thereby forming a general crescent shape, the belt having parallel stitches extending between the first and second opposite ends generally parallel to upper and lower edges and closer to the upper edge than the lower edge for preventing stretching of a mid-portion of the belt and promoting desired drape of

the belt when worn, a pocket having curvilinear upper and lower edges curved similar to upper and lower edges of the belt and having opposite first and second lateral edges generally perpendicular to upper and lower curvilinear edges at positions of intersection therewith, whereby the lateral edges generally lie along radii of the curvilinear upper and lower edges, the pocket being formed of an outer face and a backing of similar size and shape stitched together along opposite lateral edges, the outer face of the pocket having an elongated opening therein spaced slightly downward from the upper edge thereof, and a side fastener positioned inside the opening and stitched to the opening along edges thereof, whereby the opening is selectively closed and opened by moving a slide on



the slide fastener along the opening, the upper and lower edges of the belt being rolled inward about upper and lower edges of the pocket and stitches securing the inward rolled position of the edges of the belt and securing upper and lower edges of the pocket within the inward rolled upper and lower edges of the belt, a buckle having first and second openings separated by a cross-piece, the buckle being secured to the belt by passing one tapered end out through one opening in the buckle, around the cross-piece and back through the second opening in the buckle and securing the tapered end to an inside of the belt, whereby the second end may be secured to the buckle by passing the second tapered end outward through the second opening in the buckle, around the cross-piece and inward through the first opening in the buckle.

4,446,575
HOSPITAL SHORTS
Glenn R. Davis, 1213 Randy, Irving, Tex. 75060
Filed Sep. 28, 1981, Ser. No. 306,488
Int. Cl.³ A41B *9/00*
U.S. Cl. 2—400 **3 Claims**



1. Shorts adapted for use by patients undergoing proctological examination and treatment to protect the patient's privacy without interfering with examination or treatment, comprising:

a pair of trunks having front and rear portions joined together at a crotch and including a waistband and having identical leg portions extending from said front and back portions below said crotch a distance substantially above the patient's knee;

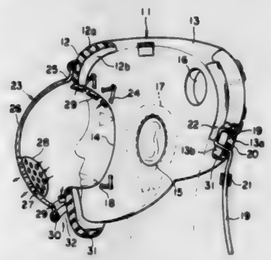
said rear portion having an elongated opening centrally thereof extending from a point spaced below said waistband to a point rearwardly of and spaced above said crotch to provide access through said opening to the patient's anal region for examination or treatment;

said front and rear portions further being dimensioned to gather below said waistband so that access through said opening is not interfered with by said shorts;

said waistband being open at the front central portion thereof and including a drawstring for adjusting the fit at the patient's waist and including fasteners at said front central portion for fastening said waistband; and

a rectangular flap having an upper and lower end, dimensioned to cover said opening in said rear portion, said flap being permanently secured at its lower end to said rear portion below said opening above said crotch and having fastening means at the opposite end thereof for removably fastening said upper end portion to said rear portion above said opening for covering said opening with said flap.

4,446,576
SAFE GUARD PROTECTIVE EQUIPMENT FOR FIGHTING ART
Masauki Hisataka, 20, Kikui-cho, Shinjuku-ku, Tokyo, 162, Japan
Filed Nov. 2, 1981, Ser. No. 317,254
Claims priority, application Japan, Nov 17, 1980, 55-165351
Int. Cl.³ A42B *3/00*
U.S. Cl. 2—425 **8 Claims**



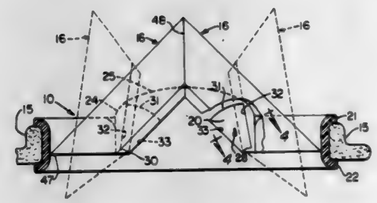
1. Safe guard protective equipment for protecting a wearer engaged in the fighting arts comprising:

a cover body integrally formed with an upper front portion to cover the brow and a lower front portion to cover the chin of said wearer and side portions extending across the side and rear of said wearers head, said cover body being composed of a tough armored exterior member formed of shock-resistant material of relatively high hardness having bonded thereto a resilient lining member formed of relatively soft material having high foaming magnefication and high adaptability to the face and head;

a spherical shaped protective mask of transparent highly shock-resistant material having a flange shaped peripheral portion conforming to the shape of the front of said cover body and fixedly secured thereto, said protective mask providing a central viewing window and being formed with a thickened portion in the lower half having a plurality of small vent holes therethrough for passage of said wearer's breath and with a plurality of ventilating windows positioned in the upper and lower portions of the outer periphery so as not to affect the field of view of said wearer; and

fastening means arranged at the rear ends of said cover body side portions for securing said ends about said wearers head.

4,446,577
ARTIFICIAL HEART VALVE
Louis C. Meyer, Denver, Colo., and Samuel H. Goodenough, Dana Point, Calif., assignors to Mitral Medical International, Inc., Wheat Ridge, Colo.
Continuation-in-part of Ser. No. 144,034, Apr. 28, 1980, abandoned. This application Dec. 8, 1980, Ser. No. 213,944
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 **23 Claims**



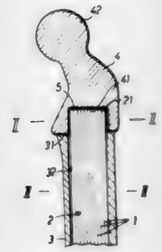
1. In an artificial heart valve wherein at least one occluder leaflet is disposed for swinging movement within a generally annular valve body, said leaflet having opposed leading and trailing edge surfaces, and a pair of axially directed extensions are disposed at spaced circumferential intervals on said valve body and extend in a downstream direction from said valve body, each extension including a shallow recess having opposed sidewalls diverging away from one another in a downstream direction, the improvement comprising:

said occluder leaflet having a major wall portion of generally elliptical configuration terminating on opposite sides in flat portions extending in opposite directions to one another and normal to said axially directed extensions, said flat portions provided with lateral edge surfaces defining opposite lateral margins of said leaflet, guide means mounting said leaflet for movement between a closed position extending across the central opening in said valve body and an open position extending substantially parallel to and relatively near said valve body and spaced away from the axis of said valve body, said guide means defined by lateral projections disposed on opposed lateral edge surfaces of said leaflet, said lateral projections aligned with and inserted into said recesses on said extensions, each lateral projection being of a width less than the space between said sidewalls, each pair of lateral projections for a leaflet being operative to control combined pivotal and translatory movement of said leaflet between said open and closed positions.

4,446,578
JOINT TREATMENT
Ezra C. Perkins, 10950 Temple Ter., Apt. 719, Seminole, Fla. 33542, and Ronald G. Connolly, 2401 Pennsylvania Ave., Wilmington, Del. 19806
Filed Mar. 8, 1982, Ser. No. 355,872
Int. Cl.³ A61F *1/24, 1/00*
U.S. Cl. 3—1.91 **7 Claims**

2. The treatment of a bone joint having defective cartilage between the bone ends, which treatment is characterized by the injecting into the joint without surgery, a liquid that is subsequently converted into a cushioning pad between the bone ends.

4,446,579
FLEXIBLE CERAMIC BIO-IMPLANT MEMBER
Kazuo Inamori, Kyoto, and Masaya Hirabayashi, Yokaichi, both of Japan, assignors to Kyocera Corporation, Kyoto, Japan
Continuation of Ser. No. 100,059, Dec. 4, 1979, abandoned. This application Apr. 16, 1982, Ser. No. 369,171
Claims priority, application Japan, Dec. 4, 1978, 53-150401
Int. Cl.³ A61F *1/24, 5/04;* A61B *17/18;* A61C *13/30*
U.S. Cl. 3—1.91 **14 Claims**



1. A flexible bio-implant member comprising a bundled body of a plurality of longitudinally arranged fibers having flexibility and elasticity and bundled into a desired shape in the state of the fibers being allowed to make flexible movement, wherein the length of each fiber extends in substantially the same longitudinal direction and said fiber bundled body is adapted for permanent insertion into the bone of a living body to be joined or redintegrated by the bio-implant member, wherein the fibers are arranged to define gaps therebetween which are sufficiently small so that new bone tissue will grow in the gaps and wherein the fibers have sufficient length so that they extend across a joint portion of the bone to be joined or redintegrated.

4,446,580
PROSTHETIC FOOT STRUCTURE
Koutaro Furuya, Tokyo; Kazuho Hosoda, Saitama; Takahito Takeuchi, Tokyo; Yasuyuki Ishikura, Tokyo, and Morihiro Kameda, Tokyo, all of Japan, assignors to Keiai Orthopedic Appliance Co., Ltd., Tokyo, Japan
Filed Jun. 9, 1981, Ser. No. 272,067
Int. Cl.³ A61F *1/08*
U.S. Cl. 3—6 **5 Claims**

1. A foot section of an artificial limb comprising:

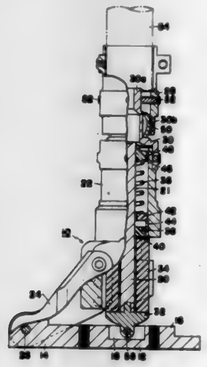
(a) a horizontal base member having a longitudinal axis defining thereon a forward projection, a heel portion, and a first pivot axis, said forward projection having a second pivot axis at a forward end wherein said first and said second pivot axes are horizontally perpendicular to said longitudinal axis;

(b) a housing having a cylindrical portion and pivotally connected to an arm extending therefrom to said base member at said second pivot axis forming an ankle axis of the foot section;

(c) a shaft pivotally connected to said base member at said first pivot axis and extending coaxially through a resilient member mounted to said housing thereby permitting said housing to incline about said second pivot axis toward said forward projection;

(d) said resilient member includes a first bumper which is compressed upon inclining of said housing toward said forward projection, and a second bumper for effecting absorption of compressive forces added to the heel por-

tion of the foot section so that a smooth walking phase can be achieved; and



(e) wherein said second pivot lies on a line which is intermediate the first pivotal axis and a line corresponding to the foremost part of the plantar arc of a human foot.

4,446,581

INTRAOCULAR LENS WITH FREE-ENDED SIZING PRONG

Larry W. Blake, 2885 Regis La., Costa Mesa, Calif. 92626

Filed Sep. 2, 1981, Ser. No. 295,464
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **29 Claims**



1. An intraocular lens comprising: a lens; and a compressible sizing prong having one end connected to the lens and having an opposite free end; and a preformed coil spring section in the prong intermediate its ends, which coil spring section has a closed coil structure when the prong is in its natural uncompressed state prior to surgical implantation.

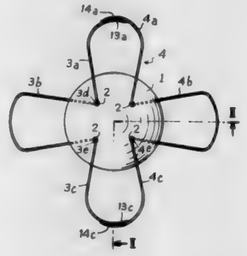
4,446,582

INTRA-OCULAR IMPLANT

Khalil Hanna, 5, rue Montmartre, Paris, France (75001)

Filed Jun. 7, 1982, Ser. No. 386,202
Claims priority, application France, Jun. 16, 1981, 81 11842
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **11 Claims**

1. In an intra-ocular implant forming artificial lens constituted by a glass lens and at least one pair of front loops for fixation thereof starting substantially radially from the lens, each of said loops being constituted by a filiform element, said loop is constituted by two portions of elastic wire curved towards each other in their final portion, so that their ends



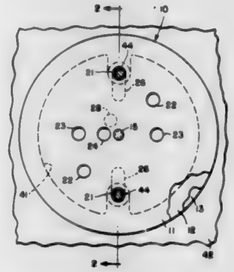
overlap in rest position to form a closed loop, the ends of said final portions being sharpened to sharp points.

4,446,583

ADJUSTABLE TOOL FOR TUB OVERFLOW

David F. Dean, 75 Berkeley St., Rochester, N.Y. 14607

Filed Jun. 28, 1982, Ser. No. 392,746
Int. Cl.³ E03C *1/24*
U.S. Cl. 4—206 **10 Claims**



1. An adjustable tool disposed to be releasably secured over and to seal any one of a variety of different types of tub overflow openings during the plunging of an associated tub drain, comprising

a first rigid member having therethrough a pair of spaced, elongate openings registrable selectively with any one of a plurality of pairs of differently spaced mounting lugs on different tub overflows,

a second rigid member having therethrough a plurality of angularly spaced pairs of circular openings, each of said pairs of circular openings also being registrable selectively with one of said pairs of spaced mounting lugs, and

means connecting said members together for adjustment relative to each other into any one of a first plurality of different operating positions in each of which one only of said pairs of circular openings in said second member registers with said elongate openings in said first member,

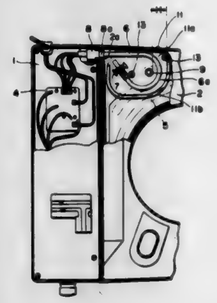
one of said members having a layer of resilient material secured to the side thereof opposite the other member, and having therethrough a plurality of openings similar to, and registering with, the openings in said one member.

4,446,584

HEATED TOILET SEAT

Koichi Suzuki, Chiryu; Mikio Yoshihara, Kariya; Shinji Kawai, and Katsuhiro Mori, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 20, 1982, Ser. No. 435,465
Claims priority, application Japan, Oct. 22, 1981, 56-157780[U]; Dec. 21, 1981, 56-190490[U]; Dec. 21, 1981, 56-190491[U]; Dec. 21, 1981, 56-190492[U]; Dec. 21, 1981, 56-190493[U]; Dec. 21, 1981, 56-190494[U]
Int. Cl.³ A47K *13/30*
U.S. Cl. 4—237 **8 Claims**



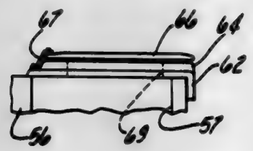
1. An apparatus for accommodating an electrical cord in a heated toilet seat which comprises a toilet seat body having a hollow interior portion and a heater, a base cover having control means for controlling the heater, and an electrical cord for electrically interconnecting the heater and the control means, said toilet seat body being connected to said base cover for pivoting through a predetermined angle, wherein said base cover is provided with a hole, a grommet fitted within said hole, and one end of said electrical cord is tightly secured within said grommet, and wherein the other end of said electrical cord is fixed within the hollow interior portion of said toilet seat body and has a slack portion in the shape of a loop accommodated within said hollow interior portion, said electrical cord extending from said hollow interior portion to take up the slack when said toilet seat body is pivoted in an opening direction, said electrical cord retracting into said hollow interior portion to form said slack when said toilet seat body is pivoted in a closing direction, and a guide stopper affixed within said hollow interior portion and positioned within said loop for guiding said electrical cord during the extension and retraction thereof.

4,446,585

PORTABLE TOILET

George W. Harding, Clearwater, Fla., and Ronald E. Sears, Bloomfield Hills, Mich., assignors to Sani-Jon Mfg., Inc., Troy, Mich.

Filed Jan. 22, 1982, Ser. No. 341,731
Int. Cl.³ A47K *11/02*
U.S. Cl. 4—460 **3 Claims**



1. A portable toilet comprising:

a plurality of unitary upright plastic walls, each wall being formed with reinforcement ribs and having an outer major face, four walls forming a structure of rectangular horizontal cross section with one wall having a door therein, and the structure having a roof, each vertical edge of the walls having a flange portion bent inwardly at about 90° angle from said outer major face of its respective wall, each of said vertical edges terminating in an outer end portion bent at about a 90° angle with respect to the flange portion thereby projecting parallel to and inwardly of said major face of its respective wall;

W-shaped metal corner posts having outer and intermediate plate portions generally conforming to the flange and outer end portions of the walls, respectively; said intermediate plate portions extending at 90° to each other and joined by a flat apex;

fastening means connecting the flange portions of said walls to the outer plates of said corner posts inboard of said structure;

an elongated V-shaped cover secured to the corner posts outboard of said structure by a fastening means extending through said apex, said cover covering the end portions of said walls;

said structure housing an effluent holding tank, a urinal emptying therein and a toilet seat giving access to said tank;

whereby the corners of the structure are indented to protect them from physical damage and the walls are secured to the corner posts in such manner so as to minimize shear forces on the fastening means when the walls flex.

4,446,586

APPARATUS AND METHOD FOR BATHING INVALIDS

Stewart D. Reed, El Toro, Calif.; Arthur A. Sills, Traverse City, Mich.; John H. Kraft, Traverse City, Mich.; Raymond T. Houle, Traverse City, Mich.; Michael A. Redwine, Acme, Mich., and Fredrick A. Kilborn, Suttons Bay, Mich., assignors to Silchor, Traverse City, Mich.

Division of Ser. No. 187,522, Sep. 15, 1980, Pat. No. 4,346,485. This application May 20, 1982, Ser. No. 380,058
Int. Cl.³ A47K *3/02, 3/08*
U.S. Cl. 4—555 **18 Claims**



1. A combination shower and bath unit, comprising:

an enclosure including a bathtub with walls upstanding from both ends and a rearward side thereof to form a stall;

said bathtub having a raised seat portion, a back portion extending generally upwardly from said seat portion, and a foot portion disposed below and forwardly of said seat portion; said seat, back and foot portions having an anatomical contour which forms a chair shape for supporting an invalid in a seated position in the unit;

said bathtub having a lateral opening in one side thereof with sufficient size to permit invalid ingress and egress therethrough, and being oriented substantially parallel with the sides of said seat portion;

a door selectively closing said bathtub opening;

means for forming a seal between said door and said bathtub when said door is in a closed position which is leakproof when said bathtub is filled with water to a level substan-

tially above a base portion of said opening for immersal bathing of an invalid;

at least one shower head mounted on one of said stall walls and oriented toward the seated invalid, whereby said unit is capable of both immersal bathing and showering the invalid for hygiene and therapy;

a pair of tracks supported on said stall end walls at opposing sides of said door, and extending vertically upwardly above said bathtub and rearwardly along ghe upper edges of said stall end wall over said bathtub; and

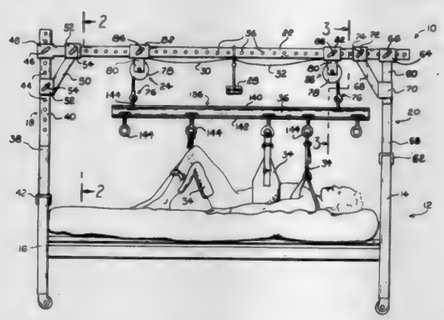
means for slideably mounting said door on said tracks for translating said door vertically into the closed position, and rotating said door as it is raised from the closed position into a substantially horizontal, overhead storage position directly over said bathtub.

4,446,587

PATIENT POSITIONING DEVICE

Clarence E. Jump, 1085 Tasman Dr. #208, Sunnyvale, Calif. 94086

Filed Jul. 28, 1981, Ser. No. 287,627
Int. Cl.[3] A47G 7/10
U.S. Cl. 5—83 7 Claims



1. A patient positioning device comprising:

(a) an elongated, substantially horizontal, suspension means including a first, upright support means, a second upright support means, an elongated, substantially horizontal suspension beam, a vertical adjustment means coupling a first end of said suspension beam to said first support means, and horizontal adjustment means for attaching said second end of said suspension beam to said second support means;

(b) a first vertical lift means coupled to said suspension means, and a second vertical lift means coupled to said suspension means;

(c) motor means coupled to said first vertical lift means and to said second vertical lift means;

(d) a motor controller means coupled to said motor means and operative to independently control said first vertical lift means and said second vertical lift means; and

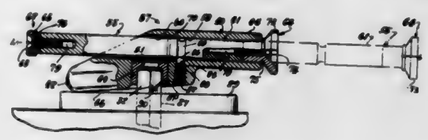
(e) a body portion support means coupled to at least one of said first vertical lift means and said second vertical lift means, whereby a portion of a patient's body may be selectively raised under the control of said motor control means, said body portion support means including a rigid, contoured, saddle shaped member having a pair of thigh receptive recesses on a first side, and a diverging pair of calf receptive recesses on a second side, whereby a patient's legs can be lifted in a bent-kneed, spread legged position.

4,446,588

MULTI-PURPOSE TOOL

Richard J. Garcia, 304 Plum Dr., Exeter, Calif. 93221

Filed May 24, 1982, Ser. No. 381,545
Int. Cl.[3] B23Q 11/00; B25F 1/00
U.S. Cl. 7—138 9 Claims



1. For use in changing a tool in a machine having a drawbar for holding a tool in a collet, which drawbar has an end protruding from said machine and is rotatable to release and secure the collet relative to said drawbar; a combination tool comprising

an elongated unitary body, said body being formed with a broad protuberant portion;

a grip portion formed above said protuberant portion and extending longitudinally of said body;

means defining an axial bore extending through said grip portion;

a handle slidably disposed in said bore between a handle extended position and a handle retracted position;

a flat surface being formed on an extremity of said protuberant portion remote from said grip portion;

means defining a recess extending inwardly from said flat surface;

a receptacle disposed in said recess and affixed therein; said receptacle conforming to the exterior shape of the drawbar and adapted to fit in mating engagement over the protruding end thereof to rotate the same upon rotation of said tool;

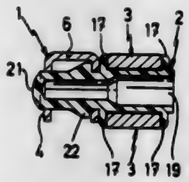
and said flat surface defining with said protuberant portion, a mallet for striking the top of said drawbar to thereby free the collet.

4,446,589

WIPER BLADE AND LATERAL CONNECTOR

Giuseppe A. Maiocco, Rivoli, Italy, assignor to Champion Spark Plug Italiana, S.p.A., Druento, Italy

Filed May 19, 1982, Ser. No. 379,656
Claims priority, application Italy, Jun. 9, 1981, 67789 A/81
Int. Cl.[3] B60S 1/40
U.S. Cl. 15—250.32 9 Claims



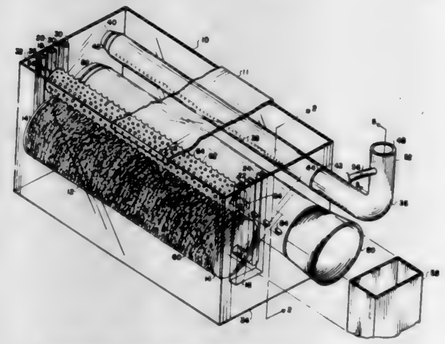
1. A wiper blade bridge of which the cross section is substantially U-shaped and a connector for attaching thereto a wiper arm, characterized in that each of the two side walls of the U-shaped bridge has a circular opening provided with two opposed extensions and that the connector has a wiper arm connecting portion and a wiper blade connecting portion extending transversely to the arm connecting portion, the blade connecting portion comprises a cylindrical pivot pin provided with two radially outwardly extending opposed stops corresponding to said extensions of said circular openings of the U-shaped bridge, the pin extending through the openings in the side walls and the stops engaging the inside of the side wall adjacent the arm connecting portion as the connector and wiper arm pivot relative to the wiper blade when the arm and blade are in a windshield wiping position.

4,446,590

PAINT ROLLER CLEANER

Charles H. Kirchner, Jr., 2013 Wreawood Dr., Huntsville, Ala. 35803, and Thomas K. McDonald, 2200 Gladstone Dr., Huntsville, Ala. 35811

Filed Feb. 25, 1982, Ser. No. 352,319
Int. Cl.[3] B08B 3/02
U.S. Cl. 15—302 10 Claims



1. A paint roller cleaner comprising:

a frame;

support means for removably and pivotally supporting ends of a paint roller, said roller including two spindles positionable within and on said frame and along an axis of a given direction;

a longitudinal manifold supported on said frame and extending generally parallel with said axis and spaced therefrom, and said manifold having a series of openings along a longitudinal side of said manifold facing in a direction which will be intercepted by an off-axis line of position on the paint roller as positioned in said support means;

mounting means for mounting said longitudinal manifold on said frame, and including means for adjustably rotating said longitudinal manifold with respect to said frame about a longitudinal axis;

supply means for supplying a flow of water under pressure to said longitudinal manifold; and

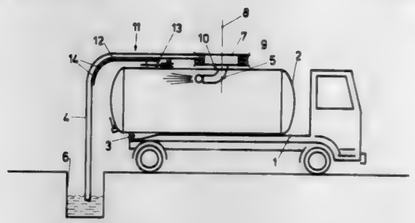
positioning means for variably positioning said support means with respect to said longitudinal manifold.

4,446,591

VEHICLE FOR CLEARING MATERIAL FROM DRAINS AND THE LIKE

Karl Wiedemann, Haldenloh 2 a, 8901 Welden, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,177
Int. Cl.[3] B08B 3/02, 9/04
U.S. Cl. 15—315 10 Claims



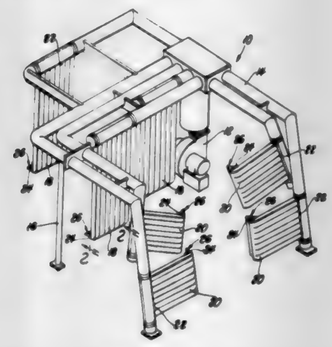
1. A tank vehicle for cleaning drains and cesspools by aspiration, having a tank, a reel, a flexible pipe designed to be coiled up on said reel, said pipe being joined with said vehicle's tank for aspiration, said reel having, at least during an aspiration operation, an upright axis with said pipe placed in horizontal turns about it.

4,446,592

NOZZLE ASSEMBLY

Lucian G. McElroy, 3315 Brocker Rd., Metamora, Mich. 48455

Filed Sep. 28, 1982, Ser. No. 425,686
Int. Cl.[3] B08B 1/00
U.S. Cl. 15—316 R 6 Claims



1. A nozzle assembly (26) to be connected to an outlet (24) of a bag (18,20) having a substantially rectangular cross section of an apparatus (10) for emitting a stream of air under pressure therethrough to remove fluid from the surface of a vehicle, said assembly (26) comprising: an elongated body portion being substantially rectangular when viewed in cross section; an outlet portion (36) defining a first elongated opening (37) and being adapted to be connected to the bag outlet (24); a nozzle portion (38) defining a second opening (40) having a smaller area than said first opening (37); and characterized by a plurality of rollers (50), support means being integral with said nozzle portion (38) and extending therefrom for supporting said rollers (50) longitudinally along said nozzle portion (38), connecting means for connecting said rollers (50) to said support means, said support means including a plurality of integral projections (52) extending from said nozzle portion (38), each of said projections (52) having a bore therethrough being aligned with the remaining ones of said bores to define an axis, said connecting means including a rod (54) for supporting said rollers (50), said rod (54) being disposed through said bores and each of said rollers (50) being mounted on said rod (54) between a pair of said projections (52).

4,446,593

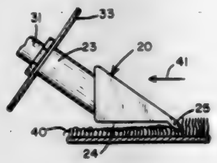
CARPET STEAMING TOOL

Dwain C. Bell; Lloyd E. Anderson, and Martin L. Anderson, all of Minneapolis, Minn., assignors to National Carpet Jobbers, Inc., Minneapolis, Minn.

Filed Jan. 18, 1982, Ser. No. 340,243
Int. Cl.[3] B08B 3/00
U.S. Cl. 15—322 7 Claims

1. A carpet steaming tool comprising an elongated steam plenum having a generally flat outer surface, means for admitting steam to said plenum, dispensing means positioned along

said surface for directing steam from said plenum outwardly from said tool, and a pile scraping blade member extending



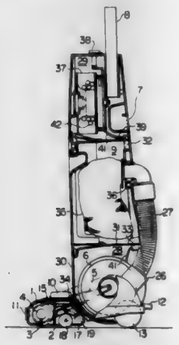
along said tool and projecting transversely beyond said surface.

4,446,594

UPRIGHT TYPE ELECTRIC CLEANER

Syuji Watanabe, Ibaraki; Yoshitaro Ishii, and Masao Sunagawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,946
Claims priority, application Japan, Jun. 3, 1981, 56-84434
Int. Cl.³ A47L *9/00*
U.S. Cl. 15—323 **5 Claims**



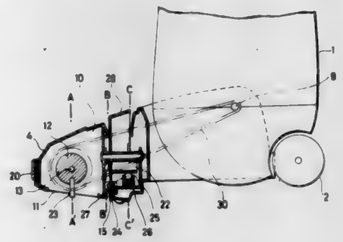
1. An upright type electric cleaner comprising: a main body case including an upper portion, a middle portion, and a lower portion, a cord reel chamber means disposed in said upper portion of said main body case for receiving a cord winding means, a bag compartment means disposed in said middle portion of said main body case for receiving a dust filter means, a blower chamber means disposed at the lower portion of said main body case for receiving a blower means and a driving means, a suction port body for supporting said main body case thereon for a tilting movement, a sound absorbing duct means disposed in said compartment means in communication with said cord reel chamber means and said blower chamber means for reducing a noise level of the cleaner, and wherein at least a portion of air introduced from said suction port body through said bag compartment means is exhausted from said blower chamber means through said sound absorbing duct means into said cord reel chamber means whereby the air cools the cord reel chamber means.

4,446,595

UPRIGHT VACUUM CLEANER

Seiichi Nakada, Yokaichi; Hiroshi Ohno, Otu; Tsuneo Nishijima, and Hiroshi Kawakami, both of Yokaichi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00069, 371 Date Dec. 2, 1981, 102(e) Date Dec. 2, 1981, PCT Pub. No. WO81/02830, PCT Pub. Date Oct. 15, 1981
PCT Filed Apr. 30, 1981, Ser. No. 328,575
Claims priority, application Japan, Apr. 2, 1980, 55-43945
Int. Cl.³ A47L *5/34*
U.S. Cl. 15—365 **2 Claims**



1. An upright vacuum cleaner comprising a main body having a fan motor and a dust collector; a floor nozzle housing a rotary brush disposed at a suction port therein; a drive pulley coupled to said rotary brush, an idle pulley separated from and disposed generally parallel and adjacent said drive pulley; a substantially flat belt for transmitting rotation from said fan motor to one of said pulleys; a belt switching mechanism for shifting said flat belt for selective engagement with the drive pulley or the idle pulley; a brush disposed rearwardly of said suction port; and a brush moving mechanism for moving the brush into and out of the bottom of said floor nozzle;

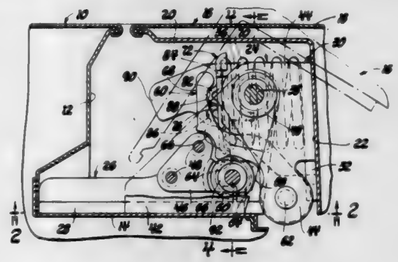
wherein said belt switching and brush moving mechanisms are operatively connected such that when said flat belt engages the drive pulley, said brush is retracted into said bottom of the floor nozzle, and when said flat belt engages said idle pulley, said brush projects out of said bottom of the floor nozzle to contact a floor.

4,446,596

DOOR HINGE AND HOLD OPEN

Alfonsas Arlauskas, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 19, 1982, Ser. No. 369,587
Int. Cl.³ E05D *11/10*
U.S. Cl. 16—333 **3 Claims**



1. A door hinge and hold open comprising, in combination, a first hinge member having a base and laterally spaced first and second legs, a second hinge member having a base and laterally spaced first and second legs, each juxtaposed to a respective first and second leg of the first hinge member and

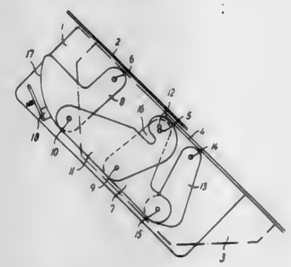
pivotally secured thereto for movement of the second hinge member relative to the first hinge member between open and closed positions, a hold open lever located immediately adjacent to the first leg of the second hinge member and including an edge portion provided with at least one detent shoulder, means pivotally securing the lever to the first leg of the second hinge member, a follower on the first leg of the first hinge member engageable with the edge portion of the lever and a detent shoulder of the lever during relative movement of the hinge members to releasably locate the second hinge member in open position, an annular spring mount extending between the second leg of the second hinge member and the hold open lever, peripherally spaced rib means on the spring mount, shoulder means on the second leg of the second hinge member and on the hold open lever releasably respectively engaged by the rib means, and spring means extending between the base of the second hinge member and the spring mount exerting a bias on the spring mount to seat the rib means and shoulder means and bias the edge portion of the lever and the detent shoulder into engagement with the follower.

4,446,597

HINGE DEVICE FOR INCLINED TILTING TYPE WINDOWS WITH EXTERNAL COVER RAILS

Bendt Dantzer-Sorensen, Holte, Denmark, and Per B. Christensen, The Canary Islands, Spain, assignors to V. Kann Rasmussen Holding A/S, Soborg, Denmark

Filed Jun. 22, 1982, Ser. No. 390,972
Claims priority, application Denmark, Jul. 3, 1981, 2969/81
Int. Cl.³ E05D *15/32*
U.S. Cl. 16—364 **1 Claim**



1. A hinge device for inclined tilting type windows having a stationary main frame and a tiltable sash with external cover rails on said main frame and said sash in overlapping relationship when the window is closed, comprising

a first hinge part including a first base plate to be mounted on said main frame,

a second hinge part including a second base plate to be mounted on said sash,

an intermediate member connected to said first base plate by means of substantially parallel links, said links being connected through lower pivot pins to said intermediate member and through upper pivot pins to said first base plate, so as to be displaceable in a substantially translatory parallelogram-like movement relative to said first base plate,

an upper pivot pin interconnecting said second base plate with said intermediate member and movable, by displacement of said intermediate member, between first and second positions in which it is located between the inner and outer surfaces of said main frame and spaced outwardly from its outer surface, respectively, and

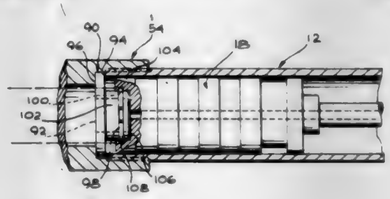
a coupling link having its ends pivotally connected by an upper pivot pin with said second base plate and by a lower pivot pin with an adjacent one of said parallel links, respectively, when the window is closed the upper pivot pins of the coupling link, the parallel links and the intermediate member are approximately in alignment and the lower pivot pins of the coupling link, the parallel links and the intermediate member are approximately in alignment, and are further so located that a line connecting the upper and lower pivot pins of the coupling link, when the window is closed, converges relative to a line connecting the upper and lower pivot pins of said adjacent pivotable link on said first base plate and said intermediate member, respectively, the upper pivot pin connecting said second base plate with said intermediate member being, in the same position of the hinge device, at least approximately coaxial with the upper pivot pin between said adjacent pivotable link and said first base plate.

4,446,598

STUNNING GUN

Ralph Karubian, Los Angeles, Calif.; Robert G. Breukelman, and Lynn R. Weston, both of Huron, S. Dak., assignors to Kentmaster Mfg. Co., Inc., Los Angeles, Calif.

Filed Jul. 25, 1983, Ser. No. 517,003
Int. Cl.³ A22B *3/02*
U.S. Cl. 17—1 B **1 Claim**



1. A stunning gun having:

a barrel with an inner wall having a first inside diameter and with first and second ends;

a piston having a first maximum outside diameter supported coaxially within said barrel for movement therein;

said first maximum outside diameter having a magnitude such that said piston forms a slip fit with said first inside diameter of said inner wall of said barrel;

a probe fixedly and coaxially supported at the end of said piston corresponding to said second end of said barrel and moveable with said piston;

said piston and said probe each having intercommunicating air passages therethrough;

said air passage in said probe having a coaxial portion and a communicating exhaust portion at right angles thereto;

said piston having annular recesses in the outer surface thereof and carrying on its end corresponding to said first end of said barrel a region of magnetic material;

a handle portion carried by said barrel at said first end thereof and having an air inlet aperture and intermediate and outlet chambers therein,

said intermediate chamber and said outlet chamber being intercoupled for air passage therethrough; said outlet chamber being coupled, for air passage, to said barrel;

a valve assembly carried in said handle and interposed between said air inlet aperture and said intermediate chamber for control of air flow between said inlet aperture and said intermediate chamber and, consequently, for control of air into said barrel;

piston-retaining means carried within said handle adjacent said first end of said barrel for releasably retaining said piston in a position adjacent said first end of said barrel prior to the firing of said gun, said retaining means comprises a spring member carried in said handle portion, said piston having a recess in its end corresponding to said first end of said barrel, said recess having an inner groove therein, said inner groove being adapted to receive said spring member carried in said handle for retaining said piston in a retracted position;

said inlet aperture being adapted for coupling to a source of compressed air; and,

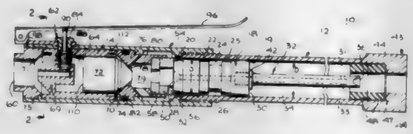
a trigger carried by said handle and positioned to engage and actuate said valve assembly for permitting the passage of compressed air from said inlet aperture to said piston to cause motion of said piston and the probe carried thereby.

4,446,599

STUNNING GUN WITH IMPROVED CONTROL VALVE

Ralph K. Karubian, and Gregorio J. Coelho, both of Los Angeles, Calif., assignors to Kentmaster Mfg. Co., Inc., Los Angeles, Calif.

Filed Sep. 16, 1983, Ser. No. 532,691
Int. Cl.³ A22B *3/02*
U.S. Cl. 17—1 B **10 Claims**



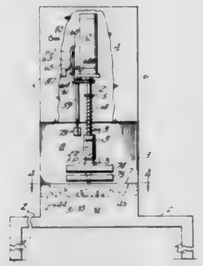
1. A stunning gun having:
a barrel with an inner wall having a first inside diameter and with first and second ends;
a piston having a first maximum outside diameter supported coaxially within said barrel for movement therein;
said first maximum outside diameter having a magnitude such that said piston forms a slip fit with said first inside diameter of said inner wall of said barrel;
a probe fixedly and coaxially supported at the end of said piston corresponding to said second end of said barrel and moveable with said piston;
said piston and said probe each having intercommunicating air passages therethrough;
said air passage in said probe having a coaxial portion and a communicating exhaust portion at right angles thereto;
said piston having annular recesses in the outer surface thereof and carrying on its end corresponding to said first end of said barrel a region of magnetic material;
a handle portion carried by said barrel at said first end thereof and having an air inlet aperture;
an insert carried coaxially within said handle portion and having an inlet port communicating with said air inlet aperture of said handle portion and having an intermediate chamber with a cylindrical inner wall having a first diameter;
control valve means carried in said insert for selectively coupling said air inlet port to said intermediate chamber;
a main valve spool having a cylindrical body portion with an axis which is coaxial with said intermediate chamber and having an outer diameter such that it forms a slip fit with said cylindrical inner wall of said cylindrical inner wall of said insert, said main spool having a flat end facing said control valve means, the opposite end of said main spool having a tapered portion;
an annular-groove portion coupling said tapered portion of said main spool to said cylindrical body portion thereof;
said annular-groove portion having a pressure surface the generating element for which is other than parallel with the axis of said cylindrical body of said main spool;
a porting element caused coaxially in said handle adjacent said insert portion at the end thereof carrying said main valve spool and having an entrance-opening tapered to cooperate with said tapered portion of said main valve spool, said porting element having an output chamber therein communicating with said entrance opening and with said barrel for passing air to said barrel, under the control of said control valve, to activate mid piston;
said control valve including means responsive to the application of compressed air to said air inlet aperture to open said control valve, whereby air may flow from said air inlet aperture, through said intermediate chamber to said flat end of said main valve spool to urge said main valve spool towards said porting element and said tapered portion of said main valve spool into engagement with said tapered entrance-opening of said porting element with a force greater than that produced in the opposite direction by compressed air operating upon said pressure surface of said annular-groove portion of said main valve spool;
said control valve further including means responsive to selective activation of said control valve in the presence of compressed air applied to said air inlet aperture to close said control valve, whereby air flow through said intermediate chamber to said flat end of said main valve spool is cut off and said tapered end of said main valve spool is urged out of engagement with said tapered entrance opening of said porting element and the flow of air from said air inlet aperture to said piston is unimpeded; and,
means for selectively activating said control valve.

4,446,600

MACHINE FOR STRIPPING MEAT FROM FOWL LEG AND THIGH BONES

Eldon R. Hooley, P.O. Box 421, Creswell, Oreg. 97426, and David L. Dodge, 77799 Sunset Dr., Cottage Grove, Oreg. 97424

Filed May 17, 1982, Ser. No. 378,497
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—11 **6 Claims**



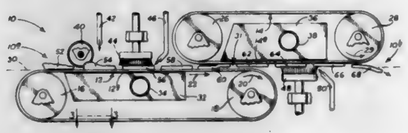
1. A machine for pressing a bone from a fowl part, said machine comprising,
a prime mover including a movable rod member for rectilinear travel, said rod member engageable at one end with the end of a bone in the fowl part,
a holder yieldably carried by said rod member for endwise engagement with a fowl part, said holder adapted for displacement relative the rod member during travel of said rod member to permit extension of said rod member end past said holder after the latter has come into abutment with a machine component, and
a stripping mechanism including cooperating blade members, means urging said blade members into and out of engagement with the bone of a fowl part, said stripping mechanism further including rail members on which said blade members are slidably mounted, means removably coupling said rail members on framework components of the machine to facilitate periodic removal and cleaning of the stripping mechanism, guide means confining the part bone against lateral movement during passage therepast with the bone in substantial alignment with said rod member, said guide means including spaced apart bone guides each having a collar portion of a size to permit laterally confined passage of a part bone, said guides mounted on said rail members in a detachable manner permitting the substitution of like guide means for the laterally confined passage of the bone of a different fowl part, shear means actuable to sever fowl part tendons subsequent to bone displacement beyond said blade members by said rod member.

4,446,601

SQUID CLEANING METHOD AND APPARATUS

Eben H. Carruthers, Warrenton, Oreg., assignor to Carruthers Equipment Co., Warrenton, Oreg.

Filed Aug. 23, 1982, Ser. No. 410,411
Int. Cl.³ A22C *25/14*
U.S. Cl. 17—51 **10 Claims**



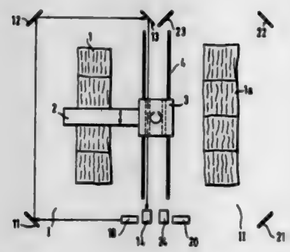
9. A method for the automatic cleaning of squid bodies which have been separated from their heads and tentacles comprising
creating an upstream, positive-advancement travel run for such a body, and transporting the body in a downstream direction along such run,
while so transporting the body, first, slitting the same along the length of one side to fillet the body, and thereafter, scrubbing the surface of the body which becomes exposed as a result of said slitting,
creating a downstream, positive-advancement travel run which is coextensive with the downstream end of the upstream run, and transferring the body from the upstream run to the downstream run to effect continued downstream transport of the body with the body surface therein which is opposite the first-mentioned body surface now exposed, and
while so continuing the downstream transport of the body, scrubbing such opposite surface.

4,446,602

MACHINE OPERATOR PROTECTION SYSTEM

Hans-Jürgen Marx, and Fritz P. Hösel, both of Mönchengladbach, Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,486
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032584
Int. Cl.³ D01G *31/00, 7/12*
U.S. Cl. 19—0.21 **10 Claims**



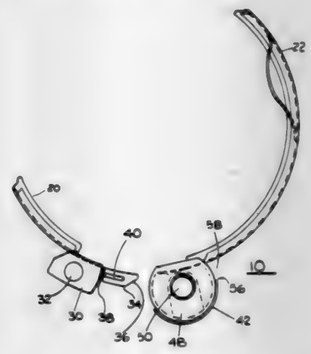
1. A system for monitoring and securing a selected one of a plurality of danger zones associated with a power driven machine for opening textile fiber bales, which machine includes a removal member mounted for displacement between two operating positions each associated with a respective danger zone, the removal member being driven, when it is in a selected operating position and the machine is in operation, to move in a manner to endanger an individual present in the respective zone associated with that position, said system comprising: radiation emitting means associated with each danger zone for producing at least one beam of directed radiation which is directed along a substantially closed path which completely encloses its associated danger zone; radiation responsive means positioned in the path of the radiation beam associated with each danger zone for producing an output indication when the at least one beam is interrupted at any point along the substantially closed path; control means connected to said radiation responsive means for halting movement of the removal member in response to appearance of such output indication; and signal generator means responsive to displacement of the removal member between its operating positions for actuating only that one of said radiation emitting means and its associated radiation responsive means whose beam path encloses that zone associated with the existing operating position of the removal member.

4,446,603

METER CLAMPING RING

Richard S. Guller, Newton, N.J., assignor to E. J. Brooks Company, Newark, N.J.

Filed Mar. 9, 1982, Ser. No. 356,335
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—21 **9 Claims**



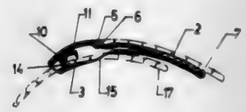
1. A clamping ring for an electric meter housing or the like, said ring having adjacent end portions having lock bolt receiving apertures, said ends being movable together to align said apertures to allow a lock bolt to be inserted therein, and cooperating means on said ends which are shaped, dimensioned and positioned to automatically releasably latch together when the apertures are moved together into alignment, to retain the ends in position to receive a lock bolt into said aligned apertures.

4,446,604

WRIST BRACELET CLASP

Lin Sen-Yi, No. 32, Alley 60, Lane 288, Yu Nung Rd., Tainan, Taiwan

Filed Apr. 1, 1982, Ser. No. 364,409
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—68 J **8 Claims**



1. A clasp for a wrist bracelet, said wrist bracelet having first and second ends, said clasp comprising:
a first arm having an elongate base plate, upstanding flanges on either side of said base plate at a first end thereof, and an opening through said base plate intermediate said first end and a second end thereof, said opening being adapted to receive therethrough a first end of a wrist bracelet;
a second arm having a stepped portion and a base portion at

first and second ends thereof, a downwardly projecting hook portion mounted at said first end of said second arm and thus at the end of said stepped portion, and upstanding flanges on either sides of said base portion at the junction thereof with said stepped portion, said second arm flanges being adapted to mount a second end of a wrist bracelet;

pivot means for pivotally connecting said second ends of said arms so that said first and second arms are pivotable between an open position in which said first ends of said arms are spaced apart and a closed position in which said first ends of said arms are in close adjacency, said hook portion for releasably securing said first ends of said arms in said closed position; and

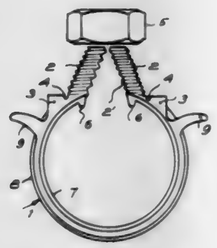
locking means on said first arm at a location remote from said pivot means, said opening being located intermediate said locking means and said pivot means, said locking means comprising a pivotable locking member spaced vertically from said base plate such that a first end of a wrist bracelet may be passed freely between said locking member and said base plate, and said locking means comprising a catch means for mating securing engagement with said hook portion, said opening through said base plate being positioned such that the first end of the wrist bracelet, after being passed between said locking member and said base plate, may pass freely through said opening, said locking member being actuated by said hook portion upon pivotal movement of said first and second arms to said closed position to releasably secure a first end of a wrist bracelet to said first arm.

4,446,605

CLAMP

Eugeni C. Molas, Urbanizacion Fournier, casa 1, La Garriga (Barcelona), Spain

Filed Mar. 8, 1982, Ser. No. 355,924
Claims priority, application Spain, Mar. 25, 1981, 257461
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—277 **6 Claims**



1. A clamp, comprising

a ring having two ends defining a split in said ring, two projections extending outwardly from said ring, each of said projections being integrally formed with said ring adjacent a espective one of said two ends, each of said projections having an inner surface and an outer surface, the inner surface of each of said projections opposing the corresponding inner surface of the other of said projections and the outer surface of each of said projections being the farthest part of that projection from the corresponding outer surface of the other of said projections;

securing means provided on said outer surfaces of said two projections;

a member adapted to be received on said projections and engage with said securing means, inward movement of said member on said projections causing said projections to move towards each other, thereby causing said two ends of said ring to be brought towards each other, whereby a body passing through said ring is gripped thereby;

handles provided on said ring and extending outwardly therefrom to facilitate manual handling of said clamp;

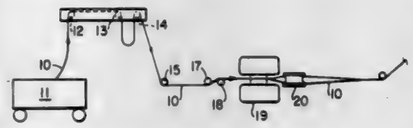
projecting parts formed in said ring adjacent said split and extending substantially radially from the inner surface of said ring, said projecting parts being forced against said body when said clamp is tightened; and a plurality of interengaging means formed on the inner surfaces of said two projections.

4,446,606

CONTINUOUS COMPRESSIVE PRESHRINKING AND DRYING METHOD

Jackson Lawrence, West Sand Lake; Harry A. Webb, Menands, and John R. Frederick, Cohoes, all of N.Y., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.

Filed Oct. 15, 1980, Ser. No. 197,297
Int. Cl.³ D06C *21/00*
U.S. Cl. 26—18.6 **4 Claims**



1. A method of continuous preshrinking and drying of cellulosic fabric with reduced one-sidedness comprising

(a) mechanically preshrinking cellulosic fabric having an initial moisture content of about 15% to 25%,

(b) conveying said fabric after preshrinking about a heated drier drum while restraining said fabric dimensionally widthwise and lengthwise,

(c) while thus conveying and restraining said fabric, controllably reducing the moisture content of said fabric to a residual amount of about 5% to 14%,

(d) the upper limit of said residual amount providing sufficient dimensional integrity to enable the fabric to be further handled without significant loss of preshrinkage previously imparted,

(e) the lower limit of said residual amount being such as to assure, upon removal of the fabric from said drum, sufficient moisture to enable additional shrinkage of the fabric to occur and to provide greater uniformity in the fabric by accommodating migration of residual moisture within the fabric from one side toward the other,

(f) immediately thereafter conveying said fabric in a tensionless manner into a loop drier wherein said fabric is arranged in tension-free loops about the poles of said drier,

(g) conveying said fabric through said loop drier in an essentially relaxed state while further controllably reducing said moisture content to at least 4%,

(h) said fabric being permitted to contract and thereby being further preshrunk lengthwise in said loop drier by reason of said further controlled reduction of moisture by said loop drier, and

(i) thereafter removing said fabric from said loop drier.

4,446,607

APPARATUS AND METHOD FOR FORMING AN EXTERNAL GUARD MEMBER ON A HOSE

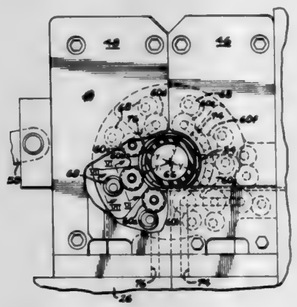
Paul H. Merritt, East Peoria, and Francis W. Fuller, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/01025, 371 Date Jul. 30, 1981, 102(e) Date Jul. 30, 1981, PCT Pub. No. WO83/00455, PCT Pub. Date Feb. 17, 1983
PCT Filed Jul. 30, 1981, Ser. No. 294,758
Int. Cl.³ B23P *23/04*
U.S. Cl. 29—33 E **13 Claims**

1. In an apparatus for forming a guard member on a hose, said apparatus having a frame, first means for supporting at least one of said guard member and said hose along a longitudi-

nal axis, and second means for feeding a continuous strand of guard material from a supply source to said apparatus, the improvement comprising:

a forming head mounted on said frame for forming a coil-shaped guard member circumferentially about and radially spaced from said hose, said head having separable first and second portions and a plurality of die members rotatably mounted on respective ones of said first and said second portions in arcuate positions which are spaced relative to each other, at least two of said plurality of die members being mounted on said first portion of the forming head at an equally radially spaced predetermined first distance from said longitudinal axis, and at least one of



said plurality of die members being mounted on said second portion of the forming head at a radially spaced second distance greater than said predetermined first distance from said longitudinal axis when said second portion is in an abutting relationship with respect to said first portion;

means for selectively separating said first and said second portions; and

wherein said second means for feeding a continuous strand of guard material includes a plurality of driven rollers for propelling said continuous strand of guard material into pressure contact with said plurality of die members and rotating said formed coil-shaped guard member about said hose.

4,446,608

VALVE SPRING COMPRESSOR FOR INTERNAL COMBUSTION ENGINE

Joel S. Johnson, Troy, Mich., assignor to Kent-Moore Corporation, Warren, Mich.

Filed Jul. 26, 1982, Ser. No. 401,873
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—220 **6 Claims**

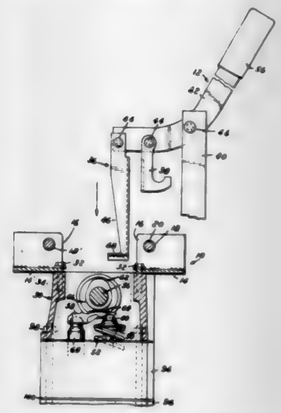
1. A tool for compressing valve springs of a valve-in-head internal combustion engine comprising, in combination:

a lever;

a fulcrum to be temporarily attached to the engine;

an attachment link having two ends, pivotably attached to the lever at the first end and removably attachable to the fulcrum at the second end;

a depresser member having two ends, pivotably attached at one end to the lever at a point spaced from the attachment link pivot and having means at the second end for cooperation with the valve spring cap to depress same while leaving the center of the cap exposed when the lever is pivoted about the attachment link pivot, said depresser



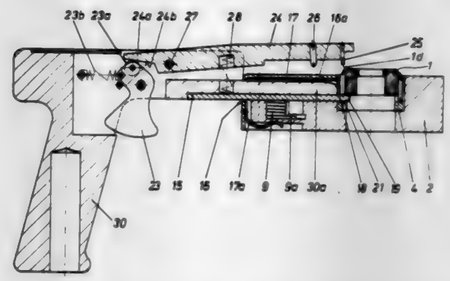
member having an effective axis substantially parallel to that of the attachment link.

4,446,609

A TOOL FOR EXCHANGING A MATRIX IN A METAL WORKING MACHINE

Walter Bredow, Alfeld, Fed. Rep. of Germany, assignor to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Division of Ser. No. 226,154, Jan. 19, 1981. This application Sep. 20, 1982, Ser. No. 421,117
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005089
Int. Cl.³ B25B *27/00*
U.S. Cl. 29—270 **2 Claims**



1. A tool for withdrawing a matrix having an axis and a peripheral surface from a matrix shoe adapted to be mounted on a tool holder of a metal working machine and provided with a matrix seating ring and a pair of clamping levers which are pivotally movable between a clamping position in which the clamping levers clamp the matrix in the matrix shoe and a clearing position in which the clamping levers release the former from the latter and permit withdrawal of the matrix from the shoe, the shoe having an elongated cutout with an open end and an opposite abutment face, and the matrix having a catch bore and the matrix seating ring having a withdrawal recess and being located in the cutout with part of its peripheral surface pressed against the abutment face in said clamping position, the tool comprising tool means for pivotally moving said levers to said releasing position and for withdrawing said matrix from said matrix shoe, said tool means including first means movable between the levers for moving the same from the clamping to the clearing position, second means for engag-

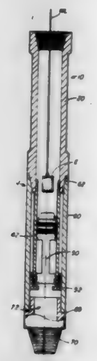
ing the matrix for withdrawing the latter between the levers from the shoe, and a pistol-shaped handle portion and an elongated portion projecting form an upper part of said handle portion and having an end face adapted to engage the peripheral surface of the matrix during movement of the tool means in the longitudinal direction of the shoe toward the matrix, said first means comprising an elongated slide fixed to said elongated portion and having transversely spaced side edges engaging and pivotally moving the levers to said releasing position and a free end portion located in the matrix seating ring withdrawal recess when said end face engages said matrix, and said second means comprising a withdrawal lever above said slide tiltable about an axis transverse to the elongation of the latter and a pin arranged to enter into the catch bore during tilting of said withdrawal lever toward said slide, said withdrawal lever being a two-armed lever, provided on one arm thereof facing away from the matrix with a cam face and on the other arm thereof with spring means biasing said withdrawal lever in a direction which said pin is out of engagement with the catch bore, and means mounted in said handle portion and cooperating with said cam face for tilting said withdrawal lever against the action of said spring means in a direction toward said slide so that said pin will enter into the catch bore.

4,446,610

RETRIEVABLE FLOAT VALVE ASSEMBLY

Larry V. Cooper, Lake Charles, and Michael W. Sloane, Sr., Egan, both of La., assignors to Ace Fishing & Rental Tools, Inc., Lake Charles, La.

Division of Ser. No. 201,580, Oct. 28, 1980, Pat. No. 4,393,940. This application May 4, 1983, Ser. No. 491,353
Int. Cl.³ B23P *17/00*; E21B *33/00*
U.S. Cl. 29—421 E **6 Claims**



1. A method of disassembling a portion of a drill string containing a float valve comprising the steps of:

a. locating a float valve within a lowermost jointed portion of the drill string and a distance below the jointed connection formed in the drill string by the lowermost jointed portion and a connected uppermost jointed portion;

b. forming a suspended connection between the uppermost portion of the drill string and the float valve which is located below the jointed connection adjacent to the lowermost jointed portion;

c. lowering an explosive charge to the jointed connection above the float valve;

d. detonating the explosive charge at the jointed connection above the float valve to loosen the jointed connection;

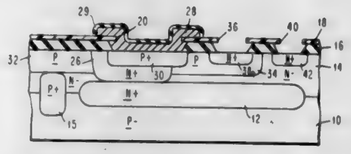
e. disassembling the uppermost jointed portion and connected float valve from the lowermost jointed portion.

4,446,611

METHOD OF MAKING A SATURATION-LIMITED BIPOLAR TRANSISTOR DEVICE

David L. Bergeron, Winooski, Vt., and Parsotam T. Patel, Round Rock, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 163,035, Jun. 26, 1980, Pat. No. 4,390,890. This application Feb. 22, 1983, Ser. No. 468,442
Int. Cl.³ H01L *21/225*
U.S. Cl. 29—578 **12 Claims**



4. A method of making a PNP transistor structure which includes the steps of;

forming a subcollector in a semiconductor substrate,

depositing a layer of silicon dioxide on the surface of said substrate,

depositing a layer of silicon nitride on said silicon dioxide layer,

defining an opening in said silicon nitride layer,

introducing a first dopant through a portion of the area of said opening to form an N+ region in said substrate extending from said subcollector to the surface of said substrate,

introducing a second dopant through the entire area of said opening to form a P+ region at the surface of said substrate, said P+ region having one end extending outside of said N+ region, and

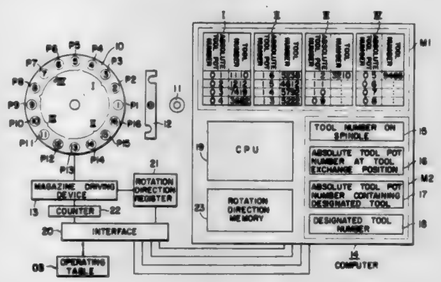
forming a P region having a first section on one side of said N+ region and a second section on the opposite side of said N+ region and in contact with said P+ region, the dopant concentration of said P region being less than that of said first dopant and the dopant concentration of said P+ region being greater than that of said first dopant.

4,446,612

METHOD AND APPARATUS FOR CONTROLLING TOOL MAGAZINES

Toshio Kawakami, Zama, and Izumi Kimura, Numazu, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,715
Claims priority, application Japan, Jan. 9, 1981, 56-1920
Int. Cl.³ B23Q *3/157*; G05B *19/27*
U.S. Cl. 29—568 **8 Claims**



6. Apparatus for controlling a tool magazine having a plurality of tool pots each containing a tool, said tool magazine being divided into at least three tool regions respectively containing

substantially the same number of tool pots, said apparatus comprising:

reversible magazine driving means for sequentially indexing a designated tool to a tool exchange position;

a first memory section including a comparison table storing correspondences between absolute pot number of respective regions and tool numbers included in respective regions;

a second memory section including a first memory region for storing a tool number of a tool mounted on a machine tool, a second memory region for storing an absolute pot number of a tool pot indexed to said tool exchange position, a third memory region for storing the absolute pot number of a tool pot containing said designated tool and a fourth memory region for storing the designated tool number;

means for searching said absolute tool pot number storing said designated tool in accordance with said comparison table prior to movement of said tool magazine;

means for determining a direction of movement of respective regions of said tool magazine towards said tool exchange position in accordance with contents of said second memory section;

means controlled by the contents of said first and second memory sections for determining an amount of movement of said tool magazine necessary to index said designated tool to said tool exchange position; and

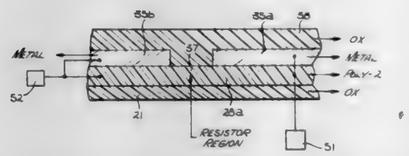
magazine drive means controlled by said direction determining means and said movement amount determining means for indexing said designated tool to said tool exchange position.

4,446,613

INTEGRATED CIRCUIT RESISTOR AND METHOD OF FABRICATION

Israel Beinglass, Santa Clara, and Nan-Hsiung Tsai, Fremont, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 19, 1981, Ser. No. 312,771
Int. Cl.³ H01L *29/00*; H01C *17/00*
U.S. Cl. 29—571 **5 Claims**



1. A process for fabricating an integrated circuit resistor on a first insulative layer, comprising the steps of:

forming a strip of polysilicon on said first insulative layer using an overlying silicon nitride member;

removing a portion of said silicon nitride member from said strip overlying a predetermined region of said strip;

growing an oxide layer on said strip at regions unprotected by said silicon nitride member, such that oxide is formed at least on the sides of said strip;

removing said silicon nitride member; and

forming metal members over opposite ends of said strip of polysilicon without forming metal over said predetermined region of said strip,

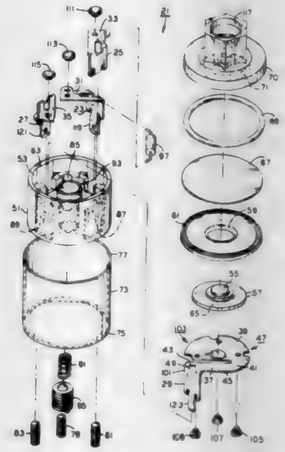
whereby said predetermined region of said strip of polysilicon forms a resistor region and said metal members form low resistance leads for said resistor region.

4,446,614

METHOD OF MANUFACTURING A CONTROL DEVICE

Donald L. Haag, Sterling, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 16, 1982, Ser. No. 349,329
Int. Cl.³ H01H *11/00*
U.S. Cl. 29—622 **5 Claims**



2. A method of manufacturing a control device having a housing with a chamber therein, a plurality of terminals each having a contact section thereon, and a switch and terminal combination including another terminal, a pair of bifurcated switch segments having a bight portion therebetween, and a pair of generally opposite sides on at least one of the switch segments extending generally from the bight portion, the method comprising the steps of:

forming the switch segments and another terminal integrally with each other with said at least one switch segment being pivotally interconnected with the another terminal remote from the bight portion and with the other of the switch segments extending generally adjacent either opposite side of the at least one switch segment in a direction from the bight portion generally toward the another terminal;

associating the terminal plurality with the housing and arranging the contact sections of the terminal plurality generally at different preselected elevations within the chamber, respectively; and

associating the another terminal with the housing and disposing the switch segments in the chamber so that the other switch segment extends in overlaying spaced apart relation with the contact sections of the terminal plurality, respectively.

4,446,615

APPARATUS FOR ATTACHING TERMINALS TO THE ENDS OF ELECTRIC CONDUCTORS

Lloyd A. Talley, Valinda, Calif., assignor to Eubanks Engineering Company, Monrovia, Calif.

Filed Mar. 16, 1982, Ser. No. 358,833
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—742 **5 Claims**

1. Apparatus for attaching terminals to the ends of electric conductors, comprising:

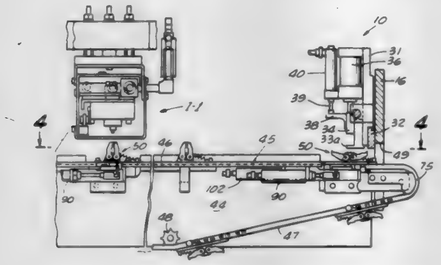
a. means for delivering predetermined lengths of electric conductors into a conductor supply zone;

b. a terminal attaching zone spaced from said conductor supply zone, including spaced apart first and second terminal attaching devices each having cooperable terminal attaching die means for receiving a terminal therebetween

having an end portion for the reception of an end of said conductor and being operable to crimp the end portion on the received conductor end;

c. means for picking up and successively transporting the conductor lengths laterally along a conveyor path from the conductor supply zone to said first terminal attaching device for attaching a terminal to one end of the conductor and thereafter transporting the conductor with the terminal attached to said one end to the second terminal attaching device for attaching a terminal to the other end of the conductor.

d. means in the terminal attaching zone including a pair of rotatable conductor gripping rollers operable to longitudinally move said gripped conductor with the terminal attached to said one end by the first terminal attaching device in a direction to bring the opposite end of said conductor into a terminal attaching position by said second terminal attaching device;



e. an electrical motor having a driving connection with one of said rollers;

f. switching means activated by the lateral movement of said conductor to energize said motor, and by longitudinal movement of the conductor to a predetermined sensed position to de-energize said motor and apply a braking force to stop the movement of said conductor by said rollers, said switching means comprising a pair of switches having actuating components laterally spaced relatively to the longitudinal axis of said conductor and being positioned for activation by the conductor during said lateral movement thereof; and

g. swingably mounted raker elements operable, upon the approach of the conductor to said switch actuating components, to engage the conductor at positions respectively adjacent said switch actuating components and thereby forcibly augment its movement into operative association with the switch actuating components.

4,446,616

POWER ASSIST, MANUAL, BAND LABELER

Theodore Waterman, Christmas Tree La., Milford, N.H. 03055

Filed Dec. 17, 1981, Ser. No. 331,607

Int. Cl.³ B23P *21/00*; B65B *7/28, 67/00, 9/10*

U.S. Cl. 29—775 **10 Claims**

1. A power assist, manual, band labeler enabling an operator to apply plastic labels to containers comprising:

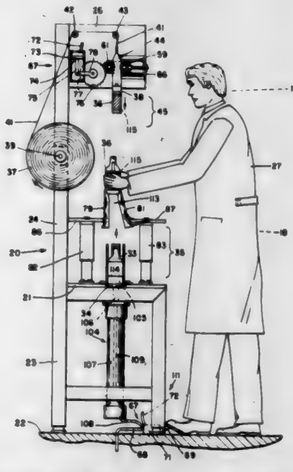
powered conveyor means for advancing a plurality of identical containers along a horizontal path, including a banding station at about waist level;

powered band supply means for feeding a plurality of bands of flexible, resilient plastic, in flat tubular, preperforated, form individually and successively around band spreader means mounted above said station to a tear off location at about eye level;

said band spreader means being located within the flat tubular form of said bands and having opposite side walls, oppositely disposed concave recesses in each said side wall and a feed roll, seated in each said recess, for feeding said bands;

a fixed holder and an oppositely disposed, pivotable, holder normally inclined toward said fixed holder, said holders mounted at said station, intermediate of waist and eye levels, and adapted to support a band in open tubular form, placed thereover by said operator;

said pivotable holder being spring biased to resiliently pivot outwardly for the passage of a container between said holders;



power actuated container lift means at said station for lifting each successive container, halted at said station, upwardly between and through said holders to frictionally transfer a band therefrom onto the exterior of said container;

and control means for retracting said container lift means to waist level to receive the next successive container while actuating said band supply means to feed the next successive band along said spreader into tear off position.

4,446,617

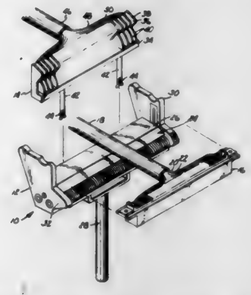
SPLICING HEAD FOR ADDING CONDUCTORS TO AN ELECTRICAL CONNECTOR

Donald J. Lydell, deceased, late of Park Rapids, Minn., and by Hilda Lydell, executor, Rte. 4, Box 414, Park Rapids, Minn. 56470

Filed Feb. 16, 1982, Ser. No. 348,321

Int. Cl.³ H01R *43/04*; B23P *00/00*

U.S. Cl. 29—861 **10 Claims**



1. A method of connecting a second cable containing a plurality of pairs of wires to a modular connector which has a connected first cable, the method comprising the following steps:

laying the modular connector with the connected first cable on a bed;

mounting a comb having a plurality of wire guides, each guide including a wire pair splitter onto the bed, over the first cable in position to permit access to the connector, the wire guides extending in the direction of extension of the first cable;

aligning the second cable generally parallel to and above the first cable;

separating the wire pairs in the second cable;

laying each wire pair of the second cable in its separate wire guide on the comb;

separating the wires of each pair with the pair splitter for the respective guide; and

connecting the wires of the second cable to the modular connector without disconnecting the wires of the first cable and without removing the comb from the bed.

2. In a portable splicing head for attaching pairs of wires from a cable to an electrical connector, the head having a body with a bed for holding the connector and a comb including a plurality of wire guides for separating pairs of wires, each wire guide having a pair splitter for separating the wires of the pair, the improvement of a mounting device for the comb to aid in adding a second cable to contacts of a connector to which is connected a first cable, the mounting device comprising:

means coupled to the comb and body for removably mounting the comb on the body in position spaced from the bed and offset from the position on the bed where a connector is to be held sufficient to permit access to a connector on the bed for providing a passageway between the comb and the body for a first cable connected to a connector on the bed, the mounting means comprising a plurality of elongated supports extending between one side of the comb and the body.

4,446,618

PROCESS FOR THE PRODUCTION OF BI-METALLIC CONTACT RIVETS

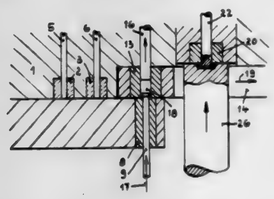
Erwin Bollian, Rastatt, Fed. Rep. of Germany, assignor to Dr. Eugen Durrwachter Doduco KG, Pforzheim, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,085

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112453

Int. Cl.³ H01R *43/04*; B21K *1/62*; B23K *20/02*

U.S. Cl. 29—882 **5 Claims**



1. A process for producing a bi-metallic contact rivet by means of a cold pressure welding operation, comprising:

inserting two wire segments of different composition and length but of congruous diameter into a first guide bush which fits the two wire segments, the diameter of the wire segments being smaller than that of the contact rivet shaft to be produced;

arranging of the two wire segments, which frontally impinge on one another, between an ejector pin displaceable lengthwise in the first guide bush, and a movable abutment having a cross-sectional surface larger than the cross-sectional surfaces of the wire segments, and arranged coaxially to the ejector pin adjacent to the first guide bush and initially abutting the adjacent end surface of the first guide bush;

pushing forward the ejector pin in the first guide bush and simultaneously withdrawing the abutment from the first guide bush coaxially with the forward movement of the ejector pin while leading the wire segments into a second guide bush in which the abutment is moveable, the relationship between the cross-sectional surfaces of the first guide bush and second guide bush being proportional to the relationship between the velocities of the ejector pin and the abutment;

maintaining the velocity of the abutment relative to the first guide bush smaller than the velocity of the ejector pin relative to the first guide bush, while maintaining both velocities in constant relationship to one another;

upsetting the wire segments in accordance with a decreasing distance between approaching surfaces of the ejector pin and of the abutment, and forming a blank therefrom of enlarged and uniform cylindrical shape and having the diameter of the shaft of the contact rivet to be produced; and

forming a contact rivet head by cold press-working at that end of the blank constituting one of the two wire segments forming the blank, said one of the two wire segments being shorter than the other.

4,446,619

RAZOR HANDLE

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 7, 1982, Ser. No. 385,905

Int. Cl.³ B26B *21/14*

U.S. Cl. 30—85 **2 Claims**



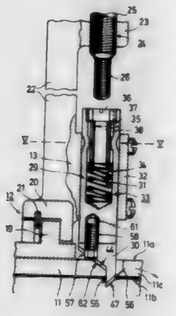
1. A razor handle comprising a grip portion, a neck portion continuous with one end of said grip portion and extending at an angle to said grip portion, a fixed protrusion extending substantially axially from an end of said neck portion for connecting a shaving unit to said handle, and a pusher member molded integrally with said handle proximate said neck portion, said pusher member having first and second legs disposed at an angle to each other and joined by an integrally molded flexible hinge, said first leg extending from said grip portion and said second leg overlying said neck portion, said pusher member having a free end substantially coincident with a free end of said neck portion, said first leg having a pusher surface thereon, said pusher member being movable in response to pressure applied to said pusher surface by an operator to cause said free end of said pusher member to move in a direction substantially parallel with an axis of said neck portion to engage a shaving unit disposed on said protrusion to force said shaving unit axially of said protrusion and off said protrusion.

4,446,620

TUBE CUTTER, ESPECIALLY FOR PLASTIC TUBES

Karl-Heinz Velte, Weilrod, Fed. Rep. of Germany, assignor to Rothenberger GmbH & Co. Werkzeuge-Maschinen KG, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,619
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1981, 3136406
Int. Cl.³ B23D *21/10*; B29C *17/10*
U.S. Cl. 30—96 8 Claims



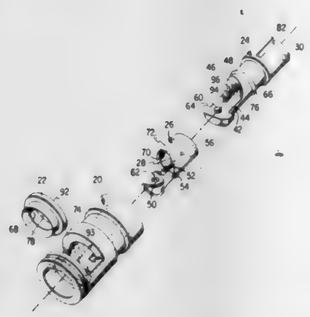
1. A tube cutter, comprising: a guide adapted to grip a tube to be cut and a cutting tool holder rotatable on the guide about the axis of a tube so gripped and adapted to hold a cutting tool with a separate beveling edge, the tool holder being resiliently urged towards the outer surface of the tube and having a stop to run only on an uncut portion of the outer surface adjacent the bevel cut therein by the separate bevelling edge of the cutting tool for limiting its movement theretowards.

4,446,621

FABRIC REPAIRING TOOL WITH CYLINDRICAL SHEET METAL CUTTER

Wesley R. Peterson, Bound Brook, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 29, 1982, Ser. No. 437,716
Int. Cl.³ B26B *13/26*
U.S. Cl. 30—241 10 Claims



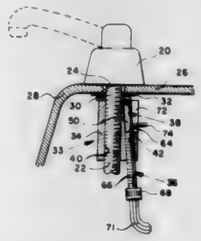
1. A fabric repairing tool including a stationary sleeve, an arbor slidable in said sleeve, a sheet metal cutter which is movable with the arbor and has a sharp helically extending edge thereon, and a sharp edged ring which is in alignment with the cutter and against which fabric is cut by sliding the arbor in a direction causing said helical cutting edge to enter the ring and in so doing to move around the sharp edge of the ring.

4,446,622

TOOL FOR REMOVING STUBBORN NUTS

William R. Lamphere, Mystic, Conn., assignor to John B. Dionne, Pawcatuck, R.I.

Filed Feb. 14, 1982, Ser. No. 466,092
Int. Cl.³ B26B *27/00*
U.S. Cl. 30—272 R 13 Claims



1. A tool for cutting and removing a nut from a threaded shank member extending beyond the nut comprising:

a body having a first threaded bore adapted to be threadedly received on the shank member in abutting relationship with the nut, said body having a second bore, at least partially threaded, with a longitudinal axis substantially parallel to the longitudinal axis of the first threaded bore; and

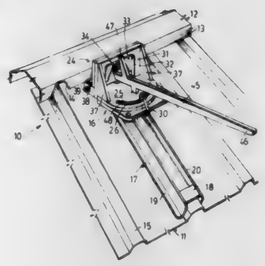
severing means including a fracturing element threadedly received within the second bore movable between a first position whereat said element is distant from the nut and fully retracted within said body and a second position whereat said element is engaged with the nut such that continued movement of said element into further engagement with the nut results in severing of the nut by said element.

4,446,623

NOTCHING TOOL

Edgar M. Stubbersfield, and Leslie V. Shaw, both of Gatton, Australia, assignors to Beryl Grace Stubbersfield, Australia

Filed Sep. 9, 1981, Ser. No. 300,486
Claims priority, application Australia, Sep. 12, 1980, PE5546
Int. Cl.³ B26B *13/06*
U.S. Cl. 30—229 6 Claims



1. A notching tool for notching sheet-like material comprising:

a base member, said base member having a pair of support flanges on the underside thereof;

a notching head on the base member comprising a die member and a punch member adapted to co-operate at a plane with the die member;

means to operate the notching head; and

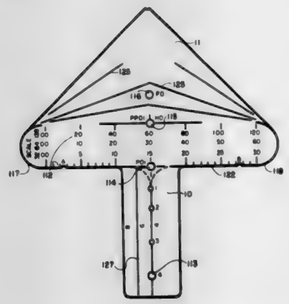
wherein the base member includes a pair of spaced, substantially parallel support members, said support members secured to said support flanges and angularly inclined at an obtuse angle relative to the plane of the punch and die members; and means to interconnect the support members, distance means between the support members being selected to accommodate a rib or protrusion on a first member with the punch and die members sized to form a notch in a sheet-like material wherein said notch co-operates with said rib or protrusion.

4,446,624

SINGLE HANDED SET-UP APPARATUS

Larry H. Nowell, Chula Vista, and Robert Halley, LaJolla, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1982, Ser. No. 411,777
Int. Cl.³ G01B *3/04*
U.S. Cl. 33—1 C 8 Claims



1. A training device for training aircraft intercept operators in the use of a radarscope to coordinate the movement of a plurality of aircraft, comprising:

a template formed in the shape of a triangle having a base stem extending therefrom such that said stem bisects the hypotenuse of said triangle;

said triangle having imprinted thereon a plurality of range scales;

said stem having imprinted thereon longitudinal lines at predetermined separation; and

said template having a series of apertures along the centerline of said stem extending into said triangle.

4,446,625

APPARATUS FOR MOUNTING FLEXIBLE PRINTING PLATES

Edward F. Hagan, E. Brunswick, N.J., and Marvin G. Reaver, Jr., Mount Prospect, Ill., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

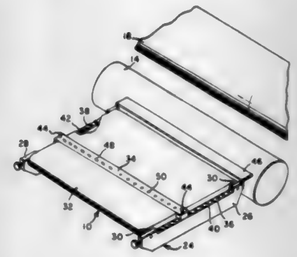
Filed Feb. 28, 1979, Ser. No. 15,934
Int. Cl.³ B41F *27/00*
U.S. Cl. 33—184.5 8 Claims

1. Apparatus for locating a flexible plate with respect to a printing cylinder, said apparatus comprising:

a frame including side bars;

a support structure between said side bars, said structure providing a flat platform for a plate and including a cross bar mounted for sliding movement between predetermined positions on said side bars, said cross bar having positionable keys adapted to project through registration apertures in a printing plate; and

locking means for fixing the location of said cross bar at one selected position with respect to said side bars such that said cross bar remains stationary with respect to said



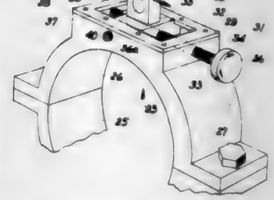
frame as the printing cylinder is rotated to apply a flexible plate thereto.

4,446,626

METHOD AND APPARATUS FOR ACCURATELY SETTING DIRECTIONAL HEADINGS IN MINING TUNNELS

Arnemann Grender, Franklin, Minn. 55333, and George F. Johnson, Jr., Rte. 4, Box 484-H, Pikeville, Ky. 41501

Filed Apr. 12, 1982, Ser. No. 367,587
Int. Cl.³ G01C *15/00*
U.S. Cl. 33—286 14 Claims



1. Apparatus for accurately setting directional headings in a mining tunnel of the type having side walls and a ceiling including a pair of spads attached to the ceiling along a reference line representing the desired heading, each of said spads having an eyelet-like opening, said openings being aligned along a line-of-sight establishing the desired heading, said apparatus comprising:

a light source comprising a laser transmitter emitting a relatively thin substantially monochromatic beam of visible light;

an elongated housing mounting said light source;

a pair of hanging means positioned at spaced locations on the upper surface of said light source housing for lockingly engaging a ball chain; and

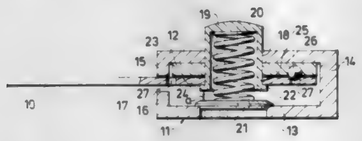
an elongated length of flexible ball chain composed of a plurality of spaced bulbous enlargements connected by thin rod-like members and having a portion lockingly cooperating with each of said hanging means and a portion held by a hook-like hanger for hangingly cooperating with each spad opening so that said housing is suspended from the spads such that said light beam is accurately aligned with said reference line to establish the desired directional heading.

4,446,627

ARRANGEMENT IN ANGLE RULERS FOR IMPROVING FIXTURE OF AN ANGULARLY ADJUSTABLE BLADE OF SAID RULERS TO THE STOCK THEREOF IN SELECTED BLADE POSITIONS RELATIVE THERETO

Bengt Persson, Pl. 577, 830 02 Mattmar, Sweden

Filed Aug. 20, 1982, Ser. No. 409,953
Claims priority, application Sweden, Sep. 21, 1981, 8105567
Int. Cl.³ B43L 7/06
U.S. Cl. 33—497 4 Claims



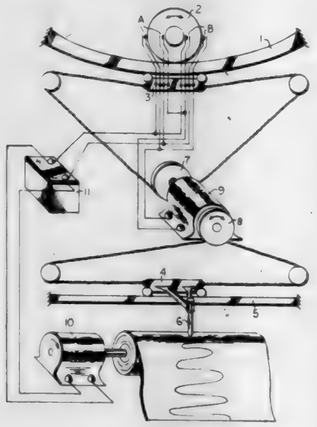
1. An angle ruler having a stock, an angularly adjustable blade and an arrangement for improved fixture of said angularly adjustable blade to said stock in selected angular positions, said arrangement comprising a rectangular hollow section being partially embraced by one end of said stock, wherein one of the two shorter sides of said hollow section is provided with a lateral opening defined by two opposed wall portions, a spring-loaded displaceable peg penetrating at least one of the mutually opposing walls of said hollow section and a bore of said blade, grooves provided on one of the inwardly facing surface of one of said walls and the opposite surface of said blade, and balls co-acting with said grooves on the other one of said surfaces, said grooves and balls being equally spaced and concentrically encircling said peg, around which said blade is arranged to pivot.

4,446,628

DEVICE FOR DETERMINING ANGLE OF INCLINATION OF SHIP

David Shkolnik, 62-42 Woodhaven Blvd., Rego Park, N.Y. 11374, and Alla Slonimsky, 1402 Ventura Way, Newport News, Va. 23602

Filed Sep. 16, 1982, Ser. No. 422,279
Int. Cl.³ G01C 9/06
U.S. Cl. 33—366 3 Claims



1. A device for determining an angle of inclination of a ship, comprising

a curved guiding member fixedly connected with a ship and inclinable together with the latter; member in response to inclination of the ship and thereby inclination of said curved guiding member between a plurality of positions;

means for recording an angle of inclination of the ship and operative in dependence upon a position of said rolling member on said curved guiding member, said recording means including a data carrier, a recorder arranged to record the angle of inclination on said data carrier, an electric motor arranged to displace said recorder and having an electric circuit, and a plurality of electric contacts in said electric circuit arranged so that during rolling of said rolling member and said contacts are closed by the latter and thereby said electric motor is energized and displaces saod recorder; and

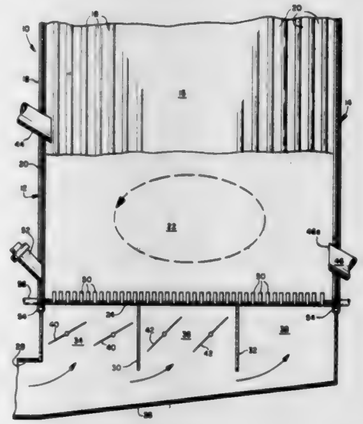
a carriage on which said electric contacts are arranged and which is displaceable together with said contacts by said electric motor relative to said curved guiding member substantially following the rolling of said rolling member on said curved guiding member.

4,446,629

FLUIDIZED BED HEAT EXCHANGER UTILIZING INDUCED CIRCULATION

Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 17, 1981, Ser. No. 322,310
Int. Cl.³ F26B 17/10
U.S. Cl. 34—57 A 2 Claims



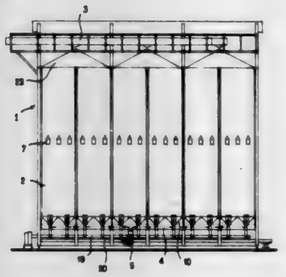
1. A fluidized bed heat exchanger comprising a plate adapted to support a bed of particulate material, inlet means for introducing additional particulate material to said bed, drain means communicating with said bed for discharging spent bed material, a plurality of perforations formed through said plate, an air plenum disposed adjacent said plate and adapted to introduce pressurized air through said perforations and into said bed, and a nozzle associated with each of said perforations for discharging said air into said bed, the number of perforations formed through said plate, and therefore the number of nozzles, increasing in a direction across said plate from said inlet means to said drain means so that the flow rate of air introduced into said bed varies in a direction from said inlet means to said drain means.

4,446,630

METHOD AND APPARATUS FOR SLOW COOLING OF HEATED GRAIN

Gérard Book, Senlis, France, assignor to SECEMIA, Senlis, France

Filed Oct. 9, 1981, Ser. No. 310,067
Claims priority, application France, Oct. 9, 1980, 80 21590
Int. Cl.³ F26B 17/14
U.S. Cl. 34—65 8 Claims



1. Apparatus for the slow cooling of grain comprising:

a silo having an upper and a lower end,

means for introducing heated grains into the silo upper end, the grain moving toward the silo lower end,

means for introducing cooling air into said silo adjacent the lower end thereof,

means for evacuating the cooling air at a point intermediate the silo upper and lower ends, said cooling air evacuating means defining a non-ventilated space between said cooling air evacuating means and the silo upper end in which internal moisture of the heated grain is allowed to diffuse within the grain as the grain descends in the silo, and a space between the cooling air evacuating means and the lower end where the cooling air causes drying and cooling as the grain descends toward the silo lower end, and

means at the lower end of said silo for extracting the cooled grain comprising a plurality of downwardly pointing cones, wherein said cooling air introducing means comprises means spaced above inlets to said cones to direct the flow of cooling air into said cone inlets.

4,446,631

AIR SYSTEM FOR CONTINUOUS FLOW GRAIN DRYER

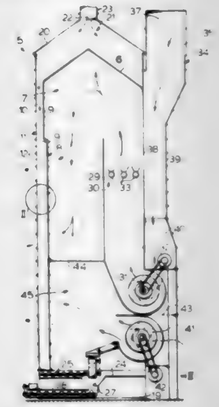
Elmo L. Batterton, and Melvin J. Lonsdale, both of Morton, Ill., assignors to Meyer Morton Company, Morton, Ill.

Filed Feb. 1, 1982, Ser. No. 344,499
Int. Cl.³ F26B 17/12
U.S. Cl. 34—65 11 Claims

1. In a continuous flow grain dryer especially useful for handling grain having a relatively high fines content, said dryer being of the type having means defining a vertical closed top plenum provided with forced heated air supplying means and being substantially surrounded by a vertical grain shower passage with means for delivering grain to be dried into the top of said passage, said plenum having a vertical air pervious wall providing the inner wall of said passage, and said passage having an air pervious outer wall spaced from said inner wall so that heated air is adapted to pass outwardly through said walls and traverse said passage for drying the showering grain and then exhasuting into a discharge atmosphere zone contiguous to said outer wall, the improvement comprising:

a vertically extending air intake duct having an air intake chamber at its upper end projecting above the air pervious area of said outer wall, and said duct communicating at its lower end with said heated air supplying means;

an air inlet into said chamber and facing generally away from said outer wall and said discharge atmosphere zone toward an ambient atmosphere zone above and remote from said discharge atmosphere zone so that fresh air for delivery by said intake duct to said heated air supplying means is received by said inlet and which fresh air is as nearly as practicable free from fines that may be discharged with the spent drying air through said outer wall into said discharge atmosphere zone;



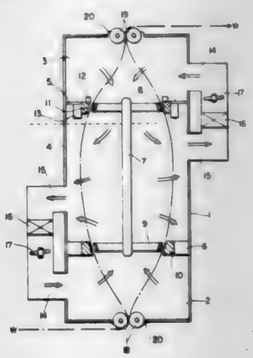
said duct extending down through said discharge atmosphere zone and having air impervious walls which shield the duct against entry of fines-containing air from said discharge atmosphere zone.

4,446,632

DRYING EQUIPMENT FOR TUBULAR TEXTILE WARES

Peter Dornier, Lindau, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,739
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3048957
Int. Cl.³ F26B 25/00
U.S. Cl. 34—103 5 Claims



1. In drying equipment for tubular textile ware comprising a vertically floating circular expander adapted to spread the tubular ware from the inside, with drying air being blown from the outside into the tubular ware inside in a first zone and evacuated from the inside to the outside in an adjacent second zone,

the improvement which comprises

(a) three zone means consecutive in the direction of motion of the ware, said zone means being mutually bounded by partition means transverse to the direction of motion of the ware and surrounding the circular expander, and being located in the area of an entry part of said expander

spreading the tubular ware and a corresponding exit part of said expander, each of said entry and exit parts being in a substantially common plane with an associated partition means,

(b) magnetic means, adapted to keep the circular expander floating, at least at one of said partition means,

(c) the zone means located between the entry part and the exit part being designed as a suction chamber and the outer zone means being designed as blowing chambers, and

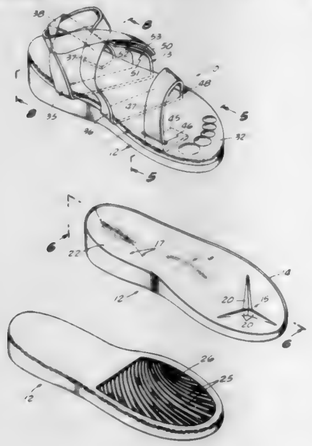
(d) the entry part and the exit part including axial flow openings for the drying air.

4,446,633

BIOMECHANICAL FOOTWEAR

Myron G. J. Scheinhaus, 3918 Libbit Ave., Encino, Calif. 91316; Paul R. Jacobson, 354 S. LaFayette Park Pl., Apt. 304, Los Angeles, Calif. 90057, and Allen J. Selner, 3918 Libbit Ave., Encino, Calif. 91316

Filed Jun. 4, 1982, Ser. No. 384,894
Int. Cl.³ A43B *03/12, 13/00*
U.S. Cl. 36—11.5 **18 Claims**



17. Biomechanical footwear comprising:

an outsole molded from wear-resistant elastomeric material substantially thicker in the heel-forming position than in the forward portion thereof:

an insole including a layer of porous elastomeric material of a type having the property during the use of said footwear of taking a generally permanent set in conformity with the plantar surface of the wearer's foot;

means for holding said insole and said outsole inseparably assembled including means anchored thereto for holding the same to the wearer's foot; and

the major outer bottom portion of said outsole having a multiplicity of resilient arcuate ribs molded therein of generally V-shape in cross section each having a center spaced outwardly from the inner lateral edge thereof which ribs are slightly inclined toward said inner lateral edge of said outsole and adapted to partially collapse during pushoff to minimize resistance to supination of the wearer's foot and leg.

4,446,634

FOOTWEAR HAVING IMPROVED SHOCK ABSORPTION

Paul H. Johnson, 2526 W. Newton, Tulsa, Okla. 74127, and Robert B. Stevenson, 6713 E. 66th St., Tulsa, Okla. 74133

Filed Sep. 28, 1982, Ser. No. 425,437
Int. Cl.³ A43B *13/18, 13/20, 13/40*
U.S. Cl. 36—29 **3 Claims**



1. Footware having improved shock absorption means comprising:

a shoe having a heel, a box portion and a sole;

a first flat elastomeric bladder supported by said shoe heel portion to bear, at least in part, the weight of the heel portion of the foot of a user;

a second flat elastomeric bladder supported by said shoe box portion to bear, at least in part, the weight of the ball portion of the foot of a user;

a first and second conduit channel connecting said first and second bladders;

means of introducing fluid into said bladders;

a separate valve means in each of said channels; and

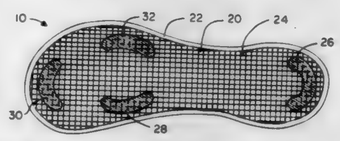
a check valve in one channel preventing fluid flow from said first to said second bladder and a check valve in the other channel preventing fluid flow from said second to said first bladder, thereby providing means to independently control the rate of fluid flow in both directions between said bladders.

4,446,635

ICE-CREEPER TYPE OVERSHOE

Donald W. Hayden, Jr., 1811 Dixon Rd., Baltimore, Md. 21209

Filed Apr. 15, 1983, Ser. No. 485,427
Int. Cl.³ A43B *5/00;* **A43C** *15/10, 15/06*
U.S. Cl. 36—116 **10 Claims**



1. In footwear of the type which flexes as the user walks and which has: a vamp, a sole which flexes during said walking and has a top, upright sides and bottom with heel and toe areas, means for assembling the vamp and sole; and wire mesh type means for preventing slipping, attached at the sole; the improvement comprising: the wire mesh type means for preventing slipping including: the bottom of the sole having thereon a substantially loose covering of aluminum flyscreen for shedding ice and snow from the bottom of the footwear, including attachment of the substantially loose covering of aluminum flyscreen permitting flexing the substantially loose covering of aluminum flyscreen in response to flexure of said sole, said substantially loose covering of aluminum flyscreen attached around the upright sides of said sole but being free of attachment to the bottom of the sole, means on said substantially loose covering of aluminum flyscreen for maintaining traction on smooth, hard tile floors and the like, and said attachment around the upright sides comprising said substantially loose covering of aluminum flyscreen having connective portions extending up around said upright sides and on the top of a flap portion of said sole extending horizontally around said vamp.

4,446,636

OCEANIC MINING SYSTEM

Friedrich Weinert, 219-19-131 Ave., Jamaica, N.Y. 11413

Filed Sep. 7, 1982, Ser. No. 415,320
Int. Cl.³ E02F *5/00*
U.S. Cl. 37—54 **4 Claims**



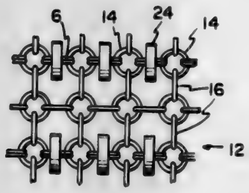
1. An oceanic mining system comprising a sea bulldozer movable across the bottom of the ocean by means of driven wheel to scrape up sediment from the ocean floor, said wheels being driven by an engine of the type which uses electrolysis to convert sea water into hydrogen and oxygen and then ignites the hydrogen and oxygen to provide power for driving the engine output, a mobile material transporting platform having a loading edge for receiving sediment from the bulldozer, means to raise the mobile platform to the surface of the ocean and lower it to the bottom including a cable and winch system mounted on at least one ship with the cables attached to the platform, a cargo ship for receiving material from the platform, said cargo ship having a material receiving opening, cable and winch means on said cargo ship with the cable attached to the end of the platform opposite the loading edge for maneuvering said loading edge of said platform into cooperative relationship with said opening for dumping said material into said cargo ship, said bulldozer being remotely controlled from a ship by means of cables to supply power needed for operation thereof.

4,446,637

CHAFING GEAR FOR FISHING DRAG

Thomas Ferreira, 9 Westhill Rd., Mattapoisett, Mass. 02739

Continuation of Ser. No. 211,261, Nov. 28, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 457,014
Int. Cl.³ E02F *5/00;* **A01K** *73/02*
U.S. Cl. 37—55 **6 Claims**



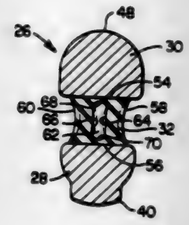
1. The combination of a fisherman's drag and chafing gear, the drag having an open end, a closed end, at least a first ring and a second ring and a midline extending from the open end to the closed end, the first and second rings connected together by a first link, the chafing gear comprising a first disk, the first disk including a surface and having an aperture centrally formed therethrough at right angles to the surface of the disk, the aperture having a wall defining the same, the wall circumscribing a portion of the first link and the surface of the disk being in parallel relation to the midline.

4,446,638

DIPPER TIP RETAINING PIN

Raymond J. Novotny, Sparta, and James P. Mulder, Oakland, both of N.J., assignors to Abex Corporation, Stamford, Conn.

Filed Dec. 27, 1982, Ser. No. 453,437
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 A **2 Claims**



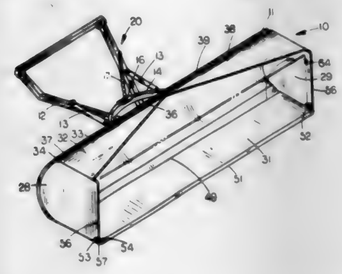
1. A pin for insertion into the pin receiving holes of a tip and the pin receiving hole of an adapter to retain the tip on the adapter which comprises: a U-shaped lock member including an elongated central body and a pair of legs which project one from each end of the body; a wedge member which is shorter than the distance between the legs and the legs overlie the wedge member; a resilient member which has a first pair of side walls of which one is bonded to the central body of the lock member and the other is bonded to the wedge member, a second pair of outer side walls which are positioned between the first pair of walls and extend between the lock member and wedge member, and means to collapse the second pair of walls inwardly when the resilient member is compressed upon insertion of the pin into the adapter and tip holes including a single centrally located sealed cavity formed within the resilient member, the surface defining each of the second pair of outer walls being concave such that the midpoints of the walls are spaced closer together than the ends of the walls adjacent the first pair of walls.

4,446,639

ANGLING SNOW BLADE

Donald L. Bohn, 7429 Glenvale Dr., Omaha, Douglas County, Nebr. 68134

Filed Jul. 22, 1982, Ser. No. 400,825
Int. Cl.³ E01H *5/06*
U.S. Cl. 37—280 **6 Claims**



1. A blade for clearing snow of a type having a vertical cross-sectional conformation of a generally circular segment to which pushing, angling and lifting means are attached, the improvement comprising a left and right side panel disposed

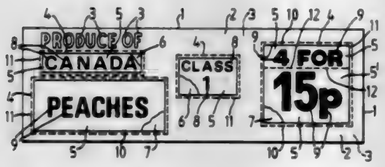
substantially normal to said blade, each having hinging means for pivoting it, independent of the other, about the top edge of the blade, whereby each panel can be held at a lower position to block the snow around the adjacent side edge of the blade and pivoted upwardly to a position permitting the escape of snow, wherein each side panel is attached to its hinging means by a top panel, one side of which extends along the adjacent one-half length of the top edge of the blade and another side of which extends along the top edge of the side panel.

4,446,640

PRICE TICKET AND LIKE DISPLAYS

George H. W. Kenney, Wimbledon, England, assignor to Richard Kenney, Toronto, Canada

Filed Feb. 18, 1982, Ser. No. 349,870
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—16.2 5 Claims



1. A price ticket or like assembly comprising in combination:
(a) a transparent support panel which is sufficiently resilient to be flexed, a ticket holder including parallel channels into which said panel is inserted and springs back upon release, whereby opposing edge portions of said panel locate within said parallel channels of said ticket holder, said panel having display matter printed thereon but with at least one area left clear to form a window, said support panel having, at least in each window area on the side adjacent to the ticket holder, a highly polished surface.
(b) components of soft plastic material having a highly polished surface, each component being self-adherent, positioned within and conveying an item of information and readable through a particular window,
(c) a setting panel comprising a rigid board, printed with an outline defining a location zone for each self-adherent component, each zone having associated therewith a discrete area to which the selected component is temporarily adhered, whereby when the side of the support panel normally adjacent the ticket holder is brought into surface-to-surface contact with the setting panel having components adhered thereon, application of pressure causes the surface of each component on the setting panel to adhere to a particular window of the support panel, removal of the support panel from the setting panel causing the components to be plucked from the setting panel and to remain adhered to the support panel.

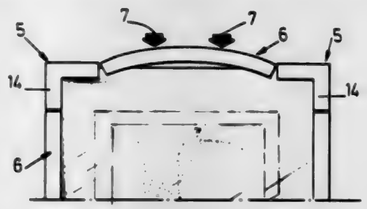
4,446,641

ALTERABLE FRAME AND SMALL FASTENING BLOCK FOR ASSEMBLING SUCH A FRAME

Marijke Cossert, Kasteelbrakel, Belgium, assignor to Linear, Belgium

Filed Feb. 2, 1982, Ser. No. 344,942
Claims priority, application Belgium, Feb. 27, 1981, 887715
Int. Cl.³ A47G *1/06*
U.S. Cl. 40—152 15 Claims

1. A frame designed for mounting desired art works such as pictures, photographs, mirrors, posters, prints and the like, which are fastened between a front glass pane and a bearing panel, comprising a series of fastening blocks mounted at an interval from one another on the panel edges by means of a screw, the axis of said screw lying substantially at right angle to the panel with the free screw end entering a corresponding recess provided adjacent the panel edges, a plurality of flexible U-shaped sections being clamped over the panel edges with each section extending over the whole length of said edge



between two successive fastening blocks, these sections being slightly longer than the distance separating succeeding blocks, so that the ends of each of said sections press against the blocks.

4,446,642

PERIPHERAL DECORATIVE ARTICLE

John P. Chap, Lemont, Ill., assignor to Selfix, Inc., Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 431,816
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152.1 8 Claims



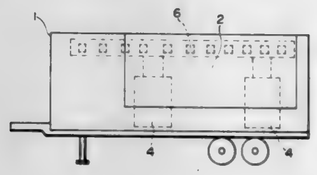
1. An integral decorative framing member adapted to be placed around and frictionally retained on a generally rigid article being framed comprising:
a decorative external portion defining front and outer decorative surfaces; and
an inner article engaging portion for engagement with the outer peripheral surface of the article being framed;
said inner article engaging portion being integral with and joined to said front surface and defining an aperture therewithin having a configuration corresponding to the shape of the article being framed, said aperture having a variable dimension between the inner article engaging portion disposed on opposite sides thereof;
said inner article engaging portion being tapered to define a maximum dimension of said aperture adjacent the junction of said inner article engaging portion with said front surface of said framing member and a minimum dimension of said aperture adjacent the rear end of said inner article engaging portion;
said inner article engaging portion being formed as a plurality of discrete segments having flexibility permitting passage of said framing member around said article without distortion of said front and outer decorative surfaces and resiliency to effect a gripping force for retaining said framing member in place on said article.

4,446,643

MOVABLE LARGE DISPLAY DEVICE

Shozo Fujita; Shunichi Futatsuishi, and Takashi Takushima, all of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,585
Claims priority, application Japan, Jul. 20, 1981, 56-108453
Int. Cl.³ G09F *21/04*
U.S. Cl. 40—590 3 Claims



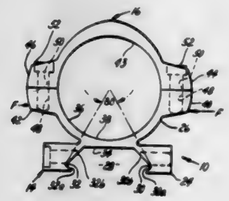
1. A large movable display device comprising a hollow display device body, a light emitting section provided on an external surface of said display device body for displaying characters and images, air conditioning means provided inside said display device body for blowing cooling air over the rear surface of said light emitting section for cooling said light emitting section, external air inlet means and external air outlet means located in an external surface of said body adjacent said air conditioning means, cover means provided for said external air inlet means and said external air outlet means for selectively opening and closing said inlet and outlet means to control the flow of external air for cooling said air conditioning means, removable separator panel means disposed in said display device body in spaced relation to said rear surface of said light emitting means to define a cooling passage between said panel means and said light emitting display section and duct means extending from said air conditioning means and having cooling air outlet disposed at the top of said cooling air passage above said separator panel means whereby said cooling air is directed through said duct means and then downwardly through said cooling air passage.

4,446,644

TELESCOPE SIGHT MOUNT SYSTEM FOR FIREARMS

Ivan Jimenez, and Irving N. Rubin, both of 5555 Treadwell, Wayne, Mich. 48184

Filed Dec. 2, 1981, Ser. No. 326,636
Int. Cl.³ F41G *1/38*
U.S. Cl. 42—1 ST 4 Claims



1. In a firearm telescope sight mount system the combination comprising a longitudinally extending base adapted to be mounted on a firearm, a one-piece non-see-through type mount engaging said base, and a semi-circular clamp on said mount, said mount compriaing a semi-circular receptacle portion and a base-engaging portion, said base-engaging portion engaging said base, said semi-circular receptacle portion cooperating with said semi-circular clamp so as to be adapted for embracing the body of a telescope sight, said base being constructed and arranged to have a slide portion having a transverse shape in the form of a general dovetail shape, said base-engaging portion being constructed and arranged to have a channel of generally complementary dovetail shape whereby the mount and base can be assembled together only by axially sliding the mount onto the base, said base-engaging portion engaging said slide portion of said base at longitudinally extending, transversely spaced apart sides of said slide portion, said base-engaging portion being constructed and arranged so as to integrally merge into said semi-circular receptacle portion in transversely inwardly set relation to said sides within a subtended acute angle with respect to the longitudinal axis of the receptacle portion, said channel also subtending an acute angle with respect to the longitudinal axis of the receptacle, and said angle subtended by the merger of said base-engaging portion with said receptacle portion being wholly included within the angle subtended by said channel.

4,446,645

CARTRIDGE MAGAZINE AND FOLLOWER FOR AUTOLOADING FIREARMS

Charles C. Kelsey, Jr., Chesterland, Ohio, and Walter C. Wolff, Berwyn, Pa., assignors to Devel Corporation, Chesterland, Ohio

Filed Feb. 12, 1982, Ser. No. 348,663
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—50 7 Claims



1. An improved box-type cartridge magazine for an autoloading firearm of existing design comprising
a magazine tube closed at one end and having substantially the same dimensions as the corresponding magazine tube for said existing design,
a modified cartridge-follower spring formed of coiled spring-wire having a solid height which is less than that of the corresponding follower spring for said existing design,
a cartridge follower comprising a cartridge-engaging portion and means for positioning and guiding said portion extending longitudinally of said magazine tube toward the closed end thereof,
said cartridge-engaging portion comprising a leaf-spring which is resilient relative to said positioning and guide means such that it yields longitudinally of said magazine as cartridges are loaded into said magazine, said positioning and guide means being formed integrally with said cartridge-engaging portion at one end thereof.

4,446,646

RETRACTABLE LANDING NET

Cecil W. van't Veld, 2301 Musgrove Rd., Silver Spring, Md. 20904

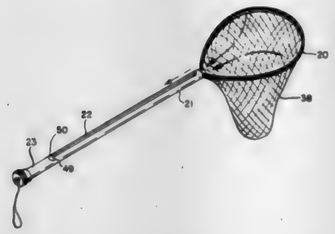
Filed Aug. 4, 1981, Ser. No. 289,989
Int. Cl.³ A01K *77/00*
U.S. Cl. 43—12 14 Claims

1. A telescopable, retractable landing net for fish comprising a handle having a hollow interior and an open forward end, and a slot extending along a substantial portion of the length thereof;
a slide block of external size and shape approximately the

same but slightly smaller than the internal size and shape of said hollow handle, said slide block being slidable within said hollow handle, and a control handle projecting from said slide block and through said slot to the exterior of said hollow handle;

a resilient net supporting hoop formed of flexible material and connected to the forward end of said slide block by hinge means for collapsing said hoop so that said hoop will slide within the hollow of said hollow handle, said hoop having a hinge spaced approximately 180° from said hinge means, said hoop further having a generally smooth outer surface and generally smooth upper and lower edges,

net-supporting hook means solely along the interior periphery of said hoop, said net-supporting hook means comprising a series of integral, net-retaining resilient hooks each



of which extends upwardly from a point at or above said lower edge generally parallel to the interior peripheral surface of the hoop and terminating below the upper edge of said hoop, said series of hooks being spaced substantially entirely about said interior periphery of said hoop, and

a net removably attached by said resilient net-supporting hooks to said hoop by having loops of said net hooked directly over said series of hooks;

whereby upon grasping said control handle and sliding said slide block to the forward end of said hollow handle, said hoop and net are placed in fully open operating position, and upon sliding said slide block from said forward end of said hollow handle backwardly, said hoop becomes compressed and, along with said net, retracted within the hollow of said hollow handle.

4,446,647

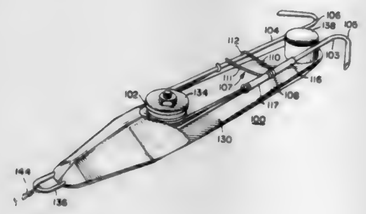
SPRING LOADED FISH HOOK

Manfred E. Kahl, P.O. Box 367, Northport, N.Y. 11768

Continuation-in-part of Ser. No. 281,568, Jul. 9, 1981, Pat. No. 4,387,528, which is a continuation-in-part of Ser. No. 134,108, Mar. 25, 1980, abandoned. This application Mar. 7, 1983, Ser. No. 472,743

Int. Cl.³ A01K *83/02*

U.S. Cl. 43—36 **13 Claims**



1. A fish hook assembly comprising:

an arm-biasing spring and first and second extending arms, said arm-biasing spring biasing said first and second extending arms apart; first and second hooks respectively disposed on said first and second extending arms; a latch spring mounted to said first extending arm, said latch spring having a first extending member with a hook portion at an end, said hook portion operative to hold said second extending arm compressed relatively close to said first extending arm, said hook portion adapted to release said second extending arm when a fish causes said first and second extending arms to move closer together, and said latch spring is operative to snap said hook portion away from said second extending arm when a fish causes said first and second extending arms to move closer together such that said arm-biasing spring springs said first and second extending arms apart, said latch spring is a coil latch spring wrapped around said first extending arm, said coil latch spring biasing said first extending member away from said second extending arm, said arm-biasing spring is a coil spring, said arm-biasing spring is separate from said first and second extending arms, and

wherein said arm-biasing spring is disposable in:

(i) a biasing position in which is opposes movement of said second extending arm towards said first extending arm, and

(ii) a non-biasing position in which said second extending arm may freely move towards said first extending arm without loading said arm-biasing spring.

4,446,648

BAIT POST

Roy Teranishi; Edwin L. Murphy, both of Albany, Calif.; Donald S. Balser, Stanwood, Wash., and Walter E. Howard, Davis, Calif., assignors to The United States of America as rpere-sented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 29, 1981, Ser. No. 288,259

Int. Cl.³ A01M *25/00*

U.S. Cl. 43—131 **3 Claims**



1. A bait post for coyotes, comprising:

(a) a vertical pole tapered at one end for facile insertion into the ground;

(b) a side arm attached at or near the end of said pole opposite the so-tapered end;

(c) a holder attached to said side arm; and

(d) a solid substrate held by said holder which comprises an inner pouch for holding effective amounts of coyote control agents, a middle pouch made of material having mechanical strength sufficient to prevent a coyote from ripping it off said holder and an outer pouch made of a material simulating a substance familiar to coyotes; and wherein said pole has a length such that after firm insertion into the ground, the distance from ground level to said side arm is short enough so that coyotes can reach said side arm and said solid substrate and tall enough so that small animals cannot reach said side arm and said solid substrate and the distance of said side arm to the end opposite the so-tapered end of said pole is sufficiently short so as not to frighten coyotes and wherein said holder secures said solid substrate so coyotes cannot remove it.

4,446,649

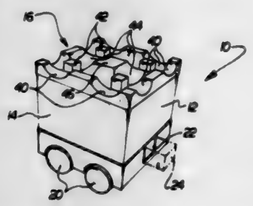
MOBILE BLOCKS

Walter Moe, 13039 Skyvalle Rd., Los Angeles, Calif. 90049, and Charles M. Diker, c/o Diker Moe, 1 New York Plz., New York, N.Y. 10004

Filed Oct. 16, 1981, Ser. No. 311,937

Int. Cl.³ A63H *7/02, 7/00*

U.S. Cl. 46—218 **10 Claims**



1. Apparatus comprising a block for use in forming an assembly of blocks which can be coupled together to form a train and which can be stacked on top of one another, said block having a bottom portion with wheels which can roll in order to move the block, said block having a top portion with means for supporting the bottom portion of another block of similar construction and for minimizing relative lateral shifting of the block supported thereon so as to allow stacking of the blocks, a coupling member movably connected to said block, said coupling member being movable between a retracted position and a protracted position in which it projects partly from said block for engaging a recess in another block to join the blocks into a train, said block including a slot and said coupling member is supported for movement in said slot, said coupling member being dimensioned so as to be disposed completely in said slot when in said retracted position and to project out of one portion of said slot and create a recess in another portion of said slot for receiving a coupling member from another block when in said protracted position.

4,446,650

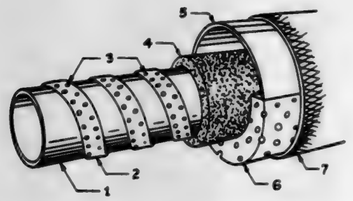
HERBICIDE APPLICATOR

Douglas D. Davis, 1721 E. 7th St., Hopkinsville, Ky. 42240

Filed Aug. 25, 1982, Ser. No. 411,520

Int. Cl.³ A01G *13/00*

U.S. Cl. 47—1.5 **10 Claims**



1. An apparatus for applying herbicides to plants comprising

(a) perforated tubing spirally wound around a rigid tube,

(b) means for introducing herbicide into the perforated tubing under pressure, and

(c) an absorbant cover over the entire tubing and rigid tube assembly.

4,446,651

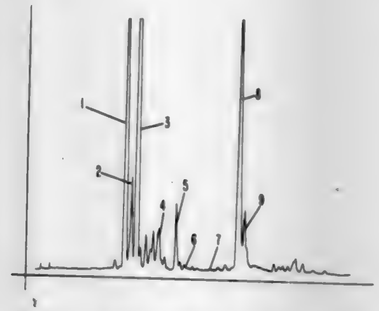
METHOD OF INCREASING EXTRACTABLE CEDARWOOD OIL FROM JUNIPERUS MEXICANA

Seymour J. Spitz, Jr., New York, N.Y.; Braja D. Mookherjee, Holmdel, N.J.; Ira D. Hill, Locust, N.J.; Lloyd F. Keleher, Rumson, N.J.; Robert W. Trenkle, Bricktown, N.J., and Robin K. Wolff, Point Pleasant, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

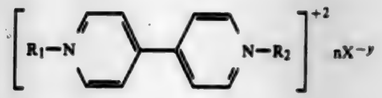
Continuation-in-part of Ser. No. 399,068, Jul. 16, 1982, abandoned. This application Aug. 19, 1982, Ser. No. 409,701

Int. Cl.³ A01G *23/10*

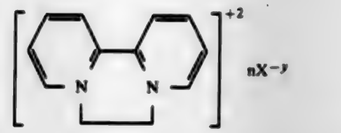
U.S. Cl. 47—10 **12 Claims**



1. A method of chemically inducing the production of increased quantities of high thojopsene cedarwood oil within living *Juniperus Mexicana* trees by treating living *Juniperus Mexicana* trees with at least one bipyridylium salt having a structure selected from the group consisting of:



and



wherein R_1 and R_2 are the same or different and each represents C_1–C_4 lower alkyl; wherein n=1, y=1 and the product of n and y is 2 and wherein X represents chloride, bromide, fluoride, iodide, sulfate, nitrate, hydroxyl or methyl sulfate; permitting the so-treated *Juniperus Mexicana* trees to grow for a time of between 2 months and 18 months; harvesting the resulting *Juniperus Mexicana* trees; and extracting high thujopsene-containing cedarwood oil from the thus-harvested trees, the concentration of bipyridylium salt being between 0.15% and 40%.

4,446,652

UNITARY FLOWER POT

Dennis C. Anderson, Northfield, Minn., assignor to National Polymers, Inc., Lakeville, Minn.

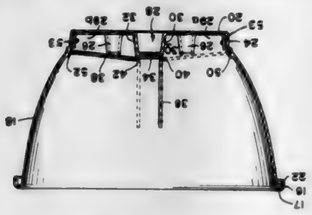
Filed Sep. 28, 1982, Ser. No. 425,971

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—66 **9 Claims**

1. A unitary flower pot including a flower pot body having a side wall and an upper free edge defining an upper open mouth, a horizontal bottom wall at the lower edge of the side wall closing the lower aspect of the pot, at least one swinging

soil support plate hinged to the pot and said plate having an elevation above the bottom wall to define a water storage reservoir therebetween, a horizontally disposed living hinge connection between the plate and the body of the pot, said pot being formed from moldable plastic resin and being formed with said plate in a substantially vertical position, said plate



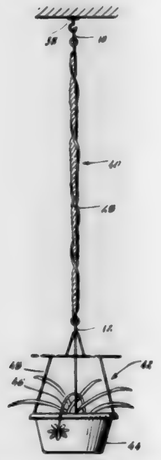
being connected to be folded at the hinge to a horizontal position spaced above the bottom wall and parallel thereto to define said water reservoir between them, said pot having a means to support the plate in said horizontal position and to resist the weight of the soil in the pot and said reservoir having at least one drain opening therein above the bottom wall to allow excess water to drain off.

4,446,653

DEVICE FOR SUPPORTING AND ROTATING A HANGING PLANT

Robert H. Morgan, Jr., 22 Birch Rd., Darien, Conn. 06820

Filed May 4, 1981, Ser. No. 260,391
Int. Cl.³ A47G 7/02
U.S. Cl. 47—67 **4 Claims**



1. A device for supporting a hanging plant object with respect to a fixed object and for slowly rotating the plant object to expose different sides to sunlight, the device consisting essentially of:

a cord having one end for attachment to said fixed object and having another end for attachment to said plant object, said cord being longitudinally extensible in response to an increase in the weight of said plant object and being longitudinally contractable in response to a decrease in the weight of said plant object, said cord including an elongate elastic core, said core being twisted about its longitudinal axis in one direction, and a flexible substantially inextensible length, said length being wound about said core in a generally helical pattern along the longitudinal axis of the core in a direction opposite to the direction said elastic core is twisted, said inextensible length having one end attached to one end of the twisted core and having another end attached to an opposite end of the twisted core, said elastic core being maintained in said twisted condition by said inextensible length when said cord is not supporting said plant object, upon an increase in weight of said plant object said elongate elastic core extending in length and twisting more tightly and said inextensible length unwinding thereby rotating the plant object in one direction, and upon a decrease in weight of said plant object said elongate elastic core contracting in length and untwisting and said inextensible length winding thereby rotating said plant object in a direction opposite said one direction; and

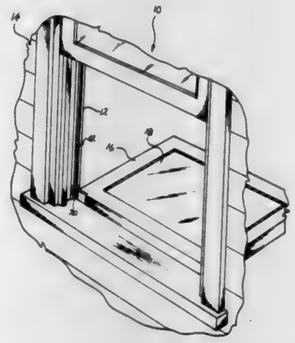
means secured to each end of said cord for supporting said plant object and attaching said fixed object.

4,446,654

COUNTERBALANCE LOCK MECHANISM FOR A WINDOW ASSEMBLY

William K. Schoolman, Wyatt; George A. Griman, Osceola, and Frank D. Andrews, Bremen, all of Ind., assignors to Mastic Corporation, South Bend, Ind.

Filed Sep. 29, 1982, Ser. No. 427,973
Int. Cl.³ E05D 15/22
U.S. Cl. 49—181 **3 Claims**



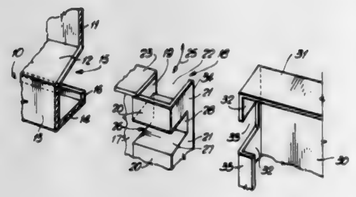
1. In a window assembly having a frame including spaced jamb members, a sash carrying a window glazing panel slidably mounted for vertical movement within said jamb members, and a sash weight balancing mechanism carried by at least one of said jamb members, said balancing mechanism including a block shiftable vertically along the one jamb member and a tensioned cord connected to the block, said sash being carried by said block for vertical and tilting movement relative to said one jamb member, said tensioned cord constituting means for balancing the weight of said sash as it slides within said one jamb member, the improvement wherein said one jamb member includes a housing member fixedly located within the one jamb member, said housing member having a vertical bore therethrough and a horizontal bore intersecting the vertical bore, said cord extending through said housing member vertical bore, a rotative lock pin fitted into said housing member horizontal bore and having an opening therethrough alignable with said housing member vertical bore when said pin is in a first rotative position, said pin opening being offset from said housing member vertical bore when the pin is in a second rotative position, said cord extending through said pin opening and being freely shiftable through said housing member horizontal bore and pin opening when the pin is in its first position, said cord being twisted about said pin and secured against movement through said housing member horizontal bore when said pin is in its second position to isolate said block from the weight balancing influence of said weight balancing mechanism, said pin including accessible means for turning the pin between its said first and second rotative positions.

4,446,655

WEATHERPROOF DOUBLE DOOR STRUCTURE, AND AN ENCLOSURE EMBODYING SUCH STRUCTURE

Peter P. Unterhoffer, Nepean, and Gilles L. Dufresne, Alymer, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 27, 1981, Ser. No. 325,304
Int. Cl.³ E06B 7/16
U.S. Cl. 49—368 **20 Claims**



1. A weatherproof sealing structure for a double door opening, said opening being unobstructed in an open condition and having first and second doors hingedly mounted at outer edges in a frame defining the sides of said door opening, said doors having contiguous inner edges when in a closed condition, said sealing structure comprising:

a continuous channel along the top of said door opening, the channel having an open side facing toward an outer surface and including a wall extending part way up said open side;

a channel at the inner edge of said first door and having an open side facing towards an outer surface of the door, the channel extending inwards from said outer surface, and an inturned upper edge on said first door;

an inturned inner edge and an inturned upper edge on said second door, said inturned inner edge entering said channel at the inner edge of said first door, in a closed condition;

a recess extending into said channel at said inner edge of said first door, the recess extending from an inner surface of said channel and positioned to admit the low wall of said continuous channel, said inturned upper edge of said first door entering said continuous channel, in a closed condition;

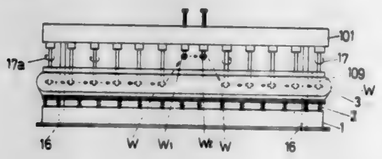
a slot in the inturned inner edge of said second door, said slot fitting over said recess in said channel of said inner edge of said first door and said inturned upper edge of said second door entering said continuous channel on closing of said second door on to said first door.

4,446,656

LONG-TRAVEL ANNULAR VIBRATORY BARREL FINISHING APPARATUS FOR LINE-PROCESSING

Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Chipton, Nagoya, Japan

Division of Ser. No. 137,441, Apr. 4, 1980, Pat. No. 4,317,313. This application Dec. 30, 1981, Ser. No. 335,665
Int. Cl.³ B24B 19/00
U.S. Cl. 51—7 **9 Claims**



1. A long travel vibratory barrel finishing apparatus for line processing of workpieces to be finished, said vibratory finishing apparatus comprising:

an elongated vibratory barrel having two opposed semicircular barrel outer wall segments and straight barrel outer wall segments extending therebetween to form an oval path, said barrel having a length from 5 to 15 times the width in the direction transverse to the straight barrel outer wall segments, and said barrel having a cross-section transverse to the length thereof which is symmetrical about the center of the cross-section and at least the lower part of which is substantially circular and which is open at the top thereof;

a plurality of springs supporting the bottom of said vibratory barrel and extending along the bottom of the barrel in a line generally parallel to the axis of the circular cross-sectional portions;

a vibrator at the center of said barrel having a vertical rotary shaft and having unbalanced weights on the upper and lower ends of said rotary shaft at a predetermined angle to each other around the axis of the shaft for producing a predetermined vibration force during rotation of said shaft;

guide means positioned above said vibratory barrel and extending around the entire perimeter of said oval path;

a plurality of workpiece supporting spindles depending from said guide means into said vibratory barrel, said spindles having workpiece holding means on the lower ends thereof within said barrel and being vertically slidable in said guide means;

means for sliding said spindles upwardly in order to raise finished workpieces completely out of said vibratory barrel before removing and replacing such finished workpieces from the lower ends of the spindles; and

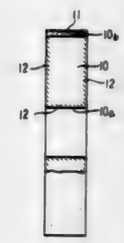
spindle drive means connected to said spindles for moving the spindles along said guide means and simultaneously for rotating the spindles around the longitudinal axes thereof.

4,446,657

RESINOID BONDED GRINDING WHEEL AND METHOD FOR FORMING SUCH WHEEL

Toshio Aseeda, Tokyo; Ikuo Suzuki, Chiryu; Tomoyasu Imai, Kariya, and Masato Kitajima, Hekinan, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Toshio Aseeda, Tokyo, both of, Japan

Filed Jun. 9, 1981, Ser. No. 271,997
Claims priority, application Japan, Jun. 13, 1980, 55-83616[U]
Int. Cl.³ B24D 5/04
U.S. Cl. 51—206 R **18 Claims**



1. A grinding wheel for use in a grinding machine which utilizes coolant during operation, said grinding wheel comprising:

(a) a support member made of porous ceramic;

(b) a grinding element mounted on said support member and constituting the working surface of said grinding wheel, said grinding element including hard grain elements distributed in a resinoid bonding matrix; and

(c) a coolant-impervious sealing layer formed on every surface of said support member except the surface on which said grinding element is mounted, said sealing layer

preventing penetration of coolant into said support member, whereby generation of vibrations due to imbalance of said support member caused by the presence of coolant in said support member during rotation of said grinding wheel is avoided.

4,446,658

FOLDING RAIN GUTTER CONSTRUCTION

Robert P. Gouin, Post Office, Halifax, Vt. 05358

Filed Oct. 17, 1980, Ser. No. 197,893
Int. Cl.³ E04D *13/06*
U.S. Cl. 52—11 **3 Claims**



1. A rain gutter for an associated building which comprises:
an elongated trough shaped member;
means for mounting said trough shaped member on the associated building in a position in which said member will hold at least temporarily a quantity of water;
said means for mounting allowing movement of said trough shaped member to a second position in which said trough shaped member will not hold water even temporarily and said trough shaped member is in substantially intimate contact with the associated building along substantially the entire axial extent thereof;
said trough shaped member comprises, at least in part, an elongated rigid member and hinge means for carrying said elongated rigid member;
said pivot axis of said hinged means is disposed in generally parallel relationship to an edge of the associated roof of the associated building;
said elongated rigid member comprises first and second generally planar axially elongated portions which intersect at an oblique angle; and said trough shaped member further includes a third portion which is generally planar and which carries said hinge means, said elongated rigid member further includes a fourth axially elongated generally planar portion which intersects said second portion thereof at an oblique angle and which in at least one relative position, said fourth portion and said third portion are disposed in generally parallel generally coplanar intimate contact.

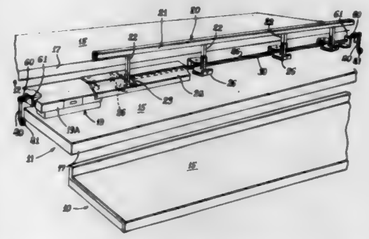
4,446,659

AUTOMATIC SEATING FOR TELESCOPING ROW SYSTEMS

Robert E. Quigley, Seymour, Ill., assignor to American Seating Company, Grand Rapids, Mich.

Filed Dec. 20, 1982, Ser. No. 451,348
Int. Cl.³ E04H *3/12*
U.S. Cl. 52—9 **23 Claims**

1. In a telescoping seating system having a plurality of rows adapted for movement between a use position in which said rows are in stepped relation and a storage position in which said rows are generally vertically aligned with a lower row nested beneath an upper row, each row including a deck and seating means including a frame pivotally mounted to said deck for movement between a raised use position and a lowered storage position, said frame carrying a seat for at least one occupant, the improvement comprising: drive rod means mounted for rotation to said deck; at least one actuation means connected to said drive rod means and adapted to be engaged by the next lower row when said next lower row is being retracted to rotate said drive rod means in a first direction; and latch means actuated by the rotation of said drive rod means in said first direction in response to the retraction motion of said next lower row for unlocking said frame and permitting said



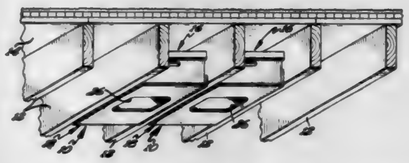
seating means to be stored substantially entirely between the decks of adjacent rows and actuated responsive to rotation of said drive rod means in a second direction for engaging said frame and locking same in a raised position.

4,446,660

STUCTURAL MEMBER STORAGE DEVICE

LeRoy Miller, Minneapolis; Stanley R. Thorud, Brooklyn Center, and Eric M. Rivkin, Minnetonka, all of Minn., assignors to Liberty Carton Co., Minneapolis, Minn.

Filed Jan. 29, 1981, Ser. No. 229,321
Int. Cl.³ A47B *5/00*
U.S. Cl. 52—36 **3 Claims**



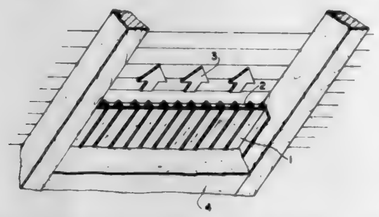
1. A building storage system for location between and attachment to structural members of a building, said system comprising:
a container;
means for attaching said container between adjacent structural members; and
means for snugly and adjustably spacing said attachment means between said structural members, wherein said structural members are joists and said container is sized to fit between said joists and said attachment means comprises a central panel substantially the width of said container, said attachment means further comprising a plurality of spacing panels hingedly attached to said central panel, said spacing panels comprising:
at least one first spacing panel hingedly attached to a first side of said central panel;
at least one second spacing panel hingedly attached to a second side of said central panel, said second side being opposite said first side; and
at least one secondary spacing panel hingedly attached to one of said first and second spacing panels opposite said central panel, said spacing panels being selectively foldable to vary the effective width of said central panel.

4,446,661

SPACER MEANS FOR PROVIDING AIR GAPS

Jan U. E. Jonsson, Hantverksvägen 8, 184 00 Åkersberga; Rolf B. J. R. Blomgren, Lövängsvägen 131, 183 00 Täby, and Nils H. Edlund, Nybygget Sandemar, 130 54 Dalarö, all of Sweden

PCT No. PCT/SE80/00042, 371 Date Oct. 7, 1980, 102(e) Date Oct. 7, 1980, PCT Pub. No. WO80/01702, PCT Pub. Date Aug. 21, 1980
PCT Filed Feb. 12, 1980, Ser. No. 198,143
Claims priority, application Sweden, Feb. 19, 1979, 7901454
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—95 **3 Claims**



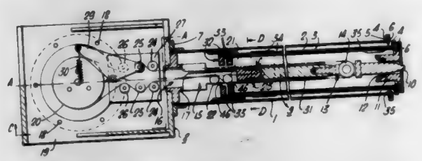
1. A spacer means for providing air gaps between a roof or ceiling and its insulation and having sufficient rigidity to support said insulation thereon comprising a sheet provided with corrugations which extend substantially the entire thickness of said air gaps, said sheet being formed so as to be resiliently compressible transverse to the longitudinal direction of said corrugations, whereby the spacer means is readily adjustable to fit a preexisting insulation without the necessity of being permanently fixed to structural members of said installation, and wherein the corrugations in their relaxed state are formed with alternate flat base portions and angular portions, united therewith, such that when the angular portions are compressed together, the sheet can be placed in its position of use between two roofing beams, while the flat base portions form a flat interconnecting surface to which an insulating layer can be applied, said compression of the corrugations transforming the sheet from a discontinuous surface of peaks and valleys to a substantially continuous surface.

4,446,662

TELESCOPIC VARIABLE LENGTH DEVICE

Martin E. Humphries, Bristol, England, assignor to British Aerospace Public Limited Company, London, England

Filed Apr. 8, 1981, Ser. No. 252,191
Claims priority, application United Kingdom, Apr. 11, 1980, 8011952
Int. Cl.³ E04H *12/34*
U.S. Cl. 52—121 **8 Claims**



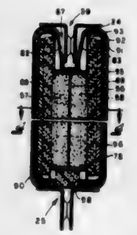
1. A telescopic boom comprising:
a support member,
a first elongate tubular boom section connected to said support member, and
a plurality of further elongate tubular boom sections,
said boom sections being at least partially nested one inside another when the boom is in a non-extended position and said further boom sections being movable relative to one another and to said first boom section in the longitudinal direction of the sections for the boom to move between said non-extended position and an extended position thereof, the boom further comprising a drive mechanism for moving the boom sections as aforesaid which drive mechanism includes:
an elongate flexible element,
support means fixed with respect to said support member and operable for supporting said flexible element so that it extends in said longitudinal direction near said first boom section and so that said flexible element is movable in the direction of its length, and
motor means coupled to the flexible element and operable for moving the flexible element in the direction of its length as aforesaid,
said further boom sections comprising respective engagement portions operable in sequence for engaging a cooperating engagement portion of said flexible member and for being moved by the flexible member to extend the associated further boom sections in corresponding sequence.

4,446,663

ACOUSTICAL PAD

William S. Stumpf, and Gary R. Ludwig, both of Kitchner, Canada, assignors to Hauserman Ltd., Waterloo, Canada

Filed Jan. 14, 1981, Ser. No. 224,892
Int. Cl.³ E04B *1/82*
U.S. Cl. 52—144 **31 Claims**



1. A readily removable and replaceable acoustical pad for an interior space dividing system of the type having horizontal and vertical frames forming generally rectangular pad receiving windows, the upper horizontal frame of each window having back-to-back slightly spaced depending flanges substantially coextensive with the window forming a tongue, said pad having a substantially central upwardly opening V-shaped groove along the top edge thereof only, said groove being at least partially defined by a pair of oppositely inclined surfaces and adapted to mate with the tongue so that the pad may be inserted in the window by first mating the groove with the tongue and then pivoting the pad along its top edge into a snug fit in the window.

4,446,664

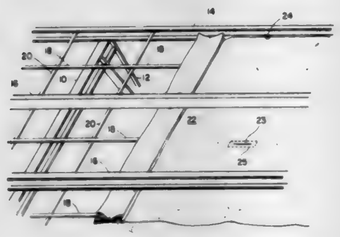
INSULATION SYSTEM

Daniel J. Harkins, 2200 W. Norfolk Ave., Norfolk, Nebr. 68701

Filed Mar. 23, 1981, Ser. No. 246,209
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—404 **10 Claims**

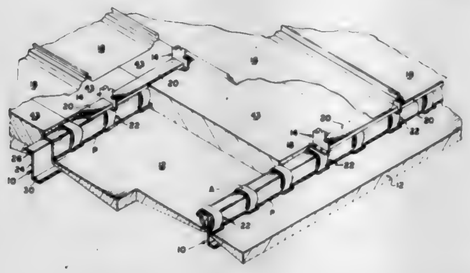
1. A suspension system for insulation of a building roof of the type comprised of two transverse end wall rafters supported by end wall corner columns, transverse rafters supported by rafter columns, longitudinal eave struts operably attached to the ends of said rafters, longitudinal beams positioned in parallel spaced relationship and operably attached to the upper surface of said rafters and roof sheeting material operably attached to the upper surface of said beams wherein the suspension system comprises:
(a) spaced longitudinal metal bands suspended between the end wall rafters in touching contact with the upper surfaces of the transverse rafters;

(b) spaced transverse metal bands suspended between the eave struts below said longitudinal bands;
(c) transverse band fasteners means for attaching said transverse bands to the beams whereby said transverse bands and said longitudinal bands form a suspension grid-work;
(d) an independent suspension sheet means, comprising a vapor barrier material, operably positioned between said suspension grid-work, and the beams, said suspension sheet means extending longitudinally from one rafter to



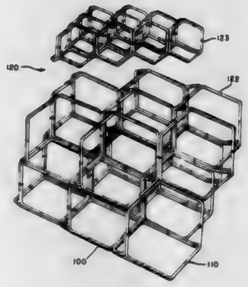
another and transversely from one eave strut below a plurality of longitudinal beams, said suspension sheet means being continuous but for the passage of said band fastener means therethrough, thereby separating said beams and rafters from the space below said suspension sheet means; and
(e) first insulation means positioned between the beams and below the roof sheeting material and operably supported on said suspension sheet means.

4,446,665
INSULATED ROOF STRUCTURE SYSTEM AND METHOD OF ERECTING SAME
Hans G. Berger, Burlington, Canada, assignor to The Wickes Corporation, Santa Monica, Calif.
Filed Dec. 2, 1981, Ser. No. 326,692
Int. Cl.³ E04B *1/78, 2/00*
U.S. Cl. 52—407 **12 Claims**



1. In a standing seam roof construction including a plurality of elongate parallel purlins, each having a vertical web and a horizontal top web projecting from one side of said vertical web at the upper edge thereof, standing seam roof panels supported by the purlins in overlying relationship therewith, a continuous blanket of deformable, squeezable insulating material spanning a plurality of said purlins and overlying and supported by said purlins; resilient generally inversely U-shaped clips for securing said blanket in overlying relation to said purlins, each clip comprising a horizontal top web section integrally joined at one end to a vertical web section and integrally joined at its other end to a downwardly directed web portion connected with a web loop portion having an upwardly directed web section and then a downwardly directed web section to resiliently enclose the upper portion of the purlin, the web sections of each clip being dimensioned relative to the webs of a purlin such that a blanket of said insulating material overlying a purlin is compressed against the top web of the purlin, and turned reversely by said loop portion, while being pressed against the vertical web of said purlin by the respective top and vertical web sections of said clip to clamp said blanket in position with the top and vertical web sections respectively of the clip opposed to and embracing the top and vertical webs of said purlin; said clips being installed along each of said purlins whereby the blanket in its extent between adjacent purlins is deformed below the tops of the purlins to form pockets between the purlins suitable for the reception of additional insulating material.

4,446,666
TETRAHEDRAL TRUSS
John J. Gilman, Convent Station, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 54,497, Jul. 3, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,047
Int. Cl.³ E04H *12/00*
U.S. Cl. 52—648 **7 Claims**

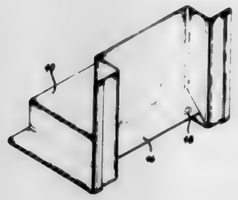


1. A structural element for constructing a tetrahedral truss in the pattern of cubic-diamond, comprising:
a closed skeletal-tetrahedric unit, said unit being comprised of four hexagonic triplanar-rings joined along the length dimensions of adjacently located and cooperatively mating sides thereof to form said unit each of said rings having six equilateral sides the intersections of which form included angles of about 109°, 28 minutes.
said ring having the configuration of a closed, triplanar pattern, and
the sides of said ring being adapted to cooperatively mate along the length dimensions thereof with adjacently located and similarly configured hexagonic triplanar-rings to form said unit.

4,446,667
DAMPER FRAME CONSTRUCTION
Robert C. Hertel, Grandview, Mo., assignor to Ruskin Manufacturing Company, Grandview, Mo.
Filed Jun. 14, 1982, Ser. No. 387,966
Int. Cl.³ E04C *2/38*
U.S. Cl. 52—658 **5 Claims**

1. A frame for a damper having blade means mounted on the frame for controlling fluid flow through a rectangular damper opening defined by the frames, said frame comprising:
an elongated, initially flat sheet member bent into longitudinally extending, generally inverted U shaped channel having a bight portion and a pair of integral, spaced apart leg portions projecting from the bight portion;
each leg portion having an integral flange projecting outwardly from its corresponding leg portion at an angle thereto;
a slot in the member for each frame corner respectively, each slot extending transversely across the member severing the bight and leg portions thereof, said slots being in

dispositions to define the lengths of the longitudinal frame sections;
a pair of spaced apart notches in the bight portion for each frame corner, said notches extending longitudinally of the bight portion and comprising a pair of parallel slits, there being a slit for each edge of the bight portion, each slit extending from the slot in the bight portion and parallel with its bight portion edge adjacent to the latter and communicating with the corresponding slot to define a flap in the bight portion material;



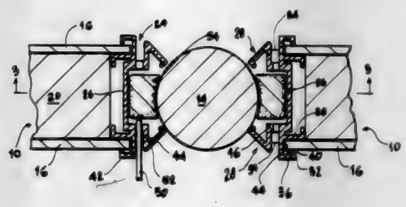
one of said slots extending through said flanges to sever the member at a length suitable for the frame periphery;
the flanges proximal the remaining slots being bent to dispose each adjacent pair of frame sections at substantially right angles to thereby form the frame corners;
the opposed ends of the member being juxtaposed at the corner; and
means securing said flaps to the bight portion across the proximal slot to hold the sections in said right angle positions.

4,446,668
STRUCTURAL MEMBER SUITABLE FOR USE AS A JOIST, BEAM, GIRDER OR THE LIKE
Victor F. Christ-Janer, 4 Forest St., New Canaan, Conn. 06840
Continuation-in-part of Ser. No. 966,086, Dec. 4, 1978. This application May 15, 1981, Ser. No. 264,006
Int. Cl.³ E04C *3/30*
U.S. Cl. 52—729 **6 Claims**



1. An elongated joist, beam, girder or similar structural member, comprising:
first and second elongated plywood webs each having a generally arcuate cross-sectional shape and, thus, one generally convex surface and an opposing generally concave surface, said webs being disposed in generally mutually parallel relation with said convex surfaces in mutually confronting relation, one of said convex surfaces diverging from the other thereof in both an upper generally V-shaped region and a lower generally V-shaped region, said webs thereby defining two parallel spaced top edges and two parallel spaced bottom edges; and
upper and lower generally V-shaped structural wedges interposed between and conforming to said confronting convex surfaces of said first and second webs throughout their length in respectively said upper region and said lower region; and
adhesive means intimately and continuously joining each of said upper and lower wedges in the respective upper and lower regions with the V-shaped surfaces of said wedges intimately and continuously joined to the respective confronting convex surfaces of said first and second webs;
said upper wedge having a base substantially coextensive with and spanning the distance between said spaced top edges of said webs and together therewith defining an exposed upper load supporting surface, said lower edge also having a base substantially coextensive with and spanning the distance between said spaced bottom edges of said webs and together therewith defining an exposed base surface, said upper wedge consisting of a wood material selected from the group of wood materials capable of bearing substantial compression loads of at least about 950 pounds per square inch without structural failure in order to, together with the portions of said webs to which it is intimately joined by said adhesive means, accept and support load on said upper load supporting surface of said member in compression and said lower wedge consisting of a wood material selected from the group of wood materials capable of bearing substantial tension loads of at least about 950 pounds per square inch without structural failure in order to, together with the portions of said webs to which it is intimately joined by said adhesive means, accept and support load on said member in tension.

4,446,669
END CHANNEL MEMBER FOR SPACE DIVIDING SYSTEM PANEL
Burton L. Siegal, Skokie, Ill., assignor to Acme Steel Door Corp., Brooklyn, N.Y.
Filed Sep. 30, 1980, Ser. No. 192,541
Int. Cl.³ A47B *57/16*
U.S. Cl. 52—738 **3 Claims**



1. An end channel for an area dividing panel adapted to receive a bracket hook of a given thickness, said channel comprising:
an elongated member;
a central web section of said member;
a pair of recesses integrally formed at a transverse end of said web section;
one of said rececces being defined by a pair of spaced apart surfaces extending perpendicular to said web section and a base extending parallel to said web section;
the other of said recesses being defined by a pair of surfaces spaced apart at a distance substantially equal to the thickness of a bracket hook and extending in parallel to said web; one of said surfaces comprising the base of said one recess and the other of said surfaces including a wing portion extending therefrom at an angle of 45° from the web in the direction opposite to that of said web and other

recess; and a base for said other recess extending perpendicular to said web; and

a plurality of bracket hook slots disposed in said other recess base.

4,446,670

SYSTEM TO UNIFORMLY FILL CASES WITH FRUIT AND VEGETABLES

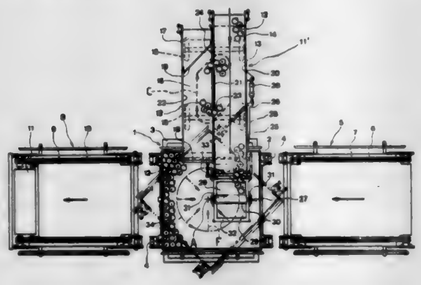
Felice Compagnoni, 1165 Via Emilia, 41018 San Cesario Sul Panaro, Modena, Italy

Filed Feb. 18, 1981, Ser. No. 235,714

Claims priority, application Italy, Mar. 3, 1980, 40015 A/80

Int. Cl.³ B65B *39/12, 25/04*

U.S. Cl. 53—244 **14 Claims**



1. A product filling system for uniformly filling cases with fruit, vegetables or the like, comprising:

(a) a case entrance conveyor;

(b) a rotating platform positioned on a base frame to receive an empty case discharged from the entrance conveyor, said platform being rotatable about a vertical axis to distribute product within the case;

(c) a case exit conveyor arranged to receive and convey filled cases away from the platform; and

(d) means for feeding product into a case positioned on the rotating platform, said means including an upper conveyor means and a generally vertical conveyor means arranged to receive product from said upper means and convey same into the case, said vertical conveyor means including a generally vertical conveyor belt passing around drum means and plural flexible blades attached in cantilevered, spaced locations to the vertical belt, said blades being upwardly inclined to receive and support product discharged from the upper means against the vertical belt and thereby lower said product into the case in controlled movement, said upper conveyor means including a first belt feeding product towards the vertical belt and a second belt moving in the direction opposite the first belt, said first and second belts being substantially coplanar with and laterally adjacent each other, and means located to recirculate product between the first and second belts to thereby direct product away from the vertical conveyor between filling operations of in line cases.

4,446,671

DEVICE AND METHOD FOR PACKING VARIOUS PRODUCTS IN BOXES

Heinz Stalder, Vufflens-La-Ville, Switzerland, assignor to Sapal, Societe Anonyme des Plieuses Automatiques, Switzerland

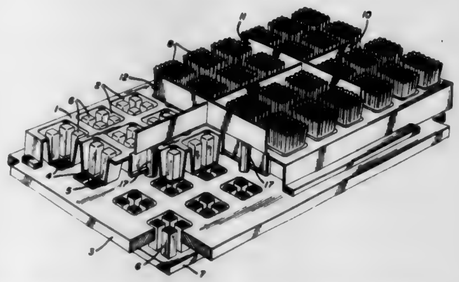
Filed Oct. 19, 1981, Ser. No. 312,805

Claims priority, application Switzerland, Oct. 21, 1980, 7840/80

Int. Cl.³ B65B *5/08, 35/38*

U.S. Cl. 53—445 **7 Claims**

1. Apparatus for packaging a plurality of products comprising a mold including a plurality of cavities, said cavities including an upper surface and a base portion for receiving said products, a plurality of product pushing means movable between a first position at said base portion of said plurality of cavities and a second position proximate to said upper surface of said plurality of cavities for elevating said products contained in said plurality of cavities to said second position, said mold including at least one slot formed between a plurality of said cavities and including an upper surface and a base portion for receiving a partition, and at least one partition pushing means movable between a first position at said base portion of



said slot and a second position proximate to said upper surface of said slot for elevating a partition contained in said at least one slot to said second position of said slot, wherein said plurality of product pushing means elevate said products and said at least one partition pushing means elevate said partition substantially simultaneously, whereby said products and said partition are substantially simultaneously placed in a position where they may be drawn together and transported together into a container.

4,446,672

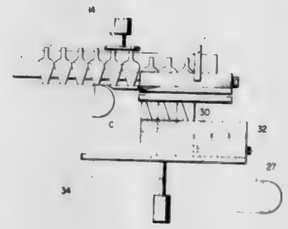
METHOD FOR DROP PACKING SMALL UNSTABLE ARTICLES

John L. Raudat, North Madison, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Filed Aug. 31, 1981, Ser. No. 298,062

Int. Cl.³ B65B *35/32, 35/44*

U.S. Cl. 53—448 **3 Claims**



1. A method for drop packing unstable articles into upwardly open packing cases and comprising the steps of:

(a) feeding the articles on a conveyor in end-to-end relationship and in side-by-side columns to fill a drop packer grid of the type having side-by-side lanes for receiving the columns of articles at the downstream end of the conveyor whereby a charge of articles is provided in the grid, adjacent the downstream end of the conveyor,

(b) stopping the flow of articles on the conveyor after a predetermined number of articles have entered the grid whereby the charge of articles in the grid are segregated from those being fed toward the grid on the conveyor,

(c) mating a portion of the case with a funnel and dropping the charge of articles through the funnel so that only that portion of the case is filled by the charge, and continuing to hold back the flow of articles on the conveyor,

(d) moving the case so that another portion is positioned below the grid to receive another charge, and mating that portion with the funnel,

(e) allowing the articles to again flow into the grid to form a second charge,

(f) dropping the second charge through the funnel and into the case to fill said another portion thereof.

4,446,673

BOTTLE-FILLING METHOD AND DEVICE

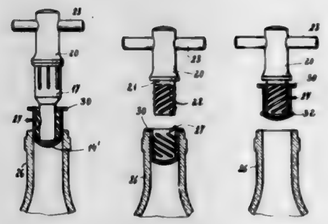
Johannes Desthieux, 1083, rue de Thizy, Gleize (Rhone), France

Filed May 14, 1982, Ser. No. 378,414

Claims priority, application France, May 15, 1981, 81 10095

Int. Cl.³ B65B *3/06, 7/28;* **B67B** *1/04, 7/02*

U.S. Cl. 53—467 **12 Claims**



12. A method of sealing and unsealing a bottle after filling same with a liquid decanted from a container through a tap attached to a spout of said container, said tap having a valve housing provided with a removable valve body which includes a tubular spigot and a handle separable from each other, comprising the steps of:

providing a resiliently deformable cap with a closed lower end insertable as a stopper into the neck of a freshly filled bottle and with an open upper end slightly wider than said spigot, said handle having a stem receivable with a positive fit in said open end upon separation from said valve body;

introducing the spigot into said open end and, with the handle still attached to the valve body, using the combined handle and valve body as a tool for forcing the closed end of the cap down the neck of the bottle;

separating the handle from the valve body; and

subsequently introducing the stem of the handle into the open end of said cap for extracting same from the neck of the bottle with the aid of mating formations on said stem and in said cap.

4,446,674

CONTAMINATION-FREE APPARATUS FOR FILLING SPOUTED BAGS WITH A FLUID

Junji Inada, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Feb. 2, 1981, Ser. No. 230,705

Claims priority, application Japan, Feb. 5, 1980, 55-12593

Int. Cl.³ B65B *1/34*

U.S. Cl. 53—502 **17 Claims**

1. An apparatus for filling bags with a fluid product to a prescribed weight in a contamination-free manner, each bag having a spout with a removable cap, the apparatus comprising:

(a) means defining a germfree chamber;

(b) means for sterilizing the germfree chamber;

(c) a weighing platform under the germfree chamber for weighing the fluid product charged into a bag placed thereon;

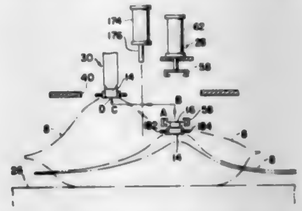
(d) a filling valve assembly fixedly mounted in the germfree chamber and having a filling head for charging the fluid product into the bag on the weighing platform, said filling valve assembly having first means for supplying therethrough at a first flowrate the fluid product of a weight less than a prescribed weight to be charged into the bag, and second means for supplying therethrough the fluid product at a second flowrate smaller than said first flowrate, said second means operating upon completion of the operation of said first means;

(e) means for sterilizing the interior of the filling head;

(f) a cap remover assembly mounted in a fixed position in the germfree chamber in side-by-side relation with the filling valve assembly;

(g) a spout carrier movably supported on the weighing platform for engagement with the spout of the bag;

(h) means mounted on said weighing platform for horizontally moving the spout carrier between a first position, where the cap is removed from and replaced on the spout of the bag by the cap remover assembly, and a second position where the spout is located substantially within the



germfree chamber and from where the spout of the bag is upwardly movable into engagement with the filling head of the filling valve assembly for receiving the fluid product therefrom;

(i) means mounted on said weighing platform for moving the spout carrier vertically between the first position and a position therebelow and between the second position and a position thereabove in which the spout of the bag is engaged with the filling head, said means for moving the spout carrier vertically having means to cause the spout carrier to move downwardly to the second position causing the engaged spout and filling head to become disengaged upon completion of the operation of the first means of the filling valve assembly, whereupon the bag freely rests on said weighing platform allowing accurate weighing of the fluid product being charged into the bag; and

(j) means for introducing sterilized air under pressure into the germfree chamber during the filling operation to maintain the chamber at a pressure higher than the atmospheric pressure.

4,446,675

ARTICLE-INSERTING STATION FOR PACKING MACHINE

Claus J. Mewes, Adlikon b.Regensdorf, Switzerland, assignor to Prometag AG, Regensdorf, Switzerland

Filed Jun. 15, 1981, Ser. No. 273,443

Claims priority, application Switzerland, Jun. 19, 1980, 4716/80

Int. Cl.³ B65B *35/44, 35/50*

U.S. Cl. 53—535 **3 Claims**

1. In a packaging machine in which a layer of articles is transferred to a container, the improvement which comprises in combination:

conveyor means defining a transport path for the movement of succession of articles in a given direction along said path;

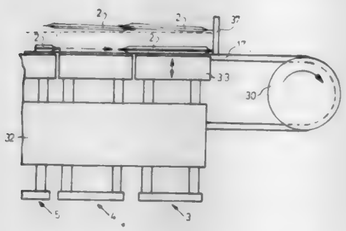
means along said path forming a stop for a first such article adapted to form a given layer;

a plurality of lifting elements spaced along said path from said stop in a direction opposite said given direction and

normally disposed below said path, each of said lifting elements having a dimension in said given direction which is less than a dimension in said given direction of said articles;

respective actuators connected with said lifting elements for raising same above said path upon energization of said actuators; and

control means for sequentially energizing said actuators to lift a first actuator proximal to said stop upon the engagement thereby of an article carried along said path in said given direction whereby a surface of the lifting element of said first actuator forms an abutment for a following article, energizing the actuator of the element of said following article to raise the same and form an abutment from the raised element for the next article, and repeating the energization of said actuators in succession until said layer is formed above said path at a level assumed by said elements upon the energization of the actuators of the articles forming said layer.



4,446,676

BAG HANDLING APPARATUS FOR A BAG MAKING MACHINE

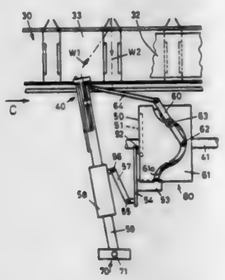
Bruno Gründler, Neuhausen am Rheinfall, Switzerland, assignor to SIG-Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Nov. 10, 1981, Ser. No. 320,061

Claims priority, application Switzerland, Nov. 11, 1980, 8373/80

Int. Cl.³ B31B *33/02*

U.S. Cl. 53—552 **10 Claims**



1. In a bag making machine including a generally vertically oriented forming element on which bags are formed in succession; a conveyor extending underneath said forming element and having a generally horizontal direction of advance, first drive means for intermittently advancing said conveyor, bag grasping tongs supported underneath said forming element below said conveyor, second drive means for moving said tongs upwardly through said conveyor to said forming element and for moving said tongs downwardly from said forming element through said conveyor, whereby said tongs draw a bag off said forming element and deposit the bag on said conveyor, the improvement comprising a third drive means for moving said tongs in a direction having a component parallel to said direction of advance of said conveyor and means for synchronizing said second and third drives with one another and with said first drive means for moving said tongs simultaneously upwardly and in said direction of advance during motion of said conveyor.

4,446,677

PACKING APPARATUS FOR A SQUEEZED PACKAGE

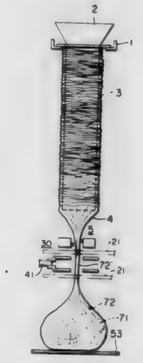
Toshiyuki Kokido, 1087-1, Oaza Mikekado, City of Buzen, Fukuoka Prefecture, Japan

Filed Oct. 19, 1981, Ser. No. 312,840

Claims priority, application Japan, Jan. 28, 1981, 56-12172

Int. Cl.³ B65B *93/42, 51/06*

U.S. Cl. 53—577 **2 Claims**



1. A packing apparatus, in particular for provisions in a squeezed style package, comprising: an appartus frame; a hopper means arranged at the top of said apparatus frame to supply said provisions by gravity into a synthetic resin film tube with a sealed bottom; a heat-seal and cutting means for said tube arranged beneath said hopper means and comprising a stationary member secured to said frame with a heat-sealer and a reciprocating member arranged horizontally opposite thereto with a cutting device; a squeezing means arranged beneath said heat-seal and cutting means comprising two pairs of horizontal parallel bar means disposed at right angles to each other; means for moving said bar means towards and away from each other in a synchronized fashion, whereby said tube is allowed to be lowered through a space formed by said stationary and reciprocating members of said heat-seal and cutting means as well as a pair of said parallel bar means of said squeezing device when they are all moved apart; a taping means mounted near said squeezing means including means to wind an adhesive tape around the squeezed portion of said synthetic resin film; a driving means to activate said heat-seal and cutting means, and said taping means; said driving means comprising a main driving shaft, a plurality of cam means secured thereto, a number of link means each operatively connected to said heat-seal and cutting means, and one of said pairs of parallel bar means, each activated by one of said cam means; said taping means being connected to and activated by said one of said pairs of parallel bar means; a drive transmitting means connected between said one pair of parallel bar means and the other pair of said parallel bar means whereby the other of said pairs of parallel bar means is activated, via said transmitting means, by said one of said pairs of parallel bar means; said transmitting means comprising a pair of pulley means secured to said apparatus frame and wire means reeved on each of said pully means, each of said wire means having two ends, one of the ends of both wire means connected to one parallel bar means of said one of said pairs of parallel bar means, the other ends of each of both wires being independently connected to an associated one of the parallel bar means of said other of said pairs of parallel bar means, said wire means being shiftably mounted to said apparatus frame at right angles to said one of said pairs of parallel bar means.

4,446,678

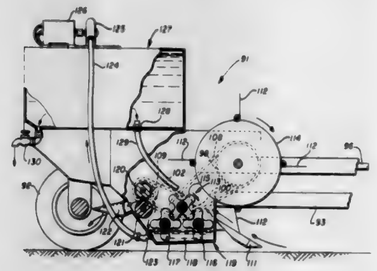
MATERIAL PROCESSING MACHINERY

Teddy V. Smith, 1421 Earlshire, Plano, Tex. 75075

Continuation of Ser. No. 190,481, Sep. 24, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,516

Int. Cl.³ A01D *82/00, 43/10*

U.S. Cl. 56—1 **5 Claims**



1. A method of processing plant material comprising: harvesting at least the top one-third of growing plants; inputting the harvested plant material to a first processor comprising a plurality of roller members each with a plurality of lobes and grooves intermeshing with the lobes and grooves of at least one other roller member; said rollers being so positioned as to fracture the stalks and stems of said plant material along the greater part of their length while leaving the leaf cells of said plant material substantially unfractured; substantially dehydrating said plant material; thereafter inputting said so processed plant material to a second processor of the same general type as said first processor but with said rollers being so positioned as to produce maximum cell fracturing action; and subsequently more fully dehydrating the processed plant material output from said second processor.

4,446,679

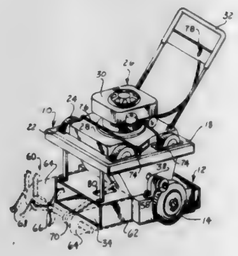
LAWNMOWER POWERED IMPLEMENT

Perry W. Thomas, 12708 12th St., Grandview, Mo. 64030

Filed Aug. 2, 1982, Ser. No. 404,560

Int. Cl.³ A01D *53/08*

U.S. Cl. 56—2 **4 Claims**



1. An implement to be powered by a lawnmower having a support, wheels for maintaining the support in vertically spaced relationship above a supporting surface, a handle projecting upwardly from the support, and a power source having an output shaft extending vertically downwardly through the support, said implement including:

a rigid frame having a plurality of wheels secured to the frame for transport of the latter;

a projection integral with the frame and projecting forwardly therefrom;

a platform mounted on the frame and extending generally horizontally in vertically spaced apart relationship above the frame;

said platform having a plurality of recesses therein, there being a recess for each lawnmower wheel respectively said recesses beng adapted to receive the lawnmower wheels to dispose the lawnmower in a substantially fixed, predetermined position on the platform with the lawnmower handle projecting upwardly and outwardly from the implement;

power take-off means carried by the frame and including a laterally extending rotatable shaft mounted generally horizontally on the frame beneath the platform, a rotatable shaft mounted generally vertically on the frame and projecting upwardly through the platform, and gear means interconnecting said vertical and horizontal shafts for rotation together about their respective axes;

sheave means secured to said horizontal shaft;

socket structure configured to telescope over said frame projection and extending in cantilevered relationship forwardly of the inmplement;

means releasably securing said socket structure on the projection;

a work member mounted on said socket structure for rotation on a horizontal axis, said member including a plurality of work performing elements extending radially outwardly from said axis;

belt means interconnecting said rotatable work means with said sheave means;

coupling means secured to said vertical shaft and adapted to be releasably coupled with the power output shaft of the lawnmower for transmitting the power from said source through the power take-off means to said work member; and

hold down means on the platform for releasably securing a lawnmower in said fixed position.

4,446,680

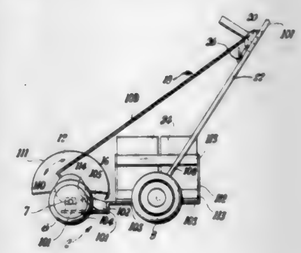
BATTERY POWERED LAWN EDGER

Thomas C. D'Alessandro, 7410 W. Lake Dr., West Palm Beach, Fla. 33404

Filed Apr. 26, 1982, Ser. No. 371,558

Int. Cl.³ A01D *69/02, 53/14*

U.S. Cl. 56—11.9 **1 Claim**



1. A lawn edger comprising:

a frame, said frame comprising a unitary plate, said unitary plate having a first flat plate portion and a third flat plate portion disposed in different horizontal planes, said first flat plate portion being nearer to the ground than said third flat plate portion, and a second flat plate portion disposed in a vertical plane, said second flat plate portion connecting said first and said third flat plate portions into said unitary plate,

a motor including an output drive shaft horizontally mounted on said frame, said motor being d.c. wound,

ground engaging means for transporting said frame, said ground engaging means being mounted on said frame, said ground engaging means comprising at least three wheels, the axis of rotation of a first of said wheels and said drive shaft being substantially parallel and in substantially the same vertical plane, the other two of said wheels being rearward of said first of said wheels and mounted for rotation on a horizontally disposed axle, said axle being ridigly mounted on said third flat plate portion of said frame,

means pivotally mounted on said motor to said frame for movement about a horizontal axis, said means pivotally mounted comprising first and second elongated mounting members, each said first and second elongated mounting member having first and second planar members, each said first planar member being rigidly attached to said motor, each said second planar member being rigidly attached to said second flat plate portion of said frame, each said first and second planar member of each said first and second elongated member being pivotally connected to one another, whereby to pivotally mount said motor to said frame,

a rigid lawn-edging blade mounted at one end of said shaft for rotation about a horizontal axis for effecting vertical cutting engagement with an overgrown lawn,

a handle connected to said frame mounted for engagement by an operator, said handle being one or more poles attached to said frame having a free-standing end for gripping by an operator of said lawn edger, and an end attached to said frame,

means mounted on said handle for effecting pivotal movement of said motor for raising and lowering said blade with respect to the ground, said means for effecting pivotal movement comprises a hand crank and a rigid link having an elongated portion extending from said free-standing end of said handle substantially to said motor, said rigid link having a right angle bend portion extending from said elongated portion of said rigid link to said motor, and being rigidly attached to said motor for rotational cranking said motor in a vertical plane responsive to the movement of said crank,

a source of electrical energy mounted on and supported by said frame, said source of electrical energy being one or more d.c. storage batteries mounted on said third flat plate portion of said frame, said one or more batteries electrically connected to said motor to run said motor and rotate said blade,

switch means electrically connecting said source of electrical energy to said motor in electrical series for turning said motor off and on,

a substantially semi-circular blade guard vertically mounted adjacent said blade, said guard having a horizontally extending rim extending about the circular periphery of said semi-circular blade guard, and

a receptacle for said batteries rigidly mounted to said third flat plate portion of said frame, said receptacle comprising at least two horizontally disposed ferrules surrounding said batteries.

4,446,681

POWER LAWN RAKE

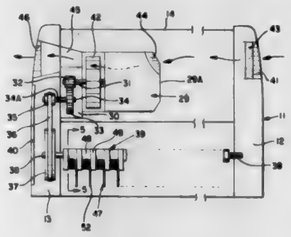
Ernest R. Dynie, and Colin Overy, both of Brockville, Canada, assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 16, 1982, Ser. No. 408,483

Int. Cl.³ A01P *7/02*; F01P *1/00*

U.S. Cl. 56—16.7 **3 Claims**

1. In a power lawn rake, the combination of a pair of spaced-apart parallel side housings, a rotor journaled respectively in the housings and having a plurality of ground-engaging tines, a deflector box mounted between the side housings and having a curved forward wall disposed rearwardly of the rotor, a motor within the deflector box and being cantilever mounted on one of the housings transverse to said one of the housings, means for driving the rotor from the motor, said means including gearing means within a gear case disposed between the motor and the one side housing, the other side housing having air inlet openings formed therein, a filter carried by the other side housing adjacent to the air inlet openings therein, a fan driven by the motor, the motor having a housing with ventilation slots formed therein opposite said air inlet openings, the one side housing having air exhaust openings formed therein opposite



said air inlet openings, and a baffle carried by the one side housing adjacent to the air exhaust openings, the air inlet openings, filter, motor housing ventilation slots, fan, baffle and air exhaust openings defining a substantially horizontal air flow path relative to the ground whereby cooling air for the motor enters the air inlet openings, passes through the ventilation slots in the motor housing and around the baffle, and exits through the air exhaust openings in the one side housing.

4,446,682

AGRICULTURAL ATTACHMENT FOR HARVESTING AGRICULTURAL PRODUCTS ARRANGED IN ROWS

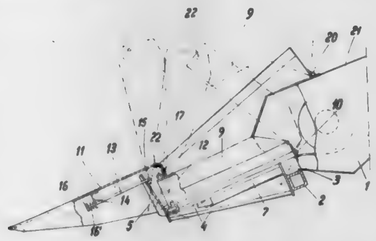
Wolfgang Jennen, and Gerd Sprügel, both of Harsewinkel, Fed. Rep. of Germany, assignors to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,095

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048327

Int. Cl.³ A01D *45/02*

U.S. Cl. 56—119 **7 Claims**



4. An agricultural attachment for harvesting agricultural products arranged in rows, such as corn and the like, comprising a frame; a plurality of product drawing elements; and a plurality of hingedly mounted dividing elements associated with said product drawing elements so as to form together with the latter a plurality of product drawing passages, each of said dividing elements having two parts which are articulately connected with one another so that they pivot relative to one another to assume a position in which they have a tipped roof shape and are fixable in said position, said parts of each of said dividing elements including a front part and a rear part as coinsidered in a travelling direction, said two parts of each of said dividing elements having proximal ends which in said position together form a tip of said tipped roof shape and distal ends which in said position form lower ends of said tipped roof shaft; and means for fixing the distal end of at least one of said parts so as to retain said at least one part in said position.

4,446,683

KNIFE DRIVE

William Rempel, and Bouko J. Kor, both of Winnipeg, Canada, assignors to Canadian CoOperative Implements Limited, Winnipeg, Canada

Filed Sep. 29, 1982, Ser. No. 426,965

Int. Cl.³ A01D *55/02*

U.S. Cl. 56—296 **28 Claims**



1. In a three section table-type swather header assembly including a center section and a wing section hingedly secured for limited movement one to each end of the center section; knife means for said sections, said knife means comprising in combination a pair of knife assemblies, each of said knife assemblies including a rigid guard bar secured to the front of each wing section, guards and hold-downs secured to said guard bar along the length thereof, a flexible guard bar section secured by one end thereof to the inner end of said rigid guard bar, means to mount the other end of said flexible guard bar section substantially centrally along the front of said center section, guards and hold-downs secured to said flexible guard bar sections, a flexible knife for each knife assembly each mounted for reciprocation through each said knife assembly and extending along said rigid guard bar and said flexible guard bar to adjacent said other end thereof and drive means operatively connected to each of said knives to reciprocate same between said guards and hold-downs on said wing section and said center section, each of said knives spanning the hinged securement of the respective wing section with the center section.

4,446,684

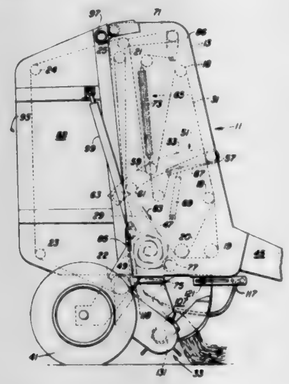
CYLINDRICAL BALER WITH FLARE SHEETS ON CROP PICKUP

Roger W. Frimml, and Gerald F. Meiers, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 28, 1982, Ser. No. 382,887

Int. Cl.³ A01D *89/00*

U.S. Cl. 56—341 **7 Claims**



1. In a baler comprising:

a frame including a pair of spaced sidewalls;

a means for defining a bale-forming chamber for forming cylindrical bales, said chamber having a downwardly facing opening;

a pickup pivotably mounted to said frame for movement through a range of vertical positions, transversely extending between said sidewalls and extending below said opening; and

first and second flare sheets mounted on respective ends of said pickup;

the improvement comprising means (1) mounting said pickup to said frame adjacent to the rear of said opening, (2) mounting each flare sheet to said frame adjacent to the front of said opening, and (3) pivotably mounting said flare sheets and pickup together between said front and rear of said opening for conjoint movement through said range of positions.

4,446,685

RAKE WHEEL ATTACHMENT

Jean-Pierre Coeffic, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 28, 1982, Ser. No. 382,883

Int. Cl.³ A01D *43/02*

U.S. Cl. 56—377 **14 Claims**



1. In a raking apparatus for a harvesting machine, said apparatus comprising:

a wheel for engaging and moving crop material along the ground;

an arm connected between said machine and said wheel, said arm having a longitudinal axis; and

means mounting said wheel on said arm for rotation, the improvement comprising:

said mounting means mounting said wheel for pivoting about said longitudinal axis responsive to impact of the wheel with a foreign object.

4,446,686

METHODS OF AND APPARATUS FOR CONTROLLING CORE-TO-SHEATH LENGTH RATIO IN LIGHTGUIDE FIBER CABLE AND CABLE PRODUCED BY THE METHODS

Andrew J. Panuska, Lilburn; Manuel R. Santana, Doraville, and Robert B. Sprow, Dunwoody, all of Ga., assignors to AT&T Technologies, Inc., New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 2, 1982, Ser. No. 414,229

Int. Cl.³ G02B *5/16, 5/14*; H01B *13/14*

U.S. Cl. 57—6 **23 Claims**

1. A method of controlling the length of a lightguide fiber core relative to the length of an enclosing composite sheath of a cable in which relative movement between the core and sheath can occur and in which the sheath includes reinforcing members having a relatively high modulus of elasticity and a plastic jacket, said method comprising the steps of:

advancing the cable along a path of travel;

elongating the sheath relative to the core along a portion of the path by applying tensile forces to the sheath; and

coupling the core to the elongated sheath to prevent relative movement therebetween by moving the cable in a prede-

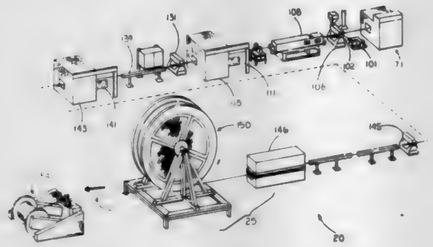
termined number of circular convolutions each of which has a diameter that exceeds the diameter of any subsequent convolution in which the coupled cable is wound, said elongating and coupling steps cooperating to allow sufficient additional length of the core to be advanced relative to the sheath to cause the ratio of the lengths of the core and the sheath to be a predetermined value when the tensile forces are reduced and the composite sheath allowed to return elastically to its original length.

11. An apparatus for controlling the length of a lightguide fiber core of a cable relative to the length of a composite sheath system, said apparatus comprising:

means for supplying a core of lightguide fibers;

means disposed along a path of travel of the fibers for enclosing the core in a sheath system, which includes at least one plastic jacket and strength members having a relatively high modu'·is of elasticity and extending coextensively with the core, such that relative movement may occur between the core and the sheath system;

means including a reel for taking up the cable;



first moving means interposed between said enclosing means and said means for taking up the cable for advancing the cable at a substantially constant velocity along a portion of the path of travel; and

second moving means disposed between said first moving means and the takeup reel and cooperating with said first moving means for elongating the sheath relative to the core along the portion of the path of travel by applying tensile forces to the sheath and for coupling the core to the elongated sheath to prevent relative movement therebetween by causing the cable to be moved in a predetermined number of convolutions each of which has a diameter that exceeds the diameter of any convolution in which the coupled cable is subsequently wound, the elongating and coupling of the sheath being effective to allow sufficient additional length of the core to be advanced relative to the sheath to cause the ratio of the length of the core and that of the sheath to have a predetermined value when the tensile forces are reduced and the composite sheath allowed to return elastically to its original length.

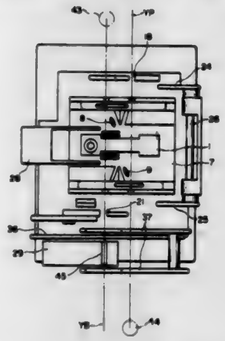
4,446,687

PNEUMATIC YARN SPLICING APPARATUS FOR SPLICING CORE SPUN YARNS

Hiroshi Mima, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 2, 1982, Ser. No. 446,486
Claims priority, application Japan, Dec. 2, 1981, 56-194790
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 **4 Claims**

1. A pneumatic yarn splicing device of the yarn end untwisting type including two nozzle pipes for untwisting and sucking yarn ends, and a yarn splicing hole disposed midway between the nozzle pipes for splicing the untwisted yarn ends with a stream of air, characterized in that said nozzle pipes have opening areas reduced with respect to the diameter of the



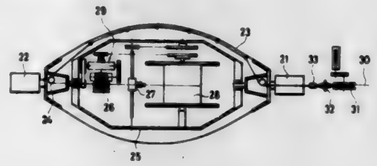
nozzle pipe for increasing the sucking and attractive force by the nozzle pipes.

4,446,688

DOUBLE TWISTING MACHINE

Iwao Ueda, Osaka, Japan, assignor to Hamana Iron Work Co., Ltd., Osaka, Japan

Filed Mar. 29, 1982, Ser. No. 362,943
Claims priority, application Japan, Mar. 31, 1981, 56-45755
Int. Cl.³ D01H *7/86*
U.S. Cl. 57—58.65 **5 Claims**



1. A double twisting machine for winding a wire around a take-up roll, comprising:

a flyer having opposite ends; and

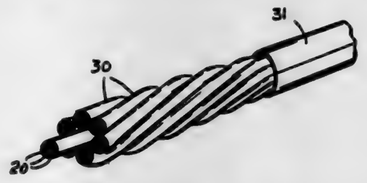
a plurality of motors, said plurality of motors separately and directly driving each of said ends of said flyer so as to wind said wire around said take-up roll.

4,446,689

TELECOMMUNICATION CABLES

Tommy G. Hardin, Lilburn, and Bruce C. Vrieland, Norcross, both of Ga., assignors to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 230,233, Feb. 2, 1981, Pat. No. 4,423,589. This application Jan. 31, 1983, Ser. No. 462,639
Int. Cl.³ H01B *11/02, 13/04;* D07B *3/00*
U.S. Cl. 57—204 **2 Claims**



1. A telecommunications cable having improved insertion loss characteristics made in accordance with the method com-

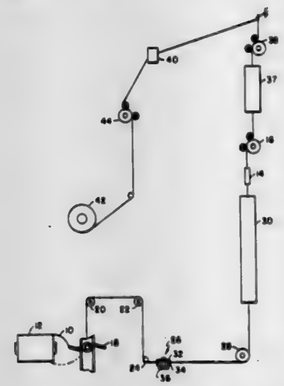
prising the steps of forming a plurality of wire units by advancing groups of twisted wire pairs or quads through twisting stations wherein each group is alternately twisted in clockwise and counterclockwise rotary directions with both the frequency and amplitude of the twisting being modulated; stranding the plurality of units so formed together into a cable core; and forming a conductive sheath around the core.

4,446,690

BAR BALLOON CONTROL

Charles E. Warner, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 18, 1982, Ser. No. 434,898
Int. Cl.³ D01H *7/18;* D02G *3/34;* D02H *13/22;* B65H *59/22*
U.S. Cl. 57—284 **3 Claims**



1. Apparatus to produce a false twisted multifilament yarn comprising: yarn creel means, a false twist device, a heater means located between said yarn creel means and said false twist device, a disc type tension means located between said heater means and said yarn creel means to intermittently and randomly vary the flow of yarn from said creel means to said false twist device, a first means to supply yarn from said yarn creel means to said false twist device, a second means operatively associated with said yarn creel means to prevent the yarn from said yarn creel means being supplied to said false twist device from forming a full balloon path as the yarn is supplied from the yarn creel, said creel means including a creel pin adapted to support a yarn package and a yarn guide member, said second means including a bar member mounted on said creel means between said creel pin and said yarn guide member and a third means to supply false twisted yarn from said false twist device to a take-up means to take-up the false twisted yarn.

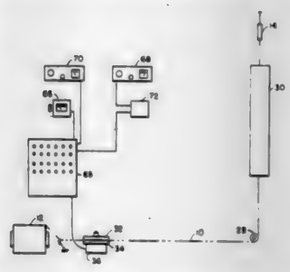
4,446,691

HIGH A.C.-D.C. YARN TENSION CONTROL

Charles E. Warner, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 10, 1982, Ser. No. 440,497
Int. Cl.³ D01H *7/18;* D02G *3/34;* D02H *13/22;* B65H *59/22*
U.S. Cl. 57—284 **11 Claims**

1. An electromagnetically actuated tension device comprising: an electromagnet, a post member operably associated with said electromagnet, a first metallic disc member mounted on said post, a second metallic disc member mounted on said post adjacent said first disc member, a D.C. circuit supplying direct current to said electromagnet and means supplying alternating current for short periods of time to said electromagnet to periodically allow said first and second disc members to move



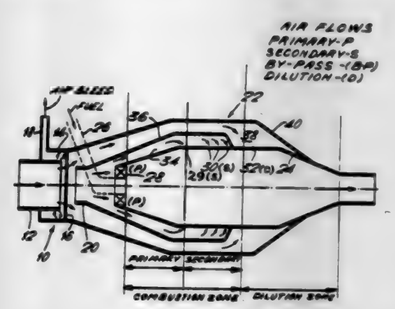
suddenly relative to one another and relative to the electromagnet.

4,446,692

FLUIDIC CONTROL OF AIRFLOW IN COMBUSTION CHAMBERS

Richard C. Adkins, Milton Keynes, England, assignor to Rolls-Royce Limited, London, England

Continuation-in-part of Ser. No. 827,109, Aug. 23, 1977. This application Jul. 31, 1979, Ser. No. 62,418
Claims priority, application United Kingdom, Sep. 9, 1976, 37326/76
Int. Cl.³ F02C *7/057*
U.S. Cl. 60—39.23 **4 Claims**



1. A gas turbine engine combustion apparatus having fluidic means for varying the air flow to the combustion apparatus to control the air:fuel ratio over an operating range of the gas turbine engine, said apparatus comprising;

a variable rate vortex controlled diffuser including a primary duct for receiving a supply of air and having an exit end for discharging the same, a secondary duct surrounding the exit end of said primary duct, a fence in said secondary duct positioned downstream of the exit end of said primary duct for generating a vortex to diffuse a portion of the air discharged from said primary duct, a bleed duct communicating with said secondary duct upstream of said fence and of said exit end of said primary duct for controlling the vortex, and a capture tube positioned within said secondary duct and spaced downstream of said fence for receiving a portion of the air directly from said primary duct;

a combustion chamber defined by a casing and having an outlet at its downstream end, a first air inlet means at its upstream end for receiving as primary air a portion of the air from said capture tube, a second air inlet means positioned downstream from said first air inlet means for receiving secondary air, and a third air inlet means positioned downstream from said second air inlet means for

receiving dilution air, said first air inlet means including an opening at the upstream end of said combustion chamber for receiving directly air discharged from said capture tube;

a second casing attached to said capture tube and extending downstream therefrom around a part of said combustion chamber casing, said second casing defining with said combustion chamber casing a first annular housing for directly receiving a portion of the air discharged from said capture tube, and delivering it as secondary air unmixed with fuel to said combustion chamber through said second air inlet means which comprise downstream openings in said combustion chamber casing providing communication between said combustion chamber and said first annular housing to direct the secondary air transversely of and into said chamber to insure proper mixing and promote further uniform combustion;

a third casing attached to said secondary duct of said variable rate vortex controlled diffuser, said third casing extending from said secondary duct downstream around said second casing and a portion of said combustion chamber casing and attached thereto, said third casing defining with said second casing and said combustion chamber casing a second annular housing for receiving diffused air and delivering it into said combustion chamber, said third air inlet means including openings in said combustion chamber casing providing communication between said combustion chamber and one of said first and second annular housings to direct the dilution air transversely of and into said combustion chamber for penetrating and cooling the hot combustion gases therein and for creating a substantially uniform temperature profile for such gases at said combustion chamber outlet; and

a unified fuel injection apparatus having a circumferential array of fuel injectors in which at each circumferential position, a single fuel injector is located at the upstream end of said first air inlet means.

4,446,693

WALL STRUCTURE FOR A COMBUSTION CHAMBER

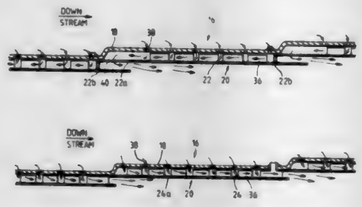
Anthony Pidcock, Shelton Lock, and George Pask, Stanton-by-Bridge, both of England, assignors to Rolls-Royce Limited, London, England

Filed Oct. 20, 1981, Ser. No. 312,985

Claims priority, application United Kingdom, Nov. 8, 1980, 8035956

Int. Cl.³ F02C *7/12, 7/20*

U.S. Cl. 60—39.32 **11 Claims**



1. A wall structure for gas turbine engine combustion equipment, the wall structure comprising: at least an outer wall and an inner wall spaced therefrom, said outer wall being perforate to allow a flow of cooling air to enter the space between the outer and inner walls, the wall structure having outlets to allow cooling air to flow from the space between the outer and inner walls to the interior of the combustion equipment, said inner wall comprising a plurality of circumferentially and axially arranged wall elements, each inner wall element having an upstream end and a downstream end, means for positively attaching the downstream end of each inner wall element to the outer wall, each upstream end of each inner wall element being located between the downstream end of an axially adjacent inner wall element and the outer wall, said means of positive attachment of each inner wall element including a non-movable attachment point positioned circumferentially in the center of the downstream end of said inner wall element and two further attachment points positioned circumferentially on each side of said centrally positioned attachment point for permitting relative movement of said wall element in an axial and a circumferential direction, and a plurality of raised lands extending from each inner wall element toward and terminating short of said outer wall, said lands defining a plurality of internal flow passages for the cooling air.

4,446,694

ELECTRIC REGENERATION SYSTEM FOR GAS TURBINE

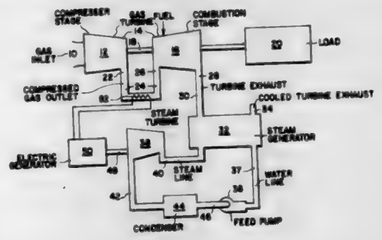
Thomas A. Walton, 15327 Gran Vista Dr., Houston, Tex. 77083

Filed Feb. 19, 1982, Ser. No. 350,220

Claims priority, application Canada, Feb. 20, 1981, 371446

Int. Cl.³ F02C *6/18*

U.S. Cl. 60—39.182 **5 Claims**



1. An electric regenerator for use with a gas turbine having at least one compressor stage, one combustion stage and at least one turbine stage, each being interconnected by duct means which contain and direct compressed gas, said regenerator comprising an electric heating means located within said duct means, said heating means being supplied with electrical power generated from exhaust gas exiting from said gas turbine, wherein the temperature of said heating means is greater than the temperature of said compressed gas flowing in said duct means at the location of said electric heating means.

4,446,695

AIRCRAFT PROPULSION ASSEMBLY

Wilson A. Burtis, 5011 Havard Ave., Westminster, Calif. 92683

Continuation-in-part of Ser. No. 81,579, Oct. 3, 1979, abandoned. This application Nov. 6, 1981, Ser. No. 318,759

Int. Cl.³ F02K *5/00*

U.S. Cl. 60—200.1 **6 Claims**



1. An aircraft propulsion assembly that includes:

a. a tubular nozzle that has a rear end and a forward end portion that extends outwardly and rearwardly;

b. a generally cylindrical housing assembly that has a forward and rearward end, said forward end portion of said nozzle secured to said rearward end of said housing and cooperating therewith to define a plenum chamber; a ring shaped stator supported in said housing and cooperating with said forward end portion of said nozzle to define a circumferentially extending orifice, said stator having a plurality of circumferentially spaced slots therein that are in communication with said plenum chamber; a bearing disposed in a fixed position in said housing; and a power driven shaft rotatably supported in said bearing; and

c. a rotatable air stream generating element disposed in said housing forwardly of said stator and driven by said shaft, said air stream generating element when rotated generating a first portion of a rearwardly moving air stream that discharges directly into said nozzle to flow rearwardly therethrough to impart forward thrust to said propulsion assembly, and a second portion of a rearwardly moving air stream that flows through said slots into said plenum chamber to be compressed and discharge through said circular orifice at a pressure greater than that of said first portion, said second portion of air flowing from said orifice flowing rearwardly in said nozzle adjacent the interior surface thereof at a velocity greater than said first portion and substantially insulating said first portion from frictional drag and intermingling with said first portion as said first and second portions move rearwardly through said nozzle, with said first portion exiting from said rearward end of said nozzle at a higher velocity than if said second portion were not present, and increasing the thrust generated by said first portion without increasing appreciably the power required to rotate said air stream generating element.

4,446,696

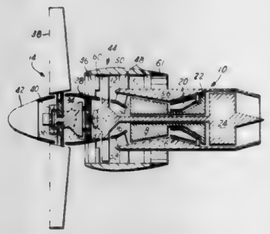
COMPOUND PROPULSOR

Donald F. Sargisson, Cincinnati, and Daniel L. Harshman, Forest Park, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 29, 1981, Ser. No. 278,924

Int. Cl.³ F02K *3/06, 3/072, 3/075*

U.S. Cl. 60—226.3 **20 Claims**



1. A compound propulsor comprising:

a. a core gas turbine engine for producing power;

b. a fan section including a fan encased within a cowl;

c. at least one propeller comprising a plurality of blades and including means for varying the pitch of said blades; and

d. a single rotatable shaft connecting a turbine of said core engine with said fan and a gear train coupling said single rotatable shaft to each said propeller, whereby said single rotatable shaft distributes a portion of said power to said fan and another portion of said power to each said propeller.

4,446,697

HYDRAULIC FAN DRIVE SYSTEM INCLUDING VARIABLE DISPLACEMENT PUMP

Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 907,064, May 18, 1978, Pat. No. 4,179,888. This application Dec. 4, 1979, Ser. No. 100,077

Int. Cl.³ F01P *7/16*

U.S. Cl. 60—443 **8 Claims**

1. A vehicle engine cooling and steering gear drive system comprising:

(a) an engine driven variable displacement pump including a pumping element operable to deliver fluid at a rate generally proportional to engine speed for any given displacement, said pump having fluid inlet and outlet ports and including fluid pressure actuated means to vary the displacement of said pump, said pump comprising the sole source of pressurized fluid for said system and having a fluid delivery rate of at least Z at engine idle and maximum pump displacement;

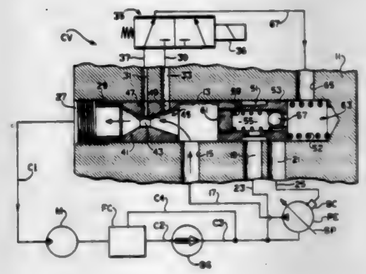
(b) a hydraulic fan motor having fluid inlet and outlet ports, said fluid inlet port being in series fluid communication with said pump outlet port, said fan motor having a fan speed at engine idle corresponding to a fluid flow rate of approximately Y, and a fan peak speed corresponding to a fluid flow rate of approximately X;

(c) bypass valve means connected in parallel with said fan motor, operable to bypass said fan motor and being responsive to the need for cooling, said bypass valve means being capable of bypassing at least a substantial portion of Y at a first relatively lower temperature and capable of substantially preventing bypass flow at a second relatively higher temperature;

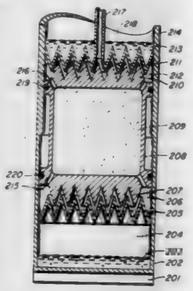
(d) flow control valve means having its inlet in fluid communication with said outlet port of said fan motor and with said bypass flow, said flow control valve means having primary and secondary fluid outlets and being operable to communicate a fluid flow rate of approximately Z from said fluid inlet to said primary outlet over substantially the entire range of operating engine speeds and to communicate substantially all fluid flow in excess of Z from said inlet to said secondary outlet, Z being substantially less than X;

(e) an open-center steering gear mechanism having inlet and outlet ports, said inlet port being in fluid communication with said primary outlet of said flow control valve means, said outlet port of said steering gear mechanism and said secondary outlet of said flow control valve means being in fluid communication with said fluid inlet port of said pump; and

(f) control valve means in fluid communication with said fluid outlet port of said pump and being operable to communicate a control fluid pressure to said pressure actuated means of said pump, said control valve means including valve means responsive to demand for cooling and being operable (1) at said first relatively lower temperature to communicate a control fluid pressure to maintain the fluid delivery rate of said pump at Y and (2) at said second relatively higher temperature to communicate a control fluid pressure to maintain the fluid delivery rate of said pump at X, over substantially the entire range of operating engine speeds.



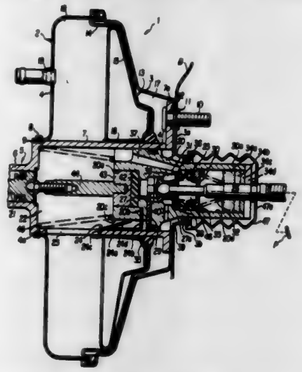
4,446,698
ISOTHERMALIZER SYSTEM
Glendon M. Benson, Danville, Calif., assignor to New Process Industries, Inc., Minneapolis, Minn.
Filed Mar. 18, 1981, Ser. No. 244,941
Int. Cl.³ F02G 1/04
U.S. Cl. 60—520 29 Claims



1. An isothermalizer system comprising:
a chamber having a heat source end and a heat sink end and a heat source having a substantially constant temperature from cycle to cycle at said heat source end;
a pair of thermally conductive walls comprising concentric tapered rings to increase their surface area spanning the chamber and forming a heat source subchamber at the heat source end of the chamber, a heat sink subchamber at the heat sink end of the chamber, and a central subchamber between the respective thermally conductive walls;
a piston located in the central subchamber and reciprocal between the respective thermally conductive walls, said piston having complementary tapered ridges which mesh with the rings of the thermally conductive walls;
a heat source fluid in the heat source subchamber to maintain the thermally conductive wall proximate the heat source end of the chamber at substantially the temperature of the heat source;
a heat sink fluid in the heat sink subchamber having a temperature different from that of the heat source to maintain the thermally conductive wall proximate the heat sink end of the chamber at a substantially constant temperature different from that of the heat source;
a working fluid located between the respective walls and the piston, the working fluid adjacent the wall proximate the heat source end of the chamber having a temperature substantially equal to that of the heat source and the working fluid adjacent the wall proximate the heat sink end of the chamber having a temperature substantially equal to the temperature of the heat sink fluid;
heat regenerative material; and
means for cycling the working fluid to and from the opposite sides of the piston within the chamber through the regenerative material, said working fluid undergoing a thermodynamic cycle which achieves nearly Carnot efficiency.

4,446,699
BRAKE BOOSTER FOR VEHICLES
Takashi Fujii, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan
Filed Feb. 3, 1981, Ser. No. 231,156
Claims priority, application Japan, Feb. 8, 1980, 55-15190
Int. Cl.³ F15B 9/10; B60T 13/00
U.S. Cl. 60—547.1 7 Claims

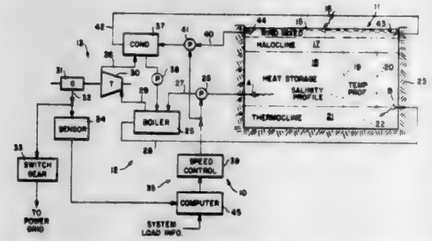
1. A brake booster for vehicles, having a vehicle body with a brake pedal, comprising:
a tubular housing, forming a seat portion at an input side thereof and a short sleeve portion at an output side thereof, said seat portion having an inner wall,
a brake master cylinder coaxially adjacent to an output side of said tubular housing, and having a piston and cylinder body,
a cylinder integrally formed with said cylinder body of said brake master cylinder, said cylinder passing through said short sleeve portion and extending to said inner wall of said seat portion within said tubular housing for attaching said tubular housing to said vehicle body,
a seal member positioned between said cylinder and said short sleeve portion;
a flange member positioned adjacent said inner wall of said seat portion and formed on an end portion of an outer circumference portion of said cylinder wherein said master cylinder body, said cylinder and said flange member constitute a one-piece member,
a first movable member axially dividing a space formed on an outer circumference portion of said cylinder by said



tubular housing and said cylinder and movable to said output side due to a pressure difference generated between both sides,
a seocnd movable member slidably inserted into said cylinder and integrally movable with said first movable member and further comprising an end portion outwardly projected from said tubular housing,
a valve mechanism disposed within said second movable member and actuatable by said brake pedal and regulating said pressure difference,
an output member operatively connected with said first and second movable members and contacting said piston of said brake master cylinder, and
means mounted on said flange for attaching said brake booster and said brake master cylinder to said vehicle body.

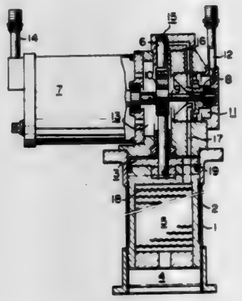
4,446,700
SOLAR POND POWER PLANT AND METHOD OF OPERATING THE SAME AS A PART OF AN ELECTRICAL GENERATING SYSTEM
Lucien Y. Bronicki, Rehovot; Haim Hershman, Givat Shmuel, both of Israel, and Gerard Lehmann, Paris, France, assignors to Solmat Systems, Ltd., Yavne, Israel
Filed Sep. 15, 1981, Ser. No. 302,575
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.8 20 Claims

1. A method for using a solar pond power plant of the type having a solar pond with a heat storage layer for storing heat absorbed from solar radiation incident on the pond, a lower-temperature, Rankine-cycle turbogenerator operating on heat extracted from the heat storage layer, the method being to provide a turbogenerator combination with a generating capacity of Q_f in excess of Q_e, where Q_e is the net electrical energy that can be generated when heat is extracted from the



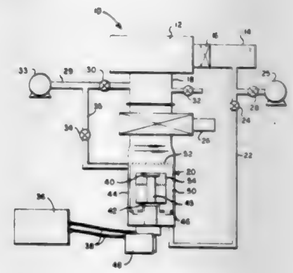
heat storage layer at substantially the same average rate at which heat is absorbed by this layer.

4,446,701
FLUID-OPERATED REFRIGERATING MACHINE
Mitsuru Suzuki, and Yasuo Tomita, both of Hiratsuka, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan
Filed Sep. 13, 1982, Ser. No. 417,351
Claims priority, application Japan, Sep. 14, 1981, 56-145295
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6 2 Claims



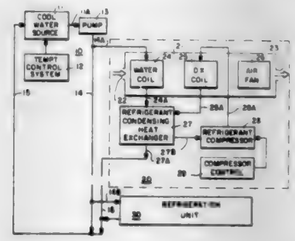
1. A fluid-operated refrigerating machine comprising:
a refrigeration cylinder;
a displacer adapted to reciprocate within said cylinder and defining in said cylinder a first chamber and at least one second chamber, the volumes of which are varied by the reciprocating motion of said displacer such that when the volume of said first chamber increases the volume of said second chamber decreases and vice versa;
a driving cylinder axially aligned with said refrigeration cylinder;
a piston solidly connected to said displacer and adapted to reciprocate within said driving cylinder to define a driving chamber variable in volume by the reciprocating motion of said piston;
a fluid path connecting said first and second chambers;
thermal storage means provided in said path;
a supply conduit for supplying high-pressure fluid;
an exhaust conduit for exhausting low-pressure fluid;
a rotary valve driven by a motor to control fluid communication such that at its first position said supply conduit is communicated with said path while said exhaust conduit is communicated with said driving chamber and at its second position said supply conduit is communicated with said driving chamber while said exhaust conduit is communicated with said path; and
a mechanical converter for restricting the stroke of said piston, said converter having a first member operatively connected to said piston for reciprocating with said piston, a second member rotating about an axis stationary with respect said driving cylinder and a third member interconnecting said first and second members for converting the reciprocating motion of said first member to the rotary moion of said second member.

4,446,702
MULTIPORT CRYOPUMP
John F. Peterson, Lynnfield, and Allen J. Bartlett, Milford, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.
Filed Feb. 14, 1983, Ser. No. 466,122
Int. Cl.³ B01D 8/00
U.S. Cl. 62—55.5 11 Claims



1. A cryopump system comprising:
a. a work chamber;
b. a load lock for receiving material to be introduced into the work chamber;
c. a cryopump housing in fluid communication with each of the work chamber and load lock;
d. a two stage refrigerator within the cryopump housing;
e. a second stage cryopumping surface in thermal contact with the second stage of the refrigerator; and
f. a radiation shield in thermal contact with the first stage of the refrigerator within the cryopump housing surrounding the second stage cryopumping surface, the shield having a frontal opening for providing gas communication from the working chamber to the second stage cryopumping surface and a rear opening for providing gas communication from the load lock to the second stage cryopumping surface.

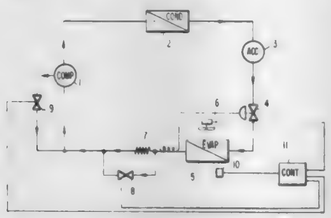
4,446,703
AIR CONDITIONING SYSTEM AND METHOD
Thomas A. Gilbertson, 216 Sandringham, N., Moraga, Calif. 94566
Filed May 25, 1982, Ser. No. 381,862
Int. Cl.³ F25B 41/00
U.S. Cl. 62—113 11 Claims



1. The method of conditioning air in a multi-unit building comprising disposing at least one air handling unit in each building unit with at least one water coil and one mechanical

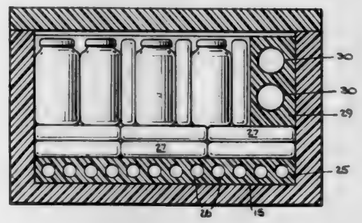
refrigerant cooled second heat absorbing means arranged in series in said air handling unit, separately circulating air in heat exchange relation with said water coil and said second heat absorbing means in each said air handling unit, circulating cooling water through said water coil in each air handling unit to provide primary cooling of air circulating therethrough independent of the operating condition of said second heat absorbing means, circulating mechanically refrigerated cooling fluid through said second heat absorbing means in each air handling unit when demand for refrigeration of air passing therethrough exceeds the cooling capacity of said cooling water traversing said water coil therein, and utilizing at least a portion of the cooling water exiting said water coil in each air handling unit to at least partially condense vaporized refrigerant associated with producing said mechanically refrigerated cooling fluid.

4,446,704
AIR CONDITIONING APPARATUS WITH TEMPERATURE REGULATED COOLING
Kisuke Yamazaki; Hitoshi Iijima; Fumio Matsuoka, all of Kamakura, and Toshizo Nishizawa, Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 8, 1982, Ser. No. 356,007
Claims priority, application Japan, Apr. 9, 1981, 56-53325
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—180 **12 Claims**



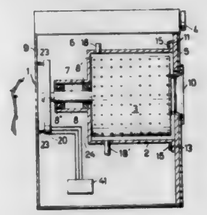
1. An air conditioning apparatus comprising:
(a) a compressor (1) for compressing a refrigerant to produce a high-pressure, high-temperature gaseous refrigerant,
(b) a condesnor (2) for condensing said gaseous refrigerant to liquefy said refrigerant,
(c) an expansion valve (4) for expanding said liquid refrigerant,
(d) an evaporator (5) for evaporating said expanded liquid refrigerant,
(e) a fan (6) for forcing air to be heat-exchanged through said evaporator,
(f) pressure reduction means provided between said evaporator and compressor, a bypass valve adapted to be open and closed being connected in parallel across said pressure reduction means to selectively provide a bypass passage for said evaporated refrigerant so as to bypass said pressure reduction means to control a pressure reduction rate thereof, a maximum pressure reduction rate being achieved when said bypass valve is closed,
(g) a feedback circuit having a feedback valve (9) for returning a portion of an intermediate pressure level refrigerant from an intermediate point in said compressor to the inlet of said compressor, and
(h) means (11) for controlling the amount of said refrigerant compressed by said compressor, said control means controlling the amount of refrigerant compressed by the compressor by controlling the fan, the feedback valve, and the bypass valve.

4,446,705
SHIPPING CONTAINER
Terry L. Loucks, Red Bank, N.J., assignor to Environmental Testing & Certif. Corp., Edison, N.J.
Filed May 12, 1982, Ser. No. 377,361
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—372 **9 Claims**



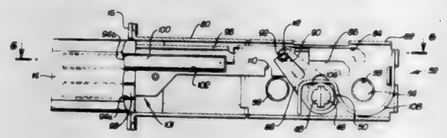
1. A device of the class described comprising:
an outer container having four walls, a bottom and openable top defining an insulated storage space;
an insert of insulating material adapted to lie flat on the bottom of said storage space and to be removably positioned within the storage space in friction fit with at least two opposing of said walls and formed to accommodate and securely retain therein a plurality of vials;
said storage space being constructed and arranged to retain packaged coolant medium on the upper surface of said insert for maintaining the temperature of the content of said vials within a predetermined range for a given period of time; and
means permitting access to the portion of said insert adjacent at least one of said opposing walls to which said insert is fitted to enable said insert to be removed from said storage space.

4,446,706
WASHING MACHINE
Carl S. M. Hartwig, Täby, Sweden, assignor to Institut Cerac S.A., Ecublins, Switzerland
Filed Dec. 15, 1982, Ser. No. 449,937
Claims priority, application Switzerland, Dec. 18, 1981, 8097/81; Jun. 29, 1982, 3971/82
Int. Cl.³ D06F *23/02, 37/38;* H02P *5/34*
U.S. Cl. 68—24 **8 Claims**



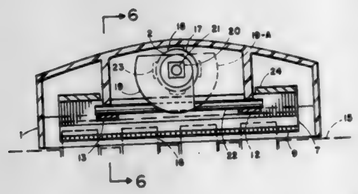
1. A washing machine comprising; a casing (1) which includes a washing-liquid container (2) and a washing drum (3) rotatably supported within the container (2) and intended to receive a washing load; a single electric bi-directional, brushless a.c. motor (84) including a rotor and a stator, means directly mechanically connecting said rotor to the rotatable washing drum, said a.c. motor being of multi-pole type and provided with terminals connected to a source of a.c. mains voltage via the out-put terminals of an inverter (41), and said inverter comprising means for generating an a.c. voltage at a variable frequency having a maximum value corresponding to the highest rotational speed of the washing drum selected and being in excess of the frequency of the mains voltage supplied to the inverter input.

4,446,707
DEADBOLT
Richard O. Mullich, Burbank, and Ray Dushane, Fullerton, both of Calif., assignors to TRE Corporation, Beverly Hills, Calif.
Continuation of Ser. No. 190,354, Sep. 24, 1980, abandoned. This application Sep. 2, 1982, Ser. No. 414,293
Int. Cl.³ E05C *1/06*
U.S. Cl. 70—134 **3 Claims**



3. A deadbolt lock assembly which can be assembled with one of at least two different selectable lockbolt extensions, comprising:
a latchcase;
a rotatable hub mounted within the latchcase, said hub including an arm extending radially therefrom;
a lockbolt slidably carried within said latchcase, a pair of pin-receiving openings extending through said lockbolt at locations which are mutually laterally offset with respect to the direction of travel of said lockbolt;
said latchcase including a pair of elongated slots extending generally in said direction of travel and being laterally aligned with said openings;
pin means for coupling the arm of the hub to one of the locations on the lockbolt, said pin means being insertable through one of said slots and a corresponding one of said openings, so that when the hub is rotated, the bolt will be moved longitudinally within the latchcase between a fully extended and a fully retracted position, the extent of full lockbolt travel being determined by which opening and slot said pin means extends through, said extent of full lockbolt travel thus being adjustable after lock assembly.

4,446,708
KEYBOARD LOCK
Laurice D. Ely, 660 W. 17th St., Costa Mesa, Calif. 92627
Filed Jan. 12, 1982, Ser. No. 338,987
Int. Cl.³ E05B *73/00;* B65D *55/14*
U.S. Cl. 70—166 **6 Claims**



1. An outer casing having a top and four sides, with one of said sides containing a splined cylindrical opening,
at least two movable legs supported by said casing and extending downwardly therein,
a locking barrel mounted rotatably to said casing and containing a key-slot accessible from one of said sides, said barrel cooperating with two of said splines to provide two locking positions,
said movable legs including a pair with end flanges facing each other, said flanges having serrated edges,
said pair of legs being held apart by a circular wedge attached to said barrel and extending therebetween when said barrel is in one of said locking positions, and forced toward each other by spring means when said barrel is in the other of said locking positions, and
a pair of longitudinal members adjacent to both said circular wedge and said legs.

4,446,709
CYLINDER LOCK MECHANISM
Robert L. Steinbach, Glendale Heights, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Jul. 14, 1981, Ser. No. 283,226
Int. Cl.³ E05B *17/14, 27/08*
U.S. Cl. 70—363 **36 Claims**



1. A cylinder lock mechanism which comprises:
a tubular barrel,
a lock cylinder received in said barrel for rotation about the longitudinal axis of the cylinder and having tumbler bore-forming means extending longitudinally therein,
a plurality of tumblers received in said bore-forming means for reciprocal longitudinal movement therein,
a cap secured to a front end of the barrel and having an opening for insertion of a key therethrough,
a discrete facing member received in said barrel for rotation about said axis and interposed between said cap and said cylinder, said facing member having an opening arranged for registry with said cap opening and with said bore-forming means, and said facing member comprising hard material resistant to drilling,
a discrete spacer received in said barrel for rotation about said axis and interposed between said facing member and said cylinder, said spacer having an opening arranged for registry with said cap opening and with said bore-forming means,
said openings when in said registry receiving a key for insertion thereof into engagement with said tumblers,
an engagement member extending transversely of said cylinder for engagement with said tumblers and laterally movable to and from the tumblers,
an elongated locking member extending longitudinally of said cylinder for engagement with said engagement member and laterally movable to and from said tumblers,
means on said cylinder and said barrel respectively for engaging said locking member along its length for locking purposes,
means on each of said tumblers for engaging said engagement member to support said locking member in a project-

ing position with respect to said cylinder and in engagement with said locking member-engaging means on said barrel for locking purposes, and

means on each of said tumblers permitting said engagement member to move towards the tumblers, thereby to permit retraction of said locking member from said projecting position for unlocking purposes,

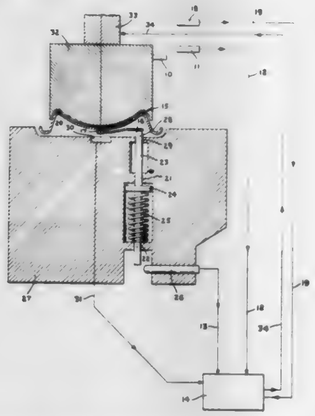
said engagement member and said locking member being free-floating in the lock mechanism such that said engagement and locking members are free to tilt in respective directions transverse to each other.

4,446,710

DEVICE FOR USE IN THE MANUFACTURE OF METAL CAN TOPS WITH PULL-UP RINGS

Kjell Sallnert, Malmö ; Carl-Erik Fridh, Trelleborg, and Manfred Hansson, Malmö, all of Sweden, assignors to Platmanufaktur AB, Malmo, Sweden

Filed Mar. 2, 1979, Ser. No. 16,877
Claims priority, application Sweden, Nov. 27, 1978, 7812169
Int. Cl.³ B21D *39/03, 51/00;* B23P *11/00*
U.S. Cl. 72—10 5 Claims



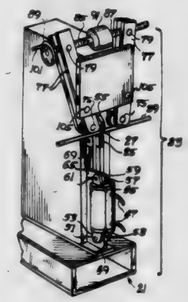
1. Apparatus for preventing the manufacture of defective products in connection with the production of metal can tops with a pull-up ring, said apparatus comprising a dolly for riveting a pull-up ring to a metal can top, drive means for driving said dolly from a starting position to a working position and back to the starting position, a tool seat located so that in said working position said dolly cooperates with said tool seat to rivet the pull-up ring to the metal can top with the pull-up ring facing said tool seat, transmitter means for sensing the passage of said dolly past a reference level and for sending a corresponding signal when said dolly is moving towards said seat, a sensing pin protruding from the surface of the seat to be moved towards the surface of the seat by said pull-up ring of the metal can top when said dolly is in said working position and the pull-up ring is being riveted to said metal can top, sensor means for sensing movement of said sensing pin and for the generation of a corresponding signal, and delay and control means for receiving said signals from said transmitter means and said sensor means for sending a signal to said drive means for stopping the movement of the dolly when a predetermined period of time between said signals is exceeded.

4,446,711

U-BOLT BENDER

Raymond L. Valente, Kankakee, Ill., assignor to Vale Industries, Inc., Pontiac, Ill.

Filed Aug. 18, 1982, Ser. No. 409,061
Int. Cl.³ B21D *7/08*
U.S. Cl. 72—213 16 Claims



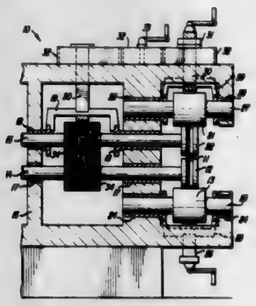
2. In a U-bolt bender of the type including support structure, in combination with a workpiece having opposite end portions, said bender further including actuator means carried by said support structure for causing movement of said workpiece along a predetermined path, a die having a surface advanceable along said path and disposed transverse thereto and opposite side surfaces disposed transverse to and converging away from said die advanceable surface, clamping means for clamping said workpiece to said die, and slide means for moving said die along said path, said slide means carrying said die, wherein the improvement, in combination, comprises: first and second linkage means for pivotally connecting said actuator means to said clamping means, one of said first and second linkage means being pivotally connected at a first end portion thereof to said actuator means, being pivotally connected at a second end portion thereof opposite said first end portion to the other of said first and second linkage means, and being pivotally connected intermediate said first and second end portions thereof to said slide means, the other of said first and second linkage means being pivotally connected at a first end portion thereof to said one of said first and second linkage means and being pivotally connected at a second end portion thereof opposite said first end portion to said clamping means; first and second roller means carried by said support structure for urging said workpiece opposite end portions against respective ones of said die side surfaces, respective ones of said first and second roller means being disposed transverse to and on opposite sides of said path; and biasing means pivotally connected to said first and second roller means for causing one of said first and second roller means initially spaced by a first dimension from the other of said first and second roller means to be urged toward said other of said first and second roller means when spaced from said one of said first and second roller means by a second dimension relatively less than said first dimension, said actuator means including means for causing movement along said path of one of said die and said first and second roller means relative to the other of said die and said first and second roller means whereby for urging said workpiece between said first and second roller means, wherein said actuator means, said slide means, said clamping means and said first and second linkage means coact to clamp said workpiece to said die thereby producing a clamped workpiece, and wherein said actuator means, said clamping means, said die, said first and second linkage means and said slide means coact to advance said clamped workpiece along said path and to urge said clamped workpiece between said first and second roller means, whereby said first and second roller means engaging said workpiece opposite end portions coact with said die to urge said workpiece opposite end portions against respective ones of said die side surfaces.

4,446,712

PROPPED CANTILEVERED ROLL STAND

Kenneth R. Stone, Carrollton, Ga., and Bapa R. Uppaluri, Sharon Hill, Pa., assignors to Southwire Company, Carrollton, Ga.

Filed Dec. 14, 1981, Ser. No. 330,292
Int. Cl.³ B21B *31/26*
U.S. Cl. 72—243 4 Claims



1. Apparatus for substantially eliminating deflection of cantilevered work roll shafts and work rolls of a cantilevered type rolling mill caused by resistance of metal stock to compressive forces applied by said work rolls during rolling of metal stock, comprising:

at least one support roller adjacent to each work roll and in the paths of deflection;

a support roller shaft upon which said support roller is concentrically mounted;

means for adjusting the longitudinal axis of said support roller toward and away from the longitudinal axis of said work roll further comprising a first set of at least two eccentric bearings secured to a frame member of said rolling mill, containing end portions of said support roller shaft, and having a longitudinal axis parallel to the longitudinal axis of said support roller shaft, a first yoke interconnecting said first set of eccentric bearings, and first rotation means for rotating said first yoke about the longitudinal axis of said first set of eccentric bearings;

means for adjusting the gap between said work rolls; and means for synchronizing movement of said longitudinal axis adjustment means of said support roller with movement of said roll gap adjustment means.

4,446,713

APPARATUS AND METHOD FOR BENDING INSULATED PIPING

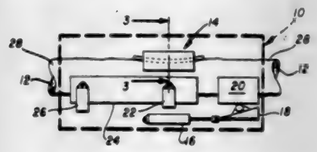
Lionel H. Wheeler, Houston, Tex., and Robert G. Goekler, Owasso, Okla., assignors to Crutcher Resources Corporation, Houston, Tex.

Filed Jul. 6, 1981, Ser. No. 280,488
Int. Cl.³ B21D *9/05*
U.S. Cl. 72—308 27 Claims

1. A bending die for use in a pipe bending machine for pipe coated with a compressible material comprising:

support structure for mounting on the pipe bending machine and having an inner surface;

a plurality of bars arranged along said inner surface of said support structure in pipe confronting relation for opposing bending forces through said compressible material, said bars being sufficiently spaced apart for flow of said compressible material between said bars as bending forces cause deformation of said compressible material to resist



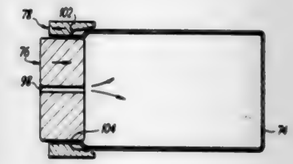
damage to the compressible material by relieving the stress in the compressible material.

4,446,714

METHODS OF NECKING-IN AND FLANGING TUBULAR CAN BODIES

Daniel S. Cvacho, 241 Kirkley Cir., Forest, Va. 24551

Filed Feb. 8, 1982, Ser. No. 346,586
Int. Cl.³ B21B *17/02*
U.S. Cl. 72—370 9 Claims



1. A method of necking in an end portion of a tubular member comprising the steps of

a. inserting a pilot die into a cylindrical member to be necked,

b. contacting the exterior surface of said member with a ring necking die,

c. reversing the direction of said pilot die to begin withdrawal of said pilot die from said member while moving said ring necking die in a direction of motion opposite to said pilot die thereby simultaneously effecting sliding motion against said member by both said pilot die and said ring necking die,

d. and continuing the motion of said dies in opposite directions while effecting necking in of the upper edge of said member by contact with said dies thereby producing a necked-in tubular member.

4,446,715

TRANSDUCER CALIBRATION SYSTEM

Wilber H. Bailey, Leucadia, Calif., assignor to Camino Laboratories, Inc., San Diego, Calif.

Filed Jun. 7, 1982, Ser. No. 385,492
Int. Cl.³ G01K *15/00;* G01L *27/00*
U.S. Cl. 73—1 R 17 Claims

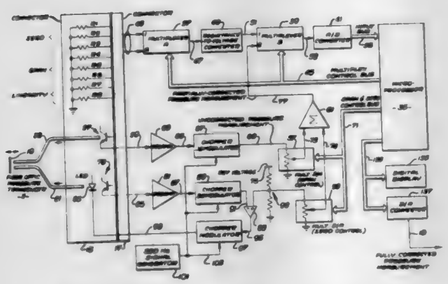
1. A system for selectively measuring one of a plurality of separate physical variables, comprising:

a plurality of transducer means, each adapted to monitor a separate physical variable and produce a signal indicative thereof, the signal differing from a desired relationship with the physical variable in a predetermined fashion;

a plurality of characterizing means, each associated with a separate transducer means and characterizing the difference between the signal produced by the transducer means and the desired relationship with the physical variable; and

a single correcting means, responsive to any selected one of

the individual transducer means and its associated characterizing means, for adjusting the transducer means signal



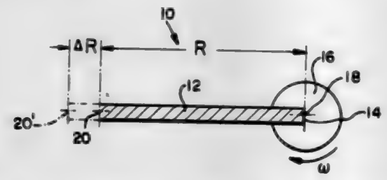
in a prescribed fashion, to produce a corrected measurement of the corresponding physical variable.

4,446,716

SELF-COMPENSATING CENTRIFUGE ARM

Howard M. Fishman, Elkins Park, Pa., assignor to Franklin Institute, Philadelphia, Pa.

Filed Jun. 8, 1982, Ser. No. 386,294
Int. Cl.³ G01C *25/00*; G01L *25/00*
U.S. Cl. 73—1 DC **12 Claims**



1. A self-compensating centrifuge arm for a centrifuge system having drive means for causing rotation of the centrifuge arm around a center of rotation, the centrifuge arm comprising:

a first elongated member attached to the drive means for rotation, the first elongated member having a first predetermined length and extending outwardly from the center of rotation in a first direction to a terminal end portion; and

a second elongated member having a second predetermined length and a first end attached to the first elongated member at the terminal end portion thereof, the second elongated member extending through the center of rotation without being affixed to the drive means and terminating at a second end.

4,446,717

ABRASIVE WEAR TESTER

Jerry R. Johanson, Chelmsford, and Thomas A. Royal, Arlington, both of Mass., assignors to Jenike & Johanson, Inc., No. Billerica, Mass.

Filed Jul. 28, 1982, Ser. No. 402,632
Int. Cl.³ G01N *3/56*
U.S. Cl. 73—7 **22 Claims**

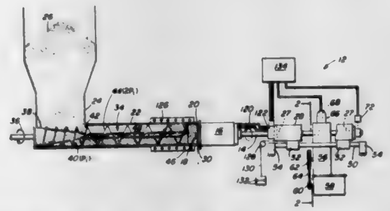
1. Apparatus for applying abrasive wear to a surface of a sample including, in combination,

support means for mounting the sample rotatably about and reciprocally along an axis,

a barrel for containing a flowable abrasive material extending along the axis and having an open end facing said surface,

means to feed the material in the barrel toward said surface at a controlled rate,

and means for urging the sample toward the barrel with a force opposed to that of the material on the sample, said controlled rate being sufficient to maintain a gap between



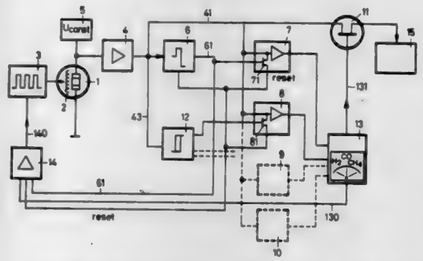
the sample and said open end, whereby the material flows continuously through the gap.

4,446,718

METHOD AND APPARATUS FOR REDUCING FALSE ALARMS IN GAS WARNING INSTALLATIONS CAUSED BY SPURIOUS GASES

Stanislaw Bukowiecki, Uerikon, and Karlheinz Paglotke, Langnau a. Albis, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Sep. 7, 1982, Ser. No. 415,038
Claims priority, application Switzerland, Sep. 22, 1981, 6115/81
Int. Cl.³ G01N *27/14*
U.S. Cl. 73—23 **7 Claims**



3. An apparatus for reducing false alarms in gas warning installations caused by spurious gases, comprising:

a gas-sensitive element constituted by a metal-oxide semiconductor;

a comparator for receiving a first output signal delivered by the gas-sensitive element;

a circuit for a first peak value which is turned-on by the output signal of the gas-sensitive element; and

an analog value-comparator which accomplishes a programmable change in the temperature of the metal-oxide semiconductor for discriminating the spurious gas.

4,446,719

ELECTROREFLECTANCE VIBRATIONAL SPECTROSCOPY

David K. Lambert, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

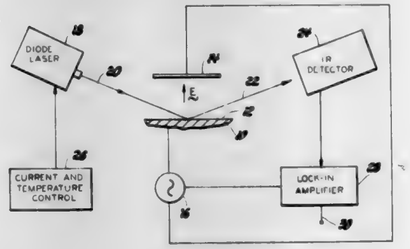
Filed Jul. 22, 1982, Ser. No. 400,869
Int. Cl.³ G01N *21/17*
U.S. Cl. 73—23 **4 Claims**

1. A method of obtaining the vibrational spectra of molecules adsorbed on a metal or insulator surface comprising the steps of:

establishing an electric field normal to the surface and amplitude modulating the electric field,

irradiating the surface with infrared radiation and varying the radiation through a range of wavelengths corresponding to the range of vibrational absorption of the adsorbed molecules,

detecting radiation reflected from the surface, and



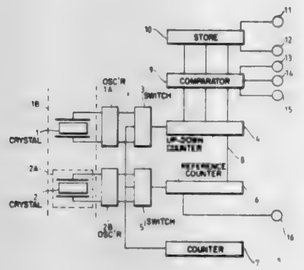
measuring the synchronous modulation of reflectivity while varying the radiation wavelength to obtain the spectra of vibrational absorption.

4,446,720

METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF A CONTAMINANT IN A GASEOUS CARRIER

Ian Sinclair, Loughborough, England, assignor to The Secretary of State for Social Services in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB81/00064, 371 Date Nov. 25, 1981, 102(e) Date Nov. 25, 1981, PCT Pub. No. WO81/03071, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 10, 1981, Ser. No. 328,589
Claims priority, application United Kingdom, Apr. 18, 1980, 8012889
Int. Cl.³ G01N *27/00*
U.S. Cl. 73—23 **13 Claims**



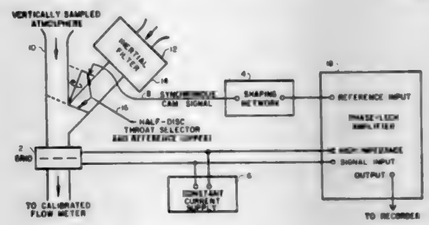
1. Apparatus for detecting the presence of a contaminant in a gaseous carrier comprising a first piezo electric crystal oscillator (1), a carrier gas feed means (1B) for enabling contaminant to act upon the said first crystal (1) in a manner which changes the effective mass thereof, measuring means (4) for obtaining a first value related to the total number of oscillations of the crystal (1) during a first predetermined period of time, means for enabling the first value to be decreased by a second value related to the total number of oscillations of the crystal (1) during a second time period not greater than said first predetermined time period, testing means (10), said testing means being arranged to allow the first crystal (1) to oscillate for a second predetermined period of time, to obtain a value related to the number of oscillations of the first crystal (1) in said second predetermined period of time, and to compare said value with at least one other preselected value, whereby any change in mass of said crystal (1) due to previous use can be determined by said comparison, and a second piezo electric crystal oscillator (2) the output of which drives a counter (6) to determine the said first predetermined period of time and said second period of time.

4,446,721

ATMOSPHERIC LIQUID WATER CONTENT MEASUREMENT AND CALIBRATION SYSTEM

Charles W. Bruce, Las Cruces, N. Mex., and Ralph J. Brewer, Zurich, Switzerland, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 30, 1981, Ser. No. 307,136
Int. Cl.³ G01N *27/06*
U.S. Cl. 73—29 **6 Claims**



1. Apparatus for measurement of atmospheric liquid water content comprising intake apparatus having a first throat means for sampling a flow of ambient atmosphere, and a second throat means for sampling flow of a filtered atmosphere and an inertial filter means for filtering said atmosphere by removing droplets of water;

selection means for cyclically and alternately sampling the inputs from said first and second throats;

a wire grid heater over which said flow from said selection means passes;

a phase lock amplifier;

electrical synchronizing means coupled to said selection means to supply a reference signal to said phase lock amplifier;

a constant current source connected to said wire grid and also in parallel to a high impedance input of said phase lock amplifier, such that said wire grid is heated to evaporate water droplets encountered and a voltage across the grid proportional to its resistance is applied as an input signal to the phase lock amplifier, and said phase lock amplifier operating to supply an output which is the rms value of the difference signal between the half cycles of said reference signal, whereby the wafer vapor component as opposed to the water droplet component of sampled ambient atmosphere is eliminated to thereby measure the liquid water content.

4,446,722

VIBRATION SENSOR, PARTICULARLY KNOCK SENSOR FOR INTERNAL COMBUSTION ENGINES

Manfred Boruschewitz, and Hansjoachim Hamisch, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 21, 1982, Ser. No. 390,171
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3126576
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **11 Claims**

1. Vibration sensor to sense vibration of a body (9, 13, 27), particularly to sense vibration due to knocking of an internal combustion engine, having

a base (7, 17) secured to the body, the vibration of which is to be sensed;

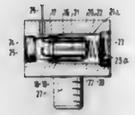
at least one piezoelecric element (4, 5, 15, 19) located in vibration-transmitting contact with said body;

an elongated elastic element (**1**, **21**, **31**) having a free end portion (**2**) having elongated transverse to the direction of vibration of said body for free vibration in the direction of the body vibration

and comprising

resilient clamping means (**6**, **7**, **8**; **12**; **20**, **21***a*, **23***a*) for resiliently clamping one end portion of the elastic element in surface contact with the at least one piezoelectric element for vibratory or oscillatory transmitting contact with the at least one piezoelectric element;





wherein the said one end portion is wavy or undulating, and a valley or trough of the waves or undulations is in essentially line engagement with a surface of the piezoelement element;

and the clamping means comprise resilient engagement means of said wavy or undulating portion to provide for said elastic clamping engagement of said one end portion with respect to the piezoelectric element.

4,446,723

OPTICAL COMBUSTION EVENT SENSOR STRUCTURE PARTICULARLY KNOCK SENSOR FOR AN INTERNAL COMBUSTION ENGINE

Bernward Böning, Ludwigsburg; Rainer Bone, Vaihingen; Rudolf Nagel, Asperg; Franz Sellmaier, Schwieberdingen, and Helmut Reum, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,409

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110997

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 **10 Claims**

1. Knocking sensor structure to obtain a signal representative of temperature characteristics of combustion events within a combustion chamber of an internal combustion engine, (ICE),

in combination with means (**10***b*) for defining the combustion chamber of the internal combustion engine,

the sensor structure having

a spark plug structure including a tubular housing (**10***a*) formed with means for securing the housing into a wall (**10***b*) defining one side of the combustion chamber;

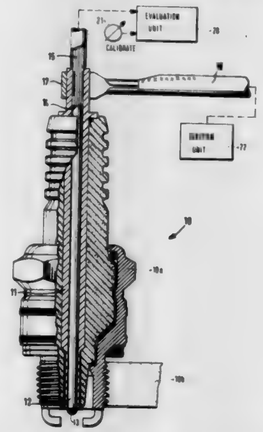
a center electrode (**11**) insulatingly passing through the tubular housing;

light sensitive means (**15**) retained in the housing;

a light pick-up means (**12**) retained in the housing having a sensing portion at an end portion of the pick-up means, lcated within the combustion chamber, and being coupled to the light sensitive means at an other end of the pickup means said pickup means further comprising

a layer of graphite, located at said sensing end and located within the combustion chamber which layer is heat resistant and, when subjected to the temperature of the combustion chamber during occurrence of combustion events therein, becomes light emitting;

emission of light being sensed by the sensing end portion of



the pick-up means, and transmitted to the light sensitive means, the light emission being representative of the temperature to which said graphite layer is being raised as a consequence of combustion events.

4,446,724

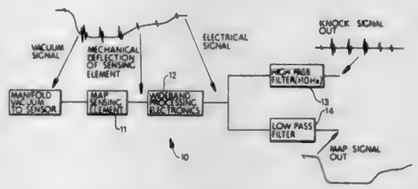
ENGINE PRESSURE AND KNOCK SENSOR

Louis R. Focht, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 431,983

Int. Cl.³ G01L *23/22, 23/24*

U.S. Cl. 73—35 **4 Claims**



1. A combination pressure and knock sensor for and internal combustion engine comprising:

a pressure sensing means for sensing intake manifold absolute pressure and having an output for providing a signal;

a high pass filter means having an input coupled to said output of said pressure sensing means for passing a high frequency knock signal; and

a low pass filter means having an input coupled to said output of said pressure sensing means for passing a low frequency pressure signal.

4,446,725

VOLUMETRIC ANALYSIS DEVICE FOR DETERMINING THE DRY RUBBER CONTENT OF LATEX

Frank C. Schulz, Jr., Cooper Hill, North Creek, N.Y. 12853

Filed May 25, 1982, Ser. No. 382,044

Int. Cl.³ G01N *15/06*

U.S. Cl. 73—61 R **8 Claims**

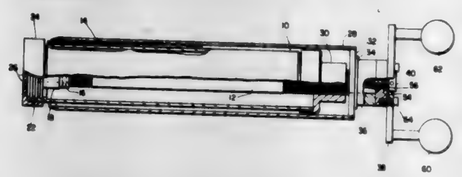
1. A volumetric analysis device for determining the solids content of a liquid composition comprising:

A. An elongated cylinder, having a removable filter cap positioned at one end;

B. A compression plunger mounted upon one end of an axial shaft reciprocably positioned within said cylinder, so as to compress a liquid batch contained within said cylinder, while urging liquid residue through said filter cap;

C. A handle connected to a portion of said shaft extending through the other end of said cylinder;

D. A reference scale positioned upon the exterior of said cylinder;



E. An open-ended cylindrical dial drum connected to that portion of said shaft extending through said cylinder, such that reciprocal movement of said axial shaft and plunger within said cylinder is reflected correspondingly in reciprocal movement of said dial drum with respect to said reference scale upon the exterior of said cylinder.

4,446,726

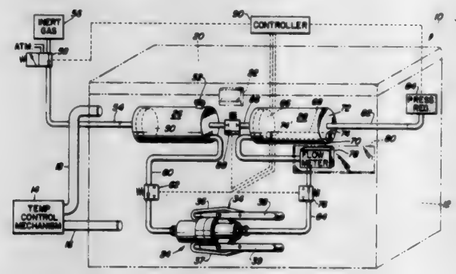
APPARATUS AND METHOD FOR MEASURING THE FILTERABILITY OF A FLUID AT LOW TEMPERATURES

Richard L. Hockenberry, Viola, Ill., assignor to Deere & Company, Moline, Ill.

Filed Sep. 1, 1982, Ser. No. 413,849

Int. Cl.³ G01N *33/26*

U.S. Cl. 73—61.4 **14 Claims**



1. An apparatus for measuring the filterability of a fluid at low temperatures, said apparatus comprising:

(a) a container having a temperature regulating mechanism connected thereto;

(b) a filter holder enclosed in said container and including a two part housing joined together by a quick attachment and release mechanism, said filter holder having a fluid inlet and a fluid outlet and retaining a filter therebetween;

(c) a first cylinder containing a free piston and housing a quantity of fluid therein, one end of said first cylinder being connected to said inlet of said filter holder and an opposite end of said first cylinder being connected to a supply of pressurized gas;

(d) a second cylinder containing a free piston and housing a quantity of a gas, one end of said second cylinder being connected to said outlet of said filter holder and an opposite end of said second cylinder being connected to a pressure regulator;

(e) a flow meter positioned between said filter holder and said second cylinder for recording fluid flow therebetween; and

(f) control valves situated on said inlet and outlet sides of said filter holder for regulating the flow of said fluid from said first cylinder to said second cylinder.

4,446,727

METHOD FOR INTEGRATING FUEL CONSUMPTION AMOUNT OF VEHICLES

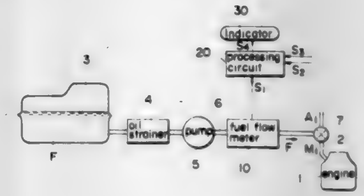
Norimitsu Kurihara, Saitama, and Takeshi Imai, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1982, Ser. No. 403,002

Claims priority, application Japan, Jul. 31, 1981, 56-120242

Int. Cl.³ G01F *9/02*

U.S. Cl. 73—113 **7 Claims**



1. In a vehicle provided with an internal combustion engine, a carburetor which supplies fuel to said internal combustion engine, and a turbine-type fuel flow meter which detects the flow rate of fuel supplied to said carburetor, a method for integrating the amount of fuel consumption, comprising the steps of:

summing the flow rate detected by said fuel flow meter at each prescribed time;

comparing a quantity relating to the vehicle speed in a mean value at said prescribed time with a given reference value;

selecting one from at least two prescribed correction factors based on the comparison and correcting the corresponding sum value of fuel flow rate by multiplying by the selected factor; and

integrating the corrected value of fuel flow rate.

4,446,728

ROTARY DRIVE DEVICE FOR INSPECTING TURBO-FAN ENGINE BLADES

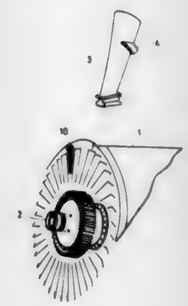
Tomoo Ito, Futtu, Japan, assignor to Jupitor Corporation, Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 373,696

Claims priority, application Japan, Jan. 26, 1982, 57-9475

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **6 Claims**



4. A blade inspection method for a turbo-fan engine comprising the steps of mounting the rotary drive device on a turbo-fan blade;

maintaining the pulley of said rotary drive device in frictional contact with the internal wall of the turbo-fan case; and

activating the motor to rotate the turbo-fan relative to the turbo-fan case.

4,446,729

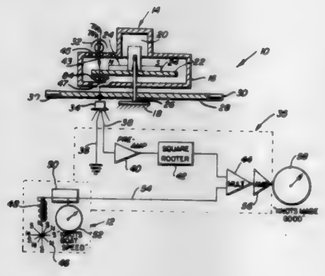
SAILING COURSE COMPUTER

Roy H. A. Watson, III, 124 Dodds Ct., Burlington, Vt. 05401

Filed Oct. 23, 1981, Ser. No. 314,478

Int. Cl.³ G01C *21/10*

U.S. Cl. 73—178 R **8 Claims**



1. A sailing course computer for instantaneously and continuously indicating the speed of a sailboat through a body of water towards a destination, said computer comprising:

speed determining means for providing a first signal representative of said sailboat's velocity through said body of water along a path of forward movement;

direction indicating means for providing a second signal proportional to an angle determined by an intersection of a first line directed from said sailboat to said destination and a second line directed along said path of forward movement of said sailboat:

computing means for combining said first and second signals to indicate said speed of said sailboat toward said destination irrespective of the instantaneous direction of movement of said sailboat through said body of water, said computing means being operable to determine said speed toward said destination by multiplying an absolute value of said sailboat's velocity by a cosine of said angle, and including an electronic circuit having an operational amplifier mode to effect said multiplication of the velocity and said cosine of said angle, said direction indicating means including compass card means rotatable about an axis for indicating a North and South direction and bezel means circumferentially positioned about the compass card means, said compass card means being constructed of a polarizing material and an analyzer disk means also constructed of a polarizing material and positioned proximate to the compass card means for regulating light passing through said compass card means during rotation thereof, and means responsive to the light passing through the compass card means and the analyzer disk means for producing the second signal.

4,446,730

SPECIFIC GRAVITY INDEPENDENT GAUGING OF LIQUID FILLED TANKS

George E. Smith, Houston, Tex., assignor to Quintex Research International, Inc., Missouri City, Tex.

Filed Apr. 26, 1982, Ser. No. 371,789

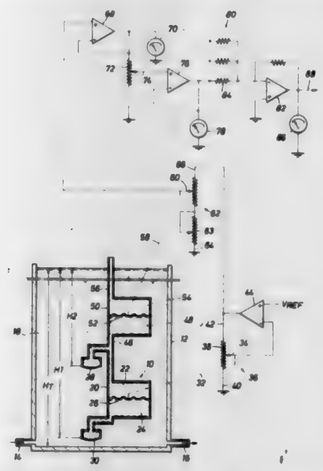
Int. Cl.³ G01F *23/18*

U.S. Cl. 73—301 **13 Claims**

1. The method of measuring the level of fluid in a tank, which comprises

establishing a first voltage level with a first pressure sensing device sensitive to the pressure difference between a first and second level within the tank, said first voltage being exponentially proportional to the reciprocal of the specific gravity of the fluid, and

with respect to the first voltage level as a reference voltage level, establishing a second voltage with a second pressure



sensing device of the absolute pressure at one of said first and second levels, the second voltage being directly proportional to the specific gravity of the fluid, the resulting output of voltage of said second pressure sensing device being a measure of the fluid level in the tank only, and being independent of the specific gravity of the fluid.

4,446,731

CONTAINER HAVING SIGHT GLASS

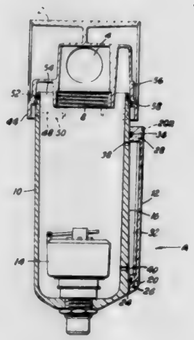
Keith S. Martin, Stafford, England, assignor to Scovill Inc., Waterbury, Conn.

Filed Sep. 4, 1981, Ser. No. 299,411

Claims priority, application United Kingdom, Sep. 5, 1980, 8028833

Int. Cl.³ G01F *23/02*

U.S. Cl. 73—334 **4 Claims**



1. A fluid container having a bowl and an attached overhanging cap, the bowl defining a vessel including a flat, generally vertical sidewall portion surrounded, except at its upper end, by a flanged lip defining a receiving opening, the lip being tapered slightly away from the flat vertical sidewall portion as the upper end of the receiving opening is approached, and an elongate light-transmitting sight glass member having a trough-like internal space extending centrally of its width along its length except adjacent its ends, the flat vertical sidewall portion being formed with at least one passage into the bowl aligned with the trough, the sight glass member having a peripheral rim, thickening as its upper end is approached and resilient sealing means disposed on the sight glass member rim, the sight glass peripheral rim being held by the flanged lip in frictional and sealing engagement against the flat vertical sidewall portion whereby the frictional engagement of the sealing means against the flat vertical sidewall portion holds the sight glass member firmly against any undesired upward movement without the use of fasteners.

4,446,732

CRANKSHAFT BALANCE CENTERING

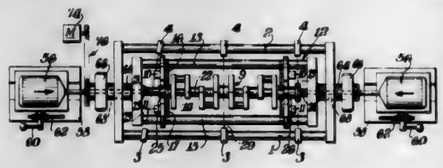
Harald Schoenfeld, Darmstadt-Arheilgen, Fed. Rep. of Germany, assignor to Carl Schenck AG, Fed. Rep. of Germany

Filed Jun. 3, 1982, Ser. No. 384,191

Claims priority, application European Pat. Off., Jun. 6, 1981, 81104386.8

Int. Cl.³ G01M *1/16*

U.S. Cl. 73—461 **3 Claims**



1. An arrangement for interrupting the dislocation of a crankshaft during centering thereof in a balance centering machine, whereby the machine is provided with a bearing bed below a swing bridge in which bearing bed the crankshaft to be balance centered is arranged to rotate around the axis of the machine and whereby the axis of the crankshaft may be displaced in relation to the axis of the machine until a minimal rotation radius has been obtained for a point on the surface of two selected crankshaft sections rotating around the axis of the machine without eccentricities due to the system, characterized in that two light emitters each for producing a sharp beam of light are arranged on the swing bridge, two light receivers in opposite positions to the emitters arranged on the swing bridge, the light beams crossing the axis of the balancing machine at a predetermined minimum radius distance, and means for moving the crankshaft to be balanced relative to the axis of the machine at several locations along the crankshaft axis until a receiver captures the first light over a section of the crankshaft and immediately thereafter interrupting such movement at that location.

4,446,733

STRESS CONTROL IN SOLID MATERIALS

Shigeo Okubo, Menlo Park, Calif., assignor to Design Professionals Financial Corporation, Monterey, Calif.

Filed Aug. 17, 1981, Ser. No. 293,751

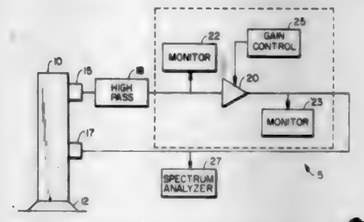
Int. Cl.³ G01H *13/00*

U.S. Cl. 73—579 **13 Claims**

1. A method of subjecting a structure to stress comprising the steps of:

determining at least some of the higher resonant frequencies of the structure, said higher resonant frequencies lying above the fourth harmonic; and

applying stress to the structure at at least one of said higher resonant frequencies to induce stress waves having points



of maximum moment at a large number of points on the surface of the structure.

4,446,734

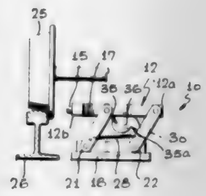
MOTOR DRIVEN EXCITER

Kenneth G. Empson, Montgomery, Ill., assignor to Southern Pacific Transportation Company, San Francisco, Calif.

Filed Jan. 8, 1982, Ser. No. 337,984

Int. Cl.³ B06B *1/12*; G01N *29/04*

U.S. Cl. 73—586 **6 Claims**



1. Apparatus for striking a moving train wheel, comprising:

a hammer unit which includes a hammer, means for supporting said hammer in movement toward and away from the path of the moving train wheel, a spring which urges said hammer towards the path of the wheel when the hammer is held away from the path of the wheel, and means for moving said hammer away from the path of the wheel in opposition to the force of the spring and for releasing the hammer to allow its movement by said spring against a moving train wheel;

said hammer including front and rear members, said spring and moving means coupled to said rear member, and said front member lying closest to said train wheel path and having a head that strikes a train wheel, at least said head moveable, relative to said rear member, by a limited distance perpendicular to hammer movement toward and away from said wheel path.

6. Apparatus for striking a moving train wheel, comprising:

a hammer unit which includes a hammer, means for supporting said hammer in primarily horizontal movement toward and away from the path of the moving train wheel, a spring which urges said hammer towards the path of the wheel when the hammer is held away from the path of the wheel, and means for moving said hammer away from the path of the wheel in opposition to the force of the spring and for releasing the hammer to allow its movement by said spring against a moving train wheel;

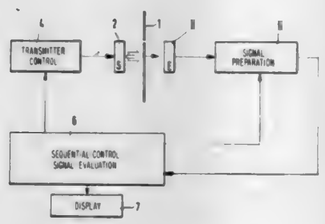
said means for supporting said hammer including a base mounted to the ground and a pair of substantially parallel arms having inner ends pivotally connected to said base and outer ends pivotally connected to spaced locations on said hammer.

4,446,735

METHOD OF TESTING THE WEIGHT PER UNIT AREA OF THIN MATERIAL

Karl H. Weilacher, Ampermoching, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,315
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048710
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—597 7 Claims



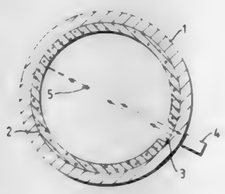
1. A method for the contactless determination of the weight per unit area and/or the thickness of thin material such as paper, foils and the like, whereby a transmitter exposes the material pulsatively to ultrasonic waves and a receiver picks up the sound vibrations from the material wherein the sound propagation time T_d between said transmitter and said receiver is determined and the receiver is switched on after a delay as long as the sound propagation time T_d and is switched off after the elapse of a time period no greater than double the sound propagation time T_d, before interferences caused by the system arrive at said receiver.

4,446,736

ULTRASONIC IDENTIFICATION OF DAMAGE IN LINED STRUCTURES

Peter Jackson, Stockton-On-Tees, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Sep. 24, 1981, Ser. No. 305,354
Claims priority, application United Kingdom, Oct. 10, 1980, 8032874
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—600 2 Claims



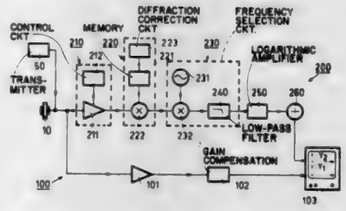
1. A method for testing the integrity of an internal lining on the wall of a hollow body at a given location comprising arranging an ultrasonic wave transmitter and an ultrasonic wave receiver exteriorly of the hollow body at said location, generating an ultrasonic wave with the transmitter and transmitting the wave through the wall at said location in a manner such that any transmitted wave which penetrates the wall and the lining, if any, at said location passes through the interior of the hollow body to a point opposite said location and is reflected back toward said location, and detecting any such reflected wave with the receiver at said location, the absence of a reflected wave being an indication of total attenuation by the wall and the lining at said location and hence an indication of the presence of the lining at said location, the presence of a reflected wave being an indication of less than total attenuation by the wall and the lining, if any, at said location and hence an indication of an absence of or a reduced thickness of the lining at said location.

4,446,737

METHOD AND DEVICE FOR MEASURING OBJECTS USING ULTRASOUND ECHOGRAPHY

Francois Hottier, La Varenne, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 9, 1983, Ser. No. 492,849
Claims priority, application France, Oct. 13, 1982, 82 17141
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—602 10 Claims



1. In a device for scanning objects by means of ultrasound echography of the type which comprises at least one ultrasound transducer, transmitter means connected to the transducer for repeated transmission of ultrasound energy, and receiver means connected to the transducer for receiving ultrasound echo signals which are produced from reflections of the transmitted energy, said receiver means comprising first processing circuit means for said echo signals which includes a first amplifier which is connected to receive signals from the output of the transducer, gain compensation means; and display means for displaying the position of the origin of the echo signals together with the amplitude of the echo signals, the improvement wherein:

the receiver means further comprise second processing means, connected in parallel with the first processing circuit means, which include, in functional series connection, automatic gain control means which increase the gain of the second processing circuit means as a function of the distance of the position of the origin of the echo signals from the transducer; diffraction correcting means which correct the amplitude of the echo signals for diffraction effects produced by the transducer; frequency selection means which pass echo signals in a narrow frequency band which is centered around a frequency F_c within the bandpass of the transducer; a first logarithmic amplifier; and means which divide the output signal of the first logarithmic amplifier by a factor which is proportional to the frequency F_c and apply the divided output signal to a display means.

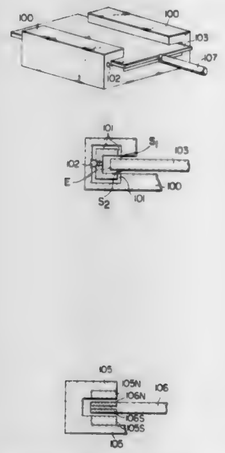
4,446,738

ACOUSTIC SCANNING MICROSCOPE

Isao Ishikawa, Hino; Hiroshi Kanda, Tokorozawa, and Kageyoshi Katakura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,779
Claims priority, application Japan, Dec. 22, 1980, 55-180397
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—606 15 Claims

1. In an acoustic microscope comprising an acoustic wave propagating medium, a piezo-electric element formed at one end of said acoustic wave propagating medium, and an acoustic wave lens formed at the other end of said propagating medium and having a focal point at a predetermined position, wherein an image of a specimen located at said focal point is produced on the basis of the acoustic wave disturbed by said specimen, an improvement comprising supporting means for supporting a specimen table for said specimen in a non-contacting manner, said table having oppositely facing side surfaces,



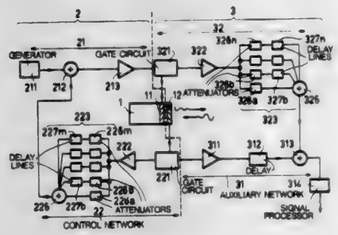
said supporting means being constituted by bearing members for supporting said specimen table under aerostatic pressure at least at portions along the oppositely facing side surfaces.

4,446,739

ECHO ULTRASOUND EXAMINATION DEVICE WITH MULTI-LAYER TRANSDUCER

Roger-Henri Coursant, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,994
Claims priority, application France, Dec. 22, 1980, 80 27202
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—609 11 Claims



1. In an echo ultrasound examination apparatus which comprises:

a multi-layer transducer which includes a first active layer for transmitting ultrasound energy in response to an electrical stimulation signal and a second active layer for detecting ultrasound echos and producing electrical echo signals in response thereto;

transmission network means which are operably connected to the first layer to supply stimulation signals thereto; and

receiver network means which are operatively connected to the second layer to receive echo signals therefrom;

the improvement comprising:

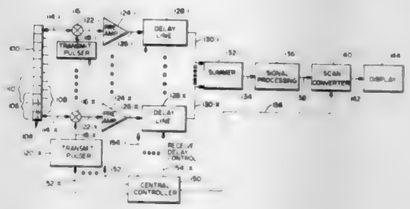
control network means, having an input which is operably connected during transmission of ultrasound energy to a first signal supply layer of the transducer, which feedback a signal to correct the transfer function of the transmission network means and thus reduce interference between the transmission network means and the receiver network means.

4,446,740

FREQUENCY CONTROLLED HYBRID ULTRASONIC IMAGING ARRAYS

David A. Wilson; James L. Buxton, both of Palo Alto, and Philip S. Green, Atherton, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Mar. 9, 1982, Ser. No. 356,467
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 46 Claims



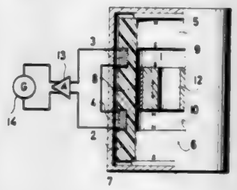
1. An ultrasonic imaging apparatus, which comprises: an array of transducer elements for transmitting ultrasonic signals having a first predetermined center frequency into an object to be examined through use of the transmitted signals reflected from within the object, means connected to transmit the ultrasonic signals from said array in a stepped array mode, means connected to transmit the ultrasonic signals from said array in an angle scanning mode, means for transmitting the signals to a desired depth within the object, the detected echoes from a particular depth sensed by the apparatus having a corresponding second center frequency less than the first center frequency as a result of signal attenuation by the object, and means connected to select automatically between said stepped array transmitting means and said angle scanning transmitting means so that at least some of the transducer elements are selectively used to transmit in both the stepped array mode and the angle scanning mode for operating said array elements based on the detected second center frequency.

4,446,741

VIBRATION TRANSDUCER

Jurij Sirokorad, and Jiri Vecera, both of Brno, Czechoslovakia, assignors to Prvni brnenska strojirna, narodni podnik, Brno, Czechoslovakia

Filed Jun. 1, 1981, Ser. No. 268,697
Int. Cl.³ G01H *11/00*
U.S. Cl. 73—654 4 Claims



1. An induction vibration transducer for measuring vibrations and shocks, comprising an elongated sleeve, an induction coil wound about the exterior of the sleeve, a first permanent magnet movably mounted within the sleeve for movement axially thereof, and second and third permanent magnets mounted on the sleeve in axially spaced positions thereon so as to provide free spaces between the inner pole pieces thereof and the confronting poles of the movable permanent magnet,

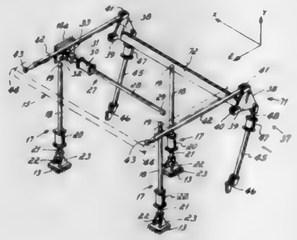
the pole of the second and third fixed permanent magnets confronting poles of the same polarity on the first movable permanent magnet, the induction coil being composed of pseudobifiliary wound induction coils disposed on the outer surface of the sleeve at the location of the interpolar spaces between the respective second and third, fixed permanent magnets and the first movable permanent magnet, the first, movable permanent magnet having a central opening therethrough which provides for the free exchange of gas between the spaces within the sleeve at the opposite ends of the first, movable permanent magnet.

4,446,742

MOTION TRANSMISSION LIMITING APPARATUS

Jack M. Thompson, Jr., Milford, and Theodore H. Leist, Jr., Bethany, both of Ohio, assignors to Structural Dynamics Research Corporation, Milford, Ohio

Filed Jan. 18, 1982, Ser. No. 339,845
Int. Cl.³ B06B *1/10*
U.S. Cl. 73—663 **3 Claims**



1. A seismic testing apparatus comprising:
a fixed base;
a rigid table horizontally disposed a spaced distance above said base;
excitation means for moving said table linearly along a predetermined X-axis, said excitation means including a pivot member connected to said table and to an actuator, said actuator being adapted to pivot said pivot member and in turn move said table along said predetermined X-axis;
excitation means adapted to simultaneously move said table linearly along an axis transverse to the X-axis;
means connected between said base and said pivot member for preventing motion of said pivot member in said transverse direction and thereby preventing said linear motion of said table transverse to said X-axis from being transmitted via said pivot member to said actuator of said X-axis excitation means.

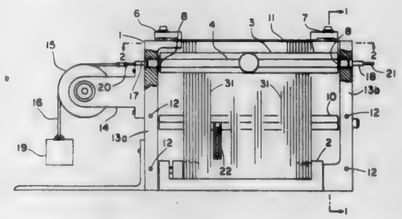
4,446,743

METHOD AND APPARATUS FOR EDGEWISE COMPRESSION TESTING OF FLAT SHEETS

Dennis E. Gunderson, Madison, Wis., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 152,874, May 23, 1980, Pat. No. 4,343,189. This application Apr. 8, 1982, Ser. No. 366,754
Int. Cl.³ G01N *11/00*
U.S. Cl. 73—822 **4 Claims**

1. An apparatus for edgewise compression testing of a flat sheet, comprising:
(a) means for restraining said sheet from buckling in the lateral direction, comprising:
(1) a sheet-supporting surface, flexible in the directions of test loading, on one side of said sheet, comprising:
(a) a plurality of lateral support leaves capable of being easily flexed in one test direction;
(b) spacing means at the base of said leaves whereby said leaves are clamped together and supported;
(c) enclosure means substantially surrounding said leaves such that a specimen in a position to be tested on said leaves comprises a boundary between said enclosure means at a lower air pressure and the ambient at a higher air pressure, and to which enclosure means said spacing means are attached; and
(d) aligning means for providing a fixed spacing between said leaves, comprising:
(1) an alignment frame located inside said enclosure means and surrounding said leaves;
(2) a plurality of wires stretched across said alignment frame equidistantly, each wire having one end



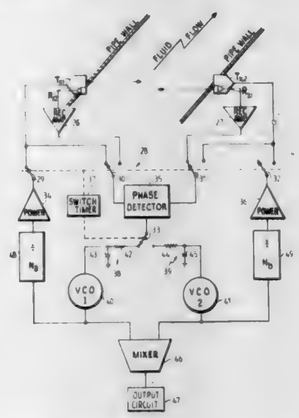
attached to one side of aid alignment frame and the other end attached to the opposite end of said alignment frame, with each wire located between two of said leaves; and
(3) means for raising and lowering said alignment frame;
(2) air pressure on the unsupported side of said sheet exceeding that on the support side of said sheet;
(b) means for holding said sheet adjacent to said restraining means during testing; and
(c) means for placing a load on said sheet in a desired direction.

4,446,744

ULTRASONIC FLOWMETER

Kenneth E. Bearcroft, Lichfield, England, assignor to ITT Industries, Incorporated, New York, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,524
Claims priority, application United Kingdom, Jan. 23, 1981, #102152
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.28 **3 Claims**



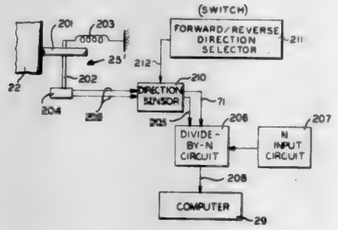
3. A flowmeter comprising: a pipe section having an axis and a first transmitting transducer at one location on said pipe section to transmit vibrational energy in a line approximately through said axis at an acute angle relative thereto; a first receiving transducer at a second location on said pipe section approximately on said line facing said first transducer; a second transmitting transducer at said second location approximately on said line; a second receiving transducer at said first location facing said second transmitting transducer; first and second receiving amplifiers connected from said first and second receiving transducers, respectively; a first voltage controlled oscillator (VCO); a second VCO; first and second power amplifiers connected from first and second VCO's, respectively; a phrase detector having first and second inputs and an output; first, second, third, fourth and fifth switches; a switch timer to operate said switches synchronously, said first switch alternately connecting and disconnecting said first power amplifier from said first transmitting transducer while the remainder of said switches are in first and second positions, respectively, said second switch being connected to one phase detector input alternately from said first transmitting transducer and said second receiving amplifier in said first and second positions, respectively, said third switch connecting the other input of said phase detector alternately to said first receiving amplifier and to said second transmitting transducer in said first and second positions, respectively, said fourth switch alternately disconnecting and connecting said second power amplifier from said second transmitting transducer in said first and second positions, respectively, said fifth switch connecting the output of said phase detector alternately to said first and second VCO's when in said first and second positions, respectively; difference means responsive to the output of said first and second VCO's for producing a main signal proportional to the difference between the output frequencies of said first and second VCO's; and an output circuit connected from said difference means to produce an indication of the magnitude of said main signal.

4,446,745

APPARATUS FOR COUNTING TURNS WHEN MAKING THREADED JOINTS INCLUDING AN INCREASED RESOLUTION TURNS COUNTER

Lyndon R. Stone, San Antonio, and James D. Hall, Austin, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Apr. 10, 1981, Ser. No. 253,118
Int. Cl.³ G01L *5/24*
U.S. Cl. 73—862.25 **10 Claims**



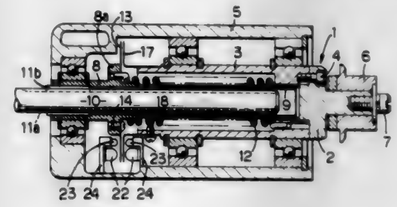
1. In an apparatus for making threaded joints from a pair of threaded members including means for rotating one of the members with respect to the other member and means for generating a signal representing the actual turns made by the one member, the actual turns signal generating means comprising: means responsive to the rotation of the one member for generating a first plurality of pulses at a first frequency proportional to the speed of rotation of the one member, said means for generating said first plurality of pulses including an idler wheel engaging the outer surface of the one member, an encoder means for generating said first plurality of pulses upon rotation thereof, and means coupling said idler wheel in driving relationship to said encoder means; and means responsive to said first plurality of pulses for generating said actual turns signal as a second plurality of pulses at a second frequency lower than said first frequency, said means for generating said second plurality of pulses including means for dividing said first plurality of pulses by a predetermined number N to generate said second plurality of pulses, the value of said predetermined number N being equal to a first value representing the outside diameter of the one member divided by the diameter of said idler wheel, multiplied by a second value representing the number of pulses generated by said encoder means per revolution of said idler wheel divided by a number of pulses desired per revolution of the one member.

4,446,746

TORQUE DETECTING APPARATUS

Shozo Aoshima; Noboru Hirose, and Michio Ishikawa, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 9, 1981, Ser. No. 310,410
Claims priority, application Japan, Oct. 29, 1980, 55-151645
Int. Cl.³ G01L *3/12, 3/14*
U.S. Cl. 73—862.33 **14 Claims**



1. An apparatus for detecting torque transmitted between a driving rotary member and a driven rotary member mounted on a frame for rotation about a common axis, comprising:
transmitting means, disposed between said driving and driven rotary members, for transmitting rotary motion from said driving rotary member to said driven rotary member, said transmitting means permitting said rotary members to produce a relative angular displacement with respect to each other in proportion to the magnitude of a load applied to said driven rotary member, said angular displacement being held within a range less than 360 degrees;
a wheel disk attached to one of said driving and driven rotary members and having a plurality of detectable portions spaced from each other along a circle concentric with said axis;
first detecting means, disposed on said frame adjacent to said wheel disk, for detecting said detectable portions of said wheel disk and generating detecting signals corresponding to said detectable portions detected during rotation of said driving rotary member;
a shutter disk attached to the other of said rotary members adjacent to said wheel disk and having a single shutter portion formed thereon so as to cover a partial circumference of said circle, said shutter portion selectively covering consecutive ones of said detectable portions and thereby preventing said first detecting means from detecting the consecutive detectable portions covered by said shutter portion, said shutter portion being movable relative to a specific one of said detectable portions in response to said relative angular displacement and thereby changing the number of the detectable portions which are exposed with respect to said shutter portion to be detected by said first detecting means;
second detecting means, disposed on said frame opposite to said wheel and shutter disks, for detecting a resetting portion formed in one of said wheel and shutter disks, said second detecting means generating a resetting signal in

each rotation of said wheel and shutter disks when said resetting portion is detected; and

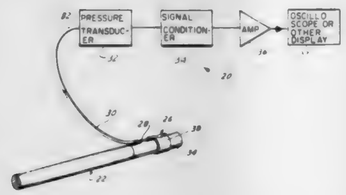
processing means connected to said first and second detecting means and comprising a counter for counting the number of said detecting signals generated from said first detecting means to detect the number of the exposed detectable portions, said counter being reset by said resetting signal, whereby said relative angular displacement is detected in each rotation of said rotary members.

4,446,747

METHOD AND APPARATUS FOR TESTING LIP PRESSURE APPLIED TO A SMOKING ARTICLE AND FOR CALIBRATING THE PRESSURE TESTING APPARATUS

Roger D. Kamm, 77 Marion Rd., Watertown, Mass. 02172

Filed Mar. 11, 1982, Ser. No. 356,979
Int. Cl.³ G01L *1/02*
U.S. Cl. 73—862.58 **15 Claims**



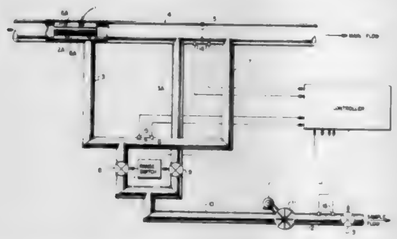
1. Apparatus for testing pressure applied to a smoking article comprising; a pressure sensor intended to be positioned on a predetermined portion of a smoking article to be subjected to external pressure, means for holding said sensor on the smoking article, a pressure transducer connected to the sensor, and means connected to the transducer to indicate the output of the transducer responsive to the pressure applied to the smoking article and sensed by the sensor.

4,446,748

PROPORTIONAL FLOW SAMPLER

William H. Clingman, Dallas, and Kenneth R. Hall, College Station, both of Tex., assignors to Precision Machine Products, Inc., Dallas, Tex.

Filed Nov. 27, 1981, Ser. No. 325,312
Int. Cl.³ G01N *1/22*
U.S. Cl. 73—863.03 **3 Claims**



1. Apparatus for taking a proportionally constant flowing sample from a gas stream flowing through a main gas flow line at rates subject to variation comprising:

a bypass line extending out of said main gas line and reentering said main line downstream from the point of said extending out;

a first orifice plate mounted in said bypass line;

a main sample line extending out of said bypass line and extending toward a point of sample processing;

a second orifice plate mounted in said sample line;

a third orifice plate mounted in said main gas line;

an alternate sample line extending out of said main gas flow line at a point upstream of said third orifice plate and extending to said main sample line at a point upstream from said second orifice plate.

means for detecting the magnitudes of the pressure drops across said orifice plates;

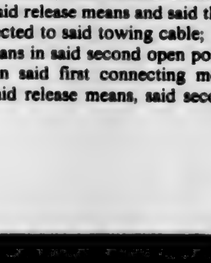
means for altering the pressure and flow conditions obtained adjacent said second orifice plate to match those obtained at said first orifice plate, to thereby establish flow through said main sample line at a constant proportion of the flow through said main gas flow line.

4,446,749

AQUATIC SPECIMEN RETRIEVAL FRAME

James K. Low, 8460 SW. 68 St., Miami, Fla. 33143

Filed Mar. 26, 1981, Ser. No. 247,731
Int. Cl.³ G01N *1/10*; A01K *73/04*
U.S. Cl. 73—863.23 **4 Claims**



1. An underwater aquatic specimen retrieval device connectable to a towing cable by at least one release means connected to said towing cable, comprising:

sampling means for positioning on opposite sides of the towing cable to prevent interference, said sampling means including at least two sampling nets each having an open end and a closed end, at least two open frame members, towing means, a first connecting means, a second connecting means a third connecting means;

said open frame member each connected to said open end of one of said sampling nets, and said open frame members movably connected to said towing means, said towing means connectable to the towing cable to position said open frame members on opposite sides of the towing cable and positionable in a first pre-sampling closed position preventing samples from collecting in said sampling nets and in a second open position holding said frame members in a plane generally transverse to said towing cable for collecting samples in said sampling nets;

first connecting means for releasably connecting said sampling means to said release means and said towing cable;

second connecting means for releasably connecting said sampling means to said release means and said towing cable;

third connecting means for connecting said sampling means to said towing cable;

said sampling means having said first pre-sampling closed position, said second open position and a third post-sampling closed position;

said sampling means in said first pre-sampling closed position with said open frame members positioned to prevent sampling, when said first connecting means is connected to said release means, said second connecting means is connected to said release means and said third connecting means is connected to said towing cable;

said sampling means in said second open position, allowing sampling, when said first connecting means is disconnected from said release means, said second connecting means is connected to said release means, and said third connecting means is connected to said towing cable;

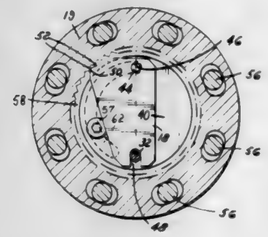
said sampling means in said third post-sampling closed position, preventing further sampling and preventing escape of samples, when said first and second connecting means are disconnected from said release means and said third connecting means is connected to said towing cable.

4,446,750

ESCAPEMENT DEVICE

Paul H. Stahlhuth, Mission Viejo, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 16, 1981, Ser. No. 331,110
Int. Cl.³ F16H *27/04*; G04B *15/00*
U.S. Cl. 74—1.5 **8 Claims**



1. An escapement device comprising:

a rotatable input member;

a rotatable output member;

means for urging said output member to rotate in one direction;

a pivotable intermediate member having a first pivotable connection to said input member offset from the axes of rotation of said input and output members and a second pivotable connection to said output member offset from the axis of rotation of said first pivotable connection and the axes of rotation of said input and output members;

a stop means engageable by said intermediate member when said intermediate member is in a first relative position with said input and output members for stopping said output member from rotation urged by said urging means; and

said intermediate member pivotable to a second relative position with respect to said input and output members upon rotation of said input member a predetermined amount such that said intermediate member disengages from said stop means to allow said output member to rotate in said one direction and said intermediate member pivots back to its first relative position upon rotation of said output member a predetermined amount to reengage said stop means.

4,446,751

KILN FLOOR SYSTEM

Norman H. Andreasen, 1520 Norwood Ave., Itasca, Ill. 60143

Division of Ser. No. 235,656, Feb. 18, 1981. This application Dec. 1, 1982, Ser. No. 445,918
Int. Cl.³ F16H *1/04, 35/06*; B61C *13/00*
U.S. Cl. 74—422 **5 Claims**

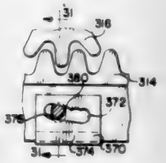
1. In a gear rack system for engaging at least one pinion of a turning machine associated with a kiln floor comprising

a plurality of gear rack sections adapted to be coupled to an adjoining wall above the kiln floor,

attachment means coupled to said gear rack for support thereof on the adjoining wall, said attachment means including a wear bar,

adjustment means attached to said wear bar to permit selected vertical movement of said gear rack sections relative to each other,

said adjustment means having a respective camming member affixed to the bottom portion of each of said gear sections, a sloped slot formed in each of said camming members, a corresponding opening in said gear rack being alignable with said sloped slot, elongated members extending through said sloped slots and said openings for attachment to said wear bar, and



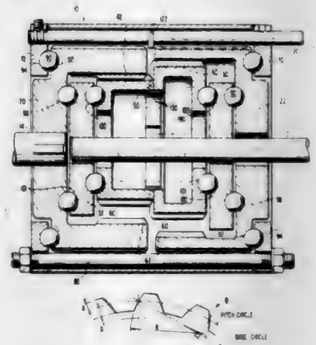
said elongated members having means to affix each of said gear sections in a fixed position and to release each gear section independently for adjustment of each gear section relative to the other.

4,446,752

EPICYCLOIDAL GEARS AND GEAR TOOTH ARRANGEMENT THEREFOR

James E. Shaffer, Longmont, and Robert G. Distin, Jr., Louisville, both of Colo., assignors to Advanced Energy Concepts '81, Ltd., Boulder, Colo.

Filed Apr. 23, 1981, Ser. No. 256,286
Int. Cl.³ F16H *55/06*
U.S. Cl. 74—462 **3 Claims**



1. An epicyclic gear train, comprising:

input and output means;

first and second orbiting gears;

first and second eccentric members coupled to said input for orbitally driving said orbiting gears;

first and second outer gears meshingly engaged with said first and second orbiting gears, respectively;

means for selectively braking either of said outer gears;

means for counterbalancing imbalance forces caused by said orbiting gears; and bearing means for supporting said orbiting gears for orbiting and rotating motion, said bearing means including first races formed in confronting axial surfaces of said first orbiting gear and said first eccentric member as well as in confronting axial surfaces of said second orbiting gear and said second eccentric member, respectively, and rollers guided in said first races; and

wherein said first orbiting gear and said first outer gear mesh with teeth having circular arc profiles and having a pres-

sure angle of 30°±7° in dependence upon the number of teeth difference between said first orbiting gear and said first outer gear, the number of teeth on said first orbiting gear being less than that on said first outer gear by a number of between two and eight.

4,446,753

ADJUSTABLE LENGTH CRANK ARM FOR A BICYCLE

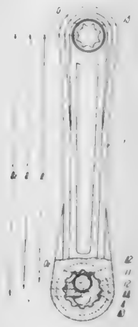
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Sep. 16, 1982, Ser. No. 418,630

Claims priority, application Japan, Sep. 24, 1981, 56-141756[U]

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—594.1 **6 Claims**



1. A crank for a bicycle comprising a crank arm having a through bore at one end thereof and annular recesses in continuation of said through bore on opposite first and second sides of said crank arm, a pedal shaft having a screw threaded portion, a first adapter fitted into said through bore at a pedal shaft mounting side thereof, said first adapter having a first mounting bore which is eccentrically positioned with respect to the center of said through bore and through which said pedal shaft is mounted to said crank arm, said first adapter having at the outer periphery thereof at a side of one axial end of said first mounting bore a first engaging portion larger in diameter than said through bore which is fitted into one of said annular recesses provided at said first side of said crank arm, a second adapter fitted into said through bore on said crank arm at a reverse side to said pedal shaft mounting side, said second adapter having a second mounting bore eccentrically positioned with respect to the center of said through bore and aligned with said first mounting bore, and having at the outer periphery at a side of one axial end of said second mounting bore a second engaging portion larger in diameter than said through bore which is fitted into one of said annular recesses provided at said second side of said crank arm, at least one of said first and second mounting bores at said first and second adapters having a screw threaded portion which is screwable with said screw threaded portion of said pedal shaft, an anti-rotation mechanism comprising a plurality of engaging splines extending axially of said through bore and provided between at least one of said first and second adapters and said crank arm which restrains said adapters from rotating with respect to said crank arm, and a connecting means for connecting and drawing said first and second adapters toward each other.

4,446,754

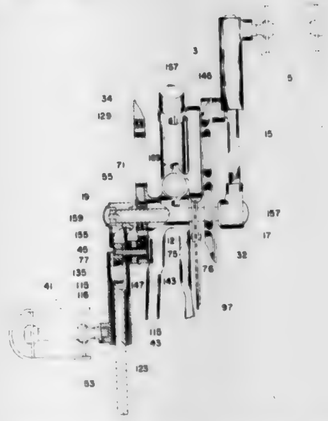
PEDAL TELESCOPING DEVICE

Jesse R. Chattin, 7201 S. 49th Ave., Tampa, Fla. 33600

Continuation of Ser. No. 100,625, Dec. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 901,363, Apr. 28, 1978, abandoned. This application Feb. 19, 1982, Ser. No. 350,262

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—594.3 **15 Claims**



1. An apparatus for telescoping a pedal of a pedal assembly between a retracted and extended position during rotation of the pedal, said apparatus comprising a spindle housing having an axle shaft rotatably disposed therein, a first cam plate mounted on said axle shaft such that said first cam plate is stationary relative to said spindle housing, a first cam ring radially spaced from said first cam plate by a ring bearing disposed circumferentially therebetween, a pedal arm attached to said axle shaft, a pedal guide slidably mounted rectilinearly on said pedal arm and having a lead bolt means attached thereto, the pedal being attached to said pedal guide and a drive means interconnected to said axle shaft to rotate with said axle shaft, said lead bolt means being rotatably coupled to said first cam ring to interconnect said pedal guide to the periphery of said first cam ring such that said lead bolt means and said pedal guide rotate together with said first cam ring about said first cam plate, said lead bolt means being rotatably movable relative to said first cam ring wherein said first cam ring controls the movement of said lead bolt means to move said pedal guide between said retracted and extended position as said pedal arm and said pedal guide rotate with said axle shaft.

4,446,755

AIR BREATHER DEVICE OF AN AUTOMOTIVE MANUAL TRANSMISSION

Kotei Takahashi, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Feb. 19, 1982, Ser. No. 350,390

Claims priority, application Japan, Feb. 20, 1981, 56-22889

Int. Cl.³ F16H *57/02*

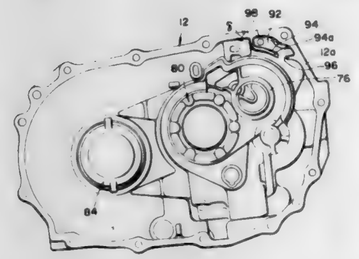
U.S. Cl. 74—606 R **5 Claims**

1. In a transmission including a transmission housing and a clutch cover which are coupled with each other by sealingly contacting their respective mating flange portions, an air breather device comprising:

a first rib integrally formed on said transmission housing to form in the vicinity of the mating flange portion of the transmission housing a first recess which faces toward said clutch cover;

a second rib integrally formed on said clutch cover to form in the vicinity of the mating flange portion of the clutch

cover a second recess which faces toward said transmission housing, said first and second ribs being sealingly contacted at their tops with each other to merge said first and second recesses thereby to form a chamber upon coupling said transmission housing and said clutch cover;



first means defining in said first and second ribs respective cuts which constitute, upon coupling said transmission housing and said clutch cover, independent openings through which the interior of said chamber is communicated with the interior of said transmission housing; and

second means communicating the interior of said chamber with the outside of said transmission housing.

4,446,756

POWER DIVIDER GEARBOX WITH A PLANETARY DIFFERENTIAL GEAR DRIVE

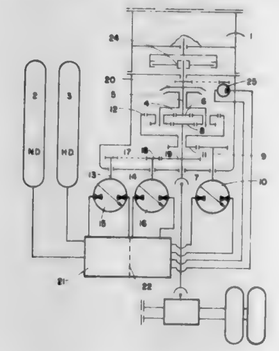
Faust Hagin, and Hans J. Drewitz, both of Munich, Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 215,146

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950619

Int. Cl.³ F16H *47/04, 37/06*

U.S. Cl. 74—687 **6 Claims**



1. In a power divider gearbox having an input shaft and an output shaft and including a planetary differential gear drive comprising dual planetary pinions, two sun gears having different diameters and an internal ring gear meshing with said pinions, said planetary differential gear drive dividing the power transmitted to the power divider gearbox through the input shaft into a mechanical branch and a hydraulic branch, said hydraulic branch being connected to the internal ring gear; the improvement comprising: a first of said sun gears having a large diameter and being torsionally rigidly connected with the gearbox output shaft, and the second of said sun gears having a small diameter and being connected to the gearbox input shaft.

4,446,757

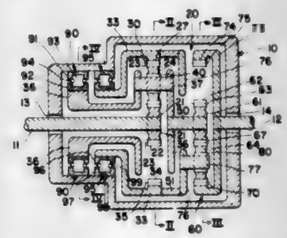
DIRECTIONAL GEAR RATIO TRANSMISSIONS

Alan E. La Fever, La Habra Heights, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 11, 1982, Ser. No. 387,728

Int. Cl.³ F16H *57/10, 3/44, 5/52*

U.S. Cl. 74—758 **15 Claims**



1. A directional gear ratio transmission comprising:

transmission housing means;

first shaft means;

second shaft means;

first epicyclic assembly means for receiving input from said first shaft means in a first or a second direction with respect to said transmission housing means;

first and second output means, within said first epicyclic assembly means, for transmitting output from said first epicyclic assembly means;

first means for restricting transmission of said output from said first output means in said first direction;

second means for restricting transmission of said output from said second output means in said first direction;

second epicyclic assembly means for transmitting output to said second shaft means in said first or said second direction;

first and second input means, within said second epicyclic assembly means, for receiving said output from said first and said second output means;

first connecting means for transmitting said output from said first output means to said first input means;

second connecting means for transmitting said output from said second output means to said second input means;

said input from said first shaft means is transmitted by said directional gear ratio transmission to said second shaft means at a higher speed and lower gear ratio when said input is in said first direction than in said second direction.

4,446,758

PLANETARY TRANSMISSION

James E. Winzeler, East Peoria, and Willis E. Windish, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00917, 371 Date Jul. 7, 1981, 102(e) Date Jul. 7, 1981, PCT Pub. No. WO83/00200, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 7, 1981, Ser. No. 288,951

Int. Cl.³ F16H *3/44, 57/10, 37/00*

U.S. Cl. 74—781 R **8 Claims**

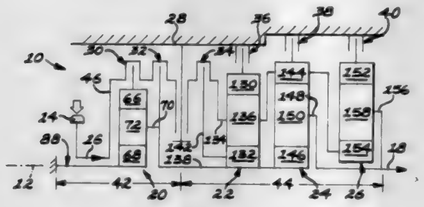
1. A planetary transmission (10) comprising:

a front section (42) having a rotating housing (46) and a planetary gear set (20) including a sun gear (68), a planet carrier (70) and a ring gear (66), the rotating housing (46) serving as the input and the planet carrier (70) serving as the output;

holding means (88) for holding the sun gear (68) stationary;

first clutch means (30) for selectively connecting the ring gear (66) to the rotating housing (46) and providing an underdrive mode of operation and including an actuating piston (110) jointly rotatable with the housing (46); and

second clutch means (32) for selectively connecting the planet carrier (70) to the rotating housing (46) and providing a direct drive mode of operation and including an actuating piston (110) jointly rotatable with the housing (46).

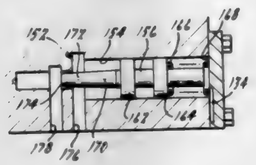


4,446,759

CLUTCH STROKE CONTROL METERING VALVE FOR AN AUTOMATIC TRANSMISSION

Paul T. McCrary, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 2, 1981, Ser. No. 307,990
Int. Cl.³ F16H *47/00*; B60K *41/06, 41/08*
U.S. Cl. 74—867 **3 Claims**



1. In an automatic transmission for use in a vehicle driveline having an internal combustion engine and multiple ratio gearing establishing plural torque delivery paths between the engine and vehicle traction wheels:

fluid pressure operated servos including a brake servo and a clutch servo for effecting speed ratio changes by controlling the relative motion of the elements of the gearing;

said clutch servo being applied during high speed ratio operation and released during intermediate speed ratio operation and said brake servo being released during high speed ratio operation and applied during intermediate speed ratio operation;

said brake servo having a pressure movable piston with two pressure chambers, one on each side thereof, the effective pressure area on the release side of the piston being greater than the effective pressure area on the apply side thereof so that the piston assumes a brake release position when both chambers are pressurized;

shift valve means for selectively distributing and exhausting pressure from said pressure chambers;

a source of an engine torque signal and a source of a speed signal proportional to the driven speed of said vehicle communicating with said shift valve means for actuating the same;

an accumulator timing valve in fluid communication with the release side of said brake servo comprising a valve chamber and a movable valve spool therein;

a flow metering orifice in said valve chamber;

said movable valve spool having a metering stem thereon registering with said orifice and adapted to move relative to said orifice to decrease the effective flow area of said orifice upon movement thereof in one direction and effective to increase the effective flow area of said orifice upon movement thereof in the opposite direction;

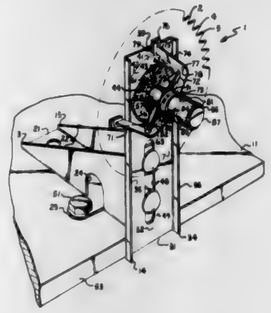
said timing valve being in fluid communication with said governor the latter effecting a pressure force on the former to shift said spool toward a said one direction thereby delaying the application of said brake upon a ratio change from the high speed ratio to an intermediate speed ratio, the magnitude of the delay being dependent upon said driven speed.

4,446,760

SAW BLADE CLAMP

Daniel W. Denham, 806 Ann, Independence, Mo. 64056

Filed Jul. 28, 1982, Ser. No. 402,591
Int. Cl.³ B23D *61/10*
U.S. Cl. 76—79 **19 Claims**



1. A clamp for releasably securing a saw blade having a generally circular configuration with a central opening to a support having an opening, which comprises:

(a) a lever having a distal end adapted for clamping said saw blade to said support and a proximate end;

(b) lever mounting means comprising a spindle adapted for extending through said saw blade and support openings, said spindle being adapted for attachment to said support and pivotally connected to said lever at a fulcrum between said proximate and distal ends of said lever; and

(c) biasing means connected to said lever proximate end and adapted for urging said lever proximate end away from said support and said lever distal end toward said blade;

(d) said lever proximate end being movable toward said blade whereby said lever distal end is disengaged therefrom.

4,446,761

PIPE SPINNING TOOL

George I Boyadjieff, and Frederick A. Monahan, both of Anaheim, Calif., assignors to Varco International, Inc., Orange, Calif.

Filed Apr. 24, 1981, Ser. No. 257,105
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.19 **15 Claims**

1. A pipe spinner comprising:

a plurality of rollers engageable with a pipe at different locations about its periphery and adapted to grip and spin the pipe;

two body parts having portions receivable at different sides respectively of said pipe and each carrying at least one of said rollers;

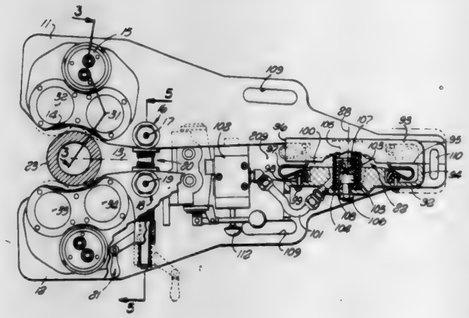
two structures movably mounting said body parts respectively;

to pivotal connections attaching said body parts to said structures respectively for pivotal movement of the body parts relative to said structures about two spaced axes between a closed position in which the rollers grip and drive a pipe and an open position releasing the pipe;

a rotatable adjusting element having a right hand thread and a left hand thread;

right hand and left hand threads on said two structures respectively engaging said right hand and left hand threads of said adjusting element in a relation moving said structures and the axes of said pivotal connections toward and away from one another in response to rotation of said adjusting element, to grip and drive different sizes of pipe;

powered means for swinging said body parts about said pivotal axes relative to said structures and between open and closed positions in differently spaced conditions of said axes; and



motor means operable to drive at least one of said rollers rotatively, and thereby turn the pipe, in any of a plurality of different rotary settings of said adjusting element in which said pivotal axes of the body parts are spaced different distances apart;

said powered means including a unit which is operable by pressurized fluid and which, in any of a plurality of differently spaced conditions of said axes, acts to urge two actuating portions of said body parts relatively apart and thereby pivot said first mentioned portions of the body parts and their carried rollers toward one another and against the pipe.

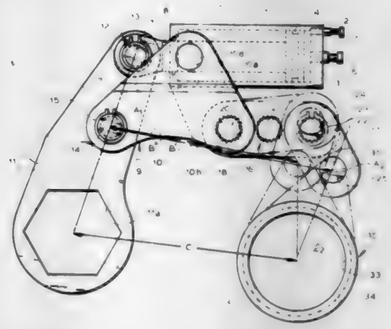
4,446,762

UNIVERSALLY USABLE HYDRAULIC WRENCH FOR SIMULTANEOUSLY TIGHTENING OR LOOSENING TWO THREADED CONNECTORS OR FOR TIGHTENING OR LOOSENING A SINGLE THREADED CONNECTOR WITH A GREATER FORCE

John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07458

Continuation-in-part of Ser. No. 315,998, Oct. 28, 1981, Pat. No. 4,406,185, which is a continuation-in-part of Ser. No. 265,234, May 19, 1981, Pat. No. 4,387,611. This application Aug. 5, 1983, Ser. No. 521,161
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—57.39 **9 Claims**

1. A hydraulic wrench comprising fluid-operated cylinder and piston means including a cylinder having an axis, a piston reciprocatable along said axis in said cylinder between an active stroke and a return stroke; connecting means connected to and projecting from one side of said cylinder; elongated drive lever means provided in the region of one end thereof with means for drivingly engaging a polygonal member of a first threaded connector to be turned during the active stroke of said piston; first mounting means for mounting said drive lever means intermediate its ends on said connecting means for tilting movement about a first pivot axis with the other end of said drive lever means operatively connected to said piston; elongated drive link means provided in the region of one end for drivingly engaging a polygonal member of a second threaded connector to be turned during the active stroke of said piston; elongated anchoring link means provided in the region of one end for engaging a polygonal member of a second threaded connector adjacent said first threaded connector; and second mounting means for releasably connecting the other end of either said drive link means or said anchoring link means to said connecting means for tilting movement about a second pivot axis parallel to and transversely spaced from said first pivot axis, whereby when the drive link means is connected to said connecting means two threaded connectors may



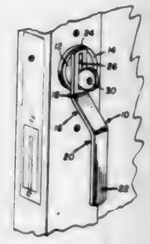
be turned simultaneously during the active stroke of said piston, while when said anchoring link means is connected to said connecting means the full force of said cylinder-and-piston means may be used to drive only said first threaded connector while said anchoring link means transmits the reaction force created during such turning to said second threaded connector.

4,446,763

MORTICE CYLINDER LOCK WRENCH STRUCTURES

LeVone A. Blough, 95 Horseshoe Dr., Longwood, Fla. 32779, and David L. Gregory, 10207 Union Park Dr., Orlando, Fla. 32817

Continuation-in-part of Ser. No. 146,213, May 5, 1980, abandoned. This application Jan. 7, 1982, Ser. No. 337,839
Int. Cl.³ B25B *13/02*
U.S. Cl. 81—90 B **7 Claims**



1. A wrench apparatus for removal of a cylinder of a mortice or similar lock from a structure in which the lock is installed, the lock being operable by a key or thumbturn, comprising wrench means for rotating the lock to remove the lock from the structure, the wrench means comprising:

an annular body member having an inner annular surface at least a portion of which engages at least a portion of outer edge surfaces of the lock cylinder, the engagement providing load-bearing contact therebetween on rotation of the wrench means; and,

a body portion extending substantially diametrically across the annular body member and being attached thereto, the body portion having a longitudinal slot to receive the key or thumbturn associated with the lock, the slot extending diametrically across the annular body member with a portion of the slot lying over the center of the circle defined by the annular body member, inner edge surfaces of the slot bearing against the key or thumbturn to provide

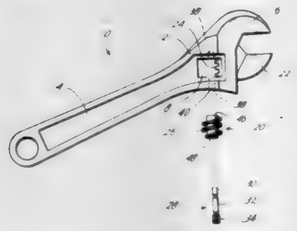
load-bearing contact therebetween on rotation of the wrench means.

4,446,764

ADJUSTABLE WRENCH ADJUSTING MECHANISM

Henry T. Sievers, Sumter, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 429,876
Int. Cl.³ B25B *13/16*
U.S. Cl. 81—170 **8 Claims**



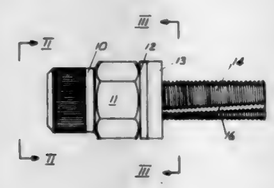
1. An adjustable wrench comprising:
(a) a main body section having a handle and a fixed jaw formed therewith;
(b) a movable jaw slidably mounted with said main body section;
(c) a rotatable adjustment sleeve having external threads thereon adapted to cooperate with teeth on said movable jaw to cause said movable jaw to open and close relative to said fixed jaw; and
(d) pin means for rotably mounting said adjustment sleeve with said main body section, said pin means including shear means for permitting ready shearing of said pin means in order to easily remove said adjustment sleeve from said wrench main body section.

4,446,765

TORQUE TRANSMITTING DEVICE

Daryl Wheeler, 4 Hope Rd., Ardross, Australia (6153)

PCT No. PCT/AU81/00142, 371 Date Jun. 4, 1982, 102(e) Date Jun. 4, 1982, PCT Pub. No. WO82/01150, PCT Pub. Date Apr. 15, 1982
PCT Filed Oct. 2, 1981, Ser. No. 387,878
Int. Cl.³ B25B *15/00*
U.S. Cl. 81—441 **16 Claims**



1. A torque transmitting device characterised by a shaft having a longitudinal axis and a first end and a second end said first end being arranged to be inserted foremost into a bore in a workpiece, wherein the shaft is formed with at least one groove extending longitudinally of the shaft, a workpiece engaging jaw is mounted in the or each groove, means is provided for retaining the or each jaw in its respective groove and wherein the or each groove is tilted with respect to the longitudinal axis of the shaft so that the or each jaw is non-aligned with the longitudinal axis of the shaft.

4,446,766

BLADED ROTOR TURNING APPARATUS

Desmond C. Lucey, Charfield, near Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Jun. 2, 1981, Ser. No. 269,610
Claims priority, application United Kingdom, Jun. 19, 1980, 8020134
Int. Cl.³ B25B *23/142*
U.S. Cl. 81—480 **9 Claims**



1. An apparatus for turning a bladed rotor of a machine comprising:
a rotatable shaft;
at least one finger secured to one end of said shaft, said finger being rotatable with said shaft about an axis extending along the longitudinal length of said shaft and being engagable with a blade of a rotor to rotate the rotor when the shaft is rotated, said finger being articulated on the shaft about an axis substantially perpendicular to the axis of the shaft; and
an inclining means cooperating with the finger to incline said finger with respect to the longitudinal axis of the shaft in dependence upon the rotational position of said shaft, said inclining means being arranged to incline the finger so that a longitudinal axis of the finger is substantially perpendicular to the shaft axis at one rotational position of the shaft and is substantially parallel to the shaft axis at a substantially diametrically opposed position of the shaft.

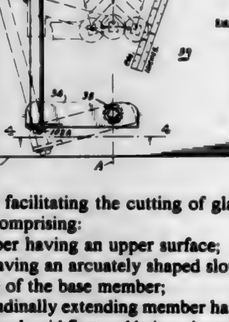
4,446,767

LOCKING RING STRIPPER PLATE ASSEMBLY

Kenneth J. Wilson, Roseville, Minn., assignor to Wilson Tool Company, White Bear Lake, Minn.

Filed Nov. 30, 1981, Ser. No. 325,650
Int. Cl.³ B26D *7/18*; B21D *45/08*
U.S. Cl. 83—136 **7 Claims**

1. An improved stripper plate assembly for use with a punch guide assembly and comprising
(a) A punch guide sleeve having a stripper plate-receiving end, the latter having a stripper plate support shoulder formed annularly within said sleeve and a groove formed annularly within said sleeve adjacent but spaced from said stripper plate support shoulder;
(b) a stripper plate carried within the stripper plate receiving end of the punch guide sleeve and having a peripheral flange disposed between the annularly groove and the annular support shoulder and engaging the annular support shoulder;
(c) a split locking ring of circular cross-section seated in the groove and bearing against the peripheral flange of the stripper plate to lock the latter into position against the annular support shoulder, the split locking ring having adjacent, spaced ends; and



(d) removeable spacer means threaded into the punch guide sleeve between the spaced ends of the locking ring to rigidly space apart and maintain the spaced-apart position of such ends.

4,446,768

GLASS CUTTER DEVICE

John J. Sirmans, 300 Allen St., Walbridge, Ohio 43465

Filed May 11, 1981, Ser. No. 262,549
Int. Cl.³ C03B *33/04*; B26D *3/08*
U.S. Cl. 83—879 **1 Claim**

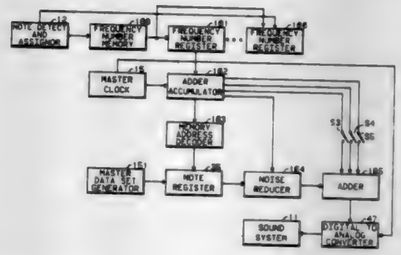
1. A device for facilitating the cutting of glass into similar shapes and sizes comprising:
(a) a base member having an upper surface;
(b) a member having an arcuately shaped slot affixed to the upper surface of the base member;
(c) a first longitudinally extending member having a first end and a second end, said first end being pivotally mounted to the upper surface of one portion of said base member;
(d) a second longitudinally extending member having a first end and a second end, with a portion of said second longitudinally extending member being engaged for free sliding movement in the arcuate slot;
(e) a third longitudinally extending member rigidly connecting said first and second longitudinally extending members;
(f) slidable means on the third longitudinally extending member for holding a tool therein for cutting purposes.

4,446,769

COMBINATION TONE GENERATOR FOR A MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jul. 14, 1982, Ser. No. 398,044
Int. Cl.³ G10H *1/06, 5/00*
U.S. Cl. 84—1.01 **11 Claims**



8. In a musical instrument having a plurality of tone generators which are assigned to actuated keyswitches contained in a keyboard array of keyswitches, apparatus for generating musical tones comprising a sawtooth waveform with selectable octave pitches determined by a preselected pitch control signal comprising;
a note detection means repetitively scanning said keyboard array of keyswitches and wherein a new note signal is created in response to each keyswitch status change from a nonactuated state to an actuated state,
a frequency number generator means wherein a frequency number is generated in response to said new note signal,
a plurality of frequency number memories,
an assignor means responsive to said new signal whereby said frequency number generated by said frequency number generator means is stored in a corresponding one of said plurality of frequency number generators,
a plurality of adder-accumulator means each of which is associated with a corresponding one of said plurality of frequency number memories, and each of which successively adds said frequency number stored in said corresponding frequency number memory to the contents of an accumulator to form a waveshape data word comprising a sequence of binary digital bits,
a plurality of data selectors, each of which is associated with one of said plurality of adder-accumulator means, whereby a subsequence of said sequence of binary digital bits is selected in response to said preselected pitch control signal, and
conversion means whereby said selected subsequence of binary digital bits is converted to produce a musical tone.

4,446,770

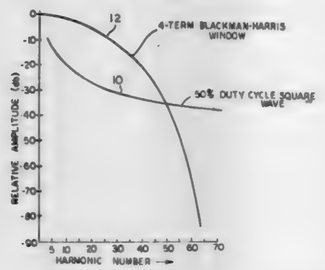
DIGITAL TONE GENERATION SYSTEM UTILIZING FIXED DURATION TIME FUNCTIONS

Steven C. Bass, Stockwell, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Continuation of Ser. No. 190,631, Sep. 25, 1980, Pat. No. 4,351,219. This application Aug. 27, 1982, Ser. No. 412,258
The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.
Int. Cl.³ G01H *1/057, 1/06*
U.S. Cl. 84—1.01 **16 Claims**

1. An electronic musical instrument comprising: player actuated tone frequency selection means, memory means for storing one cycle of a fixed width window function waveform, means responsive to the actuation of the tone selection means for reading said waveform out of said memory at a fixed rate for each cycle thereof independent of the frequency selected and in a repetitive fashion to produce a continuous signal

wherein the period of dead time between each successive reading of a cycle of the waveform is selectively adjusted in response to the frequency selected by the tone selection means without changing the width of the read out waveform to thereby produce a continuous train of time sequential said



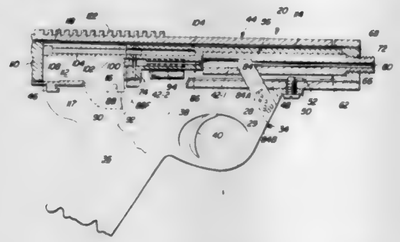
window function waveforms having a frequency inversely proportional to the period of dead time between the commencement of each successive reading, and means responsive to the train of read out waveforms for producing an audible musical tone.

4,446,771

PROJECTILE FIRING WEAPON WITH WAD DISCHARGE PORT

Myron L. Anthony, and Shane D. L. Anthony, both of 607 Agana Dr., Grand Junction, Colo. 81501

Filed Aug. 7, 1981, Ser. No. 291,021
Int. Cl.³ F41C 5/06; F42B 13/16
U.S. Cl. 89—14 SB **7 Claims**



1. In a magazine-fed firearm having a receiver supported on a frame, a barrel fixed to the receiver and presenting a firing chamber at the breech for receiving a cartridge, and a recoil-operated spring-returned bolt supporting a firing pin, the improvements for firing a cartridge in which a gas-impervious piston is packed between the charge and the projectile, the cartridge casing being of considerably larger caliber than the projectile and the piston having the internal diameter of the casing so as to apply a concentrated driving force to the rear of the projectile upon discharge, which improvements comprise:

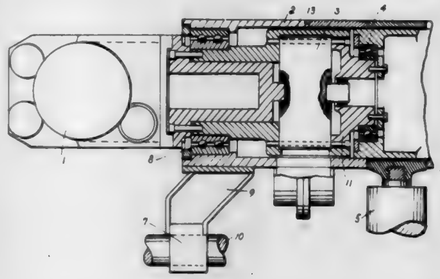
a discharge port adjacent the breech of the barrel between the firing chamber and the bore of the barrel and having a long dimension parallel to the bore axis less than the length of the projectile so that on discharge of the cartridge the projectile temporarily spans said port as it attains the barrel bore while being driven by the piston, said port constituting a discharge for the piston.

4,446,772

LARGE-BORE TWIN-WEAPON SYSTEM FOR COMBAT VEHICLES

Manfred Eggers, and Armin Zonak, both of Kiel, Fed. Rep. of Germany, assignors to MaK Maschinenbau GmbH, Kiel, Fed. Rep. of Germany

Filed Nov. 14, 1977, Ser. No. 851,265
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651679
Int. Cl.² F41H 7/00
U.S. Cl. 89—37 E **5 Claims**



1. A system for mounting weapons on a combat vehicle with the weapons arranged to extend along the long sides of the vehicle, comprising a horizontal axially extending carrier arranged to extend transversely of the long sides of the combat vehicle, a pair of large-bore weapons each mounted on said carrier spaced from one another and extending transversely of the axis of said carrier, a pair of first pivots attached to said carrier, each of said first pivots located outwardly from said carrier in the direction extending transversely of the axis thereof, said first pivots defining an axis of rotation for said carrier with the axis located outwardly from said carrier, a second pivot attached to said carrier for lifting said carrier and pivoting said carrier around the axis of rotation formed by said first pivots, means for rotatably mounting each said weapon on said carrier, said means comprises a main support bearing positioned within said carrier, a step bearing positioned within said carrier and spaced from said main support bearing, a journal mounted in said main support bearing and said step bearing and flanged to one of said weapons, and said step bearing includes an eccentrically formed bearing ring for eccentrically adjusting said journal in said step bearing relative to said carrier.

4,446,773

COMPRESSED AIR DISTRIBUTOR FOR A RECIPROCATING CONCRETE BREAKING TYPE MACHINE

Henri Emonet, Loire, France, assignor to Maco-Meuden, France

Continuation of Ser. No. 207,823, Nov. 7, 1980, abandoned, which is a continuation of Ser. No. 943,724, Sep. 19, 1978, abandoned. This application Aug. 10, 1982, Ser. No. 406,815
Int. Cl.³ F01L 25/04
U.S. Cl. 91—317 **1 Claim**

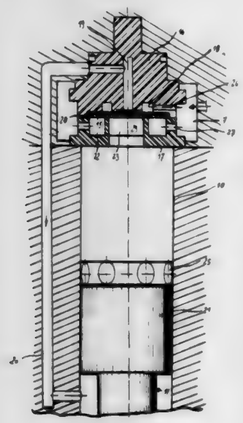
1. In combination with a reciprocating compressed air jack-hammer machine, for breaking concrete, of the type having a housing including a portion defining a central passage with one end and an opposite end, a tool mounted in the opposite end of said central passage and a piston disposed adjacent said tool; said jack-hammer machine further having a compressed air distribution system including an inlet chamber and passage means for ducting the compressed air alternatively to the front of said piston and to the back of the piston to reciprocate said piston in said central passage in said housing, said piston further striking said tool when the compressed air is ducted to reciprocate said piston toward said tool, the improvement comprising:

a distributor body mounted adjacent to said one end of said central passage of said housing, said distributor body further comprising:

a front seat member having a first contact surface and portions defining a central hole formed in said first contact surface, said central hole further being connected to said central passage for flow communication therebetween, said front seat member formed of shock resistant plastic;

a back seat member mounted adjacent to said front seat member, said back seat member having a second contact surface adjacent to said first contact surface, said back seat member being formed of shock resistant plastic;

a circular solid pellet member mounted for oscillation between said first contact surface of said front seat member and said second contact surface of said back seat member, said circular solid pellet member defining a low inertia disk with a thickness 1.2 mm or less, said circular solid pellet member further defining a first chamber on one side of said circular solid pellet member and a second chamber on the opposite side of said circular solid pellet member, said first chamber being in fluid communication with said central hole when said circular solid pellet member is contiguous to said second



contact surface and spaced away from said first contact surface; and

first inlet passage means, disposed in said front seat member for selectively connecting said inlet chamber to said central passage, said first inlet passage means further comprising at least one inlet hole spaced a predetermined distance from said first contact surface, said at least one inlet hole connecting said inlet chamber with said first chamber for fluid communication therebetween and thereby selectively interconnecting said first inlet passage means with said central passage when said circular solid pellet member is contiguous with said second contact surface of said back seat member; said communication between said inlet chamber and said central passage being terminated when said circular solid pellet member is contiguous said first contact surface of said front seat member;

second inlet passage means, disposed in said back seat member, for connecting said second chamber with said inlet chamber and said central passage when said circular solid pellet member is contiguous to said first contact surface and spaced away from said second contact surface; and

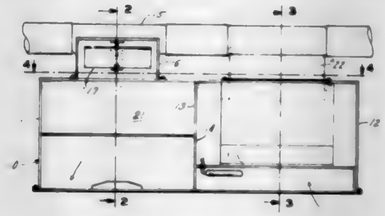
exhaust passage means located in said central passage of said housing in spaced relationship to said distributor body such that compressed air entering said inlet chamber is communicated through said first inlet passage means to said first chamber and to said central passage to move said circular solid pellet member towards said second contact surface of said back seat member and to further move said piston from a predetermined point in a front direction uncovering said exhaust passage means, said compressed air simultaneously being communicated through said second inlet passage means to said second chamber and to said central passage to the front of said piston such that when said piston uncovers said exhaust passage means and said circular solid pellet member moves against said first contact surface of said front seat member, said compressed air at the front of said piston returning said piston in a backward direction to its predetermined point of beginning to again uncover said exhaust passage means, said piston thereby reciprocating to strike said tool.

4,446,774

AIR CONDITIONING APPARATUS

Gershon Meckler, 7425 Democracy Blvd., Unit 212, Bethesda, Md. 20034

Continuation of Ser. No. 150,953, May 19, 1980, Pat. No. 4,315,412, which is a continuation of Ser. No. 897,271, Apr. 17, 1978, abandoned, which is a continuation of Ser. No. 735,548, Oct. 26, 1976, Pat. No. 4,084,389, which is a continuation of Ser. No. 572,792, Apr. 29, 1975, abandoned. This application Feb. 12, 1982, Ser. No. 348,408
Int. Cl.³ F24F 7/00, 13/00
U.S. Cl. 98—38 D **65 Claims**



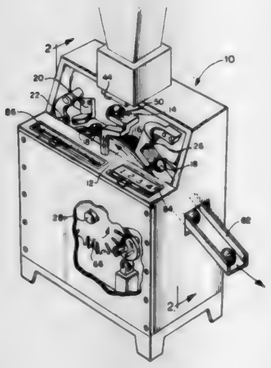
1. Apparatus for delivering air for air conditioning a zone of a building, said apparatus comprising, in combination, a mixing chamber having a first and a second air inlet, means for delivering primary, conditioned air through said first inlet to said chamber, means including an air bag actuator and effective to vary the rate at which primary conditioned air is delivered to said chamber between a maximum and a predetermined lesser rate, a fluidic valve having first and second discharge legs and operably connected to receive air circulated in the apparatus, means for conducting air between the first discharge leg of said fluidic valve and said air bag actuator, an outlet operatively connected to deliver air from said chamber to the zone of the building, and induction means operative to induce a flow of air into said chamber through said second inlet thereof for mixture therein with primary conditioned air and delivery therewith through said outlet to the building zone, whereby the energy required to power said means effective to vary the rate at which primary conditioned air is delivered to said chamber is provided by air circulated in the apparatus.

4,446,775

APPARATUS FOR HEATING FOOD PRODUCTS

Claude A. Reed, Omaha, Nebr., assignor to International Food Equipment, Inc., Peoria, Ill.

Continuation of Ser. No. 251,906, Apr. 7, 1981, abandoned, which is a division of Ser. No. 909,795, May 26, 1978, Pat. No. 4,261,258, which is a continuation of Ser. No. 719,585, Sep. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 446,951, Feb. 28, 1974, Pat. No. 3,996,847, which is a continuation-in-part of Ser. No. 190,254, Oct. 18, 1971, abandoned. This application Jan. 13, 1983, Ser. No. 457,530
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.³ A47J 37/12
U.S. Cl. 99—353 16 Claims



1. An appliance for impaling a food product onto heating grills, and which is adapted to impale hamburger patties onto such grills, preparatory to a cooking operation, the combination comprising:

a plurality of heat conductive grill means each of which has an end for insertion into the food product,

said plurality grill means mounted in an array and adapted to be inserted as a group into the food product;

a first zone for performing operations on the food product;

a second zone for the principal cookig operation of the food product;

a container for a liquid cooking medium in said second zone;

means for heating the liquid cooking meidum;

means for moving said grill means so that said grill means will be located at said first and second zones;

said grill means constructed and arranged so as to project substantially upright with said ends positioned for supporting the food product on the top portion during at least a portion of the time said grill means is positioned in said first zone;

placer means for positioning the food product on said upright grill means in said first zone;

means for moving said placer means and said grill means relatively toward and away from each other so as to support the food product on said ends of said upright grill means;

means for moving said grill means and the food product relatively toward each other for impaling the food product onto said grill means; and

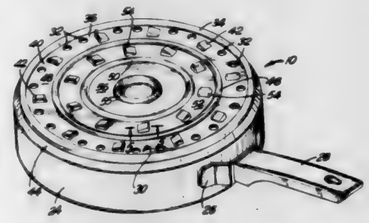
means for submerging the food product impaled on said grill means in said liquid cooking medium.

4,446,776

HEATING ACCESSORY

Stanley Gelfman, Riverdale, N.Y., assignor to Krischer Metal Products Co., Inc., Moonachie, N.J.

Filed Apr. 18, 1983, Ser. No. 485,957
Int. Cl.³ A47J 37/00
U.S. Cl. 99—401 20 Claims



1. A food heating device adapted for positioning over and surrounding a heat source, the device comprising a substantially planar surface supported by supporting walls, the surface having a plurality of peripherally disposed apertures to provide passages for vertically rising air streams, and a formation of circumferentially spaced louvered vents, the openings of each of said vents being disposed in a circular pattern to produce a circular flow of air from said vents for interacting with the vertically rising airstreams through said apertures.

4,446,777

HAND-HELD BARBECUE SPIT

Donald C. Grigorenko, 3107 N. Star Ave., Columbus, Ohio 43212

Filed Sep. 28, 1982, Ser. No. 425,189
Int. Cl.³ A47J 37/04
U.S. Cl. 99—419 7 Claims



1. A hand-held barbecue spit comprising:

(a) an elongated, substantially rigid metallic frame provided at one end thereof with a handle-supporting terminal and at its opposite end with an annular, fork-supporting loop, said loop being formed with a plurality of relatively spaced apart fork-receiving openings;

(b) a handle carried by the handle-supporting terminal of said frame; and

(c) a plurality of generally U-shaped forks extending through said loop, demountably carried in the openings of said loop and formed with elongated, spit-like tines extending generally radially of said annular loop.

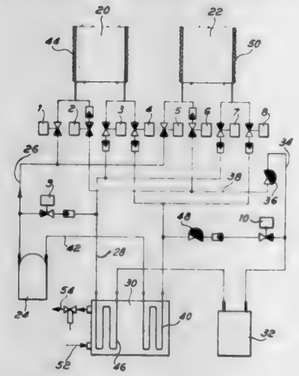
4,446,778

PASTEURIZATION SYSTEM WITH HEAT RECOVERY

Alberto Cipelletti, Guardamiglio, Italy, assignor to Frigomat S.a.s. di Alberto Cipelletti & C., Milan, Italy

Filed Sep. 9, 1982, Ser. No. 416,395
Claims priority, application Italy, Sep. 10, 1981, 23878 A/81
Int. Cl.³ A23C 3/04, 9/00
U.S. Cl. 99—455 8 Claims

1. A pasteurization system comprising: a plurality of basins, with said system adapted for effecting in each basin a heating of a product therein to a pasteurization temperature followed by a cooling to a preservation temperature, and arranged for conducting said heating and cooling sequentially from basin to basin whereby as heat is liberated from a basin undergoing cooling, said liberated heat is at least partially utilized to effect heating of another basin, and wherein said system for heating and cooling said plurality of basins comprises; a refrigeration circuit having a first part arranged downstream from a compressor for circulating hot fluid therethrough, a second part arranged downstream from an expansion valve for circulating



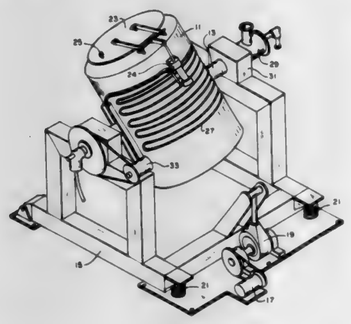
cooled fluid therethrough, heat exchanging means arranged connected between the ends of said first and second parts, a plurality of coils, corresponding to said plurality of basins, each arranged thermally connected with a respective basin and for effecting fluid circulation through each coil, and valve means arranged for selectively connecting each coil of each basin selectively to different parts of said refrigeration circuit to effect one of circulating a hot fluid stream therethrough, circulating a cold fluid stream therethrough, or circulating no fluid stream therethrough, whereby both heating and cooling of each basin is effected by means of the same coil.

4,446,779

MEAT PROCESSOR

Raymond W. Hubbard, 1746 W. Longview Ave., Stockton, Calif. 95201; John B. Seiffhart, 867 Kramer Dr., Lodi, Calif. 95240, and Thomas Hubbard, 3461 W. Michigan, Stockton, Calif. 95204

Continuation of Ser. No. 213,555, Dec. 5, 1980, abandoned. This application Apr. 8, 1983, Ser. No. 482,270
Int. Cl.³ A23B 4/00, 4/02, 4/14
U.S. Cl. 99—472 14 Claims



1. A meat processor comprising

a drum relatively smooth walled interior cavity having an internal vertical cross-section disposed parallel to the longitudinal axis of said drum which, when said drum is rotated about an axis perpendicular to the plane of said cross-section, causes the meat disposed in said drum to tumble and slide from end to end in said drum, and

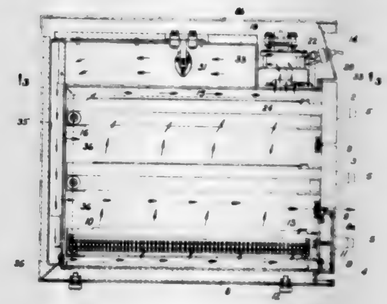
means for shaking said drum up and down with a preferred variable rate in the plane of said cross-section with a preferred predeterminable variable positive vertical displacement of the drum irrespective of the rate of rotation of the drum or the weight of meat being processed in the drum.

4,446,780

FOOD HOLDING CABINET WITH STABILIZED AIR FLOW

Timothy J. Puvogel, West Alexandria; James D. King, Oakwood, and David O. Moore, Eaton, all of Ohio, assignors to Henny Penny Corporation, Eaton, Ohio

Filed Aug. 26, 1982, Ser. No. 412,027
Int. Cl.³ F26B 9/06
U.S. Cl. 99—480 9 Claims



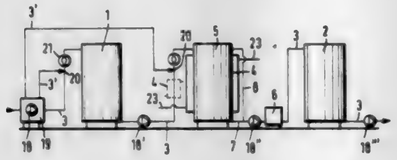
1. A heating and air circulating system for a holding cabinet having a normally closed product receiving compartment containing a plurality of product receiving receptacles lying one above the other, said system having a blower unit overlying said product compartment, said blower unit comprising a blower having an inlet side and a discharge side, and an air mixing chamber in communication with the inlet side of said blower, a first inlet orifice in the top-front-center of said product compartment in communication with said air mixing chamber for recirculating air flowing through said product compartment, a second air inlet orifice in communication with said air mixing chamber and with the outside air for introducing outside air into said mixing chamber, said first and second orifices being sized relative to each other to permit the introduction of predetermined amounts of recirculated air and outside air into said mixing chamber, a heating chamber in communication with the outlet side of said blower, heating means in said heating chamber, means for activating and deactivating said heating means, duct means in communication with said heating chamber, said duct means being positioned to convey heated air flowing through said heating chamber into said product compartment from the rear thereof, said duct means including air outlets positioned to direct heated air into said product compartment beneath each of said product receiving receptacles, and air venting means in the lower front wall of said product compartment to enhance the circulation of air throughout the lower frontal portion of said product compartment, said air vent means being spaced upwardly from the bottom of the product receiving compartment, whereby to stabilize the temperature of the air circulating in said product compartment.

4,446,781

APPARATUS FOR THE MECHANICAL/THERMAL TREATMENT, INCLUDING STERILIZATION AND PASTEURIZATION, OF FLUIDS

Armin Schmitt, Heusenstamm, Fed. Rep. of Germany, assignor to LUWA AG, Zurich, Switzerland

Filed Mar. 19, 1982, Ser. No. 359,783
Claims priority, application European Pat. Off., Mar. 21, 1981, 81102148.4
Int. Cl.³ A23G *1/00, 1/06*
U.S. Cl. 99—483 **6 Claims**



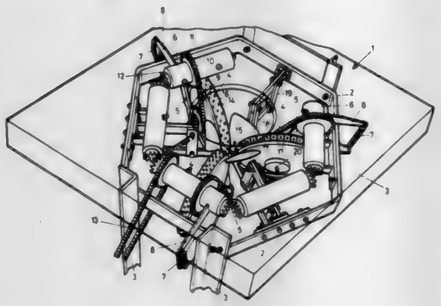
1. An apparatus for continuous mechanical/thermal treatment and sterilization of fluids including cocoa mass, with the cocoa mass being subjected to a thin layer deacidification, dehumidification and degasification treatment prior to and after the sterilization thereof, the apparatus comprising first and second spaced apart thin layer treatment systems, a degermination system placed between said first and second thin layer treatment systems and conveyor lines connecting said degermination system to said first and second thin layer treatment systems, said degermination system comprising a sterilization reactor for receiving and treating the cocoa mass flowing thereinto from said first thin layer treatment system, a heat exchanger placed outside of the sterilization reactor and coupled thereto for adjusting temperature fluctuations of the cocoa mass inside the reactor, and a cooling device coupled to the reactor for cooling the cocoa mass flowing out of the reactor and being directed to said second thin layer treatment system, the sterilization reactor being provided with an inlet opening at its top section and an outlet opening at its bottom section, and a branch line disposed on the outside thereof being connected to said outlet opening and terminating into its top section for partial recycling of treated cocoa mass therethrough.

4,446,782

BANANA PEELING MACHINE

Leslie Black, 21 Awatea, St. Ives, 2075 N.S.W., Australia

Filed Sep. 21, 1982, Ser. No. 420,906
Claims priority, application Australia, Sep. 24, 1981, PF0912
Int. Cl.³ A23N *7/00*
U.S. Cl. 99—589 **10 Claims**



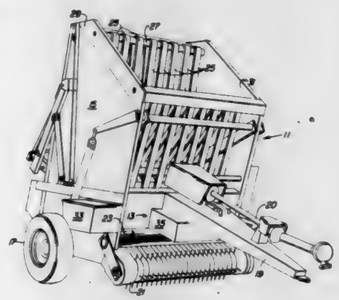
1. A banana peeling machine including at least three members each having a gripping face with means on the face to grip by engagement and penetration thereof the skin of a banana as it is moved in the direction of its longitudinal axis, the location and arrangement of each member being such that said gripping faces converge toward one another to provide a gap therebetween including a location of narrowest gap through which the banana to be peeled is passed with said gripping faces engaging and at least partially penetrating the skin of the banana, cutting members between each of the members at or near the narrowest gap to cut the skin of the banana along its longitudinal direction as it passes through the narrowest gap, the skin of the banana being retained and pulled from the banana flesh by the gripping faces as the banana moves away from the location of the narrowest gap, and drive means to move each of the members to engage and thereby pull a banana between the gripping faces and through the narrowest gap.

4,446,783

CYLINDRICAL BALER TWINE WRAPPING APPARATUS FOR WRAPPING BALE WITH TWO PIECES OF TWINE

Pierre Illy, Farrejueminef, France, assignor to Deere & Company, Moline, Ill.

Filed Mar. 30, 1983, Ser. No. 480,425
Claims priority, application European Pat. Off., Mar. 31, 1982, 82 400591
Int. Cl.³ B65B *13/18*
U.S. Cl. 100—5 **7 Claims**



1. In a twine wrapping apparatus for a cylindrical baler comprising a bale forming chamber and an opening in said chamber, said apparatus comprising:

a pair of twine guides on said baler and means for simultaneously driving said guides transversely of said baler for feeding pieces of twine through said opening and into said chamber for wrapping around a bale formed in said chamber;

the improvement wherein said drive means includes a drive interruption means for preventing the driving of said twine guides when only one of said twine pieces is being fed into said chamber and wrapped around the bale in said chamber.

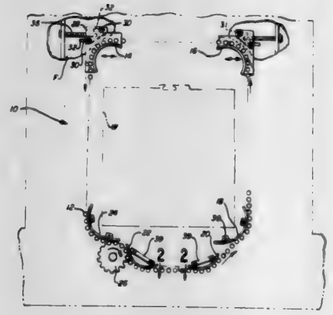
4,446,784

RESILIENT CHAIN STRAP WRAPPING AND TENSIONING DEVICE

Ronald W. Gurak, Fox River Grove, and Eduardo P. Diploma, Carol Stream, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Jun. 2, 1982, Ser. No. 384,220
Int. Cl.³ B65B *13/10*
U.S. Cl. 100—27 **5 Claims**

1. A chain strap wrapping and guiding device comprising a chain mechanism including a plurality of crown-shaped rollers, a support structure, a plurality of V-shaped guides secured to



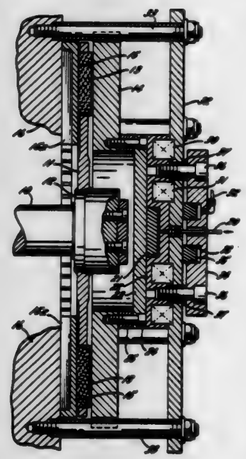
said support structure for guiding said rollers and means for driving said chain mechanism.

4,446,785

HYDRAULIC CLUTCHING AND BRAKING SYSTEM FOR STARTING AND STOPPING A POWER PRESS

Carl E. Tack, Jr., Oak Park, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Sep. 28, 1981, Ser. No. 305,839
Int. Cl.³ B30B *15/10, 15/12*
U.S. Cl. 100—35 **22 Claims**



1. A method of starting and stopping a power press having a slide mechanism mounted for reciprocating movement, a press drive for cycling the slide mechanism, a clutch for connecting and disconnecting the press drive and the slide mechanism, and a brake for braking the press drive shaft, said method comprising

starting the press by hydraulically disengaging the brake and hydraulically engaging the clutch at a predetermined intermediate torque level which is less than the full clutch torque level,

maintaining the clutch at said intermediate torque level until the press drive shaft has attained substantially full speed, and then increasing the clutch torque to the full clutch torque level,

stopping the press by hydraulically disengaging the clutch and hydraulically engaging the brake at a predetermined intermediate torque level which is less than the full brake torque level, and

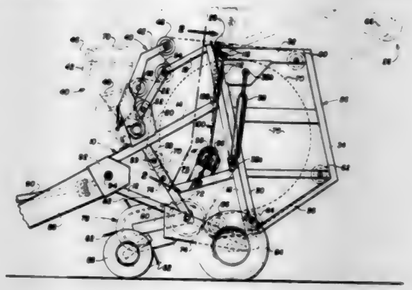
maintaining the brake at said intermediate torque level until the press drive shaft has substantially stopped, and then increasing the brake torque to the full brake torque level.

4,446,786

CAM GUIDE OPERATING MECHANISM FOR ROLL BALING MACHINE

Randy A. Gresser, Narvon, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Mar. 7, 1983, Ser. No. 472,458
Int. Cl.³ B30B *5/06;* A01D *39/00*
U.S. Cl. 100—88 **10 Claims**



1. In a roll baling machine including a base frame, a bale forming apron supported on said base frame defining an expandable bale chamber, guide means on said base frame movable between an extended position inside said bale chamber for supporting said bale forming apron in order to define an initial shape for said bale chamber and a retracted position outside said bale chamber, spring means for urging said guide means toward said extended position, the improvement comprising:

said guide means being movable from said extended position to said retracted position during bale formation without being opposed by said springs means; and

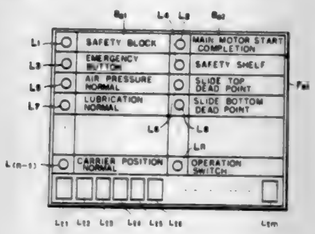
said springs means exerting force to urge said guide means toward said extended position only after a bale that is formed in said bale chamber has cleared said guide means during the discharge of the bale from the machine.

4,446,787

PREPARATIVE MONITORING APPARATUS FOR OPERATION OF A PRESS

Yoshinori Nishikawa, Kanazawa, and Iwashige Takahashi, Komatsu, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

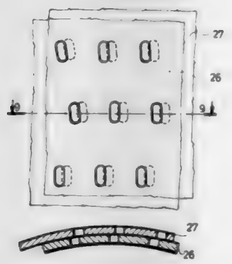
Filed Jun. 21, 1982, Ser. No. 390,507
Int. Cl.³ B30B *15/00*
U.S. Cl. 100—99 **2 Claims**



1. A preparative monitoring apparatus for operation of a press wherein interlock conditions relating to a press operation are displayed during said press operation, comprising:

a display circuit including a plurality of lighting elements for displaying said interlock conditions and a display device for performing display of title of selected operation;
memory means for storing a plurality of reference interlock conditions corresponding to a type of press operation, establishment of said reference interlock conditions being indispensable for said press operation; and
a control circuit for comparing said reference interlock conditions with an actually established interlock conditions and for flickering said lighting elements corresponding to interlock conditions which do not coincide with said reference interlock conditions.

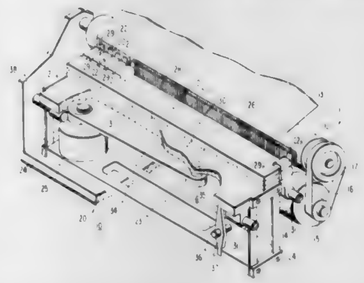
4,446,788
UNIVERSAL SCREW PRESS BUILT IN MODULAR SYSTEM
Zoltan Molnar, Budapest, Hungary, assignor to Licencia Talalmanyokat Ertekesito V., Budapest, Hungary
Filed Mar. 8, 1982, Ser. No. 355,915
Int. Cl.³ B30B *9/06, 9/14*
U.S. Cl. 100—117 **10 Claims**



1. A universal screw press comprising
(a) an inlet unit;
(b) a driving gear;
(c) a modular worm shaft;
(d) an outlet unit; and
(e) a modular housing,
wherein said modular housing comprises a first perforated housing unit provided with perforations the sizes of which are variable during operation, wherein the variably sized perforations of said first perforated housing unit are formed by a first and a second element of said first perforated housing unit, said first and second elements being displaceable in relation to each other during operation, wherein said first element of said first perforated housing unit is a perforated outer tube, said second element of said first perforated housing unit is a perforated inner tube, said inner and outer tubes have a common longitudinal axis are in contact and are rotatable with respect to one another about said longitudinal axis.

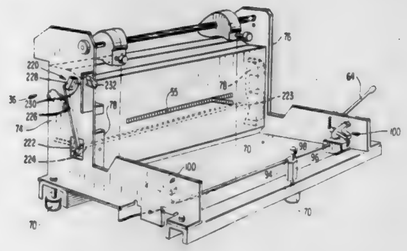
4,446,789
DOT MATRIX PRINTER
Michio Matsumoto; Masao Kitamura, both of Tokyo; Masataka Ohta, and Takeshi Ohshima, both of Kanagawa, all of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan
Filed Dec. 1, 1981, Ser. No. 326,319
Claims priority, application Japan, Dec. 1, 1980, 55-169286
Int. Cl.³ B41J *3/12*
U.S. Cl. 101—93.04 **11 Claims**

1. A dot matrix printer comprising:
a printer frame;
means for feeding paper to be printed;
a printer hammer bank mounted on said frame having a plurality of printer hammers aligned on said hammer bank;
balancing means;
a resilient member for connecting said balancing means to said hammer bank; and
means provided on said balancing means for driving said



hammer bank to reciprocate in a direction orthogonal to a feeding direction of said paper, wherein the combined mass of said balancing means and said means for driving is matched to the mass of said print hammer bank.

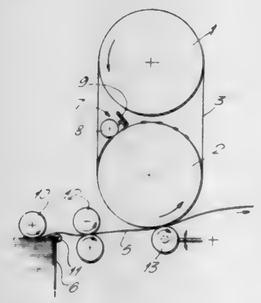
4,446,790
PRINTER WITH REMOVABLE PRINT CARRIAGE
Joseph Konkel, and David F. Sweeney, both of 99 Middlesex St., Malden, Mass. 02148
Continuation of Ser. No. 902,460, Apr. 20, 1978, abandoned.
This application Jun. 29, 1981, Ser. No. 278,462
Int. Cl.³ B41J *1/20*
U.S. Cl. 101—93.14 **8 Claims**



1. A band-type data printer comprising a main frame releasably supporting a print carriage,
A. said main frame being cooperable with said print carriage for defining a path for passage of a recording medium therebetween and containing a plurality of actuable hammers mounted adjacent said path and cooperable with said print carriage to imprint information on the recording medium, and further including:
(1) carriage supporting means for supporting said print carriage, and
(2) carriage latch means cooperable with said print carriage for releasably securing said print carriage to said frame, said carriage latch means comprising:
i. a cam pivotally mounted on said frame and having a head cooperable with a notch in said print carriage,
ii. a trunnion pivotally mounted on said frame,
iii. a connecting rod having first and second rod heads, means for preventing said rod heads from separating by more than a predetermined distance, and a spring coaxial with said connecting rod for urging said rod heads apart to tend to keep said rod heads separated by said predetermined distance, said first and second rod heads being pivotally connected to said cam and said trunnion, respectively, at pivot points thereon separated from said cam and trunnion axes, respectively, to tend

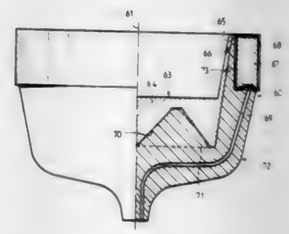
to keep the pivot points separated by the predetermined distance so that said cam tends to rotate with rotation of said trunnion and there is a range of angular positions of said trunnion in which the axis of said connecting rod passes from one side of the trunnion axis through the trunnion axis to the other side thereof, and
iv. an arm on said trunnion extending outward of said frame for rotation of said trunnion through said range of angular positions from a first position, in which the connecting-rod axis is disposed on one side of the trunnion axis, to a second position, in which the connecting rod is disposed on the other side of the trunnion axis, the spring thereby applying torque to the trunnion in one direction when said arm is in the first position and in the opposite direction when said arm is in the second position, and
B. said print carriage further comprising:
(1) means defining a printing anvil adjacent said path, and
(2) means for rotatably mounting a printing band on said print carriage for cooperation with said anvil and said hammers when said print carriage is secured to said print frame to enable information to be printed on the recording medium.

4,446,791
INK CONTROL FOR A MULTI-CYLINDER STENCIL DUPLICATOR
Colin R. Stevens, London, and Victor Ababurko, Bishops Stortford, both of England, assignors to Gestetner Manufacturing Limited, London, England
Filed May 14, 1982, Ser. No. 378,245
Claims priority, application United Kingdom, May 22, 1981, 8115823
Int. Cl.³ B41L *13/18*; B05C *11/10*
U.S. Cl. 101—122 **18 Claims**



1. A multi-cylinder stencil duplicator comprising:
(a) first and second cylinders;
(b) stencil support means for a stencil circulating around said first and second cylinders;
(c) a non-oscillating ink coating member positioned closely adjacent said first cylinder and defining therewith a nip for allowing an ink coating of predetermined substantially uniform thickness to pass through said nip on the surface of the said first cylinder;
(d) means for dispensing ink to a location on said first cylinder to one side of said nip such that during rotation of said first cylinder the ink is then passed directly through the nip for application as said substantially uniform coating to the said first cylinder;
(e) capacitive ink detector means, responsive to the electrical capacitance across the ink at said one side of the nip, for use in controlling the operation of said ink dispensing means to maintain a given build-up of ink on the said one side of the nip, said capacitive ink detector means comprising: first and second spaced elongate electrodes extending the length of said first cylinder and positioned with said build-up of the ink at said one side of said nip between said first and second elongate electrodes, and means for detecting the electrical capacitance between said first and second elongate electrodes along the length of said nip; and
(f) control means operatively connecting said capactive ink detector means and said ink dispensing means for controlling said ink dispensing means to operate in response to depletion of said ink build-up at said one side of said nip.

4,446,792
RADAR REFLECTOR FOR AN ARTILLERY SHELL
Rudolf Heller, Zurich, and Iwan Kahn, Wallisellen, both of Switzerland, assignors to Contraves AG, Zurich, Switzerland
Filed Nov. 9, 1981, Ser. No. 319,707
Claims priority, application Switzerland, Dec. 2, 1980, 8891/80
Int. Cl.³ F42B *15/02*
U.S. Cl. 102—473 **3 Claims**

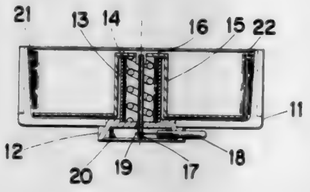


1. A body which can be axially mounted on an artillery shell, comprising:
a functional element constructed as a radar reflector of the triple-mirror type containing triple mirrors and a sleeve element formed rotationally-symmetrical about a lengthwise axis of said body;
said body being integrally constructed from said functional element and said sleeve element and being formed turnably-symmetrical about the lengthwise axis of said body;
said sleeve element being capable of being fitted onto said artillery shell;
said body further including at least one explosive device arranged at least at the neighborhood of an outer surface of said sleeve element near to one end of said sleeve element and remote from said triple mirrors;
said explosive device being essentially rotationally-symmetrical about the lengthwise axis;
said explosive device being structured such as to establish upon its detonation a form-locking connection of said sleeve element with the shell; and
said explosive device coacting with said sleeve element such that upon detonation of said explosive device said sleeve element is severed at the region of said one end of said sleeve element in order to provide a substantially straight-lined closure of the sleeve element about the artillery shell in order to avoid undesirably altering ballistic characteristics of the artillery shell.

4,446,793
DISK DEPLOYMENT OF EXPENDABLES
Robert L. Gibbs, 161 Larkwood Clr., San Ramon, Calif. 94583
Filed Dec. 28, 1981, Ser. No. 334,597
Int. Cl.³ F42B *13/42*
U.S. Cl. 102—505 **3 Claims**

1. A spin stabilized disk, rotating about an axis which is initially perpendicular to the line-of-travel of the said disk while releasing a payload of radiation interference material as said disk proceeds away from a launcher device comprising: a disk case substantially closed at one end and containing a gear

teeth means around all or a part of its external circumferential surface to provide for the input of rotational forces to said disk during its launch, an internal cavity in the said disk case for



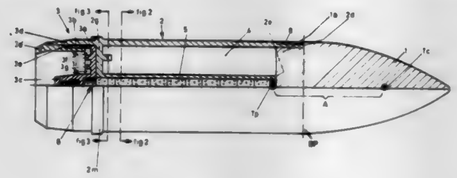
storing the said payload, a disk closure for the open end of said disk which contains the said payload until the instant of launch, a release mechanism means for the release of said disk closure immediately upon egress of said disk from its launching device.

4,446,794

PRACTICE SHELL PARTICULARLY USEFUL FOR TRAINING PURPOSES

Björn Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Continuation of Ser. No. 134,233, Mar. 26, 1980, abandoned. This application Sep. 7, 1982, Ser. No. 415,048
Claims priority, application Sweden, Apr. 2, 1979, 7902890
Int. Cl.³ F42B *9/20*
U.S. Cl. 102—513 **12 Claims**



1. A practice shell for simulating a conventional shell for a large caliber firearm comprising:

a bottom unit and effect part made of plastic material resistant to high pressure;

said effect part having a casing coaxial with a tubular unit, said tubular unit and casing connected together by radially extending spoke elements forming an integral one piece structure, said spoke elements formed as wings extending along a major portion of the length of the tubular unit, said casing enclosing an indicator substance and an explosive charge, said effect part and bottom unit connected together at thick end walls which include reinforcing patterns in addition to said spoke elements to form an assembly to withstand stress forces which result from discharging said firearm; and a front part connected to a remaining end of said effect part, said front part made from a material heavier than the material from which said bottom unit and effect part are made, whereby

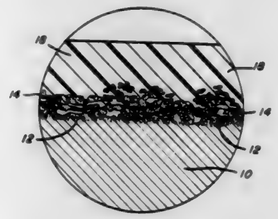
said front part, effect part, and bottom unit comprise a shell having a weight and ballistics substantially equivalent to said conventional shell.

4,446,795

METALLIC PROJECTILE BODY AND THERMOPLASTIC ROTATING BAND

Stephen J. Price, Crystal, and Charles R. Hargreaves, Maple Plain, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 193,680, Oct. 3, 1980, abandoned. This application Dec. 31, 1981, Ser. No. 336,230
Int. Cl.³ F42B *31/00*
U.S. Cl. 102—527 **8 Claims**



1. A metallic projectile comprising:

a metallic projectile body having a band seat zone designated thereon;

a sprayed metallic coating on said band seat zone, said coating being characterized by (i) having a relatively rough external surface, i.e., a large number of irregularly shaped projections comprising a maze of mechanical attachments to said body, (ii) being at least 0.003 inches thick so as to be metallurgically continuous, thereby to prevent oxidation of said body at said band seat zone thereof and (iii) being metallurgically bonded to said projectile body so as to have a metal-to-metal bond strength; and

a polymer applied in liquid form around said zone and to said sprayed metallic coating to form, after hardening, a thermoplastic rotating band, said polymer, while in fluid form, permeating into intimate contact with said irregularly shaped projections so that, after said polymer becomes solid, a high torque transmittal interface is provided between said plastic rotating band and said projectile body.

4,446,796

TABLE AND IMPROVED HINGE MECHANISM

Kermit H. Wilson, Edina, and Ronald R. Carlson, Excelsior, both of Minn., assignors to Sico Incorporated, Minneapolis, Minn.

PCT No. PCT/US80/00568, 371 Date Jun. 23, 1980, 102(e) Date Jun. 23, 1980, PCT Pub. No. WO81/03269, PCT Pub. Date Nov. 26, 1981
PCT Filed May 16, 1980, Ser. No. 161,750
Int. Cl.³ A47B *1/04*
U.S. Cl. 108—69 **7 Claims**

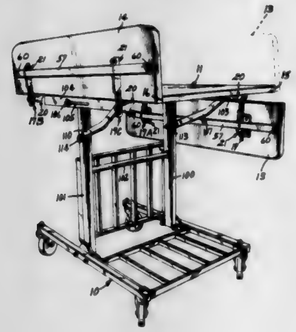
1. In a table, in combination:

a wheeled support;

a table top;

an extensive leaf for said table top;

and means hinging said leaf to said table top for movement from a first position aligned with said top to second and third positions oppositely orthogonal to said top, including means operable to maintain said leaf in each of first and second positions, said means comprising a pivot member including a pivot pin and a channel orthogonal thereto, and a slide member including a tongue sliding in said



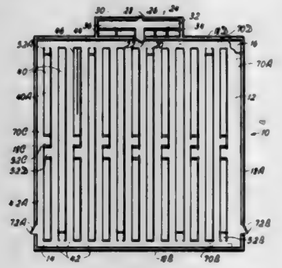
channel and slotted to enable passage of said pivot therealong.

4,446,797

SELF-CONTAINED VAULT UNIT

Errol J. French, P.O. Box 1314, Chattanooga, Tenn. 37401

Filed May 11, 1981, Ser. No. 260,375
Int. Cl.³ E05G *1/00*
U.S. Cl. 109—53 **12 Claims**



9. A self-contained vault unit for containing a plurality of safety deposit boxes, said vault unit comprising:

means defining a secure interior chamber wherein said safety deposit boxes are contained, said means including wall means, floor means, and roof means, said wall means being reinforced to assist in preventing burglary,

a selectively operable security controlled entrance into said chamber,

an entrance security room, including a further security controlled entrance which is selectively operable from the outside, which opens into said entrance of said chamber whereby a person entering said vault unit must pass through said entrance security room,

a plurality of elongated rows of cabinet sections arranged within said chamber in a substantially parallel relationship and defining aisles therebetween and perimeter aisles with respect to said wall means, said cabinet sections defining a plurality of openings having a preselected cross-sectional outline, each of said cabinet sections including opposite sides along their length,

a plurality of safety deposit boxes for inserting into said openings in said cabinet sections, each of said boxes including releasable lock means toward said aisles for releasibly securing said box within said cabinet sections upon moving said box to its closed position, said boxes being selectively movable from said cabinet openings upon release of said lock means, and

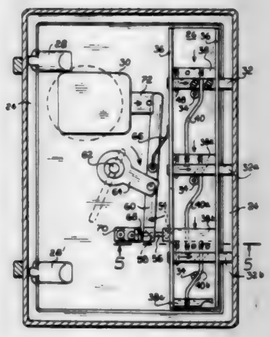
a plurality of inspection booths for inspecting the contents of said boxes, each of said booths including a table for positioning a box thereon during the inspection of said safety deposit box contents, and wherein every other row of said cabinet sections terminates at one of its end portions in a booth, and wherein every other row of said cabinet sections includes a pair of booths proximate its midportion which opens in opposite directions into said aisles on the opposite sides of said cabinet sections.

4,446,798

SAFE BOLT MECHANISM

Clinton E. Withington, 391 Stewart Dr., Hayward, Calif. 94544

Filed Mar. 26, 1982, Ser. No. 362,260
Int. Cl.³ E05G *1/04*
U.S. Cl. 109—61 **8 Claims**



1. An improved safe bolt mechanism for a safe including a main body and a safe door hinged to said main body, said safe bolt mechanism comprising:

a plurality of slide bolts coupled to an inner surface of said door for reciprocal axial movement between a bolted and an unbolted position, each slide bolt being provided with a transverse cam aperture and a transverse locking pin bore substantially parallel thereto;

guide means attached to said inner surface in proximity to said slide bolts;

a plurality of guide bars interspaced with said slide bolts and guided by said guide means for reciprocal motion substantially perpendicular to the axes of said slide bolts, said guide bars having extending locking pins coaxial with each of said locking pin bores said locking pin engages one of said locking pin bores when said slide bolts are in said bolted position;

a plurality of elongated cam rods coupling successive guide bars together, each of said cam rods being journaled within the cam aperture of one of said slide bolts; and

lockable bolt actuating means for reciprocally moving said guide bars along said guide means to urge said slide bolts between said bolted and said unbolted positions.

4,446,799

FLUIDIZED BED FUEL FEED SYSTEM

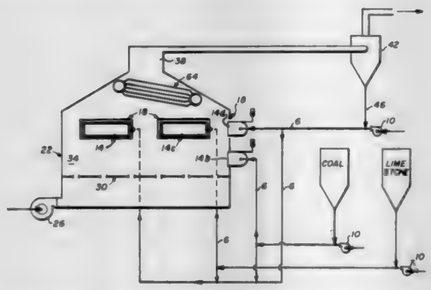
Mark S. Andersen, Agawam, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 7, 1982, Ser. No. 376,098
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—263 **3 Claims**

1. A system for feeding granulated solid materials, including a fuel, a sulfur absorbent, and a recycle material into a fluidized bed combustor, said combustor having a combustion zone with at least an upper and a lower region therewithin, and said recycle material having been elutriated previously from the combustion zone of said fluidized bed combustor, comprising:

a walled chamber surrounding the fluidized bed combustion

zone, including a plurality of feed openings in the wall of the chamber;
means for conveying the coal;
means for conveying the sulfur absorbent;
means for conveying said recycle material;
at least three nozzles, each with an exit opening, for separately receiving the conveyed solid materials and discharging each material from the nozzle exit openings;
means for supporting each of said nozzles in relation to the chamber and the fluidized bed combustion zone so as to



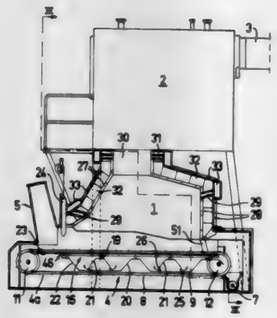
permit the movement of said nozzles and to concurrently require each discharged material to pass through the respective feed opening and into a specific region within the fluidized bed combustion zone, the location of each of said regions being dependent upon the orientation of the respective nozzle; and
means for independently moving each of said nozzles, thereby changing the location of said specific regions within the fluidized bed combustion zone into which each material is discharged.

4,446,800

APPARATUS FOR FIRING SOLID FUELS

Anders Lövgren, Myckle, Sweden, assignor to HB Megaron, Sweden

Filed Mar. 9, 1982, Ser. No. 356,358
Int. Cl.³ F23N *11/10*
U.S. Cl. 110—270 **9 Claims**



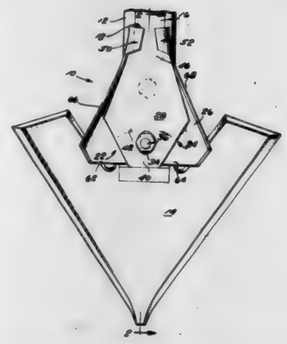
1. An apparatus for combusting solid fuels such as forest waste material in the form of bark and/or chips, and other biological materials including peat, comprising a furnace, a heat medium portion being connected to the furnace, grate means located in the furnace for feeding fuel from a fuel charge opening through the furnace while the fuel is being combusted in a furnace space, flue gases flowing from said furnace space through the heat medium portion to a chimney, at least one intake for supplying a controlled supply of at least primary and secondary combustion air to the furnace space, the grate means having a rear portion, seen in the direction of movement, located outside the furnace space proper but in connection therewith, said rear portion forming a drying zone adjacent the charge opening for effecting a partial drying of the fuel before the fuel is fed by the grate means into the furnace space, the grate means further including a plurality of transverse dogs running in contact with an upper surface of a stationary grate plane for advancing the fuel through the furnace, the grate plane being located above means for supplying the primary combustion air from below to the fuel, and below air intakes for supplying the secondary combustion air.

4,446,801

AIR SEEDING BOOT

Cecil Machnee, Yorkton, and Fred N. Butuk, Insinger, both of Canada, assignors to Morris Rod Weeder Co., Ltd., Saskatchewan, Canada

Filed Jul. 14, 1982, Ser. No. 398,449
Int. Cl.³ A01C *5/00*
U.S. Cl. 111—86 **19 Claims**



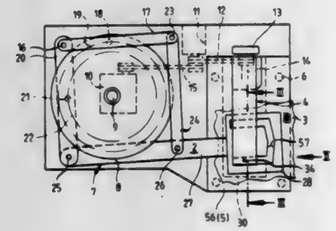
1. An air seeding boot used to deliver material such as seed, fertilizer, or chemicals to be deposited onto the soil prepared by a soil working tool, the boot being adapted to mount on a mounting shank together with a soil working tool and to be secured to the shank with at least one bolt also used to mount the soil working tool thereto in such a manner that the bolts used do not fasten across a part of the boot which is easily compressed, said boot comprising:
a front part for the purpose of deflecting the soil moved by the soil working tool away from the area where dispensed material will be deposited;
a back part which diffuses and separates dispensed material into two portions and allows the material to be deposited on the soil prepared by the soil working tool in two rows generally separated and generally equal; and
the two said parts mating with one another to form a hollow body having an opening on the top portion for receiving a material delivery conduit, and having two generally equal openings on the bottom portion of the hollow body, the openings being of generally oval shape inclined backward and upward from the lower portion of the hollow body
the two said parts being directly and rigidly bolt-connectable to said shank by said working tool mounting bolt which bolt avoids passage through said hollow body.

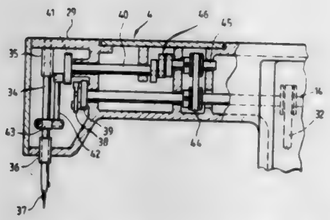
4,446,802

AUTOMATIC SEWING MACHINES

Hans Scholl, Oerlinghausen-Lipperreihe, Fed. Rep. of Germany, assignor to Kochs Adler AG, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,432
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1982, 3225046
Int. Cl.³ D05B *21/00, 55/14*
U.S. Cl. 112—121.12 **3 Claims**





1. An automatic sewing machine having a feeding device for imparting a continuous movement to a workpiece during the sewing process, a sewing head including a needle bar arranged to be driven in oscillatory manner by an arm shaft by means of a gear drive, and a mechanism for reducing the deflection of the needle during the insertion of the latter into the workpiece, said mechanism comprising a double gear drive connected between the arm shaft and the gear drive for the needle bar and adapted to reduce the angle of rotation during which the needle is inserted into a workpiece.

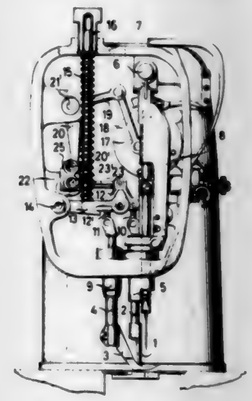
4,446,803

UPPER FABRIC FEED FOR A SEWING MACHINE

Karl Nicolay, and Klaus Hampel, both of Bielefeld, Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 321,073, Nov. 13, 1981, abandoned. This application Feb. 24, 1982, Ser. No. 351,871
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043141
Int. Cl.³ D05B *27/04*
U.S. Cl. 112—320 **7 Claims**

1. In a method of operating a fabric feed for a sewing machine wherein:
a feed foot and a holddown foot are each vertically oppositely reciprocable between a respective upper position and a respective lower fabric-engaging position;
a continuously operating rotary drive has a rotating output whose rotary motion is transformed by an appropriate linkage into alternating reciprocation of the feed foot and the holddown foot; and
the feet are alternately engaged with and disengaged from fabric in the respective fabric-engaging positions, the improvement wherein:
on moving downward from their upper into their lower positions the feet are each first accelerated to a maximum speed reached when approximately midway between said upper and lower positions and thereafter are decelerated



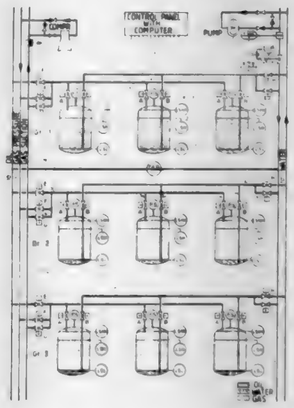
to an intermediate speed lying between zero and seven-tenths of said maximum speed reached when they attain the respective lower fabric-engaging position.

4,446,804

METHOD OF TRANSPORTING OIL AND GAS UNDER HIGH PRESSURE IN TANKS ON BOARD A SHIP

Olaf Kristiansen, Moss, and Bo Brännstrom, Hovik, both of Norway, assignors to Moss Rosenberg Verft A/S, Moss and Saga Petroleum a.s. & Co., Sandvika, both of, Norway

PCT No. PCT/NO81/00031, 371 Date Feb. 16, 1982, 102(e) Date Feb. 16, 1982, PCT Pub. No. WO82/00186, PCT Pub. Date Jan. 21, 1982
PCT Filed Jul. 8, 1981, Ser. No. 355,592
Claims priority, application Norway, Jul. 8, 1980, 802054
Int. Cl.³ B63B *25/14*
U.S. Cl. 114—74 R **3 Claims**



1. A method of transporting oil and gas under high pressure in tanks on board a ship, wherein loading and unloading are carried out utilizing a suitable liquid under pressure, for example water, in the individual tanks, said loading comprising filling a tank or group of tanks containing pressurized liquid with oil and gas while the pressurized liquid simultaneously becomes displaced into a next tank or group of tanks which are to be filled, after which the said next tank/group of tanks are filled with cargo while the pressurized liquid becomes displaced into a third tank/group of tanks, etc., and said unloading comprises removing the cargo from one tank or one group

of tanks by introducing a pressurized liquid into the tank/-group of tanks, the unloading of the cargo in the next tank/-group of tanks occurring through the transfer of the pressurized liquid from the said first tank/group of tanks to the next, etc.

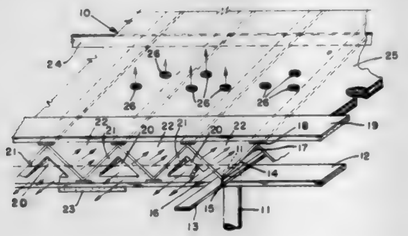
the ratio of the oil/gas mixture being held as constant as possible throughout the entire unloading operation by phasing in the unloading of gas from the various tanks or groups of tanks.

4,446,805

DECK CONSTRUCTION FOR REFRIGERATED CARGO SHIPS

Byron M. Sugahara, Bloomfield, N.J.; Avrum A. Freelund, and George Zinger, both of New York, N.Y., assignors to Reefer Express Lines Pty., Ltd., Roseland, N.J.

Filed Jun. 25, 1981, Ser. No. 277,272
Int. Cl.³ F26B *19/00*
U.S. Cl. 114—76 **5 Claims**



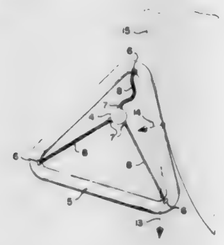
1. A deck construction for tween decks for refrigerated cargo ships comprising; a vertically-supported structural member, a lower transverse flange supported on said vertically-supported structural member, a corrugated member supported on said transverse lower flange, said corrugated member having an alternate series of longitudinally-extending V-shaped supply air channels and an intermediate series of inverted V-shaped return air channels, an upper transverse flange supported on said corrugated member, a plurality of longitudinally spaced bearer members extending transversely across said corrugated member, and a flat grating supported above said corrugated member.

4,446,806

SINGLE POINT MOORING AND FENDER

René Loire, Houston, Tex., assignor to Morrison-Knudsen Company, Inc., Boise, Id.

Continuation of Ser. No. 146,606, May 5, 1980. This application Mar. 30, 1982, Ser. No. 363,408
Int. Cl.³ E02B *3/22*
U.S. Cl. 114—219 **7 Claims**



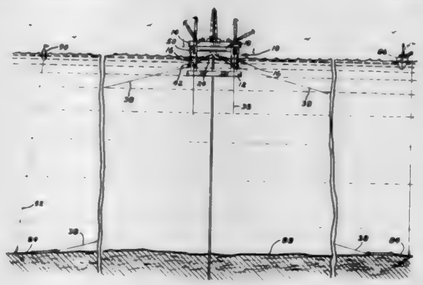
1. A single point mooring comprising a dolphin and the like fixed in the ocean bottom, a plurality of rigid fender segments joined end to end and forming an endless member positioned in a horizontal plane surrounding the dolphin, a plurality of flexible yielding means, each having one end connected to the dolphin and the other end connected to the endless member, said flexible yielding means being connected to the endless member at vertices formed by said segments whereby contact between the endless member and the dolphin is resisted by at least one of the flexible yielding means.

4,446,807

MOORING APPARATUS FOR FLOATING VESSELS

Charles A. Johnson, Lakeville, Minn., and Laurence H. Lucker, Jr., Media, Pa., assignors to American Hoist & Derrick Company, St. Paul, Minn.

Filed Jun. 10, 1981, Ser. No. 270,857
Int. Cl.³ B63B *21/50*
U.S. Cl. 114—230 **2 Claims**



1. A platform-mounted apparatus for drawing in, storing, holding, and paying out a flexible load line having the properties of wire rope and having a load at an outer end thereof, said apparatus including:

A. said flexible load line and its attached load;

B. a power supply mounted with respect to said platform and capable of supplying hydraulic fluid under pressure;

C. winch means including:

(1) a winch frame mounted with respect to the platform,

(2) a winch drum to which an inner end of the load line is attached, said drum being rotatably mounted on said frame,

(3) braking means operably connected between the drum and the winch frame,

(4) hydraulic drum drive means operable to rotate the drum to move the load line in a first direction as it winds on the drum, the drum drive means being operable selectively to power the drum

(a) in a slow speed/high torque range, or

(b) in a high speed/low torque range, and

(5) fluid operable brake control means to cause the braking means selectively to

(a) let the winch drum run free,

(b) to retard rotation of the winch drum, or

(c) to stop it and to hold it against rotation with respect to the winch frame;

D. a hydraulically operable linear load line pull machine mounted with respect to the platform and encompassing a straight run of the load line between said winch drum and said line load, said linear load line pull machine including:

(1) a linear line pull machine frame mounted with respect to the platform,

(2) wedge shape gripper jaws slidably mounted on said pull machine frame and adapted to releasably grasp the encompassed portion of the load line to hold it against movement in a second direction opposite the first direction of movement of the load line when it is wound on the winch drum,

(3) hydraulic linear pull drive means operable when applied with hydraulic fluid under pressure to move said jaw means reciprocally with respect to said pull machine frame

(a) to cause the load line when grasped by the jaw means to move in the first load line direction and

(b) to move in the jaws in a second direction, and

(4) hydraulic gripper motor means operable in a disengaging direction to disengage said jaw means from said load line and in an engaging direction to cause said jaw means to grasp said load line; and

E. control means selectively operable to:

(1) supply hydraulic fluid under pressure from the power supply to the drum drive means and actuate the drum drive means into its high speed/low torque range, actuate the gripper motor means in the disengaged direction, and actuate the brake control means to release the braking means, or

(2) supply hydraulic fluid under pressure from the power supply to the drum drive means and actuate the drum drive means into its low speed/high torque range, actuate the gripper motor means in the disengaged direction, and actuate the brake control means to release the braking means, or

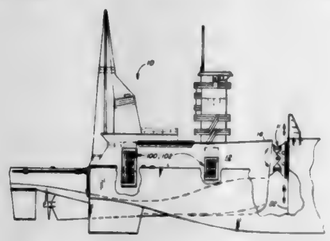
(3) actuate the gripper motor means in the engaged direction to position the gripper jaws to grasp the load line, supply hydraulic fluid under pressure from the power supply to the drum drive means and actuate the drum drive means into its high speed/low torque range, supply hydraulic fluid under pressure from said power supply to said linear line pull drive means, and actuate said brake control means to release the braking means.

4,446,808

BARGE-TUG CONNECTION APPARATUS

Jean P. Colin, Metairie, La., assignor to Ateliers et Chantiers de Bretagne A.C.B., Nantes, France

Continuation-in-part of Ser. No. 116,616, Jan. 29, 1980, Pat. No. 4,347,801. This application Jul. 13, 1981, Ser. No. 282,810
Int. Cl.³ B63B *21/60*
U.S. Cl. 114—248 **21 Claims**



1. A barge and tug connection apparatus comprising:

a. a barge providing a V-notch portion for receiving a tug thereinto, the V-notch portion having a generally uniform horizontal section with its bottom open to the sea;

b. a tug for pushing the barge with the notch of uniform horizontal section allowing the tug to pitch and heave along its entire length within the notch relative to the barge;

c. a plurality of inflatable pad assemblies mounted on the tug, each comprising an outer housing having an outer movable wear surface positioned to bear and slide against the barge at sea and inner inflatable means for maintaining the wear surface in contact with the barge absent substantial clearance at sea;

d. pushing line means for maintaining the tug in the notched portion of the barge; and

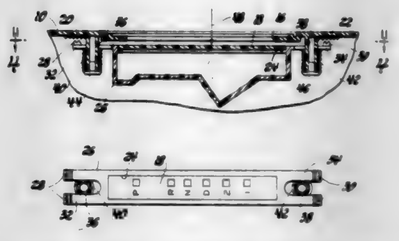
e. bow fender means mounted on the bow of the tug and facing the notch for longitudinally spacing the bow of the tug from the barge, the barge and the fender means each having smooth surfaces which can bear and slide against each other so that during normal operation the bow of the tug can freely pitch and heave responsive to wave action and with respect to different elevational positions of the barge.

4,446,809

ADJUSTABLE LENS FOR A TRANSMISSION RATIO INDICATOR

Robert P. Dennis, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 2, 1982, Ser. No. 345,066
Int. Cl.³ G09F *9/00*
U.S. Cl. 116—28.1 **2 Claims**



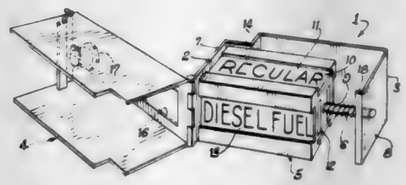
1. An improvement in automatic transmission ratio indicating mechanisms having a position indicator movable in a transmission lever housing, and a lens structure attached to said housing with indicia disposed thereon which cooperate with said position indicator to indicate the transmission ratio selected, wherein the improvement comprises; a lens housing disposed in said transmission lever housing including a wall portion having two resilient finger members formed integral thereon, another wall portion having a pair of support flanges and two groups of housing teeth formed integral thereon, a lens member with the indicia thereon disposed between the wall portions and being urged toward the toothed wall portion by said resilient finger members, and two groups of lens teeth disposed on said lens member and cooperating with the respective wall portion teeth to position said lens member in said lens structure, said resilient finger members being operable to urge engagement between respective groups of teeth and said lens member being deflectable against said resilient member upon application of a force thereto for disengaging said respective groups of teeth to permit movement of said lens member in said lens housing relative to said position indicator to establish alignment of said position indicator and said indicia.

4,446,810

ROTARY INDICATOR

Nick Bressi, 4886 Normandy Pl., La Mesa, Calif. 92041

Filed Mar. 18, 1983, Ser. No. 476,534
Int. Cl.³ G09F *9/00, 11/02*
U.S. Cl. 116—307 **7 Claims**



1. A rotary indicator which comprises:

a mounting frame;

a drum having a plurality of peripheral message-holding stations;

means for rotatably mounting said drum within said frame;

said means for rotatably mounting comprising:

a shaft axially and slidingly engaging a hole in the center of said drum;

said shaft being supported at each end by elements of said frame;

releasable means for preventing rotational movement of said drum within said frame;

said means for preventing comprising one of said elements defining a spacial restriction; and resilient means for biasing said drum toward said spacial restriction;

at least one message display mountable in said stations;

and comprising an oblong tag carrying a message on at least one of its faces;

each of said message-holding station comprising means for securing said tag; and wherein said frame comprises a backwall and first and second sidewalls supporting said shaft; and said spacial restriction is defined by an inward indentation at the juncture of said backwall and of first said sidewall.

4,446,811

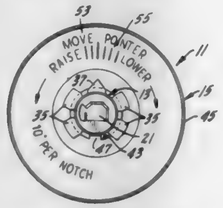
KNOB AND SKIRT ASSEMBLY

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Filed Oct. 13, 1981, Ser. No. 310,435

Int. Cl.³ G05G 1/10

U.S. Cl. 116—309 **6 Claims**



1. A knob and skirt assembly having a dial which can be calibrated relative to a control shaft, said assembly including:

a knob having a handle portion and a hub portion,

the hub portion having a control shaft receiving socket at one end and a stop on the hub located inwardly of the socket end,

a disc shaped skirt having a central opening adapted to receive the hub and to engage the stop to position the skirt relative to the hub,

means to secure the skirt against the stop of the hub and frictionally resist rotation of the hub and the skirt relative each other until a predeterminal rotational force is applied to overcome this frictional resistance,

a first set of indicia applied to the shirt on the handle portion side thereof along the circumferential periphery of the skirt,

a second set of indicia applied to the skirt on the hub portion side therof along the circumferential periphery thereof,

a pointer fixed relative to the hub and positioned to align with the second set of indicia,

an arcuate opening formed in the skirt adjacent the second set of indicia with said pointer formed as part of the handle portion and extending through the arcuate opening for alignment with the second set of indicia, and

means to limit rotational movement of the skirt relative to the hub when the frictional resistance between the skirt and hub is overcome.

4,446,812

GALVANIZATION INSTALLATIONS OF METALLIC BANDS

Robert Wang, Wissous, France, assignor to Stein Heurtey, Ris-Orangis, France

Filed May 3, 1982, Ser. No. 374,262

Claims priority, application France, May 7, 1981, 81 09061

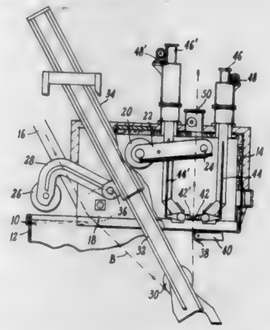
Int. Cl.³ B05C 1/08, 3/172

U.S. Cl. 118—63 **5 Claims**

1. An installation for galvanizing a metal band on one or both sides thereof, said installation comprising:

a tank containing a molten zinc bath and through which a metal band to be coated is passed continuously;

means for causing said band selectively to pass along a first path and for galvanizing both sides of said band or along a second path and for galvanizing one side only of said band, said means comprising:



a fixed first return roller positioned above the upper surface of said bath at a location to be contacted by a first side of said band during passage thereof along either said first or second paths;

a second return roller mounted on a first mobile arm for movement between a rest position out of contact with said band during passage thereof along said first path and a working position in contact with said first side of said band during passage thereof along said second path;

a coating roller mounted on a second mobile arm for movement between a rest position out of contact with said band during passage thereof along said first path and a working position partially immersed in said bath and in contact with a second side of said band during passage thereof between said first and second return rollers along said second path, thereby coating said one face of said band with said molten zinc; and

a bottom roller mounted on a third mobile arm for movement between a working position immersed in said bath and in contact with said first side of said band and causing said band to pass into and from said bath during passage thereof along said first path, whereby both sides of said band are coated with said molten zinc, and a rest position out of contact with said band during passage thereof along said second path; and

means for removing excess molten zinc from said band after passage thereof through either said first or second paths thereof.

4,446,813

MOULD HANDLING, CLEANING AND PREPARATION SYSTEMS

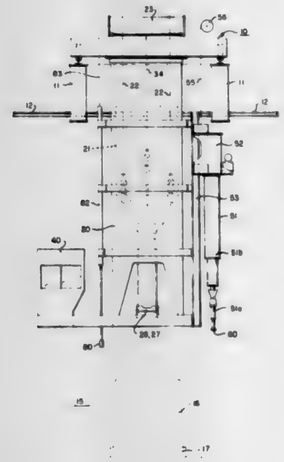
Edward J. Kinkopf, and Karl L. Polen, both of Alliance, Ohio, assignors to The Alliance Machine Company, Alliance, Ohio

Filed Mar. 17, 1983, Ser. No. 476,123

Int. Cl.³ B05C 5/00, 7/02, 13/02

U.S. Cl. 118—72 **5 Claims**

1. A mould handlng, cleaning and preparation apparatus comprising a bridge extending transversely across a work area, wheels at each end of said bridge adapted to run on rails carried by a building framework alongside the work area, drive means for driving at least one wheel at each end of said bridge, a trolley on said bridge movable from end to end lengthwise of the bridge, wheels on said trolley, guide rails on said bridge receiving and guiding said trolley, drive means on the trolley for driving at least a part of said wheels on the trolley, a main guide frame extending vertically from said trolley, a main lift column movable vertically in said main guide frame, means on the trolley for vertically moving said lift column, a pair of opposing tongs pivoted on the lift column opposite the trolley, means on the trolley and lift column for opening and closing said opposing tongs, a secondary guide frame on one side of said main guide frame, a cleaning column vertically movable on said secondary guide, a drive shaft rotatable in said secondary column, drive means in the secondary column for rotating said drive shaft, a cleaning head pivotally attached to the cleaning column and drive means for rotation about the end of



said column, cleaning means on said cleaning head for engaging the interior of a mould to be cleaned, a spray head guide rail fixed to a side of the main guide frame, a spray head movable vertically on said guide rail, reservoir means on the main guide frame for holding a liquid mould treating composition and flexible connecting means between said spray head and reservoir.

4,446,814

DEVICE FOR APPLYING A FLUID, IN PARTICULAR LACQUERS ON PRINTED SHEETS OR CONTINUOUS WEBS

Paul Abendroth, and Janko Despot, both of Offenbach am Main, Fed. Rep. of Germany, assignors to M.A.N. - Roland, Fed. Rep. of Germany

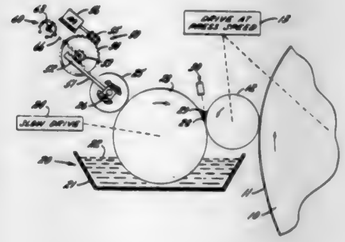
Filed Feb. 9, 1982, Ser. No. 347,144

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105020

Int. Cl.³ B05C 1/00

U.S. Cl. 118—694 **2 Claims**

1. In a printing press the combination comprising an applicator cylinder for receiving a film of lacquer from an associated counterrotating applicator roller, means for driving the cylinder and applicator roller at press speed, a fountain supplying the lacquer and having a fountain roller partially immersed in a reservoir of lacquer disposed below said fountain roller, means for driving the fountain roller so that it picks up a coating of lacquer from said reservoir, said fountain roller engaging the applicator roller so that some of the lacquer is transferred from the fountain roller to the applicator roller, a metering roller engaging the fountain roller, means for adjusting the transaxial spacing between the metering roller and the fountain roller so that a film of regulated thickness is applied to and transferred by the applicator roller, said fountain roller driving means being operable to drive said fountain roller in a counter-rotative direction with respect to the applicator roller with the contacting applicator roller and cylinder surfaces being rotated upwardly at the nip between the applicator roller and the cylinder so that there is no significant buildup of lacquer at the nip between the applicator roller and the cylinder and with the contacting fountain roller and applicator roller surfaces being rotated downward at the nip between the fountain roller and



the applicator roller so that the lacquer tends to buildup at the nip between the fountain roller and the applicator roller, the engagement of the fountain roller and the applicator roller causing a desired thickness of lacquer to be transferred to the cylinder when the buildup of lacquer is at an optimum level in the nip between the fountain roller and applicator roller, means including a sensing device located at the nip between the fountain roller and applicator roller for sensing said buildup of lacquer and for producing an output signal upon departure of the buildup from an optimum level, and means responsive to an input signal from the sensing device for acting upon the adjusting means to bring about a corrective adjustment in the position of the metering roller with respect to the fountain roller so that said lacquer buildup in the nip tends to be restored to the optimum level.

4,446,815

APPARATUS FOR CONTINUOUSLY DEPOSITING A LAYER OF A SOLID MATERIAL ON THE SURFACE OF A SUBSTRATE BROUGHT TO A HIGH TEMPERATURE

Reinhard Kalbskopf, Vordemwald; Otto Baumberger, Carouge, both of Switzerland, and Serge Masson, Orange, France, assignors to Societa Italiana Vetro SIV SpA, San Salvo, Italy

Filed Dec. 14, 1982, Ser. No. 449,773

Claims priority, application Switzerland, Dec. 22, 1981, 8211/81

Int. Cl.³ B05B 7/00; C23C 13/10

U.S. Cl. 118—718 **5 Claims**

1. In apparatus for continuously depositing on a substrate heated to a high temperature a solid coating resulting from the union of at least two reagents in the gaseous phase, comprising

(a) a first source of a first reagent, which is gaseous or diluted in a carrier gas;

(b) a second source of a second reagent, which is gaseous or diluted in a carrier gas;

(c) a nozzle having three tuyeres, each tuyere having an opening formed by a rectilinear slit and lateral walls which define the planes of the longitudinal edges of the slit, the direction of the lateral walls converging towards a common imaginary line, a first said tuyere being flanked by the other two and being adjacent, on one hand, to a second said tuyere at the junction point of their respective walls and, on the other hand, to a third said tuyere at the

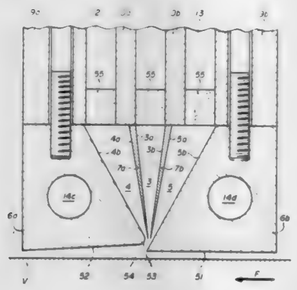
junction point of their respective walls, so that gases ejected by the tuyeres are projected towards the said common line;

(d) first and second deflector surfaces which are rigid with the nozzle and which are to face the substrate, the said deflector surfaces extending over a given distance on respective sides of the tuyeres from the external longitudinal edges of the openings of the second and third tuyeres, respectively;

(e) first distribution means connecting the first reagent source to the first tuyere of the nozzle;

(f) second distribution means connecting the second reagent source to at least one of the second and third tuyeres of the nozzle;

(g) means for moving the substrate and the nozzle relative to each other in a direction substantially perpendicular to the said imaginary line and parallel to the substrate, while maintaining constant, during the relative movement, the



distance separating the tuyere openings and the deflector surfaces from the substrate; and

(h) means for removing from the space between the deflector surfaces and the substrate reaction gases produced in this space;

the improvement that the first deflector surface extends on the upstream side with respect to the direction of movement of the substrate relative to the nozzle and is perpendicular to the median plane of the nozzle, the first deflector surface forming a sharp edge at an acute angle with the external wall of the third tuyere, which wall is extended beyond the internal wall, the sharp edge being transversely offset in the direction of the said movement with respect to the said median plane of the nozzle, the second deflector surface forming, in contrast, a blunt edge with the corresponding external longitudinal wall of the second tuyere, such that a nozzle opening defined between the said edges is bent and the gases emerging from it are deflected in the direction of movement of the substrate and substantially parallel to the substrate.

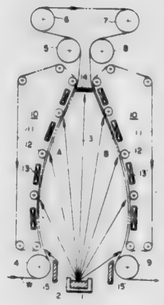
4,446,816

APPARATUS FOR MANUFACTURING A MAGNETIC RECORDING MEDIUM

Tatsuji Kitamoto, and Ryuji Shirahata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 265,123, May 19, 1981, Pat. No. 4,395,439.
This application May 3, 1983, Ser. No. 475,674
Claims priority, application Japan, May 20, 1980, 55-66877
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—718 **16 Claims**

1. An apparatus for manufacturing a magnetic recording medium comprising: a molten metal evaporating source; and means for transporting a flexible belt-shaped support above said evaporating source at a substantially constant speed along a curved path formed such that evaporated metal flow lines connecting a central point on an evaporation surface of said molten metal to said support form a substantially constant angle of incidence with respect to a longitudinal direction of



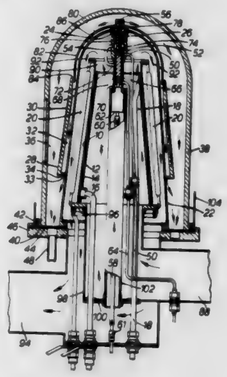
said support throughout an area where said evaporated metal flow lines contact said support.

4,446,817

APPARATUS FOR VAPOR DEPOSITION OF A FILM ON A SUBSTRATE

John A. Crawley, Royston, England, assignor to Cambridge Instruments Limited, Cambridge, England

Filed Dec. 14, 1981, Ser. No. 330,262
Claims priority, application United Kingdom, Dec. 20, 1980, 8040921
Int. Cl.³ H01L *21/20*; C23C *13/08*
U.S. Cl. 118—725 **19 Claims**



1. Vapour deposition apparatus for the deposition of a film on a substrate, comprising

a source of radiant heat,

mounting means for mounting the substrate to be heated by the radiant heat source,

means defining a passageway over the substrate,

means for passing reactant gas through the passageway so as to cause vapour deposition on the heated substrate, and

shielding means preventing the reactant gas coming between the source of radiant heat and the substrate.

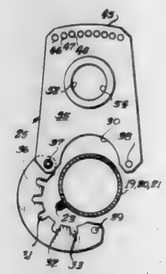
4,446,818

HANGER FOR CONVEYOR TUBES AND THE LIKE

Preston D. Rigterink, Milford, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Jun. 1, 1982, Ser. No. 383,464
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—52 AF **8 Claims**

8. A hanger for supporting a conveyor tube in a given angular position, the tube comprising at least one tube section having a tube body and a radially extending flange, the tube body defining a feed drop-out aperture located at a predetermined angular position relative to the tube flange, the hanger comprising a hanger element defining a hole for receiving the conveyor tube, and a series of recesses communicating with and arrayed along the bottom periphery of the tube hole, each



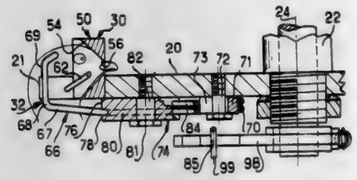
recess being adapted to mate with the tube flange so as to locate the tube and feed drop-out aperture in a given angular position, the hanger further defining a series of attachment holes for permitting the hanger to be attached to support structure in any one of a series of angularly discrete positions, so as to locate the carried conveyor tube in any one of a corresponding number of angularly discrete positions.

4,446,819

METHOD AND AN APPARATUS FOR AUTOMATICALLY SUPPORTING AND RESTRAINING BIRDS, AND PREFERABLY YOUNG CHICKS, SAID METHOD AND APPARATUS IN A PREFERRED EMBODIMENT BEING APPLIED FOR AUTOMATICALLY DEBEAKING SAID BIRDS

Albert J. A. Gourlandt, Les Grésillons, 78950 Gambais, France

Division of Ser. No. 184,970, Sep. 8, 1980, Pat. No. 4,375,814.
This application Sep. 30, 1982, Ser. No. 430,604
Claims priority, application France, Sep. 14, 1979, 79 23018
Int. Cl.³ A01K *37/00*
U.S. Cl. 119—97 R **22 Claims**



1. A method for automatically supporting and restraining live animals including birds, comprising:

providing a plurality of spaced apart supports, each support comprising means for holding the animal by its head with the head immobilized without injury.

moving said supports so that each of said supports follows a path successively passing through a loading station and an unloading station,

inserting an animal into a said support in said loading station, and

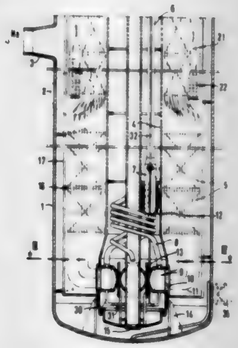
releasing said animal from said support in said unloading station.

4,446,820

STEAM GENERATOR HEATED BY LIQUID METAL

Walter Jansing, Bergisch-Gladbach, and Kurt Vinzens, Overath-Immekeppel, both of Fed. Rep. of Germany, assignors to INTERATOM Internationale Atomreaktorbau GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

PCT No. PCT/EP79/00093, 371 Date Jul. 28, 1980, 102(e) Date Jul. 28, 1980, PCT Pub. No. WO80/01101, PCT Pub. Date May 29, 1980
PCT Filed Nov. 23, 1979, Ser. No. 241,833
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851197
Int. Cl.³ F22B *1/02, 37/24*
U.S. Cl. 122—32 **7 Claims**



1. Helical tube steam generator heated by liquid metal, comprising a container, a central pipe being disposed in said container and having a closed lower end, at least one down pipe being disposed in said central pipe for feed water and having a lower end, a shell disposed between said container and said central pipe, a plurality of groups of helical tubes disposed one above the other in said shell defining horizontal interspaces between said groups of helical tubes in which said tubes are extended in a straight line, further groups of intermediate superheating tubes disposed in said shell, a plurality of distributing pipes being disposed one above the other and being helically disposed within each other, said distributing pipes having first ends connected to the lower end of said feed water down pipe and second ends, and peripherally spaced apart secondary distributors for said groups of helical pipes being connected to said second ends of said distributing pipes.

4,446,821

INTERNAL COMBUSTION ENGINE METHOD FOR DELAYED REACTION STRATIFIED COMBUSTION

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 20, 1982, Ser. No. 341,114
Int. Cl.³ F02B *41/00*
U.S. Cl. 123—26 **6 Claims**

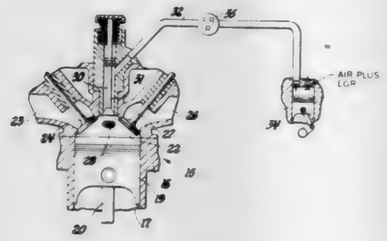
1. A delayed reaction stratified combustion method of operating an engine having a variable volume combustion chamber in which combustible fuel-air mixtures are burned to produce power, inlet means for separately supplying primary and secondary inlet charges to said combustion chamber, means for igniting the primary charges and exhaust means for exhausting the burned products, said method comprising

supplying to the combustion chamber and compressing therein without substantial dilution primary charges of rich fuel-air mixture having a sufficient excess of fuel over a stoichiometric value to provide when ignited rapid combustion with relatively low production of nitrogen oxides,

igniting and partially burning said compressed primary charges during initial portions of sequential combustion

events, said initial portions extending over essentially the first third of the elapsed time of their respective combustion events,

then, during subsequent intermediate portions extending over essentially the central third of their respective combustion events, supplying supplemental charges of oxidizing and diluting gas to the burning primary charges in



amount sufficient to provide for the substantial completion of combustion during essentially the latter two thirds of the respective combustion events by continued rapid combustion with increasingly diluted mixtures, and

expanding the combustion chamber volume during and subsequent to said combustion events whereby a high efficiency, low NO_x power producing combustion cycle is provided.

4,446,822

HEAT INSULATING MOUNTING DEVICE FOR CARBURETOR

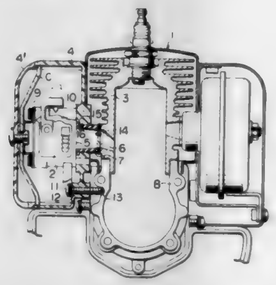
Hisashi Inaga, Tokyo, and Yoetsu Yokocho, Tachikawa, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,278

Claims priority, application Japan, May 25, 1981, 56-74614[U]

Int. Cl.³ F02B 77/11

U.S. Cl. 123—41.31 **1 Claim**



1. In an internal combustion engine including at least one engine cylinder, said engine having an engine well with an opening therethrough. In the passage through said opening of a mixture of air and fuel, said engine wall having a carburetor mounted adjacent thereto, the improvement comprising:

a heat insulating mounting device for mounting said carburetor adjacent said engine wall through heat insulating material, said heat insulating mounting device comprising a heat insulating casing and a separate air-permeable casing lid, said heat insulating mounting device surrounding said carburetor and extending between said wall of said engine and said carburetor, said casing being connected to said cylinder in a manner to isolate the carburetor from the heat of radiation of said engine, and a flexible air passageway of small thickness passing through said casing to form a heat insulating path for air and fuel between said carburetor and said opening through said engine wall, said flexible air passageway being surrounded by said casing and being formed of a heat insulating high molecular compound of rubbery properties.

4,446,823

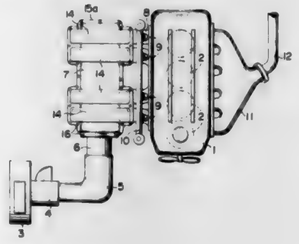
INTERNAL COMBUSTION ENGINE PASSAGE CONSTRUCTION WITH INTAKE TUBES EXTENDING ALONG SURGE TANK WALL

Hironori Bessho, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 13, 1981, Ser. No. 321,193

Int. Cl.³ F02B 75/13

U.S. Cl. 123—52 MB **3 Claims**



1. An intake passage construction for a multi-cylinder combustion engine, comprising:

(a) a surge tank of a tubular shape having a rectangular cross section, comprising a side wall which defines four sides of said rectangular cross section, and an inlet through which air is admitted into said surge tank; and

(b) a plurality of intake tubes of a rectangular cross section having four sides, each comprising a first portion formed all around said surge tank with said side wall of said surge tank serving as a common wall portion which defines one side of the four sided rectangular cross section of said intake tube, a second portion connected to said first portion and formed on said first portion of said intake tube over the width of one side of the four-sided rectangular cross section of said surge tank with one side wall portion of said first portion of said intake tube serving as a common wall portion which defines one side of the four sided rectangular cross section of said second portion of said intake tube, and a third portion connected to said second portion and having an independent tubular wall portion, thus providing a spiral intake tube, an inner end of which is opened into said surge tank and an outer end of which is in communication with one of the cylinders of the internal combustion engine, said outer ends of said tubes being connected to said engine along a common side thereof.

4,446,824

SUCTION SYSTEM IN AN ENGINE

Norio Endo, Kameoka; Yoshiaki Asayama, and Masami Kabuto, both of Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Mitsubishi Jidosha Kogyo K.K., both of Tokyo, Japan

Division of Ser. No. 125,745, Feb. 28, 1980, Pat. No. 4,361,119. This application Jan. 20, 1982, Ser. No. 341,147

Claims priority, application Japan, Mar. 1, 1979, 54-25951

Int. Cl.³ F02B 75/18

U.S. Cl. 123—52 M **1 Claim**

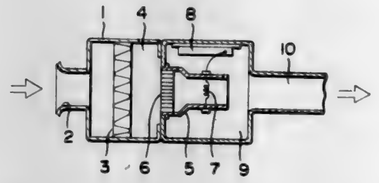
1. An air intake assembly for use with an internal combustion engine, which comprises:

air inlet means comprising an air cleaner casing having an inlet port for receiving air into said assembly from the ambient space around said assembly and having an outlet port formed in an inner wall and air cleaner means in said casing between said inlet and outlet port;

an expansion chamber on the outside of said air cleaner casing and abutting said inner wall of said air cleaner casing and having an inlet port formed in an inner wall thereof and opening directly into said outlet port of said air cleaner casing and further having an outlet port;

a duct connected to said outlet port of said expansion chamber for discharging air from said assembly; and

flow detector means disposed completely within said expansion chamber and having an inlet end mounted in and



filling said expansion chamber inlet port and being supported solely in said expansion chamber by a portion of said inner wall of said expansion chamber defining said inlet port thereof so as to be spaced from the outer walls of said expansion chamber and receiving all the air flowing through said air cleaner means, said flow detector means having an outlet end opening into said expansion chamber and having means for detecting a flow rate of air flowing through said flow detector means from said air inlet means to said expansion chamber, and means connected to said detecting means for producing an electrical signal corresponding to said flow rate.

4,446,825

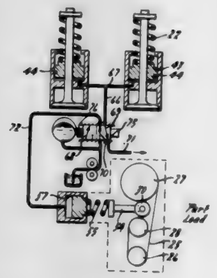
INTERNAL COMBUSTION ENGINE WITH VALVES HAVING A VARIABLE SPRING RATE

Dante S. Giardini, Dearborn Heights; Richard V. Iwanski, Belleville, and David K. Trumpy, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 16, 1982, Ser. No. 369,060

Int. Cl.³ F01L 3/10

U.S. Cl. 123—90.65 **9 Claims**



1. In an internal combustion engine having a crankshaft, a camshaft, and a timing belt interconnecting said crankshaft and camshaft, an apparatus for controlling the operational event of valves in said internal combustion engine, said valves being moved to a closed position by a spring and activated for opening by the conversion of rotary motion from said camshaft into a linear opening motion of the valve, the apparatus comprising:

(a) first hydraulic means responsive to an increase at or above a minimum high speed condition of said engine for increasing the spring rate of said valve closing spring and for reducing the spring rate under said minimum high speed condition;

(b) second hydraulic means having a spring biased idler pulley for maintaining tension on said belt, said second hydraulic means being responsive to an increase at or above said minimum high speed condition for decreasing the rate of said spring biasing idler pulley and for increasing said tension when said engine speed is below said minimum high speed condition.

4,446,826

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

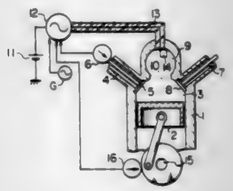
Katsuhiro Kimura, Tokyo; Akira Endo, and Jiro Takezaki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,692

Claims priority, application Japan, Jan. 7, 1981, 56-385

Int. Cl.³ F02P 23/04

U.S. Cl. 123—143 B **4 Claims**



1. An ignition system for an internal combustion engine comprising a cylinder for said engine, a piston which reciprocates within said cylinder, a combustion chamber defined by the cylinder and said piston, a power supply loop provided on a part of said combustion chamber, a microwave generator circuit for generating a microwave as ignition energy, and a coaxial cable through which the microwave is supplied from said microwave generator circuit to said power supply loop, wherein a microwave applied to the power supply loop will cause the combustion chamber to be put in the resonance state and generate a plasma discharge, whereby combustible gas introduced in the combustion chamber can be ignited; wherein said combustion chamber is divided into a primary combustion chamber and a secondary combustion chamber, and said secondary chamber functions as a cavity resonator; and wherein a filter is provided in an opening between said primary and secondary combustion chambers, said filter allowing no passage of the microwaves and passage of the combustible gas.

4,446,827

CYLINDER BLOCK OF INTERNAL COMBUSTION ENGINE

Takao Kubozuka, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 15, 1981, Ser. No. 273,727

Claims priority, application Japan, Jun. 21, 1980, 55-87332[U]

Int. Cl.³ F02F 1/10

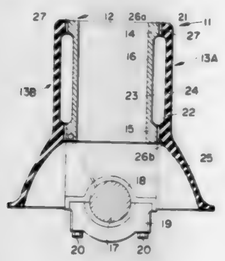
U.S. Cl. 123—195 R **7 Claims**

1. A cylinder block of an internal combustion engine, comprising:

an integrally formed metallic main body including a cylinder section which forms therein engine cylinders, and bearing bulks, a part of a water jacket being formed around said cylinder section; and

first and second side cover members secured respectively to the opposite side surfaces of said main body so as to maintain a fluid-tight seal therebetween, each side cover member including a water jacket outer wall section defining thereinside a part of said water jacket, and a skirt section defining thereinside a crankcase and securely connected

to said bearing bulks, said skirt section being integral with said water jacket outer wall section, and said first and



second side cover members being made substantially entirely of a non-metallic material which is light in weight and high in vibration damping capacity.

4,446,828

RECIPROCATING INTERNAL COMBUSTION ENGINE

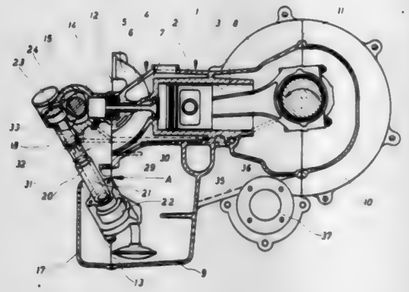
Armin Bauder, and Gerd Ohrnberger, both of Neckarsulm, Fed. Rep. of Germany, assignors to Audi Nsu Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,481

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146799

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 R **5 Claims**



1. A reciprocating piston internal combustion engine, including a cylinder head, a cylinder block providing the cylinder bores, a crankcase, an oil sump, and a camshaft case, and including a main casting which constitutes said cylinder head and cylinder block and also forms part of said crankcase and part of said oil sump, and including a second casting which forms said camshaft case together with a cover for said oil sump, and in which said cylinder head is formed with a locating surface for said camshaft case, and said oil sump has an opening for said oil sump cover lying in the same plane as the locating surface on said cylinder head.

4,446,829

ROTARY INTERNAL COMBUSTION ENGINE

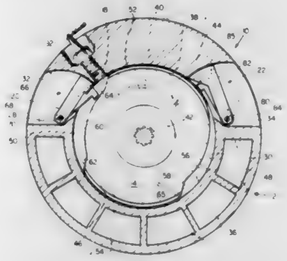
Zeno O. Yeager, 19 Lake Rd., East Hampton, Conn. 06420

Continuation-in-part of Ser. No. 223,042, Jan. 7, 1981, abandoned. This application Dec. 9, 1981, Ser. No. 328,816

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—244 **33 Claims**

1. A rotary internal combustion engine having a stationary block assembly defining a cylindrical chamber, a rotor supported for coaxial rotation within the chamber and having angularly spaced lobes and angularly spaced pockets separated by said lobes, one of said pockets being defined by a portion of the peripheral surface of said rotor, another of said pockets being defined by a radially outwardly opening channel formed in said rotor, a plurality of angularly spaced seal assemblies pivotally supported within recesses in said block assembly and having sealing surfaces engaging said rotor, each of said seal assemblies including inner and outer seal members, said inner



seal members being pivotally movable relative to said outer seal members and being movable into and out of said channel and sealingly engageable with associated walls of said channel as said rotor rotates within said cylindrical chamber, and biasing means for urging said seal assemblies toward sealing engagement with said rotor.

4,446,830

METHOD OF OPERATING AN ENGINE WITH A HIGH HEAT OF VAPORIZATION FUEL

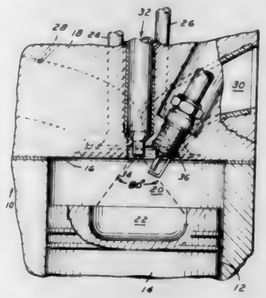
Aladar O. Simko, Dearborn Heights; Peter H. Havstad, Livonia, both of Mich., and Joseph A. Harrington, Naperville, Ill., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/00029, 371 Date Jan. 10, 1983, 102(e) Date Jan. 10, 1983

PCT Filed Jan. 10, 1983, Ser. No. 465,858

Int. Cl.³ F02F *3/26*

U.S. Cl. 123—276 **7 Claims**



1. A method of operating an internal combustion engine of the spark ignition type with a neat fuel having a high heat of vaporization, comprising:

charging the combustion chamber defined between the cylinder head and the top of the piston having a central cavity therein with a volume of air having a moderate swirl rate induced by the intake system;

injecting a first portion of the total fuel charge having a high heat of vaporization such as methanol and the like into the chamber shortly after top dead center (TDC) position of the piston at the start of the intake stroke so that essentially all of the first portion fuel charge is injected into the piston cavity;

injecting at moderate pressure levels with a conical spray pattern producing relatively low penetration and at such a fast rate and for such a short duration that the injection of the first fuel portion is terminated shortly after the start of injection and while still within the intake stroke;

continuing the induction of air into the chamber as the piston continues to descend during the intake stroke so that additional swirling air enters the chamber and cavity to effect evaporation and misting of the fuel charge and movement of the fuel charge from the cavity to the rest of the chamber whereby the heavier fuel droplets are centrifuged to the cavity walls to be contained therein and absorb the heat from the walls and the incoming air to cool the same;

injecting the remaining portion of the total fuel charge into the chamber during the later part of the compression stroke of the engine just prior to ignition with low penetration to assure a rich air/fuel mixture adjacent the spark plug; and

igniting the mixture.

4,446,831

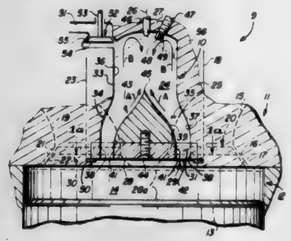
PRECOMBUSTION CHAMBER FOR INTERNAL COMBUSTION ENGINE

Noel G. Artman, 15830 Nicklaus La., Sun City, Ariz. 85351

Filed Apr. 7, 1982, Ser. No. 366,446

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—286 **15 Claims**



1. A precombustion chamber structure for an internal combustion engine cylinder having a variable volume space in which air is compressed during the compression stroke of a piston therein, said chamber structure having enclosing the chamber thereof a sidewall with an inner periphery surrounding and facing radially inwardly relatively to having a principal axis of the chamber and having opposite endwalls spaced apart axially of said axis and of the chamber, the chamber structure also including in one of the endwalls a passage means having a passage annular in transverse section surrounding said axis and communicating between the variable volume space and the interior of the chamber and operable to conduct air therethrough from said space into the chamber pursuant to the compression stroke of the piston, said annular passage having an outer periphery facing radially inwardly that constitutes an unbroken continuation of the sidewall inwardly facing periphery, said passage means and chamber sidewall being configured to create a vortex of said conducted air encircling said axis within the chamber adjacently to the one endwall, and vortex flow control means disposed contiguously with said one endwall but projecting axially inwardly of the chamber relatively to said passage means and spaced from said sidewall radially inwardly therefrom toward said axis, and said flow control means being configured to conduce contractive convergence of a portion of said vortex radially toward said axis.

4,446,832

METHOD AND SYSTEM FOR CONTROLLING THE IDLE SPEED OF AN INTERNAL COMBUSTION ENGINE AT VARIABLE IGNITION TIMING

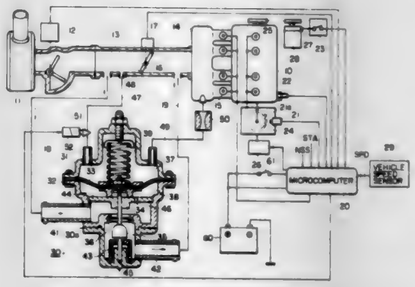
Toshimi Matsumura, Ohbu; Hideya Fujisawa, Kariya; Norio Omori, Kariya; Takashi Arimura, Kariya; Hisamitsu Yamazoe, Kariya, and Kiyotaka Nishiura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 13, 1981, Ser. No. 321,227

Claims priority, application Japan, Nov. 14, 1980, 55-160977

Int. Cl.³ F02P *5/04*; F02M *7/12*; F02D *11/10*

U.S. Cl. 123—339 **6 Claims**



1. An idle speed control system for a spark ignition internal combustion engine having a main air delivery means for introducing air to the engine in response to a manual command, an auxiliary air delivery means for introducing additional air to said engine according to an adjustable setting and means for causing ignition to occur in said engine at variable timing according to an adjustable setting, the system comprising:

engine parameter monitor means for monitoring a plurality of engine operating parameters including a parameter indicative of the speed of the engine, and

data processing means responsive to a plurality of the monitored engine operating parameters for detecting when said engine is in an idle state, deriving a reference engine speed setting from the monitored engine operating parameters when said idle state is detected, detecting the deviation of the monitored engine speed from said reference speed setting, and simultaneously adjusting the settings of said variable ignition timing and said auxiliary air delivery means according to said deviation.

4,446,833

FUEL INJECTION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Yukio Matsushita, Iwata, and Toshikatsu Nozaki, Shizuoka, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Ksisha, both of, Japan

Filed Dec. 3, 1982, Ser. No. 446,726

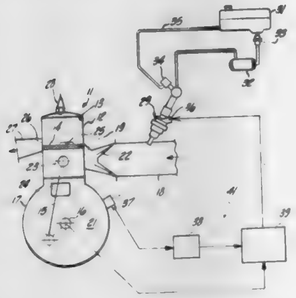
Claims priority, application Japan, Dec. 7, 1981, 56-195668

Int. Cl.³ F02M *7/00, 51/00*; F02B *33/04*

U.S. Cl. 123—435 **36 Claims**

1. In a fuel injection control system for an internal combustion engine comprising a chamber in which an intake charge is compressed during engine operation and fuel injection means

for delivering fuel to an air charge, the improvement comprising means for controlling the amount of fuel delivered by said



fuel injection means in response to the pressure in said chamber.

4,446,834

SYSTEM FOR FEEDBACK CONTROL OF AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE

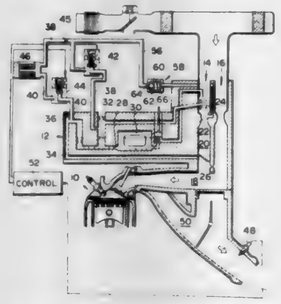
Kenji Yoneda, Atsugi; Shoji Arai, Yokohama, and Yoshimi Kunome, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Nov. 10, 1981, Ser. No. 319,997

Claims priority, application Japan, Nov. 12, 1980, 55-159114

Int. Cl.³ F02M *37/00*; F02B *73/10*; F02M *25/06*; F01N *3/00*

U.S. Cl. 123—440 **7 Claims**



1. In a system for feedback control of the air-fuel ratio of an air-fuel mixture fed to an internal combustion engine,

a carburetor having a main fuel passage provided with an air bleed passage;

said control system including an auxiliary air bleed passage communicating with said main fuel passage;

an electromagnetic valve disposed in said auxiliary air bleed passage so as to control the air flow rate through said auxiliary air bleed passage;

an exhaust sensor disposed in an exhaust passage of the engine for detecting the concentration of a specific component of the exhaust gas discharged from the engine as an indication of the air-fuel ratio of an air-fuel mixture burned in the engine and deriving a feedback signal representative of the detected concentration;

control means for producing a control signal based on said feedback signal and supplying said control signal to said electromagnetic valve to correct any deviation of the air-fuel ratio represented by said feedback signal from a predetermined air-fuel ratio;

a vacuum passage opening into a venturi section of an intake passage of the engine and connected to said auxiliary air bleed passage; and

a vacuum-responsive flow restriction valve so arranged in said vacuum passage as to (a) block said vacuum passage while the magnitude of vacuum in said venturi section is below a predetermined level and (b) gradually open in dependence on the magnitude of said vacuum when the magnitude of said vacuum rises above said predetermined level.

4,446,835

LIQUID FUEL INJECTION PUMPING APPARATUS

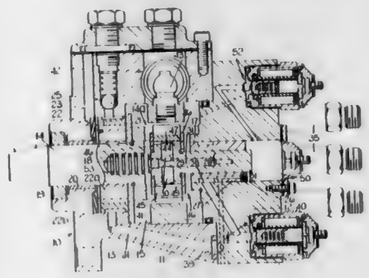
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 27, 1981, Ser. No. 315,514

Claims priority, application United Kingdom, Dec. 31, 1980, 8041547

Int. Cl.³ F02M *59/28*; F04B *1/06*

U.S. Cl. 123—450 **3 Claims**



1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine comprising a body part, a rotary distributor member mounted in the body part and arranged in use to be driven in timed relationship with the associated engine, bores formed in the distributor member, plungers in said bores respectively, cam followers positioned at the outer ends of said plungers respectively for engagement with cam lobes formed on the internal surface of a cam ring surrounding the distributor member, the cooperating surfaces of the cam followers and the cam ring being complemental and shaped such that outward movement of the plungers is controlled according to both the axial and radial positions of the cam followers with respect to the cam ring with a first axial position of the cam followers relative to the cam ring permitting outward movement of the plungers during a filling stroke farther than outward movement of the plungers permitted when the cam followers are in a second axial position relative to the cam ring with plungers associated with cam followers in the first axial position moving inwardly before plungers associated with cam followers in the second axial position, passage means for conveying fuel to and from said bores during rotation of the distributor means, the complementary surfaces on the followers and a portion rotatable with the distributor member limiting the outward movement of the plungers, means for adjusting the axial setting of the distributor member within the body part whereby the amount of fuel which can be delivered by the apparatus during inward movement of the plungers can be varied, adjusting means for reducing the initial rate of fuel delivery by reducing the number of plungers delivering initial flow, comprising moving means to adjust the axial position of less than the total number of the cam followers with respect to the cam ring in said first axial position while leaving the axial position of the remaining cam followers with respect to the cam ring unchanged in the second axial position, said adjusting means including means responsive to the speed of operation of the apparatus of activating said moving means.

4,446,836

FUEL INJECTION PUMPING APPARATUS

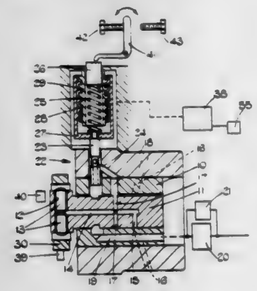
Dorian F. Mowbray, Burnham; Ivor Fenne, Greenford, and Richard J. Andrews, Guildford, all of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Sep. 28, 1982, Ser. No. 425,965

Claims priority, application United Kingdom, Oct. 23, 1981, 8132016

Int. Cl.³ F02M *41/00*

U.S. Cl. 123—450 **7 Claims**



1. A fuel injection pumping apparatus of the rotary distributor type comprising a housing, a rotary distributor member mounted in the housing and adapted to be driven in timed relationship with an associated engine, a bore formed in the distributor member and a plunger slidable therein, cam means defining a leading flank for imparting inward movement to the plunger as the distributor member rotates and a trailing flank which allows the plunger to move outwardly, a delivery passage in the distributor member, said delivery passage communicating with said bore and opening onto the periphery of the distributor member for registration in turn with a plurality of outlets during successive inward movements of the plunger, said outlets in use being connected to the injection nozzles respectively of the associated engine, a low pressure pump for supplying fuel to said bore, means for controlling the quantity of fuel supplied to the bore whilst the plunger is allowed to move outwardly, said means comprising an electrically controlled on/off valve interposed between the low pressure supply pump and the bore and electronic means for controlling said on/off valve, said electronic means being responsive to the relative angular position of the trailing flank of the cam means and the distributor member, whereby the valve is closed to prevent further flow of fuel to the bore when said relative angular position attains a predetermined value.

4,446,837

PRESSURE REGULATOR-ACCUMULATOR FOR USE WITH MECHANICAL DIAPHRAGM PUMP

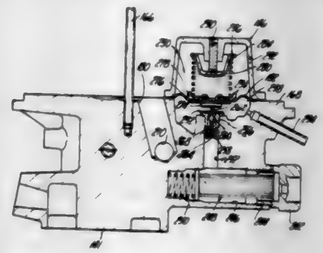
David G. Elpern, Hamtramck, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 781,263, Mar. 25, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 27,707

Int. Cl.³ F02M *69/00*

U.S. Cl. 123—460 **10 Claims**

1. In a fuel management system, for an internal combustion engine having a source of fuel supply, throttle body means mounted on the engine having throat means for delivering fuel to the engine, and pump means for delivering fuel from the supply to the engine, a fuel accumulator, control and regulating assembly comprising fuel bowl means formed in the throttle body means having a fuel accumulating cavity integrally formed therein and an inlet connecting said cavity to the pump means for receiving fuel from the pump means, said fuel bowl means having an outlet formed therein communicating said cavity with the throat means, injector means disposed in said cavity and contiguous with said outlet for controlling the flow of fuel in a pulsed fashion from said cavity to the throat means, and inlet metering regulator means positioned in said cavity and contiguous with said inlet for controlling the flow of fuel into said cavity and regulating the pressure of the fuel in said fuel accumulating cavity, said inlet metering regulating means including a valve seat and a valve assembly having a valve stem and valve head affixed thereto, said valve head being



mateable with said valve seat, and diaphragm means connected to said valve stem and closing said fuel bowl, the pump providing pressurized fuel to said cavity through said inlet, spring means urging said diaphragm means toward said valve seat, said fuel pressure moving said diaphragm means against the urging of said spring away from said valve seat and said valve head toward engagement therewith.

4,446,838

EVAPORATIVE EMISSION CONTROL SYSTEM

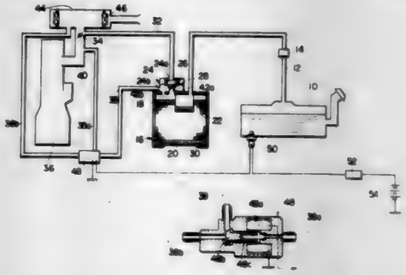
Mikio Suzuki, Zushi, and Masafumi Yamazaki, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Nov. 30, 1982, Ser. No. 445,838

Claims priority, application Japan, Dec. 1, 1981, 56-177732[U]

Int. Cl.³ F02M *33/02*

U.S. Cl. 123—520 **7 Claims**



1. In a motor vehicle having an engine, an air cleaner connected to said engine through an intake tube, and a fuel tank, an evaporative emission control system comprising:

a fuel vapor adsorbing canister connected to said fuel tank through a fuel vent tube;

a purge control valve connected to said canister and adapted to be responsive to the induction vacuum prevailing in said intake tube;

a two way valve;

a first conduit leading from said purge control valve to said two way valve;

a second conduit leading from said two way valve to said intake tube;

a third conduit leading from said two way valve to the clean side of said air cleaner;

said two way valve connecting said first and second conduits when assuming a first postion, and connecting said first and third conduits when assuming a second position;

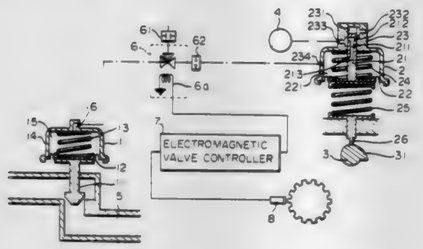
a control circuit operatively connected to said two way valve, said control circuit including means for sensing a parameter indicative of said fuel vapor adsorbing canister being saturated and unable to adsorb any further fuel vapor, said control circuit being adapted to induce said two way valve to assume said second position thereof upon said means sensing a saturated condition of said fuel vapor adsorbing canister.

4,446,839

METHOD AND APPARATUS FOR CONTROLLING EXHAUST GAS RECIRCULATION IN A DIESEL ENGINE

Kiyonori Sekiguchi, Aichi; Toshihiko Igashira, Toyokawa; Takeshi Tanaka; Hisasi Kawai, both of Toyohashi; Mitsumasa Yamada, Mishima; Michio Kawagoe, and Masaaki Tanaka, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 9, 1982, Ser. No. 396,682
Claims priority, application Japan, Jul. 10, 1981, 56-106918
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **4 Claims**



1. A method for controlling EGR in a diesel engine having an EGR valve, a pressure supplying means for supplying air pressure to a diaphragm chamber of said EGR valve, a pressure control valve for adjusting said air pressure in accordance with the rotation angle of a rotary shaft for controlling the amount of fuel injected, a three-way valve for partially releasing said adjusted air pressure to an atmospheric pressure, a first fixed throttle provided between said three-way valve and said pressure control valve, a second fixed throttle provided at an inlet of said three-way valve leading to an atmosphere, a rotation rate detector, and a control means, comprising the steps of:

detecting the rotation rate of the engine,

controlling the ratio of the opening time to the closing time of said three-way valve, and

partially releasing the negative pressure in said diaphragm chamber to an atmospheric pressure corresponding to the rotation rate of the engine detected by the rotation rate detector,

whereby the rate of EGR is decreased in accordance with an increase in the rotation rate, at least in an operating condition higher than a predetermined rotation rate.

4,446,840

EXHAUST GAS RECIRCULATION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Toyoaki Nakagawa, Yokosuka; Masao Nakajima, Atsugi; Yoshihisa Kawamura, and Giichi Shioyama, both of Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Nov. 12, 1982, Ser. No. 441,036
Claims priority, application Japan, Nov. 20, 1981, 56-186498
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **2 Claims**

1. An exhaust gas recirculation control system for an internal combustion engine having an intake passage and an exhaust passage, comprising:

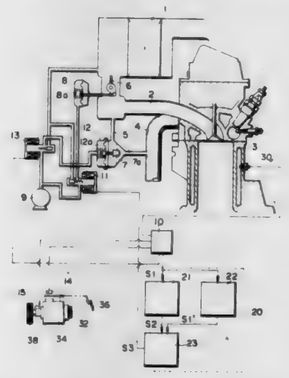
a throttle valve disposed within the air intake passage for movement between a predetermined partially closed position and a fully opened position;

means defining an exhaust gas recirculation passage connecting the exhaust passage to that portion of the intake passage which is located downstream of said throttle valve;

an E.G.R. control valve having a valve element disposed within said exhaust gas recirculation passage for movement between a closed position and a fully opened position,

a load sensor means for generating a load signal indicative of the state of load on the engine;

a revolution sensor means for generating a revolution signal indicative of the revolution speed of the engine;



means responsive to at least one of said load signal and said revolution signal for generating an engine operating state indicative signal indicating that the engine operates in a predetermined state wherein the E.G.R. flow rate higher than a predetermined E.G.R. flow rate is required;

means responsive to said engine operating state indicative signal for actuating at least one of said throttle valve and said valve element of said E.G.R. control valve in a direction tending to increase the E.G.R. flow rate; and

means responsive to said engine operating state indicative signal for preventing said throttle valve and said valve element of said E.G.R. control valve from being actuated in said direction tending to increase the E.G.R. flow rate until the engine keeps operating in said predetermined state for a time longer than a predetermined time.

4,446,841

PHOTOELECTRIC ISOLATION CIRCUIT FOR AN INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Howard E. Van Sicien, Jr., Unadilla, N.Y., assignor to The Bendix Corporation

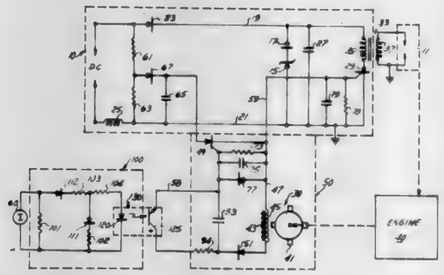
Filed Jan. 20, 1982, Ser. No. 341,030
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—602 **5 Claims**

1. In combination with an internal combustion engine ignition system having at least one spark plug; means for receiving and storing electrical energy including a first solid state electronic switching device for releasing the stored energy when switched; a triggering circuit for switching the first electronic switching device to release the stored energy through said spark plug, said triggering circuit including a second solid state electronic switching device, pulse generating means for generating a succession of electrical trigger pulses in timed relation to the speed of the engine crankshaft for switching the second switching device which switches the first switching device, and means for biasing the second switching device; and means

for automatically controlling the bias means, said bias control means including a single transistor connected in parallel with said biasing means, the improvement wherein:

said transistor is a photosensitive transistor; and

means for operating said transistor in the active region of its



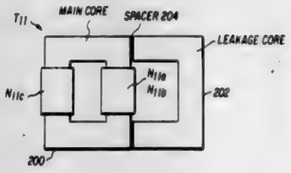
operating characteristics wherein its resistance is not substantially a constant value of resistance, said transistor operating means including at least one light emitting diode adapted to receive an electrical current which is a function of at least one operating parameter of the engine and provide a light output signal to said transistor.

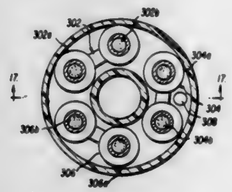
4,446,842

IGNITION SYSTEM

Shinichiro Iwasaki, Troy, Mich., assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Continuation-in-part of Ser. No. 268,889, Jun. 1, 1981, Pat. No. 4,382,430. This application Jun. 1, 1982, Ser. No. 383,607
Int. Cl.³ F02P *3/04*
U.S. Cl. 123—606 **18 Claims**





1. An ignition system for an internal combustion engine having plural cylinders comprising:

timing means coupled to a crankshaft of said engine for sequentially supplying plural timing control signals to a plurality of respective output terminals in synchronism with the rotation of said crankshaft, each of said output timing control signals being associated with a respective cylinder of said engine;

oscillator means for producing an AC output signal;

switch means coupled to said oscillator means for generating an AC drive signal based on said AC output signal, said switch means comprising a leakage transformer having a pair of output terminals across which said AC drive signal is provided;

a plurality of high voltage generator means, each of said generator means being associated with a respective cylinder of said engine, said generator means coupled to respective output terminals of said timing means to receive respective control signals therefrom, each generator means coupled to the output terminals of said leakage transformer and including means for producing a high voltage AC ignition signal when said drive AC signal and a respective timing control signal are simultaneously received; and

a plurality of spark plugs each associated with a respective engine cylinder and each having a pair of electrodes to which a respective of said high voltage AC ignition signals is sequentially applied, whereby ignition arcing is produced across the electrodes of said spark plugs;

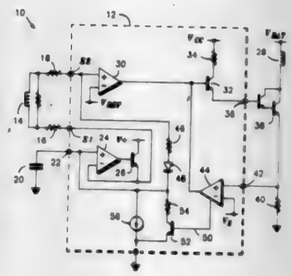
wherein after initiation of said arcing current developed across said electrode pair is limited by magnetic flux leakage within said leakage transformer whereby the level of said AC drive signal is correspondingly reduced.

4,446,843

ADAPTIVE DWELL IGNITION SYSTEM

Robert C. Rumbaugh, and Robert B. Jarrett, both of Tempe, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 4, 1982, Ser. No. 432,611
Int. Cl.³ F02P *5/00*
U.S. Cl. 123—609 **5 Claims**



5. In an adaptive dwell ignition system for charging and discharging an ignition coil to generate spark to operate an engine including an adaptive dwell capacitor for varying the excess dwell time and an integrated circuit portion responsive to timing signals applied thereto which are superimposed onto the voltage potential developed across the adaptive dwell capacitor, the improvement comprising the integrated circuit portion including first resistive circuit means coupled between a first input of the ignition system and a first circuit node for charging the adaptive dwell capacitor and a second resistive circuit means for discharging the adaptive dwell capacitor during the excess dwell time, said second resistive circuit means being coupled between said circuit node and a terminal at which is supplied a ground reference potential, the ratio between said charging and discharging of said adaptive capacitor being maintained constant at any given engine RPM to thereby maintain the excess dwell time substantially independent of temperature and manufacturing process variations.

4,446,844

PROJECTILE SHOOTING GUIDE FOR BOWS

Jim Z. Nishioka, 1268 Hemlock NW., Salem, Oreg. 97304

Filed Jun. 28, 1982, Ser. No. 392,547
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—41 A **8 Claims**

1. For use with a bow of the type having a bowstring and a

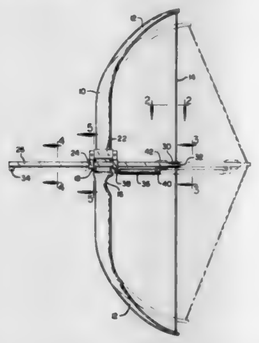
tensioning means connected to the bowstring, a projectile shooting guide comprising

(a) a support for use on a bow,

(b) an elongated guide member for support on a bow by said support,

(c) said guide member including forward and rearward portions and when in an operative position said rearward portion extends rearwardly from said support,

(d) said rearward portion including a pre-draw position and a drawn positon,



(e) means on said rearward portion of said guide member for operatively engaging a bowstring during a rearward drawing movement of said rearward portion,

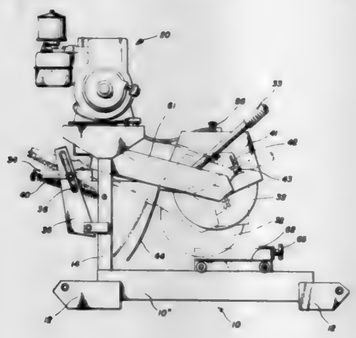
(f) resilient means on said shooting guide operatively connected to said rearward portion so that when said rearward portion is drawn rearwardly from its pre-draw position to its drawn position and then released said resilient means will urge said rearward portion forwardly towards its pre-draw position.

4,446,845

SELF-CONTAINED GASOLINE DRIVEN PORTABLE MASONRY SAW

Edward M. Harding, Middletown, Md., assignor to Equipment Development Co., Frederick, Md.

Filed Aug. 25, 1981, Ser. No. 296,126
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—13 SS **9 Claims**



1. A portable saw for cutting a workpiece comprising:

a base member adapted to be disposed in a first substantially horizontal plane;

a support stand affixed to said base member and projecting upwardly therefrom;

an engine mount affixed to said upwardly projecting support stand and being disposed in a second, fixed substantially horizontal plane displaced upwardly from said first horizontal plane;

an internal combustion engine affixed to said engine mount in a predetermined fixed substantially horizontal disposition and including an output shaft;

a support arm operatively connected to said engine mount and projecting from said support stand, said support arm including an L-shaped bracket projecting from the posterior thereof and a spring being attached to said L-shaped bracket and said support stand in an over-centered arrangement to aid an individual in pivoting the support arm into engagement or disengagement with a workpiece;

a live pivot shaft for pivotally connecting said support arm to said engine mount;

a saw blade positioned on an arbor shaft affixed to said support arm; and

drive means operatively connected to said output shaft of said internal combustion engine, said live pivot shaft and said arbor shaft on which said saw blade is positioned for imparting rotation from said output shaft to said saw blade while permitting relative vertical displacement of said arbor shaft relative to said output shaft;

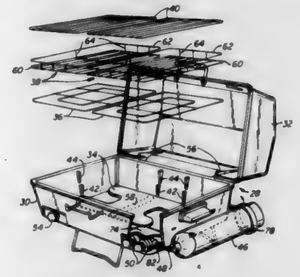
said support arm being pivotally mounted relative to said engine mount to engage or disengage said saw blade with a workpiece without changing the disposition of said second substantially horizontal plane of said engine mount and said predetermined fixed substantially horizontal disposition of said internal combustion engine affixed thereto.

4,446,846

TABLE TOP GRILL

Linus K. Hahn, Palo Alto, Calif., assignor to Columbia Industries Corporation, Palo Alto, Calif.

Filed Nov. 15, 1982, Ser. No. 441,497
Int. Cl.³ A47J *37/00*; A01J *11/06*
U.S. Cl. 126—25 R **12 Claims**



1. A table top grill of the type in which objects to be cooked are positioned in close proximity to heated heat retention material, comprising

(a) a housing;

(b) means for heating the heat retention material, the heating means being positioned within the housing;

(c) support means positioned within the housing and directly above the heating means for supporting cooking utensils in direct communication with the heating means;

(d) fire grate means positioned within the housing and above the support means for supporting the heat retention material in direct communication with the heating means including

(i) first tray means removeably positioned above one section of the support means for supporting one portion of the heat retention material; and

(ii) second tray means positioned above the remaining portion of the support means for retaining the remaining part of the heat retention material;

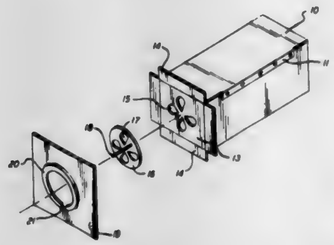
(e) first and second cooking grid means positioned within the housing and above the fire grate means for providing a cooking surface which is in close proximity to the heat retention material, wherein the first cooking grid means is disposed above the first tray means and the second cooking grid means is disposed above the second tray means and furtherwherein the combination of the first tray means and the first cooking grid means can be removed from the housing independently of the second tray means and second cooking grid means combination so that the cooking surface which is in direct communication with the heating means can be provided simultaneously with the cooking surface which is in close proximity to the heat retention material.

4,446,847

FIREPLACE OUTSIDE AIR INLET

Charles A. Martin, Chisholm Rd., Kingston, N.H. 03848

Filed Apr. 6, 1982, Ser. No. 366,041
Int. Cl.³ F22B *9/02*
U.S. Cl. 126—120 **3 Claims**



1. A fireplace inlet comprising: a square conduit having a flange at one end; a face plate affixed at said one end, said face place having a series of apertures within the area defined by the walls of said square conduit and equally radially spaced about the axis of rotation of said face plate; a circular plate of a size to encompass said apertures and lie within said area, said circular plate being mounted for rotation on said face plate and having a series of apertures registering with those of said face place when in alignment and when not in alignment preventing the passage of air through said face plate; a top plate over said circular plate and affixed to said flange, said top plate having a central circular opening therein mating with and accommodating said circular plate and having a lip on the edge of said central circular opening holding said circular plate for rotation; and an outwardly projecting lug affixed to said circular plate to affect rotation thereof by hand or by a poker.

4,446,848

FIREPLACE INSERT CONSTRUCTION

William M. Becker, and William R. Becker, both of Smithville, Mo., assignors to Gladstone Furnace Company, Inc., Kansas City, Mo.

Filed May 9, 1983, Ser. No. 492,558
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **12 Claims**

1. A fireplace control and heat exchanging unit adapted to be mounted as an assembled unit into and in front of the fire receiving recess of a preexisting fireplace,

there being, with respect to the structure of the fireplace, per se, a normally substantially horizontal fireplace hearth,

a normally substantially vertical fireplace front wall extending upwardly from said hearth,

a normally substantially rectangular opening in said front wall,

the fire receiving recess received in said front wall opening and surrounded by said front wall, there being normally vertical, opposed side edges in the front wall and a normally horizontal top lintel thereabove defining said opening and the outboard front portion of said recess,

the recess itself normally having an inwardly extending, normally horizontal floor comprising an extension of the hearth, two normally substantially vertical side walls extending inboard from the fireplace front wall side edges at substantial angles thereto, a rear wall and a top wall,

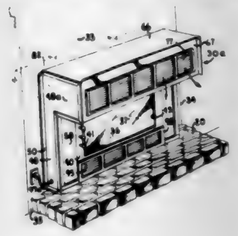
there further being a flue with a damper control therein extending upwardly from at least a portion of the top wall of said recess to carry off smoke and the combustion products of a fire,

said fireplace control and heat exchanging unit comprising, in combination:

(1) a first, substantially rectangular, relatively shallow, vertical, hollow insert housing portion adapted to fairly closely but removably fit into the fireplace front opening and be received within the outboard portion of said fireplace recess in a manner where said first housing portion somewhat congruently fills said opening, as well as the outboardmost portion of said recess,

(2) said first housing portion defined by a rear, inboard wall and bottom, top and side walls connected to one another to make a substantially rectangular insert with an open outboard face,

(3) a second, relatively deeper, largely hollow, substantially rectangular external housing portion fixed to the outboard end of said first housing portion and made integral therewith, said second portion comprising in its lower part a substantial outward extension of the first housing portion and also including an upward extension



thereof rising substantially above said first housing portion lower part whereby, when said first insert housing portion is inserted into the outboard portion of said fireplace recess, the inboard lower part of said second housing portion lies at least substantially adjacent the fireplace front wall side edges and the inboard part of the upward extension thereof approaches and extends upwardly substantially parallel to the lintel overlying said fireplace opening,

(4) said second housing portion having a bottom wall, side walls, a top wall and upper and lower front walls, the said second portion bottom, side and top walls connected, by suitable continuous wall members, with the respective bottom, side and top walls of said first portion,

(5) the first and second housing portions together defining and providing a single, hollow, sealed housing adapted to fit partly within and partly outside said fireplace opening and recess,

(6) flange means provided laterally of the outboard edges of the first housing portion side walls and the inboard edges of the second housing portion side walls operative to overlie in substantial contact the substantial entire height of said front opening side walls, whereby said fireplace recess and front opening are substantially completely closed off, when said insert is in place, by said housing, flange means and the partial upper rear wall of the second housing portion,

(7) a substantially horizontal, substantially central fuel feed and cleanout opening and passageway through said

first and second housing portions defined by a first circumferential wall extending entirely through both of said housing portions, said wall, at its inboard and outboard ends, continuously and circumferentially fixed to the first housing portion rear wall and second housing portion lower front wall, respectively, said opening spaced inwardly away from the bottom, top and side walls of said first and second housing portions,

(8) a door closure for said central opening and passageway on the lower front wall of said second housing portion,

(9) a substantially horizontal lower draft opening and passageway defined by a second circumferential wall extending entirely through said first and second housing portions below said central fuel feed opening and passageway, there being draft control means associated therewith, said second wall fixed to the front housing portion rear wall and second housing portion lower front wall,

(10) an elongate, sealed, monolithic, hollow plenum body defined by top and bottom walls, side walls and a rear wall fixed to the upper rear wall of the first housing portion above the fuel feed and cleanout opening, said plenum body so sized and shaped as to substantially, yet not entirely, block and close off a substantial portion of said fireplace recess under the top wall and flue thereof,

(11) at least two spaced-apart discrete openings through said first housing portion rear wall into said plenum body, one an inlet opening thereinto and the other an outlet opening therefrom,

(12) a blower positioned in the upper part of said housing connected to said first opening and adapted to blow relatively cool air from said housing into said plenum,

(13) a hollow passageway defined by a third circumferential wall positioned in the upper part of said first and second housing portions connected to said first housing portion rear wall around said second opening and adapted to receive therewithin relatively heated air from said plenum body and pass it out of said first and second housing, and

(14) at least one intake opening positioned in the lower part of said second housing portion for receiving air from outside said housing thereinto.

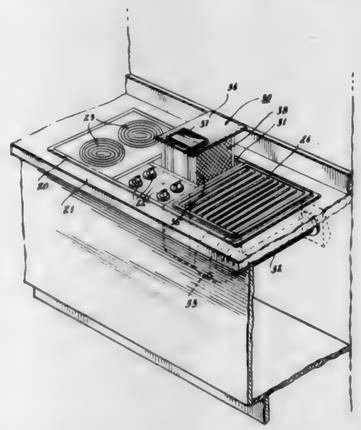
4,446,849

VENT APPARATUS FOR A SURFACE COOKING APPLIANCE

Robert H. McFarland, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Aug. 24, 1981, Ser. No. 295,598
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—299 R **12 Claims**

1. In a ventilating system for a surface cooking appliance having a ventilating duct extending downwardly through a generally horizontal surface adjacent at least one cooking unit, and a ventilator mounted for vertical movement with respect to said duct and having a lowermost position and an uppermost position, the improvement wherein said ventilator has a substantially rectangular horizontal top having a front edge, a pair of opposite side edges, and a rear edge, said top being shaped to cover and substantially seal the upper end of said duct in said lowermost position of said ventilator, vertical support means extending downwardly from said adjacent the front edge of said top for selectively holding said ventilator at said lowermost position and said uppermost position wherein said top is substantially above said surface, said ventilator having a substantially open side extending downwardly from one of said side edges and being substantially completely open between said top and said surface when said ventilator is in said uppermost position, and a flat vertically oriented filter mounted to substantially completely and removably cover said open side of said ventilator and to move vertically with said ventilator,



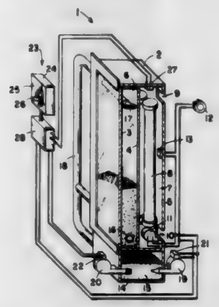
said vertical support means comprising substantially the sole support for said top.

4,446,850

SOLAR PANEL WITH STORAGE

Kenneth P. Zilisch, 606 Cape Cod Ave., Appleton, Wis. 54911

Filed Sep. 17, 1982, Ser. No. 419,323
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—431 **3 Claims**



1. A self contained fully automatic vertical wall panel solar heating system comprising;

(a) at least one wall panel in the shape of an enclosed rectangular box having a broad exterior side and a broad interior side and a substantially enclosed perimeter and the panel has no moving parts, and

(b) the exterior side comprises a first pane of transparent material such as glass and the like and a second pane of transparent material which is substantially coextensive with the first pane of transparent material and spaced apart from the first pane of transparent material so as to form an insulating chamber on the exterior side of the panel,

(c) a back panel which is opaque and substantially coextensive with the panes of transparent materials and spaced apart from the second pane of transparent materials to form a heat chamber,

(d) an array of heat storage elements such as containers of phase change materials such as calcium chloride hexahydrate, eutectic salts and the like positioned in the heat chamber, and

(e) an air entrance passage and an air exit passage passing through the back panel and communicating with the heat chamber so as to permit air from the space to be heated to enter the heat chamber, pass over the array of heat storage elements and be heated thereby, and then to pass through the exit passage into the space to be heated, and

(f) wherein the heat chamber is provided with a temperature activated heat chamber switch and the space to be heated is provided with a temperature actuated room temperature switch, and the heat chamber is provided with an air moving means such as a fan, blower, and the like and the air moving means is interconnected with the heat chamber switch and the room switch so that the air moving means will be actuated when the heat chamber temperature is above a preset temperature and the room temperature is below a preset lower temperature and operation of the air moving means will continue until the temperature in the vicinity of the room temperature switch reaches a preset upper temperature at which time the room temperature switch will act to deactivate the air moving means and the air moving means serves to draw air from the area to be heated into the heat chamber and over the array of heat storage elements and to blow the air heated thereby into the space to be heated, and

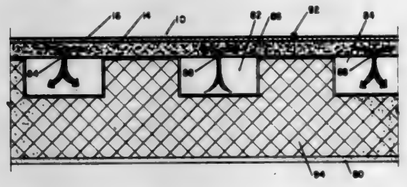
(g) wherein the exterior insulating chamber is provided with an insulating particle input port and an insulating particle output port and the insulating partical input port and the insulating particle output port are operably joined to a storage bin filled with insulating particles such as polystyrene beads and the like and the storage bin is provided with a blower means for transferring the insulating particles from the bin to the exterior insulating chamber and a vacuum means for drawing beads from the exterior insulating chamber to the storage bin and the panel is further provided with a solar sampling chamber and the sampling chamber has contained therein a temperature sensing means which serves to actuate a control switch which activates the vacuum means of the bead chamber when the temperature in the sampling chamber reaches a preset upper temperature and thereby serves to remove insulating beads from the insulating chamber and thereby permits solar energy to pass through the insulating chamber into the heat storage chamber and impinge upon the heat storage elements therein and the temperature sensing means in the sampling chamber further serves to actuate a control switch which serves to activate the blower means in the storage bin when the temperature in the sampling chamber reaches a preset lower temperature and thereby acts to fill the insulating chamber with insulating beads and thereby serves to prevent the loss of heat from the heat storage chamber by way of the insulating chamber.

4,446,851

PLASTIC RADIANT EXCHANGER

Ronald D. Grose, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 168,185, Jul. 10, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,790
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—449 **3 Claims**



1. An apparatus for radiant energy exchange having the capacity to absorb radiant energy and reject it to the atmosphere under appropriate conditions, and suitable for use as an outer protective covering, comprising a structure having open supply and return plenums formed as an integral part thereof and a radiant energy exchanger secured thereto, said exchanger comprising:

(a) a relatively thin layer of gas permeable open-celled semi-opaque plastic foam capable of absorbing and rejecting radiant energy and of allowing the passage of a heat transfer fluid therethrough,

(b) a layer of transparent lightweight gas impermeable plastic material, having air spaces disposed therewithin, disposed between the open-celled foam and the atmosphere to prevent loss of heat by convection from the exchanger, said impermeable plastic material being securely adhesively bonded to said foam to prevent separation thereof and heat transfer fluid bypass caused thereby, and

(c) a layer of gas impermeable reflective material which:

(i) forms the outer walls of said plenums of said structure when said exchanger is secured thereto,

(ii) has openings therein spaced to communicate with said plenums to provide more than one relatively short transverse flow path of said heat transfer fluid through said exchanger and to allow controlled ingress to and egress from said foam by said heat transfer fluid, and

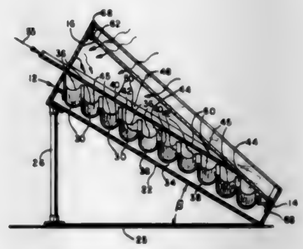
(iii) is securely adhesively bonded to said foam opposite said impermeable plastic material to prevent separation thereof and heat transfer fluid bypass caused thereby.

4,446,852

TERRACED SOLAR ENERGY COLLECTOR

William H. Steigelmann, Cherry Hill, N.J., assignor to En-Save, Inc., Cherry Hill, N.J.

Filed Aug. 10, 1981, Ser. No. 291,422
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—432 **9 Claims**



1. A solar heat collector comprising:

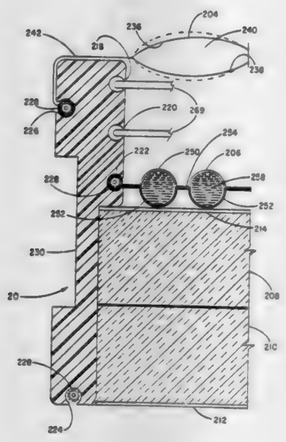
A. a plurality of elongated heat-absorbing troughs;

B. support means for supporting said troughs in a generally parallel adjoining side-by-side terraced array, in position to guide a liquid flow to prevent pools of heat-absorbing liquid from forming in the troughs, and with an end of each trough elevated longitudinally and displaced laterally relative to the other end of the trough to permit a continuous liquid flow by gravity toward and out of the respective lower ends thereof;

C. feed means for introducing heat-absorbing liquid into said troughs disposed in said array at the upper ends thereof to permit a flow of the heat-absorbing liquid toward the respective lower ends; and

D. collection means for collecting the heat-absorbing liquid from said troughs disposed in said array at the lower ends thereof.

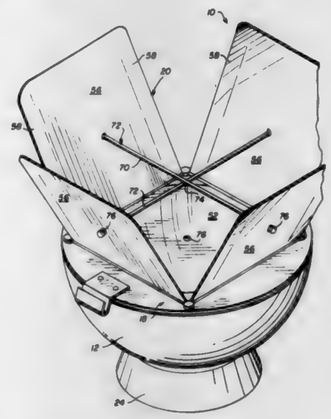
4,446,853
SOLAR COLLECTOR PANEL
Thomas P. Adcock, 300 Meadowbrook Dr., Huntsville, Ala. 35803
Division of Ser. No. 804,022, Jun. 6, 1977, Pat. No. 4,129,177.
This application Dec. 6, 1978, Ser. No. 967,044
Int. Cl.³ F24J 3/02
U.S. Cl. 126—450 2 Claims



1. A solar collector panel comprising:
a. a frame;
b. a top transparent to solar radiation sealingly mounted to said frame, said top being lenticulated and inflatable and comprised of molded thermo-plastic film;
c. an absorber cell mounted to said frame and spaced below said top;
d. a reflective member mounted in said frame and spaced below said absorber cell;
e. an insulation member mounted in said frame and spaced below said reflective member;
f. a bottom cover sealingly mounted to cover the bottom of said frame; and
g. mounting means for mounting said top, said absorber cell and said bottom cover at the respective peripheral edges thereof comprising corresponding lock-in means for engaging the respective peripheral edges and corresponding grooves in said frame for securely retaining said corresponding lock-in means.

2. A rigid frame of thermal insulating material for surrounding and securing solar collector panel elements in mutually spaced, parallel relation, said frame comprising, fluid inlet and outlet means connected to said frame and communicating with fluid-containing solar collector panel elements, a first surface having a plurality of vertically disposed, mutually spaced horizontal, continuous grooves adapted to receive splined strips and a first elongated, horizontal, continuous recess having a shoulder portion adjacent the vertically disposed, mutually spaced grooves, and, a second surface having a second horizontal, continuous groove adapted to receive a splined strip and a second elongated, horizontal, continuous recess having first and second shoulder portions adapted to receive locking means in engagement therewith, whereby said grooves in said frame, said elongated recesses and said locking means cooperate to secure said frame and said collector panel elements.

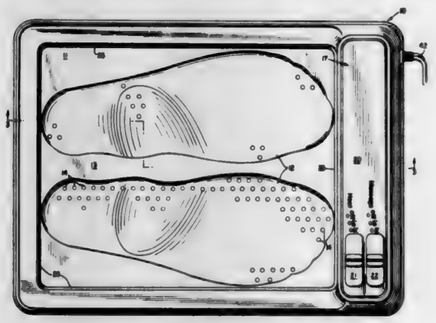
4,446,854
SOLAR OVEN
Merton L. Clevett, and Mildred L. Clevett, both of 6121 S. Logan Ct., Littleton, Colo. 80121
Filed Jul. 20, 1981, Ser. No. 285,064
Int. Cl.³ F24J 3/02
U.S. Cl. 126—451 12 Claims



1. A solar powered oven, comprising:
(a) a generally hemispherical oven body assembly having inner and outer hemispherical shells, said inner shell defining an interior supporting surface for, in use, carrying a cooking container, said outer hemispherical shell substantially concentric spaced from said inner shell;
(b) a cover assembly of solar radiation permeable material;
(c) means for releasably attaching said cover assembly to said oven body over the non-hemispheric face thereof;
(d) reflector means for directing solar radiation through said cover assembly;
(e) means for indicating alignment of the oven face with a source of solar radiation; and
(f) further comprising thermally isolating spacer means for separating and spacing said outer hemispheric shells from said inner hemispherical shell and aligning the shells in substantially concentric relationship, wherein said spacer means comprises a plurality of at least three cork bodies located at spaced apart locations between said hemispheric shells.

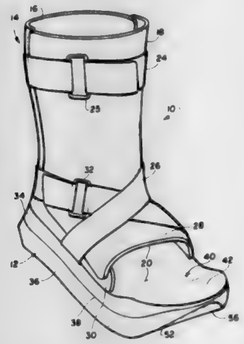
4,446,855
FOOT TREATMENT APPARATUS
Belvin F. Friedson, Miami, Fla., assignor to Windmere Corporation, Hialeah, Fla.
Filed Dec. 31, 1981, Ser. No. 336,430
Int. Cl.³ A61H 29/00, 1/02
U.S. Cl. 128—24.2 10 Claims

1. A foot treatment apparatus for providing massage treatment to the feet, said apparatus comprising: a casing which includes a floor with upwardly extending side walls and a pair of foot receiving stations located in the floor; vibrator means mounted on the casing for transmitting vibrations to said casing, said vibrator including a C-shaped vibrator plate having upper and lower end portions, a power transformer mounted at the upper end portion of said plate with the lower end portion of said plate being mounted on the casing at the level of the floor, and said vibrator being aligned with the longitudinal axis of said casing; and heating means for providing heat directly to said foot receiving station, said heating means including a rope heating element which is mounted in a channel located in the lower surface of the floor beneath the foot receiving station, said rope heating element extending the length and width of



said foot receiving station in a series of U-shaped or serpentine curves.

4,446,856
ORTHOTIC DEVICE
R. Paul Jordan, Northport, N.Y., assignor to The Langer Biomechanics Group, Inc., Deer Park, N.Y.
Filed Dec. 18, 1981, Ser. No. 331,913
Int. Cl.³ A61F 5/00
U.S. Cl. 128—80 R 28 Claims



1. An ankle-foot orthosis comprising
means immobilizing the ankle and foot against relative movement,
foot support means connected with said immobilizing means,
said immobilizing means and foot support means being formed to the configuration of the neutral position of maximal subtalor joint contact and relaxed muscle of the ankle and foot of the wearer,
and said foot support having means to support the foot with the metatarsal heads thereof normally out of muscle spasm producing contact with said foot support while the toes of the foot are supported in a position of relaxed muscle.

4,446,857
MEDULLARY NAIL AND PROCESS FOR THE PRODUCTION THEREOF
Wolf-Dieter Otte; Heinz Otte, both of Volkach, Fed. Rep. of Germany; Siegfried Schider, Reutte, and Otto Wiesner, Ruette-Muehl, both of Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.
PCT No. PCT/US79/00708, 371 Date May 9, 1980, 102(e) Date May 9, 1980, PCT Pub. No. WO80/00533, PCT Pub. Date Apr. 3, 1980
PCT Filed Sep. 4, 1979, Ser. No. 351,105
Claims priority, application Austria, Sep. 4, 1978, 6368/79
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 BC 3 Claims



1. A rotation stable medullary nail for fracture fixation having a hollow body provided with a plurality of longitudinal grooves in the outer surface and a cutter at one end; said longitudinal grooves disposed over the total length of said body to the vicinity of said cutter; said hollow body comprised of a composition selected from the group consisting of tantalum, an alloy of tantalum containing more than 50% by weight tantalum, niobium, and an alloy of niobium containing more than 50% by weight niobium, said hollow body having an inner periphery and an outer periphery, said inner periphery being formed by a closed series of contiguously alternating convex and concave segments of which said concave segments are arranged so as to be tangent to an inscribed circle; said outer periphery being formed by a closed series of contiguously alternating convex and concave segments of which said convex segments are arranged to be colinear with a second circle which is larger than and concentric to said inscribed circle; said concave segments of said inner and outer peripheries being substantially aligned so that said hollow body has a substantially uniform radial cross-sectional dimension extending between said inner periphery and said outer periphery; said radial dimension being substantially the same over the entire length of said nail body; said longitudinal grooves having sharp edges formed by the abutments of said concave and convex segments in said outer periphery.

4,446,858
ARM AND SHOULDER BRACE
Allan H. Verter, 684 Franklin Ave., Nutley, N.J. 07110
Filed Jun. 28, 1982, Ser. No. 392,560
Int. Cl.³ A61F 5/40
U.S. Cl. 128—94 1 Claim

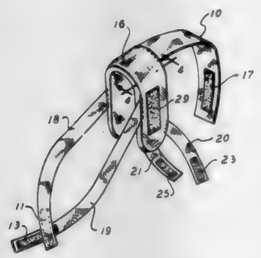
1. An arm and shoulder brace, comprising:
(a) a rigid U-shaped element having a trough portion with first and second leg portions terminating in a substantially spaced parallel relationship, said U-shaped element adapted in size and dimension for placement above the shoulder and adjacent to the base of the neck of a patient, the external surface of said U-shaped element provided with pressure responsive attachment means;
(b) two lateral straps having first ends and second ends each, the first ends permanently secured to said U-shaped element at points near the beginning of each of the leg por-

tions thereof, the second lateral strap ends extending downwardly from the leg portions, and having at the second ends thereof pressure responsive attachments means;

(c) two medial straps having first and second ends each, the first ends permanently secured to said U-shaped element at points approximately half way between the leg portions and the trough of said U-shaped element the second medial strap ends extending laterally outwardly from the trough portion, and the second ends thereof being provided with pressure responsive attachment means;

(d) a surgical bicep band having dimensions suitable for encirclement of the upper bicep, said surgical band having a first end and a second end, and at both ends and on both sides thereof, having pressure responsive attachments means;

(e) a deltoid strap having a first end and a second end, said deltoid strap permanently secured at one end to the trough of the rigid U-shaped element and extending downwardly therefrom, and the other end of the deltoid strap provided



with pressure responsive attachment means adapted for securement to the bicep band side pressure responsive attachment means; and

(f) a sling having a first end and a second end, each of said ends provided with pressure responsive attachments means, and each said pressure responsive attachment adapted for connection to the pressure responsive attachment means upon the exterior of the U-shaped element,

whereby the muscles and ligaments of a patient may be supported by encircling the upper bicep with said bicep band and securing said bicep band to the U-shaped element by means of said deltoid strap, through the connection of said deltoid strap to the upper bicep band using said pressure responsive attachment means of the respective bicep band and deltoid strap in order to facilitate effective adjustment of the bicep band and deltoid strap to provide suitable pressures by the respective bicep band and deltoid strap against the injured muscles or ligaments of the shoulder area, and further whereby, said medial and lateral straps may be secured under the armpits of the user, this providing lateral stability to the U-shaped element of the brace.

4,446,859

BREATHING APPARATUS

Vernon G. Pedersen, Chicago, Ill., assignor to Dacor Corporation, Northfield, Ill.

Filed Jul. 6, 1981, Ser. No. 280,371
Int. Cl.³ B63C *11/16*; A62B *7/04*
U.S. Cl. 128—204.26 **4 Claims**

1. In a pressure regulator for breathing apparatus, comprising in combination

a regulator housing having a recess therein,

a diaphram mounted across said recess to define a chamber in said housing,

a breathing tube opening into said chamber,

an air inlet valve mounted to said housing and having an air inlet port for connection to a source of compressed air, said air inlet valve including:

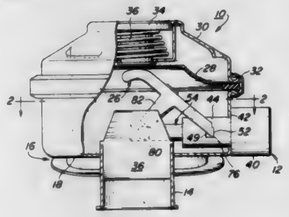
a tubular valve housing,

a valve seat disposed in said housing in communication with said air inlet port, said air inlet port including a passageway around said valve seat;

a valve member having a tubular side wall with one end open and one end closed and being slidably disposed in said valve housing with the open end positioned for movement toward and away from said valve seat, and

spring means operatively positioned between said valve member and said valve housing for biasing said open end of said valve member into sealing engagement with said valve seat to prevent the flow of air into said valve member, and

actuator means connected between said diaphram and said valve member for moving said valve member away from said valve seat in response to the pressure differential across said diaphragm between a closed position in sealing engagement with said valve seat and a fully open position spaced a substantial distance from said seat whereby gas passes from said air inlet passageway into said tubular valve member,



the closed end of said valve member extending into said chamber from said valve housing and having an air outlet orifice in a portion of the tubular side wall of said valve member located exteriorly of said valve housing, whereby air is directly emitted from said orifice into said chamber,

said air inlet valve being positioned in said regulator housing such that air emitted from said orifice is at least partially directed across said chamber into said breathing tube, and

deflector means attached to said actuator means for movement in response to movement of said actuator and thereby, with respect to said valve member, from a first position in which said air inlet valve is normally closed to a second position in which said air valve is partially opened and said deflector is between said orifice and said breathing tube wherein a portion of said stream of air is deflected away from said breathing tube and to a third position in which said inlet valve is fully opened and said deflector is positioned such that a lesser portion of said stream of air is deflected away from said breathing tube.

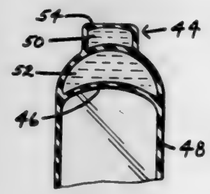
4,446,860

DEVICES AND METHODS FOR THE PREVENTION OF TRANSMISSION OF VENEREAL DISEASE AND NON-GONOCOCCAL GENITAL INFECTIONS

Morton Gutnick, 8329 Fairview Rd., Elkins Park, Pa. 19117

Division of Ser. No. 137,306, Apr. 4, 1980, Pat. No. 4,332,243. This application May 20, 1982, Ser. No. 380,267
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—132 R **2 Claims**

1. A method of treating and preventing venereal disease and providing birth control which comprises incorporating with a mechanical birth control device a venereal preventing medication, encapsulating said medication in a non-dissolvable mechanical wall of said mechanical birth control device, and causing rupture of said wall and release of said medication by



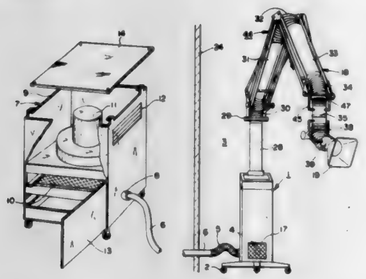
the mechanical pressure developed during intercourse to protect the participants.

4,446,861

METHOD AND APPARATUS FOR PURIFYING CONTAMINATION OF DENTAL CONSULTATION ROOM

Yoshikazu Tada, Tokyo, Japan, assignor to Hayashikane Shipbuilding & Engineering Co., Ltd., Yamaguchi, Japan, a part interest

Filed Aug. 16, 1982, Ser. No. 408,568
Claims priority, application Japan, Sep. 4, 1981, 56-138535
Int. Cl.³ A62B *7/02*; A61C *19/00*
U.S. Cl. 128—139 **6 Claims**



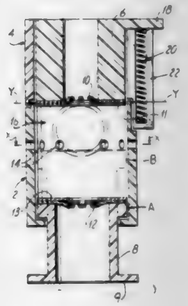
3. An apparatus for purifying the contamination of a dental consultation room comprising: a suction/dust collector adapted to be installed outside said dental consultation room; a stand having a duct adapted to be installed inside said consultation room and communicated with said suction/dust collector by means of said duct; an opening proximate the bottom of said stand for sucking anesthetic gas and dust; a duct member in communication with said duct; a suction hood for sucking anesthetic gas and dust from outside the oral cavity of a patient, communicating with said stand by means of said duct member; and means for selectively controlling the communication of said suction hood and said opening of said stand with said suction/dust collector.

4,446,862

BREATH ACTUATED DEVICES FOR ADMINISTERING POWDERED MEDICAMENTS

Eric A. Baum; Leslie J. Davies, both c/o Minnesota 3M Research Limited, The Pinnacles, Harlow, Essex, England (CM19 5AE); William F. Kirk, 1 Morley St., Loughborough, Leicestershire, and Anthony C. L. Wass, The Mousehole, Duddington Stamford, Lincolnshire, both of England

PCT No. PCT/GB80/00187, 371 Date Jun. 29, 1981, 102(e) Date Jun. 29, 1981, PCT Pub. No. WO81/01243, PCT Pub. Date May 14, 1981
PCT Filed Oct. 30, 1980, Ser. No. 279,977
Claims priority, application United Kingdom, Oct. 30, 1979, 7937519
Int. Cl.³ A61M *15/06*
U.S. Cl. 128—203.15 **13 Claims**



1. A breath actuated device for the oral inhalation by a person of medicaments in finely divided powder form from within a capsule comprising a base component having a cavity containing the powder and a rim defining an outlet aperture communicating with the cavity, and a lid component releasably engaging said base component over said outlet aperture, said device comprising:

wall members defining a chamber, having at least one inlet port for the entry of air into said chamber, and a mouthpiece having a through outlet in direct communication with said chamber, said inlet port, mouthpiece and outlet opening being aligned to provide airflow in a single generally horizontal plane through said inlet port chamber and outlet when the device is positioned normally for operation by inhalation of the person through the mouthpiece;

means positioned adjacent the chamber for supporting the base component of a said capsule containing the powder within the chamber with the rim of the base component uppermost, generally horizontal, and in the plane of the airflow through said inlet port, chamber, and outlet when the device is positioned normally for operation by inhalation of the person through the mouthpiece, and

means adapted for manual activation for removing the lid component of a said capsule having its base component in said means for supporting.

4,446,863

CONNECTOR FOR INHALATION THERAPY APPARATUS

Howard Rubin, 1937 Nester St., Philadelphia, Pa. 19115, and Brent Weinerman, 897 Bridge St., Philadelphia, Pa. 19124

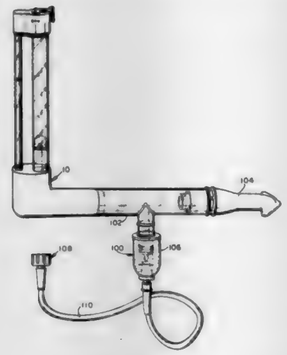
Division of Ser. No. 369,174, Apr. 16, 1982, which is a continuation-in-part of Ser. No. 363,793, Mar. 31, 1982. This application May 20, 1982, Ser. No. 380,242
Int. Cl.³ F16L *11/12*
U.S. Cl. 128—204.18 **7 Claims**

1. A connector for use with threaded or push-on outlet couplings of pressurized gas supplies, the former having an

exteriorly threaded cylindrical pipe termination and the latter having a tapering pipe termination, the connector comprising:

a resilient tubular member, having a flat annular flange at one end, means for receiving a tube at the other end, and a narrower section therebetween having a concave longitudinal cross-section, said one end also having means for receiving a push-on coupling therein; and,

a cylindrical cap member having an internally threaded bore for engaging a threaded outlet coupling and an inwardly projecting annular shoulder at one end thereof, said tubular member being mounted within said threaded bore such that said flange is pressed into a sealing position between



the cap member and the threaded coupling and said other end of said tubular member extends externally of said threaded bore, the annular shoulder defining a second bore enabling the cap member to be slidably mounted on the tubular member and retained in the narrower section and the annular shoulder having an inwardly directed circular edge for pressing a portion of the narrower section of said tubular member into a sealing position between said edge and a push-on coupling after said coupling has been pushed into the one end of the tubular member, whereby the connector may be used with both threaded and push-on couplings.

4,446,864

EMERGENCY VENTILATION TUBE

Robert L. Watson, 14312 Piccadilly Rd., Silver Spring, Md. 20906, and Robert L. Rayburn, 495 North Hills Dr., Salt Lake City, Utah 84103

Continuation-in-part of Ser. No. 168,193, Jul. 10, 1980, abandoned. This application Jul. 7, 1981, Ser. No. 281,066

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—207.14 **14 Claims**

5. A combined pharyngeal airway and esophageal tube apparatus, comprising

a standard face mask of a type which covers both the nasal passages and mouth of a patient and closely fits the patient's face and which has a central opening;

a first, inner tube dimensioned to be received in a patient's esophagus and to extend from a first end adjacent the lower esophagus to a second end adjacent a location outside of the mouth;

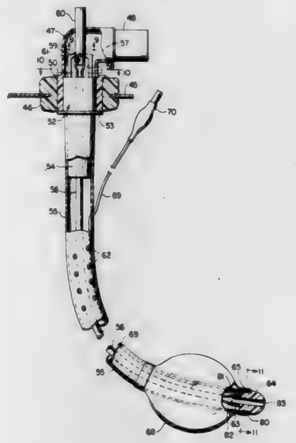
a second, outer tube having an inner diameter larger than the outer diameter of said first tube, said second tube substantially concentrically surrounding a portion of said first tube along the entire length of said second tube and being dimensioned to extend from a first end located adjacent the patient's mouth to a second end located at an inner location adjacent the inner end of said inner tube,

said second tube terminating with the interior thereof being joined to the exterior of said first tube at said inner location, that portion of said first inner tube within said second, outer tube normally being of a small diameter to maximize the volume between said tubes and being distensible and collapsible to permit passage of a nasogastric tube larger than said first tube therethrough;

an expandable and collapsible occluding means surrounding said second tube near the end thereof to be positioned in the lower esophagus for preventing passage of fluids outside of said first tube to and from the stomach;

means for actuating said occluding means;

means in said second tube defining radial passages through the walls thereof for admitting gas into the laryngeal region; and



coupling means for mounting said tubes in said central opening of said face mask, said coupling means having first and second open ends and a chamber therein fluidly connecting said first and second open ends, said first open end of said coupling means being connected to said first end of said second tube, said second open end of said coupling means including a laterally opening ventilating port connectable to a ventilating gas source for conducting ventilating gas to the interior of said second tube, said first tube extending into said chamber and through a sidewall of said coupling means to the exterior thereof, said coupling means maintaining said first and second tubes in coaxial relationship.

4,446,865

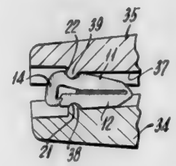
PLASTIC LIGATING CLIPS

Stephen J. Jewusiak, Denville, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 244,436, Mar. 16, 1981, Pat. No. 4,424,810. This application Oct. 21, 1982, Ser. No. 435,869

Int. Cl.³ A61B *17/28, 17/12, 17/00*

U.S. Cl. 128—321 **3 Claims**



1. A ligating clip applying instrument comprising a pair of handles pivoted about a hinge point and extending beyond the hinge point to form a pair of clip closing jaws having opposing inner faces, each of said jaws having a recessed clip-receiving channel in the inner face thereof extending from the forward tip of said jaw rearward toward said hinge point, said channel having a length at least equal to the length of the clip to be applied by said instrument, each channel having an abutment across the base thereof spaced from the tip of said jaw, said abutment being a raised area extending across the width of the jaw and having a generally convex semi-cylindrical shape with the axis of the cylinder extending across said jaw, the depth of the channel forward of said abutment being greater than to the rear of said abutment.

4,446,866

MICROSURGICAL NEEDLE HOLDER

John A. Davison, San Jose, Calif., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 10, 1982, Ser. No. 356,676

Int. Cl.³ A61B *17/04, 17/28*

U.S. Cl. 128—340 **14 Claims**



1. A microsurgical needle holder comprising,

a. a pair of arms pivotally mounted to each other intermediate their ends,

b. opposed handles on the proximal ends of each of the arms on one side of the pivot,

c. opposed jaws on the distal ends of each of the arms on the other side of the pivot,

d. opposed flat textured surfaces on each of the jaws, said textured surfaces being substantially engageable to each other in clamping relationship when the handles are drawn together,

e. at least one of said handles having an attachable first handle extension for increasing the length of said handle to be held within the palm while the other handle is being manipulated by the thumb and a finger of the microsurgeon, and

f. at least one weight positionably engageable with said first handle extension for varying the center of balance of said microsurgical needle holder.

4,446,867

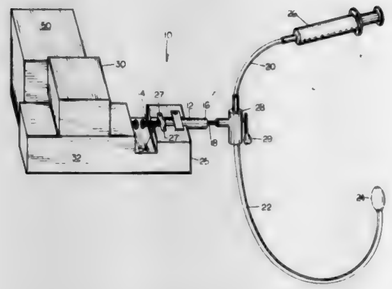
FLUID-DRIVEN BALLOON CATHETER FOR INTIMA FRACTURE

Robert F. Leveen, 312 Lombard St., Philadelphia, Pa. 19147, and Eric G. Leveen, 85-27 Hearth Dr. - #3 Condo, Houston, Tex. 77054

Filed Dec. 31, 1981, Ser. No. 336,085

Int. Cl.³ A61M *29/02*

U.S. Cl. 128—344 **11 Claims**



8. An apparatus for treatment of atherosclerotic occlusions comprising, in combination: a catheter, said catheter defining a proximal end, a distal end, and a through-going lumen, a supply syringe, said supply syringe being connected to said distal end and being adapted to supply fluid through said lumen, a balloon mounted to said proximal end of said catheter, said balloon being adapted to be inflated by fluid from said supply syringe through said lumen; and a pulse generator, said pulse generator including a pulse syringe, said pulse syringe being coupled to said catheter adjacent said distal end and being adapted to supply pressure pulses in fluid contained in said lumen, and a pulse motor adapted to create pressure pulses in said pulse syringe, said pulse motor including a ram aligned with said pulse syringe and adapted to strike said pulse syringe, a spring adjacent said ram opposite said pulse syringe, a cam rotor positioned adjacent said ram adapted to alternately drive said ram against said spring to compress said spring and then release said ram, and a rotary motor adapted to rotate said cam rotor.

4,446,868

CARDIAC ARRHYTHMIA ANALYSIS SYSTEM

Alfred L. Aronson, 6024 SW. Jean Rd., Lake Oswego, Oreg. 97034

Filed May 24, 1982, Ser. No. 381,540

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—708 **6 Claims**



1. A system for identifying a QRS complex in an electro-cardiac signal representative of cardiac electrical activity, comprising:

(a) differentiator means, responsive to said electro-cardiac signal, for producing the derivative thereof;

(b) rectifying and filtering means, responsive to said electro-cardiac signal, for producing a signal representative of the low-pass filtered absolute value of said electro-cardiac signal;

(c) first comparator means, responsive to the derivative of said electro-cardiac signal and to said low-pass filtered absolute value signal, for producing a resultant signal when the total of a predetermined reference level less the sum of said derivative and said low-pass filtered absolute value signal is greater than zero; and

(d) output means, responsive to said resultant signal and to said low-pass filtered absolute value signal, for producing an output signal representative of the occurrence of a QRS complex upon the occurrence of said resultant signal when the amplitude of said low-pass filtered absolute value signal exceeds a predetermined threshold level.

4,446,869

WATER ABSORBING TRAP TO PROTECT AN INFRARED EXHALED CARBON DIOXIDE APNEA MONITOR OF A PATIENT'S RESPIRATION

Daniel W. Knodle, Seattle, Wash., assignor to Trimed, Inc., Bellevue, Wash.

Filed Mar. 7, 1983, Ser. No. 472,722

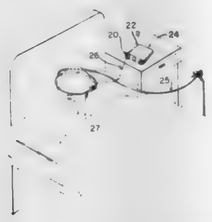
Int. Cl.³ A61B *5/08;* **A61M** *16/00*

U.S. Cl. 128—716 **20 Claims**

1. A water trap in combination with a cannula means having a substantially constant pre-selected internal diameter communicating moisture laden patient exhalations to an analyzer, comprising:

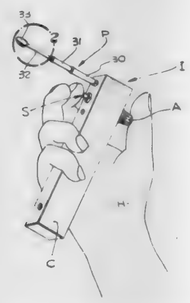
(a) a body having a recess with a diameter in excess of said pre-selected diameter and with a pre-selected volume;

(b) inlet adaptor means connected to said body and including an aperture in fluid communication with said recess;
(c) said cannula means having a first end adapted to receive patient exhalations and a second end, said inlet adaptor means secured to said second end of said cannula means and for maintaining said second end internal diameter constant while secured;
(d) said aperture coaxial with said second end when secured to said inlet adaptor means and having a diameter equal to said pre-selected diameter;
(e) water absorbent means disposed in said recess and including an aperture therethrough coaxial with said inlet adaptor means aperture and having a diameter equal to said pre-selected diameter;



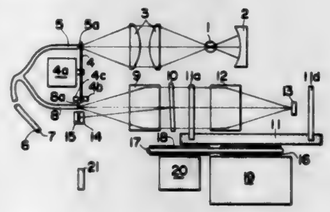
(f) said water absorbent means having a volume substantially equal to said pre-selected volume and adapted for drying exhalations;
(g) exit means connected to said body and including an aperture coaxial with and in fluid communication with said water absorbent means aperture; and,
(h) an analyzer connected to said exit means, said exit means adapted for communicating dryed exhalations from said body to said analyzer.

4,446,870
ELECTRICAL TREATMENT METHOD
Thomas W. Wing, 380 E. Baseline Rd., Claremount, Calif. 91711
Continuation-in-part of Ser. No. 887,003, Mar. 16, 1978, Pat. No. 4,180,079. This application Jun. 1, 1979, Ser. No. 44,544
Int. Cl.[3] A61H *39/00;* A61N *1/36*
U.S. Cl. 128—422 3 Claims



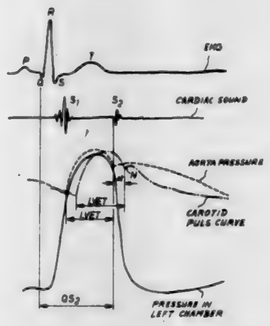
1. The method of electrically stimulating the body of a living person comprising the steps of:
generating a first square-wave voltage signal of several volts amplitude and having a period of about four seconds;
generating a second square-wave voltage signal having a higher frequency and smaller amplitude than said first signal;
combining said two signals to provide a composite signal; and then applying said composite signal to the body of a living person.

4,446,871
OPTICAL ANALYZER FOR MEASURING A CONSTRUCTION RATIO BETWEEN COMPONENTS IN THE LIVING TISSUE
Kenji Imura, Osaka, Japan, assignor to Minolta Kabushiki Kaisha, Osaka, Japan
Filed Dec. 15, 1980, Ser. No. 216,526
Claims priority, application Japan, Jan. 25, 1980, 55-8070
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—633 12 Claims



1. An oximeter for obtaining information indicative of the level of hemoglobin oxide in living tissue, comprising:
a source of light having a plurality of different wavelengths susceptible of coaction with both hemoglobin and hemoglobin oxide;
means for directing the light at the subject tissue;
means for measuring the degree of light absorption at a predetermined standard wavelength;
means for finding a second wavelength in which the degree of absorption is equal to that at the predetermined standard wavelength; and means for determining the level of oxygen saturation in the blood from the second wavelength.

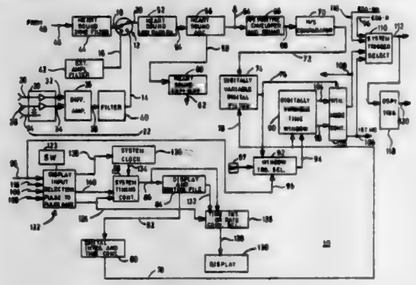
4,446,872
METHOD AND APPARATUS FOR DETERMINING SYSTOLIC TIME INTERVALS
Hermann J. Marsoner, and Günther Savora, both of Graz, Austria, assignors to AVL AG, Schaffhausen, Switzerland
Filed Aug. 29, 1978, Ser. No. 937,886
Claims priority, application Switzerland, Sep. 8, 1977, 11030/77
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—700 5 Claims



1. An apparatus for determining systolic time intervals from an electrocardiogram, the heart sound and the pluse pressure curve of a patient, comprising:

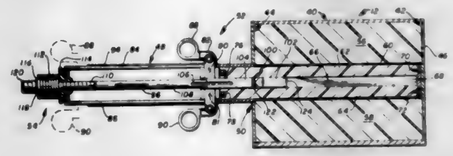
analogue signal processing means for electrocardiogram signals;
analogue signal processing means for heart sound signals;
analogue signal processing means for pulse pressure signals; and
process control means containing a computer means and display device;
each analogue signal processing means having a respective output connected to said computer means;
said analogue processing means for electrocardiogram signals having a second output connected to an amplitude and trigger control input of said analogue signal processing means for heart sound signals and having a third output connected to an amplitude control input of said analogue signal processing means for pulse pressure signals.

4,446,873
METHOD AND APPARATUS FOR DETECTING HEART SOUNDS
Mark W. Groch, Elk Grove, and James R. Domnanovich, Roselle, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.
Filed Mar. 6, 1981, Ser. No. 241,388
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—715 6 Claims



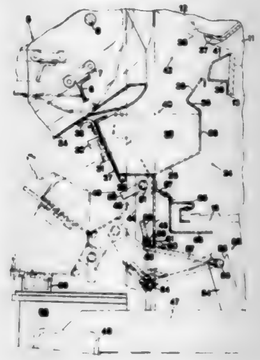
1. A method of detecting heart sounds from a heart sound signal input, comprising the step of:
(a) detecting the occurrence of a first occurring heart sound;
(b) establishing a predetermined heart sound enable window time after the occurrence of said first occuring heart sound;
(c) setting the enable window time for a first detection cycle to approximately the diastolic interval for the maximum heart rate to be detected;
(d) determining whether or not a second heart sound following said first heart sound occurs within said heart sound enable window time; and
(e1) if a second heart sound has already occurred within said heart sound enable window time, providing an output indication of a systole heart sound at the time of occurrence of said second occurring heart sound or
(e2) if no second heart sound has occurred within said heart sound enable window time, providing a signal at the end of said heart sound enable window time for repeating the measurement with increasing heart sound enable window times as long as a second heart sound occurs within said heart sound enable window time and then providing an output indication of a systole heart sound at the time of occurrence of said second heart sound.

4,446,874
MICROWAVE APPLICATOR WITH DISCOUPLED INPUT COUPLING AND FREQUENCY TUNING FUNCTIONS
Victor A. Vaguine, Dallas, Tex., assignor to Clini-Therm Corporation, Dallas, Tex.
Filed Dec. 30, 1981, Ser. No. 335,631
Int. Cl.[3] A61N *5/02*
U.S. Cl. 128—804 44 Claims



1. A microwave applicator for use in a microwave hyperthermia systems which includes a microwave generator for producing microwave electromagnetic energy and a means for determining the microwave power reflected from a treatment area, comprising:
a hollow core metal waveguide having an open end and a closed end, whereby microwave electromagnetic energy is propagated in the direction from the closed end to the open end of said waveguide,
input power coupling means for coupling said waveguide to the microwave generator of the hyperthermia system, said input power coupling means including means for tuning the coupling of said microwave electromagnetic energy from the microwave generator to said waveguide; and
frequency tuning means for tuning the frequency of said waveguide, said frequency tuning means being discoupled from said means for tuning the coupling of said microwave electromagnetic energy, whereby the reflected power from the applictor is minimized by separately tuning said frequency tuning means and said means for tuning the coupling of said microwave electromagnetic energy.

4,446,875
STONE TRAP FOR COMBINE HARVESTERS
Walter V. Deleu, Torhout, Belgium, assignor to Sperry Corporation, New Holland, Pa.
Filed Jun. 9, 1983, Ser. No. 502,854
Claims priority, application United Kingdom, Jun. 15, 1982, 8217278
Int. Cl.[3] A01F *72/20;* A01D *75/18*
U.S. Cl. 130—27 JT 19 Claims



1. A combine harvester comprising a threshing mechanism for threshing crop material, a crop elevator operatively associated with said threshing mechanism to feed crop material

thereto, and a removable stone trap located between the crop elevator and the threshing mechanism and having an inlet disposed generally at the transition between the crop elevator and the threshing mechanism, the stone trap being pivotally supported in an operative position by first releasable pivot means and being retained in the operative position by latch means, the arrangement being such that on release of the latch means the stone trap can pivot forwardly of the machine about the first pivot means while still being supported by the first pivot means and retained on said combine harvester, said first pivot means including a first pivot pin releasably cooperable with bearing means supported by said combine harvester for positionally locating said first pivot pin while permitting rotation of said first pivot pin, such that said stone trap is pivotally movable about said pivot means and is also removable from said combine harvester by disengagement of said first pivot pin from said bearing means.

4,446,876

TOBACCO METERING AND FEEDING SYSTEM

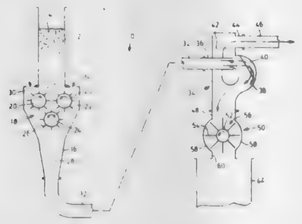
Warren A. Brackman, Cocksville, Canada, assignor to Rothmans of Pall Mall Canada Limited, Don Mills, Canada

Division of Ser. No. 168,505, Jul. 14, 1980. This application Jun. 15, 1983, Ser. No. 493,168

Claims priority, application United Kingdom, Jul. 10, 1979, 7923990

Int. Cl.³ A24B *3/06*

U.S. Cl. 131—110 **6 Claims**



1. Apparatus for conveying tobacco, which comprises:

(a) tobacco reservoir means at a first location and containing tobacco, said tobacco reservoir means comprising an upright elongate tube open at the top for receiving cut tobacco therein and open at the bottom for discharging said cut tobacco therefrom;

(b) tobacco opening and metering means communicating with said tobacco reservoir means at said first location for opening and metering tobacco therefrom, said tobacco opening and metering means including a set of roller elements arranged for rotation about parallel axes, said set of rollers including an upper pair of horizontally-spaced rollers positioned to meter tobacco received from the open bottom end of said elongate tube and a lower roller positioned equidistantly from the axes of said pair of rollers and to open tobacco metered by said pair of rollers;

(c) tobacco conveying conduit means extending from said first location to a second location remote from said first location and positioned to receive said opened and metered tobacco from said tobacco opening and metering means and to convey the same to said second location;

(d) vacuum-inducing means communicating with said tobacco conveying conduit means for drawing air through said conveying conduit means from said first location to said second location, whereby said drawn air acts as the conveying medium for said tobacco through said conveying conduit means;

(e) tobacco-air separating means at said second location for separating said drawn air from said conveyed tobacco; and

(f) rotary tobacco discharge means at said second location for discharging said separated tobacco from said second location.

4,446,877

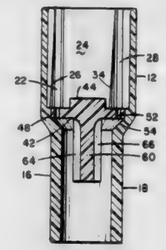
CIGARETTE HOLDER WITH FILTERING ACTION

Leslie N. Aikman, 3628 Ocean Blvd., Corona Del Mar, Calif. 92625

Filed Oct. 5, 1981, Ser. No. 308,464

Int. Cl.³ A24F *5/04*; A24D *3/04*

U.S. Cl. 131—198 R **1 Claim**



1. A filter for cigarette smoke in the form of a cigarette holder having a cigarette holding end and an outlet end and a collecting means for collecting tar and nicotine products within the holder intermediate said ends, characterized in that at least one air passageway is formed in the interior wall of the holder at the cigarette holding end which is capable of conducting air past a cigarette to the collecting means when the cigarette is held in said cigarette holding end;

at least one rib being formed on the interior wall of the holder in parallel with said air passageway which is capable of indenting the outer wall of a cigarette, when held in the cigarette end of the holder, and preventing closure of the air passageway by the cigarette; and

further including a barrier wall in the midregion of the holder and a tar collector extending from said barrier into said outlet end of the holder, and an accelerating opening formed through said barrier which opens to the space between the tar collector and the interior wall of said outlet end of the holder.

4,446,878

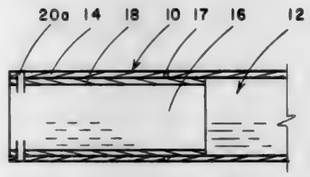
CIGARETTE FILTER

Harry S. Porenski, Jr., Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sep. 21, 1981, Ser. No. 303,737

Int. Cl.³ A24B *3/04*

U.S. Cl. 131—336 **3 Claims**



1. A filter for a cigarette comprising:

a porous filter rod of cylindrical configuration having opposed inlet and outer ends;

a filter rod wrapper extending longitudinally of and circumscribing the rod leaving the opposed ends in flow through communication;

tipping paper circumscribing said filter rod wrapper;

ventilating air means in said filter rod wrapper and said tipping paper to provide ventilating air to said filter element; and,

a plurality of apertures circumambiently arranged around the outlet end and adjacent thereto for directing the smoke from the filter in a lateral direction, said apertures being longitudinally spaced from said ventilating air means.

4,446,879

RECEPTACLE FOR MAKE UP POWDER

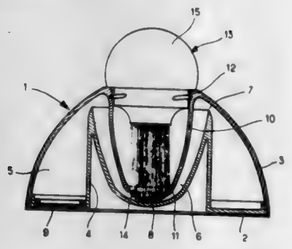
Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Sep. 8, 1982, Ser. No. 415,934

Claims priority, application France, Sep. 25, 1981, 81 18090

Int. Cl.³ A45D *33/00*

U.S. Cl. 132—82 B **10 Claims**



1. A make-up powder receptacle for containing powder substantially in a fluid state, comprising:

(a) a housing having a top and a bottom;

(b) an internal partition which divides said housing into first and second compartments;

(c) passage means intercommunicating said first and second compartments, said partition having a free edge adjacent a part of said housing and said passage means being arranged between said free edge of the partition and said part of the housing, said free edge of the partition being remote from said bottom of the housing;

said first compartment having a bottom portion remote from said free edge and wall means extending from said top of said housing, said wall means and said internal partition defining a pathway therebetween with said pathway extending from said free edge to a point adjacent but spaced from said bottom portion of said first compartment;

(d) said wall means defining a duct in said first compartment for the take-up of the make-up powder by an applicator.

4,446,880

MAKE-UP BRUSH

Jean-Louis H. Gueret, and Jean-Pierre Arraudeau, both of Paris, France, assignors to L'Oreal, Paris, France

Filed May 21, 1982, Ser. No. 380,904

Claims priority, application France, May 27, 1981, 81 10586

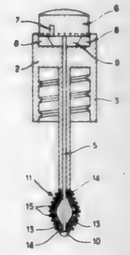
Int. Cl.³ A45D *40/30*

U.S. Cl. 132—88.5 **11 Claims**

1. In a make-up brush having a longitudinal axis and comprising:

(a) shaft means; and

(b) brush means having first and second ends and including means regularly distributed around said longitudinal axis of the brush to serve as bristles; the improvement comprising



(c) means actuable by a user of the make-up brush for varying the brush diameter at least locally at said regularly distributed means thereof.

4,446,881

METHOD FOR PRESSURE TRANSPORT OF METHANOL THROUGH A PIPELINE

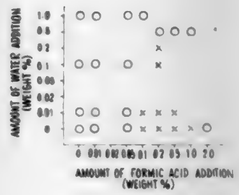
Yasuo Kitamura, Chiba; Masao Suzuki, Tokyo; Toshio Kubota, Ebina; Hiroshi Watanabe, Zushi, and Masaaki Tsujimoto, Funabashi, all of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Aug. 19, 1982, Ser. No. 409,470

Claims priority, application Japan, Aug. 28, 1981, 56-134198

Int. Cl.³ C23F *15/00*

U.S. Cl. 137—1 **6 Claims**

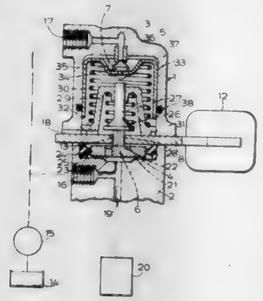


1. In a method for the long-distance pressure transport of a liquid comprised primarily of methanol and optionally containing water, formic acid and one or more organic compounds through a pipeline installation wherein the portions of said pipeline installation in contact with said liquid consist principally of low carbon steel and/or low alloy steel the sum of whose metallic components other than Fe is up to 5 wt. %, the improvement which comprises: the water content of said liquid is limited (1) to the range of 0 to 35 wt. % if the content of formate radicals in said liquid is up to 0.05 wt. %, (2) to the range of 0.25 to 35 wt. % if the content of formate radicals in said liquid is in the range of 0.05 to 2 wt. %, and (3) to the range of 0 to 35 wt. % if the content of the formate radicals in said liquid is in the range of 2 to 3 wt. %, so that said liquid is pressure-transported while the volume ratio of the formate radicals to the water content is maintained at a ratio that does not permit the presence of more than 3 wt. % of formate radicals in said liquid.

4,446,882
SOLENOID-OPERATED VALVE MEANS FOR HYDRAULIC SYSTEMS

Anthony W. Harrison, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 20, 1981, Ser. No. 313,216
Claims priority, application United Kingdom, Nov. 1, 1980, 8035193
Int. Cl.³ F16K *31/04*
U.S. Cl. 137—115 8 Claims



1. A solenoid-operated valve means for an hydraulic system, said system including at least one reservoir for fluid, a continuously-driven pump, and a part to which fluid under pressure is delivered, said solenoid-operated valve means being operative to control delivery of fluid under pressure to said part by controlling flow of fluid circulated by operation of said pump from said reservoir or one said reservoir through said solenoid-operated valve means and back to said reservoir or a different one of said reservoirs, said solenoid-operated valve means comprising a valve operated by a solenoid, said valve being urged open, energisation of said solenoid being operable to close said valve to cut off said return fluid flow to said reservoir, whereby said pump generates pressure fluid for delivery to the part of said system, said valve then also being operated in response to the pressure generated by said pump, and a valve-opening means responsive to said pump pressure, such that when said pump pressure rises above a first threshold level said pump pressure acts to keep said valve closed regardless of the state of said solenoid, until said pump pressure reaches a second threshold level at which said valve-opening means is operative to cause said valve to open, provided that said solenoid is de-energised.

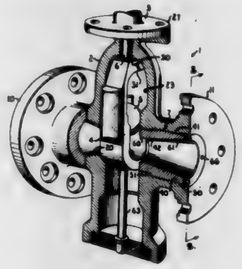
4,446,883
END LOADED VALVE

Herman L. Paul, Jr., Lebanon, Pa., assignor to Continental Disc Corporation, Kansas City, Mo.

Filed Nov. 22, 1982, Ser. No. 443,447
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 10 Claims

1. In a ball valve comprising a valve body having therein a fluid flow channel and a valve ball having a closed position associated therewith wherein flow of fluid through said flow channel is blocked by sealing engagement of the ball with a seat ring circumscribing an outlet portion of the flow channel and a plurality of open positions wherein fluid is allowed to flow through the flow channel; the ball being removably retained within a ball cage mounted within the valve body to reciprocate generally perpendicularly relative to said channel so as to selectively motivate the ball through each of the positions and being freely rotatable within said cage; wherein the improvement comprises:

(a) a removable insert for selectively positioning within said valve and surrounding the outlet portion of said flow channel when placed in said valve body and having retention means associated therewith for retaining said insert within said valve body when said valve is operational; said seat ring being removable through said channel when said insert is removed from said channel and said seat being held in a fixed position by said insert when said valve is operational; said valve body further including a wall surface spaced from and generally surrounding said outlet portion of said flow channel and defining a cavity having a diameter at least sufficiently large to permit passage of



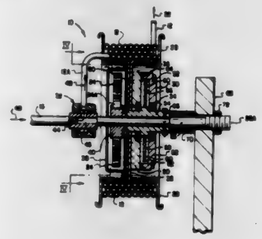
said seat ring and said ball therethrough when said insert is removed therefrom; and

(b) said ball cage including an aperture therein sufficiently large to allow passage of said ball therethrough; said cage being movable when said valve is non-operational to a position such that said aperture is aligned with said cavity to allow removal of said ball from said cage and valve body through said cavity when said insert and seat ring are removed from said cavity.

4,446,884
TAKE-UP REEL WITH CONTROLLED REWIND VELOCITY

Homer J. Rader, Jr., 10035 Surrey Oaks, Dallas, Tex. 75229

Continuation of Ser. No. 271,555, Jun. 8, 1981, abandoned. This application Oct. 12, 1983, Ser. No. 541,296
Int. Cl.³ B65H *75/48*
U.S. Cl. 137—355.23 6 Claims



1. An air hose reel assembly comprising, in combination:

a support shaft having a passage for conducting air from a high pressure supply;

a take-up reel assembly concentrically aligned with said support shaft, said take-up reel assembly having a cylindrical rim on which air hose can be wound and having a radially projecting hub connected to said rim in such a way that said rim includes rim portions which extend axially with respect to the axis of rotation of said rim in opposite directions from said hub to form enclosed areas on each side of said hub;

a damper assembly interposed between said support shaft and one of said rim portions and disposed entirely within one of said areas formed by said one rim portion on one side of said hub, said damper assembly having a housing secured to said hub and defining an annular damper chamber in concentric, spaced relation with said support shaft, a stator member secured to said shaft and received within said damper chamber, and a volume of a viscous fluid contained within said damper chamber and surrounding said stator member;

a wind-up spring motor disposed between said support shaft and the other of said rim portions and entirely within the other of said areas formed by said other rim portion on the opposite side of said hub, said spring motor being coupled between said shaft and said hub on said opposite side of said hub;

rotary fluid sealing means for said damper chamber and supporting said take-up reel assembly for rotation on said shaft;

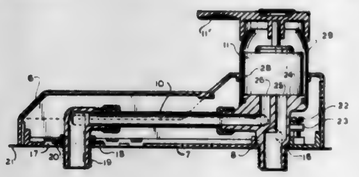
an air hose having an inlet end and a delivery end, said air hose being wound around said take-up reel; and,

rotary fluid sealing means connecting said support shaft passage in fluid communication with the inlet end of said air hose.

4,446,885
WALL MOUNTED MIXING VALVE

Werner Nolden, Wittlich, Fed. Rep. of Germany, assignor to American Standard, Inc., New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,754
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3112616
Int. Cl.³ F16L *5/00*; E03C *1/04*
U.S. Cl. 137—360 5 Claims

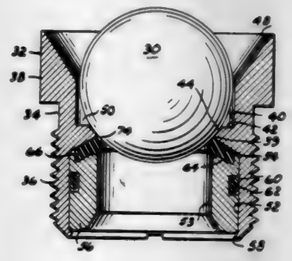


1. A wall mounted mixing valve with a cold and hot water inlet and a mixing water discharge spout consisting of individual structural elements and at least one cartridge mixing valve which are covered by a housing, whereby the inlets are designed in the form of connecting pieces for a direct connection with the pipe ends of the hot and cold water lines, said connecting pieces being adjustably mounted in spaced apart position in a support plate of said mixing valve and coupled to each other by means of a separate pipe bridge, said wall mixing valve comprising: a housing for covering said structural elements is pivotably mounted on said support plate and is parallel with the wall; said support plate, including two aperatures for mounting said connecting pieces, one of said aperatures having a diameter corresponding to the diameter of said one connecting piece and said connecting piece providing a pivot bearing for mounting said support plate, and said other aperature being spaced from said one connecting piece and having a press plate adjustably mounted therein, said press plate having a slotted opening for receiving said other connecting piece and a nut coupled to said other connecting piece for mounting said support plate against the wall and said one connecting piece having a laterally extending shoulder with a threaded opening therein for receiving a set screw for connecting said support plate.

4,446,886
SAFETY RELIEF VALVE SOFT SEAT

Wesley L. Taylor, and Julian S. Taylor, both of 8300 SW. 8, Oklahoma City, Okla. 73108

Filed Mar. 8, 1982, Ser. No. 355,981
Int. Cl.³ F16K *15/00*
U.S. Cl. 137—516.29 8 Claims



1. In a relief valve of the poppet-type including a housing having an inlet passageway communicating with an outlet port and having a spring assembly biasing a valve toward the inlet passageway, the improvement comprising:

a seat support in the inlet passageway having a valve seat facing and seating the spring biased valve for closing the inlet passageway;

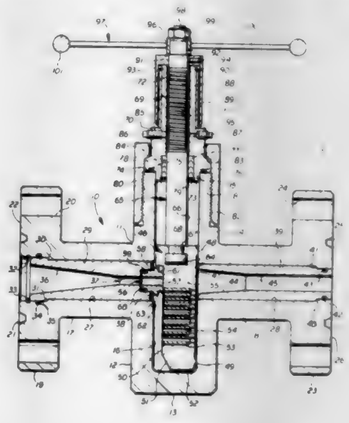
a resilient seal ring disposed on the upstream side of said valve seat and projecting downstream in a manner to concentrically contact said spring biased valve prior to its contact with said valve seat; and,

means including a sleeve bonded to and maintaining said resilient seal ring concentric with said valve seat.

4,446,887
VARIABLE HIGH PRESSURE CHOKE

Billy L. Redmon, and Buford G. Forester, both of Pasadena, Tex., assignors to Custom Oilfield Products, Inc., Houston, Tex.

Filed Dec. 21, 1981, Ser. No. 332,939
Int. Cl.³ F16K *37/00, 3/16*
U.S. Cl. 137—556 28 Claims



1. A variable high pressure choke comprising

a hollow valve body having an open end, a closed end and a cylindrical cavity therein,

cover means for said open end,

aligned tubular inlet and outlet portions on opposite sides of

said valve body defining an upstream side, a downstream side and a straight bore intersecting said cavity at a right angle thereto,

a tubular seal member in said bore having an end portion positioned in said cavity,

said tubular inlet portion including a tubular insert of wear resistant metal having a longitudinally tapered cross section operable to reduce the rate of fluid flow therethrough and having a recess in the reduced diameter end portion thereof,

said tubular seal member being of a wear resistant material and surrounded by resilient sealing material and supported in said recess in said tapered tubular insert and having an end face operable to provide the sole seal between the upstream and downstream sides of said valve body,

a flow selector member in said cavity having a solid, flow-obstructing portion and a portion with flow controlling passage means extending therethrough,

said flow selector member having a sliding fit in said cavity between an extended position with said solid portion in flow obstructing relation to said seal member end portion and movable to successively retracted positions moving said flow controlling passage means relative to said seal member to provide fluid flow passages of different areas,

said flow selector member having unsealed metal-to-metal sliding contact with the wall of said cavity on the downstream side thereof and sealed on the upstream side solely by engagement with the end face of said seal member, and

operating means on said cover means for moving said flow selector member between said extended and retracted positions and including sealing means preventing pressure leakage during operation thereof.

4,446,888

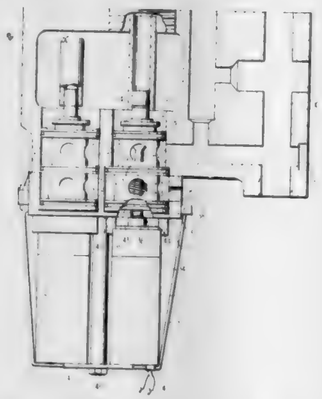
SOLENOID ACTUATED VALVE BLOCK FOR GLASSWARE FORMING MACHINES

Jorge A. Heredia de la Paz, and David F. Sanchez, both of Monterrey, Mexico, assignors to Vitro-Tec Fideicomiso, Monterrey, Mexico

Filed Dec. 15, 1981, Ser. No. 330,920

Int. Cl.³ F15B *13/08*

U.S. Cl. 137—596.17 **3 Claims**



1. A solenoid actuated valve block for glassware forming machines, which comprises a primary block provided with an inner longitudinal operational air manifold, a plurality of valve chambers opening towards a lower surface of said block at one of their ends and towards the operational air manifold at the other end thereof, a plurality of cartridge valves arranged within said valve chambers, each chamber having a duct for operational air individually connected with a pneumatic operational line of the machine and an exhaust duct opening to the atmosphere, a plate attached to said lower surface of the block, said plate having a plurality of openings coincident with each of said valve chambers of the block, a plurality of solenoids mounted on said plate and directly coupled with the cartridge valves, the coupling between said solenoids and said cartridge valves comprising a lost motion mechanical memory which, on reception of one pulse by the solenoid, pushes the cartridge valve and forces it to remain open for the admission of operational air, until reception of the next pulse by said solenoid, when it releases the cartridge valve to be closed and permits the operational air to be exhausted, and a compensating spring, one end of which bears against said cartridge valve and the other end of which bears against said lost motion mechanical memory, said compensating spring being stronger than the force necessary to open said valve but weaker than the maximum force exerted by said solenoid, in order to permit compensation of the lost motion of said mechanical memory for opening and closing the valve.

4,446,889

PRESSURE MODULATING VALVE ASSEMBLY

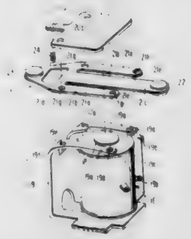
Naoji Sakakibara; Hiroyuki Amano, both of Chiryū, and Hiroaki Morioka, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 3, 1982, Ser. No. 404,738

Claims priority, application Japan, Aug. 7, 1981, 56-123130

Int. Cl.³ F15B *13/044*; F16K *11/00, 11/02*

U.S. Cl. 137—625.4 **5 Claims**



1. A pressure modulating valve assembly comprising housing means having at least one inlet port and one outlet port, solenoid coil means mounted in said housing means, magnetic yoke means associated with said coil means and having curved arm means extending over one end of said coil means, a resilient non-magnetic valve supporting member having leg means secured to said yoke means in overlying relation to said curved arm means and said solenoid coil means, armature means secured to said valve supporting means at a location spaced from the securement of said valve supporting member to said yoke means with said armature overlying said solenoid coil means, spring means connected to said armature means for normally biasing said armature means and valve supporting member about said curved surface of said yoke means away from said solenoid coil means and at least one valve member on said valve supporting member adapted to be moved into and out of engagement with valve seat means surrounding said inlet port.

4,446,890

CONTINUITY ACTUATED ISOLATION VALVE ASSEMBLY

William E. Simpson, Jr., Chamblee, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Oct. 5, 1981, Ser. No. 308,359

Int. Cl.³ F16K *17/10*

U.S. Cl. 137—87 **5 Claims**

1. A valve assembly to control the flow of fluid to a utility function comprising:

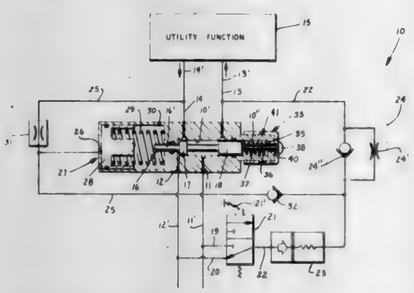
a first fluid pressure port and a first fluid return port on one side of said valve assembly, each con ected to a fluid source;

a second fluid pressure port and a second fluid return port on another side of said valve assembly, each connected to said utility function;

a reciprocable valve stem mounted between said first and said second ports;

biasing means operative on said stem normally retaining it in a position blocking communication between all of said ports;

a valve arrangement connected between said first and second fluid pressure ports and operative when actuated to open momentarily and then close to thereby release a predetermined amount of fluid therethrough and into said utility function;



a fluid return passage connected between said first and second fluid return ports;

a normally inoperative, fluid-actuated piston connected to said valve stem to move it when operative in opposition to said biasing means out of its normal position aforesaid to establish communication between said first and second fluid pressure ports and between said first and second fluid return ports; and

a spur fluid passage between said fluid return passage and said piston for the actuation of said piston by pressure in said fluid return passage.

4,446,891

METHOD FOR REPAIRING AND/OR REINFORCING A PIPE SYSTEM, AND A DEVICE FOR UTILIZATION OF THE METHOD

Sven R. V. Gebelius, Drottningholmsvägen 195, Bromma, Sweden (S-161 36)

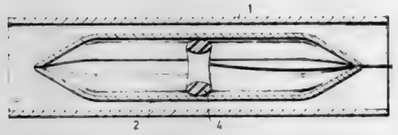
PCT No. PCT/SE81/00325, 371 Date Jun. 17, 1982, 102(e) Date Jun. 17, 1982, PCT Pub. No. WO82/01489, PCT Pub. Date May 13, 1982

PCT Filed Nov. 4, 1981, Ser. No. 395,045

Claims priority, application Sweden, Nov. 4, 1980, 8007743

Int. Cl.³ F16L *55/16*

U.S. Cl. 138—97 **6 Claims**



1. In a device for repairing and/or reinforcing a pipe wherein a tubular member enclosing an explosive charge is insertable into the pipe and arranged to expand the tubular member by means of explosive force into a contacting position against the surrounding pipe, the improvement comprising a plurality of longitudinally extending deformations in the tubular member adapted to give the tubular member a cross-sectional area of an enclosing circle having a diameter smaller than the internal diameter of said pipe so that said tubular member and deformations are expanded substantially radially by means of explosive force when the explosive charge is detonated into a substantially completely contacting position against the surrounding internal wall surface of the pipe, and at least the end portion of the tubular member intended to be first inserted into the pipe has a substantially pointed shape to serve as a guiding means for the tubular member during insertion and is adapted to open and expand by the explosive force into contact with the inner wall of the pipe after the portion of said tubular member other than said end portions has expanded into said contacting position.

4,446,892

METHOD AND APPARATUS FOR MONITORING LENGTHS OF HOSE

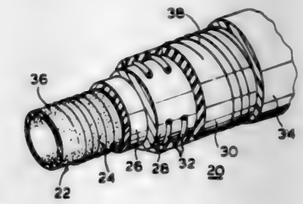
Anthony J. Maxwell, Monte Carlo, Monaco, assignor to Maxwell AG, Oberwil, Switzerland

Filed Sep. 3, 1980, Ser. No. 183,716

Claims priority, application United Kingdom, Sep. 5, 1979, 7930712

Int. Cl.³ G01M *3/28*

U.S. Cl. 138—104 **7 Claims**



1. A hose for transporting fluid having electromagnetic properties, said hose having at least two plies between which fluid normally is not present; a sensing element between the plies and forming part of a detection circuit operable to signal the presence of fluid between the plies as a result of failure of one of the plies; and a particulate material located between the plies, the sensing element being responsive to at least one of the fluid's electromagnetic properties to initiate operation of the said circuit, and the particulate material enhancing the said at least one electromagnetic property of the fluid to which the sensing element is responsive.

4,446,893

METHOD FOR TRANSPORTING A WEFT THREAD THROUGH THE WEAVING SHED OF A WEAVING MACHINE THROUGH THE INTERMEDIARY OF A FLOWING FLUID, AND WEAVING MACHINE ADAPTED FOR THE APPLICATION OF THIS METHOD

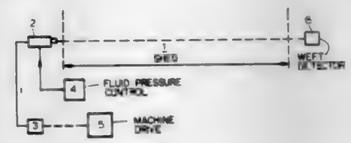
Paul Gunneman, Mierlo, and Gerardus W. Jeuken, Deurne, both of Netherlands, assignors to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Nov. 7, 1980, Ser. No. 205,013

Claims priority, application Netherlands, Nov. 15, 1979, 7908357

Int. Cl.³ D03D *41/00*

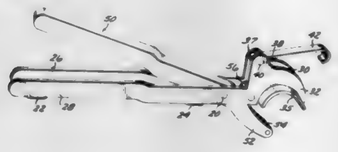
U.S. Cl. 139—11 **6 Claims**

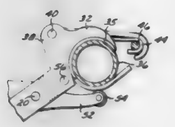


6. In a weaving machine, the combination comprising

a weft inserting means for moving weft thread through a shed at a given speed;
first means for generating a first signal in response to the measured time occupied during the movement of said weft thread through the shed;
second means for generating a second signal corresponding to the operating speed of the weaving machine;
a comparator connected to said first means and said second means to receive and compare said first signal and said second signal and to generate a third signal which is a measure of the discrepancy between said first and second signals; and
means connected to said comparator to receive said third signal to adjust the speed of insertion of the weft thread relative to the speed of the weaving machine in response to said third signal.

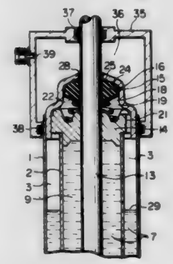
4,446,894
GATE MAKING TOOL
Donald R. Larson, 12530 Dolan Ave., Downey, Calif. 90242
Filed May 7, 1982, Ser. No. 375,886
Int. Cl.³ B21F 33/00
U.S. Cl. 140—57 9 Claims





1. A clamping device specially adapted to secure fence clips to wire fences and adjacent posts including:
(a) a hooking element provided with hooking jaw means adapted to hold a fence post;
(b) a stretch hook element hingedly mounted on said hooking element and positioned to hold a conformingly shaped fence clip which is, in turn, engaged with a fence wire and a fence post held by said jaw hooking means;
(c) a separate clip bender element having a clip bender arm pivotally connected with said hooking element, said arm adapted to press against a fence clip to engage it with a fence post held by said hooking element; and
(d) two separate handle means connected to said hooking jaw means and said clip bender arm, respectively for closing said hooking jaw means and said clip bender arm together to form a gripping area which can bend a clip held therein tightly around an engaged fence wire and post.

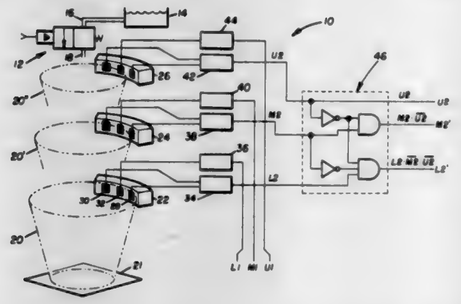
4,446,895
METHOD FOR FILLING PRESSURIZED GAS INTO A CYLINDER DEVICE
Tetsuo Kato, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan
Division of Ser. No. 140,861, Apr. 16, 1980, abandoned. This application Mar. 10, 1982, Ser. No. 356,644
Claims priority, application Japan, Apr. 20, 1979, 54-48815
Int. Cl.³ B65B 3/04; F16F 9/43
U.S. Cl. 141—4 4 Claims



1. A method for filling pressurized gas into a cylinder device of the type including coaxial inner and outer tubes having first ends and second ends, a cap closing said first ends of said inner and outer tubes, a piston slidably disposed in said inner tube, a piston rod secured to said piston and extending therefrom axially outwardly of said inner tube through said second end thereof, a rod guide secured to second ends of said inner and outer tubes, said piston slidably extending through and being guided by said rod guide, a cap member secured to said second end of said outer tube, said cap member having a central opening through which said piston rod extends, with a clearance between said piston rod and said cap member, a seal member located inwardly of said cap member, said piston rod slidably and sealingly extending through said seal member, and a coil spring positioned between said rod guide and said seal member and urging said seal member axially outwardly toward said cap member, said method comprising:
providing said seal member with a radially outer surface spaced radially inward from said cap member;
providing said seal member, on an axially outer surface thereof, with a sealing surface complementary in configuration to an adjacent surface portion of the inner surface of said cap member, such that said coil springs urges said sealing surface into sealing contact with said inner surface portion;
providing a cavity between said inner surface of said cap member and said axially outer surface of said seal member, at a position radially inwardly of said sealing surface and connected to the exterior through said clearance;
sealingly surrounding the exterior of said cap member with a filling container of a gas filling apparatus;
introducing pressurized gas into the interior of said filling container, thereby introducing said pressurized gas into said clearance and said cavity and acting on a pressure receiving area of said seal member defined by said cavity, said gas being at a pressure sufficient to move said entire seal member axially inwardly against the force of said coil spring such that said sealing surface is spaced from said inner surface portion of said cap member to form a gas filling passage therebetween, said pressure receiving area of said seal member and the dimension of said seal member being determined to permit said movement of said entire seal member, and thereby filling said pressurized gas into the interior of said cylinder device;
stopping the supply of said pressurized gas into said interior of said filling container when said pressurized gas is filled into said interior of said cylinder device to a predetermined pressure;

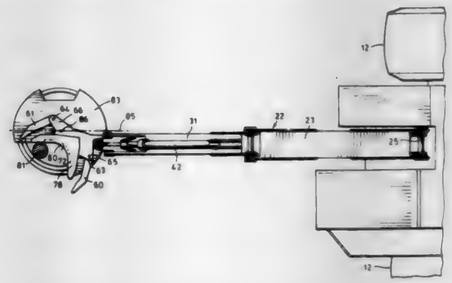
reducing the pressure in said filling container to a level such that the spring force of said spring and the pressure in the cylinder device act to move said entire seal member axially outwardly until said sealing surface contacts said inner surface portion, thereby closing the gas filling passage; and
thereafter removing said filling container from said cylinder device.

4,446,896
CUP FILLING APPARATUS
Gerald L. Campagna, San Jose, Calif., assignor to George Bumb and Timothy Bumb, both of San Jose, Calif.
Filed Jun. 7, 1982, Ser. No. 386,212
Int. Cl.³ B67D 3/00
U.S. Cl. 141—198 7 Claims



1. An automatic control for an apparatus of the type which dispenses fluid into a container and which has a dispensing valve having an outlet for dispensing said fluid when said dispensing valve is activated, said automatic control comprising:
a plurality of first sensor means, each of said first sensor means for developing a first energy field, said first energy field being perturbed by the presence of a container disposed therein; and, in response to a first energy field perturbation caused by the presence of a container, each of said first sensor means further for developing a first signal, each of said first sensor means deployed at differing distances below said outlet of said dispensing valve;
a plurality of second sensor means, each of said second sensor means being associated with a different one of said first sensor means; said second sensor means for developing a second energy field distinct from said first energy field, said second energy field being perturbed by the presence of fluid in said second energy field; and, in response to said second field perturbation caused by the presence of said fluid, each of said second sensor means further for developing a second signal; and
logic means responsive to said first signal of each of said first sensor means for determining an occurrence of said first field perturbation at at least one of said first sensor means and operative for developing a switching signal in the event said occurrence is determined for application to said dispensing valve to activate said dispensing valve, said logic means further responsive to said second signal of one of said second sensor means associated with the one of said first sensor means being at the highest elevation of all of said first sensor means in which said occurrence of said first field perturbation is determined for determining an occurrence of said second field perturbation and operative to cancel said switching signal when said occurrence of said second field perturbation is determined.

4,446,897
IMPROVEMENTS IN DISC FELLING HEADS
John Kurelek, Brantford, Canada, assignor to Koehring Canada Limited, Brantford, Canada
Filed Jan. 27, 1982, Ser. No. 343,300
Claims priority, application Canada, Aug. 5, 1981, 383217
Int. Cl.³ A01G 23/08
U.S. Cl. 144—34 R 8 Claims



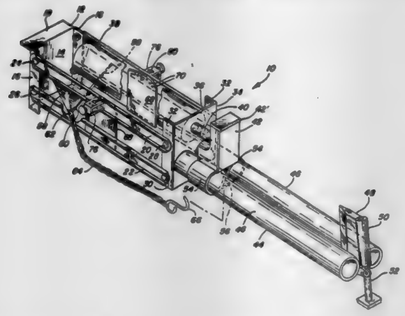
1. A felling head for attachment to a boom, the felling head comprising:
an upper part and a lower part,
the upper part including a brace portion adapted to contact a tree being felled, along with tree grappling means adapted to clasp a tree trunk against said brace portion,
the lower part having a circular saw blade mounted thereon in a plane perpendicular to the longitudinal extent of a tree clasped between the brace portion and the grappling means,
and housing means for said circular saw blade, the housing means being shaped to expose the circular saw blade over an arc thereof which is offset with respect to a line which passes through the saw blade axis and is parallel to said boom, whereby the felling head can cut trees in a scything action with the boom swinging sideways,
the felling head including means for mounting the felling head to the boom for pivotal motion in a vertical plane substantially parallel with the boom, the said offset exposed arc of the circular saw blade lying substantially wholly to one side of a hypothetical plane which passes through the rotational axis of the saw blade and is parallel to the boom.

4,446,898
SELF-ELEVATING WOOD SPLITTER AND MOUNTING ARRANGEMENT
Dale A. Manteufel, Hortonville, Wis., assignor to Ingersoll Equipment Co., Inc., Winneconne, Wis.
Continuation-in-part of Ser. No. 385,787, Jun. 7, 1982, abandoned. This application Apr. 20, 1983, Ser. No. 486,933
Int. Cl.³ B27L 7/00
U.S. Cl. 144—193 A 24 Claims

2. A wood splitter adapted to be mounted on a tractor, or the like, comprising:
mounting means for effecting a fixed connection of said wood splitter to said tractor;
an elongated wood supporting frame extending rearwardly of said mounting means;
link means pivotally interconnecting said wood supporting frame and said mounting means to provide four-bar linkage means for vertical movement of said frame with respect to said mounting means;
hydraulic splitting means operatively associated with said wood supporting frame and movable with respect thereto;
elevator means associated with said four-bar linkage means and adapted for operative connection with said hydraulic splitting means whereby operation of said splitting means

effects raising and lowering of said wood supporting frame; and

locking means for selectively locking said frame at a desired elevation, including locking plate means associated with said four-bar linkage means, said locking plate means defining arcuately spaced opening means adapted for



selective cooperative engagement with latch means on said link means,

said mounting means having means thereon permitting said splitter to be mounted at generally the same height from the ground on different tractors having associated attachment points a differing heights from the ground.

4,446,899

DOUBLE-SIDED TENONER

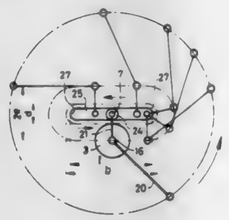
Jacobus H. Luyten, Va Steyl, Netherlands, assignor to Helmes Machinefabriek B.V., Netherlands

Filed May 11, 1982, Ser. No. 376,966

Claims priority, application Netherlands, May 18, 1981, 8102437

Int. Cl.³ B27F *1/10*

U.S. Cl. 144—201 **20 Claims**



2. An apparatus for milling tenons in a workpiece, comprising:

(A) a frame;

(B) a workpiece carrier for carrying a workpiece along a path through the frame;

(C) a first cutter assembly mounted to the frame and disposed at a first side of the path for milling a first tenon in the workpiece; and

(D) a second cutter assembly mounted to the frame and disposed at a second side of the path opposite the first side for milling a second tenon in the workpiece; each of the first and second cutter assemblies comprising:

(1) a support assembly mounted on the frame, comprising a carriage tiltable in first and second directions around respective first and second axes and displaceable relative to the frame in two mutually perpendicular directions; and

(2) a cutter mechanism for milling the tenon in the workpiece, the cutter mechanism being mounted on the carriage and being displaceable and tiltable therewith for setting the location and position of the tenon to be milled.

4,446,900

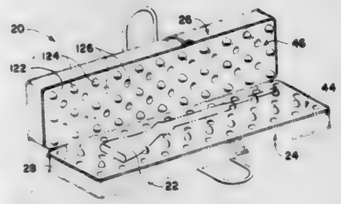
FIREARM CARRYING CASE

Mark J. Markovich, Iowa Falls, Iowa, assignor to Welsh Sporting Goods Corp., Iowa Falls, Iowa

Filed May 17, 1982, Ser. No. 378,915

Int. Cl.³ B65D *81/04*

U.S. Cl. 150—52 R **4 Claims**



1. A firearm carrying case, comprising:

two fabric shell assemblies, each including a fabric side panel member extending longitudinally and laterally and having a peripheral edge with four rounded corners and a fabric three-sided zipper half-gusset having a longitudinal edge and two terminal edges, said peripheral edge having a first portion defined by commencing at a first point on said peripheral edge where a first rounded corner begins or shortly therebefore and continuing around all of said four rounded corners to a second point where a fourth rounded corner terminates or shortly thereafter and a second portion defined by commencing at said first point on said peripheral edge extending longitudinally therealong and terminating at said second point on said peripheral edge, said three-sided zipper half-gusset being sewn transversely to said first portion of said peripheral edge of said side panel member along said longitudinal edge;

a hinging panel defined by two longitudinal edges and two lateral edges and including a backing material panel enveloped by a fabric material, folded at a longitudinal centerline, sewn within one-half inch (½") from said centerline to define a seam, each of said longitudinal edges sewn to each of said second portions of said peripheral edges of said panel members and each of said lateral edges sewn to each of said terminal edges of said three-sided zipper half-gusset and, upon folding said two fabric shell assemblies apart in an open configuration, defining a cavity within each of said fabric shell assemblies, said cavity having an inner portion and an outer portion;

two rigid support assemblies, each including a rigid wall member extending longitudinally and laterally and two rigid flange members extending longitudinally along and transversely from said rigid wall member to define a U-shaped channel, each of said two rigid support assemblies being received by each of said inner portions of said cavities in a substantially parallel relationship with each of said side panel members; and

two foam beddings, each occupying each of said outer portions of said cavities and being received by each of said U-shaped channels and each substantially contacting each of said rigid wall members at a substantially flat first surface and each having a convoluted second surface defined by fingers and recesses, said fingers extending outwardly from said cavity and said recesses extending inwardly into said cavity, whereby upon folding said two fabric shell assemblies to a closed configuration, said convoluted surfaces of said foam beddings having a proclivity to align for interlocking said fingers with said recesses in a mating relationship.

4,446,901

HEAVY DUTY PNEUMATIC RADIAL TIRES

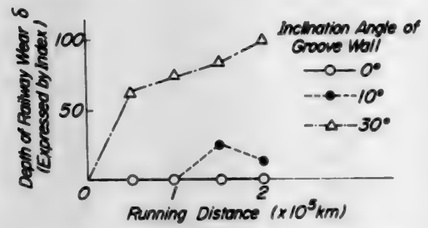
Kazuyuki Endo, Higashimurayama, and Shigeo Makino, Tokorozawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,664

Claims priority, application Japan, May 13, 1981, 56-71945; Jul. 31, 1981, 56-119286

Int. Cl.³ B60C *11/06*

U.S. Cl. 152—209 R **14 Claims**



1. A heavy duty pneumatic radial tire comprising: a carcass of a substantially radial construction composed of at least one rubberized ply layer containing cords embedded therein and a belt superimposed about said carcass for stiff reinforcement beneath a tread and composed of at least two rubberized ply layers each containing metal cords embedded therein, said metal cords of which being crossed with each other at a relatively small angle with respect to the circumferential direction of tire, and said tread being provided with a plurality of continuous or discontinuous zigzag circumferential ribs defined along the widthwise direction of tire by at least three, substantially zigzag main grooves extending circumferentially of said tread, said main grooves comprising one or a pair of central circumferential grooves located at a substantially central region of said tread and a pair of outside circumferential grooves defining each of outermost ribs of said tread, said central circumferential groove has such as symmetrical cross-sectional shape with respect to a center line of said groove that an inclination angle of a groove wall of said groove with respect to a normal line drawn from an outer surface of said tread and passing an edge of said groove in the cross section perpendicular to said groove wall is 14°–24° in a region extending from the groove bottom to at least 50% of groove depth, said outside circumferential groove has such an unsymmetrical cross-sectional shape with respect to a center line of said groove that an inclination angle of an outer groove wall of said groove in the rotation axial direction of tire is 14°–24° and an inclination angle of an inner groove wall of said groove in a region extending from the outer surface of said tread to at least 10% of groove depth is made smaller than that of said outer groove wall.

4,446,902

TIRES FOR DRIVE WHEELS OF AGRICULTURAL TRACTORS OR SIMILAR VEHICLES

Francois Madec, Versailles; Emile Delobelle, Colombes, and Georges Donvez, Neuilly sur Seine, all of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Aug. 26, 1982, Ser. No. 411,690

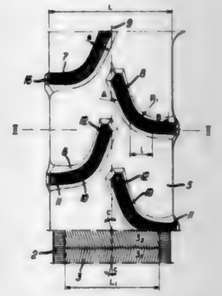
Claims priority, application France, Aug. 31, 1981, 81 16676

Int. Cl.³ B60C *11/08, 13/00, 9/20*

U.S. Cl. 152—209 B **17 Claims**

1. A tire for drive wheels of agricultural tractors or similar vehicles having a tread with raised members which consist of large lugs spaced from one another and arranged in two rows each of which extends axially over approximately a different half of the tread, the lugs being alternately staggered in the circumferential direction of the tire and each consisting of two essentially rectilinear segments joined to one another and forming different angles with the circumferential direction of the tire, characterized by the fact that

the tire comprises a radial carcass reinforcement whose meridian curvature, with the tire mounted on its rim and inflated normally but not flattened by a load, is at its maximum in the region of the shoulders of the tire and a tread reinforcement having an axial width at most equal to 0.9 times the axial width of the tire arranged radially outward around the radial carcass reinforcement and consisting of at least two plies having parallel cables in each ply which cross from one ply to the next forming about equal angles at the equator of less than 30° with the circumferential direction of the tire, and



the axially outward segment of the lugs projects axially from the corresponding edge of the tread reinforcement and forms an angle of from 85° to 100° with the circumferential direction of the tire and the axially inward segment of the lugs forms an angle less than 30° with the circumferential direction of the tire about equal to the angles of the radially outward plies of the tread reinforcement, the axially inward segment, which is intended to touch the ground in the contact area of the tire before the axially outward segment, being connected to the axially outward segment by means of an intermediate segment, extending axially over a width equal to approximately 0.15 times the axial width of the tire.

4,446,903

NON-PNEUMATIC TIRE

Richard L. Clinefelter, Littleton, Colo., and Larry R. Bradford, Woodridge, Ill., assignors to The Gates Rubber Company, Denver, Colo.

Filed Jul. 31, 1978, Ser. No. 929,399

Int. Cl.³ B60C *7/00*

U.S. Cl. 152—323 **23 Claims**



1. A non-pneumatic tire for a wheelchair or other wheeled apparatus, comprising: an integrally molded endless non-jointed elastomeric solid core element; and at least one turn of a strain-resisting tensile member embedded in the interior of the solid core element and spaced substantially from both the

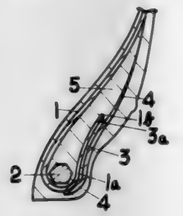
radial innermost extent of and sidewalls of the tire, and extending continuously throughout such interior, and the tensile member being sufficiently extensible to permit snap-on mounting of the tire onto a channel-shaped rim.

4,446,904

PNEUMATIC RADIAL TIRE HAVING HIGHLY DURABLE BEAD STRUCTURE

Katsuji Kishida, Osaka; Masakazu Oonishi, and Keijiro Oda, both of Kawanishi, all of Japan, assignors to The Toyo Rubber Industry Co. Ltd., Osaka, Japan.

Filed Apr. 21, 1982, Ser. No. 370,544
Claims priority, application Japan, May 1, 1981, 56-67543
Int. Cl.³ B60C *15/06, 9/00, 15/00*
U.S. Cl. 152—356 R **1 Claim**



1. In a pneumatic radial tire having an annular side wall, an annular bead portion having a lower base including an annular bead core, beneath the side wall, and an annular crown portion above the side wall, the improvement comprising:

a carcass ply layer of organic textile cords extending from the bead portion across the crown portions at an angle of 90° relative to the equatorial line of the tire, the lower end of said carcass ply layer being turned up around the annular bead core from the inside to the outside of the tire and terminating within the bead portion to form a turned-up portion of said carcass ply layer;

a reinforcing strip of steel cords positioned outwardly of and adjacent to said turned-up portion of said carcass ply layer, having a top end extending radially outwardly, above said turned-up portion;

an organic textile cord fabric disposed outwardly adjacent said reinforcing strip and extending from a radially inner side of said carcass ply layer at the lower base of the bead portion to a lower region of the side wall above said reinforcing strip;

a bead filler of approximately triangular sectional shape having an upper end extending to the side wall;

said bead filler consisting of high hardness rubber stock of approximately triangular sectional shape and medium hardness rubber stock positioned outwardly of and adjacent to said high hardness rubber stock and being enclosed by said carcass ply layer including said turned-up portion thereof, and said reinforcing strip;

a cap of organic textile cord fabric covering the upper end of said reinforcing strip; and

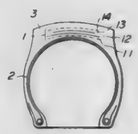
a rubber buffer fin-shaped in section, having a hardness lower than said medium hardness stock by 3° to 20° Shore A hardness, disposed radially outwardly of said upper end of said reinforcing strip and axially outwardly of and adjacent to said medium hardness rubber stock.

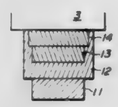
4,446,905

RADIAL TIRES FOR RUNNING ON ROUGH GROUND

Akira Tamura, and Yasuo Suzuki, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,797
Claims priority, application Japan, Nov. 6, 1980, 55-155215
Int. Cl.³ B60C *9/20*
U.S. Cl. 152—361 DM **4 Claims**





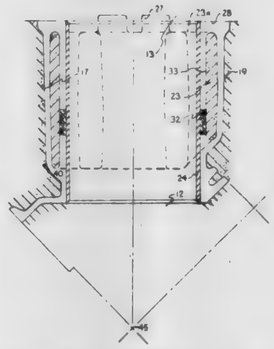
1. In pneumatic radial tires for running on rough ground in which a carcass composed of at least one cord layer arranged in radial plane of the tire is surrounded with a tread reinforcing layer composed of a plurality of belts embedded in a crown portion of the tire, the improvement wherein, said tread reinforcing layer, comprises a pair of main intersecting belts having different belt widths in which cords are arranged to intersect with each other across an equator of the tire, and supplemental belts arranged inside and outside of said pair of main intersecting belts in the radial direction of the tire respectively in which cords have an elongation at breakage at least 40% larger than that of the cords of the main intersecting belts, and an angle of the cords in the belt having the smaller width in the main intersecting belts with respect to the above described equator is 2°-9° smaller than the angle of the cords in the belt having the larger width and an angle of the cords of the supplemental belt positioned between the main intersecting belts and the carcass ply is 35°-60°.

4,446,906

METHOD OF MAKING A CAST ALUMINUM BASED ENGINE BLOCK

Allen D. Ackerman, Troy, and Howard A. Aula, Dearborn Hgts., both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 13, 1980, Ser. No. 206,430
Int. Cl.³ B22D *19/00*
U.S. Cl. 164—112 **6 Claims**



1. A method of making a cast aluminum based engine block having one or more combustion chambers, the method comprising:

(a) stationing a core assembly in a die casting assembly which is effective to provide a cavity when the assembly is closed to define a closed-deck block, said die casting assembly having means to reserve port openings and combustion chambers through the deck of the closed-deck block, said core assembly having a water soluble alkaline metal salt member selected from the group of KCl and NaCl, formed by die casting under pressure and heated to a shaped body effective to define in cooperation with said die casting assembly a submerged cast chamber, said salt member having at least one hollow cylindrical portion arranged to wrap about in spaced relation thereto one or more of said means to reserve combustion chambers, said core assembly also having a cylindrical iron liner spaced radially inwardly from said salt member and adapted to fit snugly about a portion of said means of said die casting assembly, and a resilient low melting metal mesh collar interposed between said core and liner to stabilize, support and center said liner on said core, said collar dissolved after the molten metal has been introduced into said cavity and is in place;

(b) introducing molten aluminum based metal under pressure into said cavity to fill same and to form said block having said chamber; and

(c) removing said salt member from said cast block by water dissolution, water being admitted to said chamber through said port openings and the dissolved salt member being withdrawn through said port openings.

4,446,907

DIE-CASTING METHOD

Haruo Suzuki, Aichi, and Shigeyoshi Hashimoto, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

PCT No. PCT/JP79/00034, 371 Date Oct. 14, 1980, 102(e) Date May 22, 1979, PCT Pub. No. WO80/01657, PCT Pub. Date Aug. 21, 1980
PCT Filed Feb. 14, 1979, Ser. No. 266,014
The portion of the term of this patent subsequent to Apr. 19, 2000, has been disclaimed.
Int. Cl.³ B22D *18/02*
U.S. Cl. 164—120 **8 Claims**



1. A die-casting method comprising:

a first step of relatively moving dies into close contact so as to form therebetween a die cavity for casting a product, a runner through which molten metal is injected into said die cavity, and a substantially non-narrowing squeeze passage connected directly to said die cavity at a point other than the point of connection between said die cavity and said runner;

a second step of injecting, by forwardly moving an injection plunger to effect a predetermined injection pressure, the molten metal from said runner via a gate into said die cavity and said squeeze passage to fill said die cavity and said squeeze passage with the molten metal;

a third step of starting a squeezing displacement of the molten metal in said non-narrowing squeeze passage by moving a squeeze plunger through said squeeze passage from a position therein remote from said die cavity toward said die cavity and at a predetermined squeezing pressure greater than said injection pressure and at a time before said gate is blocked by solidified molten metal;

continuing the squeezing on said molten metal by said squeeze plunger in said passage at said predetermined squeezing pressure until said cavity is filled voidlessly and, during said continued squeezing, forcing molten metal out of said die cavity through said gate into said runner by the molten metal displaced out of said squeeze passage by said squeeze plunger and until the molten metal is completely solidified at least in said die cavity while retaining said squeeze plunger substantially fully inside said passage to produce a solidified voidless die-cast product;

preventing said injection plunger from being moved backward during said third step and continued squeezing by the effect of said greater pressure applied by said squeeze plunger;

a fourth step of retracting said squeeze plunger to remove said squeezing pressure from said squeeze passage after the molten metal is solidified in said die cavity;

a fifth step of relatively moving said dies away from one another including removing therefrom the die-cast body which has been solidified in said die cavity, runner and squeeze passage; and

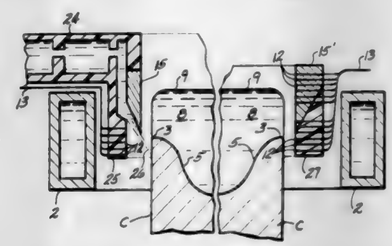
a sixth step of removing from said die-cast body the portions thereof which have been solidified in said runner and squeeze passage and also removing, from the portion of the die-cast body solidified in the die cavity, the part of the die-cast body generally opposing said squeeze passage, the removal of said die-cast body part being effected in the squeezing direction of the squeeze plunger, said part having a cross-sectional area greater than the cross-sectional area of the squeeze passage.

4,446,908

INFRARED IMAGING FOR ELECTROMAGNETIC CASTING

Gary L. Ungarean, Woodbridge, and John C. Yarwood, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 111,244, Jan. 11, 1980. This application Sep. 25, 1981, Ser. No. 305,440
Int. Cl.³ B22D *27/02, 11/16*
U.S. Cl. 164—452 **17 Claims**



1. A process of determining the position of the liquid/solid interface at the periphery of a material load in an electromagnetic casting apparatus during an electromagnetic casting run, said electromagnetic casting apparatus including a primary casting zone defined at least in part by the inner surfaces of an inductor and defining a solidification zone including said liquid/solid interface, comprising the steps of:

sensing and collecting infrared radiation within said primary casting zone emanating from at least a vertical peripheral surface at the solidification zone of said load;

computing a temperature gradient along the vertical peripheral surface of said load from the sensed and collected infrared radiation; and

providing a signal representative of the position of the li-

quid/solid interface in response to a change in the temperature gradient.

4,446,909

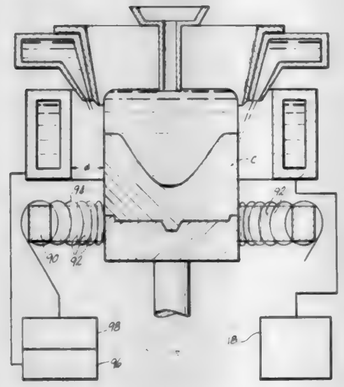
PROCESS AND APPARATUS FOR ELECTROMAGNETIC CASTING OF MULTIPLE STRANDS HAVING INDIVIDUAL HEAD CONTROL

John C. Yarwood, Madison; Gary L. Ungarean, Woodbridge; Peter J. Kindlmann, Guilford, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 236,386, Feb. 20, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 501,941

Int. Cl.³ B22D *11/01, 27/02*

U.S. Cl. 164—453 **8 Claims**



1. In an apparatus for casting molten material into an ingot of desired shape comprising:

means for receiving and electromagnetically forming said molten material into said desired shape, said receiving and forming means including:

an inductor disposed about a longitudinal axis in the direction of casting for applying a magnetic containment force field to contain the molten material, said inductor in operation, being spaced from said molten material by a gap extending from the surface of the molten material to the opposing surface of the inductor, and

means for supplying a current to the inductor to generate the magnetic containment field; the improvement comprising:

means for sensing an electrical parameter of said inductor which varies with the magnitude of the gap,

means responsive to the sensing means for generating an error signal which is a function of the difference between the sensed value of said electrical parameter and a predetermined value thereof,

means responsive to said error signal generating means for varying the magnetic containment force field applied to said molten material by redistributing the current in said inductor so as to drive said error signal towards zero, and

said containment force field varying means comprising: a core of variable permeability having laminated construction to prevent current flow therethrough, said core further being arranged in surrounding relation to the casting axis and adjacent said inductor, control winding means about said core for varying the permeability of said core, and means for supplying a variable control current to said control winding means in response to said error signal so that an increase in the control current reduces the available permeability of the core and decreases the flux linkage with magnetic fluxes generated by said inductor resulting in a redistribution of the current in the inductor away from said core and a decrease in the control current increases the available permeability of the core and the flux linkage with magnetic fluxes generated by said inductor resulting in a redistribution of the current in said inductor closer to said core whereby variations in said gap are minimized.

7. A process for casting molten material into an ingot of desired shape, comprising the following steps:

receiving and electromagnetically forming said molten material into said desired shape, said step of receiving and forming including the steps of:

providing an inductor disposed about a longitudinal axis in the direction of casting for applying a magnetic containment force field to contain the molten material, said inductor in operation, being spaced from said molten material by a gap extending from the surface of the molten material to the opposing surface of the inductor, and

supplying a current to the inductor to generate the magnetic containment field; the improvement comprising the steps of:

sensing an electrical parameter of said inductor which varies with the magnitude of the gap,

generating an error signal which is a function of the difference between the sensed value of said electrical parameter and a predetermined value thereof,

varying the magnetic containment force field applied to said molten material by redistributing the current in said inductor so as to drive the error signal towards zero,

said step of varying the magnetic containment force field, comprising the steps of:

providing a core of variable permeability having laminated construction to prevent current flow therethrough,

positioning said core in surrounding relation to the casting axis and adjacent said inductor,

providing a control winding about said core,

supplying a variable control current to said control winding in response to said error signal so that an increase in the control current reduces the available permeability of said core and decreases the flux linkage with the magnetic fluxes generated by said inductor resulting in a redistribution of the current in the inductor away from said core and a decrease in the control current increases the available permeability of the core and the flux linkage with magnetic fluxes generated by said inductor resulting in a redistribution of the current in said inductor closer to said core whereby variations in said gap are minimized.

4,446,910

TWO-PHASE THERMAL STORAGE MEANS AND METHOD

Russell S. Miller, Saratoga; Peter W. Dietz, Delanson, both of N.Y., and Christopher Bray, Chillicothe, Ill., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 152,423, May 22, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,684

Int. Cl.³ F28D *17/00, 21/00*

U.S. Cl. 165—1 **18 Claims**

1. A two phase thermal storage method comprising the steps of:

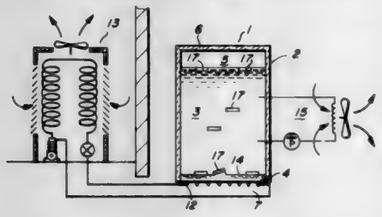
providing a temperature-sensitive phase transformation storage material having a phase-dependent variable density;

contacting an immiscible heat transfer liquid with said storage material;

storing heat in the liquid phase of said storage material by heating said heat transfer liquid to a temperature above the temperature of storage material contacting said heat transfer liquid whereby heat stored in said storage material is increased; and

removing said stored heat by cooling said heat transfer liquid to a temperature below the liquid-to-solid phase-transformation temperature of said storage material whereby at least a portion of said storage material is solidified at the interface with said heat transfer fluid, and removing solidified storage material from said interface by bouyancy forces;

wherein said heat transfer liquid may be cooled by circulating a quantity of heat transfer liquid from the interface with said storage material through a heat exchange rela-



tionship with a coolant and returning said quantity of liquid to said interface,

and further wherein said heat transfer liquid may be heated by circulating a quantity of the heat transfer liquid from the interface with said storage material through heat exchange relationship with a source of heat and returning said quantity of liquid to said interface.

4,446,911

REGENERATIVE PREHEATER FOR TWO SEPARATE GAS STREAMS

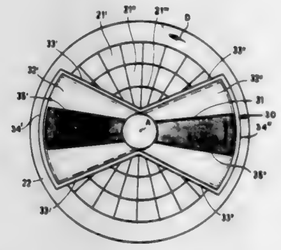
H. Reidick, Oberhausen; R. Leithner, Neuhausen; F. J. Kirchhoff, Olpe; E. Puritz, Dahlbruch, and S. Schlüter, Wenden, all of Fed. Rep. of Germany, assignors to Apparatebau Rothemühle Brandt & Kritzler GmbH, Wenden, Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,677

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1981, 3140406

Int. Cl.³ F28D *17/00*

U.S. Cl. 165—4 **8 Claims**



1. A regenerative air preheater comprising:

a heat-exchange sector plate centered on an axis and formed with a multiplicity of axially throughgoing passages;

intake and output heating-gas hoods axially flanking the plate;

conduit means for passing a heating gas from the intake hood through the plate to the output hood for heating the plate;

intake and output secondary heated-gas hoods each within one of the heating-gas hoods and axially flanking the plate, the secondary hoods being axially aligned with each other and only covering a portion of the plate, whereby the heating gas can pass through the plate only around the plate portion covered by the secondary hoods;

conduit means for passing a secondary stream of a gas to be heated from the intake secondary hood through the plate at the plate portion covered by the secondary hoods to the output secondary hood;

drive means for rotating the secondary hoods synchronously with each other about the axis in a predetermined rotational sense, whereby the heating gas will heat regions of the plate not covered by the secondary hoods so that when same move into alignment with these heated regions the secondary gas stream will be heated;

intake and output primary heated-gas hoods within the respective secondary hoods and axially flanking the plate, the primary hoods being axially aligned with each other and only covering a subportion of the plate portion covered by the secondary hoods, whereby the secondary gas will be heated at regions of the plate portion not covered by the primary hoods;

conduit means for passing a primary stream of a gas to be heated from the intake primary hood through the plate subportion aligned with it to the output primary hood; and

control means for displacing the primary hoods at least partially nonaxially within the respective secondary hoods and thereby varying the heat-exchange between the primary stream and the plate.

4,446,912

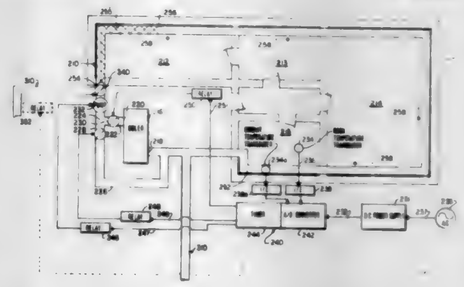
SELECTED SEGMENT HEATING OR COOLING SYSTEM

James D. Rickman, Jr., P.O. Box 272, Boxford, Mass. 01921

Filed Jan. 18, 1982, Ser. No. 340,198

Int. Cl.³ F28D *7/00;* **F24D** *3/02*

U.S. Cl. 165—12 **21 Claims**



1. A selected segment heating system comprising:

a source of hotter fluid;

conduit means for conducting said fluid from the outlet to the return inlet of said source of hotter fluid through a plurality of areas;

means, interconnected with said conduit, for moving said fluid through said conduit;

gauging means for controlling the operation of said means for moving to move a segment of said heated fluid in said conduit as far as the return point of the farthest area along the conduit of said areas to be heated; and

delay means for suspending operation of the means for moving for permitting a predetermined heat exchange to occur between the heating fluid and the air in the area to be heated.

4,446,913

AUTO CHANGEOVER THERMOSTAT WITH MEANS FOR HANDLING TEMPERATURE ENTRY ERRORS

Robert E. Krocker, Stoddard, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Jul. 5, 1983, Ser. No. 510,493

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—12 **9 Claims**

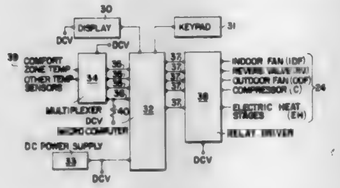
1. A thermostat for controlling a temperture conditioning system to selectively heat or cool a comfort zone to a heating or cooling setpoint, respectively, said thermostat comprising

a. a digital keypad including a plurality of keys, each associated with an alphanumeric value;

b. memory means for storing the heating and cooling setpoints entered by an operator on the digital keypad;

c. means for displaying the heating and cooling setpoints; and

d. control means for controlling the temperature conditioning system to selectively condition the comfort zone to the heating or the cooling setpoint, said control means being connected to the digital keypad, the display means and memory means and operative to automatically maintain at



least a predetermined offset between the heating and cooling setpoints by adjusting the value of one of the setpoints as the other setpoint is entered by the operator, and displaying the adjusted value to the operator to alert him of the change, so that the adjusted value may either be entered into the memory means or changed by the operator.

4,446,914

DRY COOLING TOWER

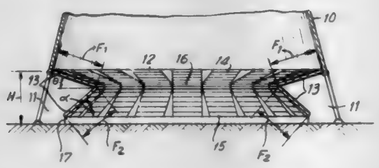
Charles M. Russell, Harpenden, England, assignor to The Lummus Company, Bloomfield, N.J.

Filed Apr. 22, 1982, Ser. No. 370,765

Claims priority, application United Kingdom, Apr. 23, 1981, 8112658

Int. Cl.³ F28D *1/04*

U.S. Cl. 165—125 **17 Claims**



1. A cooling tower comprising a hollow tower open at the upper end for the discharge of heated air, an air inlet for introducing air at the lower peripheral wall of the tower, and a plurality of heat exchange assemblies mounted within the tower comprising a lower set of heat exchangers comprising heat exchange surfaces positioned in a substantially horizontally extending array about the air inlet on a circle concentric to the peripheral wall of the tower and an upper set of heat exchangers adjoining said lower set of heat exchangers comprising heat exchange surfaces positioned in a substantially horizontal plane and extending above the tops of said lower set of heat exchangers in the annular air passage between said tops and the wall of said hollow tower, the configuration of the heat exchange surfaces of said upper and lower sets of heat exchangers being V-shaped, said upper set of heat exchangers extending downwardly from the upper end of the air inlet of the tower to define an angle θ to the horizontal, said lower set of heat exchangers extending in a direction downwardly from said upper set toward the ground to define an angle α with the horizontal or the ground, and the relationship between the height of the air inlet (H) and the length ($F_{45°}$ and angle α ranging from about 20° to about 60°.

4,446,915

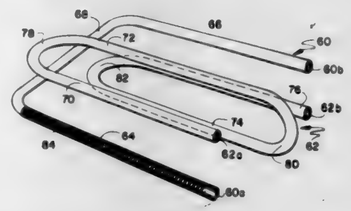
HEAT EXCHANGER TUBE CIRCUITS

Donald C. Welch, and Christopher P. Yoerg, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Apr. 14, 1982, Ser. No. 368,349

Int. Cl.³ F28D *7/08*; F28F *1/32*

U.S. Cl. 165—144 **20 Claims**



1. A multi-row heat exchanger coil having a plurality of substantially horizontal, vertically separated, circuits, each circuit comprising first and second multi-row substantially horizontal conduits, each conduit having a plurality of tubes extending the length of the heat exchanger and having interconnecting end sections disposed between the tubes for providing a continuous path of flow communication between the tubes in each conduit; said first conduit having fewer tubes than said second conduit, and having an even number of tubes at least as great as two; said second conduit having an even number of tubes at least as great as four; one tube of each of said first and second conduits forming inlet tubes for fluid to flow into said first and second conduits, and another of the tubes of each of said first and second conduits forming outlet tubes for fluid to flow from said first and second conduits; said inlet tube of the first conduit being disposed adjacent said inlet tube of the second conduit in the assembled coil, and said outlet tube of the first conduit being disposed adjacent said outlet tube of the second conduit in the assembled coil; at least one row of said heat exchanger coil being entirely comprised of inlet tubes, and another row of said heat exchanger coil being entirely comprised of outlet tubes.

4,446,916

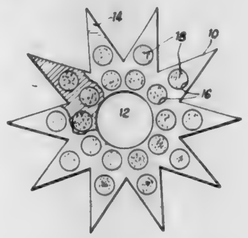
HEAT-ABSORBING HEAT SINK

Claude Q. C. Hayes, 7980 Linda Vista Rd. #49, San Diego, Calif. 92111

Filed Aug. 13, 1981, Ser. No. 292,639

Int. Cl.³ H01L *23/42*

U.S. Cl. 165—185 **12 Claims**



1. An improved heat sink device for transferring heat from a heat generator to lower-temperature surroundings by radiation, covection, and conduction, wherein the improvement comprises: a device-embedded compound that absorbs heat at a specific temperature, delaying temperature rise in the heat generator; and a multiplicity of fibers to absorb and retain said compound within the device, both below and above said specific temperature, said fibers being partially exposed as an outer surface of the device providing heat transfer by radiation and convection.

4,446,917

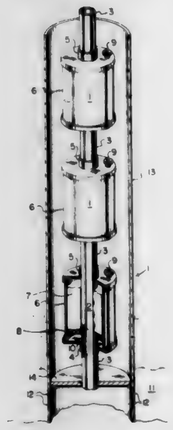
METHOD AND APPARATUS FOR PRODUCING VISCOUS OR WAXY CRUDE OILS

John C. Todd, 10646 Marguis, Dallas, Tex. 75229

Continuation-in-part of Ser. No. 948,434, Oct. 4, 1978,. This application Mar. 12, 1979, Ser. No. 19,579

Int. Cl.³ E21B *36/02*

U.S. Cl. 166—59 **4 Claims**



1. Apparatus for heating crude oil within production tubing in a wellbore comprising:

a first conduit adapted for connection at both ends to said production tubing to provide a continuous flow path for crude oil through said tubing and first conduit,

a second conduit larger than said first conduit, spaced concentrically about said first conduit,

upper and lower collars connecting said first and second conduits together,

a porous plug closing the bottom of the annulus between said first and second conduits,

a catalyst bed positioned in the annulus between said first and second conduits above said porous plug,

a gas lift valve carried by said upper collar for conducting a combustion gas containing both a fuel and oxygen to said catalyst bed, and

port means for providing communication between said annulus below said porous plug and the interior of said first conduit, whereby products of combustion from said catalyst bed are conducted into the first conduit.

4,446,918

METHOD FOR INITIATING COMBUSTION IN A SUBTERRANEAN CARBONACEOUS DEPOSIT

Herbert B. Wolcott, Jr., Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 8, 1982, Ser. No. 366,510

Int. Cl.³ E21B *43/247, 43/30*

U.S. Cl. 166—245 **4 Claims**

1. A method for initiating combustion in a subterranean coal deposit penetrated by a plurality of wellbores, said method consisting essentially of:

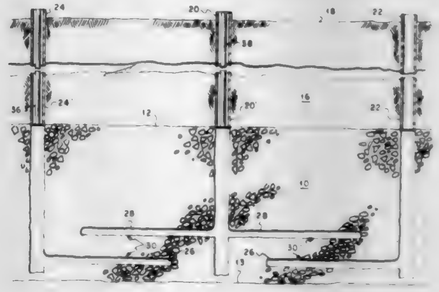
(a) penetrating said coal deposit with a first wellbore;

(b) positioning a plurality of other wellbores about said first wellbore, each of said other wellbores having at least one substantially horizontal borehole extending therefrom into the vicinity of said first wellbore;

(c) extending a plurality of substantially horizontal boreholes from said first wellbore into the vicinity of said other wellbores

(d) positioning explosive charges in at least a portion of said boreholes;

(e) detonating said explosive charges to produce a rubblized zone between said first wellbore and said other wellbores



(f) igniting said coal deposit in at least one of said wellbores; and

(g) injecting a free-oxygen containing gas into said coal deposit through at least one of said wellbores to gasify said coal deposit in situ and produce gasification products.

4,446,919

ENHANCED OIL RECOVERY USING MICROORGANISMS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 26, 1982, Ser. No. 371,770

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—246 **15 Claims**

1. A process for the recovery of oil from an oil-bearing subterranean reservoir comprising the steps of:

(a) injecting carbon dioxide into the oil-bearing reservoir under conditions effective for extracting sulfur-, and/or nitrogen-containing compounds from the oil;

(b) injecting an aqueous solution of at least one carbon dioxide-tolerating microorganism into the carbon dioxide-containing reservoir; and

(c) maintaining the carbon dioxide pressure in the microorganism-containing reservoir so as to extract nitrogen- and/or sulfur-containing nutrients for microorganism growth from the oil into the aqueous solution, the microorganism growth producing surface active agents which promote the release of oil from the reservoir.

4,446,920

METHOD AND APPARATUS FOR PERFORATING OR CUTTING WITH A SOLID FUELED GAS MIXTURE

Andrew J. Woytek, Allentown; John T. Lileck, Tamaqua, and Edward J. Steigerwalt, Lehighton, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

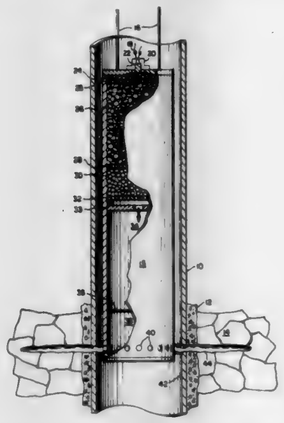
Filed Jan. 13, 1983, Ser. No. 457,815

Int. Cl.³ E21B *29/02*

U.S. Cl. 166—297 **27 Claims**

1. A method of cutting in which a highly reactive gas mix-

ture of fluorine and nitrogen trifluoride is used to perform the cutting action wherein the gas mixture is supplied at high



pressure by the rapid decomposition of a solid, normally stable, perfluoroammonium salt.

4,446,921

METHOD FOR UNDERGROUND GASIFICATION OF SOLID FUELS

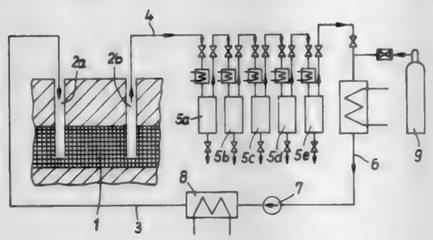
Hubert Coenen, and Ernst Kriegel, both of Essen, Fed. Rep. of Germany, assignors to FRIED. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Mar. 16, 1982, Ser. No. 359,171

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111137

Int. Cl.³ E21B *43/22, 43/24, 43/40*

U.S. Cl. 166—267 **5 Claims**



1. In a process for underground gasification of a solid fuel in which the solid fuel, which is present under the earth's surface, is initially opened up and then converted into a gaseous fuel by means of a chemical reaction with a gasification medium, the improvement comprising: opening up the solid fuel underground by treating the solid fuel with a gas which is in the supercritical state to dissolve the volatile organic compounds and water contained in the solid fuel in the supercritical gas and form a charged supercritical gas phase, the gas which is in the supercritical state having a temperature of 10° to 100° C. above its critical temperature and a pressure of 2 to 300 bar above its critical pressure when it enters the fuel deposit, and separating the dissolved organic compounds and the dissolved water from the charged supercritical gas phase above ground in at least two fractions by pressure reduction and/or a change in temperature.

4,446,922

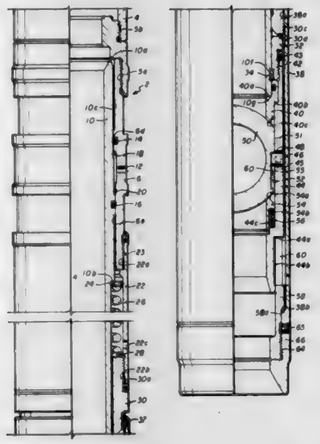
ADJUSTABLE SAFETY VALVE

Michael L. Bowyer, and Drummond Whiteford, both of Aberdeen, Scotland, assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 16, 1982, Ser. No. 388,846

Int. Cl.³ E21B *34/10*

U.S. Cl. 166—322 **16 Claims**



11. A safety valve for automatically closing a fluid transmission conduit in a subterranean well in response to a change in the pressure differential between a control fluid pressure and the well pressure below the valve, comprising:

a valve cage axially reciprocal between a first position and a second position in response to an increase in control fluid pressure and comprising a unitary member having tubular upper and lower sections on opposite sides of an opening in the side of the cage;

a ball valve element having a flow passage therethrough, the ball valve element being insertable through the cage opening;

pivot means for attaching the ball valve element to the cage to permit rotation of the ball valve element in the cage about a transverse pivot axis from a closed to an open position; and

a base member movable relative to the cage and having an axially extending member engaging the ball valve element at a point offset from the pivot axis to impart rotation of the ball valve element upon movement of the cage from the first to the second position.

4,446,923

REMOVAL OF EXPLOSIVE OR COMBUSTIBLE GAS OR VAPORS FROM TANKS AND OTHER ENCLOSED SPACES

Roy T. Martin, Kingston-Upon-Thames, England, assignor to Walter Kidde & Co., Inc., Wake Forest, N.C.

Continuation of Ser. No. 34,566, Apr. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 733,337, Oct. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 478,223, Jun. 11, 1974, abandoned. This application Jun. 9, 1981, Ser. No. 272,040

Int. Cl.³ A62C *1/14, 1/12, 3/12, 1/02*; A62D *1/02*

U.S. Cl. 169—45 **12 Claims**

1. A method of purging an enclosed space of a gaseous flammable substance comprising:

(a) forming a foam from (i) a liquid consisting essentially of water and a foaming agent and (ii) a human life-supporting, fire-suppressing gaseous mixture consisting essentially of predetermined quantities of air and a low-toxicity fire-suppressant gaseous substance, said gaseous mixture filling the bubbles of said foam, said foam being capable of decaying;

(b) introducing said foam into said enclosed space, thereby displacing said flammable substance; and

(c) allowing the foam to decay in said enclosed space.

4,446,924

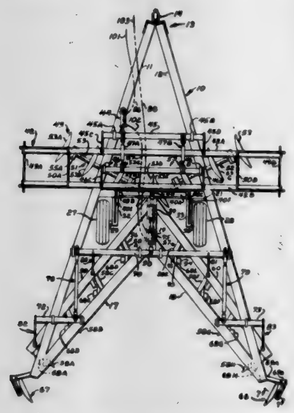
HIGH SPEED TILLAGE SYSTEM WITH DISCS AND PLOW POINTS

William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Continuation of Ser. No. 150,730, May 19, 1980, abandoned. This application Nov. 22, 1982, Ser. No. 443,849

Int. Cl.³ A01B *13/08*

U.S. Cl. 172—140 **23 Claims**



1. Apparatus for tilling soil adapted to operate at ground speeds in excess of about 4½ miles per hour, comprising: frame means; support wheel means for supporting said frame means; a first set of discs carried by said frame means for tilling the soil, each disc of said first set being widely laterally spaced relative to adjacent discs of said first set to leave alternate strips of tilled and untilled ground having substantial width; a second set of discs carried by said frame means, the discs of said second set being widely laterally spaced relative to adjacent discs of said second set and located rearwardly and laterally of the discs of said first set to till said strips of untilled soil left by said first set, the leading edges of associated pairs of discs, of said first and second sets respectively overlapping in the range of about ½ to 2 inches, the discs of both sets having diameters greater than about 24 inches and set at a working angle in the range of about 27°–35°; a plurality of plow points carried by said frame means, each point located directly behind an associated disc of said second set to form a disc/point pair therewith, and arranged to till soil in the furrow formed by said associated disc at a depth greater than the working depth of said associated disc, each disc of said second set, other than a leading disc, being located rearwardly of the adjacent disc of said second set which is displacing soil in the same direction and arranged to throw soil laterally into the furrow formed by the adjacent forward disc and its associated plow point and into the furrow formed by a disc of said first set, whereby substantially all of the soil in a swath traversed by said apparatus is tilled in a single pass of said apparatus without leaving strips of substantial overlap, and said apparatus leaves the soil substantially free of ridges and furrows.

4,446,925

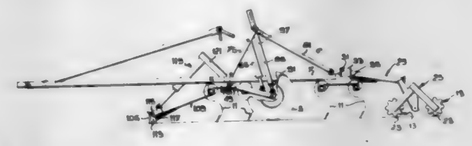
SOIL CULTIVATING MACHINE

Bertrand Vachon, Thetford Mines, Canada, assignor to Ber-Vac Inc., Quebec, Canada

Filed Jan. 15, 1982, Ser. No. 339,781

Int. Cl.³ A01B *35/18, 63/22*

U.S. Cl. 172—142 **13 Claims**



1. In a cultivator of the type including:

a frame, said frame having a drawing end and a rear end;

a single pair of wheels rotatable about an axis extending transversely of said frame with respect to the direction of displacement of the cultivator;

at least one transverse row of tines mounted on the frame forwardly of the wheel axis;

at least one other transverse row of tines rearwardly of the wheel axis;

at least one transverse cylindrical rolling harrow;

means for mounting said rolling harrow on said frame at said rear end thereof behind the rearward row of tines for oscillation about an axis parallel to the longitudinal axis of said rear harrow; and,

means for resiliently biasing said rear harrow downwardly, the improvement comprising:

said frame having a pair of parallel cross-members disposed on either side of the wheel axis and at least two longitudinal members joining said cross-members; and

mounting means along either side of said frame for mounting said wheels onto said frame, said mounting means being comprised of:

a wheel leg pivotally mounted at one end to said frame for oscillation in a vertical plane beneath said frame;

axle means at the other end of said wheel leg for mounting one of said wheels thereon, said wheel mounted on said axle means being freely rotatable about its axis,

a plurality of braces, each brace being connected to the other at one end thereof and each brace being connected at the other end thereof to one of said cross-members, whereby a vertically extending triangular structure is formed,

power jack means connecting one of said braces to said wheel leg for oscillating said wheel leg, whereby said wheel and frame are displaced relative to each other, and

an upwardly extending telescoping assembly means connecting said braces and said wheel leg for controlling the vertical position of said frame and thereby the cultivation depth of said cultivator, said assembly comprising:

a hollow tubular member have a series of holes therethrough at one end, said holes being spaced in pairs therealong,

a rod freely slidable within said hollow tubular member,

a lock pin removably extending through a selected one of said pairs of holes, whereby said rod is prevented from sliding in said tubular member past said lock pin,

first connecting means for connecting the upper end of said hollow tubular member to the apex of said vertically extending triangular structure, and

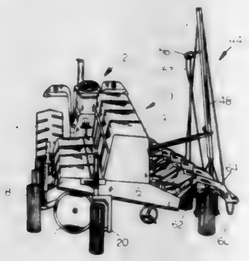
second connecting means at the lower end of said rod for connecting said rod to said wheel leg,

whereby upon release of pressure in from said power jack means and the consequent lowering of said frame, said rod rises in said hollow member until it butts against said lock pin and thus prevents further downward movement of said frame, whereby the depth of tillage of said cultivator is controlled.

4,446,926
MULTIPLE UNIT AGRICULTURAL DEVICE AND TRANSPORT SYSTEM THEREFOR

Milford D. Hoaglen, 836 Logan Ave., Grant, Nebr. 69140

Filed Aug. 11, 1981, Ser. No. 291,972
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—240 17 Claims



1. In combination with longitudinally connected multiple unit agricultural equipment of a type wherein the direction of travel in the operating mode is transverse to the longitudinal axis of the equipment and the direction of travel in the transport mode is parallel to the longitudinal axis of the equipment and wherein each unit of said equipment has a frame with a generally rectangular periphery consisting of a forward side, an aft side parallel to said forward side, an operating side, and a back side parallel to said operating side; a transport device comprising:

(a) operating hitch means connected to the operating sides of said units;

(b) transport hitch means connected to the forward side of the forwardmost unit;

(c) castor wheel means mounted on the operating sides of said units; and

(d) hydraulically retractable transport wheel means mounted on the back sides of said units and each comprising

(1) a hydraulic cylinder means having a first end and a second end wherein said first end is attached to the back side of the frame of an associated unit about a first pivot axis; and

(2) an elongated spindle arm extending lengthwise transverse to the longitudinal axis of the associated unit, said spindle arm being mounted to said associated unit independently of the spindle arms associated with the other units, and having a first end and a second end wherein a spindle and transport wheel are mounted at said first end of said spindle arm and wherein said second end of said spindle arm is mounted about a second pivot axis attached to the frame of said associated unit and wherein said spindle arm is pivotally attached at said second end thereof to said second end of said hydraulic cylinder means about a third pivot axis; said first pivot axis, said second pivot axis and said third pivot axis being substantially parallel to the longitudinal axis of said associated unit.

4,446,927
GROUND PENETRATING TOOL FOR FARM IMPLEMENT SHANKS

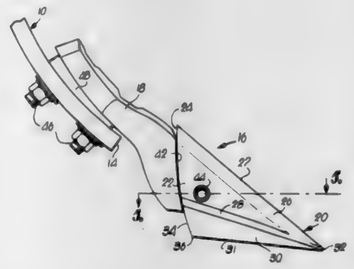
Forrest E. Robertson, Garden City, Kans., assignor to Acra-Plant, Inc., Garden City, Kans.

Filed Mar. 1, 1982, Ser. No. 356,306
Int. Cl.³ A01B *15/02*
U.S. Cl. 172—753 12 Claims

1. In a farm implement provided with an elongated, downwardly and forwardly inclined shank having a terminus, a ground penetrating tool for said shank, said tool comprising:

an elongated, downwardly and forwardly inclined mount having means for securing the same to the shank at said terminus with the mount extending downwardly and forwardly from the shank;

an elongated, essentially pyramidal downwardly and forwardly inclined tooth extending downwardly and forwardly from said mount,



the angles of inclination of the shank, the mount and the tooth being substantially the same with their longitudinal axes in substantial alignment,

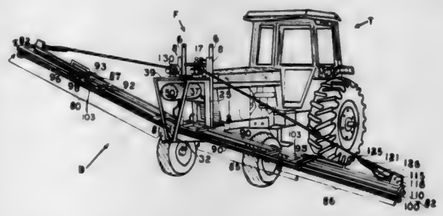
said tooth having a leading apex and a trailing end; and

means releasably attaching the tooth to said mount.

4,446,928
BOOM WITH ENERGY ABSORBING VIBRATION DAMPER

Leon C. McClure, R.R. #2, Box 78, and Stanley McClure, Sr., R.R. #2, Box 161, both of Jamestown, Ky. 42629

Division of Ser. No. 177,166, Aug. 18, 1980, Pat. No. 4,320,595.
This application Feb. 16, 1982, Ser. No. 349,343
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—776 1 Claim



1. An elongated boom and a frame, said elongated boom having a proximal end and a distal end and which is pivotably connected at its proximal end in cantilever fashion to said frame for vertical movement of said boom through an arc from a horizontal position to a vertical position, the improvement of an energy absorbing vibration damper comprising in combination:

A. a non-rotatable sheave mounted at the distal end of the boom;

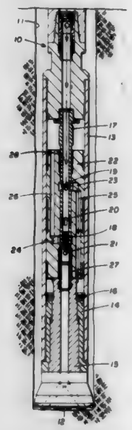
B. a cable operatively connected at the proximal end to said frame and looped around said non-rotatable sheave at the distal end of said boom; and

C. a coil spring attached at one end to the free end of said looped cable and at the other end to the body of the cable.

4,446,929
FLUID OPERATED ROCK DRILL HAMMER

Dan L. Pillow, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 11, 1979, Ser. No. 47,417
Int. Cl.³ E21B *4/14*; E21C *7/00*
U.S. Cl. 173—17 1 Claim



1. A fluid operated rock drill hammer, comprising:

an annular body having an upper end and a lower end;

a drill chuck mounted at the lower end of said body;

a drill bit connected to said drill chuck and extending into said body, said drill bit moveable in said drill chuck from a drilling position to a bypass position;

a tubular fluid feed tube mounted in said body and extending from said upper end toward the drill chuck;

a first set of apertures in said feed tube;

a second set of apertures in said feed tube;

a piston slidably mounted in said body positioned around said feed tube to move between the drill bit at the lower end for striking the drill bit and the upper end of said body, said piston having an upper surface and a lower surface;

a first passageway in said piston communicating from the lower surface of the piston to said first set of apertures in the feed tube when the piston is in abutting relationship with the drill bit and the drill bit is in drilling position to admit fluid into the space between the piston and drill bit to drive the piston upward;

a second passageway in said piston communicating from the upper surface of the piston to said second set of apertures in said feed tube when the piston is at its upper position in the body to admit fluid between the piston and the upper end of the body to drive the piston downward; and

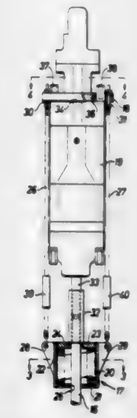
a separate fluid passage in said piston providing fluid communication between said first set of apertures and said upper surface of said piston when said piston is abutting said drill bit in a by-pass position to provide pressurized fluid to said upper surface; and

a separate restricted exhaust opening in said tube and said second passageway providing fluid communication between the upper surface of said piston and said restricted opening when said drill bit is in said by-pass position to restrict exhaust of pressurized fluid from adjacent said upper surface and thereby maintain a higher pressure on said upper surface.

4,446,930
DRILL STEEL REMOVAL ATTACHMENT FOR ROCK DRILLING MACHINE

Hans Gösta Nilsson, and Kurt A. G. Nilsson, both of Tyresö, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 25, 1982, Ser. No. 436,397
Claims priority, application Sweden, Nov. 26, 1981, 8107060
Int. Cl.³ B25D *17/00*
U.S. Cl. 173—29 9 Claims



1. Drill steel withdrawing attachment for a percussive rock drilling machine (12) of the kind which is displaceable along a feed beam (14) by a feeding device, said drill steel withdrawing attachment being arranged for applying a rearward feed force to drill steels to withdraw drill steels (16) which are stuck in a drilled hole, the drill steel withdrawing attachment comprising:

a spring housing (17);

a flexible means (26,27) coupled to said spring housing (17) for movably suspending said spring housing (17) from the drilling machine (12) with said spring housing in front of said drilling machine (12) such that said drill steel (16) passes through said spring housing (17);

a compression spring (22) located in said spring housing (17); and

a stopping member (23) coupled to said spring housing (17) and acting as a reflector for the blows of the drilling machine (12), said stopping member (23) being supported by said spring (22) in said spring housing (17) so as to be in an abutment position against the drill steel (16) via an extension sleeve (32) or the like on said drill steel (16).

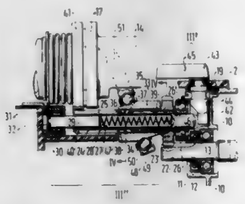
4,446,931
POWER DRIVEN HAMMER DRILL

Manfred Bleicher, Leinfelden; Manfred Buck, Filderstadt; Jörg Fälchle, Bempflingen, and Karl Wanner, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 302,112
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039669
Int. Cl.³ B23B *45/16*; B25D *16/00*
U.S. Cl. 173—48 22 Claims

1. A power driven hammer drill, comprising a housing having an axis; a tool striking means arranged to reciprocate in said housing; drive means including a wobble unit with a limitably axially displaceable drum member and a transmitting member reciprocating said tool striking means, a drive motor formed as an electric motor with a pinion, an intermediate shaft having a passage and rotatable by said drive motor, a driving gear arranged on said intermediate shaft in non-rotatable and axially displaceable manner relative thereto and engageable with said

pinion of said electric motor, means for releasably coupling said intermediate shaft with said drum member of said wobble unit and including a first coupling element provided on said drum member and a second coupling element provided on said intermediate shaft and positively engageable with said first coupling element of said drum member, a bearing which transmits axial forces, supports said intermediate shaft and has an inner ring, spring means arranged to act so as to bring said second coupling element of said intermediate shaft into interengagement with said first coupling element of said drum member, said spring means including a spring element accommodated in said passage of said intermediate shaft and prestressing the latter with an axial abutment against said drum member in engaged condition, whereas said drum member axially abuts said driving gear, and said driving gear abuts against said inner ring of said bearing; and switch means located outside of said housing and arranged so as to disengage said second coupling element of said intermediate shaft out of said first coupling element of said drum member against the action of said spring means.



4,446,932

HYDROSTATIC SHEAR PIN

James Hipp, New Iberia, La., assignor to Petro-Drive, Inc., Lafayette, La.

Filed Apr. 24, 1981, Ser. No. 257,257
Int. Cl.³ E21B *7/06*
U.S. Cl. 175—74 **10 Claims**



1. An apparatus for selectively restraining and releasing relative rotational movement of a first component connected to a second component, comprising:

(a) a housing mounted in the first component, having an internal recess opening towards the second component;

(b) a plug having a first portion slidingly engaged and constrained within the recess of the housing, but not fully occupying the space therein, defining an inner surface of the plug facing the recess, and having a second portion projecting beyond the housing and the first component so as to engage in an aligned hole in the second component when the plug is fully extended with respect to the housing, said second portion defining an outer surface of the plug;

(c) conduit means for exposing the outer surface of the plug to ambient fluid pressure so as to tend to retract the plug into the recess;

(d) locking means for restraining the retracting of the plug until the force exerted by the ambient fluid pressure equals or exceeds the precalculated level, whereupon the locking means will disengage, allowing the plug to retract into the recess, thereupon permitting relative rotational movement of the first component with respect to the second component;

(e) said locking means comprising a plurality of rigid pins mutually engaging radially aligned holes in the retracting plug and housing, said rigid pins so constructed and arranged as to break at the application of the precalculated force acting upon the outer surface of the plug,

(f) said locking means further including a quantity of pressurized gas sealed within the remaining space of the recess of the housing,

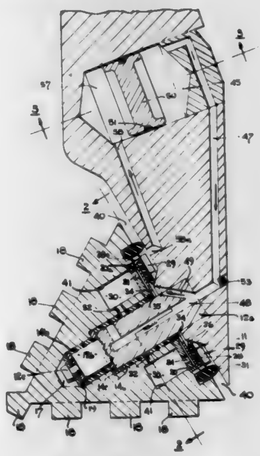
(g) said housing further including a shoulder in the recess, said shoulder being of larger diameter than the recess, so as to allow the pressurized gas within said recess and shoulder to escape when said plug retracts fully into said shoulder.

4,446,933

ROTARY EARTH BORING DRILL BIT WITH CENTRIFUGAL LUBRICATION SYSTEM

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Mar. 29, 1982, Ser. No. 362,886
Int. Cl.³ E21B *10/22*
U.S. Cl. 175—229 **5 Claims**



1. In a rotary drilling bit mechanism having a shaft and bearing means lubricated by a lubricant for supporting said mechanism for rotation on said shaft, the improvement being means for supplying lubricant to said bearing means in response to the centrifugal force generated with said rotation comprising

first cavity means formed in the body of said mechanism for storing the lubricant,

first channel means for providing fluid communications between said first cavity means and said bearing means,

second cavity means formed in the body of said mechanism,

fluid drive means interposed between said first and second cavities for driving lubricant from the first cavity means through channel means to said bearing means in response to a pressure differential between said first and second cavity means,

fluid containing means located further radially outwardly from the rotation axis of said drilling bit mechanism than said bearing means such that with rotation of said bit, the centrifugal force generated at said fluid containing means is greater than that generated at said bearing means, and

second channel means for providing fluid communication between said second cavity means and said fluid containing means,

a pressure differential being developed between said first and second cavities in response to the difference between the centrifugal force generated at said bearing means and said fluid containing means with the rotation of said bit mechanism, thereby causing the fluid drive means to drive lubricant to said bearing means.

4,446,934

BORING TOOL FOR RADIAL ENLARGEMENT OF A CYLINDRICAL FOUNDATION BORE

Norbert Müller, Wolpertswende, Fed. Rep. of Germany, assignor to Hawera Probst GmbH & Co., Ravensburg, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,160
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126472
Int. Cl.³ E21B *10/32*
U.S. Cl. 175—286 **14 Claims**



1. A boring tool for radially enlarging a cylindrical foundation bore which has a bottom, said tool being intended for rotary-blow operation and use with a prime mover; said tool in combination comprising:

a tubular cylindrical tool body having a first end and a second end, said first end being provided with a tool shank for insertion in said prime mover; said tool body including resilient segments separated from each other by radially extending slots defining openings extending radially thereof, one end of said segments forming said second end of said tool body, which respectively extend in the axial direction of said tool body, and which delimit between one another longitudinal slots which are open toward said second end of said tool body;

radially adjustable cutting elements securely connected to the second end of said tool body located coaxially therewith and projecting peripherally as arranged on said radially spreadable segments of said second end of said tool body for effecting said enlargement of said foundation bore, each cutting element having an axial working surface which extends in the circumferential direction of, i.e. substantially perpendicular to the axis of, said tool body, with those working surfaces which are adjacement to one another in the circumferential direction forming the front end face of said tool body; said cutting elements, in the starting position of said tool body, forming a substantially complete circular ring though adjustable radially such that circumferentially particularly an outermost peripheral cutting edge thereof is greater than circumference of said tool body; and

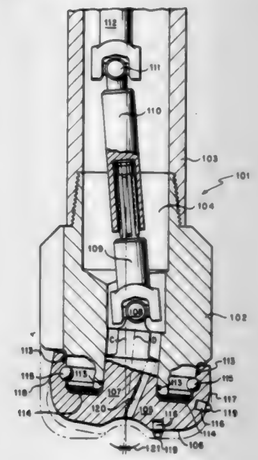
an enlarging spindle which is guided in said tool body and is adapted to be supported on said bottom of said foundation bore; said enlarging spindle, when fully entering said tool body, displacing said cutting elements radially outwardly so that said cutting elements including said resilient segments thereon after each blow exerted axially upon said tool body can spread resiliently in radial direction therefrom and returning into starting position thereafter.

4,446,935

INTERMITTENT HIGH-DRAG OIL WELL DRILLING BIT

Percy W. Schumacher, Jr., Houston, Tex., assignor to Reed Tool Company (Delaware), Houston, Tex.

Continuation of Ser. No. 24,844, Mar. 28, 1979, abandoned. This application Sep. 20, 1982, Ser. No. 420,417
Int. Cl.³ E21B *4/02, 10/56*
U.S. Cl. 175—329 **7 Claims**



1. A rotarty drill bit for drilling a well bore in a formation, the bit comprising:

a bit body having a threaded pin at its upper end adapted to be detachably secured to drill pipe or the like for rotating the bit body;

a cutter head rotatably mounted on the bit body at the bottom thereof, said cutter head comprising a cutter body of generally circular shape in transverse section having a bottom and a side wall extending up from the bottom, and a plurality of drag cutting elements mounted on and projecting from said bottom and side wall of the cutter body, with the cutting elements on the bottom of the cutter head being engageable with the bottom of the well bore and the cutting elements on the side wall being engageable with the side of the well bore, the cutter head being of slightly smaller overall diameter than the well bore and being mounted on the bit body with its axis of rotation at an angle relative to that of the bit body; and

means for interconnecting the cutter head to means for rotating the cutter head relative to the bit body, with the cutter head thus being rotatable independently of the rotation of the bit body, whereby with the bit in a well bore and upon rotation of the bit body and rotation of the cutter head relative to the bit body, each cutting element intermittently engages the formation, with only a predetermined number of the cutting elements engaging the formation at any one point in time, but with all cutting elements engaging the formation over a predetermined period of time, for enabling improved cooling of the cutting elements for extended cutting element life.

4,446,936

MINING DRILL

Vinod K. Sarin, Lexington, and Peter Oberhauser, Sudbury, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 8, 1982, Ser. No. 346,968
Int. Cl.³ E21B *10/62*
U.S. Cl. 175—410 **2 Claims**

1. A mine drill for aiding the collection of detritus during

drilling comprising a drive body being cylindrically shaped about an axis of rotation and having an axial passage for the flow of detritus, a bit mounted at the forward end of said drive body for movement about said axis of rotation, said bit comprising a body portion having a base portion with a pair of support lands projecting therefrom along an axial direction and an elongated insert having forwardly projecting cutting edges and a base surface secured to said base portion, said base surface lying in a plane substantially normal to the axis of rotation, each support land being offset said axis of rotation and secured to respective opposite sides of said insert whereby during rotation of said bit leading insert surfaces are substantially unobstructed and trailing insert surfaces are mounted to respective support lands, said insert having end portions extend-





ing in a radial direction outwardly of said base portion and said drive body, said drive body having a pair of forwardly Projecting flanges forming diametrically opposed apertures, each aperture receiving a respective end portion, each flange having a trailing land facing a respective support land for disengageably transmitting substantially all of said torsional forces to said bit during drilling, and independent means for removably holding said bit from movement in an axial direction, each flange being an extension of the tubularly shaped drive body and extending forwardly of said plane and being spaced from opposite sides of said insert to form a pair of unobstructed air passages adapted for conveyance of detritus during drilling to said axial passage, each passage being formed on an opposite side of said bit.

4,446,937

METHOD OF TREATING COMBINATION DEFECTIVENESS IN COMBINATORIAL WEIGHING OR COUNTING

Yoshiharu Asai, Kurita, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

PCT No. PCT/JP81/00193, 371 Date Feb. 23, 1982, 102(e) Date Feb. 23, 1982, PCT Pub. No. WO82/00882, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 26, 1981, Ser. No. 355,545
Claims priority, application Japan, Sep. 3, 1980, 55-122556
Int. Cl.³ G01G *19/22*
U.S. Cl. 177—1 **12 Claims**

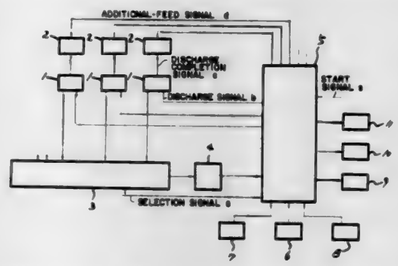
1. The process for obtaining a combination of articles of a target weight comprising the steps of:

weighing groups of articles with a plurality of weighing machines;

computing the sum weight of articles for every combination of said groups of articles;

selecting a particular combination, the sum weight of articles of which is equal to or nearest said target weight and within a preset range of allowance;

if no combination satisfies the criteria for selection, selecting at least one of said weighing machines and decreasing the



amount of the articles therein or feeding in additional fresh articles; and

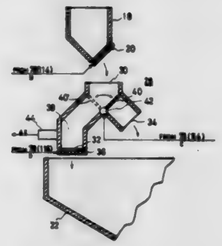
repeating the same operation from the beginning.

4,446,938

COMBINATION WEIGHING MACHINE

Shozo Kawanishi, Kobe, Japan, assignor to Yamato Scale Company. Ltd., Hyogo, Japan

Filed Jun. 10, 1982, Ser. No. 387,187
Int. Cl.³ G01G *19/22, 13/24;* B07C *5/00*
U.S. Cl. 177—25 **3 Claims**



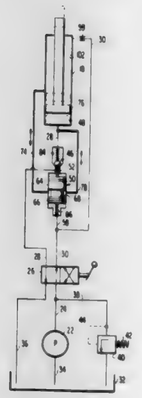
1. A combination weighing machine comprising a plurality of weighing units each having a weighing cradle for weighing articles in the cradles to produce weight signals indicative of the weights thereof, a common collection hopper, a combination selection circuit coupled for receiving said weight signals for summing said weight signals in accordance with predetermined mathematical combinations and selecting a combination having a sum which satisfies a predetermined condition to produce outputs specifying those of said weighing cradles belonging to said selected combination, first gate means responsive to said outputs for transferring the contents of said specified weighing cradles to said common collection hopper the improvement comprising at least one auxiliary hopper associated with each weighing unit, a memory associated with said auxiliary hopper for supplying its content to said combination selection circuit to cause it to participate in said combinations together with said weight signals from said weighing cradles, switching means for coupling temporarily the output of said weighing unit to the input of said memory to write said weight signal in said memory, second gate means for transferring the content of said weighing cradle to said auxiliary hopper associated with said memory after writing-in of said weight signal and third gate means responsive to an output of said combination selection circuit when the last said output specifies said memory for transferring the content of said auxiliary hopper to said common collection hopper.

4,446,939

TILTCAB TRUCK WITH HYDRAULIC LOST MOTION

Tone Oudelaar, Oldenzaal, Netherlands, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Feb. 2, 1982, Ser. No. 345,010
Int. Cl.³ B62D *33/06*
U.S. Cl. 180—89.15 **22 Claims**



1. In a motor vehicle comprising:

(a) a chassis member;

(b) a cab member mounted on said chassis member for pivotal movement about an axis transverse to the longitudinal axis of said chassis member from a lowered first position to a raised second position;

(c) at least one tilt cylinder operatively connected to said chassis member and to said cab member to pivot said cab member back and forth between its first and second positions;

(d) a pump for supplying hydraulic fluid under pressure to said tilt cylinders;

(e) a reservoir for hydraulic fluid;

(f) a suspension system between said chassis member and said cab member; and

(g) first means for permitting hydraulic fluid to move back and forth between the push chamber and the pull chamber of said tilt cylinder while said cab member is in its first position, thereby permitting said cab member to pivot relative to said chassis member to accommmodate vertical motion in said suspension system,

the improvement wherein said first means comprises a pilot-operated check valve having a through passageway which is a part of a hydraulic connection between the push chamber and the pull chamber of said tilt cylinder, which through passageway is only shut off when hydraulic pressure is applied to the push chamber of said tilt cylinder;

said pilot-operated check valve comprises a one-way valve and a pilot piston having a projection sized and shaped to open said one-way valve; and

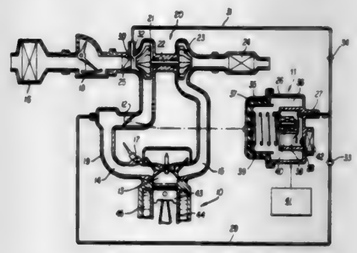
when hydraulic pressure is applied to the pull chamber of said tilt cylinder, said pilot piston is caused to open said one-way valve, but said through passageway remains open.

4,446,940

SPEED CONTROL SYSTEM FOR MOTOR VEHICLE EQUIPPED WITH TURBOCHARGER

Naoji Sakakibara, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 27, 1981, Ser. No. 258,032
Claims priority, application Japan, May 23, 1980, 55-68764
Int. Cl.³ F02B *67/00;* B60K *31/00*
U.S. Cl. 180—177 **3 Claims**



1. A speed control system for a motor vehicle having an internal combustion engine, a turbocharger, and an intake manifold, said speed control system comprising:

(a) a throttle valve located in said intake manifold;

(b) means for generating a signal in accordance with the difference between a selected speed of said motor vehicle and the actual speed of said motor vehicle;

(c) a vacuum actuator comprising:

(i) a casing the interior of which is divided into an atmospheric chamber and a vacuum chamber by a diaphragm, said casing having a first inlet port for introducing vacuum into said vacuum chamber and a second inlet port for introducing atmospheric air into said vacuum chamber, and

(ii) a modulating valve for selectively opening said first inlet port or said second inlet port in response to said signal, thereby modulating the pressure within said vacuum chamber;

(d) means operatively connecting said diaphragm to said throttle valve such that the opening of said throttle valve is dependent upon the position of said diaphragm;

(e) a first passage providing communication between said first inlet port and said intake manifold;

(f) a second passage providing communication between said first inlet port and the inlet end of said turbocharger;

(g) a first one-way check valve disposed in said first passage such that said first one-way check valve is open when the pressure in said intake manifold is less than the pressure in said first inlet port and closed when the pressure in said first inlet port is less than the pressure in said intake manifold; and

(h) a second one-way check valve disposed in said second passage such that said second one-way check valve is open when the pressure in the inlet end of said turbocharger is less than the pressure in said first inlet port and closed when the pressure in said first inlet port is less than the pressure in the inlet end of said turbocharger,

whereby the pressure in said first inlet port is the lower of the pressure in said intake manifold or the pressure in the inlet end of said turbocharger.

4,446,941

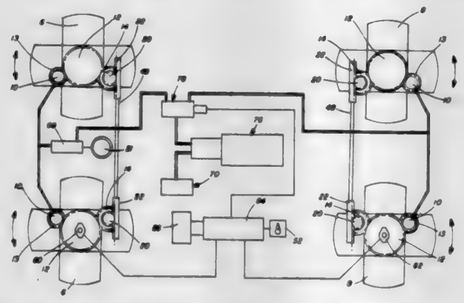
STEERING SYSTEM FOR UTILITY VEHICLE

Victor R. Laurich-Trost, 34600 McAfee Dr., Solon, Ohio 44139

Filed Sep. 18, 1981, Ser. No. 302,516
Int. Cl.³ B62K *17/30, 17/34*
U.S. Cl. 180—236 **6 Claims**

1. A steering system for a utility vehicle having multi-steering modes of operation comprising a pair of front wheels and

a pair of rear wheels mounted on a chassis for driving movement in an angular and linear directions, motor drive means operably associated with each of said wheels for driving the said wheels in clockwise or counterclockwise directions, said front wheels being hydraulically driven and also mechanically interconnected together for synchronous turning movement



and said rear wheels being hydraulically driven and also mechanically interconnected together for synchronous turning movement, and electrical control circuit means operably coupling said front to said rear wheels to enable a predetermined synchronous turning movement of said rear wheels in relation to said front wheels.

4,446,942

DEVICE FOR CONDUCTING AWAY THE EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

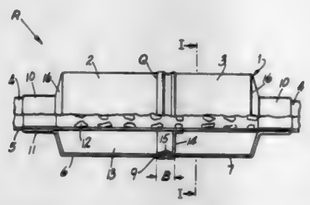
Jean Hardt, Benken, and Jakob Widrig, Winterthur, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 155,458, Jun. 2, 1980, Pat. No. 4,352,406. This application Jul. 6, 1982, Ser. No. 395,726

Claims priority, application Switzerland, Jun. 6, 1979, 5250/79

Int. Cl.³ F01N *1/02*

U.S. Cl. 181—249 **5 Claims**



1. A method for producing an aluminum exhaust system for use in conducting away gases from an internal combustion engine comprising the steps of deep drawing a pair of hollow bodies each having first and second substantially cylindrical-shaped portions connected together by a substantially conical-shaped portion, telescopically positioning the free end of said second substantially cylindrical-shaped portion of one of said pair of hollow bodies within the free end of said second substantially cylindrical-shaped portion of the other of said pair of hollow bodies, forming by electromagnetic forces a profiled shape on the free end of said second substantially cylindrical-shaped portions so as to join said pair of hollow bodies together by the profiled shapes.

4,446,943

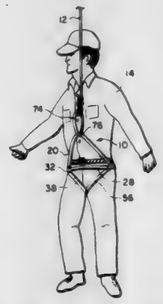
FIRE SERVICE HARNESS

Richard C. Murray, 402 Lincoln Ave., Staten Island, N.Y. 10306

Filed Mar. 3, 1983, Ser. No. 471,682

Int. Cl.³ A62B *1/16, 35/00*

U.S. Cl. 182—3 **6 Claims**



1. A rappel harness for lowering a person from a building comprising:

(a) a belly strap with left and right sides, having opposing ends with means for securing said ends together to encircle the person's abdomen;

(b) a waist strap having left and right ends and an intermediate portion adapted to be mounted on a rappel hook for supporting the harness;

(c) a pair of left and right leg straps each having a loop for securing a person's leg, each said leg strap having an end secured respectively to the left and right ends of the waist strap and an opposite end secured to the belly strap at a point spaced from the left and right ends of the waist strap wherein said waist strap is longer than the shortest distance between its left and right ends whereby the waist strap will have slack when not loaded and will assume a position vertically above the belly strap when loaded and will be virtually in the same vertical plane as the connection points between the waist strap and each leg strap thereby preventing toppling of the person being lowered.

4,446,944

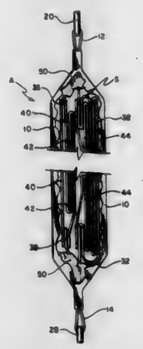
SHOCK ABSORBING DEVICE AND METHOD

William E. Forrest, and Frank R. Lupton, both of Denver, Colo., assignors to Forrest Mountaineering, Inc., Denver, Colo.

Filed Mar. 9, 1983, Ser. No. 473,577

Int. Cl.³ A62B *35/00*

U.S. Cl. 182—3 **14 Claims**



11. A shock absorber for gradually absorbing the kinetic energy of a falling body, whereby damage to the falling body,

anchor and equipment is minimized, said shock absorber comprising:

first, second and third energy absorbing webbing straps of successively increasing length and made of undrawn virgin nylon fibers and each having a first end and a second end;

a back-up strap having a longer reach than said longest third energy absorbing strap and made of substantially non-stretchable webbing, said back-up strap having an upper support loop formed adjacent one end as a portion of the strap folded over upon itself and secured together with said one end extending from said upper support loop and having a lower support loop formed adjacent the other end as a portion of the strap folded over upon itself and secured together with said other end extending from the said lower support loop, said first ends of said first and second energy absorbing straps being attached to opposite sides of said one end of said back-up strap and said second ends of said first and second energy absorbing straps being attached to corresponding opposite sides of said other end of said back-up strap and said first end of said third energy absorbing strap being connected to said reach of said back-up strap adjacent said upper support loop and said second end of said third energy absorbing strap being connected to said reach of said back-up strap adjacent said lower support loop;

ethylene glycol absorbed in each of said energy absorbing straps;

petroleum jelly coated on said energy absorbing straps to minimize evaporation of said ethylene glycol;

a water impervious cover enclosing said energy absorbing straps and said back-up strap and holding said second and third energy absorbing straps and said back-up strap in overlapping, folded condition approximately equal in length to said first energy absorbing strap, said cover being sewed at its ends to said upper and lower support loops by stitching so that upon stretching of said first energy absorbing strap said stitching will break; and

a plastic covering wrapped around said folded straps within said cover.

4,446,945

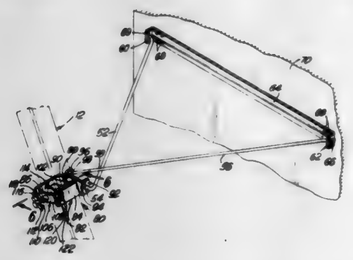
BRACE FOR SECURING A POLE TO SUPPORT SURFACE

Carl Anderson, 12 St. Stephens Pl., Staten Island, N.Y. 10306

Continuation-in-part of Ser. No. 255,631, Apr. 20, 1981, which is a continuation-in-part of Ser. No. 143,506, Apr. 24, 1980. This application Jan. 13, 1982, Ser. No. 339,091

Int. Cl.³ E04G *5/04*

U.S. Cl. 182—229 **10 Claims**



1. A brace for securing a pole to a support surface, comprising:

a frame member for securement to the support surface;

a yoke assembly formed of a pair of U-shaped yoke members each having a respective pair of legs interconnected by a respective bight portion, one of said yoke members being coupled to said frame member and the other of said yoke members fitting around the pole;

swivel means comprising a pivot member coupling together said yoke members at their respective bight portions; said frame member comprising a pair of legs defining an X-shaped structure having one end wider than the other, and an integral connecting rod closing off the narrowed end of the structure to form a smaller and a larger triangle said connecting rod pivotally passing through the opposing legs of said one of said yoke members, whereby said yoke assembly and said frame member permit modification in the relative vertical orientation of the pole with respect to the support surface by providing for relative rotation about two mutually perpendicular horizontal axes, and wherein said swivel means lies along the center line of said X-shaped structure.

4,446,946

ELEVATOR SPEED INSTRUCTION GENERATING SYSTEM

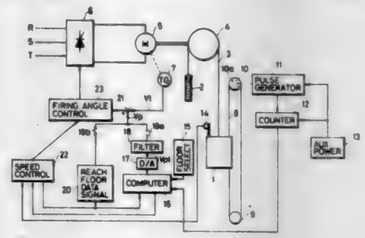
Ryuichi Kajiyama, and Masashi Yonemoto, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,404

Claims priority, application Japan, Oct. 21, 1980, 55-147315

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 R **7 Claims**



1. In an elevator system including a cage movable in first and second directions between a plurality of floors at different positions along an elevator path, and moving means for moving said cage at a speed determined by a speed instruction data signal, said speed instruction data signal comprising an acceleration instruction data signal when operating in an accelerating mode and a deceleration instruction data signal when operating in a decelerating mode, a speed instruction signal generating system comprising:

a computer;

pulse generating means provided separately from said computer for generating a pulse whenever said cage travels a predetermined distance;

counter means connected to said pulse generating means for counting said pulses upwardly when said cage travels in said first direction and for counting said pulses downwardly when said cage travels in said second direction;

floor position storing means for storing at respective addresses data corresponding to the absolute positions of each of said plurality of floors with respect to a reference position;

speed instruction storing means provided in said electronic computer for storing at respective addresses a plurality of acceleration data corresponding to different desired speeds of said cage during operation in said acceleration mode and for storing at respective addresses a plurality of deceleration data corresponding to different desired speeds of said cage during operation in said decelerating mode;

comparison means in said computer for comparing the position of said cage indicated by the value in said counter with the absolute position of an appointed floor at which said cage is to be stopped to thereby detect a remaining distance value; and

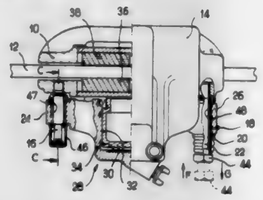
read out means in said computer for reading out increasing values of said acceleration data to said moving means as said acceleration instruction data signal during said accelerating mode and for reading a sequence of said deceleration data out of said speed instruction storing means as said deceleration instruction data signal to said moving means during said decelerating mode, the values of said sequence of decelerating data corresponding to said remaining distance value.

4,446,947

SLIDING CALIPER DISC BRAKE

Gérard Le Delt, Aulnay sous Bois, France, assignor to Societe Anonyme DBA, Paris, France

Continuation of Ser. No. 243,223, Mar. 12, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,517
Claims priority, application France, Mar. 14, 1980, 80 05706
Int. Cl.³ F16D *65/09*
U.S. Cl. 188—73.34 **5 Claims**



1. A disc brake having a caliper member which is mounted slidably on a fixed carrier member, comprising two friction elements which are mounted in an anchored and slidable mode in said fixed carrier member and which are capable of coming into frictional engagement with the opposite faces of a rotary disc upon actuation of a brake actuating unit acting directly on one of the friction elements and acting on the other friction element by reaction by way of the sliding caliper member, at least one sliding axial pin which is fixedly secured at one end with respect to one of said members and which is received slidably in a corresponding bore formed in the other of said members, said pin co-operating with the corresponding bore by means of a sleeve of resilient material which is axially immobilized in said bore, characterized in that said pin includes a second end opposite said one end and said second end cooperates with said sleeve of resilient material to form unidirectional stop means which is capable of resiliently assuming an inoperative condition to permit the pin second end to be axially introduced into the sleeve upon assembly of the brake, and said unidirectional stop means assuming an operative condition to resiliently oppose withdrawal of said pin second end from said sleeve and said unidirectional stop means is axially disposed outside said other member bore in the operative condition.

4,446,948

DISC BRAKE CALIPER MOUNT

Wolfgang Melinat, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 29, 1982, Ser. No. 362,988
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—73.45 **3 Claims**

1. A sliding arrangement in a disc brake comprising:
a carrier formed with a blind bore having a closed end and an open end;
a caliper having a pin including a slide portion slidably received in said bore;
said pin extending through a support portion of said caliper and having in axial series order a head portion, a pin threaded portion, a pin pilot portion and said slide portion;
said caliper support portion having a threaded portion receiving said pin threaded portion in threaded relation and a pilot portion receiving said pin pilot portion in piloted engaging relation so that said pin is in respective axially and diametrically secure relationship with said caliper support portion;



and a protective boot around a part of said pin and mounted on said carrier at said bore open end and on said pin adjacent said caliper support portion to protect said pin slide portion and said blind bore.

4,446,949

CONNECTING ROD AND PISTON DEVICE FOR A BRAKE SLACK ADJUSTER

James L. Weber, West Bloomfield, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 13, 1982, Ser. No. 339,037
Int. Cl.³ F16D *65/40*
U.S. Cl. 188—79.5 K **2 Claims**

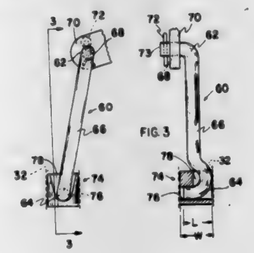


FIG. 3

1. An improved connecting rod and piston device for a brake slack adjuster of the type used to produce desired readjustment of a coupling between a brake cam shaft and a brake actuation lever, said brake actuation lever being caused to rotate about said cam shaft by actuation linkage means, said slack adjuster including a plunger having a chamber therein for receipt of said piston device, said piston device being capable of limited axial movement within said chamber, said connecting rod being utilized to connect said piston device to said actuation linkage means to produce axial movement of said piston device corresponding to said rotation of said actuation lever, whereby predetermined excessive said rotation of said actuation lever by said actuation linkage means will cause said piston device to move axially to relocate said plunger to produce said readjustment of said coupling by said slack adjuster, said improvement comprising:
said connecting rod being formed of steel rod material which is bent at each end thereof to be perpendicular to a longitudinally extending intermediate section between each said end;
a first of said ends of said connecting rod being received within a hole in said actuation linkage means;
said piston device including a radial bore therethrough which intersects an axially extending opening therein;
a second of said ends of said connecting rod and an adjacent portion of said intermediate section being respectively

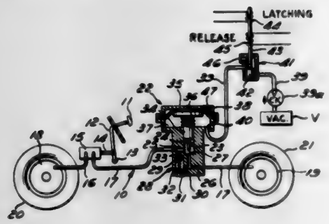
received within said bore and said axially extending opening of said piston device; and
said second end having an overall length which is less than a width of said chamber and too great to allow its removal from said bore when said piston device is in said chamber.

4,446,950

BRAKE CONTROL APPARATUS

Stanley S. Wise, Boynton Beach, and Peter Maitland, Pompano Beach, both of Fla., assignors to Fail Safe Industries, Inc., Lantana, Fla.

Filed Dec. 3, 1981, Ser. No. 327,171
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—3 TR **29 Claims**



1. In a brake control apparatus on a motor vehicle having an accelerator pedal, a brake pedal and fluid pressure-operated brakes which are applied by fluid pressure in a conduit responsive to depression of the brake pedal, said apparatus having:
valve means in said conduit for controlling the fluid pressure applied to the brakes;
electrical control means for closing said valve means to keep fluid pressure applied to the brakes after the brake pedal has been depressed;
and means for opening said valve means when said electrical control means is de-energized;
the improvement which comprises:
digital signal generator means operable to produce digital signals varying with the vehicle speed;
and means operatively connected to the output of said digital signal generator means for energizing said electrical control means to close said two-way valve means when
(a) the vehicle operator releases the accelerator pedal, and
(b) the vehicle speed decreases to within a predetermined speed range and thereafter drops below a preselected intermediate speed within said range.

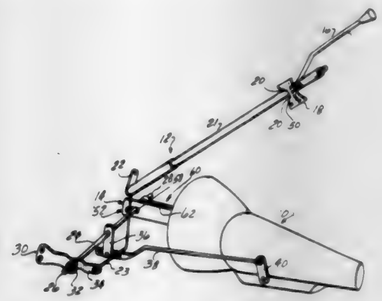
4,446,951

VEHICLE FULL PARK ENGAGEMENT APPARATUS

George R. Morris, 5643 E. Albain Rd., Monroe, Mich. 48161

Filed Nov. 18, 1981, Ser. No. 322,650
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 A **5 Claims**

1. In a vehicle transmission including a selector lever movable between a plurality of positions, each associated with a distinct vehicle movement state and a park position, a detent plate associated with the selector lever and having a plurality of detent positions, each associated with one of the vehicle movement states and the park position, a bell crank rod having first and second ends, a first mounting bracket fixedly secured to the vehicle and rotatably supporting the first end of the bell crank rod in a fixed position, a first linkage means connected between the selector lever and the bell crank rod for transmitting movement of the selector lever to rotation of the bell crank rod, a second linkage means connected between the bell crank rod and the transmission for transmitting rotation of the bell crank rod to the vehicle transmission for selecting one of the vehicle movement states and the park position, the improvement comprising:
a full park engagement apparatus including:
a second bracket secured to the vehicle for rotatably supporting a second end of the bell crank rod; and
means, associated with the second bracket, for allowing



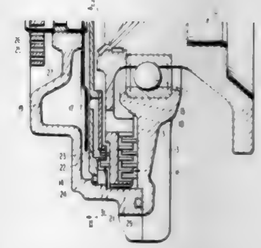
translation of the second end of the bell crank rod after the second linkage means has stationarily engaged the transmission park position to permit further travel of the selector lever such that the selector lever is fully urged into the park detent in the detent plate.

4,446,952

VISCOUS FLUID COUPLING ASSEMBLY

Hiroto Masai, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 9, 1981, Ser. No. 319,760
Claims priority, application Japan, Nov. 10, 1980, 55-158634
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **8 Claims**



1. A viscous fluid coupling assembly comprising:
an input coupling member driven by an engine and having a rotating rotor;
an output coupling member rotatably mounted on said input coupling member;
a dividing plate connected to said output coupling member and interposed between said rotor and said output coupling member while dividing the inside of said output coupling member into a reservoir chamber for a viscous fluid and a working chamber having said rotor located therein;
first torque transmission surface means being formed between one side of said rotor and a corresponding side of said output coupling member for transmitting a torque by means of said viscous fluid between said one side of said rotor and said corresponding side of said output coupling member;
second torque transmission surface means being formed between the other side of said rotor and a corresponding side of said dividing plate for transmitting a torque by means of said viscous fluid between said other side of said rotor and said corresponding side of said dividing plate;

a first passageway adjacent the outer periphery of said dividing plate for permitting passage of said viscous fluid from said working chamber to said reservoir chamber;

a first opening being formed in said dividing plate for supplying said viscous fluid to said first and second torque transmission means;

a second opening formed in said dividing plate in communication on one side of said plate with said reservoir chamber at a point radially inwardly of said first opening and in communication on the other side of said plate with said working chamber at a point radially outwardly of said first opening for supplying said viscous fluid only to said second torque transmission means; and

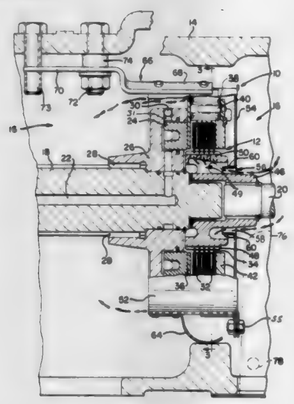
thermal responsive means controlling the opening and closing of said first and second openings in response to changes in temperature.

4,446,953

CLUTCH OIL SHIELD AND DIVERTER

Julian D. Voss, Naperville; Aldo Allori, Brookfield, and John A. Wilger, Chicago, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Nov. 17, 1981, Ser. No. 322,149
Int. Cl.³ F16D *13/72*
U.S. Cl. 192—70.12 **6 Claims**



1. A hydraulic fluid shield immersed in a fluid bath and comprising:

a peripheral wall with an open one end and coaxially encompassing a multiple disc clutch;

a shield cover rigidly attached to another end of said peripheral wall and blocking a fluid entry into said clutch;

said cover having a center opening defined by an annular baffle extending transversely to said cover;

a clutch hub having a portion thereof located within said center opening;

said clutch hub portion and said annular baffle forming a passage for the fluid entry into said clutch thereby improving a cooling effect of the fluid flowing through said clutch; and

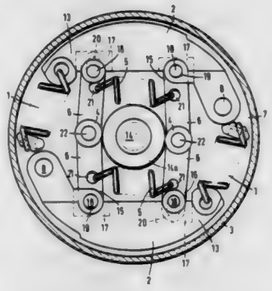
whereby the hydraulic fluid diverted into said clutch through said passage is entrained into and ejected from said clutch due to the centrifugal force exerted thereon.

4,446,954

CENTRIFUGAL CLUTCH FOR POWER SAWS

Hermann Weiss, Grossbottwar, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,569
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041213
Int. Cl.³ F16D *43/24, 43/18*; B23D *57/02*; B27B *17/10*
U.S. Cl. 192—105 CD **18 Claims**



1. A centrifugal clutch for a motor-driven chain saw subjected to kickback during use thereof by an operator, the centrifugal clutch comprising:

a rotating carrier plate driven by the motor and defining an axis of rotation;

a drum arranged in surrounding relationship to said carrier plate and operatively connected to the saw chain for driving the same;

centrifugal means mounted on said plate for engaging said drum at a first predetermined rotational speed, said centrifugal means including: a pair of diametrically adjacent centrifugal weights pivotally mounted on said plate so as to be movable between a first and a second position, and, spring means for spring loading said centrifugal weights;

said weights being movable from said first position to said second position against the force of said spring means in response to said first rotational speed, said weights engaging said drum at said second position for holding the same with said plate thereby driving the saw chain, the holding force between said weights and said drum increasing with increasing rotational speed;

lever means connected between said weights and having return weight means mounted thereon responsive to a second predetermined rotational speed greater than said first rotational speed; and,

connection means for connecting said lever means to said weights to permit unimpeded movement of said weights relative to said lever means and to actively engage said weights to limit the magnitude of said holding force between said weights and said drum when said second predetermined rotational speed is reached thereby preventing the kickback condition.

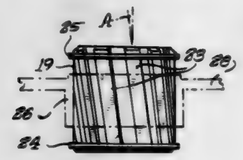
4,446,955

CLUTCH DRIVEN PLATE ASSEMBLY WITH A FLOATING HUB

Thaddeus Lech, Jr., Sterling Heights, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 166,267, Jul. 3, 1980, abandoned. This application Dec. 4, 1980, Ser. No. 212,925
Int. Cl.³ F16D *3/12, 13/68*
U.S. Cl. 192—106.2 **50 Claims**

1. In a clutch driven plate assembly for an automotive vehicle clutch operatively connected to a transmission input shaft, wherein the assembly includes a radial hub flange operatively connected to friction facings adapted to be positioned between an engine flywheel and a clutch pressure plate, the improvement comprising a multipart hub assembly including an inner hub operatively connected to the transmission input shaft and an outer hub, the radial hub flange being integral with one of said hubs, and a helical connection interposed between said



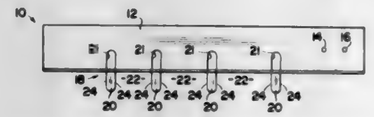
inner and outer hubs wherein one of said inner and outer hubs has axially elongated helical splines and said other hub has shorter splines to allow a substantial relative axial movement between the hubs upon rotation of said outer hub.

4,446,956

SINGLE COIN CARRIAGE BAR

Karl Knickerbocker, deceased, late of Venice, Fla. (by Lillie M. Knickerbocker, heir), assignor to Don G. Kaspar, Shiner, Tex., a part interest

Filed Feb. 16, 1982, Ser. No. 348,797
Int. Cl.³ G07F *5/08*
U.S. Cl. 194—1 L **10 Claims**



1. A single coin carriage bar of the type designed for use with a coin controlled mechanism for a vending machine, said single coin carriage bar comprising a selector bar body having a substantially L-shaped elongated linear configuration of predetermined length, said selector bar body having a pivotal aperture formed on one end portion thereof to pivotally mount said selector bar body within the coin controlled mechanism, said selector bar body further including a crank arm aperture formed on said end portion adjacent said pivotal aperture disposed outwardly therefrom such that said selector bar body is disposed in operative movable engagement with the coin controlled mechanism; finger means integrally formed in said selector bar body, said finger means comprising a plurality of finger elements disposed to entend outwardly from the longitudinal axis of said selector bar body and disposed in predetermined spaced apart relative to one another, at least one of said finger elements positioned in interruptive relation to a path of travel of coins passing through said coin controlled mechanism, an aperture corresponding to each of said plurality of finger elements formed in the L-shaped intersection of said selector bar body whereby engagement of coins passing therethrough with certain ones of said finger elements causes vertical movement of said selector bar body and actuation of the coin controlled mechanism in response to individual coins engaging at least one of said finger elements.

4,446,957

COIN OPERATED ARTICLE DISPENSING MECHANISM

Jerry L. Dohse, Alsip, and Peter A. Hess, Chicago, both of Ill., assignors to Damon Corporation, Needham Heights, Mass.

Filed Jan. 28, 1982, Ser. No. 343,427
Int. Cl.³ G07F *5/02*
U.S. Cl. 194—54 **6 Claims**

1. In a coin operated article dispensing device comprising:

base means including article access means, and

reservoir means for holding a plurality of articles to be dispensed, mounted on said base means,

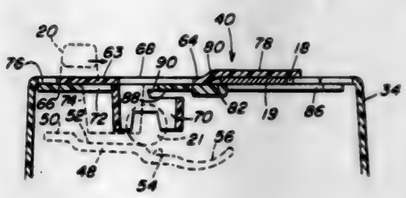
the improvement comprising a coin operated mechanism that comprises:

base plate means forming a portion of said base means, and

slide plate means slidably mounted on said base plate means, slidable between a first, locked, position and a second, dispensing, position

said slide plate means including:

article dispensing means for dispensing articles when said slide plate is moved from said first locked position to said second dispensing position



means defining an article aperture for passage of articles from said reservoir means to said article dispensing means,

a first coin slot portion partially defining a coin receiving slot, including a shoulder portion, and

actuator means for slidingly moving said slide plate,

said base plate means including:

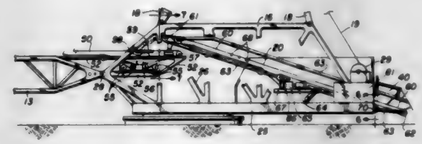
a second coin slot portion partially defining said coin receiving slot, including a dog means flexibly mounted on said base plate means and arranged to abut said shoulder portion in the absence of a coin in said coin receiving slot and to be displaced from said abutting position by a coin inserted in said slot.

4,446,958

CROSS-PIT CONVEYOR

Thomas H. Dalrymple, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 16, 1981, Ser. No. 321,862
Int. Cl.³ B65G *47/18*
U.S. Cl. 198—311 **9 Claims**



1. A cross-pit conveyor for transporting excavated soils from the working bench across the pit to the reclamation area in a strip mining operation, comprising:

a base suitable for positioning on the working bench;

a horizontally extending upper frame mounted on said base and swingable about said base in a generally horizontal plane;

a vertically inclinable long main conveyor pivotably connected at one end to the front end of said frame and extending therefrom across the pit to a discharge end;

means for raising and lowering the discharge end of said main conveyor to change the inclination of said main conveyor; and

a vertically inclinable auxiliary conveyor longitudinally aligned with said main conveyor and pivotally connected near one end to the back end of said upper frame and extending forwardly through said frame to a discharge

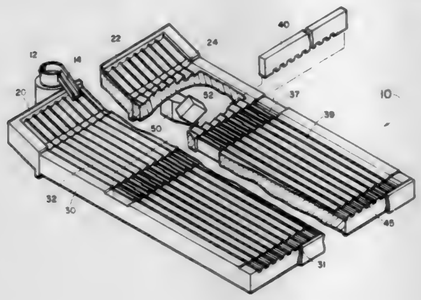
end cooperatively overlapping said connected one end of the main conveyor, said discharge end of the auxiliary conveyor resting for support on said main conveyor such that it will move up and down therewith as the inclination of said main conveyor changes to maintain a substantially constant drop distance for transferring excavated soils from said auxiliary conveyor onto said main conveyor.

4,446,959

MULTIPLE RAIL LINEAR FEED SYSTEM

Clifford E. Dunlap, Pasadena, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,673
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—382 **7 Claims**



1. An improved multiple rail linear vibratory feeder system for orienting parts into multiple rows of single file, having means comprising:

means to dispense randomly oriented parts into each of said rails of said feed plate at a first end thereof;

means to vibrate said feed plate such that said parts move from a first end thereof to a second end thereof, whereby the movement of said parts along said rails effects a desired orientation of said parts at the end of their travel along said rail;

a linear feed plate;

a plurality of rails formed in one surface of said plate;

each of said rails having at least one side wall and a base; each of said rails having a sloping base from its first end to a point beyond a discriminator area, the angle of slope ranging from 5° to 30°; each of said rails having a sloping base from a point adjacent said discriminator area to its second end, said angle of slope ranges from 0° to 30°;

means positioned between the ends of said feeder plate to discriminate between properly oriented parts and misoriented parts, said means forming a discriminator area along each of said rails;

means to remove said misoriented parts from said rails in the direction of feed, such that only properly oriented parts arrive at said second end of said feeder plate;

said discriminator area including an upper discriminator and a lower discriminator,

said lower discriminator comprising:

an elongated hole cut into each of said rails such that one vertical sidewall and an adjacent portion of the angled base remain in tact, said remaining portion of said base track being sufficient to allow a properly oriented part to pass over it without falling into said hole;

said hole being of a size sufficient to permit a misoriented part to fall off said track and through said hole;

said upper discriminator comprising:

a bar secured to said feeder plate in said discriminator area above and transverse to said lower discriminator holes;

said bar having a plurality of projections, one for each rail, extending downwards toward said rails, each of said projections being dimensioned to permit a single part to pass under it along one of said rails;

a portion of the lower surface of each of said projections being angled so as to be parallel to the surface of the angled base of each of said rails;

said projections extending downward from said bar and positioned at an angle to the leading edge of said bar and directed over said lower discriminator holes such that said projections will cause parts lying on top of other parts in each of said rails to be pushed toward and through said discriminator holes;

wherein the lower surface angle of said projections ranges from 5° to 30°; and

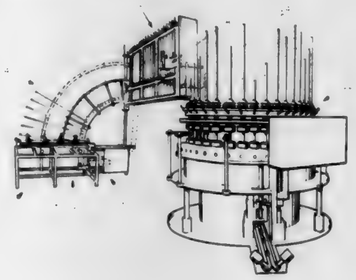
a terminal bar at the second end of said feeder plate.

4,446,960

TUBING LOADER

Otto Zauner, Vineland, and Fred Bender, Millville, both of N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 9, 1981, Ser. No. 281,815
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—408 **22 Claims**



1. An apparatus for receiving and reorienting elongate stock comprising, in combination,

means for receiving a plurality of pieces of elongate stock in a substantially horizontal orientation;

means associated with said receiving means for disposing such elongate stock substantially adjacent one another in a single thickness horizontal row; and

means for reorienting such stock from such substantially horizontal orientation to a substantially vertical orientation, said reorienting means including a pluarality of stock engaging lugs secured to at least a pair of means for driving said lugs through an arc whereby each elongate stock is engaged by at least a pair of said lugs and is reoriented generally about one end.

4,446,961

APPARATUS AND METHOD FOR UNSCRAMBLING AND SEPARATING ELONGATED ELEMENTS

Kenneth L. Klusmier, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Oct. 5, 1981, Ser. No. 308,381
Int. Cl.³ B65G *47/12*
U.S. Cl. 198—443 **5 Claims**

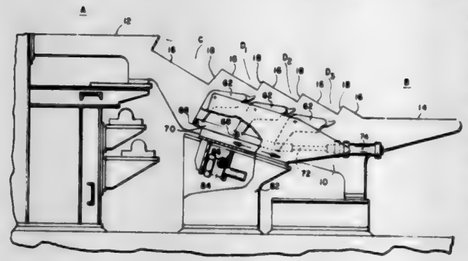
1. Apparatus for unscrambling and separating a plurality of elongated elements randomly deposited in a pile at a receiving station, comprising:

parallel stationary rack members extending from said receiving station to a discharge station, said rack members having upwardly facing notches aligned laterally to form a succession of element separating stations,

first transfer means for shifting batches of elongated elements from the pile at said receiving station into the first of said separating stations,

second transfer means movable cyclically relative to said stationary rack members to shift elongated elements from one separating station to the next towards said discharge station;

third transfer means movable cyclically relative to said stationary rack members to shift elongated elements from one separating station to the next towards said receiving station, said third transfer means being arranged to bypass



at least selected elements supported exclusively at the bases of the laterally aligned notches forming each separating station; and

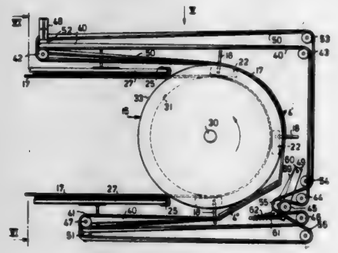
means for operating said second and third transfer means in alternating cycles in order to deliver individual elongated elements from the last of said separating stations to said discharge station.

4,446,962

CONVEYING DEVICE WITH PUSHER FINGERS

Gisbert Burkhardt, Reichenau, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 868,336, Jan. 10, 1978, abandoned. This application Aug. 11, 1982, Ser. No. 407,071
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—457 **19 Claims**



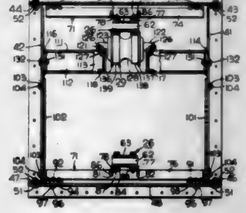
1. In a conveying device for rectangular substantially flat objects of varying dimensions comprising first and second horizontal conveyor sections each including a guide trough which defines a conveying path for the objects and supports a longitudinal edge of same, a direction changing conveyor section connecting said first and second sections together so that objects can be conveyed from said first to said second section, an orbiting pulling means, having a plurality of pusher fingers mounted on said pulling means, for moving said fingers along said guide troughs of said first and second conveyor sections so as to move objects along said conveying path, said pulling means being mounted on a plurality of drums which are mounted for rotation about respective vertical axes and with one of said drums being disposed in said direction changing conveyor section and having a first contact surface for said pulling means; the improvement wherein said direction changing conveyor section comprises: a second contact surface on said one of said drums, said second contact surface having a greater radius than that of said first contact surface and being disposed relative to said guide troughs so as to provide an object engaging surface in said direction changing conveyor section; an endless cover belt formed of an elastic material so as to be elastically yieldable with respect to its length; and means, including a plurality of rollers, for supporting and guiding said cover belt so that it normally encloses and contacts the portion of said second contact surface in said direction changing conveyor section and so that it extends along a portion of each of said guide troughs and coacts with same as an outer guide element for the objects in the transition regions between each of said first and second conveyor sections and said direction changing conveyor section to guide the objects from said guide trough of said first section into engagement with said portion of said second contact surface beneath said cover belt and from engagement with said portion of said second contact surface onto said guide trough of said second section, whereby the objects are held between said cover belt and said second contact surface and conveyed thereby through said direction changing conveyor section, and whereby, as the leading edge of an object is gripped between said second contact surface and the surface of said cover belt, the object is accelerated away from the associated said pusher finger, due to the difference in the circumferential speeds of the coacting gripping surfaces and of the pusher finger, in order to avoid undesired contact between the object and the pusher finger during travel through said direction changing conveyor section.

4,446,963

RETURN CHAIN ROLLER SUPPORT FOR EN MASSE CONVEYOR

Elmer J. Renner, Aurora, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 13, 1981, Ser. No. 321,317
Int. Cl.³ B65G *19/18*
U.S. Cl. 198—735 **5 Claims**



1. In an en masse conveyor apparatus having a longitudinally extending casing made up of sections of predetermined length and generally rectangular cross section releasably secured to one another in an end to end relationship, an endless conveyor chain with a lower working run and an upper return run disposed in the central vertical longitudinal plane of the casing and having pivotally interconnected links with laterally spaced side bars and transversely extending flights secured at their central portions to selected links of the chain, the combination comprising:

a roller for supporting the return run of said conveyor chain having a shell with laterally spaced radially outward facing cylindrical surfaces engageable, respectively, with said laterally spaced side bars of said chain and having a stationary shaft with mounting portions extending transversely beyond axially opposite ends of said roller shell,

one section of said casing presenting transversely spaced vertical side walls,

a support for said roller including

a pair of longitudinally spaced horizontal support beams extending transversely between said side walls,

a pair of transversely spaced horizontal mounting beams extending longitudinally between and secured to said

support beams, said mounting beams being disposed inwardly a substantial distance from said side walls, and detachable fastening means securing said ends of said shaft to the upper sides, respectively, of said mounting beams whereby the axis of said shaft is horizontal and transverse to said longitudinal central vertical plane and

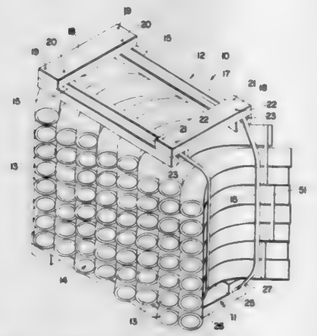
releasable securing means fastening the laterally opposite ends of said support beams to said side walls, respectively, said support for said roller serving to reinforce said side walls and being removable therefrom upon release of said releasable securing means, said one section being removable from said casing without requiring prior removal of said support.

4,446,964

METHOD OF PACKAGING ELBOW-SHAPED MEMBERS AND PACKAGE MADE THEREBY

Thomas F. Moran, 540 Cobblestone, Aurora, Ohio 44202

Filed Sep. 12, 1980, Ser. No. 186,701
Int. Cl.³ B65D *85/46*
U.S. Cl. 206—321 **4 Claims**



1. A package of elbows which comprises:

a bottom frame comprising a pair of side frame members and a pair of end frame members, the side frame members being spaced apart and connected to each other at each end by one of the end frame members, the bottom frame having a recess for insertion of a fork lift;

a matrix of elbows arranged on the bottom frame in a plurality of vertical columns of elbows alternatively divided into first columns and second columns, each of the second columns of elbows having one fewer elbow in it than each of the first columns, each elbow in each of the second columns being situated vertically between two adjacent elbows in the adjacent first columns so that the elbows nest together to occupy a minimum amount of space, each of the elbows being an elongated member which has a circular cross-section in which has a curved central portion and two straight portions on each end of the curved central portion making an angle of more than 15° with respect to each other, the straight portions of each of the elbows being contiguous with adjacent elbows, all of the elbows being of the same size and facing the same direction, the side frame members of the bottom frame extending in a direction parallel to the plane bisecting the angle between the straight portions of the elbows of the matrix, the bottom frame being capable of supporting the entire matrix of elbows; and

a top frame located on the matrix of the elbows and comprising a pair of side frame members and a pair of end frame members, the side frame members extending in a direction parallel to the plane bisecting the angle between the straight portions of the elbows in the matrix of elbows, the side frame members being spaced apart and connected to each other at each end by one of the end frame members, the top frame being secured to the bottom frame by a pair of straps, each strap extending along one of the side members of the top frame and one of the side members of the bottom frame, the straps contacting the peripheral elbows in the matrix between the top and bottom frames, the top frame also capable of supporting the entire matrix of elbows when the package is inverted.

4,446,965

APPLICATOR FOR LIQUIDS

Alexandra Montiel, 639 Bushwick Ave., Brooklyn, N.Y. 11206

Division of Ser. No. 301,457, Sep. 16, 1981. This application Sep. 16, 1982, Ser. No. 419,056
Int. Cl.³ B65D *81/24*
U.S. Cl. 206—205 **4 Claims**



1. Applicator means for containing and applying a fingertip-treating liquid composition, which comprises:

a reclosable container; and

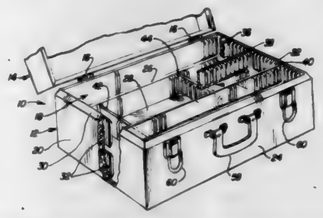
porous resilient absorbent means, shaped and dimensioned to fit unslippably within, and substantially to fill, said reclosable container, said absorbent means being a synthetic plastic foam sponge saturated with said liquid composition, said synthetic plastic foam sponge having at least one centrally disposed slit extending vertically into said sponge for facilitating entry of, and wet-sponge-contact with, a fingertip to be treated, said sponge also having a vertically extending slit positioned inwardly of, but following the periphery of, said sponge; said container and said sponge being dimensioned so that, when said container is open, all five fingertips of one hand may be inserted simultaneously into said peripheral vertically extending slit for treatment.

4,446,966

PRINTED CIRCUIT BOARD CONTAINER CARRYING CASE

Donald J. Moloney, Wilmette, Ill., assignor to Knickerbocker Case Company, Chicago, Ill.

Filed May 27, 1983, Ser. No. 498,938
Int. Cl.³ B65D *85/30, 5/48, 57/00*; A47G *19/08*
U.S. Cl. 206—334 **5 Claims**



1. A container for retaining printed circuit cards of various lengths and widths, comprising:

a base providing an open top box formed by opposed side walls spaced a transverse distance apart, opposed front and rear walls spaced a longitudinal distance apart and a bottom wall extending between all the side, front and rear walls at a depth from the top margin thereof, the side, front and rear walls being lined internal of the base with panels providing regularly spaced apart slots, the panels extending substantially from the wall top margin to the bottom wall; and

a plurality of transverse and longitudinal planar dividers having end portions inserted in said wall carried panel slots, said dividers carrying panels providing regularly spaced apart slots and having heights equal substantially to one half of said depth, the transverse dividers having lengths equal to said transverse distance and the longitudinal dividers having lengths equal to said longitudinal distance, the transverse dividers being positioned in said base between said side walls at one of a lower and upper level and the longitudinal dividers being positioned in said base between said front and rear walls at the other of said levels;

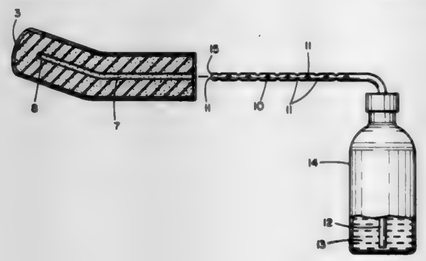
so that said dividers selectively are inserted in said base to retain printed circuit cards of various lengths and widths in said slots.

4,446,967

GERMICIDE SLEEVE FOR DENTAL AND MEDICAL INSTRUMENTS

Douglas R. Halkyard, 4300 Sandridge Rd., Morris, Ill. 60450

Filed May 7, 1982, Ser. No. 376,061
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—368 **11 Claims**



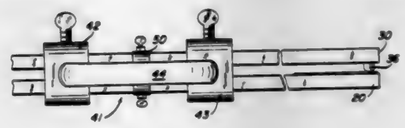
1. A germicide enclosure to disinfect instruments used in the care and treatment of living beings, comprising an elongated enclosure having an open end, an outer wall of flexible sheet material extending from said open end to the opposite end of said elongated enclosure, said flexible sheet material comprising material having the characteristic of being able to readily conform to the shape of irregularly shaped instruments including those which have a bent shape wherein said flexible sheet material correspondingly bends to conform to such shape when such instrument is received in said sleeve, an inner wall of compressible absorbent material, an expandable diameter central bore bounded by said inner wall of compressible absorbent material and opening to said open end of said elongated enclosure, said expandable diameter central bore being expandable throughout its longitudinal dimension to conform at all points to the exterior configuration and dimension of a said instrument received therein and contractable to the original diameter of said central bore when said instrument is removed therefrom, said inner wall of compressible absorbent material being impregnable with a germicide solution, said inner wall of compressible absorbent material being compressible to permit expansion of said expandable diameter central bore sufficiently to receive instruments having a cross-sectional dimension substantially greater than that of a hypodermic needle and expandable back to its original thickness when not compressed to enable return of said expandable diameter bore to its original dimension, and sealing means to seal said open end to prevent leakage of said solution therethrough.

4,446,968

CARRY COVER ART OIL CANVAS

Mary E. Bremer, 11220 Willowbrook Dr., Potomac, Md. 20854

Filed Sep. 17, 1982, Ser. No. 419,342
Int. Cl.³ B65D *6/00, 23/10, 85/00*; D06F *3/08*
U.S. Cl. 206—451 **5 Claims**



1. An artists canvas carry cover for transporting a wet oil canvas comprising:

a first and second adjustable cover member in the form of an expandable rectangular framework, wherein each of said rectangular frameworks comprise four L-shaped members, and each leg of each L-shaped member is provided with means that will slidingly engage at least one leg of other L-shaped members to form the individual expandable rectangular frameworks, and wherein only one of said first and second adjustable cover members is provided on each of the four corners of the expandable rectangular framework with a single inwardly facing projection in the form of a small peg, that is adapted to frictionally engage the corners of the wet canvas, when the canvas is interposed between the first and second cover members, and

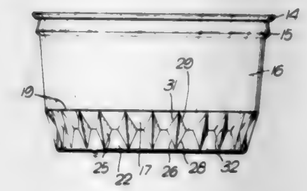
securing means for joining the said members together on either side of an artists canvas, wherein the securing means includes a combined clamp and handle device comprising a pair of generally C-shaped clamps connected by an elongated handle member, wherein each of said C-shaped clamps is dimensioned to engage at least one leg on the top each of said rectangular frameworks.

4,446,969

REINFORCED NESTABLE CONTAINERS

Frank S. Tyler, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 398,039, Jul. 14, 1982, abandoned, which is a continuation of Ser. No. 190,782, Sep. 25, 1980, abandoned. This application Aug. 19, 1983, Ser. No. 524,625
Claims priority, application United Kingdom, Sep. 24, 1979, 7933000
Int. Cl.³ B65D *21/02, 1/46*
U.S. Cl. 206—519 **6 Claims**



1. A nestable container of integral construction which is formed from thin-walled plastic material and provides improved resistance to collapse under lidding forces, said container comprising a cup portion having an open upper end and a downwardly tapered sidewall, an intermediate portion having a sidewall which tapers downwardly and inwardly at a greater degree than said tapered sidewall of said cup portion, a pedestal portion having a closed bottom end and a sidewall angled differently from said sidewall of said intermediate portion, said cup portion including a rim at said open upper end

and a denesting ridge located below and having a greater diameter than the inner diameter of said rim for denesting like stacked empty containers, and stiffening means bridging said intermediate portion with said pedestal portion for providing collapse-resistance to the container, said stiffening means comprising a circumferentially disposed array of strengthening fillets of substantially diamond shape extending upwardly from said closed bottom end of said pedestal portion to a plane parallel to said closed bottom end of said pedestal portion and intersecting a point where said sidewall of said intermediate portion meets said sidewall of said cup portion, each of said strengthening fillets having a pair of adjoining triangular-like portions inclined relative to one another and which project outwardly from said sidewall of said intermediate portion and said sidewall of said pedestal portion.

4,446,970

DIABETIC SET

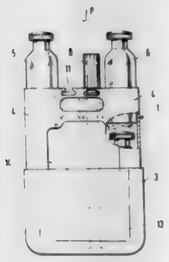
Günter Fürther, Oberfürbergerstrasse 26, 8510 Fürth, Fed. Rep. of Germany (D 8510)

Filed Jul. 21, 1981, Ser. No. 285,572

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029226

Int. Cl.³ B65D *69/00*

U.S. Cl. 206—569 **1 Claim**



1. In a diabetic set including a housing for containing at least one insulin bottle, at least one injection syringe and, optionally, alcohol cloths or the like, the improvement comprising:

(a) the housing being pressure resistant and including a container and a removable cap engagable with the container;

(b) a plurality of slit elastic expandable sleeves carried by the container and extending into the container area over a portion of its length for releasably securing a plurality of insulin bottles therein and permitting free exposure of the entire heads of the bottles;

(c) a strip disposed between the sleeves;

(d) a plurality of holders carried by the strip for releasably securing a plurality of syringes through snapfit engagement therewith;

(e) the container including spaces disposed under the sleeves and coaxial therewith for storing reserve bottles of insulin; and

(f) the strip is substantially elongate and includes a concave curvature extending for a portion of its length to define space for the optical storage of alcohol cloths.

4,446,971

LIQUID CONTAINER WITH STRAW OPENING MEANS

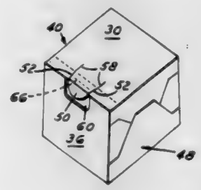
Daniel J. Wise, Farmington, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Nov. 10, 1982, Ser. No. 440,664

Int. Cl.³ B65D *5/54, 5/70*

U.S. Cl. 206—607 **3 Claims**

1. In a liquid carrying paperboard container coated overall with a thermoplastic material that serves as a barrier and becomes an adhesive when subjected to heat, and including a tubular body having four sides including first, second, third, fourth and fifth panels, wherein one side includes overlapped and sealed first and fifth panels, the improvement comprising means for forming a straw opening in said tubular body including tear strip means formed on the outer first panel along a pair of spaced apart lines beginning at the edge thereof adjacent the underlying fifth panel and extending laterally a distance just beyond the intermediate edge portion of the underlying panel, and including a tab formed as an extension of said tear strip,



with the inner ends of said pair of spaced apart lines defining a flexible hinge therebetween when said tear strip is peeled from said underlying panel, and a block score forming a depression on one of said fourth and fifth panels aligned with said tab and larger in area than the area of said tab such that said tab is sealed less tightly thereto under heat and pressure than other sealed surfaces due to the depth of said depression and, hence, readily releasable therefrom without disturbing any portion of the underlying portion of the panel bearing said depression.

4,446,972

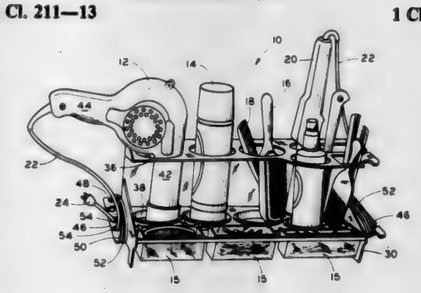
STORAGE DEVICE FOR A PORTABLE HAIR DRYER OR THE LIKE

Howard Sussman, c/o F. F. Adams Inc., 700 N.W. 8th Ave., Fort Lauderdale, Fla. 33311

Filed Mar. 12, 1982, Ser. No. 326,819

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—13 **1 Claim**



1. A convenience device for storing an electrically operated portable hair dryer of the type having an elongated cylindrical front tube bounding a hot air exiting passage and having an attached electrical cord terminating in a plug for use in completing an electrical connection thereto, said convenience device comprising a body having a base, a laterally extending panel on said body in a spaced apart clearance position above said base, at least one cooperating pair of aligned openings located respectively in said base and said panel adjacent one side thereof adapted to receive in projected relation therein said hair dryer front tube for maintaining said hair dryer in a convenient vertical orientation preparatory to the use thereof, and a laterally extending hand grip on each of the opposite sides of the base of said body provided for convenient lifting and transportation of said device, each said hand grip having a first pair of opposite inwardly extending notches at the connection thereof with said base so as to be adapted to serve as a core for the convenient coiling thereabout of said hair dryer electrical cord in the stored condition of said hair dryer, and additional plural spaced notches extending inwardly of the unattached remote edge of each said hand grip sized to engage in a friction fit therein said electrical cord, whereby after said electrical cord is coiled about said hand grip an appropriate one of said spaced notches is selected to receive said electrical cord at the connection thereof with said plug such that the friction fit thereof within said selected slot is effective to hold said electrical cord in its coiled storage condition about said hand grip.

4,446,973

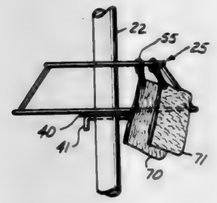
DISPLAY SYSTEM FOR STIFF FLAT SAMPLES

Robert T. Fuller, 1351 Empire St., Anaheim, Calif. 92804, and Robert J. Sanders, 2200 E. Oskosh Cir., Anaheim, Calif. 92806

Filed Sep. 2, 1981, Ser. No. 298,910

Int. Cl.³ A47F *7/16*

U.S. Cl. 211—45 **10 Claims**



1. A display system comprising:

a plurality of samples made of sheet-like pieces of relatively stiff material such as carpeting, having dimensions of length, width and diagonal, and a corner; an upright spindle having a central axis; sample support structure supported by said spindle comprising a substantially circular support ring and a substantially circular spreader ring extending around said axis, said support ring being disposed above said spreader ring, and said spreader ring projecting radially beyond said support ring, said structure being supported by said spindle attachment means for each of said samples, each attachment means comprising a fastener engaged to said support ring and to said corner of said sample, being angularly movable relative to one of said support ring and sample, whereby each said sample is linked to and hangs freely with its diagonal extending generally downwardly, and being supported by said spreader ring so as to be supported by hanging against it, and being releasably attached to said support ring or said sample whereby a plurality of said samples can hang from said support ring in a shingled and spread-out array around and against said spreader ring, and can be removed from the array by detachment of said fastener.

4,446,974

CARPET DISPLAY RACK

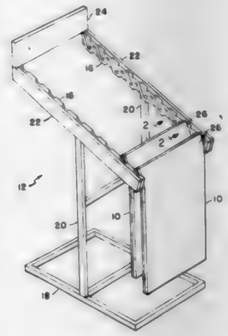
David A. Ott, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 19, 1982, Ser. No. 369,616

Int. Cl.³ A47F *7/16*

U.S. Cl. 211—45 **1 Claim**

1. A carpet sample display rack comprising: a base member, upstanding support means connected to said base member and sample support means connected to said upstanding support means at an angle to said base member, said sample support means including a pair of spaced sample support tracks spaced from one another, each of said support tracks having a plurality of upwardly opening slots on the inside surface thereof with the slots in one of said support tracks being substantially diametrically opposite to the slots in the other of said support tracks, each of said support tracks having a longitudinal axis and an axis perpendicular thereto, each of said slots having a front side and a rear side with the rear side being larger than the front side, said rear side of each slot being inclined in a direction away from the front side of said sample display rack while the front side of said slots is substantially parallel to the perpendicular axis of said support member, said front side of each of said slots having a projection thereon projecting



towards the rear side of said slot to maintain the top of a carpet sample placed in said slot in a bent back position to provide for ready observation of the carpet sample, said sample support tracks being a molded, plastic member with said slots being only in one face thereof where by the remaining position of said sample track supports prevents the sample support member for a sample supported in said slots from projecting outwardly from the sides of said carpet sample display rack.

4,446,975

ROTARY CRANE

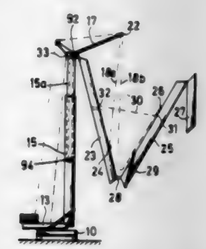
Wilhelm König, Bungertweg 10, 5020 Frechen b. Köln, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,145

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207443

Int. Cl.³ B66C *23/42, 23/02*

U.S. Cl. 212—188 **17 Claims**



1. Rotary crane comprising a carriage; a telescopic mast on said carriage having an inner portion movable upwardly from a remaining portion of the mast and having an upper end; a pivotable boom mounted at said end; said boom including at least one end hinged element connected to said end, a boom tip and at least one hinged intermediate member interconnected between said hinged element and said tip; a hinged support mounted at the end of said inner portion; a rope system connected to said intermediate hinged member and said hinged element and deflected at said hinged support and connected to said carriage for supporting and folding said boom such that the boom is folded to be in a transport position or expanded to be in an operation position, said end hinged element, said intermediate member and said tip each being of triangular

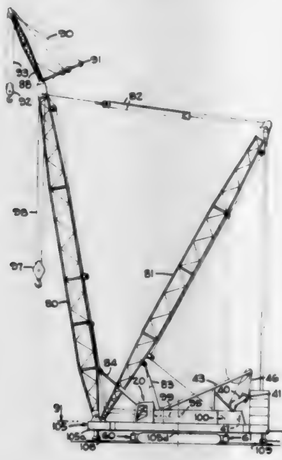
shape and including two lower chords spaced from each other and one upper chord, the chords in said end hinged element, in said member and in said tip being connected to each other respectively by rods; shackle means connecting the upper chord of the hinged element with the upper chord of the intermediate member such that they can pivot in a vertical plane with respect to each other, said shackle means being formed with an oblong opening extending in the direction of elongation of the boom when the latter is in its expanded position and including a pin insertable into said opening; and means for laterally interlocking the respective lower chord of the intermediate member with the respective lower chord of the end hinged element.

4,446,976

REVERSIBLE OUTRIGGER CRANE SUPPORT

Curtis E. Imerman, Cedar Rapids; David S. Langerud, Solon, and Brian H. Thomas, Cedar Rapids, all of Iowa, assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 16, 1982, Ser. No. 349,100
Int. Cl.³ B66C *23/72*
U.S. Cl. 212—189 **5 Claims**



1. An apparatus including a basic crane with load lifting means on an upper works that is supported on a longitudinally extending lower works for rotation about a vertical axis, said basic crane components including power means for propelling the basic crane to different locations for rotating said upper works about said vertical axis and for selectively lifting loads of substantially different magnitudes between two locations; said apparatus additionally comprising means defining a pair of outriggers, removable connecting means, means defining a plurality of jack means, movable lifting elements on each of said jack means, an auxiliary frame, means defining rigid annular ground supporting surfaces, wheel means depending from said auxiliary frame, a gantry, a counterweight, power operated reeving, pendant means, and additional power means:

when handling a light load said apparatus comprising only said basic crane;

when handling an intermediate load which is too heavy to be lifted and transferred between two locations by said basic crane, said apparatus comprising;

said basic crane, said means defining a pair of outriggers, said removable connecting means connecting said outriggers to said lower works with the outriggers extending transversely of said lower works, said jack means secured to each end of each of said outriggers, said movable lifting elements being directed downwardly from said outriggers for supporting the intermediate load and at least a substantial portion of said basic crane;

when handling a heavy load which is too heavy to be lifted and transferred between two locations by said basic crane and said outriggers including said downwardly extending lifting elements, said apparatus comprising;

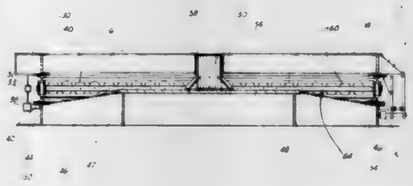
said basic crane, said outriggers with said lifting elements reversed and extending upwardly, said auxiliary frame encompassing said upper works and mounted for rotation with said upper works about said vertical axis and mounted for vertical movement relative to said upper works, said means defining a rigid annular ground supported surface being positioned below end portions of said auxiliary frame, said wheel means being in position to support said auxiliary frame for rotation about said vertical axis, said gantry and said boom being pivotally mounted on one end of said auxiliary frame, said counterweight being supported on the other end of said frame, said power operated reeving interconnecting the boom and gantry for varying the operating angle of said boom, said pendant means attaching said gantry to said auxiliary frame, said additional power means attaching said boom to the upper end of said gantry and cooperating with said power means for first lifting and carrying the heavy load between two locations, said upwardly directed lifting elements when extended being effective to engage and lift said auxiliary frame and component supported thereon a sufficient distance above said rigid annular surface for moving said basic crane and components supported thereon to a different location.

4,446,977

ROLLER SUPPORT FOR LOAD HANDLING DEVICES

James L. McClain, New Orleans, La., assignor to McDermott Incorporated, New Orleans, La.

Filed Mar. 31, 1981, Ser. No. 249,542
Int. Cl.³ B66C *23/84*
U.S. Cl. 212—247 **7 Claims**



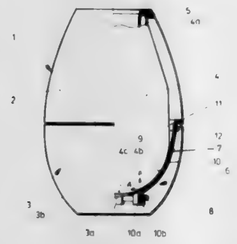
1. In apparatus mounted on a barge for rotatably supporting a load handling device, the apparatus including a first frame structure rigidly secured to a bottom hull of the barge for supporting a plate means for supporting a load handling device thereon, and a vertically oriented center pin rigidly connected at its lower end to said first frame structure and the upper end of which is insertable in an aperture in the plate means to define a vertical axis for rotation of the plate means, the improvement in the apparatus comprises means including said plate means the diameter of which is greater than the first frame structure diameter and including a second frame structure secured to a deck of the barge and disposed outwardly of and rigidly secured to said first frame structure for effecting an increased diameter roller ring for reducing load stresses thereon, a lower roller pad rigidly mounted on an upper surface of said second frame structure and concentric with said center pin, an upper roller pad rigidly mounted on a lower surface of said plate means and concentric with said center pin, a roller ring including a pair of concentric ring members and a plurality of wheel means connected to and disposed between said ring members and engaging both said upper and lower roller pads for rotational movement of said plate means relative to said first and second frame structures, a swing gear fixed to said second frame structure about the outer periphery thereof, a pinion gear for engaging said swing gear, and means rigidly connected to said plate means for rotating said pinion gear to thereby rotate said plate means relative to said first and second frame structures.

4,446,978

INSULATED CONTAINER

Manfred Arndt, Amstetten; Walter Breier, Geislingen; Hermann Riegert, Treffelhausen; Heinz Schmidt, Lonsee; Hermann Schwarz, Geislingen, and Helmut Warneke, Ostfildern, all of Fed. Rep. of Germany, assignors to Wurttemberische Metallwarenfabrik Aktiengesellschaft, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,011
Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119245
Int. Cl.³ A47J *41/02*
U.S. Cl. 215—13 R **18 Claims**



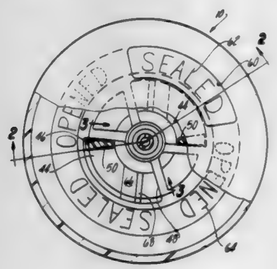
1. An insulated container comprising a vacuum glass body surrounded in spaced relationship by a protective envelope consisting essentially of an upper portion and a lower portion in the shape of a bottom having an upwards projecting edge, and an adjustable tensioning means for producing a force biasing the glass body upwards into engagement with a seal at the upper rim of said protective envelope, characterized in that said tensioning means (6) comprises a base portion (9) supported by said upper envelope portion, support elements (10) engaging the periphery of said glass body (4) and at least one tensioning member (8) engaging said support elements (10) and adapted to be tensioned for biasing said glass body (4) upwards relative to said base portion and said support elements.

4,446,979

TAMPER INDICATING CLOSURE

Peter P. Gach, and Randall G. Bush, both of Evansville, Ind., assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Continuation-in-part of Ser. No. 310,081, Oct. 9, 1981, abandoned. This application Feb. 14, 1983, Ser. No. 466,058
Int. Cl.³ B65D *55/02*; A61J *1/00*; B65D *85/56*
U.S. Cl. 215—203 **39 Claims**



1. A tamper indicating closure for containers having threaded necks forming an opening, comprising: a cup shaped cap member having internal threads to engage with threads on said neck of said container, a liner member supported by said cap member for rotation relative thereto, said liner member having an annular flange with a radially outwardly facing cylindrical friction surface for engagement with a complementary surface on the inner wall of said opening in said neck, said liner member forming adjoining first and second sectors, a window in said cap member alignable with said first sector indicating an initially closed condition or with said second sector indicating that said closure has been opened, cooperating drive means including a drive lug on one of said members engageable with driven surfaces on the other of said members, said driven surfaces including a first surface engaged by said lug when said window is in alignment with said first sector upon initial rotational movement of said cap and liner member as a unit in a closing direction in which said liner member is movable axially in a seated position relative to the neck of said container, a second surface engageable by said lug following movement of said cap member in an opening direction relative to said liner member during which said friction surface remains seated and said window moves into alignment with said second sector after which said cap and liner members are moveable as a unit to remove said friction surface from its said seated position, a third surface between said first and second surfaces, said second and third surfaces being engageable by said lug when said window is aligned with said second sector for rotation of said cap and liner member as a unit for all subsequent movements of said closure in a closing or opening direction, a cam surface associated with said third surface to deflect said lug axially to pass to a position between said second and third surfaces while said friction surface remains seated, the resistance to axial displacement of said lug being less than the resistance to rotation and axial movement of said friction surface from the seated position.

4,446,980

BOTTLE CORK EXTRACTOR

Robert Oliver, and Richard Branscombe, both of Modesto, Calif., assignors to E & J Gallo Winery, Modesto, Calif.

Filed May 17, 1982, Ser. No. 378,943
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—276 **2 Claims**



1. A resealable bottle, including a tubular bottle neck having a cylindrical opening and having an inner surface and an outer finish surface extending from a lip, comprising:

helical threads extending from said lip along said outer finish surface;

a hollow extractor cap having a helically threaded cylindrical inner surface extending from a cap base to an annular protuberance within said cap, said annular protuberance having a diameter less than that of said bottle's opening, said cap having an apertured crown, said aperture having a diameter equal to that of said bottle's opening and being coaxial with said annular protuberance, the inner diameter of said cap being substantially equal to the outer diameter of said bottle neck, said cap threads being complementary to said outer finish surface threads wherein said cap is engagable with said neck such that said bottle opening, said annular protuberance, and said crown aperture are coaxial, and wherein said cap is disengageable from said neck; and

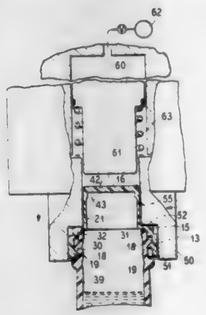
a compressed cork bottle stopper having a diameter greater than that of said bottle opening such that said stopper, when inserted through said bottle opening and advanced along said bottle inner surface into said bottle, seals said bottle; and wherein said cork is compressively gripped by said annular protuberance such that said cork is advanced into said bottle neck when said extractor cap is engaged with said bottle neck and such that said cork is withdrawn from said bottle neck when said extractor cap is disengaged from said bottle neck.

4,446,981

TAMPERING INDICATING BOTTLE CAP AND METHOD OF CLOSING A BOTTLE

Sidney M. Libit, 141 Lakeside Ter., Glencoe, Ill. 60022

Filed Oct. 6, 1982, Ser. No. 433,104
Int. Cl.³ B65D *41/28*
U.S. Cl. 215—354 **14 Claims**



1. A plastic closure cap for containers comprising a cup-shaped body member having an outer diameter axially extending skirt portion open at a first axial end thereof and a top portion closing a second axial end thereof opposite the first axial end, said top portion including a radially outer portion and an radially inner portion, the radially inner portion having an outer diameter less than the radially outer portion and projecting axially beyond the radially outer portion in a direction opposite the projection of the skirt and terminating in an end bottom wall, the axial projection of the radially inner portion from the radially outer portion to the end wall including a circumferential wall defining a hollow interior, the circumferential wall being yieldable whereby the top portion can be depressed from a first stable position spaced from the radially outer portion to a second stable position closer to the radially outer portion with the circumferential wall undergoing a U-shaped cross section convolution bend with the bight of the bend extending downwardly into the area bounded by the skirt during movement of the top closer to the radially outer portion, the bend being initially formed during such movement.

4,446,982

MULTI-PURPOSE BAKING UTENSIL

Kenneth J. Corse, R.D. #1, One Nina Dr., Kirkwood, N.Y. 13795

Filed Jan. 7, 1982, Ser. No. 337,866
Int. Cl.³ B65D *6/04, 6/24, 25/06*
U.S. Cl. 220—8 **3 Claims**

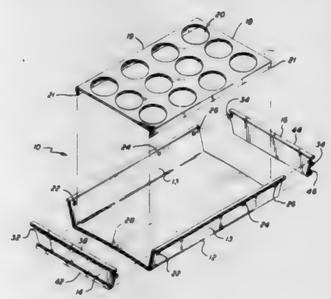
1. A baking utensil selectively adaptable to contain batter for producing baked goods of a plurality of sizes and shapes, said utensil comprising:

(a) a pan portion including a substantially rectangular bottom wall with two side walls extending integrally in the same direction from said bottom wall along opposite edges thereof, for equal distances to provide substantially parallel top edges of said side walls;

(b) each of said side walls having a plurality of openings therethrough at spaced locations to provide pairs of openings directly opposite one another along said side walls adjacent said top edges thereof;

(c) at least two end members each having substantially parallel top and bottom edges and opposite side edges each having an outwardly extending protrusion for releasable insertion in one of said opposite pairs of openings;

(d) said bottom wall being curved upwardly to provide a convex surface in the direction of said side edges, and being of resiliently flexible material to permit urging said convex surface toward a planar configuration; and



the relative sizes and shapes of said pan portion and said end members being such that when said protrusions on said side members are engaged in one of said opposite pairs of openings, said side edges are tightly engaged with said side walls and said bottom edge is tightly engaged with said bottom wall and flexes the latter to move said convex surface toward said planar configuration, whereby said end members form a batter-tight seal with said side and bottom walls.

4,446,983

RESERVOIR COVER HAVING A DEFINED PERIPHERAL SUMP

Dennis H. Gerber, Los Gatos, Calif., assignor to Burke Industries, Inc., San Jose, Calif.

Filed Jan. 7, 1982, Ser. No. 337,677
Int. Cl.³ B65D *88/38*
U.S. Cl. 220—219 **10 Claims**



1. A flexible cover for a reservoir comprising:

a. said cover is substantially a fluid impervious sheet and is attached to the periphery of said reservoir and has an area dimensioned to cover the walls and bottom of said reservoir when empty;

b. said cover includes a central portion covering a substantial portion of said reservoir surface;

c. float means buoyantly carrying at least portions of substantially the entire border area of said central portion of said cover;

d. weight means affixed to said cover outwardly of said border area of said central portion and outwardly of said float means around substantially said entire central portion so as to place substantially all of said central portion inwardly of said border area in tension in at least two different horizontal directions of sufficient magnitude to permit workmen to traverse all portions of said central portion of said horizontal cover for all working levels with said central horizontal portion remaining substantially planar in sustaining the weight of the workmen at all working levels of said reservoir;

e. said weight means and said float means are positioned so as to initiate and form a defined peripheral sump outwardly and immediately adjacent said entire border area of said central portion to receive surface water from said central portion; and

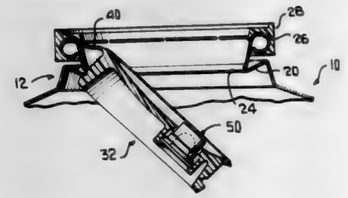
f. said peripheral sump having inner and outer sidewalls on which at least the upper portion of said inner sidewall between said float means and said weight means is in tension.

4,446,984

PUSH-IN CLOSURE

Donald J. Roth, Westport, Conn.; John Walter, Evergreen Park, Ill., and Charles S. Kubis, Weston, Conn., assignors to Continental Packaging Company, Inc., Stamford, Conn.

Filed May 23, 1983, Ser. No. 497,309
Int. Cl.³ B65D *17/32*
U.S. Cl. 220—268 **15 Claims**



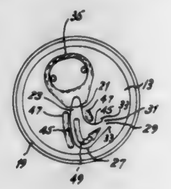
1. A closure for a container pour opening, said closure comprising an outer annular retaining ring portion and an inner sealing plug portion, said inner and outer portions being integral and joined together along the periphery of said inner portion, said inner portion being defined partly by a hinge and the remainder by a rupturable weakening line, whereby the closure may be opened by pressing in said inner portion.

4,446,985

CLOSURE FOR CONTAINERS

Kenneth A. Dickson, 14 Chipping Rd., City Beach, Western Australia, Australia

PCT No. PCT/AU82/00074, 371 Date Jan. 4, 1983, 102(e) Date Jan. 4, 1983, PCT Pub. No. WO82/04026, PCT Pub. Date Nov. 25, 1982
PCT Filed May 11, 1982, Ser. No. 456,053
Claims priority, application Australia, May 11, 1981, PE8795
Int. Cl.³ B65D *41/32*
U.S. Cl. 220—269 **19 Claims**



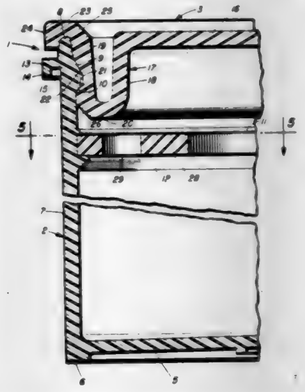
1. A closure for a container comprising: a wall for one end of a container, the wall having an upstanding peripheral flange, a continuous scoreline in the wall defining a tear portion only partially removable from the wall, the tear portion occupying first, second and third zones in the wall, the first zone being centrally located in the wall, the second zone being adjacent the edge of the wall and the third zone being displaced from both the first and second zones and also from the edge of the wall, the score line encompassing the first, second and third zones and being interupted to form an unscored section at the third zone, means for rupturing the score line at the first zone and enabling separation of the tear portion from the wall along the score line, the tear portion when removed from the wall along the score line being attached to the wall by the unscored section and being able to be folded into a position in which it lies within the confines of the wall and in the space defined between the wall and the outer edge of the upstanding flange.

4,446,986

FLUID TIGHT CONTAINER AND CLOSURE ASSEMBLY

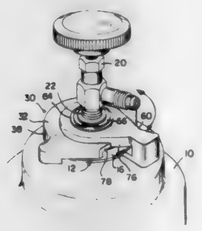
Gary D. Bowen, Glens Falls, and James L. Bowen, Fort Ann, both of N.Y., assignors to Genpak Corporation, Glens Falls, N.Y.

Filed Aug. 2, 1982, Ser. No. 404,147
Int. Cl.³ B65D *39/00*
U.S. Cl. 220—307 **16 Claims**



1. A plastic fluid tight container and closure assembly comprising a plastic container having a base, a sidewall extending upwardly from the base terminating in a rim defining an opening for the container, said sidewall defining on its inside a sloping abutment surface extending inwardly and downwardly from said rim and an annular notch terminating said abutment surface, and a plastic closure having a circular cover portion, a U-shaped annular rim joined to the periphery of said cover portion, said U-shaped rim having an inner wall and a radially spaced outer wall connected by a base to said inner wall, the outside of said outer wall defining an annular shoulder positioned above the level of the base, an abutment surface extending upwardly and outwardly from the shoulder and an angular annular flange joined to the upper end of the outer wall to form an annular groove, said closure when assembled on said container having its shoulder locked to the notch of said container, its abutment surface in liquid sealing contact with the abutment surface of said container and its annular groove fitting over the rim of said container.

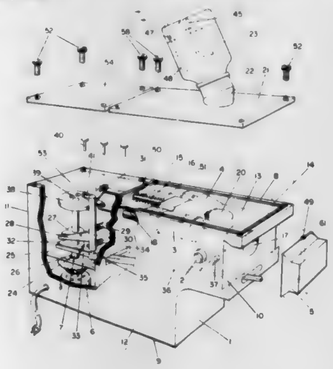
4,446,987
VALVE ATTACHMENT FOR PRESSURIZED CONTAINERS
Kenneth R. White, 5144 E. 65th St., Indianapolis, Ind. 46220
Filed Feb. 3, 1981, Ser. No. 231,098
Int. Cl.³ B67B 7/24
U.S. Cl. 222—89 **13 Claims**



10. Mechanism for attaching a valve assembly to the neck of a container having a circular peripheral rim, comprising
an attachment body having means for supporting a valve assembly for the container,
lip means on said body for engaging the container rim at a plurality of points over an arc of less than 180° for positioning the body on the neck,
a locking arm on said body and carrying a lip movable with the arm and substantially in the plane of the body lip means between an assembly position for permitting a container rim to be moved into engagement with the body lip means, and a locking position opposite the body lip means for locking the body to the container,
said arm lip in its locking position being movable radially of the rim between a rim-engaging position and a retracted position, and
means resiliently biasing the arm lip toward its rim-engaging position so as to cause the arm lip to engage the rim with a force dependent on and limited by the strength of the biasing means.

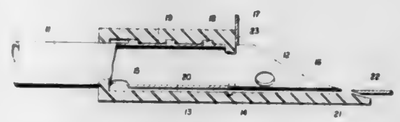
4,446,988
PORTION CONTROL DRESSING AND FOOD DISPENSER
George C. Chronis, 1813 Washington NE., Albuquerque, N. Mex. 87110
Filed Nov. 16, 1981, Ser. No. 321,595
The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.
Int. Cl.³ G01F 11/02; B67D 5/46
U.S. Cl. 222—63 **12 Claims**

1. A portion control and food dispenser device comrpising:
a chassis having a dispensing end, a butt end, a bottom, a top, and two sides; said chassis having a valve chamber, and said chassis having a piston chamber, and said chassis having a feed port connecting the valve chamber and the piston chamber, and wherein the dispensing end of the chassis is machined to accept a sliding dispensing door; and
a piston which slideably operates in the piston chamber; and
a slide valve which slideably operates in the valve chamber, and which is retained in the valve chamber by a lip formed near the top of the valve chamber; and
a sliding dispensing door which slideably mates with the dispensing end of the chassis; and
an electric motor contained within and mounted in the chassis, said electric motor having a drive shaft; and
a divider wall through which the drive shaft protrudes, said divider wall being within the chassis and said divider wall providing a moisture seal for the electric motor; and
a means for converting the rotary motion of the drive shaft into actuating motions to sequentially operate the slide valve, dispensing door, and piston; and
an electric circuit for starting, driving, and operating the invention, said electric circuit being capable of having an automatic shut off, and having the automatic shut off selectable; and



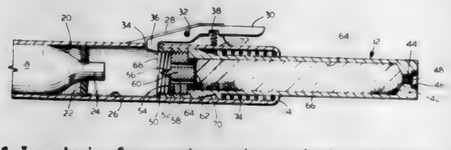
a flat top plate having a supply port which mates with the top of the chassis covering the valve chamber and a deck cover which mates with the chassis covering the means for converting the rotary motion of the drive shaft to actuating motion; and
a container which sealably mates with the top flat plate.

4,446,989
GASKETLESS NO-DRIP OIL CAN DISPENSER
Wyley W. Brannen, Statesboro, Ga., assignor to Callaway Brothers, Inc., Atlanta, Ga.
Filed Mar. 26, 1982, Ser. No. 362,150
Int. Cl.³ B65B 7/24
U.S. Cl. 222—81 **4 Claims**



1. A piercing cutter-dispenser for entering and forming a dispensing aperture in the flat closure end of a generally cylindrical sealed can container for liquid, such as oil, and conveying the liquid from the container, with structure for preventing leaking or dripping about the dispensing aperture, comprising in combination,
a generally tubular metallic dispensing spout member having a piercing cutter blade on one end and a surface retention structure spaced along the tubular member from the cutter end adapted to retain thereon in registration a surrounding member,
a plastic liquid reservoir member generally cylindrical in shape of predetermined length having a flat end surface portion with an arcuate guide lip extending therefrom in one direction along and beyond the cutter blade as an extension of the cylinder to form a container engaging cylindrical arcuate surface, and with a detent structure adapted to mate with the retention structure on the spout member, said reservoir member fitting over said spout member in mating fixed position with the spout member holding said guide lip parallel to and spaced from the cutter end to position it for forming the dispensing aperture and to support and hold the dispenser frictionally on said can in stable position after forming said dispensing aperture by resiliency between the plastic lip and cutter blade, with the cylindrical end surface portion of the plastic reservoir member adapted to fit flush against the flat closure end of the can,
the reservoir construction providing between its inner cylindrical circumference and the outer circumference of the spout member a spacing forming a reservoir for receiving liquid, and having a tightened collar about the end remote from the cutter blade and the can to retain any liquid within the reservoir established between the spout member and reservoir member,
the spout member near the tightened collar having an aperture therethrough adjacent said collar but inside the reservoir to pass liquid in the reservoir into the spout, whereby the plastic member engages the flat closure end of the can to retard seepage of liquid from the can out around the reservoir member and retains any oil seepage from the can out around the cutter end of the spout member within the reservoir and provides a flow path for liquid out through the spout aperture as the liquid is dispensed with said flow path providing a suction effect to withdraw any liquid adjacent the spout cutter end on the can surface, thereby producing a drip-free dispenser without gasket structure between the dispenser and the can.

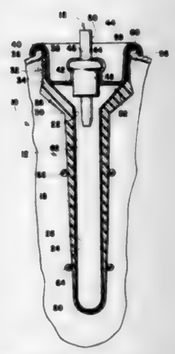
4,446,990
SELF-DEFENSE SPRAY DEVICE
David J. Stevenson, 36 Sandpiper Rd., Enfield, Conn. 06082, and Robert E. Domian, Somers, Conn., assignors to David J. Stevenson, Enfield, Conn.
Filed Apr. 3, 1982, Ser. No. 373,712
Int. Cl.³ B67B 7/28
U.S. Cl. 222—82 **22 Claims**



1. In a device for spraying an incapacitating substance, the combination comprising: a body including two parts that are telescopically interengaged for sliding movement between relatively extended and retracted positions, one of said parts having a spray nozzle adjacent its outer end and puncturing means adjacent its inner end with an incapacitating substance containment chamber defined therebetween, the other of said parts defining a chamber for holding a gas cartridge in an inwardly directed position for rupture by said puncturing means in said retracted position of said parts; means for disengageably retaining said parts in said extended position; and biasing means for forcing said parts toward said retracted position, whereby upon release of said retaining means said puncturing means of said one part can explosively dischage a gas cartridge held in said other part, the expanding gas thereby released from the cartridge in turn ejecting the incapacitating substance from said containment chamber through said nozzle.

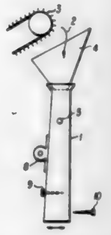
4,446,991
SELF-CONTAINED FLUID DISPENSER
Kenneth W. Thompson, Box 1455, Bartlesville, Okla. 74003
Continuation-in-part of Ser. No. 39,947, May 16, 1979, Pat. No. 4,324,350. This application Sep. 8, 1981, Ser. No. 299,997
Int. Cl.³ B67D 5/06, 11/00
U.S. Cl. 222—94 **15 Claims**

1. A self-contained fluid dispensing apparatus comprising
an elongated tubular expandable unit of molded elastomeric material closed at a bottom end thereof and open at the opposite end;
an integral widened neck portion at the open end having an enlarged internal and external diameter and being integrally formed of thickened elastomeric material to resist stretching thereat;
an extension of elastomeric material beyond said thickened and enlarged diameters neck portion and integral with the neck portion;



a valve support plate means disposed across the neck portion; and
a fluid dispenser valve inserted through and sealed to the valve support plate means, said valve support plate means being sealed to the neck portion extension for closing the open end of the expandable unit.

4,446,992
FIXED QUANTITY FEED APPARATUS
Tomosaburo Suzuki, and Toshiki Kato, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daisei Kikai, Tokyo, Japan
Filed Feb. 19, 1980, Ser. No. 122,825
Claims priority, application Japan, Feb. 19, 1979, 54-20072[U]
Int. Cl.³ B65G 11/20
U.S. Cl. 222—196 **1 Claim**



1. A fixed quantity feed apparatus for agricultural products, comprising:
an upstanding feed chute having a plurality of sides, opened at top and bottom ends thereof, said sides of said feed chute being fixed to one another and gently tapering to provide a larger cross sectional area at said bottom end than at said top end;
means for vibrating said entire feed chute;
a conveyor for feeding articles to the top end opening of said feed chute to form a column of articles in the feed chute; and
a fixed quantity dividing device for dividing the column of the articles of said feed chute to a given length for discharge from the bottom end opening, whereby a more uniform density of said articles along the length of said feed chute is achieved,
said fixed quantity dividing device comprising at least a first and second pin member; means for alternately inserting said first and second pin members into said feed chute and drawing said first and second pin members from said feed

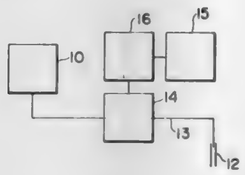
chute; and means for shifting said first and second pin members along the direction of feeding of the articles.

4,446,993

APPARATUS FOR DISPENSING A PRESELECTED AMOUNT OF LIQUID

Sadao Tokorozawa, Kanagawa, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 926,057, Jul. 19, 1978, Pat. No. 4,413,751. This application Feb. 24, 1982, Ser. No. 351,682
Claims priority, application Japan, Jul. 19, 1977, 52-86191
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—214 **12 Claims**



1. Apparatus for dispensing a preselected amount of a liquid drop-by-drop comprising; a reservoir, a peristaltic pump, an elastic tube coupling said reservoir to a discharge pipe, said liquid being pumped intermittently to said discharge pipe by the successive peristaltically squeezing and releasing of said elastic tube carrying said liquid and connected to said discharge pipe, said discharge pipe having a discharge port with a face, said face being perpendicular to the longitudinal axis of said discharge pipe, the outer diameter of said discharge pipe at said discharge port being than or equal to twice the inner diameter of said discharge pipe at said discharge port, means to regulate said pump whereby said preselected amount of said liquid is dispensed in a drop-by-drop fashion from said discharge port satisfying the following conditions:

(1) $V=Q\times M\times C$
(2) 50 mg $\geqq Q$
(3) 0.5 seconds $\leqq M$
(4) 3/seconds $\geqq C$
(5) $1.5\leqq M\times C$

wherein:

V is the weight of the produced liquid drop,
Q is the amount of liquid pumped per each pump,
M is the time interval between successive drops, and
C is the cycle of the pump.

4,446,994

CONTAINER WITH FLEXIBLE POURING SPOUT AND SEALING CLOSURE

Wallace E. Smith, 61 Meadow Brook Cir., Sudbury, Mass. 01776

Filed Aug. 26, 1982, Ser. No. 411,898
Int. Cl.³ B65D *47/10*
U.S. Cl. 222—475 **15 Claims**

1. A container for dispensing a material from the container, which container comprises in combination:

(a) a body element to contain material to be dispensed from the container;

(b) a nozzle means secured to the body element, which nozzle means comprises an elongated, collapsible nozzle having a discharge outlet at the one end to dispense material from the body element and the other base end thereof secured to the body element;

(c) a sealing means on the exterior of the body element, to provide a seal with the open discharge outlet of the elongated nozzle element; and

(d) retaining means having a one end and another end, the one end having a first open area which fits in a snug securing manner about the base end of the nozzle and the other end of the retaining means which retains the nozzle in a collapsed



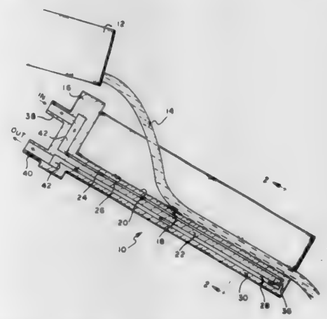
sealing position along a line of collapse in the nozzle and which places the open discharge outlet of the nozzle in a position to form a sealing relationship with the sealing means.

4,446,995

ULTRAHIGH VELOCITY WATER-COOLED COPPER TROUGH

Patrick J. Wooding, Moorestown, N.J., assignor to Wooding, Indian Mills, N.J.

Filed Oct. 13, 1981, Ser. No. 311,045
Int. Cl.³ B22D *41/08*
U.S. Cl. 222—590 **5 Claims**



1. A trough for delivering molten material flowing from a furnace comprising:

an elongated upper member having an upper surface for supporting said material and an elongated lower surface;

a coolant guide having a shape complementary to said upper member and being closely spaced from the lower surface thereof defining a highly restrictive narrow flow passage which extends substantially the entire length of said lower surface; and

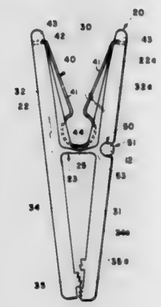
liquid coolant supply means in communication with said passage for supplying coolant thereto whereby the velocity of the coolant will be accelerated to an ultrahigh velocity across and against the lower surface of said member as it passes through the passage to thereby sweep away steam generated upon said lower surface.

4,446,996

MEANS OF SECURING GARMENT CLAMPS TO HANGER

Judd F. Garrison, Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.

Filed Sep. 3, 1981, Ser. No. 299,042
Int. Cl.³ A47J *51/14*
U.S. Cl. 223—96 **2 Claims**



1. A garment hanger comprising a body consisting of a single cylindrical rod extending lengthwise of said hanger and a clamp depending therefrom, said claim being H-shaped and having a pair of legs and integral hinge means intermediate the ends of said legs joining said legs for pivotal movement with respect to each other; spring means acting at one end of said legs for forcing the other ends thereof together as clamping jaws, said clamp characterized in that a channel extends laterally of one of said legs; said channel having an opening extending through the outer surface of said one of said legs oppositely from and aligned with said hinge means; said channel being of a size and shape to snugly receive said single cylindrical rod therethrough and yet provide for relative movement lengthwise and in radial orientation between said clamp and said rod for adjusting the position of said clamp relative to said rod; said opening through said surface being more narrow than said channel for preventing said rod from passing therethrough; said channel being of a size and shape that the cross section of said one of said legs is substantially decreased and the flexibility of said one of said legs adjacent said channel is substantially increased, said rod being of a non-compressible material and providing support to said one of said legs against bending about said channel when the jaw end of said one of said legs is seated against a garment under the bias of said spring whereby the pressure with which said walls of said channel grip said rod is substantially increased due to the flexibility of said one of said legs adjacent said channel and the pressure of said spring against a garment clamped between said legs, the increase in the pressure with which said walls of said channel grip said rod thereby stabilizing the position of said clamp relative to said rod when a garment is placed on said hanger.

4,446,997

CONVERTIBLE CAMERA-SUPPORTING BELT DEVICE

Elliot Himberg, 4 Meadow La., Norwich, Conn. 06360

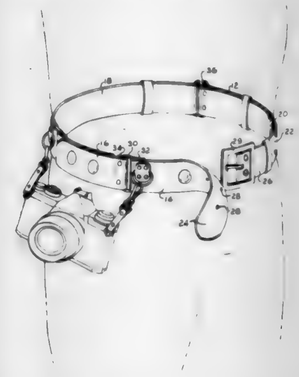
Filed Jan. 26, 1983, Ser. No. 461,275
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—151 **17 Claims**

1. A convertible multi-function camera-supporting belt for alternate, exclusive utilization solely as either a belt worn about the waist, or a strap worn about the neck or over the shoulder, comprising:

a belt strap having first and second sets of interconnecting ends adapted to be connectable to form an encircling belt, said strap being of sufficient length to be worn around the waist of a human, with no portion or apendage thereof simultaneously engaging the back of the user both above and below the shoulders of the user,

buckle means for adjustably securing said first set of ends together to form said waist encircling belt,

the ends of said second set being remote from the ends of said first set by a distance sufficient to place said second set adjacent one hip of the user when the belt is worn



about the waist, said second set being adapted to be disconnectable to form a shoulder strap and alternatively to form a neck sling

means for releasably connecting the ends of said second set together, and

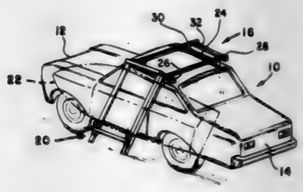
means for supportively hanging a camera from said belt strap adjacent the ends of said second set.

4,446,998

SUPPORT ASSEMBLY FOR A VEHICLE

Alistair G. Taig, 19032 Summers Dr., South Bend, Ind. 46637

Filed Dec. 7, 1981, Ser. No. 327,749
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—329 **3 Claims**



1. A support assembly for a vehicle having a roof extending over the top of the vehicle, the support assembly including at least one strip being formed from a flat piece of material, said one strip being engageable with the roof and connecting means engageable with the one strip, the support assembly being coupled to the vehicle and cooperating with the connecting means for the purpose of carrying cargo outside of the vehicle above the roof, characterized by said one strip including a pair of end legs engageable with said connecting means to form an invariant spacing between said pair of end legs and an intermediate leg extending integrally from said pair of end legs, said intermediate leg contacting the roof over substantially its entire length, said pair of end legs being bent in a normal direction relative to said intermediate leg to substantially define a V with said intermediate leg to dispose said connecting means in spaced relation to the roof, said pair of end legs also being bent in a lateral direction relative to said intermediate leg to impart an angular orientation (B) to said intermediate leg

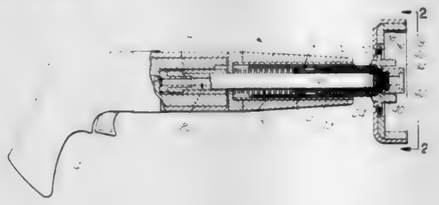
such that said intermediate leg substantially matches a contour for the roof, said pair of end legs cooperating with said intermediate leg to transmit a portion of the cargo load thereto in a direction substantially normal to the roof while at the same time transmitting another portion of the cargo load thereto in a direction substantially parallel to the roof, and said pair of end legs are relatively flexible to slightly deflect under the weight of the cargo load and dispose said connecting means closer to the roof, the slight deflection of said pair of end legs stretching said intermediate leg to load the latter in tension so that the weight of the cargo load is substantially spread over the length of said intermediate leg.

4,446,999

POWDER ACTUATED TOOL SAFETY GUARD RETENTION

John Benson, Sherwood, and Harold L. Hanel, Portland, both of Oreg., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 18, 1981, Ser. No. 322,590
Int. Cl.³ B25C *1/18*
U.S. Cl. 227—11 **1 Claim**



1. A tool for explosively driving an elongated fastener into a work surface comprising:

a housing having a barrel mounted therein, said barrel having a threaded forward end;

a safety guard for said barrel having an opening through which said forward end extends, said guard being slidable between forward and rear positions on said barrel;

means biasing said guard into said forward position;

retaining means threadedly engaged with said forward end of said barrel for retaining said guard on said barrel and comprising a nut having opposed flat side surfaces thereon;

blocking means on said guard cooperating with said retaining means preventing unthreading thereof when said guard is in said forward position said blocking means comprising an annular insert member removably mounted to said guard concentric to said opening and engaging the inwardly surface of said nut and including a pair of forwardly projecting lugs on said insert member on opposite sides of said nut each having an inner flat surface positioned in juxtaposition to a corresponding one of said side surfaces; and

said blocking means being released from said retaining means when said quard is retracted to said rear position thereby allowing unthreading of said retaining means from said barrel.

4,447,000

TURNOVER MECHANISM

Clifford H. Gage, Fort Edward, N.Y., assignor to Annette Kowalczyk, Staten Island, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,239
Int. Cl.³ B27F *7/02*
U.S. Cl. 227—49 **13 Claims**

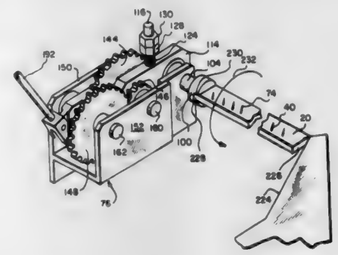
1. A turnover mechanism to turn over elongated strips for use in an automatic strip nailing machine of the type comprising a reciprocating ram to drive the nails into each strip in sequential operation and a conveyor to transport the strips to the mechanism, comprising the combination of

arm means connected to the ram for reciprocation to provide a linear, reciprocating power input upon each reciprocation of the ram;

ratchet means rotated by the arm means to convert the linear power input into uni-directional, rotary output,

the ratchet means being rotated through a first arc of rotation upon each reciprocation of the arm means;

a strip turner positioned above the conveyor to engage a first



end of each strip as the strip is transported by the conveyor; gear means rotated by the rotary output to rotate the strip turner,

the gear means being adapted to rotate the turner through a second arc of rotation that is greater than the first arc of rotation,

the strip turner being provided with means to engage the first end portion of each strip to turn over the strip as the turner is rotated;

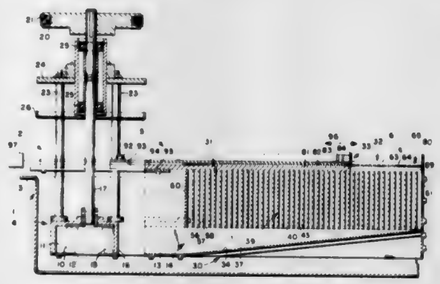
whereby the strip turner engages and turns over each strip in turn after the nails are driven by the ram.

4,447,001

ADJUSTABLY DIMENSIONED UNIFORMLY DISTRIBUTED SOLDER WAVE APPARATUS

Melvin K. Allen; Ronald J. Berri, both of Los Angeles, and Douglas N. Winther, Garden Grove, all of Calif., assignors to Banner/Technical Devices Company, Inc., Culver City, Calif.

Filed Dec. 11, 1980, Ser. No. 215,181
Int. Cl.³ B23K *3/06*
U.S. Cl. 228—37 **40 Claims**



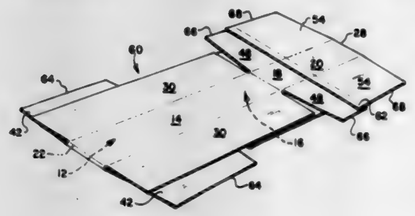
1. A variable width solder wave generating apparatus, comprising means for producing a solder wave, including means for maintaining substantially uniform at least one of the height and contour of such solder wave substantially independently of the width thereof, and means for adjustably controlling the width of such solder wave, said means for producing comprising plural flow chamber means for directing vertically upward discrete solder streams to form such solder wave, and said means for adjustably controlling comprising valve means cooperative with said flow chamber means for blocking flow from selected ones of said flow chamber means, each of said flow chamber means having a top wall and said valve means comprising means for engaging said top wall of selected flow chamber means substantially to block flow of solder from the respective flow chamber means.

4,447,002

CENTER SPECIAL SLOTTED CONTAINERS HAVING SELF-SQUARING JOINTS

Oscar J. Kistner, Cincinnati, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 2, 1981, Ser. No. 317,103
Int. Cl.³ B65D *5/02, 5/36*
U.S. Cl. 229—37 R **19 Claims**



1. In an intermediate folded blank for a center special slotted container of the type having a full end panel, a first side panel overlying said full end panel and foldably joined thereto along one side thereof at a score line, said first side panel of a length greater than that of said full end panel, a second side panel coplanar with said full end panel and joined thereto along a score line opposite said score line joining said full end panel to said first side panel, said second side panel having a length equal to that of said first side panel, a first full end flap joined to said full end panel along a score line and extending from a longitudinal edge thereof, said full end flap being substantially equal in length to one-half said lengths of said first and second side panels, first and second cover flaps joined to said first and second side panels, respectively, along score lines and extending from longitudinal edges thereof such that said first and second cover flaps are correspondingly disposed to said full end flap, said first and second cover flaps having lengths less than that of said full end flap, the improvement comprising:

a first partial end panel coplanar with said first side panel and joined thereto along a score line opposite said score line joining said first side panel to said full end panel;

a second partial end panel foldably joined to said second side panel and extending toward said first partial end panel at least to abutting relationship;

a first partial end flap joined to said first partial end panel along a score line and extending from a longitudinal edge thereof, said first partial end flap being equal in length to and correspondingly disposed to said full end flap; and

a second partial end flap joined to said second partial end panel along a score line and extending from a longitudinal edge thereof, said second partial end flap being equal in length to and correspondingly disposed to said first partial end flap.

4,447,003

HINGED LID CONTAINER HAVING FINISHED EDGES

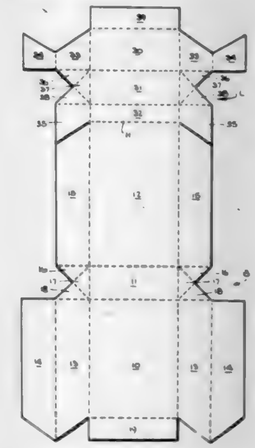
Sharon L. Gray, Cranbury, N.J., assignor to Alford Industries, Inc., Ridgefield Park, N.J.

Filed Jan. 17, 1983, Ser. No. 458,416
Int. Cl.³ B65D *85/10;* A24F *15/12*
U.S. Cl. 229—44 CB **20 Claims**

1. A one-piece container blank for the formation of a hinged lid container, the blank being creased, embossed or otherwise weakened along lines that divide the blank into first areas and second areas which when assembled form a container base defined by said first areas having an integral lid defined by said second areas,

said first areas comprising a base panel interposed between a front panel and a back panel, first side panels on opposite sides of the front panel, said first side panels having extension flaps along first edges thereof remote from said front panel, each of said first side panels having a second edge along which said first side panel is connected to said front panel, said second edge being parallel to and laterally spaced from said first edge;

said first areas also comprising second side panels on opposite sides of the back panel arranged to lap and be sealed to the extension flaps of the first side panels and positioned inboard thereof in a completed container constructed by erecting said container blank;



and said second areas comprising a lid back extending from the edge of the back panel remote from the base panel, a lid top extending from the edge of the lid back remote from the back panel, a lid front extending from the edge of the lid top remote from the lid back and lid front side panels having extension flaps along straight edges thereof remote from said lid front, each of said lid front side panels having a another edge along which said lid another side panel is connected to said lid front, said another edge being parallel to and laterally spaced from said straight edge, said lid back being furnished with lid back side panels to be sealed to the inside surfaces of the lid front side extension flaps.

4,447,004

CARTON HANDLE ARRANGEMENT

Richard F. House, St. Charles, and Karl A. Kohler, Roselle, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Feb. 7, 1983, Ser. No. 464,708
Int. Cl.³ B65D *5/46*
U.S. Cl. 229—52 B **5 Claims**

1. A carrier carton for holding at least one article, said carton being formed from a unitary blank of foldable sheet material such as paperboard and comprising:

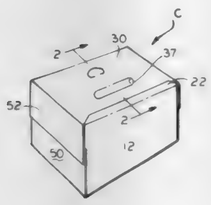
(a) a bottom wall panel;

(b) a pair of opposed side wall panels foldably joined to side edges of said bottom wall panel and upstanding therefrom;

(c) a top wall including integral handle means for lifting and carrying said carton, said top wall including a pair of inner and outer panels foldably joined to upper edges of respective side wall panels and secured to each other in lapped relation to form a tubular structure;

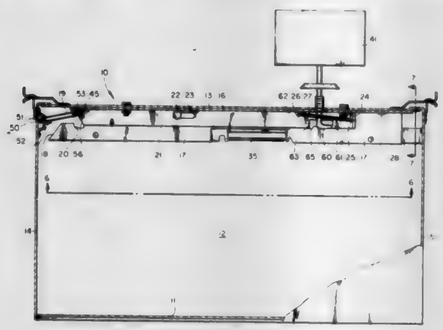
(d) said top wall inner panel including:

(i) a multi-finger receiving opening spaced inboardly from a side edge thereof;
(ii) an elongated reinforcing flap foldably joined to said side edge and adapted to be folded 180° and secured in face-to-face relation with the underside of said inner panel in the area between said opening and said side edge to provide, with said inner and outer panels three plies of carton material in said area;
(e) said top wall outer panel including:
(i) a multi-finger receiving opening of of substantially the same contour as and disposed to overlie said inner panel opening;
(ii) an integral strip of material disposed between said outer panel opening and a free side edge of said outer panel;



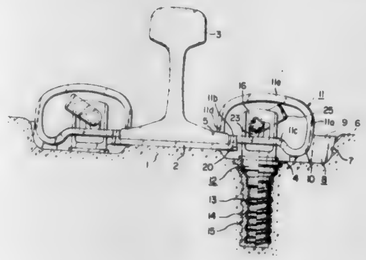
(iii) a thumb receiving opening, only large enough to accommodate a single thumb, spaced from said multi-finger receiving openings a distance substantially equal to the width of said reinforcing flap;
(f) said top wall outer panel having a contour substantially equal in area to the cross-sectional area of the upper end of said tubular structure less an area equal to that of said reinforcing flap;
(g) said openings cooperating with each other and with said three plies of carton material therebetween to provide a strong handle arrangement whereby when the top wall is grasped like a bowling ball twisting of the material of the carton between said openings is minimized.

4,447,005
DOUBLE DOOR SECURITY RURAL MAILBOX WITH AUTOMATIC SIGNALLING MEANS
James B. Kelly, and Viola F. Kelly, both of 7255 Shelby St., Indianapolis, Ind. 46227
Filed Mar. 25, 1983, Ser. No. 478,642
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—35 **15 Claims**



1. A mailbox comprising:
a mailbox main body with a mail carrier door and owner's door;
a signal flag mounted external to said main body and moveable to a first position associated with mail being in said main body and to a second position associated with said main body being empty of mail;
first means operatively associated with said mail carrier door and owner's door and operable to lock said mail carrier door once opened and closed until said owner's door is opened; and
second means operatively associated with said mail carrier door, said owner's door and said signal flag and interacting with said first means to move said signal flag to said first position when said mail carrier door is opened and to said second position when said owner's door is opened.

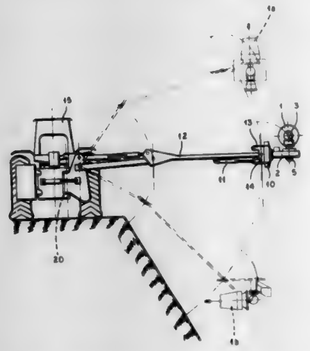
4,447,006
CAM TYPE ELASTIC RAIL FASTENING DEVICE
Yoshio Matsuo, Tokyo, Japan, assignor to Tetsudo Kizai Kogyo Company Limited, Tokyo, Japan
Filed Mar. 10, 1982, Ser. No. 356,752
Int. Cl.³ E01B *9/30*
U.S. Cl. 238—341 **4 Claims**



4. A device for clamping a rail to a base, comprising: an anchor mounted in said base and having a head projecting upwardly therefrom, a cam element mounted in said anchor for rotation about an axis parallel to said rail and for sliding motion lengthwise of its rotational axis, a spring member having an upper portion overlying said anchor and a lower portion receiving said upper portion of said anchor, said upper portion terminating in a downturned tip engaging said rail and said lower portion terminating adjacent said rail, means located outwardly of said anchor supporting said spring member remote from its tip, said cam element having a lobe and a lever, said cam lever being offset angularly with respect to said lobe and having a length greater than the spacing between the anchor and upper portion of the spring member, said cam element adapted, when said lobe is engaged with said lower portion of the spring member and said lever inclined away from the rail, to be slid axially into position beneath said upper portion of the spring member, whereby said spring member both clamps the rail and prevents the cam element from loosening inadvertently.

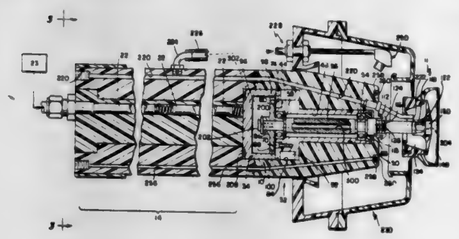
4,447,007
SWIVELLING DEVICE FOR SPREADING LIQUIDS BY SPRAYING
Jean-Michel Farines, 2 Avenue Fauvelle, 66300 Thuir, France
PCT No. PCT/FR81/00046, 371 Date Dec. 1, 1981, 102(e) Date Dec. 1, 1981, PCT Pub. No. WO81/02825, PCT Pub. Date Oct. 15, 1981
PCT Filed Apr. 1, 1981, Ser. No. 328,573
Claims priority, application France, Apr. 4, 1980, 80 07894
Int. Cl.³ B05B *1/20*
U.S. Cl. 239—165 **4 Claims**

1. A device for spraying a liquid which comprises in combination:
a vehicle adapted to travel along a site to be sprayed;
an arm articulated to said vehicle and provided with means enabling a free end of said arm to be moved to a location below said vehicle, to a location above the level of said vehicle and to selective locations between said locations above and below said vehicle;
a support member pivotally connected with said arm for rotation relative thereto about a substantially horizontal first axis, said arm and said member being interconnected by means for rotating said member about said first axis;
a platform journalled on said member for rotation relative



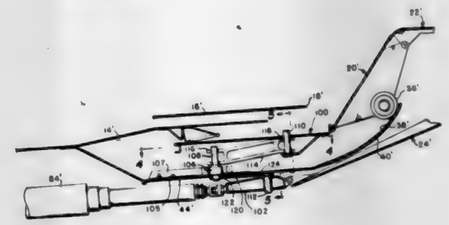
thereto about a substantially horizontal second axis orthogonal to said first axis; and
an atomizing head mounted on said platform for angular displacement thereof about a third axis substantially orthogonal to said first and second axes, said head being provided with means for dispensing an atomized spray of said liquid in a pattern having a further axis substantially orthogonal to said third axis.

4,447,008
ATOMIZING DEVICE MOTOR
Harold T. Allen, Brownsburg, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.
Continuation of Ser. No. 203,519, Nov. 3, 1980, Pat. No. 4,381,079. This application Sep. 20, 1982, Ser. No. 419,694
Int. Cl.³ B05B *3/04, 3/10*
U.S. Cl. 239—214.13 **3 Claims**



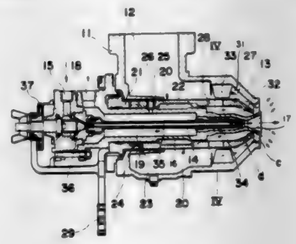
1. In combination, a fluid turbine motor, an atomizing device for high-speed rotation by the motor, means for feeding coating material to the atomizing device for atomization thereby, a shaft for mounting the atomizing device, means for coupling the shaft to the motor to spin the atomizing device, the shaft including means providing a passageway extending longitudinally therethrough, means for coupling a gas source to the passageway from a point remote from the atomizing device, and means providing an exhaust from the passageway at the atomizing device for exhausting gas therethrough.

4,447,009
THREE-DIMENSIONAL AXIALLY TRANSLATABLE CONVERGENT/DIVERGENT NOZZLE ASSEMBLY
Walter H. Wiley, Palm Beach Gardens, and William M. Madden, Palm Springs, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 28, 1981, Ser. No. 334,493
Int. Cl.³ B64D *15/06*
U.S. Cl. 239—265.39 **7 Claims**



1. A variable area nozzle assembly for a gas turbine engine having an axis comprising:
engine fixed structure;
a unison ring assembly comprising radially inner axially translatable unison ring means, radially outer axially translatable unison ring means, and interconnection means connecting said inner and outer unison ring means and causing relative axial movement therebetween in accordance with a predetermined relationship during translation of said unison ring assembly;
at least one actuator adapted to engage said unison ring assembly and translate said inner and outer unison ring means;
a plurality of rotatable and axially translatable first flaps defining an upstream nozzle;
means connecting said flaps to said inner unison ring means;
a plurality of second flaps downstream of said first flaps and interconnected to said first flaps for rotation relative thereto, said second flaps being axially translatable and rotatable; and
means connecting said second flaps to said outer unison ring means.

4,447,010
PROPORTIONAL REGULATION OIL BURNER OF LOW PRESSURE AIR TYPE
Yasunori Maeda, Nara, and Akinobu Yamasaki, Yamatokoriyama, both of Japan, assignors to Chugai Ro Co., Ltd., Osaka, Japan
Filed Feb. 26, 1982, Ser. No. 352,583
Int. Cl.³ F23D *13/38*
U.S. Cl. 239—414 **4 Claims**



1. A proportional regulation oil burner of low pressure air type, which comprises:
a burner body provided with a preheated combustion air feed port for introducing a preheated combustion air

thereinto and a restricted tip end frusto-conical opening portion for exhausting said introduced preheated combustion air;

an oil nozzle centrally disposed with said burner body for discharging oil including a tip end opening portion;

a cooling air feed nozzle disposed around said oil nozzle and having a tip end outwardly tapering, frusto-conical opening portion forwardly extending beyond a tip opening portion of said oil nozzle; and

an oil atomizing air feed nozzle disposed around said cooling air feed nozzle and comprises a base end rotary portion rotatably mounted around a base portion of said cooling air feed nozzle and a tip end nozzle portion connected to said base end rotary portion, and means mounting said atomizing air feed nozzle so as to be slidable along the axial direction of said cooling air feed nozzle due to the rotation of said base end rotary portion, said tip end nozzle portion having a plurality of holes therein for introducing, into a passage formed between said tip end nozzle portion and said cooling air feed nozzle, a portion of the preheated combustion air introduced into the burner body, and a frusto-conical tip opening portion positioned rearwardly of the tip end conical opening portion of the cooling air feed nozzle in a passage formed between the opening portion of said burner body and the opening portion of said cooling air feed nozzle;

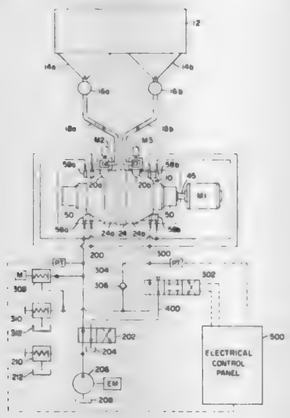
whereby both an area of the opening formed between said opening portion of the burner body and the opening portion of the oil atomizing air feed nozzle and an area of the opening formed between the opening portion of the oil atomizing air feed nozzle and the opening portion of the cooling air feed nozzle are respectively varied according to the position of said tip end nozzle portion.

4,447,011

PLATE ADJUSTMENT SYSTEM

Stanley Prew, Montoursville, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 91,083, Nov. 5, 1979, abandoned. This application Dec. 16, 1981, Ser. No. 331,068
Int. Cl.³ B02C 7/14
U.S. Cl. 241—37 **12 Claims**



1. A disc type refiner comprising:

(a) a pair of refining plate assemblies constructed and arranged to be adjustably spaced relative to each other;

(b) an attrition force-producing means and a counter-force-producing means operatively connected to at least one of said refining plate assemblies, said attrition force-producing means being constructed and arranged to provide substantially all of the attrition force required for refining and said counter-force-producing means being constructed and arranged to continuously coact at a substantially constant predetermined value with the attrition reaction-force, produced during refining, in a direction opposite that produced by said attrition force-producing means, and said attrition force-producing means and said counter-force-producing means comprising a hydraulic piston-cylinder assembly provided with means to stimultaneously introduce pressurized hydraulic fluid to both sides of said piston, the cylinder chamber adjacent one side of said piston being the attrition force-producing chamber and the cylinder chamber adjacent to the other said of said piston being the counter-force-producing chamber; and

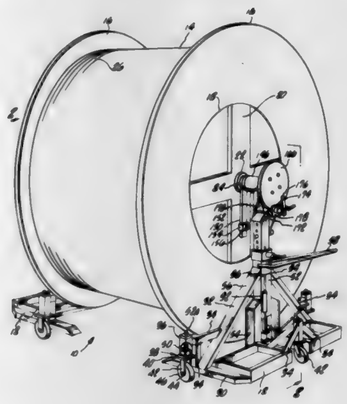
(c) means to continuously monitor the counter-force, produced by said counter-force-producing means during refining, so as to maintain said counter-force at said substantially constant predetermined value, said means to monitor including means to sense the counter-force-producing pressure in said counter-force-producing chamber and means responsive to a predetermined increase in said counter-force-producing pressure over a predetermined period of time to adjust said counter-force-producing pressure to said substantially constant predetermined value.

4,447,012

PORTABLE REEL JACK STAND

Harold F. Woodruff, 2340 Avocado Ter., Hacienda Heights, Calif. 91745

Filed Mar. 12, 1981, Ser. No. 242,982
Int. Cl.³ B65H 23/06, 75/40
U.S. Cl. 242—54 R **9 Claims**



1. An apparatus adapted to lift and support a reel of cable or the like off the ground, the apparatus further adapted to facilitate rotation of the reel, the apparatus comprising:

(A) dual oppositely positioned reel support units, each support unit comprising:

(i) a plurality of rollers affixed to each reel support unit, the rollers retractable into the support units when the support units have lifted the reel from the ground, the rollers adapted to facilitate movement of the reel support units when not retracted,

(ii) a first telescopic member slidably engaged with each of the reel support units,

(iii) a second telescopic member slidably engageable with the first telescopic member, the second telescopic member including means for engaging the first telescopic member to support the reel above the ground;

(iv) means for imparting a lifting force on the first telescopic member,

(v) indexing means for supporting the first telescopic member and the reel, and

(vi) means for engaging the reel, the engaging means affixed to the second telescopic member, the engaging means adapted to facilitate rotation of the reel when lifted from the ground, and

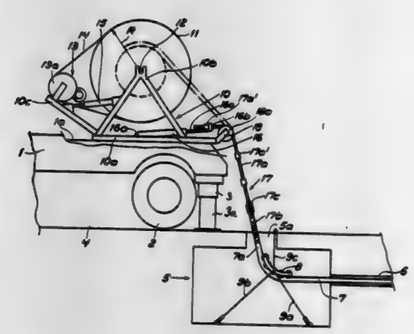
(B) means for braking rotation of the reel, the braking means including a disk brake assembly operative with at least one of the reel engaging means to occasion braking of the reel.

4,447,013

METHOD AND ARRANGEMENT ON EXTRACTING, REELING UP, PULLING IN, ETC., OF A HEAVY CABLE OR SIMILAR

Bror Sandered, Norsborg; Rune Carlsson, Västra Frölunda, and Bengt Andersson, Älvängen, all of Sweden, assignors to MEAB, Mobile Equipment AB, Mölndal, Sweden

PCT No. PCT/SE81/00119, 371 Date Dec. 17, 1981, 102(e) Date Dec. 17, 1981, PCT Pub. No. WO81/03089, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 22, 1981, Ser. No. 333,873
Claims priority, application Sweden, Apr. 23, 1980, 8003049
Int. Cl.³ B65H 75/40
U.S. Cl. 242—54 R **11 Claims**



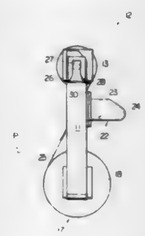
1. Method for extracting, reeling up, or pulling-in of a heavy cable or other long flexible object utilising a main frame adapted to be set up on a vehicle, the main frame including a base unit made up of a number of beams and two bearing brackets projecting upwards from long sides of the base unit, a drum freely rotatably arranged on the bearing brackets on the main frame, driving means for the drum including a motor unit and a transmission component for operatively connecting the motor unit to drive the drum, comprising the steps of connecting a pulling device both to a core of the cable and to a pull-free mechanism fixed to the main frame, activating the pull-free mechanism to effect a small longitudinal displacement of the cable and to cause the cable to be pulled free from a cable duct, disconnecting the pulling device after the cable has been pulled free, pulling the core up towards and anchoring the core on the drum, activating the motor unit to turn the drum to accomplish the subsequent main part of the longitudinal displacement of the cable by direct winding onto the drum.

4,447,014

TIRE COMPONENT ASSEMBLY

Yusaku Azuma, Higashimurayama; Yoshifumi Kitayama, Kodaira, and Chiaki Ozawa, Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,453
Claims priority, application Japan, Mar. 3, 1981, 56-30116
Int. Cl.³ B65H 75/02, 17/02
U.S. Cl. 242—55 **1 Claim**



1. A tire component storing assembly, comprising in combination;

a frame structure comprising a pair of side plate members spaced apart from and substantially in parallel with each other,

a first reel having opposite end portions rotatably supported on said side plate members, respectively, of said frame structure,

a second reel having opposite end portions rotatably supported on said side plate members, respectively, of said frame structure, said second reel spaced apart from and substantially in parallel with said first reel,

a liner having one end wound at all times on said first reel and the other end wound at all times on said second reel to form layers thereon, whereby a tire component is wound on any one of said first and second reels while intervening between the layers of the liner to be wound on any one of said first and second reels,

a pair of coupling members respectively projecting from the side plate members of said frame structure, a pair of supporting members for supporting said coupling members and said frame structure, the coupling members respectively having a pair of box-shaped recesses for receiving said supporting members and opening outwardly of said side plate members of said frame structure and having center axes substantially in alignment with each other, and grooves in communication with the recesses for facilitating insertion of the supporting members into the recesses, the grooves being open downwardly of said side plate members of said frame structure and having cross sections tapered toward the lower ends of the coupling members and toward said side plate members, and

reinforcing means for reinforcing said side plate members of said frame structure.

4,447,015

TOILET TISSUE DISPENSING DEVICE

Kenneth E. Peterson, 9617 Little Cir., Bloomington, Minn. 55437

Filed Nov. 1, 1982, Ser. No. 438,055
Int. Cl.³ B65H 19/00
U.S. Cl. 242—55.2 **2 Claims**

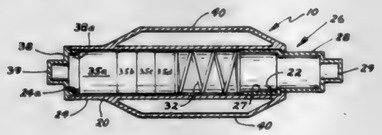
2. A toilet tissue dispensing device in connection with a fixture holding the same, said device having in combination

a tubular roller having thereon a roll of toilet tissue,

said roller comprising a hollow body having open ends,

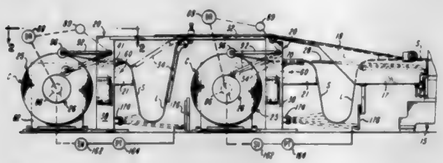
a plurality of flexible longitudinal ribs integral with said body and projecting outwardly thereof spaced thereabout,

an annular flange at one end of said body,
a cylindrical end plug having a portion thereof disposed into said body through said one end thereof, said end plug having an annular shoulder engaging the inner side of said annular flange being retained thereby, said end plug having a portion of reduced diameter extending outwardly of said body forming a pivot,
a compression spring disposed within said body abutting said end plug,



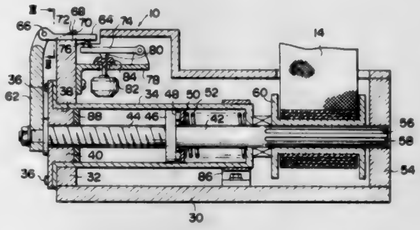
a plurality of cylindrical weight members disposed within said body engaging said spring,
an end plug forming a pivot being externally threaded at one end thereof and being disposed into said other end of said body, and
said weight members being adjusted as to weight to the tear strength of said roll of toilet tissue, said weight being such as to restrain the rotation of said roller upon removal of sheets from said roll of tissue thereon and thus prevent the free rotation of said roller.

4,447,016
REWIND APPARATUS FOR METAL STRIPS
Erik R. Enberg, Troy, and J. Douglas Plank, Piqua, both of Ohio, assignors to Perfecto, Inc., Piqua, Ohio
Filed Jun. 1, 1982, Ser. No. 383,717
Int. Cl.³ B65H *59/00*; B21C *47/02*
U.S. Cl. 242—56.9 **15 Claims**



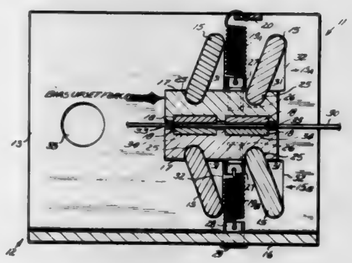
10. Apparatus for simultaneously rewinding a plurality of substantially parallel metal strips into corresponding coils after the strips are cut from a wide strip and adapted to form the coils with generally uniform tension within the strips independent of variations in the thickness and stretch of the strips, said apparatus comprising a rewind unit including a horizontal rewind mandrel having a power driven center shaft, said mandrel including a plurality of axially aligned mandrel sections mounted on said shaft for independent free rotation and adapted to receive the leading end portions of corresponding strips, each of said mandrel sections including a pair of coil support shoes each movable generally radially between a retracted position and an extended position, a corresponding plurality of air operated cylindrical clutches surrounding said shaft and providing for independently driving said mandrel sections from said shaft, means defining a plurality of axially extending air passages within said shaft and connected to corresponding said air operated clutches, means for producing a loop in each strip, a corresponding plurality of air actuated tension units each having a set of rolls for applying a generally uniform tension within the strips between said loop forming means and said rewind unit, a corresponding plurality of optical loop detectors for independently sensing variations in the corresponding loops within the strips, and means responsive to said loop detectors for variably changing the air pressures within the corresponding said fluid operated clutches.

4,447,017
SEATBELT WEBBING RETRACTING DEVICE
Mitsuo Inukai, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai-Riki-Denki-Seisakusho, both of Aichi, Japan
Filed Mar. 31, 1981, Ser. No. 249,478
Claims priority, application Japan, Mar. 31, 1980, 55-42534[U]
Int. Cl.³ A62B *35/02*; B65H *75/42, 75/48*
U.S. Cl. 242—107.4 A **10 Claims**



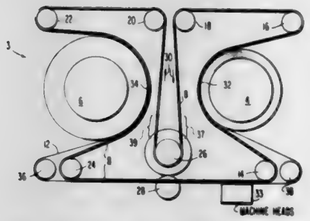
1. A seatbelt webbing retracting device for retracting a webbing fastened to an occupant in an emergency of a vehicle such as a collision so as to improve the performance of restraining the occupant, comprising:
(a) a base mounted on a vehicle body;
(b) a main shaft threadedly connected to said base;
(c) a biasing means for biasing said main shaft in the axial direction of said main shaft;
(d) transmitting means for transmitting a moving force of said main shaft generated by a biasing force of said biasing means to the webbing;
(e) an engaging means comprising an arm tiltably supported on said main shaft and engageable with a stopper provided on said base to prevent said main shaft from rotating; and
(f) an acceleration sensor for actuating said engaging means with respect to said main shaft to disengage said engaging means from said stopper so as to make said main shaft rotatable with respect to said base, whereby said main shaft is rotated and moved with respect to said base by said biasing force in the axial direction thereof, and said moving force is transmitted to the webbing through said transmitting means to thereby retract the webbing.

4,447,018
TOGGLE TYPE WEB LOCK
Wallace C. Higbee, Romeo, Mich., assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Feb. 26, 1982, Ser. No. 352,899
Int. Cl.³ A44G *11/06*; A62B *35/00*; F16D *59/02*
U.S. Cl. 242—107.2 **1 Claim**



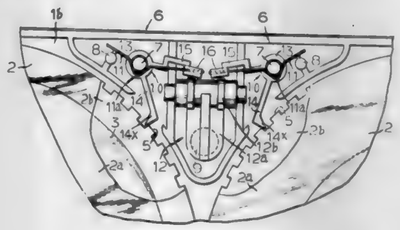
1. In a toggle type seat belt webbing lock structure, the combination comprising:
a channel shaped frame having upstanding parallel spaced-apart legs and the legs thereof defining plural pairs of aligned and juxtaposed butterfly shaped openings;
a spreader bar intermediate said legs;
a pivot bar in each of said butterfly slots and transversely across said channel shaped frame;
a pair of juxtaposed clamp blocks in spaced-apart parallel relation between said legs of said frame, each having spaced-apart grooves forming outer pockets for operative engagement with edges of said extending pivot bars and said clamp blocks having registering depressions in the facing portions thereof;
inserts of slightly deformable material with excellent memory characteristics, each retained in said depressions in said clamp blocks and having work faces projecting outwardly toward a registering and facing insert;
a spring bias connected to each of said clamp blocks and urging them away from each other and limited by said butterfly openings;
guide links coordinating movement of all of said bars and operably connected over at least a pair of the ends of said pivot bars;
means selectively actuatable in a motion generally parallel to a plane between said clamp blocks, said motion displacing said clamp blocks and closing said blocks toward each other on said guide links; and
a web belt movable between said blocks in a plane parallel generally to the actuatable means and engaged by said inserts as said clamp blocks close toward each other, the direction of pull thereafter urging a tighter grip by said inserts on said web belting.

4,447,019
MAGNETIC TAPE CARTRIDGE WITH RESILIENT BELT DRIVING MEANS AND SEPARATE TAPE AND BELT IDLERS
Boguslaw A. Nagorski, San Jose, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 30, 1981, Ser. No. 307,147
Int. Cl.³ G11B *15/26, 23/04*
U.S. Cl. 242—192 **8 Claims**



1. A tape cartridge having a take-up reel and a supply reel for taking up and supplying a tape for use in a recording machine having heads, comprising:
a continuous resilient belt, said belt supporting said tape in the vicinity of said machine heads;
means for driving said belt so that said belt contacts a portion of said take-up reel and said supply reel causing said reels to turn;
a first set of idlers for guiding said belt as said belt is transported from said portion of said supply reel to said portion of said take-up reel;
a second set of idlers for guiding only said tape and not said belt as said tape and said belt are transported from said portion of said supply reel to said portion of said take-up reel.

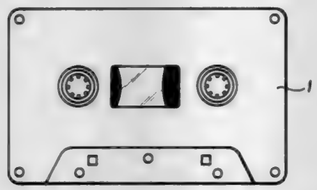
4,447,020
MAGNETIC RECORDING TAPE CARTRIDGE
Mitsuharu Toi, Kyoto, and Hiroyoshi Takagi, Kameoka, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan
Filed May 13, 1982, Ser. No. 377,825
Claims priority, application Japan, May 14, 1981, 56-70253[U]
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **4 Claims**



1. A magnetic recording tape cartridge which comprises:
a bottom section,
a top section mated with said bottom section to form a cartridge case,
a pair of tape reels each having a flange and a hub member on which a magnetic recording tape is wound, said flange being provided with a plurality of engaging teeth on the peripheral edge of said flange,
a tape reel stopping means having a boss member, a first arm extending radially from said boss member to provide a rotation preventing member which detachably engages with one of the engaging teeth of said flange and a second arm extending from said boss member with a spring receiving member formed on a free end thereof, said tape reel stopping means being rotatably pivoted on pivotal shafts of the bottom section, and
a resilient plate spring formed by a generally flat plate having its intermediate portion bent, said plate spring being situated standing vertically in a space defined by said boss member of the tape reel stopping means and a spring supporting member formed on the bottom section with one flat end of the plate spring being received by said spring receiving member, said bent portion of the plate spring being engaged with one of said pivotal shafts for preventing lateral displacement of said plate spring, said plate spring biasing said second arm of said tape reel stopping means for engagement of said rotation preventing member with one of the teeth of said flange, so that at least one of said tape reels is prevented from rotation when the magnetic recording tape cartridge is not being used.

4,447,021
TAPE CARTRIDGE OF CASSETTE SYSTEM
Tokuzo Shimizu, 2-4-7, Tamagawa Denenchofu, Setagaya-ku, Tokyo, Japan
Filed Feb. 22, 1982, Ser. No. 350,656
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—199 **9 Claims**
1. Tape cartridge cassette system having right and left reel

hubs including sliding sheets mounted within a cassette half made in circular form of a size almost a same size as a wound



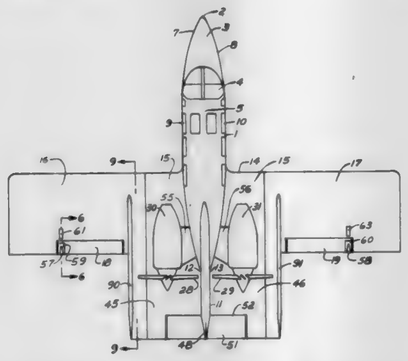
tape body and said sliding sheets rotatably provided on both side faces of right and left reel hubs, respectively.

4,447,022

REDUCED NOISE MONOLITHIC WING-STABILIZER AIRCRAFT

Charles E. Lion, 253 Euclid Ave., Ridgway, Pa. 15853

Filed May 21, 1982, Ser. No. 380,558
Int. Cl.³ B64C *1/00, 5/02, 15/14*
U.S. Cl. 244—13 **3 Claims**



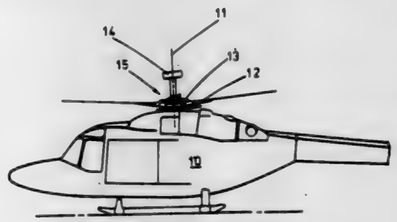
1. An aircraft comprising: (A) a fuselage having a porpoise shaped nosewindshield extending midlength to a rectangular shape and further in the rear to a transverse vertical lenticular crossection with side walls of said fuselage forming decreasing minor arcuate portions of a cylinder blending into a tall vertical stabilizer fin tail section containing a rudder recessed into the trailing edge of said tall vertical stabilizer and movably attached upstream from the trailing edge of said tall vertical stabilizer; and (B) wings connected to said fuselage containing movably mounted ailerons recessed inboard from tips of said wings, said ailerons extending further inboard to a point of operational clearance adjacent to the intersection of auxiliary vertical stabilizers, said auxiliary vertical stabilizers extending from near the leading edge of said wings parallel to said fuselage, thusly ending flush with said tall vertical stabilizer trailing edge; and (C) a monolithic wing-horizontal stabilizer, said horizontal stabilizer beginning as a rearward extension of said wings, said horizontal stabilizer extending aft of said fuselage and ending flush with an elevator movably mounted into said horizontal stabilizer, said elevator spanning horizontally outward from the intersection with, and on each side of, said tall vertical stabilizer to meet rearward extensions of said horizontal stabilizer and extending rearward to be flush with said horizontal stabilizer trailing edge, and whose leading edge is hinged to the trailing edge of said horizontal stabilizer, said horizontal stabilizer being a rearward continuance of said wings, and extending off said fuselage at wing level outward to end just inboard of said ailerons; and (D) said tall tail vertical stabilizer fin originating on the top centerline of said fuselage extending rearward to be flush with the trailing edge of said horizontal stabilizer extensions and said elevator containing a rudder superimposed into said vertical stabilizer trailing edge, hinged upstream in said vertical stabilizer to form a movable horizontal control about the vertical axis of said aircraft; and (E) a pair of pusher type engines juxtaposed and symetrically attached to the aft end of said fuselage and on each side of said vertical stabilizer with just sufficient clearance to allow safe engine propeller operation.

4,447,023

APPARATUS FOR MOUNTING A DEVICE ABOVE A HELICOPTER ROTOR

Peter Reid, Hardington Mandeville, nr. Yeovil, England, assignor to Westland plc, Yeovil, England

Filed Apr. 13, 1982, Ser. No. 367,960
Claims priority, application United Kingdom, Apr. 27, 1981, 8112941
Int. Cl.³ B64C *27/04*
U.S. Cl. 244—17.11 **12 Claims**



1. A helicopter having a main sustaining rotor comprising a rotor hub and a plurality of radially extending rotor blades arranged for rotation about a generally vertical axis and including apparatus for supporting a stationary or independently rotatable device above the rotor, wherein said apparatus comprises a first ring gear below the rotor hub and supported from helicopter structure concentrically of the axis of rotation, a second ring gear above the rotor hub having the same number of gear teeth as the first gear, support means for supporting the second ring gear concentrically of the axis of rotation and in a manner permitting relative rotation of the rotor hub, and synchronising means rotationally fixed to the rotor hub and meshing with said first and second gears.

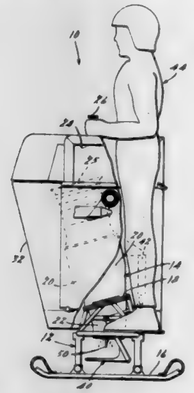
4,447,024

AIRBORNE VEHICLE

Sam B. Williams, Walled Lake, Mich., assignor to Williams International, Walled Lake, Mich.

Filed Feb. 8, 1982, Ser. No. 346,751
Int. Cl.³ B64C *29/00*
U.S. Cl. 244—23 A **9 Claims**

1. An airborne vehicle comprising a frame for the support of an operator in an erect standing position, and a jet engine mounted on said frame for direct lift of said operator, engine and frame, said frame being attached to the lower end of said engine and said engine constituting the vertically extending backbone of said vehicle, the central axis of said engine being inclined upwardly and forwardly relative to a transverse vertical plane extending through the center of gravity of the vehicle, the center of gravity of said engine being disposed on one side of the thrust line thereof and the center of gravity of said operator being disposed on the opposite side of the thrust line



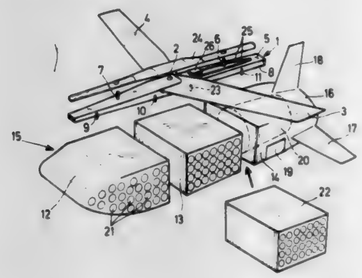
of said engine whereby the center of gravity of said vehicle is on said thrust line when said vehicle is airborne.

4,447,025

CARRIER FOR A DROPLOAD TO BE DROPPED FROM AN AIRCRAFT

Siegfried Bock, Kirchseeon, and Horst Huetter, Tegernsee, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 28, 1982, Ser. No. 402,563
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132190
Int. Cl.³ B64D *1/02*
U.S. Cl. 244—118.2 **4 Claims**



1. A carrier flying craft for a dropload to be dropped from an aircraft, comprising a longitudinal carrier body (**1**), first securing means (**6, 7**) for releasably connecting said carrier body to an aircraft, a plurality of separate dropload members (**12, 13, 14**), second securing means (**9, 10, 11**) for releasably connecting said dropload members (**12, 13, 14**) to said carrier body (**1**) for forming a carrier body load combination constituting said flying craft, wing means (**3, 4**) and hinge means (**2**) including unfolding drive means (**26**) for operatively connecting said wing means to said carrier body for holding the wing means substantially in longitudinal alignment with the carrier body when the carrier body is secured to an aircraft and for unfolding said wing means when the carrier body is released from an aircraft, whereby the flight of a load to the ground is controllable, said carrier flying craft further comprising propulsion means (**20**) forming part of the carrier body load combination, tail unit means (**16**) forming part of the carrier body load combination, electronic autopilot means (**19**) operatively connected for controlling the operation of said tail unit means, wherein said tail unit means comprise rudder flap means (**18**) and elevator flap means (**17**) for steering the carrier body load combination during its descent flight by said electronic autopilot means, and wherein one of said dropload members forms an aerodynamically shaped nose cone member (**12**) which is longitudinally spaced from said tail unit means to provide intermediate space for at least one further dropload member (**13, 22**), at least one of said dropload members having cavities for receiving scattering weapons (**21**), said cavities extending substantially at right angles to a longitudinal axis of said carrier flying craft for scattering weapons (**21**) laterally away from said carrier flying craft.

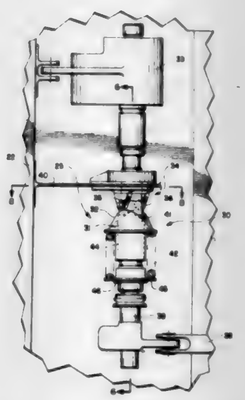
4,447,026

CAM OPERATED COUNTERBALANCE ASSEMBLY FOR AIRCRAFT DOORS

Alex Maraghe, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01782, 371 Date Dec. 21, 1982, 102(e) Date Dec. 21, 1982
PCT Filed Dec. 21, 1982, Ser. No. 474,651
Int. Cl.³ B64C *1/14*
U.S. Cl. 244—129.5 **22 Claims**





1. Apparatus for reducing the torque required to manually rotate a movable structural member about a canted hinge axis comprising, in combination:

(a) a fixed structural member;

(b) a torque tube mounted on said fixed structural member, said torque tube lying in a plane defining an acute included angle α with the vertical and defining an inclined hinge axis;

(c) a movable structural member;

(d) hinge means for coupling said movable structural member to said torque tube for permitting rotation of said movable structural member and said torque tube about said inclined hinge axis with said movable structural member rotating between first and second positions and wherein said movable structural member is constrained

for movement in an upslope direction about said inclined hinge axis during at least a portion of rotation thereof from said first to said second position and for movement in a downslope direction during at least a portion of rotation thereof from said second to said first position;

(e) cylindrical cam means mounted concentrically about said torque tube and co-axial therewith, said cylindrical cam means defining an axially presented cylindrical ramp-like cam face;

(f) cam follower means mounted concentrically about said torque tube and co-axial therewith; said cam follower means including a plurality of cam rollers engaged with said cylindrical ramp-like cam face;

(g) one of said cylindrical cam means and said cam follower means being fixedly mounted on said fixed structural member;

(h) the other of said cylindrical cam means and said cam follower means being nonrotatably mounted on said torque tube with freedom for axial movement therealong;

(i) axially compressible and expandable spring means mounted concentrically about said torque tube and having one end thereof restrained from axial movement relative to said torque tube and the other end thereof bottomed on said other of said cylindrical cam means and said cam follower means for normally biasing said other of said cylindrical cam means and said cam follower means into engagement with said one of said cylindrical cam means and said cam follower means; and,

(j) said cylindrical cam means being profiled so that said spring means is fully compressed when said movable structural member is in said first position so that when said movable structural member is rotated from said first position towards said second position about said inclined hinge axis, said spring means is permitted to expand axially as said movable structural member moves in an upslope direction and said torque tube rotates to cause said cam follower means to relatively traverse said ramp-like cam face whereby the other of said cylindrical cam means and said cam follower means imparts rotational torque to said torque tube as said spring means expands axially to thereby reduce the manual exertion required to rotate said movable structural member in an upslope direction about said inclined hinge axis during movement thereof from said first position to said second position.

4,447,027

UPPER SURFACE BLOWN POWERED LIFT SYSTEM FOR AIRCRAFT

Timothy Wang, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 000,117, Jan. 2, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 206,173

Int. Cl.³ B64C *3/38, 21/04*

U.S. Cl. 244—212 **32 Claims**

1. An upper surface blown powered lift system comprising

a. an airfoil assembly having a chordwise axis and a leading edge and a trailing edge, said airfoil assembly providing a substantially continuous upper aerodynamic surface, said airfoil assembly comprising:

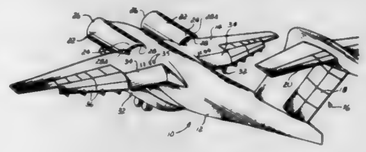
1. an airfoil having an upper airfoil surface that has a leading edge and a trailing edge and forms a forward portion of said upper aerodynamic surface,

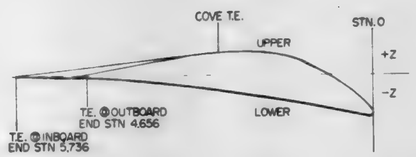
2. a flap means having an extended position extending downwardly and rearwardly from the trailing edge of the airfoil, with said flap means having an upper flap surface that forms a rear portion of said upper aerodynamic surface, and a trailing edge portion which forms the trailing edge of the airfoil assembly,

b. jet means to direct a high velocity jet flow rearwardly over the upper flap surface,

c. vortex generating means mounted rearwardly of said jet means to produce vortices in the jet flow over the upper flap surface,

d. said upper flap surface being curved in a generally chordwise direction and having a forward upper flap surface portion and a rear flap surface portion, said forward flap surface portion being curved in a relatively tight curve with overall lesser radius of curvature, said rear upper flap surface portion being curved in a more relaxed curve





having overall greater radius of curvature, said upper flap surface being characterized in that a forward half of the upper flap surface has a total degree of curvature greater than that of a rear half of said upper flap surface and causes greater deflection of said jet flow than the rear half of the upper flap surface.

4,447,028

UPPER SURFACE BLOWN POWERED LIFT SYSTEM FOR AIRCRAFT

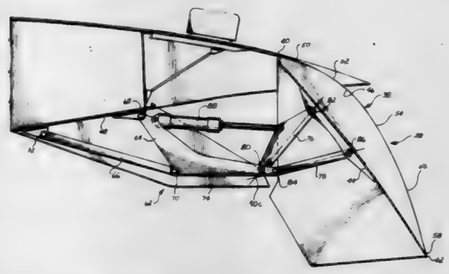
Timothy Wang, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 116, Jan. 2, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 206,174

Int. Cl.³ B64C *3/38, 21/04*

U.S. Cl. 244—212 **80 Claims**





1. An upper surface blown powered lift system comprising:

a. an airfoil assembly having a chordwise axis and a leading edge and a trailing edge, said airfoil assembly providing a substantially continuous upper aerodynamic surface, said airfoil assembly comprising:

1. an airfoil having an upper airfoil surface that has a leading edge and a trailing edge and forms a forward portion of said upper aerodynamic surface, said airfoil having a cove portion at the trailing edge,

2. a flap means having an extended position extending downwardly and rearwardly from the trailing edge of the airfoil, with said flap means having an upper flap surface that forms a rear portion of said upper aerodynamic surface, and a trailing edge portion which forms the trailing edge of the airfoil assembly, said flap means having a stowed position in said cove portion,

b. jet means to direct a high velocity jet flow rearwardly over the upper flap surface,

c. vortex generating means mounted rearwardly of said jet means to produce vortices in the jet flow over the upper flap surface,

d. said upper flap surface being curved in a generally chordwise direction and having a forward upper flap surface portion and a rear flap surface portion, said forward flap surface portion being curved in a relatively tight curve with overall lesser radius of curvature, with the forward upper flap surface portion having its radius of curvature gradually increasing from a forward end to a rear end of said forward upper flap surface portion, said rear upper flap surface portion being curved in a more relaxed curve having overall greater radius of curvature, said upper flap surface being characterized in that a forward half of the upper flap surface has a total degree of curvature greater than that of a rear half of said upper flap surface and causes greater deflection of said jet flow than the rear half of the upper flap surface,

e. actuating means to move said flap means between its stowed position and its extended position, and also to intermediate positions between its stowed and extended positions, said actuating means being arranged to rotate said flap means rearwardly with a moveable instantaneous center of rotation, with the upper flap surface being adjacent to and generally aerodynamically aligned with the airfoil upper surface at said cove portion,

whereby said flap member can be placed in the stowed position for travel in cruise mode, and deployed downwardly to create a desired downward deflection of the jet flow, in a manner that jet flow travelling at the forward end of the flap means travels over said forward upper flap surface portion in a curved path of lesser radius of curvature, and jet flow travelling over said rear end of the flap member travels in a curved path of greater radius of curvature.

4,447,029

LOAD SUPPORT ARRANGEMENT

Leslie J. Chapman, Alresford, England, assignor to Keith Hancock Structures Limited, Alton, England

Filed Apr. 12, 1982, Ser. No. 367,152

Claims priority, application United Kingdom, Jun. 23, 1981, 8119339

Int. Cl.³ A47G *29/02*

U.S. Cl. 248—246 **6 Claims**

1. A cantilever storage rack support arrangement, comprising

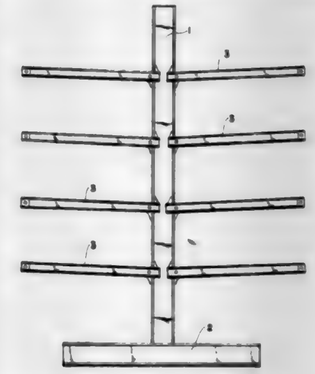
a vertical support standard including at least one extending flange forming a slideway,

a cantilever arm selectively positionable along the length of said vertical support standard and having a free end remote therefrom displaceable in a horizontal plane,

first and second plate members mounted on said cantilever arm remote from the free end thereof and normally disposed in sliding interfacial relation with said extending flange for guiding said cantilever arm along said slideway,

said first plate member having a lower marginal edge portion and said second plate member having an upper marginal edge portion disposable in progressively increasing compressive engagement on opposite sides of said extending flange in response to vertical loading of said cantilever arm towards a horizontal position to hold said cantilever arm in selected position on said upright when under load,

at least one of said plate members having a side marginal edge portion cantable into compressive engagement with



said flange in response to horizontal displacement of the free end of said cantilever arm to maintain said cantilever arm in selected position on said support standard preparatory to load application thereto.

4,447,030

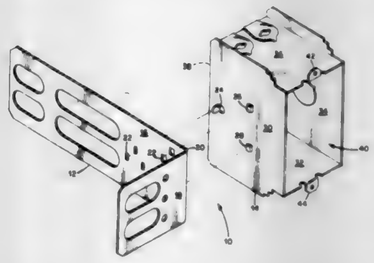
ELECTRICAL WIRING BOX ARRANGEMENT

William Nattel, Montreal, Canada, assignor to Commander Electrical Materials, Inc., St. Jean, Canada

Filed Mar. 30, 1981, Ser. No. 248,933

Int. Cl.³ G12B *9/00*

U.S. Cl. 248—27.1 **5 Claims**



1. An electrical wiring box arrangement for mounting on a metal supporting structure of the type having substantially parallel first and second flange portions and a web portion disposed therebetween, said flange portions each having first and second corner regions, the wiring box arrangement comprising:

an electrical wiring box having front-to-rear walls and a rear wall therebetween defining a chamber with a forward opening adapted to receive a wiring device; and

a mounting bracket for attachment to said wiring box and for mounting to said metal supporting structure, said mounting bracket having first and second deformable leg portions disposed to form a substantially right angle with one another;

said first leg portion having a plurality of sets of spaced apart openings adapted to coact with attachment means disposed in said front-to-rear wall structure of said wiring box to attach said wiring box to said mounting bracket with the plane of said forward opening of said box spaced apart and projecting forward of the plane of said second leg portion of said mounting bracket by a selected one of a like plurality of distances;

said second leg portion adapted to be positioned against said first flange portion of said metal supporting structure between said first and second corner regions thereof in preparation for mounting said bracket to the supporting structure, said second leg portion arranged initially to extend past said first corner region of said first flange portion of said metal supporting structure and, when deformed, to conform generally to the configuration of and embrace said first corner region of said first flange portion;

said first leg portion adapted to be positioned against said second corner region of said first flange portion and against said second corner region of said second flange portion, said first leg portion thus positioned to lie between said first and said second flange portions substantially parallel with said web portion, said first leg portion arranged initially to extend past said second corner region of said second flange portion of said metal supporting structure and, when deformed, to conform generally to the configuration of said second corner region of said second flange portion;

the balance of the length of said first leg portion of said mounting bracket thus being positioned against said second flange portion of said supporting structure between said first and said second corner regions thereof, the balance of said first leg portion arranged initially to extend past said first corner region of said second flange portion and, when deformed, to conform generally to the configuration of and embrace said first corner region of said second flange portion of said supporting structure;

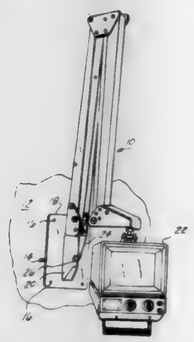
whereby said wiring box arrangement is caused to be firmly mounted to said supporting structure with the plane of said forward opening of said wiring box projecting and spaced apart from the plane of said first flange portion of said supporting structure.

4,447,031

SPRING COUNTERBALANCED SUPPORT ARM SYSTEM

James J. Souder, Jr., Ann Arbor; Edward D. Scarborough, Jr., Inkster; Merlin D. Fox, Ann Arbor, all of Mich.; Donald R. Rettich, and Robert L. Mason, both of Dayton, Ohio, assignors to Positioning Devices, Inc., Cincinnati, Ohio

Filed Apr. 13, 1981, Ser. No. 253,438
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—280.1 **16 Claims**



1. A counterbalanced swinging arm including a parallelogram linkage for supporting a load in various adjusted positions of said arm while counterbalancing said load in any of said positions, said parallelogram linkage comprising:

a pair of parallel links;

a first bracket;

means pivotally mounting one end of each of said links to said first bracket;

a second bracket and means pivotally mounting the other end of each of said links to said second bracket;

means for supporting said first bracket for enabling outward swinging movement of said links on said pivotal mounts;

means for attaching a load to said second bracket;

spring means connected to act on said second bracket and on at least one of said links along a line of direction so as to resist rotation of said one of said links about said pivotal mounts thereof in a direction opposite to a moment created by the weight of said attached load, said spring means located to exert a spring force acting with increasing leverage on said pivotal mount through a range of motion of said parallelogram linkage in swinging outwardly away from said first bracket thereby to produce a counterbalancing moment with outward movement of said parallelogram linkage to thereby offset the increase in moment exerted by said attached load with said outward arm motion;

adjustable friction brake means introducing a frictional braking force into said pivotal mounts of one of said links;

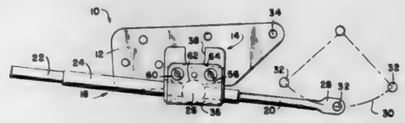
whereby a frictional braking force resisting said pivotal movement is introduced into said parallelogram linkage to absorb any unbalanced moment exerted by said attached load and spring means at positions of said parallelogram linkage as said arm undergoes said swinging motion.

4,447,032

MULTIPLE-TYPE CABLE MOUNTING APPARATUS AND METHOD

Roger F. Olsen, Cuyahoga Falls, Ohio, assignor to Incom International Inc., Pittsburgh, Pa.

Filed Mar. 22, 1982, Ser. No. 360,534
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—558 **8 Claims**



6. Cable mount apparatus comprising a support block having at least one groove extending therethrough and opening outwardly along a face of the block for mountingly receiving an end fitting of a cable conduit, said groove having an enlarged central pocket portion configured to rotatably receive a pivot member extending transversely from the end fitting, and a retainer detachably connected to the block to close the groove and thereby hold an end fitting in the groove, the retainer being a U-shape retainer having leg portions detachably connected to the block, the base of the retainer closing said groove opening to hold the end fitting in the groove and the support block being provided with at least one opening configured to receive a mounting bolt, a mounting plate being provided with a plurality of spaced openings alignable with the openings in the block for receiving a mounting block extending through the block and at least one mounting bolt being provided for selectively securing the block to the plate at any one of said plurality of spaced openings.

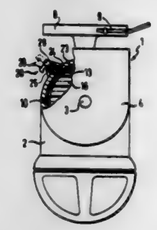
4,447,033

WEIGHT BALANCER

Leonhard Jaumann; Zdenek Tima, and Heinz Feierlein, all of Munich, Fed. Rep. of Germany, assignors to Sachtler GmbH Filmtechnische Gerate, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,601
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026379
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—563 **9 Claims**

1. An apparatus for counterbalancing the weight of an object during a pitch movement thereof, said apparatus having a stator, a rotor rotatable around said stator in the pitch direction and adpated to support said object, and an accumulator between said stator and rotor that exerts upon said rotor during a pitch movement a restoring torque opposite to the torque



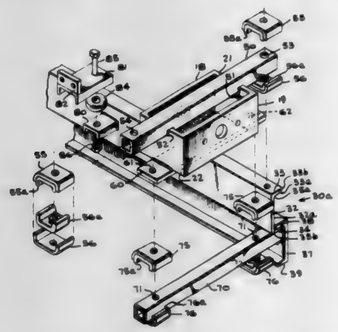
given by said object; the improvement comprising several independent accumulators placed between said stator and rotor and engaging means adapted to selectively operatively engage said several independent accumulators with said stator and rotor.

4,447,034

VIBRATION DAMPING BASE

Clifford E. Gottlob, Arkansas City, Kans., assignor to Gottlob Engine Conversions, Inc., Arkansas City, Kans.

Filed Oct. 23, 1981, Ser. No. 315,299
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—634 **23 Claims**



1. A vibration damping base for an engine and an output shaft connected to it comprising:

a supporting base,

means for mounting an engine on said base,

shaft bearing means, and means for supporting said shaft bearing means comprising:

(a) plate means having said shaft bearing means mounted therein,

(b) support arm means connected to said plate means and extending transverse to the axis of said shaft bearing means, and

(c) means for connecting said support arm means to said supporting base comprising;

(i) bracket means substantially encompassing said support arm means adjacent the ends thereof, said bracket means comprising elastomeric material engaging said support arm means, and

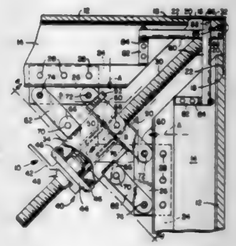
(ii) means for securing said bracket means, said support arm means and said supporting base.

4,447,035

JOINING CONCRETE FORM PANELS TO CAST AN INSIDE CORNER WALL STRUCTURE

H. Grady Ivey, Jacksonville, and D. Leonard Sprouse, Mandarin, both of Fla., assignors to Strickland Systems, Inc., Jacksonville, Fla.

Filed Sep. 30, 1982, Ser. No. 428,855
Int. Cl.³ B28B *7/30*
U.S. Cl. 249—194 **2 Claims**



1. Apparatus for use in casting a concrete inside corner wall structure comprising:

an elongated corner member defining an outwardly facing corner angle to extend lengthwise of the corner to be cast, said member providing outer edges facing generally normal to each other;

a pair of form panels disposed to define outwardly facing surfaces generally perpendicular to each other;

a control unit having a body and actuator means operable to move adjacent edges of said panels into abutment with said outer edges of said corner member preparatory to concrete pouring and to strip both of said form panels and said corner member from the concrete structure after such structure has hardened;

a control element affixed to said corner member and extending inwardly from said member, said control element being engaged with said actuator means; and

four bar linkage means connecting said control unit to both of said form panels, said linkage means including parallel links disposed at opposite sides of said control unit body with each of said links having one end of the link pivotally connected to one of said panels and the other end of the link pivotally connected to said control unit body, said four bar linkage means having retaining means operable when said form panels have been stripped from the concrete structure to retain said linkage means against relative movement while said corner member is stripped by withdrawing force applied to said corner member through said control element,

said retaining means including a retainer movable mounted on one portion of said linkage means and tab means fixedly mounted on another portion of said linkage means, said retainer being moved into retaining engagement with said tab mean when said linkage means is to be retained against relative movement.

4,447,036

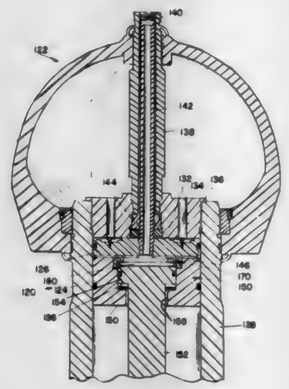
FORCE LIMITING DEVICE FOR AN ACTUATOR ROD

Andrew Hankosky, and Robert L. Clapper, both of Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 102,700, Dec. 12, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,430
Int. Cl.³ F16K *31/122*; F01B *15/02*
U.S. Cl. 251—63.4 **11 Claims**

1. In combination, a valve and actuator therefor, said valve being comprised of a body, a closure member mounted within said body for linear movement between valve closed and valve open position, a valve stem connected to said closure member,

cooperating backseating means on said body and said stem adapted for fluid-tight sealing engagement when said closure member is in valve open position to prevent the escape of fluid from the interior of said body, said actuator being comprised of a primary cylinder, a primary piston mounted within said primary cylinder for linear movement from a first position corresponding to valve closed position to a second position corresponding to approximately valve open position, a secondary cylinder movable with said primary piston, a secondary piston mounted within said secondary cylinder for linear movement therein relative to said primary piston between a first limit and a second limit, a piston rod extending from said secondary piston to the exterior of said primary piston, means to connect said piston rod to said stem, means to apply fluid pressure to one side of said primary piston to move it from said



first position to said second position, abutment stop means adapted to arrest movement of said primary piston at said second position whereby the effective thrust of the fluid pressure on said primary piston is absorbed by said stop means when said primary piston is urged against said stop means under the influence of the fluid pressure applied to said one side of said primary piston, means to apply fluid pressure to said secondary piston to urge it away from said first limit to effect sealing engagement of said backseating surfaces when said primary piston is held against said stop means by the fluid pressure applied to said one side of said primary piston whereby the thrust on said piston rod and said backseating means when said primary piston is urged against said stop means is limited to the thrust of the fluid pressure applied to said secondary piston.

4,447,037

WELL BLOWOUT PREVENTER, AND PACKING ELEMENT

Wai J. Huey, Los Angeles; Fernando Murman, Rancho Palos Verdes, and Eugene Matsuda, Laguna Hills, all of Calif., assignors to Hydril Company, Los Angeles, Calif.

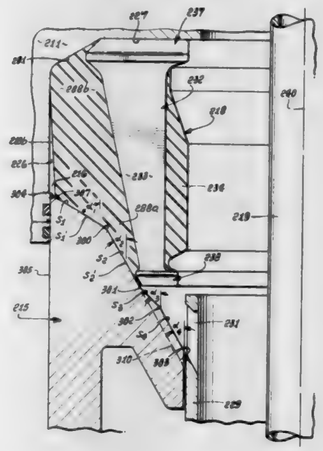
Continuation-in-part of Ser. No. 277,341, Jun. 25, 1981. This application Jan. 4, 1982, Ser. No. 336,691
Int. Cl.³ B65D *53/00*
U.S. Cl. 251—1 B **30 Claims**

1. In an annular blowout preventer packer unit having a longitudinal axis, the packer unit adapted to be compressed during axial advancement of a piston in a housing, and to engage surface extent of the housing facing inwardly toward said axis, the combination comprising

(a) said packer unit including metallic inserts generally circularly spaced about said axis, the inserts having webs that extend generally longitudinally, and

(b) said unit including an annulus of elastomeric material extending about said axis and embedding said webs so that the webs anchor the material during displacement thereof, the annulus having a bore,

(c) the annulus having a first body section located to be radially inwardly displaced by the piston during its axial advancement, and a second body section located to be axially compressed by the piston during its advancement so that the second body section remains compressively engaged against said inner surface extent of the housing during said piston advancement, said first and second body sections being integral and in longitudinal alignment prior to said compression of the packer unit by the piston,



(d) said first body section having a first frusto-conical portion of lesser angularity relative to said axis and a second frusto-conical portion of greater angularity relative to said axis, said second portion having greater radial spacing from said axis than said first portion, said portions located radially outwardly of the webs,

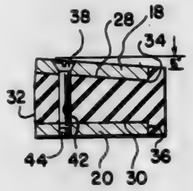
(e) the preventer including said piston having at least three interior frusto-conical cam surfaces engageable with said first body section, sequential of said surfaces having different angularites relative to said axis, and sequential of said surfaces being at successively closer spacings from said axis.

4,447,038

BLOW-OUT PROTECTOR PACKER ELEMENT

Raymond C. Floyd, Spring, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 19, 1982, Ser. No. 350,455
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 B **10 Claims**



1. A packing element for a blow-out protector comprising:

a first reinforcing plate,

a second reinforcing plate,

a body of an elastomer interposed between said reinforcing plates,

said plates and said body being formed with semi-cylindrical cutouts on one side thereof which are aligned in said element,

a semi-cylindrical arch formed by said aligned cutouts,

said elastomer facing on said arch being compressed and defining a work surface,

said elastomeric body having upper and lower surfaces respectively interfacing said reinforcing plates, the thickness of said body being greater along said work surface than in the balance of said body such that said surfaces diverge in the direction of said work surface when said body is in a free and uncompressed condition, and

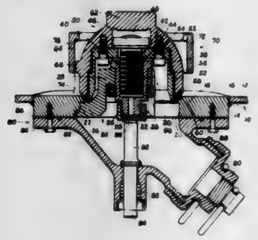
means for holding said reinforcing plates in parallel relationship and thereby compressing said elastomeric body at said work surface such that a preload compression is built into said work surface.

4,447,039

BOTTOM OPERABLE TANK CAR VALVE HAVING EXTERNAL ROTATION STOP

Gunter R. Behle, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Continuation of Ser. No. 215,917, Dec. 12, 1980. This application Jan. 10, 1983, Ser. No. 456,645
Int. Cl.³ F16K *51/00*
U.S. Cl. 251—144 **35 Claims**



1. A tank bottom outlet valve assembly comprising: a tank bottom having a bottom opening therein; a tank mounting flange located within said bottom opening; said mounting flange forming an extension of said tank bottom; fixed stop means mounted upon at least one of said tank bottom and mounting flange, and extending upwardly into said tank; said mounting flange having a flange opening therein; a valve seat separate from said fixed stop means located within said flange opening; a valve closure located within the tank movable vertically relative to said seat, in closed position engaging said valve seat, and in open position being spaced from said valve seat; means for rotating said valve closure located within said flange opening; valve closure stop means on said valve closure located within said tank engagable with said fixed stop means within said tank to prevent rotation of said valve closure and allow vertical movement of said valve closure between open and closed positions.

4,447,040

FLUID LINE COUPLING WITH RELIEF VALVE

Vincent G. Magorien, Granada Hills, Calif., assignor to Systron-Donner, Concord, Calif.

Filed Apr. 20, 1983, Ser. No. 486,695
Int. Cl.³ F16L *37/28*; F16K *31/12*
U.S. Cl. 251—149.8 **7 Claims**

1. A fluid coupling component, comprising:

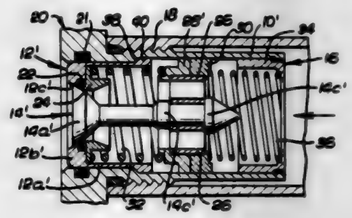
a tubular housing having one end in fluid communication with a fluid system module and an operative end portion for connection to a mating coupling component;

a valve disposed centrally in said housing and movable axially in said housing;

a poppet also movable axially in said housing and having an annular portion engageable with said valve to provide a valve closure;

a valve spring operative to urge said poppet into sealing engagement with said valve;

non-resilient abutment means rigidly connected with said



housing, for limiting movement of said poppet toward the operative end of said housing;

a second spring operative to urge said poppet, and with it said valve, into engagement with said abutment means when in the disconnected condition of the coupling;

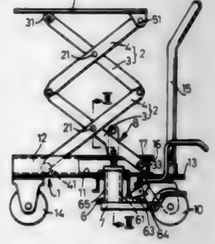
whereby, in the disconnected condition, excessive fluid pressure in the component will move said valve out of sealing engagement with said poppet, which is prevented from further movement by said abutment means.

4,447,041

DEVICE FOR LIFTING A TABLE

Hiromu Fujita, Kyoto, Japan, assignor to Osaka Taiyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 282,645, Jul. 13, 1981, abandoned, which is a continuation of Ser. No. 84,859, Oct. 15, 1979, abandoned. This application Aug. 17, 1983, Ser. No. 523,906
Int. Cl.³ B60P *1/48*
U.S. Cl. 254—9 R **1 Claim**



1. A device for lifting a table comprising:

a frame having an upwardly extending handle bar,

a stretchable assembly of intersecting pivotable arms and shiftable arms pivoted to each other at their intersection, and further stretchable assembly connected to the upper portion of the said stretchable assembly, lower ends of the pivotable arms of the lower stretchable assembly being pivotably attached to the frame and lower ends of the shiftable arms being slidably supported on the frame, the table being mounted on the upper ends of the arms of the upper stretchable assembly,

a hydraulic assembly comprising a piston rod, a piston attached thereto, a cylinder housing the piston for advancing and retracting the piston rod, a pump for feeding working oil to the cylinder operatively associated with the cylinder, an oil tank connected to the pump, a base plate fixedly mounting the cylinder, pump and tank, the base

plate and the cylinder being fixed rigidly to the frame near to the handle bar, the piston rod projecting substantially vertically from the cylinder and having a forward end, the cylinder being surrounded by a case and the oil tank being formed between the cylinder and the case, the pump being coupled to a pedal in order to operate the pump by foot, means for interconnecting said pump to said cylinder, said cylinder to said oil tank, and said oil tank to said pump, said means consisting of oil channels internally formed exclusively in said base plate, and

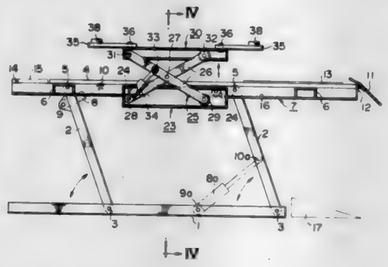
a link assembly comprising a lateral rod connected to the forward end of the piston rod, and a pair of parallel links pivotally connecting both ends of the lateral rod to portions of the pivotable arms between their lower ends and the intersection, the piston rod intersecting the arms of the stretchable assembly at right angles thereto when the stretchable assembly is in a collapsed position.

4,447,042

VEHICLE LIFT

Saburo Masui, Tokyo, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Sep. 9, 1981, Ser. No. 300,681
Claims priority, application Japan, Apr. 6, 1981, 56-51564
Int. Cl.³ B66F *3/22*
U.S. Cl. 254—90 **7 Claims**



1. A vehicle lift comprising:
(a) a base;
(b) a platform, mounted on the base, on which a vehicle is driven up upon; said platform having a pair of foot plates which are movable in a horizontal plane;
(c) a first link which moves the platform up and down;
(d) a table for supporting a chassis of the vehicle movably mounted to the platform;
(e) a second link which moves the table up and down independent of the movement of said platform by said first link; and
(f) said table being movably mounted to the platform through a chassis provided with rollers guided by guide grooves in wheel support members, and said chassis is adapted to move forward and rearward along the platform by being suspended from said wheel support members.

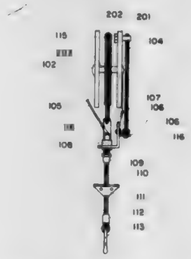
4,447,043

AUTOMATIC CABLE STOP FOR TOWING WINCH

Augustino Bocchiaro, 395 Blue Point Rd., Farmingville, N.Y. 11738

Filed Sep. 14, 1982, Ser. No. 417,989
Int. Cl.³ B66D *1/56, 1/48*
U.S. Cl. 254—269 **5 Claims**

1. Apparatus for automatically stopping the inward reeling of a tow truck cable by means of a powered winch before the end of the cable is reached to prevent damage to the winch longitudinally extending boom and injury to personnel in the area, comprising:
(a) first rotatable joint means secured to the outward end of the boom,
(b) an adjustable link having a first and second end and a longitudinal axis passing through said ends, said adjustable link being connected at its first end to said first rotatable joint means, the adjustable link being adjustable in effective length between its first and second end, and being rotatable about the first rotatable joint means in a generally vertical plane that is parallel to the longitudinal axis of the boom,
(c) a second rotatable joint connected to the second end of the first adjustable link,
(d) a connecting link having a first and second end, the first end being connected to the second rotatable joint for rotation generally in a plane orthogonal to the longitudinal axis of said adjustable link,
(e) a tension adjustment bracket having a first and a second portion, said portions both having a first and a second end, the two portions being positioned generally orthogonal to one another and being rigidly connected together at their first ends, said tension adjustment bracket having a plurality of holes along the length of its first portion between the first portions first and second end, and said tension adjustment bracket being rigidly connected at one of said holes to the second end of the connecting link to orient the first portion of the tension adjustment bracket generally parallel to the adjustable link,
(f) a resilient means connected between an outward end of the boom and one of the holes in the tension adjustment



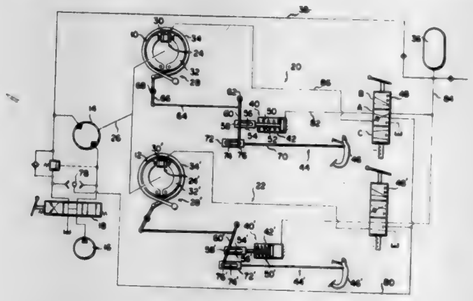
bracket to draw the tension adjustment bracket towards the boom by rotating the entire apparatus about the first rotational joint means,
(g) a cable guide means for riding on the cable, said cable guide having a first and a second end, a longitudinal axis between the ends and a concave surface in cross section orthogonal to the longitudinal axis, said concave surface encompassing at least a portion of the cable on its side away from the outward end of the boom and said cable guide means being connected at its first end to the second portion of the tension adjustment bracket, to position the longitudinal axis of the guide generally parallel to the longitudinal axis of the adjustable link,
(h) a first switch means connected to the second portion of the tension adjustment bracket, said switch means having a projection for actuating the switch means, said projection extends beyond the cable guide means in a direction away from the boom with its longitudinal axis generally parallel to the longitudinal axis of the cable guide means, and adjacent thereto, said switch means being connected to disconnect power to the winch on being actuated by pressure against the projection along its longitudinal axis, and
(i) a cable extension means secured about the cable at the point it is desired to automatically stop the reeling of the cable, said cable extension means extending radially outward of the cable to engage the switch projection and actuate the switch means as the cable is passed through the cable guide means.

4,447,044

CLUTCHING AND BRAKING CONTROL FOR HYDRAULICALLY DRIVEN CRANE WINCHES

Minoru Nakata, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 26, 1981, Ser. No. 267,356
Claims priority, application Japan, May 26, 1980, 55-69017
Int. Cl.³ B66D *1/14, 5/08, 5/26*
U.S. Cl. 254—309 **9 Claims**



1. A control system for a hydraulically driven crane winch of the type having a drum provided with a hydraulically actuated clutch and a brake, the control system comprising:
(a) a first source and a second source of hydraulic fluid under pressure;
(b) a negative braking mechanism means for automatically actuating a brake, the negative braking mechanism means including a brake cylinder;
(c) hydraulic connecting means including a mode selector valve means movable to at least three positions for selectively delivering the pressurized fluid from said two sources to the clutch and to the brake cylinder in order to condition respectively the winch for a selected one of at least three operating modes consisting of (1) a winching mode wherein said clutch is engaged and said brake is disengaged with respect to said drum, (2) a brake-locking mode and (3) a free-fall mode wherein said clutch and brake are disengaged with respect to said drum; and
(d) a positive braking mechanism for permitting an operator to selectively apply the brake whenever said mode selector valve means is in that one of the at least three positions which effects operating in the free-fall mode, and the brake is released by the negative braking mechanism.

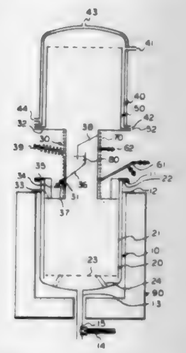
4,447,045

APPARATUS FOR PREPARING HIGH-MELTING-POINT HIGH-TOUGHNESS METALS

Etsuji Kimura; Katsumi Ogi; Kazusuke Sato, all of Saitama, and Mayuki Hashimoto, Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 485,057
Claims priority, application Japan, Jul. 21, 1982, 57-125870; Mar. 4, 1983, 58-34488
Int. Cl.³ C22B *61/02*
U.S. Cl. 266—149 **8 Claims**

1. An apparatus for the preparation of high-melting-point high-toughness metals by reduction of chlorides thereof with an active metal which comprises a heatable and tightly closable reaction chamber, an evacuable and coolable condensation chamber for condensing the unreacted active metal and the formed chloride vaporized in the reaction chamber to separate these from the formed object metal, and an intermediate connecting section for communicating and sealing off the two chambers, wherein said apparatus comprises a seal pot closing means having a funnel provided in the intermediate connecting section and pot for fusible and vaporizable sealing material which receives the lower pipe of the funnel and the heating means for melting and vaporizing the fusible and vaporizable material, and wherein the pot of the seal pot structure is provided with a conduit with a valve means for the fusible and vaporizable material.



4,447,046

APPARATUS FOR ADDING STRONGLY REACTING MATERIALS INTO A MELT

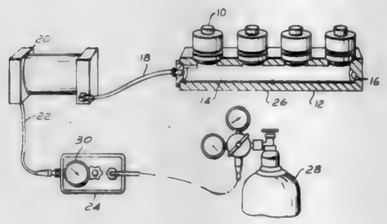
Günther Beele, Kerpen-Blatzheim, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,857
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021707
Int. Cl.³ F27D *3/10*; C21C *1/10*
U.S. Cl. 266—216 **5 Claims**

1. An apparatus for adding strongly reacting materials to a melt which comprises
a vessel for containing a metal melt, said vessel having an open upper end,
a protective top covering the open upper end of said vessel, said protective covering including a hole therein,
an elongated filling tube sealingly extending through said hole in said protective top from a location outside said vessel to a lowermost end inside said vessel and providing a material passageway therethrough, said filling tube including a support flange extending outwardly of the lowermost end, and
a dip container mounted on said support flange of said filling tube, said dip container including an outer sheath which encloses an internal reactive chamber below the lowermost end of said filling tube and communicable with the

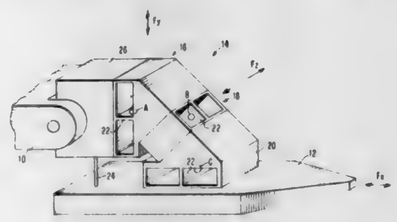
passageway in said elongated filling tube, the outer sheath extending upwardly to surround said filling tube up to a point below said protective top, said outer sheath including at least one passageway therethrough to allow for communication between a melt in said vessel and the strongly reacting materials supplied thereto via said filling tube, said outer sheath having a larger inside dimension than the outside dimensions of said filling tube so as to provide a space therebetween as well as between the outer sheath and the protective top, which space functions as an expansion joint, and said outer sheath being formed of a refractory material having reinforcing materials dispersed therein.

4,447,047
CYLINDER STRUCTURE
James M. Newell, Lowell, Mich., assignor to Di-Dro Systems Inc., Dearborn, Mich.
Continuation of Ser. No. 224,848, Jan. 14, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 419,976
Int. Cl.³ F16F *9/02*
U.S. Cl. 267—118 **6 Claims**



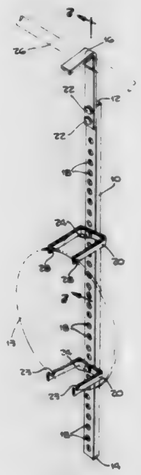
1. Piston and cylinder structure comprising a hollow cylinder having open ends, an annular piston positioned within the cylinder for reciprocation axially thereof, a hollowed out piston rod attached to the piston at one end thereof and having a closed end extending out of the one end of the cylinder, means for sealing against admission of external atmosphere between the piston rod and the one end of the cylinder, the inner surface of the cylinder being slightly greater in diameter than the outer surface of the piston rod whereby the outer surface of the piston rod is in spaced relation to but closely adjacent the inner surface of the cylinder, said piston rod being hollowed out over most of the length thereof, and the hollowed out portion of the piston rod having a substantially greater radial extent than the non-hollowed out remaining portion of the piston rod, means for securing the other end of the cylinder to a source of gaseous actuating medium under pressure to provide the gaseous actuating medium directly to the inside of the piston rod, rigid positive stop means for limiting piston travel under said pressure, means for evacuating the space defined between the cylinder, piston, piston rod and sealing means through the piston rod without contaminating the surfaces defining said space or restricting movement of the piston and piston rod, comprising radial openings in the piston rod extending between the space and the interior of the piston rod, a manifold for gaseous actuating medium connected to the other end of the cylinder, and a control panel connected between the manifold and the source of actuating medium under pressure for providing an indication of the actuating medium as charged.

4,447,048
SYMMETRICAL THREE DEGREE OF FREEDOM COMPLIANCE STRUCTURE
Friedrich L. Fischer, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1981, Ser. No. 336,487
Int. Cl.³ F16F *1/36*
U.S. Cl. 267—141.1 **10 Claims**



1. A symmetrical multiple degree of freedom compliant structure, comprising at least two individual compliant elements located at either end of said structure at substantial right angles to each other, said two compliant elements forming a unitary structure such that when a given force is applied the structure will orthogonally resolve the force along two orthogonal coordinates in response thereto, each of said compliant elements comprising two closely spaced planar regions, joined by at least two thin flexible webs which are parallel to each other and substantially perpendicular to the said planar regions with said at least two elements being disposed so that the planes including the planar regions, for each element are perpendicular to each other and the planes including the flexible webs of each element are perpendicular, and wherein each compliant element is constrained to flexural movement along a single axis perpendicular to said flexible webs.

4,447,049
APPARATUS FOR HOLDING A WORK PIECE
Sol Rudy, Upland, Calif., assignor to Alumin-Art Plating Company, Ontario, Calif.
Filed Aug. 2, 1982, Ser. No. 404,561
Int. Cl.³ B25B *11/00*
U.S. Cl. 269—46 **1 Claim**



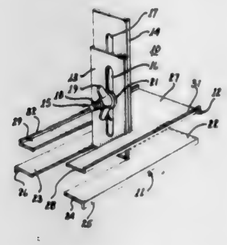
1. Apparatus for holding a workpiece to be submersed in a liquid bath against jostling and shaking movement, said apparatus comprising:

a main shaft adapted to be vertically disposed having vertically spaced horizontal holes and having top and bottom extremities and a suspension hanger attached to said top extremity;

a pair of U-shaped workpiece holders having legs spread outwardly from the bottom thereof to be adjustably attached to said main shaft, each having a hole near the center of the bottom of the U and at least one hook near the end of each leg of said U formed by making a notch near the end of each leg thereof; and

at least one pair of nut and bolt assemblies, each bolt of such assembly being disposed through said hole near the center of the bottom of the U of a corresponding one of said U-shaped workpiece holders and also through a selected one of said vertically spaced horizontal holes in said main shaft, and each bolt being of such smaller cross-sectional dimension than the diameter of either of said holes so as to provide a swivel movement of said U-shaped workpiece holder; whereby said pair of workpiece holders may be so positioned and oriented that the hooks thereof may grasp and retain a workpiece of unique size and configuration.

4,447,050
WOOD KERF CHUCK
Charles W. Niemoeller, 1091 Geneva Dr., Prescott, Ariz. 85012
Filed Nov. 9, 1981, Ser. No. 319,549
Int. Cl.³ B25B *5/14*
U.S. Cl. 269—49 **1 Claim**



1. The kerf chuck comprising in combination a base jaw having a first base part and two spaced apart first fingers, a vertical kerf member extending from said first base part between said first fingers and adapted to extend through a kerf, a clamp jaw having a second base part and two spaced apart second figures, a vertical holding member extending from said second base part between said second fingers and adapted to be disposed alongside said vertical kerf member, said base jaw including downwardly extending stiffening beads alongside the edges thereof, said clamp jaw including upwardly extending stiffening beads alongside the edges thereof, said vertical kerf member and said vertical holding member each include a longitudinal slot, and screw nut clamp means extending through said longitudinal slots for holding said vertical kerf member and said vertical holding member in their original relative positions.

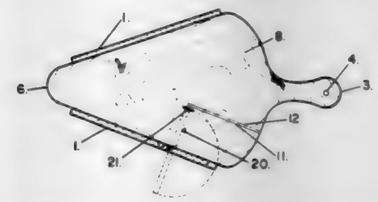
4,447,051
KITCHEN CHOPPING BOARD
Edwin A. Price, 16001 E. 11th Ave., Aurora, Colo. 80011
Filed Aug. 5, 1981, Ser. No. 290,309
Int. Cl.³ A47J *43/00*
U.S. Cl. 269—302.1 **3 Claims**

1. A foods cutting-chopping board comprising:

a. a flat, substantially triangularly shaped, one piece main body, provided with a handle affixed to, and as part of, the wide rear end portion of said flat, triangular main body member; and wherein

b. the laterally opposed side edges of said body are provided with flanges mounted thereupon, and said flanges vertically project therefrom, above said main body's upwardly useable surface, so as to constitute vertically projecting retaining side barriers; and said flanges are affixed to, and extend in one continuous piece, along substantially the entire length of laterally opposed side edges of said main body, in an unbroken linear tangent and wherein

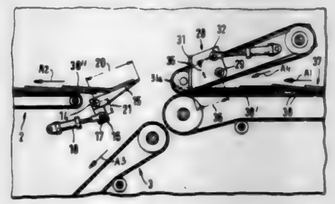
c. a portion of one of said vertical flanges is cutaway along approximately one-third of its length, said cutaway being



nearest handle end of main body, and with the upper edge of the cutaway portion being coplanar with the main body's upwardly useable surface; and

d. the said cutaway portion has a hinged gate mounted upon the flange's vertical edge, said gate being operable within an arc of 180 degrees, serving as a knife guide plate along the free edge of said gate.

4,447,052
APPARATUS FOR SELECTIVELY TRANSPORTING A STREAM OF PAPER SHEETS OR THE LIKE FROM A FIRST PATH INTO ONE OF SEVERAL ADDITIONAL PATHS
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergeswil, Switzerland
Continuation of Ser. No. 196,176, Oct. 14, 1980, abandoned. This application Nov. 12, 1982, Ser. No. 441,227
Claims priority, application Switzerland, Oct. 23, 1979, 477/79
Int. Cl.³ B65H *29/66*
U.S. Cl. 271—280 **24 Claims**



1. Apparatus for manipulating streams of articles, particularly streams of partly overlapping sheets, comprising:

(a) a first transporting unit for a stream of articles;

(b) a second transporting unit for the stream defining a gap with said first unit, said first unit having a discharge end adjacent said gap and being operative to advance the stream towards said gap, and said second unit having a receiving end adjacent said gap and being operative to advance the stream away from said gap;

(c) a third transporting unit for the stream having a receiving end adjacent said gap and being operative to advance the stream away from said gap;

(d) a switching device installed in said gap and having a free end which faces said first unit and is movable between a first position in which said device bridges at least a portion of said gap and allows the stream to advance from said first to said second unit and a second position in which said device blocks the advancement of the stream to said

second unit but allows the stream to advance from said first to said third unit;

(e) means for moving said device between said first and second positions;

(f) intercepting means movable to and from an intercepting position in which said intercepting means temporarily prevents the advancement of articles beyond said discharge end; and

(g) actuating means for moving said intercepting means to and from said intercepting position, said actuating means being operative to move said intercepting means into said intercepting position when said device is to move from said first to said second position but not when said device is to move from said second to said first position.

4,447,053

DEVICE FOR SEPARATING INDIVIDUAL SHEETS COMBINED INTO A STACK

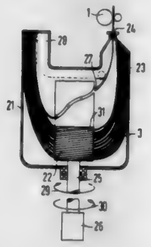
Mats Wager, Sollentuna, and Jakub Hirschberg, Täby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 3, 1982, Ser. No. 345,242

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1981, 3104670

Int. Cl.³ B65H *3/32*

U.S. Cl. 271—113 **16 Claims**



1. Apparatus for separating individual film sheets in an X-ray installation film changer, said sheets being arranged in a vertical stack laterally disposed one on top of the other in a housing comprising a screw member mounted in said housing for rotation about a vertical axis, said screw member formed with a continuous screw thread having a pitch greater than the thickness of each sheet, and every said sheet always being individually respectively engaged in said screw thread vertically spaced apart from the next adjacent sheet such that rotation of said screw member vertically displaces said sheets simultaneously in said housing and said sheets can not stick together.

4,447,054

SHEET PEELING PAWL

Yasuo Sone, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 339,936

Claims priority, application Japan, Jan. 23, 1981, 56-8160

Int. Cl.³ B65H *29/54*

U.S. Cl. 271—311 **6 Claims**



1. In an image recording machine of the type wherein a sheet is conveyed along a surface, a sheet peeling pawl for engaging said sheet and peeling said sheet away from said surface, the improvement characterized in that said pawl is comprised of a metal material having a Young's modulus of substantially between $10/10^3$ and 30×10^3 kg/mm², said pawl including a mounting portion and a forward portion which is contiguous at one end with said mounting portion and has a front end portion for engaging said sheet at the other end, said mounting portion and forward portion being arcuately formed and said forward portion tapering toward said front end portion.

4,447,055

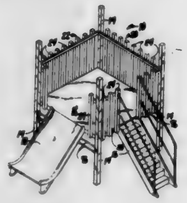
PLAYGROUND EQUIPMENT WITH WOODEN TIMBERS HAVING INTERNAL FASTENERS

Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa

Filed Jul. 14, 1982, Ser. No. 398,071

Int. Cl.³ A63B *9/00*; F16B *23/00*

U.S. Cl. 272—113 **8 Claims**





1. A playground unit having wooden timbers comprising,

a fastener interconnecting a wooden timber to an associated unit member,

said fastener including an internal metal fastener having an internally threaded sleeve element terminating at one end in an enlarged head, said sleeve and head contained within a plastic body having a substantially corresponding shape,

said plastic body including an elongated sleeve element and an enlarged head, said second head having recessed tool engaging means for operating said fastener, and

said fastener being embedded in said wooden member with the outer surface of said enlarged head being substantially coplanar with the adjacent wood member outer surface thereby providing a smooth outer surface on said wood member.

4,447,056

FOOTBALL TRAINING APPARATUS

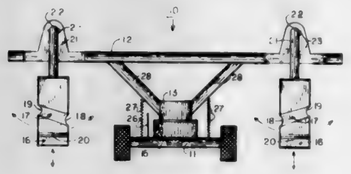
Tom E. Dalton, Rte. 6, Box 96, Galax, Va. 24333

Filed Aug. 26, 1982, Ser. No. 411,897

Int. Cl.³ A63B *67/00*

U.S. Cl. 273—55 R **4 Claims**

1. Blocking apparatus comprising: a frame member, said frame member having wheels positioned thereon, an arm member, said arm member pivotally attached to said frame member, a blocking member having a horizontal axis and a transverse axis, said blocking member attached to said arm member, said blocking member having an outer surface, said outer surface contoured to form a groove, said groove extending at an angle



less than 90 degrees to said transverse axis for assisting in blocking exercises.

4,447,057

TOY WITH BALLS

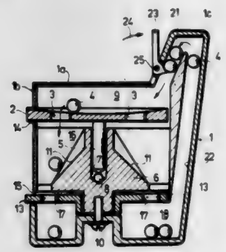
Lagos Hollósy, Budapest, Hungary, assignor to Generalimpex Kulkereskedelmi Vallalat, Budapest, Hungary

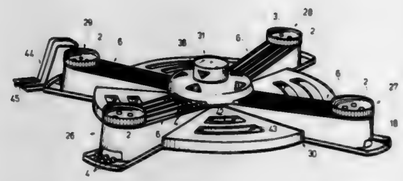
Filed Dec. 28, 1981, Ser. No. 334,721

Claims priority, application Hungary, Jan. 5, 1981, 11/81

Int. Cl.³ A63F *7/04*, *7/02*

U.S. Cl. 273—116 **3 Claims**





1. Toy with balls and playing field wherein the playing field is formed on at least one rotatable disc (2), where the disc (2) is provided with at least one hole (3), the size of which allows falling of the ball freely through, furthermore it is provided with an assorting unit (6) connectible with the hole (3) of the disc (2), said disc (2) is arranged in cup-shaped house (1) to be held in the hand, cover (1a) and side of which are made of transparent material, furthermore the assorting unit (6) is firmly fixed in an assorting chamber (16) formed below the disc (2) and has as many guiding recesses (11) as the number of holes (3) of disc (2), the lower end of the guiding recesses (11) is connectible through outlets (17) of a rotatable null-setting disc (13) with a collecting space (18), which is in communication with a preparatory space (21) through channel (22), where a feeding key (23) is built in between the preparatory space (21) and playing space (9) above the disc (2).

4,447,058

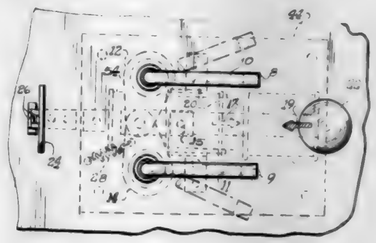
GAME GATE DEVICE

Roman A. Tojza, Chicago, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed May 11, 1981, Ser. No. 262,227

Int. Cl.³ A63D *3/00*, *3/02*

U.S. Cl. 273—121 A **9 Claims**



1. In a ball-rolling game having a downwardly sloping playfield defining an upper end and a lower end and enabling a game ball to be projected upwardly on the playfield, the combination therewith comprising gating apparatus including a pair of generally L-shaped gate members having first arm portions extending downwardly through said playfield in substantially parallel relation, means supporting said first arm portions for rotational movement about their longitudinal axes, said first arm portions extending above said playfield and being spaced apart a distance slightly greater than the diameter of a game ball so as to define a game ball passage therebetween, said gate members having generally coplanar second arm portions disposed above said playfield in substantially parallel spaced relation thereto and being directed generally toward the lower end of the playfield, a control link fixedly secured in radial relation to each of said first arm portions below said playfield, a pair of discrete control arms each of which is pivotally connected directly to a corresponding one of said control links, an actuator shaft supported below said playfield so that the axis of said shaft is substantially normal to a plane containing the axes of said first arm portions of said gate members, means pivotally connecting each of said control arms to said actuator shaft so as to define a common pivot axis therebetween, and actuator means operatively associated with said actuator shaft for effecting selective rectilinear movement thereof between first and second positions in response to command signals so as to effect selective rotation of said second arm portions of said gate members between first substantially parallel positions defining a generally parallel walled ball guide path therebetween and second diverging positions defining a converging guide path toward said game ball passage, whereby the difficulty of projecting a game ball through said game ball passage from the lower end of said playfield is increased when said second arm portions are in their said first positions.

4,447,059

PUTTING PRACTICE DEVICE WITH SPIRAL TRACK

Norman Czajkowski, 8815 Walnut Hill Rd., Chevy Chase, Md. 20015

Filed Aug. 28, 1981, Ser. No. 297,421

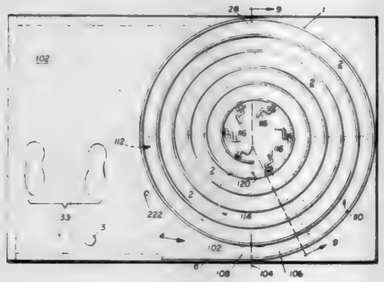
Int. Cl.³ A63B *69/36*

U.S. Cl. 273—176 FA **32 Claims**

1. An apparatus for practicing golf putting strokes that provides a direct correlation between the distance that a ball will travel when struck by a player in using the apparatus with respect to a predetermined natural grass putting green said apparatus comprising:

a wall member having front and end portions, and interior and exterior surfaces, and adapted to be positioned upon a synthetic putting surface in an arcuate spiral arrangement about a centrally located vertical axis in such a manner

that said wall member is spirally and successively coiled along a spiral path defined by the top portion of said wall member, said spiral path having a predetermined gradual decrease in radius as measured from said vertical axis as said wall member is coiled from said front portion to said end portion thereby defining a spiral track; said wall member further having a ball receiving portion receiving a ball struck by a player and directing the ball into said spiral track so that the ball will roll along said spiral track and be



in a rolling relationship with said interior surface of said wall; and

a synthetic putting surface having a surface roughness which is so different from the surface roughness of a natural grass golf putting green that a putted golf ball rolling upon said synthetic putting surface will have less velocity loss due to friction than a putted golf ball rolling upon said natural grass putting green whereby a putted ball will roll thereon in said spiral path substantially the same linear distance it would roll on said natural grass putting green.

4,447,060

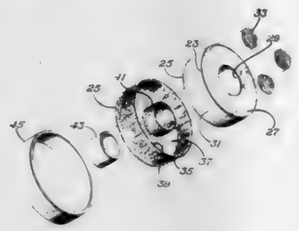
TARGET GAME

Kenneth F. Guinn, 7313 Briley Dr., Fort Worth, Tex. 76118

Filed Nov. 12, 1982, Ser. No. 440,944

Int. Cl.³ A63B *67/06*

U.S. Cl. 273—346 **3 Claims**



1. A projectile member for use in a target game, comprising:

an inner disk having inside and outside faces, a central opening, and a ring-shaped outer periphery, said outside face being provided with a contact engaging material adapted to engage the target;

a cup member having a base with cylindrical sidewalls extending therefrom adapted to receive said inner disk with the ring-shaped outer periphery of said inner disk contacting the interior of said cup member sidewalls, said cup member having a central projection which is adapted to be received within said disk central opening, said cup member base being formed of a complimentary type of contact engaging material for engaging said contact engaging material on said inner disk;

an inner cylinder adapted to be received in said disk central opening over said cup member central projection; and

an outer cylinder adapted to be slidingly received over said disk outer periphery and over said cup member cylindrical sidewalls.

4,447,061

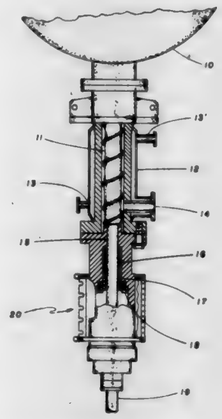
MELT PUMP SEAL WITH VACUUM HOUSING

Richard W. Stover; Frederick T. Proper, both of Chester, Va., and Steven A. Young, Cary, N.C., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 4, 1982, Ser. No. 385,237

Int. Cl.³ F16J *15/40*

U.S. Cl. 277—1 **4 Claims**



1. A method for preventing fluid leakage through a sealing mechanism of a melt pump into a vessel during the period of establishing a vacuum therein and increasing the viscosity of the material fed thereto, said melt pump comprising a shaft which rotates in a space between said sealing mechanism and said vessel and which rotates adjacent said sealing mechanism, comprising the steps of:

a. enclosing in a fluid-tight relationship the area of fluid leakage adjacent the sealing mechanism; and

b. reducing the pressure in the enclosed area sufficiently to prevent the fluid from leaking.

4,447,062

SEALING ARRANGEMENT FOR FLUID FLOW ENGINES

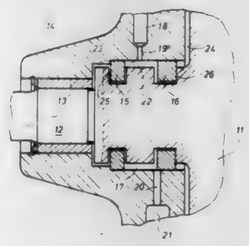
Werner Leicht, Stetten, Fed. Rep. of Germany, assignor to MTU-Motoren-und-Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,814

Claims priority, application Fed. Rep. of Germany, May 21, 1982, 3219127

Int. Cl.³ F16J *15/14*

U.S. Cl. 277—3 **7 Claims**



1. A sealing arrangement for fluid flow engines having two seal means arranged adjacent one another, at least one of said seal means being constructed as piston ring seal, the space formed between the two seal means being operable to be filled with a blocking gas and to be vented by way of vent bore means with adjustable cross section, characterized in that the orifice of the vent bore means in the blocking gas space is operable to be substantially covered off by the piston ring and in that the cross section of the vent bore means effective for the relief of the blocking gas space can be changed by axial movement of the piston ring.

4,447,063

SHAFT SEAL WITH POSITIVELY MAGNETICALLY CONTROLLED SEALING GAP

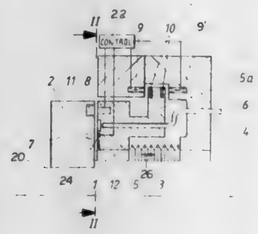
Joachim Kotzur, Oberhausen; Hans H. Reinersmann, Essen; Rolf Albers, Oberhausen; Emil Aschenbruck, Duisburg, and Günter Neuhaus, Oberhausen, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg A.G., Fed. Rep. of Germany

Filed Jun. 1, 1983, Ser. No. 500,160

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221380; Jul. 24, 1982, 3227796

Int. Cl.³ F16J *15/54*

U.S. Cl. 277—80 **12 Claims**



1. A seal device for a shaft rotating with respect to a housing, comprising:

a rotating seal ring connected to and co-rotating with the shaft;

a non-rotating seal ring non-rotatably associated with the housing and defining a radial plane sealing gap with said rotating seal ring;

a packing element which is elastically yieldable in all directions, connected between the housing and said non-rotating seal ring for permitting relative motion therebetween to vary a width of the gap and exert a resetting force on said non-rotating seal ring;

sealing fluid means for supplying a sealing fluid to said gap under a supply pressure for exerting a fluid force between said rotating and non-rotating seal rings, said sealing fluid means supplying sealing fluid over at least one supply bore communicating with said gap;

said non-rotating seal ring having a radially extending shoulder with magnetically attractable material connected thereto, the housing having an annular recess for receiving said shoulder;

an electromagnet connected to the housing on each axial side of said shoulder and adjacent said recess for exerting a magnetic force on said shoulder through said magnetically attractable material;

at least one sensor connected to said non-rotating seal ring for sensing a width of said gap; and

control means connected to said at least one sensor and each said electromagnets for activating at least one of said electromagnets in response to said at least one sensor for applying a selected magnetic force to act in conjunction with said fluid force and aid resetting force to maintain a selected width for said gap.

4,447,064

RADIAL SHAFT SEALING RING HAVING A SEALING LIP AND LIQUID DEFLECTORS

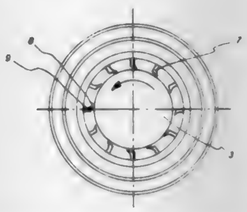
Peter Ehrmann, Hemsbach; Dieter Fuchs, Riedstadt OT-Crumstadt, and Karl-Heinrich Spies, Birkenau, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Aug. 6, 1982, Ser. No. 405,728

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1981, 3147625

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—134 **19 Claims**



1. A radial shaft sealing ring for sealing off a liquid comprising:

a lip ring surrounding said shaft wherein the inner surface of said lip ring facing said sealed off liquid has a conical shape;

a sealing lip fabricated from an elastomer material depending from said lip ring toward said shaft and surrounding said shaft wherein the side of said sealing lip facing said sealed off liquid merges into said conical shaped surface;

means for resiliently pressing said sealing lip against said shaft;

a plurality of liquid deflectors of planar design associated with said lip ring and spaced from said sealing lip on the side of said sealing lip facing said sealed off liquid;

said liquid deflectors being spaced apart around the circumferential periphery of said shaft;

said liquid deflectors having a leading surface facing the direction of rotation of said shaft and extending a distance essentially parallel to the axial direction of said shaft;

said leading surfaces being inclined against the direction of rotation of said shaft;

said liquid deflectors having an inner edge adjacent said shaft with said inner edge being a knife edge-like wiper which merges uniformly into said inclined leading surface; and

said wiper inner edges being spaced from said shaft throughout.

4,447,065

SEALING STRIP

Ronald E. Dupuy, Wabash, and John E. Clark, Marion, both of Ind., assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Feb. 28, 1983, Ser. No. 470,424

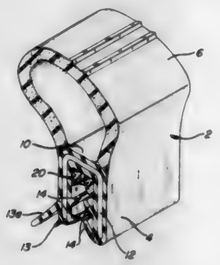
Int. Cl.³ E06B *7/22*; F16J *15/16*

U.S. Cl. 277—184 **3 Claims**

1. A polymeric strip to be mounted on a body flange adjacent a vehicle door opening, including a channel-shaped metal carrier, a relatively hard polymeric covering enclosing said metal carrier, said covering also being channel-shaped and having two relatively hard polymeric legs connected by a relatively hard polymeric base portion, one or more gripping ribs protruding inwardly from the inside facing walls of each of said relatively hard polymeric legs, and a sealing member of relatively soft polymeric material protruding from the inside facing wall of said base portion, wherein the improvement comprises:

said relatively soft polymeric sealing member being of two parts each joined to said base portion and to one of said

legs and having an inwardly facing wall of convex shape extending from said base portion to said leg, said sealing member parts being separated by a slot that extends lengthwise of said strip along the middle of said base

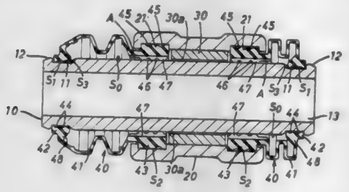


portion and receives the edge portion of said body flange when said strip is mounted on the body flange, with said inwardly facing convex walls of said parts of said sealing member in sealing engagement with opposite sides of said edge portion of said body flange.

4,447,066
SEALING BOOT

Masayoshi Katagiri, Toyota; Toshio Kondo, Okazaki, and Masanori Midooka, Inazawa, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha; Aisin Seiki Kabushiki Kaisha and Toyoda Gosei, all of Aichi, Japan

Filed Mar. 11, 1983, Ser. No. 474,479
Claims priority, application Japan, Mar. 19, 1982, 57-39940
Int. Cl.³ F16J *15/52*
U.S. Cl. 277—212 FB **9 Claims**



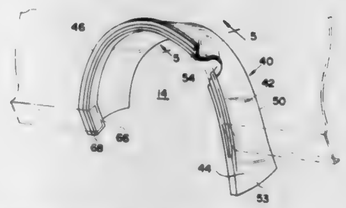
1. In a sealing boot of elastomeric material for hermetically closing an annular opening between cylindrical support and cylindrical movable members positioned to move in a relatively reciprocal relationship, said sealing boot including a bellows portion which is integrally formed at opposite ends thereof with a pair of cylindrical sealing portions attached to said support and movable members, respectively, at least one of the cylindrical sealing portions being formed to have a first end portion and a second end portion interconnected by a cylindrical portion having a cylindrical sealing surface for engaging an annular recess in one of said cylindrical support and movable members the improvement comprising:

said at least one of said cylindrical sealing portions being constructed and arranged such that at least one of said first and second end portions is radially curved away from said cylindrical sealing surface and constructed to effect rotation of said cylindrical sealing portion to cause said cylindrical sealing surface to move into contact with said annular recess.

4,447,067
AUTOMOBILE FENDER PROTECTOR FORMED OF SYNTHETIC RESIN

Toshio Yamashita, No. 2914-20, Iiyama, Atsugi City, Japan

Filed Sep. 28, 1981, Ser. No. 306,627
Claims priority, application Japan, Oct. 6, 1980, 55-142464[U]
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—153 R **16 Claims**



1. In a fender construction associated with a fender panel of an automobile for protection against splashing of mud or the like, the fender panel being formed with a generally semicircular wheel-receiving opening,

a combination comprising:

a fender protector of one-piece synthetic resin article, which comprises a protector body which is in the form of an elongate plate curved correspondingly to said generally semicircular wheel-receiving opening of said fender panel and having approximately the same circumferential length as said wheel-receiving opening, a mud guard portion which is generally in the form of a curved plate extending rearwardly and downwardly from the rear end of said protector body, and a fender molding portion which is generally in the form of a vertical wall projecting upwardly from the outboard edge of said projector body over substantially the entire circumferential length of said body, said fender molding portion being formed with a circumferentially extending slot which is generally T-shaped in cross section, said protector body extending inwardly of said fender panel substantially the width of the automobile wheel, means for securing the vertical wall of said fender molding portion to said fender panel and means for securing an inner edge of said protector body to a body member of the automobile; and

an ornamental molding which is generally in the form of an elongate plate so shaped as to fit into said T-shaped slot and is lockably received in said slot,

said fender protector being arranged and constructed so that when said protector is attached to said fender panel so as to make said protector body lie inboard of said wheel-receiving opening and over the wheel, said fender molding portion covers the outboard side of a generally semicircular portion of said fender panel along said wheel-receiving opening.

4,447,068
BICYCLE DRIVE MECHANISM

Le Ester Brooks, 676 San Jose Ave., San Francisco, Calif. 94110

Filed Nov. 19, 1981, Ser. No. 322,869
Int. Cl.³ B62M *9/00*; F16H *1/12*
U.S. Cl. 280—260 **11 Claims**

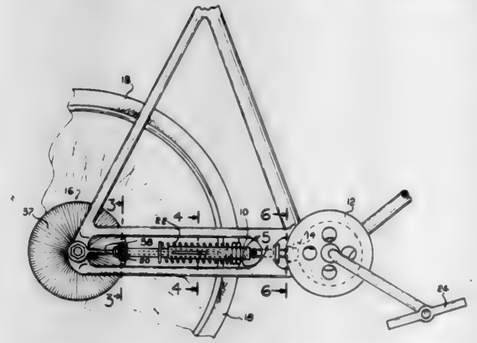
1. In a bicycle including a frame, a crank-and-pedal assembly coupled to a lower portion of the frame, a rear wheel including a rear axle coupled to a rearward portion of the frame, and a drive mechanism coupling the crank-and-pedal assembly to the rear wheel, an improved drive assembly comprising:

(a) a drive shaft having a forward end and a rearward end;

(b) a front gear means coupling said forward end of said drive shaft to said crank-and-pedal assembly;

(c) a disk gear coupled to said rear wheel, said disk gear having an outer face provided with a plurality of evenly spaced, inwardly tapering radial grooves;

(d) a torque-shift gear assembly engaged with said drive shaft for mutual rotation therewith, said torque-shift gear



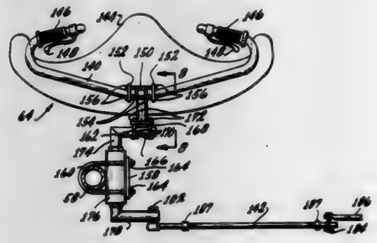
assembly being capable of limited axial movement along said drive shaft while engaging said disk gear; and

(e) means biasing said torque-shift gear assembly towards the center of said disk gear.

4,447,069
STEERING ASSEMBLY CRASH RESISTANT MOTORCYCLE

Tadeus Winiecki, San Diego, and Thomas F. Tindel, Encinitas, both of Calif., assignors to Henry F. Winiecki and Martha M. Winiecki, both of Vancouver, Wash., part interest to each

Continuation of Ser. No. 143,528, Apr. 24, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,283
Int. Cl.³ B62K *21/16*
U.S. Cl. 280—270 **9 Claims**



1. In a motorcycle having two wheels located in tandem, a frame interconnecting said wheels, a steering assembly for steering at least one wheel and a seat assembly for supporting at least one rider, the improvement wherein said steering assembly comprises:

a substantially vertical shaft connected to the front wheel support means to turn said front wheel when said vertical shaft is rotated;

a first crank arm on said shaft;

a tie rod connecting said first crank arm to a second crank arm located to the rear on the motorcycle structure;

said second crank arm mounted on the lower end of a second shaft passing through a bearing attached to said structure;

a third crank arm circular in cross-section mounted on the upper end of said second shaft;

a handlebar assembly mounted on said third crank arm through an excessive force movable mounting means;

said excessive force movable mounting means comprising:

a first tube;

at least one interconnection between one end of said first tube and the side of said third crank arm;

a first flange secured to said one end of said first tube parallel to and spaced from said third crank arm;

two U-bolts each extending from a hole in said first flange, around said third crank arm and back through a second hole in said first flange; and

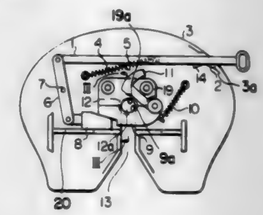
nuts on the ends of the U-bolts which, when tightened, draw the said one end of said first tube into tight friction contact with the side wall of said third crank arm;

whereby ordinary steering forces against said handlebar assembly will not overcome the gripping force of said tight friction contact between said first tube and said third crank arm and will not cause relative movement between said handlebar assembly and the third crank arm but forces on said handlebar assembly which overcome the gripping force of said tight friction contact will cause relative movement between said first tube and said third crank arm.

4,447,070
FIFTH WHEEL

Akira Inoue, Kitakyushu, Japan, assignor to Hitachi Metals, Ltd., Japan

Continuation of Ser. No. 228,183, Jan. 26, 1981, abandoned. This application May 27, 1983, Ser. No. 498,642
Claims priority, application Japan, Oct. 29, 1980, 55-154349[U]
Int. Cl.³ B62D *53/12*
U.S. Cl. 280—434 **14 Claims**



1. A fifth wheel provided on a tractor and adapted to be connected to a generally cylindrical king pin fixed for a trailer, said fifth wheel comprising:

a base plate having a longitudinal slot for receiving the king pin;

a stationary lock rigidly secured to said base plate and having a semi-circular shaped recess straddling said slot and adapted to engage approximately one-half of the circumference of said king pin;

a pivotally mounted lock supported on said base plate for pivotal movement between an opened and closed position, said lock having (i) a main body provided with a semi-circular shaped recess for straddling said slot adjacent said stationary lock, and for engaging approximately the remaining one-half of the circumference of said king pin, when said pivotally mounted lock is in the closed position, (ii) a hook having a curved end, and having a straight end integral with said main body and adapted to contact and be pivoted by said king pin as said king pin enters said slot when said pivotally mounted lock is in the opened position, thereby pivoting said main body toward the closed position, and (iii) means for biasing said pivotally mounted lock toward the opened position;

retainer means including at least one retainer piece slidably mounted on said base plate for releasably engaging said pivotally mounted lock, said retainer piece being adapted to securely hold said pivotally mounted lock in the closed position;

a longitudinal bar having two ends, with one end connected to said retainer piece, and means connected to said bar for biasing said bar so as to cause said retainer piece to engage

said pivotally mounted lock and securely hold it in the closed position;

at least one projection on said bar situated proximately to the other end of said bar for engaging said base plate to thereby securely hold said bar in a first position or a second position, as desired, such that said retainer piece is securely held in the opened or closed position, respectively; and

a latch protruding from said bar between said two ends thereof, said bar and latch being positioned, and said latch being adapted, so as to co-act with said curved end of said hook when said pivotally mounted lock pivots from the opened to the closed position to thereby cause said projection on said bar to disengage from said base plate for permitting said retainer piece to slide under the influence of the biasing force exerted by said means connected to said bar and to engage said pivotally mounted lock and hold said lock in the closed position.

4,447,071

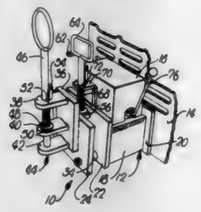
EXTENSIBLE HITCH FOR TOWING VEHICLES

James W. Kaplan, Prairie Village, Kans., assignor to Harlan Material Handling Corporation, Kansas City, Kans.

Filed Apr. 19, 1982, Ser. No. 369,487

Int. Cl.³ B60D *1/00*

U.S. Cl. 280—479 R **5 Claims**



1. An extensible hitch for releasably attaching a vehicle having power means for effecting fore and aft movement thereof to a mobile unit to be moved thereby and provided with a coupling, said hitch comprising:

a support adapted for attachment to said vehicle;

a fluid piston and cylinder assembly carried by the support and provided with a reciprocable piston shaft;

a latch adapted for releasable connection with said coupling and secured to said shaft for reciprocation therewith toward and away from said coupling during use of the hitch to attach the unit to the vehicle;

a releasable lock mounted on said support for holding the latch adjacent the support after the latch is connected to the coupling;

a first plate secured to the support; and

a second plate secured to the shaft,

said latch having a spring loaded latching pin on the second plate.

4,447,072

SUSPENSION FOR PIVOTALLY MOUNTING A RIGID AXLE ASSEMBLY

Kirk D. Bradley, Gladstone; Robert R. Koski, Rock, and James W. Clark, Gladstone, all of Mich., assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Dec. 14, 1981, Ser. No. 330,545

Int. Cl.³ B60D *7/00*

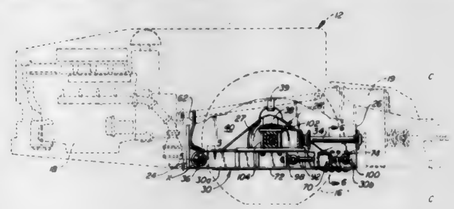
U.S. Cl. 280—492 **3 Claims**

1. In a vehicle including a chassis with a longitudinal centerline and at least one rigid axle assembly having a central housing portion and axle housings extending from opposite sides thereof, an improved suspension for mounting the axle assembly to the chassis with the axle housings extending transversely of said centerline so that the assembly may oscillate about said centerline comprising:

(a) a axle support frame having opposite front and rear ends, corresponding to the respective front and rear ends of the chassis, mounted to said axle assembly;

(b) bearing means pivotally coupling the front end of said frame to the chassis to enable said frame to swivel about a point in alignment with said centerline;

(c) means resiliently connecting the rear end of said frame to the chassis, said means including;



(i) at least one block-like elastomeric member interposedly connected between the chassis and said frame, said block-like elastomeric member having an elongate cavity extending in longitudinal alignment with said centerline and having sidewalls which resiliently deform and bulge outward to permit said frame to oscillate about said centerline;

(ii) a pair of spaced-apart vertically-extending flanges fixed to said frame to constrain bulging of said sidewalls of said elastomeric member in directions transverse to the longitudinal axis of the vehicle.

4,447,073

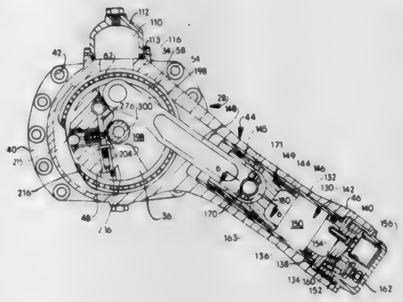
ROAD WHEEL SUSPENSION

Jack M. Brandstadter, Royal Oak, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Mar. 25, 1982, Ser. No. 361,944

Int. Cl.³ B60G *11/26*

U.S. Cl. 280—705 **6 Claims**



1. A self-contained road wheel suspension system comprising in combination: a spindle fixedly secured to a vehicle hull, a road arm having a spindle housing on one end and a road wheel support on the opposite end thereof, bearing means for supporting said spindle housing for rotation relative to said spindle, a fluid filled crankcase defined by said spindle housing and said spindle, a shaft seal retaining said fluid, means defining mechanically operated gas spring means at the opposite end of said road arm including means coupled to said spindle for producing a spring force on the vehicle hull, a mechanically operated fluid controlled damper means remote from said gas spring means and included within said spindle for damping movement of said road arm with respect to said spindle, said damper means constituting the sole damper means in said road arm for converting energy of motion to heat, and means for absorbing and dissipating said heat without adversely affecting the performance of said gas spring means.

4,447,074

BELT TRANSFER RING FOR PASSIVE VEHICLE OCCUPANT SEAT BELT SYSTEMS

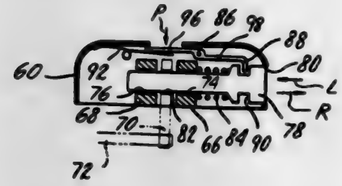
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,958

Claims priority, application Japan, Jun. 27, 1980, 55-89466[U]; Jul. 15, 1980, 55-98845[U]; Aug. 28, 1980, 55-121255[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **4 Claims**



1. In a passive vehicle occupant seat belt system having a slider that is received for movement along a guide rail and is connected to a drive device that is adapted to move it along the rail between restraint and release positions and a belt transfer ring coupled to the slider and receiving a portion of a restraint belt, the improvement characterized in that the belt transfer ring includes a body having a slot adapted to receive a coupling portion of the slider and a pair of holes, one on either side of the slot, a coupling pin removably received through an opening in one side of the body in a coupling position in which it extends through a hole in the coupling portion of the slider and through one of the holes in the body and into another of the holes in the body, thereby coupling the transfer ring to the slider, and being movable from the coupling position out of the hole in the coupling portion of the slider, in that there is a first spring urging the pin in a direction to move it out of the hole in the coupling portion of the slider, and in that there is a means for releasably retaining the pin in the coupling position, said means being operable from outside the body to enable release of the pin from the coupling position for connecting the transfer ring to and disconnecting it from the slider, the retaining means including a latch member that is shiftable between a position in engagement with the pin to retain it in the coupling position and a position out of engagement with the pin to enable the first spring to shift the pin out of the hole in the coupling portion of the slider to release the transfer ring from the slider.

4,447,075

PRESSURE-SENSITIVE RECORDING MATERIAL

Akio Miyamoto, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 11, 1982, Ser. No. 377,221

Claims priority, application Japan, May 11, 1981, 56-70379

Int. Cl.³ B41M *5/16, 5/22*

U.S. Cl. 346—213 **14 Claims**

1. A pressure-sensitive recording material comprising a base paper having coated thereon microcapsules containing a solution including a benzhydrylsulfone type color former and an amine-hydrophobic alkylene oxide adduct.

4,447,076

CONDUIT ASSEMBLY

Orde R. Evans, Lafayette, La., assignor to Oreco III, Inc., Lafayette, La.

Continuation-in-part of Ser. No. 85,756, Oct. 17, 1979, abandoned. This application Apr. 22, 1982, Ser. No. 370,626

Int. Cl.³ F16L *9/14*

U.S. Cl. 285—55 **24 Claims**



1. A conduit assembly comprising:

a first conduit section having inner and outer diameters and comprising a first tubular conduit body;

a second conduit section comprising a second tubular conduit body disposed in end-to-end relation with said first conduit body, said conduit bodies having opposed end faces, and a tubular lining disposed within said second conduit body and having an inner diameter substantially equal to the inner diameter of said first conduit section;

annular seal means disposed between said opposed end faces of said conduit bodies, said seal means creating an axial gap between said end faces;

means connecting said conduit bodies in said end-to-end relation with said seal means therebetween and urging said conduit bodies against said seal means with sufficient force to maintain a substantially high pressure seal between said end faces at said seal means;

wherein said tubular lining has a portion extending beyond said end face of said second conduit body across said axial gap and substantially non-compressively abutting said first conduit section;

said seal means being sufficiently rigid to maintain said gap under said force of said connecting means and sized so as to prevent substantial compression of said portion of said tubular lining extending across said gap.

4,447,077

FITTING FOR SMOOTH WALL TUBES

John H. Palmer, Coloma, Mich., assignor to Ramer Test Tools, Inc., Riverside, Mich.

Filed Jul. 13, 1981, Ser. No. 282,434

Int. Cl.³ F16L *33/16*

U.S. Cl. 285—104 **9 Claims**

1. A fitting for mounting to the ends of smooth wall tubes, said fitting being adapted to seal the inside diameter of the tube, and to grip the outside diameter of the tube in the same area so that the counter forces are such as to eliminate tube distortion, said fitting comprising:

a body having an axial bore;

a shaft disposed within said axial bore and having a shaft fluid channel extending axially through it;

a passageway extending through said body and in fluid communication with said shaft fluid channel, whereby fluid from external means coupled to said fitting flows through said passageway into said shaft fluid channel;

piston means slidably disposed about said shaft and within said body said body, piston means and shaft defining a piston chamber therebetween and fluid seals between said body and said piston means and between said piston means and said shaft sealing said chamber;

a fluid channel in said shaft in fluid communication with said shaft fluid channel and said piston chamber;

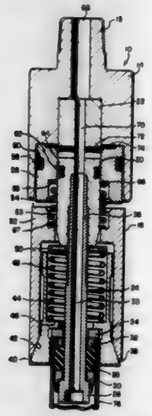
a collet operator slidably disposed about said shaft and posi-

tioned below said piston means to be operatively engagable by said piston means;

spring means disposed between said piston means and said collet operator for normally maintaining a initial separation therebetween;

an elongated screw having one end thereof coupled to said shaft, the other end of said elongated screw being adapted to extend into the end of a smooth wall tube and having stop means thereon and sealing means disposed between said stop means,

a split collet slidably disposed within said collet operator and retained therein by said stop means on said elongated screw, said spit collet being adapted to receive therein the



end of a smooth wall tube, said split collet and said collet operator having complimentary cam surfaces which are operatively engaged to operate said split collet upon operation of said collet operator to grip the outside diameter of said smooth wall tube,

said stop means being slidably fixed on said elongated screw and being urged together by said split collet to compress said sealing means to seal the inside diameter of the smooth wall tube when said split collet is operated by said collet operator,

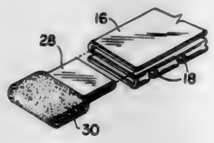
said collet operator being operated by said piston means when fluid from the external means flows through said passageway into said shaft fluid channel and said piston fluid channel into said piston chamber.

4,447,078

METHOD FOR RETAINING AIR PRESSURE IN A DUCT SYSTEM

James H. Jenkins, 6010 N. 26th St., Arlington, Va. 22207

Filed Mar. 25, 1983, Ser. No. 478,661
Int. Cl.³ F16L *25/00, 55/00*
U.S. Cl. 285—331 **4 Claims**



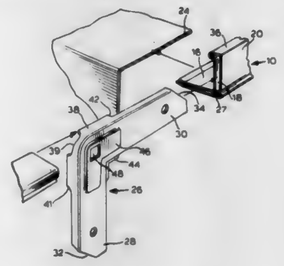
1. An S slip joint for connecting duct sections of a gas/air conduit system comprising a sheet member bent into three folds to provide two grooves that open in opposite directions and are closed at their remote ends by fold walls which connect the outer folds to the center fold with each of said grooves being adapted to receive one of the edges of connecting duct sections in a slidable association and providing an easily assemblable relation ship between the abutting edges and the slip joint; one of the fold walls connecting the outer folds to the center fold containing apertures along the length thereof to permit fluid communication between the associated groove and the duct section received in the remaining groove when the connecting duct sections are positioned in the S slip joint.

4,447,079

DUCT JOINTING SYSTEM

Michael T. Sullivan, Hamilton, Canada, assignor to Exanno Products Limited, Hamilton, Canada

Division of Ser. No. 81,501, Oct. 3, 1979, Pat. No. 4,288,115.
This application Sep. 4, 1981, Ser. No. 299,280
Claims priority, application Canada, Oct. 19, 1978, 313737
The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—363 **14 Claims**



1. A duct jointing system for joining end-to-end two abutting sections of sheet metal duct, comprising;

a plurality of elongate flange members;

said flange members each having a longitudinal channel portion defining a longitudinal opening for receiving therein one end of a respective wall of a section of said sheet metal duct and a longitudinal hollow portion upstanding from said channel portion;

generally L-shaped corner connection pieces linking said flange members together in mutually angularly disposed relationship to form a frame;

each corner connecting piece comprising a pair of limbs which are engaged in respective ones of said hollow portions and which are connected at a common junction portion, the said common junction portion and at least the portions of the limbs immediately adjacent thereto being provided around their radially outer edges with flange means projecting laterally and rearwardly therefrom for stiffening the respective portions of the piece against bending as two such pieces ae secured together to seal the joint between them; and

cleat means for securing said flange members in side-to-side relationship with like flange members on the abutting section of said duct by engagement of the cleat means over the side-by-side longitudinal hollow portions of the flange members;

each flange member longitudinal hollow portion having a hollow cleat-engaging portion projecting laterally therefrom for engagement by and within said cleat means, the flange means of the respective corner connecting piece being engaged by and within said hollow cleat-engaging portion;

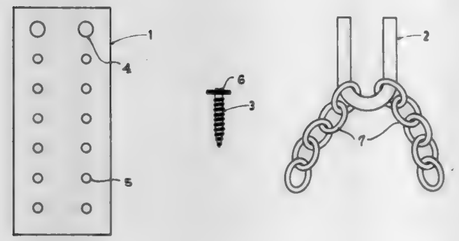
wherein each said connection piece flange means have a cut-away portion at the outer corner of its common junction portion, said cleat means being slidable longitudinally of said side-to-side flange member hollow portions, through said cut-away portions, and into and out of engagement with said laterally projecting hollow cleat-engaging portions.

4,447,080

CHAIN SECURITY DEVICE

Clemens J. Hemmer, 352-G Carlyle East, Belleville, Ill. 62221

Filed Mar. 31, 1980, Ser. No. 123,924
Int. Cl.³ E05C *17/36*
U.S. Cl. 292—264 **1 Claim**



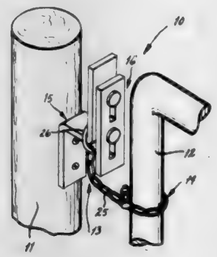
1. A security locking device comprising a plate having a pair of relatively large holes which receive the ends of a U-bar, and series of relatively small holes which each receive a mounting screw securing the plate to a support; at least one chain having its end link secured around the U-bar; the ends of said U-bar closely fitted in said relatively large holes and swaged to attach it to the plate; the head of each screw being flush with and spot-welded to said plate, whereby the device may be used in pairs to be secured together, as by a padlock.

4,447,081

FENCE DOOR LATCH

Phillip D. Stottlemyre, P.O. Box 258, Bolivar, Mo. 65613

Filed Feb. 11, 1982, Ser. No. 347,985
Int. Cl.³ E05C *17/36*
U.S. Cl. 292—264 **2 Claims**



1. A latching assembly for a fence door comprising:

(a) a keeper assembly comprising a first element fastenable to a fence post and a second element secured to the first element and vertically slidable relative thereto; and

(b) a second loop assembly comprising a flexible portion fastenable at one end to a gate and a loop member fastened to the other end and removably attachable to the keeper assembly;

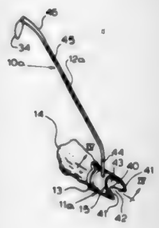
(c) said first element having a leg attachable to a fence post, an uptanding arm having a free end, and an intermediate section connecting and spacing the leg and said arm, said second member being slidable along said arm between an upward position where the loop can be passed over the arm of the first member and the second member and around the lower edge of the second member and a lower position where the second member locks the loop to the keeper assembly.

4,447,082

EXCREMENT CLEAN-UP TOOL AND BAGGER

Donald W. Lindholm, 15368 Betty Ann La., Oak Forest, Ill. 60452

Filed Jul. 30, 1982, Ser. No. 403,486
Int. Cl.³ A47F *13/06*; A01B *1/04*
U.S. Cl. 294—1 BA **6 Claims**



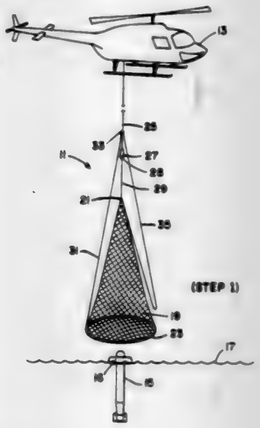
1. An excrement clean-up tool and bagger which comprises a tubular body having a rearwardly inclined open front end providing a bottom scraping lip visible from the top of the body, said scraping lip having a central open front longitudinal groove providing scraping edges along the sides thereof, said body having an upwardly inclined open rear end adapted to receive the mouth of a bag therearound, a releasable clamp adapted to surround the mouth of a bag mounted around the back of the body for securing the bag to the body, an upright handle post extending from the top of the body, a handle on the top end of the post positioned to be grasped by a user for propelling the scraping lip over a surface and under excrement deposited on the surface and to discharge the picked-up excrement into a bag mounted on the back end of the body, and said upwardly inclined rear end holding the bag mouth and clamp above and out of contact with the surface as the scraping lip is propelled on the surface.

4,447,083

NET RECOVERY DEVICE AND METHOD

Jerry M. Campana, and Richard B. Day, both of Bremerton, Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1982, Ser. No. 395,528
Int. Cl.³ B64D *1/22*
U.S. Cl. 294—66 R **15 Claims**



1. A net recovery device comprising:

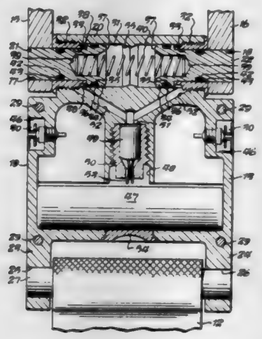
(a) a net having a closed end and an open end, said open end having a periphery;
(b) a rigid member attached to and contiguous with the entire length of said periphery;
(c) a first lift line having one end connected to a releasable hook device;
(d) a second lift line having one end attached to said releasable hook device and the other end connected to said closed end of said net;
(e) a third lift line having one end attached to said first lift line and the other end connected to said rigid member;
(f) a fourth lift line having one end attached to said first lift line and the other end connected to said closed end of said net; and
(g) said fourth lift line being longer than said third lift line, and said third lift line being longer than said second lift line.

4,447,084

EXPLOSIVELY SEPARABLE LINK

Roman Jankowiak, St. Petersburg, and Maurice W. Connell, Naples, both of Fla., assignors to Conax Corporation, Buffalo, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,245
Int. Cl.³ A44B *19/00*; B64D *17/38*
U.S. Cl. 294—83 AE **17 Claims**



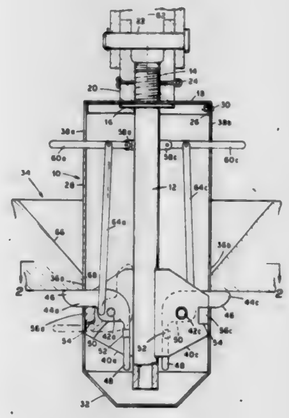
1. In a link connection adapted from automatic disengagement of two connected link members upon the occurrence of a predetermined event, and including means for connecting said link to a strap to form a part of said strap so that said link is a load-bearing element of said strap when loads are applied thereto, a first link member comprising a yoke member having a pair of oppositely disposed, coaxial apertures, one in each arm of said yoke member, a second link member comprising a housing positioned between the arms of said yoke and including a pair of opposed, outwardly extending pins each of which is cooperably received in one of said apertures to permit relative rotation between said link members about the axis of said apertures, the improvement comprising:
(a) said housing in said second link member including a cylindrical bore coaxial with the axis of said apertures;
(b) a pair of oppositely disposed piston members slidably positioned within said cylindrical bore in substantially gastight relationship therewith;
(c) pin means operably connected with said piston members for movement therewith, said pin means being coaxial with said piston members and projecting a sufficient distance to be cooperably received in said apertures; and
(d) means to provide pressurized gas to said piston members to force each piston member inwardly within said bore and thereby withdraw said pin means from said apertures.

4,447,085

GRAPPLE ASSEMBLY

Frederick L. Schmid, San Francisco, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 2, 1982, Ser. No. 384,307
Int. Cl.³ B66C *1/42*
U.S. Cl. 294—97 **7 Claims**



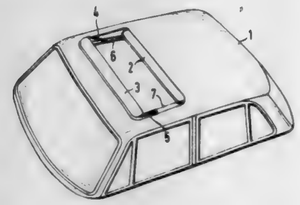
1. A grapple comprising:
an elongate support;
a stop element fixedly connected to said support and spaced from its longitudinal axis, said stop element having first and second abutment surfaces which are spaced apart from each other axially of said support and a side surface which is remote from said support;
a catch having first and second arms disposed in substantially perpendicular relation to each other, said catch being connected at the middle portion thereof to said support for rotation about an axis which is transverse to the longitudinal axis of said support and which is located between said longitudinal axis and said stop element, said catch being swingable between (1) a first object-holding position wherein said first arm abuts said first abutment surface of said stop element and is disposed substantially perpendicular to the longitudinal axis of said support and said second arm is disposed adjacent said support and substantially parallel with its longitudinal axis, and (2) a second object-releasing position wherein said first arm is spaced from said stop element and said second arm is disposed adjacent said second abutment surface of said stop element and substantially perpendicular to the longitudinal axis of said support;
a lever connected at one end thereof to said support for rotation about an axis which is transverse to the longitudinal axis of said support, said lever being spaced from said catch and aligned therewith in a plane including the longitudinal axis of said support, said lever being swingable between (1) a first position wherein it is disposed substantially perpendicular to the longitudinal axis of said support and (2) a second position wherein it is inclined relative to the longitudinal axis of said support; and
a link connected at one end thereof to the first arm of said catch and connected at the other end thereof to said lever so that said catch and said lever jointly move between said first and second positions thereof.

4,447,086

WIND DEFLECTOR FOR SLIDING ROOFS

Rudolf Roos, Maintal, and Dieter Federmann, Rodgau, both of Fed. Rep. of Germany, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 234,290, Feb. 17, 1981, abandoned, which is a continuation of Ser. No. 65,311, Aug. 9, 1979. This application Sep. 7, 1982, Ser. No. 415,006
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 7825737
Int. Cl.³ B60J *7/22*
U.S. Cl. 296—217 **1 Claim**



1. A wind deflector for sliding roofs, especially on automobiles, comprising a wind deflector plate mounted pivotally on the forward roof frame cross-member, two extend arms pivotally attached at the two outer ends of the wind deflector plate, which arms are pivotally journalled on the roof frame longitudinal members, devices acting on the wind deflector plate of the pivoting path length compensation and rod-shaped extend springs provided on each extend arm and effective between the extend arms and the roof frame longitudinal member adjacent to each extend arm for the purpose of pivoting out the extend arms and the wind deflctor plate when the sliding cover is opened and for pivoting in the extend arms and the wind deflector plate by running the sliding cover on to the extend arms when the sliding cover is closed, characterized in that extend springs of circular cross-section are provided, which bear with their free ends slidably with prestress from below against the extend arms, and the other ends of which are fixed to bearing blocks, fixed to the frame longitudinal member, for the extend arms, the extend springs for the purpose of fixing them to the bearing blocks are each bent at their outer ends to a Z-shaped curve and are so inserted into a bore of a first bearing block projection that the outer Z-extension bears from below against the first projection, whereby the extend spring bears from above against a second bearing block projection, which is disposed at a distance from the first bearing block projection, said two bearing block projections are symmetrically disposed with respect to the pivot bearing position for the extend arm situated on the bearing block and are each furnished with a bore for the passage of the extend spring.

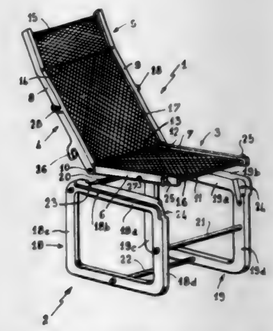
4,447,087

TWO-POSITION EASY CHAIR

Henry Massonnet, FR - 01760, Nurieux, France

Filed Jan. 26, 1982, Ser. No. 342,865
Claims priority, application France, Feb. 9, 1981, 81 02621
Int. Cl.³ A47C *13/00*
U.S. Cl. 297—130 **5 Claims**

1. A two-position easy chair comprising:
(a) an articulated seat including a seat portion having longitudinal side elements with front and rear ends, and the seat including a backrest portion having longitudinal uprights with upper and lower ends, the respective side elements and uprights being held together by crosspieces, and the seat portion and backrest portion being articulated together at their respective rear and lower ends;
(b) each longitudinal side element of the seat portion having a lateral projection extending from it near its front end, and each of the uprights having a hook near its lower end and having a lateral stop projecting therefrom between the hook and its upper end;
(c) a support comprising two laterally-spaced vertically disposed rectangular frames held together by horizontally disposed front and rear spacers, the frames receiving the seat and backrest portions between them;
(d) each support frame having a horizontal arm joined to a front and a rear leg, each arm having a first downward notch extending partway thereinto in front of and adjacent to said rear leg, and having a second downward notch extending partway thereinto near the front leg, the front spacer extending between the front legs below the second notches and the rear spacer extending between the rear legs adjacent to the arm; and
(e) the articulate seat being supportable in a raised position wherein the lateral projections of the side elements are fitted into the second notches in the arms of the support frame and the uprights of the backrest are supported by their hooks overlying the rear spacer, and the articulated seat being supportable in a lowered position wherein the side elements are supported on the front spacer and the uprights are supported on their lateral stops fitted into said first notches in the arms.

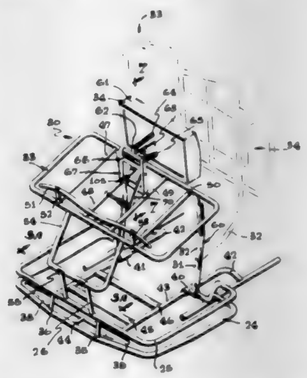


4,447,088

ARTICULATED LUGGAGE CARRIER

Tonko Bodlovic, 206 Ellery Pl., San Pedro, Calif. 90732

Filed Oct. 9, 1981, Ser. No. 310,094
Int. Cl.³ B62J *7/04*
U.S. Cl. 297—217 **9 Claims**



1. An articulated luggage carrier comprising the combination of:
a fixed frame of U-shaped configuration having a pair of

parallel spaced apart leg sections joined at one end by a cross member;
a movable frame of rectangular configuration with respect to said fixed frame in spaced relationship;
link means for selectively positioning said movable frame;
said link means movably interconnected with a selected end of said movable frame to said pair of fixed frame leg sections so that said movable frame is selectively positionable between a first position with respect to said fixed frame and a second position normal to said fixed frame;
resilient means operably carried on said link means for yieldably maintaining said movable frame in either of said first or second positions; and
backrest means movably carried on said movable frame adjacent its selected end interconnected with said link means adapted to be moved with respect to said movable frame so as to support the back of a user regardless of said movable frame being in its first or second position.

4,447,089

SAFETY LATCH FOR EXTENSIBLE LIFT MECHANISMS

Sheldon D. Tegtmeier, West Fargo, N. Dak., assignor to Tegtmeier & Sons, Inc., West Fargo, N. Dak.

Filed Dec. 9, 1982, Ser. No. 448,347
Int. Cl.³ B60P *1/34*
U.S. Cl. 298—11 **9 Claims**



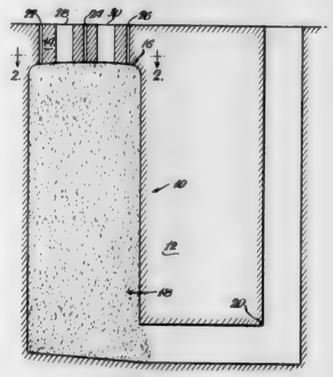
1. A safety latch for extensible lift mechanisms which includes a pair of inclined strut members, each having an extensible section and a stationary section,
a dump box pivotally mounted at its upper portion to the upper ends of said extensible sections for elevation therewith,
support means for positively positioning the dump box when in normal lowered position,
means for extending and retracting said extensible sections,
means for raising and lowering the box on its pivotal mounting,
an elongated latch bar pivotally connected at its upper end to the upper end of each of said inclined extensible sections whereby gravity urges the bar downwardly into latching position and having an abutment portion spaced from said upper end,
a positive stop lug fixed to the stationary section of said strut for engagement with said abutment portion of said latch bar when the extensible strut element is raised into fully extended position and the box is raised from its lowered position on said support means, thus positively preventing retraction of said strut section as long as the box is raised above its lowered position, and
releasing means having a box-engaging portion for engaging the box when the same is in normal lowered position to prevent the abutment portion of the bar from engaging the lug.

4,447,090

PROCESS FOR FORMING AN IN SITU OIL SHALE RETORT

Jay C. Knepper, Denver, Colo., assignor to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Jun. 28, 1982, Ser. No. 392,684
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **9 Claims**



1. A process for forming an in situ oil shale retort, comprising the steps of:
mining a lateral access tunnel into the bottom of an underground formation of oil shale;
removing from 10% to 40% of said oil shale from said formation to provide an underground cavity defining a void;
conveying said removed oil shale above ground;
drilling a plurality of blast holes extending generally vertically through the top portion of said underground formation;
forming at least two generally upright vent holes extending through the top portion of said underground formation so that the total horizontal cross-sectional area of said vent holes and said blast holes is generally equal to the vertical cross-sectional area of said access tunnel;
setting explosive charges in said blast holes;
detonating said charges to explosively expand said oil shale into a permeable rubblized mass substantially filling said void;
said charges emitting explosive gases upon detonation; and
venting said explosion gases through said vent holes, blast holes and said access tunnel to substantially minimize channeling in said rubblized mass.

4,447,091

CONVERTIBLE WIRE WHEEL HUB COVER

Liem Nguyen, Garden Grove; William J. Segal, Van Nuys, and Kent Friend, Santa Ana, all of Calif., assignors to Orion Industries, Inc., Compton, Calif.

Filed Feb. 23, 1981, Ser. No. 237,251
Int. Cl.³ B60B *7/04*
U.S. Cl. 301—37 AT **6 Claims**

1. In the combination of an automotive vehicle wheel having a bolt-on flange and a tire rim, and a wheel cover that includes:
a hub cover in which a central axial opening is defined, and having an interior surface facing said bolt-on flange, an opposite exterior surface, and radially peripheral means for gripping said tire rim, a plate removably mounted in said central opening of said hub cover to bear against the interior surface thereof and having releasable fastening means thereon; a decorative basket seated upon said exterior surface of said hub cover, a retention ring located externally on said basket to cover the center of said basket and configured to seat thereon, and a non-locking hubcap for removable mounting externally of said retention ring at the center thereof and having fastening means releasably engageable with said fastening means of said plate for securing said hubcap and basket to said hub cover, a conversion kit for providing said wheel cover with a locking mechanism, comprising:
a hub spacer defining a guide and secureable against said bolt-on flange interiorally of said hub cover in the absence of said plate to project axially toward said central opening of said hub cover;



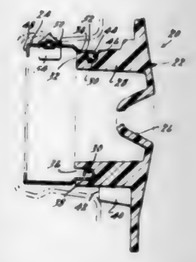
a fastener longitudinally constrained and laterally movable within said guide;
a replacement hubcap for mounting in place of said non-locking hubcap and defining an exteriorally facing central axial recess forming a narrow bearing shoulder and a smaller diameter axial bore;
lockable fastening means seated in said recess against said shoulder and engageable with said fastener in said guide and having a contoured interface surface;
a removable locking key having a tubular body which seats snugly in said recess in engagement with said contoured interface surface of said lockable fastening means for engaging and disengaging said lockable fastening means to and from said fastener in said guide to lock and unlock said replacement hubcap, said retention ring, said basket and said hub cover relative to said hub spacer; and
a cap mountable upon said replacement hubcap to conceal said recess.

4,447,092

WHEEL TRIM RETENTION

Hans R. Belsch, Amherstburg, Canada, assignor to NI Industries, Inc., Novi, Mich.

Continuation of Ser. No. 114,285, Jan. 22, 1980, abandoned. This application Jan. 26, 1982, Ser. No. 342,781
Int. Cl.³ B60B *7/00*
U.S. Cl. 301—37 P **26 Claims**



1. A wheel trim for a vehicle wheel comprising:
a trim member having means defining a generally axially extending annular flange portion having a generally radially outwardly facing surface positionable in generally radially opposed relationship to the axially extending flange portion of a standard vehicle wheel when said trim member is assembled thereto and a radially outwardly extending portion;
locking means including a generally radially outwardly opening recess formed on said radially outwardly facing surface of said trim member and extending circumferentially thereof, portions of said recess opening axially inwardly at a plurality of circumferentially spaced locations;
a continuous metallic retention band;
means provided on said retention band for cooperating with said locking means to attach said retention band to said trim member in a non-biting assembled relationship;
a plurality of circumferentially extending retaining flanges positioned radially outwardly from said retention band, said retaining flanges being operative to maintain said cooperating means in engagement with said recess;
said retention band including an annular flange portion extending axially inwardly from said cooperating means; and
retention means on said flange portion of said retention band, said retention means being engageable with said vehicle wheel and operative to retain said wheel trim when said wheel trim is installed thereon, said radially outwardly extending portion of said trim member overlying and substantially concealing said retention band.

4,447,093

WHEEL

Joel C. Cunard, and William H. Ziegler, Jr., both of Bedford, Pa., assignors to Brown Group Recreational Products, Inc., Bedford, Pa.

Division of Ser. No. 227,158, Jan. 22, 1981, Pat. No. 4,387,070. This application Aug. 9, 1982, Ser. No. 406,579
Int. Cl.³ B60B *1/06*; B29D *3/00*
U.S. Cl. 301—63 PW **13 Claims**

1. An improved wheel comprising
A. a discoid section
(1) shaped to define a wheel rim, a wheel hub and connections between the rim and hub, and

(2) being composed of a first plastic material having selected physical characteristics,

B. a generally toroidal tire section

(1) encircling the discoid section rim, and

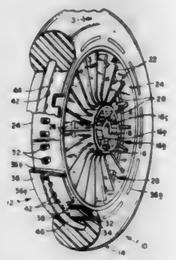
(2) being composed of a second plastic material having at least one physical characteristic different from those of the first plastic material, and

C. means mechanically connecting the tire section to the rim around the circumference of the discoid section, said connecting means including one or more portions

(1) extending appreciably radially beyond the outermost radial extent of said rim into said tire section, and

(2) extending axially to the outer surface of the tire section terminating flush therewith on at least one tire section sidewall at a location spaced radially outward from the periphery of said rim.

8. An improved wheel comprising



A. a discoid section shaped to define a wheel rim, a wheel hub and connections between the rim and hub,

B. a toroidal tire section encircling the discoid section rim, and

C. plastic tire section sidewall decorating means

(1) projecting radially out from the discoid section rim appreciably beyond the outermost radial extent of said rim into the tire section,

(2) having axially extending portions spaced radially outboard of the rim periphery which terminate and define exposed surfaces at the outer surface of the tire section on at least one side of the tire section, and

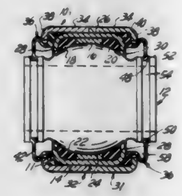
(3) said decorating means and said tire section being colored differently so that said exposed surfaces of the decorating means appear as contrasting colored indicia at said surface of the tire section.

4,447,094

PRELUBRICATED SEALED BEARINGS

William H. Trudeau, Brighton; Donald R. Gaines, and Jon M. Smallegan, both of Farmington Hills, all of Mich., assignors to O & S Manufacturing Company, Whitmore Lake, Mich.

Filed Jul. 24, 1981, Ser. No. 286,471
Int. Cl.³ F16C *32/00*
U.S. Cl. 308—2 R **16 Claims**



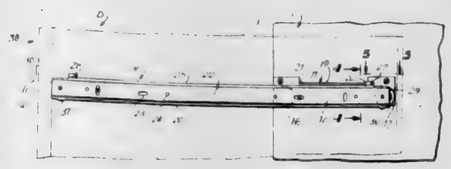
1. A hermetically sealed bearing consisting of a sealing unit and a bearing unit in assembly, said bearing unit comprising an inner member, a housing disposed around said inner member, a load-carrying bearing member disposed between said housing and said inner member and defining bearing surfaces between said inner member and said housing, and a substantially radially disposed end flange at an end of said housing, said inner member having a portion projecting from at least said one end of said housing, and said sealing unit comprising a separate shell press-fitted over said bearing unit housing, a substantially radially disposed end flange at an end of said shell, an elastomeric bellows seal having an end flange compressibly retained between said end flange of said shell and said end flange of said bearing housing, a garter flange integrally formed at the other end of said bellows seal, said garter flange forming an opening of a diameter substantially smaller than the diameter of the projecting portion of said inner member for elastically encircling a circumferential area of said projecting portion, and means hermetically sealing the other end of said shell.

4,447,095

SELF-LEVELING DRAWER SLIDE

Brian S. Fielding, Chappaqua, N.Y., assignor to Hardware Designers, Inc., Mt. Kisco, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,670
Int. Cl.³ A47B *88/00*
U.S. Cl. 308—3.8 **11 Claims**



1. A self-leveling drawer slide assembly comprising a pair of channel members adapted to be mounted to the sides of a drawer and a pair of roller assemblies adapted to be mounted to the drawer-adjacent faces of a cabinet, said channel members being generally U-shaped in transverse section and including a vertically directed branch portion and upper and lower horizontal track portions, said roller assemblies including a horizontally spaced-apart pair of roller members adapted to ride between said track portions and support said upper track for translatory movement between inner and outer limiting positions corresponding, respectively, to the closed and opened positions of said drawer, the horizontal distance between said rollers being generally of the order of about one half or less the length of said track members, said channels including a generally level central portion and at least one end portion inclined upwardly from said central portion, said inclined end portion, in one said limiting position being in registry with at least one said roller of each said roller assembly, said roller assemblies and inclined portions being positioned to coact in said one limiting position bodily to pivot the end of the channel member remote from said at least one end portion in an upward direction, thereby to counteract the tendency of said drawer to sag.

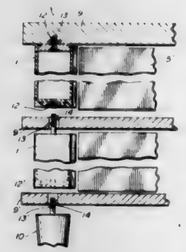
4,447,096

CABINET ASSEMBLY SYSTEM

Ludovic Perl, Chomedey, and Bill Szabo, Montreal, both of Canada, assignors to Herder, N.V., Willemstad, Netherlands Antilles

Filed Feb. 16, 1982, Ser. No. 348,978
Int. Cl.³ A47B *43/00*
U.S. Cl. 312—111 **5 Claims**

1. A cabinet assembly system comprising, in combination, at least one vertical support post having a rectangular cross-section, being provided at least on one corner with a pair of narrowly spaced-apart, integrally formed and vertically extending flanges defining a slot; at least one panel having an end edge adapted to be retained between said flanges; at least one horizontal structural member adapted to be secured to said post, said member including fastening means disposed toward at least one corner thereof; attachment means disposed within the upper end of said vertical support post adapted to matingly engage said fastening means of said horizontal member to



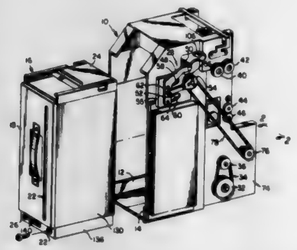
secure said structural member to said post; said panel and one contiguous surface of said post lying in a substantially common plane; said panel being thinner than the width of said post and said structural member having a thickness intermediate the thickness of said panel and the width of said post.

4,447,097

DISPENSER CASSETTE

James O. Lafevers, 3211 Helmet, Irving, Tex. 75060; Richard T. Kushmaul, 705 Woodlawn Ave., Dallas, Tex. 75208, and Ted R. Scott, 1711 Toplea, Euless, Tex. 76039

Filed Aug. 31, 1981, Ser. No. 297,580
Int. Cl.³ E65H *5/00*
U.S. Cl. 312—215 **14 Claims**



1. A cassette for use in a document dispenser, comprising in combination:

a housing for holding a supply of documents, the housing including a loading door having a locking device and further including an unloading door also having a locking device,

means for locking the housing to be secured in the document dispenser while unloading documents therefrom, said means for locking including first and second locks mounted in the housing and a first key mounted in the document dispenser to fit into the first lock, and

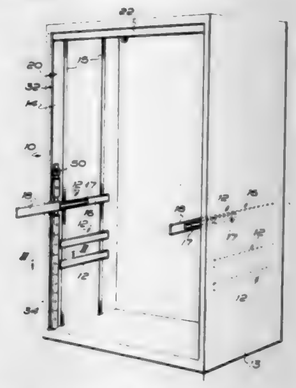
interlock means, including a shaft for interconnecting said first and second locks, responsive to rotation of the second lock to unlock the locking device of the unloading door when the housing is secured in the document dispenser by means of said first key, said interlock means securing the unloading door in a locked position by means of the locking device thereof when the housing is removed from the document dispenser.

4,447,098

PREVENTING TOPPLING OF CABINETS OR OTHER FURNITURE

Ray Parker, Leeds, England, assignor to Thatchcode Limited T/A Flexiform, Great Britain

Filed May 11, 1982, Ser. No. 377,073
Int. Cl.³ E05B *65/46*; E05C *15/04*
U.S. Cl. 312—216 **11 Claims**



1. An article of furniture having a plurality of internal units mounted so as to be slidable out of the article, and a safety device restricting the total number of said units slidable out concurrently yet permitting the sliding out of any chosen one of said units while so restricting the total number, said safety device comprising:

a guide adapted to be positioned on the article so as not to obstruct sliding out of said units, and

a plurality of blocking elements slidably mounted on the guide and projecting from the guide to block the sliding out of said units, the blocking elements being displaceable relative to each other lengthwise along the guide, displacement of at least one blocking element relative to the remining blocking elements creating a gap between successive blocking elements to permit the sliding out of a chosen unit through said gap, the length of said guide available to the blocking elements and the number and total length of said blocking elements thereon being such that said blocking elements occupy less than the total length of the guide available to the blocking elements and leave a remaining free length which is sufficiently great such that when none of said slidable units has been slid out, any blocking elements in the path of any one of the slidable units can be displaced far enough along the guide to create a gap for that unit to be slid out, said free length of the guide being sufficiently limited to restrict the creation of gaps between successive blocking elements and thereby restrict the number of said slidable units which can be slid out concurrently.

4,447,099

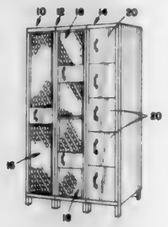
LOCKER CONSTRUCTION

Robert J. French, Wadsworth, and Elmer F. Dorony, Parma, both of Ohio, assignors to Interior Steel Equipment Co., Cleveland, Ohio

Filed Aug. 10, 1981, Ser. No. 291,441
Int. Cl.³ A47B *43/00*
U.S. Cl. 312—257 R **25 Claims**

1. A locker comprising a body portion having back wall means, side wall means, top wall means and bottom wall means, said side wall means and said top and bottom wall means extending forwardly from said back wall means and providing said body portion with an open front, frame means providing a door opening at said front having laterally spaced apart side edges, and a door hingedly connected along one of

said side edges for closing said opening, said door comprising planar open mesh panel means of plastic material and means peripherally bounding said panel means, said means bounding said panel means including laterally spaced apart side portions having upper and lower ends and laterally extending top and bottom portions respectively between said upper and lower ends of said side portions, each said side portion extending along a different one of said side edges of said door opening, each of said side portions and each of said top and bottom portions including first plate means extending laterally inwardly of said door opening and said plate means extending axially inwardly of said door opening from the laterally outer edge of the corresponding one of said side, top and bottom



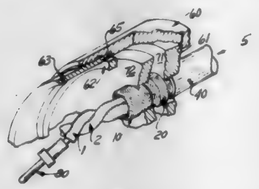
portions, and at least said top and bottom portions being of plastic material formed integral with said open mesh panel means, said side portions of said means bounding said panel means comprising laterally spaced apart metal door frame members having first and second flanges respectively defining said first and second plate means of said side portions, metal cross member means laterally interconnecting said first flanges intermediate said upper and lower ends of said side portions, said first flange of each said door frame member having axially outer and inner sides with respect to said opening, said open mesh panel means being mounted on said inner sides of said first flanges, and said first plate means of said top and bottom portions of said means bounding said panel means having outer surfaces coplanar with said first flanges.

4,447,100

APPARATUS FOR GROUNDING AND TERMINATING A CABLE

John W. Dyce; Edwin R. Waters, both of Sidney, and Cy E. Sherwood, Bainbridge, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 1, 1982, Ser. No. 383,889
Int. Cl.³ H01R *4/66, 13/46, 13/58;* **H02G** *15/06*
U.S. Cl. 339—14 R **3 Claims**



1. In combination with an electrical connector of the type having a housing; a plurality of cables extending into said housing, each of said cables having at least one wire therein surrounded by an inner and outer metal shield, an inner jacket of dielectric material between the shields and an outer jacket of dielectric material surrounding the outer shield; means for electrically grounding the inner and outer shield of said cables together and securing said cables within said connector housing; and contacts attached to the end of each wire and mounted within said connector housing, the improvement wherein said means for grounding said cable shields and securing said cables comprises:

a first plate having a plurality of apertures therein with each of said cables extending through a respective aperture;

a plurality of ferrules, each ferrule located around a respective cable and in contact with its outer shield, said inner shield of each cable folded back over its respective inner jacket and outer shield in close proximity to said ferrule, one side of said ferrule located adjacent said first plate;

a second plate having a plurality of apertures therein with each of said cables extending through a respective aperture, one face of said second plate located adjacent the other side of said ferrule; and

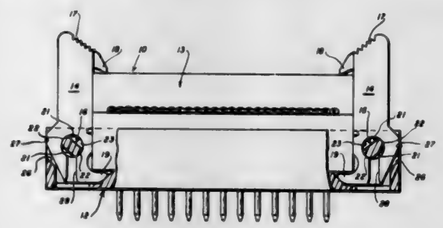
means for securing said plates within said connector housing whereby the ferrules of each of said cables are captivated within the housing to provide a strain relief for an axial force applied to said cable.

4,447,101

CONNECTOR WITH REMOVABLE EJECTOR LATCH

Carmine Gugliotti, Waterbury, Conn., assignor to Litton Systems, Inc., Watertown, Conn.

Filed Apr. 12, 1982, Ser. No. 367,412
Int. Cl.³ H01R *13/635, 13/629*
U.S. Cl. 339—45 M **5 Claims**



1. A locking pivot connection for a removable ejector latch for an electrical connector, wherein the electrical connector comprises a pin cup and a socket, said pin cup having opposite ends for mounting a pair of ejector latches,

said locking pivot connecting comprising a pair of opposed pivot pins located on the end of said pin cup, each pivot pin comprising two opposite flat sides and two opposite curved sides, the thickness of said pivot pin measured between said flat sides being less than the thickness of said pivot pin measured between said curved sides,

said locking pivot connection further comprising a pair of pivot cups located on opposite sides of said ejector latch, said pivot cups being circular and having a diameter slightly larger than the thickness of said pivot pin measured between the curved sides of said pivot pin, and

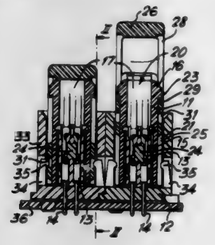
a pair of entry slots on opposite sides of said ejector latch, said entry slots joining an outer edge of the ejector latch with a pivot cup and defining a neck of material therebetween, said entry slots having a width slightly larger than the thickness of the pivot pin measured between the flat sides of said pivot pin, whereby said ejector latch may slide onto said pivot pins in a direction generally parallel to the plane of the flat sides of said pivot pins and whereby said ejector latch may be locked onto said pivot pins by rotating said latch to skew said entry slots relative to said flat sides.

4,447,102

ELECTRICAL CONNECTOR ASSEMBLIES

Friedrich J. A. Köurimsky, Bensheim, Fed. Rep. of Germany, and Werner Lothmann, Ascot, England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 15, 1982, Ser. No. 358,142
Claims priority, application United Kingdom, Mar. 18, 1981, 8108538
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—91 R **6 Claims**



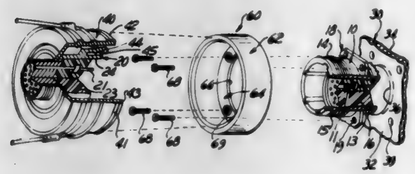
1. An electrical connector assembly comprising male and female connectors with contacts mateable on mating movement of the connectors together and a latching arm mounted on one connector, characterised in that the latching arm (26) is slidably mounted on the one connector (11) and is movable between an extended, release position and a retracted latching position, respectively remote from and adjacent the connectors (11 and 12) when mated, the latching arm (26) and the other connector (12) having complementary latching means (31 and 34) engageable on moving the latching arm (26) to the retracted position, releasably to latch the male and female connectors (11 and 12) together, and the latching means (31 and 34) includes a latching detent (34) extending into the path of movement of the latching arm (26) and depressible to a release condition by engagement with the latching arm (26) on movement of the latching arm (26) between the extended and retracted positions.

4,447,103

MOISTURE SEAL FOR A SEPARABLE ELECTRICAL CONNECTION

Dee A. Werth, Afton, and Lloyd G. Ratchford, Oneonta, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 28, 1981, Ser. No. 334,867
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—94 M **6 Claims**



6. A moisture seal for a panel mounted connection of the type including a first electrical connector (10) having a flange portion (18) secured to the panel (30) and a first mating portion (14) extending from the panel, a second electrical connector (20) having a mating portion (24) interconnected with the first mating portion (14); a duality of interconnected electrical contacts (11, 21) carried by said electrical connectors; and means (40, 42, 44, 46, 45, 15) for releasably coupling the connectors, the coupling means comprising a sleeve (42) having a marginal annulus (41) therearound and a transverse end face (43) confronting the flange portion (18), said moisture seal being adapted to seal a region (50) locally around and between the marginal annulus (41) and the flange portion (18), said moisture seal characterized by:

said panel (30) including a front face (32), a back face (34) and a hole (36) extending between the faces, said first electrical connector (10) being secured so as to have its flange portion (18) abutting against the back face (34) and its forward mating portion (14) extending through the hole (36) and terminating fowardly of the front face (32);

a resilient elastomer (60) comprising a tubular section (62) including an annular section (64) connected thereto, the tubular section (62) having an internal diameter (D) slightly less than the sleeve and defining a cavity sized to radially squeeze about the marginal annulus (41), the annular section (64) including an opening (66) slightly smaller than and sized to radially squeeze about the first mating portion (14); and

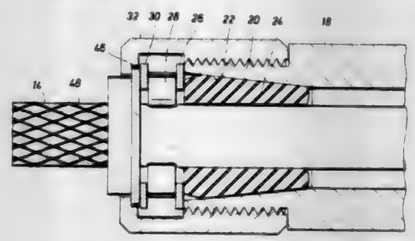
means for securing the annular section (62) to said panel (30), said securing means comprising a threaded jam-nut (80) sized to threadably engage the second mating portion (14) and compress the annular section (64) downwardly about front face (32) of said panel (30).

4,447,104

APPARATUS FOR ATTACHING A MULTICONDUCTOR CABLE TO A HOUSING

Samuel E. Haggard, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Jan. 18, 1982, Ser. No. 340,228
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **5 Claims**



3. Apparatus for attaching a multiconductor cable to a housing, such as the backshell of a connector, comprising a housing having an opening through which the cable extends into the housing, said opening having an inwardly tapering section, a seal member surrounding the cable and wedged in the tapered section of the opening to form a seal between the cable and the housing, a clamp clamped to the cable sufficiently to prevent relative movement between the clamp and the cable, means for transmitting from the clamp to the housing any force urging the cable into the housing, and means attached to the housing for exerting a force on the seal member to compress the seal member between the cable and the tapered section of the opening in the housing and to transmit any forces imposed on the cable to the housing so that the portion of the cable in sealing engagement with the seal member is relieved of such forces.

4,447,105

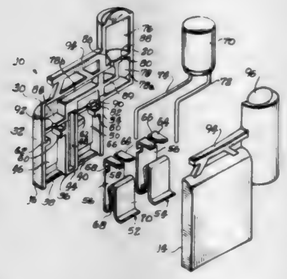
TERMINAL BRIDGING ADAPTER

William E. Ruehl, Wheeling, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 10, 1982, Ser. No. 376,862
Int. Cl.³ H01R *3/00, 13/66*
U.S. Cl. 339—113 R **12 Claims**

12. A terminal bridging adapter for mounting at least one electrical component in electrical series circuit between a selected pair of a plurality of spaced rows of substantially

colinear terminals wherein the electrical component has dimensions greater than the space between each of said spaced rows of terminals, said terminal bridging adapter comprising: a housing constructed of insulative material and defining a connector portion including at least two open ended chambers for receiving a like number of terminals therein, said chambers being respectively disposed so as to be positionable in registry with said like number of terminals, a component portion also defined in said housing and including at least one component cavity for receiving said at least one electrical component and offset from said chambers so as to be positionable offset to one



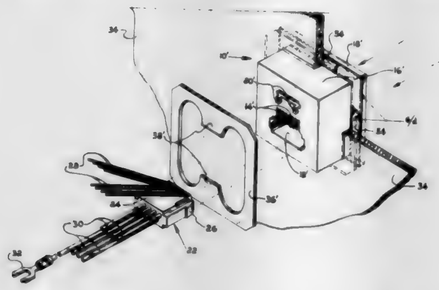
side of said like number of terminals, and a connection cavity defined in said housing and communicating with said at least one component cavity and with said at least two chambers to receive leads of said at least one component therethrough to complete respective electrical circuits to each of said chambers, whereby a plurality of like terminal bridging adapters are respectively mountable to a like plurality of said spaced rows of terminals such that the component cavities of the plurality of terminal bridging adapters may be respectively offset to alternating sides of the plurality of spaced rows of terminals so as to avoid mutual interference between said mounted terminal bridging adapters.

4,447,106

PANEL MOUNTED MODULAR JACK

Timothy W. Houtz, Tower City, and Paul R. Jagen, Mechanicsburg, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 25, 1981, Ser. No. 325,023
Int. Cl.³ H02B *1/02*
U.S. Cl. 339—126 R **2 Claims**



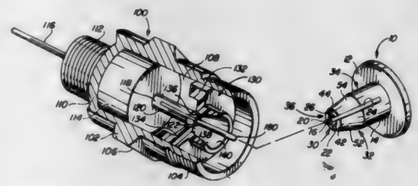
1. In an electrical assembly having a jack and complementary plug mounted on a vertical or horizontal panel, with the jack having a front face of larger size than a rear end, in a hole in the panel sufficiently large to accept the rear end of the jack but insufficiently large to allow the front face of the jack to pass through the hole, the improvement comprising having mounted on the rear end of the jack a lock nut of a flexible metal with an opening sufficiently large to accommodate the rear end of the jack and at least two flexible locking ears protruding into said opening to provide a friction contact with the rear end of the jack and a two-sided sticky tape inserted between the panel and a rear portion of the jack front face.

4,447,107

COLLET FOR CABLE CONNECTOR

Frederick A. Major, Jr., deceased, late of Tempe, Ariz., and by Clare M. Major, personal representative, 175 E. Ellis Dr., Tempe, Ariz. 85282

Filed Mar. 25, 1982, Ser. No. 361,732
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—171 E **2 Claims**



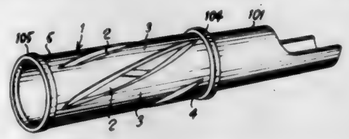
1. Collet apparatus for a coaxial cable connector, comprising, in combination:
- a base flange;
- a column extending downwardly from the base flange;
- a plurality of fingers extending outwardly from the column and comprising a continuation of the column and adapted for gripping a cable to be connected;
- a plurality of axially extending slots disposed between the fingers;
- a bore extending longitudinally of the fingers and defining the interior surfaces of the fingers for gripping the cable;
- a counterbore extending through the flange and the column and communicating with the bore through which the cable extends; and
- conically tapered surfaces on the exterior of the fingers remote from the column defining cam surfaces for camming the fingers radially inwardly to grip the cable, and the column and the fingers between the base flange and the conically tapered cam surfaces are straight and generally cylindrical in configuration.

4,447,108

SOCKET MEMBER FOR AN ELECTRICAL CONNECTOR

Giovanni Ghigliotti, and Attilio Lancella, both of Genova-Sestri, Italy, assignors to Connel S.p.A., Genvoa-Sestri, Italy

Filed Mar. 3, 1982, Ser. No. 354,448
Claims priority, application Italy, Mar. 16, 1981, 12468 A/81; Jun. 26, 1981, 12561 A/81
Int. Cl.³ H01R *13/11*
U.S. Cl. 339—256 RT **10 Claims**



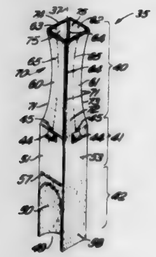
1. A socket member for pin-and-socket electrical connectors, of the type in which the inner areas of the socket member intended to establish the contact with the pin member are, when the said pin member is not inserted, arranged at least substantially in the shape of a hyperboloid of one sheet, said socket member being obtained by means of permanent deformation by twisting, according to a predetermined angle, of a hollow cylindrical body of a suitable metal provided with through slots arranged along its cylindrical surface and inclined with respect to the longitudinal axis of said cylindrical body, said twisting being directed in the sense of inclination of the slots, wherein the improvement resides in the fact that each slot previously to its twisting deformation, presents sides which diverge towards the exterior of said cylindrical body, and said sides meet at the ends of the slot forming curvilinear edges in such a manner that the vertices of said edges located on the inner surface of the socket member are nearer to each other, with respect to the vertices of the edges located on the outer surface, which are farther from each other.

4,447,109

CONNECTOR PIN

Floyd E. Hobart, Jr., Ironia, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 4, 1982, Ser. No. 385,180
Int. Cl.³ H01R *4/02*
U.S. Cl. 339—256 R **10 Claims**



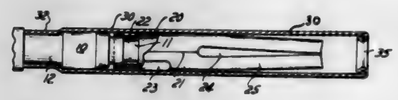
1. A connector pin comprising a unitary piece of electroconductive strip material formed into a longitudinally elongated member having contact and terminal sections at opposite ends thereof and having a mid-section between such two sections with the terminal section extending from the mid-section such that said terminal and mid-sections are in the form of a prismatic tube of polygonal cross section having a plurality of sides which are integrally joined except that two adjacent ones of said sides have therebetween an unbonded longitudinal seam, said contact section comprising a resilient tubular contact projecting outward from the forward part of said mid-section, said terminal section having a solder receiving trough provided as the interior of a depression formed in an imperforate wall portion of said terminal section on a side thereof non-adjacent with said seam so as to have the opening of such depression facing outward from said side, and said wall portion being adapted, by virtue of its being interposed between the outside of said depression's interior and said seam, to provide a barrier for inhibiting liquid material in said trough from reaching said seam and wicking therealong into said contact section.

4,447,110

SOCKET CONTACT FOR AN ELECTRICAL CONNECTOR

Stephen Punako, Bainbridge; Alan L. Davis, Unadilla, both of N.Y., and Raymond J. Eifler, Farmington Hills, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 15, 1982, Ser. No. 368,594
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—262 RR **4 Claims**



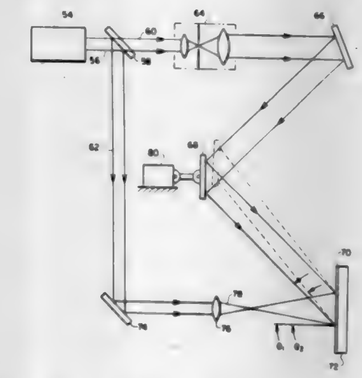
1. A socket contact for an electrical connector comprising:
a solid contact body having a rear portion including means for receiving a wire, a forward portion having a first annular groove therein and a second annular groove rearwardly of said first groove;
a tubular spring member having an axial slit extending from the rear end to one of the forward end and a slot to allow circumferential compression of said member, said tubular member further including a forward end portion having a plurality of forwardly opening longitudinal slots extending rearwardly from the forward end of said spring to provide a plurality of forwardly extending spring fingers, a rear portion having means for engaging the first groove in said contact body whereby said spring member is secured to said body and a plurality of radially and outwardly extending bosses in the rear portion of said tubular spring member; and
a sleeve telescopically mounted over said tubular spring member, said sleeve including means for engaging the second groove in said contact body whereby said sleeve is secured to said body said sleeve engaging in pressure tight relationship each of the bosses in the rear portion of said spring member.

4,447,111

ACHROMATIC HOLOGRAPHIC ELEMENT

Kenneth G. Leib, Wantagh, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,362
Int. Cl.³ G02B *5/32*
U.S. Cl. 350—3.7 **10 Claims**



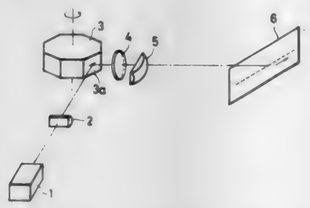
1. The method for fabricating an achromatic holographic optical element for diffracting radiation of wavelengths $\lambda_1 \ldots \lambda_n$ comprising the steps of:
making a first exposure in a three-dimensional photosensitive recording medium of the intersection of a first pair of mutually coherent electromagnetic beams having a wavelength of λ_1, said beams comprising a signal and a reference beam, said beams being incident on said recording medium with said signal beam being incident normal to said medium surface and said reference beam having an angle of incidence θ_1 to said surface normal, said exposure forming a first diffraction means havng periodic structures in said medium;
making further exposures in said recording medium of the intersection of further pairs of mutually coherent electromagnetic beams having a wavelength λ_1, each of said beam pairs comprising a signal and a reference beam, said reference beams of said pairs being incident at an angle, θ_2 through θ_n respectively on said recording medium, said exposures forming further overlapping diffraction means having periodic structures in said medium with the angles $\theta_1 \ldots \theta_n$ being related to one another as the inverse of the ratio of their sines, whereby said optical element diffracts radiation of wavelengths $\lambda_1 \ldots \lambda_n$ through a common

angle such that the general relationship $(\lambda_i/\lambda_j)=(\text{Sin } \theta_j/\text{Sin } \theta_i)$ obtains.

4,447,112
SCANNING OPTICAL SYSTEM HAVING A TILTING CORRECTING FUNCTION

Kazuhiko Matsuoka, and Kazuo Minoura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1982, Ser. No. 351,455
Claims priority, application Japan, Mar. 3, 1981, 56-30350
Int. Cl.³ G02B *27/17, 3/06*
U.S. Cl. 350—6.5 **8 Claims**

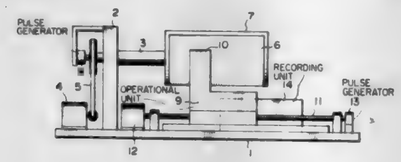


1. A scanning optical system for scanning a medium and having a tilting correcting function, comprising:
means for supplying a light beam;
means having a deflecting and reflecting surface for deflecting the light beam from said light beam supplying means in a predetermined direction;
first optical means disposed between said light beam supplying means and said deflecting means for linearly forming the light beam from said light beam supplying means near said deflecting and reflecting surface of said deflecting means; and
second optical means disposed between said deflecting means and a medium to be scanned for imaging on said medium the light beam deflected by said deflecting means, said second optical means comprising, in succession from said deflector, a single spherical lens and a single lens having a toric surface, the product of the curvature of the surface of said single spherical lens which is adjacent to said deflecting means and the curvature of the surface of said single spherical lens on the side of said medium being zero or less.

4,447,113
SETUP CONDITION RECORDER FOR A COLOR SCANNER

Sadao Ueda, Yasu; Isao Tokura, Uji, and Mitsuhiko Yamada, Kyoto, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed May 22, 1980, Ser. No. 152,472
Claims priority, application Japan, May 29, 1979, 54-65626
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **6 Claims**

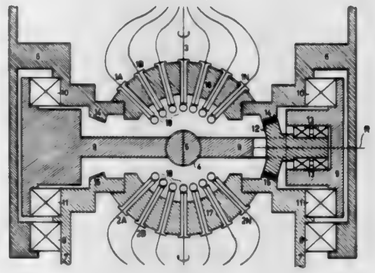


1. The method of recording setup conditions for a color scanner, comprising the steps of:
(a) securing to a picture mount means an original picture to be reproduced;
(b) scanning the original picture by incremental areas that are substantially greater than the incremental areas scanned by the color scanner;
(c) determining from the picture signal, setup conditions for a color scanner for reproducing a reproduction picture; and
(d) recording the setup conditions on a recording medium.

4,447,114
OPTICAL SLIP RINGS

Johan W. Koene, Borne, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

PCT No. PCT/NL80/00018, 371 Date Jan. 31, 1981, 102(e) Date Jan. 23, 1981, PCT Pub. No. WO80/02750, PCT Pub. Date Dec. 11, 1980
PCT Filed May 16, 1980, Ser. No. 233,610
Claims priority, application Netherlands, May 31, 1979, 7904279
Int. Cl.³ C02B *7/26*
U.S. Cl. 350—96.2 **6 Claims**



1. A rotary optical coupler comprising:
a. a reflector forming part of an optically transmissive body which is mounted for rotation around a longitudinal axis of the coupler, said reflector comprising two reflective surfaces disposed on opposite sides of a planar cross-section of the body, said cross-section intersecting said axis;
b. a first array of optical conductors mounted for rotation relative to the reflector around said axis, each of said conductors being directed toward a point on said reflector at a predefined angle of incidence;
c. a second corresponding array of optical conductors mounted for rotation relative to the reflector around said axis, each of said conductors being directed toward the same point on said reflector as a respective one of the conductors in the first array and at an angle of reflection corresponding to the angle of incidence for said respective conductor; and
d. means engaging the first and second arrays to effect equal rotation of said arrays as viewed from the reflector, whereby the optical conductors in the first array are constantly coupled to respective ones of the optical conductors in the second array during rotation of the first and second arrays.

4,447,115
MULTIPLE CONNECTION FOR AN UNDERSEA CABLE SYSTEM

Lucien Guazzo, and Jean-Pierre Trezeguet, both of Calais, France, assignors to Les Cables de Lyon, Clichy, France

Filed May 6, 1982, Ser. No. 375,628
Claims priority, application France, May 7, 1981, 81 09070
Int. Cl.³ H02G *15/14*; G02B *7/26*
U.S. Cl. 350—96.2 **9 Claims**

1. A multiple connection for connection a plurality of armoured cables to the housing of electrical apparatus in an undersea system having a cable interconnection point where a plurality of cables serving different destinations are brought together, each of said cables comprising a core surrounded by armour and being terminated by a length of bared core extending beyond a severed end of the armour, and said housing having a hollow cable-fixing part through which the bared cable cores pass; said connection comprising:
a steel binding ring through which the armoured portion of each of said cables is threaded, said ring serving to bind said armoured portions of cable together;

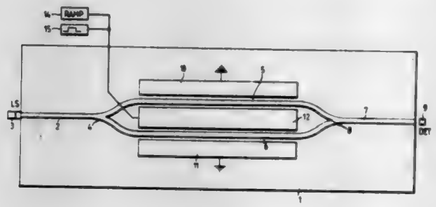


a steel tube threaded over said bared cores of said cables, having one end abutting against severed end portions of the armour of said cables and having its other end fixed mechanically to said hollow cable-fixing part of the electrical apparatus housing;
and auxiliary armour wound around the portions of armoured cable bound together by said ring and around the adjacent portion of said steel tube.

4,447,116
CONTROLLABLE ELECTRO-OPTICAL MODULATOR/PHASE SHIFTER USING AN INTEGRATED OPTICAL INTERFEROMETER

George D. H. King, Walden, and Michael C. Bone, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 7, 1982, Ser. No. 366,171
Claims priority, application United Kingdom, Apr. 9, 1981, 8111096
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.13 **4 Claims**

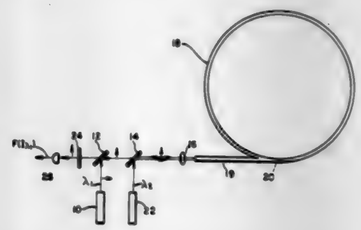


1. An optical waveguide interferometer arrangement including:
an optical waveguide for transmitting single-mode optical energy;
first and second single-mode optical waveguide branches defined by regions of increased refractive index in an electro-optically responsive substrate, which branches diverge from a common connection to said waveguide and reconverge to a further common connection to a further single-mode optical waveguide, said two branches forming first and second single-mode light paths of substantially identical optical length;
conductive electrodes disposed adjacent to a portion of at least one of said single-mode optical branches between its points of divergence and reconvergence;
a first source of electrical energy from which a waveform of symmetrical ramp shape is applied to said electrodes so as to differentially and cyclically vary the optical properties of the two branches, thus causing optical wave interferences at said reconvergence which are periodically constructive and destructive so that the light from said reconvergence is intensity modulated with a sinusoidal waveform at a frequency which can be a multiple of that of the ramp waveform; said ramp waveform being adjusted in amplitude to give an integral number of half periods of the output modulation waveform, a DC bias being provided to obtain a discontinuity free output waveform; and
a second source of electrical energy from which a waveform of rectangular shape is applied to said electrodes, the rectangular waveform having alternate ones of its half cycles in phase with one slope of the ramp and with the other slope of the ramp respectively, so that each said rectangular half-wave reinforces the said slope of the ramp waveform, the amplitude of said rectangular waveform being adjustable to provide for phase shift of the output signal while maintaining a discontinuity free waveform of the output signal leaving the point of reconvergence.

4,447,117
GATED FIBER OPTIC TRANSMISSION

Lloyd C. Bobb, Willow Grove, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1982, Ser. No. 395,557
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.15 **9 Claims**



1. A gated fiber optic sensor system, comprising:
a first light source for generating a pulse of light having a first optical wavelength;
optical fiber means coupled to said first light source for propagating the first light pulse in a continuous cyclic path;
a second light source coupled to said optical fiber means for generating a pulse of light having a second optical wavelength; and
semiconductor means affixed to said optical fiber means for gating the propagation of the first light pulse with the second light pulse so that the first light pulse is extracted from the continuous cyclic path.

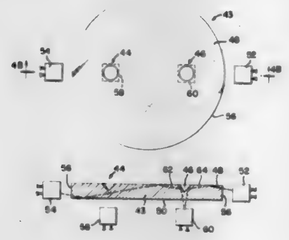
4,447,118
OPTICAL INFORMATION TRANSFER SYSTEM

Owen R. Mulkey, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 21, 1981, Ser. No. 303,793
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.16 **22 Claims**

8. A system for transferring information via light signals, comprising: a light-conductor of light transparent material having an edge surface forming a peripheral boundary thereof, a first major surface and a second major surface substantially parallel to said first major surface, said second major surface having multiple indentation means formed therein, each indentation means being defined by a light reflecting conical surface with its central axis normal to said second major surface and its apex opposite said first major surface; a first plurality of stations positioned adjacent to said edge surface; a second plurality of stations positioned adjacent to said first major surface

and each station in said second plurality being positioned opposite the apex of a corresponding indentation means; one plurality of stations including means for providing light signals and the other plurality of stations including means for receiving



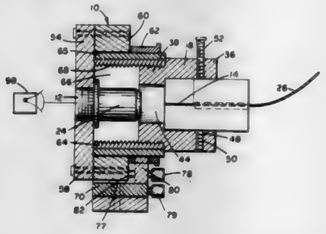
light signals, whereby light signals from said one plurality of stations are optically coupled into said light-conductor and a portion of such light signals is intercepted by at least one conical surface and is reflected to at least one of said other plurality of stations.

4,447,119

APPARATUS FOR MAINTAINING AN OPTICAL FIBER AND A FOCUSING MEANS

J. Donald Beasley, Arlington Heights, Ill., assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Nov. 2, 1981, Ser. No. 316,991
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.18 **9 Claims**



1. A multi-movement optical fiber and lens positioner device for impinging light from a light source through the lens into a core of the optical fiber, comprising in combination:

maintaining means for maintaining an optical focusing lens and one end of an optical fiber in a precisely controlled relationship, said maintaining means including a gimbal means for adjusting said precisely controlled relationship by advancing or retracting said end of said optical fiber with respect to said lens; and

means for pivoting said maintaining means to vary impingement of light onto the lens.

4,447,120

FIBER OPTIC CABLE CLAMP

Leslie M. Borsuk, Los Alamitos, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,518
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **15 Claims**

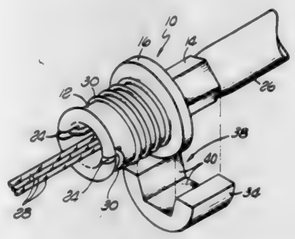
5. A fiber optic cable clamp assembly comprising:

a fiber optic cable having a strength member and an optical fiber;

inner and outer sleeves, said inner sleeve terminating in a front edge;

an axially extending slot in said inner sleeve opening at said front edge;

said cable extending forwardly through said inner sleeve with its strength member extending outwardly through



said slot and rearwardly in helical form around said inner sleeve; and

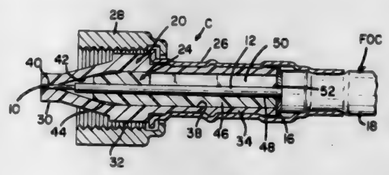
said outer sleeve being crimped around said helically wound portion of said strength member and said inner sleeve to tightly secure said strength member to said inner sleeve.

4,447,121

CONNECTOR FOR FIBER OPTIC MEMBER

Ronald F. Cooper, Orrtanna, and Erlon F. Johnson, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 6, 1981, Ser. No. 319,025
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **20 Claims**



1. A connector for terminating a fiber optic member having a buffer material thereon comprising a ferrule having an opening extending therethrough including front and rear bores interconnected by a conical surface characterized in that:

an insert comprises a conical section and a cylindrical section, a hole through said conical section and said cylindrical section to enable the fiber optic member to be inserted therethrough with an end of the fiber optic member being exposed, said cylindrical section having a longitudinally extending slot communicating with said hole which forms arcuate members,

said insert being positionable on the buffer material and being insertable along with the fiber optic member into said opening with said conical section engaging at least a part of said conical surface and with said cylindrical section extending along said rear bore,

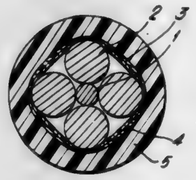
a crimping ring on said ferrule over said slot and adapted to be controllably crimped thereon to move said arcuate members thereunder into mechanical engagement with the buffer material to secure said fiber optic member within said ferrule with the exposed end of the fiber optic member disposed in the front bore.

4,447,122

PLASTIC SHEATHED CABLES

Ralph Sutehall, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,372
Claims priority, application United Kingdom, Jul. 23, 1981, 8122710
Int. Cl.³ H01B 7/02
U.S. Cl. 350—96.23 **7 Claims**



1. A cable comprising:

a conductor; and

an outer sheath of a relatively low flammability material having incorporated therein means for substantially reducing dripping of said sheath when subjected to a flame, consisting essentially of the following constituents in the proportions by weight:

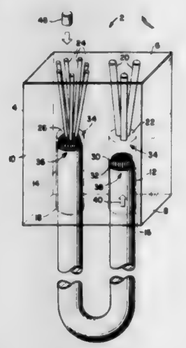
polyester elastomer	100 parts
flame retardant additive	20 parts
titanium dioxide	from 13.3 to 80 parts

4,447,123

FIBER OPTIC SECURITY SYSTEM INCLUDING A FIBER OPTIC SEAL AND AN ELECTRONIC VERIFIER

Edward A. Page, Adelphi, Md., and Carl R. Babel, Annandale, Va., assignors to Ensco Inc., Springfield, Va.

Filed Jul. 29, 1981, Ser. No. 288,042
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.24 **31 Claims**



24. A fiber optic security seal system for the detection of tampering with a sealed enclosure, said fiber optic security seal system comprising

a fiber optic cable for conducting light, said fiber optic cable including a first end which may be illuminated by a light source and a second end which emits light in response to the illumination of said first end,

fiber optic seal body means for receiving said first and second ends of said fiber optic cable, said fiber optic seal body means also having a first light guide means connected between the exterior surface of said fiber optic seal body and said first cable end for transmitting light from the light source to the first end of said fiber optic cable and a second light guide means connected between said exterior surface of said fiber optic seal body and said second cable end for transmitting light emitted by the second end of said fiber optic cable, and

an electronic verifier means for deriving a seal signature, said electronic verifier means including at least one light source means for illuminating said first end of said fiber optic cable, said light source means including a light injection guide means for registry with said first light guide means at said external surface of said fiber optic seal body to inject light from said light source means into said first light guide means,

at least one light detecting means for generating an output signal in response to light emitted from said second end of said cable, said light detecting means including a verfier guide means for registry with said second light guide means at said external surface of said fiber optic seal body to direct light from said second light guide means into said light detecting means, and

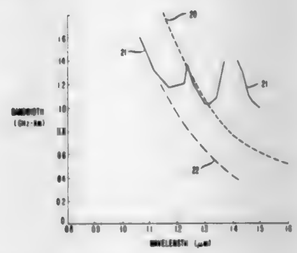
electronic circuit means connected to both said light source means and said light detecting means for controlling the injection of light into said first light guide means and for processing said output signal from said light detecting means to derive a seal signature representation indicative of the intensity of light directed into said light detecting means from said second light guide means.

4,447,124

MULTIMODE OPTICAL FIBER WITH RADIALLY VARYING ATTENUATION CENTER DENSITY

Leonard G. Cohen, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1981, Ser. No. 315,440
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.30 **13 Claims**

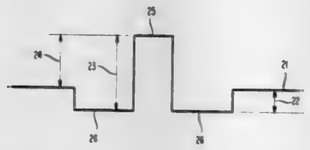


1. Multimode optical fiber for transmitting signals at least at a first wavelength, the fiber comprising a core and a clad and having a loss at the first wavelength of at least about 0.8 db/km, with a loss of at least about 0.3 db/km being caused by the presence of attenuation centers in the core, characterized in that the core has a radially varying attenuation center concentration profile in at least part of the fiber, with the maximum concentration exceeding the minimum concentration by at least about 10%.

4,447,125
LOW DISPENSION SINGLE MODE FIBER

Paul D. Lazay, New Providence; Paul J. Lemaire, Basking Ridge, and Arthur D. Pearson, Bernardsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 271,957, Jun. 9, 1981. This application Apr. 1, 1982, Ser. No. 364,623
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.30 2 Claims

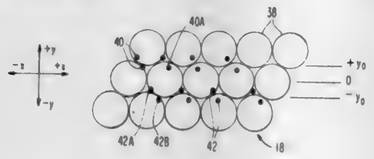


1. A single mode fiber comprising a substrate tube and within said substrate tube:
(a) an up-doped core which contributes a refractive index increase relative to that part of the fiber originating in said substrate tube of less than 0.40 percent and greater than 0.30 percent,
(b) a down-doped cladding with no abrupt change in index of refraction which contributes a refractive index decrease relative to that part of the fiber originating in said substrate tube of less than 0.22 percent and greater than 0.15 percent,
(c) a core diameter of between 8.7 and 7.5 microns and,
(d) a ratio of diameter of the down-doped cladding to the diameter of the up-doped core of greater than 5.5, the cutoff wavelength being less than 1.31 μm,
the Δ of the fiber being greater than 0.3 percent and less than 0.75 percent, the dispersion of the fiber being less than 5 psec/nm-km within the wavelength range of 1.25–1.385 μm.

4,447,126
UNIFORMLY INTENSE IMAGING BY CLOSE-PACKED LENS ARRAY

Paul F. Heidrich, Tucson, Ariz.; Robert A. Laff, Yorktown Heights, and Thomas B. Light, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,976
Int. Cl.³ G02B 5/14; G03B 27/00
U.S. Cl. 350—96.31 10 Claims

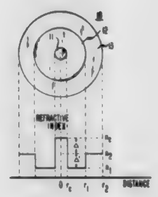


1. An optical printhead, comprising:
a linear array of light sources for providing light outputs to an imaging system,
an imaging system, including a hexagonal close-packed lens array having at least three rows of lenses therein, said lens array having at least two lines of greatest transmission symmetry where said lines of greatest symmetry are lines of minimum deviation of transmission of optical radiation therethrough, and
wherein said linear array of light sources is substantially parallel to and aligned with respect to one of said lines of greatest symmetry such that transmission of said radiation through said lens array is with minimum deviation of transmission.

4,447,127
LOW LOSS SINGLE MODE FIBER

Leonard G. Cohen; Wanda L. Mammel, both of Holmdel, and Dietrich Marcuse, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 9, 1982, Ser. No. 367,094
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.33 4 Claims

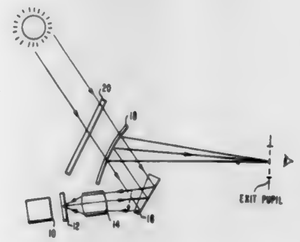


1. A single mode fiber comprising:
an inner core region having a refractive index n_c and a radius r_c surrounded by a first, inner cladding having a refractive index n_1 and an outer radius r_1, and a second, outer cladding having a refractive index n_2, where $n_1<n_2<n_c$; and the ratio $r_1:r_c$ is at least 6.5:1.

4,447,128
DIFFRACTION HEAD UP DISPLAY SOLAR RADIATION FILTER

John J. Ferrer, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 3, 1982, Ser. No. 446,538
Int. Cl.³ G02B 27/14
U.S. Cl. 350—174 12 Claims

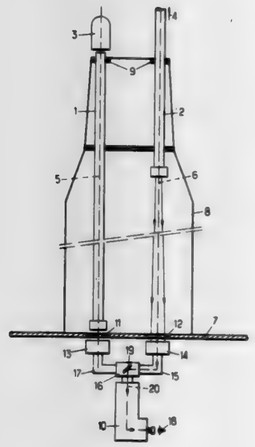


1. A visible light filter for a head up display which includes a display means for producing an image of display information and an optical system including lens means for directing the image of the display information to the eye of a viewer comprising:
optical filter means positioned between the display means and the lens means which is reversibly responsive to focused visible light directed through the lens means back toward the display means to block the focused visible light and which is transmissive to the display information except at the localized portion where focused visible light is blocked.

4,447,129
PERISCOPIC INSTALLATIONS WITH MULTI SIGHTING HEADS FOR SUBMARINES

Rene Barthelat, Taverny, and Alain Dore, Conflans Saint Honorine, both of France, assignors to Societe d'Applications Generales d'Electricite et de Mechanique Sagem, Paris, France

Filed May 10, 1982, Ser. No. 376,767
Claims priority, application France, May 15, 1981, 81 09773
Int. Cl.³ G02B 23/08, 23/22
U.S. Cl. 350—302 7 Claims

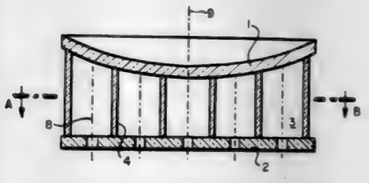


1. A periscopic installation with multi sighting heads for submarines, characterized in that it comprises:
at least two axially and rotatably mobile masts carrying respectively sighting heads at their upper end, these masts and respective sighting heads being permanently situated outside the hull of the submarine whatever the position (raised or lowered) of the masts,
at least one sealed protecting structure surrounding the masts, this structure being sealingly connected to the hull and being arranged so as to allow sealed sliding of the masts,
at least two through means passing sealingly through the hull of the submarine and adapted so as to provide, through said hull, the transmission of the signals supplied by the respective sighting heads,
at least two receiving means for receiving the signals from the respective sighting heads, these receiving means being situated inside the hull of the submarine and connected respectively to said through means,
a single observation post situated inside the hull of the submarine and adapted to allow observation of the signals received by the receiving means,
and switching means inserted between the observation post and the receiving means for selectively connecting the observation post with one of the receiving means.

4,447,130
LIGHT-WEIGHT MIRROR BLANK FOR ASTRONOMICAL PURPOSES AND METHOD OF MAKING A SUPPORTING FRAMEWORK FOR SUCH BLANKS

Uwe Christiansen, Geinhausen; Karlheinz Rau, Hanau; Anton Steinkohl, Gründau, and Bruno Streb, Freigericht, all of Fed. Rep. of Germany, assignors to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,254
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116357
Int. Cl.³ B32B 3/12; G02B 5/08
U.S. Cl. 350—310 7 Claims

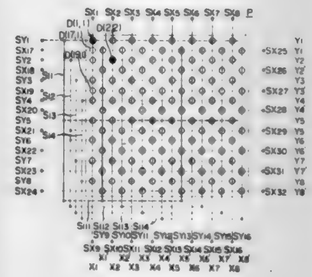


1. In a light-weight mirror blank for astronomical purposes, having a mirror plate of transparent vitreous silica or high-silica glass, a back plate of transparent or opaque vitreous silica or high-silica glass, a supporting framework of transparent or opaque vitreous silica or high-silica glass, disposed between the mirror plate and the backplate comprising several rows of tubes, the rows of tubes being staggered and the individual tubes being permanently bonded to the mirror plate and the back plate, and the tube axes being parallel to one another and to the mirror axis, the improvement wherein the tube rows are staggered such that each tube of a row has a contact line or contact strip with two adjacent tubes of an adjacent row, the wall thickness of the tubes in the area of contact line or contact strip is reduced with respect to the rest of the thickness of the wall of the tube and the tubes are welded together along the contact line or contact strip.

4,447,131
LIQUID CRYSTAL DRIVING APPARATUS

Tsunenori Soma, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

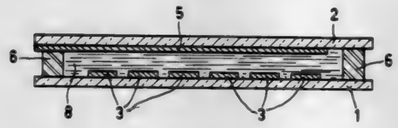
Filed Feb. 25, 1982, Ser. No. 352,264
Claims priority, application Japan, Mar. 3, 1981, 56-29425
Int. Cl.³ G02F 1/13
U.S. Cl. 350—333 5 Claims



4. Apparatus for driving liquid crystal that defines a liquid crystal panel having two surfaces, said apparatus comprising:
a first signal line group arranged on one surface of said liquid crystal panel;

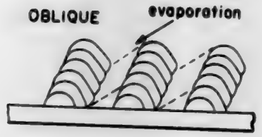
a second signal line group arranged on another surface of said liquid crystal panel;
a third signal line group arranged on the same surface of said liquid crystal panel as is said first signal line group;
a fourth signal line group arranged on the same surface of said liquid crystal panel as is said second signal line group;
time division driving signal generating means for supplying time division driving signals to said first and fourth signal line groups; and
selection driving signal generating means for supplying selection driving signals to said second and third signal line groups in synchronism with the time division driving signals generated by said time division driving signal generating means.

4,447,132
LIQUID CRYSTAL DISPLAY DEVICE
Maarten de Zwart, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 17, 1981, Ser. No. 244,543
Claims priority, application Netherlands, Mar. 17, 1980, 8001556
Int. Cl.³ G02F *1/137*
U.S. Cl. 350—346 **8 Claims**



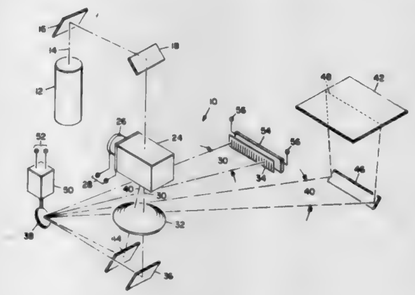
1. An electro-optic liquid crystal matrix display device comprising:
two parallel supporting plates,
patterns of strip-shaped electrodes crossing each other on facing surfaces of said supporting plates to form a matrix of display elements at said crossings,
a layer of cholesteric liquid crystal between said facing surfaces and having a positive dielectric anisotropy,
wherein said layer has at least one of a substantially transparent planar-conical texture or a light-scattering focal-conical texture below a first field strength E_1, a transparent homeotropic-nematic texture above a second field strength E_2, and at least one of a light-scattering focal-conical texture or a transparent homeotropic-nematic texture at field strengths between E_1 and E_2, such that said liquid crystal exhibits hysteresis upon application of voltage to said device,
wherein said liquid crystal has a negative dielectric anisotropy above a critical frequency of said electric field, such that said liquid crystal combines hysteresis with dielectric anisotrophy inversion,
means for applying an electric field at a frequency below said critical frequency over each display element to provide said transparent homeotropic-nematic texture in said display elements,
means for applying display signals to at least selected display elements to provide said light-scattering focal-conical texture in said selected display elements, wherein non-selected display elements remain in said transparent homeotropic-nematic texture, and
means for applying an electric field at a frequency above said critical frequency over said non-selected display elements to provide said transparent planar-conical texture in said non-selected display elements, said selected display elements remaining in said light-scattering focal-conical texture.

4,447,133
ELECTROCHROMIC DEVICE
Taisuke Miyoshi, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Filed Apr. 27, 1981, Ser. No. 257,873
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **16 Claims**



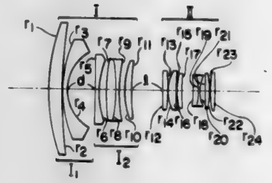
1. In an electrochromic device of the type having a substrate, an electrode disposed on the substrate, a layer of electrochromic material disposed in a predetermined pattern on the electrode and an electrolyte disposed on the layer of electrochromic material, the improvement comprising: said layer of electrochromic material having anisotropic topography formed by depositing by evaporation said electrochromic material such that the direction of evaporation makes an acute angle in the range of from 30° to 70° with respect to the normal to said substrate.

4,447,134
GRATING SIGNAL SYSTEM USING ZERO ORDER BEAM OF ACOUSTO-OPTIC MODULATOR
Bernard M. Rosenheck, Dix Hills, N.Y., assignor to Litton Systems, Inc., College Park, Md.
Filed Mar. 23, 1981, Ser. No. 245,877
Int. Cl.³ G02F *1/11*; H01J *40/14*
U.S. Cl. 350—358 **6 Claims**



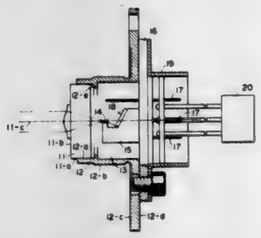
1. An optical system for document recording having a source of electromagnetic energy which is passed through an acousto-optic modulator to generate a zero order beam and, when said modulator is energized by a modulating signal, a first order beam, comprising:
grating and detector means;
first optical means for directing said zero order beam through said grating onto said detector means to generate a grating signal;
second optical means for directing said first order beam upon said document when said acousto-optic modulator is energized by said modulating signal;
amplifier means for receiving said grating signal to produce an output grating signal; and
said amplifier means also receiving said modulating signal for increasing the gain of said amplifier when said acousto-optic modulator is energized to produce a constant envelope level output grating signal.

4,447,135
ZOOM LENS SYSTEM
Akiyoshi Nakamura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 164,509, Jul. 2, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,642
Claims priority, application Japan, Jul. 13, 1979, 54-89433
Int. Cl.³ G02B *13/04, 15/14*
U.S. Cl. 350—426 **18 Claims**



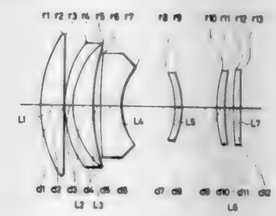
1. A zoom lens system comprising:
a first lens group of a negative refractive power including a first sub-group located at the front of the zoom lens system and a second sub-group located at the image side of the first sub-group with a first variable air space formed between the first and second sub-groups; and
a second lens group of a positive refractive power located at the image side of the first lens group with a second variable air space formed between the first and second lens groups, the first and second lens groups being shiftable along the optical axis with the second variable air space varying in zooming operation, and the first lens group being shiftable along the optical axis with the first variable air space varying in focusing operation, wherein the first sub-group includes a negative component at the image side end thereof so that the first variable air space is directly next to the negative component.

4,447,136
SEMI-CONDUCTOR LASER DEVICE
Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 9, 1981, Ser. No. 281,727
Claims priority, application Japan, Jul. 18, 1980, 55-98305
Int. Cl.³ G02B *3/02*
U.S. Cl. 350—432 **9 Claims**



1. A semi-conductor laser device, comprising:
a semi-conductor laser chip for generating a laser beam;
an aspherical single lens for collimating the laser beam from said semi-conductor laser chip, said lens having an outer peripheral surface extending in parallel to the optical axis thereof;
a protective casing for said semi-conductor laser chip, said casing having an exit window for supporting therein said lens, said exit window having an inner peripheral surface formed for cooperation with said outer peripheral surface of said lens to permit movement of said lens only in the direction of the optical axis thereof during assembly of the semi-conductor laser device, said casing further having another surface extending perpendicularly to said inner peripheral surface of said exit window; and
a base member for supporting said semi-conductor laser chip and having a mounting surface engaged with said other surface of said casing, said base member supporting said semi-conductor laser chip so as to generate the laser beam substantially perpendicularly to said other surface of said casing, said base member further being movable, relative to and along said other surface of said casing during assembly of the semi-conductor laser device, whereby focus adjustment of said lens and the alignment of said semi-conductor laser chip with said lens are permitted during assembly of said semi-conductor laser device.

4,447,137
LARGE-APERTURE TELEPHOTO LENS
Yasunori Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 21, 1982, Ser. No. 420,683
Claims priority, application Japan, Jan. 23, 1982, 57-9214
Int. Cl.³ G02B *13/02, 9/62*
U.S. Cl. 350—454 **4 Claims**



1. A large-aperture telephoto lens comprising seven lens elements in six lens components, the first lens component having a positive lens, the second lens component having a doublet composed of a negative-meniscus lens with its concave side facing an image and a positive-meniscus lens, the third lens component having a negative-meniscus lens with its concave side facing the image, the fourth lens having a meniscus lens with its concave side facing an object, the fifth lens component having a positive-meniscus lens with a surface of a larger curvature facing the object, and the sixth lens component having a positive lens, said large-aperture telephoto lens meeting the following requirements:

$$1.60 < \frac{n_1 + n_2}{2}, \; 50 < \frac{\nu_1 + \nu_3}{2}; \tag{1}$$

$$|n_2 - n_3| < 0.1, \; \nu_3 - \nu_2 > 10, \; 0.2f < r_4 < 0.35f; \tag{2}$$

$$0.35f < f_{1,2,3} < 0.55f; \tag{3}$$

$$|f_5| < 4f; \; 0.2f < -r_9 < 0.4f; \tag{4}$$

$$0.35f < r_{10} < f; \text{ and} \tag{5}$$

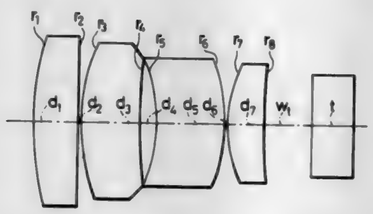
$$0.25 < f/f_7 < 0.45 \tag{6}$$

where
n_i: the refractive index of the ith lens along d-line,
ν_i: the Abbe number of the ith lens;
f : the focal length of the overall lens system;
r_i: the radius of curvature of the ith surface;
$f_{1,2,3}$: the composite focal length of the first through third lenses; and
f_i: the focal length of the ith lens.

4,447,138
OBJECTIVE SYSTEM FOR VIDEO DISC

Takahiro Sugiyama, and Yukio Hagiwara, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,341
Claims priority, application Japan, Mar. 12, 1981, 56-35719
Int. Cl.³ G02B 9/34
U.S. Cl. 350—472 4 Claims



1. An objective system for a video disc, said objective system including a plurality of lenses each having lens surfaces with at least some of said lens surfaces being separated by air gaps, said objective system including, in order from the object side, a first lens component including a positive meniscus lens L_1, a second lens component including a positive meniscus lens L_2, a third lens component including a negative meniscus lens L_3, a fourth lens component including a positive meniscus lens L_4, and a cover glass for said video disc, said objective system satisfying the following conditions:

(1) $1.7F > F_{1,2} > 1.4F$
(2) $1.35 > F_1/F_2 > 0.75$
(3) $1.0 > F_{1,2}/F_{1,2,3} > 0.8$
(4) $1.1F > d_5 > 0.4F$
(5) $d_6 < 0.5F$
(6) $N_4 > 1.7$,

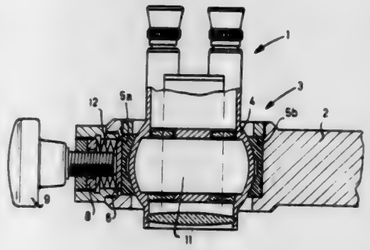
where F is the composite focal length of the objective system, F_1 is the focal length of said first lens component, F_2 is the focal length of said second lens component, $F_{1,2}$ is the composite focal length of said first and second lens components, $F_{1,2,3}$ is the composite focal length of said first, second, and third lens components, d_i is the distance from the i-th lens surface to the (i+1)-th lens surface in order from said object side, and N_i is the refractive index of the i-th lens numbered from said object side.

4,447,139
MEANS FOR SECURING AN OBSERVATION INSTRUMENT TO A SUPPORTING STAND

Klaus Biber, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Dec. 3, 1981, Ser. No. 327,189
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 8034520[U]
Int. Cl.³ G02B 21/24; F16C 11/06
U.S. Cl. 350—522 6 Claims

1. In combination, a microscope having a housing, a support, and means including an adjustably securable ball and socket joint connecting said microscope to said support; said housing including a circumferentially continuous convex spherical surface which spans both sides of a great-circle plane, whereby said convex surface is the ball component of the joint; a unipartite or bipartite bearing bushing mounted to said support and having a concave spherical surface in circumferential contact with said convex surface; first means continuously reacting between said support and said bushing for loading said bushing in engagement with said convex surface, to a first level requiring a minimum rotational moment for angular displacement of the microscope with respect to the support; and second means selectively operable for application of additional loading to

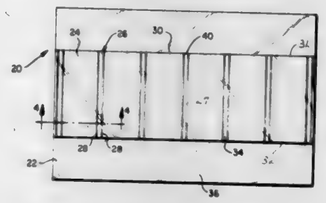


said bushing, to a level wherein said rotational moment is greater than said minimum.

4,447,140
MICROSCOPE SLIDES

Jeptha E. Campbell, 1618 Dell Ter., Cincinnati, Ohio 45230, and James E. Gilchrist, 742 Wooster Pike, Terrace Park, Ohio 45174

Filed Sep. 29, 1982, Ser. No. 428,429
Int. Cl.³ G02B 21/34
U.S. Cl. 350—534 8 Claims



1. A multi chambered slide comprising:

(a) a base plate;

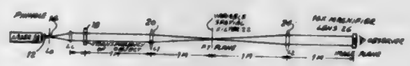
(b) at least three spaced apart boundaries attached to the base plate, each contiguous pair of boundaries defining an area within which a liquid sample may be contained, each boundary having a pair of spaced apart elements between which is defined a boundary zone for containing any sample that may leak from an area defined by a pair of boundaries, each element being of a substantially uniform thickness and being coated with an adhesive; and

(c) a cover plate attached to the spaced apart elements of the boundaries to define a plurality of volumetric chambers into which a liquid sample may be introduced.

4,447,141
VISION TESTING SYSTEM

Arthur Eisenkraft, 7 Iroquois Rd., Ossining, N.Y. 10562

Filed May 7, 1982, Ser. No. 375,805
Int. Cl.³ A61B 3/02
U.S. Cl. 351—237 25 Claims



1. A method of testing a person's vision comprising the steps of:

(A) passing a collimated beam of coherent light waves through a transparency of an object to produce its diffraction pattern;

(B) passing those light waves forming the diffraction pattern through a first lens to produce the Fourier transform of the object at the Fourier transform plane of the first lens;

(C) spatially filtering at the Fourier transform plane of the first lens the light waves forming the Fourier transform of the object;

(D) passing the spatially filtered lightwaves of the Fourier transform of the object through a second lens to produce the inverse of the Fourier transform at the image plane of the second lens as an image of the object; and

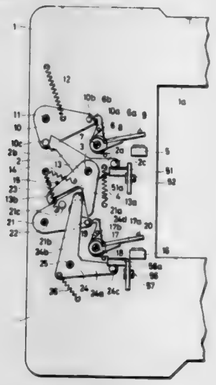
(E) varying the spatial filtering to vary the recognizability of the image of the object by the person being tested;

(F) whereby the relationship between the degree of spatial filtering and the recognizability of the image of the object is a measure of the vision of the person being tested.

4,447,142
BLADE TYPE FOCAL PLANE SHUTTER

Akira Suzuki, Tokyo; Katumi Kaneko, Ageo, and Nobuyoshi Inoue, Kawagoe, all of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,375
Claims priority, application Japan, Sep. 10, 1981, 56-141706
Int. Cl.³ G03B 9/36, 19/12
U.S. Cl. 354—246 2 Claims

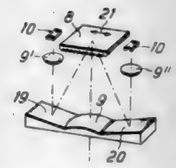


1. A blade type focal plane shutter comprising a front blade driving lever movable between its cocked position in which a front blade group is brought to an unfolded position covering an exposure aperture and its uncocked position in which said front blade group is brought to a folded position not covering said exposure aperture, a rear blade driving lever movable between its cocked position in which a rear blade group is brought to a folded position not covering said exposure aperture and its uncocked position in which said rear blade group is brought to an unfolded position covering said exposure aperture, a front blade cocking lever engageable with said front blade driving lever and capable of bringing said front blade driving lever to its cocked position from its uncocked position, a rear blade cocking lever capable of bringing said rear blade driving lever to its cocked position from its uncocked position, a first interlocking lever operatively connected to said front blade cocking lever in order to operate said front blade cocking lever, a second interlocking lever operatively connected to said rear blade cocking lever in order to operate said rear blade cocking lever, and means operatively connected respectively to said first and second interlocking levers and capable of bringing a mirror to the down-position and up-position, said rear blade driving lever being brought to its cocked position from its uncocked position through said second interlocking lever when said mirror is brought to the up-position from the down-position by said means, and said front blade driving lever being brought to its cocked position from its uncocked position through said first interlocking lever when said mirror is brought to the down-position from the up-position by said means.

4,447,143
REFLEX CAMERA WITH ELECTRONIC RANGE FINDER

Knut Heitmann, Wetzlar, and Klaus-Dieter Schaefer, Braunfels, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,166
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151289; Mar. 18, 1982, 3209908
Int. Cl.³ G03B 3/00
U.S. Cl. 354—407 16 Claims



1. An electronic range finder for a reflex camera having an objective lens and a mirror means for reflecting an image of an object to be photographed toward the range finder, said range finder comprising:

a grating located in an image plane of the objective lens;

a pentaprism having a fully reflecting concave mirror formed on the lower edge of its exit surface, for projecting an image of the object to be photographed upon said grating;

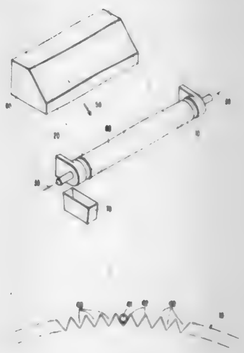
an electronic photoelectric receiver system positioned to receive light reflected from said grating; and

wherein said grating comprises a grooved reflecting grating capable of functioning as a spatial frequency filter, the grooves of said grating being shaped so as to split the image light beam into partial beams and the groove plane of said grating being arranged at an angular orientation with respect to the image plane in which the grating is located predetermined in order to reflect said partial beams in a path leading to said receiver system.

4,447,144
GROOVED ROLLER SUPPORT FOR A BELT XEROGRAPHIC PHOTOCONDUCTOR

David K. Gibson, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1982, Ser. No. 447,744
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 BE 10 Claims



1. An electrophotographic reproduction device having a photoconductor belt for receiving toner images from a devel-

oper station containing a mix of toner powder and carrier beads;

at least one roller for supporting said belt by means of engagement with the nonworking, underside of the belt; and

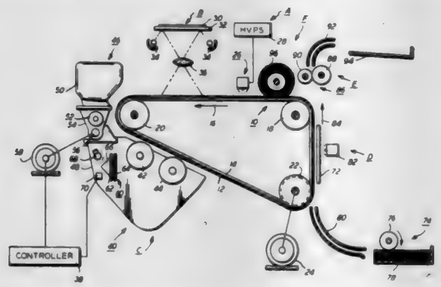
a plurality of generally axially extending, generally V-shaped grooves formed in said roller, said grooves being dimensioned relative the size of said carrier beads so as to hold beads which may escape from the developer and find their way under the photoconductor, said grooves being radially deep enough to conceal said beads from damaging contact to said photoconductor, and being circumferentially closely spaced so as not to form a transverse crease in the photoconductor as the photoconductor wraps a portion of said roller.

4,447,145

CHARGED PARTICLE SENSOR

Christopher Snelling, Penfield, and Dusan G. Lysy, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 30, 1982, Ser. No. 373,477
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—14 D **28 Claims**



1. An apparatus for sensing electrostatically charged particles, including:

a pair of spaced-apart conductive plates defining a passageway through which a portion of the charged particles flow with at least one of said pair of plates being substantially transparent;

a member secured to one surface of said transparent plate;

means for electrically biasing said transparent plate to attract a portion of the particles to the other surface thereof;

means for tansmitting a beam of energy through said member and said transparent plate with the internal angle of incidence of the beam of energy being greater than the critical angle of incidence of said member; and

means for detecting the intensity of the beam of energy internally reflected through said transparent plate and said member.

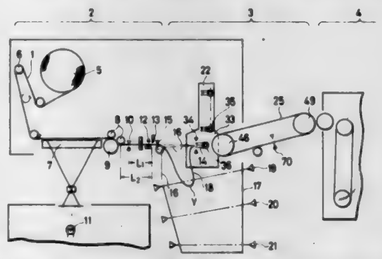
4,447,146

PHOTOGRAPHIC PRINTING APPARATUS

Mikio Kogane, and Seiichi Yamazaki, both c/o Fuji Photo Film Co., Ltd., No. 210, Nakanuma, Minami-ashigara-shi, Kanagawa, Japan, assignors to Mikio Kogane and Seiichi Yamazaki, both of Kanagawa, Japan

Filed Mar. 30, 1982, Ser. No. 363,733
Claims priority, application Japan, Apr. 1, 1981, 56-47147[U]; Apr. 11, 1981, 56-49197[U]; Apr. 6, 1981, 56-48479
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—28 **19 Claims**

1. A photographic printing apparatus, comprising: a cutter for cutting a strip of photographic printing paper, a hole puncher for making perforations in said strip adjacent to a leading edge thereof, means for engaging a printing paper guide clip in said perforations, a reservoir for temporarily accommodating a portion of said strip continuing from said guide clip, said reservoir disposed between said cutter and said means for engaging said printing paper guide clip, and means



for transferring said guide clip with said leading edge of said strip engaged therewith to a developing apparatus.

4,447,147

OPTICAL SCANNING DEVICE

Yu Yamada, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1982, Ser. No. 352,713
Claims priority, application Japan, Mar. 9, 1981, 56-33561; May 29, 1981, 56-82681
Int. Cl.³ G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **6 Claims**



1. An optical system for scanning a surface to be scanned in a slit-like form, comprising:

means for forming an image of the surface to be scanned; and

means for scanning the surface to be scanned, said means being disposed between said image forming means and a position whereat the image of the surface to be scanned is formed, said scanning means varying the direction of the optical axis of said system three or more odd number times to thereby make the direction of the optical axis incident on said scanning means and the direction of the optical axis emergent from said scanning means the same.

4,447,148

EDGE PRINTING DEVICE

Van Hatzis, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

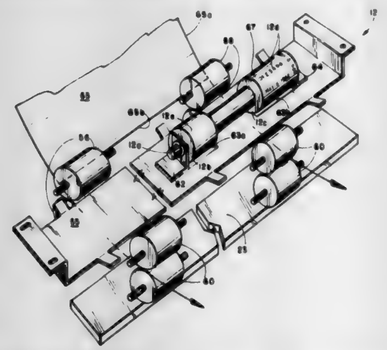
Filed Sep. 15, 1982, Ser. No. 418,362
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—75 **5 Claims**

1. An edge printing device for use on a document reproducing apparatus which includes a document exposure station having a predetermined lateral dimension and means for moving the document past the exposure station, said device printing supplemental information along the edge of a copy sheet on which a document having a smaller lateral dimension than said predetermined lateral dimension has been reproduced, said device comprising:

A. support means mounted on said document reproducing apparatus and extending across said document exposure station,

B. an indicia roller rotatably mounted on said support means adjacent one end of said support means in a position to be beyond the longitudinal edge of a document which has a lateral dimension less than said predetermined lateral dimension,

C. a friction roller rotatably mounted on said support means at an intermediate location along said support means such



that said friction roller is in contact with a document as the document is moved past the exposure station of the reproducing apparatus, and

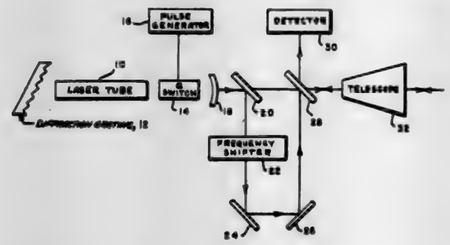
D. means connecting said indicia to said friction roller for movement therewith, whereby the moving document drives said friction roller which in turn rotates said indicia roller so that the supplemental information thereon is copied simultaneously with the image on the document in an edge portion of the copy sheet which is beyond the lateral dimension of the image on the copy sheet.

4,447,149

PULSED LASER RADAR APPARATUS

Stephen Marcus, Lexington, and Theodore M. Quist, W. Acton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 17, 1981, Ser. No. 274,698
Int. Cl.³ G01C *3/08*; G01P *3/36*
U.S. Cl. 356—5 **5 Claims**



1. A pulsed laser radar apparatus comprising in combination:

a Q-switched pulsed laser beam unit to generate a laser pulse signal, said laser pulse signal comprising a high intensity laser pulse with a substantially lower intensity CW trailing tail portion,

a local oscillator forming means receiving said laser pulse signal, said local oscillator forming means utilizing said trailing tail portion of said laser pulse signal to generate a local oscillator signal,

a signal resolution means receiving said laser pulse signal which was generated in said Q-switched pulse laser beam unit, said signal resolution means transmitting said laser pulse signal to a target, said signal resolution means receiving a target echo signal, said signal resolution means increasing the resolution of both said transmitted laser pulse signal and said target echo signal, said target echo signal being combined with said local oscillator signal to provide a target signal, and

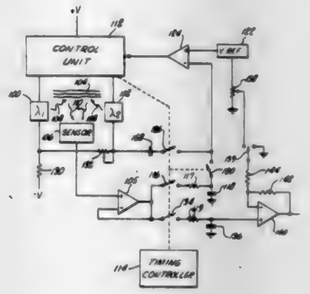
a signal detecting means receiving said target signal, said signal detecting means comprising a heterodyne detector unit, said signal detecting means detecting said target signal to provide a target return.

4,447,150

APPARATUS AND METHOD FOR MEASURING BLOOD OXYGEN SATURATION

Stanley O. Heinemann, Irvine, Calif., assignor to Bentley Laboratories, Irvine, Calif.

Filed Feb. 27, 1981, Ser. No. 236,941
Int. Cl.³ G01N *21/27, 33/48*
U.S. Cl. 356—41 **33 Claims**



1. An apparatus for measuring a selected parameter of a blood sample, comprising:

a first radiation source of a first wavelength;

a second radiation source of a second wavelength;

means for positioning said radiation sources to irradiate said sample;

sensor means responsive to radiation from said sources, having an electrical output and positioned to receive radiation from said sources after reflection from said sample and reject other radiation;

means for selectively and adjustably energizing said first radiation source such that the amount of its radiation reflected from said sample and received by said sensor means remains substantially constant regardless of the reflectivity of said sample;

means for selectively and adjustably energizing said second radiation source such that its radiant output is related to the radiant output of said first radiation source;

circuit means for developing a signal related to the ratio of the reflected radiation received by said sensor means from said first and second radiation sources;

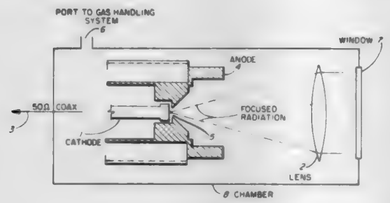
circuit means responsive to said signal for producing a resultant signal representative of said selected parameter.

4,447,151

METHOD AND APPARATUS FOR FAST LASER PULSE DETECTION USING GASEOUS PLASMAS

Edward J. McLellan, Los Alamos, and John A. Webb, Albuquerque, both of N. Mex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 18, 1981, Ser. No. 274,917
Int. Cl.³ G01J *1/42*; H01J *40/00*
U.S. Cl. 356—218 **9 Claims**



1. Apparatus for detection and monitoring of subnanosecond risetime, intense, pulsed laser radiation utilizing the "hot" electron phenomenon comprising in combination:

(a) means for generating and collecting "hot" electrons which comprises:

(i) a conducting circular disk cathode;

(ii) a conducting, cylindrically symmetric electron collecting anode which is insulated from and coaxial with said cathode and which has means of disposal as a part thereof forming a circular entrance hole adjacent to and having a smaller diameter than said cathode; and

(iii) a transition structure to allow said anode and cathode to make electrical contact with an about 50Ω impedance coaxial cable without significant mismatch;

(b) means for focusing incident laser radiation onto said cathode

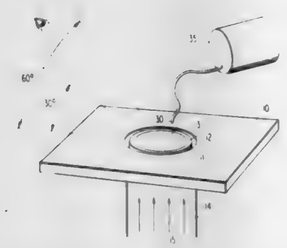
(c) means for detecting and recording voltages changing in subnanosecond timescale which are produced from said "hot" electrons having traveled from said cathode to said anode as a result of said focused laser radiation impinging on said cathode.

4,447,152

METHOD AND APPARATUS FOR DETECTING DEFECTS IN APERTURED PLATES

Robert E. Rainford, Essex Junction; Mark M. Moser, South Burlington, and Jon R. Ojala, Colchester, all of Vt., assignors to IBM Corp., Armonk, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,183
Int. Cl.³ G01N *21/88*
U.S. Cl. 356—237 **10 Claims**



1. The method of inspecting an apertured plate comprising:

directing an intense polychromatic collimated light beam perpendicular to a major dimension of said plate and parallel to axes of apertures therethrough,

viewing the beam passing through the apertures at an angle of between 30° and 60° to the plate of a major dimension of the plate,

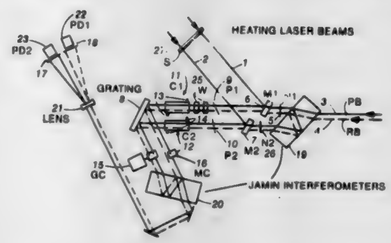
whereby defects or irregularities in the plate or said apertures result in one or more bright spots.

4,447,153

APPARATUS AND METHOD FOR QUANTITATIVE MEASUREMENT OF SMALL DIFFERENCES IN OPTICAL ABSORPTIVITY BETWEEN TWO SAMPLES USING DIFFERENTIAL INTERFEROMETRY AND THE THERMOOPTIC EFFECT

David A. Cremers, and Richard A. Keller, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 8, 1982, Ser. No. 386,371
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—361 **29 Claims**



12. An apparatus for measuring small differences between weak optical absorptions of sample comprising solutions of solutes in substantially identical solvents using differential interferometry and the conversion of absorbed radiation into heat for the solute, which comprises in combination:

a. a probe laser beam;

b. a reference laser beam approximately parallel to and narrowly-spaced from said probe laser beam;

c. a first amplitude controlled heating laser beam;

d. a second amplitude controlled heating laser beam;

e. an interferometer, which further comprises:

i. a first laser transmitting block to split said probe laser beam and said reference laser beam incident thereon into a first probe beam and a second probe beam, and a first reference beam and a second reference beam, respectively, said first probe beam and said first reference beam emerging approximately parallel and narrowly-spaced and widely-spaced from said second probe beam which emerges approximately parallel to and narrowly-spaced from said second reference beam;

ii. means for adjusting the intensity of said first and second probe beams and said first and second reference beams; and

iii. a second laser transmitting block to recombine said first probe beam and said second probe beam, and said first reference beam and said second reference beam to form a probe fringe pattern and a reference fringe pattern, respectively, the position of said fringe patterns reflecting any differential change between the optical pathlengths of said first and second probe beams and said first and second reference beams as they traverse the space between said first and second laser transmitting blocks,

iv. means for making colinear said first and said second heating laser beams with said first and second probe laser beams, respectively;

v. means for equalizing the intensity of said first and second heating laser beams after they have emerged from said colinear making means;

vi. means for correcting any non-parallel deviations of said first probe and reference laser beams, and said second probe and reference laser beams, if necessary, to insure that said first and second probe beams and said first and second reference beams are colinear when recombined in said second laser transmitting block;

vii. two sample cells hereinafter to be identified as cell one and cell two, which contain the samples under investigation, and through which said first probe beam colinear with said first heating laser beam and said first reference beam narrowly separated from said first probe beam, and said second probe beam colinear with said second heating laser beam and said second reference beam narrowly separated from said second probe beam pass, respectively, after leaving said heating laser intensity equalizing means;

viii. means for stabilizing said reference fringe pattern with respect to drift due to air currents, variations in room temperature, and thermal gradients in said sample cells which also simultaneously stabilizes said probe fringe pattern with respect to said drift;

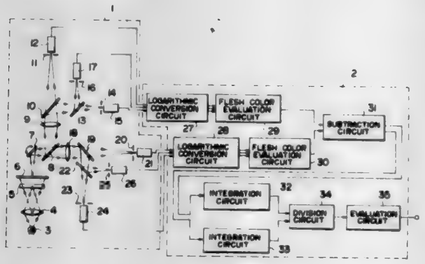
ix. means for detecting the position of said probe fringe pattern which pattern shifts due to the thermooptic effect induced by said heating beams in the samples, which can be related to the difference in optical absorptivity of the two samples under investigation.

4,447,154

METHOD FOR DETECTING FOCUS OF IMAGE

Takashi Fukui, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 19, 1981, Ser. No. 275,286
Claims priority, application Japan, Jun. 20, 1980, 55-83663
Int. Cl.³ G01J *3/46*
U.S. Cl. 356—404 **2 Claims**



1. A method for detecting whether a picture image recorded on a color recording medium is out of focus comprising the steps of: dividing the picture image into minute picture elements, detecting which portions of the picture image are of flesh color by separating the picture elements according to color transmission factor or color density of the picture elements, and detecting whether or not the picture image is out of focus from measurements on the flesh color portions.

4,447,155

DETECTION OF LIGHT-AFFECTING SUBSTANCE IN A FLUID

Colin A. Simpson, Iver, England, assignor to Graviner Limited, England

Filed Mar. 19, 1981, Ser. No. 245,565
Claims priority, application United Kingdom, Mar. 29, 1980, 8010686
Int. Cl.³ G01N *1/26, 21/11*
U.S. Cl. 356—437 **5 Claims**

1. Apparatus for detecting a light-affecting substance in a fluid, comprising

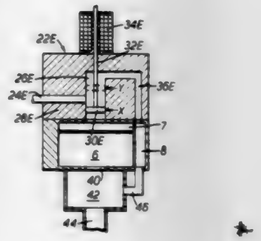
a housing,

a plurality of solenoid-operated valves mounted side-by-side in the housing and each having a respective inlet pipe, a respective outlet pipe, a respective bypass pipe, a respective solenoid coil, and a respective valve member which is movable by the solenoid coil between a closed position in which it blocks communication between the valve inlet pipe and the valve outlet pipe but connects the valve inlet pipe to the bypass pipe and an open position in which it connects the valve outlet pipe to the valve inlet pipe and blocks communication between the valve inlet pipe and the bypass pipe;

a common diffusing chamber defined in the housing immediately adjacent to the solenoid-operated valves and to which the valve outlet pipes are immediately connected;

a common measuring chamber defined by the housing immediately adjacent to the diffusing chamber and to which the diffusing chamber is immediately connected;

a bypass chamber defined by the housing and to which all the bypass pipes are connected;



a fan unit supported by the housing and in common communication with the measuring and bypass chambers to apply suction to the valves and to all the bypass pipes whereby the suction applied by the bypass pipes via the bypass chamber to the valve inlet pipes of all the valves whose valve members are in the closed position draws fluid into, so as to fill, each such valve inlet pipe, and the suction applied via the measuring chamber and the diffusing chamber to the valve inlet pipe of each valve whose valve member is in the open position draws a sample of fluid from that valve inlet pipe through the diffusing chamber into the measuring chamber;

photo-electric detectig means in the measuring chamber for photo-electrically detecting a light-affecting substance in each fluid sample; and

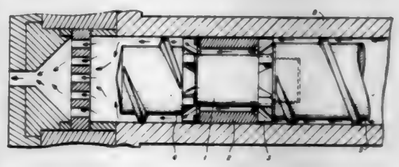
control means for energizing the solenoid coil in a predetermined sequence.

4,447,156

MODULAR MIXING APPARATUS INCLUDING INTERCHANGEABLE FLUID PROCESSING MEANS

Desider G. Csongor, Rangley, Me., assignor to Northern Lights Trust, Raingeley, Me.

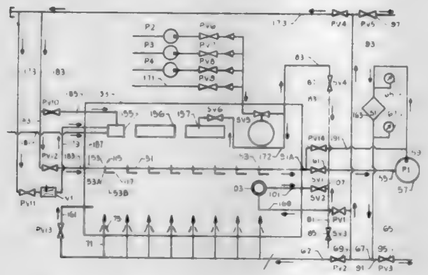
Filed Aug. 31, 1981, Ser. No. 298,065
Int. Cl.³ B01F *7/08*; B29B *1/06*
U.S. Cl. 366—80 **12 Claims**



1. Improved modular mixing apparatus for use with an extruder screw and barrel assembly to extrude fluid material, said apparatus including a rotatable driver shaft having a threaded end for engagement with the extruder screw, stationary sleeve means located around the driver shaft in spaced relation

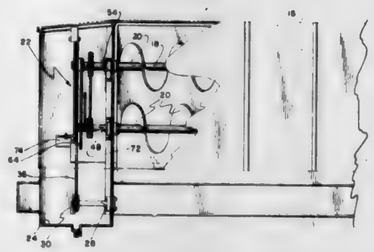
thereto and presenting opposite bearing ends, shear ring elements rotatable with the driver shaft and occurring in abutting relationship to the opposite bearing ends of the stationary sleeve, and fluid processing means detachably connected to the driver shaft.

4,447,157
FLUID MIXING SYSTEM WITH INDUCTOR CLEANOUT
Gene E. Underwood, P.O. Box 2685, Conroe, Tex. 77305
Filed Jul. 2, 1982, Ser. No. 394,658
Int. Cl.³ B01F 5/10, 15/02
U.S. Cl. 366—137 8 Claims



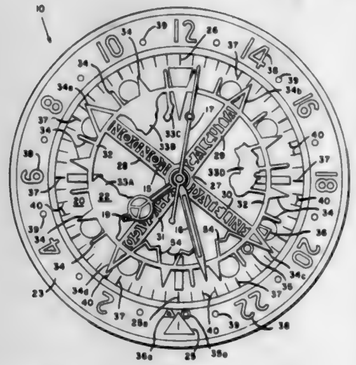
1. A fluid mixing system comprising:
a container having a given length,
injection means for injecting fluid into said container in a direction to cause the fluid to swirl around an axis along the length of said container,
first suction conduit means located in said container generally along said axis and having a plurality of spaced apart inlet means along its length for the flow of fluid from said container into said first suction conduit means,
each of said inlet means comprising an inductor conduit having a portion which extends into said first suction conduit means and which has an opening within said first suction conduit means which faces one end of said first suction conduit means,
pump means having an inlet coupled to said one end of said first suction conduit means and an outlet coupled to said injection means,
second suction conduit means coupled to the bottom portion of said container and to said inlet of said pump means,
first valve means coupled between said one end of said first suction conduit means and said inlet of said pump means,
second valve means coupled between said outlet of said pump means and said injection means,
third valve means coupled to said second suction conduit means,
a reverse flow conduit means coupled from said outlet of said pump means to said first suction conduit means at a position between said first valve means and said inlet means, and
fourth valve means coupled to said reverse flow conduit means,
said pump means being allowed to withdraw fluid from said first suction conduit means for flow to said injection means for injection back into said container when said first and second valve means are open and said third and fourth valve means are closed,
said pump means being allowed to withdraw fluid from said container by way of said second suction conduit means for flow into said first suction conduit means by way of said reverse conduit means for cleaning out said inductor conduits when said third and fourth valve means are open and said first and second valve means are closed.

4,447,158
APPARATUS AND METHOD FOR MIXING PARTICULATE MATERIAL
Clarence W. Simon, P.O. Box 714, Scott City, Kans. 67871
Filed Dec. 7, 1981, Ser. No. 327,962
Int. Cl.³ B01F 7/08
U.S. Cl. 366—297 4 Claims



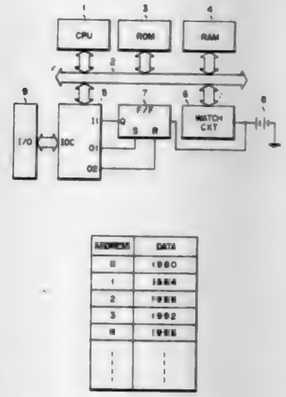
1. An apparatus for mixing particulate material in the bed of a truck comprising: a mixing chamber; a plurality of auger means rotatably disposed within said mixing chamber for moving and mixing said particulate material; auger driving means engaging said auger means for rotating the same, said auger driving means including a master drive chain means; an auger driving housing for housing said auger driving means; power means for powering auger driving means; and a lower oil tank means secured to said housing and containing a reservoir of oil in contact with the drive chain means and wherefrom the drive chain means picks up oil for self-oiling and scrubbing of the features included within the auger rotating driving means; said auger driving housing comprises an upper oil tank means including an upper reservoir of oil in contact with certain features of the auger rotating driving means for additional self-oiling and scrubbing of the features included within the auger rotating driving means; at least one oil feed splash pan means having a spout means in communication with the upper oil tank means and disposed within the housing for catching oil dripping from the master drive chain means and splashing against the other features of the auger rotating driving means; said auger driving means comprises a lower shaft-sprocket combination means secured within the lower oil tank means and an upper shaft-sprocket combination means disposed within said housing, a master endless chain means engages the lower shaft-sprocket combination means and the upper shaft-sprocket combination means while a master spring-loaded tension idler means is positioned and attached within said housing and engages the master endless chain means for achieving satisfactory tensioning of the master chain means during operation; said auger driving means additionally comprises a pair of lower auger shaft-sprocket combination means and a pair of upper auger shaft-sprocket combination means, a first auger chain means inter-engaging one of the lower auger shaft-sprocket combination means and one of the upper auger shaft-sprocket combination means, a second auger chain means inter-engaging the remaining lower auger shaft-sprocket combination means and the remaining upper auger shaft-sprocket combination means, a first auger upper shaft-sprocket chain means inter-engaging one of the lower auger shaft-sprocket combination means and the upper shaft-sprocket combination means and a second auger upper shaft-sprocket chain means inter-engaging the remaining lower auger shaft-sprocket combination means and the uppen shaft-sprocket combination means, each of said first and second auger chain means and said first and second auger upper shaft-sprocket chain means being engaged by a spring-loaded tension idler means positioned and attached within said housing for achieving satisfactory tension of each of the same during operation; said apparatus additionally comprising a rocker arm means secured within said housing in proximity to one of the upper auger shaft-sprocket combination means, said rocker arm means additionally having a rocker arm spring-loaded means attached to the rocker arm means and to the housing.

4,447,159
UNIVERSAL WORLD TIME AND DATE CLOCK
Barton L. Weller, Box 68, Monroe, Conn. 06468
Filed Jun. 14, 1982, Ser. No. 388,245
Int. Cl.³ G04B 19/22
U.S. Cl. 368—23 10 Claims



1. A twenty-four hour date clock comprising a casing containing a chronometer mechanism comprising at least one central axial shaft which is adapted to make one complete clockwise revolution every twenty-four hours, a dial on said casing having a central opening, a geographic hand member attached to said shaft through said central opening of the dial and extending parallel to and closely spaced from the surface of said dial for 360° rotation with said shaft around said dial, said hand member comprising indicia of geographic areas of the Earth in various geographically-accurate radial directions relative to the axis of rotation of said hand member which coincides with the axis of rotation of the Earth, and at least one date pointer means adjacent an extremity of said hand member and located in a geographically-accurate position relative to said geographic areas to indicate the time zone of the International Date Line, visually-distinguishable old day- and new day-indicating symbols on the clockwise and counterclockwise sides of said pointer means, respectively, said dial comprising a fixed midnight mark which is located for alignment with said pointer means of said hand member once during each twenty-four hour rotation of said hand member to coincide with the end of the old calendar day and start of another new calendar day in the time zone of the International Date Line, visually-associatable companion old day- and new day-indicating symbols affixed to said dial on the counterclockwise and clockwise sides of said midnight mark, respectively, and adjacent thereto, said clock providing a visual indication of geographic areas of the World experiencing the old day, comprising the geographic area indicia present on said hand means in the counterclockwise portion thereof located between the midnight mark on the dial and said hand member, said geographic area being visually-illustrated as the area between said companion old day symbols, and geographic areas experiencing the new day, comprising the geographic area indicia present on said hand means in the clock-wise portion thereof located between the midnight mark on the dial and said hand member, said geographic area being visually-illustrated as the area between said companion new day symbols.

4,447,160
LEAP YEAR COMPENSATION CIRCUIT
Kowji Tanikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 368,310, Apr. 14, 1982, abandoned. This application Sep. 28, 1983, Ser. No. 536,237
Claims priority, application Japan, Apr. 22, 1981, 56-60781; Apr. 22, 1981, 56-60782
Int. Cl.³ G04B 19/24, 27/00
U.S. Cl. 368—34 11 Claims

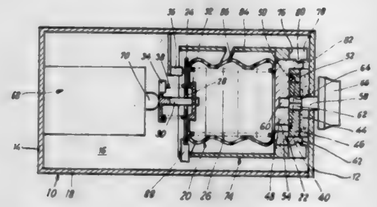


1. A leap year compensation circuit comprising electronic watch means for generating date data including at least year, month and day,
memory means for storing leap year data respectively representing a plurality of leap years, and
juding/compensating means connected to said electronic watch means and said memory means, for comparing the date data generated by said electronic watch means and the leap year data stored in said memory means, and for judging whether or not the date data corresponds to the leap year data and is after the end of February, and leap year setting means for recording leap year judgement and incompletion of leap year compensation in accordance with a judgement result,
said comparing means having function compensating for said watch means for a leap year date in accordance with the judgment result and the content of said recording means.

4,447,161
PNEUMATIC TIMER
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany, and Hans-Heinrich Glaettli, Seestr. 252, CH-8700 Küsnacht ZH, Switzerland
Filed May 6, 1982, Ser. No. 375,530
Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119089
Int. Cl.³ G04B 1/26, 9/00
U.S. Cl. 368—65 18 Claims

15. A pneumatic timer, comprising: a faceplate; a control member movably supported on one side of said faceplate; a bellows supported on the side of said faceplate opposite said one side and having two ends, said ends of said bellows being movable toward and away from each other between first and second positions and being closer to each other in said second position than in said second position; resilient means for yieldably urging said ends of said bellows toward said first position; selectively actuable means for effecting movement of said ends of said bellows from said first position to said second position against the urging of said resilient means; means for facilitating a rapid escape of gas from the interior of said bellows to the

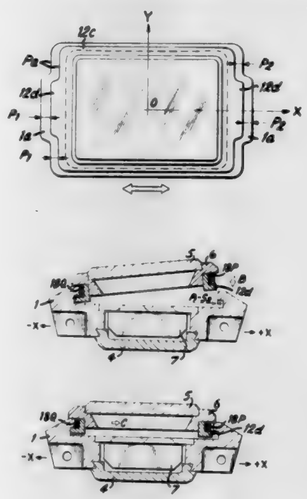
exterior thereof as said ends of said bellows are moved from said first to said second position; means defining a passageway providing fluid communication between the interior of said bellows and the exterior thereof; adjustable choke means operatively coupled to said control member for selectively varying the cross-sectional area of a portion of said passageway in response to movement of said control member in order to control the rate of flow of gas through said passageway from the exterior to the interior of said bellows as said ends thereof are moved from said second position to said first position by said resilient means; a mark support supported in the region of



said faceplate on said side thereof opposite said one side for movement relative to said faceplate in directions approximately parallel thereto between third and fourth positions, said mark support having a mark thereon on a side thereof facing said faceplate; and means operatively coupling said bellows and said mark support for effecting movement of said mark support between said third and fourth positions in response to movement of said ends of said bellows between said first and second positions; wherein said faceplate has means for facilitating observation of said mark on said mark support from said one side of said faceplate.

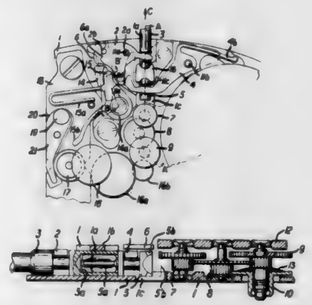
4,447,162
WATCHCASE
Gen Mitamura; Takao Eguchi, and Yukio Nagami, all of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 42,131, May 24, 1979. This application Jan. 2, 1981, Ser. No. 221,980
Claims priority, application Japan, Sep. 8, 1978, 53-110881
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—295 **10 Claims**

1. A watchcase comprising: a case body having oppositely disposed internal recesses therein; a bezel; a support member fixedly connected to said bezel, said support member having an outwardly extending flange extending in an outward radial direction of the watchcase from the upper end surface of the support member and having at least a pair of peripheral beads extending further outwardly from said flange and engageable with respective ones of said recesses; means defining clearances between the flange peripheral beads and the case body recesses to permit sufficient movement of the bezel relative to the case body in a diametrical direction of the watchcase to enable removal of the bezel from the case body without causing deformation of the case body, bezel or support member; biasing means for resiliently biasing the bezel to a balanced position in which the flange peripheral beads engage with respective ones of the case body recesses to thereby removably join said bezel to said case body; and wherein said recesses have a sloping surface defining an angle of less than 45° with respect to the diametrical direction of the watchcase, the length l of the peripheral beads of the support member being longer than the thickness t of the flange of the support member so that the peripheral beads can be displaced in the diametrical direction of the watchcase, and the peripheral beads of the support member contacting the sloping surface of the recesses



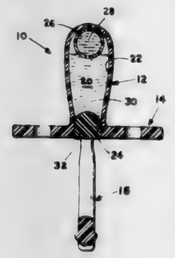
of the case body when the support member is joined to the case body.

4,447,163
STEM MECHANISM FOR A WATCH
Nobuo Tsukada, and Isamu Nishida, both of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Filed Jan. 11, 1982, Ser. No. 338,236
Claims priority, application Japan, Jan. 23, 1981, 56-9190
Int. Cl.³ G04B *27/04, 27/02, 19/22*; G04C *3/00*
U.S. Cl. 368—319 **6 Claims**



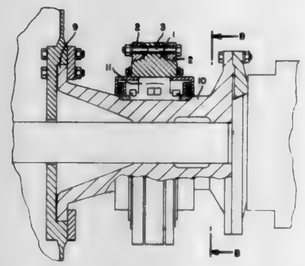
1. A winding stem mechanism for a watch comprising: a winding stem axially displaceable to a plurality of positions for setting a wheel train, for switching a reset switch, and for correcting a time, a slidable pinion slidably and rotatably mounted on a center line of the winding stem, one of the stem and pinion having a square hole extending axially in the direction of the winding stem and the other having a square rod which slidably engages with the square hole so that rotational movement of the winding stem is transmitted to the pinion, and wherein the outer diameter of the stem is substantially the same as that of the pinion.

4,447,164
TEMPERATURE-RESPONSIVE PACIFIER ASSEMBLY
Dieter R. Berndt, Neptune, N.J., assignor to TRP Energy Sensors, Inc., New York, N.Y.
Filed Feb. 22, 1982, Ser. No. 351,107
Int. Cl.³ G01K *11/12, 1/08*
U.S. Cl. 374—162 **9 Claims**



1. A heat-responsive pacifier assembly comprised of a pacifier body including a nipple portion having a chamber, a liquid sealingly disposed in said chamber and a liquid crystalline composition disposed in said liquid, said liquid crystal composition displaying a color change visually through said pacifier body at a temperature above 98.6° F.

4,447,165
BUCKET WHEEL BEARING WITH SPLIT ROLLING BEARING
Peter Kersten; Peter Meixner; Erich Müller, and Eckart Höring, all of Magdeburg, German Democratic Rep., assignors to VEB Schwermaschinenbaukombinat TAKRAF, Leipzig, German Democratic Rep.
Filed Apr. 28, 1982, Ser. No. 372,593
Claims priority, application German Democratic Rep., Dec. 2, 1981, 2353275
Int. Cl.³ F16C *35/00*
U.S. Cl. 384—428 **6 Claims**



1. A bucket wheel bearing assembly adapted to be attached to a bucket wheel support structure for rotationally supporting a bucket wheel shaft on the support structure, comprising

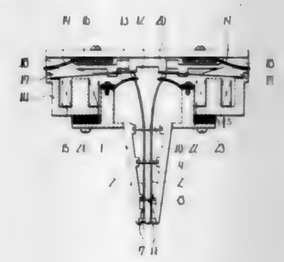
bucket wheel bearing means to be disposed on said bucket wheel shaft;

a bearing box situated outside said bucket wheel bearing means, said bearing box including at least a first bearing half and a second bearing half so that the first and second bearing halves, when assembled together, cover the bucket wheel bearing means entirely at the inside surface thereof, said bearing box having a central projection with slanted side faces at the entire outer surface thereof and two side walls, said slanted side faces extending radially outwardly toward said central projection from both said side walls,

locking means to be disposed alongside of said central projection of said bearing box, said locking means having inner slanted faces to mate with said slanted side faces of the bearing box so that when the locking means is connected to the bearing box, the first and second bearing halves are tightly and evenly connected together with forces radially inwardly applied to the slanted side faces of the bearing box from the locking means, and

a plurality of fastening means for connecting the locking means around the bearing box, some of the fastening means connecting the locking means and bearing box to the support structure.

4,447,166
PRINTING HEAD OF DOT PRINTER
Kuniaki Ochiai; Masami Horii, and Takashi Norigoe, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed May 24, 1982, Ser. No. 381,446
Claims priority, application Japan, Jun. 4, 1981, 56-86141
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **6 Claims**



4. A printing head for a dot printer, said printing head comprising:

(a) a cover;

(b) a guide holder mounted on said cover;

(c) a needle guide surface on said guide holder, said needle guide surface having:

(i) a groove formed therein the width of which is a little greater than the diameter of the working ends of the needles and

(ii) a plurality of needle support holes formed in the bottom of said groove and having a diameter which is a little greater than the corresponding needle diameter;

(d) a plurality of needles disposed in said guide holder and slidably projecting through said holes, each of said needles normally being disposed in a first position in which it projects through one of said holes by a first amount which is less than the depth of said groove;

(e) electromagnetic means for driving said plurality of needles from said first position to a second position in which they project through said holes by a second amount which is greaer than the depth of said groove;

(f) mechanical means for returning said plurality of needles from said second position to said first position after each actuation thereof; and

(g) spacer means disposed between said cover and said guide holder, said spacer means including a removable gauge spacer the thickness s of which is less than the stroke of said needles, said removable gauge spacer being disposed between said cover and said guide holder such that, when said removable gauge spacer is in position and said needles are in their first position, the working ends of said needles are beneath said needle guide surface by a distance greater than or equal to the distance s, which distance is sufficient so that said needles will disengage completely from a printing ribbon passing over said needle guide surface, and, in the absence of said removable gauge spacer, the

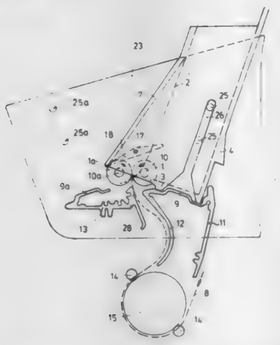
working ends of said needles are coincident with or beneath said needle guide surface.

4,447,167

STACKING DEVICE FOR DATA CARRIERS

Edmund Euteneuer, Grünebach, and Friedhelm Eckhardt, Siegen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,635
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047277
Int. Cl.³ B41J *11/58, 13/10*
U.S. Cl. 400—625 **7 Claims**



1. A stacking device for data carriers ejected from a printing mechanism, said device comprising a detachable stacking magazine; two feed rollers arranged on respective roller shafts at the underside of said magazine, and defining a symmetry plane; means for selectively mounting said magazine for stacking to a selected side of said plane; and means for diverting an ejected carrier toward said selected side into the magazine,

characterized in that said stacking magazine comprises one or more moderately spring-biased guides disposed above and spaced from said rollers, fixed to the magazine, said guides having free ends extending through said symmetry plane and having a distal portion extending below said roller shafts, arranged to divert the ejected data carriers over that roller which is on the selected side of said plane into the stacking magazine, and

further characterized in that the device comprises a switching shaft arranged above the feed rollers, extending in said plane of symmetry; a double lever mounted on the switching shaft, a respective arm of the lever projecting into the stacking magazine responsive to the placement of the magazine on the respective side of the symmetry plane; a switch mounted to said device outside the stacking magazine; and means for actuating the switch responsive to pivoting of the double lever in either direction for providing an electrical signal when a magazine has been filled with ejected carriers.

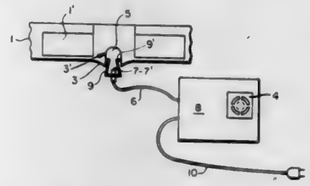
4,447,168

BOTTOM MARGIN INDICATOR APPARATUS FOR TYPEWRITERS AND THE LIKE

Carol M. Rines, 13 Spaulding St., Concord, N.H. 03301, and Duane Marshall, 9 Hadley Rd., Lexington, Mass. 02173

Filed Jul. 7, 1981, Ser. No. 281,084
Int. Cl.³ B41J *29/18*
U.S. Cl. 400—708 **8 Claims**

1. In combination, bottom margin indicator apparatus and a typewriter having a platen rotatable about an axis, said platen having a cylindrical surface, a cylindrical-section paper shield mounted immediately below the platen so that paper is advanced along a path transverse to said axis during typewriting between an upper surface of the shield and the platen; said shield being provided with an aperture extending transversely of the shield, the edges of the aperture comprising a track; said apparatus having photo-sensitive monitor means for sensing the presence and absence of paper, said monitor means mounted within an assembly block provided with means for slideably supporting the assembly block on the track for movement transverse of the shield and for positioning the assembly block at a predetermined region of the track, suspended therefrom, and with the monitor means there-exposed through the aperture, said assembly block holding the monitor means in close proximity to the said upper surface of the shield but not substantially above the same and the assembly block itself



being disposed below said surface in order to position the monitor means substantially at said surface and thus in noninterfering relationship with, but in closest proximity to, the paper passed between the same and the platen irrespective of the thickness of the paper; signaling means connected to and responsive to the sensing by the monitor means of the absence of paper at said predetermined region following the presence of paper thereat for providing an indication of such absence; means for electrically powering the monitor and signaling means; and means for preventing spurious signals from being applied to said signaling means that would effect spurious and multiple indications as the bottom edge of the paper passes by the monitor means.

4,447,169

AUTOMATIC APPLICATOR BOTTLES

Victor Vartoughian, 358 N. Ridgewood Pl., Los Angeles, Calif. 90004

Filed Mar. 23, 1981, Ser. No. 246,726
Int. Cl.³ A46B *17/04*
U.S. Cl. 401—269 **12 Claims**



1. An applicator for dispensing liquids or the like automatically, said applicator comprising:

a bottle means for containing liquid, said bottle means having an open neck formed at one end thereof;

a cap removably mounted on said bottle means, said cap having an interior surface; and

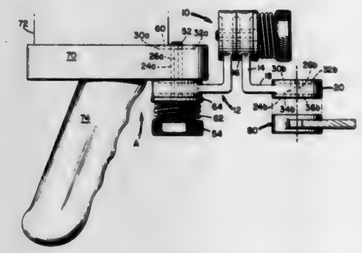
a brush having a passageway extending therethrough, a plurality of bristles and a first body means for retaining said plurality of bristles in fluid communication with said passageway and for releasably securing said brush in a first position on said bottle means such that said plurality of bristles project into said neck of said bottle means, said brush also having a second body means for releasably securing said brush in a second position on said bottle means such that said plurality of bristles project away from said neck of said bottle means, said first body means having a first surface which conforms to said interior surface of said cap to provide a fluid tight seal between said first surface and said interior surface when said cap is mounted on said bottle means with said brush in said second position, said second body means having a second surface which also conforms to said interior surface of said cap to provide a fluid tight seal between said second surface and said interior surface when said cap is mounted on said bottle means with said brush in said first position.

4,447,170

CONNECTION ASSEMBLY FOR USE WITH AN ARTICULATED LINKAGE SYSTEM

Ralph Holmes, 216 Diana Dr., Burley, Id. 83318

Filed Mar. 2, 1982, Ser. No. 353,964
Int. Cl.³ F16C *11/00*
U.S. Cl. 403—64 **2 Claims**



1. An articulated linkage system for interconnecting a camera and a flash unit, comprising:

a mounting bracket connectable to a camera and having a through bore formed therein,

a flash arm connectable to said flash unit and having a through bore formed therein, and

linkage means for interconnecting the mounting bracket with the flash arm;

wherein said linkage means comprises:

first and second angle brackets having arms with through bores formed in end portions thereof, one of the through bores of the first bracket being aligned with the through bore in the mounting bracket, and one of the through bores of the second bracket being aligned with the through bore in the flash arm, other through bores of said angle brackets being aligned with each other,

a plurality of bolts, each bolt having a shaft extending through a respective one of the pairs of aligned through bores for interconnecting the parts having the through bores, each bolt further having an enlarged head connected to a proximal end of the shaft for limiting movement of the shaft in a first direction with respect to the through bores, and each bolt further having a pin carried by a distal end of the shaft, the pin having an end portion protruding from the shaft, each through bore having an enlarged portion for passage of the pin end portion through the through bore and terminating in an end surface with a recess formed therein for receiving the pin end portion, the pin when received in said recess preventing movement of the shaft in a direction opposite the first direction, and

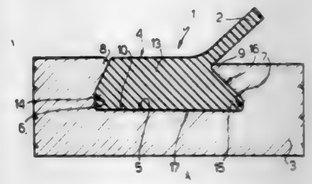
biasing means positioned between the enlarged head of the bolt and the pin for exerting a biassing force on the parts interconnected by the bolt tending to fix the angular relationship of the parts with respect to each other.

4,447,171

DEMOUNTABLE SEALED JOINT FOR THE FLUID TIGHT CONNECTION OF A SHEET MEMBER TO A SUPPORT

Viscardo Baldoni, and William J. Vorih, both of Rome, Italy, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 16, 1981, Ser. No. 302,910
Claims priority, application Italy, Nov. 7, 1980, 68705 A/80
Int. Cl.³ B25G *3/08*; F16D *1/00*
U.S. Cl. 403—381 **9 Claims**



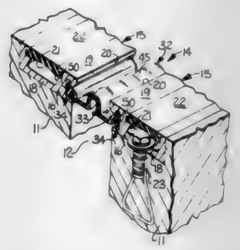
1. A demountable sealed joint for the fluid tight connection of a sheet member to a support, said joint comprising a bead forming a portion of said sheet member, and a seat for said bead provided on said support and consisting of a groove having a substantially dovetail cross-section and provided the first and second undercuts; said bead having, in cross-section, a shape substantially conjugate with that of said seat and provided with first and second extensions engaging said first and second undercuts respectively; characterized in that said bead is substantially rigid in a transverse direction, said second undercut being deeper than the first, and said sheet member extending from said bead substantially at the base of said second extension and at a predetermined distance from said first extension.

4,447,172

ROADWAY EXPANSION JOINT AND SEAL

Richard N. Galbreath, Wilsons, Va., assignor to Structural Accessories, Inc., Lenoir, N.C.

Filed Mar. 18, 1982, Ser. No. 359,216
Int. Cl.³ E01C *11/04*
U.S. Cl. 404—68 **12 Claims**



8. An elastomeric membrane adapted to extend across and sealingly close a longitudinally extending expansion gap between adjacent structural members, said membrane comprising a central web portion and a pair of integral ear-like transverse edge portions extending outwardly along respective sides of said web portion, said edge portions being solid and mirror images of each other in cross section, with each edge portion

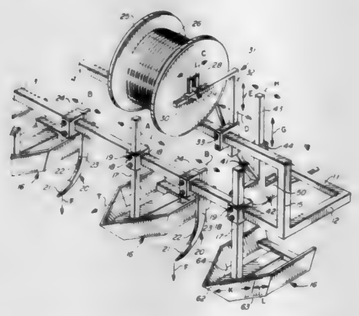
extending outwardly in the transverse direction beyond the adjacent web portion on each side thereof, and including an outer surface facing in a direction away from said web portion, said outer surface including a curved recess disposed at a medial location along the transverse dimension thereof, and being of a size sufficient to permit the edge portions to laterally flex to facilitate assembly thereof into a receiving socket or the like.

4,447,173

APPARATUS FOR BURYING DRIP IRRIGATION TUBING

Charles R. Schultz, Rte. 1, Box 115A, Coolidge, Ariz. 85228; Mark S. Tollefson, 508 East Irene, Casa Grande, Ariz. 85222, and Howard A. Wuertz, Rte. 1, Box 115A, Coolidge, Ariz. 85228

Filed Feb. 17, 1983, Ser. No. 467,383
Int. Cl.³ E02F *5/10*
U.S. Cl. 405—181 **2 Claims**



1. Apparatus for burying conduit from a supply thereof in a plowed field having

a plurality of generally parallel elongate, upstanding, spaced beds of earth, and

a plurality of elongate spaced furrows, each furrow generally lying along and following a generally horizontally oriented imaginary line,

each elongate bed generally lying in between a pair of said furrows, said apparatus comprising

(a) a frame,

(b) a plurality of members carried on said frame and each shaped, contoured and dimensioned to track along one of said furrows in a direction of travel generally parallel to said imaginary horizontally oriented line;

(c) at least one blade carried on said frame to cut a trench in one of said beds as said apparatus moves in said direction of travel and shaped to generate a downward pull on said apparatus as said blade cuts through said bed to form said trench; and

(d) a conduit laying member carried on said frame and shaped and dimensioned to

(i) track along said trench formed by said blade,

(ii) allow conduit to move therethrough to be dispensed into said trench formed by said blade;

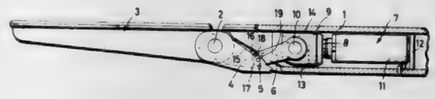
said tracking members and said conduit laying member having bottom edges which contact said furrows and trench respectively and tend to counteract said downward force generated as said blade moves through said earth in said bed such that the depth of said trench being cut in said bed tends to be substantially constant along the length thereof.

4,447,174

CAP POSITIONING MECHANISM

Kunibert Becker, Werl; Gerd Dunkel; Gunter Lagodka, both of Lunen, and Rudiger Kirchbrucher, Dortmund-Brackel, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,984
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3107209
Int. Cl.³ E21D *17/054*
U.S. Cl. 405—293 **18 Claims**



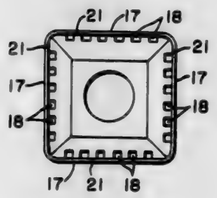
1. A cap-positioning mechanism for adjusting the angular position of an auxiliary cap relative to a main cap, the auxiliary cap and the main cap comprising the roof cap of a mine roof support unit, the auxiliary cap being connected to the main cap by a first pivot joint, the mechanism comprising a hydraulic ram and a lever acting between the main cap and the auxiliary cap, wherein the auxiliary cap is provided with an extension arm projecting from the first pivot joint towards the main cap, one end portion of the lever being connected to the arm by a second pivot joint, and the other end of the lever being connected to a first part of the ram by a third pivot joint, the lever having a length which is less than the distance between the first pivot joint and the third pivot joint, a second part of the ram being attachable to the main cap, the first and second parts of the ram being relatively movable.

4,447,175

CUTTING INSERT

Donald W. Warren, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 181,770, Aug. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 116,679, Jan. 30, 1980, abandoned. This application Jun. 17, 1982, Ser. No. 389,406
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—114 **4 Claims**



1. A cutting insert for removing material from a workpiece which comprises: a body that has top and bottom faces and a peripheral wall joining said faces; said body having a polygonal shape when viewed in plan; cutting edges formed at the juncture of said peripheral wall with one of said top and bottom faces; a land area extending inwardly from the cutting edge; a planar descending wall extending from the land area downwardly to a planar floor which extend toward the center of said body; individual discrete recesses for imparting a stiffer configuration to the material removed from the workpiece, said recesses formed and spaced inwardly from and along the length of the cutting edges in the upper portion of said planar descending wall; said recesses when viewed in side appearing concave facing outwardly and extending from the land area

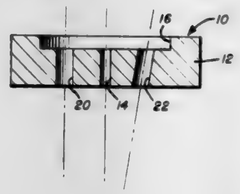
inwardly, and portions of said planar descending wall forming side walls separating and bounding said recesses.

4,447,176

TEMPLATE FOR MORTICE CYLINDER LOCK REMOVAL

LeVone A. Blough, 95 Horseshoe Dr., Longwood, Fla. 32779, and David L. Gregory, 10207 Union Park Dr., Orlando, Fla. 32817

Division of Ser. No. 146,213, May 5, 1980, abandoned. This application Jan. 7, 1982, Ser. No. 337,840
Int. Cl.³ B23B *49/02*
U.S. Cl. 408—72 R **5 Claims**



1. A drill template for facilitating the removal of a cylinder of a mortice or similar lock from a structure in which the lock is installed, comprising template means for aligning the drill on the face of the lock, the template means having at least one aperture formed therein to allow cutting away of a fastener holding the lock and the structure by drilling through the aperture formed in the template means, the template means comprising a body member having a disclike conformation and having a first, inner face engageable with the lock, the first face of the body member having a central circular recess formed therein, the body member having a slot formed in a second, outer face of said body member, the slot extending through the body member and opening on the first face of said body member, the slot further extending diametrically across the second face of the body member and communicating with the recess over less than the full diameter of said recess, the aperture positioning a drill for cutting of the fastener on positioning of the template over the lock to allow the fastener to be cut away without damage to internal keyway structure of the lock.

4,447,177

TOOL HOLDER WITH TOOL POSITION COMPENSATING MECHANISM

Yoshiki Ochiai, Okazaki; Kenji Nomura, Aichi; Tetsuro Yamakage, Anjo, and Toshiharu Takashima, Chiryu, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 9, 1981, Ser. No. 281,781
Claims priority, application Japan, Jul. 10, 1980, 55-97825[U]
Int. Cl.³ B23B *47/18, 49/00*
U.S. Cl. 408—161 **6 Claims**

1. A tool holder for use in connection with a machine tool comprising:

a shank receivable in a tool spindle rotatably supported in a spindle head of said machine tool;

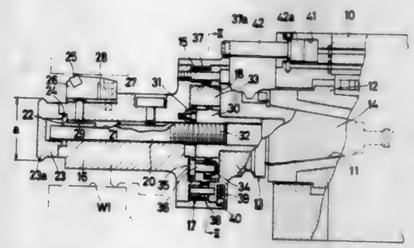
a tool mounting shell securedly connected to said shank and adjustably movably carrying a cutting tool in a radial direction of said mounting shell;

a screw shaft axially slidably but non-rotatably supported in said tool mounting shell and having a cam surface which is sloped along the axis of said tool mounting shell;

transmitting means interposed between said cutting tool and said cam surface of said screw shaft for adjustably moving said cutting tool in the radial direction by wedging action of said cam surface upon axial movement of said screw shaft;

a rotary member rotatably received and threadedly engaged with said screw shaft;

a ring shaped internal gear member rotatably supported on the external peripheries of said shank and said mounting shell adapted to be fixed relative to said spindle head for bringing about relative rotation between said internal gear member and said mounting shell upon rotation of said tool spindle; and



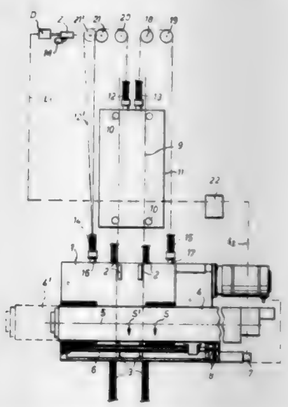
reduction gear means for transmitting rotation of said mounting shell relative to said internal gear member to said rotary member at a predetermined reduction gear ratio, wherein said reduction gear means further comprises a rotatable planet gear engaged with said internal gear member.

4,447,178

HORIZONTAL DRILLING AND MILLING MACHINE WITH A HEADSTOCK MOVING UP AND DOWN IN GUIDES

Karl-Josef Esser, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Scharmann GmbH & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Feb. 25, 1982, Ser. No. 352,332
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108934
Int. Cl.³ B23B *47/26*; B23C *1/02*
U.S. Cl. 409—80 **5 Claims**



1. In a horizontal drilling and milling machine of the type comprising a vertically movable headstock, a spindle sleeve mounted for horizontal run-out from said headstock such that an outer end of said spindle sleeve undergoes a vertical deflection relative to said headstock, which deflection is an exponential function of the extent of said run-out, and correcting means comprising a counterweight at least two reversing rolls, two cables traveling over said reversing rolls to form first and

second generally vertical cable sections connected, respectively, to said counterweight and said headstock, and means for displacing said first cable section to move said headstock in a vertical plane in response to said run-out, the improvement comprising:

means constraining said counterweight for vertical movement and preventing horizontal displacement thereof,

means mounting the first of said reversing rolls for movement in a radial direction to move said first cable section in a manner displacing said headstock in a vertical plane, and

said correcting means including:

sensing means for sensing the extent of horizontal run-out of said spindle sleeve and emitting run-out signals corresponding thereto;

a memory and computer apparatus for storing said exponential function, said memory and computer apparatus arranged to receive said run-out signals from said sensing means and emit deflection compensation signals which are an exponential function of the extent of horizontal run-out, and

displacement means connected to said memory and computer apparatus and responsive to said deflection compensation signals for radially moving said first reversing roll to incline said headstock in a vertical plane about a horizontal axis in a manner effecting a vertical correction displacement of said outer end of said spindle sleeve, which displacement is an exponential function of the extent of said horizontal run-out so as to maintain said outer end of said spindle sleeve on a zero deflection path.

4,447,179

TRACER HEAD ADJUSTMENT METHOD

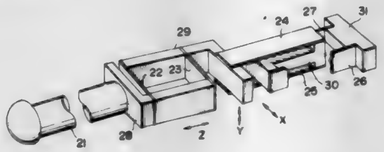
Etuo Yamazaki, Hachioji, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Continuation of Ser. No. 23,461, Mar. 23, 1979, abandoned. This application Jun. 2, 1982, Ser. No. 384,289

Claims priority, application Japan, Mar. 23, 1978, 53-33399

Int. Cl.³ B23Q *33/00, 35/30*

U.S. Cl. 409—127 1 Claim



1. A method of adjusting a horizontally mounted tracer head assembly that is subject to deformation, wherein the tracer head assembly is movably mounted on a machine frame and includes a tracer frame, a stylus having a tip that has a reference position with respect to said machine frame and said stylus being interchangeable with different styluses, support members and respective parallel plate members connected to corresponding ones of the support members for permitting displacement of the stylus in X-, Y- and Z-axis directions from said reference position and wherein said Y-axis direction is selected to be in the vertical direction, and displacement detectors for detecting displacements corresponding to the relative positions of the respective ones of said support members along the respective axis directions from corresponding reference displacements, said method comprising the steps of:

(a) changing the stylus of the tracer head assembly to one having a different weight so that the displacements detected by said displacement detector corresponding to said Y-axis direction is different from the respective one of said reference displacements,

(b) detecting a voltage across the Y-axis displacement detector for detecting the displacement, corresponding to the relative position of the respective support member with respect to the corresponding reference displacement along said Y-axis direction;

(c) displaying data corresponding to the deviation of the detected voltage from a corresponding reference voltage corresponding to the respective reference displacement along said Y-axis direction;

(d) adjusting the Y-axis displacement detector until the voltage of the Y-axis displacement detector is approximately equal to said reference voltage; and

(e) moving the tracer head assembly in the Y-axis direction relative to the machine frame to bring the tip of the stylus being employed to said reference position,

wherein deformation of said horizontally mounted tracer head in said vertical direction is compensated for so as to simultaneously provide said reference voltage from said position detector and said top of the stylus at said reference position with respect to said machine frame.

4,447,180

CHUCK WITH SAFETY CUTOUT

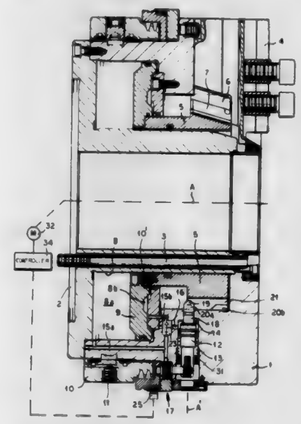
Karl Pesch, Dillingen, Fed. Rep. of Germany, assignor to Röhm GmbH, Sontheim, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,582

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102099

Int. Cl.³ B23C *9/00*

U.S. Cl. 409—232 7 Claims



1. A power chuck comprising:

a chuck body rotatable about an axis, forming an axially extending cylinder and a radially extending cylinder, and having a front face;

drive means for rotating said chuck body about said axis;

a plurality of jaw members displaceable radially on said front face between a pair of radially inner and outer end positions;

an operating member axially displaceable on said body between a pair of axially offset end positions;

mechanism between said jaw members and said operating member for displacing said jaw members toward said radial inner positions on displacement of said operating member in a first axial direction and for displacing said jaw members toward said radial outer positions on displacement of said operating member in a second axial direction opposite said first direction on said body;

a drive piston in the axial cylinder of said body, fixed on and axially jointly displaceable with said operating member and forming in said axial cylinder at least one compartment pressurizable to urge said drive piston and said operating member in one of said axial directions;

a control piston displaceable radially in the radial cylinder between a chuck-ready position and a chuck-unready position;

a spring braced against said control piston and urging same radially inward into said chuck-unready position;

means including passages between said cylinders for urging said control piston into said chuck-ready position when said compartment is pressurized; signal means including

a nonradially projecting boss on said control piston,

a nonradially projecting formation on said operating member engageable radially outward with said boss only in said end positions on said members, and

inclined camming formations on said operating member and engageable with said nonradial boss of said control piston at said end positions of said operating member for camming said control piston into said chuck-unready position and for holding said control piston in said chuck-unready position and generating an output when said one of said members is in either of its said end positions; and

control means connected to said signal means and to said drive means for preventing rotation of said body by said drive means when said signal means generates said output.

4,447,181

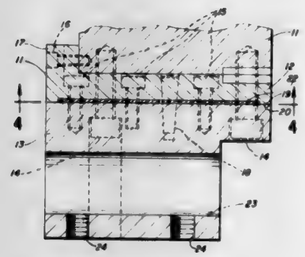
TOOL HOLDER

Toshitake Asano, Tokyo, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 416,088

Int. Cl.³ B23B *47/00*

U.S. Cl. 409—345 10 Claims



1. A tool holder for mounting a tool to a carrier, comprising:

a base member;

means for mounting the base member to a carrier;

a tool holding member, said members defining confronting transverse surfaces, at least one of said surfaces being provided with a shallow recess extending from the center thereof to a peripheral portion thereof fully surrounding the recess, said recess opening toward the other surface;

means for securing the tool holding member to the base member with at least portions of said confronting transverse surfaces at opposite sides of the recess in direct mechanical facial engagement; and

a flat, transverse, continuous pad of resilient readily compressible material complementary to and received in said recess to be compressed between said members for effectively minimizing chattering of a tool carried by said tool holder in machining use in a direction transverely to said transverse surfaces, the thickness of the pad being substantially greater than the corresponding depth of the recess.

4,447,182

FIXING PLUG

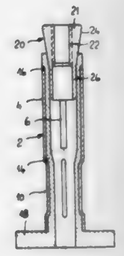
Julius Murbach, Lindengut 15, 8750 Glarus, Switzerland, assignor to Julius Murbach and Karl Stüssi, both of Glarus, Switzerland

Filed Feb. 24, 1981, Ser. No. 237,580

Claims priority, application Switzerland, Mar. 5, 1980, 1744/80

Int. Cl.³ F16B *13/10*

U.S. Cl. 411—45 20 Claims



1. A fixing plug comprising:

an expanding element;

a metallic expanding sleeve having a slotted end portion;

said expanding element cooperating with said slotted end portion of said metallic expanding sleeve such that said expanding element can be at least partially axially drawn into the metallic expanding sleeve by means of a screw element connectable with said expanding element;

said expanding element having at least one metallic connection portion;

said metallic connection portion of said expanding element cooperating by means of an oscillation damping material with said expanding sleeve;

said expanding sleeve having an end portion located opposite said slotted end portion;

at least said oppositely located end portion being provided with an inner lining protruding past said oppositely located end portion and formed of said oscillation damping material; and

the oscillation damping material comprises an elastomeric material which is arranged as an inner lining of the slotted end portion and protrudes therepast.

4,447,183

MACHINE PARTS EXPANDER HOLD DOWN

Fred W. Yunt, Cypress, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Aug. 24, 1981, Ser. No. 295,333

Int. Cl.³ F16B *13/06*

U.S. Cl. 411—57 5 Claims

1. A reusuable fastener device for releasably joining a workpiece to a work support surface in a tight relationship comprising:

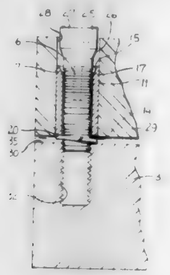
a tubular body having two ends, one of the said ends being the first to be inserted into a mating bore in said workpiece to engage said work support surface, the other end being securely and releasably attachable to said workpiece, the tubular body having a length dimension less than the thickness of the portion of the workpiece to be fastened to said work support surface;

expandable means forming the latter inserted portion of said tubular body, for grippingly engaging said bore provided in said workpiece;

split ring means on the end of said tubular body being receivable in said bore and having a portion thereof displacable longitudinally relative to said tubular body for establish-

ing the proper depth of insertion of said tubular body into said bore; and

means insertable into said tubular body, for expanding said latter inserted portion of said tubular body into gripping



engagement with said bore and having threaded means thereon for pulling said workpiece into tight mating relationship on said work support surface after said latter portion of said tubular body is expanded into gripping engagement with said bore in said workpiece.

4,447,184

APPARATUS FOR SEALING CONTAINERS

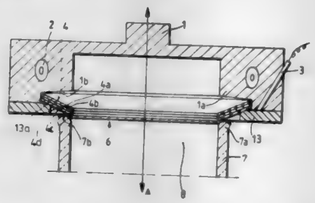
Hermann Buri, and Beat Karth, both of Kirchberg, Switzerland, assignors to Nyffeler, Corti AG, Kirchberg, Switzerland

Filed Sep. 21, 1982, Ser. No. 420,830

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 8129904[U]

Int. Cl.³ B21D *51/00*

U.S. Cl. 413—26 **3 Claims**



1. Apparatus for sealing a thin closure lid, particularly a metallic lid, coated with thermoplastic material to the rim of a container, particularly a glass container, comprising a heatable sealing head and a resiliently yielding pressure element for transmitting pressure and heat to said lid, said pressure element including at least one cup spring and, in the relaxed state thereof, a conical contact surface intended to come in contact with said lid, said contact surface being designed to bend back resiliently upon encountering the resistance of said container rim, said contact surface extending from said sealing head obliquely inward away from said sealing head.

4,447,185

CONTAINER TIPPING APPARATUS

David S. Robinson, and Rupert M. Taylor, both of Mhlume, South Africa, assignors to Mhlume (Swaziland) Sugar Company Limited, Mhlume, South Africa

Filed Oct. 9, 1980, Ser. No. 195,682

Claims priority, application United Kingdom, Oct. 11, 1979, 7935266

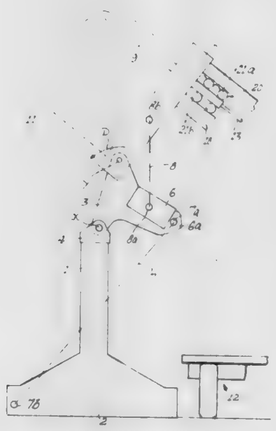
Int. Cl.³ B65G *65/34*

U.S. Cl. 414—420 **17 Claims**

1. A container tipping apparatus, comprising:

support means;

carrier means;



coupling means for coupling said support means to said carrier means;

first means for rotatably mounting said coupling means to said support means so that said coupling means is rotatable relative to said support means between a first lowest extreme position and a first elevated extreme position;

second means for rotatably mounting said carrier means to said coupling means;

means for rotating said coupling means and said carrier means so that said carrier means is rotatable between a second lowest extreme position whereat said carrier means is engaged with a container located adjacent said tipping apparatus and a second elevated extreme position whereat said container is positioned to discharge its contents due to gravitational forces;

said second rotatable mounting means allowing said carrier means to rotate freely relative to said coupling means and in a direction opposite to a direction of rotation of said coupling means as said coupling means is rotated by said rotating means between said first lowest extreme position and a position above said first lowest extreme position;

said first rotatable mounting means being fixed in position and located at a predetermined height, said second rotatable mounting means being movable and being located at a height below said fixed predetermined height when said coupling means and said carrier means are at said first and second lowest extreme positions, respectively, said second rotatable mounting means being located at a height above said predetermined height when said coupling means is at said position above said first lowest extreme position; and

said coupling means including an abutment member which engages said carrier means after said coupling means has been rotated to said position above said first lowest extreme position from said first lowest extreme position, said abutment member causing said carrier means to rotate integrally with said coupling means as said coupling means is further rotated by said rotating means between said position above said first lowest extreme position and said first elevated extreme position.

4,447,186

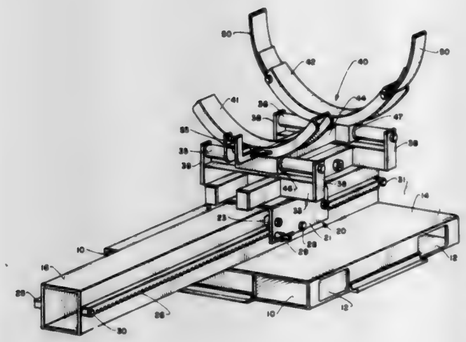
AIRCRAFT LOADING ADAPTER FOR USE WITH ORDNANCE LIFT VEHICLE

Vernon E. Renfro, Somis; Ronald L. Gudgeon, Ventura; John P. Clelland, Redondo Beach, and Clyde C. Cole, Ventura, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1982, Ser. No. 363,349

Int. Cl.³ B66F *9/14*

U.S. Cl. 414—589 **10 Claims**



1. An ordnance loading adapter for use with the fork-lift mechanism of a lift fork-lift vehicle to permit ease in accurately positioning an ordnance load into alignment with mounting means on an aircraft for attachment thereto, comprising:

a. an adapter base means operable to be secured to the fork-lift mechanism of a fork-lift vehicle;

b. A longitudinal trolley beam mounted on said adaptor base means; said longitudinal trolley beam being of substantially greater length than said adapter base and providing a boom-like extension extending well beyond one edge of said adapter base to provide a substantially extended reach to the lift mechanism;

c. a pair of parallel track means mounted on both sides of said longitudinal trolley beam;

d. a trolley platform means of inverted U-shaped cross-section operable to saddle said longitudinal trolley beam and ride on said parallel track means;

e. a linear bearing rod support means mounted on said trolley platform means and having at least two parallel lateral bearing rods mounted thereon in an axial direction which is 90 degrees transverse to the axial direction of said longitudinal trolley beam and said track means;

f. a load support means adapted to hold an ordnance load; said support means slideably affixed to and operable to be moved and ride on said lateral bearing rods transversely to the axial direction of said longitudinal trolley beam to provide movement in a lateral direction;

g. said linear bearing rod support means also being swivelly mounted on said trolley platform means for rotation in the horizontal plane;

h. movement of said trolley platform along said track means being operable to provide fore or aft movement of said ordnance load while movement of said load support means on said lateral bearing rods being operable to simultaneously provide lateral movement of said ordnance load whereby accurate and finite positioning of said ordnance load to mounting means on an aircraft is permitted.

4,447,187

LATERAL-DUCT FAN

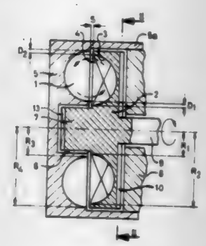
Rüdiger Galtz, Munich, and Rudolf Reinhardt, Krailling, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Gauting, Fed. Rep. of Germany

Filed Dec. 28, 1982, Ser. No. 454,025

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1982, 3203325

Int. Cl.³ F04D *29/34*

U.S. Cl. 415—53 R **16 Claims**



1. A lateral-duct fan having a housing with a lateral duct, of approximately the shape of a torus cut normally to its axis of symmetry, in an inner boundary surface thereof, and having an impeller with axially-symmetrically lined-up blades in a ring-shaped recess within a boundary surface on a front side thereof, said impeller being arranged coaxially with respect to said lateral duct with its recess disposed facing essentially opposite the lateral duct and with an axial gap between said boundary surfaces, wherein the radii of inner and outer edges of the ring-shaped recess, measured at the boundary surface of the impeller, are smaller than the inner and outer radii of the respective closest edge of the lateral duct, measured at the boundary surface of the housing.

4,447,188

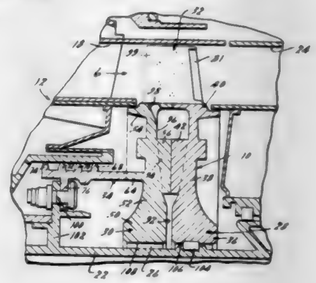
COOLED TURBINE WHEEL

Arthur M. Davis, Wixom, and Warren J. Pollington, Southfield, both of Mich., assignors to Williams International Corporation, Walled Lake, Mich.

Filed Apr. 29, 1982, Ser. No. 372,914

Int. Cl.³ F01D *5/08*

U.S. Cl. 415—115 **2 Claims**



1. A unitary turbine wheel for a gas turbine engine having a turbine shaft, said turbine wheel comprising, in combination, a pair of initially separate discs, a plurality of initially separate turbine blades, and an initially separate rotor support, each of said discs including a hub portion having side portions, respectively, a relatively thin intermediate portion formed integrally with and disposed radially outwardly of said hub portion and having a maximum axial dimension less than the maximum axial dimension of said hub portion, and a rim portion formed integrally with and disposed radially outwardly of said intermediate portion and having a maximum axial dimension

greater than the maximum axial dimension of said intermediate portion, each of said discs also including a plurality of angularly spaced, radially extending rib portions formed integrally with and projecting axially from the intermediate portions of said discs, radially extending edge portions of said rib portions and radially extending edge portions of said rim portions of said discs being radially aligned and disposed in axially spaced relationship with respect to the radially extending side portions of said hub portions of said discs, one of said discs including an integral flange portion projecting axially outwardly from said intermediate portion of said one disc on the side thereof opposite the ribs on said intermediate portion, said initially separate rotor support including a tubular body portion, said radially extending confronting edges of said rib portions and said radially extending confronting edges of said rim portions being diffusion bonded together, said discs defining an air passageway therebetween communicating with the radially innermost end of one of said discs and with the periphery of one of said rim portions, said turbine blades each defining air passageways therethrough, said turbine blades being diffusion bonded in angularly spaced relationship to the peripheral surfaces of said discs with the air passageways in said blades communicating with the air passageway defined by said discs, said tubular body portion of said rotor support being diffusion bonded to said flange portion provided on said one disc.

4,447,189

CENTRIFUGAL PUMP FOR MOVING GASEOUS LIQUIDS

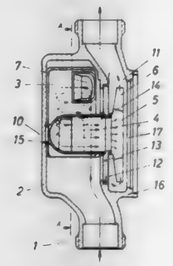
Niels D. Jensen, and Kurt F. Nielsen, both of Bjerringbro, Denmark, assignors to Grundfos A/S, Bjerringbro, Denmark

Filed Jan. 25, 1982, Ser. No. 342,644

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 810230[U]

Int. Cl.³ F01D *25/30*

U.S. Cl. 415—168 **4 Claims**



1. A centrifugal pump comprising:

(a) a one-piece pump casing configured so as to define a suction chamber and a pressure chamber, said suction and pressure chambers communicating via an interchamber opening and said pump casing having a gas exhaust taphole communicating with said suction chamber;

(b) a disc having a configuration which conforms to the configuration of said interchamber opening and having a central opening;

(c) a gas separator mounted in said suction chamber, said gas separator comprising a gas-water inlet, a water outlet and a gas outlet said gas separator being fastened relative to the longitudinal axis of the pump both in the radial and the axial direction by means of said disc and an axial abutment means so that said gas separator is prevented from rotation

(d) an impeller formed separately from said disc and including an inlet, wherein said water outlet is secured to the casing wall by said axial abutment and is connected to said central opening, said central opening being connected to said impeller inlet with said gas separator being rigidly fixed in relation to said suction chamber by securing means at said water and gas outlets.

4,447,190

FLUID PRESSURE CONTROL IN A GAS TURBINE ENGINE

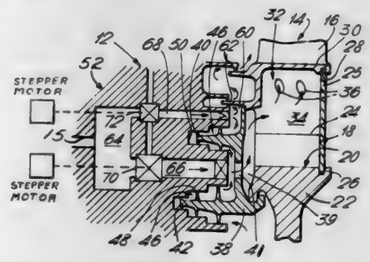
David A. Campbell, Borrowash, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 2, 1982, Ser. No. 438,632

Claims priority, application United Kingdom, Dec. 15, 1981, 8137691

Int. Cl.³ F01D *11/06*

U.S. Cl. 416—95 **7 Claims**



1. A gas turbine engine including a casing, a turbine stage comprising a disc having an upstream face and a rim and blades having shanks, a pair of annular lands adapted for co-rotation with said turbine stage, a pair of annular grooves in said casing for receipt of said annular lands, a first annular space to which cooling air is passed from between said lands, a further annular space radially outwardly of said first annular space, a plenum chamber for receipt of pressurized air, a pair of ducts communicating with said plenum chamber and with respective annular spaces and valve means in each duct and adapted for simultaneous operation to reduce flow of pressurized air in one duct and increase flow of pressurized air in the other duct.

4,447,191

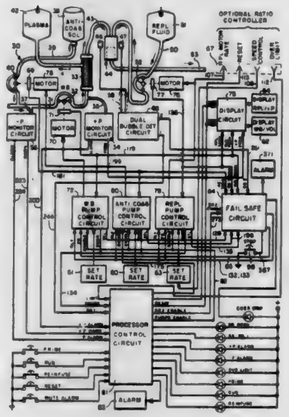
CONTROL CIRCUIT FOR A BLOOD FRACTIONATION APPARATUS

Arnold C. Bilstad, Deerfield, and John T. Foley, Wheeling, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 15, 1981, Ser. No. 330,898

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—12 **9 Claims**



1. In a blood fractionation apparatus operable in conjunction with a disposable fluid flow system for separating and collecting a blood fraction from whole blood, and including at least one motor-driven pump for conveying blood through the flow system, a tachometer associated with the motor, and a monitoring device providing an alarm signal in the presence of a fluid absence in the system, a failsafe control circuit comprising, in combination:

a flip-flop responsive to applied tachometer pulses from the pump motor for producing an alarm control signal;

a series-parallel counter having a reset input, a clock input and a series/parallel enable input, said counter requiring a predetermined number of applied clock pulses following application of a serial enabling signal for producing an output;

means for applying said flip-flop output signal to said parallel-serial enable input to enable said counter to a serial mode upon occurrence of said tach pulses;

means for applying said fluid absence alarm signal to said reset input to enable operation of said counter upon the occurrence of a fluid absence in the system;

means for applying clock pulses to said counter whereby said counter counts to zero over a predetermined time interval upon being conditioned to a serial mode at said serial-enable input and upon being enabled at said reset input; and

means responsive to the output of said counter for terminating operation of the pump.

4,447,192

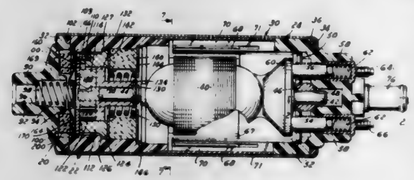
SELF-CONTAINED ROTARY FUEL PUMP

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Division of Ser. No. 123,103, Feb. 19, 1980, Pat. No. 4,352,641. This application Jun. 24, 1982, Ser. No. 391,558

Int. Cl.³ F04B *35/04*; F04C *15/00*

U.S. Cl. 417—360 **2 Claims**



1. A power driven electric fuel pump comprising:

(a) an elongate housing having a fuel inlet at one end and a fuel outlet at the other end,

(b) a rotary pump body at the inlet end of the housing and a pump rotor in said pump body,

(c) a motor armature in said housing having a through shaft projecting from each end,

(d) means mounting said pump rotor on one end of said shaft within said pump body,

(e) means on the other end of said shaft for mounting said shaft in said housing having a spherical surface engaging a similar surface in said housing, and

(f) means mounting said one end of said shaft in said elongate housing including a portion of said rotary pump body tiltable in said elongate housing to permit alignment of said pump body, rotor and shaft in said elongate housing without distortion of said shaft.

4,447,193

COMPRESSOR UNLOADER APPARATUS

Stuart E. Bunn, and Herbert B. Owsely, both of Shawnee Mission, Kans., assignors to Ball Valve Co., Inc., Olathe, Kans.

Filed Jul. 20, 1981, Ser. No. 285,251

Int. Cl.³ F04B *41/00*

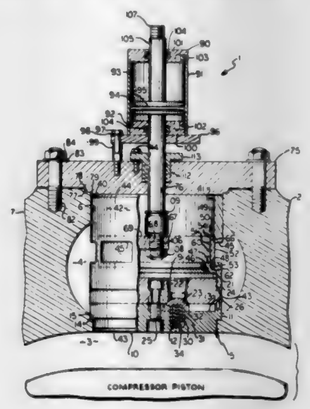
U.S. Cl. 417—441 **18 Claims**

1. An unloader apparatus for a gas compressor having a compressor cylinder, a reciprocating compressor piston slidably disposed therein, a suction chamber, and a suction valve having an inlet side communicating with said suction chamber and an outlet side communicating with said compressor cylinder, said unloader apparatus comprising:

(a) a sleeve positioned adjacent said suction valve inlet side, said sleeve having a central passage therethrough and a port for communicating gas from said suction chamber through said central passage to said suction valve inlet side;

(b) said sleeve having an annular shoulder projecting inwardly into said sleeve central passage, said annular shoulder having an upper surface;

(c) a slot encircling said sleeve central passage and opening upwardly onto said shoulder upper surface;



(d) an unloader piston having a central passage therethrough and positioned in said sleeve central passage and axially slidable with respect to said sleeve, said unloader piston being movable between an open position opening said port and a closed position closing said port;

(e) said unloader piston having a lower end extending downwardly into said slot with said unloader piston in said closed position;

(f) said unloader piston in said closed position blocking gas flow from said suction chamber to said suction valve and sealing said compressor cylinder; and

(g) actuator means for moving said unloader piston between said open and said closed positions.

4,447,194

METHOD OF MANUFACTURING A FUEL PUMP

Donald Worby, Kings Stanley, England, assignor to Lucas Industries Plc, Birmingham, England

Filed Jul. 6, 1982, Ser. No. 395,676

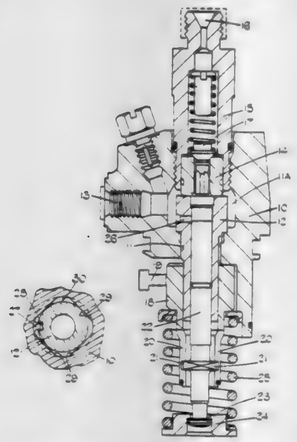
Claims priority, application United Kingdom, Jul. 21, 1981, 8122419

Int. Cl.³ F16J *10/02*; F02M *59/44*

U.S. Cl. 417—572 **5 Claims**

3. A fuel injection pump comprising a pump body, a cylindrical flanged pump barrel mounted within a bore in the body and a plunger reciprocably mounted within a further bore defined in the barrel, the pump barrel being retained against a step defined in the body by means of a part carried by the body which engages in sealing relationship, said bore having a non-circular form with at least three substantially flat sides for

engagement with the peripheral surface of the barrel, a longitudinal tongue in the bore and a groove on said barrel for engagement with said tongue to prevent angular movement of the barrel within the bore.

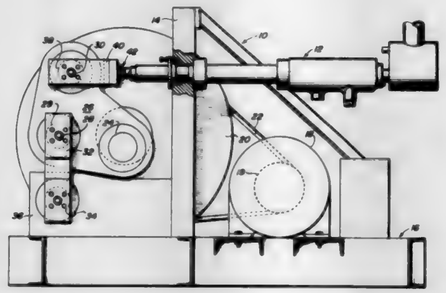


4,447,195

HIGH PRESSURE HELIUM PUMP FOR LIQUID OR SUPERCRITICAL GAS

Thomas W. Schuck, Easton, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 22, 1982, Ser. No. 350,914
Int. Cl.³ F04B *21/02*
U.S. Cl. 417—570 **5 Claims**



1. In a pump for compressing and transferring a cryogenic liquid from a storage receptacle of the type comprising a piston mounted for reciprocal movement inside a tubular housing communicating with said liquid, means to move said piston, means to permit movement of liquid from said receptacle to a variable pumping chamber in said tubular member during a portion of the stroke of said piston of said pump and means to discharge liquid from said pumping chamber through an outlet valve during the reverse portion of the stroke of said piston the improvement comprising:

a base plate mounted on a support frame for positioning said tubular housig containing a piston rod one end of which projects from said housing said projecting end positioned relative to a motor driven fly wheel containing thereon an eccentric; and

a four bar linkage disposed between said eccentric and the projecting end of said piston rod, said four bar linkage includes as its prime element a beam having at least three mounting points having centers disposed relative to each other at the apecies of a right triangle, said beam positioned by fixing the mounting point at the 90° apex to said frame by means of a rocker arm, and the mounting point at the other apecies to said eccentric and said piston rod respectively, said connection to said piston rod including a yoke; and

a piston of a hollow elongated structure extending substantially the length of said piston rod and mounted for reciprocation through a suitable aperture in said base plate said piston being sealed to said rod by means of a rigid boot;

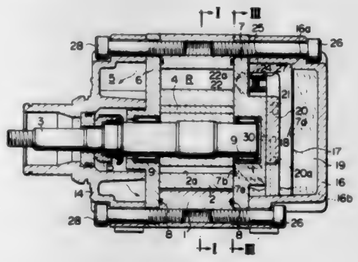
whereby rotation of said fly wheel causes said linkage to translate rotating motion of said fly wheel to nearly true straight line reciprocating motion of said piston rod so that said piston assembly travels through both the warm zone and cold zone packing with deviations from straight line motion being accommodated by elastic deformation of the piston rod.

4,447,196

ROTARY VANE COMPRESSOR WITH VALVE CONTROL OF UNDERVANE PRESSURE

Eiichi Nagasaku, Chiryu; Kimihiro Kato, and Masao Yasunaga, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 8, 1981, Ser. No. 271,382
Claims priority, application Japan, Feb. 16, 1981, 56-21706
Int. Cl.³ F04C *18/00, 29/02, 29/10*
U.S. Cl. 418—93 **8 Claims**



1. A rotary compressor for gas comprising:

a housing having an inner peripheral surface;

first and second end plates sealingly secured to the opposite ends of said housing to cooperate therewith to define a bore;

a rotor mounted eccentrically in said bore for rotation therein and provided with a plurality of vane grooves formed in the outer peripheral surface of said rotor;

vanes slidably mounted in said vane grooves, respectively;

said inner peripheral surface, said end plates, said rotor outer surface and said vanes cooperating to define a plurality of working chambers the volumes of which are varied during rotation of said rotor, each cycle of revolution of each working chamber about the axis of said rotor including intake and compression phases in which the volume of the working chamber is gradually expanded and gradually decreased, respectively;

an intake port means open to said bore and so disposed as to be communicated with the working chambers when they are in their intake phases;

a discharge port means open to said bore and so disposed as to be communicated with the working chambers when they are in the final stages of their compression phases;

means cooperating with one of said end plates to define a discharge chamber and a lubricant reservoir communicated therewith, said discharge chamber being communicated with said discharge port means, said lubricant reservoir being provided at the bottom of said discharge chamber and adapted to contain lubricant under the pressure of the compressed and discharged fluid in said discharge chamber;

said one end plate being provided with a lubricant groove formed in the surface thereof facing to said rotor, said lubricant groove being disposed such that the inner end portions of the vane grooves pertaining to vanes which define working chambers when in their intake phases are communicated with said lubricant groove;

means for guiding the lubricant under pressure from said reservoir into said lubricant groove;

said one end plate being also formed therein with a passage for the communication of said lubricant groove with the gas in said discharge chamber so that said lubricant groove and thus the inner end portions of respective vane grooves are supplied with fluid pressure from said discharge chamber;

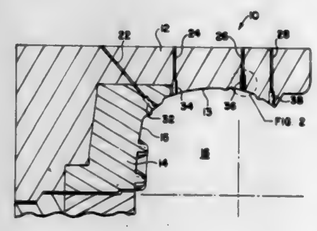
valve means operative to interrupt the communication in said passage between said lubricant groove and said discharge chamber during normal compression operation of said compressor.

4,447,197

TIRE MOLD WITH AIR VENT INSERTS

Donald R. Bartley, Cuyahoga Falls, Ohio, and James M. Haase, Lansdale, Pa., assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 25, 1983, Ser. No. 517,092
Int. Cl.³ B29H *5/02*
U.S. Cl. 425—28 R **4 Claims**



1. A tire mold having a mold cavity and at least one vent hole of selected diameter extending from said cavity to the exterior of said mold, a cylindrical insert disposed within said vent hole and having an opening therethrough of diameter less than the said selected vent hole diameter, said insert being of a low friction plastic material having a coefficient of thermal expansion less than 8×10^{-5} in/in/°C. and a heat distortion temperature at 66 psi when measured in accordance with ASTM D648 of no less than 275° F.

4,447,198

HYDRAULIC REFRACTORY PRESS INCLUDING PRODUCT THICKNESS OR DENSITY CONTROL MEANS

Gary R. Long, Bolingbrook, and Robert J. Dorsey, Chicago, both of Ill., assignors to Wehr Corporation, Milwaukee, Wis.

Filed Oct. 26, 1982, Ser. No. 436,699
Int. Cl.³ B30B *15/16*
U.S. Cl. 425—140 **18 Claims**

1. A hydraulic press comprising:

a frame,

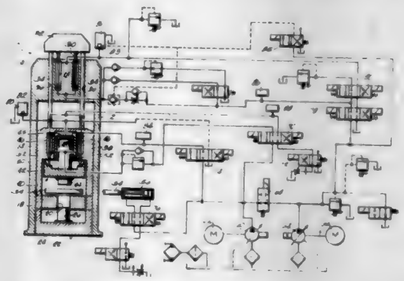
a mold box supported by said frame, said mold box including at least one vertically extending mold cavity,

a lower plunger assembly positioned below said mold box and including a plunger adapted to extend upwardly into said mold cavity,

an upper plunger assembly positioned above said mold box and including a plunger adapted to extend downwardly into said mold cavity,

means for causing selective vertical movement of said upper plunger assembly with respect to said mold box and said lower plunger assembly, said means for causing selective movement of said upper plunger assembly including a ram and a cylinder,

means for controlling movement of said upper plunger assembly and said lower plunger assembly with respect to said mold box and with respect to each other, said means for controlling movement of said upper plunger assembly and said lower plunger assembly including means for causing movement of said plunger assemblies selectively and alternatively to a position wherein there is a selected space between said plunger assemblies whereby a compressed material product produced by said press will have



a selected thickness, and to a position wherein material in said mold cavity is subjected to a selected pressure between said upper plunger assembly and said lower plunger assembly whereby a compressed product produced by said press will have a selected density, said means for controlling movement including,

means for sensing the relative movement of said lower plunger assembly and said upper plunger assembly, said means for sensing including means for generating a signal indicating the relative position of said upper plunger assembly and said lower plunger assembly, and

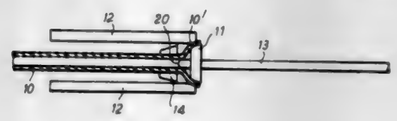
means for sensing the pressure in said cylinder.

4,447,199

APPARATUS FOR MAKING THERMOPLASTICS ARTICLES

Leonard W. Reed, Wantage; Robert M. S. Barr, Faringdon, and David A. Dick, Wantage, all of England, assignors to Metal Box Limited, Reading, England

Filed Nov. 17, 1981, Ser. No. 322,380
Claims priority, application United Kingdom, Nov. 19, 1980, 8037137
Int. Cl.³ B29C *17/02, 17/07, 17/14*
U.S. Cl. 425—182 **20 Claims**



1. Apparatus for forming a plurality of at least partly biaxially oriented tubular articles from a common elongate tube of polymeric/copolymeric thermoplastics material by a repeated cycle of operations, which comprises

a first clamping means for clampingly engaging a leading end of the tube over a first clamping region,

a second clamping means for clampingly engaging the tube on its outside and sealingly on its inside over a second clamping region which is at a spacing from the first clamping region and is intermediate the tube length, while maintaining the tube in an open condition at said second clamping region, the first and second clamping means being relatively reciprocable longitudinally of the tube,

stretch means to move the clamping means apart with the tube clampingly engaged thereby so as longitudinally to stretch the portion of the tube lying between the clamping regions,

fluid pressure means operable to supply pressure fluid to the interior of the tube portion so as to expand it radially, such stretching and radial expansion forming a bubble of biaxially oriented polymeric/copolymeric thermoplastics material adjacent the leading end of the tube, and

severance means operable to sever at least a substantial part of the bubble from the tube to form the tube with a new end as the said leading end of the tube for the succeeding cycle of operations.

4,447,200

APPARATUS FOR MOLDING SKYLIGHTS

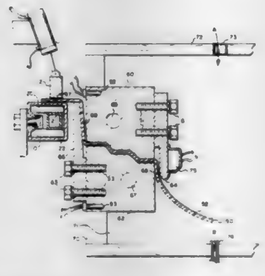
Kent A. Weisner, Altamonte Springs, and Lester L. Walls, Jr., Winter Park, both of Fla., assignors to Kenergy Corporation, Orlando, Fla.

Division of Ser. No. 230,317, Feb. 2, 1981, Pat. No. 4,352,776, and a continuation-in-part of Ser. No. 12,822, Feb. 16, 1979, Pat. No. 4,278,414. This application Nov. 12, 1982, Ser. No. 431,287

The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.

Int. Cl.³ B29C *17/00*

U.S. Cl. 425—388 **7 Claims**



5. Apparatus for molding and forming polycarbonate plastic sheet into dome elements for a skylight comprising:

a loading station having an adjustable clamp frame for clamping the perimeter of a polycarbonate plastic sheet;

a first electrical heating element in thermal contact with said clamp frame so as to heat the entire perimeter portion of the clamped polycarbonate plastic sheet to a first selected temperature;

a heating station having upper and lower ovens for receiving therebetween the polycarbonate plastic sheet in said clamp frame for applying heat to the upper and lower faces of the central portion of the polycarbonate plastic sheet and the clamp frame for heating the central portion and the perimeter portion of the polycarbonate plastic sheet to a second selected temperature greater than the first temperature; and

a molding station for receiving the clamp frame having the heated polycarbonate plastic sheet clamped therein from said heating station, said molding station having one of a pair of co-acting molds disposed above and one of said pair disposed below the polycarbonate sheet, said molds each having a second electrical heating element in thermal contact therewith for heating said molds to a temperature within the range of the first and second temperatures, said co-acting molds adapted to produce step shapes within the perimeter of the polycarbonate sheet when said pair is closed, and a vacuum box connected at one of said pair of co-acting molds for introduction of a vacuum therein for forming a dome portion in the central portion of the polycarbonate plastic sheet.

4,447,201

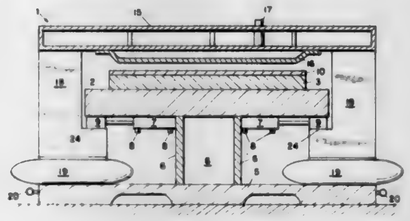
VULCANIZING PRESS FOR VULCANIZING FLAT ARTICLES

Poul H. Knudsen, Beder, Denmark, assignor to Clean-Tex A/S, Morke, Denmark

Filed Jun. 29, 1981, Ser. No. 278,572

Int. Cl.³ B28B *11/00, 7/32;* B29C *17/00, 17/06*

U.S. Cl. 425—397 **6 Claims**



1. A vulcanizing press for vulcanizing flat articles such as rubber backings on textile mats, and of the type consisting of a lower pressing plate, an upper pressing plate, which plates are mutually displaceable against and away from each other, a press frame which supports one of the pressing plates, guides and driving means for the movement of the other pressing plate between a closed vulcanizing position and an open position for insertion and removal of articles to be vulcanized, and optionally a conveying means for conveying the articles in and out between the pressing plates, one of which being adapted to be heated by heat elements, wherein the pressing plates have locking members which in the closed vulcanizing position are adapted to lock the pressing plates at a predetermined distance from each other, and the heat elementless pressing plate on its side turned towards the other pressing plate carries an inflatable member which is inflatable when supplied with a pressure fluid, which inflatable member in the closed position of the press is positioned and inflated to supply a uniform surface pressure substantially over the whole flat side of an article placed between the pressing plates.

4,447,202

DEVICE FOR THE PREPARATION OF HOLLOW CONFECTIONERY PARTS

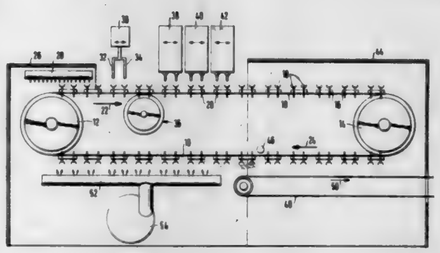
Lutz-Erdmut Adolf, Bielefeld, and Klaus Oberwelland, Steinhagen, both of Fed. Rep. of Germany, assignors to August Stork KG, Halle/Westfalen, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,757

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1981, 3101442

Int. Cl.³ B29C *5/04;* B29F *5/00;* A23G *1/21, 3/12*

U.S. Cl. 425—434 **16 Claims**



1. An apparatus for the production of hollow confectionery parts, comprising:

an endless conveyor;

a plurality of cup-shaped centrifugal molds, successively arranged for rotation on said conveyor, each of said molds being open at the top and having a drive cog comprising the lower portion thereof;

a first feeder device positioned above said centrifugal molds for supplying confectionery materials to said centrifugal molds; and

a drive means for selectively and intermittently rotating said centrifugal molds, wherein said drive means comprises a drive element located laterally in relation to said drive cogs and moving in a stationary path, the location of said drive element being such that it successively frictionally engages said drive cogs of said centrigugal molds during the movement of said conveyor, wherein said cogs have conical frictional driving surface and said driving means has an inclined frictional driving surface for mating with said conical frictional driving surfaces.

4,447,203

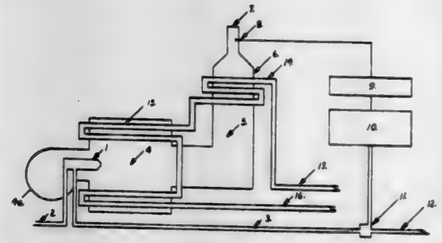
FLAME COMBUSTION OF CARBONACEOUS FUELS

William J. Hampton; Glenn R. James, both of 101 Adkisson Way, and Raymond L. Hatch, 209 E. Warren St., all of Taft, Calif. 93268

Continuation of Ser. No. 211,347, Nov. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 956,434, Oct. 31, 1978. This application Aug. 22, 1983, Ser. No. 525,421

Int. Cl.³ F23J *7/00*

U.S. Cl. 431—3 **25 Claims**



1. The method of reducing the production of nitrogen oxides in a flame combustion process utilizing carbonaceous fuel and combustion air, comprising: bringing said fuel and air together in a combustible ratio, and maintaining a flame for combustion of said fuel, and supplying an additive so that said additive is uniformly present at the situs of said combustion, said additive comprising one or more ionic compounds of sodium or one or more ionic compounds of potassium, or mixtures thereof, in amounts which reduce the NO_x generated in said combustion below the amount produced without said additive being present, said additive being uniformly and intimately pre-mixed, prior to introduction into the region where combustion occurs, throughout all of the fuel, or throughout all of such of said air as is provided to the fuel where combustion begins, or throughout both.

4,447,204

COMBUSTION CONTROL WITH FLAMES

Arnold O. Isenberg, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1982, Ser. No. 387,295

Int. Cl.³ F23N *5/00*

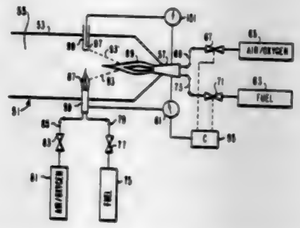
U.S. Cl. 431—76 **5 Claims**

1. A process for detecting the relative oxygen content of the combustion products from a flame fed by an undetermined air-fuel ratio comprising the steps of:

(a) providing an electrically insulated first nozzle means for the generation of said flame being fed by an undetermined air-fuel ratio, said flame consisting in part of ionized gases and said nozzle means being electrically conductive;

(b) establishing an ionic interface between the ionized gases of said flame and a second electrically insulated source of oxygen ion conductive material;

(c) measuring the potential difference between said electrically insulated first nozzle means and said second electrically isolated source of oxygen ion conductive material, said potential difference reflecting changes in the combustion condition of said flame, that is, lean to rich and rich to lean combustion conditions.



4,447,205

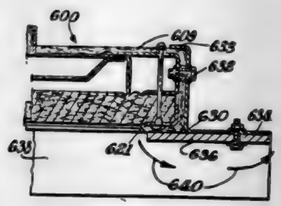
INFRA-RED EQUIPMENT AND USE

Thomas M. Smith, 114 Villinger Ave., Cinnaminson, N.J. 08077

Continuation-in-part of Ser. No. 186,491, Sep. 12, 1980, Pat. No. 4,378,207, and a continuation-in-part of Ser. No. 178,121, Aug. 14, 1980, Pat. No. 4,373,904, and a continuation-in-part of Ser. No. 94,901, Nov. 16, 1979, Pat. No. 4,272,238, and a continuation-in-part of Ser. No. 20,079, Mar. 13, 1979, Pat. No. 4,290,746, and a continuation-in-part of Ser. No. 952,332, Oct. 18, 1978, Pat. No. 4,326,843, and a continuation-in-part of Ser. No. 775,838, Mar. 9, 1977, Pat. No. 4,272,237, said Ser. No. 186,491, said Ser. No. 178,121, said Ser. No. 94,901 and said Ser. No. 20,079, and is a continuation-in-part of Ser. No. 863,251 and Dec. 22, 1977, Pat. No. 4,224,018, said Ser. No. 20,079, said Ser. No. 952,332, is a continuation-in-part of Ser. No. 906,229, May 15, 1978, Pat. No. 4,157,155, said Ser. No. 906,229, said Ser. No. 863,251, said Ser. No. 775,838, is a continuation-in-part of Ser. No. 701,687, Jul. 1, 1976, abandoned, said Ser. No. 775,838, is a continuation-in-part of Ser. No. 674,409, Apr. 7, 1976, Pat. No. 4,035,132. This application Feb. 26, 1981, Ser. No. 238,418

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—328 **5 Claims**



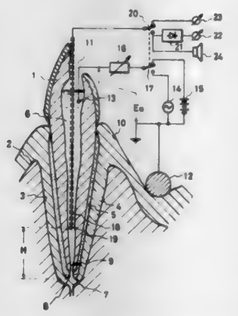
1. In a gas-fired infra-red-generating burner having a ceramic fiber matrix on a surface of which the burning of the gas takes place while the matrix is clamped in place by at least one metal hold-down flange pressed in squeezing engagement against the margins of that surface and having a width extending from the matrix edges to a location inboard of those edges, the improvement according to which about 1 to about 5 millimeters of the flange width at the inboard edge of said flange is curled away from the balance of the flange width to relieve the flange edge engagement with the matrix.

4,447,206

DEVICE AND METHOD FOR DETECTING APICAL CONSTRICTION IN ROOT CANAL OF TOOTH

Junji Ushiyama, 5829-761, Kamishin-ei-cho, Niigata-shi, Niigata-ken, Japan

Filed Dec. 30, 1982, Ser. No. 454,873
Claims priority, application Japan, Jan. 18, 1982, 57-6420; Jan. 18, 1982, 57-6421
Int. Cl.³ A61C 3/00
U.S. Cl. 433—27 9 Claims



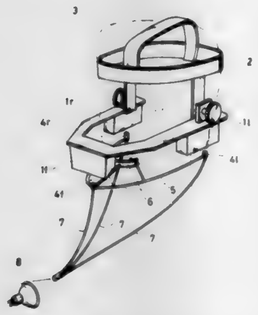
1. A device for detecting the apical constriction in the root canal of a tooth having an electrolyte therein, comprising first electrode means for contacting the mucous membrane in the oral cavity, said first electrode means being coupled to a reference potential point, second electrode means for inserting in said root canal, means coupled to said first and second electrode means for applying a fixed voltage or current therebetween, third electrode means for inserting movably into said root canal, and means coupled to said third electrode means for detecting the potential gradient along said root canal.

4,447,207

MANDIBULAR MOTION DIAGNOSTIC DEVICE

Kenzo Katsoka; Shinichi Nishimoto, both of Otsu, and Kazunari Matoba, Nara, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Apr. 6, 1983, Ser. No. 482,636
Claims priority, application Japan, Apr. 7, 1982, 57-57721
Int. Cl.³ A61C 19/04
U.S. Cl. 433—69 3 Claims



1. A mandibular motion diagnostic device comprising:
a mandibular motion measuring unit including:
a head band for a patient;
at least three position detectors coupled to said head band, each of said position detectors being provided at predetermined points to be measured and having a fixed position relative to a mandible of said patient, each of said position detectors comprising:
a linear photo-electric conversion element;
a screening plate disposed in front of said linear photo-electric conversion element; and
at least two slits provided in said screening plate; and
a clutch for being coupled to said mandible of said patient;
a loop bar coupled to said clutch and extending around said mandible;
at least three light sources provided on said loop bar in a single plane and adjacent said position detectors, said three light sources comprising:
at least three photo-fibers, one each extending to a point adjacent said position detectors; and
a single source of light for supplying light to said photo-fibers; and
whereby the movement of said each point to be measured is detected as position information as a function of time; and
a mandibular motion reproducing unit including:
three reference points for reproducing their relative positions with respect to a mandibular model equal to said relative positions of each point to be measured with respect to said patient's mandible; and
three reference coordinates for reproducing their relative positions with respect to maxillary model equal to said relative positions of individual position detectors with respect to said patient's maxilla so that said position of each reference point for reproduction is controlled with respect to said respective reference coordinates for reproduction according to said position information as a function of time for said mandibular model to cause relative movement with respect to said maxillary model to reproduce said patient's mandible movement precisely with said mandibular model.

4,447,208

DENTAL POLISHER

Masakatsu Kawai, Kashihara, Japan, assignor to Shofu, Inc., Kyoto, Japan

Filed Apr. 11, 1983, Ser. No. 483,839
Claims priority, application Japan, Apr. 23, 1982, 57-68964
Int. Cl.³ A61C 3/06
U.S. Cl. 433—166 6 Claims



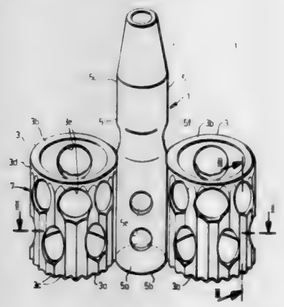
1. A dental polisher, comprising a resilient, flexible body made of rubber or synthetic resin, and a rotating shaft coupled to said body, said body having a first polyurethane layer deposited on the surface of said body, a second epoxy adhesive layer deposited on said first layer, abrasive particles scattered on said second layer and a third adhesive layer deposited on said second layer and over said abrasive particles.

4,447,209

IMPLANT FOR SECURING A DENTURE

Franz Sutter, Niederdorf, Switzerland, assignor to Institut Straumann AG, Switzerland

Filed Nov. 6, 1981, Ser. No. 319,080
Claims priority, application Switzerland, Aug. 20, 1981, 5375/81
Int. Cl.³ A61C 8/00
U.S. Cl. 433—173 25 Claims



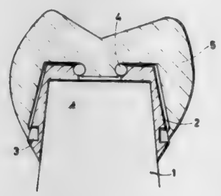
1. An implant for securing a denture to a jawbone comprising a base to be inserted into an annular groove of the bone and at least one column for supporting the denture, said base including at least two hollow, substantially cylindrical parts each having an inner diameter and open at both ends to the same extent as said inner diameter, said hollow substantially cylindrical parts each having a substantially cylindrical wall with at least one of recesses and elevations which extend along straight lines parallel to the longitudinal axis of the column, and a plurality of apertures defined therethrough, whereby bone can grow through said apertures, said aperures intersecting said at least one of recesses and elevations.

4,447,210

UPPER STRUCTURE FOR ARTIFICIAL APATITE DENTAL ROOT

Tsuneo Hidaka; Masahide Inoue, and Makoto Ogiso, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 450,156
Claims priority, application Japan, Dec. 17, 1981, 56-204134
Int. Cl.³ A61C 8/00
U.S. Cl. 433—173 3 Claims



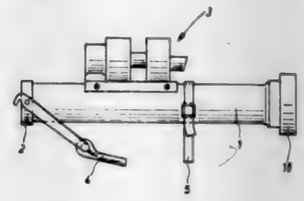
1. An upper structure for an artificial apatite dental root comprising an inner crown having a lower skirt portion and an upper central recess adapted to be fixedly secured to said root, an outer crown having a lower portion adapted to overlie said skirt portion in spaced relation thereto and a downwardly extending projection adapted to extend into said central recess, an annular groove formed in the lower end of said skirt portion of said inner crown, a first annular elastic member secured in said groove with the lower end of said outer crown disposed in contact with said first elastic member, opposed grooves formed in said central recess of said inner crown and said projection of said outer crown and a second annular elastic member disposed in said opposed grooves whereby said first and second elastic members support said outer crown in spaced relation to said inner crown.

4,447,211

SIMULATED PORTABLE ROCKET LAUNCHER

Bernd M. Kern, Stuvenborn, and Werner Hasse, Neu Wulmstorf, both of Fed. Rep. of Germany, assignors to Precitronic Gesellschaft fur Feinmechanik und Electronic mbH, Hamburg, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,502
Claims priority, application Switzerland, Dec. 2, 1981, 7716/81
Int. Cl.³ G09B 9/00; F41F 27/00
U.S. Cl. 434—12 5 Claims



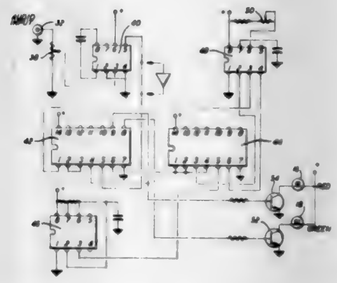
1. A portable apparatus having the shape of a rocket launcher and adapted to be used in conjunction with a laser aiming device, which comprises: a tubular casing adapted to have removably inserted therein a unit of similar shape, said unit comprising front and rear end plates and a gliding rod extending axially therebetween; an annular-shaped mass body mounted on said gliding rod extending through its annulus and adapted to move therealong between said front and rear end plates; a compression spring surrounding said gliding rod extending between said mass body and said rear end plate; a resilient stop member positioned at said front end plate; means for securing said mass body under the compressive force of said spring to said rear end plate; and triggering means for releasing said mass body from said rear end plate thereby propelling it under the force of said spring along said gliding rod toward said front end plate, said stop means terminating the movement and absorbing the force of said mass body.

4,447,212

VERBAL RESPONSE TIME CONDITIONING APPARATUS

John N. Swift, R.D. 3, Box 146, Oswego, N.Y. 13126, and Harry M. Hawkins, R.D. 2, Box 61, Oswego, N.Y., assignors to J. Nathan Swift, Oswego, N.Y. 13126

Filed Apr. 8, 1982, Ser. No. 366,630
Int. Cl.³ G09B 21/00
U.S. Cl. 434—185 12 Claims



1. A conditioning device for use in a classroom wherein

verbal statements, questions and responses are exchanged between teacher and students, said device comprising:

(a) a single audio input means for receiving verbalized sounds from said teacher and students at or above a predetermined sound level and operable to generate a first electrical signal in response thereto;

(b) first and second electric lamps positioned for observation by all of said teacher and students;

(c) power supply means operable to illuminate said first and second lamps when connected thereto;

(d) timing means operable to generate a second electrical signal in response to the absence of said first signal for a predetermined time period; and

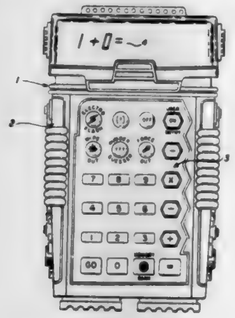
(e) switching means operable to connect said power supply means only to said first lamp in response to said first signal and only to said second lamp in response to said second signal, whereby said first lamp is illuminated and said second lamp extinguished in response to said verbalized sounds, and said first lamp is extinguished and said second lamp is illuminated in response to the absence of said verbalized sounds for said predetermined time period, thereby conditioning said teacher and students to wait for said predetermined time period after cessation of said verbalized sounds before resuming further classroom verbalization.

4,447,213

ELECTRONIC LEARNING AID

Bobby G. Culley, Wylie, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 17, 1977, Ser. No. 843,017
Int. Cl.³ G09B *23/02*
U.S. Cl. 434—201 **16 Claims**



1. An electronic learning aid comprising:

problem posing means for posing a sequence of arithmetic problems to an operator of the learning aid;

display means operably associated with said problem posing means for visually presenting to an operator of the learning aid problems posed by said problem posing means, said display means including a plurality of individually actuatable segments visually observable when actuated, some of said plurality of segments being arranged in a generally circular configuration and others of said plurality of segments being arranged to display numeric characters;

operator input means for receiving an input from an operator of the learning aid as an entered solution by the operator to the problem being posed as displayed by said display means;

comparison means for comparing an entered solution to a posed arithmetic problem in said sequence with the correct solution to the problem being posed;

elasped time measuring means coupled to said problem posing means and said comparison means for measuring elapsed times between the time the first problem in said sequence is posed until the time the last problem in said sequence is solved, said elapsed time measuring means including a register for storing a number indicative of the elapsed time;

an arithmetic unit associated with said problem posing means, said comparison means and said elapsed time measuring means for calculating the correct solutions to the problems posed and for periodically incrementing the number stored in said register of said elapsed time measuring means;

result means coupled to said display means, said comparison means and said elapsed time measuring means for providing outputs indicative of the correctness of the entered solutions of said sequence of problems posed and the elapsed time measured by said elapsed time measuring means, said display means being responsive to the outputs of said result means for displaying to the operator an indication of the correctness of the entered solutions of said sequence of problems posed and an indication of the elapsed time measured by said elapsed time measuring means; and

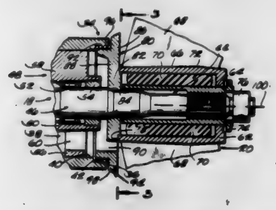
said segments of said display means arranged in said generally circular configuration being sequentially actuated around the circumference of said circular configuration by said elapsed time measuring means wherever said problem posing means poses a sequence of problems at said display means, and said other segments arranged to display numeric characters being selectively actuatable in response to said elapsed time measuring means to display numeric characters indicative of the total elapsed time measured by said elapsed time measuring means.

4,447,214

ANTI-VENTILATION MEANS FOR MARINE GEAR CASE

Donald A. Henrich, Lake Villa, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 11, 1982, Ser. No. 348,035
Int. Cl.³ B63H *1/20*
U.S. Cl. 440—66 **3 Claims**



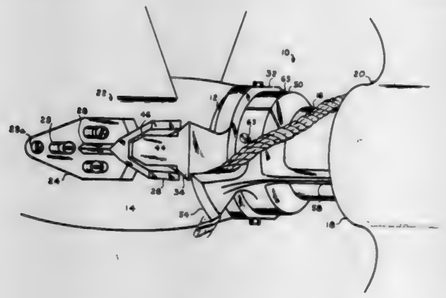
1. A marine propulsion device including a lower unit including a gear case normally submerged in water and having an outer surface, a trailing end terminating in a trailing surface, and a hollow interior having an annular inner surface adjacent said trailing surface, a propeller shaft rotatably supported in said gear case and having a rear portion extending rearwardly of the trailing end of said gear case, a propeller mounted on the rear portion of said propeller shaft for common rotation therewith and having an outer hub, means defining a passage through which engine exhaust gases are discharged rearwardly from said interior of said gear case into the water exteriorly of said outer propeller hub, a ring member having a central hub mounted on said propeller shaft for common rotation therewith, a plurality of circumferentially-spaced ribs extending radially from said central hub, and an annular collar connected to said ribs and including an annular outer surface extending closely adjacent said annular inner surface of said gear case, and an annular section on said collar located rearwardly of said annular outer surface and rearwardly of said trailing surface of said gear case, said section having an outer surface tapering radially outwardly from the outer surface of said gear case towards said propeller so as to prevent migration forwardly along the outer surface of said gear case of engine exhaust gases discharged from said gear case.

4,447,215

PROPELLOR PROTECTING DEVICES

Donald T. Govan, P.O. Box 3277 Bahia Mar, Ft. Lauderdale, Fla. 33316

Filed Jul. 6, 1982, Ser. No. 395,859
Int. Cl.³ B63H *5/16*
U.S. Cl. 440—71 **9 Claims**



1. A device for cutting lines and nets, that float on the surface of water and lines and nets that are disposed in substantially upstanding relation beneath the surface of water, so that such lines and nets do not foul the propellers, shafts, and bearings of propeller driven vessels, comprising, in combination,

a base means defined by a pair of diametrically opposed base members that are fixedly secured to a keel of a vessel,

said base members having a rearward opening wedge-shaped portion,

an annular, non-rotatable first shearing means adapted for mounting about a propeller shaft means,

said first shearing means having diametrically opposed first cutting blade members disposed in registration with said diametrically opposed base members,

said first cutting blade members having a forward extending wedge-shaped portion adapted for wedging engagement with the rearward opening wedge-shaped portion of said base members,

an annular, rotatable second shearing means fixedly secured to and conjointly rotatable with said propeller shaft, having diametrically opposed second cutting blade members disposed in cooperative relation to said first cutting blade members so that lines and nets are sheared by said first and second shearing means attendant rotation of said second shearing means relative to said first shearing means, longitudinal separation of said first and second shearing members being substantially prevented by the wedging relationship between said base members and said first shearing means,

said second shearing means further comprising an annular, square-in-section channel means within which said first shearing means is rotatably mounted, said channel serving to prevent longitudinal separation of said first and second shearing means.

4,447,216

STEM SEALING APPARATUS HAVING EXTERNAL TIPPING OFF BURNERS

Takeshi Moriwaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

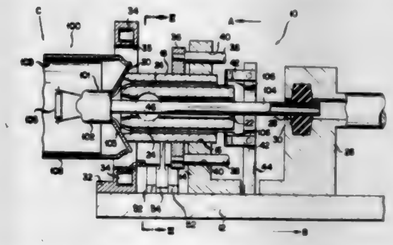
Filed Mar. 25, 1982, Ser. No. 361,618
Claims priority, application Japan, Mar. 31, 1981, 56-48029
Int. Cl.³ H01J *9/34, 9/40*
U.S. Cl. 445—70 **15 Claims**

1. In an apparatus for manufacturing bulbs each of which includes a bulb body having at least one opening edge defining an opening, and a mount contacted and sealed to the opening edge of the bulb body, the mount having a stem, an exhaust tube led out from the stem, a pair of lead wires led out from the stem, and a filament coil attached to the lead wires, comprising:

a mount holder for holding the mount, the mount holder having a pair of lead wire insertion holes through which the lead wires are passed severally, and an exhaust tube insertion hole through which the exhaust tube is passed;

a sealing burner arranged around the mount holder, and capable of fusing the contact portions of the periphery of said stem and the opening edge of the bulb body;

a butting plate arranged around the mount holder to be able to move along the axis of the mount holder toward the bulb, and capable of abutting on and pressing the fused contact portions of the stem and the bulb body; and



a tipping-off means injecting flames toward a portion of the exhaust tube located inside the exhaust tube insertion hole to heat the portion,

the improvement in which

said mount holder includes at least one flame inlet port opening in the outer surface of the mount holder and communicating with the exhaust tube insertion hole, and

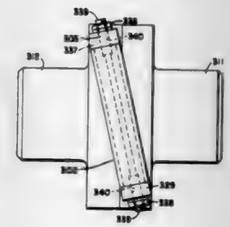
said tipping-off means includes a tipping-off burner which is located outside of the mount holder and can move between a position where the tipping-off burner is closed enough to the mount holder to inject flames into the flame inlet port and a position where the tipping-off burner is kept away from the mount holder so as not a prevent the movement of the butting plate.

4,447,217

COUPLING WITH OVERLOAD PROTECTION

Stephen Blandford, 24 Lawrence Rd., Marsh, Huddersfield, England

Filed May 14, 1981, Ser. No. 263,799
Claims priority, application United Kingdom, May 16, 1980, 8016195
Int. Cl.³ F16D *9/00*
U.S. Cl. 464—32 **1 Claim**



1. An overload protection coupling for limiting the torque transmitted between two elements of a rotating power transmission system, said coupling comprising:

coaxial driving and driven members journaled for rotation relative to one another;

at least one tensile breaking piece positioned on the periphery of the overload protection coupling and comprising an elongated rod whose two ends are connected to respective projections on the driving and driven members, at least one end of the rod being screw threaded and carrying an adjustable nut enabling the projections on the driving and driven members to be displaced towards one another thereby urging relative rotation in a first direction; and,

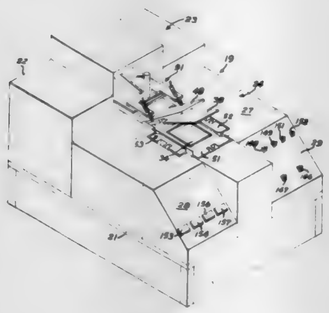
a pretension means also positioned on the periphery of the overload protection coupling and comprising a tube disposed around each elongated rod and whose two ends abut the projections on the driving and driven members respectively to resist said displacement of the projections upon tightening of said adjustable nut thereby placing said tube in compression and pretension said tensile breaking piece up to a given level which is approximately equivalent to the maximum torque transmitted by said coupling.

4,447,218

METHOD AND APPARATUS FOR THE AUTOMATIC FOLDING OF FLOPPY DISC STORAGE ENVELOPES

Dieter A. Bertsch, 940 Auburn Ct., Fremont, Calif. 94538; Mark A. Finkle, and James D. Fishman, both of 3475 Victor St., Santa Clara, Calif. 95050

Filed Jan. 6, 1981, Ser. No. 222,897
Int. Cl.³ B32B *3/04*
U.S. Cl. 493—251 **28 Claims**



20. Apparatus for automatically forming a pre-cut flat sheet blank of polyvinyl chloride or paper into an envelope having three closed edges and one open edge for the storage of floppy discs on which data is recorded, comprising:

(a) a support base;

(b) an envelope-forming assembly supported on the support base and including:

(1) a platen for receiving said flat sheet blank;

(2) a tongue plate pivotally mounted for selective impingement with said platen and normally spaced therefrom to permit placement of said flat sheet blank on said platen;

(3) a clamp plate pivotally mounted for selective impingement on said tongue plate;

(4) a plurality of folding bars associated adjacent front, left and right side edges of said platen and selectively pivotal to fold predetermined portions of said flat sheet blank upon itself;

(5) a pair of glue dispensing heads spaced apart to overlie marginal edge portions of an underlying flat sheet blank clamped on said platen and selectively reciprocable between a retracted position and an extended position in which said glue dispensing heads overlie said marginal edge portions of the blank; and

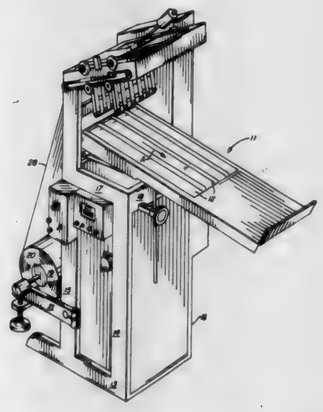
(c) computer means including a microprocessor, a programmable read-only memory section, a random access memory section and input/output circuits connected to said envelope forming assembly to control the operating functions thereof and the sequencing of performance of said functions.

4,447,219

DELIVERY MECHANISM FOR PAPER SHEET PROCESSING APPARATUS

Earnest B. Bunch, Jr., 9619 N. 21st Dr., Phoenix, Ariz. 85021

Continuation-in-part of Ser. No. 412,392, Aug. 30, 1982. This application Mar. 10, 1983, Ser. No. 474,186
Int. Cl.³ B65H *45/20*
U.S. Cl. 493—410 **2 Claims**



1. In combination with apparatus for producing continuous form stationery by folding a strip of paper along transverse lines of weakening formed therein, said apparatus including:

a frame;

primary endless belt means mounted on said frame for alternately distributing said transverse lines of weakening in said paper in substantially opposite lateral directions of travel to form creased edges in said paper along said lines of weakening, said belt means including

a pair of spaced adjacent parallelably disposed paper distribution rollers, each of said rollers having

a generally constant diameter along the length thereof, and

a longitudinal axis about which said rollers rotate; and

belts trained around said distribution rollers to form laterally extending conveyor runs with the belts and rollers cooperatively forming a passage between the distributing rollers to allow the paper strip to be fed through the passage; said belts having two runs which move in opposite directions to propel said strip in said opposite lateral directions;

means carried on said frame for directing said continuous strip of paper to said passage and into contact with at least some of said belts for said lateral distribution in said substantially opposite directions, said lateral distribution directions being generally perpendicular to said longitudinal axes of said distribution rollers,

delivery means for receiving paper distribution by said primary endless belt means, said delivery means including

(a) first endless belt means including at least one moving endless belt having an outer peripheral surface including outwardly projecting feet connected to and spaced therealong; and

(b) second endless belt means spaced apart from and in generally opposed, parallel relation to said first endless belt means by a distance approximately equal to the length of paper strip between two transverse lines of weakening, said second endless belt means including at least one moving endless belt having an outer peripheral surface including outwardly projecting feet connected to and spaced therealong,

said first and second endless belt means being positioned on said frame to respectively extend away from a position adjacent said two runs of said belts and being operatively associated with said primary endless belt means

(c) to receive therebetween paper distributed by said primary belt means and carry said distributed paper away from said primary belt means;

(d) to cooperate with said primary belt means to fold said distributed paper along selected ones of said lines of weakening to produce a zig-zag stack of paper having a plurality of creased edges between said first and second endless belt means, said stack having a top portion and a bottom portion, each of said creased edges of paper generally contacting said outer peripheral surface of at least one of said endless belts carried by said first and second endless belt means,

(e) such that paper distributed by said primary belt means generally initially moves

(i) between and contacts said top portion of said stack of paper and at least one of said belts of said primary belt means, and

(ii) in a general direction of travel toward one of said endless belt means of said delivery means,

while being distributed on said top portion of said zig-zag stack of paper to form said creased edges contacting said endless belts of said endless belt means of said delivery means, said movement of said distributed paper between said top portion of said stack of zig-zag paper and said belts of said primary belt means controlling said movement of said paper and facilitating the folding of lightweight paper by said apparatus,

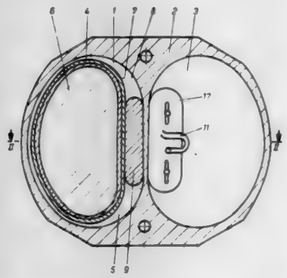
said feet being shaped, contoured and dimensioned to maintain each of said creased edges of said zig-zag stack of paper contacting said outer peripheral surface of one of said endless belts in a generally fixed position with respect to said outer peripheral surface of said endless belt.

4,447,220

METHOD AND APPARATUS FOR SEPARATING BLOOD COMPONENTS

Günter Eberle, Gartenstrasse 100, 7200 Tuttlingen, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 186,482
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938367; Nov. 15, 1979, 2946198; Apr. 1, 1980, 3012708
Int. Cl.³ B04B *15/06, 15/12*
U.S. Cl. 494—26 **3 Claims**



1. A centrifuge for the separation of blood components which comprises:

A. a rotor;

B. a plurality of expandable blood bags disposed in said rotor for rotation therewith, said blood bags comprising:

1. a first series of blood bags, each bag of said series being adapted for holding an amount of whole blood,

2. a second series of blood bags, equal in number to the number of blood bags of said first series, each bag of said series being adapted to receive a separated blood component from one of the bags of said first series;

C. a plurality of connecting tubes, equal in number to the number of bags of said first series, one of each of said tubes being connected to one bag of each said first and second series, so as to define a flow path between each bag of said first series and a corresponding bag of said second series;

D. fluid pressure responsive displacement bodies, said bodies being adapted to be placed between blood bags of said first series;

E. fluid pressure means for expanding said fluid pressure responsive displacement body during operation of the centrifuge, and thus simultaneously squeeze a controlled amount of liquid from the two blood bags;

F. a series of partitions projecting radially from the axis of rotation of said rotor, and defining a series of expandable pie-shaped chambers;

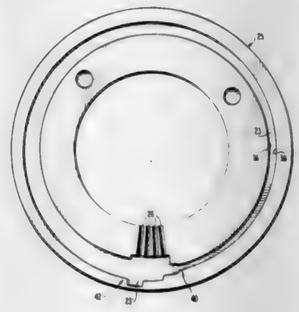
G. a support member, in the form of a modified trapezoid (34, FIG. 6), for insertion between two of said radiating partitions and in direct contact with the said fluid pressure responsive displacement body so that expansion of said displacement body applies radial pressure against said support member and against two of the blood bags of the first series disposed in adjacent pie-shaped chambers.

4,447,221

CONTINUOUS FLOW CENTRIFUGE ASSEMBLY

Alfred P. Mulzet, Princeton Jct., N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,770
Int. Cl.³ B04B *7/08*
U.S. Cl. 494—45 **18 Claims**



1. A centrifuge assembly comprising:

a rotor,

means defining a channel in said rotor, said channel having a portion of gradually increasing cross-sectional area formed solely by increasing its radial width, said channel having sidewalls of substantially uniform height and parallel to the axis of rotation of said rotor;

a disposable hollow container of semirigid material having two ends and received in said channel, said container in a dynamic mode conforming to said channel geometry, and

fluid connections coupled to said container.

4,447,222

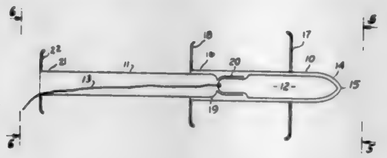
TAMPON INSERTER

Sarnt Sartinoranont, Rte. 1, Box 758, Starke, Fla. 32091

Filed Aug. 3, 1981, Ser. No. 289,398
Int. Cl.³ A61M *31/00*
U.S. Cl. 604—15 **12 Claims**

1. A device for inserting a sterile tampon into a human vagina comprising an elongated outer tube having forward and rearward opposite ends, an elongated hollow insertion tube telescopically slideable within said outer tube and having an

open back end, a sterile tampon engageable by said front end of said insertion tube, said outer tube having two spaced laterally outwardly projecting members, the first of said members being fixedly located generally spaced rearwardly from said forward end and being engageable with the labia so as to prevent insertion of said forward end into the vagina beyond the general location of the hymen remnant, and the second of said members being located adjacent said rearward end, said insertion



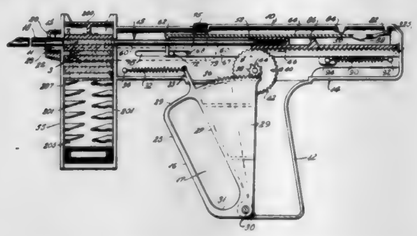
tube having a laterally outwardly projecting third member to prevent sliding of said insertion tube into said outer tube beyond the position where said tampon is disposed between the hymen remnant and the cervix when said first member engages the labia, said insertion tube with said third member engaging said second member having said front end projecting outwardly from said outer tube to forcibly eject said tampon from said outer tube into its position between the hymen remnant and the cervix.

4,447,223

MEDICAMENT IMPLANT APPLICATOR

Gordon E. Kaye, Garrison, N.Y.; Eugene B. Schwartz, Miami Beach, Fla., and Irving V. Sollins, Jiutepec Morelos, Mexico, assignors to CCT Associates, Bethesda, Md.

Filed Apr. 16, 1982, Ser. No. 369,200
Int. Cl.³ A61M *5/18*
U.S. Cl. 604—61 **6 Claims**



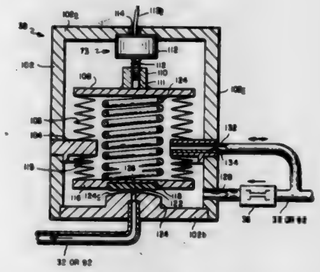
1. A pistol-like implanter device for implanting pellets into domestic animals which comprises:
- a hollow needle adapted for insertion into a domestic animal mounted at the forward end of said implanter;
- a passthrough chamber containing at least one pellet therein positioned to the rear of said needle in line with the bore thereof whereby such a pellet may be expelled from said chamber through the bore of said needle for implantation in a domestic animal;
- a trigger means and a plunger means operatively connected whereby when said trigger means is pulled said plunger advances through said chamber into the bore of said needle expelling thereby said pellet, and thereafter retracts when said trigger means is released;
- cam means connected to said plunger means to advance when said plunger means advances, to retract only after said plunger means has retracted sufficiently to clear said chamber; and
- cam track means associated with said chamber wherein said cam rides, said cam and cam track being means to shift said chamber out of line with said needle upon retraction movement to place in line a successor chamber;
- a passthrough cam track slot in the side wall of said cassette alongside each chamber;
- a diagonal cam track slot connecting adjacent passthrough cam track slots, whereby said cam traverses a passthrough slot during advancing movement, then on retraction movement is directed through the diagonal cam track slot to the next adjacent passthrough cam track slot, serving thereby to shift the cassette chamber by chamber whereby each chamber of the row may be emptied by successive pulls of said trigger.

4,447,224

VARIABLE FLOW IMPLANTABLE INFUSION APPARATUS

Leonard J. DeCant, Jr., Allston; Samir F. Idriss, Arlington, and Frank R. Prosl, Duxbury, all of Mass., assignors to Infusaid Corporation, Norwood, Mass.

Filed Sep. 20, 1982, Ser. No. 419,733
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—67 **20 Claims**



1. Variable flow implantable infusion apparatus comprising
A. a housing;
B. a variable volume infusate chamber in the housing;
C. means for conducting infusate from said chamber to an infusion site outside the housing, said conducting means including series-connected fixed and electromechanically variable fluid flow restricting means;
D. means in the housing for maintaining the contents in the infusate chamber under a substantially constant pressure;
E. means for sensing the pressure differential across said fixed restricting means and producing indications in response thereto;
F. programmable processing means in the housing which
(1) sets the restriction of the variable flow restricting means at a selected programmed value,
(2) samples the indications from the sensing means at selected programmed intervals,
(3) compares each sample value with a reference value programmed into the processing means, and
(4) issues a command signal for controlling the variable restricting means so as to maintain this constant selected infusate flow rate; and
G. a battery for powering the variable restricting means and processing means.

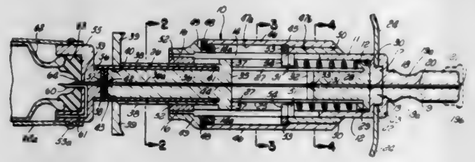
4,447,225

MULTIDOSE JET INJECTOR

Barry E. Taff, 8665 Pickford St., Los Angeles, Calif. 90035, and Kenneth P. Stoller, 341 S. Bentley Ave., Los Angeles, Calif. 90049

Filed Mar. 22, 1982, Ser. No. 360,333
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—71 **14 Claims**

1. A multiple dose hypodermic jet injector for accomplishing the needleless injection of liquid medicaments comprising:
(a) a cylindrical injector body assembly defining in its forward portion a medicament delivery chamber and terminating at its forward end in a nose piece containing a medicament ejection orifice;
(b) an injection piston assembly slidably mounted within said body assembly and having a forward piston head portion and an elongated rearward tubular portion defining in its rearward section a medicament transfer chamber, said piston head portion having a central passageway therethrough;
(c) a medicament reservoir mounted at the rearward end of the tubular portion of said piston assembly and in medicament fluid communication with the transfer chamber of said piston assembly through a first one-way valve;
(d) spring means for advancing the piston assembly to eject medicament from said delivery chamber and through the medicament ejection orifice;
(e) a reciprocative medicament pump cylinder enclosed within the elongated rearward tubular portion of said piston assembly, said pump cylinder having a central passageway therethrough and a cannula mounted therein and extending forwardly therefrom within said piston assembly to and into the central passageway of the piston head portion of said assembly for slidable positioning therein and fluid communication therewith, the central passageway of said pump cylinder being in medicament fluid communication with the medicament transfer chamber of said piston assembly through a second one-way valve;
(f) fluid volume indicia means mounted on said cylindrical body assembly and adjustably positionable thereon, said indicia means including spring seating means which regulate the position of the piston head portion of the injection piston assembly when said assembly is in cocked position



with the spring means fully compressed and thereby establishes the volume of the medicament delivery chamber;
(g) pump cylinder limiting means mounted on said cylindrical body assembly and adjustably positionable thereon, said pump limiting means including pump stop means which regulate the extent of reciprocative movement of said pump cylinder and thereby establishes the volume of the medicament transfer chamber;
(h) medicament volume regulating means mounted on said cylindrical body assembly in cooperativc engagement with said indicia means and said pump limiting means to simultaneously adjust the positions of said indicia means and pump limiting means and thereby adjust and establish the variable like volumes for the medicament delivery chamber and the medicament transfer chamber;
(i) piston puller means connected to the forward end of the reciprocative medicament pump cylinder and extending without the cylindrical injector body assembly for pulling said pump cylinder and the injection piston assembly rearwardly together against the pressure of the spring means to the cocked position established by the fluid volume indicia means and for thereafter reciprocating said pump cylinder first forwardly within the rearward section of said piston assembly to the pump stop means to aspirate liquid medicament from the medicament reservoir through the first one-way valve and into the medicament transfer chamber and thereafter rearwardly within said section of said assembly to pump the medicament from said transfer chamber through the second one-way valve, pump cylinder passageway and cannula, piston head passageway and into the medicament delivery chamber; and
(j) a piston latch mechanism for maintaining the injection piston assembly in cocked position against the pressure of the spring means after said assembly has been pulled to such position by the puller means and during the reciprocating movements of said puller to transfer medicament from its reservoir to the delivery chamber and thereafter for releasing said piston assembly whereby said spring means expands to impart force to the piston head portion of said piston assembly with the resulting ejection of the medicament from said delivery chamber and through the medicament ejection orifice of said jet injector.

4,447,226

SURGICAL ASPIRATOR VALVE APPARATUS

Armando G. Mayoral, Av. Ruiz No. 558, Ensenada, Mexico

Filed Mar. 8, 1982, Ser. No. 355,457
Claims priority, application Mexico, Oct. 18, 1961, 189850
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—73 **7 Claims**



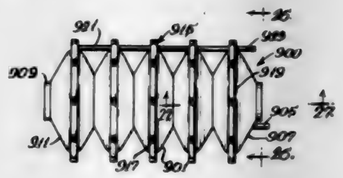
5. A non-cyclical aspirator system for use in surgery adapted to automatically remove large particles of matter and prevent clogging of said system, comprising:
- a nozzle for engaging blood clots and other matter;
- a first air suction line connected to said nozzle and extending to a waste receptacle;
- a suction pump with means to activate the same;
- a second air suction line extending from said receptacle to said pump;
- a return air discharge line extending from said pump;
- a single automatic non-cyclical valve means interposed in said first suction line and connected to said air line normally biased in an open suction position whereby said blood clots and other matter may be sucked through said nozzle, said first suction line and said valve to said receptacle, yet yieldable upon pressure change to move to an air intake position wherein said air flow is reversed and air will pass from said return air line through said valve, said first suction line and out said nozzle to discharge said large particles of matter.

4,447,227

MULTI-PURPOSE MEDICAL DEVICES

Constantine A. Kotsanis, River Grove, Ill., assignor to Endoscopy Surgical Systems, Inc., White Haven, Pa.

Filed Jun. 9, 1982, Ser. No. 386,558
Int. Cl.³ A61M *25/02*
U.S. Cl. 604—95 **9 Claims**



1. A medical device, comprising:
fluid expansive, convoluted annular envelope means for positioning in a lumen of a tubular organ;
fluid flow passageway means communicating with said fluid expansive, convoluted annular envelope means with a fluid;

tube means extending at least partially through said fluid expansive, convoluted annular envelope means; and

suction stabilizing means operatively associated with and extending outwardly from said fluid expansive, convoluted annular envelope means for engaging the wall defining said lumen and retaining said envelope means under suction pressure at a desired anatomical site.

4,447,228

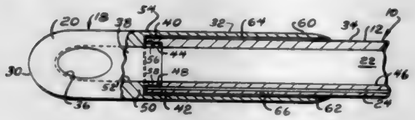
CATHETER

Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Walpole, Mass.

Division of Ser. No. 146,421, May 5, 1980, Pat. No. 4,361,152, which is a continuation of Ser. No. 930,386, Aug. 2, 1978, abandoned, which is a continuation of Ser. No. 767,425, Feb. 10, 1977, abandoned, which is a continuation of Ser. No. 581,251, May 27, 1975, abandoned. This application Aug. 25, 1982, Ser. No. 411,254

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—103 **1 Claim**



1. A retention catheter comprising:

an elongated shaft comprising an extruded tube having an outer surface, a distal end, a drainage lumen extending to the distal end of the tube, an inflation lumen extending through the wall of the tube to the distal end of the tube, an opening extending through the wall of the tube communicating between the inflation lumen and the outer surface of the tube, said opening being spaced from the distal end of the tube, and an annular tongue adjacent the outer surface of the tube and at the distal end of the tube, said tongue defining an inwardly-facing annular recess adjacent the drainage lumen at the distal end of the tube;

a tip secured to the tube adjacent its distal end, said tip having an outer surface, a drainage eye communicating with the drainage lumen of said tube, an axially-extending annular recess at the proximal end of said tip, and an axially-extending annular tongue adjacent the inner surface of said tip and at the proximal end of the tip, said tongue of said tip defining the inner surface of said axially-facing annular recess; and

an expansible annular sleeve of one-piece construction with said tip, said sleeve extending from the proximal end of the tip at its outer surface to proximal the opening between the inflation lumen and the outer surface of the tube, the distal end of said sleeve circumferentially surrounding the said tongue of said tip and defining the outer surface of said axially-facing annular recess,

said tube tongue being received within said axially-facing annular recess of said tip, said tip tongue being received within said annular recess of said tube, and said sleeve distal end being arranged to enshroud said tube tongue,

the distal end of said sleeve including an interior surface which is secured to the outer surface of the tube tongue, the proximal end of the sleeve being secured to the outer surface of the tube circumferentially around the shaft, and said tube distal end being secured to an axially-facing surface at the distal end of said tip recess and remote from said sleeve proximal end thus to provide a catheter tip structure less likely to be separated from said tube during use, and

said opening communicating between the inflation lumen and the outer surface of the tube being located intermediate said sleeve distal and proximal ends at a point remote from said tube distal end, whereby the patency of said opening will not be compromised during the assembly of said tip with said tube.

4,447,229

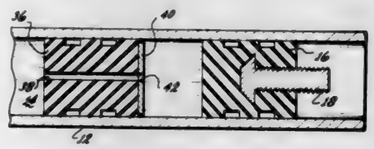
TAMPER-RESISTANT HYPODERMIC SYRINGE

Ida M. Butterfield, Santa Maria, Calif., assignor to Butterfield Group, Santa Maria, Calif.

Division of Ser. No. 364,011, Mar. 31, 1982, abandoned. This application Aug. 19, 1983, Ser. No. 524,473

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—111 **2 Claims**



1. A tamper-resistant hypodermic syringe comprising in combination:

a tubular member having a proximal end which is unobstructed and having a distal end;

a drive piston positioned within said tubular member;

a non-retractable stopper having a longitudinal passage to permit the syringe to be used for aspiration, said non-retractable stopper located within said tubular member immediately adjacent the distal side of said drive piston, but not connected to said drive piston;

a barrier impenetrable by a hypodermic needle and affixed to said non-retractable piston whereby the attempted insertion of a hypodermic needle through said non-retractable piston from the proximal end of said tubular member will cause said non-retractable stopper to be pushed toward the distal end, thereby giving a visual indication that the syringe has been tampered with.

4,447,230

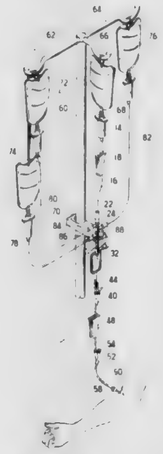
INTRAVENOUS ADMINISTRATION SET ASSEMBLY

John A. Gula, Richardson; John D. Brady, Dallas; Thomas C. Thompson, McKinney, and Joyce M. Alt, Houston, all of Tex., assignors to Quest Medical, Inc., Carrollton, Tex.

Filed Aug. 5, 1981, Ser. No. 290,257

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—122 **12 Claims**



1. An intravenous administration set assembly capable of use with at least three differing sources of intravenous fluid comprising:

adapter means (58) for mating with a corresponding adapter provided on a catheter (90) inserted into a patient;

air-eliminating filter means (32) having a hydrophilic membrane completely across the fluid flow path for receiving an air and fluid mixture through its inlet and separating the air therefrom so that only fluid may pass through its outlet;

tubing means (38, 46, 56) connecting the outlet of the air-eliminating filter means (32) to the adapter means (58);

fluid manifold means (26) having at least three inlets and a single outlet to allow for the sequencing of differing fluids from their respective sources, the outlet of the fluid manifold means (26) being connected to the inlet of the air-eliminating filter means (32) so that all fluid flowing from the outlet of the fluid manifold means must pass through the air-eliminating filter means regardless of the source of the fluid;

inlet adapter means (28) connected to each of the inlets of the fluid manifold means (26) so as to admit fluid thereto, each of the inlet adapter means (28) including a mating connector thereon so that it is securely mated in fluid-tight fashion to tubing connected from a respective one of the sources of intravenous fluid; and

one check valve means for each and every adapter means (28) connected so as to allow fluid to pass through the fluid manifold means (26) from the inlet adapter means (28) and so as to prevent the flow of fluid outward from the fluid manifold means (26) through the inlet adapter means (28) and so as to prevent the contamination of one of the sources of intravenous fluid connected to the manifold means (26) by another of those sources of intravenous fluid.

4,447,231

AUTOMATIC INJECTION SYRINGE

Hendrik M. Bekkering, Oist, Netherlands, assignor to Duphar International Research B.V., Weesp, Netherlands

Filed Jul. 22, 1982, Ser. No. 400,970

Claims priority, application Netherlands, Jul. 27, 1981, 8103531

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—131 **11 Claims**



1. An automatic syringe comprising a combination of a discharge mechanism, a cartridge holder and a cartridge slidably accommodated in the cartridge holder; said cartridge comprising an ampoule containing at least one injection liquid, a piston movable in the ampoule and a hypodermic needle connected to the front of the ampoule; said discharge mechanism including a power source that can move the cartridge from an inoperative to an operative condition, locking means for controlling the actuation of the power source and a safety device for blocking said locking device, said syringe being characterized in that a tablet holder is connected to the safety device in a manner such that the locking means are released simultaneously with removal of the tablet holder.

4,447,232

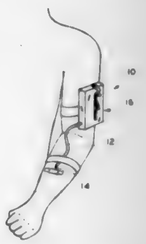
SPRING-OPERATED LIQUID-DISPENSING DEVICE

Andrew Sealfon, Middletown, and Carl Yurdin, Port Washington, both of N.Y., assignors to Repro-Med Systems, Inc., Middletown, N.Y.

Filed May 21, 1982, Ser. No. 380,564

Int. Cl.³ A61M *7/00*

U.S. Cl. 604—134 **2 Claims**



1. A spring-operated device for dispensing a liquid for achieving a medical or similar objective, said device comprising a rectangular-shaped housing bounding an internal compartment having a top cover disposed in covering relation over said compartment, said cover having a centrally located slot oriented longitudinally thereof opening into said compartment, a source of liquid in a collapsible bag disposed in said compartment, a slide member disposed in said compartment in pushing contact against said liquid-filled bag, a single constant torque spring of the type adapted to assume the form of helical coils disposed along one side of said compartment and operatively connected at one end to said slide member and at said opposite end to an end of said housing so as to urge said slide member through sliding movement through said compartment in response to said assumption of said helical coils at said end connected to said slide member, an upstanding leg on said slide member in projected relation into said slot of said cover so as to be adapted to track along said slot during said sliding movement of said slide member, whereby said tracking centrally along said cover by said slide member leg obviates any rotative tendency in said slide member as might be caused by said spring helical coils and correspondingly obviates any binding against said compartment walls by said slide member, a tracking member disposed for tracking movement in said slot of said cover attached to said projecting end of said upstanding leg of said slide member, and a clip means connected to said housing for selectively engaging said tracking member preparatory to commencing the liquid-dispensing service of said device.

4,447,233

MEDICATION INFUSION PUMP

William B. Mayfield, Costa Mesa, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 252,779, Apr. 10, 1981, abandoned. This application Jul. 30, 1982, Ser. No. 403,679

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—152 **8 Claims**

1. A disposable insert for a liquid injection device having a first surface for engagement with the insert and a first surface for alignment of the insert, said disposable insert comprising:

a reservoir,

an outlet,

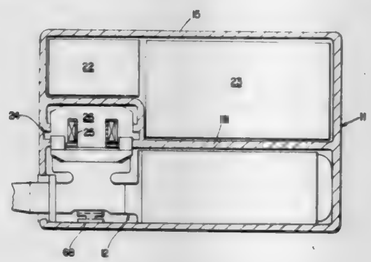
a pump disposed between said reservoir and said outlet, said pump including a housing that defines a variable volume pump chamber and a second engagement surface, said

pump further including a piston located in said pump chamber,
a first check valve disposed between said reservoir and said pump chamber,
a second check valve disposed between said pump chamber and said outlet,
movable means for altering the volume of said pump chamber, said movable means including an armature of electromagnetic material that is secured to and movable with said



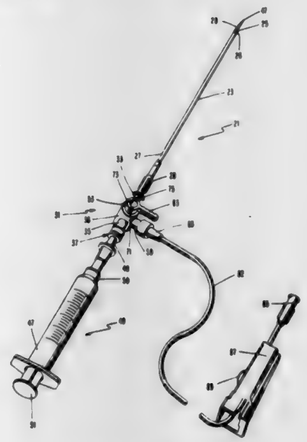
piston, said armature being movable between the first engagement surface of the injection device and the second engagement surface of the disposable insert to control said piston, and
second alignment surface means disposed in a predetermined position relative to said second engagement surface and cooperating with said first alignment surface means to accurately position said second engagement surface with respect to said first engagement surface.

4,447,234
MEDICATION INFUSION PUMP
William B. Mayfield, Costa Mesa, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Division of Ser. No. 252,779, Apr. 10, 1981, abandoned, which is a continuation of Ser. No. 515,449, Jul. 20, 1983. This application Aug. 2, 1982, Ser. No. 403,999
Int. Cl.[3] A61M *5/00*
U.S. Cl. 604—151 **5 Claims**



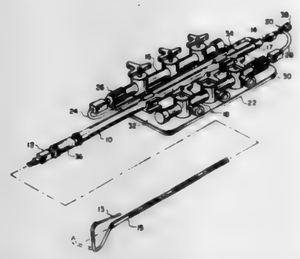
1. A medication injection device comprising:
a reusable portion including;
a housing that has a solenoid compartment and a disposable portion compartment, said disposable portion compartment having a length no less than about twice its lateral width, and said solenoid compartment being adjacent one end of said disposable portion compartment,
a solenoid coil in said compartment, and
a solenoid core in said solenoid compartment; and
a disposable portion that is located in said disposable portion compartment, said disposable portion including;
an elongated reservoir having a length no less than about twice its lateral width, and
a pump at one end of said reservoir and located adjacent said solenoid compartment, said pump including a pump chamber connected to said reservoir by a passage;
an electromagnetic solenoid armature; and
means for releasably securing said disposable portion to said reusable portion, said releasable securing means including a spring that cooperates with the disposable compartment to bias the disposable portion against the reusable portion to control the stroke length of the armature.

4,447,235
THORACENTESIS DEVICE
John M. Clarke, 861 Sixth Ave. South, St. Petersburg, Fla. 33701, assignor to John M. Clarke, St. Petersburg, Fla.
Filed May 7, 1981, Ser. No. 261,570
Int. Cl.[3] A61B *1/26*
U.S. Cl. 604—169 **11 Claims**



1. A thoracentesis device comprising an elongated flexible catheter having a distal end and a proximate end, means defining an elongated conduit including a value means and connected to the proximate end of said catheter and in line therewith, seal means at the distal end of said elongated conduit means continuously sealing said conduit means and the proximate end of said catheter from the atmosphere, a hollow needle having a sharpened distal end adapted to penetrate said seal means and to extend through said conduit means and said catheter and beyond the distal end thereof, means connected to the proximate end of said hollow needle for applying negative pressure to said needle, said needle being operable for complete withdrawl from said elongated conduit means and said seal means, said seal means being self-sealing and re-sealing said conduit means upon complete withdrawal of said needle from said conduit means and separation of said needle from said conduit means, said valve means being between said seal means and said catheter and said valve means movable to a first position where it connects said catheter to a side conduit means connected to and extending laterally of said elongated conduit means, and to a second position where it blocks communication between said elongated conduit means and said side conduit means.

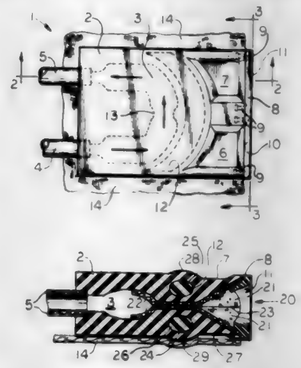
4,447,236
INFUSION CATHETER SYSTEM
David R. Quinn, Pembroke Pines, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Feb. 5, 1982, Ser. No. 346,345
Int. Cl.[3] A61M *5/00*
U.S. Cl. 604—169 **6 Claims**



1. An infusion catheter system comprising: an elongate tubular housing member having a passageway extending therethrough; a first, guiding catheter having proximal and distal ends and having a passage extending therethrough, the proximal end of said first catheter being coupled to said housing member such that the passage of said first catheter communicates with the passageway in said housing member and the distal end being adapted to be inserted into an artery or vein; a second, infusion catheter having a passage extending therethrough and being movably positioned within the passage of said first catheter and having proximal and distal ends which extend beyond the proximal and distal ends respectively of the first catheter; first fluid delivery means including first valve means coupled to said housing member for supplying a first fluid through the passage of said first, guiding catheter; and, second fluid delivery means including second valve means coupled to the proximal end of said second catheter for supplying a second fluid through the passage of said second catheter for infusion through an opening in the distal end of said second infusion catheter into an artery or vein.

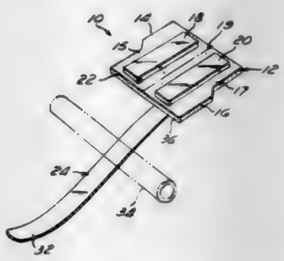
4,447,237
VALVING SLIT CONSTRUCTION AND COOPERATING ASSEMBLY FOR PENETRATING THE SAME
Eldon E. Frisch, Midland, Mich., and Leon C. Parks, Brandon, Miss., assignors to Dow Corning Corporation, Midland, Mich. and Research Against Cancer, Inc., Jackson, Miss., a part interest
Filed May 7, 1982, Ser. No. 376,002
Int. Cl.[3] A61M *25/02, 1/03*
U.S. Cl. 604—175 **24 Claims**

13. Apparatus for medical use in a pressurized fluid system associated with a living body comprising
insertable fluid engaging means for exterior insertion into communication with the pressurized fluid and
a valve assembly biased into a closed condition for sealingly containing the pressurized fluid in communication therewith and movable into a seal maintaining open condition in response to the insertion of said insertable fluid engaging means therethrough,
said valve assembly including a body of elastomeric material having flattened sleeve means therein; defining a slit presenting opposed surfaces interengaged when said valve assembly is in said closed condition and spaced apart when said valve assembly is in said open condition, said insertable fluid engaging means having a tapered end construction suitable for gradually moving said opposed surfaces from said closed interengaged condition into said open spaced apart condition in response to the insertion of said insertable fluid engaging means therethrough, said insertable fluid engaging means including an exterior periphery configured to be biasingly engaged in sealing relation by said opposed surfaces when the latter are in said open spaced apart condition,
said valve assembly further including means operable in addition to the bias provided by the elastomeric material of said body for yieldably biasing said opposed surfaces into sealed relation when in said closed interengaged condition and into sealed relation to the exterior periphery of said insertable fluid engaging means when in said open



spaced apart condition, said additional biasing means including cavity means having a yieldable material under pressure therein so located with respect to said flattened sleeve means as to transmit the pressure thereof as the additional bias of the opposed surfaces into sealed relation when in said closed interengaged condition and into sealed relation with the exterior periphery of said insertable fluid engaging means when in said open spaced apart condition.

4,447,238
MEDICAL TUBING HOLDER
John D. Eldridge, Jr., Balboa Island, Calif., assignor to Instrasetics, Inc., Tustin, Calif.
Continuation-in-part of Ser. No. 147,632, May 7, 1980, Pat. No. 4,336,806. This application Jan. 19, 1981, Ser. No. 226,493
Int. Cl.[3] A61M *25/00*
U.S. Cl. 604—280 **15 Claims**



1. A medical tube holder comprising:
(a) a backing element movable between folded and unfolded positions having first and second members with a mutual magnetic attraction spaced for mutual engagement when the element is folded; and
(b) an elongate strip having a free end and an end attached to said element, said strip being long enough to wrap around a tube to form a loop within which said tube is held and to permit said free end to be held between said engaged members locking said tube within said loop, said strip

being parallel to and offset from the longitudinal axis of one of said members.

4,447,239

CATHETER WITH RADIOGRAPHIC CONTRAST STRIPS

Victor Krütten, St. Wendel, Fed. Rep. of Germany, assignor to Dr. Eduard Fresenius Chemisch-Pharmazeutishe Industry KG, Bad Homborg, Fed. Rep. of Germany

Continuation of Ser. No. 125,154, Feb. 27, 1980, abandoned. This application May 5, 1982, Ser. No. 375,190

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910741

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—282 12 Claims



1. A catheter having first and second radiographic contrast strips in or on the surface of the catheter and having no additional contrast strips, the first said contrast strip being arranged in a helix along the length of the catheter with the helix of the first contrast strip defining a substantially constant pitch when the catheter is in use such that the first contrast strip intersects the second contrast strip at predetermined and equally spaced distances along the catheter, whereby when the catheter is inserted into a patient, the equally spaced intersections of the first and second contrast strips enable an accurate determination of the length of insertion of the catheter.

4,447,240

DISPOSABLE DIAPER

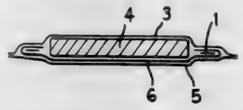
Osamu Ito, Utsunomiya, and Kazunori Nishizawa, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1981, Ser. No. 302,271

Claims priority, application Japan, Sep. 22, 1980, 55-132064

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—385 10 Claims



1. A disposable diaper comprising: a liquid-permeable surface sheet; a liquid-impermeable back sheet; a water-absorbing layer located between said sheets; a pair of bundles of water-absorbing shrinkable fibers which shrink in the lengthwise direction of the fibers and are rendered elastic on absorption of water, said bundles of water-absorbing shrinkable fibers being fixed along the edges in the central portion of said diaper and extending in the lengthwise direction of said disposable diaper and located so that said bundles of water-absorbing shrinkable fibers are not placed on the water-absorbing layer but are capable of being wetted when said diaper is wetted; and cellulose fibers extending between and connecting said water-absorbing layer and said bundles of water-absorbing shrinkable fibers for smoothly transferring liquid from said water-absorbing layer to said bundles of water-absorbing shrinkable fibers, wherein said cellulose fibers comprise an absorbent paper extending from said water-absorbing layer to said bundles of water-absorbing shrinkable fibers for transferring liquid from said water-absorbing layer to said shrinkable fibers, a central portion of said absorbent paper being interposed between said water-absorbing layer and said liquid-impermeable back sheet, said paper having lateral edge portions which extend beyond the edges of said water-absorbing layer such that said lateral edge portions of said absorbent paper are interposed between said bundles of water-absorbing shrinkable fibers and said liquid-impermeable back sheet, and the lateral ends of said lateral edge portions comprise flap portions of each of said lateral edge portions, which flap portions are folded over said bundles of water-absorbing shrinkable fibers and thereby interposed between said bundles of water-absorbing shrinkable fibers and said liquid-permeable surface sheet.

4,447,241

OXIDATIVE AFTERWASH TREATMENT FOR CREASE RESISTING FABRICS

James E. Hendrix, and George L. Payet, both of Fort Mill, S.C., assignors to Springs Industries, Inc., Fort Mill, S.C.

Filed Apr. 12, 1982, Ser. No. 367,398

Int. Cl.³ D06M *13/12, 13/34, 9/00*

U.S. Cl. 8—116.4 10 Claims

1. A durable press treatment process for textile fabrics containing cellulosic fibers, said process being characterized by producing a durable press fabric having significantly reduced levels of released formaldehyde, and said process comprising applying to the fabric a formalin durable press finishing agent, directing the fabric through a curing oven and heating the fabric to effect crosslinking and impart durable press properties to the fabric while leaving in the fabric formaldehyde which can be liberated under conditions of storage and use, and impregnating the cured durable press treated fabric with an aqueous solution containing an oxidizing agent selected from the group consisting of sodium perborate, hydrogen peroxide, and sodium hypochlorite and maintaining the fabric in contact with the oxidizing agent for a time and at a temperature sufficient to oxidize and destroy releasable formaldehyde present in the fabric without destroying the durable press properties imparted to the fabric.

4,447,242

TEXTILE FINISHING

Ladislav Benisek, Burley-in-Wharfedale, England, assignor to Wool Development International Limited, London, England

Continuation-in-part of Ser. No. 243,601, Jan. 6, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,288

Claims priority, application United Kingdom, Mar. 14, 1980, 8008756

Int. Cl.³ D06M *3/02, 13/20, 9/00*

U.S. Cl. 8—128 R 11 Claims

1. A method of finishing keratinous textile articles which comprises treating the articles with an anionic titanium or zirconium complex at low pH, and with a bromo or chloro containing organic acid in aqueous solution at elevated temperature.

4,447,243

ODOR SCAVENGING SYSTEM

J. Lyle Claiborne, Hixson, Tenn., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.

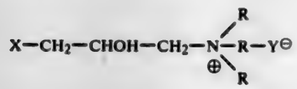
Continuation of Ser. No. 293,095, Aug. 17, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,225

Int. Cl.³ D06M *13/34*

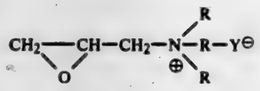
U.S. Cl. 8—188 11 Claims

1. A method of freshening air, comprising:

wetting an odor preventing member and placing it in a position so that odor containing air may come into contact with the surface of the odor preventing member, said member comprising a substrate material reacted with an odor preventing material, said material comprising a compound from the group consisting of:



or a salt of epoxy propyl ammonium having the general formula



wherein X is a halogen radical, Y is chloride, bromide, sulfate or sulfonate, and the R's are methyl, ethyl, butyl or benzyl groups and hydroxyl substituted derivatives thereof.

4,447,244

PROCESS FOR MASS-DYEING OF THERMOPLASTICS: POLYSTYRENE AND STYRENE COPOLYMERS WITH INDOLINE METHINE DYES

Bernhard Wehling, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

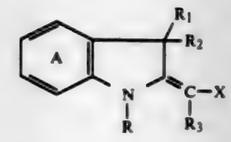
Filed Feb. 4, 1983, Ser. No. 464,073

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3206091

Int. Cl.³ C08J *3/20;* C08K *5/34*

U.S. Cl. 8—514 8 Claims

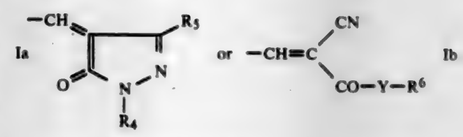
1. Process for mass-dyeing of polystyrene and styrene copolymers, characterised in that the dyestuffs used are of the formula



(I)

in which

X designates a radical



R designates hydrogen or alkyl,

R_1 and R_2 designate alkyl,

R_3 designates hydrogen, cyano, aroyl, alkoxycarbonyl, alkylcarbonyl or carbamoyl,

R_4 designates aryl,

R_5 designates alkyl, alkylcarbonyl, alkoxycarbonyl or aryl,

R_6 designates alkyl, aryl, aralkyl or aralkenyl, and

Y designates O or NR_7, with R_7 having the meaning hydrogen, alkyl, aralkyl or aryl, it being possible for the radicals which have been mentioned for R_7 and R_1–R_7 and which contain C—H or N—H bonds to be substituted, and wherein the ring A can carry 1, 2 or 3 substituents from the series comprising halogen, cyano, alkyl, alkoxy, alkylcarbonyl, alkoxycarbonyl, aralkoxycarbonyl, carbamoyl, sulphamoyl, alkylsulphonyl and arylsulphonyl, or can have a benzene ring fused to it, it being possible for the radicals which have been mentioned as substituents of the ring A and which contain C—H or N—H bonds to be substituted.

4,447,245

METHODS OF CLEANING COAL

Clay D. Smith, and Douglas V. Keller, Jr., both of Lafayette, N.Y., assignors to Otisca Industries, Ltd., Syracuse, N.Y.

Division of Ser. No. 3,641, Jan. 15, 1979, Pat. No. 4,244,699, which is a division of Ser. No. 561,168, Mar. 24, 1975, Pat. No. 4,173,530, which is a continuation-in-part of Ser. No. 423,577, Jan. 14, 1974, abandoned. This application Dec. 22, 1980, Ser. No. 218,636

Int. Cl.³ C10L *9/02*

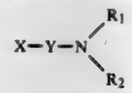
U.S. Cl. 44—1 SR 9 Claims

1. A process for preparing sulfur-containing coal for combustion having low SO_2 emissions, which comprises in combination:

(a) reducing the particle size of said coal;
(b) deeply cleaning said coal of reduced particle size by a heavy media method, the heavy media being a fluorochloro derivative of methane or ethane or 1,2-difluoroethane;
(c) admixing said clean coal with a finely divided inorganic material selected from the group consisting of an oxide or hydroxide of calcium or dolomite;
(d) forming said resulting admixture into large particles.

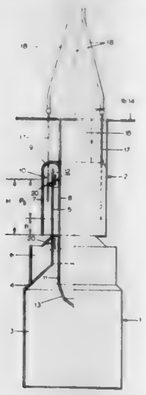
4,447,246
DIESEL FUEL
Clifford E. Smith; Harold W. Mark; Rector P. Louthan, and Howard F. Efner, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed May 16, 1983, Ser. No. 494,831
Int. Cl.³ C10L *1/08, 1/22, 1/24*
U.S. Cl. 144—57 **12 Claims**

1. A method of operating a compression-ignition engine which comprises injecting into the combustion chamber of the engine a liquid hydrocarbon fuel containing an amount effective to improve the cetane number of said fuel of at least one ignition accelerator compound of the formula:



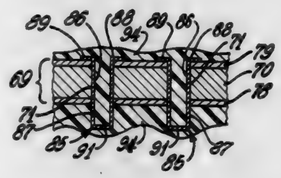
wherein X is an alkyl or alkylene (having one olefinic bond) group having one to six carbon atoms which can be normal, branched or cyclic; or an S-alkyl sulfenyl (R′—S—) where R′ is an alkyl group having from one to six carbon atoms which can be normal, branched or cyclic chain; or a phenyl or p-tolyl group, R_1 and R_2 are independently selected from alkyl groups having one to six carbon atoms which can be normal, branched or cyclic; or a single R group joined together to form a saturated C_5N ring; or R_1 can be nitroso and R_2 can be an alkyl having from 1 to 3 carbon atoms, Y is an SO_2 or a SC:S group.

4,447,247
METHOD AND APPARATUS FOR COLLECTING OIL AND GAS FROM AN UNDERWATER BLOW-OUT
Naess, Erik B., Nils Lauritssons v. 46, Oslo, Norway
PCT No. PCT/NO80/00044, 371 Date Jul. 31, 1981, 102(e) Date Jul. 31, 1981, PCT Pub. No. WO81/01864, PCT Pub. Date Jul. 9, 1981
PCT Filed Dec. 18, 1980, Ser. No. 290,810
Claims priority, application Norway, Dec. 21, 1979, 794260
Int. Cl.³ E02B *23/00*
U.S. Cl. 55—55 **17 Claims**



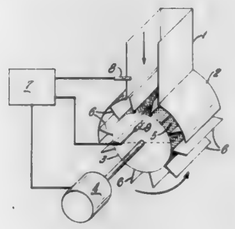
1. A method for collecting oil and gas flowing uncontrolled into a body of water beneath the water surface, especially in a blow-out from a point at the sea bed, wherein discharging oil and gas from the blow-out location is caught and ascends towards the surface within a tubular shell body, comprising the steps of: collecting the ascending gas in a floating gas bell provided at the upper end portion of the shell body, forming a gas or liquid trap against the surrounding water in that said bell has an outer wall projecting downwards and surrounding an upper portion of the shell body; and placing the gas automatically under a controllable positive pressure.

4,447,248
METHOD OF MAKING AND USING GLASS FIBER FORMING FEEDERS
Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Jul. 15, 1982, Ser. No. 398,536
Int. Cl.³ C03D *37/095*
U.S. Cl. 65—2 **19 Claims**



1. In a method of making glass filaments wherein a plurality of streams of molten glass issuing from an orificed discharge wall of a feeder are attenuated into said filaments, the improvement comprising said discharge wall being fabricated by:
inserting elements in apertures in a member;
hermetically sealing said elements and member within a coating adapted to isostatically transmit pressure to said elements and member;
applying isostatic pressure to the hermetically sealed elements and member to mechanially seal the elements to the member; and
heating the mechanically sealed elements and member to fuse the elements to the member to prevent the unwanted passage of molten glass between said elements and said member, said elements having an orifice to permit the passage of molten glass therethrough to establish said streams.

4,447,249
BLOWING WOOL SEPARATOR METHOD AND APPARATUS
David M. Kopena, Grand Rapids, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Aug. 16, 1982, Ser. No. 408,397
Int. Cl.³ C03B *37/03, 37/07*
U.S. Cl. 65—4.4 **10 Claims**



1. A method of improving the recovery of glass blowing wool which comprises:

a. introducing the wool into contact with the foraminous surface of a revolving drum;
b. establishing a pressure differential across said surface of said drum by vacuum producing means;
c. altering the speed of revolution of said drum responsive to said pressure differential to build a layer of glass wool of substantially uniform thickness on the drum; and,
d. discharging said wool from said drum.

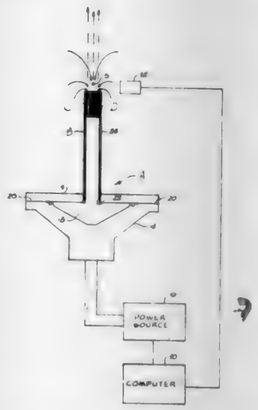
4,447,250
NOVELTY HEADBAND
John Wolens, 1000 North Lake Shore Dr., Chicago, Ill. 60611, and Leon Levy, 2112 N. Sedgwick, Chicago, Ill. 60614
Filed Apr. 4, 1983, Ser. No. 482,094
Int. Cl.³ A63H *29/16*
U.S. Cl. 46—1 F **2 Claims**



1. A novelty device including a resilient annular band having two free ends; a plurality of expandable members, each movable between a retracted position and an extended position in response to a differential in pressure within said members; a one-piece elongated mounting means secured to said band intermediate said free ends and supporting each of said expandable members, said mounting means being positioned generally adjacent and parallel to said annular band such that said expandable members are oriented generally perpendicular to said annular band; said mounting means including a manifold for transmitting fluid to and from each of the expandable members; conduit means for providing pressurized fluid to said manifold; and said manifold having one fluid input port in communication with said conduit means and a plurality of fluid discharge ports in communication with said expandable members, said input and discharge ports being joined by a common fluid passageway.

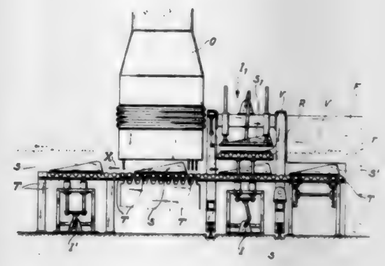
4,447,251
SONIC LEVITATION APPARATUS
Stanley A. Dunn; Alan R. Pomplun; Elmer G. Paquette, all of Madison, Wis.; Edwin C. Ethridge, and Jerry. L. Johnson, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed May 12, 1983, Ser. No. 493,866
Int. Cl.³ C03D *19/10*
U.S. Cl. 65—142 **20 Claims**

1. Apparatus for levitating a material specimen comprising:
a duct having an interior adapted to be filled with gas;
a collimated passage means disposed within and at an end of said duct, said collimated passage means including an array of parallel passageways communicating with the interior of said duct with the surrounding atmosphere; and



a sound generator means for imparting oscillatory motion to the gas within said duct so as to provide levitating force in the form of pulsed, unidirectional motion of gas axially beyond the end of said collimated passage means.

4,447,252
APPARATUS FOR CURVING AND TEMPERING OR HEAT TOUGHENING THIN GLASS SHEETS
Dino Di Nocco, Vasto, and Nicola Delle Donne, Casalbordino, both of Italy, assignors to Società Italiana Vetro - SIV - S.p.A., Italy
Filed Mar. 26, 1982, Ser. No. 362,131
Claims priority, application Italy, Apr. 6, 1981, 20938 A/81
Int. Cl.³ C03B *23/023*
U.S. Cl. 65—268 **4 Claims**



1. An apparatus for curving and tempering or heat toughening thin glass sheets, said apparatus including generally horizontally arranged starting, curve forming, quenching and unloading zones, said apparatus comprising:

a plurality of generally ring-shaped molds mounted for horizontal movement between said zones;

a vertically movable first roller assembly located at said curve forming zone;

means, located at said curve forming zone, for rapidly lowering said first roller assembly from an upper position, whereat said first roller assembly is positioned to receive and support a glass sheet to be curved, to a lower position, whereat the glass sheet supported by said first roller assembly is transferred to a said ring-shaped mold located at said curve forming zone;

an upper mold located at said curve forming zone;

means, positioned at said curve forming zone, for, when said glass sheet is transferred to said ring-shaped mold at said curve forming zone, moving said upper mold downwardly to cooperate with said ring-shaped mold to curve said glass sheet;

a vertically movable second roller assembly located at said unloading zone;

means, located at said unloading zone, for raising said second roller assembly between lower and upper positions thereof to thereby unload a glass sheet from a said ring-shaped mold at said unloading zone; and

carrousel means for transferring sequentially said plurality of ring-shaped molds in an endless horizontal path, such that said glass sheet supported by said ring-shaped mold at said curve forming zone is transferred sequentially from said curve forming zone to said quenching zone and then to said unloading zone, whereat said glass sheet is unloaded, and then the thus unloaded ring-shaped mold is transferred from said unloading zone to said starting zone and then back to said curve forming zone to receive a new glass sheet to be curved.

4,447,253

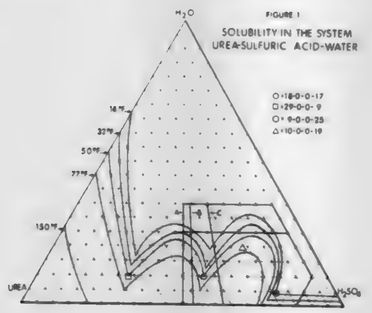
TOPICAL FERTILIZATION METHODS AND COMPOSITIONS FOR USE THEREIN

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 5, 1981, Ser. No. 318,368

Int. Cl.³ C05C *9/00*

U.S. Cl. 71—28 **24 Claims**



23. A method for topically fertilizing alkaline soils with urea, which method comprises applying to the surface of an alkaline soil having a pH of at least about 7.5 an aqueous solution of a reaction product of urea and sulfuric acid, wherein the sulfuric acid/urea molar ratio in said solution is at least about 0.7.

4,447,254

CONTROLLED RELEASE OF TRACE ELEMENTS

Alan C. Hughes, Liverpool; Richard C. Copeman, and Thomas N. R. Marples, both of Chester, all of England, assignors to McKenchnie Chemicals Limited, West Midlands, England

Filed Jul. 22, 1981, Ser. No. 285,699

Claims priority, application United Kingdom, Jul. 24, 1980, 8024324; Sep. 5, 1980, 8028801; Feb. 12, 1981, 8104390; Feb. 12, 1981, 8104391

Int. Cl.³ A01N *59/20, 59/00;* A61K *33/34*

U.S. Cl. 71—67 **21 Claims**

1. A method of employing in water a composition for releasing a controlled concentration of trace elements therein comprising a relatively water insoluble trace element compound and a plaster of paris binder mixed with said trace element and which mixture provides in water a composition having a different solubility product for the trace element compound.

4,447,255

PLANT GROWTH REGULATORS

Eberhard P. Schott, Neustadt, and Hans Lang, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,263

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 27559406

Int. Cl.³ A01N *57/12*

U.S. Cl. 71—86 **2 Claims**

1. A composition for regulating plant growth, consisting essentially of a synergistic mixture of

an effective amount to regulate plant growth of

(a) N,N-dimethylpiperidinium chloride and

(b) 2-chloroethylphosphonic acid, the ratio of (a):(b) being from 1:4 to 4:1 parts by weight.

4,447,256

N-(UNSUBSTITUTED OR SUBSTITUTED PYRIDYL)AMINOMETHYLENE-DIPHOSPHONIC ACIDS, HERBICIDAL COMPOSITIONS CONTAINING SAME, THEIR USE FOR HERBICIDES, AND PROCESS FOR PREPARING SAME

Fumio Suzuki, Funabashi; Yoshihiro Fujikawa, Tokyo; Susumu Yamamoto, Narashino; Hidemi Mizutani, Funabashi; Tunehiko Ohya, Ageo; Takashi Ikai, Tokyo, and Toshihiko Oguchi, Urawa, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

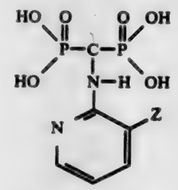
Continuation-in-part of Ser. No. 926,387, Jul. 20, 1978, abandoned. This application Jul. 29, 1980, Ser. No. 173,357

Claims priority, application Japan, Jul. 20, 1977, 52-86098; Jul. 27, 1977, 52-89910

Int. Cl.³ A01N *57/16;* C07D *213/72*

U.S. Cl. 71—86 **15 Claims**

6. A herbicidal composition comprising a herbicidally effective amount of a compound of the formula



wherein Z denotes hydrogen, an alkyl group having 1–3 carbon atoms or a halogen, or a salt thereof.

4,447,257

INHIBITING THE ANTAGONISM BETWEEN PYRIDYLOXY-PHENOXY ALKANOATE HERBICIDES AND BENZOTHIADIAZINONE HERBICIDES IN POST-EMERGENT APPLICATIONS

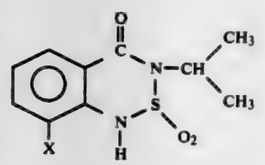
Ben C. Gerwick, III, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 16, 1981, Ser. No. 321,352

Int. Cl.³ A01N *25/00*

U.S. Cl. 71—91 **20 Claims**

1. A method of inhibiting the antagonism between pyridyloxy-phenoxy propionate herbicides and benzothiadiazinone herbicides of the formula



wherein

X represents hydrogen, chloro, bromo, fluoro, C_1–C_8 alkyl or nitro, and salts thereof, when applied post-emergently to unwanted vegetation in a composition containing both of said herbicides, said method comprising adding an amount of a non-phytotoxic petroleum distillate crop oil effective to inhibit the antagonism between the pyridyloxy-phenoxy propionate herbicide and the benzothiadiazinone herbicide.

4,447,258

3-DIMETHYLAMINO-4-METHYL-1,2,4-TRIAZIN-5(4H)-ONES AND HERBICIDAL COMPOSITIONS

Karlfried Dickoré, Leverkusen; Klaus Sasse, Bergisch-Gladbach; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

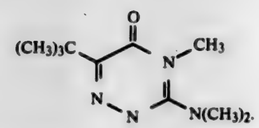
Filed Feb. 11, 1980, Ser. No. 120,174

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908963; Mar. 7, 1979, 2908964; Sep. 22, 1979, 2938384

Int. Cl.³ C07D *253/06;* A01N *43/64*

U.S. Cl. 71—93 **2 Claims**

1. 3-Dimethylamino-4-methyl-1,2,4-triazin-5(4H)-one compound designated 6-tert.-butyl-3-dimethylamino-4-methyl-1,2,4-triazin-5(4H)-one of the formula



(Ia)

2. Method of combating setaria, sinapis, matricaria, galinsoga, stellaria, lolium, echinochloa, wheat, oats, cotton and maize which method comprises applying to such vegetation or its habitat a herbicidally effective amount of a 3-dimethylamino-4-methyl-1,2,4-triazin-5(4H)-one compound as claimed in claim 1.

4,447,259

2-(SUBSTITUTED PHENOXY)PROPIONIC ACID DERIVATIVES AND THEIR USES FOR HERBICIDAL PURPOSES

Hiroshi Ohyama, Chigasaki; Sanae Takada, Atsugi; Ken Morita, Hiratsuka, and Saburo Yamamura, Fujisawa, all of Japan, assignors to Hokko Chemical Industry Co., Ltd., Nihonbashi, Japan

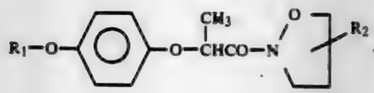
Filed Dec. 8, 1982, Ser. No. 447,892

Claims priority, application Japan, Dec. 18, 1981, 56-203416; Sep. 21, 1982, 57-163194; Sep. 24, 1982, 57-164967

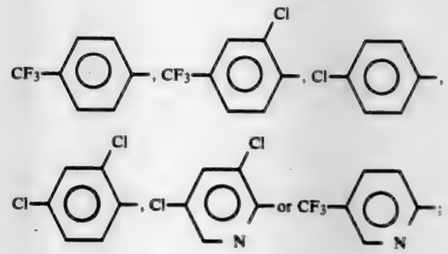
Int. Cl.³ A01N *43/40;* C07D *413/02*

U.S. Cl. 71—94 **14 Claims**

1. 2-(Substituted-phenoxy)propionic acid derivative having the formula:



wherein R_1 is



and R_2 is a hydrogen atom or a lower alkyl group.

4,447,260

N-SUBSTITUTED PHENYL-1-METHYLCYCLOPROPANECARBOXAMIDES, AND THEIR HERBICIDAL USE

Hiroshi Noguchi, Toyonaka; Ryo Yoshida, Kawanishi; Seizo Sumida, Nishinomiya, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

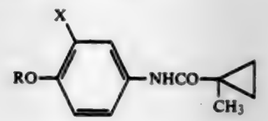
Filed Nov. 6, 1981, Ser. No. 319,100

Claims priority, application Japan, Nov. 10, 1980, 55-158526

Int. Cl.³ A01N *53/00;* C07C *103/737*

U.S. Cl. 71—118 **8 Claims**

1. A compound of the formula:



wherein R is a methyl or ethyl group substituted with two or three fluorine atoms and X is a halogen atom or a trifluoromethyl group.

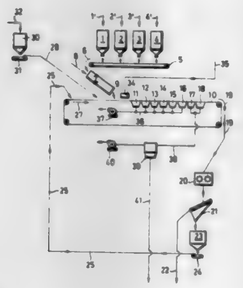
7. A method for exterminating weeds which comprises applying a herbicically effective amount of the compound according to claim 1 to the area where weeds are growing or will grow.

4,447,261

METHOD FOR SEPARATING NON-FERROUS METALS FROM IRON-CONTAINING MATERIALS

Hermann Hilbrans, Langenfeld, and Chatty Rao, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 319,939
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042941
Int. Cl.³ C01G 9/03, 21/00; C22B 1/24, 1/16
U.S. Cl. 75—5 9 Claims



1. A method for separating non-ferrous metals from an iron-containing waste material which comprises:

providing separate contiguous gas permeable layers of (1) said waste material in granular form and (2) a sintering mixture containing predominantly iron oxides and a finely divided carbonaceous fuel also in granular form, said waste material layer being thinner than and lying below said layer of sintering mixture, and

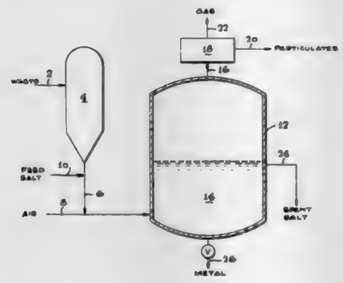
passing hot combustion supporting gases first through said layer of sintering mixture and then through said layer of waste material in a sintering zone under conditions sufficient to sinter the iron-containing constituents and volatilize the non-ferrous metals.

4,447,262

DESTRUCTION OF HALOGEN-CONTAINING MATERIALS

Richard L. Gay, Canoga Park; Arthur L. Kohl, and Samuel J. Yosim, both of Woodland Hills, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1983, Ser. No. 495,235
Int. Cl.³ C22B 7/00
U.S. Cl. 75—65 R 13 Claims



10. A process for treating an organic waste containing halogen and nonreactive metal values which comprises:

providing a molten salt pool comprising a mixture of a basic alkaline earth metal compound selected from the group consisting of alkaline earth metal oxides and carbonates with an alkaline earth metal halide;

introducing into said pool a halogen-containing organic waste and an oxygen-containing gas in an amount sufficient to convert said waste into a gaseous combustion product and to cause the halogen present in said waste to react with said basic alkaline earth metal compound to form additional alkaline earth metal halide;

recovering said gaseous product, said alkaline earth metal halide and said nonreactive metal values from said molten salt pool; and

adding to said molten salt pool as salt makeup an alkaline earth metal oxide or carbonate.

4,447,263

BLADE MEMBER OF CERMET HAVING SURFACE REACTION LAYER AND PROCESS FOR PRODUCING SAME

Taijiro Sugizawa; Hironori Yoshimura, and Junichi Toyama, all of Tokyo, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,279
Claims priority, application Japan, Dec. 22, 1981, 56-207795; Jan. 7, 1982, 57-1211; Jan. 14, 1982, 57-3486
Int. Cl.³ B22F 7/02; C22C 29/00, 32/00
U.S. Cl. 75—233 7 Claims

1. A blade member for cutting tools which comprises a substrate of cermet containing, apart from impurities,

10 to 35% by volume of at least one metal selected from the group consisting of Fe, Co, Ni, Cr, Mo, W and Al,

5 to 40% by volume of at least one compound selected from the group consisting of carbides and nitrides of metals in groups IV_A, V_A and VI_A of the periodic table, and

balance titanium carbide and titanium nitride, in which the volume ratio of titanium nitride to titanium carbide plus titanium nitride is 0.2 to 0.6,

said substrate having on a surface thereof

a reaction layer composed of carbo-nitride of at least two metals in groups IV_A, V_A and VI_A of the periodic table, said at least two metals including Ti, said reaction layer having an average thickness of 0.5 to 15.0 μm, and the concentration of titanium in said reaction layer increases toward the surface thereof.

4,447,264

PRODUCTION OF MAGNETIC POWDER

Shintaro Suzuki; Sadao Iizuka, both of Shibukawa, and Yoshimi Moriya, Gunma, all of Japan, assignors to Kanto Denka Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 247,149, Mar. 24, 1981, Pat. No. 4,404,024, which is a division of Ser. No. 18,125, Mar. 7, 1979, Pat. No. 4,306,921. This application Mar. 21, 1983, Ser. No. 477,010
Claims priority, application Japan, Mar. 16, 1978, 53-30151
Int. Cl.³ B22F 1/00
U.S. Cl. 75—251 7 Claims

1. Acicular magnetic powder consisting essentially of acicular iron particles having a high coercive force and a high saturation flux density, said particles being doped with at least one metal selected from the group consisting of Co, Mn, Ni, Ti, Bi, Mo, Ag, Cr, Zn, Si and Al and additionally containing an applied metal selected from the group consisting of cobalt, nickel, manganese and antimony and mixtures thereof, said iron particles having been produced in accordance with the process comprising

(a) treating finely divided starting material in the form of acicular particles selected from the group consisting of (i) a doped iron oxyhydroxide containing a doping component selected from the group consisting of Co, Mn, Ni, Ti, Bi, Mo, Ag, Cr, Zn, Si, Al and mixtures thereof and (ii) a doped iron oxide containing a doping component selected from the group consisting of Co, Mn, Ni, Ti, Bi, Mo, Ag, Cr, Zn, Si, Al and mixtures thereof with an aqueous solution or suspension of an applied metal compound selected from the group consisting of cobalt, nickel, manganese and antimony compounds and mixtures thereof or a mixture of said solution and said suspension so that said applied metal compound is applied on said particles,

(b) filtering said treated particles from the liquid medium to form a cake comprising said treated particles and drying said cake and,

(c) reducing said dry cake in a reducing gas stream at a temperature up to 600° C. to reduce said treated particles of doped iron oxyhydroxide or doped iron oxide containing said applied metal compound whereby the individual particles are not sintered and the initial shape of the microparticles of the starting material is retained to form said acicular magnetic powder.

4,447,265

METHOD AND COMPOSITION FOR FOAMING SLAG IN ELECTRIC ARC FURNACE

John W. Schwer, 1349 Azalea Dr., Munster, Ind. 46321

Filed Jun. 27, 1983, Ser. No. 507,767
Int. Cl.³ C21C 7/00; C22B 9/10
U.S. Cl. 75—257 10 Claims

1. A slag-foamimg composition for use in electric arc furnace steelmaking comprising from about 15 to about 80 wt% of a carbon source, the remainder consisting substantially of a source of an oxide of calcium.

4,447,266

CEMENTITIOUS COMPOSITION

Solomon J. Nachfolger, Monsey, N.Y., assignor to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Sep. 7, 1982, Ser. No. 415,741
Int. Cl.³ C04B 7/35
U.S. Cl. 106—90 10 Claims

1. A hardened cementitious composition having improved compressive strength and reduced water content prepared from a cementitious composition and an effective amount of a free acid of a condensation product of naphthalenesulfonic acid and formaldehyde wherein anionic materials in the free acid have equivalent elution volume by size exclusion chromatography of from about 61% to about 70% of the total elution.

4,447,267

DRY SET GROUT

Joseph J. Chesney, Jr., Plainsboro, and Scott C. Broney, Trenton, both of N.J., assignors to Tile Council of America, Inc., Princeton, N.J.

Filed Oct. 14, 1981, Ser. No. 311,163
Int. Cl.³ C04B 7/353
U.S. Cl. 106—93 4 Claims

1. In a dry-set grout composition adapted to be mixed with water to a workable consistency, containing Portland cement, filler, bentonite clay, a cellulose ether and polyacrylamide, the improvement comprising the use of less than about 60% but more than 50% Portland cement, from 25% to 50% of filler, about 0.15% bentonite clay, and not more than about 0.35% of a composite of a cellulose ether and polyacrylamide whrein the ratio of said cellulose ether to polyacrylamide is between 40 and 70 to 1, the resulting composition characterized by improved workability, stain resistance and cleaning properties over previously employed Portland cement based grouts.

4,447,268

IVORYLIKE COMPOSITION PLATE FOR COVERING A WOODEN BASE

Yutaka Oshima, 10-1, Nakazawa-cho, Hamamatsu-shi, Shizuoka-ken, Japan

Continuation of Ser. No. 296,483, Aug. 26, 1981, abandoned. This application Jun. 10, 1983, Ser. No. 501,968
Claims priority, application Japan, Sep. 2, 1980, 55-121663; Dec. 2, 1980, 55-172956
Int. Cl.³ C08L 89/00
U.S. Cl. 106—148 11 Claims

1. An ivorylike composition plate for covering a wooden base comprising casein resin matrix hardened with formaldehyde and from about 14.3 to about 47.0% by weight of hydrated inorganic filler selected from the group consisting of alumina hydrate, basic magnesium carbonate, hydrated aluminum silicate, magnesium silicate, hydrated silicic acid, calcium sulfate hydrate and hydrated calcium silicate, dispersed in said casein resin matrix.

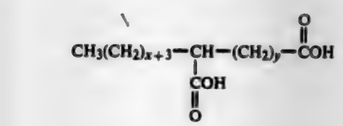
4,447,269

CATIONIC AQUEOUS BITUMINOUS EMULSION-AGGREGATE SLURRIES

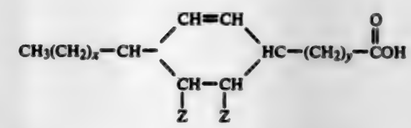
Hans G. Schreuders, and Peter Schilling, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Jul. 13, 1982, Ser. No. 397,911
Int. Cl.³ C08L 95/00
U.S. Cl. 106—277 12 Claims

1. A paving slurry seal mixture of a cationic aqueous bituminous emulsion and mineral aggregate capable of being worked comprising: a densely graded mineral aggregate passing through No. 4 and at least 80% retained on 200 mesh screen; from about 8% to about 20% of an oil in water type emulsion, based on the weight of the mineral aggregate, wherein the emulsion is comprised of from about 55% to about 65% bitumen, based on the weight of the emulsion, from about 0.5% to about 2% of a cation-active emulsifier based on the weight of the emulsion, wherein the emulsifier is selected from the group consisting of reaction products of one or more polyamines reacted with a polycarboxylic acid corresponding to the formulae



and



wherein x and y are integers from 3 to 9, x and y together equal 12, at least one Z is a carboxylic acid group and any remaining Z is hydrogen, and water to make up 100% by weight of the emulsion, the emulsion having a pH in the range of from 2–7; from about 4% to about 16% water, based on the weight of the mineral aggregate, added to form a slurry of the aggregate and the emulsion; and up to 3% of an inorganic or organic additive to reduce the setting time of the mixture.

4,447,270

PIGMENTS AND THEIR PREPARATION BY COATING WITH OXIDES OF ZR-SI-AL

Peter B. Howard, and Derek O'Donnell, both of Cleveland, England, assignors to Tioxide Group PLC, Cleveland, England

Filed Sep. 30, 1982, Ser. No. 428,868
Claims priority, application United Kingdom, Oct. 30, 1981, 8132844
Int. Cl.³ C09C 1/36
U.S. Cl. 106—300 12 Claims

1. Titanium dioxide pigments comprising particulate titanium dioxide having (i) an inner coating on a core of rutile titanium dioxide of an oxide or hydrous oxide of zirconium in an amount of from about 1% to about 4% by weight, expressed as ZrO_2 by weight of TiO_2; (ii) a coating of dense, amorphous silica in an amount of from about 2% to about 12% by weight, expressed as SiO_2 by weight of TiO_2 carried on the inner coating; and (iii) an outer coating of a hydrous oxide of alumina in an amount of from about 1% to about 6% by weight, expressed as Al_2O_3 by weight of TiO_2.

4,447,271

PIGMENTS AND THEIR PREPARATION BY COATING WITH OXIDES OF SI-ZR-AL

Peter B. Howard, and Derek O'Donnell, both of Cleveland, England, assignors to Tioxide Group PLC, Cleveland, England

Filed Sep. 30, 1982, Ser. No. 428,788
Claims priority, application United Kingdom, Oct. 30, 1981, 8132845
Int. Cl.³ C09C 1/36
U.S. Cl. 106—300 11 Claims

1. Titanium dioxide pigment which comprises pigmentary titanium dioxide having (i) an inner coating on a core of rutie titanium dioxide of dense, amorphous silica in an amount of from about 2% to about 12% by weight, expressed as SiO_2 by weight of TiO_2; (ii) carried on said inner coating, a second coating of a hydrous oxide of zirconium in an amount of from about 1% to about 4% by weight, expressed as ZrO_2 by weight of TiO_2; and (iii) an outer coating containing a hydrous oxide of aluminum in an amount of from about 1% to about 6% by weight, expressed as $Al_2O_3$by weight of TiO_2.

4. A process for the manufacture of titanium dioxide pigment which comprises (i) forming an aqueous dispersion of a particulate core material comprising rutile titanium dioxide in admixture with a water-soluble silicate and depositing at a pH greater than 8 a dense, amorphous inner coating of silica on the core material in amount of from about 2% to about 12% by weight, expressed as SiO_2 by weight of TiO_2; (ii) depositing on said inner coating a second coating of a hydrous oxide of zirconium in an amount of from about 1% to about 4% by weight, expressed as ZrO_2 by weight of TiO_2; and (iii) depositing an outer coating of hydrous alumina on said pigment after deposition of said hydrous oxide of zirconium in an amount of from about 1% to about 6% by weight, expressed as Al_2O_3 by weight of TiO_2.

4,447,272

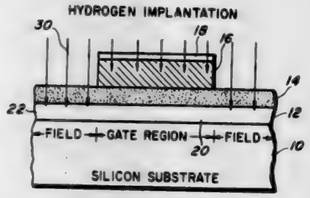
METHOD FOR FABRICATING MNOS STRUCTURES UTILIZING HYDROGEN ION IMPLANTATION

Nelson S. Saks, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1982, Ser. No. 443,828
Int. Cl.³ H01L 7/54, 21/263
U.S. Cl. 148—1.5 9 Claims

1. An improved method for reducing the density of electronic trapping states and fixed insulator charge in the oxide layer of an MNOS structure of the type having a gate, said oxide layer including a gate region disposed below the gate, and a field region surrounding said gate region, said method comprising the steps of:

implanting hydrogen ions in the MNOS structure such that the gate blocks the hydrogen implant from the gate region of the oxide layer, the field region of the oxide layer of the MNOS structure thereby being implanted with hydrogen ions; and



annealing the MNOS structure to cause said implanted hydrogen ions in the field region of the oxide layer to diffuse laterally into the gate region of the oxide layer and to chemically react at the Si—SiO_2 interface to reduce the density of electronic trapping states and fixed oxide charge.

4,447,273

PROCESS FOR PHOSPHATING METALLIC SURFACES IN NONAQUEOUS PHOSPHATING BATHS

Dieter J. Mueller; Hermann Fricke, and Heinrich Spielbrink, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,798
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209828
Int. Cl.³ C23F 7/10
U.S. Cl. 148—6.15 R 20 Claims

1. A process for phosphating a metallic surface of an article in a phosphating bath which comprises effective amounts of a low-boiling halogenated hydrocarbon, aqueous phosphoric acid, an alcohol and, optionally, a stabilizer, phosphating regulator or accelerator,

comprising at least twice dipping the surface to be phosphated, for at least 10 seconds each time, into said bath under boiling conditions, the surface being at essentially the same temperature as that of the vapor from the boiling bath, and, in the time interval between dippings, treating the surface for at least 20 seconds in the vapor of the boiling bath.

4,447,274

CONDUCTOR POWDERS

Neil Matheson, III, Garland, Tex., assignor to Graham Magnetics Incorporated, North Richland Hills, Tex.

Division of Ser. No. 17,419, Mar. 5, 1979, Pat. No. 4,347,165.
This application Mar. 17, 1982, Ser. No. 358,846
Int. Cl.³ C23F 7/24
U.S. Cl. 148—6.24 9 Claims

1. A process for stabilizing the electroconductive properties of a mass of electroconductive metallic powder having a protective coating formed thereon of a silicide, nitride, carbide or boride of said electroconductive metal by treating the surface of said powder by

(a) dispersing said metal powder in a reaction medium;

(b) adding a known amount of sulfur to such medium and reacting said dispersed metal powder with said

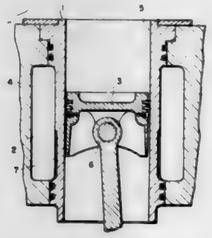
(c) said known amount of sulfur effective to improve the corrosion resistance of powder.

4,447,275

CYLINDER LINER

Takeshi Hiraoka; Shigeru Urano, both of Saitama, and Kiyoshi Yamamoto, Chiba, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,282
Claims priority, application Japan, Jan. 28, 1981, 56-10257
Int. Cl.³ C21D 1/06; F02F 1/10; B23P 9/00
U.S. Cl. 148—152 22 Claims



1. A cylinder liner for an internal combustion engine, comprising:

a white cast iron layer formed on a part of an outer peripheral surface of said cylinder liner which is exposed to cooling water;

a thermally affected layer formed between said white cast iron layer and a parent material of said cylinder liner, said thermally affected layer having a thickness of at least 0.05 mm;

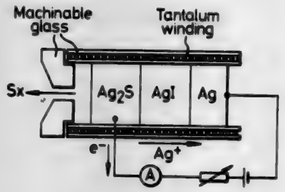
said white cast iron layer and said thermally affected layer being formed by remelting and cooling said part of said outer peripheral surface of said cylinder liner.

4,447,276

MOLECULAR BEAM EPITAXY ELECTROLYTIC DOPANT SOURCE

Graham J. Davies, Woodbridge; Roger Heckingbottom, and David A. Andrews, both of Ipswich, all of England, assignors to The Post Office, London, England

Filed Jun. 15, 1981, Ser. No. 274,286
Int. Cl.³ H01L 21/203
U.S. Cl. 148—175 3 Claims



1. A method of growing solid semiconductor material composed of group III and V elements from the vapor phase by epitaxial deposition on a substrate using one or more molecular beams formed from material in an effusion cell, including the step of:

producing a beam of dopant material for said semiconductor material in an electrochemical cell within the effusion cell by applying a controlled emf to said electrochemical cell, wherein the dopant material is one of either sulphur, selenium or tellurium, and said electro-chemical cell comprises successively adjacent regions of Ag_2X, Ag I and Ag, where X is S, Se or Te respectively.

4,447,277

MULTIPHASE THERMOELECTRIC ALLOYS AND METHOD OF MAKING SAME

Tumkur S. Jayadev, Rochester, and On V. Nugyen, Sterling Heights, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 341,864, Jan. 22, 1982, abandoned. This application Aug. 27, 1982, Ser. No. 412,306
Int. Cl.³ C22C 28/00
U.S. Cl. 148—400 119 Claims



30. A material for thermoelectric applications having low thermal conductivity and high electrical conductivity, said material comprising:

a multiplicity of matrix crystallites including at least bismuth, tellurium, and antimony, said crystallites being separated by disordered grain boundaries bordering said crystallites and grain boundary regions between said grain boundaries, said grain boundary regions including a plurality of phases including electrically conductive phases including at least one element having high electrical conductivity, and said grain boundaries including transitional phases varying in composition from the composition of said crystallites to the composition of said phases within said grain boundary regions.

32. A method of making a material for thermoelectric applications having low thermal conductivity and high electrical conductivity, said method comprising the steps of:

forming a mixture of at least first and second multiple element compounds, at least one of said compounds including at least one element having high electrical conductivity, heating said mixture to an elevated temperature, and thereafter cooling said mixture to form from said mixture of compounds a multiphase solid alloy material differing substantially in macroscopic structure, compositional distribution and thermal and electrical properties from a material formed from the constituent elements of said compounds alone, said multiphase alloy comprising a first phase of a multiplicity of matrix crystallites separated by macroscopic disordered grain boundary regions having at least electrically conductive phases with said at least one element having high electrical conductivity therein.

4,447,278

CASTABLE PYROTECHNIC COMPOSITION WITH A CHLORINATED BINDER

Georges A. Sédat, St.-Raphael, France, assignor to Etat Francais représenté par le Delegue General pour l'Armement, France

Filed Jul. 26, 1982, Ser. No. 402,076
Claims priority, application France, Aug. 10, 1981, 81 15468
Int. Cl.³ C06B 45/10
U.S. Cl. 149—19.91 11 Claims

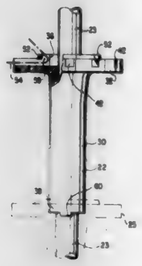
1. A castable pyrotechnic composition such as a smoke composition or flare composition comprising oxidizing and reducing pyrotechnic ingredients and a chlorinated binder, said binder comprising a polymerizable chlorinated monomer and a copolymerized or non-copolymerized chlorinated polymer.

4,447,279

AUTOMATIC ARTIFICIAL TREE

Pierre U. Boisvert, Granby, and Jean-Daniel Bapst, Ste-Cécile de Milton, both of Canada, assignors to Barcana Ltee, Granby, Canada

Division of Ser. No. 352,590, Feb. 26, 1982. This application Sep. 23, 1982, Ser. No. 422,032
Claims priority, application Canada, Jan. 18, 1982, 394375
Int. Cl.³ A47G *33/06*
U.S. Cl. 156—61 **2 Claims**



1. A method of assembly of an automatic artificial Christmas tree using a plurality of vertically nested branch holders, each branch holder comprising a branch holding ring and a tubular spacer, depending from said ring in fixed relationship thereto, each branch holding ring comprising a generally planar disc-body of rigid material, with a central hole for including a support means, a coaxial fulcrum ring on the upper surface of the disc-shaped body, a plurality of radially extending branch receiving slots on said upper surface below said fulcrum ring, the slots having laterally confining means, said method comprising the steps of:

inserting the inner straight end of the stem of a wire branch into one of the branch receiving slots of one of the branch holders, such that said inner straight end is secured against downward movement, lifting the free end of said branch upwardly about the fulcrum ring sufficiently to cause said fulcrum ring to bend the free end, relative to the inner end of the said branch, over an angle of the order of 90°, placing additional branches into the same branch holder, in different slots thereof, and performing said bending step thereon until the desired number of branches are inserted in their respective slots and bent, such that the free end of the branches are properly positioned relative to their respective slots, and thereafter placing one or more branch holders, loaded with branches, into vertical interconnected alignment with each other, and locking said branches in position on their branch holders until a stack of branch holders of sufficient height is reached such that the length of the branches in the successive rows and the relative angular position of each branch holder relative to the adjacent branch holders are appropriate to provide a pleasant structural conical shape.

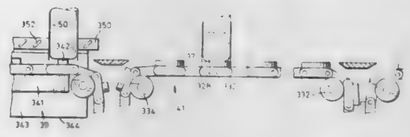
4,447,280

LABELLING MACHINE

Martin D. Malthouse, 204 Glen Rd., Toronto, Ontario, Canada

Filed Oct. 22, 1981, Ser. No. 313,850
Int. Cl.³ B29C *27/20*
U.S. Cl. 156—85 **9 Claims**

1. A labelling machine for applying heat shrinkable labels to a container, said machine comprising a label feeder, a label applicator to receive labels from said feeder and apply a leading edge of said label to said container, drive means to move said container past said applicator and draw the label onto the container to form a cylindrical sleeve, said drive means including a platen to support said container adjacent said applicator such that said label depends from said container and is supported by the periphery of said platen during application of said label, a heat chamber and transfer means to transfer said



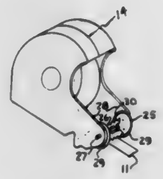
container from said platen to a conveyor to move at least a portion of the container through the heat chamber and cause said label to shrink and conform to the container.

4,447,281

DISPENSER FOR APPLYING ADHESIVE TAPE

Richard L. Joy, 1011 San Eduardo, Henderson, Nev. 89015

Filed Sep. 30, 1982, Ser. No. 428,878
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—250 **7 Claims**



1. A dispenser for applying adhesive pressure sensitive tape to a surface, comprising:

a housing including:

means to hold a roll of pressure sensitive tape and allowing rotation of the roll as the tape is peeled from the roll;

a guide for directing the tape from the dispenser onto the surface, and

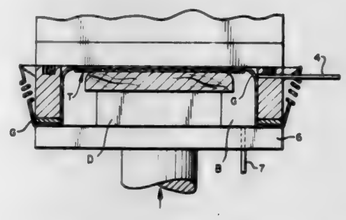
a cutting mechanism to be contacted by said tape as it is directed towards said surface, said cutting mechanism comprising a roller mounted for rotation about a shaft supported for rotation on said housing and having attached thereto at least one cutting member extending radially from said shaft and in a position to contact and sever said tape.

4,447,282

PROCESS AND EQUIPMENT FOR VENEER PRESS TO GLUE A THIN LAYER ON A VARIOUSLY SHAPED PANEL SURFACE

Savorgnan Valerio, via S.Margherita n.42, Tamai (Pordenone), Italy (33070), and Mio Dino, via Centro, 70, Summaga Di Portogruaro, Italy (30026)

Filed Jun. 21, 1982, Ser. No. 390,285
Int. Cl.³ B29C *17/00*
U.S. Cl. 156—285 **9 Claims**



1. A process for adhering thin layers onto variously shaped

or flat surfaces by means of adhesive therebetween and a press having a heated upper pressing plate and frame, an elastic diaphragm enclosing an open end of said frame, and a heated lower pressing plate, comprising the steps of:

(a) withdrawing medium from an interior cavity of said frame to retract said diaphragm into contact with said heated upper pressing plate and thereby heat said diaphragm;

(b) disposing a thin layer and a surface on said heated lower pressing plate,

(c) displacing said lower pressing plate into engagement with said diaphragm and frame whereby said thin layer and surface are pressed together by said upper and lower pressing plates,

(d) simultaneously introducing medium into said cavity and evacuating medium from an area between said lower pressing plate and diaphragm to draw said diaphragm over the periphery of said layer and surface to effect a pressing therebetween,

(e) reversing the process of step (d),

(f) separating said lower pressing plate from said diaphragm and frame, and removing the pressed together layer and surface from said lower pressing plate, and

(g) continuously repeating steps (b) through (f).

4,447,283

ADHESIVE FOR CERAMIC ARTICLES AND METHOD FOR ADHESION THEREOF

Yoshihiro Ebata, Kawanishi; Saburo Kose, Ikeda, and Ryozo Hayami, Takarazuka, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,753
Claims priority, application Japan, Mar. 4, 1982, 57-34558; Mar. 4, 1982, 57-34559
Int. Cl.³ C09J *1/00*
U.S. Cl. 156—325 **2 Claims**

1. A method for the adhesion of a ceramic article of silicon nitride to an article selected from the group consisting of ceramic articles of silicon nitride and mullite-type ceramic articles, said method comprising interposing between the two ceramic articles an adhesive comprising as active components 40% to 70% by weight of sodium fluoride and 60% to 30% by weight of yttria, and heating said adhesive to a temperature in the range of from about 1000° C. to about 1500° C., thereby adhering the two ceramic articles without forming any pinholes in the formed layer of adhesive.

4,447,284

SEAL ARM LATCHING MECHANISM FOR HEAT SEALING APPARATUS

Frank G. Shanklin, Groton, and James A. McConnell, Ayer, both of Mass., assignors to Shanklin Corporation, Ayer, Mass.

Filed Jan. 10, 1983, Ser. No. 456,964
Int. Cl.³ B30B *15/16, 15/34;* H05B *1/00*
U.S. Cl. 156—366 **10 Claims**

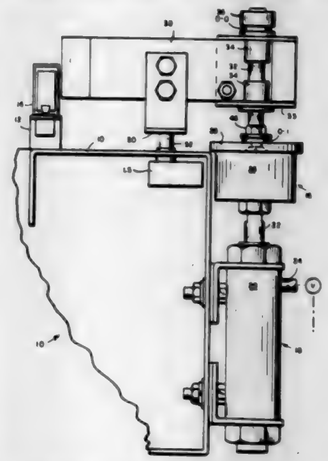
1. In a wrapping machine using thermoplastic film having a sealing bed on the machine frame and a heat-sealing jaw supported for movement from a remote position to a position of engagement with said sealing bed to seal said frame therebetween, the improvement comprising:

electromagnetic means having an electromagnet and an armature; means for mounting the armature on the heat-sealing arm;

a piston and cylinder assembly fixed to said frame with said piston rod in alignment with said armature when said jaw approaches the position of engagement with said sealing bed;

means for mounting said electromagnet to said piston rod in a position such that movement of the heat-sealing jaw toward engagement with said sealing bed brings said armature to a position to make magnetic contact with said electromagnet; and

switch means operated when the said heat-sealing jaw is moved toward said sealing bed to energize said electro-



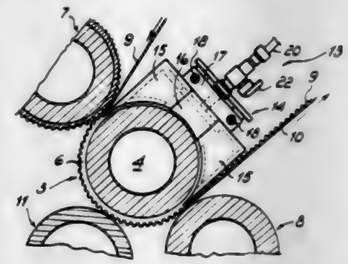
magnet and when proximate to said sealing bed to supply pressure fluid to the cylinder in a direction to move the electromagnetic means in a direction to apply pressure to the heat-sealing jaw against said sealing bed.

4,447,285

DEVICE FOR HOLDING PAPER CLOSE AGAINST A CORRUGATING ROLLER IN A CORRUGATED BOARD-MAKING MACHINE

Riccardo Lussana, Casatenovo, and Fabrizio Massenzana, Arcore, both of Italy, assignors to Vitino Massenzana s.r.l., Arcore, Italy

Filed Sep. 30, 1983, Ser. No. 537,522
Claims priority, application Italy, Dec. 29, 1982, 25025 A/82
Int. Cl.³ B31F *1/28*
U.S. Cl. 156—473 **7 Claims**



1. A device for holding paper close against a corrugating roller in a corrugated board-making machine, comprising suction members correlated to a suction control apparatus and connected to said corrugating roller on the unoccupied side thereof by the paper to be held thereagainst, said suction members being communicated to said paper through circular indentations formed on the shroud of said corrugating roller, characterized in that said suction members comprise a plurality of suction ports so flattened as to fit, at least in part, in said indentations and being made rigid with holders carried slidably on parallel bars to said corrugating roller, and in that said holders are guided along said bars by locating elements made rigid with said holders and being inserted into said indentations in

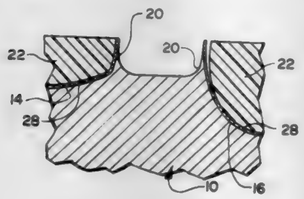
substantially direct contact relationship with said corrugating roller.

4,447,286

DIE AND METHOD OF MAKING SAME

Walter Weglin, Bellevue, Wash., assignor to Jerobee Industries, Inc., Redmond, Wash.

Filed Apr. 5, 1982, Ser. No. 365,368
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—515 **17 Claims**



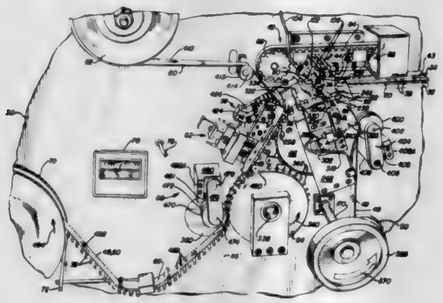
1. A method for making a die by chemical milling an etchable workpiece to form a pattern of raised die elements separated and bounded by recessed cavities, wherein intermediate stages of fabrication yield recessed cavities filled with etchant-resistant filler, said method comprising the step of depositing an underlayment film of an etchant-resistant composition between the etchable workpiece the etchant-resistant filler.

4,447,287

COMPONENT RETAPING MACHINE

John Hofbauer, Des Plaines, Ill., assignor to Die-Craft Metal Products, Inc., Des Plaines, Ill.

Division of Ser. No. 188,967, Sep. 19, 1980, Pat. No. 4,350,556. This application Jul. 1, 1982, Ser. No. 394,288
Int. Cl.³ B65H *5/26*
U.S. Cl. 156—552 **7 Claims**



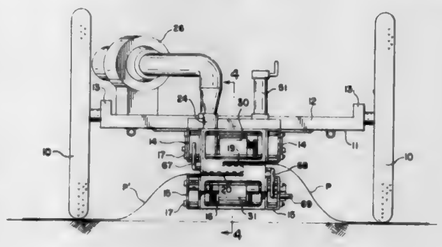
1. A machine for repackaging components, comprising:
means for receiving an input carrier having at least one component releasably secured thereto, said component including at least one lead;
a repackaging station;
means for advancing an output carrier strip length-wise through said repackaging station, said strip having a width smaller than the length of said component lead;
said strip advancing means including indexing means in juxtaposition with said strip and motive means for displacing said indexing means lengthwise of said strip;
means for removing said component from said input carrier and depositing it upon the portion of said strip which is juxtaposed to said indexing means;
means for securing said component to said strip;
means for advancing said strip in response to said displacement of said indexing member;
means, located adjacent the path of advancement of said strip and downstream of said repackaging station relative to the direction of said advancement, for forming sprocket holes in said strip at lengthwise-spaced locations thereon;
sprocket drive means located adjacent said path and downstream of said sprocket hole forming means relative to said direction of advancement, said sprocket drive means having sprocket pin means adapted to engage successive ones of said sprocket holes and means for displacing said sprocket pin means to assist in said advancement of said strip;
and means, located adjacent said path and downstream of said sprocket drive means relative to said direction of advancement, for severing said lead close to one edge of said strip.

4,447,288

SEAM WELDER FOR THERMOPLASTIC COATED FABRIC

Donald R. Seaman, Sarasota, Fla., assignor to Seaman Corporation, Millersburg, Ohio

Filed Jul. 30, 1982, Ser. No. 403,470
Int. Cl.³ B44C *7/00*
U.S. Cl. 156—574 **15 Claims**



1. A seam welding machine for thermally welding overlapping edge portions of coated fabric panels over uneven ground in the field, comprising a guiding head having slots which are open at their laterally outer ends and closed at their inner ends and extend inwardly from the opposite sides of the head to overlap each other past a longitudinal axis of the head for guiding overlapping edge portions of two panels into a nip area behind said head, a hot air welding tip directed into said nip area between said overlapping edge portions, upper and lower pressure rolls mounted behind said nip and upper and lower drive belts mounted behind said pressure rolls and drivably connected thereto to press said overlapping edge portions together into a seam, said machine behind said guiding head being laterally open in the plane of the said seam to allow unrestrained passage of panels of unrestricted width, and means for rollably supporting said machine with said overlapping guide slots close to the ground.

12. A seam welding machine for thermally welding overlapping edge portions of coated fabric panels, comprising a guiding head having slots which are open at their laterally outer ends and closed at their inner ends and extend inwardly from the opposite sides of the head to overlap each other past a longitudinal axis of the head for guiding overlapping edge portions of two panels into a nip area, a hot air welding tip directed into said nip area, upper and lower pressure rolls mounted behind said nip area and upper and lower drive belts mounted behind said pressure rolls and drivably connected thereto to press said overlapping edge portions together into a seam, said machine behind said guiding head being laterally open in the plane of the said seam to allow unrestrained passage of panels of unrestricted width, and means for rollably supporting said machine with said overlapping guide slots close to the ground, and further comprising a variable speed

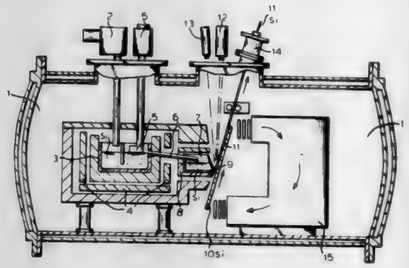
motor for driving the upper drive belt and pressure roll, and a torque motor for driving the lower drive belt and pressure roll at a following speed matching the speed of the upper drive belt and pressure roll.

4,447,289

PROCESS FOR THE MANUFACTURE OF COARSELY CRYSTALLINE TO MONOCRYSTALLINE SHEETS OF SEMICONDUCTOR MATERIAL

Joachim Geissler, Stammham, and Dieter Helmreich, Burghausen, both of Fed. Rep. of Germany, assignors to Heliotronic Forschungs-und Entwicklungsgesellschaft fur Solarzellen-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,581
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132776
Int. Cl.³ C30B *11/02, 15/12*
U.S. Cl. 156—608 **6 Claims**



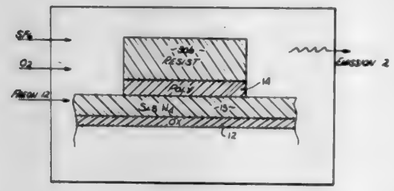
1. In a process for the manufacture of coarsely crystalline to monocrystalline sheets of semi-conductor material of preferred orientation by applying molten semiconductor material to a substrate with subsequent controlled solidification and subsequent automatic release of the applied semiconductor material, the improvement comprising the steps of:
bringing molten semiconductor material into contact with a substrate of the same semiconductor material having the desired coarsely crystalline to monocrystalline structure, said substrate being guided past the point of contact at a speed of at least 75 mm/s; and
maintaining the substrate at a temperature of not more than 0.8 T_M, where T_M denotes the melting point of the semiconductor material expressed in degress Kelvin, so as to ensure the automatic release of the growing sheet.

4,447,290

CMOS PROCESS WITH UNIQUE PLASMA ETCHING STEP

James A. Matthews, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 387,050, Jun. 10, 1982, Pat. No. 4,412,375. This application Jul. 25, 1983, Ser. No. 516,529
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 **1 Claim**



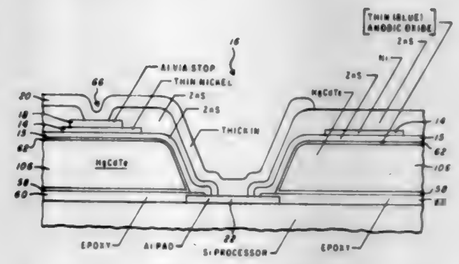
1. In the plasma etching of a polysilicon layer during the fabrication of an integrated circuit where SF_6 and O_2 are used for said etching, an improvement comprising:
adding C_nF_m to said SF_6 and O_2 during said plasma etching to provide better end point detection.

4,447,291

METHOD FOR VIA FORMATION IN HGCDTE

Eric Schulte, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1983, Ser. No. 528,206
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **6 Claims**



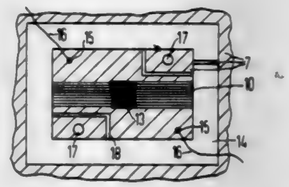
1. A method for forming vias in HgCdTe, comprising the steps of:
ion milling a hole through said HgCdTe, said hole being substantially smaller than the desired diameter of said via; and
wet etching said HgCdTe, whereby said hole is enlarged to form a via having a desired size and smooth walls.

4,447,292

METHOD FOR MANUFACTURING UNSUPPORTED METAL LATTICE STRUCTURES

Hans Scnuster-Woldan, Woerthsee/Steinebach; Hermann Buerk, Maisach; Dirk Koch, Augsburg, and Kaspar Weingand, Gmund, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 4, 1983, Ser. No. 455,595
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1982, 3204425
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—644 **4 Claims**



1. A method of manufacturing unitary unsupported metal lattice structures suitable for use as micro-flow sensors comprising the steps of:
generating a metal lattice structure on opposite sides of an insulating carrier by vapor-depositing a metal layer on said opposite sides of said carrier and subsequently removing congruent selected portions of said metal layer on each of said opposite sides thereof by photolithography; and
generating a passage in said carrier between said metal lattice structures by etching said carrier at selected locations.

4,447,293

SCRAPING BLADES FOR USE IN THIN FILM DRYERS

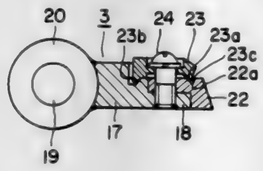
Masaru Watanabe, Fuchu; Satoru Matsumura, Tokyo; Takayoshi Amada, Yokohama; Hiromitsu Irie, Higashimine, and Norihisa Saito, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Continuation-in-part of Ser. No. 194,403, Oct. 6, 1980, abandoned. This application Jul. 8, 1982, Ser. No. 396,398

Claims priority, application Japan, Oct. 11, 1979, 54-129835; Jul. 23, 1980, 55-99850

Int. Cl.³ B01D *1/24*; A47L *13/08*

U.S. Cl. 159—6.2 5 Claims



1. A scraping blade for use in a thin film dryer adapted for processing a radioactive substance comprising:

a body having a longitudinal axis and provided with a recess on its outer surface, said body recess having first and second sidewalls;

hinge means rigidly attached to one side of said body for pivoting about an axis parallel to the longitudinal axis of said body, said hinge means being adapted to be pivotably connected to a rotor in a thin film dryer;

a blade chip attached to the other side of said body for engaging the radioactive substance to thereby cause it to be extended over a heating surface of the thin film dryer, said blade chip being provided with a recess on its outer surface, said blade chip recess having first and second sidewalls;

screw means engaged with said body to operatively secure said blade chip to said body; and

means for engagement with said screw means, said engagement means having two sides and edge portions on both said sides which are respectively engaged with one of said sidewalls of said body recess and one of said sidewalls of said blade chip recess with a clearance being provided between said edge portions and the other of said sidewalls of said body recess and the other of said sidewalls of said blade chip recess.

4,447,294

PROCESS FOR MAKING ABSORBENT TISSUE PAPER WITH HIGH WET STRENGTH AND LOW DRY STRENGTH

Thomas W. Osborn, III, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 30, 1981, Ser. No. 335,497

Int. Cl.³ D21H *3/02*

U.S. Cl. 162—158 8 Claims

1. A process for making soft, absorbent tissue paper webs comprising the steps of:

(a) providing a papermaking furnish comprising papermaking fibers and from about 0.25% to about 3% by weight of said fibers of at least one wet strength resin;

(b) forming a wet fibrous web from said papermaking furnish;

(c) drying said web until said web contains not more than about 20% by weight moisture;

(d) at least partially curing said wet strength resin in said web; and

(e) incorporating into said web from about 0.1% to about 2.5% by weight of said fibers of at least one cationic, nitrogenous debonding agent.

4,447,295

DEWATERING APPARATUS FOR LONGITUDINAL WIRE PAPERMAKING MACHINES

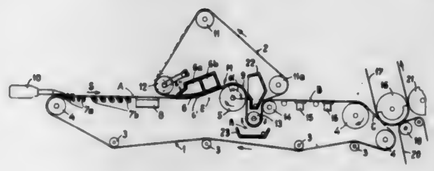
Alfred Bubik; Hans Dahl; Herbert Holik, all of Ravensburg; Rüdiger Kurtz, Immenstaad, and Werner Seider, Ravensburg, all of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,622

Claims priority, application Switzerland, Jul. 24, 1981, 4824/81

Int. Cl.³ D21F *1/36, 1/40*

U.S. Cl. 162—300 14 Claims



1. A dewatering apparatus for a longitudinal wire papermaking machine comprising:

a longitudinal wire;

an additional wire cooperating with said longitudinal wire;

guide elements over which there is guided said additional wire;

means defining a domed surface over which there is guided said additional wire along a section of the longitudinal wire in conjunction with said longitudinal wire;

said longitudinal wire extending substantially horizontally and essentially in a common wire plane forward of the guide elements and after the means defining the domed surface; and

said means defining said domed surface upwardly rising past the common wire plane.

4,447,296

DOUBLE NIP HYDROFOIL

Aubrey R. Cruse, Pasadena, Tex., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 29, 1982, Ser. No. 363,234

Int. Cl.³ D21F *1/54*

U.S. Cl. 162—312 1 Claim



1. A paper forming apparatus having a paper forming wire which moves from upstream to downstream sides of said apparatus, said apparatus further comprising a series of hydrofoils disposed below said wire and over which said wire passes, and wherein:

(a) alternate ones of said hydrofoils include a planar upper surface and an upstream planar surface which intersects said planar upper surface at an angle which is less than 90° whereby the upstream ends of said alternate hydrofoils are devoid of a leading nip, and said alternate hydrofoils further comprising an upper downstream planar surface which tapers downwardly to form a trailing nip operable to draw water through said wire from paper material disposed on said wire; and

(b) intermediate ones of said hydrofoils are disposed between said alternate hydrofoils, and said intermediate hydrofoils each including a planar upper surface, an upstream inclined planar upper surface which intersects said planar upper surface to form an upstream nip having an effective angle of approximately 3° and a length of approximately 1.5 inches on said intermediate hydrofoils operable to pump water from the underside of said wire through said wire and into paper material disposed on said wire to break up and redisperse flocs formed in the paper material, said intermediate hydrofoils further comprising an upper downstream planar surface which tapers downwardly to form a trailing nip operable to draw the water pumped by said upstream nip back through said wire from the paper material disposed on said wire.

4,447,297

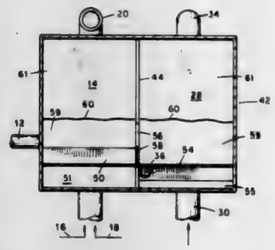
COMBINED FLUIDIZED BED RETORT AND COMBUSTOR

Jer-Yu Shang, Fairfax, Va.; John E. Notestein, Morgantown, W. Va.; Joseph S. Mei, Morgantown, W. Va., and Li-Wen Zeng, Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 14, 1982, Ser. No. 368,197

Int. Cl.³ C10B *1/06, 49/10, 49/22*

U.S. Cl. 202—99 3 Claims



1. A combined fluidized bed retorting and combustion apparatus comprising a housing, vertically oriented partition means within said housing for dividing the housing into side-by-side volumes, perforated fluid distribution means in each of said volumes disposed essentially normal to said partition means for dividing each volume into lower and upper chambers with one of said upper chambers defining a retorting chamber and the other of said upper chambers defining a combustion chamber, said fluid distribution means providing for the distribution of fluidizing medium from the lower chambers into the retorting chamber and the combustion chamber through perforations in the fluid distribution means to fluidize solid fluidizable material and thereby create a fluidized bed in said retorting chamber and said combustion chamber, first conduit means penetrating said housing and in registry with said retorting chamber for conveying the solid fluidizable material thereinto, further conduit means penetrating said housing and in registry with said combustion chamber for removing solid material therefrom, first passageway means through said partition means at a location above the distribution means for placing the retorting chamber in registry with the combustion chamber, second passageway means extending through said partition means for recycling solid fluidizable material from the combustion chamber into the retorting chamber, with said second passageway means being disposed at a location in the housing adjacent to said further conduit means, the first passageway means extending through the partition means at a location remote to said second passageway means and at a location corresponding to essentially the full length of travel of the solid fluidizable material through said retorting chamber and both said first and second passageway means extending through said partition means at locations below the upper level of the fluidized bed to inhibit admixture of gases between said retorting chamber and said combustion chamber, said distribution means being inclined at an angle to the horizontal from the highest point adjacent to the first conduit means towards a lowest point adjacent to said further conduit means with said angle being adequate for effecting displacement of solid fluidizable material from within said retorting chamber through said combustion chamber via said first passageway means.

4,447,298

METHOD OF OPERATING AN ELECTROPLATING SYSTEM

Joachim Betschler, Eckental, Fed. Rep. of Germany, assignor to Holl & CIE GmbH, Nürnberg, Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,373

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036937

Int. Cl.³ C25D *5/00, 17/12*

U.S. Cl. 204—23 2 Claims



1. A method of operating an electroplating system which comprises the steps of:

(a) cutting successive sections from a cylindrical wire of a metal to be electrodeposited to form cylindrical blanks;

(b) pressing said blanks to form therefrom individual anode bodies of said metal having a diameter of 5 to 30 mm;

(c) introducing anode bodies made in step (b) and all of the same diameter into an anode basket, the bodies which are introduced into said basket being selected to have a diameter greater than half the diameter of said basket but less than the diameter of said basket;

(d) immersing said basket in an electroplating bath in juxtaposition with a cathode upon which said metal is to be plated; and

(e) electrodepositing said metal on said cathode from said bath.

4,447,299

USE OF ALCOHOL FOR INCREASING THE CURRENT EFFICIENCY OF CHROMIUM PLATING

Arash S. Kasaaian, and John Dash, both of Portland, Oreg., assignors to State of Oregon Acting by and Through the State Board of Higher Education on behalf of Portland State University, Portland, Oreg.

Filed Jun. 15, 1982, Ser. No. 388,536

Int. Cl.³ C25D *3/10, 3/56*

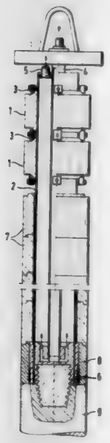
U.S. Cl. 204—43 R 5 Claims

1. In the electrolytic process of chromium plating an article by the electrodeposition of chromium from an aqueous bath solution containing dissolved CrO_3 electrolyte, the improvement comprising, with a bath solution containing metallic cations limited to the group consisting of chromium and iron, enhancing current efficiency by including in said bath solution methyl alcohol, in an amount within the range of from 0.25 mls to 80 mls of alcohol/l. of bath solution.

4,447,300
ELECTRODE HOLDER FOR USE IN FUSION ELECTROLYSIS

Dieter H. Zöllner, Schwaig b. Nürnberg; Inge Lauterbach-Dammler, Nuremberg, and Friedrich Rittmann, Rückersdorf b. Nürnberg, all of Fed. Rep. of Germany, assignors to C. Conradty Nurnberg GmbH & Co. Kg, Röthenbach, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,433
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135912
Int. Cl.³ C25C 7/02, 3/02, 3/04, 3/06
U.S. Cl. 204—67 27 Claims



1. An electrode holder for fusion electrolysis for the electrolytic production of inter alia aluminum, magnesium, sodium and lithium, in which the holder is clamped by clamping jaws for current supply, the holder comprising: an elongate metal element; cooling means internally of said metal element, said cooling means comprising an inflow channel and a return channel for a cooling medium; connection means on said metal element for mechanical and electrical connection to an active electrode element of consumable or non-consumable material; and external contact elements of pressure-resistant material carried by said metal element for detachable mechanical and electrical connection to said clamping jaws, the contact elements providing a plurality of contact sites at axially displaced positions to allow axial adjustment of the holder relative to said clamping jaws.

26. Fusion electrolysis apparatus comprising: clamping means; an electrode holder clamped by said clamping means; and an active electrode element of consumable material held by said electrode holder, wherein said electrode holder comprises:

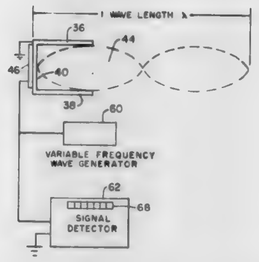
(a) an elongate metal element;
(b) connection means on said element connected electrically and mechanically to said electrode element;
(c) external contact elements at least one of which is clamped by said clamping means; and
(d) said contact elements providing a plurality of contact sites at axially displaced positions to allow axial adjustment of said holder relative to said clamping means.

27. A method of operating the apparatus of claim 26 during fusion electrolysis in which when said electrode element has been consumed by an amount corresponding to the axial spacing of said contact sites the electrode holder is axially displaced relative to said clamping means to the next adjacent contact site to readjust the position of said electrode element.

4,447,301
SONIC RESONATOR CONTROL AND METHOD FOR DETERMINING COMPONENT CONCENTRATION IN MULTIPLE COMPONENT MOLTEN LIQUIDS

Sin-Yan Shen, Woodridge, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 29, 1982, Ser. No. 437,783
Int. Cl.³ C25C 3/20, 3/00; G06F 15/46; G06G 7/58
U.S. Cl. 204—67 8 Claims



7. In the smelting of aluminum by electrolysis of a molten electrolyte at temperatures between 950° and 1000° C., where alumina would normally start at 6–7 wt.% concentration of the electrolyte and decline to 2.2–0.5 wt.% concentration near the end of the cycle where an anode effect would begin, a method for accurately determining when a predetermined alumina concentration of the order of 2.7–2.5 wt.% is reached to provide for recharging the electrolyte with alumina before any anode effort might actually begin, comprising the steps of submerging a sonic resonator in the electrolyte at a representative level thereof, periodically exciting the resonator throughout a range of frequencies through and including the resonant frequency of the resonator in the electrolyte, detecting for each excitation of the resonator the instantaneous resonant frequency thereof, correlating this against a data base calibration of the resonator at known alumina concentration throughout the smelting cycle, whereby the instantaneous resonant frequency effectively can provide the instantaneous alumina concentrations during the smelting cycle so as to allow the identification thereof when said alumina concentration reaches said predetermined alumina concentration.

4,447,302
HIGHLY POROUS ELECTRODES HOT PRESSED FROM NICKEL POWDER FOR ALKALINE WATER ELECTROLYZERS

Peter W. R. Brennecke, Braunschweig; Henning Ewe, Hamburg, and Eduard W. Justi, Braunschweig, all of Fed. Rep. of Germany, assignors to Bomin Bochumer Mineralol GmbH & Co., Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 352,886
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 3109183
Int. Cl.³ H01M 4/88; C25B 11/06
U.S. Cl. 204—128 10 Claims

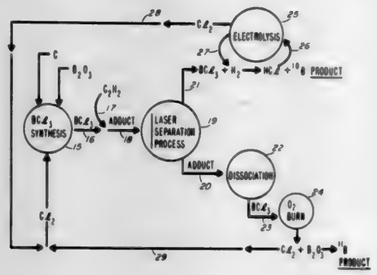
1. A highly porous electrode, hot pressed from nickel powder for alkaline water electrolysers, which is coated on its internal and external surfaces with a layer comprising a mixed Ni-Ti oxide having a thickness of 0.0025–0.1 μm (10–100 Molecular layers).

4. The method of electrolyzing an alkaline water solution using the electrode of claim 1.

4,447,303
METHOD OF SEPARATING BORON ISOTOPES

Reed J. Jensen, Los Alamos, N. Mex.; James M. Thorne; Coran L. Cluff, both of Provo, Utah, and John K. Hayes, Salt Lake City, Utah, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 23, 1981, Ser. No. 228,036
Int. Cl.³ B01D 59/00
U.S. Cl. 204—157.1 R 12 Claims



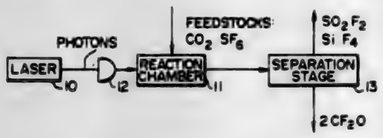
1. A method of enriching boron in a particular isotope thereof which comprises:

(a) irradiating gaseous HClC═CHBCl₂ containing both boron isotopes with radiation of a wavelength which at least preferentially excites those molecules containing a particular boron isotope and a fluence sufficient to photodissociate those molecules thus excited, and
(b) separating the undissociated HClC═CHBCl₂ from the products of said photodissociation.

4,447,304
PRODUCTION OF CARBONYL FLUORIDE

Vincenzo Malatesta; Clive Willis, and Peter A. Hackett, all of Ottawa, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Feb. 22, 1982, Ser. No. 350,742
Claims priority, application Canada, May 15, 1981, 377708
Int. Cl.³ B01J 19/12
U.S. Cl. 204—157.1 R 2 Claims



1. A method of producing carbonyl fluoride by multiphoton decomposition of carbon dioxide-sulphur hexafluoride mixtures comprising:

(a) irradiating gaseous carbon dioxide-sulphur hexafluoride mixtures in a reaction chamber at a pressure in the 10–50 Torr range with a laser beam at a frequency of about 944 wavenumbers causing the following reaction to take place:

$$SF_6 + 2\,CO_2 \xrightarrow{\text{photons}} 2\,CF_2O + SO_2F_2$$

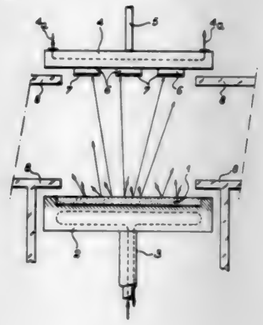
and

(b) passing the material from the reaction chamber after irradiation through a chemical processing stage to obtain a carbonyl fluoride product.

4,447,305
PROCESS FOR OBTAINING LUMINESCENT GLASS LAYERS

Rudolf Heindl, Fontenay-aux-Roses, and André Robert, Le Mesnil Saint Denis, both of, France, assignors to Commissariat a l'Energie Atomique and Centre National de la Recherche Scientifique, both of Paris, France

Filed Apr. 12, 1982, Ser. No. 367,390
Claims priority, application France, Apr. 15, 1981, 81 07566
Int. Cl.³ C23C 15/00
U.S. Cl. 204—192 C 9 Claims

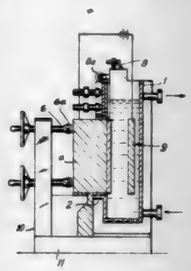


1. Process for producing a photoscintillator, comprising projecting onto a support, by cathodic sputtering, the material of a target containing silica and at least one chemical compound able to give luminescent centers, in such a way as to form on said support a scintillating glass layer able to emit light by energy absorption, said support being transparent to said light and having a polished face and a frosted face, said scintillating glass layer being deposited on the frosted face and optically coupled to the entrance window of a photodetector by means of the polished face.

4,447,306
PLATING APPARATUS

Tetsuji Ushio, Fukuoka; Satoru Tatsuguchi, Chiba; Toshihisa Otani, Fukuoka; Hoshiro Tani, Fukuoka, and Tetsuo Yabe, Fukuoka, all of Japan, assignors to Mishima Kosan Corporation, Fukuoka, Japan

Filed Jan. 20, 1982, Ser. No. 340,908
Claims priority, application Japan, Jan. 28, 1981, 56-012033
Int. Cl.³ C25D 17/02, 17/06
U.S. Cl. 204—224 R 6 Claims



1. Plating apparatus for plating a portion of an object, comprising a plating tank having a bottom and side walls extending upwardly from said bottom, an anode disposed in said plating tank and electrically connected to said object, one of said side walls having a cutout section, said cutout section having a lower edge and two side edges, a supporting holder along said lower edge for supporting said object in a position juxtaposed

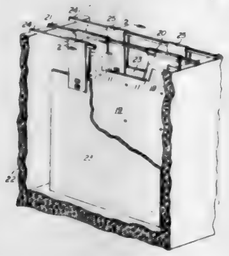
to said cutout section, a top plate disposed on top of said object and extending between said two side edges of said cutout section, sealing means along said two side edges and along said supporting holder for providing a seal between said tank and said object and between said tank and said top plate, said sealing means also extending between said top plate and said object to provide a seal between said top plate and said object, a base on which said tank is disposed, an upright support extending from said base, first adjustable set screw means on said upright support operable to engage said object and to move said object horizontally toward said tank, a second adjustable set screw means mounted in said tank and operable to engage said top plate and to move said top plate horizontally toward said tank, and third adjustable set screw means mounted on said tank and operable to engage said top plate and move the latter vertically downwardly toward said object, whereby said first, second and third set screw means in cooperation with said seal means are operable to effect a liquid-tight seal such that plating liquid in said tank is utilized in conjunction with said anode in plating at least a portion on one side of said object which is disposed in said cutout section.

4,447,307

ELECTROWINNING CELL HAVING PARTIALLY SHIELDED ANODES

Larry A. Davis, Box 1047, Kearny, Ariz. 85237; Gregory H. Boyce, 6114 E. Hannibal St., Mesa, Ariz. 85205; Timothy P. Mulloy, Box 1484, Kearny, Ariz. 85237; Neil J. Nebeker, Box 969, Kearny, Ariz. 85237; Elmer C. Newman, Box 1484, Kearny, Ariz. 85237; Donald J. Quinn, Queen Valley, Apache Junction, Ariz. 85220, and David L. Adamson, 5839 Stanida Cir., Salt Lake City, Utah 84121

Filed Dec. 15, 1982, Ser. No. 450,136
Int. Cl.³ C25C *7/00*; C25D *17/06*
U.S. Cl. 204—267 **11 Claims**



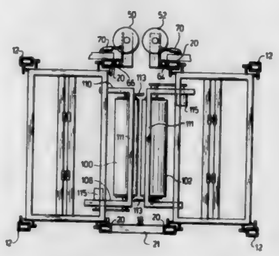
1. In an electrowinning cell utilizing suspended anode-cathode pairs having broad-area suspension members extending upwardly from the main bodies of respective, mutually spaced anodes and cathodes wherein the anodes and the suspension members thereof are such as to cause uneven cathode-current distribution and irregular metal deposits on the suspension members and upper margins of the cathodes, the improvement comprising respective, partial, anode shields applied to and carried by respective anode suspension members adjacent to upper margins of the anode bodies, each of said partial anode shields comprising an electrical-flux-impervious, electrically non-conductive material protectively covering only that portion of a suspension member adjoining the upper margin of the main body of the anode and which is within the area of electrical flux, and each of said partial anode shields having at least one electrical-flux-pervious, electrically conductive opening which is appropriately positioned in the anode shield and is of proper shape and size to permit sufficient current flux to flow to the paired cathode, when suspended in an electrowinning cell of the type specified, to induce a uniform current distribution on the upper portions of the cathode.

4,447,308

ELECTRODE BRUSHING APPARATUS

Robert D. H. Willans, Trail, Canada, assignor to Cominco Ltd., Vancouver, Canada

Filed May 18, 1983, Ser. No. 495,842
Claims priority, application Canada, Jun. 17, 1982, 405419
Int. Cl.³ C25D *17/10, 21/00*; A47L *25/00*
U.S. Cl. 204—279 **10 Claims**



1. An apparatus for sequentially brushing electrodes, said electrode each having opposite planar surfaces with areas having solution lines thereon, a head bar including lifting lugs, vertical side edges having permanent edge sticks mounted on said side edges, and a bottom edge, which apparatus comprises: a frame for supporting first and second brushing mechanisms and having a passage extending therethrough a conveyor for suspending and sequentially passing said electrodes through the passage in said frame in proximity to said brushing mechanisms; said first brushing mechanism comprising two pivotally mounted, vertically positioned, rotatable auxiliary brushes in opposing positions for brushing electrodes on the areas of said opposite surfaces below and in proximity to the head bar, said areas including the solution lines; means to rotate said auxiliary brushes; means to pivot said auxiliary brushes towards and away from electrodes such that when pivoted towards an electrode the rotating auxiliary brushes effect cleaning of both the solution line areas over the width of each electrode; a second brushing mechanism comprising two main brush carriages disposed in opposing positions on each side of said passage within said frame, means to index the suspended electrodes sequentially in a stationary position between said carriages, each carriage being mounted for vertical reciprocal travel in unison with the other, a pair of horizontal rotatable main brushes pivotally mounted on said brush carriages in opposing relationship and said main brushes being adapted to be pivoted towards and away from each other in said passage to engage and disengage opposite surfaces of an electrode in said passage; means to rotate said main brushes; means for vertically reciprocating said carriages, said brushes engaging the opposite surfaces of an electrode therebetween during said reciprocating to effect cleaning of the opposite surfaces of the electrode between the solution lines and bottom edge thereof; and means to de-index electrodes and pass electrodes on said conveyor from the brushing apparatus.

4,447,309

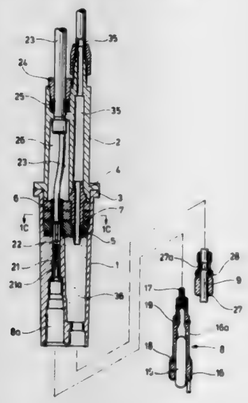
PH SENSOR

Akihiro Morioka; Yuji Maeda; Tetsuro Matsumoto; Masakazu Yukinari, and Eiichi Kishida, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,513
Claims priority, application Japan, Oct. 7, 1981, 56-159707
Int. Cl.³ G01N *27/30, 27/38*
U.S. Cl. 204—402 **11 Claims**

1. A pH sensor comprising
a sleeve assembly having a side wall and defining at least first and second spaces, a partition providing water tight separation between said first and second spaces, and a flange projecting outwardly from said side wall;

a reference electrode comprising an electrolytic solution accommodated in said first space, an inner electrode, and a liquid junction positioned at one end of said sleeve assembly;
a glass electrode comprising a sensor unit, disposed adjacent to said liquid junction;
liquid grounding means disposed adjacent to said liquid junction;
cable means inserted through an opening formed at the other end of said sleeve assembly and electrically connected to said reference electrode, said glass electrode, and said liquid grounding means; and
means for holding said cable means with a water tight seal within said second space; wherein



said sleeve assembly further defines a first cavity and a second cavity; annd wherein said glass electrode is replaceably disposed within said first cavity, and said liquid junction is replaceably disposed within said second cavity.

8. The sensor according to claim 1, including a cleaning unit means comprising a cleaning unit having a cleaning member on its distal end, an attachment having a through passageway therein and detachably connected to said cleaning unit, and means for supplying power for driving said cleaning member through said through passageway in said attachment, said cleaning unit being positioned in confronting relation to said sensor unit, whereby said sensor unit is cleanable by said cleaning unit.

4,447,310

PRODUCTION OF DISTILLATES BY THE INTEGRATION OF SUPERCRITICAL EXTRACTION AND GASIFICATION THROUGH METHANOL TO GASOLINE

Francis J. Derbyshire, Ewing, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,334
Int. Cl.³ C10G *1/00*; C07C *1/00, 27/06*
U.S. Cl. 208—8 LE **17 Claims**

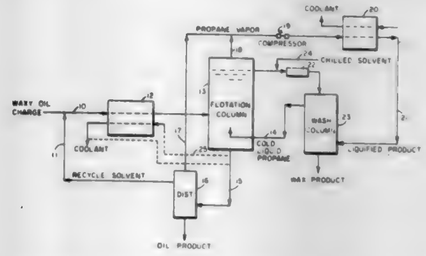
1. An integrated process for the conversion of solid coal to a wide slate of fuel products comprising: extracting a portion of said coal by contacting said coal with an extraction solvent under supercritical conditions of temperature and pressure whereby said solvent is converted to a dense-gas phase capable of dissolving the coal, separating said solvent and a hydrogen-rich liquid coal extract, said coal extract having a hydrogen concentration greater than said solid coal, a portion of said solid coal remaining an unsolvated, solid coal residue, upgrading at least a portion of said coal extract in the presence of hydrogen to produce a plurality of upgraded fuel products, gasifying said residue under oxidizing conditions to produce a synthesis gas comprising hydrogen and carbon monoxide, shifting the hydrogen to carbon monoxide ratio of a portion of said synthesis gas to produce a hydrogen-enriched gas, combining said hydrogen-enriched gas with said synthesis gas, converting said combined gas to methanol, passing at least a portion of said methanol in contact with a catalyst capable of converting said methanol to gasoline products and recycling at least a portion of said gasoline products for use as said extraction solvent.

4,447,311

DEWAXING PROCESS

Patrick E. Fowles, Doylestown; Gerald L. Shoemaker, Yardley, and Tsoung-Yuan Yan, Philadelphia, all of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,841
Int. Cl.³ C10G *73/06, 73/26*
U.S. Cl. 208—35 **20 Claims**



1. A dewaxing process for producing dewaxed oil from waxy oil which comprises:
contacting in a flotation column the waxy oil with a liquid autorefrigerant to cool the oil by vaporization of the autorefrigerant thereby causing crystallization of wax from the oil, and separating the wax from the oil by flotation to produce wax crystals and dewaxed oil wherein most of the wax separated from the oil by flotation is crystallized by vaporation of said liquid autorefrigerant and removed from an upper portion of said column wherein said dewaxed oil is removed from said column as a separate stream, substantially free of wax crystals, from a withdrawal point below the point of removal of said wax crystals.

4,447,312

PROCESS FOR IMPROVING THE DIESEL FUEL QUALITY OF COAL DERIVED LIQUIDS

Philip J. Angevine, West Deptford; Costandi A. Audeh, Princeton; Samuel A. Tabak, Wenonah, all of N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 19, 1982, Ser. No. 340,662
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—46 **28 Claims**



1. A process for improving the quality of light fuel oil derived by the direct liquefaction of coal having a low cetane number, said process comprising the steps of:
(i) contacting said light fuel oil liquid with an olefin having at least three carbon atoms under alkylation conditions.

4,447,313

DEASPHALTING AND HYDROCRACKING

Robert L. Gorring, Washington Crossing, Pa., and Robert L. Smith, Hopewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 1, 1981, Ser. No. 326,259
Int. Cl.³ C10G 67/04, 45/12
U.S. Cl. 208—86 3 Claims

1. A two-stage process for preparing from 650° F.+ residual oils a feed suitable for subsequent catalytic processing which meets heavy metals requirements for fluid catalytic cracking feedstocks comprising first pentane deasphalting the oils at room temperature thereby removing substantially all of the refractory heavy metals and thereafter removing any remaining metal by subjecting the treated 650° F.+ oil in the presence of a ZSM-5 type catalyst to mild hydrocracking conditions which include temperatures ranging from about 700° to about 825° F., pressures ranging from about 500 to about 1250 psi, liquid hourly space velocities ranging from about 0.5 to about 2 and a hydrogen feed rate ranging from about 1000 to about 5,000 s.c.f.b.

4,447,314

DEMETALATION, DESULFURIZATION, AND DECARBONIZATION OF PETROLEUM OILS BY HYDROTREATMENT IN A DUAL BED SYSTEM PRIOR TO CRACKING

Frederick Banta, Elmer, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 375,079
Int. Cl.³ C10G 65/04, 65/12
U.S. Cl. 208—89 12 Claims

1. In the preparation of suitable feed stocks for catalytic cracking, an improved process for reducing Conradson carbon content, metals content, and sulfur content in residual oils in order to convert said oils into said suitable feed stocks, comprising:

A. passing a mixture of hydrogen and said oils at hydrogen pressure of about 500 to 3000 psig, a temperature of about 600° to 850° F., and a space velocity of 0.1 to 5.0 LHSV, through a trickle bed of first catalyst, said first catalyst comprising the oxides or sulfides of a Group VIB metal and an iron group metal on a support comprising a delta or theta phase alumina, said first catalyst having also at least about 60 percent of its pore volume in pores with diameters of about 100 to 200 A, at least about 5 percent of its pore volume in pores greater than 500 A, and a surface area of up to about 110 m^2/g; and

B. then passing said mixture of hydrogen and said oils through a bed of second catalyst disposed downstream of said first catalyst, said second catalyst comprising the oxides or sulfides of a Group VIB metal and an iron group metal on an alumina support, said second catalyst having a surface area of at least 150 m^2/g, a quadrulobe shape, and at least 50 percent of its pore volume in pores with diameters of 30 to 100 A.

4,447,315

HYDROCRACKING PROCESS

Paul R. Lamb, Lake Bluff; Steve T. Bakas, Palos Hills, both of Ill., and Brian M. Wood, Sasolburg, South Africa, assignors to UOP Inc., Des Plaines, Ill.

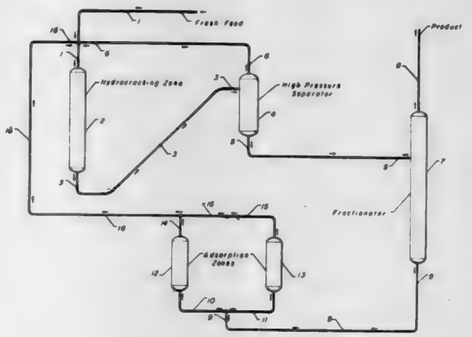
Filed Apr. 22, 1983, Ser. No. 487,797
Int. Cl.³ C10G 67/06, 25/03
U.S. Cl. 208—99 8 Claims

1. A catalytic hydrocracking process which comprises:

(a) contacting a hydrocarbon feedstock having a propensity to form polynuclear aromatic (PNA) compounds in a hydrocracking zone with added hydrogen and a metal promoted crystalline zeolite hydrocracking catalyst at elevated temperature and pressure sufficient to give a substantial conversion to lower boiling products;

(b) condensing the hydrocarbon effluent from said hydrocracking zone and separating the same into a low boiling hydrocarbon product and unconverted hydrocarbon oil boiling above about 650° F. and containing trace quantities of polynuclear aromatic compounds:

(c) contacting at least a portion of said unconverted hydrocarbon oil containing polynuclear aromatic compounds with an adsorbent which selectively retains said polynuclear aromatic compounds; and



(d) recycling unconverted hydrocarbon oil having a reduced concentration of polynuclear aromatic compounds resulting from step (c) to said hydrocracking zone.

4,447,316

COMPOSITION AND A METHOD FOR ITS USE IN DEHYDROCYCLIZATION OF ALKANES

Waldeen C. Buss, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 1, 1982, Ser. No. 344,571
Int. Cl.³ C10G 35/06
U.S. Cl. 208—138 21 Claims

1. A method of reforming hydrocarbons comprising contacting said hydrocarbons with a catalyst comprising:

(a) a type L zeolite;

(b) at least one Group VIII metal; and

(c) an alkaline earth metal selected from the group consisting of barium, strontium and calcium, wherein said catalyst is reduced in a hydrogen atmosphere at a temperature of from 480° C. to 620° C.

4,447,317

HYDROPROCESSING WITH LITHIUM-CONTAINING CATALYST

J. Wayne Miller, Yorba Linda, and Howard D. Simpson, Irvine, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 314,526, Oct. 26, 1981, Pat. No. 4,394,302. This application May 5, 1983, Ser. No. 491,896
Int. Cl.³ C10G 45/04
U.S. Cl. 208—216 R 20 Claims

1. A method for hydroprocessing a hydrocarbon feedstock which comprises contacting said feedstock with hydrogen under conditions of elevated temperature and pressure in the presence of a catalytic composition comprising metallic hydrogenation components on a material comprising a lithium-containing refractory oxide, said lithium-containing refractory oxide having been calcined at a temperature greater than about 1,200° F. to produce a lithium-containing refractory oxide having an increased average pore diameter as compared to said lithium-containing refractory oxide without lithium, said composition having an average pore diameter above about 100 angstroms.

4,447,318

EXTRACTIVE DISTILLATION METHOD

Shunichiro Ogura, Tokyo, and Masafumi Miyamoto, Ami, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,725
Claims priority, application Japan, Mar. 29, 1982, 57-50688
Int. Cl.³ C10G 7/08, 7/00; B01D 3/00, 3/40
U.S. Cl. 208—348 7 Claims

1. In a method for separating a hydrocarbon mixture into relatively difficultly soluble hydrocarbons and relatively easily soluble hydrocarbons by extractive distillation using a polar solvent comprising feeding the starting hydrocarbon mixture through at least two evaporators, an extractive distillation column, a stripping column and a rectifying column; the improvement wherein

(1) the polar solvent discharged at a high temperature from the bottom of the stripping column is recycled to the extractive distillation column after it has been cooled to a suitable temperature by giving up heat to a reboiler of the extractive distillation column, a reboiler of the rectifying column and successively to the evaporators, and

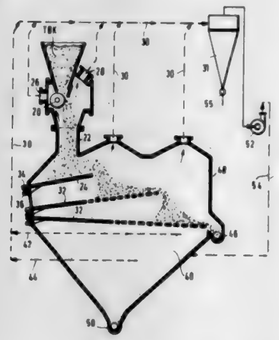
(2) the starting hydrocarbon mixture is divided into at least two streams and heated in at least two evaporators, one stream being evaporated in a first evaporator to a pressure necessary for introduction into the extractive distillation column and then fed to the extractive distillation column, and the other stream after evaporation in a second and subsequent evaporator, being pressurized to a pressure required for introduction into the extractive distillation column by means of a compressor and then fed to the extractive distillation column.

4,447,319

PROCESS FOR SEPARATING SAND FROM A BROWN COAL OR LIGNITE MATERIAL CONTAINING SAND

Paul Lazik, Cologne, Fed. Rep. of Germany, assignor to Rheinische Braunkohlenwerke AG, Cologne, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,727
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1981, 3126585
Int. Cl.³ B07B 9/02
U.S. Cl. 209—11 14 Claims



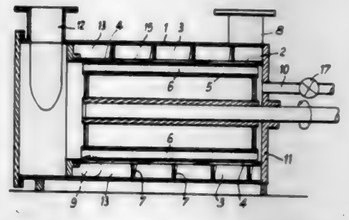
1. A process for separating sand from a brown coal material containing sand, the sand content of which is at least predominantly in a grain size range which covers only a part of the grain size range of the brown coal, with the grain size of the coarsest grains of the sand to be removed being markedly below the grain size of the coarsest grains of the brown coal, comprising carrying out at least one gaseous classifying operation to remove from said material the brown coal in the grain size range which is between zero and at least the grain size corresponding to the maximum grain size of the sand to be removed, and subjecting the remaining material to a sieving operation, the cut-off line of which is in the region of the grain size of the coarsest grains of the sand to be removed.

4,447,320

DEVICE FOR CLEANING AND RECOVERING PAPER PULP

Jean-Pierre J. Lamort, Saint Lumier en Champagne, France, assignor to E et M Lamort, Vitry le Francois, France

Continuation-in-part of Ser. No. 162,647, Jun. 24, 1980. This application Jan. 21, 1982, Ser. No. 341,247
Claims priority, application France, Jan. 23, 1981, 81 01236
Int. Cl.³ B07B 1/20
U.S. Cl. 209—273 6 Claims



1. A cleaning and recovery device for paper pulp comprising:

a closed tank with first and second end walls, said tank being chargeable with contaminated pulp material to be washed;

a fixed cylindrical sieve (2) with perforations located within and separating the tank into inner and outer chambers (3 and 4);

a rotor (5) drum situated within the inner chamber and provided with longitudinal blades or vanes (6) moving within and extending to the vicinity of the sieve along substantially its entire effective length, the perforations of said sieve having a form splayed towards the inner chamber and dissymetrical, the perforations having a radial wall at the remote edge of the perforation in the direction of rotation of the blades or vanes, said blade having a sloped surface facing in its direction of rotation, the sloped surface directing the material moving with the blades or vanes in the inner chamber against the radial walls of the perforations such that the material in the outer chamber moves in a direction opposite to the movement of the blades or vanes;

a helical wall located in the outer chamber (3) between the sieve (2) and the tank (1) so as to provide said outer chamber (3) with the shape of a helical channel which is wrapped around the sieve along its length;

a pulp inlet (8) at one end of the helical channel and a refusals outlet (9) at the other end;

a cleaned pulp outlet (12) at the first end wall of said inner chamber (4); and

closing-off means (14) for stopping the flow of material through said helical channel to retain the refusals at a dead end of the inner chamber upstream thereof for selected time intervals so as to concentrate the refusals material and periodically discharge it, said rotor blades generating substantially uniform and continuous washing turbulence across the sieve between said pulp inlet and said refusals outlet, which turbulence draws acceptable pulp material across the sieve to the inner chamber and moves the remainder in the helical channel towards the refusals outlet.

4,447,321

LIQUID DRAIN SYSTEM

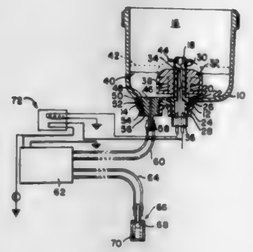
Henry D. Jackson, P.O. Box 475, Somerset West, 7130, South Africa

Filed Sep. 30, 1982, Ser. No. 430,325

Claims priority, application South Africa, Mar. 29, 1982, 82/2141

Int. Cl.³ B03D *3/00*

U.S. Cl. 210—86 **6 Claims**



1. A drain system for draining, from a settling chamber of a trapping device, foreign liquid which has separated from a supply liquid flowing through the device, the foreign liquid having a specific gravity greater than that of the supply liquid, the drain system comprising

a float in the form of an annulus in the lower part of the settling chamber and having a specific gravity higher than that of the supply liquid and lower than that of the foreign liquid for floating on foreign liquid in the chamber,

a column for guiding the float along a predetermined path in the chamber as the float floats on the foreign liquids, said annulus encircling said column and being rotatable about said column by movement of liquid in said chamber,

an indicator located in and movable with the annulus of the float,

a sensor mechanically isolated from the indicator, said sensor being arranged in said column for actuation by the indicator when the indicator moves to a predetermined region of the predetermined path,

an electrical signal circuit means responsively connected to said sensor for causing an actuating signal in response to detection of a predetermined quantity of foreign liquid in the settling chamber, and

means responsible to such an actuating signal for effecting drainage of foreign liquids from the chamber.

4,447,322

APPARATUS FOR THE CYCLONE SEPARATION OF LIQUIDS HAVING DIFFERENT DENSITIES

Miroslav Zajdlik, Bratislava, Czechoslovakia, assignor to Vyskummy ustav vodneho hospodarstva, Bratislava, Czechoslovakia

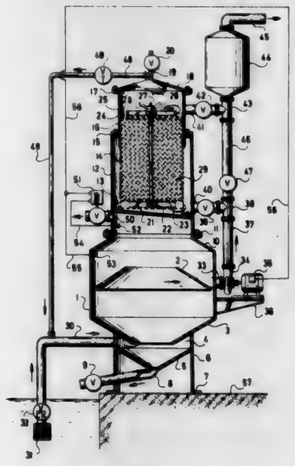
Filed May 9, 1983, Ser. No. 493,001

Claims priority, application Czechoslovakia, May 7, 1982, 3299-82

Int. Cl.³ B01D *21/24*

U.S. Cl. 210—104 **4 Claims**

4. In an apparatus for the vortical separation of liquid having different densities with automatic delivery, said apparatus having a pump, a filter, a vortex separator, a cylindrical housing for the vortex separator, discharge piping tangentially attached to the housing and to the pump, the reservoir being closed in the lower part thereof with a conical bottom and with a vortex chamber provided with tangentially attached feed piping with a suction basket and a run-back closure, the improvement wherein a conical insertion piece is disposed in the cylindrical housing for the vortex separator coaxially thereof, the upper part of the cylindrical housing of the vortex separator is closed by an upwardly converging frusto-conical housing part above which there is attached the housing for a filter, the two housings being coaxial, the housing for the filter being closed at the bottom thereof by a slanting bottom and in the upper part thereof by an upper sealing joint, the upper housing part for the filter being closed by a upwardly converging cover coaxial thereof, delivery piping, changing-over branch piping, changing-over closure and inlet piping being tangentially attached to the lower part of the housing for the filter and being connected to the pump and to the upper housing for the filter, discharge piping tangentially attached to the upper part of the



housing for the filter and connected through a discharge valve through and through discharge branch piping to a storage reservoir, discharge piping for said reservoir, a discharge coupling being connected to the housing for the filter beneath the slanting bottom of the housing, such coupling being ended by an electromagnetic valve which is connected by an electric circuit with an upper fluid level detector and by a further interconnecting circuit with a lower liquid level detector, the electromagnetic valve being further connected with the electric motor for the pump by a still further electric circuit.

4,447,323

TRASH RAKE WITH RECOVERY GUTTER

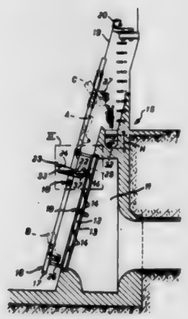
Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Paris, France

Filed Dec. 10, 1981, Ser. No. 329,601

Claims priority, application France, Dec. 11, 1980, 80 26266

Int. Cl.³ B01D *35/08*

U.S. Cl. 210—158 **8 Claims**



1. A trash rake for cleaning a bar screen of a water intake, said trash rake comprising a carriage mounted for movement along a track arranged parallel to and upstream of the bar screen, said carriage carrying a pan extending transversely to said track, said pan having a rake member along its transverse edge proximate to the bar screen, said rake member having teeth shaped and arranged to be received between adjacent bars of the bar screen for removing foreign bodies therefrom during displacement of said carriage in at least one direction, a recovery member associated and in continuity with said rake member for collecting foreign bodies removed by said rake member, the improvement wherein said recovery member defines a watertight gutter means for maintaining collected foreign bodies, including living creatures, in water during displacement in said one direction even when said recovery member is emersed, said pan member is mounted on a pivot disposed generally parallel to said bar screen with said recovery member being immediately adjacent said rake member for positioning between said pivot and said bar screen.

4,447,324

WATER SCREEN WITH REVOLVING SCREEN MEMBER

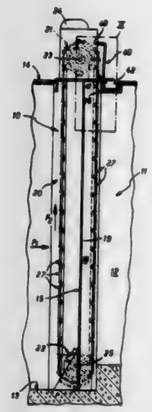
Philip Jackson, 15 Rue Las Cases, 75007 Paris, France

Filed Apr. 8, 1982, Ser. No. 366,700

Claims priority, application France, Apr. 9, 1981, 81 07137

Int. Cl.³ B01D *33/02*

U.S. Cl. 210—159 **7 Claims**



1. A water screen comprising a revolving screen member and a washing device disposed adjacent the downstream run or face of said screen member, said washing device comprising a spray means disposed on one side of said downstream run or face of said screen member to direct a jet of fluid towards said screen member to detach material deposited thereon, a recovery device disposed on the opposite side of said downstream run or face of said screen member to recover the material detached therefrom, a mobile trough member on said opposite side of said downstream run or face of said screen member between said recovery device and said sprayer, said trough member having a leading edge adjacent said downstream run or face of said screen member and a trailing edge adjacent said recovery device, said trough member extending transversely and obliquely from said leading edge to said trailing edge, and pivot means for maintaining said leading edge of said trough member continuously in contact with said screen member, for preventing the material from falling between said screen member and said recovery device.

4,447,325

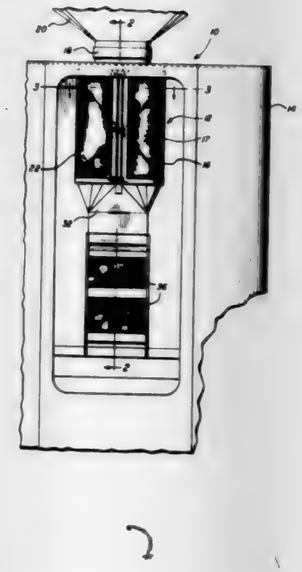
VERTICAL PRE-DEWATERING SCREEN

General J. Pauley, Roanoke, Va., assignor to Gala Industries, Inc., Eagle Rock, Va.

Continuation of Ser. No. 229,054, Jan. 27, 1981, abandoned. This application Nov. 29, 1982, Ser. No. 444,875

Int. Cl.³ B01D *25/30, 23/20, 39/12*

U.S. Cl. 210—295 **5 Claims**



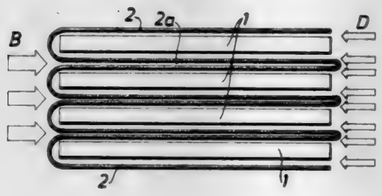
1. In combination with a device for separating solids from liquid in a slurry including a vertically disposed, elongated annular screen having a gravity slurry feed inlet and hopper communicating with the upper end thereof, an inclined screen having a portion underlying the lower end of said annular screen to receive solids and liquid after a substantial quantity of liquid has been removed by passing laterally through the annular screen with the inclined screen enabling passage of additional liquid downwardly therethrough while conveying solids laterally to further dewater the solids, that improvement comprising a baffle disposed in said annular screen, said baffle comprising a pair of imperforate baffle members supported centrally of said annular screen with each baffle having a straight inner edge and an outer edge conforming with the interior of the annular screen and a planar top surface, said outer edges being spaced from the inner surface of the annular screen, said straight inner edges of the baffle members extending generally diagonally of the annular screen and intersecting with each other adjacent the center of the annular screen thereby providing a pair of upwardly facing oppositely inclined flat surfaces on which the downwardly flowing slurry impinges with generally equal portions of the slurry flow stream being deflected toward opposite peripheral portions of the annular screen for passage of liquid therethrough and downward flow of solids between the inner surface of the annular screen and the lower edge portions of the baffle members onto the inclined screen.

4,447,326

DEVICE FOR THE DIFFUSION OF SUBSTANCES BETWEEN TWO FLUIDS VIA SEMIPERMEABLE MEMBRANES

Gerhard Riede, Vellinge, and Kjell H. I. Christopherson, Staffanstorp, both of Sweden, assignors to Gambro AG, Switzerland

PCT No. PCT/SE80/00082, 371 Date Mar. 17, 1981, 102(e) Date Mar. 17, 1981, PCT Pub. No. WO81/02681, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 19, 1980, Ser. No. 245,649
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.3 32 Claims



1. A device for diffusion of substances between first and second fluids through a semi-permeable membrane, said device comprising a stack of longitudinally extending spacer plates including first and second ends and first and second longitudinally extending sides, said spacer plates alternating between the folds of a folded semi-permeable membrane, first fluid feed means for feeding said first fluid to one side of said folded semi-permeable membrane at said first end of said spacer plates, first fluid withdrawal means for withdrawing said first fluid from said one side of said folded semi-permeable membrane at said second end of said spacer plates, second fluid feed means for feeding said second fluid to the other side of said folded semi-permeable membrane, second fluid withdrawal means for withdrawing said second fluid from said other side of said folded semi-permeable membrane, channel means extending longitudinally across the faces of said spacer plates, said spacer plates including transverse duct means extending transversely across substantially the entire width of said faces of said spacer plates, said transverse duct means being in fluid communication with both said first and second longitudinally extending sides of said spacer plates and being substantially continuous across the length thereof whereby no direct fluid communication is provided between said traverse duct means and the opposite side of said spacer plates through said spacer plates, and fluid connecting means extending between said transverse duct means and said channel means for providing fluid communication therebetween.

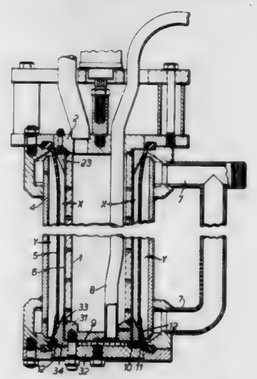
4,447,327

PRESSURE FILTERS

Norman O. Clark, Par, England, assignor to English Clays Lovering Pochin & Co. Ltd., Cornwall, England

Division of Ser. No. 87,208, Oct. 22, 1979, which is a continuation-in-part of Ser. No. 856,493, Dec. 1, 1977. This application Oct. 22, 1979, Ser. No. 290,240
Claims priority, application United Kingdom, Dec. 1, 1976, 50191/76
Int. Cl.³ B01D *29/02*
U.S. Cl. 210—350 7 Claims

1. In a tube pressure filter of the kind set forth comprising (a) a pair of generally coaxial inner and outer tubular bodies arranged one within the other and adapted to be supported in a generally upright position, (b) an impermeable elastic sleeve disposed within and secured to the outer tubula body, (c) a filter element disposed around and supported by the inner tubular body, (d) first outlet means whereby filtrate which has passed through the filter element can be discharged from the tube pressure filter, and (e) second outlet means whereby solid retained on said filter element can be discharged from the tube pressure filter, wherein the inner tubular body comprises a cylindrical central section, around which central section there is disposed the filter element, and upper and lower end sections secured one to each end of said central cylindrical section, each of which end sections includes an enlarged portion of greater diameter than said cylindrical central section, and wherein the arrangement is such that in a first operating condition of the tube pressure filter said second outlet means is closed and the tubular bodies co-operate with each other to define a closed annular chamber which is divided into generally coaxial and non-intercommunicating inner and outer compartments by said impermeable elastic sleeve, the inner compartment having an inlet for feed material (comprising a mixture of a liquid and a particulate solid) and the outer compartment having an inlet for a hydraulic fluid under pressure, and in a second operating condition of the tube pressure filter, the second outlet means is open to enable the particulate solid to be



discharged from the inner compartment; the improvement which comprises providing said tube pressure filter with a filter element comprising a filter cloth sleeve which is tailored from a woven material so that the warp and/or the weft filaments of said woven material extend helically around the inner tubular body on which the filter element is supported, said filter cloth sleeve having an unstretched diameter which is at least 5% larger than the diameter of the cylindrical central section of the inner tubular body of the tube pressure filter, and being stretchable laterally by an amount in the range of from about 8% to about 20%, whereby said sleeve can be stretched tansversely of the length thereof and drawn over said portions of the end sections of the inner tubular body which are of greater diameter than said cylindrical central section, and thereafter can be stretched longitudinally along the length of said central section thereby enabling emplacement or replacement of said sleeve without the need for removing a said end section.

4,447,328

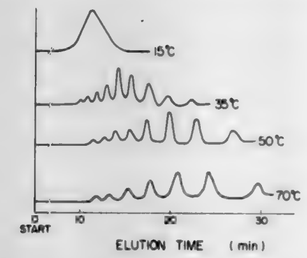
FILLER FOR LIQUID CHROMATOGRAPHY AND METHOD FOR SEPARATING WATER-SOLUBLE SUBSTANCES USING SAID FILLER

Fumio Kamiyama, Kyoto; Kazutoshi Yamazaki, Ohtsu; Minoru Kohara, Kyoto, and Mituo Nagata, Shiga, all of Japan, assignors to Sekisu Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

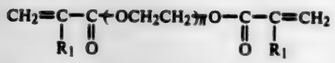
Continuation of Ser. No. 160,741, Jun. 18, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 349,252
Claims priority, application Japan, Jun. 22, 1979, 54-79494; Aug. 6, 1979, 54-100363
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—635 5 Claims

1. A method for separating water-soluble substances, which comprises subjecting said water-soluble substances to reversed phase liquid chromatography using an aqueous medium as an

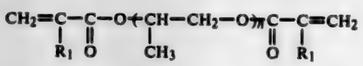
eluent and a filler comprising a particulate synthetic polymer, said polymer being a single polymer of (a) a monomer selected from the group consisting of tetramethylolmethane di-, tri- or



tetra-(meth)acrylate, trimethylolpropane tri-(meth)acrylate, trimethylolethane tri-(meth) acrylate, dipentaerythritol di- to hexa-(meth)acrylate, glycerol di- or tri-(meth)acrylate, polyethylene glycol di-(meth)acrylate of the formula



wherein R_1 is H or CH_3, and $3 \geqq n \geqq 1$, polypropylene glycol di-(meth)acrylate of the formula



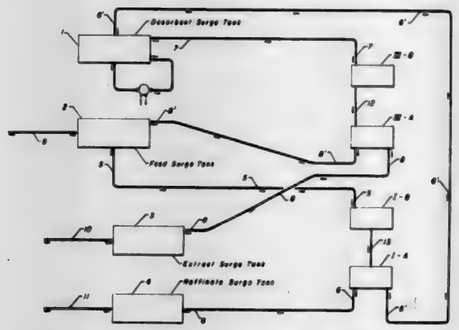
wherein R_1 is H or CH_3, and n is an integer of 1–24, and neopentyl glycol di(meth)acrylate, or (b) a combination of two or more of said monomers, said filler exhibiting a behavior such that in liquid chromatography using polyethylene glycol as a sample and water as an eluent, the elution time of the sample increases with a rise in temperature.

4,447,329

CONTINUOUS DESALINATION PROCESS

Donald B. Broughton, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 13, 1983, Ser. No. 503,490
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—673 6 Claims



1. A stepwise cyclical process for the desalination of an aqueous solution of a dissolved salt by employment of an adsorbent comprising a thermally regenerable ion retarding resin which has a retention capacity for the ions of said salt inversely proportional to temperature, which process comprises the following operations:

(a) maintaining fluid flow through at least two columns of said adsorbent, at least one column comprising an adsorption zone, and at least one column comprising a desorption zone;

(b) maintaining said adsorption zone defined by the adsorbent located between a feed input stream at an upstream boundary of said zone and a raffinate output stream at a downstream boundary of said zone;

(c) maintaining said desorption zone immediately upstream, with respect to said single direction, of said adsorption zone, said desorption zone defined by the adsorbent located between a desorbent input stream at an upstream boundary of said zone and said extract output stream at a downstream boundary of said zone;

(d) passing said feed mixture into said adsorption zone at adsorption conditions comprising a relatively low temperature to effect the adsorption of the ions of said salt by said adsorbent in said adsorption zone and withdrawing as a raffinate output stream the entire effluent from said adsorption zone comprising water of reduced salt content, a sufficient portion of said raffinate output stream being withdrawn and stored during a first stage of each step for use as the desorbent stream throughout the following step;

(e) passing a desorbent material comprising water of reduced salt content into said desorption zone at desorption conditions comprising a relatively high temperature to effect the displacement of said ions from the adsorbent in said desorption zone;

(f) withdrawing the entire effluent from said desorption zone sequentially in the course of each step, a quantity of liquid during a first stage having the composition of said feed mixture, such quantity being blended with the feedstream, and, during a second stage, an extract output stream comprising a solution having a higher concentration of salt than said feed mixture; and

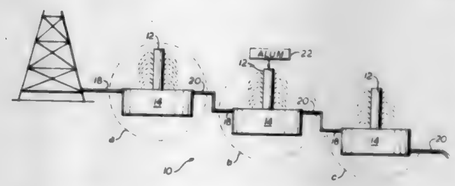
(g) periodically at the completion of each step advancing through said columns of adsorbent in a downstream direction with respect to fluid flow the feed input stream, raffinate output stream, desorbent input stream, and extract output stream, to effect the shifting of zones through said adsorbent and the initiation of the next step, each cycle being completed upon completion of the number of steps required for a given portion of said adsorbent to make a complete circuit through said zones.

4,447,330

METHOD OF TREATING WASTE WATER

David Babineaux, III, P.O. Box 103, Rayne, La. 70578

Continuation of Ser. No. 280,059, Jun. 30, 1981, abandoned, which is a continuation of Ser. No. 94,755, Nov. 15, 1979, abandoned, which is a continuation of Ser. No. 15,416, Feb. 26, 1979, abandoned. This application Mar. 23, 1983, Ser. No. 476,400
Int. Cl.³ C02F *1/52, 1/74*
U.S. Cl. 210—717 1 Claim



1. A method of purifying and treating waste water used in drilling oil and gas wells, said waste water containing impurities comprising chlorides, suspended solids, dissolved solids, and oil or grease consisting essentially of the steps of providing a plurality of serially connected sedimentation tanks with each tank having an aerator feed pipe, at least one spray aerator positioned in and above the tank, and a tank discharge pipe,

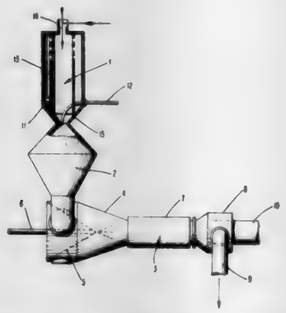
introducing waste water into an initial aerator feed pipe of one of said sedimentation tanks, spraying said waste water from each aerator feed pipe with the aerator into the atmosphere and back into the tank in order to aerate the waste water and permit the aerated waste water to recollect in the tank, skimming clear waste water from the top of each sedimentation tank into said tank discharge pipe and feeding said clear waste water into the aerator feed pipe of a subsequent one of said serially connected sedimentation tanks introducing an effective amount of a flocculent into the waste water ahead of the aerator in at least one of said sedimentation tanks so that said flocculent is mixed, aerated, and agitated along with the waste water, said flocculent reacting with minerals contained in said waste water to form a flocculent precipitate which aids in coagulating said impurities, settling said impurities as the waste water passes sequentially from one sedimentation tank to another of said tanks, and discharging clean water directly from one of said sedimentation tanks for disposal or reuse.

4,447,331

INTIMATE CONTACTING/SEPARATING OF PLURAL PHASES

Francois Prudhon, Versailles, and Augustin Scicluna, Aubervilliers, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Sep. 23, 1981, Ser. No. 304,938
Claims priority, application France, Sep. 24, 1980, 80 20464
Int. Cl.³ C02F *1/58*
U.S. Cl. 210—721 **12 Claims**



1. A process for the purification of a liquid stream containing waste materials while inhibiting the formation of deposits on the wall of a treatment vessel, comprising the steps of:

establishing a vertically descending current of axially extending, axially symmetrical helical flow of a gaseous phase in said treatment vessel;

contacting said liquid stream with a second fluid stream of a reactive material which operates on the waste materials in said liquid stream to produce solid waste substances; and

immediately following said contacting, injecting the combined liquid and fluid streams into said helical flow, downwardly along the longitudinal axis thereof, to co-atomize the liquid and fluid stream with the gaseous phase and thereby inhibit the deposit of solid waste substances or reactants on the walls of said treatment vessel.

9. A process for the purification of a stream of waste water containing orgnic and inorganic sulfide and polysulfide pollutants, comprising the steps of:

establishing a vertically descending current of axially extending, axially symmetrical helical flow of a gaseous phase;

contacting said waste water stream with a stream comprising a solution of hydrochloric acid, and thence

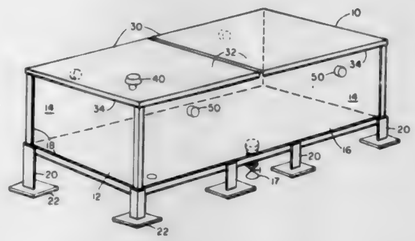
immediately injecting said liquids for co-atomization/reaction into said helical flow of gaseous phase, downwardly along the longitudinal axis thereof.

4,447,332

FUEL SLUDGE TREATMENT METHOD, ESPECIALLY FOR LEADED GASOLINE STORAGE TANK SLUDGE

Robert W. Crisman, Hamilton, and Dominick DeAngelis, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,823
Int. Cl.³ B01D *35/14*
U.S. Cl. 210—748 **5 Claims**



5. A method of treating sludge from liquid petroleum product storage sites comprising the sequential steps of

(a) transporting a solid-liquid sludge mixture containing volatile liquid hydrocarbons, sludge solids and water to an enclosed outdoor filter tank having a sloped bottom portion and a removable top closure, a lower coarse inert particle bed covering the sloped bottom portion, a liquid drain for receiving liquid through the coarse particle bed, an upper fine inert particle bed extending horizontally over the lower coarse particle bed, a porous screen separator disposed between said upper and lower beds for supporting said finer particle bed; and a flame arrestor vent mounted above the upper bed for permitting controlled venting of volatile materials from the enclosed tank under hydrocarbon conservation conditions;

(b) applying the sludge mixture uniformly over the filter particles;

(c) draining liquid from the sludge mixture through the filter particles to deposit a layer of wet sludge solids onto the filter particles;

(d) permitting residual sludge liquids to evaporate in the filter tank by introducing controlled airflow and withdrawing hydrocarbon vapors through the flame arrestor outlet vent;

(e) removing the top cover to expose sludge solids to ambient ultraviolet radiation and weathering conditions for photo-degration of the sludge solids; and

(f) recovering treated sludge solids for disposal.

4,447,333

PROCESS FOR THE ELIMINATION OF AMMONIA IN COKE PLANT WASTE WATERS

Dietrich Wagener; Theo Sander, both of Essen, and Karl H. Laue, Hattingen, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH., Fed. Rep. of Germany

Continuation of Ser. No. 188,827, Sep. 19, 1980, abandoned. This application Jan. 12, 1983, Ser. No. 457,444
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938654
Int. Cl.³ C02F *1/20, 1/70, 1/72*
U.S. Cl. 210—750 **5 Claims**

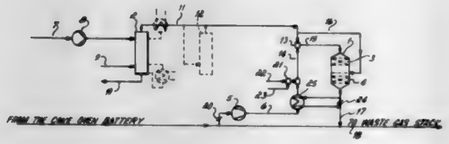
1. A process for concurrently treating an ammonia-containing waste fluid stream and a NO_x-containing flue gas from a coking plant comprising:

separating the waste fluid stream into a major portion and a minor portion;

combining the major portion of the waste fluid stream with the flue gas to form a mixture containing at least a stoichiometric ration of NO_x to ammonia;

introducing the mixture into a reactor in the form of a spray or vapor;

reacting the mixture in a first catalyst bed at a temperature of at least about 250° C. for converting a substantial amount of ammonia in the waste fluid stream and NO_x in the flue



gas into a nitrogen and water vapor reaction product, the reaction being exothermic;

heating the minor portion of the waste fluid stream in the reactor with the heat generated from the reaction of the mixture in the first catalyst bed; and

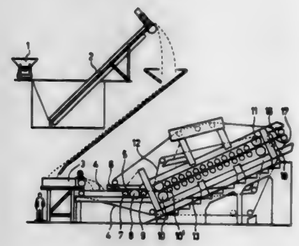
reacting in a second catalyst bed the minor portion of the waste fluid stream with the reaction product of the first catalyst bed for converting a further amount of ammonia in the waste fluid stream and NO_x in the flue gas into a nitrogen and water vapor waste gas, and removing said waste gas from said reactor.

4,447,334

METHOD FOR THE DEWATERING OF LUMP PEAT

Hugo Britschgi, Stalden, and Burkard Rosenberg, Horw, both of Switzerland, assignors to Bell Maschinenfabrik Aktiengesellschaft, Kriens, Switzerland

Filed Mar. 18, 1982, Ser. No. 359,584
Claims priority, application Switzerland, Apr. 28, 1981, 2750/81
Int. Cl.³ B30B *9/24*
U.S. Cl. 210—783 **8 Claims**



1. A method of continuously dewatering lump peat or similar naturally moist and coarse lump material by pressing, comprising the steps of:

a. providing a dewatering apparatus including a preliminary dewatering zone comprising upper and lower screen belts which travel a loop on at least one pair of rolls, a main dewatering zone comprising upper and lower screen belts which travel through the nips of successive pairs of rolls, and an elastic watertight pressure belt interposed between each screen belt and the rolls and having the same width as, and being designed to receive and carry away water expressed through, the associated screen belt, and a high pressure zone comprising upper and lower screen belts which travel through the nip or at least one pair of rolls;

b. fracturing the material to be dewatered into particles of approximately 2–3 cm diameter;

c. dispersing said particles breadthwise onto the lower screen belt of the preliminary dewatering zone and carrying the strewn material through this zone between the two belts thereof so that it is pressed only through the tension of the belts;

d. carrying the material leaving the preliminary dewatering zone through the main dewatering zone between the belts thereof and subjecting it to successively increasing pressure in the nips of the rolls of the zone, whereby water is pressed from the material and transferred into the pressure belts; and

e. carrying the material leaving the main dewatering zone through the high pressure zone between the screen belts thereof and subjecting it to a higher pressure in the nip or nips of this zone than that exerted by the last pair of rolls of the main dewatering zone.

4,447,335

PROCESS FOR THE PREPARATION OF THIN FILMS OF CADMIUM SULFIDE AND PRECURSOR SOLUTIONS OF CADMIUM AMMONIA THIOCYANATE COMPLEX USEFUL THEREIN

Otto E. Loeffler, Woodbridge, N.J.; Nirnal S. Jain, Irvington, and Otto S. Kauder, New York, both of N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 249,530, Mar. 31, 1981, Pat. No. 4,360,542. This application Mar. 22, 1982, Ser. No. 360,943
Int. Cl.³ C01C *3/20*
U.S. Cl. 252—1 **10 Claims**

1. An aqueous solution in ammonium hydroxide comprising a cadmium ammonia thiocyanate complex decomposable when heated at a temperature above 65° C. to form a cadmium sulfide insoluble in the solution, having a pH within the range from about 8 to about 10, and a ratio NH_3:SCN within the range from about 0.5:1 to about 2:1.

4,447,336

STABILIZED GALACTOMANNAN GUM COMPOSITIONS

Howard L. Vandersall, Upland, Calif., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 18, 1981, Ser. No. 332,287
Int. Cl.³ A62D *1/00*
U.S. Cl. 252—7 **21 Claims**

1. An aqueous fire retardant composition comprising an ammonium phosphate fire retardant selected from the group consisting of monoammonium orthophosphate; diammonium orthophosphate; monoammonium pyrophosphate; diammonium pyrophosphate; triammonium pyrophosphate; tetraammonium pyrophosphate; ammonium, polyphosphates; ammonium-alkali metal mixed salts of ortho-, pyro-, and polyphosphates; ammonium-alkaline earth metal mixed salts of ortho-, pyro-, and polyphosphates; and mixtures thereof, a viscosity increasing amount of galactomannan gum thickener, and, in an amount effective to reduce viscosity loss of the composition during storage, a water-soluble molybdenum compound.

4,447,337

STABIIZED GALACTOMANNAN GUM COMPOSITIONS

Mohammad S. Adl, West Covina; Gary H. Kegeler, Alta Loma, and Howard L. Vandersall, Upland, all of Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 24, 1982, Ser. No. 351,710
Int. Cl.³ A62D *1/00*
U.S. Cl. 252—7 **28 Claims**

1. An aqueous fire retardant composition comprising ammonium phosphate fire retardant selected from the group consisting of monoammonium orthophosphate; diammonium orthophosphate; monoammonium pyrophosphate; diammonium pyrophosphate; triammonium pyrophosphate; tetraammonium pyrophosphate; ammonium polyphosphates; ammonium-alkali metal mixed salts of ortho-, pyro-, and polyphosphates; am-

monium-alkaline earth, metal mixed salts of ortho-, pyro-, and polyphosphates; and mixtures thereof, a viscosity increasing amount of a galactomannan gum thickener, and, in an amount effective to reduce viscosity loss of the composition during storage, a stabilizer system comprising a mixture of water-soluble molybdenum compound and a thiourea of the formula



in which each R independently is hydrogen, alkyl of 1-3 carbon atoms, or one R of each nitrogen atom are joined to form an alkylene radical of 2-4 carbon atoms.

4,447,338

DRILLING MUD VISCOSIFICATION AGENTS BASED ON SULFONATED IONOMERS

Robert D. Lundberg, Bridgewater, N.J.; Thad O. Walker, Humble; Charles P. O'Farrell, Houston, both of Tex., and Henry S. Makowski, deceased, late of Scotch Plains, N.J. (by Patricia H. Makowski, executrix), assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 12, 1981, Ser. No. 292,235

Int. Cl.³ C09K *7/06*

U.S. Cl. 252—8.5 M **10 Claims**

1. An oil base drilling mud which comprises:
(a) an organic liquid selected from the group consisting of a diesel fuel, kerosene, fuel oil and crude oil;
(b) about 1 to about 10 parts by weight of water per 100 parts by weight of the organic liquid;
(c) about 20 to about 50 lb/bbl of at least one emulsifier;
(d) weighting material of sufficient quantity necessary to achieve the desired density; and
(e) about 0.25 to abut 2 lb/bbl of a water insoluble neutralized sulfonated elastomer, said neutralized sulfonated polymer elastomer having about 5 to about 30 meg. of sulfonate groups per 100 grams of the neutralized sulfonated polymer elastomer, said neutralized sulfonated elastomer being derived from an elastomeric polymer selected from the group consisting of EPDM terpolymers and butyl rubber, said EPDM terpolymers having a number average molecular weight of about 10,000 to about 200,000 and said butyl rubber having a Staudinger molecular weight of about 20,000 to about 500,000.

4,447,339

OIL WELL DRILLING CLAY CONDITIONERS AND METHOD OF THEIR PREPARATION

William J. Detroit, Schofield, Wis., assignor to Reed Lignin, Inc., Greenwich, Conn.

Filed Jun. 26, 1981, Ser. No. 277,714

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 A **27 Claims**

1. An oil well drilling fluid additive comprising the oxidation product of a sulfonated lignin-containing material and manganese dioxide and having an equivalent manganese content of about 2 to about 15 percent.

4,447,340

METHOD OF TRACING A WELL DRILLING MUD

Jean-Jacques Féy, Bar le Duc, France, assignor to Compagnie Francaise des Petroles, Paris, France

Division of Ser. No. 222,843, Jan. 6, 1981, Pat. No. 4,352,674. This application Jun. 22, 1982, Ser. No. 391,041

Claims priority, application France, Jan. 8, 1980, 80 00263

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 C **4 Claims**

1. An aqueous clay containing drilling mud with tracing ions suitable for use in the tracing of a well drilling mud, wherein said ions comprise the acetate ion, CH_3COO^- present in the drilling mud in a concentration of from 1×10^{-3} to 5×10^{-2} ions per liter, wherein said acetate ion in said concentration does not affect the swelling properties of the clay.

4,447,341

CLAY STABILIZER COMPOSITION FOR AQUEOUS DRILLING FLUIDS

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,152

Int. Cl.³ C09K *7/00, 3/00;* E21B *3/00*

U.S. Cl. 252—8.5 A **31 Claims**

1. A clay stabilizing composition comprising
water,
clay, and
a clay stabilizing additive mixture in an amount of 1-5% by weight of the water comprising
an aluminum hydroxide having the formula AlO(OH), and
a crosslinked polyvinyl alcohol which is crosslinked with at least about 0.05 to 200 percent of stoichiometry with a compound containing at least one aldehyde group therein or capable of generating in an aqueous medium at least one aldehyde group.

4,447,342

METHOD OF CLAY STABILIZATION IN ENHANCED OIL RECOVERY

John K. Borchardt, and David L. Brown, both of Duncan, Okla., assignors to Halliburton Co., Duncan, Okla.

Filed Apr. 19, 1982, Ser. No. 369,764

Int. Cl.³ E21B *43/22, 43/12, 43/25*

U.S. Cl. 252—8.55 D **26 Claims**

1. In an oil reservoir subject to enhanced oil recovery treatment, said treatment including the introduction of anionic or caustic flood chemicals into said reservoir, a method of stabilizing clays comprising the steps of:
mixing a clay stabilizing cationic organic polymer with a carrier fluid;
introducing the clay stabilizing cationic organic polymer containing carrier fluid into the reservoir treatment area,
introducing an effective amount of non-ionic aqueous fluid, said fluid being essentially inert with respect to said clay stabilizer and containing less than about 5% monovalent salts by weight, into said reservoir treatment area to cause said polymer to reorient itself on the clay in such a manner that said polymer continues to stabilize said clay, but does not substantially interact with the anionic or caustic flood chemicals, and
introducing into said reservoir treatment area said anionic or caustic flood chemicals.

4,447,343

CONCENTRATED FABRIC SOFTENERS

Adolf May, Hofheim am Taunus, and Hans-Walter Bücking, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,296

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150178

Int. Cl.³ D06M *13/30, 13/46*

U.S. Cl. 252—8.75 **7 Claims**

1. Transparent, liquid fabric softener concentrates consisting substantially of
(a) from 26 to 40 weight % of a cationic softener,
(b) from 0.01 to 8 weight % of an anionic surfactant,
(c) from 0.01 to 8 weight % of a nonionic dispersant,
(d) from 3 to 30 weight % of a C_1-C_3 alcohol, and
(e) water in an amount remaining to complete to 100%.

4,447,344

DEWATERING AIDS FOR COAL AND OTHER MINERAL PARTICULATES

William J. Roe, Aurora, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 2, 1983, Ser. No. 500,497

Int. Cl.³ C09K *3/18;* B01D *43/00;* F26B *1/00, 5/08*

U.S. Cl. 252—60 **10 Claims**

1. A composition for altering the water function characteristics of a wet, particulate mineral mass comprising: a surfactant material having a hydrophile-lipophile balance number of from about 6.0 to about 12.0; and a surfactant adsorption inhibitory amount of a hydrotrope.

4,447,345

THERMAL INSULATING FLEXIBLE CERAMIC CONTAINING FLAME HYDROLYSIS PRODUCED MICROPOROUS OXIDE AEROGEL

Hans Kummermehr, Ludwigshafen, and Rolf Sommer, Dannstadt-Schauernheim, both of Fed. Rep. of Germany, assignors to Grünzweig & Hartmann und Glasfaser AG, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,504

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3108816

Int. Cl.³ C04B *43/02;* E04B *1/78*

U.S. Cl. 252—62 **75 Claims**

1. Thermal insulating flexible ceramic on the basis of microporous oxide aerogel obtained from flame hydrolysis with elastically bending or limply bending, fibers with or without additional additive substances characterized by the combination of the following features:
(a) the frequency distribution of the length of fibers has a maximum of over 10 mm;
(b) the flexible ceramic is compressed up to a bulk density of more than 200 kg/m³;
(c) the sum of the portions of weight of the fibers and of the additive substances, which however contain no binder, lies between about 10% and 60% of the flexible ceramic; and
(d) the portion of weight of fibers with a specific density of the fiber material of 2.55 g/cm³ insofar as the fibers have a greater length than 10 mm, lies between about 10% and 30% of the flexible ceramic, whereby in the case of fiber material with a density of 2.55 g/cm³, the portions deviating from weight are to be changed with a factor which corresponds to the ratio of the deviating density to 2.55.

4,447,346

ELECTROLYTE SYSTEM FOR ELECTROLYTIC CAPACITORS

Richard W. MacNamee, Pickens; Morris T. Reese, Taylors, and Emil F. Blase, Pickens, all of S.C., assignors to Sangamo Weston, Inc., Springfield, Ill.

Continuation of Ser. No. 12,321, Feb. 15, 1979, abandoned, which is a continuation of Ser. No. 841,181, Oct. 11, 1977, abandoned. This application Feb. 18, 1983, Ser. No. 467,946

Int. Cl.³ H01G *9/02*

U.S. Cl. 252—62.2 **4 Claims**

1. A substantially non-aqueous electrolyte composition for aluminum-anode electrolyte capacitors consisting essentially of ethylene glycol solvent and:
a reaction product formed at a temperature below about 35° C. in the presence of said ethylene glycol solvent when an amount of fumaric acid is reacted with twice the molar concentration of a base, said base being selected from the group consisting of ammonia, a primary amine of the formula RNH_2, a secondary amine of the formula RR'NH and a tertiary amine of the formula RR'R''N wherein R, R' and R'' are selected from a group consisting of C_1 to C_4 alkyl and alkylene groups, with said substantially non-aqueous electrolyte composition being free of unreacted fumaric acid, and
wherein the total molar concentration of said fumaric acid and said base used to form the reaction product is less than about 0.3 mole per mole of said ethylene glycol and said electrolyte composition having a pH of between about 4.9 to 7.2 to prevent corrosion of the aluminum-anode.

4,447,347

HEAT STORAGE SYSTEM

Louis Goldfarb, Lancaster, and Clyde M. Sweigart, Landisville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 3, 1983, Ser. No. 471,752

Int. Cl.³ C09K *3/18*

U.S. Cl. 252—70 **5 Claims**

1. A heat storage system comprising calcium chloride hexahydrate as the storage medium and a dolomite-calcium hydroxide nucleating agent.

4,447,348

CARBOXYLIC SOLUBILIZER/SURFACTANT COMBINATIONS AND AQUEOUS COMPOSITIONS CONTAINING SAME

John W. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 238,394, Feb. 25, 1981, Pat. No. 4,368,133, which is a continuation-in-part of Ser. No. 26,384, Apr. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 948,460, Oct. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 946,294, Sep. 27, 1978, Pat. No. 4,329,249. This application Mar. 4, 1982, Ser. No. 352,693

The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.³ C10M *1/08, 1/06, 3/04*

U.S. Cl. 252—75 **88 Claims**

1. A composition comprising a continuous aqueous phase, and dispersed in said aqueous phase the combination of (A) at least one nitrogen-containing, phosphorus-free carboxylic solubilizer made by the reaction of (A)(I) at least one polycarboxylic acid acylating agent having at least one hydrocarbon-based substituent of at least about 12 to about 500 carbon atoms with (A)(II) at least one (a) N-(hydroxyl-substituted hydrocarbyl) amine, (b) hydroxyl-substituted poly(hydrocarbyloxy) analog of said amine or (c) mixtures of (a) and (b); and (B) at least one surfactant.

4,447,349

SUDS SUPPRESSING GRANULES FOR USE IN DETERGENT COMPOSITIONS

Louis H. T. Tai, Santes, France, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 259,284, Apr. 30, 1981, abandoned. This application Sep. 13, 1982, Ser. No. 417,817

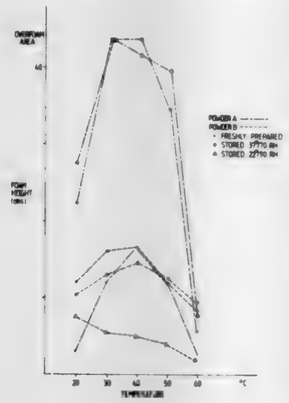
Claims priority, application France, May 12, 1980, 80 10640

Int. Cl.³ C11D *17/00;* B05D *7/00*

U.S. Cl. 252—174.13 **13 Claims**

1. Suds-suppressing granules suitable for use in detergent compositions comprising from about 25% to 80% by weight of

a substantially spherical or cylindrical core material of sucrose and one or more coatings, at least one coating comprising from



about 5% to 30% based on the weight of the granules of a silicone oil mixture.

4,447,350

MIXTURES OF OPTICAL BRIGHTENERS AND THEIR USE

Thomas Martini, Bad Soden am Taunus; Erich Schinzel; Hans Frischkorn, both of Hofheim am Taunus; Herbert Friedrich, Heusenstamm, and Heinz Probst, Sulzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

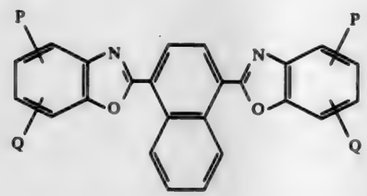
Continuation of Ser. No. 283,499, Jul. 15, 1981, abandoned. This application Sep. 15, 1983, Ser. No. 532,809

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027479

Int. Cl.³ C11D *7/26;* **D06L** *3/12*

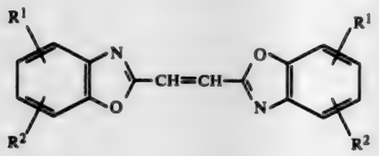
U.S. Cl. 252—301.22 **6 Claims**

1. Mixtures of optical brighteners consisting of 1 to 60% by weight of a compound of the formula (1)



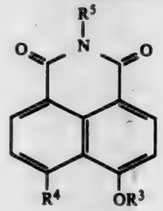
(1)

in which P and Q independently of one another denote alkyl, carbalkoxy, or alkylsulfonyl and 99 to 40% by weight of one or more compounds of the formulae (2) to (10)

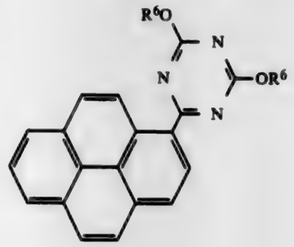


(2)

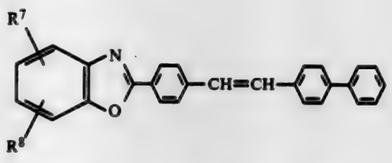
-continued



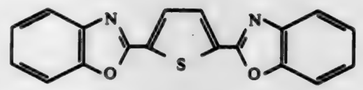
(3)



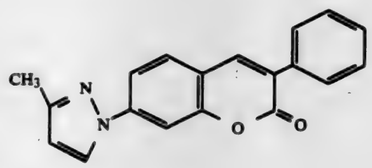
(4)



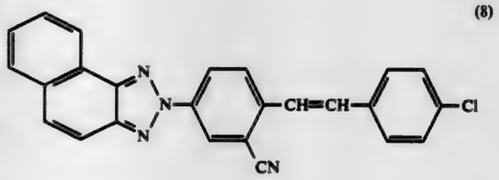
(5)



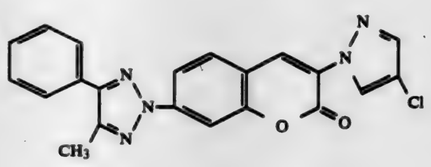
(6)



(7)

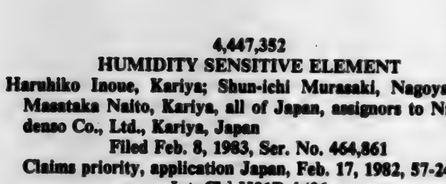


(8)



(9)

-continued



(10)

in which R^1 and R^2 independently of one another denote hydrogen or alkyl, R^3 denotes alkyl or alkoxyalkyl, R^4 denotes hydrogen or alkoxy, R^5 denotes alkyl, hydroxyalkyl, alkoxyalkyl or aralkyl, R^6 denotes alkyl and R^7 and R^8 denote hydrogen or alkyl, at temperatures of from 250° to 360° C.

4,447,351

PREPARATION OF ALUMINA HYDROSOL FROM ALUMINUM SULFATE SOLUTION

Tai-Hsiang Chao, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 12, 1983, Ser. No. 457,547

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—313 R **7 Claims**

1. Method of preparing an acidic, substantially sulfur-free alumina hydrosol from an aqueous aluminum sulfate solution which comprises the steps of:

a. admixing about a stoichiometric amount of M where M is selected from the group consisting of Ca, Sr, and Ba in the form of a mixture of $MCl_2.2H_2O$ and $M(OH)_2$ with said aqueous aluminum sulfate solution, said amount of M being sufficient to precipitate in excess of 98% of the sulfate radical of said solution;

b. filtering the resulting $M(SO_4)$ precipitate; recovering a substantially sulfur-free aluminum-containing filtrate solution; admixing sufficient aluminum metal with said filtrate solution to achieve a desired Al:Cl weight ratio in the so formed admixture; and

c. digesting said admixture at digestion conditions to form said alumina hydrosol.

4,447,352

HUMIDITY SENSITIVE ELEMENT

Haruhiko Inoue, Kariya; Shun-ichi Murasaki, Nagoya, and Masataka Naito, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 8, 1983, Ser. No. 464,861

Claims priority, application Japan, Feb. 17, 1982, 57-24239

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—519 **5 Claims**



1. A sintered, humidity sensitive element containing 70 to 20 mole % of $ZnFe_2O_4$ and 30 to 80 mole % of a member selected from the group consisting of SiO_2 and MnO_2.

4,447,353

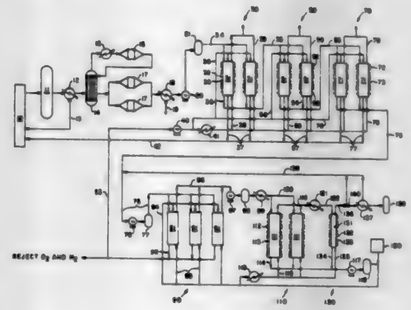
METHOD FOR TREATING A NUCLEAR PROCESS OFF-GAS STREAM

Dallas T. Pence, and Chun-Chao Chou, both of San Diego, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 63,970, Aug. 6, 1979. This application Sep. 11, 1980, Ser. No. 186,303

Int. Cl.³ B01J *20/18;* **B01D** *53/04*

U.S. Cl. 252—630 **4 Claims**



1. A method for selectively removing xenon in gas phase from a nuclear process off-gas stream which contains at least one other gas selected from the group consisting of krypton, oxygen, and nitrogen, said method comprising the step of directing said stream through an adsorbent bed containing silver-exchanged synthetic mordenite zeolite while maintaining said stream at about ambient temperature and pressure.

4,447,354

METHOD FOR MAKING OXIDATION-STABLE, LIGHT-COLORED GLYCEROL ESTER OF MODIFIED ROSIN

Roland P. F. Scharrer, Pelham, N.Y.; Robert W. Schluenz, Panama City, Fla., and Richard H. Kramss, Stamford, Conn., assignors to Arizona Chemical Company, Fair Lawn, N.J.

Filed Mar. 21, 1983, Ser. No. 477,114

Int. Cl.³ C09F *1/00, 1/04*

U.S. Cl. 260—106 **3 Claims**

1. A method of making a glycerol ester of modified rosin, wherein unmodified rosin is simultaneously disproportionated and esterified in presence of a disproportionating agent and glycerol and an esterification catalyst at a temperature sufficient for both reactions and for a time sufficient to reduce the abietic acid content to about 5% or less and to essentially complete the esterification.

4,447,355

METHOD FOR STABILIZING A TUMOR NECROSIS FACTOR AND A STABLE AQUEOUS SOLUTION OR POWDER CONTAINING THE SAME

Hajimu Sakamoto; Takao Kiyota, and Hiroshi Hayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha and Dainippon Pharmaceutical Co., Ltd., both of Osaka, Japan

Filed Mar. 23, 1983, Ser. No. 477,866

Claims priority, application Japan, Apr. 7, 1982, 57-56690; Jul. 27, 1982, 57-129560

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 B **47 Claims**

1. A method for stabilizing Tumor Necrosis Factor, which comprises adding to an aqueous solution or powder containing Tumor Necrosis Factor an effective amount of at least one stabilizing agent selected from the group consisting of an albumin, a gelatin, a globulin, a protamine and a salt of protamine.

4,447,356

CONOTOXINS

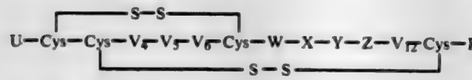
Baldomero M. Olivera, 1370 Bryan Ave., Salt Lake City, Utah 84105; Lourdes J. Cruz, 3993 Dangal, Sta Mesa, Manila, Philippines; William R. Gray, 3769 Parkview Dr., Salt Lake City, Utah 84117, and Jean E. F. Rivier, 9674 Blackgold Rd., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 255,237, Apr. 17, 1981, abandoned. This application Jun. 4, 1982, Ser. No. 385,125

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **15 Claims**

1. A peptide having the structure



wherein

U is —NH_2, Glu, Asp, Gly—Arg, N-trimethyl Glu or N-trimethyl Asp,

any of V_4, V_5 or V_6 is Asn, His, Pro or Ala,

V_{12} is Ser or Cys,

W is Gly,

X is Lys, Arg, ornithine, homoarginine, N-methyl lysine, dimethyl lysine or trimethyl lysine,

Y is Asn, Phe, Tyr, nitrotyrosine, His, Trp, monoiodo His, or substituted Phe,

Z is Leu, Val, Ile, Phe, Tyr, monoido Tyr, diiodo Tyr, monochloro-monoiodo Tyr, or cyclohexylalanine, and

R is —NH_2, —Gly—Lys—NH_2.

4,447,357

FIBRE-REACTIVE AZO DYESTUFFS CONTAINING A HALOTRIAZINYL RADICAL AND A NON-REACTIVE TRIAZINYL RADICAL

Gerd Hölzle, Liestal, and Rainer Begrich, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

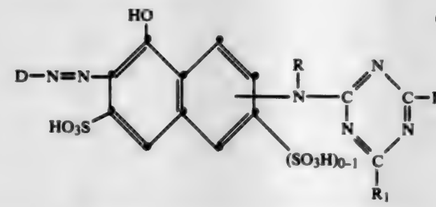
Filed Mar. 16, 1981, Ser. No. 243,233

Claims priority, application Switzerland, Mar. 18, 1980, 2125/80

Int. Cl.³ C09B *62/085, 62/09, 62/095, 62/08*

U.S. Cl. 260—153 **9 Claims**

1. An azo dye of the formula



(I)

wherein D is benzene, naphthalene, benzoylaminobenzene, azobenzene or stilbene, which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, phenoxy, alkanoylamino of 1 to 6 carbon atoms, benzoylamino, amino, alkylamino of 1 to 4 carbon atoms, phenylamino, alkoxycarbonyl of 1 to 5 carbon atoms, alkylcarbonyl of 1 to 5 carbon atoms, nitro, cyano, acetyl, carbamoyl, ureido, hydroxy, carboxy, halogen or sulfo, and which contains dihalo-s-triazinylamino or monohalo-s-triazinylamino substituted by methyl, ethyl, phenyl, C_{1-4}-alkylthio unsubstituted or substituted by carboxy; phenylthio, naphthylthio, hydroxy, C_1–C_6-alkoxy unsubstituted or substituted by carboxy; C_{1-6}-alkoxyalkoxy, C_{1-6}-alkoxyalkoxyalkoxy, cyclohexyloxy, phenoxy unsubstituted or substituted by chloro, nitro, carboxy or sulfo; naphthoxy unsubstituted or substituted by sulfo; —NH_2, C_{1-6}-mono- or -dialkyl-amino unsubstituted or substituted by C_{1-2}-alkoxy, chloro, hydroxy, carboxy, sulfo, sulfato or phenyl; cyclohexylamino, phenylamino unsubstituted or substituted by methyl, chloro, acetylamino, β-sulfato-ethylsulfonyl, nitro, hydroxy, methoxy, ethoxy, carboxy or sulfo; N-C_{1-2}-alkyl-N-phenylamino, N-β-hydroxyethyl-N-phenyl-amino, naphthylamino unsubstituted or substituted by sulfamoyl, hydroxy or sulfo; pyridylamino, benzthiazolyl-(2)-amino, quinolinylamino, pyrimidylamino, morpholino, piperidino, piperazino or 2-sulfo-4-(6'-methyl-7'-sulfobenzthiazol-2-yl)-phenylamino; wherein the halo-s-triazinylamino is bonded directly or via methylene to a ring carbon of D, and the amino bridging member by which the halo-s-triazinyl is bonded to a carbon atom in D is unsubstituted or substituted at the nitrogen atom by C_{1-4}-alkyl or -sulfoalkyl, R is hydrogen or alkyl of 1 to 4 carbon atoms, and R_1 and R_2, independently of one another, have the same meaning as those substituents referred to above of the monohalo-s-triazinyl in D; or a heavy metal complex thereof.

4,447,358

MONOAZO COMPOUNDS

Hansrudolf Schwander, Riehen, and Peter Furrer, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

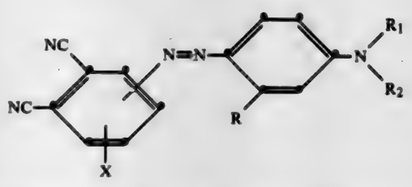
Filed Oct. 5, 1981, Ser. No. 308,691

Claims priority, application Switzerland, Oct. 16, 1980, 7737/80

Int. Cl.³ C09B *29/08, 29/26*

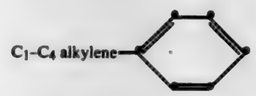
U.S. Cl. 260—205 **12 Claims**

1. A monoazo compound of the formula I



(I)

wherein X is hydrogen or halogen, R is hydrogen or C_1–C_4 alkyl, R_1 is C_1–C_8 alkyl, cycloalkyl or



wherein the phenyl radical can be monosulfonated, and R_2 is C_1–C_4 alkyl which is unsubstituted or substituted by a sulfo group or is cycloalkyl, with the proviso that either R_1 or R_2 contains a sulfo group.

4,447,359

SUBSTITUTED 2-(CHLORO, BROMO OR CYANO)-4,6-DINITROPHENYL AZO PHENYL DYES

Peter Aeschlimann, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

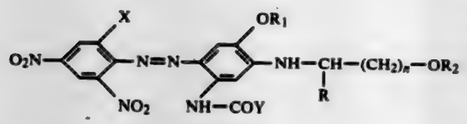
Continuation of Ser. No. 960,698, Nov. 14, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 130,795

Claims priority, application Luxembourg, Nov. 21, 1977, 78553

Int. Cl.³ C09B *29/085;* **D06P** *1/18, 3/26, 3/54*

U.S. Cl. 260—207 **11 Claims**

1. A monoazo dye of the formula



in which

X is chloro, bromo or cyano;

R is alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by bromo, chloro, cyano, lower alkoxy or phenoxy;

R_1 and R_2 are independently alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by lower alkoxy, phenoxy or phenyl, or is phenyl, tolyl, chlorophenyl, tert-butylphenyl or dimethylphenyl;

Y is lower alkyl or lower alkoxy; and

n is an integer of at most 4.

4,447,360

INTERMEDIATES FOR THIA-AZA COMPOUNDS WITH A β-LACTAM RING

Jacques Gosteli, Basel; Ivan Ernest, Birsfelden, both of Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

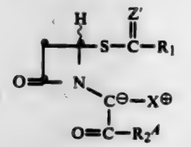
Division of Ser. No. 902,639, May 4, 1978, Pat. No. 4,331,676. This application Dec. 8, 1980, Ser. No. 214,316

Claims priority, application Luxembourg, May 9, 1977, 77306

Int. Cl.³ C07D *205/08, 401/12, 405/12, 409/12*

U.S. Cl. 260—239 A **3 Claims**

1. Compounds of the formula



(II)

in which Z' represents oxygen, sulphur or a methylidene group optionally carrying one or two substituents selected from the group consisting of lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, phenyl, phenyl-lower alkyl, lower alkoxycarbonyl, carbamoyl or cyano, R_1 represents hydrogen, lower alkyl, lower alkyl monosubstituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, lower alkylthio, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, mono- or di-lower alkylamino, lower alkylene-amino or amino acylated by benzyloxycarbonyl, p-nitrobenzyloxycarbonyl or phenoxyacetyl; lower alkoxycarbonyl; aryl-lower alkoxycarbonyl; aryloxycarbonyl; aminocarbonyl; mono- or di-lower alkylaminocarbonyl; cycloalkyl, cycloalkyl-lower alkyl; phenyl; naphthyl; phenyl-lower alkyl; phenyl or phenyl-lower alkyl mono-substituted by lower alkyl, lower alkoxy, halogen, nitro or amino; pyridyl; thienyl; furyl; pyridyl-lower alkyl; thienyl-lower alkyl; furyl-lower alkyl; lower alkylthio; lower alkenylthio; cycloalkylthio; cycloalkyl-lower alkylthio; phenylthio; phenyl-lower alkylthio; or lower alkylthio, lower alkenylthio, cycloalkylthio, cycloalkyl-lower alkylthio, phenylthio or phenyl-lower alkylthio mono-substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, mono- or di-lower alkylamino, lower alkanoylamino or lower alkyleneamino, $X^{\oplus}$ represents triarylphosphonio, tri-lower alkylphosphonio or a phosphono group esterified twice by lower alkyl together with an alkali metal cation, and R_2^4 represents lower alkoxy, lower alkenyloxy, 2-halo-lower alkoxy, 2-lower alkylsulphonyl-lower alkoxy, 1-phenyl-lower alkoxy; 1-phenyl-lower alkoxy monosubstituted or disubstituted by lower alkoxy or nitro; pentachlorophenoxy, acetonyloxy, 2-cyanoethoxy, 2-tri-lower alkylsilylethoxy, 2-triphenylsilylethoxy or tri-lower alkylsilyloxy, in racemic or optically active form.

4,447,361

ARYL SUBSTITUTED PYRIDO[1,4]BENZODIAZEPINES

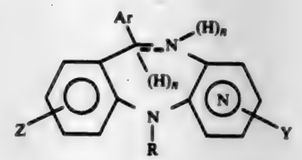
Chandler R. Taylor, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 305,080, Sep. 24, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,218

Int. Cl.³ C07D *471/04*

U.S. Cl. 260—244.4 **34 Claims**

1. A compound selected from the group having the formula:



wherein:

R is —alk^1—N—R^1R^2;

R^1 and R^2 are selected from the group consisting of hydrogen and loweralkyl;

Ar is selected from the group consisting of 2, 3 or 4-pyridinyl, 2 or 3-thienyl, phenyl or phenyl substituted by 1 to 3 radicals selected from halogen, loweralkyl, loweralkoxy, trifluoromethyl or nitro and may be the same or different;

alk^1 is a straight or branched hydrocarbon chain of 1–8 carbon atoms;

Z is selected from the group consisting of hydrogen, halogen, loweralkyl, loweralkoxy, hydroxy or nitro;

Y is selected from the group consisting of hydrogen or 1–2 radicals selected from loweralkyl, loweralkoxy or hydroxy and may be the same or different;

n is 0 or 1 and when n is zero the dotted line is a double bond, and the pharmaceutically acceptable acid addition salts thereof.

4,447,362

PROCESS FOR THE PRODUCTION OF COENZYME Q

Kiyoshi Watanabe; Satoshi Ideguchi; Masahiro Ogura; Masahiko Shimada, and Hajime Kawaharada, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 8, 1977, Ser. No. 831,426

Claims priority, application Japan, Sep. 14, 1976, 51-110435

Int. Cl.³ C07C *46/10, 50/06*

U.S. Cl. 260—396 R **4 Claims**

1. A process for producing coenzyme Q from tissues of animals and plants or microbial cells which contain coenzyme Q and which comprises treating a water suspension of said materials with a mineral acid and then with an alkali in the absence of an alcohol and an antioxidant, extracting the alkali-treated suspension with at least one water-immiscible organic solvent, and isolating coenzyme Q from the extract.

4,447,363

ANDROSTENE-17-DITHIOKETALS

Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

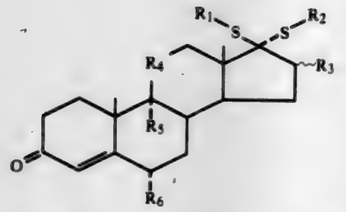
Filed Jul. 7, 1982, Ser. No. 396,178

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.3 **16 Claims**

1. A steriod having the formula



or 1,2-, 6,7- and 15,16-dehydro derivatives thereof, wherein one of R_1 and R_2 is alkyl, cycloalkyl, aryl, arylalkyl, or $-CH_2X$ wherein X is alkylthio, alkoxy, alkanoyloxy, aroyloxy or alkoxycarbonyl, and the other is alkylthioalkyl, alkoxyalkyl, alkanoyloxyalkyl, aroyloxyalkyl, alkoxycarbonylalkyl, carbonylalkyl or arylalkyl;

R_3 is hydrogen, hydroxy, alkoxy, aryloxy, oxo, methylene, alkylthio, arylthio, alkanoyl, alkanoyloxy, or halogen;

R_4 is carbonyl or β-hydroxymethylene;

R_5 is hydrogen or halogen; and

R_6 is hydrogen, methyl, hydroxy, alkanoyl or halogen.

4,447,364

METHOD FOR THE PREPARATION OF LIQUID ALUMINUM CITRATE

Philip W. Staal, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 295,227, Aug. 21, 1981, which is a continuation-in-part of Ser. No. 153,766, May 27, 1980. This application Jan. 27, 1983, Ser. No. 461,467

Int. Cl.³ C07D *103/04*; C07F *5/06*

U.S. Cl. 260—448 R **7 Claims**

1. A method for the preparation of an aqueous solution of an aluminum citrate complex which consists essentially of the following steps:

(a) providing an aqueous solution of $AlCl_3$ containing up to about 34 weight % $AlCl_3$;

(b) combining the $AlCl_3$ solution with an aqueous solution of citric acid containing up to about 50 weight % citric acid, while vigorously agitating the resultant solution, to form an aluminum citrate solution having a mole ratio of aluminum ion to citric acid molecule of from about 1.5:1 to 2.0:1, said $AlCl_3$ solution being provided in an amount sufficient to form an aluminum citrate solution containing from 1 up to about 3 weight % aluminum; and

(c) adding a basic hydroxide of the formula MOH where M is an alkali metal or ammonium cation to the aluminum citrate solution, while continuing to agitate the solution and while maintaining its temperature within the range of from 20° C. to 90° C., in sufficient quantity to raise the pH of the solution to a level of from 5.5 to 7.5.

7. A method for the preparation of a stable liquid aluminum citrate which consists essentially of the following steps:

(a) providing an aqueous solution of aluminum chloride containing up to about 34% (w/w) of aluminum chloride;

(b) combining the aluminum chloride solution with an aqueous solution of citric acid containing up to about 50% (w/w) citric acid while providing vigorous agitation to form a solution of aluminum citrate containing from 1 to about 3 weight % aluminum and having a mole ratio of aluminum ion to citric acid molecule of from about 1.5:1 to about 2:1; and

(c) adding a 50% (w/w) solution of sodium hydroxide to the aluminum citrate solution, while continuing to provide vigorous agitation and maintaining the temperature of the resultant at a level of from 40° C. to 60° C., to raise the pH to a level of from 6.0 to 7.0.

4,447,365

2-ETHYL HEXYL AND ISOBORNYL METHYL CARBONATES

Richard M. Boden, Monmouth Beach; Michael Licciardello, Farmingdale, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

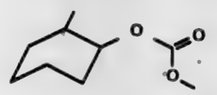
Division of Ser. No. 322,872, Nov. 19, 1981, Pat. No. 4,390,463. This application Jan. 18, 1983, Ser. No. 458,964

The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.

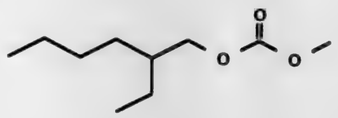
Int. Cl.³ C07C *69/96*; A61K *7/46*

U.S. Cl. 260—463 **2 Claims**

1. The methyl carbonate having the structure:



2. The methyl carbonate having the structure:



4,447,366

DERIVATIVES OF LYSINE AND ASPARTIC ACID

Jean V. Morelle, and Eliane M. T. Lauzanne-Morelle, both of 170, Ave. Parmentier, 75010 Paris, France

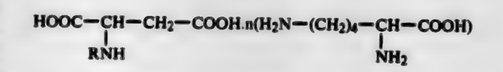
Filed Nov. 23, 1981, Ser. No. 324,004

Claims priority, application France, Dec. 4, 1980, 80 25732

Int. Cl.³ C07C *101/24*, *101/26*

U.S. Cl. 260—501.11 **2 Claims**

1. A derivative of lysine and aspartic acid having the general formula



in which R represents an acyl group having from 6 to 26 carbon atoms and n is 2 and in which the acyl group is derived from an aliphatic moncarboxylic acid.

4,447,367

PHOSPHONOFORMALDEHYDE, A PROCESS FOR ITS PREPARATION AND ITS USE AS AN INTERMEDIATE PRODUCT FOR THE PREPARATION OF MEDICAMENTS

Hermann Oediger, Cologne; Folker Lieb, Leverkusen, and Hans Disselnkötter, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

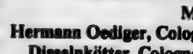
Division of Ser. No. 308,717, Oct. 5, 1981, Pat. No. 4,348,332. This application Apr. 22, 1982, Ser. No. 370,890

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039998

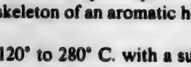
Int. Cl.³ C07F *9/38*

U.S. Cl. 260—502.4 R **2 Claims**

1. A process for the production of the compound of the formula



which comprises warming a dialkoxymethanephosphonic acid of the formula



in which

both radicals R represent an alkyl group with 1 to 4 carbon atoms, with water to a temperature in the range from +70° to +100° C., and if it is desired to convert the free phosphonoformaldehyde into a salt thereof, reacting the free phosphonoformaldehyde with a base.

4,447,368

PROCESS FOR THE PREPARATION OF AMINOARYLSULPHONIC ACIDS IN SULFOLENE SOLVENT

Herbert Emde, Cologne; Heinz U. Blank, and Peter Schnegg, both of Odenthal, all of Fed. Rep. of Germany, assignors to Siemens-Allis, Inc., Atlanta, Ga.

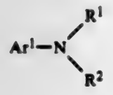
Filed Mar. 31, 1982, Ser. No. 364,083

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114830

Int. Cl.³ C07C *143/56*, *143/64*

U.S. Cl. 260—508 **19 Claims**

1. A process for the preparation of an aminoarylsulphonic acid having a free or neutralized sulphonic acid group which comprises contacting an arylamine of the formula



in which

R^1 and R^2 independently of one another denote hydrogen, alkyl, aralkyl or aryl, or both together form, together with the N atom on which they are substituted, a nitrogen-containing heterocyclic structure and

Ar^1 represents an unsubstituted or substituted benzene, naphthalene, anthracene naphthoquinone or athraquinone skeleton or the skeleton of an aromatic heterocyclic structure,

at a temperature of 120° to 280° C. with a sulphonating agent in a reaction mixture consisting essentially of said arylamine, said sulphonating agent and an inert solvent, said inert solvent comprising tetramethylene sulphone.

4,447,369

ORGANOMAGNESIUM COMPOUNDS

Eugene C. Ashby, Atlanta, Ga., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 369,340, Apr. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 303,404, Sep. 18, 1981, abandoned. This application Apr. 25, 1983, Ser. No. 488,080

Int. Cl.³ C07F *3/02*

U.S. Cl. 260—665 R **25 Claims**

1. In a process for producing dialkylmagnesium having the same or different alkyl groups wherein magnesium and an alkyl halogenide or mixture of alkyl halogenides are reacted in an inert, ether-free dispersion medium, the improvement therein comprising the step of adding a relatively small amount of a cyclopentadiene compound to the reaction mixture whereby the settling rate of the solid co-product from the dialkylmagnesium solution is effectively increased.

4,447,370

SUPPLEMENTARY FUEL SUPPLY MECHANISM FOR INTERNAL COMBUSTION ENGINES

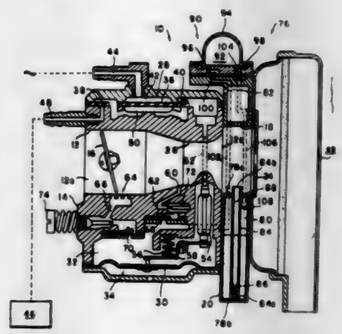
Hiroto Kobayashi, and Takeshi Kobayashi, both of Kawasaki, Japan, assignors to Walbro Far East, Inc., Kawasaki, Japan

Filed Jun. 21, 1982, Ser. No. 390,388

Claims priority, application Japan, Jul. 13, 1981, 56-108134

Int. Cl.³ F02M *1/16*

U.S. Cl. 261—35 **7 Claims**



1. A device which supplements the fuel supply for the starting and idle operation of an internal combustion engine and to be utilized in conjunction with a carburetor having a fuel chamber, a fuel and air mixing passage with an air inlet at one end and an engine outlet for fuel and air at the other end for supplying fuel to an engine during normal operation thereof which comprises:

(a) first means forming a supplemental fuel chamber adjacent the air inlet of a carburetor,

(b) orifice means in said supplemental fuel chamber opening to the air inlet of a carburetor to admit liquid fuel to said air inlet,

(c) third means to supply fuel to said supplemental fuel chamber,

(d) said first means comprising a housing forming an annular hollow chamber having an opening to register with the air inlet of said carburetor, and

(e) said orifice means comprising a tubular element radially disposed in said annular hollow chamber and having an open end forming a fuel orifice extending into said opening and a second open end communicating with the interior of said chamber.

4,447,371

CARBURETOR

Frank R. Busch, 1062 W. Maple Ave., Wauconda, Ill. 60084

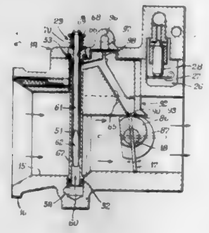
Filed Jun. 18, 1982, Ser. No. 390,069

Int. Cl.³ F02M *7/22*

U.S. Cl. 261—44 E **9 Claims**

1. A carburetor for internal combustion engines, comprising a main body having intake air passageway means of generally circular cross-section communication between atmospheric air and the intake manifold of the engine, a single planar throttle plate configured to fit the cross-section of said passageway means and mounted for limited rotational movement about an axis transverse of said passageway means to operably control the flow of air therethrough; a nozzle block extending into said passageway means in interfering relation with the rotational path of said throttle plate and having fuel introducing means at an outer end face thereof for introducing fuel substantially centrally into the stream of air flowing through said passageway means; said throttle plate having a cut away area extend-

ing inwardly of its periphery for registering reception of said nozzle block whereby to afford movement of said throttle plate over said block; and means cooperating with said nozzle block and moveable coaxially with said throttle plate and toward and away from said outer end face of said block to effectuate a variable size, convergent/divergent venturi passageway there-



between; said venturi passageway having its zone of maximum air velocity generally opposite the point of fuel introduction from said fuel introducing means with the vacuum effect of said venturi passageway being isolated from and independent of the engine's manifold vacuum and varying directly with the positioning of said throttle plate across said passageway means throughout said plate's range of movement.

4,447,372

METHOD AND APPARATUS FOR MOLDING PARTS HAVING AN ASPHERICAL SURFACE

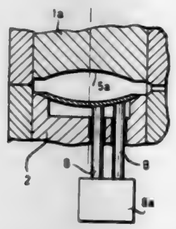
Albert Kreuttner, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Apr. 13, 1982, Ser. No. 367,920

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117474

Int. Cl.³ B29D *11/00*; B29F *1/06*

U.S. Cl. 264—2.2 **13 Claims**



1. A method of forming a molded thermoplastic product having opposed surfaces at least one of which is aspherical, which method comprises selecting for the formation of said one surface a molding-plate of elastically deformable material and having a spherical surface, selecting a mold having a molding-plate support for said plate in spaced opposed relation with a cavity formation for the other of said surfaces, the selected mold having a recessed region behind said support, mounting the selected plate on said support and over the recessed region, injecting thermoplastic material to fill said mold between said plate and said cavity formation and under sufficiently elevated pressure to elastically deform the surface of said plate to asphericity and to complete the molding of the product to such asphericity before removing the product from the mold.

4,447,373

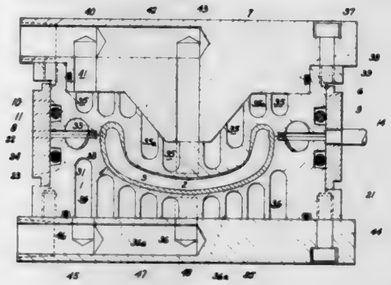
PROCESS FOR MAKING FILLED ARTICLES FROM POLYMERIC MATERIAL

Charles W. Chappell, West Chester, and Eldon G. Spletzer, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 16, 1982, Ser. No. 348,852

Int. Cl.³ B29C *6/00*

U.S. Cl. 264—4 **17 Claims**



1. A process of making a hollow article from moldable plastic material and filled with a filler substance comprising the steps of molding two parts using at least an exterior mold for each part, which parts, when joined at their peripheries, will constitute said article, causing said parts to remain in their respective exterior molds, bringing said exterior molds into opposed position, locating said filler substance in one of said parts, sealing said exterior molds together when in opposed position and prior to complete closure thereof, subjecting the space between the exterior molds with the parts therein to a partial vacuum, thereafter purging said space with a gas non-reactive to said filler material and said parts, and again subjecting said space to a partial vacuum prior to closing said exterior molds, closing said exterior molds and subjecting them to a clamping pressure to join said parts about their peripheries and to remove flash therefrom, heating parts at least of said exterior molds, cooling said exterior molds, opening said exterior molds and removing therefrom said article.

4,447,374

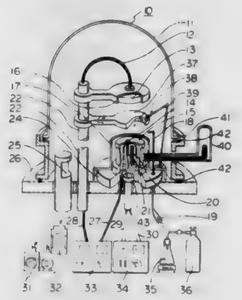
PREPARING REPLICA FILM OF SPECIMEN FOR ELECTRON MICROSCOPY

Akira Tanaka, Souka, Japan, assignor to The Tokyo Metropolitan Institute of Medical Science, Tokyo, Japan

Division of Ser. No. 100,280, Dec. 5, 1979, Pat. No. 4,334,844. This application Mar. 10, 1982, Ser. No. 356,734

Int. Cl.³ H05H *1/00*

U.S. Cl. 264—22 **2 Claims**



1. A method for preparing a replica of a specimen suitable for use in transmission-type electron microscopy and which is in the form of a film comprising the steps of:

(a) providing an apparatus comprising a pair of electrodes, one being an upper positive electrode and the other being a lower negative electrode which parallelly face each other with a distance therebetween and which are arranged in a vacuum vessel on a base plate, said pair of electrodes being electrically and thermically insulated from the vacuum vessel and the base plate and being surrounded by minute discharge prevention cylinders;

(b) placing the specimen on the surface of the negative electrode;

(c) evacuating the atmosphere within the apparatus with a vacuum pump so as to produce a high vacuum of approximately from 10^{-5} to 10^{-6} Torr within the apparatus;

(d) introducing organic monomer vapors or a mixture thereof with a small amount of an inert or active gas into the apparatus to produce a gas pressure of approximately from 1 to 10^{-2} Torr in the apparatus;

(e) applying a direct discharge voltage of from 0.5 to 3 KV between said two electrodes for 1 to 15 minutes to effect a glow discharge, while the current density of the glow discharge is maintained between 0.1 and 2 mA/cm^2 by adjusting the flow rate of the organic monomer vapors to the apparatus and the flow rate of the evacuation gas from the apparatus, whereby a polymer substance film having a uniform thickness is formed on the surface of the specimen by the diffusion effect of plasma molecules;

(f) removing the specimen having the polymer substance film thereon from the apparatus after putting the pressure of the atmosphere within the apparatus back to an ordinary pressure; and

(g) dissolving the specimen in a solvent which does not dissolve the polymer substance film, but dissolves the specimen, to thereby separate the polymer substance film from the specimen.

4,447,375

METHOD OF CASTING A PRINTING HEAD FOR AN INK JET PRINTER

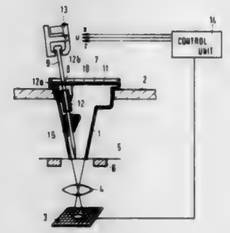
Hans Schimmelpfennig, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,731

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1982, 3226746

Int. Cl.³ B29D *3/00*

U.S. Cl. 264—40.5 **7 Claims**



1. A method of casting a synthetic body forming a write head for an ink jet printer, said write head having micro channels connecting first and second different limiting surfaces thereof, the discharge openings of said micro channels on said first limiting surface having a smaller diameter and a closer spacing than on said second limiting surface; comprising the steps of; providing a casting mold having openings corresponding to said two surfaces, covering the opening corresponding to said one surface with a transparent film, covering the other said opening with a terminal plate having bores for accepting at least one mold needle into said casting mold, using a positioning tool for positioning said needles, optically scanning the tips of said needles for developing signals for controlling operation of said positioning tool, whereby the tips of said needles are correctly positioned relative to said one surface, fixing the points of the mold needles to the transparent film, and subsequently filling said mold with liquid synthetic casting material through at least one casting orifice in said terminal plate.

7. The method according to claim 1 including the step of providing at least one opening in said terminal plate for the escape of air during filling of the mold chamber.

4,447,376

MANUFACTURE OF ELECTROCHEMICAL HIGH TEMPERATURE CELLS

Tsvetko Chobanov, Frankfurt; Dieter Künze, Kelkheim, and Friedrich Woeffler, Frankfurt, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 10, 1981, Ser. No. 291,410

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032552

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—42 **17 Claims**

1. A manufacturing process for an electrochemical high temperature cell having a solid positive electrode, a solid negative electrode, a separator of finely divided ceramic material, and a molten liquid electrolyte which is retained within the said cell components, the process comprising

mixing starting material of the separator and/or of the electrodes with electrolyte powder and with a synthetic plastic which s decomposable without residue under heat, said starting material being electrode powder for the electrodes and being finely divided ceramic for the separator,

rolling the mixture into a cohesive plate of uniform thickness,

assembling the plates individually or after being rolled together into composite electrode(s)/separator plates into a cell, and

heating the cell after completed assembly above the decomposition temperature of the plastic so as to decompose said plastic without residue and below the operating temperature of the cell.

4,447,377

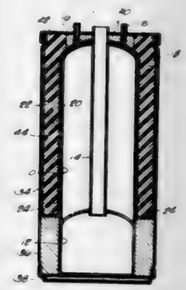
METHOD OF INSULATING THE EXTERIOR OF A WATER HEATER TANK

Donald W. Denton, Ashland City, Tenn., assignor to State Industries, Inc., Ashland City, Tenn.

Division of Ser. No. 283,983, Jul. 16, 1981, which is a continuation of Ser. No. 101,481, Dec. 10, 1979, abandoned. This application Mar. 1, 1982, Ser. No. 353,141

Int. Cl.³ B29D *27/04*

U.S. Cl. 264—45.2 **3 Claims**



1. The method of insulating a tank comprising the steps of:

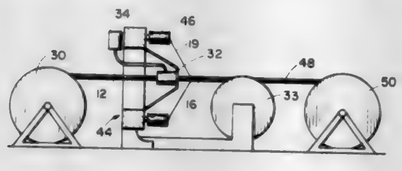
(1) wrapping a plastic envelope around the exterior side wall of the tank;
(2) installing an outer jacket member around the tank and over the envelope, said jacket member dimensioned so that there will be a space between the tank side wall and the jacket member in which said envelope is positioned;
(3) installing a cover member on the top of the jacket member to close off the top of the jacket;
(4) introducing a foam-type insulation material into the envelope through an opening in the cover member, said material when introduced being in the form of a mixture of fluid components which will expand in the envelope and when set will produce a rigid wall of insulating material in the space between the tank wall and the jacket means; and
(5) plugging the opening in the cover member through which the foam-type insulation material is introduced.

4,447,378

METHOD OF PRODUCING A COMPOSITE FOAM WIRE REINFORCED HOSE

Herbert W. Gray, Lawson, and Roger A. Payne, Excelsior Springs, both of Mo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 246,516, Mar. 23, 1981, Pat. No. 4,380,252. This application Sep. 29, 1982, Ser. No. 426,319
Int. Cl.³ B29D *27/00*; D03D *3/02*
U.S. Cl. 264—45.9 **10 Claims**



1. A method for producing wire-reinforced hose comprising the steps of:
forming a self-supporting polymeric tube;
applying a coating of an expandable polymeric material onto the outer surface of the tube;
twining a tightly packed sheath of stranded wire reinforcement over the coated tube; interspaces being defined between the reinforcement and tube and between individual strands of the reinforcement; and
expanding the polymeric material into a cellular cushion matrix at least partially filling said interspaces.

4,447,379

PRODUCTION OF CERAMIC LITHIUM NITRIDE

Armin Wagner, Laubach, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 366,858
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1981, 3123094
Int. Cl.³ B29H *7/20*
U.S. Cl. 264—61 **12 Claims**

1. A method of producing ceramic lithium nitride, particularly for use as solid electrolyte in galvanic lithium cells, comprising
stirring Li_3N powder together with molten Li-metal in a noble gas atmosphere, permitting the mixture to cool
compressing the cooled mixture into a shaped body, and
sintering the shaped body in a nitrogen stream.

4,447,380

EXPANDED INORGANIC AGGREGATE BONDED WITH CALCIUM SILICATE HYDRATE AS THERMAL INSULATION

Richard F. Shannon, Lancaster, and Jerry L. Heiser, Hebron, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 16, 1981, Ser. No. 331,445
Int. Cl.³ C04B *13/10*
U.S. Cl. 264—82 **17 Claims**

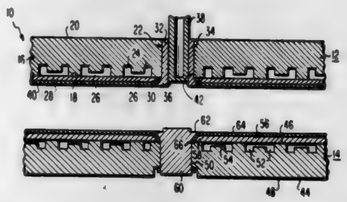
1. A method for making a shaped rigid article of thermal insulation which undergoes less than 2% shrinkage within the temperature range of 1200°–1800° F., comprising the steps of:
(a) heating an aqueous slurry of calcareous and siliceous reactants at a temperature of at least 100° C. under superatmospheric pressure to form, by hydrothermal reaction thereof, a gel of calcium silicate hydrate crystals;
(b) mixing additional material comprising thermally expanded inorganic aggregate with said gel to form a molding mixture;
(c) molding, optionally comprising mechanically dewatering, at least a portion of said mixture to form a shaped greenware body; and
(d) drying said greenware body to form said article;
where neither said molding mixture nor said greenware body is treated with saturated steam to effect further hydrothermal reaction.

4,447,381

APPARATUS AND METHOD FOR MAKING A VIDEO DISC

James R. Matey, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 8, 1982, Ser. No. 440,243
Int. Cl.³ B29D *17/00*
U.S. Cl. 264—107 **10 Claims**



1. In a method for molding a video disc wherein a mold cavity is filled with a plastic material with the mold cavity being formed between two opposed mold members each having a stamper over its surface forming the mold cavity and each mold member having imperfections which may pass through the stamper and be impressed on the surface of the molded disc, the improvement comprising
relatively rotating the stamper on the mold member so that areas of the stamper which do not contain information which will impact the perceived quality of the picture provided by the information are aligned with said imperfections in the mold members.

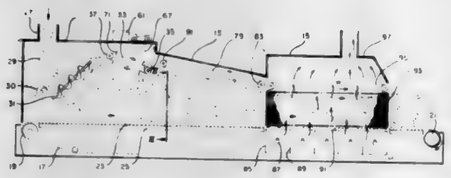
6. In an apparatus for molding a video disc which includes a pair of opposed mold members each having a mold cavity in its surface which faces the other mold member, a stamper mounted across each of the mold cavities, and each mold member having imperfections which may pass through the stampers and be impressed on the surface of the molded disc, the improvement comprising the circumferential position of the stampers with respect to the molds is arranged so that areas of the stamper which do not contain information which will impact the perceived picture quality are aligned with said imperfections in the mold members.

4,447,382

APPARATUS FOR MAKING FOAM CARPET PAD

Robert C. Spurlock, Forth Worth, Tex., and Larry W. Foster, Houston, Miss., assignors to MPI, Inc., Fort Worth, Tex.

Filed Feb. 8, 1982, Ser. No. 347,002
Int. Cl.³ B29D *27/00*; B32B *5/16, 5/18, 27/40*
U.S. Cl. 264—123 **6 Claims**



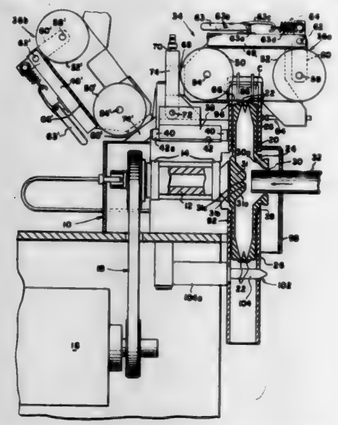
1. In a method for making a foam pad of the type that includes the steps of receiving in a hopper section foam particles coated with a heat activated bonding agent, moving a body of the particles from the hopper section into a precompressor section which has an inclined upper conveyor belt for compressing the particles, moving the particles into a heat section from the precompressor section for heating the particles, the improvement comprising:
raking in the hopper section the top of the body of the particles in a direction opposite to the direction of travel of the body of particles, while tapering upwardly the corners of the body of particles at the top to provide a concave upper surface for the body of particles prior to entering the precompressor section.

4,447,383

METHOD OF CENTRIFUGALLY PELLETIZING CERTAIN SYNTHETIC PLASTIC MATERIALS

Harutun G. Karian, and David B. Todd, both of Saginaw, Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed Feb. 16, 1982, Ser. No. 348,829
Int. Cl.³ B29C *6/00*
U.S. Cl. 264—8 **2 Claims**



1. A method for forming pellets of thermoplastic material comprising: centrifugally expressing strands of a visco-elastic thermoplastic material in a flowable state from orifices in the rim portion of a rotating hollow rotor by rotating the rotor through successive revolutions, severing said strands at a selected distance from said rim to form pellets; and controlling the mass of the pellets by locating a single strand severing member to extend across the general plane of movement of the expressed strands at a distance from said rim portion such that the visco-elastic retraction of the strands upon the severing of pellets therefrom is such that said strands are engaged by said severing member only on alternate revolutions of said rotor.

4,447,384

PROCESS FOR PRODUCING ANTIPILLING ACRYLIC SYNTHETIC FIBER

Hitoshi Tamura, Hiroshima, and Katsuhei Shigeoka, Yamaguchi, both of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1982, Ser. No. 339,008
Claims priority, application Japan, Jan. 19, 1981, 56-6067
Int. Cl.³ D01F *6/18*
U.S. Cl. 264—206 **4 Claims**

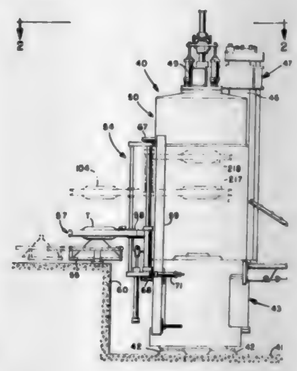
1. A process for producing an acrylic fiber having, as its characteristic properties, a tensile strength of 1.2–2.5 g/denier, a knot strength (g/denier)-knot elongation (%) product of 25 or less and a boiling water shrinkage rate of 5% or less which comprises dry-spinning a spinning solution of an acrylonitrilic polymer containing 85% or more of acrylonitrile, stretching the resulting fiber in hot water at a stretch ratio ranging from 1 to 2, then subjecting the fiber to a drying-relaxing treatment to give it a shrinkage of 10–40% and further stretching it at a temperature of 180°–210° C. at a stretch ratio of 1.2–2.3.

4,447,385

TIRE PRESS, LOADER AND METHOD

Virgil Y. Blosser; G. E. Isaksson, both of Canfield; Dallas B. Rupp, Lisbon, and A. P. Singh, Youngstown, all of Ohio, assignors to NRM Corporation, Akron, Ohio

Filed Aug. 1, 1983, Ser. No. 519,072
Int. Cl.³ B29H *5/02*
U.S. Cl. 264—315 **39 Claims**



1. A tire press comprising upper and lower mold parts including respective bead seats, means vertically to separate the mold parts for opening the press, loader means to position a green tire between said mold parts when open, means to transfer the green tire from the loader means to the press with the upper bead secured against the upper bead seat, and means partially to close the press after the loader means has released the green tire and cleared the mold parts to bring the lower bead of the green tire into contact with the lower bead seat, and means to shape the green tire and finally close the press.

28. A method of loading and shaping a green tire in a tire press for final shaping and vulcanizing comprising the steps of:
(a) using a loader to position the green tire in axial alignment with the lower mold section of the press;
(b) then securing the green tire to the press head with the top bead held against the upper bead seat;
(c) then withdrawing the loader from the press after releasing the green tire;
(d) then lowering the press head while thus holding such top

bead to bring the bottom bead of the green tire against the lower bead seat; and

(e) then bladder shaping the green tire as the press finally closes.

4,447,386

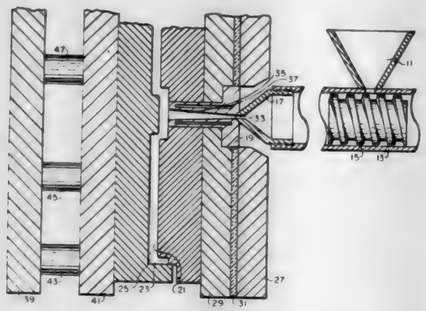
PROCESS FOR RUNNERLESS INJECTION - COMPRESSION MOLDING OF THERMOSETTING MATERIALS

W. Andrew Dannels, Grand Island, N.Y., and Robert W. Bainbridge, Gainsville, Ga., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 278,238, Jun. 29, 1981, Pat. No. 4,370,123, which is a continuation-in-part of Ser. No. 118,281, Feb. 5, 1980, Pat. No. 4,290,744, which is a continuation-in-part of Ser. No. 972,182, Dec. 21, 1978, abandoned, and a continuation-in-part of Ser. No. 164,412, Jun. 30, 1980, Pat. No. 4,309,319, which is a continuation-in-part of Ser. No. 972,189, Dec. 21, 1978, Pat. No. 4,238,181. This application Oct. 6, 1982, Ser. No. 433,061

Int. Cl.³ B29G *3/00*

U.S. Cl. 264—328.2 **7 Claims**



1. A method of injection-compression molding an article from thermosetting material comprising the steps of:

(a) plasticizing a predetermined amount of thermosetting molding material,

(b) passing said amount of plasticized molding material through a temperature-controlled zone maintained at a temperature sufficiently low to prevent substantial curing of the molding material and sufficiently high to maintain the molding material in a plasticized condition,

(c) injecting said plasticized molding material into a partially open mold cavity to partially fill the space between the mold faces, said mold cavity being maintained at a temperature sufficient to cure said molding material,

(d) completely closing said mold faces to compress and cure the molding material in the internal configuration of said mold but not in said temperature controlled zone, and

(e) remove the cured, molded article from the mold.

4,447,387

PROCESS FOR MANUFACTURE OF TUBULAR FILM

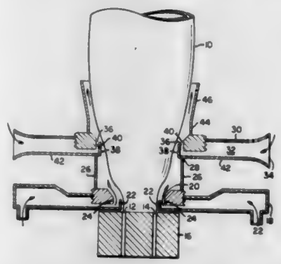
Theodore R. Blakeslee, III, Hillsborough, and Randall Wu, Matawan, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1982, Ser. No. 430,370

Int. Cl.³ B29D *7/22*

U.S. Cl. 264—566 **13 Claims**

1. A process for forming a blown film from a thermoplastic resin which comprises extruding said resin through the die lips of a tubular film die to form a film tube, expanding said film tube and directing a pressurized cooling medium in initial contact with said film tube, passing said cooling medium through a chamber surrounding said film tube, providing an air collar on the downstream edge of said chamber said air collar having discharge means for discharging cooling air substantially in the direction of film travel, and having an air conduit leading from the atmosphere to said discharge means, passing said cooling medium past said discharge means to create a reduced pressure zone proximate said discharge means and said film tube, providing a source of flow of cooling air, said



cooling air being induced to flow from the atmosphere at a velocity of about 1 to 15 ft/sec. through said air conduit as a result of the differential pressure between the atmosphere and said reduced pressure zone said induced air exiting said discharge means substantially in the direction of film travel.

4,447,388

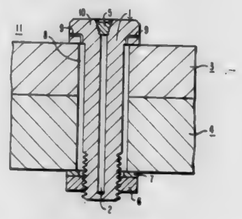
BOLT FAILURE DETECTION

Harry G. Sutton, Jr., Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1981, Ser. No. 325,880

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—245 **4 Claims**



1. A bolt member for use in normally inaccessible parts of nuclear reactors which makes a normal inspection for cracks in the bolt member impractical, said bolt member having an enlarged head portion and a cylindrical body portion having a threaded lower end onto which a nut member is adapted to be screwed to retain nuclear reactor components in operative relationship, said bolt member having a bolt-crack indicator comprising:

an elongated chamber provided within said bolt member, said elongated chamber during fabrication of said bolt-crack indicator having an entry portion opening from an exposed surface of the enlarged head portion of said bolt member, tag gas having been introduced into said elongated chamber through the entry portion thereof during fabrication of said bolt-crack indicator, and a plug sealing the entry portion of said elongated chamber and sealing said tag gas within said elongated chamber, whereby a developed crack in said bolt member which permits tag gas within said chamber to escape to the environment outside said bolt member provides evidence of such crack in said bolt member.

4,447,389

METHOD FOR MANUFACTURING TUBES BY SINTERING

Lars M. Bruce, Viken, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden

PCT No. PCT/SE81/00173, 371 Date Feb. 2, 1982, 102(e) Date Feb. 2, 1982, PCT Pub. No. WO81/03633, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 10, 1981, Ser. No. 355,552

Claims priority, application Sweden, Jun. 11, 1980, 8004338

Int. Cl.³ B22F *3/00*

U.S. Cl. 419—6 **11 Claims**

1. A method for manufacturing tubes comprising molding sinterable powder of metallic material into the shape of a tube between opposed molding surfaces, one of which is the outer circumferential surface of a mandrel, sintering the molded tube while it is supported by the mandrel and, during one sintering stage, sealing the tube by infiltrating therein an infiltratable material which is liquid or liquified at a temperature lower than the maximum sintering temperature used and which is capable of wetting the metal powder particles and of solidifying when the temperature is lowered, the tube being formed with one of its inner or outer circumferential surfaces as a layer of a relatively fine-grained sinterable metallic powder and the rest of the tube being formed of a sinterable metallic powder which is coarser than the fine-grained metal powder, the infiltration of the tube being effected by means of infiltratable material of a nature such that it forms a bond of infiltratable material between the fine grains of the surface as well as between the coarse grains of the rest, and the infiltration being carried out in a direction from the coarse powder towards and into the fine powder while a molding surface is in contact with the fine powder surface that has been formed, and remains in contact with the tube during sintering to shape infiltrating material which penetrates into contact with said molding surface.

2. A method of manufacturing tubes comprising the steps of

forming an inner tube wall layer of sinterable metallic powder on a mandrel,

forming an outer tube wall layer of sinterable metallic powder on the inner layer, the grain size of the powders formed as the inner and outer layers being unequal such that one layer has a grain size that is coarse and the other layer has a grain size that is fine,

providing a forming surface for the layer of fine grained powder while sintering the tube wall and infiltrating therein an infiltratable material which is liquid or liquifiable at the sintering temperature and is capable of wetting the metal powder particles and which solidifies at temperatures below the sintering temperature and forms a bond of infiltratable material between fine-grained and coarse-grained particles, said infiltration being carried out in a direction from the layer of coarse-grained powder towards and into the layer of fine-grained powder.

4,447,390

METHOD FOR HOT-CONSOLIDATING POWDER USING STAGED TEMPERATURE AND PRESSURE CAUSING COMPACTION FROM THE OUTSIDE INWARD

Walter J. Rozmus, Traverse City, Mich., assignor to Kelsey Hayes Company, Romulus, Mich.

Filed Oct. 26, 1981, Ser. No. 315,025

Int. Cl.³ B22F *3/14*; F27D *7/00*

U.S. Cl. 419—49 **4 Claims**

1. A method for hot consolidating powder of metallic and nonmetallic compositions and combinations thereof to form a densified compact at a predetermined temperature and pressure at which the powder is transformed into a compact, said method comprising the steps of: filling the cavity of a container with a powder to be compacted, hermetically sealing the container, subjecting the container to an intermediate gas pressure by inclusion of a predetermined amount of gas in a sealed container and sealing the container against gas flow into and out of the container to maintain the predetermined amount of gas within the sealed chamber, heating the container and the gas sealed within the chamber to raise the pressure of the gas within the sealed chamber in response to the increase of temperature thereof to reach the predetermined temperature and the predetermined pressure solely by the addition of heat to cause compaction of the powder from the outside to the inside as the outermost powder reaches the predetermined temperature and predetermined pressure for compaction before the innermost powder so that the compaction pressure is reached solely as a function of the heat input.

4,447,391

BRAZING ALLOY CONTAINING REACTIVE METALS, PRECIOUS METALS, BORON AND NICKEL

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 10, 1982, Ser. No. 448,582

Int. Cl.³ C21C *5/02, 5/04, 19/03*

U.S. Cl. 420—456 **6 Claims**

1. A brazing alloy consisting essentially of from about 0.1% by weight to about 5% by weight of a reactive metal selected from the group consisting of titanium, zirconium, vanadium and mixtures thereof, from about 0.05% by weight to about 4% by weight of boron, from about 15% by weight to about 85% by weight of nickel, from about 0% to about 30% by weight chromium, balance a precious metal selected from the group consisting of gold, palladium and mixtures thereof, said precious metal being present in amounts of from about 5% by weight to about 85% by weight.

4,447,392

DUCTILE SILVER BASED BRAZING ALLOYS CONTAINING A REACTIVE METAL AND MANGANESE OR GERMANIUM OR MIXTURES THEREOF

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 10, 1982, Ser. No. 448,583

Int. Cl.³ C22C *5/06*

U.S. Cl. 420—501 **5 Claims**

1. A brazing alloy consisting essentially of from about 0.25% to about 5% by weight of titanium, from about 4% to about 20% by weight of a third metal selected from the group consisting of germanium, manganese and mixtures thereof and the balance silver.

4,447,393

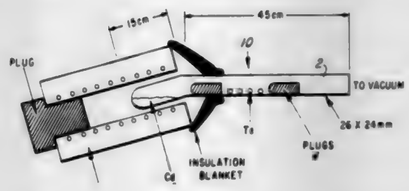
OXIDE-FREE CDTE SYNTHESIS

Donald F. Weirauch, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 9, 1983, Ser. No. 465,129

Int. Cl.³ C22C *1/02, 20/00*

U.S. Cl. 420—590 **8 Claims**



1. A method for compounding CdTe, comprising the steps of:

providing high-purity cadmium and Te;

distilling said high-purity Cd under a vacuum; and

compounding said Cd and Te to form a melt of CdTe;

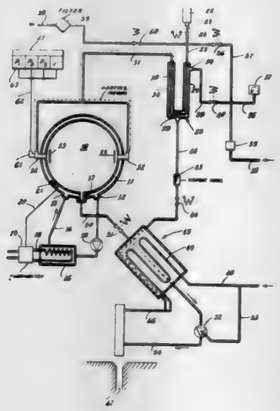
wherein said Cd is maintained under vacuum continuously from said distillation step through said compounding step.

4,447,394

METHOD FOR STERILIZATION WITH FORMALIN

Jan K. Krouthén, Halmstad, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation-in-part of Ser. No. 182,214, Aug. 28, 1980, abandoned, which is a division of Ser. No. 951,526, Oct. 16, 1978, abandoned. This application Aug. 1, 1983, Ser. No. 518,761
Claims priority, application Sweden, Oct. 17, 1977, 77116606
Int. Cl.³ A61L 2/20, 2/06
U.S. Cl. 422—27 5 Claims



1. A method of sterilizing articles in a heated autoclave chamber having an atmosphere of formaldehyde and water vapor while preventing the formation of formalin and/or paraformaldehyde residues in the autoclave chamber and comprising the steps of: supplying a given quantity of formalin through a conduit to a vaporizer having a jacket surrounding it, the vaporizer being formed as a liquid trap for receiving said quantity of formalin and preventing overflow of liquid from said quantity out of the vaporizer, heating said jacket to 110° C. to thereby transform said formalin into water vapor and formaldehyde in said vaporizer, and passing said water vapor and formaldehyde through a vapor conduit to said autoclave chamber, said vapor conduit being maintained at a temperature above the temperature of said chamber atmosphere and exposing articles to be sterilized to said formaldehyde and water vapor at a temperature elevated above room temperature for a period of time sufficient to sterilize said articles, whereupon the formaldehyde-water vapor mixture is removed from said autoclave chamber.

4,447,395

SAMPLING DEVICE

Donald G. Englar, Frederick, Md., and Robert G. Altman, Mauldin, S.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 12, 1982, Ser. No. 348,539
Int. Cl.³ G01N 33/00, 35/04
U.S. Cl. 422—68 2 Claims

1. Apparatus that is easily transportable and adapted for field use in military operations, said apparatus comprising:

a base,

a tray for holding samples,

a probe arm,

a drive shaft,

means for mounting said drive shaft for rotation on said base,

means connecting said drive shaft with said probe arm relative to said tray for cooperating with at least a portion of said samples and for reciprocating said probe arm along a path transverse to said tray and for swinging said probe arm transversely to said path during one revolution of said drive shaft,

means connecting said drive shaft with said tray for indexing said tray to place said samples in a position for cooperation with said probe arm comprising a support shaft disposed transversely to said base and having one end removably attached to said tray and the other end mounted on said base for rotation with respect thereto,

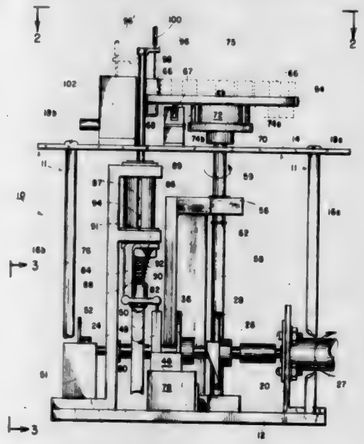
a Geneva gear rigidly attached to said support shaft, and

a first indexing disk rigidly attached to said drive shaft and operatively associated with said Geneva gear for sequentially rotating said support shaft,

said means connecting said drive shaft with said probe arm for swinging said probe arm comprises:

a second indexing disk rigidly attached to said drive shaft,

a block slidably mounted on said base and operatively associated with said second indexing disk for recriprocal translation of said block between a first position and a second position,



a follower arm attached to said probe arm,

a brace rigidly mounted on said base for supporting said follower arm,

a pin fixed on said follower arm,

a sleeve formed with a slot and slidably disposed on said follower arm with said pin seated in said slot for simultaneously allowing independent translation of said follower arm inside said sleeve and concurrent rotation of said follower arm with said sleeve, and

means operatively connecting said block with said sleeve for transmitting the reciprocal translation of said block into rotation of said sleeve whereby said probe arm reciprocally swings toward and away from said samples.

4,447,396

SYSTEM FOR DISCRIMINATING A PRECIPITATION PATTERN OF PARTICLES

Tokio Kano, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 337,068
Int. Cl.³ G01N 33/54, 35/02
U.S. Cl. 422—73 9 Claims

1. A system for discriminating a precipitation pattern of particles, comprising:

a transparent reaction container having a bottom inner surface, part of which is inclined at a predetermined angle and on which a precipitation pattern of particles to be examined is formed based on immunological agglutination;

a light source for illuminating the bottom inner surface of said reaction container;

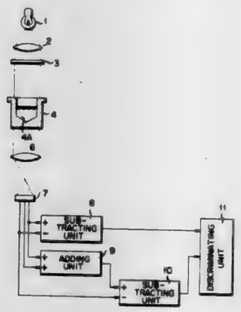
a lens for projecting an image of the precipitation pattern formed on the bottom inner surface of said reaction container and composed of first, second and third image sections which correspond to the lowest, middle and highest regions of the precipitation pattern;

at least one first photodetecting element for detecting the first image section;

at least one second photodetecting element for detecting the second image section;

at least one third photodetecting element for detecting the third image section;

first generating means for generating a first detection signal which corresponds to a difference between output signals supplied from said first and third photodetecting elements respectively;



second generating means for generating a second detecting signal which corresponds to a difference between an output signal supplied from one of said first and third photodetecting elements and an output signal supplied from said second photodetecting element;

first comparing means for comparing the second detecting signal with a reference signal to generate a correction signal; and

second comparing means for comparing both the first and second signals to the correction signal to discriminate the precipitation pattern.

4,447,397

CATALYTIC GAS SENSOR

Abraham Y. Anouchi, Aspinwall; Robert L. Novack, Evans City, and Beth Tomasovic, Butler, all of Pa., assignors to Bacharach Instrument Company, Pittsburgh, Pa.

Filed Aug. 5, 1982, Ser. No. 405,449
Int. Cl.³ G01N 27/16
U.S. Cl. 422—94 3 Claims



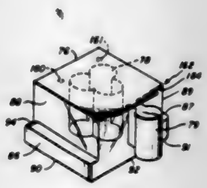
1. A reference element for a catalytic gas sensor comprising an electrically conductive filament coated with an electrically insulating first layer of Al_2O_3, a second layer of titanium dioxide coated upon said first layer and containing inorganic binder, the inorganic binder representing up to about 10% by weight of the second layer and the balance being titanium dioxide, said filament coated with said first and second layers being encased in a glass bead so as to produce a reference element with improved life and durability.

4,447,398

SAMPLE CONTAINER FOR MEASUREMENT OF IONS OF BODY FLUIDS

Henry D. Schwartz, Palo Alto; Irwin H. Krull, Santa Clara; Carl P. Clement, Los Altos Hills; Frederick H. Stengel, Palo Alto, and David D. Hayslett, San Jose, all of Calif., assignors to Sequoia Turner, Mountain View, Calif.

Division of Ser. No. 183,983, Sep. 4, 1980, Pat. No. 4,350,579.
This application Nov. 9, 1982, Ser. No. 319,474
Int. Cl.³ B01L 3/00
U.S. Cl. 422—102 13 Claims



1. An integral plastic container for use in a testing apparatus for use in the clinical measurement of ions of body fluids to be tested in which a plurality of electrodes are dipped into the fluids to perform the desired measurements in the container while the container rests in a detent within the apparatus, the container comprising:

a base

a plurality of walls extending upwardly from the base defining inner facing surfaces,

flange means associated with the base cooperating with the detent means within the testing apparatus whereby the container is held in its proper position within the testing apparatus,

the inner facing surfaces of the upwardly extending walls defining a sampling chamber having an upper open mouth, and

handle means extending outwardly from said container and sized to be gripped by the fingers of a user,

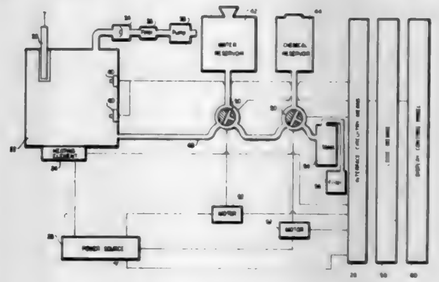
said sampling chamber being sized to fit within an volume of 1 inch by 1 inch by 1 inch.

4,447,399

COMBINATION STEAM AND UNSATURATED CHEMICAL VAPOR STERILIZER

Robert R. Runnells, Kaysville; Peter A. Haak, Salt Lake City; Rodney B. Larkin, Kaysville, and C. Keith Vandervelden, Salt Lake City, all of Utah, assignors to MDT Chemical Company, Gardena, Calif.

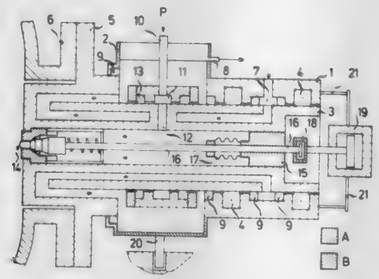
Filed May 7, 1981, Ser. No. 261,506
Int. Cl.³ A61L 2/20, 2/24
U.S. Cl. 422—113 19 Claims



1. A combination steam and unsaturated chemical vapor sterilizer comprising:

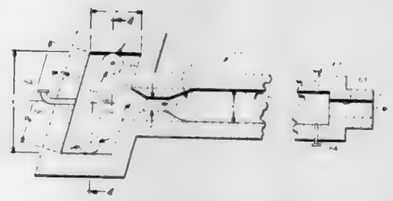
a fixed volume impervious pressure chamber structured to accommodate materials placed therein for sterilizing;
access means associated with the chamber for the insertion into or removal of materials from the chamber;
a source of liquid sterilizing chemicals;
a source of liquid water;
transport means to selectively convey either liquid sterilizing chemicals or liquid water from their respective sources to the interior of the chamber;
a heating element structured uniformly to heat the interior of the chamber, thereby to vaporize said water or sterilizing chemicals within said chamber;
a power source associated with the heating element and transport means to power the heating element and to drive the transport means; and
switching means operably associated with the power source, transport means and heating element to control the chemical or water environment, temperature and pressure within the chamber at a given time in accordance with a preselected setting.

4,447,400
METERING DEVICE
Hans-Werner Stephan, Cologne; Hermann Klein, and Klaus Lehr, both of Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 29, 1982, Ser. No. 362,978
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113705
Int. Cl.³ C01B *25/023*; B01J *4/00*
U.S. Cl. 422—150 **6 Claims**



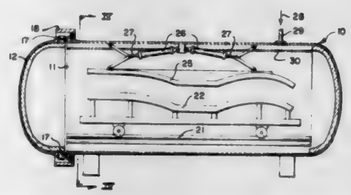
1. A device for metering liquid yellow phosphorus into a rotating ball mill for the production of red phosphorus therein, comprising an inner tubular structure rigidly connected to the rotating ball mill and an outer tubular structure partially concentrically surrounding the inner tubular structure, a valve within the inner tubular structure near its end close to the ball mill, a valve rod connected to the valve and extending generally parallel to the inner tubular structure, the valve rod having a disk at its end remote from the ball mill, an annular chamber surrounding the inner tubular structure, a bore in the inner tubular structure extending between the annular chamber and the inside of the inner tubular structure, a tubular yellow phosphorus feeder opening into the annular chamber, a plug having a central bore slidably receiving the valve rod and secured within the inner tubular structure near its end remote from the ball mill, a bellows surrounding a portion of the valve rod inside the inner tubular structure and tightly connected between the plug and valve rod, an adjusting element having a thrust rod and secured to the outer tubular structure, and a clutch connected to the thrust rod and rotatably receiving the disk of the valve rod whereby the valve is opened upon activation of the adjusting element.

4,447,401
CARBON BLACK REACTOR WITH ANGLED COMBUSTION CHAMBER AND NON-ALIGNED TANGENTIAL HOT GAS ENTRIES FOR PRODUCTION OF NEGATIVE TINT RESIDUAL CARBON BLACK
John R. Casperson, and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 22, 1982, Ser. No. 350,850
Int. Cl.³ B01J *10/00, 19/26*; C09C *1/48*
U.S. Cl. 422—151 **21 Claims**



1. A carbon black reactor comprising:
(a) a precombustion chamber defined by an upstream confining wall, a downstream confining wall substantially parallel thereto, and a cylindrical wall having a longitudinal axis wherein said cylindrical wall connects said upstream and downstream confining walls, wherein said upstream and downstream confining walls lie in planes which are skewed with respect to said longitudinal axis at an angle of 30 to 60 degrees;
(b) feedstock injection means for the introduction of at least one reactant through said upstream confining wall into said precombustion chamber;
(c) means for introducing combustion gases tangentially through said cylindrical wall into said precombustion chamber; and
(d) a pyrolytic carbon black-forming section operatively connected with said precombustion chamber, and in open communication with said precombustion chamber through said downstream confining wall.

4,447,402
AUTOCLAVES
G. Robert Cox, Pittsburgh, Pa., assignor to Devine Manufacturing Company, Pittsburgh, Pa.
Filed May 27, 1982, Ser. No. 382,598
Int. Cl.³ B01J *3/04*
U.S. Cl. 422—174 **15 Claims**



1. An autoclave apparatus for raising the temperature of metal and like parts to be bonded and/or cured comprising a pressure vessel receiving parts to be bonded and/or cured, a removable cover on one end of said pressure vessel providing access thereto, means in said vessel for holding a product to be bonded and/or cured in fixed position, means for providing a pressure gas in said vessel at a selected pressure level and radiant heat means in the vessel directing bonding and/or curing heat directly onto the surface of the product at a rate sufficient to heat the product to the desired bonding and/or curing temperature without substantially heating the pressure vessel and its parts.

4,447,403
METHOD FOR AUTOCLAVE OXIDATION OF ION SPECIES AQUEOUS SOLUTIONS
Laurence W. Bierman; Gary L. Long, and David Bortner, all of Pocatello, Id., assignors to J. R. Simplot Company, Boise, Id.
Filed Sep. 4, 1979, Ser. No. 72,304
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—20 **16 Claims**

1. A process for controlling the corrosivity of wet process phosphoric acid solution comprising the steps of:
(a) flowing the acid solution into a controlled environment reaction vessel having a total volumetric capacity greater than the volume of the acid solution therein;
(b) flowing oxygen into said vessel in sufficient quantity to substantially oxidize said reduced metal ion species present in the acid solution;
(c) oxidizing the reduced metal ion species in the acid solution by an autoclave oxidation in said reaction vessel at a temperature selected from within a range of from about 80° F. to about 170° F., at a pressure selected from within a range of from about 100 psi to about 160 psi, and by dispersing the oxygen throughout the acid solution in said reaction vessel;
(d) said oxidizing and dispersing step being continued for a period of time less than about two minutes to effect substantial oxidation of said reduced metal ion species present in the acid solution; and
(e) removing the acid solution from the reaction vessel.

4,447,404
RECOVERY OF MOLYBDENUM FROM MOLYBDENUM DISULFIDE
Clarence D. Vanderpool, and Martin B. MacInnis, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Dec. 20, 1982, Ser. No. 451,120
Int. Cl.³ C01G *39/00*
U.S. Cl. 423—61 **1 Claim**

1. A process for producing ammonium molybdate from a molybdenum disulfide concentrate comprising contacting said concentrate with an aqueous solution of ammonium chloride and chlorine at suitable concentrations and for a sufficient period of time to solubilize molybdenum disulfide present in said concentrate as molybdate ions and adding ammonium hydroxide to said aqueous solution after said contacting to form a solution of ammonium molybdate.

4,447,405
REMOVAL OF BROMIDES FROM ARSENIC ACID SOLUTION
Byung K. Ahn, Pittsburgh, and Kenneth A. Morris, Irwin, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.
Filed Aug. 26, 1982, Ser. No. 411,817
Int. Cl.³ C01B *29/00*
U.S. Cl. 423—88 **10 Claims**

1. A method for removing bromide from a solution containing same and a major proportion of H_3AsO_4 which comprises contacting said solution with an oxidant selected from H_2O_2, O_3 or Cr(VI) to convert bromide to bromine, and subjecting the resultant solution to a purge of air or inert gas to remove said bromine.

4,447,406
PROCESS FOR RECOVERING CESIUM FROM CESIUM ORE
Peter G. Mein, LaSalle, Ill., assignor to Carus Corporation, LaSalle, Ill.
Filed Jul. 12, 1983, Ser. No. 512,924
Int. Cl.³ C01G *45/12*
U.S. Cl. 423—198 **16 Claims**

1. A process for recovering cesium from a cesium-bearing mineral wherein the finely-divided mineral is extracted with aqueous hydrochloric acid (HCl) to obtain an aqueous acidic extract containing in solution cesium chloride (CsCl) together with rubidium chloride (RbCl), aluminum chloride ($AlCl_3$) and other metal chlorides selected from the group consisting of potassium chloride (KCl), sodium chloride (NaCl), iron chloride ($FeCl_3$), or mixtures thereof, wherein the improvement comprises
(a) increasing the pH of said aqueous acidic extract to a pH of 2.5 to 3.0 or higher;
(b) separating any precipitated metal hydroxide from the aqueous solution of CsCl;
(c) adding a water-soluble permanganate to said aqueous solution and selectively precipitating cesium permanganate ($CsMnO_4$) in the presence of other metal chlorides; and
(d) separating the precipitate from the residual solution to obtain $CsMnO_4$ of high purity.

4,447,407
PERFLUOROAMMONIUM SALTS FLUOROXENON ANIONS
Karl O. Christe, Calabasas, and William W. Wilson, Simi Valley, both of Calif., assignors to The United States of Americs as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 391,786, Jun. 24, 1983, Pat. No. 4,428,913. This application Oct. 11, 1983, Ser. No. 540,951
Int. Cl.³ C01B *23/00*
U.S. Cl. 423—262 **2 Claims**

1. $(NF_4)_2XeF_8$.
2. A method of preparing $(NF_4)_2XeF_8$ comprising the following steps in order:
(1) exposing NF_4XeF_7 to a blue 4880 Å laser light source until photolytic decomposition of NF_4XeF_7 occurs resulting in $(NF_4)_2XeF_8$ formation, and
(2) isolating the product $(NF_4)_2XeF_8$.

4,447,408
PHOSPHONITRILIC CHLORIDE POLYMERS
Hsueh M. Li, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 314,522, Oct. 26, 1981, Pat. No. 4,374,815. This application Dec. 7, 1982, Ser. No. 447,720
The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.
Int. Cl.³ C01B *25/10*
U.S. Cl. 423—300 **21 Claims**

1. A process for producing linear phosphonitrilic chloride polymers from linear phosphonitrilic chloride oligomers of lower molecular weight which comprises:
(a) heating a mixture of linear phosphonitrilic chloride oligomer having an average degree of polymerization of at least 3 and an excess of ammonium chloride at a temperature in the range of about 130° to about 250° C. while concurrently removing hydrogen chloride and concurrently or subsequently removing cyclic phosphonitrilic chloride oligomer from the heated reaction mixture, said ammonium chloride having a particle size within the range of about 0.1 microns to about 210 microns such that, the Mean Value is within the range of about 1 micron to about 110 microns; and
(b) after the formation of cyclic phosphonitrilic chloride

oligomer has essentially ceased and after removal of the oligomer, heating the reaction mixture in an inert liquid solvent at a temperature in the range of about 130° to about 250° C. to increase the molecular weight of the dissolved linear phosphonitrilic chloride polymer.

4,447,409

PROCESS FOR THE PRODUCTION OF HYDROGEN AND CARBONYL SULFIDE FROM HYDROGEN SULFIDE AND CARBON MONOXIDE USING A METAL BORIDE, NITRIDE, CARBIDE AND/OR SILICIDE CATALYST

Michael F. McGuiggan, Shaker Heights, and Philip L. Kuch, Aurora, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 10, 1982, Ser. No. 448,580
Int. Cl.³ C01B *31/26, 1/03*
U.S. Cl. 423—416 **20 Claims**

1. A process for the production of hydrogen and carbonyl sulfide, the process comprising contacting gaseous hydrogen sulfide with gaseous carbon monoxide in the presence of a boride, nitride, carbide or silicide catalyst of the formula

$$M_{1-3}M'_{1-2} \quad (I)$$

wherein

M is at least one of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Fe and Co; and

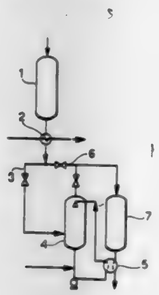
M' is at least one of B, N, C and Si.

4,447,410

PROCESS FOR THE CONVERSION OF CARBON MONOXIDE INTO HYDROGEN AND CARBON DIOXIDE

Giuseppe Giammarco, deceased, late of Palazzo Morolin, Italy, and by Paolo Giammarco, heir, San Marco 3242, Palazzo Morolin, Venezia, Italy

Continuation of Ser. No. 195,805, Oct. 10, 1980, abandoned. This application May 9, 1983, Ser. No. 490,737
Claims priority, application Italy, Oct. 11, 1979, 68990 A/79
Int. Cl.³ C01B *1/13*
U.S. Cl. 423—655 **5 Claims**



1. In a process for the production of hydrogen in a plant comprising a first unit defining a high temperature reaction stage in which combustible substances are reacted with steam at high temperature to provide a high temperature gas, a second unit including a low temperature conversion stage for the conyersion of carbon monoxide present in the gas thus obtained in said first unit by means of reaction with steam and a unit for the removal of CO_2 and/or CO_2+H_2S from the gaseous reaction mixture thus obtained in which the steam necessary for the functioning of said units is supplied by a process boiler, the improvement comprising increasing the amount of steam present in the high temperature gas during the conversion reaction by heating a stream of water by means of the heat contained in the gaseous mixture at the outlet of said low temperature conversion stage, bringing the high temperature gas from the high temperature conversion stage into direct contact with said heated stream of water to convert the heat of said water thus heated and the sensitive heat contained in the gas contacted with said water to produce steam until the gas from the high temperature conversion stage cools down to the saturation temperature to provide a saturated gas, utilizing the heat of the high temperature gas prior to bringing the high temperature gas into contact with said heat stream of water to heat said saturated gas up to the temperature required for the functioning of the low temperature conversion stage and delivering said overheated gas to said low temperature conversion stage.

4,447,411

CONTROLLING UNDESIRED GROWTH OF MOLLUSKS

Christopher J. Langdon, Lewes, Del., assignor to University of Delaware, Newark, Del.

Filed Mar. 26, 1982, Ser. No. 362,211
Int. Cl.³ A61K *9/50*
U.S. Cl. 424—14 **3 Claims**

1. The method of controlling undesirable mollusks which comprises the steps of releasing in their feed waters a microencapsulated adductor muscle relaxant, and subjecting the mollusks to a biocide after the adductor muscle relaxant takes effect.

4,447,412

ENZYME-CONTAINING DIGESTIVE AID COMPOSTIONS

Gerald L. Bilton, 195 Scranton Ct., Zionsville, Ind. 46077

Filed Feb. 1, 1983, Ser. No. 462,995
Int. Cl.³ A61K *37/48, 9/42, 9/28*
U.S. Cl. 424—16 **11 Claims**

1. A composition adapted to reduce the symptoms of digestive dysfunction when ingested orally comprising:

(a) a pancreatic enzyme extract;

(b) a proteolytic enzyme of plant origin;

(c) a choleretic agent;

(d) a hydrochloric acid source; and

(e) pepsin,

wherein the pancreatic enzyme extract and the proteolytic plant enzyme are adhered to digestible beads, said enzyme-containing beads being further coated so as to maintain their integrity when placed in about 1.2 N aqueous hydrochloric acid for at least one hour, and said coated beads being sized so as to readily pass through the stomach, and said coated beads being mixed with granules comprising the choleretic agent, the hydrochloric acid source and pepsin.

4,447,413

DRIFT INFLUENCING COMPOSITION

Wayland J. Rippstein, Jr., Alvin, Tex., assignor to Aviation Chemical, Inc., Winnie, Tex.

Continuation-in-part of Ser. No. 147,721, May 8, 1980, abandoned. This application Jul. 17, 1981, Ser. No. 284,192
Int. Cl.³ A61K *31/74*
U.S. Cl. 424—78 **4 Claims**

1. An agricultural composition for restricting the drift of agricultural insecticides and other chemicals sprayed onto crops from an aircraft comprising an aqueous solution of:

(a) an agricultural insecticide or chemical in an agriculturally effective amount, and

(b) from about seventy (70) to about two hundred (200) p.p.m. of polyethylene oxide to water and to water and having a molecular weight of 300,000 to about 4,000,000 by weight.

4,447,414

CARNIVORE ANTHELMINTICS

John C. Gay, St. Joseph, Mo.; H. Dennis McCurdy, Merriam, and Wayne B. Rose, Overland Park, both of Kans., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Dec. 21, 1982, Ser. No. 451,990
Int. Cl.³ A61K *31/78, 31/495*
U.S. Cl. 424—81 **16 Claims**

1. An oral anthelmintic composition for carnivores comprising effective amounts of a compound which is primarily systemically active and a compound which is primarily active via direct contact with helminths in a carnivore gut, the compounds being carried in a vehicle which simultaneously provides systemic and direct contact availability of the compounds, the composition being in the form of an aqueous paste containing at least 50% by weight water.

10. An oral broad spectrum anthelmintic composition for dogs and cats comprising anthelmintically effective amounts of praziquantel and febantel in an aqueous, deaerated paste-like form and comprising at least 50% by weight water.

4,447,415

PLASMA-FREE MEDIUM FOR PLATELET STORAGE

Gail A. Rock, 270 Sandridge Rd., Rockcliffe Park, Canada (K1L 5A2), and George A. Adams, 543 Broadview Ave., Ottawa, Canada (K2A 2L3)

Filed Dec. 14, 1982, Ser. No. 449,762
Claims priority, application Canada, Nov. 1, 1982, 414583
Int. Cl.³ A61K *35/14*
U.S. Cl. 424—101 **28 Claims**

1. A method for the preparation of a blood platelet concentrate for administration to animals which comprises

centrifuging plasma to obtain a platelet pellet,

removing the supernatant plasma, and

resuspending the platelet pellet in a medium consisting essentially of: a balanced, physiologically compatible, saline solution; an anticoagulant; and one or more additives to enhance stability of the platelets selected from (a) nutrients to improve the storage life of the platelets, (b) reversible inhibitors for platelet activation, (c) substances to raise cyclic adenosine monophosphate levels which have reversible effects on platelets, and (d) buffering agents which are physiologically compatible.

18. A platelet concentrate composition for administration to animals comprising blood platelets suspended in a medium consisting essentially of:

a balanced, physiologically compatible, saline solution;

an anticoagulant; and

one or more additives to enhance stability of the platelets selected from (a) nutrients to improve the storage life of the platelets, (b) reversible inhibitors for platelet activation, (c) substances to raise cyclic adenosine monophosphate levels which have reversible effects on platelets, and (d) buffering agents which are physiologically compatible.

4,447,416

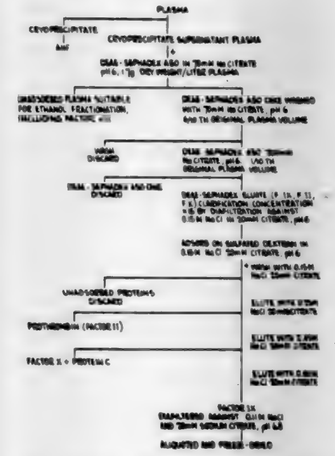
PLASMA PROTEIN CONCENTRATES OF REDUCED THROMBOGENICITY AND THEIR USE IN CLINICAL REPLACEMENT THERAPY

Doris Mensche-Aronson, Bethesda; David P. Kosow, Derwood; Carolyn L. Orthner, Rockville, all of Md., and H. Evan Behre, Alexandria, Va., assignors to American National Red Cross, Washington, D.C.

Filed Apr. 28, 1982, Ser. No. 372,525
Int. Cl.³ A61K *35/16*
U.S. Cl. 424—101 **12 Claims**

1. An intermediate purified non-thrombogenic factor IX concentrate containing factor IX in therapeutic amounts up to a specific activity of about 17.6 (u/mg. protein), and containing factors II, VII, and X in non-thrombogenic amounts of less than about 1%, 0.5%, and 5% by specific activity of factor IX, respectively.

11. An intermediate purified non-thrombogenic factor X concentrate containing factor X in therapeutic amounts up to a specific activity of about 39.7 (u/mg. protein), and containing



factors II, VII, and IX in non-thrombogenic amounts of less than about 1%, 0.5%, and 15% by specific activity of factor X, respectively.

4,447,417

BASIC ALUMINIUM MAGNESIUM CARBONATE

Robert G. W. Spickett; Jacinto M. Mauri, and Jesus E. B. Puchades, all of Barcelona, Spain, assignors to Anphar S.A., Madrid, Spain

Filed Feb. 15, 1979, Ser. No. 12,435
Claims priority, application United Kingdom, Feb. 17, 1978, 6416/78
Int. Cl.³ A61K *33/10*
U.S. Cl. 424—156 **5 Claims**

1. A basic crystalline aluminium magnesium carbonate of the formula $Al_2Mg_6(OH)_{14}(CO_3)_2.4H_2O$.

2. A pharmaceutical antacid composition which comprises an effective amount of a basic crystalline aluminium magnesium carbonate of the formula $Al_2Mg_6(OH)_{14}(CO_3)_2.4H_2O$ in association with a pharmaceutically-acceptable carrier or diluent.

4,447,418

ANIMAL MEDICINE

Lilla A. Maddoux, 514 N. 5th, Sayre, Okla. 73662

Continuation of Ser. No. 241,451, Mar. 6, 1981, abandoned. This application Apr. 2, 1982, Ser. No. 364,761
Int. Cl.³ A61K *33/04, 35/60*
U.S. Cl. 424—165 **7 Claims**

6. An animal treating therapeutic composition formed by the process comprising the steps of:

(a) mixing equal volumes of

(i) fish oil containing esters of long chain polyunsaturated acids, said chains comprising 20 to 24 carbon atoms and 1 to 6 olefinic bonds, with

(ii) turpentine containing terpenes chosen from the group comprising α pinene, β pinene, Δ^3-carene, dipentene and terpinolene to form a first combination liquid composition, then

(b) adding to said first combination composition 93–98% sulfuric acid in the ratio of one fluid ounce of sulfuric acid to each portion of said first composition formed by one pint of fish oil and one pint of turpentine and thereby causing a reaction at 180–200 degrees F. between said esters and said terpenes and forming a homogeneous sec-

ond or reaction liquor, then cooling said reaction liquor to room temperature, then

(c) adding oleic acid to said cooled reaction liquor and thereby forming a third resultant homogeneous solution and then

(d) adding kerosene in the amount of one ounce of kerosene per portion of said first composition formed by one pint of fish oil and one pint of turpentine, said kerosene having a boiling point of 208 to 248 degrees C. and a sulfur content below 0.02 percent, to said third resultant solution and reacting it with said third resultant solution to form a fourth homogeneous solution.

4,447,419

THIAZOLE DERIVATIVE, AND PHARMACEUTICAL COMPOSITIONS CONTAINING IT

Giuseppe Quadro, Milan, Italy, assignor to Ausonia Farmaceutici s.r.l., Rome, Italy

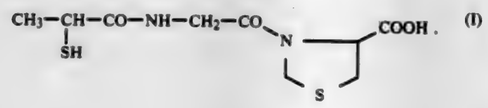
Filed Nov. 1, 1982, Ser. No. 438,283

Claims priority, application Italy, Nov. 5, 1981, 24866 A/81

Int. Cl.³ C07C *103/52*; A61K *37/02, 37/64*

U.S. Cl. 424—177 **2 Claims**

1. 3-[N-(2-mercapto-propionylamino-acetyl)]-tetrahydro-thiazolyl-4-carboxylic acid, having formula (I)



(I)

4,447,420

FLUORENONE ESTERS OF PHOSPHORIC AND PHOSPHONIC ACIDS AS INSECTICIDES

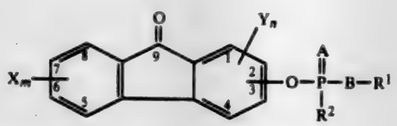
James T. Traxler, Evanston, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 429,583

Int. Cl.³ A01N *57/12*; C07F *9/165*

U.S. Cl. 424—210 **9 Claims**

1.



wherein X and Y are each independently selected from the group consisting of halogen, lower alkyl, lower haloalkyl, nitro, lower alkylsulfinyl, lower alkylsulfonyl and cyano; m and n are integers from 0 to 3; m plus n is an integer from 0 to 3; R^1 is lower alkyl; R^2 is selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, amino, lower alkylamino and di(lower alkyl)amino; and A and B are each independently selected from the group consisting of oxygen and sulfur.

9. A method of controlling insects which compriese contacting said insects or the locus of said insect with an effective amount of an insecticidal composition comprising an inert carrier and as an essential active ingredient in a quantity toxic to insects, a compound of claim 1.

4,447,421

PROCESS FOR THE PREPARATION OF MEDICATED ANIMAL FEED SUPPLEMENT

Irving Klothen, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 239,740, Mar. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 147,805, May 8, 1980, abandoned. This application Apr. 8, 1983, Ser. No. 482,271

Int. Cl.³ A61U *31/35, 31/63, 31/65, 31/625*

U.S. Cl. 424—227 **12 Claims**

1. In a process for preparing medicated animal feeds, feed additives, feed supplements or feed premixes, the improvement comprising

using in the process a tetracycline antibiotic, a sulfa drug, penicillin, monensin, tylosin or lasalocid or a mixture of the drugs by either

(a) compacting the drug or mixture of drugs or

(b) compacting a blend of the drug or mixture of drugs blended with a compressible and pharmaceutically acceptable inert diluent or diluent mixture with sufficient force to obtain a

(1) compacted cdrug

(2) compacted mixture of drugs

(3) compacted blend of drug and diluent or diluents or

(4) compacted blend of a mixture of drugs and a diluent or diluents

of at least about 10 kg to 30 kg hardness on a Stokes hardness tester and of a particle size range of 10 to 150 mesh to prevent excessive build-up, deposition, retention and dusting of the drug or mixture of drugs in the process.

4,447,422

PENICILLINS AND COMPOSITIONS CONTAINING THEM

Andrew W. Taylor, Reigate, and Richard G. Adams, Woking, both of England, assignors to Beecham Group p.l.c., England

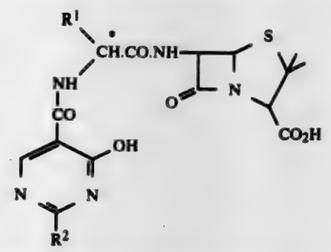
Filed Jun. 7, 1982, Ser. No. 385,805

Claims priority, application United Kingdom, Jun. 16, 1981, 8118552

Int. Cl.³ H01K *31/505*; C09D *499/10*

U.S. Cl. 424—229 **21 Claims**

1. A compound of the formula (I):



(I)

a pharmaceutically acceptable salt thereof or an in-vivo hydrolyzable ester thereof, wherein R^1 is phenyl, 4-hydroxyphenyl, 3,4-dihydroxyphenyl, 3,4-diacetoxyphenyl or a 5- or 6-membered heterocyclic ring containing up to three heteroatoms selected from the group consisting of oxygen, sulphur and nitrogen, said ring being unsubstituted or substituted by hydroxy, amino, halo, or alkoxy of 1 to 6 carbon atoms; and R^2 is a sub-group of the formula (A):

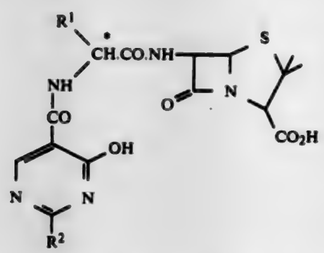
$$—NH—R^3 \qquad (A)$$

wherein R^3 is alkyl of 1 to 10 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, carbamoyl, phenyl or naphthyl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, sulphonamido, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and the alkyl moiety; or cycloalkyl of 3 to 7 carbon atoms; or (B):

$$—NH—CO—R^4 \qquad (B)$$

wherein R^4 is phenyl or naphthyl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, sulphonamido, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and the alkyl moiety; alkyl of 1 to 10 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, carbamoyl, phenyl or naphthyl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, sulphonamido, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and the alkyl moiety; or alkyloxy of 1 to 6 carbon atoms unsubstituted or substituted by phenyl or naphthyl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, sulphonamido, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and the alkyl moiety.

14. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound of the formula (I)



(I)

a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable in-vivo hydrolyzable ester thereof, wherein R^1 is phenyl, 4-hydroxyphenyl, 3,4-dihydroxyphenyl, 3,4-diacetoxyphenyl or a 5- or 6-membered heterocyclic ring containing up to three heteroatoms selected from the group consisting of oxygen, sulphur and nitrogen, said ring being unsubstituted or substituted by hydroxy, amino, halo, or alkoxy of 1 to 6 carbon atoms; and R^2 is a sub-group of the formula (A):

$$—NH—R^3 \qquad (A)$$

wherein R^3 is alkyl of 1 to 10 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, carbamoyl, phenyl or naphthyl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, sulphonamido, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and the alkyl moiety; or cycloalkyl of 3 to 7 carbon atoms; or (B):

$$—NH—CO—R^4 \qquad (B)$$

wherein R^4 is phenyl or naphthyl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, sulphonamido, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and the alkyl moiety; alkyl of 1 to 10 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, carbamoyl, phenyl or naphthyl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, sulphonamido, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and the alkyl moiety; or alkyloxy of 1 to 6 carbon atoms unsubstituted or substituted by phenyl or naphthyl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, sulphonamido, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and the alkyl moiety, in combination with a pharmaceutically acceptable carrier.

4,447,423

PEDICULICIDE COMPOSITION AND METHOD OF USE

Lester J. Workman, P.O. Box 5547, Sarasota, Fla. 34277

Continuation-in-part of Ser. No. 249,696, Mar. 31, 1981, Pat. No. 4,374,853. This application Jan. 18, 1983, Ser. No. 459,035

Int. Cl.³ A61K *31/61*

U.S. Cl. 424—234 **6 Claims**

1. A method of killing lice on warm-blooded animals comprising the steps of:

(a) applying to said animal a pediculicidely-effective amount of a composition consisting essentially of an alcohol solution of from 10 to about 25 weight percent benzyl salicylate and from 10 up to about 50 weight percent of at least one compatible, pediculicidely-effective surface active wetting agent incorporated therein, the balance of the solution being said alcohol;

(b) allowing the thus applied composition to remain in contact with the infested area for a period of time sufficient to kill the lice contained therein, and thereafter

(c) removing the composition and killed lice.

4,447,424

STEROID DERIVATIVES

Jean G. Teutsch, Pantin; Germain Costerousse, Saint-Maurice; Daniel Philibert, La Varenne Saint Hilaire, and Roger Deraedt, Pavillons sous Bois, all of France, assignors to Roussel Uclaf, Paris, France

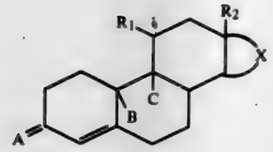
Continuation-in-part of Ser. No. 338,077, Jan. 9, 1982, Pat. No. 4,386,085. This application Jun. 10, 1982, Ser. No. 386,967

Claims priority, application France, Jan. 9, 1981, 81 00272

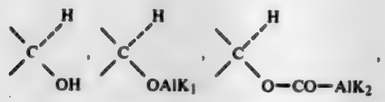
Int. Cl.³ A01N *45/00*; A61K *31/56*

U.S. Cl. 424—238 **36 Claims**

1. An antiprogestomimetic composition comprising an antiprogestomimetically effective amount of at least one compound selected from the group consisting of 19-nor steroids and 19-nor-D-homo-steroids of the formula

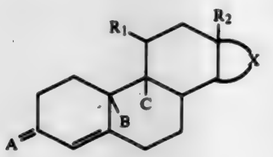


wherein R_1 is an organic radical of 1 to 18 carbon atoms containing at least one atom selected from the group consisting of nitrogen, phosphorous and silicon with the atom immediately adjacent to the 11-carbon atom being carbon, R_2 is a hydrocarbon of 1 to 8 carbon atoms, X is selected from the group consisting of a pentagonal ring and a hexagonal ring optionally substituted and optionally containing a double bond, B and C together form a double bond or an epoxy group, the ring C=A group at position 3 is selected from the group consisting of C=O, ketal,

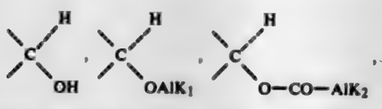


>C=NOH, >C=NOAlK$_3$ and CH_2, AlK$_1$, ALK$_2$ and AlK$_3$ are selected from the group consisting of alkyl of 1 to 8 carbon atoms and aralkyl of 7 to 15 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts and an inert carrier.

15. A method of inducing menses in warm-blooded animals comprising administering to warm-blooded animals, when progesterone plays a physiologically essential role, an anti-progestomimetically effective amount of at least one compound selected from the group consisting of 19-nor steroids and 19-nor-D-homo-steroids of the formula



wherein R_1 is an organic radical of 1 to 18 carbon atoms containing at least one atom selected from the group consisting of nitrogen, phosphorous and silicon with the atom immediately adjacent to the 11-carbon atom being carbon, R_2 is a hydrocarbon of 1 to 8 carbon atoms, X is selected from the group consisting of a pentagonal ring and a hexagonal ring optionally substituted and optionally containing a double bond, B and C together form a double bond or an epoxy group, the ring C=A group at position 3 is selected from the group consisting of C=O, ketal,



>C=NOH, >C=NOAlK$_3$ and CH_2, AlK$_1$, AlK$_2$ and AlK$_3$ are selected from the group consisting of alkyl of 1 to 8 carbon atoms and aralkyl of 7 to 15 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

4,447,425

MONO- AND BISQUATERNARY AMMONIUM DERIVATIVES OF 2β,16β-DI-AMINO-5α-ANDROSTANE DERIVATIVES AND PHARMACEUTICAL PREPARATIONS CONTAINING SAME

Ian C. Carlyle, Hamilton; David S. Savage, Glasgow, and Thomas Sleigh, Wishaw, all of Scotland, assignors to Akzo N.V., Arnhem, Netherlands

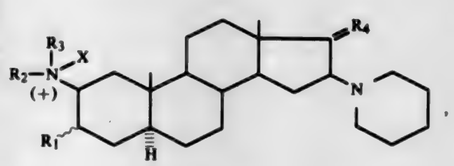
Filed Jun. 9, 1982, Ser. No. 386,756

Claims priority, application United Kingdom, Jun. 15, 1981, 8118365

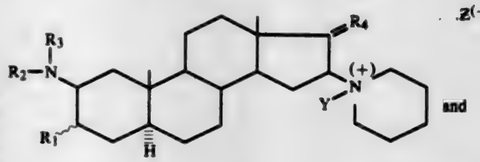
Int. Cl.³ A61K *31/58*; C07J *43/00*

U.S. Cl. 424—241 **18 Claims**

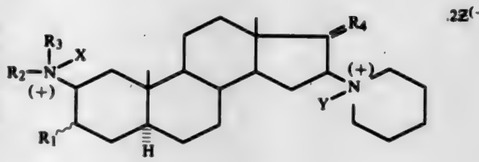
1. Mono- and bisquaternary ammonium derivatives of 2β,16β-di-amino-5α-androstanes having the formula:



.2(−)



.2(−) and



.22(−)

wherein:

R_1=H or alkyl (1–4 C);

R_2 and R_3 each are alkyl (1–4 C) or form, together with the N-atom, a piperidino, pyrrolidino or morpholino group;

R_4=O or H(βOR$_5$) and

R_5=H or (C$_1$–C$_{18}$) acyl, X and Y are the same or different and are a saturated or unsaturated aliphatic hydrocarbon group having 1–4 carbon atoms, $Z^{(-)}$ is a halide, and the acid addition salts of the monoquaternary compounds.

8. A pharmaceutical composition having neuromuscular blocking activity comprising a neuromuscular blocking effective amount of one or more compounds of claim 1 and a pharmaceutically acceptable carrier.

4,447,426

STEROID MONOHYDRATES, FORMULATIONS CONTAINING SAME AND METHOD

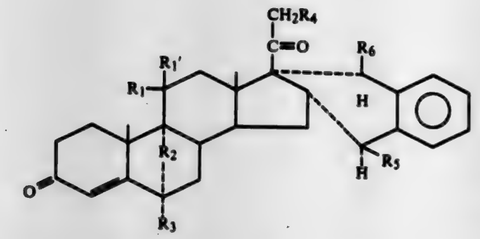
Yu-Chang J. Wang, North Brunswick; Friedrich Dürsch, Hopewell; Richard L. O'Laughlin, North Brunswick, and Thaddeus Prusik, Roosevelt, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 340,127, Jan. 18, 1982, Pat. No. 4,391,755. This application Dec. 27, 1982, Ser. No. 453,562

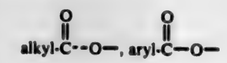
Int. Cl.³ A61K *31/56*

U.S. Cl. 424—243 **12 Claims**

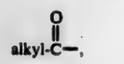
1. The steroid monohydrate having an average particle size of less than about 20 microns having the structure

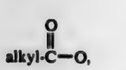


and the 1,2-dehydro derivative thereof, wherein R_1 is chlorine, fluorine or hydroxy and R'_1 is hydrogen or R_1 and R'_1 together are =O; R_2 is hydrogen or halogen; R_3 is hydrogen, methyl or fluorine, R_4 is hydrogen, hydroxy,



or halogen; and R_5 and R_6 are the same or different and are hydrogen, alkyl, alkylthio, alkoxy, carboalkoxy, formyl,





hydroxy, halogen, phenyl or cyano, with the proviso that when R_5 and R_6 are different, one of R_5 and R_6 is hydrogen, which monohydrate is in the form of a particulate material having a stable average particle size of less than about 20 microns, prepared by the process which includes the steps of micronizing the steroid in anhydrous form to reduce average particle size to below about 20 microns, introducing the micronized anhydrous steroid into water to form a suspension containing from about 5 to about 20% by weight steroid, allowing the steroid to remain in suspension for at least 0.1 hour to hydrate the steroid to form the corresponding monohydrate and cause crystal growth, and reducing the average particle size of the crystals of hydrated steroid suspended in water to below about 20 microns to form particles of steroid monohydrate having a relatively stable crystal size.

4,447,427

METHOD FOR TREATING BACTERIAL INFECTIONS WITH 2-ACETYL- AND 2-PROPIONYLPYRIDINE THIOSEMICARBAZONES

Daniel L. Klayman, Chevy Chase; John P. Scovill, Rockville; Joseph F. Bartosevich; Carl J. Mason, both of Silver Spring, all of Md., and T. Scott Griffin, Orange, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

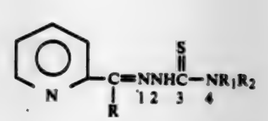
Continuation of Ser. No. 4,247, Jan. 4, 1979, Pat. No. 4,317,776. This application Oct. 14, 1981, Ser. No. 311,369

Int. Cl.³ A61K *31/33, 31/495, 31/47, 31/435*

U.S. Cl. 424—244 **51 Claims**

1. A method for treating an animal which has a bacterial infection selected from the group consisting of Group D Enterococcus, and *Neisseria meningitidis* by administering to said animal a therapeutically-effective amount of:

(a) a pyridine thiosemicarbazone derivative selected from the compounds represented by the formula:



or

(b) a pharmaceutically-acceptable acid addition salt thereof

wherein

R is methyl or ethyl; and

R_1 is alkyl having 1 to 12 carbon atoms; cycloalkyl having 3 to 10 carbon atoms; substituted alkyl (wherein the substituent is amino, alkylamino, dialkylamino, cycloalkyl, hydroxy, COO alkyl, phenyl, or pyridyl); alkenyl having 2 to 6 carbon atoms; alkynyl having 3 to 6 carbon atoms; substituted benzyl (wherein the substituent is methyl or phenyl on the alpha carbon atom, or the substituent is alkyl, dialkyl, halo, dihalo, or alkoxy on the phenyl ring); adamantyl; phenyl; naphthyl; substituted phenyl or substituted naphthyl (wherein the ring is mono-, di-, or trisubstituted and the substituents are alkyl, halo, alkoxy, hydroxy, phenoxy, trifluoromethyl, dialkylamino, dialkylaminoalkyl, or COO alkyl); or pyridyl, and

R_2 is hydrogen or is selected from the group of radicals listed above for R_1, in which case R_1 and R_2 may be the same or different; or

R_1 and R_2 are taken together with the nitrogen atom to which they are attached to form a heterocyclic ring selected from the group consisting of:

(1) alkylenimino having 3 to 13 carbon atoms;

(2) alkylenimino, having 3 to 13 carbon atoms, which may contain one double bond and/or is mono- or disubstituted with alkyl, hydroxy, phenyl, or benzyl;

(3) alkylenimino, having 3 to 13 carbon atoms, which is either bridged by an ankylene group, or is fused to a phenyl ring, or is attached by a spiro linkage to an ethylene ketal group; and

(4) homopiperazinyl; homopiperazinyl substituted with alkyl; piperazinyl; or piperazinyl substituted with alkyl, dialkyl, phenyl, COO alkyl, trifluoromethylphenyl, halophenyl, benzyl, or pyridyl; provided that: when R_2 is hydrogen, then R_1 cannot be ethyl, isopropyl, or monochlorophenyl.

4,447,428

PROSTANOID COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS

Eric W. Collington, Welwyn; Harry Finch, Hitchin, and Roger F. Newton, Melbourn, all of England, assignors to Glaxo Group Limited, England

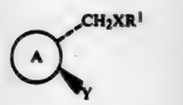
Division of Ser. No. 440,622, Nov. 10, 1982, Pat. No. 4,409,213, which is a continuation of Ser. No. 232,363, Feb. 6, 1981, abandoned, which is a division of Ser. No. 56,416, Jul. 10, 1979, Pat. No. 4,265,891. This application Jul. 15, 1983, Ser. No. 514,261

Claims priority, application United Kingdom, Jul. 11, 1978, 29403/78

Int. Cl.³ A61K *31/55, 31/557*; C07D *223/00, 295/14*

U.S. Cl. 424—244 **12 Claims**

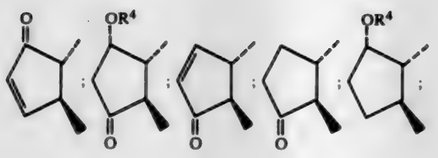
1. Prostanoids of the general formula (I)



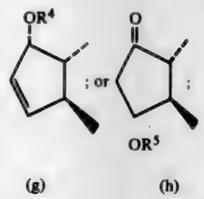
(I)

in which

A represents



(b) (c) (d) (e) (f)



(g) (h)

X is cis or trans —CH=CH— or —$(CH_2)_2$—;

R^1 is straight or branched C_{1-7} alkyl bearing as a terminal substituent —$COOR^{10}$ where R^{10} is a hydrogen atom, C_{1-6} alkyl or C_{7-10} phenalkyl;

Y represents:

(i) —NR^2R^3, where R^2 and R^3 are the same or different and represent hydrogen atom, phenalkyl having a C_{1-7} alkyl portion, or C_{1-10} alkyl (said C_{1-7} alkyl portion or said C_{1-10} alkyl being optionally substituted by one or more substituents —OR^7 or NR^8R^9; wherein R^7 represents hydrogen atom, C_{1-7} alkyl, phenyl or phenalkyl having a C_{1-4} alkyl portion; and wherein R^8 and R^9 are the same or different and represent hydrogen atom or C_{1-4} alkyl, or where —NR^8R^9 is a saturated heterocyclic amino group as defined below for Y); any phenyl group in R^2 or R^3 being optionally substituted by one or more C_{1-4} alkyl or trifluoromethyl groups; always provided that the total numbers of carbon atoms in the group —NR^2R^3 does not exceed 15; or

(ii) a saturated heterocyclic amino group selected from the group consisting of pyrrolidino, piperidino, morpholino, piperazino, thiamorpholino, 1-dioxothiamorpholino, homomorpholino, hexamethyleneimino, piperazino substituted at the second nitrogen atom by C_{1-7} alkyl or phenalkyl having a C_{1-4} alkyl portion, and piperidino which contains in the ring the group >$C(OH)R^6$ (where R^6 is a hydrogen atom, C_{1-7} alkyl, phenyl, or phenalkyl having a C_{1-4} alkyl portion) and any of said groups substituted on the ring by one or more C_{1-4} alkyl groups;

R^4 is a hydrogen atom, C_{1-6} alkyl (optionally interrupted by one or two oxygen atoms), C_{3-6} alkenyl, C_{2-4} alkanoyl, phenalkanoyl having a C_{2-4} alkanoyl portion, phenyl or aralkyl selected from the group consisting of benzyhydryl, naphthyl (C_{1-3}) alkyl and phen (C_{1-3}) alkyl and any one of said aryl groups substituted by one or more halogen, hydroxy C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-4} hydroxyalkoxy, trifluoromethyl, cyano, phenyl, phenoxy, C_{5-7} cycloalkyl, phenalkoxy, dimethylaminomethyl, carboxamido (—$CONH_2$), thiocarboxamido (—$CSNH_2$), C_{1-4} alkanoyl or —NR^8R^9 groups as defined above);

R^5 is as defined above for R^4, excluding phenyl and with the proviso that R^5 is not hydrogen when A is the group (h); and the physiologically acceptable salts thereof;

provided that when A is the group (C), then Y is the group—NR^2R^3.

12. A pharmaceutical composition comprising a bronchodilator or blood platelet aggregation-inhibiting effective amount of a compound as claimed in claim 1 and one or more pharmaceutical carriers.

4,447,429

7-[2-ALKOXYIMINO-2-(5-AMINO-1,2,4-THIADIAZOL-3-YL)ACETAMIDO]-3-CEPHEMS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

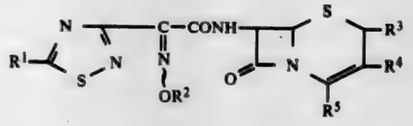
Division of Ser. No. 50,216, Jun. 20, 1979, Pat. No. 4,268,509. This application Dec. 5, 1980, Ser. No. 213,351

Claims priority, application United Kingdom, Jul. 10, 1978, 29357/78; Dec. 29, 1978, 50334/78

Int. Cl.³ A61K *31/545*; C07D *501/34*

U.S. Cl. 424—246 **29 Claims**

1. Syn isomer of cephem compounds of the formula:



wherein

R^1 is amino or a protected amino,

R^2 is lower alkyl,

R^3 is hydrogen or lower alkyl,

R^4 is hydrogen, acyloxy(lower)alkyl or, acylthio(lower)alkyl and

R^5 is carboxy or a protected carboxy, and pharmaceutically acceptable salt thereof.

29. A pharmaceutical antibacterial composition comprising an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,447,430

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi, Kohamanishi; Kiyoshi Tsuji, Osaka, and Toshiyuki Chiba, Nara, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

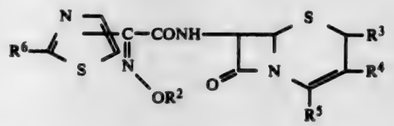
Division of Ser. No. 886,340, Mar. 14, 1978. This application Sep. 15, 1981, Ser. No. 302,682

Claims priority, application United Kingdom, Mar. 14, 1977, 10699/77; Jul. 12, 1977, 29245/77; Oct. 11, 1977, 42315/77; Jan. 3, 1978, 75/78

Int. Cl.³ C07D *501/56*; A61K *31/545*

U.S. Cl. 424—246 **9 Claims**

1. A syn compound of the formula:



wherein

R^2 is hydrogen or aliphatic hydrocarbon which may be substituted with halogen, carboxy or esterified carboxy,

R^3 and R^4 are each lower alkyl,

R^5 is carboxy or carboxy modified to a group from which carboxy may be regenerated, and

R^6 is amino or protected amino, and pharmaceutically acceptable salt thereof.

4,447,431

TRI-SUBSTITUTED IMIDAZOLE DERIVATIVES, PHARMACEUTICAL PREPARATIONS CONTAINING THEM, AND THEIR USE

Alfred Sallmann, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

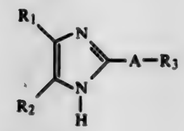
Division of Ser. No. 285,231, Jul. 20, 1981. This application Sep. 28, 1982, Ser. No. 425,603

Claims priority, application Switzerland, Jul. 25, 1980, 5715/80

Int. Cl.³ A61K *31/415, 31/44, 31/535*; C07D *401/04*

U.S. Cl. 424—246 **17 Claims**

1. A compound of the formula I



in which

one of the radicals $R_1$and R_2 represent pyrrolyl, furyl, thienyl, pyridyl, 1-oxidopyridyl or pyrimidyl each of which are unsubstituted or substituted by halogen, lower alkyl, hydroxy, lower alkoxy, and/or lower alkanoyloxy,

and the other of the radicals R_1 and R_2 represents phenyl, pyrrolyl, furyl, thienyl, pyridyl, 1-oxidopyridyl or pyrimidyl each of which is unsubstituted or substituted by halogen, lower alkyl, hydroxy, lower alkoxy and/or lower alkanoyloxy;

A represents lower alkylene, lower alkylidene, lower alkenylene, lower alkenylidene, cycloalkylene, cycloalkylidene or cycloalkyl-lower alkylidene; and

R_3 represents carboxy, carboxy esterified by a lower alkanol, by a 3- to 8-membered cycloalkanol, by phenol, by a hydroxypyridine or by a substituted phenol or substituted hydroxypyridine, or represents carbamoyl or carbamoyl mono-substituted by hydroxy, by amino, by phenyl or by substituted phenyl, or represents carbamoyl mono- or di-substituted by lower alkyl or carbamoyl di-substituted by 4- to 7-membered alkylene or 3-aza-, 3-lower alkyl-aza-, 3-oxa- or 3-thiaalkylene, wherein said lower alkanol and said cycloalkanol can be unsubstituted or substituted by hydroxy, mercapto, optionally substituted phenyl, lower alkoxy, phenyl-lower alkoxy optionally substituted in the phenyl moiety, lower alkylthio, phenyl-lower alkylthio optionally substituted in the phenyl moiety, hydroxy-lower alkoxy, lower alkoxy-lower alkoxy, phenyl-lower alkoxy-lower alkoxy optionally substituted in the phenyl moiety, carboxy-lower alkoxy, lower alkoxycarbonyl-lower alkoxy, or lower alkoxycarbonyl-lower alkoxy containing optionally substituted phenyl, or lower alkanoyloxy, and wherein substituted phenyl, phenol or hydroxypyridine can each be substituted by lower alkyl, lower alkoxy, halogen and/or trifluoromethyl, their isomers and salts thereof.

17. A method for the treatment of inflammatory dermatoses and/or herpes infections comprising administering externally an antiphlogistically and/or anti-herpes effective amount of a compound as claimd in claim 1.

4,447,432

AZINO RIFAMYCINS

Giovanni Franceschi; Leonardo Marsili; Aurora Sanfilippo, all of Milan, and Sergio Vioglio, Cusano Milanino, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

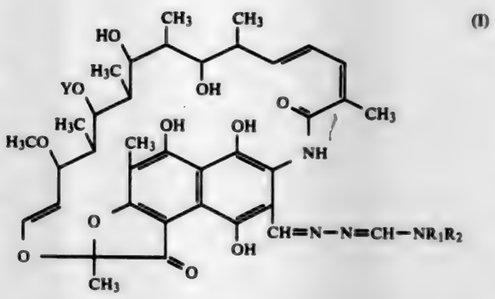
Filed Sep. 29, 1982, Ser. No. 427,467

Claims priority, application United Kingdom, Nov. 17, 1981, 8134549

Int. Cl.³ A61K *31/395*; C07D *498/08*

U.S. Cl. 424—248.54 **5 Claims**

1. A rifamycin having the formula (I)



(I)

wherein Y is a hydrogen atom or an acetyl group; R_1 is a linear or branched alkyl group having about 1 to 7 carbon atoms or an alkenyl group having about 3 or 4 carbon atoms; R_2 is a linear or branched alkyl group having about 1 to 7 carbon atoms a chloroalkyl group having about 2 to 4 carbon atoms, an alkenyl group having about 3 or 4 carbon atoms, a cycloalkyl group having about 3 to 7 carbon atoms in the ring, a cycloalkyl alkyl group having about 3 to 6 carbon atoms in the ring, a phenyl group, an unsubstituted aralkyl group having about 7 or 8 carbon atoms or an aralkyl group having about 7 or 8 carbon atoms being substituted by 1 halogen atom in the aryl group; or R_1 and R_2 along with the nitrogen atom to which they are bonded form a cyclic moiety, said moiety being pyrrolidinyl, piperidinyl, hexahydroazepinyl or heptahydroazocinyl, each of which are unsubstituted or substituted with 1 or 2 methyl radicals, 4-alkyl-1-piperazinyl, morpholinyl or 1, 2, 3, 4-tetrahydroisoquinolinyl.

4,447,433

DIPHENYLBUTYL-PIPERAZINECARBOXAMIDES TO TREAT PAIN

Anders K. K. Björk, Bjärred; Knut G. Olsson, Malmö ; Aina L. Abramo, Bjärred, and Erik G. Christensson, Lund, all of Sweden, assignors to AB Ferrosan, Malmo, Sweden

Division of Ser. No. 227,690, Jan. 23, 1981, Pat. No. 4,385,057, which is a continuation-in-part of Ser. No. 86,068, Oct. 18, 1979, Pat. No. 4,308,387. This application Sep. 15, 1982, Ser. No. 418,685

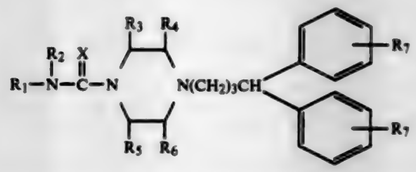
Claims priority, application Sweden, Oct. 20, 1978, 7810971

The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.

Int. Cl.³ A61K *31/495*

U.S. Cl. 424—250 **3 Claims**

1. A pharmaceutical composition for treatment of pain and for treatment of arrhythmia which comprises a pharmaceutically effective amount of a compound of formula I



(I)

wherein R_1 and R_2 are groups independently selected from the group of hydrogen, alkyl straight or branched chains having from 1 to 10 carbon atoms, cycloalkyl having from 3 to 8 carbon atoms, aralkyl having from 7 to 9 carbon atoms, alkenyl having from 2 to 10 carbon atoms, phenyl unsubstituted or substituted by one to three substituents selected from halogen, including F, Cl and Br, lower alkyl having from 1 to 5 carbon atoms, lower alkoxy having from 1 to 5 carbon atoms, amine unsubstituted or substituted by one or two lower alkyl groups

having from 1 to 5 carbon atoms, —CF_3 and —CN groups, R_3, R_4, R_5 and R_6 are groups independently selected from hydrogen, lower alkyl having from 1 to 3 carbon atoms and phenyl, R_7 is a group selected from hydrogen, halogen including F, Cl and Br, lower alkoxy having from 1 to 3 carbon atoms and —CF_3 groups, and X is O or S, or pharmaceutically acceptable acid addition salts thereof, and a pharmaceutically acceptable carrier.

4,447,434

SUBSTITUTED DIBENZODIAZEPINONES

Günter Trummlitz, Warthausen; Wolfhard Engel, Biberach; Wolfgang Eberlein, Biberach; Günther Schmidt, Biberach, all of Fed. Rep. of Germany; Rudolf Hammer, Milan, and Piero del Soldato, Monza, both of Italy, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

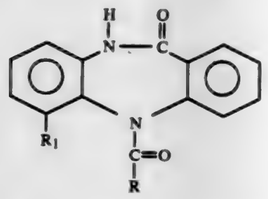
Filed Jan. 31, 1983, Ser. No. 462,149

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204157

Int. Cl.³ C07D *403/06;* A61K *31/55*

U.S. Cl. 424—256 **11 Claims**

1. A compound of the formula



(I)

wherein R_1 is hydrogen or chlorine and R is (1-methyl-4-piperidinyl)-methyl, (1-methyl-1,2,5,6-tetrahydro-4-pyridinyl)-methyl, 1-methyl-1,2,5,6-tetrahydro-4-pyridinyl, (1-methyl-4-piperidinylidene)-methyl, (2,3-dehydro-8-methyl-8-azabicyclo[3,2,1]oct-3-yl)-methyl, (8-methyl-8-azabicyclo[3,2,1]oct]-3-ylidene)-methyl or an endo- or exo-(8-methyl-8-azabicyclo[3,2,1]oct-3-yl)-methyl, each being optionally substituted by one or two further methyls on the heterocyclic ring, a diastereomer or enantiomer thereof, or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

7. A method of inhibiting ulcers in warm-blooded animals comprising administering to warm-blooded animals an antiulcergenically effective amount of at least one compound of claim 1.

4,447,435

3-METHYLSULFONYLMETHYL-4-QUINOLINONES USEFUL FOR TREATING HYPERTENSION

Roy V. Davies, Nottinghamshire, England, assignor to The Boots Company PLC, Nottingham, England

Filed Sep. 21, 1981, Ser. No. 304,165

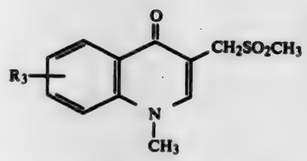
Claims priority, application United Kingdom, Sep. 26, 1980, 8031106; Sep. 26, 1980, 8031162; Jun. 19, 1981, 8118879; Jun. 19, 1981, 8119062

The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.

Int. Cl.³ A61K *31/47;* C07D *215/22*

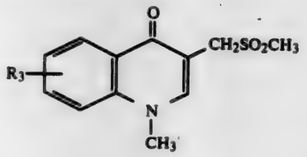
U.S. Cl. 424—258 **23 Claims**

1. Compounds of the general formula



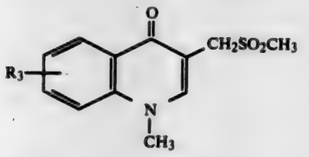
wherein R_3 is hydrogen, 7-chloro, 7-fluoro, 7-trifluoromethyl, 7-methyl or 6-fluoro.

8. Therapeutic compositions which comprise a antihypertensive effective amount of a quinolone of the general formula



wherein R_3 is hydrogen, 7-chloro, 7-fluoro, 7-trifluoromethyl, 7-methyl or 6-fluoro, together with a pharmaceutically acceptable carrier.

16. A method of treating hypertension in a hypertensive mammal which comprises administering to the hypertensive mammal a therapeutically effective amount of a quinolone of the general formula



wherein R_3 is hydrogen, 7-chloro, 7-fluoro, 7-trifluoromethyl, 7-methyl or 6-fluoro.

4,447,436

1,2,3,4-TETRAHYDROISOQUINOLINES 6.10,7,8 DIHYDROXY SUBSTITUTE-1-METHYLANILINO AND USE AS SMOOTH MUSCLE RELAXANTS

Teiji Kishimoto, Kawanishi; Hiromu Kochi, Sakai, and Masayuki Kato, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 628,935, Nov. 5, 1975, Pat. No. 4,220,647. This application Jan. 4, 1980, Ser. No. 109,531

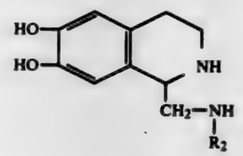
Claims priority, application Japan, Nov. 6, 1974, 49-128479; Nov. 15, 1974, 49-132287; Dec. 12, 1974, 49-143293

The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.

Int. Cl.³ A61K *31/47;* C07D *217/04*

U.S. Cl. 424—258 **5 Claims**

1. 1,2,3,4-Tetrahydroisoquinolines of the formula:



wherein R_2 is phenyl containing 1 to 3 lower alkoxy substituents, and pharmaceutically acceptable salts thereof.

5. A method of relaxing smooth muscles in mammals which comprises administering an amount of a compound of claim 1 sufficient for effectively relaxing said smooth muscles.

4,447,437

PHARMACEUTICAL COMPOSITION AND METHOD FOR TREATMENT OF PEPTIC ULCER

Haruo Ohnishi; Chihiro Itoh, both of Chiba, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,324

Claims priority, application Japan, Jun. 3, 1981, 56-140553

Int. Cl.³ A61K *31/44*

U.S. Cl. 424—263 **13 Claims**

1. A method for treating a patient suffering from peptic ulcer, comprising administering an amount therapeutically effective agent peptic ulcer of an agent comprising 2-N-methyl-1,2,3,4-tetrahydro-9H-dibenzo[a,e]pyridino[3,4-c]-cycloheptatriene (MO-8282) or its pharmaceutically acceptable salt to said patient.

4,447,438

DOPAMINERGIC STIMULATING PIPERIDIN-3-YL-INDOLES

Lucien Ledelec, Le Raincy; Jacques Guillaume, Le Pre Saint Gervais, and Claude Dumont, Nogent sur Marne, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jul. 6, 1982, Ser. No. 395,644

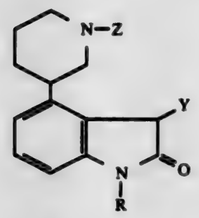
Claims priority, application France, Jul. 24, 1981, 81 14428

The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.

Int. Cl.³ A01K *31/445;* C07D *401/04*

U.S. Cl. 424—267 **10 Claims**

1. A compound selected from the group consisting of piperidin-3-yl-indoles of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and aralkyl of 7 to 12 carbon atoms, Y is alkyl of 1 to 8 carbon atoms, Z is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, hydroxyalkyl of 2 to 8 carbon atoms, cycloalkylalkyl of 4 to 12 carbon atoms, alkenyl and alkynyl of 3 to 8 carbon atoms, aryloxyalkyl of 7 to 12 carbon atoms and aralkyl of 7 to 12 carbon atoms optionally substituted with at least one member of the group consisting of halogen, alkoxy and alkyl of 1 to 4 carbon atoms, —OH, —CF_3, —OCF_3, —NO_2 and —NH_2 and their non-toxic, pharmaceutically acceptable acid addition salts.

8. A method of inducing dopaminergic stimulating activity in warm-blooded animals comprising administering to warm-blooded animals a dopaminergic stimulating effective amount of at least one compound of claim 1.

4,447,439

2-CYCLIC AMINO-2-(1,2-BENZISOXAZOL-3-YL)ACETIC ACID ESTER DERIVATIVES, PROCESS FOR THE PREPARATION THEREOF AND COMPOSITION CONTAINING THE SAME

Haruki Nishimura, Ikeda; Shunsuke Naruto, Ikoma; Hiroyuki Mizuta, Nishinomiya; Toshiaki Kadokawa, Hirakata, and Katsuyoshi Kawashima, Kobe, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

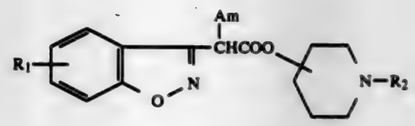
Filed Aug. 25, 1982, Ser. No. 411,515

Claims priority, application Japan, Aug. 26, 1981, 56-134600

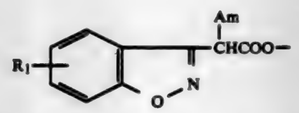
Int. Cl.³ C07D *413/14;* A61K *31/42*

U.S. Cl. 424—267 **24 Claims**

1. A tertiary amine compound of the formula:

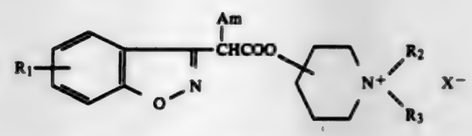


wherein R_1 is hydrogen or halogen atom, R_2 is a lower alkyl group, Am is a 5- to 9-membered saturated cyclic amino group which may be substituted by a lower alkyl group, and the group:

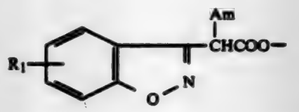


binds to the piperidine moiety at 3- or 4-position of the latter, or a pharmaceutically acceptable acid addition salt thereof.

5. A quaternary ammonium salt of the formula:



wherein R_1 is hydrogen or a halogen atom, R_2 is a lower alkyl group, R_3 is an alkyl group or a phenylalkyl group which may be substituted by a lower alkoxy or methylenedioxy group, Am is a 5- to 9-membered saturated cyclic amino group which may be substituted by a lower alkyl group, X^- is a pharmaceutically acceptable anion, and the group:



binds to the piperidine moiety at 3- or 4-position of the latter.

4,447,440

SULPHENAMIDES-CONTAINING LIPOXYGENASE INHIBITING AGENTS AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Wolf-Dieter Busse, Wuppertal; Edmund Krauthausen, Cologne, and Mithat Mardin, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

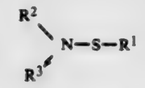
Filed Apr. 14, 1982, Ser. No. 368,193

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118126

Int. Cl.³ A61K *31/41*

U.S. Cl. 424—269 **12 Claims**

1. A pharmaceutical composition containing as an active ingredient a lipoxygenase-inhibiting amount of a compound which is a sulphenamide of the formula



(I)

or a salt thereof, in which represents an alkyl group with 1 to 18 carbon atoms, an alkenyl or alkinyl group with 2 to 12 carbon atoms, an aralkyl group with 7 to 11 carbon atoms, a cycloalkyl group with 5 to 8 carbon atoms or an aryl group with 6 to 14 carbon atoms, these radicals being optionally substituted with up to 5 identical or different substituents selected from alkoxy, alkyl, aralkyl, cycloalkyl, aryl, aryloxy, arylthio, alkylthio, carboxyl, carbalkoxy, cyano, carbamoyl, sulphonyl, halogenoalkyl, halogenoalkoxy, halogen, amino or substituted amino; independently of R^2, has any of the meanings of R^2; or represents a radical of the formula

$$-Q-S-NR^2R^{3'} \quad \text{(Ia)}$$

in which

R^2 has the meaning given below,

$R^{3'}$ independently of R^3 has the meaning given below for R^3, except a radical of formula (Ia),

Q represents an alkylene radical with 1 to 12 carbon atoms which is optionally interrupted by one or more oxygen, sulphur or nitrogen atoms, or represents a cycloalkylene radical with 5 to 12 carbon atoms, an arylene radical with 6 to 10 carbon atoms, an alkylene-cycloalkylene-alkylene or alkylene-arylene-alkylene radical,

R^2 denotes an electron-attracting radical, and

R^3 independently of R^1, has any of those meanings given for R^1, denotes a hydrogen atom or a radical of the general formula $-SR^1$ or $-NR^2R^5$, in which

R^5 denotes a hydrogen atom, independently of R^1, has any of those meanings given for R^1, or denotes a radical of the general formula

$$-W-CO-NR^{3''}R^{5'} \quad \text{(Ib)}$$

in which

$R^{3''}$ independently of R^3, has any of those meanings given for R^3, other than $-NR^2R^5$,

$R^{5'}$ has any of those meanings given for R^5 except a radical of formula (Ib),

W represents a direct bond, a disulphide bridge or one of the bridge members mentioned above for Q, and R^1 and R^2 have the meaning mentioned above, or

R^3 together with R^2 forms a tetrazolyl ring and is optionally substituted by alkyl, cycloalkyl, alkenyl, aralkyl, aryl, alkoxy, aryloxy, alkylmercapto, mercapto, amino, cyano, halogen, carbalkoxy, 1 to 3 oxo groups, 1 or 2 thiono groups and/or 1 or 2 optionally substituted imino groups, in admixture with an inert pharmaceutical carrier.

4,447,441

HALOALKYLGUANIDINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS, PROCESSES AND INTERMEDIATES

Tobias O. Yellin, Fremont, Calif., and David J. Gilman, Macclesfield, England, assignors to Imperial Chemical Industries PLC, London, England

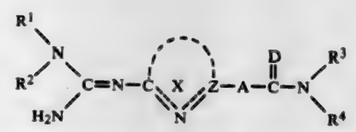
Filed Mar. 1, 1982, Ser. No. 353,502

Claims priority, application United Kingdom, Mar. 9, 1981, 8107273; Sep. 17, 1981, 8128179

Int. Cl.³ C07D *231/38, 249/04;* A61K *31/41, 31/415*

U.S. Cl. 424—269 **9 Claims**

1. A guanidine derivative of the formula I:



I

in which R^1 and R^2, which may be the same or different, are hydrogen or branched or unbranched 1–10C alkyl, 3–8C cycloalkyl or 4–14C cycloalkylalkyls, each alkyl, cycloalkyl or cycloalkylalkyl being optionally substituted by one or more halogens selected from fluorine, chlorine and bromine, provided that at least one of R^1 and R^2 is a halogen-substituted alkyl, cycloalkyl or cycloalkylalkyl, and provided that there is no halogen substituent on the carbon of the alkyl, cycloalkyl or cycloalkylalkyl which is directly attached to the nitrogen atom;

in ring X is selected from oxazole, thiazole, imidazole, 1,2,4-thiadiazole, 1,2,4-oxadiazole, 1,2,3-triazole, 1,2,4-triazole and pyrazole, and which heterocyclic ring may, where possible, carry one or two optional substituents, the optional substituents on ring X being selected from fluorine, chlorine, bromine, 1–6C alkyl, 1–6C alkoxy, trifuloromethyl, hydroxy and amino radicals; —A— is a phenylene or 5–7C cycloalkylene radical or a 1–8C alkylene chain which is optionally substituted by one or two 1–3C alkyls radicals and into which is optionally inserted, as part of the backbone of the chain, one or two groups selected from oxygen and sulphur atoms and NH, 1–6C N-alkyl, cis and trans vinylene, ethynylene, phenylene and 5–7C cycloalkylene radicals, provided that the shortest link between ring X and C=D is of at least 3 atoms, provided that when an optional insertion is made in chain A which results in the inserted group being directly attached to C=D the inserted group is other than an oxygen or sulphur atom or an NH or N-alkyl radical, and provided that no two insertions selected from oxygen and sulphur atoms and NH and N-alkyl radicals are directly attached one to the other;

D is an oxygen or sulphur atom;

R^3 is a hydrogen atom or a hydroxy, amino, 1–6C alkyl-amino, 1-C haloalkylamino, 1–6C alkanoylamino, 1–6C alkyl, 3–8C cycloalkyl, 4–12C cycloalkylalkyl, 2–6C alkenyl, 2–6C alkynyl, 1–6C haloalkyl, 1–6C alkoxy, 1–6C hydroxyalkyl, 2–10C alkoxyalkyl, 2–10C alkylthioalkyl, 1–6C aminoalkyl, 2–8C alkylaminoalkyl, 3–12C dialkylaminoalkyl, 2–8C alkanoylaminoalkyl, 8–14C benzoylaminoalkyl, 3–10C alkoxycarbonylalkyl, 2–8C carbamoylalkyl, phenyl, 7–11C phenylalkyl, heteroaryl or heteroarylalkyl radicals, wherein the heteroaryl part is a furan, thiophene, pyrrole, thiazole, oxazole, imidazole, thiadiazole, oxadiazole, triazole, pyrazole, pyridine or pyrimidine ring, wherein the alkyl part of the heteroarylalkyl radical is 1–6C and wherein, when R^3 is or contains a phenyl or heteroaryl ring, that ring is optionally substituted by one or two groups selected from fluorine, chlorine, bromine and iodine atoms and 1–6C alkyl, 1–6C alkoxy, 1–6C alkylthio, 2–6C dialkylamino, 2–6C alkanoyl, trifluoromethyl, hydroxy and amino radicals; R^4 is a hydrogen atom or R^3 and R^4 are joined to form, together with the nitrogen atom to which they are attached, a pyrrolidine, piperidine, morpholine, pipevazine or N-methylpiperazine ring;

and the pharmaceutically-acceptable acid-addition salts thereof.

4,447,442

3-TRIFLUOROACETYLAMINO-1-ARYL-2-PYRAZOLINES

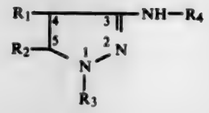
John P. Dusza, Nanuet, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Berstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 282,972, Jul. 13, 1981, Pat. No. 4,348,527. This application Aug. 9, 1982, Ser. No. 406,603

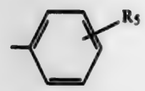
Int. Cl.³ A01N *43/56;* A61K *31/415*

U.S. Cl. 424—273 P **52 Claims**

1. A method of meliorating inflammation in a mammal which comprises administering to said mammal an effective anti-inflammatory amount of a compound selected from those of the formula:



wherein R_1 is hydrogen or lower alkyl (C_1–C_4); R_2 is hydrogen, lower alkyl (C_1–C_4), phenyl or



where R_5 is halogen; R_3 is



where R_6 and R_7 are the same or different and may be hydrogen, chloro, fluoro, lower alkyl (C_1–C_4), trifluoromethyl or $COCF_3$; R_4 is —CHO or —$COCF_3$ with the proviso that when R_4 is —CHO then R_2 is phenyl or



where R_5 is halogen; or a nontoxic pharmaceutically acceptable salt thereof.

4,447,443

ANTI-INFLAMMATORY/ANALGESIC COMBINATION OF α-FLUOROMETHYLHISTIDINE AND A SELECTED NON-STEROIDAL ANTI-INFLAMMATORY DRUG (NSAID)

Marvin M. Goldenberg, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 15, 1982, Ser. No. 441,581

Int. Cl.³ A61K *31/40, 31/415*

U.S. Cl. 424—273 R **6 Claims**

1. A pharmaceutical combination for pain and anti-inflammatory management comprising a therapeutically effective amount of indomethacin or a pharmaceutically acceptable non-toxic salt thereof and α-fluoromethylhistidine in an amount sufficient to enhance the efficacy of indomethacin wherein the weight ratio of indomethacin to α-fluoromethylhistidine is from about 1:100 to about 1:3.

4,447,444

1-ALKYL-3-ALKOXYMETHYL-4-ALKOXY-5-DIALKYLCARBAMOYLOXY PYRAZOLES AND USE AS APHICIDES

Gerhard Stähler, and Anna Waltersdorfer, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

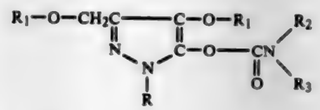
Continuation-in-part of Ser. No. 227,236, Jan. 22, 1981, abandoned. This application Jan. 13, 1983, Ser. No. 457,699

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002413

Int. Cl.³ A01N *43/56;* C07D *231/28*

U.S. Cl. 424—273 P **6 Claims**

1. N,N-dialkyl-O-[pyrazol-5-yl]-carbamic acid esters of the formula



in which R is alkyl of 2 to 4 carbon atoms, unsubstituted or substituted by CN, and R_1, R_2, and R_3 are alkyl of 1 to 4 carbon atoms.

6. A method for combating noxious aphids which comprises treating the aphids or the aphid infested crop plants with an effective amount of a compound as claimed in claim 1.

4,447,445

MANOALIDE, AN ANTI-INFLAMMATORY ANALGESIC MARINE NATURAL PRODUCT

Robert S. Jacobs, Santa Barbara, and D. John Faulkner, La Jolla, both of Calif., assignors to The Regents of the University of Calif., Berkeley, Calif.

Filed Aug. 3, 1983, Ser. No. 519,852

Int. Cl.³ A61K *31/335*

U.S. Cl. 424—279 **6 Claims**

1. The method of treating mammals including humans in need of a drug having analgesic and/or anti-inflammatory activity comprising the administration to said mammals of a therapeutically effective amount of manoalide, seco-manoalide or dehydro-seco-manoalide.

4,447,446

CERTAIN CYANO CONTAINING ARYL AMIDES, COMPOSITIONS CONTAINING SAME AND FUNGICIDAL USE THEREOF

Ian T. Kay; David Bartholomew, both of Wokingham; Emyr G. Williams, Reading, and Robert A. Noon, Cricklewood, all of England, assignors to Imperial Chemical Industries PLC, London, England

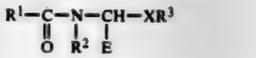
Filed Feb. 26, 1982, Ser. No. 353,006

Claims priority, application United Kingdom, Mar. 4, 1981, 8106817; May 12, 1981, 8114393

Int. Cl.³ C07D *121/52;* C07C *317/60;* A01N *43/02, 37/34*

U.S. Cl. 424—282 **18 Claims**

1. An amide derivative of the formula (I)



wherein

R^1 is phenyl optionally substituted with halogen, lower alkyl, lower alkoxy, halo-lower alkoxy, methylenedioxy, lower alkylthio or cyano;

R^2 is hydrogen, C_1–C_4 alkyl or C_3–C_5 alkenyl;
X is oxygen or sulphur;
R^3 is lower alkyl, lower haloalkyl or lower alkenyl; and
E is —CN.

17. A method for combating fungi which comprises applying to the fungi, or the locus thereof, a fungicidally effective amount of a compound as defined in claim 1.

18. A method of combating fungal disease in a plant which comprises applying to the plant, to the seed of the plant, or to the locus of the plant, or seed, a compound as defined in claim 1.

4,447,447

COMPOSITION, METHOD OF PREPARATION THEREOF, METHOD OF APPLICATION, APPARATUS FOR THE CONTROL OF LARVAE OF THE GYPSY MOTH AND OTHER HARDWOOD DEFOLIATORS

Bohdan O. Hreschak, and Christine Hreschak, both of 55 Cecelia Dr., Wayne, N.J. 07470

Filed Mar. 10, 1982, Ser. No. 356,738
Int. Cl.³ A01N *43/08*
U.S. Cl. 424—285 **13 Claims**

1. A composition effective to prevent gypsy moth caterpillars and other hardwood defoliators from ascending trees and devouring their foliage, comprising: a mixture of (a) 0.05–10.0 parts of at least one aliphatic aldehyde with 2–7 carbon atoms, (b) 0.05–10.0 parts of at least one sulfur compound which is dibutyl disulfide, or a mixture of dibutyl disulfide and dimethyl sulfide, (c) 0.05–10.0 parts of at least one diketofuran with carbon atoms ranging from 5 to 7, (d) 0.10–20 parts of at least one carboxylic acid with 4–6 carbon atoms, (e) a solvent in the amount of 0–50 parts and (f) 50–99.5 parts of a bulking agent.

4,447,448

WOOD PRESERVATIVE

Wolfgang Reuther, Heidelberg, and Hans-Volker Borck, Baden-Baden, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,317
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1981, 3151806
Int. Cl.³ A01N *43/08, 33/02*
U.S. Cl. 424—285 **2 Claims**

1. A composition for protecting wood against attack by wood-destroying fungi comprising a mixture of

(A) N-cyclohexyl-N-methoxy-2,5-dimethyl-furan-3-carboxamide

and

(B) tris-(N-cyclohexyl-diazeniumdioxy)-aluminum in a weight ratio of A to B of from about 1:3 to 3:1.

4,447,449

METHODS OF TREATING ISCHEMIC STATES

Norman B. Marshall, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 16, 1981, Ser. No. 321,367
Int. Cl.³ A61K *31/275, 31/34, 31/35*
U.S. Cl. 424—304 **5 Claims**

1. A method of arresting or preventing a pathological cardiovascular ischemic state (PACVIS) in an animal exhibiting or particularly susceptible to development of said PACVIS which comprises:

systemically administering to said animal an anti-PACVIS biologue in not less than a non-toxic amount effective to treat or prevent said PACVIS which comprises from 0.0001 mg to 400 mg per dose.

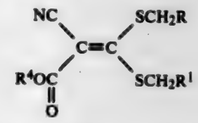
4,447,450

2,2-BIS(HALOALKENYL)-1-CYANO-1-ALKOXYCARBONYLETHYLENE FUNGICIDES

Andrew W. Ho, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 25, 1982, Ser. No. 361,652
Int. Cl.³ C07C *121/30;* A01N *37/34*
U.S. Cl. 424—304 **1 Claim**

1. A method of controlling grape downy mildew caused by *Plasmopara viticola* fungi which comprises applying to the fungus or its habitat a fungicidally effective amount of a compound having the formula:



wherein R and R^1 are independently substituted lower alkenyl having 2 through 6 carbon atoms and having 1 to 3 of the same or different halogen substituents; and R^4 is methyl or ethyl.

4,447,451

TREATMENT OF ADULT RESPIRATORY DISTRESS SYNDROME

Jerry C. Mueller, Kalamazoo, Mich., assignor to The Upjohn Manufacturing Company M, Puerto Rico

Continuation of Ser. No. 284,656, Jul. 20, 1981, abandoned. This application Dec. 6, 1982, Ser. No. 447,052
Int. Cl.³ A61K *31/19*
U.S. Cl. 424—317 **2 Claims**

1. A process for treating adult respiratory distress syndrome comprisig the systemic administration to a human or animal having adult respiratory distress syndrome of an effective amount of p-isobutylhydratropic acid or an alkyl ester of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, or a pharmacologically acceptable salt thereof.

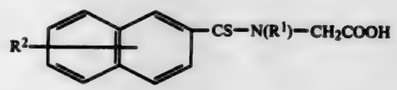
4,447,452

N[(2-NAPHTHALENYL)THIOXOMETHYL]GLYCINE DERIVATIVES

Kazimir Sestanj, St. Laurent, Canada, assignor to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Nov. 13, 1981, Ser. No. 321,303
Claims priority, application Canada, Mar. 2, 1981, 372024
Int. Cl.³ C07C *153/05;* A61K *31/195*
U.S. Cl. 424—319 **9 Claims**

1. A compound of formula I



wherein R^1 is lower alkyl, and R^2 is hydrogen or a lower alkyl, lower alkoxy, halo or trifluoromethyl substituent on the naphthalene ring, or a therapeutically acceptable salt thereof with an organic or inorganic base.

6. A pharmaceutical composition for preventing or relieving diabetic complications in a diabetic mammal which comprises a compound of claim 1, or a therapeutically acceptable salt thereof with an organic or inorganic base, and a pharmaceutically acceptable carrier.

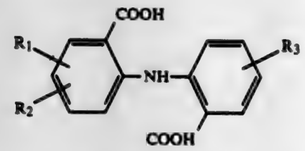
4,447,453

ANTI-PEPTIC ULCER AGENT

Mitsuru Tanemura, Tokyo; Tamotsu Yamazaki; Koji Mizuno, both of Saitama; Shin-ichi Kaiho, Chiba; Morio Kakimoto; Eiichi Hoshino, both of Saitama; Isao Matsunaga, Tokyo, and Shun-ichi Hata, Kanagawa, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,182
Claims priority, application Japan, Nov. 28, 1980, 55-166662
Int. Cl.³ A61K *31/195*
U.S. Cl. 424—319 **12 Claims**

1. A therapeutic method of treating peptic ulcer which comprises administering to a human in need of said therapy an effective amount for treating peptic ulcer of an active compound of the formula



wherein R_1, R_2 and R_3 which may be the same or different represent a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group but they do not all represent a hydrogen atom at the same time, or pharmaceutically acceptable salt thereof.

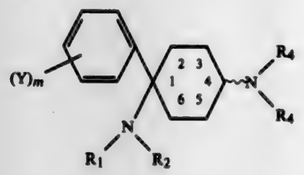
4,447,454

ANALGETIC COMPOUNDS, COMPOSITIONS AND PROCESS OF TREATMENT

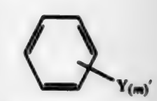
Daniel Lednicer, Evansville, Ind., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 897,105, Apr. 17, 1978, abandoned, Division of Ser. No. 783,806, Apr. 1, 1977, Pat. No. 4,113,866. This application May 15, 1981, Ser. No. 263,840
Int. Cl.³ A10N *33/02, 37/30;* C07C *87/34*
U.S. Cl. 424—330 **11 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, alkyl of from 1 to 8 carbon atoms, CH_2-alkenyl wherein alkenyl is from 2 to 4 carbon atoms, inclusive, cycloalkyl of from 3 to 6 carbon atoms, inclusive, or cycloalkylmethyl of from 3 to 6 carbon atoms, inclusive: R_2 is hydrogen, or alkyl of from 1 to 8 carbon atoms, inclusive, with the proviso that R_1 and R_2 cannot both be hydrogen at the same time; Y is alkyl of from 1 to 4 carbon atoms, inclusive, halogen, trifluoromethyl, hydroxy, alkoxy of from 1 to 4 carbon atoms, inclusive, cycloalkyloxy of from 3 to 6 carbon atoms, inclusive, or benzyloxy; m is an integer 0, 1, or 2; R_3 is alkyl of from 1 to 4 carbon atoms, inclusive; R_4 is alkyl of from 1 to 4 carbon atoms, inclusive, CH_2-alkenyl wherein alkenyl is of from 2 to 4 carbon atoms, inclusive, and arylalkyl wherein alkyl is from 1 to 4 carbon atoms, inclusive, and aryl is



wherein Y' is CF_3, halogen, alkyl of 1 to 4 carbon atoms, inclusive, and alkoxy of from 1 to 4 carbon atoms, inclusive; and its acid addition salts.

4,447,455

ORAL UROLITHIASIS REMEDY

Rolf Madaus, Köln-Brück, and Werner Stumpf, Bensberg-Refrath, both of Fed. Rep. of Germany, assignors to Madaus and Company, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 211,988, Dec. 1, 1980, abandoned, which is a continuation of Ser. No. 101,611, Dec. 10, 1979, abandoned. This application Aug. 5, 1982, Ser. No. 405,631
Int. Cl.³ A61K *31/12*
U.S. Cl. 424—331 **7 Claims**

1. A composition for the treatment of urolithiasis comprising effective amounts of

alizarin,
magnesium oxide,
disodium hydrogen phosphate, and
potassium hydrogen phosphate.

2. Composition as claimed in claim 1 comprising

5 to 14%	alizarin,
10 to 26%	magnesium oxide,
22 to 32%	disodium hydrogen phosphate, and
37 to 53%	potassium dihydrogen phosphate.

4,447,456

STRAIN OF *CORYNEBACTERIUM FASCIANS* AND USE THEREOF TO REDUCE LIMONOID BITTERNESS IN CITRUS PRODUCTS

Shin Hasegawa, Pasadena, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 10, 1983, Ser. No. 456,954
Int. Cl.³ A23L *1/00;* C12R *1/15*
U.S. Cl. 426—51 **15 Claims**

1. A biologically pure culture of *Corynebacterium fascians* NRRL B-15096 which is further identified as having the capability of producing enzymes which convert bitter limonoids to nonbitter compounds without the presence of a limonoid inducer in the growth medium.

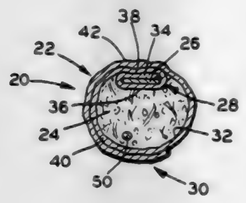
5. The process for reducing bitterness in limonoid-containing citrus products, which comprises contacting the citrus product with the bacterium *Corynebacterium fascians* NRRL B-15096 which is further identified as having the capability of producing enzymes which convert bitter limonoids to nonbitter compounds without the presence of a limonoid inducer in the growth medium.

4,447,457

READILY PORTABLE FOOD ITEM

Eddie L. Bernal, Defiance, Ohio, assignor to Taco Operations, Inc., Defiance, Ohio

Continuation-in-part of Ser. No. 389,705, Jun. 18, 1982, which is a division of Ser. No. 342,380, Jan. 25, 1982, Pat. No. 4,399,156.
This application May 25, 1983, Ser. No. 498,148
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.[3] A21D *13/00*; A23L *1/00*
U.S. Cl. 426—91 20 Claims



1. A portable food item comprising an edible sheet in a self-sustaining state, a substantially rigid and self-supporting elongate member capable of being hand held and supporting the edible sheet, said elongate member having a substantial portion of its length projecting beyond an edge of said sheet with the remaining portion of the member having an edge portion of the sheet affixed thereto by being wrapped completely therearound from said edge portion of said sheet toward an opposite edge portion thereof, with the remaining portion of the edible sheet, which is a major portion of the sheet, forming a chamber contiguous with the wrapped portion, a food filler contained within said chamber, said sheet having one edge portion between the aforesaid edge portions at an end of said chamber turned over the food filler and extending into the chamber to enclose an end of said chamber, said sheet having another edge portion at the other end of said chamber closed off to enclose the other end of said chamber, said sheet being at least partially cooked and in a semi-rigid, self-sustaining state.

14. A method of making a portable food item comprising providing a soft, edible sheet of predetermined shape, laying the edible sheet on a surface, positioning an elongate member on the sheet with a substantial portion of its length projecting beyond an edge of the sheet a sufficient distance to be hand held and located asymmetrically on the sheet with a large portion of the sheet on one side of the elongate member and a smaller portion of the sheet on the opposite side of the elongate member, said elongate member further being positioned with an edge portion of the large portion of the sheet extending beyond an end of the elongate member on the sheet, turning back the edge portion of the large portion of the sheet which is beyond the end of the member, wrapping the smaller portion of the sheet and part of the large portion around the elongate member, placing a food filler on an inner part of the remaining portion of the large portion of the sheet which is adjacent the wrapped elongate member and under the turned back edge portion, positioning the remaining portion of the large portion around the food filler and with an outer part of the remaining portion of the large portion in overlapping relationship with the wrapped portion to circumferentially enclose the food filler, and immersing the sheet and filler in hot liquid to cause the wrapped portion of the sheet to swell and become secured more fully to the elongate member and to render the sheet in a substantially self-sustaining state.

4,447,458

METHOD OF AND APPARATUS FOR PRODUCING AND PROCESSING FROZEN CONFECTIONS

Thomas E. Roth, Sylvania, and Harlan R. Getman, Toledo, both of Ohio, assignors to Vroman Foods, Inc., Toledo, Ohio

Filed Jun. 1, 1982, Ser. No. 383,793
Int. Cl.[3] A23G *9/00, 9/22*
U.S. Cl. 426—275 25 Claims

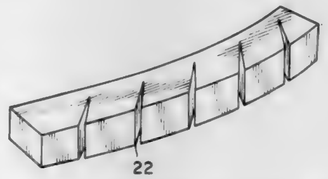
1. The method of processing freezable soft confection comprising advancing the soft confection as a column, establishing a quantity of particulate edible material adjacent the column of soft confection, agitating the particulate edible material, feeding the particulate edible material into contact with the peripheral region of the column of soft confection, moving the column of soft confection and particulate material through a restriction for impressing the particulate material into the peripheral region of the column of soft confection, severing successive bodies from the column of soft confection and particulate material embedded in the peripheral region thereof, delivering successive severed bodies onto successive cookies, and delivering each cooky and body of soft confection to a reduced temperature for freezing the bodies onto the cookies.

4,447,459

PREPARATION OF PAR-FRIED POTATO PIECES

John J. Balboni, Nash Rd., Purdys, N.Y. 10578, and Leon Hong, 29 Cottage Ct., Freeport, N.Y. 11520

Filed Mar. 15, 1983, Ser. No. 475,523
Int. Cl.[3] A23L *1/216*
U.S. Cl. 426—441 18 Claims



1. A process for preparing par-fried potato pieces comprising: cutting a potato to form pieces par-frying the potato pieces in hot oil under conditions effective to form a skin over the outer surfaces of the potato pieces, and then disrupting the outer surface skin of the potato pieces to expose the interior of the potato pieces.

4,447,460

PROCESSED VEGETABLES

Victor M. Lewis, and David A. Lewis, both of 19A Boundary St., Rushcutters Bay, N.S.W., 2011, Australia

Continuation-in-part of Ser. No. 165,294, Jul. 2, 1980, abandoned. This application Oct. 28, 1981, Ser. No. 315,723
Claims priority, application Australia, Jul. 11, 1979, PD 9542
Int. Cl.[3] A23B *7/02*; A23L *1/212*
U.S. Cl. 426—541 11 Claims

1. A process for dehydrating a vegetable to a desired moisture content and a water activity level at 20° C. of from 0.45 to 0.85, comprising the steps of

(a) partially dehydrating said vegetable, allowing at least 10% residual moisture to remain;

(b) adding to and mixing with the partially dehydrated vegetable a predetermined volume, not exceeding 34.6% by weight of the combined weights of the vegetable and solution, of an aqueous solution containing a known quantity of at least one water activity controlling solute selected from the group consisting of sodium chloride and mixtures of sodium chloride and a sugar, said solution containing no other solutes other than flavorings, coloring substances, seasonings, preservatives, salts, nutritional supplements and anti-oxidants, the quantity of said solution being such that it is totally absorbed by said partially dehydrated vegetable, and the absorption being carried out above 10° C.; and

(c) dehydrating said vegetable to a predetermined moisture content and said water activity level in a final dehydration step, the amounts of sugar and sodium chloride in said solution being such that the sugar content of the final dehydrated vegetable is less than 15% by weight and the sodium chloride content is 3–15% by weight.

4,447,461

SAUCE COMPOSITIONS CONTAINING AGGLOMERATED PARTICLES OF SPECIFIED SIZE DISTRIBUTION

Patricia J. Loos, Glendale; Debra L. Fuqua, Wyoming, and Paul J. Drzewiecki, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 370,806, Apr. 22, 1982, abandoned. This application Mar. 30, 1983, Ser. No. 478,120
Int. Cl.[3] A23L *1/22*
U.S. Cl. 426—589 11 Claims

1. A sauce comprising at least about 7% by volume of textured protein simulating loose cooked ground meat, but in which the textured protein has a particle size distribution of:

(a) from 0% to about 2% on a 15.9 mm screen;

(b) from about 6% to about 20% on a 12.7 mm screen;

(c) from about 9% to about 18% on a 9.51 mm screen;

(d) from about 27% to about 37% on a 5.66 mm screen;

(e) from about 25% to about 40% through a 4.76 mm screen; and

the balance on a 4.76 mm screen, provided that the sum of (a), (b), (c) and (d) is from about 48% to about 72%.

4,447,462

STRUCTURAL FAT AND METHOD FOR MAKING SAME

Michael W. Tafuri, and Bernard Y. Tao, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 318,161, Nov. 4, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,364
Int. Cl.[3] A23D *5/00*
U.S. Cl. 426—601 22 Claims

10. A solventless method for fractionating palm oil to obtain a structural fat, which comprises the steps of:

(1) heating whole palm oil having an iodine value of from about 50 to about 55 to a temperature of from about 140° F. to about 170° F. until essentially crystal free;

(2) slowly cooling the heated palm oil to a temperature of from about 75° to about 95° F.;

(3) maintaining the palm oil at a temperature of from about 75° to about 95° F. for at least 10 hours to permit crystallization of a first solid fraction having an iodine value of from about 42 to about 47;

(4) separating the first solid fraction from a first liquid fraction having an iodine value of from about 56 to about 61;

(5) heating the first liquid fraction to a temperature of from about 140° F. to about 170° F. until essentially crystal free;

(6) slowly cooling the heated first liquid fraction to a temperature of from about 60° to about 75° F.;

(7) maintaining the first liquid fraction at a temperature of from about 60° to about 75° F. for at least 12 hours to permit crystallization of a second solid fraction having an iodine value of from about 39 to about 47; and

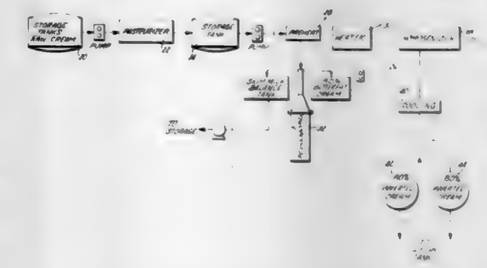
(8) separating the second solid fraction from a second liquid fraction to yield a separated second solid fraction as the structural fat.

4,447,463

PROCESS FOR PRODUCING A BUTTER/MARGARINE BLEND PRODUCT

Donald E. Antenore, Hudson; Donald W. Schmadeke, and Rodney A. Stewart, both of Waterloo, all of Iowa, assignors to Land O'Lakes, Inc., Arden Hills, Minn.

Filed Nov. 19, 1982, Ser. No. 442,920
Int. Cl.[3] A23D *3/02*
U.S. Cl. 426—603 8 Claims



1. A churn-free continuous process for producing a margarine/butter spread comprising:

concentrating a dairy cream to approximately at least an 80% butterfat content;

processing the dairy cream through a homogenizer at a pressure and temperature such that the dairy cream is inverted from an oil-in-water emulsion to a water-in-oil emulsion;

mixing the inverted cream with a vegetable oil to form a cream/oil mixture; and

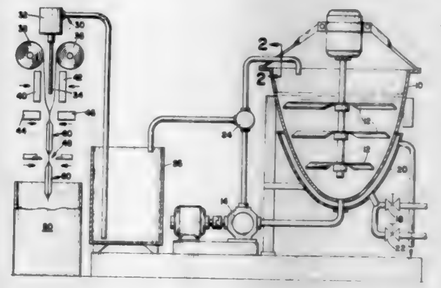
cooling the cream/oil mixture to a temperature effective to produce a spread-like viscous product.

4,447,464

METHOD OF PROCESSING MARGARINE OR BUTTER FOR SQUEEZE PACKET CONTAINERS

Charles A. Schwartz, Highland Heights, and Kenyon L. Cornwell, Lakewood, both of Ohio, assignors to Sar-A-Lee, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 423,063, Sep. 24, 1982, abandoned. This application Dec. 20, 1982, Ser. No. 451,075
Int. Cl.[3] A23C *15/00*; A23D *3/02*
U.S. Cl. 426—663 10 Claims



1. A method of processing a normally non-flowable margarine or butter product comprising:

(a) mixing said product to a uniform viscosity in a mixing bowl by stirring the product;

(b) heating the mixing bowl to form a thin layer of low viscosity liquid product around the edge of the mixing bowl, said heat being applied to the mixing bowl at a temperature and of short duration such that the liquid product around the edge of the mixing bowl does not undergo irreversible breakdown of its emulsion and such

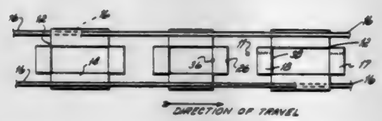
that only the product contiguous with the bowl is directly heated;
(c) recirculating a portion of the product including the low viscosity liquid product through an additional mixing means and back to the mixing bowl;
(d) repeating steps (a) through (c) until the overall product viscosity is lowered to the range of 16,000 to 18,000 centipoise at 75° F.;
(e) pumping the 16,000 to 18,000 centipoise viscosity product into flexible squeeze packets; and,
(f) sealing the squeeze packets forming closed, flexible containers holding the product.

4,447,465

METHOD FOR AUTOMATICALLY COATING OBJECTS WITH A PLURALITY OF QUANTITIES OF A COATING MATERIAL USING A SINGLE DISCHARGE APPARATUS

Timothy S. Matt, Bay Village, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Division of Ser. No. 301,520, Sep. 14, 1981, Pat. No. 4,380,967. This application Feb. 4, 1983, Ser. No. 463,731
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—10 **1 Claim**



1. A method for automatically coating objects with a plurality of quantities of a coating material comprising the steps of:
moving the objects relative to a coating material discharging device in a path past the discharge device;
sensing the presence of an object at a first point on said path upstream of said discharge device;
sensing the presence of the object at a second point on said path downstream of the first point and upstream of the discharge device;
producing a delay signal in response to either of the sensor signals after a delay time corresponding to a predetermined distance of travel by a second object on the path;
producing a duration signal in response to the delay signal for a duration of time corresponding to a predetermined distance of travel by a sensed object on the path; and
controlling the discharge of the coating material from the discharge device in response to the duration signal.

4,447,466

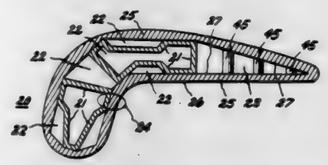
PROCESS FOR MAKING PLASMA SPRAY-CAST COMPONENTS USING SEGMENTED MANDRELS

Melvin R. Jackson, and John R. Rairden, III, both of Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 292,857, Aug. 14, 1981, Pat. No. 4,418,124, which is a continuation-in-part of Ser. No. 194,084, Oct. 6, 1980, abandoned. This application Feb. 2, 1983, Ser. No. 463,207
Int. Cl.³ B22F *3/00*; A23C *9/12*
U.S. Cl. 427—34 **9 Claims**

1. The method of making a composite article of manufacture having a plurality of hollow passageways by means of a segmented mandrel comprising the steps of:
(a) providing at least a first mandrel segment, said first mandrel segment having a top surface, a bottom surface, and a peripheral edge surface area interconnecting said top and bottom surfaces, said peripheral edge area defining the shape of said mandrel segment;
(b) plasma spray-casting a first superalloy material onto at least said peripheral edge surface area of said first mandrel segment;
(c) bringing the product of step (b) into a contacting relationship with at least a second mandrel segment, said second mandrel segment having a top surface, a bottom surface and a peripheral edge area, at least a portion of the peripheral edge area of said second mandrel being in contact with at least a portion of said first superalloy material on the peripheral edge surface area of said first mandrel segment, thereby leaving at least a portion of the peripheral edge area of said second mandrel segment and at least a portion of the first superalloy material on the peripheral edge surface area of said first mandrel segment exposed, forming thereby a completed segmented mandrel assembly resting on the bottom surfaces of said mandrel segments;
(d) plasma spray-casting a second superalloy material having a composition different from the composition of said first superalloy material onto at least the exposed peripheral edge area of said second mandrel segment and over at least a portion of the exposed superalloy material on the peripheral edge surface area of said first mandrel segment; and
(e) selectively dissolving the mandrel segments thereby creating said hollow passageways.

4. The method of making a composite airfoil having a plurality of hollow passageways by means of a segmented mandrel comprising the steps of:
(a) providing a segmented mandrel consisting of a plurality of individual segments, each segment having a top surface, a bottom surface and a peripheral edge surface area, said peripheral edge areas defining the shapes of said mandrel segments;



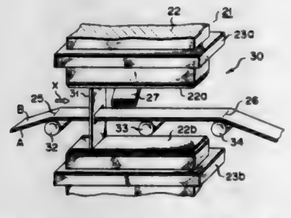
(b) plasma spray-casting a first superalloy material onto at least the peripheral edge areas of first and second mandrel segments;
(c) bringing the products of step (b) into a contacting relationship with a third mandrel segment, said third mandrel segment being interposed between said first and second mandrel segments such that a portion of the peripheral edge area of said third segment is in contact with a portion of the first superalloy on the peripheral edge area of said first segment and yet a different portion of the peripheral edge area of said third segment is in contact with a portion of the first superalloy on the peripheral edge area of said second segment;
(d) bringing forth and fifth mandrel segments into a contacting relationship with said first mandrel segment such that a portion of the peripheral edge areas of said fourth and fifth segments are in contact with a portion of the first superalloy on the peripheral edge area of said first mandrel segment, said fourth and fifth segments being substantially opposite and displaced from each other and displaced from the third mandrel segment;
(e) bringing sixth, seventh and eighth mandrel segments into a contacting relationship with said second mandrel segment such that a portion of the peripheral edge areas of said sixth, seventh, and eighth mandrel segments are in contact with a portion of the first superalloy on the peripheral edge area of said second mandrel segment, said sixth and seventh mandrel segments being substantially opposite from each other, said eighth mandrel segment being substantially opposite said third mandrel segment, said sixth, seventh, and eighth mandrel segments being displaced from each other and from the third mandrel segment, forming thereby a completed segmented mandrel assembly resting on the bottom surfaces of said mandrel segments;
(f) plasma spray-casting a second superalloy material having a composition different from the composition of said first superalloy onto at least the portions of the peripheral edge areas of the third, fourth, fifth, sixth, seventh, and eighth mandrel segments not in contact with the first superalloy material and onto at least those portions of the first superalloy material on the first mandrel segment which are not covered by the third, fourth and fifth mandrels, and onto at least those portions of the first superalloy material on the second mandrel segment which are not covered by the third, sixth, seventh and eighth mandrel segments; and
(g) selectively dissolving the mandrel segments thereby creating a plurality of hollow passageways.

4,447,467

METHOD AND APPARATUS FOR PERPENDICULAR MAGNETIC RECORDING MEDIUM

Toshihiko Oguchi, Atsugi; Hirohisa Kato, Ebina, and Hirotaka Yokoyama, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 23, 1983, Ser. No. 478,103
Int. Cl.³ H01F *10/02*; B05C *11/00*; B05D *3/06*; B05B *5/00*
U.S. Cl. 427—48 **12 Claims**



1. A method for manufacturing a perpendicular magnetic recording medium, comprising the steps of:
(a) generating a magnetic field which has an intensity of not less than 4,000 oersteds;
(b) passing a nonmagnetic substrate having a coating layer thereon through said magnetic field in one direction substantially perpendicular to a direction of said magnetic field, said coating layer comprising a binder and magnetic particles which have a particle size of not more than 0.2 μm and are dispersed in said binder, and said coating layer having a viscosity of not more than 5×10^4 centipoises as measured at a shearing speed of 8.0 sec^{-1};
(c) orienting said magnetic particles in said coating layer in an upstream region of said magnetic field such that an axis of easy magnetization of said magnetic particles is aligned with the direction of said magnetic field; and
(d) treating said coating layer which includes said magnetic particles which have been oriented, in a downstream region of said magnetic field such that a viscosity of said coating layer is increased to at least 10^5 centipoises as measured at a shearing speed of 8.0 sec^{-1}, thereby restricting further movement of said magnetic particles in said coating layer before said coating layer is removed from said magnetic field.

4,447,468

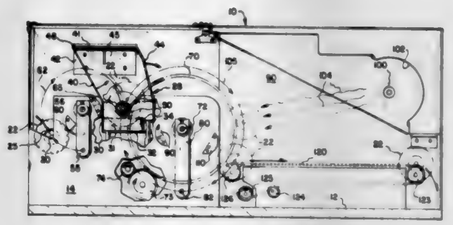
PHOTOGRAPHIC FILM COATING APPARATUS AND METHOD

John B. Keable, Spring Valley, Ohio, assignor to QMI Corporation, Centerville, Ohio

Filed Mar. 21, 1983, Ser. No. 477,205
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **10 Claims**

1. The method of applying a protective ultraviolet curable coating to the surface of film on discs of film carried on spindles, comprising the steps of:
partially lowering a spindle carrying thereon a plurality of such discs to submerge the films thereon in a pool of such coating and slowly rotating the spindle to coat each film carried thereon with said coating,
raising the spindle and discs above the pool and rotating the spindle at a rate of rotation substantially in excess of the rate of rotation during coating, to spin off excess coating from the films carried thereon,
moving said spindle out of the region of said pool into a region of ultraviolet curing light while continuing the rotation of said spindle and discs thereon,
maintaining said spindle in said ultraviolet light a time sufficient for substantial curing of said coating thereon, and
removing said spindle with said discs thereon from said ultraviolet region.

5. Apparatus for coating film discs on a disc carrying spindle for applying an ultraviolet curable liquid coating to the individual films carried on such discs, comprising:



means defining a pool of such coating,
means supporting such spindle for rotation with discs stacked thereon to a depth less than one-half the diameter of such discs so that only the lowermost films thereon are submerged in said pool,
spindle rotating means engageable with said spindle when said spindle is at said supporting means and operable to rotate said spindle slowly at said supporting means for applying such coating to said discs,
arm means elevating said spindle and discs above the level of said pool while maintaining engagement with said spindle rotating means and operable to rotate at a relatively high rate of speed for removing excess coating,
an ultraviolet curing lamp spaced from said pool and providing an ultravilet curing region,
said arm means being operable to move said spindle into said curing region while maintaining engagement with said rotating means for curing by ultraviolet energy during continued rotation of said spindle.

4,447,469

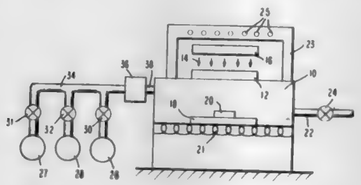
PROCESS FOR FORMING SULFIDE LAYERS BY PHOTOCHEMICAL VAPOR DEPOSITION

John W. Peters, Malibu, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jun. 10, 1982, Ser. No. 387,086
Int. Cl.³ B05D *3/06*; H01L *21/205*
U.S. Cl. 427—54.1 **26 Claims**

1. A process for depositing a sulfide layer of a chosen element on the surface of a selected substrate which comprises:
exposing said surface to a selected vapor phase reactant con-

taining said element in the presence of neutral, charge-free sulfur atoms to produce a chemical reaction between said



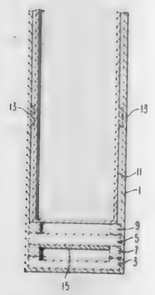
sulfur atoms and said reactant in a manner sufficient to form said sulfide layer on said surface of said substrate.

4,447,470

COMPOSITION CONTROL OF CSVPE HGCDTE

Robert E. Kay, Newport Beach, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 6, 1982, Ser. No. 447,082
Int. Cl.³ H01L *31/00*
U.S. Cl. 427—76 **7 Claims**



1. A method for growing a layer of HgCdTe on a CdTe substrate using a HgTe source and close-spaced vapor phase epitaxy, wherein close-spaced CdTe and HgTe are heated together at a constant processing temperature of between 520° C. and 625° C. for a fixed processing time of between ¼ hour and 4 hours.

4,447,471

METHOD OF TREATING THERMOPLASTIC SURFACES

Ronald A. Putt, Palatine, and Alan I. Attia, Arlington Heights, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 30, 1982, Ser. No. 454,786
Int. Cl.³ C23C *3/02*; H05K *3/18*
U.S. Cl. 427—98 **19 Claims**

1. The method of treating the surface of a body formed of polyphenylene sulfide, comprising the step of

subjecting the surface to a solution of bromine in an aqueous solution selected from the group consisting of an aqueous chloride solution and an aqueous bromide solution.

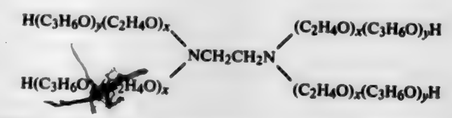
4,447,472

MAGNET WIRE COATING METHOD AND ARTICLE

Michael G. Minnick; James J. Connell, and Charles W. McGregor, all of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Sep. 23, 1982, Ser. No. 421,753
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—120 **6 Claims**

1. A method of improving the physical and electrical properties of polymeric insulation coated magnet wire comprising preparing a coating composition by mixing about 0.01% to about 5% by weight of non-ionic surfactant having the formula:



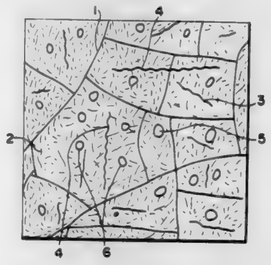
where x and y are so constituted as to result in a weight average molecular weight of 2,700 to 16,000 with x groups representing 10% to 80% of the total molecular weight, with an organic solvent solution of polymer containing hydroxyl functionality, applying said surfactant containing solution to a magnetic wire substrate, and drying and curing the coated substrate to produce a coated magnet wire with improved concentricity and smoothness.

4,447,473

METHOD OF PRODUCING DECORATIVE OBJECTS

Toru Mashida, 26-16, Miyamae 5-chome, and Sumeo Matsushita, 47-17, Izumi 3-chome, both of Suginami-ku, Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,532
Claims priority, application Japan, Nov. 6, 1981, 56-177112
Int. Cl.³ B05D *5/02*
U.S. Cl. 427—162 **4 Claims**



1. A method of producing decorative objects comprising the steps of forming a metal thin film on glazed and baked surface of a base body and treating the base body at high temperature in oxygen atmosphere, wherein the high temperature treatment causes oxidation of the thin film applied directly to the glazed and baked surface and the glazed and baked surface comes to a semi-fluid state to provide a surface with a form of fine ruggedness or unevenness, whereby a light-interference surface layer showing an esthetic pattern is formed.

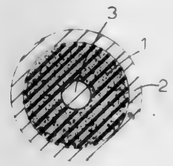
4,447,474

METHOD OF SELECTIVELY TINTING SOFT CONTACT LENSES

Charles W. Neefe, P.O. Box 429, 811 Scurry St., Big Spring, Tex. 79720

Filed Aug. 30, 1982, Ser. No. 412,872
Int. Cl.³ B05D *1/28, 7/04*; G02B *3/00, 1/10*
U.S. Cl. 427—164 **5 Claims**

1. A method of coloring selected portions of a soft contact lens by the steps of providing an impervious lens support, substantially the size and shape of the contact lens to be colored, placing an absorbent dye carrier material of a size and shape equal to the lens area to be colored in the surface of the lens support, allowing a liquid colorant to be absorbed into the absorbent dye carrier material, providing an uncolored central circular pupil area and an uncolored peripheral area, placing the lens surface in contact with the surface of the lens support and the dye carrier material, allowing the colorant present in the dye carrier material to be absorbed into the lens at the



selected lens area and chemically reacting the dye substance to render it insoluble and permanent.

4,447,475

PROCESS FOR COMPOSITE POLYMER BEADS

Frederick J. Lubbock, Beaumaris; Christopher C. K. Mok, Clayton, and Robert J. Eldridge, Moorabbin, all of Australia, assignors to ICI Australia Limited, Victoria and Commonwealth Scientific and Industries Research Organization, Campbell, both of, Australia

PCT No. PCT/AU80/00018, 371 Date Dec. 3, 1980, 102(e) Date Dec. 3, 1980, PCT Pub. No. WO80/02687, PCT Pub. Date Dec. 11, 1980
PCT Filed Jun. 2, 1980, Ser. No. 220,024
Int. Cl.³ B01J *13/02*; B05D *7/16*
U.S. Cl. 427—213.31 **10 Claims**

1. A process of incorporating non-polymeric magnetic particulate matter into a polymeric matrix so as to obtain composite particles or beads comprising the non-polymeric magnetic particulate matter coated or embedded in said matrix, said process comprising the steps of polymerizing while stirring a mixture of (1) a dispersion of the non-polymeric magnetic particulate matter in a medium comprising one or more vinyl monomers selected from the group consisting of styrene, substituted styrenes and vinyltoluenes, a polymeric dispersant selected from the group of copolymers consisting of styrene/2-vinylpyridine, styrene/4-vinylpyridine, styrene/vinyltrimethoxysilane and styrene/vinyltriethoxysilane, a cross-linking agent and a polymerization initiator, and (2) an aqueous phase containing a suspension stabilizer, to obtain said composite particles or beads and then separating said particles or beads from the polymerization medium; the weight ratio of non-polymeric magnetic particulate matter to the polymeric dispersant being in a range from 12:1 to 5:1; and the weight ratio of polymeric dispersant to vinyl monomers being in a range from 1:5 to 1:20.

4,447,476

PROCESS FOR STABILIZING DEHYDRATED MAGNESIUM CHLORIDE AGAINST REHYDRATION

Franz J. Gattys, Neu-Isenburg, Fed. Rep. of Germany, assignor to F. J. Gattys Ingenierbüro, Neu-Isenburg, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,109
Claims priority, application Fed. Rep. of Germany, May 4, 1981, 3117542
Int. Cl.³ B05D *7/00*
U.S. Cl. 427—215 **6 Claims**

1. A process for stabilizing dehydrated magnesium chloride against hydration, characterized by one of granulating and pelletizing the dehydrated magnesium chloride, providing the one of granulated and pelletized magnesium chloride with a coating of a material having a high degree of affinity for water, carrying out the coating operation using magnesium oxide, feeding the magnesium oxide into a granulator as a dry partially hydroxylated powder and completely hydroxylating the magnesium oxide during the granulation by adding water.

4,447,477

METHOD FOR THE PRODUCTION OF CORROSION-INHIBITING COATINGS ON METALLIC SURFACES

Heinrich Deibig, Frankfurt am Main, and Klaus Wollmann, Limburg, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP82/00131, 371 Date Dec. 29, 1982, 102(e) Date Dec. 29, 1982, PCT Pub. No. WO83/00105, PCT Pub. Date Jan. 20, 1983
PCT Filed Jun. 24, 1982, Ser. No. 459,693
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125113
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—388.3 **4 Claims**

1. Method for the production of corrosion inhibiting coating or pretreated metallic surfaces comprising applying a mixture of (i) 50 to 95 weight percent, based upon the total weight of the mixture, of a monomeric phenol, (ii) a low molecular condensation product of formaldehyde together with ammonia or an amine, and (iii) 0.1 to 10 weight percent, based upon the total weight of the mixture, of a wetting agent, which is chemical reactive with at least one of materials (i) and (ii), onto the surface to be coated, the mixture being in the form of a solution, dispersion or powder, and curing the mixture by heating to a temperature of 100° to 250° C.

4,447,478

NOVEL FLUOROELASTOMER FILM COMPOSITIONS AND METHOD FOR THE PREPARATION THEREOF

Donald Close, Stow, Ohio, assignor to David Hudson, Inc., Stow, Ohio

Division of Ser. No. 178,895, Aug. 18, 1980, abandoned. This application May 28, 1982, Ser. No. 383,343
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—407.1 **5 Claims**

1. A method for coating a substrate with fluoroelastomer film including the steps of:

coating the substrate with a film of an amine-derived curative selected from the group consisting of polyamine and polyamide adducts of epoxy resins, and blends of fatty amidoamine resins with polyamide adducts of epoxy resins;

applying a fluoroelastomer gum solution to said curative coated substrate; and

evaporating the solvent from said solution sufficiently to leave the film adhered to said curative coated substrate.

4,447,479

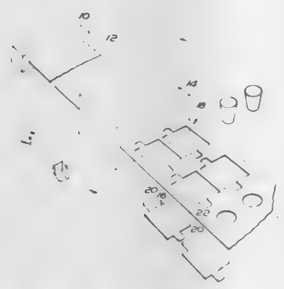
PLASTICS SHEET MATERIAL AND ARTICLES PRODUCED THEREFROM

Peter Harrison, Wakefield, and Thomas N. Gaunt, Leeds, both of England, assignors to Plastona (John Waddington) Ltd., Leeds, England

Continuation of Ser. No. 948,421, Oct. 4, 1978, abandoned, which is a continuation of Ser. No. 842,145, Oct. 14, 1977, abandoned, which is a continuation of Ser. No. 682,863, May 3, 1976, abandoned. This application Oct. 28, 1980, Ser. No. 201,557
Claims priority, application United Kingdom, May 8, 1975, 19469/75; Jun. 7, 1975, 24533/75; Jun. 7, 1975, 24534/75; Sep. 9, 1975, 36946/75; Nov. 29, 1975, 49150/75
Int. Cl.³ B32B *27/32*; B65D *5/00*
U.S. Cl. 428—35 **26 Claims**

1. A cardboard-like material free of styrene resins and elastomers that retains its dead-fold characteristics manufactured by compounding 5–70 parts by weight of inorganic particulate material with 95 to 30 parts by weight of polyolefin resin selected from polypropylene-ethylene sequential copolymer; polypropylene-ethylene random copolymer; or any mixture of these, the compounding being carried out essentially by mechanical working to generate heat, and to disperse the inor-

ganic material evenly throughout the resin so as to produce a molten mass of uniform consistency having a melt flow index



of between 0.55 and 2.2 cc/10 minutes at 230° C. under a load of 2.16 Kg and subsequently converting the mass into the sheet in a thickness of 0.1–1.2 mm by extrusion or calendering.

4,447,480

SHRINKABLE FILM FOR POULTRY BAGS

Stanley Lustig, Park Forest; Jeffrey M. Schuetz, Downers Grove, and Stephen J. Vicik, Darien, all of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 1, 1982, Ser. No. 445,941
Int. Cl.³ A21D *10/02*; C08L *23/04*; B65D *33/00*
U.S. Cl. 428—35 **33 Claims**

1. A heat-shrinkable film, suitable for use in fabricating bags for packaging frozen poultry, comprising a mixture of between about 80 and about 95 percent by weight of an ethylene-vinyl acetate copolymer having a vinyl acetate content of from at least about 1.7 to about 4.5 percent by weight, based on the weight of said ethylene-vinyl acetate copolymer, and having a melt index of from at least about 0.15 to about 0.35 decigram per minute; and between about 5 and about 20 percent by weight, based on the weight of said film, of a polyethylene material selected from the group consisting of:
(a) low pressure-high density polyethylene having a melt index of between about 0.15 and about 0.70 decigram per minute, and a density of between about 0.94 and about 0.96 gram per cubic centimeter, and
(b) low pressure-low density polyethylene having a melt index of between about 0.3 and 3.0 decigrams per minute, and a density of between about 0.915 and about 0.925 gram per cubic centimeter.

18. A resin mixture comprising between about 80 and about 95 percent by weight of an ethylene-vinyl acetate copolymer having a vinyl acetate content of from at least about 1.7 to about 4.5 percent by weight, based on the weight of said ethylene-vinyl acetate copolymer, and having a melt index of from about 0.15 to about 0.35 decigram per minute; and between about 5 and about 20 percent by weight, based on the weight of said resin mixture, of a polyethylene material selected from the group consisting of:
(a) low pressure-high density polyethylene having a melt index of between about 0.15 and about 0.70 decigram per minute, and a density of between about 0.94 and about 0.96 gram per cubic centimeter, and
(b) low pressure-low density polyethylene having a melt index of between about 0.3 and about 3.0 decigrams per minute, and a density of between about 0.915 and about 0.925 gram per cubic centimeter.

4,447,481

PAPER SHEETS HAVING RECESSED PRESSURE-SENSITIVE GLUED EDGE WITH A REMOVABLE STRIP

Albert E. Holmberg, Edina, and Thomas A. Holmberg, Richfield, both of Minn., assignors to The Holmberg Company, Minneapolis, Minn.

Filed Jul. 11, 1983, Ser. No. 512,326
Int. Cl.³ B32B *3/02, 29/00*
U.S. Cl. 428—40 **6 Claims**



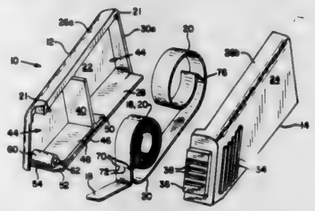
1. A paper sheet comprising,
an attachment marginal edge portion,
a recess formed along said attachment edge portion having a predetermined depth,
a layer of non-drying, pressure-sensitive adhesive applied only in the recessed marginal edge portion,
a protective strip removably applied to the layer of adhesive in said recess,
the combined thickness of the adhesive and protective strip being no greater than the depth of the recess so that the thickness of the attachment marginal edge portion of the paper sheet is no thicker than the remaining portion of the sheet to permit processing of the sheet through a conventional processing operation such as printing and copying in a conventional manner.

4,447,482

WOUND CLOSURE TAPE AND APPLICATOR THEREFOR

Bert D. Heinzelman, North Bergen, N.J.; Douglas M. Spranger; Malcolm J. Brookes, both of New York, N.Y., and John E. Kuphal, West Linn, Oreg., assignors to Shur Medical Corporation, Beaverton, Oreg.

Continuation-in-part of Ser. No. 341,487, Jan. 21, 1982, abandoned. This application Dec. 29, 1982, Ser. No. 452,749
Int. Cl.³ A61F *13/00*; B32B *35/00*
U.S. Cl. 428—42 **9 Claims**



1. A sterile wound closure adhesive tape product for use with a tape applicator, said tape product comprising:
a single strip of surgical tape having a pressure sensitive adhesive coating on one surface and a releasable backing strip covering the adhesive-coated surface,
said strip of tape being transversely perforated at regular intervals along its length to subdivide the strip into joined tape segments separable along the perforations without the aid of a cutting device upon the application of a substantial tensile force at said perforations, the length of each segment being substantially greater than its width,
said releasable backing strip being continuous and imperforate throughout its length,
said tape and backing strip being wound together into a supply roll for installation in an applicator,
said strip of tape but not said backing strip including a pair of opposed notches one at each of the opposite marginal edges of said tape aligned with the perforations dividing said tape segments to provide a visual indicator of an end of each segment and an aid to separation of segments from the supply roll upon application of said tensile force,
said strip of tape being slightly narrower than said backing strip and being positioned on said backing strip such that both marginal edge portions of said backing strip extend slightly laterally outwardly beyond the corresponding marginal edge portions of said tape strip,
said supply roll being preset to cause said backing strip to self-coil when unconstrained after its release from said strip of tape,
said perforations being arranged to provide sufficient tensile strength at the interconnections between tape segments such that application of a segment to a skin surface under sufficient tension from the supply roll to close a laceration of such surface does not separate the applied segment from the roll .

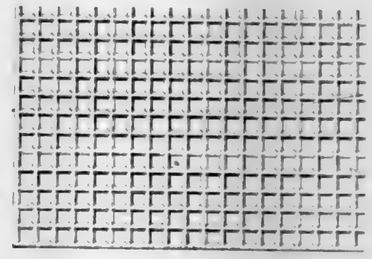
7. A blade-less, disposable surgical tape applicator system comprising in combination:
a casing sized to fit within the palm of the hand of a user and partitioned internally to define a tape supply chamber and a waste liner storage chamber,
a tape outlet slot at a lower forward corner of said casing leading from said supply chamber and formed by converging wall portions of said casing,
a rigid internal guide surface spaced inwardly of said slot within said casing at said corner and defining with said converging wall portions divergent guide paths including a tape path leading from the supply chamber to said outlet slot and a waste liner path leading from the supply chamber toward said storage chamber,
internal partition means extending along and spaced from a bottom wall of said casing rearwardly of said guide surface to define with said bottom wall a waste liner passage as a continuation of said liner path, said passage communicating at opposite ends with said supply chamber and said storage chamber,
a supply roll of liner-backed sterile surgical adhesive tape loosely positioned within said supply chamber for centerless rotation therein, said tape, but not said liner, being divided at regular intervals along its length into connected segments by transverse perforations terminating at opposed marginal edge notches providing visual indications of the divisions between segments and a focus for tensile separating force applied across said perforations to facilitate separation of each segment from said roll,
an unlined leader portion of said tape extending from said roll across said internal guide surface and along said tape path through said outlet slot,
a leader portion of said liner extending with said tape across said guide surface and thence diverging from said tape along said liner path and into said liner passage,
said outlet slot, guide surface and divergent paths being operable such that as said tape leader is withdrawn through said slot said liner is separated therefrom and propelled along said passage into said storage chamber,
said roll being preset in roll form to an extent such that as said liner enters said storage chamber it self-coils independently of the shape of said chamber,
the tensile strength of said perforated tape portions being such that sufficient tension can be applied to the tape across a perforated tape portion during application of a tape segment to a skin surface to close a wound without separating the applied segment from the roll, and being such that application of a higher tension to the tape across a perforated tape portion separates the applied segment from the roll without the aid of any cutting means,
said casing including a resilient depressible wall portion depressible by selectively applied hand pressure and cooperative with said guide surface to apply a controlled variable tension to the tape including a low tension for closing a wound and thereafter a higher tension for separating an applied segment from the roll without the aid of any cutting means.

4,447,483

RETICULAR NEEDLEWORK FABRIC

William T. Graham, Verona, and Gregory Wenkman, Dane, both of Wis., assignors to W. T. Rogers Co., Madison, Wis.

Filed Sep. 16, 1982, Ser. No. 418,992
Int. Cl.³ B32B *5/12*
U.S. Cl. 428—105 **9 Claims**



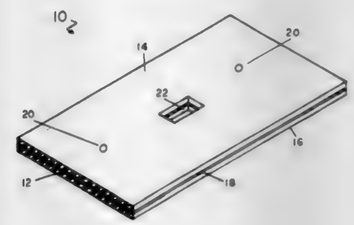
1. A reticular needlework fabric (10, 16) adapted to receive needlework yarns, comprising a unitarily molded network of strands (12) having
(a) a plurality of spaced strands (12) extending parallel to a first axis;
(b) a plurality of spaced strands (12) extending parallel to a second axis; and
(c) a selected number of marker strands (14) included among the strands (12) parallel to at least one axis, separated from each other by a selected number of strands (12) and having molded-in features rendering them visually distinguishable from the remaining strands (12), such features being adapted to be substantially obscured after application of the needlework yarns.

4,447,484

FLAME-RESISTANT VINYL FOAM GASKET AND METHOD OF PREPARATION

David K. Slosberg, Atlanta, and Gilbert S. Nowell, Marrietta, both of Ga., assignors to Compo Industries, Inc., Waltham, Mass.

Filed Mar. 25, 1983, Ser. No. 478,788
Int. Cl.³ B32B *3/10, 5/28, 31/26*
U.S. Cl. 428—137 **21 Claims**



1. A method of preparing a flame-resistant vinyl-foam sheet material, which method comprises:
(a) forming a layer of an expandable, liquid-vinyl plastisol composition;
(b) placing a fibrous tissue sheet material, having interstices therein, onto the top surface of the layer of the liquid plastisol composition, the tissue sheet material wetted by the plastisol composition, and permitting the liquid plasti-

sol composition to penetrate the interstices of the tissue sheet material and the tissue sheet material to settle to a desired depth within the coating layer; and

(c) heating the layer of the plastisol composition to a temperature to gel, expand and fuse the plastisol composition, to provide a flexible, tissue-reinforced, vinyl-foam sheet material having the tissue sheet material integrally positioned and secured within the foam layer.

18. An air draft gasket sheet material suitable for use as an open flame resistant draft shield in electrical plug and switch outlets, which gasket sheet material consists essentially of:

(a) a flexible, substantially closed-cell, integrally-formed, single vinyl resin foam sheet material;

(b) a dimensional stable thin nonwoven thin glass fiber sheet material integrally bonded to and positioned within about 20 to 80% of the depth of the vinyl foam material;

(c) the gasket material characterized by an opening formed to fit about the projection of an electrical switch or electrical plug of the electrical outlet box in which the gasket material is to be employed as a draft shield, the gasket material having the exterior dimension to fit behind the switch plate or plut plate of an electrical outlet box to prevent air drafts; and

(d) the gasket material characterized by meeting the flame test standards of the Canadian Standards Association C.22.2 No. 18 4.1.4.

4,447,485

ADHESIVE TAPE AND PROCESS FOR ITS PRODUCTION

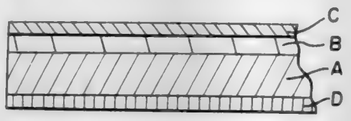
Toshiyuki Aritake, Nagahama, Japan, assignor to Mitsubishi Plastics Industries Limited, Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,237

Claims priority, application Japan, Aug. 4, 1981, 56-122294; Aug. 10, 1981, 56-125129; Oct. 5, 1981, 56-158439; Nov. 30, 1981, 56-192052

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—144 **8 Claims**



1. An adhesive tape comprising a base sheet of a polypropylene resin, an adhesive layer formed on one side of the base sheet and a roughened surface layer formed on the other side of the base sheet and composed of from 25–85% by weight of a polypropylene resin (X) having a melting point lower than that of said base sheet resin, from 10 to 50% by weight of fine inorganic filler particles (Y) and from 5–45% by weight of one or more resins (Z) selected from the group consisting of a methylpentene polymer, a polystyrene, a polyalkyl methacrylate and a polyester, provided that the total of the components (X), (Y) and (Z) is always 100% by weight and the amount of the component (Z) is not more than the amount of the component (X), and the relative specular glossiness of the roughened surface layer is not more than 30%, characterized in that said roughened surface layer has a thickness of not more than the maximum particle diameter of said fine inorganic filler particles and is substantially free from voids and cracks, and the total percent light transmittance of the adhesive tape is at least 90%.

4,447,486

SURFACE-SEALED MOLDINGS OF CELLULAR POLYURETHANE ELASTOMERS AND A PROCESS FOR THEIR PRODUCTION

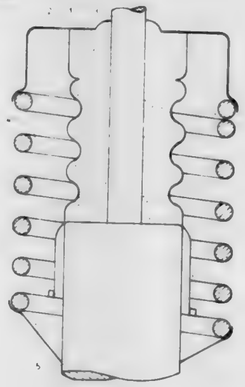
Hans-Georg Hoppe, Leichlingen, and Paul Henrichs, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 171,211, Jul. 22, 1980, abandoned. This application Sep. 21, 1981, Ser. No. 303,754

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931469

Int. Cl.³ B32B *3/26, 27/40*

U.S. Cl. 428—318.6 **4 Claims**



1. A molding of an at least partly open-cell polyurethane elastomer having a substantially homogeneous density profile and a density of from 0.3 to 0.8 g/cc, characterized in that its surface is sealed with a tight, nonporous skin of polyurethane or polyurethane urea having a thickness of from 0.05 to 1 mm.

4,447,487

HEAT-SENSITIVE RECORDING PAPERS

Masakazu Maekawa, and Hiroharu Matsukawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Company, Limited, Kanagawa, Japan

Filed Oct. 22, 1982, Ser. No. 436,081

Claims priority, application Japan, Oct. 22, 1981, 56-169034

Int. Cl.³ B41M *5/18*

U.S. Cl. 346—200 **8 Claims**

1. A heat-sensitive recording paper, comprising:

a support base comprised of paper having a density of 0.9 g/cm³ or less; and

a heat-sensitive recording layer coated on a surface of the support base, the surface of the coated layer having an optical contact ratio 7% or more.

4,447,488

SHAPED ARTICLE OF A SYNTHETIC RESIN AND/OR NATURAL RUBBER AND PROCESS FOR THE PRODUCTION THEREOF

Manfred Simm, Troisdorf; Karl-Heinz Spiess, Much, and Richard Weiss, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 150,293, May 16, 1980, abandoned. This application Jan. 21, 1982, Ser. No. 341,166

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922089

Int. Cl.³ B32B *7/02, 25/04*

U.S. Cl. 428—213 **15 Claims**

1. A sheet of a synthetic resin or natural rubber, provided with fillers and additives other than vulcanization accelerators,

which comprises a sheet of said synthetic resin or natural rubber containing 3 to 95% by weight of at least one polymeric component which is weldable by heat and/or by solvents or swelling agents, and which is crosslinkable by high-energy radiation, said polymeric component being provided in a homogeneous distribution within the sheet and being crosslinked, at least partially, over a selected portion of the thickness of said sheet starting from one exposed side surface of said sheet that has been subjected to high-energy radiation and extending into the interior of said sheet, said polymeric component in said



selected portion being sufficiently crosslinked to provide greater weather resistance and tear strength to said portion and to lose its weldability, and the polymeric component, in that portion of the sheet including another exposed side surface, which has not been crosslinked by being subjected to high-energy radiation, remaining weldable by heat and/or by solvents or swelling agents to provide weldability to said another exposed side surface of said sheet, whereby a sheet having an exposed side surface with greater weather resistance and another exposed side surface that remains weldable is provided.

4,447,489

FILAMENT YARNS OF MULTICOMPONENT FIBERS AND UTILIZATION THEREFOR IN TEXTILE FABRICS

Heinz Linhart, Erlenbach; Reiner Modtler, and Eberhard Kratzsch, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Sep. 23, 1981, Ser. No. 304,907

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035862

Int. Cl.³ D03D *3/00*

U.S. Cl. 428—225 **22 Claims**



1. A process for the production of filament yarns of multicomponent fibers of the matrix/segment type which comprises falsetwist-texturing a plurality of multicomponent fibers containing one component in the form of segments having varying deniers with a matrix component to produce a yarn, wherein the ratio of low denier segments to high denier segments is between about 1:1.6 and 1:30 and the weight ratio of low denier segments to high denier segments in the yarn is between about 25:75 and 75:25, at a setting temperature which is at least equal to the melting temperature of the matrix component, whereby the fibers are fused together by softening of matrix component in spots, zones or over nearly the entire length involving the entire or part of the cross-section of the yarn.

4,447,490

LAMINATED MINERAL FIBRE MAT AND PROCESSES FOR ITS PRODUCTION

Heinz Ventker, Emsdetten, and Fred Wendlinger, Mannheim, both of Fed. Rep. of Germany, assignors to Rheinhold & Mahla Dammstoffe GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 26, 1982, Ser. No. 444,918

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147316

Int. Cl.³ B32B *5/08, 5/14, 5/24, 17/06, 33/00*

U.S. Cl. 428—285 **10 Claims**

1. A laminated mineral fibre mat comprising substantially randomly arranged mineral fibres which are held together by organic binders where they cross one another and which form the mat and of a lamination adhering to the mat by means of an organic adhesive, characterised in that a plane of substantially randomly arranged mineral fibers substantially free from organic binder is provided in the mat parallel to and in the vicinity of the lamination.

6. A process for the production of the mineral fibre mat claimed in claim 1, characterised in that binder is removed from the mat of substantially randomly arranged mineral fibers in a plane parallel and adjacent to the surface to be laminated and thereafter the lamination is applied and adhered to the binder-free surface of the mat through use of an adhesive.

4,447,491

NETWORK OF BONDED EXPANDED POLYSTYRENE BEADS HAVING CHEMICALLY DELAMINATED VERMICULITE IMPREGNANT

John A. Bradbury; Reuben Rowlands, both of Runcorn, and James W. Tipping, Liverpool, all of England, assignors to Imperial Chemical Industries Plc, London, England

Filed May 11, 1982, Ser. No. 387,754

Claims priority, application United Kingdom, Jun. 17, 1981, 8118638

Int. Cl.³ B32B *3/10, 19/02, 31/00*

U.S. Cl. 428—304.4 **14 Claims**

1. A fire-resistant material comprising a network of bonded, expanded polystyrene beads and having an inorganic impregnant selected from chemically delaminated vermiculite and mixtures containing same incorporated in the interstices in the network to provide throughout the material a reticulated impregnant structure which is retained upon destruction of the network of bonded, expanded polystyrene beads in a fire.

4,447,492

ARTICLES HAVING AN ELECTRICALLY CONDUCTIVE SURFACE

James P. McKaveney, Claremont, Calif., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 42,374, May 24, 1979, abandoned, which is a continuation of Ser. No. 853,653, Nov. 21, 1977, abandoned. This application Aug. 7, 1981, Ser. No. 290,909

The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.

Int. Cl.³ B32B *5/16, 15/08, 27/14*

U.S. Cl. 428—328 **22 Claims**

1. An electrically conductive article having a non-conductive substrate which substrate has at least a portion of the surface thereof coated with a composition comprising about 3 to about 80 percent by weight of a binder and about 20 to about 97 percent by weight of a filler, the filler comprising particles, having an average particle size of from about 2 to about 10 microns, of a refractory ferroalloy selected from the group consisting of ferromanganese silicon, ferromanganese, ferromolybdenum, ferrosilicon, ferrochrome, ferrovanadium, ferrozirconium, ferrotitanium, ferrotungsten, ferroboron, ferrophosphorus, iron carbide, and mixtures thereof.

4,447,493

VIBRATION-DAMPING CONSTRAINED-LAYER CONSTRUCTIONS

William A. Driscoll, Woodbury; Steven M. Heilmann, North St. Paul, and Jerald K. Rasmussen, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 26, 1982, Ser. No. 401,918
Int. Cl.³ B32B *15/08, 27/38*
U.S. Cl. 428—332 **8 Claims**

1. A constrained-layer construction for damping vibrations in solid articles at a temperature of at least 50° C., said construction comprising a substrate having a stiffness relative to stainles steel of at least 0.40 and bearing a continuous layer of a copolymer having a thickness of 0.01 mm to 100 mm, said copolymer having a storage modulus of at least 1×10^7 dynes/cm^2 and a loss tangent above 0.5 at 100° C. and 1000 Hz, said copolymer being the reaction product of a mixture comprising:

(a) 25 to 75 weight percent of an acryloyl or methacryloyl derivative of at least one oligomer, said oligomer having a glass transition temperature of less than 25° C. and a molecular weight per oligomer of 600 to 20,000, said oligomer having the formula

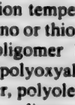


wherein:

R is the organic residue of a nucelophilic group-substituted oligomer having a molecular weight of 600 to 20,000, glass transition temperature of less than 25° C., and n hydroxyl, amino or thiol groups, said nucleophilic group-substituted oligomer being selected from the group consisting of polyoxyalkylene, poly(perfluorooxyalkylene), polyester, polyolefin, polyacrylate, polyamide, and polysiloxane oligomers;

n is the valence of R having a value of at least one;

Y is selected from —O—, —S— and



in which R^2 is (a) hydrogen, or (b) a hydrocarbyl group selected from (1) an alkyl or cycloalkyl group having 1 to 12 carbon atoms optionally substituted by cyano, hydrogen or alkoxy group having 1 to 4 carbon atoms, or (2) an aryl or aralkyl group having 6 to 12 carbon atoms;

X is a divalent connecting group; and

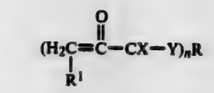
R^1 is hydrogen or methyl; and

(b) 75 to 25 weight percent of a copolymerizable monomer whose homopolymer has a glass transition temperature of at least 50° C.

2. A process for damping the vibration of a vibrating solid article at temperatures above 50° C., said process comprising the steps:

(a) providing a constrained-layer construction, said construction comprising at least one substrate having a stiffness relative to stainles steel of at least 0.40 coated with at least one continuous layer of a viscoelastic copolymer having a thickness of 0.01 mm to 100 mm, said copolymer having a storage modulus of at least 1×10^7 dynes/cm^2 and a loss tangent above 0.5 to 100° C. and 1000 Hz, said copolymer being the reaction product of a mixture comprising:

(1) 25 to 75 percent of an acryloylated or methacryloylated oligomer having a glass transition temperature of less than 25° C. and a molecular weight of 600 to 20,000, said oligomer having the formula



wherein:

R is the organic residue of a nucelophilic group-substituted oligomer having a molecular weight of 600 to 20,000, glass transition temperature of less than 25° C., and n hydroxyl, amino or thiol groups, said nucleophilic group-substituted oligomer being selected from the group consisting of polyoxyalkylene, poly(perfluorooxyalkylene), polyester, polyolefin, polyacrylate, polyamide, and polysiloxane oligomers;

n is the valence of R having a value of at least one;

Y is selected from —O—, —S— and



in which R^2 is (a) hydrogen, or (b) a hydrocarbyl group selected from (1) an alkyl or cycloalkyl group having 1 to 12 carbon atoms optionally substituted by cyano, hydrogen or alkoxy group having 1 to 4 carbon atoms, or (2) an aryl or aralkyl group having 6 to 12 carbon atoms;

X is a divalent connecting group; and

R^1 is hydrogen or methyl; and

(2) 75 to 25 percent by weight of a copolymerizable monomer whose homopolymer has a glass transition temperature of at least 50° C., and

(3) an effective amount of a free-radical generator, and

(b) affixing said constrained-layer construction onto said solid article.

4,447,494

ORIENTED MULTILAYER HEAT SEALABLE PACKAGING FILM

John R. Wagner, Jr., Rochester, and Carl C. Hein, Pittsford, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,427
Int. Cl.³ B32B *27/00;* **C09J** *7/02*
U.S. Cl. 428—349 **17 Claims**

1. A multilayer heat sealable structure comprising:

(a) a substrate comprising a polyolefin film;

(b) a layer on at least one surface of (a), said layer consisting essentially of a random copolymer of ethylene and propylene, said copolymer containing from about 0.5 to about 6% by weight of ethylene;

(c) a primer coating between layers (b) and (d) on at least one of said layer (b); and

(d) a heat sealable layer on said coating (c), said heat sealable layer comprising a vinylidene chloride copolymer containing at least 50% by weight of vinylidene chloride.

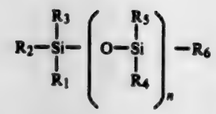
4,447,495

ADHESIVE PROCESS

Edward J. Engle, III, Wilmington, Del., assignor to Hercules, Incorporated, Wilmington, Del.

Filed Mar. 8, 1983, Ser. No. 473,292
Int. Cl.³ B32B *17/10, 5/16*
U.S. Cl. 428—429 **10 Claims**

7. A polymer coated siliceous material formed by admixing the siliceous material, an azidosilane coupling agent, the polymer, and an organosilicon compound having the formula



where n is an integer from 0 to 4 and where R_1, R_2, R_3, R_4, R_5 and R_6, which may be the same or different, are selected from the group consisting of lower alkyl, aralkyl, or lower akloxides and then heating the admixture at a temperature and for a time sufficient to decompose the azide group of the azidosilane coupling agent.

4,447,496

ORGANOTIN SURFACE TREATMENT AND INTERLEAVING MATERIAL FOR GLASS SHEETS

Helmut Franz, Pittsburgh; Paul F. Duffer, Creighton, and Joseph D. Kelly, Cheswick, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 229,046, Jan. 28, 1981, Pat. No. 4,360,544, which is a continuation-in-part of Ser. No. 83,084, Oct. 9, 1979, Pat. No. 4,263,371. This application Jul. 23, 1982, Ser. No. 401,179
The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.
Int. Cl.³ B32B *17/06, 17/10*
U.S. Cl. 428—432 **6 Claims**

1. An article of manufacture comprising:

a. a plurality of glass sheets, the surfaces of which have been treated with an organotin compound at a temperature insufficient to thermally decompose said organotin compound; and

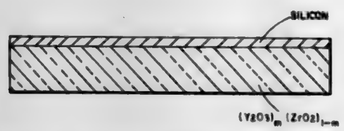
b. an interleaving material interspersed between said glass sheets.

4,447,497

CVD PROCESS FOR PRODUCING MONOCRYSTALLINE SILICON-ON-CUBIC ZIRCONIA AND ARTICLE PRODUCED THEREBY

Harold M. Manasevit, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 3, 1982, Ser. No. 373,929
Int. Cl.³ C30B *23/06, 25/18;* **H01L** *21/205*
U.S. Cl. 428—446 **24 Claims**



1. A method for producing monocrystalline semiconductor-on-insulator structures comprising:

removing sufficient oxygen from the surface of a polished insulating substrate of cubic zirconia by subjecting at least said surface to a heat treatment of approximately 1150°–1400° C. for a time in order to stabilize the surface of the substrate so that a semiconductor layer can be deposited thereon;

lowering the temperature of said substrate to below 1075° C.; and

depositing a thin monocrystalline layer of a semiconductor material on the stabilized surface of the substrate.

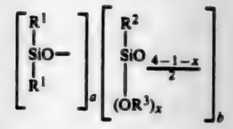
4,447,498

USE OF ORGANOPOLYSILOXANES IN THE MANUFACTURE OF PAPER-COATED PLASTER BOARDS

Hans-Ferdi Fink; Götz Koerner, and Edmund Lukasch, all of Essen, Fed. Rep. of Germany, assignors to Th.Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Dec. 1, 1982, Ser. No. 445,682
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149791
Int. Cl.³ B32B *15/12, 31/12*
U.S. Cl. 428—447 **4 Claims**

2. In a process for the preparation of paperlaminated plaster boards wherein plaster paste is spread on a lower paper sheet and the surface of the paste layer is covered with a second paper sheet, the laminate is molded into flat panels and cured at elevated temperatures, the improvement which comprises first treating the paper sheets with a hydrophobizing agent to decrease the water absorbency of the paper, the agent being an an organopolysiloxane having the formula



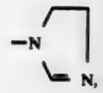
in which

R^1 is an alkyl or aryl radical, at least 80% of the R^1 radicals being alkyl radicals,

R^2 is an alkyl radical or the R^4Z radical, at least ⅛ of the R^2 radicals being R^4Z radicals, in which

R^4 is a difunctional hydrocarbon radical,

Z is $-NH_2$, $-NH(CH_2)_c-NH_2$, $-NH(CH_2)_cNH(CH_2)_cNH_2$, in which c is 2, 3, —NHCONH$_2$ radical, —SH, $-S_4-R^4-Si(OR^3)_3$, $-P(C_6H_5)_2$ or



R^3 is an alkyl radical with 1 to 4 carbon atoms, or a hydrogen radical,

a is not less than 4,

b/a is not less than 0.001, but not greater than 0.5, and

x is not less than 0.1, but not greater than 2, and then subjecting the treated paper to curing conditions.

4. Paper-laminated plaster board produced by the process of claim 2.

4,447,499

METHOD OF COATING SUBSTRATES WITH POLYDIORGANOSILOXANES HAVING LOWER ALKYL SUBSTITUENTS TO PROVIDE RELEASE COATINGS

Terence J. Swihart, Essexville, and Maris J. Ziemelis, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 9, 1983, Ser. No. 493,122
Int. Cl.³ B05D *3/06*
U.S. Cl. 428—447 **29 Claims**

1. A method for coating a substrate with a polydiorganosiloxane to provide a coating upon said substrate, said method comprising

(A) applying to said substrate a coating composition consisting essentially of

(1) 100 parts by weight of polydiorganosiloxane having a viscosity of from about 1.0×10^{-4} m^2/second to about 1.0×10^{-2} m^2/second, said polydiorganosiloxane being

selected from the group consisting of polydiorganosiloxanes having the formula $R_3SiO(MeQSiO)_x(Me_2SiO)_ySiR_3$, wherein Q is a radical selected from the group consisting of ethyl and propyl radicals, R is a radical selected from the group consisting of Q radicals, methyl radicals, and hydroxyl radicals, Me represents the methyl radical, x has an average value of 0 or more, and y has an average value of 0 or more, there being at least two radicals selected from Q radicals and hydroxyl radicals in the polydiorganosiloxane, and

(2) 0.1 to 10 parts by weight of an ultraviolet radiation photosensitizer soluble in said polydiorganosiloxane, and

(B) exposing the applied coating composition to an amount of ultraviolet radiation sufficient to cure said applied coating composition.

8. The method of claim 1 wherein the substrate is paper.

19. The method of claim 1 wherein the substrate is a polymeric film.

4,447,500

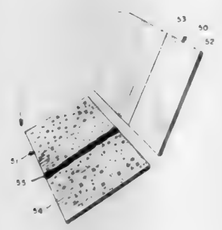
RELEASE COMPOSITIONS FOR ASPHALT ROOFING MATERIALS AND METHODS OF USE

John A. Ferris, 945 Meadow Crest Rd., LaGrange Park, Ill. 60525

Continuation-in-part of Ser. No. 403,342, Jul. 30, 1982, abandoned. This application Jul. 25, 1983, Ser. No. 516,926

Int. Cl.³ B05D *3/02;* **B32B** *11/00;* **C08L** *91/00;* **C09D** *3/26*

U.S. Cl. 428—489 **12 Claims**



8. The method of treating a surface of an asphalt roofing sheet material preparatory to stacking or rolling to prevent adherence of the treated surface to another surface of the roofing material, comprising dissolving a mixture of cocamide MEA and stearamide MEA in water at an elevated temperature, said amides being present in proportions of from 30 to 70 parts by weight of cocamide MEA to 70 to 30 parts of stearamide MEA, said solution containing from 0.5 to 2.5 parts by weight of total amides per each 100 parts of water, cooling the solution to a temperature at which most of the amides are present as a dispersion of colloidal particles, applying said dispersion to the surface to be treated, and forming a dry coating thereon of said amide mixture.

9. The method of claim 8 in which said roofing material is asphalt shingles having adhesive asphalt seal strips on their upper sides and release tapes on their undersides positioned to mate with said seal strips when said shingles are stacked, said aqueous dispersion being applied to the upper surfaces of said release strips to form a release coating thereon.

10. The stackable asphalt shingles produced by the method of claim 9.

4,447,501

CERAMIC BASED COMPOSITE MATERIAL FOR FLAME SPRAYING

Kitahara Shigeru, Ota; Isao Okane, Higashikurume; Katsuyuki Shirai, Meguro, and Tosio Morimura, Kawaguchi, all of Japan, assignors to National Research Institute for Metals and Showa Denko Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,118

Claims priority, application Japan, Sep. 29, 1980, 55-134221

Int. Cl.³ B22F *1/02*

U.S. Cl. 428—570 **11 Claims**

1. A flame spraying composite material consisting of core particles which essentially consist of ZrO_2 and a deposited coating layer which is firmly bonded over the entire surface of the ZrO_2 particles by a chemical bond, wherein said deposited layer comprises a metal oxide and a metal which is a constituent of said metal oxide, an interface of said deposited layer with said ZrO_2 particles consisting of said metal oxide whch is a major constituent material, and an outer surface of said deposited layer which essentially consists of said metal.

7. A flame spraying composite material consisting of core particles which essentially consist of ZrO_2 and a deposited coating layer which is firmly bonded over the entire surface of the ZrO_2 particles by a chemical bond, wherein said deposited layer comprises a metal oxide and a metal which is a constituent of said metal oxide, and an interface of said deposited layer with said ZrO_2 particles which consists of said metal oxide, and an outer surface of said deposited layer only which consists of said metal, the concentration of said metal increasing continuously from the interface to the outer surface of said deposited coating layer.

4,447,502

BOTTLENECK FOIL

Klaus Sommerer, Hann. Münden, Fed. Rep. of Germany, assignor to Haendler & Natermann GmbH, Hann. Münden, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,810

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137324

Int. Cl.³ B65D *23/8, 65/38;* **B32B** *15/08*

U.S. Cl. 428—571 **11 Claims**

1. A bottleneck foil comprising an aluminum foil section coated on both sides with a protective layer, the protective layer comprising a mixture of

1 to 40% by weight of a binder which is not resistant to alkaline solutions and

60 to 99% by weight of a binder which is resistant to alkaline solutions.

4,447,503

SUPERALLOY COATING COMPOSITION WITH HIGH TEMPERATURE OXIDATION RESISTANCE

Louis E. Dardi, and Srinivasan Shankar, both of Muskegon, Mich., assignors to Howmet Turbine Components Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 145,460, May 1, 1980, Pat. No. 4,339,509, and Ser. No. 67,097, Aug. 16, 1979, Pat. No. 4,313,760, which is a continuation-in-part of Ser. No. 43,146, May 29, 1979. This application Mar. 31, 1981, Ser. No. 249,502

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—632 **37 Claims**

1. In a nickel, cobalt, or iron base superalloy component, the improvement comprising a coating composition on said component consisting essentially by weight of from 6 to 30% aluminum, 0.01 to 15% tantalum, 5 to 50% chromium, 0.1 to 10% manganese, up to 5% tungsten, up to 12% silicon, up to



10% hafnium, and the balance selected from the group consisting of nickel, cobalt, and iron and combinations thereof.

4,447,504

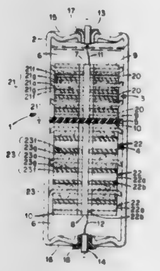
ELECTROCHEMICAL CELL WITH TWO RATE BATTERY STACKS

Franz Goebel, Sudbury, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 3, 1983, Ser. No. 455,090

Int. Cl.³ H01M *12/00, 4/36, 2/02, 2/08*

U.S. Cl. 429—9 **11 Claims**



1. An electrochemical cell comprising:

an elongated metal housing having first and second portions and an interior wall;

first and second spaced-apart elongated metal terminals within and along the direction of the housing; and

an electrochemical system contained within the housing and including an electrolytic solution within the housing with bi-directional passage between said first and second portions and a plurality of battery stack components exposed to the electrolytic solution and arranged in first and second battery stacks encircling the first and second elongated metal terminals, respectively, said first and second battery stacks and associated first and second elongated metal terminals being spaced apart from each other within the first and second portions, respectively, of the housing;

said first battery stack within said first portion of the housing comprising:

a first plurality of metal electrode structures of first thicknesses in direct physical contact with the first elongated metal terminal and spaced from the interior wall of the housing; and

a first plurality of carbon electrode structures of first thicknesses arranged in alternation with the first plurality of metal electrode structures and in direct physical contact with the interior wall of the housing and spaced from the first elongated metal terminal; and

said second battery stack within said second portion of the housing comprising:

a second plurality of metal electrode structures of second thicknesses in direct physical contact with the second elongated metal terminal and spaced from the interior wall of the housing; and

a second plurality of carbon electrode structures of second thicknesses arranged in alternation with the second plurality of metal electrode structures and in direct physical contact with the interior wall of the housing and spaced from the second elongated metal terminal;

said housing including first and second electrical terminals supported therein and electrically insulated therefrom;

first means electrically connecting the first elongated metal terminal with the first electrical terminal;

second means electrically connecting the second elongated metal terminal with the second electrical terminal; and

said metal housing serving as a common electrical terminal.

4,447,505

FUEL CELL ELECTRODE

Alain P. O. Blanchart, Balen, Belgium, assignor to Electrochemische Energieconversie, N.V., Mol, Belgium

Filed Dec. 1, 1981, Ser. No. 326,206

Claims priority, application Netherlands, Dec. 13, 1980, 8006774

Int. Cl.³ H01M *4/86*

U.S. Cl. 429—42 **14 Claims**

1. A fuel cell electrode having a catalytic layer composed of two separately prepared intimate mixtures of a noble metal on carbon, the first mixture comprising a noble metal on carbon having a relatively low specific surface area of less than 100 m^2g^{-1}, and the second mixture comprising a noble metal on carbon having a relatively high surface area of greater than 150 m^2g^{-1}, the amount by weight of noble metal in said second mixture being equal to or less than the amount by weight of nobel metal in said first mixture.

4,447,506

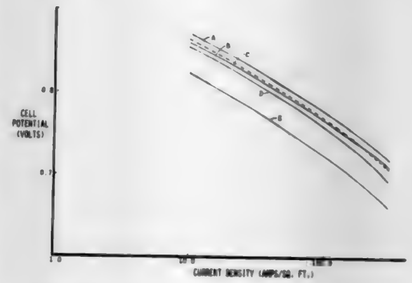
TERNARY FUEL CELL CATALYSTS CONTAINING PLATINUM, COBALT AND CHROMIUM

Francis J. Luczak, Glastonbury, and Douglas A. Landsman, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 17, 1983, Ser. No. 459,002

Int. Cl.³ H01M *4/92*

U.S. Cl. 429—44 **4 Claims**



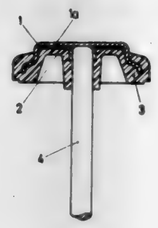
1. A fuel cell having an anode and a cathode with an electrolyte disposed therebetween, wherein the improvement comprises a ternary alloy cathode catalyst of platinum, cobalt, and chromium supported on an electrically conductive carbon-black, said catalyst having a catalytic activity for the electrochemical reduction of oxygen at least two and one-half times that of an unalloyed platinum catalyst supported on the same electrically conductive carbon-black.

4,447,507

CONTACT IN ALKALINE ELECTRIC CELLS

Javier A. Larranaga, Vitoria, Spain, assignor to Celaya, Emparanza Y Galdos S.A. (Cegasa), Vitoria, Spain

Filed Sep. 28, 1982, Ser. No. 426,202
Int. Cl.³ H01M 2/30
U.S. Cl. 429—54 3 Claims



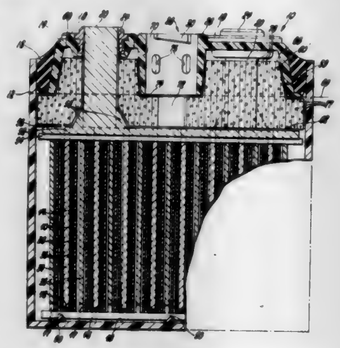
1. In an alkaline electric cell having a contact assembly therein, the improvement wherein said contact assembly comprises an inner metal disk and an outer metal disk arranged to engage one another in coaxial relation to form an exterior anode for the alkaline electric cell, said inner metal disk forming a cylindrical projection having a bore which is coaxial with said inner and said outer metal disks wherein said projection extends inwardly of the cell, a cell end cover of plastics material in which the edges of said inner and said outer metal disks are embedded, and a cylindrical collector rod arranged coaxially within the cell wherein one end of said rod is seated in the bore of said cylindrical projection in electrical contact with the inner circumference of said bore so that said electrical contact is maintained when said rod and said end cover including said projection are moved relative to one another over a certain distance in the axial direction.

4,447,508

REDUCED MAINTENANCE EXPLOSION DAMAGE RESISTANT STORAGE BATTERY

Henry E. Jensen, Lafayette Hill, Pa., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 309,639, Oct. 13, 1981. This application Apr. 28, 1983, Ser. No. 488,526
Int. Cl.³ H01M 10/34
U.S. Cl. 429—57 4 Claims



1. An explosion damage resistant reduced maintenance storage battery, comprising:

a case containing a plurality of negative plates and positive plates and a quantity of electrolytes

said case defining a first chamber between said negative and positive plates in an uppermost surface of said case;

a first strap member electrically connected to said plurality of positive plates, and a second strap member electrically connected to said plurality of negative plates;

a first post member electrically connected to said first strap member and passing through said chamber and said uppermost surface, and a second post member electrically connected to said second strap member and passing through said chamber and said uppermost surface;

a honeycomb member disposed in said first chamber and around said first post member and around said second post member and defining a second chamber substantially smaller than said first chamber between said honeycomb member and said uppermost surface;

said honeycomb member dividing said first chamber into a plurality of separated linearly extending gas chambers having lower ends below the surface of said electrolyte and having upper ends communicating with said second chamber;

said case defining a vent opening through said uppermost surface communicating with said second chamber.

4,447,509

PRE-PLATED REACTIVE DIFFUSION-BONDED BATTERY ELECTRODE PLAQUES

Nicholas J. Maskalick, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 321,645, Nov. 16, 1981. This application Mar. 29, 1982, Ser. No. 362,003
Int. Cl.³ H01M 4/75
U.S. Cl. 429—235 18 Claims



1. A method of producing a high strength, metallic, electrically conductive plaque comprising the steps of:

(1) providing a layer of iron fibers,

(2) nickel coating said iron fibers, and

(3) after nickel coating, heating the nickel coated iron fibers to form an iron-nickel alloy bond between a substantial amount of the fibers.

18. A plaque made by the method of claim 1, including an additional nickel coating applied to the fibers after the heating step, where the plaque is loaded with active material.

4,447,510

PROCESS FOR PRODUCING RELIEF COPIES IN LIGHT HARDENABLE MATERIALS WITH ULTRASONIC TREATMENT

Werner Frass, Wiesbaden, and Klaus Horn, Hofheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 376,008
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118884
Int. Cl.³ G03F 7/02, 7/08, 7/26
U.S. Cl. 430—3 23 Claims

1. A process for producing relief copies comprising:

exposing the light-hardenable layer of a light-hardenable copying material to a light image; said layer comprising at least one material selected from the group consisting of photopolymerizable mixtures, photodimerizable polymeric compounds and diazonium salt condensation products;

subjecting the exposed layer to immersion in an ultrasonic bath; and

thereafter developing the layer by washing away unexposed areas of the layer with a developer.

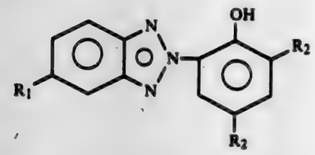
4,447,511

2-[2-HYDROXY-3,5-DI-TERT-OCTYLPHENYL]-2H-BENZOTRIAZOLE IN STABILIZED PHOTOGRAPHIC COMPOSITIONS

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 241,170, Mar. 6, 1981, Pat. No. 4,383,863, which is a continuation-in-part of Ser. No. 100,400, Dec. 17, 1979, Pat. No. 4,278,590, which is a continuation-in-part of Ser. No. 68,275, Aug. 20, 1979, Pat. No. 4,283,327, which is a continuation of Ser. No. 6,391, Jan. 25, 1979, abandoned. This application Jan. 10, 1983, Ser. No. 457,106
Int. Cl.³ G03C 1/84
U.S. Cl. 430—15 8 Claims

5. A finished photographic element comprising a support having thereon a plurality of developed and fixed photographic emulsion layers containing developed-dye image subject to fading lying between said support and a gelatin layer containing an ultraviolet absorbing hydrophobic compound selected from those represented by the formula:



wherein R_1 is hydrogen or chloro, and R_2 is tert-octyl.

4,447,512

METHOD FOR MAKING A NEGATIVE WORKING LITHOGRAPHIC PRINTING PLATE

William Rowe, Westfield, N.J.; Eugene Golda, Monsey, and Alan Wilkes, Brewster, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Jan. 25, 1982, Ser. No. 342,333
Int. Cl.³ G03C 1/71, 1/54; G03F 7/08
U.S. Cl. 430—17 18 Claims

1. A radiation sensitive, negative acting composition comprising (1) an aqueous alkali- and radiation sensitive, negative acting diazonium compound and (2) an O-epoxyalkylated tetrakis (hydroxyphenyl) alkane resin or the esterified reaction product of about one equivalent thereof with less than one equivalent of an ethylenically unsaturated organic acid.

2. The composition of claim 1 wherein said esterified reaction product further comprises a saturated organic acid.

17. A radiation-sensitive, negative-working, element comprising a substrate having coated on at least one surface thereof a radiation-sensitive, composition according to claim 1 or claim 2.

18. A lithographic printing plate comprising an element according to claim 17 wherein the substrate comprises a lithographically suitable support material which has been imagewise exposed and developed.

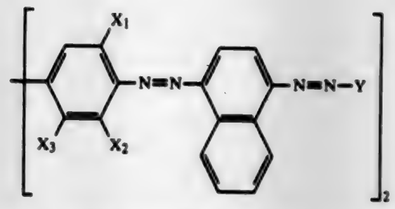
4,447,513

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY

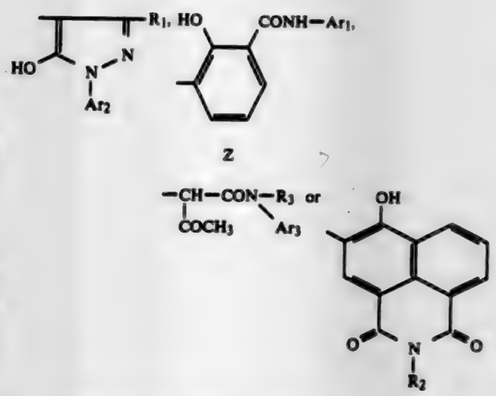
Nobuhiro Miyakawa, Abiko; Teruaki Higashiguchi, Tokyo; Yumiko Sano, Ibaragi, and Masatomi Funato, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 25, 1983, Ser. No. 460,758
Claims priority, application Japan, Jan. 27, 1982, 57-10214
Int. Cl.³ G03G 5/06, 5/02
U.S. Cl. 430—58 7 Claims

1. A photosensitive material for electrophotography, which comprises a photosensitive layer containing a tetrakis-azo pigment represented by the following formula:



wherein X_1 stands for a lower alkyl group, a lower alkoxy group or a halogen atom, X_2 and X_3 stand for a lower alkyl group, a lower alkoxy group, a halogen atom or a hydrogen atom, and Y stands for a group represented by the following group:



Z

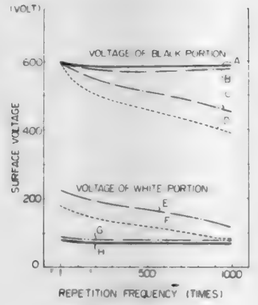
in which Z stands for benzene, naphthalene, indole, carbazole or benzofuran, or substitution product thereof, Ar_1 stands for benzene, naphthalene, or dibenzofuran, or substitution product thereof, Ar_2 and Ar_3 stand for benzene or naphthalene or substitution product thereof, R_1 stands for a lower alkyl group, a carboxyl group or an ester thereof, and R_2 and R_3 stand for a hydrogen atom, a lower alkyl group, a phenyl group or a substitution product thereof.

4,447,514

ORGANIC PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY COMPRISING POLYVINYLCARBAZOLE AND PYRENE OR PHENANTHRENE

Toru Nakazawa, Osaka; Akira Fushida, Suita, and Yasushi Kamezaki, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 4, 1983, Ser. No. 472,277
Claims priority, application Japan, Mar. 5, 1982, 57-34097
Int. Cl.³ G03G 5/06
U.S. Cl. 430—81 **8 Claims**



1. An organic photosensitive material for electrophotography comprising a charge-transporting medium composed mainly of polyvinyl carbazole and a perylene type pigment as a charge-generating pigment dispersed in said charge-transporting medium, wherein 1 to 30 parts by weight of a halonaphthoquinone and 1 to 100 parts by weight of phenanthrene or pyrene are incorporated per 100 parts by weight of the polyvinyl carbazole.

4,447,515

PHOTOCONDUCTIVE COMPOSITION AND ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING IT

Syun-ichi Kondo; Kenji Sano, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 28, 1983, Ser. No. 461,712
Claims priority, application Japan, Jan. 28, 1982, 57-10868
Int. Cl.³ G03G 5/06
U.S. Cl. 430—83 **10 Claims**

1. A photoconductive composition comprising an organic photoconductor and a diacylamine compound as the main components.

4,447,516

DRY TONER AND METHOD OF MAKING SAME

Josef Matkan, Adelaide, Australia, assignor to Research Hildings Pty. Limited, Eastwood, Australia

PCT No. PCT/AU82/00006, 371 Date Sep. 22, 1982, 102(e) Date Sep. 22, 1982, PCT Pub. No. WO82/02676, PCT Pub. Date Aug. 19, 1982
PCT Filed Feb. 3, 1982, Ser. No. 432,944
Claims priority, application Australia, Mar. 6, 1981, PE7512
Int. Cl.³ G03G 9/08
U.S. Cl. 430—109 **13 Claims**

1. The method of preparation of electroscopic marking particles having a predetermined temperature for spray drying thereof comprising the steps of

forming for each particle a core of pressure fixable material containing as its liquid phase a volatile solvent having a boiling point appreciably below said temperature,

encapsulating the said core in a polymeric shell, and

spray drying the encapsulated material at least at said predetermined temperature thereby expelling the said volatile solvent from the said core through discontinuities created in the said shell as an incident to volatilization of the solvent by the application of heat

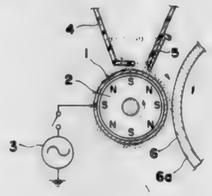
whereby to produce dry generally solvent-free particles.

4,447,517

METHOD OF DEVELOPING ELECTROSTATIC LATENT IMAGES

Shizuo Yuge, Okazaki; Susumu Sakakibara, Toyohashi; Takuma Ishikawa, Toyokawa; Nobuo Kito, Hoi, and Toshio Yamamoto, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1982, Ser. No. 379,995
Claims priority, application Japan, May 29, 1981, 56-83034
Int. Cl.³ G03G 13/09
U.S. Cl. 430—122 **6 Claims**



1. A method of developing electrostatic latent images formed on a surface of an electrostatic latent image support member through employment of a magnetic brush developing device having a developing sleeve to be impressed with an AC developing bias and a magnetic roller provided in said developing sleeve so as to be driven for rotation in said developing sleeve, said method comprising the step of setting the speed of rotation of the magnetic roller and the frequency of the AC developing bias so as to satisfy conditions represented by the following equations,

$$nt_1 = mt_2 \quad (1)$$

$$nt_1(mt_2) \leqq TD \quad (2)$$

where

t_1: period (m sec.) of variation of the magnetic action due to rotation of the magnetic roller,

t_2: period (m sec.) of variation of the electrical action due to the impression of the AC developing bias,

n, m: integers having no common divisor other than 1,

Td: substantial developing time (m sec.), and which is the time required for a point on the surface of the electrostatic latent image support member to pass a developing region where the electrostatic latent image is substantially developed, whereby the period of the developing force peak value is set so as to be no longer than the substantial developing time.

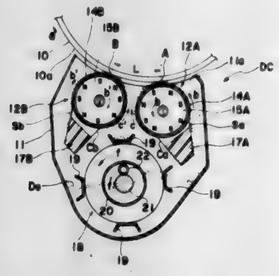
4,447,518

ELECTROSTATIC IMAGE DEVELOPING METHOD CORRECTING IRREGULARITIES OF MAGNETIC BRUSH DEVELOPING

Kenji Tabuchi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1983, Ser. No. 460,044
Claims priority, application Japan, Feb. 5, 1982, 57-17761; Mar. 18, 1982, 57-43957
Int. Cl.³ G03G 13/09
U.S. Cl. 430—122 **11 Claims**

1. An electrostatic latent image developing method for developing, by a plurality of times, an electrostatic latent image carried on a surface of an electrostatic latent image support member through employment of developing sleeves having magnetic rollers to be driven for rotation provided therein, which comprises the steps of effecting the developing for each of the plurality of times, with said magnetic roller being rotated under such a state that developing irregularities in a direction intersecting a relative moving direction of the electrostatic latent image support member with respect to said developing sleeve, are formed in a developed image when the



developing for each of the plurality of times is effected independently, causing pitches of the developing irregularities to coincide with each other, and deviating phases of the respective developing irregularities so that said respective developing irregularities are offset to each other, thereby to obtain the developed image having a uniform and sufficient image density without developing irregularities.

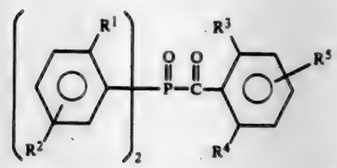
4,447,520

ACYLPHOSPHINE OXIDES AND THEIR USE

Andreas Henne, Ludwigshafen; Anton Hesse, Weinheim; Manfred Jacobi, Frankenthal; Gunnar Schornick, Neuleiningen; Rudolf Vyvial, Ludwigshafen, and Klaus Holoch, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 19, 1982, Ser. No. 409,555
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1981, 3133419
Int. Cl.³ C07F 9/53; G03C 1/68
U.S. Cl. 430—281 **6 Claims**

1. An acylphosphine oxide which may be used as a photoinitiator and is of the formula (I)



(I)

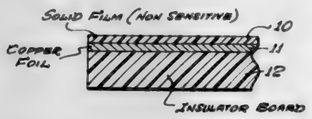
where R^1 is methyl, R^2 is a branched or straight-chain alkyl radical of 1 to 4 carbon atoms, chlorine, alkoxy of 1 to 4 carbon atoms or hydrogen, R^3 and R^4 are identical or different, and are each alkyl, alkoxy or alkylthio, each of 1 to 4 carbon atoms, or chlorine, and R^5 is hydrogen, chlorine, or alkoxy or alkylthio, each of 1 to 6 carbon atoms, or a branched or straight-chain alkyl radical of 1 to 12 carbon atoms.

4,447,519

SOLID PHOTORESIST AND METHOD OF MAKING PHOTORESIST

Nathan Pritikin, 26 Coromar Dr., Goleta, Calif. 93017

Continuation of Ser. No. 331,209, Dec. 16, 1981, abandoned, which is a continuation of Ser. No. 152,623, May 23, 1980, abandoned, which is a continuation of Ser. No. 570,751, Apr. 23, 1975, abandoned. This application Jun. 29, 1983, Ser. No. 509,589
Int. Cl.³ G03C 1/76
U.S. Cl. 430—275 **21 Claims**



1. A photoresist process in the production of a printed circuit board including the steps of:

attaching a metal foil onto an insulator board to form a substrate;

producing holes through the foil and board of the substrate;

laminating a continuous homogenous and self-supporting single layer thin film of a solid nonsensitized material which is capable of being sensitized to a photoresist, onto the foil side of the substrate covering the holes without introducing the material into the holes;

after laminating the material and substrate, sensitizing the material by wetting with a liquid sensitizer; and

drying the sensitized photoresist material.

4,447,521

FIXING OF TETRA(HYDROCARBYL)BORATE SALT IMAGING SYSTEMS

George V. D. Tiers, St. Paul; Steven M. Aasen, Lakeland, both of Minn.; Rex J. Dalzell, Sommerset, Wis., and Brian N. Holmes, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 25, 1982, Ser. No. 436,266
Int. Cl.³ G03C 1/52
U.S. Cl. 430—337 **16 Claims**

1. A desensitizable and imageable article having at least one layer comprising a tetra(hydrocarbyl)borate, a first bleachable dye, and a second bleachable dye present in a molar ratio of at least 0.8/1.0 with respect to said borate and said first bleachable dye providing an optical density to said sheet, and having a spectral absorption curve different from the said second bleachable dye wherein said second bleachable dye is a substantially non-visible dye absorbing in the infrared or ultraviolet regions of the spectrum.

9. A process comprising exposing a desensitizable and imageable article having at least one layer comprising a tetra(hydrocarbyl)borate, a first bleachable dye, and a second bleachable dye present in a molar ratio of at least 0.8/1.0 with respect to said borate and said first bleachable dye providing an optical density to said sheet, and having a spectral absorption curve different from the said second bleachable dye to an imagewise distribution of radiation to bleach said first bleachable dye in an imagewise fashion and then generally exposing said article to radiation to bleach said second bleachable dye.

4,447,522

METHOD OF FORMING A PHOTOGRAPHIC IMAGE

Shigeo Hirano, and Yoshihiro Takagi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 345,502, Feb. 3, 1982. This application Apr. 18, 1983, Ser. No. 486,174

Claims priority, application Japan, Feb. 3, 1981, 56-14565; Feb. 3, 1981, 56-14566; Feb. 3, 1981, 56-14567

Int. Cl.³ G03C 5/24, 1/02

U.S. Cl. 430—405 17 Claims

1. A method of forming a photographic image which comprises development processing, with an alkaline activator solution, an imagewise exposed silver halide photographic light-sensitive material comprising a support having thereon at least one surface latent image silver halide emulsion layer and at least one hydrophilic colloid layer, and containing in at least one layer selected from the group consisting of a silver halide emulsion layer and a hydrophilic colloid layer

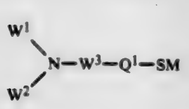
(1) a developing agent;

(2) an acylhydrazine compound represented by formula (I):

$$R^1NHNHCOR^2 \quad (I)$$

wherein R^1 represents an unsubstituted or substituted aryl group or alkyl group; and R^2 represents a hydrogen atom, or an unsubstituted or substituted aryl group or alkyl group; and

(3) at least one compound represented by formula (II):



(II)

wherein each of W^1 and W^2 can represent a hydrogen atom or an aliphatic group or W^1 and W^2 are bonded to each other to form a ring; W^3 represents a divalent aliphatic group; Q^1 represents a simple bond or a divalent heterocyclic group containing a nitrogen atom, an oxygen atom, or a sulfur atom; and M represents a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, a quaternary ammonium salt, a quartenary phosphonium salt, or an amidino group, or an inorganic acid salt or an organic acid salt thereof.

4,447,523

PHOTOGRAPHIC ELEMENTS CONTAINING 2,4-DISULFONAMIDOPHENOL SCAVENGERS FOR OXIDIZED DEVELOPING AGENTS

Robert E. Ross, Rochester, and Wilbur S. Gaugh, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 389,994, Jun. 18, 1982, abandoned. This application Jun. 9, 1983, Ser. No. 502,814

Int. Cl.³ G03C 1/40, 1/06, 7/00

U.S. Cl. 430—505 15 Claims

10. In a photographic element comprising a support, at least two silver halide emulsion layers containing dye-forming couplers and a scavenger for oxidized developing agent which does not form a dye or release a photographically useful group upon reaction with said oxidized developing agent, the improvement wherein the scavenger is a 2,4-disulfonamidophenol or an alkali labile precursor of such a phenol.

11. A photographic element of claim 10 wherein the scavenger is in an interlayer between two silver halide emulsion layers.

4,447,524

PROCESS FOR PREPARING POLYOLEFIN RESIN-COATED PAPER FOR PHOTOGRAPHIC USE

Akira Uno, Matsudo; Touru Noda, Tokyo, and Akira Ninohira, Funabashi, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 333,777

Claims priority, application Japan, Dec. 25, 1980, 55-184681

Int. Cl.³ G03C 1/76, 1/86, 3/00

U.S. Cl. 430—538 8 Claims

1. In a process for preparing a polyethylene resin-coated paper for photographic use which comprises melt-extruding and coating film shape of a polyethylene resin composition containing titanium dioxide onto at least one surface of a paper sheet or a synthetic paper base, the improvement comprising using polyethylene resin in the polyethylene resin layer on the photographic emulsion layer side containing 5 to 60 wt % of high density polyethylene and said polyethylene resin composition comprising polyethylene resin and titanium dioxide surface-treated with 0.2 to 1.2 wt % (calculated as Al_2O_3) of hydrous aluminum oxide based on titanium dioxide as said polyethylene resin composition.

8. A polyolefin resin-coated paper for photographic use obtained by the process as claimed in claim 1.

4,447,525

PROCESS FOR PROVIDING A MATT SURFACE ON A PHOTOGRAPHIC MATERIAL AND PHOTOGRAPHIC MATERIAL PROVIDED WITH SUCH MATT SURFACE

Angelo Vallarino, Ferrania, and Lorenzo Vittore, Montenotte, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 17, 1982, Ser. No. 419,403

Claims priority, application Italy, Sep. 23, 1981, 49351 A/81

Int. Cl.³ G03C 1/78

U.S. Cl. 430—539 6 Claims

1. A method for providing a matt surface on a photographic material comprising a support base, one or more light-sensitive gelatin silver halide emulsion layers coated on said support base and a non light-sensitive outer gelatin layer coated on said layers, said method comprising the introduction into said outer layer of discrete particles in an amount of from 50 to 600 mg. per square meter, insoluble in water and substantially soluble in the alkaline processing solutions, of a copolymer containing a carboxyl group, said method being characterized by the fact that said particles, of an average diameter between 0.5 and 4 micron, are introduced into the coating composition of the outer layer as a dispersion of a methacrylic acid and ethylmethacrylate copolymer containing from 20 to 50 percent in weight of methacrylic acid, which dispersion is obtained by dispersing a solution of said copolymer in ethylacetate or water-including ethylacetate in a water solution of a hydrophilic colloid.

4,447,526

HOMOGENEOUS SPECIFIC BINDING ASSAY WITH CARRIER MATRIX INCORPORATING SPECIFIC BINDING PARTNER

Patricia A. Rupchock, and Richard J. Tyhach, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 20, 1981, Ser. No. 255,521

Int. Cl.³ G01N 33/54, 33/58, 33/52

U.S. Cl. 435—7 16 Claims

1. A method for determining the presence of a ligand in, or the ligand binding capacity of a liquid test sample, the method comprising the steps of

forming a solution or suspension of a labeled conjugate and the liquid sample, the conjugate comprising the ligand or a specific binding analog of the ligand and a label, whereby a characteristic of the label is different when the conjugate is bound by a specific binding partner for said ligand or analog, compared to when said conjugate is not so bound, said difference in said characteristic being detectable,

contacting said sample with a carrier matrix incorporated with reagents which, when in the presence of said conjugate, produce a homogeneous specific binding assay system wherein said difference in said label characteristic is detectable, said reagents comprising said specific binding partner, thereby producing said difference in said characteristic, and

measuring said difference.

4,447,527

SINGLE TEST FORMULATIONS FOR ENZYME IMMUNOASSAYS AND METHOD FOR PREPARATION

Alex A. Monte, Cupertino, and Joan G. Centofanti, San Carlos, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation of Ser. No. 183,131, Sep. 2, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 350,897

Int. Cl.³ G01N 33/54

U.S. Cl. 435—7 9 Claims

1. A dry powder formulation capable of uniform dissolution upon mixing with water useful for performing a single assay of the presence of a ligand in an aqueous sample, which comprises:

	Wt %
Antiserum	5×10^{-6}–0.2
Enzyme bound ligand conjugate	5×10^{-6}–0.1
Substrates	1–15
Protein	0–5
Non-ionic detergent	0.1–5
Neutral salt	2–20
Buffer	5–30
Bulking agent	qs

9. A method for preparing the formulation according to claim 1 which comprises:

mixing a first powder formulation containing in weight percent of said first powder formulation 0.005–0.5 of the antiserum, 70–98 of the bulking agent, 0–20 of the buffer, and 0–10 of the protein; a second powder formulation containing in weight percent of said second powder formulation 0.005–0.05 of the enzyme bound ligand conjugate, 70–98 of the bulking agent, 0–20 of the buffer, and 0–10 the protein; substrates; any remaining buffer; remaining bulking agent; a non-ionic detergent and a volatile inert halocarbon to provide a homogeneous mixture;

removing the halocarbon in vacuo to provide a granular mixture; and

powdering the granular mixture.

4,447,528

DETECTING INTRINSIC FACTOR BLOCKING SITE ANTIBODY

James E. Ellis, Stoughton; Graham P. Lidgard, Wellesley; Gerald Odstrchel, Walpole, and Louis J. Riceberg, Needham, all of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,354

Int. Cl.³ G01N 33/58, 33/82, 33/50

U.S. Cl. 435—7 7 Claims

1. A process for detecting the presence of intrinsic factor blocking site antibody which comprises:

(a) admixing a biological fluid sample suspected of containing the blocking antibody with receptor having selective binding sites for said antibody, said receptor being intrinsic factor immobilized on an inanimate support;

(b) incubating the mixture from step (a) under conditions sufficient to enable substantially all of the blocking antibody present to bind to the receptor, whereby a solid phase comprising said inanimate support with the blocking antibody bound thereto and a liquid phase comprising said biological fluid sample without said blocking antibody result;

(c) separating the solid phase from the liquid phase;

(d) admixing a liquid comprising a labeled ligand for said selective binding sites with the separated solid phase, said ligand being vitamin B_{12};

(e) incubating the mixture from step (d) under conditions sufficient to enable the labeled ligand to bind to the selective binding sites of said receptor which did not bind to said blocking antibody, whereby a second solid phase comprising said inanimate support with at least one of blocking antibody and labeled ligand bound thereto and a second liquid phase comprising unbound labeled ligand result;

(f) separating the second solid phase from the second liquid phase; and

(g) determining the amount of labeled ligand present in at least one of the second solid phase and the second liquid phase.

4,447,529

PREPARING HOMOGENEOUS SPECIFIC BINDING ASSAY ELEMENT TO AVOID PREMATURE REACTION

Alfred C. Greenquist; Patricia A. Rupchock; Richard J. Tyhach, all of Elkhart, and Bert Walter, South Bend, all of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jul. 6, 1981, Ser. No. 280,260

Int. Cl.³ G01N 33/54, 33/52

U.S. Cl. 435—7 18 Claims

1. A method for preparing a test device useful in performing a homogeneous specific binding assay to determine the presence of a ligand in, or the ligand binding capacity of, a liquid test sample, the method comprising the steps of

incorporating a carrier with a first reagent mixture comprising water, a reagent capable of reacting with a label to produce a detectable response, and a specific binding partner to the ligand;

drying the carrier incorporated with the first reagent mixture;

incorporating the carrier with a second reagent mixture comprising a solvent selected from toluene, acetone, chloroform, methylene chloride, n-propanol and ethylene dichloride, and a label conjugate comprising the label coupled to a ligand moiety or a specific binding analogue thereof; and

drying the carrier incorporated with the first and second mixtures.

4,447,530

BIOCONVERSION OF INDUSTRIAL CELLULOSIC PULP MATERIALS TO PROTEIN-ENRICHED PRODUCT

Murray M. Young, 63-50 Bluesprings Dr., Waterloo, Ontario, Canada N2J 4M1

Continuation of Ser. No. 240,329, Mar. 4, 1981, Pat. No. 4,379,844, which is a continuation-in-part of Ser. No. 3,998, Jan. 17, 1979, abandoned. This application Nov. 30, 1982, Ser. No. 445,487

The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.

Int. Cl.³ C12P 21/00

U.S. Cl. 435—68 4 Claims

1. A process for the formation of proteinaceous material, which consists of:

(a) aerobically fermenting a sterile mixture of a cellulose-starchy material in divided form selected from the group consisting of banana, potato, yam and cassava and a solution of non-carbon nutrient supplement in a culture of the fungus, *Chaetomium cellulolyticum*, at a pH of about 5 to about 7 and at a temperature of about 30° to about 45° C. for a time sufficient to grow the fungus and provide a solid mass consisting of about 20 to about 80% DM of the

fungus and the balance of unfermented cellulose-starchy material, and

(b) separating the resulting solid mass from the fermentation medium.

4,447,531

GLUCOSE ISOMERASE FROM FUNGI OF THE BASIDIOMYCETES CLASS

Robert O. Horwath, Westport, and Robert M. Irbe, Norwalk, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 30, 1982, Ser. No. 393,849

Int. Cl.³ C12P *19/24, 19/20;* C12R *1/645*

U.S. Cl. 435—94 **13 Claims**

1. A process for preparing fructose which comprises contacting an aqueous solution of glucose with glucose isomerase produced by at least one species of the Basidiomycetes class of fungi to convert at least a portion of said glucose to fructose.

4,447,532

PROCESS FOR THE MANUFACTURE OF LOW D.E. MALTODEXTRINS

Lowell E. Coker, Keokuk, Iowa, and Kalyanasundram Venkatasubramanian, New Brunswick, N.J., assignors to H. J. Heinz Company, Pittsburgh, Pa.

Filed Apr. 29, 1982, Ser. No. 373,220

Int. Cl.³ C12P *19/14*

U.S. Cl. 435—99 **3 Claims**

1. A process for producing a low D.E. starch hydrolyzate which comprises (1) liquefying non-waxy corn starch in the presence of an alpha amylase by heating at a temperature within the range of from about 104°–107° C., (2) maintaining the liquefied starch hydrolyzate of step (1) at a temperature above about 93° C. in the presence of alpha-amylase so as to dextrinize the hydrolyzate to a D.E. level within the range of from about 10–13, (3) terminating the reaction of step (2) by the addition of sufficient mineral acid to lower the pH of the dextrinized hydrolyzate to a level at which residual alpha-amylase is inactivated within the period of from about thirty to about sixty minutes while maintaining the hydrolyzate temperature at least above about 93° C., (4) refining the resulting hydrolyzate from step (3) while maintaining the hydrolyzate at a temperature of at least above about 76° C. during the refining operations, and (5) spray drying the refined hydrolyzate of step (4) so as to produce a dry free-flowing starch hydrolyzate.

4,447,533

PROCESS TO PRODUCE ANTIBIOTIC X-14885A

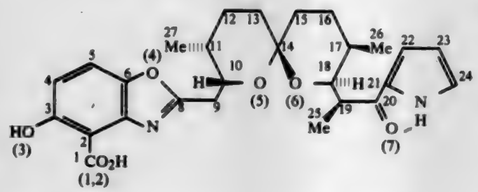
Chao-Min Liu, Cedar Grove, N.J.; Homer D. Tresner, LaFarge, Wis., and John Westley, Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 311,132, Oct. 14, 1981, Pat. No. 4,352,934. This application Jul. 30, 1982, Ser. No. 403,844

Int. Cl.³ C12P *17/18;* C12R *1/465*

U.S. Cl. 435—119 **1 Claim**

1. A process to produce a compound of the formula



which comprises fermentatively cultivating a strain having the identifying characteristics of Streptomyces sp. X-14885 NRRL 12350 in an aqueous carbohydrate solution containing a nitrogenous nutrient under submerged aerobic conditions and thereafter isolating the product from said fermentation solution.

4,447,534

METHOD OF PRODUCING ETHANOL THROUGH FERMENTATION OF CARBOHYDRATES

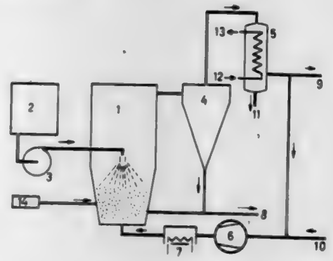
Otto Moebus, Lämmerstücken 36, Kiel-Russee; Michael Teuber, Gartenstr. 114, Flintbek, and Helmut Reuter, Dorfstede 23, Kiel-Schulensee, all of Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 344,937

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105581

Int. Cl.³ C12P *7/06*

U.S. Cl. 435—161 **12 Claims**



1. A method of producing ethanol by fermentation of carbohydrates, which comprises:

maintaining a gas-fluidized bed of microorganisms suitable for ethanol production,

adding at least one fermentable, carbohydrate-containing watery nutrient solution to said fluidized bed,

conducting fermentation in said fluidized bed while introducing gas into said fluidized bed as a continuous phase, the conditions of said fermentation being essentially provided by the termperature and partial oxygen pressure of said gas,

removing a portion of said gas from said fluidized bed,

cooling and fractionating said removed gas to precipitate an ethanol/water mixture from said gas, and

removing ethanol from said mixture.

4,447,535

PROCESS FOR THE RECOVERY OF A CONCENTRATED STILLAGE

Friedrich J. Zucker, and Georg Osthaus, both of Neuss, Fed. Rep. of Germany, assignors to Supraton F. J. Zucker GmbH, Neuss, Fed. Rep. of Germany

Continuation of Ser. No. 275,447, Jun. 22, 1981, abandoned. This application Apr. 14, 1983, Ser. No. 484,929

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3023874

Int. Cl.³ C12P *7/14*

U.S. Cl. 435—162 **2 Claims**

1. A process for the recovery of a concentrated stillage in the production of alcohol from starch or starch-containing raw materials, comprising the steps of:

(a) mixing said starch or starch-containing materials in finely divided form with an aqueous process liquor;

(b) introducing the mixture from step (a) together with steam and enzymes suitable for making alcohol coaxially to the center of a rotor-stator homogenizer wherein the starch is rapidly gelatinized thermally and mechanically in a zone of high density of shear and cavitation forces at a temperature between 70° C. and 115° C. and the enzyme is ultrafinely distributed;

(c) enzymatically liquefying the starch in the product of step (a);

(d) saccharifying and fermenting the product of step (c);

(e) distilling the product of step (d) to produce alcohol and stillage;

(f) separating solid coarse particles from said stillage; and

(g) repeating the cycle of steps (a) through (f) using the stillage essentially as obtained from step (f) at least three times without further purification as the process liquor in step (a), until the dry solids content of the stillage has increased to about 30%.

4,447,536

STABILIZATION OF ENZYME COMPOSITIONS

Gerard J. Moskowitz, Mequon, Wis., assignor to Dairyland Food Laboratories, Waukesha, Wis.

Filed Oct. 25, 1982, Ser. No. 436,638

Int. Cl.³ C12N *9/96, 9/20, 9/64*

U.S. Cl. 435—188 **10 Claims**

1. In a method for making an enzyme-containing composition including the steps of grinding edible tissue taken from between the base of the tongue and the trachea of young ruminants and drying the mixture to remove a substantial portion of the moisture therefrom, the improvement comprising

admixing with the ground tissue a stabilizing reagent comprising (a) at least 0.1 weight % stannous chloride, (b) about 0.1 to about 1.0 weight % zinc chloride, or (c) at least 0.1 weight % of a divalent cationic salt selected from the group consisting of calcium chloride, calcium carbonate, calcium orthophosphate in mono, di or tri form, calcium oxide, calcium hydroxide, calcium sulfite, calcium salts of organic acids, zinc chloride, zinc carbonate, zinc acetate, zinc oxide, zinc sulfite, stannous chloride, titanium dioxide and mixtures thereof and at least 0.05 weight % of a food acceptable reducing agent, other than stannous chloride, capable of reacting with proteins without causing substantial denaturation thereof, said weight percentages being based on the weight of the ground tissue.

4,447,537

TICK CELL LINES

Conrad E. Yunker; John C. Cory, both of Hamilton, and Harold R. Meibos, Darby, all of Mont., assignors to The United States of Americas as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 22, 1981, Ser. No. 227,166

Int. Cl.³ A61K *39/00, 39/12*

U.S. Cl. 435—235 **18 Claims**

1. A continuous cell line of embryonic cells of Acari: Ixodidae of the species *Dermacentor variabilis* designated RML-15 and having ATCC No. CRL 8052.

5. A continuous cell line of embryonic cells of Acari: Ixodidae of the species *Dermacentor parumapertus* designated RML-16 and having ATCC No. CRL 8053.

4,447,538

MICROORGANISM CONTAINING GENE FOR HUMAN CHORIONIC SOMATOMAMMOTROPIN

Howard M. Goodman; John Shine, and Peter H. Seeburg, all of San Francisco, Calif., assignors to Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 897,710, Apr. 19, 1978, Pat. No. 4,363,877, which is a continuation-in-part of Ser. No. 836,218, Sep. 23, 1977, abandoned. This application Feb. 5, 1982, Ser. No. 346,124

Int. Cl.³ C12N *1/20, 15/00*

U.S. Cl. 435—253 **7 Claims**

1. A microorganism containing a recombinant DNA transfer vector whose genetic constitution comprises a nucleotide sequence coding for at least a portion of human chorionic somatomammotropin, said portion identified to contain the sequence of human chorionic somatomammotropin.

4,447,539

MICROORGANISM CAPABLE OF DEGRADING PHENOLICS

Lewis J. Pillis, Roanoke, and Lois T. Davis, Salem, both of Va., assignors to Sybron Corporation, Rochester, N.Y.

Continuation of Ser. No. 229,025, Jan. 27, 1981, Pat. No. 4,352,886. This application Apr. 28, 1982, Ser. No. 372,775

Int. Cl.³ C12N *1/20;* C12R *1/40*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of the microorganism *Pseudomonas putida* CB-173 having the identifying characteristics of ATCC-31800, said microorganism being capable upon culturing in wastewater containing phenolics of utilizing such as an assimilable source of carbon.

4,447,540

MICROORGANISM STRAIN OF SPECIES *CLAVICEPS PURPUREA*

Karin Strnadova; Jan Kybal; Eduard Svoboda, all of Prague, and Jiri Spacil, Opava, all of Czechoslovakia, assignors to SPOFA, spojene podniky prozdravotnickou vyrobu, Prague, Czechoslovakia

Filed Jul. 20, 1982, Ser. No. 400,037

Claims priority, application Czechoslovakia, Jul. 28, 1981, 5731-81

Int. Cl.³ C12N *1/14;* C12P *17/18;* C12R *1/645*

U.S. Cl. 435—254 **1 Claim**

1. Biologically pure culture of *Claviceps purpurea* (Fr.) Tul. variant strain CCM F-725 which can be fermented to produce ergocornine, alpha-ergocryptine, and beta-ergocryptine.

4,447,541

METHODS FOR DECONTAMINATING SOIL

Robert L. Peterson, East Syracuse, N.Y., assignor to Galson Research Corporation, East Syracuse, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,620

Int. Cl.³ D06M *16/00*

U.S. Cl. 435—264 **27 Claims**

11. A method of decontaminating soil by biologically decomposing a polyhalogenated organic compound with which said soil is contaminated, said method comprising the step of admixing with said soil an effective amount of a reagent mixture which is capable of at least partially dehalogenating said organic compound and thereby increasing its biodegradability, said mixture comprising an alkali constituent and a sulfoxide catalyst and said alkali constituent being an alkali metal hydroxide, a mixture of an alkali metal hydroxide and an alcohol, or an alkoxide.

20. A method of decontaminating soil according to claim 11 which also includes the step of, subsequent to the mixing of the reagent mixture with the soil, inoculating said soil with at least one specie of bacteria which is effective to biologically decompose said at least partially dehalogenated organic compound.

4,447,542

ANALYTICAL TEST COMPOSITION, DEVICE AND METHOD FOR THE DETERMINATION OF PEROXIDATIVELY ACTIVE SUBSTANCES

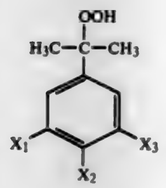
Mary L. Gantzer, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 4, 1983, Ser. No. 481,630

Int. Cl.³ G01N *33/52, 33/72*

U.S. Cl. 436—66 **9 Claims**

1. In a composition for the determination of a peroxidatively active substance in a test sample, the composition comprising an organic hydroperoxide and an indicator capable of providing a detectable response in the presence of said organic hydroperoxide and peroxidatively active substance, the improvement wherein said organic hydroperoxide is a substituted cumene hydroperoxide having the formula



in which any one of the X substituents is lower alkyl of from 1 to 6 carbon atoms, Cl, Br, I, NO_2 or carboxyl; or any two of the X substituents, same or different, are lower alkyl of from 1 to 6 carbon atoms, Cl, Br, I, NO_2 or carboxyl.

4,447,543

METHOD FOR MEASURING VOLATILE HYDRIDES

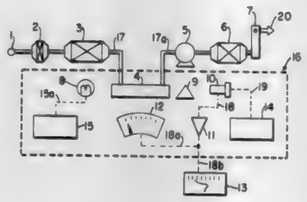
Hikaru Harada, Kamakura; Teruo Akiyama, and Tuneo Hiyama, both of Tokyo, all of Japan, assignors to Nippon Sanso K.K., Tokyo, Japan

Division of Ser. No. 109,329, Jan. 4, 1980, Pat. No. 4,309,385. This application Nov. 18, 1981, Ser. No. 207,945

Claims priority, application Japan, Jan. 26, 1979, 54-8027; Jan. 26, 1979, 54-8262[U]

Int. Cl.³ G01N *21/00*

U.S. Cl. 436—72 **2 Claims**



1. A method for measuring the concentration of hydrides selected from the group consisting of diborane, arsine, phosphine, stibine, hydrogen selenide and monosilane, comprising reacting said hydrides with an excess of mercuric oxide at an ambient temperature to form stoichiometric amounts of gaseous atomic mercury, water and the element consisting of the non-hydrogen constituent of said hydrides measuring the amount of said atomic mercury and determining the concentration of said hydrides by reference to the amount of said atomic mercury produced and the stoichiometric ratios for said reaction; wherein the lower limit of the quantity of said hydrides capable of measurement by said method is below the allowable concentration for said hydrides.

4,447,544

METHOD AND REAGENT FOR DETERMINING INORGANIC PHOSPHATE IN BIOLOGICAL SAMPLE

Bruce P. Neri, North Andover, and Stanley M. Liffmann, Methuen, both of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Jul. 22, 1982, Ser. No. 400,686

Int. Cl.³ G01N *33/52, 33/84, 33/96*

U.S. Cl. 436—105 **16 Claims**

1. An aqueous reagent for determining inorganic phosphate in a protein-containing liquid biological sample comprising

a molybdate salt,

an acid capable of reacting with said molybdate salt to form molybdic acid for complexation with said phosphate to form phosphomolybdate complexes,

a ferric salt in an amount sufficient to inhibit turbidity in the sample, and

a nonionic surfactant reagent in an amount sufficient to further inhibit turbidity in the sample,

said molybdate salt and said acid being present in amounts sufficient to form an amount of molybdic acid sufficient to produce a detectible color change when complexed with said phosphate in said sample.

11. A serum-free, aqueous inorganic phosphate standard solution for use in conjunction with a method in which the amount of phosphate in a protein-containing biological fluid sample is determined, said standard solution comprising

a predetermined amount of phospate, and

polyvinylpyrrolidone, in an amount ranging between 2 and 6 grams per liter of said standard solution.

4,447,545

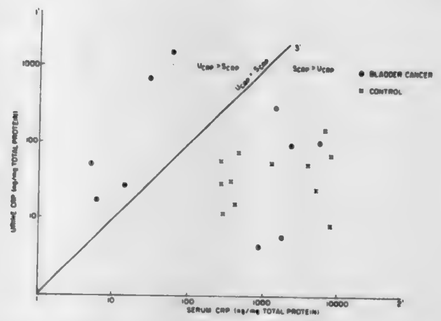
BLADDER CANCER DETECTION

Sally R. DeFazio, Watertown; James J. Gozzo, Westwood, and Anthony P. Monaco, Newton, all of Mass., assignors to New England Deaconess Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 203,146, Nov. 3, 1980, abandoned. This application Jun. 15, 1982, Ser. No. 388,675

Int. Cl.³ G01N *33/48, 33/68*

U.S. Cl. 436—518 **10 Claims**



1. A method for screening a patient for the presence of a bladder carcinoma, said method comprising the steps of:

(A) assaying for the ratio of C-reactive protein to total protein in a sample of the urine of said patient;

(B) assaying for the ratio of C-reactive protein to total protein in a sample of the serum of said patient; and

(C) comparing the ratio determined by assay in step A to the ratio determined by assay in step B, whereby

(i) a finding of the absence of C-reactive protein in said urine sample is indicative of the absence of a bladder carcinoma; and

(ii) a finding that the ratio determined in step A is greater than the ratio determined in step B is indicative of the presence of a bladder carcinoma.

4,447,546

FLUORESCENT IMMUNOASSAY EMPLOYING OPTICAL FIBER IN CAPILLARY TUBE

Tomas E. Hirschfeld, Livermore, Calif., assignor to Myron J. Block, North Salem, N.H.

Filed Aug. 23, 1982, Ser. No. 410,340

Int. Cl.³ G01N *21/00, 21/64, 33/54, 33/58*

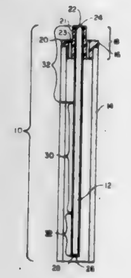
U.S. Cl. 436—527 **15 Claims**

1. Apparatus for performing immunoassays using an antigen-antibody complex incorporating a fluoreacent tag capable of emitting fluorescent radiation when excited by exciting radiation, said apparatus comprising in combination:

an optical fiber transmissive to both said exciting radiation and said fluorescent radiation;

a coating on at least a portion of said fiber, said coating having a plurality of sites, each being capable of having attached thereto a selected moiety of said antigen-antibody complex so as to leave substantially unaffected the

activity of said selected moiety for forming said antigen-antibody complex; and



means for controlling a volume of capillary dimensions bounded by said portion of said fiber.

4,447,547

IMMUNOASSAY FOR MEASUREMENT OF RETICULOCYTES, AND IMMUNOREACTIVE REAGENTS FOR USE THEREIN

Robert H. Allen, Englewood, and Paul A. Seligman, Denver, both of Colo., assignors to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 138,785, Apr. 9, 1980, Pat. No. 4,332,785. This application Mar. 9, 1982, Ser. No. 356,539

Int. Cl.³ G01N *33/54, 33/58, 33/60*

U.S. Cl. 436—543 **4 Claims**

1. Anti-human transferrin receptor antibody.

4,447,548

HIGH POROSITY CERAMIC MATERIALS AND METHOD FOR MAKING SAME

Monte F. Huebsch, III, 3770 Flora Vista Ave. #2008, Santa Clara, Calif. 95051

Filed Aug. 18, 1982, Ser. No. 409,113

Int. Cl.³ C04B *21/00*

U.S. Cl. 501—85 **9 Claims**

1. A method for producing a high porosity ceramic material comprising the steps of:

(a) wetting a finely divided, non-crystalline, amorphous silica with a wetting agent;

(b) combining said wetted silica with a ceramic slip to produce a mixture, wherein said wetted silica and said ceramic slip are combined in the proportions of at least one part and at most four parts silica to each part of slip; and

(c) removing the majority of said wetting agent and other fluids from said mixture to produce a solid, low-density, highly porous bisque.

4,447,549

NON-LINEAR DIELECTRIC ELEMENT

Sho Masujima, Tokyo; Masahide Shibuya, Nikahomachi; Iwaya Shoichi, Kisagatamachi; Kenichi Umeda, Honjo; Yasunobu Oikawa, Nikahomachi; Hisso Abe, Kisagatamachi; Yoshifumi Midori, Honjo; Shinobu Fujiwara, Nikahomachi, and Nobuaki Kikuchi, Kisagatamachi, all of Japan, assignors to TDK Kabushiki Kaisha, Tokyo, Japan

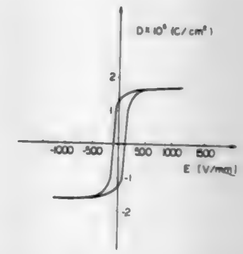
Continuation of Ser. No. 261,914, May 8, 1981, abandoned, which is a continuation of Ser. No. 087,408, Oct. 22, 1979, abandoned. This application Mar. 22, 1983, Ser. No. 476,250

Claims priority, application Japan, Oct. 20, 1978, 53-129233

Int. Cl.³ C04B *35/46*

U.S. Cl. 501—138 **6 Claims**

1. A non-linear dielectric element utilizing the non-linearity of the dielectric constant that depends on an electric field applied thereto consisting of a polycrystal which is mainly composed of $BaTiO_3$ and has the chemical composition expressed by the formula $A_yB_zO_3$, wherein the molar ratio of y/z ranges from 0.92 to 0.99, said composition of $A_yB_zO_3$ is $Ba_y(Ti_xSn_{1-x})_zO_3$, the amount (x) of titanium is in the range of from



0.90 to 0.98 and the polycrystal further includes at least one oxide selected from the group consisting of manganese oxide and chromium oxide in an amount of from 0.02 to 0.5% based on 100% by weight of said $A_yB_zO_3$ composition.

4,447,550

LEAD ALUMINOBOROFLUOROSILICATE MOLDABLE GLASSES

Dominique L. J. Leroy, Montigny Sur Loing, and Jean-Pierre Mazeau, Avon, both of France, assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 13, 1983, Ser. No. 488,960

Claims priority, application France, Sep. 30, 1982, 82 16448

Int. Cl.³ C03C *3/08, 3/10*

U.S. Cl. 501—75 **2 Claims**

1. A moldable optical glass of the lead aluminoborofluorosilicate type having an index of refraction between about 1.65–1.82, an Abbe number between about 27–39, a softening point not exceeding 500° C., good chemical durability in a moist atmosphere, and high stability which consists essentially, expressed in terms of weight percent on the oxide basis, of

SiO_2	8–20
B_2O_3	5–20
PbO	50–70
Al_2O_3	1–11
F	2–7

4,447,551

PROCESS FOR REACTIVATING IRIDIUM-CONTAINING CATALYSTS

Shun C. Fung, Bridgewater, N.J., and Richard W. Rice, Clemson, S.C., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 5, 1982, Ser. No. 374,975

Int. Cl.³ B01J *23/96, 23/46, 23/64;* C10G *35/085*

U.S. Cl. 502—37 **21 Claims**

1. A process for reactivating an agglomerated catalyst containing metallic iridium comprising the steps of:

(a) pretreating the catalyst by contact with a substantially elemental oxygen-free atmosphere comprising a halide-providing compound at an elevated temperature to provide about 1.3 weight percent and above, halide to the catalyst, taken as the coke-free dry, catalyst; and

(b) redispersing the metallic iridium from step (a) while maintaining said 1.3 weight percent and above halide provided to the catalyst by contact at an elevated temperature with an atmosphere comprising elemental halogen and a redispersing aid selected from elemental oxygen, or elemental oxygen and water, wherein said halogen and oxygen are present in a halogen to oxygen volume ratio in

the range of about 0.05 to 10, for a time sufficient to substantially redisperse said metallic iridium.

5. The process of claim 1 wherein said halide-providing compound is one which generates a hydrogen halide in the presence of hydrogen gas.

20. A process for reactivating an agglomerated platinum-iridium on alumina catalyst, containing platinum and iridium oxides, comprising the steps of:

(a) contacting said agglomerated catalyst with a hydrogen atmosphere at a temperature in the range of about 300° to 540° C., a pressure of about 0.1-2 MPa, for a sufficient time to substantially reduce said oxides of platinum and iridium to the respective metals;

(b) pretreating said catalyst from step (a) by contact with an elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1-2 MPa for a time sufficient to saturate the catalyst with chloride; and

(c) redispersing the metallic iridium and platinum while maintaining a saturated chloride level by contact with an atmosphere comprising elemental chlorine and elemental oxygen and water in a chlorine to oxygen volume ratio of about 0.2 to 5 at a temperature in the range of about 500° to 540° C., and a pressure of about 0.1-2 MPa for a time sufficient to effect about a 75-100% redispersion of both metallic platinum and iridium.

21. A process for reactivating an agglomerated metallic platinum-iridium on alumina catalyst, which has been partially decoked by hydrogen gas, comprising the steps of:

(a) pretreating said catalyst by contact with an elemental oxygen-free atmosphere comprising hydrogen chloride at a temperature in the range of about 300° to 540° C. and a pressure of about 0.1-2 MPa for a time sufficient to saturate the catalyst with chloride; and

(b) redispersing the metallic iridium and platinum while maintaining a saturated catalyst chloride level by contact with an atmosphere comprising elemental chlorine and elemental oxygen and water, in a chlorine to oxygen volume ratio of about 0.2 to 5, at a temperature in the range of about 500° to 540° C., and a pressure of about 0.1-2 MPa for a time sufficient to effect about a 75-100% redispersion of both metallic platinum and iridium.

4,447,552

PASSIVATION OF METAL CONTAMINANTS ON CRACKING CATALYST

John C. Hayes, Palatine, Ill., and Carmen Castillo, Baton Rouge, La., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 344,106, Jan. 29, 1982, Pat. No. 4,382,015, which is a continuation-in-part of Ser. No. 209,073, Nov. 21, 1980, Pat. No. 4,364,848, which is a continuation-in-part of Ser. No. 132,602, Mar. 21, 1980, abandoned. This application Mar. 3, 1983, Ser. No. 471,936
The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.
Int. Cl.³ B01J *29/38*; C10G *11/18, 11/05*
U.S. Cl. 502—41 **8 Claims**

1. A process for passivating a metal on fluidized cracking catalyst which has been contaminated with said metal due to the use of said catalyst in a fluidized cracking system, and wherein said catalyst is cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock containing said metal which deposits on said catalyst, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, said metal being included in the group comprising nickel, vanadium, cobalt or iron, said catalyst comprising a crystalline aluminosilicate contained in a inorganic oxide matrix containing less than about 10 wt % alumina excluding alumina contained in said crystalline aluminosilicate which process comprises contacting said catalyst, prior to the cycling of said catalyst to said cracking zone, with a gas or mixture of gases comprising hydrocarbons selected from the group consisting of hydrocarbons containing one, two and three carbon atoms at passivation reaction conditions selected so as to first effect substantially complete reduction of said metal to its metallic state and then deactivation of said metal in its metallic state by carbonization.

2. A process in accordance with claim 1 wherein said inorganic oxide matrix comprises silica, titania, magnesia, zirconia, boria or chromia.

3. A process in accordance with claim 1 wherein said inorganic oxide matrix comprises silica.

4,447,553

PROCESS FOR RE-ACTIVATION OF SOLID ACID CATALYST

Tokuo Fujiso, Yokosuka; Tadashi Ohmori, Yokohama, and Soichi Nomura, Tokyo, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,619
Claims priority, application Japan, Aug. 4, 1981, 56-122280
Int. Cl.³ B01J *37/12*
U.S. Cl. 502—36 **3 Claims**

1. In the re-activation of a solid acid catalyst consisting essentially of an active alumina carrier and fluorine and chlorine both supported thereon, the amounts of said fluorine and said chlorine being 0.3-1.0% and 0.6-2.0%, respectively, based on the total weight of the catalyst composition, the process of re-activation which comprises:

(i) subjecting the catalyst to a calcination treatment at 350°-550° C. in which it is brought into contact with an inert gas containing less than 1 mole % of molecular oxygen thereby to burn off high molecular weight hydrocarbons that have been deposited on the catalyst during reaction;

(ii) measuring the contents of fluorine and chlorine in the calcined catalyst to see if the content of fluorine is greater or smaller than 70% of the fresh catalyst;

(iii) subjecting the calcined catalyst to a halogenation treatment at 200°-500° C. in which it is brought into contact with an inert gas or a non-reducing gas containing 50-1,000 ppm of moisture and entrained with chlorine, a chlorine compound or a mixture thereof, in the event the catalyst upon said calcination treatment contains fluorine in an amount greater than 70% of a fresh catalyst; and

(iv) alternatively, subjecting the calcined catalyst to a halogenation treatment in which it is brought into contact with an inert gas or a non-reducing gas containing 50-1,000 ppm of moisture and entrained with a mixture of chlorine and fluorine, chlorine and a fluorine compound, a chlorine compound and fluorine, a chlorine compound and a fluorine compound, or a compound containing in the molecule both chlorine and fluorine, in the event the catalyst upon said calcination treatment contains fluorine in an amount less than 70% of a fresh catalyst.

4,447,554

HYDROALKYLATION CATALYST AND METHODS FOR PRODUCING AND EMPLOYING SAME

Timothy P. Murtha, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 154,548, May 29, 1980, Pat. No. 4,329,531. This application Mar. 16, 1982, Ser. No. 358,565
Int. Cl.³ B01J *29/14*
U.S. Cl. 502—73 **5 Claims**

1. A process of preparing a highly active hydroalkylation catalyst, said process comprising:

ion exchanging a crystalline zeolite with rare earth, nickel and ammonium cations; and

calcining the ion exchanged crystalline zeolite in the presence of air at a temperature essentially maintained in the range of between about 150° C. to about 400° C.

2. A process as in claim 1 further comprising preventing the temperature during the calcination step from exceeding a temperature of 400° C. for any substantial period of time as compared with the time at which the catalyst is calcined at a temperature of from 150° C. to 400° C.

4,447,555

HYDROCRACKING CATALYSTS

Stephen L. Parrott, and John W. Myers, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 291,662, Aug. 10, 1981, abandoned. This application Apr. 4, 1983, Ser. No. 481,957
Int. Cl.³ B01J *29/06, 29/16*
U.S. Cl. 502—74 **36 Claims**

1. A process of producing a hydrocracking catalyst having a high activity and a slow deactivation rate comprising the steps of:

(1) contacting a Group IVB metal oxide with at least one Group VIII metal-containing substance,

(2) contacting the product of step (1) with at least one Group VIB metal-containing substance,

(3) combining the product of step (2) with an acidic cracking catalyst component containing a zeolite, and

(4) recovering the product of step (3).

2. The process of claim 1 wherein the Group IVB metal oxide is titanium dioxide.

3. The process of claim 1 wherein the Group VIII metal is selected from the group consisting of nickel, cobalt, and combinations thereof.

11. The catalyst produced by the process of claim 1.

4,447,556

HYDROCARBON CONVERSION CATALYST AND USE THEREOF

Mark J. O'Hara, Mt. Prospect, and Russell W. Johnson, Villa Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 4, 1983, Ser. No. 481,969
Int. Cl.³ B01J *21/12, 29/14*
U.S. Cl. 502—74 **12 Claims**

1. A catalytic composite comprising a combination of a carrier material, a Group VIB metal component and Group VIII metal component wherein said Group VIB metal component and said Group VIII metal component are incorporated in said catalytic composite by means of a non-aqueous organic solution of a Group VIB metal compound and a Group VIII metal compound, wherein said non-aqueous organic solution comprises dimethylformamide, formamide, diethylformamide, ethylformamide, methylformamide, pyridine, aniline or toluene and wherein said catalytic composite is calcined in a non-oxidizing atmosphere.

4,447,557

PROCESS FOR SELECTIVE FORMATION OF C4 COMPOUNDS AND THIOL-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 215,555, Dec. 11, 1980, Pat. No. 4,339,610. This application Mar. 1, 1982, Ser. No. 353,376
Int. Cl.³ B01J *31/20*
U.S. Cl. 502—161 **9 Claims**

1. A catalyst system comprising a cobalt catalyst selected from the group consisting of (a) a cobalt carbonyl, (b) a hydrido cobalt carbonyl and (c) a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, an iodine promoter and a thiol defined by the folowing formula:

RSH

wherein R is selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aryl radicals having from six to 20 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms and halogen substituted derivatives thereof.

4,447,558

PROCESS FOR PRODUCING AN ANTIMONY CONTAINING METAL OXIDE CATALYST

Yutaka Sasaki, and Yoshimi Nakamura, both of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1982, Ser. No. 397,723
Claims priority, application Japan, Jul. 13, 1981, 56-108175
Int. Cl.³ B01J *27/02, 27/14, 21/02, 27/24*
U.S. Cl. 502—215 **12 Claims**

1. A process for preparing an antimony-containing metal oxide catalyst, comprising the steps of:

calcining at about 500° to 1,000° C. a metal oxide composition containing, as essential elements, antimony and at least one element selected from the group consisting of iron, cobalt, nickel, manganese, uranium, tin, and copper;

impregnating the calcined oxide composition with a tellurium-containing solution;

drying the impregnated composition; and

calcining the dried composition at about 400° to 850° C., wherein the tellurium-containing impregnating solution is a homogeneous, stable solution containing tellurium and at least one element selected from the group consisting of molybdenum and tungsten, said solution containing a tellurium compound and at least one heteropoly acid selected from the group consisting of phosphomolybdic acid, silicomolybdic acid, phosphotungstic acid, and silicotungstic acid, and said solution containing nitrate radicals in concentration of at least 5 g/liter and having a pH lower than 3.

4,447,559

MULTI-LAYER ION EXCHANGER FOR USE IN ION-EXCHANGE CHROMATOGRAPHY AND METHOD OF PRODUCING THE SAME

Yuzuru Hansoka; Takeshi Murayama, and Setsuo Muramoto, all of Musashino, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 390,208, Jun. 21, 1982, abandoned. This application Jul. 12, 1982, Ser. No. 397,060
Claims priority, application Japan, Jul. 30, 1981, 56-119689
Int. Cl.³ C08D *5/20*
U.S. Cl. 521—28 **3 Claims**

1. A method of producing an ion exchanger for use in ion exchange chromatography, comprising the steps of

suspending fine sized particles of a styrene-divinylbenzene copolymer into alcohol;

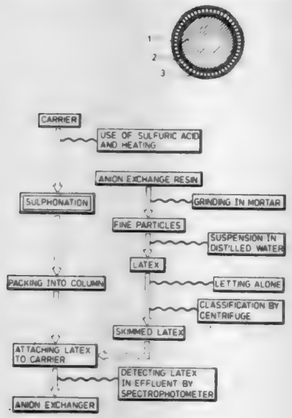
classifying the resulting suspension using a centrifugal separator;

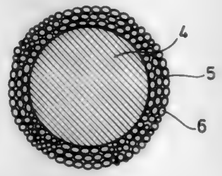
taking a classified liquid phase out of said supsension, adding coarse sized styrene-divinylbenzene copolymer particles into said liquid phase, and then evaporating alcohol component by heating said liquid phase at a temperature of about 50° C.;

adding a mixture of chloromethylstyrene and divinylbenzene having additionally incorporated therein alpha, alpha-azobisisobutyronitrile to said liquid phase, just before completion of said evaporation, and then heating said liquid phase at a temperature of about 80° C., in order to effect polymerization reaction between said chloromethylstyrene and said divinylbenzene; and

aminating chloromethyl groups in said chloromethylstyrene-divinylbenzene copolymer, by means of trimethylamine treatment, whereby said copolymers are made hydrophilic, and to thereby introduce anion exchange groups into said fine sized particles, wherein said fine sized particles have sizes ranging from 0.1 to 0.5 μm; and wherein said coarse sized styrene-divinylbenzene copoly-

mer particles added to said liquid phase has sizes ranging from 10 to 20 μm; and wherein said polymerization reaction between said chloromethylstyrene and said divinylbenzene produces said chloromethylstyrene-divinylbenzene copolymer which acts as a binder; and wherein said binder is positioned between each of said fine and coarse





particles and is grafted onto each particle thereby to form intimate attachment of a plurality of fine particles to each other through mutual attachment to said binder, and to form intimate attachment of a plurality of said fine particles to each coarse particle through mutual attachment to said binder.

4,447,560

LOW DENSITY FIBROUS SHEET MATERIAL

Jay L. Piersol, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 6, 1982, Ser. No. 375,395

Int. Cl.³ C08J *9/28, 9/30*

U.S. Cl. 521—68 **7 Claims**

1. A method of forming a low density fibrous sheet material which method comprises forming an aqueous slurry that comprises fibers, a soluble salt selected from the group consisting of aluminum salts, ferric salts and stannic salts, and a sufficient amount of an alkaline hydroxide to provide a slurry pH within the range of from about 6 to about 10, said alkaline hydroxide serving to convert said soluble salt to a water insoluble hydroxide; depositing a synthetic rubber binder on said fibers to form rubber-coated fibers; adding the resulting fibrous slurry to a solution of a foamable detergent in water; foaming the resulting mixture, which has a consistency of from about 4 to about 15 weight percent solids, to homogeneously suspend the fibrous slurry therein; and drying the mixture to thereby form the low density fibrous material wherein from about 5 to about 50 parts by weight of synthetic rubber binder are employed for every 100 parts of fiber.

4,447,561

STABLE WATER GLASS SOLUTIONS, PROCESS FOR THEIR PREPARATION AND USE FOR ORGANOSILICATE FOAMS AS WELL AS A PRODUCTION PROCESS THEREFOR

Peter Horn, Heidelberg; Robert Gehm, Limburgerhof; Matthias Marx, Bad Durkheim, and Artur Roeber, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,724

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 3227580

Int. Cl.³ C08G *18/14, 18/30, 18/38;* C08K *3/00*

U.S. Cl. 521—118 **12 Claims**

1. A stable water glass solution obtained by

(A) Mixing

(a) a solution of

(i) 100 parts by weight of an aqueous alkalisilicate solution, and

(ii) 1.5 to 20 parts by weight of an alkali hydroxide

with

(b) 2 to 12 parts by weight of a tertiary amine, and subsequent oxyalkylation of the resultant two-phase reaction mixture with

(c) at least one mole of an alkylene oxide per mole of tertiary amine, or

(B) by oxyalkylation of

(a) 2 to 12 parts by weight of a tertiary amine with

(b) at least one mole of an alkylene oxide per mole of tertiary amine

and mixing of the resultant mixture with

(c) a solution of

(i) 100 parts by weight of an aqueous alkali-silicate solution, and

(ii) 1.5 to 20 parts by weight of alkali hydroxide.

7. A process for the preparation of organosilicate foam by reacting an organic polyisocyanate and a compound with reactive hydrogen atoms in the presence of catalysts, blowing agents, and optionally auxiliaries and additives, wherein the mixtures of stable water glass solutions of claim 1 and tertiary amino group containing polyether polyols are used as compounds with reactive hydrogen atoms.

4,447,562

AMINO-POLYSACCHARIDES AND COPOLYMERS THEREOF FOR CONTACT LENSES AND OPHTHALMIC COMPOSITIONS

Edward J. Ivani, 2360 E. 74 St., Brooklyn, N.Y. 11234

Division of Ser. No. 283,613, Jul. 15, 1981, Pat. No. 4,365,050. This application Sep. 30, 1982, Ser. No. 430,813

Int. Cl.³ C08L *5/08, 89/00;* C07G *7/00*

U.S. Cl. 523—105 **6 Claims**

1. A pharmaceutical composition containing one or more active ingredients and a carrier formed from any of the polymers formed from D-glucosamine or derivatives thereof selected from the group consisting of N-acetyl-D-glucosamine, substituted N-acetyl-D-glucosamine, derivatives of N-acetyl-D-glucosamine and graft and block polymers of N-acetyl-D-glucosamine, and a compound selected from the group consisting of a silicone, collagen, acrylonitrile, acrylamide, methacrylate acids and esters, alkylaminoalkyl methacrylate and hydroxyalkyl methacrylate and pyrrolidone and derivatives of pyrrolidone, said pharmaceutical composition being used either on the body of a patient or used internally.

4,447,563

ANAEROBICALLY CURABLE COMPOSITION AND PROCESS FOR PREPARATION THEREOF

Kunio Kanaoka; Takanori Okamoto, and Hideaki Matsuda, all of Kagawa, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Filed Oct. 28, 1982, Ser. No. 437,480

Claims priority, application Japan, Oct. 30, 1981, 56-172814

Int. Cl.³ C08L *75/04*

U.S. Cl. 523—176 **18 Claims**

1. An anaerobically curable composition which consists essentially of the following components (a), (b) and (c):

(a) 100 parts by weight of polymerizable mixture consisting of the following (i) and (ii):

(i) 20 to 90% by weight of a urethane polymethacrylate composed of an addition-reaction product of

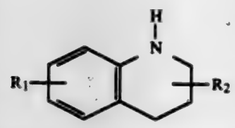
(1) a polybutadiene-based liquid rubber containing hydroxyl groups in its molecule and not less than 70% of 1,4-bonds,

(2) a polyisocyanate compound, and

(3) a hydroxyl group-containing methyacrylate in such a ratio that the resulting mixture contains OH groups and NCO groups approximately in an equivalent amount, and

(ii) 80 to 10% by weight of a polymerizable methacrylate,

(b) 0.1 to 5.0 parts by weight of the salt of o-benzoic sulfimide with an amine represented by the general formula (I):



(I)

wherein R_1 and R_2 each independently stand for hydrogen or methyl group, and

(c) 0.0001 to 0.2 part by weight of an ammonium or amine salt of a chelate-forming polycarboxylic acid containing at least one amine group and a plurality of carboxylic acid groups.

4,447,564

REACTIVE RESIN COMPOSITIONS AND MOLDED SUBSTANCES MADE THEREFROM

Rudolf Grimmer, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,904

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141955

Int. Cl.³ C08K *3/26*

U.S. Cl. 523—200 **10 Claims**

1. A filled resin composition comprising an epoxy resin hardened with an anhydride hardener and interbonded with carbonate salt filler particles having a coating of a multibasic organic or inorganic acid bonded to the filler particle surfaces.

4,447,565

METHOD AND COMPOSITION FOR MOLDING LOW DENSITY DESICCANT SYNTACTIC FOAM ARTICLES

James W. Lula, Bonner Springs, Kans., and James R. Schicker, Lee's Summit, Mo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

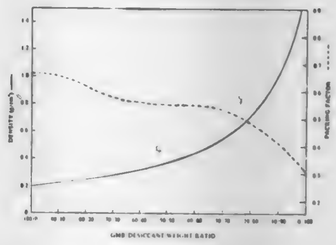
Filed Dec. 7, 1981, Ser. No. 328,327

Int. Cl.³ C08J *9/32*

U.S. Cl. 523—219 **14 Claims**

1. A process for molding to size a desiccant syntactic foam article having a density of 0.2–0.9 g/cc and a moisture capacity of 1–12% by weight, comprising the steps of:

(a) charging a mold with a powdery mixture of an activated molecular sieve desiccant, microspheres and a thermosetting resin, the amount of the desiccant being sufficient to provide the required moisture capacity, and the amounts of the microspheres and resin being such that the microspheres/desiccant volume fraction exceeds the packing factor by an amount sufficient to substantially avoid shrinkage without causing excessively high molding pressures;



(b) covering the mold and heating the covered mold to a temperature and for an amount of time sufficient to melt the resin; and

(c) tightly closing the mold and heating the closed mold to a temperature and for an amount of time sufficient to cure the resin, and removing the resultant desiccant syntactic foam article from the mold.

4,447,566

MODIFIED LIQUID PERMEABLE ASBESTOS DIAPHRAGMS WITH IMPROVED DIMENSIONAL STABILITY

Louis W. Hruska, Geneva, and Shan-Pu Tsai, Mentor, both of Ohio, assignors to Eltech Systems Corp., Boca Raton, Fla.

Filed Jan. 27, 1983, Ser. No. 461,565

Int. Cl.³ C08L *27/12*

U.S. Cl. 523—221 **6 Claims**

1. A preformulated, free-flowing particulate blend of resinous modifiers designed for direct incorporation into an aqueous slurry of abestos fibers prior to forming same into an electrolyte permeable diaphragm separator for an electrolytic cell consisting essentially of chunky particles of a perfluorocarbon polymer having an average equivalent spherical diameter of between about 0.1 and about 100 microns, about 2 to 8 parts per part by weight of said chunky particles of highly fibrous particles of the same or another perfluorocarbon polymer having an average length of about 1,000 to 20,000 microns and an average equivalent cross-sectional diameter of between about 2 and about 200 microns, and between about 0.5 and about 5% by weight, based upon the combined weight of both the chunky and fibrous particles of perfluorocarbon polymer, of an effective synthetic organic wetting agent.

4,447,567

AQUEOUS, OXIDATIVELY DRYING COATING COMPOSITION

Dirk J. F. Geerdes, Hoogerheide, and Petrus J. C. Nelen, Ossendrecht, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Dec. 27, 1982, Ser. No. 452,927

Claims priority, application Netherlands, Dec. 29, 1981, 8105879

Int. Cl.³ C08L *51/08;* C09D *3/64, 3/68*

U.S. Cl. 523—501 **10 Claims**

1. An aqueous, oxidatively drying coating composition based on a binder system obtained by polymerization of one or more monoethylenically unsaturated compounds in the presence of an aqueous solution of an ionized oxidatively drying alkyd resin, characterized in that per 100 parts by weight (calculated on solid matter) the binder system also contains

5-65 parts by weight (calculated on solid matter) of a dispersed, oxidatively drying alkyd resin having a number average molecular weight in the range of 600-6000, a viscosity not higher than 30 Pa.s, measured at 20° C., an acid number of 0-20 and a hydroxyl number of 0-130, which is substantially built up of 3-40% by weight of a hydroxyl compound having 2-8 hydroxyl groups, 2-44% by weight of a di- and/or multivalent carboxylic acid, of which 20-100 mole % is a cycloaliphatic dicarboxylic acid, and 20-90% by weight of an ethylenically unsaturated monocarboxylic acid having 6-24 carbon atoms, and wherein the three binder components of the binder system each have a solubility parameter, as defined hereinbefore, which differs by not more than 1.7 units from that of the other two binder components, the solubility parameter of the dispersed alkyd resin not being higher than 10.5.

4,447,568

FLAME-RETARDANT POLYACRYLONITRILE FIBER

Gerhard Stern, Linz, and Klaus Weinrotter, Vöcklabruck, both of Austria, assignors to Chemie Linz AG, Linz and Chemiefaser Lenzing AG, Lenzing, both of, Austria

Filed May 10, 1983, Ser. No. 493,333
Claims priority, application Austria, May 19, 1982, 1979/82
Int. Cl.³ C08K *5/34*
U.S. Cl. 524—101 **8 Claims**

1. A flame-retardant polyacrylonitrile fiber comprising a parent polymer with an acrylonitrile content of at least 85% by weight and 15 to 40% by weight based on the polymer of tris-2,3-dibromopropyl isocyanurate, said fiber being prepared by the so called "dry spinning method".

4,447,569

POLYVINYL CHLORIDE RESIN COMPOSITIONS HAVING A HIGH VOLUME RESISTIVITY AND RESISTANCE TO DETERIORATION WHEN HEATED AT TEMPERATURES ABOVE 100 DEGREES C.

Lawrence R. Brecker, Brooklyn; Charles Keeley, Wantagh, and Stuart D. Brilliant, Levittown, all of N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Oct. 8, 1982, Ser. No. 433,563
Int. Cl.³ C08K *5/05*; C08L *27/06*
U.S. Cl. 524—109 **18 Claims**

1. An electrical grade polyvinyl chloride resin composition suitable for use as electrical insulation material, having a high volume resistivity and a high resistance to deterioration when heated at temperatures above 100° C., comprising as the essential ingredients a polyvinyl chloride resin and, in the amounts indicated, in parts per one hundred of resin, from about 30 to about 100 parts carboxylic acid ester plasticizer; from about 5 to about 25 parts filler; from about 1 to about 20 parts epoxy compound, and from about 1 to about 20 parts lead alkyl phenolate.

4,447,570

BINDER COMPOSITIONS FOR MAKING NONWOVEN FABRICS HAVING GOOD HYDROPHOBIC REWET PROPERTIES

Gerald R. Cook, Wyomissing; John G. Iacoviello, Allentown; Robert K. Pinschmidt, Jr., Allentown, and George Davidowich, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 1, 1982, Ser. No. 353,445
Int. Cl.³ B32B *5/16*; D04H *1/58*
U.S. Cl. 524—127 **34 Claims**

1. A binder composition for nonwoven fabrics which comprises

(a) an anionic immobilizable surfactant which is a phosphate ester surfactant or a free carboxylic acid group containing surfactant,

(b) a latex comprising a vinyl acetate-ethylene-olefinically unsaturated carboxylic acid interpolymer colloidally suspended in water, the interpolymer containing about 0.5 to 7.0 weight percent olefinically unsaturated carboxylic acid and sufficient ethylene to provide the interpolymer with a glass transition temperature of from about −30° to +20° C., and

(c) a polyvalent metal complex compound.

4,447,571

STABILIZATION OF POLYURETHANES

Shmuel Dabi, Fair Lawn, and Peter Loewrigkeit, Wyckoff, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 138,761, Apr. 9, 1980, abandoned. This application Oct. 15, 1981, Ser. No. 311,588
Int. Cl.³ C08K *5/24*
U.S. Cl. 524—192 **4 Claims**

1. A process for the preparation of thermal oxidation color stabilized cured anionic polyurethanes, comprising preparing a water dispersed polyurethane having pendant acid groups, said polyurethane being prepared from the reaction of a polyhydroxy polyol and a polyhydroxy polyol having a pendant carboxylic acid group, with a polyisocyanate, said acid groups having been neutralized with a volatile alkyl or alkanol tertiary amine which vaporizes at a temperature below about 150° C., said water dispersed anionic polyurethane being further treated with a hydrazide being an additive selected from the group consisting of monohydrazide and a polyhydrazide in an amount sufficient to impart thermal oxidation color stability to the polyurethane during curing, there being an absence of reactive NCO terminal groups when a polyhydrazide is selected and curing the polyurethane at a temperature of from about 150° C. to about 190° C. to provide a product which has thermal oxidation color stability.

4,447,572

FIRE RETARDANT POLYAMIDE

Daniel J. Scharf, East Amherst; Charles S. Ilardo, Tonawanda; Willis T. Schwartz, Grand Island, and Gideon Salee, Williamsville, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 6, 1981, Ser. No. 318,771
Int. Cl.³ C08K *5/02, 5/06, 5/34*; C08L *77/02*
U.S. Cl. 524—371 **20 Claims**

1. A flame retarded, electrically insulated polyamide polymer composition comprising from about 30-90% by weight of a polyamide, from about 5-30% by weight of a halogenated organic flame retardant selected from the group consisting of chlorinated and brominated derivatives of monocyclic or polycyclic hydrocarbons of aliphatic or aromatic character and from about 1 to about 20% by weight of a polymer blend resin said blend resin having a lower melt viscosity than said polyamide, having acceptable thermal stability to withstand fire retardant system processing temperatures and being at least partly insoluble in said polyamide so that said blend resin cannot ordinarily be maintained as a monophasic homogeneous solution with said polyamide.

15. A method of increasing the arc tracking resistance of polyamide compositions containing from about 30 to about 90% by weight of polyamide and about 5 to about 30% by weight of a halogenated organic flame retardant selected from the group consisting of chlorinated and brominated derivatives of monocyclic or polycyclic hydrocarbons of aliphatic or aromatic character, comprising incorporating therein from about 1 to about 20% by weight, based on the total polyamide composition, of a polymer blend resin which has a lower melt viscosity than said polyamide, has acceptable thermal stability to withstand fire retardant system processing temperatures and is at least partly insoluble in said polyamide so that said blend resin cannot ordinarily be maintained as a monophasic homogeneous solution with said polyamide.

4,447,573

TEXTILE HOT-MELT ADHESIVE

Gernot Horlbeck, Haltern, and Rainer Feldmann, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,630
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138187
Int. Cl.³ C09J *3/16, 5/06*
U.S. Cl. 524—394 **12 Claims**

1. A textile hot-melt adhesive, comprising a mixture of

A. a linear, saturated, high-molecular weight copolyester reaction product of

I. 100 mole % of a dicarboxylic acid component of 75-95 mole % of terephthalic acid
5-25 mole % of isophthalic acid or phthalic acid,

II. 100 mole % of a diol component of
40-70 mole % of 1,4-butanediol
30-60 mole % of another diol of 5-12 carbon atoms which is an alkane diol or an oxa- or dioxa-alkane diol,

wherein the copolyester has a melting point of 110° to 130° C. and a crystallization half-life value, measured at 50° C., of <7 minutes;

B. 0.05-0.5% by weight of an inert inorganic nucleating agent having an average particle diameter of 0.2-3 μm; and

C. 0.01-0.2% by weight of an alkaline earth metal salt of a fatty acid of 11-18 carbon atoms and an average particle diameter of 40-60 μm; wherein all weight percentage ranges are based on the amount of component A.

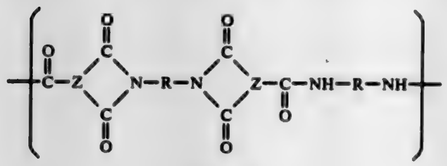
4,447,574

INJECTION MOLDABLE AMIDE-IMIDE POLYMERS CONTAINING CALCIUM MOIETIES

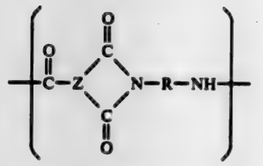
Robert G. Keske; Gary T. Brooks, both of Naperville, and Ronald E. Bockrath, Oswego, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 29, 1982, Ser. No. 393,436
Int. Cl.³ C08G *69/26*; C08K *3/22, 3/24*
U.S. Cl. 524—400 **15 Claims**

1. An injection moldable blend comprising about 0.05 to 3.0 weight percent of calcium hydroxide or calcium acetate and an amorphous polyamide-imide polymer with inherent viscosities in the range of about 0.3 to about 3.0 measured at 25° C. and 0.5% w/v in 100 percent sulfuric acid comprising units of:

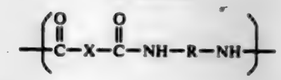


and units of:



and units of:

-continued



wherein "Z" is a trivalent benzene ring; R comprises R_1 or a mixture of R_1 and R_2, R_1 and R_2 are divalent aliphatic hydrocarbon radicals containing two to sixteen carbon atoms or are aromatic hydrocarbon radicals of from 6 to about 20 carbon atoms or two divalent hydrocarbon radicals of from 6 to 20 carbon atoms joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, —SO_2— and —S— radicals, and said R_1 and R_2 containing units run from about 10 mole percent R_1 containing units and 90 mole percent R_2 containing units to about 90 mole percent R_1 containing units to about 10 mole percent R_2 containing units and X is a divalent aromatic radical.

4,447,575

COMPOSITIONS COMPRISING A POLY(METHYL ETHENYL BENZENE) RESIN AND MINERAL OIL

Robert V. Russo, Brooklyn, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 119,681, Feb. 8, 1980, Pat. No. 4,361,506. This application Sep. 30, 1982, Ser. No. 430,157
The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.
Int. Cl.³ C08K *5/01*
U.S. Cl. 524—484 **6 Claims**

1. A composition comprising mineral oil and a poly(methyl ethenyl benzene) polymer comprised entirely of polymerized methyl ethenyl benzene prepared in the absence of preformed polymer by polymerizing a mixture of 0 to 0.1 percent by weight 1-methyl-2-ethenyl benzene, 0 to 15 percent by weight 1-methyl-3-ethenyl benzene and at least 85 percent by weight 1-methyl-4-ethenyl benzene; said mineral oil comprising up to 10 percent by weight of the composition.

4,447,576

ROOM TEMPERATURE VULCANIZABLE POLYORGANOSILOXANE COMPOSITIONS WHICH ARE PAINTABLE FOLLOWING CURING

Miyoji Fukayama, and Chikara Ichijo, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

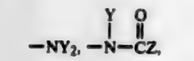
Filed Jun. 7, 1983, Ser. No. 501,954
Claims priority, application Japan, Jun. 9, 1982, 57-99044
Int. Cl.³ C08K *5/16*
U.S. Cl. 524—714 **18 Claims**

1. A room temperature vulcanizable polyorganosiloxane composition comprising

(A) 100 parts by weight of a hydroxyl-terminated polyorganosiloxane exhibiting a viscosity of from 0.02 to 1000 Pa.s at 25° C.;

(B) from 0.5 to 30 parts by weight of at least one organosilicon compound containing at least two functional groups selected from the group consisting of amido and aminoxy; and

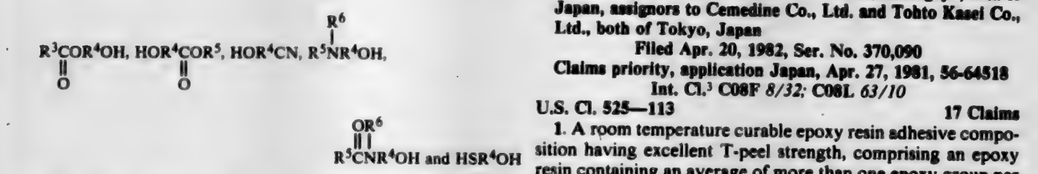
(C) from 0.01 to 15 parts by weight of an alcohol containing a substituent selected from the group consisting of acyloxy, alkoxycarbonyl, carboxy, cyano,



mercapto, and the combination of a carbon-to-carbon triple bond and at least one ether-type oxygen atom, where each Y and Z are individually selected from the group consisting of hydrogen, hydrocarbyl, and halohydrocarbyl.

4. The composition of claim 1 where said alcohol is repre-

sented by a general formula selected from the group consisting of



where R^3 represents a monovalent hydrocarbon radical or a monovalent halohydrocarbon radical where the halogen is chlorine, bromine, or fluorine, R^4 represents a bivalent hydrocarbon radical or a bivalent halohydrocarbon radical, R^5 and R^6 are individually selected from the group consisting of hydrogen atoms, monovalent hydrocarbon radicals, and monovalent halohydrocarbon radicals.

4,447,577

EMULSIONS OF DICYCLOPENTADIENE CONTAINING POLYESTERS

Charles E. Bayha, Collierville, Tenn., assignor to Alpha Corporation of Tennessee, Collierville, Tenn.

Continuation-in-part of Ser. No. 370,380, Apr. 21, 1982, abandoned. This application Sep. 20, 1982, Ser. No. 419,773

Int. Cl.³ C08L *67/00*

U.S. Cl. 524—845 **10 Claims**

1. An aqueous polyester emulsion, said emulsion comprising at least about 20% by weight of a polyester and up to about 80% by weight water,

said polyester formed from dicyclopentadiene, maleic acid and a compound containing at least two alcoholic hydroxy groups, said dicyclopentadiene being present in a molar ratio of at least about 1 compared to said maleic acid.

4,447,578

THERMOPLASTIC RESIN COMPOSITION

Takayuki Katto; Yasumasa Komatsu, and Zenya Shiiki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,325

Claims priority, application Japan, Dec. 21, 1981, 56-206645

Int. Cl.³ C08L *51/00*

U.S. Cl. 525—75 **4 Claims**

1. A thermoplastic resin composition having high heat resistance, high impact resistance and a Vicat softening point of 140° C. or higher, said composition comprising:

(A) 50 to 90% of a copolymer obtained by polymerizing a monomer mixture comprising 10 to 50% of methyl methacrylate, 5 to 25% of acrylonitrile, and 40 to 75% in total of 2-isopropenylnaphthalene and α-methylstyrene, the quantity of the 2-isopropenylnaphthalene being 5 to 70% of the total quantity of the 2-isopropenylnaphthalene and the α-methylstyrene and wherein the polymerization yield of the thus-produced copolymer is 80% or higher; and,

(B) 10 to 50% of a graft copolymer obtained by polymerizing 15 to 50 parts of a grafting monomer component comprising 10 to 100% of methyl methacrylate, 0 to 70% of styrene, and 0 to 30% of acrylonitrile in the presence of 50 to 85 parts of a butadiene rubber in latex form having a particle size of 1500–8000 Å; the total of the grafting monomer component and the butadiene rubber constituting 100 parts, all parts and percentages herein being by weight.

4,447,579

EPOXY RESIN ADHESIVE COMPOSITIONS

Yasuo Takagi, Chiba, and Michiharu Horibe, Kamagaya, both of Japan, assignors to Cemedine Co., Ltd. and Tohto Kasei Co., Ltd., both of Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,090

Claims priority, application Japan, Apr. 27, 1981, 56-64518

Int. Cl.³ C08F *8/32*; C08L *63/10*

U.S. Cl. 525—113 **17 Claims**

1. A room temperature curable epoxy resin adhesive composition having excellent T-peel strength, comprising an epoxy resin containing an average of more than one epoxy group per molecule and a polyamide-amine hardener which is obtained by the reaction of a diene rubber having terminal carboxyl groups and the reaction product of an aliphatic polyamine and one or two compounds containing carboxyl groups selected from the group consisting of tall acid and polymerized fatty acid.

4,447,580

RESIN COMPOSITION, COATING MATERIAL COMPRISING SAID RESIN COMPOSITION AND METHOD FOR FORMING COATINGS

Hideo Ai, and Naohiro Tsuruta, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

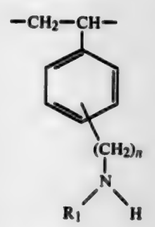
Filed Nov. 12, 1981, Ser. No. 320,801

Claims priority, application Japan, Nov. 17, 1980, 55-160842

Int. Cl.³ C08F *299/04*; C08L *27/04, 63/10*

U.S. Cl. 525—121 **22 Claims**

1. A resin composition comprising (A) a polymer comprising units of the structural formula (I):



(I)

wherein R_1 represents a group selected from the class consisting of isopropyl, sec-butyl, t-butyl, a $C_{5\text{-}20}$ alkyl group, a $C_{3\text{-}20}$ cycloalkyl group, a $C_{5\text{-}20}$ alkenyl group, a $C_{3\text{-}20}$ hydroxyalkyl group, a $C_{5\text{-}20}$ alkoxyalkyl group, a $C_{3\text{-}20}$ aminoalkyl group, a $C_{6\text{-}20}$ aryl group and a $C_{6\text{-}20}$ arylalkyl group, and n represents 0, 1 or 2, and (B) a polymer having an electron attractive group and an α, β-ethylenic double bond adjacent to said electron attractive group, said composition being stable at room temperature but being crosslinkable and curable at high temperatures by the Michael addition reaction.

4,447,581

STABILIZED SULFUR-CONTAINING RESINS, SUCH AS POLYPHENYLENE SULFIDE AND METHOD OF PRODUCING SAME

Ferdinand Quella, Gauting, and Hans-Friedrich Schmidt, Eurasburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,179

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127355; Mar. 16, 1982, 3209525

Int. Cl.³ C08L *81/00, 81/04, 81/06*

U.S. Cl. 525—189 **13 Claims**

12. A method of reducing sulfur-containing exhaust gases in sulfur-containing polymers comprising:

adding an effective amount of an additive polymer having at least one reactive radical selected from the group consisting of amino radicals, amido radicals, imido radicals, and keto radicals therein to a sulfur-containing polymer, said additive polymer being of approximately identical thermo-stability as the sulfur-containing polymer and said effective amount being in a range of about 0.1% to about 5% by weight, based on the weight of said sulfur-containing polymer.

4,447,582

METHOD OF PROCESSING LOW MOLECULAR WEIGHT EPM AND EPDM POLYMERS

Harold J. Gros, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed Apr. 8, 1983, Ser. No. 482,960

Int. Cl.³ C08L *51/06, 23/26, 23/28*

U.S. Cl. 525—279 **26 Claims**

1. A method of processing to improve the handling of an EPM or EPDM polymer of low molecular weight comprising the step of reacting the low molecular weight polymer with a monomer capable of providing quaternary salt forming groups on the polymer, and reacting the resulting polymer with a difunctional cross linking agent whereupon the cross linked polymer acquires the characteristics of a high molecular weight polymer which can be more easily handled and wherein the cross linked polymer can be broken down by exposure to elevated temperature to re-acquire the characteristics of the lower molecular weight polymer component.

4,447,583

OXIDIZED POLYACETYLENE AND A PROCESS FOR THE PREPARATION THEREOF

Jürgen Hocker, Bergisch Gladbach; Rolf Dhein, Krefeld, and Rudolf Merten, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 387,179

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1981, 3123802

Int. Cl.³ C08F *8/42*

U.S. Cl. 525—328.1 **5 Claims**

1. A process for increasing the electrical conductivity of polyacetylene, said process comprising partially oxidizing polyacetylene with a compound of trivalent iron or trivalent cobalt.

4,447,584

PROCESS FOR THE SYNTHESIS OF TERTIARY PHOSPHINE OXIDES AND SULPHIDES, AND NEW TERTIARY PHOSPHINE OXIDES AND SULPHIDES

Wilfrid Bergeret, Corbeil Essonnes; Jean-Claude Gautier, Ablon sur Seine; Serge Raynal, Draveil, and Sylvie Boileau, Paris, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jan. 18, 1982, Ser. No. 339,864

Claims priority, application France, Jan. 19, 1981, 81 00856

Int. Cl.³ C08F *8/40*

U.S. Cl. 525—340 **10 Claims**

1. Process for the synthesis of a tertiary phosphine oxide or sulfide of formula $R_1R_2R_3PZ$, in which Z=S or O,

R_1 and R_2 are identical or different and are a linear or branched C_1 to C_{18} alkyl, C_7 to C_{10} arylalkyl, phenyl, C_7 to C_{12} aryl, C_7 to C_{10} alkaryl, or R_1 and R_2, taken together, form a C_4 to C_9 polymethylene chain or a C_4 to C_9 hydrocarbon chain containing at least one ethylenic unsaturation;

R_3 is an organic halogen or polyhalogen compound containing at least one halogen atom in the form of a halogenoaryl group or halogenomethyl group;

which consists of:

(a) reacting a dihydrocarbylphosphine oxide or sulfide R_1R_2PZH, in which R_1, R_2 and Z are as defined hereinabove with 1.1–6 molar equivalents of an alkali metal amide of formula MNH_2 in which M is an alkali metal whereby an alkali metal dihydrocarbylphosphinite or thiophosphinite of formula R_1R_2PZM in which R_1R_2Z and M are as defined hereinabove is obtained, and then (b) reacting said compound of formula R_1R_2PZM from step (a) with an organic halide of formula R_3X in which R_3 is as defined hereinabove and X is Cl, Br or I and isolating said tertiary phosphine oxide or sulfide from the reaction mixture.

4,447,585

POLYMER BOUND ARYL SUBSTITUTED CROWN ETHERS

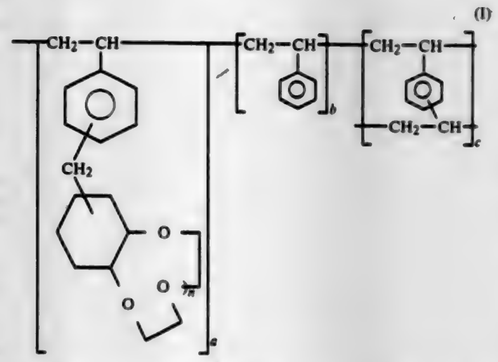
Dane K. Parker, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 354,563, Mar. 4, 1982. This application Oct. 24, 1983, Ser. No. 544,340

Int. Cl.³ G08F *8/00*

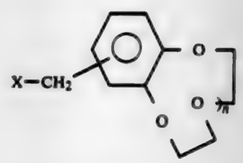
U.S. Cl. 525—359.2 **2 Claims**

1. A process to prepare a composition of of matter of the structural formula (I):



(I)

wherein n is 3 or 4 and the ratio of a to b to c may vary from 1:98:1 to 50:49:1 to 1:49:50, which comprises the following steps in an anhydrous environment of: (1) dissolving a compound of sturctural formula (II)



(II)

wherein n is 3 or 4 and X is a chlorine, bromine or iodine radical; in an inert solvent selected from the group consisting of $CHCl_3$, CH_2Cl_2, CCl_4, 1,2-dichloroethane, tetrachloroethane, CS_2, nitrobenzene, alkanes of 5 to 15 carbon atoms, benzene, and alkylated benzenes; (2) adding this solution to a crosslinked polystyrene resin wherein said resin has at least one percent crosslinking and a particle size of no more than 20 mesh; (3) removing the inert solvent under reduced pressure; (4) adding thereto a catalyst selected from the group consisting of aluminum chloride, zinc chloride, boron trifluoride, stannic chloride and titanium tetrachloride, wherein the catalyst is dispersed in a reaction solvent selected from the group consisting of 1,2-dichloroethane, nitrobenzene, methylene chloride or the catalyst is added to the polystyrene resin which is dispersed within a said reaction solvent; (5) heating the reaction mixture to 50°–120° C. for 2 to 72 hours; and (6) isolating the resulting polymer bound aryl substituted crown ether.

4,447,586

METAL FLUOBORATE CATALYZED HINDERED AROMATIC AMINE CURING AGENTS FOR POLYEPOXIDE RESINS

David A. Shimp, Prospect, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,981
Int. Cl.³ C08G 59/50, 59/68
U.S. Cl. 525—504 17 Claims

1. A curing agent for polyepoxide resins comprising a solution of:

(a) a sterically hindered aromatic diamine containing two primary amine groups attached directly to carbon atoms in the aromatic nucleus wherein the carbon atoms are not adjacent to each other and wherein each position ortho to each amine group contains an alkyl substituent having one to three carbon atoms; and

(b) copper fluoborate ps wherein the copper fluoborate is present in the solution in the amount of about 0.2 to about 5 weight percent based on the weight of (a) and (b).

9. A curable composition comprising:

(a) a sterically hindered aromatic diamine containing two primary amine groups attached directly to carbon atoms in the aromatic nucleus wherein the carbon atoms are not adjacent to each other and wherein each position ortho to each amine group contains an alkyl substituent having one to three carbon atoms;

(b) copper fluoborate; and

(c) a polyepoxide resin having more than one terminal 1,2-epoxy groups per molecule,

wherein the copper fluoborate is present in the amount of about 0.2 to about 5 weight percent based on the weight of (a) and (b) and wherein the hindered aromatic diamine and the polyepoxide resin are present in the equivalent ratios of about 0.5 to about 1.5 amine hydrogen atoms per 1 epoxy group.

4,447,587

PROCESS FOR THE PREPARATION OF A POLYOLEFIN, AND A CATALYST FOR THIS PROCESS

Joachim Berthold, Eppstein; Bernd Diedrich, Eschborn; Rainer Franke, Niedernhausen; Jürgen Hartlapp, Hattersheim am Main; Werner Schäfer, and Wolfgang Strobel, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,023
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1981, 3124223
Int. Cl.³ C08F 4/02, 10/02
U.S. Cl. 526—124 3 Claims

1. A process for the polymerization of ethylene or an olefin mixture comprising at least 70% by weight of ethylene and not more than 30% by weight of a 1-olefin of the formula $R_4CH{=}CH_2$ in which R^4 denotes an alkyl radical having 1 to 10 carbon atoms, in the presence of a catalyst comprised of the product from the reaction of a magnesium alcoholate of the formula $Mg(OR)_2$, in which R denotes identical or different alkyl radicals having 1 to 6 carbon atoms, with 1 to 5 moles titanium tetrachloride for each mole of magnesium alcoholate (component A) and an organometallic compound of Groups I to III of the periodic system (component B), which comprises carrying out the polymerization in the presence of a catalyst in which the component A has been prepared by a procedure in which, in a first reaction stage, a magnesium alcoholate has been reacted with titanium tetrachloride in a hydrocarbon at a temperature of 50° to 100° C., the reaction mixture formed is subjected, in a second reaction stage, to a heat treatment for a period of about 10 to 100 hours at a temperature of 110° to 200° C., with evolution of alkyl chloride until no further alkyl chloride is split off, and the solid is then freed from soluble reaction products by washing several times with a hydrocarbon.

4,447,588

ANAEROBICALLY-CURING COMPOSITIONS

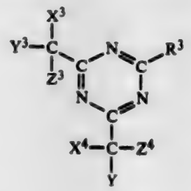
Anthony J. Rametta, White Bear Lake, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 203,682, Nov. 3, 1980, abandoned. This application Aug. 3, 1981, Ser. No. 289,703
Int. Cl.³ C08F 20/20
U.S. Cl. 526—301 14 Claims

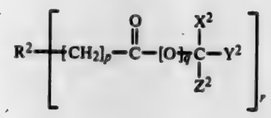
1. An anaerobically-curing composition, comprising

(A) a polymerizable monomer having at least one α,β-saturated carboxyl functionality per molecule of monomer;

(B) an effective amount of halogen-containing compound as a first initiator component and selected from the group consisting of halogenated triazines of the formula



wherein: X^3 and X^4 are each selected independently from the group consisting of H, CH_3, Cl, and Br; Y^3, Y^4, Z^3 and Z^4 are each independently selected from the group consisting of Cl and Br; and R^3 is selected from the group consisting of H and organic radicals comprising 1 to about 10 carbons; and compounds of the formula



wherein:

X^2 is selected from the group consisting of H, Cl, Br and CN;

Y^2 and Z^2 are each selected independently from the group consisting of Cl and Br;

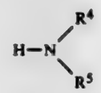
R^2 is selected from the group consisting of amino residues and organic radicals comprising 1 to about 10 carbons;

p is 0 or 1;

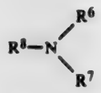
q is 0 or 1; and

r is 1 or 2;

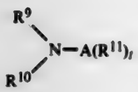
(C) an effective amount of second initiator component selected from organic sulfimides, perfluoroalkyl sulfonanilides, secondary amines of the formula



wherein: R^4 and R^5 are each hydrocarbon groups comprising 1 to about 12 carbons; tertiary amines of the formula



wherein: R^6, R^7 and R^8 are in each hydrocarbon groups comprising 1 to about 12 carbons; and tertiary amines of the formula



wherein:

R^9 and R^{10} are each hydrocarbon groups comprising up to about 12 carbons;

A is a carbocyclic aromatic nucleus selected from the group consisting of phenyl and naphthyl radicals;

R^{11} is an organic radical group comprising up to about 5 carbons and is selected from the group consisting of alkyl and alkoxy radicals; and t is from 0 to 3 inclusive;

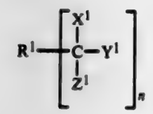
(D) a sufficient amount of an inhibitor of free-radical polymerization to retard polymerization of said adhesive composition while in the presence of air;

said composition being capable of polymerizing when placed in an anaerobically-curable environment.

11. An anaerobically-curing composition comprising:

(A) a polymerizable monomer having at least one α,β-saturated carboxyl functionality per molecule of monomer;

(B) an effective amount of halogen-containing compound as a first initiator component and selected from compounds of the formula



wherein:

x^1 is selected from the group consisting of H, CH_3, Cl and Br;

Y^1 and Z^1 are each selected independently from the group consisting of Cl and Br;

R^1 is selected from the group consisting of aromatic and heteroaromatic residues; and n is an integer from 1 to 3 inclusive;

(C) an effective amount of a second initiator component selected from compounds of the group consisting of organic sulfimides and perfluoroalkyl sulfonanilides;

(D) a sufficient amount of an inhibitor of free-radical polymerization to retard polymerization of said composition while in the presence of air;

said composition being capable of polymerizing when placed in an anaerobically-curable environment.

4,447,589

METHOD FOR PREPARING POLYAMIDE-IMIDE RESIN

Hiroshi Nishizawa, Kitaibaraki; Yoshiyuki Mukoyama, and Shozo Kasai, both of Hitachi, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,198
Claims priority, application Japan, May 28, 1982, 57-91768
Int. Cl.³ C08G 18/80
U.S. Cl. 528—45 18 Claims

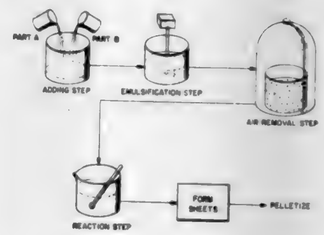
1. A process for producing a polyamide-imide resin which comprises reacting an aromatic diisocyanate with a tricarboxylic acid anhydride in approximately equimolar amounts in the presence of a basic solvent which is inert to the aromatic diisocyanate while adjusting the resin content at 40% by weight or more and adding a lactam containing an active hydrogen on the amide nitrogen in an amount of 0.1 to 1.0 mole per mole of the aromatic diisocyanate to the resulting reaction system before, during or after the reaction to mask terminal isocyanate groups and to make the reduced viscosity of the resin 0.10 to 0.27.

4,447,590

EXTRUDABLE POLYURETHANE FOR PROSTHETIC DEVICES PREPARED FROM A DIISOCYANATE, A POLYTETRAMETHYLENE ETHER POLYOL AND 1,4 BUTANE DIOL

Michael Szycher, Lynnfield, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Continuation of Ser. No. 316,922, Oct. 30, 1981, abandoned. This application Apr. 4, 1983, Ser. No. 479,922
Int. Cl.³ C08G 18/32
U.S. Cl. 528—76 1 Claim



1. A polyurethane polymer to be used in molding devices for use in the human body and requiring a high degree of blood compatibility, said polymer being a polyurethane elastomer and the reaction product of:

(a) dicyclohexyl methane diisocyanate;

(b) a polytetramethylene ether polyol having a molecular weight in the range of 1000–2000; and

(c) 1,4 butane diol, wherein for each diol there are two dicyclohexyl methane diisocyanates and one glycol; and

the average molecular weight of the polymer is 120,000 units, and a weight average molecular weight of 315,000 molecular weight units.

4,447,591

POLYURETHANE

Shoji Watanabe, and Takuya Miho, both of Ohtake, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Feb. 23, 1982, Ser. No. 351,578
Claims priority, application Japan, May 8, 1981, 56-69077
Int. Cl.³ C08G 18/42, 63/10
U.S. Cl. 528—80 3 Claims

1. A process for the preparation of polyurethanes which comprises reacting an organic diisocyanate with a polycaprolactone polyol having a narrow molecular weight distribution in which the ratio of the weight average molecular weight to the number average molecular weight is in the range of from 1.1 to 2.0 and the average molecular weight is 500 to 5,000, said polycaprolactone polyol having been prepared by subjecting a lactone to ring-opening polymerization in the presence of 0.1 to 50 ppm of stannous halide selected from the group consisting of stannous chloride, stannous bromide and stannous iodide, as a catalyst, and at a temperature of from 100° to 230° C.

4,447,592

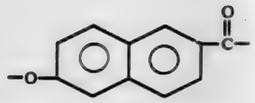
ANISOTROPIC MELT POLYESTERS OF 6-HYDROXY-2-NAPHTHOIC ACID

John F. Harris, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

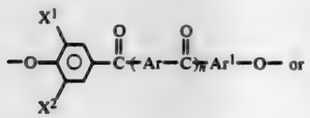
Filed Jun. 13, 1983, Ser. No. 503,651
Int. Cl.³ C08G 63/60
U.S. Cl. 528—128 13 Claims

1. Melt-processible polyester which is optically anisotropic in the melt phase and which consists essentially of the following molar amounts of the recurring units, with the sum of the molar amounts being 100%:

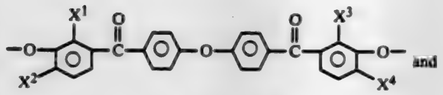
(a) about 20 to about 85%, of



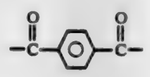
(b) about 15 to about 80% of approximately equimolar amounts of



(i)

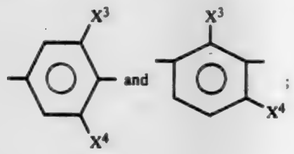


and



(ii)

wherein
each of X^1, X^2, X^3, and X^4 is independently selected from H, Cl, and CH_3;
Ar is selected from 1,4-phenylene, 1,3-phenylene, 4,4'-oxybiphenylene, 4,4'-biphenylene, and 2,6-naphthylene;
Ar^1 is selected from



and
n is 0 or 1.

4,447,593

MELT-ANISOTROPIC WHOLLY AROMATIC POLYESTER AND FIBERS OR FILMS THEREOF

Wataru Funakoshi, and Takanori Urasaki, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 17, 1982, Ser. No. 408,847
Claims priority, application Japan, Aug. 18, 1981, 56-128234; Sep. 11, 1981, 56-142406
Int. Cl.³ C08G 63/18, 63/60
U.S. Cl. 528—176 17 Claims

1. A fiber-or film-forming wholly aromatic polyester having melt anisotropy, said polyester consisting essentially of
(1) units (a) of a divalent aromatic dicarboxylic acid residue, at least 90 mole% of said acid consisting of a p-oriented aromatic dicarboxylic acid and units (b) of a divalent aromatic dihydroxy compound residue, at least about 90 mole% of said compound consisting of a mono-substituted hydroquinone ring-substituted by an alkyl group having at least 5 carbon atoms or an aralkyl group having at least 7 carbon atoms or a mixture of said mono-substituted hydroquinone and unsubstituted hydroquinone or a substituted hydroquinone other than said mono-substituted hydroquinone, the proportion of said mono-substituted hydroquinone being at least 80 mole%; or
(2) said units (a) and (b), and units (c) of a divalent p-oriented aromatic hydroxycarboxylic acid residue, at least about 70 mole% of said hydroxycarboxylic acid consisting of p-hydroxybenzoic acid, a mono-substituted p-hydroxybenzoic acid ring substituted by an alkyl group having 1 to 4 carbon atoms or a halogen atom, or mixtures thereof, the proportion of the units of the divalent p-oriented aromatic dicarboxylic acid residue and the units of the divalent mono-substituted hydroquinone residue each being at least about 9 mole% based on the entire structural units of the polyester.

4,447,594

HEAT-CURABLE COMPOSITIONS COMPRISING ISOCYANURIC ACID-ACROLEIN DERIVATIVES

Saul M. Cohen, Springfield, and John R. LeBlanc, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 21, 1981, Ser. No. 332,900
Int. Cl.³ C08G 2/00
U.S. Cl. 528—245 6 Claims

1. A heat-curable coating composition comprising (1) about 50 to about 90 parts by weight of a polyunsaturated ester of an ethylenically unsaturated acid and a polyhydric alcohol, (2) about 10 to about 50 parts by weight of a polyaldehyde adduct formed from 1 mole of isocyanuric acid and from about 2 to about 3 moles of acrolein or a hemiacetal of the polyaldehyde adduct and a monohydric alcohol and (3) an effective amount of a free-radical or ionic initiator.

4,447,595

POLYTEREPHTHALATES AND COPOLYMERS THEREOF HAVING HIGH CLARITY AND PROCESS FOR MAKING SAME

Richard R. Smith, Cuyahoga Falls, and Mellis M. Kelley, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 7, 1982, Ser. No. 415,305
Int. Cl.³ C08G 63/04, 63/22, 63/16
U.S. Cl. 528—274 22 Claims

1. A process for making a polyester having high clarity, comprising:
providing a quantity of one or more dicarboxylic compounds selected from the group consisting of a dicarboxylic acid or alkyl ester thereof having from 4 to 40 carbon atoms, and combinations thereof;
providing a quantity of one or more glycols selected from the group consisting of ethylene glycol, glycols having from 3 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof;
providing a protonic acid catalyst; and
reacting said dicarboxylic compound and said glycol in the presence of said protonic acid catalyst to form the polyesters;
wherein at least 50 mole percent of said dicarboxylic quantity is selected from the group consisting of terephthalic acid and alkyl esters thereof having from 10 to 20 carbon atoms;
wherein at least 50 mole percent of said glycol quantity is ethylene glycol; and
wherein said polyester has high clarity.

13. A polyester having high clarity, comprising the reaction product of;
a quantity of one or more dicarboxylic compounds selected from the group consisting of a dicarboxylic acid or alkyl ester thereof having from 4 to 40 carbon atoms, and combinations thereof;
a quantity of one or more glycols selected from the group consisting of ethylene glycol, glycols having from 3 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof; and
a protonic acid catalyst;
wherein at least 50 mole percent of said dicarboxylic quantity is selected from the group consisting of terephthalic acid and alkyl esters thereof having from 10 to 20 carbon atoms;
wherein at least 50 mole percent of said glycol quantity is ethylene glycol; and
wherein said polyester has high clarity.

4,447,596

METHOD OF PREPARING POLYAMIDE ACID FOR PROCESSING OF SEMICONDUCTORS

Daisuke Makino, Hitachi, and Yasuo Miyadera, Shimodate, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 54,429, Jul. 3, 1979, abandoned. This application Sep. 30, 1981, Ser. No. 307,199
Claims priority, application Japan, Jul. 11, 1978, 53-84295
Int. Cl.³ C08G 73/10
U.S. Cl. 528—353 4 Claims

1. A method of preparing polyamide acid useful for processing of semi-conductors from (i) at least one diamine and (ii) a tetracarboxylic acid dianhydride in an inert solvent, which comprises the steps of
(1) reacting (i) at least one diamine and (ii) a tetracarboxylic acid dianhydride, at a temperature below 40° C. to form a polyamide acid having a reduced viscosity above 0.5 dl/g at 30° C., and
(2) heating said polyamide acid in an inert solvent at a temperature between 50° C. and 100° C. and a trace of amount of water to lower the viscosity of said polyamide acid whereby the reducing viscosity of said polyamide acid is more than 0.3 dl/g at 30° C. and the solution viscosity of said polyamide acid in the inert solvent is 500 to 3,000 centipoises at 25° C.,
the reduced viscosity being measured by forming a 0.1 dl/g solution of said polyamide acid in dimethylsulfoxide and measuring the viscosity of the solution with a Ubbelohde's viscometer in accordance with Japanese Industrial Standard K 5400, and the solution viscosity being measured by measuring the viscosity of the solution of said polyamide acid in dimethylsulfoxide with a Brookfield type viscometer in accordance with Japanese Industrial Standard K 6901.

4,447,597

METHOD FOR ADJUSTING ARYLENE SULFIDE POLYMER CURE RATES

Ronald D. Mathis, and Jerry A. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 24, 1982, Ser. No. 422,787
Int. Cl.³ C08G 75/14
U.S. Cl. 528—388 9 Claims

1. A method for adjusting the cure rate of a first mixture of arylene sulfide polymer particles comprising:
(a) classifying particles from an uncured arylene sulfide polymer mixture by size groups:
(b) segregating size groups of classified particles to separate particles of relatively small size having a relatively slower rate of cure from particles of relatively larger size having a relatively faster rate of cure; and
(c) removing at least one size group of classified particles wherein the at least one size group removed comprises relatively large particles thereby rendering the cure rate of the remainder of the first mixture relatively slower than before removal of the classified particles.

4,447,598

METHOD OF PREPARING EPOXY RESINS HAVING LOW HYDROLYZABLE CHLORIDE CONTENTS

Terrence L. Caskey, Concord; Theodore L. Parker, Lafayette, and Patrick H. Martin, Danville, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 7, 1983, Ser. No. 482,760
Int. Cl.³ C08G 59/14
U.S. Cl. 528—489 11 Claims

1. The method of reducing the hydrolyzable chloride content of an epoxidation product, without substantially altering it otherwise, which comprises
(1) providing a two-phase mixture of
(a) an organic phase which is a solution of said product in a solvent having the characteristics of a blend of from about 40 to about 55 weight % methylethylketone and from about 60 to about 45 weight % toluene, and
(b) an aqueous solution of from about 1 to about 3 equivalents of base per equivalent of hydrolyzable chloride in said product, the amount of water in said solution being such that the base concentration therein will not be less than equivalent to 4 weight % aqueous NaOH after completion of the following step and
(2) intimately intercontacting said phases, at an elevated temperature, until the hydrolyzable chloride content of said product has decreased to a satisfactory extent.

4,447,599

THERMOTROPIC LIQUID CRYSTAL SHAPED ARTICLE

Frederic N. Cogswell, Welwyn, and Jiri G. Tomka, Harrogate, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 40,452, May 18, 1979, Pat. No. 4,352,927. This application Apr. 2, 1982, Ser. No. 365,090
Claims priority, application United Kingdom, May 26, 1978, 22953/78; May 26, 1978, 22954/78
Int. Cl.³ C08J 7/00
U.S. Cl. 528—502 8 Claims

1. A thermotropic liquid crystalline shaped article fabricated from a rigid polymer, said rigid polymer being in the form of a thermotropic melt, according to the method comprising improving the processability of the rigid polymer by subjecting a melt of the rigid polymer to shear between relatively moving surfaces at an apparent shear rate of at least 100 sec^{-1}, whereby the viscosity of the melt is reduced and remains reduced after the shear between the relatively moving surfaces ceases to be applied, and fabricating the shaped article from the melt while the viscosity is so reduced.

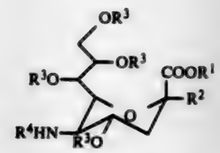
4,447,600

N-ACETYLNEURAMINIC ACID DERIVATIVES AND THE PREPARATION THEREOF

Haruo Ogura, Matsudo; Kimio Furuhata, Tokyo; Toshiaki Osawa, Akatsukashin; Satoshi Toyoshima, Tokyo; Yoshiyasu Shitori, Musashino, and Masayoshi Ito, Kunitachi, all of Japan, assignors to Kanto Ishi Pharmaceutical Co., Ltd., Japan

Filed May 20, 1982, Ser. No. 380,401
Claims priority, application Japan, May 22, 1981, 56-77672
Int. Cl.³ C07H 17/00
U.S. Cl. 536—23 5 Claims

1. N-acetylneuraminic acid derivatives of the general formula (I):



(I)

wherein R^1 represents hydrogen, lower alkyl or a lower alkyl substituted or non-substituted aralkyl or aryl group, R^2 is a nucleoside residue and R^3 and R^4 independently represent hydrogen or acetyl.

4,447,601

PROCESSED STARCH, PROCESS FOR PREPARING SAME AND USE OF SAME IN MEDICINES

Kimihiko Takeo; Tooichiro Hirano, and Fumihiko Sato, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 272,253, Jun. 10, 1981, Pat. No. 4,383,111. This application Sep. 27, 1982, Ser. No. 424,184
Claims priority, application Japan, Jun. 12, 1980, 55-79266
Int. Cl.³ C08L *3/02*; C08B *31/00*
U.S. Cl. 536—102 **10 Claims**

1. A processed starch derived from a terrestrial starch and consisting essentially of substantially non-birefringent starch powder which substantially retains a shell film structure of green starch granule, said starch powder having a particle size distribution substantially free of a fraction having a size of 48 Tyler standard sieve mesh or having a larger size and said starch powder having a bulk density of at least 0.25 g/cc, a cold water-soluble component content of less than 5% by weight, a swelling volume of about 3 to about 15 ml/g and a water retention of at least about 2.

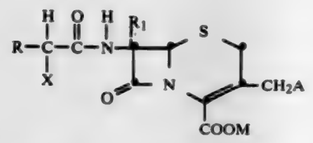
4,447,602

PROCESS TO PREPARE 7-SUBSTITUTED CEPHALOSPORINS OR 6-SUBSTITUTED PENICILLINS

Raymond A. Firestone, Fanwood; Lovji D. Cama, Edison, and Burton G. Christensen, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 647,252, Jan. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 340,803, Mar. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 203,056, Nov. 29, 1971, abandoned. This application Jun. 3, 1977, Ser. No. 803,332
Int. Cl.³ C07D *501/04*, *499/04*
U.S. Cl. 544—21 **20 Claims**

11. The process of preparing the compound having the formula:



wherein

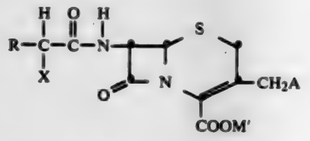
R is phenyl, thienyl or furyl;

X is hydrogen or amino;

M is sodium, potassium, benzyl, benzhydryl, trimethylsilyl, trichloroethyl, methoxymethyl, hydrogen, benzoylmethyl, or methoxybenzyl;

R_1 is hydroxy, mercapto, formyloxy, loweralkanoyloxy, loweralkoxy, loweralkylthio, azido, fluoro, chloro, bromo, or cyano; and

wherein A is hydrogen, loweralkanoyloxy, carbamoyloxy, thiocarbamoyloxy, N-loweralkylcarbamoyooxy, N-loweralkylthiocarbamoyloxy, N,N-diloweralkylcarbamoyloxy, N,N-diloweralkylthiocarbamoyloxy, pyridinium, alkylpyridinium, halopyridinium, or aminopyridinium; which comprises reacting the compound having the formula:



wherein R, X and A are as defined above, and M′ is benzyl, benzhydryl, trimethylsilyl, trichloroethyl, methoxymethyl, benzoylmethyl, or methoxybenzyl;

(a) with approximately an equivalent of an organolithium compound chosen from the group consisting of phenyl lithium, tolyl lithium, alkyl lithium having 1-6 carbon atoms in the alkyl chain, or lithium alkylamide or lithium dialkylamide, alkyl having 1-6 carbon atoms in the alkyl chain at a temperature below about −20° C.

(b) then adding from about 1-3 equivalents of an active halogen transfer agent chosen from the group consisting of N-chloroacetamide, N-bromoacetamide, N-chlorosuccinimide, N-bromosuccinimide, t-butylhypochlorite, N-chlorosulfonamide, or α-chloromalonic ester;

(c) then either at said temperature below −20° C. or optionally after allowing the temperature to rise up to about 0° C.;

(d) adding about an equivalent of a hindered base lithium t-butoxide, diazobiscyclononane, diazobiscycloundecane, di-t-butyl-potassium phenoxide, 1,8-bis(dimethylamino)napthalene or N-lithiosuccinimide;

(e) adding about an equivalent amount of the reagent R_1Q, wherein R_1 is as defined above and Q is either hydrogen, triloweralkylammonium, or pyridinium, to yield the respective R_1 substituent, and recovering the desired product.

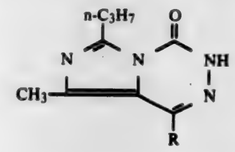
4,447,603

SUBSTITUTED-6-N-PROPYL-8-METHYLIMIDAZO[1,5-D]-AS-TRIAZIN-4-(3H)-ONES

Rolf Paul, River Vale, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 4, 1981, Ser. No. 231,196
Int. Cl.³ A61K *31/53*; C07D *487/04*
U.S. Cl. 544—184 **7 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R is methyl, ethyl or n-propyl; and the pharmaceutically acceptable acid-addition salts thereof.

4,447,604

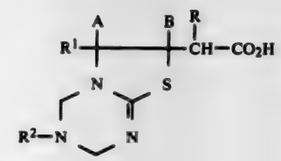
THIAZOLOTRIAZINE DERIVATIVES

John L. Archibald, Farnham Royal, and John T. A. Boyle, Cookham, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Filed Apr. 1, 1982, Ser. No. 364,561
Claims priority, application United Kingdom, Apr. 10, 1981, 8111371
Int. Cl.³ C07D *513/04*
U.S. Cl. 544—219 **13 Claims**

1. A compound selected from

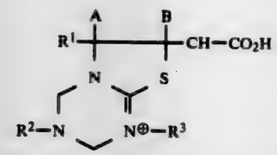
(a) thiazolotriazine derivatives having the formula I



(I)

and their pharmaceutically acceptable salts and

(b) thiazolotriazinium compounds comprising a cation having the formula II



(II)

and a pharmaceutically acceptable anion and their zwitterionic forms and pharmaceutically acceptable acid addition salts; wherein

A is hydroxy whilst B is hydrogen or A and B together represent a direct bond;

R^1 represents aryl; R^2 is selected from lower alkyl and lower alkyl monosubstituted by aryl; R^3 (where present) is selected from lower alkyl and lower alkyl monosubstituted by aryl; and each aforesaid aryl is independently selected from unsubstituted phenyl and phenyl substituted by up to two substituents selected from halogen, trifluoromethyl, lower alkoxy, lower alkyl, nitro, amino, mono- and di-(lower alkyl) amino, cyano, lower alkylsulfonyl, lower alkylsulfinyl, sulfamoyl and carbamoyl.

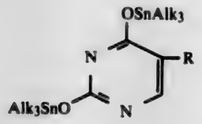
4,447,605

DI(TRI-LOWER ALKYLSTANNYL)PYRIMIDINE DERIVATIVE AND A PROCESS FOR PRODUCING THE SAME

Masanao Matsui, Tokyo, and Tomoya Ogawa, Musashino, both of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Division of Ser. No. 735,777, Oct. 28, 1976, Pat. No. 4,324,895. This application Jul. 28, 1981, Ser. No. 287,642
Claims priority, application Japan, Oct. 24, 1975, 50-128020; Oct. 24, 1975, 50-128022; Dec. 4, 1975, 50-144637; Jan. 5, 1976, 51-180; Mar. 15, 1976, 51-27836; Mar. 15, 1976, 51-27837; May 11, 1976, 51-53463
Int. Cl.³ C07D *239/52*
U.S. Cl. 544—225 **2 Claims**

1. A di(tri-lower alkylstannyl)pyrimidine derivative having the general formula:



wherein Alk stands for a lower alkyl radical and R for a hydrogen or fluorine or bromine atom or a lower alkyl radical.

4,447,606

HYDROXY AND HYDROPEROXY TETRAHYDROPYRIMIDINES

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Apr. 9, 1979, Ser. No. 28,149
Int. Cl.³ C07D *239/72*
U.S. Cl. 544—231 **5 Claims**

1. 5-hydroperoxy, 5-hydroxy or mixtures thereof derivatives of 2,2,4,4-dipentamethylene 5,6-tetramethylene 2,3,4,5-tetrahydropyrimidines.

3. A process of preparing the 5-hydroxy tetrahydropyrimidines of claim 1 which comprises reacting 2,2,4,4-dipentamethylene 5,6-tetramethylene 2,3,4,5-tetrahydropyrimidines with oxygen in the presence of trialkyl (or triaryl) phosphites.

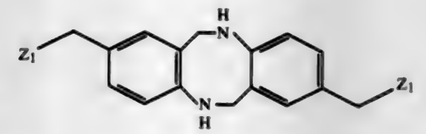
4,447,607

DIBENZO DIAZACINES

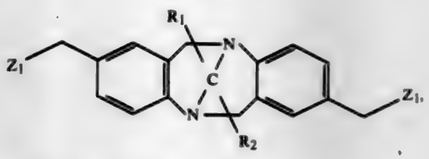
Roy A. Johnson, Brookline, Mass., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 5, 1982, Ser. No. 439,481
Int. Cl.³ C07D *239/70*
U.S. Cl. 544—246 **7 Claims**

1. A compound of the formula I or II



I



II

or a pharmaceutically acceptable acid addition salt thereof, wherein Z_1 is

(a) 3- or 4-pyridyl, or

(b) 1-imidazolyl;

wherein R_1 and R_2 are the same or different and are

(a) hydrogen,

(b) (C_1–C_4)alkyl,

(c) phenyl,

(d) phenyl mono-, di-, or tri-substituted by

(i) (C_1–C_4)alkyl,

(ii) a halogen atom,

(iii) hydroxyl,

(iv) amino

(v) an amine of the formula, $—NR_3R_4$, wherein R_3 and R_4 are the same or different and are hydrogen or (C_1–C_4)alkyl,

(vi) cyano,

(vii) hydroxy-carbonyl

(viii) (C_1–C_4)alkoxy carbonyl,

(ix) nitro, or

(x) (C_1–C_4)alkoxy,

(e) (C_7–C_{12})aralkyl, or

(f) 3-pyridyl or 1-imidazolyl.

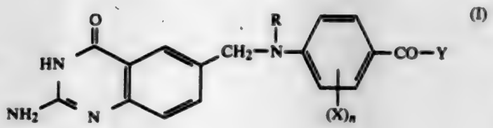
4,447,608

ANTI-CANCER QUINAZOLINE DERIVATIVES

Terence R. Jones, Sutton; Kenneth R. Harrap, Newdigate, and Alan H. Calvert, London, all of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 214,024, Dec. 8, 1980, abandoned. This application Oct. 19, 1982, Ser. No. 435,215
Claims priority, application United Kingdom, Dec. 19, 1979, 7943715; Feb. 28, 1980, 8006813
Int. Cl.³ C07D *239/84*; A61K *31/505*
U.S. Cl. 544—287 **7 Claims**

1. A compound of formula:

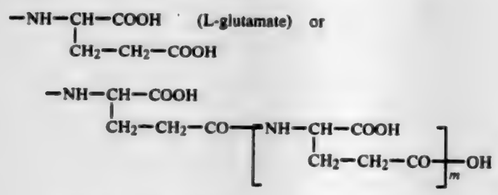


(I)

wherein

R represents a straight or branched chain unsaturated C_2–C_4 hydrocarbon group,

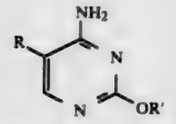
n is 0, 1 or 2;
X, which is linked in a position ortho to the —CO—Y group, represents a halogeno or C_1-C_4 alkyl group, and where two X's are present these may be the same or different; and Y represents a group of formula:



wherein m is an integer of 1-9 (poly-L-glutamates); or a pharmaceutically acceptable salt or ester thereof.

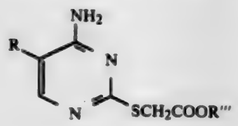
4,447,609
METHOD OF PREPARING 2-ALKOXY-4-AMINOPYRIMIDINES
Hermann Peeters, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany
Filed Mar. 17, 1982, Ser. No. 358,973
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111613
Int. Cl.³ C07D *239/24*
U.S. Cl. 544—317 **16 Claims**

1. Process for preparing 2-alkoxy-4-aminopyrimidine compounds of the formula:



1

wherein
R is hydrogen, alkyl of from 1 to about 20 carbon atoms, or a straight or branched moiety selected from the group consisting of
$(CH_2)_nCN$
$(CH_2)_n$—COOR″,
$(CH_2)_n$—NH_2,
$(CH_2)_nOR''$, and
benzyl;
R″ is an alkyl moiety of from 1 to about 12 carbon atoms or a univalent phenol moiety;
n is an integer from 1 to 5 and
R′ is straight chain or branched alkyl of from 1 to about 10 carbon atoms; by reacting a 4-amino-2-carboxymethyl-thiopyrimidine of the formula:



2

wherein R is defined as above, and R‴ is hydrogen or alkyl of from 1 to about 10 carbon atoms
with an excess of alcohol of the formula:

HOR′

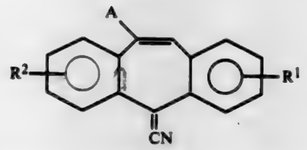
wherein R′ is defined as above,
in the presence of a base having the following formula:

XOR^4

wherein X is an alkali or alkaline earth metal and R^4 is hydrogen, or an alkyl having from 1 to about 10 carbon atoms, in an amount sufficient to form an alkaline reaction mixture.

4,447,610
10-SUBSTITUTED 5-CYANOMETHYLENE-DIBENZO[a,b]-CYCLOHEPTENES, THEIR PREPARATIONS, AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS
Gerd Steiner, Kirchheim; Hans P. Hofmann, Ludwigshafen; Horst Kreiskott, Wachenheim; Hans-Juergen Teschendorf, and Dieter Lenke, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Feb. 25, 1981, Ser. No. 237,962
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009034
Int. Cl.³ C07D *295/14, 223/02, 211/34*
U.S. Cl. 544—381 **15 Claims**

1. A 10-substituted 5-cyanomethylene-dibenzo[a,d]-cycloheptene of the formula I

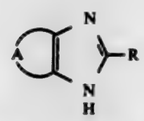


(I)

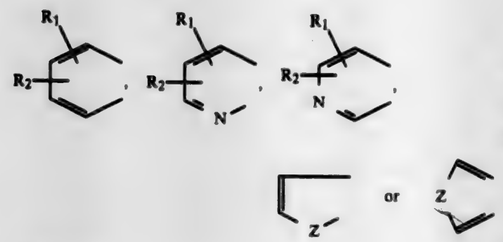
where R^1 and R^2 are hydrogen, halogen, alkyl of 1 to 3 carbon atoms or trifluoromethyl, and A is an amino radical —NR^4R^5, where R^4 and R^5 together with the nitrogen atom by which they are linked form a piperidine, piperazine or homopiperazine ring, the second nitrogen atom where present being unsubstituted or substituted by alkyl of 1 to 3 carbon atoms, hydroxyalkyl of 2 or 3 carbon atoms, alkoxyalkyl, the alkoxy and alkyl radical each being of 1 to 3 carbon atoms, cycloalkyl or cycloalkylmethyl, of 3 to 7 carbon atoms in the cycloalkyl ring, or alkynyl of 2 to 5 carbon atoms, and may be further substituted by oxygen in the form of an N-oxide, its pure cis-isomer and trans-isomer, and its physiologically tolerated addition salts with acids.

4,447,611
BENZO-FUSED AND HETEROCYCLIC FUSED IMIDAZOLE ANTI-ULCER AGENTS
Dieter H. Klaubert, Perkiomenville, and Stanley C. Bell, Penn Valley, both of Pa., assignors to American Home Products Corporation, New York, N.Y.
Filed May 27, 1982, Ser. No. 382,494
Int. Cl.³ C07D *471/04*
U.S. Cl. 546—118 **3 Claims**

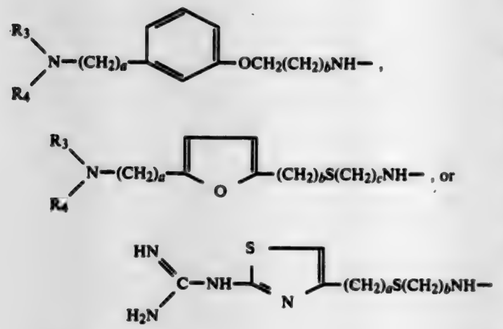
1. A compound having the formula



wherein A is a moiety of the formula



in which
R_1 and R_2 may be hydrogen, lower alkyl, lower alkoxy, halogen or thioalkyl; and
Z is O or S;
R is an amine selected from the group



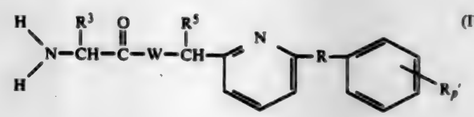
wherein
R_3 and R_4 may be hydrogen, lower alkyl, cycloloweralkyl or R_3 and R_4 taken together form a piperidinyl ring;
a=b=c=1-5; and
pharmaceutically acceptable salts thereof.

4,447,612
CATALYSTS FOR THE PRODUCTION OF 3-CYANOPYRIDINE
Helmut Beschke; Heinz Friedrich, both of Hanau, and Johannes Heilos, Seligenstadt, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Feb. 23, 1982, Ser. No. 351,402
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107755
Int. Cl.³ C07D *213/57*
U.S. Cl. 546—285 **16 Claims**

1. A process for the preparation of 3-cyanopyridine comprising heat reacting in the gas phase 3-methylpyridine with ammonia and oxygen in the presence of a catalyst consisting essentially of the elements antimony, vanadium and oxygen and additionally at least one of the elements iron, copper, titanium, cobalt, manganese, and nickel where the atomic ratio of antimony to vanadium is greater than 1 and which contains in addition to these compounds a lattice layer silicate and highly dispersed silica and which has a BET surface area of 5 to 50 m^2/g, a macropore volume of 0.1 to 0.8 cm^3/g, and an average-pore radius of 1 to 8×10^{-7} cm.

4,447,613
PYRIDYL ESTERS AND THIOLESTERS OF AMINOALKANOIC ACIDS
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.
Continuation of Ser. No. 220,335, Dec. 29, 1980, abandoned, which is a division of Ser. No. 158,834, Jun. 12, 1980, Pat. No. 4,269,981, which is a division of Ser. No. 78,525, Sep. 24, 1979, Pat. No. 4,247,701, which is a continuation-in-part of Ser. No. 69,445, Aug. 24, 1979, Pat. No. 4,226,872, which is a continuation-in-part of Ser. No. 16,775, Mar. 2, 1979, abandoned. This application Mar. 8, 1982, Ser. No. 355,792
Int. Cl.³ C07D *213/64*
U.S. Cl. 546—300 **5 Claims**

1. A compound of the formula (IV′):



(IV′)

wherein,
W is oxygen or sulfur;
p is zero, one or two;
R is oxygen, sulfur, methylene or carbonyl;
R^3 is lower alkyl of 2 to 5 carbon atoms, lower alkenyl of 2 to 5 carbon atoms or lower cycloalkyl of 3 to 4 carbon atoms;
R^5 is hydrogen, cyano, methyl, ethyl, ethynyl or Trifluoromethyl; and
R′ is fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio.

4,447,614
PROCESS FOR THE PURIFICATION OF NICOTINIC ACID AMIDE
Helmut Beschke, Hanau; Franz-Ludwig Dahm, Alzenau; Heinz Friedrich, and Günter Prescher, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany
Filed Jul. 29, 1981, Ser. No. 288,187
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028791
Int. Cl.³ C07D *211/72, 211/84, 213/56*
U.S. Cl. 546—316 **19 Claims**

1. In a process for the recovery of pure nicotinamide from a crude nicotinamide by recrystallization in an alkanol the improvement comprising using 2-methylpropanol-1 containing water as the solvent and treating the warm solution present after dissolving the nicotinamide with an ion exchanger.

4,447,615
PROCESS FOR THE PURIFICATION OF NICOTINIC ACID AMIDE I
Helmut Beschke, Hanau; Franz-Ludwig Dahm, Alzenau; Heinz Friedrich, and Günter Prescher, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jul. 29, 1981, Ser. No. 288,186
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028904
Int. Cl.³ C07D *211/72, 211/84, 213/56*
U.S. Cl. 546—317 **16 Claims**

1. In a process for the recovery of pure nicotinamide from a crude nicotinamide by recrystallization in an alcohol, the improvement comprising carrying out the recrystallization in 2-methyl-propanol-1 containing water at a pH between 7 and 10 and including the steps of at least once recycling the mother liquor from the recrystallization of the crude nicotinamide, heating the mother liquor, adding further crude nicotinamide to the heated mother liquor, cooling the mother liquor contain-

ing said further crude nicotinamide sufficiently to recrystallize the crude nicotinamide in purer form.

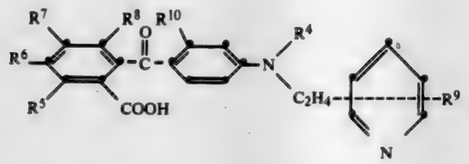
4,447,616

PYRIDINE CONTAINING BENZOIC ACID DERIVATIVES

William M. Hung, and Edward E. Ehlinger, both of Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,537
Int. Cl.³ C07D *213/30*
U.S. Cl. 546—335 2 Claims

1. A 2-{2-R[10]-4-N-[2-(R[9]-pyridyl)ethyl]-N-R[4]-aminophenyl}carbonyl-3-R[8]-4-R[7]-5-R[6]-6-R[5]-benzoic acid having the formula



wherein:

R[4] represents hydrogen, non-tertiary C_1 to C_4 alkyl, benzyl or benzyl substituted in the benzene ring by one or two of halo, non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy or nitro;

R[5], R[6], R[7] and R[8] each independently represent hydrogen, halo, or when R[5], R[8] and one of R[6] and R[7] represents hydrogen, the other of R[6] and R[7] represents COOH

R[9] represents hydrogen, or non-tertiary C_1 to C_4 alkyl; and

R[10] represents hydroxy or C_1 to C_3 alkoxy.

4,447,617

PROCESS FOR THE PREPARATION OF 2-AMINO-6-NITROBENZOTHIAZOLE

R. Donald Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1982, Ser. No. 368,240
Int. Cl.³ C07D *277/82*
U.S. Cl. 548—164 9 Claims

1. Process for the preparation of 2-amino-6-nitrobenzothiazole which comprises contacting a mixture of 2-mercapto-6-nitrobenzothiazole and ammonia with hydrogen peroxide.

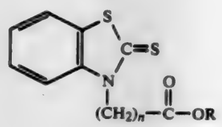
4,447,618

N-SUBSTITUTED THIOXOBENZOTHIAZOLINES

John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 5, 1979, Ser. No. 55,103
Int. Cl.³ C07D *277/70*
U.S. Cl. 548—170 4 Claims

1. A compound of the formula



wherein:

n is 1 or 2;

R is hydrogen, C_{1-5} alkyl, halo C_{1-5} alkyl, C_{2-5} alkenyl, halo C_{2-5} alkenyl, or agriculturally acceptable salts; provided that when n is equal to 1, R may not equal hydrogen or ethyl.

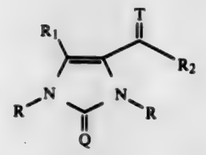
4,447,619

4-ALKANOYLIMIDAZOL-2-ONES

J. Martin Grisar, Strasbourg, France; Richard A. Schnettler, and Richard C. Dage, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 317,962, Nov. 4, 1981, Pat. No. 4,367,236.
This application Sep. 27, 1982, Ser. No. 424,821
Int. Cl.³ C07D *233/04*
U.S. Cl. 548—318 6 Claims

1. A compound of the formula



wherein Q and T are each an oxygen atom or a divalent sulfur atom; R is hydrogen, lower alkyl, lower alkanoyl or benzoyl; R_1 is hydrogen or lower alkyl; R_2 is cycloalkyl or cycloalkenyl of from 3 to 7 carbon atoms, cycloalkylalkylene or cycloalkenylalkylene wherein the cycloalkyl or cycloalkenyl moiety has from 3 to 7 carbon atoms, a furanylalkylene, thienylalkylene, pyridylalkylene, or pyrrylalkylene wherein the alkylene moiety can be a straight or branched chain radical having from 1 to 6 carbon atoms and which can have 1 or 2 double or triple bonds; and the pharmaceutically acceptable salts thereof.

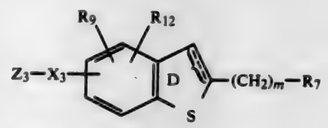
4,447,620

IMIDAZOLYL-SUBSTITUTED BENZOTHIOPHENES

John C. Sih, Kalamazoo, and Chiu-Hong Lin, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 385,619, Jun. 8, 1982, abandoned. This application Oct. 12, 1982, Ser. No. 433,941
Int. Cl.³ C07D *409/06*
U.S. Cl. 548—336 2 Claims

1. A compound of the formula I



wherein Z_3 is

(a) 1-imidazolyl, or

(b) 1-imidazolyl substituted by (C_1-C_3)alkyl;

wherein X_3 is

(a) $-(CH_2)_n-$,

(b) —CHOH—, or

(c) —C(O)—;

with the proviso that when X_3 is $-(CH_2)_n-$ and n is not zero, Z_3 is 1-imidazolyl substituted by (C_1-C_3)alkyl and Z_3X_3- is attached to the 4-position of the benzofuran,

wherein R_1 is hydrogen, a pharmacologically acceptable cation, (C_1-C_{12}) alkyl, (C_3-C_{10}) cycloalkyl, (C_7-C_{12}) aralkyl, phenyl, phenyl mono-, di-, or trisubstituted by chloro, (C_1-C_3) or alkyl, or phenyl para-substituted by

(a) —NHCO—R_{25},

(b) —O—CO—R_{26},

(c) —CO—R_{24},

(d) —O—CO—(p—Ph)—R_{27}, or

(e) —CH=N—NH—CO—NH_2,

wherein R_{24} is phenyl or acetamidophenyl, R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R_{26} is methyl, phenyl, amino or methoxy; and R_{27} is hydrogen or acetamido, and wherein —(p—Ph) is 1,4-phenylene;

wherein R_7 is

(a) hydrogen,

(b) $-CH_2OH$,

(c) $-COOR_1$,

(d) $-CH_2N(R_4)_2$,

(e) —CN

(f) $-CON(R_4)_2$, or

(g) $-C(O)-R_4$;

wherein R_4 is

(a) hydrogen,

(b) (C_1-C_4)alkyl, or

(c) phenyl;

wherein R_9 and R_{12} are the same or different and are

(a) hydrogen,

(b) (C_1-C_4)alkyl

(c) fluoro,

(d) chloro,

(e) bromo,

(f) $-OCH_3$, or,

(g) when taken together and attached to contiguous carbon atoms, —O—CH_2—O—;

wherein D represents a single or a double bond;

wherein m and n are the same or different and are the integers 0 to 4, inclusive; including, a pharmacologically acceptable acid addition salt thereof; and

when D represents a single bond, an enantiomer or a racemic mixture of enantiomers thereof.

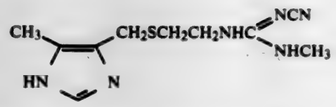
4,447,621

USE OF N-CYANO-N'-METHYL-N''-[2-(5-METHYL-4-IMIDAZOLYLMETHYLDITHIO)ETHYL]GUANIDINE IN THE PREPARATION OF CIMETIDINE

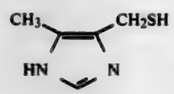
Clifford S. Labaw, Philadelphia, and George R. Wellman, Wayne, both of Pa., assignors to SK&F Lab Co., Carolina, P.R.

Division of Ser. No. 270,076, Jun. 3, 1981, Pat. No. 4,374,996.
This application Oct. 21, 1982, Ser. No. 435,807
Int. Cl.³ C07D *233/66*
U.S. Cl. 548—342 5 Claims

1. A process for preparing the compound of the formula:



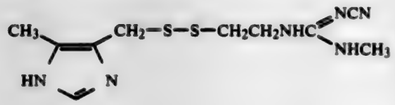
which comprises oxidizing a mixture of a mercaptomethylimidazole compound of the formula:



and a mercaptoethylguanidine compound of the formula:



in a basic solution and treating the resulting disulfide compound of the formula:



with a phosphine.

4,447,622

PREPARATION OF L- AND D-ISOMERS OF DL-3,4-TRANS-2,2-DISUBSTITUTED-3,4-DIARYLCHROMANS AND DERIVATIVES THEREOF

Mohammad Salman; Suprabhat Ray; Ved P. Kamboj, and Nitya Anand, all of Lucknow, India, assignors to Council of Scientific and Industrial Research Rafi Marg, New Delhi, India

Filed Sep. 22, 1981, Ser. No. 304,507
Int. Cl.³ C07D *405/12, 311/74*
U.S. Cl. 548—525 2 Claims

1. A process for the preparation of l-3,4-trans-2,2-dimethyl-3-phenyl-4-[p-(β-pyrrolidinoethoxy)]phenyl-7-methoxychroman or active l-acid salts thereof, which comprises reacting dl-3,4-trans-2,2-dimethyl-3-phenyl-4-[p-(β-pyrrolidinoethoxy)]phenyl-7-methoxy chroman with di-p-toluoyl-l-tartaric acid monohydrate in a protic solvent to produce on fractional crystallisation of the reaction mixture the l-3,4-trans-2,2-dimethyl-3-phenyl-4-[p-(β-pyrrolidino-ethoxy)]phenyl-7-methoxy chroman-l-acid salt of said tartaric acid monohydrate and subjecting said crystalline salt to alkaline hydrolysis to obtain the desired l-isomer.

4,447,623

PROCESS FOR THE PREPARATION OF 4,5-DICHLORO-1,2-DITHIACYCLOPENTEN-3-ONE

Rolf Müller, Karben, and Herbert Wille, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 422,843
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1982, 3201761
Int. Cl.³ C07D *339/04*
U.S. Cl. 549—36 9 Claims

1. In the process for preparation of 4,5-dichloro-1,2-dithiacyclopenten-3-one by reacting hexachloropropene with sulphur at elevated temperatures, the improvement comprises simultaneously hydrolyzing by-product sulphur chlorides by conducting the reaction in the presence of water at a temperature of about 150° to 210° C.

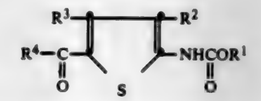
4,447,624

PREPARATION OF THIOPHENES

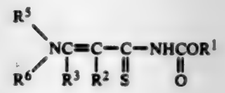
James J. Krutak, and Robert J. Maleski, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 181,923, Aug. 27, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,490
Int. Cl.³ C07D *333/36*
U.S. Cl. 549—69 5 Claims

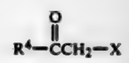
1. A process for the preparation of a thiophene having the formula



which comprises reacting an enamine having the formula



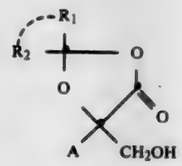
with a ketone having the formula



wherein
R^1 is an alkyl, cycloalkyl or aryl;
R^2 is hydrogen, an alkyl, cycloalkyl or aryl radical, alkoxycarbonyl, substituted alkoxycarbonyl, carboxyl, cyano, carbamoyl, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, N-carbocyclic arylcarbamoyl, alkanoyl, carbocyclic aroyl, piperidinocarbonyl, morpholinocarbonyl, sulfamoyl, N-alkylsulfamoyl, N,N-dialkylsulfamoyl, N-carbocyclic arylsulfamoyl, alkylsulfonyl, carbocyclic arylsulfonyl, piperidinosulfonyl, morpholinosulfonyl, alkylsulfinyl, carbocyclic arylsulfinyl, piperidinosulfinyl or morpholinosulfinyl radical;
R^3 is hydrogen or an alkyl, cycloalkyl or carbocyclic aryl radical;
R^4 is an alkyl, cycloalkyl or carbocyclic aryl radical;
R^5 and R^6 are alkyl radicals or together R^5 and R^6 are tetramethylene, pentamethylene or 3-oxapentamethylene; and
X is chloro or bromo.

4,447,625
1,3-DIOXOLAN-5-ONE DERIVATIVES
Walter Kunz, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 280,387, Jul. 6, 1981, Pat. No. 4,384,879. This application Sep. 23, 1982, Ser. No. 422,314
Claims priority, application Switzerland, Jul. 15, 1980, 5412/80
Int. Cl.³ C07D *317/72, 317/34*
U.S. Cl. 549—265 **2 Claims**

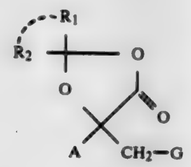
1. A compound of the formula V



(V)

wherein each of R_1 and R_2 independently is hydrogen, C_1-C_8alkyl, unsubstituted or mono- or polysubstituted by halogen, C_1-C_4alkoxy, C_1-C_4alkylthio, phenyl or phenoxy, or is phenyl, all of which phenyl radicals are unsubstituted or mono- or polysubstituted by halogen, nitro, trifluoromethyl, C_1-C_4alkyl or methoxy, or R_1 and R_2 together form a 3- to 7-membered cycloalkyl ring which is unsubstituted or substituted by halogen, C_1-C_4alkyl, C_1-C_4alkoxy or C_1-C_3alkylthio, and A is a phenyl radical, unsubstituted or mono- or polysubstituted by halogen, trifluoromethyl, nitro, C_1-C_4alkyl, C_1-C_4alkoxy or phenyl.

2. A compound of the formula VI

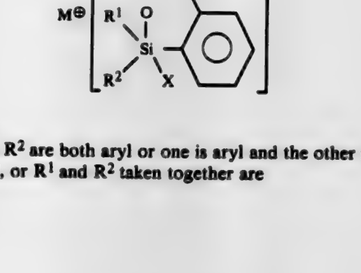


(VI)

wherein
each of R_1 and R_2 independently is hydrogen, C_1-C_8 alkyl, unsubstituted or mono- or polysubstituted by halogen, C_1-C_4 alkoxy, C_1-C_4 alkoxythio, phenyl or phenoxy, or is phenyl, all of which phenyl radicals are unsubstituted or mono- or polysubstituted by halogen, nitro, trifluoromethyl, C_1-C_4 alkyl or methoxy, or R_1 and R_2 together form a 3- to 7-membered cycloalkyl ring which is unsubstituted or substituted by halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy or C_1-C_3 alkylthio;
A is a phenyl radical, unsubstituted or mono- or polysubstituted by halogen, trifluoromethyl, nitro, C_1-C_4 alkyl, C_1-C_4 alkoxy or phenyl; and
G is C_1-C_6 acyloxy, benzenesulfonyloxy, p-bromobenzenesulfonyloxy, p-tosyloxy, C_1-C_6alkylsulfonyloxy, chlorine or bromine.

4,447,626
ML-236B DERIVATIVES
Akira Terahara, and Minoru Tanaka, both of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
Filed Jul. 7, 1982, Ser. No. 395,968
Claims priority, application Japan, Jul. 21, 1981, 56-114038
Int. Cl.³ C07D *309/30*
U.S. Cl. 549—292 **1 Claim**

1. The compound having the following formula (I):

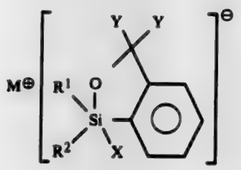


4,447,627
ALIPHATIC EPOXY-KETONE
Regula Näf, Carouge; Anthony F. Morris, Gingins, and Ferdinand Näf, Carouge, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland
Filed Apr. 22, 1982, Ser. No. 370,870
Claims priority, application Switzerland, Jun. 11, 1981, 3822/81
Int. Cl.³ C07D *303/32*
U.S. Cl. 549—548 **1 Claim**

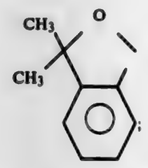
1. Substantially pure 5,6-Epoxy-3,3,6-trimethyl-hept-1-en-4-one.

4,447,628
NONHYGROSCOPIC, ANIONIC PENTACOORDINATE SILICATE
William B. Farnham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jul. 12, 1982, Ser. No. 397,212
Int. Cl.³ C07F *7/08, 7/10, 7/18*
U.S. Cl. 556—415 **7 Claims**

1. Nonhygroscopic, anionic, pentacoordinate silicate of the formula



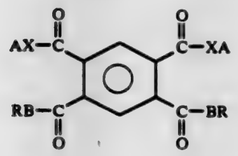
wherein
R^1 and R^2 are both aryl or one is aryl and the other is C_{1-4} alkyl, or R^1 and R^2 taken together are



Y is CF_3 or, when R^1 and R^2 are taken together, CH_3;
X is F, CN or N_3 when Y is CF_3;
X is F when Y is CH_3;
$M^{\oplus}$ is $(R^3)_4N^{\oplus}$, $[(R^4)_2N]_3S^{\oplus}$ or $Cs^{\oplus}$ when X is F;
$M^{\oplus}$ is $(R^5)_4N^{\oplus}$ when X is CN;
$M^{\oplus}$ is $[(R^4)_2N]_3S^{\oplus}$ or $(R^5)_4N^{\oplus}$
when X is N_3;
aryl is phenyl, phenyl substituted with F or C_{1-4} alkyl, C_{1-4} alkoxy or naphthyl;
R^3 is C_{1-4} alkyl;
R^4 is C_{1-2} alkyl or $(R^4)_2$ is $-(CH_2)-_5$; and
R^5 is C_{2-4} alkyl.

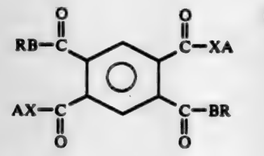
4,447,629
FLUORINATED AND NON-FLUORINATED SILOXY PYROMELLITATES
Bryce C. Oxenrider, Florham Park, and David J. Long, Stanhope, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.
Filed Sep. 30, 1982, Ser. No. 429,946
Int. Cl.³ C07F *7/08, 7/10, 7/18*
U.S. Cl. 556—419 **6 Claims**

1. A monocyclic compound having the structure:



(I)

or



(II)

or mixtures thereof wherein X is independently at each occurrence —O—, —S—, —N(CH_3)— or —NH—; wherein A is alkyl of 2-24 carbons or R'—$(CF_2)_pCF_3$ with R' being alkylene of 1-6 carbons and p being an integer of 3-15; wherein B is —S—, —NH—, or —N(CH_3)— and where R is a monovalent radical of the structure —$(CH_2)_q$—Si(OR")$_3$, with q being an integer of 1 to 8, and R" being alkyl of 1-3 carbons.

4,447,630
METHOD FOR MAKING CYCLOPOLYDIMETHYLSILOXANES
Robert E. Williams, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 29, 1983, Ser. No. 527,539
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—460 **4 Claims**

1. A method for making cyclopolydimethylsiloxanes of the formula

$[(CH_3)_2SiO]_m$

which comprises,
(A) hydrolyzing dimethyldichlorosilane in an aqueous reaction medium in the presence of an effective amount of a perfluoroalkyl sulfonic acid salts of the formula

$(C_xF_{2x+1})SO_3M$

and
(B) recovering the cyclopolydimethylsiloxane from the mixture of (A),
where M is an alkali metal, or a tetralkylammonium radical, x is 6 to 16 and m is a whole number equal to from 3-6 inclusive.

4,447,631
REDISTRIBUTION OF TETRAMETHYLSILANE/DIMETHYLDICHLOROSILANE INTO TRIMETHYLCHLOROSILANE
Alphonse Faure, Vienne, and Robert Magne, Roussillon, both of France, assignors to Rhone-Poulenc Industries, Paris, France
Filed May 12, 1980, Ser. No. 148,587
Claims priority, application France, May 10, 1979, 79 11837
Int. Cl.³ C07F *7/12*
U.S. Cl. 556—469 **11 Claims**

1. A process for the redistribution of a tetramethylsilane and dimethyldichlorosilane admixture into trimethylchlorosilane, comprising contacting such admixture, in vapor phase, with a catalytically effective amount of a catalyst selected from the group consisting of granular anhydrous aluminum chloride and mixtures thereof with a hydrogen-chlorosilane having the formula $(CH_3)_aHSiCl_{3-a}$, where a is 0, 1 or 2, at a temperature ranging from about 75° C. to 120° C.

4,447,632
PROCESS FOR PRODUCTION OF ALKYL SILICATES FROM SILICON METAL
Charles B. Mallon, Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Apr. 18, 1983, Ser. No. 485,822
Int. Cl.³ C07F *7/18, 7/04*
U.S. Cl. 556—470 **8 Claims**

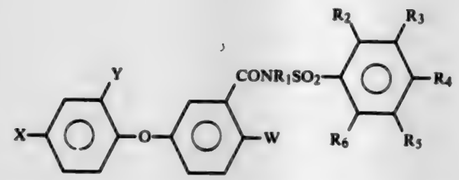
1. Process for production of alkyl silicates from silicon metal which comprises contacting finely divided silicon metal with a mixture of methanol and ethanol containing at least 10% methanol by weight at a temperature of at least about 130° C. in the presence of a catalytic amount of a carbonate or bicarbonate of an alkali metal until methyl orthosilicate, ethyl orthosilicate and mixtures of methyl ethyl silicates are formed.

4,447,633
ULTRASONICALLY PROMOTED HYDROSILATIONS
Philip R. Boudjouk, Fargo, N. Dak., assignor to North Dakota State University, Fargo, N. Dak.
Filed Jun. 14, 1983, Ser. No. 504,218
Int. Cl.³ C07F *7/08, 7/18*
U.S. Cl. 556—479 **9 Claims**

1. A method of hydrosilating non-aromatic carbon to carbon pi bonds comprising exposing a mixture of a compound having a said pi bond and a silane having silanic hydrogen to a platinum metal catalyst, and subjecting the mixture to ultrasonic energy while exposed to said catalyst.

4,447,634
HERBICIDAL ARYLSULFONAMIDE DERIVATIVES OF PHENOXYBENZOIC ACIDS
Guang-Huei Lee, East Windsor, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France
Filed Apr. 30, 1981, Ser. No. 259,336
Int. Cl.³ A01N *41/06*; C07C *143/78, 143/82*
U.S. Cl. 560—13 **14 Claims**

1. A herbicidal compound of the formula



wherein W, X, Y, Z, R_1, R_2, R_3, R_4, R_5 and R_6 are as follows:

(1) W is selected from the group consisting of halo, NO_2, CN and H;

(2) X is selected from the group consisting of halo and halo-substituted C_1–C_4 alkyl;

(3) Y is selected from the group consisting of halo, CF_3, CN and NO_2;

(4) Z is selected from the group consisting of halo and H;

(5) R_1 is selected from the group consisting of H, C_1–C_6 alkyl, alkali metal salt, ammonium salt and quarternary ammonium salt; and

(6) R_2, R_3, R_4, R_5 and R_6 are the same or different and are selected from the group consisting of halo, alkyl, H, NO_2, CO_2R_7, CN, OR_8, CF_3 and substituted alkyl, wherein R_7 and R_8 are the same of different and are C_1–C_6 alkyl.

4,447,635

N-SUBSTITUTED IMIDO-DICARBOXYLIC ACID DIARYL ESTER COMPOUNDS AND HERBICIDE INTERMEDIATES

Karlfried Dickoré, Leverkusen, and Engelbert Kühle, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

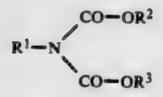
Continuation of Ser. No. 233,248, Feb. 10, 1981, abandoned. This application Jun. 30, 1982, Ser. No. 393,572

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006226

Int. Cl.³ C07C *125/063*

U.S. Cl. 560—115 **13 Claims**

1. N-substituted imido-dicarboxylic acid diaryl ester compound of the formula



(I)

wherein

R^1 is a straight-chain or branched aliphatic radical which has 3 to 5 carbon atoms; a straight-chain or branched aliphatic radical which has 2 to 5 carbon atoms and substituted by lower alkoxy, lower alkylmercapto, halogen, cyano or nitro; or a cycloaliphatic radical which has 5 to 8 carbon atoms and is optionally substituted by lower alkyl; and

R^2 and R^3 independently represent a phenyl or naphthyl radical which is optionally substituted by chlorine, methyl and/or methoxy.

4,447,636

SYNTHESIS OF 11-DEOXYPROSTAGLANDINS

William L. White, Holliston, Mass., and Peter B. Anzeveno, Zionsville, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 10, 1982, Ser. No. 376,984

Int. Cl.³ C07C *69/74, 121/48*

U.S. Cl. 560—122 **1 Claim**

1. Trans-2-β,β,β-trichlorocarboethoxy-3-carbomethoxycyclopentanone.

4,447,637

EPIMERIZATION OF TRANS CHRYSANTHEMATES

Jacques Martel, Bondy; Jean Buendia, Le Perreux sur Marne, and Jeanine Nierat, Luzernes, all of France, assignors to Roussel Uclaf, Paris, France

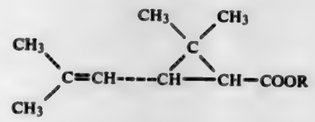
Filed Feb. 9, 1982, Ser. No. 347,278

Claims priority, application France, Feb. 13, 1981, 81 02828

Int. Cl.³ C07C *69/74, 61/18*

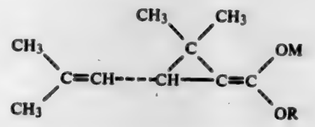
U.S. Cl. 560—124 **9 Claims**

1. A process for the epimerization of alkyl trans chrysanthemate comprising reacting at a low temperature in an anhydrous organic solvent an alkyl trans chrysanthemate of the formula



II

of the 1S,trans or 1R,trans configuration wherein R is alkyl of 1 to 6 carbon atoms with a strong alkali metal base to obtain a compound of the formula

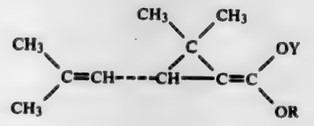


III

wherein R has the above definition and M is an alkali metal reacting the latter compound with a reactant of the formula

Y—A

wherein A is selected from the group consisting of chlorine, bromine, iodine and anion derived from a hydrogen acid and Y is an organic radical capable of forming a ketal of a ketene to obtain a compound of the formula



IV

reacting the latter at a low temperature in an anhydrous organic solvent with a proton donor to obtain a mixture of the corresponding alkyl cis chrysanthemate and alkyl trans chrysanthemate.

4,447,638

PREPARATION OF DIALKYL OXALATES BY THE OXIDATIVE CARBONYLATION OF ALCOHOLS WITH A HETEROGENEOUS PD-V-P-TI CONTAINING CATALYST SYSTEM

Anne M. Gaffney, and John A. Sofranko, both of West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 2, 1982, Ser. No. 404,203

Int. Cl.³ C07C *67/36*

U.S. Cl. 560—204 **13 Claims**

1. A process for the preparation of dialkyl oxalates by the oxidative carbonylation of a liquid saturated monohydric aliphatic or alicyclic alcohol containing from 1 to 20 carbon atoms with a mixture of carbon monoxide and oxygen or an oxygen-containing gas at a temperature of from about 40° C. to 150° C. and a total pressure of between about 500 psig and 6000 psig in the presence of a catalytic amount of an essentially insoluble tetra-metallic-containing heterogeneous catalyst

comprising palladium or a salt thereof in combination with a crystalline vanadium oxide-phosphorus oxide-titanium oxide containing compound said catalyst containing as the metals an atomic ratios of palladium to vanadium to phosphorus to titanium of from about 0.003:1:0.5:0.1 to about 0.32:1:5:5 and recovering the desired dialkyl oxalate.

4,447,639

OXIDATIVE CARBONYLATION OF ALCOHOLS TO DIALKYL OXALATES USING A HETEROGENEOUS IRON PROMOTED PD-V-P CATALYST

John A. Sofranko, and Anne M. Gaffney, both of West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 6, 1982, Ser. No. 405,972

Int. Cl.³ C07C *67/36*

U.S. Cl. 560—204 **13 Claims**

1. A process for the preparation of dialkyl oxalates by the oxidative carbonylation of a liquid saturated monohydric aliphatic or alicyclic alcohol containing from 1 to 20 carbon atoms with a mixture of carbon monoxide and oxygen or an oxygen-containing gas at a temperature of from about 40° C. to 150° C. and a total pressure of between about 500 psig and 6000 psig in the presence of a catalytic amount of an essentially insoluble tetra-metallic-containing heterogeneous catalyst comprising palladium or a salt thereof in combination with a crystalline vanadium oxide-phosphorus oxide-iron oxide containing compound said catalyst containing as the metals an atomic ratio of palladium to vanadium to phosphorus to iron of from about 0.003:1:0.5:0.1 to about 0.32:1:5:5 and recovering the desired dialkyl oxalate.

4,447,640

PREPARATION OF α-UNSATURATED CARBOXYLIC ESTERS AND AMIDES FROM 1,2-DIHALOALKANES BY CARBONYLATION

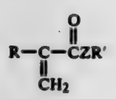
Kathryn A. Eickholt, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 17, 1982, Ser. No. 378,672

Int. Cl.³ C07C *67/36, 102/00*

U.S. Cl. 560—207 **21 Claims**

1. A process for preparing α-unsaturated carboxylic esters or amides represented by the formula



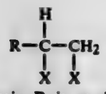
wherein:

R is hydrogen, alkyl or aryl;

R′ is hydrogen, alkyl, cycloalkyl or benzyl which may be substituted with amine groups, hydroxyl groups or carboxylic acid groups; and

Z is O or NR′;

comprising contacting a 1,2-dihaloalkane represented by the formula



wherein R is as defined above and X is separately in each occurrence chlorine, bromine or iodine; with an alcohol or amine represented by the formula

R′ZH

wherein R′ and Z are as defined above; and with carbon monoxide in the presence of a catalytic amount of a group VIII metal at elevated temperature and pressure.

4,447,641

PROCESS FOR PREPARATION OF ALPHA, BETA-UNSATURATED ESTERS USING AMS-1B BOROSILICATE CRYSTALLINE MOLECULAR SIEVE

Gary P. Hagen, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 26, 1982, Ser. No. 401,549

Int. Cl.³ C07C *67/343*

U.S. Cl. 560—211 **21 Claims**

1. A process for the preparation of alpha, beta-unsaturated methyl esters by reaction between dimethylformal and carboxylic acid compounds of the formula RCH_2COOR' wherein R is a member of the class consisting of —H, -alkyl, -aryl, -aralkyl, -cycloalkyl, and -alkylaryl radicals and R′ is selected from the group consisting of —H radicals and $-CH_3$ *radicals, in the presence of AMS-*1B borosilicate crystalline molecular sieve catalyst under reaction conditions wherein the acid compound-:dimethylformal mole ratio is from about 0.5:1 to 20:1 at a temperature within the range of from about 250° C. to about 430° C.

4,447,642

PREPARATION OF ALKYL CARBOXYLATES

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

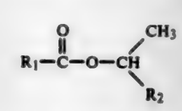
Continuation-in-part of Ser. No. 217,979, Dec. 19, 1980, Pat. No. 4,365,083. This application Sep. 30, 1982, Ser. No. 429,937

The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ C07C *67/04*

U.S. Cl. 560—247 **6 Claims**

1. A process for the preparation of alkyl carboxylate mixtures enriched in alpha-methylalkyl carboxylates of the formula:



wherein R_1 is alkyl of 1 to 10 carbon atoms and R_2 is C_4–C_{18} alkyl, said process comprising:

reacting an olefin mixture containing at least 25 percent of a C_6 to C_{20} olefin having no unsaturation at the site of the No. 2 carbon atom thereof, with a C_1 to C_{10} carboxylic acid, said reaction being carried out under ester-forming reaction conditions including the presence of a catalyst comprising the crystalline zeolite material mordenite, to thereby selectively produce an alkyl carboxylate ester product which is enriched in the alpha-methylalkyl carboxylate ester.

4,447,643

PROCESS FOR RECOVERING OXYGENATED ORGANIC COMPOUNDS FROM DILUTE AQUEOUS SOLUTIONS EMPLOYING LIQUID EXTRACTION MEDIA

Julian Feldman, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 305,884, Sep. 28, 1981, Pat. No. 4,346,241. This application Aug. 11, 1982, Ser. No. 407,224

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.³ C07C *67/48, 51/42, 41/34, 29/74*

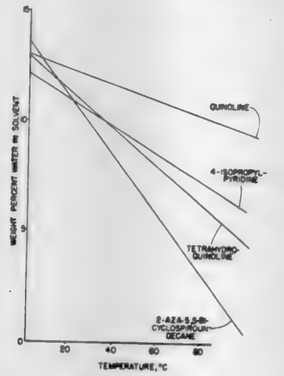
U.S. Cl. 560—248 **5 Claims**

1. A process for obtaining substantially anhydrous oxygenated organic material from a dilute aqueous solution thereof which comprises

(a) contacting the dilute aqueous oxygenated organic material solution with an inert organic extractant which is liquid at ambient pressure and temperature in at least one extraction zone for a period of time sufficient to provide a raffinate phase containing significantly less oxygenated

organic material than the dilute aqueous feed, and an extract phase containing a significant amount of the oxygenated organic material originally present in the dilute aqueous feed,

(b) concentrating the extract phase resulting from step (a) in a rectifying column to provide an aqueous oxygenated organic material of high concentration; and,



(c) azeotropically distilling the concentrated solution resulting from step (b) in the anhydrous column operated under substantially superatomospheric pressure with thermal values recovered from the anhydrous column overheads being used to satisfy part or all of the thermal operating requirements of the rectifying column.

4,447,644

METHOD FOR PREPARATION OF ARYLPYRUVIC ACID

Moustafa El-Chahawi, Troisdorf, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 223,065, Jan. 7, 1981, abandoned, which is a continuation of Ser. No. 50,028, Jun. 19, 1979, abandoned. This application May 24, 1982, Ser. No. 381,133

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 28280413

Int. Cl.³ C07C *51/10*

U.S. Cl. 562—406 **6 Claims**

1. A process for the preparation of an optionally substituted pyruvic acid comprising contacting an optionally substituted arylmethylhalide with carbon monoxide in the presence of a metal carbonyl, an alkali metal hydroxide and a mixture of a branched chain alcohol and water at −10° to +70° C. while employing at least two mols of carbon monoxide per mol of arylmethylhalide, said branched chain alcohol being selected from the group consisting of tertiary butanol, tertiary amyl alcohol and isopropanol, the reaction mixture consisting essentially of said optionally substituted arylmethylhalide, carbon monoxide, metal carbonyl, alkali metal hydroxide, water and said branched chain alcohol and thereafter acidifying the resultant salt with an acid.

4,447,645

PROCESS FOR PURIFICATION OF P-HYDROXYMETHYLBENZOIC ACID

John A. Donohue, Elmhurst; James O. Knobloch, Naperville; Bruce Petty-Weeks, Naperville, and Steven A. Cerefice, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,659

Int. Cl.³ C07C *69/76*

U.S. Cl. 562—473 **9 Claims**

1. A process for purification of p-hydroxymethylbenzoic acid containing 4-carboxybenzaldehyde, p-toluic acid, and terephthalic acid impurities wherein said p-hydroxymethylbenzoic acid is prepared as an ammonium salt by electrochemical reduction of terephthalic acid which purification process comprises:

(a) hydrogenation of said ammonium salt in the presence of a suitable catalyst to convert said 4-carboxybenzaldehyde impurities to p-hydroxymethylbenzoic acid,

(b) springing said p-hydroxymethylbenzoic acid from said ammonium salt,

(c) filtration to remove said terephthalic acid impurities by hot aqueous filtration of said p-hydroxymethylbenzoic acid,

(d) hydrocarbon extraction of said p-toluic acid impurities from p-hydroxymethylbenzoic acid by a suitable hydrocarbon solvent, and

(e) crystallization of substantially pure p-hydroxymethylbenzoic acid from aqueous solution.

4,447,646

PROCESS FOR THE PURIFICATION OF TEREPHTHALIC ACID

Griffin I. Johnson, and Judy E. Kiefer, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,705

Int. Cl.³ C07C *51/42*

U.S. Cl. 562—487 **17 Claims**

1. In a process for the purification of crude terephthalic acid produced by oxidation of para-xylene, said purification process comprising contacting said crude terephthalic acid with oxygen-containing gas at elevated temperature and pressure in the presence of a solvent comprising at least one lower alkanoic acid and a catalyst system comprising cobalt and a bromide compound, the improvement comprising employing samarium in said catalyst system in a concentration of about 0.005 to 500 ppm.

4,447,647

PROCESS FOR THE PREPARATION OF 2,4,6-TRICHLOROANILINE

Friedrich Werner, Belford Roxo, Brazil; Karl Mannes, and Viktor Trescher, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

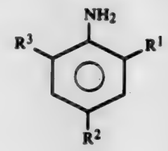
Filed Dec. 28, 1982, Ser. No. 453,984

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1982, 3200069

Int. Cl.³ C07C *85/24*

U.S. Cl. 564—412 **12 Claims**

1. A process for the preparation of 2,4,6-trichloroaniline which comprises contacting an aniline of the formula



wherein

R^1, R^2 and R^3 independently represent hydrogen or halogen and at least one of the radicals denotes hydrogen,

and/or their hydrochlorides, with a chlorinating agent in the presence of an inert organic solvent or diluent at a temperature above 80° C.

4,447,648

PROCESS FOR MAKING ALDEHYDES FROM KETALS

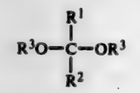
Richard W. Wegman, Cross Lanes, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 31, 1982, Ser. No. 413,466

Int. Cl.³ C07C *45/49*

U.S. Cl. 568—484 **21 Claims**

1. Method of preparing saturated aliphatic aldehydes which comprises contacting a gem diether having the formula:



wherein

each of R^1 and R^2 is a monovalent radical selected from the class consisting of alkyl, aryl radicals having 6 to about 10 carbon and cycloalkyl radicals having 5 to about 7 carbons;

R^3 is a monovalent radical selected from the group consisting of alkyls having 1 to about 10 carbons and aryl having 6 to about 10 carbons with a catalytic amount of a Group VIII compound at a temperature of about 80° to 175° C. and a pressure of about 500 to about 6000 psig in the presence of a mixture of carbon monoxide and hydrogen.

4,447,649

PROCESS FOR THE MANUFACTURE OF CITRAL

Manfred W. Breuninger, Freiburg, Fed. Rep. of Germany, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 304,723, Sep. 23, 1981. This application Sep. 27, 1982, Ser. No. 423,761

Claims priority, application Switzerland, Oct. 31, 1980, 8124/80

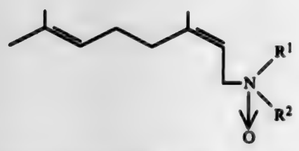
Int. Cl.³ C07C *45/00, 47/21*

U.S. Cl. 568—484 **4 Claims**

1. A process for the manufacture of a citral compound of the formula



which process comprises reacting at a temperature of from 0° C. to 100° C. a compound of the formula



wherein R^1 and R^2 are the same or different C_{2-6}-alkyl substituent or R^1 and R^2 together with the N-atom is a C_{4-6}-cyclic group, with an anhydride of a C_{2-6}-alkanecarboxylic acid.

4,447,650

METHYLENE COUPLING OF AROMATICS

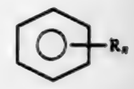
James M. Renga, Midland, Mich., assignor to The Dow Chemical Company, Midland, Ohio

Filed Jul. 26, 1982, Ser. No. 401,768

Int. Cl.³ C07C *41/18, 37/11, 17/00*

U.S. Cl. 568—640 **9 Claims**

1. A process for preparing methylene coupled aromatic compounds comprising contacting an aromatic compound of the formula:



where R is independently each occurrence hydrogen, halogen, nitro, hydroxyl, or an alkyl, alkoxy, aryl, aralkyl, haloalkyl, alkoxycarbonyl or aroxy group of up to about 12 carbons; and n is an integer from one to four, with chloromethyl methyl carbonate at a temperature from about 25° C. to about 250° C., in the presence of a catalytic amount of a Lewis acid.

4,447,651

1,4-BIS-(4-CHLORO-2-METHOXYSTYRYL)-BENZENE

Carl-Wolfgang Schellhammer, Bergisch Gladbach, and Bernhard Wehling, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,697

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118525

Int. Cl.³ C07C *43/263*

U.S. Cl. 568—645 **1 Claim**

1. 1,4-Bis-(4-chloro-2-methoxystyryl)-benzene.

4,447,652

PREPARATION OF ALKYL ARYL ETHERS

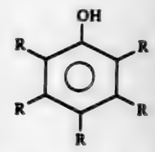
Paul R. Kurek, Schaumburg, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 21, 1982, Ser. No. 380,808

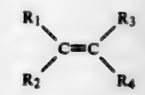
Int. Cl.³ C07C *41/06*

U.S. Cl. 568—658 **5 Claims**

1. A method of preparing an alkyl aryl ether comprising contacting a feedstock consisting essentially of a phenol of the formula,



where each R is hydrogen or an alkyl group, and from about 1.5 to about 6 molar proportions of an olefin containing from 3 to about 16 carbon atoms of the formula,



where each R is hydrogen or an alkyl group and from one to three such R groups are alkyl, with an unmodified macroreticular cationic exchange resin bearing sulfonic acid groups of which from about 10 to about 90 percent are in the form of their salt with an alkali metal cation at a temperature from about 80° C. to about 120° C., and recovering the alkyl aryl ether produced thereby.

4,447,653

ADSORBENT REGENERATION IN INTEGRATED ETHERIFICATION PROCESS

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 6, 1982, Ser. No. 395,413
Int. Cl.³ C07C 41/06, 41/00
U.S. Cl. 568—697 5 Claims

1. A process for the production of an ether which comprises the steps of:

(a) passing a first process stream comprising an isoparaffin through a catalytic dehydrogenation reaction zone and thereby producing a reaction zone effluent stream comprising the isoparaffin and a corresponding isoolefin;

(b) passing the reaction zone effluent stream and a hereinafter characterized second process stream into a stripping column and producing a stripping column bottoms stream comprising the isoparaffin, oxygen-containing hydrocarbonaceous compounds and the corresponding isoolefin;

(c) passing the stripping column bottoms stream and a feed stream comprising an alcohol into an etherification zone maintained at etherification conditions, and withdrawing from the etherification zone a product stream comprising the ether and a hydrocarbon recycle stream comprising the isoparaffin and oxygen-containing hydrocarbonaceous compounds;

(d) removing oxygen-containing hydrocarbonaceous compounds from the hydrocarbon recycle stream by contacting the hydrocarbon recycle stream with a selective sorbent at sorption-promoting conditions in a sorption zone to produce an isoparaffin-rich recycle stream;

(e) processing a first portion of said isoparaffin-rich recycle stream to produce additional amounts of the isoolefin;

(f) heating a second portion of said isoparaffin-rich recycle stream to a temperature of above 250° F.; and

(g) regenerating sorbent in the sorption zone by a regeneration procedure which comprises contacting sorbent present in the sorption zone with a regeneration stream comprising said heated isoparaffin-rich recycle stream of step (f) at regeneration-promoting conditions to produce said previously referred to second process stream, which comprises the isoparaffin and oxygen-containing hydrocarbonaceous compounds.

4,447,654

PROCESS FOR SEPARATING NITRATED PHENOLIC COMPOUNDS FROM OTHER PHENOLIC COMPOUNDS

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 431,640
Int. Cl.³ C07C 79/22
U.S. Cl. 568—708 24 Claims

1. A process for resolving a mixture of two or more phenolics at least one of which is a nitrated phenolic, comprising the step of

treating a mixture of two or more closely-boiling phenolics at least one of which is a nitrated phenolic with a metal halide salt selected from the group consisting of calcium bromide, calcium chloride, lithium bromide, magnesium chloride and magnesium bromide, at a temperature of from about 0° C. to about 150° C., so as to form preferentially a complex comprised of the selected metal halide salt and one of the phenolics,

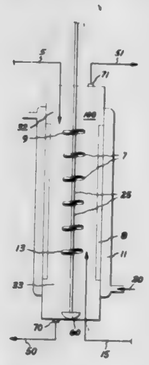
whereby the preferentially-formed metal halide salt-phenolic complex may be isolated and thereafter decomposed to a product comprising a predominantly greater amount of one phenolic over other phenolics present, as compared to the relative amounts of phenolics present in the original mixture of phenolics.

4,447,655

PURIFICATION OF BISPHENOL-A

Ashok K. Mendiratta, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,103
Int. Cl.³ C07C 2/58
U.S. Cl. 568—724 7 Claims



1. A process for simultaneously and continuously purifying the bisphenol-A crystals and the aqueous liquid of a water/-BPA crystals slurry, said process comprising the steps of:

(a) forming an aqueous-crystal stream from a water/BPA crystals slurry, said aqueous-crystal stream having a flow which is substantially downward and continuous;

(b) contacting said aqueous-crystal stream with a stream comprising an organic solvent in a region of intersecting paths, the stream of organic solvent having a flow in a direction substantially upward and counter-current to the flow of said aqueous crystal stream, said organic solvent being immiscible in water, lighter than water and a good solvent medium for impurities within said aqueous liquid and bisphenol-A crystals;

(c) mixing the aqueous-crystal stream and the organic solvent stream passing through the region of contact in the center of said region of contact;

(d) forming a lower aqueous-crystal phase below the the region of contact and an upper organic solvent phase above the region of contact;

(e) recovering purified bisphenol-A crystals and purified aqueous liquid from said lower aqueous-crystal phase;

(f) removing organic solvent with extracted impurities from said upper organic solvent phase;

said process being performed at a temperature below the melting point of said bisphenol-A crystals.

4,447,656

SOLVENT SYSTEM FOR OXIDATIVE COUPLING PROCESS

Larry D. Kershner; Leonard R. Thompson, and Robert M. Strom, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

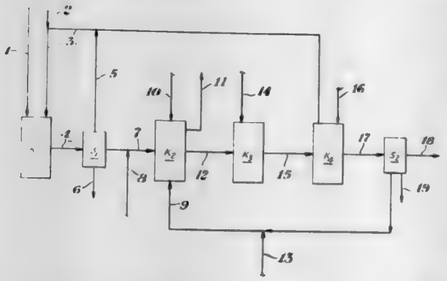
Continuation-in-part of Ser. No. 241,970, Mar. 9, 1981, abandoned. This application Feb. 24, 1983, Ser. No. 469,194
Int. Cl.³ C07C 39/15
U.S. Cl. 568—730 32 Claims

1. A process for preparation of 2,2',6,6'-tetratertiarybutyl-p,p'-biphenol comprising

(1) contacting 2,6-ditertiarybutylphenol with an oxygen-containing gas at an elevated temperature and pressure in a liquid reaction medium in the presence of a heterogeneous dehydrogenation catalyst capable of producing carbon-carbon coupling products of the 2,6-ditertiarybutylphenol until substantial amounts of 3,3',5,5'-tetratertiarybutyl-4,4'diphenoquinone are formed;

(2) reducing the 3,3',5,5'-tetratertiarybutyl-4,4'diphenoquinone under reducing conditions with hydrogen in the presence of a heterogeneous hydrogenation catalyst or with 2,6-ditertiarybutylphenol until substantial amounts of 2,2',6,6'-tetratertiarybutyl-p,p'-biphenol are formed; and

(3) separating the liquid reaction medium containing



2,2',6,6'-tetratertiarybutyl-p,p'-biphenol from the reaction mixture, provided that the liquid reaction medium is characterized in that under the reaction conditions of steps (1) and (2), 2,6-ditertiarybutylphenol and 3,3',5,5'-tetratertiarybutyl-4,4'-diphenoquinone are substantially soluble; and that under the reaction conditions of steps (2) and (3) 2,2',6,6'-tetratertiarybutyl-p,p'-biphenol is substantially soluble.

4,447,657

PREPARATION OF ORTHO-ALKYLATED PHENOLS

Bruce E. Firth, Arlington Heights, Ill., and Terry J. Rosen, Berkeley, Calif., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 10, 1982, Ser. No. 440,676
Int. Cl.³ C07C 37/05, 39/06
U.S. Cl. 568—783 13 Claims

1. A method of rearranging a secondary alkyl or tertiary alkyl phenyl ether to an ortho-alkylphenol comprising contacting said ether with an alumina selected from the group consisting of halided aluminas, aluminas containing an alkali metal cation in the matrix, and silica-alumina containing up to about 75% silica, at a temperature from about 75° C. to about 175° C. and recovering the ortho-alkyl phenol.

4,447,658

PROCESS FOR SEPARATING 3,5-XYLENOL OR 3,4-XYLENOL FROM OTHER POLYMETHYLATED PHENOLIC COMPOUNDS

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 431,651
Int. Cl.³ C07C 37/68
U.S. Cl. 568—750 12 Claims

1. A process for resolving a mixture of two or more polymethylated phenolics at least one of which is selected from the group consisting of 3,5-xylenol and 3,4-xylenol, comprising the step of

treating a mixture of two or more closely-boiling polymethylated phenolics at least one of which is selected from the group consisting of 3,5-xylenol and 3,4-xylenol with a metal halide salt selected from the group consisting of calcium bromide, calcium chloride lithium bromide, magnesium chloride and magnesium bromide, at a temperature of from about 0° C. to about 150° C., so as to form preferentially a complex comprised of the selected metal halide salt and one of the phenolics,

whereby the preferentially-formed metal halide salt-phenolic complex may be isolated and thereafter decomposed to a product comprising a predominantly greater amount of one phenolic over other phenolics present, as compared to the relative amounts of phenolics present in the original mixture of phenolics.

4,447,659

DECOMPOSITION OF POLYCARBONATES TO FORM TERMINALLY UNSATURATED ALCOHOLS

Charles W. Blewett, Fort Mitchell, Ky., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,897
Int. Cl.³ C07C 29/60, 33/025
U.S. Cl. 568—876 13 Claims

1. A process for the preparation of terminally unsaturated alcohols, said process comprising thermally decomposing a polycarbonate represented by the formula:

$$+OCH_2CHR^1-R-CH_2OC\overset{O}{\overset{\|}{}}+_n$$

wherein R is a bivalent alkylene radical having from 3 to about 19 carbon atoms, R^1 is hydrogen or an alkyl group and n is an integer from about 2 to about 500 in the presence of a titanium containing catalyst selected from the group consisting of titanates, condensates of said titanates, titanium chelates and titanium acylates.

4,447,660

PROCESS FOR THE ISOMERIZATION OF ORTHO-AND PARA-BROMOPHENOLS OR THE ETHERS THEREOF INTO META-BROMOPHENOLS AND CORRESPONDING ETHERS

Marie-Paule Jouannetaud; Jean-Pierre Gesson, and Jean-Claude Jacquesy, all of Poitiers, France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 267,415, May 26, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 428,677
Claims priority, application France, Jun. 3, 1980, 80 12262
Int. Cl.³ C07C 39/27
U.S. Cl. 568—774 6 Claims

1. A process for the isomerization of ortho- and para-bromo phenols or the ethers thereof into corresponding meta-brominated derivatives, comprising isomerizing the ortho- or para-brominated phenols or ethers in the presence of a liquid superacidic medium having a H_0 acidity estimated on the Hammett logarithmic scale of greater than −11 up to about 31 25 at elevated temperatures to effect isomerization of the ortho- and para-bromophenols or the corresponding ethers to the meta-brominated derivatives.

4,447,661

PROCESS FOR PRODUCING AN ALCOHOL BY HYDROFORMYLATION

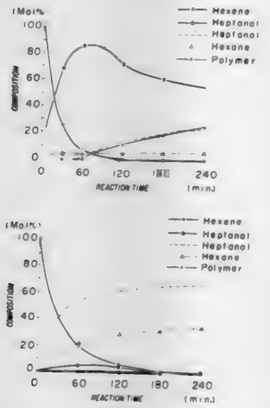
Satoshi Hoshiyama; Hiroyuki Muto; Shuzo Shinke; Kanji Otsuka; Shinichiro Takigawa, and Hiroyuki Yamazaki, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,236
Claims priority, application Japan, Sep. 7, 1981, 56-140664
Int. Cl.³ C07C 45/50
U.S. Cl. 568—882 11 Claims

1. In a process for producing an alcohol by hydroformylation which comprises reacting straight chained, branched, or alicyclic mono-olefin having from 3 to 20 carbon atoms with carbon monoxide and hydrogen to form an alcohol having carbon atoms greater in number by one than the carbon atoms of the mono-olefin, the improvement which comprises:

(a) a first step in which the mono-olefin is hydroformylated with use of a cobalt carbonyl catalyst selected from the group consisting of $HCo(CO)_4$ and $Co_2(CO)_8$ catalysts in the presence of a gas mixture of carbon monoxide and

hydrogen in a volume ratio of the hydrogen to the carbon monoxide of from 0.8 to 2.0 at a temperature of from 80° to 180° C. under pressure of from 150 to 250 kg/cm^2 to selectively form an aldehyde at a conversion of the mono-olefin being from 50 to 95 mol % while suppressing the formation of an alcohol, and the cobalt carbonyl catalyst is then removed from the unreacted olefin and the formed aldehyde by decomposition or extraction, and



(b) a second step in which the mixture of the unreacted mono-olefin and the formed aldehyde freed from the cobalt carbonyl catalyst in the first step is reacted with a gas mixture of carbon monoxide and hydrogen in a volume ratio of the hydrogen to the carbon monoxide of from 1.1 to 10 with use of a cobalt trialkylphosphine complex catalyst at a temperature of from 160° to 250° under pressure of from 30 to 200 kg/cm^2 thereby simultaneously hydroformylating the unreacted mono-olefin and hydrogenating the aldehyde to form the alcohol.

4,447,662

BETA-DICARBONYL COMPOUNDS FOR THE PROMOTION OF AROMATIC NITRATION BY NITROGEN TETROXIDE

David S. Ross, Palo Alto; Robert M. Johnson, Jr., San Mateo, and Ripudaman Malhotra, Menlo Park, all of Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 10, 1982, Ser. No. 386,856
Int. Cl.^{3} C07C *79/10*
U.S. Cl. 568—939 **26 Claims**

1. In a process for the nitration of an aromatic hydrocarbon, the method which comprises nitrating the aromatic hydrocarbon in a liquid reaction medium consisting essentially of nitrogen tetroxide, optionally an inert organic solvent and an effective amount of a beta-dicarbonyl compound which can assume a "W" configuration with a carbonyl group at each apex of the "W", at a temperature sufficient to effect nitration.

4,447,663

PROCESS FOR CONTINUOUS FLUORINATION OF CARBON

Toru Akiyama; Tsutomu Kamihigoshi, both of Takatsuki; Shoji Takagi, Toyonaka, and Tadayuki Maeda, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 132,992, Mar. 24, 1980, Pat. No. 4,348,363.
This application Mar. 1, 1982, Ser. No. 353,221
Claims priority, application Japan, Mar. 30, 1979, 54-39193; May 31, 1979, 54-74256
Int. Cl.^{3} C07C *17/00*
U.S. Cl. 570—150 **5 Claims**

1. A process for the continuous fluorination of carbon in a horizontal reactor, said reactor having a trough provided with a plurality of weirs, carbon feed and exhaust ports in both end portions of the reactor, fluorine gas feed and exhaust ports in both end portions of the reactor, which comprises the steps of:

(a) introducing continuously a carbon onto the trough through a carbon feed port in one end portion of the reactor,

(b) introducing a fluorine gas or a mixture of fluorine gas and diluent continuously into the reactor through a fluorine gas feed port in one end portion of the reactor,

(c) bringing the carbon into contact with the gas to react them at a temperature of 200° to 600° C., while transporting said carbon on the trough in a stream of the gas with vibration, and

(d) removing the fluorinated carbon continuously through a carbon exhaust port in another end portion of the reactor.

4,447,664

INTEGRATED FISCHER-TROPSCH AND AROMATIC ALKYLATION PROCESS

Craig B. Murchison; Robert A. Stowe, and Richard L. Weiss, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 23, 1982, Ser. No. 422,317
Int. Cl.^{3} C07C *2/68*
U.S. Cl. 585—323 **20 Claims**

1. A process for alkylating an aromatic hydrocarbon comprising:

(1) contacting a mixture of hydrogen and carbon monoxide with a Fischer-Tropsch catalyst at conditions effective to form a first gas mixture containing an alkylating agent selected from ethylene or mixtures of ethylene and propylene;

(2) removing from the first gas mixture components capable of alkylating aromatics and having boiling points higher than the selected alkylating agent to form a second gas mixture which contains less than about 10 mole percent of the selected alkylating agent and more than about 5 mole percent each of carbon monoxide and hydrogen;

(3) combining the second gas mixture with sufficient alkylatable aromatic hydrocarbon to form a third mixture containing at least about a 1 to 1 aromatic to alkylating agent mole ratio; and

(4) contacting the third mixture with a heterogeneous alkylation catalyst at conditions effective to alkylate the aromatic hydrocarbon.

4,447,665

DEHYDROGENATION REACTIONS

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 30, 1983, Ser. No. 480,407
Int. Cl.^{3} C07C *5/32*; B01J *21/18*
U.S. Cl. 585—379 **24 Claims**

1. A method for dehydrogenating a paraffinic or naphthenic compound, comprising: contacting an aforesaid compound under dehydrogenation conditions comprising a temperature in the range of from about 465° C. to about 650° C. with an active carbon catalyst having a cage-like structure and a BET surface area of at least 800 square meters per gram and a bulk density of at least 0.1 gram per cubic centimeter and comprising a substantially uniform dispersion of a metal, metal-containing material, or both in a porous carbon matrix, wherein the dispersed metal and metal in the dispersed metal-containing material are each a transition metal, wherein the total concentration of dispersed metal and dispersed metal-containing material is from about 0.001 to about 30 weight percent, calculated as the elemental metal and based on the weight of the catalyst, and wherein the catalyst is formed by a process comprising pyrolyzing a uniform powdered mixture of a precursor of the metal or metal-containing material, a carbon precursor and inorganic solids comprising an alkali metal hydroxide, in an inert atmosphere and at a temperature in the range of from about 400° C. to about 980° C.

4,447,666

PARA-SELECTIVE ALKYLATION CATALYSTS AND PROCESSES

John P. McWilliams, Woodbury, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,763
Int. Cl.^{3} C07C *3/52*
U.S. Cl. 585—467 **16 Claims**

1. A method for making an improved magnesium-containing, zeolite-based alkylation catalyst composition especially suitable for promoting the alkylation of mono-substituted aromatic compounds to produce a disubstituted aromatic product enriched in the 1,4-isomer of the resulting disubstituted aromatic compound, said method comprising:

(a) preparing a base catalyst composite comprising from about 25% to 80% by weight of a siliceous crystalline zeolite material characterized by a silica to alumina mole ratio of at least about 12, a Constraint Index within the approximate range of from about 1 to 12, a zeolite crystal major dimension of from about 1 to 10 microns, and a zeolite crystal minor dimension of from about 0.2 to 4 microns; said composite further comprising from about 20% to 75% by weight of an inorganic oxide binder;

(b) contacting said base catalyst composite with an aqueous solution of magnesium nitrate under contacting conditions, and for a period of time sufficient to incorporate magnesium nitrate onto said base catalyst composite; said contact of catalyst composite with said magnesium nitrate solution occurring without either prior or subsequent contact of said composite with solutions of phosphorus compounds; and

(c) calcining said magnesium nitrate-treated catalyst composite in a nitrogen-containing or oxygen-containing atmosphere at a temperature of from about 200° C. to 565° C. for a period of time sufficient to form an aromatics alkylation catalyst composition which contains from about 4% to 8% by weight of magnesium present at least in part as magnesium oxide, said alkylation catalyst composition being substantially free of phosphorus.

4,447,667

PROCESS FOR THE DEHALOGENATION OF ORGANIC COMPOUNDS

Dane K. Parker, Massillon, and Timothy A. Sabo, Southington, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 22, 1982, Ser. No. 421,678
Int. Cl.^{3} C07C *1/20*; C10G *21/16*
U.S. Cl. 585—469 **4 Claims**

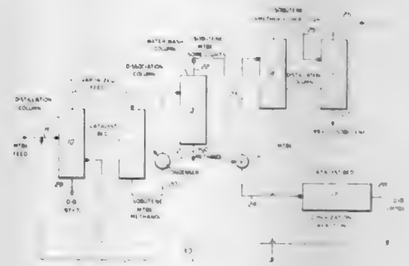
1. A process for the dehalogenation of halogenated organic materials wherein the dehalogenation is accomplished through reaction with an alkali metal aromatic radical anion reagent, the improvement comprises quenching the excess reagent after dehalogenation is completed by contacting the reaction mixture with carbon dioxide.

4,447,668

PROCESS FOR PRODUCING HIGH PURITY ISOOLEFINS AND DIMERS THEREOF BY DISSOCIATION OF ETHERS

Lawrence A. Smith, Jr., Bellaire; Edward M. Jones, Jr., Friendswood, and Dennis Hearn, Houston, all of Tex., assignors to Chemical Research & Licensing Company, Houston, Tex.

Continuation of Ser. No. 363,053, Mar. 29, 1982, abandoned.
This application May 25, 1983, Ser. No. 496,983
Int. Cl.^{3} C07C *1/00*
U.S. Cl. 585—639 **34 Claims**



1. A process for producing high purity isobutene comprising:

(a) feeding an alkyl tertiary butyl ether to a distillation column reactor into a feed zone at the lower end of a fixed bed acid cation resin packing, said alkyl having three to six carbon atoms,

(b) concurrently in said distillation column reactor:

(1) contacting said ether with said fixed bed cation exchange resin packing thereby catalytically dissociating said ether into an isobutene and alcohol having three to six carbon atoms and corresponding to said alkyl, thereby forming a non azeotroping mixture of isobutene and said alcohol, and

(2) fractionating the resulting mixture in said fixed bed cation exchange resin packing,

(c) withdrawing isobutene free of alcohol from said distillation column reactor at a point above said packing,

(d) withdrawing said alcohol from the distillation column reactor at a point below said packing.

5. A process for producing high purity diisoolefin comprising:

(a) vaporizing a feed stream containing alkyl tertiary C_4 or C_5 ether,

(b) passing said feed stream in a vaporized state through a first fixed bed cation acidic exchange resin whereby the alkyl tertiary C_4 or C_5 ether is at least partially dissociated to produce a product stream from said bed, containing isobutene or isoamylene, and an alcohol corresponding to the alkyl radical and unreacted alkyl tertiary C_4 or C_5 ether,

(c) removing said alcohol from said product stream,

(d) passing said alcohol depleted product stream in liquid phase into contact with a second fixed bed cation acidic exchange resin to form a diisoolefin product stream, and

(e) separating diisoolefin from said diisoolefin product stream.

4,447,669

PRODUCTION OF HYDROCARBONS FROM METHANOL IN THE PRESENCE OF ZEOLITE CATALYSTS

Christian Hamon, Saint Nazaire; Jean Bandiera, Lyons, and Michel Senes, La Baule, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Paris, France

Filed Dec. 17, 1982, Ser. No. 450,910
Claims priority, application France, Jan. 4, 1982, 82 00011
Int. Cl.³ C07C 1/20, 1/00
U.S. Cl. 585—640 15 Claims

1. Method of producing light olefinic hydrocarbons having 2-5 carbons from methanol, in particular unsaturated hydrocarbons, in the presence of a zeolitic mordenite catalyst, wherein

gasified methanol introduced into a carrier gas, the concentration of the methanol in an entering mixture being between 5 and 60% by volume, is passed through a catalytic bed based on dealuminised synthetic mordenite whose Si/Al ratio (atomic) is higher than 80, the methanol flow rate being between 1 and 5 liters of liquid methanol per liter of catalyst and per hour, the reaction being carried out at a temperature between 350° and 550° C., under a pressure which can reach 20 bars;

said synthetic mordenite having been de-aluminised by subjecting the mordenite to a series of alternate acid and hydrothermic treatments; during the acid treatment phase, subjecting the mordenite to treatment in a concentrated acid medium, at a temperature between 60° and 90° C., with stirring for some hours; in the hydrothermic treatment phase, bringing the mordenite to a temperature between 550° and 680° C. for some hours, at atmospheric pressure, in an air-steam mixture of which the air-steam flow rate under normal conditions of temperature and pressure is between 500 and 1250 l/h for a weight of catalyst of 1 kg, the steam concentration by volume being between 2.5 and 60%; the series of treatments commencing with an acid treatment and terminating with an acid treatment.

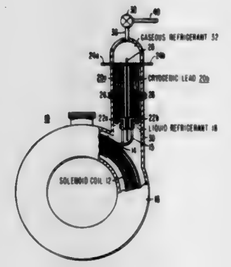
ELECTRICAL

4,447,670

HIGH-CURRENT CRYOGENIC LEADS

Phillip W. Eckels, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1982, Ser. No. 367,144
Int. Cl.³ H01F 5/08
U.S. Cl. 174—15 CA 11 Claims



1. An electrical lead, comprising:

a plurality of tubes, each of said plurality of tubes being a laminar assembly of an inner electrically conductive sleeve and an outer sleeve, said plurality of tubes being arranged in a parallel association;

an upper electrically conductive block connected to a first end of each of said plurality of tubes, said upper electrically conductive block having a plurality of holes therethrough, each of said plurality of holes being aligned in fluid communication with a preselected one of said plurality of tubes, said upper electrically conductive block being in electrical communication with said first end of each of said plurality of tubes;

a lower electrically conductive block connected to a second end of each of said plurality of tubes, said lower electrically conductive block having a plurality of holes therethrough, each of said plurality of holes of said lower electrically conductive block being aligned in fluid communication with a preselected one of said plurality of tubes, said lower electrically conductive block being in electrical communication with said second end of each of said plurality of tubes; and

means for restricting fluid flow through the central bore of said inner electrically conductive sleeve, said restricting means having an orifice therein.

3. A tubular conductor, comprising:

a first tube, said first tube being electrically conductive;

a second tube disposed around said first tube in coaxial and concentric relation;

a first fluid flow restrictor disposed inside the central bore of said first tube, said restrictor having an orifice through which a fluid can pass;

means for conducting an electric current to a first end of said first tube;

means for conducting an electric current to a second end of said first tube; and

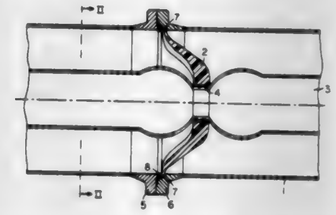
means for directing a fluid through said first tube.

4,447,671

FUNNEL-SHAPED SUPPORT INSULATOR AND A HIGH-VOLTAGE ARRANGEMENT USING THE SUPPORT INSULATOR

Franz Czech, Niederhasli, and Miroslav Subotic, Zürich, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 29, 1982, Ser. No. 426,958
Claims priority, application Switzerland, Oct. 8, 1981, 6448/81
Int. Cl.³ H02G 9/06; H01B 17/58, 9/04
U.S. Cl. 174—28 10 Claims



1. A funnel-shaped support insulator, comprising:

an insulator body having an outer edge and an orifice spaced inwardly from said edge for supporting at least one high-volatge conductor part,

said body having an at least partially convex surface terminating at said outer edge, and having a wall thickness which decreases from said orifice toward said outer edge,

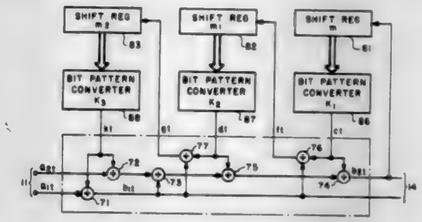
said outer edge having a plurality of lobes, said outer edge being free of control electrodes and being adapted for engaging at least one inner side of a metal housing.

4,447,672

DEVICE FOR ENCRYPTING EACH INPUT DATA BIT BY AT LEAST ONE KEYING BIT DECIDED BY A CODE PATTERN AND A BIT PATTERN OF A PREDETERMINED NUMBER OF PRECEDING ENCRYPTED BITS

Katsuhiro Nakamura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1981, Ser. No. 308,244
Claims priority, application Japan, Oct. 6, 1980, 55-139596; Mar. 11, 1981, 56-34890
Int. Cl.³ H04L 9/00
U.S. Cl. 178—22.19 24 Claims



23. A decrypting device for decrypting a sequence of receive encrypted digits into a sequence of decrypted digits, said sequence of receive encrypted digits being substantially identical with a sequence of original encrypted digits produced by an encrypting device in response to a sequence of input data digits and a sequence of encryption clock pulses timing said input data digits and said original encrypted digits with a predetermined encryption clock period, each input data digit comprising a first and a second input data bit, each original encrypted digit comprising a first and a second original encrypted bit, each receive encrypted digit comprising a first and a second

receive encrypted bit, said encrypting device comprising modulo-two encryption adding means for calculating a first encryption sum modulo two of each first input data bit and at least one encryption keying bit to produce a sequence of the first original encrypted bits with each first original encrypted bit given by said first sum, a second encryption sum modulo two of each second input data bit, said at least one keying bit, each first original encrypted bit, and a first and a second encryption adding means input bit to produce a sequence of the second original encrypted bits with each second original encrypted bit given by said second sum, and a third and a fourth encryption sum modulo two of each first original encrypted bit and said first and said second adding means input bits to produce a first and a second encryption adding means output bit given by said third and said fourth sums, respectively, encryption shift register means responsive to the encryption clock pulses supplied thereto as shift pulses for retaining, during each encryption clock period, a predetermined number m of the second original encrypted bits, a first prescribed number m_1 of the first adding means output bits successively produced by said adding means, and a second prescribed number m_2 of the second adding means output bits successively produced by said adding means to produce a unit and a first and a second additional encryption shift register bit pattern represented by the m second original encrypted bits and the m_1 first and the m_2 second adding means output bits retained therein, respectively, encryption bit pattern converting means responsive to a unit and a first and at least one second additional code pattern for converting said unit and said first and said second additional shift register bit patterns to a unit and a first and at least one second additional converted encryption bit, respectively, and feedback means for supplying said unit and said first and said at least one second additional converted bits to said adding means as said first and said second adding means input bits and said at least one keying bit, respectively, wherein said decrypting device is responsive to a sequence of local clock pulses timing said receive encrypted digits and said decrypted digits with a local clock period equal to said encryption clock period and comprises:

modulo-two decryption adding means for calculating a first decryption sum modulo two of each first receive encrypted bit and at least one decryption keying bit to produce a sequence of the first decrypted bits with each first decrypted bit given by said first decryption sum, a second decryption sum modulo two of each second receive encrypted bit, said at least one decryption keying bit, each first receive encrypted bit, and a first and a second decryption adding means input bit to produce a sequence of the second decrypted bits with each second decrypted bit given by said second decryption sum, and a third and a fourth decryption sum modulo two of each first receive encrypted bit and said first and said second decryption adding means input bits to produce a first and a second decryption adding means output bit given by said third and said fourth decryption sums, respectively;

decryption shift register means responsive to the local clock pulses supplied thereto as shift pulses for retaining, during each local clock period, m second receive encrypted bits, m_1 first decryption adding means output bits successively produced by said decryption adding means, and m_2 second decryption adding means output bits successively produced by said decryption adding means to produce a unit and a first and a second additional decryption shift register bit pattern represented by the m second receive encrypted bits and the m_1 first and the m_2 second decryption adding means output bits retained therein, respectively;

decryption bit pattern converting means responsive to said unit and said first and said at least one second additional code patterns for converting said unit and said first and said second additional decryption shift register bit patterns to a unit and a first and at least one second additional converted decryption bit, respectively; and

feedforward means for supplying said unit and said first and said at least one second additional converted decryption bits to said decryption adding means as said first and said second decryption adding means input bits and said at least one decryption keying bit, respectively.

4,447,673

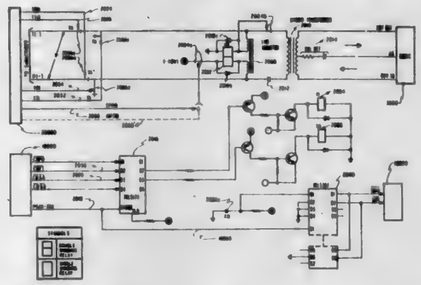
RING TRIP APPARATUS FOR A LINE CIRCUIT CONNECTED TO DCO SWITCH

George Elliott, Longwood; Pedro A. Lenk, Fern Park, and Jayantkumar R. Shah, Longwood, all of Fla., assignors to Stromberg-Carlson Corporation, Lake Mary, Fla.

Continuation of Ser. No. 063,660, Aug. 2, 1979, abandoned, which is a continuation of Ser. No. 924,770, Jul. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 864,401, Dec. 27, 1977, abandoned. This application Jul. 24, 1981, Ser. No. 286,750

Int. Cl.³ H04M *3/02*

U.S. Cl. 179—18 HB **18 Claims**



16. In a telephone switching system for selectively interconnecting subscriber telephone instruments in a telephone network, the telephone network further including a subscriber line of the type over which a d.c. signal indicates hook switch status of a corresponding subscriber telephone instrument and the telephone switching system including ringing generator means for generating an a.c. ringing signal, the improvement of a line circuit means connected to each subscriber line for generating a supervisory signal that indicates the presence of the d.c. hook status signal on the subscriber line in the presence or absence of the a.c. ringing signal, said line circuit means including:

A. d.c. signal generator means for generating a d.c. signal,

B. a bridge relay means having winding means connected in circuit with the corresponding subscriber line and contact means connected to said d.c. signal generator means for producing a supervisory signal that indicates whether the bridge relay means is energized,

C. ringing relay means including contact means for selectively coupling the ringing signal from the ringing generator means to said winding means thereby to energize the subscriber line with the ringing signal, and

D. shunting means connected to said winding means for enabling said bridge relay means to operate only in response to signals of a given polarity whereby the duty cycle of the supervisory signal indicates whether a d.c. signal is present in the subscriber line notwithstanding the presence of the a.c. ringing signal.

4,447,674

ELECTRONIC HOLD RELEASE CIRCUIT

Gary Grantland, Hartselle; Hugh S. Montgomery, Huntsville; Eduard F. B. Boeckmann, Huntsville, and Larry A. Woodworth, Huntsville, all of Ala., assignors to GTE Automatic Electric Inc., Northlake, Ill.

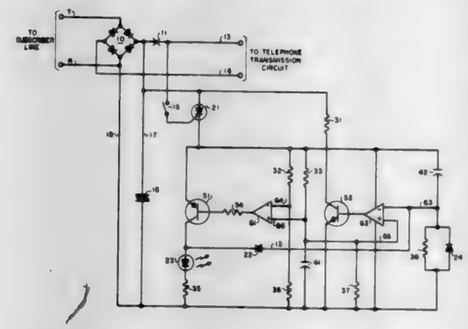
Filed Nov. 26, 1982, Ser. No. 444,760

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—81 R **11 Claims**

1. A hold release circuit for use with at least one telephone instrument and a hold circuit, said hold circuit connected to a subscriber line and a source of line voltage and said telephone instrument disconnected from said subscriber line, said hold release circuit comprising:

first and second switching devices normally turned on connecting said hold circuit to said subscriber line;



sensing means connected to said second switching device arranged to produce an output signal responsive to said telephone instrument being connected to said line, turning said second switching device off; and

load circuit means connected to shunt said first switching device responsive to said second switching device turning off, causing said first switching device to turn off and release said hold circuit.

4,447,675

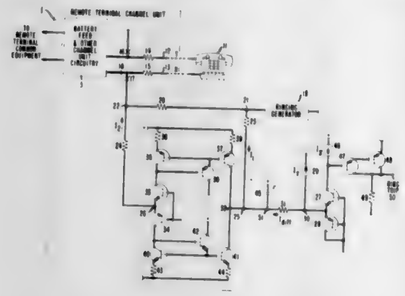
RING-TRIP DETECTOR

Tom D. Arntsen, Convent Station, and Rouben Toumani, Randolph, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 29, 1982, Ser. No. 437,804

Int. Cl.³ H04M *3/06*

U.S. Cl. 179—84 R **6 Claims**



1. A ring-trip detector circuit for the remote terminal of a subscriber loop carrier system comprising

remotely located ringing signal generating means,

resistance means having first and second opposed terminal nodes in series with said ringing signal generating means,

CHARACTERIZED BY

means for holding first and second low impedance nodes at near ground potential,

means for directly deriving from the voltage across said resistance means relatively small first and second currents and feeding said currents to said first and second low impedance nodes, respectively,

means for forming a difference signal from said first and second currents,

means for filtering AC components from said difference signal, and

means for generating a ring-trip signal when the filtered difference signal exceeds a predetermined threshold level.

4,447,676

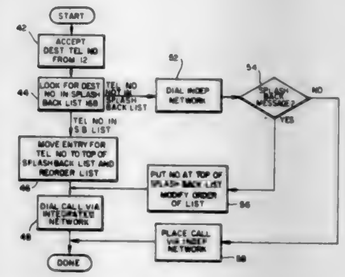
AUTOMATIC DIALER FOR TELEPHONE NETWORK ACCESS CONTROL

William J. Harris; Joseph M. Jackson, and David C. Petty, all of Cambridge, Mass., assignors to Telelogic, Inc., Cambridge, Mass.

Filed Feb. 24, 1983, Ser. No. 469,277

Int. Cl.³ H04M *1/27*

U.S. Cl. 179—90 BD **9 Claims**



1. An automatic telephone dialer for use in accessing a long-distance telephone network, comprising:

(a) a memory having a plurality of locations, each location being suitable for storing an entry indicating a group of telephone numbers not accessible via the long-distance network;

(b) means for comparing a telephone number being called with the entries in the memory and, responsive to such comparison, routing the call to the long-distance network if the number being called is not within a group of telephone numbers represented by the entries in the memory; and

(c) means for writing into said memory an indication of a telephone number called on the long-distance network when that number is found to be inaccessible via that network, whereby the directory may be compiled in said memory in response to failed attempts to access the network.

4,447,677

HEARING AID

Katsunobu Miyahra, Tokyo, and Nobuyuki Matsumoto, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1982, Ser. No. 367,214

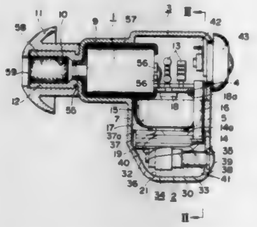
Claims priority, application Japan, Apr. 20, 1981, 56-56687

Int. Cl.³ H04R *25/00*

U.S. Cl. 179—107 R **5 Claims**

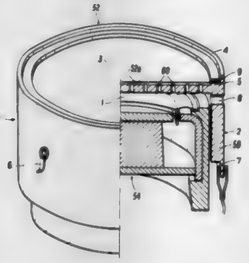
1. A hearing aid comprising a housing, a microphone for converting a received sound into an electrical signal, said microphone being mounted in said housing and having a first diaphragm, and a reproducing transducer for converting said electrical signal into sound, said reproducing transducer being mounted in said housing and having a second diaphragm, wherein the first diaphragm and second diaphragm are placed in different locations and their respective planes of vibrations are placed at an angle relative to each other, and wherein said microphone is supported by a supporting member made of an elastic material, said supporting member comprising a first

portion fixed to a solid member and a second portion connected to said first portion at a predetermined angle and having



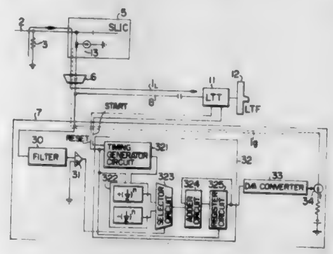
a free end, and said microphone is placed on said second portion.

4,447,678
ELECTRACOUSTIC TRANSDUCER
Werner Fidi, Baden, Austria, assignor to AKG Akustische u.-Kino-geräte Gesellschaft mbH, Austria
Filed Jul. 23, 1981, Ser. No. 286,175
Claims priority, application Austria, Jul. 28, 1980, 3920/80
Int. Cl.³ H04R *1/28, 1/24*
U.S. Cl. 179—115.5 PS **15 Claims**



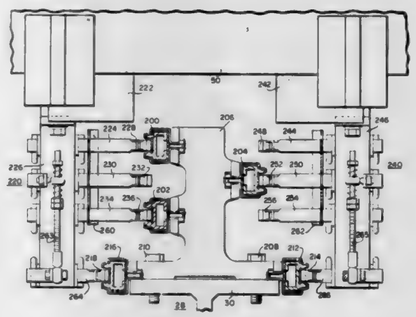
15. An electroacoustic two-way transducer assembly consisting essentially of:
- a cylindrical outer wall portion having a top end and an open bottom end;
- a flat disc shaped back plate extending across the top end of said cylindrical outer wall portion having a plurality of spaced apertures therethrough, said cylindrical outer wall portion and said back plate made of electrically conducting material;
- an electrodynamic system disposed in said cylindrical outer wall portion below said back plate and having an electrodynamic diaphragm spaced below said back plate;
- said cylindrical outer wall portion including a plurality of apertures therethrough communicating with the space between said back plate and said electrodynamic diaphragm;
- said cylindrical outer wall portion including a rim extending upwardly of said back plate and including an inwardly extending step disposed upwardly of said back plate;
- an electrostatic treble system diaphragm extending over said back plate at a spaced location with said back plate and resting on said inwardly extending step; and
- a retaining ring engaged on said step and over said electrostatic treble system diaphragm for retaining said treble system diaphragm on said step;
- said electrostatic treble system diaphragm and spaced back plate with apertures therethrough forming an electrostatic treble system above said electrodynamic system.

4,447,679
SUBSCRIBER LINE TESTING SYSTEM
Takafumi Kojima, Yokohama; Shigeru Yoshida, Kodaira, and Masayuki Mizoguchi, Tokorozawa, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan
Filed Mar. 22, 1982, Ser. No. 360,847
Claims priority, application Japan, Mar. 23, 1981, 56-40347
Int. Cl.³ H04B *3/46;* **H04M** *3/30*
U.S. Cl. 179—175.3 R **12 Claims**



1. A testing system for testing a subscriber line and a terminal equipment connected to the subscriber line with a connection of the testing system with the subscriber line through a switch, said testing system comprising:
- a semiconductor switch of the type driven by a constant current for connecting a subscriber line to a test equipment through a test line; and
- a compensation circuit including means for measuring said constant current component of said semiconductor switch in a current flowing through said switch into said test line, and means for drawing said constant current component measured by said measuring means away from said test line so as to feed only the current except said constant current component to said test equipment via said test line.

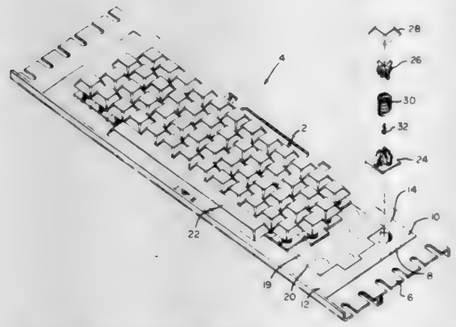
4,447,680
POWER COLLECTION APPARATUS FOR A TRANSPORTATION SYSTEM
William R. Segar, and Robert A. Larson, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 684,058, May 6, 1976. This application Nov. 20, 1978, Ser. No. 962,550
Int. Cl.³ B60L *5/40*
U.S. Cl. 191—48 **10 Claims**



1. In power collection apparatus for a vehicle having an electrical propulsion motor and being operative with a track having a vehicle support surface, with said track including one rail positioned below the vehicle support surface and being continuous through a predetermined area of the track and including a power rail positioned above the vehicle support

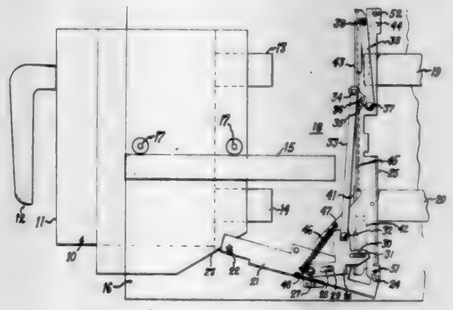
surface and not being continuous through said predetermined area of the track, the combination of
- first collector means operative with said one rail and positioned below the vehicle support surface such that said one rail determines the position of the first collector means when the vehicle travels through said area,
- second collector means operative with said power rail and positioned above the vehicle support surface such that the power rail does not determine the position of the second collector means when the vehicle travels through said area,
- collector support means carried by said vehicle for pivotally supporting each of said first and second collector means, and
- connection means provided between said first collector means and said second collector means for controlling the position of said second collector means when the vehicle travels through said area and as determined by the position of said first collector means.

4,447,681
SWITCH KEY ASSEMBLY HAVING IMPROVED SWITCH ACTUATION
Mark R. Desmarais, Derry, N.H., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 22, 1983, Ser. No. 468,732
Int. Cl.³ H01H *13/70, 3/00*
U.S. Cl. 200—5 A **19 Claims**



1. A switch key assembly of the type comprising a frame having a frame column, the column having a fixed lower end and a free upper end, a plunger on the frame, the plunger being normally in an extended position and being movable on the column parallel to the axis thereof towards the fixed end of the column to a depressed position, a spring which is effective to bias the plunger to the extended position, normally open switch contacts disposed proximate to the fixed end of the column, and a switch actuator which is responsive to movement of the plunger for moving the switch contacts to their closed positions when the plunger is moved to the depressed position, the switch key assembly being characterized in that:
- the switch actuator comprises a bell crank having an actuator arm and a cam follower arm, the bell crank being pivotally mounted on a pivotal axis which is proximate to the fixed end of the column and which extends transversely of the axis of the column,
- the cam follower arm extending beside the axis of the column and the actuator arm extending transversely of the axis of the column, the actuator arm having an actuator portion which is adjacent to the switch contacts and which is movable towards the switch contacts and which closes the switch contacts upon rotary movement of the bell crank in a first direction,
- the cam follower arm having a first cam follower portion and the plunger having a first cam surface thereon which cooperates with the first cam follower portion to cam the bell crank in the first direction upon movement of the plunger to the depressed position whereby, upon movement of the plunger from the extended position to the depressed position, the switch contacts are closed, and upon return of the plunger to the extended position, the bell crank rotates in a second direction, which is opposite to the first direction, and the switch contacts are opened.

4,447,682
ISOLATION SHIELDS FOR A 2500-4000 AMP CIRCUIT BREAKER COMPARTMENT
Roger N. Castonguay, Terryville, Conn., assignor to General Electric Company, New York, N.Y.
Filed Feb. 16, 1982, Ser. No. 349,335
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—50 AA **8 Claims**



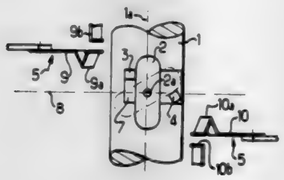
1. A shield operating mechanism for a circuit breaker compartment comprising:
- a side support frame;
- an upper moveable shield hingeably attached to a top portion of said side support frame;
- a lower moveable shield hingeably attached to a bottom portion of said support frame;
- a primary operating arm hingeably attached to said bottom portion of said side support frame for contacting a rear portion of a circuit breaker;
- an upper and a lower expansion link interconnected by means of a rotatably mounted connecting link, said lower expansion link connected with means for opening said lower moveable shield when said primary operating arm is moved in a downward direction and said upper expansion link containing means for opening said upper moveable shield when said primary operating arm is moved in a downward direction.

4,447,683
AUTOMOTIVE BLINKER OR TURN INDICATOR SWITCH
Michel Nigon, Sartrouville, France, assignor to Automobiles Peugot and Automobiles Citroen, both of, France
Filed Dec. 18, 1981, Ser. No. 332,228
Claims priority, application France, Dec. 24, 1980, 80 27532
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.27 **6 Claims**

1. Automotive blinker or turn indicator switch apparatus for a vehicle, having an actuating member which is movable in two directions, said switch apparatus adapted to make or break an electric circuit including at least one blinker, comprising:
- cam mounting means including shaft means fixed at one of its ends to the actuating member;
- an elongated cam pivotally mounted on a free end of said shaft means for free rotation with respect to said shaft means about an axis of rotation, said cam describing a path of travel upon movement of the actuating member;

stop means mounted on said mounting means for limiting the free rotation of said cam to an angle of less than 90° in either the clockwise or counter-clockwise direction, said stop means including plate means fixedly mounted on said shaft means and a pair of stop members secured on said plate means; and

a pair of parts for making and breaking the electric circuit, each part being mounted at a respective lateral side of said



cam along said path of travel thereof and being located on a respective one of the sides of a plane which is perpendicular to an axis of said actuating member and which passes through the axis of rotation of said cam;

whereby said cam positively acts on a certain one of said parts upon movement of the actuating member as determined by the particular direction in which the actuating member is moved.

4,447,684

AUTOMOTIVE HORN SWITCH STRUCTURE ON STEERING WHEEL

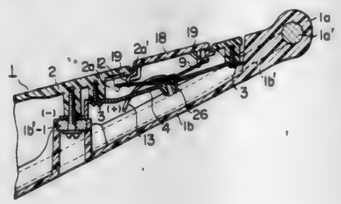
Tomokazu Sugiyama, Fuji, Japan, assignor to Nihon Plast Co., Ltd., Shizuoka, Japan

Filed Jul. 15, 1983, Ser. No. 514,232

Claims priority, application Japan, Jul. 16, 1982, 57-108278[U]

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—61.54 **6 Claims**



1. An automotive horn switch structure mounted on a steering wheel having a horn button, comprising a contact plate secured to said steering wheel, a horn spring and a fastener of an electrically insulating material securing said contact plate and said horn spring together such that said contact plate and said horn spring are electrically insulated from each other, said horn spring having at least one integral contact point adapted to be actuated by said horn button into contact with said contact plate, said contact plate being electrically connected to one of plus and minus terminals of an electric power source and said horn sprng being electrically connected through an electric wire to an electrically energizable horn electrically connected to the other terminal of said power source whereby, when said contact point of said horn spring is actuated by said horn button into contact with said contact plate, said horn is electrically energized, said fastener including a base having first and second surfaces and self-locking resilient legs formed integrally with said base extending from said first surface and cooperating with said base to secure said contact plate to said fastener, wherein said fastener further includes a pair of spaced self-locking resilient pawls integrally formed with said base, extending from said second surface thereof and having locking claws extending toward each other, said self-locking pawls cooperating with said base to grasp and hold a part of said horn plate between said second surface of said base and said locking claws, said electric wire having a part grasped and held between said part of said horn plate and said second surface of said base so that said wire is electrically connected to said horn plate.

4,447,685

SMALL-SIZED PUSH-BUTTON SWITCH

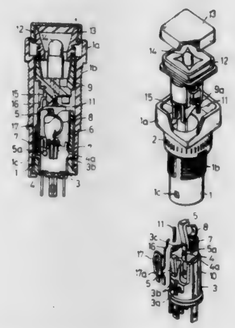
Shigeo Ohashi; Tadashi Nakamura, and Koji Kamisada, all of Tokyo, Japan, assignors to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,367

Claims priority, application Japan, Feb. 28, 1982, 57-27622[U]; Feb. 28, 1982, 57-27623[U]

Int. Cl.³ H01H *13/46*

U.S. Cl. 200—67 D **9 Claims**



1. A small-sized push-button switch which comprises;

at least one switch mechanism, each including a movable contact, fixed contacts disposed on opposite sides of the movable contact, a switch base for holding the lower portions of the movable contact and fixed contacts, an arm extending upwardly and being swung about one side portion of the switch base as a fulcrum and a resilient piece provided between the arm and the movable contact,

a switch auxiliary base for holding the switch mechanism therein,

a plunger having a push-button provided at the top and an inclined surface provided on the bottom thereof said plunger disposed on the arm so that the inclined surface of the plunger is slidable on the outer top surface of the arm, said plunger causing the arm to be swung in a direction by depression of the push-button and causing the movable contact to be moved in the other direction due to the action of the resilient piece whereby a switching operation is made,

the direction of movement of the plunger, the movable contact and fixed contacts being disposed vertically,

a heart cam formed on one side of the plunger for the heart cam being provided under the lower portion thereof with a cut-out,

a resilient plate attached to the switch auxiliary base disposed below the plunger and provided with an aperture, and

a hook pin adapted to be pushed toward the heart cam from the outside and folded at upper and lower ends in opposite directions, one end of the hook pin being inserted into the aperture of the resilient plate to form a fulcrum and the other end of the hook pin being engaged with the heart cam through the cut-out, the positions where the heart cam and the hook pin are disposed being made as a recess whereby said plunger maybe latched in a depressed position by said cam and pin.

4,447,686

PUSHBUTTON SWITCH OR PUSHBUTTON-ACTUATED SLIDE SWITCH

Werner H. Fieber; Klaus Hinze; Manfred K. O. Huth; Hans-Georg Jost; Klaus D. Lamm; Dieter Michalski, and Konstantin Rittaler, all of Berlin, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,202

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3148855

Int. Cl.³ H01H *9/26, 9/20*

U.S. Cl. 200—153 J **1 Claim**



1. An electrical pushbutton switch assembly comprising, in combination:

a housing;

a switch slider mounted in said housing for reciprocal motion therein, said slider having a generally heart-shaped cam in a first surface of said slider;

a detent pin extending through said housing and into said cam and said cam having a plurality of curved paths for receiving and guiding said detent pin therein;

a return spring resiliently urging said slider in a direction away from said housing;

a detent profile provided in a surface of said slider adjacent to said first surface with said detent profile defining latched and released slider positions; and,

a detent bar movably mounted adjacent to said housing for reciprocal motion in a direction perpendicular to the direction of motion of said slider, said detent bar being resiliently biased toward said detent profile, said detent bar having a first projection extending into and engaging said detent profile, and said detent bar having a second projection extending toward and engaging said detent pin thereby to move said detent bar in response to relative movement of said detent pin with respect to said cam when the relative movement of said detent pin is along a selected one of said curved paths, whereby said detent pin moves said first projection away from said detent profile when the relative movement of said detent pin is along said selected curved path and toward the released slider position.

4,447,687

PUSHBUTTON SWITCH

Erich Marquardt, Rietheim-Weilh., and Ekkehard Sachs, Spaichingen, both of Fed. Rep. of Germany, assignors to Marquardt GmbH, Fed. Rep. of Germany

Filed Sep. 10, 1982, Ser. No. 416,546

Int. Cl.³ H01H *13/66*

U.S. Cl. 200—159 R **23 Claims**

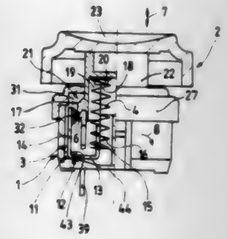
1. A pushbutton switch comprising:

a casing having an electrically non-conducting fixed bearing therein;

a button movably mounted with respect to said casing in an actuating direction and from an open position to a closed position, said button having a cam surface;

a contact member having at least two legs joined at an angle junction, said angled junction pivotally mounted on said fixed bearing for permitting pivotal movement of said contact member;

biasing means engaged between one of said contact member



legs and said button for biasing said button toward its open position, the other of said contact member legs bearing against said cam surface of said button;

at least one movable contact mounted on said contact member and at least one fixed contact mounted in said casing, said contact member movable by movement of said button to its closed position to establish engagement between said movable and fixed contacts.

4,447,688

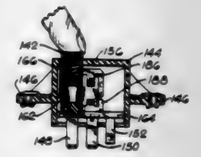
PUSH BUTTON SWITCHES HAVING IMPROVED CARRIAGE, CONTACTOR AND CONTACT CONSTRUCTIONS

William J. Schaad, Winnetka; Charles E. Black, III, Mount Prospect, and Raymond T. Halstead, Wheeling, all of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Division of Ser. No. 287,690, Jul. 28, 1981, Pat. No. 4,392,029. This application Sep. 23, 1982, Ser. No. 421,820

Int. Cl.³ H01H *3/12*

U.S. Cl. 200—159 R **20 Claims**



1. A push button switch, comprising

a push button,

a casing having guide means for guiding said push button along a path between extended and depressed positions,

resilient means biasing said push button toward said extended position,

a carriage member extending laterally in one lateral direction from said push button in said casing,

a conductive contactor mounted on said carriage member and movable with said carriage member in said casing along a path which is parallel with the path of said push button,

said contactor facing in a transverse lateral direction relative to said one lateral direction,

contact means in said casing and selectively engageable by said contactor,

and spring means acting in said transverse lateral direction between said carriage member and said contactor to afford spring pressure between said contactor and said contact means,

said spring means having a line of action spaced in said one lateral direction from the center line of said push button and thereby tending to cause twisting rotation of said push button,

said guide means including stabilizing means for stabilizing said push button against such twisting rotation due to the transverse lateral force of said spring means.

4,447,689

SLIDE ACTUATED, SNAP ACTING MULTIPLE ROCKER SWITCH

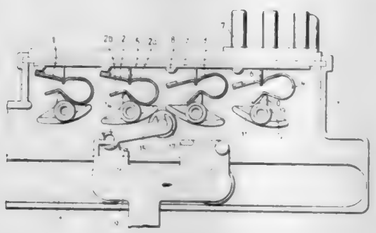
Werner Schiller, Erzhausen, Fed. Rep. of Germany, assignor to Max Kammerer GmbH, Oberursel/Taunus, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,398

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144740

Int. Cl.³ H01H *3/20*

U.S. Cl. 200—330 **15 Claims**



1. A slide actuated, snap acting multiple rocker switch comprising:

a plurality of contact springs each being in the shape of a loop and each being mounted on a pivot member and having a contact point at one end and a catch adjacent the opposite end,

a corresponding roll member for each of said contact springs, each of said roll members being mounted for rotation about an axis, and each of said roll members having two cams forming a rocker and a third cam engaging said catch,

guide means,

switching slide means mounted on said guide means for movement along said guide means, said switching slide means including a portion adapted to contact successive ones of said rockers as said switching slide means is moved along said guide means for successive actuation of said contact springs, and

said rockers being so spaced that adjacent ones of said rockers form a detent for said switching slide means between adjacent ones of said rockers.

4,447,690

INDUCTIVE PREHEATING OF UPSET TUBING

Arnold J. Grever, Colmar, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Dec. 28, 1981, Ser. No. 335,189

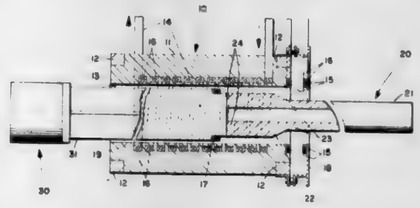
Int. Cl.³ H05B *6/40*

U.S. Cl. 219—10.43 **4 Claims**

1. In a method of heating an object to a substantially uniform temperature, said object having at least one portion tending to absorb energy at a higher rate when heated and at least one other portion tending to absorb energy at a lower rate when heated, the steps comprising:

a. subjecting said portions of said object of induction preheating in a magnetic field, produced by an energized induction coil having a plurality of turns and at least one robber coil having at least one turn and placed within the magnetic field produced by said energized induction coil in close proximity to said portion of said object tending to absorb energy at a higher rate, while said object is positioned at a predetermined position within said magnetic field;

b. controlling said magnetic field in a manner to provide controlled portions including one magnetic field portion adjacent said portion of said object which tends to absorb energy at a lower rate, thereby heating said portion of said object to a predetermined temperature, and further including another magnetic field portion adjacent said portion of said object which tends to absorb energy at a



higher rate, wherein said magnetic field portion is of lesser magnitude than the magnetic field portion first mentioned, thereby heating said portion tending to absorb energy at a higher rate to a temperature which is lower than said predetermined temperature first mentioned;

c. continuing the induction preheating of said portions of said object to reach said different predetermined temperatures at said different portions of said object;

d. removing said object from said magnetic field; and

e. post-heating said object with a separate heating means to a substantially uniform temperature.

4,447,691

CIRCUIT FOR DETECTING A UTENSIL LOAD PLACED ASYMMETRICALLY RELATIVE TO AN INDUCTION HEATING COIL

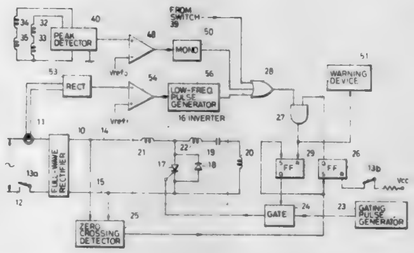
Takumi Mizukawa, Neyagawa; Keizo Amagami, Takatsuki, and Takao Kobayashi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jul. 30, 1980, Ser. No. 173,802

Claims priority, application Japan, Jul. 31, 1979, 54-98218; Jul. 31, 1979, 54-98219

Int. Cl.³ H05B *6/12*

U.S. Cl. 219—10.49 R **49 Claims**



1. An induction heating cooking apparatus having an ultrasonic frequency energy source powered by a low frequency energy source, and a spirally wound indu tion heating coil of a flat configuration energized by said ultrasonic frequency energy source to provide an ultrasonic frequency magnetic field, the coil being mounted below a top plate on which a utensil is placed, comprising:

means positioned and oriented to be responsive to the magnetic field for detecting when said ultrasonic frequency magnetic field has an asymmetric distribution of energy with respect to the center of said heating coil in response to said utensil being located asymmetrically with respect to said center and for deriving a signal indicative of the displacement of said utensil from said center; and

means for generating a warning signal in response to said displacement indicative signal having a value associated with at least a predetermined assymmetric displacement.

4,447,692

CONTROL SYSTEM WITH INTERACTIVE DISPLAY

Eugene P. Mierzwinski, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed May 18, 1981, Ser. No. 264,731

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—10.55 B **21 Claims**



1. A control system for an appliance having controlled devices operative in a plurality of selectable modes, each said mode comprising one or more respective operating sequences, said control system including storage means and electronic control means operable to effect the operating sequences of selected ones of said modes, representations of a plurality of symbols being stored in said storage means, said representations being representative of respective ones of said operating modes, display means, means for retrieving said symbol representations from storage and displaying said representations so retrieved at said display means as corresponding symbols in a plurality of groups of symbols, each said symbol group having at least one symbol and being displayed separately in time from the other said groups, respective manually operated adaptive input means associated with and positioned in visual proximity with each symbol in a said displayed group of symbols, said electronic control means being responsive to operation of a said adaptive input means during display of a respective mode symbol thereat for subsequently effecting the operating sequence associated with the respective said displayed mode symbol, and further including a plurality of manually operated dedicated input means each being for the input of fixed data to said control means and storage means, said control means and storage means being responsive to the input of said data from said dedicated input means directly following operation of a particular said adaptive input means during display of a respective particular mode symbol thereat for at least partly defining said operating sequence of said respective operating mode.

4,447,693

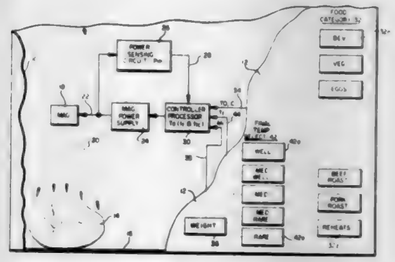
POWER CONTROLLED MICROWAVE OVEN

Ronald G. Buck, Burnsville, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Division of Ser. No. 73,077, Sep. 6, 1979. This application Oct. 22, 1981, Ser. No. 313,904

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—10.55 M **7 Claims**



1. In a microwave oven including a microwave energy source for heating food, a method for controlling the cooking of said food comprising the steps of:

determining the absorbed power in said food during cooking;

determining the average temperature of said food being heated using the derived absorbed power and cooking parameters in the relationship:

$$T_a = T_o + a_1[(P_a)t/M] + a_2[(P_a)t/M]^2 + a_3[(P_a)t/M]^3$$

where,

T_o is the initial food temperature,

P_a is the absorbed power in the food,

t is the food cooking time,

M is the initial food mass, and

a_1, a_2, a_3 are coefficients relating to food weight loss and are determined experimentally for various food categories and masses; and

repetitively performing the above steps until the determined value of average food temperature, T_a, substantially equals the predetermined final value of average food temperature, T_f.

4,447,694

APPARATUS FOR BREAKING UP METAL PARTS

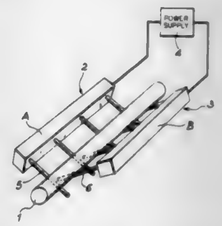
Michel Brochier, Jarrie, and Jean Chavand, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, France

Filed Oct. 19, 1981, Ser. No. 312,773

Claims priority, application France, Oct. 23, 1980, 80 22683

Int. Cl.³ B23P *1/02*; B02C *19/00*

U.S. Cl. 219—68 **1 Claim**



1. An apparatus for breaking up filiform metallic parts, comprising at least two fixed conductive supports connected to an electric power supply, each able to at least partly support

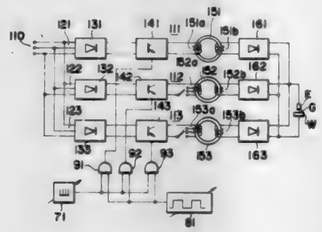
parts to be broken up, the two conductive supports being constituted by two comb-like members whose teeth are respectively meshed, the teeth of the comb-like members being parallel to each other and respectively located on two planes oriented so that the two comb-like members form a funnel, and said teeth being made of graphite.

4,447,695

INVERTER-TYPE POWER SUPPLY CIRCUIT FOR ELECTRICAL MACHINING

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Apr. 15, 1981, Ser. No. 254,300
Claims priority, application Japan, May 13, 1980, 55-63716
Int. Cl.[3] B23P *1/08*
U.S. Cl. 219—69 C 7 Claims



1. A power supply circuit for electrical machining, comprising:

a plurality of inverter circuits connectable in parallel with one another to have their respective input sides connected jointly to a common source of commercial alternating current and their respective output sides connected jointly to a single electrical machining gap, each of said parallel inverter circuits individually comprising:

a transformerless input means connectable directly to said common source of alternating current of a commercial supply frequency and an original voltage,

a rectifier means connected to said input means directly for converting said commercial alternating current to a direct current at said original voltage, and

a high-frequency transformer having a primary winding connected via a high-frequency switch means to the output of said rectifier means and a secondary winding connectable via further rectifier means to said single electrical machining gap;

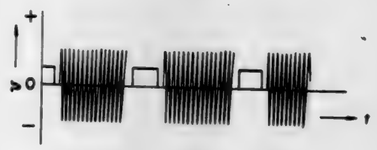
a common pulsing means for said plurality of the high-frequency switch means and for supplying thereto in unison a succession of signal pulses and thereby pulsing each of said direct currents at the respective outputs of said plural rectifier means to provide a succession of transformed alternating output pulses of a desired voltage level and with time parameters corresponding to said succession of signal pulses at each of said plural high-frequency transformers and, in turn, to provide at the respective outputs of said plural further rectifiers a concurrently occurring plurality of trains of unidirectional machining pulses with each machining pulse having said desired voltage level and with successive machining pulses corresponding in time parameters to successive signal pulses and eventually to superimpose said machining pulses at the outputs of said plural further rectifier means upon one another to provide a succession of superimposed machining pulses and for applying said succession of the superimposed machining pulses across said single electrical machining gap, at least one of said high-frequency transformers having a plurality of settings of the ratio of transforming said original voltage to said desired voltage level, which settings are capable of selectively establishing the voltage and current characteristics of said superimposed machining pulses.

4,447,696

PROCESS AND APPARATUS FOR HIGH FREQUENCY DISCHARGE SHAPING OF A WORKPIECE BY MEANS OF A RECTANGULAR BIPOLAR PULSATING VOLTAGE

Yoshiei Niwa, Yokohama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 47,819, Jun. 12, 1979, abandoned, which is a continuation of Ser. No. 766,347, Feb. 7, 1977, Pat. No. 4,211,908, which is a continuation of Ser. No. 548,019, Feb. 7, 1975, abandoned. This application Sep. 3, 1981, Ser. No. 299,197
Claims priority, application Japan, Feb. 19, 1974, 49-19130; Feb. 19, 1974, 49-19134; Feb. 19, 1974, 49-19131; Feb. 19, 1974, 49-19132; Feb. 19, 1974, 49-19133; Feb. 19, 1974, 49-25309; Feb. 19, 1974, 49-25210; Feb. 19, 1974, 49-25311; Feb. 19, 1974, 49-25312; Mar. 6, 1974, 49-25313
Int. Cl.[3] B23P *1/08*
U.S. Cl. 219—69 P 4 Claims



1. A process for high frequency discharge shaping of a work-piece comprising the steps of:

providing an electrode spaced by a gap from said work-piece;

generating an intermittent high frequency rectangular bipolar pulsating voltage;

generating an intermittent DC voltage and applying said DC voltage to said intermittent high frequency rectangular bipolar pulsating voltage during the quiescent period of said intermittent high frequency voltage to form a resultant voltage;

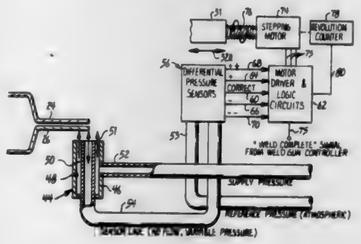
applying said resultant voltage across said gap between said electrode and said work-piece for accomplishing said discharge shaping whereby a black film is formed on the surface of said electrode to retard the consumption of said electrode and whereby the accuracy in the shape of the work-piece is improved.

4,447,697

WELD GUN REPOSITIONING SYSTEM FOR PROGRAMMABLE MANIPULATOR

Maurice J. Dunne, Newtown, and Klaus W. Nielsen, Brookfield Center, both of Conn., assignors to Unimation, Inc., Danbury, Conn.

Continuation of Ser. No. 891,000, Mar. 28, 1978, abandoned. This application Mar. 2, 1983, Ser. No. 471,304
Int. Cl.[3] B23K *11/10*
U.S. Cl. 219—86.41 33 Claims



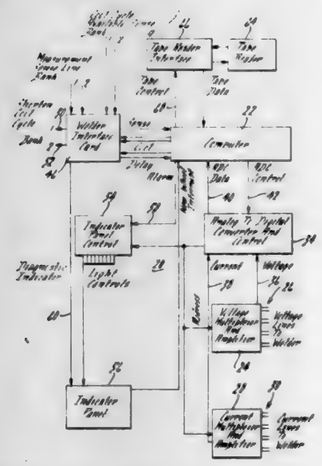
1. In a programmable manipulator, the combination of, a manipulator arm, means for moving said arm in a plurality of axes, means for generating command signals during a playback cycle, means controlled by said command signals for controlling said arm moving means to move said arm over a desired path relative to a workpiece, a weld gun positioned on the end of said arm and operative to perform a series of spot welds at predetermined points along said path during said playback cycle, means for sensing the relationship between said weld gun and a predetermined portion of the workpiece immediately after a spot weld is made at one of said predetermined points, and means controlled by said sensing means for modifying said path by successive predetermined increments as said arm is moved to successive ones of said predetermined points, thereby to maintain said gun in generally fixed relation to said predetermined portion of the workpiece.

4,447,698

WELDING SYSTEM MONITORING AND CONTROL SYSTEM

Truman T. Van Sikle, Saline, and Charles J. Drake, Detroit, both of Mich., assignors to Kelsey Hayes Company, Romulus, Mich.

Continuation of Ser. No. 338,453, Mar. 6, 1973. This application Dec. 18, 1974, Ser. No. 534,066
Int. Cl.[3] B23K *11/24*
U.S. Cl. 219—110 58 Claims



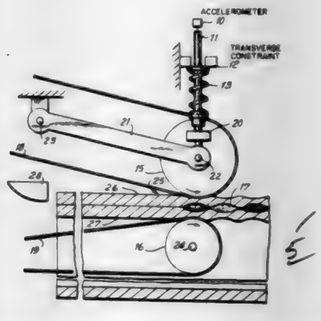
1. A welding control system for a pulse welder having a welding cycle including heat portions and cool portions, the pulse welder including at least one welding head, a source of welding pulses of preselected duration, a standard control circuit for generating a standard connected between the source and the welding head for controlling the application of alternate of the head and cool portions to a welding load by controlling the number of welding pulses fed to the load during the heat portion and the duration of the cool portion, the standard control circuit including means for generating a series of clock pulses for controlling the duration of the heat and cool portions of the welding cycle of the load by counting a preselected number of clock pulses in the heat and cool portions of the cycle, the improvement comprising means connected to the standard control circuit for altering the duration of the heat and/or cool portions of the cycle counted by the standard control including sensing means for sensing a first set of voltage and current characteristics flowing in the load during a heat portion, means for generating a varying standard impedance characteristic from said sensed first set of voltage and current characteristics flowing in the load, an interface circuit connected to the current and voltage sensing means and said impedance characteristic generating means for feeding the voltage and current signals to said impedance characteristic generating means, said sensing means sensing and feeding a second set of voltage and current characteristics to said impedance characteristic generating means, said generating means generating a second impedance characteristic from said second set, and means for comparing said second impedance characteristics of the weld with the standard impedance characteristic and generating a pulse by pulse altering signal when the sensed impedance characteristic is not within the generated standard characteristics, said altering means connected to the standard control for altering the heat and/or cool portions to maintain said second impedance characteristic within limits of said standard characteristic.

4,447,699

CLOSED LOOP CONTROL OF CONTINUOUS SEAM RESISTANCE HEATED FORGE WELDING CYLINDERS

Vance B. Gold, Lombard; Edward F. Kubacki, Marengo, and Thomas Krewenka, Prospect, all of Ill., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 173,761, Jul. 30, 1980, Pat. No. 4,376,884. This application Nov. 5, 1982, Ser. No. 439,551
Int. Cl.[3] B23K *11/24*
U.S. Cl. 219—110 4 Claims



1. A method for using an electrical signal from a pulsing resistance and mechanical force welding process applied across a thin metallic juncture including the following steps:

monitoring the relative acceleration of a resistance welding electrode during a welding operation,

providing a signal which is representative of the variations in said electrode acceleration,

filtering said acceleration signal into that which represents electrode acceleration, and

adjusting the relative power through said welding electrode to achieve an acceptable electrode acceleration.

4,447,700

RESISTANCE SPOT WELDER ADAPTIVE CONTROL

Robert K. Cohen, Troy, N.Y., assignor to General Electric Company, Schenectady, N.Y.

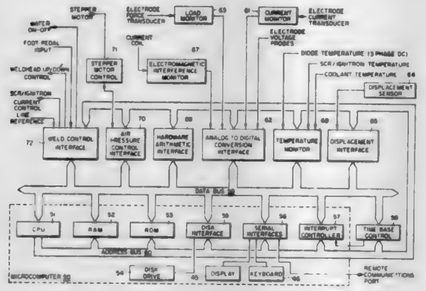
Filed Jun. 7, 1982, Ser. No. 386,153
Int. Cl.[3] B23K *11/24*
U.S. Cl. 219—117.1 17 Claims

1. A method of controlling a resistance spot welding process practiced on a welding machine which applies an electrode mechanical load to the workpieces and has a primary circuit and a secondary circuit that supplies power to the electrodes, comprising the steps of:

diagnosing the condition of said workpieces and machine before welding by measuring certain variables and determining that these variables are within predefined limits;

applying power pulses to weld said workpieces, measuring workpiece thermal expansion and expansion rate after every welding pulse and comparing respectively to a known target maximium expansion and to preset expansion rate limits, and dynamically adjusting the welding

power as a function of workpiece thermal expansion and rate of expansion in order to control the formation of a weld nugget; and



supplying additional power pulses and dynamically adjusting the welding power after every power pulse to control the cooling rate and temper the welded workpiece.

4,447,701

SLAG CAPTURE AND REMOVAL DURING LASER CUTTING

Clyde O. Brown, Newington, Conn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1982, Ser. No. 343,609
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LG **5 Claims**





1. A method for cutting a austinetic stainless steel workpiece and collecting slag resulting therefrom, comprising:
directing a laser beam onto said workpiece to thereby melt metal therefrom and form magnetized slag by transforming the austinetic stainless steel to a martinsitic steel slag;
directing a gas stream toward the area of said workpiece which is thus being melted to thereby blow said slag away from said area along a path; and
collecting said slag on a magnet located on said path.

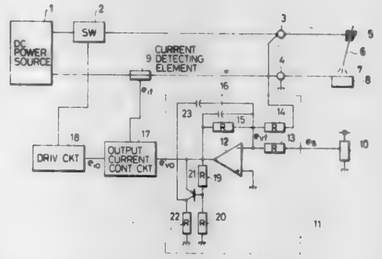
4,447,702

DC ARC WELDING APPARATUS HAVING VARIABLE CURRENT RESPONSE

Takaji Mizuno; Hiroshi Suwahara, and Hirohisa Segawa, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,408
Claims priority, application Japan, Aug. 12, 1981, 56-126496
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—130.33 **5 Claims**

1. A DC welding apparatus, comprising:
a DC power source for supplying current between a welding electrode and a material to be welded via a switching element;
means for comparing a feedback voltage detected across said welding electrode and said material to be welded with a predetermined voltage, to provide a difference signal;
circuit means having a plurality of delay elements selectively operated in response to an output signal of said comparing means;
current detecting means for detecting a current flowing between said welding electrode and said material to be welded;



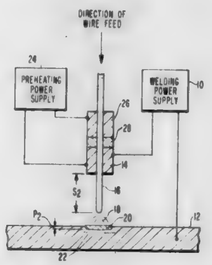
an output current control circuit for subjecting a current detected by said current detecting means and an output of said circuit means corresponding to a predetermined current to comparison to derive a control signal; and
driving means responsive to said control signal for driving said switching element.

4,447,703

METHOD AND APPARATUS FOR ARC WELDING

Israel Stol, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1981, Ser. No. 321,156
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—136 **2 Claims**



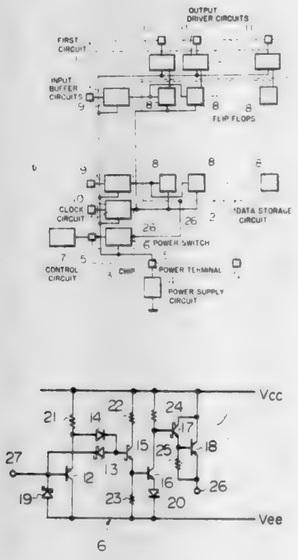
1. An apparatus for welding a metal workpiece comprising:
a first source of electric power connected between a first electrode contact tip and the workpiece;
a second source of electric power connected between said first electrode contact tip and a second electrode contact tip, wherein said first and second electrode contact tips are spaced apart by a fixed distance;
a consumable electrode slidably disposed between said electrode contact tips, wherein the preheat content of said consumable electrode is controlled by adjusting current flowing through a fixed length of said consumable electrode between said first and second contact tips; and
a dielectric element between said electrode contact tips, said dielectric element having an opening through which said consumable electrode passes to prevent lateral movement of said consumable electrode.

4,447,704

SEMICONDUCTOR DEVICE FOR DRIVING THERMAL PRINT HEADS

Hirokazu Suzuki, Yamato, and Takehiro Akiyama, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 18, 1983, Ser. No. 458,849
Claims priority, application Japan, Jan. 19, 1982, 57-006335
Int. Cl.³ H05B *3/00;* **G01D** *15/10;* **B41J** *3/20*
U.S. Cl. 219—216 **13 Claims**



1. A semiconductor device formed on a single semiconductor chip operatively connected to receive a power control signal, comprising:
a first circuit activated when power is applied to the semiconductor device, comprising:
input buffer circuits; and
output driver circuits, operatively connected to said input buffer circuits; and
a second circuit, operatively connected to said first circuit, activated only when both power and the power control signal are applied to the semiconductor device, said second circuit comprising a data storing circuit operatively connected to said input buffer circuits and said output driver circuits.

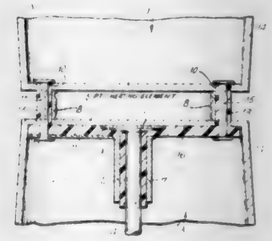
4,447,705

HAIR CURLERS HAVING PTC ELECTRIC HEATING ELEMENT

James H. Bullock, Trumbull, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,434
Int. Cl.³ A45D *2/36;* **H05B** *1/00*
U.S. Cl. 219—222 **6 Claims**

1. An electrically heated hair curler comprising a generally cylindrical member about which hair may be wound and containing as a self regulating heater, a positive temperature coefficient thermistor, wherein said positive temperature coefficient thermistor is a flat disc having electrically and heat conducting cup shaped heat sinks on the opposite flat faces thereof, the outside bottoms of said heat sinks being in heat conducting and electrical contact with said thermistor and held tightly against said faces by electrically conductive connectors positioned through holes in the bottoms of said heat sinks and recesses in the outer circumference of said positive temperature coefficient thermistor, said connectors being electrically insulated from said thermistor and one of said cup-shaped heat sinks and electrically connected to the other of cup-shaped heat sinks; an electrical contact pin in electrical contact with the inside of the bottom of said one heat sink and held in place by a plastic insulator spacer; said insulator spacer having a sleeve in the center thereof around a portion of said pin which supports a ring electrical contact member and insulates it from said pin;



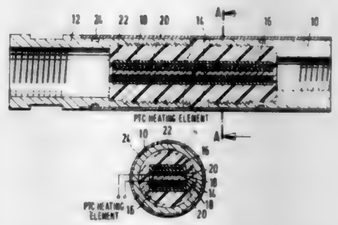
said ring electrical contact member having a leg extending radially outward from the portion thereof and resting on the insulator spacer so as to be insulated from said one heat sink, said leg having a hole therein through which one of the connectors extends and is in electrical contact therewith; the positive temperature coefficient thermistor being positioned so the center point of the flat faces thereof is concentric with the longitudinal axis of said curler, the sides of said heat sinks being imbedded in said cylindrical member to conduct heat thereto.

4,447,706

NOZZLE ASSEMBLY WITH INTEGRATED PTC HEATER FOR PREWARMING FUEL OIL

Werner Eder, and Gisbert Fischer, both of Dauchingen, Fed. Rep. of Germany, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 133,893, Mar. 25, 1980, abandoned.
This application Aug. 30, 1982, Ser. No. 413,081
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2912000; Jul. 31, 1979, 2930996
Int. Cl.³ F23D *11/44;* **F02M** *31/12;* **H05B** *1/02, 3/14*
U.S. Cl. 219—299 **1 Claim**



1. In an oil burner system having a burner nozzle connected to a supply of fuel oil by a nozzle assembly incorporating a heater for prewarming the fuel fed to the nozzle, the improvement wherein said nozzle assembly comprises an elongated casing means having a first connector means at one end thereof directly connected to said nozzle and a second connector means at its other end directly connected to a conduit receiving oil from said supply of fuel, said preheater means comprising, an elongated rectangularly shaped PTC heating resistor in said casing means for the automatic controlled preheating of fuel oil received from said supply of fuel, said PTC resistor having a pair of parallel sides of greater width than the thickness of said resistor, coextensive electrical contact means extending longitudinally and transversely in electrical engage-

ment with said parallel sides, electric connecting means attached to said contact means for supplying electrical power thereto, heat transfer means in said casing means for transferring heat from said PTC resistor to oil flowing in said casing means, said heat transfer means including flattened parallel metal thin wall conduit sections extending between said first and second connectors and defining thin generally rectangular cross section flow paths for oil flowing through said casing means from said source of oil to said nozzle, said conduit sections extending coextensively with and sandwiching said PTC resistor therebetween, a thin layer of electrical insulation material being interposed between said resistor and said conduit sections, said conduit sections being in effective heat transmitting relation to said PTC resistor parallel sides with said conduit sections having said flattened surfaces thereof parallel to and facing said parallel sides of said resistor and in direct heat conductive relationship thereto through said thin insulation layer therebetween, and said parallel conduit section flow paths having smooth unimpeded cross sections to facilitate the flowing of oil uniformly therethrough.

4,447,707

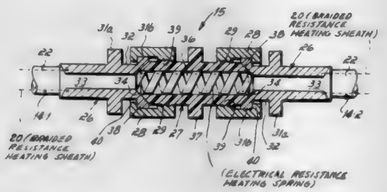
ELECTRICALLY HEATED MULTI-SECTION HOSE HAVING ELECTRICALLY HEATED HOSE JOINTS

Robert G. Baker, Buford, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Dec. 22, 1981, Ser. No. 333,378

Int. Cl.³ H05B *5/62*; F16L *53/00*; B67D *5/62*; H01R *4/64*

U.S. Cl. 219—301 **18 Claims**



1. A multi-section hose heating system including a plurality of heated hose sections and a heated joint interconnecting those sections,

each of said hose sections comprising an inner fluid impervious, chemically inert tube, an electrically conductive multi-strand braided sheath snugly embracing the exterior of the inner tube for heating the inner tube, and an outer sheath of thermal insulating material surrounding the intermediate braided sheath for minimizing heat loss from the hose section, and

said heated joint comprising an electrically conductive hose end fitting secured to one end of each of said hose sections, each of said hose end fittings being in electrically conductive contact with the electrically conductive braided sheath of the hose section to which the hose end fitting is secured, an electrical insulating fitting sealingly secured between two hose end fittings, and an electrical resistance compression spring located within the interior of said electrical insulating fitting, said spring being in compression with the ends of said spring being in electrically conductive contact with said two hose end fittings, and

said spring having an electrical resistance such that the flow of electrical current through the spring from the braided sheath of one hose section to that of the other produces sufficient heat in the insulating fitting that the interior of said joint is maintained at approximately the same temperature as the interior of said heated hose sections.

4,447,708

ASSEMBLY FOR USE IN THE SPARK PERFORATION OF SHEET MATERIAL

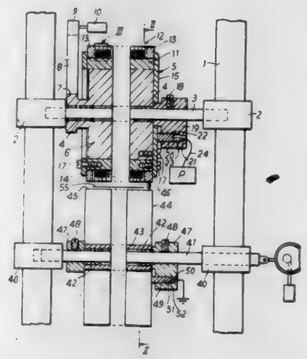
Roger A. Allen, Gt. Missenden, and Robert J. Hall, Flackwell Heath, Nr. High Wycombe, both of England, assignors to The Wiggins Teape Group Limited, England

Filed Jun. 30, 1981, Ser. No. 279,192

Claims priority, application United Kingdom, Jul. 9, 1980, 8022453

Int. Cl.³ H05B *7/18*

U.S. Cl. 219—384 **10 Claims**



1. Spark perforation apparatus including a rotary electrode assembly adapted for rotation about an axis for effecting spark perforation of sheet material passing between electrodes of the assembly and a suitably juxtapositioned earthed surface, said electrode assembly comprising a first set of annular electrodes which are annular about said axis for connection to a suitable power source, a second set of annular electrodes which are annular about said axis, individual ones of the first and second sets of electrodes alternating and being axially and radially spaced from one another along the axis, each one of the second set of electrodes having a greater external diameter than the electrodes of the first, and dielectric material which is annular about the axis and fills the axial spacing between adjacent ones of said first and second sets of electrodes to form a series of axially spaced capacitors.

4,447,709

METHOD FOR ELECTRICALLY PERFORATING DIELECTRIC WEBS

Hobart A. Whitman, III, Asheville, N.C., assignor to Olin Corporation, Pisgah Forest, N.C.

Continuation of Ser. No. 745,568, Nov. 29, 1976, abandoned, which is a division of Ser. No. 689,834, May 25, 1976, Pat. No. 4,025,752. This application Dec. 21, 1979, Ser. No. 106,369

Int. Cl.³ H05B *7/18*

U.S. Cl. 219—384 **3 Claims**

1. A method of controlling the porosity of a web of sheet material, by controlling a series of periodic electrical pulses applied to a set of electrodes, whereby a corresponding set of electrical discharges is directed through the web, the steps of said method comprising:

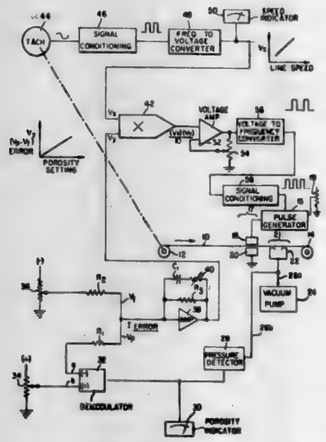
(a) moving the web of sheet material past the set of electrodes;

(b) measuring the web volocity;

(c) measuring the porosity of the web;

(d) deriving a difference signal as a function of the difference between a reference indicative of desired porosity and measured web porosity, the difference signal in normal operation being non-zero and having a magnitude directly related to desired porosity; and

(e) controllably generating and applying a series of the periodic pulses to the set of electrodes in accordance with the product of the measured web velocity and the difference



signal, whereby the porosity of the web is effectively controlled.

4,447,710

ELECTRIC COOKERS INCORPORATING RADIANT HEATERS

Joseph A. McWilliams, Hadzor, England, assignor to Micropore International Limited, Droitwich, England

Filed Aug. 6, 1982, Ser. No. 405,719

Claims priority, application United Kingdom, Aug. 8, 1982, 8124324

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—449 **17 Claims**



1. A glass ceramic top cooker comprising:

a glass ceramic plate forming a cooking surface; and

at least one radiant electric heater arranged immediately beneath the plate and comprising a continuous base layer of electrical and thermal insulating material, a peripheral wall of electrical and thermal insulating material, a heating element arranged on the base layer, thermal insulating means disposed on the base layer within a region adjacent and bounded by the peripheral wall for thermally isolating a region within the peripheral wall from heat emitted by the heating element, and a temperature sensor mounted on said thermal insulating means within the isolated region so as to be in thermal contact with the underside of the plate whereby, in use, the temperature sensor is sensitive only to the temperature of said plate which is determined by the temperature of a cooking pan which is positioned on the plate and is heated by the heater.

4,447,711

ELECTRIC HEATER

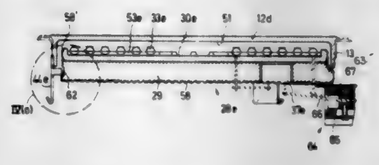
Karl Fischer, Am Gänsberg 23, D-7519 Oberderdingen, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 333,811

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1980, 3049521

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—464 **20 Claims**



1. An electric hotplate, having an insulator bearing at least one electrical heating resistor, comprising:

a metal plate heatable by the at least one electrical heating resistor, having substantially flat upper and lower surfaces and a downwardly directed rim near its outer circumference, the rim and lower surface defining a space therebetween, and the upper surface forming a cooking surface for receiving cooking vessels placed thereon;

the insulator having a plurality of insulating layers, the at least one heating resistor being disposed on the upper surface of the uppermost layer;

a basket-shaped metal lattice surrounding the insulator about its outer surface and holding the plurality of insulating layers together, the insulator and metal lattice forming an indpendently positionable heater/insulator assembly; and

fastening means at the rim for engaging the metal lattice and holding the heater/insulator assembly in position at least partly in the space.

4,447,712

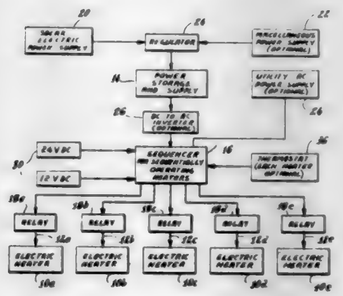
HEATING SYSTEM

Joseph E. Covillion, 3 Tumblebrook Rd., Terryville, Conn. 06786

Filed Feb. 24, 1982, Ser. No. 351,786

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—486 **14 Claims**



1. A system for space heating a dwelling, office and the like by direct current power generated by photovoltaic solar cells, the system comprising:

a plurality of electrically powered heating means for space heating, each said heating means being operable independently of the other heating means, each said heating means including an input, said heating means capable of being powered by direct current;

a chargeable power supply for storing power from said photovoltaic cells and for supplying power to said heating

system, the power supply comprising an input for receiving electrical power from said cells, an output for transmitting power to said heating means, a plurality of batteries for storing electrical energy, circuitry for connecting in parallel said plurality of batteries to said input to provide for charging of said batteries, circuitry for connecting in series said plurality of batteries to said output to provide power to said heating means, and means responsive to a signal for switching between said parallel circuitry and said series circuitry;

a source of electrical power for operating said plurality of heating means comprising said chargeable power supply, said power source being connectable to said input of each said heating means;

control means connected between said power source and said input of said plurality of heating means for controlling operation of each said heating means, said control means being powered by direct current supplied by said chargeable power supply;

said control means including for each said heating means a normally open switch means for connecting and disconnecting its respective heating means to said power source;

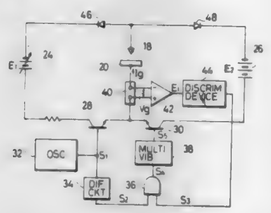
said control means further including means for generating a signal for closing each said switch means for a time interval to power its respective heating means, said generating means signaling in a sequence said plurality of switch means to close only one said switch means at a time to thereby power its respective heating means.

4,447,713

POWER SUPPLY UNIT FOR ELECTRIC DISCHARGE MACHINE

Kazuo Tsurumoto, and Yoshio Ozaki, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1982, Ser. No. 345,847
Claims priority, application Japan, Feb. 13, 1981, 56-19727
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 G **8 Claims**



1. A power supply unit for an electric discharge device wherein arc discharge is intermittently caused in a machining gap between an electrode and a workpiece to be machined, said power supply unit comprising:

a first DC source, the voltage of said source being variable;

auxiliary switching means for controlling the application of an output of said first DC source to said machining gap, said auxiliary switching means being opened and closed in response to a periodic pulse signal;

a second DC source, said second source having an output voltage which is higher than that of said first DC source;

main switching means for applying an output of said second DC source to said machining gap for a constant duration when activated, said main switching circuit being activated by a discriminating signal and including a semiconductor switch element and having a peak current supply capacity larger than that of said auxiliary switching means; and

a discriminating device for detecting the electrical condition of said machining gap a predetermined period of time after said output voltage of said first DC source is applied to said machining gap, said discriminating device discriminating between short circuit, normal discharge and non-discharge states and providing said discriminating signal only if a discharge is occurring after said predetermined time has passed.

4,447,714

DUAL-PURPOSE AUTOMATIC APPARATUS FOR DISPENSING AND DEPOSITING VALUABLE PAPERS AND OTHER DOCUMENTS, SUCH AS BANKNOTES, CHEQUES, RECEIPTS, VOUCHERS ETC.

Leif Lundblad, Häradsvägen 102, S-141 41 Huddinge, Sweden

Filed May 25, 1982, Ser. No. 381,657
Claims priority, application Sweden, Jun. 29, 1981, 8104036
Int. Cl.³ G06K 7/08
U.S. Cl. 235—379 **6 Claims**



1. A dual-purpose automatic apparatus for dispensing and depositing, valuable papers and other documents, such as banknotes, cheques, receipts, vouchers etc, comprising a feed means (**10**) for dispensing documents from an internal store (magazines **11**) to an outfeed opening (**12**), or to a storage space (**13**) which is intended to receive documents whose transportation from said store to said outfeed opening (**12**), or whose treatment during said transportation, has deviated from a predetermined program for some reason, characterized in that the feed means **10** is arranged also to feed documents posted through the outfeed opening (**12**), which thus also functions as an infeed opening, from said opening (**12**) to a storage chamber (**14**) intended to receive documents posted from without; and in that the function of the feed means (**10**) as an infeed means is dependent upon correct activation of an identifying means (**15**) arranged adjacent the outfeed/infeed means (**10**).

4,447,715

SORTING MACHINE FOR SORTING COVERS

Vincent Vulcano, 301 E. 48th St., New York, N.Y. 10017

Continuation-in-part of Ser. No. 202,124, Oct. 30, 1980, which is a continuation of Ser. No. 21,467, Mar. 19, 1979, abandoned.
This application Nov. 20, 1981, Ser. No. 323,295
Int. Cl.³ G06K 7/10, 7/14
U.S. Cl. 235—454 **12 Claims**



1. A sorting machine for sorting sheets of different optical indicia, comprising:

transport means for moving said sheets in a path;

means for converting optically responsive indicia on said sheets to an electrical analog signal with said sheets moving along said path; said means for converting optically responsive indicia being comprised of an optical scanner having an elongated window whereby said optical scanner is responsive to a portion of said sheet, said means for converting optically responsive indicia further comprising an analog card for processing said electrical signal whereby said analog signal is enhanced;

computer means operably connected to said optical converting means for converting said analog signal to a digital signal, and for storing and comparing said digital signals, and having a training mode and an operating mode wherein said training mode comprises;

a training sheet being formed with optically responsive encoding indicia, said indicia being converted to a digital signal and stored by said computer means; and said means for converting optically responsive indicia further comprising a sensor having a pair of photodiodes whereby a two line punched code on a portion of said training cover is converted to a pair of electrical signals for input to said computer means, said pair of photodiodes feeding an electrical output signal from each photodiode to said computer means for comparison whereby an edge of said sheet is detected;

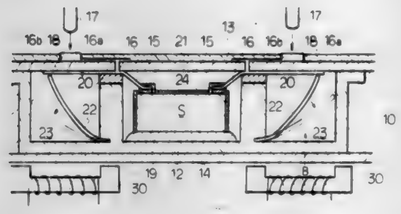
wherein said operating mode comprises sheets having common optical indicia as said training sheet, said latter said sheets being moved along said path information and digital signal generated relative thereto and compared with the stored training mode digital information, and when a comparison is found, said operating mode sheets are thereby detected, said transport means comprising a shaft angle encoder which feeds a series of pulses to said computer means whereby the speed of said sheet movement is measured.

4,447,716

INFORMATION CARD

Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,252
Int. Cl.³ G06K 19/06
U.S. Cl. 235—492 **10 Claims**



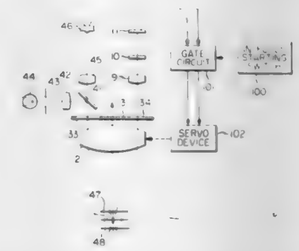
1. In an information card having an opening, and including a metallic casing disposed in the opening, at least one semiconductor chip having contacts and seated in the metallic casing, and a conductor strip extending from each of the contacts to a location where each strip can be brought into contact with a signal input/output terminal of a separate signal input/output unit, the improvement comprising the metallic casing having a cavity, an elastic member provided in said cavity at a location corresponding to each conductor strip and fixedly secured to the metallic casing at one end thereof, and a free end of each elastic member being biased into contact with its corresponding conductor strip while the information card is unused and said elastic member being attracted by a magnet in the signal input/output unit to cause its free end to separate from its corresponding conductor strip once the information card is used, each elastic member being made of magnetic material throughout its length.

4,447,717

AUTOMATIC FOCUSING DEVICE IN A STEREOSCOPIC MICROSCOPE

Masao Nohda, Yokosuka, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 29, 1982, Ser. No. 343,986
Claims priority, application Japan, Mar. 27, 1981, 56-44121
Int. Cl.³ G02B 7/11
U.S. Cl. 250—201 **9 Claims**



1. An automatic focusing device for a stereoscopic microscope having a pair of left and right stereoscopic observation optical systems disposed rearwardly of a common objective lens, said automatic focusing device including:

automatic focusing means having optical means disposed rearwardly of the objective lens and out of the optical path of each of said stereoscopic observation systems to form together with the objective lens an optical path for focus detection, the automatic focusing means producing an electric signal corresponding to focus deviation and based on an optical image formed by said optical means and the objective lens and controlling automatically the stereoscopic microscope to an in-focus position thereof based on the electric signal, and

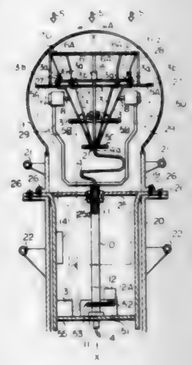
means for selecting operation and non-operation of said automatic focusing means.

4,447,718

APPARATUS FOR COLLECTING AND CONCENTRATING SOLAR LIGHT ENERGY

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,202
Claims priority, application Japan, Jul. 7, 1980, 55-92468; May 6, 1981, 56-66942
The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.
Int. Cl.³ G01J 1/20
U.S. Cl. 250—203 R **15 Claims**



1. An apparatus for collecting and concentrating solar light

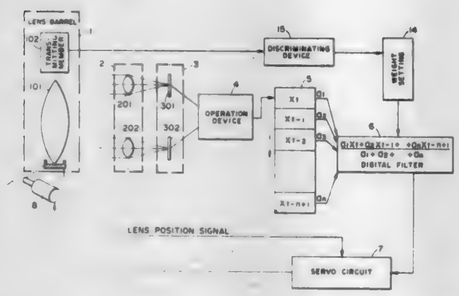
energy comprising; a transparent container; lens means for collecting and concentrating solar light energy; first supporting means for supporting the lens means so as to rotate the lens means about a horizontal axis; second supporting means for supporting the first supporting means so as to rotate the latter about a vertical axis; optical fiber means located at the focus of the lens means and extending to the outside of the container to transmit the collected sunbeams to the outside of the container; first drive means for rotating the lens means about the vertical axis; second drive means for rotating the lens means about a horizontal axis, independently of the drive of the first drive means; solar cell means connected to the first and second drive means to drive the same; and, means movable with and supported by the lens means, for detecting the position of the sun, said detecting means being connected to the drive means to control the driving of the drive means, in accordance with the position of the sun.

4,447,719

AUTOMATIC FOCUS ADJUSTING APPARATUS USING WEIGHTED AVERAGE MEANS

Akira Ogasawara, Yokohama, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,776
Claims priority, application Japan, Feb. 3, 1981, 56-13748
Int. Cl.³ G03B *3/10*
U.S. Cl. 250—204 **11 Claims**



1. In an automatic focus adjusting apparatus for forming the image of an object by an imaging optical system on a predetermined imaging plane, said apparatus having detecting means for detecting the positional relation between the image of said object and said imaging plane from the output of a light receiving element array and successively producing detection signals indicative of said relation with lapse of time, the improvement comprising: means capable of storing a predetermined number of said detection signals, averaging means for averaging said predetermined number of detection signals and creating an adjusted control signal; and means for driving said imaging optical system for focuing the same in response to said adjusted control signal.

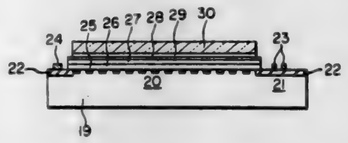
4,447,720

SOLID-STATE IMAGE PICKUP ELEMENT AND PROCESS FOR FABRICATING THE SAME

Kazufumi Ogawa, Osaka; Takao Chikamura, Kyoto, and Takuo Shibata, Osaka, all of Japan, assignors to Matsuchita Electric Industrial Co., Ltd., Tokyo, Japan

Division of Ser. No. 188,580, Sep. 18, 1980, Pat. No. 4,345,021. This application Jul. 15, 1982, Ser. No. 398,569
Claims priority, application Japan, Sep. 25, 1979, 54-12334; Sep. 25, 1979, 54-12335
Int. Cl.³ H01L *31/08*
U.S. Cl. 250—211 J **3 Claims**

1. A solid-state image pickup element comprising:
a semiconductor wafer;
a picture element portion formed over a main surface of said semiconductor wafer for sensing a light image and transferring the electric signals representative of the intensities of the light image at the picture elements;
a driving circuit for driving said picture element portion;
a photoconductive layer formed over said picture element portion;
an electrode transparent to visible light formed over said photoconductive layer;



a layer of a photosetting resin transparent to visible light formed on said transparent electrode; and a color filter bonded to said photosetting resin with an adhesive agent having optical properties substantially similar to or the same as the optical properties of the photosetting resin.

4,447,721

PANEL TYPE X-RAY IMAGE INTENSIFIER TUBE AND RADIOGRAPHIC CAMERA SYSTEM

Shih-Ping Wang, Los Altos, Calif., assignor to Diagnostic Information, Inc., Sunnyvale, Calif.

Division of Ser. No. 71,701, Aug. 31, 1979, Pat. No. 4,300,046, which is a division of Ser. No. 923,719, Jul. 12, 1978, Pat. No. 4,186,302, which is a division of Ser. No. 853,440, Nov. 21, 1977, Pat. No. 4,140,900, which is a continuation-in-part of Ser. No. 763,637, Jan. 28, 1977, abandoned, and Ser. No. 741,430, Nov. 12, 1976, abandoned. This application Jul. 31, 1981, Ser. No. 288,804
The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.
Int. Cl.³ H01J *31/50*
U.S. Cl. 250—213 VT **2 Claims**



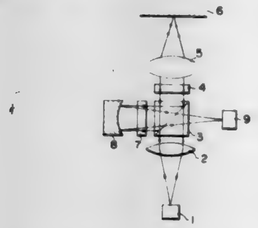
1. An X-ray sensitive image intensifier tube comprising a tube envelope, a metallic input window in the tube envelope, the input window being made of an alloy of iron, chromium and nickel, a scintillator screen adjacent the input window, a photocathode layer parallel and immediately adjacent to the scintillator screen, a phosphor display screen parallel to and spaced apart from the photocathode layer, and means for connecting an external source of high voltage between the photocathode layer and the output display screen, and wherein the tube envelope houses the scintillator screen, photocathode layer and display screen.

4,447,722

OPTICAL INFORMATION READING DEVICE

Tetsuo Saimi, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 15, 1981, Ser. No. 311,901
Claims priority, application Japan, Oct. 17, 1980, 55-146166
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—216 **4 Claims**



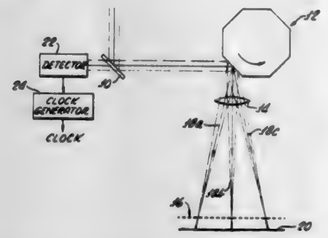
1. An optical information reading device comprising: a light beam source for producing a light beam which irradiates a recording surface of an information carrier; a light beam detector for detecting the light beam reflected from the recording surface of said information carrier; a lens system for converting the light beam from said light beam source into a collimated light beam parallel to the recording surface of said information carrier; a beam splitter adapted to reflect the light beam from said light beam source in a direction perpendicular to the recording surface of said information carrier but to allow the light reflected from the recording surface of said information carrier to pass therethrough; an objective lens system for converging the light beam reflected from said beam splitter on said recording surface of said information carrier; and means for reflecting toward said beam splitter at least a part of the light beam reflected from said recording surface of said information carrier and passed through said objective lens system and said beam splitter, and for focussing the thus obtained light beam on said detector through said beam splitter which reflects said thus obtained light beam at a right angle.

4,447,723

SCANNING BEAM REFERENCE EMPLOYING A RETROREFLECTIVE CODE MEANS

Don B. Neumann, Laguna Beach, Calif., assignor to Excellon Industries, Torrance, Calif.

Filed Sep. 3, 1981, Ser. No. 298,907
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—236 **18 Claims**



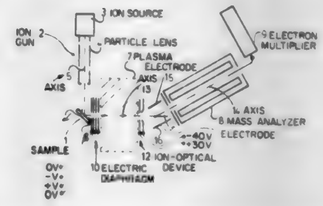
1. In a scanning system wherein an energy beam is projected in a fan shaped scanning pattern and an outgoing reference beam is projected in synchronism with the energy beam in a fan shaped scanning pattern through a reference code member to impinge thereon with varying angles of incidence in the plane of the scanning pattern, an improved reference beam detecting system comprising
a retroreflector positioned to receive said reference beam from said code member at varying incident angles and direct the beam back through the code member along the direction of incidence, and
means for detecting said retroreflected reference beam after it has been reflected back through the code member.

4,447,724

APPARATUS FOR THE CHEMICAL ANALYSIS OF SAMPLES

Hans Oechsner, Clausthal-Zellerfeld, Fed. Rep. of Germany, assignor to Leybold Heraeus GmbH, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 139,087, Apr. 10, 1980, abandoned. This application Jan. 7, 1982, Ser. No. 337,647
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950330
Int. Cl.³ H01J *49/26, 49/10*
U.S. Cl. 250—309 **10 Claims**



1. Apparatus for the chemical analysis of a sample, comprising:
primary ion source means (3) bombarding the sample (1) with ions along an axis (5) for ejecting neutral and charged particles from the sample;
electric diaphragm means (10) for being permeable along an axis (13) to the neutral particles ejected from the sample and impermeable at least to the charged particles ejected from the sample;
plasma means (7) separate from the primary ion source means (3) and having a plasma along the axis (13) along which the electric diaphragm means (10) is permeable to the neutral particles and receiving the same therealong for ionizing the neutral particles with the plasma; and
mass spectrometer means (8, 9) further along the axis (13) along which the electric diaphragm means is permeable than the plasma of the plasma means (7) to receive the now-ionized, formerly-neutral particles therefrom for performing the chemical analysis of the sample from the received ionized, formerly-neutral neutral particles thereof.

4,447,725

QUANTITATIVE MEASUREMENT OF FAT, PROTEIN AND LACTOSE IN DAIRY PRODUCTS

Delmar A. Biggs, R.R. #3, Guelph, Ontario, Canada (N1H 6H9), and John Shields, 23 North La., Wheldrake Nr. York, England

Filed Jun. 15, 1981, Ser. No. 273,392
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—339 **7 Claims**

1. Apparatus for measuring fat concentration in fat emulsions such as natural and synthetic dairy products comprising means for holding a product sample, means for irradiating said sample with energy in the infrared spectrum at a first wavelength characteristic of ester linkages and a second wavelength

characteristic of saturated carbon-hydrogen bonds, and means for assessing fat concentration in the sample as a predetermined



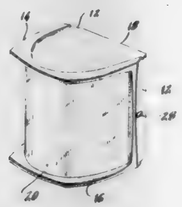
conjoint function of energy absorbed by said sample at both said first and second wavelengths.

4,447,726

PASSIVE INFRARED INTRUSION DETECTOR

Philip H. Mudge, New Fairfield, and William G. Kahl, Jr., Arrowhead Point, both of Conn., assignors to Cerberus AG, Mannedorf, Switzerland

Filed Apr. 16, 1982, Ser. No. 369,228
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—342 **15 Claims**



1. An intrusion detector comprising:
a housing having an opening therein;
an infrared transparent window closing said opening;
a chassis mounted in said housing for rotation about a first axis;
an infrared sensor carried by said chassis;
a visible light source carried by said chassis;
a truncated, substantially conical enclosure mounted in said chassis and pivoted about a second axis substantially normal to said first axis, the open small end of said enclosure surrounding said sensor and light source, the open large end of said enclosure being adjacent said window;
a flexible Fresnel lens supported over the open large end of said enclosure with its focal point positioned substantially on one of said sensor and source; and
mirror means positionable between said sensor and source such that said sensor and source are at conjugate points on opposite sides of said mirror.

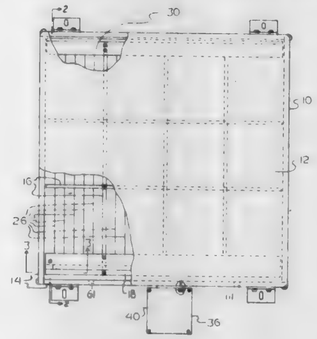
4,447,727

LARGE AREA NEUTRON PROPORTIONAL COUNTER AND PORTAL MONITOR DETECTOR

Stanley J. Friesenhahn, Poway, Calif., assignor to IRT Corporation, San Diego, Calif.

Filed Jun. 30, 1981, Ser. No. 278,958
Int. Cl.³ G01T *1/18, 3/00*
U.S. Cl. 250—390 **29 Claims**

1. A large area unitary multicell neutron counter comprising:
a container for defining an internal space and for confining counting gas therein, said container being formed of a pair of spaced substantially parallel metallic sheets sealed around their periphery and coated internally with a coating enriched with ^6Li for capturing slow neutrons and emitting into said internal space reaction products thereupon produced by the $^6Li(n,\alpha)^3H$ reaction;
a plurality of wires mounted within said internal space, spaced apart from each other and said metallic sheets and substantially parallel to each other and between and substantially parallel to said metallic sheets and electrically insulated from said metallic sheets;
a gas permeable dividing structure disposed within said internal space for dividing the internal space into discrete cells and absorbing electrons incident upon such structure, each cell having a width defined by the spacing between the coatings on said metallic sheets, with at least one wire passing through each cell;
counting gas disposed within said container;
electrical means for applying voltage to enable the said metallic sheets, wires, and counting gas to function at rated voltage in the proportional region in the collection



of charged particles occasioned by ionizing events, the wires being anodes and the metallic sheets being cathodes, and the counting gas providing a medium in which the ionizing events occur; and
discriminating means for discriminating ionizing events causing ionization above a discrimination level from ionizing events causing ionization below said discrimination level;
the linear dimensions of each cell being so small that a reaction product from said $^6L(n,\alpha)^3H$ reaction will with substantial probability stop in the counting gas whereas the energy deposition in the counting gas from a single electron resulting from a photon entering a cell will nearly always be small compared with the energy deposition from said reaction;
whereby ionizing events occurring within the counting gas caused by the $^6Li(n,\alpha)^3H$ reaction may be discriminated from events causing lesser ionization.

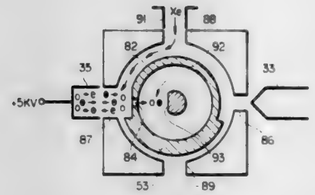
4,447,728

IONIZER INCLUDING DISCHARGE ION SOURCE AND METHOD

George C. Stafford, and Donald C. Bradford, both of San Jose, Calif., assignors to Finnigan Corporation, Sunnyvale, Calif.

Filed Feb. 5, 1982, Ser. No. 346,288
Int. Cl.³ H01J *27/02*
U.S. Cl. 250—423 R **6 Claims**

1. An ionizer including a chamber having an opening extending into said chamber, a discharge electrode disposed adjacent said opening in cooperative relationship with said chamber, means for introducing discharge gas to said discharge electrode, means for establishing a discharge voltage between said chamber and said discharge electrode to form a gas discharge which forms charged gas particles, said discharge voltage serving to accelerate the charged particles toward said opening



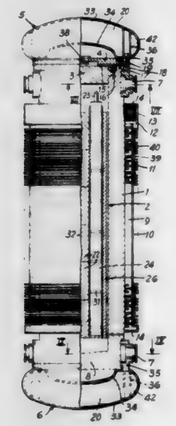
to cause charged and uncharged particles to pass through said opening into said chamber.

4,447,729

TRANSPORT CONTAINERS FOR RADIOACTIVE MATERIAL

Pal Doroszlai, Kirchdorf, and Ferruccio Ferroni, Zurich, both of Switzerland, assignors to Elektrowatt Ingenieurunternehmung AG., Switzerland

PCT No. PCT/CH80/00093, 371 Date Apr. 20, 1981, 102(e) Date Apr. 20, 1981, PCT Pub. No. WO81/00642, PCT Pub. Date Mar. 5, 1981
PCT Filed Aug. 1, 1980, Ser. No. 253,751
Claims priority, application Switzerland, Aug. 20, 1979, 7593/79
Int. Cl.³ G21F *5/00*
U.S. Cl. 250—506.1 **9 Claims**



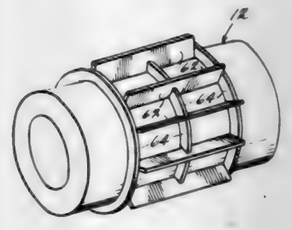
1. A cylindrical container for the transportation of radioactive reactor elements, said container including a top end, a bottom end and a pair of removable outwardly curved shock absorbers each including a double-shelled construction having an internal shell and an external shell with a convex extrados configuration, said shock absorbers being filled with low density energy-absorbing material and mounted at said top end and said bottom end of the container, respectively, and each of said shock absorbers having a toroidal configuration, and deformable tubes disposed therein and extending in the axial direction of said container.

4,447,730

TRANSPORTATION AND/OR STORAGE CONTAINERS FOR RADIOACTIVE MATERIALS

Werner Botzem, Alzenau; Ortwin Knappe, and Reiner Laug, both of Hanau, all of Fed. Rep. of Germany, assignors to Transnuklear GmbH, Hanau, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,014
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1980, 8018594[U]
Int. Cl.³ G21F *5/00*
U.S. Cl. 250—506.1 **7 Claims**



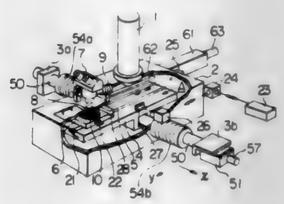
1. A transportation and/or storage container for radioactive substances, especially for irradiated fuel elements from nuclear reactors comprising:
a thick-walled integrally-cast metallic cylindrical body for shielding gamma radiation from radioactive substances carried therein;
a plurality of spaced generally parallel cooling ribs on the outer cylindrical surface of said body and extending radially outward thereof; and
a plurality of generally parallel flanges on said outer surface extending radially outward thereof and generally transversely of and to and between said ribs, said flanges being spaced along said ribs and of lesser height than said ribs, whereby in the event of accidental fracture or breaking of a rib, the fracture line occurs above the rib base to prevent continuation of a fracture into said body of the container.

4,447,731

EXTERIOR VIEW EXAMINATION APPARATUS

Asahiro Kuni, Tokyo; Yukio Kembo, Yokohama; Nobuyuki Akiyama, Yokohama, and Nobuhiko Aoki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,191
Claims priority, application Japan, Dec. 5, 1980, 55-170999
Int. Cl.³ H01J *37/20*
U.S. Cl. 250—442.1 **7 Claims**



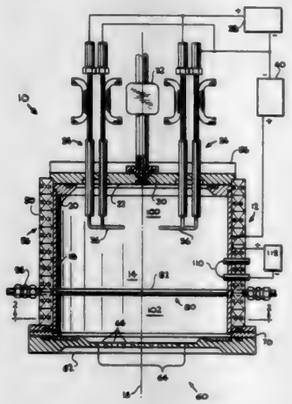
1. An exterior view examination apparatus comprising:
a movable sample stage provided in a sample chamber of a scanning type electron microscope;
a sample mounted on said sample stage; and
an optical microscope for observing said sample from an exterior of said sample chamber, said optical microscope being mounted on said chamber parallel with said scanning type electron microscope, the postion of a surface

part of said sample to be observed, measured, or analyzed being preliminarily defined by said optical microscope, said sample stage being moved by a certain amount to thereby bring said sample at a center of the visual field of said electron microscope and wherein said movable sample state comprises a first movable stage supported outside of said sample chamber to slidably move in a first direction by a first driving means provided outside of said sample chamber, and a second movable stage disposed on said first movable stage to slidably move between said optical microscope and said electron microscope in a second direction perpendicular to said first direction by a second driving means provided outside of said sample chamber.

4,447,732
ION SOURCE

Ka-Ngo Leung, Hercules, and Kenneth W. Ehlers, Alamo, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 4, 1982, Ser. No. 374,847
Int. Cl.³ H01J *27/20*
U.S. Cl. 250—427 **9 Claims**



1. An ion source for ionizing neutral hydrogen molecules and atoms into positive ions for neutral beam injection in a fusion energy system comprising:

a vessel having a chamber formed therein;

means coupled to the chamber for emitting high-energy ionizing electrons which collide with said hydrogen molecules and atoms to form a plasma of positive ions, said chamber being maintained at a positive potential with respect to said plasma;

extractor means coupled to the chamber to be biased at a low negative voltage with respect to said plasma for extracting said positive ions from the chamber, said low voltage being insufficient to cause said ions to heat and sputter said extractor means and insufficient to cause arcing between said extractor means and said chamber; and

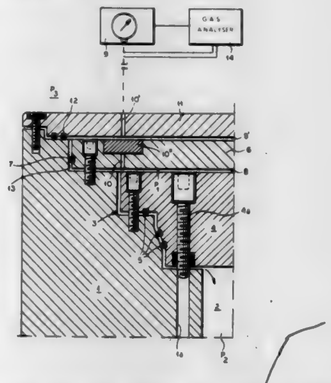
filtering means extending across said chamber reflecting high-energy electrons while allowing positive ions and cold electrons to pass therethrough, said reflecting means dividing the chamber into an ionizing zone, which communicates with the means for emitting high-energy ionizing electrons and which contains ions and high-energy electrons, and into an extraction zone, which contains positive ions and relatively few high-energy electrons so that undesired species of ions are prevented from being formed in the extraction zone due to the relative absence of high-energy electrons required for formation of said undesired ions;

said filtering means including a means for providing a magnetic field transverse to the direction of ions travelling from the ionizing zone to the extraction zone.

4,447,733
RADIATION-SHIELDING TRANSPORT AND STORAGE CONTAINER AND METHOD OF PACKAGING RADIOACTIVE MATERIAL

Henning Baatz; Dieter Rittscher, both of Essen, and Jürgen Wriegt, Heiligenhaus, all of Fed. Rep. of Germany, assignors to GNS Gesellschaft für Nuklear-Service mbH, Essen, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,332
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025795
Int. Cl.³ G21F *5/00*
U.S. Cl. 250—506.1 **7 Claims**



1. A radiation-shielding transport and storage container for radioactive material, said container comprising:

a radiation shielding vessel composed of cast iron or cast steel and defining a storage chamber for said radioactive material and a mouth opening into said chamber and formed with a plurality of seats;

a plug-type radiation-shielding cover received in one of said seats and sealed with respect to said vessel by an inner seal;

a safety cover speced outwardly from said shielding cover, received in another of said seats and sealed with respect to said vessel by an outer seal whereby said covers define a control space between said inner and outer seal containing gas at a pressure significantly higher than that in said chamber and than atmospheric pressure; and

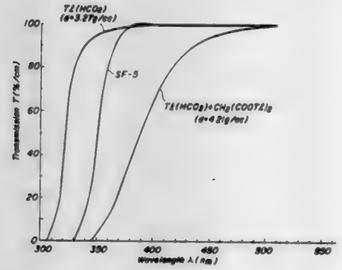
pressure-monitoring means communicating with said space and responsive to a drop in the pressure therein below a predetermined threshold value for signaling a failure of one of said seals.

4,447,734
RADIATION-SHIELDING TRANSPARENT MATERIAL AND METHOD OF PRODUCING THE SAME

Asao Kusumegi, Tsuchiura; Kenjiro Kondo, Nihari; Yoshiyuki Watase, Nihari; Yoshio Yoshimura, Nihari, and Kozo Miyake, Kyoto, all of Japan, assignors to National Laboratory for High Energy Physics, Ibaragi, Japan

Filed Sep. 23, 1981, Ser. No. 304,885
Claims priority, application Japan, Nov. 13, 1980, 55-158800
Int. Cl.³ G21F *1/00*
U.S. Cl. 250—517.1 **10 Claims**

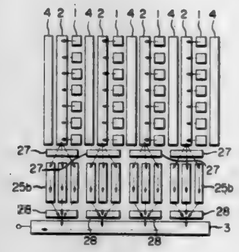
1. Radiation-shielding transparent material consisting of an aqueous solution of deoxidized thallium formate dissolved in deoxidized distilled water, said material having a density of 2.5 to 3.3 g/cm³, a radiation length of 3.8 to 1.9 cm, and a transmission of not less than 93% for light of 400 nm wavelength.



4,447,735
CHARGE-COUPLED TYPE SOLID-STATE IMAGE SENSOR

Kenju Horii, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1981, Ser. No. 331,686
Claims priority, application Japan, Dec. 19, 1980, 55-180726
Int. Cl.³ H01L *27/10*
U.S. Cl. 250—578 **2 Claims**



1. A charge-coupled type solid-state image sensor, comprising a semiconductor substrate having formed thereon:

an image pickup region comprising photosensor element arrays and charge transfer arrays coupled thereto for generating and accumulating signal charge in response to a light image impinging on said photosensor element arrays;

a plurality of charge storage regions each comprising at least two parallel-connected charge storage arrays;

first transfer switching gate means interposed between said charge transfer arrays and said charge storage region for coupling charge from each charge transfer array to a corresponding one of each of said charge storage arrays so that said signal charge is sequentially transferred into the charge storage arrays of each said corresponding charge storage region, i.e. into one array of each corresponding charge storage region at a time;

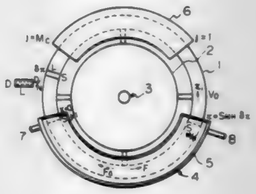
a readout region; and

second transfer switching gate means coupled between said charge storage regions and said readout region for sequentially transferring signal charge from each array of a corresponding charge storage region to said readout region in a first-in-first-out manner, so that signal charge is read out from one charge storage array of each corresponding charge storage region while signal charge remains in at least one other charge storage array of said corresponding charge storage region.

4,447,736
NON SELF-STARTING THERMAL MAGNETIC ENERGY RECYCLING FERRITE RING ENGINE

Aisuke Katayama, 2-47, Mutsumimachi, Kawamoto, Akita-shi, Akita, Japan

Filed Sep. 1, 1982, Ser. No. 413,706
Claims priority, application Japan, Sep. 2, 1981, 56-137054
Int. Cl.³ H02N *10/00*
U.S. Cl. 290—1 R **2 Claims**



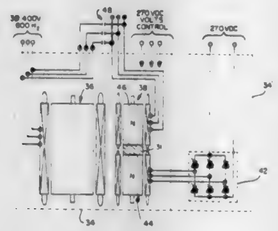
1. A magnetic energy recycling scheme which is a combination of first means for generating a mechanical power by magnetic energy recycling, and second means for starting the first means and keeping the first means in a stable power generatng state; the first means comprising one or plurality of thin circular rings of ferrite having the Curie temperature T_Q, a nonmagnetic plate to which said ferrite rings are affixed concentrically, providing a shaft to link with said second means, a hot water reservoir in which hot water must flow with a high flow rate, appropriate pressure head, and average temperature T_H such that said hot water heat power flow being transferred to said ferrite rings surface layer raises said surface layer temperature rapidly near to T_Q, a cool water reservoir wherein cool water flowing having the same properties except average temperature T_C lower than T_Q is extracted heat power from said ferrite rings surface layer and restored said ferrite rings surface layer to be magnetizable, and a magnetic field generator located outside of said hot water reservoir providing a constant magnetic field H to the portion of said ferrite rings located in said hot water reservoir; and the second means comprising a starter motor connected through a clutch and gear trains to said shaft of said first means that lacks the function of self-starting, starting to rotate said ferrite rings through said hot and cool water reservoirs cyclically, generating a positive and negative temperature gradients in the temperature range less and near T_Q in the surface layer of said ferrite rings, and then a consequent force being exerted on the part of said ferrite ring dipping in said hot water reservoir by said magnetic field H, and an electric power generator connected through gear trains to said shaft, soon beginning to generate a counter torque that balances the torque due to said force exerted in said first means, then keeping said circular ferrite rings in a constant peripheral velocity V_0, and holding a stationary positive and negative gradients of temperature along said circular ferrite rings surface layer, henceforth, said first means being entered in the magnetic recycling state, a continuous magnetic potential energy being generated in said rotating ferrite rings surface layer at the entrance portion of said hot water reservoir from said magnetic field H also applied there by said magnetic field generator, and converting promptly into a mechanical power within the average time t_H as said magnetic energy being lost by a fast temperature rise to near T_Q concerning to said ferrite rings surface layer, spatially said mechanical power being generated in the succeeding ferrite rings part dipping in said hot water; and further a controller governing said operations aforementioned.

4,447,737

VARIABLE FREQUENCY INDUCTION GENERATOR

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Continuation of Ser. No. 220,371, Dec. 29, 1980, abandoned. This application Jan. 14, 1983, Ser. No. 457,836
Int. Cl.[3] H02K *21/48*
U.S. Cl. 290—6 32 Claims



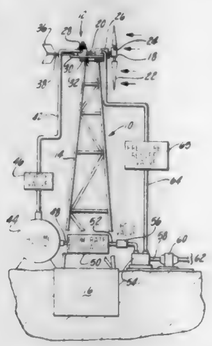
1. A power generation system comprising in combination:
an induction machine, said induction machine including an induction rotor mounted on a first shaft; and
means connected to said induction machine for exciting said induction machine to operate in a generating mode, said exciting means comprises a tandem synchronous generator including first and second synchronous permanent magnet generators, each said first and second synchronous permanent magnet generators having a permanent magnet rotor mounted on a second shaft.

4,447,738

WIND POWER ELECTRICAL GENERATOR SYSTEM

Johnny H. Allison, 43040 Penny, Sterling Heights, Mich. 48078

Filed Dec. 30, 1981, Ser. No. 335,983
Int. Cl.[3] F03D *9/02*
U.S. Cl. 290—44 17 Claims



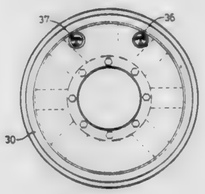
1. A wind power electrical generator system comprising:
means for converting wind energy into rotational energy of an output shaft;
first air compressor means driven by said output shaft for generating a supply of compressed air;
accumulator means connected to said first air compressor means for storing said compressed air;
electrical generator means for generating electrical power in response to a rotary input;
first air motor means having an input port and an exhaust port, for generating said rotary input to said electrical generator in response to a flow of pressurized air received at said input port from said accumulator means; and
first waste air recovery means connected to said exhaust port of said first air motor means for converting the waste air flow exhausted by said first air motor means into a rotational energy supplementing said means for converting wind energy in driving said first air compressor means.

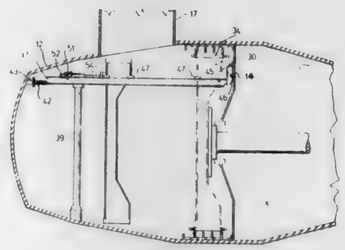
4,447,739

ROTOR WITHDRAWAL ARRANGEMENT FOR BULB GENERATORS

James H. Ferguson, and Murray W. Calderwood, both of Peterborough, Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada

Filed Apr. 27, 1982, Ser. No. 372,126
Claims priority, application Canada, Jun. 19, 1981, 380253
Int. Cl.[3] F03B *3/10, 11/10;* G03B *13/10*
U.S. Cl. 290—52 6 Claims





1. Rotor withdrawal apparatus for a bulb-type generator, comprising
a bulb-shaped housing adapted for mounting within a water conducting duct,
a rotatable shaft supported within said housing and having an upstream end and a downstream end, said downstream and projecting from said housing and having turbine blades mounted thereon for rotation of said shaft with movement of water through said duct,
a generator stator mounted within said housing and in axial alignment with said shaft,
a generator rotor having an inner ring and a peripheral rim with radially extending spaced apart pole structure therebetween,
generator rotor driving means for detachably coupling said rotor to said shaft and for supporting said rotor for rotation within said stator,
at least one detachable beam for mounting within said housing when said rotor is stationary, said at least one beam extending parallel to the axis of said shaft and passing through holes provided in said rotor,
shoe means for slidable engaging said at least one beam and engaging said rotor for supporting said rotor for sliding movement along said at least one beam, and piston means for applying a force to said rotor after said rotor driving means has been detached from said rotor for moving said rotor in an upstream direction clear of said stator.

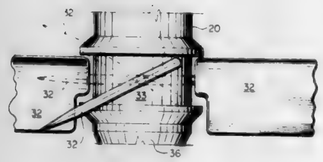
4,447,740

WAVE RESPONSIVE GENERATOR

Louis J. Heck, 5229 Choctaw Dr., Baton Rouge, La. 70805

Continuation of Ser. No. 92,379, Nov. 8, 1979, abandoned. This application Oct. 13, 1981, Ser. No. 310,492
Int. Cl.[3] F03B *13/12*
U.S. Cl. 290—53 5 Claims





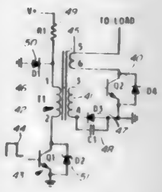
1. A free floating wave responsive generator comprising:
a. a buoyant float which freely bobs up and down responsive to the adjacent wave action during operation;
b. an outer fixed shaft depending downwardly from said float;
c. an inner drive shaft depending downwardly from and being rotatably mounted within said outer shaft to said float;
d. a turbine affixed to said drive shaft opposite said float;
e. a plurality of variable pitch vanes movably mounted on said turbine, said vanes transmitting rotational energy to said drive shaft responsive to upward and downward wave action on said float each of said vanes comprising a leading edge and a trailing edge, the area of the trailing edge being greater than the area of the leading edge, with fluid pressure acting generally vertically upon the vanes producing the variance of vane pitch responsive to the change of vertical direction of the float so that the drive shaft is rotated during both upward and downward movement of the float;
f. electric generator means cooperatively connected to said inner drive shaft for producing an electrical current responsive to the rotation of said drive shaft; and
g. a rotatable hub affixed to said drive shaft rotating freely with respect to the outer shaft at the lowermost portion thereof with said plurality of vanes attached to said hub, each of said vanes being movable between variable pitch positions responsive to fluid pressure thereon, the hub defining the travel limit of the vanes in each direction and a plurality of vane shafts radiating from the hub, each shaft supporting one of the vanes.

4,447,741

BASE DRIVE CIRCUIT FOR POWER TRANSISTORS

Anastasios Moschopoulos, Montreal, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 27, 1982, Ser. No. 424,087
Int. Cl.[3] H02M *7/00;* G05F *5/00*
U.S. Cl. 307—31 3 Claims



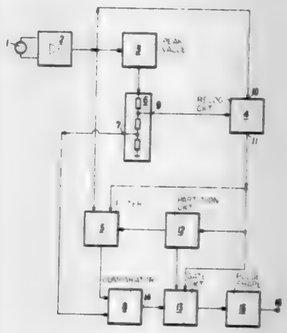
1. A base drive circuit for power transistors, comprising:
a power transistor;
a base drive transformer for said power transistor, connected to operate in a dual mode as a voltage transformer when in a switching condition and as a circuit transformer when said power transistor is conducting, said transformer including a primary winding and two secondary windings, one secondary winding connected at one end to the base of the power transistor and connected at the other end to a ground, and including a network between said other end and ground, said network including a diode and a capacitor in parallel to accelerate the turn off of the power transistor, the other secondary winding connected between the transistor and a load;
base drive means for driving said base drive transformer, said base drive means comprising a semi-conductor switch and means for applying control pulses to said switch, said primary winding connected to said switch.

4,447,742

DEVICE FOR GENERATING AN ELECTRIC TRIGGER PULSE

Helmo Denk, Feldbach; Peter Mantsch, and Werner Moser, both of Graz, all of Austria, assignors to Hans List, Graz, Austria

Filed Nov. 13, 1981, Ser. No. 321,046
Claims priority, application Austria, Nov. 28, 1980, 5836/80
Int. Cl.[3] H03K *3/00*
U.S. Cl. 307—106 4 Claims



1. A device for the generation of an electric pulse corresponding to the occurrence in time of an at least approximately

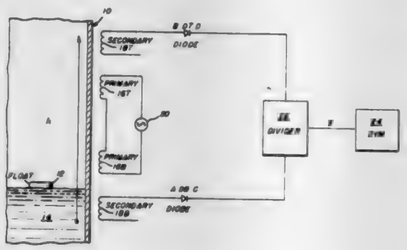
periodic event, comprising at least one sensor responding to the occurrence of said event, an evaluation unit connected to said sensor and fed by a sequence of electric signals therefrom, said evaluation unit in turn comprising a recognition circuit for delivering upon arrival of the sensor signals a stable recognition signal uncontaminated by noise, and a gate circuit connected to said recognition circuit and triggered by the occurrence of said recognition signal, the output of said gate circuit producing the pulse corresponding to the occurrence of said periodic event, wherein said evaluation unit further includes a partitioning circuit and a comparator circuit, with the partitioning circuit connected to said gate circuit and being responsive to said recognition circuit for partitioning into subintervals the time interval between the occurrence of two successive recognition signals and said partitioning circuit activating said gate circuit during one of said subintervals which has been predetermined, and wherein the sequence of signals from said sensor is fed to said comparator for transmitting an electric pulse to said gate circuit each time a predetermined signal level has been exceeded, which pulse will be available for further processing upon activation of said gate.

4,447,743

HIGH PRESSURE LIQUID LEVEL MONITOR

Vern E. Bean, Frederick, and Frederick G. Long, Ijamsville, both of Md., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 28, 1982, Ser. No. 372,861
Int. Cl.³ G01F *23/12*
U.S. Cl. 307—118 **10 Claims**



1. A system for tracking increases in liquid level in a vessel and generating a control signal therefrom comprising:

float means in said vessel movable along a vertical path with changes in said liquid level, said float means including magnetically permeable material;

first magnetic field generating means disposed outside said vessel adjacent the bottom thereof for applying an alternating electromagnetic field to said magnetically permeable material in said float means;

second magnetic field generating means disposed outside said vessel adjacent the top thereof for applying an alternating electromagnetic field to said magnetically permeable material in said float means;

first magnetic field detector means magnetically coupled to said first magnetic field generating means through the magnetically permeable material in said float means for sensing the strength of the magnetic field in the magnetically permeable material of said float means attributable to said first magnetic field generating means and generating a first float height signal as a function of increases in said liquid level;

second magnetic field detector means magnetically coupled to said second magnetic field generating means through the magnetically permeable material in said float means for sensing the strength of the magnetic field in the magnetically permeable material of said float means attributable to said second magnetic field generating means and generating a second float height signal as a function of increases in said liquid level;

first rectifier means connected to said first magnetic field detector means for converting said first float height signal from A.C. to D.C.;

second rectifier means connected to said second magnetic field detector means for converting said second float height signal from A.C. to D.C.;

divider means connected to said first and second rectifier means for dividing said second float height D.C. Signal by said first float height D.C. signal to generate a D.C. control signal which is a monitonically increasing function of float height; and

oscillator means for generating an alternating current signal of a predetermined frequency and amplitude for driving said first and second magnetic field generator means, said first magnetic field generator means including a first primary coil means disposed outside said vessel adjacent the bottom thereof and connected to said oscillator means for receiving said alternating current signal, generating an alternating electromagnetic field in response thereto and applying said field to said magnetically permeable material in said float means, said second magnetic field generator means including second primary coil means disposed outside said vessel adjacent the top thereof and connected to said oscillator means for receiving said alternating current signal, generating an alternating magnetic field in response thereto and applying said magnetic field to said magnetically permeable material in said float means, said first magnetic field detector means including first secondary coil means disposed adjacent said first primary coil means and magnetically coupled thereto through the magnetically permeable material in said float means, said first secondary coil means sensing the strength of said magnetic field attributable to said first primary coil means and generating a first float height signal as a function of increases in said liquid level, said second magnetic field detector means including second secondary coil means disposed adjacent said second primary coil means and magnetically coupled thereto through the magnetically permeable material in said float means, said second secondary coil means sensing the strength of said magnetic field attributable to said second primary coil means and generating a second float height signal as a function of increases in said liquid level.

4,447,744

CONTROL CIRCUITRY FOR HIGH VOLTAGE SOLID-STATE SWITCHES

Adrian R. Hartman, New Providence; James E. Kohl, North Brunswick, both of N.J.; William F. MacPherson, Winfield Township, DuPage County, Ill., and Terence J. Riley, Wyomissing, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

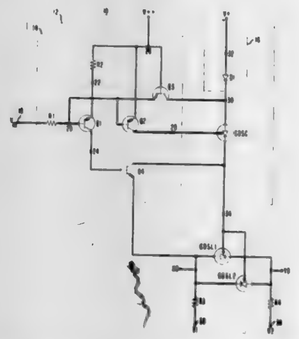
Filed Dec. 22, 1981, Ser. No. 333,434
Int. Cl.³ H03K *17/12, 17/72*
U.S. Cl. 307—252 R **10 Claims**

1. Control circuitry for use with a first switching device of the type comprising a semiconductor body having a bulk portion which is of relatively high resistivity, and a first region of a first conductivity type and of relatively low resistivity, and second and third regions of a second conductivity type opposite that of the first conductivity type, the first and third regions being connected to output terminals of the first switching device, the second region being coupled to a control terminal of the switching device, the first, second and third regions being mutually separated by portions of the bulk of the semiconductor body, a second switching device of the same type and essentially same electrical characteristics as said first switching device, an output terminal of the second switching device being coupled to the control terminal of the first switching device comprising:

third and fourth switching devices which each have a control terminal and first and second output terminals;

the control circuitry being capable of supplying up to a preselected level of current into the second switching device;

the control terminal of the third switching device and a first output terminal of the fourth switching device being coupled to a first control circuitry input terminal;



a second output terminal of the fourth switching device being coupled to a first output terminal of the second switching device;

the control terminal of the fourth switching device and the first output terminal of the third switching device being coupled together and being coupled to a second control circuitry terminal; and

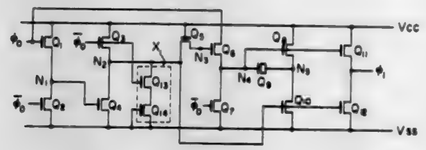
a second output terminal of the third switching device being coupled to the control terminal of the second switching device.

4,447,745

BUFFER CIRCUIT INCLUDING A CURRENT LEAK CIRCUIT FOR MAINTAINING THE CHARGED VOLTAGES

Yoshihiro Takemae; Seiji Enomoto, both of Yokohama; Shigeki Nozaki, Kawasaki; Tsutomu Mezawa, Aizuwakamatsu, and Katsuhiko Kabashima, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1981, Ser. No. 322,719
Claims priority, application Japan, Nov. 19, 1980, 55-162889
Int. Cl.³ H03K *5/135, 19/017, 19/096*
U.S. Cl. 307—269 **8 Claims**



1. A semiconductor circuit, having first and second power terminals respectively connectable to receive a power source voltage and a reference voltage, and used as a buffer circuit for providing an output clock signal in response to an input clock signal and an inverted input clock signal, comprising:

an input stage circuit, operatively connected to receive the input clock signal and the inverted input clock signal, for generating an output signal at a node in response thereto, the node being charged and maintained at the power source voltage during a standby period in which the input clock signal has a voltage lower than the voltage of the inverted input clock signal;

a bootstrap circuit, operatively connected to said input stage circuit, for generating a boosted signal in response to the output signal of said input stage circuit, said bootstrap circuit including a first field effect transistor operatively connected to the node, for receiving the output signal of said input stage circuit;

an output circuit, operatively connected to said bootstrap circuit, for generating the output clock signal, said output circuit including a second field effect transistor operatively connected to said bootstrap circuit for receiving the boosted signal; and

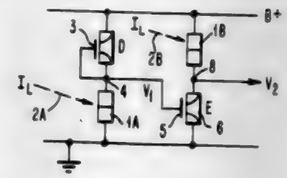
a current leak circuit operatively connected between the node of said input stage circuit and said second power terminal, for maintaining the voltage of the node being charged during the standby period at a value corresponding to the power source voltage, by leaking excess charges at the node to lower the voltage level of the node.

4,447,746

DIGITAL PHOTODETECTORS

Frank F. Fang, Yorktown Heights, and James C. McGroddy, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,490
Int. Cl.³ H03K *17/687, 3/42*
U.S. Cl. 307—311 **12 Claims**



1. In a circuit of the type wherein a digital electrical signal is delivered in response to a change in light intensity, the improvement comprising

a first and a second stage connected between a reference potential and a power source potential,

said first stage including

a photosensitive member connected in series with a load between said reference potential and said power source potential providing across said photosensitive member in the presence of light a difference in potential with respect to said reference potential,

said second stage including

an enhancement mode field effect transistor having the source electrode thereof connected to said reference potential and the drain thereof connected in series with a load to said power source potential,

means applying said difference of potential across said photosensitive member to the gate electrode of said enhancement mode field effect transistor in said second stage, and

output signal means delivering an output signal appearing at the drain electrode of said enhancement mode field effect transistor in said second stage.

4,447,747

WAVEFORM GENERATING APPARATUS

David P. LaPotin, Arlington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 2, 1981, Ser. No. 239,779
Int. Cl.³ H03K *13/11*; H01L *27/04*
U.S. Cl. 307—529 **6 Claims**

1. Monolithic integrated circuit structure comprising

a body of semiconductor material having a region of one conductivity type;

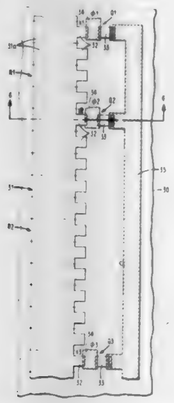
a linear resistance of semiconductor material of the opposite

conductivity type inset in said region of the one conductivity type;

said linear resistance being a series of contiguous resistance elements of approximately the same physical configuration and of approximately equal resistance value;

each resistance element including a projection of semiconductor material of the opposite conductivity type protruding into said region of the one conductivity type;

a plurality of sectors of semiconductor material of the opposite conductivity type inset in said region of the one conductivity type, the number of sectors being less than the number of resistance elements, said sectors being adjacent to but spaced from the projections of particular ones of said resistance elements; and



each sector and the projection adjacent thereto forming the drain and source regions, and the portion of the region of the one conductivity type therebetween forming the channel region of an MOS transistor;

wherein

the particular ones of said resistance elements are spaced from each other by sets of intervening resistance elements; and

the resistances of the sets of intervening resistance elements have a non-linear relationship, each of the intervening resistance elements of at least one of the sets being at least about 3 percent larger in resistance than each of the intervening resistance elements of at least another of the sets.

4,447,748

HIGH TEMPERATURE CORROSION AND EROSION RESISTANT ELECTRODE

William E. Young; Richard H. Lunn, and David H. Archer, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1981, Ser. No. 257,682
Int. Cl.³ H02N *4/02*
U.S. Cl. 310—11 **10 Claims**

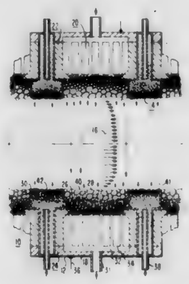
1. An electrode for a magnetohydrodynamic generator through which flows a high temperature plasma, comprising:

a metallic casing;

a porous distributor element, comprising a ceramic material, supported within said casing;

a porous, substantially electronically conductive matrix, comprising a ceramic material separating said distributor element and said casing from said plasma;

means for serially flowing combustion reactants through said distributor element, said matrix, and into said plasma;



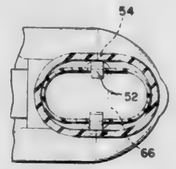
means within said matrix for combusting said combustion reactants.

4,447,749

CORDLESS ELECTRIC DEVICE HAVING CONTACT INCREASING MEANS

Irvin H. Reeb, Jr., Westminster, and Robert L. Beckhardt, Timonium, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jul. 29, 1981, Ser. No. 288,027
Int. Cl.³ H01R *13/62*
U.S. Cl. 310—71 **1 Claim**



1. A cordless electric tool having a motor mounted in a housing, a control switch in circuit with the motor to operate the same, a battery source connectable to the housing, said tool comprising:

(a) a hollow portion formed in the housing,

(b) the hollow portion having oppositely facing walls,

(c) a pair of resilient motor terminals individually fixedly connected in circuit with the motor,

(d) the motor terminals extending into the hollow portion in predetermined spaced relationship to each other,

(e) the motor terminals defining parallel legs, each of the legs having a free end bent in the direction of an adjacent wall,

(f) a battery pack detachably connected to the housing, and having the battery source therein,

(g) an insertion portion formed in the battery pack and said portion receivable within the hollow portion,

(h) a pair of battery terminals spaced from each other on opposite sides of the insertion portion and individually in circuit with the battery source,

(i) the pair of battery terminals and the pair of motor terminals to mate in individual pairs, respectively, to complete said circuit upon the battery pack's being connected to the housing, the resiliency of said motor terminals normally biasing said motor terminals into engagement with said battery terminals,

(j) resilient means connected in superposition to said pair of motor terminals adjacent said inserted battery terminals, for urging said motor terminals into increased mechanical and electrical connection with the respective mating battery terminals and for augmenting the biasing effect of the resiliency of said motor terminals,

(k) the resilient means including an "O"-ring made of dielectric material, and

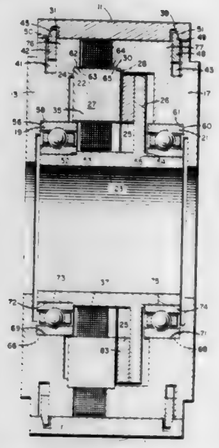
(l) the "O"-ring sized to fit within the space between the respective motor terminals and the adjacent wall and to be squeezed against said wall upon connection of the battery terminals to the motor terminals.

4,447,750

ELECTROMAGNETIC DEVICE CONSTRUCTION

James F. Howlett, Radford, and Marlin H. Thompson, Boones Mill, both of Va., assignors to International Scientific Industries, Inc., Christianburg, Va.

Filed Jun. 23, 1982, Ser. No. 391,464
Int. Cl.³ H02K *5/00*
U.S. Cl. 310—89 **8 Claims**



1. An electromagnetic device comprising:

a round tubular outer housing having respective annular grooves on an inner peripheral surface at opposite axial ends thereof, each of said grooves having a pair of opposing sidewalls and a bottom wall, one sidewall of at least one said grooves, which is closest to an axial end of said housing, being tapered so that the width of the groove having said tapered sidewall progressively decreases along its depth;

a stator assembly mounted within said housing;

a rotor assembly electromagnetically cooperating with said stator assembly and mounted within said housing;

bearing means for rotatably supporting said rotor assembly within said housing;

a pair of end bells respectively mounted at opposite axial ends of said housing, each said end bell having an outer circumferential periphery axially extending into a respective end of said housing, the said circumferential outer periphery of each end bell containing an annular groove therein which at least partially opposes a respective groove provided on the inner periphery of said housing, said end bells fixing between them said stator, rotor and bearing assemblies within said housing; and

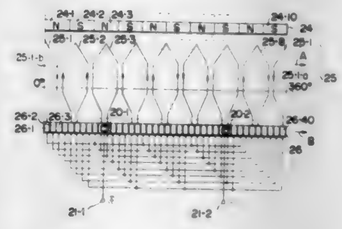
a pair of C-clips respectively mounted within and engaging with the opposing grooves at each axial end of said housing, at least that C-clip which is mounted within said groove having said tapered sidewall having a tapered face which is complementary to said tapered sidewall so that said tapered side wall and tapered face engage upon radial expansion of the C-clip having the said tapered face to provide an axial face directed inwardly of said housing to bias said end bells toward one another and hold said stator assembly, rotor assembly and bearing assembly between said end bells.

4,447,751

DIRECT CURRENT MOTOR

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo; Manabu Shiraki, 4451-171 Shimotsuruma, Yamato-shi, Kanagawa-ken, and Kazuhito Egami, 2-44-1 Chuo, Nakano-ku, Tokyo, all of Japan

Filed Nov. 12, 1981, Ser. No. 320,534
Int. Cl.³ H02K *21/26*
U.S. Cl. 310—154 **4 Claims**



1. A direct current motor comprising:

a field magnet having 2mn magnetic poles magnetized with the same angular intervals as those of the magnetic poles N and S, where m is an integer of 1 or more, and n is an integer of 4 or more;

a magnetic member for closing the magnetic circuit of the magnetic poles of the field magnet;

an armature in which $m(2n\pm2)$ armature coils are arranged each magnetically with a phase angle of $360/(2n\pm2)$ degrees, the armature being directed towards the magnetic poles in the magnetic circuit;

electric power supply control means for performing the switching of an armature current $mn(2n\pm2)$ times per revolution of the armature with respect to the field magnet; and

a rotating shaft for rotatably supporting the armature or the field magnet, said rotating shaft being supported by a bearing disposed in an outer casing of the direct current motor, the terminal of an armature coil which has a closest relationship to its corresponding magnetic pole with respect to a relationship of any desired armature coil to its corresponding magnetic pole, and the terminal of said desired armature coil being connected together to said electric power supply control means so that the armature coils are wound in the same direction in the arrangement in which said armature coils correspond to said magnetic poles.

4,447,752

BALL CONTACT SLIP RING ASSEMBLY

Arthur J. Boyce, Cambridge, Mass., and David Gold, Tacoma Park, Md., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jun. 7, 1982, Ser. No. 385,534
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—232 **14 Claims**

14. A slip ring assembly comprising:

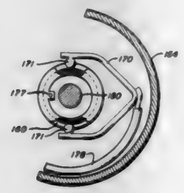
a generally cylindrical brush block having a centrally disposed, axially extending orifice;

a shaft disposed in said brush block orifice and being rotatable with respect to said brush block about the central axis of said brush block;

bearings disposed between said brush block and said shaft to permit relative rotation therebetween;

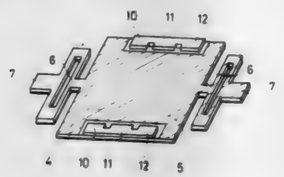
means for axially aligning said shaft with respect to said brush block;

a plurality of slip rings disposed about the outer circumference of said shaft, said slip rings being aligned axially adjacent one another along said shaft, each of said slip rings having a groove extending about the outer perimeter thereo;
means for electrically insulating each slip ring from the other;
a plurality of brushes disposed in said brush block, each of said brushes being associated with one of said slip rings and having a pair of opposed resilient arms arching about opposite sides of its associated slip ring groove;
a contact secured to each arm of each brush and being adapted to have a generally spherical contact surface



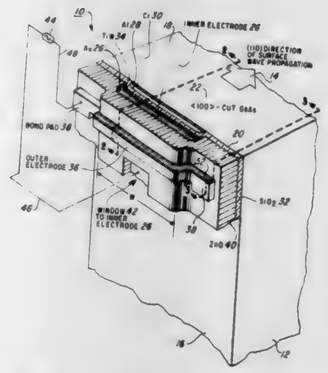
thereof seat and ride in the groove of an associated slip rings, said shaft rotates with respect to said brush block;
means disposed on said brush block for insulating each brush from the other and for forming slots permitting limited axial and radial movement of said brushes with respect to said brush block in response to radial and axial movement of said shaft with respect to said brush block;
means associated with each brush for conducting a signal from a location external of said slip ring assembly to its associated brush; and
means associated with each slip ring for conducting signals from its associated slip ring to a location external of said slip ring assembly.

4,447,753
MINIATURE GT-CUT QUARTZ RESONATOR
Osamu Ochiai, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Filed Nov. 20, 1981, Ser. No. 323,487
Claims priority, application Japan, Mar. 25, 1981, 56-43371; May 7, 1981, 56-68829; Jun. 30, 1981, 56-102957
Int. Cl.³ H01L *41/04*
U.S. Cl. 310—312 **15 Claims**



1. A GT-cut quartz resonator comprising: a quartz crystal thin plate having a resonant portion having opposed relatively short sides and opposed relatively long sides, at least one supporting portion, and at least one bridge portion connecting the resonant and supporting portions; said resonant, supporting and bridge portions all being integrally formed as a single piece from the quartz crystal thin plate, said thin plate comprising a quartz crystal Y plate rotated around the X axis through an angle of 49° to 56°, and the Y plate being further rotated through an angle of ±(40° to 50°) inside the major surfaces thereof; and masses disposed along portions of the long sides of the resonant portion at a first set of locations at which the frequency-temperature coefficient is not effectively changed by the addition or reduction of the amount of the masses and at a second set of locations at which both the frequency-temperature coefficient and the resonance frequency are effectively charged by the addition or reduction of the amount of the masses.

4,447,754
BROAD BAND SURFACE ACOUSTIC WAVE EDGE DEPOSITED TRANSDUCER
Robert S. Wagers, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sep. 24, 1982, Ser. No. 422,810
Int. Cl.³ H01L *31/16*
U.S. Cl. 310—313 R **11 Claims**

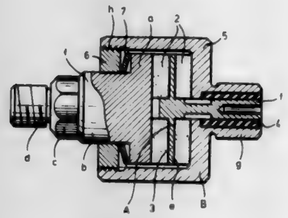


1. A surface acoustic wave device comprising:
(a) a substrate for transmitting surface waves, said substrate having a top surface and a side surface forming a sharp, smooth edge at their intersection; and
(b) a transducer means comprising:
(i) a layer of transducer material having first and second opposing surfaces,
(ii) an inner metallic electrode deposited on the first surface of the transducer layer,
(iii) an outer metallic electrode deposited on the second surface of the transducer layer, and
(iv) means for energizing the electrodes for producing bulk longitudinal waves in the layer of transducer material, said transducer means operatively affixed to the substrate with its outer electrode a distance greater than about one-fifth of a wavelength below the sharp smooth edge of the substrate whereby the bulk longitudinal waves produce surface waves in the substrate with the bulk longitudinal waves coupled to the longitudinal component of the surface waves to produce a surface wave device operably at center frequencies above 200 MHz.

4,447,755
PIEZOELECTRIC TRANSDUCER ACCELEROMETER
Florin C. V. Ghiurea, Bucharest, Romania, assignor to Institutul de Cercetarea Stiintifica si Inginerie Tehnologica Pentru Industria Electrotehnica, Bucharest, Romania
PCT No. PCT/RO82/00001, 371 Date Aug. 27, 1982, 102(e) Date Aug. 27, 1982, PCT Pub. No. WO82/02602, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 18, 1982, Ser. No. 414,378
Claims priority, application Romania, Jan. 20, 1981, 103157
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—329 **1 Claim**

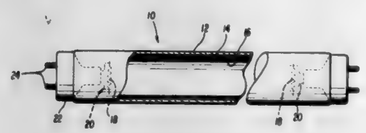
1. A piezoelectric transducer for accelerometer and vibration measurement studies which comprises:
a cylindrical casing forming a seismic mass and formed with an internal thread at one end and an axially extending

externally threaded tubular stem at an opposite end, said stem forming one pole for electrical connection to the transducer;
a pin extending from said one end of said casing axially and formed within said casing with a disk, a face of said disk confronting a face of said casing at said other end but spaced therefrom;
a pair of piezoelectric rings respectively abutting said faces and having parts of the same polarity turned toward one another;



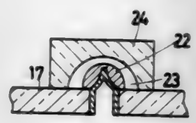
a contact bolt extending axially from said other end of said casing, insulated relative to said other end of said casing by an insulating bushing, and formed within said casing with an annular flange disposed between the parts of the same polarity whereby said contact bolt forms a second pole for electrical connection to the transducer;
a gasket threaded into said casing at said one end, said pin extending through said gasket; and
a spring member braced against said gasket and urging said disk against said rings.

4,447,756
FLUORESCENT LAMP WITH LAYER OF PLURAL PHOSPHORS HAVING DIFFERENT PARTICLE SIZES
Kohtaro Kohmoto, Yokohama; Hiroyuki Ebara, Zushi, and Hisami Nira, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 23, 1981, Ser. No. 246,254
Claims priority, application Japan, Apr. 8, 1980, 55-45204
Int. Cl.³ H01J *61/44, 61/48*
U.S. Cl. 313—487 **7 Claims**



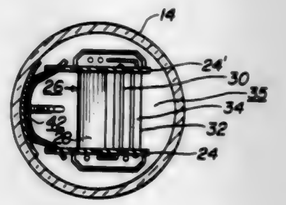
1. A fluorescent lamp, having a vacuum tight radiation transmitting envelope comprising mercury and rare gas, provided with electrodes between which the discharge takes place during operation and a luminescent layer which comprises a mixture of a plurality of phosphors each having a different density and a different particle size wherein when the plurality of phosphors are ranked in order of increasing densities, then the corresponding particle size of each of said phosphors is such that said phosphors are ranked in order of decreasing particle size.

4,447,757
STRUCTURE OF THIN-FILM ELECTROLUMINESCENT DISPLAY PANEL SEALED BY GLASS SUBSTRATES
Masashi Kawaguchi, Nara; Toshiaki Ishii; Kinichi Isaka, both of Tenri, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 11, 1981, Ser. No. 272,723
Claims priority, application Japan, Jun. 16, 1980, 55-81663; May 20, 1981, 56-77237
Int. Cl.³ H05B *33/04*
U.S. Cl. 313—509 **5 Claims**



1. A thin film electroluminescent display panel comprising:
first and second substrates disposed so as to define a cavity therebetween;
a composite comprising a thin-film electroluminescent layer interpositioned between a pair of dielectric layers, said composite being disposed within said cavity, at least one of said first and second substrates being transparent to light emitted by said electroluminescent layer when said layer is stimulated;
a pair of opposing electrodes positioned so as to sandwich said composite therebetween;
a protective liquid provided within said cavity defined by said substrates and being in contact with said dielectric layers;
an injection hole formed in at least one of said first and second substrates for introducing said protective liquid into said cavity, said substrate in which said injection hole is formed being glass, said injection hole being sealed; and
a glass covering means for completely covering said sealed injection hole.

4,447,758
BROAD AREA CATHODE CONTACT FOR A PHOTOMULTIPLIER TUBE
Richard D. Faulkner, Lancaster; Dale V. Henry, Willow Street, and David L. Muth, East Petersburg, all of Pa., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 20, 1981, Ser. No. 323,236
Int. Cl.³ H01J *40/00*
U.S. Cl. 313—532 **6 Claims**



1. In a photomultiplier tube comprising an evacuated envelope having a generally cylindrical sidewall with a faceplate closing one end of said envelope, a conductive coating disposed on a portion of said sidewall adjacent to said faceplate, a photocathode formed on said faceplate and on a portion of said conductive coating, an electron multiplier assembly including a plurality of electrodes spaced from said photocathode, means for applying potentials to said electrodes of said electron multiplier assembly, and electrical contact means for

applying a potential to said photocathode, the improvement wherein said electrical contact means comprises

a resilient conductive contact member having securing means at opposite ends thereof, said securing means being affixed to said multiplier assembly so that said resilient contact member assumes a substantially arcuate shape which contacts and coaxially conforms to said conductive coating on said sidewall of said envelope.

4,447,759

STARTER FOR IGNITING AN ELECTRIC DISCHARGE TUBE

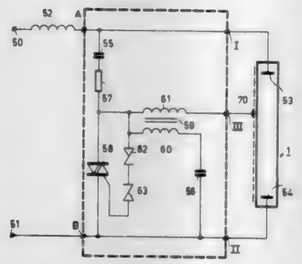
Jozef C. Moerkens, and Leonardus G. J. Verhees, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,501

Claims priority, application Netherlands, Dec. 16, 1980, 8006802

Int. Cl.³ H05B *41/16, 41/00*

U.S. Cl. 315—60 **15 Claims**



1. A starter for igniting a discharge tube having two main electrodes and an auxiliary electrode, which comprises: two input terminals and three output terminals, the input terminals being adapted to be connected to an a.c. electric power supply source via an inductive stabilisation ballast, a first output terminal being adapted to be connected to a first main electrode of the discharge tube, a second output terminal being adapted to be connected to the second main electrode, and the third output terminal being adapted to be connected to the auxiliary electrode, means interconnecting the two input terminals by an arrangement of a current-limiting circuit element including a capacitor connected in series circuit with a voltage sensitive switching element, starter circuit means including the switching element for generating a voltage between the third output terminal and one of said output terminals, and means coupling the first and second output terminals to said series circuit arrangement of the current-limiting circuit element and the switching element so that, on connecting the first and second output terminals to the discharge tube, the tube is in parallel with the said series arrangement of the current-limiting circuit element and the switching element.

4,447,760

FILAMENT SWITCHING DEVICE

Ronald Koo, 29 Greenwood Rd., Morris Plains, N.J. 07950

Filed Aug. 11, 1980, Ser. No. 176,677

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—65 **13 Claims**

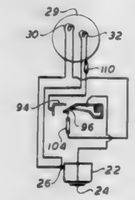
1. In an electric light having a translucent or transparent bulb sealing at least two filaments that are coupled by lead wires into a screw base, said bulb having an evacuation tube coaxially located within said screw base, a filament switching device comprising:

a frame having a floor which branches in two directions, said frame being sized to fit within said screw base and branch around said evacuation tube;

a fixed contact attached to said frame;

a cantilevered contact attached to said frame and operable to deflect laterally over said floor, said cantilevered contact being positioned to flex upon separation from said fixed contact, said cantilevered contact being positioned to deflect transversely to said evacuation tube; and

a fusible conductor, said frame including:



holding means for restraining one end of said conductor, its other end being connected to the free end of said cantilevered contact, said holding means being operable through said conductor to separate said cantilevered contact from said fixed contact.

4,447,761

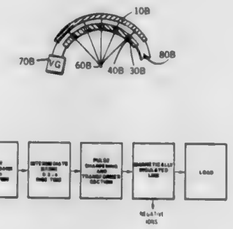
NEGATIVE ION GENERATOR

Regan W. Stinnett, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 11, 1982, Ser. No. 347,760

Int. Cl.³ H01J *27/02*

U.S. Cl. 315—111.81 **10 Claims**



1. A negative ion generator comprising:

a magnetically insulated transmission line including an elongate cathode having an emitting surface facing an elongate anode across a gap, said emitting surface having coating means for producing negative ions, and said anode having aperture means for the passage of negative ions; and

magnetic means for deflecting electrons which pass through said aperture without significantly effecting the flight of negative ions.

4,447,762

ELECTROLUMINESCENT DISPLAYS

Edward W. Williams, Reading, England, assignor to EMI Limited, Hayes, England

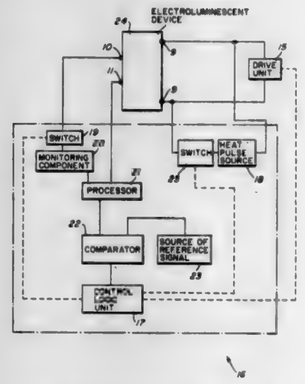
Filed Jul. 7, 1982, Ser. No. 396,121

Claims priority, application United Kingdom, Jul. 9, 1981, 8121268

Int. Cl.³ H05B *33/08*

U.S. Cl. 315—116 **7 Claims**

1. An electroluminescent device including a number of electrically conducting electrodes, embedded in an insulating layer within said device, and means for measurement of the electrical resistance between said electrodes, including means



to apply heat to the electroluminescent device in response to said electrical resistance becoming less than a preset level.

4,447,763

DISCHARGE LAMP LIGHTING DEVICE

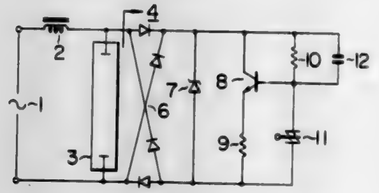
Hiroyuki Iyama, and Yoshio Watanabe, both of Tokyo, Japan, assignors to Hitachi Lighting, Ltd., Chiba, Japan

Filed Apr. 14, 1982, Ser. No. 368,163

Claims priority, application Japan, Apr. 15, 1981, 56-55581

Int. Cl.³ H05B *41/16*

U.S. Cl. 315—207 **10 Claims**



1. A discharge lamp lighting device comprising a serial circuit of an inductive ballast and a discharge lamp connected across an A.C. power source, and a switching circuit connected substantially in parallel to said discharge lamp, said switching circuit carrying out only two consecutive ON/OFF operations in the beginning of each half cycle of said A.C. power source during the lit condition of said discharge lamp.

4,447,764

POWER SUPPLY FOR LOW-VOLTAGE INCANDESCENT LAMP AND LIKE LOAD

William P. Kornrumpf, Albany, N.Y., and Paul T. Cote, Cleveland Heights, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 18, 1982, Ser. No. 379,393

Int. Cl.³ H05B *39/04*

U.S. Cl. 315—240 **34 Claims**

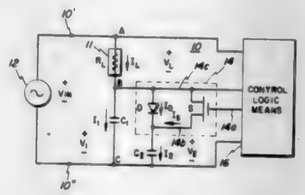
1. A power supply for energizing a load at a voltage magnitude less than the voltage magnitude provided by an A.C. source, comprising;

a first capacitive element in series connection with said load across said source, said first capacitive element having a reactance selected to cause the lowest magnitude of desired current flow through said load;

a second capacitive element;

a single active switching device having a path controlled, responsive to a control signal to connect said second capacitive element in parallel connection across said first capacitive element to allow current flow in a first of two directions with respect to said second capacitive element; and

a unidirectionally-conducting element in parallel with the controlled path of said switching device and poled to



conduct current in the remaining one of two directions with respect to said second capacitive element; wherein conduction of said switching device and said unidirectionally-conductive element establishes a total load current by variation of a portion of the source waveform cycle during which an additional current flows through said second capacitive element and said load.

4,447,765

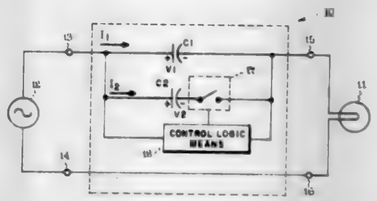
POWER SUPPLY FOR LOW VOLTAGE INCANDESCENT LAMP

Paul T. Cote, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 18, 1982, Ser. No. 379,410

Int. Cl.³ H05B *39/04*

U.S. Cl. 315—240 **12 Claims**



1. A power supply providing power to a lamp, having a filament as its load, at a voltage magnitude less than the power supply input voltage magnitude comprising:

(a) a first capacitive element electrically serially connected with said load across the power supply input terminals;

(b) a second capacitive element;

(c) control means connected in parallel across said first capacitive element; and

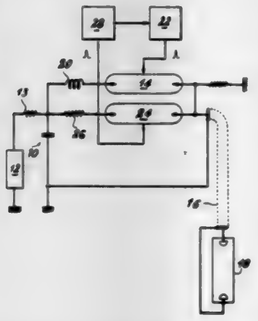
(d) a switching means responsive to a control signal generated by said control means for rendering said switching means conductive, said switching means being rendered conductive for electrically connecting said second capacitive element in parallel across said capacitive element during at least a portion of each power supply input waveform cycle.

4,447,766

SUPPLY DEVICE FOR A FLASH TUBE

Marcel Bedu, Clamart, and Marcel Jeanjean, Montgeron, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 16, 1981, Ser. No. 302,701
Claims priority, application France, Sep. 23, 1980, 80 2414
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—241 R **1 Claim**



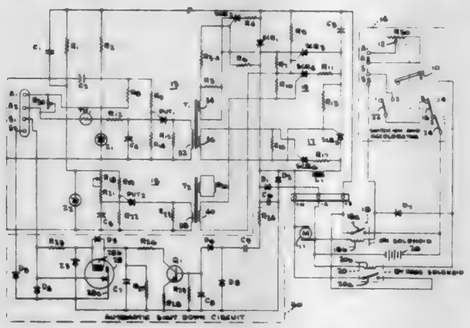
1. A supply device for a flash tube, comprising a capacitor, a d.c. voltage source connected to the capacitor, a first spark gap located between the capacitor and the flash tube, a circuit able to emit a first control pulse applied to said first spark gap, a second spark gap connected to the capacitor across a variable resistor and to the flash tube, and a second circuit able to emit a second control pulse for the second spark gap, said second control pulse being in advance of the first control pulse, said second control pulse closing said second spark gap and controlling a preionization current through said flash tube, said first control pulse occuring after said second control pulse during said preionization current and closing said first spark gap and controlling a main discharge through said flash tube, said main discharge being superimposed on said preionization current.

4,447,767

SCR MOTOR SPEED CONTROL

Luther D. Holt, Mahonoy, Pa., assignor to John J. Barni, Lake Harmony, Pa.

Filed Mar. 31, 1981, Ser. No. 254,160
Int. Cl.³ H02P *7/00*
U.S. Cl. 318—139 **4 Claims**



1. Apparatus for variably controlling the application of a D.C. energization source to a motor, said apparatus comprising:

(a) main switching means commutable between a conductive state and a nonconductive state to respectively connect and disconnect the energization source to said motor;

(b) a solenoid having a first, normally open switch, said first switch being connected by a first circuit in series with the energization source and said main switching means, and a first coil energizable to close said first switch;

(c) commutating means for commutating said main switch means between its conductive and nonconductive states, whereby the energization source is connected through said closed first switch to energize said motor;

(d) a relay having a second, normally open switch, said second switch connected in series with said first switch across the energization source, and a second coil energizable to close said second switch; and

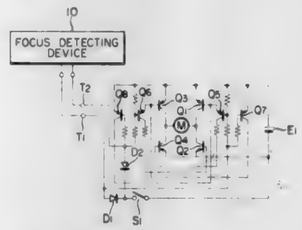
(e) failure detector means responsive to the commutation of said main switching means for energizing said second coil, whereby said second switch is closed, said first coil energized and said first switch is closed to complete said first circuit and to energize said motor, and responsive to the lack of commutation of said main switching means for deenergizing said second coil, whereby second switch is opened, said first coil deenergized and said first switch opened to disconnect the energization source from said motor when said main switch means fails to commutate.

4,447,768

MOTOR CONTROL DEVICE

Nobuhiko Terui, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,152
Claims priority, application Japan, Jun. 23, 1981, 56-92682[U]
Int. Cl.³ G03B *3/10*; H02P *3/12*
U.S. Cl. 318—293 **2 Claims**



1. A motor control device comprising:

(a) a transistor bridge circuit comprising first and second transistors connected in series with each other and third and fourth transistors connected in series with each other;

(b) a motor connected between the junction between said first transistor and said second transistor and the junction between said third transistor and said fourth transistor;

(c) means for producing first and second output signals, said means having first and second terminals from which said first and second output signals are transmitted, respectively;

(d) a first switching element connected to said first terminal and responsive to said first output signal to cause said first transistor and said fourth transistor opposed to each other diagonally in said bridge circuit to conduct;

(e) a second switching element connected to said second terminal and responsive to said second output signal to cause said second transistor and said third transistor opposed to each other diagonally in said bridge circuit to conduct;

(f) a third switching element connected to said first terminal and responsive to said first output signal to cause said third transistor to turn off forcibly; and

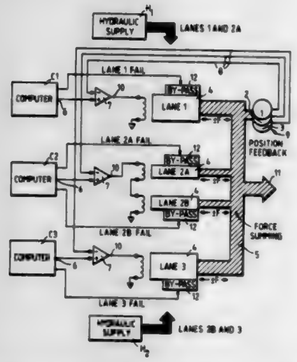
(g) a fourth switching element connected to said second terminal and responsive to said second output signal to cause said first transistor to turn off forcibly.

4,447,769

REDUNDANT ACTUATION SYSTEM

John M. Corney, Kent, England, assignor to Elliott Brothers (London) Limited, England

Filed Jan. 19, 1982, Ser. No. 340,835
Claims priority, application United Kingdom, Mar. 11, 1981, 8107619
Int. Cl.³ G05B *9/02*
U.S. Cl. 318—564 **4 Claims**



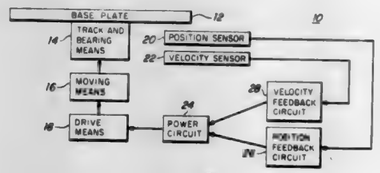
1. A redundant actuator system comprising: a first plurality of sub-actuators in which some sub-actuators have a lower force capability than the remaining sub-actuator(s); and a second plurality of electrical control circuits which control the sub-actuators, said sub-actuators with the lower force capability being controlled by a common single electrical control circuit, the remaining sub-actuators being each controlled by a respective independent electrical control circuit.

4,447,770

PRECISION DRIVE SYSTEM

Orr Shepherd, Arlington, Mass., assignor to Visidyne, Inc., Burlington, Mass.

Filed Jan. 26, 1981, Ser. No. 228,630
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—618 **7 Claims**



1. A precision drive system comprising:

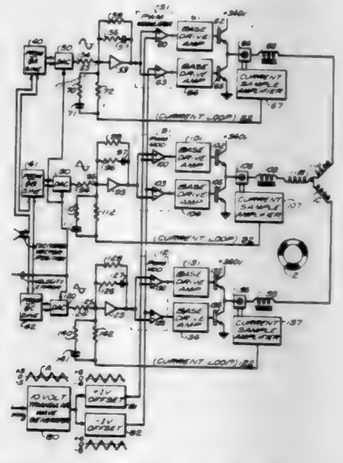
a baseplate; track means and air bearing means movable relative to one another, one of said means being fixed to said baseplate and the other being movable for carrying an object to be moved relative to the baseplate; precision lead screw means and drive nut means for moving one of said track and air bearing means; an electric servo motor for driving one of said precision lead screw means and drive nut means; and a control circuit including a power circuit for operating said electric servo motor; a tachometer for detecting the velocity of the movable one of said track and air bearing means, and a velocity feedback circuit for introducing velocity error signals into said power circuit; an LVDT to detect the position of the movable one of said track and air bearing means and a position feedback circuit for introducing position error signals to said power circuit, said power circuit including means for generating sawtooth output signals and means for summing said sawtooth output signals with said velocity error signals and said position error signals to provide corrected velocity and position signals for operating said electric servomotor.

4,447,771

CONTROL SYSTEM FOR SYNCHRONOUS BRUSHLESS MOTORS

James S. Whited, Radford, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Aug. 31, 1981, Ser. No. 297,676
Int. Cl.³ G05B *1/06*
U.S. Cl. 18—661 **18 Claims**



1. A motor control system for a brushless DC motor comprising:

a brushless DC motor including

stator windings;

a permanent magnet rotor and

a position indicator for indicating the position of said rotor relative to said stator windings;

excitation current generating circuit means responsive to said position indication from said position indicator and connected to provide sinusoidal excitation current to said stator windings, said sinusoidal excitation current being incrementally synthesized according to digital values; the frequency of said sinusoidal excitation current being controlled according to said position indication to create a rotating magnetic field synchronous with the rotation of said rotor; and

torque angle control circuit means coupled to said excitation current generating circuit means to control the phase of said sinusoidal excitation current to dynamically control the angle between said rotating magnetic field created by said stator winding and the rotor position.

4,447,772

TEMPERATURE STABLE PULSE COUNTING FM DETECTOR

Ronald V. DeLong, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

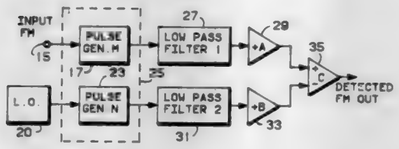
Filed Sep. 25, 1981, Ser. No. 305,586
Int. Cl.³ H03D *3/28*
U.S. Cl. 329—126 **7 Claims**

1. A temperature stable FM detector comprising:

(a) first and second pulse generating circuits formed on a single semiconductor chip, said first pulse generating circuit being adapted to receive an FM signal to be detected and to generate output pulses in response thereto

and said second pulse generating circuit being adapted to receive a reference frequency signal and to generate output pulses in response thereto;

(b) first and second low pass filters connected to receive the output pulses from said first and second pulse generating circuits, respectively; and



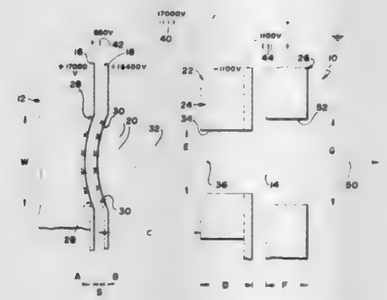
(c) combining means connected to receive filtered signals from said first and second low pass filters for combining the received signals to provide an output signal of detected FM signals applied to said first pulse generating circuit.

4,447,773

ION BEAM ACCELERATOR SYSTEM

Graeme Aston, Montrose, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jun. 22, 1981, Ser. No. 276,076
Int. Cl.³ H05H *5/02*
U.S. Cl. 328—233 **11 Claims**



1. An ion beam accelerator system for accelerating ions of an ion source, comprising:

a pair of slightly spaced extraction grids having upstream faces facing the ion source, a first of said grids being positioned upstream from a second of said grids, said grids forming a plurality of pairs of holes, one in each grid, with said pairs of holes aligned in directions to form a plurality of converging beamlet paths;

an accelerator electrode device spaced downstream from said extraction grids by more than twice the space between said pair of grids, including a first electrode with a hole for passing said beamlets; and

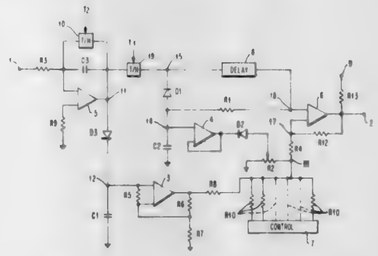
means for establishing said second grid at a negative potential relative to said first grid, and for establishing said first accelerator electrode at a negative potential with respect to both of said grids, the potential difference between either grid and said first electrode being a plurality of times greater than the potential difference between said pair of grids.

4,447,774

VIDEO SIGNAL DETECTOR

Nils G. Stalberg, Lidingo, Sweden, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,632
Claims priority, application Sweden, Oct. 8, 1980, 8007037
Int. Cl.³ H03K *5/05, 5/153*
U.S. Cl. 328—150 **7 Claims**



1. A video signal detector for converting analog video signals representing optical reflectance from successive small regions on a document into a digital output signal comprising

means for producing an analog video signal that varies in magnitude as a function of optical reflection,

means responsive to said video signal for developing a white level peak representative voltage signal,

means responsive to said video signal for developing a black level peak representative voltage signal,

means responsive to said white level peak representative signal and said black level peak representative signal for developing a threshold level voltage signal,

comparing means responsive to said video signal and to said threshold level signal for producing a digital output signal,

a diode connected between said black level peak signal developing means and said threshold level signal developing means, said diode being oriented to permit conduction in the presence of black level voltage signals, and

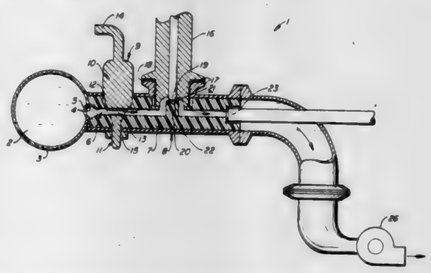
means supplying back bias to said diode for preventing conduction therethrough in the presence of relatively small black level voltage signals but permitting conduction therethrough in the presence of relatively large black level voltage signals.

4,447,775

APPARATUS AND METHOD FOR CONTINUOUS PH MONITORING

Stephen J. Breuker, and Harold L. Richmann, both of Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed Jul. 12, 1982, Ser. No. 397,727
Int. Cl.³ G01N *27/38, 27/56*
U.S. Cl. 324—438 **8 Claims**



1. An apparatus for the continuous and substantially current measurement of the pH of a fluid in a process stream conduit using a glass electrode not in contact with said process stream and entailing a minimal loss of process fluid, said apparatus comprising:

an enclosed sample conduit extending laterally from said process conduit to divert therefrom a portion of said fluid, said portion completely filling said sample conduit, with means in the wall of said sample conduit for receiving the pH-sensing surface of said electrode in fluid-tight relation to said wall, the portion of said wall facing said pH-sensing surface having a contour approximately complementary in shape to said surface with a gap therebetween of less than about 0.5 cm on the average and substantially smaller than the diameter of said sample conduit, the diameter ratio of said process conduit to said sample conduit ranging from about 5:1 to about 50:1, and

means for drawing said stream through said conduit at a controlled steady rate.

4. A method for the continuous and substantially current measurement of the pH of a stream of fluid in a process stream conduit using a glass electrode in a non-intrusive manner and entailing a minimal loss of process fluid, said method comprising:

drawing a portion of said stream at a controlled steady rate into an enclosed sample conduit extending laterally from said process conduit, said sample conduit containing the pH-sensing surface of said electrode enclosed therein, the diameter ratio of said process conduit to said sample conduit ranging from about 5:1 to about 50:1, said portion completely filling said sample conduit,

passing said portion through a passage within said sample conduit defined by the pH-sensing surface of said electrode and an opposing face of said conduit wall having a contour approximately complementary in shape to said surface with a gap therebetween of less than about 0.5 cm on the average and substantially smaller than the diameter of said sample conduit, and

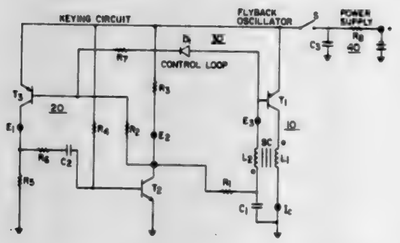
detecting the signal generated by said electrode.

4,447,776

PULSE DRIVER FOR FLUX GATE MAGNETOMETER

Robert E. Brown, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1981, Ser. No. 256,868
Int. Cl.³ G01R *33/04*
U.S. Cl. 324—253 **8 Claims**



1. A pulse driver for a fluxgate magnetometer comprising:

a saturable core having first and second windings thereon,

a pulse generator coupled to said first winding operable to provide a core saturating pulse to said winding,

a keying circuit coupled to said pulse generator continuously operable to disable said generator when actuated and to enable and subsequently disable said pulse generator after a period of time,

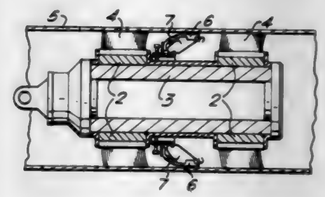
a control circuit coupled to said second winding and to said keying circuit operable to actuate said keying circuit upon the occurrence of a regenerative pulse in said second winding following core saturation.

4,447,777

MAGNETIC PIPELINE INSPECTION VEHICLE WITH METALLIC FOIL AND BRISTLE CONTACTS SUPPORTING THE VEHICLE

Michael R. G. Sharp, Whitley Bay, and John C. Braithwaite, Ponteland, both of England, assignors to British Gas Corporation, London, England

Filed Dec. 15, 1980, Ser. No. 216,499
Claims priority, application United Kingdom, Oct. 17, 1980, 8033618
Int. Cl.³ G01N *27/72, 27/82*
U.S. Cl. 324—220 **26 Claims**



1. A magnetic pipeline inspection vehicle comprising:

a vehicle body comprising a rigid, elongated, annular, magnetic flux-return-path member;

permanent magnet means mounted rigidly and directly on the outer surface of the annular member and in magnetic flux conducting relationship thereto; and

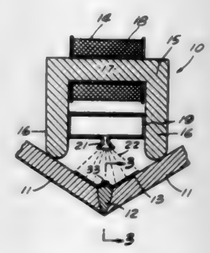
magnetic coupling means mounted directly on said magnet means and in magnetic flux conducting relationship thereto, said coupling means being positioned so as to engage the inner surface of a pipeline being inspected when the vehicle is in the pipeline to thereby couple the magnet means and the pipeline in magnetic flux conducting relationship and provide support for the vehicle as it travels in the pipeline.

4,447,778

APPARATUS FOR SECURING STORAGE TAPE ON A TEST PIECE DURING MAGNETOGRAPHIC TESTING

Wolfgang Stumm, Reutlingen, Fed. Rep. of Germany, assignor to Institut Dr. Friedrich Förster Prüfgerätebau, Reutlingen, Fed. Rep. of Germany

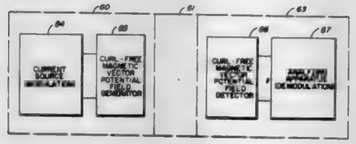
Filed Jun. 19, 1981, Ser. No. 275,318
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026540
Int. Cl.³ G01N *27/85*; G01R *33/10*
U.S. Cl. 324—213 **4 Claims**



1. Apparatus for magnetographic testing areas of a magnetizable test piece including an elongated flexible elastic magnetic storage tape overlying the magnetizable test piece, magnetizing means with a yoke and two pole shoes for introducing magnetic flux into the test piece, an energizing coil encircling the yoke, a source of electric current, and means for connecting the yoke coil to the electric current source, comprising:

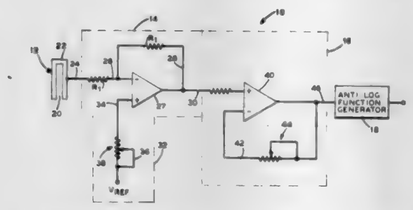
means carried by and located between the pole shoes, said means being made of a stable shape material to encircle a certain volume of fluid, and having a nozzle facing toward the storage tape overlying the test piece;
a source of compressed fluid; and
means interconnecting the source of compressed fluid to the means carried by and located between the pole shoes for directing the compressed fluid onto the storage tape and forcing said tape into continuous intimate contact with the test piece.

4,447,779
APPARATUS AND METHOD FOR DETERMINATION OF A RECEIVING DEVICE RELATIVE TO A TRANSMITTING DEVICE UTILIZING A CURL-FREE MAGNETIC VECTOR POTENTIAL FIELD
Raymond C. Gelinas, Concord, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 20, 1980, Ser. No. 198,553
Int. Cl.³ G01B *7/14*; G01R *33/02*
U.S. Cl. 324—207 **8 Claims**



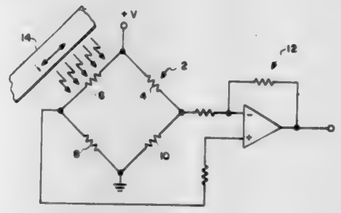
1. Apparatus for determining a direction between a first location and a second location comprising:
a source of radiation positioned at said first location and providing a substantial curl-free magnetic vector potential field;
a plurality of means at said second location for detecting said curl-free magnetic vector potential field, each of said plurality of means for detecting responsive to a component of said curl-free magnetic vector potential field having predetermined spatial orientation with respect to components detected by remaining ones of said plurality of means for detection; and
means coupled to said plurality of means for detecting for determining an orientation of said vector field from said spatial orientation of said components.

4,447,780
LINEARIZING CIRCUIT AND METHOD OF CALIBRATING SAME
Barry J. Youmans, Rittman, and Sharon L. Zimmerlin, Chagrin Falls, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Oct. 28, 1981, Ser. No. 315,783
Int. Cl.³ G01R *15/10*; B01D *59/40*
U.S. Cl. 324—132 **10 Claims**



1. A linearizing circuit for an oxygen detector having a logarithmic output range with a polarity change within the output range comprising:
biasing circuit means for zeroing one end point of the logarithmic output range of the oxygen detector to eliminate the polarity change within the output range;
scaling circuit means connected to said biasing circuit means for adjusting a second point on the logarithmic output range of the oxygen detector; and
converting means connected to said scaling circuit means for changing the logarithmic output of said scaling circuit means to a linear output.

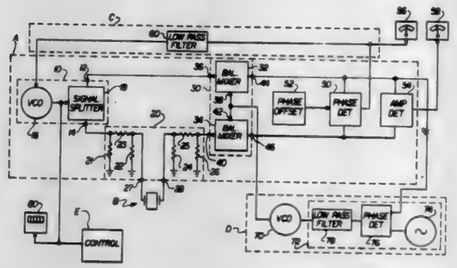
4,447,781
MAGNETORESISTIVE TRANSDUCER APPARATUS
Martin J. van Dyke, Brooklyn Park, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 13, 1981, Ser. No. 310,580
Int. Cl.³ H03D *15/00*
U.S. Cl. 324—83 A **10 Claims**



1. A zero-crossing signal detector for alternating current in an electrical conductor, said detector comprising:
a magnetoresistive bridge positioned adjacent to said conductor to be responsive to the alternating magnetic field produced about said conductor incident to the passage of said alternating current through said conductor,
said bridge having a first pair of opposite arms each having a magnetoresistive element therein, and a second pair of opposite arms each having a magnetoresistive element therein, said magnetoresistive elements in said first pair of arms being oriented transversely with respect to said magnetic field and said magnetoresistive elements in said second pair of arms being oriented longitudinally with respect to said magnetic field,
said bridge being electrically balanced in the absence of said field and the magnetoresistive elements in one pair of said opposite arms being magnetically saturated during a significant interval of each half cycle of said alternating current to unbalance said bridge during such intervals, and
means connected to said bridge and responsive to the state of balance of said bridge to produce pulse signals indicative of each zero crossing of said alternating current.

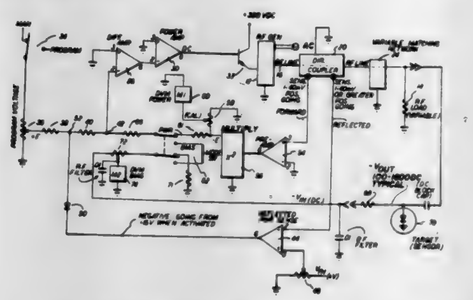
4,447,782
APPARATUS FOR AUTOMATIC MEASUREMENT OF EQUIVALENT CIRCUIT PARAMETERS OF PIEZOELECTRIC RESONATORS
John P. Rutkoski, Stow, Ohio, assignor to Transat Corp., Shaker Heights, Ohio
Filed Mar. 17, 1982, Ser. No. 359,060
Int. Cl.³ G01R *29/22*; H03L *7/00*
U.S. Cl. 324—56 **8 Claims**

1. An apparatus for measuring a characteristic frequency of a piezoelectric resonator comprising:
a variable frequency test signal generating means for generating a variable frequency test signal;
an analog heterodyne reference signal generating means for generating a selectively variable heterodyne reference signal;
heterodyne means for receiving the variable frequency heterodyne reference signal, the selectively variable test signal, and the selectively variable test signal received by way of the piezoelectric resonator whose characteristic frequency is to be measured, the heterodyne means producing a pair of fixed frequency test signals which have substantially the preselected fixed frequency and whose phase relationship is the same as the phase relationship between the signals received by the heterodyne means, whereby the phase difference between the fixed frequency test signals varies as a function of the difference between the characteristic frequency of the piezoelectric resonator and the frequency of the variable frequency test signal;



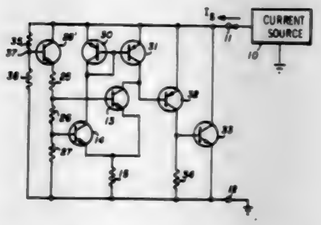
heterodyne reference signal generator control means operatively connected with one of the fixed frequency test signals for controlling the heterodyne reference signal generating means such that the frequency of the variable heterodyne reference signal is the frequency of the variable frequency test signal offset by a preselected fixed frequency;
phase detecting means operatively connected with the fixed frequency test signals for producing a phase output signal which varies with the phase difference between the fixed frequency test signals.

4,447,783
PROGRAMMABLE RF POWER REGULATOR (STABILIZER)
Donald L. Quick, Mountain View, Calif., assignor to The Perkin-Elmer Corp., Norwalk, Conn.
Filed May 19, 1982, Ser. No. 379,696
Int. Cl.³ H04B *1/04*
U.S. Cl. 323—275 **8 Claims**



1. A power supply regulator for generating a regulated RF power output to a load of variable impedance at a level proportional to a voltage level of an applied input control signal comprising,
power circuitry including AC power input cicuitry,
input control circuitry responsive to an external control and providing said control signal voltage level which is proportional to the desired power output of the power supply,
power measuring means coupled to said power circuitry for generating output voltage signals proportional to the forward and reflected power applied to said load,
signal comparison means coupled to said power measuring means and to said input control circuitry for generating an output signal proportional to a signal applied to said signal comparison means which comprises the sum of said forward power voltage signal and said control signal voltage level,
power control means coupled to said signal comparison means and responsive to said output signal for controlling the power output of said power circuitry, and
limiting circuitry coupled to said power measuring means and responsive to said reflected power voltage signal and to a predetermined threshold voltage signal for overriding signal applied to said signal comparison means for reducing the forward power of said power circuitry whenever the reflected power signal exceeds said threshold voltage signal.

4,447,784
TEMPERATURE COMPENSATED BANDGAP VOLTAGE REFERENCE CIRCUIT
Robert C. Dobkin, Hillsborough, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Mar. 21, 1978, Ser. No. 888,721
Int. Cl.³ G05F *1/613, 3/20*
U.S. Cl. 323—226 **2 Claims**



1. A constant voltage reference circuit comprising:
first and second terminals for developing a constant potential therebetween in response to a current passed between said terminals;
first and second transistors, each having emitter, base and collector electrodes;
means for coupling said first and second transistor emitters together and, through a common current source, to said second terminal;
means coupled to said first and second transistor collectors for developing a differential output potential therebetween;
means for operating said first transistor at a higher current density than said second transistor;
first voltage divider means coupled between said first and second terminals, said first voltage divider including first and second intermediate potential points coupled respectively to said base electrodes of said first and second transistors, with said second potential point being closer to the potential of said second terminal than said first potential point;
amplifier means having an input responsive to said differential output of said first and second transistors and an output coupled to said first voltage divider means, said amplifier means being operative to force said differential to substantially zero by controlling the potential difference between said first and second intermediate potential points;
second voltage divider means coupled between said first and second terminals, said second voltage divider having at least one intermediate potential point operating at the

bandgap potential of the transistor semiconductor material; and

diode means coupled in series relationship with said first voltage divider means, said diode means being operative to develop a voltage having negative temperature coefficient to compensate the positive temperature coefficient of said potential difference between said first and second intermediate potential points, said diode means comprising the emitter-base circuit of a third transistor having an emitter coupled to said first voltage divider, a base coupled to said intermediate potential point on said second voltage divider and a collector coupled to said first terminal whereby the potential between said first and second terminals can be stabilized at any desired potential above said bandgap.

4,447,785

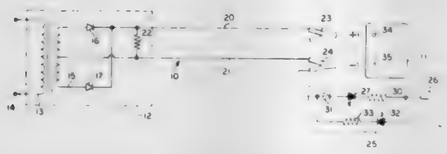
BATTERY CHARGER ASSEMBLY

Bruce R. Wright, 1006 Nana, St. Louis, Mo. 63131

Filed Mar. 30, 1982, Ser. No. 363,452

Int. Cl.³ H02J 7/00

U.S. Cl. 320—25 **8 Claims**



1. A battery charger assembly for charging a battery with two terminals comprising:

(a) a battery charger power supply having a positive output and negative output for providing a rectified DC voltage output and including a transformer and at least one rectifier diode,

(b) a continuous negative cable connected to the negative output,

(c) a continuous positive cable connection to the positive output,

(d) a pair of clamps, one clamp being connected to each of the cables, and

(e) polarity indicating means connected to one of the clamps, the polarity indicating means including:

1. a test contact for contacting a terminal of the battery,
2. a first indicator serially connected between the test contact and said one of said clamps for indicating a first polarity connection, and
3. a second indicator serially connected between the test contact and said one of said clamps for indicating a second opposite polarity condition, whereby when said test contact is brought into contact with said terminal of the battery and the other of said clamps is connected to the other terminal of the battery, an electrical circuit between the battery terminals will be completed through the battery charger assembly, said electrical circuit including said test contact, said first or second indicator, said one of said clamps, one of said cables, the other of said cables, and said other clamp.

4,447,786

WAVEFORM SYNTHESIZER AND MOTOR CONTROLLER

David A. Saar, Timonium, and Pradeep Bhagwat, Baltimore, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Feb. 12, 1982, Ser. No. 348,319

Int. Cl.³ H02P 5/40

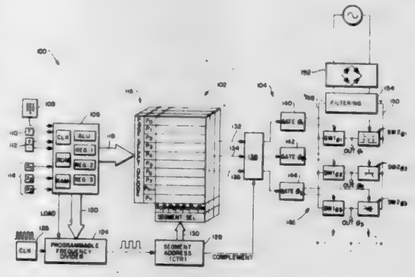
U.S. Cl. 318—811 **14 Claims**

1. A motor controller for selectively controlling an AC motor by providing a controlled power waveform thereto of selected wave shape and frequency, said motor controller comprising:

a waveform memory means divided into p addressable pages representing p available wave shapes with each page divided into s addressable segments, the segments of each page having binary switch control information stored therein, the pages and the segments of each page addressable through a memory address port to provide the so-addressed switch control information to switch control data lines;

selectively gatable switch means connected between a DC power source means to at least one output power node for connection to the motor to be controlled and connected to said switch control data lines;

stored-program control means connected to said waveform memory for (a) addressing a selected one of the pages available in the waveform memory, and (b) sequentially addressing the segments of the addressed page at a selected sequential address rate to thereby cause the gatable switch means to switch DC power to the output node to



synthesize a waveform of selected waveform and wave shape in accordance with the stored binary switch control information of the addressed page;

said stored program control means including a stored-program-controlled processor means having an address output port connected to said memory address port for providing an addressing rate select signal, and a segment addressing means connected to said memory address port for sequentially addressing the segments of an addressed page at a selected addressing rate and connected to said address rate control port so as to provide a selected addressing rate in response to an addressing rate select signal provided from said processor means; and wherein

said segment addressing means comprising a presettable frequency divider connected to a source of input pulses with the frequency divide rate set by said processor through said segment address rate select port, said presettable frequency divider connected and providing frequency divided input pulses to a segment address counter connected to said memory address port.

4,447,787

DEVICE FOR THE FIELD-ORIENTED OPERATION OF A CONVERTER-FED ASYNCHRONOUS MACHINE

Guenter Schwesig, and Felix Blaschke, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,614

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034252

Int. Cl.³ H02P 5/40

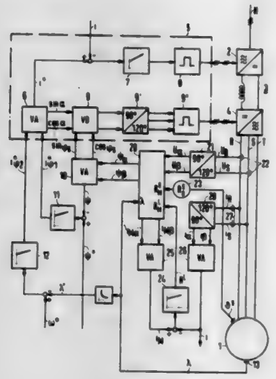
U.S. Cl. 318—803 **16 Claims**

1. Apparatus for operating a converted asynchronous electric motor which comprises:

(a) a flux computer for determining the position of the flux vector from the input values for the stator voltage provided by said motor by solving all the electrical quantities of the Park equations describing said motor in a given position of the rotor axis, taking into acount the parameter values corresponding to the rotor resistance and the stator resistance of said motor whereby signals corresponding to the position of the flux vector and belonging to a solution, can be tapped from said flux computer, said flux computer comprising:

(1) first feeding means for feeding the input value for the actual stator voltage to the computer;

(2) second feeding means for feeding an input value for the actual rotor position to the computer;



(3) first storage means for storing the rotor resistance parameter; and

(4) second storage means for storing the stator resistance parameter;

(b) a converter control unit coupled to said flux computer and said converter rectifier respectively, forming the control quantities for driving the converter rectifier from the determined position of the flux vector and from the nominal input values which fix the components of the stator current vector parallel and perpendicular to the flux vector.

4,447,788

METHOD FOR OPTIMIZING THE POWER INPUT OF A PLURALITY OF HYSTERESIS MOTORS CONNECTED IN PARALLEL

Johann Mundt, Jülich-Koslar; Horst Kasper, Gellenkirchen, and Eckhard Pritsch, Jülich-Koslar, all of Fed. Rep. of Germany, assignors to Uranit Uran-Isotopentrennungs-Gesellschaft mbH, Jülich, Fed. Rep. of Germany

Filed Nov. 3, 1982, Ser. No. 438,945

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1981, 3151904

Int. Cl.³ H02P 5/46

U.S. Cl. 318—799 **3 Claims**

1. A method for optimizing the power input to a plurality of parallel connected hysteresis motors all having the same given rated voltage, wherein a three phase alternating voltage source jointly supplies the motors with operating voltage, the voltage source being adjustable within predetermined limits by means of a control voltage, said method comprising:

(a) measuring, during the operation of each parallel connected motor, the phase angle difference between the voltage supplied to the motor and the motor current;

(b) determining the power factor from the measured phase angle difference for each motor;

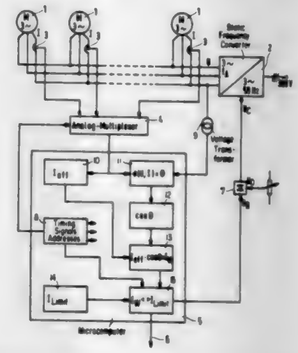
(c) measuring the effective value of the current of each motor during operation;

(d) combining the respective effective current values and power factors to determine the active current component for each motor during operation;

(e) measuring and storing the limit value of the active current component at which each motor transitions from synchronous to asynchronous operation, said limit value measuring and storing being conducted only once for each motor prior to commencement of continuous synchronous operation;

(f) allowing each motor to reach synchronous speed while maintaining the supply voltage at rated voltage;

(g) while maintaining synchronous speed, adjusting the control voltage of the voltage supply to reduce the voltage jointly supplied to the motors from rated voltage to an optimum working point which is close to the voltage level at which a first one of said parallel connected motors begins to transistion from synchronous to asynchronous operation, whereby the active and reactive power inputs are reduced to a substantially minimum value at the optimum working point;



(h) comparing the active current component of each motor, after said adjusting step, with a respective one of the stored active current component limit values to determine as to each motor whether it is operating with its active current below the stored limit value and therefore operating synchronously or whether it is operating with its active current at or above the stored limit value and therefore operating asynchronously; and

(i) regulating the control voltage of the voltage source for increasing the voltage jointly supplied to the motors to the rated voltage value when said comparing step determines that one of said motors is operating asynchronously and for decreasing the voltage jointly supplied to the motors to the optimum working point when the motors are all determined to be operating synchronously.

4,447,789

LASER AMPLIFIER

Vincent Pugliese, Vincennes, and Jean-Claude Farcy, Bris-sous-Forges, both of France, assignors to Compagnie General d'Electricite, Paris, France

Continuation of Ser. No. 244,561, Mar. 17, 1981. This application Mar. 8, 1983, Ser. No. 472,912

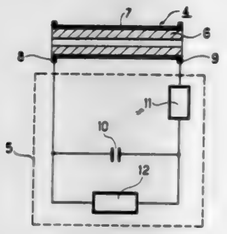
Claims priority, application France, Mar. 21, 1980, 80 06354

Int. Cl.³ H01S 3/09

U.S. Cl. 330—4.3 **8 Claims**

1. A laser amplifier including a fluid active medium, at least one electric resistance comprising an insulating support and a thin film layer of conductive material deposited on said support, a generator connected to the resistance, said generator comprising means for supplying and electrical discharge current pulse sufficiently high to produce ultra-violet radiation around said resistance of a level capable of exciting the active medium, two portions of said layer being connected to said electrical discharge current pulse supplying means of said generator said electric discharge current pulse being of short

duration so as to hold the damage to the resistance due to the flow of the electrical discharge current pulse to such a small



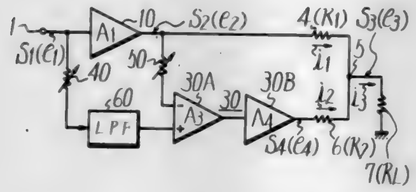
extent that it is not detrimental to subsequent re-use for subsequent excitation of the active medium.

4,447,790

DISTORTION ELIMINATING CIRCUIT

Ryuichi Fukuda; Masami Fujiwara, and Norio Ishiguro, all of Kawasaki, Japan, assignors to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Filed Oct. 8, 1981, Ser. No. 309,578
Claims priority, application Japan, Oct. 13, 1980, 55-145579[U]; Oct. 13, 1980, 55-145580[U]
Int. Cl.³ H03F *1/26, 3/26*
U.S. Cl. 330—149 **7 Claims**



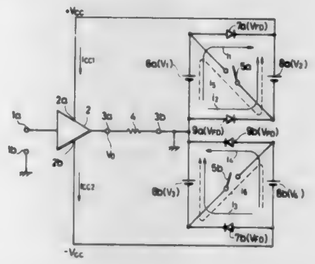
1. A distortion eliminating circuit for use with an amplifier, comprising:
(a) an amplifier for amplifying an input signal;
(b) difference detecting means for detecting a difference between two signals;
(c) first transmitting means for transmitting the input signal to said difference detecting means;
(d) second transmitting means for transmitting an output signal from said amplifier to said difference detecting means;
(e) adding resistor means for adding the outputs from said amplifier and difference detecting means to each other and supplying an added signal to a load; and
(f) first adjusting means for adjusting at least one of said first and second transmitting means and said adding resistor means such that a distortion component contained in the output signal from said difference detecting means is made substantially opposite in phase and substantially the same in level as a distortion component contained in the output signal from said amplifier at the output side of said adding resistor means;
(g) second adjusting means for adjusting at least one of said first and second transmitting means and said adding resistor means such that input signal components contained in the output from said difference detecting means become substantially same as the output signal from said amplifier in phase and level.

4,447,791

POWER SUPPLY CHANGEOVER TYPE POWER AMPLIFIER

Masao Noro, and Yoshiki Kasahara, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 7, 1982, Ser. No. 386,093
Claims priority, application Japan, Jun. 10, 1981, 56-89360
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—297 **12 Claims**



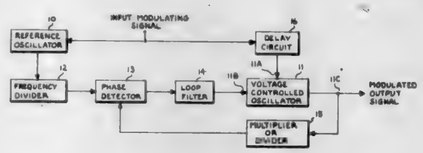
1. A power supply changeover type amplifier, comprising:
power amplifying circuit means for power-amplifying a signal inputted to its input terminal;
a plurality of power supplies for supplying power supply voltages to said power amplifying circuit means; and
changeover circuit means for changing over voltages supplied to said power amplifying circuit means from said plurality of power supplies, in accordance with a level of said signal to be power-amplified in said power amplifying circuit means;
said plurality of power supplies outputting voltages which are equal in level to each other, and
said changeover circuit means connecting said plurality of power supplies together in series and/or in parallel to form certain voltage by those voltages supplied by the plurality of power supplies and supply the certain voltage to said power amplifying circuit.

4,447,792

SYNTHESIZER CIRCUIT

Stephen R. Wynn, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 9, 1981, Ser. No. 319,139
Int. Cl.³ H03C *3/06*
U.S. Cl. 332—19 **10 Claims**



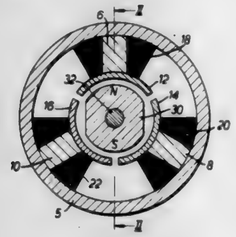
1. An improved frequency synthesizer comprising:
a. a source of modulating signals;
b. a reference oscillator;
c. a frequency divider coupled to said reference oscillator;
d. a phase locked loop including a phase comparing circuit and a voltage controlled oscillator coupled thereto;
e. means coupling the output of said frequency divider to said phase comparing circuit;
f. a time delay circuit coupled to said voltage controlled oscillator;
g. and means coupling said source of modulating signals to said reference oscillator and to said time delay circuit for modulating said reference oscillator without appreciable time delay, and for modulating said voltage controlled oscillator after said time delay.

4,447,793

ROTARY ACTUATORS

William P. Gray, West Lothian, Scotland, assignor to Racal-Mesl Microwave Limited, Newbridge, Scotland

Filed May 6, 1983, Ser. No. 492,039
Claims priority, application United Kingdom, May 13, 1982, 8213963
Int. Cl.³ H01P *1/10;* H02K *33/00*
U.S. Cl. 333—106 **11 Claims**



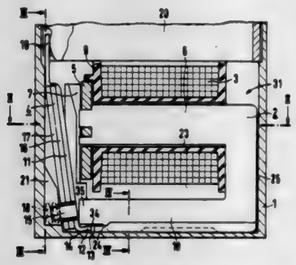
1. An angular movement actuator, comprising
a first element having two predetermined portions which are magnetised with opposite magnetic polarities, and
a second element providing first, second and third pole means spaced apart by predetermined angular distances,
one said element being at least partially embraced by the other and the two elements being mounted for relative angular movement,
the pole means being magnetisable into a first state in which the first pole means is of North polarity and the second pole means is of South polarity and a second state in which the first pole means is of South polarity and the second pole means is of North polarity, whereby the elements move to a first or second predetermined relative angular position according to the state of magnetisation of the first and second pole means, the third pole means magnetisable so as always to have the same polarity.

4,447,794

AIR BREAK CONTACTOR WITH FORM-FITTED PARTS

Werner Harbauer; Johann Drexler, both of Schwandorf, and Erwin Flierl, Kümmersbruck, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 473,997
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1982, 3210447
Int. Cl.³ H01H *67/02*
U.S. Cl. 335—128 **20 Claims**



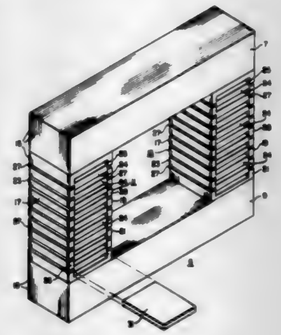
1. In an air break contactor comprising a cup-shaped housing, a contact carrier and form-fitted contactimplementing parts contained in said housing, said contactimplementing parts including a pivotable armature and a magent assembly stationary with respect to said housing, said magnet assembly having a core member with a first leg engaging a wall of said housing and with a second leg parallel to said first leg and an actuating coil mounted on and at least partially surrounding said second leg, said armature having one end continuously engaging a free end of said first leg at a pivot area and an opposite end engageable with said contact carrier for shifting the carrier upon energization of said coil and consequent pivoting of said armature, the improvement wherein:
the free end of the first leg of the magnet assembly core member is spaced from the housing wall;
the armature comprises a first lamination and at least one second lamination, said first lamination engaging said first leg at the pivot area; and
said first lamination is provided at an end juxtaposed to said first leg with an extension projecting between said housing wall and said free end of said first leg at an angle with respect to said first lamination, said extension having a curved profile proximate to said first lamination.

4,447,795

LAMINATED GRID AND WEB MAGNETIC CORES

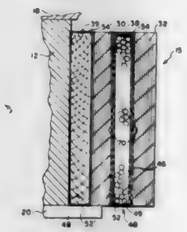
John Sefko, Monroeville, and Norman M. Pavlik, Plum Borough, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 5, 1981, Ser. No. 260,635
Int. Cl.³ H01F *17/06*
U.S. Cl. 336—178 **11 Claims**



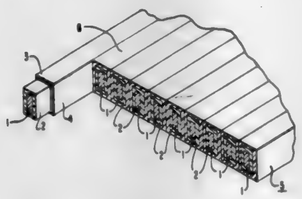
1. A laminated-magnetic core comprising:
(a) spaced core yokes;
(b) core legs disposed between the core yokes;
(c) each core yoke and core leg being comprised of stacked laminations of magnetic material;
(d) each leg including opposite edge walls and opposite web side walls extending between upper and lower core yokes;
(e) the web side walls having opening means comprising a plurality of spaced elongated apertures and edge notches;
(f) the apertures having longitudinal axis disposed transversely to the longitudinal axis of the core legs;
(g) the notches extending from the edge walls and into the web side walls between the apertures; and
(h) the opening means extending through the laminations of the core legs between the web side walls, whereby linear magnetization characteristics are obtained over the entire hysteresis loop.

4,447,796
SELF-ADJUSTING SPACER
Frank W. Heinrichs, McMurray, Pa., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Apr. 5, 1982, Ser. No. 365,347
Int. Cl.³ H01F 27/08, 27/30
U.S. Cl. 336—60 4 Claims



1. In an electrical apparatus of the type having a first electrical conductor and a second electrical conductor immersed in dielectric fluid, a spacer comprising:
a. a container, defining a first volume and a plurality of flow apertures, interposed between the first conductor and the second conductor; and
b. void filling means disposed within said container, said void filling means comprising a plurality of elements whose total volume is generally less than said first volume, said void filling means defining a plurality of interstices;
whereby the fluid fills said interstices and the electromagnetic field between said conductors in the vicinity of said container more represents the electromagnetic field which should exist if said void filling means were absent.

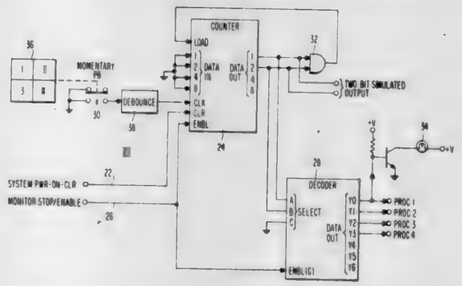
4,447,797
INSULATED CONDUCTOR HAVING ADHESIVE OVERCOAT
Howard E. Saunders, Murrysville; Dean C. Westervelt, Bullskin, and Irving N. Elbling, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 12, 1982, Ser. No. 434,100
Int. Cl.³ H01B 7/02; H01F 27/32
U.S. Cl. 336—205 9 Claims



1. An article comprising a conductor coated with a fused and cured resin powder applied insulating coating, over which is a coating of an ultraviolet B-stageable, thermally C-stageable liquid resin.

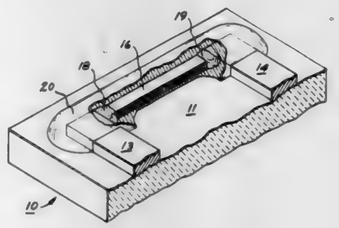
4,447,798
PROCESSOR SELECT SWITCH
Ira P. Shapiro, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Mar. 3, 1981, Ser. No. 240,142
Int. Cl.³ H03K 21/30
U.S. Cl. 377—55 9 Claims

1. A device for indicating a selected one of a plurality of n sequential states of a selector switch, said device comprising:
input means for initiating the switching of said selector switch;
counter means, responsive to said input means, said counter means for storing a value corresponding to a current state which is one of said plurality of n sequential states; and
load means, responsive to said counter means, said load means for enabling a load operation of said counter means,



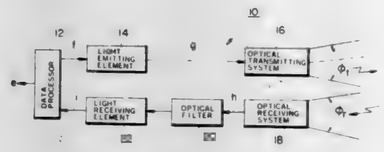
said load operation causing the value stored in said counter means to be replaced with a value corresponding to an initial one of said plurality of n sequential states upon a count of n−1 from said counter means followed by an actuation of said input means; and wherein the output of said counter means provides a coded representation of said current state of the selector switch.

4,447,799
HIGH TEMPERATURE THERMISTOR AND METHOD OF ASSEMBLING THE SAME
Richard O. Carlson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jan. 30, 1981, Ser. No. 230,163
Int. Cl.³ H01C 7/02
U.S. Cl. 338—22 R 21 Claims



1. A thermistor suitable for use in a temperature range with a maximum temperature exceeding 400° Centigrade, comprising:
(a) thermistor material;
(b) first and second leads;
(c) a first, fired, homogeneous quantity of conductive paste conductively connecting and adhering said first lead to a first location on the exterior of said thermistor material in the normal temperature range encountered thereby; and
(d) a second, fired, homogeneous quantity of conductive paste conductively connecting and adhering said second lead to a second location on the exterior of said thermistor material in the normal temperature range encountered thereby;
(e) said thermistor material, said leads, and said fired quantities of conductive paste having substantially matched thermal expansion coefficients in the normal temperature range encountered thereby;
(f) said leads being impervious to material oxidation in the environment encountered thereby during assembly and normal operation of the thermistor; and
(g) said fired quantities of conductive paste each having a curing temperature substantially in excess of said maximum temperature, each having a stable conductivity in the temperature range encountered thereby during operation of the thermistor, and each being substantially chemically inert with respect to said thermistor material and to said leads in the temperature range encountered thereby during assembly and normal operation of the thermistor.

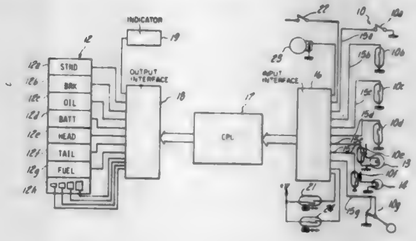
4,447,800
OBSTACLE DETECTOR FOR USE IN VEHICLES
Hideo Kasuya, and Hiroshi Endo, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan
Filed Jul. 22, 1981, Ser. No. 286,184
Claims priority, application Japan, Jul. 25, 1980, 55-105201[U]
Int. Cl.³ G08C 1/00
U.S. Cl. 340—904 11 Claims



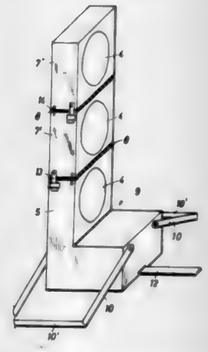
1. An obstacle detector for use in an automotive vehicle, comprising:
(a) an optical transmitting system for transmitting a light signal against an obstacle likely to be present on the road on which the vehicle with the detector travels, the light signal having a wavelength differing from that of solar radiation present in large quantities at the surface of the earth and longer than that of light radiation transmitted by front glasses of headlights of other vehicles and/or streetlamps, the transmitting system including a light emitting element made of a semiconductor infrared laser, the semiconductor being in the form of a crystal which has the formula $P_{b(1-x)}S_{n(x)}T_{(e)}$ where P_b is lead, S_n is tin, T_e is tellurium, and x is on the order of 0.07; and
(b) an optical receiving system including an optical filter means having a pass band corresponding to the transmitted wavelength for blocking passage of solar radiation present in large quantities at the surface of the earth and for blocking light radiation passed by the front glasses of other sources;
whereby optical signals received by the receiving signal are substantially free of background radiation including solar radiation and radiation generated by artificial sources.

4,447,801
TROUBLE SHOOTING METHOD OF VEHICLES
Yutaka Masuda, Fukuroi, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Sep. 4, 1981, Ser. No. 299,508
Claims priority, application Japan, Sep. 6, 1980, 55-123730
Int. Cl.³ B60Q 1/00
U.S. Cl. 340—52 F 14 Claims

1. The method of monitoring a plurality of vehicle conditions by means of individual warning devices for each of such conditions comprising the steps of simultaneously operating all of said warning devices for a period of time when a main vehicle switch is closed, sensing the starting of the vehicle engine, and sequentially operating each of said warning devices and subsequently deactivating each warning device if the condition monitored is correct.



4,447,802
WARNING LIGHT
Herbert Böse, Am Dachsbau 9, Neuenhein/Ts, Fed. Rep. of Germany (D-6232)
Filed Jul. 23, 1981, Ser. No. 286,253
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028219
Int. Cl.³ E01F 9/00; B60Q 1/00
U.S. Cl. 340—119 8 Claims



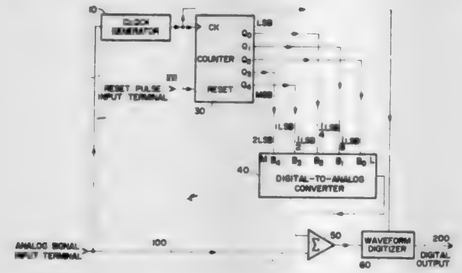
1. A road traffic warning light comprising a block-shaped housing composed of at least two superposed housing elements, a respective joint pivotally interconnecting adjacent ones of the housing elements for enabling the housing elements to be folded, a respective holding element between the adjacent housing elements for enabling the housing elements to be erected to form a column, a warning light signal transmitter mounted on each one of the superposed housing elements, and means for stabilizing a lowest one of the superposed housing elements in an erect position, the stabilizing means comprising a support and the housing elements consisting of a lowest housing element projecting substantially perpendicularly from the support and a superposed one of the housing elements adjacent the lowest housing element, the lowest housing element having an upper rim and a free space being defined between the support and the lowest housing element, the joint pivotally interconnecting the housing elements at a side of the upper rim adjoining the free space, and the superposed housing element having a volume and shape corresponding to the volume and shape of the free space.

4,447,803

OFFSET DIGITAL DITHER GENERATOR

Philip S. Crosby, Portland, and Dale A. Jordan, Aloha, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 9, 1980, Ser. No. 110,566
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 CC 7 Claims



1. A system for converting a repetitive analog input signal to an equivalent digital representation, the system including means for generating a dither signal, means for combining the analog signal with the dither signal, and means for quantizing the resultant combined signal to provide a digital representation thereof, characterized in that

said dither signal generating means generates a repetitive sequence of voltage levels corresponding in magnitude to different fractional and whole multiples of a digital bit produced by said quantizing means, and

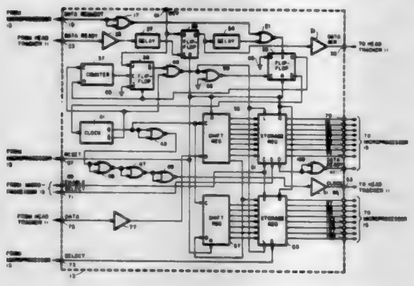
different repetitions of said analog input signal are sequentially combined with the different dither voltage levels of said sequence.

4,447,804

SERIAL TO PARALLEL DATA CONVERSION INTERFACE CIRCUIT

John H. Allen, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1981, Ser. No. 275,564
Int. Cl.³ H03K *13/258*
U.S. Cl. 340—347 DD 13 Claims



1. A serial to parallel data conversion circuit comprising, in combination:

a first input terminal adapted to receive a data ready pulse signal;

a second input terminal adapted to receive a data request pulse signal;

a third input terminal adapted to receive a plurality of data words, each of which has a predetermined number of data bits;

clock generating means having an input, and first and second outputs, for providing at the first output thereof a clock signal and at the second output thereof an inverted clock signal, each of which has a series of uniformly spaced clock pulses;

shift register means having a clock input connected to the first output of said clock generating means, a data input connected to said third input terminal, and a plurality of outputs, adapted for receiving and storing therein, in response to each clock pulse of said clock signal, one bit of each of said plurality of data words;

gating means having a first input connected to said first input terminal, a second input connected to said second input terminal, a third input connected to the second output of said clock generating means, a first output connected to the input of said clock generating means, a second output, and a third output, for providing in response to said data ready pulse signal, a data acknowledge pulse signal, for providing a latch pulse signal, and for activating for a predetermined time period, in response to said inverted clock signal, said clock generating means so as to effect the storage of each of said plurality of data words within said shift register means, with the first of said data words being stored within said shift register means in response to said data ready pulse signal, and with each successive data word being stored within said shift register means in response to said data request pulse signal;

a fourth input terminal adatped to receive an enable pulse signal;

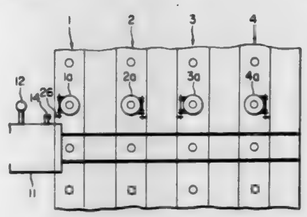
storage means having a plurality of data inputs respectively connected to the outputs of said shift register means, a latch input connected to the second output of said gating means, an enable input connected to said fourth input terminal, a data ready output, and a plurality of data outputs adapted for latching therein, in response to said latch pulse signal, each data word stored within said shift register means, and for transferring to the outputs thereof, in response to said enable pulse signal, the data words stored therein.

4,447,805

APPARATUS FOR MEASURING TEMPERATURE OF COKE OVENS

Yoshihiro Omae; Noboru Okubo; Keiichi Sigyo; Hideo Nakajima; Hiroaki Fukui; Toshio Yamada, and Hideyuki Honda, all of Kitakyushu, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,909
Claims priority, application Japan, Feb. 23, 1981, 56-25266; Nov. 11, 1981, 56-179814; Nov. 26, 1981, 56-188391
Int. Cl.³ G08B *1/08*; C10B *47/00*
U.S. Cl. 340—539 12 Claims



1. Apparatus for measuring temperature of coke ovens which are arranged in an array, each coke oven including a plurality of combustion chambers respectively provided with a plurality of flue nozzles at their tops, said apparatus comprising:

rails disposed above said array and extending in a direction thereof or in a longitudinal direction of said combustion chambers;

a measuring car continuously running on said rails;

a temperature measuring member mounted on said measuring car for receiving thermal radiations emitted by said combustion chambers through said flue nozzles;

radio transmitting means mounted on said measuring car for transmitting data measured by said temperature measuring member as an electric signal; and

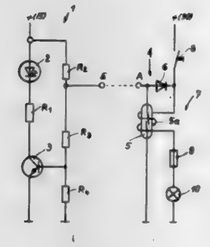
radio receiving means located in a remote control room for converting received electric signal into a signal representing measured temperature.

4,447,806

TEST CIRCUIT FOR ELECTRICAL CONTINUITY OF A LOAD CIRCUIT

Manfred Gündel; Heinz-Werner Schlamm, and Klaus-Dieter Schmitz, all of Wuppertal, Fed. Rep. of Germany, assignors to Kabelwerke Reinshagen GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 317,739, Nov. 3, 1981. This application Dec. 14, 1981, Ser. No. 330,065
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041206
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—641 7 Claims



1. In a test circuit for testing electrical continuity of an electrical load circuit, said load circuit including a load switch and a load device connected in series in the order named between the first and second terminals of a voltage source, said test circuit being of the type which includes an indicating device having normal and abnormal states, the improvement comprising,

an indicating circuit connected across the terminals of said voltage source and including said indicating device and a first switching means,

said first switching means having an input member for changing the first switching means between conductive and nonconductive states,

a detecting circuit including a second switching means having an input member responsive to current for changing the second switching means between conductive and nonconductive states,

the input member of the first switching means being coupled to the second terminal of the voltage source through said second switching means,

the input member of the first switching means being coupled to said second terminal of the voltage source through a current blocking means and the load device,

the input member of the second switching means being coupled with said load circuit and being operated to change the second switchng means between one and the other of the conductive and nonconductive states in response to current in the load circuit,

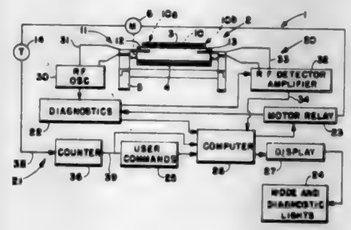
said indicating device being in a normal state when there is continuity of said load circuit with said load switch turned off or turned on and being in an abnormal state when there is discontinuity of said load circuit with said load switch turned off or turned on.

4,447,807

SIGNAL TO NOISE RATIO IMPROVEMENT FOR RIP DETECTORS

Richard G. Klein, Avon Lake, and Robert J. Houck, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 22, 1981, Ser. No. 275,969
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—676 13 Claims



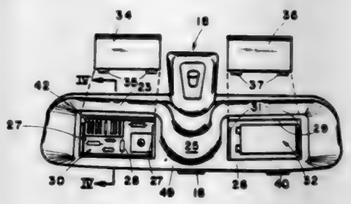
1. Conveyor belt rip detector apparatus for monitoring the integrity of a conveyor belt having antenna means for coupling or not coupling signals as an indication of a belt integrity, said antenna means having finite resistance and said conveyor belt and associated apparatus having a finite cross coupling capacitance, comprising: signal generator means for generating an AC signal in a frequency range of from about 25 KHz. to less than about 100 KHz., the frequency of such AC signal being such that the effective impedance of such cross coupling capacitance as a function of such frequency is at least several times greater than that of such antenna means, input capacitance signal coupling means for coupling such AC signal to such antenna means, receiver means responsive to receipt of AC signals for detecting conveyor belt integrity, and output capacitance means for coupling to said receiver means AC signals coupled through such antenna means.

4,447,808

REARVIEW MIRROR TRANSMITTER ASSEMBLY

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Sep. 18, 1981, Ser. No. 303,490
Int. Cl.³ H04B *7/00, 1/03*
U.S. Cl. 340—696 7 Claims



6. A self-contained garage door opening transmitter module for attachment to the rear surface of an interior rearview mirror of a vehicle said rearview mirror including a housing having a rear wall with a mounting post extending therefrom for supporting the rearview mirror in the interior of said vehicle and a front supporting a mirror element, said rear wall of said housing having a predetermined configuration, comprising:

a transmitter housing having a forward wall, a rearward wall, and side walls providing an enclosure, said forward wall having a configuration corresponding at least along the peripheries thereof to the configuration of the rear

wall of said rearview mirror, said transmitter housing being adapted to be secured to the rear wall of said rearview mirror housing and when so secured together said housings give the appearance of a one-piece housing;

said transmitter housing including an integral elongated housing having a central recess dividing said housing into two sections and permitting said housing to be attached to the rear surface of a rearview mirror with the mounting post for said rearview mirror extending through said recess;

a transmitter mounted within one section of said housing for radiating energy generally forwardly of the vehicle for activating a garage door opening receiver, and a battery positioned within the other section of said housing; and

switch means mounted to said housing in a position readily accessible to the vehicle operator and coupling said battery to said transmitter for activating said transmitter.

4,447,809

HIGH RESOLUTION FIGURE DISPLAYING DEVICE UTILIZING PLURAL MEMORIES FOR STORING EDGE DATA OF EVEN AND ODD HORIZONTAL SCANNING LINES

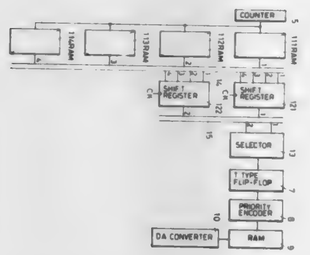
Kazuyuki Kodama, Kokubunji; Takeyuki Endo; Kunihiro Okada, both of Tokyo, and Yasutaka Shibuya, Tachikawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 156,799, Jun. 5, 1980. This application Sep. 2, 1982, Ser. No. 414,388

Claims priority, application Japan, Jun. 13, 1979, 54-73585

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—747 **14 Claims**



1. A figure displaying device comprising:

generator means for generating edge data which indicate the positions of picture elements at which edges are present on horizontal scanning lines of a monitor;

at least two sets of memory groups which correspond to picture elements located at even numbers and odd numbers on each horizontal scanning line, respectively, and which store predetermined data in the addresses corresponding to the picture elements at which edges are present;

at least two deriving means for individually deriving data stored in said addresses of said two sets of memory groups corresponding to the picture elements located at the positions of even numbers and odd numbers on each horizontal scanning line;

selection means for alternately selecting the outputs of said deriving means; and

control means for displaying figures on the monitor responsive to the output of said selection means.

4,447,810

DOT AND DASH SEGMENT DISPLAY FOR SIMPLIFIED WRITING OF ARABIAN LANGUAGE

Jean M. Lefebure, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 16, 1981, Ser. No. 321,705

Claims priority, application France, Dec. 2, 1980, 80 25558

Int. Cl.³ G09G *3/00*

U.S. Cl. 340—756 **6 Claims**



1. A dot and dash segment display device for arabic characters with a display matrix formed by the repetition, on a line of writing and without spacing, of a basic pattern, said device comprising a plurality of display elements forming a series of vertical line segments, at least three horizontal line segments with one horizontal segment contacting one end of the vertical segments and at least two horizontal segments dividing the vertical segments into upper, lower and central portions and areas and two dots in each upper and lower area.

4,447,811

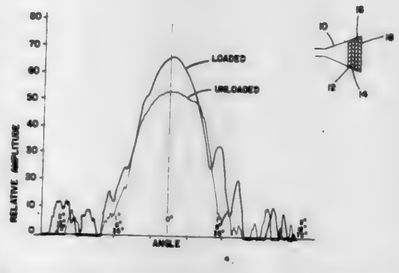
DIELECTRIC LOADED HORN ANTENNAS HAVING IMPROVED RADIATION CHARACTERISTICS

Michael Hamid, Winnipeg, Canada, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1981, Ser. No. 315,331

Int. Cl.³ H01Q *13/02*

U.S. Cl. 343—783 **3 Claims**



1. A means of improving the axial grain and narrowing the main beam of a microwave radiation system having an aperture antenna comprising:

(a) inserting a first dielectric slab of uniform relative permittivity into said aperture antenna to a predetermined depth in said aperture antenna, said first slab having a uniform thickness in the direction of propagation of said beam and extending completely between all four walls of said aperture antenna;

(b) inserting a second dielectric slab of uniform relative permittivity adjacent said first dielectric slab, said second slab having uniform thickness in the direction of propagation of said beam and extending completely between all said four walls of said aperture antenna;

(c) inserting a third dielectric slab of uniform relative permitivity adjacent said second dielectric slab, said third slab having uniform thickness in the direction of propagation of said beam and extending completely between all said four walls of said aperture antenna; and

(d) inserting a fourth dielectric slab of uniform relative permittivity adjacent said third dielectric slab, said fourth slab having uniform thickness in the direction of propagation of said beam and extending completely between all said four walls of said aperture antenna and having the opposite face of said fourth slab flush with the outer dimensions of said aperture antenna, the thickness of all of said dielectric slabs being the same.

4,447,812

LIQUID CRYSTAL MATRIX DISPLAY DEVICE

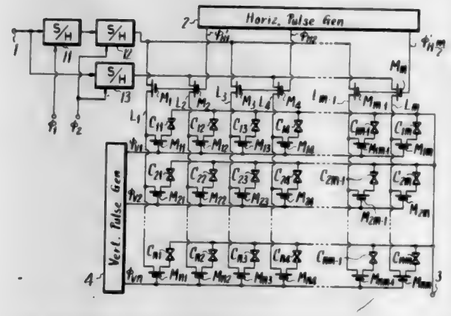
Mitsuo Soneda, Zama, and Takaji Ohtsu, Hatano, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,560

Claims priority, application Japan, Jun. 4, 1981, 56-86289

Int. Cl.³ G09G *3/18*

U.S. Cl. 340—784 **7 Claims**



1. A liquid crystal matrix display device comprising a plurality of display elements arranged in X-axis and Y-axis directions as an X-Y matrix pattern of a predetermined number n of rows of said display elements, each such row extending in the X-axis direction and containing a predetermined number m of said display elements arranged in respective columns extending in the Y-axis direction, with each such display element including a liquid crystal cell and a switching element connected therewith to supply a signal charge to the associated liquid crystal cell; input means receiving an input signal to be distributed to said display elements; a plurality of said predetermined number m of first transmitting lines each coupled to the n switching elements of each said column; a plurality of said predetermined number n of second transmitting lines each coupled to the m switching elements of each said row; a plurality of said predetermined number m of input switching devices each having an input electrode coupled to said input means, an output electrode coupled to a respective one of said m first transmitting lines, and a control electrode; first scanning pulse generator means having a predetermined number of outputs providing sequential first scanning pulses for said m input switching elements; and second scanning pulse generator means providing sequential second scanning pulses to said n second transmitting lines; wherein said m first transmitting lines are arranged into groups of a predetermined plurality l of successive such lines, and the input switching elements associated with the first transmitting lines of each such group have their control electrodes coupled together to a respective one of the outputs of said first scanning pulse generator means; and wherein said input means includes time-demultiplexing means having an input receiving said input signal and a plurality l of outputs simultaneously presenting different respective sampled versions of said input signal which represent the video signal at times staggered with respect to one another, with each of said l outputs being coupled to the input electrode of a respective one of the input switching devices of each of said groups.

4,447,813

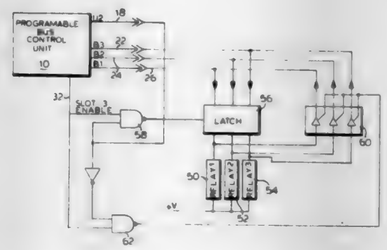
PROGRAMMABLE BUS FOR THE CONTROL OF ELECTRONIC APPARATUS

Bruce L. O'Pray, New York, N.Y., assignor to Control Resources Corporation, Hackensack, N.J.

Filed Jun. 4, 1982, Ser. No. 385,037

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825.1 **5 Claims**



1. An improved bus architecture comprising: a bus formed of a plurality of lines; a programmable bus control unit connected to said bus lines; a plurality of slots along said bus line, each slot being adapted to receive an apparatus for connection with said bus line; and a plurality of slot enabling lines, each enabling line extending from said control unit to one of said slots whereby said enabling lines control access of said apparatus to said bus lines under direction of said control unit so that the function of said bus lines may be redefined as required by said apparatus.

4,447,814

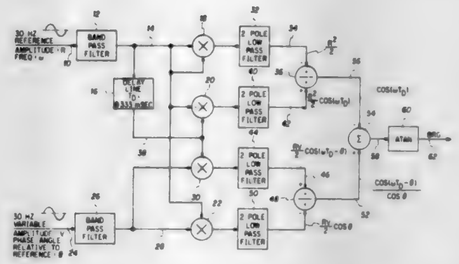
DIGITAL VOR BEARING MEASUREMENT APPARATUS

Jan E. Treise, West Melbourne, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 7, 1983, Ser. No. 472,682

Int. Cl.³ G01S *1/44*

U.S. Cl. 343—401 **5 Claims**



1. The method of determining bearing angle using reference and variable signals received from a VOR ground station comprising the steps of:

phase shifting the reference signal by approximately 90 degrees;

generating a first signal by multiplying the phase shifted signal by the reference signal and dividing the DC component of the result by the DC component of the reference signal squared;

generating a second signal by multiplying the phase shifted signal by the variable signal and dividing the DC component of the product by the DC component of the product of the reference and the variable signals; and

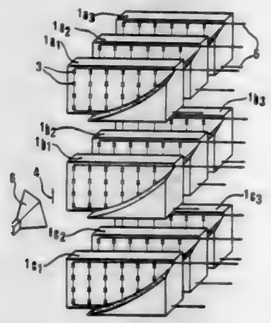
generating the bearing indicative angle by calculating the arctangent of the second signal less the first signal.

4,447,815

LENS FOR ELECTRONIC SCANNING IN THE POLARIZATION PLANE

Claude D. Chekroun, Bures sur Yvette, and Yves C. Michel, Massy, both of France, assignors to Societe d'Etude du Radant, Les Ulis, France

PCT No. PCT/FR80/00159, 371 Date Jun. 1, 1981, 102(e) Date Jun. 1, 1981, PCT Pub. No. WO81/01486, PCT Pub. Date May 28, 1981
PCT Filed Nov. 7, 1980, Ser. No. 270,519
Claims priority, application France, Nov. 13, 1979, 79 27873
Int. Cl.³ H01Q *19/06*
U.S. Cl. 343—754 **6 Claims**



1. Electronic scanning device comprising a plurality of dielectric panels each panel having flat networks of conducting wires embedded therein, said wires being capable of being continuous or discontinuous as desired by means of diodes mounted on said wires and said wires being embedded in such fashion that the wires in all the networks are parallel to the electrical field vector of an incident electromagnetic wave emitted by a microwave source, wherein the height of each said panel is less than the dimension of the incident electromagnetic wave and all the diodes in each panel are controlled simultaneously and identically by a single device, said panels being arranged in a plurality of assemblies thereof, each assembly comprising a plurality of adjacent panels extending in a direction generally along the trajectory of said electromagnetic wave and said assemblies being superimposed one on the other in a direction generally parallel to the electric field of said electromagnetic wave to form the entire device through which the electromagnetic wave propagates, and further wherein said assemblies are linked along the trajectory of the incident electromagnetic wave, each of the panels producing a phase shift in the wave, and each assembly, by means of an appropriate control device, providing a phase shift ranging from 0° to 360° in the plane parallel to the electrical field vector of the electromagnetic wave traversing the device.

4,447,816

STIFFENING CLAMP FOR SELF-ERECTING ANTENNA

Miles J. Kurina, Wellesley Hills, and John Thornhill, Tewksbury, both of Mass., assignors to RCA Corporation, New York, N.Y.

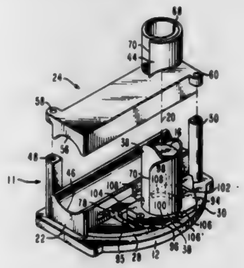
Filed Nov. 25, 1981, Ser. No. 325,046
Int. Cl.³ H01Q *1/08*
U.S. Cl. 343—877 **10 Claims**

1. In a self-erecting antenna comprising a resilient band prestressed to assume the shape of an extended tubular rod when unstressed, the rod having a longitudinal axis parallel to the length dimension of the band, and said band being sufficiently resilient to be flattened and spirally wound into a coil, about an axis parallel to the width dimension of the band, the combination therewith comprising:

means for storing said band, wound into a coil;

a support to which one end of said band is secured;

means for releasing said coil whereby it unwinds and assumes the shape of a tubular rod, the rod being secured at said one end of said band to said support; and



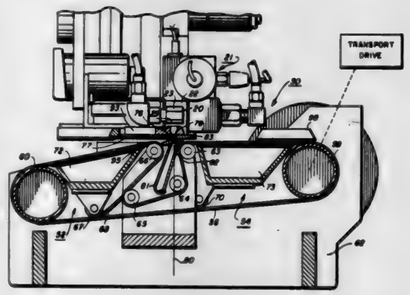
movable clamp means responsive to the change in shape of said band when it assumes its tubular rod shape for clamping the peripheral surface of said tubular rod to said support at said one end of said band.

4,447,817

CONSTANT VELOCITY COPY SHEET TRANSPORT WITH INK JET PRINTING

Raymond A. Naramore, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 27, 1982, Ser. No. 423,874
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



1. A transport apparatus for conveying sheet material to a printing zone whereat a full width, marking device is positioned to permit marking of the material comprising:

a transport belt movable in a path, a plane of which is contiguous with the printing zone and arranged to convey sheet material into marking engagement with the marking device,

a vacuum plate having a surface generally parallel to said plane between which sheet material is conveyed, said plate being provided with at least one air intake vacuum opening positioned closely adjacent and along the marking device, said plate being operatively associated with a vacuum source and arranged to draw sheet material against said surface and the marking device, and

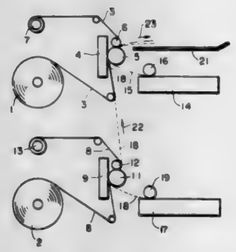
means for driving said transport belt in said path with sheet material thereon whereby the sheet will be driven through the printing zone and past the marking device as the sheet material is moved along said vacuum plate surface.

4,447,818

MULTICOLOR HEAT-SENSITIVE RECORDING APPARATUS

Masami Kurata, and Fujio Moriguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1982, Ser. No. 349,551
Claims priority, application Japan, Feb. 20, 1981, 56-23137
Int. Cl.³ G01D *15/10, 9/28;* B41J *3/02*
U.S. Cl. 346—76 PH **5 Claims**



5. A multicolor recording device, comprising:

a plurality of recording sections arranged in series, each recording section recording data in a different color;

a sheet conveying path passing from a first sheet supplying means through all of said recording sections, to allow data to be recorded in all of said different colors;

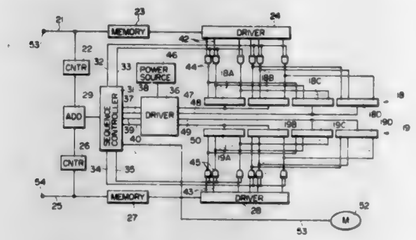
at least one alternate sheet supply means for supplying sheets to a mid point of said sheet conveying path, to allow data to be recorded in less than all of said colors.

4,447,819

THERMAL RECORDING DEVICE

Haruhiko Moriguchi, and Takashi Ohmori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,383
Claims priority, application Japan, Jun. 8, 1981, 56-86764
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **4 Claims**



1. A thermal recording device comprising:

at least two thermal heads of heat generating unit arrays arranged in parallel with each other so that data are thermally recorded on a recording sheet, each of said thermal heads or heat generating unit arrays being divided into a plurality of blocks, each of said blocks comprising a predetermined number of heat generating units;

a record signal counter means associated with each of said thermal heads or heating generating unit arrays for counting the number of recording signals for printing images supplied to said heads or arrays;

means for adding the counts of said counters at preselected times to obtain the total count value contained in all of said counters; and

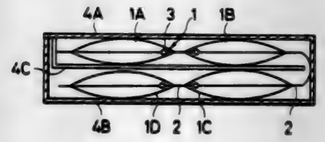
drive control means responsive to the counts in said record signal counter means for determining a number of blocks to be simultaneously driven to perform recording without exceeding the capacity of a power source of said device.

4,447,820

INK SUPPLYING MECHANISM

Koji Terasawa, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,101
Claims priority, application Japan, Jun. 8, 1981, 56-86873
Int. Cl.³ G01D *15/18;* B41F *31/00;* B41J *27/18*
U.S. Cl. 346—140 R **7 Claims**



1. An ink supplying mechanism, comprising:

a plurality of ink containers each having an ink outlet tube for supplying ink out and having a bag structure made of a flexible film, said plurality of ink containers containing an ink of a different color;

a cassette case for accommodating said plurality of ink containers;

a guide member for guiding said cassette case to a loading position and for permitting the loading of said cassette case only when said cassette case is in a proper orientation; and

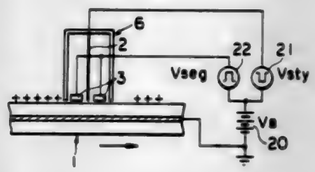
a plurality of connecting tubes each connected to a corresponding one of said ink outlet tubes of said plurality of ink containers when said cassette case is at said loading position.

4,447,821

METHOD AND APPARATUS OF ELECTROSTATIC RECORDING

Kazuhiro Yuasa, Zama, and Noboru Furukawa, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 16, 1982, Ser. No. 399,005
Claims priority, application Japan, Jul. 17, 1981, 56-112001
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—154 **8 Claims**



1. An electrostatic recording apparatus for forming an electrostatic latent image on the surface of a uniformly charged recording medium which is moved relative to said apparatus and includes a surface dielectric layer formed on an electrically conductive layer which is connected to a reference potential, said apparatus comprising:

a plurality of recording styluses arranged in the form of an array extending in the direction perpendicular to the direction of relative motion between said apparatus and said medium;

auxiliary electrodes means disposed in the vicinity of said recording styluses;

means for applying recording signals of the polarity opposite

to that of the uniform charges of said recording medium to said recording styluses;

means for applying a predetermined voltage of the polarity same as that of the uniform charges of said recording medium to said auxiliary electrode means; and

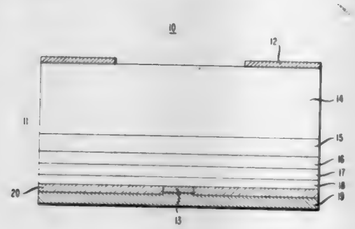
means for applying a bias voltage of the polarity same as that of the uniform charges of said recording medium to said plurality of recording styluses and said auxiliary electrode means.

4,447,822

LIGHT EMITTING DIODE

Aland K. Chin, Berkeley Heights; Michael A. DiGiuseppe, Succasunna, and Henryk Temkin, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 21, 1981, Ser. No. 304,175
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 **7 Claims**



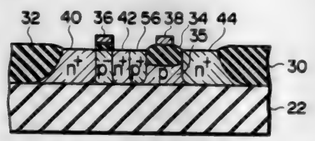
1. A light emitting diode designed for incoherent emission at about 1.3 microns in a direction essentially normal to the front face of the diode comprising a semiconductive crystal having successive contiguous layers, including a front layer of indium phosphide, a first intermediate active layer of indium gallium arsenide phosphide, a second intermediate layer of indium phosphide, and a back layer of indium gallium arsenide, a first electrode making low resistance electrical connection to the front layer, and a second electrode making low resistance electrical connection to the back layer, the crystal being free of any layer substantially absorptive of the emission at about 1.3 microns between the active layer and the front layer where the emission exits.

4,447,823

SOS P—N JUNCTION DEVICE WITH A THICK OXIDE WIRING INSULATION LAYER

Kenji Maeguchi, and Hiroyuki Tango, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 5, 1981, Ser. No. 240,850
Claims priority, application Japan, Mar. 12, 1980, 55-31291
Int. Cl.³ H01L *29/78, 27/02, 27/12, 45/00*
U.S. Cl. 357—23 **13 Claims**



1. A semiconductor device comprising:

an insulation body;

a silicon layer formed on the insulation body;

a first semiconductor region of a first conductivity type formed in a part of the silicon layer;

a second semiconductor region formed in a part of said silicon layer adjacent to the first semiconductor region and cooperating with the first semiconductor region to form a pn junction element, said second semiconductor region having a second conductivity type opposite to that of the first semiconductor region, and said first semiconductor region having an upper surface lying below the upper surface of said silicon layer;

a third semiconductor region of first conductivity type formed in a part of said silicon layer separated from the second semiconductor region and adjacent to the first semiconductor region and having a higher impurity concentration than that of the first semiconductor region; and

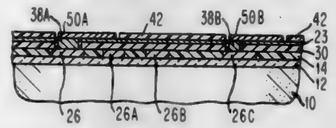
an insulation region formed at least on said upper surface of the first semiconductor region with the bottom of said insulation region lying below the upper surface of said silicon layer.

4,447,824

PLANAR MULTI-LEVEL METAL PROCESS WITH BUILT-IN ETCH STOP

Joseph S. Logan, Poughkeepsie, N.Y.; John L. Mauer, IV; Laura B. Rothman, both of Sherman, Conn.; Geraldine C. Schwartz, Poughkeepsie, and Charles L. Standley, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 179,145, Aug. 18, 1980, Pat. No. 4,367,119.
This application Sep. 10, 1982, Ser. No. 416,437
Int. Cl.³ H01L *43/48, 29/34, 29/44, 29/52*
U.S. Cl. 357—71 **5 Claims**



1. In an integrated circuit package, a substrate having a conductive interconnected pattern on a surface thereof, a superposed conductive structure comprising:

(A) a composite layered structure on said substrate comprising

(a) a lower layer of an electrically insulating organic polymer overlying said surface and said pattern and

(b) a covering oxygen plasma resistant inorganic insulating layer overlying said polymer layer,

(B) at least one via opening through said composite layered structure to a portion of said pattern,

(C) a second conductive pattern on said inorganic insulating layer, and

(D) conductive means in said via opening interconnecting the first said pattern and said second pattern.

4,447,825

III–V GROUP COMPOUND SEMICONDUCTOR LIGHT-EMITTING ELEMENT HAVING A DOPED TANTALUM BARRIER LAYER

Yasuhisa Oana, Yokohama; Nobuaki Yasuda, Zushi; Masato Yamashita, Yokohama, and Norio Ozawa, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 2, 1981, Ser. No. 230,679
Claims priority, application Japan, Feb. 28, 1980, 55-23386; Feb. 28, 1980, 55-23387; Feb. 28, 1980, 55-23391
Int. Cl.³ H01L *23/48, 23/28, 29/46, 29/62*
U.S. Cl. 357—71 **5 Claims**

1. A light-emitting element comprising:

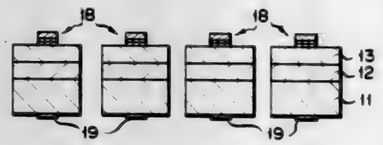
a III–V Group compound semiconductor body having a p-n junction and including a p-type layer involved in forming said p-n junction; and

a multi-layer electrode mounted on the p-type layer; said electrode including

a first layer formed of a gold alloy containing a small amount of a metal selected from the group consisting of beryllium and zinc; said first layer being formed in direct contact with the p-type layer;

a second layer formed on the first layer and made of tantalum doped with at least one dopant selected from the group consisting of the elements carbon, nitrogen and oxygen, and a mixture of at least two of said elements, said elements present in an amount between 0.5–2.0, 0.6–1.2 and 0.8–2.0 atomic %, respectively; and

a third layer formed on the second layer and made of a metal selected from the group consisting of gold and aluminum.

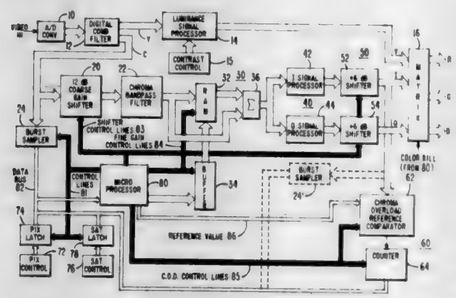


4,447,826

DIGITAL TELEVISION RECEIVER AUTOMATIC CHROMA CONTROL SYSTEM

Henry G. Lewis, Jr., Hamilton Square, N.J., and Steven M. Eliscu, Troy, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,433
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—27 **15 Claims**



4. In a television receiver, including a source of digital color information signals having a burst signal component, and a source of color control signals representing a level of amplification or attenuation to be applied to said digital color information signals, a chroma signal gain control system comprising:

means, responsive to said digital color information signals, for producing a signal indicative of the level of said burst signal component;

calculating means, responsive to said burst level indicating signal and said color control signals, for calculating the total gain required to be applied to said digital color information signals and for producing gain control signals representative of said total gain; and

controlled digital chroma gain circuitry having an input coupled to receive said digital color information signals and an output at which digital color information signals modified by a gain factor are produced, said circuitry including a controllable signal shifter having a control input coupled to said calculating means and responsive to said gain control signals for adjusting the gain applied to said color information signals in increments which are multiples of 6 dB, and a fine gain block, coupled in series with said signal shifter and having a control input coupled to said calculating means and responsive to said gain control signals for adjusting the gain applied to said color information signals in increments over a range of up to approximately 6 dB, wherein said fine gain block comprises:

a random access memory having an address input coupled to receive said color information signals from said coarse gain block, an output, and containing data words representative of the product of said color information signals and a gain factor; and

an adder having a first input coupled to the output of said random access memory, a second input coupled to receive said color information signals from said signal shifter, and an output at which said digital color information signals modified by a gain factor are produced; and

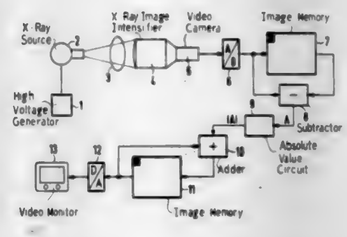
wherein said calculating means apportions said total gain between said signal shifter and said fine gain block so as to modify the level of said color information signals in accordance with said total gain requirement.

4,447,827

X-RAY DIAGNOSTIC INSTALLATION

Mircea Alexandrescu, Braeuningshof, and Joerg Haendle, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 378,785
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124584
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—111 **3 Claims**



1. An X-ray diagnostic installation comprising a television pickup system, a first image memory, a difference stage for providing subtraction images through difference formation from the stored and the current video signals, and a monitor, wherein an adder is connected with the output of the difference stage, and a second image memory is connected with the output of the adder so that, in the second image memory, the image point data from the difference stage is summed up, and wherein the output signal of the second image memory is supplied to the monitor, characterized in that circuit means comprising said difference stage, and disposed between the first image memory and the adder, is so designed that it forms the absolute values |A| of the image point data from the difference stage.

4,447,828

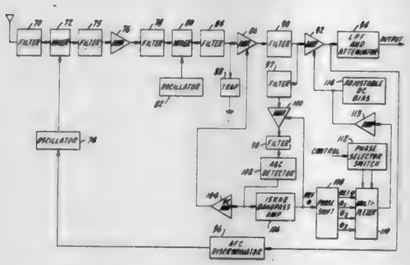
PHASE CHANGE DYNAMIC SCRAMBLING

Pieter den Toonder, Dordrecht, Netherlands, assignor to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Feb. 25, 1982, Ser. No. 352,356
Int. Cl.³ H04N *7/16*; H04K *1/02*
U.S. Cl. 358—118 **11 Claims**

1. Means for coding video signals by the application of one of a plurality of available scrambling signals, which scrambling signals have a common frequency, but differ in phase, including means for comparing the brightness level during a predetermined time period of the video signal with the brightness

level of the video signal over the succeeding predetermined time period, and means for changing from one scrambling



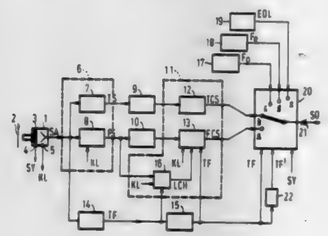
signal to another if the difference in brightness levels between successive predetermined time periods exceeds a given value.

4,447,829

FACSIMILE TRANSMISSION ARRANGEMENT

Raymond G. G. Schayes; Pol A. G. J. Gustin; Robert Bodart, and Michel F. D. J. Berck, all of Brussels, Belgium, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 387,917
Claims priority, application Belgium, Aug. 18, 1981, 205695
Int. Cl.³ H04N *1/00*
U.S. Cl. 358—260 **1 Claim**



1. Facsimile transmission arrangement for transmitting a document which is divided into document lines, comprising:

A. a transmitter which incorporates:

(A.a.) a reading arrangement for converting a document line into an analog line signal;

(A.b.) a first coding arrangement for converting the analog line signals into a first and a second binary line signal, each consisting of a sequence of binary elements which have a first or a second value;

(A.c.) a second coding arrangement for coding the first and the second binary line signal;

(A.d.) a transmitter output;

(A.e.) a selection circuit for applying selected portions of the first and of the second line signal in coded form to the transmitter output for generating a transmitter output line signal;

B. a receiver incorporating:

(B.a.) a receiver input for receiving the transmitter output line signal;

(B.b.) a decoding arrangement coupled to the receiver input and arranged for decoding the received transmitter output line signal;

(B.c.) a reproducing arrangement coupled to the output of the decoding arrangement

characterized in that:

(A.f.) the second coding arrangement incorporates:

(A.f..a.) a luminance change detector which is coupled to the first coding arrangement and is arranged to produce a detector signal if the luminance of the document line has changed by at least a predetermined value;

(A.f.b.) a first and a second auxiliary coding arrangement to which the first and the second binary line signal, respectively is applied, the second auxiliary coding arrangement being controlled by the detector signal and being arranged for converting the sequence of binary elements occurring in said second binary line signal between two consecutive detection signals into a codeword group which on the one hand characterizes the number of binary elements of the first value, occurring in that sequence and on the other hand characterizes the number of binary elements of the second value present in said sequence;

(B.d.) the decoding arrangement incorporates:

(B.d.a.) a first and a second auxiliary decoding arrangement which are each coupled by means of an input to the receiver input and produce a first and a second binary auxiliary line signal, respectively, the second auxiliary decoding arrangement being arranged for converting each received code word group into a sequence of binary elements which comprise a number of elements which are characterized by the group and have the first value, and a number of elements of the second value which are characterized by said group, in which sequence the elements having the first value and the elements having the second value alternate regularly;

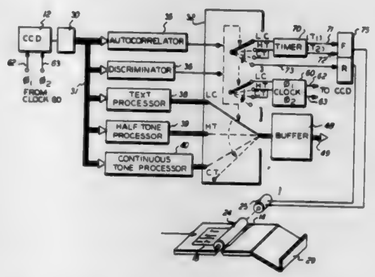
(B.d.b.) a reproducing-selection circuit for applying selected portions of the first and selected portions of the second binary auxiliary line signal to the reproducing arrangement.

4,447,830

IMAGE SCANNING APPARATUS AND METHOD

James C. Stoffel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 10, 1981, Ser. No. 300,845
Int. Cl.³ H04M *7/12*
U.S. Cl. 358—283 **11 Claims**



1. Raster scanning apparatus for scanning an image to produce pixels representative of said image, comprising in combination:

(a) first image processing means for processing at least line copy images;

(b) second image processing means for processing at least one other image type;

(c) control means for operating said scanning apparatus at high speed to scan said image while actuating said first image processing means to process the pixels produced on the assumption that said image comprises at least line copy; and

(d) image monitoring means for monitoring the content of said image while said image is being scanned at high speed to detect said other image type;

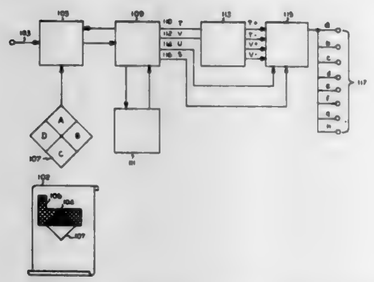
said control means operating said scanning apparatus to scan said image at reduced speed in response to detection of said other image type while actuating said second image processing means to process the pixels produced by scanning said image at said reduced speed.

4,447,831

METHOD AND APPARATUS FOR ENCODING GRAPHICS

David E. Adsett, Charlton Kings, England, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 22, 1982, Ser. No. 370,899
Claims priority, application United Kingdom, Jul. 24, 1981, 8122250
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—283 **18 Claims**



1. A method of encoding the information in a scanned original comprising the steps of:

producing signals indicative of the information in said original;

quantizing said signals according to the values of elements within a stored pattern, for at least a part of said original;

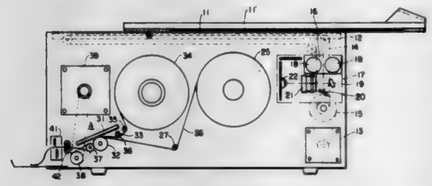
weighting the said quantized signals for separate subareas of the said pattern by combining the said quantized signals to form weighted values representing the original information for each said subarea and combining the said weighted values according to a predetermined function to produce an encoded signal indicative of the modulated distribution of said information over said subareas of said pattern.

4,447,832

REPRODUCING MACHINE

Masami Kurata; Fujio Moriguchi; Toshiharu Inui, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,467
Claims priority, application Japan, Dec. 10, 1980, 55-174073
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—296 **23 Claims**



1. A thermal recording type copying machine, comprising:

a platen for arranging an original thereon said original having image information thereon;

a stationary read unit for reading the image information of the original during movement of said platen and for converting the read image into electrical picture signals;

a stationary thermal recording head having heating elements for generating heat in accordance with said electrical picture signals;

an ink donor member stored in a first source;

a continuous recording paper web stored in a second source;

conveying means for conveying said ink donor member and said recording paper web in juxtaposition to each other from said first and second sources, while being in close contact under pressure, past said heating elements of said thermal recording head whereby an image of said original is recorded on said recording paper; and

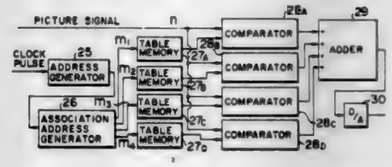
means for discharging said juxtaposed recorded paper and ink donor member from said machine.

4,447,833

METHOD FOR PRODUCING A HALFTONE PLATE

Tetsuo Sano, and Takashi Sakamoto, both of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Dec. 31, 1981, Ser. No. 336,309
Claims priority, application Japan, Jan. 21, 1981, 56-6307
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—298 **6 Claims**



1. A method for producing a halftone plate from an original picture having a continuous tone by using at least one exposure light beam of a smaller size than a halftone dot area, which is independently controlled to be turned on or off according to a picture signal obtained by scanning the original picture, the improvement which comprises a step of controlling the luminous energy of the exposure light beam depending on a reference value corresponding to the picture signal, and a position signal value which is varied depending on an exposure position in the halftone dot area to be exposed by the exposure light beam, wherein the control of the luminous energy of the exposure light beam is performed depending on the sum of the reference value and the position signal value.

4,447,834

REPRODUCING APPARATUS FOR REPRODUCING A ROTARY RECORDING MEDIUM RECORDED WITH A COLOR VIDEO SIGNAL

Hiroyuki Sugiyama, Isehara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 3, 1982, Ser. No. 345,326
Claims priority, application Japan, Feb. 6, 1981, 56-15677
Int. Cl.³ H04N *9/493*
U.S. Cl. 358—310 **5 Claims**

1. A reproducing apparatus comprising:

rotating means for rotating a rotary recording medium so that a horizontal scanning frequency of a video signal reproduced from any one of an NTSC rotary recording medium recorded with an NTSC system color video signal, a PAL rotary recording medium recorded with a PAL system color video signal, and a SECAM rotary recording medium recorded with a SECAM system color video signal, becomes equal to a horizontal scanning frequency of the PAL or SECAM system color video signal;

carrier chrominance signal separating means for separating a carrier chrominance signal from a color video signal reproduced from the rotary recording medium;

luminance signal separating means for separating a luminance signal from said reproduced color video signal;

a demodulating circuit for demodulating said separated

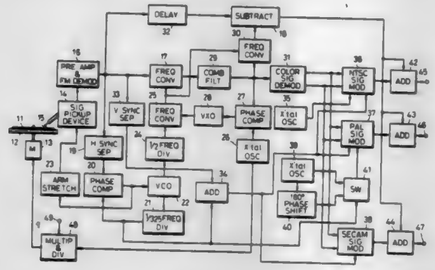
carrier chrominance signal into two color difference signals;

reference signal producing means for producing reference signals having first and second predetermined frequencies;

first modulating means supplied with the reference signal from said reference signal producing means having the first predetermined frequency as a chrominance subcarrier, for modulating this reference signal by the color difference signals from said demodulating circuit, to obtain an artificial NTSC system chrominance signal;

first adding means for adding an output signal of said first modulating means and said separated luminance signal, to obtain an artificial NTSC system color video signal;

second modulating means supplied with the reference signal from said reference signal producing means having the second predetermined frequency as a chrominance subcarrier, for modulating this reference signal by the color difference signals from said demodulating, to obtain a PAL system chrominance signal or an artificial PAL system chrominance signal;



second adding means for adding output signal of said second modulating means and said separated luminance signal, to obtain a PAL system color video signal or an artificial PAL system color video signal;

horizontal synchronizing signal separating means for separating a horizontal synchronizing signal from said reproduced color video signal;

third modulating means for forming a line-sequential signal from the color difference signals from said demodulating circuit by using the horizontal synchronizing signal or a horizontal scanning frequency signal formed in response to the horizontal synchronizing signal, to obtain a SECAM system chrominance signal or an artificial SECAM system chrominance signal; and

third adding means for adding an output signal of said third modulating means and said separated luminance signal, to obtain a SECAM system color video signal or an artificial SECAM system color video signal.

4,447,835

METHOD AND APPARATUS FOR SINGLE FRAME RECORDING ON VIDEO TAPE

Grant M. Smith, Menlo Park, Calif., assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 11, 1982, Ser. No. 338,360
Int. Cl.³ H04N *5/78*; G11B *21/02*
U.S. Cl. 360—10.2 **11 Claims**

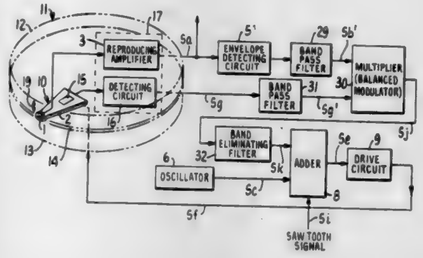
1. A method for controlling a video tape recorder/player, of the type having a movable recording head operating in response to a tracking control signal, to record an electrical signal on a stationary magnetic tape, a portion of said tape having a pre-recorded signal, said method comprising the steps of:

deriving a tracking control signal based upon the playback of the prerecorded signal while the portion is stationary;

storing said tracking control signal;

advancing said tape to a location where said electrical signal is to be recorded;

stopping said tape; and



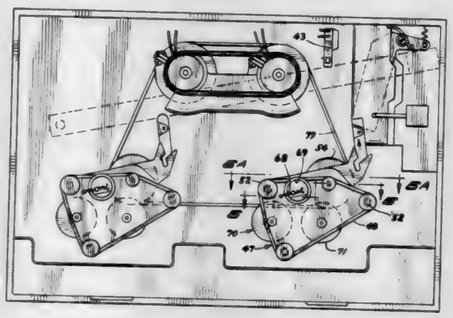
recording said electrical signal by said head in accordance with said stored tracking control signal.

4,447,836

RECORDING APPARATUS FOR CASSETTE COPYING

Dean W. Flygstad, St. Paul, and Bill H. Wehrmacher, Prior Lake, both of Minn., assignors to Telex Communications, Inc., Minneapolis, Minn.

Continuation of Ser. No. 144,441, Apr. 28, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,788
Int. Cl.³ G11B *5/86, 15/18*
U.S. Cl. 360—15 **17 Claims**



1. In tape rerecording apparatus of the class including at least one reversible master tape drive and at least one reversible recording tape drive, each of said drives including a moveable tape head, the combination comprising:

moveable tape head mounting means, adapated to receive a tape head, disposed adjacent to a master and recording tape in said drives and operable between tape engaging and retracted positions with respect to said tape; and

drive means, including resilient connecting means intermediate the tape head mounting means in said master and recording tape drives, operable to simultaneously, resiliently move the tape head into data transferring engagement with said tapes.

4,447,837

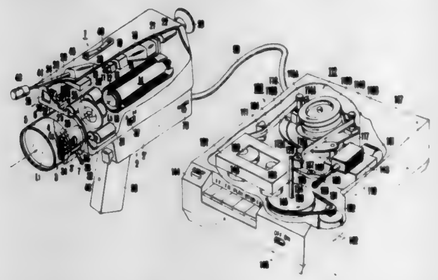
VIDEO RECORDING SYSTEM

Noritsugu Hirata; Hiroyuki Takimoto, and Masaya Maeda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 235,701, Feb. 18, 1981, abandoned. This application Dec. 7, 1982, Ser. No. 447,608
Int. Cl.³ G11B *1/04, 15/00, 31/00*; H04N *1/22*
U.S. Cl. 360—33.1 **39 Claims**

1. A video recording system comprising a video camera

including image pick up means for forming an image of an object to be recorded and providing corresponding video signals; a video recorder including recording means for recording the video signals on a tape; and coupling means for operatively connecting said video camera to said video recorder including a selected one of a cable and means for detachably mounting said video camera on said video recorder; wherein



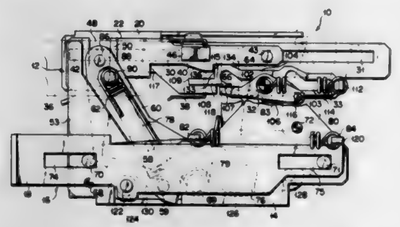
said camera is provided with first and second switches arranged to be operated in sequence for controlling an operating state of said recorder and said camera so that when said first switch is actuated, said image pick up means starts to operate and said recording means is set in a partly operative stand-by state, and then when said second switch is actuated, said recording means is fully operative to start a recording operation.

4,447,838

CASSETTE LOADING/UNLOADING APPARATUS FOR CASSETTE TAPE RECORDER

Toshikazu Kato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,330
Claims priority, application Japan, Feb. 24, 1981, 56-24928[U]
Int. Cl.³ G11B *15/00*
U.S. Cl. 360—96.5 **5 Claims**



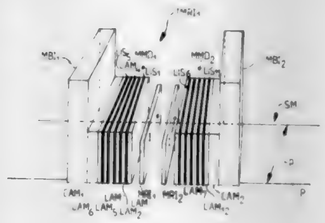
1. A cassette loading/unloading apparatus for a slot-in type cassette tape recorder using a toggle spring, characterized in that a slider holds a cassette inserted therein and slides together therewith in a cassette holder, and that a spring member to be charged with a biasing force as the slider slides at cassette insertion is provided separately from the toggle spring so that the charged biasing force may act as a resisting force on the slider, said spring member applying the resisting force to the slider before the slider passes the neutral point of the toggle spring, and being prevented from applying the resisting force to the slider after the slider passes the neutral point.

4,447,839

MAGNETORESISTANT TRANSDUCER

Jacques Desserre, Rambouillet, and Michel Helle, Marcq, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Oct. 26, 1981, Ser. No. 315,027
Claims priority, application France, Oct. 29, 1980, 80 23012
Int. Cl.³ G11B *5/12, 5/30, 21/10*; G01R *33/12*
U.S. Cl. 360—113 **9 Claims**



1. A magnetoresistant transducer for reading data present in a magnetic area of a plurality of successive magnetic areas distributed along a track of a multi-track magnetic carrier, comprising:

at least one magnetoresistant element adapted to be aligned with said track opposite to said magnetic area and to be disposed perpendicular to the direction of travel of the carrier, the element adapted to be traversed by a current flowing in the direction of its length which current generates a magnetic field;

first and second magnetic screening means disposed at opposite sides of the element for intercepting magnetic flux generated by magnetic areas which enflank the magnetic area opposite which the element is situated; and

first and second deflection means respectively located between said element and said first and second magnetic screening means for deflecting the magnetic field to minimize the creation of magnetic charges at said first and second screening means by said magnetic field and to minimize thereby the intensity at said element of magnetic return fields created by such magnetic charges.

4,447,840

2-SPEED MAGNETIC-TAPE CASSETTE APPARATUS

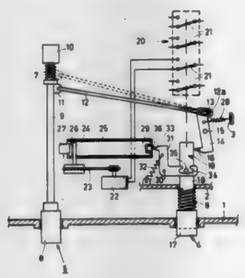
Georges M. A. Mignolet, and Gilbert E. Mestdagh, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,947
Claims priority, application Netherlands, Apr. 7, 1981, 8101695
Int. Cl.³ G11B *5/00, 5/08, 5/54*
U.S. Cl. 360—137 **11 Claims**

1. A magnetic tape cassette apparatus comprising an electrical power supply, a power switch for switching the power supply on and off, a tape drive energized by said power supply, a capstan for the tape drive, and a speed switching element which is switchable between a first and a second position, for switching the capstan drive to a first and a second speed respectively, characterized by comprising

switching means arranged between the power switch and the switching element for setting said switching element

to the first position in response to said power switch being switched off and then on again, and



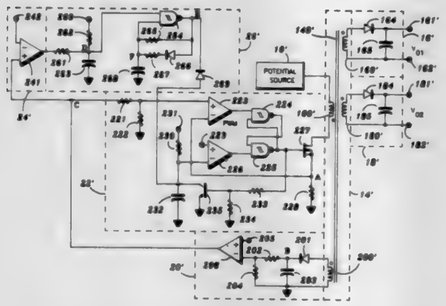
means for enabling disconnection of the supply of electrical power to said power supply without causing said switching means to set the switching element to the first position.

4,447,841

OVERCURRENT PROTECTION CIRCUIT FOR A MULTIPLE OUTPUT SWITCHING POWER SUPPLY AND METHOD THEREFOR

Stephen L. Kent, Chandler, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jun. 30, 1982, Ser. No. 393,564
Int. Cl.³ H02H 7/122
U.S. Cl. 361—18 8 Claims



1. An overcurrent protection circuit for use with a switching power supply having a voltage source coupled to a first terminal of a primary winding of a transformer, having a master oscillator coupled to a second terminal of the primary winding, having at least one output coupled to a first secondary winding of the transformer, and having at least a second secondary winding in the transformer, the overcurent circuit comprising:

an error detection circuit for detecting an undervoltage in the second secondary winding, said error detection circuit being coupled to the second secondary winding of the transformer and coupled to the master oscillator; and

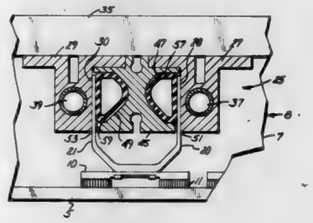
a low frequency oscillator for periodically disabling the master oscillator, said low frequency oscillator being coupled to said error detection circuit and to the master oscillator.

4,447,842

FINNED HEAT EXCHANGERS FOR ELECTRONIC CHIPS AND COOLING ASSEMBLY

William C. Berg, Stillwater, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jun. 1, 1982, Ser. No. 383,887
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 9 Claims



1. A cooling assembly including an electronic chip, comprising:

a frame;

a means supporting said chip, said chip supporting means being supported by said frame;

a cooling member supported by said frame;

a heat exchange member operably secured to said chip;

an expansible conduit, and

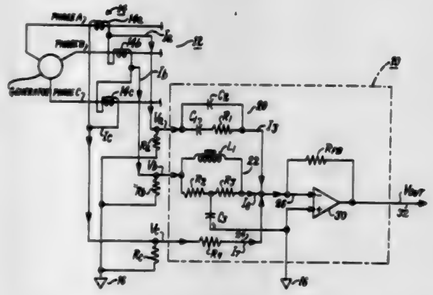
a means supporting said expansible conduit, said expansible conduit supporting means being supported by said frame, said expansible conduit having an expanded condition and a collapsed condition, and a means selectively converting said expansible conduit between said expanded and said collapsed conditions, said heat exchange member being positioned between said expansible conduit and said cooling member, said expansible conduit contacting said heat exchange member in said expanded condition and forcing said heat exchange member into contact with said cooling member so that said chip is cooled by said cooling member.

4,447,843

NEGATIVE SEQUENCE NETWORK HAVING A FREQUENCY COMPENSATED FILTER

William A. Massey, Mt. Holly, N.J., assignor to General Electric Company, King of Prussia, Pa.

Filed Jul. 21, 1982, Ser. No. 400,541
Int. Cl.³ H02H 3/26, 3/34
U.S. Cl. 361—76 4 Claims



1. A sequence network adapted to be coupled to each phase of a three phase transmission line by coupling means which develops three signals A, B, and C respectively representative in magnitude and phase of the transmission line currents or of the transmission line voltages, said sequence network being adapted to detect one phase sequence component and reject another phase sequence component of the transmission line currents or voltages, said sequence network having an operating frequency equal to the rated frequency of the transmission line and comprising:

(a) a first phase shift network having applied thereto said signal A and developing a first output signal, said first phase shift network comprising two legs each contributing substantially equal phase shifts but each leg contributing opposite variation in phase shift in response to frequency changes such that the total phase shift of the first phase shift network does not vary substantially in response to frequency changes within a predetermined limited range encompassing said operating frequency,

(b) a second phase shift network having applied thereto said signal B and developing a second output signal, said second phase shift network providing a phase shift opposite to that provided for signal A, said second phase shift network comprising two legs each contributing substantially equal phase shifts but each leg contributing opposite phase shift variations in response to frequency changes such that the total phase shift of the second phase shift network does not vary substantially in response to frequency changes within said predetermined limited range,

(c) first means for summing said first and second output signals so as to obtain a resultant signal that is representative of the vector sum of said first and second output signals,

(d) an additional network with no substantial phase shift properties having applied thereto said signal C for developing a third output signal in phase with signal C and having a magnitude equal to said resultant signal for the particular phase sequence component to be rejected, and

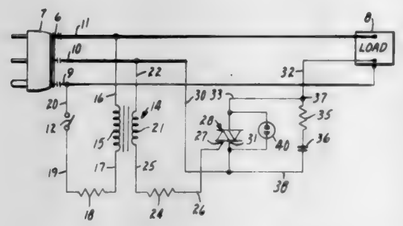
(e) means for summing said third output signal with said resultant signal and developing a fourth output signal representative of the particular phase sequence component to be detected.

4,447,844

ELECTRICAL SAFETY SWITCH FOR ELECTRICAL APPLIANCES

George W. Schossow, 2316 Lilac La., and George P. Stallings, 2327 Mayfair Ave., both of White Bear Lake, Minn. 55110

Filed Feb. 16, 1982, Ser. No. 349,011
Int. Cl.³ H02H 3/14
U.S. Cl. 361—77 5 Claims



1. An electrical safety switch adapted for incorporation in an electrical appliance having a three-wire cord comprising

an on/off switch connected directly to the ground line of the cord and disposed in series with a resistor and the primary coil of a transformer, which transformer is connected between the resistor and the B+ line of the cord leading to the appliance,

a triac connected between the load of the appliance and the neutral line with the gate triggering the triac being connected to the transformer secondary coil to be energized thereby upon a current being present through the on/off switch, and

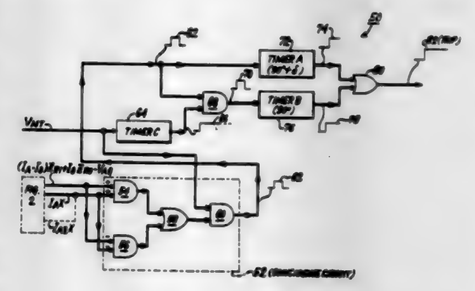
means for matching impedance in said circuit with said gate to the impedance of the circuit and said on/off switch for providing a low current across said on/off switch.

4,447,845

REACTANCE RELAY

Stanley B. Wilkinson, Havertown, Pa., assignor to General Electric Company, King of Prussia, Pa.

Filed Jul. 7, 1982, Ser. No. 395,951
Int. Cl.³ H02H 3/26
U.S. Cl. 361—80 6 Claims



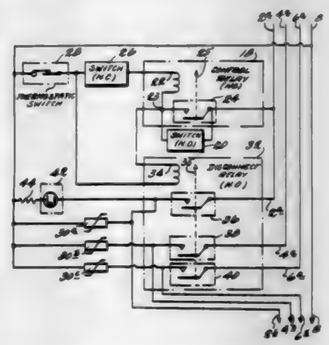
1. A reactance type relay having two characteristic TIMERS A and B and a TIMER C developing an output after a preselected delay following receipt of an input, said characteristic TIMER A providing said reactance type relay with an initial state tent-like characteristic, said characteristic TIMER B providing said reactance type relay with a final state reactance characteristic, said TIMER A having a setting of $90°+\delta$, which produces an angle of separation of δ electrical degrees between the tent-like and the reactance characteristics, and means responsive to the generation of an output by TIMER C for shifting the operating characteristic of the relay from the tent-like characteristic of TIMER A to the reactance characteristic of TIMER B.

4,447,846

COMPUTER ENVIRONMENT PROTECTOR

Winston T. McCleery, 4920 Cottage Hill Rd., Suite 5, Mobile, Ala. 36609

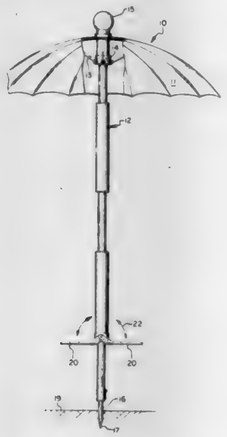
Continuation-in-part of Ser. No. 156,342, Jun. 4, 1980, Pat. No. 4,327,397. This application Nov. 12, 1981, Ser. No. 320,569
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.
Int. Cl.³ H02H 3/20, 3/24
U.S. Cl. 361—90 8 Claims



1. Protective apparatus for protecting an electronic computer powered by electrical power lines from adverse condi-

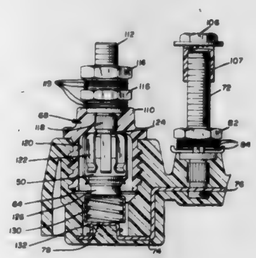
tions in its immediate environment, said protective apparatus comprising:
a manual shut-down switch,
temperature sensing means;
smoke detecting means;
excess current detecting means connected to monitor the electrical current consumed by said protective apparatus;
input power terminals connectable to said electrical power lines;
output power terminals connectable to power said electronic computer;
electrical disconnect means connected between said input power and output power terminals, to said manual shut-down switch, to said temperature sensing means and to said smoke detecting means for controllably disconnecting said computer from said power lines in response to any of the following conditions;
(a) a temporary loss of electrical power on said power lines,
(b) the ambient temperature of air in the computer's immediate environment exceeds a present temperature,
(c) smoke is detected in the computer's immediate environment,
(d) said manual shut-down switch is activated,
(e) excessive electrical current is consumed by said protective apparatus;
a manual start-up switch connected to saiu electrical disconnect means for causing said computer to be connected to said power lines in response to manual activation of the start-up switch in the absence of any of the aforestated conditions;
air conditioner control means including electrical terminals connectable to control the operation of an air conditioner servicing the immediate environment of the computer;
said air conditioner control means being connected to automatically stop a connected air conditioning system when the computer is automatically disconnected from the power lines by said protective apparatus; and
air conditioner override means connected to permit independent start-up and operation of the connected air conditioning system when manually activated.

4,447,847
PORTABLE LIGHTNING ROD
Norman R. Drulard, 8035 S.W. Ruby Ter. Portland, Oreg. 97219
Continuation-in-part of Ser. No. 770,419, Feb. 22, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,729
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—117 **15 Claims**



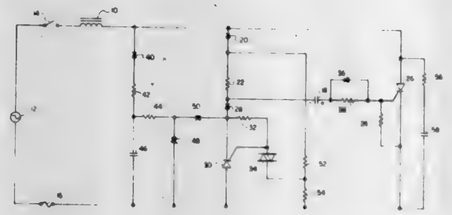
1. A portable lightning rod comprising:
path means defining an electrically conductive path of sufficient size and current carrying capacity to conduct an electric charge from lightning without disintegration, said path means including:
a. an electrically conductive upper electrode disposed at the uppermost end of said lightning rod and having a lightning-receiving portion adapted to receive an electric charge from lightning,
b. an electrically conductive lower electrode disposed at a lower end of said lightning rod and having sufficient surface area for physical and electrical contact with the earth so that, when said lower electrode is installed in the earth, an electric charge from lightning can be conducted to the earth via said lower electrode, and
c. an electrically conductive central portion electrically connecting said upper and lower electrodes for passage of electrical current therethrough;
an electrically insulative outer layer surrounding said central portion for the electrical insulation of said central portion from the environment; and
an umbrella sheath having an opening therethrough, said sheath being positionable adjacent to the upper end of said lightning rod so that said electrically conductive path means extends through said opening.

4,447,848
TELEPHONE SURGE PROTECTOR AND HOUSINGS THEREFOR
Thomas J. Smith, Bay Shore, N.Y., assignor to TII Industries Inc., Copiague, N.Y.
Filed May 10, 1982, Ser. No. 376,703
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—124 **13 Claims**



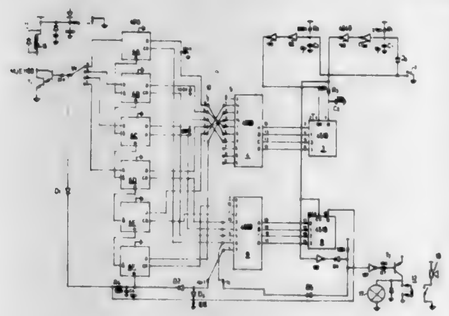
1. An overvoltage surge protector housing for protecting communication lines and equipment connected thereto from voltage surges comprising:
(a) a housing of insulating material having at least one well-type aperture disposed therein;
(b) a first terminal adapted to be connected to earth ground;
(c) a first electrode portion disposed at the closed end of said well-type aperture having a generally centrally disposed upwardly extending portion, said first electrode being connected to said first terminal, and
(d) a second terminal removably received within the open end of said well-type aperture having a second electrode portion and means integral with said electrode portion for connection to one of said communication lines, said second terminal including protector means retained therein and adapted to be in intimate contact with said first and second electrode portions when disposed in said well-type aperture.

4,447,849
ELECTROMAGNETIC CONTROL CIRCUIT
Jack B. Harwell, Grapevine, Tex., assignor to Teccor Electronics, Inc., Euless, Tex.
Filed Jul. 1, 1982, Ser. No. 394,437
Int. Cl.³ H03K *17/72*
U.S. Cl. 361—152 **8 Claims**



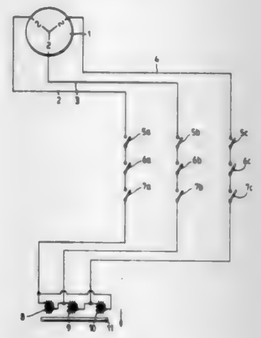
1. An electromagnetic control circuit comprising:
an electromagnetic winding means adapted to be coupled in series with an alternating current potential source;
switch means adapted to be coupled in series with said electromagnetic winding means and said alternating current potential source; and
control means coupled in series with said electromagnetic winding means and said switch means, said control means for controlling the conduction of current through said electromagnetic winding means, said control means comprising:
a gate controlled conduction device;
capacitive means coupled to the gate of said gate controlled conduction device;
means for charging said capacitive means during a negative half cycle of said alternating current potential source after the closing of said switch means; and
means for discharging said capacitive means through the gate of said gate controlled conduction device, in timed relationship with said alternating current potential source wherein said gate controlled conduction device is placed into a conductive state only during a positive half cycle after the closing of said switch means.

4,447,850
ELECTRONIC LOCK
Eldad B. Asher, 32 Margalit St., Haifa, Israel
Filed Jan. 20, 1982, Ser. No. 340,840
Claims priority, application Israel, Feb. 1, 1981, 62037
Int. Cl.³ E05B *49/00*
U.S. Cl. 361—172 **12 Claims**



1. A digital-code operated circuit for an electronic lock comprising a single pushbutton to alternatingly close and open a circuit to provide pulses of specific numbers and groupings constituting digits and sequence of digits respectively, converting means to convert the number of said pulses per digit and the number of said groupings per digit sequence, from serial to parallel, discrimination means to distinguish between discrete pulses constituting a single digit and between complete digits constituting a digit sequence, memory means to store the data produced by said converting means, program means in which said digital code can be set, verification means to verify whether the pulses provided by said single pushbutton produce digit sequences conforming to said digital code as set in said program means, wherein a signal for the unlocking of said lock is produced only by conformance with said code.

4,447,851
TRIP SYSTEM
Peter E. Simmons, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation of Ser. No. 281,105, Jul. 7, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,710
Claims priority, application United Kingdom, Jul. 7, 1980, 8022205
Int. Cl.³ H02H *1/04*
U.S. Cl. 361—189 **9 Claims**



1. A trip system which comprises:
three switches which are each either (a) normally open and adapted to close or (b) normally closed and adapted to open in response to a common trip initiating event,
each of said switches being connected to and operating on a respectively corresponding one of three lines carrying the different respective phases of a three phase power supply,
three trip actuators each electrically connected between a different pair of the said lines, one of said switches being connected on each of the lines between the power supply and the trip actuators,
the trip actuators being adapted, when normally open switches are employed, to actuate a trip when both switches of the pair of lines connected to at least one of the actuators are closed thus energising the actuator in question, and
the trip actuators being adapted, when normally closed switches are employed, to actuate a trip when both the switches in any pair of said lines are opened thus de-energising the actuators.

4,447,852
CAPACITOR ASSEMBLY
Warren J. Clement, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed Jun. 14, 1982, Ser. No. 387,739
Int. Cl.³ H01G *1/14*
U.S. Cl. 361—306 **14 Claims**

1. A capacitor assembly comprising a wound and flattened extended-foil capacitor section, a capacitor case having an insulating cover and an insulating base, a one-piece conductive bus having a horizontal bottom portion and a vertical side

portion, conductive means passing through said bottom portion and said base securing said bus to said base, said side portion having spaced apart extensions clamped against foil



edges extending from an end of said section and holding said section in place and electrically connecting said foil edges to said bus.

4,447,853

CERAMIC CAPACITOR

Noboru Tomuro; Isao Ishiguchi; Shinjiro Tsujikawa; Masao Kashima, all of Yokoze, and Yasuo Miyashita, Chichibu, all of Japan, assignors to Mitsubishi Mining & Cement Company, Ltd., Chiyoda, Japan

Filed Aug. 1, 1983, Ser. No. 519,172
Claims priority, application Japan, Aug. 25, 1982, 57-146233
Int. Cl.³ H01G *4/12*
U.S. Cl. 361—321 **3 Claims**

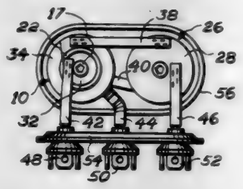
1. A ceramic capacitor comprising a polycrystalline ceramic dielectric material and a plurality of electrodes of conductive material, characterized in that said ceramic dielectric material is disposed between at least one pair of opposing electrodes and has a thickness not more than 30 μm and a particle size not more than one fifth of the thickness of said dielectric material.

4,447,854

OVAL DUAL-AC-CAPACITOR PACKAGE

Paul M. Markarian, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Nov. 22, 1982, Ser. No. 443,266
Int. Cl.³ H01G *4/32*
U.S. Cl. 361—329 **14 Claims**



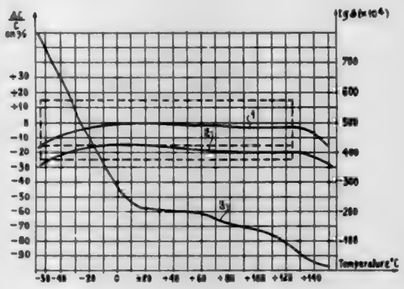
1. An oval dual-AC-capacitor package comprising a substantially-oval-cylindrical housing having a cover at one end thereof; three feed-through terminals being mounted in said cover; two circular-cylindrical capacitor sections having essentially the same length, each of said sections being enclosed in said housing and having two convolutely wound sheet-plastic strips and two metal films respectively positioned alternately between said plastic strips, each of said metal films in a first of said sections being wholly contiguous and unitary, one of said films in the second of said sections also being contiguous and unitary, the other of said films in said second section having been opened in a middle portion thereof and divided into an inner winding portion and an outer winding portion; and electrical connection means (a) for connecting one of said first-section-metal films to said one film of said second section and further to a first of said cover terminals, (b) for connecting said inner-winding metal film portion to a second of said cover terminals and (c) for connecting said outer-winding metal film portion to the other of said first-section metal films and to the third of said cover terminals.

4,447,855

DIELECTRIC CERAMIC COMPOSITION ON THE BASE OF THERMALLY STABLE BARIUM TITANATE AND CAPACITOR USING SUCH COMPOSITION

Alain Lagrange, and Alain Rossello, both of Bagnolet, France, assignors to LCC. Cice-Compagnie Europeanne de Composants Electroniques, Bagnolet, France

Filed Feb. 28, 1983, Ser. No. 470,525
Claims priority, application France, Mar. 2, 1982, 82 03423
Int. Cl.³ H01G *1/01, 3/135*
U.S. Cl. 361—321 **12 Claims**



1. A ceramic capacitor comprising at least one dielectric layer and at least two electrodes, each pair of said electrodes being separated by said dielectric layer, wherein said dielectric layer comprised from 80 to 94% by weight of barium titanate, from 1 to 3% by weight of neodymium oxide, from 0 to 4% bismuth oxide, from 2 to 5% by weight of bismuth titanate ($Bi_2O_32TiO_2$) and from 2 to 8% by weight of glass frit, the whole having been selected so as to form 100% by weight.

4,447,856

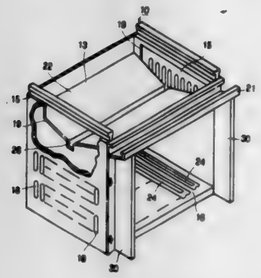
SHELF UNIT FOR ELECTRONIC COMMUNICATION DEVICES

Yoshihiro Takahashi; Katsuo Okuyama, both of Kawasaki, and Yutaka Matsukuma, Hatano, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 23, 1981, Ser. No. 314,427
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—383 **29 Claims**

1. An electronic communication device shelf unit having means for mounting printed circuit boards therein, wherein the shelf unit has means for mounting itself upon another shelf unit, said shelf unit comprises: hollow side plates which are provided, on their outer faces, with air inlet openings; and a top plate which is connected to the side plates and which has an

inclined heat diffusion plate defining thereon an air introduction space; and wherein said side plates are provided, on their



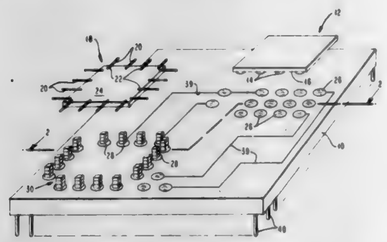
inner faces, with openings communicating with the air introduction space.

4,447,857

SUBSTRATE WITH MULTIPLE TYPE CONNECTIONS

Robert Marks, South Burlington; Douglas W. Phelps, Jr., and William C. Ward, both of Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,889
Int. Cl.³ H05K *1/09, 1/18*
U.S. Cl. 361—395 **4 Claims**



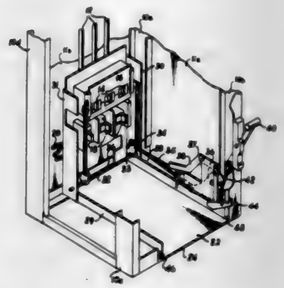
1. A package for semiconductor integrated circuits comprising:
- a substrate having input/output means;
- a plurality of solder pads on said substrate;
- at least one integrated circuit chip having its back surface attached to said substrate in a face-up configuration with contact pad metal adapted to receive wire bond type connections;
- at least one of said solder pads on said substrate having a multi-layer metallic pedestal thereon, said multi-layer metallic pedestal having a solder layer joined to said at least one solder pad, an upper layer of said pedestal made of the same metal as said contact pad metal and adapted to receive wire bond type connections, and a barrier layer of metal interposed between said solder layer and said upper layer, said barrier layer being substantially impervious to both solder and the metal of said upper layer;
- a wire formed from the same metal as the contact pad metal and said upper layer, bonded thereto to form a high temperature sustaining wire bond connection between the contact pad metal on the face-up integrated circuit chip and the multi-layer metallic pedestal on the substrate;
- a predetermined number of said solder pads arranged in a pattern for interconnecting at least one integrated circuit chip to said substrate in a flip-chip configuration;
- at least one integrated circuit chip attached to said substrate in a flip-chip configuration by means of said predetermined number of solder pads which are arranged for interconnecting integrated circuit chips in a flip-chip configuration;
- interconnecting conductor lines on said substrate for providing electrical connections between a preselected number of said solder pads which are connecting an integrated circuit chip to said substrate in a face-up configuration and a preselected number of said solder pads connecting an integrated circuit chip to said substrate in a flip-chip configuration.

4,447,858

RIGID SUBCHASSIS STRUCTURE FOR MOTOR CONTROL CENTER OR THE LIKE

Samir F. Farag; Alvin R. Hoffmann, and John D. Kleinecke, all of Wichita Falls, Tex., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Apr. 28, 1982, Ser. No. 373,029
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—429 **8 Claims**

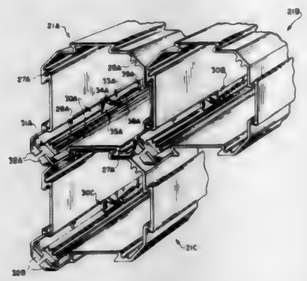


1. A motor control center, comprising:
- a deformable, alignable framework having vertical frame members and horizontal frame members enclosed by sheet material and including at least one compartment for receiving a contactor carriage assembly, a rigid subchassis for receiving said carriage assembly, said subchassis having a generally flat guide plate member mounted horizontally within said compartment, said guide plate member comprising an extended, generally flat lower section having front and back ends and opposed sides, upturned edge members extending at each of said sides for receiving and guiding said carriage assembly therein, and means at said front and back ends attaching said guide plate member to said horizontal frame members, said guide plate member being free of direct attachment to said vertical frame members;
- a pair of upstanding angle members attached to said guide plate member adjacent to the back end thereof, one leg of each angle member extending parallel to said back end, the other leg extending parallel to and overlapping one of said upturned edge members;
- means coupling each of said other legs of said angle members to the adjacent one of said upturned edge members of said guide plate member;
- a cross member coupled between said angle members at a point spaced from the back edge of said guide plate member;
- electrical connection means mounted to said cross member for engagement by said carriage assembly;
- a rotatable cross shaft having opposed ends and carriage-engaging means extending therefrom, said opposed ends being supported at opposite sides of said subchassis; and
- a rigid bracket means rigidly affixed to one of said upturned edges and supporting at least a portion of a racking mechanism thereon for rotating said cross shaft.

4,447,859
MODULAR FLASH SYSTEM

Walter V. Raczynski, Chicago, Ill., assignor to Inverse Square Systems Incorporated, Chicago, Ill.

Filed Nov. 26, 1982, Ser. No. 444,718
Int. Cl.³ G03B 15/02
U.S. Cl. 362—13 33 Claims

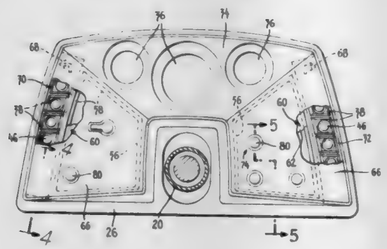


1. A photographic flash unit adapted to interfit with other like flash units, said flash unit comprising: housing structure including a hollow wall member, at least one male coupling means on the outside of said wall member, and at least one female coupling means on the outside of said wall member, said male coupling means being complementary to said female coupling means; a flash lamp mounted on said housing structure; and power supply and control means disposed within said housing structure and coupled to said flash lamp for energization thereof.

4,447,860
BACKLIGHTED INSTRUMENT CONSOLE FOR A TRACTOR

Lawrence J. Stone, Livonia, and Richard J. Wells, Ferndale, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Continuation of Ser. No. 886,006, Mar. 13, 1978, abandoned.
This application Nov. 14, 1980, Ser. No. 222,869
Int. Cl.³ G01D 11/28
U.S. Cl. 362—30 5 Claims



1. In combination with a tractor provided with a cab having a forward portion, a backlighted instrument console comprising:

a relatively fixed support member secured to the forward portion of the cab and provided with a rearwardly facing generally flat surface having a plurality of spaced apart openings and a relatively large aperture extending through said support member;

a plurality of selectively operable light emitting devices;

means mounting the light emitting devices in association with said openings, there being only one light emitting device associated with each of the openings;

a generally thin flat support panel associated with said support member with a portion of the panel extending across said aperture, the panel being mounted in such a manner that its rear surface lies in the same plane as the generally flat surface of said support member;

peripheral fastening means securing the thin flat support panel to the support member;

a translucent sheet having a plurality of symbols, said sheet being secured to said support member with one side of the sheet being adjacent said surfaces of the support member and the support panel, and with the symbols overlying said openings; and

a control secured to said support panel, at least a portion of the control overlying said sheet, another portion of the control passing through said sheet and panel.

2. A backlighted instrument console for a tractor or the like comprising:

a relatively thick support member provided with a rearwardly facing generally flat surface having a plurality of spaced apart openings and a relatively large aperture extending through said support member;

a plurality of selectively operable light emitting devices;

means mounting the light emitting devices in association with said openings, there being only one light emitting device associated with each of the openings;

a generally thin flat support panel associated with said support member with a portion of the panel extending across said aperture, the panel being mounted in such a manner that its rear surface lies in the same plane as the generally flat surface of said support member;

peripheral fastening means securing the thin flat support panel to the support member;

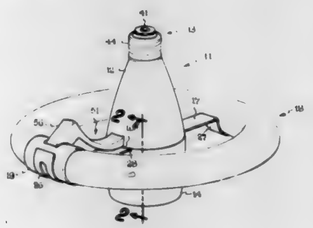
a translucent sheet having a plurality of symbols, said sheet being secured to said support member with one side of the sheet being adjacent said surfaces of the support member and the support panel, and with the symbols overlying said openings; and

a control secured to said support panel, at least a portion of the control overlying said sheet, another portion of the control passing through said sheet and panel.

4,447,861
CIRCULAR FLUORESCENT LAMP UNIT

Frederick Hetzel, Brookpark; Martin J. Graf, Wickliffe, and Douglas Seredich, Chardon, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1981, Ser. No. 333,200
Int. Cl.³ F21S 5/00
U.S. Cl. 362—216 2 Claims

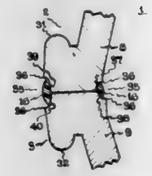


1. A circular fluorescent lamp unit comprising a central hub containing lamp ballast means, a plurality of support arms extending radially from said hub and adapted to hold a circular fluorescent lamp in a position surrounding said hub, at least one of said support arms comprising a sheet member extending through a support arm slot in said hub and having a substantially right-angle bend within said hub to form an inner length thereof within said hub which extends substantially parallel to the hub axis, and said hub further comprising receptacle means for securing said sheet member at the end region of said inner length spaced from said right-angle bend to provide means causing one or more of said support arms to have a limited amount of radial sliding movement with respect to said hub.

4,447,862
SEALED BEAM LAMP UNIT SEALING SURFACES

Bruce E. Shanks, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,435
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 9 Claims

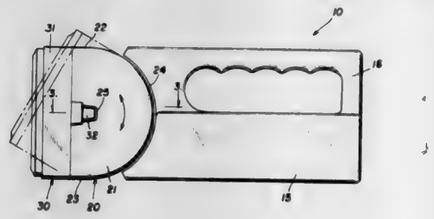


1. A sealed beam lamp unit comprising a lens and reflector having substantially polygonal peripheries and cooperating and opposing planar sealing surfaces characterized by sides and corners, located approximately about said peripheries and with said planar sealing surfaces being in physical contact along the sides but spaced apart at the corners, with adhesive disposed on and between said planar sealing surfaces wherein a first of said planar sealing surfaces has corners protruding from a plane defined by the sides thereof and cooperating and opposing corners of a second of said planar sealing surfaces, said second planar sealing surface corners indented from a plane defined by the sides thereof, and with each side of said planar sealing surfaces further including reservoirs to contain excess adhesive.

4,447,863
HAND-HELD LIGHT WITH SWIVEL HEAD

Kenneth R. Fenne, 3 S. 220 Park Blvd., Glen Ellyn, Ill. 60137

Filed Jan. 24, 1983, Ser. No. 460,590
Int. Cl.³ F21L 7/00
U.S. Cl. 362—199 13 Claims

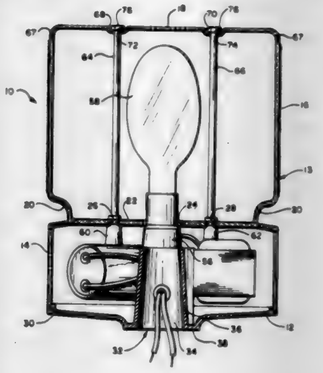


1. A hand-held light comprising a handle a support for said handle, a head having an interior, a bulb socket mounted in said head on the interior thereof, at least one leg on said support and extending into the interior of said head, and pivot means in said head disposed entirely in the interior thereof and rotatably attached to said leg at a location spaced from said support, thereby swivelly mounting said head to said support.

4,447,864
POST TOP LUMINAIRE

Donald C. Smith, Auburn; Richard F. Snow, Manlius, and George B. Pauli, Chittenango, all of N.Y., assignors to Crouse-Hinds Company, Syracuse, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,129
Int. Cl.³ F21V 3/00
U.S. Cl. 362—311 23 Claims



1. A luminaire adapted to be mounted at the top of a post and to direct light below a horizontal plane, said luminaire comprising:

a base having a mounting means for mounting said luminaire above an area to be lighted;

an electrical means positioned on said base to operate a lamp;

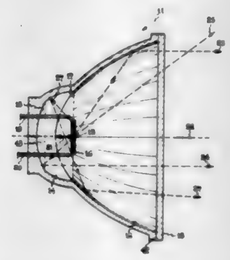
a unitary housing element received on said base, said housing element having upper and lower portions of generally cylindrical shape with an intermediate interior insulator panel intersecting the housing element sides to form a substantially H-shaped cross section, the lower cylindrical portion enclosing said electrical means and the upper cylindrical portion forming a light refractor means for said lamp; and

a cover enclosing the top of said housing element.

4,447,865
REFLECTOR LAMP

David D. VanHorn, East Cleveland; John M. Putz, Twinsburg, and Alfred J. Henderson, Jr., Shaker Hts., all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 13, 1982, Ser. No. 377,754
Int. Cl.³ F21V 7/00
U.S. Cl. 362—305 11 Claims



1. A lamp comprising a substantially concave reflector having faceted surfaces longitudinally extending along a major portion of a front section of said reflector, said faceted surfaces comprising subsections each of which is rotated about an axis predeterminedly located relative to the longitudinal axis of said lamp, said front section being substantially defined by a surface

of revolution of a first parabolic curve whose focal point is relatively close to the vertex thereof with the surface terminating essentially at the latus rectum thereof,

an intermediate section of substantially spherical configuration having a center substantially at the focal point of said front section and a diameter essentially the length of said latus rectum,

a rear section substantially defined by a surface of revolution of a second parabolic curve which terminates at the circular junction with said spherical intermediate section, having a focal point located substantially farther from the vertex of said second parabolic curve than said first parabolic curve with said two focal points being substantially coincident, and

a finite light source positioned substantially at said substantially coincident focal points so that substantially all light rays from said light source which are reflected by said spherical intermediate section are re-reflected by said front section, wherein said light rays reflected by said facets include components thereof which are circumferential about the lamp axis and thereby provide a beam pattern which is substantially circumferentially uniform about said lamp axis.

4,447,866

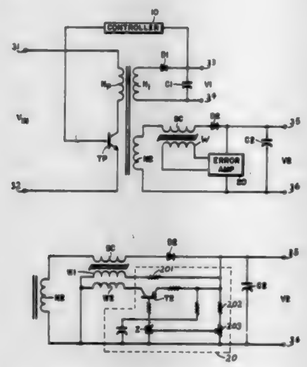
SUPPLEMENT TO CROSS REGULATION IN DC TO DC CONVERTERS

Charles R. Reeves, San Jose, Calif., assignor to Conver Corporation, Cupertino, Calif.

Continuation of Ser. No. 048,498, Jun. 14, 1979, abandoned. This application Oct. 14, 1981, Ser. No. 311,437

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **6 Claims**



1. A DC to DC flyback converter comprising:

transformer means including first and second secondary windings and transistor means and diode means for providing a main DC voltage and an auxiliary DC voltage in response to a DC input voltage, said main and auxiliary voltages being directly related to voltages provided by said first and second secondary windings, respectively;

means coupling said main voltage to said transistor means for regulating said main voltage;

a saturable core inductor having a saturable inductor winding connected in series with said second secondary winding, said inductor having at least one control winding; and

error amplifier means, connected to said saturable core inductor, for controlling current through said control winding in response to said auxiliary voltage.

4,447,867

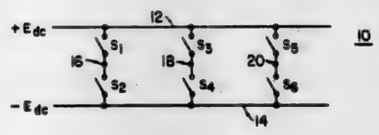
MULTIPHASE INVERTER DRIVE CIRCUIT WITH SYNCHRONIZED SWITCHING DELAY FEATURE

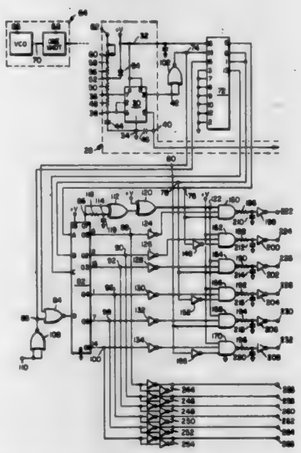
William E. Evans, and Jimmie D. Gillett, both of Garland, Tex., assignors to Varo, Inc., Garland, Tex.

Filed Jan. 29, 1982, Ser. No. 343,748

Int. Cl.³ H02M *7/217*

U.S. Cl. 363—56 **13 Claims**





1. A circuit for leading edge delay in synchronized switching waveforms, comprising:

a first power terminal;

a second power terminal

a plurality of output terminals;

a plurality of complementary paired switches, each of said pairs associated with one of said output terminals and having a first and second switch, the first and second switch of each of said paired switches alternately connecting said first and second power terminals to the associated one of said output terminals;

means for generating a plurality of synchronized reference pulse waveforms and the complements thereof, each of said reference waveforms and the complements thereof associated with each of said paired switches for switching thereof;

means for generating a delay pulse having a variable width;

steering means for receiving said reference waveforms and said delay pulse and generating a blanking pulse waveform for each of said reference waveforms and the complement waveforms thereof, each pulse therein having a width equal to the width of said delay pulse, the leading edge of each of the pulses in each of said blanking waveforms directly corresponding to the leading edge in the corresponding pulse of said reference waveforms and said complement waveforms;

blanking means for receiving said reference waveforms, said complement waveforms and said blanking waveforms, said blanking means outputting a plurality of corresponding delayed pulse waveforms, each pulse therein having the trailing edge thereof directly corresponding to the trailing edge of each of the pulses in each of the corresponding one of said reference waveforms and said complements thereof and the leading edges thereof delayed by the width of said delay pulse, each of said delayed waveforms for driving each of the first and second switches of each of said paired switches wherein closing of the first or second switch in each of said paired switches is delayed to allow the complementary switch thereof sufficient time to open; and

an inhibit circuit for generating an inhibit signal to inhibit said blanking means from generating said delayed waveforms corresponding to said complementary waveforms.

4,447,868

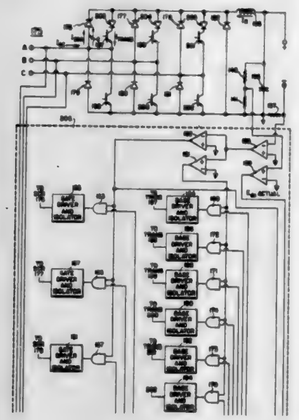
REGENERATIVE RECTIFIER CIRCUIT

Fred G. Turnbull, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,706

Int. Cl.³ H02P *13/26*

U.S. Cl. 363—81 **3 Claims**



1. A phase controlled three phase regenerative rectifier responsive to an external dc voltage command, for receiving input power from a three phase ac source and supplying direct current to an external load, comprising:

a phase-controlled three phase rectifier having a plurality of gate-controlled rectifying elements arranged in a bridge configuration;

a plurality of controllable switch means with self-commutating ability coupled, respectively, in inverse parallel with each rectifying element, respectively, said plurality of controllable switch means forming an inverter;

means for sensing the output voltage of said rectifier;

means for sensing the direction of current flow to the external load; and

control means responsive to the means for sensing rectifier output voltage and to the means for sensing current flow to the external load, and coupled to said plurality of gate-controlled rectifying elements and to said plurality of controllable switch means, for adjusting the phase lag of said rectifying elements and the phase lead of said controllable switch means responsive to the direction of current flow to said external load and the difference between the dc voltage command and actual dc voltage across said external load, so that when the current supplied to the load is positive the phase lag of said rectifying elements is adjusted to provide the commanded dc voltage and when said current in said load is zero or negative the phase lead of the controlled switch means provides regenerative current to the ac source.

4,447,869

CONTROL CIRCUIT WITH AN AUXILIARY PROCESS VARIABLE

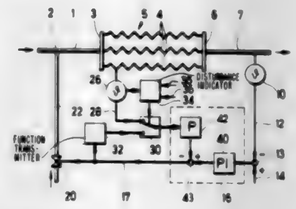
Rudolf Herzog, Tobel, Switzerland, assignor to Suzer Brothers Ltd., Winterthur, Switzerland

Filed Nov. 2, 1981, Ser. No. 317,283

Claims priority, application Switzerland, Nov. 11, 1980, 8352/80

Int. Cl.³ G05B *23/02, 11/42*

U.S. Cl. 364—184 **5 Claims**



1. In combination

a controlled plant having an input for receiving a medium to be processed therein;

a meter for emitting a first signal corresponding to a process variable of the medium processed in said plant;

a controller having a pair of inputs and an output, one of said inputs being connected to said meter to receive said first signal;

a final control element connected to said controller output to receive a control signal therefrom for controlling the medium delivered to said plant;

a signal transmitter connected to said plant near said plant input for emitting a second signal in response to an auxiliary process variable of the medium;

a selector having a pair of inputs and an output, one of said selector inputs being connected to said signal transmitter to receive said second signal and said selector output being connected between said one selector input and a second of said controller inputs to deliver said second signal thereto;

a function transmitter connected to and between said controller output and a second of said selector inputs to deliver the control signal from said controller output to said second selector input; and

a disturbance indicator connected to and between said signal transmitter and said selector to switch said selector output to said second selector input in response to an output signal from said signal transmitter falling below a bottom threshold value or above a top threshold value.

4,447,870

APPARATUS FOR SETTING THE BASIC CLOCK TIMING IN A DATA PROCESSING SYSTEM

Steven A. Tague, Billerica, and Virendra S. Negi, Pepperell, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 3, 1981, Ser. No. 250,823

Int. Cl.³ G06F *1/04*

U.S. Cl. 364—200 **4 Claims**

1. A microprogram controlled data processing system comprises:

clocking means for generating cyclic timing signals having predetermined frequencies, said clocking means including switching means for generating a set clock signal and a plurality of clock delay signals; and

control store means including

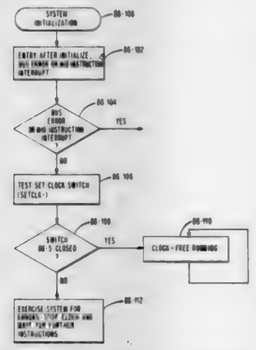
read only memory means for storing a plurality of microprogram words in a plurality of memory locations;

addressing means for addressing said plurality of memory locations; and

register means for storing a microprogram word read

from a memory location specified by said addressing means,

wherein said addressing means is responsive to said set clock signal and a first microprogram word read from a first memory location specified by said addressing means during a first cycle of operation and stored in said register means for repeatedly addressing a second memory location for repeatedly transferring a second microprogram word to said register means



during all subsequent cycles of operation; said clocking means further including

non-stall means coupled to said register means and responsive to said second microprogram word for generating a plurality of non-stall signals; and

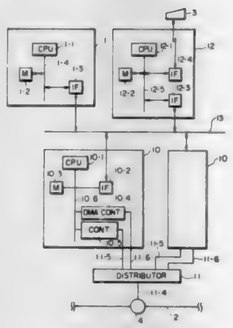
gating means responsive to said plurality of non-stall signals and selected ones of said plurality of clock delay signals for generating said cyclic timing signals having said predetermined frequencies.

4,447,871

DATA COMMUNICATION SYSTEM WITH A FRONT-END-PROCESSOR

Matsuaki Terada, Sagamigara, and Koji Yokota, Kawasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,805
Claims priority, application Japan, Feb. 4, 1980, 55-11510
Int. Cl.³ G06F *15/16, 9/19*
U.S. Cl. 364—200 **13 Claims**



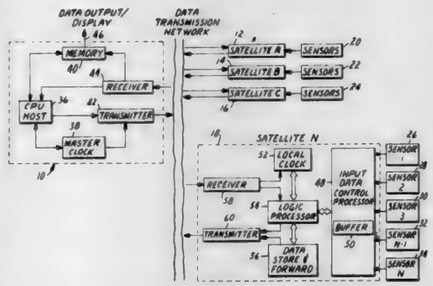
1. A data communications system for transmitting data including address information and text between computers in a multi-computer system comprising a communication line for transmitting said data between a plurality of stations connected to said communication line which respectively transmit over said communication line to other stations data received via an associated distribution circuit from an associated computer and which respectively receive over said communication line data transmitted by other stations to its associated computer, each station being associated with a different computer within the multi-computer system, each associated pair of computer and station being further associated with a separate distributor and a separate plurality of preprocessors, respectively, each distributor having a single bus coupled to its associated station for transferring data to and from said station and a plurality of distributing busses each being coupled to a separate one of said plurality of preprocessors associated with said associated computer, distributor, and station for transferring data to and from said preprocessor, the preprocessors being coupled to said distributor for parallel operation with said distributor; a plurality of data transfer busses each being coupled between a different one of said plurality of preprocessors, and said computer associated with said station and said distributor and said plurality of preprocessors for transferring data to and from said computer, each preprocessor upon receiving data from said coupled distributor functioning to perform data processing on the received data prior to transmitting processed data to said coupled computer and upon receiving data from said coupled computer functioning to perform data processing on the received data prior to transmitting said processed data to said coupled distributor.

4,447,872

ALARM DATA CONCENTRATION AND GATHERING SYSTEM

Eugene M. Nothaft, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 20, 1980, Ser. No. 199,029
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **6 Claims**



1. A system enabling bidirectional communications over a switched data transmission network between a central station and a plurality of satellite stations wherein

A. said central station comprises

(i) master clock means for maintaining an ongoing time including the current week, day, hour, and minute,

(ii) memory means having designated addresses associated with storage locations at which data signals associated with each satellite station are stored, said signals including a unique satellite station address code which is different for each satellite station, and a predetermined time setting which is also different for each satellite station and establishes the routine time at which each satellite station is required to initiate communication with the central station,

(iii) means for receiving from each said satellite station data signals including a said address code whereby a said bidirectional communication is initiated by the communicating satellite station having that address code,

(iv) means for transmitting data signals to a given satellite station identified by its address code, and

(v) central processing means including

(a) means coupled to said memory means for inputting at said storage locations data signals including said predetermined time setting and said satellite station address code for each satellite station,

(b) means for initiating a storage location at its designated address within said memory means in response to receipt of a transmission originating within said communicating satellite station, and containing its satellite station address code,

(c) means for routing said received data signals to an accessed storage location for storage thereat,

(d) means responsive to said master clock means and to said memory means for providing instructions for the communicating satellite station, said instructions including an updated ongoing time signal and an updated predetermined time setting, and coupled to said transmitting means for enabling transmission of said instructions to the communicating satellite station, and

(e) means for terminating said communication; and

wherein

B. each satellite station comprises

(i) local clock means responsive to said instructions from said central station for controlling the initiation of communications with the central station at the time corresponding to the predetermined time setting associated with that satellite station,

(ii) store and forward means for accumulating data for subsequent transmission to said central station,

(iii) means for transmitting signals including the address code for that satellite station and routine and non-routine data to said central station,

(iv) means for receiving data signals from said central station, and

(v) data processing means for controlling the flow of data signals within the satellite station and for controlling the transmission of data signals to and receipt of data signals from said central station, said processing means including

(a) means responsive to an updated ongoing time signal received from said central station for synchronizing said local clock means and responsive to an updated predetermined time setting received from the central station for adjusting said local clock means to the updated predetermined time setting,

(b) means for processing routine and non-routine data derived from external sensors including informationas to the nature of the derived data and for inputting such processed data into the store and forward means,

(c) means responsive to a signal from said local clock means when the ongoing time and the predetermined time setting are the same for activating said transmitting means of the satellite station to thereby initiate transmission to said central station at the time determined by the predetermined time setting, and to enable transmission of accumulated routine data, and

(d) means responsive to non-routine data for initiating said transmission to said central station at any time on a priority interrupt basis to enable immediate transmission of said non-routine data,

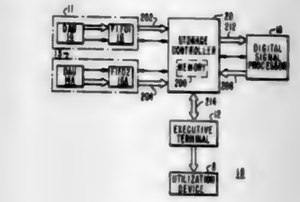
whereby communications between each satellite station and the central station are initiated by the satellite station, routine data are received and held within each of said satellite stations and are transmitted to said central station at different predetermined times, and non-routine, emergency data are immediately transmitted to the central station to enable immediate central response to such emergency data.

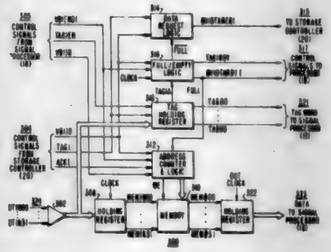
4,447,873

INPUT-OUTPUT BUFFERS FOR A DIGITAL SIGNAL PROCESSING SYSTEM

William L. Price, Severn; John C. Murtha, Towson; James A. Ross, Jr., Aberdeen; Clyde E. Adam, and Kenneth R. Lucas, both of Sykesville, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 832,853, Sep. 13, 1977, Pat. No. 4,166,289. This application May 5, 1980, Ser. No. 146,934
Int. Cl.³ G06F *3/04, 13/00*
U.S. Cl. 364—200 **5 Claims**





1. A buffer for transferring a plurality of vectors, each vector having a varying number of data words up to a predetermined maximum number between first and second data terminals wherein

said buffer is in signal communication with said first and second data terminals; comprising:

(A) first storage means for storing a vector of data words and having storage capacity to store the largest vector to be transferred;

(B) first requesting means, including determining means, responsive to control signals from said first and second data terminals, having a first state indicating when said first storage means is empty of any stored data words of a vector from said first data terminal and a second state indicating when said first storage means contains a vector of data words regardless of empty storage capacity to transfer to said second data terminal;

said first requesting means being responsive to control signals from said first data terminal and said first state of said determining means for requesting a transfer of a vector of data words between said first data terminal and said first storage means, said first requesting means further being responsive to said second state of said determining means for requesting a transfer of a vector of data words between said first storage means and said second data terminal; and

(C) first transferring means, responsive to said first state of said determining means and to control signals from said first data terminal for transferring during a first time interval a vector of data words from said first data terminal to said first storage means

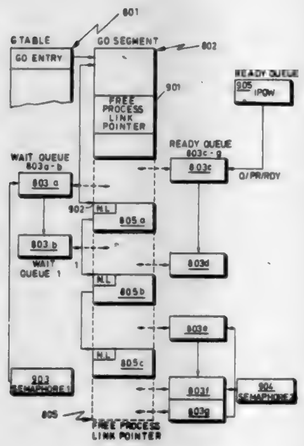
and responsive to said second state of said determining means and to control signals from said second data terminal for transferring during a second time interval after said first time interval said vector of data words in said first storage means to said second data terminal.

4,447,874

APPARATUS AND METHOD FOR COMMUNICATION OF INFORMATION BETWEEN PROCESSES IN AN INFORMATION SYSTEM

John J. Bradley, Garches, France; Benjamin S. Franklin, Cambridge, Mass.; David M. Slosberg, Paris, France; Marc Appell, Paris, France; Jean-Claude Cassonnet, Paris, France, and Philippe D. De Sabatier, Paris, France, assignors to Compagnie Honeywell Bull, Paris, France

Continuation of Ser. No. 60,161, Jul. 24, 1979, abandoned, which is a continuation of Ser. No. 911,815, Jun. 1, 1978, abandoned, which is a continuation of Ser. No. 570,101, Apr. 21, 1975, abandoned. This application Apr. 14, 1981, Ser. No. 254,185
Claims priority, application France, Apr. 25, 1974, 74 14489
Int. Cl.³ G06F 9/00
U.S. Cl. 364—200 8 Claims



1. In a computing system capable of processing a plurality of processes including central memory means for storing a process control block for each of the processes, means for operating the processes in queues, central processor means for executing one of the processes during a predetermined time and for maintaining the unexecuted processes in queues located in the central memory means, said unexecuted queues being organized by priority into various states of readiness for execution, distributor means for giving command of the central processor means to the one of the processes having the highest priority, and means for assigning to each of the processes a process ring number symbolizing a priority level, improved apparatus for communicating instructions between at least some of the processes comprising:

memory element means located in each process control block for storing information;

means responsive to the process being executed for modifying the information stored in the memory element means associated with processes to which instructions are to be communicated;

interrupt means responsive to the information stored in the memory element means for causing an interrupt; and

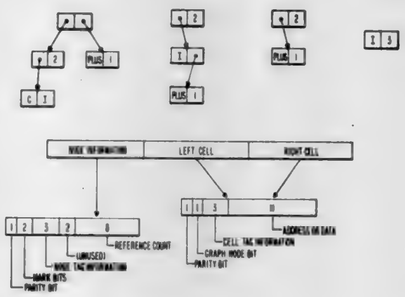
exceptions means responsive to the interrupt for enabling the instruction to be communicated to each process corresponding to a memory element means in which the modified information was stored.

4,447,875

REDUCTION PROCESSOR FOR EXECUTING PROGRAMS STORED AS TREELIKE GRAPHS EMPLOYING VARIABLE-FREE APPLICATIVE LANGUAGE CODES

Brent C. Bolton, Austin, Tex.; Carl F. Hagenmaier, Jr., Pittstown, N.J.; Gary L. Logsdon, Round Rock, and Robert L. Miner, Jr., Austin, both of Tex., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 7, 1981, Ser. No. 281,064
Int. Cl.³ G06F 7/00
U.S. Cl. 364—200 12 Claims



1. A reduction processing system for executing programs stored as treelike graphs employing a variable-free applicative language code, said system comprising:

random access storage means for storing said code in the form of two-cell nodes representing different ones of said graphs, one of said cells in some of each nodes containing a storage address of another node, another of said cells in some of each nodes containing code representing a functional variable and another of said cells in some of each nodes containing a variable-free operator code specifying a function substitution; and

processor means including retrieving means coupled to said random access storage means to retrieve said two-cell nodes for reduction thereof and substitution means to produce a result through execution of one or more steps of a series of said function substitutions.

4,447,876

EMULATOR CONTROL SEQUENCER

Wayne A. Moore, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

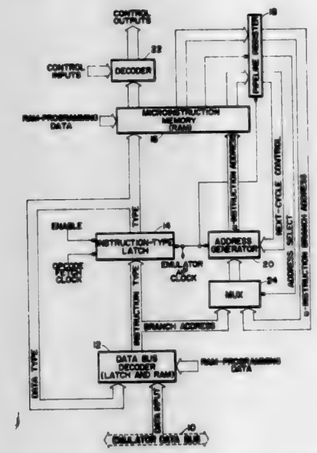
Filed Jul. 30, 1981, Ser. No. 288,255
Int. Cl.³ G06F 9/44, 5/00
U.S. Cl. 364—200 9 Claims

1. An emulator control sequencer for monitoring an emulator processor data bus, decoding instructions predictive of emulator processor behavior passing thereover from a system processor to said emulator processor, and generating control signals for said emulator processor, comprising:

first decoding means for decoding bytes of instruction data occuring on said data bus to provide instruction-type data words;

a state machine comprising storage means containing a set of instructions in addressable storage locations therein and being responsive to said instruction-type data words to execute said instructions and produce a plurality of control data thereby, and address generator means responsive to at least a portion of said plurality of control data for addressing storage locations of said storage means in a predetermined sequence determinable by said instruction-type data words, said state machine receiving an emulator processor clock signal and operating in synchromism therewith; and

second decoding means for decoding at least a portion of said plurality of control data thereby to produce said



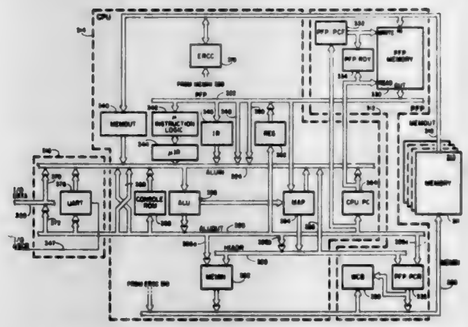
control signals in response to emulator processor status signals.

4,447,877

MEMORY BUS INTERFACE SYSTEM

David Grondalski, Hopkinton, Mass., assignor to Data General Corporation, Westboro, Mass.

Division of Ser. No. 959,038, Nov. 8, 1978, Pat. No. 4,316,244. This application Aug. 6, 1981, Ser. No. 290,285
Int. Cl.³ G06F 3/06, 13/00
U.S. Cl. 364—200 7 Claims



1. A digital data bus system useful in a digital computer system including memory means for storing said data and providing said data at a first predetermined time interval after responding to a first memory input signal, said data bus system comprising:

memory input bus means connected to said memory means for conducting said first memory input signal to said memory means;

memory output bus means connected from said memory means for conducting said data provided by said memory means; and

memory bus interface means comprising

generating means connected to said memory input bus means for generating said first memory input signal,

timing means responsive to operation of said generating means for measuring said first predetermined time interval beginning when said generating means has generated said first memory input signal, and

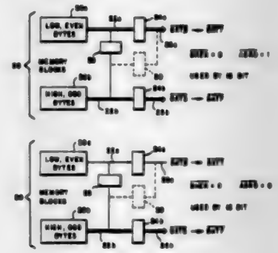
data receiving means connected from said memory output bus means and responsive to operation of said timing means for receiving said data when said timing means indicates passage of said first predetermined time interval.

4,447,878

APPARATUS AND METHOD FOR PROVIDING BYTE AND WORD COMPATIBLE INFORMATION TRANSFERS

D. Craig Kinnie, San Jose, and Richard W. Boberg, Los Gatos, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 910,103, May 30, 1978, abandoned. This application Aug. 10, 1981, Ser. No. 291,450
Int. Cl.³ G06F 13/00, 7/00
U.S. Cl. 364—200 10 Claims



1. A circuit for bidirectionally and selectively transferring digital information between at least a first and second bus comprising:

a first means for bidirectionally, and selectively transferring a first portion of said digital information between a first portion of said first and second buses, said first means coupled to said first portion of said first and second buses;

second means for bidirectionally and selectively transferring a second portion of said digital information between a second portion of said first and second buses, said second means coupled to said second portion of said first and second buses; and

swap means for bidirectionally and selectively transferring said second portion of said digital information between said first portion of said second bus and said second portion of said first bus, said swap means coupled between said second portion of said first bus and said first portion of said second bus.

4,447,879

IMPROVED APPARATUS FOR REPRESENTING THE SIZE OF AN ELEMENT IN A COMPOUND DATA ITEM AND DERIVING ADDRESSES AND LENGTHS USING THE ELEMENT SIZE

Anthony S. Fong, Southboro, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed Sep. 11, 1981, Ser. No. 302,263
Int. Cl.³ G06F 9/36
U.S. Cl. 364—200 3 Claims

1. In an improved digital computer system including

(A) memory means for performing memory operations including storing and providing items of data including instructions in response to memory commands, each one of said memory commands specifying one said memory operation and an address of one of said items of data in said memory means, and

(B) Processor means connected to said memory means for providing said memory commands in response to said instructions,

and wherein

said items further include

compound items, each one of said compound items including a plurality of element items, each of said element items in said one compound item having a single size,

index items for selecting said element items in said compound items,

table names representing said compound items, each said table name being associated with a name table entry of said items, said name table entry including

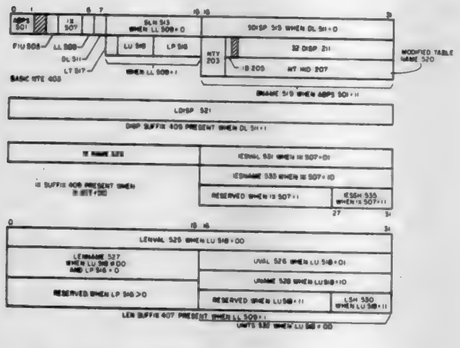
a compound item address specifier specifying said address of said represented compound item,

an index item specifier specifying said address of one of said index items and

an element size specifier specifying said single size,

said instructions contain said table names, and

said processor means includes name processing means responsive to said table names for producing said address of said compound item using said compound item address specifier, producing said address of said index item using



said index item specifier, fetching said index item into said processor means, using said index item and said element size specifier to produce a displacement of said element selected by said index item from said address of said compound item, and adding said displacement to said address of said compound item to produce said address of said element selected by said index item,

the improvements comprising:

(1) an improved said element size specifier in said name table entries associated with said table names representing said compound items having said elements whose said element size is an integer power of two, said element size in said improved element size specifier being specified by means of an integer specifying the exponent of said power of two; and

(2) means in said name processing means responsive to said improved element size specifier for producing said displacement by shifting said index item to the left the number of times specified by said integer in said improved element size specifier.

4,447,880

SYSTEM FOR DETECTING THE TRANSIENT STATE OF ENGINE OPERATION

Yoshiaki Kasai, Kiyose, and Masaaki Ohgami, Musashino, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Jan. 9, 1981, Ser. No. 223,677

Claims priority, application Japan, Jan. 16, 1980, 55-3176

Int. Cl.³ F02P 5/04; G06F 15/20

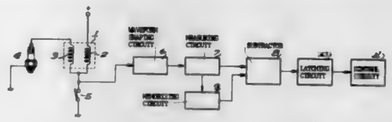
U.S. Cl. 364—431.05 **5 Claims**

1. A system for detecting a transient state of engine operation of an internal combustion engine having a spark ignition system and an air-fuel ratio control system, comprising

a waveform shaping circuit means for producing an output pulse train dependent on an ignition pulse train of said spark ignition system,

a measuring circuit means for measuring each pulse separation of said output pulse train and for producing a corresponding data output and for producing timing pulses for synchronizing operations of component circuits of the system,

a memorizing circuit means, including circuit means for producing a mean value of at least two sequential of most



recent old said data outputs, for memorizing said mean value of said old data outputs, and

a subtractor means for producing a subtraction output dependent on a difference between said mean value of said old data outputs from said memorizing circuit means and a new said data output from said measuring circuit means thereby detecting the transient state and operatively connected to the air-fuel ratio control system to supply the subtraction output to the air-fuel ratio control system for the control thereof.

4,447,881

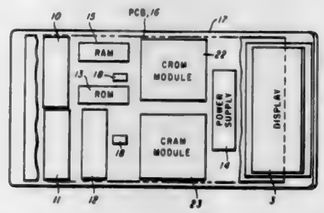
DATA PROCESSING SYSTEM INTEGRATED CIRCUIT HAVING MODULAR MEMORY ADD-ON CAPACITY

George L. Braatingham, Lubbock; Perry W. Lou, Houston; Lawrence J. Housey, Richardson; Graham S. Tubbs, and Jeffrey R. Teza, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1980, Ser. No. 154,335

Int. Cl.³ G06F 15/46

U.S. Cl. 364—488 **3 Claims**



1. A method of designing a modular data processing system integrated circuit chip having four sides and including a standard circuit having an arithmetic logic unit, program counter, memory pointers and a permanent section of read/write (RAM) and read only (ROM) memory electrically interconnected by first interconnect means, comprising the steps of:

positioning additional ROM and RAM memory circuitry on said chip to supplement the memory requirements of said data processing system, said memory circuitry having a segmented, modular geometry, and

producing second interconnect means to electrically interconnect the additional ROM and RAM memory circuitry with said standard circuitry without disturbing the electrical operation of said standard circuit.

4,447,882

METHOD AND APPARATUS FOR REDUCING GRAPHIC PATTERNS

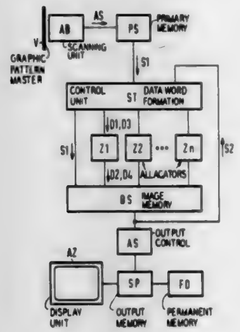
Joachim Walz, Köngen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 285,434

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036711

Int. Cl.³ G06F 3/14; G06K 9/00

U.S. Cl. 364—521 **17 Claims**



1. A method for reducing graphic patterns which are represented by binary characters in rows and columns of a prescribed grid, comprising the steps of:

(a) for each row, combining a plurality m of successive binary characters of a row into a first data word D1;

(b) for each first data word D1, forming a second data word D2 having n binary characters, with the number n being less than the number m and the binary value distribution of the second data word DZ being as similar as possible to the binary value distribution of the first data word D1;

(c) storing the second data words D2;

(d) for each column represented by the stored second data words D2, forming a third data word D3 by combining a plurality k of successive binary characters;

(e) for each third data word D3, forming a fourth data word D4 having l binary characters with the number l being less then the number k and the binary value distribution of the fourth data word D4 being as similar as possible to the binary value distribution of the third data word D3;

(f) storing the data words D4, which now represent a reduction of the original graphic pattern in the same prescribed grid; and

(g) applying the data words D4 to a utilization device.

4,447,883

COINCIDENCE-ERROR CORRECTING APPARATUS AND METHOD

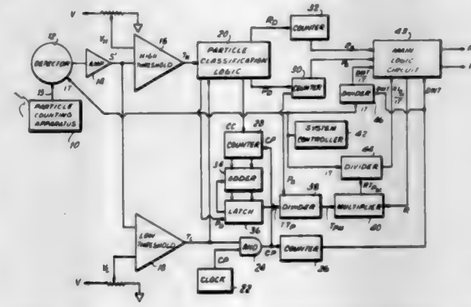
Gregory A. Farrell, Teaneck, N.J., and Edward A. Epstein, Putnam Valley, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed May 26, 1981, Ser. No. 266,879

Int. Cl.³ G01N 27/00

U.S. Cl. 364—555 **9 Claims**

6. In apparatus for the correction of coincidence errors which occur in the detecting and counting of mixed dominant and dominated particles wherein the detectable characteristics of the dominant particles are operable, under coincident dominant-dominated particle detection conditions, to render said dominated particles undetectable, the improvements comprising, means to generate first signals corresponding to the detection of said dominant particles, means to count said first signals corresponding to said dominant particles, means to generate second signals corresponding to the detection of said dominated particles, means to count said second signals corresponding to said dominated particles, means to generate correction signals corresponding to the cumulative time duration for the detection of those of said dominated particles which are detected and counted, and means for correcting the count of said dominated particles in accordance with the cumulative time duration of said correction signals.



4,447,884

GRAPHIC DISPLAY IN AN ELECTRONIC THERMOMETER

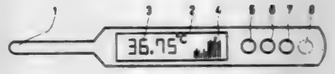
Yoshihiro Wada, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 24, 1981, Ser. No. 334,363

Claims priority, application Japan, Dec. 27, 1980, 55-185250

Int. Cl.³ G01K 1/08, 7/20

U.S. Cl. 364—557 **5 Claims**



1. An electronic thermometer comprising:

temperature sensing means for detecting the body temperature and developing a data signal representing the body temperature;

memory means for storing a said data signal for each of at least five days;

graphic display means for displaying body temperature variations in accordance with said data signals stored in said memory means;

control means for interconnecting said temperature sensing means, said memory means and said graphic display means;

measurement start key means in said control means said detecting operation of the body temperature through the use of said temperature sensing means;

memory key means in said control means for instructing a memorizing operation of said data signal into said memory means;

display key means in said control means for activating said graphic display means to display a temperature corresponding to said data signal;

time period counting means in said control means responsive to actuation of said measurement start key means for counting a time period starting from such actuation;

said control means disabling said temperature sensing means when the time period counted by said time period counting means reaches a predetermined value; and

interruption means responsive to said memory key means and said time period counting means for disabling said temperature sensing means when said memory key means is actuated before said predetermined value is counted by said time period counting means;

said memory means comprising:

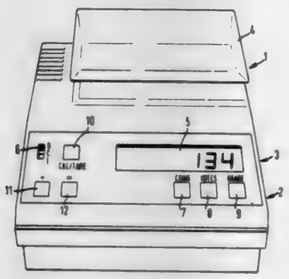
a first memory section for storing the data signal which represents the body temperature of the present day;
a second memory section for storing the data signal which represents the body temperature of one day ago;
a third memory section for storing the data signal which represents the body temperature of two days ago;
a fourth memory section for storing the data signal which represents the body temperature of three days ago; and
a fifth memory section for storing the data signal which represents the body temperature of four days ago.

4,447,885

APPARATUS AND METHOD FOR MEASURING THE NUMBER AND/OR VALUE OF AN UNKNOWN QUANTITY OF ARTICLES

Edgar L. Biss, London, England, assignor to Perkam Limited, Cardiff, Wales

Filed May 19, 1981, Ser. No. 265,326
Claims priority, application United Kingdom, May 20, 1980, 8016677; Nov. 11, 1980, 8036201
Int. Cl.³ G01G *19/42*
U.S. Cl. 364—568 **30 Claims**



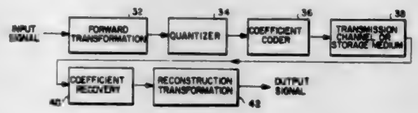
1. A method of measuring the number and/or value of an unknown quantity of articles by use of a weighing and processing apparatus comprising:
entering into the weighing and processing apparatus a record of an average weight factor related to an average unit weight of the articles to be measured;
weighing an unknown quantity of articles;
dividing the total weight of the weighed articles by the said average weight factor to give an actual quotient;
comparing the actual quotient with the nearest ideal quotient to determine whether the actual quotient differs from the nearest ideal quotient by more or less than a predetermined deviation;
as a result of the outcome of the comparison step, carrying out at least one of the following steps, namely
if the actual quotient differs from the nearest ideal quotient by less than a predetermined deviation, the step of indicating the number and/or value of the quantity of articles weighed by means of a signal derived from the said nearest ideal quotient, and
if the actual quotient differs from the nearest ideal quotient by more than the predetermined deviation, the step of indicating a warning that a reliable number and/or value of the quantity of articles weighed cannot be given;
storing in the weighing and processing apparatus information relating to the said unknown quantity of articles,
adding to the said unknown quantity of articles a further unknown quantity of articles, and
repeating in respect of the combined unknown quantities of articles the weighing, dividing, comparing and indicating steps set out above to provide a new actual quotient, but adjusting the items concerned in the comparison step so as to remove from the deviation of the new actual quotient from its nearest ideal quotient the effect of the previous deviation of the first mentioned actual quotient from its nearest ideal quotient.

4,447,886

TRIANGLE AND PYRAMID SIGNAL TRANSFORMS AND APPARATUS

G. William Meeker, 310 Bonifant Rd., Silver Spring, Md. 20904

Filed Jul. 31, 1981, Ser. No. 288,936
Int. Cl.³ G06F *15/332*
U.S. Cl. 364—725 **57 Claims**



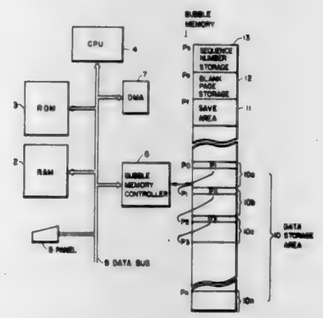
1. A transform method for operating on a one-dimensional set of input data points to provide output terms and coefficients in a transform domain organized into one or more bands, N, where N is an integer greater than zero, Band N is the highest band, and Band 1 is the lowest band, said transform method comprising:
generating and outputting at least one term for Band 1 as a B function defined as a triangularly-weighted average of the values of $2^{N+1}-1$ consecutive input data points;
generating and outputting coefficients for each band as predetermined functions defined as weighted averages of selected consecutive pluralities of input data points, the number of input data points contributing to each coefficient being the least for Band N, and the number of input data points contributing to each coefficient increasing by powers of two for each successive band below Band N, and the predetermined functions being selected so as to enable reconstruction of the values of the input data points from the B-function term for Band 1 and the coefficients for Bands N through 1.

4,447,887

METHOD OF REWRITING DATA IN NON-VOLATILE MEMORY, AND SYSTEM THEREFOR

Ryoji Imazeki, Hachioji, and Michiya Inoue, Hino, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,037
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—900 **2 Claims**



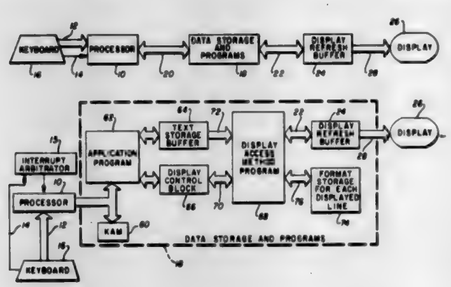
1. A data rewrite system, operatively connected to received external modification data, for a non-volatile bubble memory having a bubble memory data storage area for storing first data and a bubble memory save area, and including a predetermined pattern, for writing second data in place of the first data stored in the data storage area, the system comprising:
a memory controller, operatively connected to the non-volatile bubble memory, for performing read and write operations in the non-volatile bubble memory;
a volatile memory, operatively connected to said non-volatile bubble memory, for storing the first data which is read from said non-volatile bubble memory and the second data which is written into said non-volatile bubble memory;
control means, operatively connected to said memory controller, for controlling said memory controller so as to written the first data into the bubble memory save area and erase the second data in the bubble memory data storage area, after a power interruption, said control means comprising:
a direct memory access controller, operatively connected to said memory controller and said volatile memory, for controlling the first and second data transfer between said memory controller and said volatile memory by reading the first data from the bubble memory data storage area, transferring the first data to said volatile memory and writing the first data in said volatile memory into said bubble memory save area;
a processor, operatively connected to said direct access controller and operatively connected to receive the external modification data, for controlling said direct memory access controller by determining whether the first data in the bubble memory data storage area corresponds to the predetermined pattern and if so, the first data is written into the bubble memory save area, and for forming and storing the second data in said volatile memory to be written into the bubble memory data storage area in dependence upon the external modification data.

4,447,888

MIXED PITCH DISPLAY

Ward A. Kuecker, Round Rock; Susan D. Stratton, and William C. Cason, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,297
Int. Cl.³ G06F *15/02, 3/14*
U.S. Cl. 364—900 **18 Claims**



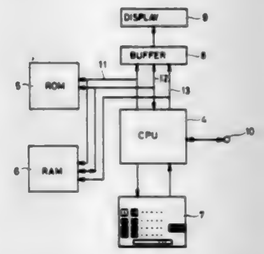
1. Apparatus for indicating how a mixed pitch presentation of characters will appear on an output device capable of outputting mixed pitch characters, utilizing a display which displays fixed pitch characters, comprising:
means for storing a mixed pitch unformatted data stream to be presented on the display, the data stream containing graphic characters and pitch data for each character,
means for calculating in accordance with said pitch data the starting address for the left margin of each text line to be presented with respect to a fixed reference on said display,
means for building a scale data stream representing a scale line on the display from the pitch data to provide a presentation of the pitch of characters to a user,
means for building a text data stream representing a text presentation on the display from the graphic character data,
a refresh buffer receiving both the scale data stream and the text data stream for generating an output of text lines on said display, said text lines having fixed size characters, and
means responsive to movement of a cursor through said lines of text for updating the scale data stream from the pitch data for a cursored text line.

4,447,889

METHOD FOR CONTROLLING DISPLAY OF OUTPUT OF A PROGRAMMABLE DEVICE

Isamu Haneda, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 30, 1981, Ser. No. 279,197
Claims priority, application Japan, Jun. 30, 1980, 55-89774
Int. Cl.³ G06F *3/12, 3/14*
U.S. Cl. 364—900 **4 Claims**



1. A programmable electronic device comprising:
storing means for storing program instructions;
executing means connected to said storing means for executing said program instructions for processing data and;
output means connected to said executing means for outputting program instructions and data processed by said device;
said output means comprising electronic display means, and printing means selectively connectable to said device;
said output means further comprising first means for determining if said printing means is connected to said device; and
second means responsive to said first means for actuating said printing means for outputting data and for permitting said executing means to execute program instructions following said outputting when said printing means is connected to said device, and for actuating said electronic display means and for interrupting operation of said executing means when said printer means is not connected to said device.

4,447,890

REMOTE POSTAGE METER SYSTEMS HAVING VARIABLE USER AUTHORIZATION CODE

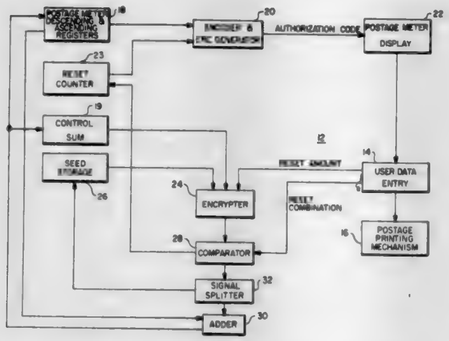
Edward C. Duwel, Trumbull, and Howell A. Jones, Jr., Fairfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 168,932, Jul. 14, 1980. This application Mar. 21, 1983, Ser. No. 476,972
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **14 Claims**

1. A postage meter of the type having printing means for printing postage, and register means for accounting for postage, said register means of the type adapted to be funded with additional postage, and data entry means for entering data into said meter of a selected, variable amount of postage in preparation for funding said register means with that amount and of an externally generated combinations, the improvement comprising:
Means for generating a unique combination which varies as

a function of said selected, variable postage amount entered by said data entry means;

Means coupled to said combination generating means and said data entry means for comparing combinations generated by said combination generating means and externally generated combinations entered by said data entry means, to determine if a predetermined relationship exists between said combination generated by said combination generating means and said externally generated combination entered by said data entry means;



Means coupled to said comparing means for funding said register means with said selected, variable postage amount when said comparing means indicates the existence of said predetermined relationship between said combination generated by said combination generating means and said externally generated combination entered by said data entry means; and

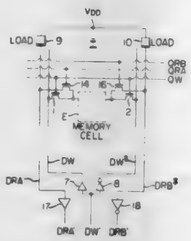
Means coupled to said comparing means for generating an authorization code, each authorization code generated by said authorization code generating means being a function of the number of times said register means have been funded with additional postage.

4,447,891

SIMULTANEOUS READ-WRITE IGFET MEMORY CELL

Hiroshi Kadota, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 23, 1981, Ser. No. 304,942
Claims priority, application Japan, Sep. 26, 1980, 55-134897
Int. Cl.³ G11C *7/00, 11/40*
U.S. Cl. 365—154 **2 Claims**



1. A circuit for a unit cell of a random-access memory coupled to first and second complementary write-only data lines, a read-only data line, a write-only address line and a read-only address line, comprising:

a bistable circuit comprising two cross-coupled insulated-gate field-effect transistors, said bistable circuit having first and second complementary input/output nodes;

write data line switching means comprising first and second insulated-gate field-effect transistors,

said first transistor having main electrodes connected between said first input/output node and said first write-only data line, and a gate electrode connected to said write-only address line,

said second transistor having main electrodes connected between said second input/output node and said second write-only data line, and a gate electrode connected to said write-only address line;

a driver circuit for supplying write data to said write-only data lines;

a load means and a detector circuit connected to said read-only data line;

means for maintaining said read-only data line at a potential higher than a threshold potential below which data can be stored in said bistable circuit, so that data cannot be written into said unit cell via said read-only data line;

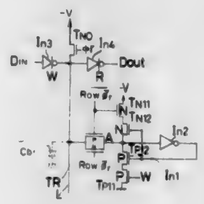
read data line switching means comprising a third insulated-gate field-effect transistor having main electrodes connected between said first input/output node and said read-only data line, and a gate electrode connected to said read-only address line.

4,447,892

PRE-CHARGE FOR THE BIT LINES OF A RANDOM ACCESS MEMORY

Mitsuo Zibu, Ueno, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 234,840, Feb. 13, 1981, abandoned.
This application Jul. 22, 1983, Ser. No. 516,195
Claims priority, application Japan, Feb. 13, 1980, 55-17068
Int. Cl.³ G11C *7/00, 11/34*
U.S. Cl. 365—156 **3 Claims**



1. A random access memory using complementary field effect devices and including an array of a plurality of storing locations, address signal lines for addressing said plurality of storing locations, a data signal line commonly coupled to said plurality of storing locations for inputting or outputting a data signal, each said location having a storing cell comprising:

first and second inverters cross connected to each other constructed of complementary field effect devices and having an input/output node;

first field effect switching means connected in series with said complementary field effect devices of said first inverter means for inhibiting selection of said storing cell upon receipt of a write signal during a write operation mode;

transmission gate means connected between said input/output node of said storing cell and said data signal line for enabling interconnection therebetween in response to receipt of a selection signal on said address line, said transmission gate means including two complementary parallel connected field effect switching devices, each individually responsive to a complementary state of the signal on said address line;

second field effect switching means serially connected to said complementary field effect devices of said first inverter means opposite said first field effect switching means for inhibiting application of bias power to said first inverter means upon receipt of said selection signal applied to a control terminal of said second field effect switching means;

write inverter means for presenting data to said storing cell during the write mode;

read inverter means for directing data from said storing cell during said read mode; and

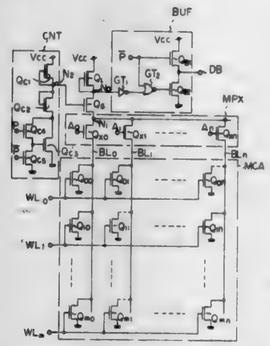
pre-charge switch means connected to said data signal line for receiving pre-charge signals for pre-charging said data signal line prior to a reading operation mode of said random access mamory.

4,447,893

SEMICONDUCTOR READ ONLY MEMORY DEVICE

Jyoji Murakami, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 27, 1981, Ser. No. 287,130
Claims priority, application Japan, Jul. 31, 1980, 55-105882
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—203 **4 Claims**



1. A semiconductor read only memory device operatively connectable to receive a clock signal, connected to a voltage source and having a preparation period and a reading period, comprising:

a plurality of bit lines;

a plurality of word lines;

a load transistor electrically connected to the voltage source;

a multiplexer including a plurality of transistors each of which is elelctrically connected to one of said plurality of bit lines;

a memory cell array in which each memory cell has one transistor having a gate electrically connected to one of said plurality of word lines and a source or a drain electrically connected to one of said plurality of bit lines;

a gate transistor connected between said load transistor and said multiplexer; and

gate voltage control means, connected to said gate transistor and operatively connectable to receive the clock signal which indicates whether the memory device is in the preparation period or the reading period, for selectively providing, to the gate of said gate transistor, a first level signal during the preparation period and a second level signal during the reading period.

4,447,894

SEMICONDUCTOR MEMORY DEVICE

Yoichi Imamura, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,621
Claims priority, application Japan, Dec. 29, 1980, 55-188141
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—219 **11 Claims**

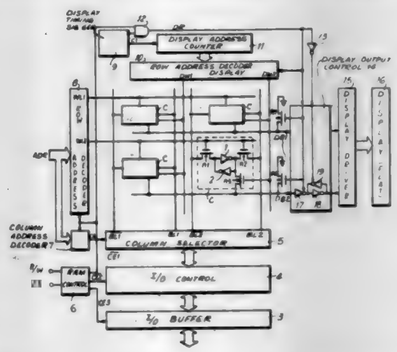
1. A semiconductor memory device having a memory cell comprising:

first and second word selecting lines, said word selecting lines being independent of each other;

first and second gated transistors having gates commonly driven by said first word selecting line;

a bi-stable memory element connected between said first and second transistors;

first, second and third bit lines, said first and second bit lines transmitting mutually inverse data bits for input to said bi-stable memory element through the source/drain terminals of said first and second transistors respectively when



said first word selecting line drives said first and second transistor gates;

a third gated transistor for selectively connecting an output terminal of said bi-stable memory element to said third bit line, said third transistor being selected for outputting data from said bi-stable memory element when driven by said second word selecting line,

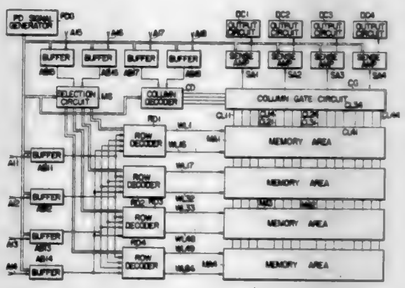
an address selected by said second word selecting line for output of data from said bi-stable memory means being independent of an address selected for input of data to said bi-stable memory element by said first word selecting line.

4,447,895

SEMICONDUCTOR MEMORY DEVICE

Masamichi Asano, Tokyo, and Hiroshi Iwahashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 30, 1980, Ser. No. 192,203
Claims priority, application Japan, Oct. 4, 1979, 54-128392; Nov. 5, 1979, 54-143104
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—226 **5 Claims**



1. An address designation circuit responsive to externally-generated address signals comprising:

a plurality of first decoding circuits coupled to said address signals;

a plurality of second decoding circuits coupled to said address signals;

a plurality of buffer circuits each having a power receiving path and including a plurality of buffers which have first and second input terminals, said first input terminals of all said buffers in each buffer circuit being connected to a different one of said plurality of said first decoding circuits and said second input terminals being connected to said plurality of second decoding circuits; and

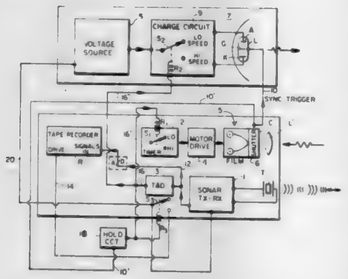
power-down means connected to said power receiving paths of said plurality of buffer circuits for selectively interrupting said power receiving paths.

4,447,896

METHOD OF AND APPARATUS FOR COMBINED OPTICAL AND SONAR DETECTION AND RECORDING OF OBJECTS

Robert H. Rines, Concord, N.H., assignor to The Academy of Applied Science, Inc., Belmont, Mass.

Filed Jun. 26, 1981, Ser. No. 277,655
Int. Cl.³ G01S *15/88, 7/60*
U.S. Cl. 367—96 **29 Claims**



1. A method of combined optical and acoustical recording, that comprises, repetitively activating an optical device and thereby periodically optically monitoring an underwater sector and recording the scenes therein at the times of said monitoring; acoustically monitoring said sector at least at said times and recording the monitored acoustical information in said sector; analyzing the acoustical information to determine if and when a predetermined acoustical pattern has been monitored; and, upon detecting the advent of such monitored predetermined pattern, changing the periodicity of said activating for so long as said acoustical pattern continues to be monitored.

4,447,897

PRE-ASSEMBLED TWO-STAGE REACTION DEVICE FOR VACUUM BRAKE BOOSTERS

Peter Boehm, Frankfurt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 21, 1982, Ser. No. 380,504
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135286
Int. Cl.³ F15G *9/10*
U.S. Cl. 91—369 B **20 Claims**

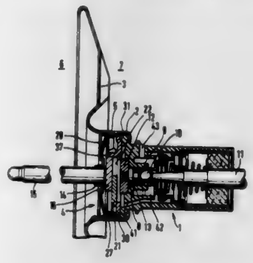
1. A two-stage reaction device for insertion into a vacuum brake booster including a movable wall separating a vacuum chamber in which a constant pressure prevails and a working chamber in which different pressures prevail, a brake pedal actuatable control valve controlling a differential of pressure acting on said movable wall and a master cylinder actuating push rod in an actuating relationship with said movable wall, said reaction device comprising:

a pair of reaction levers each aligned to be coupled to said movable wall on a first location thereof and in engagement with a reaction plate connected to said push rod at a second location thereon, said first location being disposed radially farther out than said second location;

a cup spring acting on each of said pair of reaction levers at a third location thereon having a greater radius than said first location, said cup spring being disposed on a side of said pair of reaction levers adjacent said vacuum chamber;

a spring plate disposed between said cup spring and said pair of reaction levers, said spring plate having a circumferential collar provided with supporting surfaces for said pair of reaction levers; and

a supporting ring having two inward supporting edges each abutting a different one of said pair of reaction levers on a surface thereof remote from said reaction plate, inner ends of said pair of reaction levers being tiltable about said two supporting edges in a direction of said control valve, wherein said pair of reaction levers, said push rod with said reaction plate, said spring plate and said cup spring are retained in an assembly by said supporting ring disposed on one side thereof and a circular guide element disposed on the other side thereof and connected to said supporting ring.

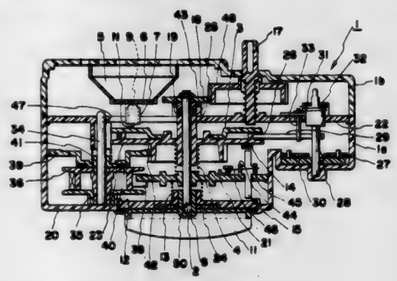


4,447,898

SIMPLIFIED SOUND REPRODUCING DEVICE DRIVEN BY A SPRING MOTOR

Eishi Koike, Sagamikara, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,612
Claims priority, application Japan, Nov. 30, 1981, 56-192393
Int. Cl.³ G11B *27/10, 3/78*
U.S. Cl. 369—65 **6 Claims**



1. A sound reproducing device comprising:

a casing;

a center pin mounted upright within the casing;

a record disc having a recorded face thereon with starting and end points of reproduction;

a turntable supported on and axially movable between advanced and retracted positions on the center shaft, the turntable carrying the record disc;

a speaker cone disposed within the casing;

a vibrating plate mounted on the bottom of the speaker cone;

a pickup mounted within the casing for lateral and vertical swinging movement between the vibrating plate and the record disc, the pickup having an upper face capable of slidingly contacting the vibrating plate;

a recording stylus mounted on the pickup and capable of engaging the recorded face of the record disc;

first means for biasing the turntable and the record disc toward the vibrating plate to impart stylus pressure to the reproducing stylus;

second means for biasing the pickup toward both the starting point of sound reproduction on the record disc and away from the recorded face of the record disc;

a winding knob supported on the center shaft and axially movable with respect to the center shaft, the winding knob being movable between winding and retracted directions;

a winding gear wheel capable of being coupled with the winding knob in the direction of winding of the winding knob and axially movable together with the winding knob along the center shaft;

third means for biasing the winding knob and the winding gear wheel toward the retracted direction;

a locking piece integrally formed on the turntable opposite from the side carrying the record disc;

a slippage preventing pole disposed between the winding gear wheel and the record disc and advanced by the winding gear wheel into engagement with the locking piece, the slippage preventing pole being retracted by pushing movement of the record disc when the record disc is in the retracted position and released from engagement with the locking piece when the record disc advances toward the reproducing stylus;

a starting post disposed parallel to the center shaft within the casing;

fourth means for normally biasing the starting post away from the record disc, the starting post being capable of moving the record disc to the retracted position when depressed;

transmission means disposed on top of the center shaft and rotatable with the record disc; and

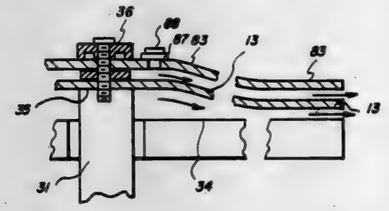
transmission follower means fixedly attached to the starting post and coupled to the transmission means to enable the starting post to function as a rotatable output shaft.

4,447,899

OPTICAL DISC METHOD, MEDIA AND APPARATUS FOR WRITING AND/OR READING INFORMATION

Frederick F. Geyer, Rochester, and Dennis G. Howe, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,769
Int. Cl.³ G11B *7/00, 25/04*
U.S. Cl. 369—111 **26 Claims**



1. A method of optically writing and/or reading high-density information, said method comprising:

(1) positioning an optical disc unit, including (i) a flexible record disc which is generally flat and of generally uniform thickness and (ii) a transparent, flexible, cover disc which: (a) is generally flat and generally uniform in thickness, (b) has a shape corresponding to said record disc and (c) has a central portion that is secured in a fixed, parallel and predeterminedly spaced relation with respect to a corresponding central portion of said record disc, with the planes of said central portions in planes substantially normal to an axis of rotation and with the outer portion of said record disc closely adjacent a highly smooth, featureless stabilizing reference surface that is axially symmetric to said axis of rotation and generally non-convex to said normal planes;

(2) maintaining said reference surface stationary and said central disc portions in said plane while rotating said disc about said axis at a high speed which flys said record disc outer portion in closely spaced opposing relation to said stabilizing reference surface and flys said cover disc outer portion in spaced relation to the opposing record disc outer portion;

(3) coupling a radially central region of: (i) the zone between said record disc and said stabilizing reference surface and (ii) the zone between the record disc and the cover disc, to gas sources of pressure not substantially exceeding the ambient pressure external of said zones; and

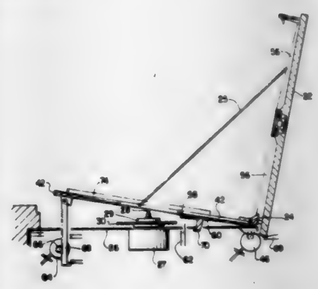
(4) directing a beam of light for writing and/or reading information on said disc through said rotating cover disc and into precise focus on said rotating record disc.

4,447,900

AUTOMATIC VIDEO DISC INVERTING MECHANISM

Etienne A. Schatteman, Wemmel, and Stephane M. A. d'Alayer de Costemore d'Arc, Ways, both of Belgium, assignors to Staar S, Brussels, Belgium

Filed Feb. 23, 1982, Ser. No. 351,410
Claims priority, application Belgium, Apr. 17, 1981, 888484; Nov. 16, 1981, 891132
Int. Cl.³ G11B *17/04, 1/00*
U.S. Cl. 369—200 **22 Claims**



1. In a video disc player apparatus having a base, means on the base for rotating a video disc, and a protective cover pivotally hinged on the base and forming therewith an enclosure for a video disc on said rotating means, and adapted to be opened and closed by pivotal movement to permit a disc to be inserted in or removed from said enclosure, the improvement comprising:

a device for automatically turning over a disc carried by said rotating means, said device including:

means associated with said cover for engaging and pivoting the disc about its bottom edge between substantially horizontal and vertical positions as an incident to pivotal movement of the cover;

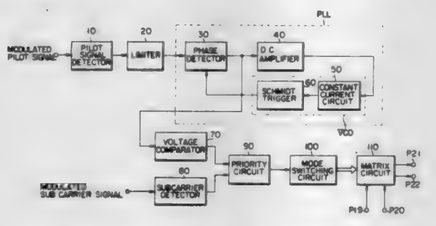
the turning over including a ninety degree phase in which the disc slides under its own weight between substantially vertical and horizontal positions while the bottom edge of the disc slides laterally and a ninety degree phase in which the disc pivots about said bottom edge between substantially horizontal and vertical positions; and

means for guiding both said bottom edge and the top edge of the disc during its sliding movement and for supporting the bottom edge of the disc for pivotal movement about an axis adjacent the pivotal axis of said cover.

4,447,901
MODE DISCRIMINATION CIRCUIT

Kozo Yoshihisa, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 26, 1982, Ser. No. 362,519
Claims priority, application Japan, Mar. 31, 1981, 56-48070
Int. Cl.³ H04J 1/06; H04H 5/00; H04M 1/32
U.S. Cl. 370—74 9 Claims



1. A mode discrimination circuit comprising:

means for detecting a pilot signal which is transmitted for discriminating a transmission mode of a composite transmission signal;

means for generating an oscillation signal having an oscillation frequency determined depending upon an input voltage;

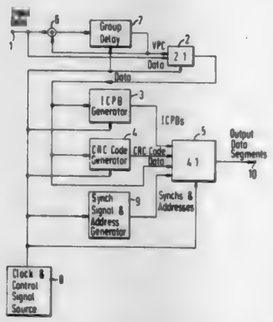
phase comparing means for comparing frequencies and phases of the oscillation signal from said generating means and the pilot signal from said detecting means so as to output a dc voltage signal proportional to a difference therebetween, the dc voltage being supplied to said generating means as the input voltage; and

voltage comparing means having at least two threshold voltages, thus defining at least three voltage ranges, for comparing the dc voltage output from said phase comparing means with the threshold voltages so as to detect within which voltage range the dc voltage falls, thereby discriminating the transmission mode.

4,447,902
ERROR-CORRECTION FORMAT FOR DIGITAL TELEVISION SIGNALS

James H. Wilkinson, Tadley, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1982, Ser. No. 359,996
Claims priority, application United Kingdom, Mar. 23, 1981, 8108998
Int. Cl.³ G06F 11/10
U.S. Cl. 371—39 10 Claims



1. A method of transmitting digital television signals comprising the steps of:

forming data words representing a digital television signal into successive data segments, each said data segment comprising a plurality of data blocks, each said data block comprising a plurality of data sub-blocks, and each said data sub-block comprising a plurality of said data words;

generating a respective first error correcting code for each said data sub-block for correcting at least one bit which may be in error in said data sub-block;

generating a respective error detecting code for each said data block for detecting whether said first error correcting code has corrected all errors in said respective data block;

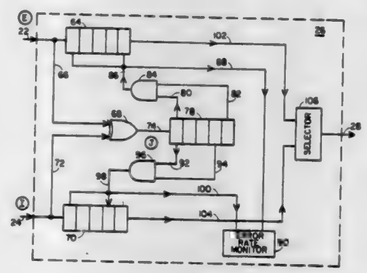
generating a respective second error correcting code for each said data segment for correcting at least one data word which may be in error in said data segment; and

combining said first and second error correcting codes and said error detecting code into said respective data segments for transmission of said digital television signal.

4,447,903
FORWARD ERROR CORRECTION USING CODING AND REDUNDANT TRANSMISSION

Ake N. Sewerinson, Port Coquitlam, Canada, assignor to AEL Microtel, Ltd., Burnaby, Canada

Filed May 22, 1981, Ser. No. 266,230
Int. Cl.³ G06F 11/00, 11/14
U.S. Cl. 371—68 15 Claims



1. In a digital data transmission system having a transmitting terminal, a receiving terminal, a transmission path connecting the two terminals, and a source of binary data at said transmitting terminal, apparatus for performing forward error correction, which comprises:

means for converting said binary data into redundant first and second binary pulse trains;

encoding means adapted to accept said first and second binary pulse trains for independently encoding said binary data in said first and second binary pulse trains to obtain first and second encoded binary pulse trains that provide different error propagation intervals in each encoded pulse train;

means, at said receiving terminal, for separately decoding said first and second encoded binary pulse trains to obtain third and fourth binary pulse trains, each of which contains the original binary data absent the effect of path error introduction in said transmission path;

means for comparing bit occurrences in said third and fourth decoded binary pulse trains to determine if an error has occurred;

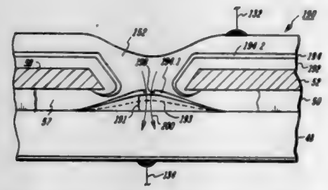
means responsive to a detected error and to subsequently detected errors occurring at said error propagation intervals to determine in which said data channel said path error occurred; and

means for correcting the bits in the decoded pulse train in which said errors have occurred.

4,447,904
SEMICONDUCTOR DEVICES WITH NONPLANAR CHARACTERISTICS PRODUCED IN CHEMICAL VAPOR DEPOSITION

Robert D. Burnham, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 231,556, Feb. 4, 1981. This application Dec. 6, 1982, Ser. No. 446,893
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 37 Claims

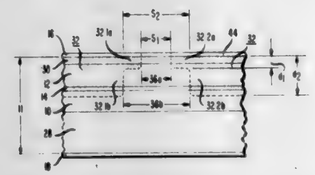


1. In a semiconductor device comprising a plurality of contiguous layers of semiconductor materials deposited on a semiconductor structure, masking means provided during the deposition of at least one of said layers by means of pyrolyzation of vapor mixtures of said semiconductor materials through an aperture in said mask, said at least one of said layers characterized by having a predetermined lateral spatial thickness variation, said lateral spatial thickness variation predetermined in part by the dimensional size and thickness of said mask aperture, the thickest region of said lateral spatial thickness variation being central of said mask aperture.

4,447,905
CURRENT CONFINEMENT IN SEMICONDUCTOR LIGHT EMITTING DEVICES

Richard W. Dixon, Bernardsville; Louis A. Koszi, Scotch Plains; Richard C. Miller, Summit, and Bertram Schwartz, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1981, Ser. No. 247,523
Int. Cl.³ H01S 3/19
U.S. Cl. 372—46 13 Claims



1. In a semiconductor light emitting device, a semiconductor body comprising

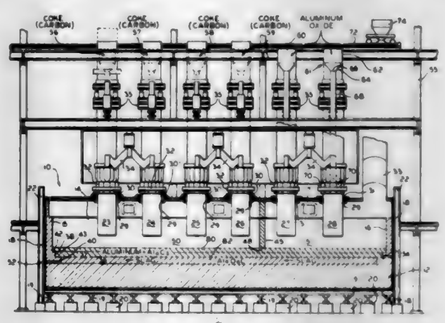
an active region in which optical radiation is generated when current flows therethrough, and

means within said body for constraining said current to flow from a surface of said body in a channel through said active region, said channel being narrow near said surface and wider near said active region.

4,447,906
ARC FURNACE FOR PRODUCING ALUMINUM

John A. Persson, Gibsonia, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Division of Ser. No. 230,629, Feb. 2, 1981, Pat. No. 4,385,930. This application Jul. 6, 1982, Ser. No. 395,807
Int. Cl.³ H05B 3/42
U.S. Cl. 373—72 3 Claims



1. An electric arc furnace having a hearth, side and end walls and a roof to define a furnace chamber,

said roof having a plurality of spaced apart apertures,

a plurality of electrodes, one of said electrodes extending through each aperture,

a partition in said furnace, said partition extending downwardly from said roof and between said side walls to divide said furnace into first and second zones,

the lower end of said partition being spaced above said hearth and said hearth being unobstructed between said end walls to permit molten material and slag having different densities to flow at all levels in the gap between said partition and said hearth and between said zones but preventing the passage of gaseous products between said zones,

first and second groups of said plurality of electrodes extending into each zone,

a first tap hole extending through one of said side walls and at a first elevation above said hearth but below the level of said partition and a second tap hole extending through the other of said side walls and between the level of said first tap hole and said partition whereby different molten materials may be removed through each tap hole,

the hearth in said first zone consisting primarily of a carbonaceous refractory material and the hearth in said second zone consisting primarily of an aluminum oxide refractory.

4,447,907
MULTIPLE MIXER SPREAD SPECTRUM MODULATION AND METHOD THEREFOR

John E. Bjornholt; Richard G. Foster, both of Mesa, and Edward J. Groth, Jr., Scottsdale, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jan. 11, 1982, Ser. No. 338,782
Int. Cl.³ H04B 15/00
U.S. Cl. 375—1 6 Claims

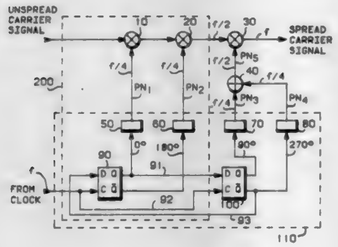
6. A method of modulating an unspread signal to obtain a spread spectrum signal comprising the steps of;

providing a plurality of phased coded signals;

serially modulating said unspread signal with a first portion of said plurality of coded signals creating a partially unspread signal;

combining a subsequent portion of said plurality of coded

signals through a sequence of logic gates creating a resulting coded signal; and



serially modulating said partially unspread signal with said resulting coded signals.

4,447,908

METHOD OF TRANSMITTING BINARY DATA SEQUENCES AND ARRANGEMENT FOR ENABLING THE RAPID DETERMINATION OF THE END OF A TRANSMITTED BINARY DATA SEQUENCE

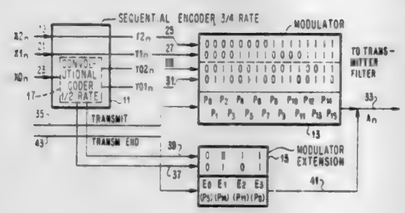
Pierre R. Chevillat, Adliswil, and Gottfried Ungerboeck, Langnau, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1981, Ser. No. 327,006

Claims priority, application European Pat. Off., Dec. 23, 1980, 80 108 156.3

Int. Cl.³ H04L *27/18*

U.S. Cl. 375—42 **4 Claims**



1. A method of transmitting input binary data sequences in the form of transmission symbols represented by modulation states of a carrier signal at discrete sampling times, said method comprising the steps of

encoding said input binary data sequence in a sequential encoder (**11**) having n integral number internal states and furnishing an encoded bit group at each sampling time, reflecting the input data and the internal state at said sampling time,

transmitting in response to each encoded bit group one associated transmission symbol from a given set of transmission symbol (**P0...P15**) which is subdivided into disjoint subsets, the subset of which the transmitted symbol is a member being associated to said internal encoder state and ending said transmission by,

transmitting one escape symbol from a set of escape symbols (**E0...E3**) which is a further subset of the set of transmission symbols, comprising selected transmission symbols of said disjoint subsets, the transmitted escape symbol being dependent on the internal encoder state but being not a member of any of the transmission symbol subsets usually associated with said internal encoder state, and

transmitting an unmodulated carrier or no carrier signal at all after said escape symbol is transmitted.

4,447,909

CIRCUIT FOR RAPID RECOGNITION OF FSK SIGNALS IN A RADIO CHANNEL

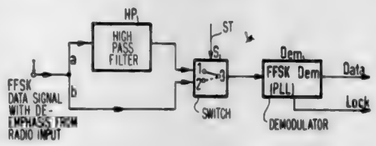
Hans Hjorring, Sfrömmen, Norway, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 379,129

Claims priority, application Fed. Rep. of Germany, May 25, 1981, 3120761

Int. Cl.³ H03K *9/06*

U.S. Cl. 375—88 **1 Claim**



1. A circuit arrangement for the rapid recognition of frequency shift keying signals in a radio channel given pre-emphasis and de-emphasis, comprising:

a fast frequency shift keying demodulator including an input, a data output and a lock output;

said demodulator including a phase locked loop circuit;

a circuit input for receiving the fast frequency keyed signals;

a first branch connected to circuit input and including a high-pass filter having a structure to provide a cutoff frequency which lies above the upper cutoff frequency of the audible channel, and a second branch connected to said circuit input; and

a switch including first and second inputs, and an output connected to said input of said fast frequency keying demodulator, said first input connected to said high-pass filter and said second input connected to said second branch for directly receiving said fast frequency shift keyed signals from said circuit input.

4,447,910

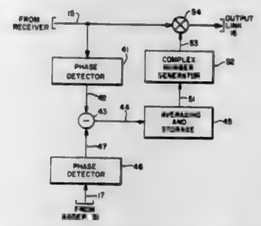
PHASE TRACKING CORRECTION SCHEME FOR HIGH FREQUENCY MODEM

Earl F. Smith, Melbourne, and Daniel D. McRae, West Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 2, 1981, Ser. No. 269,607

Int. Cl.³ H04M *3/18*

U.S. Cl. 375—99 **17 Claims**



1. For use in a data communications receiver apparatus in which signals that have been received from a dispersive channel are processed by simulating the effect of the dispersive channel on signals transmitted thereover and generating estimates of the originally transmitted signals in accordance with a preselected relationship between prescribed characteristics of the simulated effect of the dispersive channel and the received signals, an arrangement for compensating for the effect of rapid phase changes of said channel on the received signals comprising:

first means for measuring the average difference in phase between generated estimates of the received signals and actually received signals; and

second means for modifying the values of the actually received signals to be employed in generating estimates of the originally transmitted signals based upon said average difference in phase as measured by said first means.

DESIGN PATENTS

GRANTED MAY 8, 1984

ERRATA

For CLASS	See PATENT NO.
D28–064	273,808

273,719
SKI BOOT
Alessandro Pozzobon, Treviso, Italy, assignor to NORDICA S.p.A., Montebelluna, Italy
Filed May 4, 1981, Ser. No. 260,157
Claims priority, application Italy, Feb. 11, 1980, 20760B/80
Term of patent 14 years
U.S. Cl. D2—276



273,720
NECKTIE FASTENER
Warren O. Romberger, 904 NW. 59th St., Oklahoma City, Okla. 73118
Filed Feb. 18, 1982, Ser. No. 350,083
Term of patent 14 years
U.S. Cl. D2—401



273,721
FLOPPY DISK HOLDER
Peter A. Ronzani, Los Gatos, Calif., assignor to Quiet Designs, Inc., Santa Clara, Calif.
Filed Oct. 19, 1981, Ser. No. 312,638
Term of patent 14 years
U.S. Cl. D3—35



273,722
KEY RING
Attilio Brentini, c/o Lanas SA, chemin du Croset 9, 1024 Ecublens, Switzerland
Filed Sep. 2, 1981, Ser. No. 298,823
Claims priority, application Switzerland, Mar. 13, 1981, 111 653
Term of patent 14 years
U.S. Cl. D3—65



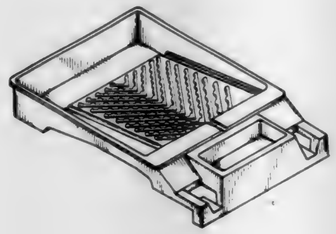
273,723
ELECTRIC TOOTHBRUSH HOLDER
Hiroshi Hukuba, Nagareyama, and Nobuji Nakamura, Chofu, both of Japan, assignors to Hiroshi Hukuba, Nagareyama, Japan
Filed Dec. 21, 1981, Ser. No. 332,997
Claims priority, application Japan, Jun. 21, 1981, 56-26932
Term of patent 14 years
U.S. Cl. D4—15



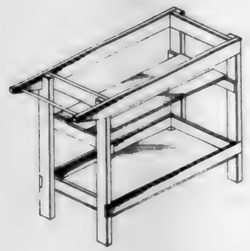
273,724
TOOTHBRUSH
Louis S. Gillow, 201 Tabor Rd., Morris Plains, N.J. 07950
Filed Sep. 29, 1982, Ser. No. 426,565
Term of patent 14 years
U.S. Cl. D4—25



273,725
TRAY
Charles R. Goetz, Pittsburgh, Pa., assignor to Stylette Plastics, Inc., Oakdale, Pa.
Filed Sep. 14, 1981, Ser. No. 301,637
Term of patent 14 years
U.S. Cl. D4—38.2



273,726
BABY BATHTUB STAND
Luis Valenzuela, 36 Meadow Glen, Brownville, Tex. 78520
Filed Oct. 8, 1981, Ser. No. 309,713
Term of patent 14 years
U.S. Cl. D6—5



273,727
BABY SEAT
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Hiroaki Matsuda, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Sep. 1, 1981, Ser. No. 298,394
Claims priority, application Japan, Mar. 2, 1981, 56-8365; Mar. 2, 1981, 56-8369; Mar. 2, 1981, 56-8370
Term of patent 14 years
U.S. Cl. D6—7



273,728
CHAIR
Vincent Cafiero, Irvington, N.Y., assignor to Simmons Universal Corporation, New York, N.Y.
Filed Nov. 12, 1981, Ser. No. 320,781
The portion of the term of this patent subsequent to May 1, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—30



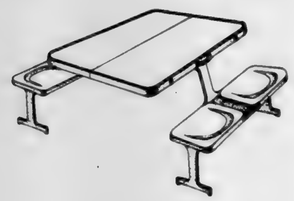
273,729
CHAIR
Charles W. Pelly, Calabasas, and John Krieger, Palos Verdes Estates, both of Calif., assignors to Unitek Corporation, Monrovia, Calif.
Filed Feb. 12, 1982, Ser. No. 348,568
Term of patent 14 years
U.S. Cl. D6—30



273,730
ARM CHAIR
Vincent Cafiero, Irvington, N.Y., assignor to Simmons Universal Corporation, New York, N.Y.
Filed Nov. 12, 1981, Ser. No. 320,810
The portion of the term of this patent subsequent to Apr. 10, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—31



273,731
FOLDABLE SEAT AND TABLE UNIT
Hugo A. Pineiro, Uppstigen 104-41, S-412 80 Göteborg, Sweden
Filed Jul. 31, 1981, Ser. No. 288,920
Claims priority, application Sweden, Feb. 27, 1980, 80-0411
Term of patent 14 years
U.S. Cl. D6—45



273,732
LOUNGE SEAT
H. Robert Tiffany, Chattanooga, Tenn., assignor to Robert Tiffany Designs, Inc., Chattanooga, Tenn.
Filed Nov. 2, 1981, Ser. No. 317,684
Term of patent 14 years
U.S. Cl. D6—47



273,733
CHAIR
Mike T. Claman, 475 Park Ave., New York, N.Y. 10022
Filed Jun. 22, 1981, Ser. No. 275,920
Term of patent 14 years
U.S. Cl. D6—57



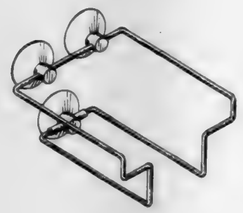
273,734
CHAIR OR SIMILAR ARTICLE
Herbert C. Saiger, Troy, Ohio, assignor to The Hammock Shop, Inc., Pawleys Island, S.C.
Filed Feb. 23, 1982, Ser. No. 351,683
Term of patent 14 years
U.S. Cl. D6—73



273,735
COLLATING RACK
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Jun. 21, 1982, Ser. No. 390,342
Term of patent 14 years
U.S. Cl. D6—114



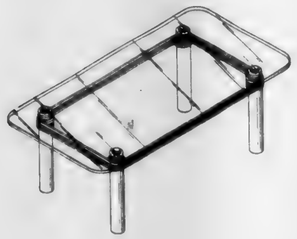
273,736
FLOWER POT HOLDER
Bernard R. Barry, Box 219, Green Mansion Rd., Warrensburg, N.Y. 12885
Filed Jul. 2, 1982, Ser. No. 394,662
Term of patent 14 years
U.S. Cl. D6—130



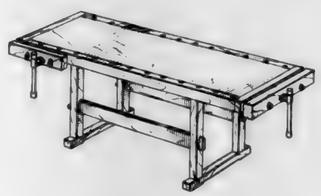
273,737
TABLE
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection, Inc., Long Island City, N.Y.
Filed Aug. 5, 1981, Ser. No. 290,207
Term of patent 14 years
U.S. Cl. D6—146



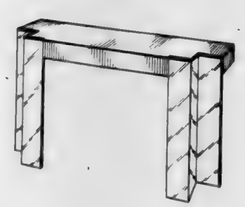
273,738
TABLE
Bruce Keiser, Phildelphia, Pa., assignor to Keiser Sterling Corporation, Phildelphia, Pa.
Filed Feb. 25, 1982, Ser. No. 352,272
Term of patent 14 years
U.S. Cl. D6—175



273,739
WORK BENCH
Peter D. Shapiro, 2143 Canyon Dr., Los Angeles, Calif. 90068
Filed Nov. 5, 1981, Ser. No. 318,384
Term of patent 14 years
U.S. Cl. D6—177



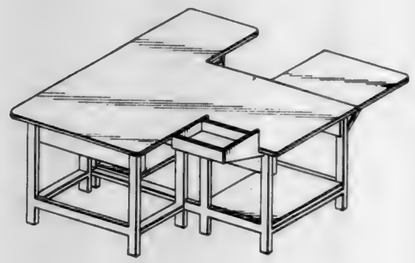
273,740
WALL TABLE
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection, Inc., Long Island City, N.Y.
Filed Mar. 1, 1982, Ser. No. 353,086
Term of patent 14 years
U.S. Cl. D6—177



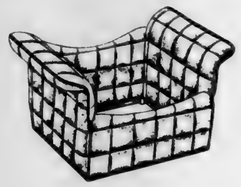
273,741
ADJUSTABLE TABLE
Thomas Koves, 645 N. Cherokee Ave., Los Angeles, Calif. 90004
Filed Feb. 16, 1982, Ser. No. 348,813
Term of patent 14 years
U.S. Cl. D6—178



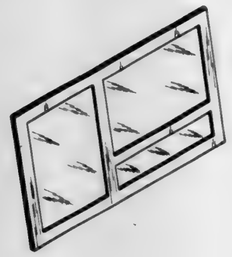
273,742
COMPUTER TABLE
Jo Ann Cunningham, Glen Burnie; Catherine A. Gilliss, Lansdowne, and Patricia M. Gorzo, Baltimore, all of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Mar. 19, 1982, Ser. No. 360,111
Term of patent 14 years
U.S. Cl. D6—179



273,743
SEAT FRAME
Gillis L. A. Lundgren, Lönashult, Sweden, assignor to Inter-Ikea A/S, Humlebaek, Denmark
Division of Ser. No. 80,166, Sep. 28, 1979. This application Feb. 12, 1982, Ser. No. 348,188
Claims priority, application Denmark, Mar. 28, 1979, 269/79
Term of patent 14 years
U.S. Cl. D6—191



273,744
PICTURE FRAME
Richard M. Castillo, 13040 Tom White Way, Ste. #L, Norwalk, Calif. 90650
Filed Nov. 9, 1981, Ser. No. 319,484
Term of patent 14 years
U.S. Cl. D6—234



273,745
DRINKING VESSEL
Vivienne D. Jagger, St. Ives, Australia, assignor to Little People Limited, Hong Kong, Hong Kong
Filed Sep. 3, 1981, Ser. No. 298,923
Claims priority, application United Kingdom, Mar. 18, 1981, 81999510
Term of patent 14 years
U.S. Cl. D7—9







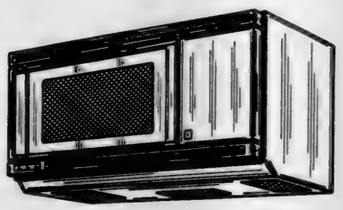
273,746
TACO HOLDER
Dale A. Hunt, 7940 Sunfield Ct., Indianapolis, Ind. 46224
Filed Dec. 7, 1981, Ser. No. 328,416
Term of patent 14 years
U.S. Cl. D7—76



273,747
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 22, 1982, Ser. No. 341,662
Claims priority, application Japan, Jul. 23, 1981, 56-32866
Term of patent 14 years
U.S. Cl. D7—351



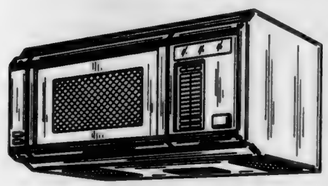
273,748
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 22, 1982, Ser. No. 341,667
Claims priority, application Japan, Jul. 23, 1981, 56-32865
Term of patent 14 years
U.S. Cl. D7—351



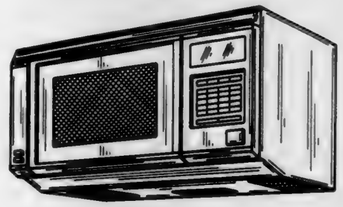
273,749
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Feb. 22, 1982, Ser. No. 351,039
Claims priority, application Japan, Aug. 25, 1981, 56-37864
Term of patent 14 years
U.S. Cl. D7—351



273,750
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Feb. 22, 1982, Ser. No. 351,040
Claims priority, application Japan, Aug. 25, 1981, 56-37865
Term of patent 14 years
U.S. Cl. D7—351



273,751
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Feb. 22, 1982, Ser. No. 351,227
Claims priority, application Japan, Aug. 25, 1981, 56-37863
Term of patent 14 years
U.S. Cl. D7—351



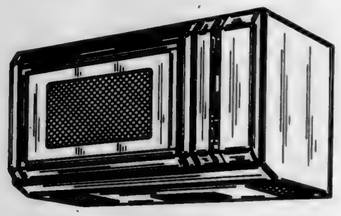
273,752
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Feb. 22, 1982, Ser. No. 351,228
Claims priority, application Japan, Aug. 25, 1981, 56-37879
Term of patent 14 years
U.S. Cl. D7—351



273,753
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Feb. 22, 1982, Ser. No. 351,234
Claims priority, application Japan, Aug. 25, 1981, 56-37878
Term of patent 14 years
U.S. Cl. D7—351



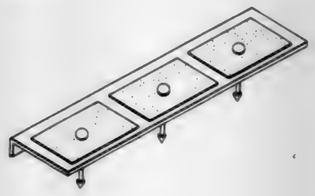
273,754
MICROWAVE OVEN
Kenici Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Feb. 24, 1982, Ser. No. 351,661
Claims priority, application Japan, Aug. 25, 1981, 37880/1981
Term of patent 14 years
U.S. Cl. D7—351



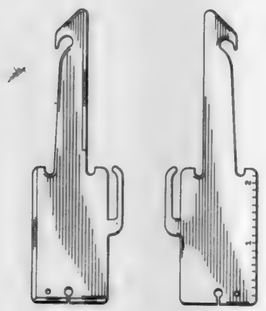
273,755
COVERED FRYING PAN OR SIMILAR ARTICLE
Heida Thurlow, c/o Lentrade, Inc., 10649 Haddington, Suite 120, Houston, Tex. 77043
Filed Dec. 11, 1981, Ser. No. 329,933
Term of patent 14 years
U.S. Cl. D7—359



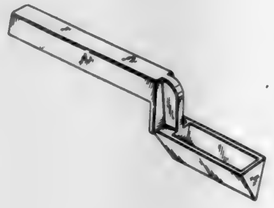
273,756
PATTERNED LAWN TRIM STRIP FASTENING DEVICE
Thomas A. Rexroth, 522 Melville, West Burlington, Iowa 52655
Filed Apr. 30, 1982, Ser. No. 373,711
Term of patent 14 years
U.S. Cl. D8—1



273,757
MULTI-PURPOSE TOOL FOR CAN PULL-TABS, SLIDE FASTENERS, OR THE LIKE
Homer E. Evans, 2107 N. 70th Pl., Scottsdale, Ariz. 85257
Filed Nov. 9, 1981, Ser. No. 319,306
Term of patent 14 years
U.S. Cl. D8—18



273,758
HOLDER FOR AN ABRASIVE SURFACE
Frank F. Ali, 2973 Pascal Dr., Fairborn, Ohio 45324
Filed Apr. 20, 1981, Ser. No. 255,702
Term of patent 14 years
U.S. Cl. D8—71

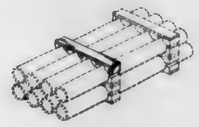


273,759
NAIL DRIVER
Michael Drori, Kibbutz Hagroshrim, Mobile Post, Upper Galilee, Israel
Filed Feb. 10, 1982, Ser. No. 347,548
Claims priority, application Israel, Oct. 12, 1981, 8765
Term of patent 14 years
U.S. Cl. D8—75



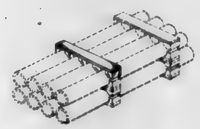
273,760
PIPE SUPPORTING AND SPACING MEMBER
Isao Takei, Yokohama, Japan, assignor to Nichiei Distribution Systems Inc., Kawasaki and Nippon Kokan Kabushiki Kaisha, Tokyo, both of, Japan
Filed Jun. 24, 1981, Ser. No. 276,911
Claims priority, application Japan, Dec. 25, 1980, 55-054269
Term of patent 14 years
U.S. Cl. D8—354



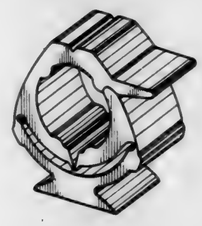


273,761
PIPE SUPPORTING AND SPACING MEMBER
Isao Takei, Yokohama, Japan, assignor to Nichiei Distribution Systems, Inc., Kawasaki and Nippon Kokan Kabushiki Kaisha, Tokyo, both of, Japan
Filed Jun. 24, 1981, Ser. No. 276,914
Claims priority, application Japan, Dec. 25, 1980, 55-054267
Term of patent 14 years
U.S. Cl. D8—354

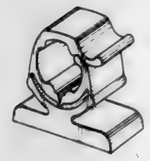




273,762
SNAP-ACTION CLIP
Keizaburo Sakaguchi, Tokyo, Japan, assignor to Sakaguchi Plastic Industrial Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1981, Ser. No. 276,886
Claims priority, application Japan, Dec. 25, 1980, 55-54275
Term of patent 14 years
U.S. Cl. D8—396



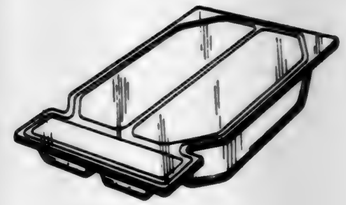
273,763
SNAP-ACTION CLIP
Keizaburo Sakaguchi, Tokyo, Japan, assignor to Sakaguchi Plastic Industrial Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1981, Ser. No. 276,907
Claims priority, application Japan, Dec. 25, 1980, 55-54276
Term of patent 14 years
U.S. Cl. D8—396



273,764
COMBINED BOTTLE AND CONTAINER
Franz Steigerwald, Griesheim; Karlheinz Zulauf, Höchst-Hasenroth, and Armin Höllwarth, Darmstadt, all of Fed. Rep. of Germany, assignors to Wella AG, Darmstadt, Fed. Rep. of Germany
Filed Dec. 10, 1981, Ser. No. 329,616
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 8 MR 842
Term of patent 14 years
U.S. Cl. D9—369



273,765
CONTAINER FOR CREAM-LIKE EDIBLE PRODUCTS
Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy
Filed Dec. 15, 1981, Ser. No. 330,871
Claims priority, application Italy, Jun. 16, 1981, 53365/81[U]
Term of patent 14 years
U.S. Cl. D9—341



273,766
PACKAGING CONTAINER
Deirdre A. Lampe, Sydney, Australia, assignor to Pavlova Pantry Pty. Ltd., Sydney, Australia
Filed Jul. 16, 1981, Ser. No. 284,013
Claims priority, application Australia, Mar. 31, 1981, 83,778
Term of patent 14 years
U.S. Cl. D9—352



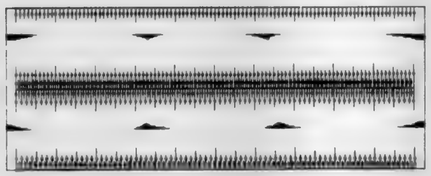
273,767
BOTTLE OR THE LIKE
Gerhard H. Weller, South Barrington, Ill., assignor to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.
Filed Dec. 16, 1981, Ser. No. 331,322
Term of patent 14 years
U.S. Cl. D9—352



273,768
BOTTLE
Jason K. Sedam, Dunwoody, and Simon J. Richter, Marietta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Oct. 9, 1981, Ser. No. 310,367
Term of patent 14 years
U.S. Cl. D9—375



273,769
RULER
Fahim R. Sidrak, 4649 Norwich Rd., Wilmington, N.C. 28405
Filed Jan. 7, 1982, Ser. No. 337,606
Term of patent 14 years
U.S. Cl. D10—71



273,770
Patent Not Issued For This Number

273,771
RING
Marina Bulgari, Athens, Greece, assignor to Marina B Creation S.A., Vaduz, Liechtenstein
Filed Oct. 9, 1981, Ser. No. 310,428
Claims priority, application Italy, Apr. 13, 1981, 35739/81[U]
Term of patent 14 years
U.S. Cl. D11—34



273,772
RING
Marina Bulgari, Athens, Greece, assignor to Marina B Creation S.A., Vaduz, Liechtenstein
Filed Dec. 30, 1981, Ser. No. 335,750
Claims priority, application Italy, Jul. 2, 1981, 35894/81[U]
Term of patent 14 years
U.S. Cl. D11—35

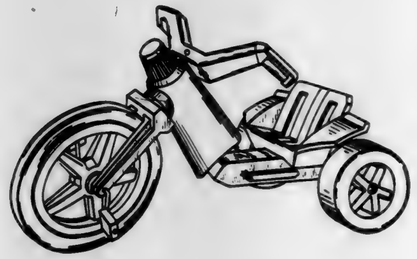




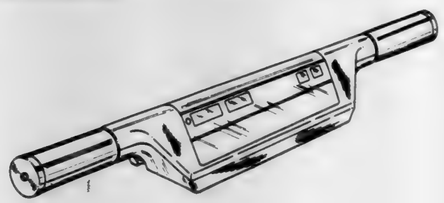
273,773
AUTOMOBILE
Claus Luthe, Munich; Manfred Rennen, Ingolstadt, and Hans Braun, Lohhof, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 26, 1981, Ser. No. 247,909
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, MR 12 272
Term of patent 14 years
U.S. Cl. D12—92



273,774
CHILD'S RIDING VEHICLE
Richard C. Levy; Sheryl Levy, both of 6737 Newbold Dr., Bethesda, Md. 20817, and Gary Piaget, 5 Ridley Ct., Glenn Ridge, N.J. 07028
Filed Nov. 9, 1981, Ser. No. 319,278
Term of patent 14 years
U.S. Cl. D12—112



273,775
BICYCLE CONSOLE
Kevin R. Aker, Fairfield, and Jeffery G. Martin, Kettering, both of Ohio, assignors to Huffy Corporation, Miamisburg, Ohio
Filed Oct. 7, 1981, Ser. No. 309,315
Term of patent 14 years
U.S. Cl. D12—114



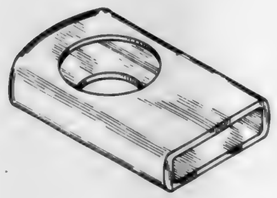
273,776
MOVABLE VEHICLE FOR THE HANDICAPPED
Eugene F. Forrest, 423 James Ter., Sault Ste Marie, Mich. 49783
Filed Feb. 4, 1982, Ser. No. 345,933
Term of patent 14 years
U.S. Cl. D12—128



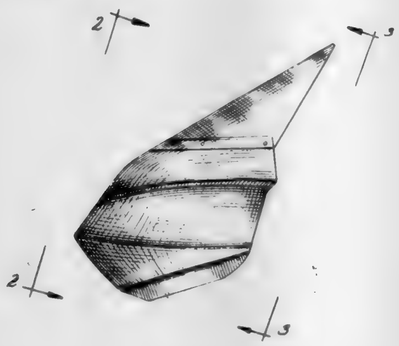
273,777
VEHICLE TIRE
Toshio Igarashi, Tokyo, and Hideaki Nishio, Saitama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Nov. 25, 1981, Ser. No. 324,889
Claims priority, application Japan, May 29, 1981, 56-22938
Term of patent 14 years
U.S. Cl. D12—147

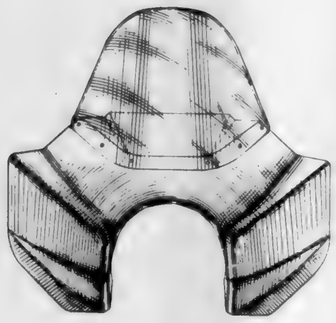


273,778
GUARD FOR A VEHICLE HITCH
Blue Ruhland, R.R. No. 1, Kingsley, Iowa 51028
Filed Nov. 12, 1981, Ser. No. 320,189
Term of patent 14 years
U.S. Cl. D12—162

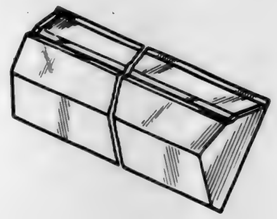


273,779
MOTORCYCLE FAIRING
Duane L. Anderson; Lewis R. Morris; Kenneth W. Cummings, and Robert S. Clarke, all of Rantoul, Ill., assignors to First Champaign Corporation, Rantoul, Ill.
Filed Jan. 15, 1982, Ser. No. 339,615
Term of patent 14 years
U.S. Cl. D12—182





273,780
RUB RAIL FOR AUTOMOBILE
Claus Luthe, Munich; Manfred Rennen, Igolstadt, and Hans Braun, Lohhof, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Wereke A.G., Munich, Fed. Rep. of Germany
Filed Mar. 27, 1981, Ser. No. 248,365
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, MR 12 271
Term of patent 14 years
U.S. Cl. D12—190



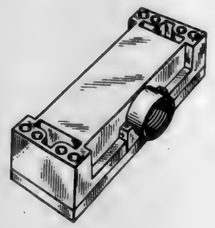
273,781
WHEEL COVER
Leif H. Chapman, Sylvan Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 23, 1981, Ser. No. 314,250
Term of patent 14 years
U.S. Cl. D12—211



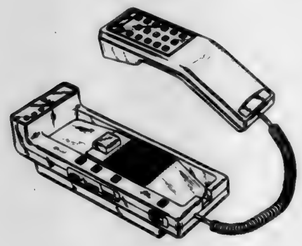
273,782
UNIVERSAL CABLE CONNECTOR FOR FIBER OPTIC CABLES AND THE LIKE
Richard E. Feinbloom, New York; Richard Lepczynski, Brooklyn, and Waldyslaw Oleksy, New York, all of N.Y., assignors to Designs for Vision, Inc., New York, N.Y.
Filed Jun. 1, 1981, Ser. No. 268,717
Term of patent 14 years
U.S. Cl. D13—24



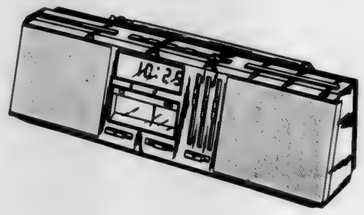
273,783
EXPLOSION-PROOF HOUSING FOR ELECTRICAL CIRCUIT COMPONENTS
Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.
Filed Apr. 20, 1981, Ser. No. 255,567
Term of patent 14 years
U.S. Cl. D13—40



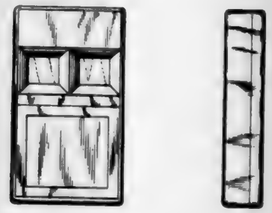
273,784
TELEPHONE
Masato Shibayama, Sayama; Takeshi Abe, Tokyo; Yoshifumi Asakawa, Yokosuka; Seiji Kinoshita, and Kazuhisa Ogawa, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 28, 1982, Ser. No. 343,596
Claims priority, application Japan, Aug. 21, 1981, 56-36482
Term of patent 14 years
U.S. Cl. D14—53



273,785
CLOCK RADIO RECEIVER
Grant M. N. Davidson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 18, 1982, Ser. No. 340,167
Claims priority, application United Kingdom, Jul. 22, 1981, 1.001.605
Term of patent 14 years
U.S. Cl. D14—73



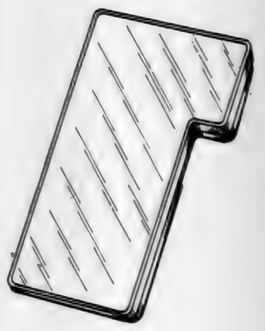
273,786
ENCLOSURE FOR A PORTABLE HANDHELD TRANSMITTER
Owerko, Raton, N. Mex., assignor to A.R.F. Products, Inc., Raton, N. Mex.
Filed Sep. 15, 1981, Ser. No. 302,570
Term of patent 14 years
U.S. Cl. D14—95



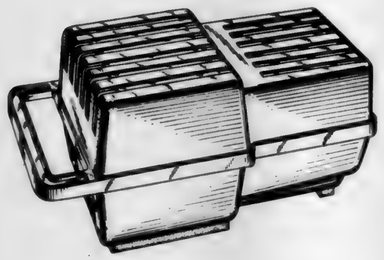
273,787
CALCULATOR TELEPHONE
Paul C. Matthews, III, 57 Front St., Brooklyn, N.Y. 11201
Filed Nov. 5, 1981, Ser. No. 318,640
Term of patent 14 years
U.S. Cl. D14—101



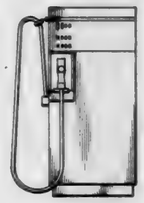
273,788
CASE FOR A KEYBOARD AND DISPLAY UNIT
Charles M. Ault, Winchester, Mass., assignor to Termiflex Corporation, Nashua, N.H.
Filed Sep. 5, 1980, Ser. No. 184,227
Term of patent 14 years
U.S. Cl. D14—114

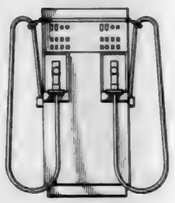


273,789
PORTABLE AIR COMPRESSOR
William J. Davis, Levittown, Pa., assignor to Interdynamics, Inc., Brooklyn, N.Y.
Filed Sep. 2, 1982, Ser. No. 414,492
Term of patent 14 years
U.S. Cl. D15—9

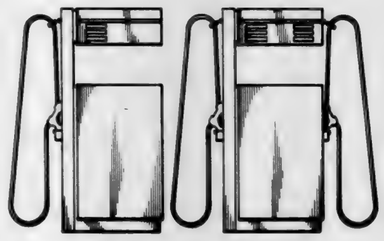


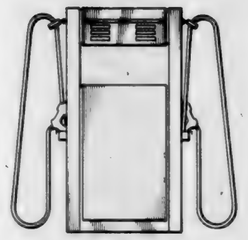
273,790
FUEL DISPENSER
Glenn W. Monigle, Golden, and David W. Roecker, Denver, both of Colo., assignors to Dresser Industries, Inc., Dallas, Tex.
Division of Ser. No. 118,376, Feb. 4, 1980, Pat. No. 266,673.
This application Apr. 5, 1982, Ser. No. 365,839
Term of patent 14 years
U.S. Cl. D15—9.1





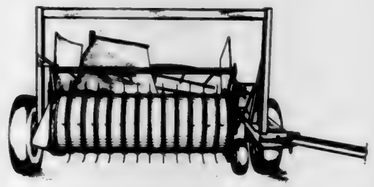
273,791
FUEL DISPENSER
Glenn W. Monigle, Golden, and David W. Roecker, Denver, both of Colo., assignors to Dresser Industries, Inc., Dallas, Tex.
Division of Ser. No. 118,376, Feb. 4, 1980, Pat. No. 266,673.
This application Apr. 5, 1982, Ser. No. 365,840
Term of patent 14 years
U.S. Cl. D15—9.1



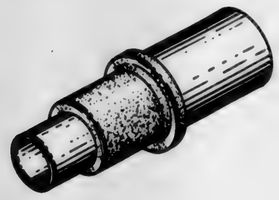




273,792
MACHINE FOR INVERTING A HAY WINDROW
Herman R. Ender, Sr., 29516 Bird Rd., Tracy, Calif. 95376
Filed Feb. 5, 1983, Ser. No. 346,802
Term of patent 14 years
U.S. Cl. D15—27



273,793
AUTO TRANSMISSION REFILL TUBE SOCKET
Ferrell D. Nachatelo, 14555 Escalon Bellota Rd., Escalon, Calif. 95320
Filed Oct. 5, 1981, Ser. No. 308,925
Term of patent 14 years
U.S. Cl. D15—150



273,794
SUNGLASSES
Aaron M. Markovitz, Rochester, and Robert H. Ramp, Pittsford, both of N.Y., assignors to Bausch & Lomb, Inc., Rochester, N.Y.
Filed Feb. 8, 1982, Ser. No. 346,967
Term of patent 14 years
U.S. Cl. D16—112



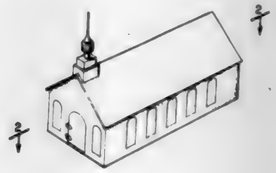
273,795
ELECTRONIC CALCULATOR
Masafumi Yamagami, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jun. 16, 1981, Ser. No. 274,234
Claims priority, application Japan, Dec. 19, 1980, 55-53641
Term of patent 14 years
U.S. Cl. D18—7



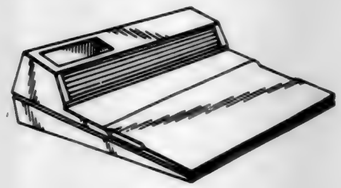
273,796
COMBINED BINDER AND EASEL FOR STORAGE AND USE OF COMPUTER SOFTWARE AND INSTRUCTIONAL MATERIAL
Charles G. Milden, 7404 Saddlehill Trail, Orange, Calif. 92669
Filed Jan. 4, 1982, Ser. No. 337,414
Term of patent 14 years
U.S. Cl. D19—27



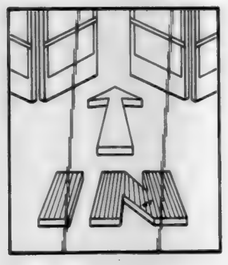
273,797
MODEL CHURCH FOR TEACHING RELIGIOUS PROCEDURES OR THE LIKE
Olivia Richardson, 111 N. Swain St., Raleigh, N.C. 27601
Filed Aug. 31, 1981, Ser. No. 297,834
Term of patent 14 years
U.S. Cl. D19—62



273,798
HOLDER FOR MULTIPLE PADS OF NOTEPAPER
Walter C. Pearson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 3, 1981, Ser. No. 289,774
The portion of the term of this patent subsequent to Sep. 27, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—91



273,799
IN-OUT SYMBOL FOR AUTOMATIC OPENING HINGED GLASS DOORS
Jack Darrell, 1646 Old Spanish Trail, Houston, Tex. 77054
Filed Mar. 1, 1982, Ser. No. 353,532
Term of patent 14 years
U.S. Cl. D20—11



273,800
AIR TRAFFIC CONTROLLER GAME HOUSING
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Dec. 3, 1981, Ser. No. 327,124
Term of patent 14 years
U.S. Cl. D21—13



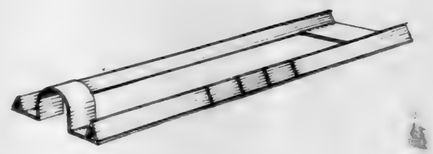
273,801
FIGURINE OR STATUETTE OF GAME PLAYING PIECES OR THE LIKE
Shawn D. Olfman, 17-165 Kennedy St., Winnipeg, Manitoba, Canada (R3C 1S6), and Jerry A. Olfman, 70 Poison Ave., Winnipeg, Manitoba, Canada (R2W 0M2)
Filed Jul. 16, 1981, Ser. No. 283,964
Term of patent 14 years
U.S. Cl. D21—51



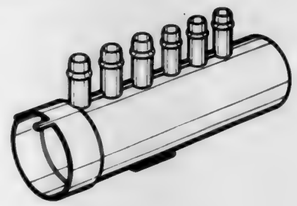
273,802
SOUND EMITTING PROBE FOR TOY OR SIMILAR ARTICLE
William J. Bousman, Burlington, Wis., assignor to Western Publishing Company, Racine, Wis.
Filed Jun. 8, 1981, Ser. No. 271,489
Term of patent 14 years
U.S. Cl. D21—64



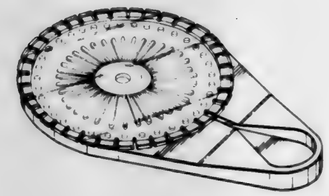
273,803
PUTTING AID FOR GOLFERS
Graham J. Johnson, 58 Jacaranda St., East Ipswich, Australia (4305)
Filed May 28, 1982, Ser. No. 382,814
Claims priority, application Australia, May 5, 1982, 0293/82
Term of patent 14 years
U.S. Cl. D21—234



273,804
MODULAR LIQUID OR GAS MANIFOLD FOR A SWIMMING POOL SOLAR HEATER
Karl Fueloep, 27 Braund Rd., Fitzroy, State of South Australia, Australia
Filed Jun. 25, 1981, Ser. No. 277,971
Claims priority, application Australia, Nov. 27, 1980, 82714; Jan. 16, 1981, 83158
Term of patent 14 years
U.S. Cl. D23—127



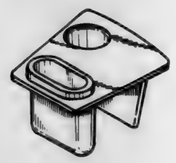
273,805
DENTAL PIN DISPENSER PACKAGE
Stuart J. Filhol, Castlefreke, County Cork, Ireland
Filed Jun. 5, 1981, Ser. No. 270,615
Claims priority, application United Kingdom, Dec. 6, 1980, 997935
Term of patent 14 years
U.S. Cl. D24—10



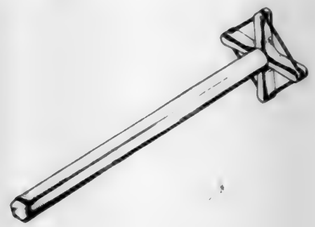
273,806
REAMER/RASP TOOL, WITH DISPOSABLE, DEBRIS RETAINING CUTTING SURFACE
Richard C. Bolesky; Nicholas Cindrich, both of Warsaw, and Michael H. Doll, North Webster, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Aug. 3, 1981, Ser. No. 289,546
Term of patent 14 years
U.S. Cl. D24—28



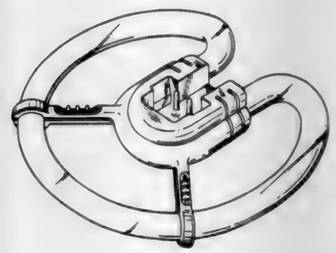
273,807
SAMPLE CUP OR THE LIKE
James T. Holen, Mundelein, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jun. 4, 1981, Ser. No. 270,310
Term of patent 14 years
U.S. Cl. D24—56



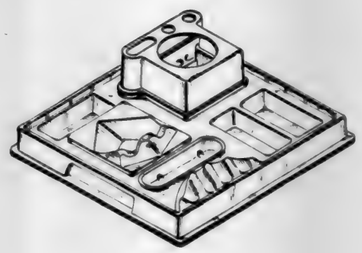
273,808
DENTAL FLOSSER
Eric L. Smith, 638 Potomac Ave., Hagerstown, Md. 21740
Filed Dec. 2, 1981, Ser. No. 326,514
Term of patent 14 years
U.S. Cl. D28—64



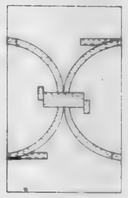
273,809
FLUORESCENT LAMP
John M. Chapman, Kent, and Basil Antonis, London, both of England, assignors to Thorn EMI Limited, London, England
Filed Aug. 4, 1981, Ser. No. 290,008
Claims priority, application United Kingdom, Mar. 31, 1981, 999726
Term of patent 14 years
U.S. Cl. D26—3



273,810
NAIL TREATMENT TRAY
Benson Zinbarg, Stamford, Conn., assignor to Sun Hill Industries, Inc., Stamford, Conn.
Filed Apr. 7, 1982, Ser. No. 366,202
Term of patent 14 years
U.S. Cl. D28—61



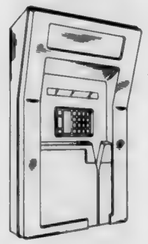
273,811
PLASTIC SHEET MATERIAL FOR SURFACING A WALL PANEL OR SIMILAR ARTICLE
Joseph Pota, 19727 Mt. Pisgah Rd., Silver Spring, Md. 20903
Division of Ser. No. 106,945, Feb. 5, 1980, Pat. No. 263,513.
This application Aug. 19, 1981, Ser. No. 294,280
Term of patent 14 years
U.S. Cl. D92—30



273,812
DEVICE FOR USE IN PARAPSYCHOLOGY
Vincent Stillace, 53, rue Olivier-Metra, 75020 Paris, France
Filed Feb. 11, 1981, Ser. No. 233,444
Claims priority, application France, Aug. 12, 1980, 802621
Term of patent 14 years
U.S. Cl. D99—25



273,813
CREDIT CARD TERMINAL
Robert Case, Chicago, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.
Filed Dec. 3, 1981, Ser. No. 327,139
Term of patent 14 years
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Taylor, Chandler R., Jr., 4,447,361, Cl. 260-244.400.
Aasen, Steven M.: *See—*
Tiers, George V. D.; Aasen, Steven M.; Dalzell, Rex J.; and Holmes, Brian N., 4,447,521, Cl. 430-337.000.
AB Ferrosan: *See—*
Bjork, Anders K. K.; Olsson, Knut G.; Abramo, Aina L.; and Christensson, Erik G., 4,447,433, Cl. 424-250.000.
Ababurko, Victor: *See—*
Stevens, Colin R.; and Ababurko, Victor, 4,446,791, Cl. 101-122.000.
Abe, Hisao: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.
Abendroth, Paul; and Despot, Janko, to M.A.N. - Roland. Device for applying a fluid, in particular lacquers on printed sheets or continuous webs. 4,446,814, Cl. 118-694.000.
Abex Corporation: *See—*
Novotny, Raymond J.; and Mulder, James P., 4,446,638, Cl. 37-142.00A.
Abramo, Aina L.: *See—*
Bjork, Anders K. K.; Olsson, Knut G.; Abramo, Aina L.; and Christensson, Erik G., 4,447,433, Cl. 424-250.000.
Academy of Applied Science, Inc., The: *See—*
Rines, Robert H., 4,447,896, Cl. 367-96.000.
Ace Fishing & Rental Tools, Inc.: *See—*
Cooper, Larry V.; and Sloane, Michael W., Sr., 4,446,610, Cl. 29-421.00E.
ACF Industries, Incorporated: *See—*
Behle, Gunter R., 4,447,039, Cl. 251-144.000.
Ackerman, Allen D.; and Aula, Howard A., to Ford Motor Company. Method of making a cast aluminum based engine block. 4,446,906, Cl. 164-112.000.
Acme Steel Door Corp.: *See—*
Siegal, Burton L., 4,446,669, Cl. 52-738.000.
Acra-Plant, Inc.: *See—*
Robertson, Forrest E., 4,446,927, Cl. 172-753.000.
Adam, Clyde E.: *See—*
Price, William L.; Murtha, John C.; Ross, James A., Jr.; Adam, Clyde E.; and Lucas, Kenneth R., 4,447,873, Cl. 364-200.000.
Adams, George A.: *See—*
Rock, Gail A.; and Adams, George A., 4,447,415, Cl. 424-101.000.
Adams, Richard G.: *See—*
Taylor, Andrew W.; and Adams, Richard G., 4,447,422, Cl. 424-229.000.
Adamson, David L.: *See—*
Davis, Larry A.; Boyce, Gregory H.; Mulloy, Timothy P.; Nebeker, Neil J.; Newman, Elmer C.; Quinn, Donald J.; and Adamson, David L., 4,447,307, Cl. 204-267.000.
Adcock, Thomas P. Solar collector panel. 4,446,853, Cl. 126-450.000.
Adkins, Richard C., to Rolls-Royce Limited. Fluidic control of airflow in combustion chambers. 4,446,692, Cl. 60-39.230.
Adl, Mohammad S.; Kegeler, Gary H.; and Vandersall, Howard L., to Monsanto Company. Stabiized galactomannan gum compositions. 4,447,337, Cl. 252-7.000.
Adolf, Lutz-Erdmut; and Oberwelland, Klaus, to August Stork KG. Device for the preparation of hollow confectionery parts. 4,447,202, Cl. 425-434.000.
Adsett, David E., to Allied Corporation. Method and apparatus for encoding graphics. 4,447,831, Cl. 358-283.000.
Advanced Energy Concepts '81, Ltd.: *See—*
Shaffer, James E.; and Distin, Robert G., Jr., 4,446,752, Cl. 74-462.000.
AEL Microtel, Ltd.: *See—*
Sewerinson, Ake N., 4,447,903, Cl. 371-68.000.
Aeschlimann, Peter, to Ciba-Geigy Corporation. Substituted 2-(chloro, bromo or cyano)-4,6-dinitrophenyl azo phenyl dyes. 4,447,359, Cl. 260-207.000.
Agency of Industrial Science and Technology: *See—*
Ebata, Yoshihiro; Kose, Saburo; and Hayami, Ryozo, 4,447,283, Cl. 156-325.000.
Ahn, Byung K.; and Morris, Kenneth A., to Koppers Company, Inc. Removal of bromides from arsenic acid solution. 4,447,405, Cl. 423-88.000.
Ahrens, Paul W., to Miracle Recreation Equipment Company. Playground equipment with wooden timbers having internal fasteners. 4,447,055, Cl. 272-113.000.
Ai, Hideo; and Tsuruta, Naohiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Resin composition, coating material comprising said resin composition and method for forming coatings. 4,447,580, Cl. 525-121.000.
Aigo, Seiichiro. Information card. 4,447,716, Cl. 235-492.000.
Aikman, Leslie N. Cigarette holder with filtering action. 4,446,877, Cl. 131-198.00R.
Air Products and Chemicals, Inc.: *See—*
Cook, Gerald R.; Iacoviello, John G.; Pinschmidt, Robert K., Jr.; and Davidowich, George, 4,447,570, Cl. 524-127.000.
Ross, David S.; Johnson, Robert M., Jr.; and Malhotra, Ripudaman, 4,447,662, Cl. 568-939.000.
Schuck, Thomas W., 4,447,195, Cl. 417-570.000.
Woytek, Andrew J.; Lileck, John T.; and Steigerwalt, Edward J., 4,446,920, Cl. 166-297.000.
Aisin Seiki Kabushiki Kaisha: *See—*
Fujii, Takashi, 4,446,699, Cl. 60-547.100.
Iwasaki, Shinichiro, 4,446,842, Cl. 123-606.000.
Katagiri, Masayoshi; Kondo, Toshio; and Midooka, Masanori, 4,447,066, Cl. 277-212.0FB.
Masai, Hiroto, 4,446,952, Cl. 192-58.00B.
Sakakibara, Naoji; Amano, Hiroyuki; and Morioka, Hiroaki, 4,446,889, Cl. 137-625.400.
Sakakibara, Naoji, 4,446,940, Cl. 180-177.000.
Suzuki, Koichi; Yoshihara, Mikio; Kawai, Shinji; and Mori, Katsuhiro, 4,446,584, Cl. 4-237.000.
AKG Akustische u.Kino-gerate Gesellschaft mbH: *See—*
Fidi, Werner, 4,447,678, Cl. 179-115.5PS.
Akiyama, Nobuyuki: *See—*
Kuni, Asahiro; Kembo, Yukio; Akiyama, Nobuyuki; and Aoki, Nobuhiko, 4,447,731, Cl. 250-442.100.
Akiyama, Takehiro: *See—*
Suzuki, Hirokazu; and Akiyama, Takehiro, 4,447,704, Cl. 219-216.000.
Akiyama, Teruo: *See—*
Harada, Hikaru; Akiyama, Teruo; and Hiyama, Tuneo, 4,447,543, Cl. 436-72.000.
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, to Daikin Kogyo Co., Ltd. Process for continuous fluorination of carbon. 4,447,663, Cl. 570-150.000.
Aktiebolaget Bofors: *See—*
Simmons, Bjorn, 4,446,794, Cl. 102-513.000.
Aktiebolaget Electrolux: *See—*
Krouthen, Jan K., 4,447,394, Cl. 422-27.000.
Akzo N.V.: *See—*
Carlyle, Ian C.; Savage, David S.; and Sleigh, Thomas, 4,447,425, Cl. 424-241.000.
Geerdes, Dirk J. F.; and Nelen, Petrus J. C., 4,447,567, Cl. 523-501.000.
Akzona Incorporated: *See—*
Linhart, Heinz; Modtler, Reiner; and Kratzsch, Eberhard, 4,447,489, Cl. 428-225.000.
Albers, Rolf: *See—*
Kotzur, Joachim; Reinersmann, Hans H.; Albers, Rolf; Aschenbruck, Emil; and Neuhaus, Gunter, 4,447,063, Cl. 277-80.000.
Alexandrescu, Mircea; and Haendle, Joerg, to Siemens Aktiengesellschaft. X-Ray diagnostic installation. 4,447,827, Cl. 358-111.000.
Alford Industries, Inc.: *See—*
Gray, Sharon L., 4,447,003, Cl. 229-44.0CB.
Allen, Harold T., to Ransburg Corporation. Atomizing device motor. 4,447,008, Cl. 239-214.130.
Allen, John H., to United States of America, Navy. Serial to parallel data conversion interface circuit. 4,447,804, Cl. 340-347.0DD.
Allen, Melvin K.; Berri, Ronald J.; and Winther, Douglas N., to Banner/Technical Devices Company, Inc. Adjustably dimensioned uniformly distributed solder wave apparatus. 4,447,001, Cl. 228-37.000.
Allen, Robert H.; and Seligman, Paul A., to University Patents, Inc. Immunoassay for measurement of reticulocytes, and immunoreactive reagents for use therein. 4,447,547, Cl. 436-543.000.
Allen, Roger A.; and Hall, Robert J., to Wiggins Teape Group Limited, The. Assembly for use in the spark perforation of sheet material. 4,447,708, Cl. 219-384.000.
Alliance Machine Company, The: *See—*
Kinkopf, Edward J.; and Polen, Karl L., 4,446,813, Cl. 118-72.000.
Allied Corporation: *See—*
Adsett, David E., 4,447,831, Cl. 358-283.000.
Gilman, John J., 4,446,666, Cl. 52-648.000.
Jensen, Henry E., 4,447,508, Cl. 429-57.000.
Oxenrider, Bryce C.; and Long, David J., 4,447,629, Cl. 556-419.000.
Stover, Richard W.; Proper, Frederick T.; and Young, Steven A., 4,447,061, Cl. 277-1.000.

Allis-Chalmers Corporation: *See—*
Renner, Elmer J., 4,446,963, Cl. 198-735.000.
Allison, Johnny H. Wind power electrical generator system. 4,447,738, Cl. 290-44.000.
Allori, Aldo: *See—*
Voss, Julian D.; Allori, Aldo; and Wilger, John A., 4,446,953, Cl. 192-70.120.
Alpha Corporation of Tennessee: *See—*
Bayha, Charles E., 4,447,577, Cl. 524-845.000.
Alt, Joyce M.: *See—*
Gula, John A.; Brady, John D.; Thompson, Thomas C.; and Alt, Joyce M., 4,447,230, Cl. 604-122.000.
Altman, Robert G.: *See—*
Englar, Donald G.; and Altman, Robert G., 4,447,395, Cl. 422-68.000.
Alumin-Art Plating Company: *See—*
Rudy, Sol, 4,447,049, Cl. 269-46.000.
Amada, Takayoshi: *See—*
Watanabe, Masaru; Matsumura, Satoru; Amada, Takayoshi; Irie, Hiromitsu; and Saito, Norihisa, 4,447,293, Cl. 159-6.200.
Amagami, Keizo: *See—*
Mizukawa, Takumi; Amagami, Keizo; and Kobayashi, Takao, 4,447,691, Cl. 219-10.49R.
Amano, Hiroyuki: *See—*
Sakakibara, Naoji; Amano, Hiroyuki; and Morioka, Hiroaki, 4,446,889, Cl. 137-625.400.
American Can Company: *See—*
Gold, Vance B.; Kubacki, Edward F.; and Krewenka, Thomas, 4,447,699, Cl. 219-110.000.
American Cyanamid Company: *See—*
Dusza, John P.; Joseph, Joseph P.; and Berstein, Seymour, 4,447,442, Cl. 424-273.00P.
Klothen, Irving, 4,447,421, Cl. 424-227.000.
Paul, Rolf, 4,447,603, Cl. 544-184.000.
American Hoist & Derrick Company: *See—*
Johnson, Charles A.; and Lucker, Laurence H., Jr., 4,446,807, Cl. 114-230.000.
American Home Products Corporation: *See—*
Klaubert, Dieter H.; and Bell, Stanley C., 4,447,611, Cl. 546-118.000.
American National Red Cross: *See—*
Menache-Aronson, Doris; Kosow, David P.; Orthner, Carolyn L.; and Behre, H. Evan, 4,447,416, Cl. 424-101.000.
American Seating Company: *See—*
Quigley, Robert E., 4,446,659, Cl. 52-9.000.
American Standard, Inc.: *See—*
Nolden, Werner, 4,446,885, Cl. 137-360.000.
AMP Incorporated: *See—*
Cooper, Ronald F.; and Johnson, Erlon F., 4,447,121, Cl. 350-96.200.
Desmarais, Mark R., 4,447,681, Cl. 200-5.00A.
Kourimsky, Friedrich J. A.; and Lothmann, Werner, 4,447,102, Cl. 339-91.00R.
Anand, Nitya: *See—*
Salman, Mohammad; Ray, Suprabhat; Kamboj, Ved P.; and Anand, Nitya, 4,447,622, Cl. 548-525.000.
Andersen, Mark S., to Combustion Engineering, Inc. Fluidized bed fuel feed system. 4,446,799, Cl. 110-263.000.
Anderson, Carl. Brace for securing a pole to support surface. 4,446,945, Cl. 182-229.000.
Anderson, Dennis C., to National Polymers, Inc. Unitary flower pot. 4,446,652, Cl. 47-66.000.
Anderson, Lloyd E.: *See—*
Bell, Dwain C.; Anderson, Lloyd E.; and Anderson, Martin L., 4,446,593, Cl. 15-322.000.
Anderson, Martin L.: *See—*
Bell, Dwain C.; Anderson, Lloyd E.; and Anderson, Martin L., 4,446,593, Cl. 15-322.000.
Andersson, Bengt: *See—*
Sandered, Bror; Carlsson, Rune; and Andersson, Bengt, 4,447,013, Cl. 242-54.00R.
Andreasen, Norman H. Kiln floor system. 4,446,751, Cl. 74-422.000.
Andrews, David A.: *See—*
Davies, Graham J.; Heckingbottom, Roger; and Andrews, David A., 4,447,276, Cl. 148-175.000.
Andrews, Frank D.: *See—*
Schoolman, William K.; Griman, George A.; and Andrews, Frank D., 4,446,654, Cl. 49-181.000.
Andrews, Richard J.: *See—*
Mowbray, Dorian F.; Fenne, Ivor; and Andrews, Richard J., 4,446,836, Cl. 123-450.000.
Angevine, Philip J.; Audeh, Costandi A.; Tabak, Samuel A.; and Yan, Tsoung Y., to Mobil Oil Corporation. Process for improving the diesel fuel quality of coal derived liquids. 4,447,312, Cl. 208-46.000.
Anouchi, Abraham Y.; Novack, Robert L.; and Tomasovic, Beth, to Bacharach Instrument Company. Catalytic gas sensor. 4,447,397, Cl. 422-94.000.
Anphar S.A.: *See—*
Spickett, Robert G. W.; Mauri, Jacinto M.; and Puchades, Jesus E. B., 4,447,417, Cl. 424-156.000.
Antenore, Donald E.; Schmadeke, Donald W.; and Stewart, Rodney A., to Land O'Lakes, Inc. Process for producing a butter/margarine blend product. 4,447,463, Cl. 426-603.000.
Anthony, Myron L.; and Anthony, Shane D. L. Projectile firing weapon with wad discharge port. 4,446,771, Cl. 89-14.0SB.
Anthony, Shane D. L.: *See—*
Anthony, Myron L.; and Anthony, Shane D. L., 4,446,771, Cl. 89-14.05B.
Anzeveno, Peter B.: *See—*
White, William L.; and Anzeveno, Peter B., 4,447,636, Cl. 560-122.000.
Aoki, Nobuhiko: *See—*
Kuni, Asahiro; Kembo, Yukio; Akiyama, Nobuyuki; and Aoki, Nobuhiko, 4,447,731, Cl. 250-442.100.
Aoshima, Shozo; Hirose, Noboru; and Ishikawa, Michio, to Brother Kogyo Kabushiki Kaisha. Torque detecting apparatus. 4,446,746, Cl. 73-862.330.
Apparatebau Rothemuhle Brandt & Kritzler GmbH: *See—*
Reidick, H.; Leithner, R.; Kirchhoff, F. J.; Puritz, E.; and Schluter, S., 4,446,911, Cl. 165-4.000.
Appell, Marc: *See—*
Bradley, John J.; Franklin, Benjamin S.; Slosberg, David M.; Appell, Marc; Cassonnet, Jean-Claude; and De Sabatier, Philippe D., 4,447,874, Cl. 364-200.000.
Applied Power Inc.: *See—*
Oudelaar, Tone, 4,446,939, Cl. 180-89.150.
Arai, Shoji: *See—*
Yoneda, Kenji; Arai, Shoji; and Kunome, Yoshimi, 4,446,834, Cl. 123-440.000.
Arai, Yasunori, to Asahi Kogaku Kogyo Kabushiki Kaisha. Large-aperture telephoto lens. 4,447,137, Cl. 350-454.000.
Archer, David H.: *See—*
Young, William E.; Lunn, Richard H.; and Archer, David H., 4,447,748, Cl. 310-11.000.
Archibald, John L.; and Boyle, John T. A., to John Wyeth & Brother Limited. Thiazolotriazine derivatives. 4,447,604, Cl. 544-219.000.
Argus Chemical Corporation: *See—*
Brecker, Lawrence R.; Keeley, Charles; and Brilliant, Stuart D., 4,447,569, Cl. 524-109.000.
Loeffler, Otto E.; Jain, Nirnal S.; and Kauder, Otto S., 4,447,335, Cl. 252-1.000.
Arimura, Takashi: *See—*
Matsumura, Toshimi; Fujisawa, Hideya; Omori, Norio; Arimura, Takashi; Yamazoe, Hisamitsu; and Nishiura, Kiyotaka, 4,446,832, Cl. 123-339.000.
Aritake, Toshiyuki, to Mitsubishi Plastics Industries Limited. Adhesive tape and process for its production. 4,447,485, Cl. 428-144.000.
Arizona Chemical Company: *See—*
Scharrer, Roland P. F.; Schluenz, Robert W.; and Kramss, Richard H., 4,447,354, Cl. 260-106.000.
Arlauskas, Alfonsas, to General Motors Corporation. Door hinge and hold open. 4,446,596, Cl. 16-333.000.
Armstrong World Industries, Inc.: *See—*
Goldfarb, Louis; and Sweigart, Clyde M., 4,447,347, Cl. 252-70.000.
Piersol, Jay L., 4,447,560, Cl. 521-68.000.
Arndt, Manfred; Breier, Walter; Riegert, Hermann; Schmidt, Heinz; Schwarz, Hermann; and Warneke, Helmut, to Wurttemberische Metallwarenfabrik Aktiengesellschaft. Insulated container. 4,446,978, Cl. 215-13.00R.
Arntsen, Tom D.; and Toumani, Rouben, to Bell Telephone Laboratories, Incorporated. Ring-trip detector. 4,447,675, Cl. 179-84.00R.
Aronson, Alfred L. Cardiac arrhythmia analysis system. 4,446,868, Cl. 128-708.000.
Arraudeau, Jean-Pierre: *See—*
Gueret, Jean-Louis H.; and Arraudeau, Jean-Pierre, 4,446,880, Cl. 132-88.500.
Artman, Noel G. Precombustion chamber for internal combustion engine. 4,446,831, Cl. 123-286.000.
Asaeda, Toshio; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, to Toyoda Koki Kabushiki Kaisha; and Toshio Asaeda. Resinoid bonded grinding wheel and method for forming such wheel. 4,446,657, Cl. 51-206.00R.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ai, Hideo; and Tsuruta, Naohiro, 4,447,580, Cl. 525-121.000.
Sakamoto, Hajimu; Kiyota, Takao; and Hayashi, Hiroshi, 4,447,355, Cl. 260-112.00B.
Takeo, Kimihiko; Hirano, Tooichiro; and Sato, Fumihiko, 4,447,601, Cl. 536-102.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Arai, Yasunori, 4,447,137, Cl. 350-454.000.
Hidaka, Tsuneo; Inoue, Masahide; and Ogiso, Makoto, 4,447,210, Cl. 433-173.000.
Sugiyama, Takahiro; and Hagiwara, Yukio, 4,447,138, Cl. 350-472.000.
Asai, Yoshiharu, to Kabushiki Kaisha Ishida Koki Seisakusho. Method of treating combination defectiveness in combinatorial weighing or counting. 4,446,937, Cl. 177-1.000.
Asano, Masamichi; and Iwahashi, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,447,895, Cl. 365-226.000.
Asano, Toshitake, to Ikegai Tekko Kabushiki Kaisha. Tool holder. 4,447,181, Cl. 409-345.000.
Asayama, Yoshiaki: *See—*
Endo, Norio; Asayama, Yoshiaki; and Kabuto, Masami, 4,446,824, Cl. 123-52.00M.
Aschenbruck, Emil: *See—*
Kotzur, Joachim; Reinersmann, Hans H.; Albers, Rolf; Aschenbruck, Emil; and Neuhaus, Gunter, 4,447,063, Cl. 277-80.000.
Ashby, Eugene C., to Ethyl Corporation. Organomagnesium compounds. 4,447,369, Cl. 260-665.00R.
Asher, Eldad B. Electronic lock. 4,447,850, Cl. 361-172.000.

Aston, Graeme, to California Institute of Technology. Ion beam accelerator system. 4,447,773, Cl. 328-233.000.
AT&T Bell Laboratories: *See—*
Panuska, Andrew J.; Santana, Manuel R.; and Sprow, Robert B., 4,446,686, Cl. 57-6.000.
AT&T Technologies, Inc.: *See—*
Hardin, Tommy G.; and Vrieland, Bruce C., 4,446,689, Cl. 57-204.000.
Panuska, Andrew J.; Santana, Manuel R.; and Sprow, Robert B., 4,446,686, Cl. 57-6.000.
Ateliers et Chantiers de Bretagne A.C.B.: *See—*
Colin, Jean P., 4,446,808, Cl. 114-248.000.
Atlantic Richfield Company: *See—*
Gaffney, Anne M.; and Sofranko, John A., 4,447,638, Cl. 560-204.000.
Sofranko, John A.; and Gaffney, Anne M., 4,447,639, Cl. 560-204.000.
Wolcott, Herbert B., Jr., 4,446,918, Cl. 166-245.000.
Atlas Copco Aktiebolag: *See—*
Nilsson, Hans Gosta; and Nilsson, Kurt A. G., 4,446,930, Cl. 173-29.000.
Attia, Alan I.: *See—*
Putt, Ronald A.; and Attia, Alan I., 4,447,471, Cl. 427-98.000.
Audeh, Costandi A.: *See—*
Angevine, Philip J.; Audeh, Costandi A.; Tabak, Samuel A.; and Yan, Tsoung Y., 4,447,312, Cl. 208-46.000.
Audi Nsu Auto Union Aktiengesellschaft: *See—*
Bauder, Armin; and Ohrnberger, Gerd, 4,446,828, Cl. 123-196.00R.
August Stork KG: *See—*
Adolf, Lutz-Erdmut; and Oberwelland, Klaus, 4,447,202, Cl. 425-434.000.
Aula, Howard A.: *See—*
Ackerman, Allen D.; and Aula, Howard A., 4,446,906, Cl. 164-112.000.
Ausonia Farmaceutici s.r.l.: *See—*
Quadro, Giuseppe, 4,447,419, Cl. 424-177.000.
Automobiles Citroen: *See—*
Nigon, Michel, 4,447,683, Cl. 200-61.270.
Automobiles Peugot: *See—*
Nigon, Michel, 4,447,683, Cl. 200-61.270.
Aviation Chemical, Inc.: *See—*
Rippstein, Wayland J., Jr., 4,447,413, Cl. 424-78.000.
AVL AG: *See—*
Marsoner, Hermann J.; and Savora, Gunther, 4,446,872, Cl. 128-700.000.
Ayerst, McKenna & Harrison Inc.: *See—*
Sestanj, Kazimir, 4,447,452, Cl. 424-319.000.
Azuma, Yusaku; Kitayama, Yoshifumi; and Ozawa, Chiaki, to Bridgestone Tire Company Limited. Tire component assembly. 4,447,014, Cl. 242-55.000.
B. F. Goodrich Company, The: *See—*
Bartley, Donald R.; and Haase, James M., 4,447,197, Cl. 425-28.00R.
Klein, Richard G.; and Houck, Robert J., 4,447,807, Cl. 340-676.000.
Baatz, Henning; Rittscher, Dieter; and Wriegt, Jurgen, to GNS Gesellschaft fur Nuklear-Service mbH. Radiation-shielding transport and storage container and method of packaging radioactive material. 4,447,733, Cl. 250-506.100.
Babcock & Wilcox Company, The: *See—*
Youmans, Barry J.; and Zimmerlin, Sharon L., 4,447,780, Cl. 324-132.000.
Babel, Carl R.: *See—*
Page, Edward A.; and Babel, Carl R., 4,447,123, Cl. 350-96.240.
Babineaux, David, III. Method of treating waste water. 4,447,330, Cl. 210-717.000.
Bacharach Instrument Company: *See—*
Anouchi, Abraham Y.; Novack, Robert L.; and Tomasovic, Beth, 4,447,397, Cl. 422-94.000.
Bailey, Wilber H., to Camino Laboratories, Inc. Transducer calibration system. 4,446,715, Cl. 73-1.00R.
Bainbridge, Robert W.: *See—*
Dannels, W. Andrew; and Bainbridge, Robert W., 4,447,386, Cl. 264-328.200.
Bakas, Steve T.: *See—*
Lamb, Paul R.; Bakas, Steve T.; and Wood, Brian M., 4,447,315, Cl. 208-99.000.
Baker International Corporation: *See—*
Stone, Lyndon R.; and Hall, James D., 4,446,745, Cl. 73-862.250.
Baker Oil Tools, Inc.: *See—*
Bowyer, Michael L.; and Whiteford, Drummond, 4,446,922, Cl. 166-322.000.
Baker Perkins Inc.: *See—*
Karian, Harutun G.; and Todd, David B., 4,447,383, Cl. 264-8.000.
Baker, Robert G., to Nordson Corporation. Electrically heated multisection hose having electrically heated hose joints. 4,447,707, Cl. 219-301.000.
Balboni, John J.; and Hong, Leon. Preparation of par-fried potato pieces. 4,447,459, Cl. 426-441.000.
Baldoni, Viscardo; and Vorih, William J., to Firestone Tire & Rubber Company, The. Demountable sealed joint for the fluid tight connection of a sheet member to a support. 4,447,171, Cl. 403-381.000.
Ball Valve Co., Inc.: *See—*
Bunn, Stuart E.; and Owsely, Herbert B., 4,447,193, Cl. 417-441.000.
Bally Manufacturing Corporation: *See—*
Tojza, Roman A., 4,447,058, Cl. 273-121.00A.
Balser, Donald S.: *See—*
Teranishi, Roy; Murphy, Edwin L.; Balser, Donald S.; and Howard, Walter E., 4,446,648, Cl. 43-131.000.
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito. Direct current motor. 4,447,751, Cl. 310-154.000.
Bandiera, Jean: *See—*
Hamon, Christian; Bandiera, Jean; and Senes, Michel, 4,447,669, Cl. 585-640.000.
Banner/Technical Devices Company, Inc.: *See—*
Allen, Melvin K.; Berri, Ronald J.; and Winther, Douglas N., 4,447,001, Cl. 228-37.000.
Banta, Frederick, to Mobil Oil Corporation. Demetalation, desulfurization, and decarbonization of petroleum oils by hydrotreatment in a dual bed system prior to cracking. 4,447,314, Cl. 208-89.000.
Bapst, Jean-Daniel: *See—*
Boisvert, Pierre U.; and Bapst, Jean-Daniel, 4,447,279, Cl. 156-61.000.
Barcana Ltee: *See—*
Boisvert, Pierre U.; and Bapst, Jean-Daniel, 4,447,279, Cl. 156-61.000.
Barni, John J.: *See—*
Holt, Luther D., 4,447,767, Cl. 318-139.000.
Barr, Robert M. S.: *See—*
Reed, Leonard W.; Barr, Robert M. S.; and Dick, David A., 4,447,199, Cl. 425-182.000.
Barthelat, Rene; and Dore, Alain, to Societe d'Applications Generales d'Electricite et de Mechanique Sagem. Periscopic installations with multi sighting heads for submarines. 4,447,129, Cl. 350-302.000.
Bartholomew, David: *See—*
Kay, Ian T.; Bartholomew, David; Williams, Emyr G.; and Noon, Robert A., 4,447,446, Cl. 424-282.000.
Bartlett, Allen J.: *See—*
Peterson, John F.; and Bartlett, Allen J., 4,446,702, Cl. 62-55.500.
Bartley, Donald R.; and Haase, James M., to B. F. Goodrich Company, The. Tire mold with air vent inserts. 4,447,197, Cl. 425-28.00R.
Bartosevich, Joseph F.: *See—*
Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,447,427, Cl. 424-244.000.
BASF Aktiengesellschaft: *See—*
Henne, Andreas; Hesse, Anton; Jacobi, Manfred; Schornick, Gunnar; Vyvial, Rudolf; and Holoch, Klaus, 4,447,520, Cl. 430-281.000.
Horn, Peter; Gehm, Robert; Marx, Matthias; and Roeber, Artur, 4,447,561, Cl. 521-118.000.
Reuther, Wolfgang; and Borck, Hans-Volker, 4,447,448, Cl. 424-285.000.
Schott, Eberhard P.; and Lang, Hans, 4,447,255, Cl. 71-86.000.
Steiner, Gerd; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Lenke, Dieter, 4,447,610, Cl. 544-381.000.
Bass, Steven C., to Kimball International, Inc. Digital tone generation system utilizing fixed duration time functions. 4,446,770, Cl. 84-1.010.
Battelle-Institut e.V.: *See—*
Deibig, Heinrich; and Wollmann, Klaus, 4,447,477, Cl. 427-388.300.
Batterton, Elmo L.; and Lonsdale, Melvin J., to Meyer Morton Company. Air system for continuous flow grain dryer. 4,446,631, Cl. 34-65.000.
Bauder, Armin; and Ohrnberger, Gerd, to Audi Nsu Auto Union Aktiengesellschaft. Reciprocating internal combustion engine. 4,446,828, Cl. 123-196.00R.
Baum, Eric A.; Davies, Leslie J.; Kirk, William F.; and Wass, Anthony C. L. Breath actuated devices for administering powdered medicaments. 4,446,862, Cl. 128-203.150.
Baumberger, Otto: *See—*
Kalbskopf, Reinhard; Baumberger, Otto; and Masson, Serge, 4,446,815, Cl. 118-718.000.
Baxter Travenol Laboratories, Inc.: *See—*
Bilstad, Arnold C.; and Foley, John T., 4,447,191, Cl. 417-12.000.
Bayer Aktiengesellschaft: *See—*
Busse, Wolf-Dieter; Krauthausen, Edmund; and Mardin, Mithat, 4,447,440, Cl. 424-269.000.
Dickore, Karlfried; Sasse, Klaus; Eue, Ludwig; and Schmidt, Robert R., 4,447,258, Cl. 71-93.000.
Dickore, Karlfried; and Kuhle, Engelbert, 4,447,635, Cl. 560-115.000.
Hocker, Jurgen; Dhein, Rolf; and Merten, Rudolf, 4,447,583, Cl. 525-328.100.
Hoppe, Hans-Georg; and Henrichs, Paul, 4,447,486, Cl. 428-318.600.
Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, 4,447,367, Cl. 260-502.40R.
Schellhammer, Carl-Wolfgang; and Wehling, Bernhard, 4,447,651, Cl. 568-645.000.
Wehling, Bernhard, 4,447,244, Cl. 8-514.000.
Werner, Friedrich; Mannes, Karl; and Trescher, Viktor, 4,447,647, Cl. 564-412.000.
Bayha, Charles E., to Alpha Corporation of Tennessee. Emulsions of dicyclopentadiene containing polyesters. 4,447,577, Cl. 524-845.000.
BBC Brown, Boveri & Company, Limited: *See—*
Czech, Franz; and Subotic, Miroslav, 4,447,671, Cl. 174-28.000.
Bean, Vern E.; and Long, Frederick G., to United States of America, Energy. High pressure liquid level monitor. 4,447,743, Cl. 307-118.000.
Bearcroft, Kenneth E., to ITT Industries, Incorporated. Ultrasonic flowmeter. 4,446,744, Cl. 73-861.280.

Beasley, J. Donald, to Gould, Inc. Apparatus for maintaining an optical fiber and a focusing means. 4,447,119, Cl. 350-96.180.

Becker, Kunibert; Dunkel, Gerd; Lagodka, Gunter; and Kirchbrucher, Rudiger, to Gewerkschaft Eisenhutte Westfalia. Cap positioning mechanism. 4,447,174, Cl. 405-293.000.

Becker, William M.; and Becker, William R., to Gladstone Furnace Company, Inc. Fireplace insert construction. 4,446,848, Cl. 126-121.000.

Becker, William R.: *See—*
Becker, William M.; and Becker, William R., 4,446,848, Cl. 126-121.000.

Beckhardt, Robert L.: *See—*
Reeb, Irvin H., Jr.; and Beckhardt, Robert L., 4,447,749, Cl. 310-71.000.

Bedu, Marcel; and Jeanjean, Marcel, to Commissariat a l'Energie Atomique. Supply device for a flash tube. 4,447,766, Cl. 315-241.00R.

Beecham Group p.l.c.: *See—*
Taylor, Andrew W.; and Adams, Richard G., 4,447,422, Cl. 424-229.000.

Beele, Gunther, to Klockner-Humboldt-Deutz AG. Apparatus for adding strongly reacting materials into a melt. 4,447,046, Cl. 266-216.000.

Begrich, Rainer: *See—*
Holzle, Gerd; and Begrich, Rainer, 4,447,357, Cl. 260-153.000.

Behle, Gunter R., to ACF Industries, Incorporated. Bottom operable tank car valve having external rotation stop. 4,447,039, Cl. 251-144.000.

Behre, H. Evan: *See—*
Menache-Aronson, Doris; Kosow, David P.; Orthner, Carolyn L.; and Behre, H. Evan, 4,447,416, Cl. 424-101.000.

Beinglass, Israel; and Tsai, Nan-Hsiung, to Intel Corporation. Integrated circuit resistor and method of fabrication. 4,446,613, Cl. 29-571.000.

Beisch, Hans R., to NI Industries, Inc. Wheel trim retention. 4,447,092, Cl. 301-37.00P.

Bekkering, Hendrik M., to Duphar International Research B.V. Automatic injection syringe. 4,447,231, Cl. 604-131.000.

Bell, Dwain C.; Anderson, Lloyd E.; and Anderson, Martin L., to National Carpet Jobbers, Inc. Carpet steaming tool. 4,446,593, Cl. 15-322.000.

Bell Maschinenfabrik Aktiengesellschaft: *See—*
Britschgi, Hugo; and Rosenberg, Burkard, 4,447,334, Cl. 210-783.000.

Bell, Stanley C.: *See—*
Klaubert, Dieter H.; and Bell, Stanley C., 4,447,611, Cl. 546-118.000.

Bell Telephone Laboratories, Incorporated: *See—*
Arntsen, Tom D.; and Toumani, Rouben, 4,447,675, Cl. 179-84.00R.
Chin, Aland K.; DiGiuseppe, Michael A.; and Temkin, Henryk, 4,447,822, Cl. 357-17.000.
Cohen, Leonard G., 4,447,124, Cl. 350-96.300.
Cohen, Leonard G.; Mammel, Wanda L.; and Marcuse, Dietrich, 4,447,127, Cl. 350-96.330.
Dixon, Richard W.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,447,905, Cl. 372-46.000.
Hartman, Adrian R.; Kohl, James E.; MacPherson, William F.; and Riley, Terence J., 4,447,744, Cl. 307-252.00R.
Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,447,125, Cl. 350-96.300.

Bender, Fred: *See—*
Zauner, Otto; and Bender, Fred, 4,446,960, Cl. 198-408.000.

Bendix Corporation, The: *See—*
Dyce, John W.; Waters, Edwin R.; and Sherwood, Cy E., 4,447,100, Cl. 339-14.00R.
Elpern, David G., 4,446,837, Cl. 123-460.000.
Punako, Stephen; Davis, Alan L.; and Eifler, Raymond J., 4,447,110, Cl. 339-262.0RR.
Van Siclen, Howard E., Jr., 4,446,841, Cl. 123-602.000.
Werth, Dee A.; and Ratchford, Lloyd G., 4,447,103, Cl. 339-94.00M.

Benisek, Ladislav, to Wool Development International Limited. Textile finishing. 4,447,242, Cl. 8-128.00R.

Benson, Glendon M., to New Process Industries, Inc. Isothermalizer system. 4,446,698, Cl. 60-520.000.

Benson, John; and Hanel, Harold L., to International Telephone and Telegraph Corporation. Powder actuated tool safety guard retention. 4,446,999, Cl. 227-11.000.

Bentley Laboratories: *See—*
Heinemann, Stanley O., 4,447,150, Cl. 356-41.000.

Ber-Vac Inc.: *See—*
Vachon, Bertrand, 4,446,925, Cl. 172-142.000.

Berck, Michel F. D. J.: *See—*
Schayes, Raymond G. G.; Gustin, Pol A. G. J.; Bodart, Robert; and Berck, Michel F. D. J., 4,447,829, Cl. 358-260.000.

Berg, William C., to Control Data Corporation. Finned heat exchangers for electronic chips and cooling assembly. 4,447,842, Cl. 361-386.000.

Berger, Hans G., to Wickes Corporation, The. Insulated roof structure system and method of erecting same. 4,446,665, Cl. 52-407.000.

Bergeret, Wilfrid; Gautier, Jean-Claude; Raynal, Serge; and Boileau, Sylvie, to Societe Nationale des Poudres et Explosifs. Process for the synthesis of tertiary phosphine oxides and sulphides, and new tertiary phosphine oxides and sulphides. 4,447,584, Cl. 525-340.000.

Bergeron, David L.; and Patel, Parsotam T., to International Business Machines Corporation. Method of making a saturation-limited bipolar transistor device. 4,446,611, Cl. 29-578.000.

Bernal, Eddie L., to Taco Operations, Inc. Readily portable food item. 4,447,457, Cl. 426-91.000.

Berndt, Dieter R., to TRP Energy Sensors, Inc. Temperature-responsive pacifier assembly. 4,447,164, Cl. 374-162.000.

Berri, Ronald J.: *See—*
Allen, Melvin K.; Berri, Ronald J.; and Winther, Douglas N., 4,447,001, Cl. 228-37.000.

Berstein, Seymour: *See—*
Dusza, John P.; Joseph, Joseph P.; and Berstein, Seymour, 4,447,442, Cl. 424-273.00P.

Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, to Hoechst Aktiengesellschaft. Process for the preparation of a polyolefin, and a catalyst for this process. 4,447,587, Cl. 526-124.000.

Bertsch, Dieter A.; Finkle, Mark A.; and Fishman, James D. Method and apparatus for the automatic folding of floppy disc storage envelopes. 4,447,218, Cl. 493-251.000.

Beschke, Helmut; Friedrich, Heinz; and Heilos, Johannes, to Degussa Aktiengesellschaft. Catalysts for the production of 3-cyanopyridine. 4,447,612, Cl. 546-285.000.

Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, to Degussa Aktiengesellschaft. Process for the purification of nicotinic acid amide. 4,447,614, Cl. 546-316.000.

Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, to Degussa Aktiengesellschaft. Process for the purification of nicotinic acid amide I. 4,447,615, Cl. 546-317.000.

Bessho, Hironori, to Toyota Jidosha Kabushiki Kaisha. Internal combustion engine passage construction with intake tubes extending along surge tank wall. 4,446,823, Cl. 123-52.0MB.

Betschler, Joachim, to Holl & CIE GmbH. Method of operating an electroplating system. 4,447,298, Cl. 204-23.000.

Bhagwat, Pradeep: *See—*
Saar, David A.; and Bhagwat, Pradeep, 4,447,786, Cl. 318-811.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method of making and using glass fiber forming feeders. 4,447,248, Cl. 65-2.000.

Biber, Klaus, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Means for securing an observation instrument to a supporting stand. 4,447,139, Cl. 350-522.000.

Bierman, Laurence W.; Long, Gary L.; and Bortner, David, to J. R. Simplot Company. Method for autoclave oxidation of ion species aqueous solutions. 4,447,403, Cl. 423-20.000.

Biggs, Delmar A.; and Shields, John. Quantitative measurement of fat, protein and lactose in dairy products. 4,447,725, Cl. 250-339.000.

Bilstad, Arnold C.; and Foley, John T., to Baxter Travenol Laboratories, Inc. Control circuit for a blood fractionation apparatus. 4,447,191, Cl. 417-12.000.

Bilton, Gerald L. Enzyme-containing digestive aid compostions. 4,447,412, Cl. 424-16.000.

Biss, Edgar L., to Perkam Limited. Apparatus and method for measuring the number and/or value of an unknown quantity of articles. 4,447,885, Cl. 364-568.000.

Bjork, Anders K. K.; Olsson, Knut G.; Abramo, Aina L.; and Christensson, Erik G., to AB Ferrosan. Diphenylbutyl-piperazinecarboxamides to treat pain. 4,447,433, Cl. 424-250.000.

Bjornholt, John E.; Foster, Richard G.; and Groth, Edward J., Jr., to Motorola Inc. Multiple mixer spread spectrum modulation and method therefor. 4,447,907, Cl. 375-1.000.

Black, Charles E., III: *See—*
Schaad, William J.; Black, Charles E., III; and Halstead, Raymond T., 4,447,688, Cl. 200-159.00R.

Black & Decker Inc.: *See—*
Dynie, Ernest R.; and Overy, Colin, 4,446,681, Cl. 56-16.700.
Reeb, Irvin H., Jr.; and Beckhardt, Robert L., 4,447,749, Cl. 310-71.000.
Saar, David A.; and Bhagwat, Pradeep, 4,447,786, Cl. 318-811.000.

Black, Leslie. Banana peeling machine. 4,446,782, Cl. 99-589.000.

Blake, Larry W. Intraocular lens with free-ended sizing prong. 4,446,581, Cl. 3-13.000.

Blakeslee, Theodore R., III; and Wu, Randall, to Union Carbide Corporation. Process for manufacture of tubular film. 4,447,387, Cl. 264-566.000.

Blanchart, Alain P. O., to Electrochemische Energieconversie, N.V. Fuel cell electrode. 4,447,505, Cl. 429-42.000.

Blandford, Stephen. Coupling with overload protection. 4,447,217, Cl. 464-32.000.

Blank, Heinz U.: *See—*
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,447,368, Cl. 260-508.000.

Blaschke, Felix: *See—*
Schwesig, Guenter; and Blaschke, Felix, 4,447,787, Cl. 318-803.000.

Blase, Emil F.: *See—*
MacNamee, Richard W.; Reese, Morris T.; and Blase, Emil F., 4,447,346, Cl. 252-62.200.

Bleicher, Manfred; Buck, Manfred; Falchle, Jorg; and Wanner, Karl, to Robert Bosch GmbH. Power driven hammer drill. 4,446,931, Cl. 173-48.000.

Blewett, Charles W., to National Distillers and Chemical Corporation. Decomposition of polycarbonates to form terminally unsaturated alcohols. 4,447,659, Cl. 568-876.000.

Block, Jacob, to W. R. Grace & Co. Clay stabilizer composition for aqueous drilling fluids. 4,447,341, Cl. 252-8.50A.

Block, Myron J.: *See—*
Hirschfeld, Tomas E., 4,447,546, Cl. 436-527.000.

Blomgren, Rolf B. J. R.: *See—*
Jonsson, Jan U. E.; Blomgren, Rolf B. J. R.; and Edlund, Nils H., 4,446,661, Cl. 52-95.000.

Blosser, Virgil Y.; Isaksson, G. E.; Rupp, Dallas B.; and Singh, A. P., to NRM Corporation. Tire press, loader and method. 4,447,385, Cl. 264-315.000.

Blough, LeVone A.; and Gregory, David L. Mortice cylinder lock wrench structures. 4,446,763, Cl. 81-90.00B.

Blough, LeVone A.; and Gregory, David L. Template for mortice cylinder lock removal. 4,447,176, Cl. 408-72.00R.

Bobb, Lloyd C., to United States of America, Navy. Gated fiber optic transmission. 4,447,117, Cl. 350-96.150.

Boberg, Richard W.: *See—*
Kinnie, D. Craig; and Boberg, Richard W., 4,447,878, Cl. 364-200.000.

Bocchiaro, Augustino. Automatic cable stop for towing winch. 4,447,043, Cl. 254-269.000.

Bock, Siegfried; and Huetter, Horst, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Carrier for a droploadto be dropped from an aircraft. 4,447,025, Cl. 244-118.200.

Bockrath, Ronald E.: *See—*
Keske, Robert G.; Brooks, Gary T.; and Bockrath, Ronald E., 4,447,574, Cl. 524-400.000.

Bodart, Robert: *See—*
Schayes, Raymond G. G.; Gustin, Pol A. G. J.; Bodart, Robert; and Berck, Michel F. D. J., 4,447,829, Cl. 358-260.000.

Boden, Richard M.; Licciardello, Michael; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. 2-Ethyl hexyl and isobornyl methyl carbonates. 4,447,365, Cl. 260-463.000.

Bodine, Albert G. Rotary earth boring drill bit with centrifugal lubrication system. 4,446,933, Cl. 175-229.000.

Bodlovic, Tonko. Articulated luggage carrier. 4,447,088, Cl. 297-217.000.

Boeckmann, Eduard F. B.: *See—*
Grantland, Gary; Montgomery, Hugh S.; Boeckmann, Eduard F. B.; and Woodworth, Larry A., 4,447,674, Cl. 179-81.00R.

Boehm, Peter, to ITT Industries, Inc. Pre-assembled two-stage reaction device for vacuum brake boosters. 4,447,897, Cl. 91-369.00B.

Boeing Company, The: *See—*
Maraghe, Alex, 4,447,026, Cl. 244-129.500.
Mulkey, Owen R., 4,447,118, Cl. 350-96.160.
Wang, Timothy, 4,447,027, Cl. 244-212.000.
Wang, Timothy, 4,447,028, Cl. 244-212.000.

Bohn, Donald L. Angling snow blade. 4,446,639, Cl. 37-280.000.

Boileau, Sylvie: *See—*
Bergeret, Wilfrid; Gautier, Jean-Claude; Raynal, Serge; and Boileau, Sylvie, 4,447,584, Cl. 525-340.000.

Boisvert, Pierre U.; and Bapst, Jean-Daniel, to Barcana Ltee. Automatic artificial tree. 4,447,279, Cl. 156-61.000.

Bollian, Erwin, to Dr. Eugen Durrwachter Doduco KG. Process for the production of bi-metallic contact rivets. 4,446,618, Cl. 29-882.000.

Bolton, Brent C.; Hagenmaier, Carl F., Jr.; Logsdon, Gary L.; and Miner, Robert L., Jr., to Burroughs Corporation. Reduction processor for executing programs stored as treelike graphs employing variable-free applicative language codes. 4,447,875, Cl. 364-200.000.

Bomin Bochumer Mineralol GmbH & Co.: *See—*
Brennecke, Peter W. R.; Ewe, Henning; and Justi, Eduard W., 4,447,302, Cl. 204-128.000.

Bone, Michael C.: *See—*
King, George D. H.; and Bone, Michael C., 4,447,116, Cl. 350-96.130.

Bone, Rainer: *See—*
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; Sellmaier, Franz; and Reum, Helmut, 4,446,723, Cl. 73-35.000.

Boning, Bernward; Bone, Rainer; Nagel, Rudolf; Sellmaier, Franz; and Reum, Helmut, to Robert Bosch GmbH. Optical combustion event sensor structure particularly knock sensor for an internal combustion engine. 4,446,723, Cl. 73-35.000.

Book, Gerard, to SECEMIA. Method and apparatus for slow cooling of heated grain. 4,446,630, Cl. 34-65.000.

Boots Company PLC, The: *See—*
Davies, Roy V., 4,447,435, Cl. 424-258.000.

Borchardt, John K.; and Brown, David L., to Halliburton Co. Method of clay stabilization in enhanced oil recovery. 4,447,342, Cl. 252-8.55D.

Borck, Hans-Volker: *See—*
Reuther, Wolfgang; and Borck, Hans-Volker, 4,447,448, Cl. 424-285.000.

Borg-Warner Corporation: *See—*
Lech, Thaddeus, Jr., 4,446,955, Cl. 192-106.200.

Borsuk, Leslie M., to International Telephone & Telegraph Corporation. Fiber optic cable clamp. 4,447,120, Cl. 350-96.200.

Bortner, David: *See—*
Bierman, Laurence W.; Long, Gary L.; and Bortner, David, 4,447,403, Cl. 423-20.000.

Boruschewitz, Manfred; and Hamisch, Hansjoachim, to Robert Bosch GmbH. Vibration sensor, particularly knock sensor for internal combustion engines. 4,446,722, Cl. 73-35.000.

Bose, Herbert. Warning light. 4,447,802, Cl. 340-119.000.

Botzem, Werner; Knappe, Ortwin; and Laug, Reiner, to Transnuklear GmbH. Transportation and/or storage containers for radioactive materials. 4,447,730, Cl. 250-506.100.

Boudjouk, Philip R., to North Dakota State University. Ultrasonically promoted hydrosilations. 4,447,633, Cl. 556-479.000.

Bowen, Gary D.; and Bowen, James L., to Genpak Corporation. Fluid tight container and closure assembly. 4,446,986, Cl. 220-307.000.

Bowen, James L.: *See—*
Bowen, Gary D.; and Bowen, James L., 4,446,986, Cl. 220-307.000.

Bowyer, Michael L.; and Whiteford, Drummond, to Baker Oil Tools, Inc. Adjustable safety valve. 4,446,922, Cl. 166-322.000.

Boyadjieff, George I; and Monahan, Frederick A., to Varco International, Inc. Pipe spinning tool. 4,446,761, Cl. 81-57.190.

Boyce, Arthur J.; and Gold, David, to Charles Stark Draper Laboratory, Inc., The. Ball contact slip ring assembly. 4,447,752, Cl. 310-232.000.

Boyce, Gregory H.: *See—*
Davis, Larry A.; Boyce, Gregory H.; Mulloy, Timothy P.; Nebeker, Neil J.; Newman, Elmer C.; Quinn, Donald J.; and Adamson, David L., 4,447,307, Cl. 204-267.000.

Boyle, John T. A.: *See—*
Archibald, John L.; and Boyle, John T. A., 4,447,604, Cl. 544-219.000.

Bozik, John E.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,447,557, Cl. 502-161.000.

Brackman, Warren A., to Rothmans of Pall Mall Canada Limited. Tobacco metering and feeding system. 4,446,876, Cl. 131-110.000.

Bradbury, John A.; Rowlands, Reuben; and Tipping, James W., to Imperial Chemical Industries Plc. Network of bonded expanded polystyrene beads having chemically delaminated vermiculite impregnant. 4,447,491, Cl. 428-304.400.

Bradford, Donald C.: *See—*
Stafford, George C.; and Bradford, Donald C., 4,447,728, Cl. 250-423.00R.

Bradford, Larry R.: *See—*
Clinefelter, Richard L.; and Bradford, Larry R., 4,446,903, Cl. 152-323.000.

Bradley, John J.; Franklin, Benjamin S.; Slosberg, David M.; Appell, Marc; Cassonnet, Jean-Claude; and De Sabatier, Philippe D., to Compagnie Honeywell Bull. Apparatus and method for communication of information between processes in an information system. 4,447,874, Cl. 364-200.000.

Bradley, Kirk D.; Koski, Robert R.; and Clark, James W., to Envirotech Corporation. Suspension for pivotally mounting a rigid axle assembly. 4,447,072, Cl. 280-492.000.

Brady, John D.: *See—*
Gula, John A.; Brady, John D.; Thompson, Thomas C.; and Alt, Joyce M., 4,447,230, Cl. 604-122.000.

Braithwaite, John C.: *See—*
Sharp, Michael R. G.; and Braithwaite, John C., 4,447,777, Cl. 324-220.000.

Brandstadter, Jack M., to Ex-Cell-O Corporation. Road wheel suspension. 4,447,073, Cl. 280-705.000.

Brannen, Wyley W., to Callaway Brothers, Inc. Gasketless no-drip oil can dispenser. 4,446,989, Cl. 222-81.000.

Brannstrom, Bo: *See—*
Kristiansen, Olaf; and Brannstrom, Bo, 4,446,804, Cl. 114-74.00R.

Branscombe, Richard: *See—*
Oliver, Robert; and Branscombe, Richard, 4,446,980, Cl. 215-276.000.

Brantingham, George L.; Lou, Perry W.; Housey, Lawrence J.; Tubbs, Graham S.; and Teza, Jeffrey R., to Texas Instruments Incorporated. Data processing system integrated circuit having modular memory add-on capacity. 4,447,881, Cl. 364-488.000.

Bray, Christopher: *See—*
Miller, Russell S.; Dietz, Peter W.; and Bray, Christopher, 4,446,910, Cl. 165-1.000.

Brecker, Lawrence R.; Keeley, Charles; and Brilliant, Stuart D., to Argus Chemical Corporation. Polyvinyl chloride resin compositions having a high volume resistivity and resistance to deterioration when heated at temperatures above 100 degrees C. 4,447,569, Cl. 524-109.000.

Bredow, Walter, to C. Behrens AG. A tool for exchanging a matrix in a metal working machine. 4,446,609, Cl. 29-270.000.

Breier, Walter: *See—*
Arndt, Manfred; Breier, Walter; Riegert, Hermann; Schmidt, Heinz; Schwarz, Hermann; and Warneke, Helmut, 4,446,978, Cl. 215-13.00R.

Bremer, Mary E. Carry cover art oil canvas. 4,446,968, Cl. 206-451.000.

Brennecke, Peter W. R.; Ewe, Henning; and Justi, Eduard W., to Bomin Bochumer Mineralol GmbH & Co. Highly porous electrodes hot pressed from nickel powder for alkaline water electrolyzers. 4,447,302, Cl. 204-128.000.

Bressi, Nick. Rotary indicator. 4,446,810, Cl. 116-307.000.

Breukelman, Robert G.: *See—*
Karubian, Ralph; Breukelman, Robert G.; and Weston, Lynn R., 4,446,598, Cl. 17-1.00B.

Breuker, Stephen J.; and Richmann, Harold L., to Gerber Products Company. Apparatus and method for continuous pH monitoring. 4,447,775, Cl. 324-438.000.

Breuninger, Manfred W., to Hoffmann-La Roche Inc. Process for the manufacture of citral. 4,447,649, Cl. 568-484.000.

Brewer, Ralph J.: *See—*
Bruce, Charles W.; and Brewer, Ralph J., 4,446,721, Cl. 73-29.000.

Bridgestone Tire Company Limited: *See—*
Azuma, Yusaku; Kitayama, Yoshifumi; and Ozawa, Chiaki, 4,447,014, Cl. 242-55.000.
Endo, Kazuyuki; and Makino, Shigeo, 4,446,901, Cl. 152-209.00R.
Tamura, Akira; and Suzuki, Yasuo, 4,446,905, Cl. 152-361.0DM.

Brilliant, Stuart D.: *See—*
Brecker, Lawrence R.; Keeley, Charles; and Brilliant, Stuart D., 4,447,569, Cl. 524-109.000.

British Aerospace Public Limited Company: *See—*
Humphries, Martin E., 4,446,662, Cl. 52-121.000.

British Gas Corporation: *See—*
Sharp, Michael R. G.; and Braithwaite, John C., 4,447,777, Cl. 324-220.000.

Britschgi, Hugo; and Rosenberg, Burkard, to Bell Maschinenfabrik Aktiengesellschaft. Method for the dewatering of lump peat. 4,447,334, Cl. 210-783.000.

Brochier, Michel; and Chavand, Jean, to Commissariat a l'Energie Atomique. Apparatus for breaking up metal parts. 4,447,694, Cl. 219-68.000.

Broney, Scott C.: *See—*
Chesney, Joseph J., Jr.; and Broney, Scott C., 4,447,267, Cl. 106-93.000.

Bronicki, Lucien Y.; Hershman, Haim; and Lehmann, Gerard, to Solmat Systems, Ltd. Solar pond power plant and method of operating the same as a part of an electrical generating system. 4,446,700, Cl. 60-641.800.

Brookes, Malcolm J.: *See—*
Heinzelman, Bert D.; Spranger, Douglas M.; Brookes, Malcolm J.; and Kuphal, John E., 4,447,482, Cl. 428-42.000.

Brooks, Gary T.: *See—*
Keske, Robert G.; Brooks, Gary T.; and Bockrath, Ronald E., 4,447,574, Cl. 524-400.000.

Brooks, Le Ester. Bicycle drive mechanism. 4,447,068, Cl. 280-260.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Aoshima, Shozo; Hirose, Noboru; and Ishikawa, Michio, 4,446,746, Cl. 73-862.330.

Broughton, Donald B., to UOP Inc. Continuous desalination process. 4,447,329, Cl. 210-673.000.

Brown, Clyde O., to United States of America, Energy. Slag capture and removal during laser cutting. 4,447,701, Cl. 219-121.0LG.

Brown, David L.: *See—*
Borchardt, John K.; and Brown, David L., 4,447,342, Cl. 252-8.55D.

Brown Group Recreational Products, Inc.: *See—*
Cunard, Joel C.; and Ziegler, William H., Jr., 4,447,093, Cl. 301-63.0PW.

Brown, Robert E., to United States of America, Navy. Pulse driver for flux gate magnetometer. 4,447,776, Cl. 324-253.000.

Brown & Williamson Tobacco Corporation: *See—*
Porenski, Harry S., Jr., 4,446,878, Cl. 131-336.000.

Bruce, Charles W.; and Brewer, Ralph J., to United States of America, Army. Atmospheric liquid water content measurement and calibration system. 4,446,721, Cl. 73-29.000.

Bruce, Lars M., to Uddeholms Aktiebolag. Method for manufacturing tubes by sintering. 4,447,389, Cl. 419-6.000.

Bubik, Alfred; Dahl, Hans; Holik, Herbert; Kurtz, Rudiger; and Seider, Werner, to Escher Wyss GmbH. Dewatering apparatus for longitudinal wire papermaking machines. 4,447,295, Cl. 162-300.000.

Buck, Manfred: *See—*
Bleicher, Manfred; Buck, Manfred; Falchle, Jorg; and Wanner, Karl, 4,446,931, Cl. 173-48.000.

Buck, Ronald G., to Litton Systems, Inc. Power controlled microwave oven. 4,447,693, Cl. 219-10.55M.

Bucking, Hans-Walter: *See—*
May, Adolf; and Bucking, Hans-Walter, 4,447,343, Cl. 252-8.750.

Buendia, Jean: *See—*
Martel, Jacques; Buendia, Jean; and Nierat, Jeanine, 4,447,637, Cl. 560-124.000.

Buerk, Hermann: *See—*
Schuster-Woldan, Hans; Buerk, Hermann; Koch, Dirk; and Weingand, Kaspar, 4,447,292, Cl. 156-644.000.

Bukowiecki, Stanislaw; and Paglotke, Karlheinz, to Cerberus AG. Method and apparatus for reducing false alarms in gas warning installations caused by spurious gases. 4,446,718, Cl. 73-23.000.

Bullock, James H., to Clairol Incorporated. Hair curlers having PTC electric heating element. 4,447,705, Cl. 219-222.000.

Bumb, George: *See—*
Campagna, Gerald L., 4,446,896, Cl. 141-198.000.

Bumb, Timothy: *See—*
Campagna, Gerald L., 4,446,896, Cl. 141-198.000.

Bunch, Earnest B., Jr. Delivery mechanism for paper sheet processing apparatus. 4,447,219, Cl. 493-410.000.

Bunn, Stuart E.; and Owsely, Herbert B., to Ball Valve Co., Inc. Compressor unloader apparatus. 4,447,193, Cl. 417-441.000.

Buri, Hermann; and Karth, Beat, to Nyffeler, Corti AG. Apparatus for sealing containers. 4,447,184, Cl. 413-26.000.

Burke Industries, Inc.: *See—*
Gerber, Dennis H., 4,446,983, Cl. 220-219.000.

Burkhardt, Gisbert, to Licentia Patent-Verwaltungs G.m.b.H. Conveying device with pusher fingers. 4,446,962, Cl. 198-457.000.

Burnham, Robert D., to Xerox Corporation. Semiconductor devices with nonplanar characteristics produced in chemical vapor deposition. 4,447,904, Cl. 372-45.000.

Burroughs Corporation: *See—*
Bolton, Brent C.; Hagenmaier, Carl F., Jr.; Logsdon, Gary L.; and Miner, Robert L., Jr., 4,447,875, Cl. 364-200.000.
Shapiro, Ira P., 4,447,798, Cl. 377-55.000.

Burtis, Wilson A. Aircraft propulsion assembly. 4,446,695, Cl. 60-200.100.

Busch, Frank R. Carburetor. 4,447,371, Cl. 261-44.00E.

Bush, Randall G.: *See—*
Gach, Peter P.; and Bush, Randall G., 4,446,979, Cl. 215-203.000.

Buss, Waldeen C., to Chevron Research Company. Composition and a method for its use in dehydrocyclization of alkanes. 4,447,316, Cl. 208-138.000.

Busse, Wolf-Dieter; Krauthausen, Edmund; and Mardin, Mithat, to Bayer Aktiengesellschaft. Sulphenamides-containing lipoxygenase inhibiting agents and their use in pharmaceutical compositions. 4,447,440, Cl. 424-269.000.

Butterfield Group: *See—*
Butterfield, Ida M., 4,447,229, Cl. 604-111.000.

Butterfield, Ida M., to Butterfield Group. Tamper-resistant hypodermic syringe. 4,447,229, Cl. 604-111.000.

Butuk, Fred N.: *See—*
Machnee, Cecil; and Butuk, Fred N., 4,446,801, Cl. 111-86.000.

Buxton, James L.: *See—*
Wilson, David A.; Buxton, James L.; and Green, Philip S., 4,446,740, Cl. 73-626.000.

C. Behrens AG: *See—*
Bredow, Walter, 4,446,609, Cl. 29-270.000.

C. Conradty Nurnberg GmbH & Co. Kg: *See—*
Zollner, Dieter H.; Lauterbach-Dammler, Inge; and Rittmann, Friedrich, 4,447,300, Cl. 204-67.000.

Calderwood, Murray W.: *See—*
Ferguson, James H.; and Calderwood, Murray W., 4,447,739, Cl. 290-52.000.

California Institute of Technology: *See—*
Aston, Graeme, 4,447,773, Cl. 328-233.000.

Callaway Brothers, Inc.: *See—*
Brannen, Wyley W., 4,446,989, Cl. 222-81.000.

Calvert, Alan H.: *See—*
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,447,608, Cl. 544-287.000.

Cama, Lovji D.: *See—*
Firestone, Raymond A.; Cama, Lovji D.; and Christensen, Burton G., 4,447,602, Cl. 544-21.000.

Cambridge Instruments Limited: *See—*
Crawley, John A., 4,446,817, Cl. 118-725.000.

Camino Laboratories, Inc.: *See—*
Bailey, Wilber H., 4,446,715, Cl. 73-1.00R.

Campagna, Gerald L., to Bumb, George; and Bumb, Timothy. Cup filling apparatus. 4,446,896, Cl. 141-198.000.

Campana, Jerry M.; and Day, Richard B., to United States of America, Navy. Net recovery device and method. 4,447,083, Cl. 294-66.00R.

Campbell, David A., to Rolls-Royce Limited. Fluid pressure control in a gas turbine engine. 4,447,190, Cl. 416-95.000.

Campbell, Jeptha E.; and Gilchrist, James E. Microscope slides. 4,447,140, Cl. 350-534.000.

Canadian CoOperative Implements Limited: *See—*
Rempel, William; and Kor, Bouko J., 4,446,683, Cl. 56-296.000.

Canadian General Electric Company Limited: *See—*
Ferguson, James H.; and Calderwood, Murray W., 4,447,739, Cl. 290-52.000.

Canadian Patents & Development Limited: *See—*
Malatesta, Vincenzo; Willis, Clive; and Hackett, Peter A., 4,447,304, Cl. 204-157.10R.

Canon Kabushiki Kaisha: *See—*
Hirata, Noritsugu; Takimoto, Hiroyuki; and Maeda, Masaya, 4,447,837, Cl. 360-33.100.
Kitamura, Takashi, 4,447,136, Cl. 350-432.000.
Matsuoka, Kazuhiko; and Minoura, Kazuo, 4,447,112, Cl. 350-6.500.
Soma, Tsunenori, 4,447,131, Cl. 350-333.000.
Terasawa, Koji, 4,447,820, Cl. 346-140.00R.
Yamada, Yu, 4,447,147, Cl. 355-51.000.

Carl Freudenberg, Firma: *See—*
Ehrmann, Peter; Fuchs, Dieter; and Spies, Karl-Heinrich, 4,447,064, Cl. 277-134.000.

Carl Schenck AG: *See—*
Schoenfeld, Harald, 4,446,732, Cl. 73-461.000.

Carl-Zeiss-Stiftung: *See—*
Kreuttner, Albert, 4,447,372, Cl. 264-2.200.

Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See—*
Biber, Klaus, 4,447,139, Cl. 350-522.000.

Carlson, Richard O., to General Electric Company. High temperature thermistor and method of assembling the same. 4,447,799, Cl. 338-22.00R.

Carlson, Ronald R.: *See—*
Wilson, Kermit H.; and Carlson, Ronald R., 4,446,796, Cl. 108-69.000.

Carlsson, Rune: *See—*
Sandered, Bror; Carlsson, Rune; and Andersson, Bengt, 4,447,013, Cl. 242-54.00R.

Carlyle, Ian C.; Savage, David S.; and Sleigh, Thomas, to Akzo N.V. Mono- and bisquaternary ammonium derivatives of 2β,16β-di-amino-3α-androstane derivatives and pharmaceutical preparations containing same. 4,447,425, Cl. 424-241.000.

Carruthers, Eben H., to Carruthers Equipment Co. Squid cleaning method and apparatus. 4,446,601, Cl. 17-51.000.

Carruthers Equipment Co.: *See—*
Carruthers, Eben H., 4,446,601, Cl. 17-51.000.

Carus Corporation: *See—*
Mein, Peter G., 4,447,406, Cl. 423-199.000.

Caskey, Terrence L.; Parker, Theodore L.; and Martin, Patrick H., to Dow Chemical Company, The. Method of preparing epoxy resins having low hydrolyzable chloride contents. 4,447,598, Cl. 528-489.000.

Cason, William C.: *See—*
Kuecker, Ward A.; Stratton, Susan D.; and Cason, William C., 4,447,888, Cl. 364-900.000.

Casperson, John R.; and Hann, Paul D., to Phillips Petroleum Company. Carbon black reactor with angled combustion chamber and non-aligned tangential hot gas entries for production of negative tint residual carbon black. 4,447,401, Cl. 422-151.000.

Cassella Aktiengesellschaft: *See—*
Muller, Rolf; and Wille, Herbert, 4,447,623, Cl. 549-36.000.

Cassonnet, Jean-Claude: *See—*
Bradley, John J.; Franklin, Benjamin S.; Slosberg, David M.; Appell, Marc; Cassonnet, Jean-Claude; and De Sabatier, Philippe D., 4,447,874, Cl. 364-200.000.

Castillo, Carmen: *See—*
Hayes, John C.; and Castillo, Carmen, 4,447,552, Cl. 502-41.000.

Castonguay, Roger N., to General Electric Company. Isolation shields for a 2500-4000 amp circuit breaker compartment. 4,447,682, Cl. 200-50.0AA.

Cataldo, Roy S., to General Motors Corporation. Internal combustion engine method for delayed reaction stratified combustion. 4,446,821, Cl. 123-26.000.

Caterpillar Tractor Co.: *See—*
Merritt, Paul H.; and Fuller, Francis W., 4,446,607, Cl. 29-33.00E.
Winzeler, James E.; and Windish, Willis E., 4,446,758, Cl. 74-781.00R.

CCT Associates: *See—*
Kaye, Gordon E.; Schwartz, Eugene B.; and Sollins, Irving V., 4,447,223, Cl. 604-61.000.

Celanese Corporation: *See—*
Shimp, David A., 4,447,586, Cl. 525-504.000.

Celaya, Emparanza Y Galdos S.A. (Cegasa): *See—*
Larranaga, Javier A., 4,447,507, Cl. 429-54.000.

Cemedine Co., Ltd.: *See—*
Takagi, Yasuo; and Horibe, Michiharu, 4,447,579, Cl. 525-113.000.

Centofanti, Joan G.: *See—*
Monte, Alex A.; and Centofanti, Joan G., 4,447,527, Cl. 435-7.000.

Centre National de la Recherche Scientifique: *See—*
Heindl, Rudolf; and Robert, Andre, 4,447,305, Cl. 204-192.00C.

Cerberus AG: *See—*
Bukowiecki, Stanislaw; and Paglotke, Karlheinz, 4,446,718, Cl. 73-23.000.
Mudge, Philip H.; and Kahl, William G., Jr., 4,447,726, Cl. 250-342.000.

Cerefice, Steven A.: *See—*
Donohue, John A.; Knobloch, James O.; Petty-Weeks, Bruce; and Cerefice, Steven A., 4,447,645, Cl. 562-473.000.

Champion International Corporation: *See—*
Cruse, Aubrey R., 4,447,296, Cl. 162-312.000.

Champion Spark Plug Italiana, S.p.A.: *See—*
Maiocco, Giuseppe A., 4,446,589, Cl. 15-250.320.

Chao, Tai-Hsiang, to UOP Inc. Preparation of alumina hydrosol from aluminum sulfate solution. 4,447,351, Cl. 252-313.00R.

Chap, John P., to Selfix, Inc. Peripheral decorative article. 4,446,642, Cl. 40-152.100.

Chapman, Leslie J., to Keith Hancock Structures Limited. Load support arrangement. 4,447,029, Cl. 248-246.000.

Chappell, Charles W.; and Spletzer, Eldon G., to Procter & Gamble Company, The. Process for making filled articles from polymeric material. 4,447,373, Cl. 264-4.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Boyce, Arthur J.; and Gold, David, 4,447,752, Cl. 310-232.000.

Chattin, Jesse R. Pedal telescoping device. 4,446,754, Cl. 74-594.300.

Chavand, Jean: *See—*
Brochier, Michel; and Chavand, Jean, 4,447,694, Cl. 219-68.000.

Chekroun, Claude D.; and Michel, Yves C., to Societe d'Etude du Radant. Lens for electronic scanning in the polarization plane. 4,447,815, Cl. 343-754.000.

Chemical Research & Licensing Company: *See—*
Smith, Lawrence A., Jr.; Jones, Edward M., Jr.; and Hearn, Dennis, 4,447,668, Cl. 585-639.000.

Chemie Linz AG: *See—*
Stern, Gerhard; and Weinrotter, Klaus, 4,447,568, Cl. 524-101.000.

Chemiefaser Lenzing AG: *See—*
Stern, Gerhard; and Weinrotter, Klaus, 4,447,568, Cl. 524-101.000.

Chemische Werke Huels AG: *See—*
Horlbeck, Gernot; and Feldmann, Rainer, 4,447,573, Cl. 524-394.000.

Chemische Werke Huels Aktiengesellschaft: *See—*
Mueller, Dieter J.; Fricke, Hermann; and Spielbrink, Heinrich, 4,447,273, Cl. 148-6.15R.

Chesney, Joseph J., Jr.; and Broney, Scott C., to Tile Council of America, Inc. Dry set grout. 4,447,267, Cl. 106-93.000.

Chevillat, Pierre R.; and Ungerboeck, Gottfried, to International Business Machines Corporation. Method of transmitting binary data sequences and arrangement for enabling the rapid determination of the end of a transmitted binary data sequence. 4,447,908, Cl. 375-42.000.

Chevron Research Company: *See—*
Buss, Waldeen C., 4,447,316, Cl. 208-138.000.
Ho, Andrew W., 4,447,450, Cl. 424-304.000.

Chiba, Toshiyuki: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,447,430, Cl. 424-246.000.

Chicago Lock Co.: *See—*
Steinbach, Robert L., 4,446,709, Cl. 70-363.000.

Chikamura, Takao: *See—*
Ogawa, Kazufumi; Chikamura, Takao; and Shibata, Takuo, 4,447,720, Cl. 250-211.00J.

Chin, Aland K.; DiGiuseppe, Michael A.; and Temkin, Henryk, to Bell Telephone Laboratories, Incorporated. Light emitting diode. 4,447,822, Cl. 357-17.000.

Chobanov, Tsvetko; Kunze, Dieter; and Woeffler, Friedrich, to Varta Batterie Aktiengesellschaft. Manufacture of electrochemical high temperature cells. 4,447,376, Cl. 264-42.000.

Chore-Time Equipment, Inc.: *See—*
Rigterink, Preston D., 4,446,818, Cl. 119-52.0AF.

Chou, Chun-Chao: *See—*
Pence, Dallas T.; and Chou, Chun-Chao, 4,447,353, Cl. 252-630.000.

Christ-Janer, Victor F. Structural member suitable for use as a joist, beam, girder or the like. 4,446,668, Cl. 52-729.000.

Christe, Karl O.; and Wilson, William W., to United States of America, Navy. Perfluoroammonium salts fluoroxenon anions. 4,447,407, Cl. 423-262.000.

Christensen, Burton G.: *See—*
Firestone, Raymond A.; Cama, Lovji D.; and Christensen, Burton G., 4,447,602, Cl. 544-21.000.

Christensen, Per B.: *See—*
Dantzer-Sorensen, Bendt; and Christensen, Per B., 4,446,597, Cl. 16-364.000.

Christensson, Erik G.: *See—*
Bjork, Anders K. K.; Olsson, Knut G.; Abramo, Aina L.; and Christensson, Erik G., 4,447,433, Cl. 424-250.000.

Christiansen, Uwe; Rau, Karlheinz; Steinkohl, Anton; and Streb, Bruno, to Heraeus Quarzschmelze GmbH. Light-weight mirror blank for astronomical purposes and method of making a supporting framework for such blanks. 4,447,130, Cl. 350-310.000.

Christopherson, Kjell H. I.: *See—*
Riede, Gerhard; and Christopherson, Kjell H. I., 4,447,326, Cl. 210-321.300.

Chronis, George C. Portion control dressing and food dispenser. 4,446,988, Cl. 222-63.000.

Chugai Ro Co., Ltd.: *See—*
Maeda, Yasunori; and Yamasaki, Akinobu, 4,447,010, Cl. 239-414.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shin-ichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, 4,447,453, Cl. 424-319.000.

Ciba-Geigy Corporation: *See—*
Aeschlimann, Peter, 4,447,359, Cl. 260-207.000.
Dexter, Martin; and Winter, Roland A. E., 4,447,511, Cl. 430-15.000.
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,447,360, Cl. 260-239.00A.
Holzle, Gerd; and Begrich, Rainer, 4,447,357, Cl. 260-153.000.
Kunz, Walter, 4,447,625, Cl. 549-265.000.
Sallmann, Alfred, 4,447,431, Cl. 424-246.000.
Schwander, Hansrudolf; and Furrer, Peter, 4,447,358, Cl. 260-205.000.

Cipelletti, Alberto, to Frigomat S.a.s. di Alberto Cipelletti & C. Pasteurization system with heat recovery. 4,446,778, Cl. 99-455.000.

Claas OHG: *See—*
Jennen, Wolfgang; and Sprugel, Gerd, 4,446,682, Cl. 56-119.000.

Claiborne, J. Lyle, to Dixie Yarns, Inc. Odor scavenging system. 4,447,243, Cl. 8-188.000.

Clairol Incorporated: *See—*
Bullock, James H., 4,447,705, Cl. 219-222.000.

Clapper, Robert L.: *See—*
Hankosky, Andrew; and Clapper, Robert L., 4,447,036, Cl. 251-63.400.

Clark, James W.: *See—*
Bradley, Kirk D.; Koski, Robert R.; and Clark, James W., 4,447,072, Cl. 280-492.000.

Clark, John E.: *See—*
Dupuy, Ronald E.; and Clark, John E., 4,447,065, Cl. 277-184.000.

Clark, Norman O., to English Clays Lovering Pochin & Co. Ltd. Pressure filters. 4,447,327, Cl. 210-350.000.

Clark, R. Donald, to Eastman Kodak Company. Process for the preparation of 2-amino-6-nitrobenzothiazole. 4,447,617, Cl. 548-164.000.

Clarke, John M., to Clarke, John M. Thoracentesis device. 4,447,235, Cl. 604-169.000.

Clean-Tex A/S: *See—*
Knudsen, Poul H., 4,447,201, Cl. 425-397.000.

Clelland, John P.: *See—*
Renfro, Vernon E.; Gudgeon, Ronald L.; Clelland, John P.; and Cole, Clyde C., 4,447,186, Cl. 414-589.000.

Clement, Carl P.: *See—*
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl P.; Stengel, Frederick H.; and Hayslett, David D., 4,447,398, Cl. 422-102.000.

Clement, Warren J., to Sprague Electric Company. Capacitor assembly. 4,447,852, Cl. 361-306.000.

Clevett, Merton L.; and Clevett, Mildred L. Solar oven. 4,446,854, Cl. 126-451.000.

Clevett, Mildred L.: *See—*
Clevett, Merton L.; and Clevett, Mildred L., 4,446,854, Cl. 126-451.000.

Clinefelter, Richard L.; and Bradford, Larry R., to Gates Rubber Company, The. Non-pneumatic tire. 4,446,903, Cl. 152-323.000.

Clingman, William H.; and Hall, Kenneth R., to Precision Machine Products, Inc. Proportional flow sampler. 4,446,748, Cl. 73-863.030.

Clini-Therm Corporation: *See—*
Vaguine, Victor A., 4,446,874, Cl. 128-804.000.
Close, Donald, to David Hudson, Inc. Novel fluoroelastomer film compositions and method for the preparation thereof. 4,447,478, Cl. 427-407.100.
Cluett, Peabody & Co., Inc.: *See—*
Lawrence, Jackson; Webb, Harry A.; and Frederick, John R., 4,446,606, Cl. 26-18.600.
Cluff, Coran L.: *See—*
Jensen, Reed J.; Thorne, James M.; Cluff, Coran L.; and Hayes, John K., 4,447,303, Cl. 204-157.10R.
Coeffic, Jean-Pierre, to Deere & Company. Rake wheel attachment. 4,446,685, Cl. 56-377.000.
Coelho, Gregorio J.: *See—*
Karubian, Ralph K.; and Coelho, Gregorio J., 4,446,599, Cl. 17-1.00B.
Coenen, Hubert; and Kriegel, Ernst, to FRIED. Krupp Gesellschaft mit beschrankter Haftung. Method for underground gasification of solid fuels. 4,446,921, Cl. 166-267.000.
Cogswell, Frederic N.; and Tomka, Jiri G., to Imperial Chemical Industries PLC. Thermotropic liquid crystal shaped article. 4,447,599, Cl. 528-502.000.
Cohen, Leonard G., to Bell Telephone Laboratories, Incorporated. Multimode optical fiber with radially varying attenuation center density. 4,447,124, Cl. 350-96.300.
Cohen, Leonard G.; Mammel, Wanda L.; and Marcuse, Dietrich, to Bell Telephone Laboratories, Incorporated. Low loss single mode fiber. 4,447,127, Cl. 350-96.330.
Cohen, Robert K., to General Electric Company. Resistance spot welder adaptive control. 4,447,700, Cl. 219-117.100.
Cohen, Saul M.; and LeBlanc, John R., to Monsanto Company. Heat-curable compositions comprising isocyanuric acid-acrolein derivatives. 4,447,594, Cl. 528-245.000.
Coker, Lowell E.; and Venkatasubramanian, Kalyanasundram, to H. J. Heinz Company. Process for the manufacture of low D.E. maltodextrins. 4,447,532, Cl. 435-99.000.
Cole, Clyde C.: *See—*
Renfro, Vernon E.; Gudgeon, Ronald L.; Clelland, John P.; and Cole, Clyde C., 4,447,186, Cl. 414-589.000.
Colin, Jean P., to Ateliers et Chantiers de Bretagne A.C.B. Barge-tug connection apparatus. 4,446,808, Cl. 114-248.000.
Collington, Eric W.; Finch, Harry; and Newton, Roger F., to Glaxo Group Limited. Prostanoid compounds and pharmaceutical compositions. 4,447,428, Cl. 424-244.000.
Columbia Industries Corporation: *See—*
Hahn, Linus K., 4,446,846, Cl. 126-25.00R.
Combustion Engineering, Inc.: *See—*
Andersen, Mark S., 4,446,799, Cl. 110-263.000.
Cominco Ltd.: *See—*
Willans, Robert D. H., 4,447,308, Cl. 204-279.000.
Commander Electrical Materials, Inc.: *See—*
Nattel, William, 4,447,030, Cl. 248-27.100.
Commissariat a l'Energie Atomique: *See—*
Bedu, Marcel; and Jeanjean, Marcel, 4,447,766, Cl. 315-241.00R.
Brochier, Michel; and Chavand, Jean, 4,447,694, Cl. 219-68.000.
Heindl, Rudolf; and Robert, Andre, 4,447,305, Cl. 204-192.00C.
Commonwealth Scientific and Industries Research Organization: *See—*
Lubbock, Frederick J.; Mok, Christopher C. K.; and Eldridge, Robert J., 4,447,475, Cl. 427-213.310.
Compagnie Francaise des Petroles: *See—*
Fey, Jean-Jacques, 4,447,340, Cl. 252-8.50C.
Compagnie General d'Electricite: *See—*
Pugliese, Vincent; and Farcy, Jean-Claude, 4,447,789, Cl. 330-4.300.
Compagnie Generale des Etablissements Michelin: *See—*
Madec, Francois; Delobelle, Emile; and Donvez, Georges, 4,446,902, Cl. 152-209.00B.
Compagnie Honeywell Bull: *See—*
Bradley, John J.; Franklin, Benjamin S.; Slosberg, David M.; Appell, Marc; Cassonnet, Jean-Claude; and De Sabatier, Philippe D., 4,447,874, Cl. 364-200.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Desserre, Jacques; and Helle, Michel, 4,447,839, Cl. 360-113.000.
Compagnoni, Felice. System to uniformly fill cases with fruit and vegetables. 4,446,670, Cl. 53-244.000.
Compo Industries, Inc.: *See—*
Slosberg, David K.; and Nowell, Gilbert S., 4,447,484, Cl. 428-137.000.
Conax Corporation: *See—*
Jankowiak, Roman; and Connell, Maurice W., 4,447,084, Cl. 294-83.0AE.
Connei S.p.A.: *See—*
Ghigliotti, Giovanni; and Lancella, Attilio, 4,447,108, Cl. 339-256.0RT.
Connell, James J.: *See—*
Minnick, Michael G.; Connell, James J.; and McGregor, Charles W., 4,447,472, Cl. 427-120.000.
Connell, Maurice W.: *See—*
Jankowiak, Roman; and Connell, Maurice W., 4,447,084, Cl. 294-83.0AE.
Connolly, Ronald G.: *See—*
Perkins, Ezra C.; and Connolly, Ronald G., 4,446,578, Cl. 3-1.910.
Container Corporation of America: *See—*
House, Richard F.; and Kohler, Karl A., 4,447,004, Cl. 229-52.00B.
Continental Disc Corporation: *See—*
Paul, Herman L., Jr., 4,446,883, Cl. 137-315.000.
Continental Packaging Company, Inc.: *See—*
Roth, Donald J.; Walter, John; and Kubis, Charles S., 4,446,984, Cl. 220-268.000.
Contraves AG: *See—*
Heller, Rudolf; and Kahn, Iwan, 4,446,792, Cl. 102-473.000.
Control Data Corporation: *See—*
Berg, William C., 4,447,842, Cl. 361-386.000.
Control Resources Corporation: *See—*
O'Pray, Bruce L., 4,447,813, Cl. 340-825.100.
Conver Corporation: *See—*
Reeves, Charles R., 4,447,866, Cl. 363-21.000.
Cook, Gerald R.; Iacoviello, John G.; Pinschmidt, Robert K., Jr.; and Davidowich, George, to Air Products and Chemicals, Inc. Binder compositions for making nonwoven fabrics having good hydrophobic rewet properties. 4,447,570, Cl. 524-127.000.
Cooper Industries, Inc.: *See—*
Sievers, Henry T., 4,446,764, Cl. 81-170.000.
Cooper, Larry V.; and Sloane, Michael W., Sr., to Ace Fishing & Rental Tools, Inc. Retrievable float valve assembly. 4,446,610, Cl. 29-421.00E.
Cooper, Ronald F.; and Johnson, Erlon F., to AMP Incorporated. Connector for fiber optic member. 4,447,121, Cl. 350-96.200.
Copal Company Limited: *See—*
Suzuki, Akira; Kaneko, Katumi; and Inoue, Nobuyoshi, 4,447,142, Cl. 354-246.000.
Copeman, Richard C.: *See—*
Hughes, Alan C.; Copeman, Richard C.; and Marples, Thomas N. R., 4,447,254, Cl. 71-67.000.
Copolymer Rubber & Chemical Corporation: *See—*
Gros, Harold J., 4,447,582, Cl. 525-279.000.
Cordis Corporation: *See—*
Quinn, David R., 4,447,236, Cl. 604-169.000.
Corney, John M., to Elliott Brothers (London) Limited. Redundant actuation system. 4,447,769, Cl. 318-564.000.
Corning Glass Works: *See—*
Ellis, James E.; Lidgard, Graham P.; Odstrchel, Gerald; and Riceberg, Louis J., 4,447,528, Cl. 435-7.000.
Leroy, Dominique L. J.; and Mazeau, Jean-Pierre, 4,447,550, Cl. 501-75.000.
Cornwell, Kenyon L.: *See—*
Schwartz, Charles A.; and Cornwell, Kenyon L., 4,447,464, Cl. 426-663.000.
Corse, Kenneth J. Multi-purpose baking utensil. 4,446,982, Cl. 220-8.000.
Cory, John C.: *See—*
Yunker, Conrad E.; Cory, John C.; and Meibos, Harold R., 4,447,537, Cl. 435-235.000.
Cosaert, Marijke, to Linenir. Alterable frame and small fastening block for assembling such a frame. 4,446,641, Cl. 40-152.000.
Costerousse, Germain: *See—*
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,447,424, Cl. 424-238.000.
Cote, Paul T., to General Electric Company. Power supply for low voltage incandescent lamp. 4,447,765, Cl. 315-240.000.
Cote, Paul T.: *See—*
Kornrumpf, William P.; and Cote, Paul T., 4,447,764, Cl. 315-240.000.
Council of Scientific and Industrial Research Rafi Marg: *See—*
Salman, Mohammad; Ray, Suprabhat; Kamboj, Ved P.; and Anand, Nitya, 4,447,622, Cl. 548-525.000.
Coursant, Roger-Henri, to U.S. Philips Corporation. Echo ultrasound examination device with multi-layer transducer. 4,446,739, Cl. 73-609.000.
Covillion, Joseph E. Heating system. 4,447,712, Cl. 219-486.000.
Cox, G. Robert, to Devine Manufacturing Company. Autoclaves. 4,447,402, Cl. 422-174.000.
Crawley, John A., to Cambridge Instruments Limited. Apparatus for vapor deposition of a film on a substrate. 4,446,817, Cl. 118-725.000.
Cremers, David A.; and Keller, Richard A., to United States of America, Energy. Apparatus and method for quantitative measurement of small differences in optical absorptivity between two samples using differential interferometry and the thermooptic effect. 4,447,153, Cl. 356-361.000.
Crisman, Robert W.; and DeAngelis, Dominick, to Mobil Oil Corporation. Fuel sludge treatment method, especially for leaded gasoline storage tank sludge. 4,447,332, Cl. 210-748.000.
Cronin, Michael J., to Lockheed Corporation. Variable frequency induction generator. 4,447,737, Cl. 290-6.000.
Crosby, Philip S.; and Jordan, Dale A., to Tektronix, Inc. Offset digital dither generator. 4,447,803, Cl. 340-347.0CC.
Crouse-Hinds Company: *See—*
Smith, Donald C.; Snow, Richard F.; and Pauli, George B., 4,447,864, Cl. 362-311.000.
Cruse, Aubrey R., to Champion International Corporation. Double nip hydrofoil. 4,447,296, Cl. 162-312.000.
Crutcher Resources Corporation: *See—*
Wheeler, Lionel H.; and Goekler, Robert G., 4,446,713, Cl. 72-308.000.
Cruz, Lourdes J.: *See—*
Olivera, Baldomero M.; Cruz, Lourdes J.; Gray, William R.; and Rivier, Jean E. F., 4,447,356, Cl. 260-112.50R.
Csongor, Desider G., to Northern Lights Trust. Modular mixing apparatus including interchangeable fluid processing means. 4,447,156, Cl. 366-80.000.

Culley, Bobby G., to Texas Instruments Incorporated. Electronic learning aid. 4,447,213, Cl. 434-201.000.
Cunard, Joel C.; and Ziegler, William H., Jr., to Brown Group Recreational Products, Inc. Wheel. 4,447,093, Cl. 301-63.0PW.
Custom Oilfield Products, Inc.: *See—*
Redmon, Billy L.; and Forester, Buford G., 4,446,887, Cl. 137-556.000.
Cutter Laboratories, Inc.: *See—*
Gay, John C.; McCurdy, H. Dennis; and Rose, Wayne B., 4,447,414, Cl. 424-81.000.
Cvacho, Daniel S. Methods of necking-in and flanging tubular can bodies. 4,446,714, Cl. 72-370.000.
Czajkowski, Norman. Putting practice device with spiral track. 4,447,059, Cl. 273-176.0FA.
Czech, Franz; and Subotic, Miroslav, to BBC Brown, Boveri & Company, Limited. Funnel-shaped support insulator and a high-voltage arrangement using the support insulator. 4,447,671, Cl. 174-28.000.
Dabi, Shmuel; and Loewrigkeit, Peter, to Witco Chemical Corporation. Stabilization of polyurethanes. 4,447,571, Cl. 524-192.000.
Dacor Corporation: *See—*
Pedersen, Vernon G., 4,446,859, Cl. 128-204.260.
Dage, Richard C.: *See—*
Grisar, J. Martin; Schnettler, Richard A.; and Dage, Richard C., 4,447,619, Cl. 548-318.000.
Dahl, Hans: *See—*
Bubik, Alfred; Dahl, Hans; Holik, Herbert; Kurtz, Rudiger; and Seider, Werner, 4,447,295, Cl. 162-300.000.
Dahm, Franz-Ludwig: *See—*
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, 4,447,614, Cl. 546-316.000.
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, 4,447,615, Cl. 546-317.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Inada, Junji, 4,446,674, Cl. 53-502.000.
Daicel Chemical Industries, Ltd.: *See—*
Watanabe, Shoji; and Miho, Takuya, 4,447,591, Cl. 528-80.000.
Daikin Kogyo Co., Ltd.: *See—*
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, 4,447,663, Cl. 570-150.000.
Dainippon Pharmaceutical Co., Ltd.: *See—*
Nishimura, Haruki; Naruto, Shunsuke; Mizuta, Hiroyuki; Kadokawa, Toshiaki; and Kawashima, Katsuyoshi, 4,447,439, Cl. 424-267.000.
Sakamoto, Hajimu; Kiyota, Takao; and Hayashi, Hiroshi, 4,447,355, Cl. 260-112.00B.
Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Sano, Tetsuo; and Sakamoto, Takashi, 4,447,833, Cl. 358-298.000.
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, 4,447,113, Cl. 358-75.000.
Dairyland Food Laboratories: *See—*
Moskowitz, Gerard J., 4,447,536, Cl. 435-188.000.
d'Alayer de Costemore d'Arc, Stephane M. A.: *See—*
Schatteman, Etienne A.; and d'Alayer de Costemore d'Arc, Stephane M. A., 4,447,900, Cl. 369-200.000.
D'Alessandro, Thomas C. Battery powered lawn edger. 4,446,680, Cl. 56-11.900.
Dalrymple, Thomas H., to Dresser Industries, Inc. Cross-pit conveyor. 4,446,958, Cl. 198-311.000.
Dalton, Tom E. Football training apparatus. 4,447,056, Cl. 273-55.00R.
Dalzell, Rex J.: *See—*
Tiers, George V. D.; Aasen, Steven M.; Dalzell, Rex J.; and Holmes, Brian N., 4,447,521, Cl. 430-337.000.
D'Amico, John J., to Monsanto Company. N-Substituted thioxobenzothiazolines. 4,447,618, Cl. 548-170.000.
Damon Corporation: *See—*
Dohse, Jerry L.; and Hess, Peter A., 4,446,957, Cl. 194-54.000.
Danfoss A/S: *See—*
Eder, Werner; and Fischer, Gisbert, 4,447,706, Cl. 219-299.000.
Danly Machine Corporation: *See—*
Tack, Carl E., Jr., 4,446,785, Cl. 100-35.000.
Dannels, W. Andrew; and Bainbridge, Robert W., to Occidental Chemical Corporation. Process for runnerless injection - compression molding of thermosetting materials. 4,447,386, Cl. 264-328.200.
Dantzer-Sorensen, Bendt; and Christensen, Per B., to V. Kann Rasmussen Holding A/S. Hinge device for inclined tilting type windows with external cover rails. 4,446,597, Cl. 16-364.000.
Dardi, Louis E.; and Shankar, Srinivasan, to Howmet Turbine Components Corporation. Superalloy coating composition with high temperature oxidation resistance. 4,447,503, Cl. 428-632.000.
Dash, John: *See—*
Kasasian, Arash S.; and Dash, John, 4,447,299, Cl. 204-43.00R.
Data General Corporation: *See—*
Fong, Anthony S., 4,447,879, Cl. 364-200.000.
Grondalski, David, 4,447,877, Cl. 364-200.000.
David Hudson, Inc.: *See—*
Close, Donald, 4,447,478, Cl. 427-407.100.
Davidowich, George: *See—*
Cook, Gerald R.; Iacoviello, John G.; Pinschmidt, Robert K., Jr.; and Davidowich, George, 4,447,570, Cl. 524-127.000.
Davies, Graham J.; Heckingbottom, Roger; and Andrews, David A., to Post Office, The. Molecular beam epitaxy electrolytic dopant source. 4,447,276, Cl. 148-175.000.
Davies, Leslie J.: *See—*
Baum, Eric A.; Davies, Leslie J.; Kirk, William F.; and Wass, Anthony C. L., 4,446,862, Cl. 128-203.150.
Davies, Roy V., to Boots Company PLC, The. 3-Methylsulfonylmethyl-4-quinolinones useful for treating hypertension. 4,447,435, Cl. 424-258.000.
Davis, Alan L.: *See—*
Punako, Stephen; Davis, Alan L.; and Eifler, Raymond J., 4,447,110, Cl. 339-262.0RR.
Davis, Arthur M.; and Pollington, Warren J., to Williams International Corporation. Cooled turbine wheel. 4,447,188, Cl. 415-115.000.
Davis, Douglas D. Herbicide applicator. 4,446,650, Cl. 47-1.500.
Davis, Glenn R. Hospital shorts. 4,446,575, Cl. 2-400.000.
Davis, Larry A.; Boyce, Gregory H.; Mulloy, Timothy P.; Nebeker, Neil J.; Newman, Elmer C.; Quinn, Donald J.; and Adamson, David L. Electrowinning cell having partially shielded anodes. 4,447,307, Cl. 204-267.000.
Davis, Lois T.: *See—*
Pillis, Lewis J.; and Davis, Lois T., 4,447,539, Cl. 435-253.000.
Davison, John A., to Warner-Lambert Company. Microsurgical needle holder. 4,446,866, Cl. 128-340.000.
Day, Richard B.: *See—*
Campana, Jerry M.; and Day, Richard B., 4,447,083, Cl. 294-66.00R.
Dean, David F. Adjustable tool for tub overflow. 4,446,583, Cl. 4-206.000.
DeAngelis, Dominick: *See—*
Crisman, Robert W.; and DeAngelis, Dominick, 4,447,332, Cl. 210-748.000.
DeCant, Leonard J., Jr.; Idriss, Samir F.; and Prosl, Frank R., to Infusaid Corporation. Variable flow implantable infusion apparatus. 4,447,224, Cl. 604-67.000.
Deere & Company: *See—*
Coeffic, Jean-Pierre, 4,446,685, Cl. 56-377.000.
Frimml, Roger W.; and Meiers, Gerald F., 4,446,684, Cl. 56-341.000.
Hockenberry, Richard L., 4,446,726, Cl. 73-61.400.
Illy, Pierre, 4,446,783, Cl. 100-5.000.
DeFazio, Sally R.; Gozzo, James J.; and Monaco, Anthony P., to New England Deaconess Hospital. Bladder cancer detection. 4,447,545, Cl. 436-518.000.
Degussa Aktiengesellschaft: *See—*
Beschke, Helmut; Friedrich, Heinz; and Heilos, Johannes, 4,447,612, Cl. 546-285.000.
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, 4,447,614, Cl. 546-316.000.
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, 4,447,615, Cl. 546-317.000.
Deibig, Heinrich; and Wollmann, Klaus, to Battelle-Institut e.V. Method for the production of corrosion-inhibiting coatings on metallic surfaces. 4,447,477, Cl. 427-388.300.
Deleu, Walter V., to Sperry Corporation. Stone trap for combine harvesters. 4,446,875, Cl. 130-27.0JT.
Delle Donne, Nicola: *See—*
Di Nocco, Dino; and Delle Donne, Nicola, 4,447,252, Cl. 65-268.000.
Delobelle, Emile: *See—*
Madec, Francois; Delobelle, Emile; and Donvez, Georges, 4,446,902, Cl. 152-209.00B.
DeLong, Ronald V., to Motorola Inc. Temperature stable pulse counting FM detector. 4,447,772, Cl. 329-126.000.
del Soldato, Piero: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Eberlein, Wolfgang; Schmidt, Gunther; Hammer, Rudolf; and del Soldato, Piero, 4,447,434, Cl. 424-256.000.
Denham, Daniel W. Saw blade clamp. 4,446,760, Cl. 76-79.000.
Denk, Heimo; Mantsch, Peter; and Moser, Werner, to List, Hans. Device for generating an electric trigger pulse. 4,447,742, Cl. 307-106.000.
Dennis, Robert P., to General Motors Corporation. Adjustable lens for a transmission ratio indicator. 4,446,809, Cl. 116-28.100.
Denton, Donald W., to State Industries, Inc. Method of insulating the exterior of a water heater tank. 4,447,377, Cl. 264-45.200.
den Toonder, Pieter, to Oak Industries Inc. Phase change dynamic scrambling. 4,447,828, Cl. 358-118.000.
Deraedt, Roger: *See—*
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,447,424, Cl. 424-238.000.
Derbyshire, Francis J.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Production of distillates by the integration of supercritical extraction and gasification through methanol to gasoline. 4,447,310, Cl. 208-8.0LE.
De Sabatier, Philippe D.: *See—*
Bradley, John J.; Franklin, Benjamin S.; Slosberg, David M.; Appell, Marc; Cassonnet, Jean-Claude; and De Sabatier, Philippe D., 4,447,874, Cl. 364-200.000.
Design Professionals Financial Corporation: *See—*
Okubo, Shigeo, 4,446,733, Cl. 73-579.000.
Desmarais, Mark R., to AMP Incorporated. Switch key assembly having improved switch actuation. 4,447,681, Cl. 200-5.00A.
Despot, Janko: *See—*
Abendroth, Paul; and Despot, Janko, 4,446,814, Cl. 118-694.000.
Desserre, Jacques; and Helle, Michel, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Magnetoresistant transducer. 4,447,839, Cl. 360-113.000.
Desthieux, Johannes. Bottle-filling method and device. 4,446,673, Cl. 53-467.000.
Detroit, William J., to Reed Lignin, Inc. Oil well drilling clay conditioners and method of their preparation. 4,447,339, Cl. 252-8.50A.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Combination tone generator for a musical instrument. 4,446,769, Cl. 84-1.010.

Devel Corporation: *See—*
Kelsey, Charles C., Jr.; and Wolff, Walter C., 4,446,645, Cl. 42-50.000.

Devine Manufacturing Company: *See—*
Cox, G. Robert, 4,447,402, Cl. 422-174.000.

Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. 2-[2-Hydroxy-3,5-di-tert-octylphenyl]-2H-benzotriazole in stabilized photographic compositions. 4,447,511, Cl. 430-15.000.

de Zwart, Maarten, to U.S. Philips Corporation. Liquid crystal display device. 4,447,132, Cl. 350-346.000.

Dhein, Rolf: *See—*
Hocker, Jurgen; Dhein, Rolf; and Merten, Rudolf, 4,447,583, Cl. 525-328.100.

Di-Dro Systems Inc.: *See—*
Newell, James M., 4,447,047, Cl. 267-118.000.

Diagnostic Information, Inc.: *See—*
Wang, Shih-Ping, 4,447,721, Cl. 250-213.0VT.

Diamond Shamrock Chemicals Company: *See—*
Nachfolger, Solomon J., 4,447,266, Cl. 106-90.000.

Dick, David A.: *See—*
Reed, Leonard W.; Barr, Robert M. S.; and Dick, David A., 4,447,199, Cl. 425-182.000.

Dickore, Karlfried; Sasse, Khaus; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. 3-Dimethylamino-4-methyl-1,2,4-triazin-5(4H)-ones and herbicidal compositions. 4,447,258, Cl. 71-93.000.

Dickore, Karlfried; and Kuhle, Engelbert, to Bayer Aktiengesellschaft. N-Substituted imido-dicarboxylic acid diaryl ester compounds and herbicide intermediates. 4,447,635, Cl. 560-115.000.

Dickson, Kenneth A. Closure for containers. 4,446,985, Cl. 220-269.000.

Didier Engineering GmbH.: *See—*
Wagener, Dietrich; Sander, Theo; and Laue, Karl H., 4,447,333, Cl. 210-750.000.

Die-Craft Metal Products, Inc.: *See—*
Hofbauer, John, 4,447,287, Cl. 156-552.000.

Diedrich, Bernd: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,447,587, Cl. 526-124.000.

Dietrich, William J., Sr., to DMI, Inc. High speed tillage system with discs and plow points. 4,446,924, Cl. 172-140.000.

Dietz, Peter W.: *See—*
Miller, Russell S.; Dietz, Peter W.; and Bray, Christopher, 4,446,910, Cl. 165-1.000.

DiGiuseppe, Michael A.: *See—*
Chin, Aland K.; DiGiuseppe, Michael A.; and Temkin, Henryk, 4,447,822, Cl. 357-17.000.

Diker, Charles M.: *See—*
Moe, Walter; and Diker, Charles M., 4,446,649, Cl. 46-218.000.

Dino, Mio: *See—*
Valerio, Savorgnan; and Dino, Mio, 4,447,282, Cl. 156-285.000.

Di Nocco, Dino; and Delle Donne, Nicola, to Societa Italiana Vetro - SIV - S.p.A. Apparatus for curving and tempering or heat toughening thin glass sheets. 4,447,252, Cl. 65-268.000.

Dionne, John B.: *See—*
Lamphere, William R., 4,446,622, Cl. 30-272.00R.

Diploma, Eduardo P.: *See—*
Gurak, Ronald W.; and Diploma, Eduardo P., 4,446,784, Cl. 100-27.000.

Disselnkotter, Hans: *See—*
Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, 4,447,367, Cl. 260-502.40R.

Distin, Robert G., Jr.: *See—*
Shaffer, James E.; and Distin, Robert G., Jr., 4,446,752, Cl. 74-462.000.

Dixie Yarns, Inc.: *See—*
Claiborne, J. Lyle, 4,447,243, Cl. 8-188.000.

Dixon, Richard W.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Current confinement in semiconductor light emitting devices. 4,447,905, Cl. 372-46.000.

DMI, Inc.: *See—*
Dietrich, William J., Sr., 4,446,924, Cl. 172-140.000.

Dobkin, Robert C., to National Semiconductor Corporation. Temperature compensated bandgap voltage reference circuit. 4,447,784, Cl. 323-226.000.

Dr. Eduard Fresenius Chemisch-Pharmazeutishe Industry KG: *See—*
Krutten, Victor, 4,447,239, Cl. 604-282.000.

Dr. Eugen Durrwachter Doduco KG: *See—*
Bollian, Erwin, 4,446,618, Cl. 29-882.000.

Dr. Karl Thomae GmbH: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Eberlein, Wolfgang; Schmidt, Gunther; Hammer, Rudolf; and del Soldato, Piero, 4,447,434, Cl. 424-256.000.

Dodge, David L.: *See—*
Hooley, Eldon R.; and Dodge, David L., 4,446,600, Cl. 17-11.000.

Dohse, Jerry L.; and Hess, Peter A., to Damon Corporation. Coin operated article dispensing mechanism. 4,446,957, Cl. 194-54.000.

Domian, Robert E.: *See—*
Stevenson, David J.; and Domian, Robert E., 4,446,990, Cl. 222-82.000.

Domnanovich, James R.: *See—*
Groch, Mark W.; and Domnanovich, James R., 4,446,873, Cl. 128-715.000.

Donohue, John A.; Knobloch, James O.; Petty-Weeks, Bruce; and Cerefice, Steven A., to Standard Oil Company (Indiana). Process for purification of p-hydroxymethylbenzoic acid. 4,447,645, Cl. 562-473.000.

Donvez, Georges: *See—*
Madec, Francois; Delobelle, Emile; and Donvez, Georges, 4,446,902, Cl. 152-209.00B.

Dore, Alain: *See—*
Barthelat, Rene; and Dore, Alain, 4,447,129, Cl. 350-302.000.

Dornier, Peter, to Lindauer Dornier Gesellschaft mbH. Drying equipment for tubular textile wares. 4,446,632, Cl. 34-103.000.

Dorony, Elmer F.: *See—*
French, Robert J.; and Dorony, Elmer F., 4,447,099, Cl. 312-257.00R.

Doroszlai, Pal; and Ferroni, Ferruccio, to Elektrowatt Ingenieurunternehmung AG. Transport containers for radioactive material. 4,447,729, Cl. 250-506.100.

Dorsey, Robert J.: *See—*
Long, Gary R.; and Dorsey, Robert J., 4,447,198, Cl. 425-140.000.

Dow Chemical Company, The: *See—*
Caskey, Terrence L.; Parker, Theodore L.; and Martin, Patrick H., 4,447,598, Cl. 528-489.000.
Eickholt, Kathryn A., 4,447,640, Cl. 560-207.000.
Gerwick, Ben C., III, 4,447,257, Cl. 71-91.000.
Kershner, Larry D.; Thompson, Leonard R.; and Strom, Robert M., 4,447,656, Cl. 568-730.000.
Murchison, Craig B.; Stowe, Robert A.; and Weiss, Richard L., 4,447,664, Cl. 585-323.000.
Renga, James M., 4,447,650, Cl. 568-640.000.
White, William L.; and Anzeveno, Peter B., 4,447,636, Cl. 560-122.000.

Dow Corning Corporation: *See—*
Frisch, Eldon E.; and Parks, Leon C., 4,447,237, Cl. 604-175.000.
Swihart, Terence J.; and Ziemelis, Maris J., 4,447,499, Cl. 428-447.000.

Drake, Charles J.: *See—*
Van Sikle, Truman T.; and Drake, Charles J., 4,447,698, Cl. 219-110.000.

Dresser Industries, Inc.: *See—*
Dalrymple, Thomas H., 4,446,958, Cl. 198-311.000.
Pillow, Dan L., 4,446,929, Cl. 173-17.000.

Drewitz, Hans J.: *See—*
Hagin, Faust; and Drewitz, Hans J., 4,446,756, Cl. 74-687.000.

Drexler, Johann: *See—*
Harbauer, Werner; Drexler, Johann; and Flierl, Erwin, 4,447,794, Cl. 335-128.000.

Driscoll, William A.; Heilmann, Steven M.; and Rasmussen, Jerald K., to Minnesota Mining and Manufacturing Company. Vibration-damping constrained-layer constructions. 4,447,493, Cl. 428-332.000.

Drulard, Norman R. Portable lightning rod. 4,447,847, Cl. 361-117.000.

Drzewiecki, Paul J.: *See—*
Loos, Patricia J.; Fuqua, Debra L.; and Drzewiecki, Paul J., 4,447,461, Cl. 426-589.000.

Duffer, Paul F.: *See—*
Franz, Helmut; Duffer. Paul F.; and Kelly, Joseph D., 4,447,496, Cl. 428-432.000.

Dufresne, Gilles L.: *See—*
Unterhoffer, Peter P.; and Dufresne, Gilles L., 4,446,655, Cl. 49-368.000.

Dumont, Claude: *See—*
Ledelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,447,438, Cl. 424-267.000.

Dunkel, Gerd: *See—*
Becker, Kunibert; Dunkel, Gerd; Lagodka, Gunter; and Kirchbrucher, Rudiger, 4,447,174, Cl. 405-293.000.

Dunlap, Clifford E., to North American Philips Corporation. Multiple rail linear feed system. 4,446,959, Cl. 198-382.000.

Dunn, Stanley A.; Pomplun, Alan R.; Paquette, Elmer G.; Ethridge, Edwin C.; and Johnson, Jerry. L., to United States of America, National Aeronautics and Space Administration. Sonic levitation apparatus. 4,447,251, Cl. 65-142.000.

Dunne, Maurice J.; and Nielsen, Klaus W., to Unimation, Inc. Weld gun repositioning system for programmable manipulator. 4,447,697, Cl. 219-86.410.

Duphar International Research B.V.: *See—*
Bekkering, Hendrik M., 4,447,231, Cl. 604-131.000.

Du Pont de Nemours, E. I., and Company: *See—*
Farnham, William B., 4,447,628, Cl. 556-415.000.
Hagan, Edward F.; and Reaver, Marvin G., Jr., 4,446,625, Cl. 33-184.500.
Harris, John F., Jr., 4,447,592, Cl. 528-128.000.
Houtz, Timothy W.; and Jagen, Paul R., 4,447,106, Cl. 339-126.00R.

Dupuy, Ronald E.; and Clark, John E., to General Tire & Rubber Company, The. Sealing strip. 4,447,065, Cl. 277-184.000.

Durkoppwerke GmbH: *See—*
Nicolay, Karl; and Hampel, Klaus, 4,446,803, Cl. 112-320.000.

Dursch, Friedrich: *See—*
Wang, Yu-Chang J.; Dursch, Friedrich; O'Laughlin, Richard L.; and Prusik, Thaddeus, 4,447,426, Cl. 424-243.000.

Dushane, Ray: *See—*
Mullich, Richard O.; and Dushane, Ray, 4,446,707, Cl. 70-134.000.

Dusza, John P.; Joseph, Joseph P.; and Berstein, Seymour, to American Cyanamid Company. 3-Trifluoroacetylamino-1-aryl-2-pyrazolines. 4,447,442, Cl. 424-273.00P.

Duwell, Edward C.; and Jones, Howell A., Jr., to Pitney Bowes Inc. Remote postage meter systems having variable user authorization code. 4,447,890, Cl. 364-900.000.

Dyce, John W.; Waters, Edwin R.; and Sherwood, Cy E., to Bendix Corporation, The. Apparatus for grounding and terminating a cable. 4,447,100, Cl. 339-14.00R.

Dynamit Nobel AG: *See—*
El-Chahawi, Moustafa, 4,447,644, Cl. 562-406.000.
Peeters, Hermann, 4,447,609, Cl. 544-317.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Simm, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, 4,447,488, Cl. 428-213.000.

Dynie, Ernest R.; and Overy, Colin, to Black & Decker Inc. Power lawn rake. 4,446,681, Cl. 56-16.700.

E. Beaudrey & Cie: *See—*
Jackson, Philip, 4,447,323, Cl. 210-158.000.

E et M Lamort: *See—*
Lamort, Jean-Pierre J., 4,447,320, Cl. 209-273.000.

E. J. Brooks Company: *See—*
Guiler, Richard S., 4,446,603, Cl. 24-21.000.

E & J Gallo Winery: *See—*
Oliver, Robert; and Branscombe, Richard, 4,446,980, Cl. 215-276.000.

E. R. Squibb & Sons, Inc.: *See—*
Varma, Ravi K., 4,447,363, Cl. 260-397.300.
Wang, Yu-Chang J.; Dursch, Friedrich; O'Laughlin, Richard L.; and Prusik, Thaddeus, 4,447,426, Cl. 424-243.000.

Eastman Kodak Company: *See—*
Clark, R. Donald, 4,447,617, Cl. 548-164.000.
Geyer, Frederick F.; and Howe, Dennis G., 4,447,899, Cl. 369-111.000.
Johnson, Griffin I.; and Kiefer, Judy E., 4,447,646, Cl. 562-487.000.
Krutak, James J.; and Maleski, Robert J., 4,447,624, Cl. 549-69.000.
Ross, Robert E.; and Gaugh, Wilbur S., 4,447,523, Cl. 430-505.000.

Eaton Corporation: *See—*
Goscenski, Edward J., Jr., 4,446,697, Cl. 60-443.000.

Ebara, Hiroyuki: *See—*
Kohmoto, Kohtaro; Ebara, Hiroyuki; and Nira, Hisami, 4,447,756, Cl. 313-487.000.

Ebata, Yoshihiro; Kose, Saburo; and Hayami, Ryozo, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Adhesive for ceramic articles and method for adhesion thereof. 4,447,283, Cl. 156-325.000.

Eberle, Gunter. Method and apparatus for separating blood components. 4,447,220, Cl. 494-26.000.

Eberlein, Wolfgang: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Eberlein, Wolfgang; Schmidt, Gunther; Hammer, Rudolf; and del Soldato, Piero, 4,447,434, Cl. 424-256.000.

Eckels, Phillip W., to Westinghouse Electric Corp. High-current cryogenic leads. 4,447,670, Cl. 174-15.0CA.

Eckhardt, Friedhelm: *See—*
Euteneuer, Edmund; and Eckhardt, Friedhelm, 4,447,167, Cl. 400-625.000.

Eder, Werner; and Fischer, Gisbert, to Danfoss A/S. Nozzle assembly with integrated PTC heater for prewarming fuel oil. 4,447,706, Cl. 219-299.000.

Edlund, Nils H.: *See—*
Jonsson, Jan U. E.; Blomgren, Rolf B. J. R.; and Edlund, Nils H., 4,446,661, Cl. 52-95.000.

Efner, Howard F.: *See—*
Smith, Clifford E.; Mark, Harold W.; Louthan, Rector P.; and Efner, Howard F., 4,447,246, Cl. 144-57.000.

Egami, Kazuhito: *See—*
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,447,751, Cl. 310-154.000.

Eggers, Manfred; and Zonak, Armin, to MaK Maschinenbau GmbH. Large-bore twin-weapon system for combat vehicles. 4,446,772, Cl. 89-37.00E.

Eguchi, Takao: *See—*
Mitamura, Gen; Eguchi, Takao; and Nagami, Yukio, 4,447,162, Cl. 368-295.000.

Ehlers, Kenneth W.: *See—*
Leung, Ka-Ngo; and Ehlers, Kenneth W., 4,447,732, Cl. 250-427.000.

Ehlinger, Edward E.: *See—*
Hung, William M.; and Ehlinger, Edward E., 4,447,616, Cl. 546-335.000.

Ehrmann, Peter; Fuchs, Dieter; and Spies, Karl-Heinrich, to Carl Freudenberg, Firma. Radial shaft sealing ring having a sealing lip and liquid deflectors. 4,447,064, Cl. 277-134.000.

Eickholt, Kathryn A., to Dow Chemical Company, The. Preparation of α-unsaturated carboxylic esters and amides from 1,2-dihaloalkanes by carbonylation. 4,447,640, Cl. 560-207.000.

Eifler, Raymond J.: *See—*
Punako, Stephen; Davis, Alan L.; and Eifler, Raymond J., 4,447,110, Cl. 339-262.0RR.

Eisenkraft, Arthur. Vision testing system. 4,447,141, Cl. 351-237.000.

Elbling, Irving N.: *See—*
Saunders, Howard E.; Westervelt, Dean C.; and Elbling, Irving N., 4,447,797, Cl. 336-205.000.

El-Chahawi, Moustafa, to Dynamit Nobel AG. Method for preparation of arylpyruvic acid. 4,447,644, Cl. 562-406.000.

Eldridge, John D., Jr., to Instranetics, Inc. Medical tubing holder. 4,447,238, Cl. 604-280.000.

Eldridge, Robert J.: *See—*
Lubbock, Frederick J.; Mok, Christopher C. K.; and Eldridge, Robert J., 4,447,475, Cl. 427-213.310.

Electrochemische Energieconversie, N.V.: *See—*
Blanchart, Alain P. O., 4,447,505, Cl. 429-42.000.

Elektrowatt Ingenieurunternehmung AG.: *See—*
Doroszlai, Pal; and Ferroni, Ferruccio, 4,447,729, Cl. 250-506.100.

Eliscu, Steven M.: *See—*
Lewis, Henry G., Jr.; and Eliscu, Steven M., 4,447,826, Cl. 358-27.000.

Elliott Brothers (London) Limited: *See—*
Corney, John M., 4,447,769, Cl. 318-564.000.

Elliott, George; Lenk, Pedro A.; and Shah, Jayantkumar R., to Stromberg-Carlson Corporation. Ring trip apparatus for a line circuit connected to DCO switch. 4,447,673, Cl. 179-18.0HB.

Ellis, James E.; Lidgard, Graham P.; Odstrchel, Gerald; and Riceberg, Louis J., to Corning Glass Works. Detecting intrinsic factor blocking site antibody. 4,447,528, Cl. 435-7.000.

Elpern, David G., to Bendix Corporation, The. Pressure regulator-accumulator for use with mechanical diaphragm pump. 4,446,837, Cl. 123-460.000.

Eltech Systems Corp.: *See—*
Hruska, Louis W.; and Tsai, Shan-Pu, 4,447,566, Cl. 523-221.000.

Ely, Laurice D. Keyboard lock. 4,446,708, Cl. 70-166.000.

Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, to Siemens-Allis, Inc. Process for the preparation of aminoarylsulphonic acids in sulfolene solvent. 4,447,368, Cl. 260-508.000.

EMI Limited: *See—*
Williams, Edward W., 4,447,762, Cl. 315-116.000.

Emonet, Henri, to Maco-Meuden. Compressed air distributor for a reciprocating concrete breaking type machine. 4,446,773, Cl. 91-317.000.

Empson, Kenneth G., to Southern Pacific Transportation Company. Motor driven exciter. 4,446,734, Cl. 73-586.000.

En-Save, Inc.: *See—*
Steigelmann, William H., 4,446,852, Cl. 126-432.000.

Enberg, Erik R.; and Plank, J. Douglas, to Perfecto, Inc. Rewind apparatus for metal strips. 4,447,016, Cl. 242-56.900.

Endo, Akira: *See—*
Kimura, Katsuhiro; Endo, Akira; and Takezaki, Jiro, 4,446,826, Cl. 123-143.00B.

Endo, Hiroshi: *See—*
Kasuya, Hideo; and Endo, Hiroshi, 4,447,800, Cl. 340-904.000.

Endo, Kazuyuki; and Makino, Shigeo, to Bridgestone Tire Company Limited. Heavy duty pneumatic radial tires. 4,446,901, Cl. 152-209.00R.

Endo, Norio; Asayama, Yoshiaki; and Kabuto, Masami, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Jidosha Kogyo K.K. Suction system in an engine. 4,446,824, Cl. 123-52.00M.

Endo, Takeyuki: *See—*
Kodama, Kazuyuki; Endo, Takeyuki; Okada, Kunihiro; and Shibuya, Yasutaka, 4,447,809, Cl. 340-747.000.

Endoscopy Surgical Systems, Inc.: *See—*
Kotsanis, Constantine A., 4,447,227, Cl. 604-95.000.

Energy Conversion Devices, Inc.: *See—*
Jayadev, Tumkur S.; and Nugyen, On V., 4,447,277, Cl. 148-400.000.

Engel, Wolfhard: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Eberlein, Wolfgang; Schmidt, Gunther; Hammer, Rudolf; and del Soldato, Piero, 4,447,434, Cl. 424-256.000.

Englar, Donald G.; and Altman, Robert G., to United States of America, Army. Sampling device. 4,447,395, Cl. 422-68.000.

Engle, Edward J., III, to Hercules, Incorporated. Adhesive process. 4,447,495, Cl. 428-429.000.

English Clays Lovering Pochin & Co. Ltd.: *See—*
Clark, Norman O., 4,447,327, Cl. 210-350.000.

Enomoto, Seiji: *See—*
Takemae, Yoshihiro; Enomoto, Seiji; Nozaki, Shigeki; Mezawa, Tsutomu; and Kabashima, Katsuhiko, 4,447,745, Cl. 307-269.000.

Ensco Inc.: *See—*
Page, Edward A.; and Babel, Carl R., 4,447,123, Cl. 350-96.240.

Environmental Testing & Certif. Corp.: *See—*
Loucks, Terry L., 4,446,705, Cl. 62-372.000.

Envirotech Corporation: *See—*
Bradley, Kirk D.; Koski, Robert R.; and Clark, James W., 4,447,072, Cl. 280-492.000.

Epstein, Edward A.: *See—*
Farrell, Gregory A.; and Epstein, Edward A., 4,447,883, Cl. 364-555.000.

Equipment Development Co.: *See—*
Harding, Edward M., 4,446,845, Cl. 125-13.0SS.

Ernest, Ivan: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,447,360, Cl. 260-239.00A.

Ernst Leitz Wetzlar GmbH: *See—*
Heitmann, Knut; and Schaefer, Klaus-Dieter, 4,447,143, Cl. 354-407.000.

Escher Wyss GmbH: *See—*
Bubik, Alfred; Dahl, Hans; Holik, Herbert; Kurtz, Rudiger; and Seider, Werner, 4,447,295, Cl. 162-300.000.

Esser, Karl-Josef, to Scharmann GmbH & Co. Horizontal drilling and milling machine with a headstock moving up and down in guides. 4,447,178, Cl. 409-80.000.

Essex Group, Inc.: *See—*
Mierzwinski, Eugene P., 4,447,692, Cl. 219-10.55B.

Minnick, Michael G.; Connell, James J.; and McGregor, Charles W., 4,447,472, Cl. 427-120.000.

Etat Francais represente par le Delegue General pour l'Armement: *See—*
Sedat, Georges A., 4,447,278, Cl. 149-19.910.

Ethicon, Inc.: *See—*
Jewusiak, Stephen J., 4,446,865, Cl. 128-321.000.

Ethridge, Edwin C.: *See—*
Dunn, Stanley A.; Pomplun, Alan R.; Paquette, Elmer G.; Ethridge, Edwin C.; and Johnson, Jerry. L., 4,447,251, Cl. 65-142.000.

Ethyl Corporation: *See—*
Ashby, Eugene C., 4,447,369, Cl. 260-665.00R.
Li, Hsueh M., 4,447,408, Cl. 423-300.000.

Eubanks Engineering Company: *See—*
Talley, Lloyd A., 4,446,615, Cl. 29-742.000.

Eue, Ludwig: *See—*
Dickore, Karlfried; Sasse, Klaus; Eue, Ludwig; and Schmidt, Robert R., 4,447,258, Cl. 71-93.000.

Euteneuer, Edmund; and Eckhardt, Friedhelm, to U.S. Philips Corporation. Stacking device for data carriers. 4,447,167, Cl. 400-625.000.

Evans, Orde R., to Oreco III, Inc. Conduit assembly. 4,447,076, Cl. 285-55.000.

Evans, William E.; and Gillett, Jimmie D., to Varo, Inc. Multiphase inverter drive circuit with synchronized switching delay feature. 4,447,867, Cl. 363-56.000.

Ewe, Henning: *See—*
Brennecke, Peter W. R.; Ewe, Henning; and Justi, Eduard W., 4,447,302, Cl. 204-128.000.

Ex-Cell-O Corporation: *See—*
Brandstadter, Jack M., 4,447,073, Cl. 280-705.000.
Wise, Daniel J., 4,446,971, Cl. 206-607.000.

Exanno Products Limited: *See—*
Sullivan, Michael T., 4,447,079, Cl. 285-363.000.

Excellon Industries: *See—*
Neumann, Don B., 4,447,723, Cl. 250-236.000.

Exxon Research and Engineering Co.: *See—*
Fung, Shun C.; and Rice, Richard W., 4,447,551, Cl. 502-37.000.
Lundberg, Robert D.; Walker, Thad O.; O'Farrell, Charles P.; and Makowski, Henry S., deceased, 4,447,338, Cl. 252-8.50M.

F. J. Gattys Ingenierburo: *See—*
Gattys, Franz J., 4,447,476, Cl. 427-215.000.

Fail Safe Industries, Inc.: *See—*
Wise, Stanley S.; and Maitland, Peter, 4,446,950, Cl. 192-3.0TR.

Falchle, Jorg: *See—*
Bleicher, Manfred; Buck, Manfred; Falchle, Jorg; and Wanner, Karl, 4,446,931, Cl. 173-48.000.

Fang, Frank F.; and McGroddy, James C., to International Business Machines Corporation. Digital photodetectors. 4,447,746, Cl. 307-311.000.

Farag, Samir F.; Hoffmann, Alvin R.; and Kleinecke, John D., to Siemens-Allis, Inc. Rigid subchassis structure for motor control center or the like. 4,447,858, Cl. 361-429.000.

Farcy, Jean-Claude: *See—*
Pugliese, Vincent; and Farcy, Jean-Claude, 4,447,789, Cl. 330-4.300.

Farines, Jean-Michel. Swivelling device for spreading liquids by spraying. 4,447,007, Cl. 239-165.000.

Farmitalia Carlo Erba S.p.A.: *See—*
Franceschi, Giovanni; Marsili, Leonardo; Sanfilippo, Aurora; and Vioglio, Sergio, 4,447,432, Cl. 424-248.540.

Farnham, William B., to Du Pont de Nemours, E. I., and Company. Nonhygroscopic, anionic pentacoordinate silicate. 4,447,628, Cl. 556-415.000.

Farrell, Gregory A.; and Epstein, Edward A., to Technicon Instruments Corporation. Coincidence-error correcting apparatus and method. 4,447,883, Cl. 364-555.000.

Faulkner, D. John: *See—*
Jacobs, Robert S.; and Faulkner, D. John, 4,447,445, Cl. 424-279.000.

Faulkner, Richard D.; Henry, Dale V.; and Muth, David L., to RCA Corporation. Broad area cathode contact for a photomultiplier tube. 4,447,758, Cl. 313-532.000.

Faure, Alphonse; and Magne, Robert, to Rhone-Poulenc Industries. Redistribution of tetramethylsilane/dimethyldichlorosilane into trimethylchlorosilane. 4,447,631, Cl. 556-469.000.

Federmann, Dieter: *See—*
Roos, Rudolf; and Federmann, Dieter, 4,447,086, Cl. 296-217.000.

Feierlein, Heinz: *See—*
Jaumann, Leonhard; Tima, Zdenek; and Feierlein, Heinz, 4,447,033, Cl. 248-563.000.

Feldman, Julian, to National Distillers and Chemical Corporation. Process for recovering oxygenated organic compounds from dilute aqueous solutions employing liquid extraction media. 4,447,643, Cl. 560-248.000.

Feldmann, Rainer: *See—*
Horlbeck, Gernot; and Feldmann, Rainer, 4,447,573, Cl. 524-394.000.

Fenne, Ivor: *See—*
Mowbray, Dorian F.; Fenne, Ivor; and Andrews, Richard J., 4,446,836, Cl. 123-450.000.

Fenne, Kenneth R. Hand-held light with swivel head. 4,447,863, Cl. 362-199.000.

Ferguson, James H.; and Calderwood, Murray W., to Canadian General Electric Company Limited. Rotor withdrawal arrangement for bulb generators. 4,447,739, Cl. 290-52.000.

Ferreira, Thomas. Chafing gear for fishing drag. 4,446,637, Cl. 37-55.000.

Ferrer, John J., to Hughes Aircraft Company. Diffraction head up display solar radiation filter. 4,447,128, Cl. 350-174.000.

Ferris, John A. Release compositions for asphalt roofing materials and methods of use. 4,447,500, Cl. 428-489.000.

Ferroni, Ferruccio: *See—*
Doroszlai, Pal; and Ferroni, Ferruccio, 4,447,729, Cl. 250-506.100.

Fey, Jean-Jacques, to Compagnie Francaise des Petroles. Method of tracing a well drilling mud. 4,447,340, Cl. 252-8.50C.

Fidi, Werner, to AKG Akustische u.Kino-gerate Gesellschaft mbH. Electracoustic transducer. 4,447,678, Cl. 179-115.5PS.

Fieber, Werner H.; Hinze, Klaus; Huth, Manfred K. O.; Jost, Hans-Georg; Lamm, Klaus D.; Michalski, Dieter; and Rittaler, Konstantin, to ITT Industries, Inc. Pushbutton switch or pushbutton-actuated slide switch. 4,447,686, Cl. 200-153.00J.

Fielding, Brian S., to Hardware Designers, Inc. Self-leveling drawer slide. 4,447,095, Cl. 308-3.800.

Finch, Harry: *See—*
Collington, Eric W.; Finch, Harry; and Newton, Roger F., 4,447,428, Cl. 424-244.000.

Fink, Hans-Ferdi; Koerner, Gotz; and Luksch, Edmund, to Th.Goldschmidt AG. Use of organopolysiloxanes in the manufacture of paper-coated plaster boards. 4,447,498, Cl. 428-447.000.

Finkle, Mark A.: *See—*
Bertsch, Dieter A.; Finkle, Mark A.; and Fishman, James D., 4,447,218, Cl. 493-251.000.

Finnigan Corporation: *See—*
Stafford, George C.; and Bradford, Donald C., 4,447,728, Cl. 250-423.00R.

Firestone, Raymond A.; Cama, Lovji D.; and Christensen, Burton G., to Merck & Co., Inc. Process to prepare 7-substituted cephalosporins or 6-substituted penicillins. 4,447,602, Cl. 544-21.000.

Firestone Tire & Rubber Company, The: *See—*
Baldoni, Viscardo; and Vorih, William J., 4,447,171, Cl. 403-381.000.
Higbee, Wallace C., 4,447,018, Cl. 242-107.200.

Firmenich SA: *See—*
Naf, Regula; Morris, Anthony F.; and Naf, Ferdinand, 4,447,627, Cl. 549-548.000.

Firth, Bruce E.; and Rosen, Terry J., to UOP Inc. Preparation of ortho-alkylated phenols. 4,447,657, Cl. 568-783.000.

Fischer, Friedrich L., to International Business Machines Corporation. Symmetrical three degree of freedom compliance structure. 4,447,048, Cl. 267-141.100.

Fischer, Gisbert: *See—*
Eder, Werner; and Fischer, Gisbert, 4,447,706, Cl. 219-299.000.

Fischer, Karl. Electric heater. 4,447,711, Cl. 219-464.000.

Fishman, Howard M., to Franklin Institute. Self-compensating centrifuge arm. 4,446,716, Cl. 73-1.0DC.

Fishman, James D.: *See—*
Bertsch, Dieter A.; Finkle, Mark A.; and Fishman, James D., 4,447,218, Cl. 493-251.000.

Flierl, Erwin: *See—*
Harbauer, Werner; Drexler, Johann; and Flierl, Erwin, 4,447,794, Cl. 335-128.000.

Floyd, Raymond C., to Mead Corporation, The. Blow-out protector packer element. 4,447,038, Cl. 251-1.00B.

Flygstad, Dean W.; and Wehrmacher, Bill H., to Telex Communications, Inc. Recording apparatus for cassette copying. 4,447,836, Cl. 360-15.000.

FMC Corporation: *See—*
Imerman, Curtis E.; Langerud, David S.; and Thomas, Brian H., 4,446,976, Cl. 212-189.000.

Focht, Louis R., to Ford Motor Company. Engine pressure and knock sensor. 4,446,724, Cl. 73-35.000.

Foley, John T.: *See—*
Bilstad, Arnold C.; and Foley, John T., 4,447,191, Cl. 417-12.000.

Fong, Anthony S., to Data General Corporation. Improved apparatus for representing the size of an element in a compound data item and deriving addresses and lengths using the element size. 4,447,879, Cl. 364-200.000.

Ford Aerospace & Communications Corporation: *See—*
Kay, Robert E., 4,447,470, Cl. 427-76.000.
Stahlhuth, Paul H., 4,446,750, Cl. 74-1.500.

Ford Motor Company: *See—*
Ackerman, Allen D.; and Aula, Howard A., 4,446,906, Cl. 164-112.000.
Focht, Louis R., 4,446,724, Cl. 73-35.000.
Giardini, Dante S.; Iwanski, Richard V.; and Trumpy, David K., 4,446,825, Cl. 123-90.650.
McCrary, Paul T., 4,446,759, Cl. 74-867.000.
Simko, Aladar O.; Havstad, Peter H.; and Harrington, Joseph A., 4,446,830, Cl. 123-276.000.

Forester, Buford G.: *See—*
Redmon, Billy L.; and Forester, Buford G., 4,446,887, Cl. 137-556.000.

Forrest Mountaineering, Inc.: *See—*
Forrest, William E.; and Lupton, Frank R., 4,446,944, Cl. 182-3.000.

Forrest, William E.; and Lupton, Frank R., to Forrest Mountaineering, Inc. Shock absorbing device and method. 4,446,944, Cl. 182-3.000.

Forsberg, John W., to Lubrizol Corporation, The. Carboxylic solubilizer/surfactant combinations and aqueous compositions containing same. 4,447,348, Cl. 252-75.000.

Foster, Larry W.: *See—*
Spurlock, Robert C.; and Foster, Larry W., 4,447,382, Cl. 264-123.000.

Foster, Richard G.: *See—*
Bjornholt, John E.; Foster, Richard G.; and Groth, Edward J., Jr., 4,447,907, Cl. 375-1.000.

Foster Wheeler Energy Corporation: *See—*
Stewart, Robert D.; and Gamble, Robert L., 4,446,629, Cl. 34-57.00A.

Fowles, Patrick E.; Shoemaker, Gerald L.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Dewaxing process. 4,447,311, Cl. 208-35.000.

Fox, Merlin D.: *See—*
Souder, James J., Jr.; Scarborough, Edward D., Jr.; Fox, Merlin D.; Rettich, Donald R.; and Mason, Robert L., 4,447,031, Cl. 248-280.100.

Franceschi, Giovanni; Marsili, Leonardo; Sanfilippo, Aurora; and Vioglio, Sergio, to Farmitalia Carlo Erba S.p.A. Azino rifamycins. 4,447,432, Cl. 424-248.540.

Franke, Rainer: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,447,587, Cl. 526-124.000.

Franklin, Benjamin S.: *See—*
Bradley, John J.; Franklin, Benjamin S.; Slosberg, David M.; Appell, Marc; Cassonnet, Jean-Claude; and De Sabatier, Philippe D., 4,447,874, Cl. 364-200.000.

Franklin Institute: *See—*
Fishman, Howard M., 4,446,716, Cl. 73-1.0DC.

Franz, Helmut; Duffer, Paul F.; and Kelly, Joseph D., to PPG Industries, Inc. Organotin surface treatment and interleaving material for glass sheets. 4,447,496, Cl. 428-432.000.

Frass, Werner; and Horn, Klaus, to Hoechst Aktiengesellschaft. Process for producing relief copies in light hardenable materials with ultrasonic treatment. 4,447,510, Cl. 430-3.000.

Frederick, John R.: *See—*
Lawrence, Jackson; Webb, Harry A.; and Frederick, John R., 4,446,606, Cl. 26-18.600.

Freelund, Avrum A.: *See—*
Sugahara, Byron M.; Freelund, Avrum A.; and Zinger, George, 4,446,805, Cl. 114-76.000.

French, Errol J. Self-contained vault unit. 4,446,797, Cl. 109-53.000.

French, Robert J.; and Dorony, Elmer F., to Interior Steel Equipment Co. Locker construction. 4,447,099, Cl. 312-257.00R.

Fricke, Hermann: *See—*
Mueller, Dieter J.; Fricke, Hermann; and Spielbrink, Heinrich, 4,447,273, Cl. 148-6.15R.

Fridh, Carl-Erik: *See—*
Sallnert, Kjell; Fridh, Carl-Erik; and Hansson, Manfred, 4,446,710, Cl. 72-10.000.

FRIED. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Coenen, Hubert; and Kriegel, Ernst, 4,446,921, Cl. 166-267.000.

Friedrich, Heinz: *See—*
Beschke, Helmut; Friedrich, Heinz; and Heilos, Johannes, 4,447,612, Cl. 546-285.000.
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, 4,447,614, Cl. 546-316.000.
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, 4,447,615, Cl. 546-317.000.

Friedrich, Herbert: *See—*
Martini, Thomas; Schinzel, Erich; Frischkorn, Hans; Friedrich, Herbert; and Probst, Heinz, 4,447,350, Cl. 252-301.220.

Friedson, Belvin F., to Windmere Corporation. Foot treatment apparatus. 4,446,855, Cl. 128-24.200.

Friend, Kent: *See—*
Nguyen, Liem; Segal, William J.; and Friend, Kent, 4,447,091, Cl. 301-37.0AT.

Friesenhahn, Stanley J., to IRT Corporation. Large area neutron proportional counter and portal monitor detector. 4,447,727, Cl. 250-390.000.

Frigomat S.a.s. di Alberto Cipelletti & C.: *See—*
Cipelletti, Alberto, 4,446,778, Cl. 99-455.000.

Frimml, Roger W.; and Meiers, Gerald F., to Deere & Company. Cylindrical baler with flare sheets on crop pickup. 4,446,684, Cl. 56-341.000.

Frisch, Eldon E.; and Parks, Leon C., to Dow Corning Corporation; and Research Against Cancer, Inc., a part interest. Valving slit construction and cooperating assembly for penetrating the same. 4,447,237, Cl. 604-175.000.

Frischkorn, Hans: *See—*
Martini, Thomas; Schinzel, Erich; Frischkorn, Hans; Friedrich, Herbert; and Probst, Heinz, 4,447,350, Cl. 252-301.220.

Fuchs, Dieter: *See—*
Ehrmann, Peter; Fuchs, Dieter; and Spies, Karl-Heinrich, 4,447,064, Cl. 277-134.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Kasai, Yoshiaki; and Ohgami, Masaaki, 4,447,880, Cl. 364-431.050.

Fuji Photo Film Co., Ltd.: *See—*
Fukui, Takashi, 4,447,154, Cl. 356-404.000.
Hirano, Shigeo; and Takagi, Yoshihiro, 4,447,522, Cl. 430-405.000.
Kitamoto, Tatsuji; and Shirahata, Ryuji, 4,446,816, Cl. 118-718.000.
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,447,515, Cl. 430-83.000.
Maekawa, Masakazu; and Matsukawa, Hiroharu, 4,447,487, Cl. 346-200.000.
Miyamoto, Akio, 4,447,075, Cl. 346-213.000.
Nagorski, Boguslaw A., 4,447,019, Cl. 242-192.000.

Fuji Xerox Co., Ltd.: *See—*
Kurata, Masami; and Moriguchi, Fujio, 4,447,818, Cl. 346-76.0PH.
Kurata, Masami; Moriguchi, Fujio; Inui, Toshiharu; and Ohmori, Takashi, 4,447,832, Cl. 358-296.000.
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,447,819, Cl. 346-76.0PH.
Sone, Yasuo, 4,447,054, Cl. 271-311.000.

Fujii, Takashi, to Aisin Seiki Kabushiki Kaisha. Brake booster for vehicles. 4,446,699, Cl. 60-547.100.

Fujikawa, Yoshihiro: *See—*
Suzuki, Fumio; Fujikawa, Yoshihiro; Yamamoto, Susumu; Mizutani, Hidemi; Ohya, Tunehiko; Ikai, Takashi; and Oguchi, Toshihiko, 4,447,256, Cl. 71-86.000.

Fujisawa, Hideya: *See—*
Matsumura, Toshimi; Fujisawa, Hideya; Omori, Norio; Arimura, Takashi; Yamazoe, Hisamitsu; and Nishiura, Kiyotaka, 4,446,832, Cl. 123-339.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kishimoto, Teiji; Kochi, Hiromu; and Kato, Masayuki, 4,447,436, Cl. 424-258.000.
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,447,430, Cl. 424-246.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,447,429, Cl. 424-246.000.

Fujiso, Tokuo; Ohmori, Tadashi; and Nomura, Soichi, to Nippon Oil Co., Ltd. Process for re-activation of solid acid catalyst. 4,447,553, Cl. 502-36.000.

Fujita, Hiromu, to Osaka Taiyo Co., Ltd. Device for lifting a table. 4,447,041, Cl. 254-9.00R.

Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Movable large display device. 4,446,643, Cl. 40-590.000.

Fujitsu Fanuc Limited: *See—*
Imazeki, Ryoji; and Inoue, Michiya, 4,447,887, Cl. 364-900.000.
Yamazaki, Etuo, 4,447,179, Cl. 409-127.000.

Fujitsu Limited: *See—*
Murakami, Jyoji, 4,447,893, Cl. 365-203.000.
Suzuki, Hirokazu; and Akiyama, Takehiro, 4,447,704, Cl. 219-216.000.
Takahashi, Yoshihiro; Okuyama, Katsuo; and Matsukuma, Yutaka, 4,447,856, Cl. 361-383.000.
Takemae, Yoshihiro; Enomoto, Seiji; Nozaki, Shigeki; Mezawa, Tsutomu; and Kabashima, Katsuhiko, 4,447,745, Cl. 307-269.000.

Fujiwara, Masami: *See—*
Fukuda, Ryuichi; Fujiwara, Masami; and Ishiguro, Norio, 4,447,790, Cl. 330-149.000.

Fujiwara, Shinobu: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.

Fukayama, Miyoji; and Ichiijo, Chikara, to Toray Silicone Company, Ltd. Room temperature vulcanizable polyorganosiloxane compositions which are paintable following curing. 4,447,576, Cl. 524-714.000.

Fukuda, Ryuichi; Fujiwara, Masami; and Ishiguro, Norio, to Nippon Columbia Kabushikikaisha. Distortion eliminating circuit. 4,447,790, Cl. 330-149.000.

Fukui, Hiroaki: *See—*
Omae, Yoshihiro; Okubo, Noboru; Sigyo, Keiichi; Nakajima, Hideo; Fukui, Hiroaki; Yamada, Toshio; and Honda, Hideyuki, 4,447,805, Cl. 340-539.000.

Fukui, Takashi, to Fuji Photo Film Co., Ltd. Method for detecting focus of image. 4,447,154, Cl. 356-404.000.

Fuller, Francis W.: *See—*
Merritt, Paul H.; and Fuller, Francis W., 4,446,607, Cl. 29-33.00E.

Fuller, Robert T.; and Sanders, Robert J. Display system for stiff flat samples. 4,446,973, Cl. 211-45.000.

Funakoshi, Wataru; and Urasaki, Takanori, to Teijin Limited. Melt-anisotropic wholly aromatic polyester and fibers or films thereof. 4,447,593, Cl. 528-176.000.

Funato, Masatomi: *See—*
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,447,513, Cl. 430-58.000.

Fung, Shun C.; and Rice, Richard W., to Exxon Research and Engineering Co. Process for reactivating iridium-containing catalysts. 4,447,551, Cl. 502-37.000.

Fuqua, Debra L.: *See—*
Loos, Patricia J.; Fuqua, Debra L.; and Drzewiecki, Paul J., 4,447,461, Cl. 426-589.000.

Furrer, Peter: *See—*
Schwander, Hansrudolf; and Furrer, Peter, 4,447,358, Cl. 260-205.000.

Further, Gunter. Diabetic set. 4,446,970, Cl. 206-569.000.

Furuhata, Kimio: *See—*
Ogura, Haruo; Furuhata, Kimio; Osawa, Toshiaki; Toyoshima, Satoshi; Shitori, Yoshiyasu; and Ito, Masayoshi, 4,447,600, Cl. 536-23.000.

Furukawa, Noboru: *See—*
Yuasa, Kazuhiro; and Furukawa, Noboru, 4,447,821, Cl. 346-154.000.

Furuya, Koutaro; Hosoda, Kazuho; Takeuchi, Takahito; Ishikura, Yasuyuki; and Kameda, Morihiro, to Keisi Orthopedic Appliance Co., Ltd. Prosthetic foot structure. 4,446,580, Cl. 3-6.000.

Fushida, Akira: *See—*
Nakazawa, Toru; Fushida, Akira; and Kamezaki, Yasushi, 4,447,514, Cl. 430-81.000.

Futatsuishi, Shunichi: *See—*
Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,446,643, Cl. 40-590.000.

Gach, Peter P.; and Bush, Randall G., to Sunbeam Plastics Corporation. Tamper indicating closure. 4,446,979, Cl. 215-203.000.

Gaffney, Anne M.; and Sofranko, John A., to Atlantic Richfield Company. Preparation of dialkyl oxalates by the oxidative carbonylation of alcohols with a heterogeneous Pd-V-P-Ti containing catalyst system. 4,447,638, Cl. 560-204.000.

Gaffney, Anne M.: *See—*
Sofranko, John A.; and Gaffney, Anne M., 4,447,639, Cl. 560-204.000.

Gage, Clifford H., to Kowalczyk, Annette. Turnover mechanism. 4,447,000, Cl. 227-49.000.

Gaines, Donald R.: *See—*
Trudeau, William H.; Gaines, Donald R.; and Smallegan, Jon M., 4,447,094, Cl. 308-2.00R.

Gala Industries, Inc.: *See—*
Pauley, General J., 4,447,325, Cl. 210-295.000.

Galbreath, Richard N., to Structural Accessories, Inc. Roadway expansion joint and seal. 4,447,172, Cl. 404-68.000.

Galson Research Corporation: *See—*
Peterson, Robert L., 4,447,541, Cl. 435-264.000.

Galtz, Rudiger; and Reinhardt, Rudolf, to Webasto-Werk W. Baier GmbH & Co. Lateral-duct fan. 4,447,187, Cl. 415-53.00R.

Gamble, Robert L.: *See—*
Stewart, Robert D.; and Gamble, Robert L., 4,446,629, Cl. 34-57.00A.

Gambro AG: *See—*
Riede, Gerhard; and Christopherson, Kjell H. I., 4,447,326, Cl. 210-321.300.

Gantzer, Mary L., to Miles Laboratories, Inc. Analytical test composition, device and method for the determination of peroxidatively active substances. 4,447,542, Cl. 436-66.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Weilacher, Karl H., 4,446,735, Cl. 73-597.000.

Garcia, Richard J. Multi-purpose tool. 4,446,588, Cl. 7-138.000.

Garrison, Judd F., to John Thomas Batts, Inc. Means of securing garment clamps to hanger. 4,446,996, Cl. 223-96.000.

Gates Rubber Company, The: *See—*
Clinefelter, Richard L.; and Bradford, Larry R., 4,446,903, Cl. 152-323.000.
Gray, Herbert W.; and Payne, Roger A., 4,447,378, Cl. 264-45.900.

Gattys, Franz J., to F. J. Gattys Ingenierburo. Process for stabilizing dehydrated magnesium chloride against rehydration. 4,447,476, Cl. 427-215.000.

Gaugh, Wilbur S.: *See—*
Ross, Robert E.; and Gaugh, Wilbur S., 4,447,523, Cl. 430-505.000.

Gaunt, Thomas N.: *See—*
Harrison, Peter; and Gaunt, Thomas N., 4,447,479, Cl. 428-35.000.

Gautier, Jean-Claude: *See—*
Bergeret, Wilfrid; Gautier, Jean-Claude; Raynal, Serge; and Boileau, Sylvie, 4,447,584, Cl. 525-340.000.

Gay, John C.; McCurdy, H. Dennis; and Rose, Wayne B., to Cutter Laboratories, Inc. Carnivore anthelmintics. 4,447,414, Cl. 424-81.000.

Gay, Richard L.; Kohl, Arthur L.; and Yosim, Samuel J., to Rockwell International Corporation. Destruction of halogen-containing materials. 4,447,262, Cl. 75-65.00R.

Gebelius, Sven R. V. Method for repairing and/or reinforcing a pipe system, and a device for utilization of the method. 4,446,891, Cl. 138-97.000.

Geerdes, Dirk J. F.; and Nelen, Petrus J. C., to Akzo N.V. Aqueous, oxidatively drying coating composition. 4,447,567, Cl. 523-501.000.

Gehm, Robert: *See—*
Horn, Peter; Gehm, Robert; Marx, Matthias; and Roeber, Artur, 4,447,561, Cl. 521-118.000.

Geissler, Joachim; and Helmreich, Dieter, to Heliotronic Forschungs- und Entwicklungsgesellschaft fur Solarzellen-Grundstoffe mbH. Process for the manufacture of coarsely crystalline to monocrystalline sheets of semiconductor material. 4,447,289, Cl. 156-608.000.

Gelfman, Stanley, to Krischer Metal Products Co., Inc. Heating accessory. 4,446,776, Cl. 99-401.000.

Gelinas, Raymond C., to Honeywell Inc. Apparatus and method for determination of a receiving device relative to a transmitting device utilizing a curl-free magnetic vector potential field. 4,447,779, Cl. 324-207.000.

General Electric Company: *See—*
Carlson, Richard O., 4,447,799, Cl. 338-22.00R.
Castonguay, Roger N., 4,447,682, Cl. 200-50.0AA.
Cohen, Robert K., 4,447,700, Cl. 219-117.100.
Cote, Paul T., 4,447,765, Cl. 315-240.000.
Haag, Donald L., 4,446,614, Cl. 29-622.000.
Hetzel, Frederick; Graf, Martin J.; and Seredich, Douglas, 4,447,861, Cl. 362-216.000.
Jackson, Melvin R.; and Rairden, John R., III, 4,447,466, Cl. 427-34.000.
Kornrumpf, William P.; and Cote, Paul T., 4,447,764, Cl. 315-240.000.
Massey, William A., 4,447,843, Cl. 361-76.000.
Mendiratta, Ashok K., 4,447,655, Cl. 568-724.000.
Miller, Russell S.; Dietz, Peter W.; and Bray, Christopher, 4,446,910, Cl. 165-1.000.
Sargisson, Donald F.; and Harshman, Daniel L., 4,446,696, Cl. 60-226.300.
Shanks, Bruce E., 4,447,862, Cl. 362-267.000.
Turnbull, Fred G., 4,447,868, Cl. 363-81.000.
VanHorn, David D.; Putz, John M.; and Henderson, Alfred J., Jr., 4,447,865, Cl. 362-305.000.
Wilkinson, Stanley B., 4,447,845, Cl. 361-80.000.
Williams, Robert E., Jr., 4,447,630, Cl. 556-460.000.
Wynn, Stephen R., 4,447,792, Cl. 332-19.000.

General Motors Corporation: *See—*
Arlauskas, Alfonsas, 4,446,596, Cl. 16-333.000.
Cataldo, Roy S., 4,446,821, Cl. 123-26.000.
Dennis, Robert P., 4,446,809, Cl. 116-28.100.
Lambert, David K., 4,446,719, Cl. 73-23.000.
Melinat, Wolfgang, 4,446,948, Cl. 188-73.450.

General Tire & Rubber Company, The: *See—*
Dupuy, Ronald E.; and Clark, John E., 4,447,065, Cl. 277-184.000.

Generalimpex Kulkereskedelmi Vallalat: *See—*
Hollosy, 4,447,057, Cl. 273-116.000.

Genpak Corporation: *See—*
Bowen, Gary D.; and Bowen, James L., 4,446,986, Cl. 220-307.000.

Gerber, Dennis H., to Burke Industries, Inc. Reservoir cover having a defined peripheral sump. 4,446,983, Cl. 220-219.000.

Gerber Products Company: *See—*
Breuker, Stephen J.; and Richmann, Harold L., 4,447,775, Cl. 324-438.000.

Gerwick, Ben C., III, to Dow Chemical Company, The. Inhibiting the antagonism between pyridyloxy-phenoxy alkanoate herbicides and benzothiadiazinone herbicides in post-emergent applications. 4,447,257, Cl. 71-91.000.

Gesson, Jean-Pierre: *See—*
Jouannetaud, Marie-Paule; Gesson, Jean-Pierre; and Jacquesy, Jean-Claude, 4,447,660, Cl. 568-774.000.

Gestetner Manufacturing Limited: *See—*
Stevens, Colin R.; and Ababurko, Victor, 4,446,791, Cl. 101-122.000.

Getman, Harlan R.: *See—*
Roth, Thomas E.; and Getman, Harlan R., 4,447,458, Cl. 426-275.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Becker, Kunibert; Dunkel, Gerd; Lagodka, Gunter; and Kirchbrucher, Rudiger, 4,447,174, Cl. 405-293.000.

Geyer, Frederick F.; and Howe, Dennis G., to Eastman Kodak Company. Optical disc method, media and apparatus for writing and/or reading information. 4,447,899, Cl. 369-111.000.

Ghigliotti, Giovanni; and Lancella, Attilio, to Connei S.p.A. Socket member for an electrical connector. 4,447,108, Cl. 339-256.0RT.

Ghiurea, Florin C. V., to Institutul de Cercetarea Stiintifica si Inginerie Tehnologica Pentru Industria Electrotehnica. Piezoelectric transducer accelerometer. 4,447,755, Cl. 310-329.000.

Giammarco, Giuseppe, deceased; and by Giammarco, Paolo, heir. Process for the conversion of carbon monoxide into hydrogen and carbon dioxide. 4,447,410, Cl. 423-655.000.

Giammarco, Paolo, heir: *See—*
Giammarco, Giuseppe, deceased; and Giammarco, Paolo, heir, 4,447,410, Cl. 423-655.000.

Giardini, Dante S.; Iwanski, Richard V.; and Trumpy, David K., to Ford Motor Company. Internal combustion engine with valves having a variable spring rate. 4,446,825, Cl. 123-90.650.

Gibbs, Robert L. Disk deployment of expendables. 4,446,793, Cl. 102-505.000.

Gibson, David K., to International Business Machines Corporation. Grooved roller support for a belt xerographic photoconductor. 4,447,144, Cl. 355-3.0BE.

Gilbertson, Thomas A. Air conditioning system and method. 4,446,703, Cl. 62-113.000.

Gilchrist, James E.: *See—*
Campbell, Jeptha E.; and Gilchrist, James E., 4,447,140, Cl. 350-534.000.

Gillett, Jimmie D.: *See—*
Evans, William E.; and Gillett, Jimmie D., 4,447,867, Cl. 363-56.000.

Gillette Company, The: *See—*
Jacobson, Chester F., 4,446,619, Cl. 30-85.000.

Gilman, David J.: *See—*
Yellin, Tobias O.; and Gilman, David J., 4,447,441, Cl. 424-269.000.

Gilman, John J., to Allied Corporation. Tetrahedral truss. 4,446,666, Cl. 52-648.000.

Gladstone Furnace Company, Inc.: *See—*
Becker, William M.; and Becker, William R., 4,446,848, Cl. 126-121.000.

Glaettli, Hans-Heinrich: *See—*
Stoll, Kurt; and Glaettli, Hans-Heinrich, 4,447,161, Cl. 368-65.000.

Glaxo Group Limited: *See—*
Collington, Eric W.; Finch, Harry; and Newton, Roger F., 4,447,428, Cl. 424-244.000.

GNS Gesellschaft fur Nuklear-Service mbH: *See—*
Baatz, Henning; Rittscher, Dieter; and Wriegt, Jurgen, 4,447,733, Cl. 250-506.100.

Goebel, Franz, to GTE Products Corporation. Electrochemical cell with two rate battery stacks. 4,447,504, Cl. 429-9.000.

Goekler, Robert G.: *See—*
Wheeler, Lionel H.; and Goekler, Robert G., 4,446,713, Cl. 72-308.000.

Gold, David: *See—*
Boyce, Arthur J.; and Gold, David, 4,447,752, Cl. 310-232.000.

Gold, Vance B.; Kubacki, Edward F.; and Krewenka, Thomas, to American Can Company. Closed loop control of continuous seam resistance heated forge welding cylinders. 4,447,699, Cl. 219-110.000.

Golda, Eugene: *See—*
Rowe, William; Golda, Eugene; and Wilkes, Alan, 4,447,512, Cl. 430-17.000.

Goldenberg, Marvin M., to Merck & Co., Inc. Anti-inflammatory/analgesic combination of α-fluoromethylhistidine and a selected non-steroidal anti-inflammatory drug (NSAID). 4,447,443, Cl. 424-273.00R.

Goldfarb, Louis; and Sweigart, Clyde M., to Armstrong World Industries, Inc. Heat storage system. 4,447,347, Cl. 252-70.000.

Goodenough, Samuel H.: *See—*
Meyer, Louis C.; and Goodenough, Samuel H., 4,446,577, Cl. 3-1.500.

Goodman, Howard M.; Shine, John; and Seeburg, Peter H., to University of California, Regents of the. Microorganism containing gene for human chorionic somatomammotropin. 4,447,538, Cl. 435-253.000.

Goodyear Tire & Rubber Company, The: *See—*
Parker, Dane K., 4,447,585, Cl. 525-359.200.
Parker, Dane K.; and Sabo, Timothy A., 4,447,667, Cl. 585-469.000.
Smith, Richard R.; and Kelley, Mellis M., 4,447,595, Cl. 528-274.000.

Gorring, Robert L.; and Smith, Robert L., to Mobil Oil Corporation. Deasphalting and hydrocracking. 4,447,313, Cl. 208-86.000.

Goscenski, Edward J., Jr., to Eaton Corporation. Hydraulic fan drive system including variable displacement pump. 4,446,697, Cl. 60-443.000.

Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., to Ciba-Geigy Corporation. Intermediates for thia-aza compounds with a β-lactam ring. 4,447,360, Cl. 260-239.00A.

Goto, Jiro: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,447,429, Cl. 424-246.000.

Gottlob, Clifford E., to Gottlob Engine Conversions, Inc. Vibration damping base. 4,447,034, Cl. 248-634.000.

Gottlob Engine Conversions, Inc.: *See—*
Gottlob, Clifford E., 4,447,034, Cl. 248-634.000.

Gouin, Robert P. Folding rain gutter construction. 4,446,658, Cl. 52-11.000.

Gould, Inc.: *See—*
Beasley, J. Donald, 4,447,119, Cl. 350-96.180.
Putt, Ronald A.; and Attia, Alan I., 4,447,471, Cl. 427-98.000.

Gourlandt, Albert J. A. Method and an apparatus for automatically supporting and restraining birds, and preferably young chicks, said method and apparatus in a preferred embodiment being applied for automatically debeaking said birds. 4,446,819, Cl. 119-97.00R.

Govan, Donald T. Propellor protecting devices. 4,447,215, Cl. 440-71.000.

Gozzo, James J.: *See—*
DeFazio, Sally R.; Gozzo, James J.; and Monaco, Anthony P., 4,447,545, Cl. 436-518.000.

Graf, Martin J.: *See—*
Hetzel, Frederick; Graf, Martin J.; and Seredich, Douglas, 4,447,861, Cl. 362-216.000.

Graham Magnetics Incorporated: *See—*
Matheson, Neil, III, 4,447,274, Cl. 148-6.240.

Graham, William T.; and Wenkman, Gregory, to W. T. Rogers Co. Reticular needlework fabric. 4,447,483, Cl. 428-105.000.

Grantland, Gary; Montgomery, Hugh S.; Boeckmann, Eduard F. B.; and Woodworth, Larry A., to GTE Automatic Electric Inc. Electronic hold release circuit. 4,447,674, Cl. 179-81.00R.

Grapha-Holding AG: *See—*
Muller, Hans, 4,447,052, Cl. 271-280.000.

Graviner Limited: *See—*
Simpson, Colin A., 4,447,155, Cl. 356-437.000.

Gray, Herbert W.; and Payne, Roger A., to Gates Rubber Company, The. Method of producing a composite foam wire reinforced hose. 4,447,378, Cl. 264-45.900.

Gray, Sharon L., to Alford Industries, Inc. Hinged lid container having finished edges. 4,447,003, Cl. 229-44.0CB.

Gray, William P., to Racal-Mesl Microwave Limited. Rotary actuators. 4,447,793, Cl. 333-106.000.

Gray, William R.: *See—*
Olivera, Baldomero M.; Cruz, Lourdes J.; Gray, William R.; and Rivier, Jean E. F., 4,447,356, Cl. 260-112.50R.

Greaser, Randy A., to Sperry Corporation. Cam guide operating mechanism for roll baling machine. 4,446,786, Cl. 100-88.000.

Green, Philip S.: *See—*
Wilson, David A.; Buxton, James L.; and Green, Philip S., 4,446,740, Cl. 73-626.000.

Green, William M. Trousers having modified pocket. 4,446,573, Cl. 2-252.000.

Greenquist, Alfred C.; Rupchock, Patricia A.; Tyhach, Richard J.; and Walter, Bert, to Miles Laboratories, Inc. Preparing homogeneous specific binding assay element to avoid premature reaction. 4,447,529, Cl. 435-7.000.

Gregory, David L.: *See—*
Blough, LeVone A.; and Gregory, David L., 4,446,763, Cl. 81-90.00B.
Blough, LeVone A.; and Gregory, David L., 4,447,176, Cl. 408-72.00R.

Grender, Arnemann; and Johnson, George F., Jr. Method and apparatus for accurately setting directional headings in mining tunnels. 4,446,626, Cl. 33-286.000.

Grever, Arnold J., to Selas Corporation of America. Inductive preheating of upset tubing. 4,447,690, Cl. 219-10.430.

Griffin, T. Scott: *See—*
Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,447,427, Cl. 424-244.000.

Grigoleit Company, The: *See—*
Howie, Robert K., Jr., 4,446,811, Cl. 116-309.000.

Grigorenko, Donald C. Hand-held barbecue spit. 4,446,777, Cl. 99-419.000.

Griman, George A.: *See—*
Schoolman, William K.; Griman, George A.; and Andrews, Frank D., 4,446,654, Cl. 49-181.000.

Grimmer, Rudolf, to Siemens Aktiengesellschaft. Reactive resin compositions and molded substances made therefrom. 4,447,564, Cl. 523-200.000.

Grisar, J. Martin; Schnettler, Richard A.; and Dage, Richard C., to Merrell Dow Pharmaceuticals Inc. 4-Alkanoylimidazol-2-ones. 4,447,619, Cl. 548-318.000.

Groch, Mark W.; and Domnanovich, James R., to Siemens Gammasonics, Inc. Method and apparatus for detecting heart sounds. 4,446,873, Cl. 128-715.000.

Grondalski, David, to Data General Corporation. Memory bus interface system. 4,447,877, Cl. 364-200.000.

Gros, Harold J., to Copolymer Rubber & Chemical Corporation. Method of processing low molecular weight EPM and EPDM polymers. 4,447,582, Cl. 525-279.000.

Grose, Ronald D., to InterNorth, Inc. Plastic radiant exchanger. 4,446,851, Cl. 126-449.000.

Groth, Edward J., Jr.: *See—*
Bjornholt, John E.; Foster, Richard G.; and Groth, Edward J., Jr., 4,447,907, Cl. 375-1.000.

Grumman Aerospace Corporation: *See—*
Leib, Kenneth G., 4,447,111, Cl. 350-3.700.

Grundfos A/S: *See—*
Jensen, Niels D.; and Nielsen, Kurt F., 4,447,189, Cl. 415-168.000.

Grundler, Bruno, to SIG-Schweizerische Industrie-Gesellschaft. Bag handling apparatus for a bag making machine. 4,446,676, Cl. 53-552.000.

Grunzweig & Hartmann und Glasfaser AG: *See—*
Kummermehr, Hans; and Sommer, Rolf, 4,447,345, Cl. 252-62.000.

GTE Automatic Electric Inc.: *See—*
Grantland, Gary; Montgomery, Hugh S.; Boeckmann, Eduard F. B.; and Woodworth, Larry A., 4,447,674, Cl. 179-81.00R.

GTE Laboratories Incorporated: *See—*
LaPotin, David P., 4,447,747, Cl. 307-529.000.
Sarin, Vinod K.; and Oberhauser, Peter, 4,446,936, Cl. 175-410.000.

GTE Products Corporation: *See—*
Goebel, Franz, 4,447,504, Cl. 429-9.000.
Mizuhara, Howard, 4,447,391, Cl. 420-456.000.
Mizuhara, Howard, 4,447,392, Cl. 420-501.000.
Vanderpool, Clarence D.; and MacInnis, Martin B., 4,447,404, Cl. 423-61.000.

Guazzo, Lucien; and Trezeguet, Jean-Pierre, to Les Cables de Lyon. Multiple connection for an undersea cable system. 4,447,115, Cl. 350-96.200.

Gudgeon, Ronald L.: *See—*
Renfro, Vernon E.; Gudgeon, Ronald L.; Clelland, John P.; and Cole, Clyde C., 4,447,186, Cl. 414-589.000.

Gueret, Jean-Louis H., to L'Oreal. Receptacle for make up powder. 4,446,879, Cl. 132-82.00B.

Gueret, Jean-Louis H.; and Arraudeau, Jean-Pierre, to L'Oreal. Make-up brush. 4,446,880, Cl. 132-88.500.

Gugliotti, Carmine, to Litton Systems, Inc. Connector with removable ejector latch. 4,447,101, Cl. 339-45.00M.

Guiler, Richard S., to E. J. Brooks Company. Meter clamping ring. 4,446,603, Cl. 24-21.000.

Guillaume, Jacques: *See—*
Ledelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,447,438, Cl. 424-267.000.

Guinn, Kenneth F. Target game. 4,447,060, Cl. 273-346.000.

Gula, John A.; Brady, John D.; Thompson, Thomas C.; and Alt, Joyce M., to Quest Medical, Inc. Intravenous administration set assembly. 4,447,230, Cl. 604-122.000.

Gulf Oil Corporation: *See—*
Knepper, Jay C., 4,447,090, Cl. 299-2.000.

Gulf Research & Development Company: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,447,557, Cl. 502-161.000.

Gundel, Manfred; Schlamm, Heinz-Werner; and Schmitz, Klaus-Dieter, to Kabelwerke Reinshagen GmbH. Test circuit for electrical continuity of a load circuit. 4,447,806, Cl. 340-641.000.

Gunderson, Dennis E., to United States of America, Agriculture. Method and apparatus for edgewise compression testing of flat sheets. 4,446,743, Cl. 73-822.000.

Gunneman, Paul; and Jeuken, Gerardus W., to Ruti-Te Strake B.V. Method for transporting a weft thread through the weaving shed of a weaving machine through the intermediary of a flowing fluid, and weaving machine adapted for the application of this method. 4,446,893, Cl. 139-11.000.

Gurak, Ronald W.; and Diploma, Eduardo P., to Signode Corporation. Resilient chain strap wrapping and tensioning device. 4,446,784, Cl. 100-27.000.

Gustin, Pol A. G. J.: *See—*
Schayes, Raymond G. G.; Gustin, Pol A. G. J.; Bodart, Robert; and Berck, Michel F. D. J., 4,447,829, Cl. 358-260.000.

Gutnick, Morton. Devices and methods for the prevention of transmission of venereal disease and non-gonococcal genital infections. 4,446,860, Cl. 128-132.00R.

H. J. Heinz Company: *See—*
Coker, Lowell E.; and Venkatasubramanian, Kalyanasundram, 4,447,532, Cl. 435-99.000.

Haag, Donald L., to General Electric Company. Method of manufacturing a control device. 4,446,614, Cl. 29-622.000.

Haak, Peter A.: *See—*
Runnells, Robert R.; Haak, Peter A.; Larkin, Rodney B.; and Vandervelden, C. Keith, 4,447,399, Cl. 422-113.000.

Haase, James M.: *See—*
Bartley, Donald R.; and Haase, James M., 4,447,197, Cl. 425-28.00R.

Hackett, Peter A.: *See—*
Malatesta, Vincenzo; Willis, Clive; and Hackett, Peter A., 4,447,304, Cl. 204-157.10R.

Haendle, Joerg: *See—*
Alexandrescu, Mircea; and Haendle, Joerg, 4,447,827, Cl. 358-111.000.

Haendler & Natermann GmbH: *See—*
Sommerer, Klaus, 4,447,502, Cl. 428-571.000.

Hagan, Edward F.; and Reaver, Marvin G., Jr., to Du Pont de Nemours, E. I., and Company. Apparatus for mounting flexible printing plates. 4,446,625, Cl. 33-184.500.

Hagen, Gary P., to Standard Oil Company (Indiana). Process for preparation of alpha, beta-unsaturated esters using AMS-1B borosilicate crystalline molecular sieve. 4,447,641, Cl. 560-211.000.

Hagenmaier, Carl F., Jr.: *See—*
Bolton, Brent C.; Hagenmaier, Carl F., Jr.; Logsdon, Gary L.; and Miner, Robert L., Jr., 4,447,875, Cl. 364-200.000.

Haggard, Samuel E., to Mark Products, Inc. Apparatus for attaching a multiconductor cable to a housing. 4,447,104, Cl. 339-103.00M.

Hagin, Faust; and Drewitz, Hans J., to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Power divider gearbox with a planetary differential gear drive. 4,446,756, Cl. 74-687.000.

Hagiwara, Yukio: *See—*
Sugiyama, Takahiro; and Hagiwara, Yukio, 4,447,138, Cl. 350-472.000.

Hahn, Linus K., to Columbia Industries Corporation. Table top grill. 4,446,846, Cl. 126-25.00R.

Halkyard, Douglas R. Germicide sleeve for dental and medical instruments. 4,446,967, Cl. 206-368.000.

Hall, James D.: *See—*
Stone, Lyndon R.; and Hall, James D., 4,446,745, Cl. 73-862.250.

Hall, Kenneth R.: *See—*
Clingman, William H.; and Hall, Kenneth R., 4,446,748, Cl. 73-863.030.

Hall, Robert J.: *See—*
Allen, Roger A.; and Hall, Robert J., 4,447,708, Cl. 219-384.000.

Halley, Robert: *See—*
Nowell, Larry H.; and Halley, Robert, 4,446,624, Cl. 33-1.00C.

Halliburton Co.: *See—*
Borchardt, John K.; and Brown, David L., 4,447,342, Cl. 252-8.55D.

Halstead, Raymond T.: *See—*
Schaad, William J.; Black, Charles E., III; and Halstead, Raymond T., 4,447,688, Cl. 200-159.00R.

Hamana Iron Work Co., Ltd.: *See—*
Ueda, Iwao, 4,446,688, Cl. 57-58.650.

Hamid, Michael, to United States of America, Navy. Dielectric loaded horn antennas having improved radiation characteristics. 4,447,811, Cl. 343-783.000.

Hamisch, Hansjoachim: *See—*
Boruschewitz, Manfred; and Hamisch, Hansjoachim, 4,446,722, Cl. 73-35.000.

Hammer, Rudolf: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Eberlein, Wolfgang; Schmidt, Gunther; Hammer, Rudolf; and del Soldato, Piero, 4,447,434, Cl. 424-256.000.

Hamon, Christian; Bandiera, Jean; and Senes, Michel, to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Production of hydrocarbons from methanol in the presence of zeolite catalysts. 4,447,669, Cl. 585-640.000.

Hampel, Klaus: *See—*
Nicolay, Karl; and Hampel, Klaus, 4,446,803, Cl. 112-320.000.

Hampton, William J.; James, Glenn R.; and Hatch, Raymond L. Flame combustion of carbonaceous fuels. 4,447,203, Cl. 431-3.000.

Hanaoka, Yuzuru; Murayama, Takeshi; and Muramoto, Setsuo, to Yokogawa Hokushin Electric Corporation. Multi-layer ion exchanger for use in ion-exchange chromatography and method of producing the same. 4,447,559, Cl. 521-28.000.

Haneda, Isamu, to Sharp Kabushiki Kaisha. Method for controlling display of output of a programmable device. 4,447,889, Cl. 364-900.000.

Hanel, Harold L.: *See—*
Benson, John; and Hanel, Harold L., 4,446,999, Cl. 227-11.000.

Hankosky, Andrew; and Clapper, Robert L., to Rockwell International Corporation. Force limiting device for an actuator rod. 4,447,036, Cl. 251-63.400.

Hann, Paul D.: *See—*
Casperson, John R.; and Hann, Paul D., 4,447,401, Cl. 422-151.000.

Hanna, Khalil. Intra-ocular implant. 4,446,582, Cl. 3-13.000.

Hansson, Manfred: *See—*
Sallnert, Kjell; Fridh, Carl-Erik; and Hansson, Manfred, 4,446,710, Cl. 72-10.000.

Harada, Hikaru; Akiyama, Teruo; and Hiyama, Tuneo, to Nippon Sanso K.K. Method for measuring volatile hydrides. 4,447,543, Cl. 436-72.000.

Harbauer, Werner; Drexler, Johann; and Flierl, Erwin, to Siemens Aktiengesellschaft. Air break contactor with form-fitted parts. 4,447,794, Cl. 335-128.000.

Hardin, Tommy G.; and Vrieland, Bruce C., to AT&T Technologies, Inc. Telecommunication cables. 4,446,689, Cl. 57-204.000.

Harding, Edward M., to Equipment Development Co. Self-contained gasoline driven portable masonry saw. 4,446,845, Cl. 125-13.0SS.

Harding, George W.; and Sears, Ronald E., to Sani-Jon Mfg., Inc. Portable toilet. 4,446,585, Cl. 4-460.000.

Hardt, Jean; and Widrig, Jakob, to Swiss Aluminium Ltd. Device for conducting away the exhaust gases from internal combustion engines. 4,446,942, Cl. 181-249.000.

Hardware Designers, Inc.: *See—*
Fielding, Brian S., 4,447,095, Cl. 308-3.800.

Hargreaves, Charles R.: *See—*
Price, Stephen J.; and Hargreaves, Charles R., 4,446,795, Cl. 102-527.000.

Harkins, Daniel J. Insulation system. 4,446,664, Cl. 52-404.000.

Harlan Material Handling Corporation: *See—*
Kaplan, James W., 4,447,071, Cl. 280-479.00R.

Harrap, Kenneth R.: *See—*
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,447,608, Cl. 544-287.000.

Harrington, Joseph A.: *See—*
Simko, Aladar O.; Havstad, Peter H.; and Harrington, Joseph A., 4,446,830, Cl. 123-276.000.

Harris Corporation: *See—*
Smith, Earl F.; and McRae, Daniel D., 4,447,910, Cl. 375-99.000.

Harris, John F., Jr., to Du Pont de Nemours, E. I., and Company. Anisotropic melt polyesters of 6-hydroxy-2-naphthoic acid. 4,447,592, Cl. 528-128.000.

Harris, William J.; Jackson, Joseph M.; and Petty, David C., to Telelogic, Inc. Automatic dialer for telephone network access control. 4,447,676, Cl. 179-90.0BD.

Harrison, Anthony W., to Lucas Industries Limited. Solenoid-operated valve means for hydraulic systems. 4,446,882, Cl. 137-115.000.

Harrison, Peter; and Gaunt, Thomas N., to Plastona (John Waddington) Ltd. Plastics sheet material and articles produced therefrom. 4,447,479, Cl. 428-35.000.

Harshman, Daniel L.: *See—*
Sargisson, Donald F.; and Harshman, Daniel L., 4,446,696, Cl. 60-226.300.

Hartlapp, Jurgen: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,447,587, Cl. 526-124.000.

Hartman, Adrian R.; Kohl, James E.; MacPherson, William F.; and Riley, Terence J., to Bell Telephone Laboratories, Incorporated. Control circuitry for high voltage solid-state switches. 4,447,744, Cl. 307-252.00R.

Hartwig, Carl S. M., to Institut Cerac S.A. Washing machine. 4,446,706, Cl. 68-24.000.

Harwell, Jack B., to Teccor Electronics, Inc. Electromagnetic control circuit. 4,447,849, Cl. 361-152.000.

Hasegawa, Shin, to United States of America, Agriculture. Strain of *Corynebacterium Fascians* and use thereof to reduce limonoid bitterness in citrus products. 4,447,456, Cl. 426-51.000.

Hashimoto, Mayuki: *See—*
Kimura, Etsuji; Ogi, Katsumi; Sato, Kazusuke; and Hashimoto, Mayuki, 4,447,043, Cl. 266-149.000.

Hashimoto, Shigeyoshi: *See—*
Suzuki, Haruo; and Hashimoto, Shigeyoshi, 4,446,907, Cl. 164-120.000.

Hasse, Werner: *See—*
Kern, Bernd M.; and Hasse, Werner, 4,447,211, Cl. 434-12.000.

Hata, Shun-ichi: *See—*
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shin-ichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, 4,447,453, Cl. 424-319.000.

Hatch, Raymond L.: *See—*
Hampton, William J.; James, Glenn R.; and Hatch, Raymond L., 4,447,203, Cl. 431-3.000.

Hatzis, Van, to Pitney Bowes Inc. Edge printing device. 4,447,148, Cl. 355-75.000.

Hauserman Ltd.: *See—*
Stumpf, William S.; and Ludwig, Gary R., 4,446,663, Cl. 52-144.000.

Havstad, Peter H.: *See—*
Simko, Aladar O.; Havstad, Peter H.; and Harrington, Joseph A., 4,446,830, Cl. 123-276.000.

Hawera Probst GmbH & Co.: *See—*
Muller, Norbert, 4,446,934, Cl. 175-286.000.

Hawkins, Harry M.: *See—*
Swift, John N.; and Hawkins, Harry M., 4,447,212, Cl. 434-185.000.

Hayami, Ryozo: *See—*
Ebata, Yoshihiro; Kose, Saburo; and Hayami, Ryozo, 4,447,283, Cl. 156-325.000.

Hayashi, Hiroshi: *See—*
Sakamoto, Hajimu; Kiyota, Takao; and Hayashi, Hiroshi, 4,447,355, Cl. 260-112.00B.

Hayashikane Shipbuilding & Engineering Co., Ltd.: *See—*
Tada, Yoshikazu, 4,446,861, Cl. 128-139.000.

Hayden, Donald W., Jr. Ice-creeper type overshoe. 4,446,635, Cl. 36-116.000.

Hayes, Claude Q. C. Heat-absorbing heat sink. 4,446,916, Cl. 165-185.000.

Hayes, John C.; and Castillo, Carmen, to UOP Inc. Passivation of metal contaminants on cracking catalyst. 4,447,552, Cl. 502-41.000.

Hayes, John K.: *See—*
Jensen, Reed J.; Thorne, James M.; Cluff, Coran L.; and Hayes, John K., 4,447,303, Cl. 204-157.10R.

Hayslett, David D.: *See—*
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl P.; Stengel, Frederick H.; and Hayslett, David D., 4,447,398, Cl. 422-102.000.

HB Megaron: *See—*
Lovgren, Anders, 4,446,800, Cl. 110-270.000.

Hearn, Dennis: *See—*
Smith, Lawrence A., Jr.; Jones, Edward M., Jr.; and Hearn, Dennis, 4,447,668, Cl. 585-639.000.

Heck, Louis J. Wave responsive generator. 4,447,740, Cl. 290-53.000.

Heckingbottom, Roger: *See—*
Davies, Graham J.; Heckingbottom, Roger; and Andrews, David A., 4,447,276, Cl. 148-175.000.

Heidrich, Paul F.; Laff, Robert A.; and Light, Thomas B., to International Business Machines Corporation. Uniformly intense imaging by close-packed lens array. 4,447,126, Cl. 350-96.310.

Heilmann, Steven M.: *See—*
Driscoll, William A.; Heilmann, Steven M.; and Rasmussen, Jerald K., 4,447,493, Cl. 428-332.000.

Heilos, Johannes: *See—*
Beschke, Helmut; Friedrich, Heinz; and Heilos, Johannes, 4,447,612, Cl. 546-285.000.

Hein, Carl C.: *See—*
Wagner, John R., Jr.; and Hein, Carl C., 4,447,494, Cl. 428-349.000.

Heindl, Rudolf; and Robert, Andre, to Commissariat a l'Energie Atomique; and Centre National de la Recherche Scientifique. Process for obtaining luminescent glass layers. 4,447,305, Cl. 204-192.00C.

Heinemann, Stanley O., to Bentley Laboratories. Apparatus and method for measuring blood oxygen saturation. 4,447,150, Cl. 356-41.000.

Heinrichs, Frank W., to McGraw-Edison Company. Self-adjusting spacer. 4,447,796, Cl. 336-60.000.

Heinzelman, Bert D.; Spranger, Douglas M.; Brookes, Malcolm J.; and Kuphal, John E., to Shur Medical Corporation. Wound closure tape and applicator therefor. 4,447,482, Cl. 428-42.000.

Heitmann, Knut; and Schaefer, Klaus-Dieter, to Ernst Leitz Wetzlar GmbH. Reflex camera with electronic range finder. 4,447,143, Cl. 354-407.000.

Heliotronic Forschungs-und Entwicklungsgesellschaft fur Solarzellen-Grundstoffe mbH: *See—*
Geissler, Joachim; and Helmreich, Dieter, 4,447,289, Cl. 156-608.000.

Helix Technology Corporation: *See—*
Peterson, John F.; and Bartlett, Allen J., 4,446,702, Cl. 62-55.500.

Helle, Michel: *See—*
Desserre, Jacques; and Helle, Michel, 4,447,839, Cl. 360-113.000.

Heller, Rudolf; and Kahn, Iwan, to Contraves AG. Radar reflector for an artillery shell. 4,446,792, Cl. 102-473.000.

Helmes Machinefabriek B.V.: *See—*
Luyten, Jacobus H., 4,446,899, Cl. 144-201.000.

Helmreich, Dieter: *See—*
Geissler, Joachim; and Helmreich, Dieter, 4,447,289, Cl. 156-608.000.

Helser, Jerry L.: *See—*
Shannon, Richard F.; and Helser, Jerry L., 4,447,380, Cl. 264-82.000.

Hemmer, Clemens J. Chain security device. 4,447,080, Cl. 292-264.000.

Henderson, Alfred J., Jr.: *See—*
VanHorn, David D.; Putz, John M.; and Henderson, Alfred J., Jr., 4,447,865, Cl. 362-305.000.

Hendrix, James E.; and Payet, George L., to Springs Industries, Inc. Oxidative afterwash treatment for crease resisting fabrics. 4,447,241, Cl. 8-116.400.

Henne, Andreas; Hesse, Anton; Jacobi, Manfred; Schornick, Gunnar; Vyvial, Rudolf; and Holoch, Klaus, to BASF Aktiengesellschaft. Acylphosphine oxides and their use. 4,447,520, Cl. 430-281.000.

Henny Penny Corporation: *See—*
Puvogel, Timothy J.; King, James D.; and Moore, David O., 4,446,780, Cl. 99-480.000.

Henrich, Donald A., to Outboard Marine Corporation. Anti-ventilation means for marine gear case. 4,447,214, Cl. 440-66.000.

Henrichs, Paul: *See—*
Hoppe, Hans-Georg; and Henrichs, Paul, 4,447,486, Cl. 428-318.600.

Henrick, Clive A., to Zoecon Corporation. Pyridyl esters and thiolesters of aminoalkanoic acids. 4,447,613, Cl. 546-300.000.

Henry, Dale V.: *See—*
Faulkner, Richard D.; Henry, Dale V.; and Muth, David L., 4,447,758, Cl. 313-532.000.

Heraeus Quarzschmelze GmbH: *See—*
Christiansen, Uwe; Rau, Karlheinz; Steinkohl, Anton; and Streb, Bruno, 4,447,130, Cl. 350-310.000.

Hercules, Incorporated: *See—*
Engle, Edward J., III, 4,447,495, Cl. 428-429.000.

Herder, N.V.: *See—*
Perl, Ludovic; and Szabo, Bill, 4,447,096, Cl. 312-111.000.

Heredia de la Paz, Jorge A.; and Sanchez, David F., to Vitro-Tec Fideicomiso. Solenoid actuated valve block for glassware forming machines. 4,446,888, Cl. 137-596.170.

Hershman, Haim: *See—*
Bronicki, Lucien Y.; Hershman, Haim; and Lehmann, Gerard, 4,446,700, Cl. 60-641.800.

Hertel, Robert C., to Ruskin Manufacturing Company. Damper frame construction. 4,446,667, Cl. 52-658.000.

Herzog, Rudolf, to Suzer Brothers Ltd. Control circuit with an auxiliary process variable. 4,447,869, Cl. 364-184.000.

Hess, Peter A.: *See—*
Dohse, Jerry L.; and Hess, Peter A., 4,446,957, Cl. 194-54.000.

Hesse, Anton: *See—*
Henne, Andreas; Hesse, Anton; Jacobi, Manfred; Schornick, Gunnar; Vyvial, Rudolf; and Holoch, Klaus, 4,447,520, Cl. 430-281.000.

Hetzel, Frederick; Graf, Martin J.; and Seredich, Douglas, to General Electric Company. Circular fluorescent lamp unit. 4,447,861, Cl. 362-216.000.

Heurtey, Stein: *See—*
Wang, Robert, 4,446,812, Cl. 118-63.000.

Hidaka, Tsuneo; Inoue, Masahide; and Ogiso, Makoto, to Asahi Kogaku Kogyo Kabushiki Kaisha. Upper structure for artificial apatite dental root. 4,447,210, Cl. 433-173.000.

Higashiguchi, Teruaki: *See—*
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,447,513, Cl. 430-58.000.

Higbee, Wallace C., to Firestone Tire & Rubber Company, The. Toggle type web lock. 4,447,018, Cl. 242-107.200.

Hilbrans, Hermann; and Rao, Chatty, to Klockner-Humboldt-Deutz AG. Method for separating non-ferrous metals from iron-containing materials. 4,447,261, Cl. 75-5.000.

Hill, Ira D.: *See—*
Spitz, Seymour J., Jr.; Mookherjee, Braja D.; Hill, Ira D.; Keleher, Lloyd F.; Trenkle, Robert W.; and Wolff, Robin K., 4,446,651, Cl. 47-10.000.

Himberg, Elliot. Convertible camera-supporting belt device. 4,446,997, Cl. 224-151.000.

Hinze, Klaus: *See—*
Fieber, Werner H.; Hinze, Klaus; Huth, Manfred K. O.; Jost, Hans-Georg; Lamm, Klaus D.; Michalski, Dieter; and Rittaler, Konstantin, 4,447,686, Cl. 200-153.00J.

Hipp, James, to Petro-Drive, Inc. Hydrostatic shear pin. 4,446,932, Cl. 175-74.000.

Hirabayashi, Masaya: *See—*
Inamori, Kazuo; and Hirabayashi, Masaya, 4,446,579, Cl. 3-1.910.

Hirano, Shigeo; and Takagi, Yoshihiro, to Fuji Photo Film Co., Ltd. Method of forming a photographic image. 4,447,522, Cl. 430-405.000.

Hirano, Tooichiro: *See—*
Takeo, Kimihiko; Hirano, Tooichiro; and Sato, Fumihiko, 4,447,601, Cl. 536-102.000.

Hiraoka, Takeshi; Urano, Shigeru; and Yamamoto, Kiyoshi, to Nippon Piston Ring Co., Ltd. Cylinder liner. 4,447,275, Cl. 148-152.000.

Hirata, Noritsugu; Takimoto, Hiroyuki; and Maeda, Masaya, to Canon Kabushiki Kaisha. Video recording system. 4,447,837, Cl. 360-33.100.

Hirose, Noboru: *See—*
Aoshima, Shozo; Hirose, Noboru; and Ishikawa, Michio, 4,446,746, Cl. 73-862.330.

Hirschberg, Jakub: *See—*
Wager, Mats; and Hirschberg, Jakub, 4,447,053, Cl. 271-113.000.

Hirschfeld, Tomas E., to Block, Myron J. Fluorescent immunoassay employing optical fiber in capillary tube. 4,447,546, Cl. 436-527.000.

Hisataka, Masauki. Safe guard protective equipment for fighting art. 4,446,576, Cl. 2-425.000.

Hitachi Chemical Company, Ltd.: *See—*
Makino, Daisuke; and Miyadera, Yasuo, 4,447,596, Cl. 528-353.000.
Nishizawa, Hiroshi; Mukoyama, Yoshiyuki; and Kasai, Shozo, 4,447,589, Cl. 528-45.000.

Hitachi Denshi Kabushiki Kaisha: *See—*
Kodama, Kazuyuki; Endo, Takeyuki; Okada, Kunihiro; and Shibuya, Yasutaka, 4,447,809, Cl. 340-747.000.

Hitachi Lighting, Ltd.: *See—*
Iyama, Hiroyuki; and Watanabe, Yoshio, 4,447,763, Cl. 315-207.000.

Hitachi, Ltd.: *See—*
Ishikawa, Isao; Kanda, Hiroshi; and Katakura, Kageyoshi, 4,446,738, Cl. 73-606.000.
Kimura, Katsuhiro; Endo, Akira; and Takezaki, Jiro, 4,446,826, Cl. 123-143.00B.
Kodama, Kazuyuki; Endo, Takeyuki; Okada, Kunihiro; and Shibuya, Yasutaka, 4,447,809, Cl. 340-747.000.
Kojima, Takafumi; Yoshida, Shigeru; and Mizoguchi, Masayuki, 4,447,679, Cl. 179-175.30R.
Kuni, Asahiro; Kembo, Yukio; Akiyama, Nobuyuki; and Aoki, Nobuhiko, 4,447,731, Cl. 250-442.100.
Terada, Matsuaki; and Yokota, Koji, 4,447,871, Cl. 364-200.000.
Watanabe, Syuji; Ishii, Yoshitaro; and Sunagawa, Masao, 4,446,594, Cl. 15-323.000.

Hitachi Maxell, Ltd.: *See—*
Toi, Mitsuharu; and Takagi, Hiroyoshi, 4,447,020, Cl. 242-198.000.

Hitachi Metals, Ltd.: *See—*
Inoue, Akira, 4,447,070, Cl. 280-434.000.

Hitzman, Donald O., to Phillips Petroleum Company. Enhanced oil recovery using microorganisms. 4,446,919, Cl. 166-246.000.

Hiyama, Tuneo: *See—*
Harada, Hikaru; Akiyama, Teruo; and Hiyama, Tuneo, 4,447,543, Cl. 436-72.000.

Hjorring, Hans, to Siemens Aktiengesellschaft. Circuit for rapid recognition of FSK signals in a radio channel. 4,447,909, Cl. 375-88.000.

Ho, Andrew W., to Chevron Research Company. 2,2-Bis(haloalkenyl)-1-cyano-1-alkoxycarbonylethylene fungicides. 4,447,450, Cl. 424-304.000.

Hoaglen, Milford D. Multiple unit agricultural device and transport system therefor. 4,446,926, Cl. 172-240.000.

Hobart, Floyd E., Jr., to Western Electric Company, Inc. Connector pin. 4,447,109, Cl. 339-256.00R.

Hockenberry, Richard L., to Deere & Company. Apparatus and method for measuring the filterability of a fluid at low temperatures. 4,446,726, Cl. 73-61.400.

Hocker, Jurgen; Dhein, Rolf; and Merten, Rudolf, to Bayer Aktiengesellschaft. Oxidized polyacetylene and a process for the preparation thereof. 4,447,583, Cl. 525-328.100.

Hoechst Aktiengesellschaft: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,447,587, Cl. 526-124.000.
Frass, Werner; and Horn, Klaus, 4,447,510, Cl. 430-3.000.
Martini, Thomas; Schinzel, Erich; Frischkorn, Hans; Friedrich, Herbert; and Probst, Heinz, 4,447,350, Cl. 252-301.220.
May, Adolf; and Bucking, Hans-Walter, 4,447,343, Cl. 252-8.750.
Stahler, Gerhard; and Waltersdorfer, Anna, 4,447,444, Cl. 424-273.00P.
Stephan, Hans-Werner; Klein, Hermann; and Lehr, Klaus, 4,447,400, Cl. 422-150.000.

Hofbauer, John, to Die-Craft Metal Products, Inc. Component retaping machine. 4,447,287, Cl. 156-552.000.

Hoffmann, Alvin R.: *See—*
Farag, Samir F.; Hoffmann, Alvin R.; and Kleinecke, John D., 4,447,858, Cl. 361-429.000.

Hoffmann-La Roche Inc.: *See—*
Breuninger, Manfred W., 4,447,649, Cl. 568-484.000.
Liu, Chao-Min; Tresner, Homer D.; and Westley, John, 4,447,533, Cl. 435-119.000.

Hofmann, Hans P.: *See—*
Steiner, Gerd; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Lenke, Dieter, 4,447,610, Cl. 544-381.000.

Hokko Chemical Industry Co., Ltd.: *See—*
Ohyama, Hiroshi; Takada, Sanae; Morita, Ken; and Yamamura, Saburo, 4,447,259, Cl. 71-94.000.

Holik, Herbert: *See—*
Bubik, Alfred; Dahl, Hans; Holik, Herbert; Kurtz, Rudiger; and Seider, Werner, 4,447,295, Cl. 162-300.000.

Holl & CIE GmbH: *See—*
Betschler, Joachim, 4,447,298, Cl. 204-23.000.

Hollandse Signaalapparaten B.V.: *See—*
Koene, Johan W., 4,447,114, Cl. 350-96.200.

Hollosy, to Generalimpex Kulkereskedelmi Vallalat. Toy with balls. 4,447,057, Cl. 273-116.000.

Holmberg, Albert E.; and Holmberg, Thomas A., to Holmberg Company, The. Paper sheets having recessed pressure-sensitive glued edge with a removable strip. 4,447,481, Cl. 428-40.000.

Holmberg Company, The: *See—*
Holmberg, Albert E.; and Holmberg, Thomas A., 4,447,481, Cl. 428-40.000.

Holmberg, Thomas A.: *See—*
Holmberg, Albert E.; and Holmberg, Thomas A., 4,447,481, Cl. 428-40.000.

Holmes, Brian N.: *See—*
Tiers, George V. D.; Aasen, Steven M.; Dalzell, Rex J.; and Holmes, Brian N., 4,447,521, Cl. 430-337.000.

Holmes, Ralph. Connection assembly for use with an articulated linkage system. 4,447,170, Cl. 403-64.000.

Holoch, Klaus: *See—*
Henne, Andreas; Hesse, Anton; Jacobi, Manfred; Schornick, Gunnar; Vyvial, Rudolf; and Holoch, Klaus, 4,447,520, Cl. 430-281.000.

Holt, Luther D., to Barni, John J. SCR Motor speed control. 4,447,767, Cl. 318-139.000.

Holzle, Gerd; and Begrich, Rainer, to Ciba-Geigy Corporation. Fibre-reactive azo dyestuffs containing a halotriazinyl radical and a non-reactive triazinyl radical. 4,447,357, Cl. 260-153.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kurihara, Norimitsu; and Imai, Takeshi, 4,446,727, Cl. 73-113.000.

Honda, Hideyuki: *See—*
Omae, Yoshihiro; Okubo, Noboru; Sigyo, Keiichi; Nakajima, Hideo; Fukui, Hiroaki; Yamada, Toshio; and Honda, Hideyuki, 4,447,805, Cl. 340-539.000.

Honeywell Inc.: *See—*
Gelinas, Raymond C., 4,447,779, Cl. 324-207.000.
Price, Stephen J.; and Hargreaves, Charles R., 4,446,795, Cl. 102-527.000.
van Dyke, Martin J., 4,447,781, Cl. 324-83.00A.

Honeywell Information Systems Inc.: *See—*
Tague, Steven A.; and Negi, Virendra S., 4,447,870, Cl. 364-200.000.

Hong, Leon: *See—*
Balboni, John J.; and Hong, Leon, 4,447,459, Cl. 426-441.000.

Hooley, Eldon R.; and Dodge, David L. Machine for stripping meat from fowl leg and thigh bones. 4,446,600, Cl. 17-11.000.

Hoppe, Hans-Georg; and Henrichs, Paul, to Bayer Aktiengesellschaft. Surface-sealed moldings of cellular polyurethane elastomers and a process for their production. 4,447,486, Cl. 428-318.600.

Horibe, Michiharu: *See—*
Takagi, Yasuo; and Horibe, Michiharu, 4,447,579, Cl. 525-113.000.

Horii, Kenju, to Matsushita Electric Industrial Co., Ltd. Charge-coupled type solid-state image sensor. 4,447,735, Cl. 250-578.000.

Horii, Masami: *See—*
Ochiai, Kuniaki; Horii, Masami; and Norigoe, Takashi, 4,447,166, Cl. 400-124.000.

Horing, Eckart: *See—*
Kersten, Peter; Meixner, Peter; Muller, Erich; and Horing, Eckart, 4,447,165, Cl. 384-428.000.

Horlbeck, Gernot; and Feldmann, Rainer, to Chemische Werke Huels AG. Textile hot-melt adhesive. 4,447,573, Cl. 524-394.000.

Horn, Klaus: *See—*
Frass, Werner; and Horn, Klaus, 4,447,510, Cl. 430-3.000.

Horn, Peter; Gehm, Robert; Marx, Matthias; and Roeber, Artur, to BASF Aktiengesellschaft. Stable water glass solutions, process for their preparation and use for organosilicate foams as well as a production process therefor. 4,447,561, Cl. 521-118.000.

Horwath, Robert O.; and Irbe, Robert M., to Nabisco Brands, Inc. Glucose isomerase from fungi of the basidiomycetes class. 4,447,531, Cl. 435-94.000.

Hosel, Fritz P.: *See—*
Marx, Hans-Jurgen; and Hosel, Fritz P., 4,446,602, Cl. 19-0.210.

Hoshino, Eiichi: *See—*
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shin-ichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, 4,447,453, Cl. 424-319.000.

Hoshiyama, Satoshi; Muto, Hiroyuki; Shinke, Shuzo; Otsuka, Kanji; Takigawa, Shinichiro; and Yamazaki, Hiroyuki, to Nissan Chemical Industries Ltd. Process for producing an alcohol by hydroformylation. 4,447,661, Cl. 568-882.000.

Hosoda, Kazuho: *See—*
Furuya, Koutaro; Hosoda, Kazuho; Takeuchi, Takahito; Ishikura, Yasuyuki; and Kameda, Morihiro, 4,446,580, Cl. 3-6.000.

Hottier, Francois, to U.S. Philips Corporation. Method and device for measuring objects using ultrasound echography. 4,446,737, Cl. 73-602.000.

Houck, Robert J.: *See—*
Klein, Richard G.; and Houck, Robert J., 4,447,807, Cl. 340-676.000.

Houle, Raymond T.: *See—*
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilborn, Fredrick A., 4,446,586, Cl. 4-555.000.

House, Richard F.; and Kohler, Karl A., to Container Corporation of America. Carton handle arrangement. 4,447,004, Cl. 229-52.00B.

Housey, Lawrence J.: *See—*
Brantingham, George L.; Lou, Perry W.; Housey, Lawrence J.; Tubbs, Graham S.; and Teza, Jeffrey R., 4,447,881, Cl. 364-488.000.

Houtz, Timothy W.; and Jagen, Paul R., to Du Pont de Nemours, E. I., and Company. Panel mounted modular jack. 4,447,106, Cl. 339-126.00R.

Howard, Peter B.; and O'Donnell, Derek, to Tioxide Group PLC. Pigments and their preparation by coating with oxides of Zr-Si-Al. 4,447,270, Cl. 106-300.000.

Howard, Peter B.; and O'Donnell, Derek, to Tioxide Group PLC. Pigments and their preparation by coating with oxides of Si-Zr-Al. 4,447,271, Cl. 106-300.000.

Howard, Walter E.: *See—*
Teranishi, Roy; Murphy, Edwin L.; Balser, Donald S.; and Howard, Walter E., 4,446,648, Cl. 43-131.000.

Howe, Dennis G.: *See—*
Geyer, Frederick F.; and Howe, Dennis G., 4,447,899, Cl. 369-111.000.

Howie, Robert K., Jr., to Grigoleit Company, The. Knob and skirt assembly. 4,446,811, Cl. 116-309.000.

Howlett, James F.; and Thompson, Marlin H., to International Scientific Industries, Inc. Electromagnetic device construction. 4,447,750, Cl. 310-89.000.

Howmet Turbine Components Corporation: *See—*
Dardi, Louis E.; and Shankar, Srinivasan, 4,447,503, Cl. 428-632.000.

Hreschak, Bohdan O.; and Hreschak, Christine. Composition, method of preparation thereof, method of application, apparatus for the control of larvae of the Gypsy Moth and other hardwood defoliators. 4,447,447, Cl. 424-285.000.

Hreschak, Christine: *See—*
Hreschak, Bohdan O.; and Hreschak, Christine, 4,447,447, Cl. 424-285.000.

Hruska, Louis W.; and Tsai, Shan-Pu, to Eltech Systems Corp. Modified liquid permeable asbestos diaphragms with improved dimensional stability. 4,447,566, Cl. 523-221.000.

Hubbard, Raymond W.; Seiffhart, John B.; and Hubbard, Thomas. Meat processor. 4,446,779, Cl. 99-472.000.

Hubbard, Thomas: *See—*
Hubbard, Raymond W.; Seiffhart, John B.; and Hubbard, Thomas, 4,446,779, Cl. 99-472.000.

Huebsch, Monte F., III. High porosity ceramic materials and method for making same. 4,447,548, Cl. 501-85.000.

Huetter, Horst: *See—*
Bock, Siegfried; and Huetter, Horst, 4,447,025, Cl. 244-118.200.

Huey, Wai J.; Murman, Fernando; and Matsuda, Eugene, to Hydril Company. Well blowout preventer, and packing element. 4,447,037, Cl. 251-1.00B.

Hughes Aircraft Company: *See—*
Ferrer, John J., 4,447,128, Cl. 350-174.000.
Peters, John W., 4,447,469, Cl. 427-54.100.

Hughes, Alan C.; Copeman, Richard C.; and Marples, Thomas N. R., to McKenchnie Chemicals Limited. Controlled release of trace elements. 4,447,254, Cl. 71-67.000.

Humphries, Martin E., to British Aerospace Public Limited Company. Telescopic variable length device. 4,446,662, Cl. 52-121.000.

Hung, William M.; and Ehlinger, Edward E., to Sterling Drug Inc. Pyridine containing benzoic acid derivatives. 4,447,616, Cl. 546-335.000.

Huth, Manfred K. O.: *See—*
Fieber, Werner H.; Hinze, Klaus; Huth, Manfred K. O.; Jost, Hans-Georg; Lamm, Klaus D.; Michalski, Dieter; and Rittaler, Konstantin, 4,447,686, Cl. 200-153.00J.

Hydril Company: *See—*
Huey, Wai J.; Murman, Fernando; and Matsuda, Eugene, 4,447,037, Cl. 251-1.00B.

Iacoviello, John G.: *See—*
Cook, Gerald R.; Iacoviello, John G.; Pinschmidt, Robert K., Jr.; and Davidowich, George, 4,447,570, Cl. 524-127.000.

Ichiijo, Chikara: *See—*
Fukayama, Miyoji; and Ichiijo, Chikara, 4,447,576, Cl. 524-714.000.

ICI Australia Limited: *See—*
Lubbock, Frederick J.; Mok, Christopher C. K.; and Eldridge, Robert J., 4,447,475, Cl. 427-213.310.

Ideguchi, Satoshi: *See—*
Watanabe, Kiyoshi; Ideguchi, Satoshi; Ogura, Masahiro; Shimada, Masahiko; and Kawaharada, Hajime, 4,447,362, Cl. 260-396.00R.

Idriss, Samir F.: *See—*
DeCant, Leonard J., Jr.; Idriss, Samir F.; and Prosl, Frank R., 4,447,224, Cl. 604-67.000.

Igashira, Toshihiko: *See—*
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,446,839, Cl. 123-569.000.

Iijima, Hitoshi: *See—*
Yamazaki, Kisuke; Iijima, Hitoshi; Matsuoka, Fumio; and Nishizawa, Toshizo, 4,446,704, Cl. 62-180.000.

Iizuka, Sadao: *See—*
Suzuki, Shintaro; Iizuka, Sadao; and Moriya, Yoshimi, 4,447,264, Cl. 75-251.000.

Ikai, Takashi: *See—*
Suzuki, Fumio; Fujikawa, Yoshihiro; Yamamoto, Susumu; Mizutani, Hidemi; Ohya, Tunehiko; Ikai, Takashi; and Oguchi, Toshihiko, 4,447,256, Cl. 71-86.000.

Ikegai Tekko Kabushiki Kaisha: *See—*
Asano, Toshitake, 4,447,181, Cl. 409-345.000.

Ilardo, Charles S.: *See—*
Scharf, Daniel J.; Ilardo, Charles S.; Schwartz, Willis T.; and Salee, Gideon, 4,447,572, Cl. 524-371.000.

Illinois Tool Works Inc.: *See—*
Ruehl, William E., 4,447,105, Cl. 339-113.00R.

Illy, Pierre, to Deere & Company. Cylindrical baler twine wrapping apparatus for wrapping bale with two pieces of twine. 4,446,783, Cl. 100-5.000.

Imai, Takeshi: *See—*
Kurihara, Norimitsu; and Imai, Takeshi, 4,446,727, Cl. 73-113.000.

Imai, Tomoyasu: *See—*
Asaeda, Toshio; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, 4,446,657, Cl. 51-206.00R.

Imamura, Yoichi, to Kabushiki Kaisha Suwa Seikosha. Semiconductor memory device. 4,447,894, Cl. 365-219.000.

Imazeki, Ryoji; and Inoue, Michiya, to Fujitsu Fanuc Limited. Method of rewriting data in non-volatile memory, and system therefor. 4,447,887, Cl. 364-900.000.

Imerman, Curtis E.; Langerud, David S.; and Thomas, Brian H., to FMC Corporation. Reversible outrigger crane support. 4,446,976, Cl. 212-189.000.

Imperial Chemical Industries Limited: *See—*
Simmons, Peter E., 4,447,851, Cl. 361-189.000.

Imperial Chemical Industries Plc: *See—*
Bradbury, John A.; Rowlands, Reuben; and Tipping, James W., 4,447,491, Cl. 428-304.400.
Cogswell, Frederic N.; and Tomka, Jiri G., 4,447,599, Cl. 528-502.000.
Jackson, Peter, 4,446,736, Cl. 73-600.000.
Kay, Ian T.; Bartholomew, David; Williams, Emyr G.; and Noon, Robert A., 4,447,446, Cl. 424-282.000.
Yellin, Tobias O.; and Gilman, David J., 4,447,441, Cl. 424-269.000.

Imura, Kenji, to Minolta Kabushiki Kaisha. Optical analyzer for measuring a construction ratio between components in the living tissue. 4,446,871, Cl. 128-633.000.

Inada, Junji, to Dai Nippon Insatsu Kabushiki Kaisha. Contamination-free apparatus for filling spouted bags with a fluid. 4,446,674, Cl. 53-502.000.

Inaga, Hisashi; and Yokocho, Yoetsu, to Kioritz Corporation. Heat insulating mounting device for carburetor. 4,446,822, Cl. 123-41.310.

Inamori, Kazuo; and Hirabayashi, Masaya, to Kyocera Corporation. Flexible ceramic bio-implant member. 4,446,579, Cl. 3-1.910.

Incom International Inc.: *See—*
Olsen, Roger F., 4,447,032, Cl. 248-558.000.

Indak Manufacturing Corp.: *See—*
Schaad, William J.; Black, Charles E., III; and Halstead, Raymond T., 4,447,688, Cl. 200-159.00R.

Infusaid Corporation: *See—*
DeCant, Leonard J., Jr.; Idriss, Samir F.; and Prosl, Frank R., 4,447,224, Cl. 604-67.000.

Ingersoll Equipment Co., Inc.: *See—*
Manteufel, Dale A., 4,446,898, Cl. 144-193.00A.

Inoue, Akira, to Hitachi Metals, Ltd. Fifth wheel. 4,447,070, Cl. 280-434.000.

Inoue, Haruhiko; Murasaki, Shun-ichi; and Naito, Masataka, to Nippondenso Co., Ltd. Humidity sensitive element. 4,447,352, Cl. 252-519.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,447,695, Cl. 219-69.00C.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Inverter-type power supply circuit for electrical machining. 4,447,695, Cl. 219-69.00C.

Inoue, Masahide: *See—*
Hidaka, Tsuneo; Inoue, Masahide; and Ogiso, Makoto, 4,447,210, Cl. 433-173.000.

Inoue, Michiya: *See—*
Imazeki, Ryoji; and Inoue, Michiya, 4,447,887, Cl. 364-900.000.

Inoue, Nobuyoshi: *See—*
Suzuki, Akira; Kaneko, Katumi; and Inoue, Nobuyoshi, 4,447,142, Cl. 354-246.000.

Institut Cerac S.A.: *See—*
Hartwig, Carl S. M., 4,446,706, Cl. 68-24.000.

Institut Dr. Friedrich Forster Prufgeratebau: *See—*
Stumm, Wolfgang, 4,447,778, Cl. 324-213.000.

Institut Straumann AG: *See—*
Sutter, Franz, 4,447,209, Cl. 433-173.000.

Institutul de Cercetarea Stiintifica si Inginerie Tehnologica Pentru Industria Electrotehnica: *See—*
Ghiurea, Florin C. V., 4,447,755, Cl. 310-329.000.

Instranetics, Inc.: *See—*
Eldridge, John D., Jr., 4,447,238, Cl. 604-280.000.

Instrumentation Laboratory Inc.: *See—*
Neri, Bruce P.; and Liffmann, Stanley M., 4,447,544, Cl. 436-105.000.

Intel Corporation: *See—*
Beinglass, Israel; and Tsai, Nan-Hsiung, 4,446,613, Cl. 29-571.000.
Kinnie, D. Craig; and Boberg, Richard W., 4,447,878, Cl. 364-200.000.
Matthews, James A., 4,447,290, Cl. 156-626.000.

INTERATOM Internationale Atomreaktorbau GmbH: *See—*
Jansing, Walter; and Vinzens, Kurt, 4,446,820, Cl. 122-32.000.

Interior Steel Equipment Co.: *See—*
French, Robert J.; and Dorony, Elmer F., 4,447,099, Cl. 312-257.00R.

International Business Machines Corporation: *See—*
Bergeron, David L.; and Patel, Parsotam T., 4,446,611, Cl. 29-578.000.
Chevillat, Pierre R.; and Ungerboeck, Gottfried, 4,447,908, Cl. 375-42.000.
Fang, Frank F.; and McGroddy, James C., 4,447,746, Cl. 307-311.000.
Fischer, Friedrich L., 4,447,048, Cl. 267-141.100.
Gibson, David K., 4,447,144, Cl. 355-3.0BE.
Heidrich, Paul F.; Laff, Robert A.; and Light, Thomas B., 4,447,126, Cl. 350-96.310.
Kuecker, Ward A.; Stratton, Susan D.; and Cason, William C., 4,447,888, Cl. 364-900.000.
Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., 4,447,824, Cl. 357-71.000.
Marks, Robert; Phelps, Douglas W., Jr.; and Ward, William C., 4,447,857, Cl. 361-395.000.
Mulzet, Alfred P., 4,447,221, Cl. 494-45.000.
Rainford, Robert E.; Moser, Mark M.; and Ojala, Jon R., 4,447,152, Cl. 356-237.000.
Stalberg, Nils G., 4,447,774, Cl. 328-150.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Licciardello, Michael; and Tyszkiewicz, Theodore J., 4,447,365, Cl. 260-463.000.
Spitz, Seymour J., Jr.; Mookherjee, Braja D.; Hill, Ira D.; Keleher, Lloyd F.; Trenkle, Robert W.; and Wolff, Robin K., 4,446,651, Cl. 47-10.000.

International Food Equipment, Inc.: *See—*
Reed, Claude A., 4,446,775, Cl. 99-353.000.

International Harvester Co.: *See—*
Voss, Julian D.; Allori, Aldo; and Wilger, John A., 4,446,953, Cl. 192-70.120.

International Scientific Industries, Inc.: *See—*
Howlett, James F.; and Thompson, Marlin H., 4,447,750, Cl. 310-89.000.

International Standard Electric Corporation: *See—*
King, George D. H.; and Bone, Michael C., 4,447,116, Cl. 350-96.130.
Sutehall, Ralph, 4,447,122, Cl. 350-96.230.

International Telephone and Telegraph Corporation: *See—*
Benson, John; and Hanel, Harold L., 4,446,999, Cl. 227-11.000.
Borsuk, Leslie M., 4,447,120, Cl. 350-96.200.

InterNorth, Inc.: *See—*
Grose, Ronald D., 4,446,851, Cl. 126-449.000.

Inui, Toshiharu: *See—*
Kurata, Masami; Moriguchi, Fujio; Inui, Toshiharu; and Ohmori, Takashi, 4,447,832, Cl. 358-296.000.

Inukai, Mitsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Riki-Denki-Seisakusho. Seatbelt webbing retracting device. 4,447,017, Cl. 242-107.40A.

Inverse Square Systems Incorporated: *See—*
Raczynski, Walter V., 4,447,859, Cl. 362-13.000.

Irbe, Robert M.: *See—*
Horwath, Robert O.; and Irbe, Robert M., 4,447,531, Cl. 435-94.000.

Irie, Hiromitsu: *See—*
Watanabe, Masaru; Matsumura, Satoru; Amada, Takayoshi; Irie, Hiromitsu; and Saito, Norihisa, 4,447,293, Cl. 159-6.200.

IRT Corporation: *See—*
Friesenhahn, Stanley J., 4,447,727, Cl. 250-390.000.

Isaka, Kinichi: *See—*
Kawaguchi, Masashi; Ishii, Toshiaki; Isaka, Kinichi; and Uede, Hisashi, 4,447,757, Cl. 313-509.000.

Isaksson, G. E.: *See—*
Blosser, Virgil Y.; Isaksson, G. E.; Rupp, Dallas B.; and Singh, A. P., 4,447,385, Cl. 264-315.000.

Isenberg, Arnold O., to Westinghouse Electric Corp. Combustion control with flames. 4,447,204, Cl. 431-76.000.

Ishiguchi, Isao: *See—*
Tomuro, Noboru; Ishiguchi, Isao; Tsujikawa, Shinjiro; Kashima, Masao; and Miyashita, Yasuo, 4,447,853, Cl. 361-321.000.

Ishiguro, Norio: *See—*
Fukuda, Ryuichi; Fujiwara, Masami; and Ishiguro, Norio, 4,447,790, Cl. 330-149.000.

Ishii, Toshiaki: *See—*
Kawaguchi, Masashi; Ishii, Toshiaki; Isaka, Kinichi; and Uede, Hisashi, 4,447,757, Cl. 313-509.000.

Ishii, Yoshitaro: *See—*
Watanabe, Syuji; Ishii, Yoshitaro; and Sunagawa, Masao, 4,446,594, Cl. 15-323.000.

Ishikawa, Isao; Kanda, Hiroshi; and Katakura, Kageyoshi, to Hitachi, Ltd. Acoustic scanning microscope. 4,446,738, Cl. 73-606.000.

Ishikawa, Michio: *See—*
Aoshima, Shozo; Hirose, Noboru; and Ishikawa, Michio, 4,446,746, Cl. 73-862.330.

Ishikawa, Takuma: *See—*
Yuge, Shizuo; Sakakibara, Susumu; Ishikawa, Takuma; Kito, Nobuo; and Yamamoto, Toshio, 4,447,517, Cl. 430-122.000.

Ishikura, Yasuyuki: *See—*
Furuya, Koutaro; Hosoda, Kazuho; Takeuchi, Takahito; Ishikura, Yasuyuki; and Kameda, Morihiro, 4,446,580, Cl. 3-6.000.

Ito, Masayoshi: *See—*
Ogura, Haruo; Furuhata, Kimio; Osawa, Toshiaki; Toyoshima, Satoshi; Shitori, Yoshiyasu; and Ito, Masayoshi, 4,447,600, Cl. 536-23.000.

Ito, Osamu; and Nishizawa, Kazunori, to Kao Soap Co., Ltd. Disposable diaper. 4,447,240, Cl. 604-385.000.

Ito, Tomoo, to Jupitor Corporation. Rotary drive device for inspecting turbo-fan engine blades. 4,446,728, Cl. 73-116.000.

Itoh, Chihiro: *See—*
Ohnishi, Haruo; Itoh, Chihiro; and Mochida, Ei, 4,447,437, Cl. 424-263.000.

ITT Industries, Incorporated: *See—*
Bearcroft, Kenneth E., 4,446,744, Cl. 73-861.280.
Boehm, Peter, 4,447,897, Cl. 91-369.00B.
Fieber, Werner H.; Hinze, Klaus; Huth, Manfred K. O.; Jost, Hans-Georg; Lamm, Klaus D.; Michalski, Dieter; and Rittaler, Konstantin, 4,447,686, Cl. 200-153.00J.

Ivani, Edward J. Amino-polysaccharides and copolymers thereof for contact lenses and ophthalmic compositions. 4,447,562, Cl. 523-105.000.

Ivey, H. Grady; and Sprouse, D. Leonard, to Strickland Systems, Inc. Joining concrete form panels to cast an inside corner wall structure. 4,447,035, Cl. 249-194.000.

Iwahashi, Hiroshi: *See—*
Asano, Masamichi; and Iwahashi, Hiroshi, 4,447,895, Cl. 365-226.000.

Iwanski, Richard V.: *See—*
Giardini, Dante S.; Iwanski, Richard V.; and Trumpy, David K., 4,446,825, Cl. 123-90.650.

Iwasaki, Shinichiro, to Aisin Seiki Kabushiki Kaisha. Ignition system. 4,446,842, Cl. 123-606.000.

Iyama, Hiroyuki; and Watanabe, Yoshio, to Hitachi Lighting, Ltd. Discharge lamp lighting device. 4,447,763, Cl. 315-207.000.

J. R. Simplot Company: *See—*
Bierman, Laurence W.; Long, Gary L.; and Bortner, David, 4,447,403, Cl. 423-20.000.

Jackson, Henry D. Liquid drain system. 4,447,321, Cl. 210-86.000.

Jackson, Joseph M.: *See—*
Harris, William J.; Jackson, Joseph M.; and Petty, David C., 4,447,676, Cl. 179-90.0BD.

Jackson, Melvin R.; and Rairden, John R., III, to General Electric Company. Process for making plasma spray-cast components using segmented mandrels. 4,447,466, Cl. 427-34.000.

Jackson, Peter, to Imperial Chemical Industries PLC. Ultrasonic identification of damage in lined structures. 4,446,736, Cl. 73-600.000.

Jackson, Philip, to E. Beaudrey & Cie. Trash rake with recovery gutter. 4,447,323, Cl. 210-158.000.

Jackson, Philip. Water screen with revolving screen member. 4,447,324, Cl. 210-159.000.

Jacobi, Manfred: *See—*
Henne, Andreas; Hesse, Anton; Jacobi, Manfred; Schornick, Gunnar; Vyvial, Rudolf; and Holoch, Klaus, 4,447,520, Cl. 430-281.000.

Jacobs, Robert S.; and Faulkner, D. John, to University of Calif., The Regents of the. Manoalide, an anti-inflammatory analgesic marine natural product. 4,447,445, Cl. 424-279.000.

Jacobson, Chester F., to Gillette Company, The. Razor handle. 4,446,619, Cl. 30-85.000.

Jacobson, Paul R.: *See—*
Scheinhaus, Myron G. J.; Jacobson, Paul R.; and Selner, Allen J., 4,446,633, Cl. 36-11.500.

Jacquesy, Jean-Claude: *See—*
Jouannetaud, Marie-Paule; Gesson, Jean-Pierre; and Jacquesy, Jean-Claude, 4,447,660, Cl. 568-774.000.

Jagen, Paul R.: *See—*
Houtz, Timothy W.; and Jagen, Paul R., 4,447,106, Cl. 339-126.00R.

Jain, Nirnal S.: *See—*
Loeffler, Otto E.; Jain, Nirnal S.; and Kauder, Otto S., 4,447,335, Cl. 252-1.000.

James, Glenn R.: *See—*
Hampton, William J.; James, Glenn R.; and Hatch, Raymond L., 4,447,203, Cl. 431-3.000.

Jankowiak, Roman; and Connell, Maurice W., to Conax Corporation. Explosively separable link. 4,447,084, Cl. 294-83.0AE.

Jansing, Walter; and Vinzens, Kurt, to INTERATOM Internationale Atomreaktorbau GmbH. Steam generator heated by liquid metal. 4,446,820, Cl. 122-32.000.

Jarrett, Robert B.: *See—*
Rumbaugh, Robert C.; and Jarrett, Robert B., 4,446,843, Cl. 123-609.000.

Jaumann, Leonhard; Tima, Zdenek; and Feierlein, Heinz, to Sachtler GmbH Filmtechnische Gerate. Weight balancer. 4,447,033, Cl. 248-563.000.

Jayadev, Tumkur S.; and Nugyen, On V., to Energy Conversion Devices, Inc. Multiphase thermoelectric alloys and method of making same. 4,447,277, Cl. 148-400.000.

Jeanjean, Marcel: *See—*
Bedu, Marcel; and Jeanjean, Marcel, 4,447,766, Cl. 315-241.00R.

Jenike & Johanson, Inc.: *See—*
Johanson, Jerry R.; and Royal, Thomas A., 4,446,717, Cl. 73-7.000.

Jenkins, James H. Method for retaining air pressure in a duct system. 4,447,078, Cl. 285-331.000.

Jennen, Wolfgang; and Sprugel, Gerd, to Claas OHG. Agricultural attachment for harvesting agricultural products arranged in rows. 4,446,682, Cl. 56-119.000.

Jensen, Henry E., to Allied Corporation. Reduced maintenance explosion damage resistant storage battery. 4,447,508, Cl. 429-57.000.

Jensen, Niels D.; and Nielsen, Kurt F., to Grundfos A/S. Centrifugal pump for moving gaseous liquids. 4,447,189, Cl. 415-168.000.

Jensen, Reed J.; Thorne, James M.; Cluff, Coran L.; and Hayes, John K., to United States of America, Energy. Method of separating boron isotopes. 4,447,303, Cl. 204-157.10R.

Jerobee Industries, Inc.: *See—*
Weglin, Walter, 4,447,286, Cl. 156-515.000.

Jeuken, Gerardus W.: *See—*
Gunneman, Paul; and Jeuken, Gerardus W., 4,446,893, Cl. 139-11.000.

Jewusiak, Stephen J., to Ethicon, Inc. Plastic ligating clips. 4,446,865, Cl. 128-321.000.

Jimenez, Ivan; and Rubin, Irving N. Telescope sight mount system for firearms. 4,446,644, Cl. 42-1.0ST.

Johanson, Jerry R.; and Royal, Thomas A., to Jenike & Johanson, Inc. Abrasive wear tester. 4,446,717, Cl. 73-7.000.

John Thomas Batts, Inc.: *See—*
Garrison, Judd F., 4,446,996, Cl. 223-96.000.

John Wyeth & Brother Limited: *See—*
Archibald, John L.; and Boyle, John T. A., 4,447,604, Cl. 544-219.000.

Johnson, Charles A.; and Lucker, Laurence H., Jr., to American Hoist & Derrick Company. Mooring apparatus for floating vessels. 4,446,807, Cl. 114-230.000.

Johnson, Erlon F.: *See—*
Cooper, Ronald F.; and Johnson, Erlon F., 4,447,121, Cl. 350-96.200.

Johnson, George F., Jr.: *See—*
Grender, Arnemann; and Johnson, George F., Jr., 4,446,626, Cl. 33-286.000.

Johnson, Griffin I.; and Kiefer, Judy E., to Eastman Kodak Company. Process for the purification of terephthalic acid. 4,447,646, Cl. 562-487.000.

Johnson, Jerry. L.: *See—*
Dunn, Stanley A.; Pomplun, Alan R.; Paquette, Elmer G.; Ethridge, Edwin C.; and Johnson, Jerry. L., 4,447,251, Cl. 65-142.000.

Johnson, Joel S., to Kent-Moore Corporation. Valve spring compressor for internal combustion engine. 4,446,608, Cl. 29-220.000.

Johnson, Paul H.; and Stevenson, Robert B. Footwear having improved shock absorption. 4,446,634, Cl. 36-29.000.

Johnson, Robert M., Jr.: *See—*
Ross, David S.; Johnson, Robert M., Jr.; and Malhotra, Ripudaman, 4,447,662, Cl. 568-939.000.

Johnson, Roy A., to Upjohn Company, The. Dibenzo diazacines. 4,447,607, Cl. 544-246.000.

Johnson, Russell W.: *See—*
O'Hara, Mark J.; and Johnson, Russell W., 4,447,556, Cl. 502-74.000.

Jones, Edward M., Jr.: *See—*
Smith, Lawrence A., Jr.; Jones, Edward M., Jr.; and Hearn, Dennis, 4,447,668, Cl. 585-639.000.

Jones, Howell A., Jr.: *See—*
Duwell, Edward C.; and Jones, Howell A., Jr., 4,447,890, Cl. 364-900.000.

Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., to National Research Development Corporation. Anti-cancer quinazoline derivatives. 4,447,608, Cl. 544-287.000.

Jonsson, Jan U. E.; Blomgren, Rolf B. J. R.; and Edlund, Nils H. Spacer means for providing air gaps. 4,446,661, Cl. 52-95.000.

Jordan, Dale A.: *See—*
Crosby, Philip S.; and Jordan, Dale A., 4,447,803, Cl. 340-347.0CC.

Jordan, R. Paul, to Langer Biomechanics Group, Inc., The. Orthotic device. 4,446,856, Cl. 128-80.00R.

Joseph, Joseph P.: *See—*
Dusza, John P.; Joseph, Joseph P.; and Berstein, Seymour, 4,447,442, Cl. 424-273.00P.

Jost, Hans-Georg: *See—*
Fieber, Werner H.; Hinze, Klaus; Huth, Manfred K. O.; Jost, Hans-Georg; Lamm, Klaus D.; Michalski, Dieter; and Rittaler, Konstantin, 4,447,686, Cl. 200-153.00J.

Jouannetaud, Marie-Paule; Gesson, Jean-Pierre; and Jacquesy, Jean-Claude, to PCUK Produits Chimiques Ugine Kuhlmann. Process for the isomerization of ortho-and para-bromophenols or the ethers thereof into meta-bromophenols and corresponding ethers. 4,447,660, Cl. 568-774.000.

Joy, Richard L. Dispenser for applying adhesive tape. 4,447,281, Cl. 156-250.000.

Jump, Clarence E. Patient positioning device. 4,446,587, Cl. 5-83.000.

Junkers, John K. Universally usable hydraulic wrench for simultaneously tightening or loosening two threaded connectors or for tightening or loosening a single threaded connector with a greater force. 4,446,762, Cl. 81-57.390.

Jupitor Corporation: *See—*
Ito, Tomoo, 4,446,728, Cl. 73-116.000.

Justi, Eduard W.: *See—*
Brennecke, Peter W. R.; Ewe, Henning; and Justi, Eduard W., 4,447,302, Cl. 204-128.000.

Kabashima, Katsuhiko: *See—*
Takemae, Yoshihiro; Enomoto, Seiji; Nozaki, Shigeki; Mezawa, Tsutomu; and Kabashima, Katsuhiko, 4,447,745, Cl. 307-269.000.

Kabelwerke Reinshagen GmbH: *See—*
Gundel, Manfred; Schlamm, Heinz-Werner; and Schmitz, Klaus-Dieter, 4,447,806, Cl. 340-641.000.

Kabushiki Kaisha Daisei Kikai: *See—*
Suzuki, Tomosaburo; and Kato, Toshiki, 4,446,992, Cl. 222-196.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Asai, Yoshiharu, 4,446,937, Cl. 177-1.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Nakata, Minoru, 4,447,044, Cl. 254-309.000.
Nishikawa, Yoshinori; and Takahashi, Iwashige, 4,446,787, Cl. 100-99.000.

Kabushiki Kaisha Morita Seisakusho: *See—*
Kataoka, Kenzo; Nishimoto, Shinichi; and Matoba, Kazunari, 4,447,207, Cl. 433-69.000.

Kabushiki Kaisha Shikishima Chipton: *See—*
Kobayashi, Hisamine, 4,446,656, Cl. 51-7.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Imamura, Yoichi, 4,447,894, Cl. 365-219.000.

Kabushiki Kaisha Tokai-Riki-Denki-Seisakusho: *See—*
Inukai, Mitsuo, 4,447,017, Cl. 242-107.40A.

Kabuto, Masami: *See—*
Endo, Norio; Asayama, Yoshiaki; and Kabuto, Masami, 4,446,824, Cl. 123-52.00M.

Kadokawa, Toshiaki: *See—*
Nishimura, Haruki; Naruto, Shunsuke; Mizuta, Hiroyuki; Kadokawa, Toshiaki; and Kawashima, Katsuyoshi, 4,447,439, Cl. 424-267.000.

Kadota, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Simultaneous read-write IGFET memory cell. 4,447,891, Cl. 365-154.000.

Kahl, Manfred E. Spring loaded fish hook. 4,446,647, Cl. 43-36.000.

Kahl, William G., Jr.: *See—*
Mudge, Philip H.; and Kahl, William G., Jr., 4,447,726, Cl. 250-342.000.

Kahn, Iwan: *See—*
Heller, Rudolf; and Kahn, Iwan, 4,446,792, Cl. 102-473.000.

Kaiho, Shin-ichi: *See—*
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shin-ichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, 4,447,453, Cl. 424-319.000.

Kajiyama, Ryuichi; and Yonemoto, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Elevator speed instruction generating system. 4,446,946, Cl. 187-29.00R.

Kakimoto, Morio: *See—*
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shin-ichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, 4,447,453, Cl. 424-319.000.

Kalbskopf, Reinhard; Baumberger, Otto; and Masson, Serge, to Societa Italiana Vetro SIV SpA. Apparatus for continuously depositing a layer of a solid material on the surface of a substrate brought to a high temperature. 4,446,815, Cl. 118-718.000.

Kalomeris, Mary. Belts with concealed pockets. 4,446,574, Cl. 2-338.000.

Kamboj, Ved P.: *See—*
Salman, Mohammad; Ray, Suprabhat; Kamboj, Ved P.; and Anand, Nitya, 4,447,622, Cl. 548-525.000.

Kameda, Morihiro: *See—*
Furuya, Koutaro; Hosoda, Kazuho; Takeuchi, Takahito; Ishikura, Yasuyuki; and Kameda, Morihiro, 4,446,580, Cl. 3-6.000.

Kamezaki, Yasushi: *See—*
Nakazawa, Toru; Fushida, Akira; and Kamezaki, Yasushi, 4,447,514, Cl. 430-81.000.

Kamihigoshi, Tsutomu: *See—*
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, 4,447,663, Cl. 570-150.000.

Kamisada, Koji: *See—*
Ohashi, Shigeo; Nakamura, Tadashi; and Kamisada, Koji, 4,447,685, Cl. 200-67.00D.

Kamiyama, Fumio; Yamazaki, Kazutoshi; Kohara, Minoru; and Nagata, Mituo, to Sekisu Kagaku Kogyo Kabushiki Kaisha. Filler for liquid chromatography and method for separating water-soluble substances using said filler. 4,447,328, Cl. 210-635.000.

Kamm, Roger D. Method and apparatus for testing lip pressure applied to a smoking article and for calibrating the pressure testing apparatus. 4,446,747, Cl. 73-862.580.

Kamoshita, Katsuzo: *See—*
Noguchi, Hiroshi; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, 4,447,260, Cl. 71-118.000.

Kanaoka, Kunio; Okamoto, Takanori; and Matsuda, Hideaki, to Okura Kogyo Kabushiki Kaisha. Anaerobically curable composition and process for preparation thereof. 4,447,563, Cl. 523-176.000.

Kanda, Hiroshi: *See—*
Ishikawa, Isao; Kanda, Hiroshi; and Katakura, Kageyoshi, 4,446,738, Cl. 73-606.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Watanabe, Kiyoshi; Ideguchi, Satoshi; Ogura, Masahiro; Shimada, Masahiko; and Kawaharada, Hajime, 4,447,362, Cl. 260-396.00R.

Kaneko, Katumi: *See—*
Suzuki, Akira; Kaneko, Katumi; and Inoue, Nobuyoshi, 4,447,142, Cl. 354-246.000.

Kano, Tokio, to Olympus Optical Co., Ltd. System for discriminating a precipitation pattern of particles. 4,447,396, Cl. 422-73.000.

Kanto Denka Kogyo Co., Ltd.: *See—*
Suzuki, Shintaro; Iizuka, Sadao; and Moriya, Yoshimi, 4,447,264, Cl. 75-251.000.

Kanto Ishi Pharmaceutical Co., Ltd.: *See—*
Ogura, Haruo; Furuhata, Kimio; Osawa, Toshiaki; Toyoshima, Satoshi; Shitori, Yoshiyasu; and Ito, Masayoshi, 4,447,600, Cl. 536-23.000.

Kao Soap Co., Ltd.: *See—*
Ito, Osamu; and Nishizawa, Kazunori, 4,447,240, Cl. 604-385.000.

Kaplan, James W., to Harlan Material Handling Corporation. Extensible hitch for towing vehicles. 4,447,071, Cl. 280-479.00R.

Karian, Harutun G.; and Todd, David B., to Baker Perkins Inc. Method of centrifugally pelletizing certain synthetic plastic materials. 4,447,383, Cl. 264-8.000.

Karth, Beat: *See—*
Buri, Hermann; and Karth, Beat, 4,447,184, Cl. 413-26.000.

Karubian, Ralph; Breukelman, Robert G.; and Weston, Lynn R., to Kentmaster Mfg. Co., Inc. Stunning gun. 4,446,598, Cl. 17-1.00B.

Karubian, Ralph K.; and Coelho, Gregorio J., to Kentmaster Mfg. Co., Inc. Stunning gun with improved control valve. 4,446,599, Cl. 17-1.00B.

Kassaian, Arash S.; and Dash, John, to State of Oregon Acting by and Through the State Board of Higher Education on behalf of Portland State University. Use of alcohol for increasing the current efficiency of chromium plating. 4,447,299, Cl. 204-43.00R.

Kasahara, Yoshiki: *See—*
Noro, Masao; and Kasahara, Yoshiki, 4,447,791, Cl. 330-297.000.

Kasai, Shozo: *See—*
Nishizawa, Hiroshi; Mukoyama, Yoshiyuki; and Kasai, Shozo, 4,447,589, Cl. 528-45.000.

Kasai, Yoshiaki; and Ohgami, Masaaki, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. System for detecting the transient state of engine operation. 4,447,880, Cl. 364-431.050.

Kashima, Masao: *See—*
Tomuro, Noboru; Ishiguchi, Isao; Tsujikawa, Shinjiro; Kashima, Masao; and Miyashita, Yasuo, 4,447,853, Cl. 361-321.000.

Kaspar, Don G.: *See—*
Knickerbocker, Karl, deceased, 4,446,956, Cl. 194-1.00L.

Kasper, Horst: *See—*
Mundt, Johann; Kasper, Horst; and Pritsch, Eckhard, 4,447,788, Cl. 318-799.000.

Kasuya, Hideo; and Endo, Hiroshi, to Nissan Motor Company, Limited. Obstacle detector for use in vehicles. 4,447,800, Cl. 340-904.000.

Katagiri, Masayoshi; Kondo, Toshio; and Midooka, Masanori, to Toyota Jidosha Kabushiki Kaisha; Aisin Seiki Kabushiki Kaisha; and Toyoda Gosei. Sealing boot. 4,447,066, Cl. 277-212.0FB.

Katakura, Kageyoshi: *See—*
Ishikawa, Isao; Kanda, Hiroshi; and Katakura, Kageyoshi, 4,446,738, Cl. 73-606.000.

Kataoka, Kenzo; Nishimoto, Shinichi; and Matoba, Kazunari, to Kabushiki Kaisha Morita Seisakusho. Mandibular motion diagnostic device. 4,447,207, Cl. 433-69.000.

Katayama, Aisuke. Non self-starting thermal magnetic energy recycling ferrite ring engine. 4,447,736, Cl. 290-1.00R.

Kato, Hirohisa: *See—*
Oguchi, Toshihiko; Kato, Hirohisa; and Yokoyama, Hirotaka, 4,447,467, Cl. 427-48.000.

Kato, Kimihiro: *See—*
Nagasaku, Eiichi; Kato, Kimihiro; and Yasunaga, Masao, 4,447,196, Cl. 418-93.000.

Kato, Masayuki: *See—*
Kishimoto, Teiji; Kochi, Hiromu; and Kato, Masayuki, 4,447,436, Cl. 424-258.000.

Kato, Tetsuo, to Tokico Ltd. Method for filling pressurized gas into a cylinder device. 4,446,895, Cl. 141-4.000.

Kato, Toshikazu, to Olympus Optical Co., Ltd. Cassette loading/unloading apparatus for cassette tape recorder. 4,447,838, Cl. 360-96.500.

Kato, Toshiki: *See—*
Suzuki, Tomosaburo; and Kato, Toshiki, 4,446,992, Cl. 222-196.000.

Katto, Takayuki; Komatsu, Yasumasa; and Shiiki, Zenya, to Kureha Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin composition. 4,447,578, Cl. 525-75.000.

Kauder, Otto S.: *See—*
Loeffler, Otto E.; Jain, Nirnal S.; and Kauder, Otto S., 4,447,335, Cl. 252-1.000.

Kawagoe, Michio: *See—*
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,446,839, Cl. 123-569.000.

Kawaguchi, Masashi; Ishii, Toshiaki; Isaka, Kinichi; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Structure of thin-film electroluminescent display panel sealed by glass substrates. 4,447,757, Cl. 313-509.000.

Kawaharada, Hajime: *See—*
Watanabe, Kiyoshi; Ideguchi, Satoshi; Ogura, Masahiro; Shimada, Masahiko; and Kawaharada, Hajime, 4,447,362, Cl. 260-396.00R.

Kawai, Hisasi: *See—*
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,446,839, Cl. 123-569.000.

Kawai, Masakatsu, to Shofu, Inc. Dental polisher. 4,447,208, Cl. 433-166.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,446,769, Cl. 84-1.010.

Kawai, Shinji: *See—*
Suzuki, Koichi; Yoshihara, Mikio; Kawai, Shinji; and Mori, Katsuhiro, 4,446,584, Cl. 4-237.000.

Kawakami, Hiroshi: *See—*
Nakada, Seiichi; Ohno, Hiroshi; Nishijima, Tsuneo; and Kawakami, Hiroshi, 4,446,595, Cl. 15-365.000.

Kawakami, Toshio; and Kimura, Izumi, to Toshiba Kikai Kabushiki Kaisha. Method and apparatus for controlling tool magazines. 4,446,612, Cl. 29-568.000.

Kawamura, Yoshihisa: *See—*
Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Shioyama, Giichi, 4,446,840, Cl. 123-571.000.

Kawanishi, Shozo, to Yamato Scale Company. Ltd. Combination weighing machine. 4,446,938, Cl. 177-25.000.

Kawashima, Katsuyoshi: *See—*
Nishimura, Haruki; Naruto, Shunsuke; Mizuta, Hiroyuki; Kadokawa, Toshiaki; and Kawashima, Katsuyoshi, 4,447,439, Cl. 424-267.000.

Kay, Ian T.; Bartholomew, David; Williams, Emyr G.; and Noon, Robert A., to Imperial Chemical Industries PLC. Certain cyano containing aryl amides, compositions containing same and fungicidal use thereof. 4,447,446, Cl. 424-282.000.

Kay, Robert E., to Ford Aerospace & Communications Corporation. Composition control of CSVPE HgCdTe. 4,447,470, Cl. 427-76.000.

Kaye, Gordon E.; Schwartz, Eugene B.; and Sollins, Irving V., to CCT Associates. Medicament implant applicator. 4,447,223, Cl. 604-61.000.

Keable, John B., to QMI Corporation. Photographic film coating apparatus and method. 4,447,468, Cl. 427-54.100.

Keeley, Charles: *See—*
Brecker, Lawrence R.; Keeley, Charles; and Brilliant, Stuart D., 4,447,569, Cl. 524-109.000.

Kegeler, Gary H.: *See—*
Adl, Mohammad S.; Kegeler, Gary H.; and Vandersall, Howard L., 4,447,337, Cl. 252-7.000.

Keiai Orthopedic Appliance Co., Ltd.: *See—*
Furuya, Koutaro; Hosoda, Kazuho; Takeuchi, Takahito; Ishikura, Yasuyuki; and Kameda, Morihiro, 4,446,580, Cl. 3-6.000.

Keith Hancock Structures Limited: *See—*
Chapman, Leslie J., 4,447,029, Cl. 248-246.000.

Keleher, Lloyd F.: *See—*
Spitz, Seymour J., Jr.; Mookherjee, Braja D.; Hill, Ira D.; Keleher, Lloyd F.; Trenkle, Robert W.; and Wolff, Robin K., 4,446,651, Cl. 47-10.000.

Keller, Douglas V., Jr.: *See—*
Smith, Clay D.; and Keller, Douglas V., Jr., 4,447,245, Cl. 44-1.0SR.

Keller, Richard A.: *See—*
Cremers, David A.; and Keller, Richard A., 4,447,153, Cl. 356-361.000.

Kelley, Mellis M.: *See—*
Smith, Richard R.; and Kelley, Mellis M., 4,447,595, Cl. 528-274.000.

Kelly, James B.; and Kelly, Viola F. Double door security rural mailbox with automatic signalling means. 4,447,005, Cl. 232-35.000.

Kelly, Joseph D.: *See—*
Franz, Helmut; Duffer, Paul F.; and Kelly, Joseph D., 4,447,496, Cl. 428-432.000.

Kelly, Viola F.: *See—*
Kelly, James B.; and Kelly, Viola F., 4,447,005, Cl. 232-35.000.

Kelsey, Charles C., Jr.; and Wolff, Walter C., to Devel Corporation. Cartridge magazine and follower for autoloading firearms. 4,446,645, Cl. 42-50.000.

Kelsey Hayes Company: *See—*
Rozmus, Walter J., 4,447,390, Cl. 419-49.000.
Van Sikle, Truman T.; and Drake, Charles J., 4,447,698, Cl. 219-110.000.

Kembo, Yukio: *See—*
Kuni, Asahiro; Kembo, Yukio; Akiyama, Nobuyuki; and Aoki, Nobuhiko, 4,447,731, Cl. 250-442.100.

Kendall Company, The: *See—*
Patel, Bhupendra C., 4,447,228, Cl. 604-103.000.

Kenergy Corporation: *See—*
Weisner, Kent A.; and Walls, Lester L., Jr., 4,447,200, Cl. 425-388.000.

Kennametal Inc.: *See—*
Warren, Donald W., 4,447,175, Cl. 407-114.000.

Kenney, George H. W., to Kenney, Richard. Price ticket and like displays. 4,446,640, Cl. 40-16.200.

Kenney, Richard: *See—*
Kenney, George H. W., 4,446,640, Cl. 40-16.200.

Kent-Moore Corporation: *See—*
Johnson, Joel S., 4,446,608, Cl. 29-220.000.

Kent, Stephen L., to Motorola Inc. Overcurrent protection circuit for a multiple output switching power supply and method therefor. 4,447,841, Cl. 361-18.000.

Kentmaster Mfg. Co., Inc.: *See—*
Karubian, Ralph; Breukelman, Robert G.; and Weston, Lynn R., 4,446,598, Cl. 17-1.00B.
Karubian, Ralph K.; and Coelho, Gregorio J., 4,446,599, Cl. 17-1.00B.

Kern, Bernd M.; and Hasse, Werner, to Precitronic Gesellschaft fur Feinmechanik und Electronic mbH. Simulated portable rocket launcher. 4,447,211, Cl. 434-12.000.

Kershner, Larry D.; Thompson, Leonard R.; and Strom, Robert M., to Dow Chemical Company, The. Solvent system for oxidative coupling process. 4,447,656, Cl. 568-730.000.

Kersten, Peter; Meixner, Peter; Muller, Erich; and Horing, Eckart, to VEB Schwermaschinenbaukombinat TAKRAF. Bucket wheel bearing with split rolling bearing. 4,447,165, Cl. 384-428.000.

Keske, Robert G.; Brooks, Gary T.; and Bockrath, Ronald E., to Standard Oil Company (Indiana). Injection moldable amide-imide polymers containing calcium moieties. 4,447,574, Cl. 524-400.000.

Kiefer, Judy E.: *See—*
Johnson, Griffin I.; and Kiefer, Judy E., 4,447,646, Cl. 562-487.000.

Kikuchi, Nobuaki: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.

Kilborn, Fredrick A.: *See—*
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilborn, Fredrick A., 4,446,586, Cl. 4-555.000.

Kimball International, Inc.: *See—*
Bass, Steven C., 4,446,770, Cl. 84-1.010.

Kimura, Etsuji; Ogi, Katsumi; Sato, Kazusuke; and Hashimoto, Mayuki, to Mitsubishi Kinzoku Kabushiki Kaisha. Apparatus for preparing high-melting-point high-toughness metals. 4,447,045, Cl. 266-149.000.

Kimura, Izumi: *See—*
Kawakami, Toshio; and Kimura, Izumi, 4,446,612, Cl. 29-568.000.

Kimura, Katsuhiro; Endo, Akira; and Takezaki, Jiro, to Hitachi, Ltd. Ignition system for internal combustion engine. 4,446,826, Cl. 123-143.00B.

Kindlmann, Peter J.: *See—*
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., 4,446,909, Cl. 164-453.000.

King, George D. H.; and Bone, Michael C., to International Standard Electric Corporation. Controllable electro-optical modulator/phase shifter using an integrated optical interferometer. 4,447,116, Cl. 350-96.130.

King, James D.: *See—*
Puvogel, Timothy J.; King, James D.; and Moore, David O., 4,446,780, Cl. 99-480.000.

Kinkopf, Edward J.; and Polen, Karl L., to Alliance Machine Company, The. Mould handling, cleaning and preparation systems. 4,446,813, Cl. 118-72.000.

Kinnie, D. Craig; and Boberg, Richard W., to Intel Corporation. Apparatus and method for providing byte and word compatible information transfers. 4,447,878, Cl. 364-200.000.

Kioritz Corporation: *See—*
Inaga, Hisashi; and Yokocho, Yoetsu, 4,446,822, Cl. 123-41.310.

Kirchbrucher, Rudiger: *See—*
Becker, Kunibert; Dunkel, Gerd; Lagodka, Gunter; and Kirchbrucher, Rudiger, 4,447,174, Cl. 405-293.000.

Kirchhoff, F. J.: *See—*
Reidick, H.; Leithner, R.; Kirchhoff, F. J.; Puritz, E.; and Schluter, S., 4,446,911, Cl. 165-4.000.

Kirchner, Charles H., Jr.; and McDonald, Thomas K. Paint roller cleaner. 4,446,590, Cl. 15-302.000.

Kirk, William F.: *See—*
Baum, Eric A.; Davies, Leslie J.; Kirk, William F.; and Wass, Anthony C. L., 4,446,862, Cl. 128-203.150.

Kishida, Eiichi: *See—*
Morioka, Akihiro; Maeda, Yuji; Matsumoto, Tetsuro; Yukinari, Masakazu; and Kishida, Eiichi, 4,447,309, Cl. 204-402.000.

Kishida, Katsuji; Oonishi, Masakazu; and Oda, Keijiro, to Toyo Rubber Industry Co. Ltd., The. Pneumatic radial tire having highly durable bead structure. 4,446,904, Cl. 152-356.00R.

Kishimoto, Teiji; Kochi, Hiromu; and Kato, Masayuki, to Fujisawa Pharmaceutical Co., Ltd. 1,2,3,4-Tetrahydroisoquinolines 6.10,7,8 dihydroxy substitute-1-methylanilino and use as smooth muscle relaxants. 4,447,436, Cl. 424-258.000.

Kistner, Oscar J., to Mead Corporation, The. Center special slotted containers having self-squaring joints. 4,447,002, Cl. 229-37.00R.

Kitajima, Masato: *See—*
Asaeda, Toshio; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, 4,446,657, Cl. 51-206.00R.

Kitamoto, Tatsuji; and Shirahata, Ryuji, to Fuji Photo Film Co., Ltd. Apparatus for manufacturing a magnetic recording medium. 4,446,816, Cl. 118-718.000.

Kitamura, Masao: *See—*
Matsumoto, Michio; Kitamura, Masao; Ohta, Masataka; and Ohshima, Takeshi, 4,446,789, Cl. 101-93.040.

Kitamura, Takashi, to Canon Kabushiki Kaisha. Semi-conductor laser device. 4,447,136, Cl. 350-432.000.

Kitamura, Yasuo; Suzuki, Masao; Kubota, Toshio; Watanabe, Hiroshi; and Tsujimoto, Masaaki, to Toyo Engineering Corporation. Method for pressure transport of methanol through a pipeline. 4,446,881, Cl. 137-1.000.

Kitayama, Yoshifumi: *See—*
Azuma, Yusaku; Kitayama, Yoshifumi; and Ozawa, Chiaki, 4,447,014, Cl. 242-55.000.

Kito, Nobuo: *See—*
Yuge, Shizuo; Sakakibara, Susumu; Ishikawa, Takuma; Kito, Nobuo; and Yamamoto, Toshio, 4,447,517, Cl. 430-122.000.

Kiyota, Takao: *See—*
Sakamoto, Hajimu; Kiyota, Takao; and Hayashi, Hiroshi, 4,447,355, Cl. 260-112.00B.

Klaubert, Dieter H.; and Bell, Stanley C., to American Home Products Corporation. Benzo-fused and heterocyclic fused imidazole anti-ulcer agents. 4,447,611, Cl. 546-118.000.

Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, to United States of America, Army. Method for treating bacterial infections with 2-acetyl- and 2-propionylpyridine thiosemicarbazones. 4,447,427, Cl. 424-244.000.

Klein, Hermann: *See—*
Stephan, Hans-Werner; Klein, Hermann; and Lehr, Klaus, 4,447,400, Cl. 422-150.000.

Klein, Richard G.; and Houck, Robert J., to B. F. Goodrich Company, The. Signal to noise ratio improvement for rip detectors. 4,447,807, Cl. 340-676.000.

Kleinecke, John D.: *See—*
Farag, Samir F.; Hoffmann, Alvin R.; and Kleinecke, John D., 4,447,858, Cl. 361-429.000.

Klockner-Humboldt-Deutz AG: *See—*
Beele, Gunther, 4,447,046, Cl. 266-216.000.
Hilbrans, Hermann; and Rao, Chatty, 4,447,261, Cl. 75-5.000.

Klothen, Irving, to American Cyanamid Company. Process for the preparation of medicated animal feed supplement. 4,447,421, Cl. 424-227.000.

Klusmier, Kenneth L., to Morgan Construction Company. Apparatus and method for unscrambling and separating elongated elements. 4,446,961, Cl. 198-443.000.

Knappe, Ortwin: *See—*
Botzem, Werner; Knappe, Ortwin; and Laug, Reiner, 4,447,730, Cl. 250-506.100.

Knepper, Jay C., to Standard Oil Company (Indiana); and Gulf Oil Corporation. Process for forming an in situ oil shale retort. 4,447,090, Cl. 299-2.000.

Knickerbocker Case Company: *See—*
Moloney, Donald J., 4,446,966, Cl. 206-334.000.

Knickerbocker, Karl, deceased (by Knickerbocker, Lillie M., heir), to Kaspar, Don G., a part interest. Single coin carriage bar. 4,446,956, Cl. 194-1.00L.

Knickerbocker, Lillie M., heir: *See—*
Knickerbocker, Karl, deceased, 4,446,956, Cl. 194-1.00L.

Knobloch, James O.: *See—*
Donohue, John A.; Knobloch, James O.; Petty-Weeks, Bruce; and Cerefice, Steven A., 4,447,645, Cl. 562-473.000.

Knodle, Daniel W., to Trimed, Inc. Water absorbing trap to protect an infrared exhaled carbon dioxide apnea monitor of a patient's respiration. 4,446,869, Cl. 128-716.000.

Knudsen, Poul H., to Clean-Tex A/S. Vulcanizing press for vulcanizing flat articles. 4,447,201, Cl. 425-397.000.

Kobayashi, Hiroto; and Kobayashi, Takeshi, to Walbro Far East, Inc. Supplementary fuel supply mechanism for internal combustion engines. 4,447,370, Cl. 261-35.000.

Kobayashi, Hisamine, to Kabushiki Kaisha Shikishima Chipton. Long-travel annular vibratory barrel finishing apparatus for line-processing. 4,446,656, Cl. 51-7.000.

Kobayashi, Takao: *See—*
Mizukawa, Takumi; Amagami, Keizo; and Kobayashi, Takao, 4,447,691, Cl. 219-10.49R.

Kobayashi, Takeshi: *See—*
Kobayashi, Hiroto; and Kobayashi, Takeshi, 4,447,370, Cl. 261-35.000.

Kobylinski, Thaddeus P.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,447,557, Cl. 502-161.000.

Koch, Dirk: *See—*
Schuster-Woldan, Hans; Buerk, Hermann; Koch, Dirk; and Weingand, Kaspar, 4,447,292, Cl. 156-644.000.

Kochi, Hiromu: *See—*
Kishimoto, Teiji; Kochi, Hiromu; and Kato, Masayuki, 4,447,436, Cl. 424-258.000.

Kochs Adler AG: *See—*
Scholl, Hans, 4,446,802, Cl. 112-121.120.

Kodama, Kazuyuki; Endo, Takeyuki; Okada, Kunihiro; and Shibuya, Yasutaka, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. High resolution figure displaying device utilizing plural memories for storing edge data of even and odd horizontal scanning lines. 4,447,809, Cl. 340-747.000.

Koehring Canada Limited: *See—*
Kurelek, John, 4,446,897, Cl. 144-34.00R.

Koene, Johan W., to Hollandse Signaalapparaten B.V. Optical slip rings. 4,447,114, Cl. 350-96.200.

Koerner, Gotz: *See—*
Fink, Hans-Ferdi; Koerner, Gotz; and Lukach, Edmund, 4,447,498, Cl. 428-447.000.

Kogane, Mikio; and Yamazaki, Seiichi, to Kogane, Mikio; and Yamazaki, Seiichi. Photographic printing apparatus. 4,447,146, Cl. 355-28.000.

Kohara, Minoru: *See—*
Kamiyama, Fumio; Yamazaki, Kazutoshi; Kohara, Minoru; and Nagata, Mituo, 4,447,328, Cl. 210-635.000.

Kohl, Arthur L.: *See—*
Gay, Richard L.; Kohl, Arthur L.; and Yosim, Samuel J., 4,447,262, Cl. 75-65.00R.

Kohl, James E.: *See—*
Hartman, Adrian R.; Kohl, James E.; MacPherson, William F.; and Riley, Terence J., 4,447,744, Cl. 307-252.00R.

Kohler, Karl A.: *See—*
House, Richard F.; and Kohler, Karl A., 4,447,004, Cl. 229-52.00B.

Kohmoto, Kohtaro; Ebara, Hiroyuki; and Nira, Hisami, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp with layer of plural phosphors having different particle sizes. 4,447,756, Cl. 313-487.000.

Koike, Eishi, to Ozen Corporation. Simplified sound reproducing device driven by a spring motor. 4,447,898, Cl. 369-65.000.

Kojima, Takafumi; Yoshida, Shigeru; and Mizoguchi, Masayuki, to Hitachi, Ltd.; and Nippon Telegraph & Telephone Public Corporation. Subscriber line testing system. 4,447,679, Cl. 179-175.30R.

Kokido, Toshiyuki. Packing apparatus for a squeezed package. 4,446,677, Cl. 53-577.000.

Kollmorgen Technologies Corporation: *See—*
Whited, James S., 4,447,771, Cl. 18-661.000.

Komatsu, Yasumasa: *See—*
Katto, Takayuki; Komatsu, Yasumasa; and Shiiki, Zenya, 4,447,578, Cl. 525-75.000.

Kondo, Kenjiro: *See—*
Kusumegi, Asao; Kondo, Kenjiro; Watase, Yoshiyuki; Yoshimura, Yoshio; and Miyake, Kozo, 4,447,734, Cl. 250-517.100.

Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive composition and electrophotographic light-sensitive material using it. 4,447,515, Cl. 430-83.000.

Kondo, Toshio: *See—*
Katagiri, Masayoshi; Kondo, Toshio; and Midooka, Masanori, 4,447,066, Cl. 277-212.0FB.

Konig, Wilhelm. Rotary crane. 4,446,975, Cl. 212-188.000.

Konkel, Joseph; and Sweeney, David F. Printer with removable print carriage. 4,446,790, Cl. 101-93.140.

Koo, Ronald. Filament switching device. 4,447,760, Cl. 315-65.000.

Kopena, David M., to Owens-Corning Fiberglas Corporation. Blowing wool separator method and apparatus. 4,447,249, Cl. 65-4.400.

Koppers Company, Inc.: *See—*
Ahn, Byung K.; and Morris, Kenneth A., 4,447,405, Cl. 423-88.000.
Leston, Gerd, 4,447,654, Cl. 568-708.000.
Leston, Gerd, 4,447,658, Cl. 568-750.000.
Prew, Stanley, 4,447,011, Cl. 241-37.000.

Kor, Bouko J.: *See—*
Rempel, William; and Kor, Bouko J., 4,446,683, Cl. 56-296.000.

Kornrumpf, William P.; and Cote, Paul T., to General Electric Company. Power supply for low-voltage incandescent lamp and like load. 4,447,764, Cl. 315-240.000.

Kose, Saburo: *See—*
Ebata, Yoshihiro; Kose, Saburo; and Hayami, Ryozo, 4,447,283, Cl. 156-325.000.

Koski, Robert R.: *See—*
Bradley, Kirk D.; Koski, Robert R.; and Clark, James W., 4,447,072, Cl. 280-492.000.

Kosow, David P.: *See—*
Menache-Aronson, Doris; Kosow, David P.; Orthner, Carolyn L.; and Behre, H. Evan, 4,447,416, Cl. 424-101.000.

Koszi, Louis A.: *See—*
Dixon, Richard W.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,447,905, Cl. 372-46.000.

Kotsanis, Constantine A., to Endoscopy Surgical Systems, Inc. Multipurpose medical devices. 4,447,227, Cl. 604-95.000.

Kotzur, Joachim; Reinersmann, Hans H.; Albers, Rolf; Aschenbruck, Emil; and Neuhaus, Gunter, to M.A.N. Maschinenfabrik Augsburg-Nurnberg A.G. Shaft seal with positively magnetically controlled sealing gap. 4,447,063, Cl. 277-80.000.

Kourimsky, Friedrich J. A.; and Lothmann, Werner, to AMP Incorporated. Electrical connector assemblies. 4,447,102, Cl. 339-91.00R.

Kowalczyk, Annette: *See*—
Gage, Clifford H., 4,447,000, Cl. 227-49.000.

Kraft, John H.: *See*—
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilborn, Fredrick A., 4,446,586, Cl. 4-555.000.

Kramss, Richard H.: *See*—
Scharrer, Roland P. F.; Schluenz, Robert W.; and Kramss, Richard H., 4,447,354, Cl. 260-106.000.

Kratzsch, Eberhard: *See*—
Linhart, Heinz; Modtler, Reiner; and Kratzsch, Eberhard, 4,447,489, Cl. 428-225.000.

Krauthausen, Edmund: *See*—
Busse, Wolf-Dieter; Krauthausen, Edmund; and Mardin, Mithat, 4,447,440, Cl. 424-269.000.

Kreiskott, Horst: *See*—
Steiner, Gerd; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Lenke, Dieter, 4,447,610, Cl. 544-381.000.

Kreuttner, Albert, to Carl-Zeiss-Stiftung. Method and apparatus for molding parts having an aspherical surface. 4,447,372, Cl. 264-2.200.

Krewenka, Thomas: *See*—
Gold, Vance B.; Kubacki, Edward F.; and Krewenka, Thomas, 4,447,699, Cl. 219-110.000.

Kriegel, Ernst: *See*—
Coenen, Hubert; and Kriegel, Ernst, 4,446,921, Cl. 166-267.000.

Krischer Metal Products Co., Inc.: *See*—
Gelfman, Stanley, 4,446,776, Cl. 99-401.000.

Kristiansen, Olaf; and Brannstrom, Bo, to Moss Rosenberg Verft A/S; and Saga Petroleum a.s. & Co. Method of transporting oil and gas under high pressure in tanks on board a ship. 4,446,804, Cl. 114-74.00R.

Krocker, Robert E., to Trane Company, The. Auto changeover thermostat with means for handling temperature entry errors. 4,446,913, Cl. 165-12.000.

Krouthen, Jan K., to Aktiebolaget Electrolux. Method for sterilization with formalin. 4,447,394, Cl. 422-27.000.

Krull, Irwin H.: *See*—
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl P.; Stengel, Frederick H.; and Hayslett, David D., 4,447,398, Cl. 422-102.000.

Krutak, James J.; and Maleski, Robert J., to Eastman Kodak Company. Preparation of thiophenes. 4,447,624, Cl. 549-69.000.

Krutten, Victor, to Dr. Eduard Fresenius Chemisch-Pharmazeutishe Industry KG. Catheter with radiographic contrast strips. 4,447,239, Cl. 604-282.000.

Kubacki, Edward F.: *See*—
Gold, Vance B.; Kubacki, Edward F.; and Krewenka, Thomas, 4,447,699, Cl. 219-110.000.

Kubis, Charles S.: *See*—
Roth, Donald J.; Walter, John; and Kubis, Charles S., 4,446,984, Cl. 220-268.000.

Kubota, Toshio: *See*—
Kitamura, Yasuo; Suzuki, Masao; Kubota, Toshio; Watanabe, Hiroshi; and Tsujimoto, Masaaki, 4,446,881, Cl. 137-1.000.

Kubozuka, Takao, to Nissan Motor Co., Ltd. Cylinder block of internal combustion engine. 4,446,827, Cl. 123-195.00R.

Kuch, Philip L.: *See*—
McGuiggan, Michael F.; and Kuch, Philip L., 4,447,409, Cl. 423-416.000.

Kuecker, Ward A.; Stratton, Susan D.; and Cason, William C., to International Business Machines Corporation. Mixed pitch display. 4,447,888, Cl. 364-900.000.

Kuhle, Engelbert: *See*—
Dickore, Karlfried; and Kuhle, Engelbert, 4,447,635, Cl. 560-115.000.

Kummermehr, Hans; and Sommer, Rolf, to Grunzweig & Hartmann und Glasfaser AG. Thermal insulating flexible ceramic containing flame hydrolysis produced microporous oxide aerogel. 4,447,345, Cl. 252-62.000.

Kuni, Asahiro; Kembo, Yukio; Akiyama, Nobuyuki; and Aoki, Nobuhiko, to Hitachi, Ltd. Exterior view examination apparatus. 4,447,731, Cl. 250-442.100.

Kunome, Yoshimi: *See*—
Yoneda, Kenji; Arai, Shoji; and Kunome, Yoshimi, 4,446,834, Cl. 123-440.000.

Kunz, Walter, to Ciba-Geigy Corporation. 1,3-Dioxolan-5-one derivatives. 4,447,625, Cl. 549-265.000.

Kunze, Dieter: *See*—
Chobanov, Tsvetko; Kunze, Dieter; and Woeffler, Friedrich, 4,447,376, Cl. 264-42.000.

Kuphal, John E.: *See*—
Heinzelman, Bert D.; Spranger, Douglas M.; Brookes, Malcolm J.; and Kuphal, John E., 4,447,482, Cl. 428-42.000.

Kurata, Masami; and Moriguchi, Fujio, to Fuji Xerox Co., Ltd. Multicolor heat-sensitive recording apparatus. 4,447,818, Cl. 346-76.0PH.

Kurata, Masami; Moriguchi, Fujio; Inui, Toshiharu; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Reproducing machine. 4,447,832, Cl. 358-296.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Katto, Takayuki; Komatsu, Yasumasa; and Shiiki, Zenya, 4,447,578, Cl. 525-75.000.

Kurek, Paul R., to UOP Inc. Preparation of alkyl aryl ethers. 4,447,652, Cl. 568-658.000.

Kurelek, John, to Koehring Canada Limited. Improvements in disc felling heads. 4,446,897, Cl. 144-34.00R.

Kurihara, Norimitsu; and Imai, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Method for integrating fuel consumption amount of vehicles. 4,446,727, Cl. 73-113.000.

Kurina, Miles J.; and Thornhill, John, to RCA Corporation. Stiffening clamp for self-erecting antenna. 4,447,816, Cl. 343-877.000.

Kurtz, Rudiger: *See*—
Bubik, Alfred; Dahl, Hans; Holik, Herbert; Kurtz, Rudiger; and Seider, Werner, 4,447,295, Cl. 162-300.000.

Kushmaul, Richard T.: *See*—
Lafevers, James O.; Kushmaul, Richard T.; and Scott, Ted R., 4,447,097, Cl. 312-215.000.

Kusumegi, Asao; Kondo, Kenjiro; Watase, Yoshiyuki; Yoshimura, Yoshio; and Miyake, Kozo, to National Laboratory for High Energy Physics. Radiation-shielding transparent material and method of producing the same. 4,447,734, Cl. 250-517.100.

Kybal, Jan: *See*—
Strnadova, Karin; Kybal, Jan; Svoboda, Eduard; and Spacil, Jiri, 4,447,540, Cl. 435-254.000.

Kyocera Corporation: *See*—
Inamori, Kazuo; and Hirabayashi, Masaya, 4,446,579, Cl. 3-1.910.

Labaw, Clifford S.; and Wellman, George R., to SK&F Lab Co. Use of N-cyano-N'-methyl-N''-[2-(5-methyl-4-imidazolylmethyldithio)ethyl]guanidine in the preparation of cimetidine. 4,447,621, Cl. 548-342.000.

La Fever, Alan E., to United States of America, National Aeronautics and Space Administration. Directional gear ratio transmissions. 4,446,757, Cl. 74/758.000.

Lafevers, James O.; Kushmaul, Richard T.; and Scott, Ted R. Dispenser cassette. 4,447,097, Cl. 312-215.000.

Laff, Robert A.: *See*—
Heidrich, Paul F.; Laff, Robert A.; and Light, Thomas B., 4,447,126, Cl. 350-96.310.

Lagodka, Gunter: *See*—
Becker, Kunibert; Dunkel, Gerd; Lagodka, Gunter; and Kirchbrucher, Rudiger, 4,447,174, Cl. 405-293.000.

Lagrange, Alain; and Rossello, Alain, to LCC. Cice-Compagnie Europeanne de Composants Electroniques. Dielectric ceramic composition on the base of thermally stable barium titanate and capacitor using such composition. 4,447,855, Cl. 361-321.000.

Lamb, Paul R.; Bakas, Steve T.; and Wood, Brian M., to UOP Inc. Hydrocracking process. 4,447,315, Cl. 208-99.000.

Lambert, David K., to General Motors Corporation. Electroreflectance vibrational spectroscopy. 4,446,719, Cl. 73-23.000.

Lamm, Klaus D.: *See*—
Fieber, Werner H.; Hinze, Klaus; Huth, Manfred K. O.; Jost, Hans-Georg; Lamm, Klaus D.; Michalski, Dieter; and Rittaler, Konstantin, 4,447,686, Cl. 200-153.00J.

Lamort, Jean-Pierre J., to E et M Lamort. Device for cleaning and recovering paper pulp. 4,447,320, Cl. 209-273.000.

Lamphere, William R., to Dionne, John B. Tool for removing stubborn nuts. 4,446,622, Cl. 30-272.00R.

Lancella, Attilio: *See*—
Ghigliotti, Giovanni; and Lancella, Attilio, 4,447,108, Cl. 339-256.0RT.

Land O'Lakes, Inc.: *See*—
Antenore, Donald E.; Schmadeke, Donald W.; and Stewart, Rodney A., 4,447,463, Cl. 426-603.000.

Landsman, Douglas A.: *See*—
Luczak, Francis J.; and Landsman, Douglas A., 4,447,506, Cl. 429-44.000.

Lang, Hans: *See*—
Schott, Eberhard P.; and Lang, Hans, 4,447,255, Cl. 71-86.000.

Langdon, Christopher J., to University of Delaware. Controlling undesired growth of mollusks. 4,447,411, Cl. 424-14.000.

Langer Biomechanics Group, Inc., The: *See*—
Jordan, R. Paul, 4,446,856, Cl. 128-80.00R.

Langerud, David S.: *See*—
Imerman, Curtis E.; Langerud, David S.; and Thomas, Brian H., 4,446,976, Cl. 212-189.000.

LaPotin, David P., to GTE Laboratories Incorporated. Waveform generating apparatus. 4,447,747, Cl. 307-529.000.

Larkin, Rodney B.: *See*—
Runnells, Robert R.; Haak, Peter A.; Larkin, Rodney B.; and Vandervelden, C. Keith, 4,447,399, Cl. 422-113.000.

Larranaga, Javier A., to Celaya, Emparanza Y Galdos S.A. (Cegasa). Contact in alkaline electric cells. 4,447,507, Cl. 429-54.000.

Larson, Donald R. Gate making tool. 4,446,894, Cl. 140-57.000.

Larson, Robert A.: *See*—
Segar, William R.; and Larson, Robert A., 4,447,680, Cl. 191-48.000.

Laue, Karl H.: *See*—
Wagener, Dietrich; Sander, Theo; and Laue, Karl H., 4,447,333, Cl. 210-750.000.

Laug, Reiner: *See*—
Botzem, Werner; Knappe, Ortwin; and Laug, Reiner, 4,447,730, Cl. 250-506.100.

Laurich-Trost, Victor R. Steering system for utility vehicle. 4,446,941, Cl. 180-236.000.

Lauterbach-Dammler, Inge: *See*—
Zollner, Dieter H.; Lauterbach-Dammler, Inge; and Rittmann, Friedrich, 4,447,300, Cl. 204-67.000.

Lauzanne-Morelle, Eliane M. T.: *See*—
Morelle, Jean V.; and Lauzanne-Morelle, Eliane M. T., 4,447,366, Cl. 260-501.110.

Lawrence, Jackson; Webb, Harry A.; and Frederick, John R., to Cluett, Peabody & Co., Inc. Continuous compressive preshrinking and drying method. 4,446,606, Cl. 26-18.600.

Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., to Bell Telephone Laboratories, Incorporated. Low dispension single mode fiber. 4,447,125, Cl. 350-96.300.

Lazik, Paul, to Rheinische Braunkohlenwerke AG. Process for separating sand from a brown coal or lignite material containing sand. 4,447,319, Cl. 209-11.000.

LCC. Cice-Compagnie Europeanne de Composants Electroniques: *See*—
Lagrange, Alain; and Rossello, Alain, 4,447,855, Cl. 361-321.000.

LeBlanc, John R.: *See*—
Cohen, Saul M.; and LeBlanc, John R., 4,447,594, Cl. 528-245.000.

Lech, Thaddeus, Jr., to Borg-Warner Corporation. Clutch driven plate assembly with a floating hub. 4,446,955, Cl. 192-106.200.

Lectromelt Corporation: *See*—
Persson, John A., 4,447,906, Cl. 373-72.000.

Le Deit, Gerard, to Societe Anonyme DBA. Sliding caliper disc brake. 4,446,947, Cl. 188-73.340.

Ledelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. Dopaminergic stimulating piperidin-3-yl-indoles. 4,447,438, Cl. 424-267.000.

Lednicer, Daniel, to Upjohn Company, The. Analgetic compounds, compositions and process of treatment. 4,447,454, Cl. 424-330.000.

Lee, Guang-Huei, to Rhone-Poulenc Agrochimie. Herbicidal arylsulfonamide derivatives of phenoxybenzoic acids. 4,447,634, Cl. 560-13.000.

Lefebure, Jean M., to Thomson-CSF. Dot and dash segment display for simplified writing of Arabian language. 4,447,810, Cl. 340-756.000.

Lehmann, Gerard: *See*—
Bronicki, Lucien Y.; Hershman, Haim; and Lehmann, Gerard, 4,446,700, Cl. 60-641.800.

Lehr, Klaus: *See*—
Stephan, Hans-Werner; Klein, Hermann; and Lehr, Klaus, 4,447,400, Cl. 422-150.000.

Leib, Kenneth G., to Grumman Aerospace Corporation. Achromatic holographic element. 4,447,111, Cl. 350-3.700.

Leicht, Werner, to MTU-Motoren-und-Turbinen-Union Friedrichschafen GmbH. Sealing arrangement for fluid flow engines. 4,447,062, Cl. 277-3.000.

Leist, Theodore H., Jr.: *See*—
Thompson, Jack M., Jr.; and Leist, Theodore H., Jr., 4,446,742, Cl. 73-663.000.

Leithner, R.: *See*—
Reidick, H.; Leithner, R.; Kirchhoff, F. J.; Puritz, E.; and Schluter, S., 4,446,911, Cl. 165-4.000.

Lemaire, Paul J.: *See*—
Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,447,125, Cl. 350-96.300.

Lenk, Pedro A.: *See*—
Elliott, George; Lenk, Pedro A.; and Shah, Jayantkumar R., 4,447,673, Cl. 179-18.0HB.

Lenke, Dieter: *See*—
Steiner, Gerd; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Lenke, Dieter, 4,447,610, Cl. 544-381.000.

Leroy, Dominique L. J.; and Mazeau, Jean-Pierre, to Corning Glass Works. Lead aluminoborofluorosilicate moldable glasses. 4,447,550, Cl. 501-75.000.

Les Cables de Lyon: *See*—
Guazzo, Lucien; and Trezeguet, Jean-Pierre, 4,447,115, Cl. 350-96.200.

Leston, Gerd, to Koppers Company, Inc. Process for separating nitrated phenolic compounds from other phenolic compounds. 4,447,654, Cl. 568-708.000.

Leston, Gerd, to Koppers Company, Inc. Process for separating 3,5-xylenol or 3,4-xylenol from other polymethylated phenolic compounds. 4,447,658, Cl. 568-750.000.

Leung, Ka-Ngo; and Ehlers, Kenneth W., to United States of America, Energy. Ion source. 4,447,732, Cl. 250-427.000.

Leveen, Eric G.: *See*—
Leveen, Robert F.; and Leveen, Eric G., 4,446,867, Cl. 128-344.000.

Leveen, Robert F.; and Leveen, Eric G. Fluid-driven balloon catheter for intima fracture. 4,446,867, Cl. 128-344.000.

Lever Brothers Company: *See*—
Tai, Louis H. T., 4,447,349, Cl. 252-174.130.
Tyler, Frank S., 4,446,969, Cl. 206-519.000.

Levy, Leon: *See*—
Wolens, John; and Levy, Leon, 4,447,250, Cl. 46-1 F.

Lewis, David A.: *See*—
Lewis, Victor M.; and Lewis, David A., 4,447,460, Cl. 426-541.000.

Lewis, Henry G., Jr.; and Eliscu, Steven M., to RCA Corporation. Digital television receiver automatic chroma control system. 4,447,826, Cl. 358-27.000.

Lewis, Victor M.; and Lewis, David A. Processed vegetables. 4,447,460, Cl. 426-541.000.

Leybold Heraeus GmbH: *See*—
Oechsner, Hans, 4,447,724, Cl. 250-309.000.

Li, Haueh M., to Ethyl Corporation. Phosphonitrilic chloride polymers. 4,447,408, Cl. 423-300.000.

Liberty Carton Co.: *See*—
Miller, LeRoy; Thorud, Stanley R.; and Rivkin, Eric M., 4,446,660, Cl. 52-36.000.

Libit, Sidney M. Tampering indicating bottle cap and method of closing a bottle. 4,446,981, Cl. 215-354.000.

Licciardello, Michael: *See*—
Boden, Richard M.; Licciardello, Michael; and Tyszkiewicz, Theodore J., 4,447,365, Cl. 260-463.000.

Licencia Talalmanyokat Ertekesito V.: *See*—
Molnar, Zoltan, 4,446,788, Cl. 100-117.000.

Licentia Patent-Verwaltungs G.m.b.H.: *See*—
Burkhardt, Gisbert, 4,446,962, Cl. 198-457.000.

Lidgard, Graham P.: *See*—
Ellis, James E.; Lidgard, Graham P.; Odstrchel, Gerald; and Riceberg, Louis J., 4,447,528, Cl. 435-7.000.

Lieb, Folker: *See*—
Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, 4,447,367, Cl. 260-502.40R.

Liffmann, Stanley M.: *See*—
Neri, Bruce P.; and Liffmann, Stanley M., 4,447,544, Cl. 436-105.000.

Light, Thomas B.: *See*—
Heidrich, Paul F.; Laff, Robert A.; and Light, Thomas B., 4,447,126, Cl. 350-96.310.

Lileck, John T.: *See*—
Woytek, Andrew J.; Lileck, John T.; and Steigerwalt, Edward J., 4,446,920, Cl. 166-297.000.

Lin, Chiu-Hong: *See*—
Sih, John C.; and Lin, Chiu-Hong, 4,447,620, Cl. 548-336.000.

Lindauer Dornier Gesellschaft mbH: *See*—
Dornier, Peter, 4,446,632, Cl. 34-103.000.

Lindholm, Donald W. Excrement clean-up tool and bagger. 4,447,082, Cl. 294-1.0BA.

Lindquist, Rosaland O. Camouflaged nursing dress. 4,446,572, Cl. 2-104.000.

Lineair: *See*—
Cosaert, Marijke, 4,446,641, Cl. 40-152.000.

Linhart, Heinz; Modtler, Reiner; and Kratzsch, Eberhard, to Akzona Incorporated. Filament yarns of multicomponent fibers and utilization therefor in textile fabrics. 4,447,489, Cl. 428-225.000.

Lion, Charles E. Reduced noise monolithic wing-stabilizer aircraft. 4,447,022, Cl. 244-13.000.

List, Hans: *See*—
Denk, Heimo; Mantsch, Peter; and Moser, Werner, 4,447,742, Cl. 307-106.000.

Litton Systems, Inc.: *See*—
Buck, Ronald G., 4,447,693, Cl. 219-10.55M.
Gugliotti, Carmine, 4,447,101, Cl. 339-45.00M.
Rosenheck, Bernard M., 4,447,134, Cl. 350-358.000.

Liu, Chao-Min; Tresner, Homer D.; and Westley, John, to Hoffmann-La Roche Inc. Process to produce antibiotic X-14885A. 4,447,533, Cl. 435-119.000.

Lockheed Corporation: *See*—
Cronin, Michael J., 4,447,737, Cl. 290-6.000.
Simpson, William E., Jr., 4,446,890, Cl. 137-87.000.

Loeffler, Otto E.; Jain, Nirnal S.; and Kauder, Otto S., to Argus Chemical Corporation. Process for the preparation of thin films of cadmium sulfide and precursor solutions of cadmium ammonia thiocyanate complex useful therein. 4,447,335, Cl. 252-1.000.

Loewrigkeit, Peter: *See*—
Dabi, Shmuel; and Loewrigkeit, Peter, 4,447,571, Cl. 524-192.000.

Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., to International Business Machines Corporation. Planar multi-level metal process with built-in etch stop. 4,447,824, Cl. 357-71.000.

Logsdon, Gary L.: *See*—
Bolton, Brent C.; Hagenmaier, Carl F., Jr.; Logsdon, Gary L.; and Miner, Robert L., Jr., 4,447,875, Cl. 364-200.000.

Loire, Rene, to Morrison-Knudsen Company, Inc. Single point mooring and fender. 4,446,806, Cl. 114-219.000.

Long, David J.: *See*—
Oxenrider, Bryce C.; and Long, David J., 4,447,629, Cl. 556-419.000.

Long, Frederick G.: *See*—
Bean, Vern E.; and Long, Frederick G., 4,447,743, Cl. 307-118.000.

Long, Gary L.: *See*—
Bierman, Laurence W.; Long, Gary L.; and Bortner, David, 4,447,403, Cl. 423-20.000.

Long, Gary R.; and Dorsey, Robert J., to Wehr Corporation. Hydraulic refractory press including product thickness or density control means. 4,447,198, Cl. 425-140.000.

Lonsdale, Melvin J.: *See*—
Batterton, Elmo L.; and Lonsdale, Melvin J., 4,446,631, Cl. 34-65.000.

Locs, Patricia J.; Fuqua, Debra L.; and Drzewiecki, Paul J., to Procter & Gamble Company, The. Sauce compositions containing agglomerated particles of specified size distribution. 4,447,461, Cl. 426-589.000.

L'Oreal: *See*—
Gueret, Jean-Louis H., 4,446,879, Cl. 132-82.00B.
Gueret, Jean-Louis H.; and Arraudeau, Jean-Pierre, 4,446,880, Cl. 132-88.500.

Lothmann, Werner: *See*—
Kourimsky, Friedrich J. A.; and Lothmann, Werner, 4,447,102, Cl. 339-91.00R.

Lou, Perry W.: *See*—
Brantingham, George L.; Lou, Perry W.; Housey, Lawrence J.; Tubbs, Graham S.; and Teza, Jeffrey R., 4,447,881, Cl. 364-488.000.

Loucks, Terry L., to Environmental Testing & Certif. Corp. Shipping container. 4,446,705, Cl. 62-372.000.

Louthan, Rector P.: *See—*
Smith, Clifford E.; Mark, Harold W.; Louthan, Rector P.; and Efner, Howard F., 4,447,246, Cl. 144-57.000.

Lovgren, Anders, to HB Megaron. Apparatus for firing solid fuels. 4,446,800, Cl. 110-270.000.

Low, James K. Aquatic specimen retrieval frame. 4,446,749, Cl. 73-863.230.

Lubbock, Frederick J.; Mok, Christopher C. K.; and Eldridge, Robert J., to ICI Australia Limited; and Commonwealth Scientific and Industries Research Organization. Process for composite polymer beads. 4,447,475, Cl. 427-213.310.

Lubrizol Corporation, The: *See—*
Forsberg, John W., 4,447,348, Cl. 252-75.000.

Lucas Industries Limited: *See—*
Harrison, Anthony W., 4,446,882, Cl. 137-115.000.
Mowbray, Dorian F., 4,446,835, Cl. 123-450.000.

Lucas Industries Plc: *See—*
Worby, Donald, 4,447,194, Cl. 417-572.000.

Lucas Industries Public Limited Company: *See—*
Mowbray, Dorian F.; Fenne, Ivor; and Andrews, Richard J., 4,446,836, Cl. 123-450.000.

Lucas, Kenneth R.: *See—*
Price, William L.; Murtha, John C.; Ross, James A., Jr.; Adam, Clyde E.; and Lucas, Kenneth R., 4,447,873, Cl. 364-200.000.

Lucey, Desmond C., to Rolls-Royce Limited. Bladed rotor turning apparatus. 4,446,766, Cl. 81-480.000.

Lucker, Laurence H., Jr.: *See—*
Johnson, Charles A.; and Lucker, Laurence H., Jr., 4,446,807, Cl. 114-230.000.

Luczak, Francis J.; and Landsman, Douglas A., to United Technologies Corporation. Ternary fuel cell catalysts containing platinum, cobalt and chromium. 4,447,506, Cl. 429-44.000.

Ludwig, Gary R.: *See—*
Stumpf, William S.; and Ludwig, Gary R., 4,446,663, Cl. 52-144.000.

Luksch, Edmund: *See—*
Fink, Hans-Ferdi; Koerner, Gotz; and Luksch, Edmund, 4,447,498, Cl. 428-447.000.

Lula, James W.; and Schicker, James R., to United States of America, Energy. Method and composition for molding low density desiccant syntactic foam articles. 4,447,565, Cl. 523-219.000.

Lummus Company, The: *See—*
Russell, Charles M., 4,446,914, Cl. 165-129.000.

Lundberg, Robert D.; Walker, Thad O.; O'Farrell, Charles P.; and Makowski, Henry S., deceased (by Makowski, Patricia H., executrix), to Exxon Research and Engineering Co. Drilling mud viscosification agents based on sulfonated ionomers. 4,447,338, Cl. 252-8.50M.

Lundblad, Leif. Dual-purpose automatic apparatus for dispensing and depositing valuable papers and other documents, such as banknotes, cheques, receipts, vouchers etc. 4,447,714, Cl. 235-379.000.

Lunn, Richard H.: *See—*
Young, William E.; Lunn, Richard H.; and Archer, David H., 4,447,748, Cl. 310-11.000.

Lupton, Frank R.: *See—*
Forrest, William E.; and Lupton, Frank R., 4,446,944, Cl. 182-3.000.

Lussana, Riccardo; and Massenzana, Fabrizio, to Vitino Massenzana s.r.l. Device for holding paper close against a corrugating roller in a corrugated board-making machine. 4,447,285, Cl. 156-473.000.

Lustig, Stanley; Schuetz, Jeffrey M.; and Vicik, Stephen J., to Union Carbide Corporation. Shrinkable film for poultry bags. 4,447,480, Cl. 428-35.000.

LUWA AG: *See—*
Schmitt, Armin, 4,446,781, Cl. 99-483.000.

Luyten, Jacobus H., to Helmes Machinefabriek B.V. Double-sided tenoner. 4,446,899, Cl. 144-201.000.

Lydell, Donald J., deceased; and by Lydell, Hilda, executor. Splicing head for adding conductors to an electrical connector. 4,446,617, Cl. 29-861.000.

Lydell, Hilda, executor: *See—*
Lydell, Donald J., deceased; and Lydell, Hilda, executor, 4,446,617, Cl. 29-861.000.

Lysy, Dusan G.: *See—*
Snelling, Christopher; and Lysy, Dusan G., 4,447,145, Cl. 355-14.00D.

M.A.N. Maschinenfabrik Augsburg-Nurnberg A.G.: *See—*
Kotzur, Joachim; Reinersmann, Hans H.; Albers, Rolf; Aschenbruck, Emil; and Neuhaus, Gunter, 4,447,063, Cl. 277-80.000.

M.A.N. - Roland: *See—*
Abendroth, Paul; and Despot, Janko, 4,446,814, Cl. 118-694.000.

Machnee, Cecil; and Butuk, Fred N., to Morris Rod Weeder Co., Ltd. Air seeding boot. 4,446,801, Cl. 111-86.000.

MacInnis, Martin B.: *See—*
Vanderpool, Clarence D.; and MacInnis, Martin B., 4,447,404, Cl. 423-61.000.

MacNamee, Richard W.; Reese, Morris T.; and Blase, Emil F., to Sangamo Weston, Inc. Electrolyte system for electrolytic capacitors. 4,447,346, Cl. 252-62.200.

Maco-Meuden: *See—*
Emonet, Henri, 4,446,773, Cl. 91-317.000.

MacPherson, William F.: *See—*
Hartman, Adrian R.; Kohl, James E.; MacPherson, William F.; and Riley, Terence J., 4,447,744, Cl. 307-252.00R.

Madaus and Company: *See—*
Madaus, Rolf; and Stumpf, Werner, 4,447,455, Cl. 424-331.000.

Madaus, Rolf; and Stumpf, Werner, to Madaus and Company. Oral urolithiasis remedy. 4,447,455, Cl. 424-331.000.

Madden, William M.: *See—*
Wiley, Walter H.; and Madden, William M., 4,447,009, Cl. 239-265.390.

Maddoux, Lilla A. Animal medicine. 4,447,418, Cl. 424-165.000.

Madec, Francois; Delobelle, Emile; and Donvez, Georges, to Compagnie Generale des Etablissements Michelin. Tires for drive wheels of agricultural tractors or similar vehicles. 4,446,902, Cl. 152-209.00B.

Maeda, Masaya: *See—*
Hirata, Noritsugu; Takimoto, Hiroyuki; and Maeda, Masaya, 4,447,837, Cl. 360-33.100.

Maeda, Tadayuki: *See—*
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, 4,447,663, Cl. 570-150.000.

Maeda, Yasunori; and Yamasaki, Akinobu, to Chugai Ro Co., Ltd. Proportional regulation oil burner of low pressure air type. 4,447,010, Cl. 239-414.000.

Maeda, Yuji: *See—*
Morioka, Akihiro; Maeda, Yuji; Matsumoto, Tetsuro; Yukinari, Masakazu; and Kishida, Eiichi, 4,447,309, Cl. 204-402.000.

Maeguchi, Kenji; and Tango, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. SOS p—n Junction device with a thick oxide wiring insulation layer. 4,447,823, Cl. 357-23.000.

Maekawa, Masakazu; and Matsukawa, Hiroharu, to Fuji Photo Film Company, Limited. Heat-sensitive recording papers. 4,447,487, Cl. 346-200.000.

Magne, Robert: *See—*
Faure, Alphonse; and Magne, Robert, 4,447,631, Cl. 556-469.000.

Magorien, Vincent G., to Systron-Donner. Fluid line coupling with relief valve. 4,447,040, Cl. 251-149.800.

Maiocco, Giuseppe A., to Champion Spark Plug Italiana, S.p.A. Wiper blade and lateral connector. 4,446,589, Cl. 15-250.320.

Maitland, Peter: *See—*
Wise, Stanley S.; and Maitland, Peter, 4,446,950, Cl. 192-3.0TR.

Major, Clare M., personal representative: *See—*
Major, Frederick A., Jr., deceased; and Major, Clare M., personal representative, 4,447,107, Cl. 339-171.00E.

Major, Frederick A., Jr., deceased; and by Major, Clare M., personal representative. Collet for cable connector. 4,447,107, Cl. 339-171.00E.

MaK Maschinenbau GmbH: *See—*
Eggers, Manfred; and Zonak, Armin, 4,446,772, Cl. 89-37.00E.

Makino, Daisuke; and Miyadera, Yasuo, to Hitachi Chemical Company, Ltd. Method of preparing polyamide acid for processing of semiconductors. 4,447,596, Cl. 528-353.000.

Makino, Shigeo: *See—*
Endo, Kazuyuki; and Makino, Shigeo, 4,446,901, Cl. 152-209.00R.

Makowski, Henry S., deceased: *See—*
Lundberg, Robert D.; Walker, Thad O.; O'Farrell, Charles P.; and Makowski, Henry S., deceased, 4,447,338, Cl. 252-8.50M.

Makowski, Patricia H., executrix: *See—*
Lundberg, Robert D.; Walker, Thad O.; O'Farrell, Charles P.; and Makowski, Henry S., deceased, 4,447,338, Cl. 252-8.50M.

Malatesta, Vincenzo; Willis, Clive; and Hackett, Peter A., to Canadian Patents & Development Limited. Production of carbonyl fluoride. 4,447,304, Cl. 204-157.10R.

Maleski, Robert J.: *See—*
Krutak, James J.; and Maleski, Robert J., 4,447,624, Cl. 549-69.000.

Malhotra, Ripudaman: *See—*
Ross, David S.; Johnson, Robert M., Jr.; and Malhotra, Ripudaman, 4,447,662, Cl. 568-939.000.

Mallon, Charles B., to Union Carbide Corporation. Process for production of alkyl silicates from silicon metal. 4,447,632, Cl. 556-470.000.

Malthouse, Martin D. Labelling machine. 4,447,280, Cl. 156-85.000.

Mammel, Wanda L.: *See—*
Cohen, Leonard G.; Mammel, Wanda L.; and Marcuse, Dietrich, 4,447,127, Cl. 350-96.330.

Manasevit, Harold M., to Rockwell International Corporation. CVD Process for producing monocrystalline silicon-on-cubic zirconia and article produced thereby. 4,447,497, Cl. 428-446.000.

Mannes, Karl: *See—*
Werner, Friedrich; Mannes, Karl; and Trescher, Viktor, 4,447,647, Cl. 564-412.000.

Manteufel, Dale A., to Ingersoll Equipment Co., Inc. Self-elevating wood splitter and mounting arrangement. 4,446,898, Cl. 144-193.00A.

Mantsch, Peter: *See—*
Denk, Heimo; Mantsch, Peter; and Moser, Werner, 4,447,742, Cl. 307-106.000.

Maraghe, Alex, to Boeing Company, The. Cam operated counterbalance assembly for aircraft doors. 4,447,026, Cl. 244-129.500.

Marcus, Konrad H., to Prince Corporation. Rearview mirror transmitter assembly. 4,447,808, Cl. 340-696.000.

Marcus, Stephen; and Quist, Theodore M., to United States of America, Air Force. Pulsed laser radar apparatus. 4,447,149, Cl. 356-5.000.

Marcuse, Dietrich: *See—*
Cohen, Leonard G.; Mammel, Wanda L.; and Marcuse, Dietrich, 4,447,127, Cl. 350-96.330.

Mardin, Mithat: *See—*
Busse, Wolf-Dieter; Krauthausen, Edmund; and Mardin, Mithat, 4,447,440, Cl. 424-269.000.

Mark, Harold W.: *See—*
Smith, Clifford E.; Mark, Harold W.; Louthan, Rector P.; and Efner, Howard F., 4,447,246, Cl. 144-57.000.

Mark Products, Inc.: *See—*
Haggard, Samuel E., 4,447,104, Cl. 339-103.00M.

Markarian, Paul M., to Sprague Electric Company. Oval dual-AC-capacitor package. 4,447,854, Cl. 361-329.000.

Markovich, Mark J., to Welsh Sporting Goods Corp. Firearm carrying case. 4,446,900, Cl. 150-52.00R.

Marks, Robert; Phelps, Douglas W., Jr.; and Ward, William C., to International Business Machines Corporation. Substrate with multiple type connections. 4,447,857, Cl. 361-395.000.

Marples, Thomas N. R.: *See—*
Hughes, Alan C.; Copeman, Richard C.; and Marples, Thomas N. R., 4,447,254, Cl. 71-67.000.

Marquardt, Erich; and Sachs, Ekkehard, to Marquardt GmbH. Push-button switch. 4,447,687, Cl. 200-159.00R.

Marquardt GmbH: *See—*
Marquardt, Erich; and Sachs, Ekkehard, 4,447,687, Cl. 200-159.00R.

Marshall, Duane: *See—*
Rines, Carol M.; and Marshall, Duane, 4,447,168, Cl. 400-708.000.

Marshall, Norman B., to Upjohn Company, The. Methods of treating ischemic states. 4,447,449, Cl. 424-304.000.

Marsili, Leonardo: *See—*
Franceschi, Giovanni; Marsili, Leonardo; Sanfilippo, Aurora; and Vioglio, Sergio, 4,447,432, Cl. 424-248.540.

Marsoner, Hermann J.; and Savora, Gunther, to AVL AG. Method and apparatus for determining systolic time intervals. 4,446,872, Cl. 128-700.000.

Martel, Jacques; Buendia, Jean; and Nierat, Jeanine, to Roussel Uclaf. Epimerization of trans chrysanthemates. 4,447,637, Cl. 560-124.000.

Martin, Charles A. Fireplace outside air inlet. 4,446,847, Cl. 126-120.000.

Martin, Keith S., to Scovill Inc. Container having sight glass. 4,446,731, Cl. 73-334.000.

Martin, Patrick H.: *See—*
Caskey, Terrence L.; Parker, Theodore L.; and Martin, Patrick H., 4,447,598, Cl. 528-489.000.

Martin, Roy T., to Walter Kidde & Co., Inc. Removal of explosive or combustible gas or vapors from tanks and other enclosed spaces. 4,446,923, Cl. 169-45.000.

Martini, Thomas; Schinzel, Erich; Frischkorn, Hans; Friedrich, Herbert; and Probst, Heinz, to Hoechst Aktiengesellschaft. Mixtures of optical brighteners and their use. 4,447,350, Cl. 252-301.220.

Marx, Hans-Jurgen; and Hosel, Fritz P., to Trutzschler GmbH & Co. KG. Machine operator protection system. 4,446,602, Cl. 19-0.210.

Marx, Matthias: *See—*
Horn, Peter; Gehm, Robert; Marx, Matthias; and Roeber, Artur, 4,447,561, Cl. 521-118.000.

Masai, Hiroto, to Aisin Seiki Kabushiki Kaisha. Viscous fluid coupling assembly. 4,446,952, Cl. 192-58.00B.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Hagin, Faust; and Drewitz, Hans J., 4,446,756, Cl. 74-687.000.

Mashida, Toru; and Matsushita, Sumeo. Method of producing decorative objects. 4,447,473, Cl. 427-162.000.

Maskalick, Nicholas J., to United States of America, Energy. Pre-plated reactive diffusion-bonded battery electrode plaques. 4,447,509, Cl. 429-235.000.

Mason, Carl J.: *See—*
Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,447,427, Cl. 424-244.000.

Mason, Robert L.: *See—*
Souder, James J., Jr.; Scarborough, Edward D., Jr.; Fox, Merlin D.; Rettich, Donald R.; and Mason, Robert L., 4,447,031, Cl. 248-280.100.

Massenzana, Fabrizio: *See—*
Lussana, Riccardo; and Massenzana, Fabrizio, 4,447,285, Cl. 156-473.000.

Massey-Ferguson Inc.: *See—*
Stone, Lawrence J.; and Wells, Richard J., 4,447,860, Cl. 362-30.000.

Massey, William A., to General Electric Company. Negative sequence network having a frequency compensated filter. 4,447,843, Cl. 361-76.000.

Masson, Serge: *See—*
Kalbskopf, Reinhard; Baumberger, Otto; and Masson, Serge, 4,446,815, Cl. 118-718.000.

Massonnet, Henry. Two-position easy chair. 4,447,087, Cl. 297-130.000.

Mastic Corporation: *See—*
Schoolman, William K.; Griman, George A.; and Andrews, Frank D., 4,446,654, Cl. 49-181.000.

Masuda, Yutaka, to Yamaha Hatsudoki Kabushiki Kaisha. Trouble shooting method of vehicles. 4,447,801, Cl. 340-52.00F.

Masui, Saburo, to Yasui Sangyo Co., Ltd. Vehicle lift. 4,447,042, Cl. 254-90.000.

Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, to TDK Kabushiki Kaisha. Non-linear dielectric element. 4,447,549, Cl. 501-138.000.

Matey, James R., to RCA Corporation. Apparatus and method for making a video disc. 4,447,381, Cl. 264-107.000.

Matheson, Neil, III, to Graham Magnetics Incorporated. Conductor powders. 4,447,274, Cl. 148-6.240.

Mathis, Ronald D.; and Reed, Jerry A., to Phillips Petroleum Company. Method for adjusting arylene sulfide polymer cure rates. 4,447,597, Cl. 528-388.000.

Matkan, Josef, to Research Hildings Pty. Limited. Dry toner and method of making same. 4,447,516, Cl. 430-109.000.

Matoba, Kazunari: *See—*
Kataoka, Kenzo; Nishimoto, Shinichi; and Matoba, Kazunari, 4,447,207, Cl. 433-69.000.

Matsuchita Electric Industrial Co., Ltd.: *See—*
Ogawa, Kazufumi; Chikamura, Takao; and Shibata, Takuo, 4,447,720, Cl. 250-211.00J.

Matsuda, Eugene: *See—*
Huey, Wai J.; Murman, Fernando; and Matsuda, Eugene, 4,447,037, Cl. 251-1.00B.

Matsuda, Hideaki: *See—*
Kanaoka, Kunio; Okamoto, Takanori; and Matsuda, Hideaki, 4,447,563, Cl. 523-176.000.

Matsui, Masanao; and Ogawa, Tomoya, to Rikagaku Kenkyusho. Di(tri-lower alkylstannyl)pyrimidine derivative and a process for producing the same. 4,447,605, Cl. 544-225.000.

Matsukawa, Hiroharu: *See—*
Maekawa, Masakazu; and Matsukawa, Hiroharu, 4,447,487, Cl. 346-200.000.

Matsukuma, Yutaka: *See—*
Takahashi, Yoshihiro; Okuyama, Katsuo; and Matsukuma, Yutaka, 4,447,856, Cl. 361-383.000.

Matsumoto, Michio; Kitamura, Masao; Ohta, Masataka; and Ohshima, Takeshi, to Nippon Electric Co., Ltd.; and Nippon Telegraph & Telephone Public Corporation. Dot matrix printer. 4,446,789, Cl. 101-93.040.

Matsumoto, Nobuyuki: *See—*
Miyahra, Katsunobu; and Matsumoto, Nobuyuki, 4,447,677, Cl. 179-107.00R.

Matsumoto, Tetsuro: *See—*
Morioka, Akihiro; Maeda, Yuji; Matsumoto, Tetsuro; Yukinari, Masakazu; and Kishida, Eiichi, 4,447,309, Cl. 204-402.000.

Matsumura, Satoru: *See—*
Watanabe, Masaru; Matsumura, Satoru; Amada, Takayoshi; Irie, Hiromitsu; and Saito, Norihisa, 4,447,293, Cl. 159-6.200.

Matsumura, Toshimi; Fujisawa, Hideya; Omori, Norio; Arimura, Takashi; Yamazoe, Hisamitsu; and Nishiura, Kiyotaka, to Nippondenso Co., Ltd. Method and system for controlling the idle speed of an internal combustion engine at variable ignition timing. 4,446,832, Cl. 123-339.000.

Matsunaga, Isao: *See—*
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shin-ichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, 4,447,453, Cl. 424-319.000.

Matsuo, Yoshio, to Tetsudo Kizai Kogyo Company Limited. Cam type elastic rail fastening device. 4,447,006, Cl. 238-341.000.

Matsuoka, Fumio: *See—*
Yamazaki, Kisuke; Iijima, Hitoshi; Matsuoka, Fumio; and Nishizawa, Toshizo, 4,446,704, Cl. 62-180.000.

Matsuoka, Kazuhiko; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Scanning optical system having a tilting correcting function. 4,447,112, Cl. 350-6.500.

Matsushita Electric Industrial Co., Ltd.: *See—*
Horii, Kenju, 4,447,735, Cl. 250-578.000.
Kadota, Hiroshi, 4,447,891, Cl. 365-154.000.
Mizukawa, Takumi; Amagami, Keizo; and Kobayashi, Takao, 4,447,691, Cl. 219-10.49R.
Nakada, Seiichi; Ohno, Hiroshi; Nishijima, Tsuneo; and Kawakami, Hiroshi, 4,446,595, Cl. 15-365.000.
Saimi, Tetsuo, 4,447,722, Cl. 250-216.000.

Matsushita, Sumeo: *See—*
Mashida, Toru; and Matsushita, Sumeo, 4,447,473, Cl. 427-162.000.

Matsushita, Yukio; and Nozaki, Toshikatsu, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Fuel injection apparatus for an internal combustion engine. 4,446,833, Cl. 123-435.000.

Matt, Timothy S., to Nordson Corporation. Method for automatically coating objects with a plurality of quantities of a coating material using a single discharge apparatus. 4,447,465, Cl. 427-10.000.

Matthews, James A., to Intel Corporation. CMOS Process with unique plasma etching step. 4,447,290, Cl. 156-626.000.

Mauer, John L., IV: *See—*
Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., 4,447,824, Cl. 357-71.000.

Mauri, Jacinto M.: *See—*
Spickett, Robert G. W.; Mauri, Jacinto M.; and Puchades, Jesus E. B., 4,447,417, Cl. 424-156.000.

Max Kammerer GmbH: *See—*
Schiller, Werner, 4,447,689, Cl. 200-330.000.

Maxwell AG: *See—*
Maxwell, Anthony J., 4,446,892, Cl. 138-104.000.

Maxwell, Anthony J., to Maxwell AG. Method and apparatus for monitoring lengths of hose. 4,446,892, Cl. 138-104.000.

May, Adolf; and Bucking, Hans-Walter, to Hoechst Aktiengesellschaft. Concentrated fabric softeners. 4,447,343, Cl. 252-8.750.

Mayfield, William B., to Parker-Hannifin Corporation. Medication infusion pump. 4,447,233, Cl. 604-152.000.

Mayfield, William B., to Parker-Hannifin Corporation. Medication infusion pump. 4,447,234, Cl. 604-151.000.

Mayoral, Armando G. Surgical aspirator valve apparatus. 4,447,226, Cl. 604-73.000.

Mazeau, Jean-Pierre: *See—*
Leroy, Dominique L. J.; and Mazeau, Jean-Pierre, 4,447,550, Cl. 501-75.000.

McClain, James L., to McDermott Incorporated. Roller support for load handling devices. 4,446,977, Cl. 212-247.000.

McCleery, Winston T. Computer environment protector. 4,447,846, Cl. 361-90.000.
McClure, Leon C.; and McClure, Stanley, Sr. Boom with energy absorbing vibration damper. 4,446,928, Cl. 172-776.000.
McClure, Stanley, Sr.: *See—*
McClure, Leon C.; and McClure, Stanley, Sr., 4,446,928, Cl. 172-776.000.
McConnell, James A.: *See—*
Shanklin, Frank G.; and McConnell, James A., 4,447,284, Cl. 156-366.000.
McCrary, Paul T., to Ford Motor Company. Clutch stroke control metering valve for an automatic transmission. 4,446,759, Cl. 74-867.000.
McCurdy, H. Dennis: *See—*
Gay, John C.; McCurdy, H. Dennis; and Rose, Wayne B., 4,447,414, Cl. 424-81.000.
McDermott Incorporated: *See—*
McClain, James L., 4,446,977, Cl. 212-247.000.
McDonald, Thomas K.: *See—*
Kirchner, Charles H., Jr.; and McDonald, Thomas K., 4,446,590, Cl. 15-302.000.
McElroy, Lucian G. Nozzle assembly. 4,446,592, Cl. 15-316.00R.
McFarland, Robert H., to Tappan Company, The. Vent apparatus for a surface cooking appliance. 4,446,849, Cl. 126-299.00R.
McGraw-Edison Company: *See—*
Heinrichs, Frank W., 4,447,796, Cl. 336-60.000.
McGregor, Charles W.: *See—*
Minnick, Michael G.; Connell, James J.; and McGregor, Charles W., 4,447,472, Cl. 427-120.000.
McGroddy, James C.: *See—*
Fang, Frank F.; and McGroddy, James C., 4,447,746, Cl. 307-311.000.
McGuiggan, Michael F.; and Kuch, Philip L., to Standard Oil Company, The. Process for the production of hydrogen and carbonyl sulfide from hydrogen sulfide and carbon monoxide using a metal boride, nitride, carbide and/or silicide catalyst. 4,447,409, Cl. 423-416.000.
McKaveney, James P., to Occidental Chemical Corporation. Articles having an electrically conductive surface. 4,447,492, Cl. 428-328.000.
McKenchnie Chemicals Limited: *See—*
Hughes, Alan C.; Copeman, Richard C.; and Marples, Thomas N. R., 4,447,254, Cl. 71-67.000.
McLellan, Edward J.; and Webb, John A., to United States of America, Energy. Method and apparatus for fast laser pulse detection using gaseous plasmas. 4,447,151, Cl. 356-218.000.
McRae, Daniel D.: *See—*
Smith, Earl F.; and McRae, Daniel D., 4,447,910, Cl. 375-99.000.
McWilliams, John P., to Mobil Oil Corporation. Para-selective alkylation catalysts and processes. 4,447,666, Cl. 585-467.000.
McWilliams, Joseph A., to Micropore International Limited. Electric cookers incorporating radiant heaters. 4,447,710, Cl. 219-449.000.
MDT Chemical Company: *See—*
Runnells, Robert R.; Haak, Peter A.; Larkin, Rodney B.; and Vandervelden, C. Keith, 4,447,399, Cl. 422-113.000.
MEAB, Mobile Equipment AB: *See—*
Sandered, Bror; Carlsson, Rune; and Andersson, Bengt, 4,447,013, Cl. 242-54.00R.
Mead Corporation, The: *See—*
Floyd, Raymond C., 4,447,038, Cl. 251-1.00B.
Kistner, Oscar J., 4,447,002, Cl. 229-37.00R.
Meckler, Gershon. Air conditioning apparatus. 4,446,774, Cl. 98-38.00D.
Meeker, G. William. Triangle and pyramid signal transforms and apparatus. 4,447,886, Cl. 364-725.000.
Mei, Joseph S.: *See—*
Shang, Jer-Yu; Notestein, John E.; Mei, Joseph S.; and Zeng, Li-Wen, 4,447,297, Cl. 202-99.000.
Meibos, Harold R.: *See—*
Yunker, Conrad E.; Cory, John C.; and Meibos, Harold R., 4,447,537, Cl. 435-235.000.
Meiers, Gerald F.: *See—*
Frimml, Roger W.; and Meiers, Gerald F., 4,446,684, Cl. 56-341.000.
Mein, Peter G., to Carus Corporation. Process for recovering cesium from cesium ore. 4,447,406, Cl. 423-198.000.
Meixner, Peter: *See—*
Kersten, Peter; Meixner, Peter; Muller, Erich; and Horing, Eckart, 4,447,165, Cl. 384-428.000.
Melinat, Wolfgang, to General Motors Corporation. Disc brake caliper mount. 4,446,948, Cl. 188-73.450.
Menache-Aronson, Doris; Kosow, David P.; Orthner, Carolyn L.; and Behre, H. Evan, to American National Red Cross. Plasma protein concentrates of reduced thrombogenicity and their use in clinical replacement therapy. 4,447,416, Cl. 424-101.000.
Mendiratta, Ashok K., to General Electric Company. Purification of bisphenol-A. 4,447,655, Cl. 568-724.000.
Merck & Co., Inc.: *See—*
Firestone, Raymond A.; Cama, Lovji D.; and Christensen, Burton G., 4,447,602, Cl. 544-21.000.
Goldenberg, Marvin M., 4,447,443, Cl. 424-273.00R.
Merrell Dow Pharmaceuticals Inc.: *See—*
Grisar, J. Martin; Schnettler, Richard A.; and Dage, Richard C., 4,447,619, Cl. 548-318.000.
Merritt, Paul H.; and Fuller, Francis W., to Caterpillar Tractor Co. Apparatus and method for forming an external guard member on a hose. 4,446,607, Cl. 29-33.00E.
Merten, Rudolf: *See—*
Hocker, Jurgen; Dhein, Rolf; and Merten, Rudolf, 4,447,583, Cl. 525-328.100.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Bock, Siegfried; and Huetter, Horst, 4,447,025, Cl. 244-118.200.
Mestdagh, Gilbert E.: *See—*
Mignolet, Georges M. A.; and Mestdagh, Gilbert E., 4,447,840, Cl. 360-137.000.
Metal Box Limited: *See—*
Reed, Leonard W.; Barr, Robert M. S.; and Dick, David A., 4,447,199, Cl. 425-182.000.
Mewes, Claus J., to Prometag AG. Article-inserting station for packing machine. 4,446,675, Cl. 53-535.000.
Meyer, Louis C.; and Goodenough, Samuel H., to Mitral Medical International, Inc. Artificial heart valve. 4,446,577, Cl. 3-1.500.
Meyer Morton Company: *See—*
Batterton, Elmo L.; and Lonsdale, Melvin J., 4,446,631, Cl. 34-65.000.
Mezawa, Tsutomu: *See—*
Takemae, Yoshihiro; Enomoto, Seiji; Nozaki, Shigeki; Mezawa, Tsutomu; and Kabashima, Katsuhiko, 4,447,745, Cl. 307-269.000.
Mhlume (Swaziland) Sugar Company Limited: *See—*
Robinson, David S.; and Taylor, Rupert M., 4,447,185, Cl. 414-420.000.
Michalski, Dieter: *See—*
Fieber, Werner H.; Hinze, Klaus; Huth, Manfred K. O.; Jost, Hans-Georg; Lamm, Klaus D.; Michalski, Dieter; and Rittaler, Konstantin, 4,447,686, Cl. 200-153.00J.
Michel, Yves C.: *See—*
Chekroun, Claude D.; and Michel, Yves C., 4,447,815, Cl. 343-754.000.
Micropore International Limited: *See—*
McWilliams, Joseph A., 4,447,710, Cl. 219-449.000.
Midooka, Masanori: *See—*
Katagiri, Masayoshi; Kondo, Toshio; and Midooka, Masanori, 4,447,066, Cl. 277-212.0FB.
Midori, Yoshifumi: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.
Mierzwinski, Eugene P., to Essex Group, Inc. Control system with interactive display. 4,447,692, Cl. 219-10.55B.
Mignolet, Georges M. A.; and Mestdagh, Gilbert E., to U.S. Philips Corporation. 2-Speed magnetic-tape cassette apparatus. 4,447,840, Cl. 360-137.000.
Miho, Takuya: *See—*
Watanabe, Shoji; and Miho, Takuya, 4,447,591, Cl. 528-80.000.
Miles Laboratories, Inc.: *See—*
Gantzer, Mary L., 4,447,542, Cl. 436-66.000.
Greenquist, Alfred C.; Rupchock, Patricia A.; Tyhach, Richard J.; and Walter, Bert, 4,447,529, Cl. 435-7.000.
Rupchock, Patricia A.; and Tyhach, Richard J., 4,447,526, Cl. 435-7.000.
Staal, Philip W., 4,447,364, Cl. 260-448.00R.
Miller, J. Wayne; and Simpson, Howard D., to Union Oil Company of California. Hydroprocessing with lithium-containing catalyst. 4,447,317, Cl. 208-216.00R.
Miller, LeRoy; Thorud, Stanley R.; and Rivkin, Eric M., to Liberty Carton Co. Stuctural member storage device. 4,446,660, Cl. 52-36.000.
Miller, Richard C.: *See—*
Dixon, Richard W.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,447,905, Cl. 372-46.000.
Miller, Russell S.; Dietz, Peter W.; and Bray, Christopher, to General Electric Company. Two-phase thermal storage means and method. 4,446,910, Cl. 165-1.000.
Milliken Research Corporation: *See—*
Ott, David A., 4,446,974, Cl. 211-45.000.
Warner, Charles E., 4,446,690, Cl. 57-284.000.
Warner, Charles E., 4,446,691, Cl. 57-284.000.
Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Pneumatic yarn splicing apparatus for splicing core spun yarns. 4,446,687, Cl. 57-22.000.
Miner, Robert L., Jr.: *See—*
Bolton, Brent C.; Hagenmaier, Carl F., Jr.; Logsdon, Gary L.; and Miner, Robert L., Jr., 4,447,875, Cl. 364-200.000.
Ministry of International Trade and Industry: *See—*
Ebata, Yoshihiro; Kose, Saburo; and Hayami, Ryozo, 4,447,283, Cl. 156-325.000.
Minnesota Mining and Manufacturing Company: *See—*
Driscoll, William A.; Heilmann, Steven M.; and Rasmussen, Jerald K., 4,447,493, Cl. 428-332.000.
Nothaft, Eugene M., 4,447,872, Cl. 364-200.000.
Rametta, Anthony J., 4,447,588, Cl. 526-301.000.
Tiers, George V. D.; Aasen, Steven M.; Dalzell, Rex J.; and Holmes, Brian N., 4,447,521, Cl. 430-337.000.
Vallarino, Angelo; and Vittore, Lorenzo, 4,447,525, Cl. 430-539.000.
Minnick, Michael G.; Connell, James J.; and McGregor, Charles W., to Essex Group, Inc. Magnet wire coating method and article. 4,447,472, Cl. 427-120.000.
Minolta Camera Kabushiki Kaisha: *See—*
Nakamura, Akiyoshi, 4,447,135, Cl. 350-426.000.
Tabuchi, Kenji, 4,447,518, Cl. 430-122.000.

Yuge, Shizuo; Sakakibara, Susumu; Ishikawa, Takuma; Kito, Nobuo; and Yamamoto, Toshio, 4,447,517, Cl. 430-122.000.
Minolta Kabushiki Kaisha: *See—*
Imura, Kenji, 4,446,871, Cl. 128-633.000.
Minoura, Kazuo: *See—*
Matsuoka, Kazuhiko; and Minoura, Kazuo, 4,447,112, Cl. 350-6.500.
Miracle Recreation Equipment Company: *See—*
Ahrens, Paul W., 4,447,055, Cl. 272-113.000.
Mishima Kosan Corporation: *See—*
Ushio, Tetsuji; Tatsuguchi, Satoru; Otani, Toshihisa; Tani, Hoshiro; and Yabe, Tetsuo, 4,447,306, Cl. 204-224.00R.
Mita Industrial Co., Ltd.: *See—*
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,447,513, Cl. 430-58.000.
Nakazawa, Toru; Fushida, Akira; and Kamezaki, Yasushi, 4,447,514, Cl. 430-81.000.
Mitamura, Gen; Eguchi, Takao; and Nagami, Yukio, to Seiko Instruments & Electronics Ltd. Watchcase. 4,447,162, Cl. 368-295.000.
Mitral Medical International, Inc.: *See—*
Meyer, Louis C.; and Goodenough, Samuel H., 4,446,577, Cl. 3-1.500.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Endo, Norio; Asayama, Yoshiaki; and Kabuto, Masami, 4,446,824, Cl. 123-52.00M.
Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,446,643, Cl. 40-590.000.
Kajiyama, Ryuichi; and Yonemoto, Masashi, 4,446,946, Cl. 187-29.00R.
Mizuno, Takaji; Suwahara, Hiroshi; and Segawa, Hirohisa, 4,447,702, Cl. 219-130.330.
Niwa, Yoshiei, 4,447,696, Cl. 219-69.00P.
Tsurumoto, Kazuo; and Ozaki, Yoshio, 4,447,713, Cl. 219-69.00G.
Yamazaki, Kisuke; Iijima, Hitoshi; Matsuoka, Fumio; and Nishizawa, Toshizo, 4,446,704, Cl. 62-180.000.
Mitsubishi Jidosha Kogyo K.K.: *See—*
Endo, Norio; Asayama, Yoshiaki; and Kabuto, Masami, 4,446,824, Cl. 123-52.00M.
Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See—*
Omae, Yoshihiro; Okubo, Noboru; Sigyo, Keiichi; Nakajima, Hideo; Fukui, Hiroaki; Yamada, Toshio; and Honda, Hideyuki, 4,447,805, Cl. 340-539.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Kimura, Etsuji; Ogi, Katsumi; Sato, Kazusuke; and Hashimoto, Mayuki, 4,447,045, Cl. 266-149.000.
Sugizawa, Taijiro; Yoshimura, Hironori; and Toyama, Junichi, 4,447,263, Cl. 75-233.000.
Mitsubishi Mining & Cement Company, Ltd.: *See—*
Tomuro, Noboru; Ishiguchi, Isao; Tsujikawa, Shinjiro; Kashima, Masao; and Miyashita, Yasuo, 4,447,853, Cl. 361-321.000.
Mitsubishi Paper Mills, Ltd.: *See—*
Uno, Akira; Noda, Touru; and Ninohira, Akira, 4,447,524, Cl. 430-538.000.
Mitsubishi Plastics Industries Limited: *See—*
Aritake, Toshiyuki, 4,447,485, Cl. 428-144.000.
Mitsubishi Rayon Co., Ltd.: *See—*
Tamura, Hitoshi; and Shigeoka, Katsuhei, 4,447,384, Cl. 264-206.000.
Miyadera, Yasuo: *See—*
Makino, Daisuke; and Miyadera, Yasuo, 4,447,596, Cl. 528-353.000.
Miyahra, Katsunobu; and Matsumoto, Nobuyuki, to Sony Corporation. Hearing aid. 4,447,677, Cl. 179-107.00R.
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Sano, Yumiko; and Funato, Masatomi, to Mita Industrial Co., Ltd. Photosensitive material for electrophotography. 4,447,513, Cl. 430-58.000.
Miyake, Kozo: *See—*
Kusumegi, Asao; Kondo, Kenjiro; Watase, Yoshiyuki; Yoshimura, Yoshio; and Miyake, Kozo, 4,447,734, Cl. 250-517.100.
Miyamoto, Akio, to Fuji Photo Film Co., Ltd. Pressure-sensitive recording material. 4,447,075, Cl. 346-213.000.
Miyamoto, Masafumi: *See—*
Ogura, Shunichiro; and Miyamoto, Masafumi, 4,447,318, Cl. 208-348.000.
Miyashita, Yasuo: *See—*
Tomuro, Noboru; Ishiguchi, Isao; Tsujikawa, Shinjiro; Kashima, Masao; and Miyashita, Yasuo, 4,447,853, Cl. 361-321.000.
Miyoshi, Taisuke, to Seiko Instruments & Electronics Ltd. Electrochromic device. 4,447,133, Cl. 350-357.000.
Mizoguchi, Masayuki: *See—*
Kojima, Takafumi; Yoshida, Shigeru; and Mizoguchi, Masayuki, 4,447,679, Cl. 179-175.30R.
Mizuhara, Howard, to GTE Products Corporation. Brazing alloy containing reactive metals, precious metals, boron and nickel. 4,447,391, Cl. 420-456.000.
Mizuhara, Howard, to GTE Products Corporation. Ductile silver based brazing alloys containing a reactive metal and manganese or germanium or mixtures thereof. 4,447,392, Cl. 420-501.000.
Mizukawa, Takumi; Amagami, Keizo; and Kobayashi, Takao, to Matsushita Electric Industrial Company, Limited. Circuit for detecting a utensil load placed asymmetrically relative to an induction heating coil. 4,447,691, Cl. 219-10.49R.
Mizuno, Koji: *See—*
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shin-ichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, 4,447,453, Cl. 424-319.000.
Mizuno, Takaji; Suwahara, Hiroshi; and Segawa, Hirohisa, to Mitsubishi Denki Kabushiki Kaisha. DC Arc welding apparatus having variable current response. 4,447,702, Cl. 219-130.330.
Mizuta, Hiroyuki: *See—*
Nishimura, Haruki; Naruto, Shunsuke; Mizuta, Hiroyuki; Kadokawa, Toshiaki; and Kawashima, Katsuyoshi, 4,447,439, Cl. 424-267.000.
Mizutani, Hidemi: *See—*
Suzuki, Fumio; Fujikawa, Yoshihiro; Yamamoto, Susumu; Mizutani, Hidemi; Ohya, Tunehiko; Ikai, Takashi; and Oguchi, Toshihiko, 4,447,256, Cl. 71-86.000.
Mobil Oil Corporation: *See—*
Angevine, Philip J.; Audeh, Costandi A.; Tabak, Samuel A.; and Yan, Tsoung Y., 4,447,312, Cl. 208-46.000.
Banta, Frederick, 4,447,314, Cl. 208-89.000.
Crisman, Robert W.; and DeAngelis, Dominick, 4,447,332, Cl. 210-748.000.
Derbyshire, Francis J.; and Whitehurst, Darrell D., 4,447,310, Cl. 208-8.0LE.
Fowles, Patrick E.; Shoemaker, Gerald L.; and Yan, Tsoung-Yuan, 4,447,311, Cl. 208-35.000.
Gorring, Robert L.; and Smith, Robert L., 4,447,313, Cl. 208-86.000.
McWilliams, John P., 4,447,666, Cl. 585-467.000.
Russo, Robert V., 4,447,575, Cl. 524-484.000.
Wagner, John R., Jr.; and Hein, Carl C., 4,447,494, Cl. 428-349.000.
Young, Lewis B., 4,447,642, Cl. 560-247.000.
Mochida, Ei: *See—*
Ohnishi, Haruo; Itoh, Chihiro; and Mochida, Ei, 4,447,437, Cl. 424-263.000.
Mochida Pharmaceutical Co., Ltd.: *See—*
Ohnishi, Haruo; Itoh, Chihiro; and Mochida, Ei, 4,447,437, Cl. 424-263.000.
Modtler, Reiner: *See—*
Linhart, Heinz; Modtler, Reiner; and Kratzsch, Eberhard, 4,447,489, Cl. 428-225.000.
Moe, Walter; and Diker, Charles M. Mobile blocks. 4,446,649, Cl. 46-218.000.
Moebus, Otto; Teuber, Michael; and Reuter, Helmut. Method of producing ethanol through fermentation of carbohydrates. 4,447,534, Cl. 435-161.000.
Moerkens, Jozef C.; and Verhees, Leonardus G. J., to U.S. Philips Corporation. Starter for igniting an electric discharge tube. 4,447,759, Cl. 315-60.000.
Mok, Christopher C. K.: *See—*
Lubbock, Frederick J.; Mok, Christopher C. K.; and Eldridge, Robert J., 4,447,475, Cl. 427-213.310.
Molas, Eugeni C. Clamp. 4,446,605, Cl. 24-277.000.
Molnar, Zoltan, to Licencia Talalmanyokat Ertekesito V. Universal screw press built in modular system. 4,446,788, Cl. 100-117.000.
Moloney, Donald J., to Knickerbocker Case Company. Printed circuit board container carrying case. 4,446,966, Cl. 206-334.000.
Monaco, Anthony P.: *See—*
DeFazio, Sally R.; Gozzo, James J.; and Monaco, Anthony P., 4,447,545, Cl. 436-518.000.
Monahan, Frederick A.: *See—*
Boyadjieff, George I; and Monahan, Frederick A., 4,446,761, Cl. 81-57.190.
Monsanto Company: *See—*
Adl, Mohammad S.; Kegeler, Gary H.; and Vandersall, Howard L., 4,447,337, Cl. 252-7.000.
Cohen, Saul M.; and LeBlanc, John R., 4,447,594, Cl. 528-245.000.
D'Amico, John J., 4,447,618, Cl. 548-170.000.
Vandersall, Howard L., 4,447,336, Cl. 252-7.000.
Monte, Alex A.; and Centofanti, Joan G., to Syva Company. Single test formulations for enzyme immunoassays and method for preparation. 4,447,527, Cl. 435-7.000.
Montgomery, Hugh S.: *See—*
Grantland, Gary; Montgomery, Hugh S.; Boeckmann, Eduard F. B.; and Woodworth, Larry A., 4,447,674, Cl. 179-81.00R.
Montiel, Alexandra. Applicator for liquids. 4,446,965, Cl. 206-205.000.
Mookherjee, Braja D.: *See—*
Spitz, Seymour J., Jr.; Mookherjee, Braja D.; Hill, Ira D.; Keleher, Lloyd F.; Trenkle, Robert W.; and Wolff, Robin K., 4,446,651, Cl. 47-10.000.
Moore, David O.: *See—*
Puvogel, Timothy J.; King, James D.; and Moore, David O., 4,446,780, Cl. 99-480.000.
Moore, Wayne A., to Tektronix, Inc. Emulator control sequencer. 4,447,876, Cl. 364-200.000.
Moran, Thomas F. Method of packaging elbow-shaped members and package made thereby. 4,446,964, Cl. 206-321.000.
Morelle, Jean V.; and Lauzanne-Morelle, Eliane M. T. Derivatives of lysine and aspartic acid. 4,447,366, Cl. 260-501.110.
Morgan Construction Company: *See—*
Klusmier, Kenneth L., 4,446,961, Cl. 198-443.000.
Morgan, Robert H., Jr. Device for supporting and rotating a hanging plant. 4,446,653, Cl. 47-67.000.
Mori, Katsuhiro: *See—*
Suzuki, Koichi; Yoshihara, Mikio; Kawai, Shinji; and Mori, Katsuhiro, 4,446,584, Cl. 4-237.000.
Mori, Kei. Apparatus for collecting and concentrating solar light energy. 4,447,718, Cl. 250-203.00R.
Moriguchi, Fujio: *See—*
Kurata, Masami; and Moriguchi, Fujio, 4,447,818, Cl. 366-76.0PH.

Kurata, Masami; Moriguchi, Fujio; Inui, Toshiharu; and Ohmori, Takashi, 4,447,832, Cl. 358-296.000.

Moriguchi, Haruhiko; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Thermal recording device. 4,447,819, Cl. 346-76.0PH.

Morimura, Tosio: *See—*
Shigeru, Kitahara; Okane, Isao; Shirai, Katsuyuki; and Morimura, Tosio, 4,447,501, Cl. 428-570.000.

Morioka, Akihiro; Maeda, Yuji; Matsumoto, Tetsuro; Yukinari, Masakazu; and Kishida, Eiichi, to Yokogawa Hokushin Electric Corporation. pH Sensor. 4,447,309, Cl. 204-402.000.

Morioka, Hiroaki: *See—*
Sakakibara, Naoji; Amano, Hiroyuki; and Morioka, Hiroaki, 4,446,889, Cl. 137-625.400.

Morita, Ken: *See—*
Ohyama, Hiroshi; Takada, Sanae; Morita, Ken; and Yamamura, Saburo, 4,447,259, Cl. 71-94.000.

Moriwaki, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Stem sealing apparatus having external tipping off burners. 4,447,216, Cl. 445-70.000.

Moriya, Yoshimi: *See—*
Suzuki, Shintaro; Iizuka, Sadao; and Moriya, Yoshimi, 4,447,264, Cl. 75-251.000.

Morris, Anthony F.: *See—*
Naf, Regula; Morris, Anthony F.; and Naf, Ferdinand, 4,447,627, Cl. 549-548.000.

Morris, George R. Vehicle full park engagement apparatus. 4,446,951, Cl. 192-4.00A.

Morris, Kenneth A.: *See—*
Ahn, Byung K.; and Morris, Kenneth A., 4,447,405, Cl. 423-88.000.

Morris Rod Weeder Co., Ltd.: *See—*
Machnee, Cecil; and Butuk, Fred N., 4,446,801, Cl. 111-86.000.

Morrison-Knudsen Company, Inc.: *See—*
Loire, Rene, 4,446,806, Cl. 114-219.000.

Moschopoulos, Anastasios, to Northern Telecom Limited. Base drive circuit for power transistors. 4,447,741, Cl. 307-31.000.

Moser, Mark M.: *See—*
Rainford, Robert E.; Moser, Mark M.; and Ojala, Jon R., 4,447,152, Cl. 356-237.000.

Moser, Werner: *See—*
Denk, Heimo; Mantsch, Peter; and Moser, Werner, 4,447,742, Cl. 307-106.000.

Moskowitz, Gerard J., to Dairyland Food Laboratories. Stabilization of enzyme compositions. 4,447,536, Cl. 435-188.000.

Moss Rosenberg Verft A/S: *See—*
Kristiansen, Olaf; and Brannstrom, Bo, 4,446,804, Cl. 114-74.00R.

Motorola Inc.: *See—*
Bjornholt, John E.; Foster, Richard G.; and Groth, Edward J., Jr., 4,447,907, Cl. 375-1.000.
DeLong, Ronald V., 4,447,772, Cl. 329-126.000.
Kent, Stephen L., 4,447,841, Cl. 361-18.000.
Rumbaugh, Robert C.; and Jarrett, Robert B., 4,446,843, Cl. 123-609.000.

Mowbray, Dorian F., to Lucas Industries Limited. Liquid fuel injection pumping apparatus. 4,446,835, Cl. 123-450.000.

Mowbray, Dorian F.; Fenne, Ivor; and Andrews, Richard J., to Lucas Industries Public Limited Company. Fuel injection pumping apparatus. 4,446,836, Cl. 123-450.000.

MPI, Inc.: *See—*
Spurlock, Robert C.; and Foster, Larry W., 4,447,382, Cl. 264-123.000.

MTU-Motoren-und-Turbinen-Union Friedrichschafen GmbH: *See—*
Leicht, Werner, 4,447,062, Cl. 277-3.000.

Mudge, Philip H.; and Kahl, William G., Jr., to Cerberus AG. Passive infrared intrusion detector. 4,447,726, Cl. 250-342.000.

Mueller, Dieter J.; Fricke, Hermann; and Spielbrink, Heinrich, to Chemische Werke Huels Aktiengesellschaft. Process for phosphating metallic surfaces in nonaqueous phosphating baths. 4,447,273, Cl. 148-6.15R.

Mueller, Jerry C., to Upjohn Manufacturing Company M, The. Treatment of adult respiratory distress syndrome. 4,447,451, Cl. 424-317.000.

Mukoyama, Yoshiyuki: *See—*
Nishizawa, Hiroshi; Mukoyama, Yoshiyuki; and Kasai, Shozo, 4,447,589, Cl. 528-45.000.

Mulder, James P.: *See—*
Novotny, Raymond J.; and Mulder, James P., 4,446,638, Cl. 37-142.00A.

Mulkey, Owen R., to Boeing Company, The. Optical information transfer system. 4,447,118, Cl. 350-96.160.

Muller, Erich: *See—*
Kersten, Peter; Meixner, Peter; Muller, Erich; and Horing, Eckart, 4,447,165, Cl. 384-428.000.

Muller, Hans, to Grapha-Holding AG. Apparatus for selectively transporting a stream of paper sheets or the like from a first path into one of several additional paths. 4,447,052, Cl. 271-280.000.

Muller, Norbert, to Hawera Probst GmbH & Co. Boring tool for radial enlargement of a cylindrical foundation bore. 4,446,934, Cl. 175-286.000.

Muller, Rolf; and Wille, Herbert, to Cassella Aktiengesellschaft. Process for the preparation of 4,5-dichloro-1,2-dithiacyclopenten-3-one. 4,447,623, Cl. 549-36.000.

Mullich, Richard O.; and Dushane, Ray, to TRE Corporation. Deadbolt. 4,446,707, Cl. 70-134.000.

Mulloy, Timothy P.: *See—*
Davis, Larry A.; Boyce, Gregory H.; Mulloy, Timothy P.; Nebeker, Neil J.; Newman, Elmer C.; Quinn, Donald J.; and Adamson, David L., 4,447,307, Cl. 204-267.000.

Mulzet, Alfred P., to International Business Machines Corporation. Continuous flow centrifuge assembly. 4,447,221, Cl. 494-45.000.

Mundt, Johann; Kasper, Horst; and Pritsch, Eckhard, to Uranit Uran-Isotopentrennungs-Gesellschaft mbH. Method for optimizing the power input of a plurality of hysteresis motors connected in parallel. 4,447,788, Cl. 318-799.000.

Murakami, Jyoji, to Fujitsu Limited. Semiconductor read only memory device. 4,447,893, Cl. 365-203.000.

Muramoto, Setsuo: *See—*
Hanaoka, Yuzuru; Murayama, Takeshi; and Muramoto, Setsuo, 4,447,559, Cl. 521-28.000.

Murasaki, Shun-ichi: *See—*
Inoue, Haruhiko; Murasaki, Shun-ichi; and Naito, Masataka, 4,447,352, Cl. 252-519.000.

Murata Kikai Kabushiki Kaisha: *See—*
Mima, Hiroshi, 4,446,687, Cl. 57-22.000.

Murayama, Takeshi: *See—*
Hanaoka, Yuzuru; Murayama, Takeshi; and Muramoto, Setsuo, 4,447,559, Cl. 521-28.000.

Murbach, Julius, to Murbach, Julius; and Stussi, Karl. Fixing plug. 4,447,182, Cl. 411-45.000.

Murchison, Craig B.; Stowe, Robert A.; and Weiss, Richard L., to Dow Chemical Company, The. Integrated Fischer-Tropsch and aromatic alkylation process. 4,447,664, Cl. 585-323.000.

Murman, Fernando: *See—*
Huey, Wai J.; Murman, Fernando; and Matsuda, Eugene, 4,447,037, Cl. 251-1.00B.

Murphy, Edwin L.: *See—*
Teranishi, Roy; Murphy, Edwin L.; Balser, Donald S.; and Howard, Walter E., 4,446,648, Cl. 43-131.000.

Murray, Richard C. Fire service harness. 4,446,943, Cl. 182-3.000.

Murtha, John C.: *See—*
Price, William L.; Murtha, John C.; Ross, James A., Jr.; Adam, Clyde E.; and Lucas, Kenneth R., 4,447,873, Cl. 364-200.000.

Murtha, Timothy P.; and Zuech, Ernest A., to Phillips Petroleum Company. Hydroalkylation catalyst and methods for producing and employing same. 4,447,554, Cl. 502-73.000.

Muth, David L.: *See—*
Faulkner, Richard D.; Henry, Dale V.; and Muth, David L., 4,447,758, Cl. 313-532.000.

Muto, Hiroyuki: *See—*
Hoshiyama, Satoshi; Muto, Hiroyuki; Shinke, Shuzo; Otsuka, Kanji; Takigawa, Shinichiro; and Yamazaki, Hiroyuki, 4,447,661, Cl. 568-882.000.

Myers, John W.: *See—*
Parrott, Stephen L.; and Myers, John W., 4,447,555, Cl. 502-74.000.

Nabisco Brands, Inc.: *See—*
Horwath, Robert O.; and Irbe, Robert M., 4,447,531, Cl. 435-94.000.

Nachfolger, Solomon J., to Diamond Shamrock Chemicals Company. Cementitious composition. 4,447,266, Cl. 106-90.000.

Naess. Method and apparatus for collecting oil and gas from an underwater blow-out. 4,447,247, Cl. 55-55.000.

Naf, Ferdinand: *See—*
Naf, Regula; Morris, Anthony F.; and Naf, Ferdinand, 4,447,627, Cl. 549-548.000.

Naf, Regula; Morris, Anthony F.; and Naf, Ferdinand, to Firmenich SA. Aliphatic epoxy-ketone. 4,447,627, Cl. 549-548.000.

Nagami, Yukio: *See—*
Mitamura, Gen; Eguchi, Takao; and Nagami, Yukio, 4,447,162, Cl. 368-295.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Adjustable length crank arm for a bicycle. 4,446,753, Cl. 74-594.100.

Nagasaku, Eiichi; Kato, Kimihiro; and Yasunaga, Masao, to Nippondenso Co., Ltd. Rotary vane compressor with valve control of undervane pressure. 4,447,196, Cl. 418-93.000.

Nagata, Mituo: *See—*
Kamiyama, Fumio; Yamazaki, Kazutoshi; Kohara, Minoru; and Nagata, Mituo, 4,447,328, Cl. 210-635.000.

Nagel, Rudolf: *See—*
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; Sellmaier, Franz; and Reum, Helmut, 4,446,723, Cl. 73-35.000.

Nagorski, Boguslaw A., to Fuji Photo Film Co., Ltd. Magnetic tape cartridge with resilient belt driving means and separate tape and belt idlers. 4,447,019, Cl. 242-192.000.

Naito, Masataka: *See—*
Inoue, Haruhiko; Murasaki, Shun-ichi; and Naito, Masataka, 4,447,352, Cl. 252-519.000.

Nakada, Seiichi; Ohno, Hiroshi; Nishijima, Tsuneo; and Kawakami, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Upright vacuum cleaner. 4,446,595, Cl. 15-365.000.

Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Shioyama, Giichi, to Nissan Motor Co., Ltd. Exhaust gas recirculation control system for internal combustion engine. 4,446,840, Cl. 123-571.000.

Nakajima, Hideo: *See—*
Omae, Yoshihiro; Okubo, Noboru; Sigyo, Keiichi; Nakajima, Hideo; Fukui, Hiroaki; Yamada, Toshio; and Honda, Hideyuki, 4,447,805, Cl. 340-539.000.

Nakajima, Masao: *See—*
Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Shioyama, Giichi, 4,446,840, Cl. 123-571.000.

Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha. Zoom lens system. 4,447,135, Cl. 350-426.000.

Nakamura, Katsuhiro, to Nippon Electric Co., Ltd. Device for encrypting each input data bit by at least one keying bit decided by a code pattern and a bit pattern of a predetermined number of preceding encrypted bits. 4,447,672, Cl. 178-22.190.

Nakamura, Tadashi: *See—*
Ohashi, Shigeo; Nakamura, Tadashi; and Kamisada, Koji, 4,447,685, Cl. 200-67.00D.

Nakamura, Yoshimi: *See—*
Sasaki, Yutaka; and Nakamura, Yoshimi, 4,447,558, Cl. 502-215.000.

Nakata, Minoru, to Kabushiki Kaisha Komatsu Seisakusho. Clutching and braking control for hydraulically driven crane winches. 4,447,044, Cl. 254-309.000.

Nakazawa, Toru; Fushida, Akira; and Kamezaki, Yasushi, to Mita Industrial Co., Ltd. Organic photosensitive material for electrophotography comprising polyvinylcarbazole and pyrene or phenanthrene. 4,447,514, Cl. 430-81.000.

Nalco Chemical Company: *See—*
Roe, William J., 4,447,344, Cl. 252-60.000.

Naramore, Raymond A., to Xerox Corporation. Constant velocity copy sheet transport with ink jet printing. 4,447,817, Cl. 346-75.000.

Naruto, Shunsuke: *See—*
Nishimura, Haruki; Naruto, Shunsuke; Mizuta, Hiroyuki; Kadokawa, Toshiaki; and Kawashima, Katsuyoshi, 4,447,439, Cl. 424-267.000.

National Carpet Jobbers, Inc.: *See—*
Bell, Dwain C.; Anderson, Lloyd E.; and Anderson, Martin L., 4,446,593, Cl. 15-322.000.

National Distillers and Chemical Corporation: *See—*
Blewett, Charles W., 4,447,659, Cl. 568-876.000.
Feldman, Julian, 4,447,643, Cl. 560-248.000.

National Laboratory for High Energy Physics: *See—*
Kusumegi, Asao; Kondo, Kenjiro; Watase, Yoshiyuki; Yoshimura, Yoshio; and Miyake, Kozo, 4,447,734, Cl. 250-517.100.

National Polymers, Inc.: *See—*
Anderson, Dennis C., 4,446,652, Cl. 47-66.000.

National Research Development Corporation: *See—*
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,447,608, Cl. 544-287.000.

National Research Institute for Metals: *See—*
Shigeru, Kitahara; Okane, Isao; Shirai, Katsuyuki; and Morimura, Tosio, 4,447,501, Cl. 428-570.000.

National Semiconductor Corporation: *See—*
Dobkin, Robert C., 4,447,784, Cl. 323-226.000.

Nattel, William, to Commander Electrical Materials, Inc. Electrical wiring box arrangement. 4,447,030, Cl. 248-27.100.

Nebeker, Neil J.: *See—*
Davis, Larry A.; Boyce, Gregory H.; Mulloy, Timothy P.; Nebeker, Neil J.; Newman, Elmer C.; Quinn, Donald J.; and Adamson, David L., 4,447,307, Cl. 204-267.000.

Neefe, Charles W. Method of selectively tinting soft contact lenses. 4,447,474, Cl. 427-164.000.

Negi, Virendra S.: *See—*
Tague, Steven A.; and Negi, Virendra S., 4,447,870, Cl. 364-200.000.

Nelen, Petrus J. C.: *See—*
Geerdes, Dirk J. F.; and Nelen, Petrus J. C., 4,447,567, Cl. 523-501.000.

Neri, Bruce P.; and Liffmann, Stanley M., to Instrumentation Laboratory Inc. Method and reagent for determining inorganic phosphate in biological sample. 4,447,544, Cl. 436-105.000.

Neuhaus, Gunter: *See—*
Kotzur, Joachim; Reinersmann, Hans H.; Albers, Rolf; Aschenbruck, Emil; and Neuhaus, Gunter, 4,447,063, Cl. 277-80.000.

Neumann, Don B., to Excellon Industries. Scanning beam reference employing a retroreflective code means. 4,447,723, Cl. 250-236.000.

New England Deaconess Hospital: *See—*
DeFazio, Sally R.; Gozzo, James J.; and Monaco, Anthony P., 4,447,545, Cl. 436-518.000.

New Process Industries, Inc.: *See—*
Benson, Glendon M., 4,446,698, Cl. 60-520.000.

Newell, James M., to Di-Dro Systems Inc. Cylinder structure. 4,447,047, Cl. 267-118.000.

Newman, Elmer C.: *See—*
Davis, Larry A.; Boyce, Gregory H.; Mulloy, Timothy P.; Nebeker, Neil J.; Newman, Elmer C.; Quinn, Donald J.; and Adamson, David L., 4,447,307, Cl. 204-267.000.

Newton, Roger F.: *See—*
Collington, Eric W.; Finch, Harry; and Newton, Roger F., 4,447,428, Cl. 424-244.000.

Nguyen, Liem; Segal, William J.; and Friend, Kent, to Orion Industries, Inc. Convertible wire wheel hub cover. 4,447,091, Cl. 301-37.0AT.

NI Industries, Inc.: *See—*
Beisch, Hans R., 4,447,092, Cl. 301-37.00P.

Nicolay, Karl; and Hampel, Klaus, to Durkoppwerke GmbH. Upper fabric feed for a sewing machine. 4,446,803, Cl. 112-320.000.

Nielsen, Klaus W.: *See—*
Dunne, Maurice J.; and Nielsen, Klaus W., 4,447,697, Cl. 219-86.410.

Nielsen, Kurt F.: *See—*
Jensen, Niels D.; and Nielsen, Kurt F., 4,447,189, Cl. 415-168.000.

Niemoeller, Charles W. Wood kerf chuck. 4,447,050, Cl. 269-49.000.

Nierat, Jeanine: *See—*
Martel, Jacques; Buendia, Jean; and Nierat, Jeanine, 4,447,637, Cl. 560-124.000.

Nigon, Michel, to Automobiles Peugot; and Automobiles Citroen. Automotive blinker or turn indicator switch. 4,447,683, Cl. 200-61.270.

Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See—*
Ohashi, Shigeo; Nakamura, Tadashi; and Kamisada, Koji, 4,447,685, Cl. 200-67.00D.

Nihon Plast Co., Ltd.: *See—*
Sugiyama, Tomokazu, 4,447,684, Cl. 200-61.540.

Nilsson, Hans Gosta; and Nilsson, Kurt A. G., to Atlas Copco Aktiebolag. Drill steel removal attachment for rock drilling machine. 4,446,930, Cl. 173-29.000.

Nilsson, Kurt A. G.: *See—*
Nilsson, Hans Gosta; and Nilsson, Kurt A. G., 4,446,930, Cl. 173-29.000.

Ninohira, Akira: *See—*
Uno, Akira; Noda, Touru; and Ninohira, Akira, 4,447,524, Cl. 430-538.000.

Nippon Columbia Kabushikikaisha: *See—*
Fukuda, Ryuichi; Fujiwara, Masami; and Ishiguro, Norio, 4,447,790, Cl. 330-149.000.

Nippon Electric Co., Ltd.: *See—*
Matsumoto, Michio; Kitamura, Masao; Ohta, Masataka; and Ohshima, Takeshi, 4,446,789, Cl. 101-93.040.
Nakamura, Katsuhiro, 4,447,672, Cl. 178-22.190.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Noro, Masao; and Kasahara, Yoshiki, 4,447,791, Cl. 330-297.000.

Nippon Kogaku K. K.: *See—*
Ogasawara, Akira, 4,447,719, Cl. 250-204.000.

Nippon Kogaku K.K.: *See—*
Nohda, Masao, 4,447,717, Cl. 250-201.000.
Terui, Nobuhiko, 4,447,768, Cl. 318-293.000.

Nippon Oil Co., Ltd.: *See—*
Fujiso, Tokuo; Ohmori, Tadashi; and Nomura, Soichi, 4,447,553, Cl. 502-36.000.

Nippon Piston Ring Co., Ltd.: *See—*
Hiraoka, Takeshi; Urano, Shigeru; and Yamamoto, Kiyoshi, 4,447,275, Cl. 148-152.000.

Nippon Sanso K.K.: *See—*
Harada, Hikaru; Akiyama, Teruo; and Hiyama, Tuneo, 4,447,543, Cl. 436-72.000.

Nippon Soken, Inc.: *See—*
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,446,839, Cl. 123-569.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Kojima, Takafumi; Yoshida, Shigeru; and Mizoguchi, Masayuki, 4,447,679, Cl. 179-175.30R.
Matsumoto, Michio; Kitamura, Masao; Ohta, Masataka; and Ohshima, Takeshi, 4,446,789, Cl. 101-93.040.

Nippon Zeon Co., Ltd.: *See—*
Ogura, Shunichiro; and Miyamoto, Masafumi, 4,447,318, Cl. 208-348.000.

Nippondenso Co., Ltd.: *See—*
Inoue, Haruhiko; Murasaki, Shun-ichi; and Naito, Masataka, 4,447,352, Cl. 252-519.000.
Matsumura, Toshimi; Fujisawa, Hideya; Omori, Norio; Arimura, Takashi; Yamazoe, Hisamitsu; and Nishiura, Kiyotaka, 4,446,832, Cl. 123-339.000.
Nagasaku, Eiichi; Kato, Kimihiro; and Yasunaga, Masao, 4,447,196, Cl. 418-93.000.
Suzuki, Haruo; and Hashimoto, Shigeyoshi, 4,446,907, Cl. 164-120.000.

Nira, Hisami: *See—*
Kohmoto, Kohtaro; Ebara, Hiroyuki; and Nira, Hisami, 4,447,756, Cl. 313-487.000.

Nishida, Isamu: *See—*
Tsukada, Nobuo; and Nishida, Isamu, 4,447,163, Cl. 368-319.000.

Nishijima, Tsuneo: *See—*
Nakada, Seiichi; Ohno, Hiroshi; Nishijima, Tsuneo; and Kawakami, Hiroshi, 4,446,595, Cl. 15-365.000.

Nishikawa, Yoshinori; and Takahashi, Iwashige, to Kabushiki Kaisha Komatsu Seisakusho. Preparative monitoring apparatus for operation of a press. 4,446,787, Cl. 100-99.000.

Nishimoto, Shinichi: *See—*
Kataoka, Kenzo; Nishimoto, Shinichi; and Matoba, Kazunari, 4,447,207, Cl. 433-69.000.

Nishimura, Haruki; Naruto, Shunsuke; Mizuta, Hiroyuki; Kadokawa, Toshiaki; and Kawashima, Katsuyoshi, to Dainippon Pharmaceutical Co., Ltd. 2-Cyclic amino-2-(1,2-benzisoxazol-3-yl)acetic acid ester derivatives, process for the preparation thereof and composition containing the same. 4,447,439, Cl. 424-267.000.

Nishioka, Jim Z. Projectile shooting guide for bows. 4,446,844, Cl. 124-41.00A.

Nishiura, Kiyotaka: *See—*
Matsumura, Toshimi; Fujisawa, Hideya; Omori, Norio; Arimura, Takashi; Yamazoe, Hisamitsu; and Nishiura, Kiyotaka, 4,446,832, Cl. 123-339.000.

Nishizawa, Hiroshi; Mukoyama, Yoshiyuki; and Kasai, Shozo, to Hitachi Chemical Co., Ltd. Method for preparing polyamide-imide resin. 4,447,589, Cl. 528-45.000.

Nishizawa, Kazunori: *See—*
Ito, Osamu; and Nishizawa, Kazunori, 4,447,240, Cl. 604-385.000.

Nishizawa, Toshizo: *See—*
Yamazaki, Kisuke; Iijima, Hitoshi; Matsuoka, Fumio; and Nishizawa, Toshizo, 4,446,704, Cl. 62-180.000.

Nissan Chemical Industries Ltd.: *See—*
Hoshiyama, Satoshi; Muto, Hiroyuki; Shinke, Shuzo; Otsuka, Kanji; Takigawa, Shinichiro; and Yamazaki, Hiroyuki, 4,447,661, Cl. 568-882.000.
Suzuki, Fumio; Fujikawa, Yoshihiro; Yamamoto, Susumu; Mizutani, Hidemi; Ohya, Tunehiko; Ikai, Takashi; and Oguchi, Toshihiko, 4,447,256, Cl. 71-86.000.

Nissan Motor Co., Ltd.: *See—*
Kasai, Yoshiaki; and Ohgami, Masaaki, 4,447,880, Cl. 364-431.050.
Kasuya, Hideo; and Endo, Hiroshi, 4,447,800, Cl. 340-904.000.
Kubozuka, Takao, 4,446,827, Cl. 123-195.00R.
Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Shioyama, Giichi, 4,446,840, Cl. 123-571.000.
Suzuki, Mikio; and Yamazaki, Masafumi, 4,446,838, Cl. 123-520.000.
Takahashi, Kotei, 4,446,755, Cl. 74-606.00R.
Yoneda, Kenji; Arai, Shoji; and Kunome, Yoshimi, 4,446,834, Cl. 123-440.000.

Nitto Chemical Industry Co., Ltd.: *See—*
Sasaki, Yutaka; and Nakamura, Yoshimi, 4,447,558, Cl. 502-215.000.

Niwa, Yoshiei, to Mitsubishi Denki Kabushiki Kaisha. Process and apparatus for high frequency discharge shaping of a workpiece by means of a rectangular bipolar pulsating voltage. 4,447,696, Cl. 219-69.00P.

Noda, Touru: *See—*
Uno, Akira; Noda, Touru; and Ninohira, Akira, 4,447,524, Cl. 430-538.000.

Noguchi, Hiroshi; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. N-Substituted phenyl-1-methylcyclopropanecarboxamides, and their herbicidal use. 4,447,260, Cl. 71-118.000.

Nohda, Masao, to Nippon Kogaku K.K. Automatic focusing device in a stereoscopic microscope. 4,447,717, Cl. 250-201.000.

Nolden, Werner, to American Standard, Inc. Wall mounted mixing valve. 4,446,885, Cl. 137-360.000.

Nomura, Kenji: *See—*
Ochiai, Yoshiki; Nomura, Kenji; Yamakage, Tetsuro; and Takashima, Toshiharu, 4,447,177, Cl. 408-161.000.

Nomura, Soichi: *See—*
Fujiso, Tokuo; Ohmori, Tadashi; and Nomura, Soichi, 4,447,553, Cl. 502-36.000.

Noon, Robert A.: *See—*
Kay, Ian T.; Bartholomew, David; Williams, Emyr G.; and Noon, Robert A., 4,447,446, Cl. 424-282.000.

Nordson Corporation: *See—*
Baker, Robert G., 4,447,707, Cl. 219-301.000.
Matt, Timothy S., 4,447,465, Cl. 427-10.000.

Norigoe, Takashi: *See—*
Ochiai, Kuniaki; Horii, Masami; and Norigoe, Takashi, 4,447,166, Cl. 400-124.000.

Noro, Masao; and Kasahara, Yoshiki, to Nippon Gakki Seizo Kabushiki Kaisha. Power supply changeover type power amplifier. 4,447,791, Cl. 330-297.000.

North American Philips Corporation: *See—*
Dunlap, Clifford E., 4,446,959, Cl. 198-382.000.

North Dakota State University: *See—*
Boudjouk, Philip R., 4,447,633, Cl. 556-479.000.

Northern Lights Trust: *See—*
Csongor, Desider G., 4,447,156, Cl. 366-80.000.

Northern Telecom Limited: *See—*
Moschopoulos, Anastasios, 4,447,741, Cl. 307-31.000.
Unterhoffer, Peter P.; and Dufresne, Gilles L., 4,446,655, Cl. 49-368.000.

Northrop Corporation: *See—*
Yunt, Fred W., 4,447,183, Cl. 411-57.000.

Notestein, John E.: *See—*
Shang, Jer-Yu; Notestein, John E.; Mei, Joseph S.; and Zeng, Li-Wen, 4,447,297, Cl. 202-99.000.

Nothaft, Eugene M., to Minnesota Mining and Manufacturing Company. Alarm data concentration and gathering system. 4,447,872, Cl. 364-200.000.

Novack, Robert L.: *See—*
Anouchi, Abraham Y.; Novack, Robert L.; and Tomasovic, Beth, 4,447,397, Cl. 422-94.000.

Novotny, Raymond J.; and Mulder, James P., to Abex Corporation. Dipper tip retaining pin. 4,446,638, Cl. 37-142.00A.

Nowell, Gilbert S.: *See—*
Slosberg, David K.; and Nowell, Gilbert S., 4,447,484, Cl. 428-137.000.

Nowell, Larry H.; and Halley, Robert, to United States of America, Navy. Single handed set-up apparatus. 4,446,624, Cl. 33-1.00C.

Nozaki, Shigeki: *See—*
Takemae, Yoshihiro; Enomoto, Seiji; Nozaki, Shigeki; Mezawa, Tsutomu; and Kabashima, Katsuhiko, 4,447,745, Cl. 307-269.000.

Nozaki, Toshikatsu: *See—*
Matsushita, Yukio; and Nozaki, Toshikatsu, 4,446,833, Cl. 123-435.000.

NRM Corporation: *See—*
Blosser, Virgil Y.; Isaksson, G. E.; Rupp, Dallas B.; and Singh, A. P., 4,447,385, Cl. 264-315.000.

Nugyen, On V.: *See—*
Jayadev, Tumkur S.; and Nugyen, On V., 4,447,277, Cl. 148-400.000.

Nyffeler, Corti AG: *See—*
Buri, Hermann; and Karth, Beat, 4,447,184, Cl. 413-26.000.

O & S Manufacturing Company: *See—*
Trudeau, William H.; Gaines, Donald R.; and Smallegan, Jon M., 4,447,094, Cl. 308-2.00R.

Oak Industries Inc.: *See—*
den Toonder, Pieter, 4,447,828, Cl. 358-118.000.

Oana, Yasuhisa; Yasuda, Nobuaki; Yamashita, Masato; and Ozawa, Norio, to Tokyo Shibaura Denki Kabushiki Kaisha. III-V Group compound semiconductor light-emitting element having a doped tantalum barrier layer. 4,447,825, Cl. 357-71.000.

Oberhauser, Peter: *See—*
Sarin, Vinod K.; and Oberhauser, Peter, 4,446,936, Cl. 175-410.000.

Oberwelland, Klaus: *See—*
Adolf, Lutz-Erdmut; and Oberwelland, Klaus, 4,447,202, Cl. 425-434.000.

Occidental Chemical Corporation: *See—*
Dannels, W. Andrew; and Bainbridge, Robert W., 4,447,386, Cl. 264-328.200.
McKaveney, James P., 4,447,492, Cl. 428-328.000.
Scharf, Daniel J.; Ilardo, Charles S.; Schwartz, Willis T.; and Salee, Gideon, 4,447,572, Cl. 524-371.000.

Ochiai, Kuniaki; Horii, Masami; and Norigoe, Takashi, to Tokyo Electric Co., Ltd. Printing head of dot printer. 4,447,166, Cl. 400-124.000.

Ochiai, Osamu, to Seiko Instruments & Electronics Ltd. Miniature GT-cut quartz resonator. 4,447,753, Cl. 310-312.000.

Ochiai, Yoshiki; Nomura, Kenji; Yamakage, Tetsuro; and Takashima, Toshiharu, to Toyoda Koki Kabushiki Kaisha. Tool holder with tool position compensating mechanism. 4,447,177, Cl. 408-161.000.

Oda, Keijiro: *See—*
Kishida, Katsuji; Oonishi, Masakazu; and Oda, Keijiro, 4,446,904, Cl. 152-356.00R.

O'Donnell, Derek: *See—*
Howard, Peter B.; and O'Donnell, Derek, 4,447,270, Cl. 106-300.000.
Howard, Peter B.; and O'Donnell, Derek, 4,447,271, Cl. 106-300.000.

Odstrchel, Gerald: *See—*
Ellis, James E.; Lidgard, Graham P.; Odstrchel, Gerald; and Riceberg, Louis J., 4,447,528, Cl. 435-7.000.

Oechsner, Hans, to Leybold Heraeus GmbH. Apparatus for the chemical analysis of samples. 4,447,724, Cl. 250-309.000.

Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, to Bayer Aktiengesellschaft. Phosphonoformaldehyde, a process for its preparation and its use as an intermediate product for the preparation of medicaments. 4,447,367, Cl. 260-502.40R.

O'Farrell, Charles P.: *See—*
Lundberg, Robert D.; Walker, Thad O.; O'Farrell, Charles P.; and Makowski, Henry S., deceased, 4,447,338, Cl. 252-8.50M.

Ogasawara, Akira, to Nippon Kogaku K. K. Automatic focus adjusting apparatus using weighted average means. 4,447,719, Cl. 250-204.000.

Ogawa, Kazufumi; Chikamura, Takao; and Shibata, Takuo, to Matsuchita Electric Industrial Co., Ltd. Solid-state image pickup element and process for fabricating the same. 4,447,720, Cl. 250-211.00J.

Ogawa, Tomoya: *See—*
Matsui, Masanao; and Ogawa, Tomoya, 4,447,605, Cl. 544-225.000.

Ogi, Katsumi: *See—*
Kimura, Etsuji; Ogi, Katsumi; Sato, Kazusuke; and Hashimoto, Mayuki, 4,447,045, Cl. 266-149.000.

Ogiso, Makoto: *See—*
Hidaka, Tsuneo; Inoue, Masahide; and Ogiso, Makoto, 4,447,210, Cl. 433-173.000.

Oguchi, Toshihiko; Kato, Hirohisa; and Yokoyama, Hirotaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for perpendicular magnetic recording medium. 4,447,467, Cl. 427-48.000.

Oguchi, Toshihiko: *See—*
Suzuki, Fumio; Fujikawa, Yoshihiro; Yamamoto, Susumu; Mizutani, Hidemi; Ohya, Tunehiko; Ikai, Takashi; and Oguchi, Toshihiko, 4,447,256, Cl. 71-86.000.

Ogura, Haruo; Furuhata, Kimio; Osawa, Toshiaki; Toyoshima, Satoshi; Shitori, Yoshiyasu; and Ito, Masayoshi, to Kanto Ishi Pharmaceutical Co., Ltd. N-Acetylneuraminic acid derivatives and the preparation thereof. 4,447,600, Cl. 536-23.000.

Ogura, Masahiro: *See—*
Watanabe, Kiyoshi; Ideguchi, Satoshi; Ogura, Masahiro; Shimada, Masahiko; and Kawaharada, Hajime, 4,447,362, Cl. 260-396.00R.

Ogura, Shunichiro; and Miyamoto, Masafumi, to Nippon Zeon Co., Ltd. Extractive distillation method. 4,447,318, Cl. 208-348.000.

O'Hara, Mark J.; and Johnson, Russell W., to UOP Inc. Hydrocarbon conversion catalyst and use thereof. 4,447,556, Cl. 502-74.000.

Ohashi, Shigeo; Nakamura, Tadashi; and Kamisada, Koji, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Small-sized push-button switch. 4,447,685, Cl. 200-67.00D.

Ohgami, Masaaki: *See—*
Kasai, Yoshiaki; and Ohgami, Masaaki, 4,447,880, Cl. 364-431.050.

Ohmori, Tadashi: *See—*
Fujiso, Tokuo; Ohmori, Tadashi; and Nomura, Soichi, 4,447,553, Cl. 502-36.000.

Ohmori, Takashi: *See—*
Kurata, Masami; Moriguchi, Fujio; Inui, Toshiharu; and Ohmori, Takashi, 4,447,832, Cl. 358-296.000.
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,447,819, Cl. 346-76.0PH.

Ohnishi, Haruo; Itoh, Chihiro; and Mochida, Ei, to Mochida Pharmaceutical Co., Ltd. Pharmaceutical composition and method for treatment of peptic ulcer. 4,447,437, Cl. 424-263.000.

Ohno, Hiroshi: *See—*
Nakada, Seiichi; Ohno, Hiroshi; Nishijima, Tsuneo; and Kawakami, Hiroshi, 4,446,595, Cl. 15-365.000.

Ohrnberger, Gerd: *See—*
Bauder, Armin; and Ohrnberger, Gerd, 4,446,828, Cl. 123-196.00R.

Ohshima, Takeshi: *See—*
Matsumoto, Michio; Kitamura, Masao; Ohta, Masataka; and Ohshima, Takeshi, 4,446,789, Cl. 101-93.040.

Ohta, Masataka: *See—*
Matsumoto, Michio; Kitamura, Masao; Ohta, Masataka; and Ohshima, Takeshi, 4,446,789, Cl. 101-93.040.

Ohtsu, Takaji: *See—*
Soneda, Mitsuo; and Ohtsu, Takaji, 4,447,812, Cl. 340-784.000.

Ohya, Tunehiko: *See—*
Suzuki, Fumio; Fujikawa, Yoshihiro; Yamamoto, Susumu; Mizutani, Hidemi; Ohya, Tunehiko; Ikai, Takashi; and Oguchi, Toshihiko, 4,447,256, Cl. 71-86.000.

Ohyama, Hiroshi; Takada, Sanae; Morita, Ken; and Yamamura, Saburo, to Hokko Chemical Industry Co., Ltd. 2-(Substituted phenoxy)propionic acid derivatives and their uses for herbicidal purposes. 4,447,259, Cl. 71-94.000.

Oikawa, Yasunobu: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.

Ojala, Jon R.: *See—*
Rainford, Robert E.; Moser, Mark M.; and Ojala, Jon R., 4,447,152, Cl. 356-237.000.

Okada, Kunihiro: *See—*
Kodama, Kazuyuki; Endo, Takeyuki; Okada, Kunihiro; and Shibuya, Yasutaka, 4,447,809, Cl. 340-747.000.

Okamoto, Takanori: *See—*
Kanaoka, Kunio; Okamoto, Takanori; and Matsuda, Hideaki, 4,447,563, Cl. 523-176.000.

Okane, Isao: *See—*
Shigeru, Kitahara; Okane, Isao; Shirai, Katsuyuki; and Morimura, Tosio, 4,447,501, Cl. 428-570.000.

Okubo, Noboru: *See—*
Omae, Yoshihiro; Okubo, Noboru; Sigyo, Keiichi; Nakajima, Hideo; Fukui, Hiroaki; Yamada, Toshio; and Honda, Hideyuki, 4,447,805, Cl. 340-539.000.

Okubo, Shigeo, to Design Professionals Financial Corporation. Stress control in solid materials. 4,446,733, Cl. 73-579.000.

Okura Kogyo Kabushiki Kaisha: *See—*
Kanaoka, Kunio; Okamoto, Takanori; and Matsuda, Hideaki, 4,447,563, Cl. 523-176.000.

Okuyama, Katsuo: *See—*
Takahashi, Yoshihiro; Okuyama, Katsuo; and Matsukuma, Yutaka, 4,447,856, Cl. 361-383.000.

O'Laughlin, Richard L.: *See—*
Wang, Yu-Chang J.; Dursch, Friedrich; O'Laughlin, Richard L.; and Prusik, Thaddeus, 4,447,426, Cl. 424-243.000.

Olin Corporation: *See—*
Ungarean, Gary L.; and Yarwood, John C., 4,446,908, Cl. 164-452.000.
Whitman, Hobart A., III, 4,447,709, Cl. 219-384.000.
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., 4,446,909, Cl. 164-453.000.

Oliver, Robert; and Branscombe, Richard, to E & J Gallo Winery. Bottle cork extractor. 4,446,980, Cl. 215-276.000.

Olivera, Baldomero M.; Cruz, Lourdes J.; Gray, William R.; and Rivier, Jean E. F. Conotoxins. 4,447,356, Cl. 260-112.50R.

Olsen, Roger F., to Incom International Inc. Multiple-type cable mounting apparatus and method. 4,447,032, Cl. 248-558.000.

Olsson, Knut G.: *See—*
Bjork, Anders K. K.; Olsson, Knut G.; Abramo, Aina L.; and Christensson, Erik G., 4,447,433, Cl. 424-250.000.

Olympus Optical Co., Ltd.: *See—*
Kano, Tokio, 4,447,396, Cl. 422-73.000.
Kato, Toshikazu, 4,447,838, Cl. 360-96.500.
Tanikawa, Kowji, 4,447,160, Cl. 368-34.000.

Omae, Yoshihiro; Okubo, Noboru; Sigyo, Keiichi; Nakajima, Hideo; Fukui, Hiroaki; Yamada, Toshio; and Honda, Hideyuki, to Mitsubishi Kasei Kogyo Kabushiki Kaisha. Apparatus for measuring temperature of coke ovens. 4,447,805, Cl. 340-539.000.

Omori, Norio: *See—*
Matsumura, Toshimi; Fujisawa, Hideya; Omori, Norio; Arimura, Takashi; Yamazoe, Hisamitsu; and Nishiura, Kiyotaka, 4,446,832, Cl. 123-339.000.

Oonishi, Masakazu: *See—*
Kishida, Katsuji; Oonishi, Masakazu; and Oda, Keijiro, 4,446,904, Cl. 152-356.00R.

O'Pray, Bruce L., to Control Resources Corporation. Programmable bus for the control of electronic apparatus. 4,447,813, Cl. 340-825.100.

Oreco III, Inc.: *See—*
Evans, Orde R., 4,447,076, Cl. 285-55.000.

Orion Industries, Inc.: *See—*
Nguyen, Liem; Segal, William J.; and Friend, Kent, 4,447,091, Cl. 301-37.0AT.

Orthner, Carolyn L.: *See—*
Menache-Aronson, Doris; Kosow, David P.; Orthner, Carolyn L.; and Behre, H. Evan, 4,447,416, Cl. 424-101.000.

Osaka Taiyo Co., Ltd.: *See—*
Fujita, Hiromu, 4,447,041, Cl. 254-9.00R.

Osawa, Toshiaki: *See—*
Ogura, Haruo; Furuhata, Kimio; Osawa, Toshiaki; Toyoshima, Satoshi; Shitori, Yoshiyasu; and Ito, Masayoshi, 4,447,600, Cl. 536-23.000.

Osborn, Thomas W., III, to Procter & Gamble Company, The. Process for making absorbent tissue paper with high wet strength and low dry strength. 4,447,294, Cl. 162-158.000.

Oshima, Yutaka. Ivorylike material for keys of musical instruments and method for producing same. 4,447,268, Cl. 106-148.000.

Osthaus, Georg: *See—*
Zucker, Friedrich J.; and Osthaus, Georg, 4,447,535, Cl. 435-162.000.

Otani, Toshihisa: *See—*
Ushio, Tetsuji; Tatsuguchi, Satoru; Otani, Toshihisa; Tani, Hoshiro; and Yabe, Tetsuo, 4,447,306, Cl. 204-224.00R.

Otisca Industries, Ltd.: *See—*
Smith, Clay D.; and Keller, Douglas V., Jr., 4,447,245, Cl. 44-1.0SR.

Otsuka, Kanji: *See—*
Hoshiyama, Satoshi; Muto, Hiroyuki; Shinke, Shuzo; Otsuka, Kanji; Takigawa, Shinichiro; and Yamazaki, Hiroyuki, 4,447,661, Cl. 568-882.000.

Ott, David A., to Milliken Research Corporation. Carpet display rack. 4,446,974, Cl. 211-45.000.

Otte, Heinz: *See—*
Otte, Wolf-Dieter; Otte, Heinz; Schider, Siegfried; and Wiesner, Otto, 4,446,857, Cl. 128-92.0BC.

Otte, Wolf-Dieter; Otte, Heinz; Schider, Siegfried; and Wiesner, Otto, to Schwarzkopf Development Corporation. Medullary nail and process for the production thereof. 4,446,857, Cl. 128-92.0BC.

Oude Alink, Bernardus A., to Petrolite Corporation. Hydroxy and hydroperoxy tetrahydropyrimidines. 4,447,606, Cl. 544-231.000.

Oudelaar, Tone, to Applied Power Inc. Tiltcab truck with hydraulic lost motion. 4,446,939, Cl. 180-89.150.

Outboard Marine Corporation: *See—*
Henrich, Donald A., 4,447,214, Cl. 440-66.000.

Overy, Colin: *See—*
Dynie, Ernest R.; and Overy, Colin, 4,446,681, Cl. 56-16.700.

Owens-Corning Fiberglas Corporation: *See—*
Bhatti, Mohinder S., 4,447,248, Cl. 65-2.000.
Grubka, Lawrence J., 4,447,250, Cl. 65-11.100.
Kopena, David M., 4,447,249, Cl. 65-4.400.
Shannon, Richard F.; and Helser, Jerry L., 4,447,380, Cl. 264-82.000.

Owens-Illinois, Inc.: *See—*
Zauner, Otto; and Bender, Fred, 4,446,960, Cl. 198-408.000.

Owsely, Herbert B.: *See—*
Bunn, Stuart E.; and Owsely, Herbert B., 4,447,193, Cl. 417-441.000.

Oxenrider, Bryce C.; and Long, David J., to Allied Corporation. Fluorinated and non-fluorinated siloxy pyromellitates. 4,447,629, Cl. 556-419.000.

Ozaki, Yoshio: *See—*
Tsurumoto, Kazuo; and Ozaki, Yoshio, 4,447,713, Cl. 219-69.00G.

Ozawa, Chiaki: *See—*
Azuma, Yusaku; Kitayama, Yoshifumi; and Ozawa, Chiaki, 4,447,014, Cl. 242-55.000.

Ozawa, Norio: *See—*
Oana, Yasuhisa; Yasuda, Nobuaki; Yamashita, Masato; and Ozawa, Norio, 4,447,825, Cl. 357-71.000.

Ozen Corporation: *See—*
Koike, Eishi, 4,447,898, Cl. 369-65.000.

Page, Edward A.; and Babel, Carl R., to Ensco Inc. Fiber optic security system including a fiber optic seal and an electronic verifier. 4,447,123, Cl. 350-96.240.

Paglotke, Karlheinz: *See—*
Bukowiecki, Stanislaw; and Paglotke, Karlheinz, 4,446,718, Cl. 73-23.000.

Palmer, John H., to Ramer Test Tools, Inc. Fitting for smooth wall tubes. 4,447,077, Cl. 285-104.000.

Panuska, Andrew J.; Santana, Manuel R.; and Sprow, Robert B., to AT&T Technologies, Inc.; and AT&T Bell Laboratories. Methods of and apparatus for controlling core-to-sheath length ratio in lightguide fiber cable and cable produced by the methods. 4,446,686, Cl. 57-6.000.

Paquette, Elmer G.: *See—*
Dunn, Stanley A.; Pomplun, Alan R.; Paquette, Elmer G.; Ethridge, Edwin C.; and Johnson, Jerry. L., 4,447,251, Cl. 65-142.000.

Parker, Dane K., to Goodyear Tire & Rubber Company, The. Polymer bound aryl substituted crown ethers. 4,447,585, Cl. 525-339.200.

Parker, Dane K.; and Sabo, Timothy A., to Goodyear Tire & Rubber Company, The. Process for the dehalogenation of organic compounds. 4,447,667, Cl. 585-469.000.

Parker-Hannifin Corporation: *See—*
Mayfield, William B., 4,447,233, Cl. 604-152.000.
Mayfield, William B., 4,447,234, Cl. 604-151.000.

Parker, Ray, to Thatchcode Limited T/A Flexiform. Preventing toppling of cabinets or other furniture. 4,447,098, Cl. 312-216.000.

Parker, Theodore L.: *See—*
Caskey, Terrence L.; Parker, Theodore L.; and Martin, Patrick H., 4,447,598, Cl. 528-489.000.

Parks, Leon C.: *See—*
Frisch, Eldon E.; and Parks, Leon C., 4,447,237, Cl. 604-175.000.

Parrott, Stephen L.; and Myers, John W., to Phillips Petroleum Company. Hydrocracking catalysts. 4,447,555, Cl. 502-74.000.

Pask, George: *See—*
Pidcock, Anthony; and Pask, George, 4,446,693, Cl. 60-39.320.
Patel, Bhupendra C., to Kendall Company, The. Catheter. 4,447,228, Cl. 604-103.000.
Patel, Parsotam T.: *See—*
Bergeron, David L.; and Patel, Parsotam T., 4,446,611, Cl. 29-578.000.
Paul, Herman L., Jr., to Continental Disc Corporation. End loaded valve. 4,446,883, Cl. 137-315.000.
Paul, Rolf, to American Cyanamid Company. Substituted-6-n-propyl-8-methylimidazo[1,5-d]-as-triazin-4-(3H)-ones. 4,447,603, Cl. 544-184.000.
Pauley, General J., to Gala Industries, Inc. Vertical pre-dewatering screen. 4,447,325, Cl. 210-295.000.
Pauli, George B.: *See—*
Smith, Donald C.; Snow, Richard F.; and Pauli, George B., 4,447,864, Cl. 362-311.000.
Pavlik, Norman M.: *See—*
Sefko, John; and Pavlik, Norman M., 4,447,795, Cl. 336-178.000.
Payet, George L.: *See—*
Hendrix, James E.; and Payet, George L., 4,447,241, Cl. 8-116.400.
Payne, Roger A.: *See—*
Gray, Herbert W.; and Payne, Roger A., 4,447,378, Cl. 264-45.900.
PCUK Produits Chimiques Ugine Kuhlmann: *See—*
Jouannetaud, Marie-Paule; Gesson, Jean-Pierre; and Jacquesy, Jean-Claude, 4,447,660, Cl. 568-774.000.
Pearson, Arthur D.: *See—*
Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,447,125, Cl. 350-96.300.
Pedersen, Vernon G., to Dacor Corporation. Breathing apparatus. 4,446,859, Cl. 128-204.260.
Peeters, Hermann, to Dynamit Nobel AG. Method of preparing 2-alkoxy-4-aminopyrimidines. 4,447,609, Cl. 544-317.000.
Pence, Dallas T.; and Chou, Chun-Chao, to United States of America, Energy. Method for treating a nuclear process off-gas stream. 4,447,353, Cl. 252-630.000.
Perfecto, Inc.: *See—*
Enberg, Erik R.; and Plank, J. Douglas, 4,447,016, Cl. 242-56.900.
Perkam Limited: *See—*
Biss, Edgar L., 4,447,885, Cl. 364-568.000.
Perkin-Elmer Corp., The: *See—*
Quick, Donald L., 4,447,783, Cl. 323-275.000.
Perkins, Ezra C.; and Connolly, Ronald G. Joint treatment. 4,446,578, Cl. 3-1.910.
Perl, Ludovic; and Szabo, Bill, to Herder, N.V. Cabinet assembly system. 4,447,096, Cl. 312-111.000.
Persson, Bengt. Arrangement in angle rulers for improving fixture of an angularly adjustable blade of said rulers to the stock thereof in selected blade positions relative thereto. 4,446,627, Cl. 33-497.000.
Persson, John A., to Lectromelt Corporation. Arc furnace for producing aluminum. 4,447,906, Cl. 373-72.000.
Pesch, Karl, to Rohm GmbH. Chuck with safety cutout. 4,447,180, Cl. 409-232.000.
Peters, John W., to Hughes Aircraft Company. Process for forming sulfide layers by photochemical vapor deposition. 4,447,469, Cl. 427-54.100.
Peterson, John F.; and Bartlett, Allen J., to Helix Technology Corporation. Multiport cryopump. 4,446,702, Cl. 62-55.500.
Peterson, Kenneth E. Toilet tissue dispensing device. 4,447,015, Cl. 242-55.200.
Peterson, Robert L., to Galson Research Corporation. Methods for decontaminating soil. 4,447,541, Cl. 435-264.000.
Peterson, Wesley R., to Singer Company, The. Fabric repairing tool with cylindrical sheet metal cutter. 4,446,621, Cl. 30-241.000.
Petro-Drive, Inc.: *See—*
Hipp, James, 4,446,932, Cl. 175-74.000.
Petrolite Corporation: *See—*
Oude Alink, Bernardus A., 4,447,606, Cl. 544-231.000.
Petty, David C.: *See—*
Harris, William J.; Jackson, Joseph M.; and Petty, David C., 4,447,676, Cl. 179-90.0BD.
Petty-Weeks, Bruce: *See—*
Donohue, John A.; Knobloch, James O.; Petty-Weeks, Bruce; and Cerefice, Steven A., 4,447,645, Cl. 562-473.000.
Phelps, Douglas W., Jr.: *See—*
Marks, Robert; Phelps, Douglas W., Jr.; and Ward, William C., 4,447,857, Cl. 361-395.000.
Philibert, Daniel: *See—*
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deradt, Roger, 4,447,424, Cl. 424-238.000.
Phillips Petroleum Company: *See—*
Casperson, John R.; and Hann, Paul D., 4,447,401, Cl. 422-151.000.
Hitzman, Donald O., 4,446,919, Cl. 166-246.000.
Mathis, Ronald D.; and Reed, Jerry A., 4,447,597, Cl. 528-388.000.
Murtha, Timothy P.; and Zuech, Ernest A., 4,447,554, Cl. 502-73.000.
Parrott, Stephen L.; and Myers, John W., 4,447,555, Cl. 502-74.000.
Smith, Clifford E.; Mark, Harold W.; Louthan, Rector P.; and Efner, Howard F., 4,447,246, Cl. 144-57.000.
Pidcock, Anthony; and Pask, George, to Rolls-Royce Limited. Wall structure for a combustion chamber. 4,446,693, Cl. 60-39.320.
Piersol, Jay L., to Armstrong World Industries, Inc. Low density fibrous sheet material. 4,447,560, Cl. 521-68.000.
Pillis, Lewis J.; and Davis, Lois T., to Sybron Corporation. Microorganism capable of degrading phenolics. 4,447,539, Cl. 435-253.000.
Pillow, Dan L., to Dresser Industries, Inc. Fluid operated rock drill hammer. 4,446,929, Cl. 173-17.000.
Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Tokorozawa, Sadao, 4,446,993, Cl. 222-214.000.
Pinschmidt, Robert K., Jr.: *See—*
Cook, Gerald R.; Iacoviello, John G.; Pinschmidt, Robert K., Jr.; and Davidowich, George, 4,447,570, Cl. 524-127.000.
Pitney Bowes Inc.: *See—*
Duwell, Edward C.; and Jones, Howell A., Jr., 4,447,890, Cl. 364-900.000.
Hatzis, Van, 4,447,148, Cl. 355-75.000.
Plank, J. Douglas: *See—*
Enberg, Erik R.; and Plank, J. Douglas, 4,447,016, Cl. 242-56.900.
Plastona (John Waddington) Ltd.: *See—*
Harrison, Peter; and Gaunt, Thomas N., 4,447,479, Cl. 428-35.000.
Platmanufaktur AB: *See—*
Sallnert, Kjell; Fridh, Carl-Erik; and Hansson, Manfred, 4,446,710, Cl. 72-10.000.
Polen, Karl L.: *See—*
Kinkopf, Edward J.; and Polen, Karl L., 4,446,813, Cl. 118-72.000.
Pollington, Warren J.: *See—*
Davis, Arthur M.; and Pollington, Warren J., 4,447,188, Cl. 415-115.000.
Polychrome Corporation: *See—*
Rowe, William; Golda, Eugene; and Wilkes, Alan, 4,447,512, Cl. 430-17.000.
Pomplun, Alan R.: *See—*
Dunn, Stanley A.; Pomplun, Alan R.; Paquette, Elmer G.; Ethridge, Edwin C.; and Johnson, Jerry. L., 4,447,251, Cl. 65-142.000.
Porenski, Harry S., Jr., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,446,878, Cl. 131-336.000.
Positioning Devices, Inc.: *See—*
Souder, James J., Jr.; Scarborough, Edward D., Jr.; Fox, Merlin D.; Rettich, Donald R.; and Mason, Robert L., 4,447,031, Cl. 248-280.100.
Post Office, The: *See—*
Davies, Graham J.; Heckingbottom, Roger; and Andrews, David A., 4,447,276, Cl. 148-175.000.
PPG Industries, Inc.: *See—*
Franz, Helmut; Duffer, Paul F.; and Kelly, Joseph D., 4,447,496, Cl. 428-432.000.
Precision Machine Products, Inc.: *See—*
Clingman, William H.; and Hall, Kenneth R., 4,446,748, Cl. 73-863.030.
Precitronic Gesellschaft fur Feinmechanik und Electronic mbH: *See—*
Kern, Bernd M.; and Hasse, Werner, 4,447,211, Cl. 434-12.000.
Prescher, Gunter: *See—*
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, 4,447,614, Cl. 546-316.000.
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Prescher, Gunter, 4,447,615, Cl. 546-317.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for selective formation of C4 compounds and thiol-containing catalyst system used therein. 4,447,557, Cl. 502-161.000.
Prew, Stanley, to Koppers Company, Inc. Plate adjustment system. 4,447,011, Cl. 241-37.000.
Price, Edwin A. Kitchen chopping board. 4,447,051, Cl. 269-302.100.
Price, Stephen J.; and Hargreaves, Charles R., to Honeywell Inc. Metallic projectile body and thermoplastic rotating band. 4,446,795, Cl. 102-527.000.
Price, William L.; Murtha, John C.; Ross, James A., Jr.; Adam, Clyde E.; and Lucas, Kenneth R., to Westinghouse Electric Corp. Input-output buffers for a digital signal processing system. 4,447,873, Cl. 364-200.000.
Prince Corporation: *See—*
Marcus, Konrad H., 4,447,808, Cl. 340-696.000.
Pritikin, Nathan. Solid photoresist and method of making photoresist. 4,447,519, Cl. 430-275.000.
Pritsch, Eckhard: *See—*
Mundt, Johann; Kasper, Horst; and Pritsch, Eckhard, 4,447,788, Cl. 318-799.000.
Probst, Heinz: *See—*
Martini, Thomas; Schinzel, Erich; Frischkorn, Hans; Friedrich, Herbert; and Probst, Heinz, 4,447,350, Cl. 252-301.220.
Procter & Gamble Company, The: *See—*
Chappell, Charles W.; and Spletzer, Eldon G., 4,447,373, Cl. 264-4.000.
Loos, Patricia J.; Fuqua, Debra L.; and Drzewiecki, Paul J., 4,447,461, Cl. 426-589.000.
Osborn, Thomas W., III, 4,447,294, Cl. 162-158.000.
Tafuri, Michael W.; and Tao, Bernard Y., 4,447,462, Cl. 426-601.000.
Prometag AG: *See—*
Mewes, Claus J., 4,446,675, Cl. 53-535.000.
Proper, Frederick T.: *See—*
Stover, Richard W.; Proper, Frederick T.; and Young, Steven A., 4,447,061, Cl. 277-1.000.
Prosl, Frank R.: *See—*
DeCant, Leonard J., Jr.; Idriss, Samir F.; and Prosl, Frank R., 4,447,224, Cl. 604-67.000.
Prudhon, Francois; and Scicluna, Augustin, to Rhone-Poulenc Industries. Intimate contacting/separating of plural phases. 4,447,331, Cl. 210-721.000.

Prusik, Thaddeus: *See—*
Wang, Yu-Chang J.; Dursch, Friedrich; O'Laughlin, Richard L.; and Prusik, Thaddeus, 4,447,426, Cl. 424-243.000.
Prvni brnenska strojirna, narodni podnik: *See—*
Sirokorad, Jurij; and Vecera, Jiri, 4,446,741, Cl. 73-654.000.
Puchades, Jesus E. B.: *See—*
Spickett, Robert G. W.; Mauri, Jacinto M.; and Puchades, Jesus E. B., 4,447,417, Cl. 424-156.000.
Pugliese, Vincent; and Farcy, Jean-Claude, to Compagnie General d'Electricite. Laser amplifier. 4,447,789, Cl. 330-4.300.
Punako, Stephen; Davis, Alan L.; and Eifler, Raymond J., to Bendix Corporation, The. Socket contact for an electrical connector. 4,447,110, Cl. 339-262.0RR.
Puritz, E.: *See—*
Reidick, H.; Leithner, R.; Kirchhoff, F. J.; Puritz, E.; and Schluter, S., 4,446,911, Cl. 165-4.000.
Putt, Ronald A.; and Attia, Alan I., to Gould Inc. Method of treating thermoplastic surfaces. 4,447,471, Cl. 427-98.000.
Putz, John M.: *See—*
VanHorn, David D.; Putz, John M.; and Henderson, Alfred J., Jr., 4,447,865, Cl. 362-305.000.
Puvogel, Timothy J.; King, James D.; and Moore, David O., to Henny Penny Corporation. Food holding cabinet with stabilized air flow. 4,446,780, Cl. 99-480.000.
QMI Corporation: *See—*
Keable, John B., 4,447,468, Cl. 427-54.100.
Quadro, Giuseppe, to Ausonia Farmaceutici s.r.l. Thiazole derivative, and pharmaceutical compositions containing it. 4,447,419, Cl. 424-177.000.
Quella, Ferdinand; and Schmidt, Hans-Friedrich, to Siemens Aktiengesellschaft. Stabilized sulfur-containing resins, such as polyphenylene sulfide and method of producing same. 4,447,581, Cl. 525-189.000.
Quest Medical, Inc.: *See—*
Gula, John A.; Brady, John D.; Thompson, Thomas C.; and Alt, Joyce M., 4,447,230, Cl. 604-122.000.
Quick, Donald L., to Perkin-Elmer Corp., The. Programmable RF power regulator (stabilizer). 4,447,783, Cl. 323-275.000.
Quigley, Robert E., to American Seating Company. Automatic seating for telescoping row systems. 4,446,659, Cl. 52-9.000.
Quinn, David R., to Cordis Corporation. Infusion catheter system. 4,447,236, Cl. 604-169.000.
Quinn, Donald J.: *See—*
Davis, Larry A.; Boyce, Gregory H.; Mulloy, Timothy P.; Nebeker, Neil J.; Newman, Elmer C.; Quinn, Donald J.; and Adamson, David L., 4,447,307, Cl. 204-267.000.
Quintex Research International, Inc.: *See—*
Smith, George E., 4,446,730, Cl. 73-301.000.
Quist, Theodore M.: *See—*
Marcus, Stephen; and Quist, Theodore M., 4,447,149, Cl. 356-5.000.
Racal-Mesl Microwave Limited: *See—*
Gray, William P., 4,447,793, Cl. 333-106.000.
Raczynski, Walter V., to Inverse Square Systems Incorporated. Modular flash system. 4,447,859, Cl. 362-13.000.
Rader, Homer J., Jr. Take-up reel with controlled rewind velocity. 4,446,884, Cl. 137-355.230.
Rainford, Robert E.; Moser, Mark M.; and Ojala, Jon R., to International Business Machines Corporation. Method and apparatus for detecting defects in apertured plates. 4,447,152, Cl. 356-237.000.
Rairden, John R., III: *See—*
Jackson, Melvin R.; and Rairden, John R., III, 4,447,466, Cl. 427-34.000.
Ramer Test Tools, Inc.: *See—*
Palmer, John H., 4,447,077, Cl. 285-104.000.
Rametta, Anthony J., to Minnesota Mining & Manufacturing Company. Anaerobically-curing compositions. 4,447,588, Cl. 526-301.000.
Ransburg Corporation: *See—*
Allen, Harold T., 4,447,008, Cl. 239-214.130.
Rao, Chatty: *See—*
Hilbrans, Hermann; and Rao, Chatty, 4,447,261, Cl. 75-5.000.
Rasmussen, Jerald K.: *See—*
Driscoll, William A.; Heilmann, Steven M.; and Rasmussen, Jerald K., 4,447,493, Cl. 428-332.000.
Ratchford, Lloyd G.: *See—*
Werth, Dee A.; and Ratchford, Lloyd G., 4,447,103, Cl. 339-94.00M.
Rau, Karlheinz: *See—*
Christiansen, Uwe; Rau, Karlheinz; Steinkohl, Anton; and Streb, Bruno, 4,447,130, Cl. 350-310.000.
Raudat, John L., to Standard-Knapp, Inc. Method for drop packing small unstable articles. 4,446,672, Cl. 53-448.000.
Ray, Suprabhat: *See—*
Salman, Mohammad; Ray, Suprabhat; Kamboj, Ved P.; and Anand, Nitya, 4,447,622, Cl. 548-525.000.
Rayburn, Robert L.: *See—*
Watson, Robert L.; and Rayburn, Robert L., 4,446,864, Cl. 128-207.140.
Raynal, Serge: *See—*
Bergeret, Wilfrid; Gautier, Jean-Claude; Raynal, Serge; and Boileau, Sylvie, 4,447,584, Cl. 525-340.000.
RCA Corporation: *See—*
Faulkner, Richard D.; Henry, Dale V.; and Muth, David L., 4,447,758, Cl. 313-532.000.
Kurina, Miles J.; and Thornhill, John, 4,447,816, Cl. 343-877.000.
Lewis, Henry G., Jr.; and Eliscu, Steven M., 4,447,826, Cl. 358-27.000.
Matey, James R., 4,447,381, Cl. 264-107.000.
Reaver, Marvin G., Jr.: *See—*
Hagan, Edward F.; and Reaver, Marvin G., Jr., 4,446,625, Cl. 33-184.500.
Redmon, Billy L.; and Forester, Buford G., to Custom Oilfield Products, Inc. Variable high pressure choke. 4,446,887, Cl. 137-556.000.
Redwine, Michael A.: *See—*
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilborn, Fredrick A., 4,446,586, Cl. 4-555.000.
Reeb, Irvin H., Jr.; and Beckhardt, Robert L., to Black & Decker Inc. Cordless electric device having contact increasing means. 4,447,749, Cl. 310-71.000.
Reed, Claude A., to International Food Equipment, Inc. Apparatus for heating food products. 4,446,775, Cl. 99-353.000.
Reed, Jerry A.: *See—*
Mathis, Ronald D.; and Reed, Jerry A., 4,447,597, Cl. 528-388.000.
Reed, Leonard W.; Barr, Robert M. S.; and Dick, David A., to Metal Box Limited. Apparatus for making thermoplastics articles. 4,447,199, Cl. 425-182.000.
Reed Lignin, Inc.: *See—*
Detroit, William J., 4,447,339, Cl. 252-8.50A.
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilborn, Fredrick A., to Silchor. Apparatus and method for bathing invalids. 4,446,586, Cl. 4-555.000.
Reed Tool Company (Delaware): *See—*
Schumacher, Percy W., Jr., 4,446,935, Cl. 175-329.000.
Reefer Express Lines Pty., Ltd.: *See—*
Sugahara, Byron M.; Freelund, Avrum A.; and Zinger, George, 4,446,805, Cl. 114-76.000.
Reese, Morris T.: *See—*
MacNamee, Richard W.; Reese, Morris T.; and Blase, Emil F., 4,447,346, Cl. 252-62.200.
Reeves, Charles R., to Conver Corporation. Supplement to cross regulation in DC to DC converters. 4,447,866, Cl. 363-21.000.
Reid, Peter, to Westland plc. Apparatus for mounting a device above a helicopter rotor. 4,447,023, Cl. 244-17.110.
Reidick, H.; Leithner, R.; Kirchhoff, F. J.; Puritz, E.; and Schluter, S., to Apparatebau Rothemuhle Brandt & Kritzler GmbH. Regenerative preheater for two separate gas streams. 4,446,911, Cl. 165-4.000.
Reinersmann, Hans H.: *See—*
Kotzur, Joachim; Reinersmann, Hans H.; Albers, Rolf; Aschenbruck, Emil; and Neuhaus, Gunter, 4,447,063, Cl. 277-80.000.
Reinhardt, Rudolf: *See—*
Galtz, Rudiger; and Reinhardt, Rudolf, 4,447,187, Cl. 415-53.00R.
Rempel, William; and Kor, Bouko J., to Canadian CoOperative Implements Limited. Knife drive. 4,446,683, Cl. 56-296.000.
Renfro, Vernon E.; Gudgeon, Ronald L.; Clelland, John P.; and Cole, Clyde C., to United States of America, Navy. Aircraft loading adapter for use with ordnance lift vehicle. 4,447,186, Cl. 414-589.000.
Renga, James M., to Dow Chemical Company, The. Methylene coupling of aromatics. 4,447,650, Cl. 568-640.000.
Renner, Elmer J., to Allis-Chalmers Corporation. Return chain roller support for en masse conveyor. 4,446,963, Cl. 198-735.000.
Repro-Med Systems, Inc.: *See—*
Sealfon, Andrew; and Yurdin, Carl, 4,447,232, Cl. 604-134.000.
Research Against Cancer, Inc.: *See—*
Frisch, Eldon E.; and Parks, Leon C., 4,447,237, Cl. 604-175.000.
Research Hildings Pty. Limited: *See—*
Matkan, Josef, 4,447,516, Cl. 430-109.000.
Rettich, Donald R.: *See—*
Souder, James J., Jr.; Scarborough, Edward D., Jr.; Fox, Merlin D.; Rettich, Donald R.; and Mason, Robert L., 4,447,031, Cl. 248-280.100.
Reum, Helmut: *See—*
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; Sellmaier, Franz; and Reum, Helmut, 4,446,723, Cl. 73-35.000.
Reuter, Helmut: *See—*
Moebus, Otto; Teuber, Michael; and Reuter, Helmut, 4,447,534, Cl. 435-161.000.
Reuther, Wolfgang; and Borck, Hans-Volker, to BASF Aktiengesellschaft. Wood preservative. 4,447,448, Cl. 424-285.000.
Rheinhold & Mahla Dammstoffe GmbH: *See—*
Ventker, Heinz; and Wendlinger, Fred, 4,447,490, Cl. 428-285.000.
Rheinische Braunkohlenwerke AG: *See—*
Lazik, Paul, 4,447,319, Cl. 209-11.000.
Rhone-Poulenc Agrochimie: *See—*
Lee, Guang-Huei, 4,447,634, Cl. 560-13.000.
Rhone-Poulenc Industries: *See—*
Faure, Alphonse; and Magne, Robert, 4,447,631, Cl. 556-469.000.
Prudhon, Francois; and Scicluna, Augustin, 4,447,331, Cl. 210-721.000.
Rice, Richard W.: *See—*
Fung, Shun C.; and Rice, Richard W., 4,447,551, Cl. 502-37.000.
Riceberg, Louis J.: *See—*
Ellis, James E.; Lidgard, Graham P.; Odstrchel, Gerald; and Riceberg, Louis J., 4,447,528, Cl. 435-7.000.
Richmann, Harold L.: *See—*
Breuker, Stephen J.; and Richmann, Harold L., 4,447,775, Cl. 324-438.000.
Rickman, James D., Jr. Selected segment heating or cooling system. 4,446,912, Cl. 165-12.000.
Ricoh Company, Ltd.: *See—*
Yuasa, Kazuhiro; and Furukawa, Noboru, 4,447,821, Cl. 346-154.000.

Riede, Gerhard; and Christopherson, Kjell H. I., to Gambro AG. Device for the diffusion of substances between two fluids via semipermeable membranes. 4,447,326, Cl. 210-321.300.

Riegert, Hermann: *See—*
Arndt, Manfred; Breier, Walter; Riegert, Hermann; Schmidt, Heinz; Schwarz, Hermann; and Warneke, Helmut, 4,446,978, Cl. 215-13.00R.

Rigterink, Preston D., to Chore-Time Equipment, Inc. Hanger for conveyor tubes and the like. 4,446,818, Cl. 119-52.0AF.

Rikagaku Kenkyusho: *See—*
Matsui, Masanao; and Ogawa, Tomoya, 4,447,605, Cl. 544-225.000.

Riley, Terence J.: *See—*
Hartman, Adrian R.; Kohl, James E.; MacPherson, William F.; and Riley, Terence J., 4,447,744, Cl. 307-252.00R.

Rines, Carol M.; and Marshall, Duane. Bottom margin indicator apparatus for typewriters and the like. 4,447,168, Cl. 400-708.000.

Rines, Robert H., to Academy of Applied Science, Inc., The. Method of and apparatus for combined optical and sonar detection and recording of objects. 4,447,896, Cl. 367-96.000.

Rippstein, Wayland J., Jr., to Aviation Chemical, Inc. Drift influencing composition. 4,447,413, Cl. 424-78.000.

Rittaler, Konstantin: *See—*
Fieber, Werner H.; Hinze, Klaus; Huth, Manfred K. O.; Jost, Hans-Georg; Lamm, Klaus D.; Michalski, Dieter; and Rittaler, Konstantin, 4,447,686, Cl. 200-153.00J.

Rittmann, Friedrich: *See—*
Zollner, Dieter H.; Lauterbach-Dammler, Inge; and Rittmann, Friedrich, 4,447,300, Cl. 204-67.000.

Rittscher, Dieter: *See—*
Baatz, Henning; Rittscher, Dieter; and Wriegt, Jurgen, 4,447,733, Cl. 250-506.100.

Rivier, Jean E. F.: *See—*
Olivera, Baldomero M.; Cruz, Lourdes J.; Gray, William R.; and Rivier, Jean E. F., 4,447,356, Cl. 260-112.50R.

Rivkin, Eric M.: *See—*
Miller, LeRoy; Thorud, Stanley R.; and Rivkin, Eric M., 4,446,660, Cl. 52-36.000.

Robert, Andre: *See—*
Heindl, Rudolf; and Robert, Andre, 4,447,305, Cl. 204-192.00C.

Robert Bosch GmbH: *See—*
Bleicher, Manfred; Buck, Manfred; Falchle, Jorg; and Wanner, Karl, 4,446,931, Cl. 173-48.000.
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; Seljmaier, Franz; and Reum, Helmut, 4,446,723, Cl. 73-35.000.
Boruschewitz, Manfred; and Hamisch, Hansjoachim, 4,446,722, Cl. 73-35.000.

Robertson, Forrest E., to Acra-Plant, Inc. Ground penetrating tool for farm implement shanks. 4,446,927, Cl. 172-753.000.

Robinson, David S.; and Taylor, Rupert M., to Mhlume (Swaziland) Sugar Company Limited. Container tipping apparatus. 4,447,185, Cl. 414-420.000.

Rock, Gail A.; and Adams, George A. Plasma-free medium for platelet storage. 4,447,415, Cl. 424-101.000.

Rockwell International Corporation: *See—*
Gay, Richard L.; Kohl, Arthur L.; and Yosim, Samuel J., 4,447,262, Cl. 75-65.00R.
Hankosky, Andrew; and Clapper, Robert L., 4,447,036, Cl. 251-63.400.
Manasevit, Harold M., 4,447,497, Cl. 428-446.000.
Roos, Rudolf; and Federmann, Dieter, 4,447,086, Cl. 296-217.000.
Treise, Jan E., 4,447,814, Cl. 343-401.000.
Weber, James L., 4,446,949, Cl. 188-79.50K.

Roe, William J., to Nalco Chemical Company. Dewatering aids for coal and other mineral particulates. 4,447,344, Cl. 252-60.000.

Roeber, Artur: *See—*
Horn, Peter; Gehm, Robert; Marx, Matthias; and Roeber, Artur, 4,447,561, Cl. 521-118.000.

Rohm GmbH: *See—*
Pesch, Karl, 4,447,180, Cl. 409-232.000.

Rolls-Royce Limited: *See—*
Adkins, Richard C., 4,446,692, Cl. 60-39.230.
Campbell, David A., 4,447,190, Cl. 416-95.000.
Lucey, Desmond C., 4,446,766, Cl. 81-480.000.
Pidcock, Anthony; and Pask, George, 4,446,693, Cl. 60-39.320.

Roos, Rudolf; and Federmann, Dieter, to Rockwell International Corporation. Wind deflector for sliding roofs. 4,447,086, Cl. 296-217.000.

Rose, Wayne B.: *See—*
Gay, John C.; McCurdy, H. Dennis; and Rose, Wayne B., 4,447,414, Cl. 424-81.000.

Rosen, Terry J.: *See—*
Firth, Bruce E.; and Rosen, Terry J., 4,447,657, Cl. 568-783.000.

Rosenberg, Burkard: *See—*
Britschgi, Hugo; and Rosenberg, Burkard, 4,447,334, Cl. 210-783.000.

Rosenheck, Bernard M., to Litton Systems, Inc. Grating signal system using zero order beam of acousto-optic modulator. 4,447,134, Cl. 350-358.000.

Ross, David S.; Johnson, Robert M., Jr.; and Malhotra, Ripudaman, to Air Products and Chemicals, Inc. Beta-dicarbonyl compounds for the promotion of aromatic nitration by nitrogen tetroxide. 4,447,662, Cl. 568-939.000.

Ross, Gary. Visor. 4,446,571, Cl. 2-13.000.

Ross, James A., Jr.: *See—*
Price, William L.; Murtha, John C.; Ross, James A., Jr.; Adam, Clyde E.; and Lucas, Kenneth R., 4,447,873, Cl. 364-200.000.

Ross, Robert E.; and Gaugh, Wilbur S., to Eastman Kodak Company. Photographic elements containing 2,4-disulfonamidophenol scavengers for oxidized developing agents. 4,447,523, Cl. 430-505.000.

Rossello, Alain: *See—*
Lagrange, Alain; and Rossello, Alain, 4,447,855, Cl. 361-321.000.

Roth, Donald J.; Walter, John; and Kubis, Charles S., to Continental Packaging Company, Inc. Push-in closure. 4,446,984, Cl. 220-268.000.

Roth, Thomas E.; and Getman, Harlan R., to Vroman Foods, Inc. Method of and apparatus for producing and processing frozen confections. 4,447,458, Cl. 426-275.000.

Rothenberger GmbH & Co. Werkzeuge-Maschinen KG: *See—*
Velte, Karl-Heinz, 4,446,620, Cl. 30-96.000.

Rothman, Laura B.: *See—*
Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., 4,447,824, Cl. 357-71.000.

Rothmans of Pall Mall Canada Limited: *See—*
Brackman, Warren A., 4,446,876, Cl. 131-110.000.

Roussel Uclaf: *See—*
Ledelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,447,438, Cl. 424-267.000.
Martel, Jacques; Buendia, Jean; and Nierat, Jeanine, 4,447,637, Cl. 560-124.000.
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,447,424, Cl. 424-238.000.

Rowe, William; Golda, Eugene; and Wilkes, Alan, to Polychrome Corporation. Method for making a negative working lithographic printing plate. 4,447,512, Cl. 430-17.000.

Rowlands, Reuben: *See—*
Bradbury, John A.; Rowlands, Reuben; and Tipping, James W., 4,447,491, Cl. 428-304.400.

Royal, Thomas A.: *See—*
Johanson, Jerry R.; and Royal, Thomas A., 4,446,717, Cl. 73-7.000.

Rozmus, Walter J., to Kelsey Hayes Company. Method for hot-consolidating powder using staged temperature and pressure causing compaction from the outside inward. 4,447,390, Cl. 419-49.000.

Rubin, Howard; and Weinerman, Brent. Connector for inhalation therapy apparatus. 4,446,863, Cl. 128-204.180.

Rubin, Irving N.: *See—*
Jimenez, Ivan; and Rubin, Irving N., 4,446,644, Cl. 42-1.0ST.

Rudy, Sol, to Alumin-Art Plating Company. Apparatus for holding a work piece. 4,447,049, Cl. 269-46.000.

Ruehl, William E., to Illinois Tool Works Inc. Terminal bridging adapter. 4,447,105, Cl. 339-113.00R.

Rumbaugh, Robert C.; and Jarrett, Robert B., to Motorola Inc. Adaptive dwell ignition system. 4,446,843, Cl. 123-609.000.

Runnells, Robert R.; Haak, Peter A.; Larkin, Rodney B.; and Vandervelden, C. Keith, to MDT Chemical Company. Combination steam and unsaturated chemical vapor sterilizer. 4,447,399, Cl. 422-113.000.

Rupchock, Patricia A.; and Tyhach, Richard J., to Miles Laboratories, Inc. Homogeneous specific binding assay with carrier matrix incorporating specific binding partner. 4,447,526, Cl. 435-7.000.

Rupchock, Patricia A.: *See—*
Greenquist, Alfred C.; Rupchock, Patricia A.; Tyhach, Richard J.; and Walter, Bert, 4,447,529, Cl. 435-7.000.

Rupp, Dallas B.: *See—*
Blosser, Virgil Y.; Isaksson, G. E.; Rupp, Dallas B.; and Singh, A. P., 4,447,385, Cl. 264-315.000.

Ruskin Manufacturing Company: *See—*
Hertel, Robert C., 4,446,667, Cl. 52-658.000.

Russell, Charles M., to Lummus Company, The. Dry cooling tower. 4,446,914, Cl. 165-129.000.

Russo, Robert V., to Mobil Oil Corporation. Compositions comprising a poly(methyl ethenyl benzene) resin and mineral oil. 4,447,575, Cl. 524-484.000.

Ruti-Te Strake B.V.: *See—*
Gunneman, Paul; and Jeuken, Gerardus W., 4,446,893, Cl. 139-11.000.

Rutkoski, John P., to Transat Corp. Apparatus for automatic measurement of equivalent circuit parameters of piezoelectric resonators. 4,447,782, Cl. 324-56.000.

Saar, David A.; and Bhagwat, Pradeep, to Black & Decker Inc. Waveform synthesizer and motor controller. 4,447,786, Cl. 318-811.000.

Sabo, Timothy A.: *See—*
Parker, Dane K.; and Sabo, Timothy A., 4,447,667, Cl. 585-469.000.

Sachs, Ekkehard: *See—*
Marquardt, Erich; and Sachs, Ekkehard, 4,447,687, Cl. 200-159.00R.

Sachtler GmbH Filmtechnische Gerate: *See—*
Jaumann, Leonhard; Tima, Zdenek; and Feierlein, Heinz, 4,447,033, Cl. 248-563.000.

Saga Petroleum a.s. & Co.: *See—*
Kristiansen, Olaf; and Brannstrom, Bo, 4,446,804, Cl. 114-74.00R.

Saimi, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Optical information reading device. 4,447,722, Cl. 250-216.000.

Saito, Norihisa: *See—*
Watanabe, Masaru; Matsumura, Satoru; Amada, Takayoshi; Irie, Hiromitsu; and Saito, Norihisa, 4,447,293, Cl. 159-6.200.

Sakakibara, Naoji; Amano, Hiroyuki; and Morioka, Hiroaki, to Aisin Seiki Kabushiki Kaisha. Pressure modulating valve assembly. 4,446,889, Cl. 137-625.400.

Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Speed control system for motor vehicle equipped with turbocharger. 4,446,940, Cl. 180-177.000.

Sakakibara, Susumu: *See—*
Yuge, Shizuo; Sakakibara, Susumu; Ishikawa, Takuma; Kito, Nobuo; and Yamamoto, Toshio, 4,447,517, Cl. 430-122.000.

Sakamoto, Hajimu; Kiyota, Takao; and Hayashi, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha; and Dainippon Pharmaceutical Co., Ltd. Method for stabilizing a tumor necrosis factor and a stable aqueous solution or powder containing the same. 4,447,355, Cl. 260-112.00B.

Sakamoto, Takashi: *See—*
Sano, Tetsuo; and Sakamoto, Takashi, 4,447,833, Cl. 358-298.000.

Sakane, Kazuo: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,447,429, Cl. 424-246.000.

Saks, Nelson S., to United States of America, Navy. Method for fabricating MNOS structures utilizing hydrogen ion implantation. 4,447,272, Cl. 148-1.500.

Salee, Gideon: *See—*
Scharf, Daniel J.; Ilardo, Charles S.; Schwartz, Willis T.; and Salee, Gideon, 4,447,572, Cl. 524-371.000.

Sallmann, Alfred, to Ciba-Geigy Corporation. Tri-substituted imidazole derivatives, pharmaceutical preparations containing them, and their use. 4,447,431, Cl. 424-246.000.

Sallnert, Kjell; Fridh, Carl-Erik; and Hansson, Manfred, to Platmanufaktur AB. Device for use in the manufacture of metal can tops with pull-up rings. 4,446,710, Cl. 72-10.000.

Salman, Mohammad; Ray, Suprabhat; Kamboj, Ved P.; and Anand, Nitya, to Council of Scientific and Industrial Research Rafi Marg. Preparation of l- and d-isomers of dl-3,4-trans-2,2-disubstituted-3,4-diarylchromans and derivatives thereof. 4,447,622, Cl. 548-525.000.

Sanchez, David F.: *See—*
Heredia de la Paz, Jorge A.; and Sanchez, David F., 4,446,888, Cl. 137-596.170.

Sander, Theo: *See—*
Wagener, Dietrich; Sander, Theo; and Laue, Karl H., 4,447,333, Cl. 210-750.000.

Sandered, Bror; Carlsson, Rune; and Andersson, Bengt, to MEAB, Mobile Equipment AB. Method and arrangement on extracting, reeling up, pulling in, etc., of a heavy cable or similar. 4,447,013, Cl. 242-54.00R.

Sanders, Robert J.: *See—*
Fuller, Robert T.; and Sanders, Robert J., 4,446,973, Cl. 211-45.000.

Sanfilippo, Aurora: *See—*
Franceschi, Giovanni; Marsili, Leonardo; Sanfilippo, Aurora; and Vioglio, Sergio, 4,447,432, Cl. 424-248.540.

Sangamo Weston, Inc.: *See—*
MacNamee, Richard W.; Reese, Morris T.; and Blase, Emil F., 4,447,346, Cl. 252-62.200.

Sani-Jon Mfg., Inc.: *See—*
Harding, George W.; and Sears, Ronald E., 4,446,585, Cl. 4-460.000.

Sankyo Company Limited: *See—*
Terahara, Akira; and Tanaka, Minoru, 4,447,626, Cl. 549-292.000.

Sano, Kenji: *See—*
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,447,515, Cl. 430-83.000.

Sano, Tetsuo; and Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Method for producing a halftone plate. 4,447,833, Cl. 358-298.000.

Sano, Yumiko: *See—*
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,447,513, Cl. 430-58.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Matsushita, Yukio; and Nozaki, Toshikatsu, 4,446,833, Cl. 123-435.000.

Santana, Manuel R.: *See—*
Panuska, Andrew J.; Santana, Manuel R.; and Sprow, Robert B., 4,446,686, Cl. 57-6.000.

Sapal, Societe Anonyme des Plieuses Automatiques: *See—*
Stalder, Heinz, 4,446,671, Cl. 53-445.000.

Sar-A-Lee, Inc.: *See—*
Schwartz, Charles A.; and Cornwell, Kenyon L., 4,447,464, Cl. 426-663.000.

Sargisson, Donald F.; and Harshman, Daniel L., to General Electric Company. Compound propulsor. 4,446,696, Cl. 60-226.300.

Sarin, Vinod K.; and Oberhauser, Peter, to GTE Laboratories Incorporated. Mining drill. 4,446,936, Cl. 175-410.000.

Sartinoranont, Sarnt. Tampon inserter. 4,447,222, Cl. 604-15.000.

Sasaki, Yutaka; and Nakamura, Yoshimi, to Nitto Chemical Industry Co., Ltd. Process for producing an antimony containing metal oxide catalyst. 4,447,558, Cl. 502-215.000.

Sasse, Klaus: *See—*
Dickore, Karlfried; Sasse, Klaus; Eue, Ludwig; and Schmidt, Robert R., 4,447,258, Cl. 71-93.000.

Sato, Fumihiko: *See—*
Takeo, Kimihiko; Hirano, Tooichiro; and Sato, Fumihiko, 4,447,601, Cl. 536-102.000.

Sato, Hideo: *See—*
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,447,515, Cl. 430-83.000.

Sato, Kazusuke: *See—*
Kimura, Etsuji; Ogi, Katsumi; Sato, Kazusuke; and Hashimoto, Mayuki, 4,447,045, Cl. 266-149.000.

Saunders, Howard E.; Westervelt, Dean C.; and Elbling, Irving N., to Westinghouse Electric Corp. Insulated conductor having adhesive overcoat. 4,447,797, Cl. 336-205.000.

Savage, David S.: *See—*
Carlyle, Ian C.; Savage, David S.; and Sleigh, Thomas, 4,447,425, Cl. 424-241.000.

Savora, Gunther: *See—*
Marsoner, Hermann J.; and Savora, Gunther, 4,446,872, Cl. 128-700.000.

Scarborough, Edward D., Jr.: *See—*
Souder, James J., Jr.; Scarborough, Edward D., Jr.; Fox, Merlin D.; Rettich, Donald R.; and Mason, Robert L., 4,447,031, Cl. 248-280.100.

Schaad, William J.; Black, Charles E., III; and Halstead, Raymond T., to Indak Manufacturing Corp. Push button switches having improved carriage, contactor and contact constructions. 4,447,688, Cl. 200-159.00R.

Schaefer, Klaus-Dieter: *See—*
Heitmann, Knut; and Schaefer, Klaus-Dieter, 4,447,143, Cl. 354-407.000.

Schafer, Werner: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,447,587, Cl. 526-124.000.

Scharf, Daniel J.; Ilardo, Charles S.; Schwartz, Willis T.; and Salee, Gideon, to Occidental Chemical Corporation. Fire retardant polyamide. 4,447,572, Cl. 524-371.000.

Scharmann GmbH & Co.: *See—*
Esser, Karl-Josef, 4,447,178, Cl. 409-80.000.

Scharrer, Roland P. F.; Schluenz, Robert W.; and Kramss, Richard H., to Arizona Chemical Company. Method for making oxidation-stable, light-colored glycerol ester of modified rosin. 4,447,354, Cl. 260-106.000.

Schatteman, Etienne A.; and d'Alayer de Costemore d'Arc, Stephane M. A., to Staar S. Automatic video disc inverting mechanism. 4,447,900, Cl. 369-200.000.

Schayes, Raymond G. G.; Gustin, Pol A. G. J.; Bodart, Robert; and Berck, Michel F. D. J., to U.S. Philips Corp. Facsimile transmission arrangement. 4,447,829, Cl. 358-260.000.

Scheinhaus, Myron G. J.; Jacobson, Paul R.; and Selner, Allen J. Biomechanical footwear. 4,446,633, Cl. 36-11.500.

Schellhammer, Carl-Wolfgang; and Wehling, Bernhard, to Bayer Aktiengesellschaft. 1,4-Bis-(4-chloro-2-methoxystyryl)-benzene. 4,447,651, Cl. 568-645.000.

Schicker, James R.: *See—*
Lula, James W.; and Schicker, James R., 4,447,565, Cl. 523-219.000.

Schider, Siegfried: *See—*
Otte, Wolf-Dieter; Otte, Heinz; Schider, Siegfried; and Wiesner, Otto, 4,446,857, Cl. 128-92.0BC.

Schiller, Werner, to Max Kammerer GmbH. Slide actuated, snap acting multiple rocker switch. 4,447,689, Cl. 200-330.000.

Schilling, Peter: *See—*
Schreuders, Hans G.; and Schilling, Peter, 4,447,269, Cl. 106-277.000.

Schimmelpfennig, Hans, to Siemens Aktiengesellschaft. Method of casting a printing head for an ink jet printer. 4,447,375, Cl. 264-40.500.

Schinzel, Erich: *See—*
Martini, Thomas; Schinzel, Erich; Frischkorn, Hans; Friedrich, Herbert; and Probst, Heinz, 4,447,350, Cl. 252-301.220.

Schlamm, Heinz-Werner: *See—*
Gundel, Manfred; Schlamm, Heinz-Werner; and Schmitz, Klaus-Dieter, 4,447,806, Cl. 340-641.000.

Schluenz, Robert W.: *See—*
Scharrer, Roland P. F.; Schluenz, Robert W.; and Kramss, Richard H., 4,447,354, Cl. 260-106.000.

Schluter, S.: *See—*
Reidick, H.; Leithner, R.; Kirchhoff, F. J.; Puritz, E.; and Schluter, S., 4,446,911, Cl. 165-4.000.

Schmadeke, Donald W.: *See—*
Antenore, Donald E.; Schmadeke, Donald W.; and Stewart, Rodney A., 4,447,463, Cl. 426-603.000.

Schmid, Frederick L., to United States of America, Energy. Grapple assembly. 4,447,085, Cl. 294-97.000.

Schmidt, Gunther: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Eberlein, Wolfgang; Schmidt, Gunther; Hammer, Rudolf; and del Soldato, Piero, 4,447,434, Cl. 424-256.000.

Schmidt, Hans-Friedrich: *See—*
Quella, Ferdinand; and Schmidt, Hans-Friedrich, 4,447,581, Cl. 525-189.000.

Schmidt, Heinz: *See—*
Arndt, Manfred; Breier, Walter; Riegert, Hermann; Schmidt, Heinz; Schwarz, Hermann; and Warneke, Helmut, 4,446,978, Cl. 215-13.00R.

Schmidt, Robert R.: *See—*
Dickore, Karlfried; Sasse, Klaus; Eue, Ludwig; and Schmidt, Robert R., 4,447,258, Cl. 71-93.000.

Schmitt, Armin, to LUWA AG. Apparatus for the mechanical/thermal treatment, including sterilization and pasteurization, of fluids. 4,446,781, Cl. 99-483.000.

Schmitz, Klaus-Dieter: *See—*
Gundel, Manfred; Schlamm, Heinz-Werner; and Schmitz, Klaus-Dieter, 4,447,806, Cl. 340-641.000.

Schnegg, Peter: *See—*
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,447,368, Cl. 260-508.000.

Schnettler, Richard A.: *See—*
Grisar, J. Martin; Schnettler, Richard A.; and Dage, Richard C., 4,447,619, Cl. 548-318.000.

Schoenfeld, Harald, to Carl Schenck AG. Crankshaft balance centering. 4,446,732, Cl. 73-461.000.

Scholl, Hans, to Kochs Adler AG. Automatic sewing machines. 4,446,802, Cl. 112-121.120.

Schoolman, William K.; Griman, George A.; and Andrews, Frank D., to Mastic Corporation. Counterbalance lock mechanism for a window assembly. 4,446,654, Cl. 49-181.000.

Schornick, Gunnar: *See—*
Henne, Andreas; Hesse, Anton; Jacobi, Manfred; Schornick, Gunnar; Vyvial, Rudolf; and Holoch, Klaus, 4,447,520, Cl. 430-281.000.

Schossow, George W.; and Stallings, George P. Electrical safety switch for electrical appliances. 4,447,844, Cl. 361-77.000.

Schott, Eberhard P.; and Lang, Hans, to BASF Aktiengesellschaft. Plant growth regulators. 4,447,255, Cl. 71-86.000.

Schreuders, Hans G.; and Schilling, Peter, to Westvaco Corporation. Cationic aqueous bituminous emulsion-aggregate slurries. 4,447,269, Cl. 106-277.000.

Schuck, Thomas W., to Air Products and Chemicals, Inc. High pressure helium pump for liquid or supercritical gas. 4,447,195, Cl. 417-570.000.

Schuetz, Jeffrey M.: *See—*
Lustig, Stanley; Schuetz, Jeffrey M.; and Vicik, Stephen J., 4,447,480, Cl. 428-35.000.

Schulte, Eric, to Texas Instruments Incorporated. Method for via formation in HgCdTe. 4,447,291, Cl. 156-643.000.

Schultz, Charles R.; Tollefson, Mark S.; and Wuertz, Howard A. Apparatus for burying drip irrigation tubing. 4,447,173, Cl. 405-181.000.

Schulz, Frank C., Jr. Volumetric analysis device for determining the dry rubber content of latex. 4,446,725, Cl. 73-61.00R.

Schumacher, Percy W., Jr., to Reed Tool Company (Delaware). Intermittent high-drag oil well drilling bit. 4,446,935, Cl. 175-329.000.

Schuster-Woldan, Hans; Buerk, Hermann; Koch, Dirk; and Weingand, Kaspar, to Siemens Aktiengesellschaft. Method for manufacturing unsupported metal lattice structures. 4,447,292, Cl. 156-644.000.

Schwander, Hansrudolf; and Furrer, Peter, to Ciba-Geigy Corporation. Monoazo compounds. 4,447,358, Cl. 260-205.000.

Schwartz, Bertram: *See—*
Dixon, Richard W.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,447,905, Cl. 372-46.000.

Schwartz, Charles A.; and Cornwell, Kenyon L., to Sar-A-Lee, Inc. Method of processing margarine or butter for squeeze packet containers. 4,447,464, Cl. 426-663.000.

Schwartz, Eugene B.: *See—*
Kaye, Gordon E.; Schwartz, Eugene B.; and Sollins, Irving V., 4,447,223, Cl. 604-61.000.

Schwartz, Geraldine C.: *See—*
Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., 4,447,824, Cl. 357-71.000.

Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl P.; Stengel, Frederick H.; and Hayslett, David D., to Sequioa Turner. Sample container for measurement of ions of body fluids. 4,447,398, Cl. 422-102.000.

Schwartz, Willis T.: *See—*
Scharf, Daniel J.; Ilardo, Charles S.; Schwartz, Willis T.; and Salee, Gideon, 4,447,572, Cl. 524-371.000.

Schwarz, Hermann: *See—*
Arndt, Manfred; Breier, Walter; Riegert, Hermann; Schmidt, Heinz; Schwarz, Hermann; and Warneke, Helmut, 4,446,978, Cl. 215-13.00R.

Schwarzkopf Development Corporation: *See—*
Otte, Wolf-Dieter; Otte, Heinz; Schider, Siegfried; and Wiesner, Otto, 4,446,857, Cl. 128-92.0BC.

Schwer, John W. Method and composition for foaming slag in electric arc furnace. 4,447,265, Cl. 75-257.000.

Schwesig, Guenter; and Blaschke, Felix, to Siemens Aktiengesellschaft. Device for the field-oriented operation of a converter-fed asynchronous machine. 4,447,787, Cl. 318-803.000.

Scicluna, Augustin: *See—*
Prudhon, Francois; and Scicluna, Augustin, 4,447,331, Cl. 210-721.000.

Scott, Ted R.: *See—*
Lafevers, James O.; Kushmaul, Richard T.; and Scott, Ted R., 4,447,097, Cl. 312-215.000.

Scovill Inc.: *See—*
Martin, Keith S., 4,446,731, Cl. 73-334.000.

Scovill, John P.: *See—*
Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,447,427, Cl. 424-244.000.

Sealfon, Andrew; and Yurdin, Carl, to Repro-Med Systems, Inc. Spring-operated liquid-dispensing device. 4,447,232, Cl. 604-134.000.

Seaman Corporation: *See—*
Seaman, Donald R., 4,447,288, Cl. 156-574.000.

Seaman, Donald R., to Seaman Corporation. Seam welder for thermoplastic coated fabric. 4,447,288, Cl. 156-574.000.

Sears, Ronald E.: *See—*
Harding, George W.; and Sears, Ronald E., 4,446,585, Cl. 4-460.000.

SECEMIA: *See—*
Book, Gerard, 4,446,630, Cl. 34-65.000.

Sedat, Georges A., to Etat Francais represente par le Delegue General pour l'Armement. Castable pyrotechnic composition with a chlorinated binder. 4,447,278, Cl. 149-19.910.

Seeburg, Peter H.: *See—*
Goodman, Howard M.; Shine, John; and Seeburg, Peter H., 4,447,538, Cl. 435-253.000.

Sefko, John; and Pavlik, Norman M., to United States of America, Energy. Laminated grid and web magnetic cores. 4,447,795, Cl. 336-178.000.

Segal, William J.: *See—*
Nguyen, Liem; Segal, William J.; and Friend, Kent, 4,447,091, Cl. 301-37.0AT.

Segar, William R.; and Larson, Robert A., to Westinghouse Electric Corp. Power collection apparatus for a transportation system. 4,447,680, Cl. 191-48.000.

Segawa, Hirohisa: *See—*
Mizuno, Takaji; Suwahara, Hiroshi; and Segawa, Hirohisa, 4,447,702, Cl. 219-130.330.

Seider, Werner: *See—*
Bubik, Alfred; Dahl, Hans; Holik, Herbert; Kurtz, Rudiger; and Seider, Werner, 4,447,295, Cl. 162-300.000.

Seiffhart, John B.: *See—*
Hubbard, Raymond W.; Seiffhart, John B.; and Hubbard, Thomas, 4,446,779, Cl. 99-472.000.

Seiko Instruments & Electronics Ltd.: *See—*
Mitamura, Gen; Eguchi, Takao; and Nagami, Yukio, 4,447,162, Cl. 368-295.000.
Miyoshi, Taisuke, 4,447,133, Cl. 350-357.000.
Ochiai, Osamu, 4,447,753, Cl. 310-312.000.
Tsukada, Nobuo; and Nishida, Isamu, 4,447,163, Cl. 368-319.000.

Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling exhaust gas recirculation in a diesel engine. 4,446,839, Cl. 123-569.000.

Sekisu Kagaku Kogyo Kabushiki Kaisha: *See—*
Kamiyama, Fumio; Yamazaki, Kazutoshi; Kohara, Minoru; and Nagata, Mituo, 4,447,328, Cl. 210-635.000.

Selas Corporation of America: *See—*
Grever, Arnold J., 4,447,690, Cl. 219-10.430.

Selfix, Inc.: *See—*
Chap, John P., 4,446,642, Cl. 40-152.100.

Seligman, Paul A.: *See—*
Allen, Robert H.; and Seligman, Paul A., 4,447,547, Cl. 436-543.000.

Sellmaier, Franz: *See—*
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; Sellmaier, Franz; and Reum, Helmut, 4,446,723, Cl. 73-35.000.

Selner, Allen J.: *See—*
Scheinhaus, Myron G. J.; Jacobson, Paul R.; and Selner, Allen J., 4,446,633, Cl. 36-11.500.

Sen-Yi, Lin. Wrist bracelet clasp. 4,446,604, Cl. 24-68.00J.

Senes, Michel: *See—*
Hamon, Christian; Bandiera, Jean; and Senes, Michel, 4,447,669, Cl. 585-640.000.

Sequioa Turner: *See—*
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl P.; Stengel, Frederick H.; and Hayslett, David D., 4,447,398, Cl. 422-102.000.

Seredich, Douglas: *See—*
Hetzel, Frederick; Graf, Martin J.; and Seredich, Douglas, 4,447,861, Cl. 362-216.000.

Sestanj, Kazimir, to Ayerst, McKenna & Harrison Inc. N[(2-Naphthalenyl)thioxomethyl]glycine derivatives. 4,447,452, Cl. 424-319.000.

Sewerinson, Ake N., to AEL Microtel, Ltd. Forward error correction using coding and redundant transmission. 4,447,903, Cl. 371-68.000.

Shaffer, James E.; and Distin, Robert G., Jr., to Advanced Energy Concepts '81, Ltd. Epicycloidal gears and gear tooth arrangement therefor. 4,446,752, Cl. 74-462.000.

Shah, Jayantkumar R.: *See—*
Elliott, George; Lenk, Pedro A.; and Shah, Jayantkumar R., 4,447,673, Cl. 179-18.0HB.

Shang, Jer-Yu; Notestein, John E.; Mei, Joseph S.; and Zeng, Li-Wen, to United States of America, Energy. Combined fluidized bed retort and combustor. 4,447,297, Cl. 202-99.000.

Shankar, Srinivasan: *See—*
Dardi, Louis E.; and Shankar, Srinivasan, 4,447,503, Cl. 428-632.000.

Shanklin Corporation: *See—*
Shanklin, Frank G.; and McConnell, James A., 4,447,284, Cl. 156-366.000.

Shanklin, Frank G.; and McConnell, James A., to Shanklin Corporation. Seal arm latching mechanism for heat sealing apparatus. 4,447,284, Cl. 156-366.000.

Shanks, Bruce E., to General Electric Company. Sealed beam lamp unit sealing surfaces. 4,447,862, Cl. 362-267.000.

Shannon, Richard F.; and Helser, Jerry L., to Owens-Corning Fiberglas Corporation. Expanded inorganic aggregate bonded with calcium silicate hydrate as thermal insulation. 4,447,380, Cl. 264-82.000.

Shapiro, Ira P., to Burroughs Corporation. Processor select switch. 4,447,798, Cl. 377-55.000.

Sharp Kabushiki Kaisha: *See—*
Haneda, Isamu, 4,447,889, Cl. 364-900.000.
Kawaguchi, Masashi; Ishii, Toshiaki; Isaka, Kinichi; and Uede, Hisashi, 4,447,757, Cl. 313-509.000.
Wada, Yoshihiro, 4,447,884, Cl. 364-557.000.
Zibu, Mitsuo, 4,447,892, Cl. 365-156.000.

Sharp, Michael R. G.; and Braithwaite, John C., to British Gas Corporation. Magnetic pipeline inspection vehicle with metallic foil and bristle contacts supporting the vehicle. 4,447,777, Cl. 324-220.000.

Shaw, Leslie V.: *See—*
Stubbersfield, Edgar M.; and Shaw, Leslie V., 4,446,623, Cl. 30-229.000.

Shen, Sin-Yan, to United States of America, Energy. Sonic resonator control and method for determining component concentration in multiple component molten liquids. 4,447,301, Cl. 204-67.000.

Shepherd, Orr, to Visidyne, Inc. Precision drive system. 4,447,770, Cl. 318-618.000.

Sherwood, Cy E.: *See—*
Dyce, John W.; Waters, Edwin R.; and Sherwood, Cy E., 4,447,100, Cl. 339-14.00R.

Shibata, Takuo: *See—*
Ogawa, Kazufumi; Chikamura, Takao; and Shibata, Takuo, 4,447,720, Cl. 250-211.00J.

Shibuya, Masahide: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.

Shibuya, Yasutaka: *See—*
Kodama, Kazuyuki; Endo, Takeyuki; Okada, Kunihiro; and Shibuya, Yasutaka, 4,447,809, Cl. 340-747.000.

Shields, John: *See—*
Biggs, Delmar A.; and Shields, John, 4,447,725, Cl. 250-339.000.

Shigeoka, Katsuhei: *See—*
Tamura, Hitoshi; and Shigeoka, Katsuhei, 4,447,384, Cl. 264-206.000.

Shigeru, Kitahara; Okane, Isao; Shirai, Katsuyuki; and Morimura, Tosio, to National Research Institute for Metals; and Showa Denko Kabushiki Kaisha. Ceramic based composite material for flame spraying. 4,447,501, Cl. 428-570.000.

Shiiki, Zenya: *See—*
Katto, Takayuki; Komatsu, Yasumasa; and Shiiki, Zenya, 4,447,578, Cl. 525-75.000.

Shimada, Masahiko: *See—*
Watanabe, Kiyoshi; Ideguchi, Satoshi; Ogura, Masahiro; Shimada, Masahiko; and Kawaharada, Hajime, 4,447,362, Cl. 260-396.00R.

Shimano Industrial Company Limited: *See—*
Nagano, Masashi, 4,446,753, Cl. 74-594.100.

Shimizu, Tokuzo. Tape cartridge of cassette system. 4,447,021, Cl. 242-199.000.

Shimp, David A., to Celanese Corporation. Metal fluoborate catalyzed hindered aromatic amine curing agents for polyepoxide resins. 4,447,586, Cl. 525-504.000.

Shine, John: *See—*
Goodman, Howard M.; Shine, John; and Seeburg, Peter H., 4,447,538, Cl. 435-253.000.

Shinke, Shuzo: *See—*
Hoshiyama, Satoshi; Muto, Hiroyuki; Shinke, Shuzo; Otsuka, Kanji; Takigawa, Shinichiro; and Yamazaki, Hiroyuki, 4,447,661, Cl. 568-882.000.

Shioyama, Giichi: *See—*
Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Shioyama, Giichi, 4,446,840, Cl. 123-571.000.

Shirahata, Ryuji: *See—*
Kitamoto, Tatsuji; and Shirahata, Ryuji, 4,446,816, Cl. 118-718.000.

Shirai, Katsuyuki: *See—*
Shigeru, Kitahara; Okane, Isao; Shirai, Katsuyuki; and Morimura, Tosio, 4,447,501, Cl. 428-570.000.

Shiraki, Manabu: *See—*
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,447,751, Cl. 310-154.000.

Shitori, Yoshiyasu: *See—*
Ogura, Haruo; Furuhata, Kimio; Osawa, Toshiaki; Toyoshima, Satoshi; Shitori, Yoshiyasu; and Ito, Masayoshi, 4,447,600, Cl. 536-23.000.

Shkolnik, David; and Slonimsky, Alla. Device for determining angle of inclination of ship. 4,446,628, Cl. 33-366.000.

Shoemaker, Gerald L.: *See—*
Fowles, Patrick E.; Shoemaker, Gerald L.; and Yan, Tsoung-Yuan, 4,447,311, Cl. 208-35.000.

Shofu, Inc.: *See—*
Kawai, Masakatsu, 4,447,208, Cl. 433-166.000.

Shoichi, Iwaya: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.

Showa Denko Kabushiki Kaisha: *See—*
Shigeru, Kitahara; Okane, Isao; Shirai, Katsuyuki; and Morimura, Tosio, 4,447,501, Cl. 428-570.000.

Shur Medical Corporation: *See—*
Heinzelman, Bert D.; Spranger, Douglas M.; Brookes, Malcolm J.; and Kuphal, John E., 4,447,482, Cl. 428-42.000.

Sico Incorporated: *See—*
Wilson, Kermit H.; and Carlson, Ronald R., 4,446,796, Cl. 108-69.000.

Siegal, Burton L., to Acme Steel Door Corp. End channel member for space dividing system panel. 4,446,669, Cl. 52-738.000.

Siemens Aktiengesellschaft: *See—*
Alexandrescu, Mircea; and Haendle, Joerg, 4,447,827, Cl. 358-111.000.
Grimmer, Rudolf, 4,447,564, Cl. 523-200.000.
Harbauer, Werner; Drexler, Johann; and Flierl, Erwin, 4,447,794, Cl. 335-128.000.
Hjorring, Hans, 4,447,909, Cl. 375-88.000.
Quella, Ferdinand; and Schmidt, Hans-Friedrich, 4,447,581, Cl. 525-189.000.
Schimmelpfennig, Hans, 4,447,375, Cl. 264-40.500.
Schuster-Woldan, Hans; Buerk, Hermann; Koch, Dirk; and Weingand, Kaspar, 4,447,292, Cl. 156-644.000.
Schwesig, Guenter; and Blaschke, Felix, 4,447,787, Cl. 318-803.000.
Wager, Mats; and Hirschberg, Jakub, 4,447,053, Cl. 271-113.000.
Walz, Joachim, 4,447,882, Cl. 364-521.000.

Siemens-Allis, Inc.: *See—*
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,447,368, Cl. 260-508.000.
Farag, Samir F.; Hoffmann, Alvin R.; and Kleinecke, John D., 4,447,858, Cl. 361-429.000.

Siemens Gammasonics, Inc.: *See—*
Groch, Mark W.; and Domnanovich, James R., 4,446,873, Cl. 128-715.000.

Sievers, Henry T., to Cooper Industries, Inc. Adjustable wrench adjusting mechanism. 4,446,764, Cl. 81-170.000.

SIG-Schweizerische Industrie-Gesellschaft: *See—*
Grundler, Bruno, 4,446,676, Cl. 53-552.000.

Signode Corporation: *See—*
Gurak, Ronald W.; and Diploma, Eduardo P., 4,446,784, Cl. 100-27.000.

Sigyo, Keiichi: *See—*
Omae, Yoshihiro; Okubo, Noboru; Sigyo, Keiichi; Nakajima, Hideo; Fukui, Hiroaki; Yamada, Toshio; and Honda, Hideyuki, 4,447,805, Cl. 340-539.000.

Sih, John C.; and Lin, Chiu-Hong, to Upjohn Company, The. Imidazolylsubstituted benzothiophenes. 4,447,620, Cl. 548-336.000.

Silchor: *See—*
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilborn, Fredrick A., 4,446,586, Cl. 4-555.000.

Sills, Arthur A.: *See—*
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilborn, Fredrick A., 4,446,586, Cl. 4-555.000.

Simko, Aladar O.; Havstad, Peter H.; and Harrington, Joseph A., to Ford Motor Company. Method of operating an engine with a high heat of vaporization fuel. 4,446,830, Cl. 123-276.000.

Simm, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, to Dynamit Nobel Aktiengesellschaft. Shaped article of a synthetic resin and/or natural rubber and process for the production thereof. 4,447,488, Cl. 428-213.000.

Simmons, Bjorn, to Aktiebolaget Bofors. Practice shell particularly useful for training purposes. 4,446,794, Cl. 102-513.000.

Simmons, Peter E., to Imperial Chemical Industries Limited. Trip system. 4,447,851, Cl. 361-189.000.

Simon, Clarence W. Apparatus and method for mixing particulate material. 4,447,158, Cl. 366-297.000.

Simpson, Colin A., to Graviner Limited. Detection of light-affecting substance in a fluid. 4,447,155, Cl. 356-437.000.

Simpson, Howard D.: *See—*
Miller, J. Wayne; and Simpson, Howard D., 4,447,317, Cl. 208-216.00R.

Simpson, William E., Jr., to Lockheed Corporation. Continuity actuated isolation valve assembly. 4,446,890, Cl. 137-87.000.

Sinclair, Ian, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the. Method and apparatus for detecting the presence of a contaminant in a gaseous carrier. 4,446,720, Cl. 73-23.000.

Singer Company, The: *See—*
Peterson, Wesley R., 4,446,621, Cl. 30-241.000.

Singh, A. P.: *See—*
Blosser, Virgil Y.; Isaksson, G. E.; Rupp, Dallas B.; and Singh, A. P., 4,447,385, Cl. 264-315.000.

Sirmans, John J. Glass cutter device. 4,446,768, Cl. 83-879.000.

Sirokorad, Jurij; and Vecera, Jiri, to Prvni brnenska strojirna, narodni podnik. Vibration transducer. 4,446,741, Cl. 73-654.000.

SK&F Lab Co.: *See—*
Labaw, Clifford S.; and Wellman, George R., 4,447,621, Cl. 548-342.000.

Sleigh, Thomas: *See—*
Carlyle, Ian C.; Savage, David S.; and Sleigh, Thomas, 4,447,425, Cl. 424-241.000.

Sloane, Michael W., Sr.: *See—*
Cooper, Larry V.; and Sloane, Michael W., Sr., 4,446,610, Cl. 29-421.00E.

Slonimsky, Alla: *See—*
Shkolnik, David; and Slonimsky, Alla, 4,446,628, Cl. 33-366.000.

Slosberg, David K.; and Nowell, Gilbert S., to Compo Industries, Inc. Flame-resistant vinyl foam gasket and method of preparation. 4,447,484, Cl. 428-137.000.

Slosberg, David M.: *See—*
Bradley, John J.; Franklin, Benjamin S.; Slosberg, David M.; Appell, Marc; Cassonnet, Jean-Claude; and De Sabatier, Philippe D., 4,447,874, Cl. 364-200.000.

Smallegan, Jon M.: *See—*
Trudeau, William H.; Gaines, Donald R.; and Smallegan, Jon M., 4,447,094, Cl. 308-2.00R.

Smith, Clay D.; and Keller, Douglas V., Jr., to Otisca Industries, Ltd. Methods of cleaning coal. 4,447,245, Cl. 44-1.0SR.

Smith, Clifford E.; Mark, Harold W.; Louthan, Rector P.; and Efner, Howard F., to Phillips Petroleum Company. Diesel fuel. 4,447,246, Cl. 144-57.000.

Smith, Donald C.; Snow, Richard F.; and Pauli, George B., to Crouse-Hinds Company. Post top luminaire. 4,447,864, Cl. 362-311.000.

Smith, Earl F.; and McRae, Daniel D., to Harris Corporation. Phase tracking correction scheme for high frequency modem. 4,447,910, Cl. 375-99.000.

Smith, George E., to Quintex Research International, Inc. Specific gravity independent gauging of liquid filled tanks. 4,446,730, Cl. 73-301.000.

Smith, Grant M., to Sony Corporation. Method and apparatus for single frame recording on video tape. 4,447,835, Cl. 360-10.200.

Smith, Lawrence A., Jr.; Jones, Edward M., Jr.; and Hearn, Dennis, to Chemical Research & Licensing Company. Process for producing high purity isoolefins and dimers thereof by dissociation of ethers. 4,447,668, Cl. 585-639.000.

Smith, Richard R.; and Kelley, Mellis M., to Goodyear Tire & Rubber Company, The. Polyterephthalates and copolymers thereof having high clarity and process for making same. 4,447,595, Cl. 528-274.000.

Smith, Robert L.: *See—*
Gorring, Robert L.; and Smith, Robert L., 4,447,313, Cl. 208-86.000.

Smith, Teddy V. Material processing machinery. 4,446,678, Cl. 56-1.000.

Smith, Thomas J., to TII Industries Inc. Telephone surge protector and housings therefor. 4,447,848, Cl. 361-124.000.

Smith, Thomas M. Infra-red equipment and use. 4,447,205, Cl. 431-328.000.

Smith, Wallace E. Container with flexible pouring spout and sealing closure. 4,446,994, Cl. 222-475.000.

Snelling, Christopher; and Lysy, Dusan G., to Xerox Corporation. Charged particle sensor. 4,447,145, Cl. 355-14.00D.

Snow, Richard F.: *See—*
Smith, Donald C.; Snow, Richard F.; and Pauli, George B., 4,447,864, Cl. 362-311.000.

Societa Italiana Vetro - SIV - S.p.A.: *See—*
Di Nocco, Dino; and Delle Donne, Nicola, 4,447,252, Cl. 65-268.000.

Societa Italiana Vetro SIV SpA: *See—*
Kalbskopf, Reinhard; Baumberger, Otto; and Masson, Serge, 4,446,815, Cl. 118-718.000.

Societe Anonyme DBA: *See—*
Le Deit, Gerard, 4,446,947, Cl. 188-73.340.

Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
Hamon, Christian; Bandiera, Jean; and Senes, Michel, 4,447,669, Cl. 585-640.000.

Societe d'Applications Generales d'Electricite et de Mechanique Sagem: *See—*
Barthelat, Rene; and Dore, Alain, 4,447,129, Cl. 350-302.000.

Societe d'Etude du Radant: *See—*
Chekroun, Claude D.; and Michel, Yves C., 4,447,815, Cl. 343-754.000.

Societe Nationale des Poudres et Explosifs: *See—*
Bergeret, Wilfrid; Gautier, Jean-Claude; Raynal, Serge; and Boileau, Sylvie, 4,447,584, Cl. 525-340.000.

Sofranko, John A.; and Gaffney, Anne M., to Atlantic Richfield Company. Oxidative carbonylation of alcohols to dialkyl oxalates using a heterogeneous iron promoted Pd-V-P catalyst. 4,447,639, Cl. 560-204.000.

Sofranko, John A.: *See—*
Gaffney, Anne M.; and Sofranko, John A., 4,447,638, Cl. 560-204.000.

Sollins, Irving V.: *See—*
Kaye, Gordon E.; Schwartz, Eugene B.; and Sollins, Irving V., 4,447,223, Cl. 604-61.000.

Solmat Systems, Ltd.: *See—*
Bronicki, Lucien Y.; Hershman, Haim; and Lehmann, Gerard, 4,446,700, Cl. 60-641.800.

Soma, Tsunenori, to Canon Kabushiki Kaisha. Liquid crystal driving apparatus. 4,447,131, Cl. 350-333.000.

Sommer, Rolf: *See—*
Kummermehr, Hans; and Sommer, Rolf, 4,447,345, Cl. 252-62.000.

Sommerer, Klaus, to Haendler & Natermann GmbH. Bottleneck foil. 4,447,502, Cl. 428-571.000.

Sone, Yasuo, to Fuji Xerox Co., Ltd. Sheet peeling pawl. 4,447,054, Cl. 271-311.000.

Soneda, Mitsuo; and Ohtsu, Takaji, to Sony Corporation. Liquid crystal matrix display device. 4,447,812, Cl. 340-784.000.

Sony Corporation: *See—*
Miyahra, Katsunobu; and Matsumoto, Nobuyuki, 4,447,677, Cl. 179-107.00R.
Smith, Grant M., 4,447,835, Cl. 360-10.200.
Soneda, Mitsuo; and Ohtsu, Takaji, 4,447,812, Cl. 340-784.000.
Wilkinson, James H., 4,447,902, Cl. 371-39.000.

Souder, James J., Jr.; Scarborough, Edward D., Jr.; Fox, Merlin D.; Rettich, Donald R.; and Mason, Robert L., to Positioning Devices, Inc. Spring counterbalanced support arm system. 4,447,031, Cl. 248-280.100.

Southern Pacific Transportation Company: *See—*
Empson, Kenneth G., 4,446,734, Cl. 73-586.000.

Southwire Company: *See—*
Stone, Kenneth R.; and Uppaluri, Bapa R., 4,446,712, Cl. 72-243.000.

Spacil, Jiri: *See—*
Strnadova, Karin; Kybal, Jan; Svoboda, Eduard; and Spacil, Jiri, 4,447,540, Cl. 435-254.000.

Sperry Corporation: *See—*
Deleu, Walter V., 4,446,875, Cl. 130-27.0JT.
Greaser, Randy A., 4,446,786, Cl. 100-88.000.

Spickett, Robert G. W.; Mauri, Jacinto M.; and Puchades, Jesus E. B., to Anphar S.A. Basic aluminium magnesium carbonate. 4,447,417, Cl. 424-156.000.

Spielbrink, Heinrich: *See—*
Mueller, Dieter J.; Fricke, Hermann; and Spielbrink, Heinrich, 4,447,273, Cl. 148-6.15R.

Spies, Karl-Heinrich: *See—*
Ehrmann, Peter; Fuchs, Dieter; and Spies, Karl-Heinrich, 4,447,064, Cl. 277-134.000.

Spiess, Karl-Heinz: *See—*
Simm, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, 4,447,488, Cl. 428-213.000.

Spitz, Seymour J., Jr.; Mookherjee, Braja D.; Hill, Ira D.; Keleher, Lloyd F.; Trenkle, Robert W.; and Wolff, Robin K., to International Flavors & Fragrances Inc. Method of increasing extractable cedarwood oil from Juniperus Mexicana. 4,446,651, Cl. 47-10.000.

Spletzer, Eldon G.: *See—*
Chappell, Charles W.; and Spletzer, Eldon G., 4,447,373, Cl. 264-4.000.

SPOFA, spojene podniky prozdravotnickou vyrobu: *See—*
Strnadova, Karin; Kybal, Jan; Svoboda, Eduard; and Spacil, Jiri, 4,447,540, Cl. 435-254.000.

Sprague Electric Company: *See—*
Clement, Warren J., 4,447,852, Cl. 361-306.000.
Markarian, Paul M., 4,447,854, Cl. 361-329.000.

Spranger, Douglas M.: *See—*
Heinzelman, Bert D.; Spranger, Douglas M.; Brookes, Malcolm J.; and Kuphal, John E., 4,447,482, Cl. 428-42.000.

Springs Industries, Inc.: *See—*
Hendrix, James E.; and Payet, George L., 4,447,241, Cl. 8-116.400.

Sprouse, D. Leonard: *See—*
Ivey, H. Grady; and Sprouse, D. Leonard, 4,447,035, Cl. 249-194.000.

Sprow, Robert B.: *See—*
Panuska, Andrew J.; Santana, Manuel R.; and Sprow, Robert B., 4,446,686, Cl. 57-6.000.

Sprugel, Gerd: *See—*
Jennen, Wolfgang; and Sprugel, Gerd, 4,446,682, Cl. 56-119.000.

Spurlock, Robert C.; and Foster, Larry W., to MPI, Inc. Apparatus for making foam carpet pad. 4,447,382, Cl. 264-123.000.

SRI International: *See—*
Wilson, David A.; Buxton, James L.; and Green, Philip S., 4,446,740, Cl. 73-626.000.

Staal, Philip W., to Miles Laboratories, Inc. Method for the preparation of liquid aluminum citrate. 4,447,364, Cl. 260-448.00R.

Staar S: *See—*
Schatteman, Etienne A.; and d'Alayer de Costemore d'Arc, Stephane M. A., 4,447,900, Cl. 369-200.000.

Stafford, George C.; and Bradford, Donald C., to Finnigan Corporation. Ionizer including discharge ion source and method. 4,447,728, Cl. 250-423.00R.

Stahler, Gerhard; and Waltersdorfer, Anna, to Hoechst Aktiengesellschaft. 1-Alkyl-3-alkoxymethyl-4-alkoxy-5-dialkylcarbamoyloxy pyrazoles and use as aphicides. 4,447,444, Cl. 424-273.00P.

Stahlhuth, Paul H., to Ford Aerospace & Communications Corporation. Escapement device. 4,446,750, Cl. 74-1.500.

Stalberg, Nils G., to International Business Machines Corporation. Video signal detector. 4,447,774, Cl. 328-150.000.

Stalder, Heinz, to Sapal, Societe Anonyme des Plieuses Automatiques. Device and method for packing various products in boxes. 4,446,671, Cl. 53-445.000.

Stallings, George P.: *See—*
Schossow, George W.; and Stallings, George P., 4,447,844, Cl. 361-77.000.

Standard-Knapp, Inc.: *See—*
Raudat, John L., 4,446,672, Cl. 53-448.000.

Standard Oil Company, The: *See—*
McGuiggan, Michael F.; and Kuch, Philip L., 4,447,409, Cl. 423-416.000.

Standard Oil Company (Indiana): *See—*
Donohue, John A.; Knobloch, James O.; Petty-Weeks, Bruce; and Cerefice, Steven A., 4,447,645, Cl. 562-473.000.
Hagen, Gary P., 4,447,641, Cl. 560-211.000.
Keske, Robert G.; Brooks, Gary T.; and Bockrath, Ronald E., 4,447,574, Cl. 524-400.000.
Knepper, Jay C., 4,447,090, Cl. 299-2.000.
Wennerberg, Arnold N., 4,447,665, Cl. 585-379.000.

Standley, Charles L.: *See—*
Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., 4,447,824, Cl. 357-71.000.

State Industries, Inc.: *See—*
Denton, Donald W., 4,447,377, Cl. 264-45.200.

State of Oregon Acting by and Through the State Board of Higher Education on behalf of Portland State University: *See—*
Kasaaian, Arash S.; and Dash, John, 4,447,299, Cl. 204-43.00R.

Steigelmann, William H., to En-Save, Inc. Terraced solar energy collector. 4,446,852, Cl. 126-432.000.

Steigerwalt, Edward J.: *See—*
Woytek, Andrew J.; Lileck, John T.; and Steigerwalt, Edward J., 4,446,920, Cl. 166-297.000.

Steinbach, Robert L., to Chicago Lock Co. Cylinder lock mechanism. 4,446,709, Cl. 70-363.000.

Steiner, Gerd; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Lenke, Dieter, to BASF Aktiengesellschaft. 10-Substituted 5-cyanomethylene-dibenzo[A,B]-cycloheptenes, their preparations, and therapeutic agents containing these compounds. 4,447,610, Cl. 544-381.000.

Steinkohl, Anton: *See—*
Christiansen, Uwe; Rau, Karlheinz; Steinkohl, Anton; and Streb, Bruno, 4,447,130, Cl. 350-310.000.

Stengel, Frederick H.: *See—*
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl P.; Stengel, Frederick H.; and Hayslett, David D., 4,447,398, Cl. 422-102.000.

Stephan, Hans-Werner; Klein, Hermann; and Lehr, Klaus, to Hoechst Aktiengesellschaft. Metering device. 4,447,400, Cl. 422-150.000.

Sterling Drug Inc.: *See—*
Hung, William M.; and Ehlinger, Edward E., 4,447,616, Cl. 546-335.000.

Stern, Gerhard; and Weinrotter, Klaus, to Chemie Linz AG; and Chemiefaser Lenzing AG. Flame-retardant polyacrylonitrile fiber. 4,447,568, Cl. 524-101.000.

Stevens, Colin R.; and Ababurko, Victor, to Gestetner Manufacturing Limited. Ink control for a multi-cylinder stencil duplicator. 4,446,791, Cl. 101-122.000.

Stevenson, David J.; and Domian, Robert E., to Stevenson, David J. Self-defense spray device. 4,446,990, Cl. 222-82.000.

Stevenson, Robert B.: *See—*
Johnson, Paul H.; and Stevenson, Robert B., 4,446,634, Cl. 36-29.000.

Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Fluidized bed heat exchanger utilizing induced circulation. 4,446,629, Cl. 34-57.00A.

Stewart, Rodney A.: *See—*
Antenore, Donald E.; Schmadeke, Donald W.; and Stewart, Rodney A., 4,447,463, Cl. 426-603.000.

Stihl, Andreas: *See—*
Weiss, Hermann, 4,446,954, Cl. 192-105.0CD.

Stinnett, Regan W., to United States of America, Energy. Negative ion generator. 4,447,761, Cl. 315-111.810.

Stoffel, James C., to Xerox Corporation. Image scanning apparatus and method. 4,447,830, Cl. 358-283.000.

Stol, Israel, to Westinghouse Electric Corp. Method and apparatus for arc welding. 4,447,703, Cl. 219-136.000.

Stoll, Kurt; and Glaettli, Hans-Heinrich. Pneumatic timer. 4,447,161, Cl. 368-65.000.

Stoller, Kenneth P.: *See—*
Taff, Barry E.; and Stoller, Kenneth P., 4,447,225, Cl. 604-71.000.

Stone, Kenneth R.; and Uppaluri, Bapa R., to Southwire Company. Propped cantilevered roll stand. 4,446,712, Cl. 72-243.000.

Stone, Lawrence J.; and Wells, Richard J., to Massey-Ferguson Inc. Backlighted instrument console for a tractor. 4,447,860, Cl. 362-30.000.

Stone, Lyndon R.; and Hall, James D., to Baker International Corporation. Apparatus for counting turns when making threaded joints including an increased resolution turns counter. 4,446,745, Cl. 73-862.250.

Stottlemyre, Phillip D. Fence door latch. 4,447,081, Cl. 292-264.000.

Stover, Richard W.; Proper, Frederick T.; and Young, Steven A., to Allied Corporation. Melt pump seal with vacuum housing. 4,447,061, Cl. 277-1.000.

Stowe, Robert A.: *See—*
Murchison, Craig B.; Stowe, Robert A.; and Weiss, Richard L., 4,447,664, Cl. 585-323.000.

Stratton, Susan D.: *See—*
Kuecker, Ward A.; Stratton, Susan D.; and Cason, William C., 4,447,888, Cl. 364-900.000.

Streb, Bruno: *See—*
Christiansen, Uwe; Rau, Karlheinz; Steinkohl, Anton; and Streb, Bruno, 4,447,130, Cl. 350-310.000.

Strickland Systems, Inc.: *See—*
Ivey, H. Grady; and Sprouse, D. Leonard, 4,447,035, Cl. 249-194.000.

Strnadova, Karin; Kybal, Jan; Svoboda, Eduard; and Spacil, Jiri, to SPOFA, spojene podniky prozdravotnickou vyrobu. Microorganism strain of species *Claviceps purpurea*. 4,447,540, Cl. 435-254.000.

Strobel, Wolfgang: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,447,587, Cl. 526-124.000.

Strom, Robert M.: *See—*
Kershner, Larry D.; Thompson, Leonard R.; and Strom, Robert M., 4,447,656, Cl. 568-730.000.

Stromberg-Carlson Corporation: *See—*
Elliott, George; Lenk, Pedro A.; and Shah, Jayantkumar R., 4,447,673, Cl. 179-18.0HB.

Structural Accessories, Inc.: *See—*
Galbreath, Richard N., 4,447,172, Cl. 404-68.000.

Structural Dynamics Research Corporation: *See—*
Thompson, Jack M., Jr.; and Leist, Theodore H., Jr., 4,446,742, Cl. 73-663.000.

Stubbersfield, Beryl Grace: *See—*
Stubbersfield, Edgar M.; and Shaw, Leslie V., 4,446,623, Cl. 30-229.000.

Stubbersfield, Edgar M.; and Shaw, Leslie V., to Stubbersfield, Beryl Grace. Notching tool. 4,446,623, Cl. 30-229.000.

Stumm, Wolfgang, to Institut Dr. Friedrich Forster Prufgeratebau. Apparatus for securing storage tape on a test piece during magnetographic testing. 4,447,778, Cl. 324-213.000.

Stumpf, Werner: *See—*
Madaus, Rolf; and Stumpf, Werner, 4,447,455, Cl. 424-331.000.

Stumpf, William S.; and Ludwig, Gary R., to Hauserman Ltd. Acoustical pad. 4,446,663, Cl. 52-144.000.

Stussi, Karl: *See—*
Murbach, Julius, 4,447,182, Cl. 411-45.000.

Subotic, Miroslav: *See—*
Czech, Franz; and Subotic, Miroslav, 4,447,671, Cl. 174-28.000.

Sugahara, Byron M.; Freelund, Avrum A.; and Zinger, George, to Reefer Express Lines Pty., Ltd. Deck construction for refrigerated cargo ships. 4,446,805, Cl. 114-76.000.

Sugiyama, Hiroyuki, to Victor Company of Japan, Ltd. Reproducing apparatus for reproducing a rotary recording medium recorded with a color video signal. 4,447,834, Cl. 358-310.000.

Sugiyama, Takahiro; and Hagiwara, Yukio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Objective system for video disc. 4,447,138, Cl. 350-472.000.

Sugiyama, Tomokazu, to Nihon Plast Co., Ltd. Automotive horn switch structure on steering wheel. 4,447,684, Cl. 200-61.540.

Sugizawa, Taijiro; Yoshimura, Hironori; and Toyama, Junichi, to Mitsubishi Kinzoku Kabushiki Kaisha. Blade member of cermet having surface reaction layer and process for producing same. 4,447,263, Cl. 75-233.000.

Sullivan, Michael T., to Exanno Products Limited. Duct jointing system. 4,447,079, Cl. 285-363.000.

Sumida, Seizo: *See—*
Noguchi, Hiroshi; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, 4,447,260, Cl. 71-118.000.

Sumitomo Chemical Company, Limited: *See—*
Noguchi, Hiroshi; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, 4,447,260, Cl. 71-118.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Suzuki, Mitsuru; and Tomita, Yasuo, 4,446,701, Cl. 62-6.000.

Sunagawa, Masao: *See—*
Watanabe, Syuji; Ishii, Yoshitaro; and Sunagawa, Masao, 4,446,594, Cl. 15-323.000.

Sunbeam Plastics Corporation: *See—*
Gach, Peter P.; and Bush, Randall G., 4,446,979, Cl. 215-203.000.

Supraton F. J. Zucker GmbH: *See—*
Zucker, Friedrich J.; and Osthaus, Georg, 4,447,535, Cl. 435-162.000.

Susman, Howard. Storage device for a portable hair dryer or the like. 4,446,972, Cl. 211-13.000.

Sutehall, Ralph, to International Standard Electric Corporation. Plastic sheathed cables. 4,447,122, Cl. 350-96.230.

Sutter, Franz, to Institut Straumann AG. Implant for securing a denture. 4,447,209, Cl. 433-173.000.

Sutton, Harry G., Jr., to United States of America, Energy. Bolt failure detection. 4,447,388, Cl. 376-245.000.

Suwahara, Hiroshi: *See—*
Mizuno, Takaji; Suwahara, Hiroshi; and Segawa, Hirohisa, 4,447,702, Cl. 219-130.330.

Suzer Brothers Ltd.: *See—*
Herzog, Rudolf, 4,447,869, Cl. 364-184.000.

Suzuki, Akira; Kaneko, Katumi; and Inoue, Nobuyoshi, to Copal Company Limited. Blade type focal plane shutter. 4,447,142, Cl. 354-246.000.

Suzuki, Fumio; Fujikawa, Yoshihiro; Yamamoto, Susumu; Mizutani, Hidemi; Ohya, Tunehiko; Ikai, Takashi; and Oguchi, Toshihiko, to Nissan Chemical Industries, Ltd. N-(Unsubstituted or substituted pyridyl)aminomethylene-diphosphonic acids, herbicidal compositions containing same, their use for herbicides, and process for preparing same. 4,447,256, Cl. 71-86.000.

Suzuki, Haruo; and Hashimoto, Shigeyoshi, to Nippondenso Co., Ltd. Die-casting method. 4,446,907, Cl. 164-120.000.

Suzuki, Hirokazu; and Akiyama, Takehiro, to Fujitsu Limited. Semiconductor device for driving thermal print heads. 4,447,704, Cl. 219-216.000.

Suzuki, Ikuo: *See—*
Asaeda, Toshio; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, 4,446,657, Cl. 51-206.00R.

Suzuki, Koichi; Yoshihara, Mikio; Kawai, Shinji; and Mori, Katsuhiro, to Aisin Seiki Kabushiki Kaisha. Heated toilet seat. 4,446,584, Cl. 4-237.000.

Suzuki, Masao: *See—*
Kitamura, Yasuo; Suzuki, Masao; Kubota, Toshio; Watanabe, Hiroshi; and Tsujimoto, Masaaki, 4,446,881, Cl. 137-1.000.

Suzuki, Mikio; and Yamazaki, Masafumi, to Nissan Motor Co., Ltd. Evaporative emission control system. 4,446,838, Cl. 123-520.000.

Suzuki, Mitsuru; and Tomita, Yasuo, to Sumitomo Heavy Industries, Ltd. Fluid-operated refrigerating machine. 4,446,701, Cl. 62-6.000.

Suzuki, Shintaro; Iizuka, Sadao; and Moriya, Yoshimi, to Kanto Denka Kogyo Co., Ltd. Production of magnetic powder. 4,447,264, Cl. 75-251.000.

Suzuki, Tomosaburo; and Kato, Toshiki, to Kabushiki Kaisha Daisei Kikai. Fixed quantity feed apparatus. 4,446,992, Cl. 222-196.000.

Suzuki, Yasuo: *See—*
Tamura, Akira; and Suzuki, Yasuo, 4,446,905, Cl. 152-361.0DM.

Svoboda, Eduard: *See—*
Strnadova, Karin; Kybal, Jan; Svoboda, Eduard; and Spacil, Jiri, 4,447,540, Cl. 435-254.000.

Sweeney, David F.: *See—*
Konkel, Joseph; and Sweeney, David F., 4,446,790, Cl. 101-93.140.
Sweigart, Clyde M.: *See—*
Goldfarb, Louis; and Sweigart, Clyde M., 4,447,347, Cl. 252-70.000.
Swift, J. Nathan: *See—*
Swift, John N.; and Hawkins, Harry M., 4,447,212, Cl. 434-185.000.
Swift, John N.; and Hawkins, Harry M., to Swift, J. Nathan. Verbal response time conditioning apparatus. 4,447,212, Cl. 434-185.000.
Swihart, Terence J.; and Ziemelis, Maris J., to Dow Corning Corporation. Method of coating substrates with polydiorganosiloxanes having lower alkyl substituents to provide release coatings. 4,447,499, Cl. 428-447.000.
Swiss Aluminium Ltd.: *See—*
Hardt, Jean; and Widrig, Jakob, 4,446,942, Cl. 181-249.000.
Sybron Corporation: *See—*
Pillis, Lewis J.; and Davis, Lois T., 4,447,539, Cl. 435-253.000.
Systron-Donner: *See—*
Magorien, Vincent G., 4,447,040, Cl. 251-149.800.
Syva Company: *See—*
Monte, Alex A.; and Centofanti, Joan G., 4,447,527, Cl. 435-7.000.
Szabo, Bill: *See—*
Perl, Ludovic; and Szabo, Bill, 4,447,096, Cl. 312-111.000.
Szycher, Michael, to Thermo Electron Corporation. Extrudable polyurethane for prosthetic devices prepared from a diisocyanate, a polytetramethylene ether polyol and 1,4 butane diol. 4,447,590, Cl. 528-76.000.
Tabak, Samuel A.: *See—*
Angevine, Philip J.; Audeh, Costandi A.; Tabak, Samuel A.; and Yan, Tsoung Y., 4,447,312, Cl. 208-46.000.
Tabuchi, Kenji, to Minolta Camera Kabushiki Kaisha. Electrostatic image developing method correcting irregularities of magnetic brush developing. 4,447,518, Cl. 430-122.000.
Tack, Carl E., Jr., to Danly Machine Corporation. Hydraulic clutching and braking system for starting and stopping a power press. 4,446,785, Cl. 100-35.000.
Taco Operations, Inc.: *See—*
Bernal, Eddie L., 4,447,457, Cl. 426-91.000.
Tada, Yoshikazu, to Hayashikane Shipbuilding & Engineering Co., Ltd., a part interest. Method and apparatus for purifying contamination of dental consultation room. 4,446,861, Cl. 128-139.000.
Taff, Barry E.; and Stoller, Kenneth P. Multidose jet injector. 4,447,225, Cl. 604-71.000.
Tafuri, Michael W.; and Tao, Bernard Y., to Procter & Gamble Company, The. Structural fat and method for making same. 4,447,462, Cl. 426-601.000.
Tague, Steven A.; and Negi, Virendra S., to Honeywell Information Systems Inc. Apparatus for setting the basic clock timing in a data processing system. 4,447,870, Cl. 364-200.000.
Tai, Louis H. T., to Lever Brothers Company. Suds suppressing granules for use in detergent compositions. 4,447,349, Cl. 252-174.130.
Taig, Alistair G. Support assembly for a vehicle. 4,446,998, Cl. 224-329.000.
Takada, Juichiro. Belt transfer ring for passive vehicle occupant seat belt systems. 4,447,074, Cl. 280-804.000.
Takada, Sanae: *See—*
Ohyama, Hiroshi; Takada, Sanae; Morita, Ken; and Yamamura, Saburo, 4,447,259, Cl. 71-94.000.
Takagi, Hiroyoshi: *See—*
Toi, Mitsuharu; and Takagi, Hiroyoshi, 4,447,020, Cl. 242-198.000.
Takagi, Shoji: *See—*
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, 4,447,663, Cl. 570-150.000.
Takagi, Yasuo; and Horibe, Michiharu, to Cemedine Co., Ltd.; and Tohto Kasei Co., Ltd. Epoxy resin adhesive compositions. 4,447,579, Cl. 525-113.000.
Takagi, Yoshihiro: *See—*
Hirano, Shigeo; and Takagi, Yoshihiro, 4,447,522, Cl. 430-405.000.
Takahashi, Iwashige: *See—*
Nishikawa, Yoshinori; and Takahashi, Iwashige, 4,446,787, Cl. 100-99.000.
Takahashi, Kotei, to Nissan Motor Company, Ltd. Air breather device of an automotive manual transmission. 4,446,755, Cl. 74-606.00R.
Takahashi, Yoshihiro; Okuyama, Katsuo; and Matsukuma, Yutaka, to Fujitsu Limited. Shelf unit for electronic communication devices. 4,447,856, Cl. 361-383.000.
Takashima, Toshiharu: *See—*
Ochiai, Yoshiki; Nomura, Kenji; Yamakage, Tetsuro; and Takashima, Toshiharu, 4,447,177, Cl. 408-161.000.
Takasugi, Hisashi: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,447,430, Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,447,430, Cl. 424-246.000.
Takemae, Yoshihiro; Enomoto, Seiji; Nozaki, Shigeki; Mezawa, Tsutomu; and Kabashima, Katsuhiko, to Fujitsu Limited. Buffer circuit including a current lead circuit for maintaining the charged voltages. 4,447,745, Cl. 307-269.000.
Takeo, Kimihiko; Hirano, Toichiro; and Sato, Fumihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Processed starch, process for preparing same and use of same in medicines. 4,447,601, Cl. 536-102.000.
Takeuchi, Takahito: *See—*
Furuya, Koutaro; Hosoda, Kazuho; Takeuchi, Takahito; Ishikura, Yasuyuki; and Kameda, Morihiro, 4,446,580, Cl. 3-6.000.
Takezaki, Jiro: *See—*
Kimura, Katsuhiro; Endo, Akira; and Takezaki, Jiro, 4,446,826, Cl. 123-143.00B.
Takigawa, Shinichiro: *See—*
Hoshiyama, Satoshi; Muto, Hiroyuki; Shinke, Shuzo; Otsuka, Kanji; Takigawa, Shinichiro; and Yamazaki, Hiroyuki, 4,447,661, Cl. 568-882.000.
Takimoto, Hiroyuki: *See—*
Hirata, Noritsugu; Takimoto, Hiroyuki; and Maeda, Masaya, 4,447,837, Cl. 360-33.100.
Takushima, Takashi: *See—*
Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,446,643, Cl. 40-590.000.
Talley, Lloyd A., to Eubanks Engineering Company. Apparatus for attaching terminals to the ends of electric conductors. 4,446,615, Cl. 29-742.000.
Tamura, Akira; and Suzuki, Yasuo, to Bridgestone Tire Company Limited. Radial tires for running on rough ground. 4,446,905, Cl. 152-361.0DM.
Tamura, Hitoshi; and Shigeoka, Katsuhei, to Mitsubishi Rayon Co., Ltd. Process for producing antipilling acrylic synthetic fiber. 4,447,384, Cl. 264-206.000.
Tanaka, Akira, to Tokyo Metropolitan Institute of Medical Science, The. Preparing replica film of specimen for electron microscopy. 4,447,374, Cl. 264-22.000.
Tanaka, Masaaki: *See—*
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,446,839, Cl. 123-569.000.
Tanaka, Minoru: *See—*
Terahara, Akira; and Tanaka, Minoru, 4,447,626, Cl. 549-292.000.
Tanaka, Takeshi: *See—*
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,446,839, Cl. 123-569.000.
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shinichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, to Chugai Seiyaku Kabushiki Kaisha. Anti-peptic ulcer agent. 4,447,453, Cl. 424-319.000.
Tango, Hiroyuki: *See—*
Maeguchi, Kenji; and Tango, Hiroyuki, 4,447,823, Cl. 357-23.000.
Tani, Hoshiro: *See—*
Ushio, Tetsuji; Tatsuguchi, Satoru; Otani, Toshihisa; Tani, Hoshiro; and Yabe, Tetsuo, 4,447,306, Cl. 204-224.00R.
Tanikawa, Kowji, to Olympus Optical Co., Ltd. Leap year compensation circuit. 4,447,160, Cl. 368-34.000.
Tao, Bernard Y.: *See—*
Tafuri, Michael W.; and Tao, Bernard Y., 4,447,462, Cl. 426-601.000.
Tappan Company, The: *See—*
McFarland, Robert H., 4,446,849, Cl. 126-299.00R.
Tatsuguchi, Satoru: *See—*
Ushio, Tetsuji; Tatsuguchi, Satoru; Otani, Toshihisa; Tani, Hoshiro; and Yabe, Tetsuo, 4,447,306, Cl. 204-224.00R.
Taylor, Andrew W.; and Adams, Richard G., to Beecham Group p.l.c. Penicillins and compositions containing them. 4,447,422, Cl. 424-229.000.
Taylor, Chandler R., Jr., to A. H. Robins Company, Inc. Aryl substituted pyrido[1,4]benzodiazepines. 4,447,361, Cl. 260-244.400.
Taylor, Julian S.: *See—*
Taylor, Wesley L.; and Taylor, Julian S., 4,446,886, Cl. 137-516.290.
Taylor, Rupert M.: *See—*
Robinson, David S.; and Taylor, Rupert M., 4,447,185, Cl. 414-420.000.
Taylor, Wesley L.; and Taylor, Julian S. Safety relief valve soft seat. 4,446,886, Cl. 137-516.290.
TDK Kabushiki Kaisha: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.
Teccor Electronics, Inc.: *See—*
Harwell, Jack B., 4,447,849, Cl. 361-152.000.
Technicon Instruments Corporation: *See—*
Farrell, Gregory A.; and Epstein, Edward A., 4,447,883, Cl. 364-555.000.
Tegtmeier, Sheldon D., to Tegtmeier & Sons, Inc. Safety latch for extensible lift mechanisms. 4,447,089, Cl. 298-11.000.
Tegtmeier & Sons, Inc.: *See—*
Tegtmeier, Sheldon D., 4,447,089, Cl. 298-11.000.
Teijin Limited: *See—*
Funakoshi, Wataru; and Urasaki, Takanori, 4,447,593, Cl. 528-176.000.
Tektronix, Inc.: *See—*
Crosby, Philip S.; and Jordan, Dale A., 4,447,803, Cl. 340-347.0CC.
Moore, Wayne A., 4,447,876, Cl. 364-200.000.
Telelogic, Inc.: *See—*
Harris, William J.; Jackson, Joseph M.; and Petty, David C., 4,447,676, Cl. 179-90.0BD.
Telex Communications, Inc.: *See—*
Flygstad, Dean W.; and Wehrmacher, Bill F., 4,447,836, Cl. 360-15.000.
Temkin, Henryk: *See—*
Chin, Aland K.; DiGiuseppe, Michael A.; and Temkin, Henryk, 4,447,822, Cl. 357-17.000.

Terada, Matsuaki; and Yokota, Koji, to Hitachi, Ltd. Data communication system with a front-end-processor. 4,447,871, Cl. 364-200.000.
Terahara, Akira; and Tanaka, Minoru, to Sankyo Company Limited. ML-236B Derivatives. 4,447,626, Cl. 549-292.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. 7-[2-Alkoxyimino-2-(5-amino-1,2,4-thiadiazol-3-yl)acetamido]-3-cephems. 4,447,429, Cl. 424-246.000.
Teranishi, Roy; Murphy, Edwin L.; Balser, Donald S.; and Howard, Walter E., to United States of America, Agriculture. Bait post. 4,446,648, Cl. 43-131.000.
Terasawa, Koji, to Canon Kabushiki Kaisha. Ink supplying mechanism. 4,447,820, Cl. 346-140.00R.
Terui, Nobuhiko, to Nippon Kogaku K.K. Motor control device. 4,447,768, Cl. 318-293.000.
Teschendorf, Hans-Juergen: *See—*
Steiner, Gerd; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Lenke, Dieter, 4,447,610, Cl. 544-381.000.
Tetsudo Kizai Kogyo Company Limited: *See—*
Matsuo, Yoshio, 4,447,006, Cl. 238-341.000.
Teuber, Michael: *See—*
Moebus, Otto; Teuber, Michael; and Reuter, Helmut, 4,447,534, Cl. 435-161.000.
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deradt, Roger, to Roussel Uclaf. Steroid derivatives. 4,447,424, Cl. 424-238.000.
Texas Instruments Incorporated: *See—*
Brantingham, George L.; Lou, Perry W.; Housey, Lawrence J.; Tubbs, Graham S.; and Teza, Jeffrey R., 4,447,881, Cl. 364-488.000.
Culley, Bobby G., 4,447,213, Cl. 434-201.000.
Schulte, Eric, 4,447,291, Cl. 156-643.000.
Wagers, Robert S., 4,447,754, Cl. 310-313.00R.
Weirauch, Donald F., 4,447,393, Cl. 420-590.000.
Teza, Jeffrey R.: *See—*
Brantingham, George L.; Lou, Perry W.; Housey, Lawrence J.; Tubbs, Graham S.; and Teza, Jeffrey R., 4,447,881, Cl. 364-488.000.
Th.Goldschmidt AG: *See—*
Fink, Hans-Ferdi; Koerner, Gotz; and Luksch, Edmund, 4,447,498, Cl. 428-447.000.
Thatchcode Limited T/A Flexiform: *See—*
Parker, Ray, 4,447,098, Cl. 312-216.000.
Thermo Electron Corporation: *See—*
Szycher, Michael, 4,447,590, Cl. 528-76.000.
Thomas, Brian H.: *See—*
Imerman, Curtis E.; Langerud, David S.; and Thomas, Brian H., 4,446,976, Cl. 212-189.000.
Thomas, Perry W. Lawnmower powered implement. 4,446,679, Cl. 56-2.000.
Thompson, Jack M., Jr.; and Leist, Theodore H., Jr., to Structural Dynamics Research Corporation. Motion transmission limiting apparatus. 4,446,742, Cl. 73-663.000.
Thompson, Kenneth W. Self-contained fluid dispenser. 4,446,991, Cl. 222-94.000.
Thompson, Leonard R.: *See—*
Kershner, Larry D.; Thompson, Leonard R.; and Strom, Robert M., 4,447,656, Cl. 568-730.000.
Thompson, Marlin H.: *See—*
Howlett, James F.; and Thompson, Marlin H., 4,447,750, Cl. 310-89.000.
Thompson, Thomas C.: *See—*
Gula, John A.; Brady, John D.; Thompson, Thomas C.; and Alt, Joyce M., 4,447,230, Cl. 604-122.000.
Thomson-CSF: *See—*
Lefebure, Jean M., 4,447,810, Cl. 340-756.000.
Thorne, James M.: *See—*
Jensen, Reed J.; Thorne, James M.; Cluff, Coran L.; and Hayes, John K., 4,447,303, Cl. 204-157.10R.
Thornhill, John: *See—*
Kurina, Miles J.; and Thornhill, John, 4,447,816, Cl. 343-877.000.
Thorud, Stanley R.: *See—*
Miller, LeRoy; Thorud, Stanley R.; and Rivkin, Eric M., 4,446,660, Cl. 52-36.000.
Tiers, George V. D.; Aasen, Steven M.; Dalzell, Rex J.; and Holmes, Brian N., to Minnesota Mining and Manufacturing Company. Fixing of tetra(hydrocarbyl)borate salt imaging systems. 4,447,521, Cl. 430-337.000.
TII Industries Inc.: *See—*
Smith, Thomas J., 4,447,848, Cl. 361-124.000.
Tile Council of America, Inc.: *See—*
Chesney, Joseph J., Jr.; and Broney, Scott C., 4,447,267, Cl. 106-93.000.
Tima, Zdenek: *See—*
Jaumann, Leonhard; Tima, Zdenek; and Feierlein, Heinz, 4,447,033, Cl. 248-563.000.
Tindel, Thomas F.: *See—*
Winiecki, Tadeus; and Tindel, Thomas F., 4,447,069, Cl. 280-270.000.
Tioxide Group PLC: *See—*
Howard, Peter B.; and O'Donnell, Derek, 4,447,270, Cl. 106-300.000.
Howard, Peter B.; and O'Donnell, Derek, 4,447,271, Cl. 106-300.000.
Tipping, James W.: *See—*
Bradbury, John A.; Rowlands, Reuben; and Tipping, James W., 4,447,491, Cl. 428-304.400.
Todd, David B.: *See—*
Karian, Harutun G.; and Todd, David B., 4,447,383, Cl. 264-8.000.
Todd, John C. Method and apparatus for producing viscous or waxy crude oils. 4,446,917, Cl. 166-59.000.
Tohto Kasei Co., Ltd.: *See—*
Takagi, Yasuo; and Horibe, Michiharu, 4,447,579, Cl. 525-113.000.
Toi, Mitsuharu; and Takagi, Hiroyoshi, to Hitachi Maxell, Ltd. Magnetic recording tape cartridge. 4,447,020, Cl. 242-198.000.
Tojza, Roman A., to Bally Manufacturing Corporation. Game gate device. 4,447,058, Cl. 273-121.00A.
Tokico Ltd.: *See—*
Kato, Tetsuo, 4,446,895, Cl. 141-4.000.
Tokorozawa, Sadao, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Apparatus for dispensing a preselected amount of liquid. 4,446,993, Cl. 222-214.000.
Tokura, Isao: *See—*
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, 4,447,113, Cl. 358-75.000.
Tokyo Electric Co., Ltd.: *See—*
Ochiai, Kuniaki; Horii, Masami; and Norigoe, Takashi, 4,447,166, Cl. 400-124.000.
Tokyo Metropolitan Institute of Medical Science, The: *See—*
Tanaka, Akira, 4,447,374, Cl. 264-22.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Asano, Masamichi; and Iwahashi, Hiroshi, 4,447,895, Cl. 365-226.000.
Kohmoto, Kohtaro; Ebara, Hiroyuki; and Nira, Hisami, 4,447,756, Cl. 313-487.000.
Maeguchi, Kenji; and Tango, Hiroyuki, 4,447,823, Cl. 357-23.000.
Moriwaki, Takeshi, 4,447,216, Cl. 445-70.000.
Oana, Yasuhisa; Yasuda, Nobuaki; Yamashita, Masato; and Ozawa, Norio, 4,447,825, Cl. 357-71.000.
Oguchi, Toshihiko; Kato, Hirohisa; and Yokoyama, Hirotaka, 4,447,467, Cl. 427-48.000.
Watanabe, Masaru; Matsumura, Satoru; Amada, Takayoshi; Irie, Hiromitsu; and Saito, Norihisa, 4,447,293, Cl. 159-6.200.
Yoshihisa, Kozo, 4,447,901, Cl. 370-74.000.
Tollefson, Mark S.: *See—*
Schultz, Charles R.; Tollefson, Mark S.; and Wuertz, Howard A., 4,447,173, Cl. 405-181.000.
Tomasovic, Beth: *See—*
Anouchi, Abraham Y.; Novack, Robert L.; and Tomasovic, Beth, 4,447,397, Cl. 422-94.000.
Tomita, Yasuo: *See—*
Suzuki, Mitsuru; and Tomita, Yasuo, 4,446,701, Cl. 62-6.000.
Tomka, Jiri G.: *See—*
Cogswell, Frederic N.; and Tomka, Jiri G., 4,447,599, Cl. 528-502.000.
Tomuro, Noboru; Ishiguchi, Isao; Tsujikawa, Shinjiro; Kashima, Masao; and Miyashita, Yasuo, to Mitsubishi Mining & Cement Company, Ltd. Ceramic capacitor. 4,447,853, Cl. 361-321.000.
Toray Silicone Company, Ltd.: *See—*
Fukayama, Miyoji; and Ichiijo, Chikara, 4,447,576, Cl. 524-714.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Kawakami, Toshio; and Kimura, Izumi, 4,446,612, Cl. 29-568.000.
Toshio Asaeda: *See—*
Asaeda, Toshio; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, 4,446,657, Cl. 51-206.00R.
Toumani, Rouben: *See—*
Arntsen, Tom D.; and Toumani, Rouben, 4,447,675, Cl. 179-84.00R.
Toyama, Junichi: *See—*
Sugizawa, Taijiro; Yoshimura, Hironori; and Toyama, Junichi, 4,447,263, Cl. 75-233.000.
Toyo Engineering Corporation: *See—*
Kitamura, Yasuo; Suzuki, Masao; Kubota, Toshio; Watanabe, Hiroshi; and Tsujimoto, Masaaki, 4,446,881, Cl. 137-1.000.
Toyo Rubber Industry Co. Ltd., The: *See—*
Kishida, Katsuji; Oonishi, Masakazu; and Oda, Keijiro, 4,446,904, Cl. 152-356.00R.
Toyoda Gosei: *See—*
Katagiri, Masayoshi; Kondo, Toshio; and Midooka, Masanori, 4,447,066, Cl. 277-212.0FB.
Toyoda Koki Kabushiki Kaisha: *See—*
Asaeda, Toshio; Suzuki, Ikuo; Imai, Tomoyasu; and Kitajima, Masato, 4,446,657, Cl. 51-206.00R.
Ochiai, Yoshiki; Nomura, Kenji; Yamakage, Tetsuro; and Takashima, Toshiharu, 4,447,177, Cl. 408-161.000.
Toyoshima, Satoshi: *See—*
Ogura, Haruo; Furuhata, Kimio; Osawa, Toshiaki; Toyoshima, Satoshi; Shitori, Yoshiyasu; and Ito, Masayoshi, 4,447,600, Cl. 536-23.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Bessho, Hironori, 4,446,823, Cl. 123-52.0MB.
Katagiri, Masayoshi; Kondo, Toshio; and Midooka, Masanori, 4,447,066, Cl. 277-212.0FB.
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,446,839, Cl. 123-569.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Inukai, Mitsuo, 4,447,017, Cl. 242-107.40A.
Trane Company, The: *See—*
Krocker, Robert E., 4,446,913, Cl. 165-12.000.
Welch, Donald C.; and Yoerg, Christopher P., 4,446,915, Cl. 165-144.000.

Transat Corp.: *See—*
Rutkoski, John P., 4,447,782, Cl. 324-56.000.
Transnuklear GmbH: *See—*
Botzem, Werner; Knappe, Ortwin; and Laug, Reiner, 4,447,730, Cl. 250-506.100.
Traxler, James T., to Velsicol Chemical Corporation. Fluorenone esters of phosphoric and phosphonic acids as insecticides. 4,447,420, Cl. 424-210.000.
TRE Corporation: *See—*
Mullich, Richard O.; and Dushane, Ray, 4,446,707, Cl. 70-134.000.
Treise, Jan E., to Rockwell International Corporation. Digital VOR bearing measurement apparatus. 4,447,814, Cl. 343-401.000.
Trenkle, Robert W.: *See—*
Spitz, Seymour J., Jr.; Mookherjee, Braja D.; Hill, Ira D.; Keleher, Lloyd F.; Trenkle, Robert W.; and Wolff, Robin K., 4,446,651, Cl. 47-10.000.
Trescher, Viktor: *See—*
Werner, Friedrich; Mannes, Karl; and Trescher, Viktor, 4,447,647, Cl. 564-412.000.
Tresner, Homer D.: *See—*
Liu, Chao-Min; Tresner, Homer D.; and Westley, John, 4,447,533, Cl. 435-119.000.
Trezeguet, Jean-Pierre: *See—*
Guazzo, Lucien; and Trezeguet, Jean-Pierre, 4,447,115, Cl. 350-96.200.
Trimed, Inc.: *See—*
Knodle, Daniel W., 4,446,869, Cl. 128-716.000.
TRP Energy Sensors, Inc.: *See—*
Berndt, Dieter R., 4,447,164, Cl. 374-162.000.
Trudeau, William H.; Gaines, Donald R.; and Smallegan, Jon M., to O & S Manufacturing Company. Prelubricated sealed bearings. 4,447,094, Cl. 308-2.00R.
Trummlitz, Gunter; Engel, Wolfhard; Eberlein, Wolfgang; Schmidt, Gunther; Hammer, Rudolf; and del Soldato, Piero, to Dr. Karl Thomae GmbH. Substituted dibenzodiazepinones. 4,447,434, Cl. 424-256.000.
Trumpy, David K.: *See—*
Giardini, Dante S.; Iwanski, Richard V.; and Trumpy, David K., 4,446,825, Cl. 123-90.650.
Trutzschler GmbH & Co. KG: *See—*
Marx, Hans-Jurgen; and Hosel, Fritz P., 4,446,602, Cl. 19-0.210.
Tsai, Nan-Hsiung: *See—*
Beinglass, Israel; and Tsai, Nan-Hsiung, 4,446,613, Cl. 29-571.000.
Tsai, Shan-Pu: *See—*
Hruska, Louis W.; and Tsai, Shan-Pu, 4,447,566, Cl. 523-221.000.
Tsuji, Kiyoshi: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,447,430, Cl. 424-246.000.
Tsujikawa, Shinjiro: *See—*
Tomuro, Noboru; Ishiguchi, Isao; Tsujikawa, Shinjiro; Kashima, Masao; and Miyashita, Yasuo, 4,447,853, Cl. 361-321.000.
Tsujimoto, Masaaki: *See—*
Kitamura, Yasuo; Suzuki, Masao; Kubota, Toshio; Watanabe, Hiroshi; and Tsujimoto, Masaaki, 4,446,881, Cl. 137-1.000.
Tsukada, Nobuo; and Nishida, Isamu, to Seiko Instruments & Electronics Ltd. Stem mechanism for a watch. 4,447,163, Cl. 368-319.000.
Tsurumoto, Kazuo; and Ozaki, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Power supply unit for electric discharge machine. 4,447,713, Cl. 219-69.00G.
Tsuruta, Naohiro: *See—*
Ai, Hideo; and Tsuruta, Naohiro, 4,447,580, Cl. 525-121.000.
Tubbs, Graham S.: *See—*
Brantingham, George L.; Lou, Perry W.; Housey, Lawrence J.; Tubbs, Graham S.; and Teza, Jeffrey R., 4,447,881, Cl. 364-488.000.
Tuckey, Charles H., to Walbro Corporation. Self-contained rotary fuel pump. 4,447,192, Cl. 417-360.000.
Turnbull, Fred G., to General Electric Company. Regenerative rectifier circuit. 4,447,868, Cl. 363-81.000.
Tyhach, Richard J.: *See—*
Greenquist, Alfred C.; Rupchock, Patricia A.; Tyhach, Richard J.; and Walter, Bert, 4,447,529, Cl. 435-7.000.
Rupchock, Patricia A.; and Tyhach, Richard J., 4,447,526, Cl. 435-7.000.
Tyler, Derek E.: *See—*
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., 4,446,909, Cl. 164-453.000.
Tyler, Frank S., to Lever Brothers Company. Reinforced nestable containers. 4,446,969, Cl. 206-519.000.
Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M.; Licciardello, Michael; and Tyszkiewicz, Theodore J., 4,447,365, Cl. 260-463.000.
Uddeholms Aktiebolag: *See—*
Bruce, Lars M., 4,447,389, Cl. 419-6.000.
Ueda, Iwao, to Hamana Iron Work Co., Ltd. Double twisting machine. 4,446,688, Cl. 57-58.650.
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Setup condition recorder for a color scanner. 4,447,113, Cl. 358-75.000.
Uede, Hisashi: *See—*
Kawaguchi, Masashi; Ishii, Toshiaki; Isaka, Kinichi; and Uede, Hisashi, 4,447,757, Cl. 313-509.000.
Umeda, Kenichi: *See—*
Masujima, Sho; Shibuya, Masahide; Shoichi, Iwaya; Umeda, Kenichi; Oikawa, Yasunobu; Abe, Hisao; Midori, Yoshifumi; Fujiwara, Shinobu; and Kikuchi, Nobuaki, 4,447,549, Cl. 501-138.000.
Underwood, Gene E. Fluid mixing system with inductor cleanout. 4,447,157, Cl. 366-137.000.
Ungarean, Gary L.; and Yarwood, John C., to Olin Corporation. Infrared imaging for electromagnetic casting. 4,446,908, Cl. 164-452.000.
Ungarean, Gary L.: *See—*
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., 4,446,909, Cl. 164-453.000.
Ungerboeck, Gottfried: *See—*
Chevillat, Pierre R.; and Ungerboeck, Gottfried, 4,447,908, Cl. 375-42.000.
Unimation, Inc.: *See—*
Dunne, Maurice J.; and Nielsen, Klaus W., 4,447,697, Cl. 219-86.410.
Union Carbide Corporation: *See—*
Blakeslee, Theodore R., III; and Wu, Randall, 4,447,387, Cl. 264-566.000.
Lustig, Stanley; Schuetz, Jeffrey M.; and Vicik, Stephen J., 4,447,480, Cl. 428-35.000.
Mallon, Charles B., 4,447,632, Cl. 556-470.000.
Wegman, Richard W., 4,447,648, Cl. 568-484.000.
Union Oil Company of California: *See—*
Miller, J. Wayne; and Simpson, Howard D., 4,447,317, Cl. 208-216.00R.
Young, Donald C., 4,447,253, Cl. 71-28.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the: *See—*
Sinclair, Ian, 4,446,720, Cl. 73-23.000.
United States of America
Agriculture: *See—*
Gunderson, Dennis E., 4,446,743, Cl. 73-822.000.
Hasegawa, Shin, 4,447,456, Cl. 426-51.000.
Teranishi, Roy; Murphy, Edwin L.; Balser, Donald S.; and Howard, Walter E., 4,446,648, Cl. 43-131.000.
Air Force: *See—*
Marcus, Stephen; and Quist, Theodore M., 4,447,149, Cl. 356-5.000.
Army: *See—*
Bruce, Charles W.; and Brewer, Ralph J., 4,446,721, Cl. 73-29.000.
Englar, Donald G.; and Altman, Robert G., 4,447,395, Cl. 422-68.000.
Klayman, Daniel L.; Scovill, John P.; Bartosevich, Joseph F.; Mason, Carl J.; and Griffin, T. Scott, 4,447,427, Cl. 424-244.000.
Energy: *See—*
Bean, Vern E.; and Long, Frederick G., 4,447,743, Cl. 307-118.000.
Brown, Clyde O., 4,447,701, Cl. 219-121.0LG.
Cremers, David A.; and Keller, Richard A., 4,447,153, Cl. 356-361.000.
Jensen, Reed J.; Thorne, James M.; Cluff, Coran L.; and Hayes, John K., 4,447,303, Cl. 204-157.10R.
Leung, Ka-Ngo; and Ehlers, Kenneth W., 4,447,732, Cl. 250-427.000.
Lula, James W.; and Schicker, James R., 4,447,565, Cl. 523-219.000.
Maskalick, Nicholas J., 4,447,509, Cl. 429-235.000.
McLellan, Edward J.; and Webb, John A., 4,447,151, Cl. 356-218.000.
Pence, Dallas T.; and Chou, Chun-Chao, 4,447,353, Cl. 252-630.000.
Schmid, Frederick L., 4,447,085, Cl. 294-97.000.
Sefko, John; and Pavlik, Norman M., 4,447,795, Cl. 336-178.000.
Shang, Jer-Yu; Notestein, John E.; Mei, Joseph S.; and Zeng, Li-Wen, 4,447,297, Cl. 202-99.000.
Shen, Sin-Yan, 4,447,301, Cl. 204-67.000.
Stinnett, Regan W., 4,447,761, Cl. 315-111.810.
Sutton, Harry G., Jr., 4,447,388, Cl. 376-245.000.
Health and Human Services: *See—*
Yunker, Conrad E.; Cory, John C.; and Meibos, Harold R., 4,447,537, Cl. 435-235.000.
National Aeronautics and Space Administration: *See—*
Dunn, Stanley A.; Pomplun, Alan R.; Paquette, Elmer G.; Ethridge, Edwin C.; and Johnson, Jerry. L., 4,447,251, Cl. 65-142.000.
La Fever, Alan E., 4,446,757, Cl. 74-758.000.
Navy: *See—*
Allen, John H., 4,447,804, Cl. 340-347.0DD.
Bobb, Lloyd C., 4,447,117, Cl. 350-96.150.
Brown, Robert E., 4,447,776, Cl. 324-253.000.
Campana, Jerry M.; and Day, Richard B., 4,447,083, Cl. 294-66.00R.
Christe, Karl O.; and Wilson, William W., 4,447,407, Cl. 423-262.000.
Hamid, Michael, 4,447,811, Cl. 343-783.000.
Nowell, Larry H.; and Halley, Robert, 4,446,624, Cl. 33-1.00C.
Renfro, Vernon E.; Gudgeon, Ronald L.; Clelland, John P.; and Cole, Clyde C., 4,447,186, Cl. 414-589.000.
Saks, Nelson S., 4,447,272, Cl. 148-1.500.
U.S. Philips Corporation: *See—*
Coursant, Roger-Henri, 4,446,739, Cl. 73-609.000.
de Zwart, Maarten, 4,447,132, Cl. 350-346.000.

Euteneuer, Edmund; and Eckhardt, Friedhelm, 4,447,167, Cl. 400-625.000.
Hottier, Francois, 4,446,737, Cl. 73-602.000.
Mignolet, Georges M. A.; and Mestdagh, Gilbert E., 4,447,840, Cl. 360-137.000.
Moerkens, Jozef C.; and Verhees, Leonardus G. J., 4,447,759, Cl. 315-60.000.
Schayes, Raymond G. G.; Gustin, Pol A. G. J.; Bodart, Robert; and Berck, Michel F. D. J., 4,447,829, Cl. 358-260.000.
United Technologies Corporation: *See—*
Luczak, Francis J.; and Landsman, Douglas A., 4,447,506, Cl. 429-44.000.
Wiley, Walter H.; and Madden, William M., 4,447,009, Cl. 239-265.390.
University of Calif., The Regents of the: *See—*
Jacobs, Robert S.; and Faulkner, D. John, 4,447,445, Cl. 424-279.000.
University of California, Regents of the: *See—*
Goodman, Howard M.; Shine, John; and Seeburg, Peter H., 4,447,538, Cl. 435-253.000.
University of Delaware: *See—*
Langdon, Christopher J., 4,447,411, Cl. 424-14.000.
University Patents, Inc.: *See—*
Allen, Robert H.; and Seligman, Paul A., 4,447,547, Cl. 436-543.000.
Uno, Akira; Noda, Touru; and Ninohira, Akira, to Mitsubishi Paper Mills, Ltd. Process for preparing polyolefin resin-coated paper for photographic use. 4,447,524, Cl. 430-538.000.
Unterhoffer, Peter P.; and Dufresne, Gilles L., to Northern Telecom Limited. Weatherproof double door structure, and an enclosure embodying such structure. 4,446,655, Cl. 49-368.000.
UOP Inc.: *See—*
Broughton, Donald B., 4,447,329, Cl. 210-673.000.
Chao, Tai-Hsiang, 4,447,351, Cl. 252-313.00R.
Firth, Bruce E.; and Rosen, Terry J., 4,447,657, Cl. 568-783.000.
Hayes, John C.; and Castillo, Carmen, 4,447,552, Cl. 502-41.000.
Kurek, Paul R., 4,447,652, Cl. 568-658.000.
Lamb, Paul R.; Bakas, Steve T.; and Wood, Brian M., 4,447,315, Cl. 208-99.000.
O'Hara, Mark J.; and Johnson, Russell W., 4,447,556, Cl. 502-74.000.
Vora, Bipin V., 4,447,653, Cl. 568-697.000.
Upjohn Company, The: *See—*
Johnson, Roy A., 4,447,607, Cl. 544-246.000.
Lednicer, Daniel, 4,447,454, Cl. 424-330.000.
Marshall, Norman B., 4,447,449, Cl. 424-304.000.
Sih, John C.; and Lin, Chiu-Hong, 4,447,620, Cl. 548-336.000.
Upjohn Manufacturing Company M, The: *See—*
Mueller, Jerry C., 4,447,451, Cl. 424-317.000.
Uppaluri, Bapa R.: *See—*
Stone, Kenneth R.; and Uppaluri, Bapa R., 4,446,712, Cl. 72-243.000.
Uranit Uran-Isotopentrennungs-Gesellschaft mbH: *See—*
Mundt, Johann; Kasper, Horst; and Pritsch, Eckhard, 4,447,788, Cl. 318-799.000.
Urano, Shigeru: *See—*
Hiraoka, Takeshi; Urano, Shigeru; and Yamamoto, Kiyoshi, 4,447,275, Cl. 148-152.000.
Urasaki, Takanori: *See—*
Funakoshi, Wataru; and Urasaki, Takanori, 4,447,593, Cl. 528-176.000.
Ushio, Tetsuji; Tatsuguchi, Satoru; Otani, Toshihisa; Tani, Hoshiro; and Yabe, Tetsuo, to Mishima Kosan Corporation. Plating apparatus. 4,447,306, Cl. 204-224.00R.
Ushiyama, Junji. Device and method for detecting apical constriction in root canal of tooth. 4,447,206, Cl. 433-27.000.
V. Kann Rasmussen Holding A/S: *See—*
Dantzer-Sorensen, Bendt; and Christensen, Per B., 4,446,597, Cl. 16-364.000.
Vachon, Bertrand, to Ber-Vac Inc. Soil cultivating machine. 4,446,925, Cl. 172-142.000.
Vaguine, Victor A., to Clini-Therm Corporation. Microwave applicator with discoupled input coupling and frequency tuning functions. 4,446,874, Cl. 128-804.000.
Vale Industries, Inc.: *See—*
Valente, Raymond L., 4,446,711, Cl. 72-213.000.
Valente, Raymond L., to Vale Industries, Inc. U-Bolt bender. 4,446,711, Cl. 72-213.000.
Valerio, Savorgnan; and Dino, Mio. Process and equipment for veneer press to glue a thin layer on a variously shaped panel surface. 4,447,282, Cl. 156-285.000.
Vallarino, Angelo; and Vittore, Lorenzo, to Minnesota Mining and Manufacturing Company. Process for providing a matt surface on a photographic material and photographic material provided with such matt surface. 4,447,525, Cl. 430-539.000.
Vanderpool, Clarence D.; and MacInnis, Martin B., to GTE Products Corporation. Recovery of molybdenum from molybdenum disulfide. 4,447,404, Cl. 423-61.000.
Vandersall, Howard L., to Monsanto Company. Stabilized galactomannan gum compositions. 4,447,336, Cl. 252-7.000.
Vandersall, Howard L.: *See—*
Adl, Mohammad S.; Kegeler, Gary H.; and Vandersall, Howard L., 4,447,337, Cl. 252-7.000.
Vandervelden, C. Keith: *See—*
Runnells, Robert R.; Haak, Peter A.; Larkin, Rodney B.; and Vandervelden, C. Keith, 4,447,399, Cl. 422-113.000.
van Dyke, Martin J., to Honeywell Inc. Magnetoresistive transducer apparatus. 4,447,781, Cl. 324-83.00A.
VanHorn, David D.; Putz, John M.; and Henderson, Alfred J., Jr., to General Electric Company. Reflector lamp. 4,447,865, Cl. 362-305.000.
Van Siclen, Howard E., Jr., to Bendix Corporation, The. Photoelectric isolation circuit for an internal combustion engine ignition system. 4,446,841, Cl. 123-602.000.
Van Sikle, Truman T.; and Drake, Charles J., to Kelsey Hayes Company. Welding system monitoring and control system. 4,447,698, Cl. 219-110.000.
van't Veld, Cecil W. Retractable landing net. 4,446,646, Cl. 43-12.000.
Varco International, Inc.: *See—*
Boyadjieff, George I; and Monahan, Frederick A., 4,446,761, Cl. 81-57.190.
Varma, Ravi K., to E. R. Squibb & Sons, Inc. Androstene-17-dithioketals. 4,447,363, Cl. 260-397.300.
Varo, Inc.: *See—*
Evans, William E.; and Gillett, Jimmie D., 4,447,867, Cl. 363-56.000.
Varta Batterie Aktiengesellschaft: *See—*
Chobanov, Tsvetko; Kunze, Dieter; and Woeffler, Friedrich, 4,447,376, Cl. 264-42.000.
Wagner, Armin, 4,447,379, Cl. 264-61.000.
Vartoughian, Victor. Automatic applicator bottles. 4,447,169, Cl. 401-269.000.
VEB Schwermaschinenbaukombinat TAKRAF: *See—*
Kersten, Peter; Meixner, Peter; Muller, Erich; and Horing, Eckart, 4,447,165, Cl. 384-428.000.
Vecera, Jiri: *See—*
Sirokorad, Jurij; and Vecera, Jiri, 4,446,741, Cl. 73-654.000.
Velsicol Chemical Corporation: *See—*
Traxler, James T., 4,447,420, Cl. 424-210.000.
Velte, Karl-Heinz, to Rothenberger GmbH & Co. Werkzeuge-Maschinen KG. Tube cutter, especially for plastic tubes. 4,446,620, Cl. 30-96.000.
Venkatasubramanian, Kalyanasundram: *See—*
Coker, Lowell E.; and Venkatasubramanian, Kalyanasundram, 4,447,532, Cl. 435-99.000.
Ventker, Heinz; and Wendlinger, Fred, to Rheinhold & Mahla Dammstoffe GmbH. Laminated mineral fibre mat and processes for its production. 4,447,490, Cl. 428-285.000.
Verhees, Leonardus G. J.: *See—*
Moerkens, Jozef C.; and Verhees, Leonardus G. J., 4,447,759, Cl. 315-60.000.
Verter, Allan H. Arm and shoulder brace. 4,446,858, Cl. 128-94.000.
Vicik, Stephen J.: *See—*
Lustig, Stanley; Schuetz, Jeffrey M.; and Vicik, Stephen J., 4,447,480, Cl. 428-35.000.
Victor Company of Japan, Ltd.: *See—*
Sugiyama, Hiroyuki, 4,447,834, Cl. 358-310.000.
Vinzens, Kurt: *See—*
Jansing, Walter; and Vinzens, Kurt, 4,446,820, Cl. 122-32.000.
Vioglio, Sergio: *See—*
Franceschi, Giovanni; Marsili, Leonardo; Sanfilippo, Aurora; and Vioglio, Sergio, 4,447,432, Cl. 424-248.540.
Visidyne, Inc.: *See—*
Shepherd, Orr, 4,447,770, Cl. 318-618.000.
Vitino Massenzana s.r.l.: *See—*
Lussana, Riccardo; and Massenzana, Fabrizio, 4,447,285, Cl. 156-473.000.
Vitro-Tec Fideicomiso: *See—*
Heredia de la Paz, Jorge A.; and Sanchez, David F., 4,446,888, Cl. 137-596.170.
Vittore, Lorenzo: *See—*
Vallarino, Angelo; and Vittore, Lorenzo, 4,447,525, Cl. 430-539.000.
Vora, Bipin V., to UOP Inc. Adsorbent regeneration in integrated etherification process. 4,447,653, Cl. 568-697.000.
Vorih, William J.: *See—*
Baldoni, Viscardo; and Vorih, William J., 4,447,171, Cl. 403-381.000.
Voss, Julian D.; Allori, Aldo; and Wilger, John A., to International Harvester Co. Clutch oil shield and diverter. 4,446,953, Cl. 192-70.120.
Vrieland, Bruce C.: *See—*
Hardin, Tommy G.; and Vrieland, Bruce C., 4,446,689, Cl. 57-204.000.
Vroman Foods, Inc.: *See—*
Roth, Thomas E.; and Getman, Harlan R., 4,447,458, Cl. 426-275.000.
Vulcano, Vincent. Sorting machine for sorting covers. 4,447,715, Cl. 235-454.000.
Vyskummy ustav vodneho hospodarstva: *See—*
Zajdlik, Miroslav, 4,447,322, Cl. 210-104.000.
Vyvial, Rudolf: *See—*
Henne, Andreas; Hesse, Anton; Jacobi, Manfred; Schornick, Gunnar; Vyvial, Rudolf; and Holoch, Klaus, 4,447,520, Cl. 430-281.000.
W. R. Grace & Co.: *See—*
Block, Jacob, 4,447,341, Cl. 252-8.50A.
W. T. Rogers Co.: *See—*
Graham, William T.; and Wenkman, Gregory, 4,447,483, Cl. 428-105.000.
Wada, Yoshihiro, to Sharp Kabushiki Kaisha. Graphic display in an electronic thermometer. 4,447,884, Cl. 364-557.000.

Wagener, Dietrich; Sander, Theo; and Laue, Karl H., to Didier Engineering GmbH. Process for the elimination of ammonia in coke plant waste waters. 4,447,333, Cl. 210-750.000.

Wager, Mats; and Hirschberg, Jakub, to Siemens Aktiengesellschaft. Device for separating individual sheets combined into a stack. 4,447,053, Cl. 271-113.000.

Wagers, Robert S., to Texas Instruments Incorporated. Broad band surface acoustic wave edge deposited transducer. 4,447,754, Cl. 310-313.00R.

Wagner, Armin, to Varta Batterie Aktiengesellschaft. Production of ceramic lithium nitride. 4,447,379, Cl. 264-61.000.

Wagner, John R., Jr.; and Hein, Carl C., to Mobil Oil Corporation. Oriented multilayer heat sealable packaging film. 4,447,494, Cl. 428-349.000.

Walbro Corporation: *See—*
Tuckey, Charles H., 4,447,192, Cl. 417-360.000.

Walbro Far East, Inc.: *See—*
Kobayashi, Hiroto; and Kobayashi, Takeshi, 4,447,370, Cl. 261-35.000.

Walker, Thad O.: *See—*
Lundberg, Robert D.; Walker, Thad O.; O'Farrell, Charles P.; and Makowski, Henry S., deceased, 4,447,338, Cl. 252-8.50M.

Walls, Lester L., Jr.: *See—*
Weisner, Kent A.; and Walls, Lester L., Jr., 4,447,200, Cl. 425-388.000.

Walter, Bert: *See—*
Greenquist, Alfred C.; Rupchock, Patricia A.; Tyhach, Richard J.; and Walter, Bert, 4,447,529, Cl. 435-7.000.

Walter, John: *See—*
Roth, Donald J.; Walter, John; and Kubis, Charles S., 4,446,984, Cl. 220-268.000.

Walter Kidde & Co., Inc.: *See—*
Martin, Roy T., 4,446,923, Cl. 169-45.000.

Waltersdorfer, Anna: *See—*
Stahler, Gerhard; and Waltersdorfer, Anna, 4,447,444, Cl. 424-273.00P.

Walton, Thomas A. Electric regeneration system for gas-turbine. 4,446,694, Cl. 60-39.182.

Walz, Joachim, to Siemens Aktiengesellschaft. Method and apparatus for reducing graphic patterns. 4,447,882, Cl. 364-521.000.

Wang, Robert, to Heurtey, Stein. Galvanization installations of metallic bands. 4,446,812, Cl. 118-63.000.

Wang, Shih-Ping, to Diagnostic Information, Inc. Panel type X-ray image intensifier tube and radiographic camera system. 4,447,721, Cl. 250-213.0VT.

Wang, Timothy, to Boeing Company, The. Upper surface blown powered lift system for aircraft. 4,447,027, Cl. 244-212.000.

Wang, Timothy, to Boeing Company, The. Upper surface blown powered lift system for aircraft. 4,447,028, Cl. 244-212.000.

Wang, Yu-Chang J.; Dursch, Friedrich; O'Laughlin, Richard L.; and Prusik, Thaddeus, to E. R. Squibb & Sons, Inc. Steroid monohydrates, formulations containing same and method. 4,447,426, Cl. 424-243.000.

Wanner, Karl: *See—*
Bleicher, Manfred; Buck, Manfred; Falchle, Jorg; and Wanner, Karl, 4,446,931, Cl. 173-48.000.

Ward, William C.: *See—*
Marks, Robert; Phelps, Douglas W., Jr.; and Ward, William C., 4,447,857, Cl. 361-395.000.

Warneke, Helmut: *See—*
Arndt, Manfred; Breier, Walter; Riegert, Hermann; Schmidt, Heinz; Schwarz, Hermann; and Warneke, Helmut, 4,446,978, Cl. 215-13.00R.

Warner, Charles E., to Milliken Research Corporation. Bar balloon control. 4,446,690, Cl. 57-284.000.

Warner, Charles E., to Milliken Research Corporation. High A.C.-D.C. yarn tension control. 4,446,691, Cl. 57-284.000.

Warner-Lambert Company: *See—*
Davison, John A., 4,446,866, Cl. 128-340.000.

Warren, Donald W., to Kennametal Inc. Cutting insert. 4,447,175, Cl. 407-114.000.

Wass, Anthony C. L.: *See—*
Baum, Eric A.; Davies, Leslie J.; Kirk, William F.; and Wass, Anthony C. L., 4,446,862, Cl. 128-203.150.

Watanabe, Hiroshi: *See—*
Kitamura, Yasuo; Suzuki, Masao; Kubota, Toshio; Watanabe, Hiroshi; and Tsujimoto, Masaaki, 4,446,881, Cl. 137-1.000.

Watanabe, Kiyoshi; Ideguchi, Satoshi; Ogura, Masahiro; Shimada, Masahiko; and Kawaharada, Hajime, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for the production of coenzyme Q. 4,447,362, Cl. 260-396.00R.

Watanabe, Masaru; Matsumura, Satoru; Amada, Takayoshi; Irie, Hiromitsu; and Saito, Norihisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Scraping blades for use in thin film dryers. 4,447,293, Cl. 159-6.200.

Watanabe, Shoji; and Miho, Takuya, to Daicel Chemical Industries, Ltd. Polyurethane. 4,447,591, Cl. 528-80.000.

Watanabe, Syuji; Ishii, Yoshitaro; and Sunagawa, Masao, to Hitachi, Ltd. Upright type electric cleaner. 4,446,594, Cl. 15-323.000.

Watanabe, Yoshio: *See—*
Iyama, Hiroyuki; and Watanabe, Yoshio, 4,447,763, Cl. 315-207.000.

Watase, Yoshiyuki: *See—*
Kusumegi, Asao; Kondo, Kenjiro; Watase, Yoshiyuki; Yoshimura, Yoshio; and Miyake, Kozo, 4,447,734, Cl. 250-517.100.

Waterman, Theodore. Power assist, manual, band labeler. 4,446,616, Cl. 29-775.000.

Waters, Edwin R.: *See—*
Dyce, John W.; Waters, Edwin R.; and Sherwood, Cy E., 4,447,100, Cl. 339-14.00R.

Watson, Robert L.; and Rayburn, Robert L. Emergency ventilation tube. 4,446,864, Cl. 128-207.140.

Watson, Roy H. A., III. Sailing course computer. 4,446,729, Cl. 73-178.00R.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Galtz, Rudiger; and Reinhardt, Rudolf, 4,447,187, Cl. 415-53.00R.

Webb, Harry A.: *See—*
Lawrence, Jackson; Webb, Harry A.; and Frederick, John R., 4,446,606, Cl. 26-18.600.

Webb, John A.: *See—*
McLellan, Edward J.; and Webb, John A., 4,447,151, Cl. 356-218.000.

Weber, James L., to Rockwell International Corporation. Connecting rod and piston device for a brake slack adjuster. 4,446,949, Cl. 188-79.50K.

Weglin, Walter, to Jerobee Industries, Inc. Die and method of making same. 4,447,286, Cl. 156-515.000.

Wegman, Richard W., to Union Carbide Corporation. Process for making aldehydes from ketals. 4,447,648, Cl. 568-484.000.

Wehling, Bernhard, to Bayer Aktiengesellschaft. Process for mass-dyeing of thermoplastics: polystyrene and styrene copolymers with indoline methine dyes. 4,447,244, Cl. 8-514.000.

Wehling, Bernhard: *See—*
Schellhammer, Carl-Wolfgang; and Wehling, Bernhard, 4,447,651, Cl. 568-645.000.

Wehr Corporation: *See—*
Long, Gary R.; and Dorsey, Robert J., 4,447,198, Cl. 425-140.000.

Wehrmacher, Bill H.: *See—*
Flygstad, Dean W.; and Wehrmacher, Bill H., 4,447,836, Cl. 360-15.000.

Weilacher, Karl H., to GAO Gesellschaft fur Automation und Organisation mbH. Method of testing the weight per unit area of thin material. 4,446,735, Cl. 73-597.000.

Weinerman, Brent: *See—*
Rubin, Howard; and Weinerman, Brent, 4,446,863, Cl. 128-204.180.

Weinert, Friedrich. Oceanic mining system. 4,446,636, Cl. 37-54.000.

Weingand, Kaspar: *See—*
Schuster-Woldan, Hans; Buerk, Hermann; Koch, Dirk; and Weingand, Kaspar, 4,447,292, Cl. 156-644.000.

Weinrotter, Klaus: *See—*
Stern, Gerhard; and Weinrotter, Klaus, 4,447,568, Cl. 524-101.000.

Weirauch, Donald F., to Texas Instruments Incorporated. Oxide-free CdTe synthesis. 4,447,393, Cl. 420-590.000.

Weisner, Kent A.; and Walls, Lester L., Jr., to Kenergy Corporation. Apparatus for molding skylights. 4,447,200, Cl. 425-388.000.

Weiss, Hermann, to Stihl, Andreas. Centrifugal clutch for power saws. 4,446,954, Cl. 192-105.0CD.

Weiss, Richard: *See—*
Simm, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, 4,447,488, Cl. 428-213.000.

Weiss, Richard L.: *See—*
Murchison, Craig B.; Stowe, Robert A.; and Weiss, Richard L., 4,447,664, Cl. 585-323.000.

Welch, Donald C.; and Yoerg, Christopher P., to Trane Company, The. Heat exchanger tube circuits. 4,446,915, Cl. 165-144.000.

Weller, Barton L. Universal world time and date clock. 4,447,159, Cl. 368-23.000.

Wellman, George R.: *See—*
Labaw, Clifford S.; and Wellman, George R., 4,447,621, Cl. 548-342.000.

Wells, Richard J.: *See—*
Stone, Lawrence J.; and Wells, Richard J., 4,447,860, Cl. 362-30.000.

Welsh Sporting Goods Corp.: *See—*
Markovich, Mark J., 4,446,900, Cl. 150-52.00R.

Wendlinger, Fred: *See—*
Ventker, Heinz; and Wendlinger, Fred, 4,447,490, Cl. 428-285.000.

Wenkman, Gregory: *See—*
Graham, William T.; and Wenkman, Gregory, 4,447,483, Cl. 428-105.000.

Wennerberg, Arnold N., to Standard Oil Company (Indiana). Dehydrogenation reactions. 4,447,665, Cl. 585-379.000.

Werner, Friedrich; Mannes, Karl; and Trescher, Viktor, to Bayer Aktiengesellschaft. Process for the preparation of 2,4,6-trichloroaniline. 4,447,647, Cl. 564-412.000.

Werth, Dee A.; and Ratchford, Lloyd G., to Bendix Corporation, The. Moisture seal for a separable electrical connection. 4,447,103, Cl. 339-94.00M.

Western Electric Company, Inc.: *See—*
Hobart, Floyd E., Jr., 4,447,109, Cl. 339-256.00R.

Westervelt, Dean C.: *See—*
Saunders, Howard E.; Westervelt, Dean C.; and Elbling, Irving N., 4,447,797, Cl. 336-205.000.

Westinghouse Electric Corp.: *See—*
Eckels, Phillip W., 4,447,670, Cl. 174-15.0CA.
Isenberg, Arnold O., 4,447,204, Cl. 431-76.000.
Price, William L.; Murtha, John C.; Ross, James A., Jr.; Adam, Clyde E.; and Lucas, Kenneth R., 4,447,873, Cl. 364-200.000.
Saunders, Howard E.; Westervelt, Dean C.; and Elbling, Irving N., 4,447,797, Cl. 336-205.000.

Segar, William R.; and Larson, Robert A., 4,447,680, Cl. 191-48.000.
Stol, Israel, 4,447,703, Cl. 219-136.000.
Young, William E.; Lunn, Richard H.; and Archer, David H., 4,447,748, Cl. 310-11.000.

Westland plc: *See—*
Reid, Peter, 4,447,023, Cl. 244-17.110.

Westley, John: *See—*
Liu, Chao-Min; Tresner, Homer D.; and Westley, John, 4,447,533, Cl. 435-119.000.

Weston, Lynn R.: *See—*
Karubian, Ralph; Breukelman, Robert G.; and Weston, Lynn R., 4,446,598, Cl. 17-1.00B.

Westvaco Corporation: *See—*
Schreuders, Hans G.; and Schilling, Peter, 4,447,269, Cl. 106-277.000.

Wheeler, Daryl. Torque transmitting device. 4,446,765, Cl. 81-441.000.

Wheeler, Lionel H.; and Goekler, Robert G., to Crutcher Resources Corporation. Apparatus and method for bending insulated piping. 4,446,713, Cl. 72-308.000.

White, Kenneth R. Valve attachment for pressurized containers. 4,446,987, Cl. 222-89.000.

White, William L.; and Anzeveno, Peter B., to Dow Chemical Company, The. Synthesis of 11-deoxyprostaglandins. 4,447,636, Cl. 560-122.000.

Whited, James S., to Kollmorgen Technologies Corporation. Control system for synchronous brushless motors. 4,447,771, Cl. 18-661.000.

Whiteford, Drummond: *See—*
Bowyer, Michael L.; and Whiteford, Drummond, 4,446,922, Cl. 166-322.000.

Whitehurst, Darrell D.: *See—*
Derbyshire, Francis J.; and Whitehurst, Darrell D., 4,447,310, Cl. 208-8.0LE.

Whitman, Hobart A., III, to Olin Corporation. Method for electrically perforating dielectric webs. 4,447,709, Cl. 219-384.000.

Wickes Corporation, The: *See—*
Berger, Hans G., 4,446,665, Cl. 52-407.000.

Widrig, Jakob: *See—*
Hardt, Jean; and Widrig, Jakob, 4,446,942, Cl. 181-249.000.

Wiedemann, Karl. Vehicle for clearing material from drains and the like. 4,446,591, Cl. 15-315.000.

Wiesner, Otto: *See—*
Otte, Wolf-Dieter; Otte, Heinz; Schider, Siegfried; and Wiesner, Otto, 4,446,857, Cl. 128-92.0BC.

Wiggins Teape Group Limited, The: *See—*
Allen, Roger A.; and Hall, Robert J., 4,447,708, Cl. 219-384.000.

Wiley, Walter H.; and Madden, William M., to United Technologies Corporation. Three-dimensional axially translatable convergent/divergent nozzle assembly. 4,447,009, Cl. 239-265.390.

Wilger, John A.: *See—*
Voss, Julian D.; Allori, Aldo; and Wilger, John A., 4,446,953, Cl. 192-70.120.

Wilkes, Alan: *See—*
Rowe, William; Golda, Eugene; and Wilkes, Alan, 4,447,512, Cl. 430-17.000.

Wilkinson, James H., to Sony Corporation. Error-correction format for digital television signals. 4,447,902, Cl. 371-39.000.

Wilkinson, Stanley B., to General Electric Company. Reactance relay. 4,447,845, Cl. 361-80.000.

Willans, Robert D. H., to Cominco Ltd. Electrode brushing apparatus. 4,447,308, Cl. 204-279.000.

Wille, Herbert: *See—*
Muller, Rolf; and Wille, Herbert, 4,447,623, Cl. 549-36.000.

Williams, Edward W., to EMI Limited. Electroluminescent displays. 4,447,762, Cl. 315-116.000.

Williams, Emyr G.: *See—*
Kay, Ian T.; Bartholomew, David; Williams, Emyr G.; and Noon, Robert A., 4,447,446, Cl. 424-282.000.

Williams International: *See—*
Williams, Sam B., 4,447,024, Cl. 244-23.00A.

Williams International Corporation: *See—*
Davis, Arthur M.; and Pollington, Warren J., 4,447,188, Cl. 415-115.000.

Williams, Robert E., Jr., to General Electric Company. Method for making cyclopolydimethylsiloxanes. 4,447,630, Cl. 556-460.000.

Williams, Sam B., to Williams International. Airborne vehicle. 4,447,024, Cl. 244-23.00A.

Willis, Clive: *See—*
Malatesta, Vincenzo; Willis, Clive; and Hackett, Peter A., 4,447,304, Cl. 204-157.10R.

Wilson, David A.; Buxton, James L.; and Green, Philip S., to SRI International. Frequency controlled hybrid ultrasonic imaging arrays. 4,446,740, Cl. 73-626.000.

Wilson, Kenneth J., to Wilson Tool Company. Locking ring stripper plate assembly. 4,446,767, Cl. 83-136.000.

Wilson, Kermit H.; and Carlson, Ronald R., to Sico Incorporated. Table and improved hinge mechanism. 4,446,796, Cl. 108-69.000.

Wilson Tool Company: *See—*
Wilson, Kenneth J., 4,446,767, Cl. 83-136.000.

Wilson, William W.: *See—*
Christe, Karl O.; and Wilson, William W., 4,447,407, Cl. 423-262.000.

Windish, Willis E.: *See—*
Winzeler, James E.; and Windish, Willis E., 4,446,758, Cl. 74-781.00R.

Windmere Corporation: *See—*
Friedson, Belvin F., 4,446,855, Cl. 128-24.200.

Wing, Thomas W. Electrical treatment method. 4,446,870, Cl. 128-422.000.

Winiecki, Henry F.: *See—*
Winiecki, Tadeus; and Tindel, Thomas F., 4,447,069, Cl. 280-270.000.

Winiecki, Martha M.: *See—*
Winiecki, Tadeus; and Tindel, Thomas F., 4,447,069, Cl. 280-270.000.

Winiecki, Tadeus; and Tindel, Thomas F., to Winiecki, Henry F.; and Winiecki, Martha M., part interest to each. Steering assembly crash resistant motorcycle. 4,447,069, Cl. 280-270.000.

Winter, Roland A. E.: *See—*
Dexter, Martin; and Winter, Roland A. E., 4,447,511, Cl. 430-15.000.

Winther, Douglas N.: *See—*
Allen, Melvin K.; Berri, Ronald J.; and Winther, Douglas N., 4,447,001, Cl. 228-37.000.

Winzeler, James E.; and Windish, Willis E., to Caterpillar Tractor Co. Planetary transmission. 4,446,758, Cl. 74-781.00R.

Wise, Daniel J., to Ex-Cell-O Corporation. Liquid container with straw opening means. 4,446,971, Cl. 206-607.000.

Wise, Stanley S.; and Maitland, Peter, to Fail Safe Industries, Inc. Brake control apparatus. 4,446,950, Cl. 192-3.0TR.

Witco Chemical Corporation: *See—*
Dabi, Shmuel; and Loewrigkeit, Peter, 4,447,571, Cl. 524-192.000.

Withington, Clinton E. Safe bolt mechanism. 4,446,798, Cl. 109-61.000.

Woeffler, Friedrich: *See—*
Chobanov, Tsvetko; Kunze, Dieter; and Woeffler, Friedrich, 4,447,376, Cl. 264-42.000.

Wolcott, Herbert B., Jr., to Atlantic Richfield Company. Method for initiating combustion in a subterranean carbonaceous deposit. 4,446,918, Cl. 166-245.000.

Wolens, John; and Levy, Leon. Novelty headband. 4,447,250, Cl. 46-1 F.

Wolff, Robin K.: *See—*
Spitz, Seymour J., Jr.; Mookherjee, Braja D.; Hill, Ira D.; Keleher, Lloyd F.; Trenkle, Robert W.; and Wolff, Robin K., 4,446,651, Cl. 47-10.000.

Wolff, Walter C.: *See—*
Kelsey, Charles C., Jr.; and Wolff, Walter C., 4,446,645, Cl. 42-50.000.

Wollmann, Klaus: *See—*
Deibig, Heinrich; and Wollmann, Klaus, 4,447,477, Cl. 427-388.300.

Wood, Brian M.: *See—*
Lamb, Paul R.; Bakas, Steve T.; and Wood, Brian M., 4,447,315, Cl. 208-99.000.

Wooding: *See—*
Wooding, Patrick J., 4,446,995, Cl. 222-590.000.

Wooding, Patrick J., to Wooding. Ultrahigh velocity water-cooled copper trough. 4,446,995, Cl. 222-590.000.

Woodruff, Harold F. Portable reel jack stand. 4,447,012, Cl. 242-54.00R.

Woodward, Robert B.: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,447,360, Cl. 260-239.00A.

Woodworth, Larry A.: *See—*
Grantland, Gary; Montgomery, Hugh S.; Boeckmann, Eduard F. B.; and Woodworth, Larry A., 4,447,674, Cl. 179-81.00R.

Wool Development International Limited: *See—*
Benisek, Ladislav, 4,447,242, Cl. 8-128.00R.

Worby, Donald, to Lucas Industries Plc. Method of manufacturing a fuel pump. 4,447,194, Cl. 417-572.000.

Workman, Lester J. Pediculicide composition and method of use. 4,447,423, Cl. 424-234.000.

Woytek, Andrew J.; Lileck, John T.; and Steigerwalt, Edward J., to Air Products and Chemicals, Inc. Method and apparatus for perforating or cutting with a solid fueled gas mixture. 4,446,920, Cl. 166-297.000.

Wriegt, Jurgen: *See—*
Baatz, Henning; Rittscher, Dieter; and Wriegt, Jurgen, 4,447,733, Cl. 250-506.100.

Wright, Bruce R. Battery charger assembly. 4,447,785, Cl. 320-25.000.

Wu, Randall: *See—*
Blakeslee, Theodore R., III; and Wu, Randall, 4,447,387, Cl. 264-566.000.

Wuertz, Howard A.: *See—*
Schultz, Charles R.; Tollefson, Mark S.; and Wuertz, Howard A., 4,447,173, Cl. 405-181.000.

Wurttemberische Metallwarenfabrik Aktiengesellschaft: *See—*
Arndt, Manfred; Breier, Walter; Riegert, Hermann; Schmidt, Heinz; Schwarz, Hermann; and Warneke, Helmut, 4,446,978, Cl. 215-13.00R.

Wynn, Stephen R., to General Electric Company. Synthesizer circuit. 4,447,792, Cl. 332-19.000.

Xerox Corporation: *See—*
Burnham, Robert D., 4,447,904, Cl. 372-45.000.
Naramore, Raymond A., 4,447,817, Cl. 346-75.000.
Snelling, Christopher; and Lysy, Dusan G., 4,447,145, Cl. 355-14.00D.
Stoffel, James C., 4,447,830, Cl. 358-283.000.

Yabe, Tetsuo: *See—*
Ushio, Tetsuji; Tatsuguchi, Satoru; Otani, Toshihisa; Tani, Hoshiro; and Yabe, Tetsuo, 4,447,306, Cl. 204-224.00R.

Yamada, Mitsuhiko: *See—*
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, 4,447,113, Cl. 358-75.000.

Yamada, Mitsumasa: *See*—
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; Kawai, Hisasi; Yamada, Mitsumasa; Kawagoe, Michio; and Tanaka, Masaaki, 4,446,839, Cl. 123-569.000.
Yamada, Toshio: *See*—
Omae, Yoshihiro; Okubo, Noboru; Sigyo, Keiichi; Nakajima, Hideo; Fukui, Hiroaki; Yamada, Toshio; and Honda, Hideyuki, 4,447,805, Cl. 340-539.000.
Yamada, Yu, to Canon Kabushiki Kaisha. Optical scanning device. 4,447,147, Cl. 355-51.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Masuda, Yutaka, 4,447,801, Cl. 340-52.00F.
Matsushita, Yukio; and Nozaki, Toshikatsu, 4,446,833, Cl. 123-435.000.
Yamakage, Tetsuro: *See*—
Ochiai, Yoshiki; Nomura, Kenji; Yamakage, Tetsuro; and Takashima, Toshiharu, 4,447,177, Cl. 408-161.000.
Yamamoto, Kiyoshi: *See*—
Hiraoka, Takeshi; Urano, Shigeru; and Yamamoto, Kiyoshi, 4,447,275, Cl. 148-152.000.
Yamamoto, Susumu: *See*—
Suzuki, Fumio; Fujikawa, Yoshihiro; Yamamoto, Susumu; Mizutani, Hidemi; Ohya, Tunehiko; Ikai, Takashi; and Oguchi, Toshihiko, 4,447,256, Cl. 71-86.000.
Yamamoto, Toshio: *See*—
Yuge, Shizuo; Sakakibara, Susumu; Ishikawa, Takuma; Kito, Nobuo; and Yamamoto, Toshio, 4,447,517, Cl. 430-122.000.
Yamamura, Saburo: *See*—
Ohyama, Hiroshi; Takada, Sanae; Morita, Ken; and Yamamura, Saburo, 4,447,259, Cl. 71-94.000.
Yamasaki, Akinobu: *See*—
Maeda, Yasunori; and Yamasaki, Akinobu, 4,447,010, Cl. 239-414.000.
Yamashita, Masato: *See*—
Oana, Yasuhisa; Yasuda, Nobuaki; Yamashita, Masato; and Ozawa, Norio, 4,447,825, Cl. 357-71.000.
Yamashita, Toshio. Automobile fender protector formed of synthetic resin. 4,447,067, Cl. 280-153.00R.
Yamato Scale Company. Ltd.: *See*—
Kawanishi, Shozo, 4,446,938, Cl. 177-25.000.
Yamazaki, Etuo, to Fujitsu Fanuc Limited. Tracer head adjustment method. 4,447,179, Cl. 409-127.000.
Yamazaki, Hiroyuki: *See*—
Hoshiyama, Satoshi; Muto, Hiroyuki; Shinke, Shuzo; Otsuka, Kanji; Takigawa, Shinichiro; and Yamazaki, Hiroyuki, 4,447,661, Cl. 568-882.000.
Yamazaki, Kazutoshi: *See*—
Kamiyama, Fumio; Yamazaki, Kazutoshi; Kohara, Minoru; and Nagata, Mituo, 4,447,328, Cl. 210-635.000.
Yamazaki, Kisuke; Iijima, Hitoshi; Matsuoka, Fumio; and Nishizawa, Toshizo, to Mitsubishi Denki Kabushiki Kaisha. Air conditioning apparatus with temperature regulated cooling. 4,446,704, Cl. 62-180.000.
Yamazaki, Masafumi: *See*—
Suzuki, Mikio; and Yamazaki, Masafumi, 4,446,838, Cl. 123-520.000.
Yamazaki, Seiichi: *See*—
Kogane, Mikio; and Yamazaki, Seiichi, 4,447,146, Cl. 355-28.000.
Yamazaki, Tamotsu: *See*—
Tanemura, Mitsura; Yamazaki, Tamotsu; Mizuno, Koji; Kaiho, Shin-ichi; Kakimoto, Morio; Hoshino, Eiichi; Matsunaga, Isao; and Hata, Shun-ichi, 4,447,453, Cl. 424-319.000.
Yamazoe, Hisamitsu: *See*—
Matsumura, Toshimi; Fujisawa, Hideya; Omori, Norio; Arimura, Takashi; Yamazoe, Hisamitsu; and Nishiura, Kiyotaka, 4,446,832, Cl. 123-339.000.
Yan, Tsoung Y.: *See*—
Angevine, Philip J.; Audeh, Costandi A.; Tabak, Samuel A.; and Yan, Tsoung Y., 4,447,312, Cl. 208-46.000.
Yan, Tsoung-Yuan: *See*—
Fowles, Patrick E.; Shoemaker, Gerald L.; and Yan, Tsoung-Yuan, 4,447,311, Cl. 208-35.000.
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., to Olin Corporation. Process and apparatus for electromagnetic casting of multiple strands having individual head control. 4,446,909, Cl. 164-453.000.
Yarwood, John C.: *See*—
Ungarean, Gary L.; and Yarwood, John C., 4,446,908, Cl. 164-452.000.
Yasuda, Nobuaki: *See*—
Oana, Yasuhisa; Yasuda, Nobuaki; Yamashita, Masato; and Ozawa, Norio, 4,447,825, Cl. 357-71.000.
Yasui Sangyo Co., Ltd.: *See*—
Masui, Saburo, 4,447,042, Cl. 254-90.000.
Yasunaga, Masao: *See*—
Nagasaku, Eiichi; Kato, Kimihiro; and Yasunaga, Masao, 4,447,196, Cl. 418-93.000.
Yeager, Zema O. Rotary internal combustion engine. 4,446,829, Cl. 123-244.000.
Yellin, Tobias O.; and Gilman, David J., to Imperial Chemical Industries PLC. Haloalkylguanidine compounds, pharmaceutical compositions and methods, processes and intermediates. 4,447,441, Cl. 424-269.000.
Yoerg, Christopher P.: *See*—
Welch, Donald C.; and Yoerg, Christopher P., 4,446,915, Cl. 165-144.000.
Yokocho, Yoetsu: *See*—
Inaga, Hisashi; and Yokocho, Yoetsu, 4,446,822, Cl. 123-41.310.
Yokogawa Hokushin Electric Corporation: *See*—
Hanaoka, Yuzuru; Murayama, Takeshi; and Muramoto, Setsuo, 4,447,559, Cl. 521-28.000.
Morioka, Akihiro; Maeda, Yuji; Matsumoto, Tetsuro; Yukinari, Masakazu; and Kishida, Eiichi, 4,447,309, Cl. 204-402.000.
Yokota, Koji: *See*—
Terada, Matsuaki; and Yokota, Koji, 4,447,871, Cl. 364-200.000.
Yokoyama, Hirotaka: *See*—
Oguchi, Toshihiko; Kato, Hirohisa; and Yokoyama, Hirotaka, 4,447,467, Cl. 427-48.000.
Yoneda, Kenji; Arai, Shoji; and Kunome, Yoshimi, to Nissan Motor Co., Ltd. System for feedback control of air-fuel ration in internal combustion engine. 4,446,834, Cl. 123-440.000.
Yonemoto, Masashi: *See*—
Kajiyama, Ryuichi; and Yonemoto, Masashi, 4,446,946, Cl. 187-29.00R.
Yoshida, Ryo: *See*—
Noguchi, Hiroshi; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, 4,447,260, Cl. 71-118.000.
Yoshida, Shigeru: *See*—
Kojima, Takafumi; Yoshida, Shigeru; and Mizoguchi, Masayuki, 4,447,679, Cl. 179-175.30R.
Yoshihara, Mikio: *See*—
Suzuki, Koichi; Yoshihara, Mikio; Kawai, Shinji; and Mori, Katsuhiro, 4,446,584, Cl. 4-237.000.
Yoshihisa, Kozo, to Tokyo Shibaura Denki Kabushiki Kaisha. Mode discrimination circuit. 4,447,901, Cl. 370-74.000.
Yoshimura, Hironori: *See*—
Sugizawa, Taijiro; Yoshimura, Hironori; and Toyama, Junichi, 4,447,263, Cl. 75-233.000.
Yoshimura, Yoshio: *See*—
Kusumegi, Asao; Kondo, Kenjiro; Watase, Yoshiyuki; Yoshimura, Yoshio; and Miyake, Kozo, 4,447,734, Cl. 250-517.100.
Yosim, Samuel J.: *See*—
Gay, Richard L.; Kohl, Arthur L.; and Yosim, Samuel J., 4,447,262, Cl. 75-65.00R.
Youmans, Barry J.; and Zimmerlin, Sharon L., to Babcock & Wilcox Company, The. Linearizing circuit and method of calibrating same. 4,447,780, Cl. 324-132.000.
Young, Donald C., to Union Oil Company of California. Topical fertilization methods and compositions for use therein. 4,447,253, Cl. 71-28.000.
Young, Lewis B., to Mobil Oil Corporation. Preparation of alkyl carboxylates. 4,447,642, Cl. 560-247.000.
Young, Murray M. Bioconversion of industrial cellulosic pulp materials to protein-enriched product. 4,447,530, Cl. 435-68.000.
Young, Steven A.: *See*—
Stover, Richard W.; Proper, Frederick T.; and Young, Steven A., 4,447,061, Cl. 277-1.000.
Young, William E.; Lunn, Richard H.; and Archer, David H., to Westinghouse Electric Corp. High temperature corrosion and erosion resistant electrode. 4,447,748, Cl. 310-11.000.
Yuasa, Kazuhiro; and Furukawa, Noboru, to Ricoh Company, Ltd. Method and apparatus of electrostatic recording. 4,447,821, Cl. 346-154.000.
Yuge, Shizuo; Sakakibara, Susumu; Ishikawa, Takuma; Kito, Nobuo; and Yamamoto, Toshio, to Minolta Camera Kabushiki Kaisha. Method of developing electrostatic latent images. 4,447,517, Cl. 430-122.000.
Yukinari, Masakazu: *See*—
Morioka, Akihiro; Maeda, Yuji; Matsumoto, Tetsuro; Yukinari, Masakazu; and Kishida, Eiichi, 4,447,309, Cl. 204-402.000.
Yunker, Conrad E.; Cory, John C.; and Meibos, Harold R., to United States of America, Health and Human Services. Tick cell lines. 4,447,537, Cl. 435-235.000.
Yunt, Fred W., to Northrop Corporation. Machine parts expander hold down. 4,447,183, Cl. 411-57.000.
Yurdin, Carl: *See*—
Sealfon, Andrew; and Yurdin, Carl, 4,447,232, Cl. 604-134.000.
Zajdlik, Miroslav, to Vyskummy ustav vodneho hospodarstva. Apparatus for the cyclone separation of liquids having different densities. 4,447,322, Cl. 210-104.000.
Zauner, Otto; and Bender, Fred, to Owens-Illinois, Inc. Tubing loader. 4,446,960, Cl. 198-408.000.
Zeng, Li-Wen: *See*—
Shang, Jer-Yu; Notestein, John E.; Mei, Joseph S.; and Zeng, Li-Wen, 4,447,297, Cl. 202-99.000.
Zibu, Mitsuo, to Sharp Kabushiki Kaisha. Pre-charge for the bit lines of a random access memory. 4,447,892, Cl. 365-156.000.
Ziegler, William H., Jr.: *See*—
Cunard, Joel C.; and Ziegler, William H., Jr., 4,447,093, Cl. 301-63.0PW.
Ziemelis, Maris J.: *See*—
Swihart, Terence J.; and Ziemelis, Maris J., 4,447,499, Cl. 428-447.000.
Zilisch, Kenneth P. Solar panel with storage. 4,446,850, Cl. 126-431.000.
Zimmerlin, Sharon L.: *See*—
Youmans, Barry J.; and Zimmerlin, Sharon L., 4,447,780, Cl. 324-132.000.
Zinger, George: *See*—
Sugahara, Byron M.; Freelund, Avrum A.; and Zinger, George, 4,446,805, Cl. 114-76.000.
Zoecon Corporation: *See*—
Henrick, Clive A., 4,447,613, Cl. 546-300.000.
Zollner, Dieter H.; Lauterbach-Dammler, Inge; and Rittmann, Friedrich, to C. Conradty Nurnberg GmbH & Co. Kg. Electrode holder for use in fusion electrolysis. 4,447,300, Cl. 204-67.000.
Zonak, Armin: *See*—
Eggers, Manfred; and Zonak, Armin, 4,446,772, Cl. 89-37.00E.
Zucker, Friedrich J.; and Osthaus, Georg, to Supraton F. J. Zucker GmbH. Process for the recovery of a concentrated stillage. 4,447,535, Cl. 435-162.000.
Zuech, Ernest A.: *See*—
Murtha, Timothy P.; and Zuech, Ernest A., 4,447,554, Cl. 502-73.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Combustion Engineering, Inc.: *See*—
Klumb, Ralph H.; and Hutchinson, John J., Re. 31,583, Cl. 376-364.000.
Gesellschaft fur digitale Automation mbH: *See*—
Richter, Hans, Re. 31,581, Cl. 414-730.000.
Higashiyama, Kazuhiro: *See*—
Hosaka, Akio; and Higashiyama, Kazuhiro, Re. 31,582, Cl. 364-431.040.
Hosaka, Akio; and Higashiyama, Kazuhiro, to Nissan Motor Company, Limited. Automatic control system for method and apparatus for checking devices of an automotive vehicle in use with a microcomputer. Re. 31,582, Cl. 364-431.040.
Hutchinson, John J.: *See*—
Klumb, Ralph H.; and Hutchinson, John J., Re. 31,583, Cl. 376-364.000.
Klumb, Ralph H.; and Hutchinson, John J., to Combustion Engineering, Inc. Fuel assembly hold-down device. Re. 31,583, Cl. 376-364.000.
Nissan Motor Company, Limited: *See*—
Hosaka, Akio; and Higashiyama, Kazuhiro, Re. 31,582, Cl. 364-431.040.
Richter, Hans, to Gesellschaft fur digitale Automation mbH. Apparatus for detecting forces directing the movement of a manipulating instrument. Re. 31,581, Cl. 414-730.000.

LIST OF DESIGN PATENTEES

A.R.F. Products, Inc.: *See*—
Owerko, John R., 273,786, Cl. D14-95.000.
Abbott Laboratories: *See*—
Holen, James T., 273,807, Cl. D24-56.000.
Abe, Takeshi: *See*—
Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, 273,784, Cl. D14-53.000.
Aker, Kevin R.; and Martin, Jeffery G., to Huffy Corporation. Bicycle console. 273,775, 5-8-84, Cl. D12-114.000.
Ali, Frank F. Holder for an abrasive surface. 273,758, 5-8-84, Cl. D8-71.000.
Anderson, Duane L.; Morris, Lewis R.; Cummings, Kenneth W.; and Clarke, Robert S., to First Champaign Corporation. Motorcycle fairing. 273,779, 5-8-84, Cl. D12-182.000.
Antonis, Basil: *See*—
Chapman, John M.; and Antonis, Basil, 273,809, Cl. D26-3.000.
Appel, Mel; and Kress, George, to Appel, Mel. Air traffic controller game housing. 273,800, 5-8-84, Cl. D21-13.000.
Asakawa, Yoshifumi: *See*—
Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, 273,784, Cl. D14-53.000.
Atlantic Richfield Company: *See*—
Case, Robert, 273,813, Cl. D99-28.000.
Ault, Charles M., to Termiflex Corporation. Case for a keyboard and display unit. 273,788, 5-8-84, Cl. D14-114.000.
Automatic Liquid Packaging, Inc.: *See*—
Weiler, Gerhard H., 273,767, Cl. D9-352.000.
Barry, Bernard R. Flower pot holder. 273,736, 5-8-84, Cl. D6-130.000.
Bausch & Lomb, Inc.: *See*—
Markovitz, Aaron M.; and Ramp, Robert H., 273,794, Cl. D16-112.000.
Bayerische Motoren Wereke A.G.: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,780, Cl. D12-190.000.
Bayerische Motoren Werke Aktiengesellschaft: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,773, Cl. D12-92.000.
Bolesky, Richard C.; Cindrich, Nicholas; and Doll, Michael H., to Zimmer, Inc. Reamer/rasp tool, with disposable, debris retaining cutting surface. 273,806, 5-8-84, Cl. D24-28.000.
Bousman, William J., to Western Publishing Company. Sound emitting probe for toy or similar article. 273,802, 5-8-84, Cl. D21-64.000.
Braun, Hans: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,773, Cl. D12-92.000.
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,780, Cl. D12-190.000.
Brentini, Attilio. Key ring. 273,722, 5-8-84, Cl. D3-65.000.
Bridgestone Tire Company Limited: *See*—
Igarashi, Toshio; and Nishio, Hideaki, 273,777, Cl. D12-147.000.
Bulgari, Marina, to Marina B Creation S.A. Ring. 273,771, 5-8-84, Cl. D11-34.000.
Bulgari, Marina, to Marina B Creation S.A. Ring. 273,772, 5-8-84, Cl. D11-35.000.
Cafiero, Vincent, to Simmons Universal Corporation. Chair. 273,728, 5-8-84, Cl. D6-30.000.
Cafiero, Vincent, to Simmons Universal Corporation. Arm chair. 273,730, 5-8-84, Cl. D6-31.000.
Case, Robert, to Atlantic Richfield Company. Credit card terminal. 273,813, 5-8-84, Cl. D99-28.000.
Castillo, Richard M. Picture frame. 273,744, 5-8-84, Cl. D6-234.000.
Chapman, John M.; and Antonis, Basil, to Thorn EMI Limited. Fluorescent lamp. 273,809, 5-8-84, Cl. D26-3.000.
Chapman, Leif H., to General Motors Corporation. Wheel cover. 273,781, 5-8-84, Cl. D12-211.000.
Cillario, Lorenzo, to Ferrero S.p.A. Container for cream-like edible products. 273,765, 5-8-84, Cl. D9-341.000.
Cindrich, Nicholas: *See*—
Bolesky, Richard C.; Cindrich, Nicholas; and Doll, Michael H., 273,806, Cl. D24-28.000.
Claman, Mike T. Chair. 273,733, 5-8-84, Cl. D6-57.000.
Clarke, Robert S.: *See*—
Anderson, Duane L.; Morris, Lewis R.; Cummings, Kenneth W.; and Clarke, Robert S., 273,779, Cl. D12-182.000.
Coca-Cola Company, The: *See*—
Sedam, Jason K.; and Richter, Simon J., 273,768, Cl. D9-375.000.
Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 273,727, Cl. D6-7.000.
Cummings, Kenneth W.: *See*—
Anderson, Duane L.; Morris, Lewis R.; Cummings, Kenneth W.; and Clarke, Robert S., 273,779, Cl. D12-182.000.
Cunningham, Jo Ann; Gilliss, Catherine A.; and Gorzo, Patricia M., to United States of America, National Aeronautics and Space Administration. Computer table. 273,742, 5-8-84, Cl. D6-179.000.
Darrell, Jack. In-out symbol for automatic opening hinged glass doors. 273,799, 5-8-84, Cl. D20-11.000.
Davidson, Grant M. N., to U.S. Philips Corporation. Clock radio receiver. 273,785, 5-8-84, Cl. D14-73.000.
Davis, William J., to Interdynamics, Inc. Portable air compressor. 273,789, 5-8-84, Cl. D15-9.000.
Designs for Vision, Inc.: *See*—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Waldyslaw, 273,782, Cl. D13-24.000.
Doll, Michael H.: *See*—
Bolesky, Richard C.; Cindrich, Nicholas; and Doll, Michael H., 273,806, Cl. D24-28.000.
Dresser Industries, Inc.: *See*—
Monigle, Glenn W.; and Roecker, David W., 273,790, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., 273,791, Cl. D15-9.100.
Drori, Michael. Nail driver. 273,759, 5-8-84, Cl. D8-75.000.
Eldon Industries, Inc.: *See*—
Evenson, Mel, 273,735, Cl. D6-114.000.
Ender, Herman R., Sr. Machine for inverting a hay windrow. 273,792, 5-8-84, Cl. D15-27.000.
Evans, Homer E. Multi-purpose tool for can pull-tabs, slide fasteners, or the like. 273,757, 5-8-84, Cl. D8-18.000.
Evenson, Mel, to Eldon Industries, Inc. Collating rack. 273,735, 5-8-84, Cl. D6-114.000.
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Waldyslaw, to Designs for Vision, Inc. Universal cable connector for fiber optic cables and the like. 273,782, 5-8-84, Cl. D13-24.000.
Ferrero S.p.A.: *See*—
Cillario, Lorenzo, 273,765, Cl. D9-341.000.
Filhol, Stuart J. Dental pin dispenser package. 273,805, 5-8-84, Cl. D24-10.000.
First Champaign Corporation: *See*—
Anderson, Duane L.; Morris, Lewis R.; Cummings, Kenneth W.; and Clarke, Robert S., 273,779, Cl. D12-182.000.

Forrest, Eugene F. Movable vehicle for the handicapped. 273,776, 5-8-84, Cl. D12-128.000.
Fueloep, Karl. Modular liquid or gas manifold for a swimming pool solar heater. 273,804, 5-8-84, Cl. D23-127.000.
General Motors Corporation: *See—*
Chapman, Leif H., 273,781, Cl. D12-211.000.
Gilliss, Catherine A.: *See—*
Cunningham, Jo Ann; Gilliss, Catherine A.; and Gorzo, Patricia M., 273,742, Cl. D6-179.000.
Gillow, Louis S. Toothbrush. 273,724, 5-8-84, Cl. D4-25.000.
Goetz, Charles R., to Stylette Plastics, Inc. Tray. 273,725, 5-8-84, Cl. D4-38.200.
Gorzo, Patricia M.: *See—*
Cunningham, Jo Ann; Gilliss, Catherine A.; and Gorzo, Patricia M., 273,742, Cl. D6-179.000.
Hammock Shop, Inc., The: *See—*
Saiger, Herbert C., 273,734, Cl. D6-73.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,747, 5-8-84, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,748, 5-8-84, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,749, 5-8-84, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,750, 5-8-84, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,751, 5-8-84, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,752, 5-8-84, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,753, 5-8-84, Cl. D7-351.000.
Haruguchi, Kenici; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,754, 5-8-84, Cl. D7-351.000.
Hiroshi Hukuba: *See—*
Hukuba, Hiroshi; and Nakamura, Nobuji, 273,723, Cl. D4-15.000.
Hitachi, Ltd.: *See—*
Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, 273,784, Cl. D14-53.000.
Holce, Thomas J.; and Huckins, Charles M., to Sentrol, Inc. Explosion-proof housing for electrical circuit components. 273,783, 5-8-84, Cl. D13-40.000.
Holen, James T., to Abbott Laboratories. Sample cup or the like. 273,807, 5-8-84, Cl. D24-56.000.
Hollwarth, Armin: *See—*
Steigerwald, Franz; Zulauf, Karlheinz; and Hollwarth, Armin, 273,764, Cl. D9-369.000.
Huckins, Charles M.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 273,783, Cl. D13-40.000.
Huffy Corporation: *See—*
Aker, Kevin R.; and Martin, Jeffery G., 273,775, Cl. D12-114.000.
Hukuba, Hiroshi; and Nakamura, Nobuji, to Hiroshi Hukuba. Electric toothbrush holder. 273,723, 5-8-84, Cl. D4-15.000.
Hunt, Dale A. Taco holder. 273,746, 5-8-84, Cl. D7-76.000.
Igarashi, Toshio; and Nishio, Hideaki, to Bridgestone Tire Company Limited. Vehicle tire. 273,777, 5-8-84, Cl. D12-147.000.
Inter-Ikea A/S: *See—*
Lundgren, Gillis L. A., 273,743, Cl. D6-191.000.
Interdynamics, Inc.: *See—*
Davis, William J., 273,789, Cl. D15-9.000.
Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 273,727, Cl. D6-7.000.
Jagger, Vivienne D., to Little People Limited. Drinking vessel. 273,745, 5-8-84, Cl. D7-9.000.
Johnson, Graham J. Putting aid for golfers. 273,803, 5-8-84, Cl. D21-234.000.
Kawaishi, Masayoshi: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,747, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,748, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,749, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,750, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,751, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,752, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,753, Cl. D7-351.000.
Haruguchi, Kenici; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,754, Cl. D7-351.000.
Monigle, Glenn W.; and Roecker, David W., to Dresser Industries, Inc. Fuel dispenser. 273,790, 5-8-84, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., to Dresser Industries, Inc. Fuel dispenser. 273,791, 5-8-84, Cl. D15-9.100.
Morris, Lewis R.: *See—*
Anderson, Duane L.; Morris, Lewis R.; Cummings, Kenneth W.; and Clarke, Robert S., 273,779, Cl. D12-182.000.
Nachatelo, Ferrell D. Auto transmission refill tube socket. 273,793, 5-8-84, Cl. D15-150.000.
Nakamura, Nobuji: *See—*
Hukuba, Hiroshi; and Nakamura, Nobuji, 273,723, Cl. D4-15.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, to Combi Co., Ltd. Baby seat. 273,727, 5-8-84, Cl. D6-7.000.
Nichiei Distribution Systems Inc.: *See—*
Takei, Isao, 273,760, Cl. D8-354.000.
Takei, Isao, 273,761, Cl. D8-354.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Takei, Isao, 273,760, Cl. D8-354.000.
Takei, Isao, 273,761, Cl. D8-354.000.
Nishio, Hideaki: *See—*
Igarashi, Toshio; and Nishio, Hideaki, 273,777, Cl. D12-147.000.
NORDICA S.p.A.: *See—*
Pozzobon, Alessandro, 273,719, Cl. D2-276.000.
Numano, Masafumi: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,747, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,748, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,749, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,750, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,751, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,752, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,753, Cl. D7-351.000.
Haruguchi, Kenici; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,754, Cl. D7-351.000.
Ogawa, Kazuhisa: *See—*
Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, 273,784, Cl. D14-53.000.
Oleksy, Waldyslaw: *See—*
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Waldyslaw, 273,782, Cl. D13-24.000.
Olfman, Jerry A.: *See—*
Olfman, Shawn D.; and Olfman, Jerry A., 273,801, Cl. D21-51.000.
Olfman, Shawn D.; and Olfman, Jerry A. Figurine or statuette of game playing pieces or the like. 273,801, 5-8-84, Cl. D21-51.000.
Owerko, John R., to A.R.F. Products, Inc. Enclosure for a portable handheld transmitter. 273,786, 5-8-84, Cl. D14-95.000.
Pace Collection, Inc., The: *See—*
Rosen, Leon, 273,737, Cl. D6-146.000.
Rosen, Leon, 273,740, Cl. D6-177.000.
Pavlova Pantry Pty. Ltd.: *See—*
Lampe, Deirdre A., 273,766, Cl. D9-352.000.
Pearson, Walter C., to Minnesota Mining and Manufacturing Company. Holder for multiple pads of notepaper. 273,798, 5-8-84, Cl. D19-91.000.
Pelly, Charles W.; and Krieger, John, to Unitek Corporation. Chair. 273,729, 5-8-84, Cl. D6-30.000.
Piaget, Gary: *See—*
Levy, Richard C.; Levy, Sheryl; and Piaget, Gary, 273,774, Cl. D12-112.000.
Pineiro, Hugo A. Foldable seat and table unit. 273,731, 5-8-84, Cl. D6-45.000.
Pota, Joseph. Plastic sheet material for surfacing a wall panel or similar article. 273,811, 5-8-84, Cl. D92-30.000.
Pozzobon, Alessandro, to NORDICA S.p.A. Ski boot. 273,719, 5-8-84, Cl. D2-276.000.
Quiet Designs, Inc.: *See—*
Ronzani, Peter A., 273,721, Cl. D3-35.000.
Ramp, Robert H.: *See—*
Markovitz, Aaron M.; and Ramp, Robert H., 273,794, Cl. D16-112.000.
Rennen, Manfred: *See—*
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,773, Cl. D12-92.000.
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,780, Cl. D12-190.000.
Rexroth, Thomas A. Patterned lawn trim strip fastening device. 273,756, 5-8-84, Cl. D8-1.000.
Richardson, Olivia. Model church for teaching religious procedures or the like. 273,797, 5-8-84, Cl. D19-62.000.
Richter, Simon J.: *See—*
Sedam, Jason K.; and Richter, Simon J., 273,768, Cl. D9-375.000.
Robert Tiffany Designs, Inc.: *See—*
Tiffany, H. Robert, 273,732, Cl. D6-47.000.
Roecker, David W.: *See—*
Monigle, Glenn W.; and Roecker, David W., 273,790, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., 273,791, Cl. D15-9.100.
Romberger, Warren O. Necktie fastener. 273,720, 5-8-84, Cl. D2-401.000.
Ronzani, Peter A., to Quiet Designs, Inc. Floppy disk holder. 273,721, 5-8-84, Cl. D3-35.000.
Rosen, Leon, to Pace Collection, Inc., The. Table. 273,737, 5-8-84, Cl. D6-146.000.
Rosen, Leon, to Pace Collection, Inc., The. Wall table. 273,740, 5-8-84, Cl. D6-177.000.
Ruhland, Blue. Guard for a vehicle hitch. 273,778, 5-8-84, Cl. D12-162.000.
Saiger, Herbert C., to Hammock Shop, Inc., The. Chair or similar article. 273,734, 5-8-84, Cl. D6-73.000.
Sakaguchi, Keizaburo, to Sakaguchi Plastic Industrial Co., Ltd. Snap-action clip. 273,762, 5-8-84, Cl. D8-396.000.
Sakaguchi, Keizaburo, to Sakaguchi Plastic Industrial Co., Ltd. Snap-action clip. 273,763, 5-8-84, Cl. D8-396.000.
Sakaguchi Plastic Industrial Co., Ltd.: *See—*
Sakaguchi, Keizaburo, 273,762, Cl. D8-396.000.
Sakaguchi, Keizaburo, 273,763, Cl. D8-396.000.
Sedam, Jason K.; and Richter, Simon J., to Coca-Cola Company, The. Bottle. 273,768, 5-8-84, Cl. D9-375.000.
Sentrol, Inc.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 273,783, Cl. D13-40.000.
Shapiro, Peter D. Work bench. 273,739, 5-8-84, Cl. D6-177.000.
Sharp Corporation: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,747, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,748, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,749, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,750, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,751, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,752, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,753, Cl. D7-351.000.
Haruguchi, Kenici; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,754, Cl. D7-351.000.
Yamagami, Masafumi, 273,795, Cl. D18-7.000.
Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, to Hitachi, Ltd. Telephone. 273,784, 5-8-84, Cl. D14-53.000.
Sidrak, Fahim R. Ruler. 273,769, 5-8-84, Cl. D10-71.000.
Simmons Universal Corporation: *See—*
Cafiero, Vincent, 273,728, Cl. D6-30.000.
Cafiero, Vincent, 273,730, Cl. D6-31.000.
Smith, Eric L. Dental flosser. 273,808, 5-8-84, Cl. D28-64.000.
Steigerwald, Franz; Zulauf, Karlheinz; and Hollwarth, Armin, to Wella AG. Combined bottle and container. 273,764, 5-8-84, Cl. D9-369.000.
Stillace, Vincent. Device for use in parapsychology. 273,812, 5-8-84, Cl. D99-25.000.
Stylette Plastics, Inc.: *See—*
Goetz, Charles R., 273,725, Cl. D4-38.200.
Sun Hill Industries, Inc.: *See—*
Zinbarg, Benson, 273,810, Cl. D28-61.000.
Takei, Isao, to Nichiei Distribution Systems Inc.; and Nippon Kokan Kabushiki Kaisha. Pipe supporting and spacing member. 273,760, 5-8-84, Cl. D8-354.000.
Takei, Isao, to Nichiei Distribution Systems, Inc.; and Nippon Kokan Kabushiki Kaisha. Pipe supporting and spacing member. 273,761, 5-8-84, Cl. D8-354.000.
Termiflex Corporation: *See—*
Ault, Charles M., 273,788, Cl. D14-114.000.
Thorn EMI Limited: *See—*
Chapman, John M.; and Antonis, Basil, 273,809, Cl. D26-3.000.
Thurlow, Heida. Covered frying pan or similar article. 273,755, 5-8-84, Cl. D7-359.000.
Tiffany, H. Robert, to Robert Tiffany Designs, Inc. Lounge seat. 273,732, 5-8-84, Cl. D6-47.000.
Tsujimoto, Kazuo: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,747, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,748, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,749, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,750, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,751, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,752, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,753, Cl. D7-351.000.
Haruguchi, Kenici; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,754, Cl. D7-351.000.

United States of America
National Aeronautics and Space Administration: *See*—
Cunningham, Jo Ann; Gilliss, Catherine A.; and Gorzo, Patricia M., 273,742, Cl. D6-179.000.
U.S. Philips Corporation: *See*—
Davidson, Grant M. N., 273,785, Cl. D14-73.000.
Unitek Corporation: *See*—
Pelly, Charles W.; and Krieger, John, 273,729, Cl. D6-30.000.
Valenzuela, Luis. Baby bathtub stand. 273,726, 5-8-84, Cl. D6-5.000.
Weiler, Gerhard H., to Automatic Liquid Packaging, Inc. Bottle or the like. 273,767, 5-8-84, Cl. D9-352.000.
Wella AG: *See*—
Steigerwald, Franz; Zulauf, Karlheinz; and Hollwarth, Armin, 273,764, Cl. D9-369.000.
Western Publishing Company: *See*—
Bousman, William J., 273,802, Cl. D21-64.000.
Yamagami, Masafumi, to Sharp Corporation. Electronic calculator. 273,795, 5-8-84, Cl. D18-7.000.
Zimmer, Inc.: *See*—
Bolesky, Richard C.; Cindrich, Nicholas; and Doll, Michael H., 273,806, Cl. D24-28.000.
Zinbarg, Benson, to Sun Hill Industries, Inc. Nail treatment tray. 273,810, 5-8-84, Cl. D28-61.000.
Zulauf, Karlheinz: *See*—
Steigerwald, Franz; Zulauf, Karlheinz; and Hollwarth, Armin, 273,764, Cl. D9-369.000.

LIST OF PLANT PATENTEES

Conard-Pyle Company: *See*—
Zebehazy, Alex J., 5,229, Cl. 54.000.
Hesse, Peter S., to Pan American Plant Company. Chrysanthemum plant named Yellow Limelight. 5,230, 5-8-84, Cl. 74.000.
Pan American Plant Company: *See*—
Hesse, Peter S., 5,230, Cl. 74.000.
Zaiger, Chris F. Nectarine tree—2w68c. 5,228, 5-8-84, Cl. 41.000.
Zebehazy, Alex J., to Conard-Pyle Company. Leucothoe plant—Zebonard variety. 5,229, 5-8-84, Cl. 54.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 8, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
13 4,446,571
104 4,446,572
252 4,446,573
338 4,446,574
400 4,446,575
425 4,446,576

CLASS 3
1.5 4,446,577
1.91 4,446,578
4,446,579
6 4,446,580
13 4,446,581
4,446,582

CLASS 4
206 4,446,583
237 4,446,584
460 4,446,585
555 4,446,586

CLASS 5
83 4,446,587

CLASS 7
138 4,446,588

CLASS 8
116.4 4,447,241
128 R 4,447,242
188 4,447,243
514 4,447,244

CLASS 15
250.32 4,446,589
302 4,446,590
315 4,446,591
316 R 4,446,592
322 4,446,593
323 4,446,594
365 4,446,595

CLASS 16
333 4,446,596
364 4,446,597

CLASS 17
1 B 4,446,598
4,446,599
11 4,446,600
51 4,446,601

CLASS 18
661 4,447,771

CLASS 19
0.21 4,446,602

CLASS 24
21 4,446,603
68 J 4,446,604
277 4,446,605

CLASS 26
18.6 4,446,606

CLASS 29
33 E 4,446,607
220 4,446,608
270 4,446,609
421 E 4,446,610
568 4,446,612
571 4,446,613
578 4,446,611
622 4,446,614
742 4,446,615
775 4,446,616
861 4,446,617
882 4,446,618

CLASS 30
85 4,446,619
96 4,446,620
229 4,446,623
241 4,446,621
272 R 4,446,622

CLASS 33
1 C 4,446,624
184.5 4,446,625
286 4,446,626
366 4,446,628
497 4,446,627

CLASS 34
57 A 4,446,629
65 4,446,630
4,446,631
103 4,446,632

CLASS 36
11.5 4,446,633
29 4,446,634
116 4,446,635

CLASS 37
34 4,446,636
55 4,446,637
142 A 4,446,638
280 4,446,639

CLASS 40
16.2 4,446,640
152 4,446,641
152.1 4,446,642
590 4,446,643

CLASS 42
1 ST 4,446,644
50 4,446,645

CLASS 43
12 4,446,646
36 4,446,647
131 4,446,648

CLASS 44
1 SR 4,447,245

CLASS 46
218 4,446,649
1 F 4,447,250

CLASS 47
1.5 4,446,650
10 4,446,651
66 4,446,652
67 4,446,653

CLASS 49
181 4,446,654
368 4,446,655

CLASS 51
7 4,446,656
206 R 4,446,657

CLASS 52
9 4,446,659
11 4,446,658
36 4,446,660
95 4,446,661
121 4,446,662
144 4,446,663
404 4,446,664
407 4,446,665
648 4,446,666
658 4,446,667
729 4,446,668
738 4,446,669

CLASS 53
244 4,446,670
445 4,446,671
448 4,446,672
467 4,446,673
502 4,446,674
535 4,446,675
552 4,446,676
577 4,446,677

CLASS 55
55 4,447,247

CLASS 56
1 4,446,678
2 4,446,679
11.9 4,446,680
16.7 4,446,681
119 4,446,682
296 4,446,683
341 4,446,684
377 4,446,685

CLASS 57
6 4,446,686
22 4,446,687
58.65 4,446,688
204 4,446,689
284 4,446,690
4,446,691

CLASS 60
39.182 4,446,694
39.23 4,446,692
39.32 4,446,693
200.1 4,446,695
226.3 4,446,696
443 4,446,697
520 4,446,698
547.1 4,446,699
641.8 4,446,700

CLASS 62
6 4,446,701
55.5 4,446,702
113 4,446,703
180 4,446,704
372 4,446,705

CLASS 65
2 4,447,248
4.4 4,447,249
142 4,447,251
268 4,447,252

CLASS 68
24 4,446,706

CLASS 70
134 4,446,707
166 4,446,708
363 4,446,709

CLASS 71
28 4,447,253
67 4,447,254
86 4,447,255
4,447,256
91 4,447,257
93 4,447,258
94 4,447,259
118 4,447,260

CLASS 72
10 4,446,710
213 4,446,711
243 4,446,712
308 4,446,713
370 4,446,714

CLASS 73
1 DC 4,446,716
1 R 4,446,715
7 4,446,717
23 4,446,718
4,446,719
4,446,720
29 4,446,721
35 4,446,722
4,446,723
4,446,724
61 R 4,446,725
61.4 4,446,726
113 4,446,727
116 4,446,728
178 R 4,446,729
301 4,446,730
334 4,446,731
461 4,446,732
579 4,446,733
586 4,446,734
597 4,446,735
600 4,446,736
602 4,446,737
606 4,446,738
609 4,446,739
626 4,446,740
654 4,446,741
663 4,446,742
822 4,446,743
861.28 4,446,744
862.25 4,446,745
862.33 4,446,746
862.58 4,446,747
863.03 4,446,748
863.23 4,446,749

CLASS 74
1.5 4,446,750
422 4,446,751
462 4,446,752
594.1 4,446,753
594.3 4,446,754
606 R 4,446,755
687 4,446,756
758 4,446,757
781 R 4,446,758
867 4,446,759

CLASS 75
5 4,447,261
65 R 4,447,262
233 4,447,263
251 4,447,264
257 4,447,265

CLASS 76
79 4,446,760

CLASS 81
57.19 4,446,761
57.39 4,446,762
90 B 4,446,763
170 4,446,764
441 4,446,765
480 4,446,766

CLASS 83
136 4,446,767
879 4,446,768

CLASS 84
1.01 4,446,769
4,446,770

CLASS 89
14 SB 4,446,771
37 E 4,446,772

CLASS 91
317 4,446,773
369 B 4,447,897

CLASS 98
38 D 4,446,774

CLASS 99
353 4,446,775
401 4,446,776
419 4,446,777
455 4,446,778
472 4,446,779
480 4,446,780
483 4,446,781
589 4,446,782

CLASS 100
5 4,446,783
27 4,446,784
35 4,446,785
88 4,446,786
99 4,446,787
117 4,446,788

CLASS 101
93.04 4,446,789
93.14 4,446,790
122 4,446,791

CLASS 102
473 4,446,792
505 4,446,793
513 4,446,794
527 4,446,795

CLASS 106
90 4,447,266
93 4,447,267
148 4,447,268
277 4,447,269
300 4,447,270
4,447,271

CLASS 108
69 4,446,796

CLASS 109
53 4,446,797
61 4,446,798

CLASS 110
263 4,446,799
270 4,446,800

CLASS 111
86 4,446,801

CLASS 112
121.12 4,446,802
320 4,446,803

CLASS 114
74 R 4,446,804
76 4,446,805
219 4,446,806
230 4,446,807
248 4,446,808

CLASS 116
28.1 4,446,809
307 4,446,810
309 4,446,811

CLASS 118
63 4,446,812
72 4,446,813
694 4,446,814
718 4,446,815
4,446,816
725 4,446,817

CLASS 119
52 AF 4,446,818
97 R 4,446,819

CLASS 122
32 4,446,820

CLASS 123
26 4,446,821
41.31 4,446,822
52 M 4,446,824
52 MB 4,446,823
90.65 4,446,825
143 B 4,446,826
195 R 4,446,827
196 R 4,446,828
244 4,446,829
276 4,446,830
286 4,446,831
339 4,446,832
435 4,446,833
440 4,446,834
450 4,446,835
4,446,836
460 4,446,837
520 4,446,838
569 4,446,839
571 4,446,840
602 4,446,841
606 4,446,842
609 4,446,843

CLASS 124
41 A 4,446,844

CLASS 125
13 SS 4,446,845

CLASS 126
25 R 4,446,846
120 4,446,847
121 4,446,848
299 R 4,446,849
431 4,446,850
432 4,446,852
449 4,446,851
450 4,446,853
451 4,446,854

CLASS 128
24.2 4,446,855
80 R 4,446,856
92 BC 4,446,857
94 4,446,858
132 R 4,446,860
139 4,446,861
203.15 4,446,862
204.18 4,446,863
204.26 4,446,859
207.14 4,446,864
321 4,446,865
340 4,446,866
344 4,446,867
422 4,446,870
633 4,446,871
700 4,446,872
708 4,446,868
715 4,446,873
716 4,446,869
804 4,446,874

CLASS 130
27 JT 4,446,875

CLASS 131
110 4,446,876
198 R 4,446,877
336 4,446,878

CLASS 132
82 B 4,446,879
88.5 4,446,880

CLASS 137
1 4,446,881
87 4,446,890
115 4,446,882
315 4,446,883
355.23 4,446,884
360 4,446,885
516.29 4,446,886
556 4,446,887
596.17 4,446,888
625.4 4,446,889

CLASS 138
97 4,446,891
104 4,446,892

CLASS 139
11 4,446,893

CLASS 140
57 4,446,894

CLASS 141
4 4,446,895
198 4,446,896

CLASS 144
34 R 4,446,897
57 4,447,246
193 A 4,446,898
201 4,446,899

CLASS 148
1.5 4,447,272
6.15 R 4,447,273
6.24 4,447,274
152 4,447,275
175 4,447,276
400 4,447,277

CLASS 149
19.91 4,447,278

CLASS 150
52 R 4,446,900

CLASS 152
209 B 4,446,902
209 R 4,446,901
323 4,446,903
356 R 4,446,904
361 DM 4,446,905

CLASS 156
61 4,447,279
85 4,447,280
250 4,447,281
285 4,447,282
325 4,447,283
366 4,447,284
473 4,447,285
515 4,447,286
552 4,447,287
574 4,447,288
608 4,447,289
626 4,447,290
643 4,447,291
644 4,447,292

CLASS 159
6.2 4,447,293

CLASS 162
158 4,447,294
300 4,447,295
312 4,447,296

CLASS 164
112 4,446,906
120 4,446,907
452 4,446,908

453 4,446,909

CLASS 165

1 4,446,910
4 4,446,911
12 4,446,912
4,446,913
129 4,446,914
144 4,446,915
185 4,446,916

CLASS 166

59 4,446,917
245 4,446,918
246 4,446,919
267 4,446,921
297 4,446,920
322 4,446,922

CLASS 169

45 4,446,923

CLASS 172

140 4,446,924
142 4,446,925
240 4,446,926
753 4,446,927
776 4,446,928

CLASS 173

17 4,446,929
29 4,446,930
48 4,446,931

CLASS 174

15 CA 4,447,670
28 4,447,671

CLASS 175

74 4,446,932
229 4,446,933
286 4,446,934
329 4,446,935
410 4,446,936

CLASS 177

1 4,446,937
25 4,446,938

CLASS 178

22.19 4,447,672

CLASS 179

IE HB 4,447,673
81 R 4,447,674
84 R 4,447,675
90 BD 4,447,676
107 R 4,447,677
115.5 PS 4,447,678
175.3 R 4,447,679

CLASS 180

89.15 4,446,939
177 4,446,940
236 4,446,941

CLASS 181

249 4,446,942

CLASS 182

3 4,446,943
4,446,944
229 4,446,945

CLASS 187

29 R 4,446,946

CLASS 188

73.34 4,446,947
73.45 4,446,948
79.5 K 4,446,949

CLASS 191

48 4,447,680

CLASS 192

3 TR 4,446,950
4 A 4,446,951
58 B 4,446,952
70.12 4,446,953
105 CD 4,446,954
106.2 4,446,955

CLASS 194

1 L 4,446,956
54 4,446,957

CLASS 198

311 4,446,958
382 4,446,959
408 4,446,960
443 4,446,961
457 4,446,962
735 4,446,963

CLASS 200

5 A 4,447,681
50 AA 4,447,682
61.27 4,447,683
61.54 4,447,684
67 D 4,447,685
153 J 4,447,686
159 R 4,447,687
4,447,688
330 4,447,689

CLASS 202

99 4,447,297

CLASS 204

23 4,447,298
43 R 4,447,299
67 4,447,300
4,447,301
128 4,447,302
157.1 R 4,447,303
4,447,304
192 C 4,447,305
224 R 4,447,306
267 4,447,307
279 4,447,308
402 4,447,309

CLASS 206

205 4,446,965
321 4,446,964
334 4,446,966
368 4,446,967
451 4,446,968
519 4,446,969
569 4,446,970
607 4,446,971

CLASS 208

8 LE 4,447,310
35 4,447,311
46 4,447,312
86 4,447,313
89 4,447,314
99 4,447,315
138 4,447,316
216 R 4,447,317
348 4,447,318

CLASS 209

11 4,447,319
273 4,447,320

CLASS 210

86 4,447,321
104 4,447,322
158 4,447,323
159 4,447,324
295 4,447,325
321.3 4,447,326
350 4,447,327
635 4,447,328
673 4,447,329
717 4,447,330
721 4,447,331
748 4,447,332
750 4,447,333
783 4,447,334

CLASS 211

13 4,446,972
45 4,446,973
4,446,974

CLASS 212

188 4,446,975
189 4,446,976
247 4,446,977

CLASS 215

13 R 4,446,978
203 4,446,979
276 4,446,980
354 4,446,981

CLASS 219

10.43 4,447,690
10.49 R 4,447,691
10.55 B 4,447,692
10.55 M 4,447,693
68 4,447,694
69 C 4,447,695
69 G 4,447,713
69 P 4,447,696
86.41 4,447,697
110 4,447,698
4,447,699
117.1 4,447,700
121 LG 4,447,701
130.33 4,447,702
136 4,447,703
216 4,447,704
222 4,447,705
299 4,447,706
301 4,447,707
384 4,447,708
4,447,709
449 4,447,710
464 4,447,711
486 4,447,712

CLASS 220

8 4,446,982
219 4,446,983
268 4,446,984
269 4,446,985
307 4,446,986

CLASS 222

63 4,446,988
81 4,446,989
82 4,446,990
89 4,446,987
94 4,446,991
196 4,446,992
214 4,446,993
475 4,446,994
590 4,446,995

CLASS 223

96 4,446,996

CLASS 224

151 4,446,997
329 4,446,998

CLASS 227

11 4,446,999
49 4,447,000

CLASS 228

37 4,447,001

CLASS 229

37 R 4,447,002
44 CB 4,447,003
52 B 4,447,004

CLASS 232

35 4,447,005

CLASS 235

379 4,447,714
45' 4,447,715
492 4,447,716

CLASS 238

341 4,447,006

CLASS 239

165 4,447,007
214.13 4,447,008
265.39 4,447,009
414 4,447,010

CLASS 241

37 4,447,011

CLASS 242

54 R 4,447,012
4,447,013
55 4,447,014
55.2 4,447,015
56.9 4,447,016
107.2 4,447,018
107.4 A 4,447,017
192 4,447,019
198 4,447,020
199 4,447,021

CLASS 244

13 4,447,022
17.11 4,447,023
23 A 4,447,024
118.2 4,447,025
129.5 4,447,026
212 4,447,027
4,447,028

CLASS 248

27.1 4,447,030
246 4,447,029
280.1 4,447,031
558 4,447,032
563 4,447,033
634 4,447,034

CLASS 249

194 4,447,035

CLASS 250

201 4,447,717
203 R 4,447,718
204 4,447,719
211 J 4,447,720
213 VT 4,447,721
216 4,447,722
236 4,447,723
309 4,447,724
339 4,447,725
342 4,447,726
390 4,447,727
423 R 4,447,728
427 4,447,732
442.1 4,447,731
506.1 4,447,729
4,447,730
4,447,733
517.1 4,447,734
578 4,447,735

CLASS 251

1 B 4,447,037
4,447,038
63.4 4,447,036
144 4,447,039
149.8 4,447,040

CLASS 252

1 4,447,335
7 4,447,336
4,447,337
8.5 A 4,447,339
4,447,341
8.5 C 4,447,340
8.5 M 4,447,338
8.55 D 4,447,342
8.75 4,447,343
60 4,447,344
62 4,447,345
62.2 4,447,346
70 4,447,347
75 4,447,348
174.13 4,447,349
301.22 4,447,350
313 R 4,447,351
519 4,447,352
630 4,447,353

CLASS 254

9 R 4,447,041
90 4,447,042
269 4,447,043
309 4,447,044

CLASS 260

106 4,447,354
112 B 4,447,355
112.5 R 4,447,356
153 4,447,357
205 4,447,358
207 4,447,359
239 A 4,447,360
244.4 4,447,361
396 R 4,447,362
397.3 4,447,363
448 R 4,447,364
463 4,447,365
501.11 4,447,366
502.4 R 4,447,367
508 4,447,368
665 R 4,447,369

CLASS 261

35 4,447,370
44 E 4,447,371

CLASS 264

2.2 4,447,372
4 4,447,373
8 4,447,383
22 4,447,374
40.5 4,447,375
42 4,447,376
45.2 4,447,377
45.9 4,447,378
61 4,447,379
82 4,447,380
107 4,447,381
123 4,447,382
206 4,447,384
315 4,447,385
328.2 4,447,386
566 4,447,387

CLASS 266

149 4,447,045
216 4,447,046

CLASS 267

118 4,447,047
141.1 4,447,048

CLASS 269

46 4,447,049
49 4,447,050
302.1 4,447,051

CLASS 271

113 4,447,053
280 4,447,052
311 4,447,054

CLASS 272

113 4,447,055

CLASS 273

55 R 4,447,056
116 4,447,057
121 A 4,447,058
176 FA 4,447,059
346 4,447,060

CLASS 277

1 4,447,061
3 4,447,062
80 4,447,063
134 4,447,064
184 4,447,065
212 FB 4,447,066

CLASS 280

153 R 4,447,067
260 4,447,068
270 4,447,069
434 4,447,070
479 R 4,447,071
492 4,447,072
705 4,447,073
804 4,447,074

CLASS 285

55 4,447,076
104 4,447,077
331 4,447,078
363 4,447,079

CLASS 290

1 R 4,447,736
6 4,447,737
44 4,447,738
52 4,447,739
53 4,447,740

CLASS 292

264 4,447,080
4,447,081

CLASS 294

1 BA 4,447,082
66 R 4,447,083
83 AE 4,447,084
97 4,447,085

CLASS 296

217 4,447,086

CLASS 297

130 4,447,087
217 4,447,088

CLASS 298

11 4,447,089

CLASS 299

2 4,447,090

CLASS 301

37 AT 4,447,091
37 P 4,447,092
63 PW 4,447,093

CLASS 307

31 4,447,741
106 4,447,742
118 4,447,743
252 R 4,447,744
269 4,447,745
311 4,447,746
529 4,447,747

CLASS 308

2 R 4,447,094
3.8 4,447,095

CLASS 310

11 4,447,748
71 4,447,749
89 4,447,750
154 4,447,751
232 4,447,752
312 4,447,753
313 R 4,447,754
329 4,447,755

CLASS 312

111 4,447,096
215 4,447,097
216 4,447,098
257 R 4,447,099

CLASS 313

487 4,447,756
509 4,447,757
532 4,447,758

CLASS 315

60 4,447,759
65 4,447,760
111.81 4,447,761
116 4,447,762
207 4,447,763
240 4,447,764
4,447,765
241 R 4,447,766

CLASS 318

139 4,447,767
293 4,447,768
564 4,447,769
618 4,447,770
799 4,447,788
803 4,447,787
811 4,447,786

CLASS 320

25 4,447,785

CLASS 323

226 4,447,784
275 4,447,783

CLASS 324

56 4,447,782
83 A 4,447,781
132 4,447,780
207 4,447,779
213 4,447,778
220 4,447,777
253 4,447,776
438 4,447,775

CLASS 328

150 4,447,774
233 4,447,773

CLASS 329

126 4,447,772

CLASS 330

4.3 4,447,789
149 4,447,790
297 4,447,791

CLASS 332

19 4,447,792

CLASS 333

106 4,447,793

CLASS 335

128 4,447,794

CLASS 336

60 4,447,796
178 4,447,795
205 4,447,797

CLASS 338

22 R 4,447,799

CLASS 339

14 R 4,447,100
45 M 4,447,101
91 R 4,447,102
94 M 4,447,103
103 M 4,447,104
113 R 4,447,105
126 R 4,447,106
171 E 4,447,107
256 R 4,447,109
256 RT 4,447,108
262 RR 4,447,110

CLASS 340

52 F 4,447,801
119 4,447,802
347 CC 4,447,803
347 DD 4,447,804
539 4,447,805
641 4,447,806
676 4,447,807
696 4,447,808
747 4,447,809
756 4,447,810
784 4,447,812
825.1 4,447,813
904 4,447,800

CLASS 343

401 4,447,814
754 4,447,815
783 4,447,811
877 4,447,816

CLASS 346

75 4,447,817
76 PH 4,447,818
4,447,819
140 R 4,447,820
154 4,447,821
200 4,447,487
213 4,447,075

CLASS 350

3.7 4,447,111
6.5 4,447,112
96.13 4,447,116
96.15 4,447,117
96.16 4,447,118
96.18 4,447,119
96.2 4,447,114
4,447,115
96.20 4,447,120
4,447,121
96.23 4,447,122
96.24 4,447,123
96.30 4,447,124
4,447,125
96.31 4,447,126
96.33 4,447,127
174 4,447,128
302 4,447,129
310 4,447,130
333 4,447,131

346 4,447,132
357 4,447,133
358 4,447,134
426 4,447,135
432 4,447,136
454 4,447,137
472 4,447,138
522 4,447,139
534 4,447,140

CLASS 351

237 4,447,141

CLASS 354

246 4,447,142
407 4,447,143

CLASS 355

3 BE 4,447,144
14 D 4,447,145
28 4,447,146
51 4,447,147
75 4,447,148

CLASS 356

5 4,447,149
41 4,447,150
218 4,447,151
237 4,447,152
361 4,447,153
404 4,447,154
437 4,447,155

CLASS 357

17 4,447,822
23 4,447,823
71 4,447,824
4,447,825

CLASS 358

27 4,447,826
75 4,447,113
111 4,447,827
118 4,447,828
260 4,447,829
283 4,447,830
4,447,831
296 4,447,832
298 4,447,833
310 4,447,834

CLASS 360

10.2 4,447,835
15 4,447,836
33.1 4,447,837
96.5 4,447,838
113 4,447,839
137 4,447,840

CLASS 361

18 4,447,841
76 4,447,843
77 4,447,844
80 4,447,845
90 4,447,846
117 4,447,847
124 4,447,848
152 4,447,849
172 4,447,850
189 4,447,851
306 4,447,852
321 4,447,853
4,447,855
329 4,447,854
383 4,447,856
386 4,447,842
395 4,447,857
429 4,447,858

CLASS 362

13 4,447,859
30 4,447,860
199 4,447,863
216 4,447,861
267 4,447,862
305 4,447,865
311 4,447,864

CLASS 363

21 4,447,866
56 4,447,867
81 4,447,868

CLASS 364

184 4,447,869
200 4,447,870
4,447,871
4,447,872
4,447,873
4,447,874
4,447,875
4,447,876
4,447,877
4,447,878
4,447,879
431.04 Re.31,582
431.05 4,447,880
488 4,447,881
521 4,447,882
555 4,447,883
557 4,447,884
568 4,447,885
725 4,447,886
900 4,447,887
4,447,888
4,447,889
4,447,890

CLASS 365

154 4,447,891
156 4,447,892
203 4,447,893
219 4,447,894
226 4,447,895

CLASS 366

80 4,447,156
137 4,447,157
297 4,447,158

CLASS 367

96 4,447,896

CLASS 368

23 4,447,159
34 4,447,160
65 4,447,161
295 4,447,162
319 4,447,163

CLASS 369

65 4,447,898
111 4,447,899
200 4,447,900

CLASS 370

74 4,447,901

CLASS 371

39 4,447,902
68 4,447,903

CLASS 372

45 4,447,904
46 4,447,905

CLASS 373

72 4,447,906

CLASS 374

162 4,447,164

CLASS 375

1 4,447,907
42 4,447,908
88 4,447,909
99 4,447,910

CLASS 376

245 4,447,388
364 Re.31,583

CLASS 377

55 4,447,798

CLASS 384

428 4,447,165

CLASS 400

124 4,447,166
625 4,447,167
708 4,447,168

CLASS 401

269 4,447,169

CLASS 403

64 4,447,170
381 4,447,171

CLASS 404

68 4,447,172

CLASS 405

181 4,447,173
293 4,447,174

CLASS 407

114 4,447,175

CLASS 408

72 R 4,447,176
161 4,447,177

CLASS 409

80 4,447,178
127 4,447,179
232 4,447,180
345 4,447,181

CLASS 411

45 4,447,182
57 4,447,183

CLASS 413

26 4,447,184

CLASS 414

420 4,447,185
589 4,447,186
730 Re.31,581

CLASS 415

53 R 4,447,187
115 4,447,188
168 4,447,189

CLASS 416

95 4,447,190

CLASS 417

12 4,447,191
360 4,447,192
441 4,447,193
570 4,447,195
572 4,447,194

CLASS 418

93 4,447,196

CLASS 419

6 4,447,389
49 4,447,390

CLASS 420

456 4,447,391
501 4,447,392
590 4,447,393

CLASS 422

27 4,447,394
68 4,447,395
73 4,447,396
94 4,447,397
102 4,447,398
113 4,447,399
150 4,447,400
151 4,447,401
174 4,447,402

CLASS 423

20 4,447,403
61 4,447,404
HH 4,447,405
198 4,447,406
262 4,447,407
300 4,447,408
416 4,447,409
633 4,447,410

CLASS 424

14 4,447,411
16 4,447,412
78 4,447,413
81 4,447,414
101 4,447,415
4,447,416
156 4,447,417
165 4,447,418
177 4,447,419
210 4,447,420
227 4,447,421
229 4,447,422
234 4,447,423
238 4,447,424
241 4,447,425
243 4,447,426
244 4,447,427
4,447,428
246 4,447,429
4,447,430
248.54 4,447,431
250 4,447,432
256 4,447,433
258 4,447,434
4,447,435
4,447,436
263 4,447,437
267 4,447,438
4,447,439
269 4,447,440
4,447,441
273 P 4,447,442
4,447,444
273 R 4,447,443
279 4,447,445
282 4,447,446
285 4,447,447
4,447,448
304 4,447,449
4,447,450
317 4,447,451
319 4,447,452
4,447,453
330 4,447,454
331 4,447,455

CLASS 425

28 R 4,447,197
140 4,447,198
182 4,447,199
388 4,447,200
397 4,447,201
434 4,447,202

CLASS 426

51 4,447,456
91 4,447,457
275 4,447,458
441 4,447,459
541 4,447,460
589 4,447,461
601 4,447,462
603 4,447,463
663 4,447,464

CLASS 427

10 4,447,465
34 4,447,466
48 4,447,467
54.1 4,447,468
4,447,469
76 4,447,470
98 4,447,471
120 4,447,472
162 4,447,473
164 4,447,474
213.31 4,447,475
215 4,447,476
388.3 4,447,477
407.1 4,447,478

CLASS 428

35 4,447,479
4,447,480
40 4,447,481
42 4,447,482
105 4,447,483
137 4,447,484
144 4,447,485
213 4,447,488
225 4,447,489
285 4,447,490
304.4 4,447,491
318.6 4,447,486
328 4,447,492
332 4,447,493
349 4,447,494
429 4,447,495
432 4,447,496
446 4,447,497
447 4,447,498
4,447,499
489 4,447,500
570 4,447,501
571 4,447,502
632 4,447,503

CLASS 429

9 4,447,504
42 4,447,505
44 4,447,506
54 4,447,507
57 4,447,508
235 4,447,509

CLASS 430

3 4,447,510
15 4,447,511
17 4,447,512
58 4,447,513
81 4,447,514
83 4,447,515
109 4,447,516
122 4,447,517
4,447,518
275 4,447,519
281 4,447,520
337 4,447,521
405 4,447,522
505 4,447,523
538 4,447,524
539 4,447,525

CLASS 431

3 4,447,203
76 4,447,204
328 4,447,205

CLASS 433

27 4,447,206
69 4,447,207
166 4,447,208
173 4,447,209
4,447,210

CLASS 434

12 4,447,211
185 4,447,212
201 4,447,213

CLASS 435

7 4,447,526
4,447,527
4,447,528
4,447,529
68 4,447,530
94 4,447,531
99 4,447,532
119 4,447,533
161 4,447,534
162 4,447,535
188 4,447,536
235 4,447,537
253 4,447,538
4,447,539
254 4,447,540
264 4,447,541

CLASS 436

66 4,447,542
72 4,447,543
105 4,447,544
518 4,447,545
527 4,447,546
543 4,447,547

CLASS 440

66 4,447,214
71 4,447,215

CLASS 445

70 4,447,216

CLASS 464

32 4,447,217

CLASS 493

251 4,447,218
410 4,447,219

CLASS 494

26 4,447,220
45 4,447,221

CLASS 501

75 4,447,550
85 4,447,548
138 4,447,549

CLASS 502

36 4,447,553
37 4,447,551
41 4,447,552
73 4,447,554
74 4,447,555
4,447,556
161 4,447,557
215 4,447,558

CLASS 521

28 4,447,559
68 4,447,560
118 4,447,561

CLASS 523

105 4,447,562
176 4,447,563
200 4,447,564
219 4,447,565
221 4,447,566
501 4,447,567

CLASS 524

101 4,447,568
109 4,447,569
127 4,447,570
192 4,447,571
371 4,447,572
394 4,447,573
400 4,447,574
484 4,447,575
714 4,447,576
845 4,447,577

CLASS 525

75 4,447,578
113 4,447,579
121 4,447,580
189 4,447,581
279 4,447,582
328.1 4,447,583
340 4,447,584
359.2 4,447,585
504 4,447,586

CLASS 526

124 4,447,587
301 4,447,588

CLASS 528

45 4,447,589
76 4,447,590
80 4,447,591
128 4,447,592
176 4,447,593
245 4,447,594
274 4,447,595
353 4,447,596
388 4,447,597
489 4,447,598
502 4,447,599

CLASS 536

23 4,447,600
102 4,447,601

CLASS 544

21 4,447,602
184 4,447,603
219 4,447,604
225 4,447,605
231 4,447,606
246 4,447,607
287 4,447,608
317 4,447,609
381 4,447,610

CLASS 546

118 4,447,611
285 4,447,612
300 4,447,613
316 4,447,614
317 4,447,615
335 4,447,616

CLASS 548

164 4,447,617
170 4,447,618
318 4,447,619
336 4,447,620
342 4,447,621
525 4,447,622

CLASS 549

36 4,447,623
69 4,447,624
265 4,447,625
292 4,447,626
548 4,447,627

CLASS 556

415 4,447,628
419 4,447,629
460 4,447,630
469 4,447,631
470 4,447,632
479 4,447,633

CLASS 560

13 4,447,634
115 4,447,635
122 4,447,636
124 4,447,637
204 4,447,638
4,447,639
207 4,447,640
211 4,447,641
247 4,447,642
248 4,447,643

CLASS 562

4,447,644
473 4,447,645
487 4,447,646

CLASS 564

412 4,447,647

CLASS 568

484 4,447,648
4,447,649
640 4,447,650
645 4,447,651
658 4,447,652
697 4,447,653
708 4,447,654
724 4,447,655
730 4,447,656
750 4,447,658
774 4,447,660
783 4,447,657
876 4,447,659
882 4,447,661
939 4,447,662

CLASS 570

150 4,447,663

CLASS 585

323 4,447,664
379 4,447,665
467 4,447,666
469 4,447,667
639 4,447,668
640 4,447,669

CLASS 604

15 4,447,222
61 4,447,223
67 4,447,224
71 4,447,225
73 4,447,226
95 4,447,227
103 4,447,228
111 4,447,229
122 4,447,230
131 4,447,231
134 4,447,232
151 4,447,234
152 4,447,233
169 4,447,235
4,447,236
175 4,447,237
280 4,447,238
282 4,447,239
385 4,447,240

CLASSIFICATION OF DESIGNS

-D2—	276	273,719		114	273,735			273,751		369	273,764	D14—	53	273,784	D20—	11	273,799
	401	273,720		130	273,736			273,752		375	273,768		73	273,785	D21—	13	273,800
D3—	35	273,721		146	273,737			273,753	D10—	71	273,769		95	273,786		51	273,801
	65	273,722		175	273,738			273,754	D11—	34	273,771		101	273,787		64	273,802
D4—	15	273,723		177	273,739		359	273,755		35	273,772		114	273,788		234	273,803
	25	273,724			273,740	D8—	1	273,756	D12—	92	273,773	D15—	9	273,789	D23—	127	273,804
	38.2	273,725		178	273,741		18	273,757		112	273,774		9.1	273,790	D24—	10	273,805
D6—	5	273,726		179	273,742		71	273,758		114	273,775			273,791		28	273,806
	7	273,727		191	273,743		75	273,759		128	273,776		27	273,792		56	273,807
	30	273,728		234	273,744		354	273,760		147	273,777		150	273,793	D26—	3	273,809
		273,729	D7—	9	273,745			273,761		162	273,778	D16—	112	273,794	D28—	61	273,810
	31	273,730		76	273,746		396	273,762		182	273,779	D18—	7	273,795		64	273,808
	45	273,731		351	273,747			273,763		190	273,780	D19—	27	273,796	D92—	30	273,811
	47	273,732			273,748	D9—	341	273,765		211	273,781		62	273,797	D99—	25	273,812
	57	273,733			273,749		352	273,766	D13—	24	273,782		91	273,798		28	273,813
	73	273,734			273,750			273,767		40	273,783						

CLASSIFICATION OF PLANTS

P.—	41	5,228		54	5,229		74	5,230									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

6 :	4,446,933	4,446,866	4,447,527	12 :	4,447,628	4,446,873	4,447,265	19 :	4,446,684	4,447,336	4,447,392
	4,447,336	4,446,870	4,447,538		4,446,578	4,446,924	4,447,366		4,446,685	4,447,392	4,447,598
	4,447,392	4,446,877	4,447,546		4,446,585	4,446,953	4,447,412		4,446,900	4,447,598	
	4,447,598	4,446,894	4,447,548		4,446,680	4,446,957	4,447,454		4,446,976		
9 :	4,446,653	4,446,896	4,447,613		4,446,749	4,446,963	4,447,472		4,447,055		
	4,447,726	4,446,916	4,447,662		4,446,754	4,446,966	4,447,526		4,447,463		
01 :	4,446,590	4,446,959	4,447,721		4,446,763	4,446,967	4,447,529		4,447,532		
	4,446,853	4,446,973	4,447,723		4,446,855	4,446,981	4,447,542	20 :	4,446,927		
	4,447,674	4,446,980	4,447,727		4,446,950	4,447,004	4,447,692		4,447,034		
	4,447,846	4,446,983	4,447,728		4,446,956	4,447,058			4,447,071		
04 :	4,446,831	4,447,001	4,447,732		4,446,972	4,447,080			4,447,158		
	4,446,843	4,447,012	4,447,737		4,447,009	4,447,082			4,447,193		
	4,447,050	4,447,019	4,447,773		4,447,035	4,447,105			4,447,565		
	4,447,107	4,447,037	4,447,783		4,447,084	4,447,119		21 :	4,446,650		
	4,447,126	4,447,040	4,447,784		4,447,176	4,447,191			4,446,878		
	4,447,173	4,447,049	4,447,835		4,447,200	4,447,198			4,446,928		
	4,447,219	4,447,068	4,447,866		4,447,215	4,447,214			4,447,586		
	4,447,307	4,447,069	4,447,878		4,447,222	4,447,227			4,447,659		
	4,447,772	4,447,085	4,447,904		4,447,235	4,447,228		22 :	4,446,610		
	4,447,841	4,447,088	08 : 4,446,577		4,447,236	4,447,250			4,446,808		
	4,447,907	4,447,091	4,446,752		4,447,288	4,447,287			4,446,932		
06 :	4,446,571	4,447,120	4,446,771		4,447,423	4,447,301			4,446,977		
	4,446,572	4,447,128	4,446,854		4,447,673	4,447,315			4,447,076		
	4,446,581	4,447,150	4,446,903		4,447,804	4,447,329			4,447,330		
	4,446,586	4,447,169	4,446,944		4,447,814	4,447,344			4,447,408		
	4,446,587	4,447,183	4,447,051		4,447,910	4,447,351			4,447,582		
	4,446,588	4,447,186	4,447,090	13 :	4,446,686	4,447,371			4,447,740		
	4,446,598	4,447,203	4,447,144		4,446,689	4,447,406		23 :	4,447,156		
	4,446,599	4,447,218	4,447,547		4,446,712	4,447,420		24 :	4,446,635		
	4,446,613	4,447,225	09 : Re.31,583		4,446,890	4,447,471			4,446,646		
	4,446,615	4,447,229	4,446,622		4,446,974	4,447,480			4,446,774		
	4,446,624	4,447,233	4,446,668		4,446,989	4,447,500			4,446,845		
	4,446,633	4,447,234	4,446,672		4,447,369	4,447,552			4,446,864		
	4,446,648	4,447,238	4,446,829		4,447,484	4,447,556			4,446,968		
	4,446,649	4,447,253	4,446,908		4,447,707	4,447,574			4,447,059		
	4,446,695	4,447,257	4,446,909	16 :	4,447,170	4,447,641			4,447,123		
	4,446,698	4,447,262	4,446,984		4,447,403	4,447,645			4,447,341		
	4,446,703	4,447,290	4,446,990			4,447,652			4,447,395		
	4,446,707	4,447,316	4,446,997	17 :	4,446,607	4,447,653			4,447,416		
	4,446,708	4,447,317	4,447,101		4,446,614	4,447,657			4,447,427		
	4,446,715	4,447,337	4,447,148		4,446,631	4,447,665			4,447,743		
	4,446,733	4,447,353	4,447,159		4,446,642	4,447,688			4,447,749		
	4,446,740	4,447,391	4,447,506		4,446,659	4,447,699			4,447,776		
	4,446,750	4,447,398	4,447,531		4,446,669	4,447,859			4,447,786		
	4,446,757	4,447,407	4,447,682		4,446,709	4,447,863					
	4,446,761	4,447,441	4,447,697		4,446,711	18 : 4,446,654					
	4,446,769	4,447,445	4,447,701		4,446,726	4,446,770					
	4,446,779	4,447,450	4,447,705		4,446,734	4,446,818					
	4,446,793	4,447,456	4,447,712		4,446,751	4,446,979					
	4,446,798	4,447,469	4,447,890		4,446,758	4,446,987					
	4,446,810	4,447,470	10 : 4,447,411		4,446,784	4,446,998					
	4,446,846	4,447,492	4,447,495		4,446,785	4,447,005					
		4,447,497	4,447,592		4,446,811	4,447,008					
		4,447,519			4,446,859	4,447,065					

4,447,873
4,447,886
25 : 4,446,619
4,446,637
4,446,702
4,446,717
4,446,747
4,446,790
4,446,799
4,446,912
4,446,936
4,446,961
4,446,994
4,447,149
4,447,224
4,447,284
4,447,504
4,447,528
4,447,544
4,447,545
4,447,590
4,447,594
4,447,607
4,447,636
4,447,676
4,447,747
4,447,752
4,447,770
4,447,779
4,447,816
4,447,852
4,447,854
4,447,870
4,447,877
4,447,879
26 : 4,446,573
4,446,592
4,446,596
4,446,608
4,446,644
4,446,697
4,446,719
4,446,724
4,446,759
4,446,809
4,446,821
4,446,825
4,446,830
4,446,837
4,446,842
4,446,906
4,446,949
4,446,951
4,446,955
4,446,971
4,446,996
4,447,018
4,447,024
4,447,031
4,447,047
4,447,072
4,447,073
4,447,077
4,447,094
4,447,188
4,447,192
4,447,237
4,447,277
4,447,383
4,447,390
4,447,449
4,447,451
4,447,499
4,447,503
4,447,620
4,447,640
4,447,650

4,447,656
4,447,664
4,447,698
4,447,738
4,447,775
4,447,808
4,447,860
27 : 4,446,593
4,446,617
4,446,626
4,446,652
4,446,660
4,446,767
4,446,795
4,446,796
4,446,807
4,447,015
4,447,481
4,447,493
4,447,521
4,447,588
4,447,693
4,447,781
4,447,836
4,447,842
4,447,844
4,447,872
29 : 4,446,667
4,446,679
4,446,760
4,446,848
4,447,039
4,447,081
4,447,378
4,447,414
4,447,606
4,447,618
4,447,785
30 : 4,447,537
31 : 4,446,639
4,446,664
4,446,775
4,446,851
4,446,926
32 : 4,447,281
33 : 4,446,616
4,446,847
4,447,168
4,447,681
4,447,896
34 : 4,446,603
4,446,621
4,446,625
4,446,629
4,446,638
4,446,666
4,446,705
4,446,762
4,446,805
4,446,852
4,446,858
4,446,865
4,446,960
4,446,995
4,447,003
4,447,109
4,447,124
4,447,125
4,447,127
4,447,164
4,447,205
4,447,221
4,447,267
4,447,310
4,447,312
4,447,314
4,447,332

4,447,335
4,447,338
4,447,363
4,447,365
4,447,381
4,447,387
4,447,421
4,447,426
4,447,443
4,447,447
4,447,482
4,447,512
4,447,533
4,447,551
4,447,571
4,447,602
4,447,603
4,447,629
4,447,632
4,447,634
4,447,642
4,447,666
4,447,675
4,447,744
4,447,760
4,447,822
4,447,826
4,447,843
4,447,883
4,447,905
35 : 4,446,721
4,446,988
4,447,151
4,447,153
4,447,303
4,447,761
36 : 4,446,574
4,446,583
4,446,606
4,446,628
4,446,636
4,446,647
4,446,651
4,446,725
4,446,776
4,446,841
4,446,856
4,446,910
4,446,943
4,446,945
4,446,965
4,446,982
4,446,986
4,447,000
4,447,043
4,447,048
4,447,095
4,447,100
4,447,103
4,447,110
4,447,111
4,447,134
4,447,141
4,447,145
4,447,212
4,447,223
4,447,232
4,447,245
4,447,266
4,447,354
4,447,386
4,447,442
4,447,459
4,447,466
4,447,494
4,447,511
4,447,523

4,447,541
4,447,562
4,447,569
4,447,572
4,447,575
4,447,630
4,447,655
4,447,700
4,447,715
4,447,746
4,447,764
4,447,799
4,447,813
4,447,817
4,447,824
4,447,830
4,447,848
4,447,864
4,447,868
4,447,899
37 : 4,447,709
38 : 4,447,089
4,447,633
39 : 4,446,645
4,446,696
4,446,742
4,446,768
4,446,777
4,446,780
4,446,813
4,446,849
4,446,941
4,446,948
4,446,958
4,446,964
4,447,002
4,447,016
4,447,032
4,447,099
4,447,140
4,447,197
4,447,248
4,447,249
4,447,294
4,447,348
4,447,373
4,447,380
4,447,385
4,447,409
4,447,457
4,447,458
4,447,461
4,447,462
4,447,464
4,447,465
4,447,468
4,447,478
4,447,566
4,447,585
4,447,595
4,447,616
4,447,643
4,447,667
4,447,765
4,447,780
4,447,782
4,447,807
4,447,861
4,447,862
4,447,865
40 : 4,446,634
4,446,886
4,446,919
4,446,991
4,447,246

4,447,342
4,447,401
4,447,418
4,447,554
4,447,555
4,447,597
41 : 4,446,600
4,446,601
4,446,844
4,446,868
4,446,999
4,447,299
4,447,803
4,447,847
4,447,876
42 : 4,446,716
4,446,786
4,446,860
4,446,863
4,446,867
4,446,883
4,446,920
4,447,011
4,447,022
4,447,036
4,447,093
4,447,106
4,447,117
4,447,121
4,447,175
4,447,195
4,447,204
4,447,311
4,447,313
4,447,347
4,447,388
4,447,397
4,447,402
4,447,404
4,447,405
4,447,496
4,447,508
4,447,509
4,447,557
4,447,560
4,447,570
4,447,611
4,447,621
4,447,638
4,447,639
4,447,654
4,447,658
4,447,670
4,447,680
4,447,690
4,447,703
4,447,748
4,447,758
4,447,767
4,447,795
4,447,796
4,447,797
4,447,798
4,447,845
4,447,906
45 : 4,446,690
4,446,691
4,446,764
4,447,241
4,447,269
4,447,346
47 : 4,446,797
4,447,243
4,447,377
4,447,577
4,447,617

4,447,624
4,447,646
48 : 4,446,575
4,446,678
4,446,694
4,446,713
4,446,730
4,446,745
4,446,748
4,446,806
4,446,874
4,446,884
4,446,887
4,446,917
4,446,918
4,446,929
4,446,935
4,447,038
4,447,060
4,447,097
4,447,104
4,447,157
4,447,213
4,447,230
4,447,274
4,447,291
4,447,296
4,447,382
4,447,393
4,447,413
4,447,474
4,447,668
4,447,754
4,447,849
4,447,858
4,447,867
4,447,875
4,447,881
4,447,888
49 : 4,447,356
4,447,399
50 : 4,446,611
4,446,658
4,446,729
4,447,152
4,447,857
51 : 4,446,714
4,447,056
4,447,061
4,447,078
4,447,172
4,447,272
4,447,297
4,447,325
4,447,361
4,447,539
4,447,750
4,447,771
4,447,792
53 : 4,446,869
4,447,026
4,447,027
4,447,028
4,447,083
4,447,118
4,447,286
54 : 4,447,648
55 : 4,446,743
4,446,850
4,446,898
4,446,913
4,446,915
4,447,251
4,447,339
4,447,483
4,447,536

DESIGN PATENTS

04 : 273,757
06 : 273,721
273,729
273,735
273,739
273,741
273,744
273,792
273,793
273,796

08 : 273,790
273,791
09 : 273,810
11 : 273,811
13 : 273,768
17 : 273,767
273,779
273,807
273,813
18 : 273,746

19 : 273,806
273,756
273,778
24 : 273,742
273,774
273,808
25 : 273,788
26 : 273,776
273,781
27 : 273,798

34 : 273,724
273,800
35 : 273,786
36 : 273,728
273,730
273,733
273,736
273,737
273,740

273,782
273,787
273,794
37 : 273,769
273,797
39 : 273,734
273,758
273,775
40 : 273,720

41 : 273,783
42 : 273,725
273,738
273,789
47 : 273,732
48 : 273,726
273,755
273,799
55 : 273,802

PLANT PATENTS

06 : 5,228
12 : 5,230
19 : 5,229

U.S. GOVERNMENT PRINTING OFFICE : O—1984

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST
COMPANY NAME OR ADDITIONAL ADDRESS LINE
STREET ADDRESS
CITY | STATE | ZIP CODE
(or) COUNTRY

PLEASE PRINT OR TYPE

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM
ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST
COMPANY NAME OR ADDITIONAL ADDRESS LINE
STREET ADDRESS
CITY | STATE | ZIP CODE
(or) COUNTRY

PLEASE PRINT OR TYPE

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

Vol. 1042 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 15, 1984

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

Route to:

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

May 15, 1984 Volume 1042 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1042 OG 44
Reissue Applications Filed	1042 OG 44
Requests for Reexaminations Filed	1042 OG 44
Patent Cooperation Treaty (PCT) Update	1042 OG 45
Patent Certificates of Correction	1042 OG 46
Disclaimers	1042 OG 46
Dedications	1042 OG 46
Disclaimers and Dedications	1042 OG 46
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1042 OG 47
Condition of Patent Applications	1042 OG 48
Reissue Patents Granted (31,584)	913
Plant Patents Granted (5,231)	915
Patents Granted	
General and Mechanical (4,447,911)	917
Chemical (4,448,581)	1147
Electrical (4,449,010)	1265
Design Patents Granted (273,814)	1351
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 51
Classification of	
Patents (Including Reissues)	PI 55
Designs and Plants	PI 58
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 59
Designs and Plants	PI 60
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 2 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 13, 1984.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,359,734, Re. S.N. 583,352, Filed Feb. 24, 1984, Cl. 367/101, SIGNAL PROCESSING SYSTEM, Wesley J. Bachman, Owner of Record: *Dickey-John Corp., Auburn, Ill.,* Attorney or Agent: Richard R. Trexler, et al., Ex. Gp.: 222

4,384,350, Re. S.N. 586,172, Filed Mar. 5, 1984, Cl. 365/229, MOS BATTERY BACKUP CONTROLLER FOR MICROCOMPUTER RANDOM ACCESS MEMORY, Yong K. Lee, et al., Owner of Record: *Fairchild Camera and Instrument Corp., Mountain View, Calif.,* Attorney or Agent: Kenneth Olsen, et al., Ex. Gp.: 235

4,404,182, Re. S.N. 568,710, Filed Jan. 6, 1984, Cl. 424/005, ETHIODIZED OIL EMULSION FOR INTRAVENOUS HEPATOGRAPHY, Michael Vermess, et al., Owner of Record: *The United States of America as Represented by the Department of Health and Human Services, Washington, D.C.,* Attorney or Agent: John S. Roberts, Jr., Ex. Gp.: 125

4,412,359, Re. S.N. 587,955, Filed Mar. 9, 1984, Cl. 3/13, POSTERIOR CHAMBER LENS IMPLANT, William D. Myers, Owner of Record: *Inventor,* Attorney or Agent: Ernest I. Gifford, Ex. Gp.: 336

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Issues This Publication.

Patent Cooperation Treaty (PCT) Update

Accession to the Patent Cooperation Treaty (PCT) by the Sudan and by Bulgaria, and Listing of PCT Member Countries.

The Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) that the Sudan deposited its instrument of accession to the PCT on 16 Jan. 1984, and that Bulgaria deposited its instrument of accession to the PCT on 21 Feb. 1984. Therefore, according to PCT Article 63(2), the Sudan may be designated in international applications filed on and after 16 Apr. 1984; Bulgaria may be designated in international applications filed on and after 21 May 1984.

Listing of PCT Member Countries

	Country	Ratification or Accession	Date of Ratification or Accession	Date from which Country may be Designated
(1)	Central African Republic*	Accession	15 September 1971	01 June 1978
(2)	Senegal*	Ratification	08 March 1972	01 June 1978
(3)	Madagascar	Ratification	27 March 1972	01 June 1978
(4)	Malawi	Accession	16 May 1972	01 June 1978
(5)	Cameroon*	Accession	15 March 1973	01 June 1978
(6)	Chad*	Accession	12 February 1974	01 June 1978
(7)	Togo*	Ratification	28 January 1975	01 June 1978
(8)	Gabon*	Accession	06 March 1975	01 June 1978
(9)	United States of America	Ratification	26 November 1975	01 June 1978
(10)	Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11)	Congo*	Accession	08 August 1977	01 June 1978
(12)	Switzerland**	Ratification	14 September 1977	01 June 1978
(13)	United Kingdom**	Ratification	24 October 1977	01 June 1978
(14)	France**	Ratification	25 November 1977	01 June 1978
(15)	Soviet Union	Ratification	29 December 1977	01 June 1978
(16)	Brazil	Ratification	09 January 1978	01 June 1978
(17)	Luxembourg**	Ratification	31 January 1978	01 June 1978
(18)	Sweden**	Ratification	17 February 1978	01 June 1978
(19)	Japan	Ratification	01 July 1978	01 October 1978
(20)	Denmark	Ratification	01 September 1978	01 December 1978
(21)	Austria**	Ratification	23 January 1979	23 April 1979
(22)	Monaco	Ratification	22 March 1979	22 June 1979
(23)	Netherlands**	Ratification	10 April 1979	10 July 1979
(24)	Romania	Accession	23 April 1979	23 July 1979
(25)	Norway	Ratification	01 October 1979	01 January 1980
(26)	Liechtenstein**	Accession	19 December 1979	19 March 1980
(27)	Australia	Accession	31 December 1979	31 March 1980
(28)	Hungary	Ratification	27 March 1980	27 June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30)	Finland	Ratification	01 July 1980	01 October 1980
(31)	Belgium**	Ratification	14 September 1981	14 December 1981
(32)	Sri Lanka	Accession	26 November 1981	26 February 1982
(33)	Mauritania*	Accession	13 January 1983	13 April 1983
(34)	Sudan	Accession	16 January 1984	16 April 1984
(35)	Bulgaria	Accession	21 February 1984	21 May 1984

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member countries. A designation of any country is an indication that all OAPI countries have been designated. Note: Only one designation fee is due regardless of the number of OAPI member countries designated.

** Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member countries are available through PCT, except for France and Belgium, for which only European patents are available if PCT is used. Note: Only one PCT designation fee is due if European regional patent protection is sought for one, several or all EPC member countries.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 13, 1984.

PATENT NOTICES

Certificates of Correction for the Week of May 15, 1984

3,618,659	4,399,289	4,414,553	4,424,922
3,994,221	4,400,828	4,414,608	4,424,942
4,017,271	4,401,135	4,415,271	4,425,670
4,182,180	4,401,905	4,415,319	4,425,964
4,251,831	4,402,047	4,417,740	4,425,967
4,269,506	4,402,996	4,417,915	4,426,097
4,287,198	4,403,100	4,418,004	4,426,151
4,290,112	4,403,169	4,418,085	4,426,219
4,334,780	4,404,445	4,418,189	4,426,370
4,342,729	4,404,485	4,418,284	4,426,700
4,344,944	4,404,974	4,418,524	4,426,911
4,360,600	4,405,078	4,418,686	4,426,921
4,362,734	4,405,291	4,418,991	4,427,348
4,363,911	4,405,679	4,419,665	4,427,934
4,367,452	4,405,770	4,419,975	4,428,404
4,373,678	4,405,916	4,420,049	4,428,815
4,374,280	4,406,106	4,420,321	4,429,090
4,381,562	4,406,281	4,420,544	4,429,205
4,383,092	4,406,458	4,420,595	4,429,778
4,383,325	4,407,857	4,420,685	4,429,812
4,385,940	4,408,083	4,420,751	4,429,907
4,386,315	4,409,421	4,421,182	4,429,961
4,387,304	4,409,453	4,421,197	4,430,735
4,387,538	4,410,900	4,421,433	4,431,064
4,392,212	4,411,414	4,421,629	4,431,759
4,393,776	4,411,446	4,421,829	4,431,986
4,395,332	4,412,610	4,422,506	4,432,132
4,396,063	4,413,003	4,422,931	4,432,478
4,397,058	4,413,543	4,423,213	4,432,838
4,397,871	4,413,687	4,423,308	4,434,084
4,398,106	4,414,102	4,423,518	4,434,463
4,398,504	4,414,225	4,424,165	

Disclaimers

3,446,283.—*August B. Baumstimler,* Odessa, Tex. METHOD AND APPARATUS FOR SIMULTANEOUSLY CLEANING A WELL AND REMOVING A DOWNHOLE TOOL. Patent dated May 27, 1969. Disclaimer filed Jan. 30, 1984, by the *inventor.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

4,104,339.—*James G. Fetz,* Baldwin Park and *Ronald P. Jensen,* Glendale, Calif. METHOD FOR THE MANUFACTURE OF INTRAOCULAR LENSES. Patent dated Aug. 1, 1978. Disclaimer filed Feb. 7, 1984, by the *inventors.*

The term of this patent subsequent to Nov. 30, 1993, has been disclaimed.

4,237,222.—*Hideo Misaki; Yoshifumi Horiuchi; Kazuo Matsuura* and *Saburo Harada,* Shizuoka, Japan. LACTATE OXIDASE PROCESS FOR THE MANUFACTURE THEREOF AND ANALYTICAL METHOD AND KIT FOR THE USE OF THE SAME. Patent dated Dec. 2, 1980. Disclaimer filed Mar. 20, 1984, by the assignee, *Toyo Jozo Kabushiki Kaisha.*

Hereby enters this disclaimer to claims 1, 2 and 5–10 of said patent.

4,308,987.—*Merrill Solomon,* Potomac, Md. REMAILABLE ENVELOPE. Patent dated Jan. 5, 1982. Disclaimer filed Mar. 16, 1984, by the assignee, *21st Century Envelope Co., Inc.*

Hereby enters this disclaimer to claims 1, 2, 4, 5, 7, 8, 9, 10 and 16 of said patent.

4,318,043.—*Lawrence E. Crooks,* Richmond; *John C. Hoenninger III,* Berkeley; and *Mitsuaki Mrakawa,* San Mateo, Calif. METHOD AND APPARATUS FOR RAPID NMR IMAGING OF NUCLEAR DENSITIES WITHIN AN OBJECT. Patent dated Mar. 2, 1982. Disclaimer filed Mar. 13, 1984, by the assignee, *The Regents of the University of California.*

The term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Dedications

4,090,791.—*Iqbal Siddiqi,* Veyrier and *Tito Suva,* Chatelaine, Switzerland and *Christian Roehrich,* Chaillevette, France. DEVICE FOR CYCLICALLY REPEATING A SERIES OF COLORIMETRIC ANALYSIS ON EACH OF A SUCCESSION OF SAMPLES. Patent dated May 23, 1978. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,150,922.—*Gerard Cuenoud,* Grand-Lancy; *Rudolf Farkas,* Geneva; *Georges Revillet,* Onex and *Manuel Sanz,* Grand-Lancy, Switzerland. ELECTROMAGNET MOTOR CONTROL FOR CONSTANT VOLUME PUMPING. Patent dated Apr. 24, 1979. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,295,948.—*Alain Roman,* Bossey; *Pierre Chevreux,* St. Jean de Gonvillo, France; *Manfred Wust,* Dardagny; and *Jacques Ehretsmann,* Conches, Switzerland. PHOTOCURABLE ADHESIVE FROM ACRYLIC ACID, ACRYLAMIDE, DIMETHYLAMINOETHYL METHACRYLATE, BENZOPHENONE AND METHYL ETHYL KETONE. Patent dated Oct. 20, 1981. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Disclaimers and Dedications

4,001,663.—*William E. Bray,* Houston, Tex. SWITCHING REGULATOR POWER SUPPLY. Patent dated Jan. 4, 1977. Disclaimer and Dedication filed Jan. 26, 1984, by the assignee, *Texas Instruments, Inc.*

Hereby disclaims and dedicates to the Public claims 1–39 of said patent.

4,092,709.—*William G. Voigt* and *William F. Jergens,* Houston, Tex. MULTIPLE OUTPUT SELF OSCILLATING CONVERTER REGULATOR POWER SUPPLY. Patent dated May 30, 1978. Disclaimer and Dedication filed Jan. 26, 1984, by the assignee, *Texas Instruments, Inc.*

Hereby disclaims and dedicates to the Public claims 1–11 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF March 31, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-28-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	5-12-76
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-18-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	1-26-81
DESIGN, GROUP 290—K. L. CAGE, Director	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-04-76
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,307,200 to 3,311,920, inclusive
Plant Patents ..... Numbers 2,723 to 2,729 inclusive

REISSUES

MAY 15, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

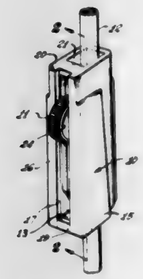
Re. 31,584
APPARATUS FOR REGULATING FLUID FLOW THROUGH PLASTIC TUBING

Marvin Adelberg, 16821 Oak View Dr., Encino, Calif. 91436

Original No. 3,685,787, dated Aug. 22, 1972, Ser. No. 855,907, Sep. 8, 1969. Application for reissue Aug. 10, 1981, Ser. No. 256,707

Int. Cl.³ F16K *7/06*

U.S. Cl. 251—6 **9 Claims**



1. A flow regulator for controlling the rate of flow of fluid through a flexible plastic tubing comprising:

a body formed with a passage to receive the tubing;

a clamping surface elongated in the direction of the tubing through said body and integrally formed in said body;

a clamping member mounted on said body for translation longitudinally of said body through a given distance above said clamping surface to unyieldingly define a clearance with respect to said clamping surface of substantially twice the nominal wall thickness of the tubing;

and an opening defining an elongated channel extending longitudinally in said clamping surface [to] *and into* which a portion of the wall in the tubing is forced by said clamping member,

said body, said clamping surface, said clamping member, and said channel together defining a cross-sectional area smaller than the normal cross-sectional area included by the unclamped tubing and which varies between the ends of said channel as said clamping member is moved relative to said channel.

Re. 31,585
LONG TIME EXPOSURE PREVENTING DEVICE FOR CAMERA WITH ELECTRONIC FLASH

Masahiro Kawasaki, and Yoshio Sawada, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

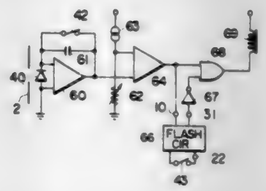
Original No. 4,209,245, dated Jun. 24, 1980, Ser. No. 944,517, Sep. 20, 1978. Application for reissue Jun. 22, 1982, Ser. No. 391,042

Claims priority, application Japan, Sep. 20, 1977, 52-127931

Int. Cl.³ G03B *7/08, 15/03*

U.S. Cl. 354—459 **24 Claims**

11. A camera system, comprising; means for generating a correct exposure signal indicative of a correct exposure value, flash means for emitting a flash of light, and including flash triggering means, flash stopping means, and an output, said correct exposure signal being applied as an input to said flash stopping means, means connected to said output for producing a signal indicative of the completion of a flash operation, and logic means for forming a



logical sum of said flash operation completion signal and said correct exposure signal to generate a shutter closing signal.

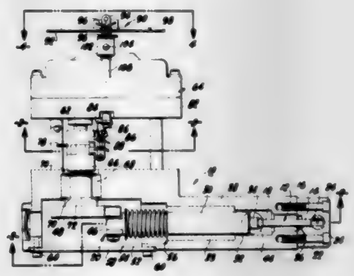
Re. 31,586
LIQUID CHROMATOGRAPHY PUMP

Haakon T. Magnussen, Jr., Pinole, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Original No. 4,180,375, dated Dec. 25, 1979, Ser. No. 913,359, Jun. 7, 1978. Continuation-in-part of Ser. No. 761,433, Jan. 21, 1977, Pat. No. 4,131,393. Application for reissue Feb. 9, 1981, Ser. No. 232,945

Int. Cl.³ F04B *49/06*

U.S. Cl. 417—22 **6 Claims**



5. A fluid pump mechanism for delivering fluid against a back pressure comprising:

a piston movable within a chamber for drawing fluid into the chamber during a chamber filling interval, pressurizing the fluid during a pressurizing interval and delivering the pressurized fluid from the chamber during a delivery interval of piston movement;

means for moving the piston at a predetermined rate during delivery of the pressurized fluid;

means including a pressure transducer communicating with the chamber for generating a signal having a value related to the pressure of fluid in the chamber;

means for storing the value of the signal generated during a delivery interval;

means for comparing a present value of the signal during the chamber pressurizing interval with the stored value; and

means for changing the rate of piston movement during at least a portion of the chamber pressurizing interval to a rate exceeding the predetermined rate by an amount related to any difference between said present and stored values.

PLANT PATENTS

GRANTED MAY 15, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,231

PLUM TREE, "ALETA ROSE"

Loretta J. Strohmaier, 9162 Ave. 392 (executrix); Phillip D. Strohmaier, 39252 Rd. 88, both of Dinuba, Calif. 93618, and Alfred W. Strohmaier, deceased, late of Dinuba, Calif.

Filed Oct. 29, 1982, Ser. No. 437,746
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—38 1 Claim

1. A new and distinct variety of plum tree, substantially as illustrated and described, characterized by similarity in tree and fruit characteristics to the Simka variety of plum tree (U.S. Plant Pat. No. 1,882), but distinguished therefrom and characterized as to novelty by bearing fruit which ripens approximately ten days earlier than fruit of the Simka variety and which, when ripe, has a 90 percent to full red-purple skin coloration.

5,232

DISTINCT VARIETY OF STRAWBERRY PLANT—RUBY RED

Albert B. Cook, Rockport, Ind., assignor to Herschel L. Boll, Champaign, Ill.

Filed Aug. 9, 1982, Ser. No. 406,378
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—48 1 Claim

1. A new and distinct variety of strawberry plant substantially as herein shown and described, characterized by its very large plant, its late season of maturity, and its very large fruit.

5,233

TRICOLOR VARIEGATED PITTOSPORUM PLANT

Ted L. Turner, Sr., 6503 S. Padre Island Dr., Corpus Christi, Tex. 78412

Filed Nov. 29, 1982, Ser. No. 445,727
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of pittosporum, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of: A dwarf and compact habit of growth makes it especially suitable as a border plant, as a small hedge, in planter boxes and as a pot plant; a slow rate of growth which is advantageous in that frequent pruning is not necessary to maintain the shrub in a pleasing shape; an ability to be asexually reproduced; the ability to provide a shrub having three colors by reason of the variegated nature of all or substantially all of the broadleaf evergreen leaves occuring on the new variety, the variegation consisting of irregular shaped areas of dark green, medium green and pale yellow, with the dark green area of a leaf generally being in the central base area of the leaf, and the medium green and pale yellow areas generally forming an irregular margin area on each leaf, the pattern of variegation varying from leaf to leaf, and which leaves grow alternately in a whorl on the branches; and the ability to tolerate pruning in order that attractive shapes can be maintained.

PATENTS

GRANTED MAY 15, 1984

ERRATA

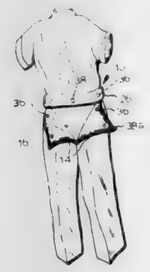
For CLASS	See PATENT NO.
128–760	4,447,939
122–017	4,448,136
134–076	4,448,221
181–234	4,448,284
548–165	4,448,399
365–185	4,448,400
361–331	4,448,444
346–206	4,448,445
346–224	4,448,446
204–140	4,448,475
181–227	4,448,538
502–074	4,448,711
118–699	4,449,241

PATENTS

GRANTED MAY 15, 1984

GENERAL AND MECHANICAL

4,447,911
JUMPSUIT
Irene C. Marcellaro, 1746 Princeton Ave., Trenton, N.J. 08638
Filed Sep. 3, 1980, Ser. No. 183,967
Int. Cl.³ A41D *13/02*
U.S. Cl. 2—79 **1 Claim**



1. An improved unitary pants-suit garment for covering the upper and lower torso of the wearer, said garment having an upper opening for the neck of the wearer, sleeves and pant legs, said garment comprising:
a unitary torso enclosing garment having a vertical opening in the mid-frontal area extending from the neck opening to the waist area;
first hidden zipper connected along said garment front opening for closing said front opening;
said garment having a rear lower torso, triangular shaped panel formed by a horizontal, rear, waist high opening and a vertical, side opening, said panel horizontal and vertical openings being of sufficient length to permit exposure of the lower rear torso of the wearer;
second hidden zipper connected to said horizontal rear opening; and
third hidden zipper connected to said vertical side opening whereby said triangular shaped garment panel is not distinguishable from said overall garment when said second and third zippers are closed.

4,447,912
CRIPPLED HAND ASSISTING DEVICE
Rosemary K. Morrow, Huntington Beach, Calif., assignor to Philip A. Putman, Huntington Beach, Calif.
Filed Feb. 14, 1983, Ser. No. 466,225
Int. Cl.³ A61F *5/10*; A41D *19/00*
U.S. Cl. 2—159 **8 Claims**



1. Apparatus to enable persons to fix objects to their hand without requiring participation of their fingers, comprising
a body portion constructed of fabric having a roughly quadrilateral outline with a plurality of spaced protrusions along one side, and
first securing means located on one (the outer) surface of said body portion, and
a plurality of straps attached one to each spaced protrusion of said body portion extending in the same direction as the protrusion, and,
second securing means located on one (the inner) surface of each said strap, said second securing means being capable of attachment to said first securing means, and
a patch of material having on its surface a coarser version of said first securing means, fixed to the same surface of said body portion as is said first securing means,
whereby said body portion may be placed with its inner surface against the palm of a persons open hand, then said straps may be passed around the back of the hand and across said body portion, so that through action of said first and second securing means the apparatus will be fixed to the hand with said patch of material both exposed and attached to the persons hand such that objects may be fixed thereon without requiring participation of the fingers.

4,447,913
BELT
David Engelson, Roslyn, N.Y., assignor to Page Accessories, Inc., West Babylon, N.Y.
Filed Jul. 22, 1982, Ser. No. 400,607
Int. Cl.³ A41F *3/02*
U.S. Cl. 2—338 **1 Claim**

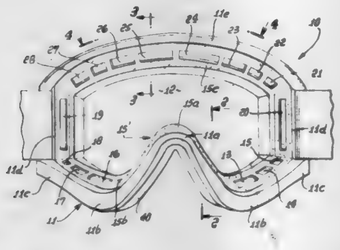


1. A belt comprising: an elongated substrate of a stretchable material, a plurality of plates partially overlapping each other on one side of said substrate, and a plurality of connecting means respectively connecting said plurality of plates to said substrate, each of said connecting means having a base on the other side of said substrate, and spaced prongs connected to said base and extending through said substrate and through openings in the respective plate and being bent to lie essentially parallel to said plate to thereby fixedly connect said plate to said substrate, wherein each of said plates has an essentially circular portion and an essentially rectangular portion extending from said essentially circular portion, said openings being provided in said rectangular portion.

4,447,914
GOGGLE
James H. Jannard, Laguna Niguel, Calif., assignor to Oakley, Inc., Irvine, Calif.
Filed Jan. 22, 1982, Ser. No. 341,846
Int. Cl.³ A61F *9/02*
U.S. Cl. 2—432 **3 Claims**

1. In a goggle, the combination comprising
(a) a forwardly facing flexible frame,
(b) a forwardly convex flexible eye protecting lens carried by the frame,
(c) the frame having a ledge located rearwardly of the lens and extending about and adjacent the space immediately rearwardly of the lens,
(d) the ledge having a textured surface to reduce glare of light passing through the lens and incident on said ledge,

said surface inclined relative to the lens to flare forwardly toward and openly face the lens,



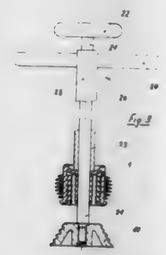
(e) said textured surface having upwardly humped extent which is forwardly and downwardly inclined above and laterally of a nose bridge defined by the frame.

4,447,915

EXPANDABLE MEDULLARY CANAL PLUG

Bernhard G. Weber, St. Gallen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 3, 1982, Ser. No. 345,380
Claims priority, application Switzerland, Feb. 18, 1981, 1064/81
Int. Cl.³ A61F 1/04
U.S. Cl. 3—1.9 14 Claims



1. A medullary canal plug comprising

a cup-shaped outer body having a base and segmental jacket defining an internal cavity and including at least two segments extending from said base with a plurality of externally disposed deformable anchoring elements on said segments;

a conical expansion body for movement into said cavity of said outer body to spread said segments radially outwardly of said base; and

means for fixing said expansion body within said cavity of said outer body.

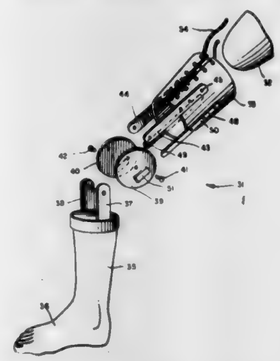
4,447,916

MECHANICAL KNEE

Thomas D. Hall, 821 Hudson Rd., Glenview, Ill. 60025

Filed Aug. 20, 1981, Ser. No. 294,471
Int. Cl.³ A61F 1/04
U.S. Cl. 3—22 9 Claims

1. A mechanical knee for extending the upper leg of a user with respect to the lower leg of the user comprising a pulley adapted to be rotatably supported by the lower leg, a collar for attachment to the upper leg, a link attached to the collar and pivotably attached directly to the pulley eccentrically with respect to the axis of rotation of the pulley and extensor means extending between the pulley and the collar for rotating the collar into an extended position with respect to the lower leg



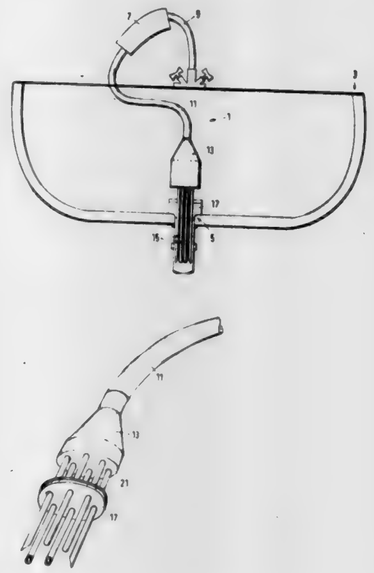
when the pulley is rotated by weight applied to the collar and the link.

4,447,917

WATER PRESSURE JET CLEANER

Klaus Walter, Priener Str. 28a, 8201 Eggstätt, Fed. Rep. of Germany

Filed Jul. 1, 1982, Ser. No. 394,269
Int. Cl.³ E03D 11/00
U.S. Cl. 4—256 8 Claims



1. Water pressure jet cleaner means adapted for relieving clogged sink drains comprising:

(a) a connecting hose;

(b) a cleaning head coupled to a distal free end of the connecting hose for insertion into a clogged drain;

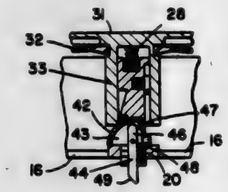
(c) a clamping device for detachably securing said connecting hose to a water faucet, said clamping device including a pair of clamping segments detachably secured to one another and arranged for axial positioning along said faucet relative to a spirally wound metallic strip and wherein said clamping segments include radially inwardly disposed contact surfaces converging radially outwardly from said clamping device and a pair of pivotally movable levers for generating a radially inwardly directed force against said contact surfaces and thereby against said metallic strip for compressively securing said clamping device to said faucet.

4,447,918

TAMPER-PROOF POP-UP DRAIN FITTING

Casper Cuschera, 1047-77th Ave., Oakland, Calif. 94621

Filed Sep. 27, 1982, Ser. No. 423,535
Int. Cl.³ A47K 1/14
U.S. Cl. 4—286 8 Claims



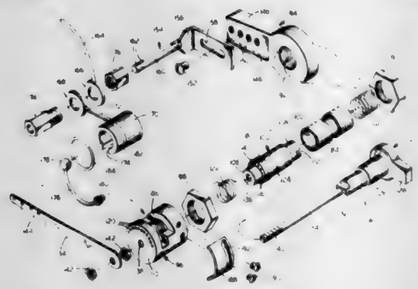
1. In a pop-up drain fitting including a post threadedly secured to a spider at the lower end of the drain body, the improvement comprising; a detent member pivotally joined to the lower end of the pop-up drain fitting post, said detent member extending gravitally through the nominal plane of the spider, stop member means disposed adjacent to the detent member to prevent rotation of said detent member in only one direction, said detent member being driven to rotate in said one direction by impingement on said spider when said pop-up mechanism is unthreaded from said spider.

4,447,919

FLUSH CONTROL DEVICE

Crescenzo Mobilia, 42 Pine St., Torrington, Conn. 06790

Filed Jun. 18, 1982, Ser. No. 389,672
Int. Cl.³ E03D 1/14, 3/12
U.S. Cl. 4—325 7 Claims



1. A flush control device for selectively operating a toilet tank water discharge valve assembly and the plug thereof in either a full or partial flush mode, comprising (a) an operating mechanism, (b) a restraining arm assembly, and (c) linkage means therebetween; said operating mechanism including:

(1) means for mounting said mechanism on said tank, and having a cylindrical sleeve member for seated engagement within an aperture through a wall of said tank, and a support member for said restraining arm assembly;

(2) an operating cylinder rotatably mounted within said sleeve member, said cylinder having a bore extending axially therethrough, linkage engaging means thereon, and coupling means adjacent the outward end thereof;

(3) an actuating member mounted outwardly adjacent said operating cylinder in said sleeve, said actuating member including a cylindrical bearing portion for supporting said actuating member for rotation and axial shifting in said sleeve between an outward, normal flush mode position and an inward, partial flush mode position, a shaft extending through said bore of said operating cylinder with an end portion projecting beyond the inward end of said cylinder, and coupling means on said actuating member end disposed adjacent said operating cylinder for cooperative turning engagement with said coupling means of said operating cylinder only in said inward position of said actuating member; and

(4) a valve operating arm affixed to said projecting end portion of said shaft for operative connection to the valve assembly for displacement of the valve plug from its seat in the toilet tank;

said restraining arm assembly comprising a valve plug biasing member constructed to engage a moveable part of said valve assembly and to bias the valve plug toward its closed position, said restraining arm assembly being mounted on said support member of said mounting means for pivotable movement from a retracted position, with said operating cylinder in its normal position and with said biasing means withdrawn from the path of movement of the moveable parts of the valve assembly, to an extended position, with said cylinder angularly displaced from said normal position thereof and with said valve biasing member disposed in such path of movement, said biasing member engaging a moveable part of the valve assembly in the course of its movement from the closed to the open position of the valve plug in the extended position of said restraining arm assembly; and said linkage means being engaged with said engaging means of said operating cylinder and operatively connecting said operating cylinder and said restraining arm assembly to transmit turning movement of said cylinder so as to effect pivoting of said restraining arm assembly; whereby, upon rotation of said actuating member, in either said inner or said outer position thereof, said operating arm, connected to the water discharge valve assembly, will displace the valve plug from its seat, and whereby, upon rotation only in said inward position thereof, said actuating member, coupled to said operating cylinder and acting therethrough and through said linkage means, will dispose said biasing means in the path of movement of a part of the valve assembly to engage it and exert a closing force upon the valve plug, said biasing means thereby effecting premature closing of the valve plug and thereby producing a partial flush mode in which the volume of water discharged from the toilet tank is substantially reduced from that which would occur in the full flush mode with the actuating member in its outward position and the restraining assembly withdrawn.

4,447,920

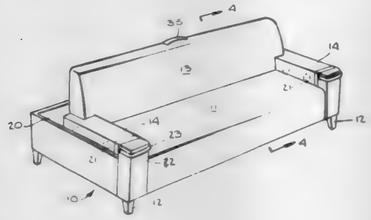
CONVERTIBLE COUCH

Louis M. Rosen, 7 E. 14th St., New York, N.Y. 10003

Filed Jul. 29, 1981, Ser. No. 288,145
Int. Cl.³ A47C 17/00
U.S. Cl. 5—12 R 5 Claims

1. A convertible couch assembly adapted to be readily converted from a couch to a bed assembly which comprises a generally horizontal rectangular cushion member which remains generally horizontal during conversion from said couch to said bed assembly and which is suitably supported on stationary legs, a generally upright back member forming a back support section of the couch which remains generally upright during conversion from said couch to said bed assembly, an arm rest attached to each end of said back member and extending forwardly thereof, said arm rest being of a length shorter than the width of said horizontal cushion member, a guide rail disposed at each end of the upper surface of said cushion member and extending generally for the length thereof, roller

means disposed at each end of said couch assembly in the lower portion of said arm rest and upright back member for engagement with the respective guide rail to facilitate rolling of said



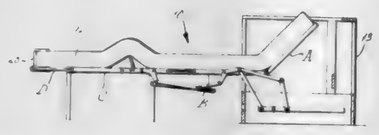
upright back member together with said extending arm rest thereby enabling the conversion of said couch to a bed assembly and vice versa, and latch means for locking said back member with respect to said horizontal cushion member.

4,447,921

SOFA BED WITH CONTOURED MATTRESS

Julius Greenblatt, 7572 York Dr., Clayton, Mo. 63105

Filed Jun. 17, 1982, Ser. No. 389,411
Int. Cl.³ A47C *17/00*
U.S. Cl. 5—12 R **4 Claims**



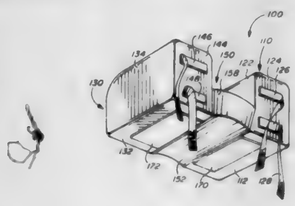
1. In an articulated foldable sofa bed construction movable from an extended bed defining position to a folded seat supporting position including relatively movable side frame sections, a fabric stretched between said frame members and connected thereto by spring members, and a mattress supported on said fabric, the improvement comprising a lateral bar extending across the width of the sofa bed construction between opposed side frame members between the fabric and the mattress and having each end connected to one of said side frame members by links which carry the bar from a position recessed between said side frame members to a raised position extending above said side frame members, so as to raise a section of the mattress when said bar is moved to its raised position, said raised mattress section providing support for the knees of the user.

4,447,922

PILLOW APPARATUS

Henry D. Brochu, 4075 N. Tyndall Ave., Tucson, Ariz. 85719

Filed Jan. 22, 1982, Ser. No. 341,879
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—434 **3 Claims**



1. A resilient pillow apparatus, comprising, in combination:

first wing means having a first top surface and a first bottom surface;

second wing means spaced apart from the first wing means and having a second top surface and a second bottom surface;

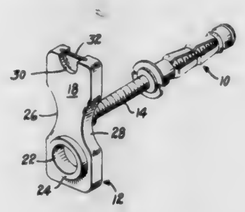
center means disposed between and secured to the first and second wing means and having a bottom compound concave arch extending upwardly between the first and second wing means and above the first and second bottom surfaces to allow the center means to move downwardly under the weight of a user on the center means, said center means being disposed downwardly from the first and second top surfaces, the first wing means further including a first inner side extending downwardly from the first top surface to the center means, the second wing means further including a second inner side extending downwardly from the second top surface to the center means, the center means further including a convex top arch extending between the first and second inner sides of the first and second wings, respectively, whereby the first and second wing means move inwardly under the weight of a user with the first and second inner sides disposed against the user on the center means.

4,447,923

SETTING TOOL FOR WALL ANCHOR

Michael E. Bond, Topton, and Harry E. Taylor, Wyomissing, both of Pa., assignors to USM Corporation, Farmington, Conn.

Filed Dec. 30, 1981, Ser. No. 335,865
Int. Cl.³ B25B *15/00*
U.S. Cl. 7—165 **11 Claims**



1. A tool for setting a screw anchor, within a wall, said tool comprising:

means for threadably engaging the screw anchor; and

means for manually applying separate and distinct torque levels to said threadably engaging means, said torque applying means comprising;

a first means for manually applying a breakdown torque to said threadably engaging means; and

a second means for manually applying a continuous lower level torque to said threadably engaging means following the breakdown of the screw anchor, the lower level torque being substantially less than the break-down torque and occurring in a continuous manner until the screw anchor has been set against the wall.

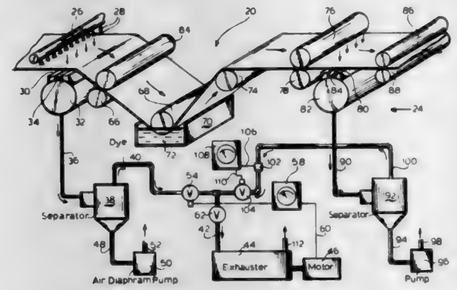
4,447,924

MOISTURE CONTROL SYSTEM FOR CONTROLLING THE AMOUNT OF CHEMICAL ADDED TO A FABRIC

Joseph A. Bolton, Queensbury, N.Y., and George R. Feehery, Waleska, Ga., assignors to Albany International Corp., Menands, N.Y.

Filed Feb. 18, 1982, Ser. No. 350,086
Int. Cl.³ D06B *15/04, 21/00, 23/28*
U.S. Cl. 8—151 **27 Claims**

1. A moisture control system for controlling the amount of chemical added to a fabric composition comprising: vacuum means capable of applying a vacuum to fabric passing thereby; conduit means connected to the vacuum means, a source of liquid including a predetermined percentage of chemical therein to be added to the fabric; means for applying liquid from the liquid source to the fabric; means for advancing the fabric containing liquid from the liquid source passed the vacuum means whereupon vacuum is applied thereto to deliquefy the fabric; the vacuum means being calibrated to provide a predetermined amount of vacuum which leaves a predetermined percentage of moisture in the fabric and accordingly a



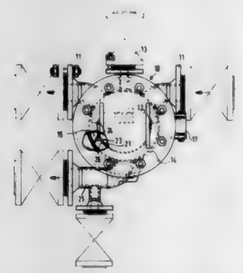
predetermined percentage of chemical in the fabric with the predetermined amount of vacuum being a function of the predetermined percentage of chemical in the liquid and the composition of the fabric; sensing means for sensing a change in the vacuum and the vacuum means being responsive to the change sensed by the sensing means to adjust the vacuum and return it to the predetermined vacuum thereby maintaining a constant moisture level and accordingly amount of added chemical in the fabric.

4,447,925

SLUICE APPARATUS FOR CLEANING THE INTERIOR OF PIPES

Erich O. Riedel, Haan, Fed. Rep. of Germany, assignor to Firma Alfred Gutmann GmbH and Co., Hamburg, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 364,196
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3112968
Int. Cl.³ F28G *1/12*
U.S. Cl. 15—104.06 A **4 Claims**



1. A sluice apparatus for dosed introduction of rubbing elements into, and removal from, a liquid-carrying pipeline, comprising:

a drum-shaped collecting vessel interposable into the pipeline having a flow inlet valve and a flow outlet valve in the upper portion thereof for establishing a continuous flow therethrough, said drum-shaped collecting vessel also having a catcher valve in the lower portion thereof; and

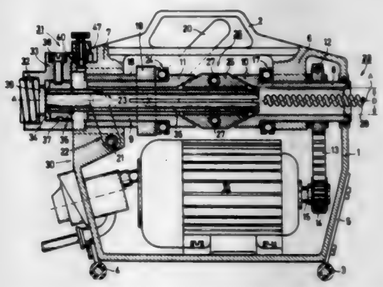
a catcher basket with side plates having a multiplicity of apertures formed therein arranged inside said vessel above said catcher valve in spaced relation from the inside wall of said vessel so that said rubbing elements enter said catcher basket from said flow inlet valve.

4,447,926

PIPE CLEANING MACHINE HAVING A CONTAINER TO ACCOMMODATE CLEANING SPIRALS OF VARIOUS DIAMETER

Günter Rothenberger, Bad Homburg, Fed. Rep. of Germany, assignor to Rothenberger GmbH & Co., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 356,985
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3119876
Int. Cl.³ B08B *9/02*
U.S. Cl. 15—104.3 SN **6 Claims**



1. In a pipe cleaning machine for rotating cleaning spirals of various outside diameters, the machine having a guide-hose container having a passage therethrough for passing the cleaning spiral, a coupling for releasably coupling the guide-hose container to the machine having a passage therethrough for passing the cleaning spiral, at least one hollow-shaft portion having a passage therethrough for passing the cleaning spiral from the coupling through the machine to a free end of the cleaning spiral for cleaning use, a rotationally-driven rotary clutch having jaws defining a passage therethrough aligned with the hollow-shaft portion and movable radially into the passage for passing the cleaning spiral, and means for moving the rotary clutch jaws radially into the passage therethrough, whereby to rotationally drive the cleaning spiral therein, the improvement comprising:

means in the guide-hose container, coupling, hollow-shaft portion, and rotary clutch for defining the inside diameter of the passages therethrough to be at least as large as the largest outside diameter of the cleaning spirals to be used with the machine, whereby at least the guide-hose container does not have to be changed with the cleaning spirals of various outside diameters; and

means in the coupling for releasably mounting a rotatable collet therein, whereby the collet adapts the hollow-shaft portion and rotary-clutch jaws for cooperation with at least one of the cleaning spirals smaller than the one of largest outside diameter and is the only accessory needed therefor.

4,447,927

GUTTER CLEANING APPARATUS

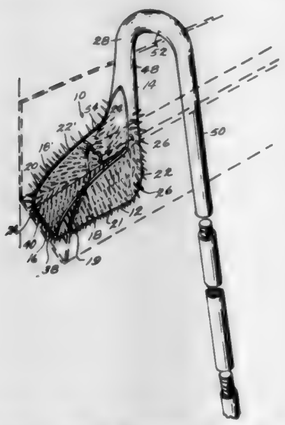
George C. Malless, Jr., 9 Tynewick Ct., Silver Spring, Md. 20906

Filed Sep. 2, 1982, Ser. No. 414,513
Int. Cl.³ E04D *13/06*
U.S. Cl. 15—236 R **19 Claims**

1. Apparatus for cleaning leaves and other debris from overhead building gutters, said apparatus comprising:

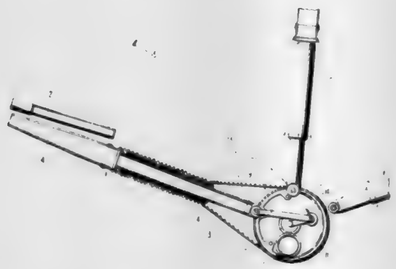
a scoop-shaped body defining first and second ends, a bottom portion and side portions, and defining an interior

surface and outer surfaces of said side and bottom portions;
a first plurality of spike-like projections extending from said interior surface;
a second plurality of spike-like projections extending from said outer surfaces of said side portions;
a third plurality of spike-like projections extending from said outer surface of said bottom portion;



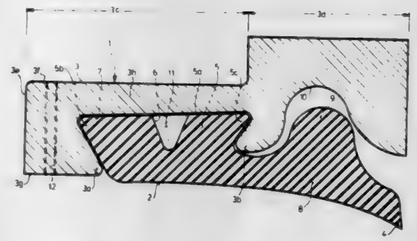
an attachment member connected to said first end of said body, said attachment member defining a substantially inverted U-shaped configuration having a free end positioned adjacent to a side portion of said body; and
at least a first pole defining first and second free ends, said first end of said pole and said free end of said attachment member constructed to be removably connected to each other.

4,447,928
WINDSHIELD WIPER ARRANGEMENT
Siegmund Schüch, Boeblingen; Karl-Heinz Nägele, Gaertringen; Arno Jambor, Vaihingen, and Bruno Sacco, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Jun. 30, 1982, Ser. No. 393,704
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125628
Int. Cl.³ B60S *1/26*
U.S. Cl. 15—250.21 **9 Claims**



1. A windshield wiper arrangement for a motor vehicle comprising telescopic windshield wiper arm means having a lower portion and an extendable upper portion, crank drive means for displacing the extendable upper portion so as to vary an effective length of the wiper arm means during a wiping motion thereof, driving means for driving the crank drive means including a toothed gearing means, wherein the lower portion is constructed as a housing means for accommodating the toothed gearing means and crank drive means and wherein the windshield wiper arm means and crank drive means have a common axis of rotation.

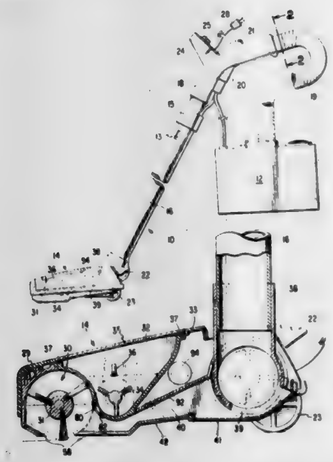
4,447,929
SCRAPER DEVICE AND ASSEMBLY TOOL
Kurt Hennig, Munich; Manfred Klein, Ismaning, and Matthias Nuspl, Munich, all of Fed. Rep. of Germany, assignors to Gebr. Henning GmbH, Ismaning, Fed. Rep. of Germany
Filed Mar. 1, 1982, Ser. No. 353,345
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 8107714[U]; May 13, 1981, 8114012[U]
Int. Cl.³ F16C *29/08*
U.S. Cl. 15—256.5 **14 Claims**



1. In a machine tool scraper device of the kind adapted for use with guideways and the like and having an elastically deformable scraper element provided with a scraper lip and an anchoring extension, said device also including a support element formed of rigid material having a recess in which said scraper element is accommodated, the improvement wherein said anchoring extension has a groove therein enabling elastic deformation of said scraper element by compression of said groove to enable insertion of said scraper element into said recess of said support element, the elasticity of said scraper element enabling the latter to expand into a form locking fit in said recess, said scraper element having a reinforcing rib between said scraper lip and said anchoring extension.

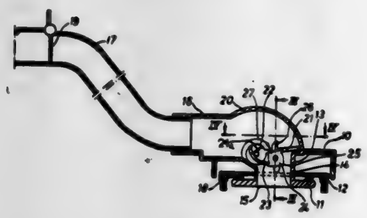
4,447,930
POWER HEAD UNIT FOR CARPET CLEANING
William K. Glenn, III, Anderson; John E. Jones, Greenville; Gordon E. Laing, Anderson, and William R. Sumersu, Easley, all of S.C., assignors to The Singer Company, Stamford, Conn.
Filed Dec. 27, 1982, Ser. No. 453,363
Int. Cl.³ A47L *11/00*
U.S. Cl. 15—322 **24 Claims**

12. For use with an external source of vacuum, a power head unit for a carpet cleaner and vacuum, said power head unit comprising:
a housing;
means including an upwardly extending wand for connecting said housing to said external source of vacuum;
means in said housing for defining a brush chamber, a vacuum chamber for communication on one end with said brush chamber and on the other end with said connecting means, and a powder retaining chamber for retaining a quantity of a dry chemical carpet cleaning material therein;
a brush rotatably supported by said housing for contact with a carpet, said brush comprising bristles and a substantially circular brush roll supporting said bristles offset from the centerline of said brush roll so that in a first direction of rotation said bristles resiliently sweep over said carpet toward said vacuum chamber with a first force and in a second direction of rotation said bristles resiliently sweep against said carpet with a second force higher than said first force for agitating dry chemical carpet cleaning material into said carpet to perform a cleaning function;
means for selectively reversibly rotating said brush;
said housing further supporting means for selectively dispensing said dry chemical cleaning material onto said carpet;
means supported by said wand for selecting between a vacuum mode of operation and a carpet cleaning mode of operation in which said dispensing means is selectively effective;



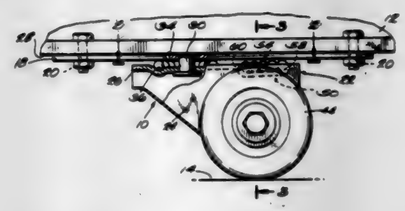
a least one slot in said powder retaining chamber adjacent said brush chamber and extending therealong;
means for selectively covering said at least one slot;
means on said powder retaining chamber adjacent said at least one slot for facilitating dispensing of said dry chemical cleaning material through said at least one slot when said covering means is actuated to uncover said at least one slot.

4,447,931
REMOTELY CONTROLLED VACUUM CLEANER NOZZLE
Lennart S. A. Lindqvist, Sundbyberg, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Continuation-in-part of Ser. No. 212,350, Dec. 3, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,165
Int. Cl.³ A47L *9/06*
U.S. Cl. 15—365 **7 Claims**



1. In a suction nozzle attached to a suction conduit of a vacuum cleaner and provided with a brush nozzle and a flat surface nozzle, both of which are working members, and can be alternately brought into engagement with the work surface by means of an actuating member, the improvement comprising: said actuating member being a valve mounted on said suction conduit remote from said nozzle which is movable between two end positions to change the pressure conditions in said conduit to either open or close said suction conduit, and a movable blocking element adapted to be mounted in said nozzle to normally close the suction channel of said nozzle, and during the opening of said suction channel by said valve to move to a position whereby said suction channel is opened, and means responsive to movement of said element to its open position to cause one of said working members to move away from said work surface while the other of said working members moves into contact with said work surface due to the substantially unrestricted negative pressure generated in said suction conduit.

4,447,932
CASTER INCLUDING ON CENTER BEARING ARRANGEMENT
Ralph W. Mueller, Waukesha, Wis., assignor to E. R. Wagner Mfg. Co., Hustisford, Wis.
Filed Jan. 22, 1982, Ser. No. 341,839
Int. Cl.³ B60B *33/00*
U.S. Cl. 16—21 **5 Claims**

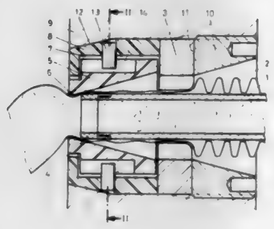


1. A caster including
a support plate member having a lower surface,
a yoke adapted to support said support plate, said yoke including
a pair of spaced apart downwardly extending legs, said legs including upper ends and lower ends, said lower ends having aligned bores,
a horizontal plate member joining the upper ends of said legs, said plate member having an upper surface in closely adjacent generally parallel spaced relation with respect to said lower surface of said support plate,
means for pivotably joining said plate member to said support plate for free rotation about a generally vertical axis,
an axle supported in said aligned bore, said axle being spaced laterally from said generally vertical axis such that said means for pivotally joining said plate member to said support plate is positioned laterally of said axle,
at least one wheel rotatably supported on said axle,
a first ball bearing assembly surrounding said means for pivotably joining, said first ball bearing assembly including a bearing race formed in one of said lower surface of said support plate and said upper surface of said horizontal plate member, said bearing race surrounding said generally vertical axis, and a plurality of balls housed in said race, and
a second ball bearing assembly including a bearing race spaced laterally from said first ball bearing assembly bearing race such that said first ball bearing assembly bearing race is positioned outside of said second ball bearing assembly bearing race, said second ball bearing assembly bearing race being formed in one of said lower surface of said support plate and said upper surface of said horizontal plate member and having a first race portion spaced laterally from said first ball bearing assembly and being positioned above said axle, said first race portion being arcuate and having as a center of curvature said generally vertical axis, and said first race portion housing a plurality of balls for transferring weight from said support plate to said yoke, to said axle, and to said wheel.

4,447,933
GUT CASING HOLDING NOZZLE FOR A SAUSAGE FILLING MACHINE

Ulf Spiegelberg, Niederwil, Switzerland, assignor to C. Hoegger & Cie. AG., Gossau, Switzerland

Filed Mar. 26, 1982, Ser. No. 362,197
Claims priority, application Switzerland, Apr. 13, 1981, 2448/81
Int. Cl.³ A22C *11/00*
U.S. Cl. 17—41 5 Claims

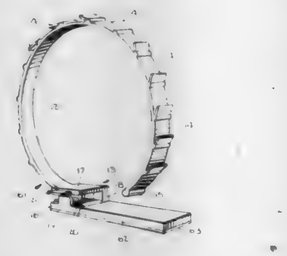


1. A gut casing holding nozzle for a sausage filling machine, comprising:
(a) a rotatable fill tube (1),
(b) a gut casing holding element (4) attached to an outlet end of the tube,
(c) a nozzle member (5) having a conical interior surface surrounding the holding element to define therewith an annular slot for the passage of a gut casing,
(d) a mounting member (8) disposed surrounding the nozzle member and defining a cylindrical gap (7) therebetween,
(e) at least two spaced cavities (14) defined in the outer surface of the nozzle member, and
(f) at least two anchoring pins (13) extending inwardly from the mounting member and loosely disposed in the nozzle member cavities, whereby the nozzle member is "float mounted" within the mounting member with a predetermined degree of both radial and axial play to thereby enable the nozzle member to automatically center itself during operation to compensate for fill tube bends, casing irregularities, and the like.

4,447,934
CABLE HARNESS

Bernard Anscher, Woodbury, N.Y., assignor to National Molding Corporation, Farmingdale, N.Y.

Filed Jun. 7, 1982, Ser. No. 386,098
Int. Cl.³ B65D *63/10*
U.S. Cl. 24—16 PB 10 Claims

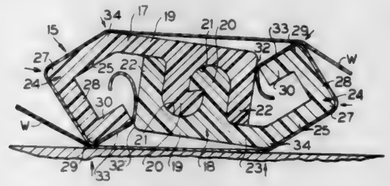


1. A cable harness comprising: a flexible strap having a ratchet lock and a plurality of ratchet engaging members disposed thereon so as to define therebetween operative strap lengths corresponding to different workpiece bundle sizes,
said ratchet lock having a channel orientated in the longitudinal direction of said flexible strap and sized to permit the passage of said flexible strap therethrough in said longitudinal direction only,
said channel having a plurality of ratchet teeth disposed therein to engage said ratchet engaging members on said flexible strap when in operation, said flexible strap is moved through said channel to tighten said cable harness about a bundle and to restrain, by virtue of that engagement, the movement of said flexible strap in a cable harness loosening direction while permitting movement in the tightening direction, thereby locking said cable harness, and
a ratchet lock lateral opening means serving to open a side of said ratchet lock channel so as to enable a flexible strap of a locked cable harness to be removed from the ratchet lock of said cable harness laterally with respect to the path travelled by said flexible strap through said ratchet lock, said opening means comprising a side wall or tab extending at least partially across said ratchet lock channel side.

4,447,935
DEVICE FOR AND METHOD OF JOINING SHEET MATERIAL

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,320
Int. Cl.³ A44B *17/00, 21/00*
U.S. Cl. 24—201 C 24 Claims

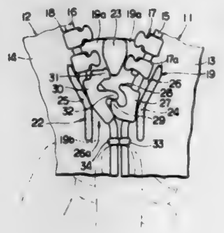


1. Two margins on substantial expanses of sheet material and a device for mechanically joining the margins, and comprising:
said device having a pair of complementary extruded plastic, elongated separable fastener members each of which has a body provided with complementary resilient rib and groove fastener means adapted for separable interlocking for maintaining said members in a separable fastener assembly;
and each of said members having integrally on and along its body, and laterally spaced from said fastener means a respective releasable sheet-margin-gripping resiliently manipulatable jaw structure;
said jaw structure of one of said members extending along one side of the assembly for retaining one of said sheet material margins in attached relation to said one member and thereby to the assembly, and the jaw structure on the other of said members extending along the opposite side of the assembly for retaining the other of said sheet material margins in attached relation to said other of said members and thereby to the assembly;
and one of said sheet material expanses extending from its margin retained in one of said jaw structures and in partially wrapping relation across said assembly and into grip-enhancing thrusting relation to the other of said jaw structures, and the other of said sheet material expanses extending from its margin retained in said other of said jaw structures and in partially wrapping relation across said assembly and into grip-enhancing thrusting relation to said one jaw structure.

4,447,936
SLIDE FASTENER WITH SEPARABLE BOTTOM END STOP

Masahiro Kusayama, Kurobe, Japan, assignor to Yoshida Kogyo K K, Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 310,380
Claims priority, application Japan, Nov. 1, 1980, 55-156533
Int. Cl.³ A44B *19/36*
U.S. Cl. 24—433 6 Claims



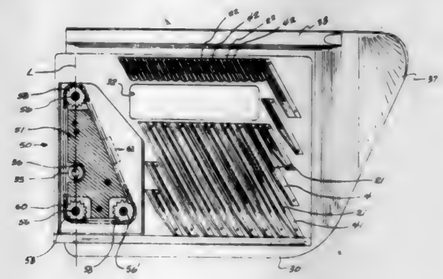
1. A slide fastener comprising:
(a) a pair of stringers having interlocking fastener elements carried on a pair of first and second marginal beads thereof;
(b) a slider cooperable with said fastener elements to interlock and to disengage them in response to opposite directions of movement along said pair of stringers, said slider having a pair of flaring flanges;
(c) a separable bottom end stop including a pair of first and second members mounted on said first and second beads, respectively, adjacent to the lowermost fastener element for being interlocked with one another; and
(d) a pair of register marks disposed one on each of said pair of stringers and spaced from said first and second members to such an extent that said register marks are disposed below a rear end of said slider at the beginning of interlocking of said first and second members within said slider upon threading of said pair of stringers through said slider, said register marks being aligned with one another transversely of said stringers when said first and second members are registered with one another for correct interlocking, said register marks being so spaced from said first and second members that said register marks are aligned with one another and with the rear end of said slider only after said first member is threaded through said slider until it reaches the correct position to interlock with said second member after said second member has been threaded through said slider to a correct position for interlocking with said first member.

4,447,937
WEB EDGE DECURLING DEVICE

William O. Young, Jr., Spartanburg, S.C., assignor to Young Engineering, Inc., Spartanburg, S.C.

Filed Jun. 12, 1981, Ser. No. 273,084
Int. Cl.³ D06C *25/00*
U.S. Cl. 26—98 28 Claims

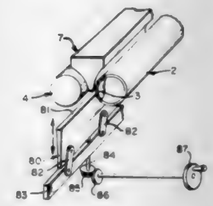
1. A device for removing curl, folds and the like from an edge of a moving web comprising:
(a) a top plate, said plate having a plurality of elongated fins associated therewith, said fins being disposed at an angle to an edge of a web traveling thereby, said fins having a smooth angled edge for contact with said web;
(b) a bottom plate, said bottom plate having a plurality of elongated fins associated therewith, said fins being disposed at an angle to an edge of a web traveling thereby, said fins having a smooth angled edge for contact with said web;
(c) means to associate said top and bottom plates whereby said top and bottom fins define a web passageway therebetween; and
(d) means for positionally adjusting the fins associated with the top plate relative to the fins associated with the bottom plate, said means comprising a plurality of adjustment members received between said plates, said members being operatively associated with one of said plates for movement toward and away from said plate and contactable with the other of said plates, said members being interrelated for simultaneous movement, one of said members extending from between said plates and having means associated therewith for manual movement of same, other of said members being located entirely between said plates; whereby movement of said one of said members will cause like movement of the other of said members to positionally adjust said fins.



4,447,938
METHOD AND APPARATUS UTILIZING AN IMPACT BLADE FOR THE COMPRESSIVE TREATMENT OF FABRIC

Frank Catallo, 84 Wheatley Rd., Old Westbury, N.Y. 11568

Division of Ser. No. 195,301, Oct. 8, 1980, Pat. No. 4,363,161, which is a continuation-in-part of Ser. No. 095,090, Nov. 16, 1979, abandoned. This application Apr. 14, 1982, Ser. No. 368,202
Int. Cl.³ D06C *21/00*
U.S. Cl. 26—18.6 4 Claims



1. An apparatus for the compressive treatment of a fibrous material where the apparatus comprises a first movable surface, means for moving said first movable surface in a first direction at a first rate of speed, a second movable surface spaced from said first movable surface, means for moving said second movable surface in a second direction opposite to said first direction at a second rate of speed slower than said first rate of speed, a confining means spaced from said first and second movable surfaces having an apex extending between and towards said surfaces to form a stuffing chamber therewith into which material is adapted to be moved by said first movable surface and from which material is adapted to be moved by said second movable surface, and an impact blade extending between said first and second movable surfaces towards said apex for guiding flow of said material around said apex.

4. A method for the compressive treatment of a fibrous web

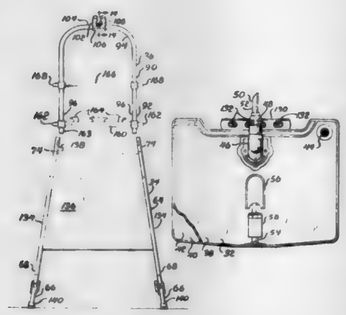
material where said material is forced into a stuffing chamber formed by a space between a first movable cylindrical surface, a second movable surface, an apex of a confining means extending in part between and spaced from the first and second surfaces, and an impact blade extending between the first and second movable surfaces towards said apex, comprising the step of moving the first surface at a first rate of speed in a first direction to move said material between it and said confining means towards and into said stuffing chamber, the step of moving the second surface in a second direction opposite to said first direction at a second rate of speed slower than said first rate of speed to move said material in said second direction around said apex and out of said stuffing chamber, and the step of guiding flow of said material around said apex by said impact blade.

4,447,939

DEVICE FOR COLLECTING BODY LIQUIDS

Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 247,499, Mar. 25, 1981, Pat. No. 4,393,880.
This application Sep. 29, 1982, Ser. No. 426,515
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—760 **25 Claims**



1. A device for collecting body liquids, comprising:
a receptacle having upper and lower portions, said receptacle having a chamber to receive and collect body liquids;
a stand having a back member having upper and lower portions, and leg means extending from the lower portion of said back member;
means for connecting the upper portion of the stand to the upper portion of the receptacle to support the receptacle in an upright position by the stand, wherein the leg means comprises a pair of legs and including means for pivotally mounting the legs to a lower portion of the back member, wherein the legs are movable between a first forward position to support the receptacle, and a second inner position with the legs being generally aligned with a central portion of the back member, with said legs being in a configuration with one of the legs overlying the other of the legs.

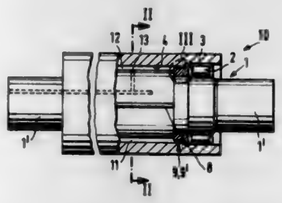
4,447,940

REVOLVING HOLLOW ROLL WITH A GAP SEAL

Valentin Appenzeller, Kempen, and Peter F. Mingers, Willich-Anrath, both of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,007
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128140
Int. Cl.³ B21B *13/02*
U.S. Cl. 29—116 AD **9 Claims**

1. In a roll with a revolving hollow roll forming the working roll circumference and a stationary cross head which extends through the hollow roll lengthwise spaced a distance from the inside circumference of the hollow roll on all sides, to which cross head external forces can be applied at the ends protruding from the hollow roll, the hollow roll braced against the cross head via a pressure liquid in a chamber which is formed in the space between the hollow roll and the cross head, said space provided with a feed line and divided by a sealing arrangement which is mounted at the cross head and comprises



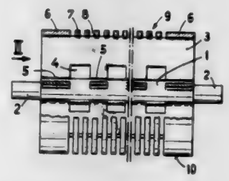
strip-shaped longitudinal seals extending along the cross head on both sides of the action plane of the roll, as well as transverse end seals provided at the ends of the chamber arranged opposite each other along the cross head and the hollow roll, the improvement comprising, each of the transverse end seals being in the form of a gap seal having opposed gap surfaces and a separate precision antifriction bearing for keeping the gap surfaces of said gap seal spaced regardless of flexure of the cross head and the hollow roll.

4,447,941

DEWATERING ROLL OF A WIRE PRESS

Hans Schnell, Mengen, and Rolf Wenske, Ravensburg-Torkenweiler, both of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 373,848
Claims priority, application Switzerland, May 11, 1981, 3026/81
Int. Cl.³ A01B *29/00*
U.S. Cl. 29—121.1 **8 Claims**



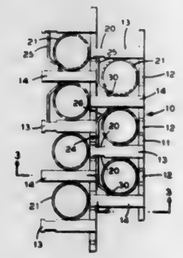
1. A dewatering roll for a wire press comprising:
a substantially cylindrical roll shell provided with at least one outflow opening for expressed liquid;
substantially radially extending arm members for supporting said roll shell;
said radially extending arm members being formed by support walls extending essentially axially along essentially the entire length of the roll shell;
said roll shell being provided with at least one gap forming said outflow opening;
said gap piercing the wall thickness of the roll shell along at least a portion of its extent and providing said outflow opening;
said roll shell possesses a plurality of gaps extending in the circumferential direction of the roll shell and defining a plurality of throughflow openings for the expressed liquid; and
said plurality of circumferentially extending gaps imparting to the roll shell the shape of coaxial ring members which extend essentially parallel to one another.

4,447,942

HELICAL STEAM GENERATOR TUBE SUPPORT

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 192,775, Oct. 1, 1980, Pat. No. 4,337,827.
This application Apr. 15, 1982, Ser. No. 368,790
Int. Cl.³ B23P *15/26*; F28F *9/00*
U.S. Cl. 29—157.4 **2 Claims**



1. A method of assembling a support structure for a heat exchanger having helically coiled tubes comprising the steps of:
a. providing a plurality of longitudinally extending generally flat support plates having support members affixed to the longitudinal edges thereof and extending perpendicular from the plane thereof, the support members being longitudinally spaced to accept and nest the helically coiled tubes there between, the support plates being notched to mate with the support members of an adjacent plate, a plurality of spring plates, alternating successive support members having recesses to accept the edges of said spring plates, said spring plates being sized to engage said recesses of said alternating support members and having notches to accommodate remaining members and having generally flat portions separated by a corrugation,
b. positioning a first set of said plurality of support plates vertically extending and radially distributed about the center of the steam generator;
c. helically winding the heat exchanger tubing to nest between support members of said first set of plates;
d. positioning each of said plurality of springs by inserting a first spring edge in a pair of said recesses, snapping an opposing spring edge into an opposing pair of said recesses such that said corrugaton runs parallel to and bears against a pair of said plurality of tubes;
e. positioning a second set of support plates such that the notches thereof mate with the support members of said first set of support plates;
f. compressing said second set of plates to said first set of plates to compress said spring to a desired pressure;
g. affixing the support members of said first set of support plates to the notches of said second set of support plates; and
h. repeating steps c through g with a number of successive sets of support plates until the heat exchanger is fully assembled.

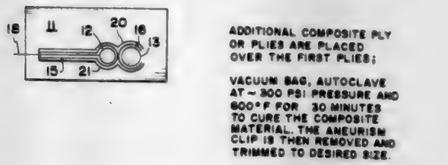
4,447,943

PROCESS OF MAKING MEDICAL CLIP

Robert M. Baucom, Carrollton, Va., assignor to United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 264,381, May 15, 1981, abandoned. This application Feb. 10, 1983, Ser. No. 465,363
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—423 **3 Claims**

1. A method of making an essentially X-ray transparent medical clip for use in treating aneurisms and the like in a living animal comprising the steps of:
providing a graphite fiber/resin composite film material;
providing a mold stand having a pair of elongated cylinders disposed in spaced relationship and extending vertically therefrom;
wrapping a first length of the composite film around one of the elongated cylinders with the end portions of the film being trimmed so as to be spaced from each other and with this spacing provided on the diametrically opposed surface of the cylinder adjacent to the other cylinder;
wrapping a second length of the composite film around the other of the elongated cylinders with the end portions of the film exceeding the cylinder diameter and positioned so as to extend a distance away from the cylinder pair;
providing an inert separator film between the end portions of the second length of composite film to avoid film adherence along this length;
positioning at least one pair of additional lengths of the composite film in abutting relationship with and extending



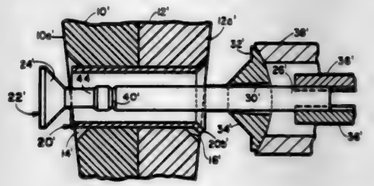
one each from the spaced ends of the first length of composite film to the ends of the second length of composite film;
positioning the mold stand in a vacuum bag at approximately 26 mm Hg and autoclaving the bagged assembly at approximately 600° F. and 300 psi pressure for approximately 30 minutes to cure the composite assembly into a unitary molded structure;
cooling and removing the molded structure from the elongated cylinders to recover a clip structure having a spaced opening at one end and elongated abutting jaws at the opposite end;
removing the inert separator film from the abutting jaws of the molded structure and trimming the molded structure to the desired dimensions; and
inserting a silicone rubber pellet in the spaced open end of the molded structure to thereby exert a spring force on the structure and bias the abutting jaws at the opposite end in pressure contact with each other for use as a medical clip.

4,447,944

METHOD OF FORMING A TUBULAR RIVET IN FASTENING RELATION TO A PLURALITY OF LAMINATES

Robert H. Mohrman, Bridgeton, Mo., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1982, Ser. No. 389,138
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—512 **1 Claim**



1. A method for forming a tubular rivet in fastening relation

to a plurality of laminates one or both of which is tapered in thickness and through which laminates a rivet hole extends having first and second countersinks the axes of which are at small angles to the axis of said rivet hole, the method comprising the steps of:

providing in said hole a tubular rivet at least one end of which is unformed and the other end of which has a partially formed conical rivet head;

providing a forming mandrel having a head presenting a first conical forming surface adjacent said unformed end and having a shaft extending through the lumen of said rivet;

providing an annular anvil having a central bore through which said shaft extends and presenting a second conical forming surface to said partially formed conical rivet head;

said shaft being bendable adjacent said mandrel head and said bore of said anvil being tapered to permit tilting of said anvil relative to said shaft; and

forcefully moving said mandrel head and said anvil toward one another so as to flare said one end and further flare said other end to form first and second conical rivet heads the axes of which are substantially coaxial with said axes of said countersinks.

4,447,945

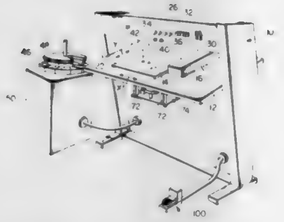
CUT AND CLINCH MECHANISM FOR USE IN ELECTRICAL COMPONENT ASSEMBLY APPARATUS

Istvan Priscsak, New Fairfield, Conn., assignor to Contact Systems, Inc., Danbury, Conn.

Continuation of Ser. No. 145,794, May 1, 1980, abandoned. This application Aug. 26, 1982, Ser. No. 411,677

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—566.3 **14 Claims**



1. A mechanism for cutting and clinching a terminal lead of an electrical component that extends downwardly from a circuit board onto which the component is mounted, said mechanism being below the board and comprising

a rigid finger obliquely inclined to the bottom surface of said circuit board and having an end positionable adjacent said bottom surface of the board,

an aperture extending transversely through said finger at or adjacent its end for receiving a thin lead of an electrical component that extends downwardly from the bottom surface of said board,

the outer rim of said aperture comprising a cutting edge,

a cutting sleeve coaxially disposed on said finger and adapted to rotate coaxially thereabout,

a cutting blade on said sleeve,

said cutting blade being positioned on said sleeve to wipe across the outer rim of said aperture in the finger when the sleeve rotates,

means for rotating said sleeve coaxially around said finger,

whereby a component lead in said aperture is cut or sheared when the cutting blade wipes past the aperture,

said cutting blade having a thickness in the radial direction of the finger sufficient to engage the remaining end of the lead after it has been cut to bend said remaining end toward the circuit board as the cutting sleeve rotates further after the lead is cut.

4,447,946

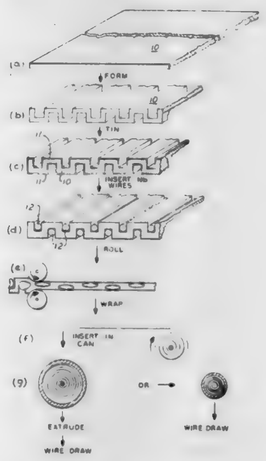
METHOD OF FABRICATING MULTIFILAMENT INTERMETALLIC SUPERCONDUCTOR

William G. Marancik, Basking Ridge, N.J., assignor to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 74,186, Sep. 10, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,832

Int. Cl.³ H01L *39/24*

U.S. Cl. 29—599 **6 Claims**



1. A method of making a superconducting wire of the type in which a predetermined number of fine filaments of intermetallic superconductor having the composition A_3B and the A-15 crystal structure are embedded in a matrix of normal conductor which comprises distributing wires of A having a nominal diameter not greater than 0.050 inch in a body consisting of Cu and interspersed B material, the B material being provided as a coating on Cu stock having a cross sectional dimension in one direction not greater than the diameter of the wires of A, mechanically working the composite to reduce its cross section to the desired final wire diameter with concomitant elongation, and heating treating the conductor to cause the dispersed B material to diffuse into the Cu and to migrate to and react with the A material filaments to form filaments of A_3B.

4,447,947

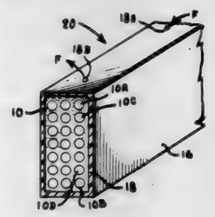
PROCESS FOR MAKING FLUID-COOLED ELECTRICAL CONDUCTOR

Fred B. McCarty, San Pedro, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 206,413, Nov. 13, 1980, abandoned. This application Feb. 9, 1983, Ser. No. 465,214

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—825 **15 Claims**



15. A method of making an electrical conductor capable of being fluid cooled, comprising the steps of:

a. encapsulating a stranded wire electrically conductive member of predetermined length in a material having characteristics of good adhesion, flexibility, and removability, thereby forming a matrix in which said stranded electrically conductive member is contained and supported;

b. inserting said matrix into a tube of insulating material, thereby creating a member of insulating material which surrounds said matrix and said electrically conductive member in said matrix;

c. providing openings through said insulating member for passage therethrough of an insulating coolant fluid; and

d. removing said matrix material from said electrically conductive member and from said insulating member.

4,447,948

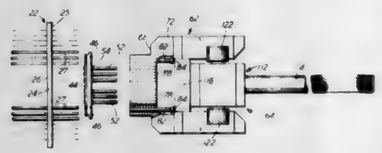
TECHNIQUE FOR INSERTING KEYING MEMBERS INTO BACKPLANES

Stanley Golinski, Proviso Township, Cook County, Ill., and Willard E. Rapp, Franklin Township, Somerset County, N.J., assignors to AT & T Technologies, Inc., New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,567

Int. Cl.³ H05K *3/00*

U.S. Cl. 29—829 **7 Claims**



1. A method of inserting a plurality of keying members, each member comprising a planar base with a plurality of keys projecting therefrom and a plurality of first openings, onto a backplane having a multitude of connector pins therethrough, the method comprising the steps of:

inserting the keys of the keying members into second openings in a transfer member;

positioning the transfer member proximate the backplane; and

sequentially urging keying members from the transfer member onto pins in the backplane whereby said pins are inserted at least in some of said first openings.

3. Apparatus for inserting a plurality of keying members, each member comprised of a planar base with a plurality of keys projecting therefrom, into a backplane having a multitude of connector pins therethrough, said backplane forming the back wall of a PCB mounting shelf, said shelf having a plurality of parallel tracks therein which are normal to the backplane, the apparatus comprising:

a transfer means adapted to receive the keys of each of the keying members;

means for positioning the transfer means within the mounting shelf, proximate the backplane; and

means, slidably mounted on the transfer means, for sequentially ejecting groups of keying members from the transfer member onto pins in the backplane.

4,447,949

WIRE STRIPPER

Michael W. Kane, 2712 - 65th Ave. North, Minneapolis, Minn. 55430

Filed Sep. 30, 1982, Ser. No. 429,094

Int. Cl.³ H02G *1/12*

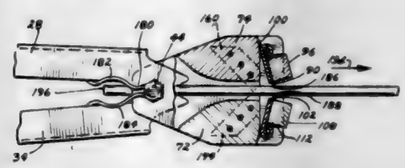
U.S. Cl. 30—90.6 **18 Claims**

1. A tool for use in stripping an end portion of plastic-sheathed electrical cable comprising:

jaw means with first and second jaw elements for engaging, at a location spaced from a free end thereof, an electrical cable having a plastic sheath;

closing means for urging the jaw elements together to engage the cable;

transverse cutting means mounted on the first jaw element for making a transverse cut through the plastic sheath generally perpendicular to a longitudinal axis of the cable when the jaw means engages the cable, said transverse cutting means being movably mounted on the jaw element so that it has a first cutting position for making the transverse cut and so that it moves to a second non-cutting position when the tool is moved relative to the cable for slitting the sheath; and



longitudinal cutting means mounted on the first jaw element adjacent the transverse cutting means toward the free end of the cable for puncturing the plastic sheath at a point near the transverse cut when the jaw means engages the cable and for slitting the sheath as the tool is moved relative to the cable along the longitudinal axis of the cable toward the free end thereof.

4,447,950

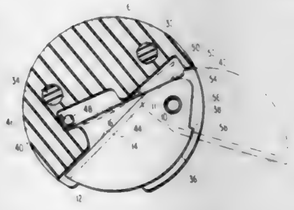
POCKET KNIFE

Ned W. Mizelle, 604 Idol Dr., High Point, N.C. 27262

Filed Apr. 2, 1982, Ser. No. 364,742

Int. Cl.³ B26B *1/02*

U.S. Cl. 30—155 **1 Claim**



1. A combined pocket knife and money clip, comprising,

a casing which has a substantially circular perimeter, said casing including two casing members which are formed of molded plastic and are in direct contact with each other, said casing members each having a substantially circular external face, said casing having an interior cavity which is substantially parallel to said faces,

a grommet extending through the thickness of the casing and provided with a central opening for receiving a keychain, said grommet having a tubular section with radial flanges at its opposite ends,

a blade which is provided with a cutting edge, said blade being pivotally supported on said grommet and being movable from an interior position where the cutting edge is located in said interior cavity to an exterior position where the cutting edge projects outwardly from said casing, said blade also including a cam surface which is located in said cavity,

said casing having a notch in its perimeter which exposes a portion of the blade to permit manual grasping thereof for moving the blade from its interior position to its exterior position,

a spring clip located on the exterior of the casing, said spring clip having a fixed end which is attached to the casing by

the grommet, said fixed end wrapping around the perimeter of the casing to prevent the spring clip from pivoting about said grommet, said spring clip having a movable end which is spaced from the grommet and bears against a said face of the casing so as to be operable as a money clip,

an internal spring located in said cavity for biasing the blade to its interior position and to its exterior position, said internal spring being a resilient wire which is linear when in an unstressed condition, said wire having a fixed end which is affixed to the casing and a free end which is movable relative to the casing, a fulcrum which is fixed relative to the casing, said internal spring having a portion located between the fulcrum and the free end which bears against the cam surface of the blade, said wire being free to flex so that pivotal movement of the blade will cause the wire to flex about said fulcrum in a same direction of curvature between its fixed end and the fulcrum and between its free end and the fulcrum,

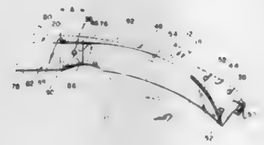
said blade having a shoulder which lies in abutting relationship with the end of the internal spring when the blade is in its exterior position.

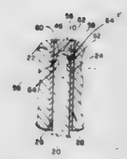
4,447,951

FOLDING KNIFE STRUCTURE

Charles K. Fortenberry, 3112 Vandenberg, Wichita, Kans. 67210

Filed Apr. 5, 1982, Ser. No. 365,240
Int. Cl.³ B26B *1/04*
U.S. Cl. 30—161 **7 Claims**





1. A folding knife structure, comprising:

(a) a handle assembly;

(b) a spring bias assembly connected to said handle assembly having a guide portion;

(c) a blade assembly including a blade member pivotally connected to said handle assembly having a lock portion selectively engagable with said guide portion; and,

(d) said guide portion and said lock portion having opposed points of contact as seen in transverse cross-section when said blade assembly is in an opened position.

4,447,952

DEVICE FOR UNDERWATER CRYOGENIC CUTTING

James H. Elkins, Picayune, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

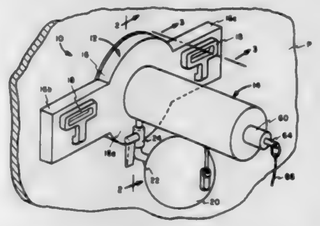
Filed Dec. 27, 1982, Ser. No. 453,068
Int. Cl.³ B26F *1/00*
U.S. Cl. 30—361 **11 Claims**

1. A device for performing a cutting or penetrating operation on a workpiece in an underwater environment, said device comprising:

attachment means for securing said device to said workpiece;

enclosure means for excluding water from a zone of said workpiece and for confining a cryogenic fluid in contact with said zone;

velocity power means supported by said attachment means and comprising an explosively driven member adapted to



impact said workpiece in said zone so as to cut or penetrate said workpiece;

a source of fluid at cryogenic temperatures; and

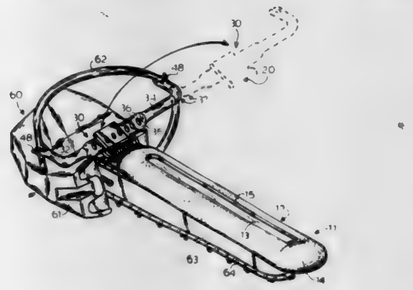
fluid control means for controllably passing said fluid to said zone within said enclosure means so as to cool said workpiece to a cryogenic temperature prior to and during impacting of said workpiece by said member, whereby said cutting or penetrating operation is facilitated.

4,447,953

CHAIN SAW GUARD

Anthony V. Lombardino, 113-15 84th Ave., Richmond Hill, N.Y. 11416, and Louis P. Perfetto, 18-11 154th St., Whitestone, N.Y. 11357

Filed Aug. 9, 1982, Ser. No. 406,352
Int. Cl.³ B27B *17/02*
U.S. Cl. 30—382 **17 Claims**



1. A guard for a chain saw of the type having a housing and an elongated saw blade projecting outwardly from said housing including an endless chain having an upper run and a lower run, comprising:

an elongated guard arm having a generally arcuately-shaped cross-section; and

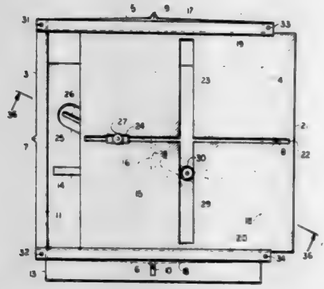
spring-loaded hinge means pivotably connecting said guard arm at one of its ends to said housing for movement between a first end position, in which said guard arm overlies and extends above said upper run of said chain in a spaced-apart generally parallel relationship thereto, and a second end position, in which said guard arm extends upwardly generally normally relative to said chain upper run, said guard arm being resiliently biased by said spring-loaded hinge means so that it normally assumes and is urged into said first end position thereof.

4,447,954

ELLIPSOGRAPH

Marian Poll, 1271 Northwest Hwy., Park Ridge, Ill. 60068

Filed Mar. 14, 1983, Ser. No. 474,974
Int. Cl.³ B43L *11/04*
U.S. Cl. 33—30 D **1 Claim**



1. A drafting instrument for tracing an entire ellipse, or parts thereof, comprising a lower base with first and second side members and first and second end members, each of said members bearing center line indicator on its outer edge and a groove on the inner edge between points adjacent to each end, with another center line indicator on each outer edge of the end members of the lower base at their center, a cross-slotted plate slideably mounted within said grooves, a lower bridge bearing slideably mounted within said cross-slot specifically in the slot parallel to said grooves, an upper base rigidly affixed at both ends to the ends of the lower base side members, said upper base having a first and a second side members, each of the said upper base side members bearing an inner edge groove between points adjacent to each end and set normal to the grooves of the lower base, an upper cross-slotted plate slideably mounted within said grooves, an upper bridge bearing slideably mounted within said cross-slotted plate specifically in the slot parallel to the said grooves, a scribe arm having a lengthwise slot between points adjacent to the first end to a point adjacent to the center, and a lengthwise slot between points adjacent to the center to a point adjacent to the second end, said scribe arm having mounted in the slot at its first end first rotably connecting means between the upper bridge bearing and said slot, second rotably connecting means between the lower bridge bearing and the center of said scribe arm, means for mounting a drafting instrument mounted in said slot at a point near the second end of said scribe arm, said means projecting and sliding freely into the slots of lower and upper cross-slotted plates, specifically, in the slots perpendicular to corresponding mounting grooves, and mounting holes through each corner of the lower and upper base.

4,447,955

METHOD FOR DETERMINING THE LENGTH OF FILAMENTARY MATERIALS, SUCH AS YARN, WOUND UPON A CROSS-WOUND PACKAGE BY MEANS OF A FRICTION DRIVE AND A GROOVED DRUM

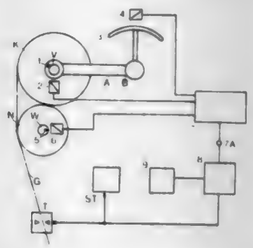
Hansruedi Stutz, Dietlikon, and Karl Lapp, Zürich, both of Switzerland, assignors to Loepfe Brothers Limited, Wetzikon, Switzerland

Filed Nov. 29, 1982, Ser. No. 445,442
Claims priority, application Switzerland, Dec. 4, 1981, 7758/81
Int. Cl.³ G01B *19/04*
U.S. Cl. 33—129 **11 Claims**

1. A method for determining the length of a yarn wound upon a cross-wound package at a winding apparatus with the aid of a friction drive by means of a grooved drum, comprising the steps of:

continuously measuring during the winding operation in successive time intervals the slip governed by the ratio of the circumferential velocities of the grooved drum and the cross-wound package;

determining therefrom a measured magnitude of the slip; and



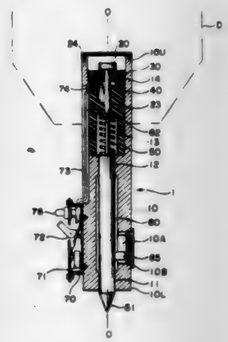
undertaking with aid of the measured magnitude of the slip a correction of the yarn length determined during the momentary successive intervals without taking into account the slip.

4,447,956

CENTERING DEVICE

Hun H. Chung, No. 98-13, Tung Yang Rd., Fon Yuan City, Taiwan

Filed Aug. 26, 1982, Ser. No. 411,874
Int. Cl.³ G01B *5/25*
U.S. Cl. 33—172 D **1 Claim**



1. A centering device comprising:

(a) a centering pointer having:

a cylindrical, hollow metallic holder having a longitudinal center axis and two ends and being adapted to be coaxially detachably mounted onto the spindle of a manufacturing machine;

a metallic needle member slidably held within said holder and having a pointed lower end extending out of one end of said holder and an upper end disposed within said holder, and a stopper adapted to limit the axial movement of said needle member with respect to said holder, said needle member being in sliding contact with an inner wall of said holder;

a spring means to urge said needle member towards the said lower end of said holder;

a probe member coaxially slidably held within said holder to correspond with the upper end of said needle member, said probe member being electrically conductive and electrically insulated from said holder;

a resilient, metallic contact member adapted to fricitonally restrict the movement of said probe member; an elastic cap for covering the upper end of said holder,

a visual indicator means comprising an indicator lamp, a

dry battery a switch and an electric cord connecting said switch and said resilient contact member so arranged that with said switch turned on said indicator lamp is caused to be lit when the upper end of said needle member comes into contact with said probe member; and

(b) a truncated cylindrical centering block provided with a cylindrical surface having a center axis, and an L-shaped cutaway having two planar surfaces forming a 90 degree angle therebetween, at least one of said surface passing through said center axis;

said centering block adapted to be mounted on an article having a vertical planar surface with one surface abutting said vertical planar surface of said article to be aligned with the center axis of said centering pointer, said alignment being attained by causing said needle member of said centering pointer to move axially by moving said centering block with said article in a direction perpendicular to the center axis of said centering pointer so that said lower end of said needle member contacts and moves along said cylindrical surface with upward movement of said needle member causing said probe member to move to and remain at a position where said needle member comes into contact therewith and moves apart therefrom to activate said visual indicator means which thereby indicates that the center axis of said centering pointer has been aligned with the center axis of said centering block.

4,447,957

ROLL DIAMETER SENSING DEVICE

Roberto Cavazza, Pianoro, Italy, assignor to SASIB S.p.A., Bologna, Italy

Filed Jul. 27, 1982, Ser. No. 402,340
Claims priority, application Italy, Jul. 28, 1981, 12596 A/81
Int. Cl.³ G01B *5/10*
U.S. Cl. 33—172 F **6 Claims**

1. A device for sensing the outer diameter of a roll of web upon unwinding of the said web from the said roll for the actuation of a control member when the diameter of the roll has been reduced to a predetermined minimum diameter, comprising a follower arm capable of swinging movement to-and-fro in the direction of the axis of the roll around a fixed axis and urged in the direction of the said roll axis, a control member arranged in the path of the swinging movement of the said follower arm, said follower arm carrying a feeler element intended to bear against the circumferential surface of the web roll, said feeler element being constructed as a gauging fork or snap gauge having a pair of arms which are spaced a predetermined distance apart, in such a manner that the clearance between the said two arms corresponds to the predetermined minimum diameter of the roll and that when said two arms swing over the roll after its diameter has, due to unwinding of the web, reached said minimum diameter, said follower arm acts on said control member.

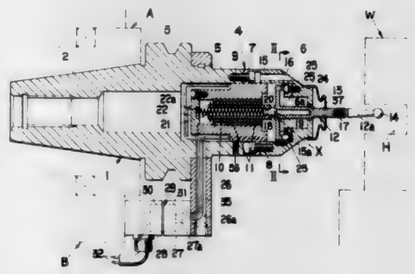
4,447,958

TOUCH SENSOR

Yuzuru Tanaka, Higashiosaka, Japan, assignor to Daishowa Seiki Co., Ltd., Osaka, Japan

Filed Mar. 1, 1982, Ser. No. 353,265
Claims priority, application Japan, Mar. 18, 1981, 56-38899
Int. Cl.³ G01B *7/00*
U.S. Cl. 33—174 L **10 Claims**

1. A touch sensor comprising: a holder; a casing intergrally connected to the holder; a plunger and sensor rod disposed coaxially in the casing; a contact at one end of the sensor rod and projecting from the casing; a radial flange integrally connected to the other end of the sensor rod; means mounting the plunger comprising slide ball bearings to enable the plunger to move freely in its axial direction and means biasing the plunger towards the sensor rod; a universal joint between the plunger and the other end of the sensor rod; and means fixed on the casing and in engagement with a peripheral portion of the



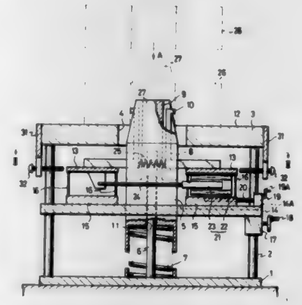
flange for producing a signal representative of the movement of the contact.

4,447,959

INSTRUMENT FOR MEASURING INTERNAL DIMENSIONS

Teruo Watanabe, and Masaaki Ishikawa, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,358
Claims priority, application Japan, Jun. 19, 1981, 56-95604
Int. Cl.³ G01B *5/12, 7/12*
U.S. Cl. 33—178 E **12 Claims**



1. An instrument for measuring an internal dimension of a workpiece, comprising:

a mount having a planar upper surface adapted to support a workpiece thereon, said mount having an upright opening which extends therethrough and penetrates said planar upper surface;

an elongated, vertically movable, workpiece positioning member extending upwardly through said opening in said mount, said positioning member having a longitudinal axis which is perpendicular to said planar upper surface, said positioning member having an upwardly tapering upper end portion, and means supporting said workpiece positioning member for vertical movement relative to said mount;

a pair of upright measuring elements disposed on opposite sides of said workpiece positioning member and means supporting said measuring elements for horizontal movement toward and away from each other, said measuring elements extending upwardly through said opening and having a pair of measuring probes on the upper ends of said measuring elements respectively, said probes being positioned to extend outwardly in opposite directions from said tapered upper end of said positioning member when said workpiece is in contact with said planar upper surface and an internal dimension measurement of said workpiece is effected, such that said probes contact with said workpiece, whereby the distance between said probes indicates said internal dimension of said workpiece; and

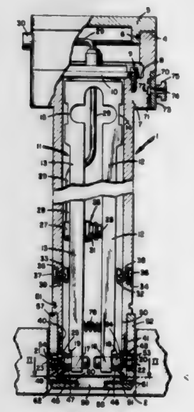
a displacement detecting device for detecting the distance between said measuring probes.

4,447,960

PLUG GAUGE FOR CHECKING DIMENSIONS OF BORES OF MECHANICAL PARTS

Guido Golinelli, Bologna, and Narciso Selleri, Monteveglio, both of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Apr. 6, 1982, Ser. No. 366,132
Claims priority, application Italy, Apr. 30, 1981, 3417 A/81
Int. Cl.³ G01B *7/12*
U.S. Cl. 33—178 E **15 Claims**



1. A plug gauge according to claim 1, wherein said sealing means include at least for checking diameters of bores of mechanical parts, comprising an arm-set, the arm-set including two movable arms, two feelers adapted to touch the surface of a bore to be checked, two connective devices for connecting each feeler to a relevant movable arm, and transducer means associated with the movable arms for providing signals indicative of the diameter of the bore; and a protective device including a hollow nosepiece adapted for entering the bore, the nosepiece having two opposite openings for the passage of the connective devices, a hollow casing located, at least partially, inside the nosepiece and having two holes in correspondence with the nosepiece openings; and a gasket having first portions coupled to the hollow casing, second portions fixed to the connective devices, and third resilient portions connecting the first and the second portions, the gasket being arranged inside the nosepiece and adapted to provide sealing between the holes of the hollow casing and the connective devices, while allowing the displacements of the connective devices and the feelers.

4,447,961

UNIVERSAL BENCH FOR THE ASSEMBLY, TESTING AND REPAIR OF MOTOR VEHICLES

Claude R. Valat, 139 Boulevard Murat, 75016 Paris, France

PCT No. PCT/FR80/00045, 371 Date Nov. 26, 1980, 102(e) Date Nov. 26, 1980, PCT Pub. No. WO80/01998, PCT Pub. Date Oct. 2, 1980
PCT Filed Mar. 26, 1980, Ser. No. 227,093
Claims priority, application France, Mar. 26, 1979, 79 07506; Aug. 24, 1979, 79 21327
Int. Cl.³ G01B *3/38, 5/14*
U.S. Cl. 33—180 AT **5 Claims**

1. A universal bench for the assembly, checking and repair of damages vehicle bodies and chassis comprising:

(a) a frame (1) composed of

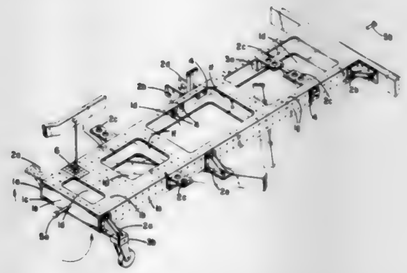
two end transverse bulkheads (1*e*) forming the ends of the frame,

a plurality of transverse reinforcement bulkheads (1*f*) disposed between said two end transverse bulkheads (1*e*),

two steel longitudinal beams (1*a*) joined together by said transverse bulkheads (1*e*),

two steel plates (1*b*, 1*c*), respectively superior and inferior, having open spaces (1*d*) and constituting the two main faces of the frame, said steel plates being welded on said longitudinal beams (1*a*) and transverse bulkheads (1*e*) so as to form an integral box particularly rigid in torsion,

(b) two removable pivoting shafts (5*a*, 5*b*) supported in two holes provided in the center of each of the end bulkheads (1*e*) of the frame, in such a position that the axis of the two shafts (5*a*, 5*b*) corresponds to the longitudinal axis of the frame (1), so as to form a turning arrangement for tipping over the frame,



(c) holes (1*g*) provided in said steel plates (1*b*, 1*c*) and longitudinal beams (1*a*) of the frame, the drilling of said holes in the two longitudinal beams and at least one of the two steel plates being in the form of a square grid pattern;

angle brackets (2) composed of

(1) two perpendicular planar elements (2*f*, 2*g*) reinforced by

(2) two triangular and parallel shoulder plates (2*h*) which are perpendicular to said planar elements, and

(3) a plurality of holes (2*i*) provided in said two perpendicular planar elements (2*f*, 2*g*) according to a square grid pattern similar to the hole pattern provided in said two longitudinal beams (1*a*) and at least one of the two steel plates (1*b*, 1*c*) of the frame (1), and in such a position that when said angle bracket (2) is fixed onto a side of the frame (1), with one of the two planar elements (2*f*, 2*g*) adjacent to said side, the surface of the other planar element will be exactly flush with a surface of the frame (1).

4,447,962

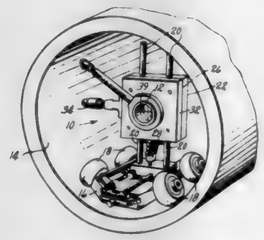
ADJUSTABLE BORE TARGET AND GAGE

Joseph J. Grosberg, Oxford, Conn., assignor to USM Corporation, Farmington, Conn.

Filed May 24, 1982, Ser. No. 381,357
Int. Cl.³ G01C *15/00*
U.S. Cl. 33—286 **7 Claims**

1. A device for aligning a gage with the axis of a bore comprising a carriage having four points of engagement adapted to move along one side of the internal cylindrical surface of the bore in directions parallel to the bore axis, a gage positioning unit mounted on the carriage for movement therewith and including two crossed stages for adjustment in crossed direc-

tions normal to the bore axis, means mounting the gage on one of the stages for rotation on an axis parallel to the bore axis, the



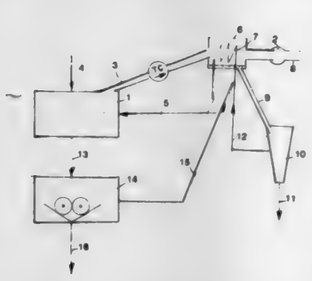
gage being engageable with the bore surface as it is rotated for determining alignment of the gage axis with the bore axis.

4,447,963

METHOD FOR PRODUCING A FUEL FROM SOLID BITUMINOUS AND/OR LIGNOCELLULOSIC MATERIAL

Stig A. Petersson, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Feb. 19, 1982, Ser. No. 350,244
Claims priority, application Sweden, Mar. 13, 1981, 8101623
Int. Cl.³ F26B *3/00, 7/00*; C10L *5/00*
U.S. Cl. 34—12 **6 Claims**



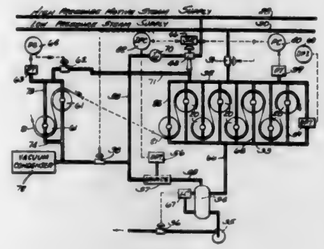
1. A method for producing fuel from solid lignocellulosic material, comprising charging said material to a closed vessel together with a substantially liquid product based on hydrocarbon; maintaining in said vessel a pressure of 12 to 20 kilo Pascal; said hydrocarbon liquid product having a higher boiling point than water and having a temperature of above 60° C., said temperature further being at least 30° C. above the temperature of the water vapour related to the actual pressure, removing the material and liquid hydrocarbon product from the vessel, passing said material between rolls to separate liquid hydrocarbon product from said material, over-blowing said material with air to remove substantial remaining contents of said hydrocarbon product; removing water vapour from said material, thermo compressing said removed water vapour to increase the pressure to 101 kilo Pascal and its temperature to about 320° C., and heat exchanging an ingoing quantity of liquid hydrocarbon product with said compressed and heated vapours to heat said liquid hydrocarbon product to a temperature as given.

4,447,964

DRYER DRAINAGE BY RECIRCULATION WITH PRIMARY AND SECONDARY DRYERS

Thomas A. Gardner, 513 Clark St., Neenah, Wis. 54956

Filed Nov. 23, 1981, Ser. No. 324,190
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—16 **9 Claims**



1. In a steam dryer system for drying a moving web including a primary group of rotatable drying drums in contact with the web; primary steam inlet conduits for supplying steam at a first pressure to said primary drums; primary steam outlet conduits for exhausting blow-through steam, condensate, and noncondensible gases therefrom at a second pressure lower than the first pressure, the noncondensible gases being transported by the blow-through steam; and means for separating said condensate and said blow-through steam, an improvement for directing substantially all of said blow-through steam and noncondensible gases at the first pressure for further drying the web comprising:

a secondary group of rotatable drying drums in contact with the web and having secondary steam inlet conduits and secondary steam outlet conduits for exhausing blow-through steam condensate, and noncondensible gases at a substantial negative pressure, a thermocompressor for recompressing the blow-through steam and noncondensible gases to the first pressure; conduit means for directing the blow-through steam from the separating means to the thermocompressor; velocity pressure control means communicating with the conduit means and the steam jet compressor for maintaining a constant velocity pressure at the primary steam outlet conduits; and flow dividing means for dividing the output from said compressor into a first stream re-entering said primary inlet conduits and a second stream supplying the secondary steam inlet conduits for the secondary group of drying drums so that the primary group of dryers may be operated at low pressure, and so that a selected ratio of blow-through steam to normal rate of condensation in the primary dryers is maintained at a sufficiently low pressure to provide stable control and without wasting steam by bleeding at any operable pressure.

4,447,965

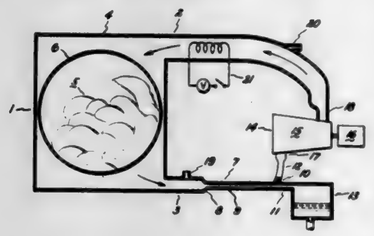
PROCESS AND APPARATUS FOR DRYING WITH LATENT HEAT RECOVERY

Steven C. Bray, Chillicothe, Ill., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 156,337, Jun. 4, 1980, abandoned. This application Nov. 20, 1981, Ser. No. 323,202
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—27 **18 Claims**

1. A drying process in which liquid is continuously extracted from an article as a vapor by contacting the article in a drying chamber with a drying fluid supplied to an inlet of said chamber at a temperature in excess of the liquid vaporization temperature and is removed from said chamber in an effluent mixture with said drying fluid, and in which the drying fluid in said effluent mixture is recycled to the drying chamber inlet by:

(a) directing said effluent mixture to a flow accelerating means;
(b) accelerating said effluent mixture in said flow accelerating means to a velocity less than Mach 1 in order to effect the condensation of at least a portion of said vapor;
(c) directing the effluent mixture from said flow accelerating means to a liquid extracting means;



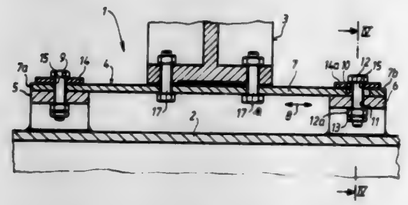
(d) effecting the extraction in said liquid extracting means of condensed vapor from said effluent mixture;
(e) directing the resultant effluent mixture from said liquid extracting means to a compressor means;
(f) effecting a temperature and pressure increase on said resultant effluent mixture in said compressor means; and
(g) returning said resultant effluent mixture from said compressor means to said drying chamber inlet.

4,447,966

ROTARY DRUM

Hans Mollenkopf, Beckum; Jürgen Wurr, and Reinhard Körting, both of Ennigerloh, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 402,058
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132578
Int. Cl.³ F26B *11/02*
U.S. Cl. 34—108 **11 Claims**



1. In a rotary drum having a toothed rim mounted on the drum and supported at a number of points on the periphery of the drum by means of a bridge member having two axially spaced clips fixed to the drum and a cross plate spanning the clips and radially spaced from the drum, the improvement wherein the cross plate is fixed to one clip and connected to the other clip for sliding movement relative thereto axially of said drum.

4,447,967

SHOE WITH ITS VAMP ZONALLY COVERED WITH INJECTED PLASTICS MATERIAL SECURELY BONDED TO THE FABRIC

Luigi Zaino, Mortara (Pavia), Italy, assignor to Nouva Zarine S.p.A. Construzione Macchine E Stampi Per Calzature, Italy

Filed Mar. 24, 1982, Ser. No. 361,494
Claims priority, application Italy, Apr. 23, 1981, 21560/81[U]
Int. Cl.³ A43B *23/00, 1/14*
U.S. Cl. 36—45 **2 Claims**



1. In footwear of the shoe type including a fabric sock to which a reinforcing plastic structure is connected, the improvement comprising:

said fabric sock including a fabric base part and at least one fabric lateral part forming an upper of the shoe, said base part being formed of a fabric which is less dense than the fabric forming the shoe upper; and

said reinforcing plastic structure including a shaped grid-like portion formed by mutually intersecting ribs which penetrate through said less dense fabric of said sock base part into the inside of said sock from its outside, said grid-like portion constituting a support for an insole.

4,447,968

MULTIDIRECTIONAL DYNAMIC FITTING SYSTEM FOR SPORT SHOE

Richard G. Spademan, 130 Country Club Dr. #30, Incline Village, Nev. 89450

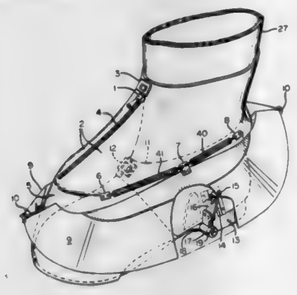
Filed Jul. 16, 1981, Ser. No. 283,862
Int. Cl.³ A43B *23/02, 5/04*
U.S. Cl. 36—109 **45 Claims**



1. Apparatus for increasing the tightness of the fit of a shoe worn on the foot of a lower extremity when the foot moves relative to a remainder of the lower extremity away from a normal position of the foot, the apparatus comprising means for engaging a portion of the foot with a given tightness when the foot is in the normal position; and actuating means responsive to relative movement of the foot with respect to the lower

extremity in first and second directions from the normal position and operatively coupled with the engaging means for increasing the tightness of the engaging means on the foot when the foot is in a position other than the normal position.

4,447,969
BOOT FOR WALKING ON SOFT MATERIALS
James R. Johnson, 4361 Ivory Way NE., Salem, Oreg. 97301
Filed Feb. 12, 1982, Ser. No. 348,336
Int. Cl.[3] A43B *5/04*
U.S. Cl. 36—116 4 Claims



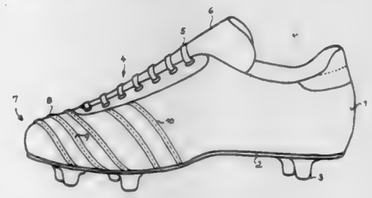
1. A boot for walking on soft materials comprising:
a. means for engaging and disengaging a boot or foot;
b. an axle and/or stirrup;
c. a lower bearing pin, a lower stop pin, a link, and an upper bearing block connecting the axle and/or stirrup to hinged wings;
d. means to prevent fouling.

4,447,970
SKI BOOT
Marc Delery, Caluire, France, assignor to Compagnie Francaise d'Articles de Sport, France
Filed Jan. 20, 1982, Ser. No. 341,077
Claims priority, application France, Jan. 20, 1981, 81 01109
Int. Cl.[3] A43B *5/04*
U.S. Cl. 36—121 5 Claims



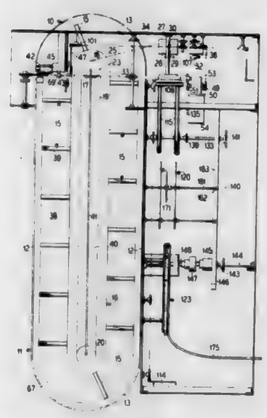
1. An improved ski boot comprising a shell to receive the foot and a rear collar hinging on the shell snugly to fit with the shell,
said rear collar hinged on the shell at the level of the malleoluses of the wearer of the boot, and comprising on its rear side a raised horizontally molding pointing toward the interior of the boot, the shell comprising at its rear a compressible element located in the chamber housing defined with the bottom of the collar, said compressible element cooperating with the collar where said collar moves on the shell,
wherein:
the shell comprises at its rear a raised horizontal molding pointing outward and parallel to the molding pointing inward, for the purpose of limiting the motion of the collar on the shell, said molding pointing outward being located in an horizontal plane comprising the malleoluses of the wearer.

4,447,971
FOOTBALL BOOT
Alfred Bente, Herzogenaurach, Fed. Rep. of Germany, assignor to Messrs. Adidas Sportschuhfabriken Adi Dassler AG, Fed. Rep. of Germany
Filed Feb. 19, 1982, Ser. No. 350,157
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 8105234[U]
Int. Cl.[3] A43B *5/02*
U.S. Cl. 36—133 11 Claims



1. A football boot comprising friction-enhancing projections on the outside of the upper portion of the boot, to enhance frictional contact with a ball, wherein the projections are formed by strips of leather or the like material, which extend transversely over the instep of the upper portion of the boot and which are joined to the upper portion of the boot in such a way that at least the forward edge regions thereof can lift away from the upper portion of the boot.

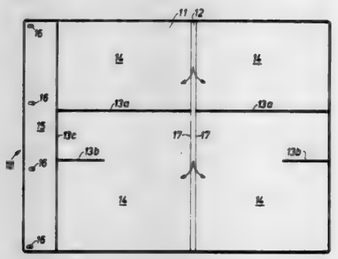
4,447,972
LAUNDRY SPREADER, COUNTER, AND FOLDER
Stanley G. McCabe, 1318 Grinell, Lubbock, Tex. 79403
Filed Dec. 15, 1981, Ser. No. 330,941
Int. Cl.[3] D06C *3/02*
U.S. Cl. 38—12 17 Claims



1. A spreader, counter, folder and stacker for rough laundered articles comprising:
a receiving bin for the laundered articles having a pick up station,
means progressing the laundered articles about said bin at least to said pick up station,

gripper means at said pick up station, gripping an article and elevating the article to an elevated discharge station,
means at said elevated discharge station for releasing the article gripped by said gripper means,
catch means catching a released article,
brush means adjacent said catch means,
said catch means drawing the article past said brush means, to effect spreading of the article,
a spreader bar at the opposite side of said bin from said catch means and adapted to have an article spread therealong and deposited thereon by said catch means,
means brushing the article as moved by said catch means along said spreader bar, to be deposited thereon, said means brushing the article in position to have the article drawn therealong by said spreader bar after deposit thereon by said catch means,
a counter and stacking conveyor in series disposed beneath the path of travel of said spreader bar and adapted to have the article draped thereover during operation of said counter and have the article draped on said brush conveyor to be successively stacked on said brush conveyor, and
means actuated by said counter effecting a drive to said brush conveyor upon the stacking of a preselected group of articles thereon.

4,447,973
ALBUM LEAF WITH POCKETS FOR INSERTION OF PHOTOGRAPHIC PAPER PRINTS AND SIMILAR ARTICLES
Hans Wihlke, Strömkarlsvägen 57, S-161 38 Bromma, Sweden
Filed Jun. 25, 1979, Ser. No. 51,859
Claims priority, application Sweden, Jun. 30, 1978, 7807440
Int. Cl.[3] G09F *1/10*
U.S. Cl. 40—159 9 Claims



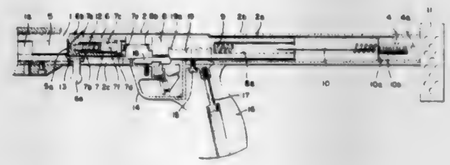
1. An album leaf for mounting of a photographic paper print or a similar planar rectangular article comprising:
at least two superimposed layers being joined together along peripheral edges thereof, the outer layer being transparent;
at least one pocket means for inserting the print or the similar rectangular article therein;
frame means for defining said at least one pocket means; and
restriction means, extending partially into said at least one pocket means, for limiting selectable mounting therein of the print or the similar rectangular article to one of a standing upright position and a horizontally oriented position;
said restriction means extends a distance corresponding substantially to a difference between lengths on a long side and on a short side of the print or the similar rectangular article.

4,447,974
INFLATABLE BOTTLE REPLICA
Robert K. Vicino, 8847 Complex Dr., San Diego, Calif. 92123; Dale L. Cooper; Lauren M. Pembleton, both of 6140 Jackson Dr., San Diego, Calif. 92041, and Constance C. Allen, 728 Robinson Ave., San Diego, Calif. 92103
Filed Aug. 2, 1982, Ser. No. 404,084
Int. Cl.[3] G09F *1/08*
U.S. Cl. 40—538 10 Claims



1. A giant inflatable generally cylindrical body simulating a product with distinctive trade dress comprising:
(a) a generally cylindrical external envelope dimensioned and shaped to simulate the external appearance of said body when inflated; and to define an internal chamber, in the absence of any rigid supporting element;
(b) a plurality of generally longitudinally extended ribs and furrows defined on the surface of said envelope
(c) within said chamber a plurality of interconnected shaping means having outer ends attached along said furrows said shaping means having their inner ends joined together along a generally longitudinal axis in the center of said chamber to create an inward radial restrain along said furrows while said ribs billow out under internal inflating fluid pressure applied against the inner face of said envelope.

4,447,975
GUN WITH REDUCED RECOIL
Albert V. Ljutic, 602 N. 52nd Ave., Yakima, Wash. 98902
Filed Mar. 18, 1981, Ser. No. 244,979
Int. Cl.[3] F41C *11/00*
U.S. Cl. 42—16 13 Claims



1. A gun comprising,
a barrel with a rear cartridge receiving chamber,
a rearwardly extending receiver unit connected to the barrel,
a bolt mounted in the receiver unit for movement between a forward locking position adjoining said chamber and a rearward retracted position, said receiver unit being adapted to receive a flanged cartridge through a loading zone for loading into said chamber when the bolt is in retracted position, said bolt being lockable when in said forward locking position to hold said cartridge in said chamber, said bolt having a defined longitudinal movement when locked in said forward locking position to provide a headspace zone sufficient to accommodate various thicknesses of cartridge flanges,
firing pin means slidably mounted in said bolt for movement

between a firing position in which it projects forwardly beyond the bolt and a retracted position, said firing pin means engaging a rearwardly facing portion of said bolt when in firing position,

hammer means slidably mounted in the receiver unit for longitudinal movement therein between a forward engagement position engaging said firing pin means and a retracted position clear of said loading zone, said hammer means being arranged to engage the rear end of the firing pin means and drive said firing pin means into engagement with said rearwardly facing portion of said bolt when in said forward engagement position and to retract responsive to retraction of the bolt,

spring means yieldingly resisting retraction of the hammer means, and

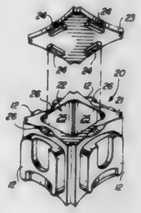
trigger means for holding the hammer means in retracted position and for selectively releasing the hammer means to engage and drive the firing pin means forwardly into said firing position and to responsively drive the bolt forwardly through said headspace zone unoccupied by the cartridge flange and into engagement with the cartridge flange, the combined forward movement of said hammer means, firing pin means and bolt providing a forward thrust force countering recoil thrust upon firing of a cartridge in said chamber by the firing pin means.

4,447,976

CARTRIDGE MAGAZINE MOUNT

LaDreau V. Cooper, 2102 W. Coolbrook Ave., Phoenix, Ariz. 85023

Filed May 17, 1982, Ser. No. 378,530
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—49 A **5 Claims**



1. Means for mounting a plurality of cartridge magazines such that when one magazine is in use in a weapon it may be readily removed from the weapon when its cartridges are spent while presenting a fresh magazine for insertion into the weapon until all cartridges are spent comprising:

base means independent from and non-integral with a cartridge magazine and having a plurality of mounting surfaces thereon; and

coupling means affixed to each of at least four of said plurality of mounting surfaces for coupling a conventional commercially available cartridge magazine to each of at least said four of said plurality of mounting surfaces of said base means.

4,447,977

MULTI-FACETED FIRING DEVICE

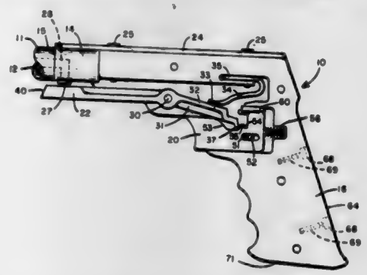
Steven A. Holmgren, 2150 Wilson Ave., Apt. #326, St. Paul, Minn. 55119

Filed Feb. 1, 1982, Ser. No. 344,762
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—51 **7 Claims**

1. A firing device for a muzzle-loading weapon comprising a barrel and a stock, said barrel having a central bore and said stock including a frame, a breech block adapted to receive said barrel, and a trigger, a trigger spring, a hammer, and a hammer spring below said barrel;

said breech block including a right-angle bore communicating with the bore of said barrel, and further having a downward nipple, communicating with said right-angle bore, for impacting by a percussion cap to ignite a charge of powder in said breech;

said hammer having first and second spaced ends and being pivotally mounted in said frame at a site between said ends for pivotal movement between an "armed" position and a "fired" position, said first end being configured for manual engagement to move said hammer into said "armed" position, and including a cavity apposed to said breech for receiving a percussion cap, disposed on said nipple when said hammer moves to said "fired" position;



said hammer spring engaging said second end of said hammer for urging said hammer into said "fired" position;

said trigger being mounted in said frame, in proximity to said second end of said hammer, for sliding movement, aligned with said barrel, and having a first surface for engaging said second end of said hammer to maintain said hammer in said "armed" position;

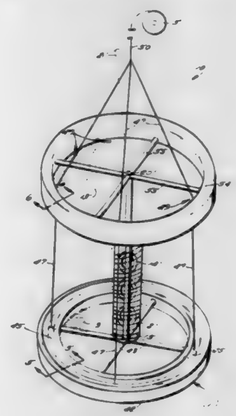
and said trigger spring urging said trigger toward said second end of said hammer.

4,447,978

REACTION GILL NET

Thomas E. Robison, 3661 Airport Blvd. - Apt. 134, Mobile, Ala. 36608

Division of Ser. No. 197,746, Oct. 16, 1980, Pat. No. 4,373,286. This application Aug. 19, 1982, Ser. No. 409,353
Int. Cl.³ A01K *69/10, 74/00*
U.S. Cl. 43—10 **3 Claims**



1. A gill net assembly comprising

a frame having open sides, an open top, and an open bottom;

a bait-enclosing structure mounted to a central portion of said frame;

a first net having openings formed therein large enough to allow small fish to insert their heads through the openings in an attempt to feed on bait in the bait-enclosing structure and catch their gills on the net if withdrawal from the opening is attempted;

means for mounting said first net to said from adjacent a central portion thereof wherein said first net encloses the sides of said frame and surrounding said bait-enclosing structure;

a second net, said second net having openings large enough to allow small fish which would be caught by said first net to pass completely therethrough, but small enough to allow larger fish to insert their heads through said second net openings and catch their gills on the second net if withdrawal from the openings is attempted;

means for mounting said second net to said frame and substantially concentrically with said first net, and radially outwardly therefrom, and enclosing the sides of said frame; and

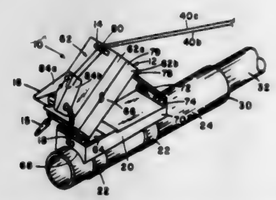
---

4,447,979

FISH STRIKE ALARM

F. Hoyt Taylor, 420 Pebble Beach, SE., Grand Rapids, Mich. 49506

Continuation-in-part of Ser. No. 409,152, Aug. 18, 1982, abandoned. This application Mar. 10, 1983, Ser. No. 474,181
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 **26 Claims**



1. A fish strike alarm for a fishing rod and reel, the rod having a handle end on which the reel is mounted and a free end, the rod and reel together supporting a fish line, said alarm comprising:

a housing operably connectable to the rod opposite the reel from the free end;

clamping means supported on said housing for releasably securing the line extending from the reel;

spring-loaded line switch means supported by said housing and engageable by the line for indicating whether the line portion between said clamping means and the rod free end is at a first tension or at a second higher tension;

selector switch means supported by said housing and including first and second states; and

indicator means responsive to both said line switch means and said selector switch means for providing an indication that the line portion is at said first tension when said selector switch means is in said first state and that the line portion is at said second tension when said selector switch means is in said second state.

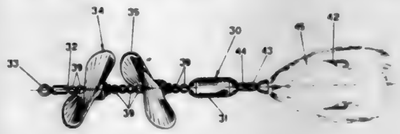
4,447,980

SPINNER FOR FISHING LURE, AND FISHING LURE HAVING SPINNER MOUNTED THEREON

Ronald M. Bassett, 2107 Summerdale, Chicago, Ill. 60625

Filed Apr. 19, 1982, Ser. No. 369,930
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.14 **14 Claims**

10. A spinner adapted for being rotatably mounted on the shaft of a fishing lure, said spinner comprising an elongate strip of material having a single concave surface and a single convex surface with the ends of said strip twisted oppositely with respect to each other, and a bearing member centrally mounted on said elongate strip having an elongate aperture of cylindrical surface adapted to be rotatably journalled over said shaft, the axis of said aperture being disposed at an acute angle with respect to and substantially intersecting the longitudinal center line of said elongate strip, whereby one end of said spinner is



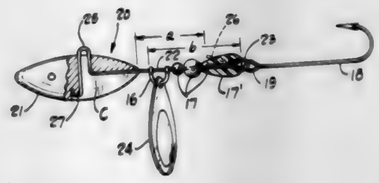
adapted to be disposed in a forward direction with respect to said lure and the other end of said spinner is adapted to be disposed in a rearward direction thereto.

4,447,981

LEVEL-TRAVELLING FISHING LURE

Paul E. Bauer, 20204 Indian Hollow Rd., Wellington, Ohio 44090

Continuation-in-part of Ser. No. 192,649, Oct. 10, 1980, abandoned. This application Jun. 16, 1982, Ser. No. 388,887
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.21 **2 Claims**



1. An artifical lure to attract fish, comprising:

(a) an elongate minnow-shaped body formed from a heavier-than-water material, said body having a T-shaped cavity therewithin, and a head and tail,

(b) a line eyelet protruding above said body from about the center of mass thereof for attaching a fishing line,

(c) a bent wire shaft having a generally T-shaped end portion the arms of which are said line eyelet and a detent means which holds the shaft in said cavity, said wire shaft being removably inserted within said cavity, said shaft extending rearwardly from said body's tail portion in generally horizontal alignment with the longitudinal axis of said body and terminating in a hook-attaching means, said line eyelet being integral with said wire shaft,

(d) a spinner blade rotatably disposed on said wire shaft, adjacent said tail,

(e) a fish hook attached to said hook-attaching means, and,

(f) spacer means secured to said wire shaft for spacing said blade from said hook.

4,447,982

BUBBLE-BLOWING APPARATUS

Roger B. Gushea, 142 Annetta St., Syracuse, N.Y. 13207

Filed Jul. 26, 1982, Ser. No. 401,669
Int. Cl.³ A63H *33/28*
U.S. Cl. 46—8 **3 Claims**

1. Bubble-blowing apparatus comprising in combination:

(a) a fan blade rotatable to emit an air stream along a predetermined path;

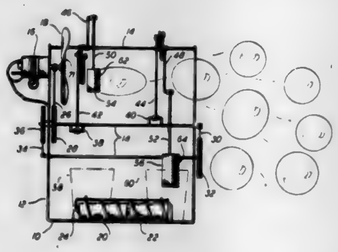
(b) at least one dip ring adapted to carry a quantity of bubble-forming liquid when immersed therein and removed therefrom;

(c) an arm carrying said dip ring at a first point and mounted for movement about a first axis passing through said arm at a second point;

(d) means rotatable in one direction connected to said arm

for imparting reciprocating movement to said arm about said axis to move said dip ring back and forth between a first position in said predetermined path and a second position below said first position; and

(e) means including a single motor for imparting rotation to both said fan blade and said rotatable means;



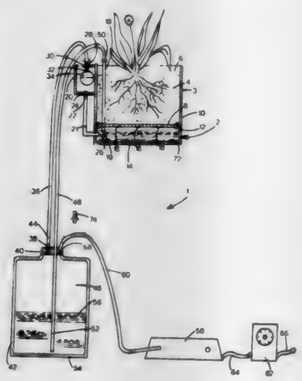
(f) said fan blade being mounted upon, and rotated directly by, the output shaft of said motor, and said rotatable means including at least one belt and pulley connected for transferring rotation of said motor output shaft to additional rotating structure intermediate of said pulley and said arm.

4,447,983

PLANT IRRIGATION SYSTEM

Junji Shinada, 20 N. Ellesmere Ave., Burnaby, B. C., Canada V5B 1J8

Filed Jan. 3, 1983, Ser. No. 455,204
Int. Cl.³ A01G *29/00*
U.S. Cl. 47—48.5 **11 Claims**



1. An apparatus for irrigating plants, the apparatus comprising a planter having a container for a growing medium; a liquid reservoir below the container; openings between the reservoir and the container, permitting a flow of liquid from the reservoir to the container; a filler conduit communicating with the reservoir; a float chamber near the top of the container; a float chamber conduit extending from the reservoir to the float chamber; a float in the float chamber; a normally closed air valve operatively connected to the float so the float opens the valve when liquid from the reservoir rises in the float chamber;

an air conduit connected to the valve so pressurized air from the air conduit is discharged when the valve opens; and

a closed liquid container normally positioned below the planter, the liquid container having a top, a bottom, and means for connecting the air conduit to the container so an end of the air conduit opposite the air valve communicates with the inside of the liquid container near the top thereof and a liquid conduit communicates with the inside of the container near the bottom thereof, the liquid conduit being connectable to the filler conduit of the planter.

4,447,984

PROCESS FOR OBTAINING IMPROVED YIELDS FROM PLANTS

Michael J. Sampson, 21, The Avenue, Chichester, Sussex, and Neville Hutchings, The Station, Edwinstowe, Mansfield, Notts., both of England

PCT No. PCT/GB80/00155, 371 Date Jun. 8, 1981, 102(e) Date Jun. 8, 1981, PCT Pub. No. WO81/00955, PCT Pub. Date Apr. 16, 1981
PCT Filed Oct. 6, 1980, Ser. No. 270,516
Claims priority, application United Kingdom, Oct. 13, 1979, 7935652; May 2, 1980, 8014695; Jul. 11, 1980, 8022810; Jul. 30, 1980, 8024986; Aug. 12, 1980, 8026246
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **6 Claims**

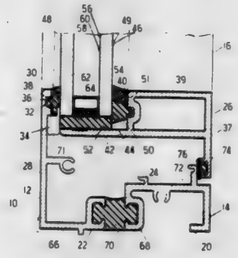
1. A method for reducing or preventing premature release or scattering of seed due to splitting of seed-bearing bodies comprising applying to plants bearing said seed-bearing bodies, not more than fifteen days before harvest, an effective amount of a composition comprising di-1-p-menthene and/or polymeric di-1-p-menthene to provide a semi-permeable coating on said seed-bearing bodies.

4,447,985

WINDOW STRUCTURE

Ronald J. Weber, and Gene T. Pagel, both of Wausau, Wis., assignors to Wausau Metals Corporation, Wausau, Wis.

Filed Jun. 16, 1982, Ser. No. 388,752
Int. Cl.³ E05D *7/00*
U.S. Cl. 49—400 **14 Claims**



1. A window structure (10) having an exterior side (12) and an interior side (14), comprising:

(a) a stationary casing (22) defining the perimeter of the window structure (10) and of a window opening (24);

(b) a movable sash (26) fastened to the stationary casing (22) in hinged relation, having an open position and a closed position in which it closes the window opening (24), the sash (26) having sash frame members (37) defining the perimeter of the sash (26) and of a sash opening (39), surfaces of the sash frame members (37) defining an exteriorly facing mounting surface (40);

(c) an exterior panel (28) located exterior to the sash (26) and forming part of the stationary casing (22), the exterior panel (28) extending over the sash (26) to overlap its periphery;

(d) a gasket (30) fastened to the exterior panel (28) and facing interiorly, generally toward the sash (26);

(e) a window lite (46) mounted in spaced relation to the mounting surface (40) to close the sash opening (39), the window lite (46) having an exterior surface (48) adapted to engage the gasket (30) in sealing relation when the sash (26) is in its closed position and an interior surface (49) facing the mounting surface (40);

(f) a glazing support member (42) extending exteriorly from the mounting surface (40) to cover the edges of the window lite (46);

(g) a glazing channel (44) defined by the window lite interior surface (49), the mounting surface (40), and the adjacent portion of the glazing support member (42), the glazing channel (44) opening toward the sash opening (39); and

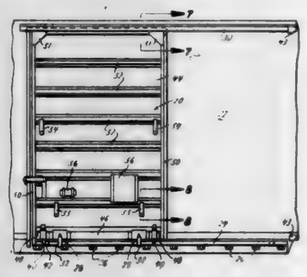
(h) a structural bonding member (54) extending within a selected portion of the glazing channel (44) adjacent to the sash opening (39) and adapted to be inserted into the glazing channel (44) therefrom, structurally engaging the interior surface (49) and the mounting surface (40), to bond the window lite (46) to the sash (26) in supporting relation.

4,447,986

ADJUSTABLE BOXCAR DOOR WITH DOUBLE ROLLER BOGEY TRAVERSE MECHANISM AND METHODS FOR FABRICATING AND INSTALLING SAME

James H. Wilkins, DeSoto, Mo., and Mark Payne, North Little Rock, Ark., assignors to Missouri Pacific Railroad Company, St. Louis, Mo.

Continuation of Ser. No. 117,285, Jan. 31, 1980. This application May 18, 1982, Ser. No. 379,483
Int. Cl.³ E05D *13/02*
U.S. Cl. 49—426 **12 Claims**



1. A rolling type railroad boxcar door assembly for closing a boxcar opening including: a main panel and an adjustable panel, said main panel having a predetermined height slightly less than that of the opening to be covered; the adjustable panel being adapted to be secured to the end of the main panel, the end of the main panel having a flat surface along which the adjustable panel may slide, so that it may be slidably adjustable up and down against the edge of the main panel to combine with the main panel to provide a door that can cover the opening; retaining means to hold the adjustable panel slidably against the main panel during its slidable adjustment prior to its being fixedly secured to the main panel.

4,447,987

ADJUSTABLE THRESHOLD AND SILL ASSEMBLY

Thomas Lesosky, West Bank, Canada, assignor to Decor Doors Manufacturing Ltd., Kelowna, Canada

Filed Mar. 19, 1981, Ser. No. 245,497
Int. Cl.³ E06B *1/70*
U.S. Cl. 49—468 **10 Claims**

6. A threshold and sill assembly, comprising:

(a) a metallic sill having an elongated front, an elongated back, and a top sloping upwardly from the front to the back, the back including:

(i) a vertically disposed back supporting wall;

(ii) a back supporting base extending outwardly from the bottom of said wall;

(iii) an overhang merging along one side with the top of the sill and extending outwardly from the top of said wall over said base;

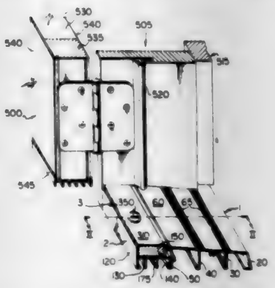
(iv) a lower flange extending upwardly from said base in parallel relationship with said wall so as to form an upwardly facing elongated channel between said lower flange and said wall; and,

(v) an upper flange extending downwardly from said overhang in parallel relationship with said wall so as to form a downwardly facing elongated channel between said upper flange and said wall;

(b) a water resistant, thermally insulating threshold base member generally disposed rearward of said sill and extending longitudinally in parallel relationship therewith, said base member including:

(i) a vertically disposed elongated back supporting wall;

(ii) a horizontally disposed median wall merging with said back supporting wall to divide the back supporting wall into an upper portion above the median wall and a lower portion below the median wall, said median wall



extending forwardly to merge with a supporting flange which extends downwardly to engage said sill in the upwardly facing elongated channel of the sill;

(iii) a vertically disposed inner wall extending upwardly from said median wall and in parallel opposed relationship with the upper portion of said back supporting wall so as to form a longitudinally extending rectangular channel having an open top; and,

(iv) a flange extending forwardly from said inner wall, then upwardly to engage said sill in the downwardly facing elongated channel of the sill; and,

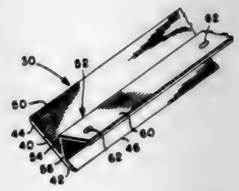
(c) an adjustable threshold member received by the rectangular channel of said threshold base member and adjustably connected therein for upward and downward movement to vary the level of its upper surface above the open top of such channel.

4,447,988

GARAGE DOOR WEATHER SEAL

Richard H. Cole, and Jerry H. Lillie, both of Conneaut, Ohio, assignors to Plycraft Fabricating Corporation, Conneaut, Ohio

Filed Feb. 28, 1983, Ser. No. 470,064
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—485 **14 Claims**



1. A weather seal for a garage door, said seal having a main body portion and a generally L-shape attachment means for attaching said seal to a garage door frame, said L-shape attach-

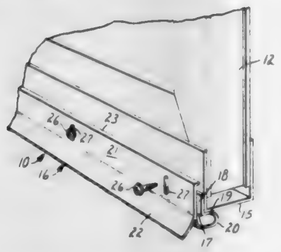
ment means including first and second legs connected with each other and engageable with surfaces of a frame of a garage door which surfaces are generally normal to each other, said main body portion extending outwardly from said first leg at an included angle of less than 90°, and a first sealing lip on the outer edge of said main body portion adapted to form a weather-tight seal with the garage door when closed.

4,447,989

ADJUSTABLE WEATHERSTRIP ASSEMBLY

John J. Mailand, Wyoming Township, Chicago County, and Bruce E. Samuelson, West Lakeland Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 16, 1982, Ser. No. 358,835
Int. Cl.³ E06B 7/16
U.S. Cl. 49—488 **7 Claims**



1. A weatherstrip assembly or use on an door having side and edge surfaces, said assembly comprising:

an integral extrusion of polymeric material comprising a first stiff portion including first and second strip-like parts disposed at right angles to each other to provide a general L-shaped cross section, a second resiliently flexible strip-like portion extending from the edge of said second part opposite said first part, and a third stiff strip-like portion extending from the edge of said second portion opposite said first portion;

said first portion being adapted to be positioned on said door with said first part along the side surface of the door and said second part along the edge surface of the door, and said third portion being adapted to then be positioned in face-to-face contact with the surface of said first part opposite said door and adjusted to a desired position so that said second part and said flexible second portion form a tube-like structure having a sufficient diameter to fill a void space adjacent the edge surface of said door; and

means for attaching said first and third portions to the door with said third portion in said desired position.

4,447,990

MACHINE FOR FINISHING FERRITE MAGNETIC POT CORES

Alexis Nepomiastchy, Paris, and Guy R. F. Pireyre, Montlucon, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Aug. 19, 1981, Ser. No. 294,297
Claims priority, application France, Aug. 22, 1980, 80 18357
Int. Cl.³ B24B 7/00
U.S. Cl. 51—76 R **6 Claims**

1. A machine for finishing magnetic half-pots which have, on the open side, side edges for assembling half-pots together and a center part designed to be machined to create a preset air gap for the pot core assembly, comprising:

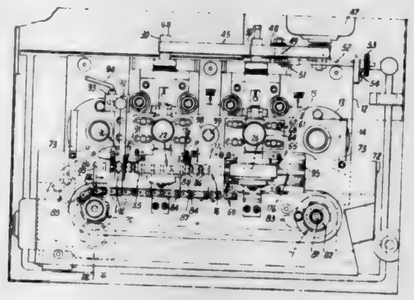
a reference plane supporting the side edges of the half-pots,

at least one grinding wheel projecting through said reference plane in between said side edges,

feed means for feeding said half-pots along said reference plane to said grinding wheel, and

pressure means for pressing the side edges of said half-pots onto the reference plane while said center parts is engaged by each said grinding wheel, said pressure means comprising a flexible elastomeric support wheel opposite each said grinding wheel engaging directly each half-pot to form a yieldable back support for grinding, providing the support force by self-deformation while retaining said side edges of said half-pots in contact with said reference plane and thereby providing precision as to the amounts removed from said center part by grinding,

said feed means comprising feed elements with openings matched to the shape of the half-pots and lamellar in form,



and means for moving said elements freely between said support wheel and said grinding wheel, said means for moving said feed elements comprising a single endless drive chain extending parallel to the direction of travel and in a plane parallel to the reference plane and having extended pins comprising the sole elements on which said feed elements are removably mounted, so as to enable quick replacement of each said feed element, said chain having successive links articulated to each other about axes perpendicular to said reference plane said lamellar feed elements moving along said reference plane, laterally with respect to their respective links and each feed element having a slot and an opening receiving respectively two successive said extended pins.

4,447,991

METHOD FOR GRINDING OR POLISHING CURVED SURFACES OF SOLID BODIES AND APPARATUS FOR CARRYING OUT THIS METHOD

Wolfgang Landgraf; Walter Scharf, both of Zwiesel, and Heinrich Simon, Rabenstein, all of Fed. Rep. of Germany, assignors to Schott-Zwiesel-Glaswerke Aktiengesellschaft, Zwiesel, Fed. Rep. of Germany

Continuation of Ser. No. 204,368, filed as a PCT DE79/00151, Dec. 20, 1979, published as WO80/01261, Jun. 26, 1980 § 102(e), Aug. 18, 1980, abandoned. This application Nov. 24, 1982, Ser. No. 444,186
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855895
Int. Cl.³ B24B 5/00
U.S. Cl. 51—161 **15 Claims**

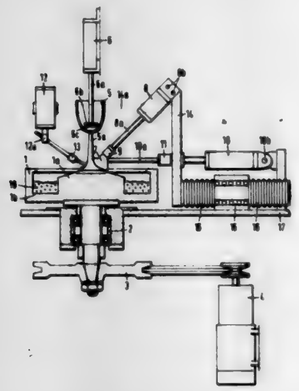
1. Apparatus for removing a step-like ridge from, and for simultaneously grinding, an extended portion of the surface of a substantially rotationally symmetric stem of a glass or ceramic article, which surface is curved both laterally and longitudinally, comprising:

(a) means for rotating the article about the axis of symmetry of said stem, said means including means for securely holding the article as it is rotated;

(b) at least one rigid tool having a rigid, extended work surface curved to complement said lateral and longitudinal curvature of a sector of said extended portion of the surface of said stem for removing the step-like ridge from,

and for simultaneously grinding, said extended portion, the boundary of said work surface defining a sector delimited by: (i) the arc of a first circle intercepted by two radii thereof, (ii) the arc of a second, concentrically situated circle intercepted by said two radii, and (iii) said two radii, the angle subtended by said two radii comprising at least about 100°; and

(c) means operatively connected to said tool for pressing



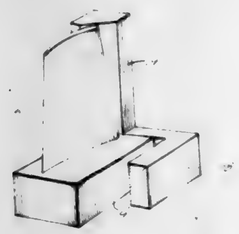
said tool work surface against said extended portion of the surface of said stem, said means for pressing being positioned in a plane extending radially with respect to the axis of rotation of the stem to provide a resultant force in said radial plane sufficient to accomplish the desired ridge removal and grinding when the article is rotated, said means for pressing including elastically displaceable support means for displacing the tool during ridge removal and grinding in response to any asymmetry of said surface.

4,447,992

SHUTTLE FOR A TUMBLING OPERATION

Everett J. Bergquist, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 18, 1981, Ser. No. 303,678
Int. Cl.³ B24B 31/00
U.S. Cl. 51—163.1 **6 Claims**



1. A support for an article such as a compressor blade or vane for a tumbling operation, said blade or vane having a root portion and an airfoil section with leading and trailing edges, such support having:

a base with a recess to receive the root portion of the blade or vane;

clamping means in said base to engage said root portion and hold it in position with the airfoil section projecting therefrom and;

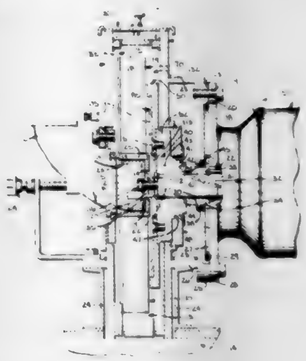
a spar extending from said base and in closely spaced parallel relation to and out of contact with one of said edges, said spar being located only at the end of the airfoil section at said one of said edges and being otherwise completely out of contact with and at a greater spacing from the remainder of the airfoil to form a shield for said edge and to protect said one of said edges from the action of the tumbling material.

4,447,993

ALIGNMENT MEANS FOR CENTRIFUGAL BLASTING WHEEL

Donald A. Laido, N22 W28698 Louis Ave., Pewaukee, Wis. 53072

Filed Apr. 16, 1982, Ser. No. 369,125
Int. Cl.³ B24C 5/06
U.S. Cl. 51—439 **1 Claim**



1. A centrifugal apparatus, comprising

a motor driven shaft providing an annular ridge spaced from the end of said shaft,

a hub journalled on said shaft and connected to rotate with said shaft,

a particulate throwing wheel operatively connected to said hub for rotation therewith,

a hollow vaned impeller connected to said shaft by a threaded bolt and connected to said hub through a centering plate with said centering plate applying an axial force to said hub through said impeller in response to compression provided by said threaded bolt,

a blast wheel housing surrounding said throwing wheel and said impeller,

a stationary control cage fixedly attached to said blast wheel housing and located between said impeller and said throwing wheel, and

an annular sleeve journalled on said shaft between said hub and said ridge and having a first axial end abutting said annular ridge and a second axial end abutting said hub to maintain said hub and interconnected impeller and throwing wheel in precise axially spaced alignment with respect to said annular ridge, means for fixedly connecting said sleeve to said shaft for simultaneous rotation of said sleeve and said shaft.

4,447,994

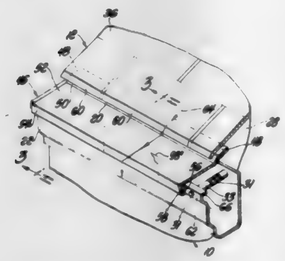
GUTTER CONSTRUCTION AND METHOD

William L. Garneau, 2835 Buick Ave., Pontiac, Mich. 48054

Filed May 26, 1981, Ser. No. 266,662
Int. Cl.³ E04D 13/06
U.S. Cl. 52—11 **3 Claims**

1. A gutter cover, comprising a relatively thin strip of metal, plastic or other suitable weather resistant material, said strip having substantially parallel opposite ends and opposite side edges, said cover being formed along one edge thereof so as to provide a portion adapted to be insertable between the shingles and the sheathing at the lower peripheral edge of a roof and so that a portion of said cover strip may slopingly extend from the roof and beyond the outer edge of a gutter secured to the roof

so that water draining from the roof is prevented from entering the gutter, said cover being formed to accommodate the fall of the gutter with respect to the horizontally level roof edge that



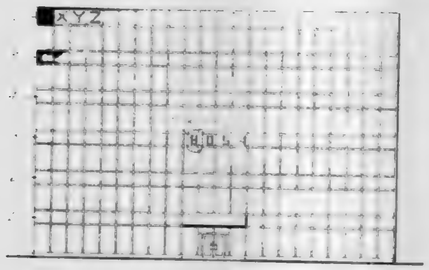
results in a progressively greater slope distance from the roof edge to the outer edge of the gutter from the higher end to the lower end of the gutter.

4,447,995

BUILDING WITH ILLUMINATED SIGN

Junius H. Fulcher, Houston, Tex., assignor to Neal J. Mosely, Houston, Tex., a part interest

Filed Apr. 21, 1982, Ser. No. 370,529
Int. Cl.³ G09F 7/18
U.S. Cl. 52—38 **8 Claims**



1. An office building provided with interiorly located illuminated signs visible when energized and invisible when deenergized, for construction in an area where exterior signs are not permitted legally,

said office building having a glass paneled exterior with transparent or translucent window panels extending from floor to ceiling of each story and a horizontal row of panels of translucent glass positioned adjacent the floor or the ceiling of a single story building or between the top portion of one story and the bottom portion of the next story in a multi-story building, an illuminated sign positioned within said building comprising a plurality of electrically illuminated sign modules aligned linearly, closely adjacent to and behind selected ones of said translucent glass panels adjacent the floor or the ceiling of a single story building or between the top portion of one story and the bottom portion of the next story in a multi-story building,

each of said modules comprising lighting means selectively energized for illumination in the form of any one of a plurality of selected symbols,

said lighting means, when energized, providing light of an intensity sufficient to be seen outside said translucent glass panels but being substantially invisible from the outside when deenergized, and

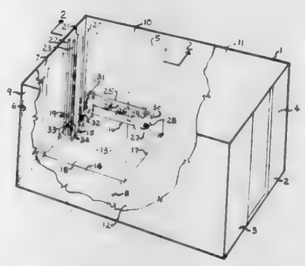
means for selectively energizing said lighting means to produce selected symbols on selected ones of said sign modules.

4,447,996

FACTORY BUILT CONSTRUCTION ASSEMBLY

Edward J. Maurer, Jr., P.O. Box 5880, Austin, Tex. 78763; Hanns U. Baumann, 312 Emerald Bay, Laguna Beach, Calif. 92651, and Herbert E. Watkins, 7803 Pinegreen La., Humble, Tex. 77338

Filed Jun. 8, 1981, Ser. No. 271,802
Int. Cl.³ E04F 17/08
U.S. Cl. 52—79.1 **9 Claims**



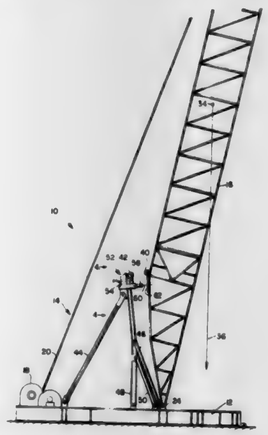
1. A prefabricated building cubicle adapted to receive an interior module, said cubicle comprising: a floor, a ceiling and four walls, said floor having a portion thereof recessed to receive said interior module and to align with the floor of said module, at least one of said walls having plumbing and electrical lines adjacent thereto, said plumbing lines being adapted for connection with said interior module, and another of said walls having an openable area therein, said openable area being of sufficient size to allow passage of said module therethrough.

4,447,997

DRILLING RIG

Raul A. Delgado, Queretaro, Mexico, assignor to Industria del Hierro, S.A., Queretaro, Mexico

Filed Jul. 2, 1982, Ser. No. 394,611
Int. Cl.³ E04H 12/34
U.S. Cl. 52—120 **7 Claims**



1. A drilling rig comprising:

I a base; and

II an A-frame carried by the base;

A. left and right hydraulic mast cylinders attached to the A-frame;

B. left and right mast pistons in the left and right mast cylinders; and

III a mast pivoted on the base and capable of being raised from a horizontal position to a vertical position; and when in the vertical position having a center of gravity far above the top of the A-frame; said mast carrying left and right pads adapted to respectively contact the left and right mast pistons before the center of gravity of the mast passes a point directly above the axis of rotation of the mast; and

IV drawworks adapted to raise the mast about its axis of rotation; and

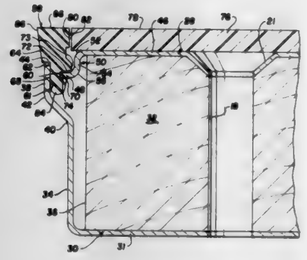
V a hydraulic control system comprising means for synchronizing the movement of the left mast piston with the right mast piston.

4,447,998

FLOOR PANEL

Kary A. Griffin, 6837 Fisher Rd., Dallas, Tex. 75214

Filed Mar. 5, 1982, Ser. No. 355,127
Int. Cl.³ E04B 2/28
U.S. Cl. 52—126.6 **9 Claims**



1. A floor panel for use in elevated floor assemblies, said panel comprising:

(a) a core member having a bottom, a top and a side connected between said bottom and said top;

(b) a bottom sheet having a central section lying in a first plane and an upwardly deflected edge portion formed about a periphery of said central section, said upwardly deflected edge portion forming a first shoulder lying in a second plane, a predetermined portion of said central section being in contact with said bottom of said core member, said upwardly deflected edge portion being spaced a predetermined distance from the side of said core member;

(c) a top sheet having a central section lying in a third plane, an edge section lying generally in a fourth plane which is generally parallel to said second plane and is positioned between said second plane and said central section of said bottom sheet, and a connecting section operatively connecting said central section of said top sheet with said edge section, said edge section having an end of predetermined shape and being positioned inboard of and below said first shoulder and forming an opening therebetween, said connecting section and said edge section being spaced a predetermined distance from the side of said core member; and

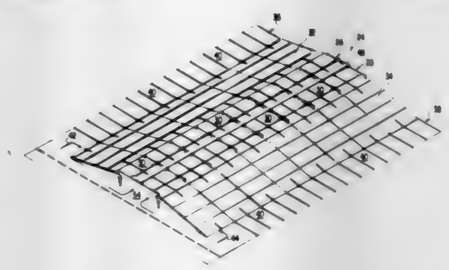
(d) a flexible edge member having a portion thereof extending through said opening and having an outer shoulder engaging said first shoulder, said flexible edge member having an inner groove being configured to receive said edge section therein to sustain a downward force on said flexible edge member, said inner groove including a portion to mate with said end of predetermined shape to sustain a rotational force on said flexible edge member, said flexible edge member being spaced a predetermined distance from the side of said core member, whereby said flexible edge member is supported entirely by said upwardly deflected edge portion and said edge section.

4,447,999

APPARATUS FOR INCREASING THE SELF PARKING CAPACITY OF A PARKING LOT

Wayne B. Stone, Jr., Bethesda, Md., assignor to Wood Mfg. Co., Inc., Flippin, Ak.

Filed Nov. 6, 1981, Ser. No. 318,959
Int. Cl.³ E04H 6/10
U.S. Cl. 52—175 **2 Claims**



1. In combination with means defining a lower parking level having an automotive drive lane affording access to a row of lower level parking spaces on either side thereof, the improvement comprising: means defining a substantially horizontal, elevated parking level parallel to and overlying said lower level drive lane throughout substantially the entire length thereof and providing two rows of elevated parking spaces thereon; means defining at least one row of parking spaces spaced outboard of and parallel to the adjacent one of said lower level parking rows; said outboard row of parking spaces being at a lower elevation than said elevated parking level; support means defining a pair of automotive drive lanes extending parallel to and along opposite sides of said elevated parking level to provide a path of automotive travel therealong and access to each of said two rows of elevated parking spaces; said last named pair of automotive drive lanes being inclined transverse to the direction of automotive travel therealong and each inclined drive lane being in spaced overlying relation to at least a portion of each said row of lower level parking spaces; one of said inclined drive lanes merging one side of said elevated parking level with said lower parking level; and the other of said inclined drive lanes merging the other side of said elevated parking level with said row of outboard parking spaces whereby selective automotive access may be had to either an elevated parking row or the lower, outboard parking row from said other inclined drive lane.

4,448,000

HIGH TEMPERATURE ULTRA-HIGH VACUUM INFRARED WINDOW SEAL

Thomas J. Manuccia, Silver Springs, Md.; John R. Peele, Alexandria, and Christine E. Geosling, Oakton, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1982, Ser. No. 372,341
Int. Cl.³ E06B 3/00; F16D 1/00
U.S. Cl. 52—208 **11 Claims**

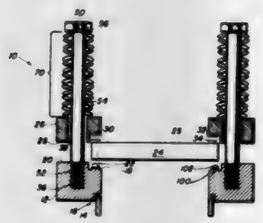
1. A temperature cyclable sealing structure for use under high temperature, high vacuum conditions, comprising:

a sealing flange member coupled with an aperture in a body and sealed thereto, said sealing flange including a continuous annular rim, said annular rim of said sealing flange including a raised continuous annular sealing knob, said sealing knob including a continuous annular indentation in its upper surface;

a panel member including a first face coupled to said annular rim of said sealing flange;

a clamp flange member including a continuous annular rim, said annular rim of said clamp flange being coupled to a second face of said panel member;

sealing means located between said annular rim of said sealing flange and said first face of said panel member for sealing said first face to said annular rim, said sealing means being positioned such that a portion of said sealing means is located between said first face of said panel member and portions of said sealing knob on each side on said indentation;



pressure distribution means located between said annular rim of said clamp flange and said second face of said panel member for distributing forces applied by said annular rim of said clamp flange to said second face; and

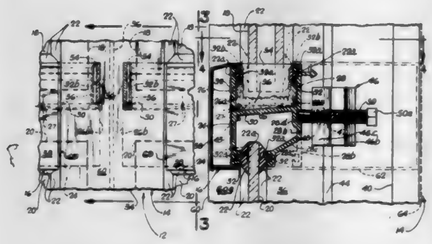
constant force means for pushing said clamp flange toward said sealing flange with approximately constant force over a wide temperature range thereby maintaining a high vacuum seal between said panel member and said sealing flange over a wide range of temperatures.

4,448,001

MOISTURE DAM SYSTEM FOR CURTAIN WALLS

Wayne E. Whitmyer, Buchanan, and Thomas E. Matthews, Niles, both of Mich., assignors to Kawneer Company, Inc., Norcross, Ga.

Filed Aug. 13, 1982, Ser. No. 407,777
Int. Cl.³ E06B 7/14
U.S. Cl. 52—209 **11 Claims**



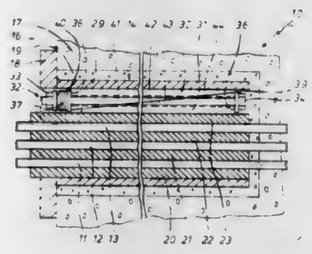
1. A moisture control dam system for curtain wall structures and the like including spaced apart vertical and horizontal frame members forming a framework for supporting at least one wall panel; at least one of said horizontal frame members having a pair of upstanding, spaced apart, inner and outer walls interconnected by a bottom wall forming a channel for receiving a lower edge portion of a wall panel; ribs integrally formed on opposite facing inside surfaces of said inner and outer walls, each rib projecting toward an opposite wall; vertical groove means formed in each of said ribs adjacent at least one end of said horizontal frame member, and a dam having opposite edges inserted in said groove means of said ribs for preventing any accumulated moisture collecting in said channel from running out said one end of said horizontal frame member into another portion of said curtains wall structure.

4,448,002

END-ANCHORING DEVICE FOR ANCHORING AT LEAST ONE BAR MADE FROM A FIBROUS COMPOUND MATERIAL AND BEING USED AS TENDON IN PRE-STRESSED CONCRETE CONSTRUCTION

Gallus Rehm, München-Pasing, and Lutz Franke, Leonberg, both of Fed. Rep. of Germany, assignors to Restra Patentverwertung GmbH, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,631
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2932803; Dec. 4, 1979, 2935419; Dec. 19, 1979, 2950303; Dec. 19, 1979, 2951088
Int. Cl.³ E04C 5/12
U.S. Cl. 52—223 L **10 Claims**



1. An end-anchoring system for anchoring at least one bar made from a fibrous compound material and being used as a tendon in pre-stressed concrete construction, comprising an anchorage pot arranged for being fixed at a pre-stressed concrete component and containing a clamping body which extends over a portion of the length of the bar and encloses the latter and upon which transverse forces acting perpendicularly to the longitudinal axis of the bar and producing a frictional connection between the rod and the clamping body and the anchorage pot, respectively, can be exerted, the clamping body being part of translating means for transforming axial forces into transverse forces and serving to transform forces acting upon the device in the longitudinal direction of the bar into proportional transverse forces providing the frictional connection between the rod and the clamping body, wherein, as part of a means for producing the axial forces which are transformed into the transverse forces providing the frictional connection between the rod and the clamping body, at least one clamping element, in the form of a tie rod, is provided that acts upon two members of the axial force producing means that are axially displaceable relative to each other and disposed between a head and a tightening nut of the clamping element, tightening of the tie rod nut being operable for causing an axial displacement of at least one of said two members relative to the other and an axial force in proportion to said displacement, and in that a resilient body in the form of a cup spring arrangement is disposed between the tightening nut and said one of the two members in a manner that the tightening nut bears against the one of the said two members of the axial force producing means via said cup spring arrangement, whereby said cup spring arrangement serves as a threshold member limiting said transverse forces to a preset level.

4,448,003

TUBE CONNECTIONS

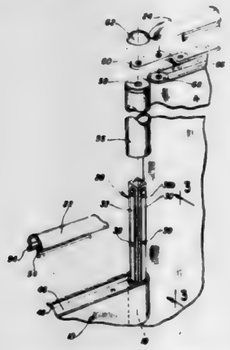
Gene B. Hasbrouck, Corry, Pa., assignor to Hon Industries, Inc., Muscatine, Iowa

Filed Dec. 17, 1981, Ser. No. 331,649
Int. Cl.³ E04B 2/74
U.S. Cl. 52—239 **32 Claims**

1. A tube mounting connector for connection with a tubular member having a sleeve portion at one end, which comprises

a post member having at least a portion thereof of a configuration to be nestably inserted within such a sleeve portion

gripping means attached to said post member and including spaced portions disposed at preselected intervals along the portion of said post member to be inserted within such a sleeve portion, and



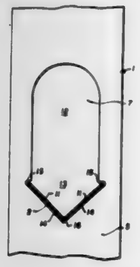
means for adjustably spacing and holding said spaced portions of said gripping means at variable distances away from said post member for effecting telescopic engagement between said connector and such a tubular member by firm sliding engagement of said post and spaced portions of said gripping means with the inside surface of the sleeve portion of such a tubular member.

4,448,004

CHANNEL AND CUT-OUT STRUCTURE FOR REMOVEABLE PARTITION WALL

Stanley E. Thorsell, Edmonton, Canada, assignor to Robert S. Agar Inc., Markham; Thorsell Holdings Ltd., Edmonton and Mudlake Holdings Ltd., Calgary, all of, Canada

Filed Jul. 27, 1981, Ser. No. 286,848
Int. Cl.³ E04H 1/00
U.S. Cl. 52—241 **2 Claims**



1. In a partition wall having a framework comprising spaced vertical stud members having webs forming aligned cut-outs and one or more horizontal support members, having side legs, extending through said cut-outs, said framework supporting a plurality of panels suspended in side-by-side relationship from the support members,

the improvement comprising:

the support member being generally V-shaped;

each such cut-out having a generally rectangular upper portion and a generally V-shaped lower portion, whereby the web edge defining the cut-out forms a generally V-shaped seat and inwardly projecting shoulders at the confluence of said portions;

the seat being dimensioned and shaped so as to conform with the outer surface of the support member;

the upper portion being of a size sufficient to permit translation therethrough of the support member on edge;

whereby, when the support member is extended on edge through the upper portions of an array of cut-outs, it may be dropped on edge into the corresponding lower portions and rotated to lock one side leg of the support member under one shoulder and further rotated to snap the other side leg under the other shoulder, whereby the support member is then locked against rotation or vertical displacement.

4,448,005

INTERIOR AUTOMOTIVE SUNSHADE WITH RING HINGES

Julian P. Vochelli, Huntington Beach, Calif., assignor to Hollywood Accessories, Compton, Calif.

Filed Sep. 27, 1982, Ser. No. 424,383
Int. Cl.³ E06B 7/08
U.S. Cl. 52—473 **8 Claims**



1. An improvement in a sunshade for attachment to the interior surface of an automotive window comprising:

a pair of ribs including means for affixing said ribs to the interior surface of said window;

a plurality of louver fixtures connected to each rib and spaced at regular intervals along the longitudinal axis of said corresponding rib, each fixture being ring-shaped and defining a circumscribed space;

a plurality of louvers, each louver disposed through a pair of said louver fixtures connected to a corresponding one of said pair of ribs, said louver disposed through said louver fixture through said circumscribed space; and

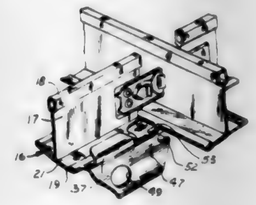
means for temporarily attaching and orienting said louver to said fixture and rib, said means for attaching and orienting included within said louver fixture, whereby a simplified fixture may be devised which allows arbitrary orientation of said plurality of louvers in the same fixture which provides for attachment of said louvers to said rib and therefore indirectly to said window.

4,448,006

GRID CEILING STRUCTURE AND METHOD OF CONVERTING

Robert F. Worley, Bay Village, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed May 28, 1981, Ser. No. 267,731
Int. Cl.³ E04B 5/55
U.S. Cl. 52—488 **5 Claims**



1. A method of converting the appearance of a tee grid lay-in panel ceiling structure to that of a linear beam array structure,

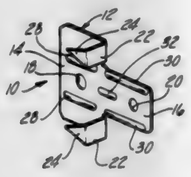
comprising the steps of providing a plurality of elongated converter brackets each having a nominal length substantially equal to a dimension of the rectangular grid of the tees, providing each bracket with first gripping means adapted to engage the face flange of a parallel aligned tee and second gripping means spaced in a predetermined pattern along its length and adapted to engage a plurality of beams extending crosswise to said bracket, assembling the converter brackets on selected parallel tees in an existing suspended grid by engaging said first gripping means with the face flanges of such selected tees, and assembling a plurality of beams on said converter brackets by interengaging said beams with said second gripping means, said first gripping means preparatory to installation lying in a substantially horizontal plane, and including a first plurality of elements on one longitudinal side of the bracket and second plurality of elements on the other side of the bracket, said first plurality of elements being adapted to engage a face flange exclusively from one side of the web of a tee and said second plurality of elements being adapted to engage a face flange exclusively from the opposite side of the web of the tee, said first gripping means being arranged to interengage with said face flanges while lay-in ceiling panels are disposed on said selected grid tees and others, said converter brackets being installed on said selected tees while said lay-in panels are in place on said selected tees and others, said brackets being provided with camming means and being mounted on said face flange by engaging said face flange substantially at the middle of said bracket while said bracket extends at an angle with respect to said face flange and thereafter rotating said brackets into alignment with said face flange causing said first and second plurality of elements to move into engagement with said face flange, and camming said brackets axially with respect to said grid tees in response to said rotation thereof to properly position brackets with respect to each other along said face flange.

4,448,007

WALL PANEL FASTENER

George C. Adams, 3055 Hunting Valley Dr., Ann Arbor, Mich. 48104

Filed Apr. 22, 1981, Ser. No. 256,678
Int. Cl.[3] E04B 5/52
U.S. Cl. 52—489 7 Claims



1. A wallboard fastener comprising a single piece of sheet material having:

a base portion, said base having a first aperture therethrough;

a tongue portion extending outwardly from and coplanar with said base portion, said tongue portion having a second aperture therethrough and said tongue having two sides which intersect said base portion;

a pair of first flanges, each flange extending substantially perpendicularly outwardly from said base portion, one first flange disposed on each side of said tongue;

a pair of impaling flanges, each impaling flange extending from one first flange in a plane parallel to but spaced from said base portion, said impaling flanges overlying a portion of said base portion,

at least one rib formed in said base portion, said base rib protruding outwardly from said base portion in the same direction as said first flanges, and

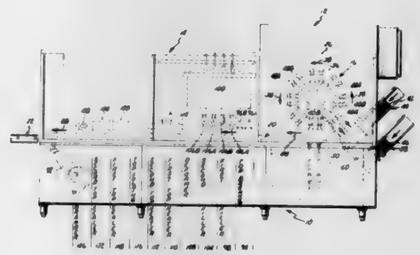
at least two ribs formed in said tongue portion, said tongue ribs protruding outwardly from said tongue in the same direction as said first flanges, one tongue rib being formed adjacent each side of said tongue so that said tongue aperture is positioned in between said tongue ribs, said tongue ribs terminating short of an edge of said tongue portion most spaced from said base portion.

4,448,008

MULTIPLE MANDREL CARTON ERECTING, FILLING AND SEALING MACHINE WITH TWO-STAGE LOADING

Lawrence A. Pankratz, St. Paul, and Donald G. Cornica, Inver Grove Heights, both of Minn., assignors to Liquipak International, Inc., St. Paul, Minn.

Filed Nov. 9, 1981, Ser. No. 319,801
Int. Cl.[3] B65B 43/26
U.S. Cl. 53—202 13 Claims



1. A machine for erecting flat, collapsed cartons and for filling and sealing the erected cartons during a sequence of operating cycles, the machine comprising:

a frame;

first and second spindles mounted on the frame for simultaneous rotation about a common horizontal axis;

first and second pairs of mandrels mounted side-by-side on the first and second spindles, respectively, at each of a plurality of equally spaced circumferential positions, each first pair of mandrels extending outward from the first spindle in a generally radial direction with respect to the horizontal axis to define a first vertical plane and each second pair of mandrels extending outward from the second spindle in a generally radial direction with respect to the horizontal axis to define a second vertical plane which is parallel to the first vertical plane;

a plurality of first and second work stations mounted side-by-side on the frame in the first and second vertical planes, respectively; the plurality of first work stations being positioned circumferentially about the horizontal axis in the first plane to surround the first spindle, and the plurality of second work stations positioned circumferentially about the horizontal axis in the second plane to surround the second spindle;

intermittent spindle drive means for rotating simultaneously the first and second spindles and the mandrels mounted thereon in the first and second vertical planes, respectively, about the horizontal axis during each operating cycle to bring each first pair of mandrels sequentially into alignment with each of the first work stations and each second pair of mandrels sequentially into alignment with each of the second work stations;

first and second supply means aligned with the first and second vertical planes, respectively for holding supplies of flat carton blanks;

first and second erecting means aligned with the first and second vertical planes, respectively for erecting pairs of flat carton blanks into open-end tubular form during each operating cycle;

first and second loader means positioned at first and second loader work stations, respectively, for loading a pair of

open-end tubular carton blanks onto the first pair of mandrels aligned with the first loader work station during each operating cycle and loading a pair of open-end tubular carton blanks onto the second pair of mandrels aligned with the second loader work station during each operating cycle;

means positioned at the work stations in the first and second vertical planes subsequent to the first and second loader work stations for successively forming and sealing bottom ends of the pair of carton blanks carried by each first and second pairs of mandrels;

first and second parallel horizontal conveyor tracks aligned with the first and second vertical planes, respectively;

first and second carton transfer means positioned at first and second transfer work stations for successively transferring a pair of carton blanks with their bottom ends sealed from each of the first and second pairs of mandrels to the first and second conveyor tracks, respectively;

a plurality of side-by-side first and second work stations positioned along the first and second conveyor tracks, respectively;

means positioned at the first and second work stations along the first and second conveyor tracks for filling, closing and sealing top ends of each pair of carton blanks; and

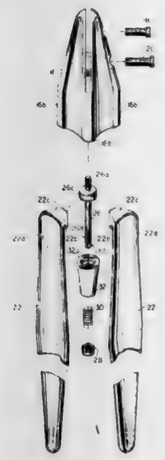
first and second carton conveyor means operatively synchronized with the intermittent spindle drive means for simultaneously advancing carton blanks by pairs along the first conveyor track and along the second conveyor track in stepped sequence from one work station to another during each operating cycle.

4,448,009

FINGER ASSEMBLY FOR A CASE LOADER

John L. Raudat, North Madison, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Continuation-in-part of Ser. No. 182,103, Aug. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 135,508, Mar. 31, 1980, abandoned. This application Jun. 12, 1981, Ser. No. 273,012
Int. Cl.[3] B65B 21/16
U.S. Cl. 53—248 15 Claims



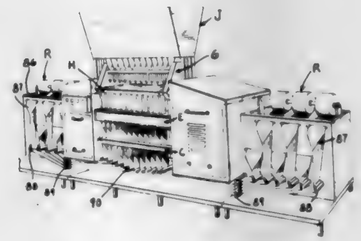
1. A finger assembly for a case loader comprising a finger holder mounted to the loader, a finger retaining member cooperating with said holder to define a plurality of finger sockets therebetween, an axially elongated fastener extending in a generally vertical direction centrally through an opening in said retaining member and secured to said holder, a plurality of fingers having upper ends inturned toward the axis of said fastener for pendulously supporting said fingers in said sockets for movement inwardly toward and outwardly away from the axis of said fastener, each finger having a portion of said inturned end with a downwardly facing concave contour slidably engaging a convex rib portion of said retaining member to pendulously support each finger for movement inwardly toward and outwardly away from said central fastener, and biasing means comprising a spring member acting between said retaining member and said holder to resiliently biase said upper ends of said fingers into said sockets to thereby urge said fingers outwardly relative to said axis of said fastener to cooperate with the fingers of other such finger assemblies to form pockets through which articles drop to load a case.

4,448,010

METHOD AND APPARATUS FOR MAKING BAG-TYPE PACKAGES

Roger H. Stohlquist; Jonathan G. Brown, both of Rockford, and Kenneth V. Baker, Stillman Valley, all of Ill., assignors to Anderson Bros. Mfg. Co., Rockford, Ill.

Filed Dec. 14, 1981, Ser. No. 330,217
Int. Cl.[3] B65B 43/04, 43/16
U.S. Cl. 53—450 31 Claims



1. A packaging machine for making bag type packages from strip web material comprising, product dispensing means for dispensing product at a bag filling station, an elongated mandrel having a forward end portion, means for moving the mandrel lengthwise along a feed path in forward and return strokes, means for forming an end portion of strip web material around the mandrel into a sleeve having a lead end, feed means for advancing the sleeve with its lead end forward along said feed path during at least a portion of the forward stroke of the mandrel to a forward position, means for opening the lead end of the sleeve, a plurality of bag gripper assemblies and transfer means for moving the bag gripper assemblies from a bag loading station in overlying relation to the leading end of the sleeve at its forward position to the bag filling station, each bag gripper assembly including first and second outer jaws laterally spaced apart and first and second inner jaws disposed between the outer jaws and movable relative thereto, means for operating the bag gripper assembly at the bag loading station to move the inner jaws inwardly relative to the outer jaws to a release position for reception in the open end of the sleeve when it is advanced to its forward position and for moving the inner jaws outwardly to a clamp position after the sleeve is advanced to its forward position to grip opposite side walls of the open lead end of the sleeve and to support the lead end of the sleeve in an open condition, means for severing the sleeve at a location spaced inwardly of its lead end to form a bag supported by the bag gripper assembly transverse seal means for transversely sealing the sleeve at a location spaced from the end supported by the gripper assembly means for maintaining the jaws of the bag gripper assemblies in a clamp position to support the bags as the transfer means moves the gripper assemblies from the bag loading station to the bag filling station, the transfer means including means for positioning the bag gripper assembly at bag filling station in an attitude supporting the bag carried thereby with its open end facing upwardly to receive product dispensed by the product dispensing means at the filling sta-

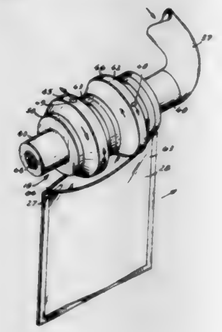
tion, and means for operating the product dispensing means to dispense product into bags at the bag filling station.

4,448,011

INERT GAS WHEEL ASSEMBLY

Peter H. Pohl, Worthington, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 1, 1981, Ser. No. 307,475
Int. Cl.³ B65B *31/04, 55/24*
U.S. Cl. 53—512 **9 Claims**



1. An apparatus for cleaning filling material from filled pouches to be sealed and for injecting inert gas into said pouches, said container pouches having opposing flexible walls with an opening at the top:

a shaft member;

at least two apertured members mounted in proximity to each other and for opposing rotation on said shaft member;

said shaft member and said apertured members including interconnecting fluid passage means;

means to supply a pressurized inert gas to said fluid passage means in said shaft member;

said apertured members including channels constructed and arranged to provide rotation of one of the apertured members in one direction and the other apertured member in an opposing direction in reaction to the force of the inert gas directed through said fluid passage means; and

means to place said pouches at a position below said apertured members with the opening and said flexible opposing walls adjacent thereto;

whereby when said inert gas is forced through said apertures, said rotatable members will move in opposing directions to remove said material from the outside of and adjacent the opening of said pouch as well as to introduce an inert atmosphere therein.

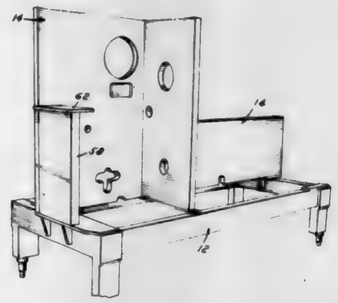
4,448,012

FORMING, FILLING AND SEALING MACHINE

Ivan L. Kauffman, Union Lake, and Robert J. Allen, Farmington, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Nov. 12, 1981, Ser. No. 320,985
Int. Cl.³ B65B *43/26*
U.S. Cl. 53—563 **4 Claims**

1. A forming, filling and sealing machine comprising a base frame, a single vertical keel, said single vertical keel being secured along the longitudinal centerline of said base frame and having forming means mounted on one side thereof for forming side seam sealed blanks into rectangular tubes, bottom sealing means mounted on said one side thereof for sealing the bottoms of said tubes into open topped cartons, filler means mounted on said one side thereof for filling said open topped cartons with a liquid, top sealing means mounted on said one side thereof for sealing the tops of said filled cartons, and conveyor means mounted on said one side thereof for conveying said cartons; said vertical keel also having driving and



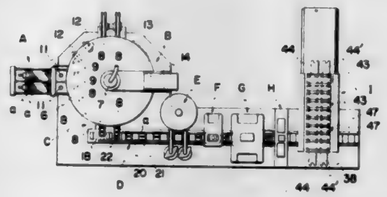
indexing means mounted on the other side thereof and operatively connected to said forming, filler, sealing and conveying means for actuating means.

4,448,013

AUTOMATIC CARTON PACKING MACHINE

Mutsuhiko Nakajima, Soka, Japan, assignor to Ace Pak Company Incorporated, Japan

Filed Apr. 2, 1981, Ser. No. 250,282
Int. Cl.³ B65B *43/26*
U.S. Cl. 53—565 **6 Claims**



1. An automatic carton packing machine comprising:

a magazine for accommodating a plurality of carton blanks in a flattened state;

means for extracting the carton blanks one by one;

means for opening the carton blanks into a rectangular form during extraction of the carton blanks;

a disc adapted to be rotated intermittently and having mandrels secured thereto, said mandrels being adapted to receive the open carton blanks;

means for effecting a bottom sealing of the open carton blanks while said disc rotates;

means for withdrawing the carton blanks from said mandrels and arraying the withdrawn carton blanks in rows;

means for pushing out the carton blanks intermittently by a distance corresponding to one carton blank from the rows to shift the carton blanks into successive ones of bucket portions of a bucket conveyor adapted to move in synchronization with intermittent rotary motion of said disc;

means for effecting, during the intermittent running of said bucket conveyor, filling of the carton blank with a substance;

means for folding the carton tops including means for forming triangular lugs extending outwardly of the carton tops; and

means for bending the triangular lugs downwardly and sealing the bent triangular lugs against sides of the carton blanks to form completed and filled cartons having flat tops;

said means for bending the triangular lugs downwardly and sealing the bent lugs comprising:

a clamp conveyor arranged to move at right angles to a direction of movement of said bucket conveyor and adapted to run intermittently in a timed relationship with the running of said bucket conveyor;

a plurality of horizontally extending base plates connected along said clamp conveyor, each base plate including a substantially vertically extending back plate movable into said bucket portion to move a carton in said bucket portion out of said bucket portion;

at least two clamping members movably mounted to and extending from the bottom of each of said base plates for movement together to clamp a carton therebetween;

push-up means including a push-up plate onto which said back plates intermittently move at least one carton, said push-up means moving said push-up plate upwardly to move a carton thereon into engagement between said clamping members to fold the triangular lugs of the cartons downwardly;

clamp set means engageable with said clamping members for moving said clamping members together to clamp a carton therebetween after the triangular lugs have been folded down; and

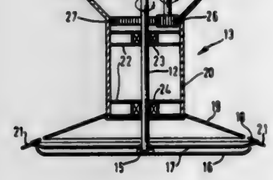
a hot air blower positioned to blow hot air toward an underside of the triangular lugs and side surfaces of the carton for sealing the triangular lugs against the side surfaces of the carton when the push-up plate pushes the carton into engagement between said clamping members.

4,448,014

APPARATUS FOR CUTTING CROP

Wilfred E. Klinner, Milton Keynes, England, assignor to National Research Development Corporation, London, England

PCT No. PCT/GB81/00159, 371 Date Apr. 9, 1982, 102(e) Date Apr. 9, 1982, PCT Pub. No. WO82/00563, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 6, 1981, Ser. No. 369,012
Claims priority, application United Kingdom, Aug. 14, 1980, 8026481
Int. Cl.³ A01D *55/18, 57/28*
U.S. Cl. 56—13.6 **16 Claims**



1. Crop cutting apparatus for cutting crop by rotary motion about a substantially vertical axis comprising:

a first rotor,

a second rotor, said first and second rotors being mounted for rotation about a common substantially vertical axis,

said first rotor including at least one cutting means for cutting crop by rotation of the first rotor, and said second rotor including surface means extending from a peripheral edge separated by a gap from an adjacent edge of said first rotor and providing a crop conveying surface for conveying cut crop to the rear of the apparatus by rotation of said second rotor, said conveying surface forming an angle less than forth-five degrees to the horizontal, said first rotor also including mounting means for mounting said cutting means at an attachment region outside the edge of said surface means of said second rotor, and

drive means for driving said first and second rotors in rotation at different angular velocities such as to effect cutting of crop by said cutting means and conveying of crop by said conveying surface,

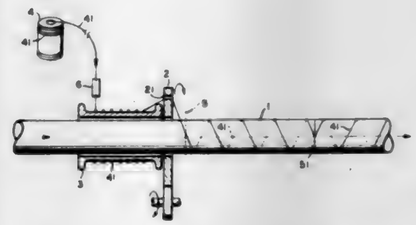
said drive means driving said rotors in rotation at said different angular speeds with a working clearance between said rotors to prevent contact between said first and second rotors at the periphery of said conveying surface of said second rotor, said gap between said first and second rotors at said periphery of said conveying surface of said second rotor extending between said edges in a direction forming an angle less than forty-five degrees to the horizontal.

4,448,015

WINDING METHOD AND APPARATUS

Fumio Usui, 441 Shimosato, Asao-ku, Kawasaki-shi, Kanagawa, 215, Japan

PCT No. PCT/JP81/00419, 371 Date Aug. 5, 1982, 102(e) Date Aug. 5, 1982, PCT Pub. No. WO82/02377, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 28, 1981, Ser. No. 405,953
Claims priority, application Japan, Jan. 13, 1981, 56-3511
Int. Cl.³ D07B *7/14*
U.S. Cl. 57—3 **9 Claims**



1. A winding method comprising the steps of:

inserting a core bar through a winding drum and a winding disk for a coaxial and relative movement therewith;

disposing a reel with a linear material wound therearound at a predetermined position;

fixing a leading end of the linear material payed out from said reel at an arbitrary position on said core bar through a guide hole of said winding disk;

rotating said winding disk in a first direction while moving said core bar in a predetermined direction, thereby winding the linear material around said core bar while winding the linear material around said winding drum;

binding, after a predetermined quantity of the linear material has been wound, a terminal end of the winding of the linear material on said core bar to fix it thereon;

rotating, after said binding and fixing, said winding disk in a second direction which is opposite to said first direction while moving said core bar in a predetermined direction, thereby winding the linear material around the core bar while unwinding and rewinding the linear material around the outer peripheral surface of said winding drum;

binding, after a predetermined quantity of the linear material has been wound, the terminal end of the winding of the linear material securely around said core bar; and

repeating the winding and secure binding of the linear material around said core bar a predetermined times.

4,448,016

METHOD OF LUBRICATING A SPINNING OR TWISTING SPINDLE AND A SPINDLE LUBRICATED ACCORDING TO THE METHOD

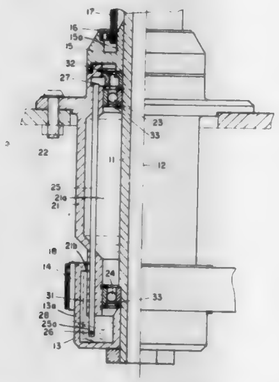
Dieter Thalmann, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Oct. 18, 1982, Ser. No. 434,915

Claims priority, application Switzerland, Oct. 27, 1981, 6850/81

Int. Cl.³ D01H *7/20*

U.S. Cl. 57—133 **10 Claims**



1. In a method of lubricating a bearing of a spinning or twisting spindle containing a spindle shaft, a fixedly mounted housing cooperating with said spindle shaft, a reservoir containing a liquid lubricant therein, the bearing being secured to and enclosed by the housing and the spindle shaft being rotatably supported by the bearing, the lubricant moving in a closed circulation path from the reservoir to the bearing which is arranged above the reservoir and back again to the reservoir, the improvement which comprises the steps of:

immersing a stationary tube which is secured to the housing so as to dip at one end of the tube into the reservoir and forming a portion of the closed circulation path leading from the reservoir to the bearing;

placing the spindle shaft and reservoir into rotation;

causing the lubricant within the reservoir, at the start of rotation of the spindle shaft and reservoir and before reaching a maximum speed of rotation, to flow against an inlet opening provided at the immersed end of the tube in order to form a back pressure at the inlet opening; and

selecting the position of the tube such that upon reaching the maximum speed of rotation of the lubricant the inlet opening is located outside the region of the lubricant present in the reservoir and which lubricant is subjected to centrifugal force.

4,448,017

JEWELRY CHAIN LOOP ELEMENT AND METHOD OF ASSEMBLY

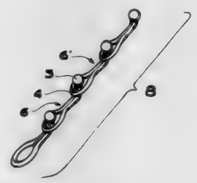
Jean R. Stark, 309 Second St., Belvidere, N.J. 07823

Filed Apr. 26, 1982, Ser. No. 371,724

Int. Cl.³ F16G *13/00*

U.S. Cl. 59—80 **11 Claims**

1. An improved jewelry chain link comprising a continuous wire loop having a generally teardrop shape and including a crimped segment of generally straight parallel wires in substantial contact along their length and at least one loop segment, said crimped segment as seen in elevation being bent from a 15 to a 60 degree angle with respect to the loop segment of the link, and having a tip element disposed on one end of said crimped segment, said tip element being smaller than the inner diameter of said loop segment and providing an undercut into



which the loop segment of a second link is articulatably receivable upon squeezing said loop segment thereabout.

4,448,018

METHOD FOR ADDING WATER TO A HEAT EXCHANGING SYSTEM

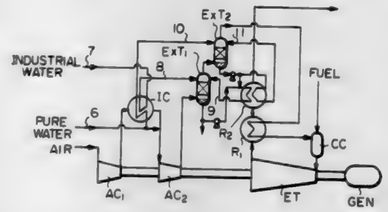
Norio Sayama, and Hiromi Nakamura, both of Chiba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 324,096

Claims priority, application Japan, Nov. 25, 1980, 55-165719

Int. Cl.³ F02C *3/30, 7/143*

U.S. Cl. 60—39.05 **8 Claims**



1. A method for operating a regenerative gas turbine cycle to recover heat from the exhaust gas of a turbine comprising the steps of:

compressing a gaseous medium to a predetermined pressure;

saturating the compressed gaseous medium with steam from untreated water containing impurities to form a mixture of said gaseous medium and steam;

washing said mixture with pure water to remove said impurities;

transferring heat from said exhaust gas to said mixture;

mixing the heated mixture with fuel and combusting to drive said turbine; and

discharging the exhaust gas after the heat transfer.

4,448,019

TURBINE BYPASS TURBOJET WITH MID-TURBINE REINGESTION AND METHOD OF OPERATING THE SAME

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 890,364, Mar. 27, 1978, Pat. No. 4,294,068. This application Sep. 29, 1981, Ser. No. 306,652

Int. Cl.³ F02F *3/02*

U.S. Cl. 60—204 **22 Claims**

13. In a supersonic jet engine adapted to cruise at supersonic speeds at a relatively high efficiency, to operate with high turbine inlet temperatures for high power operation, and to cruise subsonically with a relatively low specific fuel consumption, said engine comprising:

a. a housing structure having an upstream inlet end to receive intake air, and a downstream exhaust end to discharge jet exhaust,

b. an air inlet arranged to receive intake air at subsonic velocity and also to receive intake air at surpersonic velocities and reduce said air to subsonic velocity,

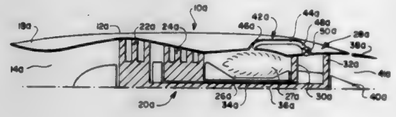
c. a compressor mounted in said housing rearwardly of said inlet and arranged to compress air flowing into said inlet, said compressor having a first compressor section and a second compressor section, each having an inlet end and an outlet end arranged to operate between a maximum compression ratio and a minimum compression ratio,

d. means defining a combustion chamber mounted in said housing downstream of said compressor to receive compressed air therefrom,

e. fuel injection and ignition means in said combustion chamber arranged to burn fuel in airflow from the compressor and provide a gaseous flow from said combustion chamber,

f. a turbine mounted in said housing rearwardly of said combustion chamber and arranged to receive said gaseous flow from the combustion chamber, said turbine having a first stage operatively connected to the compressor second section, and a second stage operatively connected to the compressor first section adapted to receive gaseous flow from said first stage, each of said first and second turbine stage having a predetermined cross-sectional nozzle area through which said gaseous flow passes to pass rearwardly through a primary exhaust passageway,

g. an exhaust nozzle to receive gaseous flow from said turbine and exhaust said flow to produce a thrust,



h. turbine bypass means to receive flow from a location downstream of said compressor as bypass flow, to direct said bypass flow along a path bypassing said turbine first stage and exhaust said bypass flow to pass through said turbine second stage,

i. bypass valve means to control the amount of flow bypassed through said turbine bypass means,

j. engine control means operatively connected to said fuel injection and ignition means and to said bypass valve means, in a manner to control the amount of fuel directed to said fuel injection and ignition means and to control said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means,

a method of operating said jet engine, said method comprising: controlling the amount of fuel directed to said fuel injection and ignition means and controlling said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means so that said bypass valve means is at a more open position at higher engine thrust settings where higher temperatures are created in said combustion chamber, and at a more closed position at lower engine thrust settings where lower temperatures are created in said combustion chamber, in a manner that there is substantially constant corrected gaseous flow into said turbine, and said bypass flow is directed through said turbine second stage, said corrected flow being measured according to the formula:

$$\text{corrected gaseous flow} = \frac{W\sqrt{\theta_t}}{\delta_t}$$

where:

W=Total Mass Flow Rate in lbs. per second

θ_t=Observed temperature (absolute) divided by standard temperature (518.67° R)

δ_t=Observed pressure divided by standard pressure (2116.22 lbs./sq. ft.)

whereby during subsonic cruise said engine can operate at a relatively low specific fuel consumption with high compression ratio and low combustion exit temperature, in a condition where said valve bypass means is at a substantially closed position, during high power acceleration mode, said engine can operate at high combustion exit temperatures in a condition where said valve bypass means is in a more open position to maintain constant corrected flow through said turbine to satisfy the turbine requirements, and during supersonic cruise mode the engine can operate efficiently at relatively high combustion exit temperatures.

4,448,020

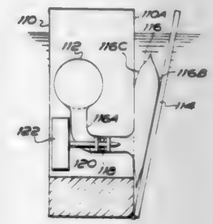
ENERGY GENERATING DEVICE

Eric Wood, Northants, and Norman W. Bellamy, Coventry, both of England, assignors to Sea Energy Associates Ltd., Feltham, England

Continuation-in-part of Ser. No. 120,265, Feb. 11, 1980, abandoned. This application Jul. 14, 1982, Ser. No. 398,431

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—398 **12 Claims**



1. Energy conversion apparatus for generating energy from the wave motion of a body of liquid comprising a reaction body providing a reaction side facing oncoming waves, said reaction body carrying a flexible gas pump bag having front and rear sides of which the front side is deflected by an oncoming wave while the rear side obtains reactive support from the reaction side of the body whereby the bag is compressed by the oncoming wave and the bag expands when the wave recedes, means enabling the pumping of gas from the interior of the bag when compressed and the intake of fluid to the interior of the bag when it expands, and means for converting this movement of fluid into output energy in a more readily usable form.

4,448,021

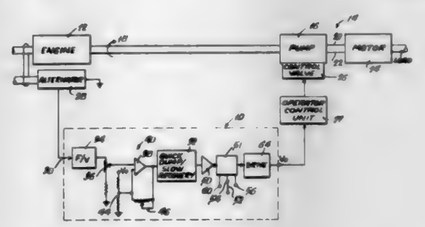
ANTI-STALL CONTROL

Royal R. Hawkins, Bloomington, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 21, 1982, Ser. No. 341,238

Int. Cl.³ F16H *39/46*

U.S. Cl. 60—449 **11 Claims**



1. In a system having an engine which drives a pump to supply fluid under pressure to a motor and including means

responsive to a control voltage for altering the flow of fluid to the motor, an anti-stall control comprising:

means for sensing the speed of said engine, said means generating a voltage having an amplitude proportional to said speed;

means for comparing said speed voltage to a reference voltage, said comparing means generating a D.C. signal having an amplitude proportional to said speed voltage;

means for generating a control voltage in response to said D.C. signal, said control voltage having a maximum amplitude proportional to said D.C. signal when said speed voltage is equal to said reference voltage and having a decreased amplitude proportional to said D.C. signal when said speed voltage is less than said reference voltage;

means responsive to a decrease in the amplitude of said D.C. signal for decreasing the control voltage from said maximum amplitude to said decreased amplitude at a first rate; and

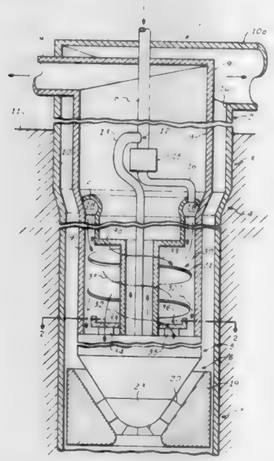
means responsive to an increase in said D.C. signal for increasing the control voltage from said decreased amplitude to an increased amplitude at a second rate less than the first rate.

4,448,022

DOWNHOLE LIQUID TRAP FOR A GEOTHERMAL PUMPING SYSTEM

Andrej M. R. Aplenc, Hines County, Miss., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,838
Int. Cl.³ F03G *7/00*
U.S. Cl. 60—641.4 **6 Claims**



1. An improved geothermal pumping system of the type having a boiler for vaporizing a working fluid with thermal energy from geothermal brine and a turbine driven pumping unit which is disposed in the geothermal brine and which is driven by the vaporized working fluid, wherein the improvement comprises:

means for separating liquid droplets from the vaporized working fluid exhausted from said boiler; and

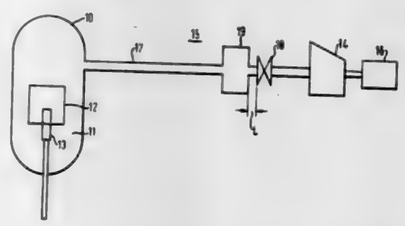
means for collecting the separated liquid and for returning the liquid in a vaporized form to the vaporized working fluid exhausted from said turbine pumping unit.

4,448,023

PRESSURE WAVE ATTENUATING MAIN STEAM LINE APPARATUS

Mutsihiro Arinobu, Tokyo, and Isamu Suzuki, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 11, 1981, Ser. No. 301,818
Claims priority, application Japan, Oct. 20, 1980, 55-146423
Int. Cl.³ G12D *5/00*
U.S. Cl. 60—644.1 **1 Claim**



1. A main steam line apparatus for use in carrying steam from a pressure vessel to a turbine in a boiling water nuclear reactor plant, the apparatus comprising:

(a) piping connecting the pressure vessel with the turbine;

(b) a main stream valve for rapidly stopping the flow of steam being supplied to the turbine through said piping, said main steam valve being located in said piping between the pressure vessel and the turbine; and

(c) a header for attenuating the pressure wave which occurs in said piping when said main steam valve is closed rapidly and for suppressing the increase in pressure in the pressure vessel due to the pressure wave, said header being located in said piping between the pressure vessel and said main stream valve,

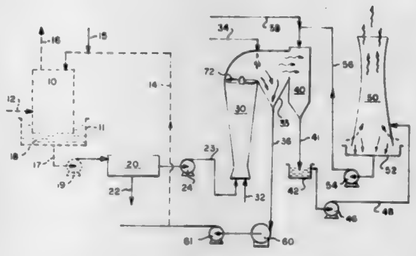
wherein the distance between said header and said main steam valve is less than A·Tv, where A is the sound propagation velocity in the steam and Tv is the closing time of said main steam valve.

4,448,024

RECOVERY OF ENTHALPY FROM HOT FLUIDS

Alberto E. Molini, Quinta Paso Estrecho, San German, P.R. 00753, and Clarence Zener, 3955 Bigelow Blvd., Pittsburgh, Pa. 15213

Continuation-in-part of Ser. No. 46,668, Jun. 8, 1979, Pat. No. 4,308,722. This application Sep. 18, 1981, Ser. No. 303,385
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ F01K *25/06*
U.S. Cl. 60—649 **13 Claims**



1. A method for concurrently recovering enthalpy and removing pollutants from a hot liquid industrial effluent comprising:

a. cleansing the hot effluent to remove pollutants therefrom,

b. conducting the effluent into a flashing unit having an inlet and an outlet and operating with a pressure differential between its inlet and outlet such that the differential will induce a flow of fluid within the flashing unit,

c. flashing the effluent into a foam, and

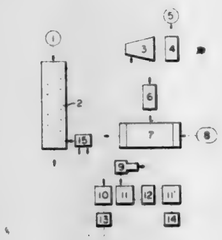
d. providing turbine means operably connected to the flashing unit such that a flow of the foam will propel the turbine.

4,448,025

PROCESS FOR RECOVERING EXHAUST HEAT

Kenichi Oda, 4-4-24, Tsujidomotomachi, Fujisawa, Japan

Filed Jul. 22, 1981, Ser. No. 286,006
Claims priority, application Japan, Aug. 1, 1980, 55-106630
Int. Cl.³ F01K *25/10*
U.S. Cl. 60—651 **4 Claims**



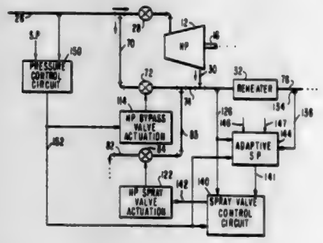
1. A process for recovering heat using the working fluid in a turbine characterized in that the working fluid is a mixture of 30 to 80 mole % water and toluene, wherein said water and toluene mixture is insoluable at ambient temperature and wherein the vapor cycle heat energy in the temperature range of 400° to 750° C. is converted into work.

4,448,026

TURBINE HIGH PRESSURE BYPASS PRESSURE CONTROL SYSTEM

Morton H. Binstock, Pittsburgh, Pa.; Thomas H. McCloskey, Palo Alto, Calif., and Leaman B. Podolsky, Wilmington, Del., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 25, 1981, Ser. No. 305,813
Int. Cl.³ F22B *35/00*
U.S. Cl. 60—662 **15 Claims**



1. Apparatus for controlling the outlet throttle pressure of a steam generator in a steam turbine system having a steam bypass path for bypassing said turbine, comprising:

(A) valve means in said bypass path for controlling the introduction of steam into said bypass path;

(B) means for generating a desired throttle pressure set point signal which is variable as a function of load and independent of steam flow;

(C) means for measuring said throttle pressure of said steam generator for providing an actual throttle pressure signal; and

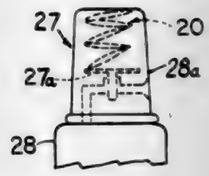
(D) control means for governing operation of said valve means as a function of said actual throttle pressure signal and said desired throttle pressure set point signal.

4,448,027

CARTRIDGE CONTAINING WATER EXPANDABLE MEMBERS

Charles J. Hsu, P.O. Box 460, Grand Central Station, New York, N.Y. 10017

Filed Aug. 26, 1981, Ser. No. 296,558
Int. Cl.³ F01B *29/00*
U.S. Cl. 60—721 **9 Claims**



1. A cartridge arranged to expand in the presence of liquid water comprising a plurality of packet-like members, each said packet-like member comprising a water permeable flexible cover arranged to form a closed pocket, a quantity of a dry material located in said pocket with the material being such that it expands to a multiple number of volumes greater than the original dry volume when the material is contacted by liquid water, the amount of material placed in said pocket is limited so that it is sufficient to form a thin layer within said pocket when the material is in the dry state, the cover of said packet-like member comprising a pair of correspondingly shaped oppositely disposed polygonally sided generally planar sides with said material forming a layer between said sides, said packet-like members arranged one superposed on another with adjacent said planar sides of said packet-like members disposed in generally contacting relation and said sides having the corners thereof in alignment, and means for interconnecting said packet-like members around the edges of said sides at least at two oppositely located said sides so that they are secured together as a unit whereby when water passes through said cover and contacts said material, said material expands and greatly increases the volume thereof and the volume of said unit of said packet-like members while said interconnecting means retains said packet-like members in the unit form, said interconnecting means comprising a tape-like strip extending between the peripheral edges of said packet-like members of said cartridge with said tape being fixed to the edges of said packet-like members.

4,448,028

THERMOELECTRIC SYSTEMS INCORPORATING RECTANGULAR HEAT PIPES

Shun-lung Chao, Troy, and Richard A. Vining, Bloomfield Hills, both of Mich., assignors to ECD-ANR Energy Conversion Company, Troy, Mich.

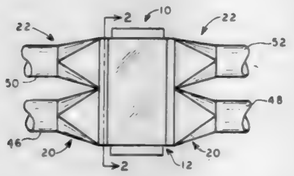
Filed Apr. 29, 1982, Ser. No. 373,179
Int. Cl.³ F25B *21/02*; H01L *35/30*
U.S. Cl. 62—3 **25 Claims**

1. A compact thermoelectric system for generating electrical energy from a temperature difference between a flowing heated fluid and a flowing cold fluid, said system comprising:

a thermoelectric device, said device being disposed between and in thermally transmissive contact with both a heat pipe in contact with one side thereof and said flowing cold fluid on another side thereof, whereby electrical energy is generated and current flows from the hot side to the cold side in response to the temperature difference;

the thermally transmissive contact being provided by at least one closed heat pipe containing a working fluid therein and in thermally transmissive contact with the flowing heated fluid and the thermoelectric device

said heat pipe being disposed within said flowing heated fluid, said heat pipe extending externally from said flowing heated fluid and having at least one integral substantially planar surface adapted to be in thermally transmissive contact with said thermoelectric device; and



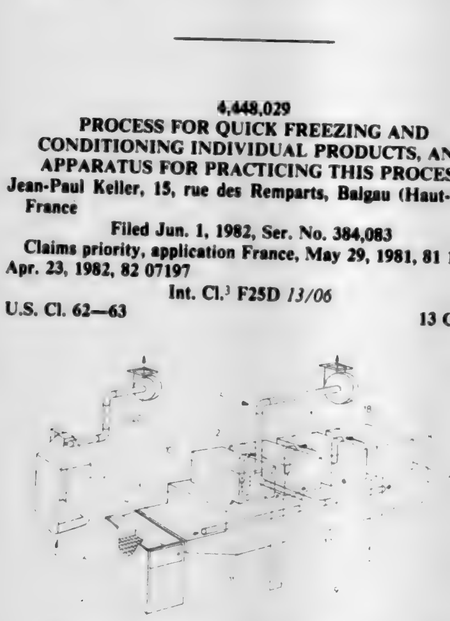
a flowing cold fluid remote from said flowing heated fluid, in thermally transmissive contact with said thermoelectric device to establish the temperature differential at said thermoelectric device, said temperature differential substantially simultaneously generating an electrical current across the thermoelectric device and condensing working fluid.

4,448,029

PROCESS FOR QUICK FREEZING AND CONDITIONING INDIVIDUAL PRODUCTS, AND APPARATUS FOR PRACTICING THIS PROCESS

Jean-Paul Keller, 15, rue des Remparts, Balgau (Haut-Rhin), France

Filed Jun. 1, 1982, Ser. No. 384,083
Claims priority, application France, May 29, 1981, 81 10847; Apr. 23, 1982, 82 07197
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 **13 Claims**



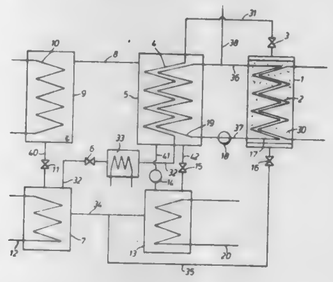
1. Process for quick freezing and conditioning of individual products, comprising treating small individual quantities of products in individual modular quick-freeze chambers (1) fed with cryogenic gas, treating larger quantities of piece products in a tunnel (3) provided with a conveyor belt (4), and which is also fed with cryogenic gas, evacuating cryogenic gas from the chambers (1) to the tunnel (3) to cool the tunnel, evacuating the residual warmed gas obtained from the interior of the tunnel (3), packaging the products leaving the tunnel in insulating packaging disposed in a receiver (6) mounted at the outlet of said tunnel (3), then surrounding the assembly of products disposed in the packaging with a cryogenic product, and closing the packaging.

4,448,030

COMBINED STAGED AIR CONDITIONER AND HEAT STORE

Gerald Moss, Wantage, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 2, 1981, Ser. No. 326,532
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—79 **5 Claims**



1. A combined absorption and adsorption process comprising:

(a) supplying heat to an adsorbate loaded adsorbent to vaporize the adsorbate:

(b) placing said vaporized adsorbate in heat exchange relationship with an absorbate loaded adsorbent in a generator in which the absorbate is the same as the adsorbate and whereby the vaporized adsorbate is condensed and the absorbate is removed from the absorbent;

(c) circulating absorbate depleted absorbent through an absorber wherein absorbate is replenished and returned to said generator;

(d) vaporizing said condensed adsorbate by first passing the condensed adsorbate through a heat exchanger and then an expansion valve and finally an evaporator;

(e) passing said vaporized absorbate through a condenser thereby condensing said absorbate;

(f) evaporating said absorbate by passinbg the absorbate through an expansion valve and finally said evaporator;

(g) combining said adsorbate and said absorbate;

(h) supplying a portion of said combined adsorbate and absorbate to said absorbent in said absorber to reabsorb the absorbate;

(i) supplying a portion of said combined adsorbate and absorbate to said adsorbent thereby generating heat of adsorption; and

(j) placing said absorbent and said generator and heat exchanger relationship whereby the heat of adsorption is transferred to said generator.

4,448,031

PROCESS FOR COLD AND/OR HEAT PRODUCTION WITH USE OF CARBON DIOXIDE AND A CONDENSABLE FLUID

Alexandre Rojey, Garches, and Jacques Cheron, Maisons Laffitte, both of France, assignors to Institut Francais du Petrol, Rueil-Malmaison, France

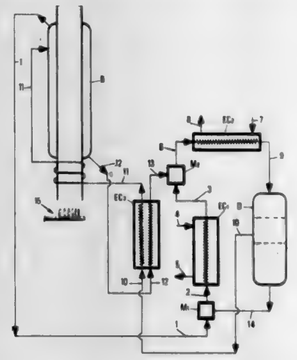
Filed Jan. 7, 1983, Ser. No. 456,463
Claims priority, application France, Jan. 7, 1982, 82 00272
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—101 **4 Claims**

1. A process for cold and/or heat production

(a)—contacting a solvent liquid phase (S) with a gas phase comprising both an auxiliary fluid (F) and carbon dioxide, in an absorption/condensation step, so as to obtain a solution of carbon dioxide in the solvent (S) and a liquid phase of the fluid (F), the liquid phase of the fluid (F) being at least partly immiscible with the solution of carbon dioxide in the solvent (S), the fluid (F) being vaporizable under the conditions of the hereinafter set forth step (e) and condensable under the conditions of step (a), and transferring the heat released by the absorption of carbon dioxide into the solvent (S) and the heat released by the condensation of the fluid (F) to an external fluid,

(b)—separating the solution of carbon dioxide in the solvent (S) from the liquid phase of the fluid (F),

(c)—supplying the solution of carbon dioxide in the solvent (S) to a desorption step and subjecting this solution to desorption conditions, the desorption heat being received from an external fluid, so as to obtain a solvent liquid phase of reduced carbon dioxide content and a vapor phase of high carbon dioxide content, and recycling said solvent liquid phase of reduced carbon dioxide content to



the absorption/condensation step (a) to constitute therein the solvent liquid phase (S),

(d)—admixing at least a portion of the liquid phase formed by condensation of the fluid (F), obtained in the absorption/condensation step (a) and separated in the step (b), with at least a portion of the carbon dioxide gas phase obtained in the step (c) of desorbing carbon dioxide from its solution in the solvent (S),

(e)—subjecting the mixture obtained in step (d) to an evaporation step, the heat required for evaporating the fluid (F) being received from an external fluid, and recovering a gas phase composed of a mixture of fluid (F) vapor with carbon dioxide, and

(f)—subjecting the gas phase obtained in step (e) to an aborption/condensation step (a).

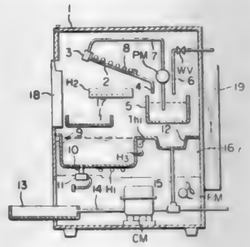
4,448,032

ICE-MAKING AND FRESH WATER DISPENSING APPARATUS

Takashi Hibino, and Yoshinori Ito, both of Toyoake, Japan, assignors to Hoshizaki Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 297,972, Aug. 31, 1981, Pat. No. 4,370,865. This application Sep. 23, 1982, Ser. No. 422,431
Claims priority, application Japan, Feb. 26, 1979, 54-20780
Int. Cl.³ B01D *9/04*; C02F *1/22*
U.S. Cl. 62—124 **1 Claim**

1. An ice making and fresh water dispensing apparatus, comprising in combination: an ice making unit for making pure ice cubes using a refrigeration system, said ice cubes dropping down by gravity from said ice making unit when an ice removing cycle of said refrigeration system is completed; a tank disposed on a path, along which said ice cubes drop down by gravity, to receive said ice cubes; means disposed on the bottom surface of said tank for heating the ice cubes received in said tank thereby to melt the same into fresh water; means attached to said tank for dispensing the fresh water stored therein; and an ice storage box removably disposed between said ice making unit and said tank, said ice storage box extending partly across said ice cube path so that the ice cubes falling down from said ice making unit are received partly in said ice



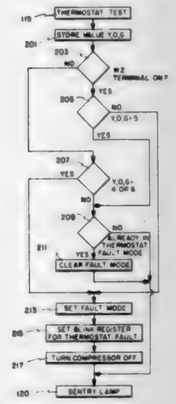
storage box and partly in said tank without passing through the interior of said ice storage box.

4,448,033

THERMOSTAT SELF-TEST APPARATUS AND METHOD

Mario F. Briccetti, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,786
Int. Cl.³ F25B *49/00*; G05D *23/00*
U.S. Cl. 62—126 **10 Claims**



1. A method of detecting a fault in the wiring of a thermostat of an air conditioning system wherein the thermostat has a series of outputs which are energized under the appropriate conditions in known patterns to effect operation of the air conditioning system which comprises the steps of:

determining which outputs of the thermostat are energized;

comparing the status of the outputs ascertained by the step of determining with the known pattern of legal thermostat outputs; and

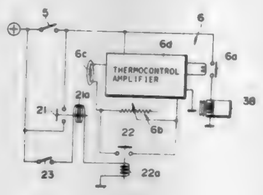
indicating a fault condition when the step of comparing detects that the outputs ascertained by the step of determining are other than a known pattern.

4,448,034

AIR-CONDITIONING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Yukio Shimada, Yokohama; Tetsuya Iijima, Yamato, and Mikio Tanino, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 18, 1982, Ser. No. 359,351
Claims priority, application Japan, Mar. 19, 1981, 56-38645
Int. Cl.³ F25D *29/00*; B60H *3/04, 1/00*
U.S. Cl. 62—161 **7 Claims**



1. An air-conditioning system provided with a compressor, an evaporator, and a temperature-adjusting lever, which comprises:

(1) a thermorelay connected in series with the compressor for operating the compressor when energized;

(2) a temperature-sensitive element disposed on the downstream side of the evaporator for detecting air temperature, the resistance of said element decreasing with increasing temperature,

(3) a variable resistor connected in series with said temperature-sensitive element, and linked with the temperature-adjusting lever in such a way that the resistance of said variable resistor is adjusted when the temperature adjusting lever is shifted;

(4) a thermocontrol amplifier responsive to the total resistance of said temperature-sensitive element and said variable resistor for energizing said thermorelay when the sum of temperature-sensitive element resistance and variable resistor resistance drops below a predetermined value and deenergizing said thermorelay when the sum of temperature-sensitive element resistance and variable resistor resistance exceeds another predetermined value; and

(5) a dehumidification switch for shorting said variable resistor when closed,

whereby when said dehumidification switch is closed, said thermocontrol amplifier energizes said thermorelay when only the temperature-sensitive element resistance drops below the predetermined value and independently of the resistance of the variable resistor.

4,448,035

AIR CONDITIONER CONTROL SYSTEM

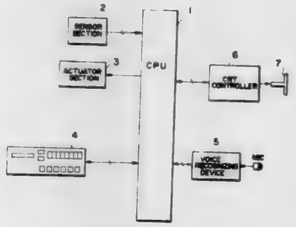
Masakazu Moriyama; Takao Saito; Akinori Ido; Takeo Matsushima, and Hisao Hara, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 13, 1982, Ser. No. 367,906
Claims priority, application Japan, Apr. 20, 1981, 56-60293
Int. Cl.³ F25D *17/04*; B60H *3/00*
U.S. Cl. 62—176.6 **11 Claims**

1. An air conditioner control system comprising:

a memory medium for storing control modes in which the comfortability of a vehicle is taken into consideration; and

a central process unit having a control program corresponding to at least one of a plurality of controls including a compressor control, a recirculation/fresh air change-over control, a blow-out opening change-over control, an air flow rate control, a condensation control and an air purification control and performing said control program in response to outputs from various sensors, external instructions, and data from said memory medium, said sensors including at least a condensation sensor for detecting humidity and a temperature sensor for detecting ambient air temperature, whereby said condensation control performs a regulation of a blow-out air flow rate and a control of a rear defogger and a compresor in response to output signals from said condensation sensor and said temperature sensor.

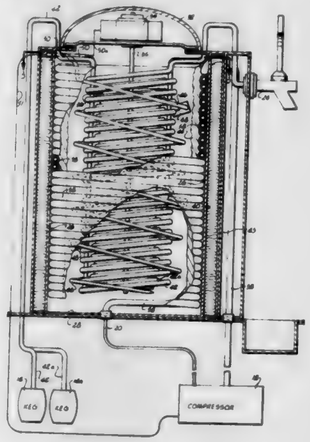


4,448,036

REFRIGERATION SYSTEM

Frank M. Iannelli, Spartanburg, S.C., assignor to Gerlach Industries Inc., Spartanburg, S.C.

Continuation-in-part of Ser. No. 316,873, Oct. 30, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 486,252
Int. Cl.³ F25D *17/00*; B67D *5/62*
U.S. Cl. 62—178 **3 Claims**



1. A refrigeration system for cooling a beverage as said beverage is withdrawn from a container comprising:

a housing having a vertically extending wall and a top and bottom;

water carried within said housing;

an evaporator coil carried adjacent the wall of said container extending vertically from adjacent the bottom of said container to adjacent the top of said container;

refrigeration condensing means circulating a refrigerant through said evaporator coil cooling said water carried in said container and building an ice bank along the inner wall of said container;

a pair of vertically extending beverage dispensing coils centrally carried within said container;

said beverage dispensing coils having a predetermined outside diameter so as to provide a space between said inside wall of said container and said beverage dispensing coils for allowing said bank of ice to build up on said inside wall;

a faucet connected to each of said beverage dispensing coils;

said beverage dispensing coils being connected between said container and said faucets for cooling said beverage as said beverage is drawn from said faucet;

a power driven paddle carried within said beverage dispensing coils for gently circulating water carried in said housing against said ice bank for cooling said water and said beverage dispensing coil;

inlet ends of said beverage dispensing coils being positioned side by side to form a junction;

a first temperature sensor carried within said housing between said ice bank and said beverage dispensing coils for deactivating said refrigeration condensing means responsive to the temperature of said water dropping below a predetermined temperature;

a second temperature sensor carried in said junction in heat transfer relation with said inlet ends of said beverage dispensing coils for sensing when beverage is being drawn from one of said containers; and

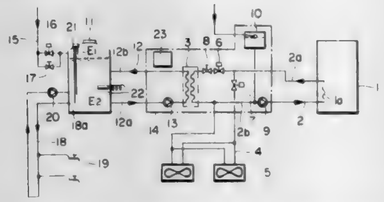
means for operably connecting said second temperature sensor to said power driven paddle for activating said paddle responsive to beverage being drawn from either of said faucets.

4,448,037

COMBINED AIR CONDITIONING AND HOT WATER SERVICE SYSTEM

Hiroaki Hama; Masami Imanishi, both of Wakayama; Yasuyuki Funahashi, Kainan, and Seiichi Kato, Wakayama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,120
Claims priority, application Japan, Jan. 29, 1982, 57-14495; Jan. 29, 1982, 57-14496; Jan. 29, 1982, 57-14497; Jan. 29, 1982, 57-14498
Int. Cl.³ F25D *17/02*; G05D *23/00*
U.S. Cl. 62—188 **4 Claims**



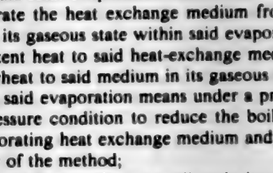
1. A combined heating/cooling and hot water service system comprizing a heat pump type chiller unit designed to effect a cooling cycle and a heating cycle, a water circuit communicating with a water-side heat exchanger of the chiller unit, a heat exchanger in said water circuit, adapted for supplying hot water, a fan coil unit for heating/cooling the room, said fan coil unit communicating with said water circuit and connected in parallel with said heat exchanger adapted for supplying hot water, changeover valves for selectively switching said water circuit for cooperation with said heat exchanger adapted for supplying hot water or with said fan coil unit, a reservoir for hot water having a water heating circuit placed in heat exchange relation with said heat exchanger for supplying hot water, a hot water service circuit for supplying the hot water from said reservoir to hot water service spots through said hot water pump, a first program timer operable for setting a hot water storage time zone in which the changeover valves are switched so that the heat exchanger adapted for supplying hot water comes into operation and hot water is stored through said water heating circuit in said reservoir, said first program timer being further operable for setting a heating/cooling time zone in which the changeover valves are switched so that the fan coil unit comes into operation for heating or cooling the room, and a second program timer operable for setting a hot water service time zone which is included in said heating/cooling time zone and in which said hot water pump is activated for serving the hot water from said reservoir through said hot water service circuit.

4,448,038

REFRIGERATION CONTROL SYSTEM FOR MODULATING ELECTRICALLY-OPERATED EXPANSION VALVES

William J. Barbier, St. Louis, Mo., assignor to Sporlan Valve Company, St. Louis, Mo.

Division of Ser. No. 80,398, Oct. 1, 1979, Pat. No. 4,362,027, which is a continuation-in-part of Ser. No. 865,903, Dec. 30, 1977, abandoned. This application Aug. 4, 1982, Ser. No. 405,251
Int. Cl.³ F25B *41/04*
U.S. Cl. 62—212 **2 Claims**



1. In a refrigeration system including a compressor, a condensor, and an evaporator operatively connected, the system comprising:

(a) a modulating, electrically operated expansion valve connected to the inlet of the evaporator,

(b) first and second temperature-responsive electrical sensors, the first sensor being positioned to respond to the temperature of liquid refrigerant expanded to suction pressure, and the second sensor being positioned to respond to suction line sensible temperature,

(c) an electrical amplifier circuit connecting the sensors to the valve for modulation of the opening and closing of the valve in response to the differences in the temperatures sensed by the sensors, and

(d) the electrical amplifier circuit including a detector for determining whether the suction saturation temperature exceeds a maximum set point, and actuating the expansion valve to close and limit the suction saturation temperature.

4,448,039

LATENT-HEAT HEATING AND COOLING SYSTEM

Robert D. Hutchins, 221 E. Pebble Beach, Tempe, Ariz. 85282

Filed Sep. 17, 1982, Ser. No. 419,225
Int. Cl.³ F25B *27/00*
U.S. Cl. 62—235.1 **20 Claims**

1. A method for collecting, transferring and storing energy through change-of-state between liquid and vapor phases of a heat exchange transmission medium comprising the steps of:

pumping a heat exchange medium in its liquid state into a solar evaporation means;

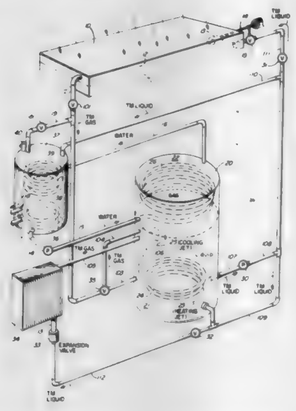
irradiating said solar evaporation means with solar radiation to evaporate the heat exchange medium from its liquid state into its gaseous state within said evaporation means to add latent heat to said heat-exchange medium, and to add superheat to said medium in its gaseous state;

maintaining said evaporation means under a predetermined lower pressure condition to reduce the boiling point of said evaporating heat exchange medium and increase the efficiency of the method;

evacuating said heat exchange medium in its gaseous state from said solar evaporation means by vacuum-induced suction into a remote heat exchanger for the recovery of said latent heat and said super heat therefrom;

transferring the latent heat of said heat exchange medium

within said remote heat exchanger to said heat exchange medium in its liquid state; and



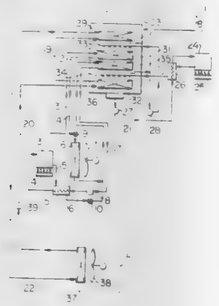
spraying said heat exchange medium through a venturi jet means for compressing and condensing said heat exchange medium from said heat exchange medium's gaseous state to its liquid state.

4,448,040

ABSORPTION TYPE HEAT PUMP SYSTEM

Yoshifumi Kunugi, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,375
Claims priority, application Japan, Jul. 10, 1981, 56-106991
Int. Cl.³ F25B *27/02, 15/00*
U.S. Cl. 62—238.3 **13 Claims**



1. A absorption type heat pump system comprising a first heat pump of the absorption type and a second heat pump of the absorption type, said first heat pump of the absorption type comprising a generator equipped with a heating source, a condenser, an evaporator, an absorber, and a solution heat exchanger for supplying hot water for heating and hot water supply purposes from said condenser and said absorber, and said second heat pump of the absorption type comprising a generator equipped with a heating source, a condenser, an evaporator, an absorber, and a solution heat exchanger, wherein the improvement resides in that:

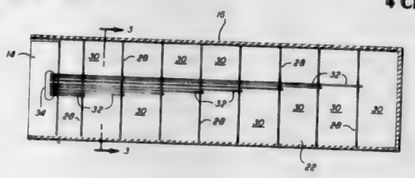
said condenser and said absorber of said second heat pump of the absorption type are both mounted in said evaporator of said first heat pump of the absorption type, and the evaporator of the first heat pump is connected with the second heat pump, in a manner so as to cause heat given off by said condenser and said absorber of said second heat pump to be utilized as a heat source for vaporizing a refrigerant in said evaporator of said first heat pump, a refrigerant in the condenser of the second heat pump to be condensed by heat of evaporation of the refrigerant in the evaporator of the first heat pump and the condensed refrigerant absorbed by an absorbing agent in the absorber of the second heat pump.

4,448,041

VACUUM INSULATED WALLS FOR REFRIGERATED CONTAINERS AND TRAILERS

John V. D. Southworth, Jr., Cazenovia, N.Y., assignor to Trans Refrigeration International, Inc., East Syracuse, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,926
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—268 **4 Claims**



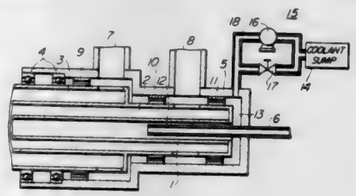
1. In a refrigerated container or trailer, an insulated structural member adapted for use as a sidewall, ceiling or floor of the container, the structural member comprising an interior and an exterior wall of like dimensions, means securing the walls together in spaced relation to one another whereby an airtight compartment is formed between the walls, means for dividing said airtight compartment into a plurality of individual airtight sections, a manifold in the container, a conduit extending from each airtight section to the manifold, a vacuum pump connected to the manifold for withdrawing air from each section to create a vacuum therein, a check valve in the conduit for each section that permits air to be withdrawn from the section but prevents the flow of air in the opposite direction, and a pressure switch in communication with the manifold for detecting an increase in pressure therein, the pressure switch being operable in response to a predetermined pressure increase to actuate the vacuum pump.

4,448,042

COOLANT SUPPLY AND DISCHARGE DEVICE FOR SUPERCONDUCTIVE ROTOR

Kiyoshi Yamaguchi, Hitachi, and Naoki Maki, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,675
Claims priority, application Japan, Oct. 31, 1981, 56-175314
Int. Cl.³ F25B *31/00*
U.S. Cl. 62—505 **2 Claims**



1. A coolant supply and discharge device for a superconductive rotor comprising:

an inlet tube connected to an end portion of the superconductive rotor to introduce a coolant in a liquid state into said superconductive rotor;

an inner discharge tube and an outer discharge tube located at the outer periphery of said inlet tube to recover the coolant in a gaseous state;

a fixed casing located at the outer periphery of said outer discharge tube through bearings in a manner to enclose said inlet tube and said inner and outer discharge tubes;

a feed tube extending into said fixed casing and having an open end portion located in said inlet tube to feed the coolant in the liquid state into the inlet tube; and

withdrawing means located at an end portion of said fixed casing to withdraw a predetermined amount of gaseous coolant produced in a clearance between said feed tube and said inlet tube to a coolant sump located outside said fixed casing through a space in said fixed casing communicating with said inlet tube.

4,448,043

HEAT EXCHANGER WITH A CAPILLARY STRUCTURE FOR REFRIGERATION EQUIPMENT AND/OR HEAT PUMPS AND METHOD OF MAKING THE SAME

Yvan Aragou, 32, Hameau de Russac, 33400 Talence, France

Filed Feb. 11, 1982, Ser. No. 347,970
Claims priority, application France, Feb. 13, 1981, 81 03033
Int. Cl.³ F25B *39/02*
U.S. Cl. 62—515 **15 Claims**



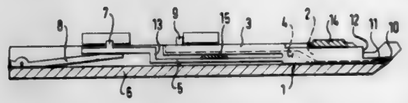
1. In a heat exchanger for refrigeration equipment and/or heat pumps, in which the heat exchanger comprises an array of tubular elements, the invention comprising an annular capillary structure arranged in said tubular elements and comprising a series of individual, smooth, rectilinear fibers of suitable material arranged parallel to the longitudinal axes of said tubular elements, said fibers being regularly positioned in annular zones along the inner walls of said tubular elements, and means for urging said fibers against said inner walls of said tubular elements.

4,448,044

SLIDER NEEDLE

Gottfried Kühnert, Aalen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co., KG, Westhausen, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,696
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151225
Int. Cl.³ D04B *35/04*
U.S. Cl. 66—120 **6 Claims**



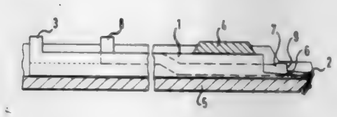
1. A slider needle for knitting machines, particularly flat knitting machines, comprising a needle body with needle hook and needle butt, and a slider with a slider butt mounted to be displaceable relative to the needle body, the needle body comprising a guide shaft having a slot for receiving and guiding the slider and a flexible shaft extending from the guide shaft and projecting rearwardly from the guide shaft towards the needle butt, and the flexible shaft carrying the needle butt being engageable from below in the needle channel by a tilting lever.

4,448,045

SLIDER NEEDLE

Gottfried Kühnert, Aalen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG, Westhausen, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,697
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151150
Int. Cl.³ D04B *35/04*
U.S. Cl. 66—120 **5 Claims**



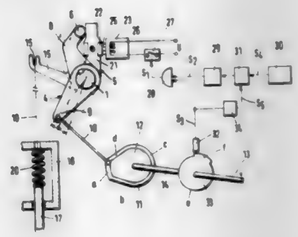
1. A slider needle for knitting machines, particularly flat knitting machines, comprising a needle body with needle hook and at least one needle butt, and a slider with slider butt mounted to be displaceable relative to the needle body, in which a short swivel detent is mounted on the needle body behind the needle hook, the length and shape of the swivel detent being selected so that in the normal position of the needle with the needle hook closed by the slider the swivel detent is masked by the slider in each pivoted end position of the detent, whereas with the needle hook open the swivel detent projects proud of the needle body and above the slider in its two end positions.

4,448,046

ELECTROMAGNETICALLY ACTUATED JACQUARD CONTROL ARRANGEMENT

Kresimir Mista, Obertshausen, and Hans-Jurgen Hohne, Hainburg, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Dec. 1, 1982, Ser. No. 445,950
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148054
Int. Cl.³ D04B *23/04*
U.S. Cl. 66—205 **13 Claims**



1. An electromagnetically controlled jacquard arrangement for a machine having working cycles controlled by a main shaft, comprising:

a plurality of control elements rotatably mounted to reciprocate in said machine and biased to rotate in a first direction;

a plurality of electromagnetic devices, each operable to hold magnetically a corresponding one of said control elements in a predetermined position;

synchronization means coupled to and reciprocated by said main shaft for repetitively urging said control elements to

rotate in a second direction and lace them proximate to said electromagnetic device at the start of each of the working cycles; and

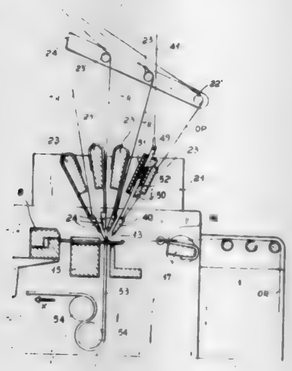
switching means operable over successive working cycles to energize sequentially, given ones of said electromagnetic devices according to a predetermined pattern, said switching means including timing means for maintaining energization in existence at the beginning of each of the working cycles and throughout a major portion of each of the working cycles.

4,448,047

EMBROIDERY DEVICE FOR CROCHET MACHINES

Rancati Romano, Cilavegna, Italy, assignor to Rockwell Rimoldi, S.p.A., Milan, Italy

Filed Aug. 4, 1982, Ser. No. 404,992
Claims priority, application Italy, Jan. 29, 1982, 19360 A/82
Int. Cl.³ D04B *23/00*
U.S. Cl. 66—207 **8 Claims**



1. An embroidery device for forming designs on a base fabric with crochet machines having a plurality of needles mounted for movement toward and from warp thread guides for forming chains of warp threads and weft thread tubular guides mounted on a plurality of rectangularly driven bar members for feeding weft threads to the needles to be interlocked with the chains of warp threads, said embroidery device comprising:

(a) means mounted on one of the rectangularly driven bar members for guiding a plurality of embroidery threads;

(b) supplementary vertical drive means operatively connected to said guiding means for elevating selected embroidery threads to effect their insertion within the chains of warp threads when no designs are to appear on the base fabric; and

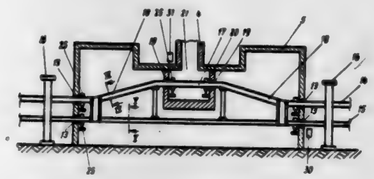
(c) means returning the selected embroidery threads to their initial position upon completion of the function of said supplementary drive means to effect the formation of visible designs on the base fabric.

4,448,048

CONTINUOUS LINE FOR IRRADIATION AND CHEMICAL TREATMENT OF TEXTILE WEBS

Vadim K. Burov; Boris M. Vanjuskin; Anatolij E. Voskoboev; Nikolaj G. Kon'kov; Vsevolod D. Orechov; Konstantin D. Pismannik, all of Moscow; Michail P. Svin'in; Michail I. Fedotov, both of Leningrad, all of U.S.S.R.; Werner Damerau, Kambs/Bützow, German Democratic Rep.; Achim Dulling; Adolf Heger, both of Dresden, German Democratic Rep.; Gerd Reichardt, Gera, German Democratic Rep., and Gotthard Wilde, Berlin, German Democratic Rep., assignors to VEB Kombinat Textima, Karl Marx Stadt, German Democratic Rep.; Zentrales wissenschaftliches Forschungsinstitut der Baumwollindustrie; Allunions-Forschungsinstitut für Strahlentecknik, both of Moscow, U.S.S.R. and Allunions-Forschungsinstitut für physikalischen Apparatebau, Leningrad, U.S.S.R.

Filed Dec. 29, 1981, Ser. No. 335,396
Claims priority, application German Democratic Rep., Feb. 10, 1981, 2275203
Int. Cl.³ D06B *3/10, 23/18*
U.S. Cl. 68—5 E **6 Claims**



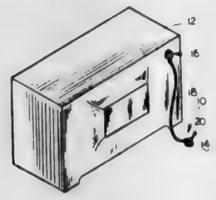
1. A progressive line for irradiation and chemical treatment of a textile web, comprising a succession of treatment stations including an irradiation station with a ray accelerator having a ray exit window for treating the textile web with electron rays; adjustable conveyor means having an upper run for holding and advancing the web between the stations, and a lower run; said irradiation station being surrounded by an outer electron ray screening protective jacket formed with outer openings for passing through at least the upper run of the conveyor means together with the web, and also including an inner electron ray screening protective jacket surrounding the exit window of the ray accelerator and having inner openings for passing through the upper run with the web, the inner openings and the corresponding outer openings being vertically offset relative to each other; guiding channels arranged in the irradiation station for guiding and protecting the upper and lower runs of the conveyor means, the guding channel for the upper run having a central portion extending parallel to the plane of the ray exit window between said inner openings of the inner protective jacket, and two sloping lateral sections extending between the outer openings in the outer protective jacket and the inner openings, respectively; ray-shielding means including displaceable shielding blocks which are connected with the guiding channels and arranged for movement together therewith along the inner and outer openings in a plane of the textile web for adjusting a clearance between the guiding channels in dependence upon a width of the textile web and cooperating to move in two opposite directions transversely to the web feeding direction; and control means arranged to sense the movement of the displaceable shielding blocks and to thereby control the ray accelerator and the conveyor means to convey the textile web.

4,448,049

SECURITY TIE-DOWN APPARATUS

Avon R. Murray, 5031 S. 131st Street, Omaha, Nebr. 68137

Filed Jul. 2, 1982, Ser. No. 394,498
Int. Cl.³ E05B *69/00*
U.S. Cl. 70—58 **12 Claims**



1. A security tie down apparatus comprising,

an anchor screw adapted to be fastened to an object and having a head to be positioned exteriorly of the object,

a base plate fixed to the anchor screw in axially spaced relation from the head thereof and adapted to engage the object to be secured,

a disk rotatably carried on said anchor screw and surrounding the head thereof so as to prevent grasping of the head by a wrench,

a plurality of hold-down screw holes in said base plate adapted for receiving hold-down screws to independently fasten said base plate to the object to be secured,

said disk including at least one access hole which is registerable with at least one of said hold-down screw holes to provide for the insertion and removal of a hold-down screw therethrough, and

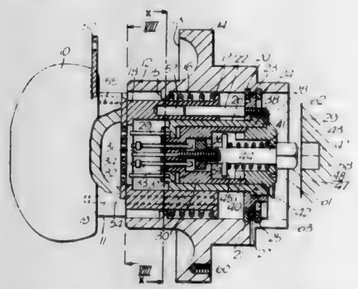
means for securing an elongated connector to one of said anchor screw, base plate and disk.

4,448,050

LOCKS

Walter J. Nugent, and Leslie G. Nugent, both of 147 Rae St., North Fitzroy, Melbourne, Australia (3068)

PCT No. PCT/AU80/00023, 371 Date Feb. 20, 1981, 102(e) Date Feb. 3, 1981, PCT Pub. No. WO80/02857, PCT Pub. Date Dec. 24, 1980
PCT Filed Jun. 18, 1980, Ser. No. 237,133
Claims priority, application Australia, Jun. 20, 1979, PD9271
Int. Cl.³ E05B *27/10, 13/10, 17/04, 19/16*
U.S. Cl. 70—223 **17 Claims**



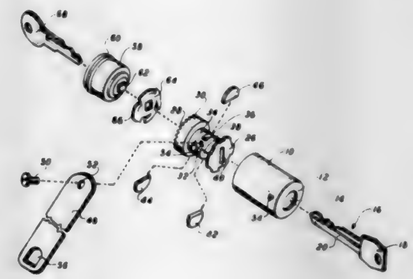
1. A key operated lock comprising, a body member having a bore therethrough adapted to be secured to a door or the like, a lock cylinder rotatably mounted in said bore of said body member, means to restrain said lock cylinder against axial movement relative to said body member, a latch actuating member adapted to be engageable with a latch release means, a handle member rotatably mounted on said body member and being axially movable relative to said bore, a substantially transverse opening in a side of said handle member, at least one ward member fixedly attached to said lock cylinder to be held against axial movement relative to said handle, releasable coupling means in said lock cylinder operable in the engaged position to connect said latch actuating member to said lock cylinder for rotation therewith, coupling actuating means movably mounted in said lock cylinder for movement from a rest position to an actuating position at which said coupling means is engaged and said latch actuating member is engaged with said latch release means, a key having a blade insertable into said transverse opening to be movable rotationally and axially with said handle, and at least one hole through said blade positoned with respect to said handle when operably inserted therein so that said ward member enters said hole by relative axial displacement of said handle to allow said key blade to engage said coupling actuating means to move it into said actuating position and said lock cylinder and latch actuating member to rotate in response to rotation of said handle to release said latch.

4,448,051

KEY RETAINING DEVICE

Hildaur L. Neilsen, 2 Juniper St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 322,265, Nov. 17, 1981. This application Feb. 4, 1982, Ser. No. 345,722
Int. Cl.³ E05B *11/00, 73/00*
U.S. Cl. 70—389 **11 Claims**



1. A key retaining device for capturing and selectively locking a key having a working section and handle section comprising:

a housing having at least one end wall and a side wall and having a chamber therein;

said end wall having an opening therein communicating with said chamber and dimensioned to receive said working section of said key therethrough;

at least one wedge-like member movable radially for selectively securing said key; and

means to resiliently and releasably urge said wedge-like member to engage and secure said working section of said key within said chamber.

4,448,052

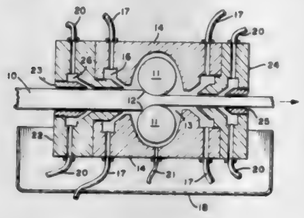
HYDROSTATIC ASSIST DURING ROLLING OF CAST METAL

Deepak K. Verma, Rochester, Minn., assignor to Southwire Company, Carrollton, Ga.

Filed Feb. 4, 1982, Ser. No. 345,843
Int. Cl.³ B21D *39/08*
U.S. Cl. 72—57 **7 Claims**

1. A method of continuously rolling a cast metal bar while preventing serious cracking of the bar surface due to tension exerted upon the unrolled surface by the adjacent rolled surface, comprising applying a fluid under pressure to the bar and creating a hydrostatic compressive stress on the unrolled bar surface immediately prior to rolling; said stress sufficient to reduce rolling tension to below the level needed to crack the bar; and

said step of applying a hydrostatic compressive stress to the bar surface includes the steps of flowing a liquid under a first high pressure to and around the bar immediately prior to rolling while flowing a liquid under a second, lower,



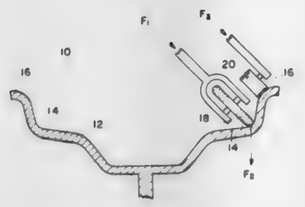
pressure to and around the bar immediately prior to contacting said bar with said first high pressure so that the flow of the second lower pressure liquid assists in sealing the first high pressure liquid around the bar.

4,448,053

METHOD OF STRESS ROLLING A METALLIC RIM

Roy C. Holmstrom, Lake Orion, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 18, 1982, Ser. No. 379,398
Int. Cl.³ B21D *53/26*; B21H *1/02*
U.S. Cl. 72—102 **2 Claims**



1. An improved method of stress rolling a metallic rim of the type which includes the step of mounting said rim for rotation, directing a stress roller into contact with a surface of a portion of said rim to be stress rolled, and applying a predetermined force to said stress roller during said rotation of said rim to cause it to produce a predetermined compressive stress in said portion of said rim near said surface thereof as said stress roller entirely traverses said surface, said rim including a peripheral flange adjacent said portion, said improvement comprising: applying an outside force to said peripheral flange to produce elastic bending of said rim at said portion thereof in a direction which will create a tensile force in said portion of said rim adjacent said surface thereof during said step of applying said predetermined force to said stress roller to produce a desired compressive stress in said portion of said rim near said surface thereof which exceeds said predetermined compressive stress; and said step of applying said outside force being accomplished by directing a second roller means in axial alignment with said stress roller into contact with said peripheral flange.

4,448,054

COIL WINDING APPARATUS

Albert Wayne, Muncie, Ind., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 250,815, Apr. 3, 1981, abandoned. This application May 24, 1983, Ser. No. 496,873
Int. Cl.³ B21C *47/00*; B21F *3/08*
U.S. Cl. 72—146 **5 Claims**

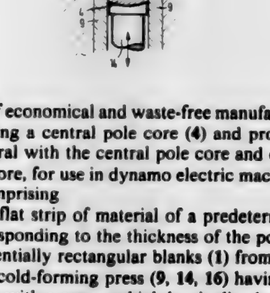
1. A coil winding apparatus for winding adjacent pancake type coils, said apparatus comprising:

(a) a winding table for supporting a coil during winding;

(b) restraining barrier means on the table surface for defining the outer dimensions of a coil;

(c) reel means adjacent to the table for storing and paying off a continuous strand of insulated metal onto the table and within the confines of the restraining barrier means;

(d) forming means for pressing the continuous strand against the restraining barrier means during placement of the outer coil turn and against each successive inner coil turn as the strand is placed spirally on the table;



(e) at least one of the forming means and the table being rotatable in such direction as to facilitate the placement of the strand in a spiral pattern, whereby a compact coil is formed;

(f) the forming means comprising a retractable member having leading surface means for forcing the strand radially outwardly; and

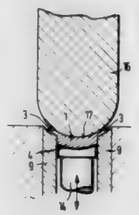
(g) the retractable member being pivotally mounted on the table, and includes drive means for rotating the member in the direction of placement of the strand on the table.

4,448,055

METHOD TO MANUFACTURE POLE PIECES FOR DYNAMO ELECTRIC MACHINE, AND SO-MADE POLE PIECE

Hans Würth, Ludwigsburg, and Jürgen Leinhos, Göttingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 165,556, Jul. 3, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,192
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935182
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—354 **5 Claims**



1. Method of economical and waste-free manufacture of pole pieces (6) having a central pole core (4) and projecting pole shoes (3) integral with the central pole core and of less thickness than the core, for use in dynamo electric machines having an air gap, comprising

providing a flat strip of material of a predetermined thickness corresponding to the thickness of the pole core (4);

severing essentially rectangular blanks (1) from the strip;

providing a cold-forming press (9, 14, 16) having

a die formed with a recess which has inclined edges (10) of the shape of the pole shoes (3);

and a central well, the junction of the inclined edges (10) and of the surfaces of the well-forming shearing edges (11);

a lower punch element (14) movable in the well and shaped to match the surface configuration of the pole core of the pole piece (6), and

an upper punch element (16) formed with an outwardly bulging surface (17) matching the surface configuration of the side of the pole piece (6) facing the air gap;

and including the steps of

positioning the essentially rectangular blank (1) on the inclined edges (10) of the die;

moving said upper and lower punch elements towards each other and engaging said punch elements with the blanks to shape, in one operation, the central pole core (4) and form the projecting pole shoes (3) without cutting waste, the step of forming the pole shoes (3) comprising

engagement of the blank with the inclined edge (10) of the die, and, upon contact of the blank with the shearing edges (11), and pressure of said upper punch element (16), the shearing edges shearing two side edge portions of the blank and flow forming the poles shoes (3) only by cutting into the blank to form the pole shoes as cut flaps of reduced thickness with respect to the thickness of the blank;

and the step of

shaping the surface configuration of the pole core comprising

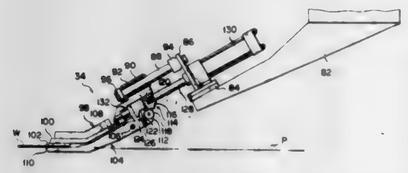
moving the lower punch element (14) in the well to shape the surface configuration of the pole core (4) while maintaining said predetermined thickness of the pole core.

4,448,056

INFEED MECHANISM FOR A PRESS

Kiyokazu Baba, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,974
Claims priority, application Japan, Oct. 12, 1981, 56-150015[U]; Oct. 12, 1981, 56-150021[U]
Int. Cl.³ B21D *43/10*
U.S. Cl. 72—422 **7 Claims**



1. In a press wherein an upper die or press slide is moved up and down relative to a lower die by drive means, an infeed mechanism for successively feeding sheetlike workpieces into the press in timed relation to the up-and-down motion of the upper die or press slide, comprising:

(a) an infeed cam mechanism driven from the same drive means as the upper die or press slide;

(b) a carriage linked to the infeed cam mechanism thereby to be reciprocated horizontally between a retracted position away from the dies and a loading position close to the dies;

(c) a pair of gripping jaw assemblies carried by the carriage for gripping each of the successive sheetlike workpieces in the retracted position of the carriage and for releasing the workpiece in the loading position thereof, each gripping jaw assembly comprising:

(1) guide means on the carriage extending at an angle to the plane of the horizon;

(2) an upper jaw having a gripping end and a base end and movable back and forth along the guide means;

(3) a lower jaw also having a gripping end and a base end and medially pivoted to the upper jaw, the gripping ends of the upper and lower jaws being adapted to engage the successive workpieces therebetween;

(4) a grip cam mechanism acting between the base ends of the upper and lower jaws; and

(5) a linear actuator mounted to the carriage and coupled to the grip cam mechanism for moving therethrough the upper and lower jaws back and forth along the guide means, the grip cam mechanism being adapted to cause the pivotal motion of the gripping end of the lower jaw toward the gripping end of the upper jaw upon both full extension and full contraction of the linear actuator; and

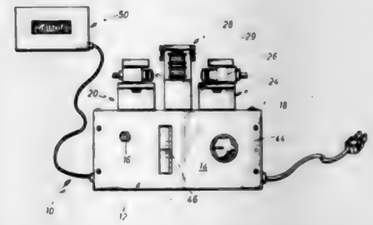
(d) a lock mechanism for preventing the infeed cam mechanism from reciprocating the carriage and retaining the latter in the retracted position during die replacement.

4,448,057

APPARATUS AND METHOD FOR TESTING A GEOPHONE DURING ASSEMBLY

Gary J. Craig, Houston, Tex., assignor to Geosource Inc., Houston, Tex.

Filed May 21, 1982, Ser. No. 380,840
Int. Cl.³ G01V *13/00*; G01M *19/00*
U.S. Cl. 73—1 DV **25 Claims**



1. Apparatus for testing a geophone during assembly comprising:

a power source;

a light source electrically connected to said power source;

means, electrically connected to said power source, for generating a voltage signal in response to light received from said light source;

a member for supporting said geophone, said geophone including a coil suspended by springs about a cylindrical magnet and pole pieces secured at each end of the magnet, said member located in a defined path between said light source and said means for generating a voltage signal; and

means for indicating said voltage signal, electrically connected to and operatively associated with said power source and said means for generating a voltage signal, said voltage signal representative of the resilient characteristics of said geophone springs.

4,448,058

RESPIRATORY GAS ANALYSIS INSTRUMENT HAVING IMPROVED VOLUME CALIBRATION METHOD AND APPARATUS

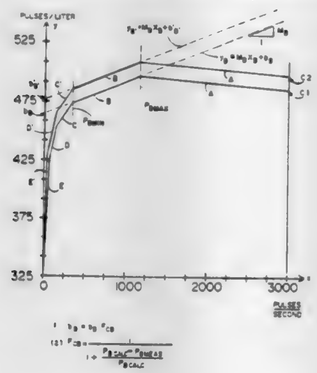
Michael B. Jaffe; Charles R. Luper, both of Anaheim; Eric Mabry, Westminster, and Howard J. Reid, Brea, all of Calif., assignors to Sensormedics Corporation, Anaheim, Calif.

Filed Jul. 2, 1982, Ser. No. 394,608
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—23 **50 Claims**

1. In a gas analysis instrument ofthe type having at least one gas analyzer for measuring the concentration of a component of interest in human breath, and a gas turbine for producing a number of output pulses that varies in accordance with the volume and rate of flow of human breath therethrough, the improvement comprising:

(a) first means for storing a piecewise linear approximation of the response of the gas turbine,

(b) second means responsive to the number of output pulses produced by the turbine for determining the operating point of the turbine on the stored approximation, and



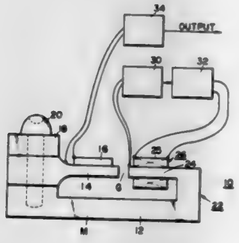
(c) third means responsive to the stored approximation and the output of the second means for providing volume data for a breath.

4,448,059

ENGINE VIBRATION SENSOR

Haruyoshi Kondo, and Masaharu Takeuchi, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Apr. 2, 1982, Ser. No. 364,679
Claims priority, application Japan, Apr. 6, 1981, 56-51326
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **9 Claims**



1. An engine vibration sensor comprising:

a vibrator formed of a magnetic material whose Young's modulus varies in response to a strength of a magnetic field applied to said material, said vibrator having a resonant frequency to resonate at a specific frequency of vibration of an engine and the vibration of said vibrator being converted into an electric signal representing the engine vibration, said resonant frequency being variable in response to a change in magnetic field applied to said vibrator,

a magnetic field generator for applying a magnetic field to said vibrator to vary the resonant frequency of said vibrator, and

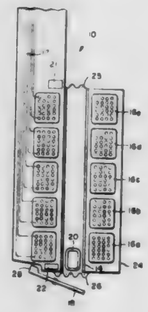
a means for controlling the intensity of the magnetic field applied to said vibrator by said magnetic field generator, whereby the resonant frequency of the vibrator is adjusted to the specific frequency of vibration of the engine by varying the intensity of the magnetic field.

4,448,060

VISCOSITY MEASUREMENT USING PRESSURIZED VISCOMETER DEVICE

Peter Maruhnic, Pennington, N.J., assignor to HRI, Inc., Gibbsboro, N.J.

Filed Mar. 1, 1982, Ser. No. 353,456
Int. Cl.³ G01N *11/12*
U.S. Cl. 73—57 **5 Claims**



1. A fluid viscosity measuring device which is installed in the upper portion of a pressurized reactor containing an ebullated catalyst bed and has its lower end located above the catalyst bed, said device comprising:

(a) a vertically oriented non-magnetic tube containing a movable core-float member which is cylindrical shaped and contains sufficient iron to be magnetizable and has a diameter slightly smaller than the tube inner diameter;

(b) multiple electromagnetic coils surrounding said tube, and enclosed within electrical insulating material which comprises a resin compound, said tube being surrounded by at least three adjacent electromagnetic coils each centrally located around the tube;

(c) switching means for energizing and deenergizing said electromagnetic coils in a sequence so as to magnetically lift the magnetizable core-float member to the upper end of said tube and then release said member, said core-float member having a length of at least about 0.8 the height of each electromagnetic coil and the distance for movement of the core-float member is between about 6 and 24 inches; and

(d) timing means for measuring the elapsed time for the core-float member to fall through said tube from the top to the bottom end of said tube.

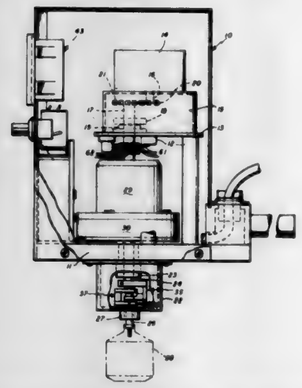
4,448,061

VISCOMETER WITH A CONTINUOUSLY VARIABLE ELECTRONIC READOUT

David A. Brookfield, 168 Massapoag Ave., Sharon, Mass. 02067

Filed Jun. 7, 1982, Ser. No. 385,576
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—59 **4 Claims**

1. A viscometer for use in continuously monitoring the viscosity of a liquid, said viscometer including a rotatable drive unit, means to rotate said unit, a rotatable driven unit coaxial with said first mentioned drive unit and provided with an element to be immersed in the liquid the viscosity of which is to be monitored, and to be subjected to drag which increases as the viscosity of the liquid increases, resiliently yieldable means connecting said unit enabling the drive unit to rotate the drive unit but with the connecting means yielding as the drag increases, and an electric circuit including an electronic readout having a plurality of leads and a transducer having a stator included in said drive unit and a rotor included in said driven unit, said stator having a plurality of leads each including a slip ring, one for each of said readout leads and said readout leads including brushes, one for each slip ring and in contact therewith, said transducer providing a variable signal continuously to said readout to which said readout responds and which



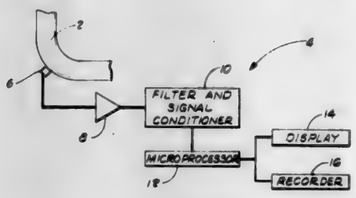
varies in strength immediately with any variations in the viscosity of the liquid.

4,448,062

METHOD AND APPARATUS FOR EROSION DETECTION AND LOCATION IN HYDROCARBON PRODUCTION SYSTEMS AND THE LIKE

Marvin L. Peterson, and Norman W. Hein, Jr., both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 22, 1981, Ser. No. 313,902
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—86 **8 Claims**



1. A method for detecting the loss of conduit material from a conduit through which flows a fluid comprising:

sensing the energy released when the conduit material is separated from the conduit as the fluid flows therethrough;

determining the amount of material separated from the conduit based directly on the sensed released energy;

wherein a particulate substance is entrained in the fluid and wherein the step of sensing the energy released includes:

attaching to the conduit a transducer means responsive to a first range of frequencies of the released energy;

converting, by means of said transducer means, the sensed released energy within the first range of frequencies into corresponding electrical signals;

wherein the first range of frequencies of the released energy to which the transducer means is responsive includes the frequencies between approximately 100 kilohertz and approximately 500 kilohertz;

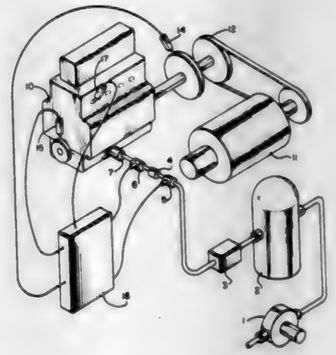
wherein the step of sensing the energy released further includes electrically filtering the corresponding electrical signals so that only those ones of the corresponding electrical signals having frequencies within a second range of frequencies are provided for performing said step of computing the quantity of material separated from the conduit.

4,448,063

ENGINE COLD TESTING

Ronald K. Mudge, Brighton, and Edwin E. Rice, Farmington Hills, both of Mich., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 3, 1983, Ser. No. 463,400
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.2 **16 Claims**



1. An apparatus for engine testing comprising:

means for rotating the engine;

means for supplying a fluid to the pressure oil supply gallery of said engine;

means for measuring the instantaneous flow of said fluid on a continuing basis as said engine is rotated;

means for determining the position of said engine in its rotating cycle; and

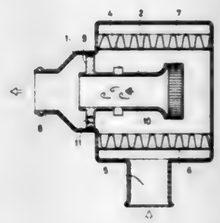
means for determining the amount of said fluid flow relative to the position of said engine in its rotating cycle.

4,448,064

DEVICE FOR DETECTING THE INTAKE AIR FLOW RATE IN AN INTERNAL COMBUSTION ENGINE

Yoshiaki Asayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,660
Claims priority, application Japan, Nov. 28, 1980, 55-169250
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—118.2 **6 Claims**



1. A device for detecting an intake air flow rate in an internal combustion engine, comprising:

a casing into which intake air is introduced;

a detector for detecting the air flow rate;

an air conduit housing said detector; and

a partition blocking off a section of said casing and being penetrated on its upstream side by said conduit for bounding upstream and downstream regions of the intake air, said partition being positioned downstream of the air flow detecting portion of said detector.

4,448,065

METHOD AND APPARATUS FOR PNEUMATICALLY MEASURING THE VOLUME OF COMBUSTION CHAMBER SPACES IN CYLINDER HEADS AND THE LIKE

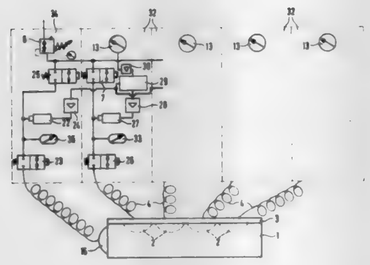
Karl-Heinz Meurer, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to J. W. Froehlich Machinenfabrik GmbH, Leinfelden-Echterdingen, Fed. Rep. of Germany

Filed Jul. 6, 1982, Ser. No. 395,682

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130151; Nov. 12, 1981, 3144941

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 R **15 Claims**



1. Process for measuring the volume of one or more spaces in a workpiece, comprising

supplying fluid under a predetermined pressure to a first pressure circuit,

communicating the fluid in said first pressure circuit to a workpiece space to be measured,

comparing the actual pressure in said workpiece space and first circuit with a predetermined nominal pressure corresponding to a known nominal combustion chamber volume,

generating a workpiece space volume indicating signal dependent on the difference in said actual and nominal pressures,

generating a temperature compensating signal dependent on the actual temperature of the workpiece at which the workpiece space is being measured, and

communicating the temperature compensating signal to means for automatically correcting the workpiece space volume indicating signal to correct erroneous volume indications due to workpiece temperature variation induced pressure changes, wherein said generating a temperature compensating signal includes:

placing a detachable test chamber part in temperature communicating relationship to the workpiece, said test chamber part defining a test chamber space of predetermined volume,

supplying fluid under predetermined pressure to a second pressure circuit,

communicating the fluid in said second pressure circuit to said test chamber space,

monitoring the actual pressure in said test chamber space and said second circuit, and

utilizing the monitored actual pressure to generate a corresponding signal which serves as said temperature compensating signal.

4,448,066

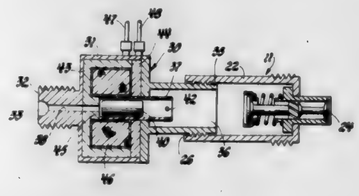
FUEL PER PULSE INDICATOR FOR A PULSE ENGINE FUEL INJECTION SYSTEM

Edward F. Romblom, Dewitt, and Arthur R. Sundeen, Lansing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 293,002, Aug. 14, 1981, abandoned. This application Jul. 19, 1982, Ser. No. 399,439

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **8 Claims**



1. Fuel per pulse sensing apparatus for a fuel line with a fuel injector in an internal combustion engine pulse fuel injection system comprising, in combination:

a body inserted in the fuel line, the body defining a cylindrical bore with an inlet and outlet at opposite axial ends thereof;

a magnetic piston axially movable in the bore to and from a stopped position, the piston having an outer diameter of such size in relation to the inner diameter of the cylindrical bore that fluid flow past the piston exerts an axial force thereon;

means comprising, with the piston, a magnetic circuit including an actuating coil having an inductance varying with axial piston position over the range of piston movement resulting from a fuel injection pulse;

reset means effective, before each injection event to apply an electrical current to the coil so as to move the piston to its stopped position;

means effective, at least when the piston is within said range of piston movement, to measure a parameter varying with the inductance of the coil and to determine therefrom substantially how far the piston moves axially in response to a fuel injection pulse, whereby the injected fuel quantity is known.

4,448,067

METHOD AND APPARATUS FOR DETERMINING THE INJECTED FUEL QUANTITY IN INTERNAL COMBUSTION ENGINES

Hans-Christian Engelbrecht, Stuttgart; Helmut Kniss, Waiblingen, and Wolf Wessel, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

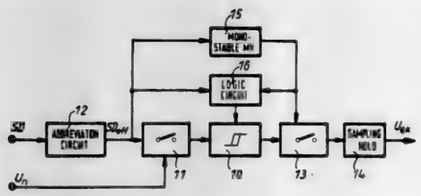
Filed Sep. 22, 1982, Ser. No. 421,665

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224742

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **16 Claims**

8. An apparatus for determining the injected fuel quantity (Q_K) in internal combustion engines, and providing for the injection duration correction upon the evaluation of a performance graph indicating the injection quantity over the injection duration dependent upon the rpm (n) as a parameter for the engine type, comprising, means supplying an injection duration signal (SD) derived from the operation of the engine, an integrator means for the integration of rpm-dependent voltages (Un), and circuit means (12) for correcting the injection duration signal, whereby the integration duration is determined from the corrected injection duration signal.



4,448,068

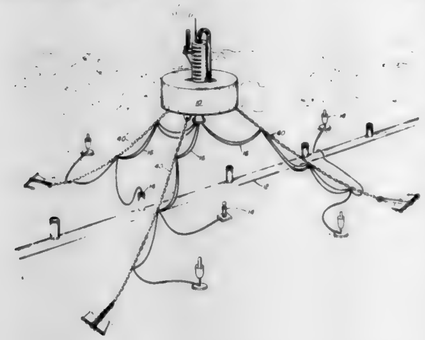
SHALLOW WATER ENVIRONMENTAL/OCEANOGRAPHIC MEASUREMENT SYSTEM

Alexander L. Sutherland, and Richard C. Swenson, both of Carriere, Miss., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1981, Ser. No. 298,053

Int. Cl.³ B63B *35/00*

U.S. Cl. 73—170 A **3 Claims**



1. A shallow water environmental/oceanographic measurement system comprising:

a moored cylindrical buoy having a central hawse pipe, said cylindrical buoy being anchored at multiple points over a particular location and containing an electronics package;

a first pipe mounted on said cylindrical buoy, said first pipe enclosing the upper end of said hawse pipe;

a second pipe having a gooseneck at the top, said second pipe being mounted on said cylindrical buoy such that the bottom of said second pipe extends into the interior of said cylindrical buoy and said gooseneck extends over the upper end of said first pipe;

a plurality of sensors mounted on the sea floor within the moor area of said cylindrical buoy, said sensors being connected to said electronics package in said cylindrical buoy by electrical cables over which sensor data is transmitted; and

means connected to said electronics package for transmitting said sensor data to a remote site, said transmitting means being mounted on said cylindrical buoy;

whereby said electrical cables from said sensors are routed through said hawse pipe, said first pipe and said second pipe to said electronics package in the interior of said cylindrical buoy.

4,448,069

AIRSPEED SENSING POST FOR DETERMINING RELATIVE VELOCITY OF A FLUID AND A CARRIER

Francis J. P. Gibert, Les Mesnuls, France, assignor to FGP Instrumentation, Les-Clayes-sous-Bois, France

Filed Jan. 7, 1982, Ser. No. 337,710

Claims priority, application France, Jan. 8, 1981, 81 00186

Int. Cl.³ G01C *21/10*

U.S. Cl. 73—182 **8 Claims**



1. An airspeed sensing post for determining the relative velocity of a fluid and a carrier, in a direction which can vary in a substantially planar circle sector defined on both sides of a mean direction, from static pressure and total pressure values, said post including

a body to be fixed to the carrier,

a static pressure sensing device fixed to said body and forming a first pressure signal, and

a total pressure sensing device, fixed to said body, having an orifice opening in a direction substantially parallel to said mean direction and for forming a second pressure signal,

said static pressure sensing device including at least one orifice made in a surface in which it opens in a direction substantially normal to said mean direction,

said surface in which at least one orifice opening includes at least a part of a revolutionary surface having a revolution axis normal to the plane of said circle sector,

said revolution axis intercepting or being disposed very near to said orifice,

said revolutionary surface part having an angular extension at least equal to the angular extension of said circle sector, and

said revolutionary surface part being disposed at least above the orifice in the flowing direction of the fluid, so that the fluid flow arriving near said orifice is always the same and the fluid flows along a surface having the same contour when the fluid flow direction varies in the circle sector.

4,448,070

HOT-WIRE TYPE FLOW VELOCITY METER

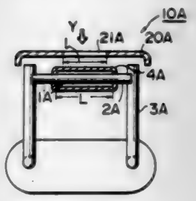
Yoshishige Ohyama; Yutaka Nishimura; Teruo Yamauchi, all of Katsuta; Hiroshi Kuroiwa; Minoru Ohsuga, both of Hitachi, and Tadashi Kirisawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,641

Claims priority, application Japan, Apr. 20, 1981, 56-58473

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **9 Claims**



1. In a hot-wire type flow velocity meter having an electric

resistor for producing heat and a supporting member supporting said electric resistor, said electric resistor and said supporting member being placed in a flowing fluid and the flow velocity of said fluid being measured by sensing the change in the rate of heat transfer from said electric resistor to said fluid,

an improvement which comprises shielding means for shielding said supporting member so as to prevent any change of rate of heat transfer from said supporting member to said fluid around said supporting member, and a support to the surface of which said electric resistor is attached and a coating member on the surface of said electric resistor, said support being supported by said supporting member, said shielding means comprising a shielding member attached to said supporting member and being disposed so as to shield said supporting member in such a manner as to expose only said electric resistor to the flow of fluid,

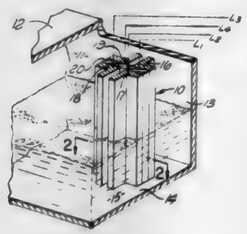
wherein said shielding member is provided with a vent hole and further including a guide plate attached to said shielding member so as to be coaxial with said supporting member on one side of said resistor and within said shielding member.

4,448,071

METHOD OF MEASURING AND INDICATING FLUID LEVELS

Emanuel Tward, Northridge, Calif., assignor to Tward 2001 Limited, Los Angeles, Calif.

Filed Feb. 3, 1982, Ser. No. 345,350
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—304 C **3 Claims**



1. A method for measuring the level of a fluid within a fluid storage vessel over a predetermined height range comprising:

(a) sensing the fluid level within said vessel with a multi-capacitor fluid level sensor having a length at least equal to said height range and formed of a first pair of capacitors of said length and of fixed and substantially like capacitive values located within said vessel and of a second pair of capacitors of said length and having like open dielectric spaces located within said vessel for receiving varying levels of the fluid within said vessel, said fluid within said spaces functioning as a variable dielectric material therein whereby said second pair of capacitors have variable capacitive values related linearly to the fluid level within said spaces;

(b) connecting the four capacitors of said sensor together to form the four capacitive sides of a Wheatstone bridge circuit, the pair of fixed value capacitors connected as two opposing sides of said bridge and the pair of variable value capacitors connected as the remaining two opposing sides of said bridge;

(c) applying a source of alternating current of constant voltage and set frequency across said bridge circuit to a first set of bridge terminals at opposite corners of the bridge, each of said first terminals located between a fixed capacitor and a variable capacitor of said sensor;

(d) connecting a current flow detection circuit across said bridge to a second set of bridge terminals independent of said first set of terminals and at opposite corners of the bridge, each of said second terminals located between a fixed capacitor and a variable capacitor of said sensor, said bridge circuit being in an unbalanced capacitive state so long as any fluid remains in the dielectric spaces of the variable value capacitors and said detection circuit experiencing a current flow so long as said bridge is in said unbalanced state with the current value of said current flow related linearly to the variable capacitive values of the variable capacitors; and

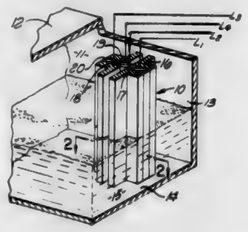
(e) measuring the current value in said detection circuit and indicating said value as a fluid level value in direct linear relationship with said current value.

4,448,072

FLUID LEVEL MEASURING SYSTEM

Emanuel Tward, Northridge, Calif., assignor to Tward 2001 Limited, Los Angeles, Calif.

Filed Feb. 3, 1982, Ser. No. 345,352
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—304 C **4 Claims**



1. A system for measuring the level of a fluid within a fluid storage vessel over a predetermined height range comprising:

(a) a multi-capacitor fluid level sensor having a length at least equal to said height range and formed of

(i) a first pair of capacitors of known fixed and substantially like capacitive value located within said fluid vessel and

(ii) a second pair of capacitors located within said fluid vessel having like open dielectric spaces for receiving varying levels of the fluid contained within said vessel, said fluid within said spaced functioning as a variable dielectric material therein whereby said second pair of capacitors have variable capacitive values;

(b) means connecting the four capacitors of said sensor together to form the four capacitive sides of a Wheatstone bridge circuit, the pair of fixed value capacitors connected as two opposing sides of said bridge and the pair of variable value capacitors connected as the remaining two opposing sides of said bridge;

(c) a source of alternating current of constant voltage and set frequency applied across said bridge circuit to a first set of bridge terminals at opposite corners of the bridge, each of said first terminals located between a fixed capacitor and a variable capacitor of said sensor; and

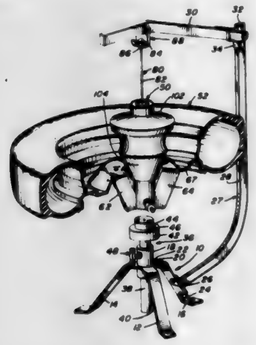
(d) a detection circuit connected across the bridge to a second set of terminals independent of said first set of terminals and at oposite corners of the bridge, each of said second terminals located between a fixed capacitor and a variable capacitor of said sensor, said detection circuit including current value measurement and current value indication circuitry.

4,448,073

WHEEL BALANCING DEVICE

Louison Patry, 393 8th Street West, Thetford Mines, Quebec, Canada

Filed Jun. 28, 1982, Ser. No. 392,461
Int. Cl.³ G01M *1/02*
U.S. Cl. 73—484 **8 Claims**



1. A device designed to balance wheels comprising:

(a) a tripod;

(b) a vertically sliding element mounted upon said tripod;

(c) a supporting element serving to support a wheel to be balanced, said supporting element itself supported, in one instance, upon said vertically-sliding element;

(d) a suspension element mounted upon said tripod and including a lever extending over said supporting element;

(e) a connecting element uniting the supporting element to said lever and allowing said supporting element, in a second instance, to be supported in free suspension upon being released from said vertically-sliding element;

(f) a first reference mark associated with said connecting element; and

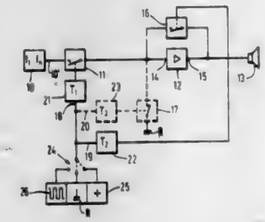
(g) a second reference mark associated with said supporting element, the balancing of the wheel being effected by adding weights to the wheel until the two reference marks coincide.

4,448,074

SOFT-SWITCHING AUDIOMETER

Wolfgang Schmidt, Berlin, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 3, 1982, Ser. No. 345,224
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 3108407
Int. Cl.³ A61B *5/12*
U.S. Cl. 73—585 **14 Claims**



1. Soft-switching audiometer having

a source (10) of audio signals;

an amplifier (12) connected to the source, and an audio transducer (13) providing amplified audio output;

a first switch (11) serially connected between the source (10) and the amplifier;

and a switch control unit (24; 25, 26, R) to control switch operation,

and wherein, in accordance with the invention,

a second switch (16) is connected in a circuit path across the input-output terminals (14, 15) of the amplifier;

said first switch (11) and said second switch (16) are electronic controlled switches, both being connected to and controlled to open and close by the switch control unit;

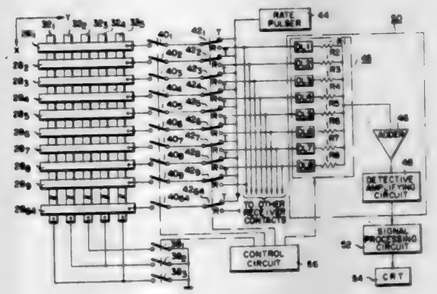
and both said first and second switches have a current passing/current blocking vs. time characteristic which results in a current rise, or decay, respectively, which is close to but different from abrupt change in current level yet providing rapid level and, below the rate of level change resulting in perceived switching clicks upon connection and disconnection of a circuit path from said audio source (10) through the amplifier (12) to the transducer (13).

4,448,075

ULTRASONIC SCANNING APPARATUS

Yasuhiko Takemura, and Fumihiko Akutsu, both of Tochigi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 6, 1981, Ser. No. 260,992
Claims priority, application Japan, May 9, 1980, 55-61592
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 **8 Claims**



1. An ultrasonic beam apparatus comprising:

a transducer plate;

a plurality of elongated, parallel driving line electrodes arranged on one surface of said transducer plate and spaced side-by-side in a first direction;

a plurality of elongated, parallel grounding line electrodes arranged on the opposite surface of said transducer plate and spaced side-by-side in a second direction not parallel to said first direction;

said driving line electrodes and said grounding line electrodes being positioned to form a matrix of individual transducer elements capable of both emitting and receiving ultrasonic beams;

a transmission control means interconnected with said driving line electrodes and said grounding line electrodes for selectively supplying electronic pulses to selected electrodes to produce ultrasonic beams; and

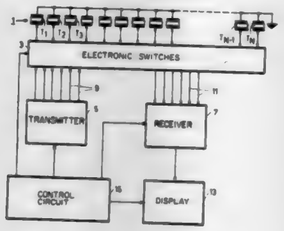
reception control means interconnected with said driving line electrodes and said grounding line electrodes for switching selected electrodes to a reception mode to sequentially produce generally circular arrays of receptive transducer elements respectively having a common center but different diameters to thereby vary along both the first and second directions the effective reception area of the apparatus.

4,448,076

METHOD AND DEVICE FOR EXAMINATION BY MEANS OF ULTRASONIC BEAMS

Teunis R. van Heelsbergen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 197,366, Oct. 15, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,557
Claims priority, application Netherlands, Oct. 15, 1979, 7907595
Int. Cl.³ G01N 29/04
U.S. Cl. 73—626
9 Claims



1. A method of examining an object with ultrasound energy utilizing a row of N electroacoustic transducers, comprising the steps of:

selecting a group of M adjacent transducers in the row, M being less than or equal to N;

applying first electrical signals to at least part of the group of transducers, the signal applied to each of the transducers being multiplied by a respective one of a first set of amplitude weighting factors, to transmit ultrasound energy as a beam which does not diverge between the group and the object;

receiving said ultrasound energy, which is reflected from the object, with said group of transducers to produce second electrical signals;

applying the second signals to receive networks which multiply each of the second signals by a respective one of a second set of amplitude weighting factors; and

applying the second signals to receive networks which multiply each of the second signals by a respective one of a third set of amplitude weighting factors;

wherein the second and third sets of weighting factors are different from each other and the sum of the weighting factors in the second set is equal to the sum of the weighting factors in the third set.

4,448,077

VIBRATION DIAGNOSIS METHOD FOR ROTARY MACHINE

Kazuo Sato, Kitaibaraki; Motoji Ohmori, Hitachi; Masakazu Takasumi, Ibaraki; Motohiro Shiga, Hitachi; Koki Shiohata, Ibaraki, and Fumio Fujisawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 371,561
Claims priority, application Japan, Apr. 30, 1981, 56-64162
Int. Cl.³ G01M 1/22
U.S. Cl. 73—660
11 Claims

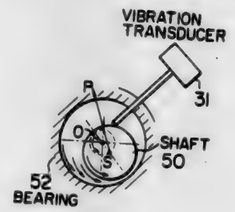
1. A vibration diagnosis method for a rotary machine which detects a shaft vibration of the rotary machine to diagnose the presence or absence of a self-excited vibration on the basis of a detected shaft vibration signal comprising:

a first step of detecting a rotating speed n of the rotary machine;

a second step of determining if the rotating speed n detected in the first step is not lower than two times of a rotating speed n_1 corresponding to a first order natural frequency of the rotary machine;

a third step of determining phases at predetermined characteristic points on a vibration waveform of the detected shaft vibration signal in a plurality of cycles of the detected shaft vibration signal when it is determined that the detected rotating speed n is not lower than the rotating speed n_1;

a fourth step of determining a difference between the determined phases for at least adjacent ones of the plurality of cycles; and



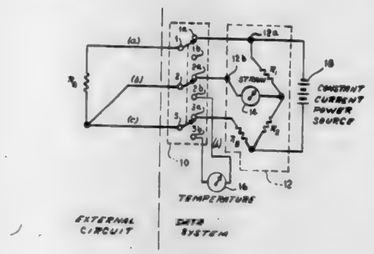
a fifth step of diagnosing the occurrence of the self-excited vibration on the basis of the phase difference determined in the fourth step.

4,448,078

THREE-WIRE STATIC STRAIN GAGE APPARATUS

William F. Bridges, Palm City, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 23, 1982, Ser. No. 444,006
Int. Cl.³ G01B 7/18
U.S. Cl. 73—766
5 Claims



1. A three-wire static strain gage apparatus comprising in combination:

means for forming a Wheatstone bridge comprising a first, second and third resistors in series, and means for measuring strain connected to the common junction of said first and second resistors,

means for switching arranged to provide respectively a complete circuit between one end of said first resistor and the other end of said strain measuring means and between one end of said third resistor and said other end of said strain measuring means in a first switch mode, said switching means providing an open circuit respectively between said first and third resistors and said other end of said strain measuring means in a second switch mode,

a strain gage means having a first, second and third leadwire connected thereto, said first leadwire connected to one end of said strain gage means and to said switching means, said switching means in said first switch mode connecting said first leadwire to the non-common end of said first resistor, said second and third leadwires being connected to the other end of said strain gage means, the other end of said second leadwire being connected to said switching means which in said first switch mode connects it with said other end of said strain measuring means, the other end of said third leadwire being connected to said switching means which in said first switch mode connects it to said one end of said third resistor, and

means for measuring temperature connected to said switching means which in said second switch mode connects said temperature measuring means to the non-common ends of said second and third leadwires, said strain measuring means measuring the strain in said strain gage means in said first switch mode, said temperature measuring means measuring the temperature of said second and third leadwires in said second switch mode to provide a temperature compensation reading for said gage measurement, and,

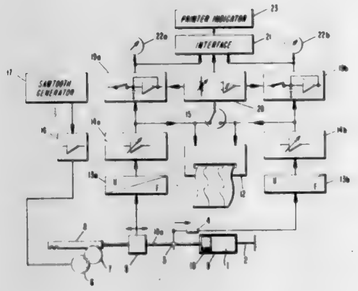
a power source means connected between the common junction of said second and third resistors and said one end of said first resistor.

4,448,079

PROCESS FOR DETERMINING THE FORCE ACTING ON A TEST PIECE AND THE RESULTANT CHANGE IN PARAMETERS AND A DEVICE FOR CARRYING OUT SUCH A PROCESS

Gerd Schumacher, Pinneberg-Waldenau, and Heinz-Werner Masurat, Pinneberg, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 19, 1982, Ser. No. 359,912
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1981, 3111319
Int. Cl.³ G01D 1//16
U.S. Cl. 73—789
15 Claims



1. A process for determining the force acting on a test piece and the parameters of the test piece reacting under the force, comprising the steps of:

(a) exposing the test piece to the effect of the force increasing in a linear manner;

(b) measuring continuously the resultant changes in parameters and the force needed for this purpose, and comparing the ascertained values with predetermined values; and

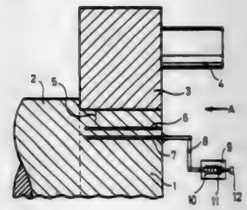
(c) determining the measured value pair when there is equality between at least one measured value and the associated reference value.

4,448,080

PROCESS AND APPARATUS FOR MONITORING THE FORMATION AND PROPAGATION OF CRACKS IN MACHINE PARTS AND COMPONENTS

Manfred Dressel, Lambsheim; Johannes Greven, Lampertheim; Arnulf Jeck, Neustadt; Rudolf Magin, Schifferstadt; Günther Nick, Neuhofen; Paul Schaffarczyk, Speyer, and Guenther Weiss, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 330,026
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049628
Int. Cl.³ G01N 19/08
U.S. Cl. 73—799
6 Claims



1. A method for continuously monitoring the formation and propagation of cracks in movable machine parts and components during the operation thereof, especially in the rotating shafts or prime movers and mechanical equipment, said method comprising

providing in the uncracked section of the component at least one zone which is permeable to a medium and which intersects the plane of the crack,

filling said zone with a medium and adjusting said medium to a defined pressure which deviates from the ambient pressure,

closing off said zone with respect to the environment,

providing outside of said component a pressure responsive means,

connecting said pressure responsive means by a line to said zone for communication therewith, and

deriving from the displacement of said pressure responsive means an indication of a change in pressure caused by the crack.

4,448,081

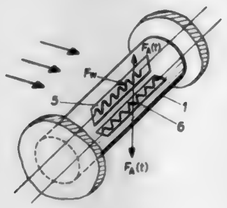
METHOD AND DEVICE FOR THE DYNAMIC AND DENSITY-INDEPENDENT DETERMINATION OF MASS FLOW

Jörg Kolitsch, Munich; Norbert Sparwell, Troisdorf, and Eugen Brockmann, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 21, 1981, Ser. No. 295,021
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032578
Int. Cl.³ G01F 1/86
U.S. Cl. 73—861.03
15 Claims

1. Method for the dynamic and density-independent determination of the mass flow of fluids, comprising placing a single, rigid, fixed vortex-generating bluff body in the flow to generate vortices according to the principal of the Karman vortex path, determining the dynamic pressure ($\frac{1}{2}\rho v^2$), wherein ρ is the density and V is the velocity of flow, via the effect of the drag directly at said bluff body, said dynamic pressure being directly determined as an electric signal at said vortex-generating bluff body, determining the velocity of flow (v) via the effect of the vortex shedding at said bluff body, another electric signal being obtained which is due to the effect of the differential pressure generated by the vortex shedding in a direction normal to the direction of flow, the frequency of the

latter signal being a measure of the flow velocity, and determining the mass flow (m) according to the equation:



$$m=2\cdot(\tfrac{1}{2}\rho v^2)\cdot\tfrac{1}{2}\cdot A$$

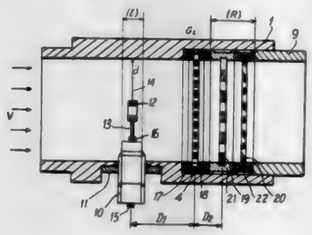
wherein A is the cross section of the flow channel.

4,448,082

DIFFERENTIAL TYPE TRANSIT-TIME IONIC PICKUP

Roger Bariol, Olivet; Jackie Lecomte, Orleans, and Jean-Marie Bouvet, Boulogne-Billancourt, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 29, 1981, Ser. No. 306,851
Claims priority, application France, Oct. 7, 1980, 80 21400
Int. Cl.³ G01F *1/56, 1/70*
U.S. Cl. 73—861.05 **10 Claims**



1. Ionic transit-time pickup of the type which includes a body having an emission area (E) and a receiving area (R), associated with an electronic device making it possible to obtain an electric magnitude in the form of a pulse whose width depends on the volume flow of a gaseous fluid in an intake manifold, wherein said receiving area (R) comprises two parallel grids (19, 20) between which is measured the transit time of the ionized particles so that a differential measurement system is established and wherein said emission area (E) contains a multiplicity of emission electrodes (14, 27) which are equally distributed radially in a plane perpendicular to the stream of the gaseous fluid and which are supported by a portion (12) which is centered in said body.

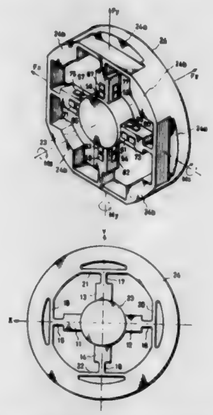
4,448,083

DEVICE FOR MEASURING COMPONENTS OF FORCE AND MOMENT IN PLURAL DIRECTIONS

Junichi Hayashi, Akashi, Japan, assignor to Yamato Scale Company, Ltd., Hyogo, Japan

Filed Apr. 5, 1982, Ser. No. 365,797
Claims priority, application Japan, Apr. 13, 1981, 56-56004
Int. Cl.³ G01L *5/16*
U.S. Cl. 73—862.04 **3 Claims**

1. A device for measuring components of force and moment in plural directions, comprising a central hub portion, a rigid annular rim portion, a plurality of spoke portions extending outwardly from said hub portion with pairs of spoke portions positioned in mutually orthogonal radial directions and each having a rectangular cross-section with its width dimension parallel to the radial plane and its height dimension perpendicular to said radial plane, a plurality of chord portions each coupled laterally at its midway to the top to one of said spoke portions and also coupled at both ends to said rim portion for exhibiting substantial flexibility with respect to a bending force applied thereto along the extending direction of said spoke portion, and a plurality of strain detecting mechano-electric conversion elements attached to said spoke portions; wherein each of said spoke portions consists of a trunk section adjacent



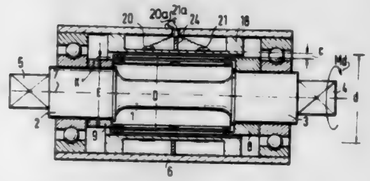
to said hub portion and an end section adjacent to said chord portion, the width dimension of said end section being substantially less than that of said trunk section, substantially uniform in width throughout its length and symetrical about the axis of the associated trunk section whereby said end section exhibits substantial flexibility with respect to a twisting force applied thereto about the extending direction of said spoke portion, and said conversion elements are adhered to the four surfaces of said trunk sections.

4,448,084

NON-CONTACTING SHAFT POSITION SENSOR

Klaus Dobler, Gerlingen, and Hansjörg Hachtel, Weissach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,316
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209623
Int. Cl.³ G01L *3/10*
U.S. Cl. 73—862.33 **18 Claims**



18. Non-contacting relative shaft position sensor for determination of the relative position or rotation of a first shaft element (2, 5) with respect to a second shaft element (3, 4) axially aligned with the first shaft element, and relatively angularly shiftable with respect thereto, having

a first sleeve (9) secured to the first shaft, surrounding said shaft over a portion of its axial length, and rotatable therewith;

a second sleeve (8) secured to the second shaft and rotatable

therewith, concentric with the first sleeve and telescopically extending thereover, said first and second sleeves being relatively rotatable with respect to each other upon relative twist or rotation of said shaft elements;

means (11, 16, 17) for subdividing the circumferences of said sleeves into essentially part-cylindrical segments or portions (14, 15) of alternating high electrical conductivity (14, 15) and low electrical conductivity (11, 16, 17);

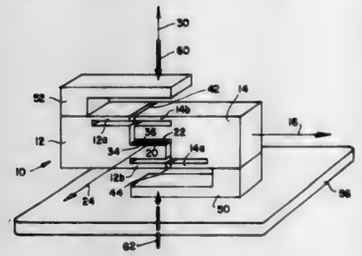
and an exciter winding means (20, 21) positioned for coupling high-frequency currents to said sleeves and inducing eddy currents in said sleeves.

4,448,085

FORCE TRANSDUCER

Shih-Ying Lee, Lincoln, Mass., assignor to Setra Systems, Inc., Acton, Mass.

Filed May 19, 1981, Ser. No. 265,087
Int. Cl.³ G01L *1/14*; G01G *3/08*
U.S. Cl. 73—862.64 **25 Claims**



25. A force transducer comprising:

A. a pair of elongated members, each of said members extending along a common central axis and having at least in part, complementary faces at their adjacent ends, each complementary face having at least one sensing portion angularly offset from said central axis by less than ninety degrees, wherein each elongated member includes at least one planar slot extending from its complementary face,

whereby upper and lower beam portions of said elongated member are spaced apart from each other in a direction of a first reference axis, said first reference axis being perpendicular to said central axis, said upper and lower beam portions being relatively flexible about axes parallel to a second reference axis, said second reference axis being perpendicular to said central axis and said first reference axis,

B. means for joining the upper beam portion of each of said pair of elongated members and the lower beam portions of the other said pair of elongated members to form a monolithic structure, wherein said complementary faces are mutually offset in the direction of said first reference axis, and are moveable in the direction parallel to said first reference axis and relatively immoveable otherwise,

C. a planar electrically conductive member on said sensing portions of said complementary faces,

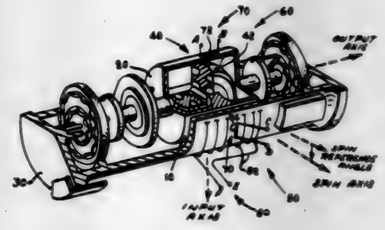
whereby the capacitance associated with said conductive members is related to the forces applied to said pair of elongated members.

4,448,086

TEMPERATURE CONTROLLED GYRO

John M. Kennel, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 20, 1982, Ser. No. 380,451
Int. Cl.³ G01C *19/04*
U.S. Cl. 74—5 R **12 Claims**



1. A gyroscope assembly, comprising:

a. a gyroscope;

b. a sealed inner container which houses said gyroscope;

c. a sealed outer container which houses said inner container;

d. a fluid interposed between said inner container and said outer container, whereby said inner container is supported by and floats in said fluid;

e. means, operably associated with said inner container and said outer container, for sensing the temperature respectively of said inner and outer containers and the difference in temperature thereof, wherein the temperature of said inner container is higher than the temperature of said outer container; and

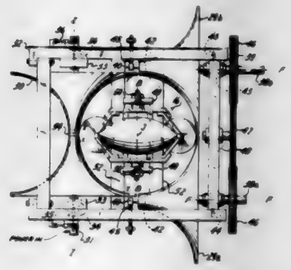
f. means, operably associated with said outer container and with said means for sensing the temperature respectively of said inner and said outer containers and the difference thereof, for raising the temperature of said outer container to the temperature of said inner container.

4,448,087

CONTINUOUSLY VARIABLE TORQUE TRANSMITTER

Eyal Barzel, 4707 Delafield Ave., Riverdale, N.Y. 10471

Filed Mar. 6, 1981, Ser. No. 241,028
Int. Cl.³ F16H *15/16, 15/08, 15/26*
U.S. Cl. 74—193 **14 Claims**



1. A continuously variable torque transmitter comprising a bi-rotor having a plurality of ovoids assembled to form a wheel whose perimeter is a substantially continuous circle, each ovoid being mounted for independent rotation about its axis and each ovoid defining a predetermined portion of the arc of the circle, the sum of the predetermined portions being substantially equal to said perimeter, and a frame holding the ovoids in assembled relationship.

4,448,088

RACK BAR AND PINION ASSEMBLY AND A STEERING GEAR INCLUDING SUCH AN ASSEMBLY

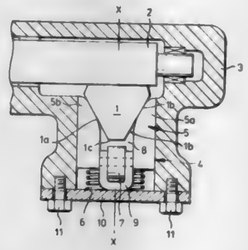
Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Mar. 11, 1982, Ser. No. 357,312

Claims priority, application United Kingdom, Mar. 24, 1981, 8109108

Int. Cl.³ F16H *1/04*; B62D *1/20*

U.S. Cl. 74—422 **9 Claims**



1. A rack and pinion assembly comprising:
a housing,
a pinion rotatively mounted in said housing,
a rack member movable in a longitudinal direction in said housing, said rack member having a rack thereon operatively connected with said pinion so that rotation of said pinion effects movement of said rack member in said longitudinal direction in said housing,
means for continuously supporting said rack member to maintain the operative connection between said rack and pinion and for preventing displacement of said rack member laterally of said longitudinal direction, and
additional means for supporting said rack member only when the load on said rack member exceeds a predetermined amount,
said means for continuously supporting said rack member and said additional means being located between said housing and said rack member on the side of said rack member remote from said rack,
said means for continuously supporting said rack member including:
a rack member carrier,
a spring means for biasing said rack member carrier into engagement with said remote side of said rack member, and
a means for constraining said rack member carrier for slidable movement in said housing in a direction substantially normal to said longitudinal direction of movement of said rack member and relative to said additional means,
said rack member carrier including two transversely spaced bearing surfaces,
said rack member having two transversely spaced support surfaces on said remote side continuously engaged by respective ones of said transversely spaced bearing surfaces, said transversely spaced bearing surfaces being inclined relative to said normal direction and converging towards a flat bottom support surface,
said additional means including a roller means for engaging said flat bottom support surface in a low friction manner, said roller means being spaced from said flat bottom support surface of said rack member when the load on said rack member is less than said predetermined amount, and means for supporting said roller means for rotation about an axis extending transverse to the longitudinal direction of movement of said rack and parallel to said flat bottom surface.

4,448,089

LUBRICATING DEVICE FOR CHANGE-SPEED GEARING UNITS

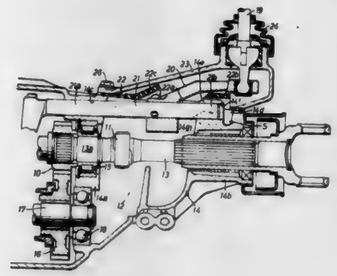
Kazuhito Ikemoto; Nobuaki Katayama; Yukio Terakura, all of Toyota, and Kan Sasaki, Shiratori, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 4, 1981, Ser. No. 240,330

Claims priority, application Japan, Aug. 20, 1980, 55-117922[U]

Int. Cl.³ F16H *57/04*; F01M *9/00*

U.S. Cl. 74—467 **6 Claims**



1. In a change-speed gearing unit having an extension housing having an upper opening portion and containing therein the rearmost gears of said change-speed gearing unit and being formed at its rear end portion with an upright projection having two faces located in the upper opening of said housing, a retainer casing mounted on said housing to support a shift lever thereon, and a shift-and-select lever shaft slidably and rotatably supported at its rear end portion by an axial bearing hole in said upright projection and being operatively connected to said shift lever,
a lubricating device comprising:
a pair of lateral upright walls formed on the rear end portion of said housing between both faces of said upright projection and the opposed inner walls of said upper opening portion of said housing to form an oil well in open communication with said axial bearing hole, and
an oil buffer member of elastic material having an outer periphery portion interposed between said housing and said retainer casing to cover the upper opening of said housing, said buffer member being integrally formed with a rearwardly and upwardly inclined portion for receiving the lubricating oil picked up by the rearmost gears and directing it into said oil well.

4,448,090

DEVICE FOR AUTOMATICALLY TAKING UP PLAY IN A MECHANICAL CONTROL

Jean-Jacques Carré, Montreuil, and Alain Thioux, Chennevières, both of France, assignors to Societe Anonyme DBA, Paris, France

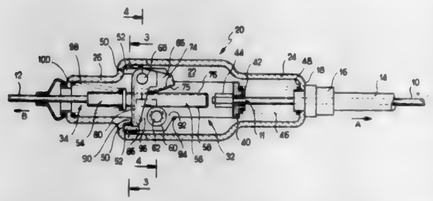
Filed May 14, 1981, Ser. No. 263,613

Claims priority, application France, May 14, 1980, 80 10873

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501.5 R **7 Claims**

1. A compensating device for a mechanical control linkage adapted to be arranged between two consecutive portions of said control linkage and comprising first and second axially telescopic connecting parts movable axially within a stationary casing and respectively connected to said consecutive portions of said control linkage, releasable coupling means for selectively coupling said first and second connecting parts together for axial movement in one axial direction, said coupling means comprising an eccentric member pivotally mounted on said first connecting part and resiliently biased to come into engagement with an adjacent surface of said second connecting part, and a lever means coupled to said eccentric member and cooperating in engagement with a first abutment surface in said casing to release said coupling means when said control linkage is not actuated in said one axial direction.



4,448,091

SINGLE-SPOKE STEERING WHEEL

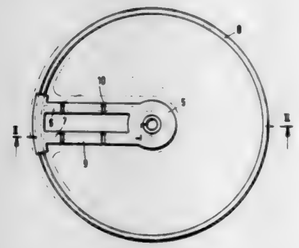
Wolfgang Bauer, Karlstein, and Werner Grosser, Sulzbach, both of Fed. Rep. of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,802

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947197

Int. Cl.³ B62D *1/04*

U.S. Cl. 74—552 **4 Claims**



1. In a steering wheel having a steering heel hub, a single steering wheel spoke joined to the steering wheel hub and extending in a vertical center plane of the steering wheel, and a steering wheel rim joined to the steering wheel spoke, the improvement wherein: the hub comprises an aluminum pressure diecasting, one end of the spoke is embedded in the steering wheel hub and a pressure-diecast layer surrounds the spoke and a portion of the steering wheel rim to which the spoke is connected, wherein the pressure-diecast layer has circumferential indentations therealong forming breaking points.

4,448,092

GEAR TRANSMISSION FOR THE FINAL DRIVE OF HEAVY MOTOR VEHICLES

Bernhard Binger, Ravensburg, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellchaft, Friedrichshafen, Fed. Rep. of Germany

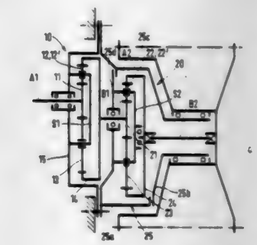
Filed Aug. 22, 1980, Ser. No. 181,138

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935376

Int. Cl.³ F16H *57/10*

U.S. Cl. 74—770 **3 Claims**

1. A gear transmission forming a final drive in a power train of a heavy automotive vehicle, said gear transmission comprising:
a first set of intermeshing gears lying in a first plane and having an input shaft connected to one gear of said first set and a coupling shaft offset from said input shaft and connected to another gear of said first set;
a second set of intermeshing gears lying in a second plane parallel to said first plane and having said coupling shaft connected to one gear of said second set and an output shaft offset from said coupling shaft and connected to another gear of said second set; and
a common housing for both sets of gears having a support part and first and second housing parts respectively assigned to said first and second sets and each rotatably supporting at least one gear of the respective set, at least one of said sets being a planetary standing gear set with planet gears journaled on fixed axes on the respective housing part and interposed between the said one gear and the said other gear of said sets, said housing parts being relatively displaceable angularly about the axis of the coupling shaft and duplicable relative to said support to vary an interaxial spacing of said input and output shafts without changing transmission ratio of said transmission, means being provided to affix said first and second housing parts to said support part.



4,448,093

STEPPING DRIVE MECHANISM

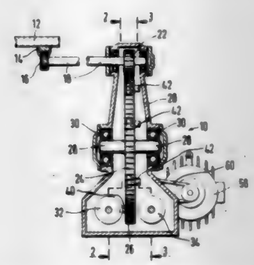
Reinfried Möller, Weinheim, Fed. Rep. of Germany, assignor to Expert Maschinenbau GmbH, Lorsch, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,885

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034627

Int. Cl.³ F16H *27/04, 1/16, 1/20*; B23B *29/24*

U.S. Cl. 74—821 **5 Claims**



1. Stepping drive mechanism for converting a constant input rotatory movement introduced into the mechanism, to a linear movement of given length, first in an acceleration phase from zero to a certain velocity value, then at constant velocity at said value, and finally in a deceleration phase from said velocity value back to zero, said mechanism comprising: two positively coupled cylindrical driving cams journalled in a housing and to which said constant input rotatory movement introduced into the mechanism is transmitted, said cylindrical driving cams having indexing grooves provided in their cylindrical circumferential surfaces, and indexing pins provided on a carrier component coupled with the mechanism and engaging said grooves, said indexing pin carrier component being a circular disk which is mounted for rotation about a horizon-

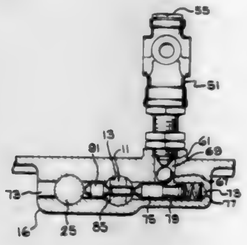
tally extending central axis in said housing and which has opposite flat sides from which said indexing pins project, one driving cam being associated with the acceleration-deceleration phases and arranged on one side of said disk and one with the constant-velocity value linear movement phase and arranged on the other side of said disk, said cams each having an axis of rotation disposed at right angles to said central axis of said disk, and the indexing grooves of said cams being engaged by an associated one of said indexing pins, the indexing pins associated with the acceleration-deceleration phase and with the phase of the constant-velocity linear movement being disposed on the same pitch circle diameter of the disk, said disk having at its circumference a circumferential toothing so as to form a vertically standing gear of relatively large diameter, a pinion of relatively small diameter and meshing with said gear, and a rack-and-pinion drive associated with said pinion for conversion of the pinion rotatory movement to a linear movement of said rack-and-pinion drive.

4,448,094

APPARATUS FOR SWITCHING ENGINE GOVERNOR

James A. Yarnell, Temperance, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 13, 1981, Ser. No. 282,246
Int. Cl.³ B60K *41/14, 41/16*; G05G *5/10*
U.S. Cl. 74—872 **8 Claims**



1. Apparatus for switching operation ranges for an air actuated governor for an engine of a vehicle, said governor establishing a maximum rpm for said engine when air under pressure is supplied to said governor and a lower maximum rpm for said engine when said supply of air to said govenor is interrupted, said lower rpm being selected when the transmission of said vehicle is in a preselected gear, said apparatus comprising:

at least one sliding shift rod for mounting gears positioned in said transmission, said sliding shift rod containing a notch on one end, said sliding shift rod being disposed for engaging a gear in said transmission;

a sliding splitter shift rod for mounting a splitter gear positioned in said transmission, said sliding splitter shift rod being disposed for engaging said splitter gear;

a secondary splitter shift rod positioned in said transmission adjacent to and connected to said splitter shift rod, said secondary splitter shift rod containing a notch on one end, said notch on said secondary splitter shift rod being disposed to be in alignment with said notch on said sliding shift rod when said shift rod is positioned to engage a preselected gear in said transmission;

a valve for controlling said supply of air to said governor, said valve including a valve stem for controlling the flow of air through said valve to said governor, said valve stem being operatively connected to said sliding shift rod and said splitter shift rod; and

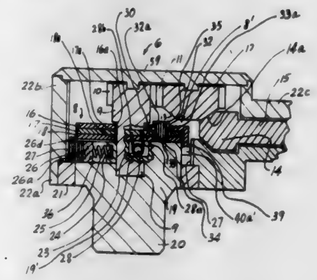
an interlock means operatively connected to said valve stem of said valve, said interlock means engaging said notch in said sliding shift rod and said notch in said secondary splitter shift rod when said shift rod is positioned to engage a preselected gear in said transmission whereby said interlock means allows said valve stem to move to a position when said transmission is in a preselected gear whereby said supply of air to said governor is interrupted and said governor switches to said lower maximum rpm range.

4,448,095

RATCHET WRENCH

Richard E. Blodgett, Basking Ridge, N.J., and Ervin J. Furedi, 223 Pleasant Grove Rd., Long Valley, N.J. 07853, assignors to Ervin J. Furedi, Long Valley, N.J.

Continuation-in-part of Ser. No. 083,380, Nov. 10, 1979, Pat. No. 4,318,314. This application Mar. 8, 1982, Ser. No. 355,529
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.29 **13 Claims**



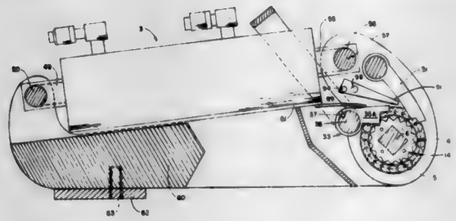
1. A novel ratchet wrench assembly having selectable ratcheting action to rotate a drive stud in alternately either direction, which comprises: a support structure; a drive stud means including a socket stud, mounted on the support structure; a first gear means fixedly mounted on the support structure for driving said drive stud means; a two-position ratchet means mounted on said drive stud means and including a first ratchet member with one portion positioned and adapted to effect ratcheting action of said drive stud means in one direction relative to an engagable second ratchet member mounted on said support structure, and another portion positioned and adapted to effect ratcheting action in another direction relative to the second ratchet member and a first toggle-spring having one end thereof mounted on the drive stud means and having an opposite end thereof spring-biased against the first ratchet member in an arrangement as to alternately bias the first and second portions into engagement with said second ratchet member; a drive shaft means for drivably engaging said first gear means; a barrel structure rotatable in alternately either of opposite directions and rotatably actuatable of the drive shaft means; first gear clutch means for providing freedom of reverse non-driving movement of said drive stud means, within a predetermined limited range of reverse non-driving movement within which reversing action may take place in direction of drive of the socket stud; and a reversible switch means for reversing in alternately each of opposite directions of driven movement of the drive stud means, said reversible switch means including a spring-biased toggle switch inclusive of a spring element having spaced-apart opposite first and second spring ends and having a central portion rotatably mounted on and movable with said drive stud means, said first spring end being mounted on and movable alternately in opposite directions with said first gear means, said two-position ratchet means including a lever member having a portion thereof freely movable alternately in opposite directions and fixedly mounting said second spring end, to move with the second spring end, and the lever member being in engagement with each of said first and second portions for alternate movement thereof into and away-from engagement with the second ratchet member, whereby alternately reverse-rotatable-turning of said barrel structure shifts said first ratchet member alternately between a first position of ratcheting by the first portion and non-ratcheting of the second portion, and a second position of ratcheting by the second portion and non-ratcheting of the first portion, and whereby concurrently said first gear means beyond said predetermined limited range of freedom of reverse non-driving movement, is reversely drivable of said drive stud means.

4,448,096

FLUTTER LIFT FOR TORQUE WRENCH

Bobby W. Collins, P.O. Box 1366, Harvey, La. 70059

Continuation-in-part of Ser. No. 218,663, Dec. 22, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,325
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—57.39 **2 Claims**



1. A hydraulic torque wrench having a ratcheting assembly comprising a ratcheting gear having gear teeth wherein said ratcheting gear is rotatably attached to a body assembly plate, a drive pawl attached at one end to a hydraulic cylinder piston rod and drivingly engageable at its opposite end to said ratcheting gear, the improvement to which comprises a drive pawl lifting assembly pivotly attached to said body which comprises:

(a) locking pawl pivotly attached at one end to said body assembly and having drive pawl teeth at its other end shaped to engage said gear teeth in a manner to prevent their rotation,

(b) means operatively attached to said locking pawl to engage and disengage said locking pawl from said gear teeth, and

(c) a flutter lift assembly pivotly attached at one end to said body assembly and having its opposite end positioned between the locking pawl other end and said drive pawl so that when said locking pawl is disengaged from said gear teeth it contacts and lifts said flutter lift assembly a distance sufficient to disengage said drive pawl from said gear teeth.

4,448,097

DRIVER TOOL

David Rocca, 4006 Greenacre Rd., Castro Valley, Calif. 94546

Filed Dec. 10, 1981, Ser. No. 329,303
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—177 M **10 Claims**

1. A driver tool, comprising a handle, at least one driving bit, shaft means secured to said handle and adapted to secure said driving bit, and means for expanding a dimension of said handle, including a plurality of strips having like proximal ends joined to a proximal end portion of said handle, bushing means rotatable in common with said shaft means, said bushing means joined to like distal ends of said strips and translatable from a first position in which said strips are compressed longitudinally and expanded outwardly from said handle to a second position in which said strips are relaxed longitudinally and retracted toward said handle, means for releasably retaining said bushing means in said first position, and means for transferring torque from said strips to said bushing means.

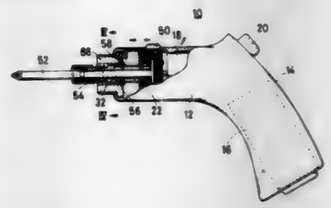


4,448,098

ELECTRICALLY DRIVEN SCREW-DRIVER

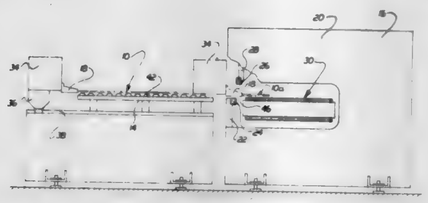
Katsuyuki Totsu, No. 1-17-8, Higashi-Mukojima, Sumida-ku, Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,895
Int. Cl.³ B25B *23/14*
U.S. Cl. 81—467 **8 Claims**



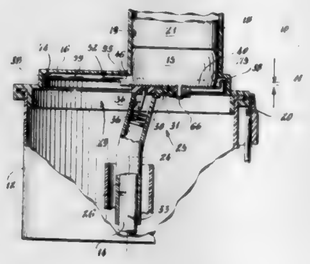
1. An electrically driven screw-driver comprising a ratchet device mounted to a portion of a chucking shaft to which a driver bit is detachably connected, said chucking shaft being connected to the output shaft of an electric motor through a planetary reduction system, said planetary reduction system comprising a plurality of planetary gears each capable to self-rotating and revolving around a pinion gear of a power transmission connected to the output shaft of the electric motor, and having an internal gear ring coacting with the planetary gears providing an orbit for their revolution, a cylindrical casing for rotatably receiving the internal gear and a torque controlling mechanism having a clutch function mounted between said casing and the planetary reduction system, said torque controlling mechanism comprising a steel ball contacting an outer circumferencial surface of the internal gear and means for pressing the steel ball against the internal gear with a predetermined pressure.

4,448,099
WORK HANDLING METHOD
Naoki Kuroda, Kyoto, and Kimihiro Tsuge, Inuyama, both of Japan, assignors to The Warner & Swasey Company, Cleveland, Ohio
Continuation of Ser. No. 127,801, Mar. 6, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 328,380
Claims priority, application Japan, Mar. 24, 1979, 54-34722
Int. Cl.[3] B26D 5/20
U.S. Cl. 83—23 1 Claim



1. A method of operating an apparatus to cut scrap pieces off a sheet material workpiece to form a sheet material article of a desired configuration, said method comprising the steps of gripping the workpiece with a holder, moving the holder to position the workpiece between a pair of blades, effecting relative movement between the blades to cut a first scrap piece off of the workpiece, dropping the first scrap piece onto a conveyor which is separated from the blades by a clearance space and is disposed on a side of the blades opposite from the holder, subsequently moving the holder to change the position of the workpiece relative to the blades, cutting the article off of the workpiece to leave a second scrap piece in the holder, depositing the article on the cnveyor and moving the article away from the holder with the conveyor while gripping the second piece of scrap with the holder, thereafter extending the holder between the blades and across the clearance space to a location adjacent the conveyor, and dropping the second scrap piece onto the conveyor by actuating the holder to release the second scrap piece while the holder extends between the blades and across the clearance space.

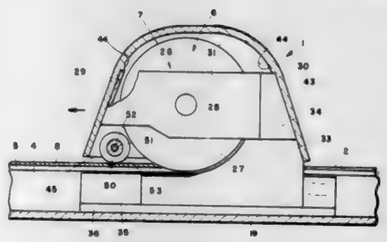
4,448,100
ROTARY SLICING TOOL FOR A FOOD PROCESSOR
John W. Breeden, Westport, Conn., assignor to Cuisinarts, Inc., Greenwich, Conn.
Filed Jul. 26, 1982, Ser. No. 401,877
Int. Cl.[3] B26D 7/00
U.S. Cl. 83—355 17 Claims



1. A rotary tool for use in a food processor of the type having a housing with motor drive means and a working bowl mountable on the housing and in which the rotary tool has an elongated hub with a lower end including coupling means removably engageable with said motor drive means for rotating said tool in said bowl about the axis of rotation of said coupling means, said rotary tool including

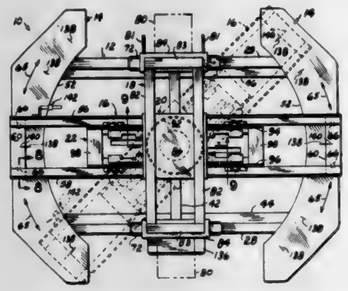
a horizontal disc-like member rotatable by said elongated hub in a predetermined direction of rotation,
a raised rim extending around the periphery of said disc-like member having a skirt extending downwardly therefrom,
an arcuate opening extending inward from said raised rim to a position near the center of said disc-like member,
a raised platform located immediately behind said opening with respect to said direction of rotation having a rearwardly sloping shoulder,
the forward edge of said platform overhanging the trailing portion of said opening for forming an elevated slot between the disc-like member and the forward edge of said raised platform,
a U-shaped cutting blade having a front leg and a rear leg,
said front leg of said U-shaped blade being mounted on the forward edge of said platform with the leading edge portion of said front leg overhanging said slot,
said leading edge portion being sharpened for forming the cutting edge of said U-shaped blade,
the rear leg also being mounted on said platform,
said rear leg having an arcuate peripheral configuration matching the curvature of said raised rim and being mounted snug against said raised rim with said rim at all points around the circumference of said disc-like member being at an elevation above said cutting blade for providing a clean, neat cut of food items which are fed to the top of said horizontal disc-like member with said raised rim preventing the radial expansion or distortion of said food items outwardly into the region between the rotary tool and the bowl in which it is being operated.

4,448,101
SHEAR CUTTER
John G. Templeton, Grand Rapids, Mich., assignor to Bulman Products, Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 126,960, Mar. 3, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,393
Int. Cl.[3] B26D 1/04, 1/14
U.S. Cl. 83—374 20 Claims



1. A cutter for material, comprising:
a cutter bar having a bottom wall, opposing side walls and first and second upper wall portions defining a hollow interior, said upper wall portions being spaced apart to define a longitudinal slot; said upper wall portions each having an outer surface;
a blade positioned in the hollow interior of said bar and extending substantially along the length thereof and including an upper edge disposed within said longitudinal slot; said blade being mounted in said cutter bar in a manner which permits lateral displacement of the upper edge of said blade;
a movable knife connected with said cutter for translation along said slot, and including a cutting edge abuttingly engaging the upper edge of said blade for cutting material therebetween as said knife is moved along said bar; said blade having an extended, cutting position, wherein the upper edge of said blade is disposed substantially flush with the outer surface of said upper wall portions for cutting the material, and a retracted, storage position wherein the upper edge of said blade is disposed below the outer surface of said upper wall portions for storage;
resilient means for normally retaining said blade in the storage position; and wherein
said knife is positioned over said slot in a location such that engagement between said knife and said blade shifts said blade from the storage position to the cutting position.

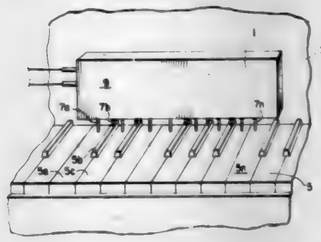
4,448,102
COMPOUND MITER SAW STAND
Jack L. Thornton, P.O. Box 222400, Carmel, Calif. 93922
Filed Nov. 19, 1982, Ser. No. 443,090
Int. Cl. B27B 9/04; B27G 5/02
U.S. Cl. 83—471.1 10 Claims



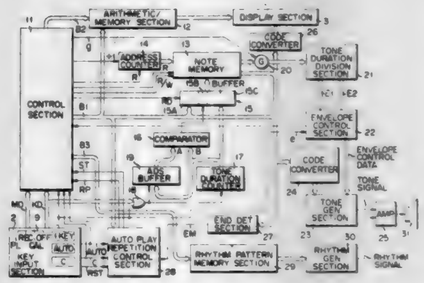
1. A miter saw guide for forming miter cuts on a workpiece, comprising:
upright rigid frame means having opposing sides and end portions;
a horizontal track plate transversely overlying the respective frame means end portion;
bridge means overlying said frame means in vertically spaced relation medially its end portions for defining a horizontal workpiece supporting travel path extending transversely of said frame means;
track means extending longitudinally of said frame means in overlying relation with respect to said workpiece travel path and said track plates for horizontal pivoting movement in opposing directions with respect to the longitudinal axis of the workpiece travel path;
turntable bearing means centrally interposed between and connecting said track means with said bridge means for defining a vertical pivoting axis for said track means;
cradle means supported by said track means for reciprocating movement between its respective ends; and,
at least one electric hand saw supported by said cradle means.

4,448,103
TUNABLE BASS-TONE DEVICE
Bill W. Blakely, 553 NW. Sweetbriar, and Robert Reece, 1423 SE. Lane St., both of Roseburg, Oreg. 97470
Filed Nov. 2, 1981, Ser. No. 317,255
Int. Cl.[3] G10H 1/36, 5/06
U.S. Cl. 84—1.01 5 Claims

1. A bass-tone device for use with a piano having a keyboard, said device comprising:
(a) a housing, for mounting on a piano above the keyboard thereof;
(b) a plurality of switch means mounted in said housing, each of said switch means having an engaging portion extending from said housing for contacting a key of the piano and for remaining in contact with the key for at least a portion of the movement thereof, wherein when a key is depressed, the engaging portion of the switch means in contact therewith, moves, thereby changing the state of said switch means; and
(c) bass-tone generator means mounted in said housing and having said switch means connected thereto, said bass-tone generator means generating bass-tone signals in response to the change of state of said switch means.

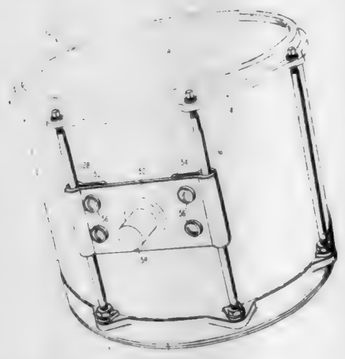


4,448,104
ELECTRONIC APPARATUS HAVING A TONE GENERATING FUNCTION
Toshifumi Hoshii, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 331,173, Dec. 16, 1981, abandoned. This application Oct. 11, 1983, Ser. No. 540,699
Claims priority, application Japan, Dec. 24, 1980, 55-181920
Int. Cl.[3] G10H 1/26, 7/00
U.S. Cl. 84—1.01 9 Claims



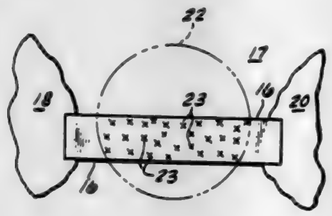
1. An electronic apparatus having a tone generating function, comprising:
input means for inputting note data;
memory means for storing the note data input by operation of said input means;
a readout key which is provided independently from said input means and which is operable for reading out the note data from said memory means sequentially one by one every time the readout key is operated, after said note data is stored in said memory means by said input means;
first detecting means for detecting a key-on period during which said readout key is kept operated;
second detecting means for detecting a key-off period during which said readout key is not operated;
duration input means coupled to said first and second detecting means for inputting tone duration information into said memory means, said input tone duration information designating tone producing intervals and tone releasing intervals according to the key-on period and the key-off period, respectively, with respect to each input note data.

4,448,105
DRUM CONSTRUCTION
Charles P. Cordes, 27 Kenneth Pl., Clark, N.J. 07066
Filed Sep. 30, 1982, Ser. No. 429,635
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—413 4 Claims



1. A drum comprising an annular shell having top and bottom edges, supporting ring means disposed in abutting enagement with said bottom edge of said shell and having a plurality of laterally outwardly extending ears spaced equidistantly about the circumference of said support ring means with each ear having a threaded aperture extending therethrough, a head disposed in engagement with the top edge of said shell, a top hoop disposed in engagement with said head and having a plurality of apertures extending through said top hoop at equally spaced intervals about the circumference of said top hoop, a plurality of tensioning means adjustably interconnected between said top hoop and said support ring means comprising a plurality of hollow tubes each having internal threads at opposite ends thereof and external threads at the lower end thereof for a complimentary engagement with the threaded aperture in said support ring means, thension screw means extending through said apertures into threaded engagement with each of said tubes, a head disposed in engagement with said support ring means below said ears, a bottom hoop having a plurality of apertures therethrough and tension screw means adapted to pass through said apertures into threaded engagement with the end of each tube engaged in said ears.

4,448,106
METHOD OF IDENTIFYING HARD TARGETS
Richard D. Knapp, Santa Ana, assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Continuation of Ser. No. 921,962, Jul. 5, 1978, abandoned. This application Apr. 29, 1981, Ser. No. 258,630
Int. Cl.³ F41F *5/00*; F42B *13/34*
U.S. Cl. 89—1 A 14 Claims

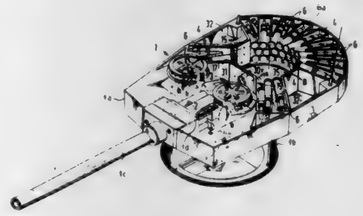


1. The method of using a plurality of kinetic penetrator elements to identify a hard target and distinguish said target from other, more penetrable areas adjacent said target to enable subsequent bombardment of a thus-identified target by direct aiming of projectiles at said target comprising the steps of:

dropping a plurality of said elements in a region in which potential targets may be located, which elements have means for reflecting electromagnetic radiation received from a remote source to indicate their presence to a remote detector when in contact with a target and the capability of penetrating to the point of disappearance those areas adjacent a hard target which are not part of the target to be identified transmitting electromagnetic radiation from said remote source in the direction of said region; and

detecting said reflected electromagnetic radiation from said elements in contact with a target in order to identify the location of said target.

4,448,107
ROUND-HANDLING SYSTEM FOR A MOBILE WEAPON
Ferenc Kotai; Markus Spotzl; Erich Drosen, all of Munich, and Leo Pongratz, Karlsfeld, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 29, 1982, Ser. No. 363,287
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3113027
Int. Cl.³ F41H *7/06, 7/04, 5/20*; F41F *9/06*
U.S. Cl. 89—36 K 20 Claims



1. In a tank having a rotatable turret provided with a barrel-type weapon swingable in a vertical plane of said turret, a magazine containing a multiplicity of round to be supplied to said weapon, and a loading device adapted to remove the round from said magazine and transfer it to said weapon, said turret being formed with a crew compartment and a munitions compartment, said munitions compartment containing said magazine and said device, said weapon terminating in said crew compartment, the improvement wherein:

said munitions compartment is confined to a rear portion of said turret;

said crew compartment occupies a forward portion of said turret;

said magazine has the configuration of at least one annular nonrotatable sector receiving said rounds with said rounds turned toward a centrum of said sector in a chamber partly surrounded by said sector, said sector being oriented horizontally in said turret and being swingable on said turret with said weapon for traversing said weapon, and said sector having at least one layer of rounds lying substantially at the level of said opening in a horizontal position of said weapon;

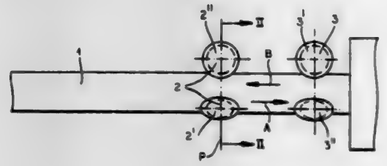
said weapon has a breach turned toward said chamber;

said loading device comprises a rotatable body in said chamber and means on said body selectively alignable with said rounds in said magazine and with said breach for withdrawing rounds from said magazine and then inserting them into said breach;

an armored partition being provided between said compartments having a hole aligned with said opening in a horizontal position of said weapon whereby rounds can be fed through said hole; and

means including an armored cover being provided in said turret for closing said hole.

4,448,108
GUIDE SYSTEM FOR A GUN BARREL
Rainer Moller, Schweinfurt, and Günter Scharting, Gochsheim, both of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany
Filed May 3, 1982, Ser. No. 374,036
Int. Cl.³ F41F *19/00*
U.S. Cl. 89—37 R 5 Claims



1. A guide arrangement for a cannon barrel comprising a pair of guide units spaced apart along said barrel and enabling longitudinal displacement thereof, each of said units comprising a plurality of guide rollers spaced around said barrel and engaging same, the rollers of each unit being mutually coplanar and including at least one yieldably biased roller bearing upon said barrel, comprising an axle, and yieldable upon thermal expansion thereof so as to prevent development of play between said units and said barrel, and means comprising elastic elements bearing against said axle for biasing said yieldable rollers against said barrel.

4,448,109
AUTOMATIC OR SEMI-AUTOMATIC FIREARM
James H. Johnson, 818 S. Willow Ave., Tampa, Fla. 33606
Filed Oct. 13, 1981, Ser. No. 311,090
Int. Cl.³ F41D *11/02*
U.S. Cl. 89—141 9 Claims

1. A trigger mechanism for a firearm, comprising in combination:

a hammer/sear pivotably positionable to a firing position, a searing position, and recessed position;

first means for urging said hammer/sear from said recessed position to said searing position, and further to said firing position;

a hammer link moveable to and from a rearward position, an intermediate position, and a forward position;

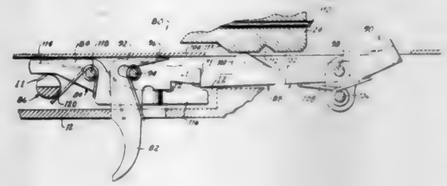
said hammer link pivotably connected to said hammer/sear to lock said hammer/sear into said recessed position when said hammer link is in said intermediate position, to permit said first urging means to pivot said hammer/sear to said searing position when said hammer link is in said forward position, and to permit said first urging means to pivot said hammer/sear to said firing position when said hammer link is in said forward position;

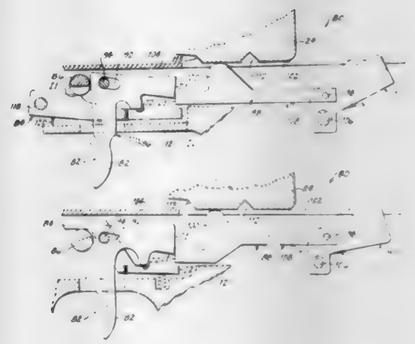
second means for urging said hammer link upwardly;

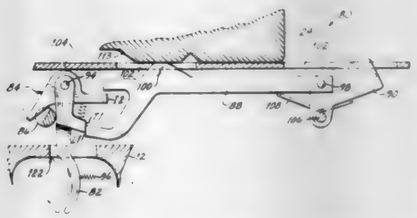
a trigger pivotably connected to the firearm, said trigger including a projection which engages said hammer link to prevent said hammer link from moving forward until said trigger is pulled;

means for urging said trigger in a direction opposite to that in which said trigger is pulled;

an interruptor for holding said hammer link in the fully rearwardly position when said trigger is pulled; and





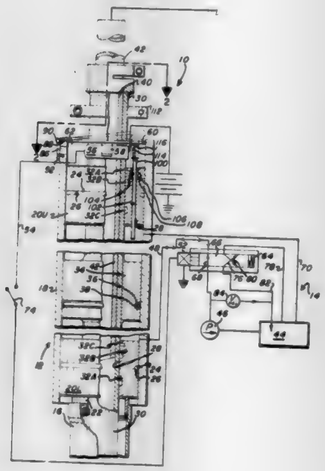


a selector in engagement with said interruptor to lock said interruptor in and out of operable engagement with said hammer link.

4,448,110
HYDRAULIC PUMP
Paul R. Polak, and Daniel E. Jantzen, both of Arvada, Colo., assignors to P & W Pumping-Jack Co., Arvada, Colo.
Continuation of Ser. No. 125,182, Feb. 27, 1980, abandoned. This application Oct. 20, 1981, Ser. No. 313,234
Int. Cl.³ F01L *25/08, 31/08, 23/00*
U.S. Cl. 91—275 6 Claims

1. A pump jack for use on a well having a fixed casing accessible at the wellhead and a sucker rod string disposed within the casing for reciprocating movement which comprises: a hydraulic cylinder having upper and lower ends, said lower end being connectable to the casing in substantially coaxial relation atop thereof, and said lower end having a centrally-located opening therein sized to pass the sucker rod axially therethrough; a piston housed within the cylinder for axial movement between the ends thereof, said piston having a central opening therein sized to pass the sucker rod; a hollow piston rod fastened in coaxial position to the piston for movement therewith, said piston rod extending both above and below the piston being sized to telescope down over the sucker rod; said upper cylinder end having a central opening therein sized and adapted to receive the piston rod for relative axial

movement therein while maintaining a fluid-tight seal therearound, said upper cylinder end having a pushrod opening therethrough substantially paralleling the central opening therein but displaced to one side thereof; a pushrod mounted for reciprocating movement within the pushrod opening in the upper cylinder end; switch-actuating means associated with said pushrod for movement therewith between a retracted and an extended position; said pushrod and piston cooperating during the power stroke of the latter toward the upper end of the cylinder to raise the switch-actuating means into extended position; friction means engaging said pushrod effective to maintain same and the switch-actuating means associated therewith in extended position upon retracting of said piston; clamp means carried by the piston rod for clamping same to the sucker rod for conjoint movement in response to movement of the piston; means comprising a stop carried by a piston rod for movement therewith, said stop being positioned to engage the switch-actuating means in extended position and return same together with the pushrod associated therewith to



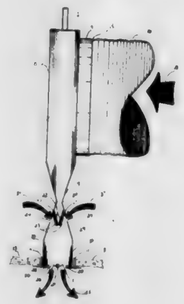
its retracted position by overpowering said friction means during the return stroke of the piston; first conduit means connectable to a source of fluid under pressure connected into the lower end of the cylinder; second conduit means connectable to the first conduit means for returning fluid exhausted from the cylinder to a reservoir; an electrically operated control valve operative in a first position to disconnect the second conduit from the first and connect the latter to the source of fluid under pressure, and said control valve being operative in a second position to disconnect said first conduit means from the pressurized source and connect same to the second conduit means; and, an electrical circuit including said valve and switch means for controlling the latter, said switch means being positioned for actuation by said switch-actuating means as the latter moves between its retracted and extended positions, said switch means being operative in the retracted position of said switch-actuating means to shift said valve into its first position, and said switch means being operative in the extended position of said switch-actuating means to shift said valve into its second position.

4,448,111

VARIABLE VENTURI, VARIABLE VOLUME, AIR INDUCTION INPUT FOR AN AIR CONDITIONING SYSTEM

Robert Doherty, 3455 Budleigh Dr., Hacienda Heights, Calif. 91745

Filed Jan. 2, 1981, Ser. No. 222,721
Int. Cl.³ F24F *13/06*
U.S. Cl. 98—38 E **8 Claims**



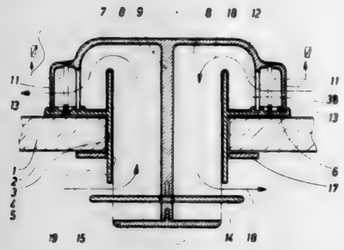
1. A variable Venturi, variable volume, air induction, input for an air conditioning system for controlling the amount of ambient air inducted into an air conditioning system comprising: in an air conditioning system having an input duct provided with an upstream end adapted to be connected to an air-temperaturemodifying and air-moving apparatus at said upstream end thereof and having a downstream end provided with, and connected to, an air-diffusing plenum chamber, the provision of an output duct connected to the plenum chamber at one end and at another end to the interior of a room which is to be air conditioned, said output duct being positioned between said plenum chamber and the interior of a room which is to be air conditioned and being provided with controllably adjustable variable Venturi means in circuit therewith and being provided with and operatively connected to a control member for varying said variable Venturi means between a substantially fully open relationship with respect to the interior of said output duct and an inner, constricted, maximum-closed relationship with respect to the interior of said output duct whereby to reduce the volume of air flow therethrough from the plenum chamber into the interior of the room while increasing the linear velocity thereof; and lateral air induction opening means extending laterally through said output duct from the exterior thereof to the interior thereof adjacent to said variable Venturi means and in direct exterior-to-interior communication with the variable volume, variable linear velocity, interior air passing through the interior of said output duct and said variable Venturi means between the plenum chamber and the room to be air conditioned whereby to cause correspondingly variable induction of ambient air from a position exterior of said air induction opening means in said output duct into the interior thereof for feeding movement thereof and effective mixing thereof with the air passing through said output duct from the plenum chamber to the interior of the room to be air conditioned; said variable Venturi means comprising first inner walls surfaces of said output duct smoothly and continuously converging in a downstream direction into a reduced cross-sectional area and then further comprising second inner wall surfaces of said output duct smoothly and continuously diverging in a downstream direction from said first wall surfaces and additionally comprising multiple controllably opposedly and correlatedly pivotally movable swinging volume dampers hingedly mounted to the inner wall surfaces slightly downstream from said reduced cross-sectional area at transversely spaced locations, said dampers having inwardly and outwardly swingably movable airflow-modifying downstream ends located closely adjacent to said reduced cross-sectional area; said lateral air induction opening means being positioned in said second wall surfaces of the output duct downstream from said reduced cross-sectional area and slightly upstream from said free air-flow-modifying downstream ends of said swinging dampers.

4,448,112

VENTILATOR

Ramon Söderberg, Sörgårdsvägen 5, S-443 00 Partille, Sweden

PCT No. PCT/SE80/00189, 371 Date Mar. 8, 1982, 102(e) Date Mar. 8, 1982, PCT Pub. No. WO82/00336, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 14, 1980, Ser. No. 359,657
Int. Cl.³ B63J *2/04*
U.S. Cl. 98—62 **5 Claims**



1. A ventilator for air ventilation between a delimited space and the outside air, said ventilator being adapted to be inserted in an opening in a partition wall between said space and the outside air and also adapted to form a connecting passage therebetween, said passage being divided into a plurality of passage sections, at least one external, partly closed, cover portion and partitions separating said passage sections from each other, said partitions being directed symmetrically with substantially the same length outwards from a central longitudinal axis of said connecting passage, each of said sections being adapted to maintain communication between the outside air and said space and also comprising in its outer end, facing the outside air, a number of outer openings and in its inner end facing said space a number of inner openings, at least said outer openings being directed sideways in relation to said longitudinal axis so as to be distributed over the periphery of the ventilator, said passage sections and said partitions being eight in number and with the angle between two adjacent partitions amounting to 45°, said cover portion being provided with a peripheral substantially circularly extended wall which by means of said outer openings is divided into a plurality of wall portions, and covering part of the outer end of the connecting passage, said outer openings and said wall portions being at least two in number for each passage section, said partition having end portions positioned outside of said partition wall between said space and the outside air and extending radially outwards up to said circularly extending peripheral wall, and said inner openings being directed sideways in relation to the longitudinal axis of the connecting passage, and the passage sections comprising at their inner end an adjustable wall portion for varying their effective length.

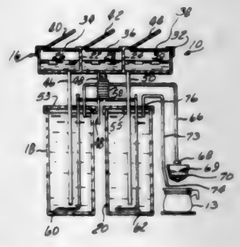
4,448,113

COFFEE REFRESHENER

David L. Brabon, 401 Kenyon Ave., Wilmore, Ky. 40390

Filed Sep. 29, 1982, Ser. No. 428,006
Int. Cl.³ A47J *31/00*
U.S. Cl. 99—290 **5 Claims**

1. A drip coffee maker for brewing a coffee beverage from roasted and ground coffee, said drip coffee maker comprising:
a drop brew basket filter means for receiving a bed of roasted and ground coffee;
means for providing a predetermined quantity of heated water for drip extraction from said roast and ground coffee, the improvement comprising:
a first liquid receiving means for receiving a predetermined quantity of water;
a first means for heating said predetermined quantity of water;
a first conduit communicating said heated water to said drip brew basket;
a second liquid receiving means for receiving a predetermined amount of coffee extract;
a first outlet;
second conduit means independent of said first conduit means for communicating said coffee extract to said first outlet via



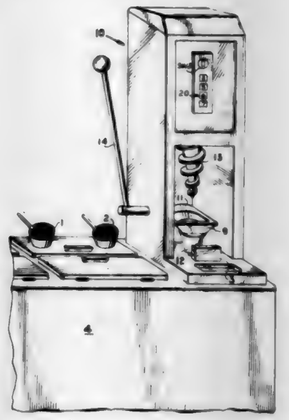
said first heating means so as to reheat said coffee extract as said coffee extract passes thereby;
a third liquid receiving means for receiving a predetermined quantity of water;
a second means for heating said predetermined quantity of water in said third liquid receiving means;
a second outlet;
a third conduit for communicating said heated water in said third liquid receiving means to said second outlet independent of said drip brew basket; and
said second means for communicating said coffee extract to said first outlet communicating same via both said first and second heating means for reheating said coffee extract.

4,448,114

APPARATUS FOR PROCESSING FROZEN COMESTIBLES AND IN PARTICULAR TO AN IMPROVEMENT THEREIN

David Mayer, Scarsdale, N.Y., assignor to Custom Creamery Systems, Inc., New York, N.Y.

Filed Mar. 24, 1983, Ser. No. 478,219
Int. Cl.³ A23G *9/02, 9/04, 9/12*
U.S. Cl. 99—494 **3 Claims**



1. In an apparatus for processing frozen comestibles said

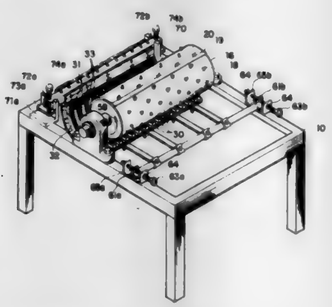
apparatus having a cup for receiving a frozen comestible; rotatable auger means; means mounting said cup and auger means for related movement toward and away from each other; means adapted to actuate said related movement of said cup and auger and move said auger means into and out of said cup in a first related relatively brief movement; said first related movement adapted to create a pocket in a frozen comestible placed in said cup; said pocket adapted for the insertion of flavoring material; and in a second relatively longer related movement actuatable by said means adapted to actuate said related movement of said cup and auger to mix said frozen comestible and said flavoring material and extrude the mixture from said cup, the improvement comprising: means for counting the number of second related movements extruding said mixture, said counting means including means for distinguishing between said first and second related movements and for counting only the second related movements, said distinguishing means comprising a timer actuated by the related movements and having a duration greater than that of said first related movement and less than that of the second related movement, and said counting means only counting when the second related movement is actuated after the duration of the timer.

4,448,115

APPARATUS FOR HULLING PISTACHIO NUTS

Joseph Volk, Sr., 766 First St., Apt. 21, Gilroy, Calif. 95020, assignor to Benjamin Volk, Gilroy, Calif.

Division of Ser. No. 275,263, Jun. 19, 1981, Pat. No. 4,353,931.
This application Jun. 21, 1982, Ser. No. 390,549
Int. Cl.³ A23N *5/00*
U.S. Cl. 99—574 **15 Claims**



1. A huller for removing hulls from pistachio nuts comprising:

(a) support means;

(b) means having slots for receiving unhulled pistachio nuts on a surface thereof and for contacting said nuts received on said surface and being attached to the support means, said slots being more narrow than the pistachio nuts to be hulled;

(c) means having a plurality of projections outwardly disposed on a surface thereof for pushing said nuts with said projections and for forcing contact of said nuts with said means having slots, said projections being spaced apart on said surface having projections, said surface having projections being movably mounted on the support means with said surface having projections being disposed in close proximity to said surface of said means having slots, so that said projections extend into said slots; and

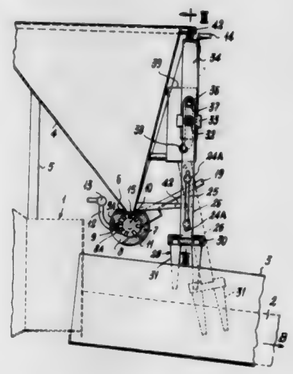
(d) means for moving said surface having projections coupled to said means having a plurality of projections for passing said projections through said slots whereby unhulled pistachio nuts deposited in abrading engagement between said surface having projections and said surface of said means having slots are hulled.

4,448,116

APPARATUS FOR THE DRY SALTING OF CURD FOR CHEESE PRODUCTION

Gabriele Muzzarelli, Via Marzabotto, 116-Modena 41100, Italy

Filed May 7, 1982, Ser. No. 376,548
Claims priority, application Italy, Jun. 23, 1981, 22513 A/81
Int. Cl.³ A01J *25/00*; A23C *19/064*
U.S. Cl. 99—460 **9 Claims**



1. Apparatus for use in the production of cheese and, in particular, for introducing salt into and mixing salt within a mass of curd in its plastic or pliable state, comprising:

means for conveying the plastic curd in a stream having a free surface along a path in a downstream direction;

a hopper adapted to contain salt, said hopper having an outlet;

means disposed at said hopper outlet for dispensing metered quantities of salt onto the free surface of the stream of plastic curd at a first upstream region along the path of movement of the curd stream as the same is being conveyed;

a movably mounted comb member situated over a second region along the path of movement of the curd stream, said second region being located downstream of said first region; and

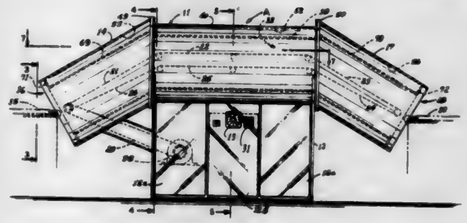
means for movably driving the comb member so that the comb member penetrates the free surface of the plastic curd stream moving on said conveying means to substantially uniformly introduce the salt dispensed onto the curd stream by said dispensing means through the mass of the curd stream.

4,448,117

HUMPBACK OVEN-BROILER

Harold D. Wells, St. Louis County, Mo., assignor to Pet Incorporated, St. Louis, Mo.

Continuation of Ser. No. 380,552, May 21, 1982, abandoned.
This application Jul. 25, 1983, Ser. No. 516,868
Int. Cl.³ A47J *27/62*
U.S. Cl. 99—331 **11 Claims**



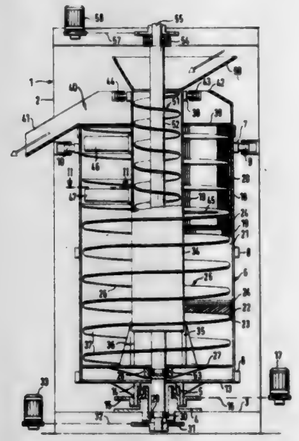
1. A tunnel oven-broiler for flame-controlled tunnel oven broiling of food products of ordinarily flame-producing character such as steaks, chops or other greasy meats prone to burn or produce flame, said oven-broiler comprising a tubular, tunnel-form heating chamber and a conveyor therein for broiling of said food products by infrared heating, means for heating surfaces of said chamber for emission of energy into said chamber for absorption by said food products characterized by means for defining an open entrance and open exit at opposite ends of said chamber such that said entrance and exit are oriented relatively lower than said chamber to entrap within said chamber an oxygen-starved atmosphere having a slight overpressure for suppressing flaming or flaring during broiling of said food products, venting means for selectively venting said atmosphere for control of said atmosphere, means for removing from said chamber grease and other flammable liquids produced by heating of said food products, means for directly sensing the emission temperature of the heated surfaces of said chamber, and control means for controlling said heating means to maintain said emission temperature substantially at a predetermined level, said venting means providing venting from said atmosphere at opposite ends of said chamber proximate the highest points of said entrance and exit, respectively, and tubular inner and outer members, said inner members defining said chamber, and tubular end sections interconnected with said inner member to provide said means defining said entrance and exit.

4,448,118

CLEANING AND PEELING MACHINE

Paul Kunz, Deishardtstr. 3, D-5419 Dötteafeld, Fed. Rep. of Germany

PCT No. PCT/EP82/00064, 371 Date Nov. 22, 1982, 102(e) Date Nov. 22, 1982, PCT Pub. No. WO82/03314, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 24, 1982, Ser. No. 448,981
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113348
Int. Cl.³ A23N *7/00*
U.S. Cl. 99—624 **8 Claims**



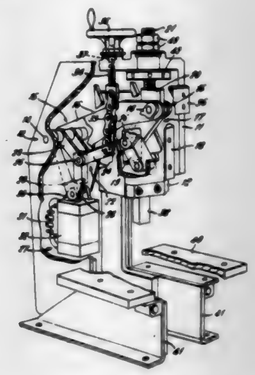
1. A cleaning and peeling machine comprising a vertically-disposed first rotatable cylinder defined by a cylindrical side wall containing openings and a closed imperforate lower end, said first cylinder being open at its upper end, a second rotatable cylinder defined by an imperforate, cylindrical side wall, said second cylinder being open at its upper and lower ends and being supported in the first cylinder in concentric relation thereto for rotation about its axis, with its open lower end spaced above the closed lower end of the first cylinder and its open upper end extending above the open upper end of the first cylinder, said second cylinder being of smaller diameter than the first cylinder such as to define therewith an annular chamber in communication at its lower end with the open lower end of the second cylinder and open at the upper end of the first cylinder, a first screw-like element comprising a helical blade fixed to the outer side of the side wall of the second cylinder and extending from the top to bottom thereof, the lower end of said first screw-like element being adjacent the open lower end of the second cylinder such as to receive product to be peeled from the lower open end of the second cylinder, a second screw-like element comprising a shaft to which is fixed a helical blade supported within the second cylinder in concentric relation therewith for rotation about the axis of the shaft with its upper end adjacent the open top of the second cylinder, first means supported above the open upper end of the second cylinder for delivering product to be processed into the open upper end of the second cylinder onto the upper end of the second screw-like element, second means supported above the open upper end of the annular chamber for receiving peeled product from the upper end of the first screw-like element and means for rotating the first and second screw-like elements independently of each other in directions to move the product to be processed downwardly in the second cylinder and processed product upwardly in the annular space between the first and second cylinders and wherein the openings in the side wall of the first cylinder provide for discharge of the peelings.

4,448,119

TOGGLE PRESS

Hugh E. Williamson, London, England, assignor to Hugan Limited, London, England

Filed Jun. 9, 1982, Ser. No. 386,831
Claims priority, application United Kingdom, Jun. 17, 1981, 8118678
Int. Cl.³ B30B *1/16*
U.S. Cl. 100—231 **19 Claims**



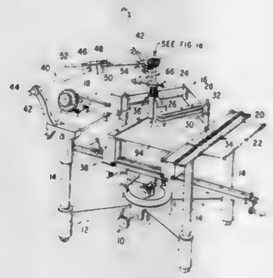
1. A toggle press comprising a main frame and a tool holder mounted for reciprocal movement relative to the frame by power means actuating an intermediate toggle arrangement comprising two toggle mechanisms acting in series, said toggle mechanisms being carried on a sub-frame which is pivotally mounted on the main frame, said press having means for adjusting the position of the sub-frame and thereby the operating position of the tool holder and a press tool therein.

4,448,120

CALLIGRAPHIC APPARATUS AND METHOD AND ENGRAVING TOOL FOR USE IN CONNECTION THEREWITH

William A. Richardson, 608 Snyder Ave., and Douglas A. Richardson, 27 Canterbury La., both of Berkeley Heights, N.J. 07922

Continuation of Ser. No. 275,390, Jun. 19, 1981, which is a continuation-in-part of Ser. No. 240,574, Mar. 4, 1981, abandoned. This application May 10, 1983, Ser. No. 492,154
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ B41F *1/07*
U.S. Cl. 101—32 12 Claims



1. Calligraphic apparatus, comprising holding means for holding a workpiece to be lettered, lettering means for calligraphically lettering a workpiece held by said holding means, said lettering means including an engraving tool having an elongate, continuously straight chisel-pointed tip which has an included angle in a range of from about 80° to about 120°, positioning means for fixedly positioning single-line indicia relative to a workpiece held by said holding means, following means for following single-line indicia fixedly positioned by said positioning means, connecting means for connecting said lettering means to said following means such that the movement of said lettering means copies the movement of said following means, and attaching means for attaching said lettering means to said connecting means such that said lettering means continuously and automatically rotates relative to said connecting means without rotating relative to a workpiece held by said holding means during the movement of said lettering means as it copies the movement of said following means, whereby single-line indicia fixedly positioned by said positioning means may be used to produce single-line calligraphic lettering on a workpiece held by said holding means.

4,448,121

ROTARY PRINTING PRESS AND INSPECTION METHOD AND APPARATUS THEREFOR

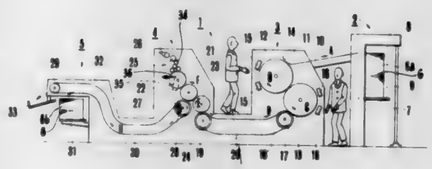
Chiyomatsu Uno, Saitama, and Hiroshi Muto, Chiba, both of Japan, assignors to Komori Printing Machinery Co., Ltd., Japan

Filed May 21, 1982, Ser. No. 380,508
Claims priority, application Japan, Jun. 13, 1981, 56-91363
Int. Cl.³ B07C *5/34*
U.S. Cl. 101—76 17 Claims

1. In a rotary printing press for sequentially printing additional indicia on preprinted sheets, said printing press having an impression cylinder, a printing cylinder disposed parallel to and in engagement with said impression cylinder and selectively movable out of engagement therewith, input sheet feeding means sequentially supplying preprinted sheets to said impression cylinder for printing, and output sheet feeding means sequentially removing said preprinted sheets from said impression cylinder, the improvement comprising:

automatic defect detection means for detecting defects on said preprinted sheets, said automatic defect detection means being disposed adjacent said input means such as to inspect said preprinted sheets as they are sequentially supplied to said impression cylinder;

printing cylinder moving means selectively operable to temporarily move said printing cylinder away from said impression cylinder in response to the detection of a defective preprinted sheet by said automatic defect detection means, such that said additional indicia is not printed on preprinted sheets on which a defect is detected; and



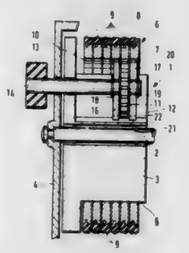
sorting means disposed along said output means and responsive to the detection of defects in said preprinted sheets by said automatic defect detection means to sort said preprinted sheets into a first output stream of defective preprinted sheets and a second output stream of preprinted sheets on which no defect is detected.

4,448,122

PRINT WHEELS HAVING MEANS FOR ROTATING A SELECTED PRINT WHEEL AND PREVENTING THE ROTATION OF PRINT WHEELS ADJACENT THE ROTATED PRINT WHEEL

Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Apr. 14, 1982, Ser. No. 368,315
Int. Cl.³ B41L *47/46*
U.S. Cl. 101—91 7 Claims



1. A printing wheel for a rotary printer comprising:

a cylindrical support having a recess longitudinally extending therethrough;

a plurality of print rings positioned adjacent one another on the periphery of said cylindrical support, each said print ring having a plurality of internal teeth disposed along the inner periphery thereof;

an adjusting spindle having a pinion non-rotatably disposed thereon;

means for mounting said spindle and pinion within said recess;

means for axially shifting said spindle in said recess to effect engagement of said pinion with the internal teeth of a selected one of said plurality of print rings to thereby permit rotation of the selected print ring to a desired position;

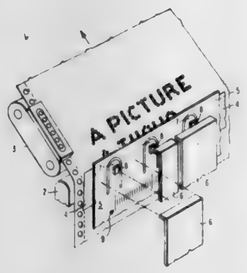
rotation prevention means for preventing rotation of the print rings adjacent said selected print ring as the selected print ring is being rotated, said rotation prevention means including first and second locking members rotatably disposed on said adjusting spindle and respectively associated with the print rings on the opposite sides of the selected print ring, each said locking member including first engaging means for fixedly engaging its associated print ring and a second engaging means for fixedly engaging the recess for locking the associated print rings in place as the selected print ring is rotated, said first and second engaging means respectively fixedly engaging said associated print wheel and said recess in a common plane, said plane being substantially perpendicular to the adjusting spindle.

4,448,123

VARIABLE SPEED PRINTING FOR DOT MATRIX PRINTERS

Arthur E. Fleek, Cary, N.C., and Samuel C. Tseng, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,054
Int. Cl.³ B41J *3/12, 1/20*
U.S. Cl. 101—93.04 7 Claims



1. A dot matrix printing apparatus for printing dots in a pattern along a desired printing line on a recording medium comprising:

a dot font element carrier having a plurality of dot font elements spaced apart from each other by at least a first width measured along said print line;

a plurality of impact hammer means adjacent to said dot font element carrier, and means for actuating said hammer means to produce a mark by one of said dot font elements on said recording medium; and

logic circuit means connected to said hammer actuating means for timing said actuation to impact said carrier when said font elements thereon are adjacent to portions of said printing line where printed dots are desired, the improvement comprising:

means for storing a series of groups of pattern data defining where printed dots are desired along said printing line from a first print position to a second print position;

monitoring means for monitoring the state of the pattern data to be printed in said printing line, said monitoring means comprising a plurality of devices capable of being set into either of two states and means for setting a plurality of said devices to one of said states;

first accessing means for accessing said groups of pattern data sequentially in the order said data is to be printed starting at said first print position;

means for setting one of said devices of said monitoring means to the state opposite said one state for each of said groups of data sensed by said first accessing means;

second accessing means for accessing said groups of pattern data sequentially in the order opposite to the order said data is to be printed starting at said second print position;

means for setting one of said devices of said monitoring means to the state opposite said one state for each of said groups of data sensed by said second accessing means having a second state prior to sensing one group of data having said first state; and

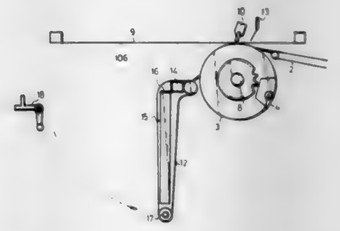
sensing means for sensing when the number of devices of said monitoring means set to the state opposite said one state reaches a reference level.

4,448,124

APPARATUS FOR DISCHARGE OF PRINTED SHEETS FROM A CYLINDER TYPE SCREEN PRINTING MACHINE

Kazuo Nagatani, Seki, Japan, assignor to Sakurai Machine Trading Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1982, Ser. No. 391,551
Claims priority, application Japan, Apr. 1, 1982, 57-47546
Int. Cl.³ B41L *13/00*
U.S. Cl. 101—118 4 Claims



1. A paper sheet discharge device in a cylinder type screen printing machine, said device comprising a cylinder for transferring printing sheets towards a discharge table mounted downstream thereof, a screen mounted on top of said cylinder and adapted to travel back and forth in synchronism with forward and reverse rotation of said cylinder, said screen being pressed from above in synchronism with rearward travel of said screen to effect printing a design on printing sheets supplied between said screen and the cylinder, and means for alternately carrying said paper discharge table in a first operative position for receiving printing sheets from said cylinder or in a second non-operative cleaning position with said second position providing easy access to the underside of said screen so as to allow said screen to be cleaned in its mounted position.

4,448,125

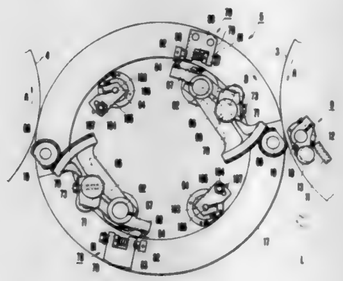
SHEET-FED ROTARY PRINTING MACHINE WITH A TURN-OVER MECHANISM

Shoichi Kawaguchi, and Hiroyuki Sugiyama, both of Toride, Japan, assignors to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,302
Claims priority, application Japan, Jun. 14, 1982, 57-101885
Int. Cl.³ B41F *5/16*
U.S. Cl. 101—185 2 Claims

1. A sheet-fed rotary printing machine with a turn-over mechanism, comprising a pair of adjacent printing units having a pair of blanket cylinders, respectively, a pair of printing cylinders each having a diameter twice that of the blanket cylinders and gripper devices mounted on an outer periphery thereof in diametrically opposite relation, and a turn-over cylinder interposed between and held peripherally against said printing cylinders, said turn-over cylinder having a diameter twice that of the blanket cylinders, said turn-over cylinder having a pair of gripper shafts and a pair of suction lever shafts mounted on an outer periphery thereof in diameterically opposite relation and extending parallel to an axis of the turn-over cylinder, a plurality of turn-over grippers fixed to each of said gripper shafts at intervals, a plurality of gripper pad assemblies loosely fitted on each of said gripper shafts adjacent to said turn-over grippers, respectively, and having sheet gripping surfaces facing ends of said turn-over grippers, a gripper spring

interposed between said turn-over gripper and said gripper pad assembly for resiliently urging them in a direction to grip a sheet therebetween, a turn-over cam mechanism for reciprocably turning said gripper shaft for turning over and turn-over gripper and said gripper pad assembly in unison between a sheet-leading-edge gripping position and a sheet-trailing-edge position, a gripper cam mechanism and a turn-over gripping cam mechanism for reciprocably turning said gripper shaft for opening and closing said turn-over gripper and said gripper pad assembly in both said positions, a sheet releasing mecha-



nism for reciprocably turning said gripper shaft for opening and closing said turn-over gripper and said gripper pad assembly in a sheet releasing position, a plurality of suction levers mounted at intervals on each of said suction lever shafts in alignment with said turn-over grippers and axially staggered relation to the latter, and a suction lever turning cam mechanism for reciprocably turning said suction lever shaft for turning said suction lever between a position in which said gripper pad assembly is limited against angular movement and a position in which a sheet trailing edge is attracted.

4,448,126

INKER FOR PRINTING PRESSES

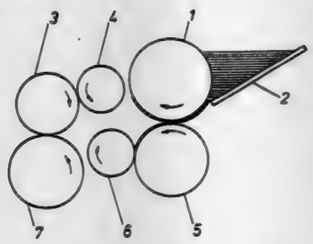
Daniel Bognar, Wiesbaden, and Friedrich Kuhnert, Heusenstamm, both of Fed. Rep. of Germany, assignors to Miller-Johannisberg Druckmaschinen GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,759

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219655

Int. Cl.³ B41F *31/14*

U.S. Cl. 101—363 **13 Claims**



1. In an inking train for a printing press wherein a serial plurality of rotatable rollers cooperate to transport ink from an ink fountain through the inking train for repetitive printing of inked impressions upon a printing medium, the combination comprising; an ink transporting roller which receives an ink output from such ink fountain; an ink splitting cylinder which contacts said ink transporting roller to acquire therefrom a first portion of such ink output while a second portion of such ink output remains on a surface portion of said ink transporting roller; a first ink ductor roller intermittently engageable with said ink splitting cylinder to intermittently acquire therefrom an ink load comprising substantially all of said first portion of such ink output; a second ink ductor roller intermittently engageable with said surface portion of said ink transporting roller to intermittently acquire therefrom an ink load comprising substantially all of said second portion of such ink output; and subsequent roller means cooperable with said first and second ductor rollers to recombine their respective ink loads upon a common ink transporting roller for further transport of such entire ink output through such inking train.

4,448,127

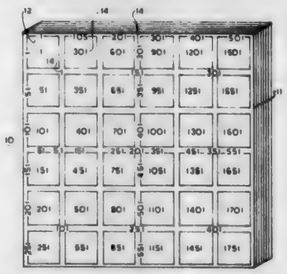
METHOD OF PRODUCING STACKS OF TICKET STACKS

John J. Frain, 400 Island Way, Clearwater, Fla. 33515

Filed May 28, 1982, Ser. No. 382,950

Int. Cl.³ B41F *13/54*

U.S. Cl. 101—426 **9 Claims**



1. The method of producing a stack of ticket sets each of which contains a plurality of different tickets comprising the steps of printing and stacking a plurality of rectangular first sheets containing different tickets arranged in similar patterns of mutually perpendicular rows and columns each having a factorable number of tickets to form a first stack, cutting said first stack along one or a plurality of parallel first cut lines to produce similar first substacks, stacking said first substacks to form a second stack, cutting said second stack along one or a plurality of parallel second cut lines perpendicular to said first cut lines to produce second substacks of different ticket sets and stacking said second substacks to produce a third stack of said ticket sets, said ticket sets being mutually different.

4,448,128

HOLLOW EXPLOSIVE BODY

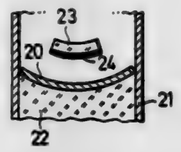
Walter Trinks, Bergstrasse 71, D-5340 Bad Honnef, and Kurt-Albrecht Köhler, Geislarstrasse 86, D-5300 Bonn 3, Fed. Rep. of Germany

Division of Ser. No. 74,550, Sep. 11, 1979. This application Jul. 27, 1982, Ser. No. 408,262

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841056

Int. Cl.³ F42B *11/22*

U.S. Cl. 102—476 **1 Claim**



1. A hollow explosive projectile for penetrating an armored target, comprising

(a) a hollow cylindrical jacket (**21**) formed of resilient material and closed at one end;

(b) a body of explosive material (**22**) arranged within said jacket, said body of explosive material containing an axial recess;

(c) a generally circular concave lining plate (**20**) arranged within said recess and in contact with said jacket extending continuously across the interior of said jacket, one surface of said plate being in contiguous engagement with said body of explosive material, thereby to enclose said body of explosive material;

(d) an auxiliary charge support plate (**24**) having a concave configuration corresponding with said lining plate;

(e) means for mounting said support plate in parallel spaced relation from said lining plate; and

(f) a body of auxiliary explosive charge material (**23**) arranged in contiguous relation with the remote surface of said support plate relative to said lining plate, whereby upon ignition of said auxiliary explosive charge material, said support plate is operable to expand said lining plate and said cylindrical jacket radially outwardly, and upon subsequent ignition of said body of explosive material the projectile penetrates the armored target.

4,448,129

TELESCOPIC PROJECTILE

André J. Gabriels, Genk, Belgium, assignor to Fabrique Nationale Herstal, Belgium

Filed Nov. 20, 1980, Ser. No. 208,809

Claims priority, application Belgium, Nov. 30, 1979, 2/58240; Oct. 10, 1980, 2/58794

Int. Cl.³ F42B *27/00*

U.S. Cl. 102—487 **16 Claims**



1. A projectile having a head and a tubular tail, the projectile containing an explosive charge and a firing chain therefor, the tail comprising first and second telescopically related tubular parts, said first telescopic part is fixed to said head and includes a first part of said firing chain, said second telescopic tubular part includes the remaining parts of the firing chain, and inter-engaging guiding means on said first and second telescopically related tubular parts to relatively rotate said first and second tubular parts in response to relative longitudinal telescopic movement of said first and second telescopically related parts to bring said first part of said firing chain into radial and functional alignment with said remaining parts of the firing chain.

4,448,130

PACKAGING KIT FOR PYROTECHNIC MATERIALS LOADING

Spencer J. Speer, Ontario, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 15, 1982, Ser. No. 398,724

Int. Cl.³ F42B *13/20*

U.S. Cl. 102—498 **17 Claims**

1. A packaging kit for pyrotechnic materials which comprises:

a preformed cup of generally cylindrical configuration, closed at the bottom and open at the top, having a radially outwardly projecting lip extending about the open end;

a sheet-like cover for hermetically sealing the cup by attachment about the periphery of the cover to the cup lip after the cup is filled to a preselected bulk density with pyrotechnic materials;

a cup-like casing of configuration and dimension selected to receive the preformed cup therein with minimal spacing between the inner surface of the casing wall and the outer wall surface of the cup, said casing being of substantially rigid construction for protecting the cup and its contents against deformation or rupture from forces normally encountered in the handling of the cup and casing combination, the casing being longer than the cup by a predetermined dimension with a selected spacing between the bottom of the cup and the bottom of the casing being maintained by virtue of the lip of the cup engaging the upper end of the casing;



a casing plug for insertion in the open end of the casing to push the cup a predetermined distance into the casing and to retain the cup in said position within the casing by crimping of the cup lip and outer cover portion between the plug and the casing; and

means defining an opening in the bottom of the casing for receiving an igniter in a position adjacent to but spaced from the bottom of the cup within the casing.

4,448,131

SUSPENSION SYSTEM FOR RAIL VEHICLES

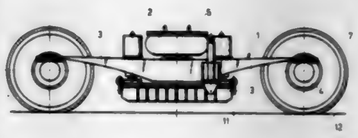
Emil Weiland, Hohenbrunn, and Christian Günther, Haar, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,693

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952182

Int. Cl.³ B61F *5/52*

U.S. Cl. 105—182 R **5 Claims**



1. A bogie for a rail vehicle comprising at least two wheel sets each consisting of an axle and a plurality of wheels and a bogie frame joining said wheel sets together in operative relationship, said bogie frame being formed with an H-shaped configuration consisting of a cross member and arm members extending therefrom, said arm members having attached at the ends thereof said wheel set axles, said bogie frame operating to provide the primary spring suspension means acting between said wheel set axles and said cross member to effect vertically resilient suspension of respective wheel set axles relative to said cross member, said bogie frame being constructed with said cross member and said arm members made completely of fiber-reinforced material joined together to form said bogie frame as a unitary member, with said cross member having a relatively rigid structure and with said arm members being formed with a more resilient structure taken relative to said

cross member; said arm members being formed as integral units of fiber-reinforced material which function as said primary spring suspension means of said bogie; said fiber-reinforced structure of said bogie frame thereby functioning simultaneously as a frame member supporting said wheel sets maintaining them in guided relationship relative to each other and as the primary spring suspension means of said bogie.

4,448,132

CONVERTIBLE RAILWAY-HIGHWAY VEHICLE

William T. Beatty, Rte. 2, Box 169-A, Tara Dr., Oakwood, Ga. 30566

Filed Sep. 17, 1981, Ser. No. 303,157
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ B60F *1/00*; B61D *15/00*; B61F *13/00*; B62D *61/12*
U.S. Cl. 105—215 C **6 Claims**



1. A convertible highway-railway vehicle with one end adapted to be removably and alternatively coupled to a railway truck for railway use and a highway truck tractor for highway use, said vehicle including:

an elongate frame having opposed ends, said frame removably and alternatively coupled to the railway truck and the highway truck tractor adjacent one of said ends;

a convertible truck assembly operatively connected to said frame adjacent the other of said ends, said truck assembly including a plurality of railway wheels and a first plurality of highway wheels, said truck assembly adapted to lower said railway wheels into operative position for railway use while raising said highway wheels out of operative position and to lower said highway wheels into operative position for highway use while raising said railway wheels out of operative position; and

a plurality of liftable highway axle assemblies operatively connected to said frame intermediate the ends thereof and including a second plurality of highway wheels adapted to be lowered into operative position during highway use so that the vehicle is supported by both said first and second plurality of highway wheels to prevent overloading said first plurality of highway wheels during highway use and to be raised out of operative position during railway use.

4,448,133

DRAFTING TABLE

Paul G. Randall, 11902 Binghamton Dr., Houston, Tex. 77089

Filed Mar. 30, 1981, Ser. No. 248,946
Int. Cl.³ A47F *5/12*
U.S. Cl. 108—9 **7 Claims**

1. A foldable drafting table comprising:

(a) front member,

(b) two first side members, rigidly attached to and spaced apart by said front member,

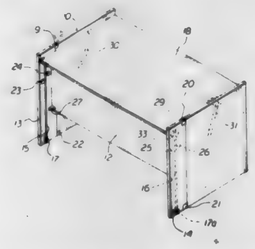
(c) two opposed slots, one in each of said first side members, forward of said front member, and extending above said front member,

(d) two second side members, one each hingedly attached to each of said first side members and extendable rearward from said front member, and foldable toward said front member,

(e) a drafting top for extension between said first and second side members,

(f) pin means attached to said drafting top at one end thereof to seat in said slots for movement of said drafting top along said slots into a position forward of said front member and between said two first side members for storage, and

(g) means for releasably attaching said drafting top between and to said second side members and for adjusting the



slope of said drafting top, by pivoting said drafting top about said pin means, each of said slots being provided at the upper end thereof with an offset in which to rest said pins attached to said top when said top is in an open configuration for use.

4,448,134

UNIFORM DISPENSING OF GRANULAR MATERIAL FROM A VESSEL

Jerry B. Foote, Spokane, Wash., assignor to Energy Products of Idaho, Coeur d'Alene, Id.

Continuation-in-part of Ser. No. 170,429, Jul. 21, 1980, abandoned, Division of Ser. No. 57,479, Jul. 13, 1979, Pat. No. 4,253,824. This application Sep. 7, 1982, Ser. No. 415,112
Int. Cl.³ F23G *5/00*, *7/00*
U.S. Cl. 110—245 **13 Claims**

1. A method of removing granular material from a fluidized bed vessel comprising the steps of:

causing air to be selectively displaced upwardly through a fluidized bed of substantially homogeneous granular material within the vessel;

elevating the temperature of the fluidized bed granular material;

causing combustible material to be burned within the fluidized bed thereby causing tramp material to be present in the fluidized bed;

gravity displacing the hot granular bed material and hot tramp material downwardly in a vessel passed the air displacement site;

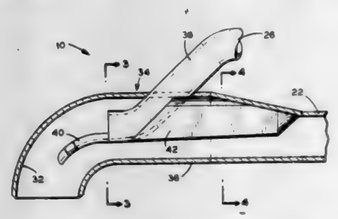
insuring a substantially uniform rate of descent across the entire cross section of the vessel of the hot bed and tramp material as combustion continues in the bed by: interposed apertured downwardly converging funnel shaped means in the path of the granular material at the bottom of the vessel, the funnel means substantially spanning the entire cross section of the vessel but entirely closed at the lower end whereby the granular bed and the tramp materials are caused to substantially uniformly pass through the apertures of the apertured funnel means, either directly or after being deflected along the funnel means between adjacent apertures; causing the passsed granular bed and tramp materials to engage a substantially solid downwardy converging funnel means at a fixed permanent distance below and juxtaposed the apertured funnel means whereby the granular bed and tramp materials move between the two funnel means as a generally cone-shaped layer in an hour-glass fashion; and discharging the granular bed and tramp materials through a port at a central location comprising the low point of the solid downwardly converging funnel means.

4,448,135

INLINE AIR-COAL SEPARATOR

Donald R. Dougan, North Canton; Albert D. La Rue, Uniontown, both of Ohio, and John J. Wolf, Upper Darby, Pa., assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 321,011, Nov. 16, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 500,016
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—263 **1 Claim**



1. In combination with a boundary wall of a furnace, a burner wall spaced from the boundary wall to form a windbox therebetween, the boundary wall having first and second ports extending therethrough, the first port being disposed subjacent to the second port, and the windbox communicating with the first port to deliver combustion air thereto, an improved pulverized fuel burner comprising first and second nozzles, the first nozzle being formed of a horizontally-oriented segment defining an outlet, an elbow defining an inlet, and a fairing connection the elbow to the segment, the second nozzle being formed of an upwardly-oriented segment having upper and lower curved end-portions, and a horizontally-oriented segment connected to the upper portion and defining an outlet, the lower portion being disposed within the first nozzle and defining an inlet concentrically spaced with relation to the elbow, an arcuate deflector connected to a lower section of the inlet of the second nozzle, the deflector projecting into the elbow to promote flow of a lean fuel-air mixture through the second nozzle and a rich fuel-air mixture through said first nozzle.

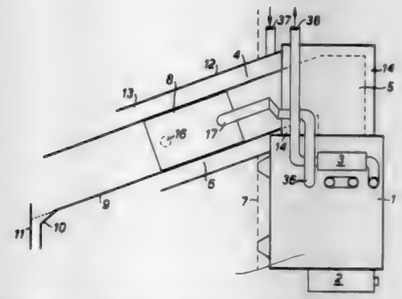
4,448,136

BOILER WITH WASTE HEAT RECOVERY

Martin White, Kingston upon Thames, England, assignor to British Gas Corporation, London, England

Filed Jul. 6, 1982, Ser. No. 395,267
Claims priority, application United Kingdom, Aug. 4, 1981, 8123819
Int. Cl.³ F22B *1/18*; F22D *1/00*
U.S. Cl. 122—17 **1 Claim**

1. A fuel fired boiler for heating circulating water, the boiler comprising a housing, a burner and a primary heat exchanger disposed in said housing, a flue extending from the upper end of said housing, a secondary heat exchanger disposed within said flue, a fluid circulating system including piping for circulating fluid through said secondary heat exchanger to said primary heat exchanger, an outlet comprising a discharge spout for said flue for discharging externally of the housing any flue gas condensate formed in the secondary heat exchanger during use, the outlet being disposed in relation to the secondary heat exchanger so as to receive condensate from said secondary heat exchanger by gravity flow and being disposed at the outer end of the flue portion lying external of the housing, an air intake duct forming a shroud for at least a portion of said flue external of said boiler housing, and a passageway within



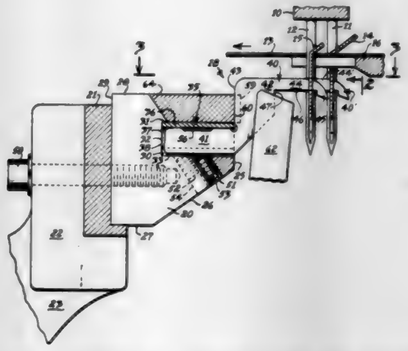
said housing for delivering air from said air intake duct to said burner whereby air passing through said air intake duct is preheated by the flue gas prior to delivery to the burner.

4,448,137

MODULAR HOOK BAR WITH GAUGE INSERT FOR TUFTING MACHINE

Kenneth C. Curtis, and John C. Densmore, both of Dalton, Ga., assignors to Tuftco Corporation, Chattanooga, Tenn.

Filed Jan. 26, 1983, Ser. No. 447,974
Int. Cl.³ D05C *15/00*
U.S. Cl. 112—79 R **7 Claims**



1. A looper apparatus for a multiple-needle tufting machine including looper hooks, each hook comprising a neck portion having an upright rear shoulder, a shank portion projecting rearward from the neck portion, and a bill projecting forward from the neck portion, comprising:

(a) a hook bar of solid material having a front face, a rear face, a bottom surface, and a transverse dimension,

(b) an elongated recess opening through the front face of said hook bar, projecting rearward into said hook bar, and extending transversely of said hook bar,

(c) said recess having a top surface and a bottom surface,

(d) an elongated unitary gauge member having front, rear, upper and lower portions, and received within said recess, the longitudinal axis of said gauge member extending transversely of said recess,

(e) a plurality of transversely spaced hook slots in said gauge member having the same gauge as the needles in the multiple-needle tufting machine,

(f) said hook slots being disposed vertically and extending front-to-rear through said gauge member and opening through the front and lower portions of said gauge member, each of said hook slots being adapted to receive the

shank portion of a corresponding looper hook projecting rearwardly into said recess,

(g) said gauge member comprising an elongated continuously extending transverse top wall portion having a continuously solid, uninterrupted top surface and defining the closed upper surface of each of said hook slots, the upper surfaces of said hook slots being spaced from the bottom surface of said recess a height slightly greater than the height of the shank portion of the corresponding looper hook received in said corresponding hook slot in operative position; and

(h) a set screw means for each hook slot, a threaded hole for each set screw extending at an angle upward from front-to-rear through the bottom portion of said hook bar, each threaded hole being in the same vertical plane as each of said hook slots and intercepting the bottom surface of said recess, so that a set screw threaded through each corresponding hole may be adjusted to bear against the bottom edge of the shank portion of a looper hook in the operative position for holding the top edge of the shank portion against the top surface of the corresponding hook slot within said guage member.

4,448,138

MACHINE FOR CONTINUOUSLY FOLDING OVER AND STITCHING WEB EDGES

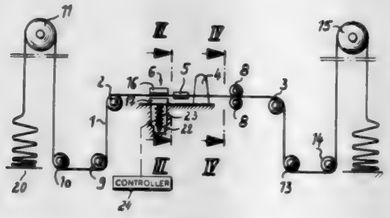
Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale KG, Ochtrup, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,868

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227196

Int. Cl.³ D05B *35/00*

U.S. Cl. 112—147 **14 Claims**



1. An apparatus for folding over and stitching the longitudinally extending and transversely spaced edges of an elongated textile web, the apparatus comprising:

a pair of longitudinally spaced and transversely throughgoing main rolls rotatable about respective parallel axes;

guide and drive means for passing the web longitudinally and continuously from one of the main rolls to the other main roll in a travel direction perpendicular to the roll axes and with the web spanned tightly longitudinally between the main rolls and lying generally in a plane with its edges generally parallel;

means including respective stretchers transversely confronting each other between the main rolls and engaging the web edges for urging same transversely apart and thereby transversely stretching the web;

means between the stretchers and the downstream main roll for folding over the edges of the web; and

sewing means between the folding means and the downstream main roll for stitching together for folded-over web edges.

9. A method of selvedging the longitudinally extending and transversely spaced edges of an elongated textile web, the method comprising the steps of:

passing the web longitudinally and continuously from a transversely throughgoing upstream main roll to a transversely throughgoing downstream main roll in a travel direction perpendicular to the rolls and with the web spanned tightly longitudinally between the main rolls and lying generally in a plane with its edges generally parallel;

engaging the web edges at a stretching location between the main rolls to urge the edges transversely apart and transversely stretch the web;

folding over the edges of the web between the stretching location and the downstream roll; and

stitching together the folded-over web edges upstream of the downstream main roll.

4,448,139

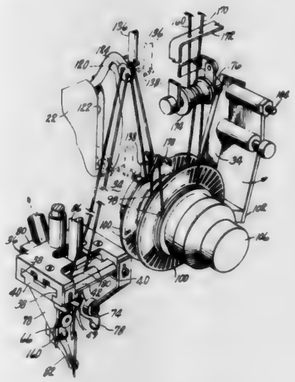
AUTOMATIC THREAD CHANGING SEWING MACHINE

Adolph S. Dorosz, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Oct. 27, 1981, Ser. No. 315,415

Int. Cl.³ F23G *5/04*

U.S. Cl. 112—221 **17 Claims**



1. A sewing machine having a plurality of reciprocably movable spaced apart shuttlable needles to permit the stitching of several different kinds of threads, said sewing machine comprising:

a shuttle means wherein a first needle and a second needle may be moved, one from an active sewing position transversely to an inactive standby position, the other from an inactive standby position transversely to the active position, said shuttle means including an indexer which moves said first and second needles simultaneously;

and

an indexing cylinder, attached to said indexer through a linkage, which when actuated, effectuates the shuttle of said needles;

said needles being each supported by a needle holder, said needle holders being reciprocably supported in said indexer, said indexer being transversely supported in a needle holder cage, wherein a biased detent means is arranged between said needle holder cage and said needle holders to facilitate alignment and proper location of said needles in the inactive positions.

4,448,140

RECESSED TOP FEED FOR SEWING MACHINES

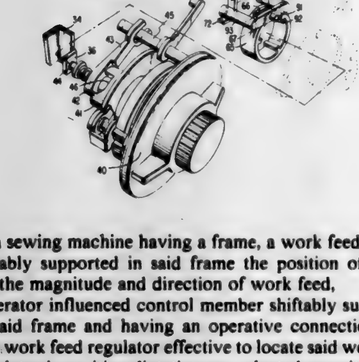
Robert E. Porter, 18 Tally Ho Dr., Hamilton, Mass. 01936

Filed Oct. 5, 1982, Ser. No. 432,810

Int. Cl.³ D05B *27/04*

U.S. Cl. 112—311 **3 Claims**

1. In a sewing machine having a source of drive, a top feed for material to be sewn and a work area over which said material passes, a horizontal drive system for said top feed which comprises a bed plate disposed beneath said work area, and having openings formed in a surface thereof, slide members disposed in said openings, means connecting said slide members to said source of power to cause reciprocation thereof in



said openings and means connecting said slide members to said top feed to apply material feeding motion thereto.

4,448,141

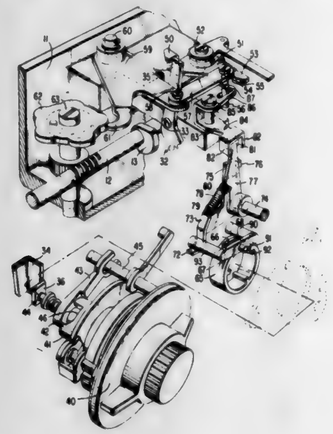
SEWING MACHINE CAM CONTROLLED FEED ENGAGING AND DISENGAGING MECHANISM

Jan Szostak, Lincroft; Henry Schaeflern, Pittstown, and Walter H. W. Marsh, Scotch Plains, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 15, 1983, Ser. No. 514,136

Int. Cl.³ D05B *27/22*

U.S. Cl. 112—315 **3 Claims**



1. In a sewing machine having a frame, a work feed regulator shiftably supported in said frame the position of which dictates the magnitude and direction of work feed,

an operator influenced control member shiftably supported in said frame and having an operative connection with said work feed regulator effective to locate said work feed regulator in position dictating any selected magnitude and direction of feed,

said operative connection between said operator influenced control member and said work feed regulator including means for providing a dwell segment of control member movement in which the position of said work feed regulator dictated by said operator influenced control member remains in maximum magnitude and forward direction of feed,

a feed advance pattern cam carried by said sewing machine frame and driven by said sewing machine,

a feed advance cam tracking mechanism carried by said sewing machine frame,

connection means selectably engageable or disengageable between said feed advance cam tracking mechanism and said work feed regulator,

and means for positively engaging and disengaging said connection means comprising:

cam means carried by said operator influenced control member and including separate engaging and disengaging cam surfaces,

engaging and disengaging cam follower means supported on said sewing machine frame and arranged for positive influence by said engaging and disengaging cam surfaces respectively during said dwell segment of control member movement,

said engaging cam follower means being operatively coupled to said connection means, and

said disengaging cam follower means being operatively coupled to said engaging cam follower means.

4,448,142

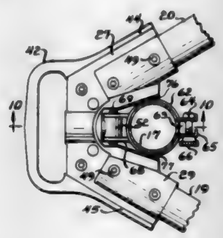
BOOM ASSEMBLY FOR SAILBOARD

Jerry B. Pollard, Woodinville, Wash., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Nov. 2, 1981, Ser. No. 316,782

Int. Cl.³ B63B *15/00*

U.S. Cl. 114—39 **3 Claims**



1. In a sailboard assembly having a board adapted to support a user on water, a mast connected to the board, and a sail supported by the mast, an improved boom assembly comprising a boom support bracket having a pair of mast-engaging surfaces, at least one boom connected to the boom bracket, and an elastic connecting member mounted on the boom bracket between the mast-engaging surfaces and extending toward the mast for pivotally connecting the boom bracket to the mast, the connecting member including a first end which is pivotally connected to the mast for pivoting movement about a first axis which extends perpendicularly to the axis of the mast and a second end which is pivotally connected to the boom bracket for pivoting movement about a second axis which extends perpendicularly to said first axis, the boom bracket being pivotable with respect to the mast between a use position in which the boom extends generally perpendicularly to the mast and the mast-engaging surfaces engage the mast and frictionally retain the boom bracket in the use position and a storage position in which the boom extends at less than 90° with respect to the mast, the elastic connecting member being tensioned with the boom bracket is in the use position to provide a frictional retention force between the mast-engaging surfaces and the mast.

4,448,143

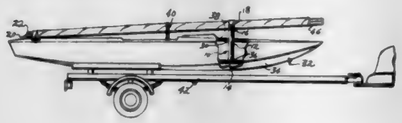
SAIL CRADLE

Richard J. Welsh, 460 NE. 105 St., Miami Shores, Fla. 33138

Continuation-in-part of Ser. No. 119,387, Feb. 7, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,100

Int. Cl.³ B63B *15/00*

U.S. Cl. 114—90 **1 Claim**



1. In combination, a sailboat of the type sized to be transported on a trailer behind a vehicle, said sailboat having a removable mast having an upper end and a lower end, a deck with a hole sized to receive the lower end of the mast in upstanding relation when in use in the water, said deck being above the hull a predetermined first distance, a boom having a first end zone adapted to engage the mast when in use and a sail to be supported by the mast and the boom, said mast and boom being adapted to be positioned in parallel relation when not in use and said sail being adapted to be furled about said mast to provide a generally tubular package,

a tubular stem of predetermined length and diameter, said length being greater than the first predetermined distance, said tubular stem having a bottom end, said bottom end being of a diameter sized to fit within the hole in the deck and to dwell upon the hull bottom after removal of the mast, an upper end zone on said stem, said upper end zone being at all times above the deck when said bottom end is in engagement with the hull bottom, said upper end zone comprising a cradle defining a generally C-shaped upwardly opening pocket, said pocket having a starboard and port arm, each of said arms curving from the stem outwardly and upwardly to a terminal end in spaced relation from one another and spaced from one another a distance less than the diameter of the package, said arms being of flexible yieldable material for resiliently opening to nest the package therein in snug relation for captivating receipt of the package composed of the boom, sail and mast when the sailboat is to be transported by a trailer over land,

said lower end being normally open in use on land and said stem including a cap having an outer end surface of a diameter substantially equal to the diameter of the stem and an inwardly projecting portion of smaller diameter sized to engage the interior of the tubular stem defining a shoulder for close snug abutting relation to close the end of the stem.

4,448,144

METHOD FOR OPENING, CLOSING AND ROTATING RIGID MARINE SAIL

Akira Senoo, Yokosuka; Yuzo Nezu, Zama; Masanori Ito, Tokyo; Hironobu Nagano, and Tatsuo Aire, both of Yokohama, all of Japan, assignors to Japan Marine Machinery Development Association, Tokyo; Aitoku Company Limited, Yamaguchi and Nippon Kokan Kabushiki Kaisha, Tokyo, all of, Japan

Filed Jul. 7, 1981, Ser. No. 281,164

Claims priority, application Japan, Jul. 21, 1980, 55-98687

Int. Cl.³ B63B *49/00;* **B63H** *9/06;* **G05B** *7/02*

U.S. Cl. 114—102 **2 Claims**

1. A method of selectively opening or closing, and rotating a generally rigid marine sail, the sail comprising at least first and second sail portions selectively pivotably movable between an open position and a closed position about a substantially vertical axis associated with a mast of a ship, and said mast being rotatable about its own axis;

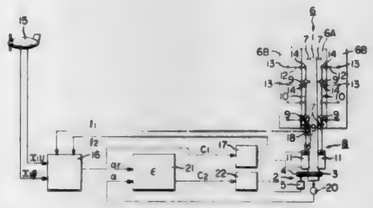
the method comprising:

smoothing a plurality of signals representative of the wind velocity at predetermined time intervals;

smoothing a plurality of signals representative of the wind direction at predetermined time intervals;

determining on the basis of said smoothed wind velocity signal and said smoothed wind direction signal whether said sail portions are to be in the open or closed position;

automatically operating an apparatus for selectively opening or closing said sail portions in accordance with said aforementioned determinating step;



determining an optimum sail angle, relative to the ship, at which said sail portions provide maximum propulsive effect when in said open position and minimum wind resistance when in said closed position; and

rotating said mast together with said sail portions in accordance with any deviation between the actual sail angle and said determined optimum sail angle to thereby tend always to maintain said sail portions at said optimum sail angle;

either or both of said plurality of wind velocity signals and said plurality of wind direction signals being smoothed in accordance with the following equation:

$$\bar{\chi}_n = \bar{\chi}_{n-1} + (\chi_n - \bar{\chi}_{n-1}) \exp\left(-\frac{\Delta t}{T}\right)$$

where

$\bar{\chi}_n$: smoothed wind velocity signal or smoothed wind direction signal,

$\bar{\chi}_{n-1}$: smoothed wind velocity signal or smoothed wind direction signal directly before $\bar{\chi}_n$,

χ_n: n-th wind velocity signal or wind direction signal,

T: time constant under the first order lag; and

Δt: time interval for measuring the wind velocity or wind direction.

4,448,145

UNMANNED SUBMARINE VEHICLE

René Hervieu, Nantes, France, assignor to Centre National pour l'Exploitation des Oceans, Paris, France

Continuation of Ser. No. 212,314, Dec. 2, 1980, abandoned, which is a continuation of Ser. No. 902,230, May 2, 1978, abandoned. This application Sep. 30, 1982, Ser. No. 433,050

Claims priority, application France, May 4, 1977, 77 14154

Int. Cl.³ B63G *8/00, 8/14*

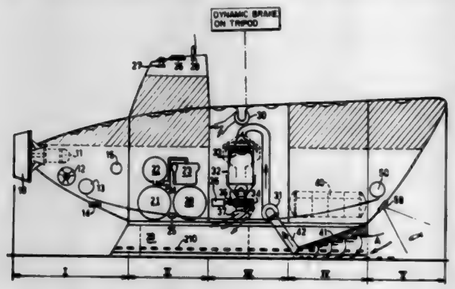
U.S. Cl. 114—312 **14 Claims**

1. A submarine vehicle capable of operating at extremely great depths and of gathering materials from the ocean, comprising:

(a) loading means for said materials including an exchanger-container having a vertical axis of symmetry coinciding with a line passing through the center of gravity and center of volume of said vehicle;

(b) said exchanger-container having a moveable wall, dividing the interior thereof into a first compartment containing ballast and means for unloading the ballast, and a second compartment for receiving said materials; and

(c) wherein said ballast unloading means is adapted to operate to unload ballast while materials are being received in said second compartment, whereby the apparent weight of the vehicle is maintained approximately constant during a material loading operation.



4,448,146

RUDDER WITH A STABILIZER FIN

Willi Becker, Hamburg, Fed. Rep. of Germany, assignor to Willi Becker Ingenieurbüro GmbH, Hamburg, Fed. Rep. of Germany

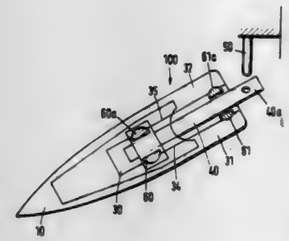
PCT No. PCT/DE81/00182, 371 Date Feb. 11, 1982, 102(e) Date Feb. 11, 1982, PCT Pub. No. WO82/01527, PCT Pub. Date May 13, 1982

PCT Filed Oct. 29, 1981, Ser. No. 349,082

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040808

Int. Cl.³ B63H *25/06*

U.S. Cl. 114—162 **11 Claims**



1. A rudder for ocean going ships comprising an upwardly extending main rudder (**20**), an upwardly extending stabilizer fin (**10**) hinged to said main rudder and forcibly guided by said main rudder, a swivel drive articulation (**100**) connected to the upper end of said stabilizer fin (**10**), said drive articulation (**100**) comprises a slide bearing (**30**) located at the upper end of said fin and extending transversely of the upward direction, an elongated drive rod (**40**) positioned in said slide bearing with one end of said drive rod located within said slide bearing and the other end thereof extending out of said slide bearing, hinging bolt (**50**) arranged to be fixed to a ships's hull and extending in the upward direction, the end of said drive rod (**40**) extending out of said slide bearing is pivotally mounted on said hinging bolt, said slide bearing (**30**) has a forked configuration and includes a pair of fork arms (**31, 32**) disposed in laterally spaced relation with said drive rod (**40**) located therebetween and said fork arms extend transversely of the upward direction, each of said fork arms has a wall surface (**34,35**) facing the other said wall surface with said drive rod (**40**) located between said wall surfaces, at least one recess (**36**) formed in each of said wall surfaces (**35,36**) open toward said drive rod (**40**), said recess (**36**) being open in the upward direction, a replaceable guide block (**60,60*a*,61,61*a***) formed of plastic and inserted in said open recess so that said guide block projects inwardly from said wall surface toward said drive rod, and means located at the upper end of said recesses (**36**) for blocking unintentional removal of said guide blocks from said recesses.

4,448,147

TEMPERATURE RESPONSIVE WARNING DEVICE

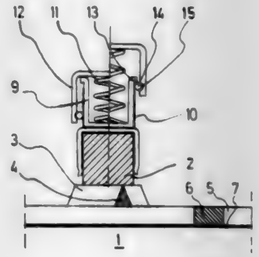
Gabriël Dewaeheneire, Deerlijk, Belgium, assignor to Leuven Research & Development, Leuven, Belgium

Filed Jun. 8, 1981, Ser. No. 271,173

Claims priority, application Netherlands, Jun. 9, 1980, 8003358

Int. Cl.³ G01K *1/16, 5/70*

U.S. Cl. 116—216 **10 Claims**



1. A warning device in heat conducting contact with a current conductor comprising means fixing the device to the conductor, at least two concentric tubular members in telescoping relationship with each other and having outer surfaces with different and contrasting appearances, a spring element with shape memory properties that is activated at a predetermined temperature, opposite sides of the spring element being in contact with inner surfaces of each tubular member whereby one of the tubular members will extend relative to the other to signal when said predetermined temperature has been reached.

4,448,148

POST INDICATING VALVE ASSEMBLY INDICATOR

Lorand H. Gain, Jr., Montgomery, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed May 3, 1982, Ser. No. 373,876

Int. Cl.³ F16K *37/00*

U.S. Cl. 116—277 **2 Claims**



1. An indicator for a valve permitting observation of a valve position in the closed or open position thereof comprising a post connected for movement with a shaft for moving the valve between its open and closed position, a fixed housing coaxially disposed about said shaft, said housing including a first pair of diametrically opposed openings, and a second pair of diametrically opposed openings vertically spaced from said first pair of openings, color indicia means on said post fixed to said shaft and viewable through said openings, said indicia

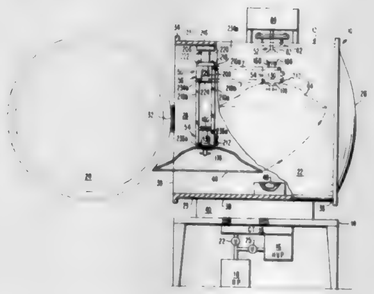
means when viewed through either of said openings in said first and second rows indicating simultaneously the closed or open position of said positions of said valve, wherein said indicia means includes a first row of two alternately arranged colors of which one color designates the open position and the other color the closed position of said valve, and a second row of the same two colors alternately arranged in staggered relation to said first row of colors, whereby the same colors are simultaneously visible through said openings in either the closed or open position of said valve.

4,448,149

APPARATUS FOR REMOVABLY MOUNTING AND SUPPLYING MECHANICAL AND ELECTRICAL ENERGY TO A VACUUM CHAMBER SUBSTRATE HOLDER

William W. Brown, Jr., Milton; Gerhard P. Dahlke, Fishkill, and Francis T. Lupul, LaGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1982, Ser. No. 433,590
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—500 **11 Claims**



1. Apparatus for removably mounting and coupling mechanical and electrical energy to a multiposition holder in a vacuum chamber, the holder for retaining substrates in the chamber during substrate processing, the apparatus comprising:

a feedthrough mounted on the chamber for transmitting electrical and mechanical energy from outside the chamber to inside the chamber;

a coupler for releasably engaging the feedthrough and the holder for supplying electrical and mechanical energy from the feedthrough to the holder; and

a linkage assembly mounted within the chamber and connected to the coupler for locating the coupler in a first position at which the holder may be mounted to the coupler and in a second position at which the coupler may be connected to the feedthrough so that electrical and mechanical energy may be supplied to the holder during processing of the substrates.

4,448,150

ANIMAL HOUSING AND ACTIVITY MONITOR

Nicholas Catsimpoolas, Newton Center, Mass., assignor to Trustees of Boston University, Boston, Mass.

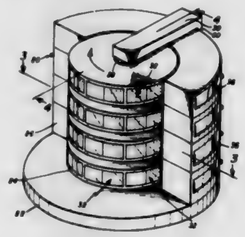
Filed Sep. 15, 1982, Ser. No. 418,555
Int. Cl.³ A01K *1/03, 45/00*
U.S. Cl. 119—1 **24 Claims**

1. Animal housing and activity monitor comprising:

a. a cage assembly of at least two levels of vertically displaced animal cages, each level comprising a plurality of cages angularly displaced;

b. a central column-like core having a central axis, mounted for rotation relative to the cage assembly, the core carrying electromagnetic communicating means;

c. means responsive to the electromagnetic communicating means for providing at least one beam through seqential cages within each level; and,



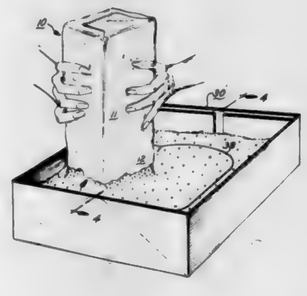
d. detecting means for receiving said beams for providing indications of the animals's position through the electromagnetic communicating means.

4,448,151

CAT BOX FILLER SYSTEM AND METHOD

Henry E. Lowe, 21725 Allegheny St., Cassopolis, Mich. 49031

Filed Mar. 20, 1980, Ser. No. 132,285
Int. Cl.³ A01K *1/015*
U.S. Cl. 119—1 **16 Claims**



1. A package of cat box filler material, comprising a container having side walls and end walls, one of said walls being openable for discharging the material from the container, a first layer of litter material disposed adjacent said openable wall, a second layer of litter material with an odor suppressant mixed throughout in any amount substantially greater than any odor suppressant in said first layer, disposed in spaced relation to said openable wall with said first layer being disposed between said second layer and said openable wall so that when the two layers of litter are emptied from the container through the openable wall with the opened wall facing downwardly, two layers of litter are formed in the cat box with said second layer forming the top layer in the box.

4,448,152

APPARATUS FOR REARING SMALL ANIMALS

Motohiro Niki, 22-11, Yushima 2-Chome, Bunkyo-Ku, Tokyo-To, Japan

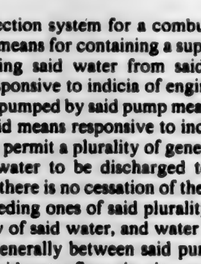
Filed Sep. 7, 1982, Ser. No. 415,191
Claims priority, application Japan, Jun. 4, 1982, 57-94886
Int. Cl.³ A01K *31/04*
U.S. Cl. 119—22 **5 Claims**

1. An apparatus for rearing small animals comprising:

a main structure having elongated rearing spaces for small animals, said spaces being disposed one above another and having respective elongated floors each so inclined transversely thereof that one longitudinal side thereof is higher than the other longitudinal side;

a nozzle unit disposed on the same side of the main structure as said one longitudinal side, said nozzle unit having a plurality of nozzles arranged to eject cleaning water onto said one longitudinal sides of the respective floors transversely thereto, said nozzles being provided at heights corresponding to those of the respective floors;

means for moving the nozzle unit reciprocatingly in the horizontal direction along said side of the main structure; and



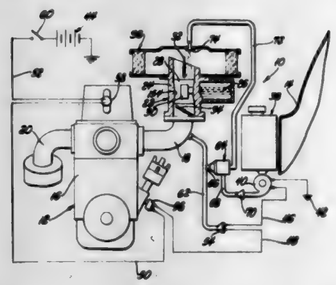
filth scraping strip blades placed flat on and in close contact with the upper surfaces of the respective floors and extending transversely thereto, each of the filth scraping blades being connected at one end thereof to the nozzle unit immediately below a respective one of the nozzles so that the cleaning water ejected from the nozzle flows down the upper surface of the filth scraping blade, whereby each filth scraping member slides reciprocally on and along the floor of the rearing space synchronously with the nozzle unit.

4,448,153

WATER INJECTION SYSTEM FOR A COMBUSTION ENGINE

Robert J. Miller, Warren, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed Oct. 2, 1981, Ser. No. 307,790
Int. Cl.³ F02M *25/04*
U.S. Cl. 123—25 J **30 Claims**



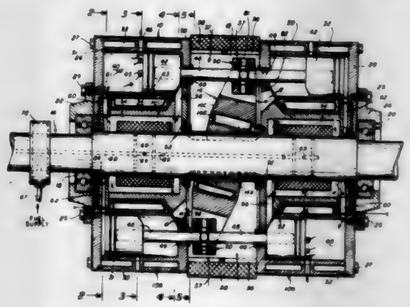
1. A water injection system for a combustion engine, comprising reservoir means for containing a supply of water, pump means for pumping said water from said reservoir to said engine, means responsive to indicia of engine load for at times permitting water pumped by said pump means to be discharged to said engine, said means responsive to indicia of engine load being effective to permit a plurality of generally constant rates of flow of said water to be discharged to said engine in a manner whereby there is no cessation of the flow of said water as between succeeding ones of said plurality of generally constant rates of flow of said water, and water flow circuit means communicating generally between said pump means and said engine, wherein said water flow circuit means comprises parallel flow paths, wherein said means responsive to indicia of engine load comprises a valve member, and wherein said valve member controls the flow of said water through at least one of said parallel flow paths.

4,448,154

INTERNAL COMBUSTION ENGINE

Horst K. Kossel, Shrewsbury, Mass., assignor to Paradox International, Incorporated, Morningdale, Mass.

Continuation of Ser. No. 34,866, Apr. 30, 1979, Pat. No. 4,313,404. This application Aug. 21, 1981, Ser. No. 295,028
Int. Cl.³ F02B *75/26*
U.S. Cl. 123—58 BB **10 Claims**



1. Apparatus for converting between linear motion and rotary motion comprising;

shaft means,

power transfer means including inner and outer members inclined to the shaft means extending substantially radially therefrom and intermediate bearing means between inner and outer members, said inner member being fixed to the shaft means,

linear motion member including a connecting rod,

and joint means disposed at the periphery of the outer member and for intercoupling the connecting rod of the linear motion member to the outer member,

said joint means comprising an outer open housing member and an inner member, means securing the connecting rod to the inner member, a first guide rod means coupling between the inner and outer members permitting linear sliding movement between said members in a direction normal to the longitudinal motion of the connecting rod to permit longitudinal motion of the connecting rod along a single linear path of operation, and a second guide rod means coupling orthogonally to the first guide rod means between the inner and outer members permitting linear sliding movement between said members in a direction normal to both the longitudinal motion of the connecting rod and the sliding relative to the first guide rod means,

said inner and outer members being relatively dimensioned so as to provide a clearance gap therebetween to enable the relative linear sliding therebetween as the power transfer means is driven, said clearance gap being at least of a width comparable to a difference in transition of the power transfer means outer member between a minimum radius position and a maximum radius position as measured orthogonally from said shaft means.

4,448,155

GUIDE FOR ROLLER CAM FOLLOWER

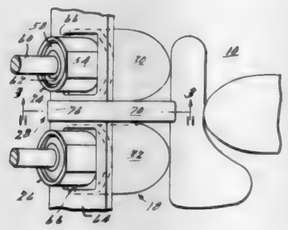
George A. Hillebrand, and Michael S. Paar, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 3, 1982, Ser. No. 384,450
Int. Cl.³ F01L *1/14*
U.S. Cl. 123—90.5 **23 Claims**

1. In an internal combustion engine of the type including a

valve train incorporating at least one roller cam follower and a block defining a boss characterized by an upper surface, a lower surface and a bore for slidably receiving said follower, follower guide means comprising:

a member defining keying surfaces nominally spaced from



said follower at a point adjacent said upper surface and operative to effect limited non-contacting rotational freedom of said follower within said bore; and

means for resiliently connecting said member to said boss by embracingly engaging said member and said lower surface.

4,448,156

VARIABLE GAS DISTRIBUTION DEVICE FOR INTERNAL COMBUSTION MOTORS

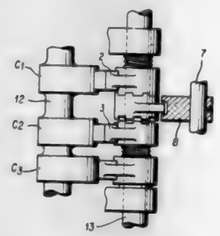
Claude Henault, Jouy en Josas, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 29, 1981, Ser. No. 316,278

Claims priority, application France, Nov. 13, 1980, 80 24129

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.17 **5 Claims**



1. A variable valve timing device for an internal combustion engine, comprising:

at least two rocker arms mounted on a common rocker arm shaft;

two cams, each of said cams being engageable with one of said rocker arms for rotating said rocker arm about said shaft, each said cam having a different configuration;

a connecting element slidably mounted on said shaft between two of said rocker arms, said connecting element including a first portion and a second portion;

control means engageable with said first portion for moving each said connecting element along the axis of said shaft;

an engine cylinder valve engageable with said second portion for actuating said valve when said connecting element is rotated; and

coupling means associated with said rocker arms and said connecting element for rotatably coupling said connecting element to one of said rocker arms.

4,448,157

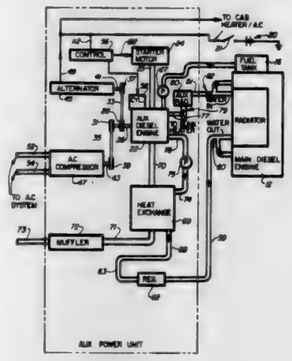
AUXILIARY POWER UNIT FOR VEHICLES

Robert J. Eckstein, 1202 Fairfield Rd., Round Lake Beach, Ill. 60073, and Roger L. Mason, 3156 Fulling Mill Rd., Middletown, Pa. 17057

Filed Mar. 8, 1982, Ser. No. 355,770

Int. Cl.³ F02N *17/02*

U.S. Cl. 123—142.5 R **10 Claims**



1. In an auxiliary power unit for operation with a vehicle main liquid-cooled diesel internal combustion engine having a liquid coolant inlet and a liquid coolant outlet, and having a radiator, and exhaust gas conduit and a vehicle diesel fuel tank, apparatus comprising:

a small auxiliary liquid-cooled diesel internal combustion engine having an output shaft, said engine having liquid inlet means and liquid outlet means;

power producing means having an input shaft drivingly connected to said output shaft for producing electrical energy;

a first T connector for connecting in fluid communication the main engine radiator and the coolant outlet of the main engine;

first conduit means connecting in fluid communication the first T connector and the auxiliary engine liquid inlet;

a second T connector for connecting in fluid communication the main engine radiator and the coolant inlet of the main engine;

second conduit means coupling in fluid communication the main engine liquid inlet means and the auxiliary engine outlet means to complete a single closed-loop coolant path of recirculation;

pumping means for recirculating coolant through said path of recirculation including said conduit means;

heat exchanging means connected in fluid communication in said coolant path of recirculation for supplying heat to said coolant being recirculated;

means connecting the main engine exhaust gas conduit to said heat exchanging means for supplying heat thereto to, in turn, supply said heat to the coolant flowing through said heat exchanging means; and

means for conveying diesel fuel from the main engine fuel tank.

4,448,158

THROTTLE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

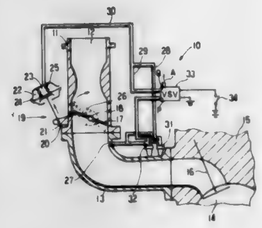
Tokuzi Ishida, Hamamatsu, and Wataru Yamamoto, Kami, both of Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 30, 1982, Ser. No. 430,067

Claims priority, application Japan, Oct. 27, 1981, 56-170705; Feb. 4, 1982, 57-15498

Int. Cl.³ F02M *1/16*

U.S. Cl. 123—179 G **12 Claims**



1. A throttle control system for an internal combustion engine having a cylinder, comprising:

(a) an intake passage having a throttle valve disposed therein for allowing a air-fuel mixture to flow in a direction into the cylinder;

(b) a vacuum-operated actuator operatively connected to said throttle valve for opening the latter through a predetermined angle in response to a vacuum signal;

(c) a vacuum pickup port opening into said intake passage downwardly of said throttle valve with respect to said direction of flow of the air-fuel mixture;

(d) a first vacuum passage communicating between said vacuum-operated actuator and said vacuum pickup port and having a first thermosensitive valve for opening said first vacuum passage when the engine is kept below a preset temperature; and

(e) a second vacuum passage communicating between said vacuum-operated actuator and said vacuum pickup port in parallel relation to said first vacuum passage, and having a second thermosensitive valve for opening said second vacuum passage when the engine is kept above said preset temperature and a directional control valve responsive to cranking of the engine for opening said second vacuum passage.

4,448,159

V-TYPE INTERNAL COMBUSTION ENGINE

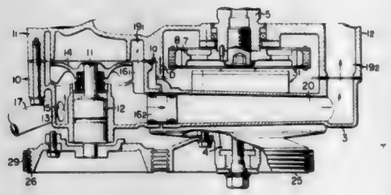
Yoshiaki Hidaka, and Tadashi Tsuchiyama, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1982, Ser. No. 346,280

Claims priority, application Japan, Feb. 16, 1981, 56-21144; Feb. 16, 1981, 56-21145

Int. Cl.³ F01P *3/02*

U.S. Cl. 123—195 C **2 Claims**



1. In an internal combustion engine having a cylinder block with two banks of cylinders arranged in a V-shape and having a crankshaft supported in said block, the improvement comprising, in combination: a camshaft positioned above the crankshaft and mounted centrally on said block between the two banks of cylinders, timing gear means including driving and driven gears positioned only in front of the cylinder block for driving the camshaft in timed relation with the crankshaft, a coolant pump secured to the cylinder block laterally offset from the crankshaft and adjacent one bank of cylinders, a first discharge passage from said coolant pump to said bank of cylinders, means in front of said timing gear means for driving the coolant pump from said crankshaft, the front of said timing gear means facing a direction same as the front of said engine block, said pump driving means including driving and driven pulleys mounted on the crankshaft and the coolant pump, respectively, and a second discharge passage positioned between a plane formed by said driving and driven gears of the timing gear means and a second plane formed by said driving and driven pulleys of the said pump driving means, said second discharge passage extending from said coolant pump to the other bank of cylinders.

4,448,160

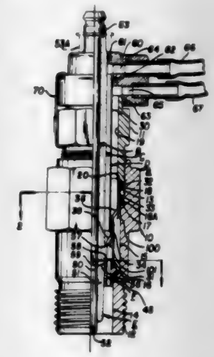
FUEL INJECTOR

George W. Vosper, 140 Earl St., Kingston, Ontario, Canada K7L 2H3

Filed Mar. 15, 1982, Ser. No. 358,011

Int. Cl.³ F02M *57/06*

U.S. Cl. 123—297 **14 Claims**



1. An automobile spark plug having a threaded mounting body member, an elongate insulated electrode extending through said body member and terminating in an ignitor tip at one end thereof, first and second concentric annular fluid-flow passageways having different diameters in said body member and surrounding said insulated electrode, and a fluid-flow atomizing means interconnecting said annular fluid-flow passageways with one another at one location and downstream therefrom discharging into a common passage surrounding the electrode adjacent the tip end thereof.

4,448,161

INTERNAL COMBUSTION ROTARY POWER PLANT SYSTEM

Ching-Ho Tseng, 7307 Caracas Dr., Houston, Tex. 77083

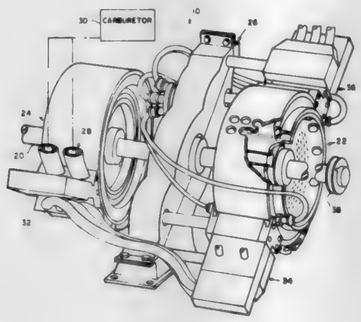
Division of Ser. No. 160,628, Jun. 18, 1980. This application Apr. 14, 1982, Ser. No. 368,390

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—237 **1 Claim**

1. In an integrally supported system of an internal combustion rotary engine with means for engine valving, a first rotor and a first housing; a rotary compressor with a second rotor and a second housing for supplying gaseous fuel to the rotary

engine, a gearbox with gearing therein for synchronizing said valving means, and a driveshaft connecting all of said rotary engine, rotary compressor and gearbox, the improvement comprising: the first and second rotors being fixed on respective end portions of the driveshaft in axially spaced relation with the gearbox, the driveshaft having a central portion located for attachment to a foundation and the gearbox centrally supporting the driveshaft thereby and through the driveshaft being the support for the first and second rotors; means spacedly connecting the gearbox with the first housing and with the second housing, and said gearbox through said spaced connection being the support for the first housing and the second housing.

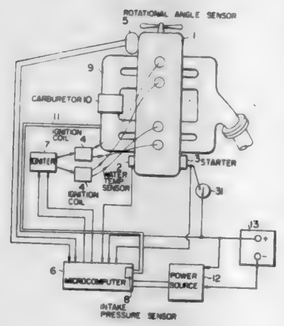


4,448,162

OPTIMUM CONTROL FOR INTERNAL COMBUSTION ENGINES

Masakazu Ninomiya, and Atsushi Suzuki, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1982, Ser. No. 386,097
Claims priority, application Japan, Jun. 8, 1981, 56-87703
Int. Cl.³ F02D *5/04*; F02P *5/08*; F02B *3/04*
U.S. Cl. 123—419 **8 Claims**



1. In an optimum control method for an internal combustion engine comprising the steps of:

calculating a value of one of plural control variables of said engine in response to an operating condition of said engine;

dithering the value of said control variable with a predetermined value from the calculated value of said control variable; operating said engine at the dithered value of said control variable;

detecting a resulting change of a rotational speed of said engine during a predetermined time period;

deciding a direction of changing the value of said control variable toward an optimum value thereof in accordance with a result of said detection;

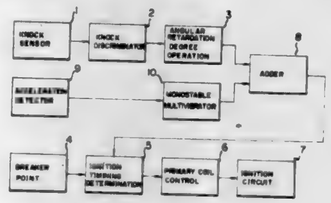
correcting the value of said control variable in said direction toward the optimum value thereof, the improvement wherein, during each period of the operation of said engine by dithering the value of said control variable, the rotational speed of said engine speed is detected two or more times thereby to decide a direction of the change thereof accurately.

4,448,163

IGNITION TIMING CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

Kenichi Yoshida, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 17, 1981, Ser. No. 322,168
Claims priority, application Japan, Dec. 11, 1980, 55-174990
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—422 **16 Claims**



1. An ignition timing control device for an internal combustion engine, comprising:

first means for setting the normal ignition timing of the engine;

second means responsive to occurrence of knocking in said engine for providing a first signal;

third means responsive to manipulation of the engine for achieving an acceleration higher than a predetermined acceleration level, for providing a second signal; and

fourth means for determining the actual ignition timing of the engine, said fourth means being adapted, responsive to said first signal, for setting the ignition timing for an optimum knocking condition, said fourth means being also adapted, responsive to said second signal, for causing said normal ignition timing to be quickly retarded in accordance with said second signal to such an extent that knocking tending to occur when said manipulation of the engine is made can be avoided, and for causing said normal ignition timing to be recovered immediately after the end of the retardation thereof,

said third means comprising:

a monostable multivibrator responsive to a signal derived from said first means;

an integrator circuit adapted to be reset by a signal obtained in said third means in response to said manipulation of the engine and for integrating the output of said monostable multivibrator for a period of time corresponding to a predetermined number of ignitions occurring subsequent to said manipulation of the engine so that the duration of said ignition timing retardation is determined on the basis of said predetermined number of ignitions; and

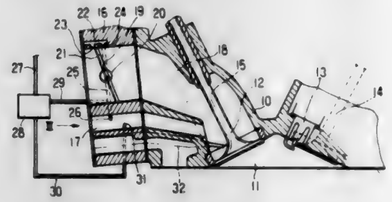
a comparator for comparing the output of said integrator circuit with a reference signal corresponding to said predetermined acceleration level, thereby providing said second signal.

4,448,164

INTAKE PASSAGE CONSTRUCTION FOR INTERNAL COMBUSTION ENGINES

Tokuzi Ishida, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 30, 1982, Ser. No. 430,066
Claims priority, application Japan, Nov. 13, 1981, 56-180981
Int. Cl.³ F02B *15/00*
U.S. Cl. 123—432 **9 Claims**



1. An intake passage construction for an internal combustion engine having a combustion chamber, comprising:

(a) a primary intake passage opening into the combustion chamber for supplying an air-fuel mixture when the engine operates under a full range of loads;

(b) a secondary intake passage opening into the combustion chamber for supplying an air-fuel mixture when the engine operates under relatively high loads;

(c) a secondary throttle valve pivotably mounted in said secondary intake passage for controlling the flow of the air-fuel mixture through said secondary intake passage;

(d) a secondary slow fuel passage connected to a fuel supply and having a pair of fuel supply ports opening into said secondary intake passage adjacent to said secondary throttle valve;

(e) a fuel drain passageway means communicating with one of said pair of fuel supply ports for discharging fuel from said secondary slow fuel passage to remove fuel vapors from the secondary slow fuel passage; and

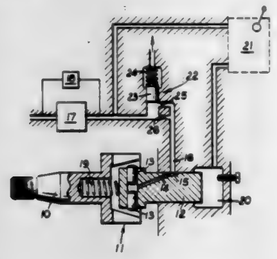
(f) means for introducing air into said fuel drain passageway means as a result of a vacuum developed in said primary intake passage.

4,448,165

FUEL INJECTION PUMPING APPARATUS

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 2, 1981, Ser. No. 298,802
Claims priority, application United Kingdom, Oct. 29, 1980, 8034741
Int. Cl.³ F02D *17/00, 1/06*
U.S. Cl. 123—179 L **5 Claims**



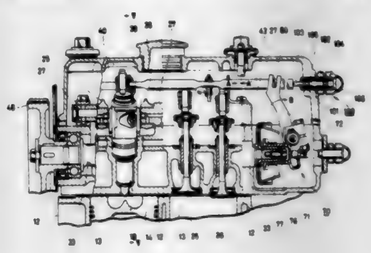
1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine, comprising an injection pump operable in use to deliver fuel in timed relationship with an associated engine, a low pressure supply pump for supplying fuel to the injection pump, valve means for controlling the output pressure of the supply pump so that it varies in accordance with the speed at which the apparatus is driven, a resiliently loaded component defining a surface upon which the output pressure of the supply pump acts to vary the amount of fuel supplied at each injection stroke of the injection pump, a pressure responsive valve responsive to the output pressure of the low pressure supply pump located between the low pressure supply pump and the injection pump, said valve being arranged to close when the output pressure of the low pressure supply pump is below a predetermined value, and a restricted flow path through which fuel can be supplied to the injection pump for the purpose of starting the engine.

4,448,166

OVERHEAD CAM TYPE DIESEL ENGINE

Koichi Amemori, and Toshihiko Kawabe, both of Takatsuki, Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Nov. 30, 1981, Ser. No. 325,763
Claims priority, application Japan, Nov. 28, 1980, 55-169688[U]; Nov. 28, 1980, 55-169691[U]
Int. Cl.³ F02M *39/02, 59/20*; F02D *1/02*
U.S. Cl. 123—445 **3 Claims**



1. An overhead cam type diesel engine, comprising:

unit injectors mounted on a cylinder head in an oblique arrangement relative to an axes of cylinder,

a rocker arm for actuating an intake valve and another rocker arm for actuating an exhaust valve, disposed on one and another side of each unit injector,

a further rocker arm for actuating the unit injector, disposed between said rocker arm and said another rocker arm,

a single cam shaft disposed parallel with a crankshaft for actuating said rocker arm, said another rocker arm and said further rocker arm,

a rocker arm shaft disposed parallel with said cam shaft, said further rocker arm being supported on said rocker arm shaft in a rockable manner and also in a slidable manner in an axial direction of rocker arm shaft,

a pair of support beds disposed in a manner of interposing said rocker arm and said another rocker arm between them and thereon securely supporting said rocker arm shaft,

two shafts respectively projected from said support beds toward a vicinity of said unit injector, said rocker arm and said another rocker arm being rockably supported on one and another of said two shafts said unit injectors are each provided with a plunger for adjusting a fuel injection quantity and a fork-shaped lever secured to said plunger, said fork-shaped lever engaging a pin mounted parallel with the unit injectors, on a control rod disposed parallel with the crankshaft.

3. An overhead cam type diesel engine, comprising:

a rocker arm for actuating an intake valve, another rocker arm for actuating an exhaust valve and a further rocker arm for actuating an injector, disposed between said rocker arm and said another rocker arm,

a single cam shaft disposed parallel with a crankshaft for

actuating said rocker arm, said another rocker arm and said further rocker arm,

a control rod disposed parallel with said cam shaft and capable of being reciprocated in an axial direction of the cam shaft,

a governor mounted at one end of said cam shaft,

a governor lever disposed in a vicinity of said governor and pressed at its one end by an end face of the governor and engaging at its other end with a pin secured to said control rod,

a cylindrical support member secured at an intermediate portion of said governor lever in a perpendicular arrangement to the lever, and

a torsion bar having a torsion spring force, fixed with its one end to an end face of said cylindrical support member and with its other end to a shaft of a regulator handle.

4,448,167

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

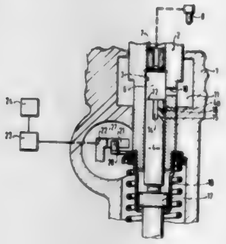
Werner Schmid, Dischingen, and Karl Rapp, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 403,197

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130620; Jun. 29, 1982, 3224127

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—446 **6 Claims**





1. A fuel injection pump for internal combustion engines, comprising:

a cylinder;

a pump piston mounted to reciprocate within the cylinder;

an adjusting device connected to the piston injection pump to alter the termination of the piston supply stroke by rotating the piston between no-load and maximum load terminal positions;

said cylinder having at least one fuel opening extending through a wall thereof;

said pump piston having an end face and an outer jacket surface extending from the end face,

at least one longitudinal stop groove and one oblique groove formed in said outer jacket surface,

said oblique groove extending over a circumferential portion of said jacket surface and oriented obliquely to said end face,

said oblique groove communicating with said longitudinal stop groove,

and stop means for limiting the rotation of the piston by said adjusting device at least at said maximum load terminal position,

the location of said stop means and at least a portion of the width of said at least one longitudinal groove being related such that said at least one opening in the cylinder wall reaches a congruent relationship with at least said one longitudinal groove shortly before said maximum load terminal position is reached.

4,448,168

FUEL INJECTION SYSTEM

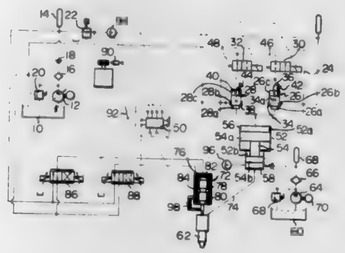
Hideaki Komada; Yutaka Kojima, and Tomonori Ohie, all of Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,514

Claims priority, application Japan, Jul. 30, 1981, 56-119734

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—446 **6 Claims**



1. A fuel injection system including a booster for compressing at one end thereof a supply of fuel pumped from a fuel reservoir, a fuel injector supplied with the compressed fuel from the booster to start and terminate a fuel injection at controlled timings, a fluid reservoir storing operating hydraulic fluid substantially under atmospheric pressure, and a pump for compressing the operating fluid by sucking it from the fluid reservoir, characterized by comprising:

a valving means for operating the booster by selectively communicating the other end of the booster to the fluid pressure in the fluid reservoir and the delivery pressure of the pump; and

a control means for controlling the operation of the valving means in response to a varying operating condition of an engine with which the fuel injection system is associated;

the valving means comprising a poppet type valve formed with a first port communicating to said other end of the booster, a second port communicating to the delivery pressure of the pump and a third port communicating to the fluid pressure in the fluid reservoir through a pilot valve, a valve member being slidably received in said valve and formed with a restriction passageway therethrough which provides communication between the second and third ports, and a second poppet type valve formed with a first port communicating to said other end of the booster, a second port communicating to the fluid pressure in the reservoir, and third port communicating to the fluid pressure in the reservoir through a second pilot valve, a valve member being slidably received in said second poppet type valve and formed with a restriction passageway which communicates the first and third ports of the valve to each other.

4,448,169

INJECTOR FOR DIESEL ENGINE

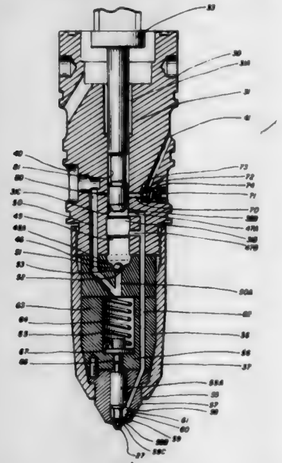
Patrick R. Badgley, Glen Rock, N.J., and Andrew C. Rosselli, Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1980, Ser. No. 221,764

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—467 **7 Claims**

1. An injector to introduce fuel into the cylinder of a diesel engine, said injector comprising an elongated housing having a spray tip means at one end thereof for introducing fuel into a combustion chamber formed in the cylinder, said housing including an inlet port for connection to a pressurized source of diesel fuel, an exit port for connection to a diesel fuel return, and a primary axial bore having a generally uniform diameter, said bore selectively communicating with said inlet and exit ports and having first and second portions with said first portion being proximate said spray tip means, a plunger axially movable within said bore and operatively connected to reciprocating means to selectively withdraw and depress said plunger, said plunger and bore coacting to form a fluid-tight chamber in the first portion of said primary bore, said chamber expanding to admit fuel supplied via said inlet port when said plunger is at least partially withdrawn, and partially contracting to expel therefrom a predetermined amount of the admitted fuel when said plunger is at least partially depresssed, the



expelled fuel amount being pumped by the plunger from an upper section of the chamber to said spray tip means via a first passage formed in said housing, the remainder of the admitted fuel being entrapped and continuously maintained within a lower sealable section of the chamber to dampen plunger movement into said chamber; a spill valve means selectively communicating with said chamber, and operating in conjunction with the reciprocating of said plunger; and an internal second passage formed in said housing and connecting said spill valve to said exit port, so that when said plunger is in a predetermined depressed position within said bore effecting communication between said spray tip means and said exit port via said first passage and said spill valve, the pressure in said spray tip means collapses to sharply end injection while said chamber lower section remains sealed to dampen plunger movement.

4,448,170

WATER INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Arthur C. O'Hara, 4978 Skyline Dr., Syracuse, N.Y. 13215

Filed Jun. 14, 1982, Ser. No. 388,359

Int. Cl.³ F02M *25/02*

U.S. Cl. 123—25 A **2 Claims**

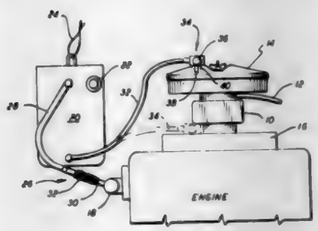
1. A water injection system for installation on a conventional internal combustion engine of a motor vehicle to automatically add controlled amounts of water to the engine fuel intake as a function of pressure in the engine's exhaust manifold, said system comprising, in combination:

(a) an enclosed, flexible-walled, plastic container supported adjacent the engine and holding a quantity of water;

(b) a length of hollow, metal tubing surrounded by an extended surface heat exchanger and having one end communicating with the interior of said exhaust manifold;

(c) a first length of hollow, flexible, plastic tubing having a first internal diameter and connected at one end to the other end of said metal tubing and at the other end to an upper portion of said container, whereby the pressure in said exhaust manifold is communicated to said container upper portion after the temperature of the exhaust gases has been suitably reduced by said metal tubing and heat exchanger;

(d) a second length of hollow, flexible, plastic tubing having



a second internal diameter less than said first diameter and connected at one end to a lower portion of said container; and

(e) a manually adjustable throttling valve mounted upon the top of the air intake housing for the engine's carburetor, and having an inlet connected directly to the other end of said second plastic tubing and an outlet discharging directly into the carburetor air intake, whereby water flows through said second tubing and valve into the carburetor for mixture with the normal fuel intake system as governed jointly by the exhaust manifold pressure and the degree of opening of said throttling valve.

4,448,171

METHOD AND APPARATUS FOR OPTIMUM CONTROL OF INTERNAL COMBUSTION ENGINES

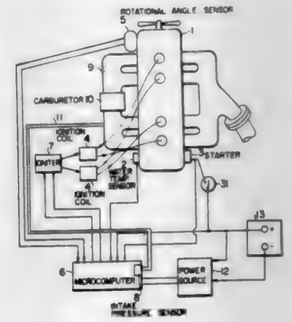
Masakazu Ninomiya, and Atsushi Suzuki, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1982, Ser. No. 386,096

Claims priority, application Japan, Jun. 8, 1981, 56-87702

Int. Cl.³ F02P *5/08, 5/04*; F02B *3/04*

U.S. Cl. 123—419 **7 Claims**



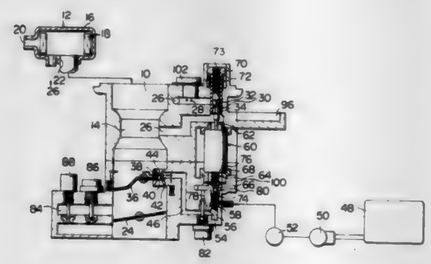
1. In a method for optimum control of an internal combustion engine comprising the steps of:

calculating a value of one of plural control variables of said engine in response to an operating condition of said engine;

dithering the value of said control variable with a predeter-

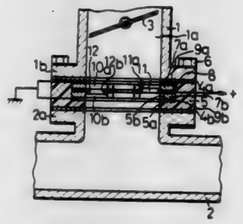
mined value from the calculated value of said control variable;
operating said engine at the dithered value of said control variable;
detecting a resulting change of a rotational speed of said engine during a predetermined time period;
deciding a direction of changing the value of said control variable toward an optimum value thereof in accordance with a result of said detection;
correcting the value of said control variable in said direction toward the optimum value thereof, the improvement wherein said predetermined time period is varied in accordance with the rotational speed of said engine.

4,448,172
FUEL INJECTION APPARATUS
Mineo Kashiwaya; Kinsaku Yamada; Yoshiyuki Tanabe; Yoshishige Oyama, all of Katsuta; Hiroshi Kuroiwa, and Hisato Tsuruta, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 20, 1982, Ser. No. 380,339
Claims priority, application Japan, May 22, 1981, 56-78196
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—494 **4 Claims**



1. In a fuel injection apparatus comprising:
an air intake passage connecting an air cleaner housing air filters to an engine to be supplied with an air-fuel mixture gas;
a venturi portion provided in said air intake passage;
a throttle valve provided within a portion of said air intake passage downstream from said venturi portion;
a bypass air passage one end of which opening into said venturi portion;
a sensing means provided in said bypass air passage for sensing air flow passing therethrough;
an air flow metering means disposed in a portion of said bypass air passage downstream from said sensing means and having an orifice and an air needle valve cooperating with the latter;
a fuel injection means disposed within a portion of said air intake passage between said venturi portion and said throttle valve;
a fuel passage through which a fuel from a fuel tank is pumped into said fuel injection means;
a fuel metering means disposed in said fuel passage and having an orifice and a fuel needle valve cooperating with the latter;
an electromagnetic actuator adapted for driving said air flow metering means and said fuel metering means; and
electric means for controlling said electromagnetic actuator so as to control said air flow metering means and said fuel metering means;
wherein the improvement comprises that the other end of said bypass air passage opens into a portion located upstream from one end of said air intake passage adjacent to said air cleaner.

4,448,173
FUEL EVAPORATOR
Seiko Abe, Kariya, and Kazuhide Watanabe, Toyohashi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Feb. 25, 1983, Ser. No. 469,715
Claims priority, application Japan, Mar. 10, 1982, 57-37419
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **22 Claims**

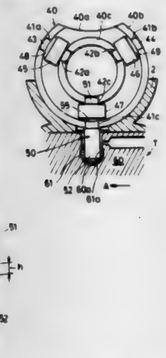


1. A fuel evaporator to be installed between a carburetter and an intake manifold of an internal combustion engine for heating an air-fuel mixture flowing through an air-fuel mixture passage of said carburetter, comprising:
at least one circular ceramic heater made of semi-conductive material;
said ceramic heater being provided with a plurality of open passages;
at least one electrically conductive metallic plate provided with a plurality of open passages having the same shape and size as those of said open passages of said ceramic heater, which is disposed in contact with a surface of said ceramic heater so that said open passages of said metallic plate are coaxial with said open passages of said ceramic heater;
an electric current supplying means for supplying an electric current to said ceramic heater;
said electric current supplying means comprising electrode plate means having an inner diameter equal to the diameter of said air-fuel mixture passage, which is disposed in contact with said ceramic heater;
an annular insulator made of electric insulating material for supporting said ceramic heater, said metallic plate and said electric current supplying means;
said insulator having an inner diameter equal to the diameter of said air-fuel passage of said carburetter and being interposed between said carburetter and said intake manifold through gaskets;
said open passages of said metallic plate being defined by edge portions, at least one of which is bent in the axial direction of said open passages of said ceramic heater and closely inserted into a corresponding open passage of said ceramic heater;
said metallic plate being fixed to said insulator in the outer peripheral portion of said metallic plate.

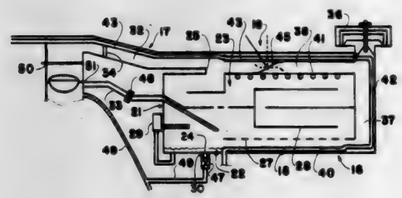
4,448,174
DISTRIBUTOR TYPE FUEL INJECTION PUMP ADAPTABLE TO INTERNAL COMBUSTION ENGINES WITH A WIDE RANGE OF THE NUMBER OF CYLINDERS
Seizi Takahashi, and Hachiro Aoki, both of Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Feb. 18, 1983, Ser. No. 467,787
Int. Cl.³ F02M *59/20*
U.S. Cl. 123—502 **8 Claims**

1. A distributor type fuel injection pump for an internal combustion engine, comprising: a pumping plunger; a drive shaft disposed for rotation at speeds dependent upon the rotational speed of the engine; a cam disc having a camming surface, said cam disc being secured to said plunger and coupled

to said drive shaft for rotation in unison therewith; a roller holder disposed for circumferential displacement about an axis thereof; a plurality of rollers carried by said roller holder in radial arrangement, said rollers being disposed in urging contact with said camming surface of said cam disc; injection timing control means having an element displaceable in response to the rotational speed of the engine; and means connecting said roller holder with said displaceable element of said injection timing control means, said connecting means including an eccentric member comprising a first portion and a second portion combined together in eccentricity with each other, said first portion engaging with said roller holder and supporting a predetermined one of said rollers rotatably fitted thereon, said second portion engaging with said displaceable element of said injection timing control means; wherein displacement of said displaceable element of said injection timing control means causes circumferential displacement of said roller holder through said eccentric member of said connecting means, to thereby change the injection timing of fuel into the engine.

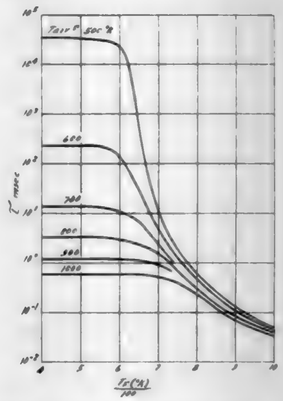


4,448,175
FUEL APPARATUS
Bruce L. Darvial, 2754 Hollister Cir.; Phillip L. Heintz, 7405 Castle Rock Lake Dr.; John S. Smith, P.O. Box 1674, and Lee A. Walth, P.O. Box 608, all of Colstrip, Mont. 59323
Filed Jan. 24, 1983, Ser. No. 460,372
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **14 Claims**



1. Fuel apparatus including a fuel vaporizing portion, an air conveying portion, a heating portion and a flow control portion; said fuel vaporizing portion including an enclosed chamber, said chamber including a liquid reservoir section and a vapor expansion section, said vapor expansion section including a plurality of baffle means providing a tortuous path through said expansion section, a liquid fuel inlet to said chamber and a vapor outlet from said chamber, first vapor conduit means connecting said chamber outlet with a carburetor of an engine, second vapor conduit means connecting said engine carburetor with said chamber adjacent said vapor expansion section thereof; said air conveying portion including an air intake section, means for dividing air flowing through said air intake section, first duct means for conveying one part of said air flow to a point adjacent said liquid reservoir section of said enclosed chamber, second duct means for conveying a second part of said air flow to said vapor conduit means; said heating portion being disposed adjacent said enclosed chamber, said air duct means and said vapor conduit means; said flow control portion including adjustable damper means located in said second air duct means, said damper means providing a more open path through said second air duct means when said engine is idling or decelerating and providing a more closed path when said engine is accelerating; whereby liquid fuel is vaporized in said enclosed chamber, mixed with heated air and selectively delivered to said carburetor with a second vapor source and a second air source being delivered independently to said carburetor when said heated vapor/air mixture is not being delivered in significant quantities, said selective delivery being in response to changes in the vacuum level of said engine.

4,448,176
METHOD FOR REDUCING IGNITION DELAY OF FUELS
Lyle O. Hoppie, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 22, 1982, Ser. No. 350,780
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—558 **7 Claims**



1. A method of reducing ignition delay, τ, of a fuel, to a negligible value, comprising the steps of:
determining τ according to a relation whercin

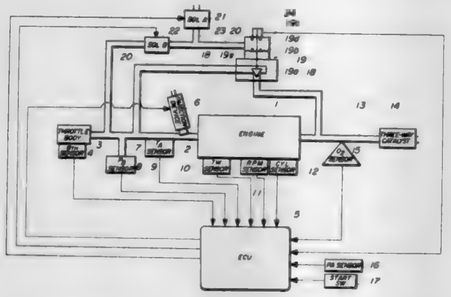
$$\tau \sim (1/KwN_0)e^{+E_a/RT_f};$$

where
τ is the ignition delay,
K is the temperature rise when one fuel molecule is oxidized,
w is the reaction rate of the fuel molecules in air, N_0 is the density of molecules in ground and excited states at time (t)=O,
e is the base of natural logarithms,
E_a is the activation energy of the fuel,
R is the universal gas constant, and
T_f is the temperature of the fuel; and
heating the fuel prior to injection into an oxidant to a temperature T_f such that the fuel self-ignites substantially instantaneously when injected into an oxidant, such that the fuel requires substantially no heat transfer from the oxidant to effect said self-ignition, and such that the amount of said self-ignition is sufficient to sustain continued combustion.

4,448,177
EXHAUST GAS RECIRCULATION CONTROL SYSTEM HAVING VARIABLE VALVE LIFT CORRECTING SPEED FOR EXHAUST GAS RECIRCULATION VALVE

Shumpei Hasegawa, Niiza; Takashi Koumura, Iruma; Toyohei Nakajima, Setagaya; Junichi Miyake, Iruma, and Junichi Kimura, Higashimurayama, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1982, Ser. No. 437,894
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **11 Claims**



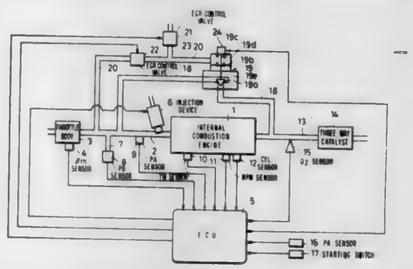
1. An exhaust gas recirculation control system for use in an internal combustion engine having an intake pipe and an exhaust pipe, comprising: an exhaust gas recirculating passageway connecting said exhaust pipe to said intake pipe; an exhaust gas recirculation valve having a controllable valve opening and arranged across said exhaust gas recirculating passageway for opening and closing same; command means responsive to operating conditions of said engine for generating a command signal indicative of a required valve opening value for said exhaust gas recirculation valve; sensor means for detecting an actual value of the valve opening of said exhaust gas recirculation valve and generating a signal indicative of said actual value; actuator means connected to said exhaust gas recirculation valve for varying the valve opening thereof; and control means responsive to the difference between an actual valve opening value indicated by said actual value signal and a required valve opening value indicated by said command signal for controlling said actuator means so as to minimize said difference, said control means being operable to control said actuator means to vary the valve opening of said exhaust gas recirculation valve at a plurality of difference speeds in a manner such that a higher speed is selected when said difference has a larger absolute value, and a lower speed is selected when said difference has a smaller absolute value.

4,448,178
ELECTRONIC FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING EXHAUST GAS RECIRCULATION CONTROL

Akihiro Yamato, Sayama, and Shigeo Umesaki, Iruma, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,542
Claims priority, application Japan, Nov. 11, 1981, 56-180764
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **10 Claims**

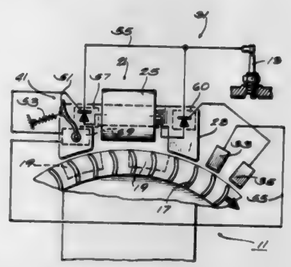
1. An electronic fuel supply control system for combination with an internal combustion engine having an intake passage, an exhaust passage, exhaust gas recirculating means for returning part of exhaust gases from said exhaust passage to said intake passage, and fuel delivery means, said electronic fuel injection control system comprising: means for driving said fuel delivery means; first sensor means for detecting a first parameter representing operating condition of the engine and generating a first signal indicative of a detected value of said first parameter; second sensor means for detecting a second parameter representing operating condition of the engine and generating a second signal indicative of a detected value of said seond parameter; first memory means storing a first group of predetermined output values being functions of the first and second signals; second memory means storing a second group of predetermined output values being functions of the first and second signals but different from the predetermined output values in the first group; means for determining whether or not the exhaust gas recirculation is being carried out by said exhaust gas recirculating means; and selector means responsive to an output signal from said exhaust gas recirculation determining means to selectively allow one of said first and second groups of predetermined output values in said first and second memory means to be supplied to said driving means; whereby said driving means is operable to drive said fuel delivery means so as to supply quantities of fuel corresponding to output values in the selected one of said first and second groups to the engine.



4,448,179
ENGINE INCLUDING MEANS FOR RETARDING SPARKING OPERATION TO CONTROL ENGINE OVERSPEED

Leslie W. Foster, 2154 Sheridan Hills Rd., Wayzata, Minn. 55391

Continuation-in-part of Ser. No. 309,557, Oct. 8, 1981, abandoned. This application Sep. 7, 1982, Ser. No. 415,340
Int. Cl.³ F02G *1/00*; F02P *5/04, 1/00*
U.S. Cl. 123—599 **6 Claims**

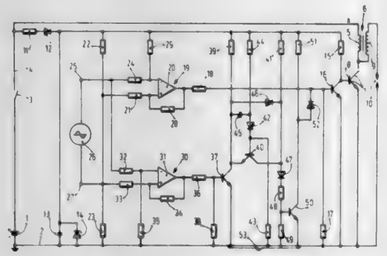


1. An internal combustion engine including means comprising a relatively rotatable magnet and coil means for providing a potential capable of producing a spark when applied to a spark plug, means selectively operable for applying said potential to a spark plug to selectively produce sparks at a normal and retarded timing relative to top dead center and comprising said rotatable magnet, first trigger means mounted adjacent to said magnet for generating a first signal which is effective to cause sparking operating at a normal timing, second trigger means mounted adjacent to said magnet in spaced relation to said first trigger means and operable to generate a second signal which is effective, when said first signal is disabled, to cause sparking operation at a retarded timing, and means operable in response to engine rotation above a given speed for operating said selectively operable means to change the timing of sparking operation from said normal timing to said retarded timing, said means for operating said selectively operable means to change the timing of sparking operation comprising switch means coupled to said first trigger means and operative to interrupt operation of said first trigger signal to cause sparking operation, and means for operating said switch means including a member movable between a first position which is inoperative to actuate said switch means and a second position which is operative to actuate said switch means so as to disable said first signal from causing sparking operation.

4,448,180
IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Bernd Bodig, Leinfelden-Echterdingen; Gerd Höhne, Ludwigsburg, and Bernd Kalkhof, Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Fed. Rep. of Germany

Filed Oct. 13, 1982, Ser. No. 433,957
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215728
Int. Cl.³ F02P *9/00, 3/04*
U.S. Cl. 123—618 **3 Claims**



1. Ignition system for an internal combustion engine of the kind utilizing a d.c. voltage source for providing power through an ignition system enabling switch, an engine-driven a.c. generator for providing a timing wave, an ignition coil having a primary and a secondary winding, an electronic interruptor switch in circuit with said primary winding and said d.c. voltage source and means responsive to the timing wave of said a.c. generator for timing the closing and opening of said interruptor switch, said timing means including a first threshold switch responsive to said timing wave of said a.c. generator constituted so as to switch on and to switch off a respective predetermined polarity conditions of said timing wave, said system also having the improvement which comprises:

a second threshold switch (**30**) responsive to said timing wave of said a.c. generator and having its input in shunt with the input of said first threshold switch, and

a delay circuit (**53**) connected to the output of said second threshold switch and interposed between said second threshold switch and a control circuit for operating interruptor switch which is also responsive to said first threshold switch,

said first and second threshold switches being so constituted so that:

in normal operation the switchover of said interruptor switch into its nonconducting condition is produced in response to said first threshold switch (**19**);

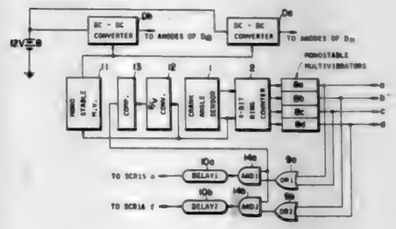
in other cases, the switchover of said interruptor switch into its nonconducting condition is produced in response to said delay circuit (**53**) prior to a corresponding operation of said first threshold switch, and

with reference to the null transition of said a.c. timing wave (U) the switch-on threshold (U) and the switch-off threshold (U) of said first threshold switch (**19**) are of opposite polarities, whereas the switch-on threshold (U) and the switch-off threshold (U) of said second threshold switch are of the same polarity as that of said switch-on threshold (U) of said first threshold switch (**19**).

4,448,181
PLASMA IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yasuki Ishikawa; Hiroshi Endo; Masazumi Sone, and Iwao Imai, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 7, 1982, Ser. No. 386,782
Claims priority, application Japan, Jun. 9, 1981, 56-87443
Int. Cl.³ F02P *3/08*
U.S. Cl. 123—620 **18 Claims**



1. A plasma ignition system for an internal combustion engine having a plurality of engine cylinders each of which is provided with a plasma ignition plug, which comprises:

(a) power supply means for separately generating and deriving first and second high DC voltages, the first high DC voltage being higher than the second high DC voltage;

(b) a first switching unit for sequentially applying the first high DC voltage generated by said power supply means across one of the plasma ignition plugs according to a predetermined ignition order so that an insulation breakdown occurs in the plasma ignition plug due to a spark discharge in response to the application of the first high DC voltage at every ignition timing; and

(c) a second switching unit for applying the second high DC voltage across the same plasma ignition plug that is responsive to the first high DC voltage, the second high DC voltage being applied to the plug while the first high voltage is applied to the plug and after the first high voltage is initially applied to the plug by a predetermined time delay so as to provide plasma ignition energy of the generated second high DC voltage for the plasma ignition plug, the supply of plasma ignition energy being effectd only while the engine speed is lower than a predetermined speed.

4,448,182
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Jun Aoyama, and Noboru Nakayama, both of Okazaki, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 10, 1980, Ser. No. 185,920
Claims priority, application Japan, Sep. 10, 1979, 54-115871
Int. Cl.³ F02P *3/04*
U.S. Cl. 123—605 **5 Claims**

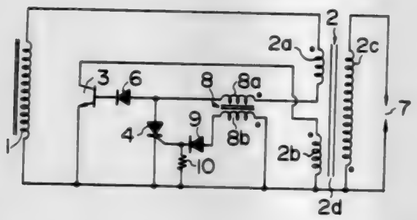
1. An ignition system for internal combustion engines comprising:

a generating coil incorporated in a magneto for generating a primary current;

an ignition coil including a primary winding connected to said generating coil to receive said primary current, an auxiliary winding electromagnetically coupled to said

primary winding and responsive to a magnetic flux produced by said primary current in said primary winding to generate an electromotive force, such that an electromotive force produced in said primary winding and said electromotive force produced in said auxiliary winding are mutually cancelled, and a secondary winding electromagnetically coupled to said auxiliary winding and said primary winding to generate an ignition high voltage;

transistor means having base, collector and emitter electrodes, said base electrode being connected to said primary winding of said ignition coil to cause flow of said primary current through a base-emitter path of said transistor means, the ends of said auxiliary winding being connected between said collector and emitter electrodes, whereby when said transistor means is non-conductive current flowing in said auxiliary winding is interrupted and the cancelling of said electromotive force produced in said primary winding is released so as to generate a high voltage in said secondary winding;



a thyristor connected to said base electrode of said transistor means and said primary winding, whereby said primary current from said primary winding is shunted so as to make said transistor means nonconductive; and

signal generating means connected to said semiconductor switching element so as to cause said shunting operation of said semiconductor switching element at a predetermined ignition time, said signal generating means including:

a transformer having a primary coil connected between said ignition coil primary winding and said transistor base electrode to pass said primary current therethrough, and a secondary coil electromagnetically coupled to said transformer primary coil and connected to a gate electrode of said thyristor so as to apply to said thyristor gate electrode an output voltage induced in response to the flow of said primary current through said transformer primary coil.

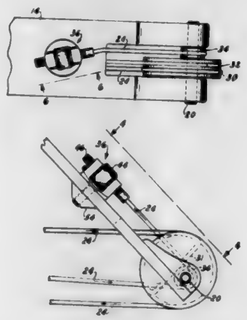
4,448,183

ADJUSTABLE CABLE ANCHORS FOR A COMPOUND BOW

Miguel A. Quartino, and Earl H. Hoyt, Jr., both of St. Louis County, Mo., assignors to Hoyt/Easton Archery Co., Bridgeton, Mo.

Filed Mar. 2, 1982, Ser. No. 353,965
Int. Cl.³ A41B *5/00*
U.S. Cl. 124—24 R **3 Claims**

1. In a two-wheel type compound bow having two eccentric wheels mounted on shafts journalled in the outer ends of the bow limbs and wherein a pair of cables each having one end connected to one end of a bow string and extending therefrom over an adjacent eccentric wheel and thence along the belly side of the bow to an opposite end thereof to an anchored end; the improvement comprising a pulley mounted for rotation on each of said shafts for the friction free extension of the anchored end portions of said cables to the back side of said bow, and a screw threadedly adjustable anchoring device mounted on the back side of each bow limb, said anchoring devices each comprising a body member mounted in fixed position on the back side of a bow limb spaced from the outer end thereof, each of said body members having an upstanding portion with opposite sides and a smooth bore extending therethrough from side to side, a screw in said bore projecting from opposite sides of said upstanding portion and being guided for longitudinal movement in said bore, said screw having a cable end attached to one projecting end, a nut threadedly engaged on said other



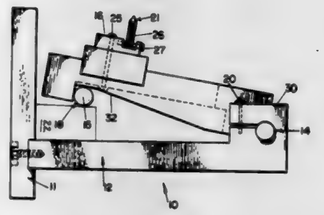
projecting end portion of said screw and abutting the adjacent side of said upstanding portion, and a low friction washer between said nut and said upstanding portion whereby said cables may be adjustably anchored without twisting by rotation of said nut.

4,448,184

SINE BAR GRINDING WHEEL DRESSER

Raymond W. Zmijewski, R.D. #7 Station Rd., Erie, Pa. 16510

Filed Feb. 5, 1982, Ser. No. 346,256
Int. Cl.³ B24B *53/12*
U.S. Cl. 125—11 B **1 Claim**



1. A grinding wheel dresser comprising a base and a column supported on the base and extending upwardly therefrom and fixed thereto,

said column having two forwardly extending bosses fixed to its upper end,

an arm having a first end and a second end,

said base being fixed to said second end of said column and disposed generally perpendicular to said column and underlying said arm, said base having a lower surface adapted to rest on a magnetic table,

said first end of said arm being received between said bosses,

an axle extending through said bosses and through said first end of said arm,

a cylinder fixed to said arm adjacent said second end on the side thereof adjacent said column, said arm terminating adjacent said base and providing a space between said cylinder and said column to receive a gauge block resting on said base and against said column with said cylinder disposed against the block,

a T-shaped slot in the arm,

said T-shaped slot extending from said first end to a position adjacent said second end,

a slider having a follower received in said T-shaped slot and sliding on the outer surface of said arm remote from said column,

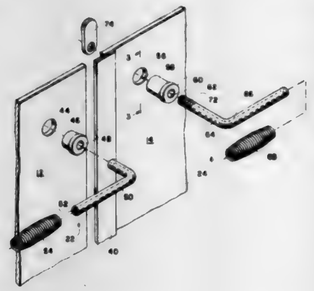
a diamond point on said slider adapted to engage a wheel to be dressed whereby said slider can be slid up and down on said arm to move said diamond point in a path disposed at an angle to the vertical determined by the thickness of said gauge block.

4,448,185

AIR COOLED DOOR HANDLE FOR HEATERS

Carrol E. Buckner; Clarence G. Cook, both of Weaverville, and Thomas J. Kane, Asheville, all of N.C., assignors to Buck Stove Corporation, Asheville, N.C.

Filed Jan. 4, 1979, Ser. No. 943
Int. Cl.³ F23M *7/00*
U.S. Cl. 126—193 **20 Claims**



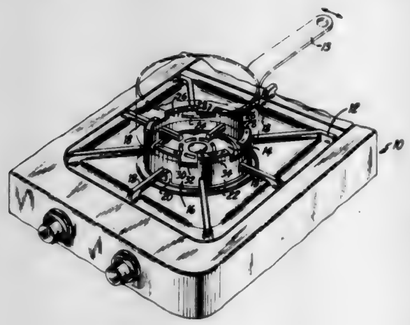
1. In a heating unit having a firebox, a flue port, an access opening in a front, closure means for covering said access opening and a handle mounted to said closure means for manipulating said closure means to cover and uncover said access opening, the improvement being said handle comprising, a duct means interior to said handle for supplying air from the exterior of said firebox to the interior of said firebox, through said duct means, when said closure means covers said access opening.

4,448,186

DEVICE FOR INCREASING THE EFFICIENCY OF COOKING ON GAS STOVES

George E. K. Smith, 163 E. 81st St., New York, N.Y. 10028

Filed Oct. 21, 1981, Ser. No. 313,382
Int. Cl.³ F24C *15/10*
U.S. Cl. 126—215 **2 Claims**



1. A device for controlling the venting of a flame provided by a burner with support prongs of a gas stove in combination with a cooking utensil comprising:

collar means positioned proximate the burner of said stove and having a plurality of peripherally disposed first venting means;

mating means attached to and projecting from said utensil and rotatably mating with said collar means to enable (a) rotation and adjustment of the mating means by rotating the utensil during the cooking operation with the burner operative and (b) the removal of the pan and the mating means from the burner during the cooking operation to facilitate visibility and adjustment of the flames;

means for attaching said collar means to the burner support prongs of said stove; and

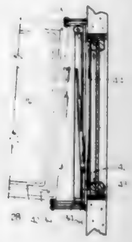
peripherally disposed second venting means on said mating means for aligning with said first venting means of said collar means whereby rotation of said utensil and said mating means controls the venting of the flame of said stove.

4,448,187

DEVICE FOR HEATING ABSORBENT SURFACES WITHIN AN ENCLOSED SPACE WITH SOLAR THERMAL RADIATION

Leon Stulken, Rte. 2, Hastings, Nebr. 68901

Filed May 17, 1982, Ser. No. 378,692
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—417 **12 Claims**



1. A device for heating absorbant surfaces within an enclosed space with solar thermal radiation, comprising:

an enclosure having an opening with a generally east or west orientation formed in a wall thereof;

a frame means mounted to the exterior wall of said enclosure adjacent to the north side of the opening, at an angle such that the plane in which the frame lies intersects with the plane in which the opening lies at a line which forms an angle with a generally vertical line at the north side of the opening, the intersecting line bearing north from the point it intersects with said vertical line; and

a reflecting surface supported by said frame means whereby the sun's rays are reflected upwardly and inwardly through said opening when the sun is south of the opening.

4,448,188

METHOD FOR PROVIDING AN OXYGEN BEARING LIQUID TO A BLOOD VESSEL FOR THE PERFORMANCE OF A MEDICAL PROCEDURE

Marvin P. Loeb, Chicago, Ill., assignor to Laserscope, Inc., Arlington Heights, Ill.

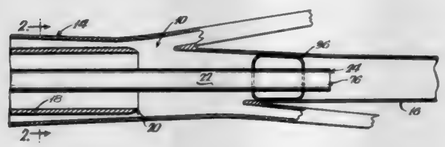
Filed Feb. 18, 1982, Ser. No. 349,718
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **30 Claims**

20. A method of treating a site in a blood vessel with laser irradiation, the method comprising the steps of:

(a) positioning within the blood vessel, proximate the site, the distal end of a conduit carrying a viewing system and means for emitting laser irradiation from the distal end of the conduit;

(b) temporarily occluding the blood vessel upstream of the of the site;

(c) introducing downstream of the produced occlusion and about the site a physiologically compatible liquid, from an external source, bearing sufficient available oxygen to maintain the viability of tissue downstream of the occlusion while the blood vessel is occluded;



(d) positioning the distal end of the conduit adjacent the site such that the site can be viewed through the viewing system when the physiologically compatible oxygen bearing fluid is substantially clear; and

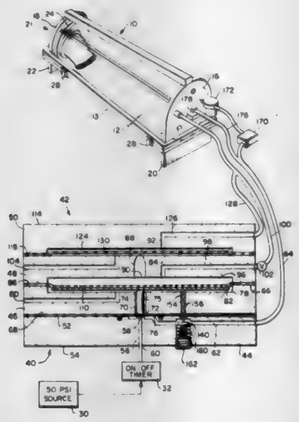
(e) transmitting laser light through the conduit to subject the site with laser irradiation when the physiologically compatible oxygen bearing is sufficiently transparent to laser energy.

4,448,189

FLUIDIC VALVE COMBINATION

Robert A. Lasley, 508 Sentinel Rd., Moorestown, N.J. 08057

Filed Apr. 7, 1982, Ser. No. 366,340
Int. Cl.³ A61H *9/00*
U.S. Cl. 128—25 R **6 Claims**



1. A low pressure hyperbaric device adapted for use in conjunction with a pressure source of oxygen for treatment of a patient including a chamber having an entrance adapted to allow the introduction of a body part, means associated with the entrance to seal the body part thereto and thereby provide an air tight chamber, timing means for controlling treatment time connected in series with the pressure source of oxygen, said timing means including an on-off valve for starting and stopping oxygen flow, an oxygen feed line in fluid communication with the chamber, said oxygen feed line having an oxygen flow control means therein, an exhaust valve in fluid communication with the chamber, said exhaust valve being in fluid communication with the oxygen feed line whose pressure maintains the exhaust valve in the closed condition, a first pressure line in fluid communication with the chamber, said first pressure line having a one way valve therein set to allow flow from the chamber at a prescribed pressure, a second pressure line in fluid communication with the chamber, and a fluidic valve means operatively associated with the aforementioned apparatus, said fluidic valve means comprising

an inlet flow valve having an inlet and an outlet, the inlet being fluidly connected to the timing means, the outlet being fluidly connected to the oxygen feed line in communication with the chamber, closure means for closing said outlet,

power means connected to the first pressure line via said one way valve for closing said closure means when fluid flows in the first pressure line upon attainment of the prescribed chamber pressure,

a first vent means for venting the oxygen feed line to atmosphere, the aforesaid power means simultaneously opening the first vent means to atmosphere with the closure of the closure means for the outlet of the inlet flow valve, the decrease in pressure in the oxygen feed line allowing the exhaust valve to open to vent the chamber to atmosphere,

a second vent means for venting the power means,

and pressure means connected to the second pressure line in fluid communication with the chamber for controlling the second venting means in response to chamber pressure wherein upon the loss of pressure in the chamber, the pressure in the aforesaid pressure means decreases to allow the second venting means to open to vent the power means to atmosphere whereby the oxygen pressure from the timing means will force open the closure means for the inlet and simultaneously close the first vent means to open fluid flow between the outlet and the chamber through the oxygen feed line to commence a new cycle.

4,448,190

CONTROL SYSTEM FOR BODY ORGANS

Maynard L. Freeman, 5469 Ranier Dr., Lisle, Ill. 60532

Continuation-in-part of Ser. No. 34,224, Apr. 30, 1979, Pat. No. 4,304,225. This application Jul. 20, 1981, Ser. No. 285,302
Int. Cl.³ A61H *31/00*
U.S. Cl. 128—60 **8 Claims**

1. A body organ control system, comprising:

auxiliary pumping means including compression means adapted to be implanted totally within the body for applying pressure to the outer surface of a body part to compress it repeatedly and thus to force body materials therefrom;

control means for producing a series of timing pulses;

electrical force-producing means connected to said compression means and responsive to said series of timing pulses for causing said compression means to apply pressure to the outer surface of the body part only upon the occurrence of individual ones of said pulses;

said compression means including a compression member having a gently curved contour, said member having a thick portion for engaging the outer surface of the body part and for applying progressively-increasing external pressure to the body part to cause it to deform over a gradually progressively increasing area thereof during the applying of pressure to the body part by said compression means wherein the body part is the aorta and said compression means includes support means adapted to be fixed directly to and to engage directly another internal body part of the body near said aorta, said support means having a rear wall adapted to be secured to the aorta body, fastening means adapted for attaching fixedly said support means directly to and in engagement with said another internal body part disposed within the body for anchoring purposes, elongated strap means connected at its ends to said support means to cooperate with said rear wall of said support means to receive the aorta for applying pressure thereto, and said force producing means applying force repeatedly to said strap means to tension it repeatedly and thus to cause said pressure to be applied repeatedly to the surrounded outer part of the aorta against said support means.

4,448,191

IMPLANTABLE CORRECTANT OF A SPINAL CURVATURE AND A METHOD FOR TREATMENT OF A SPINAL CURVATURE

Lazar I. Rodnyansky, ulitsa Karla Marxa, 133, kv. 47, and Viktor K. Gupalov, ulitsa Gorkogo, 24, kv. 6, both of Krasnoyarsk, U.S.S.R.

Filed Jul. 7, 1981, Ser. No. 281,165
Int. Cl.³ A61F *5/00, 5/04*
U.S. Cl. 128—69 **20 Claims**



1. An implantable correctant of a spinal curvature, comprising:

a rod of a generally rectangular cross section, shaped in an arc, positioned on one side of the spinous processes with the convexity of the rod facing the convexity of the spine; and

a tension fixation device mounted on the spine, said device straightening said rod and said spine to correct said spinal curvature.

4,448,192

MEDICAL VENTILATOR DEVICE PARAMETRICALLY CONTROLLED FOR PATIENT VENTILATION

Frederick A. Stawitcke; William J. Mordan, both of Sunnyvale; Holly B. Jimison, Palo Alto; Robert Piziali, Stanford, and Allen K. Ream, Woodside, all of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

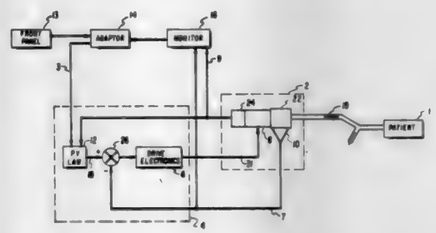
Filed Mar. 5, 1982, Ser. No. 354,993
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.26 **9 Claims**

1. A ventilator for regulating respiration gas, comprising:

a source for transfer of respiration gas in response to a regulatory signal;

measuring means coupled to said source for measuring pressure and volume of said respiration gas being transferred by said source and for providing a pressure signal and a volume signal to represent same; and

regulator means coupled to said measuring means and said source (a) for generating a pressure target from comparison of said volume signal with a pressure-volume control law, having a predetermined constant term (b) for comparison of said pressure target with said measured pressure signal, and (c) for generation of said regulatory signal to regulate, in response to said comparison of said pressure



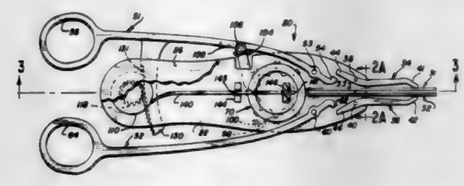
target, the pressure of said respiration gas in accordance with said pressure-volume control law.

4,448,193

SURGICAL CLIP APPLIER WITH CIRCULAR CLIP MAGAZINE

Konstantin Ivanov, Edison, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Feb. 26, 1982, Ser. No. 352,836
Int. Cl.³ F16B *2/10*; A61B *17/12*
U.S. Cl. 128—326 **18 Claims**



18. A medical instrument for applying a plurality of ligating clips seriatim about tissue wherein each said clip is initially provided in an open state, each said open clip comprising first and second legs joined at a leg connection end of the clip and being spaced apart at their distal ends, said instrument comprising:

a frame;

first and second jaws mounted to said frame in confronting relationship for movement away from each other into an open position to receive one of said clips and toward each other into a closed position for closing said one clip;

jaw biasing means for biasing said jaws outwardly away from each other from said closed position and into said open position;

jaw actuating means for being operated to permit the movement of said jaws away from each other into said open position under the influence of said jaw biasing means and for being operated through a lost motion phase to effect movement of said jaws toward each other from said open position into said closed position following the termination of said lost motion phase;

a magazine and means for mounting said magazine on said frame for rotation relative to said frame, said magazine defining a plurality of clip storage regions arranged in a generally circular array, each said clip storage region defining an inner access opening at an inner radius of said circular array and an outer access opening at an outer radius of said array, each said clip storage region being adapted to hold one of said clips with the leg connection end of said clip adjacent said inner access opening and with said clip leg distal ends adjacent said outer access opening;

means carried on said frame for releasably retaining said magazine against inadvertent rotational movement after said magazine has been rotated to align any one of said

magazine clip storage regions with said first and second jaws;

magazine rotating means responsive to the operation of the said jaw actuating means to close said jaws for incrementally rotating said magazine to move one of said clip storage regions out of registration with said jaws and to move the next adjacent clip storage region into registration with said jaws; and

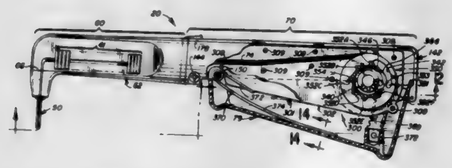
clip pushing means responsive to said jaw actuating means for (1) advancing into one of said magazine clip storage regions in registration with said jaws and moving said clip out of said clip storage region and into position between said jaws when said jaw actuating means is operated to permit the opening of said jaws, and (2) withdrawing from said jaws and behind said inner access opening of one of said clip storage regions in registration with said jaws as said jaw actuating means is operated through said lost motion phase prior to the closure of said jaws.

4,448,194

FULL STROKE COMPELLING MECHANISM FOR SURGICAL INSTRUMENT WITH DRUM DRIVE

John DiGiovanni, Irvington; Szabolcs M. Vigh, Woodbridge, both of N.J.; William P. McVay, Clearwater, Fla., and Anthony S. Miksza, Jr., Jersey City, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Feb. 3, 1982, Ser. No. 345,308
Int. Cl.³ A61B *17/00, 17/12*
U.S. Cl. 128—334 R **7 Claims**



1. An actuating mechanism for a hand-operated surgical instrument for applying a plurality of fasteners to tissue, said instrument having at least one moveable operating member, said actuating mechanism placing said fasteners in the tissue, said mechanism comprising:

a drum mounted for rotation relative to said instrument; said drum including an arm biased to a neutral position and including a laterally projecting pin extending from said arm; said arm adapted to be moved radially inwardly and radially outwardly relative to the axis of rotation of said drum;

a flexibe pusher member engaging, extending from, or functioning as said operating member; said flexible pusher member being secured to said drum for being wound at least partially around the circumference of said drum;

means for guiding said flexible pusher member for reciprocating movement adjacent said drum;

means for rotating said drum in a first direction for unwinding said flexible pusher member from said drum to move said flexible pusher member relative to said instrument from a retracted position to an extended position for effecting movement of said operating member;

means for rotating said drum in a second direction to return said flexible pusher member to said retracted position; and

an array of fixed teeth adjacent said drum and extending generally in a circular arc about an axis coincident with the axis of rotation of said drum; said teeth having an exterior tooth surface for engaging said laterally projecting pin and deflecting said pin and arm radially outwardly when said drum is rotated in said first direction; said teeth defining an inner camming surface for deflecting said pin and arm radially inwardly and permitting rotation of said drum in said second direction only after said pin has been rotated in said first direction past the end of said circular arc array of ratchet teeth.

4,448,195

REINFORCED BALLOON CATHETER

Harry H. LeVeen, 321 Confederate Cir., Charleston, S.C. 29407; Eric G. LeVeen, 3-3 Woodlake Rd., Albany, N.Y. 12203, and Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147

Filed May 8, 1981, Ser. No. 261,810
Int. Cl.³ A61M *29/02*
U.S. Cl. 128—344 **7 Claims**



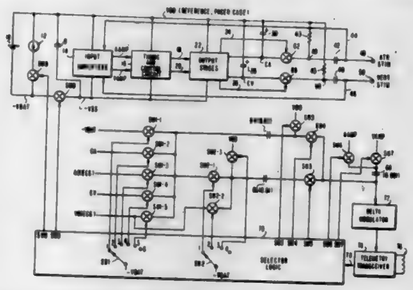
1. An expandable balloon catheter comprising an elongate flexible cylindrical tube having proximal and distal ends, said tube defining an inflation lumen means within said tube, said lumen means being sealed at said distal end and open at said proximal end of said tube, said tube including a unitary balloon portion adjacent to and spaced apart from said distal end, said balloon portion of said tube being thinner than the remaining portion of said tube, and a woven reinforcing structure combined with said remaining portion of said tube, said woven reinforcing structure overlapping opposite ends of said balloon portion to reinforce the remaining portion of the tube onto the balloon portion.

4,448,196

DELTA MODULATOR FOR MEASURING VOLTAGE LEVELS IN A HEART PACER

David K. Money, Pennant Hills, and Tibor A. Nappholz, Drummoyne, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Jun. 30, 1982, Ser. No. 393,801
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT **30 Claims**



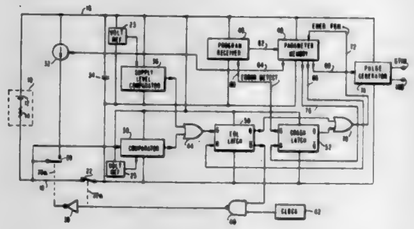
1. An implantable medical prosthetic device having means for sensing a physiological signal to be monitored; and means for deriving from a sensed signal a continuous sequence of bit samples, an excess of one of the two states of said bit samples representing a change in a corresponding direction in the sensed signal; characterized by means for sampling an operating potential whose level is to be measured; and means for applying the sampled potential to the input of said bit-sample deriving means.

4,448,197

HEART PACER END-OF-LIFE DETECTOR

Tibor A. Nappholz, Drummoyne; David K. Money, Pennant Hills; Stephen Swift, Hornsby, and Ronald C. Bradbury, Marsfield, all of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Jul. 22, 1982, Ser. No. 401,013
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT **11 Claims**



1. A programmable heart pacer comprising a power source, a pulse generator for generating pacing pulses, means for storing externally-generated parameter values and for controlling the operation of said pulse generator in accordance with the stored parameter values, and means for detecting the approach of the end of life of said power source and in response thereto for storing in said storing means predetermined parameter values, said detecting means including means for selectively connecting a test current source across said power source and means for comparing with a reference value the potential across said power source when a test current flows therethrough, characterized by said storing means further storing a variable test current source magnitude parameter value, and means for controlling the magnitude of said test current source in accordance with the stored test current source magnitude parameter value.

4,448,198

INVASIVE HYPERTHERMIA APPARATUS AND METHOD

Paul F. Turner, North Salt Lake, Utah, assignor to BSD Medical Corporation, Salt Lake City, Utah

Continuation of Ser. No. 50,050, Jun. 19, 1979, abandoned. This application Sep. 24, 1981, Ser. No. 305,180
Int. Cl.³ A61N *5/02*
U.S. Cl. 128—422 **11 Claims**

1. Electromagnetic hyperthermia apparatus for heating local regions within body tissue comprising:

(a) a source of electromagnetic radiation;

(b) a plurality of electromagnetic energy radiating applicators, wherein said applicators are inserted into the body tissue in a preselected pattern, and further wherein said applicators are substantially parallel; and

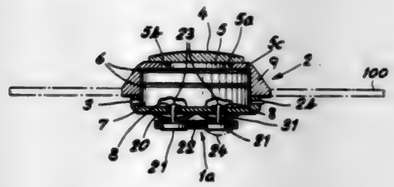
(c) means interconnected between the radiation source and each of said applicators for continuously providing each said applicator with electromagnetic energy having the same frequency and preselected relative phase and power relationships, wherein the radiation emitted by said applicators undergoes constructive interference in the local region to be heated.

4,448,199

ELECTRODE FOR DETECTING BIOELECTRICAL SIGNALS

Walter Schmid, Fuchsweg 9, D-7911 Pfaffenhofen, München, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 142,741, Apr. 22, 1980, Pat. No. 4,375,219. This application Feb. 24, 1982, Ser. No. 351,870
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004126
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—639 **6 Claims**



1. An electric assembly for skin-contacting bioelectrical purposes, comprising:

a support;

a pair of electrodes mounted on and insulated from one another by said support, said electrodes having side-by-side contact surfaces adapted to rest directly against the skin, terminals enabling electrical connection to the respective electrodes and means forming a respective p-n junction poled in the same direction as the p-n junction of the other electrode with respect to the skin between each contact surface and the respective terminal, each such means including a plate of p-conductive semiconductive material lying against a plate of n-conductive semiconductive material, said plates being parallel to the respective contact surface; and

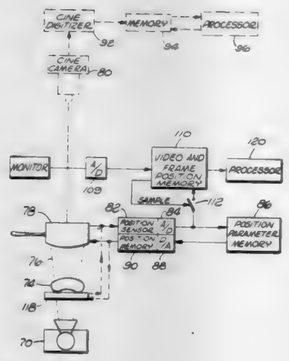
means for connecting said terminals of said electrodes to a device for monitoring bioelectric signals traversing said p-n junctions from the skin.

4,448,200

SYSTEM AND METHOD FOR DYNAMIC BACKGROUND SUBTRACTION

Samuel H. Brooks, Los Angeles; Donald W. Crawford, Long Beach; Robert H. Selzer, Los Angeles, and David H. Blankenhorn, Pasadena, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 890,103, Mar. 27, 1978, Pat. No. 4,263,916. This application Apr. 27, 1981, Ser. No. 258,132
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—653 **31 Claims**



1. An image acquisition system for generating a subtracted image motion picture of a selected feature of a biological subject comprising:

imaging means including an illumination source, a support for the subject and an illumination receiver, for generating an image of the selected subject feature, at least one of the illumination source, the support and the illumination receiver being movable by an operator whereby there is relative movement between the subject and the illumination receiver along an imaging path selected by the operator;

means for causing at least one of the illumination source, support and illumination receiver to move so that the relative movement between the subject and the illumination receiver is along the imaging path to duplicate said imaging path;

means for generating and storing a sequence of first frames of the image to define a first motion picture as the operator causes relative movement between the subject and the illumination receiver to define the imaging path and a sequence of second frames of the image to define a second motion picture as the relative movement between the subject and the illuminating receiver along the imaging path is duplicated;

means for aligning and registering the first motion picture and the second motion picture on a frame-by-frame basis; and

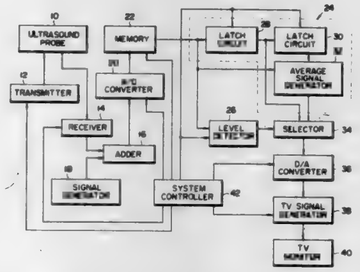
means for subtracting the aligned second motion picture from the first motion picture on a frame-by-frame basis for generating a subtracted image motion picture of the subject as the relative movement between the illumination receiver and the subject occurs along the imaging path.

4,448,201

DIGITAL SCAN CONVERTER

Kenzo Matsumoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 26, 1981, Ser. No. 315,154
Claims priority, application Japan, Oct. 27, 1980, 55-150311
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **9 Claims**



1. A digital scan converter comprising:

means for adding a signal of a predetermined value to an image signal obtained by sector scanning an object;

means, whose address is specified by orthgonal coordinates, for storing an output signal from said adding means in the address specified by the orthogonal coordinates corresponding to polar coordinates at which the image signal is obtained;

means for reading out a signal from said storing means by linear scanning;

means for detecting the level of the signal read out from said storing means; and

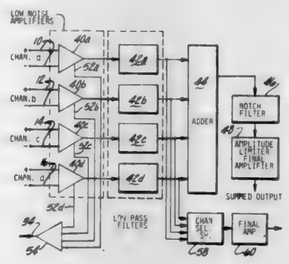
interpolating means for converting the signal read out from said storing means into an interpolating signal in response to tne output signal from said detecting means.

4,448,202

BIOLOGICAL SIGNAL AMPLIFIER SYSTEM WITH NOISE LEVEL REDUCTION

Waldemar J. Wajszczuk, 4489 Patrick, West Bloomfield, Mich. 48033; Tadeusz Palko, Gorlicka, 15 A m 10, and Grzegorz Pawlicki, Prosta 2/6, both of Warsaw, Poland

Filed Apr. 26, 1982, Ser. No. 371,710
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—709 **7 Claims**



7. An amplifier system for displaying a biological signal voltage from a body surface, comprising:

a plurality of leads coupled to the body surface at closely spaced locations, all of which produce the same signal voltage,

a plurality of amplifiers each having its input coupled with a different one of said leads for amplifying said signal voltage,

a summing circuit having a plurality of inputs each being coupled with the output of a different one of said amplifier for adding the amplified signal voltages,

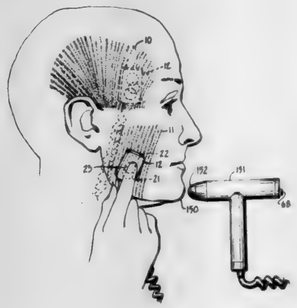
and display means coupled with the output of the summing circuit for graphically displaying the time variation of said signal voltage.

4,448,203

ELECTROMYOGRAPHIC DIAGNOSTIC DEVICE

Eugene Williamson, Evans, Ga.; Stephen M. Thompson, and Derek K. Evans, both of San Diego, Calif., assignors to "A" Company, San Diego, Calif.

Filed Sep. 24, 1982, Ser. No. 422,927
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—733 **11 Claims**



1. Apparatus for sensing the Silent Period of masticatory muscles comprising:

electrode means adapted for contact with the skin overlying a masticatory muscle for sensing electrical activity of said muscle;

first means connected to said electrode means and providing an electrical signal representative of the sensed electrical activity;

second means receiving said representative electrical signal for sensing the onset of a Silent Period;

third means receiving said representative electrical signal and communicating with said second means for rejecting a Silent Period having a duration less than a predetermined time interval;

fourth means communicating with said second means and said third means for determining the duration of any Silent Period longer than said predetermined time interval; and

display means for indicating the duration of any such Silent Period so determined.

4,448,204

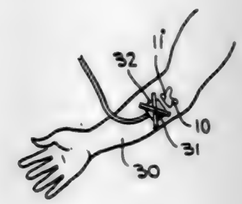
LIQUID CRYSTAL INFILTRATION SENSING SYSTEM

Joseph Lichtenstein, Colonia, N.J., assignor to Whitman Medical Corporation, Clark, N.Y.

Division of Ser. No. 137,741, Apr. 7, 1980, Pat. No. 4,378,808. This application Sep. 24, 1982, Ser. No. 423,205
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—736 **11 Claims**

11. A method of monitoring temperature change of a substance in a body at a surface of the body which is not in direct contact with the substance by adhering a patch of liquid crystal material to said surface, said liquid crystal material having a variable color versus temperature characteristic wherein the material remains at one color over a pre-determined range of temperatures and varies from that color when the temperature of the patch varies outside said pre-determined range, said method comprising the steps of:

providing a prescribed area on said patch which is permanently colored at said one color; and



observing the applied patch to determine if the variable color portion differs from the color of said prescribed area.

4,448,205

DEVICE FOR TAKING SAMPLES OF CELLS FROM THE CERVIX UTERI

Björn G. Stenkvist, Döbelnsgatan 13, S-752 37 Uppsala, Sweden

PCT No. PCT/SE81/00198, 371 Date Feb. 18, 1982, 102(e) Date Feb. 18, 1982, PCT Pub. No. WO82/00090, PCT Pub. Date Jan. 21, 1982
PCT Filed Jun. 30, 1981, Ser. No. 355,589
Claims priority, application Sweden, Jul. 8, 1980, 8005022
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—749 **3 Claims**

1. Device for taking samples of cells from the cervix, characterized in that it consists of a rod, a conical body having a concave undulated lateral surface and a hemispherical tip, said rod connected to the base of said conical body and extending coaxially with the longitudinal axis thereof, said undulated surface extending from the base of the conical body to the hemispherical tip, the base radius of the cone being 5–15 mm, the radius of the hemispherical tip being 2–4 mm, the radius of the arc defining the concave lateral surface of the conical body being less than 50 mm and the undulated lateral surface approximately defining in cross-section taken through an imaginary conical section normal to said surface and the apex of which lies on the longitudinal axis of the conical body, a sine curve with decreasing wavelength and amplitude along the circular arc approaching the tip, the wavelength and amplitude being between 1.5 and 5 mm at the base of the cone.

4,448,206

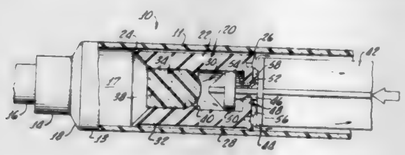
VENTED, ASPIRATING SYRINGE

Michael D. Martell, 7555 Jurupa Ave., #E, Riverside, Calif. 92504

Continuation-in-part of Ser. No. 293,662, Aug. 17, 1981, Pat. No. 4,373,535. This application Dec. 13, 1982, Ser. No. 449,560
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—765 **17 Claims**

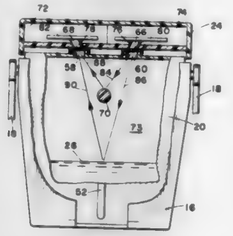
1. A syringe assembly comprising:

a tubular body open at one end and being adapted to receive a hypodermic needle at the other end thereof;
a plunger, one end of which is adapted for insertion into said tubular body through said open end, said plunger having a longitudinal passageway for air flow therethrough;
means for forming a fluid-tight seal between the outside surface of said plunger and the inside surface of said tubular body; an air permeable filter member extending across said passageway adjacent said one end of said plunger;



a handle movably connected to the plunger to move the plunger within said tubular body; and
said handle and plunger having mutually interengaging means forming valve means extending across said passageway between said filter member and said open end of said tubular body for selectively permitting the passage of air through said passageway, said valve means including relatively movable parts on said handle and plunger.

4,448,207
MEDICAL FLUID MEASURING SYSTEM
John H. Parrish, La Jolla, Calif., assignor to Vital Metrics, Inc., San Diego, Calif.
Filed Nov. 3, 1981, Ser. No. 317,611
Int. Cl.³ A61B 5/00; G01F 23/28
U.S. Cl. 128—771 **18 Claims**



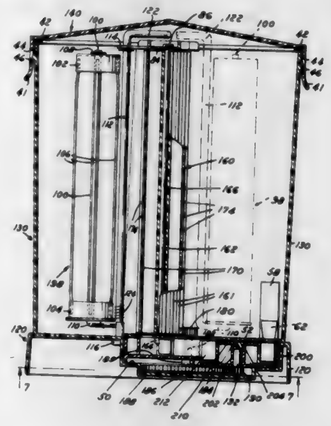
1. A medical system for measuring liquids discharged from a patient's body comprising:
housing means,
a substantially rigid wall container removably mounted in the housing means for collecting liquid discharged from said patient's body,
ultrasonic measuring means mounted in the housing means in operational relationship to the container and bacteriologically isolated from the interior of the container for measuring the distance to the surface of the liquid collected within the container,
control means for determining the volume of liquid collected in the container in a defined time interval in response to the output of the measuring means,
display means for visually indicating the volume of liquid collected in the container in a defined time interval as determined by the control means, and
means for connecting the container to said patient's body to collect therein liquid discharged from said body.

4,448,208
TOBACCO EXTRACTOR
Hermann Friedrich, Avenches; Claude Ruf, Cortaillod, and Jacques Brosy, Neuchatel, all of Switzerland, assignors to Philip Morris Incorporated, New York, N.Y.
Filed Jan. 18, 1982, Ser. No. 340,399
Int. Cl.³ A24B 15/24
U.S. Cl. 131—297 **3 Claims**



1. An extractor comprising:
a downwardly sloping inlet conduit;
an upwardly sloping outlet conduit connected to said downwardly sloping conduit at their lowest portions;
a worm conveyor coaxially mounted in said inlet and outlet conduit;
a plant material inlet mounted at the upper end of said inlet conduit;
a plant material outlet at the upper end of said outlet conduit;
an extract discharge line mounted at the upper end of said inlet conduit; and
a wash liquid feed connection mounted at the upper end of said outlet conduit.

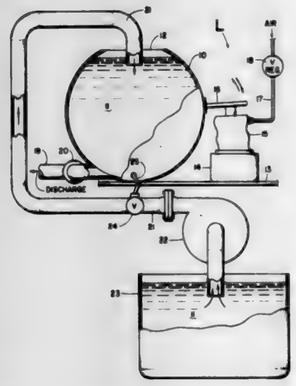
4,448,209
WASHER FOR PAINT ROLLERS
Erin J. Lindsay, 17855 Sharon Hollow La., Manchester, Mich. 48158
Filed Mar. 18, 1982, Ser. No. 359,203
Int. Cl.³ B08B 3/00
U.S. Cl. 134—141 **13 Claims**



1. A washing apparatus for cleaning paint applicators of the roller type which comprises:
(a) a housing,
(b) an elongate rotatable roller mount for a paint roller to be cleaned mounted for rotation on a first axis in said housing,
(c) a washer cylinder mounted in said housing for rotation on a second axis parallel to and adjacent said first axis,
(d) means to rotate said washer cylinder and said rotatable roller mount simultaneously, and

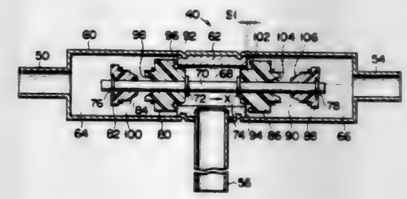
(e) means to direct washing liquid to a paint roller on a roller mount to flush paint from said paint roller,
(f) said housing having a base, side walls and a cover at one end, and said means to rotate said washer cylinder comprising a pressure liquid operated turbine mounted in a turbine chamber in said base having an inlet port and outlet port, and a gear train driven by said turbine operatively connected to said washer cylinder to rotate said cylinder in response to introduction of liquid under pressure into said inlet port of said turbine chamber.

4,448,210
APPARATUS AND METHOD FOR CONTROLLING THE LEVEL OF A LIQUID IN A TANK
James W. Althouse, III, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed May 20, 1983, Ser. No. 496,763
Int. Cl.³ F16K 21/18; F17D 3/00
U.S. Cl. 137—2 **2 Claims**



2. Method for controlling the level of a liquid in a tank, comprising the steps of:
fastening an air spring to a tank filled with a liquid, the tank has an access opening along its top surface, the tank has an outlet conduit which connects the bottom of the tank to a use point, and the outlet conduit has a swivel joint therein for swivel movement of the tank;
installing pressure regulator means for controlling flow of air into the air spring;
installing a conduit for delivering liquid into the tank, the delivery conduit has one end which extends into the tank through the access opening and an opposite end which connects into a source for the liquid;
installing a valve means in the delivery conduit and linking the tank to the valve with a valve operator means capable of opening and closing the valve in response to an upward and downward movement of the tank;
withdrawing the liquid from the tank through the outlet conduit, to cause the air spring to expand and swivel the tank upwardly until it reaches a first position in which the valve operator means opens the valve;
adding liquid to the tank through the delivery conduit, to cause the air spring to compress and swivel the tank downwardly until it reaches a second position in which the valve operator means closes the valve.

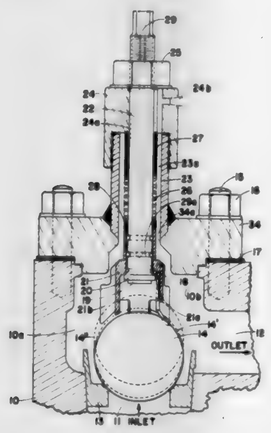
4,448,211
THREE-WAY VALVE
Syoichi Yoshida, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Dec. 1, 1981, Ser. No. 326,205
Int. Cl.³ F16K 11/06
U.S. Cl. 137—112 **7 Claims**



1. A three-way valve comprising:
a valve main body having a first valve chamber, one end of which is provided with a first inlet port, a second valve chamber, one end of which is provided with a second inlet port, a path for communicating the other end of the first valve chamber with the other end of the second valve chamber, a first valve seat disposed on the other end of the first valve chamber, a second valve seat disposed on the other end of the second chamber, and an outlet port communicating with said path;
a first main valve disposed within said first valve chamber and selectively movable between a first position in which the first main valve comes into contact with the first valve seat to seal the first valve chamber, a second position in which the first main valve is separated from the first valve seat by a first distance, and a third position in which the first main valve is separated from the first valve seat by a second distance greater than the first distance;
a second main valve disposed within said second valve chamber and selectively movable between a fourth position in which the second main valve comes into contact with the second valve seat to seal the second valve chamber, a fifth position in which the second main valve is separated from the second valve seat by a third distance, and a sixth position in which the second main valve is separated from the second valve seat by a fourth distance greater than the third distance; and
control means disposed within the valve main body for (a) moving the first main valve from the third position to the first position while simultaneously moving the second main valve from the fourth position to the fifth position when the pressure within the first valve chamber is greater than the pressure within the second valve chamber by a first value to thereby close the first valve chamber and establish communication between the second valve chamber and the outlet port, (b) moving the second main valve from the fifth position to the sixth position when the pressure within the first valve chamber is greater than the pressure within the second valve chamber by a second value greater than the first value to thereby separate the second main valve and the second valve seat greatly from each other, (c) moving the second main valve from the sixth position to the fourth position while simultaneously moving the first main valve from the first position to the second position when the pressure within the second valve chamber is greater than the pressure within the first valve chamber by a third value to thereby close the second valve chamber and establish communication between the first valve chamber and the outlet port; and (d) moving the first main valve from the second position to the third position when the pressure within the second valve chamber is greater than the pressure within the first valve chamber by a fourth value which is greater than the third

value to thereby separate the first main valve and the first valve seat greatly from each other.

4,448,212
CHECK VALVE FOR USE WITH HIGH PRESSURE PUMP
Robert J. Rubey, Wisconsin Rapids, Wis., assignor to Sterling Drug Inc., New York, N.Y.
Division of Ser. No. 263,506, May 14, 1981, Pat. No. 4,393,895. This application Feb. 10, 1983, Ser. No. 465,677
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—238 **7 Claims**



1. A check valve for use with a high pressure pump, said valve comprising:

a valve body having an inlet and an outlet and a fluid Passageway therebetween, said valve body having an opening therein on the opposite side of the valve body from said inlet, a cover mounted over said opening and having an aperture therein, and a limiter housing covering said aperture and extending away from said valve body;

a valve seat in said passageway between said inlet and said outlet;

a valve member in said passageway movable toward said valve inlet for seating against said valve seat for sealing said passageway against back flow of fluid therethrough;

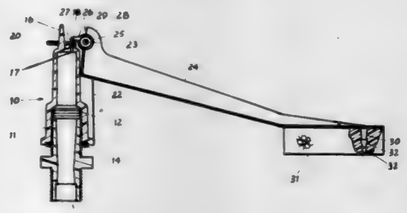
a valve member lift limiter mounted on said valve body and having a valve member engaging end extending into the path of movement of said valve member for engaging said valve member and limiting movement of said valve member away from said valve seat, said valve member lift limiter having a stem extending through said housing and projecting out of said housing;

adjusting means mounted on said limiter housing and operably associated with said valve member lift limiter for adjusting the position of said valve member lift limiter foward and away from said valve seat;

a plunger slidably mounted on said valve member lift limiter for movement toward and away from said valve seat along an axis which is substantially coaxial with the axis of movement of said valve member lift limiter and in the position closest to said valve seat projecting past the valve member lift limiter toward said valve seat and having the end toward said valve member spaced from said valve member when said valve member is seated on said valve seat and having a sleeve extending into said housing; and

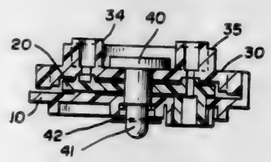
a coil spring positioned around said valve member lift limiter within said housing and engaging said sleeve for urging said plunger toward said valve member and permitting movement of said plunger away from said valve seat sufficiently far to permit said valve member to engage said valve member lift limiter.

4,448,213
WATER VALVE
Frederic F. Seeley, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty. Ltd., St. Marys, Australia
Filed Mar. 28, 1983, Ser. No. 479,643
Claims priority, application Australia, Mar. 29, 1982, PF3347
Int. Cl.³ F16K *31/18, 29/00*
U.S. Cl. 137—451 **8 Claims**



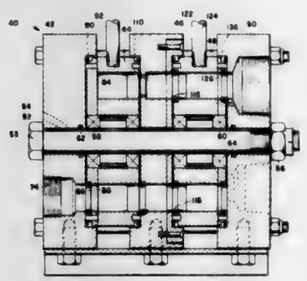
1. A float valve having walls defining a hollow valve body, a valve seat disposed exteriorly on one end of the body and defining an outlet orifice, a valve member locating spigot being disposed exteriorly of the valve body and adjacent the valve seat and being integral with the valve body, a resilient washer-like valve member having aperture forming walls surrounding and engaging the spigot and being freely rotatable thereabout, a float arm, pivot means pivotably interconnecting the float arm at a first end to the valve body, the float arm having a float at a second end, and an abutment surface on the first end engageable against a portion of the washer-like valve member, the abutment surface being operable to tilt, distort or both tilt and distort the portion of the valve member into sealable engagement with the valve seat upon hinging of the float arm in a given direction.

4,448,214
MULTI-CHANNEL LAMINAR-FLOW FLUID VALVE
Lawrence M. D'Alessio, 2426 Cedar St., Manasquan Park, N.J. 08736
Filed Nov. 22, 1982, Ser. No. 443,751
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—625.46 **6 Claims**



1. A multi-channel, laminar-flow fluid valve comprising a first, circular, outer member; a second outer member; and a circular inner member; each of said members having a centrally-located pivot hole; a pivot pin extending through said centrally-located pivot holes; means on each end of said pivot pin to hold said members together in a rotatable condition; a continuous circular depression, concentric with said pivot pin, on the inner surface of said first outer member, a plurality of openings through said first outer member, equidistant from each other around said continuous circular depression; a plurality of ports, for connecting to tubes, aligned with said plurality of openings, on the outer surface of said first outer member; an inner and an outer circular ridge, concentric to said pivot pin, projecting from the surface of said inner member adjacent to said inner surface of said first outer member to engage an inner and an outer edge of said continuous circular depresssion, respectively a plurality of smaller circular ridges projecting from the surface of said inner member between said inner and outer circular ridges, equidistant from each other and positioned to correspond with the location of said plurality of ports in said first outer member; an opening through said inner member in the center of one of said smaller circular ridges; a port, extending from the opposing side of said inner member and aligned with said opening through said inner member, to connect to a tube; an opening through said second outer member to contain said port of said inner member, said inner member being made of resilient material so that pressure exerted between said two outer members compresses said ridges along said edges of said depression and around said openings through said first outer member to provide a tight gasket.

4,448,215
MULTIPLE FLOW CONTROL VALVE
Michael Skelly, 2505 Dogwood, Pampa, Tex. 79066
Division of Ser. No. 96,058, Nov. 20, 1979, Pat. No. 4,330,008, which is a continuation-in-part of Ser. No. 929,312, Jul. 31, 1978, Pat. No. 4,219,049. This application Jul. 6, 1981, Ser. No. 281,015
Int. Cl.³ F16K *11/06;* F15B *13/09*
U.S. Cl. 137—625.46 **8 Claims**



3. A multiple flow selector valve comprising a pair of spaced-apart first and second valve body members, a plurality of n fluid inlet ports provided in the first valve body member, a pair of outlet ports provided in the second valve body member, one being a power outlet, the other being an exhaust outlet, a third valve body member sealingly and movably interposed between said first and second valve body members and rotatably carried by the first and second valve body members about a longitudinal axis and wherein the inlet ports are radially spaced about said longitudinal axis, means carried by said third valve body member to operably connect $2n-1$ choices of flow rates from said inlet ports into open communication with the power outlet port of the second valve body member while simultaneously operably connecting any remaining inlet ports into open communication with the exhaust outlet port.

4,448,216
SUBSURFACE SAFETY VALVE
Steven C. Speegle, Flower Mound; Kenneth L. Schwendemann, Lewisville; Michael B. Vinzant, Carrollton; Robert W. Crow, Irving, and Cary G. Mondon, Carrollton, allof, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed Mar. 15, 1982, Ser. No. 358,313
Int. Cl.³ F16K *31/163*
U.S. Cl. 137—630 **14 Claims**

1. A surface controlled subsurface safety valve having a ball type valve closure means for controlling fluid flow therethrough, comprising:

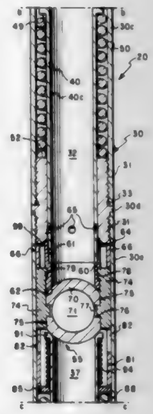
a. a housing means with a longitudinal passageway therethrough;

b. an operating sleeve and attached piston means slidably disposed within the longitudinal passageway;

c. the valve closure means disposed within the longitudinal passageway;

d. means for communicating control fluid pressure with the piston means;

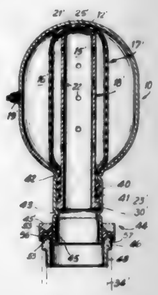
e. means for connecting the valve closure means to the operating sleeve whereby longitudinal movement of the operating sleeve causes longitudinal movement of the valve closure means within the housing means;



f. biasing means which generates a force opposing longitudinal movement of the valve closure means in one direction; and

g. the biasing means causing longitudinal movement of a part of valve closure means in the other direction to permit fluid flow therethrough after any difference in fluid pressures on opposite sides of the valve closure means have been equalized.

4,448,217
ACCUMULATOR HAVING BLADDER IN EXPANSION LIMITING CONTACT WITH CASING
Jacques H. Mercier, Stamford, Conn., assignor to The Normand Trust, New York, N.Y.
Filed Sep. 27, 1982, Ser. No. 424,363
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **10 Claims**



1. A low cost, hydraulic accumulator device comprising a pressure vessel having parti-spherical upper and lower end portions and a cylindrical section interposed between said end portions, a neck portion integral with and extending outwardly from said lower end portion, a rigid, hollow, generally cylindrical casing extending through said neck portion and into said

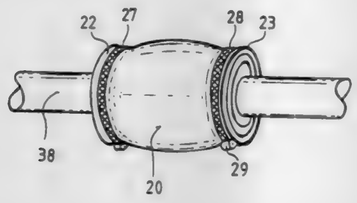
vessel, said casing have a closed upper end and an open lower end defining an oil port, said casing including a plurality of transversely directed throughgoing apertures in the cylindrical portion thereof, a resilient, deformable elastomeric bladder member mounted over the outer surface of and conforming to said casing and dividing said vessel into two chambers, said bladder member including a closed upper end portion, an open mouth portion at the lower end, and a thickened collar portion adjacent said mouth portion and surrounding said lower end of said casing, said collar portion being clampingly secured between said lower end of said casing and said neck of said vessel to define a seal, a portion of said closed end of said bladder being pressed between said upper end of said casing and said upper end of said pressure vessel, whereby the central portion of said bladder member is constrained against elongation and the center line of said upper end of said bladder member is retained substantially coincident with the longitudinal axis of said vessel and casing upon expansion thereof.

4,448,218

APPARATUS FOR SEALING LEAKS

Manfred Vetter, Postfach 1260, D-5352 Zülpich, Fed. Rep. of Germany

Filed Jun. 5, 1981, Ser. No. 270,828
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 8031745[U]
Int. Cl.³ F16L *55/00*
U.S. Cl. 138—99 **10 Claims**



1. Patching apparatus for containers, pipes and similar objects, comprising in combination:

an inflatable pad with a non-elastic top layer and an attached flexible lower layer, with said lower layer having an attached external reinforced layer arranged in such a way that an U-shaped area of high elasticity is formed between said flexible lower layer and said external layer;

two tension straps;

four strips framing said pad, two of which are side strips disposed respectively along each of two longer sides of said pad and being adapted to the width of said straps for receiving said straps, one frontal cross strip at the frontal end of said pad, and one rear cross strip at the rear end of said pad; and

a small tube being connected through one of the strips selected from the group consisting of said side strips and said rear cross strip, said tube having valve means for connection to a pressure source.

4,448,219

HEAT-INSULATING PIPE ELEMENT

Hendricus W. M. van Hatten, Vlissingen, Netherlands, assignor to AMGAS B.V., Middleburg, Netherlands

Filed Jan. 28, 1983, Ser. No. 461,946
Claims priority, application Netherlands, Jan. 28, 1982, 8200319
Int. Cl.³ F16L *9/22*
U.S. Cl. 138—149 **5 Claims**

1. A heat-insulating pipe element of a pipe for conveying flue gases, comprising, an elongated metal inner tube, an elongated metal outer tube surrounding said inner tube in spaced relation and coaxial therewith, said tubes defining an annular space therebetween, a continuous layer of insulating material, having a coherent, fibrous resilient structure, located within said annular space in contact with both said tubes for resiliently maintaining a coaxial relationship therebetween, at least one elongated connecting element disposed within said annular space



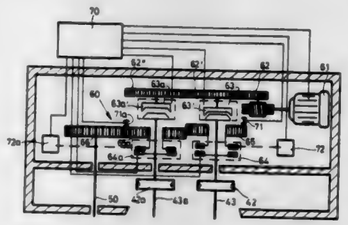
for securing said tubes together against relative axis movement, said element being connected to said tubes at only three locations and having only a central portion thereof connected with a central portion of said inner tube, and having only opposite end portions thereof connected with end portions of said outer tube.

4,448,220

METHOD FOR OPERATING A TWO-PHASE GRIPPER LOOM AND TWO-PHASE GRIPPER LOOM FOR PERFORMANCE OF THE METHOD

Rudolf Zwiener; Anton Lucian, and Ernst Gattiker, all of Arbon, Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Dec. 4, 1981, Ser. No. 327,624
Claims priority, application Austria, Dec. 23, 1980, 6282/80
Int. Cl.³ D03D *51/02*
U.S. Cl. 139—1 E **10 Claims**



1. In a method of operating a two-phase gripper weaving machine containing two juxtapositioned loom units each having heald frames operated by a heald frame positioning device containing heald frame cam means and respectively movable into open shed and closed shed positions and a respective rotary shaft operatively correlated with each loom unit, the loom units working in phase opposition to one another and the rotary shafts being conjointly driven by a weaving machine main shaft, the improvement which comprises the steps of:

upon interruption of the weaving operation at any one of the loom units closing a still open weaving shed of both sheds of said loom units; and

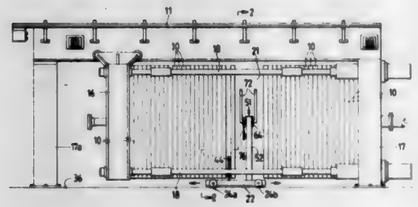
prior to again placing into operation the weaving machine initially again opening the previously closed weaving shed in order to place it back into the open shed position which it possessed prior to interruption in the weaving operation.

4,448,221

SPRAYING APPARATUS FOR CLEANING FILTER PLATES

James D. Murray, Birmingham, Ala., assignor to Passavant Corporation, Birmingham, Ala.

Filed Jun. 17, 1982, Ser. No. 389,178
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—76 **6 Claims**



1. Spraying apparatus for cleaning filter plates of a filter press wherein said plates are adapted for separation along longitudinally extending horizontal guides to define a space between adjacent filter plates,

(a) a support frame mounted for longitudinal movement beneath said filter press and adapted for alignment with said space defined between adjacent filter plates to be cleaned,

(b) an elongated arm pivotally connected at one end to said support frame for pivotal movement thereon selectively to a first position beneath said filter plates to permit free longitudinal travel of said support frame beneath said filter press and to a second position with said elongated arm in alignment with and extending into said space so that upon movement of said elongated arm to said second position the other end thereof extends inwardly of said space toward the mid portions of said adjacent filter plates,

(c) a fluid supply conduit carried by said elongated arm and having an inlet adjacent said one end of said elongated arm connected to means supplying a cleaning fluid under pressure and having an outlet adjacent said other end thereof,

(d) an elongated spray dispenser mounted for rotation at one end to said other end of said elongated arm and adapted to rotate at least 360° within said space upon movement of said elongated arm to said second position, with said dispenser being rotatable in at least one direction to apply spray over the vertical surfaces of said adjacent filter plates being cleaned,

(e) actuator means carried by said support frame for pivoting said elongated arm to said first and said second positions, and

(f) means carried by said elongated arm for imparting rotation to said spray dispenser.

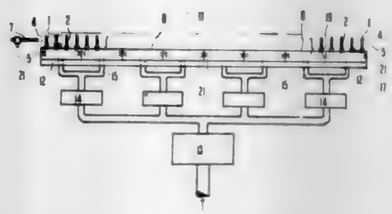
4,448,222

APPARATUS FOR MOUNTING WEFT GUIDING MEMBERS IN JET LOOMS

Hiroshi Arakawa, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Aug. 7, 1981, Ser. No. 290,727
Claims priority, application Japan, Aug. 9, 1980, 55-109485
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **7 Claims**

1. In a jet-operated weaving machine including a main nozzle, a race on which are arranged a reed, a series of weft guides forming a weft guiding channel in a shed and a number of auxiliary nozzles provided adjacently along said series of weft guides for injecting therefrom fluid under pressure into said channel thereby to carry through said channel a weft yarn introduced into the shed by a jet stream from said main nozzle, apparatus for mounting said weft guides and said auxiliary nozzles, comprising a plurality of mounting blocks, a plurality of said weft guides and at least one of said auxiliary nozzles being mounted integrally on each of said mounting blocks, all of said series of weft guides and said number of auxiliary nozzles being mounted on said mounting blocks, said mounting blocks being arranged end-to-end in a row in substantially abutting relation and fixedly but individually removably mounted on and along said race, releasable means mounting said blocks on said race, each of said mounting blocks having formed therein a fluid passage communicating with each of said auxiliary nozzles thereon, fluid supply means, and means connecting said fluid passages to said fluid supply means.

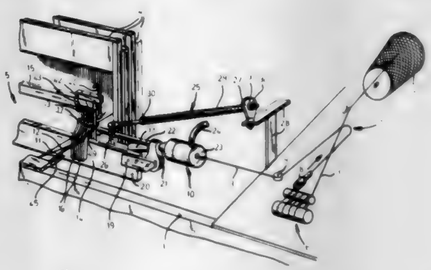


4,448,223

DEVICE COMPRISING A MOVABLE NOZZLE FOR THE PNEUMATIC INSERTION OF THE WEFT IN A SHUTTLE-LESS LOOM

Albert H. Deborde, and Pierre L. Rémond, both of Bourgoin Jailleu, France, assignors to Saurer Diederichs (Societe Anonyme), Bourgoin Jailleu, France

Filed Dec. 17, 1981, Ser. No. 331,922
Claims priority, application France, Dec. 30, 1980, 80 27964
Int. Cl.³ D03D *47/36*
U.S. Cl. 139—435 **12 Claims**



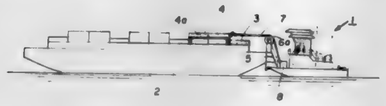
1. A device for the pneumatic insertion of a weft in a shuttleless weaving loom having a sley with a sley sole, said device comprising a pneumatic insertion nozzle mounted to pivot on an extension of said sley sole about an axis perpendicular to said sley sole, a connecting rod separate from said nozzle and pivotally connected to said nozzle and to a fixed point of the loom at spaced apart locations along the length of the rod so that the nozzle has a position parallel to the sley sole during the insertion of the weft thread, but forms an angle with respect to the longitudinal direction of the sley sole in a beating-up position of the sley.

4,448,224

TUG BOAT COVER ROLLING APPARATUS

Frank M. Crain, Box 105, Shippingport, Pa.

Filed Sep. 23, 1981, Ser. No. 304,851
Int. Cl.³ B63B *35/70*
U.S. Cl. 114—242 2 Claims



1. In combination with a tow boat having a pair of vertically extending push knees at the bow of the boat and a barge pushed by said push knees and which barge has a plurality of slidable top and bottom covers which are slidable into and out of nesting relationship, the improvement comprising a bar, bridging the top ends of said push knees, mounting a sheave centrally of the bow of said tow boat and positioned substantially at the height of said covers, a winch mounted centrally in the bow portion of said tug boat for pulling on a cable entrained about said sheave and having a free end connected to one of said covers, said sheave being mounted on top of said bar and being at a height substantially that of said covers, whereby the winch will selectively pull said covers along a central longitudinal axis to prevent twisting movements of said covers.

4,448,225

TOOL TO SUPPLY, TWIST AND CUT ENDS OF A METAL WIRE OR PLASTIC FILAMENT TO PROVIDE A FASTENER

Daniel Schmidt, 8, avenue du Petit-Lancy, Petit-Lancy, Switzerland

Filed May 24, 1982, Ser. No. 381,377
Claims priority, application Switzerland, Jun. 11, 1981, 3819/81
Int. Cl.³ B21F *7/00*
U.S. Cl. 140—119 1 Claim



1. A tool to supply, twist and cut a portion of a metal wire (14) to form a fastener, said tool comprising a shaft (2), a head (1) integral with one end of said shaft (2) and including a tubular extension (6) having oppositely disposed longitudinal slots (7,8) therein, said head and shaft having an axial bore therein for receiving a length of wire, cutting pliers (5) mounted in said extension above said head and including a pair of pivotally connected handles (9,10), a cutting jaw at the end of each of said handles, a tubular sleeve (4) in which said shaft (2) is mounted, said plier jaws projecting from the free end of said tubular extension (6), said plier handles (9,10) projecting through said longitudinal slots (7,8), drive means for rotatably driving said shaft, said head, said extension and said pliers, said drive means including a helicoidal groove on said shaft, clutch means comprising a first toothed member secured in the upper end of said sleeve, a second toothed member slidably mounted on said shaft, a lug on said second toothed member engaged in said helicoidal groove on said shaft, a return spring surrounding said shaft and abutting the bottom of said second toothed member at one end and at the other end abutting a stop member at the end of said shaft opposite said head, said spring normally supporting said second toothed member in a position spaced from said first toothed member whereby upon sliding said sleeve longitudinally relative to said shaft against the action of said spring and away from said head, said first and second toothed members are engaged to rotate said shaft, said head, said extension and said pliers to twist portions of said wire around one another and cut them.

4,448,226

METHOD OF FILLING DISPOSABLE GAS LIGHTER AND DEVICE FOR FILLING SAME

Bernard Dumont, Isère, France, assignor to Feudor S.A., Rhone, France

Filed Sep. 2, 1981, Ser. No. 298,739
Claims priority, application France, Sep. 5, 1980, 80 19587
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—2 2 Claims



1. A method of filling a lighter having a well forming part of a lighter body defining a fuel reservoir and adapted to receive a valve assembly, said method comprising the steps of:

positioning in said well an obturator having axially spaced first, second and third portions, said first portion being formed with a passage, said second portion being free from a passage and said third portion being of a cross section substantially less than that of a wall portion of said well, said obturator initially occupying a starting position in which said second portion cooperates with said wall portion to block flow of fuel through said well;

shifting said obturator in one direction into a first position wherein said first portion is received in said wall portion and feeding liquid fuel through said well into said reservoir via said passage in a direction opposite said first direction;

axially shifting said obturator in the opposite direction into a second position to dispose said second portion in said wall portion and block flow from said reservoir through said well;

axially shifting said obturator in said opposite direction into a third position whereby a clearance is provided between said wall portion and said third portion to allow flow of fuel from said reservoir through said well for lighter operation; and

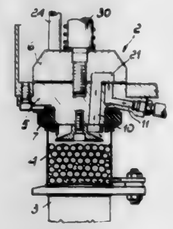
mounting a valve assembly in said well for controlled outflow of fuel therefrom.

4,448,227

DRESSING OR PRESERVING LIQUID FILLING UNIT FOR VACUUM FILLING MACHINES

Giuseppe Zanichelli, Via Mantova, 65, Parma, Italy

Filed Oct. 13, 1981, Ser. No. 310,590
Claims priority, application Italy, Oct. 24, 1980, 25573 A/80
Int. Cl.³ B65B *31/00*
U.S. Cl. 141—57 7 Claims



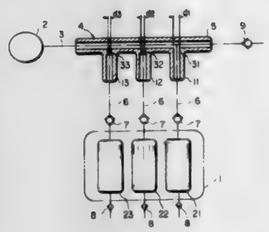
1. A dressing or preserving liquid filling unit for vaccum filling and the like machines, comprising a carousel, at least one valving element for the introduction of dressing liquid in cans and the like containers, said at least one valving element being carried on said carousel and including a lower body, associable in sealed relationship with one said container, and an upper body overlying and pivotable relatively to said lwoer body to sequentially carry out the steps of creating a vaccum in said container, filling said container with said dressing liquid, topping, where required, said container with said dressing liquid, and removing the vacuum from the thusly filled container, programmed actuating means being provided for said upper body, wherein, according to the improvement, said programmed actuating means comprise a cam following element carried by said upper body and a fixed camming path arranged above a processing path followed by said containers and engaged by said cam following element to bring said upper body cyclically into positions corresponding to said steps.

4,448,228

AIR BAG SYSTEM HAVING A BRANCHED JOINT

Nobuyuki Hashimoto, Toyota, and Takemi Hattori, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 29, 1981, Ser. No. 335,524
Claims priority, application Japan, Jan. 10, 1981, 56-1310[U]
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—114 1 Claim



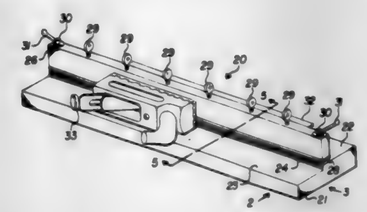
1. An air bag system for a back rest comprising a plurality of inflatable air bags; an air source for supplying air to said air bags, a branched joint for distributing the air from said air source to said air bags; check valves, each being provided between said joint and said air bags for allowing the air to flow to the air bags; and openings of ports of said joint to branch pipes being different in cross-sectional area to regulate the order of inflation of the air bags; the area of the opening of the port for the at least one of the air bags against which the waist of an occupant rests being arranged such that said one of the air bags is fully inflated first.

4,448,229

PLANING JIG

William D. Woods, and John H. Pigman, both of Phoenix, Ariz., assignors to International Design Corporation, Phoenix, Ariz.

Filed Mar. 5, 1982, Ser. No. 355,210
Int. Cl.³ B27C *1/14*
U.S. Cl. 144—129 16 Claims



1. A planing jig for facilitating hand planing an edge of a flat work piece using a bench plane having a planar sole surface, a blade having a straight cutting edge parallel to and extending from the sole surface and a planar side surface which is perpendicular to the sole surface and perpendicular to the cutting edge, said blade being spaced inwardly from said side surface, said planing jig including in combination:

(a) a platen, comprising:

(i) a horizontal planar upper surface, and

(ii) a horizontal planar lower surface, parallel to said upper surface, and

(iii) a vertical planar guide surface, perpendicular to and located between said upper and lower surfaces, wherein the maximum vertical dimension from said lower surface to any point on said guide surface is less than the minimum distance between the blade and the side surface of such bench plane, and

(iv) an edge groove located immediately between said guide surface and said upper surface, and shaped in such a manner that, when such bench plane is positioned with the side surface thereof in contact with said lower surface, and the sole surface of such plane is in contact with said guide surface, the blade of such plane cannot come into contact with any material comprising said platen, and

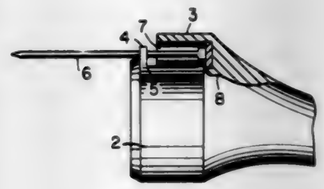
(b) means for clamping a work piece securely onto said upper surface of said platen with the edge to be planed extending beyond said upper surface and above said edge groove.

4,448,230

NAIL HOLDING HAMMER

Claude E. Reed, 7400 N. Adams Rd., North Adams, Mich. 49262

Filed Mar. 18, 1982, Ser. No. 359,569
Int. Cl.³ B25C *1/00*
U.S. Cl. 145—30 A 1 Claim



1. In a nailing hammer having a handle, a head affixed to the

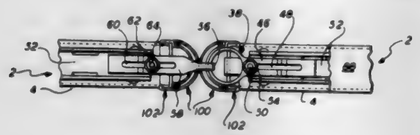
handle, a poll defined on the head having a circumference and defining a flat nail driving surface, the improvement comprising an elongated socket defined in the head at the poll adjacent the poll circumference and having an axis substantially perpendicular to the poll nail driving surface, said socket having an open end disposed toward the poll circumference and a closed end axially spaced from said open end a distance significantly greater than the axial dimension of the head of a nail to be retained within the socket, a permanent magnet within said socket defining said closed end thereof having a nail head engaging surface substantially parallel to the poll nail driving surface, a pair of spaced nail holing lugs defined upon the poll adjacent the circumference thereof spaced from said socket open end a distance greater than the axial dimension of the head of a nail to be retained within the socket and laterally offset with respect to said socket axis whereby said lugs define a nail receiving notch for receiving the shank of a nail whose head is received within said socket and held against said magnet, said notch and magnet nail engaging surface mounting the length of a retained nail substantially perpendicular to the poll nail driving surface permitting the nail to be started in the direction it is to be driven.

4,448,231

PANEL SYSTEM EDGE SEALING MEANS

Stephen A. Salkeld, Mechanicsburg; Mark E. Stock, McSherrystown, both of Pa., and Robert J. Welch, West Chicago, Ill., assignors to Litton Business Systems, Inc., York, Pa.

Continuation of Ser. No. 047,650, Jun. 11, 1979, abandoned.
This application Aug. 5, 1982, Ser. No. 405,625
Int. Cl.³ A47G 5/00
U.S. Cl. 160—135 **1 Claim**



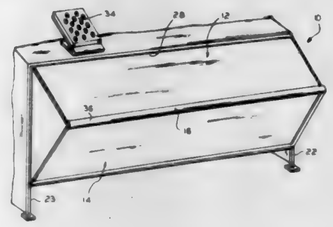
1. In a room divider panel system comprised of two or more panels, each of said panels having a vertical edge, spring-biased means connected between said panel, said spring-biased means permitting two or more of said panels to be drawn against each other along said panels' vertical edges in any of a plurality of angular positions relative to each other, an improved means for sealing the vertical edges of adjoining panels so that said vertical edges are sealed along their length when two or more of said panels are joined in any of a plurality of angular positons, an identical one of said edge sealing means being mounted along each vertical adjoining edge of each of said adjoining panels, each of said adjoining edge sealing means being comprised of a first, outer, relatively yieldable substantially semicircular elastometric sealing portion and a second, inner, relatively rigid portion, said first portion being substantially concentric in configuration with said second portion, said second portion being convexly arcuate in cross section, whereby said spring-biased means draws each of said first elastometric substantially semi-circular sealing portions of adjoining edge sealing means into contact with each other to produce an intimate sealing relationship along the vertical edges of adjoining panels when said panels are in a plurality of angular positions relative to each other.

4,448,232

BI-FOLD DOOR ASSEMBLY

Coy E. McQueen, and Lynn O. Twedt, both of Harvard, Ill., assignors to Erect-A-Tube, Inc., Harvard, Ill.

Filed May 3, 1982, Ser. No. 374,178
Int. Cl.³ E05D 15/26
U.S. Cl. 160—207 **12 Claims**



1. A bi-fold door assembly for a building, comprising:
an upper door section and a lower door section hinged to one another, said door sections having front surfaces facing outwardly of said building and rear surfaces facing inwardly thereof;
a door track mounted adjacent said inwardly facing rear surfaces of said upper and lower door sections in an upwardly and inwardly inclined position relative to said building;
means associated with the bottom of said lower door section cooperating with said door track;
said upper and lower door sections being disposed in a common plane when fully lowered;
said common plane being inclined upwardly and inwardly relative to said building to lie in a plane defined by said door track; and
a bearing surface on said door track adapted to support said upper and lower door sections when fully lowered.

4,448,233

PULLING DEVICE

Rombout M. Rombouts, BT Capelle A/D Yssel, Netherlands, assignor to Allpac Holding B.V., Raamsdonkveer, Netherlands

Filed Nov. 9, 1982, Ser. No. 440,270
Claims priority, application Netherlands, Feb. 5, 1982, 8200459
Int. Cl.³ E06B 9/208
U.S. Cl. 160—319 **3 Claims**



1. A pulling device for a material wound around a roll shaft comprising in combination:
(a) a cord pulley having a projecting hub,
(b) a housing for rotatably supporting said cord pulley and being provided with a lateral opening for passing the projecting hub of said pulley adaped to be connected to a roll shaft and provided with a cord opening for passing the free ends of a cord wound about said cord pulley,
(c) clamp means having an opening for passing said cord ends situated within said housing at one side of the cord pulley periphery between said pulley and the boundary of said cord opening in said housing,
(d) said housing defining a chamber between the boundary of said cord opening and said cord pulley permitting of a tilting motion of said clamp,
(e) end portions on said clamp projecting toward said pulley at both sides of its opening for said cord adapted to abut against the housing at said boundary of said cord opening in the housing permitting a rotation of said cord pulley when pulling one of said cord ends from outside of the housing and permitting a tilting of said clamp when a rotational force is exerted on said hub of said cord pulley.

4,448,234

METHOD FOR FORMING SAND CORES AND MOLDS

Brian D. Kelley, and Patrick H. Stewart, both of Danville, Ill., assignors to CL Industries, Inc., Danville, Ill.

Filed Aug. 5, 1982, Ser. No. 405,415
Int. Cl.³ B28B 7/34
U.S. Cl. 164—16 **7 Claims**

1. In a method of forming sand cores or molds which comprises
mixing a major amount of sand with a minor amount of an organic peroxide, hydroperoxide or hydroxy-hydroperoxide, and an acid-curable, condensation-type resin or a condensation-type resin precursor or a condensation-type resin prepolymer,
forming said mixture into the shape of a core or mold, and
gassing said formed mixture with sulfur dioxide for a period of a few seconds to several minutes at a temperature from room temperature or ambient to about 300° F. to cause resin polymerization; the improvement comprising adding to said mixture, prior to the forming step, a hydrogen peroxide composition comprising a major amount of concentrated hydrogen peroxide and minor amounts of phosphoric acid, a halogen-containing acid, and a water-soluble perborate salt.

4,448,235

VARIABLE-PERMEABILITY, TWO-LAYER PATTERN COATING FOR LOST FOAM CASTING

Gary E. Bishop, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 26, 1982, Ser. No. 402,108
Int. Cl.³ B22C 9/02, 7/00
U.S. Cl. 164—34 **6 Claims**



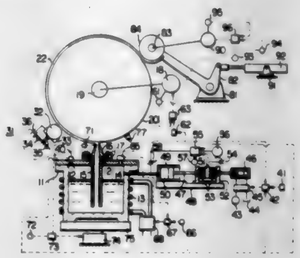
1. A coated pattern for casting reduced porosity metal by a lost foam process comprising
a fugitive pattern adapted to be substantially concurrently decomposed and duplicated by molten metal to form a casting, said decomposition forming vapors that produce pores in the casting when entrapped in the metal, and
a coating applied to the pattern and comprising
a thermally insulative material that is substantially stable at metal casting temperatures, and
a material adapted to be substantially vaporized by heat from pattern-duplicating molten metal during casting and being arranged within the coating such that said insulative material thermally insulates said vaporizable material from the pattern and thereby is adapted to insulate the vaporizable material from pattern-duplicating molten metal during casting,
said materials cooperating to initially retard gas flow through the coating but to readily vent pattern-derived vapors through the residual material after vaporization of said vaporizable material, said insulation within said coating being adapted to suitably delay vaporization to allow pattern-derived vapors to reduce turbulence in the molten metal, but thereafter allowing pattern-derived vapors to vent through the coating to avoid entrapment within the metal.

4,448,236

APPARATUS FOR PRODUCING THIN METAL SHEET

Tomoaki Kimura, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 151,492, May 27, 1980, abandoned.
This application Mar. 16, 1982, Ser. No. 358,614
Claims priority, application Japan, May 25, 1979, 54-63860; May 25, 1979, 54-63868; Jul. 2, 1979, 54-82661
Int. Cl.³ B22D 11/06
U.S. Cl. 164—423 **17 Claims**



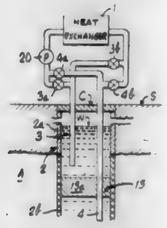
1. An apparatus for producing thin metal sheet, comprising:
a nozzle;
a rotary drum;
means for rotating said drum and applying molten metal to the peripheral surface of said rotary drum through said nozzle at a predetermined application pressure, and allowing said molten metal to be cooled and solidified on said peripheral surface of said rotary drum to produce a thin metal sheet as said drum rotates;
crucible means for containing the molten metal;
an inlet end of said metal nozzle extending into said crucible means to be immersed in the molten metal;
said crucible means having a gas plenum formed in its upper portion above the molten metal;
a gas-pressure chamber device of a variable volume and fluid communicating with said gas plenum;
thickness sensor means to produce a signal correlated to the thickness of said thin metal sheet;
means responsive to said signal to produce a control instruction;
controlling means adapted to cause a change of volume of said gas-pressure chamber device to adjust the pressure in said gas plenum, in accordance with the control instruction formed in response to the output of said thickness sensor means sensitive to the thickness of said thin metal sheet, thereby to control the rate of application of said molten metal in accordance with the change of thickness of said thin metal sheet; and
said controlling means including a mechanical actuator drivingly connected to said expansible chamber device and having means for increasing the spring constant of said actuator.

4,448,237

SYSTEM FOR EFFICIENTLY EXCHANGING HEAT WITH GROUND WATER IN AN AQUIFER

William Riley, RD #1, P.O. Box 223, Pittstown, N.J. 08867

Continuation-in-part of Ser. No. 207,405, Nov. 17, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 404,354
Int. Cl.³ F24H 7/04
U.S. Cl. 165—2 21 Claims



8. A system capable of operation through a single well bore for using ground water in an aquifer as a heat source and a heat sink comprising:

inlet means disposed in the upper portion of said aquifer for admitting the ground water thereinto from said upper portion;

outlet means disposed in the upper portion of said aquifer for exhausting ground water therefrom into said upper portion;

inlet means disposed in the lower portion of said aquifer for admitting the ground water thereinto from said lower portion; and

outlet means disposed in the lower portion of said aquifer for exhausting ground water therefrom

into said lower portion;

heat exchanger means for exchanging heat with the ground water conducted through said water-conducting means; and

means for producing ground water flow from and to said aquifer through said water-conducting means to selectively create a temperature difference in the normally uniform temperature ground water in said aquifer inhibiting convective mixing by causing warmer water to accumulate in the upper portion and cooler water to accumulate in the lower portion, said flow-producing means comprising:

means for drawing ground water from which heat is to be extracted in said heat exchanger means, through said upper aquifer inlet means into said water-conducting means;

means for returning ground water which has absorbed heat in said heat exchanger means through said upper aquifer outlet means into said upper aquifer portion;

means for drawing ground water which is to absorb heat in said heat exchanger means, through said lower aquifer inlet means into said water-conducting means; and

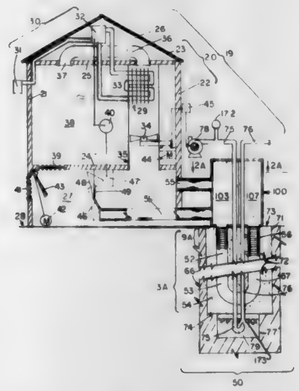
means for returning ground water from which heat has been absorbed in said heat exchanger means, through said lower aquifer outlet means into said lower aquifer portion.

4,448,238

HEAT EXCHANGE SYSTEM AND PROCESS FOR HEATING AND COOLING USING GEOTHERMAL ENERGY

Lewis Singleton, Jr., Palo Duro Club, Rte. 2, Canyon, Tex. 79015, and James M. Whitney, 3403 Paramount, Amarillo, Tex. 79109

Filed Sep. 11, 1980, Ser. No. 186,114
Int. Cl.³ F24D 11/00
U.S. Cl. 165—45 3 Claims



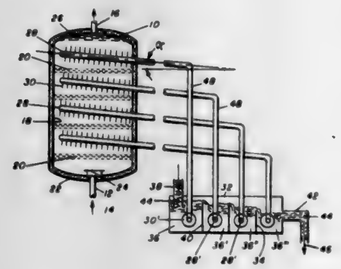
1. A heating and cooling system for a house comprising, in operative combination, a heat exchange unit for altering the temperature of air, ducts leading from said unit to rooms in said house and air confinement means extending from said rooms to said heat exchange unit, and a geothermal heat exchange system having an outlet duct operatively connected to said heat exchange unit, a mass of ground extending downward 30 to 80 feet from the upper surface of said ground, a downwardly extending hole extending from said surface of said ground, a pair of downwardly extending ducts in the hole, a space between said ducts and the interior of said hole, and a porous mass in said space between said ducts and the interior of said hole, said space containing water vapor but substantially completely free of liquid water, each of said pair of ducts in heat conducting relationship with said porous mass and downwardly extending into said ground to a depth of 30 to 80 feet, each of said ducts joined to each other at a bottom end thereof, said ducts each having walls with a continuous series of corrugations surrounding an internal cavity, each of said corrugations having a centrally extending internal ridge and a radially extending internal furrow, each of said ridges and furrows extending transversely to the length of the duct, the surface area of the duct wall being at least 2π D L for each unit of length of the duct wall measured parallel to the length of the duct in units of length greater than L wherein D is minimum diameter of the duct between said internal ridges and L is the length in feet between said ridges of said corrugations, the cross-section area of the internal furrows of the duct measured transversely between said internal ridges being between 25 and 33% of the cross-sectional area of the cavity of said duct measured transversely to the length of the duct and between the internal ridges, and an inlet duct of said pair of ducts operatively connects to an air discharge opening from said rooms, and wherein a portion of the hole extends downwardly below said ducts, a liquid conduit means extends below said ducts in the hole, and a liquid impelling means located below said ducts is operatively connected to said liquid conduit means whereby to move liquid from the portion of the hole below said ducts upwardly and out of said hole and maintain the exterior surface of said ducts free of contact with liquid water.

4,448,239

HEAT-PIPE-DIODE-CHARGED THERMAL

Donald K. Edwards, Irvine, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1982, Ser. No. 369,314
Int. Cl.³ F28D 15/00
U.S. Cl. 165—47 6 Claims



1. A heat-pipe-diode charged thermal reservoir which comprises:

tank means for holding a reserve of heated feed water, which includes;

a feed water vessel having thermally insulated walls;

an outlet connection for hot feed water operatively disposed on an upper end of said vessel;

an inlet connection for incoming cold feed water operatively disposed on a lower end of said vessel; and

a baffle member fixedly positioned on the bottom of said vessel opposite said inlet connection, said baffle member helping to stratify feed water in said vessel;

means for stratifying said feed water in said tank means, which includes;

a plurality of horizontally spaced apart screens supported from the interior walls of said vessel;

means for holding a waste stream remote from said tank means, which includes;

a compartmented evaporator tank, operatively disposed at a lower level than said tank means, having a waste fluid inlet connected to a top side of a first compartment and a waste tank output connection positioned at a lower level on the side of another compartment;

baffle means for dividing said waste stream flow and for permitting overflow of waste stream from said first compartment to other compartments, which includes;

a plurality of baffle walls for dividing said tank into multiple decreasingly sized compartments for permitting waste fluid to exit by gravity in the direction of the waste fluid flow;

means for automatically extracting heat from said waste stream and for using said heat to preheat incoming and stored feed water; which includes

a plurality of inclined heat-pipe-diode condenser members operatively disposed between each layer of said means for stratifying;

a plurality of heat receiving members fluidically connected to said condenser member, and horizontally disposed in separate sections of said compartments evaporator tank;

a plurality of vertical pipes fluidically connecting each of said condenser members to a receiving member, said condenser member located in the hottest and upper stratum of said feed water vessel is fluidically coupled to a receiving member located in the hottest compartment of said evaporator tank, each progressively cooler condenser member being fluidically connected to a progressively cooler receiving member in said evaporator tank; and

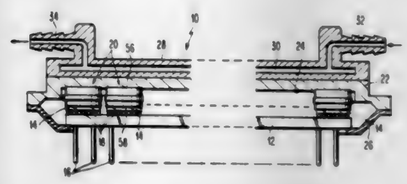
a heat transfer fluid sealed in each of said condensor and receiving members.

4,448,240

TELESCOPING THERMAL CONDUCTION ELEMENT FOR COOLING SEMICONDUCTOR DEVICES

Andre Sharon, Arlington, Mass., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,884
Int. Cl.³ F28F 7/00
U.S. Cl. 165—80 C 7 Claims



1. An extensible bridge element for use in a semiconductor package to conduct heat from a semiconductor device to a cold plate located in close proximity to the device comprising

a first plate to be placed in contact with a semiconductor device surface

a first spiral strip of thin heat conductive material joined along an edge to said first plate,

a second plate to be placed in contact with a heat sink surface spaced from said device surface,

a second spiral strip of thin heat conductive material interleaved with said first spiral strip in a laterally displaced overlapping and slideably contacting telescoping relation, said second spiral strip joined along an edge to said second plate, and

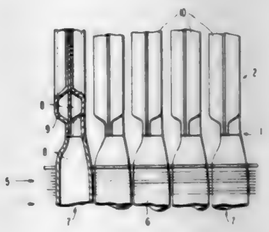
means to bias said first and said second plates outwardly relative to each other, said element capable in use of adjusting to spacing variations between the device surface and heat sink surface.

4,448,241

HEAT-EXCHANGER WITH A BUNDLE OF PARALLELLY EXTENDING PIPES ADAPTED TO BE ACTED UPON BY AIR

Rudolf Andres; Helmut Grantz, both of Sindelfingen; Wolf-Dietrich Münzel, Ehningen, and Wolfgang Odebrecht, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,571
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143332
Int. Cl.³ F28D 15/00
U.S. Cl. 165—104.14 33 Claims



1. A heat-exchanger with a bundle of metallic pipe means extending substantially parallelly to one another and adapted to be acted upon by air, said pipe means being hermetically

closed and constructed in the manner of heat-pipe means, and at least one metallic heat-exchanger head means extending transversely to the pipe bundle and adapted to be traversed by a heat carrier medium, said heat-exchanger head means being sealed off from a flow point of view with respect to the heat-pipe hollow spaces of the pipe bundle but being in heat-transferring connection therewith, characterized in that the heat-exchanger head means is formed of at least one expanded three-layered flat partial composite laminated body means per pipe row which includes two separate channel means, said body means being aligned substantially parallelly to the associated pipe row, one of the channel means of a body means being operatively connected with the heat-pipe hollow spaces of the pipe row to form a heat-pipe channel means while the other channel is adapted to be acted upon by a heat carrier medium and forms a heat carrier channel means.

4,448,242

HEAT-EXCHANGER WITH A BUNDLE OF PARALLELLY EXTENDING PIPES ADAPTED TO BE ACTED UPON BY AIR

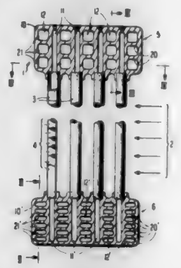
Rudolf Andres; Helmut Grantz, both of Sindelfingen; Wolf-Dietrich Münzel, Ehningen, and Wolfgand Odebrecht, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 28, 1982, Ser. No. 437,202

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143333

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.14 **20 Claims**



1. A heat-exchanger comprising a bundle of substantially parallelly extending metal pipe means adapted to be acted upon by air, which are arranged in at least one row, said pipe means being hermetically sealed and constructed in the manner of heat-pipe means forming heat-pipe hollow spaces, at least one metallic connection box means extending transversely to the pipe bundle and surrounding section-wise the heat-pipe hollow spaces of the pipe bundle, said connection box means being adapted to be traversed by a heat carrier medium and being sealed off with respect to the heat pipe hollow spaces of the pipe bundle but being in heat-transferring connection with said heat pipe hollow spaces, characterized in that

(a) the connection box means is formed essentially of an extruded profile means whose profile direction is disposed substantially parallel to the at least one pipe row;

(b) a longitudinally extending slot-like heat pipe channel means being provided in the extruded profile means within the area of each pipe row, said slot-like heat pipe channel means being closed over the entire circumference and at the end faces thereof and being open exclusively toward the individual pipe means of the corresponding pipe row;

(c) longitudinally extending heat carrier channel means open at the end faces of the extruded profile means being provided inside of the extruded profile means on both sides of each heat pipe channel means; and

(d) guide cover means sealingly secured at both end faces of the extruded profile means which operatively connect adjacent heat carrier channel means into a channel system adapted to be traversed uniformly by a respective medium.

4,448,243

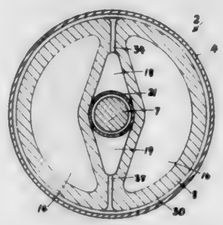
HEAT EXCHANGER

John R. Pain, Montmorency, Australia, assignor to Heat Transfer Pty. Ltd., Victoria, Australia

Filed Jun. 29, 1981, Ser. No. 278,080

Int. Cl.³ F28F *19/00*

U.S. Cl. 165—134 R **8 Claims**



1. A heat exchanger for primary and secondary fluids between which heat exchange occurs, said exchanger comprising at least first, second and third coaxially disposed tubes of successively larger diameters, said tubes being spaced apart by a pair of end manifolds to form annular fluid flow passages for said primary and secondary fluids between adjacent tubes,

at least one of said manifolds having a generally conical portion and having first, second and third pairs of sealing elements which sealingly engage the inner surfaces of the first, second and third tubes respectively, circumferential flow passages located between the sealing elements of at least said second pair,

said conical portion including first and second chambers formed therein for the primary and secondary fluids and wherein, in transverse section of said conical portion, said first and second chambers lie on opposite sides of a diametrical line,

a third chamber located in said conical portion between said first and second chambers,

a tubular member extending through third chamber so as to divide said third chamber into three chambers: one central chamber within said tubular member, and circulating fluid inlet and outlet chambers on opposite sides of said central chamber, said diametrical line passing through said circulating fluid inlet and outlet chambers and said central chamber,

said conical portion further including generally radial ducts extending from respective circulating fluid inlet and outlet chambers to said circumferential flow passage on generally opposite sides thereof,

said manifold further including circulating fluid inlet and outlet ducts for fluid communication to the circulating fluid inlet and outlet chambers respectively whereby in use circulating fluid can pass through the circulating fluid inlet duct, to the circulating fluid inlet chamber, through one of the radial ducts to the circumferential passage and can flow through the passage and enter the other radial duct, then flow through the circulating fluid outlet chamber and thence out of the circulating fluid outlet duct.

4,448,244

HEAT-TRANSMITTING DEVICE FOR HEAT PUMPS

Hans Demuth, Voehringen; Peter Kropp, Nersingen, and Karl Noll, Illerrieden, all of Fed. Rep. of Germany, assignors to Wieland-Werke AG, Ulm, Fed. Rep. of Germany

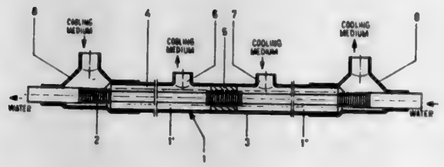
Division of Ser. No. 300,858, Sep. 10, 1981, Pat. No. 4,406,137.

This application May 31, 1983, Ser. No. 499,615

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034965

Int. Cl.³ F25B *15/00*

U.S. Cl. 165—141 **16 Claims**



1. A heat transmitting apparatus, comprising an elongate tubular shell, an elongate core tube adapted to have a medium flow therethrough and extending through said shell lengthwise thereof, a closed space being defined between the interior surface of said shell and the exterior surface of said core tube, a fill member which is disposed in and divides said space into separate first and second portions which are located on opposite sides of said fill member, and means defining first, second, third and fourth openings through said shell, said first and third openings communicating with said first portion of said space and said second and fourth openings communicating with said second portion of said space, said first and second openings being adjacent said fill member and said third and fourth openings being spaced from said fill member.

4,448,245

RADIATOR

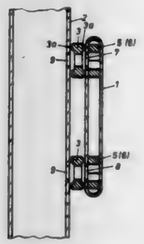
Jacques de Palézieux, Hauterive, Switzerland, assignor to Runtal Holding Company S.A., Glarus, Switzerland

Filed Feb. 19, 1982, Ser. No. 350,354

Claims priority, application Switzerland, Mar. 12, 1981, 1678/81

Int. Cl.³ F28F *9/02*

U.S. Cl. 165—174 **6 Claims**



1. A radiator comprising mutually parallel flat tubes connected to header pipes for the feed and return flow of the heating medium, said flat tubes having connection bores formed at a distance from each end of each said flat tube and on opposite sides at a distance from the longitudinal axis of the tube, and said flat tubes having inside support parts resting against the mutually opposite inner tube walls in the region of the connection bores, the improvement wherein each said support part is angled into a U-shape of approximately the same width as the internal width of the tube, said support part having two bent ends each of which being formed for coaxially surrounding a portion of the circumference of one of the connection bores, said support part also forming the end closure wall of the flat tube and being welded thereto along the end edge of the tube, the header pipes having connection bores in alignment with the flat tube connection bores, connecting rings provided for connecting the flat tubes and header pipes together, the connecting rings having tapered end faces for applying pressure welding and being disposed in alignment with the aligned connection bores coaxially with each bent end of the U-shaped support part for connecting by pressure welding the flat tubes to the header pipes.

4,448,246

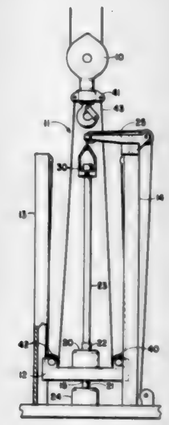
APPARATUS FOR SETTING CASING IN AN OIL WELL

William Guier, 3100 E. 71st St., Tulsa, Okla. 74105

Filed Jul. 12, 1982, Ser. No. 397,516

Int. Cl.³ E21B *15/00, 19/02*

U.S. Cl. 166—77 **2 Claims**



1. In combination with a drilling rig of sufficient capacity for drilling the bore of an oil well with a drawworks and mast supporting a crown block through which the cable from the drawworks runs through the crown block in suspension of the traveling block over the well bore,

a string of casing in the well bore,

a mechanical linkage connecting the traveling block and the casing, including

a pair of posts vertically extended upward from the ground on each side of the well bore and a pair of pulleys connected to the casing string with a cable running from the upper portion of each post down through the pair of pulleys and up to the traveling block, whereby

the weight-bearing capacity of the mechanical linkage is great enough to enable the drawworks and cable of the drilling rig to suspend the casing string in the well bore by the mechanical advantage of the linkage.

4,448,247

GEOTHERMAL WELL HEAD CLEAN OUT AND SHUT OFF ASSEMBLY

Lehman T. Reed, Bakersfield, Calif., assignor to Midway Fishing Tool Company, Long Beach, Calif.

Filed Sep. 3, 1982, Ser. No. 414,903

Int. Cl.³ E21B *33/068*

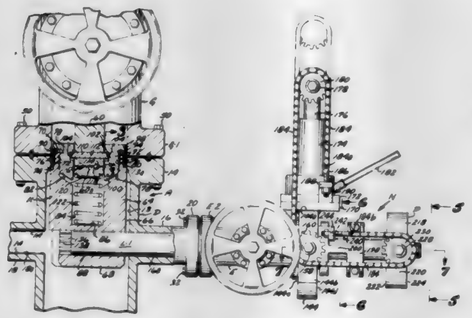
U.S. Cl. 166—82 **14 Claims**

1. In combination with a geothermal well that includes casing that extends downwardly from a first flange to a geological zone from which pressurized fluid containing minerals flows; a substantially vertical first tubular member that includes a lower second flange secured to said first flange and an upper third flange, first and second horizontal axially aligned, lateral tubular member that extend outwardly from said first

tubular member in opposite directions to terminate in fourth and fifth flanges; first, second and third flanged gate valves secured to said fourth, fifth and third flanges, each of said gate valves having a longitudinal passage therein; a first assembly for cleaning deposited solid minerals from the interior surfaces of said tubular lateral members without killing said well, said first assembly including:

a plurality of elongate rigid members including a first elongate rigid member that include threaded ends that permit said first elongate member to have other of said elongate rigid members removably connected thereto end to end with each of said rigid elongate members having a diameter slightly less than that of said first and second tubular laterals;

b. first means removably mounted on said first gate valve that permit said first elongate rigid member to be inserted in said passage therein and removably grip said first elon-



gate rigid member when said first gate valve is placed in an open position and said first elongate rigid member has a leading end thereof subject to said pressurized fluid; and

c. second means operatively associated with said first means for intermittently moving said first elongate member forwardly through said first gate valve when said first gate valve is in an open position, with each intermittent move occurring after one of said rigid elongate members is connected to said first elongate rigid member and others of said elongate rigid members are sequentially added thereto, and each intermittent move being preceded by said first means releasing said grip on one of said elongate rigid members and re-establishing said grip on the one of said rigid elongate members that has been added thereto after said intermittent move has been completed, and said first elongate rigid member as it advances through said first tubular lateral scraping said deposited foreign material from the interior surface thereof.

4,448,248

ENHANCED FLOW TOOL POSITIONER

Edward C. Schwind, Burleson, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

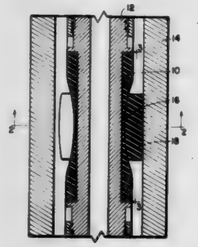
Filed Jun. 26, 1981, Ser. No. 277,910
Int. Cl.³ E21B *17/10*
U.S. Cl. 166—241 **4 Claims**

1. Apparatus for centering a tubular member comprising:

a generally cylindrical resilient body adapted to be mounted around said tubular member; and

at least three resilient vanes mounted longitudinally about said resilient body, each of said at least three resilient vanes having a varying cross-sectional width,

said generally resilient body varying in diameter in inverse proportion to the cross-sectional width of each of said at least three resilient vanes wherein the cross-sectional area



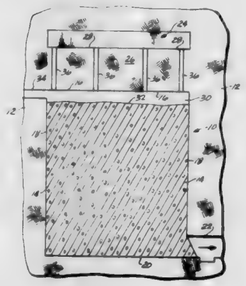
between any two adjacent resilient vanes is substantially constant along the axis of said tubular member.

4,448,249

METHOD OF IN SITU OIL SHALE RETORT IGNITION WITH OXYGEN CONTROL

Frederick M. Gragg, Seabrook, Tex.; Jian C. Shen, Santa Ana, Calif., and Carl L. Jacobson, Rifle, Colo., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Jun. 18, 1982, Ser. No. 389,847
Int. Cl.³ E21B *43/247, 47/06*
U.S. Cl. 166—251 **31 Claims**



1. A method for igniting an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale in a retort site in a subterranean formation containing oil shale, the method comprising the steps of:

(a) introducing into a fragmented permeable mass of formation particles in an in situ oil shale retort, a hot ignition gas comprising oxygen at a selected concentration for heating the top surface of the fragmented mass;

(b) determining the percentage of the fragmented mass top surface that is at a temperature less than the ignition temperature of oil shale; and thereafter

(c) increasing the concentration of oxygen in the ignition gas by an amount inversely proportional to the percentage determined in step (b).

4,448,250

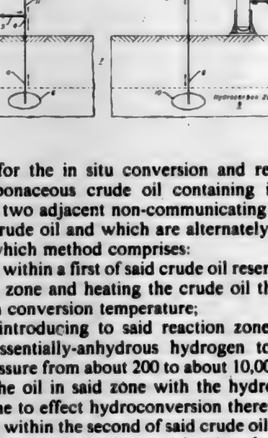
METHOD OF FREEING A HOLLOW TUBULAR MEMBER

Claude E. Cooke, Jr., and Leon H. Robinson, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Apr. 22, 1983, Ser. No. 487,550
Int. Cl.³ E21B *31/00, 47/06*
U.S. Cl. 166—255 **10 Claims**

1. A method for freeing and releasing a hollow tubular member which has become stuck by differential pressure against the wall of a wellbore, said method comprising the steps of:

measuring temperature distribution around the circumference of said member at a predetermined vertical depth where said member is stuck to determine which side of said member is stuck against the side of the wellbore; and



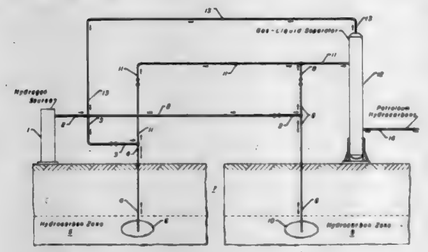
perforating the side of said member determined to be stuck to place the interior of said member in fluid communication with the adjacent formation and to free said member from the side of the wellbore by relieving the differential pressure between the member and the formation.

4,448,251

IN SITU CONVERSION OF HYDROCARBONACEOUS OIL

Laurence O. Stine, Western Springs, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 223,467, Jan. 8, 1981, abandoned. This application Dec. 9, 1982, Ser. No. 448,117
Int. Cl.³ E21B *43/24, 43/40*
U.S. Cl. 166—263 **7 Claims**



1. A method for the in situ conversion and recovery of heavy hydrocarbonaceous crude oil containing indigenous trace metal from two adjacent non-communicating reservoirs containing said crude oil and which are alternately pressured and recovered, which method comprises:

(a) establishing within a first of said crude oil reservoirs an in situ reaction zone and heating the crude oil therein to a hydrocarbon conversion temperature;

(b) thereafter introducing to said reaction zone sufficient elemental, essentially-anhydrous hydrogen to generate therein a pressure from about 200 to about 10,000 psig and contacting the oil in said zone with the hydrogen for a sufficient time to effect hydroconversion therein;

(c) establishing within the second of said crude oil reservoirs a second in situ reaction zone and heating the crude oil therein to a hydrocarbon conversion temperature;

(d) depressuring said first reaction zone to yield an effluent comprising hydroprocessed crude oil and unreacted elemental hydrogen;

(e) separating the effluent from said first reaction zone to recover a hydroprocessed crude oil and a gaseous component comprising elemental hydrogen;

(f) introducing to said second reaction zone sufficient elemental, essentially-anhydrous hydrogen, a portion of which is recovered in step (e), to generate therein a pressure from about 200 to about 10,000 psig and effecting hydroconversion of crude oil in the second reaction zone; and,

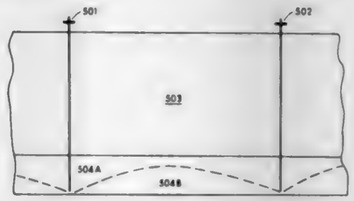
(g) depressuring said second reaction zone to yield an effluent comprising hydroprocessed crude oil and unreacted elemental hydrogen.

4,448,252

MINIMIZING SUBSIDENCE EFFECTS DURING PRODUCTION OF COAL IN SITU

Xerxes T. Stoddard, Denver; Vesper A. Vaseen, Wheat Ridge, and Ruel C. Terry, Denver, all of Colo., assignors to In Situ Technology, Inc., Golden, Colo.

Division of Ser. No. 273,378, Jun. 15, 1981. This application Apr. 18, 1983, Ser. No. 486,088
Int. Cl.³ E21B *43/00, 43/243*
U.S. Cl. 166—263 **1 Claim**



1. A method of removing flowable water from a wet underground coal seam, comprising the steps of

drilling a first well from the surface of the earth into an underground coal seam,

drilling a second well from the surface of the earth into the underground coal seam, the second well being spaced apart from the first well,

drawing down the localized water table by pumping water from the first well and the second well,

terminating pumping water from the first well and the second well,

injecting an inert gas into the first well under sufficient pressure to displace water with the resultant flow of water out of the second well,

continuing injection of the inert gas into the first well until water ceases to flow out of the second well,

terminating injection of the inert gas into the first well, then pumping water out of the second well until water drawdown.

4,448,253

MODERATED BOROHYDRIDE-INDUCED RESERVOIR DEWATERING

Jeffrey G. Southwick, and Lee N. Morgenthaler, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 10, 1983, Ser. No. 473,887
Int. Cl.³ E21B *43/25*
U.S. Cl. 166—300 **7 Claims**

1. A well treating process for improving the productivity of an oil or gas-productive reservoir by removing water from the reservoir without fracturing the reservoir comprising:

dissolving an alkali metal borohydride in an aqueous alkaline solution which has a pH of at least about 10 and contains at least one dissolved compound which reacts

relatively slowly with water at the reservoir temperature to yield an acid capable of lowering the pH of the borohydride-containing solution;

flowing the borohydride-containing solution into the reservoir at a rate which is correlated with the composition of the solution so that a significant volume of the solution in which a significant portion of the borohydride has not yet reacted is displaced into the reservoir; and

after substantially all of the borohydride has reacted, initiating the production of fluid from the well.

4,448,254

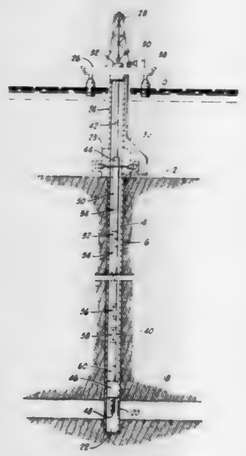
TESTER VALVE WITH SILICONE LIQUID SPRING

Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 354,529, Mar. 4, 1982. This application Sep. 14, 1982, Ser. No. 417,947

Int. Cl.³ E21B *34/06*

U.S. Cl. 166—373 **33 Claims**



1. A valve apparatus, comprising:

a housing having a flow passage disposed therethrough;

flow valve means disposed in said housing and movable between a closed position wherein said flow passage is closed, and an open position wherein said flow passage is open;

power mandrel means, disposed in said housing, said power mandrel means being operatively associated with said flow valve means for moving said flow valve means from its closed position to its open position upon movement of said power mandrel means in a first direction longitudinally within said housing from a first position to a second position;

a power piston included in said power mandrel means, said power piston including:

a main piston having a first differential area; and

a booster piston means, operably associated with said main piston, for initially providing an additional differential area to said first differential area of said main piston, and for thereby providing an additional initial force for moving said flow valve means from its closed position to a partially open position;

power passage means disposed in said housing for transmitting pressure from a well annulus external of said housing to a first side of said power piston;

a first chamber disposed in said housing and filled at least partially with a compressible liquid, a second side of said power piston being in fluid communication with said first chamber so that pressure from said compressible liquid is transmitted to said second side of said power piston;

a second chamber disposed in said housing;

a floating piston means disposed in said second chamber and dividing said second chamber into a first zone and a second zone;

an equalizing passage means, disposed in said housing for transmitting said pressure from said well annulus external of said housing to said second zone of said second chamber;

a pressurizing passage communicating said first chamber with said first zone of said second chamber;

a first back pressure check valve means, disposed in said pressurizing passage, for allowing liquid to flow from said first zone of said second chamber through said pressurizing passage into said first chamber when a pressure in said first zone of said second chamber exceeds a pressure of said compressible liquid in said first chamber by a first predetermined value, and for preventing liquid from flowing from said first chamber through said pressurizing passage to said first zone of said second chamber;

a depressurizing passage communicating said first chamber with said first zone of said second chamber; and

a second back pressure check valve means, disposed in said depressurizing passage, for allowing liquid to flow from said first chamber through said depressurizing passage into said first zone of said second chamber when the pressure in said first chamber exceeds the pressure in said first zone of said second chamber by a second predetermined value, said second predetermined value being greater than said first predetermined value, and for preventing liquid from flowing from said first zone of said second chamber through said depressurizing passage into said first chamber.

4,448,255

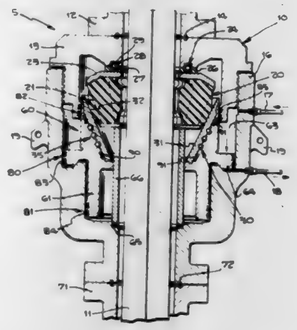
ROTARY BLOWOUT PREVENTER

Donald U. Shaffer, 2850 E. Coronado St., Anaheim, Calif. 92806, and Gary M. Oulrey, 540 Traffic Way, Arroyo Grande, Calif. 93420

Filed Aug. 17, 1982, Ser. No. 408,764

Int. Cl.³ E21B *33/06*

U.S. Cl. 166—387 **14 Claims**



1. In a blowout preventer having a housing, a metal reinforced, elastomeric, annular packing and a hydraulic wedging piston the improvement comprising:

a packing engaging and contracting element and bearing means for rotatably mounting the packing engaging and contracting element between said packing and said hydraulic wedging piston.

4,448,256

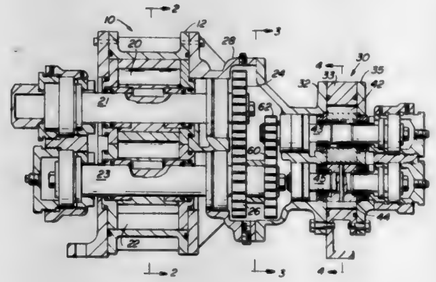
FOAM LIQUID PROPORTIONER

H. Alfred Eberhardt, Paoli; Kenneth F. Hoffman, Collegeville, and Raymond R. Petersen, Meadowbrook, all of Pa., assignors to Hale Fire Pump Company, Conshohocken, Pa.

Filed Jan. 28, 1982, Ser. No. 392,710

Int. Cl.³ A62C *35/00*

U.S. Cl. 169—15 **5 Claims**



1. In a foam liquid proportioner for introducing foam producing liquid into a stream of water including

a water motor driven by the flow of water discharged from a pressurized source and flowing through a flow path containing the water motor, and

a foam liquid pump in a flow path which bypasses the water motor and arranged to inject a metered amount of foam liquid into said stream of water,

said water motor having a rotor means including a rotating shaft driven by the water flowing through the water motor,

said foam liquid pump having rotor means including a rotating shaft,

the improvement comprising

step-up gear means in a drive connection between said water motor rotor means and said foam liquid pump rotor means for causing said foam liquid pump rotor means to rotate at a speed which is much faster than speed of rotation of said water motor rotor means to reduce the ratio of the liquid slippage flow to the total flow of said foam liquid pump, said step-up gear means including a large gear mounted on said rotating shaft of said water motor and a small gear mounted on said rotating shaft of said foam liquid pump in engagement with said large gear which said small gear is to be driven thereby at a stepped-up RPM,

and a mounting head means for mounting said foam liquid pump adjacent to said water motor with the longitudinal axis of said rotating shaft of said water motor being parallel to and spaced apart from the longitudinal axis of said rotating shaft of said foam liquid pump, said mounting head means defining a gear chamber between said water motor and said foam liquid pump,

said rotating shaft of said water motor having an extended portion extending into said gear chamber and having said large gear mounted thereon, said rotating shaft of said foam liquid pump having an extended portion extending into said gear chamber and having said small gear mounted thereon for direct engagement with said large gear.

4,448,257

SOIL-SEPARATING ASSEMBLIES

Douglas C. McRae, Penicuik, Scotland, assignor to National Research Development Corporation, London, England

Filed Jul. 9, 1982, Ser. No. 396,684

Int. Cl.³ A01D *13/00, 17/00*

U.S. Cl. 171—127 **11 Claims**

1. For use with a crop lifting means for a root-crop, a soil separating assembly comprising a conveyor sieve for transporting the crop rearwardly from the crop-lifting means to another part of the assembly and area control means for varying the effective sieving area of the conveyor sieve by varying



the effective length of the conveyor sieve, said assembly further including agitation means for imparting mainly horizontal oscillations to that part of the sieve leading rearwardly from said lifting means to said area control means.

4,448,258

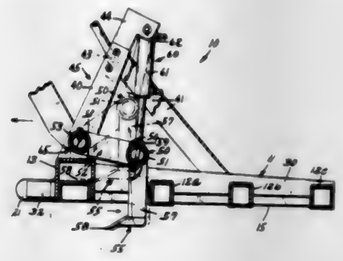
SOIL LEVELING APPARATUS

Orlan H. Mork, 6029 225th St. West, Farmington, Minn. 55024

Filed Jan. 12, 1981, Ser. No. 224,458

Int. Cl.³ A01B *49/02*

U.S. Cl. 172—197 **21 Claims**



12. Apparatus for leveling soil and the like comprising:

a frame including a plurality of elongated ground-engaging members fixedly attached with the longitudinal axes of said members extending generally transverse to the direction of motion, said members having lower surfaces lying generally in the same plane;

a pair of side rail members, each side rail member being of continuous construction connected to said ground-engaging members and extending substantially normal thereto;

each said side rail member being of generally channel-like configuration with a top surface which slopes downwardly from the forwardmost ground engaging member, and downwardly depending inner and outer legs, the outer leg being substantially coplanar at its lower edge with the lower surfaces of said ground-engaging members, the lower edges of said outer legs generally having no slope relative to said forwardmost ground engaging member; and

connecting means rigidly attached to said frame for fastening said frame to a draft means for operation of said apparatus.

4,448,259

RUBBER SPRING FOR FURROW OPENER

Arthur J. Ford, Leesburg, Ga.; Patrick Kuhn, and William D. Long, both of Bismarck, N. Dak., assignors to Lilliston Corporation, Albany, Ga.

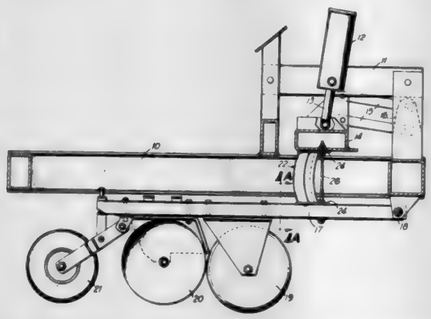
Filed Apr. 19, 1982, Ser. No. 369,571

Int. Cl.³ A01C *5/06*

U.S. Cl. 172—462 **12 Claims**

1. A rubber spring device for a furrow opener comprising a solid rubber body portion having opposite end faces which diverge when said body portion is in a relaxed state, the body portion being elongated between its end faces and being

adapted to function as a resilient column in response to forces applied to its end faces along its longitudinal axis, and adjustable tension means connected between said end faces to draw the end faces into parallel relationship and to cause initial prestressing of the spring device by effecting initial arcuate deflection of the body portion in one direction across the



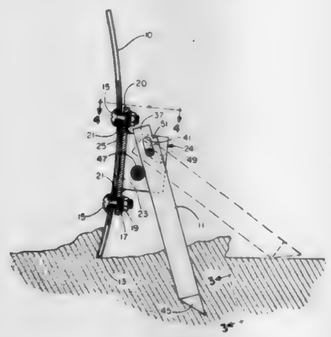
longitudinal axis of the body portion, said adjustable tension means including a pair of plate elements fixed to said end faces of the body portion and an adjustable tension element connected between the plate elements and being spaced from one side of the body portion, said solid rubber body portion being arcuate in cross section, the cross-sectional shape of said body portion being approximately one-quarter of an annulus.

4,448,260

PIVOTAL BLADE SPIKES FOR TRACTORS

Wayne A. Harmsen, 607 Morris St., Fond du Lac, Wis. 54935, and Arlyn V. Harmsen, Waupun, Wis., assignors to Wayne A. Harmsen, Fond du Lac, Wis.

Filed Apr. 7, 1982, Ser. No. 366,311
Int. Cl.³ E02F *3/12*
U.S. Cl. 172—777 **7 Claims**



1. In combination with an earth-working vehicle, a suspension system operatively connected to the vehicle, a blade joined to the suspension system, and means for actuating the suspension system, at least one earth-loosening attachment comprising:

a. a bracket mounted to the back side of the blade;

b. a pivot pin supported in the bracket;

c. a spike having a pointed lower end and an upper end, the spike containing an elongated aperture near the upper end for receiving the pivot pin so that the spike is cradled in the bracket and is suspended from the pivot pin for pivotal motion thereabout;

d. a reaction pin supported in the bracket; and

e. at least one adjusting bushing coaxial with and supported by the reaction pin for adjustably limiting the pivotal motion of the spike in one direction,

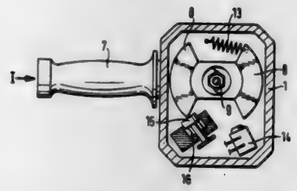
so that the spike has earth-loosening engagement at a predetermined angle with the earth during backward motion of the vehicle and has dragging action on the surface of the earth during forward motion of the vehicle.

4,448,261

MOTORIZED HAND TOOL FOR DRILLING

Heinz Kousek, Muntlix, Austria, and Ernst Wohlwend, Nendeln, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 30, 1981, Ser. No. 316,739
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041099
Int. Cl.³ B23Q *5/00*
U.S. Cl. 173—12 **7 Claims**



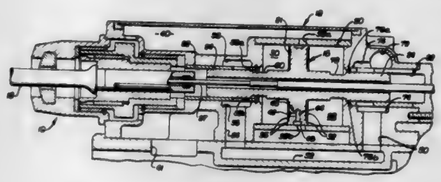
1. A manually guided, motorized hand tool for drilling and/or percussive drilling comprising a housing, a handle attached to said housing, said housing having a drilling axis extending therethrough, a shaft located within said housing and disposed parallel to the drilling axis, means for mouting a drilling tool on the drilling axis of said housing so that the drilling tool can be rotated, a mass mounted on and rotatable relative to said shaft in a plane extending substantially perpendicular to said shaft so that said mass is rotatable relative to said housing in a plane extending substantially at right angles to the drilling axis, said mass has a moment of inertia so that when a moment of reaction about said shaft rotates said housing said mass remains stationary whereby relative movement takes place between said mass on said shaft and said housing, a switch located within and mounted on said housing and operable by said mass when said mass experiences a predetermined angular displacement relative to said housing, and said switch arranged to interrupt the power supply to said drive means when said switch is operated by said mass.

4,448,262

PNEUMATIC HAMMER

Robert R. Vincent, Springfield, Mo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed May 19, 1982, Ser. No. 379,772
Int. Cl.³ B23Q *5/00*
U.S. Cl. 173—16 **4 Claims**



1. In a pneumatic hammer for repeatedly inpacting a tool, said hammer having a housing which has an inner wall which defines a chamber, a piston reciprocally carried within the chamber and having a wall which slidably engages the chamber wall, said piston defining an impact subchamber of the chamber wherein pneumatic fluid supplied under pressure to the impact subchamber from an outside source drives the piston to impact the tool, the piston also defining a retracting subchamber of the chamber wherein pneumatic fluid supplied under pressure to the retracting subchamber drives the piston back from the tool, an exhaust port in the chamber wall which provides an outlet from the chamber, said piston having a first position wherein the exhaust port is coupled to the impact subchamber so as to exhaust pneumatic fluid under pressure from the impact subchamber, a second position wherein the exhaust port is coupled to the retracting subchamber so as to exhaust pneumatic fluid under pressure from the retracting subchamber, and a third position intermediate the first and second positions in which the exhaust port is covered by the piston, the improvement comprising:

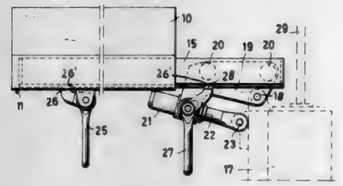
a passageway located in the piston and coupled to one of the subchambers, said passageway having an outlet located in the piston wall, which registers with the exhaust port when the piston is in the intermediate position wherein only said one of the two subchambers is coupled to the exhaust port when the piston is in the intermediate position and pneumatic fluid may be exhausted from only said one subchamber to prevent the piston from stalling in the intermediate position.

4,448,263

DRILLING APPARATUS

Kunibert Becker, Werl; Rudiger Kirchbrucher, Dortmund-Brackel, and Burckhard Elsner, Lunen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,462
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045047
Int. Cl.³ E21C *11/00*
U.S. Cl. 173—34 **20 Claims**



1. In a mineral mining installation for use in an underground mine, the installation comprising a mine roof support assembly and apparatus for drilling bores, the roof support assembly comprising a plurality of roof support units positioned side-by-side, each of the roof support units having at least one roof bar, the improvement comprising an elongated track arranged on the roof bars of the roof support units, an elongated beam mounted on and movable along the length of the track, a trolley mounted on and movable along the length of the beam, said drilling apparatus comprising a drilling device which is pivotally mounted on said trolley, and means for releasably securing said beam at selected locations along said track and for releasably securing said trolley at selected locations along said beam.

4,448,264

GROUND ROD DRIVING POLE

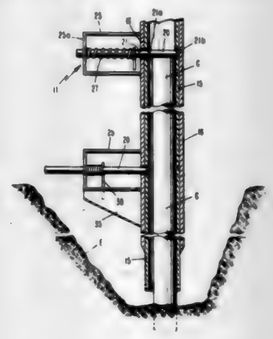
Jackie W. Peyton, 911 Husbands Rd., Paducah, Ky. 42001

Filed Nov. 27, 1981, Ser. No. 325,592
Int. Cl.³ B25D *1/00*
U.S. Cl. 173—52 **9 Claims**

1. A driving pole assembly for a ground rod or the like comprising:

a hollow pole for receiving the rod, and

adjustable means extending across the interior of said pole at spaced locations along the pole to selectively provide a stop for the top of said rod, whereby said rod may be



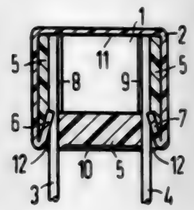
driven in increments into the ground upon applying repeated series of downward forces to said pole.

4,448,265

ELECTRICAL COMPONENT MEMBER WHICH IS MOUNTED IN A HOUSING CENTERED AND ADJUSTED

Tassilo Kodal, Oppersdorf, and Hubert Kraus, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Münich, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,658
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132243
Int. Cl.³ H05K *5/06*
U.S. Cl. 174—52 PE **1 Claim**



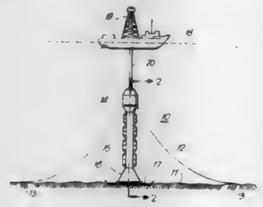
1. An electrical component comprising an electrical component member mounted centered and adjusted in a cup-shaped housing having a rectangular cross section, said housing having an opening through which lead wires from the electrical component member protrude in the same direction, and hardened sealing compound securing the electrical component member in said cup-shaped housing, said cup-shaped housing being of rectangular cross section and having, at least on two opposite sides thereof, integrally formed tabs consisting of the same material as that of said cup-shaped housing, said tabs being bent into the interior of said cup-shaped housing and resiliently clamping the electrical component member in said housing, said tabs being encased in said hardened sealing compound and serving as centering and adjusting means for said electrical component member, said tabs having a V-shape and forming channels wherein said lead wires of said component member extend.

4,448,266

DEEP WATER RISER SYSTEM FOR OFFSHORE DRILLING

Harold L. Potts, 2201 - 1081 Ambleside Dr., Ottawa, Ontario, Canada K2B 8C8

Filed Nov. 14, 1980, Ser. No. 206,948
Int. Cl.³ E21B *7/128*
U.S. Cl. 175—7 **20 Claims**





1. A deep water riser system for offshore drilling and well completion comprising, in combination:

buoyancy means adapted to be anchored at a predetermined depth in support of a submerged load;

riser coupling means including closure means having an inlet and an outlet attached to said buoyancy means;

sub-riser means connected to said inlet and depending from the buoyancy means for communicating said coupling means with a well bore;

riser means connected to said outlet for communicating the well bore with a floating drill rig positioned thereabove; and guying means including cable means having lengths of predetermined positive, neutral and negative buoyancy adapted to anchor said buoyancy means at a depth established by the sub-riser means and to stabilize said system by producing a restoring force for controllably limiting lateral excursions of said buoyancy means and corresponding pivotal motions of said sub-riser means.

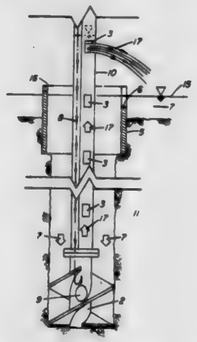
4,448,267

DOOR DRILLING KELLY

Russell C. Crawford, III; George M. Crawford, and Russell C. Crawford, Jr., all of P.O. Box 27054, Memphis, Tenn. 38127

Filed Aug. 30, 1982, Ser. No. 412,605
Int. Cl.³ E21B *17/00*
U.S. Cl. 175—218 **1 Claim**

1. A hollow drilling kelly for reverse circulation drilling comprising a hollow metal tubing having a series of openings longitudely spaced therealong, each of said openings having door means normally closing said openings to allow retention of fluids within said kelly and means associated with said doors for allowing said doors to be sequentially opened and closed



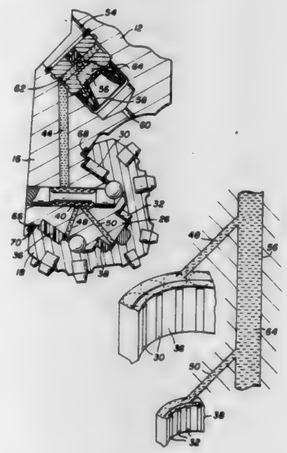
for discharging fluid from and retaining fluids within said kelly, respectively.

4,448,268

ROCK BIT WITH BEARING LUBRICANT RESERVOIR

Dennis D. Fuller, Duncanville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 27, 1981, Ser. No. 286,826
Int. Cl.³ E21B *10/22*
U.S. Cl. 175—228 **5 Claims**



1. A rotary rock bit comprising:

a bit body defining a pressurized fluid flow path therethrough and having at least one arm terminating at its free end in an axle portion;

a rotatable cutter member having an internal open cavity for receipt therein of said axle portion in radial spaced relation to define an annular bearing cavity;

annular bearing and cage assembly means disposed in said annular cavity and comprising:

at least one annular array of rolling load bearing elements, with all bearing elements thereof retained in said annular array by being caged in and in intimate contact with a permeable porous plastic material having a flowable lubricant in the pores thereof and providing a lubricating cage for said rolling bearing elements, said at least one annular array of rolling bearing elements and plastic material substantially filling the annular bearing cavity adjacent the initial portion of said open cutter cavity; and

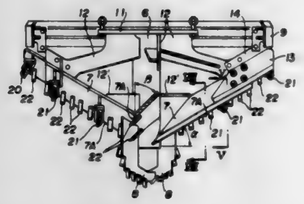
a lubricant reservoir in said body and lubricant passages therefrom to said bearing cavity terminating adjacent said cage, lubricant in said reservoir and passages and means for pressurizing said lubricant to force lubricant to flow from said reservoir to adjacent said permeable porous plastic material to replenish through capillary draw thereinto the lubricant lost from said pores of said material during use.

4,448,269

CUTTER HEAD FOR PIT-BORING MACHINE

Yasuaki Ishikawa, Ami; Shuichi Ajiro, and Masami Wada, both of Chiyoda, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,650
Int. Cl.³ E21B *10/28, 10/16*
U.S. Cl. 175—335 **8 Claims**



1. A rotatable cutter head for a pit boring machine used in reverse circulation drilling, comprising:

cutter arrays each including a rotary cutter means and a plurality of drag cutters disposed at circumferentially spaced positions on said cutter head, said drag cutters having the cutting ends lying generally in a conical plane having the axis coaxial with the axis of rotation of said cutter head, said cutter arrays lying along a spiral line on said conical plane in which the cutting ends of said drag cutters lie and extending from the outer circumferential edge of said plane to the center of said plane, the drag cutters succeeding the rotary cutter means in each array, the respective rotary cutter means having the axes of rotation thereof at an acute angle relative to a radius perpendicular to the axis of rotation of the cutter head, said angle lying in a plane perpendicular to the axis of the cutter head,

said rotary cutter means each having cutting teeth around the circumference thereof and the tip of each cutting tooth of each rotary cutter means projecting beyond the plane in which the cutting ends of said drag cutters lie.

4,448,270

VARIABLE DIAMETER EARTH BORING BIT

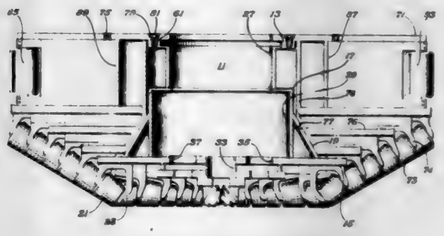
Robert J. Buske, Corsicana, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed May 10, 1982, Ser. No. 376,793
Int. Cl.³ E21B *10/20*
U.S. Cl. 175—342 **6 Claims**

1. An earth boring bit adapted to be connected in a drill string for cutting a shaft in the earth, comprising:

a central bit body which is adapted to be driven to cut a shaft, said central bit body having an outer conical surface thereon and a hollow interior for circulating drilling fluids; and

an outer ring segment carried on said central bit body, said outer ring segment being connectable in said drill string whereby torque transmitted to said drill string is transmitted to said outer ring segment, and said outer ring segment having a conical surface for matingly engaging said central bit body conical surface, and pre-load means for detachably engaging said outer ring segment to said central bit body to assure drivable contact between said mating conical surfaces whereby torque transmitted to said outer ring segment is transmitted through said mating conical



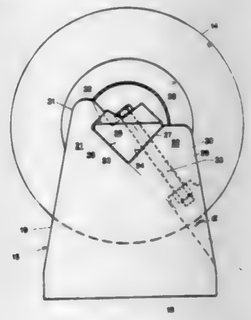
surfaces to drive said central bit body to cut a shaft in the earth.

4,448,271

EARTH BORING DEVICE

Erik A. Persson, Sandviken, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Nov. 13, 1981, Ser. No. 321,260
Claims priority, application Sweden, Mar. 31, 1981, 8102049
Int. Cl.³ E21B *10/10*
U.S. Cl. 175—364 **1 Claim**



1. A roller cutter assembly for rotary boring the face of an earth formation, comprising:

a boring head having a mounting face,

a roller cutter including a bearing shaft having first and second supporting faces which are mutually non-parallel,

mounting means carried on said mounting face and supporting ends of said shaft, said mounting means including first and second arm portions extending away from said mounting face, said first and second arm portions respectively including third and fourth supporting faces which engage said first and second supporting faces, respectively, to prevent rotation of the bearing shaft relative to said mounting means,

said first, second, third, and fourth supporting faces being non-parallel relative to said mounting face, and

a bolt extending through a hole in said bearing shaft for clamping said first and second supporting faces against said third and fourth supporting faces, respectively, said bolt being arranged such that its longitudinal axis intersects said second and fourth supporting faces,

said first arm portion including a cap portion having a fifth supporting face which faces generally in the direction of both said fourth supporting face and said mounting face and is engageable with said bearing shaft to prevent independently of said bolt, movement of said bearing shaft in a direction perpendicularly away from said mounting face

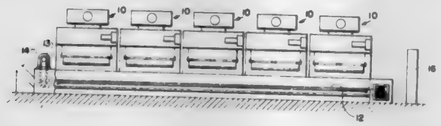
and prevent, independently of said bolt, rotation of said bearing shaft relative to said mounting means.

4,448,272

METHOD AND APPARATUS FOR FEEDING, WEIGHING AND RELEASING FIBER

Alex J. Keller, Clover, S.C.; Joseph R. Williams, Kings Mountain, N.C.; Erhard A. Fechner, Gastonia, N.C.; Akiva Pinto, Gastonia, N.C.; James A. King, Jr., Greensboro, N.C.; Charles D. Crawford, Burlington, N.C., and Riley C. Maness, Greensboro, N.C., assignors to Platt Saco Lowell Corporation, Easley, S.C.

Filed Oct. 9, 1981, Ser. No. 310,213
Int. Cl.³ G01G *23/22, 19/52, 13/24*
U.S. Cl. 177—1 **8 Claims**



1. An apparatus for feeding, weighing and releasing a predetermined quantity of fiber to a conveyor or the like in reoccurring cycles whereby the quantity of fiber released in each cycle is maintained at an essentially constant and preselected level, said apparatus including weigh pan means for receiving and collecting said fiber therein, said weigh pan means having selectively operable means for releasing the fiber collected therein, and fiber feeding means for selectively delivering a quantity of fiber to said weigh pan means, the improvement comprising:

(a) means for sensing the weight of said fiber collected in said weigh pan means during each said cycle and generating a signal indicative of said weight; and

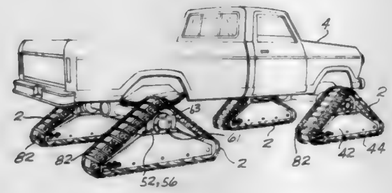
(b) control means for receiving said generated signal, determining the actual weight of fiber released from said weigh pan after each release thereof by said releasing means, comparing said actual weight with a constant preset weight corresponding to the weight desired to be released during each said cycle, and controlling said fiber feeding means to vary the weight of fiber delivered to said weigh pan means during the next said cycle by an amount that is a predetermined fractional portion of the difference between said actual weight and said preset weight for the immediately preceding cycle.

4,448,273

ENDLESS TRACK ATTACHMENT FOR A VEHICLE

Louis C. Barbieri, Seattle, Wash.

Filed Dec. 18, 1981, Ser. No. 332,087
Int. Cl.³ B62D *55/04*
U.S. Cl. 180—9.21 **17 Claims**



1. A track laying attachment comprising:

a shaft having inner and outer ends and a mounting flange at its inner end adapted to be secured to a wheel hub of a vehicle, so as to be rotatable with the wheel hub, said outer end of the shaft being threaded;

a sprocket wheel secured to the shaft, so as to rotate with the shaft, said sprocket wheel comprising evenly spaced apart, tooth-receiving sockets at its periphery bounded by bearing surfaces;

a track supporting frame including an upper portion and a lower portion;

mounting means for mounting the shaft on the upper portion of the frame; said mounting means including a pillow block mount on each side of the sprocket wheel, one of such pillow block mounts including a threaded member in threaded engagement with the outer end of the shaft, and bearing means engaging the shaft, which bearing means comprises antifriction bearing means housed within each pillow block mount, each such antifriction bearing means surrounding the shaft and including a portion that rotates with the shaft and a non-rotating portion;

idler wheel means mounted on the lower portion of the frame, said idler wheel means including portions defining a tooth-receiving passage; and

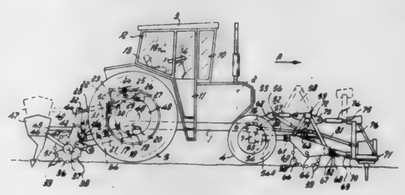
an endless track extending about the sprocket wheel and the idler wheel means and including a multiplicity of radially inwardly projecting drive teeth adapted to roll into and out from the sprocket wheel sockets and to travel through the tooth-receiving passage, said drive teeth being of sufficient depth to prevent disengagement of the track from the sprocket wheel.

4,448,274

VEHICLE

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Mar. 17, 1980, Ser. No. 131,043
Claims priority, application Netherlands, Mar. 21, 1979, 7902200; Mar. 21, 1979, 7902199; Mar. 21, 1979, 7902198
Int. Cl.³ B60B *39/00*
U.S. Cl. 180—15 **11 Claims**



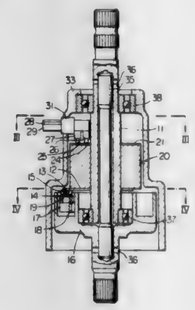
1. A vehicle which is an agricultural tractor comprising a frame, an axle connected to said frame so as to be pivotable with respect thereto about a horizontal pivotal axis lying in the tractor's longitudinal plane of symmetry, upwardly extending pivot axes on said axle on each side of said plane of symmetry, a pair of wheels for supporting the vehicle on the ground mounted on said axle so as to be steerable about said upwardly extending pivot axes, at least one lifting device also mounted on said axle, a rotary support means connected to said lifting device, said lifting device being pivotable together with said axle relative to said pivotal axis, powered extensible means disposed between said axle and said rotary support means which is adapted to exert downwardly directed force from said axle to said rotary support means which shifts support for said axle from said pair of wheels onto said rotary support means and reduces the pressure applied by said pair of wheels on the ground, and said rotary support means having coupling means to which further equipment can be hitched.

4,448,275

TORQUE SENSOR

Junji Kitagawa; Shigeyuki Akita, both of Okazaki; Norimichi Kasegawa, Susono, and Akira Nakamura, Shizuoka, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 27, 1981, Ser. No. 325,484
Claims priority, application Japan, Nov. 28, 1980, 55-168709; Dec. 26, 1980, 55-186270
Int. Cl.³ B62D *5/04*
U.S. Cl. 180—79.1 **6 Claims**



1. A torque sensor comprising:

a first rotor having two kinds of first electrodes;

a second rotor having a second electrode, said second electrode facing said two kinds of first electrodes at a predetermined distance therefrom and coupled thereto electrically by electrostatic capacitance coupling and mechanically by a torsion spring; and

an electric processing circuit for impressing electric signals of opposite phases to said respective kinds of first electrodes and generating a signal corresponding to the magnitude of twist of said torsion spring from a signal generated from said second electrode according to the magnitude of electrostatic capacitance corresponding to the overlap area of one kind of said first electrodes and said second electrode, said overlap area being variable with the rotation of both said rotors relative to each other caused by said torsion spring,

wherein each kind of said first electrodes are comb-shaped electrodes connected to each other and said second electrode is a comb-shaped electrode the pitch of which is double the pitch of said comb-shaped first electrodes.

4,448,276

CLUSTERED SWITCH MOUNTING MEANS FOR USE IN AUTOMOTIVE VEHICLES

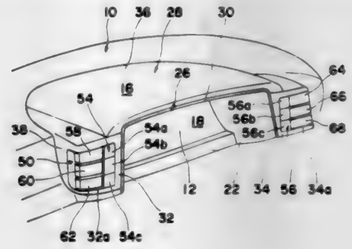
Hiromasa Nakamoto, and Takeshi Miyoshi, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 28, 1982, Ser. No. 392,797
Claims priority, application Japan, Jun. 30, 1981, 56-102613; Jun. 30, 1981, 56-102614
Int. Cl.³ B60K *37/06*
U.S. Cl. 180—90 **10 Claims**

1. An apparatus for mounting various switches used to control different mechanisms in an automotive vehicle, which apparatus comprises:

a meter housing mounted on an instrument panel rearwardly of a steering wheel as viewed from a driver's seat inside the automobile vehicle, said meter housing comprising a pair of opposite lateral portions, said lateral portions protruding from the instrument panel a certain distance towards the steering wheel, but spaced from said steering wheel, at least one of said lateral portions having a chamber defined therein for accommodating at least some of the various switches therein, a portion of the wall defining the chamber being inwardly recessed to define a pocket;

manipulatable switch knobs operatively connected to the switches, said switch knobs being accommodated in said pocket one above the other in a direction generally perpendicular to the longitudinal direction of the instrument panel and protruding widthwise of the vehicle in a plane



generally parallel to the plane of rotation of the steering wheel in closely adjacent relation to each other, each of said switch knobs being supported for movement in a plane generally perpendicular to the plane of rotation of the steering wheel; and

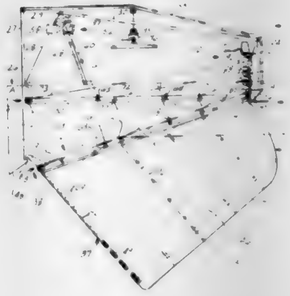
means positioned within the chamber for transmitting the movement of the switch knobs to the associated switches to control said associated switches, respectively.

4,448,277

SKIRTS AND SKIRT HANDLING FOR AIR CUSHION VEHICLES

Sherman B. Wetmore, Westminster, and Gordon D. Knorr, Irvine, both of Calif., assignors to Global Marine, Inc., Los Angeles, Calif.

Filed Sep. 14, 1981, Ser. No. 301,726
Int. Cl.³ B60V *1/16*
U.S. Cl. 180—127 **14 Claims**



1. A method for replacing a skirt segment of a segmented skirt for an air-cushion vehicle in which the skirt is disposed circumferentially of a body of the vehicle and is composed of a plurality of segments, each of which is connected to an enclosed plenum structure which extends peripherally of the vehicle body, the method comprising the steps of:

(a) from within the plenum structure,

(i) disconnecting from the plenum structure a skirt segment of interest, and

(ii) placing the disconnected segment at a desired location aboard the vehicle;

(b) providing a replacement skirt segment at a selected location within the plenum structure;

(c) moving the replacement segment within the plenum structure from the selected location to the location at

which the segment of interest was connected to the plenum structure; and

(d) from within the plenum structure connecting the replacement segment to the plenum structure in place of the segment removed in performance of step (a)(i).

7. An air cushion vehicle comprising:

a vehicle body;

a plenum structure carried by and projecting laterally from the body around a periphery thereof;

flexible skirt means around the body periphery for cooperation with a surface below the body for defining and substantially sealing a space below the body between the body and the surface;

means for supplying air under pressure to the space for establishing and maintaining in the space sufficient pressure to support at least a major portion of the weight of the vehicle,

the skirt means comprising a plurality of skirt assemblies, each comprising a flexible, air-impermeable skirt segment and a substantially rigid support frame for the segment, each assembly having an outer end pivotally connected to the plenum structure and an inner end adjacent the body; and

selectively operable means operable for moving the inner ends of the frames, and of the skirt segments carried thereby, between an upper retracted position and a lower deployed position relative to the body.

4,448,278

LAND VEHICLE

William J. Badsey, P.O. Box 70061, Bryanston 2021, South Africa

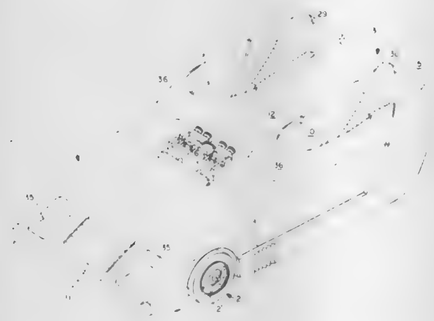
Filed Feb. 16, 1982, Ser. No. 348,682

Claims priority, application South Africa, Feb. 20, 1981, 81/1127

Int. Cl.[3] B62D *61/06*

U.S. Cl. 180—210

10 Claims



1. A land vehicle having three wheel means, two of said wheel means being disposed adjacent the front of said vehicle and spaced apart from each other, said third wheel means being disposed adjacent the rear of said vehicle and located centrally thereof, said wheel means defining a wheel base for said vehicle, an engine unit mounted on said vehicle and located centrally thereof and within the wheel base, said vehicle including two passenger compartments, one of said passenger compartments being disposed on either side of the engine unit.

4,448,279

VEHICLE DRIVE UNIT

Masaki Watanabe, Urawa, and Goroei Wakatsuki, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

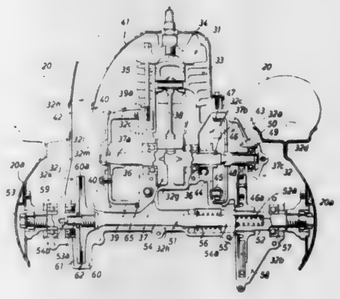
Division of Ser. No. 137,603, Apr. 7, 1980, Pat. No. 4,372,415. This application Apr. 9, 1982, Ser. No. 366,877

Claims priority, application Japan, Apr. 10, 1979, 54-43552; Apr. 20, 1979, 54-52999

Int. Cl.[3] B60K *5/04*

U.S. Cl. 180—297

11 Claims



1. A drive unit for a vehicle having two juxtaposed drive wheels, comprising:

an engine;

an axle for supporting on the ends thereof said drive wheels, said axle comprising first and second drive portions arranged coaxially and in alignment with each other;

a final output gear operatively coupled with said engine and mounted on said first drive portion of said axle adjacent to one end thereof so as to rotate said first drive portion by power of said engine, said one end of said first drive portion supporting one of said drive wheels;

power transmitting means for coupling said second drive portion with said first drive portion so as to rotate said second drive portion upon rotation of said first drive portion, said power transmitting means including a pair of flanges mounted on said first and second drive portions in confronting relation, and means for frictionally engaging said flanges with each other, wherein said first and second drive portions may rotate relative to each other against the force of said friction engaging means;

said second drive portion having one of said flanges mounted at one end thereof, and supporting the other of said drive wheels at the other end thereof, said one end of said second drive portion being arranged substantially adjacent to said other drive wheel;

said engine being disposed between said final output gear and said power transmitting means;

a crankshaft extending parallel to said axle;

a clutch mounted on one end of said crankshaft, said clutch operatively cooperating with said final output gear so as to transmit said power of said engine to said final output gear; and

a flywheel mounted on the other end of said crankshaft, said engine being disposed between said clutch and said flywheel.

4,448,280

CARBURETOR

Haruo Endo, Matsuda, Japan, assignor to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

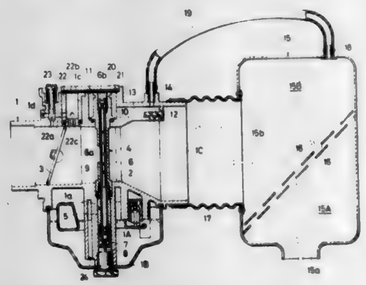
Filed Nov. 4, 1981, Ser. No. 318,197

Claims priority, application Japan, Dec. 7, 1980, 55-175118[U]

Int. Cl.[3] B01H *13/36*

U.S. Cl. 181—229

3 Claims



1. A carburetor for internal combustion engines comprising a suction bore, an air introducing path having an air inlet opening within said suction bore, an air chamber made to communicate with said air introducing path, a main air jet and pilot air jet opening within said air chamber, a plug body fitted in said air inlet so as to interrupt the communication of the air introducing path with said suction bore, a suction silencer connected to said suction bore so as to introduce air into said suction bore and sectioned into a first chamber and second chamber with a plurality of silencing plates fitted within and means for making the second chamber communicate with said air introducing path, said first chamber having an air inlet.

4,448,281

FIRE ESCAPE DEVICE

Jack B. Adams, Rte. 7, Box 68, Griffin, Ga. 30223

Filed Feb. 11, 1982, Ser. No. 348,004

Int. Cl.[3] A62B *1/14*

U.S. Cl. 182—5

1 Claim



1. In a fire escape device having an elongated flexible member provided with an upper end capable of being anchored with respect to a building structure and having a length to depend to ground level or other safe level, that improvement comprising a slide and sling assembly in which the sling is connected to the slide and adapted to supportingly engage a person descending along the flexible member, said slide comprising a pair of generally rectangular plate members having inwardly facing and aligned grooves adapted to receive the flexible member and frictionally engage the flexible member, parallel hinge rods interconnecting adjacent side edges of the plate members, means connecting the hinge rods and sling and means adjustably interconnecting the opposite side edges of the plate members to vary the frictional gripping engagement of the plate members with the flexible member, said hinge rods being interconnected at their lower ends by a loop structure that is continuous with the rods, means anchoring the rods within longitudinal passages through the side edge portions of the plate members, thereby connecting the plate members for hinged movement, said loop structure forming said means connecting the hinge rods and sling, said means connecting the opposite side edges of the plate members including a notch in each of the plate members, a threaded bolt having one end pivotally mounted in the notch in one plate member and removably received in the notch in the side edge of the other plate member, an enlarged wing nut structure mounted on the bolt for engaging the outer surface of the plate member opposite to that having the bolt mounted therein for varying the frictional engagement between the plate members and flexible member, each of said plate members having substantially straight edges from end to end of each edge to render the plate members more rigid and less prone to flexing, said loop structure being disposed at the lower end of the slide and having a major internal diameter greater than the distance between the hinge rods to provide an enlarged loop receiving the sling, said means anchoring the hinge rods in the longitudinal passages through the plate members including a plate positioned on the hinge rods at the juncture with the loop structure in engagement with the lower edges of the plate members and an anchoring plate positioned over the upper ends of the rods in engagement with the upper edges of the plate members with the upper ends of the rods above the anchor plate being enlarged to retain the anchor plate on the hinge rods and retain the hinge rods in the longitudinal passages, the grooves receiving the flexible member being generally parallel to the hinge rods and intermediate the hinge rods and threaded bolt so that the sling engaged with the loop structure will not become entangled with the flexible member when the slide is moving along the flexible member.

4,448,282

LADDER FORMED AS A MULTIPLE-PURPOSE DEVICE

Ruedi Giezendanner, Rosenstrasse 16, CH-6010 Kriens, Switzerland

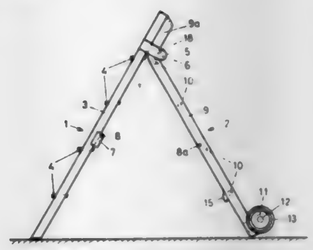
Filed Nov. 12, 1982, Ser. No. 441,293

Claims priority, application Switzerland, Nov. 13, 1981, 7314/81

Int. Cl.[3] B62B *1/20*; E06C *1/397, 1/04*

U.S. Cl. 182—22

5 Claims



1. A ladder formed as a multiple-purpose device comprising first and second ladder elements including side beams having upper and lower ends, said elements combinable to form a stepladder or a leaning type ladder, wherein said first ladder element side beams include straps provided with holding means for positioning and securing said second ladder element to said first element when said second element side beams are inserted through said straps, upper side beam ends of said second ladder element being curved to serve as hand grips, said

second element side beams also comprising wheels attached at the lower end thereof, and a support plate including means for positioning said plate between said wheels whereby said second ladder element can be used as a hand truck.

4,448,283

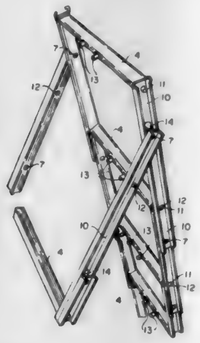
PORTABLE FOLD-UP LADDER

Salvador A. Marques, Barcelona, Spain, assignor to Andral Corporation, Williamsville, N.Y.

Continuation-in-part of Ser. No. 341,830, Jan. 22, 1982, and a continuation-in-part of Ser. No. 417,382, Sep. 13, 1982, Pat. No. 4,429,766. This application May 6, 1983, Ser. No. 492,487

Int. Cl.³ E06C *1/383*

U.S. Cl. 182—164 **20 Claims**



1. A portable folding lean to ladder comprising a plurality of u-shaped modules comprising a rung and two vertical portions, said modules movably connected to each other, and when opened becoming progressively narrower as they approach the top of said ladder, when folded said narrower modules fitting inside of the next wider modules, said modules except for said widest base module comprising in their lower portions a complete module locking means and a module hinge means, said locking means fixing said modules in a rigid manner when said ladder is extended and open, said locking means integral with said modules and comprising latches adapted to movably fit into and mate with an aperture located in the upper sections of said vertical portions of said modules, at least a section of the wider of said modules overlapping at their upper vertical portions with the bottom portions of the next adjacent narrower modules, and said locking means and said module hinge means provided within said overlapping portions.

4,448,284

PEOPLE RESCUE DEVICE

Renzo Ciabo, P.zza Stefano Iacini, 26, Rome, Italy

Filed Feb. 26, 1982, Ser. No. 352,412

Int. Cl.³ A62B *1/06*

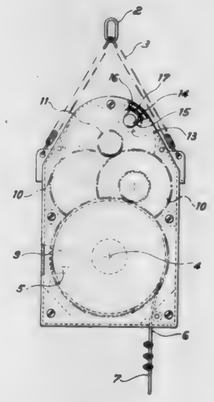
U.S. Cl. 182—234 **9 Claims**

1. In a device for slowly descending from a building, comprising a frame including means adapted for being connected to a location from which descent is to be initiated, a reel rotatably arranged in the frame and having a cable wound thereon with one end of the cable attached to the reel, and the other end projecting outwardly from the frame and with attaching means at the projecting end for latching thereonto for effecting a descent by causing unwinding of the cable from the reel, and brake means for regulating the speed of unwinding of the cable to regulate the speed of descent, the improvement wherein said brake means comprises:

gear means fixedly and coaxially attached within said frame to said reel for being rotated by rotating movement of said reel;

reducing overgear means comprising multiple gears interconnected within said frame to engage said gear means for being rotated thereby;

wheel means axially connected to one gear of said reducing overgear means for being rotated by rotation of said one gear, and having a plurality of radially arranged housings disposed about the circumference thereof, and a plurality of spherical steel bearings respectively arranged axially movable and rotatable in each one of said plural housings, wherein said reducing overgear means is adapted for causing rotation of said wheel means at a rate greater than



the rotation of said reel, when being unwound, sufficient to cause outward axial movement of each one of said bearings; and

a layer of friction causing material fixedly attached within said frame and surrounding the lateral surface of, and about the circumference of said wheel means and spaced therefrom at a distance less than the radius of said spherical steel bearings whereby upon rotation of said reel, said bearings are forced into direct contact with said layer of friction causing material to limit the speed of rotation of said reel in a continuously uniform manner.

4,448,285

LUBRICATOR FOR A POWER LOOM

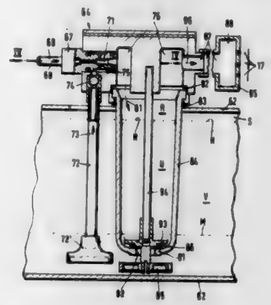
Herbert Burgbacher, Hilzingen, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 20, 1981, Ser. No. 323,559

Claims priority, application Switzerland, Dec. 2, 1980, 8887/80

Int. Cl.³ D03J *1/00*; F16K *31/18*; F01M *1/00*

U.S. Cl. 184—55 A **8 Claims**



1. A pulse lubricator comprising an atomizer head,

a nozzle in said head for forming a lubricant spray;

a macro-separator in said head for receiving a lubricant spray from said nozzle to separate large lubricant particles from the spray;

a lubricant catch basin sealingly connected to said atomizer head below said macro-separator to receive the separated large particles, and having a check valve at a lower end for releasing lubricant therefrom; and

a suction line extending from said head entirely outside said basin for drawing lubricant from a reservoir into said nozzle.

4,448,286

ELEVATOR GROUP CONTROL SYSTEM

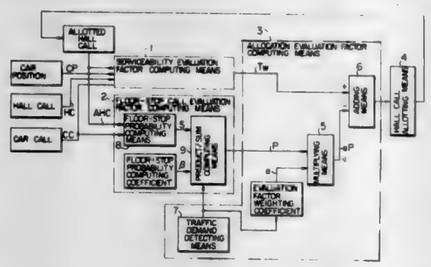
Soshiro Kuzunuki, Katsuta, and Kotaro Hirasawa, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,046

Claims priority, application Japan, Jul. 15, 1981, 56-109216

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 R **11 Claims**



1. An elevator group control system comprising a plurality of elevator cars arranged for movement across a plurality of floors of a building, hall call registering means disposed at each of the floors to originate a hall call for calling one of said elevator cars toward said floor, car call registering means disposed in each of said elevator cars for instructing target floors, allocation evaluation factor computing means for computing for each of said elevator cars an allocation evaluation factor indicative of the suitability of allocation of a newly originated hall call to said elevator car, and hall call allotting means for allotting said new hall call to the elevator car which is decided to be most suitable for the service in respect of the value of the allocation evaluation factor, said allocation evaluation factor computing means including means for weighting the output signal from floor-stop probability evaluation factor computing means relatively to the output signal from serviceability evaluation factor computing means, and varying means for varying the traffic demand and varying the value of the relative weight depending on the detected traffic demand.

4,448,287

CALIPER HOUSING IN A DISC BRAKE

Masayoshi Katagiri, Toyota, and Toshio Kondo, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Nov. 13, 1981, Ser. No. 320,979

Claims priority, application Japan, Nov. 21, 1980, 55-167722[U]

Int. Cl.³ F16D *55/00*

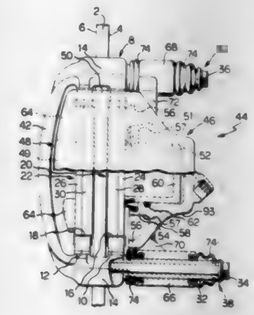
U.S. Cl. 188—73.31 **6 Claims**

1. A caliper housing of a disc brake for a vehicle including a disc rotor, a pair of brake pad assemblies disposed on opposite sides of the rotor, and a torque member fixed to the vehicle to support said caliper housing and the pad assemblies movably along an axis of rotation of the rotor, said caliper housing comprising:

a cylinder portion located on one side of the rotor and including a fan-shaped cylinder wall section which is formed with a cylinder having a cylinder bore open at one end thereof, said cylinder wall section having a sectorial external profile in cross section in a first plane perpendicular to said axis, and said cylinder wall section including a circumferential wall which defines said cylinder bore and which is substantially inscribed to said sectorial external profile;

a reaction portion located on the other side of the rotor opposite said cylinder portion; and

a bridging portion bridging said cylinder and reaction portions and cooperating with the same so as to constitute an integral, substantially saddle-shaped one-piece shell structure which straddles an outer peripheral portion of the



rotor and said pad assemblies, said bridging portion having a substantially circular arc configuration in cross section in a second plane parallel to said first plane, a quotient of a width of said bridging portion in said cross section divided by a thickness thereof being not less than 11; and

said cylinder wall section having in each of two areas thereof at least one opening, each of said areas being defined by a pair of lines which pass the associated one of opposite ends of the circular arc of said bridging portion and which are tangent with the circumference of said circumferential wall at an open end of said cylinder, and by a segment of said circumference of said circumferential wall defined by points of tangency of said pair of lines with said circumference.

4,448,288

DISC BRAKE

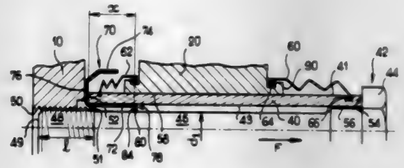
Jean Delaunay, Drancy, France, assignor to Societe Anonyme DBA, Paris, France

Filed Nov. 2, 1981, Ser. No. 317,089

Claims priority, application France, Nov. 13, 1980, 80 24138

Int. Cl.³ F16D *65/02*

U.S. Cl. 188—73.45 **5 Claims**



1. A disc brake having a caliper slidably mounted on a fixed support by means of at least one axial column slidingly received in an open bore formed in the caliper, said axial column comprising a cylindrical sleeve fixed to said fixed support by

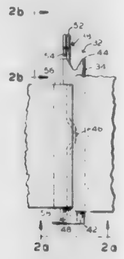
means of a bolt the stem of which is held in a bore inside the cylindrical sleeve and the threaded end of which is screwed into a hole tapped in said fixed support so as to hold the sleeve tight between the fixed support and the head of the bolt, protective bellows being mounted between said sleeve and the caliper on opposite sides of the latter, characterized in that the said column includes means of axial abutment associated with said sleeve in order to limit the axial displacements of the latter with respect to said caliper when the stem of said bolt is unscrewed from the fixed support said means of abutment include an abutment surface capable of coming to bear against a corresponding surface formed on the caliper when said sleeve is acted upon by an axial pull in the direction corresponding to the withdrawal of the said bolt, said means of abutment consist of a crown of U-shaped cross-section having an inner cylindrical sidewall which is mounted in the bore inside said sleeve and a flat annular end which is held tight between the end of the sleeve and the fixed support when said column is fixed to the latter, said abutment surface consisting of an extreme free edge of the outer cylindrical sidewall of said crown.

4,448,289

DISC BRAKE ASSEMBLY

Bert A. Gumkowski, and Peter J. Schreiner, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 25, 1982, Ser. No. 392,057
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.45 **5 Claims**



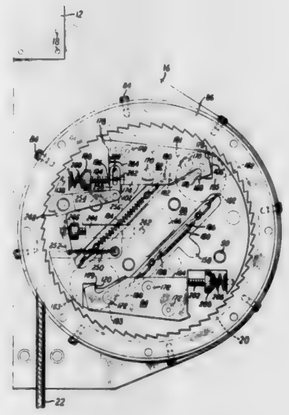
1. A disc brake assembly comprising a torque member with a pair of circumferentially spaced arms defining an opening therebetween to receive a caliper assembly, one of the arms cooperating with the caliper assembly to define substantially matching axially extending recesses, and a pin assembly disposed within the recesses to slidably mount the caliper assembly relative to the torque member, the pin assembly comprising a cylindrical part defining an axially extending bore and engageable with the walls of the caliper and torque member recesses and a resilient member disposed within the cylindrical part bore to yieldably oppose radial contraction of the cylindrical part, and the pin assembly further including means to prevent withdrawal of the pin assembly from the matching axially extending recesses, characterized by said pin assembly means comprising a wire element extending outwardly from said resilient member to define opposite ends for said wire element, one of said wire element ends defining a flexible latch to permit said pin assembly to be inserted into said recesses, said flexible latch being deformable to fit within said recesses when said pin assembly is inserted into said recesses, and said flexible latch returning to its free state when said pin assembly is disposed in its operative position within said recesses whereby both of said wire element ends cooperate with either said caliper assembly or said torque member to yieldably prevent withdrawal of said pin assembly from said recesses.

4,448,290

SAFETY DEVICE FOR A CABLE WOUND DRUM

Walter L. Reid, Jr.; Robert A. Van Stone, and Ralph L. Delano, all of Mattapoisett, Mass., assignors to Acushnet Company, New Bedford, Mass.

Filed Nov. 23, 1981, Ser. No. 324,006
Int. Cl.³ B60T *7/12*
U.S. Cl. 188—82.7 **9 Claims**



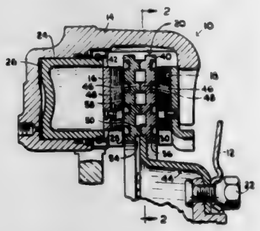
1. A safety device for stopping cable payout from a drum when the rotational speed of the drum exceeds a predetermined level comprising:
(a) a housing;
(b) a drum rotatably mounted in said housing;
(c) a cable, said cable being adapted for winding on said drum upon rotation of said drum in one direction and for being paid out from said drum upon rotation of said drum in the opposite direction;
(d) a plate mounted on an end of said drum for rotation therewith;
(e) a ring-shaped member fixed on said housing, said ring-shaped member surrounding said plate and being in the plane thereof;
(f) a pawl pivotally mounted on said plate;
(g) said pawl having a first and a second position;
(h) said pawl in said first position enabling rotation of said drum;
(i) said pawl in said second position engaging said ring-shaped member to arrest rotation of said drum;
(j) said pawl being operative to pivot from said first position to said second position by inertial forces generated on said pawl by rotation of said drum;
(k) biased toggling means for holding said pawl under bias in said first position until the rotational speed of the drum attains a predetermined value;
(l) said toggling means thereafter holding said pawl under bias in said second position; and
(m) said pawl having a tooth at one end thereof for engagement with said ring-shaped member when said pawl is in said second position the other end of said pawl being in abutting engagement with a shoulder of the plate when said pawl is in said second position, a knife edge on said pawl engaging an opposed shoulder in said recess of the plate when the pawl is in said first position.

4,448,291

ROTOR FOR A DISC BRAKE ASSEMBLY

Irving R. Ritsema, and Donald D. Johannesen, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 21, 1981, Ser. No. 332,786
Int. Cl.³ F16D *65/12*
U.S. Cl. 188—218 XL **6 Claims**



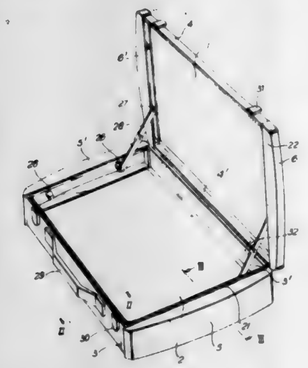
1. A rotor for a disc brake assembly having a pair of friction elements engageable with the rotor to retard rotation thereof, the rotor comprising at least a pair of stamped members with radially extending surfaces engageable with a pair of friction elements, the pair of stamped members cooperating to define a clearance therebetween permitting air flow through the rotor to readily convey thermal energy to an environment for the disc brake during braking, characterized in that each of said pair of stamped members includes a plurality of integrally formed projections extending axially toward opposing integrally formed projections of the other stamped member, the integral projections of a respective stamped member aligned with a plurality of depressions in a surface engageable with an associated friction element, said projections for securing together the pair of stamped members and cooperating to define said clearance and reduce axial deflection of said pair of stamped members into said clearance during braking over the radial dimension for said pair of stamped members.

4,448,292

KNOCKDOWN SUITCASE

Yacov Comfort, 4 Graetz St., Holon, Israel

Filed Jan. 19, 1981, Ser. No. 226,137
Claims priority, application Israel, Jul. 7, 1980, 60509
Int. Cl.³ A45C *3/02, 7/00*; B65D *8/00*
U.S. Cl. 190—107 **4 Claims**



1. A suitcase comprising
a bottom part having a bottom panel, two sidewalls, a front panel and a back panel,
a top part having a top panel, two sidewalls, a front panel and a back panel, characterized in that
said sidewalls of both said bottom part and said top part are made by casting or molding and include integrally formed corners between said sidewalls and said front and back panels and between said sidewalls and their respective bottom and top panels, and further include short flanges extending from said corners perpendicular to the length of the sidewalls and having means shaped to receive the ends of said front and back panels,
said front and back panels being separately formed profiled strips, shaped to receive their respective bottom and top panels and to engage said shaped means formed by said short flanges,
said bottom and top panels being plates.

4,448,293

PRESSURE-RESPONSIVE CONTROL FOR A POWER TRAIN OF THE TYPE HAVING A TORQUE CONVERTER EQUIPPED WITH A LOCKUP CLUTCH

Fujio Maeda, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,348
Int. Cl.³ F16D *33/00*
U.S. Cl. 192—3.3 **4 Claims**



1. A hydraulic control system for a power train of the type including a torque converter for coupling a prime mover to a transmission having a plurality of hydraulically actuated shift clutches thereby to be conditioned for operation in a selected speed setting and in a selected direction, a hydraulically actuated lockup clutch for bypassing the torque converter and mechanically coupling the prime mover to the transmission, and pressure control means for temporarily dropping and then gradually increasing the hydraulic fluid pressure to the transmission and to the lockup clutch during each shift of the transmission, the control system comprising a delay valve responsive to the output pressure of the pressure control means for communicating the lockup clutch with a fluid drain when the output pressure of the pressure control means drops, and with the pressure control means when the output pressure thereof rises to a predetermined level, whereby the lockup clutch, if in engagement, becomes disengaged upon shifting of the transmission and reengaged with some delay after the engagement of a selected one of the shift clutches; the delay valve comprising a housing defining a bore and having an inlet port in communication with the pressure control means, an outlet port in communication with the lockup clutch, and a drain port in communication with the fluid drain, a control spool movable in the bore to place the outlet port in selective communication with the inlet port and with the drain port, resilient means urging the control spool toward a first position for placing the outlet port in communication with the drain port, and means defining a pressure chamber in communication with the inlet port for urging the control spool against the resilient means toward a second position for allowing communication between the inlet port and the outlet port when the output pressure of the pressure control means rises to the predetermined level.

4,448,294

CLUTCH RELEASE BEARING HAVING VIBRATION DAMPING MATERIAL

Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt; Armin Olschewski, Schweinfurt; Wolfgang Hüber, Schweinfurt, and Wolfgang Friedrich, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

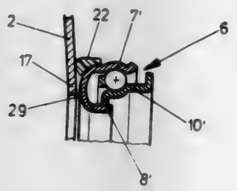
Filed Mar. 27, 1981, Ser. No. 248,061

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012019

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—30 V

4 Claims



1. In a clutch comprising a throw-out bearing having a bearing ring, said bearing being mounted for axial displacement by movement of an actuating member to move said bearing ring into and out of engagement with a clutch lever; said clutch lever having an end for contact with the bearing ring, the improvement comprising a ring of vibration damping material mounted on said bearing ring to vibration damp engagement between said clutch lever end and said bearing, said ring of vibration damping material being elastically deformable in the axial direction and projecting axially beyond the contact surface of said bearing ring adapted to engage said clutch lever only sufficiently far that it can be deformed by pressure of said actuating member to permit engagement between said surface and said clutch lever.

4,448,295

CONTROL APPARATUS FOR THE ELECTROMAGNETIC BRAKE OF A WEAVING MACHINE

Gabriella F. Viniczay, Steinach, Switzerland, and Siegfried Roehrich, Götzis, Austria, assignors to Aktiengesellschaft Adolf Saurer, Arbon, Switzerland

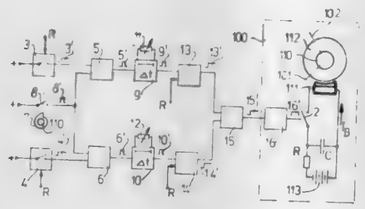
Filed Aug. 13, 1981, Ser. No. 292,450

Claims priority, application Switzerland, Aug. 27, 1980, 6442/80

Int. Cl.³ F16D *71/00*; D03D *51/18*

U.S. Cl. 192—125 A

6 Claims



1. A control apparatus for the electromagnetic brake of a weaving machine comprising:

at least one switching stage for generating a continuous signal representative of a braking function;

at least one switching stage for generating a pulse signal which is released periodically at a given angular position of a shaft of the machine;

and AND-gate;

said switching stage for the continuous signal and said switching stage for the pulse signal being commonly connected to said AND-gate which produces a stop pulse for a subsequently connected brake unit of the machine shaft;

a time-delay element connected in circuit after said AND-gate;

said time-delay element having means for regulating the time-delay between an output pulse of said AND-gate and an output pulse of said time-delay element; and

said regulatable time-delay being a measure for the angular position of the machine shaftat the moment of releasing said stop pulse for said brake unit and the moment of standstill of the machine.

4,448,296

LIVE GUIDE SYSTEM FOR GRAVITY CONVEYORS

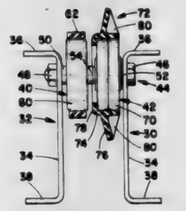
Charles P. Tabler, Hamilton, Ohio, assignor to Buckhorn Material Handling Group Inc., Cincinnati, Ohio

Filed Sep. 8, 1981, Ser. No. 300,181

Int. Cl.³ B65G *13/00*

U.S. Cl. 193—35 C

21 Claims



1. A live guide and load speed control mechanism for a gravity type conveyor wherein a load is supported by and passed along a planar flowpath defined by said conveyor, said mechanism comprising:

a rail disposed longitudinally of said flowpath adjacent one side edge thereof and having an uppermost portion disposed beneath the plane of said flowpath; a plurality of cylindrical rollers each including an outer circumferential surface and being journalled to said rail at spaced intervals therealong for rotation about axes generally normal to the rail length, wherein at least some of said plurality of rollers are mounted such that at least a pair of commonly journalled rollers are disposed in an axially spaced apart relationship with each other; a first roller in each said pair including an annular load support ring of compressible material received on the roller outer circumferential surface and adapted to support a load; and, a second roller in each pair having a generally annular guide ring received on the roller outer circumferential surface, said guide ring including a body portion having a generally radially outward disposed load guiding flange extending circumferentially thereof adapted to guide a load moving along said flowpath and a thrust resisting means for retaining said guide ring on the associated second roller.

4,448,297

FERROMAGNETIC COIN VALIDATOR AND METHOD

Lewis I. Mendelsohn, King's Point, Valencia, 34B, c/o Toscher, Del Ray Beach, Fla. 33446

Filed Jun. 18, 1981, Ser. No. 275,115

Int. Cl.³ G07F *3/02*

U.S. Cl. 194—100 A

11 Claims

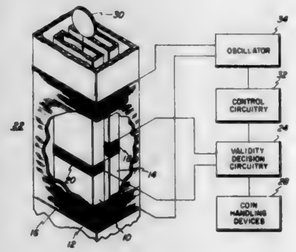
1. Apparatus for validating a coin or other object comprising:

a primary coil connected to an oscillator;

a first pickup coil within the windings of the primary coil and having the axis of its windings disposed substantially parallel with the axis of the primary coil;

a second pickup coil within the windings of the primary coil and having its windings disposed substantially parallel with the axis of the primary coil;

the configuration and turns of the second pickup coil being substantially the same as the first pickup coil so that the inductive properties of the two pickup coils are substantially the same,



means for holding a standard coin of known ferromagnetic properties within the first pickup coil so that the plane of the coin is substantially parallel with the axis of that coil;

means for passing a test coin through the second pickup coil so that the plane of the test coin is substantially parallel with the axis of that coil; and

means for sensing the combined output of the pickup coils as the test coin passes through the second pickup coil.

4,448,298

ROTARY TROUGH TYPE COOLING BED RUN-IN APPARATUS

Giichi Matsuo, Tokyo, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

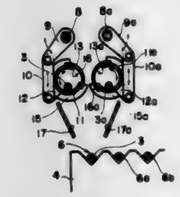
Continuation-in-part of Ser. No. 219,377, Dec. 22, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 456,799

Claims priority, application Japan, Dec. 26, 1979, 54-168079

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—451

11 Claims



1. In a rotary trough type cooling bed run-in apparatus employed for guiding a small round bar rolled by a merchant bar mill to the upper input side of a cooling bed and allowing the bar to drop in an aligned state on the cooling bed, the combination comprising:

a plurality of rotatably mounted long troughs open at each end and arranged in serial fashion, each having a longitudinal slit and each being adapted to receive a product bar axially;

a plurality of rotary guide means secured lengthwise to each of said long troughs each having a lateral opening extending in the same direction as said slit;

fixed support means for rotatably supporting each of said long troughs through said guide means;

a slit cover secured to said support means without interfering with the rotation of said long troughs and said guide means, whereby, in response to the rotation of each of said long troughs said slit is covered when said slit faces said slit covers and said slit is uncovered when said slit is not facing said slit covers; and

a cooling bed having a plurality of grooves disposed below said long troughs, whereby, the product bar dropped from each of said long troughs through said slit is received in one of said grooves.

4,448,299

APPARATUS FOR ADVANCING ELONGATE OBJECTS AROUND A CURVE

Hervé Voillot, Sartrouville, France, assignor to Creusot-Loire, Paris, France
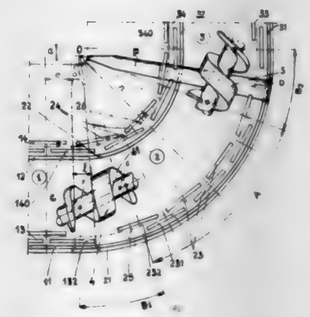
Filed Oct. 15, 1981, Ser. No. 311,730

Claims priority, application France, Dec. 1, 1980, 80 25442

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—457

3 Claims



1. Apparatus for advancing elongate objects (D) around a curve between an upstream straight guideway (1) and a downstream guideway (3) of different orientation, connected by curved connecting guideway (2), each of said straight guideways (1, 3) being constituted by two pairs of parallel guides (11, 12; 31, 32) between which said objects (D) are advanced by successive displacements by means of two series (13, 14; 33, 34) of overlapping seating plates fixed on shafts perpendicular to said guides and rotated in synchronism at a rate determining a constant linear rate of displacement of said objects, said curved connecting guideway (2) being bounded by two pairs of guides (21, 22) assuring continuity of guidance from said upstream guideway (1) to said downstream guideway (3) respectively at the inner side and the outer side at the curve therebetween, said inner guides (22) of said curved guideway (2) being associated with a series of angularly spaced seating plates (24) fixed on shafts normal to said curve, said plates (24) being driven in synchronism with said plates (14; 34) of said straight guideways (1, 3) at a rate determining a constant angular rate of change of orientation of said objects; said outer guides (21) being associated in the central part (A) of said curve, with a series of angularly spaced, overlapping seating plates (23) the axes of which are normal to said curve, said seating plates (23) being rotated in synchronism at a rate determining, along the outer guide (21), a tangential speed corresponding to the constant angular rate of change of orientation, and said outer guides (21) being associated, in the upstream (B1) and downstream (B2) parts of said curve, with two varying-speed drive devices (4, 5) determining along said outer guide 21 respectively in the upstream part (B1) a tangential speed increasing from the linear speed along said upstream guideway (1) to the tangential speed along said curved guideway (3) and in said downstream part (B2) a tangential speed decreasing from the tangential speed along said curved guideway (2) to the linear speed along said downstream guideway (3).

4,448,300

DEVICE FOR BLOCKING CONTAINERS AGAINST MOVING ON A CONVEYOR

Gerhard Reich, Bernhardswald, and Michael Wenner, Neutraubling, both of Fed. Rep. of Germany, assignors to Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

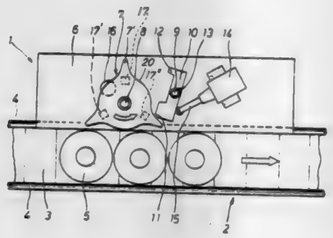
Filed Jan. 21, 1982, Ser. No. 341,399

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1981, 3102669

Int. Cl.³ B65G 47/74

U.S. Cl. 198—633

8 Claims



1. A device for blocking and unblocking movement of containers that are guided to move along a predetermined path on a conveyor, said device comprising:

a star wheel mounted for rotation adjacent said path and having radially extending arms,

means for selectively locking the star wheel against rotation and for releasing said wheel for rotation at two different times, one of which is when said star wheel is in a neutral position wherein the arms are outside of the path of container movement and the other of which is when said star wheel is in a blocking position wherein an arm extends into the path of container movement, and

means operative when said star wheel is unlocked at neutral position to initiate rotation of the star wheel at least through a sufficient angle for one of its arms to enter said path in the direction of container movement such that if there is a container moving into the one arm it will rotate said star wheel for being locked in blocking position.

4,448,301

CONVEYOR SYSTEM WITH FRICTIONALLY DRIVEN CONVEYOR BELT

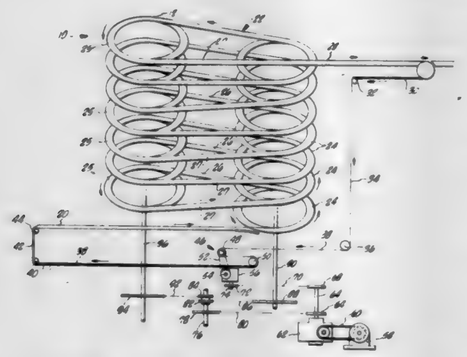
David W. Alger, One Oceanaire Dr., Rancho Palos Verdes, Calif. 90274

Filed Aug. 4, 1980, Ser. No. 175,313

Int. Cl.³ B65G 21/18

U.S. Cl. 198—778

46 Claims



1. A conveyor system comprising:

(a) an endless flat belt capable of bending in an edgewise direction, the belt moving along a path comprising a plurality of vertically spaced apart loops, each loop comprising two curved portions interconnected by two straight portions, and

(b) means for applying a frictional driving force to the underside of the belt and carrying the belt along the curved portions of the paths, wherein the belt is driven substantially only by friction between the applying means and the underside of the belt.

4,448,302

ROLLER CONVEYOR CONSTRUCTION

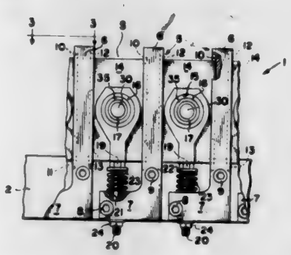
Richard A. Weaver, Linden; James H. Niedzielski, Fenton; John R. Herronen, Linden; Joseph M. Wright, Fenton, and Ronald M. Prime, Flint, all of Mich., assignors to Prime & Weaver Investment Company, Fenton, Mich.

Filed Nov. 23, 1981, Ser. No. 324,142

Int. Cl.³ B65G 13/06

U.S. Cl. 198—781

11 Claims



1. Roller conveyor apparatus comprising a main frame; a first plurality of independent, uniformly spaced apart support members individually fixed to and upstanding from said frame and extending along one side thereof; a second plurality of independent, uniformly spaced apart support members individually fixed to and upstanding from said frame and extending along its opposite side parallel to and spaced from said first plurality of support members, the space between each adjacent pair of said support members on the same side of said frame being uniform and upwardly unobstructed; a plurality of rollers each of which has a mounting shaft projecting beyond its opposite ends, each of said rollers being of such length as to be accommodated between any selected pair of said first and second pluralities of support members on opposite sides of said frame; journal means fitted to each of said shafts outboard of the associated roller; and a journal support for each of said journals, each of said journal supports having a uniform width enabling it to span the space between any adjacent two of said support members on the same side of said frame, each of said journal supports being mounted on and between each of two adjacent support members on the same side of said frame for linear sliding movements in a vertical plane only.

4,448,303

POINT OF SALE DISPLAY CONTAINER

Ronald Beckenfeld, 1535 Carla Ridge, Beverly Hills, Calif. 90210

Filed Mar. 24, 1983, Ser. No. 478,571

Int. Cl.³ B65D 5/44

U.S. Cl. 206—44 R

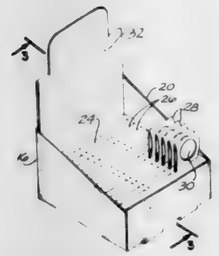
7 Claims

1. A container for point of sale display and retention of articles comprising:

a recti-linear box having a bottom, front, rear and two sidewalls;

an insert comprising a flat body having four orthogonally disposed flaps extending therefrom with a fold line at the intersection between each flap and said body, said flaps being foldable for insertion into said box with the flaps having engagement with said bottom wall thereof to support said body for defining a planar surface supported above said bottom wall at a level substantially the same as the height of said front wall, said planar surface being substantially co-extensive with said bottom wall and defining a plenum therewith;

said planar surface having a plurality of individual slits defined by cutting through said planar surface without removing material from said body; and



a plurality of flat elongate pocket defining means having a flat tongue extending therefrom, one of said slits cooperatively receiving one of said tongues thereby allowing said tongue to enter said plenum, said pocket being supported above said surface for retaining said article therein, said pocket being open along at least one side thereof to permit articles to be readily inserted into and removed from said pocket, said pocket being formed by a pair of opposed flat walls, one of said walls defining an opening therethrough to provide visibility of an article received in said pocket.

4,448,304

REMOUNT KIT FOR REPRESENTATIONS OF STONE-BEARING RINGS

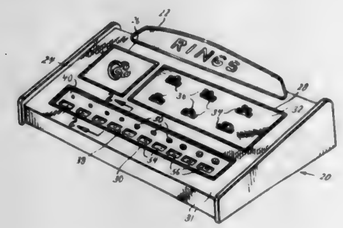
Michael Weinzettel, St. Louis, Mo., and Walter Weeks, Collinsville, Ill., assignors to Eisenstadt Company, St. Louis, Mo.

Filed Mar. 29, 1982, Ser. No. 362,600

Int. Cl.³ B65D 71/00

U.S. Cl. 206—223

15 Claims



1. A remount kit for stone-bearing rings which comprises a plurality of individually-different, displayable, demonstration rings, each of which is formed and dimensioned to represent an ultimate ring to which at least one ultimate stone can be secured, and a plurality of individually-different, stud-mounted, displayable, demonstration stones, each of which is formed and dimensioned to represent an ultimate stone which could be secured to at least one of the ultimate rings represented by said plurality of individually-different, displayable, demonstration rings, the studs of said individually-different, stud-mounted, displayable, demonstration stones being dimensioned to project substantial distances inwardly of the finger-engaging surface of a selected, displayable, demonstration ring of said plurality of individually-different, displayable demonstration rings, said studs thereby providing means by which they may be easily held for temporary displaying of one or more selected, stud-mounted, displayable, demonstration stone or stones immediately adjacent said selected, displayable, demonstration ring, whenever said one or more selected, stud-mounted, displayable, demonstration stone or stones is or are disposed in juxtaposition to said selected, displayable, demonstration ring to enable a viewer to visualize the position or positions which the ultimate stone or stones, represented by said one or more selected, stud-mounted, displayable, demonstration stone or stones, would occupy when secured to the ultimate ring corresponding to said selected, displayable, demonstration ring and also to enable the viewer to visualize the appearance of said ultimate ring and ultimate stone or stones in any desired attitude or position of said ultimate ring by enabling said selected, displayable, demonstration ring to be moved to any corresponding attitude or position while having said one or more selected, stud-mounted, displayable, demonstration stone or stones temporarily associated with it.

4. A remount kit as claimed in claim 1 wherein a display-like support has a plurality of spaced recesses that releasably hold the shanks of said plurality of individually-different, displayable, demonstration rings, wherein said support has a plurality of small diameter openings that releasably hold said plurality of individually-different, stud-mounted, displayable, demonstration stones, wherein said support holds identifying indicia adjacent said plurality of individually-different, stud-mounted, displayable, demonstration stones, and wherein two-dimensional representations of selected rings of said plurality of individually-different, displayable, demonstration rings have a space therein which can have the locations and natures of stones recorded thereon to facilitate the subsequent proper positioning of one or more of said ultimate stones on said ultimate ring.

4,448,305

GOLF BAG INCLUDING STIFFENING STRUCTURE

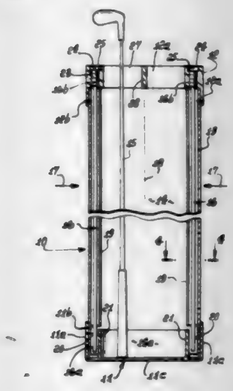
Kim Y. Sup, Busan, Rep. of Korea, assignor to King Stone Co., Ltd., Busan, Rep. of Korea

Filed Aug. 30, 1982, Ser. No. 413,221

Int. Cl.³ A63B 55/00

U.S. Cl. 206—315.8

5 Claims



1. A lightweight reinforced golf bag construction, comprising

(a) a longitudinally elongated golf bag having an open upper end, a closed lower end, and a flexible wall extending between said ends and about a hollow interior adapted to receive golf club shafts,

(b) multiple rods extending longitudinally between said ends and removably retained by the bag adjacent said wall to resist sideward flexing of the wall,

(c) a channel at the closed lower end of the bag and opening longitudinally toward the upper end of the bag, the rod

lower ends freely, loosely and blindly received in said channel, and

(d) holders removably holding the upper ends of the rods to the bag adjacent the upper end thereof and thereby holding the rod lower ends in said channel, the holders having screw threaded attachment to the rods,

(e) said channel being annular and defined by a relatively rigid cap attached to said flexible wall, said cap having an annular upstanding wall directly exposed to the rod lower ends and spaced radially inwardly therefrom, the radial dimension of the channel at the rod locations being greater than the outer diameters of the rod lower ends.

4,448,306

INTEGRATED CIRCUIT CHIP CARRIER

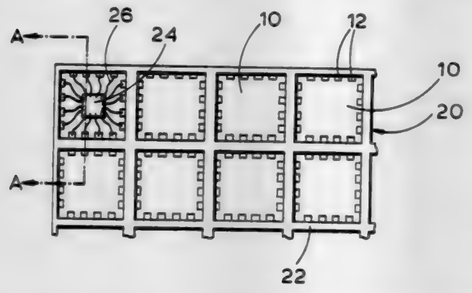
F. Nihal Sinnadurai, Woodbridge; Anthony J. Cook, Dippenhall, Near Farnham, and Keith W. Gurnett, Bracknell, all of England, assignors to British Telecommunications, London, England

Filed Jan. 25, 1982, Ser. No. 342,358

Claims priority, application United Kingdom, Feb. 9, 1981, 8103840

Int. Cl.³ B65D *73/02, 85/42*

U.S. Cl. 206—331 **8 Claims**



1. A structure for mechanically mounting integrated circuit dice within respective protective cavities and for also providing electrical connections from each die within its cavity to external electrical connection points outside its cavity, said structure comprising:

a base sheet of plastics material having a top surface and a bottom surface;

a plurality of metallized holes being formed in said base sheet between said top and bottom surfaces and disposed about respectively different predetermined contiguous areas on said top surface of said base sheet;

a plurality of first metallized pads disposed on said top surface in register with said plurality of holes, with respectively corresponding ones of the metallized holes and first pads being electrically connected;

a plurality of second metallized pads disposed on said bottom surface also in register with said plurality of holes, with respectively corresponding ones of the metallized holes and second pads being electrically connected;

at least some of said first pads being individually extended in two directions away from their corresponding holes so as to have opposite ends terminating within different but contiguous ones of said predetermined areas; and

a grid sheet of plastics material bonded to said top surface of the base sheet, said grid sheet having plural open apertures formed by interconnected arms which are in alignment with said holes and covering portions of said first pads, said apertures being in register with said predetermined areas such that said arms define the sidewalls of said protective cavities;

said structure thereby providing plural integrated circuit carriers when cut apart along lines defined by said holes, each carrier having its own protective cavity defined by a corresponding one of said apertures and also having an array of generally U-shaped conductive leads formed by respective portions of said metallized holes and pads connecting the top surface of the carrier from points within the protective cavity to the bottom surface of the carrier outside that cavity.

4,448,307

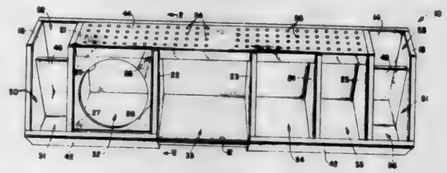
DENTAL SUPPLY DISPENSER

Clyde L. Roggenkamp, 1152 N. White River Pkwy. #512, Indianapolis, Ind. 46222

Filed Jun. 9, 1982, Ser. No. 386,449

Int. Cl.³ B65D *1/24, 1/36, 85/20*

U.S. Cl. 206—369 **12 Claims**



1. A dental supply dispenser and instrument holder apparatus comprising: a planar elongated base member having front and rear side walls, end walls and transverse partition walls extending upwardly therefrom, said partition walls extending transversely to the longitudinal axis of said base member and being generally parallel to said end walls; said front side wall extending outwardly toward the front from the base at an angle relative to the vertical; said rear side wall extending higher than said front side wall, said end walls and partition walls having parallel front edges which abut said outwardly extending front wall and extend upwardly and inwardly from the top of said front wall, said front and rear side walls, together with said end walls and partition walls, defining a plurality of compartments which are open at the upper front portion thereof, at least one of said compartments having a door with hinge means pivotally connecting said door to said apparatus; a planar top wall attached to the upper portions of said partition walls and extending generally horizontally to enclose the top of at least one of said compartments, said top wall having a plurality of openings in the upper surface thereof for receiving dental burs, said apparatus including a compartment at each end thereof which is free of said top wall so as to be easily accessible for storing items of greater length.

4,448,308

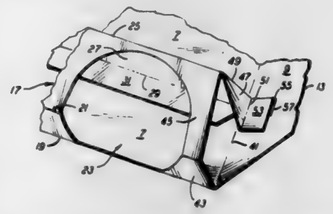
COLLAPSIBLE DISPLAY CARRIER

Robert G. Carver, Ashland, Ohio, assignor to Don Coburn, Inc., Ashland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,627

Int. Cl.³ B65D *85/44*

U.S. Cl. 206—426 **14 Claims**



1. A collapsible display carrier for articles inserted into the carrier, said carrier comprising;

opposing top and bottom walls having transverse and lateral edges;

opposing side walls laterally hingedly attached to said lateral edges of said top and bottom walls to form a sleeve said side walls including lateral fold lines defining upper and lower half side walls and acting as lateral hinge axes for collapsing said carrier to a substantially flat configuration about a lateral plane lying intermediate of said top and bottom walls; and

collapsible retaining means for engaging articles inserted into said carrier, said collapsible retaining means comprising a divider wall hingedly secured to said bottom wall along a first transverse hinge axis and extending between said opposed lower half side walls, a support wall hingedly attached to said divider wall and extending from said support wall to said bottom wall and hingedly attached to a first transverse edge of said bottom wall, said support wall including a second transverse hinge axis, and hinge means depending from said divider wall and fastened to one of said lower half side walls for collapsing said retaining means to a substantially flat configuration when said carrier is collapsed to a substantially flat configuration.

4,448,309

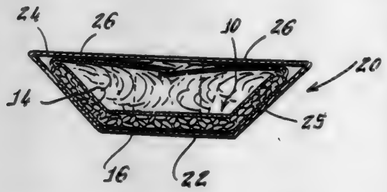
CONTAINER FOR EXPANDABLE FOOD POUCH

Harry I. Roccaforte, Western Springs, and Raymond G. Scott, Oak Brook, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 23, 1982, Ser. No. 422,472

Int. Cl.³ B65D *5/36*

U.S. Cl. 206—525 **22 Claims**



1. A quick-opening, non-metallic container for housing an expandable food pouch in a non-expanded and in an expanded condition comprising:

a base portion having

a bottom support panel of regular polygonal shape bisected by a scoreline and adapted to be folded about said scoreline,

upwardly and outwardly extending side wall panels connected to preselected ones of the edges of said polygonally shaped bottom support panel, each one of said side wall panels being connected to the adjacent one thereof to form with said bottom support panel a bowl when said bottom support panel is unfolded about said scoreline, said bowl being adapted to receive an expandable food pouch in a stored condition,

a plurality of overlapped, separate top panels, each top panel having an edge resiliently and foldably connected to one of said side panels, and

means connected to said bottom support panel extending between said bottom support panel and said side wall panels for locking said bottom support panel in a substantially horizontal plane relative to said sidewalls,

said locking means including

a pair of abutment tabs foldably connected to opposed sides of said bottom support panel adapted to be placed in contact with the interior of a pair of adjacent sidewall panels, and

a V-shaped locking tab cut from at least one of said pair of abutment tabs extending at least partially beneath one of said sidewall panels.

4,448,310

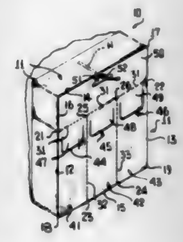
DISPLAY PACKAGE OF PAGE-MARKERS

Dale A. Hodgson, Summersville, W. Va., assignor to Bright of America, Summersville, W. Va.

Filed Feb. 7, 1983, Ser. No. 464,413

Int. Cl.³ B65D *85/62, 83/00*

U.S. Cl. 206—526 **3 Claims**



1. A package for the display, sale and eventual use of page-markers consisting solely of a single sheet of paperstock material of a generally polygonal configuration defined by a pair of generally parallel spaced side edges and generally parallel spaced top and bottom edges, at least two lines of weakening disposed generally normal to each other, a first of said lines of weakening being spaced below and in parallel relationship to said top edge, a second of said liens of weakening being spaced inboard of and parallel to said side edges and extending between said first line of weakening and said bottom edge and defining therewith at least a pair of page-markers joined to each other along said second line of weakening, each said pair of page-markers having a generally U-shaped cut line opening upwardly toward said first weakening line defining a page-engaging tab, and cut-line means between said top edge and said first weakening line and generally centrally of said spaced side edges forming an opening for suspending said package for display purposes.

4,448,311

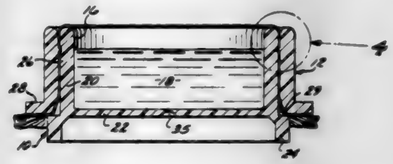
SAMPLE CELL

Edwin A. Houser, Fullerton, Calif., assignor to Tech Ref, Inc., Fullerton, Calif.

Filed Jan. 24, 1983, Ser. No. 460,310

Int. Cl.³ G01N *21/00*

U.S. Cl. 206—527 **8 Claims**



1. A sample cell for use with a radiation permeable membrane, in analyzing a liquid sample, said sample cell comprising:

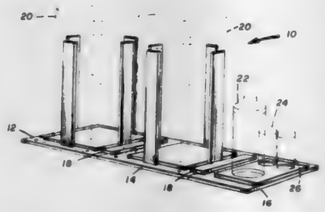
A cup member having upstanding side walls and a bottom wall;

a ring member telescopically slideably received by the exterior of the side walls of said cup with the intermediate portion of said membrane sandwiched therebetween so as to be tightly stretched across the top of said side walls;

complementary releasable rib and recess means interposed between said members; and

said cup and ring being molded from a synthetic plastic mixed with a lubricant.

4,448,312
VERTICAL FOOD HOLDER
Eldor N. Schuman, 9633 10th Ave., Carney, Md. 21234
Filed Mar. 18, 1982, Ser. No. 359,507
Int. Cl.³ A47F 7/00
U.S. Cl. 211—49 R **5 Claims**

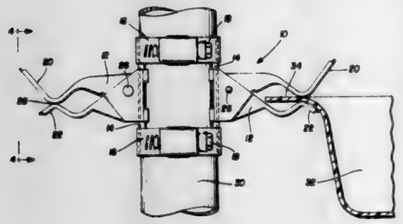


1. A food holding system, comprising:
at least one of a first food holding unit, said first food holding unit having a first base means, a first food support means, and a plurality of first retainer means, said first base means being substantially square in configuration and having a thickness and a top face side and a bottom face side, said bottom face side being for the purpose of providing an interface with any surface upon which said first food holding unit is placed, said first food support means being substantially square in configuration, but of lesser outside dimensions in each direction than said substantially square first base means, said first food holding unit having a thickness and a top face side and a bottom face side, said first food support means being centrally located on and suitably affixed to said first base means, said bottom face side of said first food holding unit interfacing with said top face side of said first base means, the four edges of said substantially square first food holding unit being substantially parallel with the respective four edges of said substantially square first base means on which it is centrally located and to which it is suitably affixed, said plurality of first retainer means being peripherally located and spaced around said first food support means and suitably affixed to said top face side of said first base means and individually to one of said four edges of said substantially square first food holding unit, each of said first retainer means of said plurality of first retainer means being further centrally positioned along the peripheral outside edge of one of said four edges of said substantially square first food holding unit, each of said first retainer means being substantially rectangular in cross sectional configuration, said plurality of first retainer means extending vertically upward from said first base means, said plurality of first retainer means having no interface with each other, said plurality of spaced first retainer means retaining food in position therebetween and positioned on said first food support means, said first base means having a plurality of apertures therein, said plurality of apertures being arranged in a symetrical pattern on said top face side, said plurality of apertures in said symetrical pattern being spaced apart, equal portions of said plurality of apertures with each portion in like symetrical patterns being each centrally positioned along and spaced from one of said four edges of said substantially square first base means;
at least one of a second food holding unit, said second food holding unit having a second base means, and a plurality of second retainer means, said second base means being substantially rectangular in configuration and having a thickness and a top face side and a bottom face side, said bottom face side being for the purpose of providing an interface with any surface upon which said second food holding unit is placed, said plurality of second retainer means being of a depressed area configuration for each retainer means of said plurality of second retainer means, said plurality of second retainer means being formed as a plurality of said depressed area configurations set into a substantially rectangular member, said substantially rectangular member with said plurality of depressed areas therein having a longer side thereof being centrally positioned along a dimensionally longer edge of said second base means, said longer side of said substantially rectangular member coinciding with said dimentionally longer edge of said second base means, the dimensionally shorter side of said substantially rectangular member being dimensionally less than the dimensionally shorter edge of said substantially rectangular second base means, said plurality of depressed areas being circular in configuration, said substantially rectangular member being suitably affixed to said top face side of said second base means as located and positioned, said second retainer means having said plurality of depressed areas therein holding food in a plurality of containers, said plurality of containers of food being retained within and by said plurality of depressed area and held in a vertical position thereby, said second base means having a plurality of apertures therein, said plurality of apertures being arranged in a symetrical pattern and spaced apart similar to one of said portions of said plurality of apertures in said first base means, said plurality of apertures in said second base means being centrally positioned along and spaced from the dimensionally longer edge of said second base means opposite to said longer side coinciding with said longer side of said substantially rectangular member, said symetrical pattern and spacing of apertures in said second base means from said longer edge matching similar said symetrical pattern and spacing of said apertures in said first base means, said pattern of apertures in first and second base means respectively, being directly opposite to each other at the adjacent edges of said first and second base means, respectively; and
at least one of a coupling means, said coupling means being removably assembled to said first and second food holding units, respectively, said coupling means thereby affixing said first food holding unit to said second food holding unit in a lateral relation to each other, said coupling means having a body member and a plurality of projection means, said body member having a top surface and a bottom surface, said plurality of projection means being suitably affixed to said bottom surface of said body member, said plurality of projection means being spaced in a symmetrical pattern on said bottom surface of said body member, said symmetrical pattern matching said symmetrical pattern of apertures in adjacent first and second base means when assembled adjacent to each other, said symmetrical patterns of said apertures and said projection means providing for assembly of said first food holding unit to said second food holding unit by removably inserting said symmetrical pattern of projection means into said symmetrical pattern of apertures in said adjacent first and second base means to removably affix said first food holding unit to said second food hold unit.

4,448,313
SUPPORTING DEVICE
Glenn A. Pomeroy, #1 Revere La., and Carol L. Scrivens, 321 S. Logan St., both of Elyria, Ohio 44035
Filed Jul. 19, 1982, Ser. No. 399,728
Int. Cl.³ A47G 29/00
U.S. Cl. 211—71 **1 Claim**

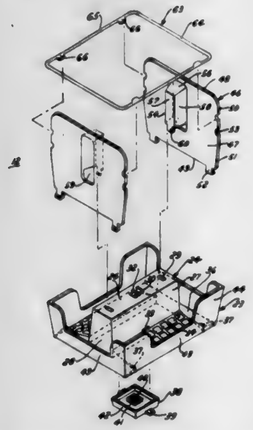
1. A supporting device, including:
a pair of circular adjustable mounting clamps;
a pair of support members integrally attached to said mounting clamps, said support members, each being perpendicular to said mounting clamps;
a non-pivotal first lip member, rigidly affixed to each said support member, said first lip member being arcuate in configuration at one end and terminating in a triangular flare at the other end;
a bearing member affixed to said first lip member at the end terminating in a generally triangular flare,

a second lip member, pivotally attached to said first lip member by said bearing member such that said second lip member is superimposed on said first lip member and is rotatable about said bearing member, said second lip member being arcuate in configuration at one end thereof; and
spring means attached to said bearing member for resiliently



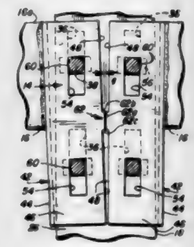
biasing said second member against said first lip member, said first and second lip member being in pressurized contact with one another at opposed points defined by said arcuate ends and being adapted for resiliently gripping a pan at the edge thereof, with said first lip member contacting one surface of said pan and said second lip member contacting another surface of said pan.

4,448,314
MERCHANDISE RACK
Peter J. Weiller, Armonk, N.Y., assignor to Thomson Leeds Company, Inc., New York, N.Y.
Filed Jun. 14, 1982, Ser. No. 388,458
Int. Cl.³ A47F 5/02
U.S. Cl. 211—131 **14 Claims**



1. A display structure comprising a vertical shaft;
A rack member including a body member having a first coupling opening engaging said shaft, a pair of opposite upstanding partition walls coupled to said body member and a frame member including a first pair of opposite legs extending between and beyond and engaging the opposite edges of said walls and a second pair of opposite legs disposed outwardly of said walls; and
means for supporting said rack member at a predetermined position along said shaft.

4,448,315
STORAGE RACKS WITH SPACER TABS
James H. Obermeyer, Crown Point, Ind., assignor to Unarco Industries, Inc., Chicago, Ill.
Filed Nov. 13, 1981, Ser. No. 321,045
Int. Cl.³ A47F 5/00
U.S. Cl. 211—191 **3 Claims**

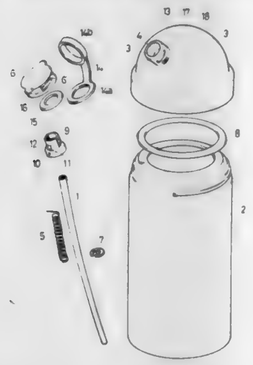


1. A storage rack which comprises:
a generally upright post having a pair of end surfaces facing in opposite directions along the longitudinal axis of the storage rack, and an outer surface extending between and connecting said end surfaces;
a first beam assembly having a first elongated, generally horizontal beam extending in one direction along said longitudinal axis, a first connector assembly fixedly secured to one end of said first beam for connecting said first beam to said post, and a first tolerance control tab fixedly secured to said first connector assembly at a location generally adjacent said outer surface of said post; and
a second beam assembly having a second elongated generally horizontal beam extending in the direction opposite to said one direction along said longitudinal axis, a second connector assembly fixedly secured by second connector means to one end of said second beam for connecting said second beam to said post, and a second tolerance control tab fixedly secured to said second connector assembly at a location generally adjacent said outer surface of said post,
said first and second connector assemblies being spaced from each other and said first and second tolerance control tabs being positioned adjacent each other at generally the same vertical level, some degree of play being provided between said first and second connector assemblies and their associated upright post when said connector assemblies are seated generally in their installed positions but are not yet fully tightened,
said first and second tolerance control tabs abuttingly engaging each other when said connector assemblies are tightened in their final installed positions.

4,448,316
STRAW-EQUIPPED LIQUID DRINK CONTAINER
Nakayama Hiroshige, 2-2-9, Asakusabashi, Taito-ku, Tokyo, Japan
Filed Jul. 17, 1981, Ser. No. 284,404
Claims priority, application Japan, Jul. 28, 1980, 55-106755[U]; Jun. 15, 1981, 56-87769[U]
Int. Cl.³ A47G 21/18; B65D 55/16, 47/04
U.S. Cl. 215—1 A **3 Claims**

1. A straw-equipped liquid drink container comprising, a liquid container having a mouth, a semispherical cap screwed over said mouth of said container, a tubular projecting opening on the upper side wall surface of said cap, a straw made of flexible material disposed in said container and protruding in use through said opening, a seal cap, means for removably screwing said seal cap onto said tubular projecting opening comprising a tubular extension on said seal cap to fit over said tubular projecting opening, a pair of internal screw thread segments provided on the opposite sides of the internal periph-

ery of said tubular extension of said seal cap, a pair of external screw thread segments provided on the external periphery of said tubular projecting opening, and gaps provided between said pairs of thread segments for enabling said segments to pass therethrough when said seal cap is placed in the closing position, said seal cap forcing the protruding part of said straw into said liquid container and retaining it therein when said seal cap



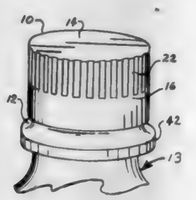
is in the closed position, a support member connecting said seal cap to said projecting tubular opening, a snap ring inserted onto said straw, and a coil spring fixedly attached at one end to said snap ring and at the other end to said tubular opening so that said straw is resiliently urged by said spring into the protruding position to project out of said tubular opening by flexure of said straw as well as the spring action of said spring when said seal cap is opened.

4,448,317

TAMPER EVIDENT CLOSURES AND PACKAGES

Mortimer S. Thompson, Arlington, Mass., assignor to Tri-Tech Systems International, Inc., West Springfield, Mass.

Filed Feb. 18, 1983, Ser. No. 467,791
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—203 **53 Claims**



1. A tamper evident resealable closure for closing, opening and reclosing a package, including a stretchable portion thereof which effects a change in color when stretched, and mechanical means thereon adapted to coact with the package to stretch said portion to effect a change in color which indicates the condition of the package.

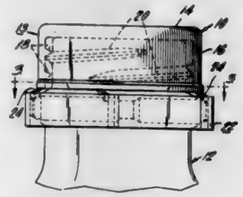
4,448,318

TAMPER EVIDENT CONTAINER-CLOSURE ASSEMBLY

Allen D. Lowe, Montgomery, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Aug. 20, 1982, Ser. No. 410,047
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **4 Claims**

1. A closure for containers having a discharge opening and a finish with means for supporting the closure over the discharge opening comprising a cap portion of generally cup-like form having a top and a depending skirt with means on the interior peripheral surface thereof cooperating with means on the container finish for applying and removing the cap portion; a tamper-evident ring connected to the lower terminal edge of said skirt by at least two fracturable bridge means and at least one lug cooperatively associated with at least one cam element below the container finish operable in one direction of move-



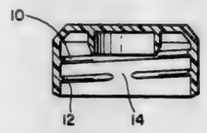
ment of the cap portion relative to the container to effect fracturing of the bridge means to separate the tamper-evident ring from the cap portion, said bridge means being oriented in a predetermined manner relative to one another to effect sequential breaking of said bridge means in a given pattern upon relative movement of said cap portion and ring in said one direction.

4,448,319

SCREW CAP

Josef Kern, Hainburg, Fed. Rep. of Germany, assignor to Firma Heinrich Josef Winter, Hainburg/Main, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,496
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204201
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—329 **11 Claims**



1. A plastic screw cap for bottle-like containers of the type having at their mouth a neck with a single external screwthread making a full uninterrupted turn, the cap comprising a mating single screwthread within the cap making at least a full turn, and wherein the screwthread has only an interruption in the screwthread of the cap at a position along the screwthread at an angular spacing of less than 360° from the start of the screwthread of the cap for enabling snapping of the lowermost turn of the screwthread of the cap over the uppermost turn of the screwthread of the container.

4,448,320

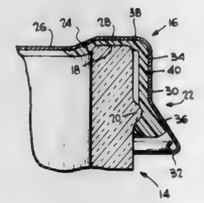
CLOSURE WITH PLASTISOL LINER DEFINING A RETAINING BEAD

William J. Kapolas, Mt. Prospect, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Feb. 1, 1983, Ser. No. 462,846
Int. Cl.³ B65D *53/00*
U.S. Cl. 215—346 **11 Claims**

1. A closure comprising a shell having a cured plastisol liner

wherein the plastisol is in a puffed state, said liner having a lower radially inwardly directed locking bead formed solely



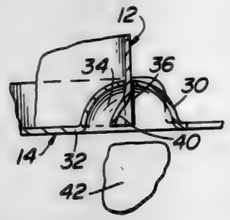
due to the puffed state of said plastisol for locking engagement beneath a container neck finish bead.

4,448,321

FASTENING SYSTEM

Jacques M. Hanlet, Loxahatchee, Fla., assignor to Intent Patent A.G., Liechtenstein

Filed Sep. 22, 1982, Ser. No. 421,278
Int. Cl.³ B29C *27/00*; B32B *7/08, 7/12*; B65D *6/32*
U.S. Cl. 220—4 R **2 Claims**



1. A closed container comprising:
(a) an open container member having an upper wall member and a sidewall member secured each to the other;
(b) a cover member having a dome member formed thereon defining an open chamber, said dome member having a slot formed therethrough for insert therethrough of at least a portion of said sidewall member into said dome open chamber, said portion of said sidewall member within said open chamber being deformed to fasten said cover member to said open container member; and,
(c) adhesive securement means inserted within said open chamber for sealing said sidewall portion and said cover member together.

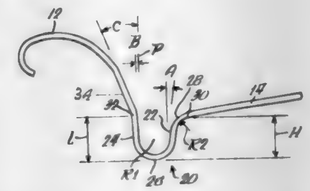
2. A method for forming a closed container including the steps of:
(a) providing an open container having an upper wall member and a sidewall member secured each to the other;
(b) forming a dome member defining an open chamber in a cover member for said open container;
(c) cutting a slot in said dome member for insert of a portion of said sidewall member into said open chamber;
(d) deforming said portion of said sidewall member internal said open chamber for fastening said cover member to said open container; and,
(e) inserting adhesive within said open chamber to seal said sidewall member portion to said cover member.

4,448,322

METAL CONTAINER END

John L. Kraska, Riverside, Ill., assignor to National Can Corporation, Chicago, Ill.

Division of Ser. No. 968,099, Dec. 8, 1978, Pat. No. 4,217,843, which is a continuation-in-part of Ser. No. 820,237, Jul. 29, 1977, abandoned. This application Oct. 11, 1979, Ser. No. 83,870
Int. Cl.³ B65D *8/08*
U.S. Cl. 220—67 **5 Claims**



1. A circular, metal container end having a metal thickness of approximately 0.0120 inches and including a peripheral curl and a central panel with a countersink between said curl and central panel extending below said central panel, the improvement of said countersink having inner and outer flat walls interconnected by a first arcuate portion, said first arcuate portion having a radius less than three times the thickness of said metal, said flat inner wall being integral with said central panel through a second arcuate portion having a radius approximately twice the thickness of said metal and said outer flat wall having a length greater than said inner flat wall so that an upper end is located above a peripheral edge of said central panel, and said outer flat wall defining an angle of less than five degrees with respect to a plane extending perpendicular to said central panel, said peripheral curl extending above said central panel so that said container end is capable of resisting at least 90 psi buckle pressure and at least 60 psi rock pressure.

4,448,323

SAFETY FUEL FILLER STRUCTURE OF A MOTOR VEHICLE

Isao Hayashi, and Makoto Moriya, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 5, 1982, Ser. No. 355,211
Claims priority, application Japan, Mar. 12, 1981, 56-34508; Mar. 12, 1981, 56-34509
Int. Cl.³ B65D *41/00*
U.S. Cl. 220—86 R **6 Claims**



1. A fuel filler structure of a motor vehicle having an outer body panel and an inner structural panel spaced from said outer body panel, said fuel filler structure comprising:
a cup-shaped base member secured to an open portion of said outer body panel to form a recess on said outer body panel, said base member being formed at its bottom portion with an opening;
a fuel filler tube secured to said inner structural panel with its fuel inlet mouth portion freely inserted into said recess through said opening of said base member;
a flexible sealing member sealingly covering the clearance defined between said filler tube and said base member;

a filler cap removably fitted to the mouth of said filler tube and located within said recess of said outer body panel; and

a bumper means mounted on said filler tube and constructed to make an initial collision with said base member when said fuel filler tube is displaced to a certain degree relative to said base member,

wherein said bumper means comprises a tubular member which is spacedly and coaxially mounted about the fuel filler tube in the vicinity of the mouth of said filler tube, said tubular member being secured at its axial one end to a flange integrally formed on said fuel filler tube, said flange being secured to said inner structural panel, said tubular member having at its axial both ends respective inward flanges which act as spacers having the cylindrical major portion of said tubular member coaxially spaced from the filler tube, the diameter of said major portion being greater than the outer diameter of the filler cap which is circular.

4,448,324

CONTAINER CLOSURE HAVING WEAKER OPENING MEANS

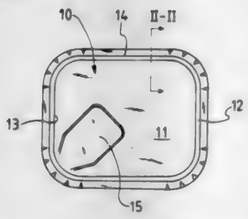
Jan B. Jeppsson, Lomma, and Zoltan Pollak, Lund, both of Sweden, assignors to AB Akerlund & Rausing, Sweden

Filed May 3, 1983, Ser. No. 491,020

Claims priority, application Sweden, May 10, 1982, 8202917-4

Int. Cl.³ B65D *17/34, 17/40*

U.S. Cl. 220—266 **22 Claims**



1. A container element comprising first and second injection molded portions and a tear line therebetween, said tear line comprising a weld zone comprising the area of direct contact between said first and second injection molded portions, said first injection molded portion including first and second elongated surfaces corresponding to the molds within which said first injection molded portion was formed, and said second injection molded portion including first and second surfaces corresponding to the molds within which said second injection molded portion was formed, whereby said weld zone comprises the area of direct contact between said first injection molded portion and said second injection molded portion.

4,448,325

CONTAINER CLOSURE

Cyril K. Edwards, Oadby, and Edward H. Webb, Dunchurch, near Rugby, both of England, assignors to Thomas Hunter Limited, Warwickshire, England

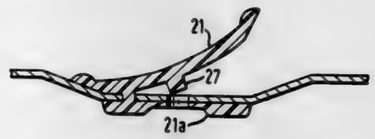
Filed Jul. 12, 1982, Ser. No. 397,070

Claims priority, application United Kingdom, Jul. 10, 1981, 8121325

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—269 **9 Claims**

1. A closure for a container including an element which can be manipulated to expose an aperture in the closure and thereby allow pressure in the headspace to adjust to ambient pressure, the element including an upper member on the upper surface of the closure and a lower member adhered to the underside of the closure thereby sealing the aperture and protecting it from chemical attack from the contents of the container, said lower member being connected to the upper member through the aperture and having its shear strength varied so that a section thereof will shear easily to release the pressure in the headspace whilst another section has higher resistance to



shear and will retain the upper member on the closure after the upper member has been manipulated to release the pressure.

4,448,326

EASY OPENING TAPE CLOSURE FOR BEVERAGE CONTAINER

Wilfred R. Brochman, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 1, 1982, Ser. No. 438,304

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **9 Claims**



1. An easy opening closure for a container comprising a polymeric film having a free end portion to be grasped by the user, said free end portion having an array of punctures formed therein with each puncture being surrounded by a plurality of projections fractured from the tape with the projections projecting in opposite directions from adjacent punctures.

4,448,327

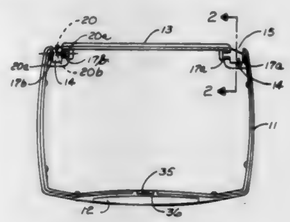
PLASTIC CONTAINER HAVING A CONCEALED HINGE

William J. Gahm, Jamesburg, N.J., assignor to Graber-Rogg, Inc., Cranford, N.J.

Filed Aug. 2, 1982, Ser. No. 404,453

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—341 **7 Claims**



1. A plastic container which comprises a first body, a second body for uniting with said first body to form an enclosure, when located within opposing relationship, and a pivotal pin having a body portion and end portion;

said first body having at least one pair of shoulders moulded therein in opposing relationship to each other, said pair of shoulders each having an opening therein for receiving and holding the respective end portions of said pin which is capable of being snap-fitted therein; and,

said second body having at least one moulded projection having an opening therein for receiving and holding the body portion of said pin when the first body is united with the second body, thereby rendering any portion of the pin invisible external the container.

4,448,328

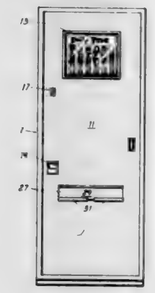
MACHINE FOR VENDING ARTICLES SUCH AS NEWSPAPERS, MAGAZINES AND THE LIKE

W. Jack Wingate, Charlotte, N.C., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Jan. 27, 1982, Ser. No. 343,157

Int. Cl.³ G07F *11/28*

U.S. Cl. 221—13 **11 Claims**



1. A vending machine for flat articles such as newspapers comprising an enclosed cabinet having an inclined ramp therein defining the bottom wall of an article storage magazine, an inclined outlet chute substantially aligned with said ramp and having a discharge opening communicating with the exterior of said cabinet, an upright vertically movable post adjacent the lower end of said ramp, electromechanical power means for lowering said post to release individual articles from said ramp and permit them to slide onto said outlet chute, coin actuated means for energizing said power means, said power means including means responsive to movement of a released article across said post for de-energizing said power means and interrupting downward movement of said post after each article has passed from said ramp onto said chute, a display window in said cabinet, a chamber within said cabinet registering with said window for receiving a display article, and electromagnetic means energized responsive to the discharge of the last article from said storage magazine and to said coin-actuated means for releasing said display article upon insertion of coins into said coin actuated means, said power means comprising a source of electric power, an electric motor drivingly connected to said post, a first conductor connecting said power source and said coin actuated means, said coin actuated means including a normally open switch closeable responsive to insertion of proper coinage, said de-energizing means comprising a first normally-closed pressure-responsive switch in the upper end of said post openable responsive to the passage thereover of an article, a second conductor connecting said normally-open switch and said first normally-closed pressure-responsive switch, a second pressure-responsive switch in the bottom of said newspaper storage magazine, a third conductor connecting said first and second pressure-responsive switches, a fourth conductor connecting said second pressure-responsive switch and said motor, said second pressure-responsive switch normally connecting said third and fourth conductors, said display window chamber having a drop door and a solenoid normally permitting said drop door to be latched in closed position when de-energized and releasing said door when energized, a third normally-closed switch openable responsive to the discharge of a newspaper from said display window chamber, a fifth conductor connecting said second and third switches, said second pressure-responsive switch normally connecting said third and fourth conductors and being constructed to disconnect said third and fourth conductors and connect said third and fifth conductors upon release of the last article from said article storage magazine, whereby to cut out said motor and to energize said solenoid to release said drop door upon receipt by said coin actuated means of proper coinage and thereby permitting said drop door to open and discharge the article from said display window chamber, said third switch de-energizing said solenoid responsive to discharge of the article from said display window chamber.

4,448,329

DISPENSER FOR TUBES OF FLUENT MATERIAL

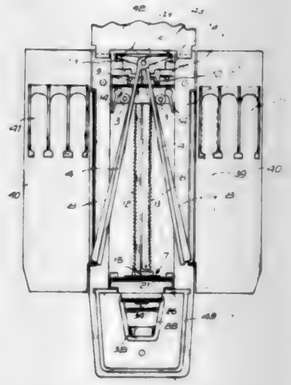
Hilario S. Vilaseca, Avinguda Joan Prim, 202 Granollers (Barcelona), and Ramon B. Mas, Avinguda Joan Prim, 221 Granollers (Barcelona), both of Spain

Filed Dec. 2, 1981, Ser. No. 326,901

Claims priority, application Spain, Dec. 9, 1980, 255.283; Oct. 21, 1981, 260.892

Int. Cl.³ B65D *35/28*

U.S. Cl. 222—96 **11 Claims**



1. A dispenser for tubes of fluent materials, comprising:

means for supporting a compressible tube of fluent material which is open at one end in a dispensing position,

two flexible wings extending along the length of and on either side of the tube when the latter is present and supported in the dispensing position, the respective ends of the wings distal from the open end of the tube being mounted so that the wings are movable towards each other so as to squeeze between them the tube in the dispensing position and thereby express its contents,

two guides, each guide being positioned on a side of a respective one of the wings,

a carriage on which the guides are mounted, said carriage being movable to move the guides along the wings away from the mounted ends thereof so as to urge the wings towards each other,

the guides being mounted on the carriage such that each of said guides is free to move relative to the carriage in an oblique direction relative to the length of a tube when the latter is present in the dispensing position, the guides being so movable in directions approaching each other as they move towards the mounted ends of the wings and away from the open end of a tube present in the dispensing position, and

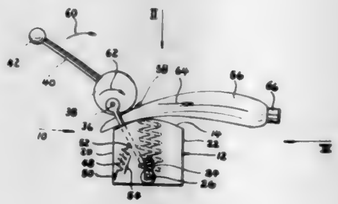
a ratchet mechanism operable to produce the said movement of the carriage in steps.

4,448,330

DISPENSER DEVICES FOR FLOWABLE CONTENTS IN COMPRESSIBLE TUBES

Pieter Roux, 6 Reservoir St., Malmesbury, South Africa 7300

Filed Jan. 8, 1982, Ser. No. 337,968
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—101 **4 Claims**



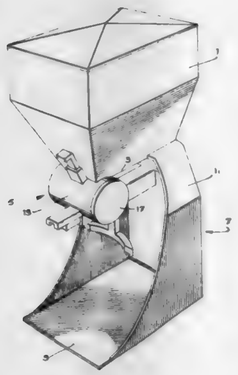
1. A dispenser device for dispensing flowable contents from a compressible tube, which includes a support having a base plate; a curved compressor body in the form of an elongated cylinder, which is mounted off-center rotatably to a pair of arms, which arms in turn are pivotably connected to the support; a connection means rotatably supporting the compressor body and having a pivotable connection on the support so as to define a gap between the compressor body and the base plate, into which gap a compressible tube can be inserted; a manually operable handle connected to the compressor body, which handle, on rotation, is adapted to move the compressor body towards the base plate for reducing the gap thereby exerting pressure on a tube placed between the compressor body and the base plate so as to force the flowable contents out of the tube and a spring provided acting between the support and at least one of the arms so as to urge the compressor body into an inoperative position.

4,448,331

DISPENSER FOR DISPENSING VARIABLE AMOUNTS OF A GRANULAR MATERIAL

Germain Millette, and Michel Martin, both of Longueuil, Canada, assignors to Distributeur Minute Inc., Longueuil, Canada

Filed May 20, 1982, Ser. No. 380,279
Claims priority, application Canada, Oct. 15, 1981, 388001
Int. Cl.³ B67D *5/06*; G01F *11/10*
U.S. Cl. 222—181 **11 Claims**



1. A dispenser, for dispensing predetermined amounts of a granular product, essentially comprising a hopper to hold a reserve of such a product and having, at its base, a device for measuring and distributing the product and further provided with a support to hold the hopper and the device in elevated position to allow the insertion of a container beneath the device to receive therefrom a predetermined quantity of the product, the said measuring and distributing device comprising:

a hollow cylinder and a rotary drum mounted therein, the drum having a first and a second cavity defining, at the periphery of the drum, two openings disposed side by side in a direction parallel to the axis of the drum and extending transversely of the said axis, the opening of the first cavity extending forwardly past the opening of the second cavity in one of the two directions of rotation of the drum;

two feed apertures, provided side by side through the drum cylinder and in communication with the inside of the hopper; the said cavities being arranged so that their openings be, in feeding position, simultaneously in registry with the feed apertures;

two dispensing apertures, provided side by side through the drum cylinder and arranged so as to communicate successively with the said drum cavities in dispensing position for discharging the product fed into the cavities;

wherein the spacing between the feed apertures and the dispensing apertures, about the drum, is provided to allow selective communication of the cavities either with the feed apertures or with the dispensing apertures, and

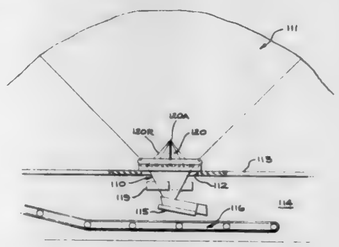
means to allow controlled rotation, in two steps, of the drum in the said one of the two directions of rotation from the said feed position of the cavities: in a first step, when only the opening of the first cavity is brought into registry with the dispensing aperture corresponding thereto and, in a second step and following further rotation of the drum, when the opening of the second cavity is brought into registry with the corresponding dispensing aperture thereof.

4,448,332

VIBRATORY STORAGE PILE DISCHARGER MEANS

Virgil C. Plummer, Jr., Louisville, Ky., assignor to Vibranetics, Inc., Louisville, Ky.

Filed Jun. 3, 1981, Ser. No. 270,117
Int. Cl.³ B65G *65/40*
U.S. Cl. 222—196 **8 Claims**



1. Improved vibratory storage pile discharger means for promoting the downward flow of material from a storage pile of a flowable material, such as coal, limestone, woodchips, sulphur and the like, through an opening in a generally horizontal surface on which the pile is supported and into another area located beneath that pile-supporting surface, comprising:

(a) an inverted hollow frustoconical conduit member generally vertically arranged within the opening in the pile-supporting surface with its long central axis concentrically aligned with that of the opening and having its wider upper inlet end supported by the pile-supporting surface through resilient means and also having its narrower lower outlet end extending through the opening and into an area located therebeneath;

(b) an upright conical member mounted generally vertically within the wider upper inlet end of said hollow frustoconical conduit member with its base being radially spaced apart from the interior walls thereof and having its long central axis concentrically aligned with those of the opening in the pile-supporting surface and said inverted hollow frustoconical conduit member and also having its apex extending above the uppermost edge of said inverted hollow frustoconical conduit member; and

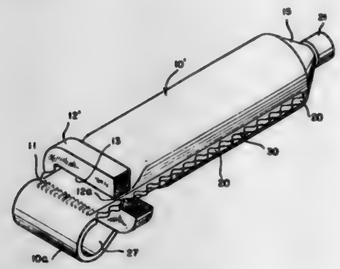
(c) drive means connected to said inverted hollow frustoconical conduit member for imparting vibratory movement to it and the upright conical member mounted therein with respect to the pile-supporting surface and the opening therethrough to transmit vibratory impulses to the pile and thus promote downward flow of material from the pile through said conduit member and into the area located beneath the pile-supporting surface.

4,448,333

FLEXIBLE CONTAINER AND EXPELLER

Mario Ferrari, 8 Holden Rd., Cherry Hill, N.J. 08034

Continuation of Ser. No. 100,898, Dec. 6, 1979, Pat. No. 4,316,556. This application Feb. 18, 1982, Ser. No. 350,110
Int. Cl.³ B05B *11/04*
U.S. Cl. 222—214 **7 Claims**



1. A flexible container comprising:

a body having flexible sidewalls, which sidewalls define a compressible storage space,

the body terminating forwardly in a content dispensing opining and rearwardly in a closure which prevents escape of the contents,

at least one strip extending longitudinally of said storage space and projecting laterally from one side of said body sidewalls, said strip having a plurality of lateral corrugations spaced-apart along said storage space,

said corrugations defining distances along the storage space, whereby predetermined fractions of its contents may be dispensed by compressing the storage space up to a given corrugation, and

expeller means positioned between the closure and the dispensing opening, and being movable relative to the body from one of said corrugations to another,

the expeller means being so constructed as to engage the body in such manner that said movement progressively compresses the storage space between the two corrugations in a direction substantially perpendicular to the direction of lateral projection of said strip and urges the contents in said compressed space toward the dispensing opening.

4,448,334

CONTAINER AND DISPENSER FOR MATERIAL IN GRANULAR OR POWDER FORM

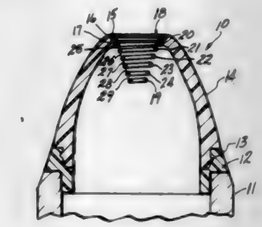
William Morris, 383 Ellsworth Ave., New Haven, Conn. 06511

Filed Jan. 18, 1982, Ser. No. 340,355
Int. Cl.³ A47G *19/24*
U.S. Cl. 222—230 **8 Claims**

1. A device for containing and dispensing material in granular or powder form comprising a container, a substantially unrestricted outlet opening defined at the upper end of said container,

a spring member of conical shape defined by helices of decreasing diameter about a longitudinal axis, said helices being uniformly spaced apart along the axis to permit dispensing of material therethrough,

said member being affixed to said container in said opening adjacent the larger helices thereof and depending into said container, the smallest helix defining a dispensing opening along said axis,



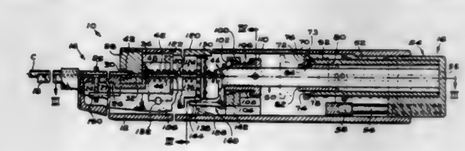
whereby a substance in said container may be dispensed between helices of said member, and said spring may be extended to break a build-up of material between said helices.

4,448,335

INCREMENTAL METERING DEVICE HAVING RESET MEANS

Thomas C. Jessop, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,740
Int. Cl.³ G01F *11/00*
U.S. Cl. 222—391 **10 Claims**



2. A device for metering liquid from a container, comprising

means for ejecting liquid from such container, said means including a piston rod mounted for movement along a first path between an initial position and positions operative to eject liquid,

first biasing means for biasing said piston rod away from said container and said operative positions to said initial position,

movable actuator means couplable to said piston rod for moving said piston rod in incremental amounts against said biasing means, from said initial position to successive operative positions, said actuator means being mounted for reciprocation along a second path that is parallel to said first path,

second biasing means for biasing said actuator means to move along said second path away from said container to a rest position,

first one-way locking means for preventing movement of said piston rod by said first biasing means, along said first path away from said container, said first locking means comprising a first member adapted to roll relative to the surface of said piston rod, and a second member adapted to wedge said first member towards said piston rod when moved in only one direction relative to said piston rod, said locking means being operative when said actuator means is moving away from said container under the influence of said second biasing means, and

reset means for releasing said first one-way locking means, said reset means including moving means for moving said first member away from said second member of said first locking means,

whereby actuation of said reset means allows said piston rod to automatically move towards said actuator means and to said initial position under the influence of said first biasing means.

4,448,336

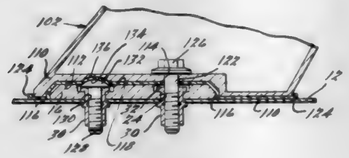
COMBINATION OF PERMANENT LUGGAGE CARRIER ADAPTERS WITH SELECTED AND REMOVABLE PRIMARY LUGGAGE CARRIERS

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation-in-part of Ser. No. 39,391, May 15, 1979, Pat. No. 4,277,009. This application Jun. 18, 1981, Ser. No. 274,868

Int. Cl.³ B60R *9/10*

U.S. Cl. 224—309 **13 Claims**



1. A load carrying system for use in conjunction with a substantially horizontal surface of an automotive vehicle, said system comprising a plurality of polygonal-shaped receptacles spaced over said surface and permanently attached thereto, each of said receptacles projecting above said surface and having at least one opening for the reception of a blind fastener, a first load carrier adapted for carrying loads of one type, said first load carrier comprising elongated transversely extending elements and first mounting means having at least an opening therein and at least one bottom surface and having recess means associated with said bottom surface which substantially corresponds with the shape of each of said plurality of receptacles wherein said receptacles are substantially concealed when engaged said first mounting means to enable said transversely extending elements to be properly located with respect to said plurality of receptacles and removably secured thereto with said at least one opening of said first mounting means being aligned with said at least one opening of one of said receptacles, and a second load carrier adapted for carrying loads of another type, said second load carrier comprising elongated longitudinally extending elements and second mounting means having at least one opening therein and at least one bottom surface and having recess means associated with said bottom surface which substantially corresponds with the shape of each of said plurality of receptacles wherein said receptacles are substantially concealed in engagement with said second mounting means to enable said longitudinally extending elements to be properly located with respect to said plurality of receptacles and removably secured thereto, said first and second load carriers comprising interchangeable load carrying elements which are selectively attachable to said plurality of receptacles and removable therefrom.

4,448,337

ARTICLE CARRIER

Gary M. Cronce, Port Huron, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed May 6, 1982, Ser. No. 375,400

Int. Cl.³ B60R *9/00*

U.S. Cl. 224—321 **12 Claims**

1. An article carrier for fastening to an exterior surface of a motor vehicle, said article carrier comprising a pair of longitudinal tracks fastened to said surface in a spaced apart, parallel relationship, a bracket fastened to each of said tracks, and a cross rail fastened between said brackets; wherein said bracket comprises a main body reciprocal fastening means selectively reciprocable to a clamped position securing said main body to said track, and driving means pivotally fastened to said main body for pivotable movement about a vertical axis spaced from said reciprocal fastening means and selectively operable to reciprocate said fastening means to said clamped position and



to secure said fastening means in said clamping position, said driving means has a ramp surface in sliding engagement with a surface of said reciprocal fastening means, said ramp surface biasing said fastening means into said clamping position in one orientation of said driving means.

4,448,338

PNEUMATIC NAIL DRIVER

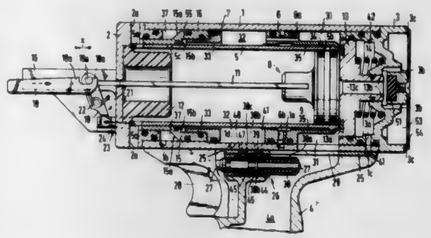
Eugen Graf, and Edwin Kindle, both of Triesen Liechtenstein, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft

Filed Dec. 8, 1981, Ser. No. 328,741

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047638

Int. Cl.³ B25C *1/04*

U.S. Cl. 227—8 **1 Claim**



1. A pneumatic nail driver comprising an axially extending working cylinder having a front end and a rear end and arranged to receive a supply of compressed air, a working piston positioned within said working cylinder and arranged to be driven in the axial direction thereof from the rear end toward the front end of said working cylinder by compressed air supplied into said working cylinder, an inlet valve having an open position for supplying compressed air into driving contact with said working piston and a closed position for blocking the flow of compressed air into driving contact with said working piston, said inlet valve in combination with said working cylinder forming a control space, a safety valve mounted on said working cylinder and movable parallel to the axis of said working cylinder, means in operative engagement with said safety valve for moving said safety valve, said means including a sensing element movably mounted for movement opposite to the driving direction for moving said safety valve when said sensing element is pressed against a receiving material into which a nail is to driven, and a spring arranged to bias said sensing element in the driving direction, said safety valve is movable between a first position in which it supplies said control space with compressed air in the closed position of said inlet valve and a second position where it connects said control space in the open position of said inlet valve with the ambient atmosphere, wherein the improvement comprises that said means includes a shift lever having a first end in engagement with said sensing element and a second end in engagement with said safety valve for moving said safety valve in a direction opposite to the movement of said sensing element, engagement cams spaced apart in the driving direction and associated with said sensing element, said shift lever displaceable into locking engagement with said engagement cams, said engagement cams are formed on said sensing element, a trip cam formed on said shift lever, said trip cam is movable between and into locking engagement with said engagement cams, the spacing between said engagement cams is greater than the width of said trip cam in the driving direction so that when said trip cam is in engagement with one of said engagement cams an amount of free play is provided between said trip cam and the other one of said engagement cams.

4,448,339

NAIL DRIVING AND RECESSING TOOL

Ronald Pettigrew, 42 Tennyson Ave., Westbury, N.Y. 11590

Filed Dec. 3, 1981, Ser. No. 327,237

Int. Cl.³ B25C *7/00*

U.S. Cl. 227—147 **4 Claims**



1. A nail driving and recessing tool for use with percussive equipment upon a predrilled and recessed work piece comprising an elongated nail driving shaft operatively engagable with said percussive equipment at one end, a nail driving portion on the other end of the shaft, a first and a second diameter portion on said shaft, said second diameter portion being smaller than the first diameter portion and forming the said nail driving portion, a sleeve slidably carried by the two-diameter nail driving shaft, a stepped elongated axial bore in said sleeve to receive the said shaft, a first large diameter portion of the bore being of a size to freely receive the larger diameter portion of the shaft, a second smaller diameter portion of the bore of a size to slidably receive the smaller diameter portion of the shaft therethrough to guide the nail driving portion of the second diameter portion of the shaft, said smaller diameter portion of the shaft being of a length to permit the smaller diameter shaft portion to advance beyond the sleeve and drive a nail into the recessed portion of the work piece and below the surface of said work piece, a spring carried within the large diameter portion of the bore and around the first diameter portion of the shaft to yieldably urge the sleeve in the direction of the work piece until the sleeve comes to bear against the surface of said work piece, and a third tapered, portion of the stepped bore in the sleeve at the nail driving end of the tool, said third diameter portion being of a size to engage and center the head of the nail to be driven when the nail head is located well above the surface of the work piece.

4,448,340

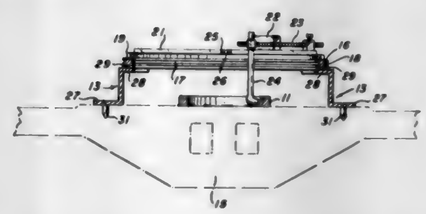
APPARATUS FOR REPLACING BOLSTER RINGS

Glen R. Lollis, 10405 Mockingbird Dr.; Marvin G. Marler, 9926 Orchard Ave., both of Omaha, Nebr. 68127; Joe P. Car, 5114 California St., Omaha, Nebr. 68132, and Sam J. John, 6208 Parker, Omaha, Nebr. 68104

Division of Ser. No. 171,121, Jul. 22, 1980, Pat. No. 4,330,076. This application Feb. 16, 1982, Ser. No. 349,263

Int. Cl.³ B23K *37/02*

U.S. Cl. 228—29 **2 Claims**



1. Apparatus useful in replacing a worn bolster ring on a freight car truck bolster which contains two pairs of mounting holes for side bearing cages which are spaced laterally from the axis of said ring a uniform distance, the apparatus comprising

a. a motorized circle cutting and welding machine including an annular track, and a movable carriage which is driven around the track by a motor and is adapted to carry torch cutting and welding devices;

b. diametrically opposed support members attached to the track and arranged to rest upon the upper surface of said bolster and hold the track parallel with the surface;

c. two locating pins attached to and depending from each support member, the pins being sized and positioned to fit said mounting holes and thereby center the annular track with respect to those holes;

d. a centering jig which is adapted to engage a replacement bolster ring and hold it against movement in a plane perpendicular to its axis; and

e. means for removably attaching the jig to the movable carriage in a position in which it is coaxial with, but at an elevation below, the track.

4,448,341

AUTOMATIC VEHICLE-BODY ASSEMBLING APPARATUS

Tsuneo Fujikawa, Ebina; Kazuyoshi Kamio, Yokohama, and Haruyoshi Takagishi, Yamato, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 11, 1981, Ser. No. 329,874

Claims priority, application Japan, Dec. 16, 1980, 55-177808

Int. Cl.³ B23K *37/04, 11/36;* **B62D** *65/00*

U.S. Cl. 228—45 **8 Claims**

1. An automatic vehicle-body assembling apparatus for automatically welding together an engine compartment assembly, a front floor assembly and a rear floor assembly to constitute a vehicle floor structure of an automotive vehicle, each of the engine compartment and front and rear floor assemblies being composed of a plurality of component members, comprising:

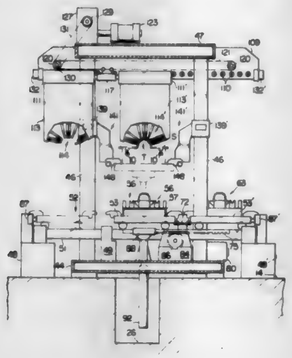
a frame structure having a fore-and-aft direction in which the engine compartment and front and rear floor assemblies and said vehicle floor structure are to be conveyed through the apparatus and a lateral direction horizontally perpendicular to the fore-and-aft direction, the frame structure including lower and upper base frames extending in lateral direction of the frame structure at the bottom and top, respectively, of the frame structure,

lower and upper working stations supported on said lower and upper base frames, respectively, each of the lower and

upper working stations including carrier means movable on said lower and upper base frames in lateral directions of the frame structure,

at least two jig assemblies each operative to hold in position the engine compartment and front and rear floor assemblies during each cycle of operation, the jig assemblies being carried on the carrier means of one of said lower and upper working stations, at least two welding units each operative to weld together the engine compartment and front and rear floor assemblies during each cycle of operation, the welding units being carried on the carrier means of the other of said lower and upper working stations,

first drive means operative to drive the carrier means of the lower working station to move in a lateral direction of the frame structure, and



second drive means operative to drive the carrier means of the upper working station to move in a lateral direction of the frame structure,

said jig assemblies being movable in a lateral direction of the frame structure alternately between a predetermined operative position within the frame structure and a predetermined outermost lateral position as the carrier means carrying the jig assemblies are driven by one of the first and second drive means, said welding units being movable in a lateral direction of the frame structure alternately between a predetermined operative position within the frame structure and a predetermined outermost lateral position as the carrier means carrying the welding units are driven by one of the first and second drive means.

4,448,342

METHOD AND DEVICE FOR TRACER CORRECTION IN A WELDING ROBOT

Riichi Abe, Hiratsuka; Katsuji Tsuruta, and Seiji Tsujikado, both of Isehara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

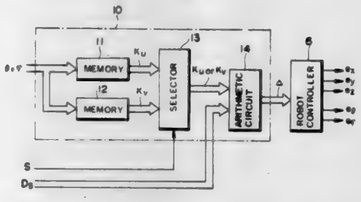
Filed Nov. 6, 1981, Ser. No. 318,952
Claims priority, application Japan, Nov. 17, 1980, 55-161781
Int. Cl.³ B23K *37/02*
U.S. Cl. 228—102 **16 Claims**

11. A tracer correction method for a welding robot comprising steps of:

detecting, by a sensor having a predetermined direction, the torch tip error against weld line with respect to a coordinate system fixed to a torch,

reading out a coefficient value for converting the torch tip error into a correction value with respect to axes in which a robot body is driven corresponding to a torch posture, from a memory in which a set of such coefficient values are stored at addresses accessed by an address signal representing said torch posture,

performing arithmetic operations by an arithmetic circuit to obtain said correction value based on said coefficient value and a torch tip error value detected by the sensor, and



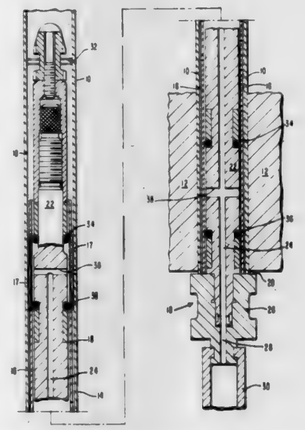
making correction with respect to said axis, using said correction value.

4,448,343

SLEEVE PREPARATION METHOD

Edgar L. Kochka, Greentree; Robert D. Burack, Pleasant Hills, and Kenneth E. Pfeiffer, Penn Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1981, Ser. No. 307,354
Int. Cl.³ B23K *1/20*
U.S. Cl. 228—205 **6 Claims**



1. A method for preparing a metal sleeve for brazing comprising:

cleaning the outer surface of said sleeve;

depositing a braze material on the outer surface of said sleeve;

applying an adhesive of approximately 1.5% to 12% acrylic resin by weight dissolved in toluene to said braze material;

heating said sleeve to soften said adhesive; and

applying a flux to said adhesive whereby said adhesive causes said flux to be affixed to said braze material.

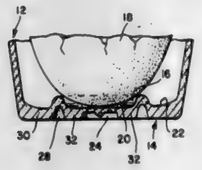
4,448,344

EGG CELL CONSTRUCTION

Henry A. Lord, Cape Elizabeth, Me.; Kenneth D. Bixler, Huntington, N.Y., and Richard F. Reifers, New Canaan, Conn., assignors to Diamond International Corporation, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,915
Int. Cl.³ B65D *81/16*; D21J *7/00*
U.S. Cl. 229—2.5 EC **6 Claims**

1. In a molded egg carton having a plurality of egg cells, the improvement wherein the bottom of a said egg cell is provided with, internally of said egg cell, a crater depression to cradle the tip of an egg resting therein, said crater being formed of a generally circular ridge encircling a depressed floor, said egg cell bottom having a thickened peripheral annular portion having an upper surface lower than the height of said circular ridge and peripherally surrounding said circular ridge, said circular ridge defining immediately therebelow and therewithin a circular groove so that the circular groove faces the bottom outside of said egg cell, a central depression of diameter less than the diameter of said crater and underlying said



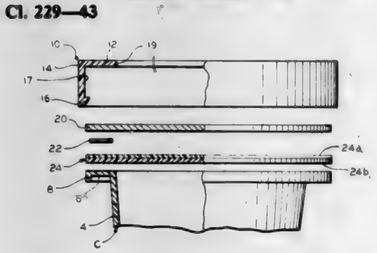
depressed crater floor along the central portion thereof, the wall between said depressed crater floor and said depression being relatively thin to provide a softened cushion for egg tip contact, and at least one pedestal for supporting said crater floor and located between said depression and said circular groove, said pedestal being of such thickness to extend from the crater floor to the bottom outside of said cell so that the bottom of said at least one pedestal and the bottom of said thickened peripheral portion normally lie in substantially the same plane.

4,448,345

COMPOSITE LID

Charles R. Helms, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 29, 1982, Ser. No. 402,939
Int. Cl.³ B65D *51/20*
U.S. Cl. 229—43 **1 Claim**



1. A composite lid for use in a sealable closure arrangement with a container having a rim surface formed of a heat sealable material, said lid comprising:

(a) an annular rim formed of molded plastic and including:

(i) a horizontally disposed, radially inner ledge;

(ii) a vertically disposed, radially outer skirt formed integrally with an outer portion of said ledge;

(b) a central panel formed of a sheet of relatively thin printable sheet material, such as paperboard, and having a marginal area bonded to the underside of said rim ledge;

(c) a membrane formed of an upper layer of Saran and a lower layer of polyethylene, said lower layer of polyethylene being compatible with the material of said container rim;

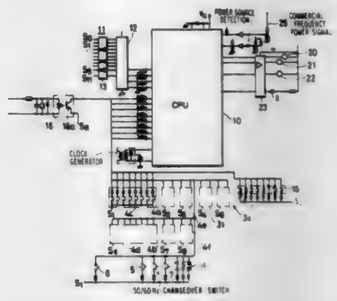
(d) a temporary adhesive of a wax type material filled with metal particles disposed between said upper layer of Saran and said central panel at a marginal area thereof above the sealing area of the container rim, said membrane having the marginal area of its upper side of said upper layer of Saran releasably secured to the underside of said central panel by said temporary adhesive which will maintain said membrane and central panel attached to each other during formation of the lid in an insert molding process but which will deteriorate when the underside of said membrane is releasably attached to said container rim by radio generated frequency sealing.

4,448,346

CONTROL SYSTEM FOR AUTOMATIC VENDING MACHINES

Masami Kuwaki; Youichi Hatada, and Satoru Umino, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 6, 1982, Ser. No. 375,627
Int. Cl.³ F23N *5/20*; B67D *5/62*
U.S. Cl. 236—46 R **5 Claims**



1. A control system for an automatic vending machine adapted to control the temperature of thermal loads placed in the vending machine, comprising: time setting means, a loading switch actuated after the setting of a load in the automatic vending machine, a control switch means for selectively setting periods of positive operation of a refrigerator or heater and control circuit means responsive to signals from said time setting means, said loading switch and said control switch means, for placing said refrigerator or heater in an ON state continuously for a predetermined period of time just after the installation of the automatic vending machine, upon recovery of the power source after a power supply interruption and upon operation of said loading switch, and for thereafter carrying out positive ON-OFF control based on a time set by said control switch means and stopping the operation of said refrigerator or heater during a time outside of a period set by said time setting means.

4,448,347

HEAT PUMP SYSTEM USING WASTEWATER HEAT

Phillip E. Dunstan, 1022 S. 208th St., Seattle, Wash. 98148

Filed Dec. 9, 1981, Ser. No. 328,905
Int. Cl.³ G05D *23/00*
U.S. Cl. 237—2 B **13 Claims**

1. A heat pump system for heating water through the efficient use of heat from home wastewater while automatically avoiding freezing of the wastewater, comprising a plumbing network having:

(a) a wastewater storage tank to collect and circulate wastewater;

(b) a consolidated heat pump unit having a closed refrigeration loop, including:

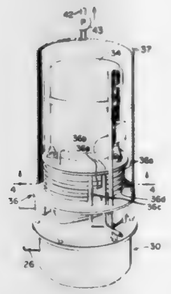
(i) an evaporator, at the bottom of a stack, to exchange heat between the wastewater and a refrigerant,

(ii) a compressor, at the top of the stack, connected to the evaporator,

(iii) a condenser, between the evaporator and compressor, connected to the compressor to exchange heat between the refrigerant and household water, and

(iv) an expander connected to the condenser and evaporator to close the loop; and

(c) a heated water storage tank to collect household water heated in the condenser,



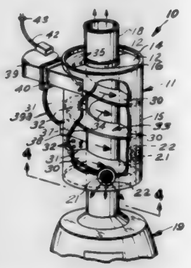
wherein the compressor and condenser are submerged in a water vessel so that household water in the vessel absorbs additional heat from the mechanical and electrical losses of the compressor, after the water leaves the condenser.

4,448,348

FORCED AIR FLUE HEATER DEVICE

Malcolm A. Bidwell, 30138 Lilac Rd., Valley Center, Calif. 92082

Filed Aug. 19, 1982, Ser. No. 409,667
Int. Cl.³ F24B *7/00*
U.S. Cl. 237—55 **1 Claim**



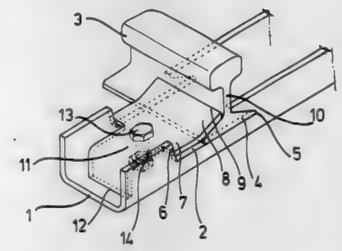
1. A flue heat reclaimer for woodburning stoves comprising a helical shaped divider ring adapted to fit over said flue with the inner edge adjacent thereto, said helical divider ring being divided into sections each being semi-circular in configuration, said sections being joined together by arcuate splice plate means, an outer cylindrical housing fitted over said helical divider ring, said housing including a top pair of semi-circular plates and means for mounting said plates to said housing, wherein the upper end of said helical divider ring is mounted to one of said top plates, a thermostatically controlled blower means being mounted on the upper end of said housing, said blower means being mounted to form a double air flow path in the helical divider ring, said housing further including bottom walls and plural air outlet means at the lower end of said housing.

4,448,349

RAIL SLEEPERS WITH RAIL CLAMPING DEVICES

Jan C. Wozniak, Thorneville, Isle of Man, assignor to Serni Limited, Douglas, Isle of Man

Filed Oct. 28, 1981, Ser. No. 315,939
Claims priority, application United Kingdom, Nov. 1, 1980, 8035201
Int. Cl.³ E01B *3/16, 9/32*
U.S. Cl. 238—62 **3 Claims**



1. A rail securement arrangement including a rail sleeper and means for gripping a pair of rails, each rail having first and second flange portions, said arrangement comprising:

a metallic U-shaped channel member including a base section with at least one orifice formed therein, and having flanged sections formed with slots at substantially a right angle to the longitudinal axis of said channel member for receiving said rail; said slots formed with a recessed portion to receive said first flange portion of said rail and a sloped portion opposite said recessed portion;

a T-shaped plate member and including an orifice, said T-shaped plate member being disposed in said slots in contact with said sloped portion of said slots and with said second flange portion of said rail; and

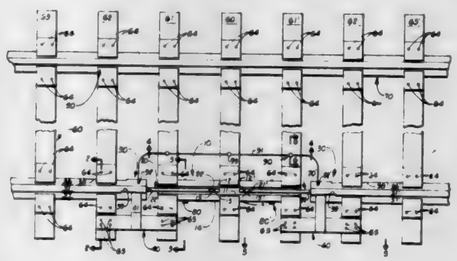
bolt means positioned through said orifice of said T-shaped member and said orifice in said base section of said channel member whereby tensioning of said bolt means causes said T-shaped plate member to push against said sloped portion of said slots and thus against said second flange of said rail thereby forcing said first flange portion of said rail into said recessed portion of said slots.

4,448,350

RAILROAD TRACK STRESS TRANSFER APPARATUS

Albert A. Phillips, P.O. Box 56A, Byars, Okla. 74831

Filed Aug. 6, 1982, Ser. No. 406,049
Int. Cl.³ E01B *11/08*
U.S. Cl. 238—231 **11 Claims**



8. Apparatus for interconnecting longitudinally extensive and expandable railroad rails positioned end-to-end and adapted to be secured to laterally extending cross-ties, comprising:

each of said rails having at one end thereof a tapered tongue, said tongue having its maximum lateral dimension adjacent said respective rail end;

means for securing said rail ends in end-to-end alignment, said securing means including opposing tapered slot means correspondingly configured with said tapered tongues for receiving said tongues therein; and

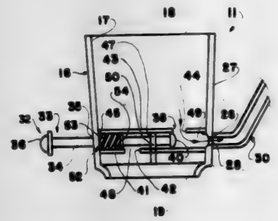
means, longitudinally displaced from said securing means and bearing against each rail in direction substantially normal to its longitudinal extent, for laterally aligning one side of each said rail with a respective side of said securing means, said aligning means comprising tapered means for moving each said rail laterally as said rail moves longitudinally relative to said securing means.

4,448,351

WATER FAUCET MODIFYING APPARATUS

Darrell D. Aldinger, 2211 Green Terrace Dr., and Roger B. Van Wagoner, 2309 Wyoming Ave., both of Billings, Mont. 59102

Continuation-in-part of Ser. No. 278,750, Jun. 29, 1981, abandoned. This application Jan. 28, 1983, Ser. No. 462,040
Int. Cl.³ B05B *1/16*
U.S. Cl. 239—25 **15 Claims**



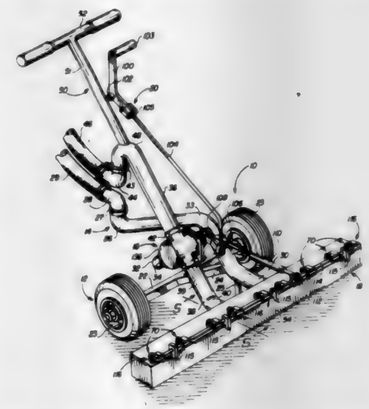
1. Water faucet modifying apparatus including a housing, a main passage extending through said housing, an inlet at one end of said main passage, an outlet at the opposite end of said main passage, removable connector means extending from said inlet for securing said inlet to a water faucet spout, aerating means connected with said outlet, a side passage in the sidewall of said housing communicating with said main passage intermediate said inlet and outlet, said side passage having an outlet at the periphery of said housing, a conduit extending from said side passage outlet in the direction of said inlet, said conduit including an outlet at the free end thereof, diverter means disposed within said housing adjacent the intersection of said side passage with said main passage thereof, said diverter means including a valve stem member extending into said main passage transversely thereto, said stem member including an actuator portion extending through the sidewall of said housing, sealing means disposed on the opposite end of said stem member, said sealing means being engageable with said side passage at the intersection thereof with said main passage, a first barrier section disposed across said main passage between said stem member and said outlet of said main passage, said first barrier section including an opening therethrough at a point adjacent said stem member opening in said housing sidewall, a second barrier section across said main passage between said stem member and said inlet of said main passage, said second barrier section including an opening therethrough at a point adjacent said side passage, a connector plate section extending between said first and second barrier sections, said connector plate section dividing the space between said barrier sections into two chambers, said connector plate section including an opening therethrough, said stem member extending through said connector plate opening, biasing means urging said stem member toward said side passage.

4,448,352

MOLTEN ASPHALT SPRAY MECHANISM

Carl C. Jacobson, Jr., Tempe, and Mark C. Manning, Chandler, both of Ariz., assignors to Crafco, Inc., Chandler, Ariz.

Filed Mar. 15, 1982, Ser. No. 358,251
Int. Cl.³ B05B *9/00*
U.S. Cl. 239—125 **9 Claims**



1. A manually manipulatable spray mechanism for use with a spray apparatus having a source of molten asphalt under pressure, said spray mechanism for spraying a coating of molten asphalt on selected areas of a paved surface and comprising:

(a) a wheeled carriage for manual manipulation;

(b) a conduit assembly carried on said carriage and having input and return conduits on one end for coupling to the supply apparatus;

(c) a spray bar carried on the other end of said conduit assembly and defining an internal chamber and having first and second ports in communication with said conduit assembly;

(d) at least a pair of nozzles extending from the internal chamber of said spray bar and movable between open and closed states;

(e) a single flow switching valve in said conduit assembly and having a first position in which the molten asphalt receivable in said conduit assembly is supplied to the first port of said spray bar circulated through the internal chamber thereof and is received from the second port of said spray bar and returned by said conduit assembly to the supply apparatus and a second position in which the molten asphalt receivable from the supply apparatus is simultaneously supplied to the first and second ports of said spray bar; and

(f) manually operable control linkage coupled to operatively interconnect said pair of spray nozzles and said flow swithing valve for simultaneous movement between a first operational mode wherein said flow switching valve is in the first position thereof and said pair of spray nozzles are closed and a second operational mode wherein said flow switching valve is in the second position thereof and said pair of spray nozzles are open.

4,448,353

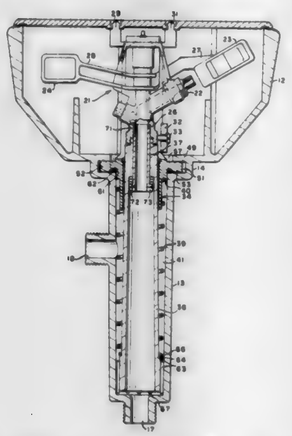
POP-UP SPRINKLER

Zvi Livne, Shavei Zion, Israel, assignor to Dan Mamtirim, Israel

Filed Sep. 8, 1982, Ser. No. 415,971
Claims priority, application Israel, Sep. 14, 1981, 63830
Int. Cl.³ B05B *15/10*
U.S. Cl. 239—205 **10 Claims**

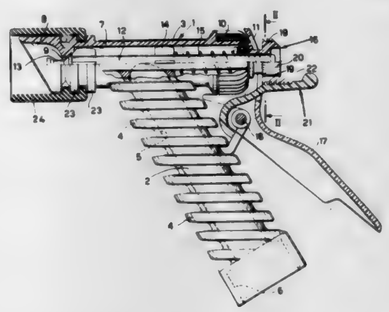
1. A pop-up sprinkler assembly for pop-up sprinkler systems, said sprinkler assembly comprising:

a rotating sprinkler head having a longitudinal dimension that is larger than the width of said head,
a housing unit having substantially rectangular cross-sections,
said housing unit set into the ground for receiving said sprinkler head therein,
the width of said unit being shorter than the length of said head,
means for causing said head to rise above said housing unit when said sprinkler system is turned on to apply water pressure to said sprinkler assembly,



means for causing said head to return to said housing unit when said system is turned off, and
means for aligning the length of said head with the length of said unit as said head returns to said unit,
said aligning means comprising cam follower means and cam follower track means for said cam follower means, said cam follower means comprising wheel means, said wheel means mounted to said head through axle means, and
said axle means being in parallel to the longitudinal axis of said head.

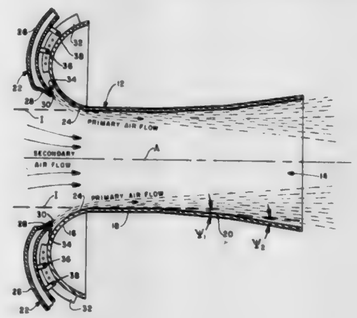
4,448,355
WATERING PISTOL
Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Fiume Veneto, Italy
Continuation of Ser. No. 276,248, Jun. 22, 1981, abandoned. This application Sep. 14, 1983, Ser. No. 532,091
Claims priority, application Italy, Jun. 23, 1980, 22101/80[U]
Int. Cl.[3] B05B *9/10*
U.S. Cl. 239—526 **7 Claims**



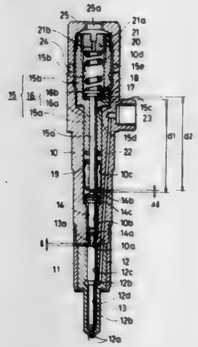
1. A pistol-grip, liquid-dispensing device comprising: a casing having an internal conduit terminating in a dispensing spout; an axially movable stem located in said conduit and carrying at one end a shutter member for opening and closing said spout upon axial movement of said stem in opposite directions, means for spring biasing said stem toward a closed position, said stem having an opposite end located outside said casing; and operating handle cooperating with said stem opposite end for imparting axial movement thereto in a direction to open said spout; and a latching device for releasably latching said stem in preselected spout-open positions, said latching device including a pawl member and a toothed rack member biased toward engagement with each other, one of said members being fixed to and rotatably movable with said stem opposite end outside of said casing and the other of said members being fixed to and deflectably carried by said casing adjacent said stem opposite end and selectively engageable with said one member outside of said casing.

4,448,354
AXISYMMETRIC THRUST AUGMENTING EJECTOR WITH DISCRETE PRIMARY AIR SLOT NOZZLES
Steven G. Reznick, and Milton E. Franke, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 23, 1982, Ser. No. 401,163
Int. Cl.[3] B64C *15/00*
U.S. Cl. 239—265.17 **8 Claims**

1. A circular thrust augmenting ejector, comprising:
(a) a contoured inlet section having a surface;
(b) a constant area mixing section;
(c) a conical diffuser outlet section;
(d) said inlet, mixing and outlet sections merging one into the next in serial relationship, having a common central axis, and defining a central passageway; and
(e) a plurality of discrete primary nozzles positioned at the entrance but spaced from the surface of said contoured inlet section for injecting a primary flow of high velocity air into said inlet section with a trajectory generally parallel thereto and thereby entraining a secondary flow of ambient air into said central passageway of said ejector.

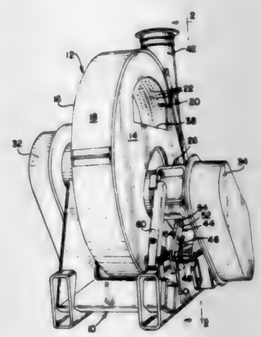


4,448,356
DOUBLE-INJECTION TYPE FUEL INJECTION VALVE
Nobuyuki Nakajima, and Katumi Hiruma, both of Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Mar. 24, 1982, Ser. No. 361,583
Claims priority, application Japan, Apr. 3, 1981, 56-47356[U]
Int. Cl.[3] F02M *45/08*
U.S. Cl. 239—533.5 **4 Claims**



1. A fuel injection valve comprising: an injection nozzle having a nozzle needle liftable in response to fuel pressure; a nozzle holder supporting said injection nozzle; a first spring arranged within said nozzle holder; a first movable spring seat coupled to said nozzle needle and supporting said first spring; a first adjusting threaded member threadedly engaging said nozzle holder in a direct manner, said first adjusting threaded member defining therein an internal space opening at one end in an end face of said first adjusting threaded member remote from said injection nozzle, said first adjusting threaded member having another end facing toward said injection nozzle and disposed in urging contact with said first spring, said first adjusting threaded member being rotatable for axial displacement relative to said nozzle holder, said axial rotative displacement of said first adjusting threaded member causing a change in the setting load of said first spring; a second spring accommodated within said internal space of said first adjusting threaded member; a second movable spring seat accommodated within said internal space of said first adjusting threaded member and supporting said second spring, said second movable spring seat extending in part through said another end of said first adjusting threaded member facing toward said injection nozzle; a second adjusting threaded member threadedly fitted in said open end of said internal space of said first adjusting threaded member in a manner rotatable relative thereto for axial displacement and urging said second spring, said axial rotative displacement of said second adjusting threaded member causing a change in the setting load of said second spring; said second movable spring seat being urged by said second spring in a direction toward said injection nozzle, said second movable spring seat having one end disposed in facing relation to said first movable spring seat and adapted to have said one end spaced from said first movable spring seat by a predetermined gap when said nozzle needle is in a seated position thereof, said second spring and said second movable spring seat being so disposed that said first and second springs have a combined force thereof acting upon said nozzle needle when said nozzle needle is lifted beyond said predetermined gap, whereby said first spring has a setting load thereof adjustable by rotation of said first adjusting threaded member, while said second spring has a setting load thereof adjustable by rotation of said second adjusting threaded member; and a shim arranged within said internal space of said first adjusting threaded member and interposed between said second movable spring seat urged by said second spring and a seating surface formed in said internal space to determine a position of said second movable spring seat relative to said first movable spring seat, which is assumed when said nozzle needle is in said seated position thereof, said shim having a thickness selected as a function of the difference between the distance between a predetermined point on said first movable spring seat in a position assumed when said nozzle needle is in said seated position thereof, and a predetermined point on said first adjusting threaded member and the length of a predetermined portion of said second movable spring seat so that said predetermined gap is provided between said first movable spring seat and said second movable spring seat; whereby lifting of said nozzle needle from said seated position thereof causes corresponding lifting of said first movable spring seat against the force of said first spring through a lift determined by said predetermined gap to effect an initial injection, and further lifting of said nozzle needle causes further corresponding lifting of said first movable spring seat to urge said second movable spring seat against the combined force of said first and second springs to lift said second movable spring seat to effect a main injection.

4,448,357
ROTARY MACERATOR
Stanley D. Harlow, Willowbrook, and Donald Alexander, Plainfield, both of Ill., assignors to International Harvester Co., Chicago, Ill.
Filed Mar. 8, 1982, Ser. No. 355,794
Int. Cl.[3] B02C *4/32*
U.S. Cl. 241—32 **7 Claims**



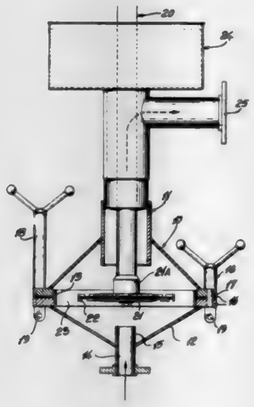
1. In a macerator having a rotary perforated die ring and a roller operative within the die ring to press material through the die ring perforations as the ring is rotated, the combination with overload release structure comprising:
means mounting said roller in a fixed rotational axis operative position and for bodily pivotal movement between fixed rotational axis operative position and inoperative position relative to said die ring;
shearable means retaining said roller in the fixed rotational axis operative position and shearable under a predetermined overload to permit the roller to swing to its inoperative position; and
means operative in response to shearing of said shearable means for retaining the roller in its inoperative position thereby minimizing overload damage to the macerator.

4,448,358

HIGH SPEED FLUID GRINDING AND DISPERSER MILL

Jean G. Menard, Quebec, Canada, assignor to NL Chem Canada, Inc., Montreal, Canada

Continuation-in-part of Ser. No. 62,344, Jul. 31, 1979, abandoned. This application Jul. 10, 1980, Ser. No. 168,219
Int. Cl.³ B02C *18/10*
U.S. Cl. 241—39 **10 Claims**



1. A continuous high speed grinding and disperser mill and classifier for fluids comprising,

an enclosed vessel having a conically shaped top and an inverted conically shaped bottom and having an annular wear ring in the approximate center of the vessel,

a shaft rotatable about a vertical axis extending downwards into the vessel terminating at an end in the approximate center of the vessel,

an impeller attached to the end of the shaft adapted to rotate within the wear ring, the impeller being in the form of a circular disc with a plurality of shear blades at the periphery producing a high shear zone between the blades and the wear ring,

an axially directed inlet extending up into the vessel and being directly below the impeller on the veritcal axis,

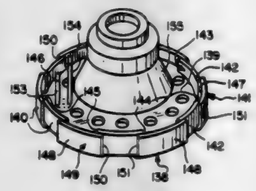
an outlet extending downward into the vessel positioned around the shaft and at a predetermined height directly above the impeller on the vertical axis such that a flow of fluid from the inlet to the outlet passes through the high shear zone, and means to rotate the shaft and impeller.

4,448,359

COMBINATION DRAIN PUMP AND GRINDING APPARATUS

Theodore F. Meyers, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Jun. 10, 1982, Ser. No. 387,067
Int. Cl.³ B02C *18/42*
U.S. Cl. 241—46.06 **8 Claims**



1. In combination with a vessel for containing a quantity of fluid having food soil suspended therein and having a drain line for draining fluid therefrom, a combination drain pump and grinding apparatus for grinding food soil and pumping fluid and food soil from said vessel through said drain line, comprising:

housing means having a side wall and a floor defining a pump chamber;

means defining an inlet opening above said pump chamber and communicating with said vessel;

said housing means defining at least one pump outlet extending through said side wall and communicating with said chamber and with said drain line;

a waste impeller positioned within said chamber and having a disk-shaped base substantially parallel to and spaced above said floor, said base defining a plurality of soil-sizing orifices therethrough, an upstanding rim extending about a periphery of said base and including an inner wall defining a plurality of radially-extending, substantially vertical cutting edges and an outer wall defining a plurality of radially-extending, substantially vertical pumping vanes, and at least a first breaker tooth extending upwardly from said base and positioned inwardly of said rim;

at least one stationary tooth having a vertical cutting edge extending downwardly adjacent said inner wall such that rotation of said impeller causes said stationary tooth to pass between said inner wall and said breaker tooth such that said cutting edges come into opposing close proximity to said cutting edge of said tooth;

means for mounting said impeller for rotation about a vertical axis; and

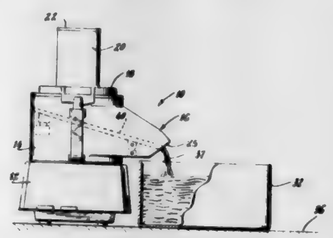
means associated with said mounting means for rotating said impeller.

4,448,360

CONTINUOUS OUTPUT VIBRATING DECK FOOD PROCESSOR

James E. Williams, Stamford, Conn., assignor to Cuisinarts Research & Development, Inc., Greenwich, Conn.

Filed Sep. 30, 1981, Ser. No. 307,110
Int. Cl.³ B02C *18/06, 18/08*
U.S. Cl. 241—92 **28 Claims**



1. In a food processor of the type including a base housing having an electric motor drive, a bowl mountable on said base housing for enclosing a rotary food processing tool within said bowl, said tool being rotatable within said bowl by said electric motor drive, a removable cover adapted to be secured in position on said bowl, a feed tube forming a passageway for feeding food items into said bowl for processing by the rotating tool, an output vibrating deck apparatus comprising:

a chute having a discharge end projecting laterally from said bowl for directing food processed by said food processing tool out of said bowl,

a vibratable inclined deck mounted in said bowl beneath said food processing tool for relative movement between said inclined deck and said bowl, said inclined deck extending on a downward incline toward and within said chute, and

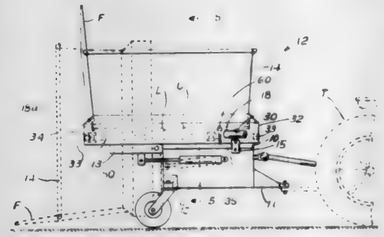
vibrating drive means coupled to said deck for moving said deck relative to said bowl for causing food processed by said rotary food processing tool deposited on said deck to be guided and propelled by said vibrating deck into and through said chute for discharge from said discharge end of the chute into an external container.

4,448,361

SELF-LOADING BALE DISINTEGRATING MACHINE

Dewey R. Marcy, 3430 - 13th St., Greeley, Colo. 80631

Continuation of Ser. No. 227,991, Jan. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 146,447, May 5, 1980, abandoned. This application May 23, 1983, Ser. No. 484,210
Int. Cl.³ B02C *13/08, 13/286*
U.S. Cl. 241—101.7 **14 Claims**



1. A self-loading machine for disintegrating and discharging a mass of crop material comprising:

a mobile chassis having a pair of opposite ends with respect to a normal path of travel thereof;

a container on said chassis having an internal mass-receiving area bounded at lateral extremities by normally generally upwardly projecting, mass confining agitator means,

said confining agitator means being rotatable as a unit about a normally generally upwardly projecting axis passing through said mass-receiving area, and the container having an open entry mouth to said area defined by normally uppermost, end extremities of said confining agitator means;

apparatus associated with the container for disintegrating and discharging a mass of material contained therein as said confining agitator means is rotated to agitate the mass after the latter is loaded into said receiving area;

means mounting said container for fore-and-aft tipping movement relative to the chassis between a raised, disintegrating position and a lowered, self-loading position in which the confining agitator means projects generally horizontally with a lower portion thereof generally adjacent the ground and said axis of rotation extending generally parallel to said path of travel,

said container being configured for slipping said confining agitator means under and around the mass to scoop the same into said mass-receiving area in a self-loading action upon shifting of the chassis toward the mass along said path of travel with the container lowered and said mouth thereof leading; and

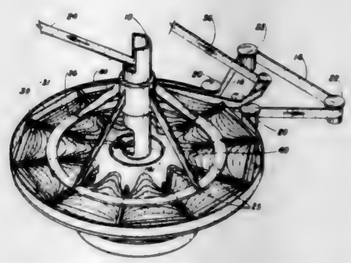
means for effecting said movement of the container between said disintegrating and self-loading positions.

4,448,362

METHOD OF AND APPARATUS FOR THE TAPE LOADING AND USE OF A SINGLE TURNTABLE IN THE RENDITION OF A TAPED PROGRAM

J. Ralph Johnson, 573 Willham Loop, La Place, La. 70068

Continuation of Ser. No. 249,382, Mar. 31, 1981, which is a continuation of Ser. No. 83,771, Oct. 11, 1979, abandoned, which is a continuation of Ser. No. 844,471, Oct. 21, 1977, abandoned, which is a continuation of Ser. No. 736,277, Oct. 27, 1976, Pat. No. 4,066,221. This application Sep. 28, 1982, Ser. No. 425,641
Int. Cl.³ B65H *17/48*
U.S. Cl. 242—55.19 R **7 Claims**



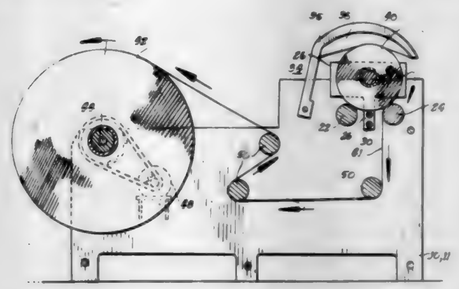
1. A tape-handling unit comprising a turntable rotatable about an axis, and means for holding loops of a tape on edge against the turntable along a plurality of radii of the turntable and permitting movement of the tape radially along each radius while restricting circumferential movement of the tape across the radius, wherein the holding means is rotatable about the axis of the turntable, and means for rotating the turntable and the holding means in synchronism.

4,448,363

REWINDER APPARATUS

Donald F. Mukenschnabl, 4026 Elm, Downers Grove, Ill. 60515

Filed Feb. 26, 1981, Ser. No. 238,486
Int. Cl.³ B65H *23/08*
U.S. Cl. 242—67.3 R **35 Claims**



1. A rewinder apparatus for receiving a roll end having material thereon comprising:

free-wheeling means for supporting said roll end for feeding said material therefrom;

end means for positioning said roll end on said free-wheeling means for supporting the roll end;

said roll end having material thereon;

collector means for receiving and accumulating said material; and,

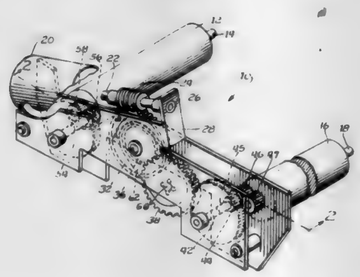
means for selectively pushing against said roll end responsive to a control stimulus including means for selectively braking said roll end wherein said means for selectively resiliently braking includes tension arms having pneumatically positioned straps.

4,448,364

REVERSIBLE RIBBON DRIVE

Richard Frystak, Park Ridge; Robert F. Johnston, Wildwood, and John R. Flint, Barrington, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 9, 1982, Ser. No. 366,948
Int. Cl.³ G11B *15/44*; B65H *17/02, 59/38*
U.S. Cl. 242—674 **4 Claims**



1. A web drive system for automatically reversing the direction of travel of the web when reaching the end of the web comprising:

a supply spindle having means to engage one end of the web;

a take up spindle having means to engage the opposite end of the web;

the supply and take up spindles adapted to receive a supply of web to be wound thereon;

electric motor means with an output shaft rotating in a first direction;

a sun gear operatively connected to the motor and driven in a first direction in response to the motor being driven in a first direction;

a planet gear engaging the sun gear and driven by the sun gear;

linking means to maintain the planet gear in engagement with the sun gear;

the linking means comprising a link with one end of the link mounted to a shaft on which the sun gear is mounted for rotation, and the other end of the link is mounted to a second shaft on which the planet gear is mounted for rotation;

clutch means on the second shaft to cause the linking means to move between a first position when the sun gear rotates in the first direction, to a second position when the sun gear rotates in a direction opposite the first direction;

take up spindle gear means operatively connected to the planet gear when the linking means are in the first position to supply power to the take up spindle to draw the web from the supply spindle;

supply spindle gear means operatively connected to the planet gear when the linking means are in the second position to supply power to the supply spindle to draw the web from the take up spindle after the take up spindle has had the web wound thereon;

motor current sensing means to sense the rise in motor current due to the increase in load when the end of the web on the supply reel is reached;

control means operated responsive to the motor current sensing means sensing the rise in motor current to reverse the direction of rotation of the output shaft to a direction opposite the first direction;

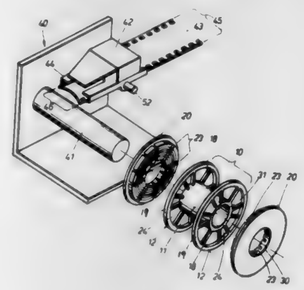
whereby upon each reversal of the gear means the direction of web travel is reversed and the supply spindle becomes the take up spindle and the take up spindle becomes the supply spindle.

4,448,365

FILM DEVELOPING SPOOL

Helmut Petsching, Gummersbach; Walter Kremer, Bergneustadt; Rainer Bernhardt, Bergneustadt, and Johannes J. Bockemuehl-Simon, Bergneustadt, all of Fed. Rep. of Germany, assignors to JOBO Labortechnik GmbH & Co. KG., Gummersbach, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,235
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113465; Nov. 26, 1981, 3146802
Int. Cl.³ B65H *75/14, 75/28*
U.S. Cl. 242—71.8 **20 Claims**



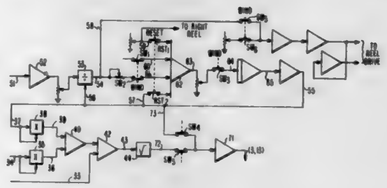
1. A spool for strip-shaped photographic material, particularly for developing and/or drying of such material, comprising an elongated core having spaced end portions each including a transversely extending end flange, each of said end flanges having an axially inner surface provided with a plurality of circumferentially spaced cut-outs; a plurality of spot supports projecting from each of said surfaces intermediate the respective cut-outs and defining first portions of successive turns of a spiral groove surrounding said core, said spot supports being arranged to hold strip-shaped photographic material on said spool in a position spirally surrounding said core; and a plurality of plug portions shaped to enter the respective cut-outs, each such plug portion having partial turns constituting second portions of the turns of said spiral groove so that the partial turns of the inserted plug portions substantially complete the groove in conjunction with the spot supports, said plug portions being attachable to said end flanges for loading of the photographic material onto the spool and thereafter detachable prior to treatment of the loaded photographic material.

4,448,366

COIL DIAMETER TRACKING SYSTEM AND TENSION REGULATION SYSTEM USING SUCH TRACKING SYSTEM

Jan M. Fludzinski, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 8, 1982, Ser. No. 396,211
Int. Cl.³ B65H *77/00*; H02P *7/68*
U.S. Cl. 242—75.51 **4 Claims**



1. Apparatus for rolling material from a pay-off reel driven by a first motor drive to a rewind reel driven by a second motor drive, comprising:

means for measuring the instantaneous diameter d_X of one of said reels and for deriving a first signal representative of d_X during the rolling operation;

means for calculating the instantaneous diameter D_X of the other of said reels in accordance with the formula:

$$D_X = \sqrt{D_1^2 + d_1^2 - d_X^2}$$

where D_1 is the initial diameter of one of said reels and d_1 is the initial diameter of the other of said reels and for deriving a second signal representative of D_X;

first means responsive to said first signal for controlling the motor drive associated with said one reel in relation to the ratio ϕ_1/d_X, where ϕ_1 is the flux of the motor drive associated with said one reel;

second means responsive to said second signal for controlling the motor drive associated with said other reel in relation to the ratio ϕ_2/D_X, where ϕ_2 is the flux of the motor drive associated with said other reel;

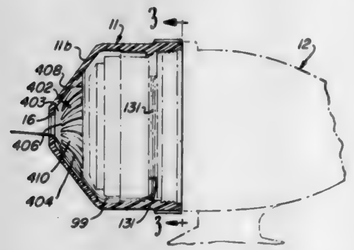
said first and second control means being controlled independently to provide desired tensions upon said pay-off and rewind reels, respectively.

4,448,367

SPIN CASTING TYPE REEL WITH DRAG REDUCING FRONT COVER

John W. Puryear, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed May 20, 1982, Ser. No. 380,233
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 A **14 Claims**



1. In a spin casting type fishing reel having a reel structure comprising: front cover means having a line guide therein, rear cover means, central mounting plate means, the plate means being an individual component, the plate means having a forwardly facing front wall and a rearwardly facing back wall, a spool for storing fishing line mounted on the front wall, line pickup means mounted on the front wall between the spool and front cover, means mounted in cooperation with the pickup means and the plate means to permit line to be cast off the spool and then rewound thereon, the line when cast or rewound passing through the line guide;

the improvement characterized in that the front cover has

a front portion that is conical in shape with the line guide located substantially at the apex of the cone,

the front conical portion have an outer surface and an inner surface,

spiral-shaped ribs formed on the inner surface and facing rearwardly of the front cover,

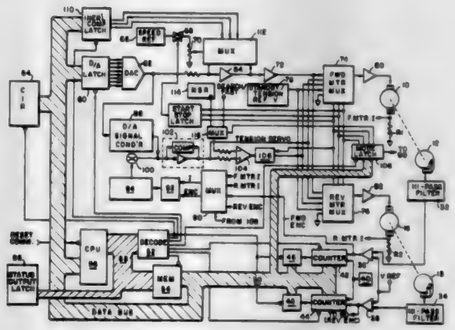
line from the spool passing over the inner surface of the conical portion and contacting the facing surfaces of the spiral-shaped ribs reducing contact of the line with the front cover thereby increasing the casting efficiency.

4,448,368

CONTROL FOR TAPE DRIVE SYSTEM

Edward S. Skalko, Cromwell, Conn., assignor to Raymond Engineering Inc., Middletown, Conn.

Filed Mar. 23, 1982, Ser. No. 361,116
Int. Cl.³ B65H *77/00*; G11B *15/32, 15/48*; H02P *7/68*
U.S. Cl. 242—186 **38 Claims**



1. Apparatus for transferring a web between a pair of rotatable reels along a transfer path comprising:

first drive means for selectively imparting rotation in a first direction to a first of the reels, said first drive means including an electric motor having an output shaft coupled to the first reel;

second drive means for selectively imparting rotation in a second direction opposite to said first direction to the second reel whereby a web stored on the reels may be selectively transferred between said reels by exercising control over the operation of said drive means, said second drive means including an electric motor having an output shaft coupled to the second reel;

means for sensing the rotational speed of said drive means motor output shafts and providing signals commensurate therewith;

means for digitally encoding said sensed rotational speed signals;

means responsive to said digitally encoded signals for calculating the actual instantaneous linear velocity of the web at a point intermediate the reels and generating a signal commensurate therewith;

means for generating a desired web linear velocity reference signal;

means for comparing said signal commensurate with calculated linear velocity with said desired velocity reference signal to provide a linear velocity error signal;

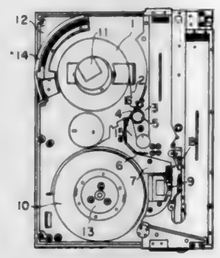
means for generating signals indicative of the direction of web movement;

means responsive to an input command signal for generating a variable energizing signal for said first drive means motor, the magnitude of said energizing signal determining the motor output shaft rotational speed;

means responsive to an input command signal for generating a variable energizing signal for said second drive means motor, the magnitude of said energizing signal determining the motor output shaft rotational speed; and

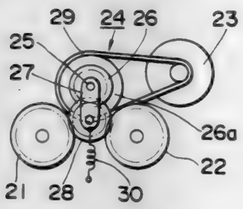
means responsive to said velocity error signal and to a signal indicative of web movement direction for delivering said velocity error signal as the input command signal to only the energizing signal generating means associated with the drive means which will produce the desired direction of web movement to vary the energization of the electric motor therein to obtain constant linear web velocity at the said intermediate point.

4,448,369
TAPE THREADING DEVICE
Michinori Watanabe, Odawara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed May 26, 1982, Ser. No. 382,102
Claims priority, application Japan, May 29, 1981, 56-81067
Int. Cl.³ G03B *1/04, 1/56;* G11B *15/32*
U.S. Cl. 242—195 **3 Claims**



1. An automatic tape threading device suitable for use with a tape system comprising a supply reel and a takeup reel arranged vertically in superposed one above the other, comprising:
a passage having an opening in the vicinity of said supply reel and extending downwardly to said takeup reel for transporting a tape;
a threading chute located in the vicinity of said supply reel and including an outer surface for guiding a leading end of the tape to the opening, said outer surface ending at the opening of said passage, and
means located between said outer surface and said opening for generating an air jet stream ejected through said opening toward the interior of said passage.

4,448,370
TAPE TRANSPORT MECHANISM
Kazumi Miyazi, and Akira Osanai, both of Tokyo, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan
Filed Oct. 15, 1981, Ser. No. 311,612
Claims priority, application Japan, Oct. 16, 1980, 55-147438[U]
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—201 **3 Claims**



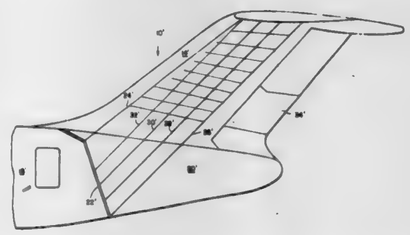
1. A tape transport mechanism for use in a tape recorder comprising a supply reel base and a take-up reel base each having a rotary gear and arrangd at a given distance apart, a rotatable lever arranged between the reel bases, a rotating gear rotatably supported by the rotatable lever and said rotating gear having a shaft arranged at a position deviated from a line connecting the centers of both reel bases, in the stopped condition of said mechanism the rotating gear is slightly meshed with the rotary gear of each reel base with the rotatable lever centered between said reel bases, and a drive source for driving the rotating gear in the forward and reverse directions.

4,448,371
CAMOUFLAGED AIRCRAFT
Carlisle K. Ferris, 50 Moraine Rd., Morris Plains, N.J. 07950
Division of Ser. No. 152,300, May 22, 1980, Pat. No. 4,406,428.
This application Sep. 28, 1982, Ser. No. 425,378
Int. Cl.³ F41H *3/00*
U.S. Cl. 244—1 R **6 Claims**



1. A camouflaged and deceptive perception distorted aircraft, comprising:
a. an aircraft fuselage having nose, tail, top, bottom and side surfaces, and longitudinal and vertical axes;
b. a real cockpit canopy on said top surface having length, width and height dimensions;
c. a simulated cockpit canopy on said bottom surface positioned substantially in the same general area as said real cockpit canopy so that only one of said cockpit canopies is visible when said aircraft is perceived directly above said top surface or directly below said bottom surface;
d. said simulated cockpit canopy having dimensions simulating the length, width and height of said real cockpit canopy;
e. at least one of said simulated cockpit canopy dimensions being substantially greater than the corresponding length, width or height dimension of said real cockpit canopy;
f. said simulated cockpit canopy when viewed from below said aircraft at an angle of approximately 45° from the vertical axis of the fuselage being a visually identical projection of said real cockpit canopy when said real cockpit canopy is viewed above said aircraft at substantially the same angle; and,
g. at least one of said simulated cockpit canopy dimensions being observable from below said aircraft at a substantial angle from the vertical axis of said fuselage thus enhancing deceptive perception by reducing angular viewing distortion by enemy aircraft.

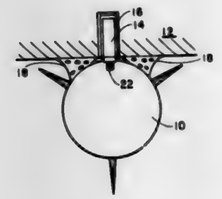
4,448,372
AIRCRAFT VERTICAL FIN-FUSELAGE STRUCTURAL INTEGRATION SYSTEM
Robert J. Larson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 30, 1981, Ser. No. 307,107
Int. Cl.³ B64C *1/26*
U.S. Cl. 244—87 **20 Claims**



1. An aircraft vertical fin-fuselage structural integration system, comprising:
fuselage means;

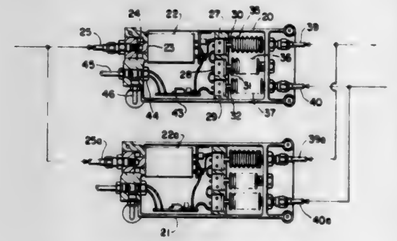
single pressure bulkhead means disposed within said fuselage means;
vertical tail fin means disposed atop the rear portion of said fuselage means; and
a plurality of structural spars disposed within said vertical tail fin means,
all of said vertical tail fin structural spars being directly connected to said single fuselage pressure bulkhead means.

4,448,373
ELASTOMERIC SWAY BRACING AND EJECTOR SYSTEM
Jack R. Bates, and John W. Holtrop, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 15, 1980, Ser. No. 216,460
Int. Cl.³ B64C *1/22*
U.S. Cl. 244—137 R **6 Claims**



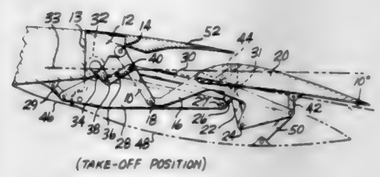
1. An elastomeric sway brace for mounting stores on external surfaces of aircraft comprising:
an inflatable bladder on an external surface of said aircraft;
means for inflating said bladder to a predetermined pressure;
means for holding said stores against said bladder, said holding means connected through said bladder to the aircraft; and
means for retracting said holding means so as to compress said bladder with said stores such that release of said stores by the holding means permits expansion of said compressed bladder to eject said stores.

4,448,374
DEPLOYMENT SEQUENCER
James W. Duncan, Arden, N.C., assignor to Stencel Aero Engineering Corporation, Arden, N.C.
Filed Jun. 3, 1982, Ser. No. 384,636
Int. Cl.³ B64D *17/56, 17/58*
U.S. Cl. 244—150 **4 Claims**



1. A sequencing apparatus for controlling the initiation of the deployment of a parachute following ejection of a seat from an aircraft comprising the combination of
a parachute and means carried by the seat for deploying the parachute;
left and right pitot tubes carried by said seat;
a housing carried by said seat;
first, second and third pneumatically operated bellows in said housing, each said bellows being operable between a retracted position and an extended position;
first, second and third switches in said housing, each of said switches including
a contact set, and
operator means connected to said contact set and to one of said bellows for closing said contact set when said one of said bellows is moved to a predetermined one of said positions;
a battery;
circuit means for connecting said contact sets of said first, second and third switches in series circuit relationship with each other and to said battery and said means for deploying said parachute;
first conduit means for coupling ambient air pressure to said first one of said bellows so that the switch associated therewith is closed at and below a predetermined altitude; and
second and third conduit means for coupling free stream pressures from said left and right pitot tubes to said second and third bellows so that each switch associated therewith is closed whenever the pressure to which the associated tube is exposed is indicative of an air speed below a preselected speed,
whereby closure of all three of said switches permits operation of said means for deploying.

4,448,375
FOLDING TRUSS MECHANISM FOR TRAILING EDGE FLAPS
Gerald F. Herndon, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
PCT No. PCT/US82/01356, 371 Date Sep. 29, 1982, 102(e) Date Sep. 29, 1982, PCT Pub. No. WO84/01343, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 29, 1982, Ser. No. 463,455
Int. Cl.³ B64C *9/16*
U.S. Cl. 244—216 **30 Claims**



1. A folding truss mechanism interconnected between a wing section, and a flap, for supporting and driving the flap from the wing section, comprising:
an upper frame portion carried by said wing section;
a lower frame portion carried by said wing section and positioned both below and aft of said upper frame portion;
a drive link having an upper end and a lower end;
first pivot means pivotally connecting the upper end of the drive link to the upper frame portion of said wing section for pivotal movement about a first pivot axis;
a support link having an upper and a lower end;
second pivot means pivotally connecting the lower end of said support link to the lower frame portion of said wing section for pivotal movement about a second pivot axis;
a swing link having an upper end and a lower end;
a slave link having a forward and an aft end;
third pivot means pivotally connecting the upper end of the swing link and the aft end of the slave link to the upper end of said support link, for pivotal movement about a third pivot axis;
fourth pivot means pivotally connecting the lower end of

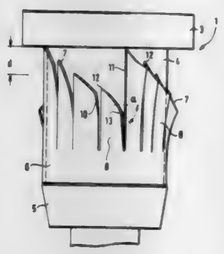
the drive link to a forward portion of the flap for pivotal movement about a fourth pivot axis;
fifth pivot means pivotally connecting the lower end of the swing link to an aft portion of the flap for pivotal movement about a fifth pivot axis;
sixth pivot means pivotally connecting the forward end of the slave link to an intermediate portion of the drive link for pivotal movement about a sixth pivot axis;
said drive link having a forward position and said flap being stowed when the drive link is in its forward position;
said drive link having an intermediate position and said flap being in a take-off position when the drive link is in its intermediate position;
said drive link having an aft position and said flap being in a landing position when the drive link is in its aft position; and
drive means for swinging the drive link fore and aft about the first pivot axis.

4,448,376

HOLDER FOR AN ELECTRICAL COMPONENT

Martin Behrendt, Hagen, Fed. Rep. of Germany, assignor to Wickmann-Werke AG, Witten-Annen, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,636
Claims priority, application Fed. Rep. of Germany, Nov. 1, 1980, 3041610
Int. Cl.³ G12B 9/00
U.S. Cl. 248—27.3 **12 Claims**



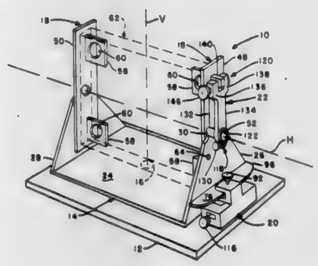
1. In a holder for an electrical component and adapted to be fixed by once-only plugging of said holder into an opening in a mounting panel, said holder comprising a housing which has a substantially cylindrical outer face carrying a resilient clamping element with a diameter adapted in use to exceed in part the inner diameter of said opening, and said housing being dimensioned to be pushed through said opening whereupon an edge of said clamping part running obliquely to a generatrix of said cylindrical outer face engages behind said mounting panel; the improvement wherein said clamping part comprises a collar having a plurality of strip springs extending axially along said outer face and terminating at ends at least most of which have oblique edges which are located at different axial positions along said outer face, said strip springs being twisted such that one side edge of a strip spring extends substantially parallel to a generatrix of said cylindrical outer face and the other side edge of said strip spring is displaced outwardly away from said outer face, and said strip springs being arranged in groups with the axial lengths of said strip springs in each group successively decreasing around said outer face.

4,448,377

MOUNTING ARRANGEMENT FOR AN INERTIAL MEASUREMENT UNIT

Kurt D. Shinkle, Germantown, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 19, 1982, Ser. No. 379,806
Int. Cl.³ F16M 11/04
U.S. Cl. 248—178 **6 Claims**



1. In mounting arrangement for an instrument, such as an inertial measurement unit or the like, including a first frame for supporting said instrument, a second frame mounting said first frame and therewith said instrument for movement about a first axis, and a platform mounting said second frame and therewith said first frame and instrument for movement about a second axis extending in generally orthogonal relationship to said first axis, the improvement comprising:
(a) a first lock and motion assembly interconnecting said second frame and platform, said first assembly including
(i) first means for locking said second frame to said platform and
(ii) first means for movably adjusting the angular position of said second frame relative to said platform about said second axis while said second frame is locked to said platform by said first locking means; and
(b) a second lock and motion assembly interconnecting said first and second frames, said second assembly including
(i) second means for locking said first frame to said second frame and
(ii) second means for movably adjusting the angular position of said first frame relative to said second frame about said first axis while said first frame is locked to said second frame by said second locking means.

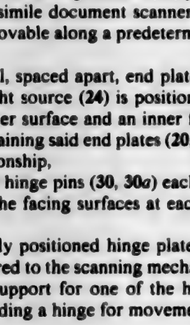
4,448,378

MODULAR SUPPORTING STRUCTURE FOR TABLES, SMALL TABLES, CHAIRS AND THE LIKE

Francesco Binfaré, Monza, Italy, assignor to C.D. & C Centro Design & Communicazione S.r.l., Milan, Italy

Filed Dec. 2, 1981, Ser. No. 326,481
Claims priority, application Italy, Dec. 19, 1980, 23690/80[U]
Int. Cl.³ A47B 91/00
U.S. Cl. 248—188.7 **4 Claims**

1. A modular furniture support structure, comprising: a substantially vertically extending tubular column member;
a first set of angularly spaced radially extending arm members lying in a first plane at an upper end of said column member;
means for connecting said first set of arm members to said column member at said upper end of said column member;
a second set of radially extending arm members lying in a second plane at the lower end of said column members; and
second means connecting said second set of arm members to said column member at said lower end thereof, at least one of said connecting means including:
a pair of clamping bodies each formed with a plurality of angularly spaced radially and axially open recesses registering with the recesses of the other body for receiving the respective arm members and clamping them between said bodies, each arm clamped between said bodies being tubular and having an extremity received in two registering recesses of said bodies,
a screw traversing said bodies and anchored in said column member for drawing said bodies together to clamp



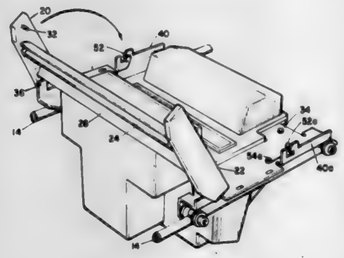
said ends of the respective set of arm members removably between said bodies, and
each of said ends is formed with a pair of cylindrical projections each provided with a circumferential groove and each of said recesses is cylindrical and said bodies are provided with pins extending radially into said recesses for engagement in said groove.

4,448,379

LIGHT SOURCE MOUNTING BRACKET FOR A FACSIMILE DOCUMENT SCANNER

Raymond W. DeMuth, Carpentersville, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Apr. 15, 1982, Ser. No. 368,617
Int. Cl.³ F16M 11/00
U.S. Cl. 248—201 **7 Claims**



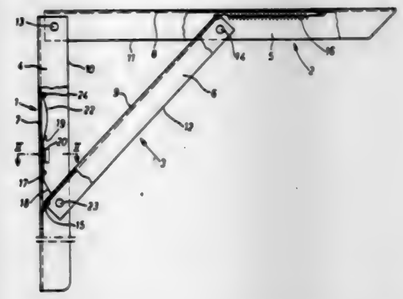
1. A light source mounting bracket (18) particularly adapted for use with a facsimile document scanner having a scanning mechanism (16) movable along a predetermined path comprising:
a pair of parallel, spaced apart, end plates (20, 22) between which the light source (24) is positioned, each end plate having an outer surface and an inner facing surface,
means for maintaining said end plates (20, 22) in spaced apart parallel relationship,
a pair of coaxial hinge pins (30, 30a) each of which projects from one of the facing surfaces at each of the end plates (20, 22),
a pair of spatially positioned hinge plates (36, 36a) each of which is secured to the scanning mechanism (16) and each providing a support for one of the hinge pins (30, 30a) thereby providing a hinge for movement of the mounting bracket (18) between an operating position and a service position,
a release mechanism mounted upon said scanning mechanism (16) and cooperating with said end plates (20, 22) for releasably retaining said mounting bracket (18) in said operating position, and wherein said release mechanism includes a pair of coaxially oriented lock pins (32, 32a) each of which projects from one of the surfaces of each of the end plates (20, 22) and a pair of spatially positioned lock plates (40, 40a) each of which is secured to said scanning assembly (16) and said release mechanism includes means (50, 50a) for engaging and selectively releasing the lock pins (32, 32a) from their respective lock plates (40, 40a).

4,448,380

FOLDABLE CANTILEVER

Rudolf Huber-Krattiger, Hofgut Bolzenried, 2216 Bubendorf, Switzerland

Filed Dec. 3, 1981, Ser. No. 327,182
Claims priority, application Switzerland, Dec. 3, 1980, 8947/80
Int. Cl.³ E04G 3/08
U.S. Cl. 248—235 **17 Claims**



1. A foldable cantilever comprising a first U-profile section defined by a web and two legs with said two legs being at right angles to said web, a second U-profile section defined by a web and two legs with said last-mentioned two legs being at right angles to said last-mentioned web, a third U-profile section defined by a web and two legs with said last-mentioned two legs being at right angles to said last-mentioned web, said third U-profile section extending between said first and second U-profile sections, first means for pivotally connecting adjacent ends of said first and second U-profile sections to each other, second means for pivotally connecting an end of said third U-profile section to said second U-profile section, said U-profile sections being so dimensioned as to effect the receipt of said third U-profile section within the legs of said second U-profile section and the receipt of said second U-profile section within the legs of said first U-profile section, said first U-profile section web having a supporting flap projecting obliquely between the two legs thereof, said third U-profile section having an end remote from said second pivotally connecting means in engagement with said flap to maintain said first and second U-profile sections disposed in transverse relationship to each other, a tension spring having opposite ends, and one end of said tension spring being connected to said second U-profile section and another end of said tension spring being connected to said third U-profile section such that the tension of said tension spring biases said third U-profile section remote end between said first U-profile section legs.

4,448,381

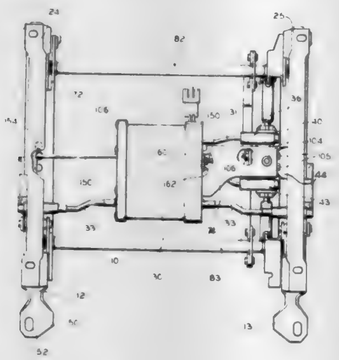
MOTOR MOUNT STRUCTURE FOR VEHICLE SEAT ADJUSTMENT APPARATUS

Dennis J. Anspaugh, Osseo, and Ronald R. Siegrist, Jackson, both of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 111,598, Jan. 14, 1980. This application Mar. 10, 1982, Ser. No. 356,849

Int. Cl.³ A45D *19/04*

U.S. Cl. 248—394 **3 Claims**



1. A motor vibration reducing apparatus for a power adjusting mechanism for a vehicle seat, comprising: first and second transversely spaced apart base rails arrayed fore and aft in said vehicle, a first and a second slide track with the slide tracks tracked relative to the respective rails for longitudinal driven movement therealong, a motor drive unit including a plurality of output shafts extending transversely between said rails, slide track drive members coupled to respective ones of said output shafts for driving said tracks on operation of the motor drive unit, a motor housing structure enclosing said motor drive unit, said motor housing structure including transversely opposed end walls, platform structure secured to said housing structure for rigidly securing one end wall of said motor unit to the adjacent one of said slide tracks for longitudinal movement therewith, the invention comprising means for preventing undue longitudinal vibration of the motor unit comprising a rigid elongated rod laterally extending through the housing structure of the motor drive unit and engaged with the other of said slide tracks, and means affixing one end of said rod firmly adjacent said one end wall, said rod extending through the other end wall and extending to drop-in engagement with the other of said slide tracks transversely adjacent said motor unit to stabilize said motor unit.

4,448,382

POWER OPERATED CHAIR LIFT MECHANISM

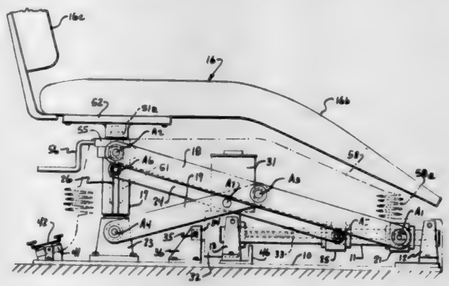
Robert R. Melone, Rockford, Ill., assignor to Smith Investment Company, Rockford, Ill.

Filed Aug. 16, 1982, Ser. No. 408,439

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—421 **14 Claims**

1. A power operated chair lift mechanism comprising, a base having horizontal linear guide means thereon, a chair support, a first follower means mounted on the horizontal linear guide means for horizontal movement relative to the base, first link means, means connecting one end of the first link means to said first follower means for movement therewith and for pivotal movement relative thereto about a first horizontal axis, means connecting the other end of the first link means to the chair support for pivotal movement relative thereto about a second horizontal axis, a second link means, means connecting one end of the second link means to the first link means at a location intermediate the first and second horizontal axes for pivotal movement relative thereto about a third horizontal axis, means pivotally connecting the other end of the second link means to the base for pivotal movement relative thereto about a fourth horizontal axis at a fixed location, the spacing between the third and fourth horizontal axes along the second link means being equal to the spacing between the first and third horizontal axes along the first link means, means engaging said chair support for maintaining the chair support in a fixed attitude relative to the horizontal as the chair support is moved vertically, and power operated means connected to said first follower means for moving the first follower means along the horizontal linear guide means to raise and lower the chair support, said means for maintaining said chair support in a fixed attitude including, vertical guide means on the chair support, a second follower means on said horizontal linear



guide means, a third follower means mounted on the vertical guide means for vertical movement relative to the chair support, a third link means shorter than said first link means, means connecting one end of said third link means to said second follower means for movement therewith and for pivotal movement relative thereto about a fifth horizontal axis, means connecting the other end of said third link means to said third follower means for movement therewith and for pivotal movement about a sixth horizontal axis, and means pivotally connecting said second link means to said third link means for relative pivotal movement about a seventh horizontal axis at a location on said third link means intermediate said fifth and sixth horizontal axes and at a location on said second link means intermediate said third and fourth horizontal axes.

4,448,383

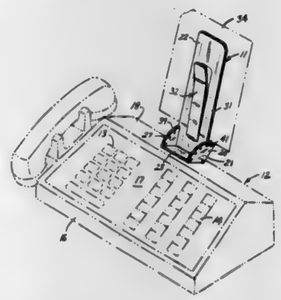
ADJUSTABLE TELEPHONE MESSAGE HOLDER

Robert S. Hansen, P.O. Box 1040, Doylestown, Pa. 18901

Filed May 28, 1982, Ser. No. 383,286

Int. Cl.³ A47B *19/00*

U.S. Cl. 248—447.1 **8 Claims**



1. In a message holder for use with a telephone instrument: a base of substantially smaller lateral extent than the telephone instrument mounted in a stationary position on the telephone instrument and having a generally planar flange projecting therefrom, an elongated message holding arm hingedly connected to the base for pivotal movement about an axis generally perpendicular to the flange, and detent means carried by the flange for selectively retaining the message holding arm in a plurality of different angular positions relative to the base, wherein the detent means comprises a plurality of notches formed in the flange and spaced along an arcuate path centered about the hinge axis for engagement with an edge portion of the arm.

4,448,384

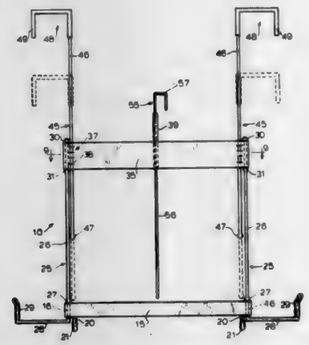
ADJUSTABLE MUSIC/BOOK HOLDER

Larry L. Jones, Jr., 206 S. Collins St., Nashville, N.C. 27856, and Star D. Cockrell, 1315 Beal St., Rocky Mount, N.C. 27801

Filed Dec. 20, 1982, Ser. No. 451,486

Int. Cl.³ G10G *5/00*

U.S. Cl. 248—443 **6 Claims**



1. An adjustable music/book holder comprising:

(a) a lower, elongated, transverse, metal, frame member formed of a bar material and in such manner as to establish a predetermined weight effect to help maintain the holder positioned in use;

(b) a pair of metal rod-formed foot members formed integral with said lower frame member and extending vertically downward from the bottom and outer extremities thereof;

(c) an upper elongated transverse frame member formed of metal sheet material and fixedly positioned above and having its longitudinal axis parallel to the longitudinal axis of said lower frame member;

(d) a first pair of metal rod-formed page holders, each having an upper vertically positioned straight rod portion mounted for rotation in an outer end portion of each of said frame members and having a lower U-shaped portion swingable around an outer extremity of said lower frame member and being adapted for holding book or music pages therein;

(e) stop means operatively associated with said first page holder upper rod portions for limiting axial movement thereof relative to said frame members;

(f) a second pair of metal rod-formed hook/alternate page holders, each having a lower vertically positioned straight rod portion mounted for rotation in said upper frame member at the outer ends thereof and having an upper inverted U-shaped portion adapted for alternately holding book or music pages or structural surfaces against which said holder resides, the axes of said lower, straight rod portions of said second pair of hook/alternate page holders being parallel to the axes of said upper rod portions of said first pair of page holders;

(g) a sleeve member vertically positioned and integrally secured centrally and on said upper frame member with its longitudinal axis parallel to the axis of said first and second page holder rod portions; and

(h) a support device having a lower metal rod-formed portion removably mounted, slidable and rotatable in said sleeve member and an upper metal rod-formed portion shaped to grasp a selected portion of a book, support surface, or the like.

4,448,385

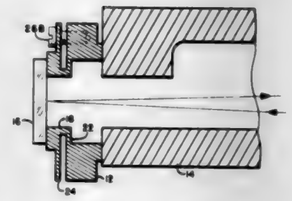
STABLE ALIGNMENT MECHANISM FOR LASER MIRRORS

Robert J. Matthys, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 12, 1981, Ser. No. 262,736

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—476 **7 Claims**



1. A stable alignment mechanism comprising in combination;

a base,

a support for supporting an optical element having

a surface which is to be aligned with respect to a predetermined axis,

a flange secured to said support,

an adjusting screw engaging said flange and said base,

a resilient diaphragm coupling said base to said support and integral therewith, said diaphragm oriented to bend in a direction generally parallel to said axis of alignment in response to rotation of said screw whereby said support moves relative to said base.

4,448,386

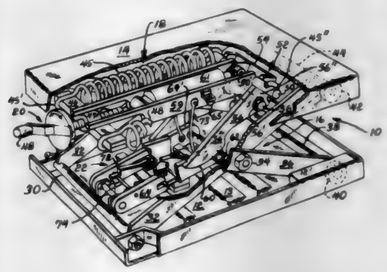
LOW PROFILE RESILIENT SUSPENSION FOR VEHICLE SEAT

David Moorhouse, Towcester, and David E. Marshall, Bugbrooke, both of England, assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 1, 1981, Ser. No. 326,300

Int. Cl.³ B60N *1/02*

U.S. Cl. 248—564 **10 Claims**



1. In a resilient suspension system for a vehicle seat including a seat suspension base support, a vertically movable seat suspension upper support, a linkage system on each side of the seat which is connected to the seat suspension base support and to the seat suspension upper support for guiding and permitting generally vertical movement of the upper support relative to the base support, and spring means and damper means for

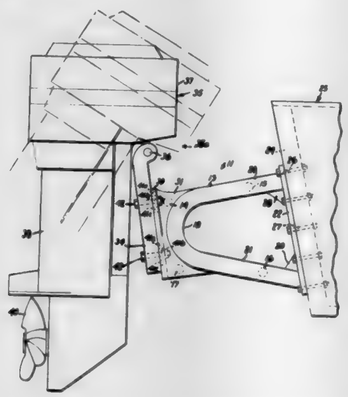
yieldingly resisting upward and downward movement of the upper support, the improvement comprising adjustable mounting means on one of said supports attached to one portion of said spring means for permitting the tension of said spring means to be selectively varied to accommodate occupants of varying weights, means on said one of said supports for pivotally mounting at least one elongated bellcrank lever having a short leg portion and a long leg portion, means at the end of the short leg portion of said at least one elongated bellcrank lever for mounting a second portion of said spring means, cooperating cam and cam follower means, one of which is located on the long leg portion of said at least one elongated bellcrank lever and the other of which is located on the other of said supports for causing the means for mounting the second portion of the spring means to move relative to the means for mounting the first portion of the spring means as said supports move vertically toward or away from each other, said cam means being of a non-rectilinear configuration.

4,448,387

OUTBOARD MOTOR SUPPORT BRACKET

James C. Gilbreath, 26225 Big Pines Hwy., P.O. Box 304, Wrightwood, Calif. 92397

Filed Sep. 13, 1982, Ser. No. 417,389
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—642 **5 Claims**



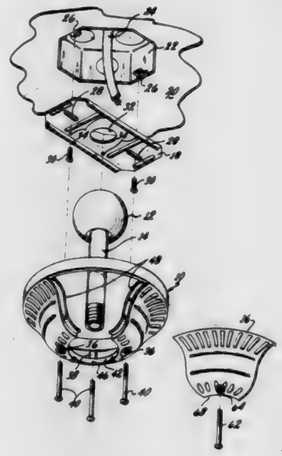
1. A one piece outboard motor support bracket comprising a pair of tubular frame members,
each of said frame members being at least substantially cylindrical in cross-section,
each of said frame members forming a substantially semi-circular end portion and two leg portions diverging from said end portion,
transom mounting pads integrally united to the free ends of said leg portions of respective ones of said frame members,
motor mounting pads adjacent respective ones of said semi-circular end portions of respective ones of said frame members,
said motor mounting pads extending substantially parallel to said transon mounting pads,
gusset plates united between said motor mounting pads and said respective semi-circular end portions, and strut means for maintaining said frame members in fixed spaced apart relation.

4,448,388

CANOPY ASSEMBLY

Warren E. Dennis, Pasadena, and Eric D. Plambeck, South Pasadena, both of Calif., assignors to Casablanca Fan Company, Inc., City of Industry, Calif.

Filed Mar. 20, 1981, Ser. No. 245,987
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—663 **17 Claims**



1. A canopy assembly for hanging an overhead electrical fixture from an electrical housing box supported on an overhead surface, including:
a main canopy having an upper portion, a lower portion and an interconnecting side portion, the upper portion adapted to surround and enclose the housing box and the lower portion including a symmetrical opening having a particular size and configuration and the side portion including an access opening extending into the symmetrical opening,
first means included in the main canopy for providing for a mechanical attachment of the main canopy to the housing box,
a ball member for coupling to the electrical fixture for supporting the electrical fixture, the ball member having an outer configuration matching the configuration of the symmetrical opening and having a size greater than the particular size of the symmetrical opening,
the ball member being provided with dimensions for insertion through the access opening into the main canopy to be captured and supported by the symmetrical opening to have the electrical fixture hang below the main canopy,
a cover plate having the same configuration as the access opening for covering the access opening after the ball member is inserted through the access opening, and
second means included in the cover plate for providing for a mechanical attachment of the cover plate to the housing box.

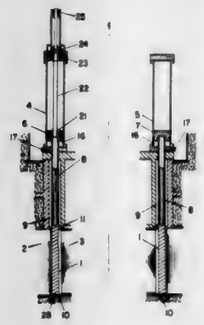
4,448,389

OPERATING DEVICE FOR A CYLINDRICAL GATE

Paul Hudon, 9100 de Charente, Tracy, Canada

Filed Feb. 16, 1982, Ser. No. 349,317
Claims priority, application Canada, Mar. 12, 1981, 372843
Int. Cl.³ F16K *31/163*
U.S. Cl. 251—62 **17 Claims**

1. A safety device to protect a hydraulic turbo-machine equipped with a hydraulic conduit, including:
a self-closing cylindrical gate which blocks, when closed, the hydraulic conduit, said cylindrical gate having an upstream face and a downstream face, an upper edge and a bottom lip; and a chamber receiving the gate in open position, said chamber comprising an upstream orifice defined by an opening between said upstream face of said gate and a stationary part of said chamber and a downstream orifice defined by another opening between said



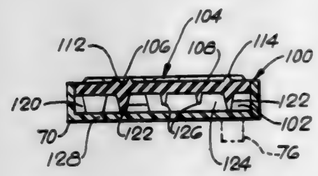
downstream face of said gate and another stationary part of said chamber, each said orifice having a selected discharge coefficient and cross-sectioned area such that, when said chamber is filled with liquid a force will be exerted on the upper edge of said gate to move said gate to close the hydraulic conduit.

4,448,390

VACUUM CONTROL VALVE FOR AUTOMOTIVE HEATING AND AIRCONDITIONING SYSTEMS

Raymond T. Halstead, Wheeling, and Charles E. Black, III, Mount Prospect, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Continuation of Ser. No. 237,995, Feb. 25, 1981. This application Jan. 3, 1983, Ser. No. 455,200
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—176 **7 Claims**



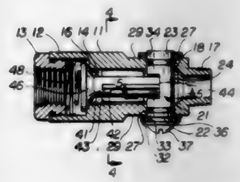
1. A vacuum control valve, comprising
a body having a valve surface with a plurality of valve ports extending through said body from said surface,
a soft resilient valve member having a control surface slidable along said valve surface and formed with passage means for selectively establishing communication with said valve ports,
a movable carriage for receiving and supporting said valve member,
and means for moving said carriage along a predetermined path substantially parallel with said valve surface,
said soft resilient valve member having a soft resilient compressible rear portion formed integrally with said valve member on the opposite side thereof from said control surface,
said soft resilient valve member being confined between said carriage and said valve surface with said soft resilient compressible rear portion in a compressed condition for exerting resilient pressure between said control surface of said valve member and said valve surface of said body,
said soft resilient compressible rear portion comprising a pattern of fins on said valve member and alternating with recesses therein to afford resilient compressibility,
said fins projecting from said valve member toward said carriage and engaging said carriage,
said carriage being formed with a pattern of shallow grooves for receiving and stabilizing the rear portions of said fins,
the depth of said grooves being small in comparison with the depth of said fins.

4,448,391

SQUEEZE GRIP VALVE

Richard E. Young, 625 Coney Island Dr., Sparks, Nev. 89431

Filed Apr. 4, 1983, Ser. No. 481,790
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—263 **2 Claims**



1. A valve comprising a body having intersecting longitudinal and transverse bores, said longitudinal bore being formed with an inlet port at one end, a seat inward of said inlet port, a cylindrical reduced diameter portion inward of said seat and an outlet port on other end of said body, a stem in said transverse bore, a handle external to said body movable by squeezing action between a first position at an angle to the exterior of said body and a second position substantially parallel to said body, stem turning means for turning said stem as said handle moves from first and second positions, a portion of said stem being formed at the intersection of said bores in a cam, said cam portion of said stem being initially circular in cross-section and being cut away through approximately 270° to form said cam as a sector of a circle of about 90°, an actuator reciprocable in said longitudinal bore having a seat-engaging means at one end engageable with said seat to close said valve, a cam follower at the opposite end of said actuator to engage said cam, said cam follower in the closed position of the valve engaging a radial side of said sector, said cam follower in the open position of the valve engaging a peripheral corner of said sector, a substantial portion of said stem being cut away to form said cam, the cut-away portion permitting fluid flow around said cam when the valve is open, said actuator being substantially smaller than said reduced diameter portion and having spacing means intermediate said ends comprising vanes engaging the walls of said reduced diameter portion permitting fluid flow between said actuator and said reduced diameter portion, said cam forcing said actuator toward said inlet port to move said seat engaging means off said seat to open said valve when said handle is in second position, and spring means biasing said actuator to close said valve.

4,448,392

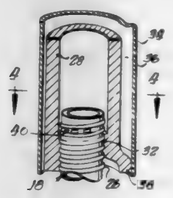
THREAD STOP FOR A SCREW JACK

Bernard F. Ladewski, St. Joseph, Mich., assignor to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Jan. 25, 1982, Ser. No. 342,070
Int. Cl.³ B66F *3/18*
U.S. Cl. 254—103 **8 Claims**

1. A thread stop for a screw jack including at least one elongated, substantially cylindrical hollow metal screw member having an external thread, said thread stop comprising: metal screw member material being deformed radially outwardly from the hollow screw member interior in a predetermined portion of a minor diameter of said external thread, said

at least one deformed metal formation being formed by a ductile movement of screw member material and having substantially the same hardness as said screw member, the deformed



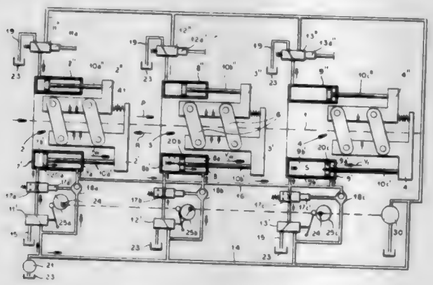
metal formation comprising a pair of nibs each having a substantially continuous, curved radially outer surface and being substantially symmetrical one with the other about a predetermined point in said minor thread diameter.

4,448,393

APPARATUS FOR PULLING IN AND LETTING OUT A CABLE

Willy Habegger, Hünibach, and Ernst Lauber, Thun, both of Switzerland, assignors to Willy Habegger AG, Thun, Switzerland

Filed Mar. 26, 1982, Ser. No. 362,120
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112344
Int. Cl.³ B66D *3/18*
U.S. Cl. 254—264 **12 Claims**



1. An apparatus for pulling in and letting out a flexible element such as a cable, said apparatus comprising:

a generally stationary housing defining a cable path;

a predetermined number N equal to at least three of grippers spaced in a row and shiftable along said path, said grippers being clampable on said element in said path;

respective actuator means connected to said grippers for shifting same parallel to said path in a pulling direction and in an opposite letting-out direction; and

control means responsive to gripper position and connected to said actuator means for

(a) clamping all but one of said grippers on said element and unclamping said one gripper from said element,

(b) displacing the clamping grippers with said element in one direction at a rate V_w through a distance $S/(N-1)$ while simultaneously displacing the nonclamping gripper oppositely through a distance S along said element at a rate V_r equal substantially to $2 \cdot V_w$ to return the nonclamping gripper to a starting position; and

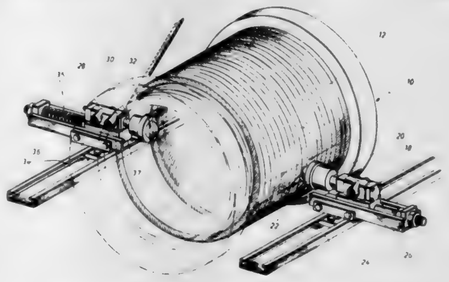
(c) thereafter clamping said nonclamping gripper on said element and unclamping the one of the other grippers which follows the gripper in said starting position in said row and sequentially repeating steps (b) and (c), whereby said grippers are successively returned to said starting position in an operation cycle having N parts.

4,448,394

HIGH LOW SAFETY APPARATUS FOR DRILLING RIGS

Joseph L. LeMoine, Houston, Tex., assignor to Koomey, Inc., Brookshire, Tex.

Filed Sep. 30, 1982, Ser. No. 432,052
Int. Cl.³ B66B *5/08*; B66D *1/56*
U.S. Cl. 254—271 **1 Claim**



1. In a safety apparatus for raising and lowering a traveling block of a drilling rig by a cable on a cable drum actuated by a primer mover which is controlled by a brake and clutch, the improvement in means for preventing the traveling block from being raised above a predetermined high position and from being lowered below a predetermined low position comprising,

a high position limiting valve having an air inlet and an air outlet, said valve having a stem normally positioned spaced from the cable drum for actuation and providing communication between the inlet and the outlet when a predetermined amount of cable is spooled onto the drum,

a low position limiting valve having an air inlet and an air outlet, said valve having a stem positioned contacting the cable on the drum for actuation and providing communication between the inlet and the outlet when a predetermined amount of cable is spooled off of the drum,

an air supply connected to the inlets of the high position valve and the low position valve,

the outlets of the high position valve and the low position valve adapted to supply air to stop the actuation of the cable drum,

the longitudinal axis of the valves are positioned generally perpendicular to the surface of the cable drum and their stems are longitudinally movable, and

said stem of the high position valve is normally positioned out of contact with the cable until actuated and the stem of the low position valve is yieldably urged at all time into engagement with the cable.

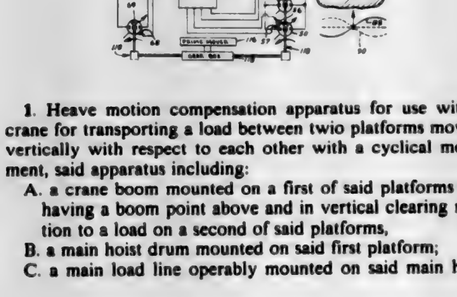
4,448,395

IMPROVEMENTS IN AND RELATING TO WINCHES

William C. Purdy, Barnehurst, England, assignor to Sykes Pumps Limited, London, England

Filed Jan. 18, 1982, Ser. No. 340,037
Claims priority, application United Kingdom, Jan. 29, 1981, 8102735
Int. Cl.³ B66D *1/46, 1/50, 1/56, 1/58*
U.S. Cl. 254—334 **7 Claims**

1. A winch arrangement comprising a drive motor; a winch drum assembly coupled to said drive motor by means of a transmission incorporating a reduction gear, said transmission including a component of relatively high inertia, whereby in the event of sudden cease of drive from the drive motor the transmission can run on to drive the winch drum assembly and take up possible slack in the winch rope; rope guide means for guiding rope from a load to the winch drum along an indirect path; and shock absorbing buffer means associated with said rope guide means and arranged, upon sudden increase in the load in the winch rope above a predetermined limit, to allow deflection of the winch rope and to absorb the load placed on the rope due to the inertia of the system; said transmission including a non-return device arranged to prevent the winch drum from rotating in the reverse direction under the load placed on the winch rope, following stoppage of the transmission, and the said transmission incorporates a releasable clutch means to enable manual unreeling of the winch rope prior to operation of the winch, said clutch means comprising an electromagnetically actuatable clutch, the said winch drum is



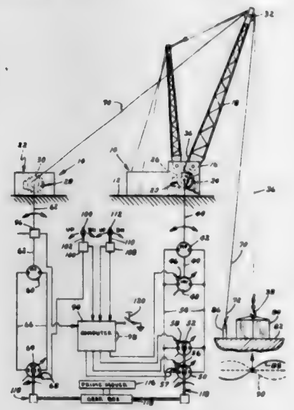
provided with an electromagnetically actuatable braking means, and there is further provided a manually operable control circuit incorporating an actuating switch for controlling release of said clutch means, and a timing circuit for controlling release of said brake means, the said timing circuit being arranged to delay release of said brake means following release of said clutch means so that the said brake means remains applied for a predetermined period of time sufficient to permit relaxation of tension in the winch rope.

4,448,396

HEAVE MOTION COMPENSATION APPARATUS

Pierre C. Delago, Afton, Minn., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Filed Feb. 25, 1982, Ser. No. 352,082
Int. Cl.³ B66D *1/48*
U.S. Cl. 254—340 **15 Claims**



1. Heave motion compensation apparatus for use with a crane for transporting a load between twio platforms moving vertically with respect to each other with a cyclical movement, said apparatus including:

A. a crane boom mounted on a first of said platforms and having a boom point above and in vertical clearing relation to a load on a second of said platforms,

B. a main hoist drum mounted on said first platform;

C. a main load line operably mounted on said main hoist drum and having an outer end portion extending over the boom point and terminating in an outer end;

D. load line fastening means for attaching said outer end of said main load line to said load when said load is situated on said second platform;

E. power means;

F. first sensor means operable to develop a first signal representative of the speed and direction of movement of the two platforms toward and away from each other;

G. second sensor means operable to develop a second signal representative of the rate of change of the speed of movement of the platforms toward each other;

H. lifting means including the power means operative to rotate the main hoist drum to cause the load line to lift the load from the second platform; and

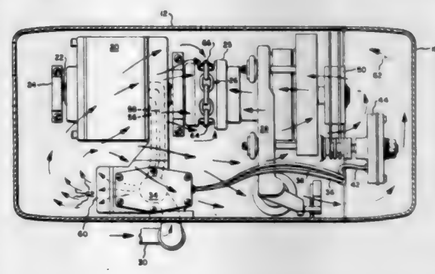
I. pick-off control means operable to activate said lifting means responsive to the simultaneous presence of a first signal representative of movement of the platforms toward each other and of a second signal representative of a zero rate of change of speed of such movement of the platforms toward each other.

4,448,397

PNEUMATIC POWERED HOIST

Robert H. Broyden, Williamsville, N.Y., assignor to Columbus McKinnon Corporation, Amherst, N.Y.

Filed Nov. 12, 1982, Ser. No. 440,850
Int. Cl.³ B66D *3/20, 3/26*
U.S. Cl. 254—360 **6 Claims**



1. A compressed air powered hoist comprising a casing housing the parts of the hoist mechanism including the hoist motor;

said casing being pneumatically sealed except for having close-clearance load carrying means guide openings therethrough; said hoist motor being so arranged within said casing that the exhaust vapors from said hoist motor are discharged into the interior of said casing while expanding and cooling the mechanisms enclosed within said casing;

said vapors finally exiting through said guide openings while further expanding and cooling the load carrying means occupying said guide openings and attenuating and eliminating the high decibel acoustic vibrations issuing initially from the motor exhaust ports.

4,448,398

WINCH CONTROL SYSTEM

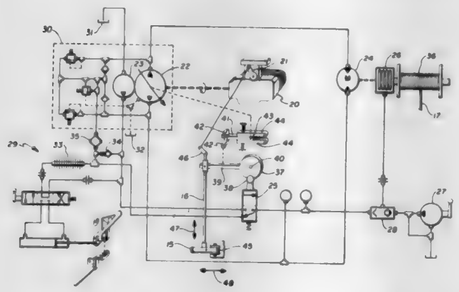
Lloyd A. Wyatt, Elk River, Minn., assignor to Garlock Equipment Company, Plymouth, Minn.

Filed Mar. 1, 1982, Ser. No. 353,018
Int. Cl.³ B66D *1/44, 1/48*
U.S. Cl. 254—361 **14 Claims**

1. In a crane of the type having a winch including a rotatable spool, an improved winch control system which comprises:

motor means connected for rotating said spool; dual state

brake means connected for preventing spool rotation in one state and permitting spool rotation in the other state;
power means including means for providing driving energy for said motor means and means providing state changing energy for said brake means; and



control means including first means for selectively interconnecting said brake means and said state changing energy providing means and second means responsive to said first means for selectively providing said driving energy to said motor means.

4,448,399

BENZTHIAZOLYL-2-THIOALKANOIC NITRILES

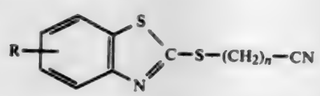
John J. D'Amico, Los Angeles, Calif., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 212,389, Dec. 3, 1980, abandoned, which is a continuation of Ser. No. 120,436, Feb. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 915,846, Jun. 15, 1978, abandoned. This application Apr. 16, 1981, Ser. No. 254,812

Int. Cl.³ C07D *277/74*

U.S. Cl. 548—165 **6 Claims**

1. A compound having the formula:



wherein R is hydrogen, halogen, or alkyl having 1 to 5 carbon atoms; n is equal to 1, 3, 4, 5, or 6.

4,448,400

HIGHLY SCALABLE DYNAMIC RAM CELL WITH SELF-SIGNAL AMPLIFICATION

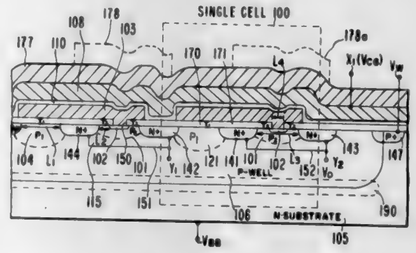
Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022

Continuation-in-part of Ser. No. 282,882, Jul. 13, 1981, Pat. No. 4,417,325. This application Mar. 8, 1982, Ser. No. 355,986

Int. Cl.³ G11C *11/40, 11/56*

U.S. Cl. 365—185 **27 Claims**

1. A memory cell comprising:
a substrate of a first conductivity type;
a first region of second conductivity type formed in said substrate, said second conductivity type being opposite to said first conductivity type;
second, third, and fourth regions of said first conductivity type formed in said first region of said second conductivity type, said second and third regions being separated by a first portion of said first region and said third and fourth regions being separated by a second portion of said first region;
a fifth region of said first conductivity type formed in said second portion of said first region;
a first electrode attached to said fifth region, said first electrode being electrically isolated from said second, third, and fourth regions, said first electrode extending on insulation over said first portion to said second region and also extending over said third region and a part of said second portion, said first electrode being covered by second insulation;
a word line formed over said second insulation so as to overlie said first electrode and said second portion between said third region and said fifth region, said first electrode and said word line forming a dual electrode, said dual electrode structure forming a read transistor with channel length measured by the separation between said second region and said third region, a write transistor with channel length measured by the separation between said



third region and said fifth region, and a storage junction formed between said fifth region and said first region;
wherein the conductivity state of the channel region of said write transistor with channel length measured by the separation between said third region and said fifth region is controlled entirely by said word line which has a portion thereof extending over said second portion of said first region extending between said third region and said fifth region and being separated from said second portion of said first region by insulation of approximately the same thickness as the insulation separating said first electrode from said first portion.

4,448,401

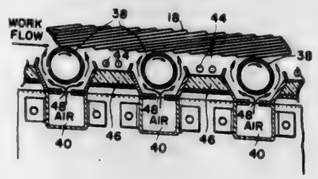
APPARATUS FOR COMBINED HOT ROLLING AND TREATING STEEL ROD

Asjed A. Jalil, Holden; Earl S. Winslow, Jr., Grafton, and Charles H. Gage, Westboro, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Nov. 22, 1982, Ser. No. 443,618

Int. Cl.³ C71D *9/56*

U.S. Cl. 266—78 **7 Claims**



1. Apparatus for rolling and treating steel rod comprising:
(a) a rod rolling mill,
(b) delivery means for receiving said rod from (a),
(c) a laying head for receiving said rod from (b), and forming said rod into a succession of relatively stationary rings,
(d) a conveyor for receiving said rings from (c),
(e) means for driving (d) whereby said rings become spread out on (d),
(f) a portion of (d) comprising spaced rollers,
(g) means for applying head to said rod generally from above and a heating element between each pair of rollers to heat said rod from below, and
(h) air cooling means associate with each said roller in (f) for applying a jet of cooling air directly upwardly to the under surface of each said roller, whereby said cooling air flows around said rollers and impinges against the under surfaces of said rings.

4,448,402

APPARATUS FOR DIRECTLY MAKING LIQUID PIG-IRON FROM COARSE IRON ORE

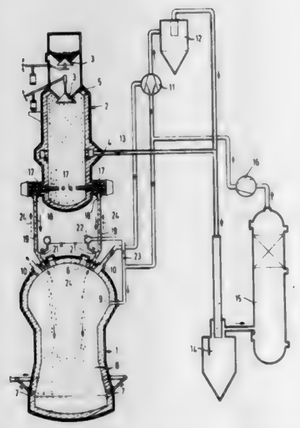
Ralph Weber, Sao Paulo, Brazil; Bernt Rollinger, Baden-Baden, Fed. Rep. of Germany; Rolf Hauk, Baden-Baden, Fed. Rep. of Germany; Michael Nagle, Baden-Baden, Fed. Rep. of Germany, and Bernhard Rinner, Kehl am Rhein, Fed. Rep. of Germany, assignors to Korf Engineering GmbH and Voest-Alpine AG, both of, Fed. Rep. of Germany

Division of Ser. No. 300,904, Sep. 10, 1981, Pat. No. 4,409,023. This application May 12, 1983, Ser. No. 494,096

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034539

Int. Cl.³ F27B *1/20*

U.S. Cl. 266—183 **7 Claims**



1. Apparatus for transporting hot iron sponge from a direct-reduction shaft furnace to a smelter-gasifier disposed beneath the direct-reduction shaft furnace, comprising a pipe connecting the direct-reduction shaft furnace with the smelter-gasifier, a casing tube inserted into a wall opening of the direct-reduction shaft furnace, a liquid-cooled shaft journaled coaxially with said tube projecting into the interior of said direct-reduction shaft furnace, a screw conveyor constructed in the form of a helix carried by said liquid-cooled shaft, an outlet opening for the iron sponge connected with said pipe and located adjacent to one end of the screw conveyor, and a rotary drive for said liquid-cooled shaft, characterized in that the screw conveyor is constructed in the form of an interrupted helix formed by paddles.

4,448,403

POSITION DRIVE

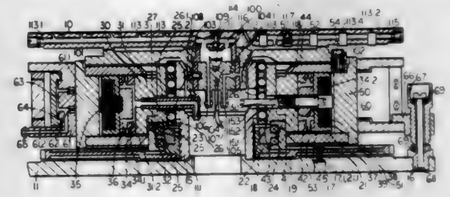
Eberhard Riesland, and Karl-Heinz Krüger, both of Dresden, German Democratic Rep., assignors to Veb Zentrum für Forschung und Technologie Mikroelekronik, Dresden, German Democratic Rep.

Filed Dec. 7, 1981, Ser. No. 328,092

Claims priority, application German Democratic Rep., Dec. 9, 1980, 225885

Int. Cl.³ B25B *11/00*

U.S. Cl. 269—21 **30 Claims**



1. A position drive for positioning a wafer containing integrated circuit components in a system for testing the integrated circuit components wherein the wafer is preliminarily positioned in X-Y coordinate directions, comprising a wafer-supporting member; a base plate; first means for displacement of said wafer-supporting member in a direction of an axis defined by Z coordinate between two stable positions; means for rotation of said wafer-supporting member about said axis; and second means for displacement of said wafer-supporting member in a direction of said axis, said second displacement means being adapted to displace said supporting member independently from said first displacement means, said first means for displacement of said wafer-supporting member between two stable positions including a lifting magnet and a uniformly rotatable slide frame surrounding said lifting magnet and connected to said wafer-supporting member, said means for rotation including a supporting ring surrounding said slide frame and adapted to actuate the uniform rotation of said slide frame.

4,448,404

DEVICE FOR HOLDING A SHEET-LIKE SAMPLE

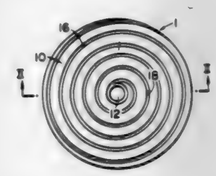
Koji Ogawa, Yokohama; Yoshihiko Ohtsuki, Chigasaki; Yoshihiko Kudo, Tokyo; Hideo Maeda, Hoya, and Naoto Kihara, Funabashi, all of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Continuation-in-part of Ser. No. 321,271, Nov. 13, 1981, abandoned. This application Jun. 2, 1983, Ser. No. 499,024

Claims priority, application Japan, Nov. 18, 1980, 55-162340; Jun. 15, 1982, 57-89444[U]

Int. Cl.³ B25B *11/00*

U.S. Cl. 269—21 **7 Claims**



1. A device for holding a sheet-like sample having a circular outline, comprising:
(a) table means including a reference surface capable of intimately contacting the surface of said sample, the reference surface having a width equal to or larger than the surface prescribed by said circular outline of said sample, and at least one groove formed in said reference surface

and open along its length at said reference surface so as to be capable of being covered by the surface of said sample during said intimate contact, said groove being formed in the shape of at least one continuous circular spiral extending toward the periphery of said reference surface and having its center substantially at the center of said reference surface, said sample being located so that the center of the sample is at the center of said reference surface; and

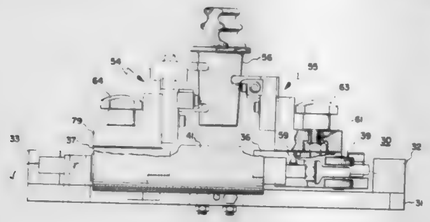
(b) exhaust means for exhausting the air in said groove covered by the surface of said sample at a position that is spaced from the center of said reference surface by a distance less than the radius of said sample.

4,448,405

VERSATILE GRIPPING DEVICE

Thomas M. Cipolla, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,605
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—32 **6 Claims**



1. A gripping device which grasps a wide variety of objects comprising:

a pair of jaw assemblies each having at least one gripper jaw selected from a set of generic jaws which in different combinations are adapted to grasp objects of many sizes and shapes and inlude nose-shaped jaws primarily for concave and concave/convex surfaces, vee-shaped jaws primarily for convex surfaces, and multiple rest button jaws for flat surfaces;

an operating mechanism to which said jaw assemblies are removably and interchangeably attached and which has means for providing relative linear motion of said jaw assemblies between open and closed positions in response to actuation of a power source to grip an object in a monostable manner;

wherein every jaw assembly includes a mounting base and one or more brackets adjustably mounting at least one gripping jaw on said base; and

said nose-shaped jaws have a radius of curvature in two directions forming a contact area which has the shape of a section of a toroid, said vee-shaped jaws have two contact areas that intersect and are each a sector of a cylinder, and said multiple rest button jaws have a flat mounting plate with an array of holes in which are three spherical rest buttons.

4,448,406

WORKPIECE POSITIONING VISE

Frederick C. Hallberg, Wheaton, and Clyde J. Morgan, Oxon Hill, both of Md., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 31, 1982, Ser. No. 364,094
Int. Cl.³ B23Q *3/18*
U.S. Cl. 269—224 **13 Claims**

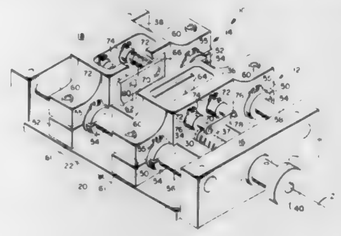
1. A workpiece positioning device comprising:

a rigid frame (20) having a rigid bed (22, 24) and end pieces (16, 18);

a pair of assemblies (12, 14) disposed intermediate of said end pieces;

means (26) rotatably supported by said end pieces, engaging said pair of assemblies for simultaneously driving each of them in opposed reciprocation;

at least a pair of parallel cylindrical guides (56, 58) supported by said end pieces on opposite sides of said rotatably



supported means and maintaining said pair of assemblies spatially suspended above said cylindrical rigid bed;

means (54) interposed between said guides and said assemblies for providing rollable bearing surfaces there between; and

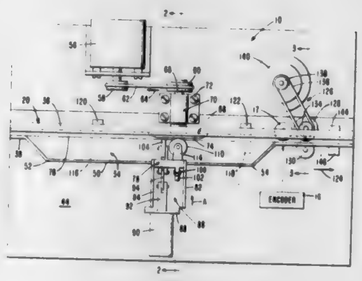
means (46) contacting said rotatably supported means and at least one of said end pieces for effecting a compressive force there between.

4,448,407

DUAL DIRECTIONAL DOCUMENT DRIVE APPARATUS

Anthony J. Bashford, Baden, and Elbert H. Vandenham, Waterloo, both of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 28, 1981, Ser. No. 334,510
Int. Cl.³ B65H *9/16*
U.S. Cl. 271—8 A **5 Claims**



1. A sheet moving apparatus comprising:

a track having first and second spaced side walls and a third wall therebetween to form a sheet receiving space therebetween; and

means for moving a sheet towards said third wall and thereafter moving said sheet in a downstream direction along said track comprising:

a rotatable member having a surface positioned in said sheet receiving space and means enabling said rotatable member and its surface to be rotated;

a moveable member moveable between first and second positions with regard to said rotatable member;

said moveable member having a first member to cooperate with said surface of said rotatable member to move a sheet towards said third wall when said moveable member is in said first position and said rotatable member and its surface are rotated, and said moveable member also having a second member to cooperate with said surface of said rotatable member to move said sheet in said downstream direction when said moveable member is in said second position and said rotatable member and its surface are rotated; and

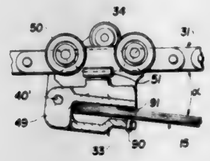
drive means for moving said moveable member between said first and second positions.

4,448,408

GRIPPER CLAMPS FOR CONVEYING PAPER SHEET PRODUCTS

Hans G. Faltin, York, Pa., assignor to Advance Enterprises, Inc., York, Pa.

Continuation-in-part of Ser. No. 271,032, Jun. 4, 1981. This application Dec. 22, 1981, Ser. No. 333,428
Int. Cl.³ b65H *5/02*
U.S. Cl. 271—277 **6 Claims**



1. A transport carriage for conveying newspapers or like paper products between processing stations with precision timing and orientation over a path defined by a track consisting of a single piece U-shaped channel having two inwardly disposed flanges at the mouth of the U adapted to receive and confine guide rollers riding thereinside, comprising in combination,

two jaw members pivoted about a common pivot axis and presenting gripping means with a friction surface disposed between the jaws for gripping between gripping edges on the two jaws and seating means for holding the paper products in alignment against a stop surface adjacent the axis for transport by pulling along said path with the leading paper edges in parallel position,

four guide rollers positioned with two rollers each on opposite sides of the carriage midpoint and coupled to one jaw for confinement inside of said U-shaped channel to ride thereinside and thereby said track,

and programmable pivot means for selectively opening and closing the jaws for entry, alignment, gripping and releasing the paper products for transport between selected stations along the track to pull the leading edges of the products.

4,448,409

CARTESIAN DIVING TOY

Takashi Kaga, and Nobuo Kobayashi, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,206
Claims priority, application Japan, Jul. 23, 1980, 55-103154
Int. Cl.³ A63H *23/08*
U.S. Cl. 272—8 N **11 Claims**

1. A toy Cartesian diver which comprises:

a diver housing;

an air chamber located in said housing, said air chamber having imperforate unitary walls, a section of said walls forming an essentially rigid outer shell, the remaining section of said walls formed as an elongated surface invaginated within said outer shell, at least a portion of said invaginated sections of said walls being permanently convoluted and capable of moving about its convolutions to elongate or shorten said invaginated section of said walls;

the volume of said chamber decreasing and increasing in response to elongation and shortening repeatedly of said invaginated section of said walls;

a propulsion means movably mounted on said housing and capable of moving with respect to said housing, said propulsion means connected to said invaginated section of said walls such that said propulsion means moves with respect to said housing in response to elongation and shortening of said walls;



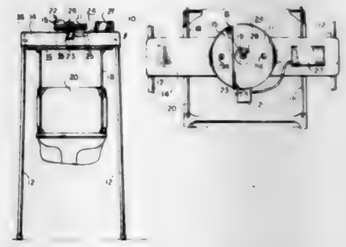
said toy capable of being immersed in an essentially noncompressible liquid and in response to pressure increases in said liquid in said invaginated section of said walls elongating to decrease the volume of said chamber and in response to pressure decreases in said liquid said invaginated section of said walls shortening to increase the volume of said chamber, said toy moving in said liquid in response to movement of said propulsion means.

4,448,410

ELECTRICALLY-POWERED BABY SWING

Harold Kosoff, 22 Sycamore Dr., Burlington, N.J. 08016

Filed Aug. 10, 1981, Ser. No. 291,552
Int. Cl.³ A63G *9/16*; A47D *13/10*
U.S. Cl. 272—86 **26 Claims**



1. In a baby swing combination which includes horizontal pendulum axle means from which a seat is suspended, the combination comprising:

(a) weighted means adapted to be coupled to said axle means and capable of rotary movement in a generally horizontal plane, and

(b) non-rotating motor means coupled to said weighted means for causing said rotary movement of said weighted means whereupon said axle means is caused to have cyclical rotary movement about its axis thereby causing said seat to swing, said motor means being immobile relative to said weighted means.

4,448,411

MULTI-USE BALANCE BEAM APPARATUS

Michael S. Parker, P.O. Box 200, Sorrento, Me. 04677

Filed Jan. 12, 1983, Ser. No. 457,402
Int. Cl.³ A63G *1/32, 11/00*
U.S. Cl. 272—111 **15 Claims**

10. A multi-purpose recreational balance beam device comprising:

first balance beam comprising a pair of parallel spaced apart rails, each rail having a straight side and a curved side, the

straight sides of said rails lying in a common plane, said curved sides lying in a common surface of curvature for rocking action, a pair of flat platform seat members rigidly joining the pair of rails on the straight sides thereof in said parallel spaced apart configuration, each rail of the first balance beam having a pair of notches formed in the straight side thereof distributed on either side of the center of the rail and spaced apart a distance equal to the spacing of the rails from each other,

second balance beam comprising a second pair of parallel spaced apart rails, spaced apart the same distance as the first balance beam, each rail having a straight side and a curved side, said straight sides lying in a common plane, said curved sides lying in a common surface of curvature for rocking action, each rail of the second pair of rails formed with a pair of notches formed in the curved side, said notches distributed on either side of the center of the rail and spaced apart a distance equal to the spacing of the rails from each other, and a pair of flat platform seat members rigidly joining the pair of rails on the straight sides thereof in said parallel spaced apart relationship;

said notches formed so that the first and second balance beams may be assembled in interfitting relationship at right angles to each other defining a rectangle at the center of the interfitting balance beams, the straight sides of the rails of the respective balance beams lying in a common plane, said curve sides also being coincident at the intersections of the rails of the interfitting balance beams whereby the interfitting balance beams may be



placed with the straight sides down resting on the respective flat platform seats providing stable rails in two orthogonal directions for one rail or two rail walking, or placed with the curved sides down thereby affording a two way rocker or see-saw device;

locking piece means comprising a flat locking plate having projections means depending therefrom arranged to bear against the inner surfaces of the center rectangle formed by the interfitting balance beams, said locking piece constructed and arranged to be operatively inserted in said center rectangle with the flat locking plate bearing against the sides of the rails;

turning disc means and means for coupling said turning disc means to the flat locking plate of the locking piece when the locking piece is inserted into the center rectangle from below with the flat locking plate bearing against the coincident curved sides of the respective pairs of rails of the interfitting balance beams and with the curved sides of the balance beams facing downward, said turning disc affording a reduced bearing surface between the interfitting balance beams and the ground whereby said interfitting balance beams may be turned by users sitting on the platform seats and thereby function as a merry-go-round;

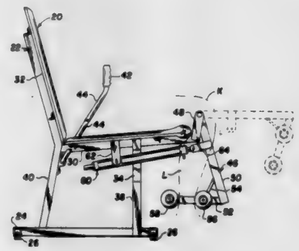
and a pair of guide plates, said guide plates spaced apart in parallel relationship and joined by a pair of guide bars, said guide bars constructed and arranged for operatively seating in the notches of the second balance beam having notches formed in the curved sides thereof so that the second balance beam may form a stable base with the platform seats facing the ground and the curved sides of the rails facing upward, said guide plates held adjacent to the outsides of the rails with the guide bars seated in the notches, and whereby said first balance beam may be positioned with the curve sides of the rails facing downward and abutting against the upward facing curved sides of the rails of the second balance beam thereby providing a see-saw for rocking the first balance beam on the second for enhanced vertical rocking action, the rails of said respective balance beams held in alignment on each other by said guide plates.

4,448,412

EXERCISING DEVICE WITH DOUBLE ACTING HYDRAULIC CYLINDER

Jerry D. Brentham, P.O. Box 599, Belton, Tex. 76513

Division of Ser. No. 12,874, Feb. 16, 1979, Pat. No. 4,291,787.
This application Jul. 20, 1981, Ser. No. 285,257
Int. Cl.³ A01B *23/04*
U.S. Cl. 272—130 **9 Claims**



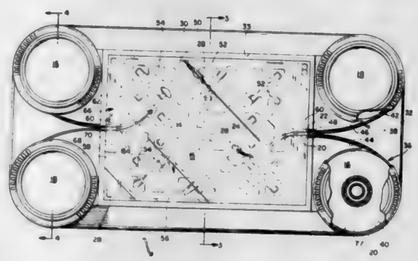
1. An exercising device, comprising: a frame; actuating means mounted with the frame for movement by a portion of a human body; a double acting cylinder connected to the frame for resisting movement of said actuating means, said cylinder including a container having first and second chambers for supporting a fluid disposed therein and a passageway for placing the first and second chambers in fluid communication with one another; control means for regulating the flow of fluid through said passageway, said control means having a plurality of orifices of varying sizes formed therein; and means to selectively position the orifices in communication with the passageway to control resistance to fluid flow to vary the magnitude of force required to move the actuating means.

4,448,413

AMUSEMENT GAME DEVICE

David Weindel, 106 Forge Rd., East Greenwich, R.I. 02818, and Carl Cederholm, Lincoln, R.I., assignors to David Weindel

Filed Feb. 3, 1983, Ser. No. 463,384
Int. Cl.³ A63F *7/00, 9/14*
U.S. Cl. 273—1 GB **14 Claims**



1. An amusement game device comprising:
a. a base;

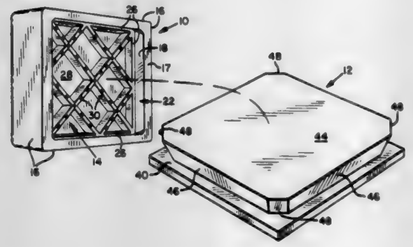
b. a game board on said base;
c. a game element on said board;
d. first and second resiliently flexible elongated strips having spaced inner and interconnected outer ends;
e. means attached to said base and communicating with said first and second strip inner ends for selectively longitudinally advancing and retracting said first and second strips on said board;
f. guide means engaging said first and second strips to maintain at least the outwardly advanced portions thereof in closely spaced relation so that substantially longitudinal advancement of the respective strips can be effected with the respective advancing and retracting means without substantial outward bulging of either of said strips, whereby said interconnected ends can be directed to engage said game element through the independent selective advancement and retraction of said strips.

4,448,414

BASEBALL BASE

Pete Gutierrez, 420 NW. Witham Dr., Corvallis, Oreg. 97330

Filed Mar. 25, 1982, Ser. No. 361,733
Int. Cl.³ A63B *71/00*
U.S. Cl. 273—25 **5 Claims**



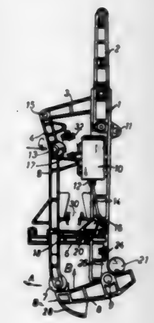
1. A baseball base comprising:
anchor means adapted for positioning in the ground, said anchor means having an upright upper bag engaging portion;
resilient bag means defining a recess in its under surface, the opening leading to the recess being sized less than the size of the largest horizontal cross section through the upper bag engaging portion, such that the portion of the bag surrounding the recess opening stretches as the bag means receives the upper bag engaging portion within the recess to thereby releasably retain the bag means in engagement with the upper bag engaging portion;
said upper bag engaging portion being of progressively increasing horizontal cross section from the bottom of such portion to the top of such portion and in which the recess is of progressively increasing horizontal cross section from the recess opening upwardly to a first location spaced above the recess opening;
said bag means including means for limiting the depth of insertion of the bag engaging portion into the recess; and
said bag means including means for providing plural cushioning air pockets between the upper surface of the upper bag engaging portion and the upper boundary of the recess.

4,448,415

BOWLING PIN SWEEPER MOVING APPARATUS

August Schmid, Schwerzenbach, Switzerland, assignor to Patentverwertungs-und Finanzierungsgesellschaft SERANIA AG, Glarus, Switzerland

Filed Jun. 30, 1982, Ser. No. 393,795
Int. Cl.³ A63D *5/08*
U.S. Cl. 273—54 A **14 Claims**



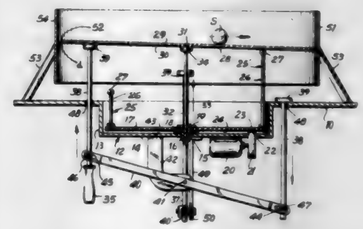
1. Damage resistant bowling pin wiper operating device having
a wiper (35) subject to be dropped to a vertical position, and having a holding pin projecting from an upper portion thereof;
a suspension arm (1);
a hook (8) pivotably secured (9) to the suspension arm (1) having a forwardly projecting portion engageable with the holding pin (21) and a rearwardly extending portion (8*a*);
a support arm (4, 5) connected to the suspension arm (1) supporting the rearwardly extending portion of the hook to thereby prevent release of the pin from the hook;
an electromagnet means (10) operatively connected to the support arm to release the support arm from engagement with the rearwardly extending portion of the hook and permit release of the hook upon operation of said electromagnetic means,
and wherein, in accordance with the invention,
the support arm includes means (4, 5, 13, 32) including spring means (32) for releasing engagement with the extending portion (8*a*) of the hook (8) upon excessive force being applied on the hook (8) by the pin (21) where the hook and pin are engaged.

4,448,416

BALANCING GAME

Paul Belter, 335 Elwood Rd., East Northport, N.Y. 11731

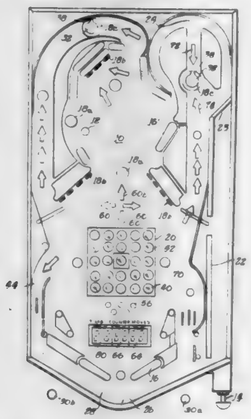
Filed Sep. 20, 1982, Ser. No. 420,307
Int. Cl.³ A63F *7/00*
U.S. Cl. 273—110 **10 Claims**



8. A game of skill comprising a frame, a table mounted on

said frame for tilting movement about a pivot point, motorized drive means on said frame operatively connected to said table for continuously inducing tilting movements of said table about said point, and manually adjustable control means on said frame adapted to be shifted into operative connection with said table eccentrically of said point for counteracting the tilting effects of said drive means in accordance with the adjusted position of said control means.

4,448,417
PINBALL GAME WITH SIMULATED PROJECTILE DISPLAY
Norman R. Clark, Burbank, and George Christian, Melrose Park, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.
Filed Apr. 22, 1982, Ser. No. 370,983
Int. Cl.³ A63F 7/02
U.S. Cl. 273—121 A **14 Claims**



1. A pinball game comprising a playfield having a plurality of targets, means for introducing a projectile onto said playfield, means for manipulating said projectile on said playfield to contact said targets, a plurality of individual light devices in a spatial array, means for actuating one of said light devices, player controlled means for stepwise actuating the other light devices to simulate a projectile, means on the playfield for indicating a player determined direction of stepwise actuation of the simulated projectile, means providing an objective for movement of said simulated projectile, and scoring means for tabulating events of said projectile on said playfield and events on said array.

4,448,418
SURFACE PROJECTILE AND TARGET GAME
Locksley D. McNeill, 584 Ash St., Winnipeg, Manitoba, Canada R3N 0R4
Filed Sep. 7, 1982, Ser. No. 415,168
Claims priority, application United Kingdom, Sep. 24, 1981, 8128847
Int. Cl.³ A63B 63/00, 43/04
U.S. Cl. 273—123 A **11 Claims**

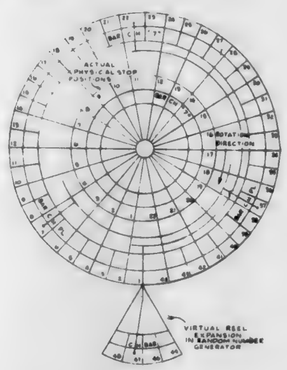
1. A combination for playing a game comprising a ball having an outer flexible resilient enclosing envelope and a comminuted material inside the envelope which is free to move within the envelope, and a target board having a front edge and an upper surface and including means for supporting the board such that the front edge thereof can rest upon the ground with the upper surface inclined upwardly away from said front edge, a plurality of dividers extending upwardly from said upper surface to both the transverse and lengthwise directions of the board to define a plurality of compartments each adapted to receive said ball whereby the ball can roll





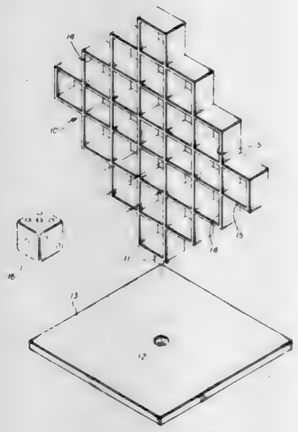
from the ground onto said board to enter one of said compartments.

4,448,419
ELECTRONIC GAMING DEVICE UTILIZING A RANDOM NUMBER GENERATOR FOR SELECTING THE REEL STOP POSITIONS
Inge S. Telnaes, 4435 Canyon Dr., Reno, Nev. 89509
Filed Feb. 24, 1982, Ser. No. 352,048
Int. Cl.³ A63F 5/04
U.S. Cl. 273—143 R **10 Claims**



1. A game apparatus, comprising:
a reel mounted for rotation about an axis through a predetermined number of radial positions;
means to start rotation of said reel about said axis;
indicia fixed to said reel to indicate the angular rotational position of said reel;
means for assigning a plurality of numbers representing said angular positions of said reel, said plurality of numbers exceeding said predetermined number of radial positions such that some rotational positions are represented by a plurality of numbers;
means for randomly selecting one of said plurality of assigned numbers; and
means for stopping said reel at the angular position represented by said selected number.

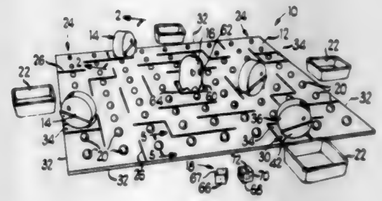
4,448,420
UPRIGHT GAME WITH INSERTABLE DICE
Ricardo Escamilla-Kelly, 8374 Leamont, Houston, Tex. 77072
Filed Feb. 8, 1982, Ser. No. 346,541
Int. Cl.³ A63F 3/00
U.S. Cl. 273—241 **3 Claims**



1. A two-person competitive game of skill comprising
a playing grille having 25 square shaped openings, each being substantially cubic in dimensions,
said grille having said openings disposed horizontally in substantially parallel relation and being arranged in a pattern having both in-line and diagonally positioned openings,
twenty-five conventionally numbered dice of a size just fitting said openings, used as non-chance playing pieces by the players,
said dice being played alternately by each player inserting a die into one of said openings from opposite sides of said grille in an effort to produce a score which is a multiple of seven by addition of the number on the face of the die to the numbers on the faces of at least two dice aligned linearly or diagonally therewith,
said grille having a support,
the portion of said grille adjacent to said support having only one opening, and
the remaining openings of said grille being arranged in successive rows of 3, 5, 7, 5, 3 and 1 openings arranged symmetrically.

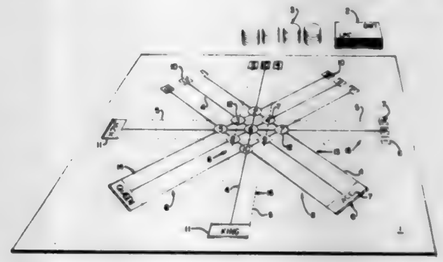
4,448,421
BOARD GAME HAVING APERTURED, MARKER-RECEIVABLE PLAYING PIECES
John V. Zaruba, Chicago, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 18, 1982, Ser. No. 339,850
Int. Cl.³ A63F 3/00
U.S. Cl. 273—243 **9 Claims**

1. A board game device comprising:
a playing surface;
a plurality of markers positionable on said playing surface;
a first playing piece adapted to receive said markers within the interior of said playing piece upon engagement of one of said markers by said first playing piece;
said first playing piece including a first portion contacting the playing surface and a second portion supported atop of said playing surface by said first portion;
an opening in one of said portions for receiving a marker within the interior of said first playing piece; and
said first and second portions being pivotally connected for relative movement such that said second portion is movable away from said playing surface and back downwardly toward said playing surface so as to capture a



marker within its interior by forcing the marker through said opening.

4,448,422
BOARD GAME APPARATUS
Donald G. Rose, Friends Hospital, Philadelphia, Pa. 19124
Filed Feb. 22, 1982, Ser. No. 351,240
Int. Cl.³ A63F 3/00
U.S. Cl. 273—271 **22 Claims**



1. A game board adapted for use in conjunction with a board game apparatus, said game board comprising:
(a) a plurality of linear indicia; and
(b) a plurality of numerical indicia;
(c) wherein said linear indicia combine to form a plurality of groups;
(d) wherein said groups of linear indicia intersect one another in an essentially centrally disposed region of said game board;
(e) wherein a first series of numerical indicia are operatively associated with selected intersections of linear indicia; and
(f) wherein a second series of numerical indicia are operatively associated with an end of each group of linear indicia, a single one of said second series of numerical indicia intersecting with the end of each of the linear indicia forming said associated group, and said single one of said second series of numerical indicia being common to all said linear indicia within said group.

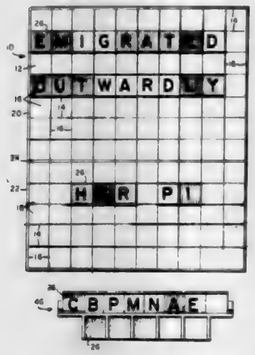
4,448,423
BOARD GAME
George V. Augusta, 40 Reinert 71 John Wise Ave., Essex, Mass. 01929
Filed Sep. 20, 1982, Ser. No. 419,756
Int. Cl.³ A63F 3/00
U.S. Cl. 273—272 **11 Claims**

1. A board game apparatus comprising a playing board having a flat surface, to receive, thereon, playing pieces having a definite configuration, and adapted to be used by at least two players comprising:
means on said flat surface dividing said surface into first and second sections, the surfaces of said first and second sec-

tions adapted to receive playing pieces placed in juxtaposition on said surfaces to form words,

a plurality of sets of playing pieces, means disposed on each said set of playing pieces distinguishing each said set from other sets,

means disposed on the top surface of certain playing pieces of each said set representing alphabetical characters selected from the group consisting of consonants and vowels, other means disposed on the top surface of certain



playing pieces of each said set representing the absence of said alphabetical characters,

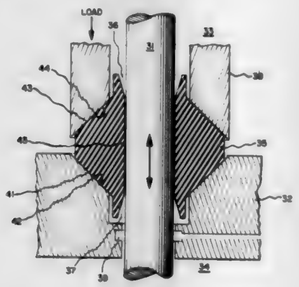
other means disposed on certain playing pieces of each said set whereby the playing pieces of each said set are divided into two subgroups comprising a first group consisting of playing pieces having alphabetical consonants on the top surface and a second group consisting of playing pieces having alphabetical vowel characters or the absence of alphabetical characters on the top surface.

4,448,424

DOUBLE ANGLE SEAL FORMING LUBRICANT FILM

William D. Ernst, Troy, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,490
Int. Cl.³ F16J *15/24, 15/40, 15/44*
U.S. Cl. 277—30 **15 Claims**



1. A seal assembly for preventing gas leakage along a reciprocating member between a first gas chamber and a second gas chamber, including a wall through which said member extends and separating said first chamber and said second chamber; means for supplying a lubricant to the surface of said reciprocating member in at least one of said first and second gas chambers; a sealing gland having a first and second end and held against the wall between the first chamber and the second chamber; the improvement comprising:

means for mounting said sealing gland to said reciprocating member to provide for a predetermined radial load;

means at said first end of said sealing gland proximate the lubricant supply forming a first convergent passage between said gland and said reciprocating member operative to effect lubricant pumping in the direction into said sealing gland and sufficient to overcome said radial load and establish a finite lubricant film between the confronting surfaces of the reciprocating member and the sealing gland;

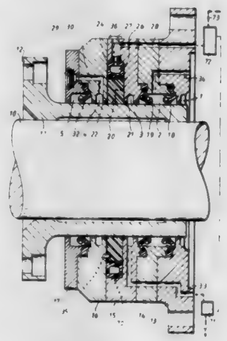
means at said second opposite end of said sealing gland forming a second convergent passage between said gland and said reciprocating member to effect lubricant pumping in the direction into said sealing gland sufficient to at least balance the flow of lubricant being pumped from said first end of said sealing gland.

4,448,425

SHAFT SEAL ASSEMBLY WITH INFLATABLE ANNULAR MEMBER

Ernst P. von Bergen, Hamburg, Fed. Rep. of Germany, assignor to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,307
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143866
Int. Cl.³ F16J *15/32, 15/54*
U.S. Cl. 277—34 **12 Claims**



1. A shaft seal assembly for sealing a shaft emerging from a housing, the assembly comprising:

a shaft around which the seal assembly is applied,

radial-contact seal disposed concentric with the shaft and consisting of a plurality of segments which have circumferentially overlapping ends,

said contact seal being disposed coaxially with the shaft within an annular chamber of said housing, the seal assembly including means for nonrotatably and axially supporting the contact seal within said housing,

at least one inflatable member inserted in said annular chamber, to peripherally contact said contact seal,

conduit means connecting said inflatable member to a supply system of an adjustable pressurized medium for inflating said inflatable member,

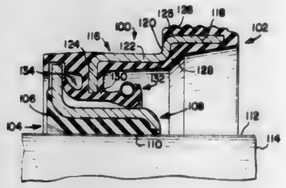
whereby in use the contact seal segments are radially constrained and forced against the shaft by the pressure of the pressurized medium in said inflatable member in inflated condition.

4,448,426

UNITIZED OIL SEALS

Ronald A. Jackowski, Algonquin, and Glenn W. Peisker, Barrington, both of Ill., assignors to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed Jul. 6, 1981, Ser. No. 280,888
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—37 **13 Claims**



1. A unitized oil seal assembly comprising, in combination, first and second components adapted to cooperate with each other in use to form said unitized assembly, said first component being a lip-containing assembly and said second component being a companion flange assembly, said first component comprising an annular casing made from a rigid material and having at least one axial flange and one radial flange, a rubber element bonded to and surrounding a portion of said first component casing, said rubber element including an annular portion covering at least a portion of the exterior of said axial flange on said first component casing so as to form a rubber covered, outer diameter, secondary seal-forming surface for said first component, and a seal body portion boned to said first component radial flange, said seal body portion including a primary lip-forming part extending generally axially inwardly from said first component radial flange, said lip forming part comprising oil and air side frustoconical surfaces joined at their inner margins to form a primary lip seal band, and an auxiliary lip forming part extending at least partially axially outwardly of said first component radial flange and being defined by an annular surfaces which cooperate to define the body of said auxiliary lip, said second component including a single rigid casing portion with axial and radial companion flanges, a radially outwardly directed surface of said axial companion flange being sized so as to engage said seal band of said primary lip in fluid-tight relation, with one of said axial and radial surfaces of said companion flange being also sized and positioned to engage said auxiliary lip to form an excluder seal, an annular body of seal-forming material bonded to a radially inwardly directed surface of said axial companion flange and adapted for engagement with an associated machine element, said axial companion flange having a radially inturned flange thereon and forming the axially innermost end thereof, said innermost end being free from radially outwardly extending portions and having a reduced diameter relative to said radially outwardly directed axial flange surface, and unitizing means extending axially outwardly from at least one of said flanges of said first component, said unitizing means having at least one radially extending surface adapted to cooperate with another radially extending portion of said first component to assist in axial positioning of said second component by limiting relative axial movement of said first and second component and to insure mutual engagement of said primary and auxiliary seal lips with sealing surfaces on said companion flange.

4,448,427

PISTON-EXPANDED METALLIC SEAL FOR SIDE DOOR WELL VALVE

Howard R. Mashaw, Jr., The Colony, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jun. 10, 1983, Ser. No. 503,173
Int. Cl.³ F16J *15/40*; E21B *23/00*
U.S. Cl. 277—73 **8 Claims**



1. A valve comprising,

a tubular housing,

tube means having one end fixed in said housing and a section spaced radially inward from said housing to provide an annulus,

port means in said housing communicating with said annulus,

flowway means remote from said port means communicating said annulus with the interior of said tube means,

stop means in said annulus,

metallic seal means slidably carried in said housing and movable from a first position spaced from the annulus between said port means and flowway means and to a second position in said annulus between said port means and flowway means,

piston means slidable in said housing for moving said seal means from said first to said second position and expanding said seal means against said stop means to prevent flow through said ports, and

releasable means preventing sliding of said seal means and said piston means in said housing with said seal means in said first position.

4,448,428

MECHANICAL SEAL ASSEMBLY

Joseph A. Marsi, R. Palos Verdes, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 8, 1982, Ser. No. 346,812
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—92 **2 Claims**

1. A mechanical seal assembly for separating two fluids and comprising:

a housing;

a rotatable shaft in said housing and surrounded by said housing;

a stationary seal ring in and connected to said housing, said stationary seal ring surrounding said shaft;

a rotatable seal ring surrounding and connected to said shaft;

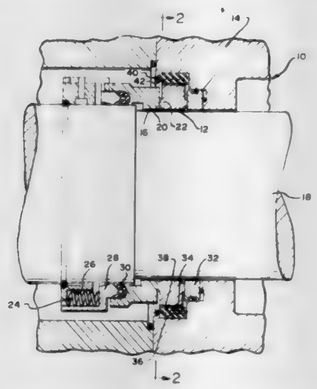
said seal rings having opposed seal faces lubricated by a film of one of said fluids flowing thereacross;

spring means urging one seal ring axially toward the other;

one seal ring being of a relatively brittle material and the other seal ring being of a less brittle material;

at least one axially elongated keyway in said housing positioned to overlie said stationary seal ring;

at least one axially elongated complimentary keyway in an outer portion of said stationary seal ring in radial alignment with the keyway in said housing; and



a generally rectangular-sectioned, axially elongated, elastomer key in said keyways forming the connection between said housing and said stationary seal ring, said elastomer key being distortable to substantially prevent breakage and similar damage to said relatively brittle seal ring in the event of failure of said fluid film flowing across said seal faces.

4,448,429

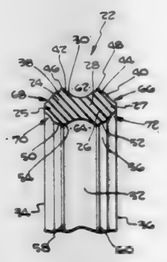
ELASTOMER ENERGIZED SEAL

Guy A. Thomas, Oxnard, Calif., assignor to W. S. Shamban & Company, Santa Monica, Calif.

Filed Sep. 30, 1982, Ser. No. 429,857

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—165 **16 Claims**



1. An expander adapted for use in supporting a cap seal for preventing the leakage of fluid past two members having mating surfaces, one of said surfaces having a groove for housing said expander and cap seal, said groove having a bottom surface, sides and an open top, said expander being mounted below said cap seal in said groove and being sized for pressuring said cap seal against the other of said surfaces to prevent said fluid leakage therebetween, said expander comprising:

a resilient body having a first lobe portion and a second lobe portion, said lobe portions being integrally connected by a center portion, said lobe portions having arcuate top surfaces with an outermost portion defining an apex, outer side surfaces and bottom surfaces, wherein each of said lobe portion top surfaces includes a pressure ridge located at said top surface apex for applying spaced localized pressure to said cap seal to provide said seal between said cap seal and said other surfaces.

4,448,430

HOLLOW REINFORCED SEALING STRIPS

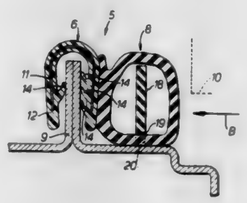
Robert G. Bright, Viersen, Fed. Rep. of Germany, assignor to Draftex Development AG, Zug, Switzerland

Filed Sep. 21, 1982, Ser. No. 420,529

Claims priority, application United Kingdom, Jan. 27, 1982, 8202279

Int. Cl.³ E06B *7/23*; F16J *15/10*

U.S. Cl. 277—184 **13 Claims**



1. A sealing strip, comprising

a length of soft flexible sealing material defining a longitudinally extending hollow interior, and

a reinforcing member made of soft flexible material integral with the sealing material and positioned in the hollow interior of the sealing material at a position therein where the sealing material is to be curved,

the reinforcing member being of narrow strip-like cross-sectional configuration and having integral reduced-thickness webs running along the edges of it which define its width, the webs being integrally joined with the sealing material so that the width of the reinforcing member extends across the whole of the width of the hollow interior in one direction thereacross but extends across only a small proportion of the width of the hollow interior in the perpendicular direction, whereby to support the sealing material when it is curved with the said one direction lying in the plane of curvature and without substantially impairing the compressibility of the sealing material in the said perpendicular direction.

4,448,431

CYLINDER HEAD GASKET

Klaus-Peter Majewski; Martin Morsbach, both of Burscheid, and Dietrich Schülz, Leverkusen, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,996

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826386

Int. Cl.³ F16J *15/10*

U.S. Cl. 277—325 B **3 Claims**

1. In a cylinder head gasket for an internal-combustion engine, composed of a disc of fibrous and/or porous soft material provided with passages, and a metallic casing extending around one such passage and presenting two arms each disposed at a respective side of the disc with at least one arm being angled in the direction toward the soft material, and a saturating agent which is plastic or elastic when installed and which fills the pores of the soft material except for the region underneath the casing, the improvement wherein the angled portion of said at least one arm has the configuration of an annular recess directed toward the interior of said disc in the immediate vicinity of the end of said one flange arm and said annular recess is pressed into said at least one arm after said casing has been placed around said disc and compresses the material of said disc thereunder to an extent sufficient to prevent movement of the saturating agent through said disc beyond the region where said recess compresses said disc material.

4,448,432

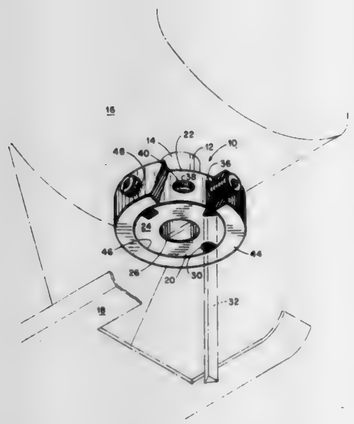
SABRE SAW CHUCK

Errol J. French, P.O. Box 1314, Chattanooga, Tenn. 37401

Filed Jun. 19, 1981, Ser. No. 275,253

Int. Cl.³ B23B *31/12*; B23Q *3/00*

U.S. Cl. 279—83 **3 Claims**



1. A sabre saw chuck for securing a shank of one or more files/rasps to a reciprocatable standard sabre saw head which normally holds a saw blade in place such that such files/rasps are reciprocated during reciprocating operation of such head, said chuck comprising:

an adaptor body having an upper surface and a lower surface and provided with a centrally disposed bore extending therethrough, said centrally disposed bore being disposed for receiving such sabre saw head therein, said adaptor body having a preselected cross-sectional outline and at least one groove disposed along the perimeter of said adaptor body for receiving such shank of a file/rasp, said groove being substantially parallel with said centrally disposed bore and opening on said lower surface of said adaptor body, and wherein said adaptor body defines a first radial bore opening into said centrally disposed bore;

a sleeve member having a centrally disposed opening proportioned for receiving said adaptor body, said sleeve member provided with a radial hole extending substantially perpendicularly with respect to the axis of said centrally disposed opening and designed for being juxtaposed with respect to said groove in said perimeter of said adaptor body, and wherein said sleeve member defines a further radial bore for alignment with said first radial bore in said adaptor body;

securing means extending through said radial hole in said sleeve member for releasably engaging such shank of a file/rasp disposed in said groove of said adaptor body; and

a set screw passing through said first and further radial bores, when aligned, for releasably joining said adaptor body and said sleeve member with such head whereby reciprocation of such head imparts a like reciprocating motion to said chuck and said files/rasps carried thereby, said set screw having a first end portion for engagement with such head and a further end portion which is recessed within said further radial bore in said sleeve member.

4,448,433

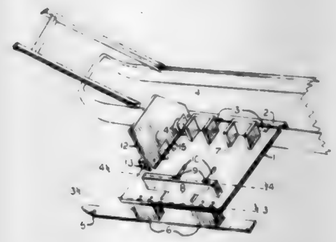
TOBOGGAN PLATFORM

Chris Zeller, 2403 County Rd. 203 #20, and Jeff Ohmstedt, 23 La Plata Pl., both of, Durango, Colo. 81301

Filed Apr. 20, 1982, Ser. No. 370,045

Int. Cl.³ B62B *13/16*

U.S. Cl. 280—18 **1 Claim**



1. A platform having on one side hinges and a brace for means of attachment of said platform to a snow toboggan and for means of folding said platform into said toboggan, a snow ski communicating with said platform opposite said hinges for means of gliding same across snow, an adjustable foot brace and knee braces mounted atop said platform for means of supporting a rescuers' lower body while kneeling atop said platform, a verticle support for means of maintaining in a somewhat verticle position the midsection of said rescuer, operably connected atop said platform to enable said verticle support to be removeable from said platform to facilitate the folding of said platform into said toboggan.

4,448,434

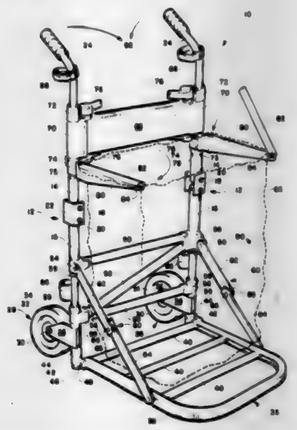
COLLAPSIBLE HAND TRUCK

Milan B. Anderson, P.O. Box 178088, San Diego, Calif. 92117

Filed Dec. 30, 1981, Ser. No. 335,875

Int. Cl.³ B62B *1/12*

U.S. Cl. 280—40 **9 Claims**

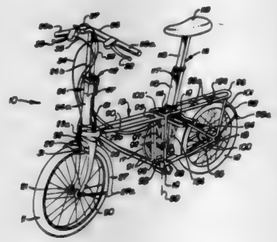


1. An improved collapsible hand truck comprising:

a pair of side-by-side, spaced-apart, segmented, upright members, each of the segments of each upright member are pivotally attached in a spaced-apart relationship to a common "U" bracket and each upright comprises a handle member formed on one end thereof, extending at an angle therefrom and a wheel rotatably attached near the end remote from said handle member and extending therefrom in a direction of the distal end of said handle mem-

ber, whereby said handle member and wheel lie along a common plane and the open portion of said "U" bracket is perpendicular to said common plane;
a load-carrying bracket positioned between and rotatably attached to the upright members adjacent the handle member end thereof;
a weight support shelf member rotatably attached to the upright members at their wheel adjacent ends;
brace members extending between said upright members intermediate said common "U" bracket and said wheels, said upright members are rotatable relative thereto; and
a pair of levers pivotally interconnected intermediate their ends, each of said levers being pivotally attached at one end to said brace members and at their opposite end to said weight support shelf member intermediate the upright member attachment and its opposite outer end surface.

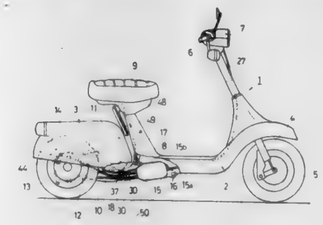
4,448,435
FOLDABLE AND PORTABLE VEHICLE
David T. Hon, Los Angeles, Calif., assignor to Hon Corporation International, Los Angeles, Calif.
Division of Ser. No. 233,624, Feb. 12, 1981. This application Sep. 29, 1982, Ser. No. 427,434
Int. Cl.³ B62K *15/00*; F16M *11/24*
U.S. Cl. 280—278 **14 Claims**



1. In a foldable and portable bicycle having a frame with front and rear ends, an improved longitudinally extendable and collapsible seat assembly comprising:
a plurality of elongated, longitudinally telescoping seat post sections including a base section mounted on said frame in an upwardly and rearwardly inclined position, and at least a second section telescoped into said base section to be extended and collapsed longitudinally relative thereto;
means on said base section for latching said second section in a longitudinally extended position;
and a seat on the upper end of said seat post to be raised and lowered by said second section;
said seat post sections being of non-circular cross-section and having rearwardly and downwardly facing sides positioned to be nested together under the force applied by a weight on said seat.

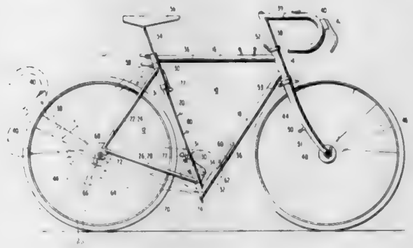
4,448,436
LOCKING SYSTEM FOR ROLLING-TYPE TRICYCLE
Kohei Ohzono, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 12, 1982, Ser. No. 397,160
Claims priority, application Japan, Jul. 14, 1981, 56-109750
Int. Cl.³ B62K *5/06*
U.S. Cl. 280—282 **24 Claims**

1. A locking system in a rolling-type tricycle having front and rear bodies coupled together for relative rolling movement, comprising:
means for braking at least one rear wheel of said tricycle;
restraint means for locking the relative rolling movement of said bodies;
driving means, operatively cooperating with said braking means and said restraint means, for causing said braking means and said restraint means to perform braking and locking operations, respectively, in response to predetermined first signals, and for performing said locking of said restraint means in response to predetermined second signals;



control means for applying said first signals to said driving means; and
means for detecting a speed of said tricycle so as to apply said second signals to said driving means when said speed is lower than a predetermined value.

4,448,437
FOLDABLE BICYCLE
Harry D. Montague, 3042 Newark St., Washington, D.C.
Filed Aug. 31, 1981, Ser. No. 298,145
Int. Cl.³ B62K *15/00*
U.S. Cl. 280—287 **18 Claims**

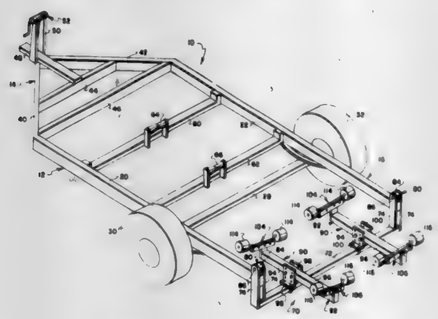


1. A foldable bicycle frame comprising;
a complete closed front frame having a first hollow member to accommodate a seat post,
a complete rear frame having a second hollow member to accommodate said seat post, said first and second hollow members being concentric to define a joining section, whereby said front and rear frames are foldable about said hollow members, and
means to secure said first and second hollow members into a rigid orientation.

4,448,438
BOAT TRAILER WITH IMPROVED AFT SUPPORT CRADLE
Arnold R. DeWalk, Hubbard, Ohio, assignor to The Tee Nee Trailer Company, Youngstown, Ohio
Filed Sep. 23, 1981, Ser. No. 304,719
Int. Cl.³ B60P *3/10*
U.S. Cl. 280—414.1 **7 Claims**

1. A boat trailer for towing a boat and for loading and launching the boat from and onto a body of water, comprising:
(a) a wheel supported trailer frame including longitudinally-extending frame rails and at least one transversely-extending member interconnecting the frame rails;
(b) hull support means carried on the frame for engaging portions of the hull of a boat which has been loaded onto the trailer;

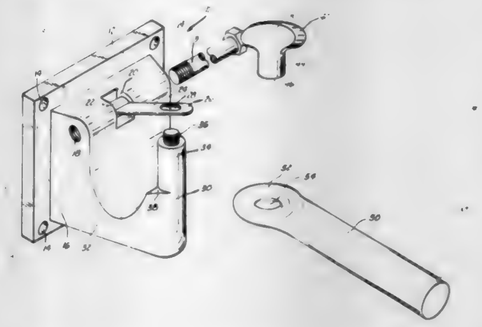
(c) aft support cradle means including a cross-bar having upwardly extending support arms near opposite ends thereof, the support arms being pivotally connected to aft end portions of the frame rails at pivotal connection locations disposed near the upper surfaces of the frame rails;
(d) the cradle means additionally including longitudinally-extending rocker arms means fastened to the cross-bar and including a forwardly-extending portion for carrying at least one forward hull engagement roller, a rearwardly-extending portion for carrying at least one rearward hull engagement roller, a forward hull engagement roller carried on the forwardly-extending portion, and a rearward hull engagement roller carried on the rearwardly-extending portion; and,
(e) the cradle means and its rocker arm means being configured such that the locations of the pivotal connections



between the support arms and the frame rails are above the locations at which the forward and rearward hull engagement rollers are carried on the rocker arm means when the cradle means is in a loaded position wherein the forward and rearward hull engagement rollers are substantially level with each other, for assuring that during launching of a boat from the trailer, as the cradle means begins to pivot from its loaded position toward a launched position wherein the forward hull engagement roller is relatively higher than the rearward hull engagement roller, the forward and rearward hull engagement rollers are caused to move in unison in a forward direction, and for assuring that during loading of a boat trailer, as the cradle begins to pivot from said launched position toward said loaded position, the forward and rearward hull engagement rollers are caused to move in unison in a rearward direction.

4,448,439
SAFETY TRAILER HITCH
Edgar J. Huffman, 210 S. Broadway, St. John, Kans. 67576
Filed Apr. 5, 1982, Ser. No. 365,371
Int. Cl.³ B60D *1/04*
U.S. Cl. 280—504 **6 Claims**

6. A trailer hitch for mounting on the bumper of a vehicle or the like, the hitch adapted for receiving the tongue of the trailer, the tongue having a tongue eye, the hitch comprising:
a mounting bracket having apertures therein, the apertures adapted for receiving bolts therethrough for securing the mounting bracket to the bumper of the vehicle;
a hook base attached to the front of the mounting bracket;
a "J" shaped hook, the bottom of the hook integrally formed in the hook base, the hook extending outwardly and upwardly therefrom, the top of the hook having a threaded end, the hook dimensioned for receipt through the eye of the tongue when the tongue is placed therearound, below the top of the hook are formed shoulders on both sides thereof, the shoulders adapted for receiving the end of the tongue thereon;
a threaded nut having an enlarged head thereon and a neck extending downwardly therefrom, the neck having a threaded bore therein and adapted for attachment to the threaded end of the top of the hook to prevent the tongue from being removed from the hitch when the trailer is being pulled; and



a flapper, one end of the flapper pivotally mounted on the hook base, the other end of the flapper having an aperture, the threaded end in the top of the hook received through the aperture in the flapper, the threaded nut securing the flapper in place, the flapper adapted for preventing the tongue from contacting the threaded nut when the vehicle is pulling the trailer therebehind.

4,448,440
COLLAPSIBLE HAND TRUCK
Rolland H. Gier, 2013 Harold, Salina, Kans. 67401
Filed Mar. 1, 1979, Ser. No. 16,398
Int. Cl.³ B62B *1/04*
U.S. Cl. 280—655 **3 Claims**



1. In a hand truck of the class wherein an elongated and generally planar frame inclusive of upper and lower portions is adapted to be manually held at its upper end, and wherein the lower end of the frame is provided with a load supporting and generally planar platform disposed on one side of and sharply inclined thereto for operative use, together with a pair of ground wheels mounted on the lower end of the frame and disposed for operative use on the other side of the latter opposite the platform, the improvement comprising the platform being pivotally secured to the lower end portion of the frame for swinging movement toward the upper end of the frame between its operative position in which it is sharply inclined to the frame to a collapsed position thereof that is on said one side of the frame and in close proximity to and in approximate parallelism with the lower end of the frame, means pivotally connecting the upper and lower end portions of the frame for swinging movement of the upper end portion of the frame from its operative position in which it is generally coplanar with the lower portion of the frame to a collapsed position

wherein the same extends toward the lower frame and from its pivotal connection to the latter and wherein the same is on said one side of and in close proximity to and in approximate parallelism to the lower portion of the frame, the arrangement being such that the platform and the upper end portion of the frame overlap each other along the longitudinal extent of the lower portion of the frame when such components are in their collapsed positions with one of such components and the lower frame having the other component sandwiched therebetween, whereby securing said one of such components in its collapsed position serves to retain the other in its collapsed position, and said truck including means for securing said one component in its collapsed position, with the last recited means being included in a common means for selectively and releasably securing the upper portion of the frame to the lower portion of the frame in its operative position and in its collapsed position.

4,448,441

INDEPENDENT FRONT AXLE SUSPENSION FOR PASSENGER CARS

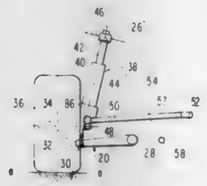
Hans J. Brümmer, Kernen; Karlheinz Böse, Fellbach; Frank Knothe, Stuttgart; Hans-Hermann Keller, Notzingen, and Henning Wallentowitz, Aichwald, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,759

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145988

Int. Cl.³ B60G *3/00*

U.S. Cl. 280—691 **7 Claims**



1. An independent front axle suspension for passenger vehicles comprising a suspension possessing a lower guide member, extending transversely to the longitudinal direction of the vehicle body and being flexibly coupled to the vehicle body; the suspension also possessing a shock absorber strut located between the guide member and the vehicle body, the strut being connected at its upper end by a coupling point, via a flexible support, to the vehicle body; and possessing a wheel carrier connected to the shock absorber strut, in which suspension a wheel, mounted on the wheel carrier, is able to move about a steering axis defined by the upper coupling point of the shock absorber strut, coaxial with the shock absorber strut, to a guide link, the supporting joint being located a substantial distance below the axis of the wheel in which suspension, the wheel carrier or the shock absorber strut being coupled to a steering track rod extending in the transverse direction of the vehicle body, and in which suspension an instantaneous rotation axis is present, extending downwards from the upper coupling point of the shock absorber strut about which axis the total mass of the front axle suspension is capable of vibrating, the instantaneous rotation axis and the axis of the steering track rod substantially intersect one another.

4,448,442

LONGITUDINALLY ADJUSTABLE SKI POLE

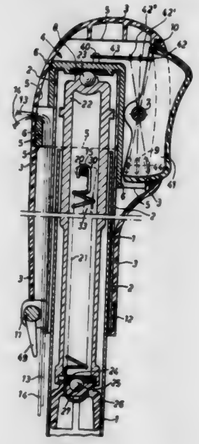
Hans Weber-Henning, Dorfhalde 14, Stäfa, 8712, and Peter Weber, Haltenstrasse 146, Meilen, 8706, both of Switzerland

Filed Jan. 4, 1982, Ser. No. 336,610

Claims priority, application Switzerland, Jan. 8, 1981, 9681

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—823 **13 Claims**



1. An improved ski pole having an adjustable length, which said ski pole is provided with two telescopically movable tube sections which are inserted into each other and are arrestable at their respective positions by an arresting means, which said ski pole is provided further with an operating member located at a handle portion of said ski pole and operational for mutual arresting or unlatching of both said tube sections, which said operating member is arranged to be reachable by the finders of the skier's hand gripping said ski pole, which arresting means comprises a latching arrangement having a plurality of catches and whereby there is provided a spring which engages at the one end the inner tube section and at the other end the outer tube section, which said spring biasses both said tube sections away from each other,

the improvement comprising a pivoting cylinder at which said catches are provided, which said pivoting cylinder is provided with a groove where said catches form a part of said groove, which said pivoting cylinder is pivotably supported in said inner tube section and operationally connected to said operating member.

4,448,443

CONTINUOUS FORM BOOK PROCESSING KIT

Robert A. Jones, Minneapolis, Minn., assignor to Catalog Corporation of America, Inc., Burnsville, Minn.

Filed Dec. 30, 1981, Ser. No. 335,724

Int. Cl.³ B42D *15/00*; B32B *31/00*

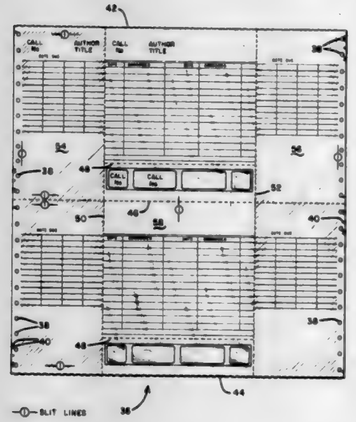
U.S. Cl. 281—5 **2 Claims**

1. A pre-printed continuous form containing a plurality of book processing kits, wherein said book processing kits are printed on a paperstock having a plurality of line holes formed therein and index marks printed on each of the side edges thereof for permitting the controlled feeding and indexing of the paperstock in a computer controlled line printer that appropriately prints book identification data on each of the form parts, each of said book processing kits comprising:

(a) a pocket part back for adhesive attachment to and for identifying a unique one of a plurality of books and having a plurality of printed vertical and horizontal columns and lines within which the due date of the book may be manually entered upon loaning the book to a borrower;

(b) a circulation card having a plurality of printed vertical and horizontal columns and lines for correspondingly identifying the book identified by said pocket-part and for providing the library with a retainable record of the due date and borrower's name;

(c) a removable stub containing at least one removable piggyback adhesive label that identifies and is for attachment to said identified book; and wherein



(d) said pocket part back is semipermanently attached to said circulation card and said stub along an adjacent edge of each and said stub is also semipermanently attached to said circulation card along a common edge of each, whereby all the parts of each of said kits may be simultaneously and automatically prepared for subsequent manual separation and mounting in the correspondingly identified books.

4,448,444

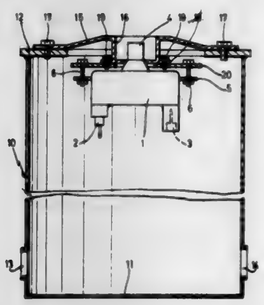
POWER SUPPLY HOUSINGS FOR EXTERIOR LIGHT APPARATUS

Etienne G. Toussaint, Brussels, Belgium, assignor to Societe Anonyme des Etablissements Adrien de Backer, Brussels, Belgium

Filed Jul. 8, 1981, Ser. No. 281,337

Int. Cl.³ H01F *27/02*

U.S. Cl. 361—331 **2 Claims**



1. In an airport light deep base intended for an elevated-type light, said deep base having a removable base plate cover with a central opening fitted with a tapped hole used to secure the elevated light and ending at a ring flange having a central opening located coaxially with said cover central opening, said ring flange having a plurality of apertures therein, the improvement comprising a suspended isolating transformer including an envelope having moulded primary plug and receptacle terminal means at its lower end, moulded secondary receptacle terminal means at its upper end adapted to fit a feeder of the light, and apertured attachment means; and suspension means comprising a support ring secured to the ring flange and having a central opening that is coaxially disposed with respect to the cover central opening, said support ring having apertures arranged around the central opening which cooperate with apertures in the transformer attachment means via securing members and suspend the isolating transformer away from the bottom of said deep base and position the moulded secondary terminal means within the cover central opening and thereby allow the direct plug-in of the light feeder into said secondary terminal means.

4,448,445

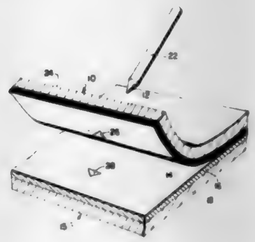
PRESSURE-SENSITIVE RECORD SYSTEM

John C. H. Chang, Naperville, and Theodore Dimitriou, Deerfield, both of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Filed Feb. 10, 1982, Ser. No. 347,171

Int. Cl.³ B41M *5/22*

U.S. Cl. 346—206 **10 Claims**



1. A pressure-sensitive record system comprising a plurality of sheets in superposed relationship, wherein

at least one of said sheets comprises a support bearing an autogenous layer comprising microscopic pressure-rupturable capsules and an electron-acceptor material;

at least one other of said sheets comprises a support bearing a color-developer layer comprising electron-acceptor material;

said autogenous layer and said color-developer layer being in direct, superimposed contact;

at least one of said supports being a semi-translucent support;

said capsules containing chromogenic material in amount sufficient to form a visible colored marking in said autogenous layer and to transfer to said color-developing layer to form a visible colored marking therein;

said semi-translucent support being sufficiently translucent that the colored marking formed on one side of said semi-translucent support is visible from the other side of said semi-translucent support with the naked eye.

4,448,446

PROCESS FOR THE PURIFICATION OF TRIPHENYLMETHANE COMPOUNDS AND PRESSURE SENSITIVE COPYSHEET CONTAINING SAME

Robert J. Flores, Cincinnati, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

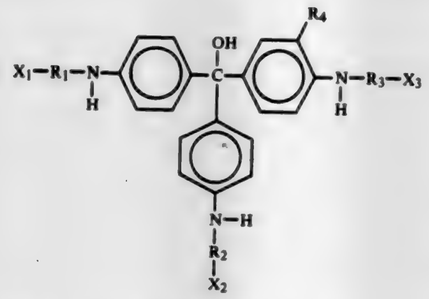
Continuation-in-part of Ser. No. 328,899, Dec. 9, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,678

Int. Cl.³ B41M *5/22*

U.S. Cl. 346—224 **36 Claims**

1. In a pressure-sensitive carbonless copy media having a first sheet in contiguous interfacial relation with a second sheet wherein said first sheet comprises a planar sheet material having coated thereon a substantially colorless dye precursor

which is encapsulated or dispersed in a pressure-sensitive coating and wherein said second sheet comprises a planar sheet material having coated thereon an electron accepting material whereby the application of pressure effects a rupture of the capsular elements or coating in the area of applied pressure to effect a co-reacting and color-producing relationship between the dye precursor and the electron accepting material, the improvement which comprises utilizing as a dye precursor a purified triphenylmethane compound in its carbinol form and wherein said compound in its carbinol form has the following general structural formula:



wherein R_1, R_2 and R_3 are direct linkages, phenyl, or napthyl groups; R_4 is hydrogen or methyl; X_1, X_2 and X_3 are hydrogen, halogen, alkyl of 1 to 4 carbons or alkoxy of 1 to 4 carbons; provided that at least one of R_1, R_2 and R_3 is not a direct linkage and provided that X_1, X_2 or X_3 is hydrogen when the corresponding R_1, R_2 or R_3 is a direct linkage; and wherein said dye precursor containing coating is substantially free of unreacted aromatic amine.

4,448,447

COUPLING FOR PRESSURE LINES

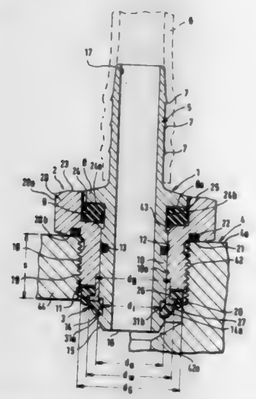
Hans G. Funk; Frank Neumann, and Dankmar Schaefer, all of Hungen, Fed. Rep. of Germany, assignors to Johannes Schaefer vormals Stettiner Schraubenwerke GmbH & Co. KG, Hungen, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,793

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108651

Int. Cl.³ F16L *37/00, 5/00, 39/00*

U.S. Cl. 285—4 **19 Claims**



1. A coupling adapted to connect a pressure line to a member having a threaded hole therein, comprising a receiving part having a hole therethrough and having an external thread which can be screwed into said threaded hole in said member, a plug-in part having a hole therethrough and slidably received in said hole through said receiving part, and an elastically expansible retaining ring which lockingly engages said plug-in part and said receiving part so as to fix said plug-in part and said receiving part against relative movement in an axial direction; said retaining ring being located near one end of said receiving part, extending over a surface on said one end of said receiving part, having a portion which engages an external groove provided in said plug-in part, and having projections thereon which engage recesses provided in said receiving part; and wherein said recesses are straight grooves and said projections are tangential webs which are offset with respect to one another by equal angular intervals.

4,448,448

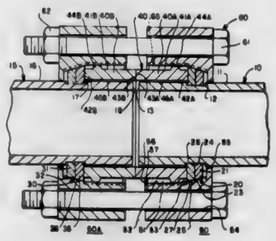
COUPLING SYSTEM

Andrew A. Pollia, San Francisco, Calif., assignor to Raphael Theresa Pollia, San Francisco, Calif.

Continuation-in-part of Ser. No. 360,428, Mar. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 263,358, May 14, 1981, abandoned. This application Nov. 26, 1982, Ser. No. 444,738

Int. Cl.³ F16L *17/06*

U.S. Cl. 285—112 **22 Claims**



1. In a coupling assembly for coupling an elongated cylindrical first element to a second element having a front-facing thrust-bearing surface thereon extending radially outside the outer diameter of said first element, a shallow circumferential groove formed on an outer circumferential surface of said first element at a position spaced a moderate distance from the front end of said first element at which said coupling is to be made; at least one split ring mounted in said groove and having an outer circumferential surface portion tapering radially inward in a direction away from said front end of said first element; and a housing-fastener assembly, including a generally hollow cylindrical housing mounted over said split ring and having an inner surface portion tapering radially inward in a direction away from a front surface of said housing and contacting at least a portion of said tapering outer surface of said split ring, fastening means for mounting said housing to said second element with a coupling force applied therebetween, and thrust-bearing means defining at least one front-facing, thrust-bearing surface on said housing-fastener assembly at a location opposite said thrust bearing surface on said second element and displaced a short distance forward of and radially spaced from said front end of said first element, said repetitive thrust bearing surfaces being urged into thrust-bearing engagement with each other by said coupling force to take the thrust force of said fastening means and to displace said front end of said first element away from said second element; said tapered inner surface portion of said housing defining an angle with respect to the axis of said first element substantially less than twenty degrees and thereby producing a strong radial squeezing force of said split ring on said first element in response to load forces tending to separate said first and second elements.

4,448,449

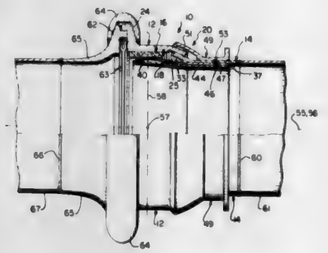
FLEXIBLE PIPING JOINT AND METHOD OF FORMING SAME

Horace P. Halling, 6708 McCahill Ter., Laurel, Md. 20810, and Bernard J. Sadoff, Jr., 4524 Hornbeam Dr., Rockville, Md. 20853

Filed May 4, 1981, Ser. No. 260,162

Int. Cl.³ F16L *27/04, 25/00, 33/18*

U.S. Cl. 285—263 **20 Claims**



1. A fluid-tight coupling and sealing apparatus for a first tube and a second tube having high pressure fluid flowing therethrough, the combination comprising:

a non-metallic ring rigidly received in the first tube via an interference shrink-fit between the outer surface of said ring and the inner surface of the first tube; and

a metallic, resilient, annular sealing element rigidly coupled to and extending from the second tube,

said sealing element having a ring portion with a curved outer surface having a maximum free diameter greater than the inner diameter of the inner surface of said non-metallic ring and in contact via an interference fit with the inner surface of said non-metallic ring,

the coefficient of friction between the material of said non-metallic ring and the material of said metallic sealing element being less than the coefficient of friction between the material of said metallic sealing element and the material of the first tube,

the interference shrink-fit between said non-metallic ring and said first tube equaling $(\alpha T-\alpha R)A(T2-T1)+0.001$ inch, where αT is the coefficient of thermal expansion of said first tube over the operating temperature range, αR is the coefficient of thermal expansion of said non-metallic ring over the operating temperature range, A is the interface diameter of said ring and said first tube, T2 is the maximum operating temperature of the apparatus, and T1 is the initial temperature of the apparatus, to maintain the interference fit between said sealing element and said ring over the operating temperature of the apparatus.

4,448,450

DEFEATABLE HANDLE AND INTERLOCK FOR ELECTRICAL EQUIPMENT ENCLOSURE

John D. Kleinecke, and Thomas R. Little, both of Wichita Falls, Tex., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed May 12, 1982, Ser. No. 377,436

Int. Cl.³ E05C *3/04*; H01H *33/48*

U.S. Cl. 292—210 **11 Claims**

1. A handle interlock for an electrical equipment enclosure having a pivoted door with a tongue extending therefrom and a jamb adjacent said door, comprising:

an elongate handle member having a manually graspable protion on one end and a shaft extending generally transversely thereto at the other end;

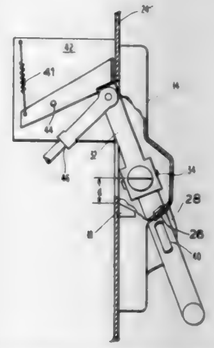
support means, secured to the jamb of the enclosure, for rotatably supporting said shaft;

an elongate arm having an opening adjacent a first end rotatably receiving said shaft therethrough, and having a second end adapted to be coupled to a mechanism within said enclosure;

a fastener releasably securing said first end of said elongate arm to said shaft for causing said arm to rotate with said shaft; and

an abutment extending from one end of said shaft, said abutment interfering with the tongue on the door when said shaft is in an on position to prevent opening of the door, said abutment being clear of said tongue when said handle is in an off position to allow opening of said door,

whereby release of said fastener allows said handle to be moved from an on position to an off position with respect to the door tongue without causing a corresponding movement of said elongate arm.



4,448,451

SELF-LOCKING SLING

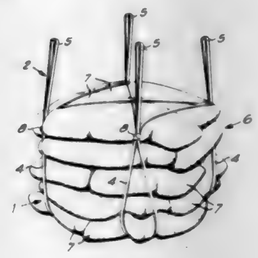
Eugène J. Colson, Antwerp, Belgium, assignor to N.V. Transworld Marine Agency CY S.A., naamloze vennootschap, Antwerp, Belgium

Filed Jan. 20, 1982, Ser. No. 340,858

Claims priority, application Belgium, Jan. 20, 1981, 2/58962

Int. Cl.³ B66C *1/18*

U.S. Cl. 294—74 **3 Claims**



3. A self-tightening sling for unit loads of bagged material, comprising:

distinct bottom and top parts made of webbing, the bottom part having a clover-leaf configuration, said top part having a two-loop configuration, each loop of which being shaped into two sub-loops, when the sling is placed on and around a unit load, each of said sub-loops being tied to a loop of the bottom part by a self-locking sliding knot and including an exposed portion projecting from said knot and forming a hoisting loop, whereby four knots and four hoisting loops are formed.

4,448,452

BOTTLE CARRIER

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 269,572, Jun. 2, 1981, abandoned, which is a continuation of Ser. No. 155,146, May 30, 1980, abandoned. This application Aug. 26, 1982, Ser. No. 411,707

Int. Cl.³ B65D *71/00*

U.S. Cl. 294—87.2 **7 Claims**



1. A bottle carrier of the top gripping type for packaging a plurality of bottles having flanged neck portions and arranged in at least one row, said carrier being formed of semi-rigid plastic material and comprising a frame structure, a plurality of collars integrally formed with said frame structure for respectively enveloping the necks of a plurality of bottles, each collar including a plurality of lift tabs of substantially equal length and distributed about the periphery of the associated bottle neck and in upwardly inclined relation with their upper ends in engagement with the flange of the associated bottle throughout a substantial part of the periphery of the bottle neck, and a plurality of stabilizing tabs distributed about the periphery of the associated bottle neck and of substantially equal length and substantially shorter in length than said lift tabs and arranged to engage the neck of the associated bottle at a level substantially below the level of the upper ends of said lift tabs for imparting a gripping force thereto in a lateral and downward direction against the bottle shoulder and which is distributed about the periphery of the neck of the associated bottle, each of said stabilizing tabs being disposed between a pair of lift tabs.

4,448,453

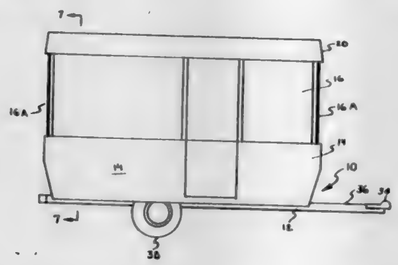
APPARATUS AND METHOD FOR RAISING AND LOWERING BOTH ROOF AND SIDE WALLS OF A RECREATIONAL VEHICLE

John A. Irelan, Elkhart, Ind., and William E. Peterson, Harmony, Minn., assignors to Coachmen Industries, Inc., Middlebury, Ind.

Filed Jul. 6, 1982, Ser. No. 395,609

Int. Cl.³ B60P *3/34*

U.S. Cl. 296—27 **9 Claims**



1. Apparatus for raising and lowering the roof and solid side panels of a recreational vehicle comprising:

a raising and lowering mechanism disposed at the upper interior edge of the roof on opposite sides thereof;

means forming a track extending substantially the length of the interior upper roof edge and at opposite sides of said roof;

oppositely movable gear toothed racks in confronting relation and located for slidable movement within said track means;

power actuating means having a gear wheel associated with the upper and lower racks and in driving relation with each;

an idler sprocket also in geared relation with said racks for insuring simultaneous and coequal movement of said racks and whereby said racks can be power actuated in each of opposite directions relative to each other;

a pivoted lever at each of the four corners of the vehicle and pivotally connected at one end to said vehicle;

means forming an operative connection between the power driven end of each said levers and said power actuating means whereby movement of said gear racks will effect pivoting of each said levers at its pivoted base end with the vehicle to effect selective directional pivotal movement of each such lever;

a pair of solid wall panels forming opposite sides of said vehicle and operatively connected one with each of a pair of complementary levers, whereby said levers pivot the wall panels between a substantially horizontal stored position to a substantially vertical raised position; and,

a compound link associate one with each of said levers and having an articulated connection to a mid portion of its associated lever and further having a pivoted connection at the opposite end thereof with a corner of said roof, the radius of movement of each said levers about its connection with the vehicle and the radius of counter pivotal movement of the associated link about its articulated connection with said lever, causing each roof corner to develop coequal simultaneous rectilinear vertical movement of each corner which moves in unison with the others.

4,448,454

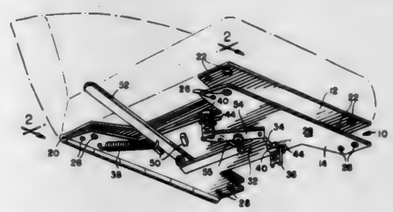
ADJUSTABLE AUTOMOBILE SEAT BRACKET

Wayne A. Scott, R.R. Saunemin, Saunemin, Ill. 61769

Continuation of Ser. No. 55,222, Jul. 5, 1979. This application Jan. 21, 1982, Ser. No. 341,421

Int. Cl.³ A47C *1/02*

U.S. Cl. 297—313 **2 Claims**



1. An adjustable seat bracket for disposition between a seat support surface and a seat mounted within a vehicle, comprising:

top and bottom generally flat support plates pivotally hinged at their rearward edges, said top support plate adapted to be affixed to said seat with said rearward edge of said top support plate in proximity to the rearward edge of the seat and said bottom support plate being adapted to be affixed to said seat support surface within the vehicle;

latch means mounted to and between said top and bottom generally flat support plates for releasably maintaining said support plates and said seat and seat support surface in a desired angular relationship, said latch means being spaced rearwardly of the forward edge of the seat;

said latch means including a slotted catch bar depending from the underside of said top support plate toward said bottom support plate, said bottom plate having a clearance opening positioned and sized to permit said catch bar to pass therethrough as said support plates are moved toward and away from each other, bolt means movably attached to said bottom support plate on the underside thereof for releasably engaging said slotted catch bar, and stop means on said catch bar and engageable with said bottom support plate to limit the extent of pivotal movement of said seat;

a control lever movably fixed to the underside of said bottom support plate and linked to said bolt means for moving said bolt means into and out of engagement with said slotted catch bar, said control lever including a portion protruding beyond one side edge of said bottom plate to permit ready access to the control lever; and

spring means connected between said control lever and said bottom support plate for biasing said bolt means into engagement with said slotted catch bar.

4,448,455

RELEASABLE AUXILIARY WHEEL COUPLING MECHANISM

Peer Ellegaard, Lundemarken 16, Himmelev, 4000 Roskilde, Denmark

PCT No. PCT/DK81/00012, 371 Date May 13, 1982, 102(e) Date May 13, 1982, PCT Pub. No. WO82/01687, PCT Pub. Date May 27, 1982

PCT Filed Feb. 11, 1981, Ser. No. 380,737

Claims priority, application Denmark, Nov. 20, 1980, 4949/80

Int. Cl.³ B60B *11/00, 15/26*

U.S. Cl. 301—36 R **6 Claims**

6. Apparatus for releasably coupling an auxiliary wheel (2) with the rim of an original wheel (1) of a vehicle, comprising

(a) a cylindrical hollow member (3) having an outer diameter corresponding with the diameter of the original wheel rim, one end of said member being connected with the auxiliary wheel and the other end of said member containing a plurality of circumferentially spaced cutouts;

(b) a plurality of locking cams (5) secured to the original wheel rim in circumferentially spaced relation corresponding with the spacing of said member cutouts, each of said locking cams including a groove; and

(c) a plurality of tightening devices connected with said member in alignment with said cutouts, respectively, said cutouts being adapted to receive said grooved locking cams for releasable interlocking with said tightening devices, respectively, the width of each of said cutouts being such that the lateral surface of the corresponding locking cam abuts the lateral surface of the corresponding cutout when said said tightening device is opposite said corresponding locking cam groove.

4,448,456

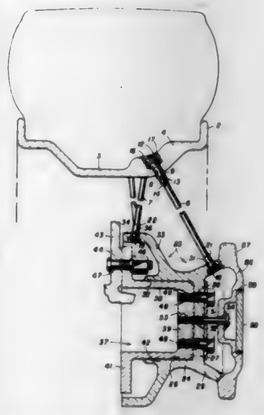
WIRE SPOKE WHEEL HUB ASSEMBLY

Dean W. Pfundstein, 866 Hummingbird Dr., San Jose, Calif. 95125

Filed Mar. 4, 1982, Ser. No. 354,583

Int. Cl.³ B60B *1/04, 27/06*

U.S. Cl. 301—58 **5 Claims**



1. A wire spoke wheel and hub assembly, including an adaptor for mounting the wire spoke wheel on a conventional wheel support plate or brake drum comprising:

(a) a wheel rim;

(b) a hub concentrically disposed with respect to a wheel rim, said hub including a central body portion of relatively small diameter and spoke-anchoring flanges at opposite ends thereof of relatively larger diameter to which a multiplicity of spokes may be anchored, said central body portion including a centrally disposed cylindrical recess closed at one end by an end wall and open at its other end;

(c) a plurality of wire spokes detachably interconnected between the wheel rim and hub to retain the hub coaxially disposed with respect to the wheel rim;

(d) an adaptor including a central cylindrical body portion and a radially extending flange adapted to be detachably secured to a wheel mounting plate by appropriate lug bolts, said central body portion of said adaptor being proportioned to be snugly received in the interior of said central recess formed in the body of said hub; and

(e) means for detachably securing said hub to said adaptor to retain the wheel on a conventional wheel mounting plate or brake drum while functioning to carry torsional loads imposed between said hub and adaptor.

4,448,457

BRAKING PRESSURE CORRECTOR

Pierre Pressaco, La Courneuve, France, assignor to Societe Anonyme DBA, Paris, France

Filed Nov. 2, 1981, Ser. No. 317,088

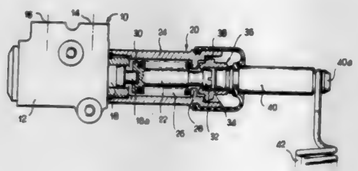
Claims priority, application France, Nov. 28, 1980, 80 25291; Jun. 11, 1981, 81 11497

Int. Cl.³ B60T *8/18*

U.S. Cl. 303—22 R **20 Claims**

1. A vehicle load sensitive braking pressure corrector, comprising a casing, sliding correcting valve means arranged within said casing, a push rod engaging said valve means in the prolongation thereof to bias said valve means in one direction, a preloading spring coupled to said push rod so as to exert on said valve means a biasing force of fixed magnitude and bias the valve means in said one direction, and a control vehicle load-sensing spring coupled to said push rod via a reversing coupling device so as to exert on said valve means a force of a magnitude varying as an inverse function of the vehicle load,

characterized in that said reversing coupling device is hingedly mounted for pivotable movement relative to said casing via a swivel joint and has one end cooperating with said push rod



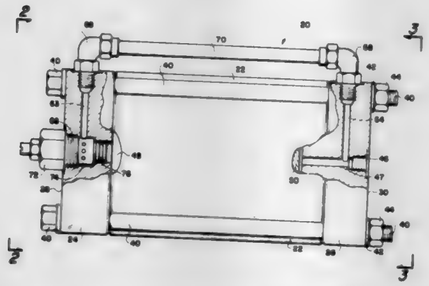
and means adjacent its other end for connection to said load-sensing spring which extends angularly with respect to said valve means.

4,448,458

SHUT-OFF CYLINDER FOR A SUPPLY ACCUMULATOR OF A HYDRAULIC BRAKE SYSTEM

George T. Knothe, and Robert A. Mayfield, both of Tulsa, Okla., assignors to Unit Rig & Equip. Co., Tulsa, Okla.

Filed Nov. 23, 1981, Ser. No. 324,102
Int. Cl.³ B60T *15/46*
U.S. Cl. 303—84 A **5 Claims**



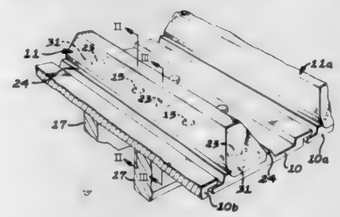
1. An automatic hydraulic shut-off cylinder used in conjunction with a hydraulic braking system of an off-highway vehicle comprising a hollow cylindrical housing, an inlet end cap received in a first open end of said housing, an outlet end cap received in a second open end of said housing, a means for securing the end caps to said housing, said inlet end cap having an inlet port in fluid communication with the interior of said housing and with a source of hydraulic fluid from a common hydraulic reservoir of said braking system, said outlet end cap having an outlet port in fluid communication with said interior of said housing and with an outflow source of hydraulic fluid to said braking system, a piston slidably received in said interior of said housing between said inlet end cap and said outlet end cap, a resilient means positioned between said pison and said outlet end cap to bias the movement of said piston toward said inlet end cap under normal operating conditions, a bypassing means to provide an inflow of hydraulic fluid from said common reservoir to said interior of said housing between said outlet end cap and said piston under start-up conditions, and an openable and closable regulating means when closed preventing flow of fluid through said bypassing means during normal operation of said braking system, and whereby under adverse operating conditions resulting from a failure in said braking system said piston travels toward said outlet end cap until said piston encounters the interior edge of said outlet end cap and stops, thereby preventing a continuous outflow of hydraulic fluid from said common reservoir to said braking system.

4,448,459

ROADABLE TRACK SHOE WITH SEALED GROUSER

Randall L. Kortering, and Danny J. Becker, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00458, 371 Date Apr. 13, 1982, 102(e) Date Apr. 13, 1982, PCT Pub. No. WO83/03583, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 13, 1982, Ser. No. 385,416
Int. Cl.³ B62D *55/20, 55/26*
U.S. Cl. 305—38 **4 Claims**



1. In a track shoe (10) having a roadable grouser assembly (11), said grouser assembly (11) extending the length of said shoe (10) and including an elastomeric grouser (12) and an anchor plate (13) bonded to said grouser (12), the improvement comprising:

said track shoe (10) having a pair of laterally-spaced ribs (24), each rib (24) being of a height substantially less than the height of said grouser assembly (11);

said track shoe (10) having a pair of laterally-spaced ribs (24), each rib (24) being of a height substantially less than the height of said grouser assembly (11);

said anchor plate (13) having a flat bearing surface (26) and opposite lateral sides (28), said anchor plate (13) being secureable to said track shoe (10) along said bearing surface (26) at a location between said ribs (24); and

said grouser (12) having a pair of lip portions (27), said lip portions (27) each extending in wrapped relationship around and being bonded to the entirety of its respective anchor plate side (28) and locating the bond edge along the anchor plate bearing surface (26), at least one of said lip portions (27) being of a size such that in response to said grouser assembly (11) being affixed to said track shoe, said lip portion (27) is compressed only between its respective rib (24) and anchor plate side (28) to a preselected magnitude sufficient to measurably reduce the magnitude of stresses subjectable upon said bonded portion of said lip portion (27) during flexing of said grouser (12).

4,448,460

HYDROSTATIC BEARING

Hironori Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 160,173, Jun. 17, 1980, abandoned. This application Mar. 17, 1983, Ser. No. 474,736
Claims priority, application Japan, Jun. 26, 1979, 54-80307
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—5 R **2 Claims**

1. A hydrostatic bearing, comprising:

a first member;

a second member having a surface opposed to a surface of said first member, said first and second members being movable relative to each other;

a protuberance formed at an outer peripheral portion of said first member, said protuberance and said opposing surfaces of said first and second members defining a recess therebetween; and

means, in communication with the recess, defining a plurality of holes for supplying high pressure gas to the recess,

wherein when pressurized gas is supplied to the recess the following relationships are satisfied:

λ is in the range of 0.02 to 0.06;

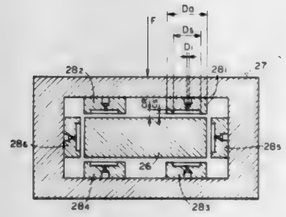
α is in the range of 0.001 to 0.01; and

β is in the range of 0.2 to 0.7 where

$\lambda = (\ln Da/Ds)/(\ln Ds/Di)$

$\alpha = Di/Da$

$\beta = Cs/Cr$



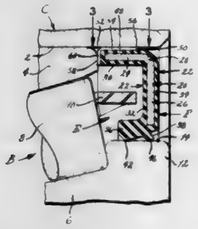
with Da being the diameter of said first member, Ds being the diameter of the recess, Di being the diameter of each of said plurality of holes, Cs being the gap formed between said surface of said second member and said protuberance and Cr being said gap formed between said surface of said second member and the surface of said first member.

4,448,461

SELF-VENTING SEAL

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Mar. 16, 1982, Ser. No. 358,683
Int. Cl.³ F16C *33/76*
U.S. Cl. 308—187.2 **18 Claims**



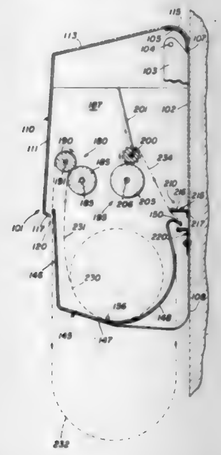
1. In an assembly including a shaft, a housing surrounding the shaft and containing a bearing cavity, a bearing located within the bearing cavity for enabling the housing to rotate relative to the shaft or vice-versa, there further being a bore and a wear surface at the end of the bearing cavity with the wear surface being located generally within the bore, an improved seal for closing the end of the cavity at the bore and wear surface, said seal comprising: a retaining band fitted into snug-fitting contact with the wall of the bore such that it does not rotate relative to the bore and having radially outwardly opening channels which communicate with the bearing cavity and means which normally bear against and contact the wall of the bore to close the channels but will separate from the wall of the bore and open the channels in response to a slight increase in pressure within the bearing cavity so as to expose the channels to the ambient atmosphere, whereby the bearing cavity is vented; a seal lip contacting the wear surface and forming a barrier to the passage of fluid along the wear surface while the wear surface moves relative to the lip or vice-versa; and an impervious intermediate member extending between the retaining band and the lip.

4,448,462

TOWEL DISPENSER

Randel P. Smith, Chicago, Ill., assignor to Steiner Corporation, Salt Lake City, Utah

Filed Aug. 20, 1980, Ser. No. 179,652
Int. Cl.³ B65H *19/00*
U.S. Cl. 312—38 **24 Claims**



22. A towel dispenser of the continuous loop type, comprising a housing having associated therewith a loop of towel that extends along an exit path from a clean towel supply within the housing to an exposed position accessible to a user and thence along a return path into the housing, said housing including a rear wall adapted to be mounted on a support surface and a cover having a front with the bottom edge thereof above the bottom edge of said rear wall and two sides removably mounted on said rear wall, two spaced apart and vertically extending support members mounted on said rear wall, each support member having a cantilever portion with mounting mechanism, a towel bed mounted to said mounting mechanism on the cantilever portions of said support members movable between a dispensing configuration wherein said towel bed is in the closed position thereof and a loading configuration wherein said towel bed extends outwardly from said housing to facilitate the loading of clean towel thereinto, two end pieces each removably mounted on a respective one of said support members to cover the ends of said towel bed, towel dispensing mechanism mounted in said housing for dispensing clean towel therefrom into the loop along the exit path when the accessible portion of the loop is pulled by the user, loop take-up mechanism mounted in said housing coupled to said towel dispensing mechanism for retracting and storing soiled towel from the return path, and movable and adjustable tension control mechanism for adjusting the tension in the soiled towel retracted and stored by said loop take-up mechanism to vary the amount of soiled towel taken up during operation of said loop take-up mechanism to control the amount of towel in the loop.

4,448,463

FURNITURE ASSEMBLY FOR STORAGE OF ARTICLES

Paul E. Amos, 1132 Pennsylvania Ave., McKeesport, Pa. 15131

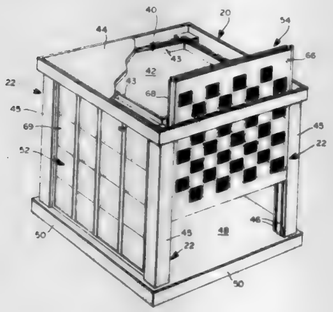
Filed Mar. 26, 1982, Ser. No. 362,504
Int. Cl.³ A47B *43/00, 77/18*
U.S. Cl. 312—111 **19 Claims**

1. A storage assembly for the storage of articles comprising:

(a) a top member having an outer frame of polygonal shape, including a vertical wall;

(b) an inner frame of polygonal shape, including a vertical wall within, and spaced from said outer frame;

(c) means for connecting said inner and outer frames, and providing elongated spaces of uniform width between the walls thereof;
(d) supporting legs connected to and extending downwardly from the corner portions of said inner and outer frames;
(e) the opposed faces of each of said supporting legs being provided with side retaining means;



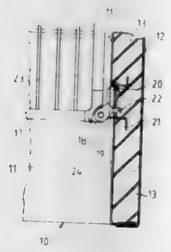
(f) side members positioned between opposed faces of said support legs and held in engagement therewith by said side retaining means, and
(g) said side members being inserted into, positioned in the assembly, and removed therefrom, through the elongated spaces between the walls of the inner and outer frames.

4,448,464

COOLING APPLIANCE, ESPECIALLY A HOUSEHOLD REFRIGERATOR OR THE LIKE

Rudolf Reichert, and Theo Haftlmeier, both of Giengen, Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte, Stuttgart, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 344,926
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3104012
Int. Cl.³ F25D *11/00*
U.S. Cl. 312—214 **9 Claims**



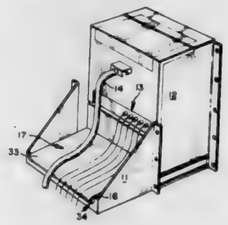
1. Cooling appliance, comprising a housing having an opening formed therein, a solid outer layer, an inner lining having a surface facing said outer layer, and hard synthetic foam being foamed in situ between said inner lining and outer layer, at least one lockable door covering said opening, a mounting rail being embedded in said synthetic foam on said surface of said inner lining, at least one first bearing part fixed on said mounting rail in vicinity of said opening, at least one second bearing part being movably disposed on said at least one first bearing part, and at least one supporting tray being disposed in said housing and having a given region being disposed on said at least one second bearing part, said supporting tray having a curved portion opposite said given region for permitting said tray to be at least partly swung out of said housing with said door open.

4,448,465

ELECTRICAL CABLE PROTECTOR

Thomas H. Yonenaka, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,730
Int. Cl.³ A47B *88/00*
U.S. Cl. 312—223 **3 Claims**



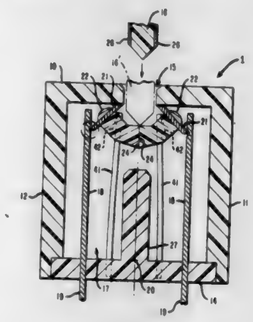
1. Protection apparatus for electrical cables that extend from the back of a drawer when the drawer is sliding between open and closed position with respect to a framework thereof, comprising:
an apron of sheet material secured to said drawer said drawer and said cables when said drawer is opened and closed, said apron extending from said back of said drawer beneath said cables and being draped downwardly between said cables and said framework, so as to remain in frictional contact with said framework during said sliding, thus to avoid abrasion of said cables by said framework upon opening and closing and pinching of said cables between said drawer and framework upon closing of said drawer.

4,448,466

LOW INSERTION FORCE CONNECTOR FOR PRINTED CIRCUIT BOARDS

Warren W. Porter, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 12, 1981, Ser. No. 320,280
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ H01R *23/68*
U.S. Cl. 339—17 M **5 Claims**



1. An electrical connector for connecting to an edge contact of a printed circuit board or the like comprising:
(a) a housing having a longitudinal slot for receiving an edge of a printed circuit board;

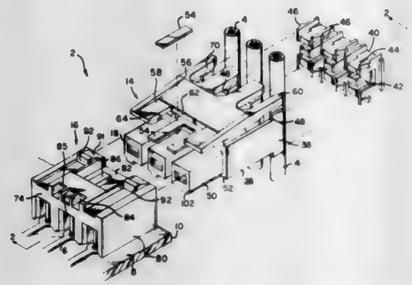
(b) a pin made of an electrically conductive resilient material;
(c) interconnection means for operatively connecting said pin to said edge contact, said inteconnection means rotatably positioned within said housing and actuated by an insertion of the printed circuit board or the like, said interconnection means being configured to have two ends such that the first end of said interconnection means makes a first contact point with said edge contact when said interconnection means is actuated by the insertion of said printed circuit board or the like, said interconnection means rotating as said printed circuit board or the like is further inserted, and the second end of said interconnection means makes a second contact point with said pin, the second end of said interconnection means causing said pin to be deflected as a result of the rotating motion of said interconnection means, said deflection causing a force to be transmitted through said first and second contact points, thereby permitting a piercing action to occur at said first and second contact points; and
(d) means for applying a force to said interconnection means to return said interconnection means to an unrotated position, said means for applying being effectively inoperative when the printed circuit board or the like is acting in concert with said electrical connector.

4,448,467

CONNECTOR ASSEMBLY HAVING COMPACT KEYING AND LATCHING SYSTEM

Charles H. Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 2, 1982, Ser. No. 414,160
Int. Cl.³ H05K *1/00*; H01R *13/62*
U.S. Cl. 339—17 LC **8 Claims**



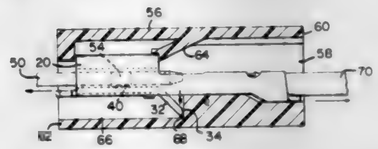
1. An electrical connector assembly of the type comprising first and second connector housings, each of the housings having a mating face and a rearward face which faces oppositely with respect to the mating face, external housing walls extending from the mating face to the rearward face, the external walls comprising oppositely facing sidewalls and oppositely facing endwalls, terminals in the housings which are coupled to each other when the housings are mated with each other, a latch arm on one of the external housing walls of the first housing, the latch arm being hinged to the one housing wall and having a forward portion which extends towards the mating face and a rearward portion which extends towards the rearward face, and forward portion having latching shoulder means thereon for cooperation with complementary latching shoulder means on the second housing, and a keying system on the housings for keying the housings to each other, the connector assembly being characterized in that:
the keying system comprises at least one removable key on the first housing and a keyway in the second housing, the key extending parallel to, and being adjacent to, the one external wall of the first housing, the key being substantially coextensive with the forward portion of the latch arm and the key being between the forward portion of the latch arm and the one external wall of the first housing,
the forward portion of the latch arm having an inspection opening therein to permit determination of the presence or absence of the removable key whereby, the first and second housings can be keyed to each other by removing the key from the first housing and placing a key plug in the keyway of the second housing.

4,448,468

RECEPTACLE TERMINAL HAVING LATCHING FEATURE

Daniel R. Coldren, Enola, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 9, 1982, Ser. No. 396,973
Int. Cl.³ H01R *13/635*
U.S. Cl. 339—74 R **7 Claims**



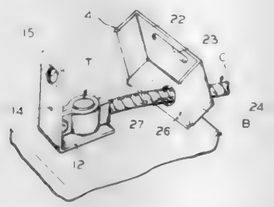
1. A stamped and formed receptacle terminal of the type having a receptacle portion which is dimensioned to receive a tab type terminal, the receptacle portion having a web and having sidewalls extending from the marginal side portions of the web, the sidewalls having portions which extend inwardly over the web and towards each other and having free edges which are spaced from the surface of the web, the receptacle portion having a tab receiving end and an inner end whereby upon relative movement of the tab into the tab receiving end towards the inner end, electrical contact is established between the tab and the receptacle portion, the receptacle portion having a releasable latch for releasably latching the tab to the receptacle portion, the receptacle portion being characterized in that:
the releasable latch comprises a latching tongue struck from the web of the receptacle portion, the web having an opening therein which was produced when the tongue was struck from the web, the tongue having a fixed end, a free end, and said edges extending between the ends and alongside the marginal side portions of the web, the fixed end being proximate to one of the ends of the receptacle portion and the free end being proximate to the other end of the receptacle portion,
the tongue having an intermediate portion which extends from the fixed end obliquely with respect to the plane of the web towards the free edges of the sidewalls, an engaging ear extending from the intermediate portion to the free end, the engaging ear extending away from the free edges of the sidewalls and through the opening in the web whereby the free end of the tongue can be engaged,
the web having stop portions which are proximate to the side edges of the tongue intermediate the ends of the tongue, the stop portions extending beneath the tongue and into the opening in the web, the tongue extending between the stop portions and the free edges of the sidewalls thereby to prevent overstressing of the tongue during flexure thereof, and latching portions on the tongue which are engageable with complementary latching portions on the tab when the tab is inserted into the receptacle portion thereby to latch the tab to the receptacle portion whereby,
the tongue can be disengaged from the tab by engaging the engaging portion of the tongue and flexing the tongue away from the free edges of the sidewalls until the latching portions of the tongue are disengaged from the complementary latching portions of the tab.

4,448,469

BATTERY SECURING DEVICE

Romain Metzger, 408 Pleasant Run Dr., Wheeling, Ill. 60090

Filed May 20, 1982, Ser. No. 380,138
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—82 **6 Claims**



1. A device for preventing the theft of a battery from a vehicle or other location by eliminating access to a connection between a cable and a terminal post of the battery, said device comprising:

(a) a generally L-shaped locking member having a pair of angularly related arms;

(i) one of said arms being adapted to extend into a related cover member and be secured to a battery terminal post under the end of a battery cable which is also attached to said battery terminal post;

(ii) the other of said arms being adapted to be connected to said cover member by a padlock;

(iii) said arms containing separate openings for attachment to said battery terminal post said padlock, respectively

(b) a cover member adapted to shroud a connection between a battery terminal post, a cable, and said locking member and having:

(i) a first opening for receiving a portion of said battery cable;

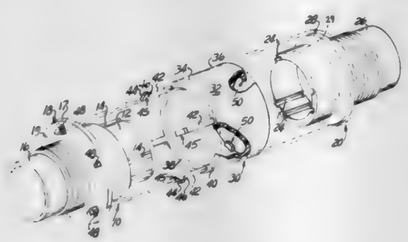
(ii) a second opening for receiving said one arm of said locking member.

4,448,470

COUPLING MEMBER AND AN ELECTRICAL CONNECTOR

Ann E. Peterson, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 28, 1981, Ser. No. 334,868
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—91 R **6 Claims**



1. An assembly comprising a coupling member (**30**) and a pair of housings (**10, 20**), each said housing having a forward end portion (**12, 22**), a rear end portion (**16, 26**) and at least one electrical contact (**11, 21**) mounted therein, the forward end portion and the contact of one said housing (**10**) and the forward end portion and the contact in the other said housing (**20**) being disposed in mated relation, the coupling member being disposed around the forward end portions (**12, 22**) and having a rearward portion (**36**) and a forward portion (**34**), the assembly being characterized by:

at least one resilient finger (**42**) extending axially from the forward portion (**34**) of said coupling member (**30**), said finger being radially deflectable inwardly and outwardly relative to the electrical connector central axis and including a transverse abutment shoulder (**46**);

at least one resilient tab (**50**) extending from the rearward portion (**36**) of said coupling member (**30**), said tab extending radially inwardly towards the central axis;

means (**18, 48**) on said one connector housing for retaining the abutment shoulder (**46**) and receiving the finger (**42**), said retaining means comprising said one connector housing (**10**) including a first radial flange (**18**) having an opening (**48**) disposed therein; and

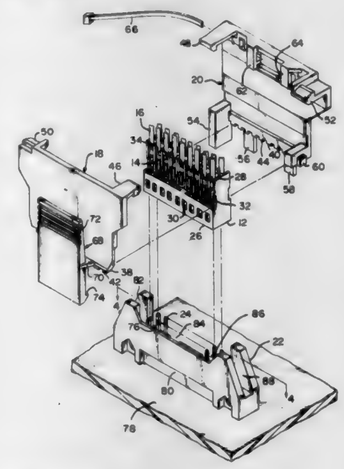
means (**28**) on the other connector housing (**20**) for receiving the tab (**50**), said receiving means comprising said other connector housing (**20**) including a second radial flange (**28**) having an outer diameter slightly less than the inner diameter of the coupling member (**30**) to allow the tab (**50**) to be received thereover, said finger (**42**) being sized to pass through said opening (**48**) to allow the abutment shoulder (**46**) to engage the first radial flange (**18**), said finger (**42**) securing the coupling member to said one connector housing and said tab (**50**) securing the coupling member to said other connector housing whereby said connector housings (**10, 20**) are coupled and secured together.

4,448,471

POLARIZED LOCKING LATCH COVER FOR AN ELECTRICAL CONNECTOR

Donald A. Berry, Elizabethtown, and David J. Fabian, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 20, 1982, Ser. No. 379,836
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—91 R **1 Claim**



1. In combination with an electrical connector having an elongated housing of rigid insulative material with a plurality of terminal passages extending from a rear portion through said housing to open on a front mating face, each passage being fully enclosed toward the mating face and having an outwardly directed, open channel shape toward the rear portion remote from said mating face, a plurality of terminals each mounted in a respective one of said passages with each terminal having a forwardly directed mating portion lying in said fully enclosed portion of said passage and an insulation displacing conductor engaging rear portion lying in and accessible from said rear channel shaped portion, a pair of mating cover members comprising:

a first cover member having a forward edge receivable against a first side of said housing with a plurality of tines extending from said forward edge and received in said fully enclosed portions of respective passages to hold said first cover member in assembly therewith and an opposite spaced rear edge having at least one latching leg extending normal to the plane of said first cover member and at least one latching shoulder;

a second cover member having a forward edge receivable against a second opposite side of said housing with a plurality of tines extending from said forward edge and received in said fully enclosed portions of respective passages to hold said second cover member in assembly therewith and an opposite spaced rear edge having at least one latching leg extending normal to the plane of said second cover member and at least one latching shoulder, each said leg of one cover member being positioned to engage a shoulder of the other cover member;

keying means extending in cantilever fashion forwardly of a respective forward edge of one of said cover members parallel to and spaced from said tines to overlie said housing, the free end of said keying means being coplanar with said mating face;

at least one end wall depending from an end of one of said cover members and extending normal to the plane of said cover member to substantially enclose an end portion of said housing forming a keying/polarization profile therefore;

means on one of said cover members to latchingly engage a mating connector member;

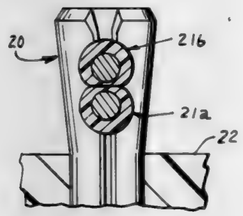
at least one U-shaped member integral with an inner surface of one of said cover members forming a belt loop configuration, and tie means passing through each said U-shaped member and about conductors terminated by said connector to secure said conductors to said one of said cover members providing strain relief for said conductors.

4,448,472

SLOTTED, SUBSTANTIALLY RIGID MULTI-CONDUCTOR ELECTRICAL CONNECTOR

Edwin C. Hardesty, Perry Hall, Md., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 16, 1981, Ser. No. 302,865
Int. Cl.³ H01R *9/08*
U.S. Cl. 339—97 P **10 Claims**



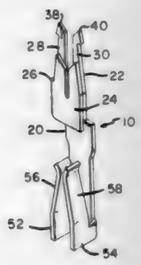
1. A contact element for establishing an electrical connection between conductive elements of at least two insulated conductors with the conductive elements each having a diameter that falls in a predetermined range, said contact element comprising an open-ended substantially linear tubular member which is made of an electrically conductive material having a relatively high modulus of elasticity, which has an inner diameter that is less than twice the outer diameter of the smallest insulated conductor to be connected by said contact element and an outer diameter, and which has a thickness that is less than the minimum diameter of conductive elements in the predetermined range and that is relatively large with respect to said inner diameter of said tubular member, said tubular member including surfaces that define a longitudinal slot which is formed through a wall thereof from one end of said tubular member to the other for receiving one or more of the insulated conductors, which is parallel to a longitudinal axis of said tubular member and which has a width that is less than the minimum diameter of the predetermined range, further said tubular member at one end including a peripheral edge having at least a portion thereof which is diametrically opposite to said slot provided with a cutting edge which serves conductors that are moved into said slot and that extend past said peripheral edge, and said slot being configured and said tubular member having sufficient stiffness to cause at least portions of said surfaces which define said slot to nick the conductive elements of insulated conductors that are moved into and along said slot with any accompanying deflection of said surfaces being substantially negligible.

4,448,473

LATCHING SLOTTED BEAM TERMINAL

Ronald G. Felix, Harrisburg, and Douglas R. Hoffman, Humelstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,169
Int. Cl.³ H01R *11/20*
U.S. Cl. 339—99 R **6 Claims**



1. A stamped and formed electrical terminal for forming an electrical connection with an insulated conductor and having a conductor engaging portion and a mating portion extending from opposite ends of a main body, said conductor engaging portion having a pair of closely spaced parallel substantially planar plate sections connected by a bight extending along corresponding first sides of the plate sections, each plate section having a pair of spaced apart arms extending from second corresponding sides of said plate sections, said main body being connected to a third side of at least one of said plate sections characterized by the arms of one said plate section being of a first set of dimensions of width and length to define therebetween a slot narrower than the conductor with the arms being stiff and unyielding to deflection in the plane of said one plate section and the arms of the second plate section being of width and length dimensions to be of greater length than said arms of said one plate section and defining therebetween a slot wider than the conductor to be resilient and more capable of deflection in the plane of said second plate than the arms of said one plate section, and

said second arms having outwardly directed latching shoulders adjacent the free ends thereof.

4,448,474

STRAIN RELIEF DEVICE

Walter Melnychenko, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,414
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **6 Claims**

1. In a printed circuit card assembly having a plurality of electrical terminals thereon electrically connected respectively

to the ends of a plurality of wire conductors carried in a cable and a pin hole located in each corner at one end of the card, a strain relief device for the wire conductors comprising:

a pair of identically configured elongated clamp members each of which has a locking pin and a hook element projecting from the bottom surface thereof and a wire conductor receiving cavity in said bottom surface, and a hook latching recess and a hole recess in the top surface thereof with a pin hole through said hole recess,

one of said members being positioned across the top surface of the card with its locking pin extending through one of



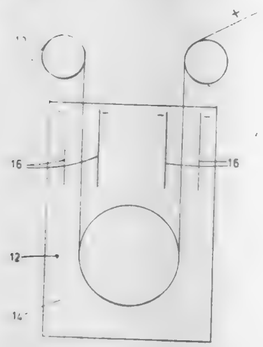
said card pin holes and bottom surface cavity receiving said wire conductors, the other of said members being positioned across the bottom surface of the card and being inverted with respect to said one member and having its locking pin extending through the other card pin hole whereby said members may be snapped together into locking engagement with one portion of said wire conductors being retained against one surface of the card by one of said members and another portion of said wire conductors being clamped directly between said members beyond the pin hole edge of the card to provide effective strain relief.

4,448,475

METHOD AND APPARATUS FOR TREATMENT OF TINNED METAL SURFACES AND TREATED TINNED METAL SURFACE

David Reznick, 21 Rehov Raanan, Haifa, Israel

Filed Jan. 13, 1982, Ser. No. 339,150
Claims priority, application Israel, Jul. 7, 1981, 63243
Int. Cl.[3] C25F *1/00*
U.S. Cl. 204—140 12 Claims



1. A method of anodically treating a tinned metal surface prior to coating with an organic coating so as to increase the long-term adhesion of the organic coating to the surface comprising the steps of:

placing said surface in an electrolyte bath wherein said electrolyte comprises one or more of the following substances:

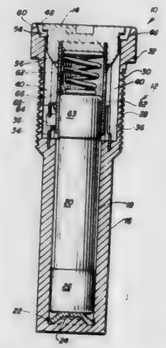
tap water, dilute nitrate salts of concentration approximately 0.2%, dilute hydrochloric acid, dilute nitrite salts, dilute sulfuric acid, dilute nitric acid of concentration approximately 0.1%, wherein the electrolyte has a pH of approximately 2.5, maintaining said tinned metal surface at a relatively positive voltage, maintaining said electrolyte at a relatively negative voltage, and passing a current of between 3 and 5 amperes per square decimeter of metal surface to be treated through said surface for up to a few seconds, and wherein cathodic treatment of the surface does not follow the foregoing steps.

4,448,476

FUSE HOLDER

Stanley Perlman, Park Forest, Ill.; William G. Herbert, Goodland, Ind.; Donald Layton, Kentland, Ind., and James S. Hanafee, Rensselaer, Ind., assignors to Permonite Mfg. Co., Morocco, Ind.

Filed May 11, 1982, Ser. No. 377,062
Int. Cl.[3] H01H *85/22, 85/16;* H01R *13/625*
U.S. Cl. 339—203 10 Claims



1. A fuse holder for receiving cylindrical fuses of the type having conductive ends, said fuse holder comprising:

a body to receive the fuse;

a first contact disposed in said body to conductively engage one end of said fuse;

a second contact disposed in said body, said second contact having at least one J-shaped slot;

a cap having a connector to conductively engage the other end of said fuse, said connector having a tab received in each slot and conductively engaged between the fuse and the second contact with the connector and second contact in a first position;

a conductive protrusion interposed between said connector and said second contact to maintain sliding contact between the connector and the second contact in the event said connector and second contact are moved relative to each other and away from said first position without relative rotation so that the tab disengages said second contact; and

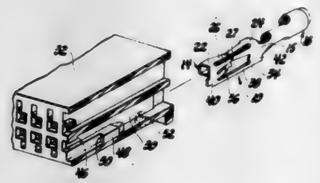
a biasing means between said connector and said second contact to maintain the tabs in said slots and against said second contact, forming a bayonet connection therebetween.

4,448,477

ELECTRIC SOCKET TERMINAL

Joseph H. Gladd, Cortland; Robert G. Plyler, Vienna, and Lyle B. Suverison, Fowler, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1982, Ser. No. 359,686
Int. Cl.[3] H01R *11/22*
U.S. Cl. 339—258 RR 3 Claims



1. An electric socket terminal comprising:

an elongated, resilient socket having two axially spaced split tubes joined by a circumferential array of juxtaposed spring strips,

means beside the elongated, resilient socket for retaining the electric socket terminal in a cavity of an insulator block or the like,

said means including a U-shaped guard extending outwardly of the resilient socket and a resilient latch tang,

said U-shaped guard having axially spaced legs which are integrally attached to the respective split tubes of the resilient socket, and

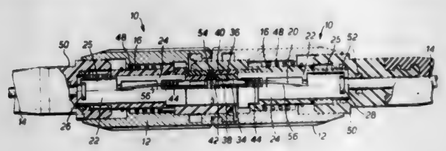
said resilient latch tang being integrally attached at one end to one of the legs of the U-shaped guard and extending generally axially of the elongated, resilient socket.

4,448,478

FIBER OPTIC CONNECTOR

Maurice A. Matthews, Basingstoke; Michael J. Cook, Thatcham, and David E. Ivey, Whitchurch, all of England, assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 142,341, Apr. 21, 1980, abandoned.
This application Oct. 19, 1981, Ser. No. 312,428
Claims priority, application United Kingdom, May 8, 1979, 7915872
Int. Cl.[3] G02B *7/26*
U.S. Cl. 350—96.21 4 Claims



4. An optical fiber connector comprising:

a pair of mating connector elements, each said element comprising:

a body embodying a front end portion having a plurality of axially extending tunnel-like cavities therein;

a ferrule in each said cavity adapted to terminate an optical fiber, each said ferrule having a lens adjacent to its forward end, said ferrules lying in a predetermined pattern;

the forward ends of said ferrules all lying substantially in the same plane, said plane being substantially normal to the longitudinal axes of said ferrules;

a single cover piece of an optically transparent material closing said front end portion of said body, the perimeter of said cover piece surrounding said pattern of ferrules;

the forward ends of said ferrules being positioned close to the inner surface of said transparent cover piece; and

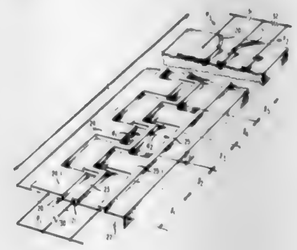
when said connector elements are mated, their transparent cover pieces are close to and parallel to each other with the ferrules in one of said elements optically aligned with the ferrules in the other of the elements, the lenses in the mating ferrules in said connector elements allowing efficient light transmission through the mating connector elements in spite of the separation of the mating ferrules by said cover pieces.

4,448,479

TRAVELING WAVE, ELECTROOPTIC DEVICES WITH EFFECTIVE VELOCITY MATCHING

Rodney C. Alferness, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 16, 1981, Ser. No. 321,475
Int. Cl.[3] G02B *5/174*
U.S. Cl. 350—96.14 10 Claims



1. An optical device comprising:

optical waveguiding means;

electrical waveguiding means extending longitudinally along said optical waveguiding means over an interaction distance L for locally modulating, via the electrooptic effect, the operative parameter of said device;

said electrical waveguiding means having a total length substantially equal to L, and including, at longitudinally spaced interval therealong, means for producing the equivalent of a 180 degree phase shift in said operative parameter, said 180 degree phase shifts occurring at intervals spaced apart a distance, l_0, given by

$$l_0 = \frac{\lambda_{rf}}{2n_{rf}}\left(1 - \frac{V_{rf}}{V_o}\right)^{-1},$$

where λ_{rf}, V_{rf}, n_{rf} are, respectively, the wavelength, velocity of propagation, and refractive index at a specified electrical wave frequency; and V_0 is the velocity of propagation at the frequency of the optical signal of interest.

4,448,480

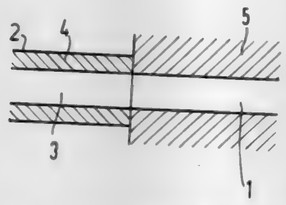
OPTICAL FIBER COUPLER

Hans-Hermann Witte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,302
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036883
Int. Cl.[3] G02B *7/26*
U.S. Cl. 350—96.15 10 Claims

1. A coupler for coupling light signals into and out of light conducting system fibers of a fiber optical system to couple-out and couple-in a light signal to the system fibers, said coupler

comprising at least first, second and third optical coupler fibers for connection to the system fibers, and means for holding said coupler fibers in a plane with the first and second coupler fibers converging together to have a portion of each of said coupler fibers adjacent the end faces extending in parallel side by side



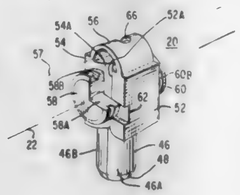
relationship with the end faces being flush and said means for holding positioning at least the third coupler fiber with its end face abutting against the end faces of the first and second coupler fibers with the improvement comprising that each of the coupler fibers having an overall diameter equal to the core diameter of the system fiber which is being connected thereto.

4,448,481

FIBER OPTIC CLAMP

Emma Basov, Des Plaines; Igor Grois, Lincolnwood; Mark Margolin, Chicago, and Alan Berg, Wood Dale, all of Ill., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 22, 1981, Ser. No. 275,846
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **18 Claims**



10. An optical fiber clamp comprising a pair only of elongate clamping portions having clamping ends, clamping surfaces adjacent said clamping ends, distal ends, and a flexible hinge portion integrally joining said clamping ends of said clamping portions and defining a hinge axis, whereby said clamp may be folded at said hinge portion by essentially relative rotation of said clamping portions substantially about said hinge axis into a fiber clamping configuration wherein said clamping portions are situated side-by-side with said clamping surfaces disposed in confronting clamping relation to one another to clamp an optical fiber between said surfaces with the fiber extending transverse to said clamping portions and with said distal ends disposed side-by-side with their adjacent sides in contact to permit retention of said clamp in said clamping configuration by exerting external forces on said distal ends only to retain said distal ends in contact.

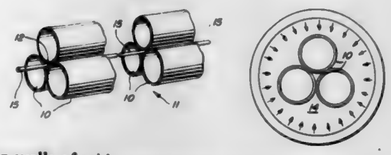
4,448,482

VARIABLE GEOMETRY OPTICAL FIBER CONNECTOR

Richard A. Lathlaen, Thousand Oaks, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 149,888, May 14, 1980, abandoned. This application Aug. 11, 1982, Ser. No. 407,192
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **32 Claims**

1. A connector for use in effecting optical signal transmissive connections between the ends of optical fibers comprising an elastomeric body having a thin-walled, fiber-receiving passageway therein; said body also having means surrounding and formed integrally with the passageway thin walls for bending



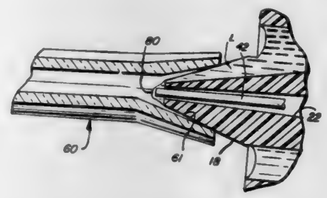
the thin walls of said passageway so as to shrink the cross-sectional area of said fiber-receiving passageway by bending the thin walls thereof inwardly, whereby optical fibers disposed in said passageway are aligned along a common longitudinal axis.

4,448,483

OPTICAL FIBER CONNECTORS WITH AUTOMATIC SUPPLY OF INDEX MATCHING FLUID AND RESERVOIRS FOR SAME

James F. Ryley, Jr., Voorhees, N.J., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 20, 1981, Ser. No. 294,693
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **23 Claims**



9. A combination comprising a guide containing a capillary passageway for receiving and aligning the ends of optical fibers in light transmissive relation; a reservoir for supplying liquid to said capillary passageway having a well for containing the liquid; said guide and reservoir being formed for interengagement and said reservoir including capillary means communicating said well and capillary passageway in the interengaged condition of said guide and reservoir, whereby liquid in said reservoir well proceeds from said well through said capillary means to said guide capillary passageway.

4,448,484

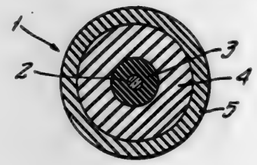
OPTICAL FIBER ELEMENT WITH THREE LAYER PROTECTIVE COVERING

Aurelio Lombardi, Monza, and Elio Occhini, Milan, both of Italy, assignors to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Mar. 31, 1982, Ser. No. 364,187
Claims priority, application Italy, Apr. 2, 1981, 20895 A/81
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.23 **12 Claims**

1. An optical fiber element for a communication cable comprising an optical fiber and three layers of plastomeric or elastomeric material surrounding said fiber along its length, a first one of said layers surrounding and being in contact with said fiber, a second one of said layers surrounding and being in contact with said first layer and a third one of said layers

surrounding and being in contact with said second layer and said second layer having a modulus of elasticity less than the



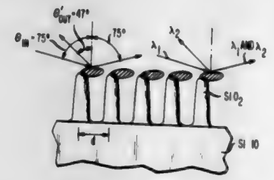
modulus of elasticity of said first layer and said third layer and having a modulus of elasticity less than one Kilogram per mm².

4,448,485

HARMONIC GENERATION USING A SURFACE OF METAL PARTICLES

John G. Bergman, Rumson; Paul F. Liao, Fair Haven, and Alexander J. Wokaun, Highlands, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 10, 1981, Ser. No. 284,609
Int. Cl.³ G02B 5/18
U.S. Cl. 350—162.2 **11 Claims**



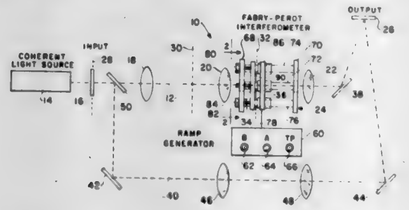
1. A device for generating second harmonic radiation from an input fundamental beam comprising an insulating substrate surface covered with metal particles characterized in that said metal particles are arranged in an ordered array of rows and columns, wherein said rows are separated by a spacing d that is less than one-half of the wavelength of the fundamental beam and greater than one-half of the wavelength of the second harmonic radiation.

4,448,486

VARYING BANDPASS OF OPTICAL SPATIAL FILTER BY ROTATING MIRRORS HAVING CHANGING REFLECTIVITY

David W. Evans, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 6, 1982, Ser. No. 337,350
Int. Cl.³ G02B 5/28; G01B 9/02
U.S. Cl. 350—162.12 **5 Claims**



1. In a system of real-time coherent optical filtering of visual imagery having a Fabry-Perot interferometer placed in an intermediate image plane of said system for use as a variable bandpass spatial filter, the improvement which comprises:

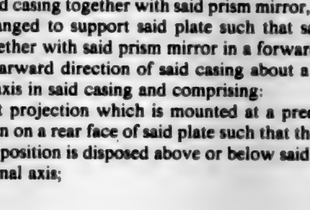
a pair of mirrors mounted in generally spaced, parallel relationship to one another in said interferometer for rotation about a common axis and each having a reflectivity value which changes as a function of rotation, whereby the bandwidth of said interferometer in acting as a spatial filter can be adjusted by merely rotating one or both of said mirrors.

4,448,487

PHOTON ENERGY CONVERSION

Jerome J. Cuomo, New York; Thomas H. DiStefano, Bronxville, and Jerry M. Woodall, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 723,857, Sep. 16, 1976, abandoned. This application May 29, 1979, Ser. No. 43,398
Int. Cl.³ G02B 1/10
U.S. Cl. 350—164 **7 Claims**



1. A photothermal absorbing member comprising a body of photon absorbing material with an index of refraction and an extinction coefficient for light impinging thereon and having;

a surface contour insuring multiple reflections of incident light;

a contour conforming reflection control region material with an index of refraction of light at a particular wavelength impinging thereon covering said body and positioned between said photon absorbing material and a source of incident light;

said photon absorbing material exhibiting a first reflectivity at said particular wavelength of light;

said reflection control region exhibiting a second reflectivity at said particular wavelength of light; and

the magnitude of said index of refraction of the material of said body, the index of refraction of said reflection control region material at said particular wavelength of light and the extinction coefficient of said body at said particular wavelength of light being such that said first reflectivity of said material and said second reflectivity of said reflection control region are equal within a variation of the order of 0.05.

4,448,488

TILTING DEVICE FOR USE IN ANTI-GLARE MIRROR

Junichi Nakaho, Ichinomiya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Sep. 27, 1982, Ser. No. 424,497
Claims priority, application Japan, Feb. 19, 1982, 57-23462[U]
Int. Cl.³ G02B 17/00; F16C 1/10
U.S. Cl. 350—278 **5 Claims**

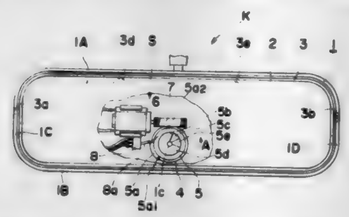
1. A tilting device for use in an anti-glare mirror including a prism mirror, a plate for holding said prism mirror fixedly secured thereto, and a casing, with the plate being accommodated in said casing together with said prism mirror, said tilting device arranged to support said plate such that said plate is tiltable together with said prism mirror in a forward direction and in a rearward direction of said casing about a horizontal rotational axis in said casing and comprising:

a contact projection which is mounted at a predetermined position on a rear face of said plate such that the predetermined position is disposed above or below said horizontal rotational axis;

a spring for urging said plate and said prism mirror about the horizontal rotational axis;

a rotary member having a cam face formed on one face thereof, which is rotatably provided at a position in said casing so as to confront said contact projection such that said contact projection is brought into sliding contact with said cam face with said one face extending in a radial direction of said rotary member;

said cam face comprising a first plane, a second plane, and a spirally inclined face interposed between said first plane and said second plane such that said first plane, said spirally inclined face and said second plane are arranged in a



circumferential direction of said rotary member so as to form a circle with said first plane being different, in level, in an axial direction of said rotary member, from said second plane; and

a reversible motor for driving said rotary member, which is provided in said casing;

whereby when said rotary member is rotated upon forward rotation or reverse rotation of said reversible motor, said contact projection is selectively brought into pressure contact with said first plane and said second plane such that said prism mirror is changed over to either one of two positions in the forward direction and in the rearward direction of said casing.

4,448,489

WIDE ANGLE LIQUID CRYSTAL DISPLAY THAT COPES WITH INTERFERENCE COLORING

Yukihiro Sato, and Yoshimichi Shibuya, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 17, 1982, Ser. No. 378,745
Claims priority, application Japan, May 22, 1981, 56-76510
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—330 **2 Claims**



1. A liquid crystal display device assembly comprising:
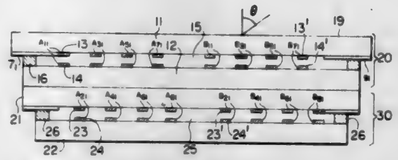
a first liquid crystal display device including a pair of substrates having electrodes in a dot-matrix pattern and a TN liquid crystal layer sandwiched between said substrates; and a second liquid crystal display device disposed in laminated relation with said first liquid crystal display device and including a pair of substrates having electrodes in a segment pattern and a TN liquid crystal layer sandwiched between said last-mentioned substrates, wherein the product of refractivity anisotropy Δn and thickness d of the liquid crystal layer of said first liquid crystal display device is smaller than 0.6 μm, and the product of refractivity anisotropy Δn and thickness d of the liquid crystal layer of said second liquid crystal display device is 0.6 μm or more.

4,448,490

LIQUID CRYSTAL MATRIX DISPLAY CELLS PILED WITH NON-OVERLAPPING DISPLAY ELEMENTS

Yoshimichi Shibuya, and Masami Takahashi, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,867
Claims priority, application Japan, Apr. 23, 1980, 55-52969
Int. Cl.³ G02F *1/33*
U.S. Cl. 350—335 **7 Claims**



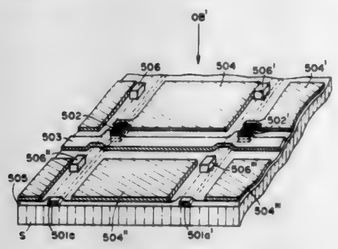
3. A liquid crystal display device having a plurality of display sections arranged in at least one row, each of said display sections being formed of a plurality of common electrodes divided into a plurality of groups and a plurality of segment electrodes corresponding to said common electrodes and divided into a plurality of groups, common electrodes included in the corresponding common electrode groups in said plurality of display sections being connected in common to a single common electrode lead, said single common electrode lead including plural lead sections connecting said common electrode and also said display sections, segment electrodes included in each segment electrode group in respective ones of said display sections being connected to a single segment electrode lead, said single segment electrode lead including plural lead sections connecting said segment electrodes, wherein said liquid crystal display device includes a plurality of liquid crystal display elements piled in the direction perpendicular to a display surface of said liquid crystal display device, each of said liquid crystal display elements comprising first and second transparent substrates arranged opposite to each other, a liquid crystal material disposed between said first and second substrates, common electrodes belonging to selected groups of said common electrode groups, said common electrodes of said selected groups being formed on an inner surface of said first substrate, segment electrodes corresponding to said common electrodes of said selected groups, said segment electrodes being formed on an inner surface of said second substrate, a power source for selectively applying voltages having predetermined waveforms between said common electrodes of said selected groups and said segment electrodes corresponding to said common electrodes of said selected groups to drive said liquid crystal display element in a time divisional fashion, wherein two of said liquid crystal display elements are provided, said elements being piled to form a two-layer structure, and in each of said display sections, said common electrodes and segment electrodes are arranged to form a matrix having a plurality of rows and columns, and said common electrodes are grouped to every one of said rows, wherein a first one of said first liquid crystal display elements is provided with common electrodes arranged in odd-numbered rows and with segment electrodes corresponding to said common electrodes in said odd-numbered rows, and a second one of said second liquid crystal display elements is provided with common electrodes arranged in even-numbered rows and with segment electrodes corresponding to said common electrodes in said even-numbered rows.

4,448,491

IMAGE DISPLAY APPARATUS

Yukitoshi Okubo, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,524
Claims priority, application Japan, Aug. 8, 1979, 54-101120; Aug. 10, 1979, 54-102485; Sep. 3, 1979, 54-112645; Sep. 6, 1979, 54-114422; Oct. 16, 1979, 54-133407
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—344 **12 Claims**



1. A display apparatus comprising: a first substrate having a driving thin film transistor array including a plurality of gate lines insulated from each other, thin film semiconductors isolated from the gate lines by an insulating layer, source lines contacting said thin film semiconductors and insulated from said gate lines, and drain electrodes contacting said thin film semiconductors and serving as picture elements and a second substrate having a counter electrode film, said substrates facing each other, whereby display by an electro-optical change generated between said two substrates may be performed, and wherein a plurality of separate thin films, each covering only a small portion of the total area of said apparatus, are disposed between the first substrate and the second substrate, and are arranged along at least one of said gate lines and said source lines as spacers formed by forming a film of an insulating material different from said insulating layer on at least one of said first and second substrates and then etching said film of the insulating material to form a plurality of said spacers.

4,448,492

CYCLOALKYL-TYPE ISOTROPIC DYES FOR LIQUID CRYSTAL DISPLAY DEVICES

William A. Huffman, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 23, 1982, Ser. No. 452,812
Int. Cl.³ G02F *1/13*; C09K *3/34*
U.S. Cl. 350—346 **12 Claims**

1. A composition of matter comprising a nematic, smectic or cholesteric liquid crystal material, at least one dichroic dyestuff, and an isotropic dyestuff having the general formula

$$(Y)_n{=}C{=}(X)_m$$

wherein:

Y is independently selected from the group consisting of a 9-anthron-10-ylidene (anthracene-one) group, an indene-1', 3'-dion-2'-ylidene (phthalone) group, or a 4-oxo-2, 5-cyclohexadien-1-ylidene (quinonoid benzene ring) group, provided that when Y is a quinonoid benzene ring, it is substituted with one or two alkyl substituents of about 1 to 20 carbon atoms in the ortho positions relative to the oxygen of the quinonoid benzene ring;

C is independently selected from the group consisting of a cyclopropyl and a cyclobutyl ring;

X is independently selected from the group consisting of Y or an oxygen atom;

n is 1 to 3 when C is a cyclopropyl ring, and 1 to 4 when C is a cyclobutyl ring; and

m is 3-n when C is a cyclopropyl ring, and 4-n when C is a cyclobutyl ring,

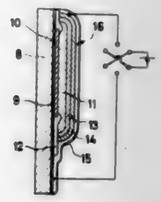
wherein said isotropic dyestuff has an optical order parameter of about 0.

4,448,493

ELECTROCHROMIC DISPLAY DEVICE

Nagahisa Matsudaira, Tokyo; Kaneki Yoshida, Urawa; Kenzo Fukuyoshi, Tokyo, and Kiyoshi Masui, Asaka, all of Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Feb. 24, 1982, Ser. No. 351,953
Claims priority, application Japan, Feb. 25, 1981, 56-26358; Jun. 1, 1981, 56-83969; Jun. 8, 1981, 56-87760
Int. Cl.³ G02F *1/01*; H01G *9/20*
U.S. Cl. 350—357 **14 Claims**



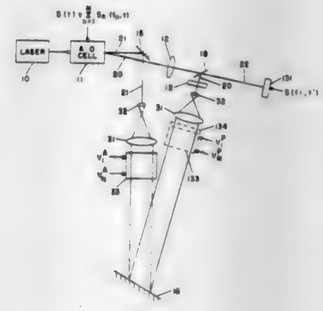
1. An electrochromic display device having at least an electrochromic layer containing a transition metal oxide and a solid proton conductive layer disposed between a transparent electrode and a counter electrode, characterized in that a main component of said solid proton conductive layer is a member selected from the group consisting of titanic acid, stannic acid, antimonic acid, zirconic acid, niobic acid, tantalic acid, silicic acid and mixtures thereof.

4,448,494

ACOUSTO-OPTICAL SIGNAL DETECTOR

Frederick W. Freyre, Wantagh, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,577
Int. Cl.³ G02F *1/11*
U.S. Cl. 350—358 **8 Claims**



1. In an apparatus for detecting frequency components of a signal, said apparatus having:

(a) first means for converting a supplied signal into corresponding acoustic waves propagating through a medium, said first means comprising an acousto-optical cell having a transducer to which the signal is applied and an absorber; and

(b) second means for optically detecting the frequency components of the corresponding acoustic waves, whereby

the frequency components correspond to the components of the signal, said second means comprising:

(1) means for providing coherent light incident on said cell at an acousto-optical angle;

(2) a Fourier Transform element for focusing light diffracted by said cell;

(3) means for focusing undiffracted light from said means for providing; and

(4) means for detecting the frequency difference between the diffracted light focused by said element and the undiffracted light focused by said means for focusing;

the improvement comprising: means for deflecting the undiffracted light incident on said means for detecting thereby controlling the position at which said undiffracted light is incident upon said means for detecting.

4,448,495

ZOOM LENS SYSTEM CAPABLE OF VERY CLOSE RANGE PHOTOGRAPHY

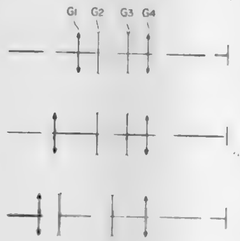
Kiyoshi Hayashi, Yokohama, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,436

Claims priority, application Japan, Mar. 25, 1981, 56-43486

Int. Cl.³ G02B *15/18*

U.S. Cl. 350—428 **7 Claims**



1. A zoom lens system capable of very close range photography and comprising, in succession from the object side, a convergent first lens unit stationary during zooming and moved on the optical axis during focusing, a divergent second lens unit which is a variator moved on the optical axis during zooming, a divergent third lens unit which is a compensator moved on the optical axis during zooming, and a convergent fourth lens unit which is a master lens stationary during zooming, and wherein focusing in a normal photographing distance range is effected by moving said first lens unit which is a focusing lens unit in the direction of the optical axis, characterized in that when focusing to an object lying at a shorter distance than said normal photographing distance, all of said first lens unit, said second lens unit and said third lens unit are moved toward the object side in the direction of the optical axis, thereby effecting very close range focusing, said system satisfying the following conditions:

$$0.23<|f_2/f_1|<0.67 \quad (1)$$

$$0.62<|f_3/f_1|<1.19 \quad (2)$$

$$1.5<x_2'/x_1'<7.5 \quad (3)$$

$$0.45<x_3'/x_1'<2.7 \quad (4)$$

where x_1' is the amount of movement of said first lens unit (G1) from its reference position in the shortest focal length condition when focused to an object lying at a shorter distance than a normal close range, x_2' is the amount of movement of said second lens unit (G2) for focusing, x_3' is the amount of movement of said third lens unit (G3) for focusing, f_1, f_2 and f_3 are the focal lengths of said first lens unit (G1), said second lens unit (G2) and said third lens unit (G3), respectively.

4,448,496

ZOOM LENS ASSEMBLY HAVING A MECHANICAL LENS SYSTEM MOUNTING MECHANISM OPERATIVE TO ENABLE CLOSEUP OPERATION

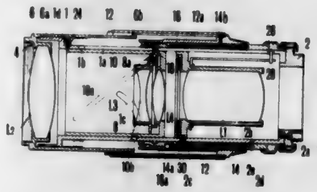
Takashi Isobe, Kanagawa, and Shigeru Kamata, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 192,828, Oct. 1, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,716

Claims priority, application Japan, Oct. 11, 1979, 54-131126; Dec. 13, 1979, 54-161871

Int. Cl.³ G02B *7/10*

U.S. Cl. 350—430 **4 Claims**



1. A zoom lens assembly capable of selectively performing a zooming operation and a closeup operation, comprising:

(a) a single operational member for effecting focusing by rotation thereof around the optical axis of said lens assembly, and for effecting zooming operation by axial movement thereof;

(b) first and second lens mounting members containing a first movable lens group and second movable lens group;

(c) a lens barrel member having first and second guide means for controlling movement of said first and second lens mounting members in response to axial movement of said single operational member so as to perform said zooming operation, and third guide means associated with said first guide means to effect said closeup operation;

(d) an intermediary sleeve connected to said single operational member so as to be freely rotatable around the optical axis and arranged to move together with said single operational member in the axial direction;

(e) means for controlling movement of said first and second lens mounting members by movement of said single operational member along the optical axis, said control means unitarily combining said first lens mounting member with said intermediary sleeve so as to move the first lens mounting member along the first and third guide means of the lens barrel and to move the second lens mounting member along the second guide means of the lens barrel;

(f) first connecting means between said single operational member and said intermediary sleeve, said first connecting means connecting said single operational member to said intermediary sleeve when said single operational member is rotated toward the closeup range from the focusing range so as to make the first and second lens mounting members movable to the closeup range by rotation of said intermediary sleeve around the optical axis; and

(g) second connecting means between said single operational member and said intermediary sleeve, said second connecting means connecting said intermediary sleeve to said single operational member when said single operational member is moved toward the zooming range from the closeup range so as to restore the intermediary sleeve to the zooming range and to release the connection when the single operational member comes into the zooming range.

4,448,497

GREAT APERTURE RATIO LENS

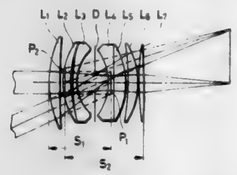
Koichi Wakamiya, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,564

Claims priority, application Japan, Mar. 31, 1981, 56-47849

Int. Cl.³ G02B *9/62*

U.S. Cl. 350—464 **9 Claims**



1. A great aperture ratio lens having a long back focal length and high aperture efficiency and being good in aberration balance, including a first lens which is a positive meniscus lens having its convex surface facing the object side, a second lens which is a positive meniscus lens having its convex surface facing the object side, a third lens which is a negative meniscus lens having its convex surface facing the object side, a fourth lens which is a negative lens having its concave surface facing the object side, a fifth lens which is a positive lens having its convex surface facing the image side, a sixth lens which is a positive meniscus lens having its convex surface facing the image side, and a seventh lens which is a positive lens, said fourth lens and said fifth lens being cemented to each other, said great aperture ratio lens satisfying the following conditions:

$$0.74f<l<0.88f \quad (1)$$

$$0.94<\frac{r_1}{f_1}+\frac{r_3}{f_2}<1.05 \quad (2)$$

$$0.45<\frac{|r_{11}|}{f_6}<0.70 \quad (3)$$

$$0.65<r_1/f_1<0.75 \quad (4)$$

$$1.35<r_3/r_6<1.52 \quad (5)$$

$$1.17<f_2/f_1<1.51 \quad (6)$$

where

r_i: radius of curvature of the ith surface from the object side

d_i: distance between the ith surface from the object side and the next surface

n_i: refractive index of the ith lens from the object side

ν_i: Abbe number of the ith lens from the object side

f_i: focal length of the ith lens from the object side

l: full length of the lens (distance from the foremost lens surface on the object side to the rearmost lens surface on the image side).

4,448,498

OPERATION MICROSCOPE

Ortwin Muller; Klaus Biber, both of Aalen; Heinz Jakubowski, and Gerhard Hanemann, both of Oberkochen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

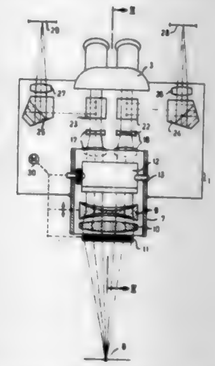
Filed Jan. 29, 1982, Ser. No. 343,943

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105018

Int. Cl.³ G02B *21/02, 21/22, 13/10*

U.S. Cl. 350—516 **7 Claims**

1. An operation microscope having an observation-ray path and comprising a microscope housing and means for rigidly mounting the same to fixed supporting structure, at least one observation tube fixed to said housing, an objective housing swingably connected to said microscope housing, an objective carried within said objective housing, means for selectively varying the back focus of said objective, means including a pair of wedges rotatably carried by said objective housing on said



ray path and in front of said objective, and means for selectively angularly positioning said wedges with respect to each other whereby the magnitude and direction of lateral offset of the observation-ray path external to said objective may be selectively controlled, with respect to the optical axis of said objective.

4,448,499

IMAGE TRANSMITTER FOR COPYING APPARATUS OF SLIT EXPOSURE SCANNING TYPE

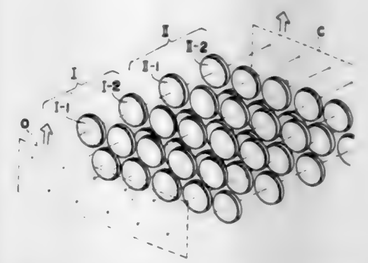
Hisashi Tokumaru, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1981, Ser. No. 265,795

Claims priority, application Japan, May 25, 1980, 55-72399

Int. Cl.³ G02B *27/00*

U.S. Cl. 350—573 **16 Claims**



1. In a copying apparatus of a slit exposure scanning type in which an original and an image recording member are correlatively movable in a scanning direction relative to an image transmitter optically positioned therebetween so that images of successive striped portions of the original extending in a direction transverse to the scanning direction are scanned and projected onto the image recording member successively by the image transmitter to thereby form a complete image of the original, the image transmitter comprising a plurality of rows of erecting lens systems arranged in a transverse direction, each erecting lens systems including on its optical axis a first and second lens element for temporarily forming an inverted real image of the original and a third and fourth lens elements for relaying the inverted real image to finally form an erecting real image of the original on the image recording member, all of the first to fourth lens elements are biconvex symmetric lens

elements, wherein the images formed by the respective erecting lens systems partially overlap each other on the image recording member and the image transmitter fulfills the following conditions:

$$0.45 < l/\beta_M < 0.7$$

$$0.05 < l/D < 0.35$$

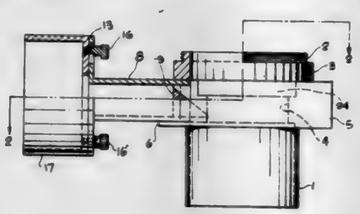
wherein: β_M represents the magnification of the inverted real image formed by the first and second lens elements, D represents the maximum effective aperture of the lens system, and l represents the distance between respective edges of the maximum effective apertures of two adjacent erecting lens systems along the transverse direction.

4,448,500

TELESCOPE GUIDER

John B. Marling, 2111 Research Dr., #5, Livermore, Calif. 94550, and Thomas K. Heath, Canyon Country, Calif., assignors to John Beaton Marling, Livermore, Calif.

Filed Oct. 1, 1981, Ser. No. 307,585
Int. Cl.[3] G02B *23/04, 23/16, 27/10*
U.S. Cl. 350—574 8 Claims



1. Guiding apparatus for a telescope having an optical field of substantially circular cross section and a camera focused along the optic axis, comprising:

means for bending rays of light from a peripheral portion of the optical field of the telescope into a direction away from the optic axis, said means being attached to said telescope in front of the camera and intercepting the light from said portion of the optical field, wherein said portion substantially occupies the region outside a chord across said field whose length is less than the diameter of said optical field, but is not substantially less than one-half the diameter of the field; and

means for observing the image of the field portion intercepted by said bending means;

wherein said observing means comprises a support holding an eyepiece through which said image is observed, wherein said support is adjustably attached to said bending means in a manner such that the position of said eyepiece may be varied along a direction perpendicular to the eyepiece axis and lying in the plane of the eyepiece axis and optic axis, and wherein said support comprises:

a plate attached to said bending means, having a plurality of holes;

an eyepiece holder having a plane surface slidably contiguous to said plate, said surface having a plurality of holes aligned with said plate holes, wherein at least one of each pair of aligned holes is elongated in said direction of eyepiece adjustment; and

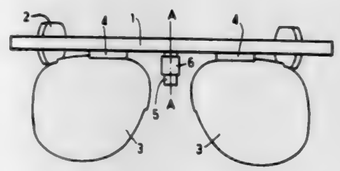
a plurality of screw fastener members, each member fitting into one pair of said aligned holes, such that said holder may be thereby adjusted and fastened against said plate.

4,448,501

EYE GLASSES FOR EXPERIMENTATION AND TESTING

Jean Cogez, Paris, France, assignor to Essilor International (Compagnie Generale d'Optique), Creteil, France

Filed Apr. 13, 1982, Ser. No. 367,958
Claims priority, application France, Apr. 13, 1981, 81 07359
Int. Cl.[3] G02C *5/04, 5/12;* A61B *3/04*
U.S. Cl. 351—128 6 Claims



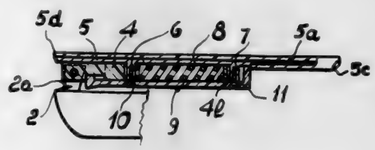
1. Eye glasses for experimentation and testing of the type comprising a frame on which adjustable lens holders are shifted to allow eye testing of a patient to be provided with eye glasses having different corrective lenses, and with different positions of said lenses relative to the eyes of the patient, with said frame comprising a frontal mounting provided with two eye glass sidepieces and on which slide, in a longitudinally adjustable manner, two lens carriers, and the mounting is extended downwardly in its central portion in the direction of the patient's nose by a bar of short length and on which slides a vertically adjustable support, adapted to engage the patient's nose or the eye glasses he must wear during the test, characterized in that said bar (5) has a portion with two non-parallel faces (10) which form a wedging bevel and on which two conjugate faces (11) of the adjustable support (6) engage under the action of an elastic means (8) to maintain the adjustable support (6) in position by wedging.

4,448,502

SPREADABLE BAR FOR EYEGLASS FRAMES PROVIDED WITH A SPRING HINGE

Giuseppe Tota, Agordo (Belluno), Italy

Filed Jun. 29, 1981, Ser. No. 278,169
Claims priority, application Italy, Oct. 16, 1980, 3810 B/80[U]
Int. Cl.[3] G02C *5/16*
U.S. Cl. 351—153 3 Claims



1. An eyeglass frame having a base at each side thereof and a spring hinge assembly for each base, each spring hinge assembly including:

(A) a base,

(B) a bar,

(C) a spring hinge joining said bar to said base, said spring hinge comprising:

(i) a cavity at the proximal end of said bar, said cavity having an open end facing said base,

(ii) a projection extending away from the base of said cavity,

(iii) a guiding and hinge portion, said guiding and hinge portion constituting:

(a) a cavity-defining means slidable in the cavity at the proximal end of the bar and including a closed wall at its distal end,

(b) a slender hinge end protruding from the cavity-defining means at the proximal end thereof,

(c) means pivotally connecting the hinge end to the base,

(iv) a spring within the cavity-defining means, said spring having one end abutting the projection and the other end abutting the closed wall of the cavity-defining means, said spring being of helical configuration and under compression, and

(D) a cover having a skirt located within the cavity in the bar and a base overlying the cavity-defining means and including means securing the cover to the bar,

(E) whereby the spring hinge permits the bar to be spread horizontally beyond normal open use position and to be angled vertically away from normal open use position, the latter by horizontal flexure of the slender hinge end,

(F) the front corner of the bar abutting the base to limit outward angling movement of the bar in a horizontal plane beyond normal use postion,

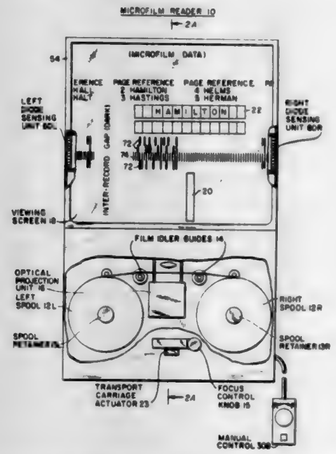
(G) the hinge and guiding portion being of synthetic resilient plastic.

4,448,503

AUTOMATIC HIGH SPEED MICROFILM SEARCHING SYSTEM

Norman N. Axelrod, New York, N.Y.; Peter Haas, Ridgewood, N.J., and Rainer Noess, Goshen, Mass., assignors to Information Retrieval Systems Corp., New York, N.Y.

Filed Apr. 21, 1981, Ser. No. 256,140
Int. Cl.[3] G03B *23/12*
U.S. Cl. 353—26 A 11 Claims



1. An automatic high speed microfilm searching system for locating a desired frame of microfilm employing a microfilm reader which rapidly transports the microfilm by means of a film drive and control unit from one spool to another past an optical projection unit which projects the optically-recorded images from the microfilm onto a viewing screen, each frame consisting of information data and index data, the index data comprising a sequence of vertically-aligned data bar groups, each vertical data group repesenting all or part of a character of a sequence of characters of a unique index code for the associated frame, with a synchronization bar vertically positioned near said vertical data groups, said system comprising:

(a) a bar sensing unit comprising a plurality of vertically-aligned data bar sensors and a plurality of synchronization bar sensors vertically-aligned with said data bar sensors, with at least two data bar sensors adapted to sense each of the data bars of a vertical group and at least two synchronization bar sensors adapted to sense the synchronization bar;

(b) said bar sensing unit being fixedly positioned within the field of focus of the optically-projected images of the data bars and synchronization bar;

(c) one or more of the plurality of synchronization bar sensors sensing the synchronization bar, depending on whether the synchronization bar is high, low or centrally positioned vertically;

(d) position determining means responsive to each of the plurality of synchronization bar sensors to determine whether the sensed synchronization bar is high, low or centrally positioned vertically;

(e) data bar signal selecting means responsive to each of the plurality of data bar sensors and to said position determining means to select the data bar signals from the data bar sensors corresponding in vertical position to the synchronization bar sensor which sensed the synchronization bar;

(f) computer means responsive to selected data bar signals representing a plurality of characters of the index code and to signals repesenting the desired frame index code to cause said film drive and control unit to stop said desired frame adjacent the optical projection unit to project the information on said desired frame onto said viewing screen; and

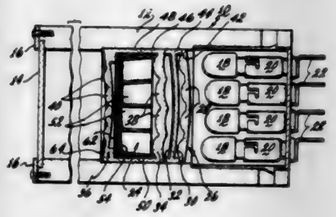
(g) a plurality of pairs of synchronization bars, each half the width of a data bar, with each pair positioned vertically adjacent a vertical data group, and further including storage means responsive to the transition between each pair of synchronization bars to store the data represented by the associated vertical data group.

4,448,504

REAR END PROJECTION SYSTEM EMPLOYING ASPHERICAL LENSES

Richard M. Altman, Woodland Hills, Calif., assignor to Industrial Electronic Engineers, Inc., Van Nuys, Calif.

Filed Nov. 18, 1981, Ser. No. 322,516
Int. Cl.[3] G03B *21/26*
U.S. Cl. 353—36 16 Claims



1. A character projection unit for projecting on a screen images of characters on a film, including,

a plurality of light sources mounted in side-by-side relation, the light sources constituting filament lamps at least some of which have misaligned filaments,

a plurality of condensor lenses mounted in side-by-side relation and having oppositely disposed first and second surfaces,

a first plurality of projection lenses mounted in side-by-side relation between the condensor lenses and the screen and having oppositely disposed first and second surfaces and having aperture stops of particular dimensions,

means for supporting the film at a position between the condensor lenses and the projection lenses in the first plurality,

at least one condensor lens plate in which is disposed the plurality of individual condensing lenses, and

at least one projection lens plate in which is disposed the plurality of individual projection lenses,

a plurality of complete projection systems each including an individual one of the condensor lenses formed in the condensor lens plate and a corresponding one of the individual projection lenses formed in the projection lens plate, and

at least one of the lens surfaces of each of the condensor lenses and projection lenses being formed as an aspheric surface for providing for the focusing of the light from the misaligned filaments of the filament lamps on the film and for assuring the passage of substantially the entire images from the film through the apeture stops of the particular dimensions on the projector lens and for the focusing of the images from the film on the screen.

4,448,505

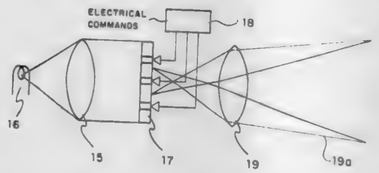
ARRANGEMENT FOR ADDRESSING RAYS OR PLANES OF LIGHT IN SPACE

Paul DiMatteo, Huntington, N.Y., assignor to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Sep. 24, 1982, Ser. No. 423,197

Int. Cl.³ G03B *21/02*; G01B *11/24*

U.S. Cl. 353—122 **7 Claims**



1. An arrangement for projecting a sequence of coded patterns onto an object surface, comprising: code generation means having a plurality of electrically addressable light attenuation regions with a single light source for irradiating said code generation means; each region of low attenuation resulting from addressing producing illumination of a corresponding part of said projected coded pattern; said coded pattern being projected onto the object surface by passing electromagnetic radiation through said code generation means.

4,448,506

EXPOSURE CONTROL DEVICE OF A CAMERA

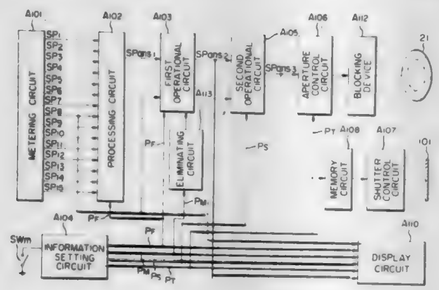
Takashi Saegusa, Sagamihara; Osamu Maida, Tokyo, and Toru Fukuhara, Isehara, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 141,886, Apr. 21, 1980, abandoned. This application Jul. 7, 1982, Ser. No. 396,060

Claims priority, application Japan, Apr. 27, 1979, 54-51527; May 1, 1979, 54-52470; Jun. 15, 1979, 54-75419

Int. Cl.³ G03B *7/087, 7/097, 17/18*

U.S. Cl. 354—431 **21 Claims**



1. An exposure control device of a camera having aperture control means for varying an aperture of a phototaking lens, said device comprising:

first metering means for effecting metering while dividing an object into a plurality of metering areas and for generating a first metering output determining an exposure of the object on the basis of a plurality of photoelectric outputs corresponding to said areas;

second metering means for metering said object through said aperture to generate a second metering output;

first operational means for generating a first operation output including information on the difference between said first metering output and said second metering output;

second operational means for adding said second metering output during operation of said aperture control means and said first operation output and generating a second operation output; and

blocking means for blocking said operation of said aperture control means when said second operation output and an output corresponding to a preset shutter speed assume a predetermined relation.

4,448,507

CAMERA

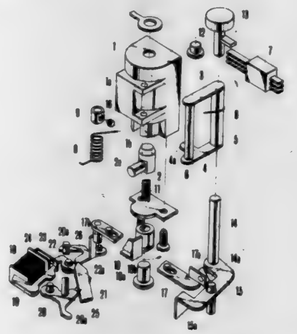
Akio Sunouchi, Tokyo; Ryuji Suzuki, Kanagawa; Toshikazu Ichiyanagi, and Masahisa Fujino, both of Tokyo, all of Japan, assignors to Minigrip, Inc., Orangeburg, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,253

Claims priority, application Japan, Jun. 22, 1981, 56-96412

Int. Cl.³ G03B *1/12, 17/38*

U.S. Cl. 354—173 **7 Claims**



1. A camera capable to changing over between electrical release and mechanical release operation, comprising:

(a) a release member for actuation of a camera release operation;

(b) an electromagnetic release mechanism for electromagnetically controlling the operation of said release member;

(c) a mechanical release mechanism for mechanically controlling the operation of said release member;

(d) changeover means for changing over the functional connection of said release member from with one of said electromagnetic release mechanism and said mechanical release mechanism to the other;

(e) control means alternately switched between a first position where said electromagnetic release mechanism is rendered operative and a second position where the winding operation is rendered possible,

said control means assuming said first position when the winding operation is terminated, and said second position when the exposure operation is terminated;

(f) operating means for actuating said electromagnetic release mechanism or said mechanical release mechanism depending upon the switched position of said changeover means,

said operating means being movable between a first position where a releasing operation is carried out and a second position where the releasing operation is not carried out; and

(g) means responsive to establishment of a functional connection between said release member and said mechanical release mechanism by said changeover means for hindering said control means from being switched to said second position when said operating means is in said first position, and for permitting said control means to be switched to said second position when the operating means is in said second position.

4,448,508

CUT FILM CASSETTE WITH TWO FILM CHAMBERS

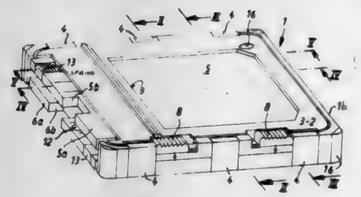
Walter Bauer; Heinrich Färber, and Jürgen Müller, all of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,971

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3119977

Int. Cl.³ G03B *17/26*

U.S. Cl. 354—281 **28 Claims**



1. A cassette for simultaneous reception of two cut films, comprising a centrally disposed partition having at least substantially mirror symmetrical first and second sides spaced-apart and first and second marginal portions; at least substantially identical first and second covers; first and second coupling means for movably connecting the respective covers to said partition so that each cover is movable between a first position in which it is remote from and a second position in which it is adjacent to and defines with the respective side of said partition a discrete film chamber; and first and second locking means for releasably holding the respective covers in their second positions, said first and second locking means being respectively disposed in the regions of said second and first marginal portions of said partition, wherein each of said covers has an exposure aperture, and further comprising first and second shutters installed in the respective covers, each of said shutters being movable between first and second positions in which the corresponding aperture is respectively exposed and closed.

4,448,509

INTERCHANGEABLE LENS BARREL WITH SIGNAL TRANSFER CONTACTS

Makoto Katsuma, Kanagawa; Shigeru Kamata, Tokyo; Syuichiro Saito, Kanagawa; Masaharu Kawamura, Kanagawa, and Akira Akashi, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,136

Claims priority, application Japan, Oct. 26, 1981, 56-171237[U]; Oct. 26, 1981, 56-171238; Oct. 26, 1981, 56-159528[U]

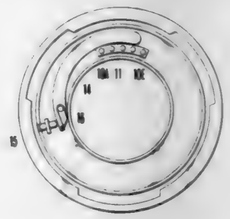
Int. Cl.³ G03B *17/00, 17/14*

U.S. Cl. 354—286 **5 Claims**

1. An interchangeable lens barrel, comprising:

(a) signal transfer means for transferring signals between a part of the interchangeable lens barrel and an imaging apparatus, and coupling means arranged to permit said part of the interchangeable lens barrel to be attached to and detached from the imaging apparatus; and

(b) a protection member for protecting said signal transfer means, said protection member being arranged to cover



the signal transfer means when said part of the interchangeable lens barrel is detached from the imaging apparatus, and to be retracted away from the signal transfer means when said part of the interchangeable lens barrel is mounted on the imaging apparatus.

4,448,510

CAMERA SHAKE DETECTION APPARATUS

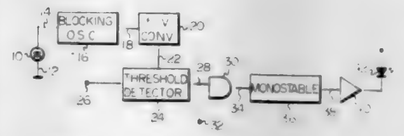
Makoto Murakoshi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 14, 1982, Ser. No. 434,341

Claims priority, application Japan, Oct. 23, 1981, 56-169589

Int. Cl.³ G03B *17/18*

U.S. Cl. 354—289.12 **20 Claims**



1. Apparatus for detecting a camera shaking comprising:

acceleration sensing means mounted in the camera for sensing acceleration due to shaking of the camera to produce an electrical signal associated with the acceleration sensed;

alarm indicator means for indicating an alarm; and

control circuit means connected to said acceleration sensing means for comparing the electrical signal with a threshold signal level, said control circuit means being operative in response to releasing of a shutter of the camera to enable said alarm indicator means when the electrical signal exceeds the threshold, whereby said alarm indicator means indicates an alarm representative of the possibility of blur occurring due to shaking of the camera in an image taken by the camera.

4,448,511

ELECTROPHOTOGRAPHIC RECORDING APPARATUS WITH CORONA-DISCHARGE DEVICE HAVING COVER MEANS BETWEEN END OF DISCHARGE WIRE AND ELECTROPHOTOSENSITIVE SURFACE

Keiji Masuda, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1981, Ser. No. 328,748

Claims priority, application Japan, Dec. 18, 1980, 55-182775

Int. Cl.³ G03G *15/02*

U.S. Cl. 355—3 CH **11 Claims**

1. An electrophotographic recording apparatus, comprising:

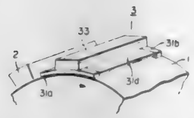
an electrophotosensitive means having an electrophotosensitive surface;

a corona discharge device located adjacent said electropho-

tosensitive surface, said corona discharge device including at least one elongated discharge wire spaced from said electrophotosensitive surface and extending along a dimension of said electrophotosensitive surface, said discharge wire having opposite ends;

said electrophotosensitive surface being movable relative to said corona discharge device; and





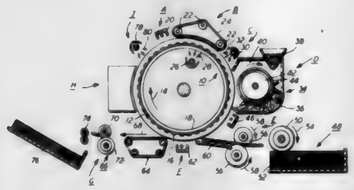
said corona discharge device including covering means at least at each end of said discharge wire for substantially covering the space between said discharge wire and said electrophotosensitive surface at each end of said discharge wire, said covering means extending from said discharge wire and extending toward said electrophotosensitive surface, said covering means having contact portions contacting with said electrophotosensitive surface.

4,448,512

LIGHT MEANS FOR EXPOSING AND LIGHT MEANS FOR DISCHARGING IN A ELECTROPHOTOGRAPHIC PRINTING MACHINE

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 19, 1982, Ser. No. 379,610
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **11 Claims**



1. An electrophotographic printing machine, including:

a photoconductive member;

means for charging said photoconductive member;

means, in communication with said photoconductive member, for forming a non-uniform charge pattern on said photoconductive member and optically filtering light rays transmitted thereto;

means for exposing the non-uniform charge pattern with a light image to record a latent image on said photoconductive member with the light image being substantially attenuated by said forming and filtering means; and

means for transmitting light rays onto selected portions of said photoconductive member to discharge selected regions of the charge pattern with the light rays being of a bandwith selected to be substantially unattenuated by said forming and filtering means.

4,448,513

IMAGE INFORMATION RECORDING APPARATUS

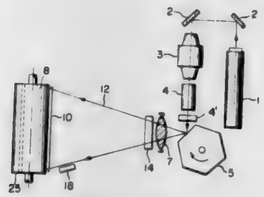
Kazuhiro Hirayama, Yokohama; Yasushi Sato, Kawasaki; Noritaka Mochizuki, Yokohama, and Katsumi Masaki, Kodaira, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 935,987, Aug. 22, 1978, Pat. No. 4,257,701, which is a division of Ser. No. 850,348, Nov. 10, 1977, Pat. No. 4,122,462, which is a continuation of Ser. No. 611,783, Sep. 9, 1975, abandoned. This application Nov. 19, 1980, Ser. No. 208,313

Claims priority, application Japan, Sep. 11, 1974, 49-104738; Sep. 13, 1974, 49-105631; Oct. 1, 1974, 49-112925; Jan. 24, 1975, 50-10286

The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.

Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 **10 Claims**



1. An image information recording apparatus, comprising:

means for reading an image carried on an image carrying member and for generating a first electric signal representing the image, said reading and first signal generating means including means for projecting light to the image carrying member in an elongate projection area extending across the image carrying member, means for moving the light projected by said projecting means in a direction substantially perpendicular to the length of the elongate projection area, and photoelectric transducer means for receiving the projected light from the image carrying member to generate a first electric signal representative of the image;

means for combining the first electric signal with a second electric signal representing information to be recorded, which is different from the image of said image carrying member, to form a third electric signal;

means for generating a laser beam modulated in accordance with the third electric signal; and

means for scanning a recording medium with the laser beam.

4,448,514

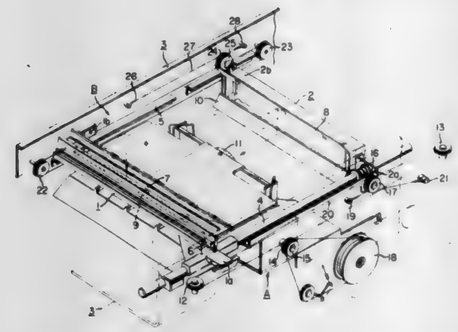
SPLIT EXPOSURE OPTICAL SYSTEM FOR COPYING MACHINE

Yozo Fujii; Hirofumi Sakaguchi, and Tsugio Hirabayashi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 363,917
Claims priority, application Japan, Apr. 25, 1981, 56-63156
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—8 **2 Claims**

1. In a slit exposure optical system for a copying machine of the type having a frame supporting a primary movable table provided with a scanning slit and a first mirror for reflecting an incident image from said slit upon a second mirror on a secondary movable table, with means including a driving wire interconnecting the same respective ends of said tables for moving the secondary table at half the speed of the previous table, the improvement comprising means interconnecting the respective opposite ends of said tables for insuring that said opposite ends move relatively to one another in the same manner as the

driven ends, said last means including a sheave mounted on the opposite end of said secondary table and a supplementary wire



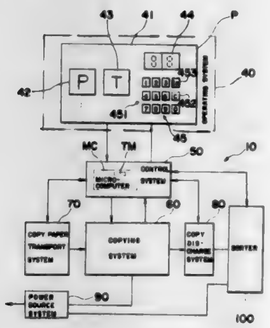
attached at its opposite ends to said supporting frame and intermediate its ends extending about said sheave.

4,448,515

CONTROL ARRANGEMENT FOR CONTINUOUS COPYING

Takuma Ishikawa, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 21, 1982, Ser. No. 390,563
Claims priority, application Japan, Jun. 27, 1981, 56-99894
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **9 Claims**



1. In a copying apparatus having a multi-copying mode for effecting a continuous copying function in correspondence with numerical values preliminarily set therein, a control arrangement for controlling functioning of said copying apparatus which comprises;

a first switching means for starting ordinary copying functioning,

a second switching means for causing the copying apparatus to function in a trial copy mode,

a timer means for starting a subsequent copying function after a lapse of a predetermined period of time subsequent to termination of an initial copying functioning when the copying functioning is executed in the trial copy mode, and

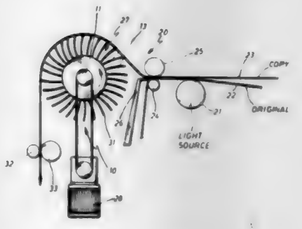
a control means for starting the ordinary copying functioning selectively by a time-up signal of said timer means or by start signal from said first switching means during timer functioning of said timer means.

4,448,516

DEVELOPER ROLL

Jonathon S. Arney, and Richard F. Wright, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 13, 1982, Ser. No. 397,681
Int. Cl.³ G03B *27/32, 27/52*
U.S. Cl. 355—27 **15 Claims**



1. Image-developing apparatus for use in combination with a color-producing substrate; said substrate including a coating composition which contains a chromogenic material and a developer material, said chromogenic material being isolated from said developer material in said chromogenic material and said developer material being co-reactive with said chromogenic material to form a color; said image developing apparatus comprising:

(a) means for image-wise exposing said color producing substrate;

(b) means for advancing said exposed substrate to the developing section of said image-developing apparatus;

(c) a developer roll for releasing said isolated chromogenic material, in the absense of rupturing pressure, by burnishing the surface of said substrate; and

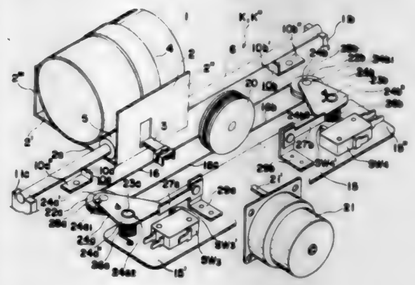
(d) drive means for actuating said developer roll.

4,448,517

DRIVE CONTROLLING MECHANISM OF OPTICAL MEMBER FOR USE IN COPYING APPARATUS

Masamichi Hayashi, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 8, 1982, Ser. No. 396,474
Claims priority, application Japan, Jul. 11, 1981, 56-108436; Jan. 20, 1982, 57-7869
Int. Cl.³ G03B *27/34*; G02B *7/11*
U.S. Cl. 355—56 **11 Claims**



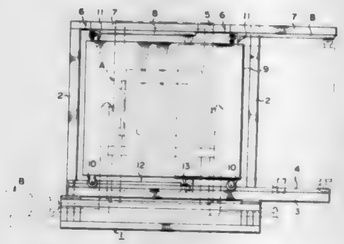
1. A drive controlling mechanism of optical members for use in a copying apparatus, comprising:

an optical member which is supported to be movable reciprocatingly along a linear path;

a pair of a first and a second pulleys which are swingably provided at opposite ends in the direction of reciprocating movement of said optical member and on a plane in paral-

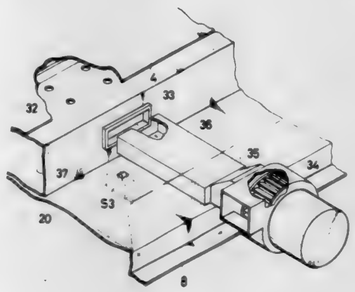
lel with said linear path of movement of said optical member;
a drive pulley for driving said first and said second pulleys for rotation thereof, which is provided between said first and said second pulleys and is arranged to be rotatable in a normal direction and the reverse direction;
a wire which is wound around said pair of said first and said second pulleys and said drive pulley and is secured to said optical member;
a plurality of stopper members for stopping said optical member at predetermined positions, which are provided in the course of said linear path of movement of said optical member;
a pair of a first and a second urging members for urging said first and said second pulleys in opposite directions for preventing said optical member from being brought out of contact with said stopper member;
a pair of a first and a second detecting members for detecting swing movement of said first and said second pulleys, respectively;
said first and said second pulleys being selectively swung through contact of said optical member by one of said stopper members; and
a control means including an electrical circuitry, which is arranged to stop rotational drive of said drive pulley through selective detection of swing movement of respective said first and said second pulleys by said first and said second detecting members.

4,448,518
PHOTOSENSITIVE MATERIAL HOLDER FOR AN UPRIGHT PRINTING MACHINE
Fumihiko Nishida, Kyoto; Isamu Yamanaka, Mukou, and Hiroshi Ijiri, Nagaokakyo, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan
Filed Jan. 28, 1982, Ser. No. 343,458
Claims priority, application Japan, Mar. 25, 1981, 56-43781
Int. Cl.³ G03B *27/58*
U.S. Cl. 355—72 **4 Claims**



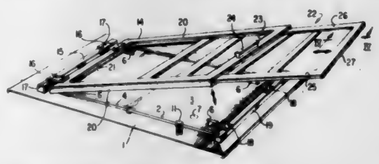
1. In an apparatus of the type for exposing a photosensitive material comprising a holder for holding photosensitive material in an operative position for exposure and means to facilitate loading and unloading photosensitive material the improvement comprising;
a substantially flat holder having transport guide means located near its top edge and its bottom edge, said holder being adapted to be transported between a first position for exposure of photosensitive material mounted thereon and a second position for loading and unloading of photosensitive material,
a support structure having a lower guide supporting means which extends laterally between the first position and the second position and an upper guide supporting means spaced from the lower guide supporting means which extends from the first position at an angle to the lower guide supporting means rearwardly of the lower guide supporting means to the second position,
the holder being moveably mounted between the first and second positions by the bottom edge guide means being transportable along the lower guide supporting means and the top edge guide means being transportable along the upper guide supporting means,
whereby upon moving the holder from the first position to the second position, the bottom edge is transposed laterally while the top edge is transported simultaneously laterally and rearwardly to rotate the top edge relative to the bottom edge causing the material holder to be rearwardly inclined when in the second position.

4,448,519
IMAGE FORMING APPARATUS
Ishida, Hiroshi; Takaichi Kitagawa; Yasuji Sumida; Satoshi Nanba, and Toshikazu Tomi, all of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan
Filed Jun. 15, 1982, Ser. No. 388,734
Claims priority, application Japan, Jun. 19, 1981, 56-95436
Int. Cl.³ G03B *27/60*
U.S. Cl. 355—73 **4 Claims**



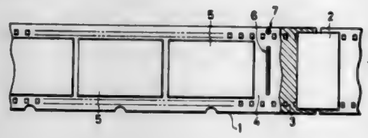
1. An image forming apparatus comprising:
an exposure section base movable in a horizontal direction to be inserted into and removed from a housing,
said exposure section base having a plurality of suction holes in a region on which a plate-like photosensitive member of a rectangular or square configuration is placed,
switching means for detecting when said exposure section base has been inserted into the housing to reach a predetermined position, and
suction means for sucking air through said suction holes when said switching means detects that said exposure section base has reached said predetermined position.

4,448,520
PHOTOGRAPHIC PRINTING DEVICE
Myron B. Achtman, and Malcolm S. Achtman, both of 116 Barmondsey Way NW., Calgary, Alberta, Canada T3K 1V4
Filed Mar. 22, 1982, Ser. No. 360,208
Int. Cl.³ G03B *27/58*
U.S. Cl. 355—74 **10 Claims**



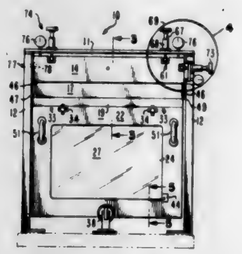
1. A photographic printing device for use in producing photographic proof sheets and photographic enlargements without the use of a pressure plate comprising a planar base plate means; a continuous raised fence means on said base plate means defining a recessed area for receiving a sheet of photographic print paper; frame means; means for releasably hingedly connecting said frame means to said base plate along one edge of said frame means; carrier means for holding photographic film and including a first peripheral frame member and a plurality of film receiving slots; masking means including a second peripheral frame member and a masking element; said frame means comprising an inwardly opening track portion on three sides thereof and being open on the fourth side thereof for receiving selectively said carrier means or said masking means.

4,448,521
COLOR FILM PRINTING CONTROL METHOD
Kazuo Shiota, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 22, 1982, Ser. No. 360,537
Claims priority, application Japan, Mar. 23, 1981, 56-42010
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—77 **4 Claims**



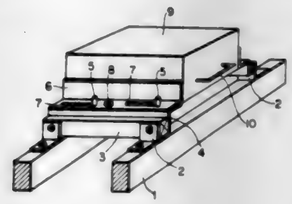
1. A method of controlling the printing conditions of a color negative, comprising:
measuring the densities of three separate colors, namely, red (R), green (G) and blue (B), of a mask obtained at a transparent portion of said color negative of a color negative film to be used for printing;
comparing said densities thus measured with the average densities of three separate colors, namely, red (R), green (G) and blue (B) of a mask obtained at a transparent portion of the color negative of a normal color negative film of a type equivalent to that of said color negative to be used for printing, to determine the degree of difference therebetween; and
correcting the exposure condition according to said degree of difference thus determined.

4,448,522
DEVICE FOR SUPPORTING AND ALIGNING PHOTOGRAPHIC MASTERS
Russell G. Raush, Conestoga, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 22, 1982, Ser. No. 435,969
Int. Cl.³ G03B *27/02*
U.S. Cl. 355—78 **13 Claims**



1. A device for holding and aligning masters used for photographically producing images on both sides of a medium comprising:
a support structure;
a fixed suspension member supported by said support structure;
a moveable suspension member supported by said support structure in the proximity of said fixed suspension member whereby the plane of said fixed suspension member is substantially parallel to the plane of said moveable suspension member;
means for vertically and horizontally moving said moveable suspension member relative to said fixed suspension member in the plane of said moveable suspension member;
a first support member suspended from said fixed suspension member through a first flexible hinge;
a second support member suspended from said moveable suspension member through a second flexible hinge;
a first frame supported by said first support member, said first frame including an opening for receiving a first photographic plate, and fluid actuated means for holding said plate in said opening;
a second frame supported by said second support member, said second frame including an opening for receiving a second photographic plate, and fluid actuated means for holding said second plate in said opening; and
means for pivoting said first and second support members about said first and second hinges whereby said first and second frames are held in a substantially parallel relationship during exposure of said medium, are separable by flexing said hinges during changing of said medium and whereby the images on said plates are alignable by selectively moving said moveable suspension member.

4,448,523
SUBASSEMBLY WITHDRAWING DEVICE IN A COPYING MACHINE
Michio Kanzaki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Apr. 5, 1982, Ser. No. 365,689
Claims priority, application Japan, Aug. 4, 1981, 56-121435
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—133 **5 Claims**



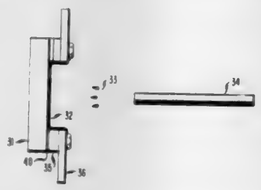
1. A subassembly withdrawing device for a copying machine, comprising:
a first subassembly supporting member fixedly secured to a subassembly in said copying machine;
a second subassembly supporting member fixedly secured to subassembly-withdrawing rail members;
fixing means operating only to fixedly interconnect said first and second subassembly supporting members so that said first and second subassembly supporting members are movable together, said fixing means being removable; and
separate means for movably guiding said first and second members relative to one another so that said first and second members are movable a predetermined distance relative to each other when said fixing means is removed from said first and second members.

4,448,524

REFLECTIVE CONTAINMENT OF ELECTROMAGNETIC RADIATION IN MATRIX ISOLATION THIN FILMS

Louis E. Brus, Madison, and Ronald Rossetti, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 120,689, Feb. 11, 1980, abandoned.
This application Sep. 11, 1981, Ser. No. 301,888
Int. Cl.³ G01N *1/28, 21/01;* G02B *5/14*
U.S. Cl. 356—36 **18 Claims**



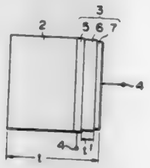
1. A method comprising
directing a stream of a guest-host gaseous mixture to a cold substrate upon which the mixture freezes to yield a film of the frozen gaseous mixture on the substrate;
directing a beam of electromagnetic energy through the frozen film;
the improvement comprising
the substrate is selected from the group consisting of dielectrics having a refractive index greater than that of the frozen gaseous film, and metals, and in that the electromagnetic energy is propagated through the film along a direction substantially parallel to the substrate and wherein,
prior to directing the stream of the gaseous mixture to the cold substrate upon which it freezes, a slotted structure is placed on at least one end of the substrate,
a passageway, parallel to the substrate surface, being formed, and bounded, by the slot in the said structure and the substrate,
the said gaseous mixture, upon freezing, forming a thin film face, which covers at least part of the passageway exit, which face is perpendicular to the substrate,
such that light, directed through the passageway entrance, which is opposite to that of the thin film face, passes through the passageway and enters the thin film.

4,448,525

CRYSTAL DEFECTS ANALYZER

Nobuo Mikoshiba; Kazuo Tsubouchi, and Kenji Wasa, all of Sendai, Japan, assignors to Semiconductor Research Foundation, Miyagi, Japan

Filed Jun. 26, 1981, Ser. No. 277,645
Claims priority, application Japan, Jun. 27, 1980, 55-88099
Int. Cl.³ G01N *21/00, 29/04*
U.S. Cl. 356—73 **24 Claims**



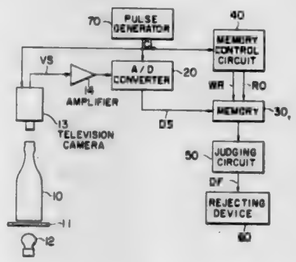
1. A crystal defects analyzer comprising: excitation means for projecting light, electrons or particles on a face of a sample to be analyzed to excite said sample, a thin flexible acousto-electric transducer for converting acoustic waves or elastic strain within the sample into electrical signals, a thin flexible conductive noise-free filter layer bonding said acousto-electric transducer to the entire face of the sample opposite that exposed to said excitation means so that said acousto-electric transducer changes its shape according to deformation of the sample, said filter layer functioning to intercept light, electrons or particles emitted by said excitation means and to transmit acoustic waves or elastic strain produced within the sample by the excitation, means for modulating the amplitude of the light, electrons or particles emitted by said excitation means so as to excite the sample intermittently at a frequency which does not coincide with the resonance frequency of said acousto-electric transducer or an integer multiple thereof and means for holding the sample with said acousto-electric transducer bonded thereto by said filter layer in a manner to minimize acoustic coupling between said holding means and the sample, filter layer and acousto-electric transducer, the thickness of said filter layer being 3000 and 5000 angstroms and the thickness of said acousto-electric transducer being between several microns and several tens of microns, so that the sample, said filter layer and said acousto-electric transducer are allowed to change their integrated shape freely with the result that said acousto-electric transducer conducts the acousto-electric conversion with respect to the modulation frequencies in a broad band.

4,448,526

DEFECT DETECTING METHOD AND DEVICE

Takashi Miyazawa, Urayasu, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272,792
Claims priority, application Japan, Jun. 27, 1980, 55-87510; Jun. 27, 1980, 55-87511
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—237 **9 Claims**



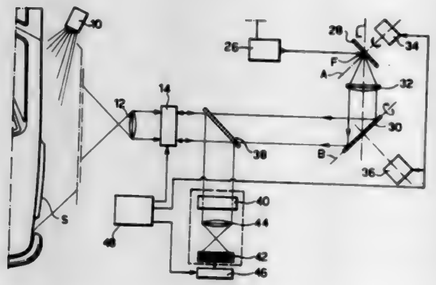
1. A defect detecting method comprising the steps of:
illuminating an object to be examined;
receiving light from said object to form in image forming means the impage of said object;
dividing the image of said object into a plurality of picture elements;
storing in signal storing means the signals of said picture elements in relation with the positions of portions of said objects to which said picture elements correspond respectively;
reading the signals of said picture elements in order in which the portions of said object corresponding respectively to said picture elements are traversed by a substantially spiral imaginary line which is drawn on said object; and
detecting a defect in said object from the mutual relationship between the signal of one of the picture elements and the signal of another picture element read out a little before the reading of the signal of said one of the picture elements and the variation of the signal of one of the picture elements relative to the signal of another picture element is found to be outside a predetermined value range.

4,448,527

METHOD AND APPARATUS FOR DETECTING SURFACE DEFECTS IN MECHANICAL WORKPIECES

Emilio Milana, Rivalta, Italy, assignor to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Feb. 8, 1982, Ser. No. 346,672
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—237 **11 Claims**



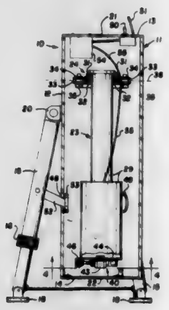
1. A method of detecting surface defects in mechanical parts by analysis of diffracted light coming from these surface defects, said method comprising the steps of:
(a) illuminating, with incoherent light, the surface of the part in which it is desired to detect defects,
(b) forming a flat image of this surface in a transparent photo-sensitive medium in which the spatial intensity distribution of the incoherent light reflected from the said surface produces a corresponding and proportional spatial distribution of the values of refractive index of said medium,
(c) illuminating the transparent photo-sensitive medium with plane polarized coherent light by frame scanning in elementary areas,
(d) during the scanning operation, detecting variations in at least one of the polarization components of the coherent light after the latter has traversed the said transparent photo-sensitive medium, and
(e) deriving from these variations, information on possible defects in the surface under examination.

4,448,528

PORTABLE LASER VERTICAL COLLIMATOR AND PLUMB LINE INDICATOR

Acie J. McManus, 5828 Parkdale, Dallas, Tex. 75227

Filed Dec. 7, 1981, Ser. No. 327,951
Int. Cl.³ G01C *9/14*
U.S. Cl. 356—250 **10 Claims**



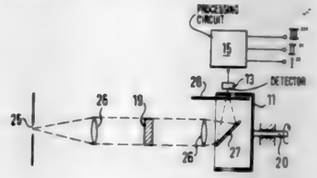
1. Apparatus for transferring a floor marking to a location on an overhead in direct true vertical relationship to said floor marking comprising: a generally tubular housing means having essentially solid vertical walls shielding the interior of said housing from wind disturbance, the end walls of said housing having an area transparent to laser beams, said housing having legs pivotally attached thereto above its mid section providing collapsible tripod support therefor, tubular laser means generating a pair of laser beams directionally separated precisely 180 degrees, gimbal means near the upper end of said housing mounting said laser means near the upper end thereof in pendular fashion free to swing in any direction, said laser means being so positioned in said mounting means that a first of said beams is directed vertically downwardly and the other of said beams is directed vertically upwardly whereby when said floor marking is illuminated by said downwardly directed beam with said pendular mounted laser means at rest, said upwardly directed beam illuminates the point on the overhead in precise vertical relationship to said floor marking, and caging arm means attached to each of said legs and extending into the interior of said housing through openings in said vertical walls, said caging arm means being of such length as to hold said laser means in a generally centralized position within said housing when said tripod support is collapsed with said legs pivoted to rest against said housing.

4,448,529

SPECTRAL ANALYSIS OF A BEAM OF RADIATION

Gerhard Krause, Rosenheim, Fed. Rep. of Germany, assignor to Erwin-Sick GmbH - Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,357
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014646
Int. Cl.³ G01J *3/28*
U.S. Cl. 356—310 **45 Claims**



11. Apparatus for the spectral analysis of a beam of radiation to determine one or more spectral components thereof, said apparatus comprising splitting means capable of splitting said beam of radiation into a spectrum of different spectral components so that distinct locations along the spectrum are associated with respective spectral components in said beam; means for modulating said spectrum after said splitting means to impose a common and repetitive location and time dependent modulation function on each of the spectral components, whereby each spectral component is modulated by the same modulation function, but at any given time exhibits a different instantaneous modulation from any other spectral component; common detector means for receiving the modulated spectral components to generate superimposed signals representative of these modulated spectral components, and electronic processing circuitry for electronically segregating said superimposed signals in dependence on the instantaneous modulations applied to the spectral components to form an individual measurement signal for the spectral component of interest.

4,448,530

SPECTROPHOTOMETER

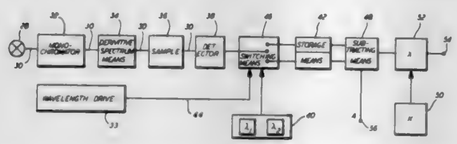
Albert Schmitt, deceased, late of Überlingen, Fed. Rep. of Germany; by Magdalena S. Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany; by Thomas Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany; by Martin Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany; by Georg Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany; by Annette Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany, and Ernst Spreitzhofer, Zum Kretzer 4, 7770 Überlingen, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,308

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008345

Int. Cl.³ G01J *3/42*

U.S. Cl. 356—320 **2 Claims**



1. Spectrophotometer for determining the concentration of a looked-for component from a derivative spectrum; comprising:

a monochromator having a wave length drive for scanning a wave length range;

means for producing a derivative spectrum;

a detector arrangement for producing a signal, which provides said derivative spectrum as a function of the wave length defined by said wave length drive;

means for defining two wave length values;

memory means for storing signals of said detector arrangement;

applying means controlled by said wave length drive for applying said signals provided by said detector arrangement at the two defined wave lengths to said memory means;

means for forming the difference of said two stored signals as measure of the concentration of said looked-for component in a sample;

means for defining a calibration factor; and

multiplying means for multiplying said difference by said calibration factor for producing a signal directly representing the concentration of said looked-for component in said sample.

4,448,531

DISPLACEMENT MEASURING INSTRUMENT

Takahashi Seigo, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

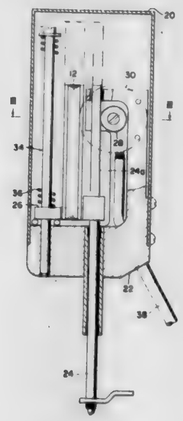
Filed Oct. 6, 1981, Ser. No. 308,996

Claims priority, application Japan, Oct. 16, 1980, 55-147781

Int. Cl.³ G01B *11/02*

U.S. Cl. 356—374 **3 Claims**

1. A displacement measuring instrument comprising a case having a closed construction, a fixed scale solidly secured to said case, a spindle abutted at the forward end thereof against an object under measurement and reciprocated due to a displacement of the object under measurement, an urging means for giving a measuring force to said spindle and a movable scale operationally associated with said spindle, and capable of measuring the displacement of the objects under measurement from a variation in physical value between the movable scale and the fixed scale due to the displacement of the object under measurement, wherein a rack is formed on the rear portion on said spindle and a vane wheel is provided in said case, which is rotatable by the utilization of the reciprocatory motion of said spindle through a pinion meshed with said rack, so that a



resistance to movement increasing with the increase in the rate of travel can be exerted against the movement of said spindle.

4,448,532

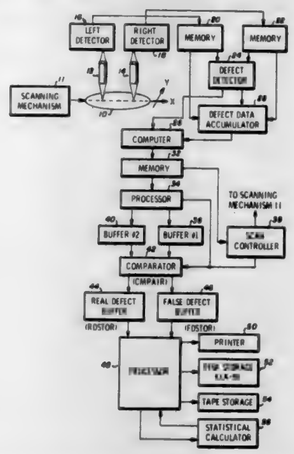
AUTOMATIC PHOTOMASK INSPECTION METHOD AND SYSTEM

David A. Joseph, Mountain View, and Peter G. Eldredge, Santa Clara, both of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.

Filed Mar. 31, 1981, Ser. No. 249,474

Int. Cl.³ G01B *11/14*

U.S. Cl. 356—394 **10 Claims**



1. Optical inspection apparatus for detecting defects in photomasks and the like containing a plurality of supposedly identically configured portions, comprising:

first and second detector means disposed in spaced-apart relationship and operative to simultaneously inspect corresponding sub-portions of two of said supposedly identically configured portions and to develop first and second digital signals corresponding to the detected character of each said sub-portion;

scanning means for causing relative movement between the photomask and said first and second detector means thereby defining at least one scan line across the photomask being inspected;

memory means for storing said first and second digital signals developed as said photomask is scanned;

defect detector means for comparing said stored first and second digital signals and for developing defect signals when said stored second signal differs from said stored first signal;

first signal processing means including first and second buffer means, said first processing means being operative to generate first and second address data corresponding to said stored first and second signals and to store in said first buffer means those defect signals and address data developed in response to a first scan of said one scan line, and operative to store in said second buffer means those defect signals and address data developed in response to a second scan of said one line;

comparator means for comparing the address data of defect signals contained in said first buffer means to the address data of defect signals stored in said second buffer means, and for generating real defect signals when defect signals stored in said first buffer means have a common address which defect signals stored in said second buffer means, and for generating false defect signals each time a defect signal stored in said first buffer means does not have a common address with a defect signal stored in said second buffer means;

real defect buffer means for receiving and storing said real defect signals;

false defect buffer means for receiving and storing said false defect signals; and

utilization means for processing and storing or otherwise utilizing the data stored in said real defect buffer means and said false defect buffer means.

4,448,533

APPARATUS FOR ENSURING THE QUALITY OF PRINTED PRODUCTS

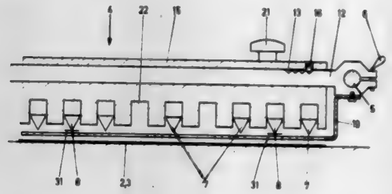
Willi Jeschke, Heidelberg; Hugo Rambausek, Wiesloch; Rudolf-Karl Uhrig, Schriesheim, and Gerhard Löffler, Weisenheim, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 117,475, Feb. 1, 1980, abandoned, which is a continuation of Ser. No. 915,762, Jun. 15, 1978, abandoned. This application Mar. 15, 1982, Ser. No. 358,380

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727227

Int. Cl.³ G01J *3/48*; G01N *21/55*

U.S. Cl. 356—416 **6 Claims**



1. Monitoring device for densitometrically evaluating printed sheets with a printed print-monitoring strip, the printed sheets lying in a static position on a test bench outside the printing machine, comprising holding means displaceable in longitudinal and tranverse direction of the test bench, a plurality of first densitometers for exclusively measuring full-tone density carried by said holding means at a selective spacing from one another so as to define respective gaps between said first densitometers, and a plurality of second densitometers for simultaneously measuring at least one tone density value selected from a range of screen and full tone values, said second densitometers being received, respectively, in said gaps between said first densitometers and being connected to a device for mathematically correlating the values measured by said second densitometers with quality-assessing parameters.

4,448,534

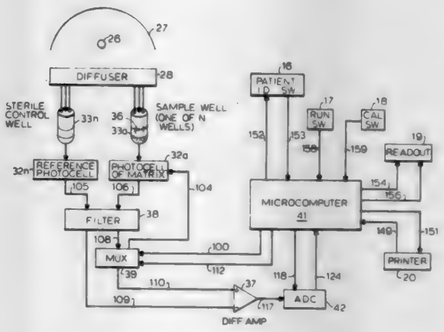
ANTIBIOTIC SUSCEPTIBILITY TESTING

Richard K. Wertz; Albert M. Cook, and James C. Hathaway, all of Sacramento, Calif., assignors to American Hospital Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 891,648, Mar. 30, 1978, abandoned. This application Oct. 5, 1979, Ser. No. 82,228

Int. Cl.³ G01J *3/46*

U.S. Cl. 356—435 **17 Claims**



1. A method for performing simultaneously a plurality of interrelated optical density tests, employing a sample tray having a multiplicity of wells in rectangular grid arrangement containing liquid samples, said wells having translucent bottoms, comprising:

holding said tray accurately in a single predetermined stationary reading position without blocking off light paths through said wells,

sending light from a light source through all said wells at approximately the same intensity to an array of light-intensity-detecting well-associated photocells, there being one photocell adjacent to each well,

while simultaneously sending light directly from said light source to a reference detecting photocell without passing the light through a said sample,

electronically sequentially transmitting the signals from all said photocells in a prescribed order, each signal corresponding to the intensity of light received by a said photocell,

sequentially comparing the signal from each said well-associated photocell of said array with the simultaneous signal from said reference detecting photocell and developing a related signal therefrom for each well indicating a first adjusted value for each well,

sequentially making an electronic comparison of each said related signal value with an electronically stored data reference value corresponding to a preliminary value for each well derived like said first adjusted value without interposing the sample between said light source and any of said well-associated photocells, and developing a resultant value from that comparison,

sequentially comparing electronically said resultant values with one another for said interrelated optical density tests and with other stored values and determining a conclusion therefrom, and

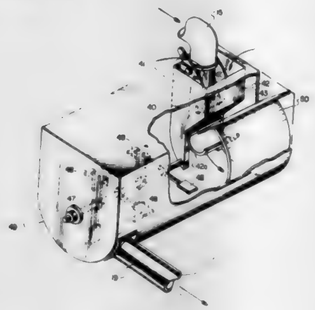
reading out the desired results thereby obained.

4,448,535

APPARATUS FOR BLENDING ADDITIVES INTO A LIQUID

Joe E. West, Coppell, Tex., assignor to The Western Company of North America, Fort Worth, Tex.

Filed Dec. 15, 1981, Ser. No. 330,949
Int. Cl.³ B01F *15/02, 7/04*
U.S. Cl. 366—13 19 Claims



1. Apparatus for blending a high volume flow of sand and solid additives, selectively and at selected rates, into water for injection into a well comprising:

a frame;

a blending tank on said frame;

a water intake line on said frame for receiving water from a source off said frame and delivering it to said blending tank, said water intake line having a pump therein;

said water intake line terminating in a downwardly oriented nozzle at said blending tank through which all water delivered to said tank flows; and

means for delivering said sand into said blending tank adjacent said nozzle and disposed for delivering said sand directly into the flow of said water issuing through said nozzle;

means for delivering solid additives into said blending tank, said solid additive delivery means being constructed and arranged to deliver additive into said blending tank adjacent said nozzle and disposed for delivering said solid additive directly into the flow of said water issuing through said nozzle;

whereby the turbulence, violence, low pressure and high shear of all of said water issuing through said nozzle effects dispersion and solution of said sand and solid additives.

4,448,536

CONCRETE MIXER DEVICE

William A. Strong, Rte. 11, Box 1150, Brinkley Rd., Pine Bluff, Ark. 71611

Filed Aug. 9, 1982, Ser. No. 406,173
Int. Cl.³ B28C *5/14*
U.S. Cl. 366—66 2 Claims

1. A mixing device for preparing wet mix cementitious products, the device comprising:

a rigid frame adapted to be disposed upon a solid supporting surface;

a pair of generally tubular, horizontally disposed pump casings elevated by said frame and sharing a common open side, the casings forming a mixing chamber, and each casing having front and rear ends and inner surfaces provided with an abrasion resistant liner;

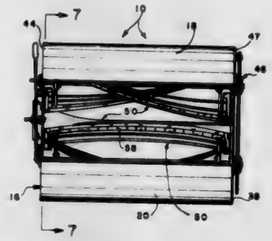
an upper, open top through which raw material to be mixed may be inputted interiorly of said mixing chamber;

two elongated, central impeller shafts, one each extending longitudinally within each of said casings, and rotatably terminating in said front and rear ends of said casings;

an impeller assembly rotatably disposed longitudinally within each of said casings and removably coupled to an impeller shaft, each of said impeller assemblies including a terminal end and each comprising:

a pair of rigid, spaced-apart spiders, a spider being defined at each of said terminal ends, and each spider having three equally radially spaced-apart and integral arm segments extending outwardly from a central spider region provided with an inner notch adapted to be selectively manually removably coupled to said said impeller shaft, the notches of each spider being radially, angularly offset from each other to facilitate positive placement and maintenance of said impeller assemblies in generally coaxial relation relative to said shafts;

a plurality of pairs of spiralled, spaced-apart mixing rods extending generally longitudinally within the casing between opposite spaced-apart arm segments of the spiders, said rods being spaced apart from each other a distance substantially equal to or greater than the size of



the largest constituent aggregate piece in the cementitious mixture to be blended; and,

a spiralled outermost, resilient wiping blade extending between the outermost portions of said spider arm segments in spaced-apart relation with respect to said mixing rod pairs for wipingly contacting the casing liner in response to rotation of the impeller assembly;

hub means for removably securing said spiders to said impeller shafts to prevent relative rotation therebetween;

a material discharge opening defined in said mixing device between said casings at the front ends thereof;

means for rotating said impeller shafts whereby to rotate said impeller assemblies in opposite directions and thus effectuate the mixing of materials within said pump casings simultaneously with the forced conveyance of said materials toward said discharge opening; and,

door means for selectively opening and closing said discharge opening to control output of said mixed material.

4,448,537

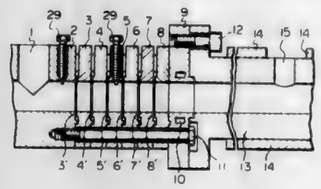
SCREW-TYPE HYDRO-EXTRACTING EXTRUDER

Teruhiko Sugimori; Fumio Suzuki, and Hideaki Habara, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,930
Claims priority, application Japan, Sep. 18, 1979, 54-128972[U]; Sep. 19, 1979, 54-129821[U]
Int. Cl.³ B29B *1/06*
U.S. Cl. 366—75 5 Claims

1. A hydro-extracting extruder for dehydrating a solid material having a predetermined liquid component, said extractor of the type including means defining an extrusion chamber and material supply means in communication with said chamber for supplying a predetermined quantity of said material to said chamber, wherein the improvement comprises:

means defining a hydro-extracting zone downstream of said material supply means, said hydro-extracting zone means comprising a plurality of plate members each of which includes means defining a cavity for axially communicating with said chamber, a front face having a predetermined number of first raised portions and a back face having a predetermined number of second raised portions, said first and second raised portions arranged so that each cooperates with second raised portions and first raised portions, respectively, of immediately adjacent plate members so that between a predetermined plate member and adjacent ones thereto, a space is defined through which a portion of said liquid component will pass, thereby at least partially dehydrating said material; and



means defining a material heating zone downstream of said hydro-extracting zone means for substantially removing residual liquid remaining in said material including heater means for transmitting heat energy to said material thereby substantially changing said liquid to a gaseous state, and vent means for venting said gas; and

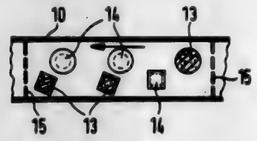
connecting means for connecting said hydro-extracting zone means to said heating zone means.

4,448,538

DEVICE FOR REDUCING STATIC AND DYNAMIC PRESSURES IN PIPELINES, PARTICULARLY OF SOLID-BORNE SOUND IN TUBULAR CONDUITS

Juval Mantel, Simeonistrasse 19, D-8000 München 19, Fed. Rep. of Germany

Filed Apr. 6, 1982, Ser. No. 366,100
Int. Cl.³ F01N *1/00*
U.S. Cl. 181—227 11 Claims



1. A device for reducing static and dynamic pressures in pipelines, particularly for preventing solid-borne sound from being transmitted through pipelines, said device comprising a tubular outer member configured to be interposed in a pipeline and a compensator contained within said outer member, said compensator comprising an imperforate resilient breathing body whose volume changes with small changes in externally applied pressure.

4,448,539

APPARATUS FOR MIXING SOLID AND LIQUID SUBSTANCES

Herwig Burgert, Bismarckstrasse 40, 6300 Giessen, Fed. Rep. of Germany

Continuation of Ser. No. 160,964, Jun. 19, 1980, abandoned.
This application Jul. 7, 1982, Ser. No. 396,041
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925191
Int. Cl.³ B01F *3/12, 5/10, 15/02*
U.S. Cl. 366—132 2 Claims

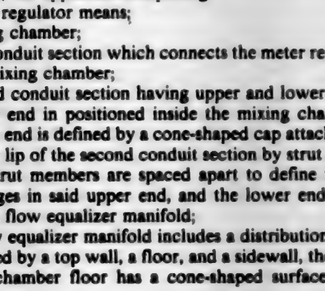
1. A loop reactor for mixing solid and liquid substances, the reactor comprising

a. a tube-shaped reactor housing (1) supported horizontally on a foundation;

b. inlet means (14) at one end and outlet means (10) at the opposite end of said reactor housing;

c. a guide tube (2) in said reactor housing defining a mixing chamber between said guide tube and the inner wall of said reactor housing;

d. a tube portion (3) surrounding said guide tube and being connected to said guide tube at the end adjacent said outlet means, said tube portion and said guide tube defining an annular space (5) between them, said annular space being connected to said mixing chamber by openings (6) through which said substances enter into said annular space;



e. a filling socket (8) having means for filling both said solid and liquid substances connected to the upper side of said reactor housing adjacent said inlet means for filling the substances into the reactor housing;

f. at least one level control indicator (17) in said filling socket for opening and closing said socket and thereby regulating the level of the substances in the reactor;

g. a pipe connection (12) and (13) between the reactor housing inlet means and outlet means;

h. a circulating pump (11) in said pipe connection for pumping the mixture from said outlet means to said inlet means; and

i. a discharge valve (16) connected to said pipe connection for discharging the ready mixture.

4,448,540

APPARATUS FOR MIXING A LIQUID ADDITIVE COMPOUND WITH VAPOR AND LIQUID PHASES OF ANHYDROUS AMMONIA

David M. McLeod, Midland County, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 4, 1982, Ser. No. 385,195
Int. Cl.³ B01F *15/02, 15/04*
U.S. Cl. 366—160 4 Claims

1. An apparatus for mixing a stream of anhydrous ammonia, having a vapor and liquid phase, with a stream containing a liquid additive compound, to obtain a homogeneous vapor-liquid mixture of the anhydrous ammonia and the liquid additive compound, the apparatus comprising:

a meter regulator means;

a mixing chamber;

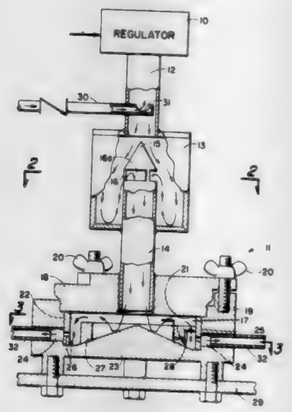
a first conduit section which connects the meter regulator to the mixing chamber;

a second conduit section having upper and lower ends, the upper end in positioned inside the mixing chamber, the upper end is defined by a cone-shaped cap attached to the upper lip of the second conduit section by strut members, the strut members are spaced apart to define fluid inlet passages in said upper end, and the lower end connects into a flow equalizer manifold;

the flow equalizer manifold includes a distribution chamber defined by a top wall, a floor, and a sidewall, the distribution chamber floor has a cone-shaped surface, and the

distribution chamber sidewall has outlet openings therein which communicate with a use point;

the flow equalizer manifold includes an orifice sleeve, the sleeve is positioned inside the distribution chamber, it surrounds the cone-shaped surface, it is in contact with the chamber sidewall, and it has openings therein which communicate with the outlet openings in the chamber sidewall;



the flow equalizer manifold includes a flow integrator ring, the flow integrator ring is positioned inside the orifice sleeve, and it seats on the cone-shaped surface of the distribution chamber floor;

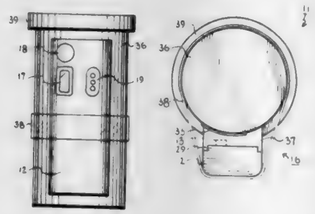
the apparatus includes a delivery tube, the tube has a delivery end positioned in the first conduit section between the meter regulator and the mixing chamber, and the delivery end has an outlet opening in the wall of the tube which faces toward the meter regulator.

4,448,541

MEDICAL TIMER APPARATUS

Jonathan D. Wirtschafter, Minneapolis, Minn., assignor to Mediminder Development Limited Partnership, Minneapolis, Minn.

Filed Sep. 22, 1982, Ser. No. 421,681
Int. Cl.³ G04B *47/00*
U.S. Cl. 368—10 **3 Claims**



1. In medical timer apparatus having means for measuring time, an improvement comprising:

(a) providing said apparatus with a magnetically responsive switch for restarting the measurement of time;

(b) providing said apparatus with an integral medication container that may be selectively opened and closed with respect to said apparatus to make accessible and non-accessible, respectively, medication located within said integral container and further including within said integral container a first magnet, such that opening said integral container will position said magnet to activate said magnetically, responsive switch, and wherein said integral medication container may be non-permanently attached and removed, selectively, to and from said apparatus, and further including:

(c) providing said apparatus with non-integral container attachment means for use with a non-integral medication container, comprising:

(i) a second magnet attached proximal to the non-integral medication container;

(ii) sponge means for disposition between said magnetically responsive switch, and the non-integral medication container; and

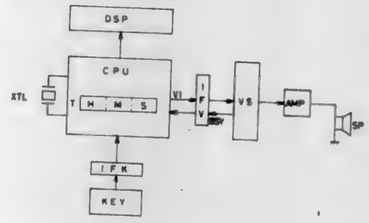
(iii) fastening means for maintaining said apparatus in operable attachment with said non-integral medication container, such that upon squeezing said combined non-integral medication container, attachment means and apparatus, the magnet of said attachment means will activate said magnetically responsive switch.

4,448,542

ELECTRONIC TIMEPIECE

Isamu Washizuka, Kyoto; Yutaka Ikemoto, Nara, and Hiroshi Tsuda, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 12, 1982, Ser. No. 357,754
Claims priority, application Japan, Mar. 23, 1981, 56-42987
Int. Cl.³ G04B *21/08*; G04C *9/00*
U.S. Cl. 368—63 **5 Claims**



1. A timepiece having a time set mode of operation and another time-related mode of operation, comprising:

timekeeping means;

input means for entering information for setting said timekeeping means when said timepiece is in the time set mode;

voice synthesizing means responsive to said input means for synthesizing first sounds representing information input by said input means;

generating means for generating a second sound in the time set mode for indicating that said timepiece is in the time set mode; and

means associated with said timekeeping means for delaying generation of said second sound for a predetermined period following synthesis of said first sounds and for a predetermined period following placing said timepiece in the time set mode.

4,448,543

TIME-OF-DAY CLOCK HAVING A TEMPERATURE COMPENSATED LOW POWER FREQUENCY SOURCE

David K. Vail, Palm Bay, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 17, 1983, Ser. No. 458,419
Int. Cl.³ G04B *17/20, 1/00*
U.S. Cl. 368—202 **10 Claims**

1. Electronic apparatus including a time-of-day clock, said apparatus comprising:

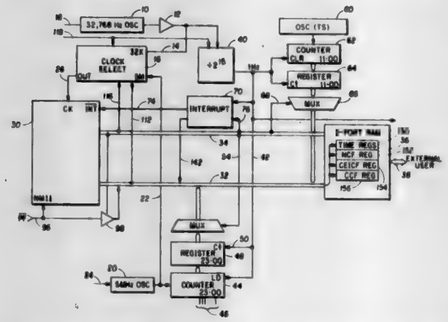
primary means for supplying operating power to said apparatus;

secondary means for supplying power to said time-of-day clock;

means powered by said secondary power supply means for generating a first clock signal;

means coupled to said first clock signal generating means for generating indicia representing a period of time;

means powered by said primary power supply means for generating a second clock signal having a frequency and



accuracy at least one order higher than the first clock signal; and

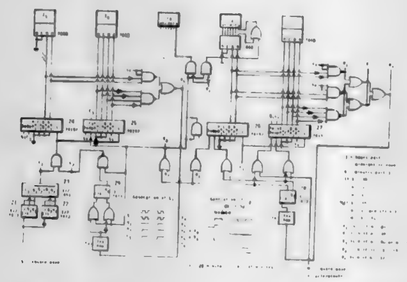
microprocessor means powered by said secondary power supply means and responsive to the indicia for generating data items representing time-of-day, said microprocesor means being clocked by the first clock signal when said primary power supply is disabled and by the second clock signal when said primary power supply is enabled.

4,448,544

METHOD AND APPARATUS TO DIGITALLY DISPLAY THE TIME OF DAY

Richard G. Schreitz, 2020 Brooks Dr., Apt. 203, Forestville, Md. 20747

Filed Dec. 2, 1980, Ser. No. 212,069
Int. Cl.³ G04C *17/02*
U.S. Cl. 368—239 **5 Claims**



1. A digital time display system which comprises:

first digital display means for displaying digits representing hour time values;

second digital display means disposed to the right side of said first display means, said second digital display means being provided for displaying digits representing minute time values;

third digital display means disposed between said first and second display means, said third digital display means being provided for displaying a minus sign when activated; and

timing control means connected to said first second and third display means for selectively causing time displays to occur in one of the following two formats:

(a) in succession from left to right, the current hour and the number of elapsed minutes after that hour; and

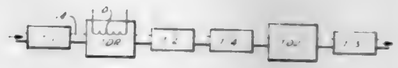
(b) in succession, from left to right, the next hour to subsequently become the current hour and the number of minutes which must yet elapse before that event is to occur.

4,448,545

NON-INTRUSIVE THERMAL POWER MONITOR AND METHOD

David G. Pelka, and Roc V. Fleishman, both of Los Angeles, Calif., assignors to Southern California Gas Company, Los Angeles, Calif.

Filed Mar. 2, 1982, Ser. No. 354,012
Int. Cl.³ G01K *17/16*
U.S. Cl. 374—41 **30 Claims**



1. An improved non-intrusive thermal power monitor for determining thermal power contribution to a fluid stream from an unknown thermal power source or sink, the monitor comprising:

(a) thermal power reference device means adapted to add or remove a known amount of heat to or from a fluid stream flowing through a fluid carrying conduit without intruding into the fluid or conduit;

(b) first non-intrusive temperature differential measuring means for measuring a first temperature differential across the power reference device and generating an electrical signal which is a function of the first temperature differential, the first non-intrusive temperature differential measuring means including a first temperature sensor and a second temperature sensor, each such temperature sensor having means to permit its attachment to the conduit at least ten conduit diameters from the thermal power reference device;

(c) second non-intrusive temperature differential measuring means for measuring a temperature differential across a portion of the fluid stream that contains an unknown thermal power source that adds thermal power to the stream or an unknown thermal power sink that extracts thermal power from the stream, the second temperature differential measuring means generating an electrical signal which is a function of the second temperature differential;

(d) means for determining the heat capacity rate of the fluid from the first temperature differential signal and the known amount of heat; and

(e) means for determining the thermal power introduced into or removed from the fluid by the unknown source or sink from the heat capacity rate and the second temperature differential signal.

4,448,546

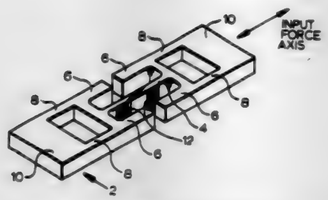
DIGITAL TEMPERATURE SENSOR

Jerome M. Paros, Redmond, Wash., assignor to Novex, Inc., Salt Lake City, Utah

Filed Nov. 28, 1980, Ser. No. 211,126
Int. Cl.³ G01K *11/22, 7/32*
U.S. Cl. 374—117 **23 Claims**

1. A temperature sensor comprising a load-sensitive resonator having at least a pair of spaced-apart mounts which are secured to a base and which isolates said resonator from external forces, said base having a coefficient of thermal expansion which is different from that of said resonator such that said base applies a thermally induced stress to said resonator, said resonator having a resonant frequency and being unstressed at a first temperature in a preselected operating range of said

temperature sensor so that said resonator is compressed at temperatures differing from said first temperature so as to vary the resonant frequency by one polarity and tensioned at tem-



peratures differing from said first temperature so as to vary the resonant frequency in the opposite polarity, thereby changing the resonant frequency of said resonator solely in accordance with changes in the temperature of said resonator and base.

4,448,547

OPTICAL TEMPERATURE MEASUREMENT TECHNIQUE UTILIZING PHOSPHORS

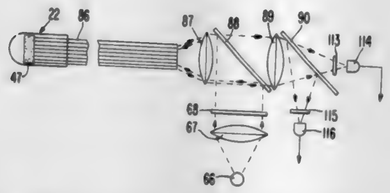
Kenneth A. Wickersheim, Palo Alto, Calif., assignor to Luxtron Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 877,977, Feb. 15, 1978, Pat. No. 4,215,275, which is a continuation-in-part of Ser. No. 751,366, Dec. 16, 1976, Pat. No. 4,075,493. This application Jul. 10, 1980, Ser. No. 167,691

Claims priority, application United Kingdom, Dec. 7, 1977, 51006/77

Int. Cl.³ G01N *21/31*

U.S. Cl. 374—131 **67 Claims**



For a temperature measuring system having a visible or near-visible electromagnetic radiation detector optically coupled to receive radiation indicative of temperature, a radiation emitting temperature sensor, comprising:

a substrate adapted to be positioned in heat conductive relationship with an environment whose temperature is to be measured, said substrate being a length of optical fiber, and

a quantity of phosphor material coated on one end of said optical fiber in a manner to be viewed by said optical coupling when said substrate is positioned in a heat conductive relationship with said environment, said phosphor being characterized by emitting, when excited, detectable optical radiation that varies as a known function of the phosphor temperature.

4,448,548

STEAM STERILIZATION INDICATOR

Theodore A. Foley, West Milford, N.J., assignor to PyMaH Corporation, Somerville, N.J.

Filed Jun. 11, 1979, Ser. No. 47,955

Int. Cl.³ G01K *1/02*; A23L *3/00*; C09K *3/00*; C12Q *1/22*

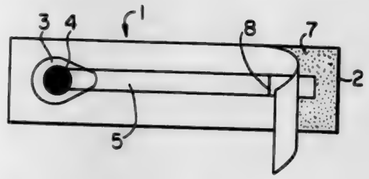
U.S. Cl. 374—160 **13 Claims**

1. A steam sterilization indicator comprising:

a tablet including a fusible material and a binder, said fusible material meltable at a predetermined temperature in the presence of substantially saturated steam, the melting point of said fusible material being substantially lower in the presence of saturated steam than when dry;

a wicking strip having one end in close proximity to said tablet whereupon attainment of said predetermined temperature, said fusible material melts and moves along said strip at a rate proportional to the temperature of said saturated steam;

a steam permeable membrane covering said tablet and said wicking strip, said binder holding said fusible material in tablet form prior to attainment of said predetermined temperature and further providing a mechanism for alter-



ing the rate movement of said fusible material along said wicking strip as a function of the amount of binder used for certain temperature ranges, such rate of movement being similar to spore death kinetics;

a backing; and

an acrylic adhesive, wherein said backing and said membrane enclose said tablet and said strip and said acrylic adhesive holds said membrane and said strip to said backing, said acrylic adhesive acting to further alter the rate of movement of said fusible material along said strip.

4,448,549

TEMPERATURE SENSING DEVICE

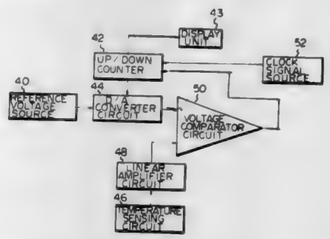
Shingo Hashimoto, and Mitsuo Sekine, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,750

Claims priority, application Japan, Mar. 10, 1981, 56-34222

Int. Cl.³ G01K *7/16*

U.S. Cl. 374—170 **5 Claims**



1. A temperature sensing device comprising:

temperature sensing circuit means for producing a temperature sensing voltage whose level varies linearly with temperature;

reference voltage generating means for producing a reference voltage whose level is independent of temperature;

comparator circuit means for comparing said temperature sensing signal and said reference voltage signal and for producing output signals indicative of a difference therebetween; and

circuit means responsive to said output signals from said comparator circuit means for producing signals indicative of a temperature value;

said temperature sensing voltage circuit means comprising first and second MOS field effect transistors and circuit means for controlling the ratio between the drain currents thereof, said drain currents and the physical configurations of said first and second MOS field effect transistors being arranged such that a ratio of the drain current of said first MOS transistor to the channel pattern ratio of said first MOS transistor is different from a ratio of the drain current of said second MOS transistor to the channel pattern of said second MOS transistor, said temperature sensing circuit means being operative to set the value of said temperature sensing voltage to be directly proportional to the physical quantity kT/q, where k is Boltzmans constant, T is absolute temperature, and q is unit electrical charge.

4,448,550

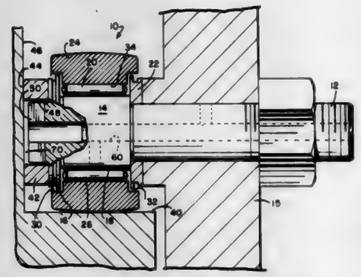
BEARING

John J. Moroney, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Jul. 14, 1982, Ser. No. 398,070

Int. Cl.³ F16C *21/00, 29/04, 33/30*

U.S. Cl. 384—127 **1 Claim**



1. A cam follower-type bearing comprising: an inner race member having a flange at one end and an annular end plate at the other end with a raceway between the flange and the end plate; an outer race member with a raceway spaced from said inner member raceway to provide an annular roller space; rollers in said annular roller space axially kept in position by said flange and said end plate; said inner race member having an annular plain bearing portion extending axially beyond the outer race member and said flange; the plain bearing portion having an end surface adapted to rub against a bearing support surface to provide bearing positioning thrust and location; said inner member having a secondary plain bearing extending partially through the bore of the annular bearing portion.

4,448,551

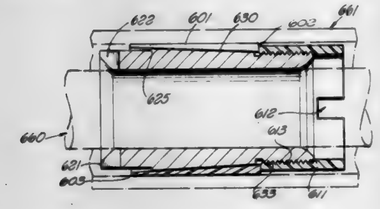
METHOD AND APPARATUS FOR SHAFT SUPPORT FOR TURBINE PUMPS

Reuel A. Murphy, 5200 Cavitt Stallman Rd., Roseville, Calif. 95678

Continuation-in-part of Ser. No. 897,573, Apr. 19, 1978, which is a continuation-in-part of Ser. No. 797,923, May 18, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 5,993

Int. Cl.³ F16C *23/02*

U.S. Cl. 384—252 **1 Claim**



1. An expandable bushing for use within a tubing for purposes of supporting a shaft within said bushing and within said tubing comprising in cooperative relationship: a first elongate tubular member having an interior surface suitable to support a rotatable shaft and an exterior surface including a tapered portion and having threads adjacent one end and having slots suitable to be engaged by a tool; a second elongate tubular member having an opening extending its length, and having an interior tapered surface suitable to slide upon the tapered surface upon the first tubular member, in such manner as to expand outwardly; and means to force said second tubular member to slide upon first tubular member to cause expansion of said second tubular member and to hold the same in an expended figuration; and threaded collar means having slots suitable to be engaged by a tool for the purpose of threading said collar means upon said first tubular member in such manner as to mount upon the threads of said first tubular member and by turning said collar means forcing the said second tubular member to slide upon the said first tubular member.

4,448,552

BEARING LUBRICATION SYSTEM

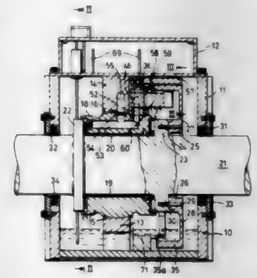
William W. White, Glasgow, and Ian N. MacDonald, Ayrshire, both of Scotland, assignors to James Howden & Company Limited, Glasgow, Scotland

Filed Aug. 18, 1982, Ser. No. 409,307

Claims priority, application European Pat. Off., Aug. 28, 1981, 81303962.5

Int. Cl.³ F16C *33/10*; F16N *7/14*

U.S. Cl. 384—404 **11 Claims**



1. A bearing comprising, in combination;

A. A fixed part having a bearing surface;

B. A shaft rotatable in the bearing surface;

C. A radially extending disc mounted on the shaft for rotation therewith;

D. An axially extending cylindrical ring mounted on said disc at a location spaced radially from the shaft;

E. A lubricant reservoir;

F. Means to feed lubricant from the reservoir to said bearing surface;

G. Means to lead lubricant from said bearing surface to the vicinity of the lower part of said ring;

H. A lubricant scoop mounted within said ring and closely adjacent to the internal cylindrical surface thereof;

I. A closed conduit leading from said scoop to said reservoir, said closed conduit being fully closed to atmosphere from said scoop to said reservoir; and

J. Said scoop being so-shaped whereby, upon rotation of said shaft, a film of lubricant is formed on inner surface of said ring, to move at substantially the same velocity as said ring, this film being picked up at said velocity by said scoop to produce a pressure head in said closed conduit sufficient to pump lubricant to said reservoir.

4,448,553

METHOD OF DETERMINING PRINT STARTING POSITIONS FOR AN IMPACT TYPE DOT PRINTER

Setsuo Yonezawa, and Kazuaki Ikeda, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,534

Claims priority, application Japan, Sep. 16, 1981, 56-145885

Int. Cl.³ B41J *3/12, 3/08*

U.S. Cl. 400—121 **2 Claims**

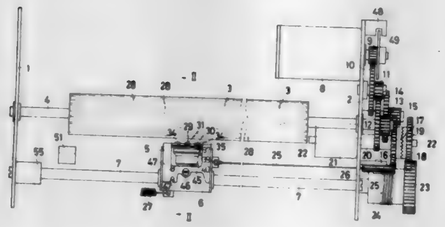
1. A method of determining print starting positions for an impact type dot printer including a rotatable platen having a

plurality of axial projections and a printing head movable from a home position in spacing increments along the platen and having a print hammer actuatable to hit the projections one at a time to print dot-matrix characters on a recording medium between the platen and the print hammer, said method comprising the steps of:

generating a print timing signal in synchronism with rotation of the platen, said print timing signal being indicative of positions in which the print hammer strikes the projections and being composed of a pulse-free blank and a plurality of subsequent pulses defining one cycle;

moving the printing head from the home position for pre-spacing prior to a normal printing operation;

generating a home signal when the printing head leaves the home position;



counting the number of pulses of said print timing signal until a first pulse-free blank arrives while the printing head is moving for pre-spacing;

storing data on a phase relationship between said print timing signal and said home signal based on the counted number of pulses;

counting the number of pulses of said print timing signal generated after the printing head has left the home position until the first pulse-free blank arrives each time the printing head is moved in spacing increments for the normal printing operation; and

setting print starting positions based on said stored data and said last-mentioned number of pulses as counted.

4,448,554

SHEET FEEDING APPARATUS HAVING AN EXPANSIBLE PERIPHERY

Reinhold G. F. Driemeyer, Waterloo, Canada, assignor to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Dec. 21, 1981, Ser. No. 333,149
Int. Cl.³ B61J *3/02*
U.S. Cl. 400—124 **15 Claims**

1. An apparatus comprising:

a track for guiding a sheet therealong and;

means for feeding a sheet along said track;

said feeding means comprising:

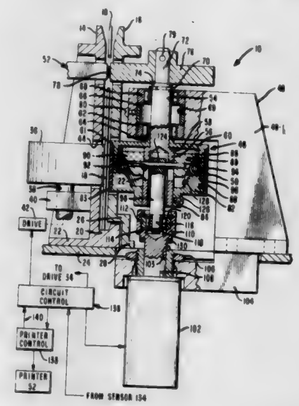
a rotatable member having a shaft mounted for rotation; said rotatable member having a driving periphery extending into said track;

a coupling unit;

means for rotatably mounting said coupling unit at said track;

said coupling unit having an expansible periphery; and

means for selectively moving said expansible periphery between a first position in which said expansible periphery is uncoupled from said driving periphery and a second position in which said expansible periphery is expanded to form a driving coupling with said driving periphery of said rotatable member to feed a sheet positioned therebe-



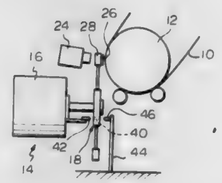
tween along said track when said rotatable member is rotated.

4,448,555

IMPACT PRINTING APPARATUS WITH INTERCHANGEABLE ROTARY TYPE WHEELS

Keiji Hasegawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,556
Claims priority, application Japan, Mar. 20, 1981, 56-40570; Mar. 20, 1981, 56-40571; May 27, 1981, 56-80383
Int. Cl.³ B41J *1/30*
U.S. Cl. 400—144.2 **26 Claims**



1. Impact printing apparatus employing a set of interchangeable rotary type elements and identifying each rotary type element mounted thereon to optimumly match various printing conditions to the identified rotary type element, comprising:

a movable carriage which mounts each rotary type element comprising a rotary hub and a plurality of tongues carrying type members, a hammer for selectively impacting the type members and drive means for rotatably driving the rotary type element;

a stationary frame member which mounts a generally cylindrical paper support platen against which the type members are impacted;

mark means provided on each type element for identifying the type element;

sensor means mounted on the stationary frame member at a home position of the carriage for sensing the mark means as the carriage is being linearly moved to the home position; and

control means for identifying the type element on the carriage in accordance with the sensed mark means;

the drive means being constructed to hold the type element in a predetermined angular position in which the marks are spaced from each other in a direction which is parallel to a direction of movement of the carriage while the marks are being sensed by the sensor means, the marks being sensed by means of linear movement of the type element past the sensor means;

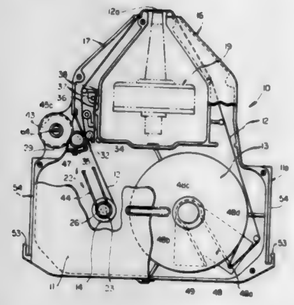
whereby a print control program is selected in conformity to the identified type element while desired printing is carried out in accordance with the selected program.

4,448,556

CARTRIDGE FOR MATRIX PRINTER

Richard Trezise, San Jose; John Boldt, San Ramon, and Keith Gnutzman, Alameda, all of Calif., assignors to Chroma, San Jose, Calif.

Filed Apr. 21, 1982, Ser. No. 370,201
Int. Cl.³ B41J *32/00*
U.S. Cl. 400—208 **7 Claims**



1. A ribbon cartridge for use in a printer comprising:

an envelope having a predetermined thickness for storing ribbon and for supporting a length of ribbon for placement between a platen and print head;

a capstan driven within the envelope for moving the ribbon;

an outboard gear for coupling to ribbon driver means on the printer, the periphery of the gear engaging the capstan to drive it, the gear being mounted for rotation on an ear portion of the envelope thinner than the predetermined thickness of the ribbon containing portion of envelope, said gear including means engageable by said ribbon driver means of said printer.

4,448,557

METHOD AND MEANS FOR INHIBITING INTERLEAVING OR CAVE-IN AMONG TABLE TEXT COLUMNS RESULTING FROM COLUMN INSERTION

Gary R. Horn, and Kenneth O. Shipp, Jr., both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,254
Int. Cl.³ B41J *25/18*
U.S. Cl. 400—279 **4 Claims**



1. In the insertion of a first-text column into a tab-stop positioned multicolumn table, the table having right-adjacent column text entries on the same row line as null entries of the first column, the column insertion being executable on an interactive stored program controlled word processing system, a method for inhibiting interleaving or cave-in among entries from dissimilar columns comprising the program executable steps of:

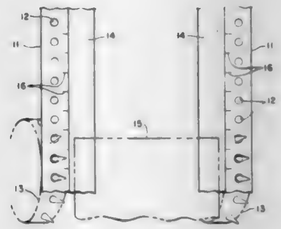
merging the row entries of the first column within the table in a single pass and including identifying each first column null entry and right adjacent text entry, and inserting a tab into the identified null-entry positions.

4,448,558

COMPUTER PRINTER PAPER SUPPORT

Joseph L. Weingarten, 1927 Oak Tree Dr. E., Dayton, Ohio 45440

Continuation of Ser. No. 300,869, Sep. 10, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 502,027
Int. Cl.³ B41J *13/08, 13/12, 13/24*
U.S. Cl. 400—529 **4 Claims**



1. In a paper transport assembly for a printer having a pin type paper feed mechanism which includes a pair of spaced sprockets for advancement of various sizes and configurations of individual sheets of paper into said printer, said paper transport comprising:

a. a first flexible strip having along the length and near a first edge thereof a first plurality of regularly spaced holes for engaging the sprocket on a first side of said pin type feed mechanism, and a layer of non-setting and non-permanent adhesive means on said first strip along the length and near a second edge thereof, for removeably attaching said sheet along a first edge thereof to said first strip;

b. a second flexible strip having along the length and near a first edge thereof a second plurality of regularly spaced holes for engaging the sprocket on a second side of said pin type feed mechanism, and a layer of non-setting and non-permanent adhesive means on said second strip along the length and near a second edge thereof said first and second strips defining a width, between said first plurality of holes and said second plurality of holes of more than the width of said sheets of paper supportable thereon, for removably attaching said sheet along a second edge and opposite said first edge thereof to said second strip whereby said sheet is directly attached to and supported only on said first and second strip between said sprockets and is not otherwise provided with means for transport into said printer; and

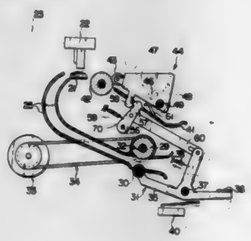
c. each of said layers of adhesive means having a width extending a predetermined distance from the second edges of said respective first and second strips towards the respective first and second pluralities of holes whereby said range of sizes and configurations of sheets transportable by said assembly is related to the combined width of said adhesive means.

4,448,559

PAPER GUIDE ARRANGEMENT FOR PRINTING APPARATUS

Susumu Matsuda, and Katuhiko Kawaguchi, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 387,238
Claims priority, application Japan, Jun. 19, 1981, 56-90786[U]
Int. Cl.³ B41J *13/04*
U.S. Cl. 400—637.4 **7 Claims**



1. A paper guide arrangement for printing apparatus, comprising:

an apparatus housing;

a platen fixedly supported relative to the apparatus housing;

a paper supply guide having an outlet for supplying paper at one side of the platen;

a paper discharge guide having an inlet for discharging the paper from the other side of the platen;

a drive source;

a paper supply drive roller arranged in operative relation with the paper supply guide for rotation by the drive source;

a paper supply contact roller arranged in confronting relation to the paper supply drive roller and first support means for movably supporting the paper supply contact roller into and out of rolling contact with the paper supply drive roller;

a paper discharge drive roller arranged in operative relation with the paper discharge guide for rotation by the drive source;

a paper discharge contact roller arranged in confronting relation to the paper discharge drive roller and second support means for movably supporting the paper discharge contact roller into and out of rolling contact with the paper discharge drive roller; and

an operating mechanism including the first and the second support means for controlling the drive source to rotate the paper supply drive roller when the paper supply contact roller is brought by the first support means into rolling contact with the paper supply drive roller, and to stop the rotation of the paper supply drive roller by the drive source when the paper supply contact roller is removed by the first support means from the paper supply drive roller, and wherein the first and the second support means are arranged to cooperate so that the paper discharge contact roller retracts from the paper discharge drive roller when the paper supply contact roller is brought into rolling contact with the paper supply drive roller.

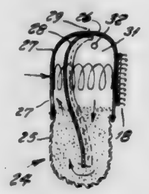
4,448,560

ROSIN BAG AND TOWEL ATTACHED TOGETHER

Donald R. Monaco, Jr., 316 Stump Rd., North Wales, Pa. 19454

Filed Jan. 11, 1983, Ser. No. 457,253
Int. Cl.³ A44B *13/00*
U.S. Cl. 401—200 **1 Claim**

1. An article of manufacture for rosining and wiping the hands of an athlete, comprising, in combination, a towel unit and a bag unit, detachably attached together by loop pile fastener means, said towel unit including a towel of terry, and said bag unit including a bag containing rosin powder; said bag also including means for being kneaded selectively in a hand or being pushed for blowing a quantity of said rosin powder at said hand; said means comprising said bag, being made of an upper portion of non-porous flexible plastic sheeting material stitched to a lower portion of loose woven fabric, a plurality of



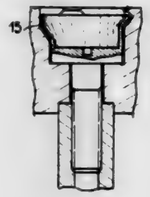
large holes through the front side of said upper portion, a flap inside said bag being threaded on a horizontal compression coil spring between the rear side of said upper portion and said upper portion front side, and said flap forming a rear chamber and a front chamber inside said bag which communicate with each other beneath a lower edge of said flap.

4,448,561

SCREWED SAFETY ASSEMBLY

Jacques Le Pargneux, Lyons, France, assignor to Framatome, Courbevoie, France

Filed Aug. 29, 1980, Ser. No. 183,563
Claims priority, application France, Sep. 19, 1979, 79 23312
Int. Cl.³ F16B *35/04*
U.S. Cl. 403—19 **1 Claim**



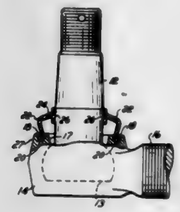
1. A screwed safety assembly for an easily dismountable assembly of a nuclear reactor, comprising a screw (12) the head (13) of which engages in a smooth seating (4) in a first part to be assembled (1), and the threaded shank of which engages a mating threaded portion of a second part to be assembled (2), said head of said screw comprising a deformable portion consisting of a thin external cylindrical ferrule (15), and said seating (4) of said screw head comprising, over a portion only of its periphery, at least one widened portion (6) of larger diameter into which a corresponding portion of said deformable ferrule (15) penetrates upon being deformed by expansion, said seating (4) of said screw head also comprising a circular groove (10) formed at the level of the upper edge of said deformable ferrule (15) between said at least one widened portion (6) and leading thereinto, in such manner that, when said ferrule is deformed by expansion, at least a portion of said upper edge penetrates into said groove (10) between said at least one widened portion (6), whereby said head (13) of said screw (12) is retained in said seating (4) in the event of fracture of said screw (12), the deformability of said ferrule (15) being sufficient to permit disengagement of said assembly merely by unscrewing, the portions of said ferrule (15) which were expanded then being deformed in the opposite direction.

4,448,562

BELLOWS SEAL FOR BALL AND SOCKET JOINTS

John A. Rose, Ypsilanti, Mich., assignor to O & S Manufacturing Company, Whitmore Lake, Mich.

Filed Jan. 7, 1982, Ser. No. 337,665
Int. Cl.³ F16C *11/00*; F16D *1/12*
U.S. Cl. 403—134 **6 Claims**





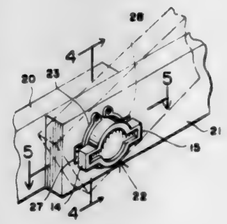
1. In a ball and socket joint comprising a ball and socket in mutual swivelling sliding engagement, said ball having a stud integrally formed therewith projecting outwardly through one end of said socket, and means holding said ball in said socket, the improvement comprising an annular groove disposed around the exterior periphery of said socket at said end of the socket from which said stud projects, said annular groove having a pair of lateral walls, and a resilient tubular body disposed around said stud, said resilient tubular body having an open end stretched around said stud and another open end provided with an integral reinforcing bead fitted within said annular groove, wherein said annular groove is partially closed by at least one lateral wall of said groove being bent over and folded over said bead such as to hold said bead within said groove.

4,448,563

PIVOTAL RIVET ASSEMBLY

Robert H. Zankl, 5410 Banyan Dr., Miami, Fla. 33156

Filed Sep. 12, 1980, Ser. No. 186,827
Int. Cl.³ F16C *11/00*
U.S. Cl. 403—161 **4 Claims**



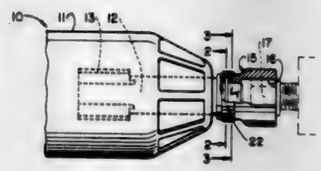
1. A pivotal rivet assembly swingably securing a rivet member to a companion member comprising, in combination, a first flat metal bar, a second flat metal bar adapted to be pivotally interconnected in face-to-face relation with respect to said first flat metal bar for relative swinging motion and having a round opening and a pair of diametrically-opposed recesses communicating with said round opening, a rivet having a cylindrical rivet head, a reduced diameter rivet shank integrally formed with and extending coaxially outwardly of the underside said rivet head, the outer end of said shank being fixedly riveted to said first flat metal bar, the juncture of said rivet head with said rivet shank defining an annular shoulder lying in a plane perpendicular with the longitudinal axis of said rivet head and said shank, an outer end portion of said cylindrical rivet head being integrally formed with a pair of diametrically-opposed lugs the under-surfaces of which lie in a common plane parallel with said plane of said annular shoulder, the axial distance between said plane of said annular shoulder and said plane of said underside of said lugs being somewhat greater than the thickness of said second flat metal bar to be swingably secured, the peripheral size and shape of said opening and said opening recesses being complemental with the outer peripheral shape of said outer end portion of said rivet head with its said integral lugs to permit passage therethrough of said rivet head upon assembly or disassembly of said first and second flat metal bars, and a resilient arcuate member receivable in embracing relation about said rivet shank between the undersides of said rivet head lugs and outer surface portions of said second flat metal bar fitted over said rivet head.

4,448,564

RETAINING MEANS FOR IMPACT DRIVE SOCKET

Stanley J. Orszulak, Springfield, Mass., assignor to Easco Corporation, Baltimore, Md.

Filed Apr. 13, 1983, Ser. No. 484,618
Int. Cl.³ B25G *3/00*
U.S. Cl. 403—318 **3 Claims**



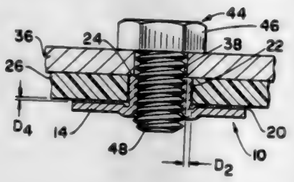
1. In combination with a socket carried by the drive shank of a power-operated tool, wherein the socket has at least one radial bore formed therein, wherein the shank has a transverse bore formed therein in communication with the radial bore in the socket, and wherein a locking pin is received mutually within the radial bore and transverse bore, respectively, the improvement in socket retaining means comprising a sleeve carried by the socket and having a normal position covering the radial bore therein, thereby retaining the pin, resilient means biasing the sleeve in its normal position, and means for moving the sleeve axially against the bias of the resilient means and into an alternate position to uncover the radial bore in the socket, whereby the pin may be removed to remove the socket from the shank, wherein the resilient means comprises a split ring, the socket having an external annular groove receiving the ring, the ring having a portion protruding radially of the external groove, and the sleeve having a pair of spaced-apart internal annular grooves formed therein, whereby the ring is received in one of the internal grooves in the sleeve in the normal position of the sleeve, and whereby the sleeve may be pushed manually to compress and ride over the ring, whereby the ring will be received in the other internal annular groove in the sleeve in the alternate position thereof, thereby providing a two-position detented action for the sleeve.

4,448,565

STRESS RELIEVING NUT MEMBER

Francis C. Peterson, St. Charles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 17, 1982, Ser. No. 359,004
Int. Cl.³ F16B *5/02*
U.S. Cl. 403—408 **6 Claims**



1. In a joint designed to clamp a first workpiece to a second, relatively fragile workpiece, the combination of a nut member including a tubular section of predetermined outer diameter and axial length, the tubular section defining first and second extremities, a generally planar, radially extending flange extending from a region adjacent the first extremity, the second, relatively fragile workpiece being of predetermined thickness and including at least one aperture of predetermined transverse dimension and axial dimension sufficient to receive the tubular section of predetermined outer diameter but not appreciably greater than said predetermined outer diameter, the aperture in the fragile workpiece defining first and second extremities generally corresponding to the relative location of the first and second extremities of the tubular section, adhesive securement means interposed between the flange and the planar surface of the fragile workpiece surrounding the at least one aperture, the adhesive joint thus formed being spaced radially, slightly beyond the aperture, rim means integrally interconnecting the annular flange and the first extremity of the tubular section to space the radial innermost region of the planar flange radially from the first extremity as well as axially toward the second extremity, the nut member being secured to the fragile workpiece with the tubular section telescopically associated within the aperture so the second extremity of the tubular section is spaced slightly inwardly from the second extremity of the aperture, the first workpiece including an aperture of less transverse dimension than the aperture in the second workpiece and also less than the predetermined outer diameter of the tubular section so that the second extremity of the tubular section abuts against the peripheral surface around the aperture in the first workpiece when the nut is threadingly associated with a mating externally threaded member and clamping forces applied to the joint while the clamping forces are substantially isolated from the second fragile workpiece due to the layer of adhesive and the spring loaded tubular section so as to create a column between the first workpiece and nut member.

4,448,566

METHOD OF MAKING A LOAD BEARING SURFACE USING PHOSPHOGYPSUM AND FLYASH

H. Hobson King, Richmond, Va., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 441,145
Int. Cl.³ E01C *7/06, 7/32*
U.S. Cl. 404—31 **17 Claims**

1. A method of producing a load bearing surface disposed on a subgrade, comprising the steps of:

(a) spreading a layer of phosphogypsum having a predetermined thickness over the surface of the subgrade;

(b) spreading a layer of flyash over the surface of said layer of phosphogypsum in an amount from about 10 to 30 percent by weight based upon the total weight of the phosphogypsum and flyash;

(c) mixing said flyash and phosphogypsum and compacting said mixture to form a subbase layer;

(d) spraying water over the surface of said subbase layer until the layer is moist and soft and then compacting said layer;

(e) repeating step (d) for a plurality of cycles until the materials are intimately mixed, densified, and the layer is saturated with water;

(f) spreading a layer of phosphogypsum having a predetermined thickness over the surface of said subbase layer;

(g) spreading a layer of flyash over the surface of said layer of phosphogypsum overlying the subbase layer in an amount from about 20 to 50 percent by weight based upon the total weight of the phosphogypsum and flyash;

(h) mixing said flyash and phosphogypsum and compacting said mixture to form a base layer;

(i) spraying water over the surface of said base layer until the layer is moist and soft and then compacting said layer; and

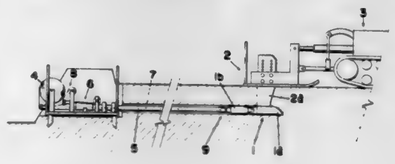
(j) repeating step (i) for a plurality of cycles until the materials are intimately mixed, densified, and the layer is saturated with water.

4,448,567

METHOD FOR INSTALLING LINES, PIPES OR CABLES UNDERGROUND

Yutaka Tsuda, Kurume, Japan, assignor to Pipe Master International Ltd., Hong Kong, Hong Kong

PCT No. PCT/JP80/00075, 371 Date Oct. 1, 1981, 102(e) Date Oct. 1, 1981, PCT Pub. No. WO81/02317, PCT Pub. Date Aug. 20, 1981
PCT Filed Apr. 15, 1980, Ser. No. 309,968
Claims priority, application Japan, Feb. 5, 1980, 55-12804
Int. Cl.³ E02B *13/00*; E02D *29/10*; E02F *5/10*; E03F *3/06*
U.S. Cl. 405—43 **2 Claims**



1. Method for efficiently installing various lines, pipes or cables underground comprising;

(i) disposing a boring means underground, said boring means being movable in a desired direction so as to form an elongated hole underground,

(ii) connecting a front end of a plastic tube formed from a flat plastic sheet to a rear end of said boring means,

(iii) connecting a front end of a hauling rope to said rear end of said boring means through said plastic tube,

(iv) propelling said boring means underground so as

(a) to form said elongated hole underground,

(b) to unreel said flat plastic sheet, to form said plastic tube from said flat plastic sheet while preventing said plastic tube from returning to to said original plastic flat sheet,

(c) to unreel said hauling rope within said plastic tube,

(v) installing said plastic tube and said hauling rope in and along said elongated hole along with said propelling of said boring means,

(vi) disconnecting said front end of said plastic tube and said front end of said hauling rope from said rear end of said boring means,

(vii) connecting a front end of a desired line, pipe or cable to a rear end of said installed hauling rope, and

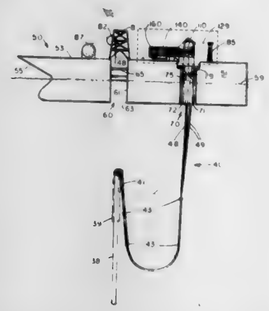
(viii) pulling only said hauling rope in and along said plastic tube thus installing said line, pipe or cable in and along said plastic tube, whereby any kind of size of lines, pipe or cable having a diameter less than said plastic tube can be installed in said plastic tube by being hauled through said plastic tube by said hauling rope.

4,448,568

MARINE SURFACE FACILITY WORK STATION FOR SUBSEA EQUIPMENT HANDLING

Larry L. Gentry, Sunnyvale; Herbert H. Moss, Cupertino, both of Calif., and Narayana N. Panicker, Grand Prairie, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 22, 1982, Ser. No. 391,038
Int. Cl.³ E21B *17/01*; F16L *1/04*
U.S. Cl. 405—169 **38 Claims**



1. An offshore process vessel, having an elongated hull and a main deck, for performing subsea service functions on a deepwater production riser system without major equipment support, comprising:

A. a pair of moonpools extending vertically from said main deck to an open bottom end below water level;

B. below-deck storage facilities communicating with at least one of said moonpools; and

C. cooperatively interacting feed and retrieval means at each said moonpool for:

(1) introducing a plurality of service hoses and high-pressure hoses into the water beneath said vessel,

(2) keelhauling and slinging said hoses between said moonpools,

(3) selectively working on both ends of said hoses,

(4) equipping said hoses with selected component parts to form a flowline bundle as a catenary between said moonpools and beneath said vessel, and

(5) lowering the intake end of said flowline bundle from one said moonpool to said riser system and making connections thereto, while the discharge end of said flowline bundle remains secured to a removable plug within the other said moonpool.

4,448,569

LIFT SLING EMPLACEMENT DEVICE

Donald J. Hackman, Columbus; Don W. Caudy, Dublin, both of Ohio; Robert L. Wernli, San Diego, Calif., and Carl S. Albro, Worthington, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1981, Ser. No. 276,416
Int. Cl.³ B63C *11/52*
U.S. Cl. 405—190 **18 Claims**

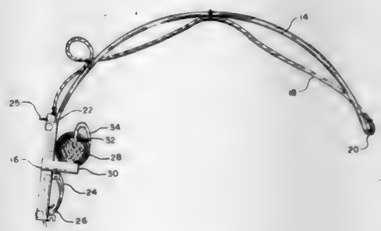
1. A device for enabling the lifting of an object comprising:

a support frame;

an elongate tubular member in slideable engagement with said support frame, said tubular member having a first end and a second end;

a hose having a first end connected to said tubular member first end and having a second end secured to said support frame;

a strap having a first end connected to said tubular member second end and having a second end secured to said support frame; and



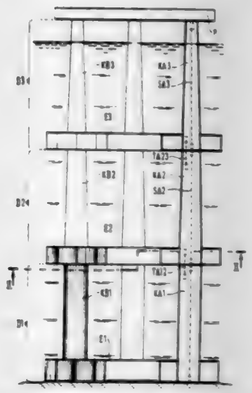
a cord having first and second ends, said cord first end being secured to said support frame.

4,448,570

METHOD OF CONSTRUCTING A CONCRETE OFF-SHORE STRUCTURE MORE THAN 200 M HIGH STABILIZED ON THE SEA BED BY ITS OWN WEIGHT

Jean-Claude Berthin, Mennecy, France, assignor to Sea Tank Co., Rungis, France

Filed Sep. 22, 1981, Ser. No. 304,498
Claims priority, application France, Oct. 21, 1980, 80 22443
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—204 **2 Claims**



1. A method of constructing an off-shore concrete structure which stands on the sea floor in depths of more than 200 m and is stabilized thereon by its own weight, the method comprising the following steps:

prefabricating a floating unit comprising a compartmented base with hollow columns projecting upwardly therefrom and floating said unit at a sheltered site by the sea;

transporting said floating unit to a final site at sea; and

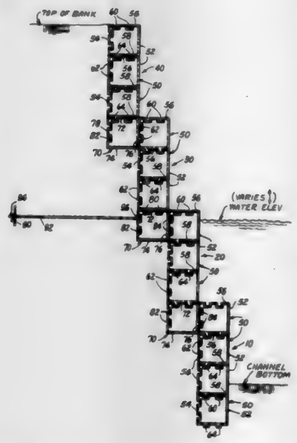
sinking the unit over its final site by progressively filling the compartments and the columns with water, to cause the base to rest on the sea floor;

the improvement wherein the prefabrication step comprises constructing a succession of units each constituting one storey of the support structure, the succession including at least a bottom storey and a top storey, and each storey comprising a horizontal polygonal compartmented base with vertical hollow columns of equal height disposed at the corners of the base polygon by forming said bases and said columns of concrete reinforced with longitudinal, storey-prestressing cables under tension, said cables being located in the column walls and extending over the full height of each storey;

and wherein the floating and transporting steps comprise:

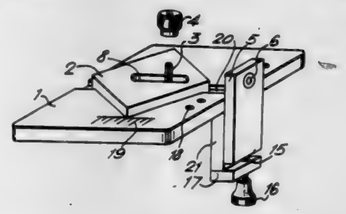
floating each of the storeys at the prefabrication site;
transporting each storey to an assembly site at sea;
tilting each of the storeys at the assembly site by progressively filling compartments in the base to cause the storey to float with two of its columns at the surface of the water;
assembling the storeys with corresponding columns of successive storeys being aligned, and with the base of each upper storey being assembled to the tops of the columns of the next storey down;
and wherein said assembly step further comprises a preassembly step in which metal members provided for the purpose in the assembly zones are interconnected, and a final structure assembly step in which interconnecting pre-stressed cables are installed, put under tension, and embedded in mortar, at least some of said interconnecting cables being longitudinally disposed and extending on either side of the junction plane between two successive storeys beyond the ends of the longitudinal, storey-pre-stressing cables in such a manner as to insure continuous pre-stressing over the entire height of the structure; and
transporting the structure thus assembled in the horizontal position from the assembly site to the final site;
and tilting the assembled structure to bring it into the vertical before said step of sinking it.

4,448,571
PANEL SYSTEM FOR SLOPE PROTECTION
Robert Y. Eckels, 4035 Trey Dr., Houston, Tex. 77084
Filed Nov. 30, 1981, Ser. No. 325,751
Int. Cl.³ E02D *29/02*
U.S. Cl. 405—284 **4 Claims**



1. A system of panels and accessory anchoring devices for providing erosion protection to the slopes of a watercourse, including:
a plurality of panels of a weight such that each is man portable, and designed to be placed vertically one upon the other along a watercourse slope;
said panels each being made of a plurality of hollow sections designed and constructed to mate with each other, each of said sections being extruded in a hollow rectangular configuration from light weight material, the mating surfaces of the sections carrying interlocking, longitudinally extending tongue and groove means thereon, and the hollow interiors thereof accommodating the reception of other material and items within the sections and the panels formed thereby;
a plurality of deadman elements, for burying in the earth fill placed behind each panel; and
means connecting said deadman elements with the rear sides of said panels, whereby when said deadman elements are buried in the earth fill said panels will be secured in position.

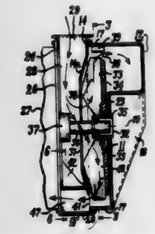
4,448,572
PICTURE FRAMING
Cyril A. Gill, 36 Grove Rd., Eastbourne, Sussex, England
Filed Sep. 13, 1982, Ser. No. 417,130
Int. Cl.³ B23B *47/28*
U.S. Cl. 408—115 R **10 Claims**



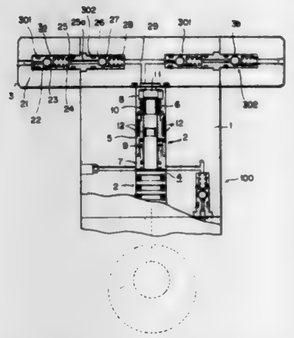
1. Apparatus for facilitating the correct positioning of dowel holes in the mitered ends of picture frame moldings which are to be joined comprising:
a base plate arranged to be positioned horizontally when in use, said base plate having a planar upper surface and an elongated guide groove formed in said upper surface, said groove having an axis;
slide means mounted from said base plate adjacent one edge thereof, said slide means having an adjustable portion which defines a plane perpendicular to the plane of said base plate upper surface, said slide means adjustable portion intersecting an extension of the axis of said base plate groove;
a drill guide mounted in said slide means adjustable portion, said drill guide having an axis, said drill guide being mounted so that the axis thereof is parallel to the plane of said base plate upper surface;
means for imparting motion to said slide means adjustable portion to thereby adjust the position of said drill guide axis relative to said base plate upper surface;
a moulding positioning member extending above and slidably mounted on the upper surface of said base plate, said positioning member engaging said guide groove and having at least a pair of guide faces thereon, each of said guide faces lying in a plane which intersects said drill guide axis at an angle of substantially 45°, the intersection of said guide faces defining a line which is intersected by and transverse to an extension of said drill guide axis; and
adjustment means, said adjustment means allowing movement of said positioning means along said guide groove to vary the spacing between said slide means and positioning member while maintaining the angular relationship between the axis of said drill guide and the planes in which said positioning member guide faces lie, said adjustment means engaging said positioning member and being operable to retain said positioning member at a selected location.

4,448,573
SINGLE-STAGE, MULTIPLE OUTLET CENTRIFUGAL BLOWER
Joseph P. Franz, Erie, Pa., assignor to General Electric Company, Erie, Pa.
Filed Mar. 25, 1982, Ser. No. 361,958
Int. Cl.³ F04D *29/40*
U.S. Cl. 415—206 **7 Claims**

1. A housing for a single-stage, multiple outlet centrifugal blower, comprising:
a. a relatively stationary casing adapted to enclose a rotatable impeller, said casing having a generally planar barrier on the intake side of the impeller, a generally spiral plenum on the other side of the impeller, and means including a curvilinear wall for joining said plenum to the perimeter of said barrier;
b. said barrier having a first port in a central region thereof to provide a fluid inlet in the vicinity of the eye of the impeller;
c. said plenum having an exit section that provides a first fluid outlet from said casing and having an opening in its inboard side that extends along a predetermined limited portion of the periphery of the impeller; and
d. a second fluid outlet comprising a second port in said barrier, said second port being located in a generally arcuate region of said barrier near the periphery of said impeller but displaced from said predetermined limited portion of the periphery so that said second port is out of register with said opening of said spiral plenum, the pressure and volume flow rate of fluid discharging through said second outlet being dependent on the shape and cross-sectional area of said second port and on the fluid backpressure on the discharge side of said second port and being substantially independent of the pressure and volume flow rate of fluid discharging through said first outlet, whereby the downstream backpressure of the fluid discharged from either one of said outlets will not significantly affect the flow of fluid discharging from the other outlet.

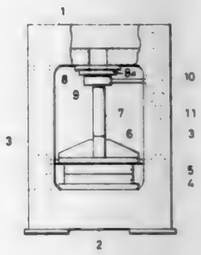


4,448,574
EXTRA-HIGH PRESSURE WATER PUMP
Sachio Shimizu, Tokyo, Japan, assignor to Aiko Engineering Co. Ltd., Tokyo, Japan
Filed Jan. 25, 1982, Ser. No. 342,413
Int. Cl.³ F04B *21/04*
U.S. Cl. 417—488 **9 Claims**



1. An extra high pressure water pump comprising:
a cylinder barrel;
a cylinder head extending across one end of said cylinder barrel;
a double piston in said cylinder barrel comprising;
a main reciprocally driven piston;
a piston rod rigidly secured to and projecting from the main piston;
an additional lubricating oil piston slidable over an additional piston rod;
a lubricating oil chamber in said barrel between said main piston and said additional lubricating oil piston;
a water chamber in said barrel between said lubricating oil piston and said one end of said cylinder barrel.

4,448,575
TIRE VULCANIZING PRESS
Takaomi Hanyu; Nobuhiko Irie; Akira Hasegawa; Teruaki Muta; Katsuyoshi Sakaguchi; Toshihisa Ikeda; Yoshiharu Itayama, and Akira Nakahara, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan
Filed Jul. 12, 1983, Ser. No. 513,065
Claims priority, application Japan, Jul. 13, 1983, 58-121572
Int. Cl.³ B29H *5/02, 5/08*
U.S. Cl. 425—47 **5 Claims**

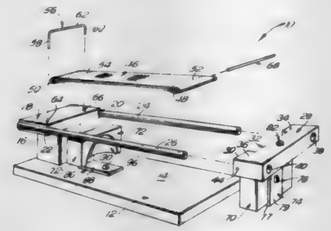


1. A tire vulcanizing press of the type including an upper frame, a lower frame and side frames by way of which said upper frame and said lower frame are integrally connected to one another, wherein a lower die half is fixedly mounted on the lower frame and an upper die half is fixedly secured to a raising and lowering table adapted to be raised up or lowered by means of a raising and lowering means fixedly attached to the upper frame in such a manner that the upper die half is displaced away from or toward the lower die half, characterized in that the raising and lowering table has a vertically extending member fixedly mounted thereon, a working cylinder is secured to the bottom of the upper frame having a piston reciprocally mounted therein and a distance plate is disposed between the working cylinder piston and the vertically extending member in such a manner as to be displaced away from the operative position to the inoperative position and vice versa, the working cylinder and piston both comprising a doughnut-shaped cylinder having a through hole formed at the central part thereof.

4,448,576
PASTRY AND DUMPLING MAKER
William Y. Liu, 286 Clinton Ave., Brooklyn, N.Y. 11205
Filed Feb. 4, 1983, Ser. No. 463,840
Int. Cl.³ A21C *9/06, 11/00*
U.S. Cl. 425—89 **14 Claims**

1. A pastry and dumpling maker comprising:
a pair of cooperating first and second mold sections defining therebetween a particular shape of a pastry to be formed;
first means for relatively moving said mold sections into cooperative engagement with each other to form the pastry, and for subsequently separating said mold sections after a shaped pastry is formed;
a flexible strip of material defining a strap for supporting a dough skin with a filling of food ingredients thereon;
second means for suspending said flexible strap above said mold sections, and for lowering a center portion of said flexible strap with the dough skin and filling supported

thereon between said mold sections as said mold sections are moved into cooperative engagement, whereby the



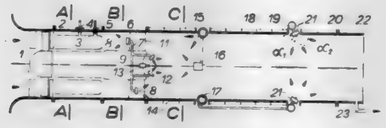
dough skin is folded over the filling and sealed into the particular pastry shape, the shaped pastry being removable upon separation of said mold sections.

4,448,577

DEVICE FOR PRODUCTION OF INERT GASES

Marian Paczkowski, Katowice, Poland, assignor to Glowny Instytut Gornictwa, Katowice, Poland

Filed Jan. 29, 1982, Ser. No. 344,101
Claims priority, application Poland, Jan. 29, 1981, 229466
Int. Cl.³ F23L 9/00
U.S. Cl. 431—190 **1 Claim**



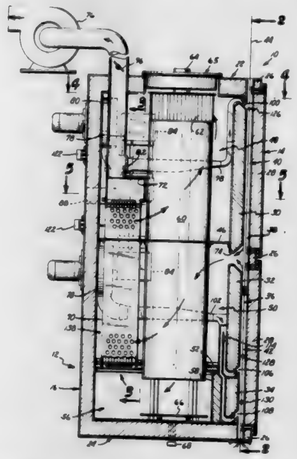
1. In a device for producing inert gases by liquid fuel combustion and diffusion of combustion products with water, useful particularly to prevent and extinguish underground fires, comprising a turbo-compressor and tightly connected multiple stage chambers for preliminary reduction of oxygen, fuel atomization, after-burning, mixing and evaporation, the improvements which are characterized by providing a first cylindrical shaped inlet combustion chamber immediately downstream of said turbo-compressor, and including a circumferential array of burner tubes extending longitudinally of said chamber, each tube including a fuel injector means and downstream thereof a sparking means for combustion of fuel introduced by said fuel injector means, providing preliminary reduction of oxygen in said flame tubes, a second cylindrical chamber attached downstream of said first chamber and including fuel atomization means in the form of two circumferential rows of atomizers, one of which consists of a series of fuel nozzles facing upstream toward the outlet of said first chamber and said flame tubes therein, a second set of atomizers facing downstream parallel to flow through said second chamber, therebeing included a cylindrical internal tube mounted within said second chamber by means of radially extending partition means connected to the circumference of said second chamber and defining a series of axially arranged channels each containing one of said second set of atomizers therein, a third cylindrical chamber connected to the downstream end of said second chamber, therebeing a further set of supplemental fuel atomizers arranged in a concentric pattern around the central axis of said third chamber, sparking means arranged in the center of said third chamber, a fourth cylindrical chamber connected to the downstream end of said third chamber and providing a preliminary cooling means for exhaust gases flowing therethrough, said fourth chamber including a cylindrically arranged water jacket means for preliminary cooling of said gases, a centrally located water nozzle mounted between said third and fourth chambers for supplying a spray of water facing upstream of said flow toward said third chamber, and a circumferentially arranged spray diffuser means in the form of a ring mounted between said third and fourth chambers and also facing substantially upstream of said flow to supply with said centrally arranged nozzle, a pattern of water for preliminary cooling of said gases, a fifth cylindrical chamber connected to the downstream end of said fourth chamber, a circumferentially mounted set of water nozzles between said fourth and fifth chambers facing partially downstream of said direction of flow therethrough, including individual nozzles mounted at an angle with respect to the cylindrical chamber and defining thereby a spray pattern facing inwardly as well as downstream of said flow of gases, and a chamber connected to the downstream outlet end of said fifth chamber, whereby exhaust gases passing through said device provide for evaporation of water and forming of inert gases at the outlet end thereof.

4,448,578

CURING OVEN FOR ENAMELED WIRE AND CONTROL SYSTEM THEREFOR

George A. Brunet, Hennepin County, and Richard J. Cowan, Dakota County, both of Minn., assignors to Acrometal Products, Inc., Minneapolis, Minn.

Continuation of Ser. No. 373,797, Apr. 30, 1982, abandoned.
This application Aug. 25, 1983, Ser. No. 526,276
Int. Cl.³ F27B 9/28; F24H 1/00; C21D 9/54
U.S. Cl. 432—72 **25 Claims**



23. A curing oven for coated product, comprising:

casing means defining an elongated work chamber for receiving coated product to be cured, said work chamber having an evaporating zone adjacent an inlet end and a curing zone adjacent an outlet end;

partition means within casing means for defining an upper chamber, an intermediate chamber in fluid communication with the evaporating and curing zones of said work chamber, and a lower chamber;

a combustor tube having an inlet end located in said upper chamber and an outlet end located in said lower chamber;

a burner disposed in the inlet end of said combustor tube;

a heat exchanger means defining a first flow path fluidly connected to said lower chamber, and a second flow path fluidly interconnecting said upper and intermediate chambers such that process air from the work chamber is preheated before oxidation by said burner;

means defining a cold air intake in fluid communication with air outside said casing means;

means fluidly connected to said first flow path of said heat exchanger means and said cold air intake means for mixing outside air and combustion gases to separate predetermined temperatures and directing the resultant mixtures into the curing and evaporating zones of the work chamber; and

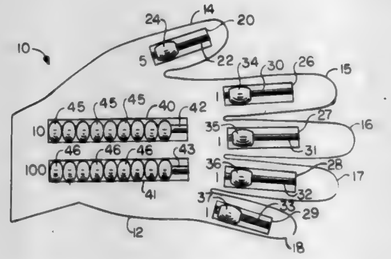
means connected to the first flow path of said heat exchanger means for exhausting hot air from the oven.

4,448,579

ARITHMETIC INSTRUCTION APPARATUS

Richard A. Currie, 833 S. Burgess Dr., Baton Rouge, La. 70815

Filed May 7, 1982, Ser. No. 376,127
Int. Cl.³ G09B 19/02; G06C 1/00
U.S. Cl. 434—203 **16 Claims**



1. An educational teaching device formed in the shape of a human hand comprising a frame in the shape of a human hand having a palm, a thumb and four fingers, the frame having a first groove in the palm, a second groove in the thumb, a third groove in the first finger, a fourth groove in the second finger, a fifth groove in the third finger, and a sixth groove in the fourth finger, said grooves having one or more slidable beads therein which can be manipulated to perform various arithmetic operations.

4,448,580

PROCESS FOR PRODUCING α-METHYL STYRENE-METHYL METHACRYLATE-ACRYLONITRILE THERMOPLASTIC RESIN

Mitsuo Abe; Syuji Tsuchikawa; Teizo Fukuta, all of Yokkaichi, and Tsugio Asakawa, Suzuka, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1982, Ser. No. 421,777
Claims priority, application Japan, Sep. 29, 1981, 56-154150
Int. Cl.³ C08L 55/02, 33/12; C08F 257/02
U.S. Cl. 525—71 **16 Claims**

1. A process for producing a thermoplastic resin having an excellent thermal stability and a high heat resistance, which comprises (1) the first step of initiating polymerization of 65–85 parts by weight of a monomer mixture (A) consisting of 50–85% by weight of α-methylstyrene, 3–20% by weight of methyl methacrylate, 2–20% by weight of acrylonitrile, and 0–25% by weight of an aromatic alkenyl compound other than α-methylstyrene, (2) the second step of then adding continuously or intermittently 2–15 parts by weight of a monomer (B) consisting of acrylonitrile or a mixture thereof with an aromatic alkenyl compound other than α-methylstyrene, and continuing the polymerization and (3) the third step of further adding 5–25 parts by weight of a monomer (C) consisting of an aromatic alkenyl compound, other than α-methylstyrene, or a mixture thereof with acrylonitrile when the polymerization reaches 60% or more based on the total of the monomers (A) and (B) used, and continuing the polymerization to complete the polymerization, the total amount of monomers (A), (B), and (C) being 100 parts by weight.

4,448,581

PROCESS FOR WASHING DYED OR PRINTED TEXTILE MATERIALS

Peter Fennekels, and Ernst Waltmann, both of Krefeld, Fed. Rep. of Germany, assignors to Girmes-Werke AG, Grefrath, Fed. Rep. of Germany

Filed Apr. 14, 1983, Ser. No. 484,709

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213840

Int. Cl.³ B08B *7/04, 3/00;* **C11D** *9/42, 1/02*

U.S. Cl. 8—137 **16 Claims**

1. A process for washing dyed or printed textile materials comprising:

uniformly applying a foam to one side of the textile material, said foam comprising at least one surface active agent, and a compound soluble in the foam-forming liquid having substantially no affinity to the fibers of the textile material, and having a high adsorption capacity for the substances to be washed out of the textile material;

applying steam to the textile material immediately following the application of the foam, and

rinsing the textile material after said application of steam.

4,448,582

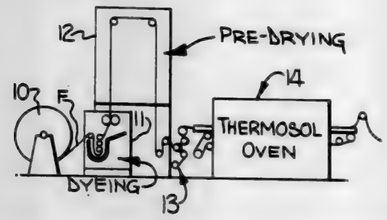
PROCESS FOR CONTINUOUS THERMOSOL DYEING OF TEXTILE FABRICS

David F. Johnson, Charlotte, N.C., assignor to American Artos Corporation, Charlotte, N.C.

Filed Feb. 1, 1982, Ser. No. 344,405

Int. Cl.³ D06B *5/08, 21/00*

U.S. Cl. 8—149.1 **4 Claims**



1. In a process for the continuous thermosol dyeing of a textile fabric formed at least partially of synthetic fibrous material, said process including the steps of applying dyestuffs to the fabric and thereafter heating the fabric to fix the dyestuffs on the fibers, the improvement which comprises carrying out said heating step by directing the fabric onto an air permeable supporting conveyor and conveying the fabric supported on said conveyor longitudinally through an elongate heated oven while directing heated air downwardly through the fabric and through the underlying supporting conveyor and while at predetermined longitudinally spaced locations as the fabric travels through the oven directing heated air upwardly through the supporting conveyor and into impingement with the fabric so as to lift portions of the fabric from the supporting conveyor to permit free shrinkage and bulking of the fabric while avoiding distortion of the fabric or obtaining an undesirable ironed surface appearance.

4,448,583

STABLE AQUEOUS LIQUID COMPOSITION OF REACTIVE DYES CONTAINING β-SULFATOETHYLSULFONYL GROUPS

Anthony J. Corso, Coventry, R.I., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Feb. 22, 1983, Ser. No. 468,513

Int. Cl.³ D06P *67/00;* **C09B** *62/00*

U.S. Cl. 8—527 **12 Claims**

1. An aqueous, liquid fiber-reactive dye composition which is stable to decomposition consisting essentially of 5 to 45% by weight of a water-soluble, fiber-reactive dyestuff having from 1 to 3 $-SO_2CH_2CH_2OSO_3H$ groups, or a mixture of such dyestuffs; 0 to 10% by weight of water-soluble inert inorganic salt; and 45 to 95% by weight of water; said liquid dye composition having a pH of about 2.5 to about 4.5 and being substantially free of buffer substances.

4,448,584

PROCESS FOR REMOVING SULFUR FROM COAL

George P. Masologites, Columbus, N.C.; Jui-Yuan Sun, South Holland, Ill.; Jin S. Yoo, Flossmoor, Ill., and Emmett H. Burk, Jr., Glenwood, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 944,435, Sep. 21, 1980, abandoned. This application Aug. 7, 1980, Ser. No. 175,983

Int. Cl.³ C10L *9/02*

U.S. Cl. 44—1 SR **17 Claims**

1. A process for reducing the sulfur and ash content of coal comprising the steps of:

(1) contacting coal particles containing ash and iron pyrite mineral matter with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the pyrite under conditions to effectuate alteration or modification of at least a portion of the contained pyritic sulfur, wherein the conditioning agent is an inorganic compound which can hydrolyze in water;

(2) separating the coal particles from at least a portion of the pyritic sulfur while surface characteristics are altered or modified; and

(3) recovering coal particles wherein the coal exhibits reduced sulfur and ash content.

6. The process of claim 1 wherein the conditioning agent is selected from the group consisting of aluminum oxide, aluminum hydroxide and mixtures thereof hydrolyzed in water forming an alumina gel.

4,448,585

PROCESS FOR FORMING STABLE COAL-OIL MIXTURES

Jin S. Yoo, Flossmoor, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 28, 1981, Ser. No. 334,691

Int. Cl.³ C10L *1/32, 9/02*

U.S. Cl. 44—51 **14 Claims**

1. A process for providing a coal-oil mixture fuel slurry of enhanced stability comprising the steps of:

(1) contacting an aqueous slurry of coal particles containing ash and iron pyrite mineral matter with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the pyrite under conditions to effectuate alteration or modification of at least a portion of the contained pyritic sulfur;

(2) agglomerating the coal particles while said pyrite surfaces are altered or modified in an aqueous medium with hydrocarbon oil;

(3) separating coal hydrocarbon oil agglomerates from at least a portion of the iron pyrite mineral matter and ash; and

(4) mixing the separated coal hydrocarbon oil agglomerates with a quantity of fuel oil to form a coal-oil mixture fuel slurry of enhanced stability.

5. The process of claim 1 wherein the conditioning agent is selected from the group consisting of metal aluminates having the formula $M'_d(AlO_3)_e$ or $M'_f(AlO_2)_g$, wherein M' is Fe, Co, Ni, Zn, Mg, Pb, Ca, Ba or Mc; and de, e, f and g are whole numbers dependent upon the ionic valence of M'.

4,448,586

CORROSION INHIBITOR COMPOSITIONS FOR ALCOHOL-BASE FUELS

Charles F. Weidig, Grosse Pointe, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1981, Ser. No. 317,573
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—55 **17 Claims**

1. A liquid fuel for use in internal combustion engines comprising a major amount of a monohydroxy alkanol having from 1 to about 5 carbon atoms and a corrosion inhibiting amount of a mixture consisting essentially of (a) from about 5 to 95 parts of a mixture consisting essentially of 40 to 80 volume percent alkyl or alkenyl succinic acid and 20 to 60 volume percent of an ester of an alkyl or alkenyl succinic acid and a glycol containing 2 to 4 carbon atoms; wherein the alkyl and alkenyl groups in said acid and in said ester each contain about 8 to 30 carbon atoms, and (b) from about 95 to 5 parts of at least one polymerized unsaturated aliphatic monocarboxylic acid having about 16 to 18 carbon atoms per molecule.

4,448,587

SYNERGISTIC CETANE IMPROVER

James B. Hinkamp, Birmingham, Mich., and John V. Hanlon, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 28, 1983, Ser. No. 479,507
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—57 **14 Claims**

8. A distillate fuel of the diesel boiling range containing a cetane number increasing amount of the synergistic combination of (a) about 5-95 weight percent of a C_4-C_{12} alkylnitrate, C_6-C_{12} cycloalkyl nitrate or mixtures thereof and (b) about 95-5 weight percent of an alkoxyalkyl nitrate of the formula

$$R—O—R'_nONO_2$$

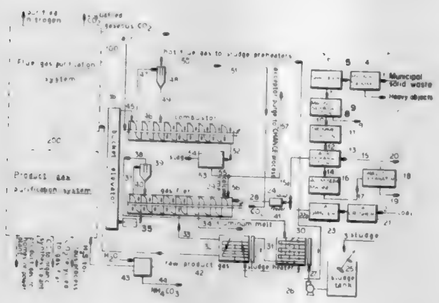
wherein R is an alkyl containing 1-10 carbon atoms, R' is a divalent alkylene group of 2-4 carbon atoms and n is an integer from 1-4.

4,448,588

INTEGRATED GASIFICATION APPARATUS

Shang-I Cheng, 17 Woodsend Dr., Matawan, N.J. 07747

Division of Ser. No. 173,169, Jul. 28, 1980, Pat. No. 4,353,713. This application Apr. 20, 1982, Ser. No. 370,055
Int. Cl.³ C10J *3/20*
U.S. Cl. 48—99 **5 Claims**



1. A plant for the gasification of water and a carbon-containing substance consisting of coal alone or coal together with municipal waste, biomass or sewage sludge with comprises:

a substantially horizontally disposed cylindrical gasifier provided internally with conveyor means for substantially horizontally, displacing said carbon-containing substances and other solids from one end of said gasifier to the opposite end thereof;

first feeding means for feeding said carbon-containing substance into said gasifier at said one end thereof;

second feeding means for feeding calcined lime or dolomite into said gasifier at said one end thereof whereby said carbon-containing substance undergoes devolatilization and pyrolysis proximal to said one end thereof;

means for withdrawing a gas from the other end of said gasifier containing product gas components and means for separating components including carbon dioxide from said product gas components means for recycling, the separated carbon dioxide at least partially to said gasifier and further including means for distributing the carbon dioxide near the opposite end of the gasifier;

recovery means for recovering solids containing char and calcium carbonate from said other end of said gasifier;

a combustor connected to said recovery means for receiving the char and calcium carbonate and for burning said char at a temperature sufficient to effect decomposition of the calcium carbonate to CaO and CO_2, means for delivering the CaO to the second feeding means for feeding calcined line or dolomite to said gasifier; and

third feeding means for feeding water to said gasifier at a location intermediate said ends thereof to sustain a steam/-carbon reaction in said gasifier.

4,448,589

PYROLYTIC CONVERSION OF CARBONACEOUS SOLIDS TO FUEL GAS IN QUARTZ SAND FLUIDIZED BEDS

Liang-tseng Fan, and Walter P. Walawender, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Jan. 23, 1980, Ser. No. 114,698
Int. Cl.³ C10J *3/54*
U.S. Cl. 48—197 R **17 Claims**

1. The method of pyrolytically converting subdivided carbonaceous solids to a fuel gas in a fluidized bed containing quartz sand as the primary inert medium for transferring heat to said carbonaceous solids, said bed being operated under endothermic reducing conditions at a temperature sufficient to convert said solids but below the sintering temperature of said sand, wherein the improvement comprises forming said bed from a mixture of said quartz sand and an anti-agglomerating composition in particulate form for fluidization with said sand and said carbonaceous solids, at least 55% by weight of said bed being said quartz sand, said anti-agglomerating composition being selected from the class consisting of the carbonates and oxides of calcium, magnesium, and barium, and mixtures thereof, said bed containing from 1 to 45% by weight of said anti-agglomerating composition based on the combined weight of said sand and said composition, said bed being operated as a fluidized bed without the formation of aggregates which interfere with the bed fluidization while producing a fuel gas in said bed.

4,448,590

FLAP-TYPE ROTARY ABRASIVE DEVICE

Daniel J. Wray, Tujunga, and Alexis G. Regnier, Los Angeles, both of Calif., assignors to Standard Abrasives, Inc., Northridge, Calif.

Division of Ser. No. 910,319, May 30, 1978, Pat. No. 4,258,509. This application Oct. 17, 1980, Ser. No. 198,082
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—297 **4 Claims**

1. A method of fabricating a flap-type rotary abrasive device comprising an annular array of abrasive leaves having opposite side edges and base edges, said annular array having an inner surface formed by said base edges facing radially inward, each leaf having abrasive particles bonded to at least one face thereof, comprising the steps of:

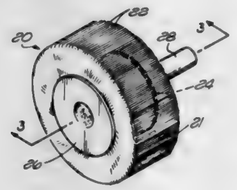
providing a plurality of leaves of flexible material, each leaf having abrasive particles bonded to at least one face thereof; arranging the plurality of leaves in a stack so that a face of each leaf having abrasive particles faces in one direction;

subjecting the stack to high compression substantially perpendicular to the leaf faces to cause successive leaves of the stack to adhere to one another by penetration of abrasive particles of each leaf into an adjacent leaf, thereby transforming the stack of leaves into a rigid block;

forming at least one straight line groove in the rigid block, the groove being substantially perpendicular to a base edge of each leaf;

filling said groove with a deformable adhesive;

loosening the leaves from face to face adherence to each other, each leaf defining a leaf of said array, the array of leaves being interconnected by said deformable adhesive at said base edges;



forming said loose array into a circular configuration defining a central bore the boundary of which is determined by said base edges;

providing two centrally disposed end caps one at each end of said bore, each end cap forming an annular passageway around the side edges adjacent to said base edges of the leaves, said passageway having at least one access aperture into said central bore;

disposing a spindle centrally of said bore; and

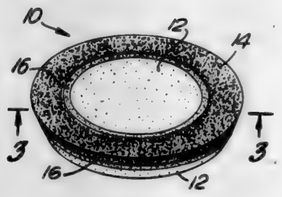
inserting a settable securing material having a liquid and a solid state into said central bore while in a liquid state to substantially fill said bore and flow through said access aperture and said annular passageways into contact with the side edges adjacent the base edges of said leaves so that said material penetrates slightly between said leaves at the side edges thereof adjacent said base edges, said securing material becoming solidified subsequent to insertion.

4,448,591

CUTTING INSERT HAVING UNIQUE CROSS SECTION

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Detroit, Mich.

Continuation-in-part of Ser. No. 226,604, Jan. 21, 1981. This application Dec. 16, 1981, Ser. No. 331,381
Int. Cl.³ C04B *35/56, 35/58*
U.S. Cl. 51—298 **8 Claims**



1. A process for producing a blank adapted to be mounted on a substrate to form a cutting insert, comprising the steps of:

preparing at least one crystal dispersion of super-hard crystals selected from at least one member of the group consisting of diamond and cubic boron nitride crystals and carbon black in a temporary binder;

preparing a core dispersion of carbon fiber, carbon black and filler in a temporary binder;

placing said at least one crystal dispersion and said core dispersion in a mold to respectively form at least one crystal dispersion layer and a core dispersion layer, said at least one crystal dispersion layer forming a rim about the periphery of said core dispersion layer on the upper surface thereof;

compacting said crystal and core dispersion layers with a chamfered plunger applied to the lower surface of said core layer to form an intermediate composite having a recess at said lower surface, thereby compressing said dispersions to a substantially uniform density throughout said intermediate composite;

heating said intermediate composite to allow for the removal of said temporary binder and the infiltration of liquefied silicon into said intermediate composite; and

sintering said intermediate composite to produce said blank.

4,448,592

ADSORPTIVE METHOD FOR THE SEPARATION OF A GAS MIXTURE

Gerhard Linde, Grünwald, Fed. Rep. of Germany, assignor to Linde AG, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 409,019
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132572
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—68 **9 Claims**

1. A method of recovering at least two product fractions each highly enriched in a respective component of a gas mixture containing at least two such components, said method comprising the steps of:

separating a stream of said mixture into at least two partial streams; and

passing said stream separately through respective beds of respective adsorbents different from one another and selectively retaining at least one component from each of said mixture so that respective product fractions emerge from said adsorbents highly enriched in respective components of said mixture, each of said adsorbents for a particular one of said fractions having a composition such that it retains at least one component in which another of said fractions is enriched.

5. An adsorption system for separating a gas mixture of an incoming gas stream into product fractions rich in respective components of said mixture, said apparatus comprising at least two functionally interchangeable adsorbers adapted respectively to operate alternately in an adsorption mode and a desorption mode, each of said adsorbers comprising a plurality of parallel beds of different adsorbents each adapted to retain at least one component of said mixture and pass a product fraction rich in at least one other component of said mixture whereby said product fractions of the adsorbents of each adsorber are rich in different components of said mixture.

4,448,593

WATER AIR FILTER

Walter A. Spiers, 4000 E. Fletcher Ave., Apartment #J106, Tampa, Fla. 33612

Filed Jun. 14, 1982, Ser. No. 387,789
Int. Cl.³ B01D *47/02*
U.S. Cl. 55—227 **4 Claims**

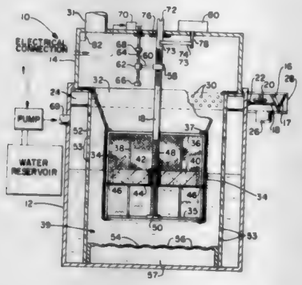
1. A humidifying filter, comprising:

a container having a water reservoir therein;

a wick disposed in said container and having at least the lower portion thereof submerged in said reservoir;

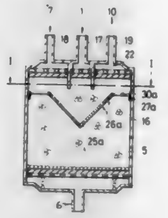
an air impermeable surround connecting in air tight fashion the upper perimeter of said wick with the perimeter of

said container at a location above the water level of said reservoir;
a wick support stretching said wick over an area;
a rod rotatably secured to said wick support;
a float threadably engaged on the lower portion of said rod;



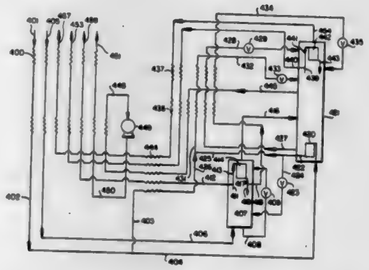
an air inlet in the wall of said container positioned between the water level of said reservoir and the perimeter of attachment of said surround; and
an outlet conduit positioned on the upper portion of said container above the perimeter of attachment of said surround.

4,448,594
CANISTER FOR VOLATILE FUEL CONTROLLING DEVICE
Tadashi Kozawa, Aichi, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan
Filed Jan. 7, 1982, Ser. No. 337,651
Claims priority, application Japan, Jan. 27, 1981, 56-10580[U]
Int. Cl.³ B01D *39/00*
U.S. Cl. 55—387 **5 Claims**



5. A canister for a volatile fuel control device, comprising
a canister case containing therein an adsorbent of volatile fuel,
at least one volatile fuel inlet and a volatile fuel outlet for volatile fuel at one end of said canister case,
said at least one volatile fuel inlet being axially positioned on said canister case,
an air introduction port axially positioned with respect to said canister at the other end of said canister case for introduction of scavenging air into said canister case,
means comprising a conical baffle disposed in a portion of the interior of said canister case within a layer of said adsorbent for restricting the flow of said volatile fuel and air,
a separation cylinder extending vertically from an upper end of said canister case into an upper portion of said layer of adsorbent,
said conical baffle extending such that an outer circumferential edge of said baffle is positioned around an outer side of a downward vertical extension of the outer circumferential surface of said separation cylinder and is spaced close to an inner circumferential surface of said canister case and secured to said canister case to define a restricted passage between said inner circumferential surface of said canister case and said outer circumferential edge of said baffle for movement of both the volatile fuel and the scavenging air to the volatile fuel outlet,
said volatile fuel outlet being positioned substantially above said restricted passage between said inner circumferential surface of said canister case and said outer circumferential edge of said baffle,
said baffle is formed continuous without openings at portions thereof under said separation cylinder and with air vents at portions thereof radially outwardly below said separation cylinder, whereby the scavenging air desorbs the volatile fuel from the adsorbent passing through said air vents and said restricted passage to said volatile fuel outlet.

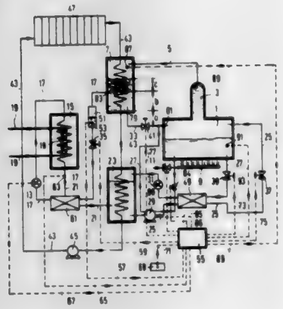
4,448,595
SPLIT COLUMN MULTIPLE CONDENSER-REBOILER AIR SEPARATION PROCESS
Harry Cheung, Buffalo, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Dec. 2, 1982, Ser. No. 446,400
Int. Cl.³ F25J *3/04*
U.S. Cl. 62—31 **22 Claims**



1. A process for the production of nitrogen gas at greater than atmospheric pressure by the separation of air by rectification comprising:
(A) introducing cleaned, cooled feed air at greater than atmospheric pressure into a high pressure column operating at a pressure of from about 80 to 300 psia;
(B) separating said feed air by rectification in said high pressure column into a first nitrogen-rich vapor fraction and a first oxygen-enriched liquid fraction;
(C) recovering from about 0 to 60 percent of said first nitrogen-rich vapor fraction as high pressure nitrogen gas at a purity exceeding about 99 percent;
(D) condensing at least a portion of said first nitrogen-rich vapor fraction by indirect heat exchange with said first oxygen-enriched liquid fraction thereby producing a first nitrogen-rich liquid portion and a first oxygen-enriched vapor fraction;
(E) employing at least some of said first nitrogen-rich liquid portion as liquid reflux for said high pressure column;
(F) introducing said first oxygen-enriched vapor fraction into a medium pressure column operating at a pressure, lower than that of said high pressure column, of from about 40 to 150 psia;
(G) separating said first oxygen-enriched vapor fraction by rectification in said medium pressure column into a second nitrogen-rich vapor fraction and at least some oxygen in the form of a second oxygen-enriched liquid fraction;
(H) vaporizing a portion of said second oxygen-enriched liquid fraction by indirect heat exchange with cleaned, cooled feed air at a pressure of from about 80 to 350 psia, thereby producing a first oxygen-enriched vapor portion, for use as vapor reflux in said medium pressure column, and liquid air;

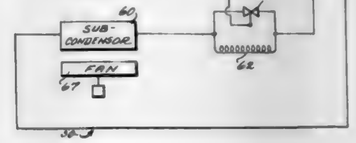
(I) dividing said liquid air into a first part which is introduced into said high pressure column wherein it is separated by rectification into parts which comprise the first nitrogen-rich vapor fraction and the first oxygen-enriched liquid fraction, and into a second part, which is introduced into said medium pressure column wherein it is separated by rectification into parts which comprise the second nitrogen-rich vapor fraction and the second oxygen-enriched liquid fraction;
(J) recovering up to 60 percent of said second nitrogen-rich vapor fraction as medium pressure nitrogen gas at a purity exceeding about 99 percent;
(K) condensing at least a portion of said second nitrogen-rich vapor fraction by indirect heat exchange with a portion of said second oxygen-enriched liquid fraction thereby producing a second oxygen-enriched vapor portion and a second nitrogen-rich liquid portion;
(L) employing said second nitrogen-rich liquid portion as liquid reflux for said medium pressure column;
(M) employing said first nitrogen-rich liquid portion as additional liquid reflux for said medium pressure column in an amount equivalent to that of from about 0 to 60 percent of said first nitrogen-rich vapor fraction such that the sum of said amount and of the high pressure nitrogen gas recovered in step (C) is from about 0 to 60 percent of said first nitrogen-rich vapor fraction; and
(N) removing from the process said second oxygen-enriched vapor portion having an oxygen purity of from 57 to 97 percent.

4,448,596
METHOD OF OPERATING A BIMODAL HEAT PUMP, AS WELL AS BIMODAL HEAT PUMP FOR USING SAID METHOD
Willem L. N. van der Sluys, and Mathias L. Hermans, both of Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 7, 1983, Ser. No. 456,235
Claims priority, application Netherlands, Oct. 28, 1981, 8204161
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—101 **2 Claims**



1. A method of operating a bimodal heat pump which in a first mode operates as an absorption heat pump and in a second mode operates as an evaporation-condensation device, in which first mode at least a part of a dissolved working medium is separated in a generator from a solvent by heating and is then transported in the gaseous state to a condensor in which the working medium is liquefied by giving off thermal energy to a heat-transporting medium, after which the liquid working medium is expanded and evaporated in an evaporator by taking up thermal energy from the environment and is further transported to an absorber in which the working medium is bonded to the solvent while giving off thermal energy to a heat-transporting medium, while another part of the still bonded working medium in the generator is pumped to the absorber together with the relevant part of the solvent and a part of the working medium and the solvent is returned from the absorber to the generator, in which second mode the connections between evaporator and condensor and absorber and generator, respectively, are closed and a connection between the working medium in the condensor and the generator is opened, characterized in that upon switching over from the first to the second mode an extra quantity of working medium is provided in the cycle formed by the generator (1) and condensor (7) and the concentration of the working medium in the generator (1) compared with the concentration of the working medium in the first mode is increased, which extra quantity of working medium is stored again in the condensor (7) which switching from the second mode to the first mode.

4,448,597
AIR CONDITIONING APPARATUS
Eiji Kuwabara, Fujishi; Takayoshi Sakata, Jufishi; Noboru Kawauchi, Shizuokashi; Yuuichi Ide, and Takeshi Matsuo, both of Fujishi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Division of Ser. No. 195,065, Oct. 7, 1980, Pat. No. 4,350,023. This application Jul. 1, 1982, Ser. No. 394,302
Claims priority, application Japan, Oct. 15, 1979, 54-132673
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—176.6 **2 Claims**



1. An air-conditioning apparatus comprising:
a compressor for compressing the refrigerant;
a first condensor connected to said compressor for condensing refrigerant;
a first expanding means connected to said first condensor for expanding the refrigerant therein;
a first valve means connected in parallel with said expanding means for allowing refrigerant to flow therethrough;
a second condensor connected to said expanding means for further condensing the refrigerant when said first valve means is opened and for evaporating the refrigerant when said first valve means is closed;
a second valve means connected to said second condensor for allowing the refrigerant therethrough;
a second expanding means connected in parallel with said second valve means for expanding the refrigerant when said first valve means is opened while said second valve is closed;
an evaporator connected to said second expanding means for evaporating the refrigerant;
means for sensing temperature to produce a temperature signal substantially corresponding to the temperature;
means for sensing humidity to produce a humidity signal substantially corresponding to humidity; and
means responsive to said humidity and temperature signals for controlling opening and closing of said first and second valve means so that said first valve means is opened and said second valve means is closed when temperature

and humidity exceed a given temperature and a given humidity, respectively, and a value substantially corresponding to a sum of said temperature and said humidity exceeds a given value substantially corresponding to a given sum of said given temperature and said given humidity and said first valve means is closed and said second valve means is opened when said humidity exceeds said given humidity while said temperature is below said given temperature.

4,448,598

PNEUMATIC SYSTEM FOR OPERATING THE MECHANISM OF ICE SEPARATION FROM EVAPORATING PLATES IN A PLATE OR SLAB ICE GENERATOR BY USING THE CONDENSING GAS, SIMULTANEOUSLY WITH CIRCUIT REVERSAL FOR DEFROSTING THE ICE PRODUCT

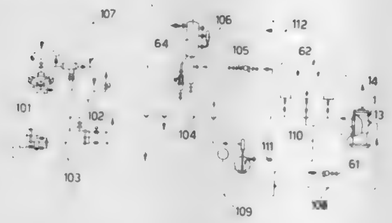
Gaspare LaMonica, Brugherio, Italy; Federico Richelli, deceased, late of Milan, Italy; by Angelo Richelli, heir, Segrate, Italy; by Giorgio Richelli, heir; by Fabrizia Richelli, heir, both of Milan, Italy; by Mauro Richelli, heir, Napoli, Italy, and by Matilde Orini, heir, Milan, Italy, assignors to Samifi Babcock Samifi Internationale S.A., Paris, France

Filed Feb. 25, 1982, Ser. No. 352,235

Claims priority, application France, Feb. 27, 1981, 81 04036

Int. Cl.³ F25C *5/10*

U.S. Cl. 62—352 **19 Claims**



1. In an icemaking machine, the combination of a plurality of hollow evaporating plates, means for supplying to said plates liquid refrigerant for evaporation in said plates to cool said plates and thereby freeze water supplied to said plates to form slabs of ice thereon, pneumatically operable mechanical means engagable with ice slabs on said plates to exert thereon forces directed to remove said slabs from said plates and means for supplying hot gaseous refrigerant under pressure to said plates to heat said plates to release ice slabs therefrom and to said pneumatically operable mechanical means to activate said mechanical means to remove released ice slabs from said plates.

4,448,599

HOLLOW SPHERES PRODUCED FROM NATURAL ZEOLITES

John D. Mackenzie, and Tetsuro Horiuchi, both of Los Angeles, Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 22, 1982, Ser. No. 360,705

Int. Cl.³ C03B *19/10*; C03C *3/04*

U.S. Cl. 65—21.4 **8 Claims**

1. A process for the formation of hollow glassy generally spherical particles which comprises rapidly heating natural mineral zeolite particles to a temperature above the liquidus temperature of the particles for a time sufficient to melt the surfaces of the particles and cause the combined water present in the particles to be rapidly vaporized, whereby the particles expand and form said hollow glassy particles, and the hollow glassy particles are thereafter quenched in an ambient atmosphere at a temperature below said liquidus temperature.

4,448,600

MOULD OPENING AND CLOSING MECHANISM

David Braithwaite, Doncaster, and Stanley P. Jones, Tickhill, both of England, assignors to Emhart Industries, Inc., Farmington, Conn.

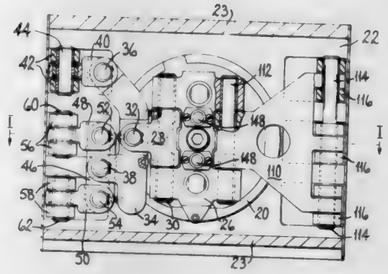
PCT No. PCT/GB82/00049, 371 Date Sep. 30, 1982, 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02877, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 22, 1982, Ser. No. 433,140

Claims priority, application United Kingdom, Feb. 27, 1981, 8106259

Int. Cl.³ C03B *11/06*

U.S. Cl. 65—360 **4 Claims**



1. A mould opening and closing mechanism for use in opening and closing three moulds simultaneously by moving a portion of each mould relative to further portions of that mould, the mechanism comprising three mould portion supports (**66, 68, 70**) each arranged to support a portion of a mould (**12**), three levers (**42, 56, 58**) each of which is pivotal on a fixed pivot (**64**) and each of which is pivotally connected to one of the mould portion supports (**66, 68, 70**), and moving means (**18, 20**) connected to the levers (**42, 56, 58**) and operable to cause the levers (**42, 56, 58**) to pivot about the fixed pivots (**64**) so that the mould portion supports (**66, 68 70**) are moved and the mould portions (**12**) are moved away from or towards further mould portions (**14**) thereby opening or closing the moulds, characterised in that the moving means (**18, 20**) is connected to the three levers (**42, 56, 58**) by a system of links comprising a link (**34**) pivotally connected at a central region thereof to the moving means (**18, 20**), the link (**34**) being pivotally connected on one side of the central region thereof to a first (**42**) of the levers and also being pivotally connected on the other side of the central region thereof at half the effective distance therefrom to a further link (**46**) of the system, the further link (**46**) being pivotally connected to a second (**56**) and a third (**58**) of the levers on opposite sides of and at equal effective distances from its pivotal connection to the link (**34**).

4,448,601

HERBICIDAL COMPOSITIONS AND HERBICIDAL PROCESSES

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Chuo, Japan

Continuation of Ser. No. 959,838, Nov. 13, 1978. This application Dec. 23, 1981, Ser. No. 334,042

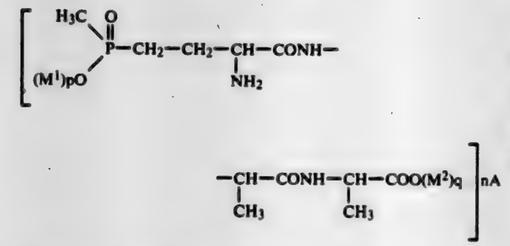
Claims priority, application Japan, Mar. 9, 1978, 53-25971

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ A01N *71/86*

U.S. Cl. 71—86 **3 Claims**

1. A process for severely damaging or killing unwanted herbaceous and woody plants, which comprises applying to plants susceptible thereto a herbicidally effective amount of SF-1293 substance or an alkali metal, alkaline earth metal, copper, zinc, nickel, manganese, ammonium, substituted ammonium or acid-addition salt thereof, said SF-1293 substance or salt thereof being of the formula:



wherein M^1 and M^2 are each hydrogen or a cation selected from the group consisting of sodium, potassium, lithium, copper, magnesium, calcium, zinc, nickel, maganese and ammonium which is unsubstituted or substituted by 1-4 lower alkyl, hydroxy lower alkyl, or lower alkenyl; A is an inorganic or organic acid selected from the group consisting of hydrochloric, sulfuric, hydrobromic, phosphoric, perchloric, nitric, acetic, propionic, citric, tartaric, monochloroacetic, trichloroacetic and trifluoroacetic acids; n is 0, 0.5 or 1; p is the inverse number of the valency of M^1; and q is the inverse number of the valency of M^2.

4,448,602

HERBICIDAL COMPOSITIONS

Hans Schumacher, Flörsheim am Main; Konrad Albrecht, and Rudolf Heinrich, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

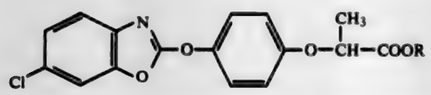
Filed Sep. 15, 1982, Ser. No. 418,396

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3136913

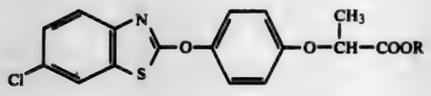
Int. Cl.³ A01N *43/02, 43/00*

U.S. Cl. 71—90 **6 Claims**

1. A herbicidal composition consisting essentially of an effective amount of the mixture of a compound of the formula I



in which R is (C_1-C_4)-alkyl, in combination with a compound of the formula II



in which R is as defined above, the mixing ratio of compounds of the formulae I and II being from 1:1 to 1:5.

4,448,603

HERBICIDAL COMPOSITION

Haruhiko Nakayama, Kashiwa, and Takashi Tatsuno, Tokyo, both of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Filed Aug. 13, 1981, Ser. No. 292,642

Claims priority, application Japan, Aug. 21, 1980, 55-115286; Aug. 21, 1980, 55-115287; Jul. 27, 1981, 56-117267

Int. Cl.³ A01N *43/64*

U.S. Cl. 71—92 **3 Claims**

1. A method of killing weeds which consists of applying to the weeds a herbicidally effective amount of 3-[3-(4H-1,2,4-triazolyl)amino]-1-(3H)-isobenzofuranone.

4,448,604

RECOVERY OF PRECIOUS METALS FROM LEACH RESIDUES

Joseph G. Day, Holmer Green, and Jeffrey R. Taylor, Reading, both of England, assignors to Matthey Rustenburg Refiners (Pty) Limited, Johannesburg, South Africa

Filed Sep. 12, 1982, Ser. No. 417,616

Claims priority, application United Kingdom, Sep. 16, 1981, 8127977

Int. Cl.³ C22B *11/00*

U.S. Cl. 75—63 **13 Claims**

1. A process for the recovery of platinum group metals, silver and gold from a Fe, Cu and Ni sulphide-containing leach residue which also contains Se and Te, said process comprising the following steps:

(a) smelting the said leach residue with a flux to produce:
  (i) a slag containing FeO, CaO and SiO_2 and
  (ii) a copper matte phase containing S, the platinum group metals, Au, Ag, Se and Te, and an excess of Ni and/or Fe as defined in step (b) below,

(b) removing excess, as defined below, of the elements iron or nickel or compounds thereof from the matte phase produced by step (a) by oxidation thus converting the said elements or compounds thereof to their respective oxides which then report to the slag phase, said excess being defined as more than about 5% by weight of iron, more than about 8% by weight of nickel or more than 12% by weight of the total of iron and nickel, based on the weight of the matte phase,

(c) contacting the matte phase produced after oxidation step (b) in liquid form with one or more molten metals selected from the group consisting of Cu, Ni and Fe so as to produce a separate immiscible metallic phase containing platinum group metals, silver and gold, and

(d) recovering silver from the matte phase and the platinum group metals, gold and the proportion of silver which remains from the metallic phase.

4,448,605

DUCTILE BRAZING ALLOYS CONTAINING REACTIVE METALS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 2, 1982, Ser. No. 446,285

Int. Cl.³ C22C *30/00*

U.S. Cl. 75—123 H **7 Claims**

1. An article consisting essentially of a ductile brazing foil having a thickness of from about 2 to about 6 mils, said foil being a binary alloy of a reactive metal and a second metal, said reactive metal constituting from about 0.1 to 4% of said alloy and selected from the group consisting of titanium, zirconium, vanadium and mixtures thereof and the balance of said alloy being the second metal which is only one metal selected from the group consisting of silver, iron, nickel, and aluminum.

4,448,606

MOLYBDENUM-TUNGSTEN BASED ALLOYS CONTAINING HAFNIUM CARBIDE

Russell H. Rhodes, Monroeton; James S. Smith, Towanda, both of Pa., and Leslie P. Clare, Colonia Del Valle, Mexico, assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 15, 1982, Ser. No. 449,918
Int. Cl.³ B22F 3/00
U.S. Cl. 75—236 4 Claims

1. A powder metallurgy alloy consisting essentially of a solid solution of molybdenum and from about 10 to about 98 percent by weight tungsten, said alloy having a dispersed phase of precipitated hafnium carbide wherein hafnium and carbon are present in an amount from about 0.25 to about 3 percent by weight and in a ratio of about 12 to about 15 parts of hafnium per part of carbon.

4. A process for producing a molybdenum-tungsten based alloy comprising preparing a mixture consisting essentially of the oxides of molybdenum and tungsten, said mixture comprising from about 10 to 98 percent by weight tungsten based on the combined weight of tungsten and molybdenum, coreducing said oxide mixture in a hydrogen atmosphere to give an intimate mixture of molybdenum and tungsten powder, adding and blending hafnium carbide with said mixture in an amount sufficient for hafnium carbide to be from about 0.25 to about 3 percent by weight of a resulting mixture, pressing and sintering said resulting mixture at a temperature of from 1800 to about 2300 degrees Celsius for a sufficient period of time to dissolve at least a portion of said hafnium carbide, working said sintered alloy at a temperature below the recrystallization temperature of the resulting alloy to precipitate a dispersed phase of hafnium carbide.

4,448,607

CONDITIONING CRUDE PHTHALOCYANINE PIGMENTS

Steven L. Johnson, Fairfield; George McLaren, Mason, and George H. Robertson, Montgomery, all of Ohio, assignors to Sun Chemical Corporation, New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,083
Int. Cl.³ C09D 11/00; C08L 1/08; C09B 47/04
U.S. Cl. 106—19 8 Claims

1. A process for conditioning crude phthalocyanine pigment which consists of grinding the crude pigment with a phthalimidomethyl phthalocyanine derivative or a sulfonated phthalimidomethyl phthalocyanine derivative in the absence of any grinding aid.

4,448,608

COLORED INORGANIC COMPLEX FOR USE AS A PIGMENT AND COMPOSITIONS CONTAINING IT

John W. Jenkins, and John Wolstenholme, both of Reading, England, assignors to Johnson Matthey Public Limited Company, London, England

Filed Feb. 24, 1983, Ser. No. 469,446
Claims priority, application United Kingdom, Dec. 30, 1982, 8236866
Int. Cl.³ C09C 1/36
U.S. Cl. 106—292 14 Claims

1. An inorganic complex of stannous oxide with titanium and zinc oxides the complex having a colour describable in terms of at least one of the four basic colours which are red, yellow, green and blue.

4,448,609

PROCESS FOR THE PRODUCTION OF AQUEOUS DISPERSIONS OF PIGMENTARY TITONIUM DIOXIDE

Brian Tear, Cleethorpes, and David G. Othen, Grimsby, both of England, assignors to Laporte Industries Limited, London, England

Filed Mar. 25, 1982, Ser. No. 361,888
Claims priority, application United Kingdom, Apr. 10, 1981, 8111319
Int. Cl.³ C09C 1/36, 3/02; C08J 3/00
U.S. Cl. 106—308 N 8 Claims

1. A process for the production of an aqueous dispersion of pigmentary titanium dioxide particles characterised by forming an aqueous dispersion of washed pigmentary titanium dioxide particles which have been surface treated with from 1.0 to 4.0% of alumina, raising the solids concentration of the said alumina surface-treated titanium dioxide particles to above 60% by weight, introducing into the dispersion, before or after the solids concentration thereof has been raised, a combination of dispersants comprising an amine dispersant in from 0.3% to 3.0% by weight of the alumina surface treated titanium dioxide, and an anionic dispersant in from 0.04% to 0.75% by weight of the alumina surface treated titanium dioxide and milling the raised solids concentration dispersion, containing the said combination of dispersants, in the presence of grinding elements to raise the gloss value given by the dispersion to at least 50 and the Brookfield viscosity value using spindle No. 3 and 60 r.p.m. given by the dispersion to from 400 to 3000.

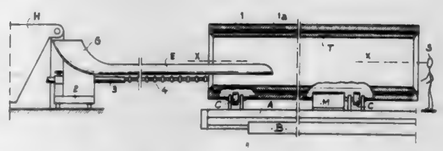
8. An aqueous dispersion of pigmentary titanium dioxide particles surface treated with from 1.0% to 4.0% of alumina, the dispersion having a concentration of said alumina surface-treated titanium dioxide particles of above 60% by weight and containing a combination of dispersants comprising an amine dispersant in at least 0.3% and not more than 2% and an anionic dispersant in at least 0.04% less than 0.6% by weight of the alumina surface-treated metal oxide particles less than 20% of the said alumina surface-treated metal oxide particles having a particle size greater than 0.5 microns in diameter, the dispersion giving a % gloss value of at least 50 and a Brookfield viscosity value, using spindle No. 3 and 60 r.p.m., of from 400 to 3000.

4,448,610

CENTRIFUGALLY CAST TUBE OF SPHEROIDAL GRAPHITE CAST-IRON AND ITS METHOD OF MANUFACTURE

Rio Bellocci, Pont A Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Feb. 24, 1983, Ser. No. 469,601
Claims priority, application France, Mar. 1, 1982, 82 03327
Int. Cl.³ C21D 5/06, 9/08
U.S. Cl. 148—3 6 Claims



1. Centrifugally cast tube of spheroidal graphite cast-iron, characterised in that the cast-iron has the following composition by weight:
carbon: 2.5–4.0%
silicon: 2–4.0%
manganese: 0.1–0.6%
nickel: 0–3.5%
copper: 0–11%
magnesium: 0–0.5%
sulphur: 0.01% maximum
phosphorus: 0.06% maximum

the remainder being iron, this cast iron having a bainitic structure.

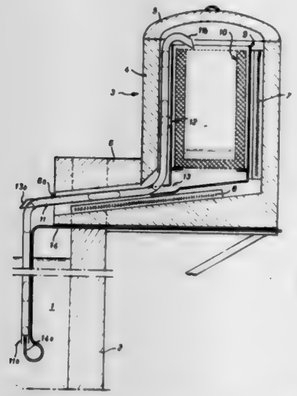
4. Method for the manufacture of a centrifugally cast tube of spheroidal graphite cast-iron, the cast-iron having a bainitic structure and a composition by weight of carbon: 2.5–4.0%, silicon: 2–4.0%, manganese: 0.1–0.6%, nickel: 0–3.5%, copper: 0–11%, magnesium: 0–0.5%, sulphur: 0.01% maximum, and phosphorus: 0.06% maximum, the remainder being iron, characterised in that one starts with a spheroidal graphite cast-iron having said composition, this cast-iron is poured into a centrifugal chill-mould provided with a refractory coating and cooled externally by water, the centrifugally cast tube is left to cool in the chill-mould to a temperature of the order of 800°–1000° C. in order to acquire an austenitic structure, then, still in the chill-mould, it is cooled vigorously and uniformly over its entire length by spraying water or a mixture of air and water onto its inner wall, to a temperature of approximately 250°–400° C., in order to give it an austenitic or bainitic structure, then the tube is removed from its chill-mould and placed inside a furnace kept at a temperature of between 250° and 450° C. in order to create or maintain a bainitic structure and the tube is removed from the furnace in order to allow it to cool in the air.

4,448,611

PROCESS FOR IMPROVING THE CORROSION RESISTANCE OF FERROUS METAL PARTS

Bernard Grellet, Saint-Etienne; Jean-Pierre Emmanuel, Cellieu, and Bernard Sipp, Andrezieux-Boutheon, all of France, assignors to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, Andrezieux-Boutheon, France

Filed Apr. 25, 1983, Ser. No. 488,612
Claims priority, application France, Apr. 23, 1982, 82 07008
Int. Cl.³ C23F 7/04
U.S. Cl. 148—6.11 20 Claims



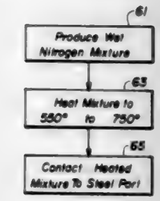
1. A process for improving the corrosion resistance of ferrous metal parts containing free or combined sulphur in their surface layers, in which the parts are immersed in an oxidising bath of molten salts comprising alkali metal hydroxides, alkali metal nitrates and/or nitrites and, if appropriate, alkali metal carbonates, comprising adding to the oxidising bath from 0.5% to 15% by weight of oxygen-containing salts of alkali metals, the normal oxidation-reduction potential of which is less than or equal to −1.0 volt relative to the hydrogen reference electrode; blowing a gas containing oxygen into the bath at a sufficient rate for the bath to be saturated with dissolved oxygen; immersing the parts in the bath for a sufficient time for the composition of their surface layer to be stabilised; and maintaining below 3% by weight the proportion of insoluble particles in the bath thereby eliminating sulphur contaminants from the said surface layers.

4,448,612

METHOD OF BLACKENING SURFACES OF STEEL PARTS WITH WET NITROGEN

Chris W. Ebert, Lancaster, and Earle S. Thall, Leola, both of Pa., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 351,281, Feb. 22, 1982, abandoned. This application May 3, 1983, Ser. No. 491,251
Claims priority, application France, Feb. 14, 1983, 83 02292
Int. Cl.³ C23C 11/10
U.S. Cl. 148—6.35 13 Claims



1. A method of blackening surfaces of steel parts comprising
(a) producing a gaseous mixture consisting essentially of nitrogen and water vapor, said mixture having a dew point of about −8° to +32° C.,
(b) heating said gaseous mixture to about 600° to 750° C., and
(c) contacting said heated mixture with said steel parts for about 5 to 15 minutes.

4,448,613

DIVORCED EUTECTOID TRANSFORMATION PROCESS AND PRODUCT OF ULTRAHIGH CARBON STEELS

Oleg D. Sherby; Toshimasa Oyama, both of Palo Alto, and Jeffrey Wadsworth, Menlo Park, all of Calif., assignors to Board of Trustees, Leland Stanford, Jr. University, Stanford, Calif.

Filed May 24, 1982, Ser. No. 381,194
Int. Cl.³ C21D 8/00
U.S. Cl. 148—12 R 9 Claims

1. A method for processing ultrahigh carbon steel employing a divorced eutectoid transformation comprising the steps of:
(a) heating an ultrahigh carbon steel with a carbon content from about 1.0% to 2.1% to a temperature in excess of the A_{cm} transformation temperature, to form an austenite matrix in which substantially all of the carbon is dissolved;
(b) cooling the steel treated in step (a) from the A_{cm} temperture to about the A_1 transformation temperature, and deforming the steel during at least part of the cooling step;
(c) cooling the steel treated in step (b) to below the A_1 transformation temperature to form pearlite and ferrite;
(d) reheating the steel treated in step (c) to a soaking temperature approximately 50° C. above the A_1 temperature;
(e) soaking the steel at a temperature above A_1 treated in step (d) in the soaking temperature range for a sufficient time such that the major portion of the pearlite is dissolved into the austenite matrix in which the carbon is not uniformly distributed; and
(f) cooling at a rate equivalent to air cooling a second time to below the A_1 transformation temperature.

4. A method for processing ultrahigh carbon steel comprising the steps of:
(a) heating an ultrahigh carbon steel with a carbon content from about 1.0% to 2.1%, containing substantially spheroidized pro-eutectoid carbides in a matrix of ferrite and cementite, to a soaking temperature approximately 50° C. above the A_1 temperature;
(b) maintaining the steel treated in step (a) at a soaking temperature for a time sufficient such that the eutectoid carbides are dissolved into the austenite in which the carbon is not uniformly distributed; and

(c) cooling at a rate equivalent to air cooling the steel of step (b) to below the A_1 transformation temperature.

7. A method for processing ultrahigh carbon steel comprising the steps of:

(a) heating an ultrahigh carbon steel with a carbon content from about 1.0% to 2.1%, containing substantially spheroidized pro-eutectoid carbides in a matrix of martensite, to approximately 50° C. above the A_1 temperature

(b) maintaining the steel treated in step (a) at a soaking temperature for a time sufficient such that the eutectoid carbides are dissolved into the austenite in which the carbon is not uniformly destributed; and

(c) cooling at a rate equivalent to air cooling the steel of step (b) to below the A_1 transformation temperature.

4,448,614

PROCESS FOR COOLING A COLD ROLLED STEEL STRIP

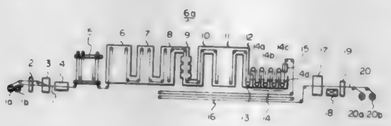
Masao Morimoto, Yokohama; Ichiro Shimbashi, Kitakyushu; Hiroshi Iida, Himeji, and Koichi Sakurai, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Apr. 1, 1981, Ser. No. 249,904

Claims priority, application Japan, Oct. 9, 1980, 55-141311

Int. Cl.³ C21D *9/52*

U.S. Cl. 148—12.1 **5 Claims**



1. A process for continuously cooling a cold-rolled steel strip which has been annealed in an inert gas atmosphere at an elevated temperature, which process comprises the steps of:

(a) moving a cold-rolled steel strip vertically downward along at least one cooling path,

(b) bringing a plurality of streams, each stream consisting of a cooling gas and a cooling liquid comprising water, respectively, into contact with each surface of said steel strip in order to cool said steel strip to a predetermined temperature at a predetermined cooling rate, each stream being jetted independently from each other, and in which process,

(i) said cooling gas consisting of a cooled inert gas extracted from said annealing process,

(ii) said cooling gas and cooling liquid streams being jetted in directions intersecting each other before the jetted cooling gas and liquid streams reach the surface of said steel strip, thus providing a plurality of cooling gas-liquid mixture streams,

(iii) said cooling gas and said cooling liquid being mixed with each other in a volume ratio which is in the range of from 100:1 to 5,000:1 under atmospheric pressure,

(c) removing the cooling liquid remaining on said steel strip surface from said surface when the temperature of said steel strip has reached the desired final temperature, and

(d) moving said cooled strip into a vertically upward drying path to dry said steel strip.

4,448,615

METHOD OF SPOT ANNEALING TUBING

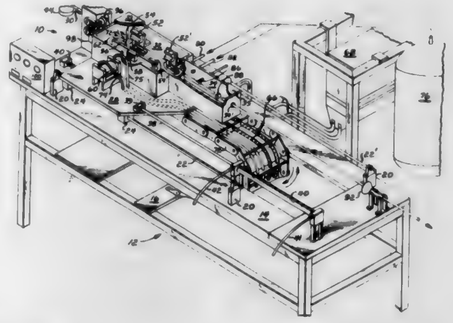
James L. Cunningham, and John M. Tatum, both of Decatur, Ala., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 375,781, May 6, 1982, abandoned. This application Dec. 15, 1982, Ser. No. 449,967

Int. Cl.³ C21D *1/18*

U.S. Cl. 148—13 **4 Claims**

1. A method for selectively annealing spaced portions of a length of continuously moving tubing which is guided for movement in one direction of its axis comprising the steps of mounting an annealing chamber having tube receiving apparatus in its ends on a carriage for reciprocable movement relative to its mounting base in the direction of the tube axis so that one of said spaced portions of the length of tubing is within the chamber; fixedly clamping said spaced portion of the tubing relative to the annealing chamber at the upstream end thereof



so that said carriage and annealing chamber will move with said continuously moving tubing in a downstream direction; heating said portion of the tubing to an annealing temperature while it is clamped; unclamping said tubing; and returning said carriage and annealing chamber to its original upstream position relative to its mounting base while said tubing continues to move in said one direction of its axis.

4,448,616

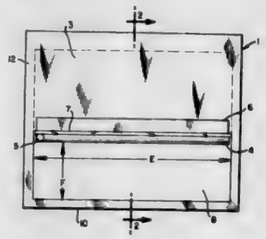
PROCESS FOR REDUCING BACKMIXING

Arthur W. Francis, Jr., New City; Mark S. Nowotarski, Ossining, and Jack Solomon, Rye, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 284,681, Jul. 20, 1981, abandoned. This application May 26, 1982, Ser. No. 382,201

Int. Cl.³ F27B *3/22*; F27D *7/00*; F23M *11/02*

U.S. Cl. 148—16 **2 Claims**



1. In a process for preventing the backmixing of gases into a metal heat treating furnace having two ends, one or both of said ends having openings; each of said openings being defined by its dimensions of width and height and having a gas jet positioned in said opening in such a manner that at least part of the gases is prevented from backmixing into the furnace,

the improvement comprising preventing substantially all of said gases from backmixing into the furnace by carrying out the following steps:

(a) constructing the gas jet by providing a row of uniformly distributed holes in the wall of a straight tube, said row of holes being about parallel to the hypothetical axis running through the center of the tube from one end of the tube to the other end, the ratio of the distance between any two adjacent holes to the height of the opening being no greater than about 1:6;

(b) positioning the gas jet at about the top, and across the width of each opening, the holes being pointed into the furnace in such a direction that a hypothetical line drawn through the center of each hole from, and perpendicular to, the axis of the gas jet would be at an angle in the range of about 0 degree to about 110 degrees as measured from a hypothetical line corresponding to the height dimension of the opening; and

(c) inserting a plate above the gas jet at about the top, and across the width, of at least one opening at about a ninety degree angle to the hypothetical line corresponding to the height dimension of the opening, said plate extending into the furnace a distance at least about equal to the height of the opening; and

(d) introducing a gas through each gas jet at a flow rate through said gas jet, which is (i) about equal to or greater than the value determined by the following formula when the furnace has one opening and (ii) about equal to the value determined by the following formula when the furnace has two openings:

$$\sqrt{\frac{(A-B)(g)(D)(E)(F)^2(G)}{C}} \times \frac{H}{1.0} \times \frac{300}{J}$$

wherein:

A=density of ambient air

B=density of furnace gases at the opening for said gas jet

C=density of jet gas

g=acceleration of gravity

D=total area of holes in said gas jet

E=width of said opening

F=height of said opening

G=about 1 to about 5

H=the pressure in number of atmospheres inside the gas jet

J=the temperature in degrees Kelvin inside the gas jet.

4,448,617

STEEL FOR A VEHICLE SUSPENSION SPRING HAVING GOOD SAG-RESISTANCE

Toshiro Yamamoto, Tokai; Ryohei Kobayashi, Chita; Mamoru Kurimoto, Tokonabe, and Toshio Ozone, Nagoya, all of Japan, assignors to Aichi Steel Works, Ltd. and Chuo Hatsujo Kabushiki Kaisha, both of Aichi, Japan

Filed Aug. 4, 1981, Ser. No. 289,852

Claims priority, application Japan, Aug. 5, 1980, 55-108020; May 16, 1981, 56-74639

Int. Cl.³ C22C *38/12, 38/26*

U.S. Cl. 148—36 **12 Claims**

1. A steel for a vehicle suspension spring having a good sag-resistance consisting essentially of by weight 0.50–0.80% carbon, 1.50–2.50% silicon, 0.50–1.50% manganese and 0.05–0.50% niobium, the remainder being iron together with impurities.

4,448,618

NICKEL BASED BRAZING FILLER METALS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 28, 1983, Ser. No. 470,403

Int. Cl.³ C27C *19/00*

U.S. Cl. 148—403 **9 Claims**



Photomicrograph of AISI 316 stainless steel joint brazed with Sample No. 1 alloy of the present invention (Magnification 400 X).

1. A metal alloy having a composition consisting essentially of 25 to 35 atom percent palladium and 15 to 20 atom percent silicon, the balance being nickel and incidental impurities.

4,448,619

EMULSION EXPLOSIVE COMPOSITION

Kenneth A. W. Mitchell, Cheltenham, Australia, assignor to ICI Australia Limited, Melbourne, Australia

Filed May 25, 1983, Ser. No. 498,173

Claims priority, application Australia, Jun. 11, 1982, PF4411

Int. Cl.³ C06B *45/02*

U.S. Cl. 149—21 **23 Claims**

1. A water-in-oil emulsion explosive composition which comprises a discontinuous aqueous phase comprising at least one oxygen-releasing salt, a continuous water-immiscible organic phase comprising sump oil, and an emulsifying agent.

4,448,620

METHOD AND APPARATUS FOR THE INJECTION MOLDING AND VULCANIZATION OF VEHICLE TIRES

Lothar Fink, Achim-Baden, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Division of Ser. No. 244,400, Mar. 16, 1981. This application Mar. 8, 1982, Ser. No. 355,787

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011199

Int. Cl.³ B29H *17/00, 5/02*

U.S. Cl. 156—125 **8 Claims**

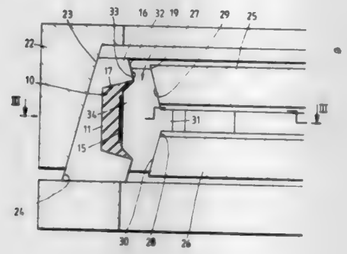
1. A method for producing vehicle tires, comprising the steps of:

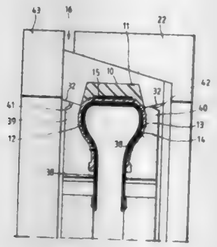
(a) injection molding and prevulcanizing a crown portion (10) having treads (11) in a closed annular mold cavity (17) an outer part of which is defined by an annular outer mold (16) and an inner part of which is defined by an inner removable mold core (19) which comprises a plurality of circumferentially abutting radially movable segments and wherein pressing means are provided for urging said removable mold core and said outer mold radially toward one another to mold said crown portion after a crown portion building material has been injected into said annular mold cavity,

(b) opening the cavity by removing the inner removable mold core and keeping said crown portion against an inner surface of said annular outer mold,

(c) placing a carcass (14) having prevulcanized sidewalls (12, 13) in abutment with an exposed inner surface of said

crown portion retained in said outer part of said cavity, and





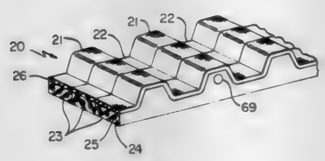
(d) completing the vulcanization of the crown portion and sidewalls, and simultaneously joining the sidewalls to the crown portion.

4,448,621

LONG SYNCHRONOUS BELT AND METHOD FOR MAKING THE SAME

Richard L. Marsh, and Robert E. Wetzel, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 30, 1979, Ser. No. 34,698
Int. Cl.³ B29H *7/22*; F16G *1/00*; B29H *7/04*
U.S. Cl. 156—138 **16 Claims**



1. A process for manufacturing an endless toothed power transmission belt made primarily of elastomeric material which comprises the steps of:

(a) providing a first belt sleeve made primarily of elastomeric material and having a load-carrying band located therein, said first sleeve having a desired circumferential length, tooth pitch and tooth shape by the steps comprised of winding a fabric around the outer circumference of a cylindrical mold having substantially axially extending grooves therein to form tooth cavities beneath said fabric, helically winding at least one strand in a plurality of convolutions around said mold over said fabric to form said load-carrying band, applying a layer of moldable rubber over said band, heating said layer to soften it and applying pressure to said rubber to force said softened rubber through the spaces between successive convolutions of said band and filling said tooth cavities by forcing said fabric into contact with the walls of said grooves and filling the space between said fabric and said band with said rubber; and thereafter at least partially curing said rubber;

(b) cutting said first sleeve in helical fashion into a continuous strip of predetermined width;

(c) providing an alignment means having a plurality of grooves, said grooves having a shape complimentary to said tooth shape and having a spacing corresponding to said tooth pitch;

(d) winding said strip in helical fashion around said alignment means to provide a plurality of adjacent strips and aligning the teeth of adjacent strips with each other and with said grooves in said alignment means to provide a second belt sleeve, said second sleeve having a circumferential length different from the circumferential length of said first sleeve;

(e) joining said adjacent strips in side-by-side relation; and

(f) cutting at least one belt from said second sleeve.

4,448,622

COMPOSITE POLYMERIC FILM AND METHOD FOR ITS USE IN INSTALLING A VERY THIN POLYMERIC FILM IN A DEVICE

David V. Duchane, Los Alamos, and Barry L. Barthell, Tesuque, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 26, 1982, Ser. No. 371,745
Int. Cl.³ B32B *31/00, 27/42*
U.S. Cl. 156—155 **14 Claims**

1. A composite polymeric film for use in installing a very thin polymeric film in a device, comprising a water soluble backing layer selected from the group consisting of polyvinyl alcohol, cellulose ether, sodium carboxymethyl cellulose and polyoxyethylene, and a thin film layer selected from the group consisting of polyvinyl formal, polymeric di-p-xylylene and cellulose acetate, and wherein said backing layer is relatively thicker than said thin film layer.

5. A method of installing a thin polymeric film in a device, comprising the steps of:

forming a composite film consisting essentially of a backing layer and a thin film layer, said backing layer being relative thicker than said thin film layer, said backing layer being soluble in at least one solvent in which said thin film layer is insoluble;

installing said composite film in a device in a position in which it is desired to install said thin film; and

immersing said device together with said composite film in a suitable solvent to dissolve said backing layer and leave said film layer as an unbacked thin polymeric film installed in the device.

4,448,623

WETTED FILAMENT DISPENSER AND WINDING THEREWITH

Keith B. Critchlow, London, England, assignor to The British Petroleum Company Limited, London, England

Filed Apr. 30, 1980, Ser. No. 145,037
Claims priority, application United Kingdom, May 4, 1979, 7915564
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—169 **12 Claims**

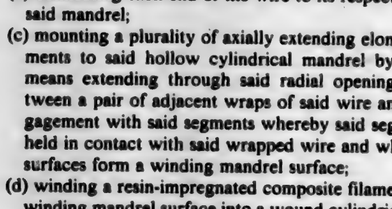
1. A wetted filament dispenser comprising:

(a) a container of a size suitable for hand holding and having an outlet nozzle;

(b) a source of a bundle of filaments forming a continuous strand;

(c) means for holding a quantity of liquid through which said continuous strand passes;

(d) spreader guide bars inside said container over which said wetted continuous strand passes prior to passing through said outlet nozzle; and



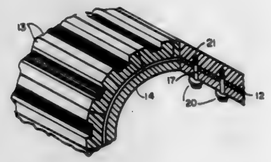
(e) manually-operated means for regulating the tension of said continuous strand as it is dispensed through said outlet nozzle.

4,448,624

METHOD AND APPARATUS FOR MAKING FILAMENT WOUND CYLINDRICAL STRUCTRES

Robert C. Webber, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Mar. 11, 1983, Ser. No. 474,441
Int. Cl.³ B65H *81/00*; B41B *11/00*
U.S. Cl. 156—175 **5 Claims**



1. The method of fabricating a resin-impregnated filament wound cylindrical section comprising the steps of:

(a) wrapping a single layer of metallic wire around the cylindrical surfaces of a hollow cylindrical mandrel having a plurality of radial openings therein, the pitch of said wrapping of wire on the mandrel being sufficiently great to permit intermediate spacings between at least some of the adjacent wraps of the wire;

(b) connecting each end of the wire to its respective end of said mandrel;

(c) mounting a plurality of axially extending elongated segments to said hollow cylindrical mandrel by fastening means extending through said radial openings and between a pair of adjacent wraps of said wire and into engagement with said segments whereby said segments are held in contact with said wrapped wire and whose outer surfaces form a winding mandrel surface;

(d) winding a resin-impregnated composite filament on said winding mandrel surface into a wound cylindrical configuration as desired;

(e) curing the cylindrically wound composite filament while still contained on the mandrel surface;

(f) remove the fastener means retaining the elongated segments to said hollow cylindrical mandrel;

(g) disconnect both ends of the wire from the hollow cylindrical mandrel and pull the wire from between the hollow cylindrical mandrel and the elongated segments;

(h) separate the hollow cylindrical mandrel and the elongated segments still containing the filament wound cylindrical section in cured state;

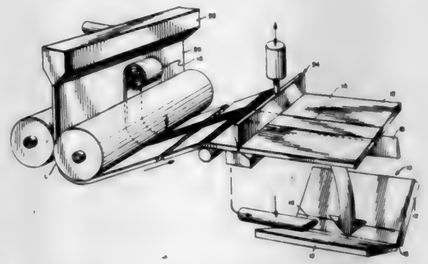
(i) and remove the elongated segments from within the filament wound cylindrical section.

4,448,625

METHOD OF MAKING A COMPOSITE PLASTIC MAT

Armando Carrera, Wood Dale, Ill., assignor to Tenex Corporation, Elk Grove, Ill.

Filed Oct. 2, 1981, Ser. No. 307,651
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—243 **10 Claims**



1. A process for forming a floor mat and the like including an elongated web means of flexible plastic material and a plastic strip means laminated into one side of said web means, said plastic strip means being relatively more flexible than said web means whereby folding of said mat along the length of said strip means is facilitated, said process comprising the following steps:

feeding and advancing a web-like supply of vinyl in molten condition to and through a forming station,

feeding and advancing, simultaneously with said web-like supply of vinyl, a plastic strip means to and through said forming station,

pressuring said web-like supply of molten vinyl and said plastic strip means at said forming station into an elongated composite web wherein said forming station comprises cylindrical formers which calendar the thickness of the resulting said composite web so that said plastic strip means becomes laminated in said web-like supply of molten vinyl with one side of said plastic strip means forming a portion of the resulting side of said composite web, and with the thickness of said composite web being greater than the thickness of said plastic strip means, including the step of slitting the side of said composite web opposite from said plastic strip means along a line generally opposite and parallel to said strip means substantially through to said plastic strip means.

4,448,626

METHOD AND APPARATUS FOR APPLYING A WELT TO A GARMENT PANEL

Joseph W. A. Off, Irving; Judson H. Early, Dallas; Daniel K. Roady, Dallas, and Theodore B. Thayer, Dallas, all of Tex., assignors to Haggar Company, Dallas, Tex.

Continuation-in-part of Ser. No. 170,750, Jul. 21, 1980, Pat. No. 4,371,074. This application Aug. 16, 1982, Ser. No. 408,641
Int. Cl.³ A41D *27/20*; A41H *43/00*; B32B *31/04, 31/10*
U.S. Cl. 156—256 **25 Claims**

1. An apparatus for positioning a garment piece on a garment panel at a work station, comprising:

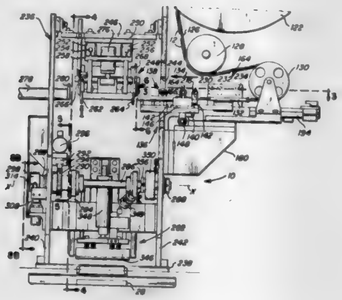
holding clamp means for holding the garment piece in a fixed position;

transfer clamp means for receiving the garment piece from said holding clamp means and for moving the garment piece in a first direction to a preselected position;

trimming means for trimming at least one edge of the piece;

setting clamp means for receiving the garment piece from that transfer clamp means and for transferring the piece to

the work station and positioning the piece on the garment panel; and



means at the work station for adhering the garment piece to the garment panel.

4,448,627

APPARATUS FOR APPLYING A RUBBER SHEET ONTO A TIRE MAKING DRUM

Kazuo Satoh, Kobe, and Tsutomu Nosaka, Hyogo, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Aug. 31, 1982, Ser. No. 413,436
Claims priority, application Japan, Sep. 9, 1981, 56-142799
Int. Cl.³ B29H *17/18, 17/02*
U.S. Cl. 156—405.1 **2 Claims**



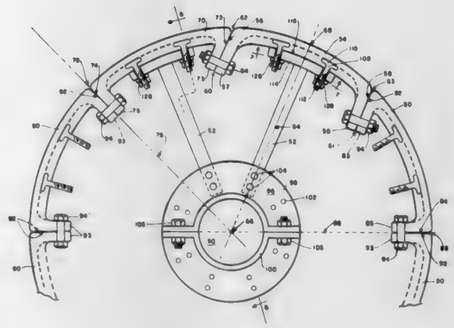
1. An apparatus for applying a rubber sheet onto a tire making drum comprising:
a movable main frame,
a tire making drum for applying thereto a rubber sheet, provided rotatably in the vicinity of one end of the movable main frame,
a sheet attracting and transferring means, located adjacent to the movable main frame, for attracting a long rubber sheet in the vicinity of its initial end and for transferring the long rubber sheet to the tire making drum,
a press roller means, disposed adjacent to the tire making drum, for press-contacting the initial end of the long rubber sheet onto the tire making drum, and
a cutter means for subsequently cutting the long rubber sheet, already applied onto said tire making drum, to a length corresponding to about one circumference of the tire making drum, said cutter means being provided adjacent to the sheet attracting and transferring means.

4,448,628

SEGMENTAL MANDREL FOR MAKING WOUND FILAMENT STRUCTURES

Rexeene S. Stott, 123 W. 4th N., Brigham City, Utah 84302

Filed Jul. 14, 1982, Ser. No. 398,133
Int. Cl.³ B29C *1/13*; B28B *21/48, 21/64*
U.S. Cl. 156—425 **9 Claims**



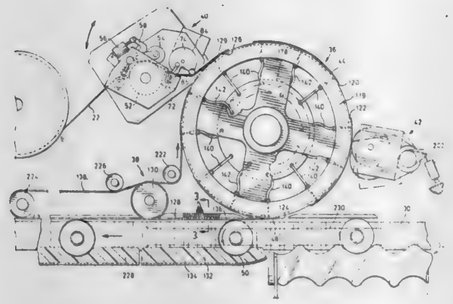
1. A hollow mandrel for forming a reinforced shell thereabout, said mandrel having a right cylinderical body with domed end portions and a central longitudinal axis, which comprises:
a. a center shaft adapted for mounting for rotation in a lathe:
b. a plurality of longitudinal sector pieces demountably assembled in edge-to-edge relationship to define the periphery of said mandrel each sector piece including a sector section of said right cylinderical body and sector sections of said domed end portions;
c. means for supporting said sector pieces in concentric relation to said center shaft;
d. means for demountably securing said supporting means to said sector pieces; and
e. means for demountably securing said supporting means to said shaft;
wherein a first one of said sector pieces has spaced-apart edges defined by inwardly directed flanges wherein the inner lateral dimension of said first sector piece is at least equal to the outer lateral dimension of said first sector piece;
wherein a second and a third sector piece each have a first edge defined by an inwardly directed flange complementary to the adjacent edge of said first sector piece, and each have a second edge defined by an inwardly directed flange complementary to the edges of the remaining sector pieces; and
wherein all remaining sector pieces have spaced-apart edges defined by inwardly directed flanges, said edges lying in the plane passing through said central axis each said means for supporting being a spoke removably attached to said shaft, and being removably attached to section piece by plural studs generally radially disposed relative said shaft in such a manner that said spoke can be detached from said section piece by movement of said spoke axially of said shaft and laterally of said studs.

4,448,629

CUTTER ASSEMBLY

Martin D. Malthouse, Toronto, and Heinz K. Groeger, Thornhill, both of Canada, assignors to Associpak International Inc., Markham, Canada

Division of Ser. No. 98,085, Nov. 28, 1978, Pat. No. 4,323,416. This application Nov. 13, 1981, Ser. No. 321,004
Claims priority, application Canada, Dec. 5, 1978, 317428; Nov. 22, 1979, 340448
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—510 **13 Claims**



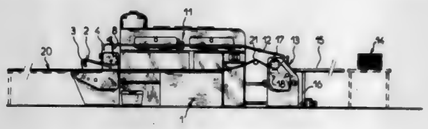
1. For use in a machine having a feed mechanism to feed a strip of material along a predetermined path and into engagement with a, transport device a cutter assembly located in said path for severing said strip of sheet material, into discrete pieces to be carried by said transport device said cutter assembly comprising:
a fixed support,
a first knife element attached to said fixed support to extend transverse to said strip,
a rotatable knife carrier mounted for rotation about a first axis,
a second knife element attached to said rotatable knife carrier for movement therewith,
drive means to rotate said rotatable knife carrier about said first axis and move said second knife element past said first knife element to produce a cutting action, said knife elements diverging in the direction of travel of said second knife element to provide progressive severing of said strip of sheet material in a direction transverse to the strip, and
cam means associated with said rotatable knife carrier and moveable into said path to engage said strip of sheet material and during a latter part of said cutting action out of said path to disengage said strip whereby tension is removed from the strip between said cutter assembly and said label carrier during the latter part of said cutting action.

4,448,630

MACHINE FOR APPLYING A FILM

Philippe Blanquart, 43 rue du Marais, 59152 Tressin (Nord), France

Filed Jul. 13, 1982, Ser. No. 397,805
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—514 **8 Claims**



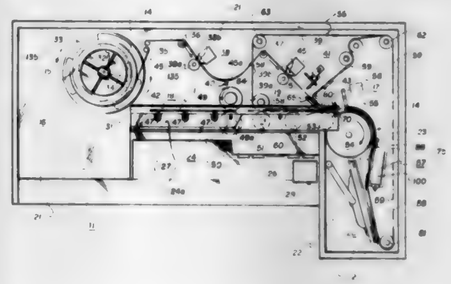
1. Machine for applying film intended in particular for applying a film of polypropylene or acetate to a cardboard support comprising cut-outs, comprises a winding arrangement in which is stored the roll of film, a station for glueing the surface of the film, a tunnel oven in which the glued film is heated, an applicator unit composed of a pressure roller and a counter-pressure roller pressed one against the other, between which passes the glued film superimposed on the front side of the cardboard supports, characterised by the fact that means deflect the arrangment of the cardboard support coated with film leaving the applicator unit in order to separate it from the counter-pressure roller.

4,448,631

ENCODABLE STRIP ATTACHMENT APPARATUS

Charles K. Eaton, Lewisville; Eugene C. Nolting, Coppell, and Thomas J. Norman, Jr., Richardson, all of Tex., assignors to BancTec, Inc., Dallas, Tex.

Continuation of Ser. No. 348,421, Feb. 12, 1983, abandoned, which is a continuation of Ser. No. 228,334, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 52,022, Jun. 25, 1979, abandoned. This application May 25, 1983, Ser. No. 498,060
Int. Cl.³ B65C *5/02*
U.S. Cl. 156—521 **2 Claims**



1. Encodable strip attachment apparatus for attaching discrete strips of encodable material to documents of various lengths, comprising:
a. supply means for retaining, at a supply station, a continuous supply of encodable material of the type having an encodable band portion and a heat activatable adhesive bearing portion;
b. supply transport means for transporting said encodable material along a first path to an alignment station;
c. document transport means for transporting documents along a second path different from said first path, to said alignment station;
d. alignment means, disposed at said alignment station, for independently aligning respective leading edges of said encodable material and said document, and for aligning a defined portion of said encodable material and a document along a linear edge of the document in abutting relationship with a linear edge of said encodable band portion when said document and said encodable material are sealed together;
e. a single sealing means, disposed at a strip attachment station, for heat-sealing only the adhesive bearing portion with said document along the entire length thereof in a single step, thereby to provide an encodable material modified document;
f. stacking means, disposed at an output station, for stacking said encodable material modified document with other encodable material modified documents; and
g. a friction belt drive assembly for assistably transporting the encodable material and said documents to said alignment station, for independently transporting the aligned document and encodable material continuously from the

alignment station to the strip attachment station, and for transporting the encodable material modified documents to the output station; said friction belt drive assembly comprising a first driven continuous document transport belt for transporting said documents to said alignment means, a second driven continuous belt for translating severed strips of said encodable material to said alignment means, said first and second belts passing into cooperative relationship with said alignment and sealing means, so that the aligned document and strip of encodable material are aligned at their respective leading edges and transported to the strip attachment station, said first and second belts being in side by side relationship at said alignment means and at said sealing means, and means for driving said first and second belts at the same speed.

4,448,632

METHOD OF FABRICATING SEMICONDUCTOR DEVICES

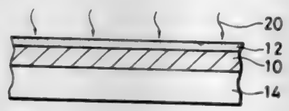
Yoichi Akasaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,597

Claims priority, application Japan, May 25, 1981, 56-79813; May 27, 1981, 56-80565

Int. Cl.³ C30B *33/00*; H01L *21/428*

U.S. Cl. 156—603 **16 Claims**



1. A method of fabricating semiconductor devices, comprising the steps of forming a polycrystalline silicon layer on an insulating or amorphous layer; irradiating said polycrystalline silicon layer with a laser or electron beam so as to increase the grain size of said polycrystalline silicon layer and to provide a plurality of monocrystals in the polycrystalline layer; epitaxially forming a layer primarily containing silicon on said altered polycrystalline silicon layer; and melting said epitaxially grown layer and said polycrystalline silicon layer with an irradiation of a laser or electron beam so as to obtain a monocrystalline layer from said epitaxially grown layer and said polycrystalline silicon layer.

9. A method of fabricating a semiconductor device, comprising the steps of forming a polycrystalline silicon layer on an insulating or amorphous layer; irradiating said polycrystalline silicon layer with a laser or electron beam so as to increase the grain size of said polycrystalline silicon layer and to provide a plurality of monocrystal in the polycrystalline layer; epitaxially forming a layer primarily containing silicon on said altered polycrystalline silicon layer; partially oxidizing said epitaxially grown layer to form an oxide layer spreading through said polycrystalline silicon layer to said insulating or amorphous layer to thereby electrically separate a non-oxidized portion of said epitaxially grown layer from the remaining portions thereof; and melting said non-oxidized portion of said epitaxially grown layer and said polycrystalline silicon layer beneath said non-oxidized portion with a laser or electron beam to monocrystalline said epitaxially grown and polycrystalline silicon layers.

4,448,633

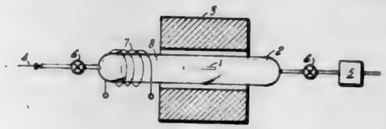
PASSIVATION OF III-V SEMICONDUCTOR SURFACES BY PLASMA NITRIDATION

Alexander J. Shuskus, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 29, 1982, Ser. No. 445,384

Int. Cl.³ C23C *11/08*; C30B *25/10*

U.S. Cl. 156—610 **6 Claims**



1. Method for producing surface passivating layers on III-V semiconductor articles by nitriding the surface of the articles including the steps of:

(a) heating the III-V article to a temperature greater than about 400° C. and less than 500° C. while contacting the III-V article with a nitrogen plasma, said plasma having been produced by ionizing nitrogen gas having a pressure of from about 0.01 to about 10 torr, to provide an initial III-nitride layer having a thickness of about 20–100 Å, and

(b) heating the III-V semiconductor to a temperature greater than 500° C. and less than about 700° C. while contacting the III-V surface with a nitrogen plasma to produce a thicker nitride layer, said plasma having been produced by ionizing nitrogen gas having a pressure of from about 0.01 to about 10 torr, so that the total thickness of the nitride layer is from about 200 to about 1000 Å.

4,448,634

PROCESS FOR POLISHING III-V-SEMICONDUCTOR SURFACES

Ingolf Lampert, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Jul. 15, 1983, Ser. No. 513,813

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1982, 3237235

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—636 **6 Claims**

1. In a process for polishing III-V semiconductor surfaces, in which, in the polishing operation, a solution containing an alkali metal hypochlorite and a liquid containing a mechanical polishing component are applied to the surface to be polished, the improvement comprising the steps of:

adjusting the solution containing the alkali metal hypochlorite to a pH value of from 8.5 to 11 by the addition of buffering components; and

adding a complex-forming component to the liquid containing the mechanical polishing component.

4,448,635

METHOD OF ETCHING CAVITIES AND APERTURES IN SUBSTRATES AND DEVICE FOR CARRYING OUT SAID METHOD

Hendrik K. Kuiken, and Rudolf P. Tijburg, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

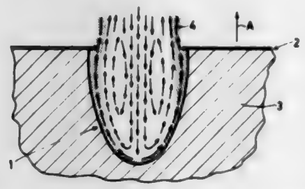
Filed Feb. 4, 1983, Ser. No. 463,761

Claims priority, application Netherlands, Nov. 8, 1982, 8204307

Int. Cl.³ H01L *21/306*; C23F *1/02*; B44C *1/22*; C03C *15/00*

U.S. Cl. 156—637 **6 Claims**

1. A method of etching cavities and apertures in a substrate comprising subjecting said substrate to the action of an etchant characterized in that the etching takes place in an artificial gravitational field causing a relative movement of the etchant in regard to the substrate solely by virtue of the difference of the density between the etchant and the products formed during etching.



4,448,636

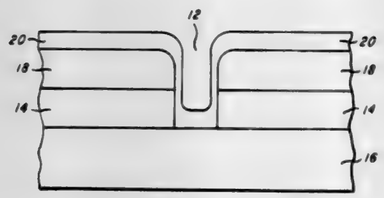
LASER ASSISTED LIFT-OFF

Samuel C. Baber, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1982, Ser. No. 384,355

Int. Cl.³ B44C *1/22*; C03C *15/00*; B23K *9/00*; B05D *5/12*

U.S. Cl. 156—643 **17 Claims**



1. A method for patterning thin films in integrated circuit processing, comprising the steps of:

providing a substrate having an integrated circuit surface;

providing a patterned layer of organic polymer on said surface;

depositing a thin film of a preselected material both over portions of said patterned layer of organic polymer and also over poritons of said substrate which are not covered by said patterned layer of organic polymer;

heating said thin film with a pulse or radiation, whereby portions of said polymer in contact with said film are heated to break adhesion between said film and said polymer; and

removing separated portions of said film from said polymer layer.

4,448,637

ETCHING METHOD OF CONDUCTIVE FILM

Masanori Hiraishi, Himeji, and Masashi Sugata, Hyogo, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

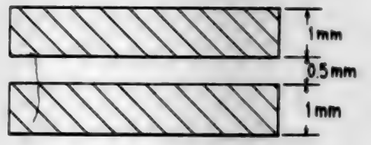
Filed Dec. 13, 1982, Ser. No. 449,091

Claims priority, application Japan, Dec. 28, 1981, 56-214123; Jun. 25, 1982, 57-110356

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—635 **7 Claims**

1. A method of producing a pattern of an electrically conductive film on a substrate comprising: providing a substrate coated with a continuous layer of an electrically conductive material; depositing an etchant composition on selected areas of said layer, said etchant composition consisting essentially of an aqueous solution of an etching agent effective for reacting with said electrically conductive material to form water-soluble reaction products, said aqueous solution containing dissolved therein from 0.01 to 30% by weight of a water-soluble organic polymer effective to increase the viscosity of said composition to at least 10 cps, said aqueous solution also containing dissolved therein up to 30% by weight of a polyhydric alcohol capable of preventing the evaporation of water from said etchant composition; maintaining said etchant composition on said selected areas of said layer until said etching agent has reacted with said electrically conductive material to form water-soluble reaction products; and then applying water to remove said etchant composition and said water-soluble reaction products from said layer.



4,448,638

PAPER WEBS HAVING HIGH BULK AND ABSORBENCY AND PROCESS AND APPARATUS FOR PRODUCING THE SAME

Bernard G. Klowak, Neenah, Wis., assignor to James River-Dixie/Northern, Inc., Norwalk, Conn.

Continuation of Ser. No. 182,835, Aug. 29, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,973

Int. Cl.³ D21H *5/24*

U.S. Cl. 162—112 **11 Claims**

1. A process for producing paper webs having exceptional bulk and absorbency, comprising the steps of:

(a) mixing a predetermined amount of chemical debonding agent which inhibits the formation of interfiber bonds into a pulp furnish;

(b) forming the pulp furnish and debonding agent mix into a web;

(c) pressing the web to reduce the moisture content thereof;

(d) applying the web to a heated, moving creping surface and drying the web on the creping surface;

(e) simultaneously uniformly applying a predetermined amount of creping adhesive to the creping surface ahead of the position at which the web is applied to the moving creping surface;

(f) the amount of debonding agent mixed into the pulp furnish and the amount of creping adhesive applied to the creping surface selected such that substantial splitting apart of the web would occur if the web were pulled from the creping surface; and

(g) creping the dried web by removing the web from the creping surface with the creping blade having a cutting angle of about 72° or less such that crepes are formed on both sides of the web.

4,448,639

MINERAL FIBER-CONTAINING PAPER FOR THE PRODUCTION OF GYPSUM WALLBOARD PRODUCT PREPARED THEREWITH

William J. Long, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jun. 24, 1982, Ser. No. 391,627

Int. Cl.³ D21H *1/02*

U.S. Cl. 162—124 **12 Claims**

1. A method for the preparation of porous mineral fiber-containing paper cover sheet material suitable for use in preparing gypsum wallboard, which comprises forming an aqueous slurry comprising cellulose fibers, mineral fibers containing substantially all the shot resulting from their formation, cellulose gel, a polymeric latex binder and a flocculant without said shot being released from the mineral fibers, applying said slurry to a paper-making machine and forming paper there-

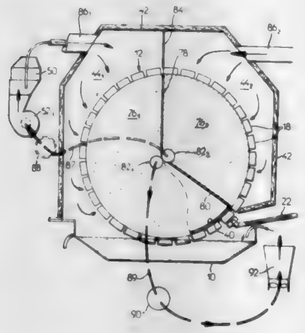
from, and drying the paper; said cellulose fibers being present on a dry weight basis in an amount from about 65% to about 95%, said shot-containing mineral fibers being present in an amount of from about 5% to about 40%, said cellulose gel being present in an amount of from about 1% to about 10%, said polymeric latex binder being present in an amount of from about 1% to about 10%, and said flocculant being present in an amount of from 0.05% to about 0.5%.

4,448,640

PROCESS AND DEVICE FOR MOLDING AND DRYING OBJECTS MADE OF FIBROUS MATERIALS

Bernard Brault, Paris, and Paul H. Marchal, Thann, both of France, assignors to Societe Anonyme dite: Air Industrie, France

Filed Feb. 4, 1982, Ser. No. 345,697
Claims priority, application France, Feb. 17, 1981, 81 03099
Int. Cl.³ D21J 7/00
U.S. Cl. 162—218 **3 Claims**



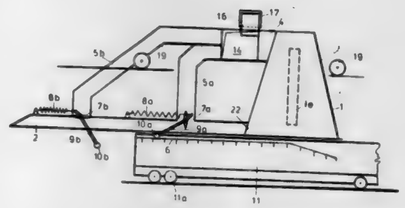
1. A device for molding and drying articles made of fibrous materials, of a type having a cylinder turning around its longitudinal axis, said cylinder carrying along the length of its lateral faces a row of porous molds, said molds partially dipping into a vat maintained with a constant level of a fibrous product paste made of an appropriate liquid, means for removing and transferring articles from said molds which periodically and successively applies itself on each of the aforesaid row of molds, and a belt conveying the products to a dryer, characterized in that said cylinder (12) is surrounded on its entire lateral surface between paste vat (10) and said removing and transferring means (22), by an arrangement of insulating walls (42) which define with cylinder (12) and vat (10) an enclosure (44) into which opens a first conduit for conveying hot air (46) and connected in series to a ventilator (52), a reheater (50), and a second conduit (54) to which are connected a plurality of extraction conduits located along the length of the dryer (56) for extracting heated air therefrom and an exhaust conduit (64) to the atmosphere; wherein the interior volume of said cylinder (12) is divided by first and second radial partitions (78,80), fixed in space, into a first draining and predrying chamber (76_1) and a first drying chamber (76_2), both in the form of cylindrical sections, said second partitions (80) terminating opposite an edge of the insulating wall (42), contiguous with said removing and transferring means (22); said enclosure also being divided by a third partition (84) positioned radially outwardly of the first radial partition (78) said third portion together with the exterior surface of the cylinder (12) and walls of said enclosure define a second draining and predrying chamber (76_1), and a second drying chamber; (44_2) connected to said first draining and predrying chamber and said first drying chamber; said first conduit opening into said second drying chamber; a third conduit connecting a heating means for heating new air to said second raining and predrying chamber.

4,448,641

METHOD FOR EVACUATING EMISSIONS OF A COKE OVEN

August Lucas, Dattein-Horneburg, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. K.G., Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,050
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115217
Int. Cl.³ C10B 33/00, 41/02
U.S. Cl. 201—41 **5 Claims**



1. A method of evacuating emissions caused by glowing coke cake which is pushed over a coke guide car out of a coke oven opening of a coke oven battery, into a quenching car movable in a feed direction along the coke oven battery, using a hood structure which is also movable along the coke oven battery and which has a front portion and a rear portion, the coke oven battery having a fixed exhaust system with a selected amount of suction power for receiving the emissions, and the hood structure having duct means for communicating the coke guide car, the front portion and the rear portion with the fixed exhaust system, the front and rear portions of the hood structure having a combined length in the feed direction at least equal to a length of the quenching car in the feed direction, the method comprising:

positioning the front portion of the hood structure in alignment with the coke oven opening, with the rear portion extending downstream thereof in the feed direction;

moving the quenching car in the feed direction under the front portion;

the coke cake being pushed into the quenching car as it passes under the front portion;

applying the entire selected amount of suction power over the duct means for communicating the coke guide car and the front portion to the fixed exhaust system during a starting period of coke pushing when the quenching car is under the front portion only; and

distributing some of the selected amount of suction power to the duct means for communicating the rear portion to the fixed exhaust system as a forward end of the quenching car in the feed direction moves under the rear portion of the hood structure;

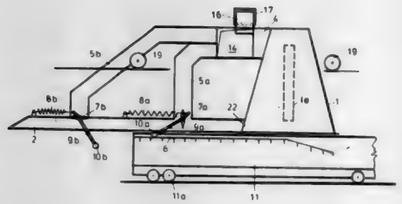
the front and rear portions of the hood structure both being provided with a width extending across an entire width of the quenching car, the front portion being higher above the quenching car than the rear portion and sufficiently high to cover an entire height of the coke oven opening, the duct means for communicating the rear portion with the exhaust system including a valve which is activatable by engagement with the quenching car as the quenching car moves in the feed direction under the rear portion.

4,448,642

APPARATUS FOR EVACUATING EMISSIONS OF A COKE OVEN

August Lucas, Dattein-Horneburg, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. K.G., Fed. Rep. of Germany

Division of Ser. No. 368,050, Apr. 14, 1982. This application Apr. 5, 1983, Ser. No. 482,166
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115217
Int. Cl.³ C10B 33/00, 41/02
U.S. Cl. 202—263 **6 Claims**



1. A coke handling apparatus for use with a coke oven battery having a plurality of horizontally arranged side by side coke ovens with a quenching car trackway for a coke quenching car disposed alongside the battery outwardly of a coke cake guide car which is also movable along the ovens of the battery on a guide car trackway, comprising;

a coke quenching car for movement on the quenching car trackway;

a stationary closed exhaust system adapted to be disposed adjacent the battery and having an exhaust connection adjacent said quenching car;

means defining a hood support and trackway adapted to be adjacent the quenching car trackway;

a hood structure supported on said hood support and trackway and moveable therealong and connected to said exhaust connection and having a first hood portion of a size to overlay a portion of said quenching car across its width in a position to withdraw gases and dust from glowing coke pushed from a coke oven through the coke cake guide car and said first hood portion into said quenching car;

a second hood portion extending forwardly of said first hood portion in a position to overlay a portion of said quenching car as it is advanced with the coke which has already passed under said first hood portion;

said second hood portion having a plurality of separate exhaust channel hood connections connected to said exhaust connection with each having a control valve therein;

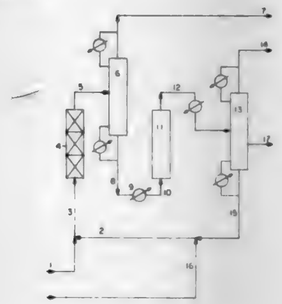
control means associated with said second hood portion exhaust channel hood connections to open said exhaust channel hood connections to said exhaust connection to cause additional exhaust over said quenching car, said control means including means associated with said quenching car to automatically sequentially actuate said control valves in said separate exhaust channel hood connections to selectively open and close these connections as the quenching car advances therebeneath.

4,448,643

ISOLATION OF ISOBUTENE FROM C₄-HYDROCARBON MIXTURES CONTAINING ISOBUTENE

Alfred Lindner, Bobenheim-Roxheim; Klaus Volkamer, Frankenthal, and Ulrich Wagner, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 122,067, Feb. 15, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 282,746
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908426
Int. Cl.³ C07C 7/148; B01D 3/32
U.S. Cl. 203—34 **10 Claims**



1. A process for isolating isobutene from C_4-hydrocarbon mixtures containing isobutene which comprises

(a) reacting the mixture with a primary C_3- or C_4-alcohol in the presence of an acid condensing agent, to form the tertiary ether,

(b) taking the reaction mixture off at the exit of the etherification stage at a temperature from 3° to 30° C. lower than the mean temperature in the etherification stage,

(c) separating off the unconverted hydrocarbons, and

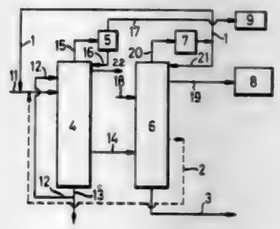
(d) composing the tertiary ether in the presence of an acid catalyst.

4,448,644

METHOD OF PRODUCING ETHANOL-WATER AZEOTROPE FROM CRUDE ETHANOL

Brian R. Foster, and William T. Woodfin, both of Hull, England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 326,362, Dec. 1, 1981, abandoned. This application May 12, 1983, Ser. No. 493,653
Claims priority, application United Kingdom, Dec. 6, 1980, 8039196
Int. Cl.³ B01D 3/40; C07C 29/88
U.S. Cl. 203—37 **10 Claims**



1. A process for purifying crude ethanol to obtain substantially pure ethanol-water azeotrope, comprising separately feeding the crude ethanol and water into a single hydroselection column having a refluxing section above the water feed

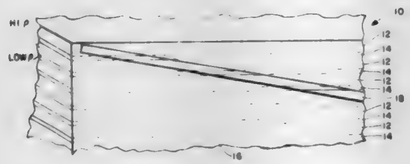
point, an intermediate section between the water feed point and the crude ethanol feed point, a stripping section between the crude ethanol feed point and a produce side draw tray below the crude ethanol feed point, and a base section below the prouduct side draw tray wherein the ratio of theoretical trays in the refluxing, intermediate and stripping sections is in the range 0.2–0.7:1:2.0–2.5, the hydroselection column containing less than 100 actual trays and being operated at temperatures between 120° C. and 180° C. and at a pressure above 50 psia, the water being fed to the column at a point above the crude ethanol feed point and the molar ratio of water fed to ethanol in the crude ethanol feed being at least 10:1, withdrawing an overhead vapour fraction containing a substantial portion of volatile impurities, and returning part of the overhead vapour fraction after condensation to the column as liquid reflux maintaining a reflux ratio of less than 100:1 expressed on the total amount of fluid removed from the column above the water feed point, withdrawing a purified aqueous ethanol sidestream substantially free of all impurities from the produce side draw tray below the crude ethanol feed point, feeding the purified aqueous ethanol into the lower half of a rectification column, said column being operated at temperatures between 70° and 125° C. recycling an overhead purge stream containing acetaldehyde and other impurities from the rectification column to the crude ethanol feed to the hydroselection column, withdrawing a purge stream from the head of the hydroselection column at a point above the water feed point, and withdrawing a substantially pure ethanol-water azeotrope containing less than 5 ppm of any of the impurities, except methanol, in the crude ethanol feed as a side-stream from the upper half of the column and an aqueous effluent substantially free from ethanol from the base of the column.

4,448,645

ELECTRODING OF MULTI-LAYERED EPITAXIAL STRUCTURES

Glenn D. Robertson, Jr., Malibu, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 11, 1983, Ser. No. 512,847
Int. Cl.³ C25D *5/02*
U.S. Cl. 204—15 **3 Claims**



1. The method of forming contacts for separate electrical connections to low-resistivity layers of an epitaxially grown stack of alternate high and low-resistivity layers, said method comprising the steps of:

coating one edge of the stack with a dielectric;

forming a diagonal strip opening across the edge through the dielectric to thereby expose the edges of the layers;

forming on a different edge of the stack a metallic contact which makes electrical connections to all of the low-resistivity layers, to provide a common electrode;

immersing said one edge in a metallic plating solution and applying an electric potential between said common electrode and said solution, so that current flows through each of the low-resistivity layers, and at the point where it is exposed to the plating solution through said strip opening a deposit of metal is formed, to thereby provide a contact area for each low-resistivity layer for electrical connections; and

removing said common electrode.

4,448,646

PROCESS FOR PREPARATION OF HIGH PURITY METALS BY THE ELECTROCHEMICAL REDUCTION OF CHALCOGENIDE ESTERS

Santokh S. Badesha, Ontario, N.Y., and Rafik O. Loutfy, Willowdale, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1983, Ser. No. 509,752
Int. Cl.³ C25C *1/22*
U.S. Cl. 204—59 M **6 Claims**

1. A process for the preparation of selenium, tellurium, or arsenic of high purity, which comprises subjecting the following pure esters of these elements, which esters are of the formulas:

$$(C_2H_5O)_2SeO \quad (I)$$

$$Te(OCH_2CH_2O)_2 \quad (II)$$

$$(OCH_2)_2As—OCH_2CH_2O—As—(OCH_2)_2 \quad (III)$$

to an electrochemical reduction in an electrochemical apparatus, containing an anode, a cathode, a power source, and an electrolytic solution comprised of the esters contained in a solution of tetrabutyl ammonium perchlorate, and cellosolve, and wherein the temperature of the electrolytic solution is maintained at from about 15 degrees centigrade to about 80 degrees centigrade.

4,448,647

ELECTROCHEMICALLY TREATED METAL PLATES

Thomas N. Gillich, Whitehouse Station; John E. Walls, Annandale; Stanley F. Wanat, Scotch Plains, and William J. Rozell, Martinsville, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation of Ser. No. 188,091, Sep. 26, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,685
Int. Cl.³ C25D *11/02, 11/08, 11/10*
U.S. Cl. 204—33 **58 Claims**

1. A process for preparing an element comprising

(a) cleaning a metal article,

(b) electrolyzing said metal article made anodic using direct current in an aqueous electrolytic solution having dissolved therein a mixture of electrolytes comprising:

i. a water-soluble organic acid or mixture of two or more water-soluble organic acids selected from the group consisting of organic phosphoric acids, sulfonic acids, phosphonic acids, diethylene diamine penta acetic acid, ethylene diamine tetra acetic acid, hydroxyethyl ethylene diamine triacetic acid, and nitrilo triacetic acid; and

ii. a strong inorganic acid comprising a phosphorus oxo acid having POH groups in which the hydrogen atom is ionizable under electrolytic conditions sufficient to form an insoluble substantially non-porous metal oxide-organic complex, including said organic acid, bonded to the surface of said metal article.

4,448,648

TRIVALENT CHROMIUM ELECTROPLATING BATHS

Donald J. Barclay, Winchester; William M. Morgan, Chandlers Ford, and James M. Vigar, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1982, Ser. No. 437,992
Claims priority, application United Kingdom, Nov. 18, 1981, 8134777
Int. Cl.³ C25D *3/06*
U.S. Cl. 204—51 **12 Claims**

1. A chromium electroplating electrolyte containing a source of trivalent chromium ions, a complexant, a buffer and a sulphur species selected from the group consisting of thiosulphates, thionates, polythionates and sulfoxylates for promoting chromium deposition, the complexant being selected so that the stability constant K_1 of the reaction between the chromium ions and the complexant is in the range $10^6 < K_1 < 10^{12} M^{-1}$ at about 25° C.

4,448,649

TRIVALENT CHROMIUM ELECTROPLATING BATHS

Donald J. Barclay, Winchester; William M. Morgan, Chandlers Ford, and James M. Vigar, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,075
Claims priority, application United Kingdom, Nov. 18, 1981, 8134779
Int. Cl.³ C25D *3/06*
U.S. Cl. 204—51 **11 Claims**

1. A chromium electroplating electrolyte containing trivalent chromium ions, a complexant, a buffer agent and a sulphur species selected from sulphites and dithionites, the complexant being selected from aspartic acid, 5-sulphosalicylic acid and citric acid.

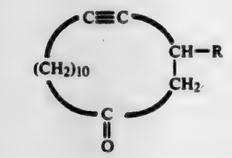
4,448,650

PROCESS FOR THE PREPARATION OF CYCLOPENTADEC-4-YNONE AND OF ITS 3-METHYL HOMOLOGUE

Francois Delay, Carouge, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

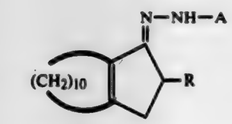
Filed May 25, 1983, Ser. No. 498,050
Claims priority, application Switzerland, Jul. 5, 1982, 4078/82
Int. Cl.³ C25B *3/02*
U.S. Cl. 204—59 R **5 Claims**

1. Process for the preparation of a macrocyclic acetylenic ketone of formula



(I)

wherein symbol R designates a hydrogen atom or a methyl radical which comprises subjecting to anodic oxidation, in the presence of an aliphatic or an araliphatic alcohol or a glycol, a hydrazone of formula



(II)

wherein symbol R has the above given meaning and A represents a hydrogen atom or a sulfonyl radical of formula $R^1—SO_2—$, wherein R^1 stands for a substituted or an unsubstituted aryl group.

4,448,651

PROCESS FOR PRODUCING SILICON

Jerry M. Olson, Lakewood, and Karen L. Carleton, Boulder, both of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 10, 1982, Ser. No. 387,115
Int. Cl.³ C25B *1/00*; C25C *7/00*
U.S. Cl. 204—60 **24 Claims**

1. A process for producing silicon comprising:

forming an alloy of Cu and Si;

positioning said alloy in a dried, molten salt electrolyte to form a solid Cu/Si anode structure therein;

placing electrically conductive cathode means within said electrolyte for plating silicon thereon;

purifying said electrolyte to remove dissolved oxides therefrom; and

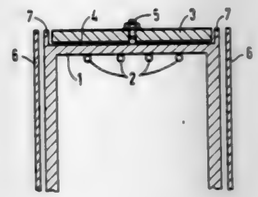
applying a potential between said anode and cathode means in an amount sufficient to form substantially pure silicon on said cathode means in the form of substantially dense, coherent deposits.

4,448,652

DEVICE FOR THE CATHODE SPUTTERING OF A METAL

Horst Pachonik, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,552
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1981, 3148354
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **10 Claims**



1. Device for cathode sputtering of metal, comprising a holder, means for cooling said holder, a heat conducting paste layer disposed on said holder, a target disposed on said heat conducting paste layer, and a bolt connecting said target to said holder with said heat conducting paste layer disposed therebetween as a heat transfer medium, said target being formed of the metal to be sputtered.

4,448,653

CATHODE ARRANGEMENT FOR SPUTTERING MATERIAL FROM A TARGET IN A CATHODE SPUTTERING UNIT

Urs Wegmann, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Oct. 30, 1981, Ser. No. 311,267
Claims priority, application Switzerland, Oct. 14, 1980, 7637/80
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **10 Claims**



1. A cathode arrangement for sputtering material from a target in a cathode sputtering unit, comprising a frame-shape magnet being disposed adjacent the target remote from the surface to be sputtered, and another magnet being provided within said frame-shap magnet, and with the directions of magnetization of the two magnets forming an angle of between 45° and 90°, said frame-shape magnet being made of a perma-

nent-magnet mterial having an energy density of at least 40 kJ per m^3 and the other magnet being made of a permanent-magnet material having an energy density of less than 40 kJ per m^3.

4,448,654

PROCESS AND ANODE FOR MOLTEN SALT ELECTROLYSIS

Stanley F. Spangenberg; Arlington L. Finley, both of Midland, and D. James Searson, Sanford, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 204,733, Nov. 6, 1980, Pat. No. 4,370,216. This application Jun. 18, 1982, Ser. No. 389,835

Int. Cl.³ C25C *3/00, 3/04, 3/06*

U.S. Cl. 204—70 **4 Claims**

1. In an electrolytic process comprising:
imposing an electrical potential on an anode and a cathode in an electrolytic cell sufficient to cause electrolysis of electrolyte to occur;
removing the products of electrolysis from the cell;
wherein the improvement comprises using as the anode
(a) an uncoated, uncatalyzed hollow ceramic member which comprises a single phase material of an oxide of titanium and a dopant suited to prevent at least a portion of titanium ions having a formal valence of +3 from converting to titanium ions having a formal valence of +4; and
(b) an electrically conductive substance occupying at least a portion of the interior of the hollow ceramic member and adapted to transfer electrical energy from a power source to the ceramic member.

4,448,655

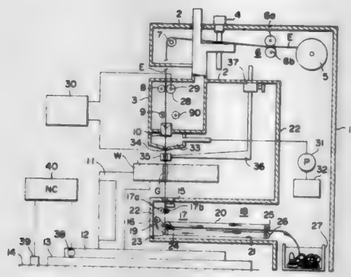
TRAVELING-WIRE ELECTROEROSION MACHINING ELECTRODE AND METHOD

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Nov. 17, 1981, Ser. No. 322,381

Int. Cl.³ B23P *1/10, 1/12*; B23K *9/16*

U.S. Cl. 204—129.1 **29 Claims**



5. A method of electroerosively machining an electrically conductive workpiece with a traveling-wire machining electrode, comprising the steps of:
(a) preparing a continuous, elongated element having a thickness ranging between 0.1 and 0.5 mm and being formed with a rugged peripheral surface along a length thereof;
(b) axially displacing said elongated element continuously through a workpiece along a predetermined path to form a traveling-wire machining electrode juxtaposed with said workpiece across a machining gap;
(c) supplying a machining liquid to said gap;
(d) passing a machining current between said electrode and said workpiece through said machining gap to electroerosively remove material from said workpiece, thereby machining the latter while causing gaseous bubbles to be formed in the gap by electrical decomposition of said machining liquid which bubbles tend to be adherent on the machining surface of said electrode and thus act as a thermal insulator between said machining surface and said machining liquid;
(e) relatively displacing said path and said workpiece transversely to form a machined contour in the latter; and
(f) promoting detachment of said gaseous bubbles from said machining surface by forming said elongated element with said rugged peripheral surface acting to facilitate detachment of said gaseous bubbles from said machining surface of said electrode element, said rugged peripheral surface comprising a multiplicity of spaced projections of an electrically conductive material added in a predetermined uniform, discrete pattern on said elongate element, said projections having a height ranging between one tenth and one third of the thickness of said elongate element.

4,448,656

ELECTROLYTIC/ELECTRIC DISCHARGE MACHINING OF A NON-CONDUCTIVE WORKPIECE

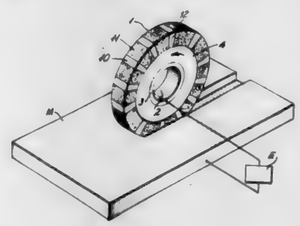
Akio Kuromatsu, Yokohama, Japan, assignor to Ohyo Jiki Labolatory Company Ltd., Kawagawa, Japan

Filed Jun. 22, 1982, Ser. No. 390,851

Claims priority, application Japan, Jun. 24, 1981, 56-96631; May 8, 1982, 57-75986

Int. Cl.³ B23P *1/10, 1/12*; B23K *9/16*

U.S. Cl. 204—129.4 **9 Claims**



1. A method for the electrolytic/electric discharge machining of a non-conductive workpiece, comprising
preparing a grinding wheel having conductive regions and non-conductive abrasive regions circumferentially alternately arranged at least on the circumferential edge of the wheel,
placing a non-conductive workpiece beneath the surface of an electrolyte, and
bringing the rotating grinding wheel in contact with said non-conductive workpiece while applying voltage between the conductive regions of said grinding wheel and said non-conductive workpiece.

4,448,657

METHODS EMPLOYING MAGNETIC FIELDS FOR CONTROLLING EMULSION POLYMERIZATION

Nicholas J. Turro, Tenafly, N.J., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,664

Int. Cl.³ C08F *2/50*; C03G *19/00*

U.S. Cl. 204—155 **9 Claims**

1. A method of controlling an emulsion polymerization reaction comprising employing as an initiator for the reaction an oil-soluble photoinitiator which produces triplet radical pairs, irradiating the photoinitiator to produce such triplet radical pairs, providing for the photoinitiator a plurality of loci of polymerization initiation having the restricted dimensionality of microscopic reaction vessels, and applying a magnetic field having a strength of at least about 100 Gauss and sufficient to afford significant enhancement of polymerization initiation.

4,448,658

USE OF HIGH-INTENSITY RAPIDLY-PULSATING ACTINIC RADIATION IN THE CHLORINATION OF POLYVINYL CHLORIDE RESIN

Alan J. Olson, Westlake, Ohio, assignor to The B. F. Goodrich Company, Arkon, Ohio

Filed Aug. 25, 1982, Ser. No. 411,161

Int. Cl.³ C08F *8/22*

U.S. Cl. 204—159.18 **8 Claims**

1. The process for chlorinating macrogranules of polyvinyl chloride resin comprising associating said macrogranules of polyvinyl chloride resin with diatomic chlorine and exposing said macrogranules of polyvinyl chloride resin while associated with said diatomic chlorine to high-intensity rapidly-pulsating actinic radiation, said radiation having a wavelength spectrum of from about 150 to 1000 nanometers and pulses at a rate of from about 1 to 120 pulses per second with a pulse width of from 1×10^{-3} to 1×10^{-6} second and with the energy of each pulse being from about 50 joules to about 1000 joules.

4,448,659

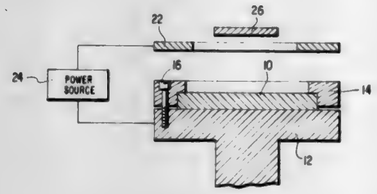
METHOD AND APPARATUS FOR EVAPORATION ARC STABILIZATION INCLUDING INITIAL TARGET CLEANING

Charles F. Morrison, Jr., Boulder, Colo., assignor to VAC-TEC Systems, Inc., Boulder, Colo.

Filed Sep. 12, 1983, Ser. No. 531,258

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **101 Claims**



1. Apparatus for evaporation arc stabilization comprising
a target having a surface of non-permeable material to be evaporated;
means for establishing an arc on the target surface for evaporating the target material, the arc being characterized by the presence of charged particles and a cathode spot which randomly migrates over said target surface;
a confinement ring surrounding the target surface, the ring being composed of a magnetically permeable material to thereby confine the cathode spot to the target surface; and
means for preventing said arc from moving off said target and confinement ring in response to said arc being initially applied to said target and ring to effect cleaning of contaminants therefrom.

4,448,660

MONITORING APPARATUS

Peter Fabian, Freigericht, Fed. Rep. of Germany, assignor to Heraeus Elektroden GmbH, Hanau, Fed. Rep. of Germany

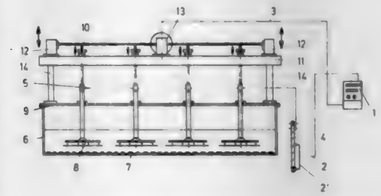
Filed Jun. 17, 1982, Ser. No. 389,285

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124108

Int. Cl.³ C25C *7/00*

U.S. Cl. 204—225 **4 Claims**

1. A monitoring and control apparatus for a single flowing mercury electrolytic cell by measurements of the voltage drop in the shunted feed line of each metal anode group comprising taps at the ends of a measured section of electrical bus bars for each metal anode group electrically connected to a measuring means whereby the measured voltage drop is fed as an amplified signal to the measuring means, a control means set for a value from the total cell current divided by the number of taps comparing the actual measured values at various feed lines and a signal means activated when a set excess current is exceeded



and to actuate the adjusters for a group of metal anodes to lift the metal anodes stepwise by an adjustable amount until excess current is not measured by comparison indicating that the feed line is no longer overloaded.

4,448,661

DEVICE FOR MEASURING THE BATH TEMPERATURE IN A FUSED SALT ELECTROLYTIC CELL USED FOR THE PRODUCTION OF ALUMINUM

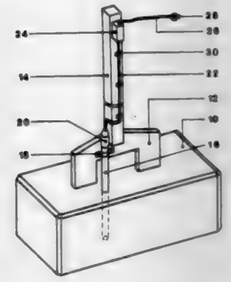
Rolf Roggen, Sion, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 18, 1983, Ser. No. 476,621

Claims priority, application Switzerland, Apr. 2, 1982, 2037/82

Int. Cl.³ C25C *3/12*; G01J *5/28, 5/08*

U.S. Cl. 204—243 R **12 Claims**



1. Device for measuring the bath temperature in the pot of a reduction cell used for the fused salt electrolytic production of aluminum which comprises: at least one anode in combination with said cell; a rod running approximately vertically through said anode and made of a material which transmits infra-red radiation and dissolves in the molten electrolyte at approximately the same rate as the consumption of the anode, wherein said rod is made of a material which contains no components which would excessively contaminate the aluminum produced; an infra-red detector optically coupled to the rod; at least one bundle of fibers which transmit infra-red radiation communicating between the infra-red detector and the rod; means for optically connecting said rod and fibers including a light plug between the fibers and the rod for transmitting the signal from the rod to the fibers, wherein the light plug contains a coupling fluid which transmits infra-red radiation and has an index of refraction (n_2) approximately the same as that (n_1) of the rod; and a transmitter or connecting cable for communicating an electrical signal from the infra-red detector to the control system.

4,448,662

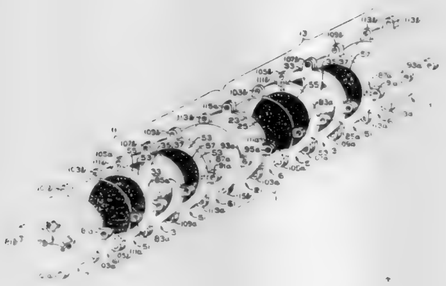
SOLID POLYMER ELECTROLYTE CHLOR-ALKALI ELECTROLYTIC CELL

Donald W. DuBois, Corpus Christi, and William B. Darlington, Portland, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 382,450, May 24, 1982, abandoned, which is a division of Ser. No. 076,898, Sep. 19, 1979, Pat. No. 4,342,629. This application May 19, 1983, Ser. No. 496,031

Int. Cl.³ C25C 17/12

U.S. Cl. 204—252 4 Claims



1. In an electrolytic cell comprising an anolyte compartment with an anode therein, a catholyte compartment with a cathode therein, and a permionic membrane therebetween, said anode and cathode each comprising an electroconductive substrate having electrocatalyst bonded thereto, the electrocatalyst removably bearing upon the permionic membrane, the improvement wherein the electroconductive substrates have at least about 40 percent open area, the anode and cathode compress the permionic membrane therebetween by about 1 to 20 pounds per square inch, and the permionic membrane comprises a fluorocarbon resin having the moieties:

$$-CF_2-CXX'-$$

and,

$$-CF_2-CXY-$$

where,

X is chosen from the group consisting of —F, —Cl, —H, and $-CF_3$;

X′ is chosen from the group consisting of —F, —Cl, —H, $-CF_3$ and $(CF_2)_mCF_3$, where m is an integer from 1 to 5;

Y is chosen from the group consisting of —A, ϕA, —P—A, and $-O-(CF_2)_n-(P,Q,R)-A$, where P is $CCF_2-_a(CXX')_b(CF_2)_c$, Q is $(-CF_2-O-CXX')_d$ and R is $(-CXX')-O-CF_2)_e$, (P,Q,R) is or contains one or more P, Q, and R;

n is 0 or 1;

a,b,c,d and e are integers from 0 to 6;

ϕ is a phenylene group and A is chosen from the group consisting of —COOH, —CN, —COF, —COCl, —COOR, —COOM, $-CONR_2R_3$, $-CO_3H$, PO_3H_2, and PO_2H_2 where R_1 is a C_1 to C_{10} alkyl group, and R_2 and R_3 are chosen from the group consisting of —H, and C_1 to C_{10} alkyl groups; and

M is chosen from the group consisting of —H and alkali metals.

4,448,663

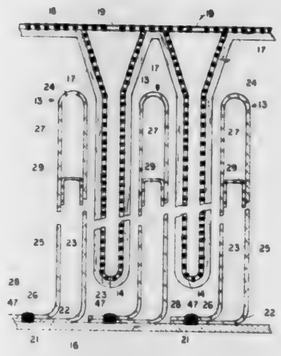
DOUBLE L-SHAPED ELECTRODE FOR BRINE ELECTROLYSIS CELL

Hiep D. Dang, Lake Jackson; Richard N. Beaver, Angleton; Frank W. Spillers, and Mark J. Hazelrigg, Jr., both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 6, 1982, Ser. No. 395,404

Int. Cl.³ C25B 11/03; C25C 7/02

U.S. Cl. 204—270 12 Claims



2. In a brine electrolysis cell in which there is a multiplicity of spaced, substantially vertically oriented cathode elements extending at least partly across the cell, said cathode elements being supported in the cell by support means in a spaced apart relationship with respect to one another; and in which cell there is a multiplicity of substantially vertically oriented and spaced apart anode elements, said anode elements extending at least partly across the cell in an interleaved and spaced apart relationship with respect to the spaced cathode elements; and in which cell the anode elements are attached to and physically supported by a substantially flat, substantially vertically oriented anode backplate; said backplate extending across the cell in a manner such that it is substantially perpendicular to the anode elements; the improvement which comprises:

at least one of the anode elements of the cell being comprised of a single piece of a metal sheet, said single metal piece having two end sections and one middle section with the surfaces of all three of these sections being substantially vertically oriented in the cell, and with at least the middle section being sufficiently foraminous to allow easy passage of gas bubbles and liquid therethrough;

said single metal piece being bent outwardly in and about its middle section in a direction away from the anode backplate so as to be interleaved between and spaced from two adjacent cathode elements in the cell in such a manner so as to form interelectrode gaps between the anode element and adjacent cathode elements;

said outwardly bent middle section being bent so that an anolyte circulation chamber is formed between spaced apart portion of it; and

said two end sections of said bent single piece of metal sheet being parallel to the anode backplate with both of the two end sections extending from the middle section in the same direction along the anode backplate, said end sections extending far enough from the middle section to overlap one another in surface-to-surface contact for at least some part of their length at a site external to the anolyte circulation chamber, said anode element being mechanically connected to said anode backplate at this external site.

4,448,664

ANODE FOR ELECTROLYSIS

Tadao Ikegami, and Takeshi Miyamoto, both of Tamano, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,717

Claims priority, application Japan, Jul. 22, 1982, 57-110298[U]

Int. Cl.³ C25B 11/02; H01R 43/00

U.S. Cl. 204—286 1 Claim



1. An anode for electrolysis which comprises:

an electrolytic bottom plate;

an electrically conductive bar erected on the electrolytic bottom plate,

anode supporting bodies connected to opposite sides of said conductive bar, each of said anode supporting bodies having two wing-like members projecting away from the conductive bar and ends which bend towards each other;

opposed anode bodies connected to the electrically conductive bar through contact with the wing-like members of the anode supporting bodies; and

reinforcing bodies having closed outer portions and wing-like inner portions disposed between the anode bodies, the outer portions of each of which contacts and supports the anode bodies and the inner portions of each of which contacts the ends of the anode supporting bodies and thereby further supports the anode bodies, each of the reinforcing bodies and anode supporting bodies defining a closed channel through which electrolyte may move separately from gas generated during electrolysis.

4,448,665

USE OF AMMONIA TO REDUCE THE VISCOSITY OF BOTTOMS STREAMS PRODUCED IN HYDROCONVERSION PROCESSES

Sioma Zaczepinski; Rustom M. Billimoria, both of Houston; Frank Tao, Baytown; Christopher G. Lington, Houston, and Karl W. Plumlee, Baytown, all of Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 30, 1982, Ser. No. 454,804

Int. Cl.³ C10G 1/00, 1/06, 47/00; C10C 1/18

U.S. Cl. 208—8 LE 21 Claims

1. In a process for the hydroconversion of a carbonaceous feed in the presence of molecular hydrogen wherein a hydroconversion effluent containing liquids and unconverted carbonaceous material is produced, and said effluent is subjected to one or more separation steps to remove lower molecular weight liquids from said effluent and thereby produce a heavy bottoms stream containing high molecular weight liquids and unconverted carbonaceous material, the improvement which comprises contacting the feed stream to said separation step or steps at a temperature between about 300° F. and about 700° F. with sufficient added ammonia gas such that the weight ratio of said ammonia gas to said feed stream rangers between about 0.01 and about 0.6 prior to or during said separation step or said separation steps, thereby reducing and controlling the viscosity of said heavy bottoms stream.

4,448,666

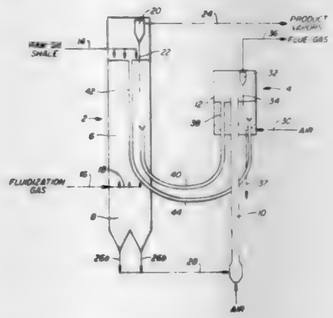
RETORTING PROCESS FOR HYDROCARBONACEOUS SOLIDS

P. Henrik Wallman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1982, Ser. No. 423,336

Int. Cl.³ C10G 1/02; C10B 53/06, 49/16

U.S. Cl. 208—11 R 7 Claims



1. A process for pyrolyzing a particulate hydrocarbonaceous solid containing a fraction of non-fluidizable particles making up at least 50 weight percent of the total particulate hydrocarbonaceous solids which comprises:

(a) passing the hydrocarbonaceous solid downwardly through a bed of hot, solid, heat-transfer particles of fluidizable size, said bed of heat-transfer particles being fluidized by an inert gas passing upward through said bed at a superficial gas velocity sufficient to fluidize the heat-transfer particles but insufficient to fluidize the non-fluidizable fraction of the hydrocarbonaceous solids, whereby the hydrocarbonaceous solid is raised to a pyrolyzing temperature;

(b) retaining the heated non-fluidizable fraction of the hydrocarbonaceous solids in a vertical moving packed bed located below the fluidized bed of heat-transfer solids for a time sufficient to allow for the release of a substantial amount of product vapors from the pyrolyzed hydrocarbonaceous material;

(c) recovering from step (b) the product vapor and the pyrolyzed solid remaining from the non-fluidizable fraction of the hydrocarbonaceous solids, said product vapors being recovered from the top of the packed bed and are introduced into the bottom of the fluidized bed of heat-transfer solids to serve as inert fluidizing gas;

(d) drawing the fluidized, heat-transfer particles from off the top of the fluidized bed;

(e) heating the heat-transfer particles in a heating zone; and

(f) introducing the hot, heat-transfer particles of step (e) back into the fluidized bed of step (a).

4,448,667

PROCESS FOR SOLVENT EXTRACTION OF BITUMEN FROM OIL SAND

George B. Karnofsky, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

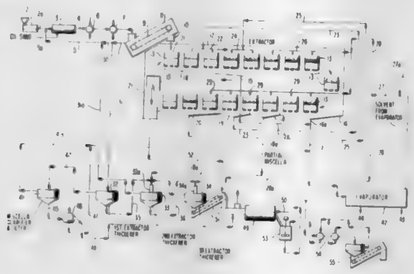
Continuation-in-part of Ser. No. 240,541, Mar. 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 41,769, May 27, 1979, abandoned. This application Dec. 20, 1982, Ser. No. 451,331

Int. Cl.³ C10G 1/04

U.S. Cl. 208—11 LE 3 Claims

1. In a process for the continuous extraction of bitument from oil sand by a hydrocarbon solvent wherein the sand is in the form of discrete particles, and wherein the oil sand is mixed with a miscella recycled from the process to form a slurry and

to dissolve the bitumen, and wherein said discrete particles in the slurry are classified to produce a major coarse fraction and a minor fines fraction, and wherein both fractions are contacted with the solvent to wash miscella therefrom, the improvement wherein:



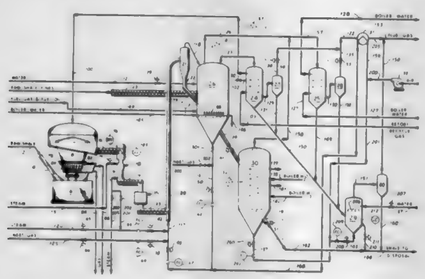
the major coarse fraction is contacted with the solvent by gravity percolation and the classification of the sand in the slurry is effected so as to remove sufficient fine material from the slurry to achieve a flooding rate in said gravity percolation of between 1 and 4 gallons per minute per square foot.

4,448,668

PROCESS FOR RETORTING OIL SHALE WITH MAXIMUM HEAT RECOVERY

Roland F. Deering, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 20, 1982, Ser. No. 451,602
Int. Cl.³ C10B *47/00*; C10G *1/02*
U.S. Cl. 208—11 R **28 Claims**



1. A process for recovering heat energy from retorted shale particulates of a size suitable for fluidization, said shale particulates containing combustible materials and being of a size suitable for fluidization, which process comprises:

(1) combusting a substantial proportion of the combustible material contained within said shale particulates in a fluidized bed combustion zone, the particulates being maintained in a fluidizing condition by a first fluidizing gas stream comprising oxygen introduced into said combustion zone at a rate sufficient to fluidize the largest of the particulates introduced therein;

(2) recovering flue gases from said fluidized bed combustion zone and dividing said flue gases into a first and second flue gas stream;

(3) heating a stream of eduction gases used in a retorting zone to retort hydrocarbon-bearing particulates by indirect heat exchange with the first flue gas stream recovered in step (2);

(4) heating water by indirect heat exchange with the second flue gas stream recovered in step (2);

(5) regulating the temperature in said retorting zone by changing the flow rate of said flue gases recovered from step (1) used to heat water in step (4) and correspondingly changing the flow rate of said flue gases in step (3) used to heat said stream of eduction gases;

(6) heating water by indirect heat exchange with shale particulates recovered in step 2 in a fluidized cooling zone, the shale particulates being maintained in a fluidizing condition by a second fluidizing gas stream introduced into said cooling zone at a rate sufficient to fluidize the largest of the particulates contained therein;

(7) recovering heat from gases recovered from said fluidized cooling zone; and

(8) heating said first fluidizing gas stream by heat exchange with residual heat contained in said first and second flue gas streams after recovery thereof from steps (3) and (4).

4,448,669

HYDROCARBON RECOVERY FROM DIATOMITE

James Scinta, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 16, 1983, Ser. No. 475,991
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **14 Claims**

1. Process for recovering hydrocarbon values comprising

(a) subjecting a mixture of diatomaceous earth containing hydrocarbons and solvent to supercritical conditions with respect to the solvent,

(b) separating a fluid phase comprising at least a portion of said solvent and some of said hydrocarbon values from a solid phase comprising at least some of the remaining diatomaceous earth.

4,448,670

AROMATIC PITCH PRODUCTION FROM COAL DERIVED DISTILLATE

Ghazi Dickakian, Greenville, S.C., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 346,625, Feb. 8, 1982. This application Jul. 19, 1982, Ser. No. 399,472
Int. Cl.³ C10C *1/00, 1/20, 3/00*
U.S. Cl. 208—22 **16 Claims**

1. A pitch suitable for carbon artifact manufacture, comprising by weight content between 80 and 100 percent toluene insolubles, said pitch having been derived, by heat soaking followed by vacuum stripping, from a substantially deasphaltenated middle fraction of a coal distillate feedstock rich in 3, 4, 5 and 6 polycondensed aromatic rings, and wherein said pitch is further characterized as being relatively free of impurities and ash.

4,448,671

SELECTIVE SORPTION BY ZEOLITES

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 105,190, Dec. 19, 1979, Pat. No. 4,309,281. This application Sep. 30, 1981, Ser. No. 307,052
Int. Cl.³ C10G *73/02, 25/03*
U.S. Cl. 208—26 **14 Claims**

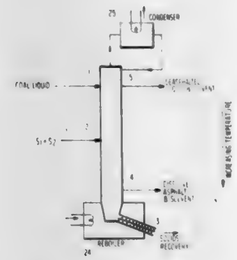
1. A process for the selective separation of waxy paraffinic compounds comprising straight-chain and branched-chain paraffins from stocks selected from the group consisting of crude oil, heavy oil, distillate oil and lube base oil which comprises contacting the mixture below cracking temperatures with a zeolite having a SiO_2/Al_2O_3 mole ratio of greater than about 12 and a Constraint Index of between about greater than 2 and about 12 to effect the selective sorption of said waxy paraffinic compounds by said zeolite.

4,448,672

PROCESS FOR THE COMBINED DEASHING/DEASPHALTING OF COAL LIQUIDS

Philip J. Angevine, West Deptford; Michael B. Carroll, Mantua; Stuart S. Shih, Cherry Hill, and Samuel A. Tabak, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 4, 1982, Ser. No. 385,159
Int. Cl.³ C10G *21/14*
U.S. Cl. 208—86 **12 Claims**



1. A process for the combined deashing and deasphalting of liquified coal comprising

(a) charging to a vertically oriented deashing/deasphalting column, having a top, an upper portion, a lower portion, a bottom and a feed point a feed comprising a liquified coal containing solids into the upper part of said column;

(b) subjecting said feed within said column to contact with at least a first and a second solvent; and wherein

(i) said second solvent is more polar than said first solvent and

(ii) said second solvent has a boiling point higher than said first solvent within said column;

(c) heating said lower portion of said column whereby said lower portion is hotter than said upper portion and wherein the temperature in said lower portion is sufficient to vaporize at least a majority of said first solvent while maintaining at least a majority of said second solvent in liquid phase, whereby said lower portion of said column is relatively deficient in said first solvent and said upper portion of said column is relatively enriched in said first solvent;

(d) removing from the bottom of said column a liquid stream containing a majority of said solids in said feed;

(e) removing from said lower portion at a locus above the bottom of said column, a liquid phase containing a majority of said asphalt and said second solvent;

(f) removing from an upper portion of said column, at a locus below the top of said column, a liquid stream containing a majority of said deasphalted liquid and said first solvent,

(g) withdrawing from the top of said column a vapor stream comprising said first solvent.

4,448,673

AGING RESISTANCE SHAPE SELECTIVE CATALYST WITH ENHANCED ACTIVITY

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 331,117, Dec. 16, 1981, Pat. No. 4,402,866. This application Sep. 28, 1982, Ser. No. 426,029
Int. Cl.³ C10G *11/05, 47/20*
U.S. Cl. 208—111 **3 Claims**

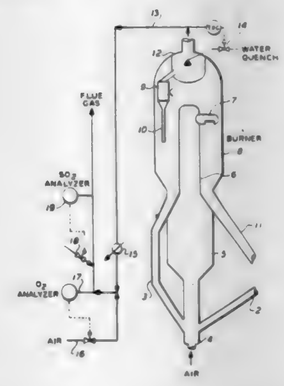
1. In a process for the catalytic dewaxing of a hydrocarbon fraction under catalytic dewaxing conditions wherein the improvement comprises employing as catalyst for said dewaxing a composition obtained from the process which comprises steaming a precursor crystalline aluminosilicate in the hydrogen or ammonium form having a silica-alumina ratio greater than 12, a constraint index between about 1 and about 12 and an alpha value greater than about 20 in the presence of ammonia to provide a crystalline aluminosilicate having an alpha value of from about 10 to about 150 and thereafter ion-exchanging the steamed precursor with an alkali metal cation under conditions effective to further reduce the alpha value of the crystalline aluminosilicate to less than about 10.

4,448,674

CONTROL OF EMISSIONS IN FCC REGENERATOR FLUE GAS

David B. Bartholic, Watchung, N.J., assignor to Engelhard Corporation, Edison, N.J.

Continuation of Ser. No. 26,011, Apr. 2, 1979, abandoned. This application Mar. 3, 1982, Ser. No. 354,320
Int. Cl.³ C10G *11/04, 11/18*
U.S. Cl. 208—113 **16 Claims**



1. A cyclic process for the catalytic cracking of a sulfur-containing hydrocarbon charge comprising:

(a) cracking a sulfur-containing hydrocarbon charge by contacting it with a cracking catalyst in a cracking zone and at a cracking temperature;

(b) depositing a carbonaceous deposit containing sulfur on the cracking catalyst during step (a);

(c) removing the cracking catalyst having a carbonaceous deposit containing sulfur deposited on it from the cracking zone and introducing it into a regeneration zone;

(d) regenerating the cracking catalyst in the regeneration zone by contacting the catalyst with air at a temperature of at least about 1100° F. to burn the carbonaceous residue off the catalyst and thereby produce regenerated catalyst and flue gas comprising oxides of sulfur;

(e) removing the flue gas and the regenerated catalyst from the regeneration zone;

(f) returning the regenerated catalyst to the cracking zone;

(g) cooling the flue gas to a temperature at least about 100° F. below its temperature in the regeneration zone;

(h) adding to the cooled flue gas a particulate solid from a source separate from the cracking catalyst, said particulate solid comprising a metal compound;

(i) in the presence of oxygen, suspending the particulate solid in the cooled flue gas to reduce the quantity of oxides of sulfur in the flue gas by chemical reaction.

4,448,675

SILICO-CRYSTAL ZSM-48 METHOD OF PREPARING SAME AND CATALYTIC CONVERSION THEREWITH

Pochen Chu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 303,276, Sep. 17, 1981, Pat. No. 4,397,827, and a continuation-in-part of Ser. No. 56,754, Jul. 12, 1979, abandoned. This application Apr. 14, 1983, Ser. No. 484,748
Int. Cl.³ C10G *11/05, 45/64, 45/12, 45/54*
U.S. Cl. 208—118 3 Claims

1. A process for effecting catalytic conversion of an organic charge which comprises contacting said charge under catalytic conversion conditions with a catalyst comprising the porous silico-crystal ZSM-48 having a composition expressed in terms of moles of anhydrous oxides, per 100 moles of silica, as follows:

$$(0.5 \text{ to } 5)N_2O:(0.1 \text{ to } 10)M_{2/x}O:(0 \text{ to } 4)Al_2O_3:(100)SiO_2$$

wherein M is at least one cation having a valence n, N is a mixture of a C_2–C_{12} alkylamine compound and tetramethylammonium compound, and wherein said crystal is characterized by the X-ray diffraction pattern whose values are set forth in Table I of the specification and which exhibits a singlet line within the range of 11.8 0.2 Angstrom units.

4,448,676

METHOD OF REFORMING GASOLINE TO RAISE THE OCTANE THEREOF UTILIZING LOW VALENCE CHROMIUM COMPOSITED WITH NON-OXIDIZING HIGH SURFACE AREA SUPPORT

William K. T. Gleim, Seattle, Wash., assignor to Energy Modification, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 335,447, Dec. 29, 1981, Pat. No. 4,394,252. This application Jul. 18, 1983, Ser. No. 514,603
Int. Cl.³ C10G *35/06*
U.S. Cl. 208—136 6 Claims

1. In a method of reforming a gasoline feed in the presence of a reforming catalyst to raise the octane number thereof, the improvement which comprises utilizing a reforming catalyst comprising:

(a) chromium present in divalent form or in an admixture of the divalent form and the metal, the ratio of the chromium in divalent form to the chromium present as the metal being at least 1:1; and

(b) a non-oxygen containing high surface area support for said chromium which will not oxidize said catalytic component at reforming conditions to a valence state higher than the divalent valence state.

4,448,677

CATALYST AND PROCESS FOR RESIDUA DEMETALATION AND DESULFURIZATION

Stephen M. Oleck, Moorestown, and Howard S. Sherry, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 42,659, May 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 714,145, Aug. 13, 1976, abandoned. This application Aug. 3, 1982, Ser. No. 404,786
Int. Cl.³ C10G *45/04*
U.S. Cl. 208—216 PP 7 Claims

1. A process for treating a residual hydrocarbon oil to reduce the metal or sulfur content thereof which comprises contacting said oil with hydrogen at a hydrogen pressure of about 500 to 3000 psig, a hydrogen circulation rate of about 1000 to 15,000 scf/bbl. of feed, a temperature of about 600 to 850° F., a space velocity of 0.1 to 5.0 LHSV; and in the presence of a catalyst comprising a hydrogenating component which comprises the oxides or sulfides of a Group VI-B metal and a Group VIII metal on an alumina support comprising gamma phase alumina, said catalyst having at least 25% of its pore volume in pores of 0–30 Å diameter, at least 50% of its pore volume in pores of 0–100Å diameter, at least 90% of its pore volume in pores 0–200 Å diameter, and not more than 10% of its pore volume in pores greater than 200 Å diameter.

4,448,678

APPARATUS AND METHOD FOR BENEFICIATION OF LIGNITE

Cecil C. Gentry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 2, 1982, Ser. No. 364,585
Int. Cl.³ B03B *1/00;* C22B *3/02*
U.S. Cl. 209—3 3 Claims



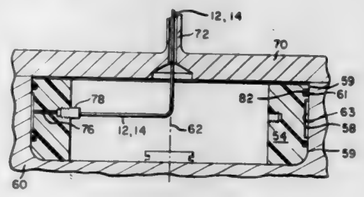
1. A method for beneficiating crushed lignite which comprises (1) feeding the same into a locus in a lower-end portion of a conveying-fracturing-washing zone disposed in an upwardly inclined direction and (2) conveying crushed lignite in said zone from the lower-most end of a quiescent section provided therein to the upper discharge end of said zone using a conveying means having two portions: (a) the portion of said conveying means extending within the quiescent section having a configuration to convey the lignite therefrom without causing turbulence of the supernatant liquid therein and (b) the portion of said conveying means extending through the remaining portion of said zone having a configuration to accomplish conveying, fracturing, and intimate mixing of the lignite with a washing medium to convey washed lignite up to a discharge at the upper end of said zone.

4,448,679

APPARATUS AND METHOD FOR SEDIMENTATION FIELD FLOW FRACTIONATION

Charles H. Dilks, Jr., Newark; Joseph J. Kirkland, and Wallace W. Yau, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1981, Ser. No. 326,156
Int. Cl.³ B03B *5/62*
U.S. Cl. 209—155 13 Claims



9. A method for separating particulates suspended in a fluid medium according to their effective masses by the steps of:

flowing the fluid medium through an annular channel having an annulus axis and defined by the interfacial gap between the outer surface of an inner ring and an inner surface of an outer ring,

covering the inner ring with a liquid, and

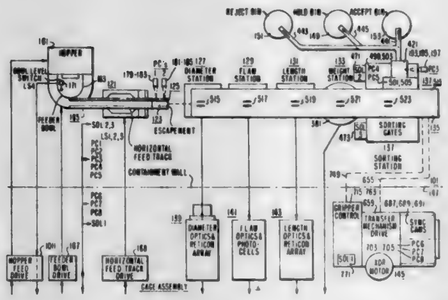
rotating the channel and liquid together about the axis.

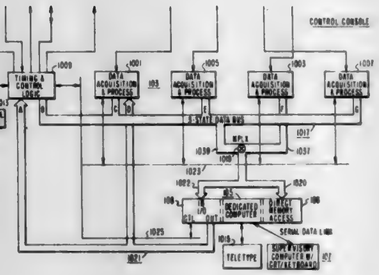
4,448,680

APPARATUS AND METHOD FOR CLASSIFYING FUEL PELLETS FOR NUCLEAR REACTOR

Robert S. Wilks, Plum Borough; Eliezer Sternheim, Pittsburgh; Gerald A. Breakey, Penn Township, Allegheny County; Robert H. Sturges, Jr., Plum Borough; Alexander Taleff, Churchill Borough, and Raymond P. Castner, Monroeville, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 22, 1980, Ser. No. 171,606
Int. Cl.³ B07C *1/10, 5/16, 5/344*
U.S. Cl. 209—564 35 Claims





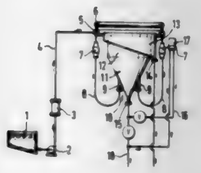
1. Apparatus for measuring the diameter of a fuel pellet for a nuclear reactor, including a diameter station in which said pellet is positioned for measurement, means for projecting a beam of light on said pellet, a rotatable prism interposed in said beam for causing said beam to scan elemental areas of said pellet, said prism having a plurality of faces, means connected to said prism to rotate said prism so as to scan said elemental areas of said pellet, the deflection of said beam by each said face in its turn interposed in the path of said beam, as said prism is rotated, causing said beam to scan elemental area lengthwise across said pellet, means responsive to the rotation of said prism for producing a pulse corresponding to each face of said prism as said prism is interposed in the path of said beam, the said pulse-producing means also including means for producing an additional pulse for identifying a starting face of said prism interposed in the path of said beam whereby faces interposed in the path of said beam in succession after said starting face may be identified with reference to said starting face, and means cooperative with the pulses produced by said pulse-producing means for assigning a unique scan-word address to each elemental area of said pellet scanned by rotation of successive faces of said prism.

4,448,681

FLOATATION ARRANGEMENT

Hans Lüdke, Essen-Bredeney; Albert Bahr, Clausthal-Zellerfeld; Friedrich-Wilhelm Mehrhoff, Gladbeck, and Karl Legner, Herten-Bertlich, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Ruhrkohle AG, both of Essen, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,754
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111506
Int. Cl.³ C02F *1/24;* B03D *1/00*
U.S. Cl. 210—97 7 Claims



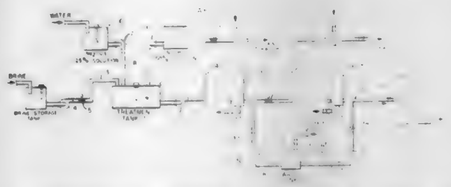
1. An arrangement for floatation of solid particles from liquids such as from sewage, particularly for separating of coal from a conditioned pulp, the arrangement comprising conditioning means from which a pulp flows in a predetermined direction; a pulp supplying conduit extending from said conditioning means; gasifying means having a gasifying surface extending parallel to the pulp flow direction and provided with a bubble generator; a gas supplying conduit; and separating means having substantially upright conical container for foam formation and a level controlling element, arranged laterally of said separator means for adjusting the level of the pulp in said separating means said gasifying means including a plurality of gasifying devices arranged in a ring-shaped manner around said conical container and each connected with said pulp supplying and gas supplying conduits so that when the pulp is supplied from said conditioning means via said pulp supplying conduit and said gas is supplied via said gas supplying conduit into each of said gasifying devices solid particles of the pulp adhere to gas bubbles produced in said gasifying devices and thus-formed gas bubbles-solid particles complexes are supplied into said separating means, said bubble generator of each of said gasifying devices is formed of at least one pipe composed of an elastic and porous synthetic plastic material, extending transversely to the flow direction of the pulp.

4,448,682

PRODUCTION OF PURIFIED BRINE

George J. Moritz, Clarks Summit, Pa., assignor to Akzona, Incorporated, Asheville, N.C.

Division of Ser. No. 176,686, Aug. 8, 1980, Pat. No. 4,336,232, which is a continuation of Ser. No. 896,379, Apr. 14, 1978, abandoned. This application Feb. 18, 1982, Ser. No. 349,811
Int. Cl.³ B01D *21/01;* C02B *1/20*
U.S. Cl. 210—101 11 Claims



1. An apparatus for effecting purification of salt brine containing calcium and magnesium ions which comprises a treatment tank for containing a predetermined amount of salt brine to be purified, a solution of soda ash in a predetermined con-

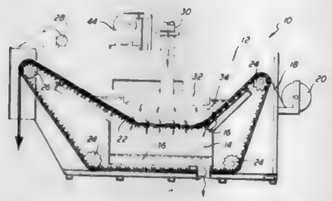
centration in one container, a solution of caustic soda of predetermined concentration in another container, and feed control means for introducing metered amounts of the contents of each of said containers, in succession, into the treatment tank and being capable of controlling the successive introduction of the soda ash and the caustic soda to form a readily filterable floc precipitate containing calcium and magnesium within a period of not more than two hours after the introduction of the soda ash into said saturated salt brine, filtering means for filtering the floc precipitate and treated brine, conduit means for directly conveying the admixture of floc precipitate and treated brine from the treatment tank to said filtering means, means for passing the filtered treated brine from the filtering means to a purified brine storage unit; the feed control means including flow control means operatively associated with said containers for controlling the metered amounts of the contents of each of the containers introduced into the treatment tank depending upon the combined magnesium and calcium hardness of the salt brine, said feed control means initially actuating the flow control means operatively associated with said one container to introduce the solution of soda ash into said treatment tank and after formation of and floculation of a first precipitate containing calcium carbonate in said treatment tank, said feed control means actuating the flow control means operatively associated with said another container to introduce said caustic soda into said treatment tank to form a second precipitate containing magnesium hydroxide whereby from 0.6 g/l to 1.0 g/l of the soda ash is first introduced in excess of stoichiometric proportions to said salt brine and is allowed to react with the salt brine and then from 1.0 g/l to 2.0 g/l of the caustic soda is introduced in excess of stoichiometric proportions to said salt brine, and discharge control means for controlling the discharge of treated brine from said treatment tank; after formation of said readily filterable floc precipitate containing calcium and magnesium, said discharge control means discharging the treated brine from the treatment tank into the conduit means for directly conveying the treated brine to said filter means.

4,448,683

LIQUID FILTRATION SYSTEM WITH LEVEL-RESPONSIVE CONTAMINANT REMOVAL AND AIR FLOW CONTROL FOR VACUUM PRODUCER

James F. Green, Pompey, N.Y., assignor to Filtertech Inc., Manlius, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,386
Int. Cl.³ B01D *29/02*
U.S. Cl. 210—106 **13 Claims**



1. A liquid filtration system including apparatus for limiting the horsepower required from an electric motor driving a centrifugal vacuum producer which operates to evacuate air from an enclosed chamber, said filtration system comprising:

(a) a tank for receiving contaminated liquid from an industrial process and having a lower wall incorporating permeable filter media through which the liquid passes for removal of solid contaminants by collecting thereof on the upper surface of the media;

(b) means for removing said contaminants from said media surface;

(c) an enclosed chamber below said tank for receiving filtered liquid passing through said media with an air space above;

(d) a centrifugal vacuum producer positioned in a line communicating with said air space and operable to evacuate air therefrom to produce a sub-atmospheric pressure within said enclosed chamber;

(e) an electric motor operatively connected to said vacuum producer;

(f) a throttling valve interposed in said line between said air space and said vacuum producer and movable between open and closed positions to control the rate at which air is evacuated by said vacuum producer, and thereby the horsepower required from said electric motor;

(g) float means positioned in said tank for movement in response to the level of said contaminated liquid therein; and

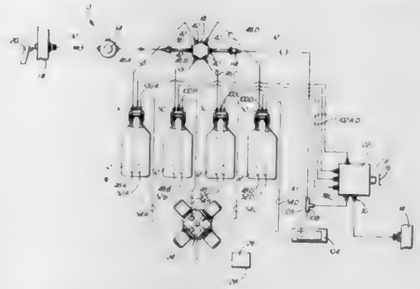
(h) linkage means connecting said float means to said throttling valve to move the latter toward said open position thereof in response to increases, and toward said closed position thereof in response to decreases in the level of said contaminated liquid.

4,448,684

SOLVENT PRESSURIZATION SYSTEM

Roland C. Paradis, Newtown, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 28, 1983, Ser. No. 461,789
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—198.2 **15 Claims**



1. A solvent pressurization system for use in liquid chromatography; said system comprising:

a source of pressurized gas;

a plurality of sealed vessels, said vessels being adapted to hold solvents therein; each said vessel having a gas input port, said vessels being located within a closable cabinet;

means for simultaneously communicating said pressurized gas from said gas source to each one of said plurality of sealed vessels such that the pressure within each said vessel is substantially equal to the pressure within every other said vessel;

means for regulating the pressure to said vessels;

means for relieving said pressure from said vessels when said cabinet is opened;

means for depressurizing said vessels when said pressure within said vessels exceeds a preselected venting pressure; and

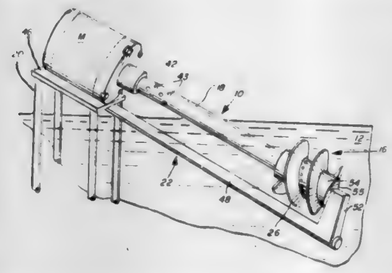
means for equilibrating the pressurized gas when said pressure exceeds the regulated pressure but remains less than said preselected venting pressure.

4,448,685

AERATING APPARATUS UTILIZING ROTATING IMPELLER VANE

Frank Malina, 2832 S. Harding Ave., Chicago, Ill. 60629

Filed Nov. 28, 1980, Ser. No. 211,305
Int. Cl.³ B01F *3/04*
U.S. Cl. 210—219 **7 Claims**



1. Apparatus for aerating an unclean body of water comprising:

a hollow cylindrical casing including means for rotation at a substantially high speed, one end of said cylindrical casing being provided with an enlarged diameter portion having a cylindrical wall and which is submerged beneath the surface of the body of water, and an opposite end of said cylindrical casing disposed above the surface of the body of water,

said cylindrical wall being formed with a plurality of air outlet openings arranged therein in a helical row,

water impelling vane means secured to said cylindrical wall of said enlarged diameter portion for submersion beneath the surface of the body of water,

said vane means comprise at least one helical blade including one helix turn and having its inner edge continuously secured to said cylindrical wall along helix lines which follow the contour of said helical row of air outlet openings and which is spaced from such row by a slight distance,

said at least one helical blade being inclined throughout its entire length toward the opposite end of said cylindrical casing, at an acute angle with respect to the normal to the longitudinal axis of said cylindrical casing, and overlapping said row of air outlet openings,

the inner edge of said at least one helical blade having a diameter equal to the outside diameter of said cylindrical wall of said enlarged diameter portion, and the outer edge of said at least one helical blade having throughout its entire length the same outside diameter thereof, and

air inlet means disposed at the opposite end of said cylindrical casing for admitting air to the interior of said cylindrical casing for subsequent discharge through said air outlet openings.

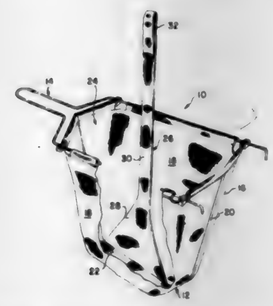
4,448,686

FILTER BAG WITH INTEGRAL AGITATOR

Bernard Friedman, Allentown, Pa., assignor to Oil Process Systems, Inc., Allentown, Pa.

Filed Nov. 4, 1982, Ser. No. 439,194
Int. Cl.³ B01D *33/00, 35/00*
U.S. Cl. 210—238 **12 Claims**

1. A filter bag, comprising a porous flexible body having a closed end and an open end, agitating means positioned within said filter bag and formed integrally therewith for agitating liquid being filtered by said filter bag, and attaching means for attaching said agitating means directly to said closed end of said filter bag such that the movement of said agitating means causes a corresponding movement of said closed end of said filter bag body, whereby said agitating means inhibits particular matter collected within said filter bag during a filtering operation from clogging said filter bag.



4,448,687

PROCESS FOR THE PRODUCTION OF SEMIPERMEABLE POLYBENZIMIDAZOLE MEMBRANES WITH LOW TEMPERATURE ANNEALING

Donald G. J. Wang, Tamshui, Taiwan, assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,717
Int. Cl.³ B29D *27/00*
U.S. Cl. 210—500.2 **41 Claims**

1. In a process for the production of a semipermeable polybenzimidazole membrane wherein a film or hollow filament is formed from a solution of a polybenzimidazole polymer and subsequently subjected to an annealing step at elevated temperatures in the presence of an annealing medium, the improvement comprising conducting said annealing step at a temperature below the boiling point of water in the presence of an aqueous annealing medium comprised of a solvent for said polymer.

11. A semipermeable membrane produced in accordance with the process of claim 1.

4,448,688

COUNTER FLOW SEPARATOR

Jerome F. Havlis, 223 N. Aldine, Park Ridge, Ill. 60068

Filed Jun. 20, 1983, Ser. No. 505,795
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—512.3 **14 Claims**

1. In a counter flow separator for removing solid particles from liquid compositions, the combination of:

(a) a vertically disposed stationary housing having a cylindrical side wall and outwardly vaulted upper and lower end walls;

(b) said end walls presenting axially aligned openings and journal means for rotatably mounting axially aligned turbine shafts;

(c) said housing presenting inwardly adjacent said cylindrical side wall a generally laterally disposed helical surface extending between said end walls;

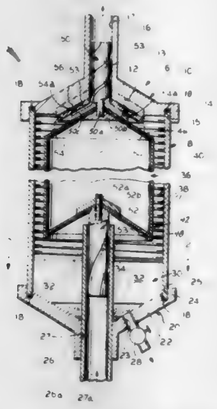
(d) said housing presenting in said lower end wall means for removing solids from said housing and presenting in said upper end wall means for removing purified liquid;

(e) a turbine mounted for rotation within said housing and including:

(i) a hollow body having a cylindrical side wall with an outer diameter slightly less than the inner diameter of said housing helical surface and having upwardly vaulted top and bottom walls;

(ii) shaft means extending from opposite ends of said body through said housing openings and journal means;

(iii) said shaft means including a cylindrical shaft having therein at least one spiral groove which extends from a free end of said shaft to the interior of said housing to



permit liquid to enter and leave said housing whereby the hydraulic pressure of said liquid causes said turbine to rotate and force liquid in said housing to the side wall thereof.

4,448,689

APPARATUS FOR FINAL CLEARING OF WASTE WATER

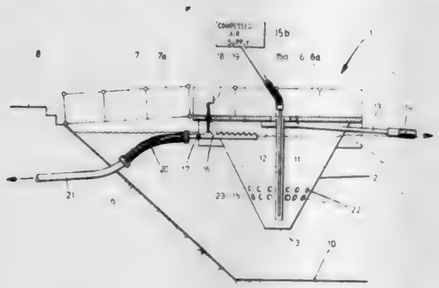
Reinhart von Nordenskjöld, Am Jagdweg 4, D-8011 Solalinden, Fed. Rep. of Germany

Filed Aug. 17, 1981, Ser. No. 293,440

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031412

Int. Cl.³ B01D *43/00*

U.S. Cl. 210—521 **14 Claims**



1. An apparatus for separating cleared water from sludge-containing water, comprising:

a basin having wall means defining therein a chamber for separating cleared water from sludge;

means for supporting said basin in a reservoir of sludge-containing waste water;

outlet means for receiving the cleared water from the upper region of said chamber, said outlet means including a flow control edge positioned at an elevation below the surface level of the waste water in the reservoir for maintaining the surface level of the cleared water in the basin at an elevation lower than that of said waste water surface level;

opening means in the wall means of said basin at a location spaced upwardly a substantial distance above the bottom of the basin for permitting flow of waste water from the reservoir through the opening means into the chamber due to the surface level of cleared water in the basin being lower than the surface level of waste water in the reservoir, said opening means providing the sole communication between said reservoir and said chamber;

said basin having a vertically elongated tapering wall portion which projects upwardly from said opening means, and is of a diverging tapered configuration as said side wall portion projects upwardly said basin also having a bottom portion positioned below said opening means for collecting said sludge therein, said bottom portion being free of openings which communicate with said waste water in said reservoir; and

means communicating directly with said bottom portion for removing sludge therefrom.

4,448,690

SUBSURFACE WASTE DISPOSAL SYSTEM

Sam W. Maphis, Boulder, Colo., assignor to Genstar Waste Transfer, Inc., San Mateo, Calif.

Filed Sep. 14, 1981, Ser. No. 301,970

Int. Cl.³ C02F *3/04*; B09B *1/00*

U.S. Cl. 210—609 **22 Claims**



13. The method of sludge treatment with decomposition of the solids portion thereof, comprising:

(a) providing a bed of granular media including a first, aerobic layer of relatively fine media consisting essentially of media having an effective grain size (D_{10}) approximately in the range of 0.35 mm. to 0.50 mm. and a clay content less than 0.002 mm of not more than substantially 3% capable of retaining and aerobically decomposing solids from an injected liquid sludge having a solids content of at least one percent, while permitting effluent from the sludge to percolate therethrough at a rate in excess of two inches per hour under conditions equivalent to an approximate annual hydraulic bed loading of at least fifty-four inches, and a second layer of relatively coarser media than said first layer, located below the first layer, capable of permitting percolation of effluent at a relatively greater rate than the first layer;

(b) providing an underdrain system located below said first layer and in communication with said second layer for receiving sludge effluent percolated through the first layer and removing effluent from the bed;

(c) providing a mobile subsurface injector means for injecting liquid sludge having a solids content of at least one percent into a subsurface, aerobic portion of the first layer while moving therethrough and restructuring the first layer to prevent formation of a continuous layer of injected sludge;

(d) supplying liquid sludge having a solids content of at least one percent to said injector means while simultaneously moving the injector means through the aerobic portion of the first layer and restructuring the first layer to prevent formation of a continuous layer of injected sludge;

(e) substantially retaining the solids content of the liquid sludge within said first layer and subjecting said retained solids to aerobic decomposition; and

(f) collecting percolated effluent in said underdrain system and removing the effluent from the bed.

4,448,691

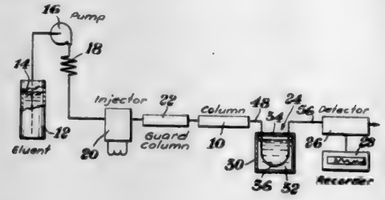
LIQUID CHROMATOGRAPHIC METHOD AND APPARATUS WITH HOLLOW FIBER DEVICE FOR POST-COLUMN DERIVATIZATION

James C. Davis, East Lansing, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 276,110, Jun. 22, 1981, abandoned, which is a continuation of Ser. No. 183,527, Sep. 2, 1980, abandoned. This application Feb. 14, 1983, Ser. No. 465,977

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **6 Claims**



4. Method of analyzing samples by liquid chromatography comprising adding sample to a chromatographic column means, adding eluent to the chromatographic column means effective to chromatographically displace species of the sample from the chromatographic column means, whereby chromatographically displaced sample species appear ultimately in the effluent of the chromatographic column means, the improvement which comprises feeding the effluent of the chromatographic column means through the internal bore of a hollow fiber membrane, ultimately to a liquid chromatographic detector, and prior to detection, using the hollow fiber membrane for permeation transfer of a mobile reagent into the effluent of the chromatographic column means to enhance the sensitivity of detection of the method.

4,448,692

LIQUID CHROMATOGRAPH

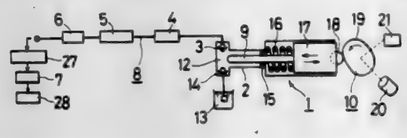
Akira Nakamoto, Takatsuki, and Katsuhiko Saito, Otsu, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 28, 1983, Ser. No. 470,553

Claims priority, application Japan, Feb. 27, 1982, 57-31411; Jun. 29, 1982, 57-98345[U]

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **9 Claims**



1. In a liquid chromatography system comprising a reciprocating single plunger pump provided with a pump chamber communicating through an inlet valve with a solvent reservoir and through an outlet valve with a solvent supply passage, said solvent supply passage communicating with a chromatographic column and a detector; and a drive means for moving said plunger through suction and delivery strokes whereby solvent is drawn into said pump chamber from said solvent reservoir and discharged into said solvent supply passage, said drive means being adapted to provide a set velocity to said suction stroke greater than the set velocity of said delivery stroke, the improvement for controlling the velocity stroke of said pump plunger so as to compensate for the compressibility of the solvent thereby minimizing pulsating of the solvent within the chromatography system, which comprises a delivery stroke velocity control system including a pressure detecting means disposed in said solvent supply passage for measuring pump outlet solvent pressure; memory means for receiving and storing a pressure signal provided by said pressure detecting means at a predetermined point during the suction stroke of said pump plunger; comparator means associated with said memory means for measuring the pressure differential between said stored pressure signal and an outlet solvent pressure signal measured by said pressure detecting means at the initiation of the subsequent delivery stroke of said pump plunger; means for increasing the velocity of said delivery stroke in response to said pressure differential to an adjusted velocity between the set velocities of said suction and delivery strokes; means for maintaining said adjusted velocity until the outlet pressure in said solvent supply passage corresponds to said stored pressure signal; and means for establishing and maintaining the set delivery velocity for the remainder of the delivery stroke.

4,448,693

METHOD FOR PARTIALLY DESALINATING WATER WITH A WEAKLY ACID AND STRONGLY BASIC ION EXCHANGER MATERIALS AND SUBSEQUENTLY REGENERATING THE ION EXCHANGER MATERIALS

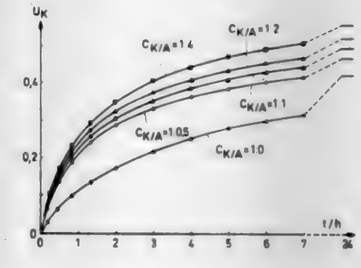
Brigitte Kiehling, Karlsruhe, and Wolfgang Höll, Ettlingen, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 344,072

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1981; European Pat. Off., Nov. 24, 1981, 81109498

Int. Cl.³ B01J *49/00*

U.S. Cl. 210—673 **16 Claims**



1. Method for partially desalinating water by a combination of a weakly acid cation exchanger material present in aqueous suspension in the free acid form and a basic anion exchanger material present in aqueous suspension in hydrogen carbonate form, and subsequently regenerating the charged ion exchanger materials, comprising:

(a) effecting the partial desalination with a weakly acid cation exchanger and an anion exchanger which are in two beds with the anion exchanger being in the first bed and the cation exchanger being in the second bed, to remove neutral salt cations and neutral salt anions from the water, and

(b) regenerating both exchangers together exclusively by adding CO_2, which forms carbonic acid as a regenerating agent, to hydrogen carbonate form for the anion exchanger and free acid for the weakly acid cation exchanger, by flowing the regnerating agent in succession through the first and second beds and then recycling the regenerating agent to the first bed.

4,448,694

METAL EXTRACTION FROM SOLUTION AND IMMOBILIZED CHELATING AGENTS USED THEREFOR

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 4, 1981, Ser. No. 299,416

Int. Cl.³ B01D *15/04*; C02F *1/42*; C08L *83/06*; C07F *7/10*

U.S. Cl. 210—682 **22 Claims**

1. A method for preparing an immobilized chelating agent

which comprises treating an inorganic solid substrate with a silylating agent which is a compound of the formula $(RO)_3SiQNH(CH_2CH_2NH)_xQSi(OR)_3$ where x has a value of 2, 3, or 4, R is a methyl, ethyl, propyl or butyl radical and Q is propylene or butylene.

2. The product produced by the method of claim 1.

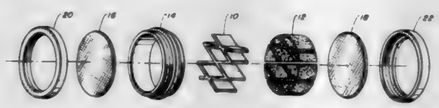
3. A method of removing heavy metal ions from solution which method comprises contacting a solution containing heavy metal ions with a silylated substrate of claim 2.

4,448,695

EFFLUENT WATER FILTER DEVICE AND METHOD

Edward C. Gordon, Jr., and Glen D. Gordon, both of 7475 SW. Cherry St., Tigard, Oreg. 97221

Filed Feb. 19, 1982, Ser. No. 350,373
Int. Cl.³ B01D 23/14
U.S. Cl. 210—694 7 Claims



1. An effluent filtering system comprising:
a pipe section;
a plurality of filter pack means serially positioned in said pipe;
said filter pack means comprising;
grid support means having a plurality of cells;
said cells being packed with granular carbon;
ring means receiving said grid support means packed with granular carbon;
a screen on each side of said ring means;
locking end caps on each side of said ring means locking said ring means, screens and grid together thereby forming a filter pack assembly;
said grid and ring means being formed of bacterial growth retarding stainless steel;
securing means securing said plurality of filter pack means in said pipe section;
connecting means for connecting said pipe section with said plurality of filter pack means in an effluent pipe whereby effluent is caused to flow through said series of filter pack means.

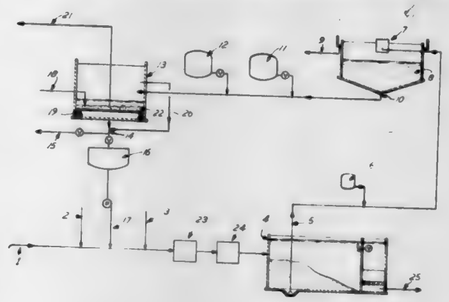
4,448,696

PROCESS FOR RECOVERING AND RECYCLING COAGULANT PRESENT IN WATER TREATMENT SLUDGES

A. R. White, Jr., Matthews, N.C., assignor to U.S. Environmental Products, Inc., Boca Raton, Fla.

Filed Feb. 23, 1982, Ser. No. 351,503
Int. Cl.³ C02F 1/52, 11/14
U.S. Cl. 210—711 21 Claims

1. An improved raw water treatment process of the type involving mixing an aluminum or iron coagulant and an alkaline agent with untreated raw water to effect flocculation of solids in the water and formation of a sludge containing the hydroxide form of the coagulant, separating the coagulant containing sludge from the water, and concentrating and dewatering the sludge, wherein the improvement comprises:
(a) adding acid to the sludge sufficient to lower the pH of the sludge to about 3.9 or less and to convert an amount of the hydroxide form of the coagulant to an acid soluble form, resulting in an acidulated sludge comprising a liquid component containing the acid soluble form of the coagulant and acid soluble impurities, and a solids component containing unsolubilized hydroxide form of the coagulant and other suspended matter;
(b) introducing the acidulated sludge onto the surface of a non-mechanical substantially horizontal filtering medium;
(c) filtering the liquid component through the solids component on the filtering medium yielding a recovered coagulant filtrate comprising (i) a recovered soluble form of the coagulant that is a more efficient coagulant, on a mole basis, than the commercially available coagulant and (ii) some acid soluble impurities; and leaving on the surface of the nonmechanical substantially horizontal filtering medium a solids cake comprising unsolubilized hydroxide form of the coagulant, other suspended matter, and entrained liquid component;
(d) retaining a portion of the recovered coagulant filtrate and recycling at least a portion of the retained recovered coagulant filtrate, which is less than the molar equivalent



of the commercially available coagulant which would otherwise be required, to effect flocculation of solids in untreated raw water; and
(e) discarding an amount of the recovered coagulant filtrate sufficient to ensure that the concentration of acid soluble impurities recovered along with the acid soluble form of the coagulant does not exceed an acceptable maximum contaminant level for the water treated with the recycled recovered coagulant filtrate;
the amount of the hydroxide form of the coagulant that is converted to an acid soluble form being equal to or less than the amount necessary to ensure that the concentration of acid soluble impurities in the recycled recovered coagulant filtrate does not exceed the acceptable maximum contaminant level for the water treated with the recycled recovered coagulant filtrate.

4,448,697

SECONDARY RECOVERY PROCESS

David R. McCoy, and Robert M. Gipson, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 22, 1982, Ser. No. 341,962
Int. Cl.³ E21B 43/22; C09K 3/00
U.S. Cl. 252—8.55 D 10 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:
(A) injecting into the formation via an injection well an aqueous drive fluid comprising water or brine containing therein:
(a) from about 0.05 to about 6.0 weight percent of a nonionic surfactant of the formula:

$$RO(R'O)_m(CH_2CH_2O)_nH$$

wherein R is selected from the group consisting of an alkyl of 1 to 6 carbon atoms, phenyl and tolyl; R' is a 1,2- or 2,3-butylene radical; m is an integer from 1 to 40 and n is an integer of 10 or greater such that the resulting surfactant contains not less than 50 weight percent of oxyethylene units, and

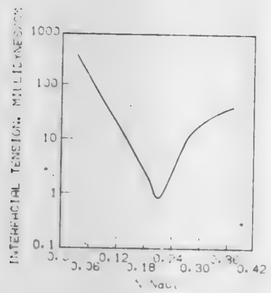
(b) from about 0.03 to about 5 weight percent of an anionic sulfate or sulfonate surfactant,
(B) forcing the said fluid through the formation, and
(c) recovering hydrocarbons through the production well.

4,448,698

SELECTING SALINITIES IN MICELLAR FLOODING

Scott P. Trushenski, Broken Arrow, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Aug. 30, 1978, Ser. No. 938,131
Int. Cl.³ C09K 3/00
U.S. Cl. 252—8.55 D 14 Claims



1. A method of displacing crude oil through an oil-bearing subterranean reservoir containing aqueous formation fluid, which comprises:
injecting into the reservoir an aqueous displacement fluid comprising micellar fluid and aqueous polymer-containing fluid with the micellar fluid in immediate contact with the aqueous formation fluid and the polymer-containing fluid in immediate contact with the micellar fluid, said displacement fluid having a composition such that the interfacial tension between said displacement fluid and said crude oil will change and will decrease and then increase as said displacement fluid mixes with the aqueous formation fluid, and
displacing said displacement fluid through at least a portion of the reservoir to displace crude oil.

5. In a method of displacing crude oil through an oil-bearing subterranean reservoir containing saline aqueous formation fluid, wherein the reservoir is penetrated by at least one injection well which is in fluid communication through the reservoir with at least one production well penetrating the reservoir, which includes the step of injecting into the reservoir through said at least one injection well an aqueous formation fluid comprising micellar fluid and aqueous polymer-containing fluid with the micellar fluid in immediate contact with the aqueous formation fluid and the aqueous polymer-containing fluid in immediate contact with the micellar fluid, said aqueous fluid having a different salinity from the salinity of the aqueous formation fluid and the step of displacing said injected fluid through at least a portion of the reservoir to displace crude oil toward said at least one production well under conditions such that the aqueous formation fluid mixes with said injected fluid, the improvement comprising:
selecting the salinity of said injected fluid such that as the injected fluid mixes with aqueous formation fluid, the salinity of the resulting mixtures and the interfacial tension between said mixtures and displaced crude oil change and said interfacial tension passes through a minimum interfacial tension as shown on FIG. 1.

4,448,699

LAUNDRY ADDITIVE PRODUCTS CONTAINING AMINO-SILANES

Christian R. Barrat; John R. Walker, both of Brussels, and Jean Wevers, Strombeek-Bever, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 22, 1982, Ser. No. 421,186
Claims priority, application United Kingdom, Sep. 25, 1981, 8129068; Nov. 27, 1981, 8135945
Int. Cl.³ D06M 13/38; C11D 7/32
U.S. Cl. 252—8.75 11 Claims

1. A laundry additive product for inhibiting or preventing the corrosion of enamelled surfaces characterised in that it comprises a composition comprising an amino-silane having the formula

$$(R_3O)_{3-x}-\overset{(R_1)_x}{\underset{|}{Si}}-(CH_2)_m-N(R_3)_2$$

where
R_1 is C_{1-4} alkyl or C_{1-4} hydroxyalkyl
x is 0 or 1
m is 1–6
each R_3 is H, R, C_{1-6} alkylamine or

$$\left[-(CH_2)_n-\overset{R_4}{\underset{|}{N}}-\right]_y R_5$$

where
R_4 is H or R_1
n is 1–6
y is 0–6
R_5 is R_4,

$$(CH_2)_p\overset{O}{\overset{\|}{C}}-OR_1 \text{ or } -\overset{O}{\overset{\|}{C}}-NHR_4;$$

p is 1–6,
the composition being impregnated in and/or coated on a flexible non particulate substrate, in a weight ratio of amino-silane to substrate of from 1:5,000 to 1:1.

4,448,700

LUBRICATING COMPOSITION AND METHOD OF MAKING SAME

Herman Lankamp, Odijk, Netherlands, assignor to SKF Industrial Trading and Development Co., B.V., Nieuwegein, Netherlands

Continuation-in-part of Ser. No. 95,573, Nov. 19, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,585
Claims priority, application Netherlands, Jun. 12, 1978, 7811913
Int. Cl.³ C10M 7/14, 7/24
U.S. Cl. 252—12.4 20 Claims

1. A solid self lubricating bearing component comprised of a composition of finite thickness having self oil-releasing properties, said composition comprising polypropylene in an amount of from 12–60% by weight, having a melt index below 1.0, and 88–40% by weight of one or more synthetic ester oils, at least half of the oil consisting of neopentylpolyolesters having an average chain length of the acid function groups between 5–7, the other part of the oil being comprised of at least one compound of the group trialkyl-, tricycloalkyl-, and triarylphosphatesters, said composition being capable of being shaped by extrusion or injection molding into self-lubricating objects, said bearing component having a thickness up to 4 mm.

4,448,701

AQUEOUS CUTTING FLUID FOR MACHINING FISSIONABLE MATERIALS

Walter K. Duerksen, Norris; John M. Googin, Oak Ridge, and Bradley Napier, Jr., Powell, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1982, Ser. No. 343,608
Int. Cl.³ C10M 3/04
U.S. Cl. 252—49.3 1 Claim

1. A cutting fluid for machining fissionable materials consisting of an admixture of water, 35–65 vol. % of a glycol selected from the group consisting of ethylene glycol and propylene glycol, and a boron compound selected from the group consisting of boric acid and sodium tetraborate decahydrate with said boron compound being dissolved in the admixture in an effective neutron attenuating concentration in the range of about 5–12 grams/100 ml of the admixture.

4,448,702

FREEZING-POINT-LOWERING COMPOSITION AND METHOD

Gertrude Kaes, Vienna, Austria, assignor to Lang & Co., Chemisch-Technische Produkte Kommanditgesellschaft, Vienna, Austria

Filed Sep. 30, 1982, Ser. No. 428,912
Claims priority, application Austria, Oct. 12, 1981, 4378/81
Int. Cl.³ C09K 3/18
U.S. Cl. 252—70 7 Claims

4. In an antifreezing and ice melting composition, the improvement wherein an active antifreezing and ice melting component of said composition is at least one water soluble sodium, potassium, ammonium or organoamine salt of at least one dicarboxylic acid having at least three carbon atoms together with at least one further antifreezing and ice dissolving compound selected from the group which consists of urea, inorganic ammonium compounds, and water soluble phosphates.

4,448,703

CARBOXYLIC SOLUBILIZER/SURFACTANT COMBINATIONS AND AQUEOUS COMPOSITIONS CONTAINING SAME

John W. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 238,394, Feb. 25, 1981, Pat. No. 4,368,133, which is a continuation-in-part of Ser. No. 26,384, Apr. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 948,460, Oct. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 946,294, Sep. 27, 1978, Pat. No. 4,329,249. This application Mar. 4, 1982, Ser. No. 352,692
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.
Int. Cl.³ C10M 1/08, 1/06, 3/04
U.S. Cl. 252—75 110 Claims

1. A composition comprising a continuous aqueous phase, and dispersed in said aqueous phase the combination of (A) at least one nitrogen-containing, phosphorus-free carboxylic solubilizer made by the reaction of (A)(I) at least one polycarboxylic acid acylating agent having at least one hydrocarbon-based substituent of at least about 30 to about 500 carbon atoms with (A)(II) at least one (a) N-(hydroxyl-substituted hydrocarbyl) amine, (b) hydroxyl-substituted poly(hydrocarbyloxy) analog of said amine or (c) mixtures of (a) and (b); and (B) at least one surfactant.

4,448,704

ARTICLE SUITABLE FOR WIPING HARD SURFACES

Donald Barby, Great Barrow; David E. Clarke, Bromborough; John Lloyd, Higher Bebington, and Zia Haq, Spital, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed May 24, 1982, Ser. No. 381,612
Claims priority, application United Kingdom, May 29, 1981, 8116438
Int. Cl.³ C11D 17/04
U.S. Cl. 252—91 17 Claims

1. An article suitable for wiping hard surfaces to give a substantially streak-free result, said article comprising:

(a) a homogeneous aqueous liquid composition having a surface tension of less than 35 mNm^{-1}, which composition when applied to a surface and allowed to dry, dries substantially without the formation of discrete droplets or particles larger than 0.25 μm, said composition including at least one surface-active agent in a concentration not exceeding 1.5% by weight of total liquid composition;

(b) a substrate, for carrying said liquid composition, of a flexible sheet material selected from the group consisting of paper, woven, knitted and non-woven fabrics, the substrate being pre-washed with demineralized water or said homogeneous aqueous liquid composition;

the loading of the liquid composition (a) on the substrate (b) being within the range of from 0.5 to 10 grams per gram of substrate.

4,448,705

MONOPEROXYPHTHALIC ACID BLEACHING COMPOSITION CONTAINING DTPMP

Frederick W. Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 20, 1982, Ser. No. 379,824
Int. Cl.³ C11D 3/30, 3/36, 3/.9; D06L 3/02
U.S. Cl. 252—102 16 Claims

1. A bleaching and laundering composition comprising monoperoxyphthalic acid (MPPA) and/or a water-soluble salt thereof and a chelating agent to enhance the bleaching efficiency of the MPPA and/or the salt thereof consisting essentially of diethylene triamine pentamethylene phosphonic acid and/or a water-soluble salt thereof, said bleaching and laundering composition being devoid of an inorganic peroxygen compound.

7. A bleaching detergent composition comprising:

(a) from about 5 to 50%, by weight, of a bleaching agent comprising monoperoxyphthalic acid and/or a water-soluble salt thereof, said bleaching agent being devoid of an inorganic peroxygen compound;

(b) less than about 5%, by weight, of a chelating agent consisting essentially of diethylene triamine pentamethylene phosphonic acid (DTPMP) and/or a water-soluble salt thereof;

(c) from about 5 to 50%, by weight, of one or more detergent surface active agents selected from the group consisting of anionic, cationic, nonionic, ampholytic and zwitterionic detergents;

(d) from 5 to 80%, by weight, of a detergent builder salt selected from the group consisting of inorganic builders, carboxylates, polycarboxylates, polyhydroxysulfonates, salts of ethane 1-hydroxy-1,1-diphosphonic acid and ethane-1,1,2-triphosphonic acid and mixtures thereof; and

(e) the balance comprising water and optionally a filler salt.

4,448,706

DEFOAMING DETERGENT ADDITIVES CONTAINING BLEACHED TALLOW ACID PHOSPHATES

Bongsub Kim, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 10, 1982, Ser. No. 376,283
Int. Cl.³ C11D 17/00, 1/78
U.S. Cl. 252—108 5 Claims

1. A dishwashing detergent additive composition comprising (a) a double heteric polyoxyalkylene polyol prepared by condensing a mixture of 90 percent propylene oxide and 10 percent ethylene oxide with trimethylolpropane so as to provide a hydrophobic base having a molecular weight of about 3200 and then condensing a mixture of 90 weight percent ethylene oxide and 10 weight percent propylene oxide with the hydrophobic base so as to provide a hydrophilic portion having a molecular weight of about 1280, and (b) a bleached mono tallow alcohol phosphate ester, wherein the weight ratio of (a) to (b) is from 1:1 to 99:1.

4,448,707

MATERIAL FOR DRYING CUT PLANTS AND APPARATUS FOR FACILITATING SUCH DRYING

George S. Fenn, Elkton, Oreg., assignor to Fenn & Company, Cottage Grove, Oreg.

Filed Apr. 21, 1981, Ser. No. 256,106
Int. Cl.³ A23C 9/00; C09K 15/02, 15/06
U.S. Cl. 252—194 36 Claims

1. In combination for use in a solution for drying cut plants,

a drying agent providing a basic pH in the solution and having properties of becoming at least partially insoluble at a pH no greater in the solution than approximately 13.4 and

a mold inhibiting agent mixed with the drying agent and having properties of remaining inactive for different pH conditions in the solution until the occurrence of particular acidic conditions inducing molding of the plants and having properties of reacting with moisture under such particular acidic conditions in the solution to inhibit the molding of the plants.

4,448,708

USE OF QUATERNIZED POLYAMIDOAMINES AS DEMULSIFIERS

George R. Killat, and Jerry R. Conklin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 29, 1982, Ser. No. 343,782
Int. Cl.³ B01D 17/04; C08G 69/00
U.S. Cl. 252—344 11 Claims

1. A demulsification method which comprises contacting an emulsion of oil and water with an amount of a water-soluble quaternized polyamidoamine effective to cause the emulsion to separate into two essentially distinct phases, said quaternized polyamidoamine (1) having amide and amine moieties in its backbone and pendent quaternary ammonium moieties and (2) being an adduct of a polyamidoamine and a quaternary agent containing the quaternary ammonium moiety and a moiety capable of reacting with the polyamidoamine.

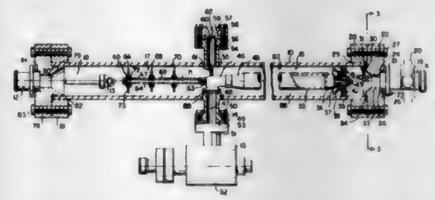
7. A quaternized polyamidoamine having a polyamidoamine backbone bearing sufficient pendent quaternary ammonium moiety to enable the quaternized polyamidoamine to function at least 10 percent better as a demulsifier for oil-in-water than does a polyamidoamine which is similar to the quaternized polyamidoamine except that it contains no pendent quaternary ammonium moieties, said quaternized polyamidoamine being an adduct of a polyamidoamine and a quaternizing agent selected from the group consisting of 2-hydroxy-3-chloropropyl trimethyl ammonium chloride, methacrylamidopropyl trimethyl ammonium chloride, 2-acryloyloxyethyl trimethyl ammonium chloride, N,N-dimethylaminoethyl acrylate, acrylamidopropyl trimethyl ammonium chloride, 2,3-epoxypropyl trimethyl ammonium chloride and 2,3-epoxypropyl dimethylamine.

4,448,709

PROPPANT CONCENTRATOR

Ronald S. Bullen, 700 703 6 Ave., Calgary, Alberta, Canada (T2P 0T9)

Filed Aug. 3, 1981, Ser. No. 289,623
Claims priority, application Canada, Nov. 6, 1980, 364139
Int. Cl.³ B01D 12/00, 43/00; E21B 43/26, 43/267
U.S. Cl. 252—359 D 19 Claims



1. An apparatus for concentrating a proppant/fluid slurry and foaming the concentrated slurry which comprises

a unitary cylindrical casing containing, in order, an inlet, a concentration zone, a mixing zone, a foaming zone, and an outlet for foamed fluid slurry, said inlet, concentration zone, mixing zone, foaming zone and outlet being in axial alignment with one another along the length of said cylindrical casing, so as to permit axial flow of slurry from said inlet to said outlet;

fixed deflector means located in the concentration zone to impart a helical path flow to slurry passing into said concentration zone;

a fixed cylindrical screen in the concentration zone downstream from the deflector means with reference to the direction of axial flow, said cylindrical screen defining a central cylinder coaxial with and within the unitary cylindrical casing, the ends of said cylinder being closed to the entry of slurry from the unitary cylindrical casing into the central cylinder defined by the screen; and

fluid outlet means for withdrawing fluid from the central cylinder.

4,448,710

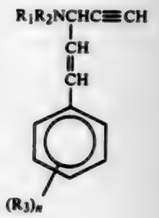
CORROSION INHIBITORS INCLUDING A 3-DIALKYLAMINO-3-PHENYLETHENYLPROP-1-YNE

Eugene V. Hort, Wayne; Lowell R. Anderson, Morristown, and Dru W. Alwani, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 1, 1981, Ser. No. 326,309
Int. Cl.³ C09K 3/00; C23F 11/00, 11/14
U.S. Cl. 252—390 10 Claims

1. An aqueous composition for inhibiting the corrosion of metals placed therein comprising:

(a) an effective amount of a corrosion-inhibiting compound having the formula:



where

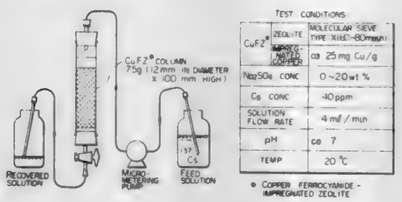
R_1 and R_2 are independently alkyl C_{1-8};
R_3 is independently hydrogen, halo, or alkyl C_1–C_8; and
n is 1–2; and
(b) a non-oxidizing acid.

4,448,711

PROCESS FOR PRODUCING ZEOLITE ADSORBENT AND PROCESS FOR TREATING RADIOACTIVE LIQUID WASTE WITH THE ZEOLITE ADSORBENT

Kenji Motojima, Mito, and Fumio Kawamura, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,005
Claims priority, application Japan, Dec. 6, 1979, 54-158302; Feb. 8, 1980, 55-13646
Int. Cl.³ B01J *27/24*
U.S. Cl. 502—74 **8 Claims**



1. A process for producing a metal ferrocyanide-impregnated zeolite adsorbent, which comprises:
(1) impregnating zeolite with a salt of a metal capable of forming, sparingly, water-soluble ferrocyanide in the pores of the zeolite through ion exchange adsorption;
(2) treating the zeolite with a water-soluble ferrocyanide compound, thereby forming a ferrocyanide of the metal; and
(3) subjecting the zeolite to aging treatment to stabilize said metal ferrocyanide within the pores of said zeolite; said aging treatment being carried out by dipping in a highly concentrated aqueous solution of neutral alkali metal salt at room temperature to 100° C.

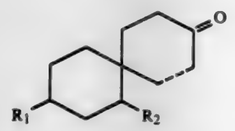
4,448,712

PERFUME COMPOSITIONS AND PERFUMED ARTICLES CONTAINING SPIRO-UNDECANONES AND -UNDECENONES AS PERFUME BASE

Antonius J. A. van der Weerdt, Huizen, and Willem Apeldoorn, Blaricum, both of Netherlands, assignors to Naarden International N.V., Ca Naarden-bussum, Netherlands

Filed Sep. 13, 1982, Ser. No. 417,207
Claims priority, application Netherlands, Sep. 16, 1981, 8104271
Int. Cl.³ C11B *9/00*; A01K *7/46*; C07C *49/317*
U.S. Cl. 252—522 R **5 Claims**

1. Perfume composition, perfumed material and perfumed article, characterized by a contents of one or more derivatives of spiro[5.5]undecane-3-one and/or -undecene-3-one having the following formula



(I)

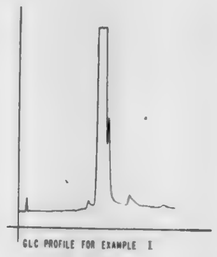
wherein R_1 and R_2 are hydrogen or methyl and the dotted line is a single or double bond with the provisio that when this dotted line is a double bond R_1 and R_2 are both hydrogen.
4. 7-Methyl-spiro[5.5]undecane-3-one.
5. 7.9-Dimethyl-spiro[5.5]undecane-3-one.

4,448,713

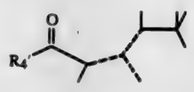
BRANCHED KETONES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 318,428, Nov. 5, 1981, Pat. No. 4,380,674, which is a continuation-in-part of Ser. No. 184,132, Sep. 4, 1980, Pat. No. 4,321,255. This application Nov. 19, 1982, Ser. No. 442,912
Int. Cl.³ A61K *7/46*; C11B *9/00*
U.S. Cl. 252—522 R **13 Claims**



1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of perfume compositions, perfumed articles, colognes, medicinal products, smoking tobacco compositions, and smoking tobacco articles comprising the step of adding to a perfume composition, perfumed article base, cologne base, medicinal product base, smoking tobacco composition or smoking tobacco article component, one or more unsaturated branched chain ketone defined according to the structure:



in an organoleptic property modifying, augmenting or enhancing quantity, wherein R_4' represents C_1–C_4 lower alkyl, and one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represent carbon-carbon single bonds.

4,448,714

ANTIBIOTIC POLYPEPTIDE COMPOUNDS PREPARED FROM STAPHLOCOCCUS BACTERIA

William J. Cunliffe, 47 Tredgold Ave., Bramhope, Nr. Leeds; Elizabeth A. Eady, 20 Woodlea Rd., and Keith T. Holland, 13 Hall Park Ave., Horsforth, both of Leeds, all of England

PCT No. PCT/GB80/00164, 371 Date Jun. 4, 1981, 102(e) Date Jun. 4, 1981, PCT Pub. No. WO81/00962, PCT Pub. Date Apr. 16, 1981
PCT Filed Oct. 13, 1980, Ser. No. 270,523
Claims priority, application United Kingdom, Oct. 12, 1979, 79/35534
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 R **4 Claims**

1. An antibiotic polypeptide compound produced by *Staphylococcus epidermidis* NCIB 11536 or a mutant strain thereof, or an acid addition salt thereof, having a molecular weight of from about 950 to 10,000 and possessing bactericidal and bacteriolytic properties with respect to Gram-positive bacteria, said compound comprising within its peptide chain one residue of proline, two residues of glycine, and at least one residue of each of the amino acids isoleucine, phenylalanine, alanine, aspartic acid, glutamic acid, and lysine, said compound having UV absorption maxima at about 210 nm and at from about 260 to 280 nm, and said compound having a thermostability, when in a liquid medium, which is enhanced by acidity.

4,448,715

TAGGED PYROGLU-L-PHE-L-ARG DERIVATIVES, SUBSTRATES AND ASSAYS FOR KALLIKREIN

James W. Ryan, and Alfred Chung, both of Miami, Fla., assignors to University of Miami, Miami, Fla.

Filed Nov. 2, 1981, Ser. No. 317,612
Int. Cl.³ C07C *103/52*; C12Q *1/56*
U.S. Cl. 260—112.5 R **14 Claims**

1. Novel compounds of the general formula:

A—L—phe—L—arg—Y,

or methyl esters thereof or ethyl esters thereof, wherein,
group A contains a carbonyl moiety in amide linkage with the α-amino group of L—Phe and is any one of the groups consisting essentially of cyclopropanecarbonyl, cyclobutanecarbonyl, cyclopentanecarbonyl, cyclohexanecarbonyl, pyroglutamyl, 3,4-dehydroprolyl, 4-keto-prolyl, 4-OH-prolyl, 3-OH-prolyl, 3-phenylpropanoyl, thioprolyl, azetidine-2-carbonyl, thiazolidine-4-carbonyl, 5-X-prolyl, 4-X-prolyl, 3-X-prolyl, and 2-X-prolyl wherein X of any of the last four radicals is halo; and
group Y is joined to the α-carbonyl of L—Arg to form an ester or amide linkage therewith and is —OH or any known indicator that is radioactively or chemiluminescently tagged or which comprises a chromogen or fluorogen except that when A is pyroglutamyl Y is a radioactively or chemiluminescently tagged benzylamide group.

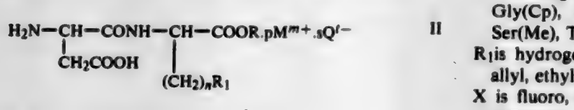
4,448,716

DIPEPTIDE SWEETENER-METAL COMPLEXES

Josef H. Tsau, Prospect Heights, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Mar. 4, 1982, Ser. No. 354,574
Int. Cl.³ C07C *103/52*; A23L *1/236*
U.S. Cl. 260—112.5 R **21 Claims**

1. A dipeptide sweetener-metal complex of the formula:



II

wherein the stereochemical configuration is:

DL-DL, DL-L, L-DL or L L

wherein R is:
(a) alkyl of from one to six carbon atoms;
(b) alkylaryl, the alkyl portion of from one to six carbon atoms, inclusive, the aryl portion of from six to ten carbon atoms, inclusive; or
(c) cycloalkyl of from three to seven carbon atoms, inclusive;
wherein R_1 is:
(a) alkyl of one to six carbon atoms, inclusive;
(b) a saturated, unsaturated, or partially saturated six carbon ring, which may be optionally substituted by R_2;
wherein R_2 is:
(a) hydroxy;
(b) alkoxy of one to six carbon atoms, inclusive;
(c) alkyl of one to six carbon atoms, inclusive;
(d) halogen; or
(e) $—S(O)_f(CH_2)_k(CH_3)$ wherein f is 0, 1 or 2; wherein k is an integer of from 0 to 5, with the proviso that n is 1 or 2;
wherein n is an integer of from zero to 5 wherein m and t are integers of from one to three either the same or different;
wherein p is the M^{m+}/dipeptide sweetener ratio which may be from 0.1 to 3;
wherein s is the ratio of Q^{t-} to the dipeptide sweetener and wherein $p \times m = s \times t$;
wherein M^{m+} is a pharmacologically acceptable Metal ion or a combination of pharmacologically acceptable Metal ions;
wherein Q^{t-} is a pharmacologically acceptable anion, or a combination of pharmacologically acceptable anions;
wherein the dipeptide sweetener-metal complex may either by hydrated or unhydrated.

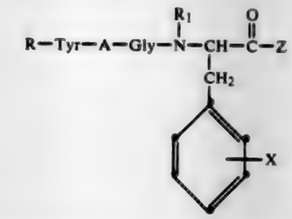
4,448,717

PHARMACOLOGICALLY ACTIVE PEPTIDES

Robert T. Shuman, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 12, 1982, Ser. No. 441,137
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 E **15 Claims**

1. A compound of the formula



and pharmaceutically acceptable non-toxic acid addition salts thereof, in which
R is hydrogen, methyl, ethyl, cyclopropylmethyl, or allyl;
A is a residue of a D-amino acid selected from the group consisting of Ala, Abu, Nva, Val, Nle, Leu, Ile, Gly(Al), Gly(Cp), Met, Cys(Me), Met(O), Cys(Me)(O), Ser, Ser(Me), Thr, and Hse;
R_1 is hydrogen, C_1–C_3 primary alkyl, cyclopropylmethyl, allyl, ethylthiomethyl, 2-fluoroethyl, or propargyl;
X is fluoro, bromo, iodo, chloro, hydroxy, C_1–C_3 alkyl, trifluoromethyl, or C_1–C_2 alkoxy; and
Z is methyl or ethyl.

4,448,718

METHOD FOR THE PREPARATION OF COLLAGEN-GLYCOSAMINOGLYCAN COMPOSITE MATERIALS

Ioannis V. Yannas, Newton, and James F. Kirk, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 13, 1983, Ser. No. 531,804
Int. Cl.³ C07G *7/00*; C08H *1/00, 1/06*
U.S. Cl. 260—123.7 **10 Claims**

1. A process for preparing a crosslinked collagen-glycosaminoglycan composite material, which comprises:
forming an uncrosslinked composite material from collagen and a glycosaminoglycan; and
contacting said uncrosslinked composite with a gaseous aldehyde until a crosslinked product having an M_c of from about 800 to about 60,000 is formed.

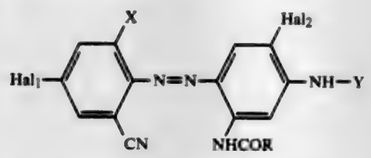
4,448,719

TRIFLUOROMETHYL-SUBSTITUTED MONOAZO DISPERSE DYES

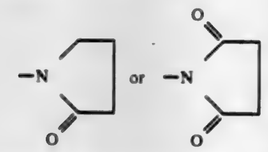
Hansrudolf Schwander, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,910
Claims priority, application Switzerland, Jun. 20, 1980, 4752/80
Int. Cl.³ C09B 29/01, 29/085; D06P 1/18, 3/36
U.S. Cl. 260—152 8 Claims

1. A monoazo compound, or a mixture of different azo compounds, of the formula



in which Hal_1 and Hal_2 independently of one another are halo, X is CF_3, R is C_1–C_{14}-alkyl which is unsubstituted or substituted by halo or C_1–C_4-alkoxy, or C_1–C_4-alkoxy or C_1–C_4-alkoxy-C_1–C_4-alkoxy and Y is C_1–C_8-alkyl which is unsubstituted or substituted by hydroxy, C_1–C_4-alkoxy, cyano-C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkoxy, halo, cyano, phenoxy, —COO-phenyl, —COO—C_1–C_4-alkyl in which alkyl is unsubstituted or substituted by furyl, hydroxy or C_1–C_4-alkoxy, —N(CO—C_1–C_4-alkyl) (C_1–C_4-alkyl) wherein alkyl is unsubstituted or substituted by hydroxy,



or Y is C_3–C_4-alkenyl or halo-C_3–C_4-alkenyl.

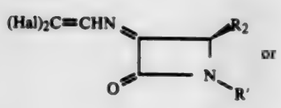
4,448,720

INVERSION OF THE 3α-AMINO GROUP ATTACHED TO THE β-LACTAM RING

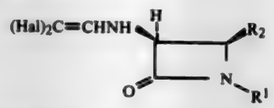
Wataru Nagata, Hyogo, and Tsutomu Aoki, Osaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 136,073, Mar. 28, 1980, Pat. No. 4,342,685. This application Apr. 7, 1982, Ser. No. 366,418
Claims priority, application Japan, Apr. 3, 1979, 54-40624
Int. Cl.³ C07D 205/08, 498/04
U.S. Cl. 260—239 A 12 Claims

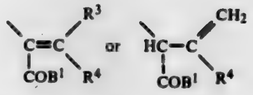
1. A compound of the formula



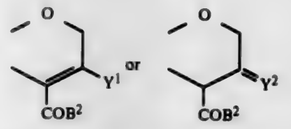
or



wherein R^1 is a group of the formula



in which R^3 and R^4 are the same or different C_1 to C_3 alkyl and COB^1 is carboxy or a conventional carboxylic ester group, and R^2 is C_2 to C_4 alkenyloxy, C_2 to C_4 alkynyloxy, C_1 to C_4 alkanoyloxy or C_1 to C_4 alkylthio, or R^1 and R^2 taken together represent a group of the formula



wherein Y^1 is hydrogen, halogen, C_1 to C_7 alkoxy or C_1 to C_7 alkyl which is unsubstituted or monosubstituted by halogen, acetoxy or 1-methyl-tetrazol-5-yl-thio, Y^2 is C_1 to C_2 alkylidene, COB^2 is carboxy or a conventional carboxylic ester group, and Hal is chloro, bromo or iodo, and wherein the conventional carboxylic ester group is diphenyl methyl ester, 2,2,2-trichloroethyl ester, p-nitrobenzyl ester, p-methoxybenzyl ester, phthalidyl ester, acetoxymethyl ester, pivaloyloxymethyl ester, t-butyl ester, phenyl ester, or indanyl ester.

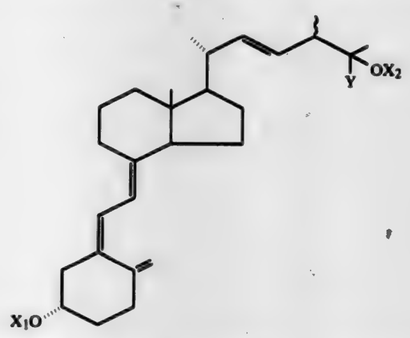
4,448,721

HYDROXYVITAMIN D_2 COMPOUNDS AND PROCESS FOR PREPARING SAME

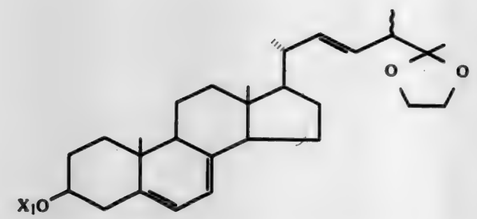
Hector F. DeLuca; Heinrich K. Schnoes, and Jacek W. Morzycki, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Sep. 20, 1982, Ser. No. 420,191
Int. Cl.³ C07J 43/00, 9/00
U.S. Cl. 260—239.5 35 Claims

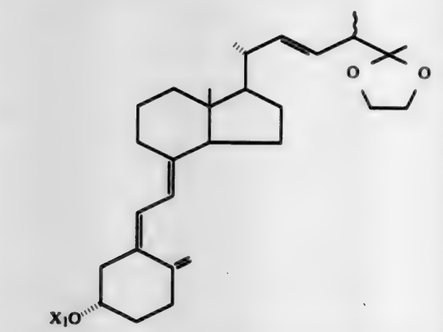
1. A process for preparing compounds having the formula



wherein X_1 and X_2 are each selected from hydrogen or acyl, and Y is an alkyl or aryl group, which comprises, irradiating a 5,7-diene steroid of the formula

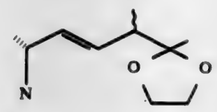


wherein X_1 is hydrogen or acyl,
with ultraviolet light to obtain the corresponding previtamin D product, isomerizing said previtamin D compound in an inert solvent at a temperature from about room temperature to about 100° C. for a time sufficient to reach equilibrium, thereby obtaining a vitamin D compound of the formula

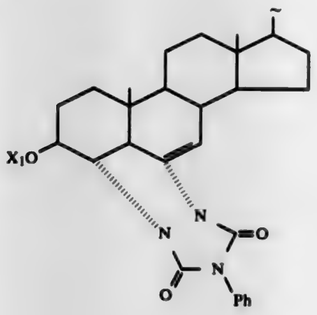


where X_1 is hydrogen or acyl, subjecting said vitamin D compound to acid catalyzed hydrolysis to remove the ketal protecting group thereby obtaining the corresponding ketone, subjecting said ketone to alkylation with a reagent of the formula YMg-halide or YLi, where Y is an alkyl or aryl group and the halide is chloride, bromide or iodide, and, optionally, acylating one or both free hydroxy groups.

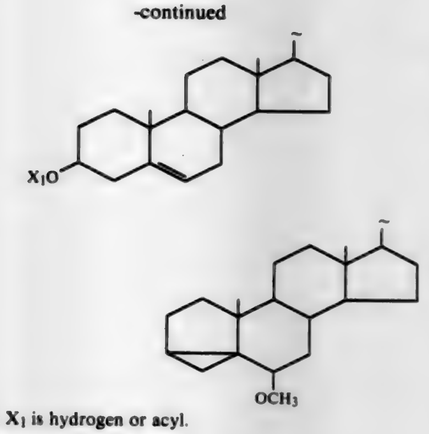
6. Compounds having the formula



where N is a steroid nucleus selected from the group consisting of



-continued



wherein X_1 is hydrogen or acyl.

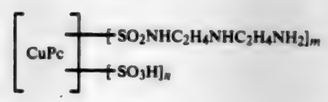
4,448,722

PHTHALOCYANINES

Nathan N. Crounse, Myrtle Beach, S.C., assignor to The Hilton-Davis Chemical Co., Cincinnati, Ohio

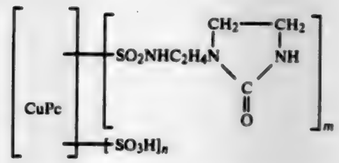
Division of Ser. No. 235,969, Feb. 19, 1981, Pat. No. 4,379,710, Continuation-in-part of Ser. No. 44,238, May 31, 1979, abandoned. This application Sep. 27, 1982, Ser. No. 423,932
Int. Cl.³ C09B 47/04
U.S. Cl. 260—245.1 10 Claims

1. Acid addition salts of a phthalocyanine of the formula



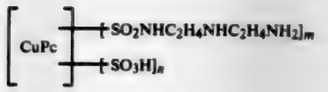
with a single acid or mixed acids wherein: Pc is phthalocyanine, m is a number from one to five, and n is a number from zero to one having a total of at least (0.05 m) but not more than (2 m) complexed molecules of one or more acids selected from the group consisting of hydrochloric acid, hydrobromic acid, acetic acid, propionic acid, glycolic acid, 3-hydroxypropionic acid, lactic acid, methanesulfonic acid and ethanesulfonic acid.

9. A phthalocyanine of the formula



wherein Pc is phthalocyanine, m is a number from one to five and n is a number from zero to one.

10. A phthalocyanine of the formula



wherein m is a number from one to give and n is a number from zero to one.

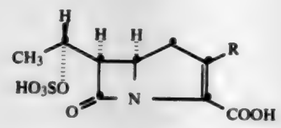
4,448,723

ANTIBIOTICS PA-41746-B AND C

Kentaro Tanaka; Eiji Kondo; Mikao Mayama; Kouichi Matsumoto; Yoshimi Kawamura, all of Osaka, and Naoki Tsuji, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 432,102
Claims priority, application Japan, Nov. 10, 1981, 56-180628
Int. Cl.³ C07D *487/04*
U.S. Cl. 260—245.2 T **3 Claims**

1. A compound of the formula



wherein R is carboxymethylsulfinyl (PA-41746-B) or formylsulfinyl (PA-41746-C) and the pharmaceutically acceptable salts thereof.

4,448,724

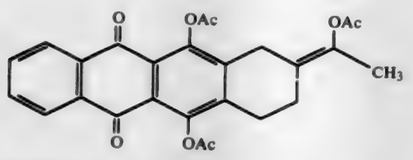
SYNTHESIS OF 4-DEMETHOXYDAUNOMYCINONE

Michael P. Cava, Wynnewood, Pa., and Domingo Dominguez, Santiago de Compostela, Spain, assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

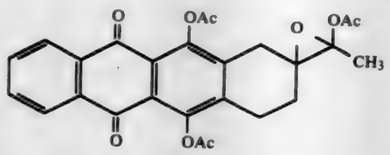
Filed Dec. 20, 1982, Ser. No. 451,523
Int. Cl.³ C07C *50/27, 87/10, 50/36*
U.S. Cl. 260—351.5 **1 Claim**

1. A process for making 4-demethoxydaunomycinone comprising:

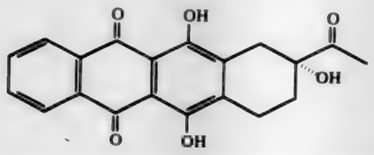
a. converting 9-acetyl-6,11-dihydroxy-7,8,9,10-tetrahydro-5,12-naphthacenedione by a perchloric acid catalyzed reaction to the enol-acetate compound having the formula



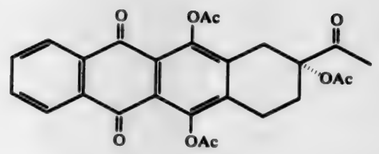
b. epoxidizing the enol-acetate compound with a peracid to produce the epoxidized compound having the formula



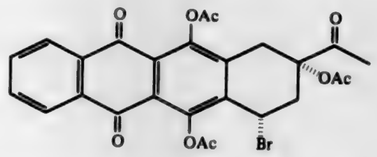
c. rearranging the epoxidized compound by alkaline hydrolysis to produce the trihydroxy compound having the formula



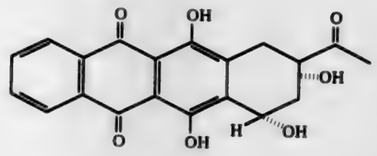
d. acetylating the trihydroxy compound to produce the triacetoxy compound having the formula



e. brominating the triacetoxy compound with a brominating agent to produce the brominated compound having the formula



f. solvolyzing the brominated compound to produce 4-demethoxydaunomycinone having the formula



4,448,725

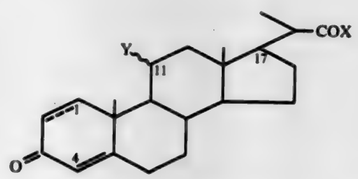
Δ4-STEROID COMPOUNDS AND A PROCESS FOR THEIR PRODUCTION

Wolfgang Preuss, Monheim, Fed. Rep. of Germany, assignor to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 262,965, May 12, 1981, abandoned. This application Aug. 13, 1982, Ser. No. 407,790
Claims priority, application Austria, May 12, 1980, 2535/80
Int. Cl.³ C07J *9/00*
U.S. Cl. 260—397.1 **8 Claims**

1. Δ4-Steroid compounds optionally containing further double bonds in the 1-position and an 11-oxygen function and corresponding to formula I:

(I)



in which X represents a member selected from the group consisting of halogen and NH_2 and Y represents a member selected from the group consisting of hydroxy and, together with the C-atom substituted by Y, a carbonyl group.

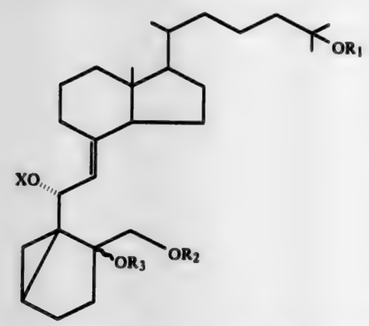
4,448,726

RING A- AND TRIENE-MODIFIED VITAMIN D COMPOUNDS

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison; Herbert E. Paaren, Deerfield, and Connie M. Smith, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 11, 1983, Ser. No. 493,537
Int. Cl.³ C07J *9/00*
U.S. Cl. 260—397.2 **9 Claims**

1. A compound having the formula



where R_1, R_2 and R_3, which may be the same or different, represent hydrogen or a hydroxy-protecting group, and where X is alkyl.

4,448,727

COLOR-STABILIZED HALOBISPHENOLETHYLENE POLYCARBONATES

Arnold Factor, Scotia, N.Y., and Keith N. Sannes, Mt. Vernon, Ind., assignors to General Electric Company, Schenectady, N.Y.

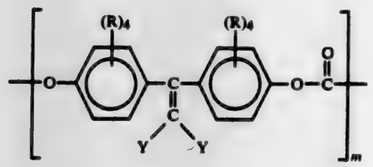
Continuation of Ser. No. 947,659, Oct. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 668,857, Mar. 22, 1976, abandoned. This application Sep. 2, 1981, Ser. No. 298,662
Int. Cl.³ C07C *69/96*; C08G *63/62*
U.S. Cl. 260—463 **15 Claims**

1. A thermally stable, color-stabilized halobisphenolethylene polycarbonate composition prepared by combining:

(A) a polycarbonate having a number average molecular weight of at least about 5000 comprising:

(1) about 1–100 parts by weight of halobis(phenyl)ethylene carbonate units having the formula

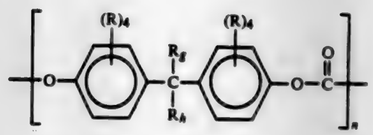
(II)



wherein independently each R is hydrogen, chlorine, bromine or a C_{1-30} monovalent hydrocarbon or hydrocarbonoxy group; each Y is hydrogen, chlorine or bromine, at least one Y being chlorine or bromine; and m is an integer of at least 2; and

(2) about 99–0 parts by weight of arene carbonate units having the formula

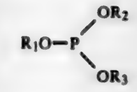
(IV)



wherein R_g and R_h are each hydrogen or a C_{1-30} monovalent hydrocarbon group and n is an integer of at least 2; with

(B) from 0.01 to 4.0 parts by weight, per 100 parts of component A, of a phosphite of the formula

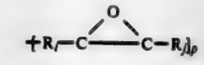
(I)



wherein R_1, R_2 and R_3 are each hydrogen or C_{1-20} alkyl, aryl, cycloarkyl, arylalkyl or alkaryl, or combinations thereof, at least one of R_1, R_2 and R_3 being other than hydrogen or a group directly bonded to an oxygen atom by a phenyl ring carbon atom except that when R_2 and R_3 are phenyl, R_1 can be hydrogen;

(C) from 0.01 to 5.0 parts by weight, per 100 parts of component A, of an epoxide selected from the group consisting of aliphatic epoxides of the formula

(VI)



wherein each of R_i and R_j is a C_{1-24} alkyl group and p is an integer from 1 to about 10;

cycloaliphatic epoxides containing 1–2 aliphatic rings of 6 carbon atoms each with at least one oxygen bridge being attached to adjacent carbon atoms in at least one cycloaliphatic ring; and

aromatic epoxides selected from glycidyl ethers, diglycidyl ethers containing 1–3 aromatic rings, and polyglycidyl ethers containing 1–3 aromatic rings; and

(D) from 0.01 to 5.0 parts by weight, per 100 parts of component A, of a mixture of a compound selected from the group consisting of cadmium, barium and cerium salts of a C_{2-20} alkanoic or C_{7-20} aromatic carboxylic acid or of carbonic acid with a stabilizing amount of said acid.

4,448,728

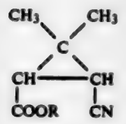
PREPARATION OF CIS ESTER-NITRILE CYCLOPROPANE COMPOUNDS

Renée Jullien, Palaiseau, France, and Samir Benayache, Constantine, Algeria, assignors to Roussel Uclaf, Paris, France

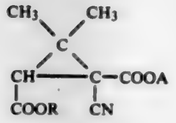
Filed Jun. 19, 1981, Ser. No. 275,291
Claims priority, application France, Jun. 20, 1980, 80 13734
Int. Cl.³ C07C *121/46*
U.S. Cl. 260—464 **6 Claims**

1. A process for the preparation of a compound of the formula

III



wherein —COOR and —CN are in the cis positions and R is alkyl of 1 to 4 carbon atoms comprising heating a mono-ester, mono-salt, mono-nitrile compound of the formula



where R is alkyl of 1 to 4 carbon atoms and wherein —CN and —COOR are in the cis position and wherein A is an alkali metal in an aprotic solvent at 100° to 150° C. in the presence of 1 to 4 moles of water per mole of the said mono-ester, mono-salt, mono-nitrile.

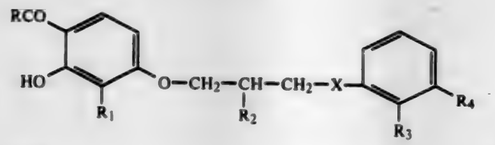
4,448,729

LEUCOTRIENE ANTAGONISTS

Dieter H. Klaubert, Perkiomenville; Anthony F. Kreft, III, Devon, and Stanley C. Bell, Narberth, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 25, 1982, Ser. No. 411,200
Int. Cl.³ C07C *121/80, 69/612, 103/29*
U.S. Cl. 260—465 D **8 Claims**

1. A compound of the formula



wherein
R is ethyl or methyl
R_1 is hydrogen or alkyl of 1 to 6 carbon atoms;
R_2 is hydrogen or hydroxyl;
X is —O— or —NH—;
R_3 is hydrogen, —CN or —$CONH_2$; and
R_4 is —NH_2 or —$NHCOCO_2Z$ where Z is hydrogen or alkyl of 1 to 6 carbon atoms;
or a pharmaceutically acceptable salt thereof.

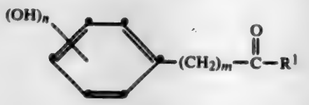
4,448,730

HYDROXYBENZOHYDROXAMIC ACIDS, BENZAMIDES AND ESTERS AND RELATED COMPOUNDS AS RIBONUCLEOTIDE REDUCTASE INHIBITORS

Bartholomeus van't Riet, 3419 Noble Ave., Richmond, Va. 23222; Howard L. Elford, 3313 Gloucester Rd., Richmond, Va. 23227, and Galen L. Wampler, 6938 Chamberlayne Rd., Mechanicsville, Va. 23111

Continuation-in-part of Ser. No. 247,171, Mar. 24, 1981, Pat. No. 4,394,389 which is a continuation-in-part of Ser. No. 16,472, Mar. 1, 1979, Pat. No. 4,263,322. This application Apr. 20, 1982, Ser. No. 370,023
U.S. Cl. 260—500.5 H **5 Claims**

1. A method of inhibiting ribonucleotide reductase which comprises administering to a mammal carrying a tumor having a relatively high ribonucleotide reductase level, an amount of a compound according to the following formula effective to inhibit ribonucleotide reductase



wherein n is 2, 3 or 4, m is 1, 2 or 3 and R^1 is NH_2, NHOH, $NH(C_1-C_3)$alkyl, $N[(C_1-C_3)alkyl]_2$, aryl-NH_2 or O-phenyl except that when n is 2 or 3, m is 0 and R^1 is NHOH, no OH can be ortho to the carboxyl.

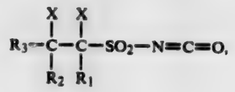
4,448,731

1,2-DIHALOGENOALKYLSULFONYL ISOCYANATES AND 1,2-DI-HALOGENOCYCLOALKYLSULFONYL ISOCYANATES AND PROCESS FOR THEIR MANUFACTURE

Lothar Willms, Unkel; Dieter Günther, and Thomas Hüttelmaier, both of Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,848
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1981, 3134548
Int. Cl.³ C07C *143/828*
U.S. Cl. 260—545 R **4 Claims**

1. A compound of the formula



wherein
X is halogen;
R_3 is hydrogen, halogen, or C_1-C_4 alkyl;
R_1 and R_2, taken alone, are the same or different and are hydrogen, halogen, (C_1-C_4) alkoxy, (C_1-C_6) alkyl, such alkyl substituted with up to 4 halogen atoms, or such alkyl interrupted by an oxygen atom; or
R_1 and R_2, taken together with the carbon atoms to which the are attached, form a 5- to 7-membered saturated or unsaturated alicycle or such an alicycle substituted by 1 to 3 halogen atoms or mono- or di-substituted by (C_1-C_3) alkyl.

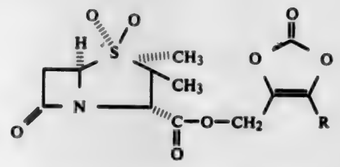
4,448,732

2-OXO-1,3-DIOXOL-4-YLMETHYL ESTERS OF PENICILLANIC ACID 1,1-DIOXIDE

Willard M. Welch, Jr., Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,281
Int. Cl.³ C07D *499/00; A61K 31/425*
U.S. Cl. 260—245.2 **5 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, methyl and phenyl.

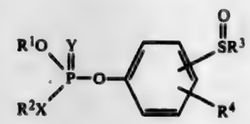
4,448,733

PRODUCTION OF ALKYLSULFINYL SUBSTITUTED ORGANOPHOSPHORIC ACID ESTERS

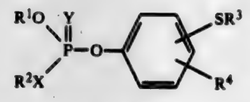
Junichi Saito, Tokyo; Kozo Shiokawa, Kanagawa, and Toshiyuki Takemoto, Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Apr. 6, 1982, Ser. No. 366,101
Claims priority, application Japan, Apr. 6, 1981, 56-50536
Int. Cl.³ C07F *9/09, 9/165*
U.S. Cl. 260—985 **6 Claims**

1. A process for preparing an alkylsulfinyl-substituted phenylphosphoric acid ester of the formula



in which
R^1 and R^2 each independently is alkyl, haloalkyl, alkenyl or optionally substituted aryl,
R^3 is alkyl,
R^4 is hydrogen, halogen, alkyl, alkoxy, nitro, cyano, alkoxycarbonyl group, phenyl or phenoxy, and
X and Y each independently is oxygen or sulfur,
which comprises reacting hydrogen peroxide with an alkylmercapto-substituted phenylphosphoric acid ester of the formula



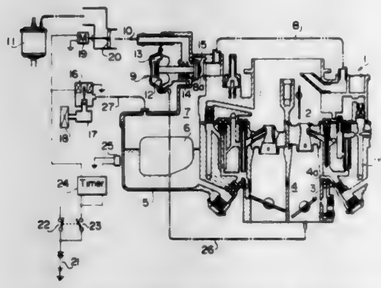
in an aprotic solvent under sulfuric acid-induced acidic conditions in the presence of an organic carboxylic acid.

4,448,734

CARBURETOR

Kenji Shibano, Musashimurayama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1982, Ser. No. 435,789
Claims priority, application Japan, Oct. 31, 1981, 56-175255
Int. Cl.³ F02M *5/08*
U.S. Cl. 261—26 **4 Claims**



1. A system for preventing percolation of fuel in a carburetor having a float chamber communicated with an induction passage of the carburetor through a vent passage, comprising:
a passage for communicating said float chamber with the atmosphere;
a first valve provided in said passage for closing it;
a discharge passage connected with said float chamber at an upper portion thereof;
a canister connected with a discharge end of said discharge passage, said canister being filled with fuel vapor absorbing material;
a second valve provided in said discharge passage for closing the passage and opening the vent passage;
a fan provided in said discharge passage for delivering gases to said canister;
a motor for driving said fan;
actuating means for actuating said first and second valves;
a thermo sensor operative to produce a signal when the temperature of the fuel in the float chamber rises to a predetermined value; and
means for opening said first and second valves and operating said motor for a predetermined period in response to the stop of the engine operation and to said signal of said thermo sensor, whereby the air is introduced into said float chamber and discharged to said canister.

4,448,735

TOOTH POSITIONER WITH HARDER AREAS

Gerald W. Huge, Racine, Wis., assignor to Professional Positioners, Inc., Racine, Wis.

Division of Ser. No. 275,002, Jun. 18, 1981, Pat. No. 4,370,129. This application Sep. 30, 1982, Ser. No. 431,893
Int. Cl.³ B29C *5/08*; B29H *7/00*
U.S. Cl. 264—16 **5 Claims**



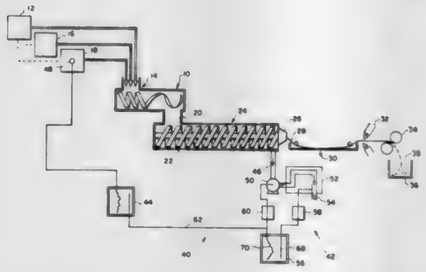
1. A method for forming a tooth positioner having at least a first portion composed of a first resilient cured material and at least a second, integral portion composed of a second resilient cured material, said first and second resilient cured materials being pourable liquids before curing, comprising the steps of:
A. providing first and second materials curable to form said first and second resilient cured materials;
B. providing a counterpart of a patient's teeth in their desired positions in the patient's mouth;
C. enclosing the counterpart in a mold;
D. supporting the mold in a position such that a portion of the mold is bottom most which is to receive a material selected from said first and second materials and pouring the selected material in said mold in sufficient quantity to cover same of the teeth of said counterpart to form said first or second portion, and partially curing the material placed in said mold;
E. supporting said mold to receive the other of said first and second materials and pouring said other material in said mold, covering remaining teeth of said counterpart to form at least one other portion in contact with the first partially cured portion; and
F. curing said first and second portions to form an integral positioner.

4,448,736

CONTINUOUS IN-LINE MELT FLOW RATE CONTROL SYSTEM

Donald B. Emery, Warrenville, and William M. Herring, Elburn, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 24, 1982, Ser. No. 381,048
Int. Cl.³ B29F *3/06*
U.S. Cl. 264—40.1 **25 Claims**



1. A method for controlling the molecular weight of a polymer being extruded through a die head at the outlet end of an extruder by altering, in a forward control manner, the mixture of degradent and polymer fed to the extruder relative to a target melt flow rate related to the molecular weight of polymer desired, said method comprising the steps of: monitoring the viscosity of a slip stream of melt from the extruder upstream from the die head; converting the monitored viscosity value to a process signal; comparing the process signal with a set point value related to a target melt flow rate; generating a correction signal when there is a difference between the process signal and the set point value; supplying said correction signal to a degradent additive feed control system for adjusting the amount of degradent added to the polymer fed to the extruder in response to the deviation of the process signal from the set point value; comparing the actual process signal with an approximated process model signal which includes at least one model for the process transition and a model for dead time; after the process transition and dead time periods have completely reacted to the correction signal, comparing the process signal with the set point value and if there is still a difference between the process signal and the set point value, generating a further correction signal and repeating the above thereby to maintain the melt flow rate as closely as possible to a target melt flow rate related to the desired polymer molecular weight.

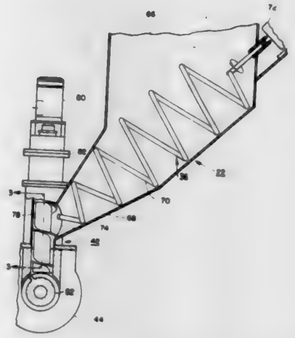
10. An apparatus for controlling the molecular weight of the polymer being extruded through a die head at the outlet of an extruder by altering, in a forward control manner, the mixture of degradent and polymer fed to the extruder relative to a target melt flow rate related to the molecular weight of polymer desired, said apparatus comprising: means for monitoring the viscosity of a slip stream of melt from the extruder upstream of the die head; means for converting the monitored viscosity value to a process signal; means for comparing the process signal with a set point value related to a target melt flow rate; means for generating a correction signal when there is a difference between the process signal and the set point value; means for supplying said correction signal to a degradent additive feed control system for adjusting the amount of degradent added to the polymer fed to the extruder in response to the deviation of the process signal from the set point value; means for comparing the actual process signal with an approximated process model signal which includes at least one model for the process transition and a model for dead time; means for comparing the process signal with the set point value after the process transition and dead time periods have elapsed and a steady state condition has been reached, and if there is still a difference between the process signal and the set point value, said apparatus being operable to generate a further correction signal thereby to maintain the melt flow rate as close as possible to the target melt flow related to the desired polymer molecular weight.

4,448,737

METHOD AND APPARATUS FOR PRODUCING FOAMED PRODUCTS FROM A MIX OF RECLAIMED PLASTIC FOAM MATERIAL AND FOAMABLE VIRGIN PLASTIC RESIN

David E. Johnson, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,781
Int. Cl.³ B29D *27/00*; B29C *17/03*; B29H *19/00*
U.S. Cl. 264—53 **12 Claims**



1. A method for producing a foamed thermoformable polymer material from a mixture of reclaimed polymer foam material and a foamable virgin polymer resin; comprising:

(a) conveying a supply of reclaimed polymer foam material fluff into a feed hopper; concurrently conveying a separate supply of foamable virgin polymer resin into said feed hopper; intermixing said plastic materials in said hopper to facilitate continual and uniform free flow of the intermixed polymer materials towards a discharge in said feed hopper, said intermixing comprising imparting movement to said intermixed polymer materials in said feed hopper away from said discharge to prevent compacting of said materials at the discharge and to facilitate free flow through said discharge at a constant material density;

(b) conveying said intermixed polymer materials into a compressor communicating with said feed hopper discharge and comprising a pair of counter-rotating interdigitating screws; compacting said materials in said compressor intermediate the pair of counter-rotating interdigitating screws to advance the admixed polymer materials through said compressor towards an extrusion arrangement for the extrusion of a thermoformable foamed polymer material product.

4,448,738

PROCESS FOR PRODUCING FOAMED PLASTIC ARTICLES

Zenas Crocker, Quebec, Canada, assignor to Synergistics Chemicals Ltd., Ontario, Canada

Continuation of Ser. No. 149,642, May 14, 1980, abandoned. This application Mar. 15, 1982, Ser. No. 358,046
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—54 **11 Claims**

1. A method of making a molded foamed thermoplastic article from a particulate thermoplastic resin comprising:

intensively mixing and thermokenetically heating a particulate composition comprising thermoplastic resin particles and a foaming agent, said foaming agent having a trigger temperature at which a gas is evolved therefrom to effect foaming, said mixing and heating being effected by mixing said particulate composition in an enclosed mixing chamber with a plurality of blades attached to arms rotating within said chamber with a blade tip speed of at least about 18 meters per second;

continuing said mixing of said particulate composition in said enclosed chamber until said particulate composition is heated to a mixing temperature at or above said trigger temperature of said foaming agent, said mixing temperature being sufficient to effect fluxing of said particulate composition to an extent such that the fluxed composition has a viscosity sufficient to contain gas evolved from said foaming agent;

discharging the fluxed composition from said mixing chamber when the fluxed composition is at said mixing temperature and when said foaming agent is just beginning to foam; and

feeding the discharged fluxed composition to a mold and confining the composition within said mold to mold the composition while foaming of said composition continues, to form a molded foamed plastic article in said mold.

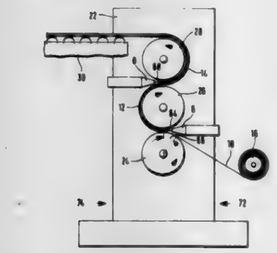


4,448,739

METHOD AND DEVICE FOR MANUFACTURING MULTI-PLY SHEETS

Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed Mar. 11, 1982, Ser. No. 357,336
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110157
Int. Cl.³ B29D *9/02*
U.S. Cl. 264—132 **12 Claims**



1. Method of manufacturing multi-ply sheets containing plastic material supplied by way of at least two heated, plastic state, extruded webs which are produced by extruders having at least two corresponding flat sheet dies and which are joined, together with an introduced structured web, by means of cooperating rolls, which comprises

feeding sequentially the at least two heated, plastic state, extruded webs from the flat sheet dies to a single common laminator comprising a single common set of at least three cooperating chill rolls providing at least two corresponding roll nips each defined between adjacent corresponding rolls of the set of rolls and constituting at least an upstream roll nip and a downstream roll nip, while also introducing the structured web to the laminator,

such that sequentially the structured web is applied onto one of the adjacent rolls providing the upstream roll nip at a point thereof prior to reaching the roll nip sufficiently for achieving uniform introduction of the structured web into the upstream roll nip, then a first of the heated, plastic state, extruded webs is introduced from a first of the flat sheet dies into the upstream roll nip in operative contact with the adjacent side of the structured web thereat for heat bonding thereof to the structured web whereupon the structured web and first extruded web are conducted to the downstream roll nip, and thereafter a second of the heated, plastic state, extruded webs is introduced from a second of the flat sheet dies into the downstream roll nip such that the structured web is disposed at the downstream roll nip between the second extruded web and the first extruded web and in operative contact with the second extruded web for heat bonding thereof to the structured web,

the heated extruded webs being heated sufficiently for providing a heat content for achieving a corresponding reliable permanent bond thereof to the structured web and the corresponding flat sheet dies being disposed in the immediate proximity of the corresponding roll nips sufficient for maintaining that heat content at the point of contact between the respective heated extruded web and the structured web,

whereby to form a multi-ply sheet containing the structured web sealingly sandwiched between the at least two extruded webs.

10. Device for manufacturing multi-ply sheets containing plastic material supplied by way of at least two heated, plastic state, extruded webs and which are joined, together with an introduced structured web, which comprises

a single common laminator comprising a single common set of at least three cooperating chill rolls providing at least two corresponding roll nips each defined between adjacent corresponding rolls of the set of rolls and constituting at least an upstream roll nip and a downstream roll nip,

feeder means for introducing a structured web to the upstream nip and arranged for applying the structured web onto one of the adjacent rolls providing the upstream roll nip at a point thereon prior to reaching the roll nip sufficiently for achieving uniform introduction of the structured web into the upstream roll nip, and

at least two corresponding extruders each having a flat sheet die, a first of the dies being arranged in the immediate proximity of the upstream roll nip and a second of the dies being arranged in the immediate proximity of the downstream roll nip for extruding plastic material from such dies in the form of at least two corresponding heated, plastic state, extruded webs,

said first die being arranged for introducing a first of the heated, plastic state, extruded webs into the upstream roll nip in operative contact with the adjacent side of the structured web thereat for heat bonding thereof to the structured web, the laminator being arranged for conducting the structured web and the first extruded web to the downstream roll nip,

said second die being arranged for introducing a second of the heated, plastic state, extruded webs into the downstream roll nip such that the structured web is disposed at the downstream roll nip between the second extruded web and the first extruded web and in operative contact with

the second extruded web for heat bonding thereof to the structured web, and

said corresponding extruders being arranged for supplying the extrudable plastic material from the first and second dies in sufficiently heated condition for providing a heat content for achieving a corresponding reliable permanent bond thereof to the structured web and the first and second dies being disposed in the immediate proximity of the corresponding roll nips sufficiently for maintaining that heat content at the point of contact between the respective heated extruded web and the structured web,

whereby to form a multi-ply sheet containing the structured web sealingly sandwiched between the at least two extrudeded webs.

4,448,740

PROCESS FOR PRODUCING ACRYLIC FIBERS WITH EXCELLENT SURFACE SMOOTHNESS

Shigeru Sawanishi; Yozo Shiomi, and Akira Yamane, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jan. 6, 1983, Ser. No. 456,292

Claims priority, application Japan, Jan. 26, 1982, 57-11089

Int. Cl.³ D01F *6/18*

U.S. Cl. 264—182 **5 Claims**

1. A process for producing acrylic fibers having excellent surface smoothness and a color development ratio not less than 105%, which comprises:

wet-spinning an acrylonitrile polymer spinning solution having a temperature of from 50° to 70° C. and a viscosity of from 40 to 200 poises at 30° C. (a) with a spinning draft of from 0.06 to 0.15 in the case where the spinnerette orifice capillary length is 0.5 mm or less, or (b) with a spinning draft of from 0.15 to 1.0 in the case where the spinnerette orifice capillary length exceeds 0.5 mm,

coagulating and water-washing the resulting fibers substantially without stretching, and

wet-heat stretching the fibers not less than 8 times in length at a temperature not lower than 80° C.

4,448,741

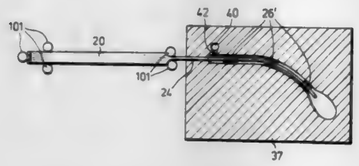
METHOD OF MOLDING PLASTIC WORKPIECES ABOUT SLENDER PERMANENT INSERTS

Robert D. Schad, Toronto, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Continuation-in-part of Ser. No. 327,900, Dec. 7, 1981, Pat. No. 4,422,995. This application Feb. 25, 1982, Ser. No. 352,215

Int. Cl.³ B29D *3/00, 12/02*; B29C *6/02*

U.S. Cl. 264—251 **5 Claims**



1. A method of injection-molding a workpiece of plastic material containing a prefabricated slender insert permanently embedded therein, comprising the steps of:

(a) introducing at least part of the prefabricated insert into a first mold portion which defines a generally annular first-shot cavity encircling a portion of the insert so introduced, said cavity being such as to form a spacer with an axially throughgoing recess adjacent the spacer periphery;

(b) injecting plastic material into said first-shot cavity to form a generally annular spacer with an axial recess therein;

(c) upon hardening of said spacer and removal thereof together with said insert from said first mold portion, introducing said insert with said spacer into a second mold portion having a second-shot cavity, of greater length than said first-shot cavity, divided along a centerline thereof by said spacer into two sections within which said insert is held substantially centered by positive contact of said spacer on all sides with the peripheral walls of said second-shot cavity except adjacent said recess;

(d) injecting plastic material into said sections to embed said insert in a plastic sheath on opposite sides of said spacer, said material flowing through said recess from one side of said spacer to the opposite side thereof;

(e) allowing the plastic material last injected to harden around said insert into a finished workpiece incorporating said spacer; and

(f) removing said workpiece from said second-shot cavity.

4,448,742

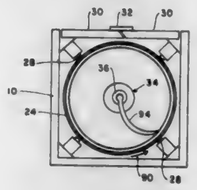
LOW COST THERMAL PROTECTION SYSTEM PROCESSING

Robert V. Kromrey, Campbell, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,233

Int. Cl.³ B29D *3/00*

U.S. Cl. 264—270 **10 Claims**



1. A method for spin casting an extrudable uncured material to form a concentric layer of controlled thickness on the interior of an elongated cylindrical body which comprises the steps of rotating an elongated cylindrical body at a desired speed of rotation about its longitudinal axis, applying said extrudable uncured material as a continuous ribbon in helical fashion from one selected point in said body to another selected point in said body, with each newly applied turn contiguous to the next immediately applied turn, continuing to rotate said body until said material is leveled between said selected points, and at least partially curing said material while continuing to rotate said body.

4,448,743

GENERATION, INSULATED CONFINEMENT, AND HEATING OF ULTRA-HIGH TEMPERATURE PLASMAS

Robert W. Bass, Provo, Utah, assignor to Applied Fusion Research Corporation, Denver, Colo.

Filed Oct. 15, 1979, Ser. No. 84,837

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—103 **5 Claims**

1. An improved method of generation, insulated confinement and heating of plasmas, including the known steps of:

(a) surrounding a target mass with an ambient fluid medium at a predetermined pressure;

(b) projecting upon said target mass, to bring it to a predetermined temperature and to fully ionize it, pulsed energy selected from the class consisting essentially of pulsed photon energy or pulsed particle-beam kinetic energy; while

(c) relying upon the spontaneous creation of an electrostatic double-layer between said ionized mass and said ambient medium to provide substantially complete thermal insulation of said ionized mass from energy losses by ordinary

electron thermal conductivity, or convection, leaving the dominant energy loss from said ionized mass to be bremmstrahlung losses P_{brem} predictable by

$$P_{brem}=C(p^2/T^{3/2})((4/3)\pi r^3),$$

where p denotes pressure in atm and T denotes temperature in °K., and

$$C=2.12\times10^9\ (°K.)^{3/2}\text{Watts/cm}^3$$

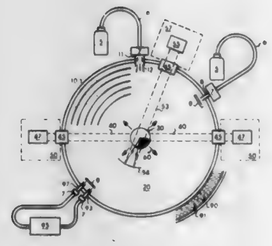
is a known plasma-physical constant;

(d) compensating completely for said bremmstrahlung loss by supplying additional radiant energy to said ionized mass so as to maintain said temperature of said ionized mass at a substantially steady level; wherein

(e) the frequency range of said additional radiant energy is so selected as to be absorbable by said ionized mass, namely

$$(c/4)/r\leq\nu\leq D(rp^2/T^{5/2})^{\frac{1}{3}},$$

where r denotes the radius of said ionized mass in cm, where c denotes the speed of light in cm/sec, where p denotes the pressure of said ambient fluid medium in atm,



where T denotes the temperature of said ionized mass in °K., where ν denotes the frequency of said additional radiant energy in Hertz, and where $D=2\times10^{18}$ is a constant; and

(f) adjusting the power level of said additional radiant energy to maintain said ionized mass in a substantially steady state by just compensating for said ionized mass's power losses;

wherein the improvement comprises the subsequent additional steps of:

(g) increasing the static pressure of said ambient medium to a pressure greater than atmospheric, thereby, through the medium of the thermal-barrier double-layer, equally increasing the static pressure of said ionized mass, so as to enable said mass to absorb more of said radiant energy, thereby increasing said temperature of said ionized mass, but also increasing its power losses; while simultaneously

(h) monitoring said radius r and said temperature T; and

(i) increasing said power level of said radiant energy

supply so as to compensate for said increased power losses during said temperature increase while maintaining said radius and hence said ionized mass's volume substantially constant during this subsequent stage of heating beyond said initial temperature.

4,448,744

METHOD OF LOADING AND/OR UNLOADING A NUCLEAR REACTOR, AND SUPPORT MEMBER, ESPECIALLY FOR THE FOREGOING METHOD

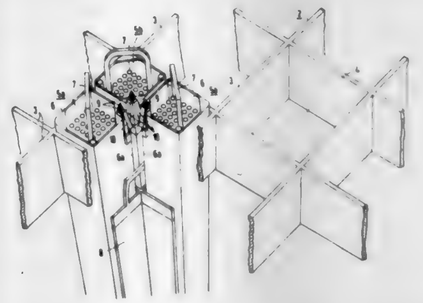
Ludwig Karger, Frankfurt, and Hans-Joachim Lippert, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,577

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027562; Nov. 26, 1980, 3044570

Int. Cl.³ G21C *3/30*

U.S. Cl. 376—262 **21 Claims**



1. Method of loading or unloading or both loading and unloading a nuclear reactor wherein control rods of cruciform cross section are at least partly withdrawn, each of the control rods being associated with a respective group of four fuel assemblies respectively having elongated duct tubes of rectangular cross section and being disposed in respective corners of a rectangular mesh of a transverse support grid, the duct tubes forming therebetween a gap-shaped intermediate space of cruciform cross section for accommodating a respective one of the control rods of cruciform cross section, which comprises, prior to withdrawing a respective control rod associated with the respective group of four fuel assemblies, unloading from the nuclear reactor at least one of the four fuel assemblies of the group thereof, and inserting a support member into the respective mesh so as to fix in the respective corners of the mesh the ends of two diagonally opposed fuel assemblies of the group remaining in the nuclear reactor.

4,448,745

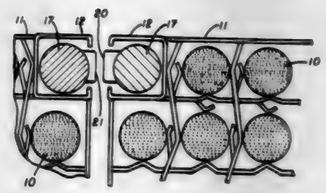
LATERAL SUPPORT FOR NUCLEAR FUEL ASSEMBLIES

Andrew J. Anthony, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 5, 1982, Ser. No. 365,753

Int. Cl.³ G21C *3/30*

U.S. Cl. 376—448 **7 Claims**



1. An assembly of nuclear fuel rods arranged in the path of water to be heated, including,

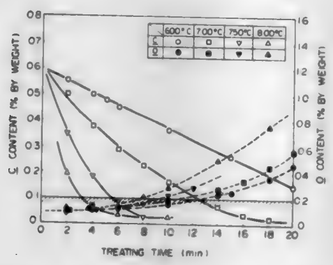
a framework for vertically supporting an assembly of nuclear fuel rods and having a square cross section,
a tube mounted at each corner of the framework in parallel with the fuel rods of the assembly,
at least one aperture in the wall of each corner tube directed toward the external surface of a corner tube of an adjacent fuel assembly,
spring structure mounted within each corner tube actuatable to extend through at least one of the tube apertures into loading engagement with the external surface of the corner tube of the adjacent fuel assembly,
a rod extended down each corner tube in engagement with the spring structure mounted within the tube to actuate the spring structure,
and a connection between the rods and an upper guide structure to position the rods downward in their spring structure actuation when the upper guide structure is in its operative position.

4,448,746

PROCESS FOR PRODUCING ALLOY STEEL POWDER

Toshihiko Kubo, Ibaraki; Minoru Ichidate, Ohtsu; Eijiro Tamura, Hirakata; Isamu Karasuno, Yamato-Koriyama, and Masahide Umino, Nara, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Nov. 5, 1982, Ser. No. 439,432
Int. Cl.³ B22F *1/00*
U.S. Cl. 419—31 **17 Claims**



1. A process for producing low-oxygen, low-carbon alloy steel powder, which comprises the steps of:
preparing molten steel which contains at least one easily oxidizable element selected from the group consisting of chromium, manganese, vanadium, niobium, boron and silicon;
atomizing said molten steel by means of an atomizing agent containing a non-oxidizing medium to provide as-atomized alloy steel powder containing 0.2% by weight or less of oxygen and 0.1% by weight or more of carbon;
adjusting the amount of carbon of said as-atomized alloy steel powder by maintaining it in a decarburizing atmosphere containing at least H_2 and H_2O gases under either of the below-defined conditions (A) or (B); and
cooling the thus obtained alloy steel powder to room temperature in an inert or reducing atmosphere.

Condition (A):
Temperature (t°C.): 600° C.≦t≦950° C.
Atmosphere (P_{H_2}/P_{H_2O}): $0.5 \leqq P_{H_2}/P_{H_2O} \leqq 1000$
Treating Time (θ minute):

$$1.1 \times 10^{-3} \exp\left[\left(\frac{13126}{1.987(t+273)}\right)\left(\frac{P_{H_2}}{P_{H_2O}}\right)^{0.667}\right] \leqq$$

-continued

$$\theta \leqq \{0.101 + (1.0 - 1.0038 \times 10^{-3}t)\}\left(\frac{P_{H_2}}{P_{H_2O}}\right)^{1.341}$$

Condition (B):
Temperature (t°C.): 950° C.<t≦1250° C.
Atmosphere (P_{H_2}/P_{H_2O}): $P_{H_2}/P_{H_2O} \geqq 0.5$
Treating Time (θ minute):

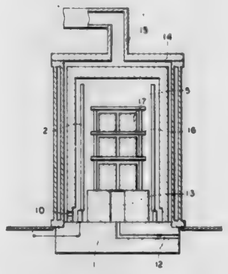
$$\theta \geqq 1.1 \times 10^{-3} \exp\left(\frac{13126}{1.987(t+273)}\right)\left(\frac{P_{H_2}}{P_{H_2O}}\right)^{0.667}$$

4,448,747

HIGH DENSITY SINTERING METHOD FOR POWDER MOLDED PRODUCTS

Masato Moritoki, Miki; Takao Fujikawa, and Junichi Miyanaga, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 1, 1982, Ser. No. 413,836
Claims priority, application Japan, Sep. 1, 1981, 56-138012
Int. Cl.³ B22F *3/14, 3/16*
U.S. Cl. 419—49 **10 Claims**



1. A high density sintering method for powder molded products by applying preliminary sintering to powder molded products previously molded into a predetermined shape and then applying a hot isostatic press process to said sintered products thereby producing high density sintered products and utilizing a high pressure vessel, a movable heating furnace equipped with at least one heating means and having a heat insulating structure and an atmosphere chamber, which comprises:
loading said powder molded products into said movable heating furnace;
introducing said heating furnace into said atmosphere chamber;
applying preliminary sintering to said powder molded products in said heating furnace by said at least one heating means while simultaneously conditioning the inside of said atmosphere chamber with a vacuum or predetermined gas atmosphere;
subsequently removing said heating furnace from said atmosphere chamber while maintaining the inside of the furnace at a high temperature so that heat energy losses are minimized and directly introducing said furnace into said high pressure vessel;
thereafter applying said hot isostatic press process to the sintered products in said furnace while charging a gas as a pressure medium under pressure into said high pressure vessel and elevating the temperature in said heating furnace by said at least one heating means to thereby produce high density sintered products; and
removing said heating furnace together with the high density sintered products loaded therein from the high pressure vessel after completion of said hot isostatic pressure process.

6. A high density sintering method for powder molded products by applying preliminary sintering to powder molded products previously molded into a predetermined shape and then applying a hot hydrostatic press process to said sintered products thereby producing high density sintered products, utilizing a plurality of movable heating furnaces each equipped with least one heating means and heating a heat insulating structure and at least one atmosphere chamber and a high pressure chamber, and which repeats the successive steps of loading said powder molded products into the first heating furnace, which comprises:
introducing said heating furnace into the at least one atmosphere chamber;
applying preliminary sintering to the powder molded products in said first heating furnace by said at least one heating means while conditioning the inside of said at least one atmosphere chamber to a vacuum or predetermined gas atmosphere;
subsequently removing said heating furnace from said at least one atmosphere chamber while maintaining the inside of the furnace at a high temperature so that heat energy lossess are minimized and directly introducing said furnace into the high pressure vessel;
thereafter applying said hot isostatic press process to said sintered products in said heating furnace while charging a gas as a pressure medium under pressure into said high pressure vessel and elevating the temperature in said heating furnace by said at least one heating means, while, on the other hand, introducing a second heating furnace loaded with said powder molded products into said at least one atmosphere chamber and applying the preliminary sintering to said powder molded products in the same manner as above in the course of said hot isostatic press process, and introducing the second heating furnace while maintaining the inside of the furnace at a high temperature so that heat energy losses are minimized into said high pressure vessel from which said first heating furnace has been removed after completion of said hot isostatic press process.

4,448,749

HEAT RESISTANT CAST IRON-NICKEL-CHROMIUM ALLOY

Junichi Sugitani, Hirakata; Teruo Yoshimoto, Suita, and Makoto Takahashi, Hirakata, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Sep. 17, 1982, Ser. No. 419,318
Claims priority, application Japan, Oct. 12, 1981, 56-162479
Int. Cl.³ C22C *30/00*
U.S. Cl. 420—584 **1 Claim**

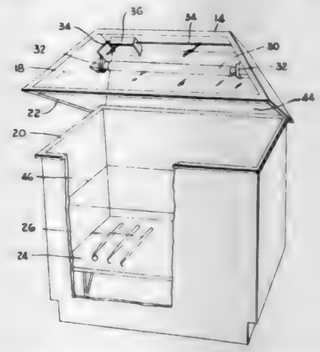
1. A heat resistant cast iron-nickel-chromium alloy consisting essentially of the following components in the following proportions in terms of % by weight:
C: 0.3–0.6,
0<Si≦2.0,
0<Mn≦2.0,
Cr: 20–30,
Ni: 30–40,
Nb+Ta: 0.3–1.5,
N: 0.04–0.15,
B: 0.0002–0.004,
Ti: 0.04–0.50 and
0.07<Al≦0.50
the balance being substantially Fe.

4,448,750

STERILIZATION METHOD

Michael L. Fuesting, 449 N. First St., Wood River, Ill. 62095

Continuation of Ser. No. 271,013, Jun. 5, 1981, abandoned. This application May 23, 1983, Ser. No. 495,922
Int. Cl.³ A61L *2/10, 2/18*
U.S. Cl. 422—20 **12 Claims**



1. A batchwise and static method of disinfecting and/or sterilizing small objects such as medical and dental instruments and the like comprising the steps of:
(a) contacting an object to be disinfected and/or sterilized with a stationary body of liquid or liquid solution which has a percent transmittance greater than twenty percent to ultraviolet radiation;
(b) exposing said object while contacted by said liquid to ultrasonic radiation;
(c) exposing said object while contacted by said liquid to ultraviolet radiation;
(d) said steps of exposing said object to ultrasonic radiation, ultraviolet radiation and liquid being performed simultaneously; and
(e) said liquid being relatively chemically stable at the temperature employed and under the ultraviolet and ultrasonic energy conditions employed.

4,448,748

ZINC-ALUMINUM ALLOYS AND COATINGS

Schrade F. Radtke, New Canaan, Conn.; Dimitri Coutsouradis, Liege, and Jacques Pelerin, Angleur, both of Belgium, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Division of Ser. No. 245,172, Mar. 18, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,405
Claims priority, application Belgium, Mar. 25, 1980, 882431; Jan. 16, 1981, 887121
Int. Cl.³ C22C *18/04*
U.S. Cl. 420—514 **25 Claims**

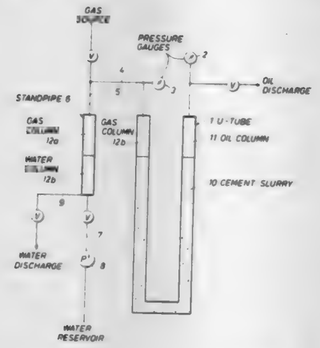
1. A protective metal coating adhered to a substrate, said coating comprising from about 85% to about 97% Zn, from about 4% to about 15% Al, and at least about 5 ppm of a rare earth-containing alloy.

4,448,751

APPARATUS FOR TESTING A NITROGEN-GAS-STABILIZED CEMENT

Edwin A. Richardson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 227,027, Jan. 21, 1981, Pat. No. 4,333,764.
This application Nov. 10, 1981, Ser. No. 319,848
Int. Cl.³ G01N 7/00, 33/38
U.S. Cl. 422—68 **2 Claims**



1. A cement slurry testing apparatus comprising:
a test chamber having a substantially rigid-walled generally tubular portion;
means for flowing a sample of cement slurry into the chamber so that it fills at least a transverse section of said tubular portion;
means for inflowing and pressurizing a gas within the chamber so that a body of gas contacts and presses against said inflowed cement slurry;
means including a pump for maintaining the so-positioned gas and cement slurry within the chamber at a selected pressure and temperature; and,
means for measuring the amount of said pressurized gas which flows into or away from the transverse section of said chamber that was initially occupied by the cement slurry.

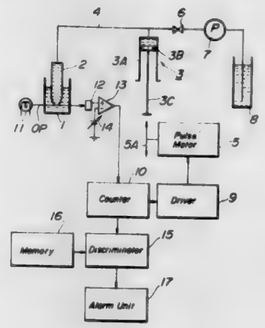
4,448,752

LIQUID DISTRIBUTING DEVICE FOR USE IN CHEMICAL ANALYZER

Taiichi Banno; Ryo Fujimori, both of Hachioji; Hiroshi Takekawa, Sagamihara, and Kazuo Hijikata, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Dec. 14, 1981, Ser. No. 330,449
Claims priority, application Japan, Dec. 12, 1980, 55-175490
Int. Cl.³ G01N 1/14, 35/08
U.S. Cl. 422—81 **18 Claims**

1. A distributing device for delivering a given amount of liquid from a first vessel into a second vessel, comprising:
a probe, said probe having a tip and being selectively immersed in said first vessel for removing said given amount of liquid therefrom;
pumping means connected to said probe for aspirating and discharging said given amount of liquid through said probe;
means for driving said pumping means;
means for detecting an amount of liquid remaining in said first vessel and producing a liquid detection signal when said amount of liquid remaining in said first vessel is at a predetermined level corresponding to the proximity of the tip of the probe when immersed in said first vessel;
means for receiving said liquid detection signal to produce a first signal representative of an actual amount of liquid aspirated through the probe;
means for storing a second signal representing said given amount of liquid to be delivered; and



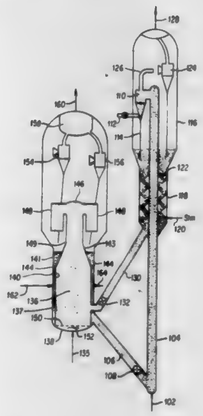
means for comparing said first and second signals with each other to produce a discrimination signal denoting that the actual amount of the aspirated liquid is not equal to the given amount to be delivered into the second vessel.

4,448,753

APPARATUS FOR REGENERATING CRACKING CATALYST

Benjamin Gross, Cherry Hill; James H. Haddad, Princeton Junction, and Madhava Malladi, West Deptford, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,484
Int. Cl.³ B01J 8/26, 11/18
U.S. Cl. 422—144 **9 Claims**



1. In a fluid catalytic cracking apparatus comprising a reactor vessel and a regenerator vessel, said reactor vessel comprising a reactor riser means and a separation means for separating products of a catalytic cracking reaction from spent catalyst, said regenerator vessel comprising a bed of spent catalyst, placed substantially in the center of said regenerator vessel, and a bed of regenerated catalyst, placed substantially concentrically about said bed of spent catalyst, a means of recycling at least a portion of said regenerated catalyst from said regenerated catalyst bed to said spent catalyst bed and a regenerating medium inlet conduit cooperating with a regenerating medium distribution means in the lower section of said spent catalyst bed, the improvement wherein:
said bed of spent catalyst is substantially completely separated from said bed of regenerated catalyst by a substantially annular wall means,

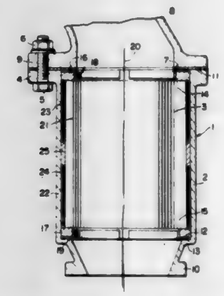
said bed of spent catalyst further comprises a riser in the upflow section of said bed of spent catalyst
said means of recycling at least a portion of said regenerated catalyst from said regenerated catalyst bed to said spent catalyst bed comprises at least one trickle valve means placed in said annular wall means.

4,448,754

MONOLITHIC CATALYST CATALYTIC CONVERTER WITH CATALYST HOLDING EXPANSIBLE RETAINER RING

Kiyoshi Isogai; Nobuo Tobi; Itsuo Koga; Masahiko Takeuchi; Makoto Okamoto; Nobuo Ohmori, and Naka Takita, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 30, 1982, Ser. No. 428,663
Claims priority, application Japan, Aug. 31, 1982, 57-151459
Int. Cl.³ F01N 3/10
U.S. Cl. 422—179 **15 Claims**



1. A monolithic catalytic converter, comprising:
a tubular casing which defines a cylindrical internal space therein and has first and second annular stepped portions which define first and second outer peripheral axial ends of said cylindrical internal space, respectively;
a monolithic catalyst body which is generally of a columnar shape and which has first and second axial ends;
first and second cushion rings, which are respectively engaged with said first and said second axial ends of said monolithic catalyst body; and
first and second retainer rings, said first retainer ring being engaged with a side of said first cushion ring remote from said monolithic catalyst body and said second retainer ring being engaged with a side of said second cushion ring remote from said monolithic catalyst body, said first retainer ring being freely rotatable relative to, but axially supported by, said first stepped portion of said casing and abuttingly supporting said monolithic catalyst body via said first cushion ring, and said second retainer ring being freely rotatable relative to, but axially supported by, said second stepped portion of said casing and abuttingly supporting said monolithic catalyst body via said second cushion ring,
at least one of said first and said second retainer rings being a substantially annular arcuate body with two opposite free ends thereof being arranged to be circumferentially movable relative to one another by at least such an amount accomodating circumferential thermal expansion of said retainer ring caused by a temperature rise thereof from a cold non-operating condition thereof to a hot operating condition thereof.

4,448,755

METHOD FOR REMOVAL OF TIN FROM AMMONIUM TUNGSTATES

Richard A. Scheithauer; Michael J. Miller; Martin B. MacInnis; James N. Christini, all of Towanda, and Martin C. Vogt, Monroeton, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 1, 1983, Ser. No. 557,021
Int. Cl.³ C01G 41/00
U.S. Cl. 423—56 **7 Claims**

1. A process for producing pure ammonium paratungstate from ammonium tungstate solutions containing tin, said process comprising:
(a) adding a sulfide to said ammonium tungstate solutions to give an amount of a sulfide sufficient to form a complex with said tin,
(b) evaporating the ammonium tungstate solution containing the complexed tin at a sufficient temperature and to a reduced volume sufficient to form a two phase system in which the solid phase contains essentially all of the tungsten as ammonium paratungstate, and the liquid phase contains a majority of the tin and
(c) separating said solid phase from said liquid phase.

4,448,756

PROCESS FOR TREATMENT OF EXHAUST GASES

Robert H. Hammerle, Franklin, and Ching-Hsong Wu, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 28, 1983, Ser. No. 461,819
Int. Cl.³ B01J 23/42, 23/44, 23/46; B01D 53/36
U.S. Cl. 423—213.7 **4 Claims**

1. In a process for treatment of exhaust gases from an internal combustion engine, the steps of:
burning a hydrocarbon fuel or a fuel containing hydrocarbons and alcohol blends in the internal combustion engine thereby to generate exhaust gases from the internal combustion engine containing various amounts of unburned hydrocarbons, carbon monoxide, and oxides of nitrogen depending upon operating conditions of the internal combustion engine; and
passing said generated exhaust gases over an improved catalyst system, characterized by;
a support medium for supporting a catalyst system, said support medium having both an upstream support portion over which exhaust gases initially flow and a downstream support portion over which exhaust gases flow after passing over said upstream support portion thereof;
finely divided palladium dispersed by itself on said upstream support portion of said support medium, said palladium being present in an amount of from about 10 to 40 grams per cubic foot of said upstream support portion of said support medium;
said downstream support portion of said support medium having a platinum/rhodium three-way catalyst thereon, said platinum to rhodium ratio being from about 11:1 to about 5:1 with said three-way catalyst material being present in an amount of from about 10 to 40 grams per cubic foot of said downstream support portion of said support medium.

4,448,757

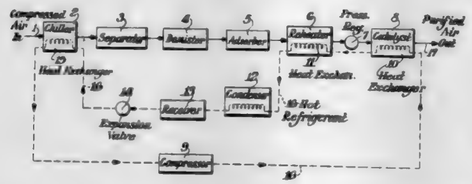
PROCESS FOR REMOVING CONTAMINANTS FROM COMPRESSED AIR

James W. Barnwell, New Castle, and Ernest J. Breton, Wilmington, both of Del., assignors to Deltech Engineering, Inc., New Castle, Del.

Filed Apr. 26, 1982, Ser. No. 371,547
Int. Cl.³ B01D 53/34
U.S. Cl. 423—247 **4 Claims**

1. A process for purifying compressed air used for human breathing comprising:

(a) cooling of the compressed air to condense water and other condensable vapors in the compressed gas,
(b) removing condensed water and other condensable vapors from the compressed air,



(c) reheating the compressed air to reduce its relative humidity to below 5%, and
(d) passing the reheated compressed air through one or more catalysts to convert carbon monoxide to carbon dioxide.

4,448,758

HYDROXYAPATITE, CERAMIC MATERIAL AND PROCESS FOR PREPARING THEREOF

Hirosi Nagai, Chofu, and Yasushi Nishimura, Tokyo, both of Japan, assignors to Kureha Kagku Kagyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 188,832, Sep. 19, 1980, Pat. No. 4,330,514. This application Nov. 4, 1981, Ser. No. 318,020
Claims priority, application Japan, Sep. 25, 1979, 54-123000
Int. Cl.³ C01B *25/32*
U.S. Cl. 423—308 **1 Claim**

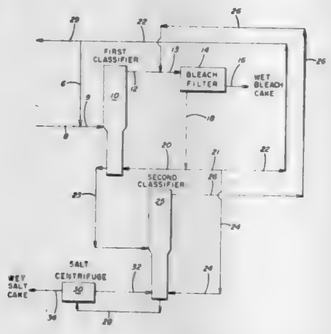
1. A filtered, dried cake of hydroxyapatite having a structure possessing the three-dimensional order with an average opening radius of 50 to 150 Å and a pore cavity of 0.2 to 0.8 cm^3/g, said cake comprising, hydroxyapatite having an atomic ratio of calcium to phosphorus of 1.67 to 1.69 and a dimension including a length of 150 to 1200 Å, a width of 50 to 400 Å, a ratio of said length to said width of 3 to 10.

4,448,759

METHOD FOR SEPARATING PARTICULATE CALCIUM HYPOCHLORITE AND SODIUM CHLORIDE

Duk S. Chun, Uniontown; David A. Stermole, Bedford Heights, and Clifford E. Loehr, Norton, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 3, 1982, Ser. No. 374,132
Int. Cl.³ C01B *11/06*
U.S. Cl. 423—474 **18 Claims**



1. In the process of producing calcium hypochlorite wherein an aqueous slurry of calcium hypochlorite particles and larger separable sodium chloride crystals is produced and wherein the particles of calcium hypochlorite and crystals of sodium chloride are separated in a classification zone, the improvement which comprises:
(a) introducing aqueous slurry containing such calcium hypochlorite particles and larger sodium chloride crystals into a staged upward flow primary elutriator-classifier at about the midpoint of such classifier,
(b) introducing elutriating fluid comprising an aqueous solution substantially saturated with calcium hypochlorite and sodium chloride into the lowermost stage of said primary classifier,
(c) removing a first slurry in which the solid phase is predominantly calcium hypochlorite particles from the uppermost stage of said primary classifier,
(d) separating said first slurry into a wet cake of calcium hypochlorite solids and bleach mother liquor,
(e) removing from the lowermost stage of said primary classifier a second slurry in which the solid phase is predominantly sodium chloride crystals, and introducing second slurry into a staged upward flow secondary elutriator classifier at about the midpoint of such secondary classifier,
(f) introducing elutriating fluid comprising an aqueous solution substantially saturated with calcium hypochlorite and sodium chloride into the lowermost stage of said secondary classifier,
(g) removing from the uppermost stage of said secondary classifier a third slurry in which the solid phase is predominantly calcium hypochlorite particles, and
(h) removing from the lowermost stage of said secondary classifier a fourth slurry in which the solid phase is predominantly sodium chloride crystals, the diameter of the stages of said primary and secondary elutriator-classifiers increasing in ascending order, and the upward fluid velocity in the lowermost stages being higher than the upward fluid velocity in the uppermost stages.

4,448,760

CONTINUOUS PROCESS FOR THE PREPARATION OF MANGANITE, MNOOH

Jay Y. Welsh, Catonsville; Denis F. DeCraene, Elkridge, and Irving Sochol, Baltimore, all of Md., assignors to Chemetals Incorporated, Baltimore, Md.

Filed Sep. 30, 1982, Ser. No. 428,540
Int. Cl.³ C01G *45/02*
U.S. Cl. 423—605 **8 Claims**

1. A continuous process for preparing alkali and alkaline-earth free manganite, comprising the steps of:
continuously feeding a first decomposition tank with an aqueous solution containing manganese (II) nitrite,
contacting said aqueous manganese (II) nitrite solution in said first decomposition tank with an active surface to promote the formation of manganite,
maintaining said aqueous manganese (II) nitrite solution in said first decomposition tank at a temperature sufficient to effect formation of manganite,
decomposing approximately 80% to 95% of the manganese (II) nitrite in said aqueous manganese (II) nitrite solution to form manganite,
continuously transferring said aqueous manganese (II) nitrite solution containing manganite to a second decomposition tank,
maintaining said aqueous manganese (II) nitrite solution containing manganite in said second decomposition tank at a temperature sufficient to effect formation of manganite, and
decomposing the remaining manganese (II) nitrite in said aqueous manganese (II) nitrite solution to form manganite.

4,448,761

PREPARATION OF ACICULAR, FERRIMAGNETIC IRON OXIDES

Wilhelm Sarnecki, Limburgerhof; Jenoe Kovacs, Bobenheim-Roxheim; Werner Loeser, Ludwigshafen; Peter Rudolf, Neuhofen, and Guenter Vaeth, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,369
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143870
Int. Cl.³ C01G *49/08*
U.S. Cl. 423—632 **2 Claims**

1. A process for the preparation of an acicular ferrimagnetic iron oxide comprising reducing iron (III) oxide hydroxide consisting essentially of lepidocrocite, at from 350° to 600° C., by means of an organic compound which is decomposable within this temperature range in the presence of iron oxide, to give magnetite, wherein the organic compound employed for the reduction is a synthetic polymer having a molecular weight of from 3,000 to 40,000, used in an amount of from 0.8 to 15% by weight, based on the iron oxide hydroxide and selected from the group consisting of polyethylenes, polypropylenes, polyesters, polyethers, nylons and polycarbonates.

4,448,762

COMPLEX OF TRANSFERRIN WITH RUTHENIUM FOR MEDICAL APPLICATIONS

Powell Richards, Bayport; Suresh C. Srivastava, Setauket, and George E. Meinken, Middle Island, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 3, 1980, Ser. No. 203,194
Int. Cl.³ A61K *49/00, 43/00*
U.S. Cl. 424—1.1 **9 Claims**

7. A method for diagnostic tumor scanning which comprises the intravenous administration of a tumor localizing agent, said tumor localizing agent being a mono- or di- metal complex of monomeric transferrin with radioactive ruthenium, with subsequent imaging of the tumor.

4,448,763

ALTERATION OF GALLIUM BIODISTRIBUTION USING INDIUM COMPLEXES FOR ENHANCED EARLY IMAGING

John W. Triplett, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Nov. 10, 1980, Ser. No. 205,423
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **24 Claims**

8. A method for detecting tumors in mammals comprising:
administering to said mammals an effective tumor imaging amount of radioactive gallium and an effective tumor imaging improving amount of non-radioactive indium and measuring the biodistribution of said radioactive gallium using external scintigraphic techniques.

4,448,764

DIRECT-ACTING IODINATING REAGENT

Paul K. Smith, and Dennis C. Klenk, both of Roscoe, Ill., assignors to Pierce Chemical Company, Rockford, Ill.

Filed Jul. 6, 1982, Ser. No. 395,805
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **13 Claims**

1. The process of making a reagent useful for the direct iodination of a biological specimen comprising reacting, in an aqueous medium, sodium iodide with an oxidant comprised of a water insoluble suppot having covalently attached to its surface molecules containing a chloramine group and recovering the support from said aqueous medium, said reaction being such that iodous ions are complexed onto the support but are free to react with groups susceptible to iodination in proteins and be transferred to the specimen being iodinated.
2. The reagent prepared by the process of claim 1.

4,448,765

LIPOSOMES AND THEIR USE IN TREATING HUMAN OR OTHER MAMMALIAN PATIENTS

Philip S. Ash, Colchester, and Robert C. Hider, St. Osyth, both of England, assignors to National Research Development Corporation, London, England

Filed Jul. 3, 1979, Ser. No. 54,649
Claims priority, application United Kingdom, Jul. 3, 1978, 28612/78
Int. Cl.³ A01N *25/28;* A61J *3/07;* A61K *9/58;* B32B *9/02*
U.S. Cl. 424—14 **20 Claims**

1. Liposomes incorporating a polymer having aliphatic lipophilic groups with a chain of at least six atoms attached to the backbone thereof and having a molecular weight of from 2,000 to 50,000 wherein the proportion of polymer to the lipid content of the liposomes is in a range from 1 part by weight of the polymer to from 10 to 1,000 parts by weight of the lipid.
15. A composition comprising liposomes according to claim 1 incorporating a physiologically active substance.

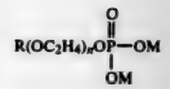
4,448,766

DENTIFRICE COMPOSITION

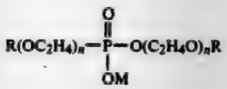
Anthony J. Morton, Ashton-under-Lyne, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 373,208, Apr. 29, 1982. This application Oct. 27, 1983, Ser. No. 545,987
Int. Cl.³ A61K *7/16, 7/18*
U.S. Cl. 424—52 **7 Claims**

1. A toothpaste dentifrice composition consisting essentially of a non-toxic amount of a water-soluble monofluorophosphate, about 40–60% by weight of a polishing material consisting essentially of a calcium salt member selected from the group consisting of dicalcium phosphate as the single calcium salt polishing material and calcium salt polishing material of at least half by weight of dicalcium phosphate with a member selected from the group consisting of calcium carbonate, calcium pyrophosphate, tricalcium phosphate and calcium polymetaphosphate and about 0.5–5% by weight of a water-soluble surface active material consisting essentially of a non-cationic surface active agent, the said non-cationic surface active agent containing an anionic phosphate ester mixture in an amount of at least about 0.1% by weight of the said dentifrice, the said anionic phosphate ester mixture being a mixture of an anionic phosphate monoester of the formula:



and anionic phosphate diester of the formula:



wherein R represents an alkyl group of 10–20 carbon atoms, n is an integer from 1 to 6 and M represents a member selected from the group consisting of a hydrogen atom of an alkali metal cation or an ammonium group, wherein said anionic phosphate mixture improves the retention of soluble fluorine in said dentifrice.

4,448,767

PREPARATION OF MONOSPECIFIC MALE-SPECIFIC ANTIBODY AND THE USE THEREOF FOR INCREASING THE PERCENTAGE OF MAMMALIAN OFFSPRING OF EITHER SEX

Bernard J. Bryant, Davis, Calif., assignor to Sumar Corporation, Foster City, Calif.

Continuation-in-part of Ser. No. 841,207, Oct. 11, 1977, Pat. No. 4,191,749. This application Feb. 15, 1980, Ser. No. 117,341

Int. Cl.³ A61K *39/00, 35/48*

U.S. Cl. 424—85 7 Claims

1. A process for separating male and female determining sperm from native semen which comprises:

(a) treating the native semen with excess mono-specific male-specific antibody free from male-specificity interfering antibodies and coupling reaction interfering proteins to form comjugates between the male determining sperm and the antibodies,

(b) coupling anti-immunoglobulin antibody capable of specifically binding said male-specific antibody to a solid phase immunoabsorbent substrate, said substrate having a form capable of being loaded into a separation column,

(c) loading a separation column with the conjugate of the solid phase immunoabsorbent and anti-immunoglobulin antibody,

(d) passing the treated semen containing male and female determining sperm through the column, whereby the male determining sperm and male-specific antibody conjugates are bound to the solid phase immunoabsorbent, while the female determining sperm passes out of the column, and

(e) separating out the male determining sperm from the column.

4,448,768

PROTECTION AGAINST DENTAL CARIES

Geoffrey Colman, Sevenoaks, and Roy R. B. Russell, Bromley, both of England, assignors to The Secretary of State for Social Services in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 68,443, Aug. 21, 1979, abandoned. This application Sep. 18, 1981, Ser. No. 303,539

Claims priority, application United Kingdom, Sep. 1, 1978, 35383/78

Int. Cl.³ A61K *39/09;* C12P *21/00*

U.S. Cl. 424—92 4 Claims

1. A process for preparing an antigen preparation from bacteria of the species *Streptococcus mutans* comprising growing bacteria of the species *S mutans* in a culture medium to produce a cell culture, removing at least the cell walls from said cell culture to leave a protein solution, and separating the antigen preparation from the protein solution by a method of separation which comprises contacting the protein solution with an immobilized antibody, washing unwanted materials from the immobilized antibody and eluting the antigen preparation from the immobilized antibody, wherein the immobilized antibody has a specificity for one or more antigenic proteins which are selected from the group consisting of:

(A) proteins which are present on the cell walls of *Streptococcus mutans* genetic group I, are not extractable from said walls by boiling with 10 g/liter sodium dodecyl sulphate for 20 minutes, have a molecular weight of about 29,000, have an isoelectric point of about 4.1 to 4.5, on treatment with a proteolytic enzyme form no precipitin lines when tested by immunodiffusion against antiserum to sodium dodecyl sulphate extracted cells of *Streptococcus mutans* and do not cross-react with heart tissue; and

(B) proteins which react serologically with antibodies to proteins of group member A.

4,448,769

ESTER OF 1,1-DIOXOPENICILLANIC ACID, AND USE THEREOF AS β-LACTAMASE INHIBITOR

Shoji Ikeda, Ibaraki; Fumio Sakamoto, Osaka; Goro Tsukamoto, Toyonaka, and Shigeru Yamabe, Kobe, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

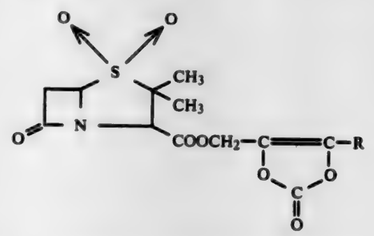
Filed Jul. 8, 1982, Ser. No. 396,471

Claims priority, application Japan, Jul. 15, 1981, 56-109275; Oct. 23, 1981, 56-168605

Int. Cl.³ C07D *499/00;* A61K *31/425*

U.S. Cl. 424—114 6 Claims

1. A 1,1-dioxopenicillanic acid ester represented by the following formula (I)



(I)

wherein R represents a methyl or phenyl group.

4,448,770

DIETETIC BEVERAGE

Elmer E. Epting, Jr., Newberry, S.C., assignor to Electroade, Inc., Newberry, S.C.

Filed Mar. 17, 1982, Ser. No. 358,845

Int. Cl.³ A61K *31/70, 33/06, 33/14*

U.S. Cl. 424—153 5 Claims

1. A beverage, essentially free of sodium ions, for consumption by humans to maintain the balance of body fluids during periods of fluid depletion or potassium depletion, comprising an aqueous solution, contain per gallon:

30–50 meq of potassium chloride

5–10 meq of calcium gluconate or glubionate calcium

1–3 meq of magnesium chloride

5–10 ounces of sucrose, and

provided further that the beverage composition contains no sodium ion except that present in minor amounts in flavoring agents, preservatives, or other minor additives.

4,448,771

FRUCTOSE-1,6-DIPHOSPHATE PREPARATION HAVING PROTECTIVE ACTION OF ERYTHROCYTE MEMBRANE IN PATIENTS UNDERGOING EXTRACORPOREAL CIRCULATION

Luciano Cattani, Bologna, and Renato Costrini, Rome, both of Italy, assignors to Biomedica Foscama Industria Chimico-Farmaceutica S.p.A., Rome, Italy

Filed Mar. 9, 1981, Ser. No. 242,128

Claims priority, application Italy, Mar. 12, 1980, 48137 A/80

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 1 Claim

1. A method of treatment for patients undergoing extracorporeal circulation, comprising intravenously administered to said patents the pharmaceutical preparation comprising a 10% solution of fructose-1,6-diphosphate sodium salt in apyrogenic bidistilled water in effective doses not less than 2.5 ml/kg of body weight.

4,448,772

PHOSPHINYLMETHYLAMINOCARBONYL IMINO ACID COMPOUNDS USEFUL FOR TREATING HYPERTENSION

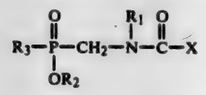
Donald S. Karanewsky, Princeton Junction, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 22, 1982, Ser. No. 371,033

Int. Cl.³ A61K *31/675;* C07F *9/65*

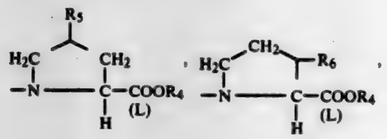
U.S. Cl. 424—200 15 Claims

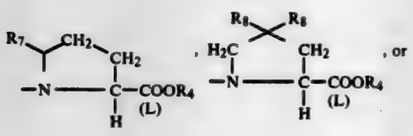
1. A compound of the formula

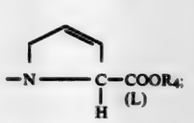


and a pharmaceutically acceptable salt thereof wherein:

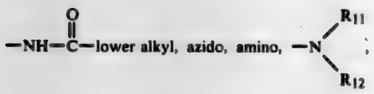
X is an imino acid of the formula

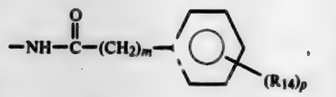


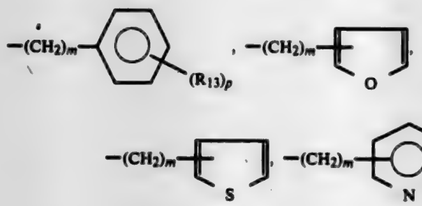




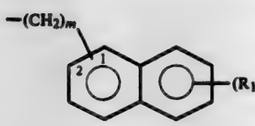
R_5 is hydrogen, lower alkyl, halogen, keto, hydroxy,



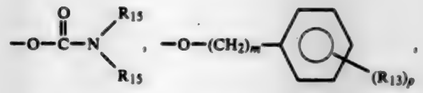




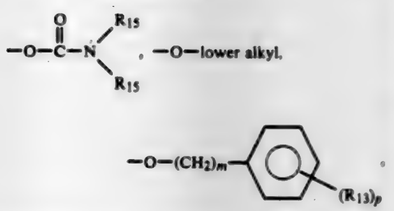
a 1- or 2-naphthyl of the formula



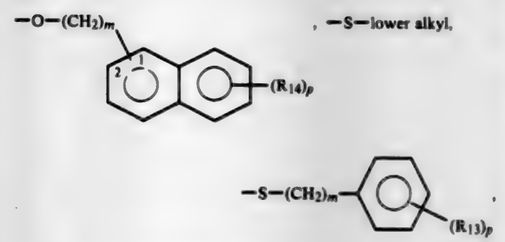
R_6 is keto, halogen,



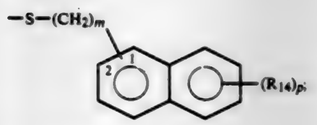
-continued



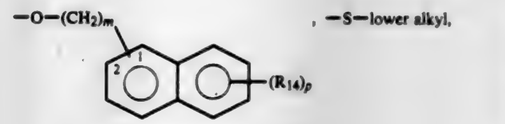
a 1- or 2-naphthyloxy of the formula

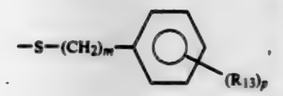


or a 1- or 2-naphthylthio of

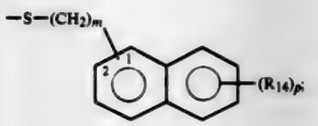


—O—lower alkyl, a 1- or

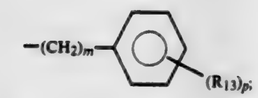




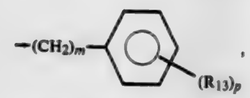
or a 1- or



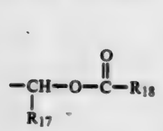
R_7 is keto or



R_8 is halogen or —Y—R_{16};
R_{11} is lower alkyl, benzyl, or phenethyl;
R_{12} is hydrogen, lower alkyl, benzyl or phenethyl;
R_{13} is hydrogen, lower alkyl or 1 to 4 carbons, lower alkoxy or 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or benzyl;
R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;
m is zero, one, two, three or four;
p is one, two or three provided that p is more than one only if R_{13} or R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;
R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;
Y is oxygen or sulfur;
R_{16} is lower alkyl of 1 to 4 carbons,



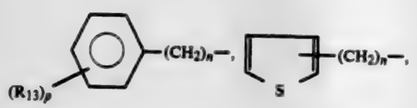
or the R_{16} groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl, amino substituted lower alkyl, benzyl, or phenethyl;
R_2 and R_4 are independently selected from the group consisting of hydrogen, lower alkyl, benzyl, benzhydryl, and



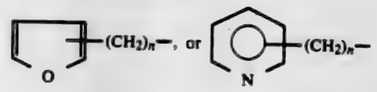
wherein R_{17} is hydrogen, alkyl, cycloalkyl, or phenyl, and R_{18} is hydrogen, alkyl, cycloalkyl, lower alkoxy, phenyl, benzyl, phenethyl, or R_{17} and R_{18} taken together are —$(CH_2)_2$—, —$(CH_2)_3$—, —CH=CH—, or



and
R_3 is alkyl, halo substituted lower alkyl, amino substituted lower alkyl, cycloalkyl-$(CH_2)_n$-,

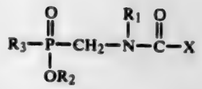


-continued



wherein R_{13}, m and p are as defined above and n is zero or an integer from 1 to 7.

14. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and a hypotensive agent or pharmaceutically acceptable salt thereof of the formula



wherein R_1, R_2, R_3 and X are as defined in claim 1.

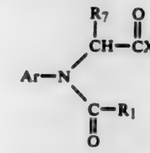
4,448,773

MICROBICIDAL N-ALKOXYCARBONYL-ALKYL-N-SUBSTITUTED ACETYL-ANILINES AND -NAPHTHYLAMINES

Peter Riebli, Basel; Hanspeter Fischer, Bottmingen; Rudolph C. Thummel, Courgenay, and Adolf Hübele, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

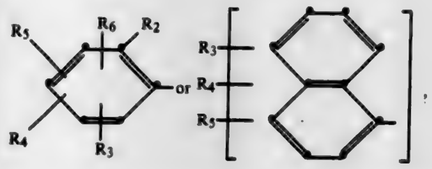
Filed Apr. 22, 1982, Ser. No. 370,759
Claims priority, application Switzerland, Apr. 29, 1981, 2783/81
Int. Cl.³ A01N *37/46*; C07C *103/365, 103/37, 103/38*
U.S. Cl. 424—211 **13 Claims**

1. A compound of the formula I



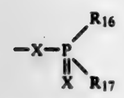
(I)

wherein
Ar is a group of the formula



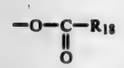
R_1 is 2-furyl, 2-tetrahydrofuryl, C_2-C_4-alkenyl, cyclopropyl, β-(C_1-C_4)-alkoxyethyl or —CH_2Z, each being unsubstituted or substituted by halogen, and Z being
(a) —OH,
(b) -1H-1,2,4-triazolyl, 1-imidazolyl or 1-pyrazolyl,
(c) —$S(O)_n$—R_{13}
where R_{13} is C_1-C_4-alkyl, and n is 1 or 2,
(d) —X—R_{14}
where X is oxygen or sulfur, and R_{14} is C_1-C_6-alkyl, C_3-C_4-alkenyl or C_3-C_4-alkynyl, each unsubstituted or substituted by C_1-C_2-alkoxy,
(e) —OSO_2—R_{15}
where R_{15} is C_1-C_4-alkyl, or mono- or di-(C_1-C_3)-alkylamine,

(f)

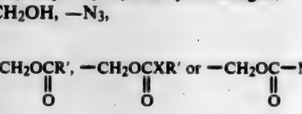


where X is oxygen or sulfur, R_{16} is C_1-C_4-alkyl, C_1-C_4-alkoxy or C_1-C_4-alkylamino, and R_{17} is C_1-C_4-alkoxy or C_1-C_4-alkylamino, or

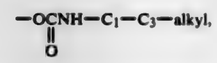
(g)



where R_{18} is C_1-C_3-alkyl which is unsubstituted or substituted by C_1-C_2-alkoxy,
R_2 is C_1-C_3-alkyl, C_1-C_3-alkoxy or halogen,
R_3 is —CH_2OH, —N_3,



where R' is C_1-C_6-alkyl or C_2-C_4-alkenyl, each unsubstituted or substituted by halogen or C_1-C_3-alkoxy, or it is unsubstituted or phenyl substituted by chlorine, and X is oxygen or sulfur,
R_4 is hydrogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, halogen, —NO_2 or —NH_2,
R_5 is hydrogen or C_1-C_3-alkyl,
R_6 is hydrogen or C_1-C_3-alkyl,
R_7 is hydrogen, or C_1-C_2-alkyl which is unsubstituted or substituted by halogen, —OH, —OC_1—C_3-alkyl or



R_8 is C_1-C_4-alkyl which is unsubstituted or substituted by C_1-C_2-alkoxy,
X is oxygen or sulfur.

8. A composition for combating and/or preventing an infestation by harmful microorganisms, which composition contains as active ingredient at least one active substance according to claim 1 and an inert carrier.

4,448,774

STEROID FORMULATION

Emmett Clemente, Manchester, Mass.; Ho-Leung Fung, Getzville, N.Y., and Denise Brousseau, Andover, Mass., assignors to Fisons Corporation, Bedford, Mass.

Filed Dec. 22, 1982, Ser. No. 452,294
Int. Cl.³ C07J *7/00*; A61K *31/56*
U.S. Cl. 424—243 **20 Claims**

1. An aqueous pharmaceutical solution suitable for oral administration comprising as an active ingredient a steroid selected from the group consisting of prednisolone, prednisolone sodium phosphate, prednisone and methyl prednisolone, the steroid being present at a concentration of at least 0.3 mg/ml, the pH of the formulation being between 5 and 8 and the formulation containing a pharmaceutically acceptable preservative, a pharmaceutically acceptable chelating agent, and being substantially free of ethanol.

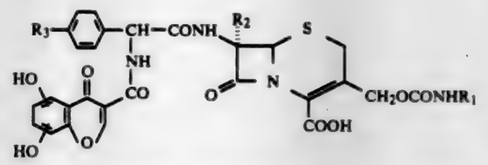
4,448,775

3-CARBAMOYLOXYMETHYLCEPHEM DERIVATIVES, AND ANTIBACTERIAL DRUGS CONTAINING SAME

Shigeto Negi, Tokyo; Yoshimasa Machida; Hiroshi Yamauchi, both of Ibaraki; Isao Saito, Tokyo; Yoshikazu Hasegawa, and Tamio Kawamura, both of Gifu, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

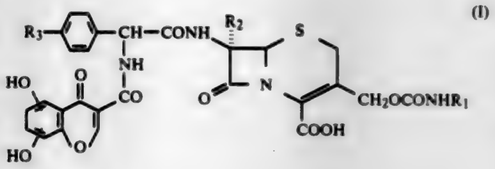
Filed Sep. 23, 1982, Ser. No. 422,440
Claims priority, application Japan, Sep. 29, 1981, 56-153009
Int. Cl.³ A61K *31/545*; C07D *501/34, 501/57*
U.S. Cl. 424—246 **5 Claims**

1. A compound of the formula:



wherein R_1 represents trichloroacetyl, R_2 represents hydrogen or methoxy, and R_3 represents hydrogen atom or hydroxyl, or a pharmaceutically acceptable salt thereof.

5. An antibacterial composition comprising
(a) an antibacterially effective amount of a compound of the formula



(I)

wherein R_1 represents trichloroacetyl, R_2 represents hydrogen or methyl, and R_3 represents hydrogen or hydroxyl, or a pharmaceutically acceptable salt thereof; and
(b) a pharmaceutically acceptable carrier therefor.

4,448,776

METHOD OF USING CERTAIN SUBSTITUTED ALIPHATIC SECONDARY AMINES OR THEIR SALTS FOR EASING BREATHING

Karl Bucher, Wielandplatz 2, 5054 Basel; Max Matter, Lindenweg 3, 4052 Basel; Bernhard Brunner, Seegarten, 3626 Hünibach, and Alfred Frey, Obere Hauptgasse 8, 3600 Thun, all of Switzerland

Filed Jan. 20, 1982, Ser. No. 341,035
Claims priority, application Switzerland, Feb. 12, 1981, 939/81; May 10, 1981, 6376/81
Int. Cl.³ A61K *31/24, 31/135, 31/495*
U.S. Cl. 424—250 **21 Claims**

1. A method of easing the breathing activity of a warm-blooded organism suffering from respiratory disorders or being exposed to unfavourable respiratory conditions, comprising administering to the organism a breathing effectively easing amount of a compound of the formula

R_1—$CH(R_2)$—$N(R_3)$—R_4 (IC)

in which
R_3 is hydrogen, methyl or benzyl, and
R_4 is: the group —alk_1—X—alk_2—R_5, or
R_3 and R_4 together are the group —alk_3—NH—alk_4 wherein:
alk_1 and alk_2 are the same or different and are each lower alkylidene,
alk_3 and alk_4 are the same or different and are each ethylene

X is a direct bond, methylene or phenylene,
R_5 is: hydroxy, amino, or the group

$$-N(R_6)-CH(R_7)-R_8;$$

each of R_1 and R_8 being the same or a different one of the groups: phenyl or phenyl substituted by one of the substituents: methyl and halogen having an atomic number of at most 35, any such halogen substituent being in positions meta- or para- of the phenyl nucleus,
R_6 is hydrogen or lower alkyl, but at least one of R_3 and R_6 must be hydrogen;
R_2 and R_7 are the same or different and are each one of the following: hydrogen, lower alkyl; phenyl, phenyl substituted as defined for R_1, lower alkoxy-carbonyl of from 2 to 5 carbon atoms; and
groups defined as "lower alkyl" hereinbefore having at most 7 carbon atoms;
or of a pharmaceutically acceptable salt of the compound of Formula IC.

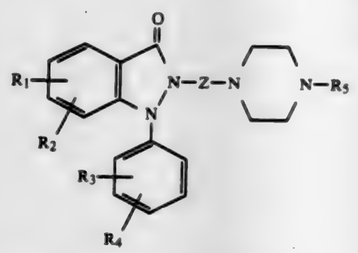
4,448,777

1-PHENYLINDAZOLE-3-ONE COMPOUNDS, PROCESS AND INTERMEDIATES FOR THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Henning Heinemann, Hanover, Fed. Rep. of Germany; Daniel Jasserand, Paris, France; Wolfgang Milkowski, Burgdorf, Fed. Rep. of Germany; Dimitri Yavordios, Chatillon sur Chalaronne, France, and Horst Zeugner, Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

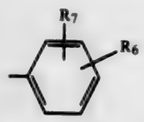
Filed Aug. 19, 1982, Ser. No. 409,632
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132916
Int. Cl.³ C07D *403/06, 487/00, 231/56;* A61K *31/495*
U.S. Cl. 424—250 **9 Claims**

1. A 1-phenylindazol-3-one compound of the formula I



I

where R_1 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy or trifluoromethyl, R_2 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy, R_3 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy or trifluoromethyl, R_4 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy, Z is an alkylene with 2 to 6 carbon atoms and R_5 is an unsubstituted pyridyl or a pyridyl which is monosubstituted by a halogen atom or a lower alkyl or lower alkoxy, a thienyl or an unsubstituted or substituted phenyl a



a

where R_6 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, hydroxyl, trifluoromethyl or lower alkanoyloxy radical and R_7 is a hydrogen or halogen atom or a lower alkyl or lower alkoxy, or R_6 and R_7 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy; and acid addition salts thereof.

4,448,778

MALTITOL CONTAINING GEL BASE SYSTEMS

Matthew J. Lynch, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 289,465, Aug. 3, 1981, Pat. No. 4,381,318, which is a continuation-in-part of Ser. No. 222,300, Jan. 5, 1981, Pat. No. 4,357,314. This application Jul. 7, 1982, Ser. No. 395,923
Int. Cl.³ A61K *31/485, 47/00*
U.S. Cl. 424—260 **4 Claims**

1. A non-crystallizing edible gel useful in formulating cosmetics, pharmaceuticals, confections and food specialties consisting essentially of an aqueous maltitol containing syrup resulting from the hydrogenation of maltose rich syrups which comprise 36-49% by weight maltitol, 11-14% by weight sorbitol, minor amounts of higher saccarides and reducing sugars when said ingredients are calculated on a dry basis said syrup having a total solids content of 75-85% by weight when calculated on a wet basis and 5-10% by weight of a gelling agent.

4. A composition of claim 1 useful as a gelled cough remedy which further comprises minor amounts of cough supressants, expectorants and antihistamines.

4,448,779

USE OF MS SALT IN GERIATRIC MEDICINE

Jean F. Blanchard, and Pierre P. Lasserre, both of Toulouse, France, assignors to Sanofi, Paris, France

Filed Jul. 16, 1981, Ser. No. 283,829
Int. Cl.³ A61K *31/44*
U.S. Cl. 424—263 **16 Claims**

1. A geriatric method which comprises administering orally to an aged person a composition which comprises a biologically acceptable carrier and as the active ingredient, 5-o-cyanobenzyl-4,5,6,7-tetrahydrothieno [3,2-c] pyridine methanesulfonate, in an effective amount, and alleviating symptoms of organic brain syndrome of that person.

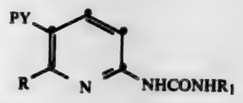
4,448,780

N-(LOWER-ALKYL)-N'-[5-(PYRIDINYL)-2-PYRIDINYL-]UREAS AND CARDIOTONIC USE THEREOF

George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,602
Int. Cl.³ C07D *213/22;* A61K *31/44*
U.S. Cl. 424—263 **12 Claims**

1. N-R_1-N'-(6-R-5-PY-2-pyridinyl)urea having the formula



or an acid-adddition salt thereof, where R_1 is lower-alkyl, R is hydrogen or lower-alkyl, and PY is 4-pyridinyl or 3-pyridinyl, or 4-pyridinyl or 3-pyridinyl having one or two lower-alkyl substituents.

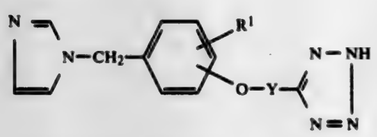
4,448,781

N-BENZYL-IMIDAZOLES AS SELECTIVE INHIBITORS OF THE THROMBOXANE SYNTHETASE ENZYME

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

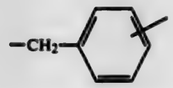
Division of Ser. No. 110,711, Jan. 9, 1980. This application Jul. 27, 1981, Ser. No. 286,808
Claims priority, application United Kingdom, Jan. 19, 1979, 7902114
Int. Cl.³ C07D *257/04;* A61K *31/41*
U.S. Cl. 424—269 **6 Claims**

1. A compound of the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein:
R^1 is hydrogen, C_1-C_4 lower alkyl, C_1-C_4 lower alkoxy or halogen; and
Y is $(CH_2)_n$ where n is an integer of from 1 to 4, or a group of the formula



6. A method of selectively inhibiting the action of the thromboxane synthetase enzyme in an animal which comprises administering to the animal a thromboxane synthetase inhibiting amount of a compound of claim 1 or of a pharmaceutical composition of claim 5.

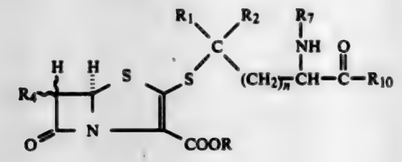
4,448,782

2-(AMINO ACID-THIO)-2-PENEM-3-CARBOXYLIC ACIDS AND CONGENERS

Adriano Afonso, West Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 125,811, Feb. 28, 1980, abandoned. This application Oct. 30, 1981, Ser. No. 316,702
Claims priority, application European Pat. Off., Feb. 20, 1981, 81101210.3
Int. Cl.³ C07D *499/04;* A61K *31/425*
U.S. Cl. 424—270 **13 Claims**

1. A compound of the formula



wherein
n is 0 to 4;
R is hydrogen; an alkali metal cation; a quaternary ammonium cation or a metabolisable ester group;
R_1 and R_2 are independently hydrogen or lower alkyl;
R_4 is hydrogen, lower alkyl or a group of the formula



wherein:
R_5 is hydrogen; lower alkyl; phenyl; phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; lower alkyl substituted by phenyl or by phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; pyridyl; furanyl; thienyl; alkyl-substituted pyridyl, furanyl or thienyl; lower alkyl substituted by pyridyl, furanyl or thienyl; or lower alkyl substituted by lower alkyl-substituted pyridyl, furanyl or thienyl;
R_{10} is amino, loweralkylamino, an α-amino acid residue bonded through the α-nitrogen atom or OR_6;
R_6 is hydrogen; lower alkyl; phenyl; phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; lower alkyl substituted by phenyl or by phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy groups; an alkali metal cation; a quaternary ammonium cation; or a metabolisable ester group;
R_7 is hydrogen; lower alkyl; phenyl; phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl, or lower alkoxy; lower alkyl substituted by phenyl or by phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; phenylsulfonyl; phenylsulfonyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; methyl acetoacetyl; dihydroresorcinyl; dimedonyl; acetyl acetyl; a group



wherein R' is phenyl or phenyl substituted by 1 to 3 lower alkyl, lower alkoxy or halogen groups, and R'' is hydrogen, lower alkyl or lower alkyl substituted by one or two phenyl or substituted phenyl groups, wherein the substituents on the phenyl are 1 to 3 halogen, lower alkyl or lower alkoxy groups; an amidine or guanidine group; or an acyl group of the formula



wherein:
R_8 is lower alkyl; lower alkoxy; phenoxy or substituted phenoxy; lower alkyl substituted by phenyl or by substituted phenyl; pyridyl; furanyl; thienyl; substituted pyridyl, furanyl or thienyl; lower alkyl substituted by pyridyl, furanyl or thienyl; lower alkyl substituted by substituted pyridyl, furanyl or thienyl; alkenyl or alkynyl of 2 to 6 carbon atoms; cycloalkyl of 4 to 6 carbon atoms; wherein the substituents are selected from 1 to 3 hydroxy, thio, alkylthio, lower alkyl, lower alkoxy, halogen, cyano, carboxy, nitro, amino, amino lower alkyl or halo-lower alkyl groups.

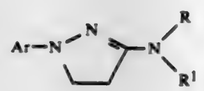
4,448,783

SUBSTITUTED PYRAZOLINE, AND ITS USE IN TREATMENT OF GASTRO-INTESTINAL DISTURBANCES

Marvin I. Siegel, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed May 17, 1982, Ser. No. 378,514
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 P **20 Claims**

1. A method of treatment or prophylaxis of secretory diarrhea in a mammal, including man, comprising the administration to said mammal of a non-toxic effective anti-secretory diarrheal amount of a compound of formula (I)



wherein
Ar is 3-trifluoromethylphenyl,
R is hydrogen and
R^1 is selected from hydrogen and lower alkyl having 1 to 6 carbon atoms, or a pharmaceutically acceptable salt thereof.

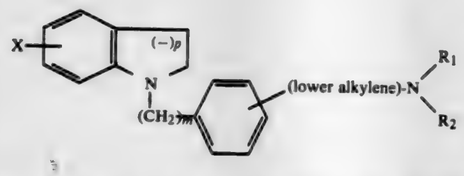
4,448,784

1-(AMINOALKYLPHENYL AND AMINOALKYLBENZYL)-INDOLES AND INDOLINES AND ANALGESIC METHOD OF USE THEREOF

Edward J. Glamkowski, Warren, N.J., and James M. Fortunato, North Wales, Pa., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Filed Apr. 12, 1982, Ser. No. 367,707
Int. Cl.³ A61K *31/405*; C07D *209/08*
U.S. Cl. 424—274 **31 Claims**

1. A compound having the formula



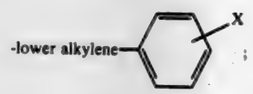
where R_1 and R_2 are the same or different and are hydrogen, lower alkyl, cycloalkyl and acyl of the formula



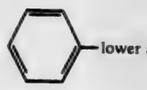
where R_3 is lower alkyl, lower alkoxy, cycloalkyl, phenyl of the formula



and Ar lower alkyl of the formula

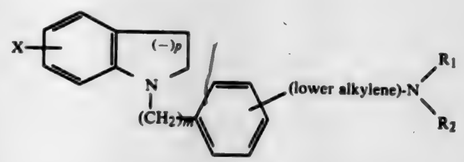


X is hydrogen, halogen, lower alkoxy, Ar lower alkoxy of the formula



m and p are independently an integer of 0 or 1 and the pharmaceutically acceptable acid addition salts thereof.

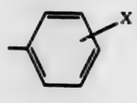
31. A method of alleviating pain in a mammal which comprises administering to a mammal a pain alleviating amount of a compound of the formula (I)



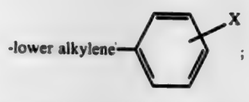
where R_1 and R_2 are the same or different and are hydrogen, lower alkyl, cycloalkyl and acyl of the formula



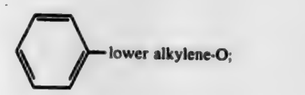
where R_3 is lower alkyl, lower alkoxy, cycloalkyl, phenyl of the formula



and Ar lower alkyl of the formula



X is hydrogen, halogen, lower alkoxy and Ar lower alkoxy of the formula



m and p are independently an integer of 0 or 1 and the pharmaceutically acceptable acid addition salts thereof.

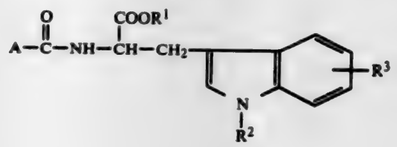
4,448,785

N-UNSATURATED FATTY ACID AMIDES OF TRYPTOPHAN ESTER HOMOLOGUES AND ANTI-CHOLESTERIC USE THEREOF

Faizulla G. Kathawala, Mountain Lakes, N.J., and John G. Heider, West Nyack, N.Y., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 5,355, Jan. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 867,813, Jan. 9, 1978, abandoned. This application Jun. 24, 1982, Ser. No. 391,548
Int. Cl.³ C07D *209/20*; A61K *31/405*
U.S. Cl. 424—274 **30 Claims**

1. A compound of the formula



wherein
R^1 is alkyl having from 1 to 8 carbon atoms or benzyl
R^2 is a hydrogen atom, alkyl having from 1 to 3 carbon atoms or benzyl;
R^3 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms, or alkoxy having from 1 to 3 carbon atoms;
A is the residue of an unsaturated long-chain fatty acid minus the carboxylic portion, said acid having from 8 to 24 carbon atoms and having from 1 to 4 ethylenically unsaturated positions.

14. A method of controlling the cholesterol ester content of an arterial wall, in a mammal in need of such treatment, comprising orally administering a cholesterol ester-controlling amount of a compound of claim 1 to said mammal.

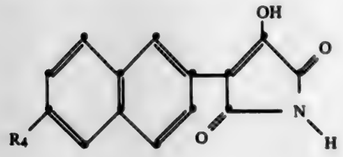
4,448,786

4-NAPHTHYL AND SUBSTITUTED NAPHTHYL-3-HYDROXY-3-PYRROLINE-2,5-DIONES AND THEIR USE AS INHIBITORS OF GLYCOLIC ACID OXIDASE

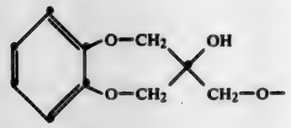
Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 91,293, Nov. 5, 1979, Pat. No. 4,349,561. This application Jun. 25, 1982, Ser. No. 392,191
Int. Cl.³ C07D *207/416, 405/10*; A61K *31/40*
U.S. Cl. 424—274 **3 Claims**

1. The compounds having the structural formula:

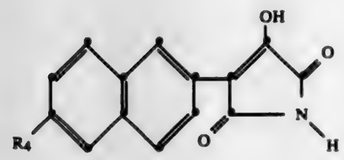


wherein
R_4 is hydrogen, halogen, loweralkyl having 1 to 6 carbon atoms or

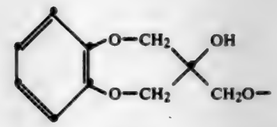


or a pharmaceutically acceptable salt thereof.

3. A method of treating or preventing the formation of calcium oxalate kidney or bladder stones which comprises administering to a patient with or prone to renal lithiasis an effective amount of a compound having the structural formula:



wherein
R_4 is hydrogen, halogen, loweralkyl having 1 to 6 carbon atoms or



or a pharmaceutically acceptable salt thereof.

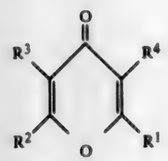
4,448,787

6-SUBSTITUTED PYRANONE COMPOUNDS AND THEIR USE AS PHARMACEUTICALS

Barry P. Clark, Fleet; William J. Ross, Lightwater, and Alec Todd, Wokingham, all of England, assignors to Lilly Industries Limited, London, England

Division of Ser. No. 134,135, Mar. 27, 1981, Pat. No. 4,304,728. This application Sep. 17, 1981, Ser. No. 303,297
Claims priority, application United Kingdom, Apr. 5, 1979, 7912062
Int. Cl.³ A61K *31/35*
U.S. Cl. 424—283 **6 Claims**

3. A method of treating an animal, including a human, susceptible to or suffering from an immediate hypersensitivity condition of the type represented by asthma, which comprises administering an effective amount of a compound of the formula



in which R^1 is $COOR^5$, $CONHR^5$, cyano, 5-tetrazolyl or R^6, where R^5 is hydrogen or C_{1-8} alkyl and R^6 is phenyl or naphthyl, the phenyl or naphthyl group being optionally substituted by one or more groups selected from halogen, C_{1-6} alkyl, C_{1-4} alkoxy, hydroxy, benzyloxy, nitro, trifluoromethyl, carboxyl, C_{1-4} alkylsulphinyl, C_{1-4} alkylsulphonyl, $N(R^5)_2$, $NHCOR^5$ and SR^5; R^2 is R^6 or $-CH=CH-R^6$ when R^1 is $COOR^5$, $CONHR^5$, cyano or 5-tetrazolyl, or R^2 is $-CH=CH-R^6$ when R^1 is R^6; R^3 is hydrogen, C_{1-6} alkyl, halogen, hydroxy or $-OCH_2R^6$; and R^4 is hydrogen, C_{1-6} alkyl or halogen; or a pharmaceutically-acceptable salt therefor.

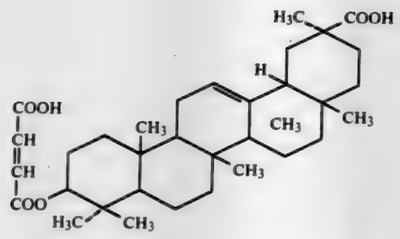
4,448,788

11-DEOXOGLYCYRRHETINIC ACID HYDROGEN MALEATE, PROCESS FOR ITS PRODUCTION, AND ITS USE AS A MEDICINE

Shigeshi Toyoshima, Tokyo; Hajime Fujimura, Kyoto; Shunsuke Ito, and Yasuji Kondo, both of Hiroshima, all of Japan, assignors to Maruzen Pharmaceutical Co., Ltd., Hiroshima, Japan

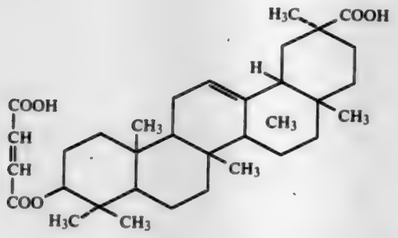
Filed Jul. 1, 1982, Ser. No. 394,114
Claims priority, application Japan, Jul. 6, 1981, 56-104406
Int. Cl.³ A61K *31/225*; C07C *69/60*
U.S. Cl. 424—313 **14 Claims**

1. A compound of the following formula



and its salts.

3. A pharmaceutical preparation suitable for the treatment of ulcers or as an anti-inflammatory agent or as a cellular immunity activator, comprising as an active ingredient a pharmaceutically effective amount of a compound of the following formula



or its pharmaceutically acceptable salt, and a pharmaceutically compatible inert diluent or carrier.

4,448,789

ENHANCED FLAVOR-RELEASING AGENT

Robert K. Yang, Morris Plains, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 27, 1982, Ser. No. 412,323
Int. Cl.³ A23G *3/30*; A23L *1/222, 1/226*
U.S. Cl. 426—5 **20 Claims**

1. A flavoring composition, which comprises: a flavoring agent and a hydrophilic polymer, said hydrophilic polymer being characterized by
(a) being water-soluble,
(b) being soluble in organic solvent,
(c) having a viscosity below 100 cps, 10% by weight, at 25° C. in water, and
(d) being compatible with the flavoring agent.

4,448,790

PROCESS FOR FRACTIONING GRAIN FLOUR INTO COMPONENTS OF FOOD QUALITY

Marja-Leena Sarkki, Naantali; Martti Söderström, Turku; Hannu Maunula, Turku, and Annika Korhonen, Turku, all of Finland, assignors to Oy Vehnä AB, Raisio, Finland

Filed Jan. 19, 1982, Ser. No. 340,646
Claims priority, application Finland, Jan. 28, 1981, 810246
Int. Cl.³ A23J *1/12*; A23L *1/195, 1/09*
U.S. Cl. 426—52 **10 Claims**

1. A process for fractioning grain flour into at least three fractions of food quality including starch, protein and sugar fractions comprising:
(a) slurrying the grain flour into water;
(b) separating the resulting slurry into a heavier fraction containing ordinary grain starch having a particle size of about 15 to 35 mm and a lighter fraction containing about 15 to 40% of the dry substance of the flour containing protein covered small particle starch having a particle size of about 2 to 10 mm and a protein content of about 1.5 to 1.7% of the dry substance of the starch particle,
(c) heating said lighter fraction from step (b) to a temperature of at least 120° C. for a period of time sufficient for the protein network on the surface of the particles of the small particle starch to split and the starch to be gelatinized,
(d) cooling said lighter fraction from step (c) to a temperature of 90° C. or lower and treating said lighter fraction simultaneously with alpha-amylase and beta-glucanase;
(e) separating the resulting protein precipitate from the lighter fraction from step (d) as a precipitate constituting about 20 to 35% of the dry substance of the lighter fraction and containing about 40 to 60% protein based on the dry substance of the precipitate to obtain a clear fraction remaining after separating the precipitate; and
(f) saccharifying the clear fraction from step (e) with amyloglucosidase or fungal amylase at a temperature of 55° C. or lower until the dextrose equivalent is at least 20 to 80.

4,448,791

BROWNABLE DOUGH FOR MICROWAVE COOKING

Roland C. Fulde, Cherry Hill, and Stanley H. Kwis, Pennsauken, both of N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Nov. 19, 1981, Ser. No. 323,086
Int. Cl.³ A21D *13/00*
U.S. Cl. 426—94 **12 Claims**

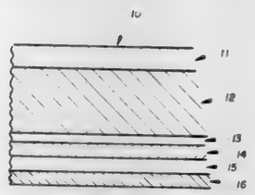
1. A composite dough material for incorporation into a food product as a crust, said composite dough material comprising an unreactive substrate dough layer which does not brown upon exposure to microwave energy and said substrate dough layer having coated thereon a thin, uniform layer of a reactive dough composition which undergoes chemical surface browning reactions upon exposure to microwave energy, said reactive dough composition comprising a dough-base having added thereto a reducing sugar and an amino acid source the ratio of reducing sugar to amino acid source being sufficient to promote said chemical surface browning reaction when the composite is exposed to microwave energy for a desired period of time.

4,448,792

PASTEURIZABLE AND COOK-IN SHRINK BAG CONSTRUCTED OF A MULTILAYER FILM

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Jul. 26, 1982, Ser. No. 401,679
Int. Cl.³ B65B *25/22*; B65D *81/34*; B32B *7/02*
U.S. Cl. 426—113 **10 Claims**



1. A pasteurizable, cook-in shrink bag constructed of a multilayer film comprising:
(a) a first or sealing and food contact layer comprising propylene homopolymer or copolymer;
(b) a second or heat shrinkable layer comprising a blend of said propylene polymer with about 30–70% by weight of butylene homopolymer or compolymer;
(c) a third or adhesive layer being irradiatively crosslinkable and comprising a copolymer of ethylene;
(d) a fourth or barrier layer comprising vinylidene chloride copolymer;
(e) a fifth or adhesive layer as in said third layer; and
(f) a sixth or optical clarity layer as in said first layer;
(g) further provided that said film is oriented and irradiated to at least a dosage sufficient to render said film delamination resistant during pasteurizing or cooking of a food product contained in said bag.

4,448,793

PROCESS FOR PRODUCING ELONGATED ROD-SHAPED COMMINUTED MEAT PRODUCT

Yngve R. Akesson, Helsingborg, Sweden, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Apr. 23, 1982, Ser. No. 371,307
Claims priority, application Sweden, Sep. 23, 1981, 8105623
Int. Cl.³ A23L *3/18*; A22C *11/00*; A23P *1/00*
U.S. Cl. 426—241 **12 Claims**



1. A process for the continuous production of an elongated rod-shaped comminuted meat product which comprises:
(a) feeding a flowable protein-containing food mixture into a hollow mold which is formed by the cooperation of the adjacent runs of a pair of endless flexible belts and which mold has a sealing system formed by at least one longitudinal projection on one of the flexible belts which is engaged with at least one corresponding recess on the other of the flexible belts;
(b) passing the mold containing the food mixture through a microwave oven; and then
(c) releasing the meat product from the said mold.

4,448,794

COATING OF ARTIFICIALLY COLORED CHERRIES

Ulrich Wissgott, La Tour-de-Peilz, and Alexis Berberat, Corseaux, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jun. 9, 1982, Ser. No. 386,443
Int. Cl.³ A23B *7/16*; A23L *1/272*
U.S. Cl. 426—267 **6 Claims**

1. A process for coating artificially coloured real cherries to prevent the migration of the colour therefrom which comprises contacting said cherries with (i) an aqueous solution of an edible calcium salt, then (ii) with a warm aqueous solution consisting essentially of a low-methoxy pectin having a concentration of from 2.5 to 10% by weight based on the weight of water, and then finally (iii) again with an aqueous solution of an edible calcium salt.

4,448,795

PROCESS OF CONCENTRATING ACID WHEY

Frank A. A. Termote, Veghel, Netherlands, assignor to DMV-Campina B.V., Veghel, Netherlands

PCT No. PCT/NL81/00021, 371 Date Apr. 7, 1982, 102(e) Date Apr. 7, 1982, PCT Pub. No. WO82/00570, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 12, 1981, Ser. No. 369,017
Claims priority, application Netherlands, Aug. 14, 1980, 8004614
Int. Cl.³ A23C *1/04, 21/00*
U.S. Cl. 426—471 **9 Claims**

1. A method for the processing of acid whey which comprises continuously evaporating acid whey, under conditions substantially avoiding denaturation of whey proteins, in a series of at least two separate evaporation phases to obtain a concentrated liquid whey; subjecting the partially concentrated liquid whey obtained in each preceding evaporation phase to evaporation in a subsequent evaporation phase; storing the partially concentrated liquid whey, obtained from at least one of said preceding evaporation phases and having a dry solids content of at least 30% by weight, in a storage zone for at least 30 minutes at a temperature above 35° C.; further subjecting the partially concentrated liquid whey, after storage, to evaporation in a subsequent evaporation phase; recovering from the last evaporation phase a concentrated liquid whey product having a dry solids content above 45% by weight; and spray-drying said whey product.

4,448,796

COATING OF PLANT SEEDS

Franz Wieser, Linz, and Hans-Peter Hofinger, Wels, both of Austria, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Nov. 2, 1982, Ser. No. 438,607
Claims priority, application European Pat. Off., Nov. 30, 1981, 81110000
Int. Cl.³ A01C *1/06*
U.S. Cl. 427—4 **10 Claims**

1. A process for treating plant seeds with an active ingredient, which includes forming on the surface of the seeds a firmly adhering, moisture-permeable, essentially water-insoluble coating, by applying to the seeds a coating solution comprising 4.0 to 20% by weight of a binder and 45 to 95% by weight of a solvent for the binder, wherein: (i) the binder is a natural or synthetic resin or a natural or synthetic wax, and (ii) the respective weight ratios of solvent to binder and solvent to total solids in the solution are 3.5 to 20:1 and 0.4 to 6.0:1, and thereafter eliminating the solvent, characterised in that the coating solution also contains 5.0 to 25.0% by weight of a metal pigment.

4,448,797

MASKING TECHNIQUES IN CHEMICAL VAPOR DEPOSITION

Robert D. Burnham, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1981, Ser. No. 231,556
Int. Cl.³ H01L *21/203, 21/205*
U.S. Cl. 427—8 **39 Claims**



1. A method of producing at least one nonplanar shaped layer on the surface of a semiconductor structure positioned in the heated deposition zone of a reactor of a chemical vapor deposition system comprising the step of providing masking means during the pyrolyzation of vapor mixtures of elemental compounds deposited as said layer in said heated deposition zone, said masking means having at least one aperture therein for exposing said structure surface to said vapor mixtures, said layer characterized by predetermined lateral spatial variation

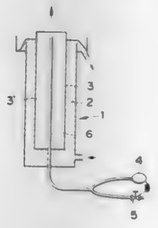
in thickness with tapered contour and with the thickness region of said variation central relative to said aperture, said variation controlled and, therefore, predetermined in part by the dimensional size and thickness of said aperture.

4,448,798

COATING METHOD

Masahide Kageyama, Tokyo, and Takeshi Fujita, Kuki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 486,076
Claims priority, application Japan, Apr. 23, 1982, 57-68507
Int. Cl.³ G03G *5/082*
U.S. Cl. 427—8 **3 Claims**



1. A method of coating the outside surface of a cylindrical member, with one end being closed and the other end being open, which comprises:
(1) dipping said member in a coating material, while holding the same substantially vertically and with the closed end being turned upward;
(2) detecting an increase in the internal pressure caused by the evaporation of solvent of said coating material in an internal hollow part of said member; and
(3) releasing a part of the gas from said internal hollow part to prevent generating bubbles therefrom into the coating material.

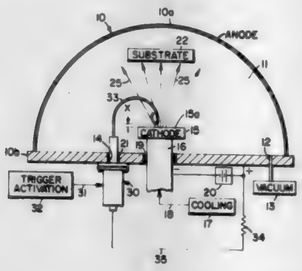
3. A method of coating outside surface of a cylindrical member according to claim 1, wherein said cylindrical member is an image bearing member for use in an electrophotographic device.

4,448,799

ARC-INITIATING TRIGGER APPARATUS AND METHOD FOR ELECTRIC ARC VAPOR DEPOSITION COATING SYSTEMS

Clark Bergman, Roseville; Gary E. Vergason, Minneapolis; Robert Clark, Vadnais Heights, and Shannon Bosak, Minneapolis, all of Minn., assignors to Multi-Arc Vacuum Systems Inc., Saint Paul, Minn.

Filed Apr. 21, 1983, Ser. No. 487,145
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—37 **34 Claims**



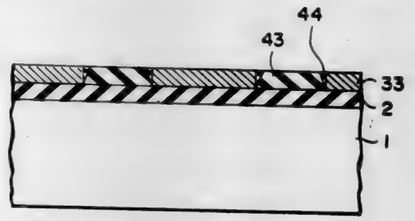
1. An arc-initiating apparatus of the type suitable for mounting to a port of a vapor deposition chamber, for moving an arc-initiating rod into and out of engagement with a cathode source surface during an electric arc vapor deposition process, comprising:
(a) a housing defining an internal cavity having oppositely disposed ends;
(b) means for mounting said housing to a port of a vapor deposition chamber;
(c) a plunger shaft axially extending between first and second ends and slidably mounted for axial movement within said housing internal cavity;
(d) seal means arranged and configured for maintaining a vacuum seal at said port, between said chamber and said housing;
(e) contact rod means operatively connected to said second end of said plunger for moving in response thereto, and having an engagement portion configured and arranged for selectively engaging a surface of a cathode source mounted in the vapor deposition chamber, said contact rod means being operable in response to axial movement of said plunger shaft to selectively engage and disengage the cathode source surface; and
(f) pneumatic cylinder means having a prime mover operatively connected with said first end of said plunger shaft for positively axially moving said plunger shaft between extended and retracted positions, whereby when said plunger shaft is positioned in said retracted position, said contact rod means operatively engages said cathode source surface, and when said plunger shaft is positioned in said extended position, said contact rod means is moved out of engagement with said cathode source surface.

4,448,800

METHOD FOR THE MANUFACTURE OF SEMICONDUCTOR DEVICE USING REFRACTORY METAL IN A LIFT-OFF STEP

Kohei Ehara, Kodaira; Susumu Muramoto, Hachioji; Takashi Morimoto, Tokorozawa; Seitaro Matsuo, Hachioji, and Manabu Itsumi, Hoya, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Jul. 30, 1982, Ser. No. 403,531
Claims priority, application Japan, Aug. 10, 1981, 56-124168; Aug. 14, 1981, 56-126643
Int. Cl.³ H01L *21/302*
U.S. Cl. 427—39 **7 Claims**



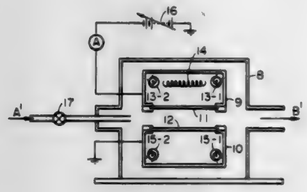
1. A method for the manufacture of a semiconductor device, comprising the steps of:
(a) forming on a semiconductor substrate a first insulating material layer, a polysilicon film, and a refractory metal layer in that order;
(b) selectively removing at least a portion of the refractory metal layer to form a predetermined pattern having a side wall and selectively removing at least a portion of the polysilicon film by using the pattern as a mask to expose an area of the first insulating material layer;
(c) forming a second insulating material layer by an ECR plasma deposition method, which is slightly thicker than the polysilicon film, on the refractory metal pattern and the exposed area of the first insulating material layer which is not covered with the refractory metal pattern;
(d) heat treating the semiconductor substrate including the second insulating material layer and etching away the second insulating material layer to a thickness substantially equal to that of the polysilicon film to thereby expose the side wall of the refractory metal pattern; and
(e) dissolving the refractory metal pattern to lift it off along with the second insulating material layer overlying the refractory material pattern, thereby to obtain a structure in which the polysilicon is embedded substantially level with the second insulating material layer formed on the area of the first insulating material layer which is not covered with the refractory metal pattern.

4,448,801

PROCESS FOR FORMING DEPOSITION FILM

Tadaji Fukuda, Kawasaki, and Yuji Nishigaki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 275,586, Jun. 18, 1981. This application Apr. 29, 1983, Ser. No. 487,718
Claims priority, application Japan, Jun. 23, 1980, 55-85019
Int. Cl.³ H01L *45/00*
U.S. Cl. 427—39 **3 Claims**



1. A process for forming a film of an amorphous material comprising at least one member selected from the group consisting of hydrogen atom and halogen atom and at least one member selected from the group consisting of silicon atom and germanium atom as a matrix, which comprises introducing a film formable material in a gaseous form containing at least a source of silicon or germanium as a matrix-formable atom into a vacuum deposition chamber, and decomposing the gaseous material by discharge of direct current or low frequency alternating current while supplying to the film during formation at least one member selected from hydrogen and halogen characterized in that the film, during formation, is irradiated with an electromagnetic wave having a wavelength from 350 nm. to 850 nm to activate the amorphous material and increase electroconductivity of the film.

4,448,802

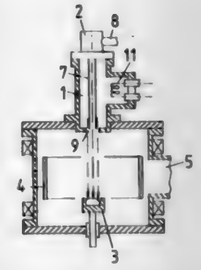
METHOD AND APPARATUS FOR EVAPORATING MATERIAL UNDER VACUUM USING BOTH AN ARC DISCHARGE AND ELECTRON BEAM

Rainer Buhl, Sargans, Switzerland; Eberhard Moll, Triesen, Liechtenstein, and Helmut Daxinger, Wangs, Switzerland, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Mar. 12, 1982, Ser. No. 357,719
Claims priority, application Switzerland, Mar. 13, 1981, 1719/81
Int. Cl.³ C23C *13/00, 13/12*
U.S. Cl. 427—42 **5 Claims**

1. A method of evaporating an evaporative substance under vacuum comprising: generating a low voltage arc in a cathode chamber for receiving an ionizable gas and containing a heatable cathode, the chamber having a small opening communicating with an evacuable evaporation chamber, the low voltage arc being generated along an axis passing through the small opening; generating a high voltage electron beam, by means of an electron gun producing electron energy in excess of 1 keV, which is directed along the axis through the small opening; the low voltage arc and the high voltage electron beam passing coaxially through the small opening into the evaporation chamber in a manner such that a low voltage arc is established in a path surrounding the high voltage electron beam; positioning a crucible forming an anode for the low voltage arc in the evaporation chamber and on the axis for receiving the low voltage arc and the high voltage electron beam to evaporate a substance in the crucible; and placing a substrate in the evaporation chamber for receiving the evaporated substance from the crucible.

2. A device for evaporating an evaporative substance under vacuum, comprising: an evacuable evaporation chamber; a receptacle provided in said evaporation chamber for a substance to be evaporated; low voltage arc means for establishing a low voltage arc between a cathode and an anode located in



said evaporation chamber; and an electron gun for bombarding the substance with a high voltage electron beam having an electroenergy more than 1 KeV; said low voltage arc means comprising an anode, a hot cathode and a cathode chamber surrounding said hot cathode for containing an ionizable gas separately of said evaporation chamber and communicating with said evacuation chamber through a small opening; said anode and cathode and said electron gun being arranged to discharge along a common axis with said high voltage electron beam passing coaxially through said small opening to said cathode chamber; said low voltage arc being established in a path surrounding said high voltage electron beam of said electron gun.

4,448,803

PROCESS FOR MANUFACTURNG A POLYCHELATE COATING

Jurgen F. Gauger; Jean M. Hinden, and Michael Katz, all of Geneva, Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

PCT No. PCT/US81/00217, 371 Date Oct. 19, 1981, 102(e) Date Oct. 19, 1981, PCT Pub. No. WO81/02432, PCT Pub. Date Sep. 3, 1981
PCT Filed Feb. 23, 1981, Ser. No. 315,852
Claims priority, application United Kingdom, Feb. 25, 1980, 8006230; Feb. 25, 1980, 8006231
Int. Cl.³ H01L *29/28*
U.S. Cl. 427—58 **21 Claims**

1. A process for forming a stable, bonded, electrically conducting, polychelate coating on an electrically conductive substrate surface providing metal coordination centers therein which comprises: contacting said surface with a vaporized tetranitrile compound in amounts of not more than about 10 grams per square meter of said surface at temperatures between about 400° and 600° C. for a time period of between about 12 and about 24 hours and under conditions carefully controlled to avoid substantial thermal decomposition of said tetranitrile compound or other undesirable competing reactions, thereby achieving a cross-linked, relatively insoluble polychelate coating bonded to the substrate via said metal coordination centers.

4,448,804

METHOD FOR SELECTIVE ELECTROLESS PLATING OF COPPER ONTO A NON-CONDUCTIVE SUBSTRATE SURFACE

William J. Amelio, Binghamton; Gary K. Lemon; Voya Markovich, both of Endwell; Theodore Panasik, Vestal; Carlos J. Sambucetti, Croton-on-Hudson, and Donna J. Trevitt, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,600
Int. Cl.³ B05D 5/12, 1/32, 3/04; C23F 1/00
U.S. Cl. 427—98 20 Claims

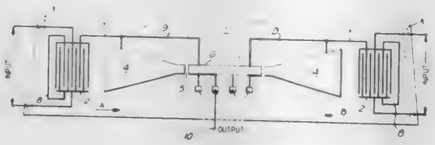
1. Method for selectively depositing copper onto the surface of a non-conductive substrate comprising the steps of:
(a) providing a copper sheet having a roughened surface;
(b) laminating said copper sheet to the non-conductive substrate surface by pressing the roughened surface of said copper sheet against the surface of said substrate;
(c) etching away all copper;
(d) conditioning the etched surface by contacting the surface with an acidic solution containing a multifunctional cationic group containing at least two available ionic moities;
(e) activating the conditioned surface with particles of palladium/stannous chloride;
(f) rinsing the activated surface with deionized water;
(g) bringing the rinsed, activated surface into contact with an aqueous solution of HCl;
(h) rinsing the HCl treated surface with deionized water;
(i) drying the substrate at a temperature between 60° C. and 100° C.;
(j) applying a photoresist layer to the cleaned, activated surface and exposing and developing the photoresist; and
(k) plating the activated surface by bringing it into contact for a period from about 15 minutes to about 30 minutes with a first plating bath containing copper sulphate, a complexing agent, formaldehyde, a surfactant and an oxygen content of less than 2 ppm and then for a period from about 10 hours to about 20 hours with a second plating bath differing from the first plating bath by an increased oxygen content of about 3 ppm to about 4 ppm and a NaCN content of 10 ppm to 20 ppm.

4,448,805

METHODS OF PRODUCING DEVICES COMPRISING METALLIZED REGIONS ON DIELECTRIC SUBSTRATES

Meirion F. Lewis, Malvern, England, assignor to National Research Development Corporation, London, England

PCT No. PCT/GB81/00222, 371 Date Jul. 8, 1982, 102(e) Date Jul. 8, 1982, PCT Pub. No. WO82/01790, PCT Pub. Date May 27, 1982
PCT Filed Oct. 12, 1981, Ser. No. 396,900
Claims priority, application United Kingdom, Nov. 17, 1980, 8036806
Int. Cl.³ B05D 5/12
U.S. Cl. 427—100 14 Claims



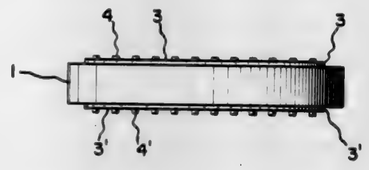
1. A method of producing a device comprising a dielectric substrate and metallised regions superimposed upon the substrate constituting elements of the device, said method comprising the steps of forming at least one resistive link connected between at least two otherwise mutually insulated metallised regions, said link being inessential to the required function of the device when subsequently connected into an external circuit but acting to prevent establishment of a damaging electric field between adjacent ones of said metallised regions due to unwanted electric charge storage not arising from the in-circuit operation of the device.

4,448,806

SOLDERABLE LARGELY BASE METAL ELECTRODES FOR METAL OXIDE VARISTORS

Lionel M. Levinson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 239,246, Mar. 2, 1981. This application May 2, 1983, Ser. No. 490,611
Int. Cl.³ B05D 5/12; H01C 7/12
U.S. Cl. 427—102 5 Claims



1. A method of fabricating largely non-noble metal electrodes for metal oxide varistors comprising the steps of:
screen printing a base metal electrode on a metal oxide varistor substrate;
drying the printed base metal electrode;
screen printing a distributed noble metal pattern on said printed base metal electrode, said pattern covering selected regions of said base metal electrode; and
heating said metal oxide varistor substrate.

4,448,807

PREPARATION OF AN ELECTROGRAPHIC RECORDING MATERIAL

Irving Serlin, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 218,868, Dec. 22, 1980, Pat. No. 4,397,883, This application May 16, 1983, Ser. No. 495,016
Int. Cl.³ B41M 5/00; G01D 15/34
U.S. Cl. 427—121 10 Claims

1. A method of producing an electrographic recording material which comprises applying to a conductive paper support an aqueous latex consisting essentially of a C_4-C_6 vinyl ester interpolymer and a protective colloid and evaporating water from the latex to form a continuous insulating layer in adherent contact with the conductive sheet support, wherein the aqueous latex has a pH in the range of about 6.2 to about 7.5, wherein the vinyl ester interpolymer comprises from about 3 to about 7 weight percent of carboxylic acid groups supplied by an interpolymerized C_4-C_{10} vinylene monobasic carboxylic acid monomer of the formula RCH=CHCOOH where R is a hydrocarbyl, hydrocarbyloxy, or hydrocarbyloxycarbonyl group and wherein the concentration of protective colloid is in the range of about 0.2 to about 0.8 parts by weight per 100 parts by weight of the interpolymer.

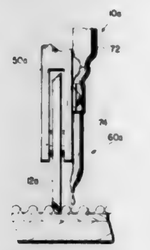
4,448,808

METHOD FOR PREPARING PATTERN PIECE

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Apr. 15, 1982, Ser. No. 368,708
Int. Cl.³ B05D 3/12
U.S. Cl. 427—208.6 14 Claims

1. A method for preparing a pattern piece from sheet material comprising the steps of spreading at least one sheet of material on a supporting surface, moving a cutting instrument in cutting engagement with the spread material in response to a predetermined cutting program to cut the pattern piece from the sheet material, simultaneously applying adhesive to the cutting instrument as the instrument is moved in cutting engagement with the sheet material and transferring the substance from the moving cutting instrument to one of the parts



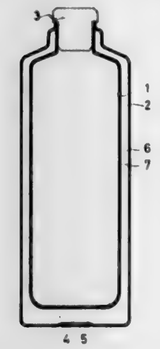
of the sheet material which includes the pattern piece and the scrap material adjacent the pattern piece, moving a pickup surface into engagement with the applied adhesive, and picking up the one part with the pickup surface.

4,448,809

METHOD OF SILVER PLATING STAINLESS STEEL VACUUM BOTTLE SURFACES

Kiyoshi Nagai, Nishinomiya; Hiroshi Shinohara, Nara, and Nobuo Imamura, Matsubara, all of Japan, assignors to Taiyo Sanso Co., Ltd., Osaka, Japan

Filed Sep. 30, 1982, Ser. No. 429,890
Int. Cl.³ B05D 7/22, 7/14; C23C 3/02
U.S. Cl. 427—239 6 Claims



1. A method of silver plating stainless steel vacuum bottle surfaces including the steps of:
thermally treating the surfaces to be coated at a temperature of at least 700° C. in a vacuum furnace at a vacuum of at least 1×10^{-2} torr; and,
then using an electroless plating technique to plate silver onto said surface.

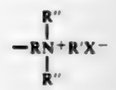
4,448,810

TREATING TEXTILE FIBRES WITH QUATERNARY SALT POLYDIORGANOSILOXANE

Stephen Westall, Barry, Wales, assignor to Dow Corning Limited, Barry, Wales

Filed Oct. 15, 1982, Ser. No. 434,679
Int. Cl.³ B05D 3/04, 3/02
U.S. Cl. 427—302 5 Claims

1. A process for the treatment of fibres which comprises applying thereto a polydiorganosiloxane having in the molecule at least one silicon-bonded —OM group, wherein M represents a hydrogen atom, an alkyl group or an alkoxyalkyl group, and at least one silicon-bonded quaternary salt group represented by the general formula



wherein R represents a divalent group having from 3 to 10 carbon atoms, the said group being composed of carbon, hydrogen and, optionally, oxygen in the form of ether linkages and/or hydroxyl groups, R′ represents a monovalent hydrocarbon group having from 1 to 15 carbon atoms or the group $(—OQ)_aOZ$, wherein Q represents an alkylene group having 2 or 3 carbon atoms, *a* has a value from 1 to 20 and Z represents a hydrogen atom, an alkyl group or an acyl group, each R″ represents methyl or an ethyl group and X represents a halogen atom, at least 40 percent of the total silicon-bonded substituents in the polydiorganosiloxane being methyl groups and any remaining substituents being monovalent hydrocarbon groups having from 2 to 8 carbon atoms.

4,448,811

OXIDIZING AGENT FOR ACIDIC ACCELERATOR IN ELECTROLESS METAL PLATING PROCESS

Warren R. Doty, Los Alamos, N. Mex., and Timothy J. Kinney, Berkley, Mich., assignors to OMI International Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 335,780, Dec. 30, 1981, abandoned. This application Jun. 16, 1983, Ser. No. 505,133
Int. Cl.³ C23C 3/02
U.S. Cl. 427—304 12 Claims

1. In a process for treating a polymeric plastic substrate to render it receptive to electroless plating including the steps of etching the substrate with an aqueous acid solution containing hexavalent chromium ions, activating the etched substrate, and accelerating the activated substrate, the improvement comprising contacting the activated substrate during the acceleration step with an aqueous accelerating solution containing an aqueous soluble compatible oxidizing agent present in an amount effective to increase the activity of the accelerating solution, which oxidizing agent is selected from the group consisting of chromic acid, potassium iodate, potassium meta-periodate, ammonium persulfate, vanadium pentoxide, and iodine, as well as mixtures thereof.

4,448,812

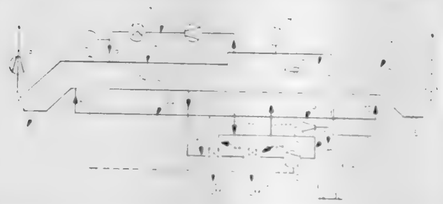
SPRAY COATING PROCESS, AND AN ARRANGEMENT FOR CARRYING OUT THE SAME

Arno Lauke, Münster, Fed. Rep. of Germany, assignor to BASF Farben & Fasern A.G., Hamburg, Fed. Rep. of Germany

PCT No. PCT/DE82/00027, 371 Date Sep. 27, 1982, 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/02843, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 11, 1982, Ser. No. 432,947
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1981, 3106605
Int. Cl.³ B05D 1/02
U.S. Cl. 427—377 6 Claims

1. A spray coating process having a spraying zone (1), a drying zone (2) located after said spraying zone, a preheating zone located ahead of said spraying zone and a closed spraying cabin with spray tools mounted therein wherein an inert gas atmosphere is introduced into said preheating zone and a sol-

vent enriched inert gas atmosphere is generated in said spraying and drying zones, solvents are removed from said solvent



enriched inert gas atmosphere and said inert gas atmosphere free of solvents is recirculated to said drying zone.

4,448,813

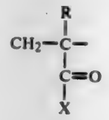
PREPARATION OF CORD FOR BONDING TO RUBBER

Thomas S. Solomon, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 20, 1982, Ser. No. 420,548
Int. Cl.³ B05D *3/02, 1/18;* **C09J** *3/12*
U.S. Cl. 427—381 **13 Claims**

7. A one-step process for dipping cord or fabric to coat it with an adhesive from a bath prior to drying and heat-setting the adhesive, comprising,

(a) a one-step process for dipping the cord or fabric made from adhesive-activated polyester or aramid in said bath comprising an aqueous dispersion containing an adhesive latex of a diene polymer, an acrylic resin selected from the group consisting of poly[(meth)acrylic acids], poly[N-methylol (meth)acrylamides], and a copolymer of one or more monomers of the foregoing homopolymers with a lower (meth)acrylic acid ester, having the structure



wherein, R represents H, methyl, ethyl, Cl or CN, and, X represents hydroxyl (OH), hydroxymethylamino ($NHCH_2OH$), or alkoxy (O-alkyl) having from 1 to 4 carbon atoms, and, a reversibly blocked polyisocyanate formed by reversibly blocking a polyisocyanate with a blocking agent capable of an addition reaction with said polyisocyanate, wherein resorcinol formaldehyde solids in said adhesive latex and said acrylic resin are present in a ratio in the range from about 0.5:1 to about 5:1, and the ratio of resorcinol formaldehyde solids to reversibly blocked polyisocyanate is in the range from about 9:1 to about 1:3,

(b) drying the cord at a temperature in the range from about 200° F. to about 350° F. under tension, and thereafter

(c) heat-setting the coated cord or fabric at a temperature in the range from about 350° F. but below that which is deleterious to the tensile strength of the cord or fabric.

4,448,814

METHOD OF FORMING FILM

Chiyuki Shimizu, and Nobuo Nakamura, both of Ota, Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 23, 1981, Ser. No. 334,013
Claims priority, application Japan, Dec. 17, 1980, 55-178449
Int. Cl.³ B05D *3/02;* **C08G** *77/04*
U.S. Cl. 427—387 **14 Claims**

1. A method for forming a stainproof film which comprises the steps of dissolving:

(1) 100 parts by weight of an aminoxy group-containing organosilicon compound having an average of more than two organoaminoxy groups per molecule,

(2) 10 to 1,000 parts by weight of a mixture or condensation products of:

(A) 100 parts by weight of benzene-soluble polyorganosiloxane consisting substantially of SiO_2 units and $(R^1)_3SiO_{\frac{1}{2}}$ units in a ratio of one mole of SiO_2 to 0.4 to 1.0 mole of $(R^1)_3SiO_{\frac{1}{2}}$ units wherein R^1 is the same or different substituted or unsubstituted monovalent hydrocarbon group and wherein the ratio of reactive groups is 0.0004 to 1 reactive group per silicon atom, and

(B) 10 to 1,000 parts by weight of silanol-terminated polydiorganosiloxane having a viscosity of 30 to 2,000,000 cSt at 25° C., in

(3) a mixed solvent consisting of:

(A) a volatile organosilicon compound represented by the molecular formula:

$(R^2)_4Si$,

$(R^3)_3SiO[(R^4)_2SiO]_mSi(R^3)_3$,

$R^5Si[OSi(R^6)_3]_3$, or

$[(R^7)_2SiO]_n$

wherein R^2 to R^7 are hydrogen or the same or different alkyl groups; m is 0 or a positive number; and n is 3 or a positive number greater than 3; and having a boiling point of 70° to 250° C. under normal pressure; and

(B) a hydrocarbon solvent, wherein the quantity of component (a) is more than 5 weight percent of the total quantity of components (1), (a), and (b), such that the total quantity of components (1) and (2) are 5 to 80 weight percent of the total quantity of components (1), (2), and (3); and

applying the resulting composition to the surface of a silicone elastomer, followed by drying.

4,448,815

MULTI-COMPONENT SOLVENTLESS SILICONE RELEASE COATING SYSTEM

Maurice E. Grenoble, Ballston Lake, and Richard P. Eckberg, Round Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,421
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—387 **42 Claims**

1. A process for providing a substrate having a silicone release coating composition cured thereon comprising the steps of:

(a) mixing 100 parts by weight of Component A with 5 to 100 parts of Component B and 3 to 10 parts of Component C, wherein Component A is an olefinorganopolysiloxane or a silanol end-stopped organopolysiloxane base polymer, Component B is a precious metal or precious metal complex catalyst dispersed in a vinyl silicone fluid; and Component C is an organohydrogenpolysiloxane crosslinking agent, wherein Component A and/or Component C further includes an amount of inhibitor effective for retarding a hydrosilation cure reaction at ambient temperature but which does not interfere with such reaction at elevated temperatures and wherein prior to use Component A, Component B and Component C are stored in separate containers;

(b) applying a coating of the mixture comprising Component A, Component B and Component C to a suitable substrate; and

(c) curing said coating to said substrate.

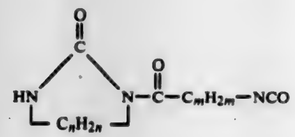
4,448,816

COMPOUNDS, COMPOSITIONS AND PROCESS

Edward A. Barsa, Cheshire, and Philip W. Sherwood, Milford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 4, 1983, Ser. No. 520,352
Int. Cl.³ C08G *18/80;* **A23L** *2/02;* **B32B** *27/40;* **C07D** *233/30*
U.S. Cl. 427—388.2 **18 Claims**

1. A compound having the formula



wherein C_nH_{2n} represents alkylene from 2 to 12 carbon atoms, inclusive, and C_mH_{2m} represents alkylene from 2 to 20 carbon atoms, inclusive, and C_nH_{2n} and C_mH_{2m} are each independently substituted by from 0 to 2n inert substituents and 0 to 2m substituents, respectively.

8. A process for the preparation of a polyurethane which comprises reacting a compound according to claim 1 with a polyol in the presence of a urethane catalyst and heating the reaction mixture at a temperature sufficient to effect ring opening of the hexahydropyrimidin-2-one moiety.

4,448,817

TEXTILE FINISHING OF KERATINOUS ARTICLES

Ladislav Benisek, Burley-in-Wharfedale, and Penelope C. Craven, Shipley, both of England, assignors to Wool Development International Limited, London, England

Continuation-in-part of Ser. No. 222,943, Jan. 6, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 428,950
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—412 **10 Claims**

1. A method for finishing keratinous textile articles which comprises applying a mixture of about 0.2 to 2.0% of an anti-felt polymer and about 1.0 to 4.0% of a chlorinated ethylenically unsaturated monomer on said article; drying and curing said article following the application of said mixture on said article; and thereafter applying from about 0.5 to 2.5% of an anionic titanium complex or about 1.0 to 5.0% anionic zirconium complex (calculated as oxide) to said article at a pH of about 4 or less.

4,448,818

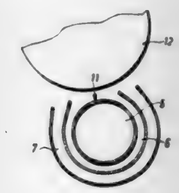
METHOD AND APPARATUS FOR APPLYING LIQUID TO A MOVING SURFACE

Stefan Hartog, Bromma, and Holger Hollmark, Huddinge, both of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden

Continuation-in-part of Ser. No. 154,419, Aug. 30, 1979, abandoned. This application Sep. 28, 1981, Ser. No. 306,374
Claims priority, application Sweden, Dec. 30, 1977, 7714975
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—424 **8 Claims**

1. A method of applying liquid in a finely divided form onto a moving surface comprising:

positioning an elongated container substantially parallel to and extending transversely across the width of a surface which is mounted for movement, said container having an inlet and an outlet in the form of a slit or series of openings facing the surface, with the cross-sectional area of the inlet being substantially larger than the total area of the slit or openings;



passing a stream of air containing suspended liquid particles into said inlet so that said stream is substantially parallel to the surface;

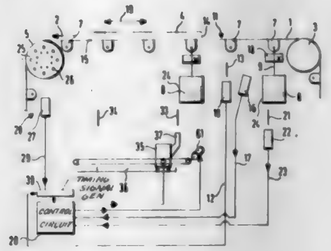
increasing the velocity of the air-liquid stream as it emerges from said slit or openings due to the smaller cross-sectional area thereof, at least a part of the liquid particles being deflected and passing substantially normal to said surface to be deposited thereon.

4,448,819

SPRAY COATING SYSTEM

Karl Buschor, St.Gallen, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,167
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148540
Int. Cl.³ B05D *1/02;* **B05B** *12/02*
U.S. Cl. 427—424 **19 Claims**



1. A method for spray coating articles as they are moved through a spray-coating region by a conveyor or having a plurality of support members located at spaced locations along said conveyor, said method comprising the steps of:

(a) hanging members to be spray coated from selected ones of said support members such that only said selected support members have an article to be sprayed associated with it;

(b) generating conveyor movement pulses having a frequency representative of the speed of said conveyor, and therefore the speed of said articles, as it moves through said spray coating region;

(c) generating a start signal whenever a support member having an article associated with it reaches an initial position upstream of said spray-coating region, said step of generating start signals comprising the steps of:

(1) generating a first signal whenever a said support member reaches said initial position;

(2) generating a second signal whenever an article to be coated is associated with a said support member located at said initial position; and

(3) generating a said start signal when both said first and second signals are generated; and

(d) spray coating each said article as it moves through said spray-coating region in a manner determined by said start signal and said conveyor movement pulses.

4,448,820

SPRAY COATING CONTROL SYSTEM

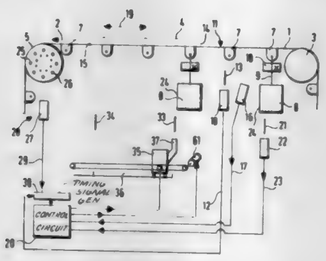
Karl Buschor, St.Gallen, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,299

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148539

Int. Cl.³ B05D *1/02;* **B05B** *12/02*

U.S. Cl. 427—424 **17 Claims**



10. A method for controlling the operation of a sprayer in synchronism with the movement of an article to be sprayed through a spray-coating region by a conveyor, said conveyor having a plurality of detectable elements located at spaced locations along said conveyor, said method comprising the steps of:

(a) generating conveyor movement pulses having a frequency representative of the speed of said conveyor, and therefore the speed of said article, as it moves through said spray-coating region;

(b) generating an element position signal each time one of said elements passes a predetermined location, whereby said element position signals provide information regarding the relative lengths of subsections of said conveyor, the location of said element being such that the frequency of said element position signals is less than the frequency of said conveyor movement pulses;

(c) generating timing signals at a frequency determined by said conveyor movement pulses and periodically adjusting the phase of said timing signals as a function of said element position signals; and

(d) controlling the operation of said sprayer as said article is moved through said spray-coating region as a function of said timing signals.

4,448,821

SPRAY COATING SYSTEM

Karl Buschor, St. Gall, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,309

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148541

Int. Cl.³ B05D *1/02;* **B05B** *12/02*

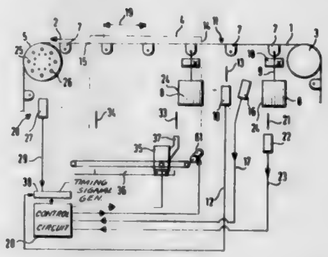
U.S. Cl. 427—424 **20 Claims**

16. A method for spray coating articles as they move through a spray-coating region, comprising the steps of:

(a) sequentially transporting a plurality of articles through said spray-coating region along a first path;

(b) generating a first position signal indicative of the actual position of a sprayer along a second path, parallel to said first path, said sprayer spray coating each said article as said article is transported through said spray-coating region;

(c) generating a second position signal indicative of the desired instantaneous position of said sprayer along said second path; and



(d) controlling the movement of said sprayer along said second path as a function of the difference between said actual and desired positions of said sprayer as indicated by said second and first position signals, respectively.

4,448,822

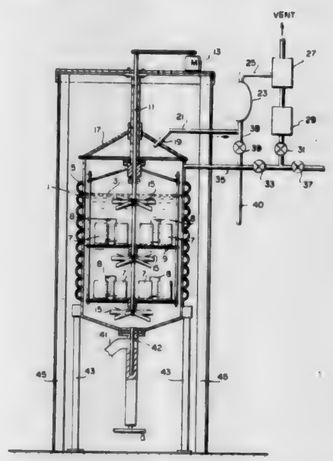
APPARATUS AND METHOD FOR THE PRODUCTION OF GAS FILTERS

Kung-You Lee, Wappingers Falls, N.Y.; Jackson K. Chiou, Bakersfield, Calif., and Matthew A. McMahon, Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,856

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—430.1 **9 Claims**



1. A method for coating a substrate with an alumina hydrate film comprising the steps of contacting a caustic solution in a vessel with a plurality of substrates to be coated and with a plurality of porous containers having aluminum metal therein, reacting said aluminum metal with said caustic solution to form an aluminate coating solution, mechanically agitating said caustic solution with a flat blade turbine having a diameter of about 35 to about 65 percent of the diameter of said vessel, and depositing alumina hydrate on said substrate.

4,448,823

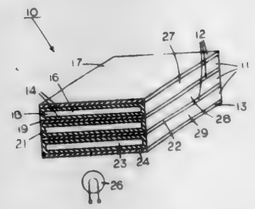
MULTI-COLORED LIQUID CRYSTAL DISPLAY DEVICE

Brad W. Clifford, 747 E. Main St., Hoopeston, Ill. 60942

Filed Sep. 29, 1982, Ser. No. 427,233

Int. Cl.³ B32B *31/20*

U.S. Cl. 428—1 **7 Claims**



1. A multi-colored liquid crystal display device comprising at least three color units, said color units comprising:

(a) first liquid crystal display and filter means comprising a first liquid crystal display unit operably connected to a first colored filter for providing a first color unit;

(b) second liquid crystal display and filter means comprising a second liquid crystal display unit operably connected to a second colored filter for providing a second color unit; and

(c) third liquid crystal display and filter means comprising a third liquid crystal display unit operably connected to a third color filter for providing a third color unit and being disposed between said first and second liquid crystal display and filter means; said color units being operably disposed proximal to one another and aligned with one another such that at least some of any light that passes through one of said color units will also pass through all remaining said color units; whereby different colored displays may be selectively displayed by selectively energizing one or more of said first, second and third liquid crystal display units.

4,448,824

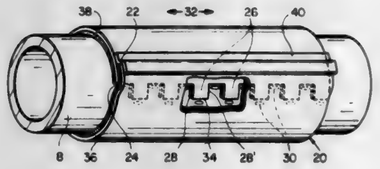
WRAPAROUND PROTECTIVE CLOSURE

James C. Holmes, San Francisco; Harvey Bush, Palo Alto, and Roger L. Fink, Redwood City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 28, 1982, Ser. No. 344,275

Int. Cl.³ B32B *31/26*

U.S. Cl. 428—33 **19 Claims**



1. In combination with an elongate substrate, a wraparound closure, comprising:

A. a dimensionally-recoverable sheet having opposing transverse-edges;

B. means for preventing a leak path, comprising;

1. one of the transverse-edges having at least two structural units,

2. each unit having at least one spoiler-edge, said spoiler-edge substantially perpendicular to the transverse-edge,

3. each spoiler-edge having a length equal to at least twice the thickness of the sheet,

4. the spoiler-edges adjacent to each structural unit being separated by a distance at least twice the length of the spoiler-edge, and

the sheet overlappingly wrapped around the substrate such that the means for preventing a leak path is enveloped between the other transverse edge and the substrate,

whereby a continuous leak path in the transverse direction is preventedne of the transverse edges having at least two structural units,

2. each unit having at least one spoiler-edge substantially perpendicular to the transverse-edge, and

3. each spoiler-edge having a length equal to at last twice the thickness of the sheet; and

the sheet overlappingly wrapped around the substrate such that the means for preventing a leak path is enveloped between the other transverse edge and the substrate,

whereby a continuous leak path in the transverse direction is prevented.

4,448,825

THERMALLY INSULATED CERAMIC CONTAINER AND METHOD FOR MANUFACTURE THEREOF

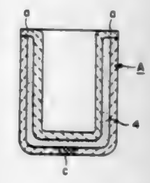
Toshio Asahara, 1017-31, Ouaza Uchiage, Neyagawa, Osaka, Japan

Filed Mar. 2, 1982, Ser. No. 353,970

Claims priority, application Japan, Mar. 6, 1981, 56-32755

Int. Cl.³ A47J *41/00;* **H05B** *3/68;* **C04B** *33/34;* **B32B** *5/18*

U.S. Cl. 428—35 **11 Claims**



1. A thermally insulated double wall ceramic container, comprising an inner container wall and an outer container wall, cement joining said inner and outer walls with an inner cavity formed therebetween, and insulation formed of a foaming resin of low thermal conductivity contained within said inner cavity, said outer wall having an opening for insertion of said insulation into said inner cavity.

2. A method of manufacturing a thermally insulated ceramic container, comprising the steps of:

(1) forming an inner green container wall, and an outer green container wall larger than said inner green container wall, each having an upper circumferential edge;

(2) inserting said inner wall within said outer wall, said inner and outer walls being sized so that an inner cavity is located between said inner and outer walls when said inner wall is inserted within said outer wall;

(3) forming an opening in said outer wall, said opening opening into said inner cavity when said inner wall is inserted within said outer wall;

(4) intimately joining said inner and outer walls along their upper circumferential edges with cement to form a molded green double-wall container after step (3);

(5) firing said molded green double-wall container to produce a double-wall ceramic container; and

(6) injecting a foaming resin of low thermal conductivity into said inner cavity through said opening and foaming said resin to thereby form an insulation filling said inner cavity.

4,448,826

CASKET COATING

Michael Davidian, Darien, Ill., assignor to Ameritek, Inc., Villa Park, Ill.

Filed Jul. 29, 1982, Ser. No. 402,955
Int. Cl.³ B32B *1/02, 1/06*
U.S. Cl. 428—35 **8 Claims**

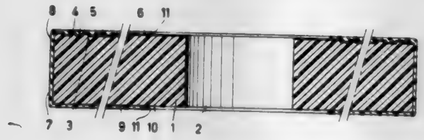
1. A casket construction, comprising an enclosed metal casket containing in use a finite quantity of organic acids, and a coating applied to the interior surface of the casket to prevent corrosion thereof, said coating comprising a film forming matrix having dispersed therein particles of an alkaline material in an amount sufficient to neutralize said finite amount of organic acids.

4,448,827

OPTICALLY READABLE INFORMATION DISC COMPRISING AN ENVELOPE OF CROSS-LINKED SYNTHETIC RESIN

Henricus G. J. A. M. Luijben, and Herman C. Meinders, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1983, Ser. No. 491,622
Claims priority, application Netherlands, Feb. 24, 1983, 8300685
Int. Cl.³ B65D *1/00*; B32B *27/36*
U.S. Cl. 428—35 **2 Claims**



1. An optically readable information disc comprising a carrier body of polycarbonate which on one side has an optically readable information track which is provided in the surface of the carrier body and a reflection layer overlying the track, whereby the disc at playback is read by means of laser light which is focused on the information track via the carrier body of polycarbonate, characterized in that the disc comprises a mantle of a cross-linked transparent synthetic resin which extends as a closed envelope over the information track with the reflection layer present on the upper side of the disc, over the edge and over the lower side of the disc.

4,448,828

CERAMIC HONEYCOMB STRUCTURAL BODIES

Shigeru Mochida, Kasugai, and Masaru Kojima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jun. 29, 1981, Ser. No. 278,580
Claims priority, application Japan, Jul. 11, 1980, 55-93785
Int. Cl.³ B32B *3/20*
U.S. Cl. 428—36 **7 Claims**



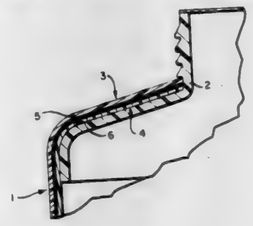
1. In a ceramic honeycomb structural body having numerous parallel channels separated by thin walls of substantially uniform thickness in which partition walls forming the channels and/or connecting portions of the partition walls are constructed so as to have flexibility, whereby thermal stress generated in the honeycomb structural body is absorbed, the improvement comprises that a given area of the outer circumferential annular portion of said ceramic honeycomb structural body has cells, each having a cell shape having a higher rigidity than the shape of cells of the inner portion.

4,448,829

METAL-PLASTIC LAMINATE TUBE CONSTRUCTION WITH PLASTIC TUBE HEAD

Andreas Köhler, Nürtingen, Fed. Rep. of Germany, assignor to Automation Industrielle SA, Switzerland

Continuation of Ser. No. 300,791, Sep. 10, 1981, abandoned. This application Jun. 3, 1983, Ser. No. 499,175
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3042073
Int. Cl.³ B65D *35/10*; B29C *27/02*
U.S. Cl. 222—107 **4 Claims**



1. A tube comprising a tube body formed from a laminate having a metallic barrier layer and at least one plastic layer, a synthetic plastic tube head and a washer formed from a laminate having a metallic barrier layer and at least one plastic layer, said washer being positioned on the outer surface of the tube head shoulder, characterized in that the washer rests with its outer marginal edge directly on a cut edge of the tubular body and the butt connection thus formed is sealed.

4,448,830

CONSTRUCTION BARRIER BOARD

Joseph A. Cogliano, Pasadena, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,748
Int. Cl.³ B32B *1/04, 3/02, 3/12, 11/04*
U.S. Cl. 428—40 **20 Claims**



1. A performed sheet-like barrier consisting essentially of
(a) a substantially rigid, porous, open-celled, substantially planar structure having a first and a second major surface and edges defining the dimensions of said structure, said structure having a thickness of from about 0.25 inch to 10 inches;
(b) an adhesive bituminous sheet formed from blends of bituminous material and a natural or synthetic rubber or resin, said sheet having a first and a second major surface and edges defining the dimensions of sheet and having a thickness of at least 0.01 inch, wherein the first major surface of said sheet is in contact with and self adhered to the substantial entire first major surface of said porous structure;
(c) a coating which is substantially non-adherent with respect to said adhesive bituminous sheet, said coating being a removable sheet which is substantially coextensive and congruent with the second major surface of the adhesive bituminous sheet or said coating being a film of substantially non-adherent material applied to at least the substantial entire second major surface of said structure; said porous structure (a) and said sheet (b) are each substantially in the form of a quadrilateral parallelogram, each of two adjacent edges of said sheet extend beyond each of two adjacent edges of said porous structure, respectively, are in contact with each other at one corner section of the barrier and are substantially parallel to each of the two adjacent edges of said porous structure: and each of the two remaining adjacent edges of said sheet are substantially congruent with each of the two remaining adjacent edges of said porous structure, respectively.

4,448,831

LEATHERLIKE FABRICS

Frank P. Civardi, Wayne, N.J., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 711,589, Aug. 4, 1976, Pat. No. 4,055,693, which is a continuation of Ser. No. 542,993, Jan. 22, 1977, Pat. No. 3,988,488. This application Oct. 18, 1977, Ser. No. 843,322
The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.
Int. Cl.³ B32B *27/40*
U.S. Cl. 428—91 **43 Claims**



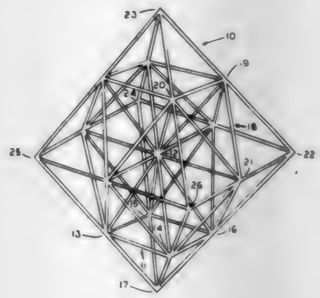
1. An imitation leather material which comprises in combination:
a. a woven fabric base sheet material, one surface of which is a napped surface and the other surface of which is not napped;
b. the napped surface of the base sheet impregnated with a cross-linked polymeric material;
c. the napped impregnated surface of the base sheet characterized by a buffed, flesh-like surface;
d. an open-cell flexible polymeric cellular-layer bonded to the other unnapped surface of the base sheet material;
e. a thin polymeric skin layer bonded to the surface of the cellular layer; and
f. the thin polymeric skin layer characterized by an imitation leather-like surface,
the fibers of said nap being bonded together by said impregnation, said bonded nap being severed, after bonding impregnation, along a multitude of short spaced lines to form spaced clumps of bonded fibers, said clumps having free ends and being brushable to and from stable upright positions, in which said free ends of the upright clumps project outwardly from the surrounding bonded nap and said fabric has a rough appearance, to bent-over positions in which said clumps merge with said surrounding bonded nap so that the fabric has a smoother appearance.

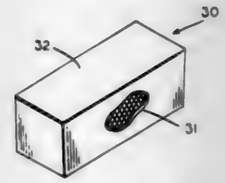
4,448,832

DIMENSIONALLY WOVEN COMPOSITE

William J. Kidwell, 408 E. 5th St., Port Angeles, Wash. 98362

Filed Apr. 25, 1983, Ser. No. 488,194
Int. Cl.³ A47B *13/00*; D03D *15/00*; H01S *3/02*
U.S. Cl. 428—113 **16 Claims**





1. A three dimensional woven composite comprising at least one bundle of elongated graphite threads contiguously connected around a common point in a completely oriented central intersection, and extending outwardly therefrom to adjacent intersections of alternately spaced regular octahedronal and regular tetrahedronal linkages of a basic geometric structure having complete and incomplete intersections capable of being extended to complexity.

4,448,833

POROUS CERAMIC BODY AND A METHOD OF MANUFACTURING THE SAME

Shunzo Yamaguchi, Okazaki; Yukihisa Takeuchi, Aichi; Yasunao Miura, Kasugai, and Naoto Miwa, Tsushima, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 15, 1982, Ser. No. 388,660
Claims priority, application Japan, Jun. 16, 1981, 56-92538; Jun. 16, 1981, 56-92539; Jun. 16, 1981, 56-92540
Int. Cl.³ B32B *3/12*
U.S. Cl. 428—116 **9 Claims**



1. A porous ceramic body which comprises:
a ceramic honeycomb structure provided with a large number of passages 0.5 mm to 10 mm in inner diameter; and
adhered to the walls of said honeycomb structure a ceramic layer penetrated by fine meandering holes 0.1 mm to 0.5

mm in diameter or width which holes are produced first by filling the passages of the ceramic honeycomb structure with a ceramic slurry formed of a mixture of organic solids 0.05 mm to 0.5 mm in diameter or length, and then firing an integral mass of said ceramic honeycomb structure and ceramic slurry to decompose and scatter the organic solids.

4,448,834

FOIL AND METHOD FOR PROTECTING FILM

Claus Pohl, Eschenlohe, Fed. Rep. of Germany, assignor to Geimuplast Peter Mundt GmbH. & Co. KG., Farchant, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,354

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115288

Int. Cl.³ B32B *3/04, 31/18*

U.S. Cl. 428—122 **8 Claims**



1. A protected film strip comprising:

(a) a developed rectangular photographic film strip having a front and back and two pairs of opposed marginal edges; and

(b) a protective foil having a pressure sensitive adhesive, said foil releasably connected along one longitudinal marginal edge of said film strip, the remaining longitudinal marginal edge of said film strip extending beyond said protective foil.

4,448,835

WINDOW WEATHER STRIPPING AND THE MANUFACTURING METHOD

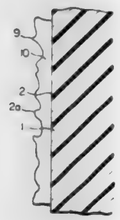
Toshiaki Yamaguchi, Chiba, Japan, assignor to Kinugawa Rubber Industrial Co., Ltd., Chiba, Japan

Filed Jul. 15, 1982, Ser. No. 398,659

Claims priority, application Japan, Aug. 31, 1981, 56-136638; Aug. 31, 1981, 56-136639

Int. Cl.³ B32B *25/08, 27/08, 27/40*

U.S. Cl. 428—147 **6 Claims**



1. Window weather stripping for sealing a gap between a movable glass and a window frame, which comprises a strip of elastic material made of rubber or a synthetic resin, said strip having a microscopic rough surface on at least one surface thereof, along which the movable glass slides, said rough surface being formed by painting a liquid-state colloidal paint having cohered colloidal particles dispersed therein, said colloidal paint being prepared by dissolving a solid-state synthetic resin in a first solvent having good solubility for the solid-state synthetic resin, and then mixing the resulting solution with a second solvent having poor solubility for the solid-state synthetic resin, as compared with the first solvent, and drying the paint.

4,448,836

METHOD FOR PRETREATING THERMOPLASTIC SUBSTRATES CONTAINING CARBONAMIDE GROUPS IN THE PREPARATION OF STRONGLY ADHERING METAL COATINGS

Horst Gätzschmann, Schermbeck; Herbert Bertels, Marl; Hubertus Häfner, Marl, and Alfred Schmid, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,359

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234363

Int. Cl.³ B32B *3/00;* C25D *5/00;* B05D *3/04;* B29C *17/08*

U.S. Cl. 428—164 **11 Claims**

1. In a process for pretreating thermoplastic substrates, seeding with an activator system, depositing an electrically conductive layer thereon, and galvanically depositing a metal coating thereon, wherein said thermoplastic substrates are polymers containing carbonamide groups and an inorganic fine particulate adhesion filler, said polymer having at least 10 aliphatically bound carbon atoms per carbonamide group, the improvement comprising:

carrying out said pretreating by pickling in at least first and second separate partial steps separated by a rinsing procedure, where said first partial step, namely predipping, is performed in 50 to 96% sulfuric acid having a surface tension not more than about 25 mN/m at 20° C., and drying said pretreated thermoplastic substrate at temperatures from 70° C. to the limit of thermal dimensional stability, said drying step being carried out after said seeding or said depositing and prior to said galvanically depositing metal.

4,448,837

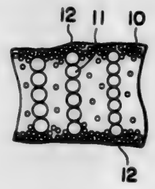
PRESSURE-SENSITIVE CONDUCTIVE ELASTIC SHEET

Eiichi Ikeda, Hatano; Ikuo Kayama, Tama, and Masahiro Izaki, Kawasaki, all of Japan, assignors to Oki Densen Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 19, 1982, Ser. No. 399,695

Int. Cl.³ B32B *7/02;* B05D *3/14;* C09J *7/02*

U.S. Cl. 428—215 **10 Claims**



1. A pressure-sensitive, conductive elastic sheet, which comprises:

(a) coarse ferromagnetic conductive particles of from 30 to 150 microns in diameter;

(b) fine ferromagnetic conductive particles of 10 microns or less in diameter, said fine particles being mixed with said coarse particles at a mixture ratio of from 1:0.1 to 1:1 by weight; and

(c) elastomer mixed with said coarse and fine particles at a mixture ratio of from 1:0.5 to 1:0.8 by weight, said coarse ferromagnetic particles being aligned in the direction perpendicular to the plane of the sheet through the interior thereof and said fine ferromagnetic particles being dispersed near at least one surface thereof,

whereby the pressure at which an electrically conductive pathway is formed through the sheet is almost constant irrespective of contact area to which pressure is applied or increases with increasing contact area.

4,448,838

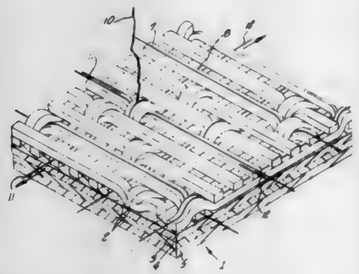
GRAPHITE FIBER REINFORCED LAMINATE STRUCTURE CAPABLE OF WITHSTANDING LIGHTNING STRIKES

David H. McClenahan, Reno, Nev., and John A. Plumer, Dalton, Mass., assignors to Lear Fan Corp., Reno, Nev.

Filed Sep. 4, 1981, Ser. No. 299,346

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—251 **14 Claims**



1. A graphite fiber reinforced laminate structure capable of withstanding the damaging effects of lightning strikes, comprising at least one graphite fiber bonded ply having metal wire or metal coated filament woven therein in the warp and fill directions, said metal wire or filament being compatible with said bonded graphite fibers and being periodically at the outer surface of said laminate, to intensify locally the electrical field upon approach of a lightning arc, to disperse the lightning arc into a plurality of current filaments and facilitate distribution of electric currents throughout said laminate.

4,448,839

METHOD OF SIZING HYDROPHOBIC YARN

Hal C. Morris, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 311,561, Oct. 16, 1981, abandoned, and Ser. No. 202,543, Oct. 31, 1980. This application Oct. 20, 1981, Ser. No. 312,761

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ B32B *7/00;* B65B *33/00;* B05D *3/02*

U.S. Cl. 428—267 **13 Claims**

1. A method of sizing a hydrophobic yarn for weaving comprising the steps of (1) applying thereto an acid pH latex of a free radical initiated vinyl polymer having a weight average molecular weight of from about 300,000 to about 2,500,000; said polymer, in dried film form, being hydrophobic and not redispersible in a solution at a low pH and being redispersible in an alkaline aqueous medium; said polymer being of monomers having a solubility parameter from about 9.0 to about 9.5, a T_g from about −20° C. and comprising 8% to about 14%, by weight, alpha, beta-ethylenically unsaturated acid, and (2) drying the yarn.

4,448,840

METHOD FOR MANUFACTURING A RUBBER SHEET WHICH IS ELECTRICALLY INSULATING AND THERMALLY RADIATING AND RUBBER SHEETS MADE THEREFROM WITH IMPROVE RESISTANCE TO FLEXURAL FATIGUE

Takao Matsushita, Kisarazu, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,933

Claims priority, application Japan, Jun. 14, 1982, 57-101896

Int. Cl.³ B32B *7/00;* B05D *1/36*

U.S. Cl. 428—266 **19 Claims**

1. A method for manufacturing a rubber sheet which is electrically insulating and thermally radiating,

comprising treating a network insulating material with an alkoxysilane, then coating the resulting network insulating material with a fluid silicone rubber composition, and then curing said composition, where the fluid silicone rubber composition consists essentially of

(a) 100 parts by weight of a polyorganosiloxane having a viscosity at 25° C. of from 0.1 to 100 Pa·s and having an average unit formula

$$R_aR'_bSiO_{(4-a-b)/2}$$

wherein each R represents a monovalent hydrocarbon radical free of aliphatic unsaturation or a halogenated monovalent hydrocarbon radical free of aliphatic unsaturation, each R′ represents a monovalent aliphatically unsaturated hydrocarbon radical, a has a value from 1.90 to 2.05, b has a value from 0.005 to 0.1, and the sum of a+b has a value from 1.91 to 2.06,

(b) a polyorganohydrogensiloxane having a viscosity at 25° C. of 0.007 to 5 Pa·s and having an average unit formula

$$R_cH_dSiO_{(4-c-d)/2}$$

wherein R is defined above, the sum of c+d has a value of 1.001 to 3, there is at least two silicon-bonded hydrogen atoms per molecule, and said polyorganohydrogensiloxane is present in an amount such that there are 0.5 to 10 equivalents of silicon-bonded hydrogen atoms per equivalent of aliphatically unsaturated hydrocarbon radical in (a),

(c) from 100 to 500 parts by weight of alumina powder, and

(d) a catalytic quantity of a platinum-group compound as a catalyst.

12. An electrically insulating and thermally radiating rubber sheet prepared in accordance with the method of claim 1.

4,448,841

FLAME RETARDANT COMPOSITIONS FOR TEXTILES AND TREATED TEXTILES

Cyril Glass; Leslie G. Hursey, and Ronald Inness-Turnbull, all of London, England, assignors to The Sargom Company Limited, London, England

Filed Sep. 30, 1982, Ser. No. 428,559

Int. Cl.³ B27K *3/00;* B32B *7/00*

U.S. Cl. 428—270 **11 Claims**

1. A flame retardant composition for in situ treatment of textiles and textile products comprising in admixture: 9.5 to 15.5 percent by weight of a component consisting of at least one ammonium salt having flame retardant properties, 2.0 to 3.0 percent by weight of a water-soluble amide which will decompose to give ammonia when heated to a temperature of 100° C. to 200° C., and aqueous acid in a concentration of 1.5 to 2.0 percent (by weight) of the composition and with the pH of the composition being 3 to 4.5 thereby ensuring that the composition is sufficiently diluted for application to a fabric without degrading it.

4,448,842

MAGNETIC RECORDING MEDIUM

Nobutaka Yamaguchi; Nobuo Tsuji, and Masaaki Fujiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 4, 1982, Ser. No. 345,848
Claims priority, application Japan, Feb. 4, 1981, 56-15389
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—329 **17 Claims**

1. A magnetic recording medium comprising:
a non-magnetic support base; and
a magnetic layer formed on a surface of said non-magnetic support base, said magnetic layer comprising magnetic particles dispersed within a binder, an abrasive having a Mohs hardness of 6 or more, calcium carbonate, an aliphatic acid in an amount of from 0.1 to 2 weight percent of the magnetic particles and an aliphatic acid ester in an amount of 0.1 to 2 weight percent of the magnetic particles.

4,448,843

MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Ryuji Shirahata; Akio Yanai, and Tatsuji Kitamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 10, 1981, Ser. No. 252,762
Claims priority, application Japan, Apr. 10, 1980, 55-47176; Apr. 10, 1980, 55-47177; Apr. 28, 1980, 55-56425
Int. Cl.³ G11B *5/72*
U.S. Cl. 428—336 **9 Claims**

1. A magnetic recording medium comprising
(a) a support,
(b) a vapor-deposited ferromagnetic metal layer on said support(a), and
(c) a protective layer comprising mainly one of (i) a polyurethane resin, (ii) a vinylidene chloride copolymer or (iii) a cellulose derivative on the surface of said vapor-deposited ferromagnetic metal layer (b), said protective layer having a thickness of from about 0.002 to 0.3 μm.

4,448,844

HEAT RESISTANT RESIN AND PROCESS FOR PRODUCING THE SAME

Yuichi Osada; Shozo Kasai; Yasunori Okada; Isao Uchigasaki, all of Hitachi; Toyoji Oshima, Higashikurume; Yoshiyuki Mukoyama, Hitachi, and Hiroshi Nishizawa, Kitaibaraki, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 518,109
Claims priority, application Japan, Apr. 6, 1981, 56-52108
Int. Cl.³ D02G *3/00*; B32B *15/08*; H01B *7/00*
U.S. Cl. 428—375 **8 Claims**

1. An insulated wire comprising a coating of a heat resistant resin composition on an electric conductor; said heat resistant resin composition comprising a heat resistant resin and a phenolic solvent; the heat resistant resin being produced by reacting with heating
(A) a polyamideimide resin obtained by reacting in a phenolic solvent the following components (a) to (e):
(a) a polyisocyanate containing an isocyanurate ring in an amount of 0 to 30 equivalent percents based on the total isocyanate equivalent,
(b) a diisocyanate free of an isocyanurate ring,
(c) a lactam,
(d) a tricarboxylic acid anhydride, and
(e) a compound different from the component (d) and selected from the group consisting of trimesic acid, tris(2-carboxyethyl) isocyanurate, 3,3',4,4'-butanetricarboxylic acid, anhydrides thereof and a reaction product of trimellitic anhydride and a trimer of isophorone diisocyanate or a trimer of tolylene diisocyanate, in an amount of 0 to 30 equivalent percents based on the total carboxyl equivalent, with
(B) an alcohol component selected from the group consisting of a di- or higher polyhydric alcohol and a mixture of a di- or higher polyhydric alcohol with a monohydric alcohol, and
(C) an acid component selected from the group consisting of a divalent or higher polyvalent carboxylic acid, an ester thereof and an anhydride thereof.

4,448,845

HALOGENATED POLAR POLYMER TREATMENT OF INORGANIC FILLERS

James J. Jakubowski; Victor E. Meyer, and Ronald R. Pelletier, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 29, 1982, Ser. No. 426,558
Int. Cl.³ B05D *7/00*
U.S. Cl. 428—404 **10 Claims**

1. A method for coating a particulate filler comprising the steps of:
contacting the filler with an effective amount of a halogenated polar polymer comprising a reaction product of a molecular halogen and an unhalogenated polar polymer comprising an addition polymerizable organic monomer which does not contain an acid group; and an addition polymerizable acid; and mixing the halogenated polar polymer with the filler particles
such that the halogenated polar polymer forms an adherent coating on the filler particle.

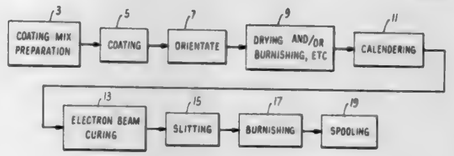
6. The coated filler produced by the method of claim 1.

4,448,846

RADIATION-CURED MAGNETIC MEDIA AND PROCESS FOR MAKING SAME

Hao-Jan Chang, Santa Clara, and Akihiro Nishimura, Cupertino, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 189,979, Sep. 22, 1980, abandoned. This application Oct. 8, 1981, Ser. No. 309,632
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—412 **11 Claims**



1. A magnetic medium comprising:
(a) a nonmagnetic substrate coated with
(b) a magnetic binder composition comprising
(i) a radiation-cured mixture of a high molecular weight fully polymerized thermoplastic polymer comprising a styrene-butadiene copolymer, acrylonitrile-butadiene copolymer, vinylacetate-vinylchloride copolymer, polyester, polyamide, polycarbonate, polysulfone, polyacrylate, polyacrylic acid, polyvinylacetal, polyvinylbutyral, polyurethane, epoxy or phenoxy resin, having a weight average molecular weight of at least 50,000, and a radiation-curable acrylate prepolymer having a weight average molecular weight of less than 10,000, wherein the ratio of high molecular weight thermoplastic polymer to acrylate prepolymer is from 50:50 to 90:10 on a polymer solids basis by weight, and
(ii) magnetic particles dispersed in the radiation-cured mixture.

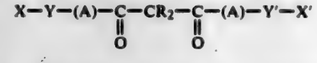
4,448,847

PROCESS FOR IMPROVING STEEL-EPOXY ADHESION

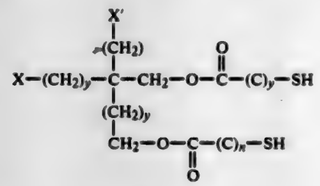
James P. Bell, Storrs, Conn., and Anthony J. De Nicola, Jr., Newark, Del., assignors to Shell Oil Company, Houston, Tex.

Filed May 28, 1982, Ser. No. 382,986
Int. Cl.³ B32B *27/38*
U.S. Cl. 428—413 **18 Claims**

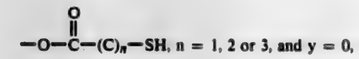
1. A method for improving the adhesion of epoxy resins to steel substrates which comprises (1) chemically removing the oxide layer from said substrate and (2) pretreating said cleaned substrate with a solution of at least one coupling agent selected from the group consisting of β-diketones of the general formula



wherein R is H or an alkyl radical, Y and Y' are each (symetrical or assymetrical) aliphatic, cycloaliphatic or aromatic radicals, A is O, S, N, or CH_2, X and X' are each an aromatic OH, carboxyl, glycidyl, glycidyl ether, glycidyl ester or $—CH_2OH$ group and a mercaptoester of the general formula:



wherein X and X' are each H or



$—O—C—(C)_n—SH$, n = 1, 2 or 3, and y = 0, 1, 2 or 3.

4,448,848

MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Tsutomu Okita, and Kyoichi Naruo, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 4, 1982, Ser. No. 345,903
Claims priority, application Japan, Feb. 4, 1981, 56-15391
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—447 **9 Claims**

1. A process for producing a magnetic recording medium which comprises the steps of applying onto a non-magnetic base a magnetic coating composition consisting essentially of (1) a compound having a carbon-carbon unsaturated bond polymerizable by electron beams, (2) a coupling agent having a carbon-carbon unsaturated bond selected from the group consisting of (a) a silane coupling agent wherein one terminal group of the silane molecule is a hydrogen or alkoxy and the other terminal group is an alkoxy group having an unsaturated group, and (b) a titanate coupling agent wherein at least one substituent in the titanate molecule is an alkoxy group and at least one other substituent is a substituent having an unsaturated bond, (3) ferromagnetic particles and (4) an organic solvent, and curing the applied magnetic coating composition by irradiation with electron beams.

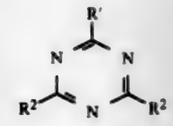
4,448,849

HYDROXYLALKYLMELAMINE CONTAINING RESINS AND THEIR USE IN HEAT AND PRESSURE CONSOLIDATED LAMINATES

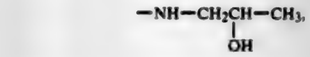
Ronald J. Keeling; Jin-Young K. Roe, and Henry C. Mollmann, all of Cincinnati, Ohio, assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 421,950, Sep. 23, 1982, Pat. No. 4,242,261. This application Sep. 12, 1983, Ser. No. 518,253
Int. Cl.³ B32B *27/42, 27/08*
U.S. Cl. 428—503 **9 Claims**

1. A heat and pressure consolidated laminate comprising
(1) a substrate
(2) a decor sheet and, optionally,
(3) an overlay sheet
wherein at least one of (1), (2), and (3) is impregnated with an impregnant comprising:
(A) a hydroxyalkylmelamine/formaldehyde reaction product having a molar ratio of hydroxyalkylmelamine to formaldehyde of from about 1:0.05 to about 1:3 respectively, or
(B) a blend of A, above, and a melamine/formaldehyde resin, the ratio of A to melamine/formaldehyde resin ranging from about 20:1 to about 1:20, respectively, and the ratio of melamine to formaldehyde ranging from about 1:1 to 1:3, respectively, or
(C) a blend of a hydroxy alkyl melamine and a melamine/-formaldehyde resin, the ratio of hydroxyalkyl melamine to melamine/formaldehyde resin ranging from about 1:1 to about 1:20, respectively, and the ratio of melamine to formaldehyde ranging from about 1:1 to about 1:3, respectively,
said hydroxyalkyl melamine having the formula



wherein R' is a C_1–C_8 linear or branched chain alkyl, a C_6–C_{10} aryl, or R^2 and R^2 is $—NH_2$, $—NH(CH_2)_xOH$ or



wherein x is 3–8, inclusive and at least one R^2 is a hydroxyalkylamine group.

4,448,850

VINYL ACETATE POLYMERS AND LATEX COMPOSITIONS CONTAINING SAME

Donald A. Upson, Webster, and David J. Steklenski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,205
Int. Cl.³ B32B *27/28, 27/30*; G03C *5/54, 1/76*
U.S. Cl. 428—510 **9 Claims**

1. An element comprising a support having thereon a layer comprising a polymer characterized in that the polymer has random recurring units:

$-(A)_w-(B)_x-(C)_y$ and $-(D)_z$

wherein;
A represents polymerized vinyl acetate;
B represents a polymerized acrylate or methacrylate monomer capable of copolymerization with vinyl acetate;
C represents a polymerized monomer selected from the

group consisting of methacrylic acid, itaconic acid and vinylbenzoic acid;
D represents a polymerized cationically charged copolymerizable monomer;
w represents from 20 to 85 weight percent;
x represents from 5 to 65 weight percent;
y represents from 5 to 50 weight percent and,
z represents from 2 to 10 weight percent.

4,448,851

HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 20, 1982, Ser. No. 420,550
The portion of the term of this patent subsequent to May 15, 2001, has been disclaimed.
Int. Cl.³ C22C *9/00*; B23K *35/30*
U.S. Cl. 428—606 **14 Claims**

6. A homogeneous brazing foil having a composition consisting essentially of about 2.5 to 11 atom percent tin and about 11 to 15 atom percent boron, the balance being copper and incidental impurities and the total of copper and tin ranging from about 85 to 89 atom percent.

4,448,852

HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 420,550, Sep. 20, 1982. This application Apr. 26, 1983, Ser. No. 488,858
The portion of the term of this patent subsequent to May 15, 2001, has been disclaimed.
Int. Cl.³ C22C *9/00*; B23K *35/30*
U.S. Cl. 428—606 **16 Claims**

6. A metal alloy composition as recited in claim 1, consisting essentially of about 67.1 atom percent copper, about 10.7 atom percent nickel, about 10.6 atom percent tin and about 11.6 atom percent boron.

4,448,853

LAYERED ACTIVE BRAZING MATERIAL AND METHOD FOR PRODUCING IT

Melch Fischer, Dietikon, and Kurt Brunner, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 15, 1981, Ser. No. 254,511
Int. Cl.³ B23K *35/20*; C22C *9/00, 14/00*
U.S. Cl. 428—607 **6 Claims**

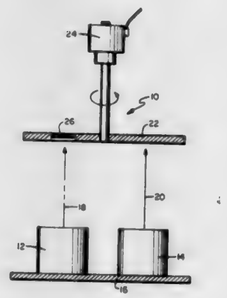
1. A layered active brazing material being in the form of two thin foils selected from the group consisting of binary and ternary copper alloys with at least 40 atomic percent copper selected from the group consisting of binary copper/titanium alloys with 40 to 85 atomic percent copper with the remainder titanium,
copper/titanium/germanium alloys,
copper/titanium/silicon alloys,
copper/zirconium/silicon alloys, and
copper/zirconium/germanium alloys;
nickel/titanium/silicon alloys;
nickel/titanium/germanium alloys;
zirconium/aluminum/silicon alloys;
zirconium/aluminum/germanium alloys;
zirconium/iron/silicon alloys;
zirconium/iron/germanium alloys;
zirconium/nickel/silicon alloys; and
zirconium/nickel/germanium alloys; with structure ranging from microcrystalline to amorphous, said foils being applied to both sides of a flat ductile metallic carrier, said carrier being in the form of a ribbon or sheet and consisting of copper, a copper alloy, tantalum, zirconium, niobium, molybdenum, aluminum, or an aluminum alloy.

4,448,854

COHERENT MULTILAYER CRYSTALS AND METHOD OF MAKING

Ivan K. Schuller, Woodridge, Ill., and Charles M. Falco, Tucson, Ariz., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 202,083, Oct. 30, 1980, abandoned. This application Nov. 15, 1982, Ser. No. 441,900
Int. Cl.³ B32B *15/04, 15/20*
U.S. Cl. 428—611 **9 Claims**



1. A new material comprising a multilayered crystalline structure which is coherent perpendicular to the layers, the structure consisting of a plurality of parallel, ultrathin, alternating, crystalline, epitaxial layers of two different elements, each layer being a single element having a thickness of about 2 to 100 Å.

4,448,855

HEAT RESISTANT REFLECTOR

Susumu Senaha; Suizo Kyo; Susumu Shimomura; Akira Akagami; Hiroshi Imai; Akira Ohno; Shitomi Katayama, and Suguru Nomura, all of Kanagawa, Japan, assignors to Kiko Co., Ltd. and NHK Spring Co., Ltd., both of Kanagawa, Japan

Filed Nov. 13, 1979, Ser. No. 93,472
Claims priority, application Japan, Nov. 13, 1978, 53-138906
Int. Cl.³ G02B *5/08*; B32B *15/04*
U.S. Cl. 428—632 **8 Claims**

1. A heat resistant reflector consisting essentially of a vacuum deposited light reflective metal layer disposed directly on (1) a metallic substrate or (2) a non-metallic, non-resinous substrate and a light transmittable pre-existing ceramic vacuum deposited protective layer having low light refractivity and absorption further disposed on said substrate.

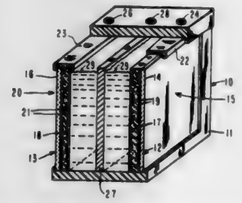
4,448,856

BATTERY AND FUEL CELL ELECTRODES CONTAINING STAINLESS STEEL CHARGING ADDITIVE

David Zuckerbrod, Pittsburgh, and Ann Gibney, Monroeville, both of Pa., assignors to U.S. Department of Energy, Washington, D.C.

Filed Mar. 14, 1983, Ser. No. 474,933
Int. Cl.³ H01M *4/96*
U.S. Cl. 429—27 **10 Claims**

1. An electrode comprising:
A. a hydrophilic layer comprising:
(1) a hydrophilic composite comprising:
i. 1 part by weight of carbon particles where at least about 50 wt.% of the carbon particles have a total surface area of from about 30 to about 300 sq. meters/gram;
ii. about 0.2 to about 1 part by weight of stainless steel particles;
iii. an effective amount of a bonding/nonwetting agent; and



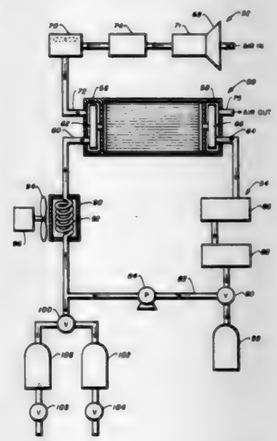
iv. an effective amount of a catalyst for decomposition of perhydroxides; and
(2) at least one metal current collector contacting said composite to provide a hydrophilic layer, and
B. a hydrophobic layer pressed to said hydrophilic layer.

4,448,858

CHEMICALLY RECHARGEABLE BATTERY

James E. Graf, Arcadia, and John J. Rowlette, Monrovia, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 362,087, Mar. 26, 1982. This application Mar. 17, 1983, Ser. No. 476,318
Int. Cl.³ H01M *6/50*
U.S. Cl. 429—49 **10 Claims**



4,448,860

GALVANIC ELEMENT WITH INTEGRAL GETTER

Ulrich von Alpen, Schlossborn, and Subash C. Nijhawan, Kronberg, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,948

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136578

Int. Cl.³ H01M *10/34*

U.S. Cl. 429—57 7 Claims

1. In a galvanic element having a solid negative alkali metal electrode, a non-aqueous electrolyte and a solid positive electrode within a sealed metal housing, the improvement which comprises said housing being sealed with a seal-sealing composite polymer comprising a thermoplastic synthetic material and a gas absorbing getter material.

4,448,861

LITHIUM-THIONYL CHLORIDE CELL WITH LITHIUM SURFACE ALLOYS TO REDUCE VOLTAGE DELAY

Niles A. Fleischer, Madison, and Ronald J. Ekern, Verona, both of Wis., assignors to Rayovac Corporation, Wis.

Filed Jun. 24, 1983, Ser. No. 507,666

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—105 6 Claims



1. In a lithium-thionyl chloride cell, the improvement for reducing voltage delay which comprises using an anode consisting of a lithium substrate having a thin lithium-aluminum alloy at the anode surface exposed to electrolyte.

2. A lithium thionyl chloride cell in accordance with claim 1 wherein said anode surface is formed by initially laminating a thin aluminum foil to said lithium substrate.

4,448,862

LEAD STORAGE BATTERY

Heinz Schulte, and Werner Kirchhoff, both of Hagen, Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,386

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005297

Int. Cl.³ H01M *2/14*

U.S. Cl. 429—136 9 Claims

1. A lead storage battery with positive and negative electrode plates between which are positioned the microporous separators, comprising:

on each separator, an additional hydrogen and acid resistant layer of high porosity glass wool mat applied only to the side facing the negative plate.

4,448,863

ELECTRIC STORAGE BATTERIES

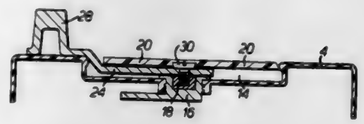
Christopher Terrell, London, England, assignor to Chloride Group Limited, London, England

Filed Nov. 4, 1981, Ser. No. 318,134

Claims priority, application United Kingdom, Nov. 5, 1980, 8035534

Int. Cl.³ H01M *2/02, 2/08, 2/26*

U.S. Cl. 429—178 13 Claims



1. An electric storage battery kit comprising:

(a) a container having a plurality of walls, one of said walls having an outer surface and means defining two spaced elongate recesses, each of said spaced elongate recesses having two ends and an overhanging edge;

(b) two battery terminals, each of said battery terminals being accommodated in a respective one of said spaced elongate recesses and not extending beyond said outer surface of said one of said walls;

(c) two terminal connectors, each of said terminal connectors including:

(i) an elongate portion which is adapted to be releasably connected both mechanically and electrically to a respective one of said battery terminals and

(ii) a current take-off portion adapted to be releasably connected to a battery cable; and

(d) said terminal connectors and said recesses being shaped and dimensioned so that:

(i) when said terminal connectors are connected to said battery terminals, at least a part of each of said elongate portions is accommodated in said respective one of said spaced elongate recesses and said current take-off portions extend above said one of said walls, and

(ii) when said terminal connectors are connected to said battery terminals, one end of the elongate portion of each of said terminal connectors is underneath one of said overhanging edges.

4,448,864

LITHIUM - MANGANESE DIOXIDE CELL

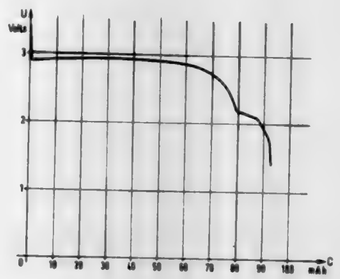
Michel Broussely, Liguge, France, assignor to Societe Anonyme dite: GIPELEC, Levallois-Perret, France

Filed Jul. 22, 1983, Ser. No. 516,386

Claims priority, application France, Jul. 30, 1982, 82 13324

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—194 5 Claims



1. A lithium-manganese dioxide cell having an electrolyte which includes a lithium salt dissolved in a solvent chosen from the group constituted by esters, ethers, and mixtures thereof, the improvement wherein the manganese dioxide is mixed with copper oxyphosphate suitable for conferring a second voltage plateau on the cell discharge curve, the proportion by weight of the copper oxyphosphate being determined by the capacity required at said second discharge voltage plateau.

4,448,865

SHADOW PROJECTION MASK FOR ION IMPLANTATION AND ION BEAM LITHOGRAPHY

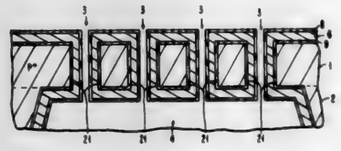
Harald Bohlen, Boeblingen; Johann Greschner, Pliezhausen, and Peter Nehmiz, Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.J.

Filed Oct. 12, 1982, Ser. No. 434,074

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 81109370

Int. Cl.³ G03F *9/00*

U.S. Cl. 430—5 13 Claims



1. A projection mask comprising; a thin P+-doped silicon layer having through holes adapted to the mask pattern, a grid supporting said silicon layer in areas where holes are not present, said grid comprising silicon ribs doped differently from the silicon layer and having on at least an upper side facing away from the grid an ion-absorbing layer, said grid on at least the surface exposed to ion radiation being electrically and thermally conductive, said silicon layer and said grid defining a silicon frame, a coating disposed on said frame where it is to be exposed to the ion beams having at least such a thickness, taking into consideration the ion energy and the characteristics of the covering material, preventing ion penetration into the silicon, said mask surface exposed to the ion radiation comprising a material resistant to the ion attack, and said silicon frame coating not causing mask deformation due to temperature and/or inherent tensions of the coating.

4,448,866

METHOD OF ELECTROPHOTOGRAPHICALLY MANUFACTURING A DISPLAY SCREEN FOR A COLOR DISPLAY TUBE

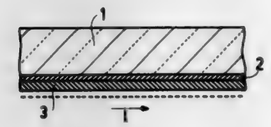
Henri G. Oliesalagers, and Frederik B. Melgert, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,949

Claims priority, application Netherlands, May 7, 1981, 8102224

Int. Cl.³ G03F *5/00, 7/00*

U.S. Cl. 430—24 1 Claim



1. In a method of manufacturing a display screen on a color display tube window including the steps of:

(a) providing an electrically conductive layer on the window;

(b) providing a photoconductive layer on the electrically conductive layer;

(c) establishing a substantially uniform electric charge on the photoconductive layer;

(d) exosing selected areas of the photoconductive layer with light to effect conductive of the charge away from said areas, thereby forming a latent charge image;

(e) applying to the photoconductive layer a solution containing particles charged to the opposite polarity of the charge forming the latent image, thereby effecting deposition of said charged particles on the photoconductive layer in a pattern corresponding to said charge image; and

(f) blow drying the pattern of particles;

the improvement comprising increasing particle adhesion by uniformly exposing with light the portions of the photoconductive layer lying between the deposited pattern of particles to effect conduction of any remaining charge away from said portions, said uniform exposure being made before the drying step is completed.

4,448,867

IMAGE FORMING METHOD AND DEVICE FOR SAME

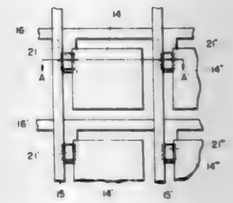
Yukitoshi Ohkubo, Yokohama; Yoshiyuki Osada, Yokosuka; Masso Sugata, Kawasaki, and Takashi Nakagiri, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 340,459

Claims priority, application Japan, Jan. 26, 1981, 56-9954

Int. Cl.³ G03G *13/00*; G11C *13/00*

U.S. Cl. 430—31 33 Claims



1. A method for forming images which comprises:

providing an array of dot-like electrodes, each dot-like electrode electrically connected to a transistor with a gate electrode having an on-state and an off-state and a source electrode;

applying scanning signals by line-at-a-time scanning to said gate electrodes to provide the on-state thereof;

applying image signals to said source electrodes during the on-state of said gate electrodes to generate a voltage or electric charge in the corresponding dot-like electrodes; and developing a toner image on said dot-like electrodes charged by said image signals by electrically attaching a toner to said charged dot-like electrodes in said array.

4,448,868

ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH HYDRAZONE DERIVATIVE

Shinichi Suzuki; Kiyoshi Sawada, both of Hachioji; Akira Kinoshita; Osamu Sasaki, both of Hino, and Satoshi Goto, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,974

Claims priority, application Japan, Feb. 5, 1982, 57/17765; Mar. 27, 1982, 57/49394

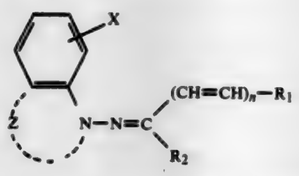
Int. Cl.³ G03G *5/06, 5/14*

U.S. Cl. 430—58 30 Claims



1. An electrophotographic photoreceptor having formed on

an electrically conductive support a light-sensitive layer containing a hydrazone derivative of formula (I):



(I)

wherein Z is a divalent hydrocarbon group necessary to form in conjunction with a nitrogen atom a 5- or 6-membered nitrogen-containing heterocyclic ring condensed to the benzene ring; R_1 is an aryl group or a heterocyclic group; R_2 is a hydrogen atom, an alkyl group or an aryl group; X is a hydrogen atom, a halogen atom, an alkyl group, a substituted amino group, an alkoxy group or a cyano group; and n is an integer of 0 or 1.

5. A photoreceptor according to claim 1, wherein said light-sensitive layer is an assembly of a carrier generation layer and a carrier transporting layer.

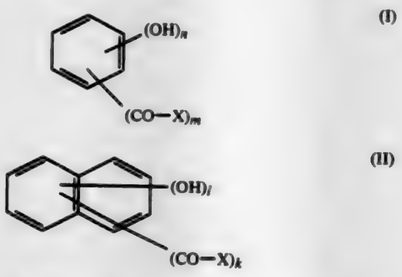
4,448,869

PHOTOCONDUCTIVE COMPOSITION AND ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING SAID COMPOSITION

Syun-ichi Kondo; Kenji Sano, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 4, 1983, Ser. No. 472,305
Claims priority, application Japan, Mar. 4, 1982, 57-33082
Int. Cl.³ G03G *5/05, 5/09*
U.S. Cl. 430—83 **19 Claims**

1. An electrophotoconductive composition comprising an organic photoconductive substance and at least one compound represented by the general formula (I) or (II):



(I)

(II)

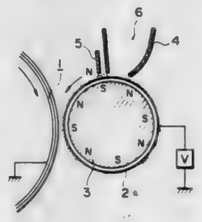
wherein X is an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an alkoxyl group, a substituted alkoxyl group, an aryloxyl group, or a substituted aryloxyl group, n and m each represent an integer of 1 or 2, and l and k each represent an integer from 1 to 4.

4,448,870

MAGNETIC COLOR TONER

Eiichi Imai, Narashino; Hitoshi Uchide, Yokohama; Kazunori Murakawa, Tokyo; Masaki Uchiyama, Tokyo; Hisayuki Ochi, Tokyo; Motoo Urawa, Funabashi; Seiichi Takagi, Tokyo, and Yasuo Mitsuhashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1983, Ser. No. 483,740
Claims priority, application Japan, Apr. 15, 1982, 57-62855
Int. Cl.³ C01G *49/06*; G03C *5/46*
U.S. Cl. 430—107 **7 Claims**



1. A magnetic color toner containing a magnetic material and a binder, said magnetic material comprising magnetic particles comprising a mixture of α-Fe_2O_3 and γ-Fe_2O_3

4,448,871

TONER FOR DEVELOPING AN ELECTROSTATICALLY CHARGED IMAGE AND MANUFACTURING METHOD THEREOF

Kiyoshi Tamaki; Hideki Murata; Sadatugu Terada; Tsuneo Wada, all of Hino; Akitoshi Matsubara, and Hiroyuki Takagiwa, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,657
Claims priority, application Japan, Aug. 27, 1980, 55-118825
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—109 **2 Claims**

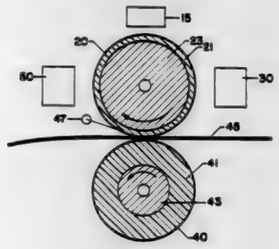
1. A toner for developing an electrostatically charged image comprising polymerized grains formed by the suspension polymerization of an alpha-beta unsaturated polymeric monomer or monomers in the presence of a dispersion stabilizer selected from the group consisting of aluminum hydroxide, ferric hydroxide, titanium hydroxide and thorium hydroxide.

4,448,872

DUPLEX IMAGING WITH PRESSURE TRANSFIXING

Casey S. Vandervalk, Mendon, Mass., assignor to Delphax Systems, Mississauga, Canada

Continuation-in-part of Ser. No. 14,196, Feb. 22, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 426,335
Int. Cl.³ G03G *13/14*
U.S. Cl. 430—126 **18 Claims**



1. A method of duplex imaging which comprises forming a first toner image on the surface of an image roller, said image

surface having a smoothness in excess of 20 microinch rms and a modulus of elasticity in compression of at least 10^7 PSI;

transferring said first toner image to the surface of a transfer roller in rolling contact with said image roller under a compressive load, said transfer roller having a surface layer of a material selected from the group consisting of engineering thermoplastic and engineering thermoset materials;

creating a second toner image on the surface of the image roller;

passing an image receptor sheet between said image roller and said transfer roller; and

transferring said first toner image from said transfer roller to one side of said image transfer sheet and simultaneously transferring said second toner image from said image roller to an opposite side of said image receptor sheet,

wherein the rollers are pressed together sufficiently to fuse the toner images to said image receptor sheet at ambient temperatures.

4,448,873

NEGATIVE WORKING DIAZO CONTACT FILM

John E. Walls, Annandale, and Major S. Dhillon, Hillsborough, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Mar. 18, 1982, Ser. No. 359,460
Int. Cl.³ G03C *1/60, 1/78*
U.S. Cl. 430—157 **10 Claims**

1. A photographic element capable of functioning as a photomask upon imagewise exposure to a suitable light source and upon development by a suitable developer, comprising a transparent support and a coating on at least a portion of said support, said coating comprising a light sensitive negative working diazonium composition having a light absorbency of about 45% or less when exposed to a suitable energy source in the range from about 350 to about 390 nanometers as determined by the herein specified Test Procedure, and a colorant composition comprising a mixture of dyes, said coating having a light transmission of not more than about 0.1% in the 350 to 390 nanometer range, and is capable of being rendered substantially insoluble upon exposure to ultraviolet radiation at an energy level of from about 15 to about 25 mJ/cm^2 and wherein the non-image areas are substantially removable upon treatment with a suitable developer.

4,448,874

POLYMERIC TIMING LAYER FOR COLOR TRANSFER ASSEMBLAGES

Edward P. Abel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,963
Int. Cl.³ G03C *1/40, 1/48, 5/54, 5/24*
U.S. Cl. 430—215 **23 Claims**

1. In a photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

(b) a dye image-receiving layer;

(c) a neutralizing layer for neutralizing an alkaline processing composition; and

(d) a timing layer located between said neutralizing layer and said dye image-receiving layer;

the improvement wherein said timing layer comprises a physical mixture of the following two polymers:

(i) a first polymer comprising from about 5 to about 35 percent by weight of recurring units of an ethylenically unsaturated monomer, from about 0 to about 20 percent by weight of recurring units of an ethylenically unsaturated carboxylic acid, and from about 55 to about 85 percent by weight of recurring units of vinylidene chloride; and

(ii) a second polymer comprising from about 20 to about 70 percent by weight of recurring units of maleic anhydride and from about 80 to about 30 percent by weight of recurring units of a vinyl ester or an alkene;

said second polymer being present at a concentration of from about 2 to about 20 percent by weight of said mixture.

4,448,875

ELECTRON BEAM SENSITIVE MIXTURE RESIST

David F. Lewis, Monroe, Conn., assignor to GAF Corporation, New York, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,636
Int. Cl.³ G03C *5/16*
U.S. Cl. 430—283 **26 Claims**

1. A high sensitivity electron beam resist material which is the mixture of the reaction product consisting essentially of a mixture of an alkyl vinyl ether-maleic anhydride copolymer with a terminally unsaturated alcohol and the reaction product consisting essentially of a compound selected from the group consisting of N-hydroxyalkyl amides and N-aminoalkyl amides mixed with alkylvinyl ether-maleic anhydride copolymer.

4,448,876

ELECTRON BEAM SENSITIVE RESIST

Donald H. Lorenz, Basking Ridge, N.J., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 381,287, May 24, 1982, Pat. No. 4,375,398, which is a continuation-in-part of Ser. No. 357,381, Mar. 12, 1982, abandoned, which is a continuation of Ser. No. 249,991, Apr. 15, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,381
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 **4 Claims**

1. In a method of recording information whereby a beam of electrons is scanned across a surface of an electron beam sensitive material comprising a polymer which is the mixed half-ester reaction product of a reaction between the maleic anhydride of a copolymer of maleic anhydride and a vinyl monomer with a mixture of a terminally unsaturated alcohol compound and an N-hydroxyalkyl amide.

2. In a method of recording information whereby a beam of electrons is scanned across a surface of an electron beam sensitive material comprising a polymer which is the mixed half-ester reaction product of a reaction between the maleic anhydride of a copolymer of maleic anhydride and a vinyl monomer with a mixture of terminally unsaturated alcohol compound and an N-aminoalkyl amide.

4,448,877

TELLURIUM IMAGING COMPOSITION INCLUDING WATER

Terry T. Yu, Macomb County, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 28, 1982, Ser. No. 392,576
Int. Cl.³ G03C *5/24, 1/00*
U.S. Cl. 430—346 **18 Claims**

1. A film for forming an image made from a film-forming composition, which composition comprises:

(a) an image forming tellurium compound selected from the group consisting of

R_x—Te—Hal_y;

(Hal—R^2)$_x$—Te—Hal_y;

$TeCl_nBr_m$; and

R_2—Te—Hal_4

where, in the foregoing formulae, R is an organic radical containing at least 1 carbonyl group, R^2 is the residue of an

ethylenic hydrocarbon, Hal is halogen, x is 1, 2 or 3 and x+y=4, n is an integer from 1 to 4 and m+n=4;

(b) a reductant precursor which will abstract labile hydrogen from a labile hydrogen source under the influence of imaging energy to become a reducing agent with respect to the imaging forming tellurium compound;

(c) a source of labile hydrogen for reaction with said reductant precursor;

(d) water, present in an amount such that an increase in the film speed is attained relative to film made of the same composition having no water; and

(e) a matrix in which said tellurium compound, reductant precursor, source of labile hydrogen and water are combined in amounts effective to form a composition which may be applied to a substrate.

4,448,878

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Kiyohiko Yamamuro; Shigeo Hirano, and Yasuo Iwasa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 12, 1982, Ser. No. 441,208

Claims priority, application Japan, Nov. 13, 1981, 56-181994; Dec. 2, 1981, 56-193832

Int. Cl.³ G03C *1/34*

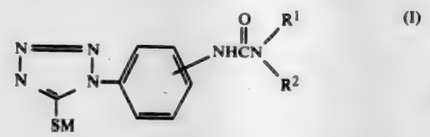
U.S. Cl. 430—507 **12 Claims**

1. A silver halide photographic light-sensitive material, comprising:

a support base;

a silver halide emulsion layer positioned on the support base; and

a compound represented by the general formula (I):



(I)

wherein M is hydrogen, an alkali metal atom, or a quaternary ammonium group, and R^1 and R^2 are each hydrogen, a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted aromatic group, and may be the same or different and may combine together to form a ring.

4,448,879

HIGH YIELD PROCESS FOR IN VITRO PRODUCTION OF SERUM-FREE AND MITOGEN-FREE INTERLEUKIN-2

Hans-Ake Fabricius, Breisach, and Roland Stahn, Holzhausen, both of Fed. Rep. of Germany, assignors to Hooper Trading Company, Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 247,769, Mar. 26, 1981, Pat. No. 4,390,623, which is a continuation-in-part of Ser. No. 193,112, Oct. 2, 1980, abandoned. This application Sep. 15, 1982, Ser. No. 418,378

Int. Cl.³ A01N *1/02*; C12P *21/00*

U.S. Cl. 435—2 **3 Claims**

1. In a process for producing a serum-free and mitogen-free interleukin-2 containing supernatant by the steps of stimulating IL-2 producing cells by incubating the cells in a liquid tissue culture medium supplemented with serum protein and mitogen; separating and washing the stimulated cells to remove substantially all of the serum protein and mitogen; and, conditioning the washed cells by incubating the cells in the presence of fresh liquid tissue culture medium in the absence of serum protein and mitogen to thereby transfer the interleukin-2 into the liquid phase; the improvement comprising,

carrying out the incubation steps under an oxygen rich atmosphere comprising at least 70% oxygen and at least 5% carbon dioxide.

4,448,880

DETECTION OF β-LACTAMASE UTILIZING A CHROMOPHORIC CEPHALOSPORIN COMPOSITION

Peter Schindler, Rodgau, and Gerhard Huber, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst AG., Frankfurt am Main, Fed. Rep. of Germany

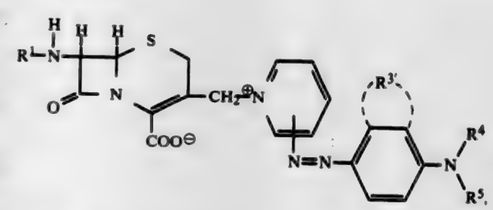
Division of Ser. No. 142,767, Apr. 22, 1980, Pat. No. 4,353,824. This application Jul. 6, 1982, Ser. No. 395,135

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916433

Int. Cl.³ C12Q *1/34, 1/00, 1/04*

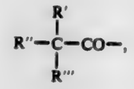
U.S. Cl. 435—18 **5 Claims**

1. A composition for the detection of β-lactamase comprising, in solution or on a carrier, a chromophoric cephalosporin of the formula



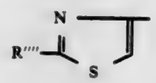
wherein

R^1 is hydrogen, formyl, or



wherein in turn

R′ is hydrogen; alkyl having 1 to 4 carbon atoms; such alkyl substituted by chlorine, by bromine, by cyano, by hydroxy, or by alkoxy having 1 to 4 carbon atoms; or is ω-carboxyalkyl; ω-carboxy-ω-aminoalkyl; ω-carboxy-ω-benzoylaminoalkyl; cycloalkyl or cyclalkenyl having 5 to 7 carbon atoms; phenyl; phenyloxy; or phenyl or phenyloxy mono- or di-substituted by alkyl having 1 to 4 carbon atoms, by hydroxy, by alkoxy having 1 to 4 carbon atoms, by alkanoyloxy having 1 to 4 carbon atoms, by fluorine, by chlorine, by carboxy, by sulfoxy, by amino, or by alkanoylamino having 1 to 4 carbon atoms; or R′ is 2-pyridon-1-yl; 4-pyridon-1-yl; 3,5-dichloro-pyridon-1-yl; 2-thienyl; 3-thienyl; 2-furyl; 3-furyl; tetrazolyl; or is thiazolyl of the formula



wherein R′′′′ is alkyl having 1 to 4 carbon atoms, formamido, acetamido, chloroacetamido, bromoacetamido, or trifluoroacetamido; or R′ is 2-methyl-1,3,4-thiadiazol-5-yl-thio; or is 2-amino-1,3,4-thiadiazol-5-yl-thio;

R″ and R‴, taken together, are oxygen, or, taken alone, are the same or different and are hydrogen; alkyl having 1 to 4 carbon atoms; hydroxy; alkanoyloxy having 1 to 4 carbon atoms; alkoxy having 1 to 4 carbon atoms; amino; alkylamino; alkylamino mono- or di-substituted by p-methoxyphenyl or mono-, di-, or tri-substituted by phenyl; alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl group; chlorine; bromine; cyano; sulfoxy; aminosulfonyl; or are acylamino selected from the group consisting of formylamino, acetylamino, chloroacetylamino, bromoacetylamino, benzoylamino, tert.butoxycarbonylamino, 2,2,2-trichloroethoxycarbonylamino, 4-hydroxy-1,5-naphthyridin-2-carbonylamino,3-hydroxy-pyridazin-4-carbonylamino, imidazolidin-2-on-1-yl-carbonylamino, (3-methyl-sulfonyl-imidazolidin-2-on-1-yl) carbonylamino, and (4-ethyl-piperazin-2,3-dion-1-yl) carbonylamino;

R^4 and R^5 are the same or different and are hydrogen; alkyl having 1 to 4 carbon atoms; or alkyl having 1 to 4 carbon atoms substituted by cyano, by carboxy, by alkoxy having 1 to 4 carbon atoms, by hydroxy, by alkanoyloxy having 1 to 4 carbon atoms, by aminocarbonyl, by sulfoxy, or by chloro; and

$R^{3'}$ is two hydrogen atoms or is benzo, pyrido, thieno, pyrimidino, or thiazolo.

4,448,881

FERMENTABLE SUGAR FROM THE HYDROLYSIS OF STARCH DERIVED FROM DRY MILLED CEREAL GRAINS

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 219,011, Dec. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 112,033, Jan. 14, 1980, Pat. No. 4,287,304. This application Jun. 23, 1982, Ser. No. 391,324

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ C12P *7/14, 7/06*

U.S. Cl. 435—162 **17 Claims**

1. A process for converting the starch fraction derived from whole dry milled cereal grain to a sterile aqueous solution of fermentable sugar, said starch containing water insoluble protein and oil and one or more water soluble components selected from the group consisting of sugar, lipid, protein, vitamin and mineral, which comprises:

a. liquefying an aqueous slurry of the starch by hydrolysis to provide sterile aqueous partial starch hydrolysate slurry containing the water insoluble protein and oil and the water soluble components in substantially unaltered condition;

b. separating the slurry resulting from liquefying step (a) into an aqueous sterile slurry of partial starch hydrolysate containing a part of the water soluble components and an aqueous slurry of water insoluble protein and oil containing the remaining part of the water soluble components; and

c. intensively saccharifying the relatively thin aqueous slurry of partial starch hydrolysate to provide a sterile aqueous solution of fermentable sugar.

4,448,882

STABILIZED PEROXIDASE COMPOSITIONS

Hans Brodbeck, Münchenstein, and Harald Gallati, Dornach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 12, 1982, Ser. No. 397,613

Claims priority, application Switzerland, Jul. 30, 1981, 4944/81

Int. Cl.³ C12N *9/96, 9/08*; C12Q *1/28*

U.S. Cl. 435—188 **12 Claims**

7. A stabilized comosition of peroxidase which is bound to an immunologically active material comprising said bound peroxidase and a stabilizing effective amount of 4-amino-antipyrine.

4,448,883

METHOD OF MAKING LYOPHILIZED TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE

Richard V. Case, Midland, Tex., assignor to The Midland Certified Reagent Company, Midland, Tex.

Filed Jul. 26, 1982, Ser. No. 401,812

Int. Cl.³ C12N *9/12, 9/96*

U.S. Cl. 435—194 **7 Claims**

1. A method of stabilizing the bio-catalytic activity of heat-sensitive terminal deoxynucleotidyl transferase (TDT) comprising lyophilizing a solution of the enzyme, said solution prior to lyophilization having a pH in the range of 6.0 to 10.0, an ionic concentration of at least 0.05 mole/liter and a protein concentration of 0.3 gram/liter or greater, comprising the steps of:

(a) maintaining the pH of the solution at 6.0–10.0;

(b) maintaining the ionic concentration of the solution at a concentration of the solution at a concentration of 0.05 mole/liter or above;

(c) maintaining the protein concentration above 0.3 gram/-liter; and

(d) lyophilizing said solution, whereby a lyophilized terminal deoxynucleotidyl transferase having substantial bio-catalytic activity is obtained.

4,448,884

GLASS-SURFACE MICROCARRIER FOR GROWTH OF CELL CULTURES

Timothy M. Henderson, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Mar. 3, 1982, Ser. No. 354,345

Int. Cl.³ C12N *5/00, 5/02, 11/14*

U.S. Cl. 435—241 **7 Claims**

1. A microcarrier adapted for use as growth sites for anchorage dependent cells in an aqueous cell culture medium comprising a spherical substrate of polymeric material having a density of about 1 g/cc and a thin continuous discrete surface layer of silicate glass composition entirely surrounding said substrate.

4,448,885

BACILLUS THURINGIENSIS CRYSTAL PROTEIN IN *ESCHERICHIA COLI*

H. Ernest Schnepf, and Helen R. Whiteley, both of Seattle, Wash., assignors to Board of the Regents of the University of Washington, Seattle, Wash.

Filed Apr. 27, 1981, Ser. No. 257,963

Int. Cl.³ C12N *1/20, 15/00, 1/00*; C12P *21/00*

U.S. Cl. 435—253 **6 Claims**

2. A hybrid recombinant plasmid capable of replication in an *Escherichia coli* bacterial host species, said plasmid containing expressible heterologous DNA coding for a polypeptide of 130,000 Mr which has the immunological properties of crystal protein of *Bacillus thuringiensis*, said plasmid further including an expression mechanism for said heterologous DNA which is recognized by the host species' system.

4,448,886

BIODISPERSIONS

Lawrence J. Gestaut, Concord, Ohio, and P. David Simcox, Langhorne, Pa., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Nov. 30, 1981, Ser. No. 325,652

Int. Cl.³ C12P *3/00*; C22B *11/00, 3/00*; C25B *11/08*

U.S. Cl. 435—262 **11 Claims**

1. A process for producing high dispersion metal crystallites dispersed substantially homogeneously in a carbonaceous material matrix comprising:

a. introducing living microbes into a growth medium consisting essentially of a microbe nutrient, an aqueous liquid, and at least one metal in solvated form;

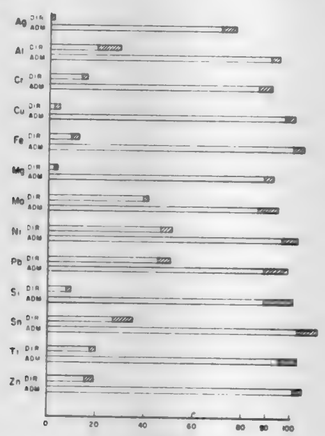
b. growing said microbes in said growth medium, allowing said microbes to incorporate said metal;
c. harvesting said microbes containing said metal; and
d. pyrolyzing said harvested, metal-containing microbes in an inert or reducing atmosphere at a temperature of at least about 300° C. thereby yielding said high dispersion metal crystallites dispersed substantially homogeneously in a carbonaceous material matrix coformed therewith during this pyrolysis step.

4,448,887

METHOD FOR THE PARTICLE SIZE INDEPENDENT SPECTROMETRIC DETERMINATION OF METAL PARTICLES IN LUBRICATING OILS AND HYDRAULIC FLUIDS

Robert E. Kauffman, Kettering; Wendell E. Rhine, Dayton, and Costandy S. Saba, Springfield, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,939
Int. Cl.³ G01N *21/71, 33/20, 33/28*
U.S. Cl. 436—60 **20 Claims**



1. A method for determining the degree of wear metal contamination of an oil which comprises the steps of:
(a) combining a sample of said oil with an acid mixture consisting of about 8 to 12 weight percent of concentrated HF, about 76 to 84 weight percent of concentrated HCl and about 8 to 12 weight percent of concentrated nitric acid;
(b) heating the resulting oil/acid mixture to dissolve wear metal particles;
(c) diluting said oil/acid mixture with a solvent mixture consisting of about 20 to 40 parts by weight of a nonionic surfactant and about 60 to 80 parts of a diluent; and
(d) spectrometrically analyzing the resulting diluted mixture.

4,448,888

COMPOSITIONS AND METHOD FOR CORRECTING TEMPERATURE DEPENDENCE OF HEMOGLOBIN ASSAYS

Dennis M. Bleile, Emeryville; Diane M. Allen, Richmond; Steve K. Tanaka, Vallejo, and Francis J. Matarrese, Jr., Oakland, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Aug. 24, 1982, Ser. No. 411,112
Int. Cl.³ G01N *33/72, 33/66*
U.S. Cl. 436—67 **20 Claims**

1. A set of storage-stable hemoglobin compositions for use in the temperature correction of a hemoglobin A_1 or A_{1c} assay of a sample performed on a cation exchange chromatographic column, said set comprising a plurality of compositions of hemoglobin A_o and hemoglobin A_1 containing hemoglobin A_{1c}, said compositions containing known ratios of hemoglobin A_1 to total hemoglobin at graduated levels extending over the expected range of said sample, with the hemoglobin A_{1c} content of the hemoglobin A_1 in each composition adjusted approximately according to the following formula:

$$y = mx + b$$

where y = weight percent A_{1c} with respect to A_1,
x = weight percent A_1 with respect to total hemoglobin
m = −1.7 and b = 85 when $x < 10$, and
m = −1.2 and b = 80 when $x > 10$,

and said compositions further containing effective amounts of at least one antibiotic agent.

11. In a method for determining the level of hemoglobin A_1 in a sample of human blood, which comprises:
(a) lysing the red blood cells in said sample to form a hemolysate,
(b) impregnating a weak cation exchange resin with said hemolysate,
(c) passing through said resin a buffer solution with ions of an alkali metal dissolved therein at a concentration of from about 0.06 M to about 0.11 M to preferentially elute said hemoglobin A_1 over other hemoglobins present in said hemolysate, and
(d) analyzing the eluate from step (c) for its hemoglobin content, the improvement comprising performing the following steps under substantially identical ambient conditions as those under which steps (b) through (d) above were performed:
(e) impregnating each of a plurality of further cation exchange resins substantially identical to that of step (b) with an aqueous calibrator solution selected from a series of such solutions such that the calibrators used contain known graduated ratios of hemoglobin A_1 to total hemoglobin extending over the expected range of said sample, and the composition of said calibrators conforming approximately to the following formula:

$$y = mx + b$$

where y = weight percent A_{1c} with respect to A_1
x = weight percent A_1 with respect to total hemoglobin
m = 1.7 and b = 85 when $x < 10$, and
m = 1.2 and b = 80 when $x > 10$,

(f) passing through each of the resins of step (e) a buffer solution identical to that of step (c),
(g) analyzing each of the eluates from step (f) for its hemoglobin content, and
(h) comparing the analysis of step (d) with those of step (g).

4,448,889

FLUID ANALYSIS

Bruce P. Neri, North Andover; Stanley M. Liffmann, Methuen, both of Mass., and Carolyn Bergkuist, Hampstead, N.H., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Jun. 18, 1982, Ser. No. 389,895
Int. Cl.³ G01N *33/20, 33/52*
U.S. Cl. 436—74 **19 Claims**

1. A method for determination of calcium in a fluid sample comprising the steps of
providing a first reagent that contains a dye which interacts with calcium ions and, when mixed with said sample at a first pH value, provides a first colorimetrically detectable value that is not a function of an interaction between calcium ions in said sample and said dye, and when mixed with said sample at a second pH value provides a second colorimetrically detectable value, said second colorimetrically detectable value being different from said first colorimetrically detectable value and being a function of an interaction between calcium ions in said sample and said dye,
mixing said sample with said first reagent such that the resulting mixture has said first pH value,
performing a first colorimetric measurement on said mixture of said first reagent and said sample,
adding a second reagent to said mixture of said first reagent and said sample to shift the pH of the resulting mixture from said first pH value to said second pH value,
performing a second colorimetric measurement on the resulting mixture, and
determining the difference between said first and second colorimetric measurements, said difference being a measure of calcium in said sample.

4,448,892

OLEFIN OXIDATION CATALYST

Semyon G. Kukes, and Tod K. Shioyama, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 1, 1982, Ser. No. 364,360
Int. Cl.³ B01J *31/30, 31/28, 31/18;* **C07C** *45/04*
U.S. Cl. 502—164 **12 Claims**

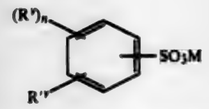
1. A composition useful for the Wacker catalytic oxidation of olefins to carbonyl compounds comprising:
(a) one or more suitable palladium components;
(b) one or more suitable heteropolyacid or copper components;
(c) one or more surfactants selected from the group consisting of quaternary ammonium salts, alkali metal sulfates, alkali metal salts of alkanoic acids, alkali metal salts of alkaryl sulfonic acids, and 1-alkyl pyridinium salts; and
(d) at least one fluorocarbon compound conforming to the empirical formula:

$$C_{x'}F_{y'}X_{z'}$$

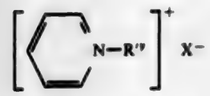
wherein X is a halogen other than fluorine and y' is greater than x' and y' is greater than z'.

2. The composition of claim 1 wherein (d) is at least one perfluorinated compound containing from 1 to about 24 carbon atoms.

12. The composition of claim 1 wherein the surfactant is at least one compound selected from Groups (A) through (E), as follows:
(A) Quaternary ammonium salts of the general formula $(R'''')_4N^+X^-$ wherein R'''' is an alkyl radical of from 1 to 20 carbon atoms and wherein the total number of carbon atoms in said quaternary ammonium salt is from 8 to 30 carbon atoms; and wherein X is selected from the group consisting of Br^-, Cl^-, I^-, F^-, $R''''CO_2^-$, QSO_3^-, BF_4^-, and HSO_4^-, wherein Q is an aryl, alkaryl or arylalkyl radical of 6 to 10 carbon atoms;
(B) Alkali metal alkyl sulfates of the general formula $R''^{9}OSO_3M$, wherein R''^{9} is an alkyl radical having from 10 to 20 carbon atoms and wherein M is an alkali metal;
(C) Alkali metal salts of alkanoic acids of the general formula $R''^{9}CO_2M$, wherein R''^{9} and M have the same meaning as given above for the compounds of (B);
(D) Alkali metal salts of alkaryl sulfonic acids of the general formula



wherein R''^{9} and M have the same meaning as given and wherein R^{9} is an alkyl radical of 1 to 4 carbon atoms and wherein n is 0 or an integer of from 1 to 4; and
(E) 1-Alkyl pyridinium salts of the general formula



wherein R''^{9} and X^- have the same meanings as described above.

4,448,891

ZEOLITE L CATALYST FOR REFORMING

Abraham D. Cohen, Sarnia, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 28, 1982, Ser. No. 426,211
Int. Cl.³ B01J *29/32, 29/12*
U.S. Cl. 502—74 **21 Claims**

1. A catalyst for hydrocarbon reforming comprising a zeolite having exchangeable cations of which at least 90% are metal ions selected from the group consisting of sodium, barium, lithium, potassium, rubidium and cesium and containing at least one metal selected from the group consisting of Group VIII of the periodic table of elements and having a dehydrocyclizing effect, said zeolite produced by soaking a type L zeolite prior to calcining the dehydrocyclizing metal loaded zeolite in an alkali solution having a pH of at least 11 for a time and at a temperature effective to increase the period of time over which the catalytic activity of the catalyst is maintained under reforming conditions.

18. A zeolite suited for use as a catalyst support comprising:
a zeolite produced by soaking a type L zeolite in an alkali solution having a pH of at least 11 for a temperature and a period of time effective to increase the period of time over which the catalytic activity is maintained when said zeolite is loaded with a catalytically active metal, said soaking carried out prior to calcining the zeolite when it is loaded with a dehydrocyclizing metal.

21. Zeolite of claim 18 wherein said soaking is carried out prior to loading the zeolite with a dehydrocyclizing metal.

4,448,893

PREPARATION OF IMPROVED MIXED VANADIUM PHOSPHORUS OXIDE CATALYST AND THEIR USE IN OXIDATION PROCESSES

Noel J. Bremer, Kent; Dennis E. Dria, Cleveland Heights, and Andrew M. Weber, Bedford Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 286,434, Jul. 24, 1981, Pat. No. 4,365,069. This application Aug. 26, 1982, Ser. No. 411,780

Int. Cl.³ B01J 27/14

U.S. Cl. 502—209 12 Claims

1. A process for the preparation of vanadium phosphorus mixed oxide containing catalysts comprising

(a) introducing a pentavalent vanadium compound into an organic liquid reaction medium selected from alcohols and glycols capable of reducing at least a portion of the vanadium to a valence state of about +4 in the absence of corrosive reducing agents;

(b) introducing at least one pentavalent phosphorus compound into the reaction medium;

(c) effecting reduction of the vanadium prior or subsequent to the addition of the phosphorus compound and reacting the vanadium with the phosphorus compound to form a catalyst precursor;

(d) removing from the reaction medium during the reduction or reaction at least 1.5 moles of the organic liquid including organic oxidation byproducts per mole of vanadium reduced or reacted;

(e) recovering the catalyst precursor from the reaction medium;

(f) drying the catalyst precursor; and

(g) calcining the catalyst precursor.

4,448,894

CATALYST AND REVERSE DISPROPORTIONATION PROCESS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 403,254, Jul. 29, 1982, Pat. No. 4,419,526. This application Jul. 18, 1983, Ser. No. 514,724

Int. Cl.³ B01J 23/31

U.S. Cl. 502—249 7 Claims

1. A catalyst comprising catalytically-effective amounts of antimony, tungsten and an alkali or alkaline earth component on a carrier material.

4,448,895

PROCESS FOR PREPARATION OF CATALYST FOR CLEANING EXHAUST GASES AND CATALYST PREPARED BY THE PROCESS

Tetsuji Ono, Amagasaki; Kazuo Tsuchitani, Ibaraki; Shin Yamauchi, Ikeda, and Kiyoshi Yonehara, Kawanishi, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Nov. 4, 1982, Ser. No. 439,191

Claims priority, application Japan, Nov. 11, 1981, 56-179819

Int. Cl.³ B01J 21/04, 23/10, 23/89

U.S. Cl. 502—304 11 Claims

1. A process for preparing a catalyst for cleaning exhaust gases comprising a refractory carrier composed mainly of alumina and having deposited thereon, iron oxide, cerium oxide and at least one platinum group noble metal element, which comprises impregnating said carrier with

(a) an aqueous solution A prepared by adding aqueous ammonia to an aqueous solution containing a water-soluble iron salt as a material for iron and a cerium salt of an organic acid as a material for cerium to adjust the pH of the aqueous solution to 6.0–9.0, and optionally adding an ammonium salt of an organic acid, and

(b) an aqueous solution B containing a compound of the platinum group noble metal element; drying and calcining said impregnated carrier, the catalyst containing 0.5 to 20 g of iron and 0.5 to 20 g of cerium per liter of the catalyst.

4,448,896

HYDROGENATION CATALYST FOR DESULFURIZATION AND REMOVAL OF HEAVY METALS

Yoichi Kageyama, Isehara; Kazuhiko Onuma, Machida; Toshihiro Kawakami, Yokkaichi, and Makoto Suzuki, Yokohama, all of Japan, assignors to Mitsubishi Chemical Ind., Ltd. and Asia Oil Company Limited, both of Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,626

Claims priority, application Japan, Jun. 2, 1981, 56-84703; Jun. 4, 1981, 56-86116

Int. Cl.³ B01J 21/04, 23/24, 23/74

U.S. Cl. 502—314 17 Claims

1. A hydrogenation catalyst for desulfurization and removal of heavy metals, which comprises: (a) at least one metal component selected from the group consisting of metals of Groups VI B and VIII of the Periodic Table, as a catalytically active component, and (2) a porous activated alumina carrier obtained by shaping a mixture of carbon black and a powder of activated alumina or a precursor of activated alumina, drying the shaped mixture and firing said dried mixture in an oxygen-containing gas stream to burn off the carbon black.

4,448,897

METHOD FOR PRODUCING A VANADIUM-TITANIUM CATALYST EXHIBITING IMPROVED INTRINSIC SURFACE AREA

Robert G. Gastinger, Brookhaven, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 13, 1982, Ser. No. 377,775

Int. Cl.³ B01J 21/06, 23/22

U.S. Cl. 502—350 7 Claims

1. A method for producing a mixed vanadium-titanium oxides catalyst which method comprises forming a precipitate by the mixing of at least one vanadyl alkoxide, at least one titanium alkoxide in an aqueous solution, recovering, drying and calcining the resulting precipitate.

4,448,898

METHOD FOR PRODUCING A VANADIUM-TITANIUM-TIN CATALYST EXHIBITING IMPROVED INTRINSIC SURFACE AREA

Hsiang-Ning Sun, Media, Pa., assignor to Altantic Richfield Company, Los Angeles, Calif.

Filed Jun. 7, 1982, Ser. No. 386,168

Int. Cl.³ B01J 21/06, 23/14, 23/22

U.S. Cl. 502—350 10 Claims

1. A method for producing a mixed vanadium-titanium-tin oxides catalyst which method comprises forming a precipitate by the mixing of at least one vanadyl alkoxide, at least one titanium alkoxide, and at least one tin compound in an aqueous solution, recovering, drying and calcining the resulting precipitate.

4,448,899

PROCESS FOR REMOVING SO_x AND NO_x COMPOUNDS FROM GAS STREAMS

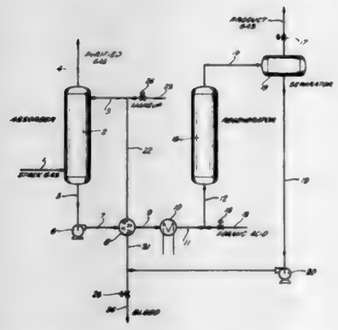
Robert H. Hass, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 151,783, May 21, 1980, Pat. No. 4,372,932, Continuation-in-part of Ser. No. 907,189, May 18, 1978, Pat. No. 4,222,991. This application Sep. 24, 1982, Ser. No. 423,008

Int. Cl.³ B01D 53/34

U.S. Cl. 521—32 25 Claims

1. A catalyst composition comprising a water-insoluble, anionic, organic ion exchange resin containing tertiary amine functional groups, said resin having anionic ion exchange capacity, essentially all of which exchange capacity resides in



said tertiary amine functional groups, and containing formate ion in at least 50% of the anionic ion exchange sites.

4,448,900

EXPANDABLE POLYSTYRENE COMPOSITION AND PROCESS

Richard A. Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Apr. 29, 1983, Ser. No. 489,973

Int. Cl.³ C08J 9/22

U.S. Cl. 521—57 3 Claims

1. A process for reducing the adhesion of expandable polystyrene beads to one another, comprising coating the beads with an anti-adhesion composition comprising effective amounts of magnesium stearate and zinc stearate respectively, wherein, (a) the effective amount of magnesium stearate is from about 50 grams to about 400 grams per 1000 pounds of expandable polystyrene beads; and (b) the effective amount of zinc stearate is from about 50 grams to about 500 grams per 1000 pounds of expandable polystyrene beads.

4,448,901

EXPANDED PARTICLES OF POLYOLEFIN RESIN AND PROCESS FOR PRODUCING SAME

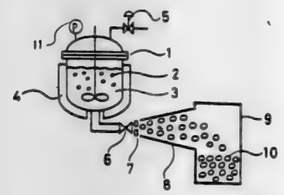
Kenichi Senda, Hirakata; Masao Ando, Toyonaka; Kyoichi Nakamura, Settsu; Kiyoshi Mori, Kakogawa, and Tatehiko Nishida, Ibaraki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1983, Ser. No. 494,394

Claims priority, application Japan, May 13, 1982, 57-81137; May 13, 1982, 57-81138; May 13, 1982, 57-82097; May 14, 1982, 57-82096; Aug. 13, 1982, 57-141573

Int. Cl.³ C08J 9/18

U.S. Cl. 521—60 7 Claims



1. A process for producing expanded particles of a polyolefin resin characterized by dispersing polyolefin resin particles 0.25 to 10 mm in particle size and a volatile blowing agent in water in the presence of a dispersant within a pressure-resistant container, heating the mixture at a temperature within the range of from the melting point of crystals of the resin minus 25° C. to the melting point plus 10° C. to impregnate the resin particles with the blowing agent, and releasing the mixture of the particles and water into a low-pressure zone through at least one orifice having an area of 0.07 to 300 mm^2 while maintaining the interior of the container at a constant temperature and constant pressure.

4,448,902

METHOD AND A DEVICE FOR THE PRODUCTION OF A REACTION MIXTURE FROM FLOWABLE FOAM-FORMING OR SOLID-FORMING COMPONENTS

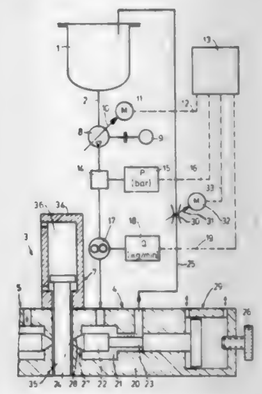
Rolf Coblenz, Cologne; Klaus Schulte, Leverkusen; Wilfried Ebeling, Cologne, and Dieter Evertz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 183,487, Sep. 2, 1980, Pat. No. 4,399,104. This application Dec. 16, 1982, Ser. No. 450,414

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936223

Int. Cl.³ C08G 18/14; B29D 27/00

U.S. Cl. 521—99 2 Claims



1. A method of producing a reaction mixture from flowable, foam-forming or solid-forming components which comprises

(a) continuously circulating said components from storage containers via feed pipes to a mixhead and back to said storage containers via return pipes, said feed pipes being provided with metering pumps and said return pipes being provided with adjustable throttling means,

(b) preselecting the desired rate of flow through said feed pipes and storing the preselected value in a controlled computer,

(c) preselecting the circulation pressure through said return pipes to approximate the desired injection pressure in said mixhead and storing the preselected value in a control computer,

(d) measuring the actual rate of flow through said feed pipes and the circulation pressure through said return pipes,

(e) comparing the measured values for both the rate of flow and circulation pressure from step (d) with the stored, preselected values from steps (b) and (c) and, if necessary, adjusting said metering pumps and said throttling means,

(f) repeating steps (d) and (e) until the difference between the measured and stored values for both the rate of flow and the circulation pressure are within preselected limits, and then

(g) discontinuing the circulation through said return pipes of step (a) and mixing the components in said mixhead,

(h) measuring the injection pressure under which the components are mixed in said mixhead, and

(i) repeating the process, using the measured injection pres-

sure from step (h) as said preselected circulation pressure of step (c).

4,448,903

NOVEL SYSTEM FOR THE PRODUCTION OF POLYURETHANES

Tai-Ming Liang, Pittsburgh, and Keith G. Spitler, Bethel Park, both of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jul. 25, 1983, Ser. No. 517,167
Int. Cl.³ C08G *18/14, 18/63;* C09K *3/00*
U.S. Cl. 521—137 **12 Claims**

1. A polyurethane product formed by reacting

(a) an isocyanate selected from the group consisting of 4,4'-diisocyanatodiphenylmethane, isocyanates based on 4,4'-diisocyanatodiphenylmethane, and mixtures thereof,

(b) at least one polyether polyol having at least two and no more than three hydroxyl groups,

(c) at least one polymer polyol prepared by polymerizing an ethylenically unsaturated monomer or monomers in a relatively high molecular weight organic compound containing at least two hydroxyl groups, the amount of polymer polyol being such that the combination of component (b) and component (c) has an average hydroxyl functionality of from about 2.10 to about 2.30, and a solids content of from about 2 to about 15 percent by weight,

(d) from about 5 to about 15 percent by weight based on the total weight of components (b), (c) and (d) of a compound selected from the group consisting of ethylene glycol, 1,4-butanediol and mixtures thereof, in the presence of

(e) a blowing agent and, optionally, catalyst and surfactant, wherein the amount of component (a) is such that the isocyanate index is from about 94 to about 105.

10. A blend comprising

(b) at least one polyether polyol having at least two and no more than three hydroxyl groups,

(c) at least one polymer polyol prepared by polymerizing an ethylenically unsaturated monomer or monomers in a relatively high molecular weight organic compound containing at least two hydroxyl groups, the amount of polymer polyol being such that the combination of component (b) and component (c) has an average hydroxyl functionality of from about 2.10 to about 2.30, and a solids content of from about 2 to about 15 percent by weight,

(d) from about 5 to about 15 percent by weight based on the total weight of components (b), (c) and (d) of a compound selected from the group consisting of ethylene glycol, 1,4-butanediol and mixtures thereof,

(e) a blowing agent, and optionally, catalyst and surfactant.

4,448,904

REACTION INJECTION MOLDED ELASTOMER USING A METHYLENE BIS(PHENYLISCOYANATE) CONTAINING 2,4' ISOMER IN AMOUNTS GREATER THAN ABOUT 10 PERCENT

Richard J. G. Dominguez, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 8, 1983, Ser. No. 502,397
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—160 **12 Claims**

1. A method for making a reaction injection molded elastomer comprising injecting into a mold cavity of desired configuration, a formulation comprising primary or secondary amine terminated polyethers of greater than about 1,500 molecular weight wherein greater than 50% of the active hydrogens are in the form of amine hydrogens, an amine terminated chain extender and a methylene bis(phenylisocyanate) wherein the 2,4' isomer is present in amounts greater than about 10%.

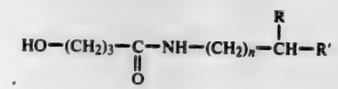
4,448,905

ALCOHOL SUBSTITUTED AMIDES AS CHAIN EXTENDERS FOR POLYURETHANES

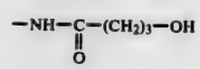
I. Sioun Lin, Oak Ridge; Stanley J. Gromelski, Jr., West Caldwell; Eugene V. Hort, Wayne; Lowell R. Anderson, Morristown, all of N.J., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,573
Int. Cl.³ C08G *18/72;* C08J *18/10*
U.S. Cl. 521—164 **5 Claims**

1. A castable elastomeric composition comprising a polyurethane and a compound having the formula



wherein R is hydrogen or methyl, R' is hydroxy or



and n has a value of 1 or 2 in a mole ratio of between about 1:1 and about 1:3.

4,448,906

SURFACE-COATING COMPOSITIONS

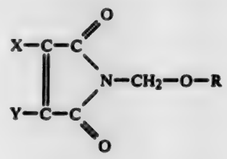
Adolph J. Deinet, East Brunswick, and William B. Woods, Lebanon, both of N.J., assignors to Nuodex Inc., Piscataway, N.J.

Filed Jun. 16, 1982, Ser. No. 389,210
Int. Cl.³ C08K *5/34*
U.S. Cl. 523—122 **14 Claims**

1. A surface-coating composition having improved resistance to attack by bacteria, fungi, and other microorganisms that comprises

(a) a water-insoluble resinous binder selected from the group consisting of synthetic linear addition polymers prepared by the emulsion polymerization of ethylenically-unsaturated monomers, oleoresinous binders, and mixtures thereof and

(b) 0.1% to 3%, based on the weight of the composition, of a biocidal compound having the structural formula



wherein R represents hydrogen or —COR'; R' represents alkyl, aryl, or aralkyl; and X and Y, which may be the same or different, represent hydrogen or chlorine.

4,448,907

PROCESS FOR CASTING LIGHTWEIGHT METALS

Robert J. Schafer, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 248,165, Mar. 30, 1981, Pat. No. 4,370,463, which is a continuation of Ser. No. 72,730, Sep. 4, 1979, abandoned, which is a continuation of Ser. No. 915,413, Jun. 14, 1978, abandoned. This application Jan. 24, 1983, Ser. No. 460,426
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ C08G *18/50;* B22C *1/22*
U.S. Cl. 523—139 **16 Claims**

1. Process for casting lightweight metals comprising:

a. forming a foundry mix, said mix comprising an aggregate, a polyisocyanate, an amine polyol, and a catalyst for forming urethane, wherein the aggregate comprises at least 90% by weight of said mix;

b. shaping said mix to form a foundry shape;

c. allowing said mix to cure after said shape has been formed;

d. forming a shaped lightweight metal casting by using said cured shaped mix and casting melted lightweight metal into contact with said cured shaped mix; and

e. removing the cured shaped mix from said lightweight metal casting.

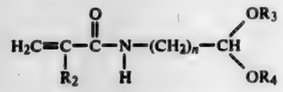
4,448,908

LATEX, BIOLOGICALLY ACTIVE LATEX CONJUGATES AND A PROCESS FOR THEIR PREPARATION

Hans-Erwin Pauly, Dautphetal; Wolfgang Kapmeyer, Marburg, and Ulrich Seitz, Leonberg, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 440,986
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145082
Int. Cl.³ C08F *257/02*
U.S. Cl. 523—201 **5 Claims**

1. A latex containing particles comprising a core of a polymer of at least one ethylenically unsaturated monomer and a shell, graft polymerized to said core, of a copolymer comprising at least one ethylenic unsaturated monomer an acetal monomer of the formula



wherein n is 1 to 6, R_2 is H or CH_3, and R_3 and R_4 are alkyl having 2 to 6 carbon atoms, aryl, or some other inert group imparting sufficient water insolubility to said monomer to permit graft polymerization thereof to said core polymer in an aqueous latex of core polymer particles.

5. A method for making a latex as in claim 1 which comprises graft polymerizing said acetal monomer and other shell comonomers on particles of said core polymer by mixing said monomers with an aqueous latex of said core polymer particles in the presence of a detergent, and adding a free radical initiator to said mixture.

4,448,909

METHOD FOR DETERMINING COMPOUNDING PROCESS VARIABLES

Joseph C. Golba, Jr., and Prakash K. Shete, both of Saratoga, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 3, 1982, Ser. No. 374,588
Int. Cl.³ C08L *25/02, 25/04, 25/06, 25/08*
U.S. Cl. 523—303 **16 Claims**

1. A method for obtaining a predetermined additive concentration in a polymer mixture comprising (1) mixing at least one polymer and at least one additive to form a mixture; (2) determining the dielectric constant of the mixture and (3) controlling the amount of additive to obtain a dielectric constant in the mixture which is substantially the same as the dielectric constant of the desired mixture.

4,448,910

AQUEOUS COMPOSITIONS FOR SIZING GLASS FIBERS CONTAINING EMULSIFIED EPOXY RESIN AND CHLOROPROPYLSILANE

Richard M. Haines, Warsaw, and Robert Wong, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 25, 1983, Ser. No. 488,474
Int. Cl.³ B32B *17/10;* C08L *39/06, 91/00*
U.S. Cl. 523—402 **4 Claims**

1. An aqueous composition comprising:

(a) an emulsified liquid epoxy resin or emulsified liquid solution of an epoxy resin, said epoxy resin being a diepoxide reaction product of a bisphenol and an epihalohydrin, said epoxy resin having an epoxy equivalent weight greater than about 250, said epoxy resin comprising from about 1 to about 10 percent of the total weight of said composition;

(b) a lubricant comprising a mineral oil in an amount of about 2 to about 15 percent of the weight of said epoxy resin; and,

(c) as the sole organosilane coupling agent, 3-chloropropyltrimethoxy silane or hydrosate thereof, said silane or hydrosate thereof being present in an amount from about 2 to about 15 percent of the weight of the epoxy resin.

4,448,911

AQUEOUS EPOXY SIZING COMPOSITION FOR GLASS FIBERS AND FIBERS SIZED THEREWITH

Richard M. Haines, Warsaw, and Robert Wong, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 12, 1983, Ser. No. 484,124
Int. Cl.³ B32B *17/10;* C08L *39/06, 91/00*
U.S. Cl. 523—411 **11 Claims**

1. A dilute aqueous composition suitable for sizing glass fibers which consists essentially of emulsified liquid epoxy resin or emulsified liquid solution of a major proportion by weight of epoxy resin and a minor proportion by weight of an organic solvent therefor; about 5 to about 15 percent of the weight of the epoxy resin of emulsified mineral oil; about 5 to about 12 percent of the weight of the epoxy resin of predominantly non-ionic surfactant for emulsifying the epoxy resin or solution thereof and the mineral oil; about 2½ to about 7½ percent of the weight of the epoxy resin of amide anti-static agent; about 2 to about 15 percent of the weight of the epoxy resin of polyvinylpyrrolidone; about 3 to about 15 percent of the weight of the epoxy resin of an organosilane coupling agent having a halogen atom or an epoxy group linked by hydrolysis-resistant bonds through at least one intervening atom to a silicon atom of said silane and also having at least two groups which are readily hydrolyzable at a silicon atom of said silane, and/or hydrolysate thereof; and water.

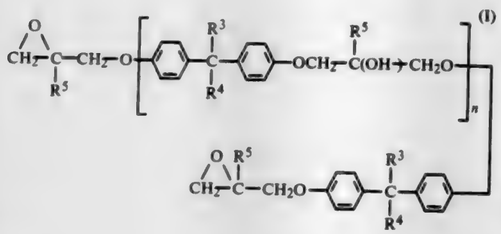
4,448,912

HEAT HARDENABLE BINDERS COMPRISING AQUEOUS DISPERSIONS OF SOLID EPOXY RESINS, PROCESSES FOR THE PREPARATION THEREOF AND THE USE THEREOF

Wilhelm Becker, Hamburg, and Albrecht Manz, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,840
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106529; Aug. 20, 1981, 3132884
Int. Cl.³ C08L 63/02
U.S. Cl. 523—414 14 Claims

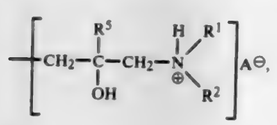
1. A heat hardenable binder composition comprising an aqueous dispersion of a resin derived from a solid epoxy resin of the general structure



(I)

wherein

R^3, R^4 and R^5 independently are methyl or hydrogen and n is an integer from 2 to 20 and the glycidyl groups in part are converted to ammonium groups of the structure



(II)

in which

$A^{\ominus}$ represents the anionic group of a monocarboxylic acid having from 1 to 6 carbon atoms and at least one of the radicals R^1 and R^2 represents hydroxy-alkyl having from 1 to 6 carbon atoms and at most one of R^1 and R^2 is hydrogen and the composition containing in addition an effective amount of a polybasic water-soluble polycarboxylic acid unit containing at least 3 carboxyl functions acting as a hardener and being selected from the group consisting of polycarboxylic acids, anhydrides thereof and acid esters still containing at least three carboxyl functions.

4,448,913

FAST CRYSTALLIZING POLYETHYLENE TEREPHTHALATE COMPOSITIONS

Ernest A. Coleman, Stamford, Conn.; Kevin J. Cronin, Waldwick, N.J.; Frank K. Chu, Ramsey, N.J., and Robin W. Kirwan, West Milford, N.J., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Oct. 29, 1982, Ser. No. 437,651
Int. Cl.³ C08K 5/12; C08L 63/00, 67/02
U.S. Cl. 523—455 12 Claims

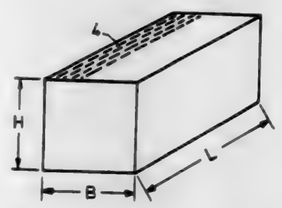
1. A composition consisting essentially of polyethylene terephthalate, sodium benzoate and a poly-alpha-olefin.

4,448,914

AQUEOUS PREPARATION AND ITS USE IN THE PRODUCTION OF CERAMIC COMPOSITIONS

Franz Drinkuth, Odenthal; Wulf von Bonin, Leverkusen; Dietmar Schäpel, Cologne, and Artur Lorenz, Konstanz-Litzelstetten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,841
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151374
Int. Cl.³ C04B 21/06, 33/02; B28B 3/00
U.S. Cl. 524—32 7 Claims



1. In the production of porous ceramic bodies the improvement which comprises the addition to the ceramic mass of an aqueous porosifying agent containing

(a) oils in quantities of from 0.03 to 30% by weight,
(b) water-soluble or swellable vinyl polymers in quantities of from 0.2 to 10% by weight,
(c) water-soluble or swellable polymers based on natural substances in quantities of from 0.01 to 5% by weight,
(d) surfactants in quantities of from 0.01 to 2% by weight and optionally
(e) inorganic or organic powders in quantities of from 0.5 to 30% by weight.

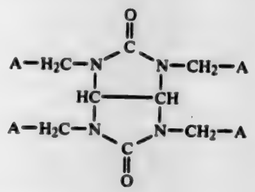
4,448,915

ACETYLENE CARBAMIDE DERIVATIVES, PROCESSES FOR THEIR PRODUCTION, AND ANTIOXIDANTS FOR ORGANIC SUBSTANCES WHICH COMPRISE SUCH DERIVATIVES AS ACTIVE INGREDIENTS

Yutaka Terada, Nishinomiya; Yukoh Takahashi; Shinichi Yachigo, both of Toyonaka, and Tamaki Ishii, Suita, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

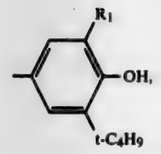
Filed Oct. 19, 1982, Ser. No. 435,187
Claims priority, application Japan, Oct. 19, 1981, 56-167434
Int. Cl.³ C07D 515/08; C08K 5/34
U.S. Cl. 524—93 22 Claims

1. An acetylene carbamide derivative of the general formula (I):



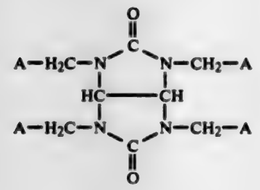
(I)

wherein A represents



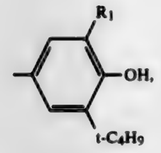
in which R_1 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms.

14. A composition comprising an organic substance susceptible to deterioration by light or oxygen and an effective amount to inhibit said deterioration of an acetylene carbamide derivative of the general formula (I):



(I)

wherein A represents



in which R_1 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms.

4,448,916

RESIN ANTISTATIC AND STRENGTHENING COMPOSITION

Irvin W. Martenson, Brea, Calif., assignor to American Organics Corp., Placentia, Calif.

Filed Dec. 16, 1980, Ser. No. 217,175
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.
Int. Cl.³ C08K 5/20, 5/42; D06M 13/46
U.S. Cl. 524—106 11 Claims

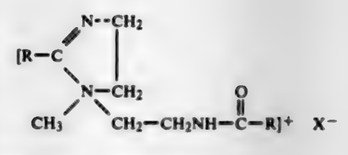
1. A resin composition consisting essentially of a synthetic resin having uniformly dispersed therein from 0.05 to 5 weight percent of stable liquid gel composition consisting essentially of:

(a) from about 70 to 90 weight percent of a fatty amine derivative of the formula:

$$(OHR_1)_n—NH_{(2-n)}—R_2[(OHR_1)_n—NH—R]$$

wherein:
R_1 is a C_1 to C_8 alkylene
R_2 is a C_{10} to C_{22} alkyl; and
n is 1 or 2; and

(b) from 10 to about 30 weight percent of a fatty imidazolinium quaternary of the formula:



wherein:
R is a C_{10} to C_{22} alkyl; and
X is C_1 to C_5 alkyl sulfate; and

(c) a gelling agent in an amount from 1 to about 5 percent of the weight of said liquid gel and comprising an organophilic, expanding lattice clay ion exchanged with alkyl quaternary ammonium ions.

4,448,917

SIZE FOR GLASS FIBERS

Denny E. Black, and David W. Garrett, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 6, 1983, Ser. No. 455,789
Int. Cl.³ C08K 5/09
U.S. Cl. 524—160 4 Claims

1. A glass comprising an polyolefin latex, an amino silane, a polymeric film former and an organic acid selected from the group consisting of substituted benzoic acids, benzenedicarboxylic acids, benzenetricarboxylic acids, benzenetetracarboxylic acids, benzenepentacarboxylic acids, benzenehexacarboxylic acids, cyclohexanedicarboxylic acids, fatty acids, aliphatic diacids, aliphatic polyacids, cinnamic acids, benzenediacrylic acids, benzenediacetic acids, naphthoic acids, naphthalenedicarboxylic acids, naphthalenedisulfonic acids and anhydrides of the aforesaid acids said acid or acids being added in an amount sufficient to improve the impact strength of injected molded polypropylene into which glass fibers, coated with said size, are incorporated.

4,448,918

POLY(ARYLENE SULFIDE) COMPOSITION CONTAINING TITANIUM DIOXIDE AND 3-MERCAPTOPROPYLTRIMETHOXYSILANE

John E. Leland, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 15, 1982, Ser. No. 434,662
Int. Cl.³ C08K 5/54, 3/22
U.S. Cl. 524—262 19 Claims

1. A composition comprising poly(arylene sulfide), titanium dioxide and 3-mercaptopropyltrimethoxysilane; wherein the amount of titanium dioxide and 3-mercaptopropyltrimethoxysilane present is sufficient to increase the resistance of the poly(arylene sulfide) composition to carbonization and track formation.

4,448,919

ANTI-ICING COMPOSITIONS

Heihachi Murase, Kanagawa, Japan, assignor to Kansai Paint Company, Hyogo, Japan

Filed Sep. 30, 1982, Ser. No. 430,018
Int. Cl.³ C08L 83/04
U.S. Cl. 524—394 3 Claims

1. A composition for use in preventing the formation of ice comprising:

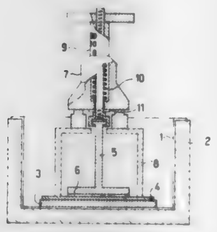
(A) 70 to 99.8% by weight of organopolysiloxane resin comprising recurring structural units of the formula

$$RnSi(OR')_mO_{\frac{4-n-m}{2}}$$

wherein R represents hydrogen atom or monovalent or-

ganic group attached to the silicon atom by a carbon-to-silicon bond, R' represents hydrogen atom, C_1 to C_{20} alkyl group, aryl group, oxime residue, n and m are each 0, 1, 2, or 3 and n plus m is an integer of 1-3, and

(B) 0.2 to 30% by weight alkali metal compound represented by the formula



$$M_a\oplus_x\ominus$$

wherein M represents alkali metal selected from Li, Na and K, X represents inorganic or organic acid group or hydroxyl group and a is an integer of 1 to 4.

4,448,920

REINFORCED ELASTOMER PRODUCTS

Stewart C. Watson, Williamsville, N.Y., assignor to Watson-Bowman Associates, Inc., Getzville, N.Y.

Continuation of Ser. No. 10,252, Feb. 8, 1979, Pat. No. 4,305,172, which is a division of Ser. No. 888,660, Mar. 21, 1978, Pat. No. 4,210,698, which is a continuation-in-part of Ser. No. 616,140, Sep. 24, 1975, Pat. No. 4,080,086. This application Nov. 30, 1981, Ser. No. 326,059

Int. Cl.³ C08K *3/08*

U.S. Cl. 524—439 **7 Claims**

1. An elastomeric load bearing device capable of withstanding large compressive forces without substantial dimensional deformation, said device having an interior core section and an exterior marginal section surrounding the core section on all sides, said core section consisting of an elastomeric binder and a sufficient amount of a filler of metal particles to reduce deformation of the device, the exterior marginal section consisting of an elastomer substantially free of the metal particles of the interior core section.

4,448,921

ROCK WOOL COMPOSITE MATERIAL

Eisuke Yamaya, Funabashi; Osamu Yamamoto, Chiba; Takashi Koike, Funabashi, and Shunji Seino, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo; Nippon Aroma Co., Ltd. and Nitto Boske, both of Fukushima, all of, Japan

Filed Sep. 27, 1982, Ser. No. 424,299

Claims priority, application Japan, Oct. 16, 1981, 56-164311

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—443 **11 Claims**

1. A rock wool composite material comprising a fine rock wool having a diameter of 1 to 10μ and a length of 70 to 500μ and containing substantially no shots and a heat-resistant aromatic polymer which is an aromatic polyamide or aromatic polyamideimide having a freeness value of 150 seconds or more or less than 500 seconds when measured as an 0.3% aqueous dispersion (20° C.), the weight ratio of fine rock wool to the heat-resistant aromatic polymer being 10:90 to 90:10.

4,448,922

COAGULATED POLYURETHANE COATING COMPOSITIONS

John R. McCartney, Westown, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 188,329, Sep. 18, 1980, Pat. No. 4,376,148, and a continuation-in-part of Ser. No. 188330, Sep. 18, 1980, Pat. No. 4,342,805, and a continuation-in-part of Ser. No. 321,246, Nov. 13, 1981, Pat. No. 4,366,192, which is a division of Ser. No. 234,464, Feb. 17, 1981, Pat. No. 4,332,710. This application Jul. 14, 1982, Ser. No. 398,259

Int. Cl.³ C08L *75/04*

U.S. Cl. 524—443 **9 Claims**

1. An aqueous coating composition comprising:
an aqueous anionic polyurethane dispersion; and
a salt of hydrofluorosilicic acid;
wherein the pH of said composition is acidic and said composition is thixotropic.

4,448,923

INTERPOLYMER LATEX, PROCESS FOR ITS PREPARATION AND USE OF THE LATEX FOR COATING PAPER

Roland Reeb, Temblay-/les-Gonesse, and Bernard Chauvel, Ermont, both of France, assignors to Rhone Poulenc Specialites Chimiques, Courbevoie, France

Filed Mar. 17, 1983, Ser. No. 476,257

Claims priority, application France, Mar. 24, 1982, 82 04989

Int. Cl.³ C08L *25/10*

U.S. Cl. 524—460 **16 Claims**

1. An interpolymer latex, wherein said interpolymer comprises
(a) a copolymer A of butadiene, styrene and at least one ethylenically unsaturated carboxylic acid, and
(b) a polymer B of at least one halogenoalkyl or halogenoacetoxylalkyl ester of an ethylenically unsaturated monocarboxylic or dicarboxylic acid, said polymer B being at least partially grafted onto the copolymer A.

4,448,924

AQUEOUS INTERPOLYMER EMULSIONS, PROCESS FOR THEIR PREPARATION AND USE OF THE EMULSIONS AS BINDERS FOR COATING PAPER

Roland Reeb, Tremblay/les/Gonesse, and Bernard Chauvel, Ermont, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Mar. 17, 1983, Ser. No. 476,258

Claims priority, application France, Mar. 24, 1982, 82 04988

Int. Cl.³ C08L *25/10*

U.S. Cl. 524—460 **16 Claims**

1. An interpolymer latex, wherein said interpolymer comprises (a) a copolymer A of butadiene, styrene and at least one ethylenically unsaturated carboxylic acid, and (b) a polymer B of at least one halogenohydroxyalkyl ester of an ethylenically unsaturated monocarboxylic or dicarboxylic acid, said polymer B being at least partially grafted onto the copolymer A.

4,448,925

INJECTION MOLDABLE POLYMERS CONTAINING PHTHALIC ANHYDRIDE

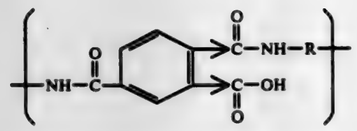
Robert B. Hanson, Oswego, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 6, 1982, Ser. No. 406,110

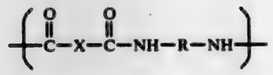
Int. Cl.³ C08G *69/04, 69/26, 73/14*; C08L *77/10*

U.S. Cl. 524—600 **19 Claims**

1. An injection moldable polyamide copolymer comprising about 1 to about 10 percent phthalic anhydride moieties and comprising recurring polyamide A units of



capable of undergoing imidization wherein → denotes isomerization and polyamide B units of



wherein the molar ratio of A units to B units is about 80 to 20 to 20 to 80, and wherein R is a divalent aromatic hydrocarbon radical of from 6 to about 20 carbon atoms or 2 divalent hydrocarbon radicals of from about 6 to 20 carbon atoms joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, $—SO_2—$, and —S— radicals and X is a divalent aromatic radical.

4,448,926

VISCOSIFICATION OF HYDROCARBON FLUIDS

Robert D. Lundberg, Bridgewater, and Dennis G. Peiffer, East Brunswick, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 13, 1982, Ser. No. 416,926

Int. Cl.³ C08F *8/36*; C08L *23/32, 53/00*

U.S. Cl. 524—612 **9 Claims**

1. A process for gelation of a hydrocarbon liquid, which comprises the steps of:
(a) forming a turbid suspension of a water insoluble block copolymer in an aqueous phase, said block copolymer having the formula:

$$xB—[AB]_n—yA$$

wherein B is a thermoplastic hydrophilic polymer block, A is a thermoplastic hydrophobic polymer block, n is an integer ≧1, x and y are 0 or 1, and y is 1 when n is 1;
(b) adding a polar cosolvent to said turbid solution;
(c) mixing the cosolvent and turbid suspension until a polymeric solution has formed;
(d) adding said polymeric solution to a hydrocarbon liquid; and
(e) mixing the polymeric solution and hydrocarbon liquid until phase separation occurs, wherein said hydrocarbon liquid has gelled.
(f) removal of said aqueous liquid from said hydrocarbon fluid.

4,448,927

METHOD OF POLYMERIZING OLIGOMERS OF POLYDIORGANOSILOXANE IN THE PRESENCE OF FILLER

James R. Falender, Sanford, and John C. Saam, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 14, 1983, Ser. No. 474,916

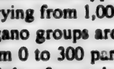
Int. Cl.³ C08L *83/04*

U.S. Cl. 524—860 **24 Claims**

1. A method of polymerizing oligomer in the presence of reinforcing filler comprising
(A) mixing (i) 100 parts by weight of oligomer selected from the group consisting of polydiorganosiloxane (a) of the formula

$$HO(R_2SiO)_xH,$$

polydiorganocyclosiloxane (b) of the formula



and mixtures thereof, optionally (i) can have present oligomer selected from the group consisting of polydiorganosiloxane (c) of the formula

$$R'_3SiO(R_2SiO)_zSiR'_3,$$

polydiorganosiloxane (d) of the formula

$$R'_3SiO(R_2SiO)_zH,$$

and mixtures thereof wherein each R is a radical selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3-trifluoropropyl; each R' is monovalent hydrocarbon radical of 6 or less carbon atoms, x is an average value in the range of from 3 to 50, y is an average value in the range of from 3 to 10, and z is an average value in the range of from 0 to 50 inclusive; with (ii) from 2 to 70 parts by weight of reinforcing filler which is acidic or neutral, to yield a paste-type material,
(B) intiating polymerization of (A) in a closed system at a temperature in the range of 70° C. to 150° C. with from 400 to 4000 parts by weight trifluoromethane sulfonic acid per million parts by weight of (i), then
agitating the resulting product of (B) adjusting its temperature to a value in the range of 20° C. to 100° C., polymerizing until the desired increase in molecular weight is reached, then
(D) admixing a Lewis base to inactivate the trifluoromethane sulfonic acid and produce a non-crepeing silicone polymer-filler mixture.

4,448,928

SHELF-STABLE CATALYST COMPONENT FOR RTV SILICONE COMPOSITION

Steven H. Klein, Clifton Park, and Alfred H. Smith, Jr., Ballston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 238,333, Feb. 26, 1981, Pat. No. 4,388,433. This application Mar. 17, 1983, Ser. No. 476,174

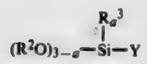
Int. Cl.³ C08L *83/06*

U.S. Cl. 524—864 **3 Claims**

1. A room temperature vulcanizable silicone rubber composition that has a mixed viscosity of from 100,000 to 1,000,000 centipoise at 25° C. and that does not separate out and does not have any nodules comprising (A) 100 parts by weight of a silanol-end stopped diorganopolysiloxane having a viscosity varying from 1,000 to 1,000,000 centipoise at 25° C. where the organo groups are monovalent hydrocarbon radicals; and (B) from 0 to 300 parts of a filler; and (C) from 1 to 30 parts by weight of a catalyst component provided by:
(a) mixing 100 parts by weight of an organo polysiloxane fluid of a viscosity varying from 1,000 to 50,000 centipoise where the organo group is a monovalent hydrocarbon group, with a first portion of a mixture of crosslinking agent, catalytic promoter and self-bonding additive effective for providing a stable catalyzed paste base mixture of said composition upon heat cycling of said base mixture wherein said first portion constitutes 1 to 15 percent by weight of the total amount of crosslinking agent, catalytic promoter and self-bonding agent utilized in said shelf-stable catalyst component for a room temperature vulcanizable silicone rubber composition and is comprised of:
(1) an alkyl silicate crosslinker of the formula:

$$R_mSi(OR^1)_{4-m}$$

or partial hydrolysis producers thereof wherein R and R_1 are monovalent hydrocarbon radicals, m is 0 or 1;
(2) a tin salt catalytic promoter and
(3) a self-bonding additive of the formula:



where R^2 and R^3 are alkyl radicals of 1 to 8 carbon atoms, a is 0 or 1 and Y is a nitrogen-functional radical which is a saturated, unsaturated or aromatic residue which in addition to nitrogen functionality may be functionalized by a radical selected from the class consisting of amino, cyano, thio, oxo, and ester, and multiples and combinations thereof; and after there is a uniform mixture of (a);

(b) adding to the mixture from 10 to 250 parts of filler and mixing the ingredients to a uniform mixture and heating the mixture to a temperature of at least 100° C. for at least 1 hour thereby providing a stable paste-like base mixture; and

(c) mixing into the base mixture a second portion consisting of the remainder of the cross-linking agent, the catalytic promoter and self-bonding additive; and mixing to a uniform fluid mixture by agitating the base mixture and the rest of the ingredients for at least 30 minutes wherein the entire process is carried out in the substantial absence of moisture.

4,448,929

ENCAPSULATION PROCESS

Marius Rodson, El Cerrito, and Herbert B. Scher, Moraga, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 296,406, Aug. 26, 1981, abandoned. This application Jun. 1, 1982, Ser. No. 383,448
Int. Cl.³ C08L *29/04*
U.S. Cl. 525—57 **2 Claims**

1. A protective colloid for use in an interfacial polymerization process comprising a graft copolymer of polyvinyl alcohol and methyl vinyl ether/maleic acid in a weight ratio of the polyvinyl alcohol to the methyl vinyl ether/maleic acid is in the range of about 1:10 to about 1:300.

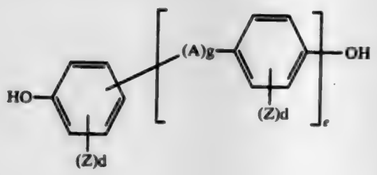
4,448,930

POLYCARBONATE BLENDS HAVING AN IMPROVED IMPACT STRENGTH

Sivaram Krishnan, Moers, Fed. Rep. of Germany, and Nelson R. Lazear, McMurray, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

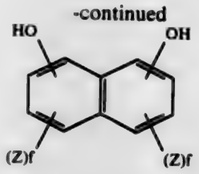
Filed Aug. 2, 1982, Ser. No. 404,066
Int. Cl.³ C08L *69/00*
U.S. Cl. 525—67 **4 Claims**

1. A thermoplastic molding composition comprising
(i) a blend of an aromatic polycarbonate resin and a nuclear alkylated polycarbonate resin said blend characterized in that it consists of about 10 to about 90 percent relative to the weight of the blend of an aromatic polycarbonate resin based on one or more of the bisphenols conforming to the structural formula (1) and/or (2)



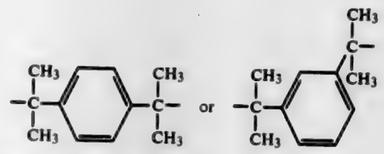
(1)

-continued

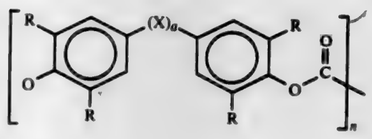


(2)

wherein
A denotes an alkylene group with 1 to 8 carbon atoms, an alkylidene group with 2 to 8 carbon atoms, a cycloalkylene group with 5 to 15 carbon atoms, a cycloalkylidene group with 5 to 15 carbon atoms, a carbonyl group, an oxygen atom, an —SO— or $-SO_2-$ radical or a radical of the general formula



g denotes 0 or 1;
e denotes 0 or 1;
Z denotes F, Cl or Br and if several Z radicals are substituents in one aryl radical, they may be identical or different;
d denotes 0 to 4; and
f denotes 0 to 3,
and about 90 to 10 percent relative to the weight of said blend of a nuclear-alkylated polycarbonate resin characterized in that structural units of formula (3)



(3)

wherein
R is $-CH_3$, $-C_2H_5$ or $-CH(CH_3)_2$ and
X is an alkylene or an alkylidene group having 1 to 5 carbon atoms, a cycloalkylene or a cycloalklidene radical with 5 to 15 carbon atoms, an ether bond or a keto bond,
n is at least 55 and
a is 0 or 1
comprise at least 5 percent relative to the weight of said nuclear-alkylated resin and
(ii) an acrylic rubber interpolymer composite comprising 25 to 95 percent by weight of a first elastomeric phase polymerized from about 75 to 99.8 percent by weight of C_1 to C_6 acrylate, 0.1 to 5 percent by weight of a cross-linking monomer and 0.1 to 5 percent by weight of a graft-linking monomer and about 75 to about 5 percent by weight of a second rigid thermoplastic phase, said acrylic rubber interpolymer composite being present at an amount of between 15 and about 50 phr in relation to the weight of said blend.

4,448,931

POLYPHENYLENE ETHER RESIN

Akitoshi Sugio, Ohmiya; Masanobu Masu, and Akikazu Amagai, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 16, 1982, Ser. No. 369,109
Claims priority, application Japan, Apr. 21, 1981, 56-60417
Int. Cl.³ C08L *61/04*
U.S. Cl. 525—68 **12 Claims**

1. A resin composition comprising a polyphenylene ether resin and a rubber-modified polystyrene resin, wherein at least 80% of the rubber particles based on the total number of rubber particles in the elastomeric phase of the rubber-modified polystyrene resin have a particle diameter in the range of 0.5 to 4 microns, and the elastomeric phase has a particle size distribution index, SDI, defined by the equation

$$SDI = \frac{\Sigma(nx^3)/\Sigma(nx^2)}{\Sigma(nx)/\Sigma n}$$

wherein x is the diameter in microns of the particles, and n is the number of particles having a particle diameter of x microns, of not more than 1.9.

4,448,932

POLYVINYL CHLORIDE MODIFIED WITH BUTADIENE-CONTAINING CORE-SHELL COMPOSITE POLYMERS FOR ENHANCED IMPACT STRENGTH

Yehuda Ozari, Arcadia, Calif.; Suzanne B. Nelsen, Bergenfield, and Andrew Klein, Somerville, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 141,513, Apr. 18, 1980, abandoned, and Ser. No. 119,606, Feb. 8, 1980, abandoned. This application Sep. 2, 1982, Ser. No. 414,168
Int. Cl.³ C08L *33/02, 51/04*
U.S. Cl. 525—78 **16 Claims**

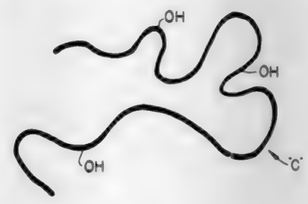
1. A polyvinyl chloride resin composition comprising (1) from about 60 to about 95 parts by weight of polyvinyl chloride and (2) from about 5 to about 40 parts by weight of a core-shell composite polymer, said core shell composite polymer being produced by a process consisting essentially of
(a) providing, as the core polymer, an emulsion comprising discrete particles of (1) polybutadiene, (2) a copolymer of butadiene and styrene, or (3) a terpolymer of butadiene, styrene and from about 2 to about 12 weight percent of an alkyl methacrylate in which the alkyl has from 1 to 18 carbon atoms, in an aqueous medium containing a fast acting wetting agent selected from the group consisting of diisopropyl sulfosuccinate, and sodium or potassium salts of dioctyl-, dihexyl-, diisobutyl- and diisopropylsulfosuccinates;
(b) adding to the emulsion, as a final outer shell-forming monomer, or monomer mixture selected from the group consisting of methylmethacrylate and methylmethacrylate with from about 0.01 to about 1% by weight of allylmethacrylate, in an amount sufficient to form, upon polymerization, a substantially complete surface shell around the core polymer, and
(c) reacting the emulsion under conditions effective to polymerize the shell-forming monomer or monomer mixture, by precipitation polymerization on said core polymer surface,
thereby forming discrete composite polymer core particles which are completely encapsulated by an integral outer surface shell of the polymerized shell-forming surface monomer or monomer mixture, which cure particles are free of the shell-forming homopolymer in at least the center thereof.

4,448,933

BETTER FOAMABLE STYRENE AND OTHER OLEFIN POLYMER COMPOSITIONS CONTAINING LIGHTLY CROSSLINKED HYDROXY AND ISOCYANATE LINKAGES

Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 23, 1981, Ser. No. 256,758
Int. Cl.³ C08F *6/26*
U.S. Cl. 525—123 **18 Claims**



1. Composition comprising, in intimate admixture:
(a) as a fundamental constituent, a hydroxylated, normally-solid, linear olefin copolymer, the copolymer having a hydroxyl functionality of from 2 to 6 average hydroxyl groups per unit weight average molecule; and
(b) a substantially minor proportion of an inter-reactive cross-linking polyisocyanate constituent, with the further limitation that reaction of the polyisocyanate constituent with the hydroxylated copolymer provides a copolymer having a crosslinking coefficient of from about 0.8 to about 3 which results in a visually detectable gel in a solvent which dissolves the corresponding noncrosslinked hydroxylated polymers, and that such composition on incorporation of a blowing agent therein is foamable to a thermal collapse resistant thermoplastic foam.

4,448,934

BLENDS OF IONIC ELASTOMERS AND NYLON

Ebon P. Weaver, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Feb. 2, 1982, Ser. No. 345,270
Int. Cl.³ C08F *27/06*; C08L *23/32*
U.S. Cl. 525—184 **4 Claims**

1. A polymeric blend which comprises an admixture of:
5 to 60 parts of an ionically crosslinked elastomer containing neutralized sulfonated EPDM;
40 to 95 parts of nylon 1; and
5 to 50 parts, per 100 parts of said elastomer, of zinc stearate;
all said parts being by weight.

4,448,935

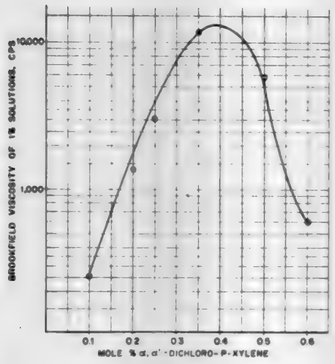
PROCESS FOR THE PREPARATION OF CROSSLINKED, SULFONATED STYRENE POLYMERS

Carmine P. Iovine, and Dilip K. Ray-Chaudhuri, both of Bridgewater, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

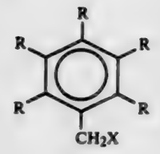
Continuation-in-part of Ser. No. 878,204, Feb. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 694,785, Jun. 10, 1976, abandoned. This application Jul. 21, 1982, Ser. No. 400,216
Int. Cl.³ C08F *8/36, 8/00*
U.S. Cl. 525—343 **7 Claims**

1. A process for the simultaneous crosslinking and sulfonation of polystyrene and styrene copolymers containing at least 5% by weight styrene and having a molecular weight of 800–4,000,000 comprising the steps of:
(a) dissolving the polystyrene or styrene copolymer in an aliphatic hydrocarbon or chlorinated hydrocarbon as a sulfonating solvent;

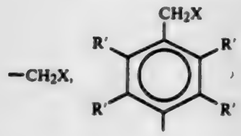
(b) adding thereto from 0.1 to 5 mole percent of a crosslinking reagent selected from the group consisting of:



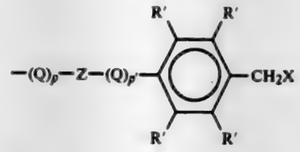
(i)



wherein one or two of the R substituents are selected from the group consisting of:



—CH_2X, and



wherein X is —OH, —Cl, or —Br; Q is oxygen or sulfur; p and p' are independently selected integers having the value 0 or 1; Z is a radical containing from 1 to 10 carbon atoms inclusive and is selected from the group consisting of straight and branched chain alkylene radicals; and the remaining R and R' are selected from the group consisting of hydrogen, C_1-C_3 alkyl and C_1-C_3 alkoxy radicals; and

(ii) polynuclear aryl compounds containing two or three —CH_2X groups wherein X is as defined above, which compounds may be further substituted with substituent groups selected from the group consisting of —OH, C_1-C_3 alkyl radicals and C_1-C_3 alkoxy radicals; and

(c) adding the resultant solution to a sulfonating reagent derived from the addition of sulfur trioxide and a trialkyl phosphate while maintaining the reaction at a temperature of 5° to 25° C. whereby crosslinked sulfonated polymer is immediately precipitated; and

(d) recovering the resultant precipitated crosslinked sulfonated polymer.

4,448,936

POLYURETHANE RESIN COMPOSITION

Huei-Hsiung Wang, and Chyuan-chyuan Wang, both of No. 6, Alley 69, La. 492, Sec. 1, Hsi Tun Rd., Taichung, Taiwan

Filed Apr. 8, 1982, Ser. No. 366,689

Int. Cl.³ C08L *75/04, 77/02*

U.S. Cl. 525—424 **5 Claims**

1. A polyurethane resin composition capable of heat transfer printing comprising:

(a) one polyurethane resin; and

(b) nylon 6 resin in an amount of 10 to 30 parts by weight per 100 parts by weight of said polyurethane resin.

2. A process for manufacturing a polyurethane resin composition capable of heat transfer printing comprising the steps of:

(a) preparing a solution blend of the polyurethane resin composition by mixing a polyurethane solution and nylon 6 resin solution, the nylon 6 resin solution being in an amount between 10 to 30 parts by weight per 100 parts by weight of the polyurethane solution; and

(b) drying the solution mixed according to step (a) to eliminate solvents from the polyurethane resin composition.

4,448,937

BLENDS OF POLYETHERIMIDES AND BLOCK POLY(ESTERAMIDES)

Richard C. Bopp, West Coxsackie; Joseph C. Golba, Jr., Ballston Spa, both of N.Y., and Scott A. White, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

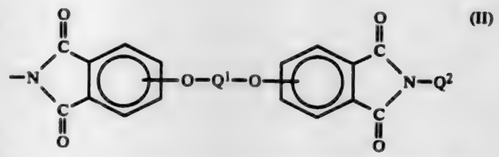
Filed Apr. 21, 1983, Ser. No. 487,495

Int. Cl.³ C08L *77/12, 79/08*

U.S. Cl. 525—432 **16 Claims**

1. A resinous composition comprising

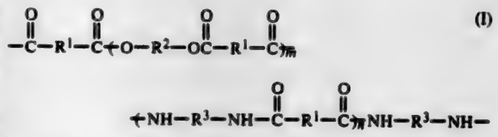
(A) about 99-1% by weight of at least one polyetherimide consisting essentially of chemically combined units of the formula



(II)

wherein Q^1 is a divalent aromatic hydrocarbon-based radical and Q^2 is a divalent hydrocarbon-based radical, and

(B) about 1-99% of at least one block poly(esteramide) having the formula,



(I)

wherein each R^1 is independently a divalent aliphatic hydrocarbon-based radical, each R^2 is independently a divalent aliphatic hydrocarbon-based radical, each R^3 is independently a divalent aromatic hydrocarbon-based radical, and m and n are each at least about 100.

4,448,938

MODIFIED ISOCYANATE COMPOSITIONS, THEIR PRODUCTION AND USES FOR POLYURETHANE MANUFACTURE

Alphonse E. Bruyninckx; Martin F. Brooks, both of Everberg, Belgium, and David Thorpe, Manchester, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 6, 1979, Ser. No. 100,877

Claims priority, application United Kingdom, Dec. 11, 1978, 47954/78

Int. Cl.³ C08G *18/28*

U.S. Cl. 525—457 **4 Claims**

1. A liquid isocyanate composition which has low temperature stability such that when stored it remains crystal-free for more than 10 days at 0° C., said composition being derived from diphenylmethane diisocyanate and comprising:

(A) the product of reaction of 90–45% by weight of diphenylmethane diisocyanate with 10–55% by weight of a polyether of an alcohol or an amine of molecular weight from 600 to 10,000, the indicated percentages by weight being based on the weight of the reaction product; and a uretonimine modified diphenylmethane diisocyanate, the weight ratio of A to B being from 19:1 to 1:1.

4,448,939

POLYURETHANES PREPATED USING POLY(SILYLDIAMINES)

Michael J. Fasolka, Pennsburg, and Barton Milligan, Coplay, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 30, 1982, Ser. No. 403,459

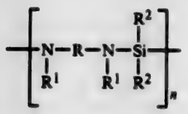
Int. Cl.³ C08L *75/04, 83/16*

U.S. Cl. 525—474 **23 Claims**

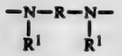
1. A composition of matter comprising

(a) a polyisocyanate,

(b) a poly(silyldiamine) containing the unit formula



wherein the grouping



is a divalent organic radical terminated by two nitrogen atoms with R being a divalent organic moiety, or a divalent alicyclic radical in which R and R^1 with the two nitrogen atoms form a cyclic diamine structure, R^1 is hydrogen or a monovalent hydrocarbon, R^2 is a monovalent hydrocarbon, and n is an integer greater than 1, and

(c) a polyol.

4,448,940

THERMOSETTING RESIN COMPOSITION AND PREPOLYMER THEREOF

Tohru Koyama; Motoyo Wajima, and Junji Mukai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,720

Claims priority, application Japan, Oct. 30, 1981, 56-172732

Int. Cl.³ C08G *59/40*

U.S. Cl. 525—504 **16 Claims**

1. A thermosetting resin composition comprising

(A) at least one polyfunctional epoxy compound having two or more 1,2-epoxy groups,

(B) at least one polyfunctional nitrile compound having two or more nitrile groups and

(C) at least one curing catalyst which can form both cyanurate rings and oxazoline rings or only oxazoline rings during curing of said composition.

4,448,941

RESIN BINDER FOR FIBER COMPOSITE MATERIALS

Mo-Fung Cheung, Farmington Hills; David L. Garrett, Jr., Southfield, and Henk van Oene, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1981, Ser. No. 328,278

Int. Cl.³ C08G *59/16*

U.S. Cl. 525—528 **15 Claims**

1. A method of making a free-radical curable amino vinyl resin binder composition for fiber reinforced composite materials which comprises reacting about 80 to about 20 weight percent of an amino vinyl prepolymer and about 20 to about 80 weight percent of a crosslinkable ethylenically unsaturated monomer diluent, having one or more vinyl groups, which crosslinks with said prepolymer during curing by means of peroxide or peroxide sensitizing initiators, wherein said prepolymer consists essentially of the two step reaction product of:

(A) an epoxy-amino alcohol adduct reaction product of

(i) polyepoxide containing terminal epoxide groups; and

(ii) secondary amino alcohol, wherein (i) and (ii) are reacted in about a 1:1-1.2 ratio of chemical equivalent of epoxide to amino groups so as to react essentially all of said epoxide groups to form said adduct having hydroxyl groups; and

(B) unsaturated monomer having a terminal vinyl group and having a hydroxy reactive functionality capable of reacting with said hydroxyl groups of said adduct and being selected from the group consisting of glycidyl acrylate, glycidyl methacrylate and isocyanatoethyl methacrylate,

wherein (A) and (B) are reacted in an amount sufficient to provide between about 0.3-1.0 equivalents of said hydroxy reactive functionality of said monomer (B) for each equivalent of said hydroxyl group of said adduct, and wherein said solvent which optionally may be employed in said method consists essentially of said diluent.

4,448,942

PROCESS FOR THE PRODUCTION OF HYDANTOINS

Bernhard Schulte, Krefeld; Wolfgang Jakob, Moers; Willi Dünwald, Leverkusen, and Karl-Heinrichrich Meyer, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

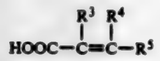
Filed Nov. 1, 1982, Ser. No. 438,270

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144701; Nov. 11, 1981, 3144697

Int. Cl.³ C08G *73/00, 73/06*

U.S. Cl. 525—540 **5 Claims**

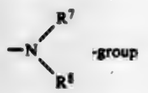
1. A process for the production of a compound having at least one hydantoin ring, wherein a polyimide is reacted with an acid corresponding to the formula



wherein

R^3 and R^4 represent hydrogen or an alkyl radical;

R^5 represents a CN— group, a CHO— group, $COOR^6$— group or



in which R^6, R^7 and R^8 represent alkyl, cycloalkyl, alke-

nyl or alkinyl; at temperatures of from about −20° to 250° C.

4,448,943

METHOD FOR MEASURING POLYMERIZATION PROCESS VARIABLES

Joseph C. Golba, Saratoga, and Marion G. Hansen, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 3, 1982, Ser. No. 374,585

Int. Cl.³ C08G *63/62, 73/10*

U.S. Cl. 526—59 **15 Claims**

1. A method for controlling continuous polymerization process variables comprising (1) mixing at least one monomer and optionally additives to form a mixture; (2) polymerizing the mixture to form a polymer; (3) monitoring the dielectric constant of the mixture; and (4) controlling the process variables so as to obtain a dielectric constant which is substantially the same as the dielectric constant of the desired polymer.

4,448,944

PROCESS FOR THE PREPARATION OF A POLYOLEFIN, AND A CATALYST FOR THIS PROCESS

Joachim Berthold, Eppstein; Bernd Diedrich, Eschborn; Rainer Franke, Niedernhausen; Jürgen Hartlapp, Hattersheim am Main; Werner Schäfer, and Wolfgang Strobel, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,022

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1981, 3124222

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—119 **3 Claims**

1. A process for the polymerization of ethylene alone or in combination with a minor amount of a 1-olefin of the formula R^4-CH=CH_2 in which R^4 denotes an alkyl radical having 1 to 10 carbon atoms, in the presence of a catalyst comprised of a component which contains magnesium and titanium (component A) and an organometallic compound of the Groups I to III of the periodic system (component B), which comprises carrying out the polymerization in the presence of a catalyst in which the component A has been prepared by a procedure in which, in a first reaction stage, a magnesium alcoholate of the formula $Mg(OR)_2$, wherein R represents identical or different alkyl radicals having from 1 to 6 carbon atoms, is reacted with titanium tetrachloride in a hydrocarbon at a temperature of 50° to 100° C., 1 to 5 moles of titanium tetrachloride per mole of magnesium alcoholate being employed, the soluble constituents are then removed by washing with a hydrocarbon and the resulting solid is suspended in a hydrocarbon and is subjected, in a second reaction stage, with the addition of 0.1 to 3 moles chloroalkoxytitanate per mole of magnesium alcoholate, to a heat treatment for 10 to 100 hours at a temperature of 110° to 200° C., with evolution of alkyl chloride, until no further alkyl chloride is split off, and the solid is then freed from soluble reaction products by washing several times with a hydrocarbon.

4,448,945

METHOD OF MAKING EMULSION POLYMERS

Herbert Fink, Bickenbach; Werner Siol, Pfungstadt; Horst Dinklage, Dieburg, and Hubert Rauch, Weiterstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 346,004, Feb. 5, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 534,939

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106502

Int. Cl.³ C08F *4/04*

U.S. Cl. 526—193 **13 Claims**

1. A method for making an emulsion polymer which is completely soluble in organic solvents, which method comprises emulsion polymerizing, in an aqueous phase, a monomer component containing more than 70 percent by weight of at least one water insoluble free radically polymerizable monounsaturated monomer suitable for preparing an emulsion polymer and selected from the group consisting of esters of acrylic acid and of methacrylic acid having 1 to 8 carbon atoms in the alcohol portion, styrene, vinyltoluene, and alpha-methyl-styrene, in the presence of 0.1 to 1 percent, by weight of the aqueous phase, of a free radical forming azo initiator as the sole initiator, said initiator being soluble to at least about 0.1 percent by weight at 20° C. in a solvent selected from the group consisting of methylethyl ketone, ethyl acetate, tetrahydrofuran, cyclohexanone, toluene, xylene, and trichloroethylene, and in the further presence of 0.01 to 2 percent, by weight of the aqueous phase, of a free emulsifier acid having a pK_a- value no greater than 4.5 and selected from the group consisting of organic sulfonic acids, organic phosphonic acids, the monoesters and diesters of phosphoric acid with hydrophobic organic hydroxy compounds or with oxyethylation products of the hydroxy compounds, perfluoralkane carboxylic acids having from 8 to 20 carbon atoms in the perfluoroalkyl portion, free acids of long-chain sarcosides of the formula

$$R{-}N(CH_3){-}CH_2{-}COOH,$$

wherein R is a long-chain saturated or unsaturated aliphatic hydrocarbon having from 8 to 18 carbon atoms, and alkylsulfamidoacetic acids having 8 to 20 carbon atoms in the alkyl portion, said free emulsifier acid being non-polymerizable under the emulsion polymerization conditions employed.

4,448,946

PROCESS FOR THE PREPARATION OF NONCELLULAR POLYURETHANE ELASTOMERS BASED ON 4,4-DIISOCYANATO-1,2-DIPHENYLETHANE

Herbert Stutz, Karlsruhe; Karl H. Illers, Otterstadt; Herbert Haberkorn, Gruenstadt, and Walter Heckmann, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,717

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138421

Int. Cl.³ C08G *18/76*

U.S. Cl. 528—67 **5 Claims**

1. In a process for the preparation of a noncellular polyurethane elastomer comprising reacting (a) an organic polyisocyanate; (b) a polyhydroxyl compound having an average functionality of 2 to 6 and an average molecular weight of 700 to 10,000; (c) a chain extender having a molecular weight less than 500 and selected from the group consisting of aliphatic diols, aromatic diamines, and mixtures thereof; and (d) catalysts and other additives; the improvement comprising employing as the organic polyisocyanate 4,4'-diisocyanato-1,2-diphenylethane containing 0 to 5 weight percent of the 2,2'- and 2,4'-isomers in an amount equal to 0.8 to 1.3 isocyanate groups per mole of Zerewitinoff active hydrogen atoms in the combined polyhydroxyl compound and chain extender.

4,448,947

ONE-CAN TYPE PRESSURE-SENSITIVE ADHESIVE COMPOSITION

Jun-ichi Miyake; Kyuya Yamazaki, and Yoshio Kamatani, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 29, 1982, Ser. No. 445,094

Claims priority, application Japan, Dec. 8, 1981, 56-197939

Int. Cl.³ C08G *18/77, 18/78, 18/79*; C07D *273/04*

U.S. Cl. 528—73 **11 Claims**

1. A one-can type pressure-sensitive adhesive composition which contains a polyurethane polyol obtained by the reaction of an isocyanate component having an oxadiazine-2,4,6-trione ring, other organic diisocyanate and a polyol component having a molecular weight of 400 to 50,000 at such a proportion

that the number of oxadiazinetrione ring/the total number of free isocyanate group is in the range of ½ to 1/20 and (the number of oxadiazinetrione rings + the total number of free isocyanate groups)/(the number of hydroxyl group of the polyol component) is less than 1.0.

4,448,948

EPOXY RESIN AND THE PROCESS FOR ITS PRODUCTION

Kazumi Tsubaki; Hiroshi Morinaga, and Joei Yukawa, all of Ichihara, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

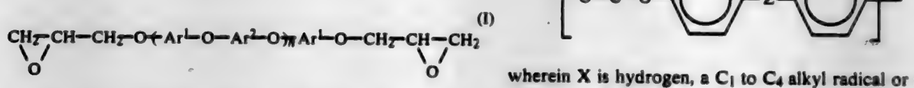
Filed Jan. 14, 1983, Ser. No. 458,039

Claims priority, application Japan, Feb. 3, 1982, 57-14827

Int. Cl.³ C08G *59/02, 59/24, 59/30*

U.S. Cl. 528—95 **8 Claims**

1. An epoxy resin substantially represented by the general formula



(I)

where Ar^1 is a residual group of a dihydric phenol derived from a compound having one or two benzene nuclei, Ar^2 is residual group of a halogen-substituted benzenoid compound having two halogen atoms on its nuclei and represented by the formula $-Ar^3-Y-Ar^4-$ where each of Ar^3 and Ar^4 is a hydrocarbon group having a divalent benzene nucleus and Y is a sulfone group or a carbonyl group, and n is an integer of from 1 to 50.

4,448,949

LATENT CURING AGENTS FOR EPOXY RESINS

Nobuo Ito, Oiso; Koji Takeuchi, Yokohama; Masahiro Abe, and Kiyomiki Hirai, both of Kawasaki, all of Japan, assignors to General Electric Company, Mt. Vernon, Ind.

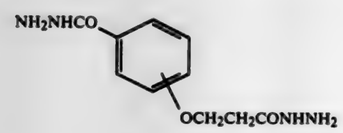
Filed Jul. 22, 1983, Ser. No. 516,332

Claims priority, application Japan, Jul. 30, 1982, 57-134453

Int. Cl.³ C08G *59/44*

U.S. Cl. 528—99 **7 Claims**

1. A curable, storage-stable epoxy resin composition comprising (a) an epoxy resin having an average of more than one epoxy group per molecule and (b) as curing agent a compound having the formula



4,448,950

POLYCARBONATE HAVING IMPROVED CRITICAL THICKNESS

Arthur L. Baron, New Martinsville, W. Va., and Parameswar Sivaramakrishnan, Pittsburgh, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

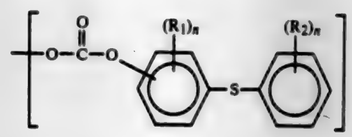
Continuation of Ser. No. 872,393, Jan. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 767,607, Feb. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 687,490, May 18, 1976, abandoned. This application Aug. 14, 1980, Ser. No. 178,069

Int. Cl.³ C08G *8/02, 63/62*

U.S. Cl. 528—128 **10 Claims**

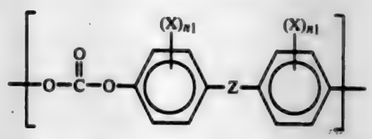
1. A copolycarbonate resin with a melt flow rate of 1 to 24 gram/10 min. at 300° C. (ASTM 1238) consisting essentially of:

2 up to 15 mole percent of the sulfur containing structural unit



(I)

wherein R_1 and R_2 are hydrogen or lower alkyl groups having 1 to 4 carbon atoms and n equals 0 to 2, and from greater than 85 to 98 mole percent of the structural unit



(II)

wherein X is hydrogen, a C_1 to C_4 alkyl radical or a halogen and n_1 equals 1 or 2, and Z is a single bond, an alkylene or alkylidene radical with 1 to 7 carbon atoms, a cycloalkylene or cycloalkylidene radical with 5 to 12 carbon atoms, —O—, —CO—, —SO— or —SO_2—.

4,448,951

PHENOLIC POLYOLS AND RIGID CELLULAR COMPOSITIONS DERIVED THEREFROM

John P. Rupert, Wadsworth, Ohio, and John T. Patton, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 17, 1983, Ser. No. 458,283

Int. Cl.³ C08G *8/36*

U.S. Cl. 528—129 **5 Claims**

1. A modified high ortho benzyllic ether-containing resole polyol obtained by a process comprising reacting at 100° C. to 130° C.

(a) a phenol which is free of ortho substituents,

(b) a molar excess relative to the phenol of a nonaqueous aldehyde having the formula RCHO where R is hydrogen, an alkyl group of 1 to 6 carbon atoms, or a halogenated alkyl group of 1 to 3 carbon atoms, and

(c) less than fifty mole percent relative to the phenol of an aliphatic hydroxyl compound having 1 to 4 hydroxyl groups, 1 to 12 carbon atoms, and 0 to 5 ether oxygen atoms,

in the presence of a catalytic amount of a metal derivative selected from the group consisting of (i) carboxylate salts of divalent ions of Mn, Zn, Cd, Mg, Co, Ni, Fe, Pb, Ca, Ba,

and di(C_1-C_5 alkyl)tin where the carboxylate ions each contains 1 to 20 carbon atoms, and (ii) $(C_nH_{2n+1})_4$ TiO_4 where n is an integer of 3 to 8.

4,448,952

HALOGENATED PHENOLIC POLYOLS AND RIGID CELLULAR COMPOSITIONS MADE THEREFROM

John T. Patton, Jr., Wyandotte, Mich., and John P. Rupert, Wadsworth, Ohio, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 17, 1983, Ser. No. 458,286

Int. Cl.³ C08G *8/36*

U.S. Cl. 528—129 **7 Claims**

1. A modified benzyl ether-containing resole polyol obtained by reacting at a temperature of 100° to 130° C. a mixture comprising

(a) a phenolic component comprising phenol or a mixture of phenol and a phenol which is substituted in the meta or

para position with halogen, C_1–C_{12} alkyl, or halogen-substituted alkyl of 1 to 6 carbon atoms;
(b) a molar excess relative to the phenolic component of a non-aqueous aldehyde having the formula RCHO where R is hydrogen, alkyl of 1 to 5 carbon atoms, or halogenated alkyl of 1 to 5 carbon atoms;
(c) less than fifty mole percent relative to the phenolic component of a hydroxylic component consisting of one or more aliphatic hydroxyl compound which contain 1 to 4 hydroxyl groups, 1 to 12 carbon atoms, and 0 to 5 ether oxygen atoms wherein the hydroxylic component contains at least 15 mole percent of a halogenated alcohol having 2 to 4 carbon atoms and at least 60 weight percent of halogen having an atomic number of 17 to 35; and
(d) an effective amount of a metal salt catalyst.

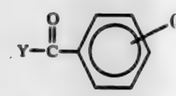
4,448,953

PREPARATION OF BENZOATE ESTER TERMINATED POLYCARBONATE WITH AROYL HALIDE

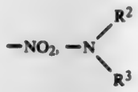
Niles R. Rosenquist; Victor Mark, both of Evansville, and Charles V. Hedges, Mount Vernon, all of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 221,935, Dec. 31, 1980, abandoned. This application Aug. 18, 1982, Ser. No. 409,304
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—198 **10 Claims**

1. A process for preparing an aromatic polycarbonate resin of controlled molecular weight which comprises interfacially reacting in water and an organic solvent, a dihydric phenol, a carbonate precursor and a molecular weight controlling effective amount of a compound of the formula



wherein n is an integer having a value of from 0 to 5 inclusive; Y is a halide or hydroxyl; and each R is independently selected from the group consisting of alkyl radicals, aryl radicals, alkaryl radicals, aralkyl radicals, alkoxy radicals, aryloxy radicals, halides,



radicals wherein R^2 is selected from hydrogen, alkyl radicals or acyl radicals or R^3 is an acyl radical or —C≡N.

4,448,954

SINGLE STAGE PRODUCTION OF IMPROVED HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH ORGANOSILICON HALIDE CATALYST.

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 409,008, Aug. 17, 1982. This application Apr. 7, 1983, Ser. No. 482,767
Int. Cl.³ C08G *73/18*
U.S. Cl. 528—207 **7 Claims**

1. A single stage melt polymerization process for the production of high molecular weight polybenzimidazole which comprises polymerizing at least one monomeric aromatic compound having a pair of amine substituents in an ortho position relative to each other and a carboxylic acid group positioned on an aromatic nucleus, by heating the monomer above its melting temperature in contact with an organosilicon halide polymerization catalyst.

4,448,955

PRODUCTION OF IMPROVED HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH TIN CONTAINING CATALYST

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 399,610, Jul. 19, 1982. This application Apr. 7, 1983, Ser. No. 482,768
Int. Cl.³ C08G *73/18*
U.S. Cl. 528—207 **6 Claims**

1. A single stage melt polymerization process for the production of high molecular weight polybenzimidazole which comprises polymerizing at least one monomeric aromatic compound having a pair of amine substituents in an ortho position relative to each other and a carboxylic acid group positioned on an aromatic nucleus, by heating the monomer above its melting temperature in contact with a tin-containing polymerization catalyst.

4,448,956

POLYMERIZATION OF LACTAM WITH GRAFT COPOLYMER PROMOTER

Gerd M. Lenke, Mogadore; Earl G. Melby, Uniontown, and Hubert J. Fabris, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed May 10, 1983, Ser. No. 493,383
Int. Cl.³ C08G *69/20*
U.S. Cl. 528—312 **15 Claims**

1. The method which comprises mixing together and copolymerizing to form a solid polyamide
(a) a major amount of weight of the mixture of at least one lactam monomer and
(b) a minor amount by weight of the mixture of at least one graft copolymer promoter having a Tg of from about −40° to −100° C. and comprising (I) from about 4 to 13 parts by weight of maleic anhydride grafted on (II) 100 parts by weight of at least one liquid polymer having an average molecular weight of from about 1,000 to 30,000 and being selected from the group consisting of (A) homopolymers, copolymers and mixtures of the same of polymerizable conjugated dienes having from 4 to 6 carbon atoms and (B) copolymers of at least 50% by weight of at least one polymerizable conjugated diene having from 4 to 6 carbon atoms and essentially the balance at least one copolymerizable monomer selected from the group consisting of at least one monovinyl aryl monomer having from 8 to 12 carbon atoms, acrylonitrile and methacrylonitrile and mixtures of the same in admixture with
(c) an effective catalytic amount of an anionic lactam polymerization catalyst (lactamate salt), the lactam of (a) and (c) having the formula



where R is an alkylene radical of from 5 to 11 carbon atoms and R′ is hydrogen or an alkyl radical of from 1 to 4 carbon atoms.

4,448,957

PROCESS FOR PRODUCING AROMATIC POLYAMIDE-IMIDE

Kenji Nagaoka, Hirakata, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 13, 1983, Ser. No. 484,475
Claims priority, application Japan, Apr. 16, 1982, 57-64195
Int. Cl.³ C08G *73/14*
U.S. Cl. 528—351 **11 Claims**

1. In a process for producing an aromatic polyamide-imide by polycondensation of an aromatic tricarboxylic acid and/or aromatic tricarboxylic anhydride and an aromatic diamine by heating in the presence of a dehydration catalyst, the improvement which comprises using a solvent containing sulfolane as a reaction medium.

4,448,958

PURIFICATION OF CEFORANIDE

Paul D. Sleezer, Dewitt, and Richard R. Smith, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 20, 1982, Ser. No. 435,583
Int. Cl.³ C07D *501/20*
U.S. Cl. 544—20 **6 Claims**

1. The process for the purification of ceforanide having from trace amounts up to 36.5% by weight of impurities comprising the consecutive steps of
(a) forming the salt N,N-dimethylbenzylamine 7-[α-(2-aminomethylphenyl)acetamido]-3-[(1-carboxymethyltetrazol-5-ylthio)methyl]-3-cephem-4-carboxylate by mixing approximately equimolar amounts of N,N-dimethylbenzylamine and zwitterionic 7-[α-(2-aminomethylphenyl)-acetamido]-3-](1-carboxymethyltetrazol-5-ylthio)methyl]-3-cephem-4-carboxylic acid in an aqueous solvent mixture containing a water-miscible neutral organic solvent at a temperature in the range of 5° C. to 35° C.;
(b) adding a supplementary water-miscible neutral organic solvent to said mixture in sufficient amount of cause precipitation of said salt in crystalline form;
(c) recoverying said solid salt;
(d) dissolving said salt in water or a mixture thereof with a water-miscible organic solvent at substantially neutral or acidic pH; and
(e) adjusting the solution to pH 2.3–2.5 to precipitate the purified, crystalline, zwitterionic 7-[α-(2-aminomethylphenyl)acetamido)-3-[(1-carboxymethyltetrazol-5-ylthio)-methyl]-3-cephem-4-carboxylic acid.

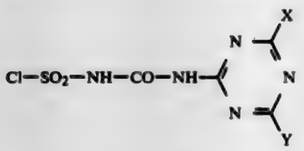
4,448,959

CHLOROSULFONYL UREA TRIAZINES

Beat Böhner, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 313,064, Oct. 19, 1981, Pat. No. 4,391,976. This application Sep. 20, 1982, Ser. No. 419,687
Int. Cl.³ C07D *251/46, 251/42, 251/16, 251/42*
U.S. Cl. 544—213 **7 Claims**

1. Chlorosulfonyl urea compounds of the formula VI



VI

wherein
X is C_1–C_2-alkyl, C_1–C_3-alkoxy, C_1–C_2-alkylthio, methoxymethyl, methoxyethyl, CF_3 or chlorine, and
Y is C_1–C_2-alkyl, C_1–C_3-alkoxy, C_1–C_2-alkylthio, methoxymethyl or methoxyethyl.

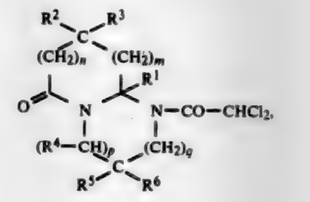
4,448,960

DICHLOROACETAMIDES, HERBICIDES CONTAINING ACETANILIDES AS HERBICIDAL ACTIVE INGREDIENTS AND THE DICHLOROACETAMIDES AS ANTAGONISTS, AND THE USE OF THESE HERBICIDES IN CONTROLLING UNDESIRED PLANT GROWTH

Wolfgang Rohr, Wachenheim; Hanspeter Hansen; Peter Plath, both of Ludwigshafen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,337
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948535
Int. Cl.³ C07D *239/70, 487/00;* E05B *65/10*
U.S. Cl. 544—282 **4 Claims**

1. A dichloroacetamide of the formula



(I)

where
R^1 is hydrogen, methyl or ethyl,
R^2 and R^3 are identical or different and are hydrogen, methyl or methoxy,
R^4 is hydrogen or methyl and
R^5 and R^6 are identical or different and are hydrogen or methyl, and
m is 0 or 1, n is 1 or 2, p is 0, 1 or 2 and q is 0, 1 or 2, the sum of p+q being 1 or 2.

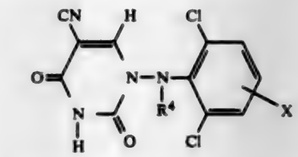
4,448,961

SUBSTITUTED ANILINO PYRIMIDINES

George R. Lindahl, III, Mountain View, and Clive A. Henrick, Palo Alto, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 187,001, Sep. 14, 1980, abandoned. This application May 27, 1982, Ser. No. 382,526
Int. Cl.³ C07D *239/55*
U.S. Cl. 544—311 **3 Claims**

1. A compound of the following formula:



wherein X is chloro and R^4 is hydrogen, methyl or hydroxymethyl.

4,448,962

SUBSTITUTED QUINOLINE CARBOXYLIC ACID DERIVATIVES

Tsutomu Irikura, Tokyo; Seigo Suzue, Saitama; Akira Ito, Saitama, and Hiroshi Koga, Saitama, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 80,519, Oct. 1, 1979, abandoned. This application Oct. 14, 1981, Ser. No. 311,343
Claims priority, application Japan, Sep. 29, 1978, 53-120216
Int. Cl.³ C07D *401/02;* A61K *31/495*
U.S. Cl. 544—362 **3 Claims**

1. 1-Ethyl-1,4-dihydro-6-fluoro-7-(1-piperazinyl)-4-oxo-1,8-naphthyridine-3-carboxylic acid, the pharmacologically acceptable hydrates and acid addition salts thereof.

3. 1-Ethyl-7-(4-p-aminobenzyl-1-piperazinyl)-1,4-dihydro-6-fluoro-4-oxo-quinoline-3-carboxylic acid.

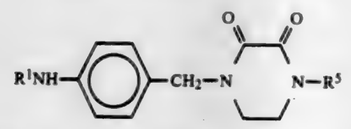
4,448,963

4-[4-(THIAZOLYL-AMINO)BENZYL]-2,3-DIOXOPIPERAZINE DERIVATIVES, ACID ADDITION SALTS THEREOF AND PROCESS FOR PRODUCING SAME

Takako Hori, Toyama; Chosaku Yoshida, Takaoka; Yasuo Kiba, Toyama; Ryuko Takeno, Toyama; Joji Nakano, Toyama; Jun Nitta, Namekawa; Sumiko Kishimoto, Toyama; Shohachi Murakami, Toyama; Hisatsugu Tsuda, Toyama, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 169,457, Jul. 16, 1980. This application Feb. 22, 1982, Ser. No. 351,257
Claims priority, application Japan, Jul. 24, 1979, 54-93234
Int. Cl.³ C07D *241/06;* A61K *31/41*
U.S. Cl. 544—367 **2 Claims**

1. A compound represented by the formula



wherein R^1 represents 2-thiazolyl, 4-thiazolyl or 5-thiazolyl; R^5 represents C_{1-8} alkyl; or a pharmaceutically acceptable acid addition salt thereof.

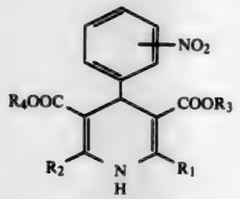
4,448,964

1,4-DIHYDROPYRIDINE DERIVATIVES

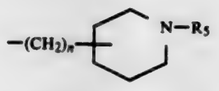
Kenji Muto, Shizuoka; Minoru Watanabe, Tokyo; Takao Hatta, Machida; Toru Sugaya, Tokyo; Yoshinori Takemoto, Shizuoka, and Nobuhiro Nakamizo, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1982, Ser. No. 367,995
Claims priority, application Japan, Apr. 17, 1981, 56-56937
Int. Cl.³ C07D *401/12*
U.S. Cl. 546—194 **10 Claims**

1. A 1,4-dihydropyridine compound of the formula:



wherein R_1 and R_2 are the same or different groups and each represents a lower alkyl group, one of R_3 and R_4 represents a lower alkyl group and the other represents a group of the formula:



wherein R_5 represents a benzyl group, a phenethyl group, an acetyl group or a benzoyl group and n represents 0 or an integer of 1-3; or a pharmaceutically acceptable acid addition salt thereof.

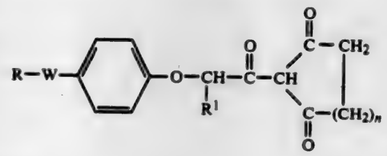
4,448,965

SUBSTITUTED CYCLOALKANEDIONES

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

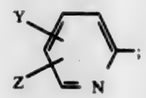
Filed Aug. 16, 1982, Ser. No. 408,291
Int. Cl.³ C07D *213/64, 213/74;* A01N *43/40*
U.S. Cl. 546—302 **5 Claims**

1. A compound of the following formula (A):



(A)

wherein,
n is zero, one, two or three;
R is



R^1 is hydrogen or lower alkyl;
W is oxygen, sulfur or amino; and
each of Y and Z is independently selected from hydrogen, lower haloalkyl and halogen.

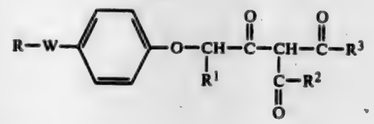
4,448,966

SUBSTITUTED 2-PYRIDYLOXYPHENOXY-ALKANETRIONES

Shy-Fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Del.

Filed Aug. 6, 1982, Ser. No. 405,852
Int. Cl.³ C07D *213/64, 213/74;* A01N *43/40*
U.S. Cl. 546—302 **6 Claims**

1. A compound of the following formula (A):



(A)

wherein,
R is



R^1 is hydrogen or lower alkyl;
R^2 is lower alkyl;
R^3 is lower alkyl;
W is oxygen, sulfur or amino; and
each of Y and Z is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, halogen, and nitro.

4,448,967

PROCESS FOR PREPARING CHLORO-TRIFLUOROMETHYL PYRIDINES

Graham Whittaker, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 20, 1982, Ser. No. 409,854
Claims priority, application United Kingdom, Sep. 3, 1981, 8126746
Int. Cl.³ C07D *213/26*
U.S. Cl. 546—345 **4 Claims**

1. A process for the production of at least one of the compounds 3-chloro-5-trifluoromethylpyridine and 2,3-dichloro-5-trifluoromethylpyridine which comprises reacting a substituted pyridine selected from the group consisting of 3-trifluoromethylpyridine and 2-chloro-5-trifluoromethylpyridine with at least one mole of chlorine per mole of substituted pyridine in the vapour phase at a temperature in the range from 250° C. to 450° C. in the presence of a catalyst comprising an oxide, chloride or fluoride of copper.

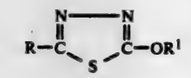
4,448,968

PROCESS FOR THE PREPARATION OF 1,3,4-THIADIAZOLONE DERIVATIVES

Haukur Kristinsson, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 23, 1982, Ser. No. 351,095
Claims priority, application Switzerland, Feb. 27, 1981, 1336/81
Int. Cl.³ C07D *285/12*
U.S. Cl. 548—136 **3 Claims**

1. In the process in which a 2-alkoxy-1,3,4-thiadiazole of the formula



in which R^1 is alkyl of 2 to 4 carbon atoms and R is (a) hydrogen; (b) unsubstituted alkyl; (c) alkyl substituted with one or more substituents selected from the group consisting of halo, cyano, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, alkoxycarbonyl, phenyl, phenoxy and phenylamino; (d) alkenyl; (e) phenylalkenyl; (f) cycloalkyl; (g) amino; (h) alkylamino; (i) dialkylamino; (j) alkoxycarbonyl; (k) alkylaminocarbonyl; (l) dialkylaminocarbonyl; (m) phenyl; or (n) a heterocyclic group selected from the group consisting of furyl, thienyl, pyrryl, isoxazolyl, oxazolyl, thiazolyl, isothiazolyl, pyridyl, pyrimidyl, benzofuryl, benzothienyl, indolyl, quinolyl and isoquinoline; is hydrolyzed to yield the corresponding 1,3,4-thiadiazol-2(3H)-one, the improvement which comprises treating said 2-alkoxy-1,3,4-thiadiazole with hydrogen chloride in non-aqueous organic solvent under nonaqueous conditions at a temperature of from 0° to 100° C.

4,448,969

CYCLIC ETHER OR CARBONATE ALKYLATION PRODUCTS OF 2,2,5,5-TETRAMETHYLIMIDAZOLIDIN-4-ONE AND DERIVATIVES, THEIR PREPARATION, AND THEIR USE AS STABILIZERS FOR SYNTHETIC POLYMERS

Chester E. Ramey, and Charles J. Rostek, Jr., both of Chagrin Falls, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Apr. 23, 1982, Ser. No. 371,201
Int. Cl.³ C07D *233/00*
U.S. Cl. 548—301 **2 Claims**

1. A process for hydroxyalkylating a 2,2,5,5-tetra(lower alkyl) imidazolidin-4-one comprising
(a) reacting it with an aqueous sodium hydroxide solution,
(b) removing water present and water formed by the reaction, then
(c) bringing the reaction product into contact with molten ethylene carbonate, then
(d) adding water and heating at reflux, then
(e) drying and recovering the hydroxy alkylated product.

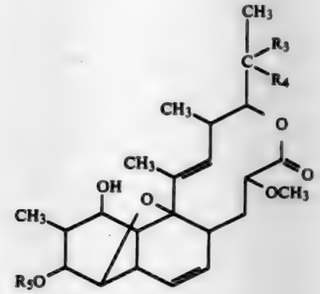
4,448,970

NARGENICIN DERIVATIVES

Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 236,221, Feb. 19, 1981, abandoned. This application May 4, 1981, Ser. No. 259,999
The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.
Int. Cl.³ C07D *233/54, 405/14*
U.S. Cl. 548—336 **8 Claims**

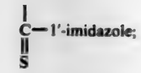
1. A compound of the formula



wherein
R_3 and R_4 = one is hydrogen and the other is O-arylsulfonyl, wherein aryl can be phenyl or substituted phenyl wherein phenyl can have the substituents p-CH_3 or p-NO_2; O-alkylsulfonyl and substituted O-alkylsulfonyl wherein alkyl is C_1-C_8 inclusive wherein the additional substituent can be CH_3 or CF_3; halogen; azide; amine and substituted amine wherein the substituent can be alkyl of 1 to 3 carbon atoms, inclusive; S alkyl wherein alkyl is C_1-C_8, inclusive; S substituted alkyl wherein the substituent can be —CH_2CH_2OH; nitrile (CN); thio-ester;



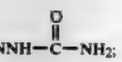
wherein alkyl is C_1-C_8, inclusive;



1'-imidazole;

O-alkyl wherein alkyl is C_1–C_8, inclusive;

R_3 and R_4 taken together are =O(ketone); $=NOR_8$, wherein R_8 is H, alkyl (C_1–C_8, inclusive), alkylidene and substituted alkylidene wherein the substituent can be alkyl of 0–8 carbons, inclusive; $=CH-COOC_2H_5$; $=CHOCH_3$;

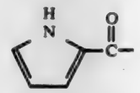


R_3 is OH and R_4 is



wherein R_9 is $(CH_2)_nCH_3$ and n is an integer of from 0–8, inclusive;

R_5 is



4,448,971

HYPOGLYCEMIC 5-PHENYL-SUBSTITUTED OXAZOLIDINE-2,4-DIONES

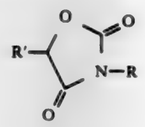
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 222,202, Jan. 2, 1981, Pat. No. 4,367,234, which is a continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,776

Int. Cl.³ C07D *263/44*; A61K *31/42*

U.S. Cl. 548—226 **11 Claims**

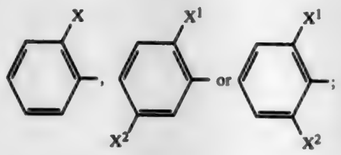
1. A racemic or optically active compound of the formula



wherein

R is hydrogen, (C_1–C_4)-alkanoyl, benzoyl, (C_2–C_4)-carbalkoxy, (C_1–C_3)-alkylcarbamoyl, (C_5–C_7)-cycloalkylcarbamoyl or di(C_1–C_3)-alkylcarbamoyl;

R′ is



X is acetamido or fluoro;

X^1 is (C_1–C_2) alkoxy; and

X^2 is hydrogen, chloro, bromo, fluoro, cyano or methyl;

or a pharmaceutically acceptable cationic salt thereof when R is hydrogen.

4,448,972

ADAMANTYL CONTAINING INTERMEDIATES

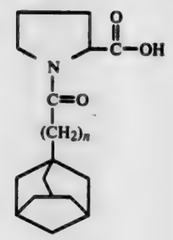
Francis R. Pfeiffer, Cinnaminson, N.J., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 350,975, Feb. 22, 1982, Pat. No. 4,387,049. This application Mar. 1, 1983, Ser. No. 471,112

Int. Cl.³ C07D *207/16*

U.S. Cl. 548—528 **2 Claims**

1. A chemical compound of the structural formula:



in which n is an integer of 1–3.

4,448,973

THERAPEUTICALLY ACTIVE 3-SUBSTITUTED AMINO-1-PHENYL AND SUBSTITUTED PHENYL-2-PYRAZOLINES

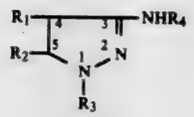
John P. Dusza, Nanuet, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 282,971, Jul. 13, 1981, abandoned. This application May 10, 1982, Ser. No. 376,885

Int. Cl.³ C07D *231/06*

U.S. Cl. 548—362 **4 Claims**

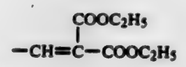
1. A compound selected from the group consisting of those of the formula:



wherein R_1 and R_2 may be hydrogen or lower alkyl (C_1–C_4); R_3 is



where R_5 and R_6 may be hydrogen, chloro or fluoro; R_4 is CH_2CF_3 or



and the pharmacologically acceptable acid-addition salts thereof.

4,448,974

POLYALKYLENE SUCCINIMIDE LUBRICANT ADDITIVES

Joseph P. O'Brien, Kirkwood, and Andrew G. Papay, Manchester, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Filed Mar. 24, 1982, Ser. No. 361,519

Int. Cl.³ C07D *207/412*

U.S. Cl. 548—550 **24 Claims**

1. A lubricating oil additive having dispersant properties which is a product made by a process comprising the steps of (a) reacting 0.5–10 moles of an aliphatic aldehyde containing 1–20 carbon atoms with 1–2 moles of a saturated aliphatic amine having 2–50 carbon atoms and 2–11 amine nitrogen atoms, at least one of which is a primary amine group, at an elevated temperature high enough to distill out water and within the range of 70°–200° C. to form an intermediate and (b) reacting this intermediate at about 80°–200° C. with about 0.5–5 mole parts of an aliphatic hydrocarbon substituted succinic acid, anhydride or lower alkyl ester.

4,448,975

PROCESS FOR THE PREPARATION OF SUBSTITUTED AMIDINES

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 106,677, Dec. 26, 1979, Pat. No. 4,353,830. This application Oct. 15, 1981, Ser. No. 311,675

Int. Cl.³ C07D *207/00*; C07C *81/00*

U.S. Cl. 548—558 **10 Claims**

1. In a process for producing substituted amidines which comprise reacting a substituted methylene ammonium halide with a primary or secondary amine or ammonia, the improvement comprising coreacting at least one mole of a base selected from the group consisting of

A. tertiary amines,

B. alkali or alkaline earth metal hydroxides,

C. the amidine itself that is the product of the reaction,

D. quaternary ammonium hydroxide, and

E. the primary amine reactant, the secondary amine reactant or ammonia reactant in excess over the stoichiometric quantities.

4,448,976

CHIRAL SYNTHESIS OF THIENAMYCIN FROM D-GLUOCOSE

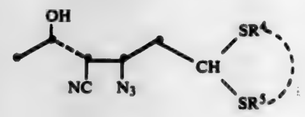
Philippe L. Durette, New Providence, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 248,177, Mar. 30, 1981, Pat. No. 4,384,998. This application Feb. 7, 1983, Ser. No. 464,185

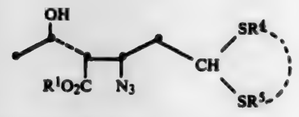
Int. Cl.³ C07D *333/24*

U.S. Cl. 549—39 **3 Claims**

1. A compound selected from the group consisting of



and



wherein: R^1 is lower alkyl having 1–6 carbon atoms; R^2 and R^3 are independently selected from hydrogen or triorganosilyl; and R^4 and R^5 are independently selected from alkyl having 1–6 carbon atoms and are joined as indicated by the dotted line.

4,448,977

STABILIZED ACETAL-ACID COMPOSITIONS

Glenn H. Warner, St. Albans; Louis F. Theiling, Jr., Charleston, both of W. Va., and Marvin G. Freid, Putnam Valley, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 178,133, Aug. 14, 1980, abandoned, which is a continuation of Ser. No. 961,714, Nov. 17, 1978, Pat. No. 4,244,876. This application Aug. 26, 1982, Ser. No. 411,620

Int. Cl.³ C07D *309/06*; C07C *41/46*, *47/198*

U.S. Cl. 549—201 **9 Claims**

1. A storage stable composition comprising (I) at least one member selected from the group consisting of 2-hydroxyalkoxy-6-alkoxytetrahydropyran, 5-hydroxyalkoxy-5-alkoxypentanal, 1-alkoxy-1,5,5-tri(hydroxyalkoxy)pentane, 2,6-dihydroxyalkoxy-tetrahydropyran, 5,5-dihydroxyalkoxypentanal, and 1,1,5,5-tetra(hydroxyalkoxy)pentane, or mixtures thereof and (II) from 0.25 to 2.5 weight percent, based on the weight of component (I), of a soluble organic acid, wherein said alkoxy moieties contain from 1 to 3 carbon atoms.

4,448,978

PROCESS FOR PREPARING MALEIC ANHYDRIDE

Ramon A. Mount, and James T. Wrobleski, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 223,659, Jan. 9, 1981, abandoned. This application Mar. 8, 1982, Ser. No. 355,936

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **6 Claims**

1. A method for the preparation of maleic anhydride from butane comprising reacting an oxygen-containing gas and butane at a temperature between about 350° and 600° C. in the presence of the product of the process comprising:

(1) forming a first reaction product from a vanadium compound and a phosphorus compound having a phosphorus-to-vanadium atom ratio of 0.8–1.5:1

(2) reacting the first reaction product with hydrogen iodide to form a catalyst intermediate;

(3) partially dehydrating the catalyst intermediate to yield an amorphous material;

(4) heating the amorphous material in an aqueous environment at a temperature of about 120°–250° C. to form a catalyst precursor and

(5) calcining the catalyst precursor at about 300°–600° C. to form the catalyst.

4,448,979

ML-236B DERIVATIVES

Akira Terahara, and Minoru Tanaka, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

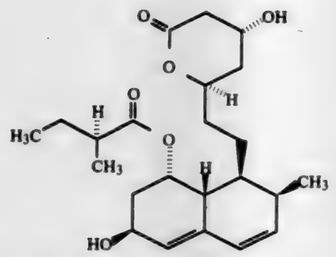
Division of Ser. No. 270,846, Jun. 5, 1981, Pat. No. 4,346,227. This application Feb. 24, 1982, Ser. No. 351,975

Claims priority, application Japan, Jun. 6, 1980, 55-76127; Aug. 22, 1980, 55-115483; Sep. 8, 1980, 55-124385; Sep. 19, 1980, 55-130311

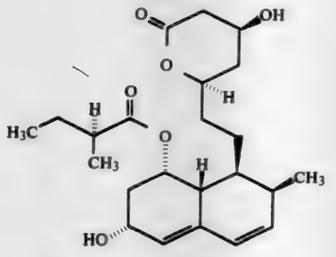
Int. Cl.³ C07D *309/30*

U.S. Cl. 549—292 **3 Claims**

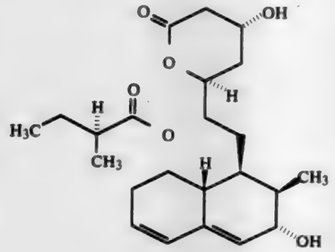
1. The compound having the formula (V):



2. The compound having the formula (VII):



3. The compound having the formula (XIII):



4,448,980

PREPARATION OF TRIALKYLSILYL ETHERS

Dotsevi Y. Sogah, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 22, 1983, Ser. No. 534,778

Int. Cl.³ C07F *7/18, 7/08, 7/10*

U.S. Cl. 556—446 **21 Claims**

1. Process comprising contacting and reacting $(R)_3SiZ$ and $R^1—C(O)—R^2$ wherein

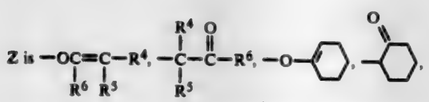
R is C_{1-4} alkyl;

R^1 is C_{1-10} alkyl or C_{6-10} cycloalkyl, aryl, alkaryl or aralkyl;

R^2 is —H, C_{1-10} alkyl or C_{6-10} cycloalkyl, aryl, alkaryl, aralkyl or $—OR^3$;

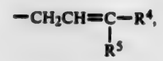
R^3 is $—Si(R)_3$ or C_{1-4} alkyl, optionally substituted with $—Si(R)_3$ or $—OSi(R)_3$;

R^1 and R^2 taken together are $—CH_2—_5$; and



—H, —CN, $—N_3$, —Sr, $—OP(OR^3)_2$, $—OP[N(R)_2]_2$,

(V)



$—CH_2CN$ or $—C_6F_5$;

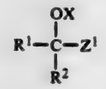
R^4 and R^5 are independently selected from —H and C_{1-4} alkyl;

R^6 is —H, C_{1-6} alkyl, aryl or $—OR^7$; and

R^7 is $—Si(R)_3$ or C_{1-4} alkyl, optionally substituted with $—Si(R)_3$ or $—OSi(R)_3$,

in the presence of a catalytic amount of bifluoride ($HF_2\ominus$) catalyst to produce the trialkylsilyl ether

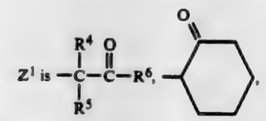
(VII)



wherein

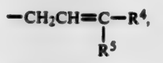
X is $—Si(R)_3$;

R, R^1 and R^2 are as defined above; and



—H, —CN, $—N_3$, —SR, $—OP(OR^3)_2$, $—OP[N(R)_2]_2$,

(XIII)



$—CH_2CN$ or $—C_6F_5$.

4,448,981

METHOD OF MAKING ORGANOSILOXANES AND ALKYL HALIDES FROM DIALKYLDIALKOXYSILANES

Luisito A. Tolentino, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed May 13, 1983, Ser. No. 494,191

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—459 **25 Claims**

1. An improved process for making an alkyl halide and organosiloxanes from a dialkyldialkoxysilane and a hydrogen halide, comprising, simultaneously introducing the dialkyldialkoxysilane and hydrogen halide into a column containing hydrogen halide under reflux in such proportions that the amount of hydrogen halide introduced into the column is at a stoichiometric excess relative to the dialkyldialkoxysilane introduced into the column.

4,448,982

SELECTIVE PROCESS FOR THE PREPARATION OF HYDROXY ALKYL PHENOXY BENZOATES

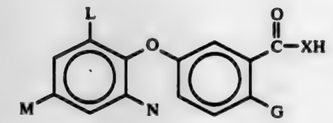
Kou-Chang Liu, Wayne, and Michael J. Brown, Randolph, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,539

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—21 **8 Claims**

1. The process which comprises reacting an ethylene or propylene carbonate with a phenoxy benzoic acid having the formula



wherein X is O or S; G is selected from the group of nitro, halo, cyano or a hydrogen atom; L, M and N are independently selected from the group of halo, trihaloalkyl, lower alkyl, lower alkoxy or a hydrogen atom, in the presence of a catalyst at a temperature of between about 90° C. and 125° C. to produce the corresponding hydroxyalkyl phenoxybenzoate in a substantially pure state.

4,448,983

PREPARATION OF ALKYL CARBOXYLATES

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

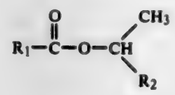
Continuation-in-part of Ser. No. 218,148, Dec. 19, 1980, Pat. No. 4,365,084. This application Sep. 30, 1982, Ser. No. 429,936

The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ C07C *67/04*

U.S. Cl. 560—241.1 **9 Claims**

1. A process for the preparation of alkyl-carboxylate mixtures enriched in alpha-methylalkyl carboxylates having the formula:



wherein:

R_1 is alkyl of 1 to 10 carbon atoms and R_2 is C_4 to C_{18} alkyl; said process comprising:

reacting an olefin mixture containing at least 25 percent of a C_6 to C_{20} olefin having no unsaturation at the site of the No. 2 carbon atom thereof, with a C_1 to C_{10} carboxylic acid, said reaction being carried out under ester-forming reaction conditions including the presence of a catalyst comprising crystalline zeolite material having a silica to alumina mole ratio of at least 12 and a Constraint Index of from about 1 to 12, to thereby selectively produce an alkyl carboxylate ester product which is enriched in the alpha-methylalkyl carboxylate ester.

4,448,984

MONO-OXOMETHYL SUBSTITUTED POLYHYDRODIMETHANONAPHTHALENE DERIVATIVES

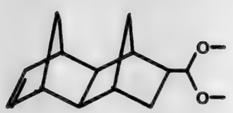
Mark A. Sprecker, Sea Bright; Marie R. Hanna, Hazlet; Richard J. Tokarzewski, Keyport; Robert P. Belko, Woodbridge; Hugh Watkins, Lincroft, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 354,387, Mar. 2, 1982. This application Jan. 18, 1983, Ser. No. 458,890

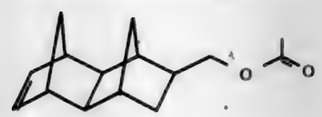
Int. Cl.³ C07C *43/162, 67/035, 67/04, 35/28*

U.S. Cl. 560—256 **3 Claims**

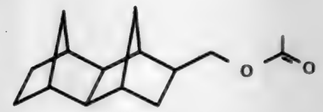
1. The compound having the structure:



2. The compound having the structure:



3. The compound having the structure:



4,448,985

OXIDATION OF ISOBUTYRIC ACID TO ALPHA-HYDROXYISOBUTYRIC ACID

John A. Sofranko, West Chester, and John J. Leonard, Springfield, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 13, 1982, Ser. No. 449,301

Int. Cl.³ C07C *59/00*

U.S. Cl. 562—579 **8 Claims**

1. A process for the preparation of α-hydroxyisobutyric acid which comprises heating at temperatures of from about 50° C. to 200° C. a mixture containing stoichiometric quantities of isobutyric acid, water and a TlX_3 salt selected from the group consisting of thallic chloride, thallic bromide, thallic nitrate, thallic oxide, thallic sulfate, thallium (III) trifluoroacetate and thallium (III) benzoate.

4,448,986

PREPARATION OF (1R,CIS)-OXYIMINO-SUBSTITUTED CYCLOPROPANECARBOXYLIC ACIDS

Steven A. Roman, Fulshear, Tex., assignor to Shell Oil Company, Houston, Tex.

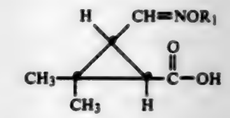
Division of Ser. No. 292,567, Aug. 13, 1981, Pat. No. 4,409,398. This application Jul. 14, 1982, Ser. No. 398,032

Int. Cl.³ C07C *131/02*

U.S. Cl. 562—506 **8 Claims**

1. A process for the preparation of (1R,4R,5S)-4-acetoxy-6,6-dimethyl-3-oxabicyclo[3.1.0]hexan-2-one which comprises treating (1R,cis)-caronaldehydic acid with acetic anhydride.

4. A process for the preparation of a (1R,cis)-oxyimino-substituted cyclopropanecarboxylic acid of the formula



wherein R_1 represents a hydrogen atom; an alkyl group containing from 1 to 10 carbon atoms optionally substituted by one or more halogen atoms; a (cycloalkyl)alkyl group containing from 3 to 7 carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms; a cycloalkyl group containing from 3 to 7 ring carbon atoms; an alkenyl group containing from 2 to 4 carbon atoms optionally substituted by one or more halogen atoms; an alkynyl group containing from 2 to 4 carbon atoms; an aryl group containing from 6 to 12 carbon atoms; an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms; or a group



wherein X is thienyl, furfuryl, $-CO_2R^1$, $-CONR^1R^2$, $-SO_3R^1$, $-SO_2NR^1R^2$, $-PO(OR^1)_2$, $-NO_2$, $-CN$, $-OR^1$, $-SR^1$, $-S(O)_{R1}$, $-S(O)_2R^1$, $-NR^1R^2$, $-N(O)R^1R^2$ or $-(OCH_2CH_2)q-OR^1$ in which q is an integer of 1 to 4, R^1 and R^2 each independently is a hydrogen atom, an alkyl group containing from 1 to 8 carbon atoms optionally substituted by one or more halogen atoms, a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms, a cycloalkyl group containing from 3 to 7 ring atoms, an alkenyl group containing from 3 to 4 carbon atoms optionally substituted by one or more halogen atoms, an alkynyl group containing from 3 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms, or R^1 and R^2 taken together is an alkylene or oxaalkylene group containing from 4 to 6 carbon atoms, or when one R^1 or R^2 is furfuryl or thienyl then the other is a hydrogen atom; p is an integer of 1 or 2; when p is 1 then X^1 is an alkyl group containing from 1 to 4 carbon atoms or when p is 2 then X^1 is a hydrogen atom, which process comprises treating (1R,cis)-caronaldehydic acid with acetic anhydride and treating the resulting (1R,4R,5S)-4-acetoxy-6,6-dimethyl-3-oxabicyclo[3.1.]-hexan-2-one with an acid addition salt of the corresponding hydroxylamine or optionally substituted hydrocarbyloxyamine in the presence of a base.

4,448,987

CATALYZED HYDROGENATION OF TEREPHTHALIC ACID TO P-HYDROXYMETHYLBENZOIC ACID USING A RHENIUM CATALYST

Lawrence D. Lilliwitz, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,547

Int. Cl.³ C07C *65/04*

U.S. Cl. 562—473 **13 Claims**

1. A process for preparing a hydroxymethyl aryl monocarboxylic acid from an arylene dicarboxylic acid which comprises hydrogenating an aqueous solution of an arylene dicarboxylic acid compound in the presence of a rhenium oxide catalyst at a temperature within the range of from about 140° C. to about 200° C.

4,448,988

2-KETOSULFONAMIDES

Dieter Günther, Kelkheim (Taunus), Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

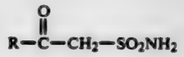
Filed Apr. 21, 1982, Ser. No. 370,504

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116129

Int. Cl.³ C07C *143/74*

U.S. Cl. 564—95 **1 Claim**

1. A 2-ketosulfonamide of the formula



in which R is alkyl having 1 to 4 carbon atoms.

4,448,989

N-NITROXYALKYLENE BENZAMIDE DERIVATIVES

Masami Shiratsuchi, Musashimurayama; Hirochi Ishihama, Higashimurayama, and Yasumi Uchida, Ichikawa, all of Japan, assignors to Kowa Company, Ltd., Japan

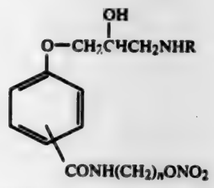
Filed Dec. 20, 1982, Ser. No. 451,322

Claims priority, application Japan, Dec. 24, 1981, 56-208105

Int. Cl.³ C07C *103/76, 103/78*; A61K *31/165*

U.S. Cl. 564—165 **4 Claims**

1. A compound represented by the following formula



wherein R represents a lower alkyl group having 2 to 6 carbon atoms, and n is an integer of from 1 to 5.

4,448,990

HYDROXYAMINOTETRALINCARBOXAMIDES

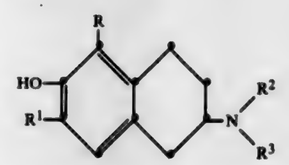
Nicholas J. Bach; Edmund C. Kornfeld, and Robert D. Titus, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 16, 1982, Ser. No. 442,074

Int. Cl.³ C07C *103/28*; A61K *31/165*

U.S. Cl. 564—167 **10 Claims**

1. A compound of the formula



wherein one of R and R^1 is H and the other is $CONH_2$, R^2 and R^3 are individually H, methyl, ethyl or n-propyl, and pharmaceutically-acceptable acid addition salts thereof formed with non-toxic acids.

4,448,991

CYCLOHEXENE DERIVATIVES

Hans Bruderer, Benken; Albert E. Fischli, Riehen, and Rudolf Pfister, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

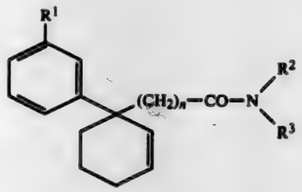
Division of Ser. No. 228,793, Jan. 27, 1981, Pat. No. 4,336,268. This application Mar. 24, 1982, Ser. No. 361,290

Claims priority, application Switzerland, Jan. 29, 1980, 724/80

Int. Cl.³ C07C *103/19, 103/76*

U.S. Cl. 564—171 **2 Claims**

1. A compound of the formula



IV

wherein R^1 is hydroxy or lower alkoxy, n is the integer 1 or 2, R^2 is lower alkyl and R^3 is hydrogen, lower alkyl, lower alkenyl or lower cycloalkylmethyl.

4,448,992

ADDITION PRODUCTS FROM TRIETHANOLAMINE CONDENSATION PRODUCTS AND BISGLYCIDYL ETHERS AND THEIR USE

Helmut Diery, Kelkheim, Fed. Rep. of Germany, and Bernhard Mees, Charlotte, N.C., assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

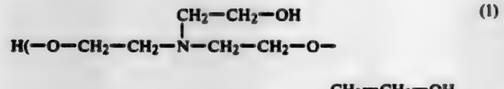
Filed Sep. 9, 1982, Ser. No. 416,117

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136281

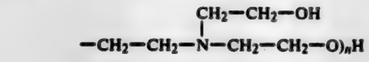
Int. Cl.³ C07C *91/08, 33/08*

U.S. Cl. 564—347 **2 Claims**

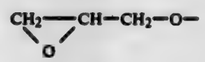
1. An addition product obtained by reaction of a triethanolamine condensation product of the formula 1,



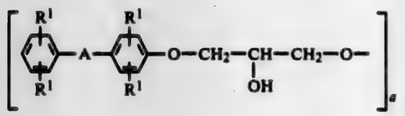
(1)

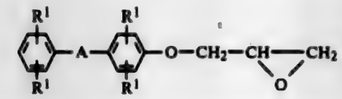


wherein n denotes a number from 1 to 3, with a bisglycidyl ether of the formula 2,

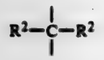


(2)





wherein R^1 can be identical or different and denote hydrogen, C_1–C_4-alkyl or halogen, A denotes a direct bond, a sulfonyl or cyclohexyl group or a group of the formula



R^2 denotes hydrogen, methyl or phenyl and a denotes a whole number from 0 to 10.

4,448,993

PROCESS FOR CONVERSION OF HYDROXYBENZENES TO AMINES

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 219,279, Dec. 22, 1980, Pat. No. 4,335,022, which is a continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 353,010

Int. Cl.³ C07C *85/06*

U.S. Cl. 564—402 **15 Claims**

1. A process for conversion of arylhydroxides to the corresponding amines which comprises contacting the arylhydroxide and ammonia at about 250° C. to about 550° C. with a catalyst prepared by a process which comprises impregnating a substantially dehydrated amorphorous silica gel with aluminum hydride dissolved in an anhydrous, non-hydroxyl containing organic solvent, drying the impregnated silica to remove the solvent and subsequently heating the impregnated silica at a temperature of about 300° to about 900° C. in a non-oxidizing atmosphere.

4,448,994

REDUCTION OF C-NITROSOARYLAMINES

Paul R. Kurek, Schaumburg, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 16, 1983, Ser. No. 533,071

Int. Cl.³ C07C *85/11*

U.S. Cl. 564—416 **8 Claims**

1. A method of making an aminoarylamine comprising contacting an aqueous basic solution of an alkali metal salt of a C-nitrosoarylamine with a reducing sugar at a temperature from about 40° C. to about 110° C., and recovering the aminoarylamine formed thereby.

4,448,995

CATALYTIC HYDROGENATION OF DI(4-AMINOPHENYL)METHANE

Gary F. Allen, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1982, Ser. No. 449,341

Int. Cl.³ C07C *85/24*

U.S. Cl. 564—451 **10 Claims**

1. A process for the catalytic hydrogenation of di(4-aminophenyl)methane to a liquid di(4-aminocyclohexyl)methane containing from 15 to 40% by weight of the trans,trans isomer comprising hydrogenating di(4-aminophenyl)methane at a hydrogen pressure of at least 500 psi and at a temperature of from 100° to 300° C., in the presence of a ruthenium catalyst supported on an inert carrier, said catalyst being moderated with from 65 to 700% by weight, based on the weight of the ruthenium of a compound selected from the group consisting of nitrates and sulfates of alkali metals and alkaline earth metals.

4,448,996

PROCESS FOR PREPARING TERTIARY AMINES

Yoshio Yanagi; Kunikazu Yoneyama, and Hiroyuki Omori, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Mie, Japan

Filed Dec. 15, 1982, Ser. No. 449,859

Claims priority, application Japan, Dec. 15, 1981, 56-201986; Apr. 19, 1982, 57-65067

Int. Cl.³ C07C *85/00*

U.S. Cl. 564—467 **14 Claims**

1. In a process for the preparation of a tertiary amine having at least one long-chain alkyl group by the catalytic reaction of a long-chain olefin containing 8 to 30 carbon atoms, carbon monoxide, hydrogen, and a primary or secondary amine in the presence of a rhodium-based catalyst and/or a ruthenium-based catalyst, the improvement which comprises:

conducting said reaction in a solvent of an alcohol selected from the group consisting of monohydric alcohols containing 1 to 3 carbon atoms, dihydric alcohols containing 2 to 6 carbon atoms, trihydric alcohols containing 3 to 6 carbon atoms, intermolecular dehydrated condensates of dihydric or trihydric alcohols containing 2 to 3 carbon atoms and mixtures of said alcohol and water; and

allowing the reaction solution to separate into an amine phase containing the product tertiary amine and a solvent phase containing the catalyst.

4,448,997

PREPARATION OF LINEAR POLYETHYLENEPOLYAMINES WITH AN ALUMINUM PHOSPHATE CATALYST

Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 283,713, Jul. 16, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,841

Int. Cl.³ C07C *85/06*

U.S. Cl. 564—479 8 Claims

1. A method of preparing linear polyethylenepolyamines from ethylenediamine and monoethanolamine which comprises:

mixing and reacting ethylenediamine with monoethanolamine at a temperature of about 200° to about 400° C. and a pressure of about 700 to about 1400 psig in the presence of a catalytically effective amount of an aluminum phosphate catalyst;

said catalyst prepared by mixing and reacting alumina with phosphoric acid, adding water to the reaction mixture, adding ammonium hydroxide to form a precipitate, continuing the addition of ammonium hydroxide until precipitate formation ceases, and separating the precipitate catalyst from the reaction mixture; and

recovering a polyethylenepolyamine product characterized by a relatively large percentage of linear, non-cyclic polyethylenepolyamines.

4,448,998

CATALYTIC HYDROGENATION OF N,N-DISUBSTITUTED AMIDES TO AMINES

Richard M. King, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 22, 1982, Ser. No. 443,426

Int. Cl.³ C07C *85/12*

U.S. Cl. 564—488 12 Claims

1. A process for producing tertiary amines containing from about 10 to about 72 carbon atoms by hydrogenation of the corresponding N,N-disubstituted amides, the said process being conducted with gaseous hydrogen at a temperature of from about 200° C. to about 400° C. and a pressure of from about 140 to about 350 kg./sq.cm., and in the presence of a catalyst composition comprising copper chromite and zeolite, the weight ratio of copper chromite:zeolite being from about 10:1 to about 0.1:1.

4,448,999

PROCESS FOR THE PREPARATION OF 2-AMINOPROPANEDIOL-1,3(SERINOL)

Klaus Thewalt, Witten; Gunter Bison, Troisdorf-Sieglar, both of Fed. Rep. of Germany, and Heinz Egger, Muttenz, Switzerland, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,326

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130082

Int. Cl.³ C07C *85/11*

U.S. Cl. 564—495 7 Claims

1. A process for the preparation of 2-aminopropanediol-1,3 which comprises effecting catalytic hydrogenation of an alkali salt of 2-nitro-1,3-propanediol in the presence of inert solvents and a buffered acid at elevated temperatures and under pressures of 1-98 bar hydrogen in a batch reactor and maintaining a narrow range of temperatures extending from 50° to 80° C. during the reaction by controlled cooling of the reactant medium with a cooling device.

4,449,000

1:1:2 AND 1:3 MIXED POLYNITROETHYL ORTHOCARBONATES VIA MIXED TRIALKOXYMETHYL TRICHLOROMETHYL DISULFIDES

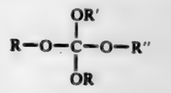
Michael E. Sitzmann, Adelphi, and William H. Gilligan, Fort Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1983, Ser. No. 467,714

Int. Cl.³ C07C *79/343, 76/02*

U.S. Cl. 568—22 21 Claims

1. A 1:1:2 mixed orthocarbonate of the formula



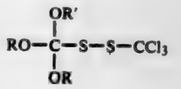
wherein

R and R″ are selected from the group consisting of
$-CH_2C(NO_2)_2CH_3$,
$-CH_2C(NO_2)_3$,
$-CH_2CF(NO_2)_2$,
$-CH_2CF_2(NO_2)$, and
$-CH_2CF_3$,

and R′ is selected from the group consisting of
$CH_2CF(NO_2)_2$,
$CH_3CF_2(NO_2)$, and
CH_2CF_3,

provided that R≠R′, R≠R″, and R′≠R″.

11. A disulfide of the formula

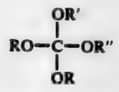


wherein

R≠R′ and R is selected from the group consisting of
$-CH_2C(NO_2)_2CH_3$,
$-CH_2C(NO_2)_3$,
$-CH_2CF(NO_2)_2$,
$-CH_2CF_2(NO_2)$, and
$-CH_2CF_3$,

and R′ is selected from the group consisting of
$CH_2CF(NO_2)_2$,
$CH_2CF_2(NO_2)$, and
CH_2CF_3.

16. A process for preparing 1:1:2 mixed orthocarbonates of the formula



comprising the following steps in order:

(1) reacting a

(a) a thionocarbonate of formula

$(RO)_2C{=}S$ with

(b) an alcohol of the formula R′OH and

(c) $ClSCCl_3$,

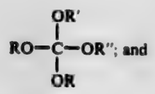
in an 1:1:1 molar ratio in the presence of a hydroxyl ion source to produce a disulfide of the formula

$(RO)_2(R'O)CSSCCl_3$;

(2) reacting the disulfide produced in step (1) with chlorine gas to produce a chloroorthoformate of the formula

$(RO)_2(R'O)CCl$;

(3) reacting the chloroorthoformate produced in step (2) with an alcohol of the formula R″OH to produce the desired orthocarbonate of the formula



(4) isolating the product orthocarbonate;

wherein

R and R″ are selected from the group consisting of
$-CH_2C(NO_2)_2CH_3$,
$-CH_2C(NO_2)_3$,
$-CH_2CF(NO_2)_2$,
$-CH_2CF_2(NO_2)$, and
$-CH_2CF_3$,

and R′ is selected from the group consisting of
$CH_2CF(NO_2)_2$,
$CH_2CF_2(NO_2)$, and
CH_2CF_3,

provided that R≠R′, R≠R″, and R′≠R″.

4,449,001

OXY AND THIOARYL-PHENYLATED AROMATIC BISCYCLOPENTADIENONES

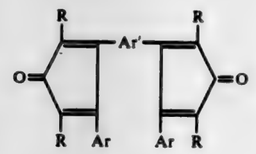
Bruce A. Reinhardt, New Carlisle, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 366,733, Apr. 8, 1982, Pat. No. 4,400,540. This application Mar. 8, 1983, Ser. No. 473,391

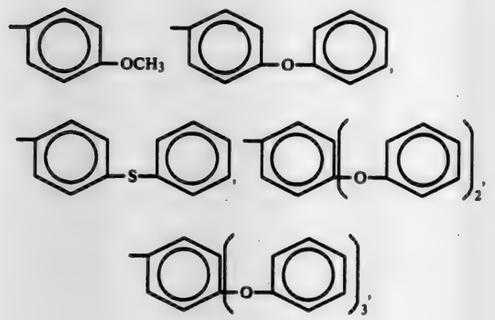
Int. Cl.³ C07C *49/792*

U.S. Cl. 568—31 3 Claims

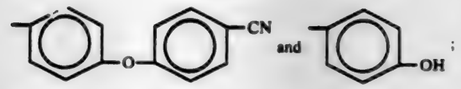
1. A process for preparing a compound having the general formula



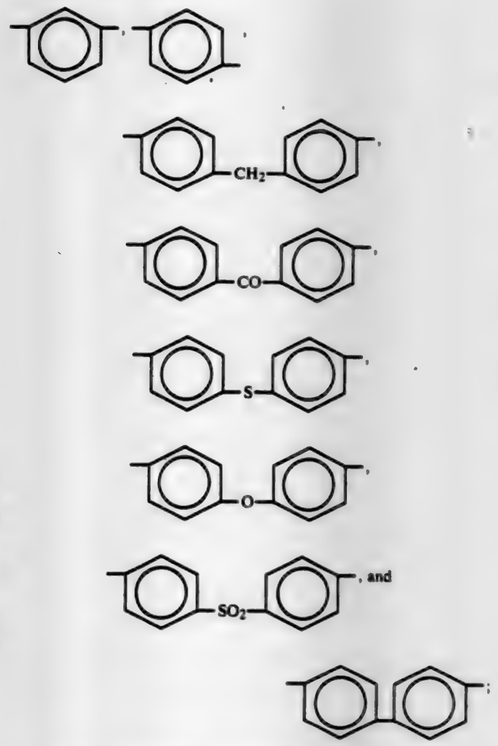
wherein Ar is a monovalent aromatic radical selected from the group consisting of



-continued



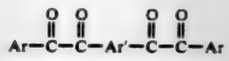
Ar′ is a divalent aromatic radical selected from the group consisting of



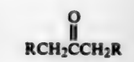
and R is a monovalent aromatic radical selected from the group consisting of



which comprises reacting an aromatic bis-benzil having the general formula



wherein Ar and Ar′ are as described above, with a benzylketone having the general formula



wherein R is as described above, in the presence of an

alkali metal hydroxide under reflux reaction conditions in an alcohol reaction medium.

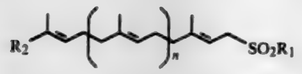
4,449,002

POLYPRENYL SULFONES

Akio Sato; Kenji Nakajima, both of Ibaragi; Yoshimasa Takahara, Narashino; Shizumasa Kijima, Niiza; Hideaki Watanabe, Kisogawamachi; Tamio Kawamura, Kakamigahara, and Yasushi Nagai, Tokyo, all of Japan, assignors to Eisai Co., Ltd. and General Director of the Agency of Industrial Science and Technology, both of Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,475
Claims priority, application Japan, Apr. 17, 1981, 56-58223
Int. Cl.³ C07C *147/08*
U.S. Cl. 568—28 **2 Claims**

1. A polyprenyl sulfone compound of the formula:



(I)

wherein n is an integer of 1 to 4, R_1 is selected from the group consisting of phenyl, tolyl, xylyl, naphthyl and p-chlorophenyl and R_2 is hydroxymethyl or carboxyl.

4,449,003

PROCESS FOR THE PRODUCTION OF BIS(4-HYDROXYPHENYL)BIPHENYL DISULFONE

John R. Sanderson, Austin, Tex., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Apr. 2, 1982, Ser. No. 364,828
Int. Cl.³ C07D *147/06, 147/10*
U.S. Cl. 568—33 **6 Claims**

1. A process for the preparation of bis(4-hydroxyphenyl)-biphenyl disulfone comprising the steps of (i) reacting 4,4'-biphenyldisulfonylchloride with anisole in the presence of a Lewis acid as catalyst to produce bis(4-methoxyphenyl)biphenyl disulfone and (ii) isolating the reaction product (iii) refluxing the bis(4-methoxyphenyl)biphenyl disulfone in the presence of a lithium halide to produce said bis(4-hydroxyphenyl)-biphenyl disulfone and (iv) isolating the reaction product of (iii).

4,449,004

PROCESS FOR PREPARING ORGANIC SULPHIDES

Iacopo Degani; Rita Fochi, and Valeria Regondi, all of Turin, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Apr. 13, 1982, Ser. No. 368,293
Claims priority, application Italy, Apr. 17, 1981, 21263 A/81
Int. Cl.³ C07C *148/00*
U.S. Cl. 568—38 **7 Claims**

1. A process for preparing organic sulphides of formula:

$$R—S—R_1$$

in which: R is an aliphatic, aryl, arylaliphatic or heterocyclic radical, and R_1 is an aliphatic or arylaliphatic radical, characterized by reacting organic dithiocarbonates with an alkylating or arylating agent in the presence of an aqueous alkaline base and a phase transfer catalyst, at a temperature of about 50° to 100° C., in accordance with the equation:

$$2R—X+(R_1S)_2CO+H_2O \; 2R—S—R_1+2HX+CO_2 \qquad (I)..$$

in which R and R_1 are as heretofore defined, and X is Cl, Br, I, $—SO_3CH_3$, or $—SO_3—C_6—H_4—CH_3$.

4,449,005

DEHYDROHALOGENATION PROCESS

George T. Davis, deceased, late of Bel Air, Md. (by Maureen A. Davis, administratrix), and William R. Hydro, Bel Air, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1982, Ser. No. 405,680
Int. Cl.³ C07C *149/10*
U.S. Cl. 568—59 **8 Claims**

1. A process for dehydrochlorinating a compound selected from the group consisting of 2-chloroethyl ethyl sulfide and bis(2-chloroethyl)sulfide, which consists essentially of contacting said compound in vapor phase with a quaternary ammonium—or quaternary phosphonium fluoride of the formula $(R)_4 X F$, wherein the R's represent the same or different alkyl radicals containing 1–12 carbon atoms or phenyl, X is nitrogen or phosphorus and F is fluorine, in the absence of a solvent at a temperature and for a period of time sufficient to effect the dehydrochlorination to the corresponding vinyl compound.

4,449,006

PREPARATION OF METHYL MERCAPTAN FROM CARBON OXIDES

Paul G. Haines, Lafayette Hill, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 29, 1982, Ser. No. 431,858
Int. Cl.³ C07C *148/00*
U.S. Cl. 568—70 **8 Claims**

1. A continuous process for the manufacture of methyl mercaptan comprising contacting an intimate mixture of carbon oxide, sulfur or hydrogen sulfide, and hydrogen at elevated temperature and pressure with a single-phase, solid catalyst system comprising from about 10 to about 90%, based on the weight of said system of a porous support comprising alumina upon which is deposited from about 90 to 10%, based on the weight of the system, of a mixture of:

(a) from about 2 to about 95%, based on the weight of said mixture, of the sulfide of manganese,

(b) from 0 to about 90%, based on the weight of the mixture, of at least one sulfide selected from the group consisting of sulfides of iron, nickel, zinc, chromium, cobalt and molybdenum, and

(c) from about 5 to about 80%, based on the weight of said mixture, of an alkali metal sulfide, the total of (a), (b) and (c) equaling 100%.

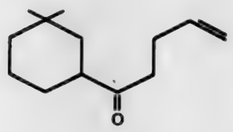
4,449,007

PROCESS FOR PREPARING 1(4-PENTONOYL)-3,3-DIMETHYLCYCLOHEXANE AND INTERMEDIATES USED IN A SAID PROCESS

John B. Hall, Rumson, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

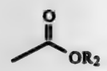
Continuation-in-part of Ser. No. 375,767, May 6, 1982. This application Nov. 12, 1982, Ser. No. 441,221
Int. Cl.³ C07C *45/67, 49/303*
U.S. Cl. 568—343 **2 Claims**

1. A process for preparing the compound defined according to the structure:

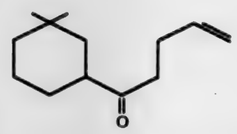


comprising the steps of:

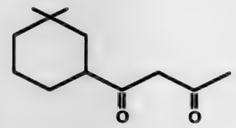
(i) reacting an alkyl acetate having the structure:



with 1-acetyl-3,3-dimethylcyclohexane having the structure;

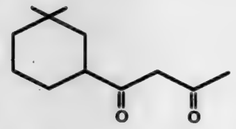


wherein R_2 is C_1–C_5 alkyl thereby forming a diketone having the structure:



at a temperature of from about 20° C. up to about 50° C. and a pressure of from about 0.7 atmospheres up to about 5 atmospheres in the presence of an alkali metal alkoxide catalyst or aluminum isopropylate catalyst, the mole ratio of said 1-acetyl-3,3-dimethylcyclohexane:alkyl acetate being between 1:1 and 1:2 and the mole ratio of alkali metal alkoxide or aluminum triisopropylate:1-acetyl-3,3-dimethylcylcohexane being between 0.5:1 and 1:0.5;

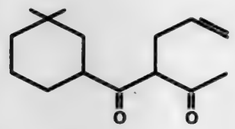
(ii) reacting the diketone having the structure:



with the allyl halide having the structure:

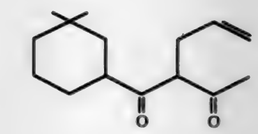


wherein X is bromo or iodo therby forming the compound defined according to the structure:

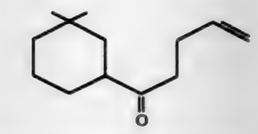


under reflux conditions at a pressure of from about 0.7 atmospheres up to about 10 atmospheres, the mole ratio of diketone:allyl halide being from 1:1 up to 1:2;

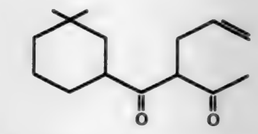
(iii) performing a retro-Claisen reaction on the allyl diketone having the structure:



in order to form the compound having the structure:

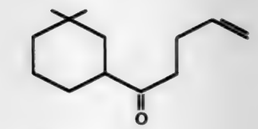


by means of reacting the compound having the structure:



with an alkali metal alkoxide or aluminum triisopropylate or in an aqueous alcoholic solution at a temperature of between 35° C. and 50° C.; and

(iv) isolating the compound having the structure:



from the reaction mass.

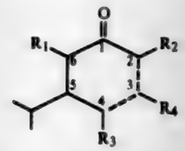
4,449,008

SUBSTITUTED METHYL ISOPROPYL CYCLOHEXENONES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Philip T. Klemarczyk, Old Bridge; Lambert Dekker, Wyckoff, both of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 343,580, Jan. 28, 1982, Pat. No. 4,400,311. This application May 5, 1983, Ser. No. 492,010
Int. Cl.³ C07C *49/603, 45/45*
U.S. Cl. 568—353 **7 Claims**

1. At least one compound defined according to the structure:



wherein one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represents a carbon-carbon single bond; wherein R_4 represents methyl or ethyl; wherein one of R_1, R_2 and R_3 represents 2-methyl-1-

propenyl or 2-methyl-1-propylidenyl; and the other of R_1, R_2 and R_3 represent hydrogen; with the provisos that:

(i) when the dashed line at the 3–4 position is a double bond, then R_3 is hydrogen or 2-methyl-1-propenyl;

(ii) when the dashed line at the 2–3 position is a double bond, then R_2 is hydrogen or 2-methyl-1-propenyl;

(iii) when R_4 is ethyl, then R_2 is methyl and the double bond is at the 2–3 position; and

(iv) when R_4 is methyl, then R_2 is hydrogen; 2-methyl-1-propenyl or 2-methyl-1-propylidenyl.

4,449,009

ACETYL DIMETHYLBUTYLCYCLOHEXENE AND ORGANOLEPTIC USES THEREFOR

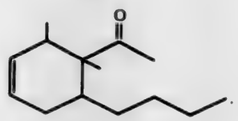
Richard J. Tokarzewski, Atlantic Highlands, and William L. Schreiber, Jackson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 482,824

Int. Cl.³ C07C *49/537*

U.S. Cl. 568—377 **1 Claim**

1. The compound having the structure:



ELECTRICAL

4,449,010

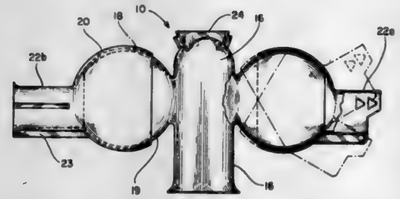
INSULATOR GUARD

Kenneth P. Apperson, Chaulkville, and Cecil D. Morgan, Centerpoint, both of Ala., assignors to Hastings Fiber Glass Products, Inc., Hastings, Mich.

Filed Sep. 28, 1982, Ser. No. 424,942

Int. Cl.³ H02G *1/02*; H01B *17/00*

U.S. Cl. 174—5 R **11 Claims**



11. An insulator guard adapted to cover an overhead line insulator and the adjacent portion of an energized exposed conductor mounted on said insulator, whereby to provide protection against electrical shock, comprising: a hollow insulator cover made of electrical insulating material and adapted to cover the overhead line insulator, said cover having a substantially cylindrical sidewall and being open at one end thereof, said sidewall having a slot extending axially from said open end of said cover partway along the length of said sidewall, said slot being adapted to receive the conductor therethrough; a hollow ball-and-socket joint made of electrical insulating material, said ball-and-socket joint extending laterally outwardly from said sidewall at a location adjacent the axially inner end of said slot in said sidewall, said ball-and-socket joint comprising a hollow ball part and a hollow socket part, one of which parts is fixedly mounted on said sidewall and the other of which parts is interfitted with said one part so as to be capable of rotary motion with respect to said cover and said one part in every direction, said one part of said joint having a slot laterally aligned and communicating with the inner end of the slot in said sidewall of said cover and extending laterally outwardly therefrom so that the conductor can be received therethrough, said other part of said joint having a laterally outwardly extending slot which is alignable with said slot in said one part of said joint and with said slot in said sidewall of said cover so that the conductor can be received therethrough whereby a portion of said conductor that is adjacent to said cover can be received inside said joint, said other part of said joint being rotatable with respect to said one part thereof to move the slot of said other part out of lateral alignment with the slot of said one part whereby to releasably lock said guard on the insulator and the conductor and to completely encircle a portion of the conductor; and a line guard adapter attached to the laterally outer end of said other part of said joint and adapted to be moved with said other part.

4,449,011

METHOD AND APPARATUS FOR ENCAPSULATION OF CHEMICALLY SENSITIVE FIELD EFFECT DEVICE

Jiri Kratochvil, Sandy; Nelson Ho, West Valley, and Jiri Janata, Salt Lake City, all of Utah, assignors to Critikon, Inc., Tampa, Fla.

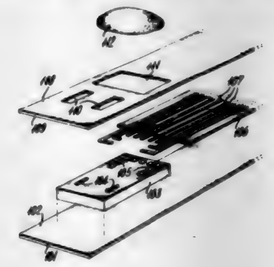
Filed Jan. 8, 1982, Ser. No. 350,929

Int. Cl.³ H05K *5/00*

U.S. Cl. 174—52 PE **4 Claims**

1. For use in an apparatus employing a semiconductor chip having lead bonding pads and carrying at least one chemically sensitive field effect device which interacts with select ambient substances by means of one or more exposed selectively reactive membrane systems, an encapsulation system comprising:

tape means having conductive beam leads disposed thereon, said tape means defining an area to accommodate said chip, said beam leads terminating in first ends over said area, said tape means further defining first openings which are respectively adapted to be coincident with said membrane systems; wherein said tape means comprises respective first and second tapes, said first tape carrying said beam leads and said second tape defining a second opening coincident with the first ends of said beam leads, said first



tape further defining said first openings; said tape means sealably overlaying at least said beam leads; whereby said tape means and a chip when connected thereto, will be aligned to leave exposed only at least a portion of each of said membrane systems.

4,449,012

OVERHEAD CABLE WITH TENSION-BEARING MEANS

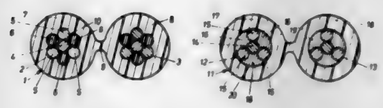
Othmar Voser, Mörlken, Switzerland, assignor to Kupferdraht-Isolierwerk AG Wildegg, Wildegg, Switzerland

Filed Dec. 15, 1981, Ser. No. 330,961

Claims priority, application Switzerland, Dec. 19, 1980, 9374/80

Int. Cl.³ H01B *7/08*

U.S. Cl. 174—70 A **19 Claims**



1. An overhead cable comprises at least two conductors each comprising a plurality of metal wires for signal transmission and a plurality of substantially non-extensible load-bearing substantially circular helically stranded fiber bundles, both said wires and bundles extending generally in the longitudinal direction of the cable and being helically stranded together, and an exterior protective cover enclosing said wires and bundles, and a bridge connecting together the covers of each adjacent pair of conductors in said cable, said conductor having one metal wire or fibre bundle at the center thereof as a core, said plural metal wires and said circular fibre bundles other than said core being arranged generally symmetrically around the core axis at substantially equispaced peripheral points therearound with said wires and bundles in alternating relation, said symmetrically arranged wires being of like size and said symmetrically arranged bundles being of like size, each such bundle being in abutting contact with said core and the adjacent pair of wires.

4,449,013

OIL WELL CABLE

Alfred Garschick, Raynham, Mass., assignor to BIW Cable Systems, Inc., Boston, Mass.

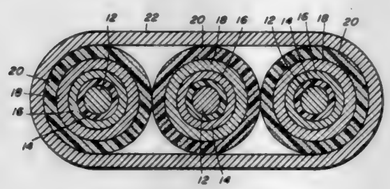
Filed Feb. 26, 1982, Ser. No. 352,797

Int. Cl.³ H01B *7/22*

U.S. Cl. 174—103 **7 Claims**

1. In an electrical cable for use in a hostile environment, the combination of a plurality of electrical conductors disposed in

parallel relationship, each said conductor being surrounded by a relatively thick jacket of high-temperature, low-permeability insulating material, at least one relatively thin metallic barrier layer surrounding and bonded to each said jacket, a layer of semiconductive insulating material surrounding each said barrier layer and a conductive armor sheath surrounding and in electrical contact with each of said layers of semiconductive insulating material, said layers of semiconductive material cushioning said electrical conductors from said armor sheath and providing a conductive path between said metallic barrier layers and said armor sheath along the length of said cable.



4,449,014

PLASTIC/METAL LAMINATES, CABLE SHIELDING OR ARMORING TAPES, AND ELECTRICAL CABLES MADE THEREWITH

Richard H. Brezinsky, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 225,946, Jan. 19, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 406,661

Int. Cl.³ B32B *15/08;* **H01B** *7/18, 7/22*

U.S. Cl. 174—107 **20 Claims**

1. A plastic/metal laminate comprising at least one metallic substrate having directly adhered to at least one surface thereof a multi-layered plastic coating consisting essentially of a first thermoplastic polymer layer of a random copolymer of ethylene with an ethylenically unsaturated carboxylic acid monomer, said first layer being directly adhered to said metallic substrate, and a second thermoplastic polymer layer which consists essentially of a polymer blend of a random copolymer of ethylene with an ethylenically unsaturated carboxylic acid and at least one ethylenic polymer resin which is not a random copolymer of ethylene with an ethylenically unsaturated carboxylic acid monomer and which is directly adhered to said first polymer layer on the surface thereof opposite said metallic substrate; said blend layer being further characterized by being capable, when employed as an intermediate adhesive layer between said first polymer layer and an olefin polymer layer composed of an olefin polymer resin selected from the group consisting of ethylene homopolymers and copolymers of a major proportion of ethylene with a minor proportion of a comonomer which is polymerizable therewith, of providing higher 90° peel adhesion as between said first polymer layer and said olefin polymer layer when measured at 10° F. or 160° F. than is obtained by directly adhering said first polymer and said olefin polymer layer to each other.

4,449,015

CONNECTOR COVER WITH MULTIPLE MOUNTING MEANS

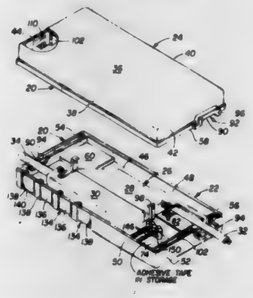
Kenneth W. Hotchkiss, Golden; John A. Popken, Longmont, and Nellie S. Griffith, Boulder, all of Colo., assignors to Proto Production Plastics, Inc., Boulder, Colo.

Filed May 18, 1981, Ser. No. 264,649

Int. Cl.³ H01R *13/52;* **H02G** *3/10*

U.S. Cl. 174—138 F **23 Claims**

9. An improved cable connector cover of the type having a body adapted to house a cable connector and defining a cable passage opening having an arcuate side, a sliding door means associated with the cable passage opening and having an arcuate edge opposed to the arcuate side of the cable passage opening, wherein the sliding door means is of the type having a plate with the arcuate edge at one end thereof and a cable contacting member extending normally to the plane of the plate from the arcuate edge and defining an arcuate seat substantially as wide as the cable passage opening, guide means for directing the sliding door means in a path toward the arcuate edge of the opening, and friction means for retaining the door in a given position along the path toward the arcuate edge, wherein the improvement comprises:



a cable access panel formed in a wall of the cover and having a perimetric line of weakness for guiding the separation of the cable access panel from the wall, wherein the cable access panel is of a size that the hole created in the wall by removal of the cable access panel will permit passage of at least one-half of a cable connector therethrough; and

a flexible ear at each side of said seat, deformable under contact with the arcuate side of the cable passage opening, whereby the ears are guided to follow the curvature of the cable passage opening.

4,449,016

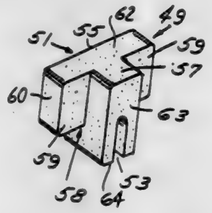
CERAMIC HEATER SUPPORT AND SPACER BLOCK

Lorne A. Best, West Bloomfield, Mich., assignor to National Element, Inc., Troy, Mich.

Division of Ser. No. 227,434, Jan. 22, 1981, Pat. No. 4,337,390. This application Dec. 14, 1981, Ser. No. 330,101

Int. Cl.³ H01B *17/56*

U.S. Cl. 174—138 J **1 Claim**



1. A heater support and spacer block adapted for mounting on a support for spacing and retaining an electric resistance heating wire primarily for use in a plug-type convection heater comprising:

a ceramic unitary body having opposed, parallel and spaced apart end faces and being symmetrical about a central plane perpendicular to said end faces;

said body including a support boss extending on opposite sides of the central plane, and extending between and including said end faces;

said body including a pair of spacer bosses which project in opposite directions laterally outwardly from said support boss and terminate in side faces which are spaced from the aforesaid central plane;

said support boss having a width measured in a direction perpendicular to the central plane which is less than the distance between the side faces of said spacer bosses;

said body including said support boss and said spacer bosses having a top face of T-shaped configuration and said support boss having a bottom face of generally rectangular configuration parallel to and spaced from said top face;

said spacer bosses having end surfaces in the plane of one of said end faces;

said spacer bosses being of the same height measured in a direction parallel to the central plane which is less than the height of said support boss;

and an elongated groove in the bottom face of said support boss extending between and being perpendicular to said end faces.

4,449,017

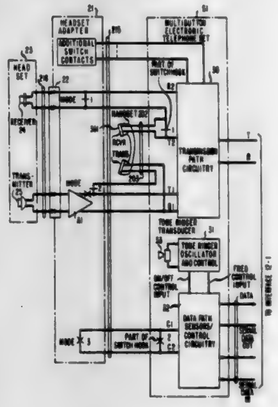
ACD COMBINED HANDSET AND HEADSET ARRANGEMENT

Edmund T. Burke, West Long Branch; Joseph F. Catalano, Holmdel; James A. Henderson, Jr., Neptune, and Nicholas K. Smith, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 28, 1982, Ser. No. 383,314

Int. Cl.³ H04Q *3/64*

U.S. Cl. 179—27 D **13 Claims**



1. A communication system having a plurality of telephone stations operable for completing communication connections thereto, said system comprising

means for providing at a called station a broadcast signal indicating the presence of an incoming connection to said station,

means controlled by an answer signal from said station subsequent to said provided broadcast signal for establishing a communication connection to said station,

means for monitoring said station to determine if said station is in one particular mode or an alternate mode,

means operative when said station is determined to be in said alternative mode for inhibiting said provided broadcast signal and for providing instead a pretimed signal, and

means operative at the conclusion of said pretimed signal for establishing said communication connection to said station without regard to said answer signal.

4,449,018

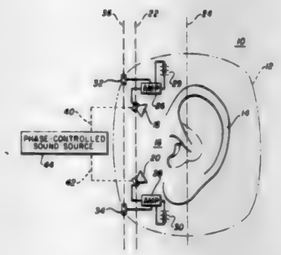
HEARING AID

Austin N. Stanton, 3017 Stonebenge La., Carrollton, Tex. 75006

Filed Jun. 7, 1982, Ser. No. 386,020

Int. Cl.³ H04R *5/00*

U.S. Cl. 179—107 FD **9 Claims**



1. Apparatus for audible assistance to persons with impaired hearing, comprising:

a vertically arrayed group of audio speakers positioned anterior to the pinna of a human ear, each said speaker independently radiating sounds to the ear,

a vertically arrayed set of microphones positioned anterior to said speakers, said microphones corresponding respectively to said speakers, and

an amplifier for each of said speakers, each said amplifier interconnecting the corresponding ones of said microphones and said speakers.

4,449,019

PIEZOELECTRIC LOUDSPEAKER

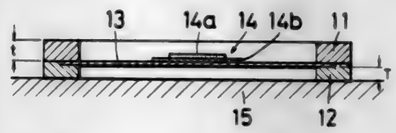
Sasuga Kakehi, Kanazawa; Nobuhiko Nakagawa, Ishikawa; Hideo Adachi, Kanazawa, and Tadashi Takaya, Kanazawa, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 9, 1981, Ser. No. 319,362

Claims priority, application Japan, Nov. 11, 1980, 55-158559

Int. Cl.³ H04R *17/10*

U.S. Cl. 179—110 A **5 Claims**



1. A piezoelectric loudspeaker having a piezoelectric transducer including a thin plate of piezoelectric ceramic of a high dielectric constant, said transducer being fixed to a diaphragm streteched onto frame, so that the resonance frequency of a sound generator comprising said piezoelectric transducer and diaphragm is set at a low frequency band side of an audio frequency region and the resonance frequency of a cavity formed by said frames is set at a high frequency band side.

4,449,020

MULTI-POSITION MICROPHONE STAND SUPPORT ASSEMBLY

Frederick L. Seebinger, Smoke Rise, N.J., assignor to Atlas Sound Division of American Trading & Production Corporation, Parsippany, N.J.

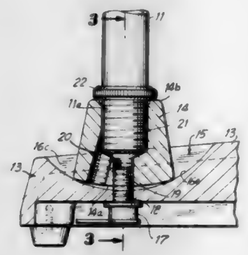
Filed Aug. 24, 1981, Ser. No. 295,907

Int. Cl.³ H04R *1/02;* **F16M** *11/00*

U.S. Cl. 179—147 **14 Claims**

1. A microphone stand assembly for supporting a microphone support column comprising a base, said base including therein a track means, a pivot means adapted to be positioned

within said track means at at least two predetermined positions, said pivot means being constructed and arranged to support a microphone support column, and a locking means for cooperating with said track means and said pivot means for selectively positioning said pivot means to said base at one of said predetermined positions, said pivot means including at least two positioning means for permitting said locking means to be engaged with said positioning means to orient said pivot means at one of said predetermined positions.

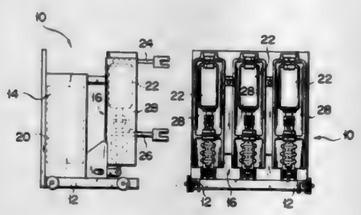


4,449,021

VACUUM CIRCUIT BREAKER

Hideaki Wakayama; Jyunji Fujiwara, and Kanya Doi, all of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1982, Ser. No. 351,874
Claims priority, application Japan, Mar. 6, 1981, 56-31262
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B **10 Claims**



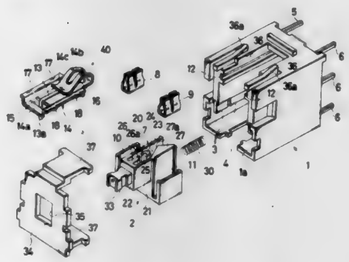
1. A vacuum circuit breaker comprising:
a base;
an insulating frame having a plurality of housing portions juxtaposed and separated from one another by a predetermined distance and a connecting portion for connecting adjacent housing portions, said insulating frame being made of plastic as a unit;
a plurality of vacuum interrupters each having a fixed electrode and a movable electrode and being rigidly supported in one of the respective housing portions, each housing portion being formed to cover the upper, lower and three lateral sides of the vacuum interrupter and having an open front to allow the vacuum interrupter to be easily exchanged with a new one therethrough;
a plurality of pairs of main circuit conductors, one said pair being provided for each of said housing portions and being rigidly supported in the respective housing portions, the main circuit conductors of each said pair connected to the fixed and movable electrodes of each vacuum interrupter;
a support frame detachably mounted on the base and supporting the insulating frame, the support frame being aranged at a backside of the insulating frame, said backside being opposite said open front; and
an operating means supported by the support frame for moving the movable electrodes of said vacuum interrupters.

4,449,022

SELF-HOLDING TYPE PUSH SWITCH WITH HEART TYPE CAM

Hiroshi Uno, Yao, and Kenji Furuhashi, Osaka, both of Japan, assignors to Hosiden Electronics, Co., Ltd., Yao, Japan

Filed Feb. 3, 1983, Ser. No. 463,490
Claims priority, application Japan, Feb. 12, 1982, 57-19054[U]
Int. Cl.³ H01H *13/56*
U.S. Cl. 200—153 J **6 Claims**



1. A self-holding type push switch with heart shaped cam, comprising:
a switch case, a slider means movably disposed in the switch case, and an engaging means limiting relative movement of the switch case and the slider;
said switch case defining an enclosure and having contact pieces therein for receiving said slider means and having receptacle grooves for receiving said engaging means, the engaging means operative to alternately hold said slider means in specified inner and outer positions within the switch case;
said engaging means comprising a hook rod bent at both ends thereof to form a C-shape, and a spring plate member adapted to support said hook rod, said spring plate member having a pivot hole for pivotally carrying one end of said hook rod, and a slit for movably carrying the other end of said hook rod, the spring plate having a body and a bent-over piece adapted to press and hold said hook rod between the bent-over piece and the body of the spring plate;
said slider means having a heart-shaped cam having a recess and conductive contact pieces, the slider being resiliently urged outwardly by a spring member in said switch case, said slider means being adapted to bring said hook rod into engagement with the recess of said cam when the slider means is once depressed, thereby holding the slider in position and, when again depressed, to disengage said hook rod from the recess of said cam, whereby said slider means effects changeover of connection between said contact pieces.

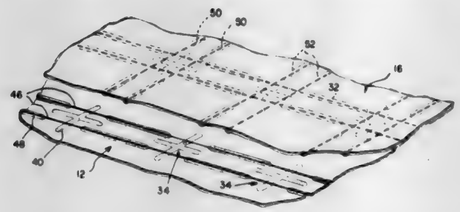
4,449,023

TRANSPARENT SWITCH HAVING FINE LINE CONDUCTORS

Jacques J. Hilhorst, Greensboro, and Donald G. Stillie, Winston-Salem, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 23, 1982, Ser. No. 452,642
Int. Cl.³ H01H *3/12*
U.S. Cl. 200—159 B **8 Claims**

1. A membrane switch assembly comprised of two layers of substantially transparent film having internal surfaces that are separated from each other by spacing means, the spacing means having openings therein constituting switch sites, the internal surfaces of each layer having electrodeposited hairline conductors thereon, the conductors crossing and being normally spaced from each other at the switch sites, the assembly being characterized in that:
the internal surface of the first layer has a plurality of electrodeposited spaced-apart parallel double hairline conductors, each double conductor having a first portion, an intermediate portion, and a second portion, the first and second portions of the double conductor being essentially parallel to each other, with the intermediate portion connecting the first and second portions, the distance between the first and second portions of each double conductor being less than the distance between adjacent conductors,
the internal surface of the second layer has a plurality of spaced-apart parallel double hairline conductors electrodeposited in a direction normal to the direction of the first layer conductor, the first sites being created by the crossing double hairline conductor of the first and second circuit layers when they are assembled, thus giving four points of contact at each site,
the spacing means is a polymer spacer comprised of an insulating ultraviolet curable polymer applied in parallel strips over the conductors, the polymer spacer being discontinuous at the switch sites, whereby,
as force is applied at the switch site to bring the two layers of conductors together, an electrical circuit can be completed at any one of four crossing locations thus providing redundancy and insuring the completion of the electrical circuit even if the force has been applied at the periphery of the switch site.

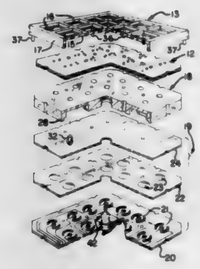


4,449,024

BACKLIGHTED ILLUMINATED KEYBOARD

Steve W. Stracener, Evans, Colo., assignor to KB Denver, Inc., Frederick, Colo.

Filed May 3, 1983, Ser. No. 491,246
Int. Cl.³ H01H *9/18*
U.S. Cl. 200—317 **17 Claims**



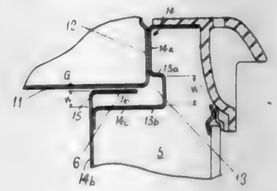
1. An illuminated keyboard comprising, a switch assembly having a printed circuit board with a plurality of switch sites and a dome coacting with each said site to define a switch, a light diffuser above said switch assembly, a plurality of dome actuating pins guidably received in said diffuser, one each aligned with a dome and one end of which engages a dome, a translucent graphic overlay above said diffuser engaging the other ends of said pins, an opaque bezel over said overlay defining a plurality of key areas for said overlay, one each aligned with an actuating pin, whereby pressure in a key area causes depression of a pin and actuation of the dome in alignment therewith to close the switch including said dome, a single light source for lighting the entire overlay, and means removably and centrally mounting said light source on said printed circuit board such that it extends into said diffuser for transmitting light energy therethrough to light the key areas of the entire overlay.

4,449,025

DOOR SEAL CONSTRUCTION FOR HIGH FREQUENCY HEATING APPLIANCE

Nobuo Ikeda, and Hirofumi Yoshimura, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 30, 1981, Ser. No. 307,361
Claims priority, application Japan, Oct. 3, 1980, 55-138942
Int. Cl.³ H05B *6/76*
U.S. Cl. 219—10.55 D **2 Claims**



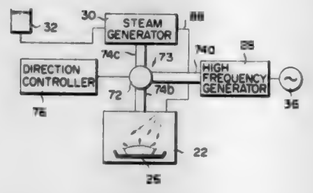
1. A microwave heating apparatus, comprising:
a heating cavity having a front opening thereinto, an inner wall extending inwardly into said cavity from said front opening and a front wall extending radially away from said front opening parallel to the plane of said front opening;
means for generating microwave energy and for guiding said energy into said heating cavity;
a door mounted on said apparatus for opening and closing said front opening, said door having an inwardly facing door surface facing toward said heating cavity which has an outer peripheral part engagable with said front wall when said door is closed and having a central inner part which is positioned within said cavity when said door is closed;
a choke attenuator around the periphery of said door between said outer peripheral part of said inwardly facing door surface and said inner part of said inwardly facing door surface and being constituted only by an inwardly extending wall part extending between said outer peripheral part and said inner part of said inwardly facing door surface, an end wall extending radially outwardly from said inner part of said inwardly facing door surface, and an outer wall extending parallel to said inwardly extending wall part and extending outwardly from the radially outer end of said end wall and terminating short of said outer peripheral part of said inwardly facing door surface and spaced slightly radially inwardly of said inner wall when said door is closed, the space within said choke attenuator being unobstructed, said outer peripheral part of said inwardly facing door surface having a recess at the radially inner end thereof and having an opening facing toward said cavity, the recess having a radially inner side wall which is an extension of said inwardly extending wall part of said choke attenuator, and a radially outer side wall spaced outwardly of said outer wall of said choke attenuator, said opening extending between said radially inner side wall and said radially outer side wall and being unobstructed.

4,449,026

HIGH FREQUENCY AND STEAM HEATING METHOD AND APPARATUS

Seiichi Satoh, Fujinomiya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 248,283, Mar. 27, 1981, abandoned, which is a continuation of Ser. No. 35,641, May 3, 1979, abandoned. This application Mar. 2, 1983, Ser. No. 471,061
Claims priority, application Japan, May 8, 1978, 53-54326
Int. Cl.³ H05B *6/66*
U.S. Cl. 219—10.55 B **3 Claims**



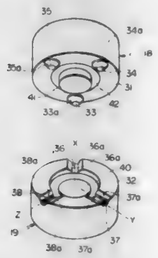
1. A high frequency heating apparatus comprising:
a housing;
an oven provided within said housing;
a high frequency generator provided within said housing for supplying a high frequency wave into said oven;
a steam generator provided within said housing for supplying steam into said open, the steam generator utilizing as a heat source a high frequency wave generated by said high frequency generator;
microwave circulator means for selectively directing a high frequency wave from said high frequency generator to said oven or said steam generator; and
a control circuit including:
a steam generator timer for setting an energization period of said high frequency generator, and
a high frequency generator timer for setting an energization period of said high frequency generator, and
drive means for driving said steam generator before said high frequency generator in each cooking cycle and for independently controlling the energization periods of said high frequency generator and said steam generator in response to the operations of said high frequency generator timer and said steam generator timer, respectively.

4,449,027

ELECTRODE MOUNTING DEVICE

Misao Fujikawa, Yokohama, Japan, assignor to Sodick Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 110,863, Jan. 9, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 404,943
Claims priority, application Japan, Feb. 6, 1979, 54-13351
Int. Cl.³ B23B *31/02*; B23P *1/12*
U.S. Cl. 219—69 E **5 Claims**



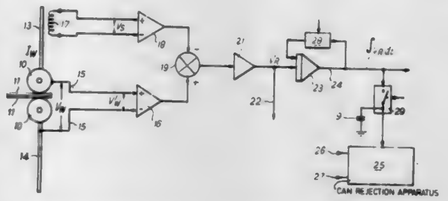
1. A self-aligning electrode mounting device in an electrical discharge machining apparatus comprising first and second coupling members, one of which is fixed to the electrical discharge machining apparatus in a predetermined positional relation thereto, and the other coupling member of which is mounted on a machining electrode in a predetermined positional relation thereto, the first and second coupling members having self-aligning means for coupling together with a self-aligning force for self-aligning the first and second coupling members during coupling to precisely locate and position the machining electrode on the electrical discharge machining apparatus, the first coupling member comprising self-aligning positioning projections, each projection extending from its own round base on the first coupling member and having a curved side wall extended toward the second coupling member, and the second coupling member having groove means with side walls sloping inward in a direction away from the first coupling member, whereby curved side walls of the projections fit within inward sloping side walls of the groove means and provide self-aligning forces between the curved walls of the first coupling member and the sloped walls of the groove means of the second coupling member.

4,449,028

MONITORING CIRCUITS FOR ELECTRICAL WELDING APPARATUS

Keith Buxton, Mansfield, England, assignor to Metal Box Limited, Reading, England

Filed Aug. 26, 1981, Ser. No. 296,506
Claims priority, application United Kingdom, Sep. 1, 1980, 8028204
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—109 **15 Claims**



1. A monitoring circuit for monitoring the electrical energy expended in forming a weld nugget during one half-cycle of an a.c. resistance welding apparatus, which comprises first means for deriving a voltage in quadrature phase relation to the resistive component in-phase with the welding current, second means for deriving a monitored weld voltage which inherently contains a significant reactive component due to electromagnetic effects, and summing means for summing the quadrature voltage and the monitored weld voltage in such manner that the reactive component of the monitored weld voltage is substantially cancelled by the quadrature voltage, and for producing a voltage output signal representative of their sum, said output signal being thereby representative substantially only of the resistive or in-phase component of the weld voltage.

4,449,029

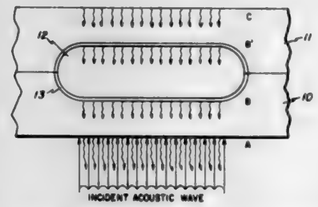
ACOUSTIC WAVE SPOT WELDER ADAPTIVE CONTROL

Herman A. Nied, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 9, 1983, Ser. No. 492,845
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—117.1 **9 Claims**

1. A method of controlling weld nugget penetration during resistance spot welding comprising:
transmitting longitudinal acoustic pulses into a workpiece held between electrodes and welded by passage of current which generates heat and forms a molten weld nugget;

receiving waves reflected from solid/solid and liquid/solid workpiece interfaces;
tracking the position of at least one liquid/solid interface as



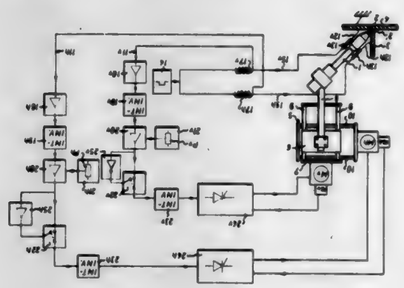
the weld nugget grows by pulse time discrimination of reflected waves; and
turning off the current when proper weld penetration is achieved.

4,449,030

APPARATUS FOR SENSING THE DISTANCE BETWEEN AN OBJECT OF ELECTRICALLY CONDUCTIVE MATERIAL AND A REFERENCE POINT

Sven G. R. Blomdahl, Trastvägen 6, S-241 00, Eslöv, Sweden

Filed Jun. 25, 1982, Ser. No. 392,075
Claims priority, application Sweden, Jul. 3, 1981, 8104141
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—124.34 **5 Claims**



1. An apparatus for sensing the distance between a workpiece of electrically conductive material and a reference point, the apparatus comprising: a welding gun for forming a seam on the workpiece, an electrode rigidly connected to the welding gun, electrically insulated from the welding gun and having a tip forming the reference point, supply line means for connecting said electrode to a high voltage source and generating high voltage pulses thereby generating an arc between the electrode tip and the workpiece, measuring means for sensing the electric field around the supply line means and for generating a measuring signal corresponding to the electric field, a measuring signal sensing circuit for determining the distance between the workpiece and reference point based upon the measuring signal, and transmitting means for connecting the measuring means to the measuring signal sensing circuit.

4,449,031

TUBULAR COMPOSITE APC WELDING ELECTRODE FOR VERTICAL UP WELDING OF STAINLESS STEEL AND NICKEL-BASE ALLOYS

Damian J. Kotecki, York, Pa., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 140,825, Apr. 16, 1980, Pat. No. 4,314,136. This application Jan. 20, 1982, Ser. No. 341,116
The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.
Int. Cl.³ B23K *35/30*
U.S. Cl. 219—146.23 **4 Claims**

1. In a tubular composite arc welding electrode comprising a metallic outer sheath and a core within and enclosed by the sheath, of the type wherein the sheath and the metallic portion of the core are balanced to produce a stainless steel or nickel-base alloy weld deposit, the improvement which comprises providing a non-metallic portion of the core which consists essentially of a slag mix constituting from 6 to 15 weight percent of the electrode, the slag mix containing the following listed components in the proportions stated:

	Weight percent of Slag Mix
Arc stabilizer selected from potassium titanate, sodium titanate and alkali metal oxide	up to 15
Fluoride selected from calcium fluoride, magnesium fluoride, sodium fluoride, lithium fluoride, aluminum fluoride, potassium silicofluoride, and cryolite	up to 50
Silicon dioxide	up to 10
Zirconium dioxide	15 to 60
Titanium dioxide	balance,

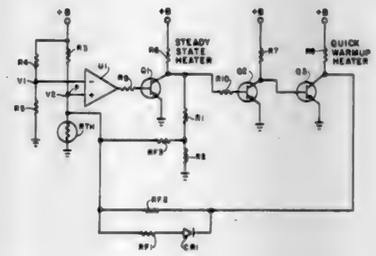
whereby the electrode operates satisfactorily in vertical up welding.

4,449,032

VARIABLE GAIN OVEN TEMPERATURE CONTROL CIRCUIT

Marvin E. Frerking, Cedar Rapids, Iowa, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1983, Ser. No. 465,228
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—210 **9 Claims**



1. A circuit for controlling the temperature in an oven, comprising:
a quick warm-up heater and a steady state heater, each comprising an electrical resistance element, located in the oven;
sensing means located in the oven for sensing the temperature;
steady-state amplifier means having an input and having an

output connected to control the power supplied to the steady-state heater;

quick warm-up amplifier means having an input and having an output connected to control the power supplied to the quick warm-up heater;

an input means connected between the sensing means and the input of the steady-state amplifier means, the input means being also coupled to the input of the quick warm-up amplifier means;

a low-gain feedback means coupled between the quick warm-up amplifier means and the input means;

a high-gain feedback means coupled between the steady-state amplifier means and the input means;

the circuit being operative responsive to the sensing means sensing a large difference in temperature in the oven below a predetermined set temperature to fully turn on the quick warm-up amplifier means to apply a maximum power to the quick warm-up heater, until the sensed temperature rises to a value which causes the quick warm-up amplifier means to reduce the power in the quick warm-up heater in a continuous range, causing the low-gain feedback means to become effective, until the sensed temperature reaches a value which causes the quick warm-up amplifier means to be turned off with no significant power in the quick warm-up heater, which causes the high gain feedback means to become effective with the steady-state amplifier means applying power in a continuous range to the steady-state heater, which is then effective to control the temperature very near to the set temperature.

4,449,033

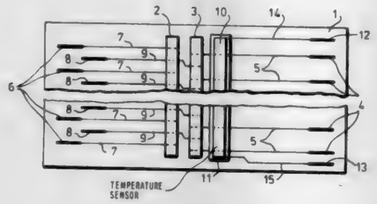
THERMAL PRINT HEAD TEMPERATURE SENSING AND CONTROL

Richard G. McClure, Georgetown; James M. Rakes, Leander, and Errol R. Williams, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 452,989

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—216 **11 Claims**



1. In a thermal print head having a row of thermal print elements, a temperature sensor comprising a sensor bar of temperature sensitive material positioned in parallel with and in heat transfer proximity to, the row of print elements, and a controller operatively connected to the sensor bar and responsive thereto for regulating the power input to the print elements.

4,449,034

HEATING APPARATUS

Kazuyoshi Taniguchi, 126 Linda La., Green Creek, N.J. 08219

Continuation-in-part of Ser. No. 74,924, Sep. 13, 1979, abandoned. This application Oct. 30, 1981, Ser. No. 316,722

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—217 **5 Claims**

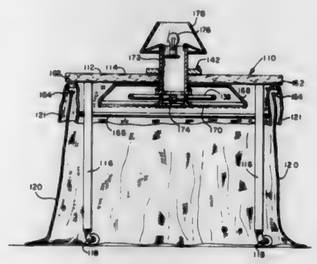
1. An apparatus for providing a user a warm environment within a cold environment, comprising:

a table having a table top with a thermal insulating material disposed between an upper and lower surface of said table top, the table top supported by legs and having a peripheral edge, the table top and legs surrounding the legs of the user when seated at the table;

electric heating means disposed beneath the table top and attached thereto;

a metallic reflector disposed between the table top and the radiant heating means, the table top and the reflector each having an opening defining an air passage;

means for forcing air beneath table top, through the air passage; and,



a flexible skirt member releasably secured around the peripheral edge and depending from the table top, the skirt member adapted to drape over the user's legs when inserted below the table top, the skirt confining heat to the user's legs, partially enveloped by the skirt and thereby kept comfortably warm, despite substantially cooler temperatures in the cold environment.

4,449,035

ARRANGEMENT FOR MOUNTING A THERMISTOR-TYPE TEMPERATURE SENSOR IN A METALLIC HEATING DEVICE

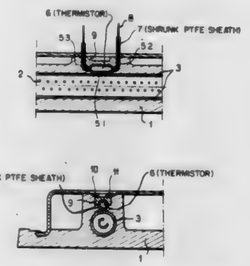
Pierre Schwob, Lyons, France, assignor to SEB S. A., Selongey, France

Filed Dec. 22, 1981, Ser. No. 333,266

Claims priority, application Luxembourg, Jul. 4, 1981, 83286

Int. Cl.³ G01K *1/16, 7/16;* H05B *1/02*

U.S. Cl. 219—251 **9 Claims**



1. A heating device including a body having a metal mass and an electric resistance element for heating the mass, and a temperature sensing thermistor which is disposed in a cavity between an orifice in the mass and a metal sealing plug having substantially the same composition as the mass and is connected to the exterior of the mass by lead means, wherein the thermistor and the lead means are housed in a shrunk sheath of thermoplastic material, and wherein the orifice and that face of the plug which is adjacent the orifice are so shaped as to define for the cavity a shape substantially corresponding to the space occupied in the orifice by the sheath containing the thermistor and the lead means.

4,449,036

ELECTRIC CIGAR LIGHTER WITH A SNAP DISK FORMING A BIMETALLIC SWITCH

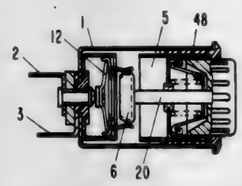
Georg Seibel, Dreieich; Günther Mues, Dietzenbach-Steinberg, and Theodor Horn, Kriftel, all of Fed. Rep. of Germany, assignors to Schoeller & Co., Frankfurt, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,257

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206904

Int. Cl.³ F23G *7/02*

U.S. Cl. 219—265 **9 Claims**



1. An electric cigar lighter, such as used in a motor vehicle, comprising a socket forming a tubular bore and having a first end and a second end, contact means in the first end of said pocket and forming a part of the heating circuit of the lighter, a bimetallic switch including a snap disk located within the tubular bore in said socket, a plug located within the tubular bore in said socket and including a cup containing a heating element, said plug including an axially extending plug sleeve, a control knob mounted in and axially displaceable within said plug sleeve, said control knob is connected to said heating element, a restoring spring positioned within said plug sleeve and in operative engagement with said control knob, said cup and heating element are movable between an off-position and an on-position by axially displacing said control knob into said socket, means for holding said snap disk within said socket, said cup containing said heating element is in engagement with said means in the on-position, in the on-position said snap-disk engages said contact means and connects said heating element to the heating circuit, wherein the improvement comprises that said contact means comprises a tubular member secured to the first end of said socket, said means for holding said snap disk comprises an adjustment spring disposed in a sliding fit within said tubular member, a contact part supported on said adjustment ring, and said contact part has an outer circumferentially extending edge extending around the inner surface of said tubular member and retaining parts secured to the outer edge for holding the outer rim of said snap disk.

4,449,037

METHOD AND APPARATUS FOR HEATING SEMICONDUCTOR WAFERS

Yoshiyuki Shibamata, Machida; Hideo Onodera, Kawasaki, and Tadashi Kiriseko, Kanagawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 88,463, Oct. 26, 1979, abandoned. This application May 14, 1982, Ser. No. 378,261

Claims priority, application Japan, Oct. 31, 1978, 53-134140

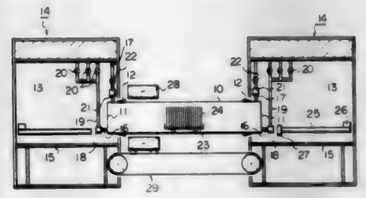
Int. Cl.³ F27B *9/06;* C23C *13/08*

U.S. Cl. 219—388 **22 Claims**

1. A method for radiation heating semiconductor wafers comprising the steps of:

positioning a plurality of semiconductor wafers in a substantially vertical arrangement and substantially in parallel spacing to each other in an atmosphere within a horizontally disposed elongated reaction zone, with the main faces of the wafers being substantially perpendicular to the longitudinal axis of the horizontally disposed reaction zone, and

continuously moving along the longitudinal axis of the reaction zone a short radiation heating means, said heating means surrounding only a small part of the length of the reaction zone, forming a heating zone exhibiting when stationary a temperature profile with no flat portions along its length, moving at a speed of 10 cm/min. to 100 cm/min. relative to the wafers, having a high heating



temperature relative to a stationary heating means varied depending upon the moving speed of the short radiation heating means, and passing over each wafer placed in the reaction zone, thereby rapidly, evenly heating the vertically-arranged wafers directly by radiation.

4,449,038

APPARATUS FOR WELDING A JOINT BETWEEN PLASTIC PIPES

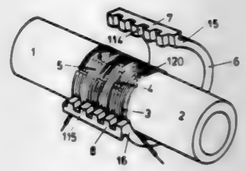
Fritz Reich, and Alfred Thalmann, both of Uhwiesen, Switzerland, assignors to George Fischer Ltd., Switzerland

Division of Ser. No. 242,301, Mar. 10, 1981, Pat. No. 4,365,144. This application Jul. 2, 1982, Ser. No. 394,769

Claims priority, application Switzerland, Mar. 10, 1980, 1850/80

Int. Cl.³ H05B *3/58*

U.S. Cl. 219—535 **6 Claims**



1. An improved apparatus for welding together the abutting ends of two coaxially aligned plastic pipes, the apparatus being of the type including a heating mat having heating wire therein, said mat being wrappable around the pipes so as to encircle the abutment thereof with the ends of the mat substantially meeting at one side of the pipes, and a generally cylindrical, C-shaped sleeve of plastic material placeable around the mat with the ends thereof defining a slit, the sleeve being subjectable to clamping force in the direction of reduction of its circumference, the improvement wherein

said mat includes means defining end portions of different lengths so that said end portions interengage each other at the side where they meet; and

said sleeve includes means defining end portions of different lengths so that said end portions interengage each other to define a nonlinear slit.

4,449,039

CERAMIC HEATER

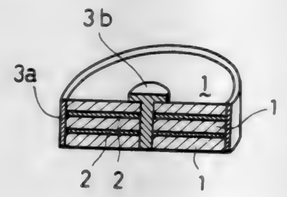
Takeshi Fukazawa, Kariya; Shunzo Yamaguchi, Okazaki, and Morihiro Atsumi, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 7, 1982, Ser. No. 415,547

Claims priority, application Japan, Sep. 14, 1981, 56-144970; Oct. 8, 1981, 56-160817; Oct. 8, 1981, 56-160818

Int. Cl.³ H05B *3/10*

U.S. Cl. 219—553 **7 Claims**



1. A ceramic heater having a heating element composed of a sintered body of a powdery mixture consisting essentially of from 50 to 90% by weight of alumina, from 10 to 50 of a member selected from the group consisting of titanium nitride, titanium carbide and a mixture thereof, and from 0.05 to 7.5% by weight nickel.

4,449,040

IDENTIFICATION CODE DETERMINING APPARATUS FOR USE IN TRANSACTION PROCESSING APPARATUS

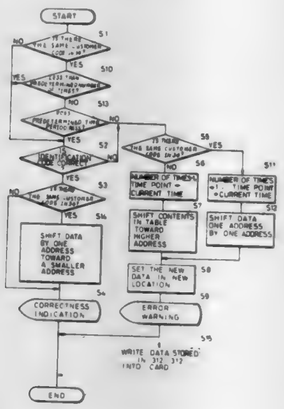
Akira Matsuoka, Takatsuki, and Terukazu Tsukagoshi, Otokuni, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 7, 1981, Ser. No. 328,133

Claims priority, application Japan, Dec. 6, 1980, 55-172480

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—380 **9 Claims**

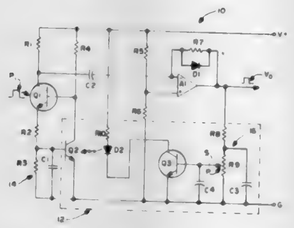


4,449,045

LIGHT MONITORING ARRANGEMENT HAVING OPTICALLY COUPLED SATURATION PREVENTING CIRCUITRY

Roger Colvin, Portola Valley, Calif., assignor to Scientific Technology Incorporated, Mountain View, Calif.

Filed May 15, 1981, Ser. No. 264,013
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 AG **5 Claims**



1. An electrical circuit arrangement for monitoring the presence or absence of discrete light pulses displaying a minimum frequency at a given point, said arrangement comprising: a first circuit including a first light sensitive device for sensing the light present at said point including said minimum frequency pulses, if the latter are present, and cooperating electrical circuitry responsive to all of the light sensed for producing discrete electrical output pulses which correspond to said minimum frequency pulses if the latter are sensed and so long as the light pulses sensed do not reach an intensity level sufficiently high to electrically saturate said first circuit means and thereby distort said output pulses by causing the latter to merge with one another, said cooperating circuitry including a second light sensitive device and associated circuitry connected with the latter and said first light sensitive device, said second light sensitive device and its associated circuitry together forming a control network for preventing changes in light which appear at said given point but at a frequency below said minimum pulse frequency from affecting said output pulses, said control network also controlling operation of said first circuit sufficient to prevent electrical saturation of the latter when an appropriate amount of light is applied to said second light sensitive device and even though the intensity of the light pulses sensed reaches said sufficiently high level; and a second circuit including a light producing device in optical alignment with said second light sensitive device and cooperating circuitry which is connected with said first circuit and which is responsive to said output pulses for controlling said light producing device such that the latter applies the appropriate amount of light onto said second light sensitive device to prevent said first circuit from becoming saturated in the event the intensity of the sensed light pulses reaches said sufficiently high level.

4,449,046

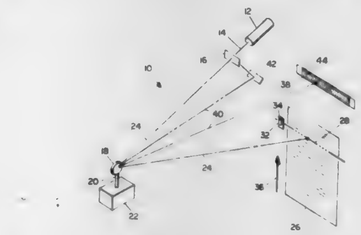
START OF LINE DETECTION AND SYNCHRONIZATION CIRCUIT FOR OPTICAL SCANNING SYSTEMS

Leonard Zuckerman, Dix Hills, and Colin Taddonio, Port Jefferson Station, both of N.Y., assignors to Litton Systems, Inc., College Park, Md.

Filed Mar. 12, 1982, Ser. No. 357,500
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—235 **9 Claims**

1. A start of line detection and synchronization circuit for use in an optical scanning system utilizing a grating scanning beam which generates a grating signal and a document scanning beam which generates a picture element signal as said scanning beam scans over a scan line having a reference target in said scan line comprising:

oscillator means which generate an oscillator signal;
means for detecting a first grating signal and connecting said grating signal to said oscillator means;
means for synchronizing said grating signal with said oscillator signal.
first counter means driven by said oscillator signal;



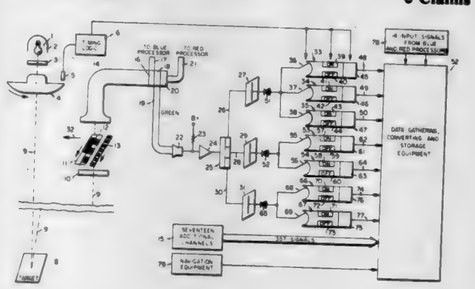
means for detecting said reference target in said scan line to enable said first counter means after synchronization of said oscillator and said grating signals; and
second counter means driven by said first counter means for, after a predetermined delay count, generating a start of line signal.

4,449,047

AIRBORNE MINERAL EXPLORATION SYSTEM

John N. Monroe, Waco, Tex., assignor to Sunoco Energy Development Co., a wholly-owned subsidiary of Sun Company, Inc., Dallas, Tex.

Filed Oct. 26, 1981, Ser. No. 315,330
Int. Cl.³ G01V *5/00*; G01N *21/64*
U.S. Cl. 250—253 **6 Claims**



1. An airborn mineral exploration system carried by an aircraft comprising:
(A) a source of downwardly directed ultraviolet light;
(B) pulsing means for causing said source to alternately issue a beam of ultraviolet light and issue no ultraviolet light;
(C) lens means for collecting fluorescent light emanating from targets on the ground within the field of view beneath the aircraft, which fluorescent light is issued in response to stimulation by the ultraviolet light from said source and in synchrony with the pulsations thereof;
(D) at least one chopper means disposed to chop the fluorescent light signals received from the ground targets and gathered by said lens;
(E) filter means for splitting the chopped fluorescent light signals into a plurality of color bands falling within the visible and infrared spectrum;
(F) light sensing and amplifying means disposed to separately sense and amplify target signal components falling within each said color band;
(G) at least one narrow band pass filter means coupled to the output of said light sensing and amplifying means, said narrow bandpass filter means being tuned to the frequency

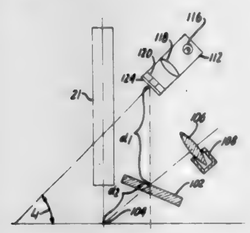
of said at least one chopper means to thereby reject all signal components outside a narrow band centered at the chopper frequency;
(H) detector means coupled to the output of said narrow band filter means for changing the signal issued therefrom to an analagous d-c signal;
(I) integrator means for receiving and integrating said d-c signal, said integrator means including:
(i) a first integrator for receiving and integrating said d-c signal when said source is issuing a beam of ultraviolet light;
(ii) first switch means for connecting said first integrator to the output of said detector means when said source is issuing a beam of ultraviolet light;
(iii) a second integrator for receiving and integrating said d-c signal when said source is not issuing a beam of ultraviolet light;
(iv) second switch means for connecting said second integrator to the output of said detector means when said source is not issuing a beam of light; and
(v) a subtraction circuit for subtracting the d-c signal accumulated by said second integrator from the d-c signal accumulated by said first integrator to obtain an output d-c signal representing only sensed fluorescent light which has responded to said source and from which noise has been stripped; and
(J) timing means for synchronizing said first and second switch means with the respective periods during which said source issues and does not issue an ultraviolet beam.

4,449,048

WORKPIECE POSITIONING SYSTEM FOR BETA RAY MEASURING INSTRUMENTS

Philip B. Pinches, New York, and Sidney Lieber, Kings Point, both of N.Y., assignors to UPA Technology, Inc., Syosset, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,717
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—308 **5 Claims**



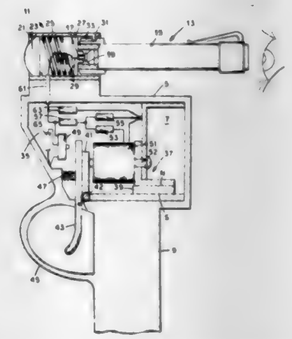
1. A beta backscatter type of thickness measuring instrument comprising
a workpiece supporting platform,
a probe assembly including a beta ray isotope source and a first mask defining a selectively contoured exposure area disposed adjacent thereto,
means for advancing said probe assembly along a predetermined path to place said mask in interfacially engaged relation with the surface of a workpiece disposed on said workpiece supporting surface,
a beam splitting mirror for providing a transmitted image of the portion of the workpiece surface disposed in the path of advance of said probe assembly at a remote location,
a reticle assembly including a second mask identically defining said selectively contoured exposure area and a light source for back illuminating said mask,
means for selectively prepositioning said back illuminated sound mask relative to said beam splitting mirror to provide a reflected image of said exposure area at the surface of said beam splitting mirror in superposed relation to said transmitted image of said workpiece surface that is indicative of the location of the exposure area to be defined by said first mask when the latter is disposed in interfacial engagement with said workpiece surface,
whereby said workpiece may be moved relative to said reflected image to precisely locate the surface area thereof that is to be exposed to radiation through said first mask when the latter is disposed remote therefrom.

4,449,049

PORTABLE BATTERY-FREE CHARGER FOR RADIATION DOSIMETERS

Frank W. Manning, Norris, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1982, Ser. No. 343,607
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—377 **10 Claims**



1. Charging apparatus for an electrometer-type dosimeter, comprising:
(a) a housing,
(b) means carried by said housing for supporting a dosimeter,
(c) electrical-contact means carried by said housing and including a pair of contacts for impressing a charging voltage across a dosimeter,
(d) a charging system in said housing, comprising:
(1) a magnetic loop including a permanent magnet for establishing magnetic flux therein, said loop including a segment which is hinged for arcuate movement between a loop-closed position and a loop-open position,
(2) coil means inductively coupled with said loop for generating voltage pulses when said segment is cycled between its loop-closed and loop-open positions,
(3) electrical circuit means for impressing voltage so generated across said pair of contacts, and
(e) a trigger carried by said housing, said trigger being operatively coupled to said segment to cycle the same between said positions.

4,449,050

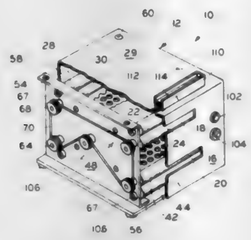
DEVICE FOR PROCESSING PAPER MONEY

Ralph Kamhi, 261 W. 35th St., New York, N.Y. 10001

Filed Mar. 25, 1982, Ser. No. 361,749
Int. Cl.³ H01J *37/20*
U.S. Cl. 250—455.1 **1 Claim**

1. A device for urging paper money of an elongated rectangular size of a prescribed length and width through movement in cleansing relation to an ultraviolet lamp source comprising a housing having a front panel, opposing top and bottom panels, a rear panel, and opposite side panels, an input slot and an output slot in said front panel for said paper money, three chute means each respectively mounted in a clearance position internally of said top, bottom and said rear panels and in spanning

relation between said opposite side panels so as to bound a central compartment for an ultraviolet lamp source and also defining a curved path for said paper money through said chutes, four motor-driven pairs of cooperating rollers operatively located in spanning relation between said opposite sides with two such pairs in interposed positions between said input and output slots and the ends of said two chutes adjacent thereto and with said other two such pairs in positions adjacent the other ends of said two chutes and at the opposite ends of said third chute to thereby urge said paper money from said input slot through movement along said curved path of said three chutes and out through said output slot, each lower roller of the upper pairs of rollers and each upper roller of the lower pairs of rollers being mounted on shafts which extend beyond one said



housing side panel, a pulley means and means connected therefrom to said shafts for completing an operative driving connection made by said pulley means to said shafts for driving said pairs of rollers at a selected uniform speed, said operative locations of said four pairs of rollers being selected with respect to each other so as to be less than the length of said paper money, whereby a unit of paper money fed lengthwise into said input slot is always in engagement at either a leading or trailing edge thereof with one of said pairs of rollers during movement through said device to thereby contribute to the positive feed thereof so as to obviate any internal jamming, and an ultraviolet light source mounted to extend into said central compartment from said other housing side panel, whereby the motor drive for said rollers and the energizing connection to said ultraviolet light source are on opposite sides of said device to thereby contribute an optimum compact size therein.

4,449,051

DOSE COMPENSATION BY DIFFERENTIAL PATTERN SCANNING

Edward H. Berkowitz, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 16, 1982, Ser. No. 349,293
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—492.2 **12 Claims**



1. A method for irradiating a workpiece with a flux of charged particles to obtain a desired spatial distribution of integrated radiation dose thereon, comprising

(a) scanning the surface of the workpiece with said charged particle beam to irradiate said surface along locii of a first pattern in order to obtain a first integrated dose distribution over said surface,

(b) scanning selected regions of said surface wherein the integrated dose distribution established by step (a) is less than said desired spatial distribution than said regions, and

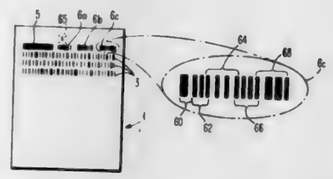
(c) repeating step (b) until said desired distribution is accomplished.

4,449,052

METHOD OF PRINTING AND DETECTING OPTIMUM BAR CODE TEST PATTERNS

Michael L. Krieg, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,894
Int. Cl.³ G06K *7/10*
U.S. Cl. 250—568 **16 Claims**



1. A method of recording information on a print-receiving medium in a bar code in which the distance between the edges of separated marks defines the meaning of said code comprising the steps of

(1) printing a plurality of test patterns having groups of marks in said code of predetermined significance, each of said groups having edges of marks separated by different corresponding distances defining different densities of printed codes,

(2) subsequently sensing said test patterns with a machine-controlled sensing apparatus and determining the apparent significance of said groups,

(3) comparing said apparent significance of each said test pattern with the predetermined significance of that test pattern, and

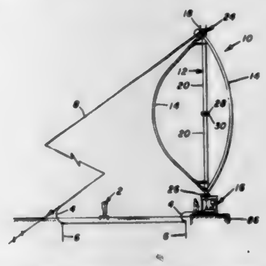
(4) printing subsequent data on said medium in said code with separation of marks at a distance between edges corresponding to the density of a said test pattern in which said apparent significance corresponds to its predetermined significance.

4,449,053

VERTICAL AXIS WIND TURBINE

Howard R. Kutcher, Allison Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 27, 1981, Ser. No. 287,028
Int. Cl.³ F01D *5/14*; F03D *7/04*; H02J *3/08*
U.S. Cl. 290—44 **17 Claims**



1. A vertical axis wind turbine, comprising:

a support structure;

a rotor shaft extending vertically upward from said structure;

a lower bearing supporting said rotor shaft in said support structure;

an upper bearing assembly adapted for disassembly from said turbine with said rotor shaft in the upwardly extending vertical position, the assembly comprising a housing having a top wall and having cable attaching means for attachment to guy cables to thereby maintain the housing in a substantially fixed position, an upstanding cylinder adapted for attachment to a top end of said rotor shaft within and spaced apart from the housing, bearing means between the cylinder and housing to maintain the cylinder in the spaced apart relationship with the housing and to allow the cylinder to rotate about its longitudinal axis, and lubrication means to automatically provide and maintain an adequate amount of oil to lubricate the bearing means;

at least three guy cables attached to the cable attaching means;

wind responsive means for causing said shaft to rotate in response to wind energy; and

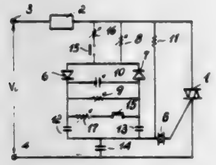
a generator connected to said rotor shaft for producing electrical energy upon rotation of the turbine shaft by wind energy.

4,449,054

ELECTRONIC CIRCUIT FOR CONTROLLING THE SUPPLY VOLTAGE OF ELECTROMAGNETS, ELECTRIC MOTORS, RESISTORS, IN SINGLE- AND THREE-PHASE SYSTEMS

Fiorenzo Jop, Via Montebaldo, 29 - Carate Brianza, (Provincia di Milano), Italy

Filed May 10, 1982, Ser. No. 376,897
Claims priority, application Italy, May 18, 1981, 21764 A/81
Int. Cl.³ H03K *17/56*
U.S. Cl. 307—31 **1 Claim**



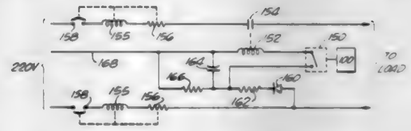
1. An electronic circuit for controlling the supply voltage of electromagnets, electric motors, electric resistances and the like, comprising a solid state controlled switch having a control electrode and series coupled between a supply source and the electric load, a solid state switch electrically coupled to the control electrode of said controlled switch and a phase shifting RC network electrically coupled to said solid state switch for switching on said solid state switch and triggering said solid state controlled switch, wherein said RC network includes resistor and capacitor elements effective to provide a fine adjusting of the on and off times of said controlled switch and cooperating in such a way as to allow for the load voltage to be accurately varied in a given broad range wherein said controlled switch is a silicon bilateral controlled switch or TRIAC and said solid state switch is a silicon bilateral switch or DIAC, characterized in that said RC network comprises a first diode and a second diode, a first variable resistor coupled between one end of the load and the coupling point of the cathode of said first diode and the anode of said second diode, said first variable resistor being effective to set the load maximum RMS voltage, a second variable resistor coupled between the cathode of said first diode and the anode of said second diode, said second variable resistor being effective to set the load minimum RMS voltage, a third and fourth variable resistors respectively coupled in parallel to said first and second variable resistors and cooperating therewith for finely adjusting said load maximum and minimum RMS voltage, a first variable capacitor coupled in parallel with said second variable resistor, a second and third capacitors having one respective end commonly coupled and the other two respectively coupled to the cathode of said first diode and to the anode of said second diode, a fourth capacitor coupled between the coupling common point of said second and third capacitors and the ground and a fixed resistor coupled between said end of said load and one end of said DIAC.

4,449,055

CIRCUIT BREAKER CONTROL DEVICE

Richard H. Greer, 5009 N. Fratus Dr., Temple City, Calif. 91780, and James B. Newport, 12772 Panorama Crest, Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 826,073, Aug. 19, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,707
Int. Cl.³ H02J *4/00*
U.S. Cl. 307—38 **10 Claims**



1. A device for managing consumer demands for electricity comprising

means adapted for connection to a voltage supply,

means adapted for connection to a load,

energy storage means having a predetermined amount of energy stored therein,

impulse sensing means not requiring constant energization,

first switch means responsive to a command signal for connecting said energy storage means to said impulse sensing means for a predetermined period of time,

second switch means having two states and actuated by said impulse sensing means when said energy storage means is connected to said impulse sensing means for connecting said voltage supply to said load when said second switch means is in a first state and disconnecting said voltage supply from said load when said second switch means is in a second state.

4,449,056

POWER SUPPLY CONTROL SYSTEM OF AN INSTALLATION INCLUDING SEVERAL DEVICES HAVING ELECTRIC CIRCUITS

Shigeru Shibazaki, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,217
Claims priority, application Japan, Sep. 25, 1980, 55-136593[U]
Int. Cl.³ H01H *47/00*
U.S. Cl. 307—38 **7 Claims**



1. A power supply control system for supplying a source

voltage to load elements respectively contained in at least two signal source devices and at least one signal processing device for processing one of the output signals from at least one of said signal source devices, said control system comprising:

manually operated first switch means provided within a first of said signal source devices;

manually operated second switch means provided within a second of said the signal source devices for supplying said source voltage to the load elements of said second signal source device;

reset signal generating means connected to said manually operated second switch means for producing a reset signal when said second switch means is operated;

first switching circuit means for supplying said source voltage to said load elements of said first signal source device when said manually operated first switch means is operated, and being responsive to said reset signal to inhibit the source voltage applied to said first signal source device; and

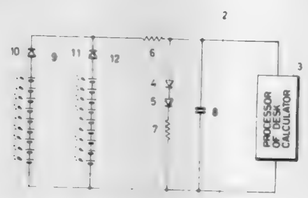
second switching circuit means for supplying said source voltage to said load elements of said signal processing device when either one of said first and second switches is manually operated.

4,449,057

SOLAR CELL POWER SUPPLY DEVICE

Junichi Ishiwata, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1982, Ser. No. 401,250
Int. Cl.³ H02J *1/10*
U.S. Cl. 307—43 **9 Claims**



1. A solar cell power supply device comprising:

a first solar cell having a determined spectral sensitivity characteristic;

a second solar cell having a different spectral sensitivity characteristic and connected in parallel to said first solar cell; and

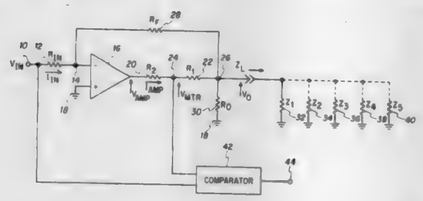
a voltage regulating circuit for stabilizing the output voltages from said first and second solar cells and supplying thus stabilized voltage to a load.

4,449,058

LOAD STATUS MONITORING APPARATUS

Daniel P. Feldmann, Melbourne, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 14, 1983, Ser. No. 474,855
Int. Cl.³ G01R *19/12, 27/02*
U.S. Cl. 307—152 **6 Claims**



5. Apparatus for monitoring the status of a load circuit connected to the output of a feedback stabilized driver amplifier circuit including circuit input means and circuit output means comprising, in combination:

first means for detecting the level of current input to the feedback stabilized driver amplifier circuit;

second means for detecting the level of current output by the amplifier portion of the feedback stabilized driver amplifier circuit;

third means, connected to said first and second means, for comparing the relative current levels detected; and

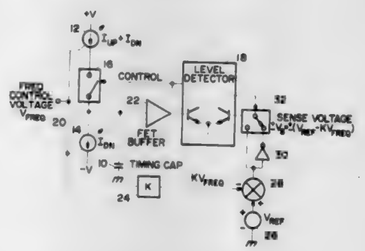
fourth means for outputting a signal from said third means, based upon the ratio obtained in the comparison by said third means, indicative of the status of the load circuit of said feedback stabilized driver amplifier circuit.

4,449,059

TRIANGLE WAVEFORM GENERATOR HAVING A LOOP DELAY COMPENSATION NETWORK

E. Jon Dickes, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 13, 1981, Ser. No. 282,477
Int. Cl.³ H03K *4/08, 4/80*
U.S. Cl. 307—228 **7 Claims**



1. A triangle waveform generator, comprising:

(a) means for generating positive-slope and negative-slope ramp waveforms;

(b) means for controlling the ramp rates of said waveform;

(c) means for establishing predetermined amplitude limits of said waveforms;

(d) means coupled to said ramp rate control means and said amplitude-limit establishment means for generating sense voltages which are within said amplitude limits by a predetermined time related factor, wherein said means for generating sense voltages comprises at least one compensation network having a predetermined multiplication constant coupled between said ramp-rate control means and said amplitude-limit establishment means;

(e) means for detecting when said ramp waveforms reach said sense voltages and for generating control signals in response thereto; and

(f) means connected to said ramp waveform generating means and being responsive to said control signals for switching the polarity of slope of said ramp waveforms.

4,449,060

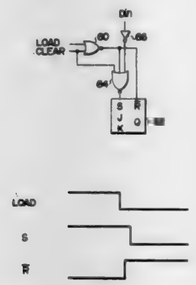
PRESET CIRCUIT FOR A CLOCKED FLIP-FLOP

Takashi Totoki, Kawasaki, and Susumu Kawakami, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 23, 1982, Ser. No. 360,971
Claims priority, application Japan, Apr. 13, 1981, 56-55452
Int. Cl.³ H03K *19/003, 3/037, 17/30*
U.S. Cl. 307—247 R **6 Claims**

1. A preset circuit for a flip-flop having first and second preset terminals adapted to preset data "0" and "1", respectively, and having their priority levels different from each other, in which either of data "0" and "1" is preset by the preset terminal of the higher priority level during a preset mode when both of said first and second preset terminals are enabled; and a normal mode operation is performed when both of said first and second preset terminals are disabled, said preset circuit comprising:

a signal terminal directly connected to the preset terminal of the lower priority level and supplied with a signal for setting the flip-flop to the preset mode;



a data terminal to which the preset data is supplied; and

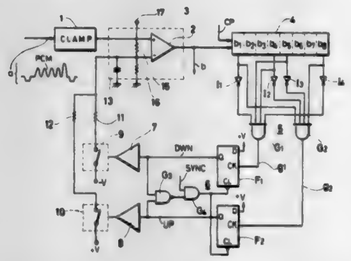
gate means connected between said data terminal and the preset terminal of the higher priority level and also to said signal terminal so as to be controlled by the level of said signal thereat to thus assure phase lag of said preset mode setting signal to said preset terminal of the higher priority level.

4,449,061

WAVE-SHAPING CIRCUIT FOR DIGITAL SIGNAL

Nobuyuki Yasuda, and Kentaro Odaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,729
Claims priority, application Japan, Jun. 17, 1980, 55-82306
Int. Cl.³ H03K *5/08*
U.S. Cl. 307—268 **13 Claims**



1. A wave-shaping circuit for digital signal comprising:

(A) a slice circuit for slicing a time varying input signal at a predetermined threshold level, so as to produce a digital signal having high and low level portions;

(B) a detecting circuit for detecting the pulse widths of high and low level portions of the digital signal from said slice circuit during a predetermined period; and

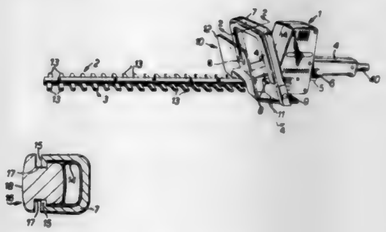
(C) a control circuit which lowers the threshold level of said slice circuit when the pulse widths of the high level portion of the digital signal are less than a predetermined width, and raises the threshold level of said slice circuit when the pulse width of the low level portion of the digital signal is less than a predetermined width, and in which said detecting circuit includes an n-bit, where n is an integer larger than 1, shift register which successively shifts the output of said slice circuit in response to a shift clock signal, and a discriminating circuit for decoding the parallel outputs of said shift register.

4,449,062

SAFETY ARRANGEMENT FOR A POWERED TOOL OR IMPLEMENT

Peter H. Wilson, Stockton-on-Tees, England, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 15, 1981, Ser. No. 302,699
Claims priority, application United Kingdom, Sep. 15, 1980, 8029763
Int. Cl.³ H02H *5/08*; A01H *69/02*
U.S. Cl. 307—328 **14 Claims**



9. A hand-held power tool, comprising:

a housing;

an electric drive motor housed in said housing;

a main handle connected to said housing;

a main switch for controlling energisation of said motor, said main switch having a trigger for operation thereof mounted on said main handle;

a secondary handle connected to said housing, said secondary handle having an elongate channel therein;

a secondary control system of pneumatic form which must be actuated before said motor can be energised;

said secondary control system comprising an elongate flexible-walled air sac and a secondary switch responsive to deformation of said air sac, said air sac being disposed in said channel;

said secondary switch being located in said housing and said air sac being made of electrically-insulating material;

an elongate actuating member engaged in said channel and disposed over said air sac, said actuating member partly protruding from said channel and being manually depressable into said channel to deform said air sac and increase the pressure therein to actuate said secondary switch; and

said channel having inturned lips which retain said actuating member in said channel;

whereby to energise said motor an operator must hold said main handle and actuate said trigger with one hand, and grasp the secondary handle and depress said actuating member with the other hand, release of either said trigger or said actuating member effecting deenergisation of said motor.

4,449,063

LOGIC CIRCUIT WITH IMPROVED SWITCHING

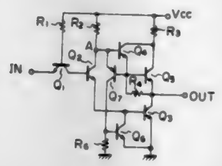
Hitoshi Ohmichi; Hiromu Enomoto, both of Kawasaki; Yasushi Yasuda, Inagi; Yoshiharu Mitono, Tokyo, and Taketo Imaizumi, Fukuoka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 22, 1980, Ser. No. 180,452
Claims priority, application Japan, Aug. 29, 1979, 54-110074; Aug. 29, 1979, 54-110075
Int. Cl.³ H03K *19/013, 19/088*
U.S. Cl. 307—456 **6 Claims**

1. A fundamental logic circuit for performing a fundamental logic operation comprising:

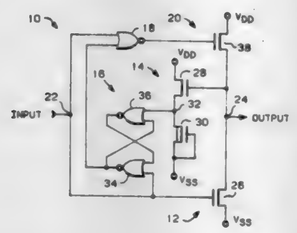
input means for receiving an input signal:

a driver transistor having a base electrode connected to said input means and having emitter and collector electrodes producing output signals;
an output emitter follower transistor which is driven by the output signal from the collector electrode of said driver transistor;
an output inverter transistor having a base electrode which is driven by the output signal from the emitter electrode of said driver transistor and which comprises a totem-pole output stage together with said output emitter follower transistor;
a first switching transistor which is connected between the



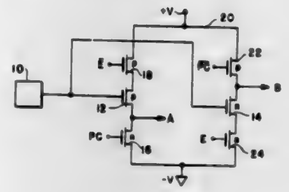
base electrode of said output inverter transistor and ground, and which removes any base charge from the base of said output inverter transistor; and
a second switching transistor whose collector is connected to the base electrode of said first switching transistor and whose emitter electrode and base electrode are connected between two nodes of said fundamental logic circuit, the potential difference between said two nodes increasing only during a transient period in which said output inverter transistor changes from the turned on condition to the turned off condition, and said first and second switching transistors being turned on temporarily in said transient period.

4,449,064
THREE STATE OUTPUT CIRCUIT
Kim Eckert; Richard D. Crisp, and Lam Ta, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 2, 1981, Ser. No. 250,522
Int. Cl.³ H03K *19/094, 19/017*
U.S. Cl. 307—473 **9 Claims**



1. A three state output circuit comprising:
active pull down means coupled to an input node and an output node, for coupling the output node to a first supply voltage in response to an assert signal having a first predetermined voltage level;
threshold detection means coupled to the output node, for providing a reset signal in response to the voltage on the output node exceeding a predetermined threshold voltage;
latch means coupled to the input node and the threshold detection means, for providing an enable signal in response to said assert signal, and, in the absence of said assert signal, terminating said enable signal in response to said reset signal;
gate means coupled to the input node and the latch means, for passing a rescind signal having a second predetermined voltage level in response to the coincidence of said rescind signal and said enable signal; and
active pull up means coupled to the gate means and the output node, for coupling the output node to a second supply voltage in response to said rescind signal passed by the gate means.

4,449,065
TRI-LEVEL INPUT BUFFER
Thomas J. Davies, Jr., Gilroy, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.
Filed Oct. 2, 1981, Ser. No. 308,070
Int. Cl.³ H03K *19/096, 19/20*
U.S. Cl. 307—473 **13 Claims**

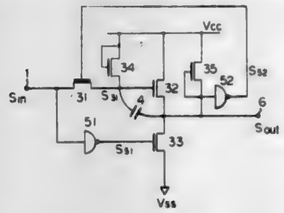


1. A dynamic input buffer for generating three binary output signals in response to input signals of differing voltage levels, said buffer comprising:
first and second branch circuits, said first branch circuit having a p-channel field effect input transistor and said second branch circuit having an n-channel field effect input transistor, said first and second branch circuits being parallel-connected between a first voltage supply terminal having a first voltage level and a second voltage supply terminal having a second more positive voltage level and having an output terminal, and each of said branch circuits having the same input terminal for receiving an input signal at the respective gate electrodes of said input transistors;
a first switch in said first branch circuit responsive to a first signal for applying said first voltage level to the drain electrode of said first branch input transistor and to said first branch output terminal;
a first switch in said second branch circuit responsive to a second signal for applying said second voltage level to the drain electrode of said second branch input transistor and to said second branch output terminal;
a second switch in said first branch circuit responsive to a third signal for applying said second voltage level to the source electrode of said first branch input transistor; and
a second switch in said second branch circuit and responsive to a fourth signal for applying said first voltage to the source electrode of said second branch circuit input transistor.

4,449,066
BUFFER CIRCUIT FOR GENERATING OUTPUT SIGNALS HAVING SHORT RECOVERY TIME
Keizo Aoyama, Yamato, and Takahiko Yamauchi, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 16, 1981, Ser. No. 331,287
Claims priority, application Japan, Dec. 24, 1980, 55-183076
Int. Cl.³ H03K *19/017, 19/094, 17/10*
U.S. Cl. 307—482 **12 Claims**

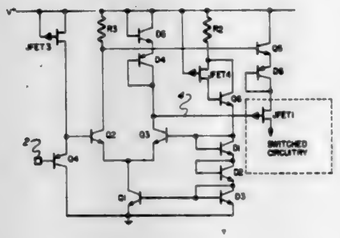
1. A buffer circuit operatively connectable to a voltage source and operatively connected to receive an input signal, comprising:
a capacitor;
a first FET transistor having one of a source or drain which receives the input signal;

a second FET transistor for performing a bootstrap function, having a source operatively connected to one terminal of said capacitor, having a gate operatively connected to the other of the drain or source of said first FET transistor, and the other terminal of said capacitor and having a drain operatively connected to the voltage source;
a third FET transistor having a source or drain operatively connected in series with the source of said second FET transistor at an output point, and having a gate for receiv-



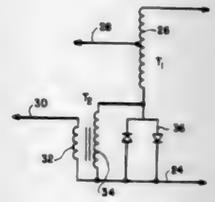
ing a signal which has an inverse phase of the phase of the input signal and which is slightly delayed from the input signal, and having the other of the source or drain connected to a reference voltage; and
an inverter operatively connected to the output point at which said second and third FET transistors are connected in series, said inverter inverting the potential at the output point and supplying the inverted potential to the gate of said first FET transistor.

4,449,067
LOW POWER, PROCESS AND TEMPERATURE INSENSITIVE FET BIAS CIRCUIT
Yukio Nishikawa, Los Gatos, assignor to Precision Monolithics, Inc., Santa Clara, Calif.
Filed Aug. 6, 1981, Ser. No. 290,432
Int. Cl.³ H03K *17/14, 17/687*
U.S. Cl. 307—570 **10 Claims**



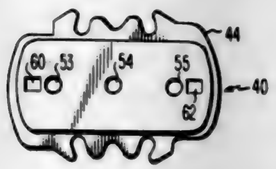
1. A lower power, process and temperature insensitive circuit for a switch FET, said switch FET having a gate, source and drain and characterized by a pinch-off voltage which is subject to processing and temperature variations, comprising:
a bus for receiving a voltage potential from a voltage source,
first and second resistors having a predetermined resistance ratio and each connected to the bus,
first circuit means connected with respect to the bus to generate a voltage across the first resistor which is proportional to the switch FET pinch-off voltage, and thereby drive a current proportional to the pinch-off voltage through the first resistor,
current reflection means connected to receive current from the first resistor and to drive a current through the second resistor which is proportional to the current through the first resistor, and thereby generate a voltage across the second resistor which is proportional to the pinch-off voltage,
switch control means controlling the application of current to the second resistor, and
second circuit means connecting the bus and one end of the second resistor in circuit with the switch FET gate, and the other end of the second resistor with the switch FET source to impose a voltage across the gate-source terminals of the switch FET which is controlled by the current through the second resistor and is at least equal to the pinch-off voltage when said proportional currents flow through the first and second resistors.

4,449,068
SONAR COMPENSATION TRANSFORMER
Leopold J. Johnson, Valley Center, and David L. Carson, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 22, 1983, Ser. No. 534,901
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—316 **2 Claims**



1. An improved sonar transceiver made up of a tapped transformer in series with a diode switch wherein the connection to the transducer is from the terminals bounding the transformer winding and series connected diode switch, and connections to the transmitter is between a preselected terminal tap into the transformer winding and the bounding terminal at the opposite end of the diode switch, said improvement comprising:
means connected in parallel with said diode switch for inducing a controlled magnetic field dependent upon the acoustical signal received by the transducer; and
means connected in the line to the transceiver which connects from the bounding terminal at the opposite end of the diode switch for inductively receiving the magnetic field created by the inducing means, said receiving means being preadjusted to control the output voltage of the signal from the transducer which is being transmitted to the transceiver for processing.

4,449,069
COLOR PICTURE TUBE WITH FOCUSING ELECTRODE HAVING ELECTROSTATIC FIELD DISTORTION APERTURE THEREIN
Naim Z. Asoil, and Richard H. Hughes, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.
Filed Feb. 10, 1982, Ser. No. 347,526
Int. Cl.³ H01J *29/51*
U.S. Cl. 313—412 **4 Claims**



1. In a color picture tube having an inline electron gun including at least a focusing electrode and a screen grid elec-

trode, said electrodes including a plurality of inline apertures in portions facing each other, the improvement comprising

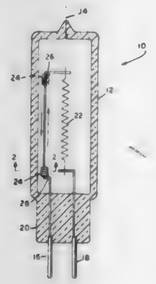
the portion of said focusing electrode facing said screen grid electrode including an additional aperture which is spaced sufficiently close to and outward from an offaxis aperture of the plurality of inline apertures therein to cause a distortion of an electrostatic field formed between said focusing electrode and said screen grid electrode at the offaxis aperture.

4,449,070

TUNGSTEN-HALOGEN LAMP WITH VARIABLY POSITIONABLE GETTER

John W. Shaffer, Williamsport, and Gary L. Houseknecht, Hughesville, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 28, 1982, Ser. No. 372,518
Int. Cl.³ H01K *1/56*
U.S. Cl. 313—557 **3 Claims**



1. A tungsten-halogen incandescent lamp comprising: a light transmitting, hermetically sealed glass envelope having a longitudinal axis; a long lead-in wire and a short lead-in wire sealed in a press of said envelope and extending internally and externally of said envelope; a tungsten filament attached between the internal ends of said lead-in wires; a fill gas within said envelope comprising an inert gas and a halogen; and a copper getter slidably mounted within said envelope.

4,449,071

FLUORESCENT LAMP DEVICE

Nobuo Yokoyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 239,466, Mar. 2, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,458
Claims priority, application Japan, Mar. 13, 1980, 55-31850; Mar. 13, 1980, 55-31851
Int. Cl.³ H01J *7/44*
U.S. Cl. 315—53 **7 Claims**

1. A fluorescent lamp device comprising:

a cylindrical outer tube;

a fluorescent lamp, having two ends including a base at each end thereof, disposed in said outer tube, each of said bases including a pair of electrodes for making electrical connection to said lamp;

a cylindrical connection tube connected to one end of the outer tube;

a cap member, containing a parallel combination of a glow starter and a condenser therein, fixed to the other end of the said outer tube;

a base member fixed to said connection tube;

a ballast member contained in said base member,

said ballast comprising,

a spring,

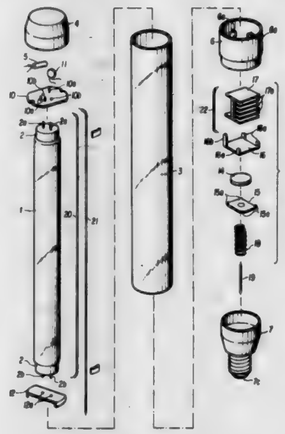
a first conductive plate pressed against by said spring,

a thermistor,

a secopd conductive plate, said thermistor disposed between said first and second conductive plates,

a thermal adjustment member;

wherein said thermistor and said thermal adjustment member are thermally and electrically connected through said second conductive plate;



said parallel combination of said glow starter and said condenser connected in series circuit with said pairs of electrodes and said thermistor; and

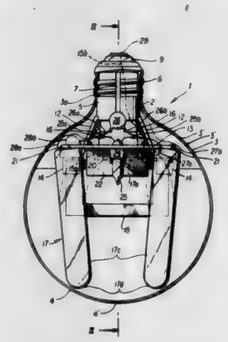
a pair of conductors coupled from said one end of said lamp and from said base member to the other end of said lamp and to said parallel combination of said glow starter and said condenser to complete said series circuit.

4,449,072

COMPACT FLUORESCENT LAMP

Kimio Osada, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 10, 1981, Ser. No. 272,388
Claims priority, application Japan, Jul. 11, 1980, 55-94723
Int. Cl.³ H01J *7/44*
U.S. Cl. 315—58 **7 Claims**



1. A compact fluorescent lamp comprising:

a screw base;

a unitary chassis member having a cylindrical part, and a holder member, said screw base secured to said cylinder part;

a base member, having an upper opening and a lower opening, said base member being attached to said cylindrical part so as to cover said chassis member;

a winding envelope attached to said holder member and

formed by bending a straight glass tube into a U-shape, thereby forming a first bent part and a pair of first leg parts, and bending each of said first leg parts into a second U-shape, thereby forming a pair of second bent parts and two pairs of second leg parts;

a ballast mounted to said holder member of said chassis member;

said holder member of said unitary chassis member for substantially supporting the weight of said winding envelope and said ballast, said unitary chassis member further including a hook arm member extending from said holder member for holding said first bent part of said winding envelope, at least a pair of fixing wall members extending from said holder member for fixing said ballast to said holder member and for providing resistance to the radiant effect of the ballast and to external oscillations, at least first and second heat shield plates extending from said holder member and positioned between said ballast and the ends of said winding envelope for preventing the radiant heat of said ballast from impinging upon said winding envelope, and a holder plate extending from said holder member for holding said ends of said winding envelope; and

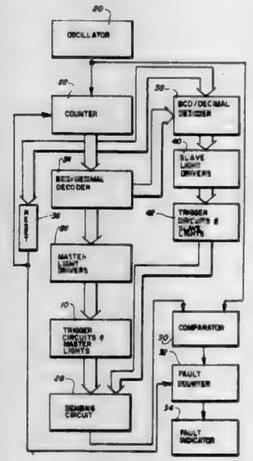
a globe member forming a semi-sphere attached to said base member.

4,449,073

RUNWAY APPROACH LIGHTING SYSTEM WITH FAULT MONITOR

Michael A. Mongoven, Oak Park; Paul R. Bees, Elmhurst, and David C. Earl, Naperville, all of Ill., assignors to Multi Electric Mfg. Inc., Chicago, Ill.

Filed Jun. 14, 1982, Ser. No. 388,120
Int. Cl.³ H05B *37/03*
U.S. Cl. 315—130 **21 Claims**



1. A system for individually energizing each of a plurality of output devices including means for providing a fault indication when a preselected number of the output devices are inoperative, comprising:

means coupled to the output devices for generating trigger signals to individually energize each output device;

means coupled to the output devices for sensing the output of each output device to develop monitoring signals;

means for comparing the trigger signals with the monitoring signals to develop status signals representing the operative status of each output device; and

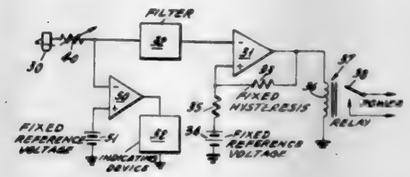
means for generating a fault indication in response to the status signals when at least the preselected number of output devices are inoperative.

4,449,074

EXCESS LIGHT TURN-OFF CIRCUIT

David G. Luchaco, Macungie, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Feb. 23, 1983, Ser. No. 468,870
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—159 **16 Claims**



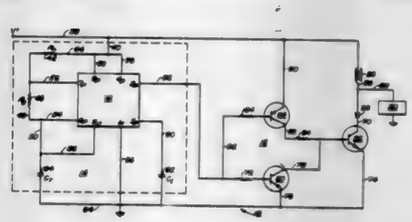
1. An excess light turn-off circuit for interior spaces which are provided with both natural and artificial lighting; said excess light turn-off circuit including: a light level sensor which produces an output signal related to the light level which impinges thereon; an adaptive electrical filter circuit connected to the output of said light level sensor, said filter producing an output which changes in a predetermined manner to a new level when the output of said light level sensor changes; a comparator circuit having a first input connected to the output of said filter circuit and having a second input; a fixed reference voltage circuit connected to said second input of said comparator circuit; said comparator circuit having an output which switches from a first level to a second level when the voltage at its said first input reaches a first given value relative to said fixed reference voltage circuit at its said second input; the ratio of said first given value and said fixed reference voltage circuit having a value which changes with the initial steady state input to said filter circuit; and relay switching means connected to control said artificial lighting in accordance with available natural light in order to conserve energy; said comparator circuit output connected to said relay switching means and operating said relay switching means to turn said artificial lighting on and off when said comparator circuit output switches between its said first and second levels.

4,449,075

ELECTROLUMINESCENT LAMP DRIVER

Anthony D'Onofrio, West Hartford, and Jack Gunzy, Bethel, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Sep. 13, 1982, Ser. No. 417,779
Int. Cl.³ H05B *33/08*
U.S. Cl. 315—169.3 **8 Claims**



1. A driver circuit for driving an electroluminescent lamp including voltage power supply means and an inductor electrically connected to said lamp, said driver circuit comprising:

(a) timer circuit means for periodically producing a LOW level voltage signal lower in magnitude than a predetermined threshold voltage level in response to a HIGH level voltage signal provided by said power supply means greater in magnitude than a predetermined control voltage level and for periodically producing a HIGH level

voltage signal in response to a LOW level voltage signal, and

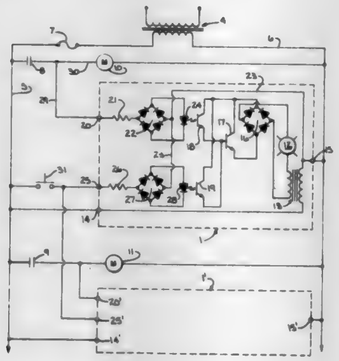
(b) logic circuit means including a first logic circuit element for controlling the magnitude of the operating voltage produced by said voltage power supply means that drives said logic circuit means, a second logic circuit element which periodically turns off and on in response to said HIGH and LOW voltage signals periodically produced by said timer circuit means and a third logic circuit element which periodically turns on and off in response to said first and second logic circuit elements for providing the switching for periodically producing energy in the field of said inductor to periodically excite said lamp to luminesce due to interchange of energy between said inductor and said lamp.

4,449,076

LIGHT ISOLATED PILOT LIGHT

Enoch P. Smith, Greendale, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 18, 1982, Ser. No. 359,267
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—312 **6 Claims**



1. In a pilot light the combination comprising:
a signal circuit having a light emitter;
a test circuit having a light emitter; and
a lamp circuit with light responsive means in light receiving relation to said light emitters that causes lamp circuit conduction.

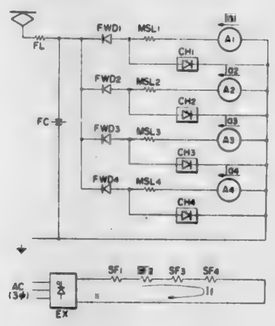
4,449,077

CHOPPER CONTROL EQUIPMENT FOR ELECTRIC RAILCARS

Masashi Naruto, Osaka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,995
Claims priority, application Japan, May 27, 1981, 56-80555
Int. Cl.³ H02P *5/50*
U.S. Cl. 318—6 **3 Claims**

1. A chopper control system for an electric railcar comprising:
a plurality of shunt motors having a common field current for driving said electric railcar;
a plurality of armature choppers for controlling the armatures of said shunt motors;
a multiplier for multiplying a maximum value of the armature currents of said plurality of shunt motors by said field current of said plurality of shunt motors;
a shunt field controller for comparing an output of said multiplier with a preset desired instructed braking force value so as to control said field current of said plurality of shunt motors in response to said comparison;
a maximum-value detector for each of said plurality of shunt motors for comparing armature currents of said plurality of shunt motors other than its respective shunt motor with a reference instruction value of armature current so as to produce a signal corresponding to a maximum value of said comparison; and
an armature controller for each of said plurality of shunt motors for providing a signal corresponding to a maximum value consisting of the armature current of its respective shunt and said signal of maximum value from its respective maximum value detector; wherein said armature controller signal is used to control said armature current of its respective shunt motor that is to be controlled.

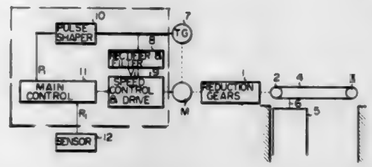


4,449,078

APPARATUS FOR PROVIDING AN OPTIMAL OPENING AND CLOSING OF A DOOR

Masaaki Ogishi; Isao Hagiwara; Yukio Yoshida, and Kenzo Oono, all of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,707
Claims priority, application Japan, Sep. 28, 1981, 56-151966
Int. Cl.³ H02P *1/58*
U.S. Cl. 318—102 **10 Claims**



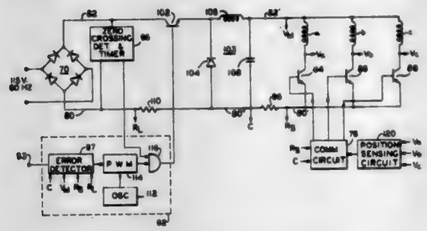
1. In an apparatus for controlling the operation of an automatic door including means for providing a deceleration point associated with the door operation, means coupled with the door for driving the door, means for providing a speed control of said door driving means, and means for electrically obtaining the current position of the door, the improvement comprising:
means for comparing said current position of the door with said deceleration point to generate a low speed command upon the coincidence of said current position with said deceleration point so that said speed control means will decelerate the door toward a low speed in response to the generation of said low speed command;
means for measuring a variable run-length of the door which is subject to variations in the mechanical condition of the door;
means for setting a predetermined low speed run-length of the door; and
means for correcting said deceleration point by utilizing the measured run-length and the predetermined low speed run-length.

4,449,079

CONTROL SYSTEM FOR AN ELECTRONICALLY COMMUTATED MOTOR

David M. Erdman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 141,267, Apr. 17, 1980, which is a continuation-in-part of Ser. No. 77,656, Sep. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 802,484, Jun. 1, 1977, Pat. No. 4,169,990, said Ser. No. 802,484, is a continuation-in-part of Ser. No. 729,761, Oct. 5, 1976, abandoned, said Ser. No. 729,761, is a continuation-in-part of Ser. No. 482,409, Jun. 24, 1974, Pat. No. 4,005,347. This application Aug. 27, 1982, Ser. No. 412,421
Int. Cl.³ H02P *1/02*
U.S. Cl. 318—138 **10 Claims**



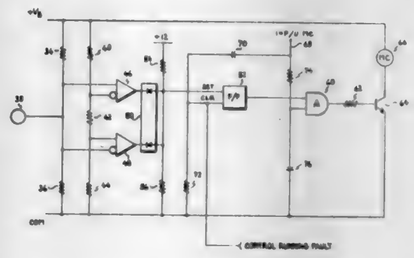
1. A system for controlling the energization of an electronically commutated motor having a stationary assembly with a plurality of winding stages and also having a rotatable assembly associated in magnetic coupling relation with the stationary assembly upon the energization of the motor, the system comprising:
means responsive to the angular position of the rotatable assembly for providing commutation signals;
a plurality of commutation switching means for connection with the winding stages, respectively;
means for applying the commutation signals in sequence to said commutation switching means to control the conductivity thereof;
circuit means for dissipating energy generated by the commutation of the winding stages and including a first common point connected to one terminal of each of the winding stages, and first diode means for separate connection between the other terminal of each of the winding stages and a second common point;
said commutation switching means being connected between a third common point and the other terminal of each of the winding stages;
an energy return circuit including capacitor means for connection between said first and second common points;
first impedance means, first transistor means and second diode means for connection in series combination between said first and second common points;
voltage divider means and second transistor means for connection in series combination substantially between said second and third common points, said voltage divider means including second and third impedance means for connection at a fourth common point;
means responsive to the voltage at said fourth common point for controlling the conductivity of said first transistor means;
means for deriving a control signal representative of the actual angular velocity of the rotatable assembly; and
means for applying the control signal to said second transistor means to decrease the conductivity thereof whenever the actual angular velocity of the rotatable assembly exceeds an externally determined variable limit with the decreased conductivity of said secnd transistor means being effective to increase the conductivity of said first transistor means and whereby energy generated upon the commutation of the winding stages is stored in said capacitor means for subsequent dissipation and a negtive torque is variably applied to the rotatable assembly in proportion to the amount by which the actual velocity exceeds the variable limit.

4,449,080

ELECTRIC VEHICLE PROTECTION SCHEME

Charles E. Konrad, Roanoke, and Robert C. Clark, deceased, late of Charlottesville, Va. (by Jean B. Clark, executrix), assignors to General Electric Company, Charlottesville, Va.

Filed May 27, 1982, Ser. No. 382,477
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—139 **3 Claims**



1. A fault detection and inhibit circuit for a power control unit in an electric traction motor propelled vehicle, the control unit including a chopper circuit for regulating power to the motor and a bypass contactor for shunting the chopper circuit when the percent conduction time of the chopper circuit exceeds a predetermined value, and a main contactor for connecting the motor, the chopper circuit and a power source in a series current path, comprising;
(a) a first voltage divider connected in parallel with the power source;
(b) means for connecting an intermediate point of said first voltage divider to a point intermediate the main contactor and the bypass contactor;
(c) means for comparing the voltage at said intermediate point of said first voltage divider to a predetermined range of voltage values; and
(d) means for inhibiting the operation of the main contactor when said intermediate point voltage is outside said predetermined range of voltage values.

4,449,081

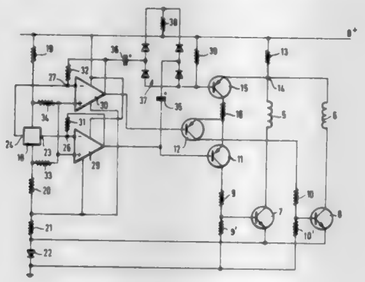
COMPENSATING OUTPUTS OF HALL GENERATORS TO MINIMIZE EFFECTS OF TEMPERATURE VARIATION AND THE LIKE

Benno Doemen, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 175,194, Jul. 31, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 456,752
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931686
Int. Cl.³ H02P *5/06*
U.S. Cl. 318—254 **6 Claims**

1. In an electronic power supply for a commutatorless DC motor which includes a permanently magnetized rotor for generating a magnetic field, a stator winding arrangement comprising at least one stator coil positioned in torque-producing arrangement consisting of a single stationary Hall generator disposed in magnetic field sensing relation to said rotor so as to develop first and second voltage output signals at first and second output terminals thereof, and control circuitry con-

nected to said output terminals for energizing and deenergizing said at least one stator coil in response to rotor position, the improvement comprising first and second amplifier stages each having an input and an output, the first stage having its input connected to the first output terminal and the second stage having its input connected to the second output terminal, the outputs of said first and second stages being connected to the



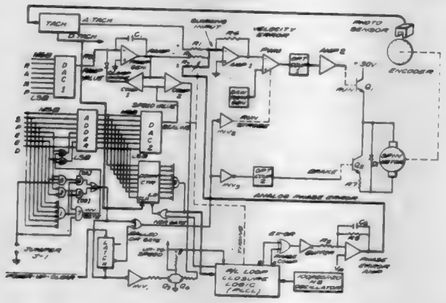
control circuitry, first and second feedback networks connected between the input and the output of the first and of the second stage, respectively, and said control circuitry including non-linear control means responsive to output signals from said first and second stages for preventing current flow through said stator coil when the magnetic field is below a predetermined threshold value and for passing current through said stator coil when the magnetic field exceeds said value.

4,449,082

MOTOR SPEED CONTROL SYSTEM

Douglas G. Webster, 14450 Blackwalnut Ct., Saratoga, Calif. 95070

Filed Dec. 17, 1981, Ser. No. 331,873
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—326 **4 Claims**



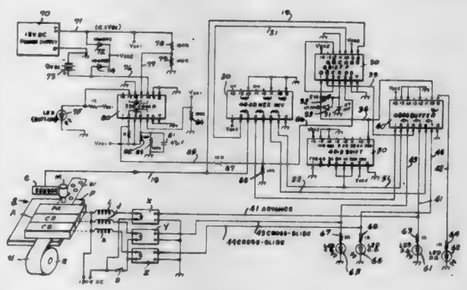
1. A system for controlling the speed of a motor comprising:
(a) a first system input terminal for receiving a first digital number representative of a desired acceleration characteristic for said motor;
(b) a second system input terminal for receiving a second digital number representative of a desired speed for said motor;
(c) a first digital to analog converting means operatively connected to said first system input terminal;
(d) a second digital to analog converting means operatively connected to said second system input terminal;
(e) a ramp generating means operatively connected to said first digital to analog converting means via a resistance means and operatively connected to said second digital to analog converting means via a comparator network means;
(f) a velocity error summing amplifier means having a first, second, and third input terminal, the output of said ramp generating means operatively connected to the first input terminal of said velocity error summing amplifier means;
(g) a pulse width modulating means operatively connected between said velocity error summing amplifier means and said motor;
(h) encoding means connected to said motor;
(i) sensing means associated with said encoding means;
(j) tachometer means operatively connected to said sensing means, said tachometer means having an analog output terminal and a digital output terminal, said analog output terminal connected to the second input terminal of said velocity error summing amplifier means;
(k) variable-modulo counting means operatively connected to said second system input terminal and including clocking means operatively connected to the digital output terminal of said tachometer means;
(l) decoding means operatively connected to said variable-modulo counting means;
(m) phase lock loop closing means operatively connected to said decoding means and to a crystal-controlled reference signal source means;
(n) phase detecting means operatively connected to said phase lock loop closing means for comparing the phase of the decoded output signal from said variable-modulo counting means with the phase of a reference signal from said crystal-controlled reference signal source means and generating a phase error output signal;
(o) phase error amplifying means operatively connected to said phase detecting means for amplifying the phase error output signal of said phase detecting means; and
(p) variable resistance means operatively connected to the output of said phase error amplifying means and to the third input terminal of said velocity error summing amplifier means for controllably coupling said amplified phase error output signal to said velocity error summing amplifier means thereby effecting precise phase lock velocity control of the speed of said motor.

4,449,083

STAGGER FEED CONTROL CIRCUIT

Charles D. Beall, Tallahassee, Fla., assignor to Wayne H. Coloney Co., Inc., Tallahassee, Fla.

Filed Jun. 21, 1982, Ser. No. 390,615
Int. Cl.³ G05B *19/28*
U.S. Cl. 318—602 **9 Claims**



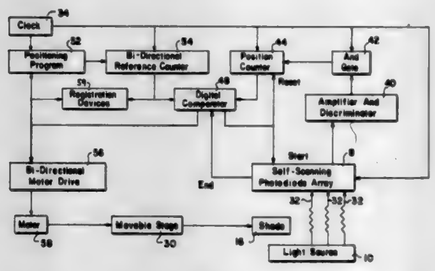
1. A control system for feeding strip material to a cyclic stamping machine synchronously with the cycle thereof, the machine having longitudinal strip-incrementing actuator means and having transverse strip-shifting actuator means for shifting the strip laterally to permit stamping the strip in a repeating pattern having multiple different longitudinal rows, the control system comprising:
sensor means operative to sense each cycle of the machine and deliver a synchronizing signal in response thereto;
multiple buffer means operative in response to sequential pulses to deliver a drive signal to said incrementing actuator means to shift the strip longitudinally, and to deliver a drive signal to an associated one of said shifting actuator means to shift the strip transversely to another of said rows; and
sequential pulse generating means having different outputs respectively connected to different buffer means and operative in response to said synchronizing signals to deliver a repeating sequence of pulses determining said pattern to different ones of said outputs and associated buffer means in a repeating sequence.

4,449,084

POSITIONING SERVO-MECHANISM OR TACHOMETER EMPLOYING SELF-SCANNING LIGHT SENSING ARRAY

Frank Meno, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,965
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—640 **10 Claims**



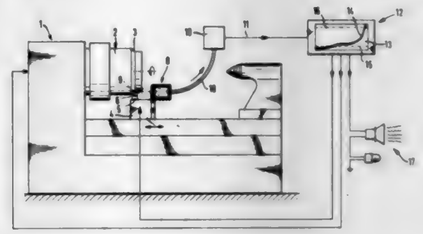
1. Apparatus for precise positioning of a movable stage at one of a number of predetermined positions comprising
light source means,
a self-scanning array of photodiodes including a plurality of said photodiodes positioned to receive light from said light source means and adapted to emit a responsive electrical signal proportional to the number of photodiodes receiving said light,
opaque shade means for movement responsive to movement of said stage,
said shade means being mounted for reciprocating movement between said light source means and said self-scanning array of photodiodes,
motor means for effecting movement of said shade means,
electronic means for receiving said electrical signals from said self-scanning array of photodiodes and comparing such signals with a said predetermined position,
said self-scanning array of photodiodes is a linear array,
said shade means being adapted for relative longitudinal reciprocating movement with respect to said self-scanning linear array of photodiodes, whereby movement of said shade means in a first direction will sequentially increase the number of said photodiodes receiving said light and movement of said shade means in a second direction will sequentially reduce the number of said photodiodes receiving said light, and
said electronic means having means for emitting a signal to said motor means to effect corrective movement of said stage if said comparison indicates that said stage is not in the desired predetermined position.

4,449,085

CONTROL FOR OPERATION OF A MACHINE TOOL

Volker Gomoll, Wernau, Fed. Rep. of Germany, assignor to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,615
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042211
Int. Cl.³ G05D *23/00*
U.S. Cl. 318—641 **8 Claims**



1. Method of monitoring the tool bit in a machine tool during the processing of a workpiece comprising the steps of measuring the temperature of the processed surface of the workpiece, feeding the measured temperature to an evaluation device, checking the measured temperature and terminating the processing operation on the occurence of one of a sudden increase in the measured temperature and a rise of the measured temperature above a given level, measuring the temperature by arranging an optical element with a measurement spot directed at the surface to be measured, collecting the infra-red radiation from the measurement spot and transferring the radiation to a thermal sensor, reading the temperature indicated by the infra-red radiation in the thermal sensor and passing the temperature on to an evaluating device and determining in the evaluating device when there is a sudden temperature increase or the rise in the measured temperature is above a given level.

4,449,086

METHOD AND APPARATUS FOR CONTROLLING AND REGULATING A MOTOR WITH A PERMANENT MAGNETIC ROTOR

Harald Hoffmann, Konigstein, and Dan-Corneliu Raducanu, Bad Soden, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,785
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1980, 3013473
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **13 Claims**

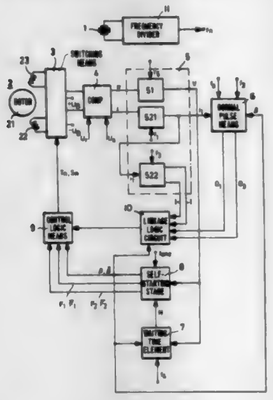
1. A control circuit for driving an electric motor at a substantially constant desired rotational speed and for accelerating said motor after a stoppage thereof or the application of an adverse resistive torque thereto, said motor including a rotor having at least one pair of permanent magnetic poles and a stator provided with a first and a second coil, said control circuit comprising:
control means for detecting the rotational speed of said rotor and for supplying energizing pulses to said first or said second coil dependent upon said detected speed, said control means having at least two modes:
a normal speed mode wherein the rotational speed of said rotor is detected by said first coil and wherein only said second coil is supplied with said energizing pulses at a frequency substantially corresponding to single coil driving of said rotor at said desired rotational speed; and
a self-starting mode wherein said energizing pulses are supplied alternately to said first and said second coil to accelerate said rotor to said desired rotational speed;

said control means including rotor acceleration and braking means, operable during said normal speed mode and comprising:

means for generating desired frequency pulses of a predetermined width and phase;

means for generating actual frequency pulses of a width and phase indicative, respectively, of the rotational speed and angular disposition of said rotor;

means for comparing the widths and phases of said desired and said actual frequency pulses; and



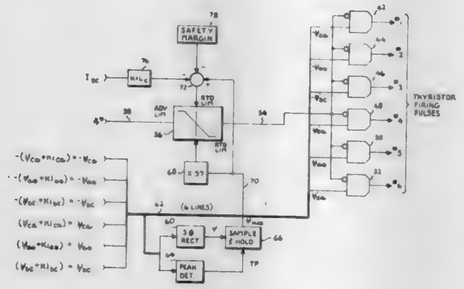
accelerating and braking pulse generating means for generating energizing pulses which exert an accelerating force on said rotor whenever the phase of said actual frequency pulses leads the phase of said desired frequency pulses and for generating braking pulses which exert a braking force upon said rotor by effecting a short circuiting of one of said coils whenever the phase of said actual frequency pulses leads the phase of said desired frequency pulses.

4,449,087

FLUX FEEDBACK FIRING CONTROL FOR A LOAD COMMUTATED INVERTER

David L. Lippitt, Schenectady, N.Y.; Paul M. Espelage, Salem, Va.; Leland C. Tupper, Schenectady, N.Y.; Loren H. Walker, and Herbert W. Weiss, both of Salem, Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 23, 1981, Ser. No. 333,933
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—723 **30 Claims**



1. A method of generating a firing control signal for controlling current commutation of a set of thyristors included in an electrical power converter coupled to a polyphase AC power line, comprising the steps of:

(a) deriving at least one voltage signal representing the line-to-line voltage on said AC power line;

(b) generating a pseudo flux signal waveform from said voltage signal;

(c) determining the peak value of at least one pseudo flux signal waveform;

(d) determining a value, in terms of the units of the pseudo flux signal waveform, necessary to effect thyristor current commutation in said thyristors;

(e) determining a difference value between said peak value and said value necessary to effect commutation;

(f) determining a thyristor firing angle from said difference value and generating said firing control signal therefrom; and

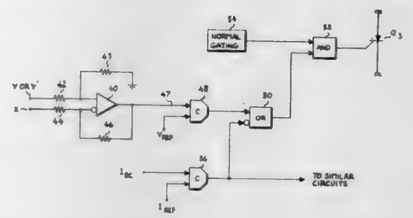
(g) applying said firing control signal to firing circuitry for selectively firing at least one of the thyristors prior to the peak of the forthcoming pseudo flux signal waveform.

4,449,088

COMMUTATION FAILURE CORRECTION SCHEME FOR A CONTROLLED CURRENT INVERTER

John H. Cutler, Roanoke, Va.; John D. D'Atre, Saratoga, N.Y., and Loren H. Walker, Salem, Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 23, 1981, Ser. No. 333,930
Int. Cl.³ H02M *1/06*; H02P *13/24*
U.S. Cl. 318—798 **7 Claims**



1. For use in conjunction in a controlled inverter bridge of the type having a plurality of legs each having a controlled rectifier and further including an associated commutating capacitor across which an electrical voltage is developed to effect thyristor conduction commutation to thereby transfer current from one controlled rectifier to another through the sequential rendering conductive of controlled rectifiers, recovery circuitry for recovery from a bridge malfunction condition resulting from insufficient capacitor voltage to effect controlled rectifier commutation comprising;

(a) means to develop a voltage signal representative of the voltage across the capacitor associated with the controlled rectifier to be cummutated;

(b) means to compare said voltage signal with a reference signal of predetermined value and to provide an enabling signal in response to an established relationship therebetween; and,

(c) inhibiting means to inhibit the application of a gating signal to the next to be rendered conductive controlled rectifier in the absence of said enabling signal.

4,449,089

BATTERY CHARGERS

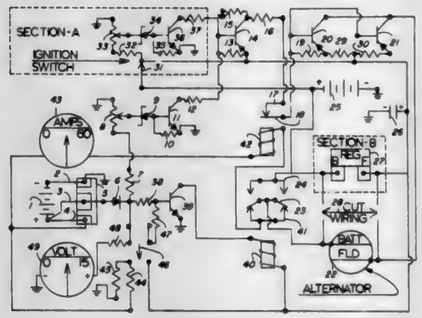
Harry L. Winkler, Box 632, Pinehurst, Id. 83850

Filed Nov. 16, 1981, Ser. No. 321,920
Int. Cl.³ H02J *7/00*
U.S. Cl. 320—15 **7 Claims**

1. A vehicular battery charger comprising in combination:

means for installation, means for convenient connecting and or disconnecting to this vehicular battery charger's output power which consists of an electrical receptacle with at least three individual conductors, further consisting at least a three conductor wiring harness jumper cable with a plug on one end to mate with said electrical receptacle and the other end of said jumper cable is equipped with a convenient means for connecting and or disconnecting to or from the external battery or batteries to be charged, said three conductor jumper cable has two of said three conductors connected together on the external battery(s) plus end, one of said two conductors is a feed-back line for a battery charger polarity sensor as well as a feed-back line for a battery charger voltage sensor for said external battery(s), a jumper cable feed-back line connecting to the center terminal on said receptacle also said center terminal on said receptacle is connected to the anode end of a first diode and the upper terminal of said receptacle is connected to a battery charger ground and the lower terminal of said receptacle is connected to the proper side of a battery charger ammeter;

a polarity sensor which consists of a first rectifier type diode, a first resistor, a first transistor of the NPN type and a heavy duty power relay all being electrically connected as a functional part of this battery charger, said first diode anode end connected to the center terminal of said receptacle and the cathode end connected to one end of the first resistor and the other end of said first resistor connected to the base of the first transistor, the emitter of said transistor is grounded and the collector is connected to one end of the power relay's coil and means for powering the other



end of said coil from an internal battery plus terminal the negative terminal of said internal battery is connected to said ground, the upper set of points of said power relay is connected to the positive terminal of said internal battery, the center set of points of said power relay is connected to the output terminal of the vehicle's alternator and is means for receiving said alternator's output power, the lower set of points of said power relay is connected to one end of a battery charger overload relay coil, when said battery charger is connected to an external battery said polarity sensor senses the polarity of said external battery if said polarity is not proper said charger will not respond, upon proper polarity said first diode passes voltage on to the base of said first transistor when said base receives a significant amount of positive voltage said transistor will switch on thus causing said power relay to switch said charger's output power to said external battery or batteries, when said external battery or batteries is disconnected said battery charger automatically resumes maintaining the charge on said internal battery;

a voltage sensor for the external battery which consists of second, third and fourth resistors, one potentiometer, a first zener diode, and a second transistor of the NPN type all being electrically connected as a functional part of this battery charger, said charger's second resistor connected at the point of in between said first diode and said first resistor and the other end of said second resistor connected to the lower end of the first potentiometer, the upper end of said potentiometer is grounded and the center terminal is connected to the first zener diode cathode end, and the anode end is connected to base of the second transistor as well as to one end of the third resistor the other end of said resistor is connected to the ground as well as the emitter of the said second transistor and the collector of said second transistor is connected to one end of the fourth resistor and the other end of said fourth resistor is connected to the base of the third transistor, said potentiometer is used as a voltage divider network when the voltage exceeds twelve volts on said first zener diode said zener diode will break down and pass the voltage in excess of twelve volts on in series to the base of said second transistor as well as to one end of said third resistor, so when said base of said second transistor receives a significant amount of positive voltage from the zener diode said second transistor will turn on, said external battery voltage sensor senses the voltage level of said external battery or batteries, said voltage sensor is adjustable being capable of sensing up to 100 volt range and when a pre-determined voltage level is reached, said sensor's transistor turns on thus providing means for a sensed, controlled, pre-set charge level for said external battery or batteries;

a transistor voltage regulator which consists of fifth, sixth and seventh resistors, and a third transistor of the PNP type all being electrically connected as a functional part of this battery charger, said charger's fifth resistor is connected across the base and the emitter of said third transistor, one end of the sixth resistor as well as one end of the seventh resistor is connected to the collector of said third transistor, the other end of said sixth resistor is connected to the ground, the other end of said seventh resistor is connected to the upper terminal of said charger's overload relay points, said voltage regulator is in a neutral condition until said regulator receives a command from said external voltage sensor, upon said external voltage sensor's transistor turning on pulls down the voltage on the collector of said sensor's transistor which reduces the voltage on the base of said regulator's transistor thus making said base more negative with respect to the emitter of said transistor causing said regulator's transistor to turn on;

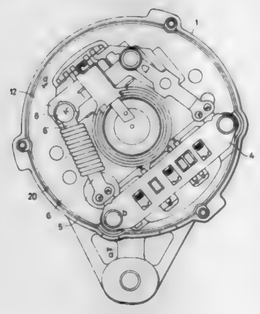
the output power transistors which consist of eighth, ninth and tenth resistors, one capacitor, and fourth and fifth transistors of the PNP type all being electrically connected as a functional part of this battery charger, said charger's lower terminal of said overload relay points is connected to the base of each of the fourth and fifth power transistor, the collectors of said fourth and fifth power transistors are connected to the field terminal of said vehicle's alternator and the emitter of said fourth transistor is connected in series with the eighth resistor to the power supply, the emitter of said fifth transistor is connected in series with the ninth resistor to the power supply, the capacitor is connected across said power supply and said ground, the tenth resistor is connected across the base and the emitter of said fifth transistor, said output power transistors are wired with a negative bias and will produce full output power until they receive a significant amount of positive voltage either from said transistor voltage regulator or from the opening of said overload relay points thus causing said output power transistors to reduce or cut off their output power, in combination, when said external voltage sensor senses a pre-set voltage level, said sensor's transistor turns on thus causing said regulator's transistor to turn on thus causing said power transistors to reduce or cut off their output power, the function of said output power transistors is to control the vehicle alternator's output power and does this by controlling said alternator's field voltage.

4,449,090

CHARGING GENERATOR FOR VEHICLES

Hitoshi Gotoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,960
Claims priority, application Japan, Sep. 19, 1981, 56-139707
Int. Cl.³ H04B *15/00*; H01R *13/66*; H02K *11/00*
U.S. Cl. 322—95 3 Claims



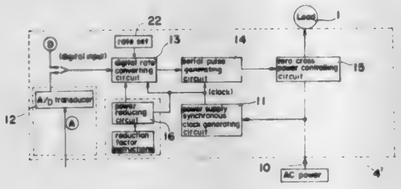
1. A vehicular charging generator, comprising:
a rear bracket;
a capacitor (5) mounted in said rear bracket;
a connecting plate (6) connecting said capacitor and an output connection (8) mounted on said bracket; and
an inductive solenoid coil (20) wound on said connecting plate for preventing noise from being transmitted to the outside.

4,449,091

POWER CONTROLLING CIRCUIT FOR AUTOMATIC REGULATING APPARATUS

Takashi Otoi, Arita, Japan, assignor to Hanwa Elecyronic Co., Ltd., Wakayama, Japan

Filed Dec. 31, 1981, Ser. No. 336,331
Int. Cl.³ G05F *1/45*
U.S. Cl. 323—236 7 Claims



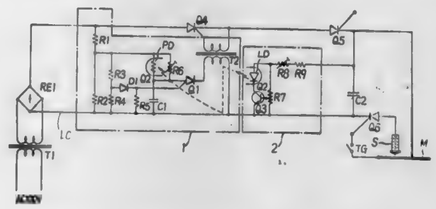
1. A power control apparatus for controlling application of A.C. power to a load wherein an output of an A.C. power source is connected to the load by at least one switch element, said control apparatus comprising:
feedback means for generating a feedback signal indicative of an amount of power actually applied to the load;
reference means for providing a reference signal indicative of a nominal amount of power to be applied to the load;
power reducing factor means for providing a power factor reducing signal indicative of a factor by which said nominal amount of power is to be reduced;
rate converting means responsive to said feedback, reference and power factor reduction signals for providing a control signal which corresponds to the amount of power to be applied to said load;
zero-cross power controlling means for switching said at least one switch element in response to said control signal at zero voltage cross-over points of said A.C. power source.

4,449,092

CAPACITOR CHARGING CIRCUIT FOR DISCHARGE TYPE WELDING TOOL

Yoshiteru Kondo, Toyohashi, Japan, assignor to USM Corporation, Farmington, Conn.

Filed Dec. 28, 1981, Ser. No. 335,153
Claims priority, application Japan, Dec. 26, 1980, 55-188076
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—271 4 Claims



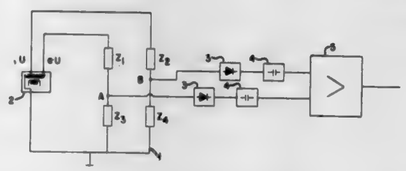
1. A capacitor charging circuit for a discharge type welding tool wherein a capacitor is charged with rectified pulsating currents through a thyristor to effect discharge-welding by the electric energy stored in the capacitor, said circuit comprising a rectifier for producing said rectified pulsating currents; a capacitor to be charged; a thyristor between said rectifier and said capacitor; a pulse generator connected to receive said pulsating currents, said pulse generator producing a pulse at each hill of the pulsating current, the pulse being applied to the gate of said thyristor to turn the thyristor on at each hill of said pulsating current, said pulse generator comprising a pair of resistance elements connected in parallel to a second capacitor which is charged in response to the electrical current in the pair of resistance elements, and means for discharging said second capacitor when said second capacitor exceeds a predefined voltage so as to produce the pulse applied to said thyristor; and a charge potential detecting circuit arranged to directly measure the charge potential across said charged capacitor so as to transfer a signal, changed according to the level of the capacitor potential, to said pulse generator thereby to control the timing of the pulse generation at each hill of said pulsating current.

4,449,093

CIRCUIT FOR MEASURING ELECTRICAL PROPERTIES

Günter Schierjott, Lorenz-Rebbert-Allee 1, 4630 Bochum 1, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,503
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037925
Int. Cl.³ G01R *27/00*
U.S. Cl. 324—57 R 4 Claims



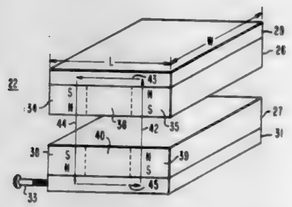
1. A circuit for measuring an electrical property, such as the resistance, capacitance or inductance of a circuit component, said circuit including two bridge branches each having at least two serially-connected components, one bridge branch having a variable resistance bridge component representing an electrical property under measurement, a common voltage supply having two supply outputs each at a different voltage, each bridge branch being connected to one of said two supply outputs such that the voltage applied to the bridge branch without said variable resistance bridge component differs from the voltage applied to the other bridge branch by a factor, and means to detect the voltage difference at measuring points between the serially-connected components of the bridge branches for producing a measurable signal, said means to detect eliminating the effect of a phase shift caused by complex components upon said measurable signal, said means to detect including two rectifiers each connected to one of said measuring points, electrical storage means receiving the output from said rectifiers for providing direct current outputs defining said measurable signal.

4,449,094

TEMPERATURE COMPENSATED MAGNETIC DAMPING ASSEMBLY FOR INDUCTION METERS

John A. MacFadden; Joseph M. Keever, both of Raleigh, and William J. Zisa, Cary, all of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1981, Ser. No. 272,244
Int. Cl.³ G01R *1/14, 11/10, 11/185*
U.S. Cl. 324—152 14 Claims



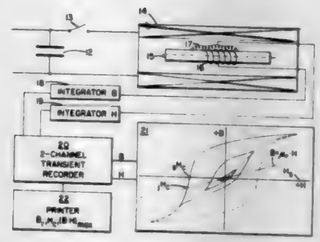
14. A permanent magnet assembly, comprising:
two pieces of anisotropic magnetic material, each of said pieces comprising two magnetized regions of opposite polarity with an unmagnetized dead zone therebetween, said pieces being disposed in cooperative association to define a gap between them, said two magnetized regions of said two pieces being associated to define two positions within said gap, each of said positions having magnetized regions of opposite polarity disposed proximate each other on opposing sides of said gap;
a first flux return member disposed adjacent to a first one of said two pieces, said first one piece being disposed between said first flux return member and said gap, said first flux member providing a flux path between said two magnetized regions of said first one piece;
a second flux return member disposed adjacent to a second one of said two pieces, said second one piece being disposed between said second flux return member and said gap, said second flux return member providing a flux path between said two magnetized regions of said second one piece; and
means for moving said second flux return method in relation to said second piece in a direction parallel to said gap.

4,449,095

PROCESS AND APPARATUS FOR RECORDING HYSTERESIS CURVES OF MAGNETIC MATERIALS

Erich Steingroever, Flensburger Strasse 33, 53 Bonn am Rhein, and Dietrich Steingroever, Bergisch-Gladbach, both of Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,976
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028410
Int. Cl.³ G01R *33/14*; G01N *27/72*
U.S. Cl. 324—223 13 Claims



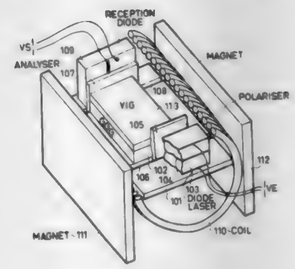
11. Apparatus for measuring the hysteresis curve of a magnetic material, comprising:
means to generate an alternating magnetic field of short duration having a high initial amplitude with a decreasing amplitude thereafter within which field a sample to be measured may be placed;
measuring coil means and potential coil means, both to be attached to said sample;
integrating means connected with said measuring coil means and potential coil means for converting electrical values detected by said coils into respective electrical signals indicating values of flux density B and internal field intensity H of said sample while in said magnetic field;
transient recorder means having at least two channels connected to said integrating means for recording and storing said values of B and H in real time, and for converting said values into digital units; and
display means connected to the output of said transient recorder means for displaying at least one set of simultaneous values of B and H.

4,449,096

MEASURING HEAD FOR MAGNETOMETER AND MAGNETOMETER INCORPORATING SUCH A HEAD

Gérard Doriath; Roger Gaudry, and Georges Hepner, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 3, 1980, Ser. No. 212,620
Claims priority, application France, Dec. 14, 1979, 79 30721
Int. Cl.³ G01R *33/032*; G02F *1/09*
U.S. Cl. 324—244 6 Claims



1. A measuring head for a magnetometer comprising:

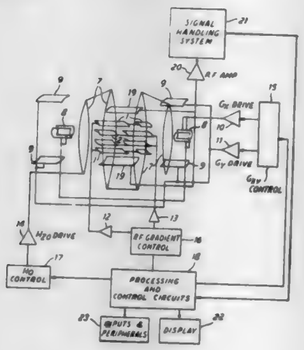
polarized light beam emitting means including a diode and a polarizer for producing a polarized light beam;
magnetic field producing means;
a planar layer of a magnetic material deposited on a substrate having a first and second edge with said polarizer being located near said first edge and wherein the thickness of said magnetic layer permits a multimode guided propagation of said beam in the plane of said layer and also permits the rotation of said beam in its polarization direction wherein said magnetic field producing means produces in said layer a magnetic field perpendicular to the propagation direction of said beam of polarized light and wherein said magnetic field is parallel to the plane of said layer; and
means for measuring said rotation, wherein said rotation measuring means comprises an analyzer and a photodetector placed on the second edge of said layer.

4,449,097

NUCLEAR MAGNETIC RESONANCE SYSTEMS

Ian R. Young, Sunbury-on-Thames, and Michael Burl, Hampton Hill, both of England, assignors to Picker International Limited, Wembley, England

Filed Jul. 15, 1981, Ser. No. 283,635
Claims priority, application United Kingdom, Aug. 6, 1980, 8025615
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **9 Claims**



1. A nuclear magnetic resonance system for examining a region of a body by a steady state free precession procedure, the system including, for selecting and exciting a chosen slice of the body, a coil system providing two RF fields having respective gradients in opposing directions perpendicular to the plane of the slice.

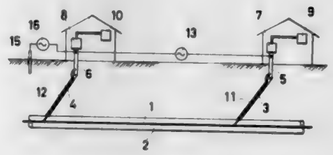
4,449,098

ARRANGEMENT FOR DETECTING THE LOCATION OF AN ELECTRICALLY INSULATIVE CONTINUOUS ITEM POSITIONED UNDERGROUND

Syuichi Nakamura, and Masakazu Morioka, both of Osaka, Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Mar. 10, 1981, Ser. No. 242,255
Claims priority, application Japan, Mar. 19, 1980, 55-35611
Int. Cl.³ G01V *3/30*; H01B *7/28*
U.S. Cl. 324—326 **2 Claims**

1. An arrangement for detecting above the ground the location of a generally horizontally arranged gas conveying passage positioned beneath the ground, said arrangement comprising:
a gas pipe positioned beneath the ground and defining a generally horizontal gas conveying passage, said gas pipe being formed of an electrically insulative synthetic resin material;
an electrically conductive wire positioned along the exterior of said gas pipe, said wire comprising a flexible metallic core formed by stranding together a plurality of single wires, and an electrically conductive flexible outer coating layer applied directly over said core, said layer being formed of a combination of 100 parts by weight of chloroprene rubber or natural rubber per 50 to 60 parts by weight of acetylene carbon, and said layer having a specific resistance of approximately 100 ohm-cm;
a steel pipe extending into the ground;
a branch gas pipe extending from said gas pipe to said steel pipe and positioned beneath the ground, said branch gas pipe being formed of an electrically insulative synthetic resin material;
an electrically conductive branch wire extending along the exterior of said branch gas pipe, said branch wire comprising a flexible metallic core formed by stranding together a



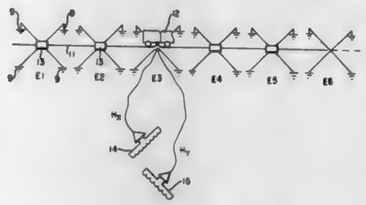
plurality of single wires, and an electrically conductive flexible outer coating layer applied directly over said core, said layer being formed of a combination of 100 parts by weight of chloroprene rubber or natural rubber per 50 to 60 parts by weight of acetylene carbon, and said layer having a specific resistance of approximately 100 ohm-cm, said branch wire having a first end electrically connected to said wire and a second end wound around the exterior of said steel pipe, an end of said core of said second end of said branch wire being welded to the exterior of said steel pipe; and
high frequency power source means, electrically connected to said steel pipe at a position above ground, for supplying to said steel pipe, said branch wire and said wire high frequency energy of from 2 KHz to 100 KHz at 6 volts, such that said branch wire and said wire emit electromagnetic waves which are detectable above ground.

4,449,099

RECORDING DECIMATED MAGNETOTELLURIC MEASUREMENTS WITH COHERENCE

Gustave L. Hoehn, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 18, 1981, Ser. No. 293,786
Int. Cl.³ G01V *3/08*
U.S. Cl. 324—350 **10 Claims**



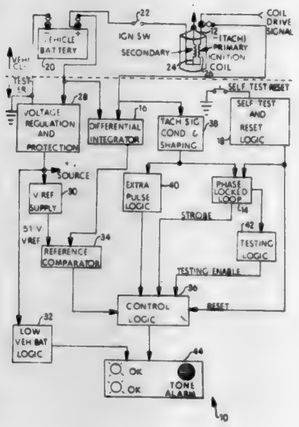
9. In magnetotelluric exploration wherein channels of measurements are obtained of the earth's electric and magnetic field as a function of time, said channels representing said measurements at spaced locations on the earth, and wherein said measurements are digitized and stored, the method of removing noise spikes from said measurements comprising:
selecting blocks of samples of said measurements;
transforming said blocks into frequency domain representations of power spectra, including amplitude and phase, at selected harmonics;
determining the coherence between said power spectra for two successive blocks of said samples representing measurements from different channels, said coherence being represented by values which are high to indicate high coherence and low to represent low coherence;
comparing said coherence to a threshold; and
stacking the power spectra which have a coherence exceeding said threshold whereby measurements having said noise spikes are not stacked.

4,449,100

IGNITION SYSTEM TESTER

Robert C. Johnson, Dearborn; Thomas C. Nation, and David L. Perry, both of Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1982, Ser. No. 365,433
Int. Cl.³ F02P *17/00*
U.S. Cl. 324—378 **7 Claims**



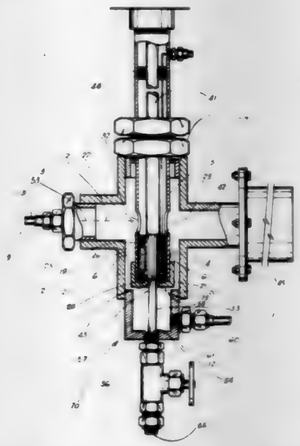
1. A vehicle ignition system tester for determining when a fault exists in the ignition system of a vehicle, said ignition system tester including:
detection means for detecting the occurrence of a spark firing voltage;
integrating means for integrating the spark firing voltage over a predetermined period of time; and
decision means for determining whether the integrated voltage reaches a predetermined threshold thus signifying that sufficient spark plug firing energy was stored in the coil and there is no fault in the vehicle ignition system, said decision means including:
a phase lock loop circuit for generating strobe pulses at predicted spark plug firing times and comparing the occurrence of a spark plug firing pulse to the occurrence of the strobe pulse;
a first phase lock loop filter having a relatively slow time constant for adjusting the strobe repetition rate to slow changes in engine speed;
a second phase lock loop filter having a relatively fast time constant for adjusting the strobe repetition rate to rapid changes in engine speed; and
a selection means for selecting between said first and second phase lock loop filters so as to minimize strobe repetition rate change in response to additional erroneous or missing spark plug firing pulses and maximize strobe repetition rate change in response to actual changes in engine speed.

4,449,101

JET WASH FOR ULTRASONIC STREAMING CURRENT DETECTOR

Anthony S. Canzoneri, Kenner, and Joseph V. McDonald, Metairie, both of La., assignors to Process Development, Inc., Kenner, La.

Continuation-in-part of Ser. No. 375,577, May 6, 1982, Pat. No. 4,446,435. This application Oct. 22, 1982, Ser. No. 435,903
Int. Cl.³ G01N *27/60*
U.S. Cl. 324—453 **11 Claims**



1. A jet wash apparatus for ultrasonic streaming current detector, having passageway means for variably conveying a cleaning fluid into said ultrasonic streaming current detector, said ultrasonic streaming current detector comprising:
a. a cross-shaped tubular member having cross-member and longitudinal elements communicating with each other and filled with a test fluid containing charge-influencing species;
b. a piston receiving member mounted coaxially with said longitudinal element;
c. a casing substantially surrounding said piston receiving member;
d. a pair of electrodes, the first of which is disposed adjacent to a bottom end of said piston receiving member and the second of which is disposed in said piston receiving member above the first electrode;
e. a reciprocating element mounted in a central bore of said piston receiving member;
f. means for reciprocating and reciprocating element within the bore of said piston receiving member, so as to cause a continuous repititive flow of said test fluid to and from said bore to thereby generate electrical signals across said electrodes;
g. means for amplifying said electrical signals generated across said electrodes and means for utilizing said amplified signals;
h. means for conducting said electrical signals generated across said electrodes from said electrodes to said means for amplifying said electrical signals and said means for utilizing said amplified signals;
i. means for synchronizing said conduction of said electrical signals with the action of said reciprocating element;
j. an ultrasonic cleaning device disposed adjacent to said piston receiving member and said casing for generating mechanical vibrations to prevent an agglomeration of said charge-influencing species contained by said test fluid in the area about said electrodes,
and wherein said jet wash apparatus comprises:
a connector receptacle connected in fluid communication

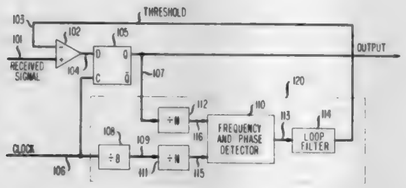
with the bottom of said longitudinal element of said cross-shaped tubular member;
a cleaning fluid inlet means connected in fluid communication to the bottom of said connector receptacle, said cleaning fluid inlet means having an adjustable valve;
a conduit connected in fluid communication at its bottom end to said cleaning fluid inlet means and fluidly communicating with said piston receiving member at its top end.

4,449,102

ADAPTIVE THRESHOLD CIRCUIT

Gerald L. Frazer, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 15, 1982, Ser. No. 358,310
Int. Cl.³ H03K *5/08, 5/153*
U.S. Cl. 328—162 **10 Claims**



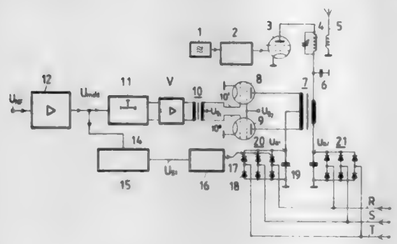
1. Apparatus for use in a digital transmission system wherein the digital signal forms at least one reoccurring signal-eye surrounded by a region of intersymbol interference in the voltage-time domain, said apparatus being characterized by
means (e.g., **102, 105**) for sensing the amplitude of the digital signal relative to a threshold at discrete times which coincide with said signal-eye; and
means (e.g., **108, 110, 114**) responsive to the sensed amplitude for generating a correction signal which drives said threshold solely toward a predetermined level relative to said signal-eye, said level passing only through said region of intersymbol interference.

4,449,103

HIGH POWER CLASS B MODULATION AMPLIFIER FOR A BROADCAST TRANSMITTER

Bohumil Kyrian, Windisch, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 4, 1981, Ser. No. 327,588
Claims priority, application Switzerland, Dec. 12, 1980, 9173/80
Int. Cl.³ H03F *3/26*
U.S. Cl. 330—123 **6 Claims**



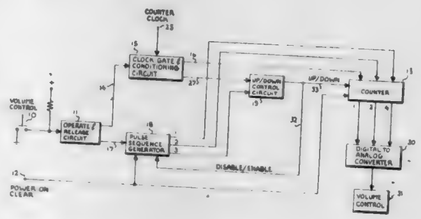
1. A high power class B modulation amplifier for a broadcast transmitter, comprising:
first and second high power amplifying means connected for push-pull operation to a primary winding of a modulation transformer;
preamplifying means for amplifying an incoming audio signal to a level sufficient for controlling the operation of said first and second high power amplifying means;
a modulator rectifier including at least one controllable rectifier provided for deriving a variable D.C. power supply voltage for said first and second high power amplifying means from an A.C. line voltage;
a voltage control stage provided for deriving a control signal from said incoming audio signal, said control signal corresponding at least partially to the envelope of said incoming audio signal and following the amplitude of said envelope with a presettable response time; and
a control device connected to the output of said voltage control stage provided for delivering an output signal to said at least one controllable rectifier in accordance with said control signal, so that said variable D.C. power supply voltage varies in accordance with said control signal.

4,449,104

CIRCUIT FOR CONTROLLING THE OUTPUT LEVEL OF AN ELECTRONIC DEVICE

William C. Agnor; Edwin C. Lafferty, both of Lynchburg, and Samuel Toliver, Rustburg, all of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Apr. 23, 1982, Ser. No. 371,074
Int. Cl.³ H03G *3/02*
U.S. Cl. 330—279 **20 Claims**



1. An improved signal level control circuit comprising:
a. switch means having operated and released states;
b. input means coupled to said switch means for producing a counting signal in response to and during the time said switch means are operated, and for producing a trigger signal in response to said switch means being released;
c. counting means arranged to produce a sequence of up counts and a sequence of down counts alternately and repetitively in response to said counting signal;
d. control means coupling said input means to said counting means whereby said counting means produce said counts in response to said counting signal, and whereby said counting means produce a count in the same direction in response to said counting signal following said trigger signal;
e. and means coupled to said counting means for deriving an output therefrom.

4,449,105

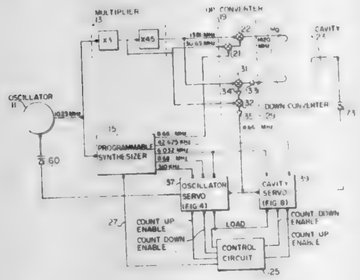
PASSIVE MASER USING TIMESHARING FOR CONTROL OF THE CAVITY AND CONTROL OF THE OSCILLATOR ON THE LINE OF STIMULATED EMISSION

Alick H. Frank, Springfield, and Joseph D. White, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1981, Ser. No. 265,129
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—3 **14 Claims**

10. A process for controlling a passive maser having a resonant cavity which contains a medium capable of stimulated emission, and which is excited by an injected signal, comprising the steps of:

producing from a signal picked off from the cavity a first error signal representing the difference between the carrier frequency of the injected signal and the frequency of the stimulated emission;
using the first error signal to adjust the carrier frequency;
producing from the picked-off signal a second error signal representing the difference between the resonance frequency of the cavity and the said carrier frequency; and



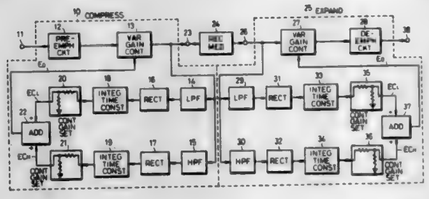
using the second error signal to adjust the resonance frequency,
wherein production of the second error signal is periodically inhibited and that the first error signal is produced only during the inhibition periods, and wherein the step of producing a first error signal includes comparing a signal that preserves the phase of the signal picked off from the cavity to a reference signal to produce a third signal whose pulse width represents their phase difference.

4,449,106

NOISE REDUCING APPARATUS

Yukinobu Ishigaki, Machida; Yutaka Haramoto, Zama, and Kaoru Totsuka, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 4, 1982, Ser. No. 354,863
Claims priority, application Japan, Mar. 10, 1981, 56-34148; Mar. 23, 1981, 56-41976
Int. Cl.³ H04B *1/64*
U.S. Cl. 333—14 **5 Claims**



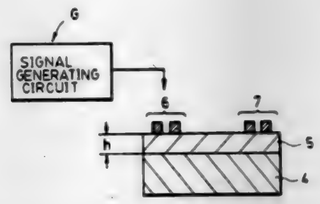
1. A noise reducing apparatus comprising:
a pre-emphasis circuit for performing a pre-emphasis operation with respect to an input signal;
a first variable gain control circuit for giving a level compression characteristic to an output signal of said pre-emphasis circuit, to produce an output signal to a transmission path;
a first control voltage producing circuit for dividing the output signal of said first variable gain control circuit into a plurality of frequency bands, to produce a plurality of control voltages respectively given mutually different integration time constants for each of the divided frequency bands;
a first weighting circuit for respectively and relatively weighting said plurality of control voltages obtained from said first control voltage producing circuit;
a first adding circuit for adding said plurality of control voltages obtained from said first weighting circuit, to obtain a first control voltage to be applied to said first variable gain control circuit;
a second variable gain control circuit for giving a level expansion characteristic to the level compressed signal obtained through said transmission path, said level expansion characteristic being complementary to said level compression characteristic;
a de-emphais circuit having a characteristic complementary to the pre-emphasis characteristic of said pre-emphasis circuit, for performing a de-emphasis operation with respect to an output signal of said second variable gain control circuit;
a second control voltage producing circuit for dividing the input signal of said second variable gain control circuit into a plurality of frequency bands, to produce a plurality of control voltages respectively given mutually different integration time constants for each of the divided frequency bands;
a second weighting circuit for respectively and relatively weighting said plurality of control voltages obtained from said second control voltage producing circuit; and
a second adding circuit for adding said plurality of control voltages obtained from said second weighting circuit, to obtain a second control voltage to be applied to the second variable gain control circuit.

4,449,107

SURFACE ELASTIC WAVE ELEMENT

Ryuichi Asai; Takeshi Okamoto, and Shoichi Minagawa, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,430
Claims priority, application Japan, Mar. 5, 1981, 56-31562; Sep. 7, 1981, 56-139724; Sep. 30, 1981, 56-153826; Sep. 30, 1981, 56-153825; Sep. 30, 1981, 56-153827; Oct. 9, 1981, 56-160062; Oct. 12, 1981, 56-163148
Int. Cl.³ H03H *9/145, 9/25, 9/42*
U.S. Cl. 333—150 **14 Claims**



1. A surface elastic wave element which comprises:
a (110)-oriented silicon substrate;
a zinc oxide layer grown on said substrate; and
electrodes formed on said zinc oxide layer.

4,449,108

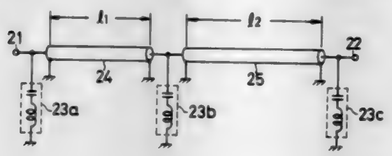
BAND-STOP FILTER FOR VHF-UHF BAND

Haruyoshi Endo, Sagamihara; Mitsuo Makimoto, Yokohama; Ko Kikuchi, Tokyo, and Sadahiko Yamashita, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Feb. 16, 1982, Ser. No. 348,768
Claims priority, application Japan, Feb. 17, 1981, 56-22600
Int. Cl.³ H01P *1/202, 7/04;* H03H *7/01*
U.S. Cl. 333—202 **7 Claims**

1. A band-stop filter for VHF-UHF band, comprising:
(a) at least three series resonance circuits, one of said series resonance circuits being connected between an input terminal and ground, and another one of said series resonance circuits being connected between an output terminal and ground; and

(b) a plurality of transmission lines each connected between said series resonance circuits, said transmission lines having different electrical lengths from each other, one of said transmission lines having an electrical length which is shorter or longer than the quarter wavelength of the



center frequency of the stop band of said band-stop filter by more than 20 but less than 50 percent, while at least one of remaining transmission line or lines having electrical length which is equal to said quarter wavelength or shorter or longer than said quarter wavelength by less than 20 percent.

4,449,109

MAGNET SUPPORT COLLAR

Kimberly A. Paddock, Blaine, and Roy L. Ruth, Moundsview, both of Minn., assignors to Ball Corporation, Muncie, Ind.

Filed Nov. 8, 1982, Ser. No. 439,696
Int. Cl.³ H01F *1/00*
U.S. Cl. 335—212 **12 Claims**



1. Apparatus for correcting deflection distortion of an electron beam in a cathode ray tube assembly comprising:
an elongated strip extending around said cathode ray tube assembly, said elongated strip having a plurality of holes distributed along the length thereof;
a plurality of fasteners, each of said plurality of fasteners including a base portion and a shaft portion substantially perpendicular to said base portion, the shaft portion of each of said fasteners extending through a hole in said elongated strip, at least a portion of each shaft portion being bifurcated by a vertical slot;
a plurality of ring-shaped permanent magnets, each of said magnets being supported on the shaft portion of one of said plurality of fasteners, said bifurcated portion permitting easy insertion of said magnets onto said shaft portions while retaining said magnets in position thereon; and
means for attaching said elongated strip to said cathode ray tube assembly.

4,449,110

DEVICE FOR CHOCKING AN INVERTED TYPE CURRENT TRANSFORMER WHEN TRANSPORTED ON ITS SIDE

Jean C. Duchene, Le Bourget Du Lac, France, assignor to Alsthom-Atlantique, Paris, France

Filed Aug. 20, 1982, Ser. No. 409,806
Claims priority, application France, Sep. 17, 1981, 81 17547
Int. Cl.³ H01F *27/02*
U.S. Cl. 336—94 **5 Claims**



1. A device for chocking an inverted type current transformer when laid on its side, said transformer comprising:
a column insulator (2) having a base (3),
a metal enclosure (1) having a sidewall, said metal enclosure (1) being disposed at the top of said column insulator (2),
an active part disposed in said metal enclosure (1), said active part having a magnetic core (8) attached to said base (3) of the column insulator (2) by means of a mast (11) disposed within the column insulator (2),
said device comprising:
at least one jack disposed in said metal enclosure (1) between said sidewall thereof and an external surface of the toroidal magnetic core (8),
said at least one jack having a jack base (13) fixed to said sidewall of said metal enclosure (1) and having a bore extending in the direction towards said toroidal magnetic core (8),
said at least one jack further comprising a jack rod (15) sliding within the bore of said jack base (13),
said jack rod (15) including a threaded axial bore (19),
two stop screws (26, 27) of different lengths for selective projection into said jack base (13) bore from outside the metal enclosure (1) and for screwing into the threaded axial bore (13) in said jack rod (15), the longer stop screw (26) when the jack is extended, the shorter stop screw (27) when the jack is retracted, with the head of the longer stop screw (26) being formed with a threaded axial bore (35), and wherein the shorter stop screw (27) is screwed into said threaded axial bore (35) when not used to maintain said jack in its retracted position, and
holding means for holding the head of the longer stop screw (26) against the bottom of the jack base (13) when the jack is extended.

4,449,111

TRANSFORMER

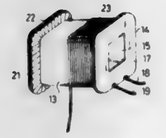
Tomoo Nakajima, Omiya, Japan, assignor to Tamura Seisakusho Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 349,260
Claims priority, application Japan, Jul. 17, 1981, 56-107079
Int. Cl.³ H01F *27/30*
U.S. Cl. 336—206 **4 Claims**

1. A transformer comprising a coil bobbin having at both axial ends opposing radially extending flanges and between said flanges an axial winding part, primary and secondary coils wound in superposed relation on said winding part between the flanges of said coil bobbin, and an insulator interposed between said primary and secondary coils, said insulator comprising a corrugated insulating base member wider than said winding part of the bobbin extending completely around said coil bobbin, and an insulating sheet member having substantially the same width as said winding part, said insulating base member having a strength relatively higher than that of said insulating sheet member and corrugated to have a plurality of

elevations extending in the direction perpendicular to the coil winding direction to provide extensibility to said insulating base, and having respective side portions of the insulating base bent to extend in the radial direction outwardly adjacent respective side edges of the insulating member along the inner





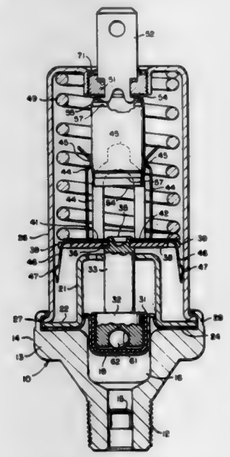
surfaces of both flanges, said corrugated insulating base member and insulating sheet member being formed to extend adjacent each other coaxially of said axial winding part between the flanges of said coil bobbin and between said primary and secondary coils.

4,449,112

OIL PRESSURE SENDER WITH ROLLING DIAPHRAGM

Richard E. Gould, Shelby, N.C., assignor to Fasco Controls Corporation, Shelby, N.C.

Continuation-in-part of Ser. No. 359,206, Mar. 18, 1982. This application Dec. 8, 1982, Ser. No. 447,779
Int. Cl.³ H01L *10/10*
U.S. Cl. 338—39 **28 Claims**



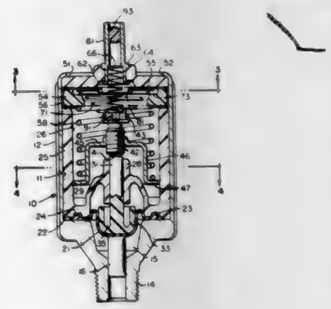
1. A fluid pressure transducer, comprising
a housing having a metal cover secured to one end thereof,
a flexible diaphragm secured over a cavity in said housing to communicate at one side with a fluid under pressure,
a variable resistor mounted in said cover and connected at one end to an electrical terminal on the exterior of said cover,
a plunger mounted to reciprocate between said resistor and said opposite side of said diaphragm in response to changes in the pressure of said fluid, and having thereon two sets of resilient contacts slidably engaged with said resistor and with said cover, respectively,
a coiled compression spring interposed between said cover and said plunger resiliently to resist movement of said plunger in one direction by said diaphragm, and
means for preventing said spring from applying a rotational torque to said diaphragm.

4,449,113

OIL PRESSURE SENDER WITH FRICTION FREE RESISTOR DEVICE

Richard E. Gould, Shelby, and William P. Page, Kings Mountain, both of N.C., assignors to Fasco Controls Corporation, Shelby, N.C.

Filed Jun. 22, 1983, Ser. No. 506,726
Int. Cl.³ H01L *10/10*
U.S. Cl. 338—39 **14 Claims**



1. A fluid pressure transducer, comprising
a housing closed at one end and having a fluid pressure inlet in its opposite ends,
fluid pressure sensing means in said housing including a plunger mounted in said housing to reciprocate between opposite ends thereof in response to changes in the pressure of the fluid supplied to said inlet,
a flat, spirally shaped resistor element mounted in said housing with its convolutions lying in a plane extending transversely of the direction of reciprocation of said plunger,
means for connecting said resistor element in a fluid pressure indicator circuit, including a conically coiled, electrically conductive spring element mounted in said housing adjacent said resistor element with the convolutions thereof registering coaxially with the convolutions of said resistor element, and
means connecting said plunger to one of said elements, whereby when said plunger is moved in one direction the convolutions of said spring element are progressively pressed into engagement with the registering convolutions of said resistor element, and are progressively disengaged from the convolutions of the resistor element when said plunger is moved in the opposite direction.

4,449,114

SYSTEM FOR IDENTIFYING AND DISPLAYING DATA TRANSMITTED BY WAY OF UNIQUE IDENTIFYING FREQUENCIES FROM MULTIPLE VEHICLES

Anthony C. Fascenda, Pacifica; Daniel L. Gregg, San Francisco, both of Calif., and Rollin W. Ache, Phoenixville, Pa., assignors to Dataspeed, Inc., Burlingame, Calif.

Continuation-in-part of Ser. No. 134,664, Mar. 27, 1980, abandoned. This application Mar. 26, 1982, Ser. No. 362,481
Int. Cl.³ G08B *1/12*
U.S. Cl. 340—988 **5 Claims**

1. A system for detecting and indicating relative location and speed of a number of vehicles on a closed racetrack where each vehicle generates a unique radio frequency identification signal, said vehicle making a plurality of laps around said

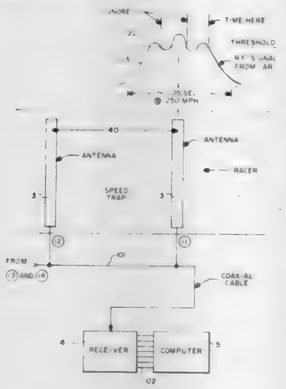
racetrack in a given race and also temporarily leaving and then re-entering said racetrack, said system comprising:

a plurality of antennas on said track at spaced locations for sensing said signals as said vehicles pass;

a first pair of antennas spaced relatively close together compared to the overall racetrack length to provide a speed trap;

a second pair of antennas spaced significantly greater apart than said first pair and located relatively far from said first pair;

common cable means for interconnecting all of said antennas for receiving said signals of various frequencies on a common transmission path;

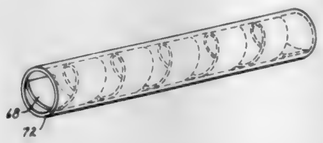


timing means connected to said cable means for recording elapsed times of vehicles between antenna locations having minimum valid times between said various antenna locations and having preset and different maximum times for the passage of a vehicle between said two antennas of said first pair and said antennas of said second pair, said maximum times being based on said antenna pair spacing and a minimum vehicle speed, said timing means including update means responsive to a vehicle not passing through one of said antenna pairs in said preset maximum time for said one antenna pair for updating the location of said vehicle to said other antenna pair, whereby the true location of said vehicle on said racetrack is established despite pitstops and/or mechanical difficulties.

4,449,115
APPARATUS FOR DETECTING FERROMAGNETIC MATERIAL

Ralph J. Koerner, Pomona, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 310,764, Oct. 13, 1981, which is a continuation-in-part of Ser. No. 197,173, Oct. 15, 1980, abandoned. This application Aug. 2, 1983, Ser. No. 519,214
Int. Cl.³ G08G *1/01*
U.S. Cl. 340—941 **40 Claims**



15. A passive apparatus for detecting a ferromagnetic material comprising:

a core having a major axis along its largest dimension and having orthogonal cross-sectional axes, said major axis of said core being at least partially aligned with the magnetic flux lines of the earth's magnetic field, said core consisting essentially of a permeable material which approaches saturation under the influence of said magnetic field intensity, said major axis being much larger than the smaller of said orthogonal cross-sectional axes;

a coil having a conductor surrounding said major axis of said core;

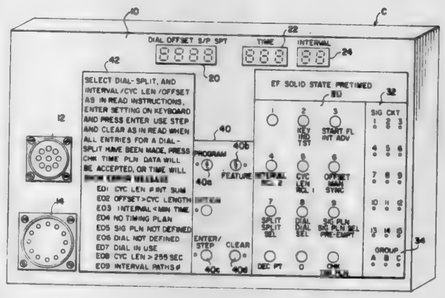
said coil and said core having an impedance measured from said coil; and

detection means coupled to said coil for monitoring impedance and for generating a signal indicative of the detection of said ferromagnetic material responsive to a change in said impedance.

4,449,116
ACTUATED DIGITAL PRETIMED TRAFFIC CONTROLLER

Frank W. Hill, Round Rock; William L. May, and Willard L. Kent, both of Austin, all of Tex., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Dec. 1, 1981, Ser. No. 326,226
Int. Cl.³ G08G *1/07*
U.S. Cl. 340—909 **11 Claims**



1. In a digital pretimed traffic controller of the type used to control traffic signals at an intersection during a selected signal cycle, said controller including a central processing unit, a read only memory means for storing the executive program for said controller and a plurality of programmed solid state camshaft simulating signal plans each having a number of distinct intervals to be processed in sequence during a cycle of said controller, a random access read/write memory means for storing a rotary dial simulating timing plan having stored duration times for each of said distinct intervals of each of said signal plans stored in said read only memory means, external cycle select means for activating one of said signal plans and one of said timing plans for processing by said controller in accordance with said stored executive program, and interfacing means for controlling the condition of said traffic signals in accordance with the selected cycle being processed by said controller, the improvement comprising: detector means for directing a demand signal to said controller, means for providing a plurality of different interval sequences in a selected portion of the selected cycle being processed and means for selecting one of said interval sequences in response to said demand signal.

4,449,117
ENCODER TRACKING DIGITIZER HAVING STABLE OUTPUT

Stephen M. Fortescue, Northridge, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Nov. 13, 1981, Ser. No. 321,333
Int. Cl.³ H03K *13/08*
U.S. Cl. 340—347 SY **2 Claims**

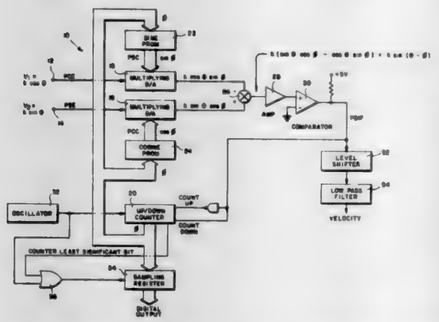
1. A digitizer for receiving analog signals representing the sine and cosine of an unknown angle and providing a digital output of the angle, comprising:

a bidirectional counter for providing a digital signal representative of a reference angle;

first means for providing digital signals representative of the sine and cosine of the reference angle;

multiplication means for providing a first analog signal representative of the product of the sine of the unknown angle and the cosine of the reference angle and a second analog signal representative of the product of the cosine of the unknown angle and the sine of the reference angle;

comparison means for comparing the first and second analog signals, wherein the output of the comparison means



causes the counter to vary the value of the reference angle until it is equal to the unknown angle, whereby the output of the counter is a digital representation of the unknown angle;

sampling means including a sampling register for receiving and storing the output of the counter and logic circuitry for controlling the operation of the sampling register; and

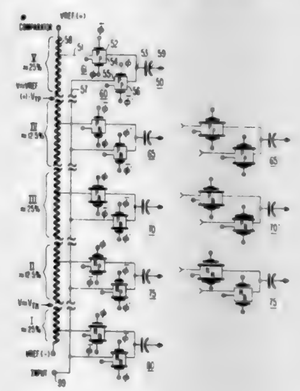
a clock for controlling the counting of the counter, wherein the logic circuitry receives a clock signal from the clock and a signal representing the least significant bit of the counter output and provides a control signal to the sampling register to receive the output of the counter on alternate counts thereof to thereby provide a stable digital output representation of the unknown angle.

4,449,118
SWITCHING CIRCUITRY AS FOR A FLASH A/D CONVERTER

Andrew G. F. Dingwall, Bridgewater, and Victor Zazzu, Montvale, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1981, Ser. No. 326,153
Int. Cl.³ H03K *13/02, 13/175*
U.S. Cl. 340—347 AD **12 Claims**

1. A flash A/D converter having a resistive ladder for establishing incrementally ascending reference potentials, a plurality of summing capacitors serially connected to respective input terminals of a like number plurality of selectively self biasing inverter circuits and a signal input terminal, said A/D converter having a plurality of switch means for alternately serially connecting respective ones of the reference potentials or input signal from said signal input terminal to respective ones of said plurality of summing capacitors, each of said plurality of switch means including at least two transistors of like type having an interconnection at one of said capacitors, one of said two transistors being connected to one of said reference potentials and the other of said two transistors being connected to said input terminal, the two transistors of ones of said plurality of switch means connected to a prescribed range of most positive reference potentials being P-type FET's precluding the capacitors connected thereto from being discharged below a predetermined first potential due to application of input signal potential to said signal input terminal less than said predetermined first potential and the two transistors of ones of said plurality of switch means connected to a prescribed range of most negative reference potentials being N-type FET's precluding the respective capacitors connected

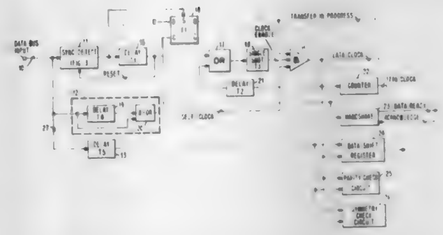


thereto from being charged above a predetermined second potential due to application of input signal potential to said input terminal greater than said predetermined second potential.

4,449,119
SELF-CLOCKING SERIAL DECODER

Craig A. Hanna, Vestal, and Edmund Lancki, Newark Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,621
Int. Cl.³ G06F *3/00*
U.S. Cl. 340—347 DD **18 Claims**



1. Apparatus connected to a data bus for producing clocking pulses from an asynchronously transmitted binary code word having a synchronizing wave form followed by a data word having at least one voltage level transition for said wave form and each said data bit comprising:

detection means responsive to said synchronizing wave form for producing a synchronizing detection signal;

delay means responsive to each said detection signal for producing a delayed detection signal; and

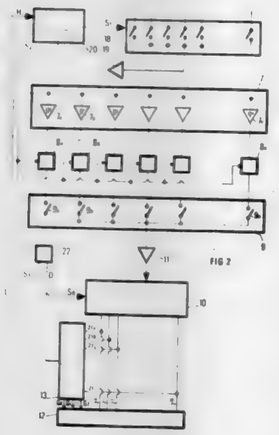
coincidence means connected to said code word bus, said detection means and said delay means for providing a clock signal upon the coincidence of a said voltage level transition, a said detection signal and a said delayed detection signal.

4,449,120

METHOD FOR AMPLIFYING MULTIPLEXED SIGNALS THROUGH DIFFERENT GAIN AMPLIFICATION UNITS FOR SELECTING AN OPTIMUM GAIN SIGNAL AND DEVICE THEREFORE

Joseph Rialan, Meudon, and Jacques Cretin, Le Chesnay, both of France, assignors to Institut Francais du Petrol, Ruell-Malmaison, France

Continuation of Ser. No. 95,124, Nov. 16, 1979. This application Feb. 10, 1982, Ser. No. 347,680
Claims priority, application France, Nov. 17, 1978, 78 32703
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD 16 Claims



1. In a method for amplifying multiplexed analog signals having amplitudes subject to large variations, such that the gain amplification of the signals is optimized for subsequent digitization in an analog-to-digital converter and recording thereof, the method comprising simultaneously and separately amplifying each analog signal received, in parallel connected amplifying means, to different specified gain levels for obtaining a plurality of amplified analog signals corresponding to predetermined amplification gains, each predetermined gain being different from the others, selecting the optimum gain amplified analog signal, and transmitting said optimum gain signal by switching means to the analog-to-digital converter for digitization therein and subsequent storage, the improvement comprising performing the selecting by means of the following sequential steps:

(a) controlling the switching means to transmit one of the amplified analog signals from a predetermined one of said parallel connected amplifying means to the analog-to-digital converter for digitizing therein;

(b) generating a specific gain code signal from said digitized amplified analog signal transmitted from said predetermined one of said amplifying means; and

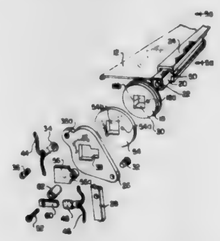
(c) controlling the switching means by supplying said specific gain code signal thereto and thereby causing said switching means to transmit the optimum gain amplified analog signal from the corresponding one of said plural amplifying means, whereby the optimum level amplified analog signal for the analog-to-digital converter is obtained in a rapid manner.

4,449,121

JALOUSIE WITH INTEGRAL ALARM CIRCUIT

Jesus M. Sosa, Interamericana 773 University Gardens, Rio Piedras, P.R. 00927

Filed Nov. 10, 1981, Ser. No. 319,936
Int. Cl.³ G08B *13/02*
U.S. Cl. 340—550 24 Claims



15. In an alarm system for use in with a jalousie window of the type comprising a plurality of pivotally movable blades, each blade being moved by an associated lever arm, and a movable operating bar connected to the lever arms to open and close the blades, the combination of

alarm circuit means comprising a first conductor, a second conductor, a source of electrical power feeding current to the first and second conductors and an alarm indicating device,

the first conductor energizing a first terminal, the second conductor energizing a second terminal, the first and second terminals defining an alarm circuit opening therebetween;

tube means forming a portion of each blade, at least some of the tube means being connected electrically to one of said conductors;

shaft means associated with each tube means and connected for rotation by a lever arm, at least some of the shaft means being connected electrically to the other of said conductors; and

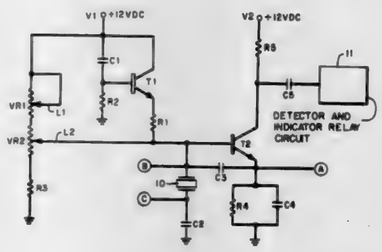
insulating means between a tube means and a shaft means to normally prevent contact therebetween to maintain the circuit opening.

4,449,122

PROXIMITY DETECTOR EMPLOYING A CRYSTAL OSCILLATOR

Melvin H. Whitmer, 2905 31st St., Zion, Ill. 60099

Filed Apr. 24, 1981, Ser. No. 257,212
Int. Cl.³ G08B *13/26, 21/00*
U.S. Cl. 340—562 10 Claims



1. A proximity detecting crystal oscillator circuit comprising:

biasing means for providing a variable voltage including a fixed source of DC voltage, a transistor having a base, collector and emitter, said collector being connected to said fixed source of voltage, a capacitor coupled between the emitter and base, a resistor coupled between said emitter and ground, a resistor coupled to the collector and to a supply lead, a three-lead range selecting variable resistor having a first lead coupled to the collector of said transistor, a second variable lead coupled to said first lead, and a third lead coupled to a first lead of a second three-lead variable resistor, said second variable resistor having a second lead coupled through a resistor to ground, and a third variable lead coupled to said supply lead;

crystal means including a crystal having first and second leads, said second lead being coupled to said supply lead;

impedance means comprising a first capacitor coupled between said first lead of said crystal and ground, a second capacitor connected on one side of said second lead, a third capacitor connected between the other side of said second capacitor and ground, and a current limiting resistor coupled in electrical parallel with said third capacitor;

output means for providing a crystal oscillation output signal from said crystal means comprising a second transistor having a base, collector and emitter, the base of said second transistor being coupled to the common point between the second and third capacitor, the collector of said second transistor being coupled through a resistor to said fixed source of DC potential and a coupling capacitor coupled to the collector of said second transistor to provide an alternating output signal when said crystal is oscillating, said first, second and third capacitors being set to such values that said crystal is in a selected one of the states of oscillation or non-oscillation;

means coupled to the impedance means for changing the capacitance of the impedance means in response to the proximity of a capacitance means thereto; and

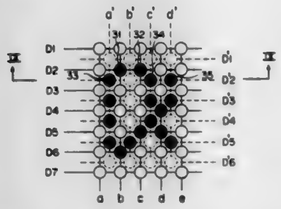
means responsive to the output from said output means for providing an alarm/indicator signal, said means coupled to said impedance means comprising capacitance varying means responsive to the proximity thereto of a body having at least a preselected capacitance for varying the capacitance coupled to said crystal means to alternatively instantaneously initiate or terminate oscillation produced by said crystal means independently of the rate of movement of the body relative to said means for varying the capacitance coupled to said crystal means.

4,449,123

DOT MATRIX TYPE MULTI-LAYER LIQUID CRYSTAL DISPLAY DEVICE

Yoshinobu Muranaga, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,745
Claims priority, application Japan, Dec. 14, 1979, 54-162598
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—716 8 Claims



1. A dot matrix type multi-layer liquid crystal display device comprising:

a liquid crystal display unit including at least two liquid crystal display sections, each liquid crystal display section including a liquid crystal sandwiched between two transparent base plates, and transparent electrodes arranged in the form of a dot matrix pattern, said transparent electrodes being provided on a transparent base plate, said dot matrix patterns of each liquid crystal display section having a plurality of rows and columns of dots, said rows and columns extending horizontally and vertically, respectively, in the plane of the respective display section;

means for arranging said liquid crystal display sections one above another such that the transparent electrodes of one liquid crystal display section are disposed without overlapping the transparent electrodes of the other liquid crystal display section when viewing in the vertical diection with respect to said transparent base plates, and said transparent electrodes of said one liquid display section projecting into the horizontal and vertical interstices between the transparent electrodes of the other liquid crystal display section when viewing in the horizontal direction with respect to said transparent base plates;

means for supplying a common drive signal to the transparent electrodes of one of said crystal display sections; and

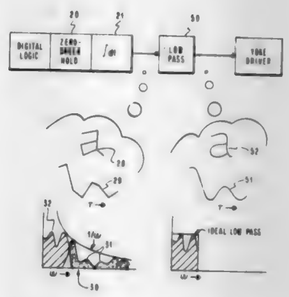
at least two decoding means coupled respectively to the liquid crystal display sections, said decoding means each decoding input data representing a character, a numeral of a symbol in synchronism with said common drive signal and supplying segment drive signals to the transparent electrodes of the respective liquid crystal display sections.

4,449,124

PRECOMPENSATED STROKE CATHODE RAY TUBE DISPLAY SYSTEM APPARATUS AND METHOD

Albert D. Edgar, Austin, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,221
Int. Cl.³ G09G *1/14*
U.S. Cl. 340—739 10 Claims



1. In a stroke display system for the display of images the improvement comprising in combination:

digital means providing a sequential digital signal pattern at a selected stroke frequency, said digital signal pattern being a function of the linear image to be displayed;

means to convert said digital signal pattern into a sequential analog voltage pattern;

beam deflection means;

analog filter means for filtering said analog voltage pattern; and

means for coupling the filtered analog voltage pattern to said beam deflection means to drive said deflection means;

said filter means substantially eliminating the effect on the deflected beam of the harmonic sidebands of said selected stroke frequency in said analog voltage pattern;

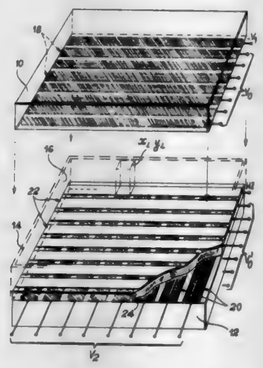
said digital means including means for precorrecting stroke endpoints to an extent necessary to compensate for errors in said filter means and in said beam deflection means.

4,449,125

MATRIX DISPLAY DEVICE

Jean F. Clerc, Meylan, and Jacques Robert, Ville d'Avray, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 31, 1981, Ser. No. 336,190
Claims priority, application France, Jan. 5, 1981, 81 00049
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—752 **7 Claims**



1. A matrix display device comprising a display cell constituted by two transparent insulating walls and by a material incorporating a plurality of zones distributed in matrix-like manner and having a first group of p rows of parallel electrodes placed on one of said insulating walls and a second group of q columns of parallel electrodes placed on the other of said insulating walls, said p rows and said q columns crossing one another, a zone x_i/y_j being defined by the region of the material covered by row x_i in which i is an integer such that $1 \leqq i \leqq p$, and by column y_j in which j is an integer such that $1 \leqq j \leqq q$, and means making it possible to supply excitation signals to the electrodes, said material having an optical property dependent on said excitation signals, wherein the device also comprises a third group of p rows of parallel electrodes, whose orientation is identical to that of the first group and placed on the second group of electrodes, whilst being electrically insulated from said second group by an insulating layer, so that the material is inserted between the first group of electrodes and the third group of electrodes and is in contact with said first and third groups of electrodes wherein the third group of electrodes is in the form of a matrix of point electrodes, each of said point electrodes being provided with a switch being operable to one of join said each point electrode to a constant potential conductor common to all the point electrodes of the same row in the group or to electrically insulate said each point electrode, with the control of each said switch being effected by a control conductor common to all the point electrodes in the same row of said third group.

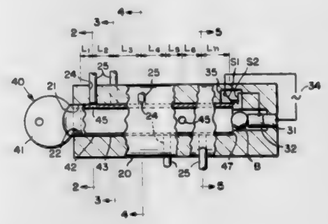
4,449,126

ELECTRONIC LOCK DEVICE AND OPTICAL KEY THEREFOR

Valery Pekker, 7 Squire La., Pittsford, N.Y. 14534

Filed Dec. 2, 1981, Ser. No. 326,533
Int. Cl.³ E05B *47/00*; H04Q *3/00*
U.S. Cl. 340—825.32 **5 Claims**

1. An electronic locking device, comprising
- a housing having therein an elongate, generally cylindrical keyway,
- a locking circuit associated with said housing and including a plurality of light-sensitive elements disposed, when energized, to unlock an associated locking mechanism,
- a key having an elongate, generally cylindrically shaped, one-piece shank similar in configuration to said keyway, and having on its outer peripheral surface a chordal flat which extends substantially the full axial length of the shank, and said shank being releasably insertable into an operative position in said keyway substantially coaxially thereof, and with said flat engaging a corresponding flat formed on the inner peripheral surface of said keyway thereby to prevent relative rotation between said shank and said keyway,
- a first plurality of separate light pipes mounted in said housing with one end of each pipe registering with one of a like plurality of spaced openings formed in the wall of said keyway intermediate its ends, and with the opposite end of each pipe confronting on one of said light sensitive elements,



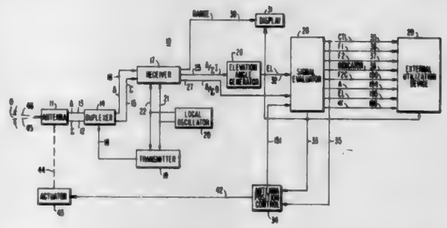
said shank having a light transmissive central section extending continouusly for substantially the full axial length of said shank, and surrounded by an opaque section having therethrough a second plurality of radial openings which are fixed angularly and axially relative to the axis of said shank, and
- means operable upon the placement of said shank into its operative position in said keyway to direct light from a common source thereof longitudinally through said shank and radially through said second plurality of openings into said one ends of certain only of said light pipes, thereby to energize only those light-sensitive elements confronting on the opposite ends of said certain light pipes.

4,449,127

SYSTEM AND METHOD FOR TRACKING TARGETS IN A MULTIPATH ENVIRONMENT

José A. Sanchez, Pasadena, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 10, 1981, Ser. No. 242,514
Int. Cl.³ G01S *13/44*
U.S. Cl. 343—7 A **54 Claims**



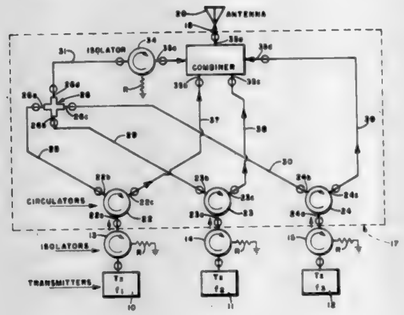
1. A method for determining the presence of multipath conditions when tracking a target with a radar comprising the steps of:
- transmitting a first signal with an antenna having a first predetermined beamwidth and directed in a first direction towards said target;
- receiving target reflected first signals with said antenna directed in said first direction;
- generating a first elevation signal from said target reflected first signals;
- transmitting a second signal with an antenna having a second predetermined beamwidth and directed in a second direction towards said target, said second direction being angularly offset in elevation from said first direction by a predetermined angle;
- receiving target reflected second signals with said antenna directed in said second direction;
- generating a second elevation signal from said target reflected second signals;
- subtracting said first and second elevation signals to provide an elevation difference signal; and
- generating a first signal indicative of multipath conditions at times said elevation difference signal exceeds a first predetermined value.

4,449,128

RADIO FREQUENCY TRANSMITTER COUPLING CIRCUIT

Colin B. Weir, Franklin, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 22, 1982, Ser. No. 360,877
Int. Cl.³ H01Q *5/00*
U.S. Cl. 343—858 **8 Claims**



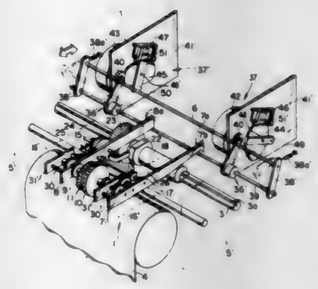
1. A circuit for coupling an antenna to the outputs of at least three transmitters comprising
- first, second and third circulators, each of said circulators having first, second and third ports with said first and second ports being adjacent and said second and third ports being adjacent, adjacent ports of each circulator being nonreciprocally connected, the first ports of said circulators being connected to said outputs, respectively, of the transmitters,
- a connector having first, second, third and fourth ports, the impedance at each of said ports of the connector being the same whereby a 3 to 1 voltage standing wave ratio is presented to any one port thereof by the other three ports thereof,
- a power combiner having first, second, third and fourth input ports and an output port,
- means for connecting the first port of said connector to the first port of said combiner,
- means for connecting the second ports of said circulators with equal phase delays to the second, third and fourth ports, respectively, of said connector, and
- means for connecting the third ports of said circulators with equal phase delays to the second, third and fourth ports, respectively, of said combiner,
- said output port of said combiner being connected to said antenna.

4,449,129

MULTIPLE POSITION RECORDER

Toshiaki Uesugi; Kazutaka Ogitani, and Toshikazu Inden, all of Oimachi, Japan, assignors to Chino Works Ltd., Saitama, Japan

Filed Mar. 15, 1982, Ser. No. 357,898
Claims priority, application Japan, Mar. 20, 1981, 56-39602
Int. Cl.³ G01D *9/28*
U.S. Cl. 346—61 **1 Claim**



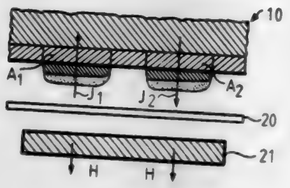
1. In a multiple position recorder having a carriage capable of controlled movement in a direction substantially perpendicular to the direction of travel of recording paper in accordance with an input control value;
- a figure print wheel and a dot print wheel, each disposed inside said carriage and descending to sequentially perform a predetermined at least one of a figure print recording and dot print recording on said recording paper;
- a figure print lever and a dot print lever pivotably attached inside said carrier so as to be capable of rocking at least one of said figure print lever, and having said figure print wheel and said dot print wheel pivotably attached at one end of each of said levers, respectively;
- and figure print wheel and said dot print wheel being operatively interlocked with a driving shaft extending in a moving direction of said carriage; and
- a check bar driven to rock and engage with the other end of said figure print lever and with the other end of said dot print lever in accordance with the rocking position thereof, thereby controlling the vertical descension of at least one of said figure print wheel and said dot print wheel;
- the improvement which comprises position detectors connected to said driving shaft for detecting the positions of printed dots and printed figures in synchronism with said driving shaft;
- a group of selection switches selected by an external operation;
- a dot print control motor driven by a print control circuit for a predetermined period when a output of a selected switch of said group of selection switches coincides with the output of said position detector;
- a figure and dot print check cam rotated by said dot print control motor and rocking said check bar to thereby effect said vertical descension of at least one of said dot print wheel and said figure print wheel;
- a figure print gap selection circuit for detecting position change-over signals obtained from said position detectors and generating a signal whenever said detected change-over signals equal a predetermined value;
- a figure print control motor driven for a predetermined period by the output signal of said figure print gap selection circuit; and
- a figure print check cam rotated by said figure print control motor to rock said check bar to thereby affect said vertical discension of at least one of said dot print wheel and said figure print wheel.

4,449,130

PROCESS AND MACHINE FOR MAGNETOGRAPHIC PRINTING (I)

Jean Magnenet, Belfort, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed May 20, 1982, Ser. No. 380,356
Claims priority, application France, Dec. 23, 1981, 81 24056
Int. Cl.³ G01D 15/12
U.S. Cl. 346—74.7 11 Claims



6. A magnetographic printing machine for printing an image in two preselected colors on a print carrier comprising a recording element (10) having a magnetic recording surface, a plurality of magnetic heads (13-1 through 13-n) controlled by electric pulses and adapted to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to produce thereon a group of magnetized points (A), driving means (25) for bringing about a relative displacement between the recording element and the magnetic heads (13*a*–13*n*), pulse generator means (28) for selectively transmitting electrical pulses to said heads, applicator means (40) to allow a powdery developer to be deposited onto said recording surface, said developer containing particles whose shade is one of the two preselected colors and remaining applied only to the magnetized points of said surface in order to produce a powder image, and a transfer station (44 45) to transfer said powder image to a print carrier; and

current-reversing means (27) connected between the magnetic heads (13-1 through 13-n) and the pulse generator (26) for selectively reversing the curent direction of the pulses emitted by said generator so as to produce on the recording surface a latent magnetic image whose magnetic points have the same intensity of magnetization (J_1, J_2) but with opposite polarities, the magnetic polarity of the points intended to produce powder-image parts in one of said colors being opposite to that of the points intended to produce the other parts of said image

a second applicator means (42) located between the transfer station (44, 45) and the first applicator means (40) for depositing a second powdery developer on said recording surface, said second developer containing particles whose shade is that of the other of said colors, said second developer remaining applied only to the magnetized points of said surface and being superimposed on the first powdery developer; and

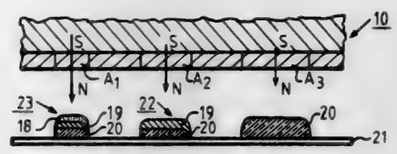
magnetic-field generator means (21) at the transfer station for applying a constant magnetic field to said recording surface in a direction perpendicular to said surface, the amplitude (H) and the direction of said magnetic field being such as to reduce the intensity of magnetization of the magnetized points intended to produce on the carrier powder image parts whose color is that of said first powdery developer and to increase the intensity of magnetization of the other magnetized points, so that the sole second developer, which has been deposited onto the points whose magnetizations have been increased, is transferred to the print carrier, while the two developers, which have been deposited onto the points whose magnetizations have been reduced are transferred to said carrier in superimposed layers.

4,449,131

PROCESS AND MACHINE FOR MAGNETOGRAPHIC PRINTING (III)

Jean Magnenet, Belfort, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed May 20, 1982, Ser. No. 380,358
Claims priority, application France, Dec. 23, 1981, 81 24059
Int. Cl.³ G01D 15/12
U.S. Cl. 346—74.7 9 Claims



6. A magnetographic printer for obtaining on a carrier an image in p previously chosen colors, p being a whole integer equal to at least 2, comprising a recording element (10) having a magnetic recording surface, a plurality of magnetic heads (13-1 through 13-n) controlled by electric pulses and adapted to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to form a group of magnetized points (A) thereon which produce a latent magnetic image, driving means (25) for causing a relative displacement between the recording element (10) and the magnetic heads (13-a through 13-n), a pulse generator (26) adapted to emit electric pulses selectively to said heads, and an applicator means (40) to allow a powdery developer to be deposited onto said recording surface, said developer remaining applied only to the magnetized points of said surface to form a powder image, said developer including particles whose shade is of the first of the p previously selected colors,

frequency-generating means (27) controlled by the pulse generator (26) and, in response to each pulse provided by said generator, adapted to energize selectively the magnetic heads (13-1 through 13-n) and to enable each of said heads to be energized by one of p periodic direct currents having the same intensity, said p currents having different frequencies with the values f_1, $f_2 \ldots f_p$, and thus to produce on the recording surface a latent magnetic image whose magnetized points (such as A_1, A_2, A_3) have the same magnetic polarity but different intensities of magnetization (J_1, J_2, J_3), said points having different sizes L_1, L_2, $\ldots L_p$, such that $L_1 < L_2 \ldots < L_p$,

each of said values being associated with a corresponding one of said p colors, such that the magnetized points, intended to produce image parts which, on the print carrier (21), appear in the same color, all having the same size;

(p-1) other applicator means (42, 44) distributed along the path followed by the recording surface during its displacement, each of said applicator means enabling the depositing, on each magnetized point of said surface, of a layer of each of the (p-1) other powdery developers, each of said (p-1) developers having as a shade one each of said colors other than the first color;

(p-1) retouching means (41, 43) each fitted downstream, in relation to the direction of surface displacement, to each of said applicator means (40, 42), except the last one (44), the first of said retouching means (41) being arranged so as to removing the first developer (18) from the magnetized points (such as A_2, A_3) whose size is greater than L_1, the second retouching means (43) being arranged to remove the second developer (19) from the magnetized points (such as A) whose size is greater than L_2, and

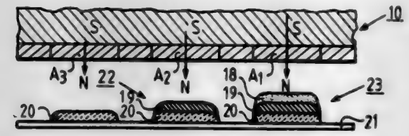
a transfer station (45) fitted downstream to the last applicator means (49) to transfer to the print carrier practically all the various developer layers covering the magnetized points of the surface when said points move past said last applicator means.

4,449,132

PROCESS AND MACHINE FOR MAGNETOGRAPHIC PRINTING (II)

Jean Magnenet, Belfort, France, assignor to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull, Paris, France

Filed May 20, 1982, Ser. No. 380,404
Claims priority, application France, Dec. 23, 1981, 81 24055
Int. Cl.³ G01D 15/12
U.S. Cl. 346—74.7 9 Claims



6. A magnetographic printer for obtaining on a carrier an image in p previously chosen colors, p being a whole integer equal to at least 2, comprising a recording element (10) having a magnetic recording surface, a plurality of magnetic heads (13-1 through 13-n) controlled by electric pulses and adapted to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to form a group of magnetized points (A) thereon which produce a latent magnetic image, driving means (25) for causing a relative displacement between the recording element (10) and the magnetic heads (13-a through 13-n), a pulse generator (26) adapted to emit electric pulses selectively to said heads, and an applicator means (40) to allow a powdery developer to be deposited onto said recording surface, said developer remaining applied only to the magnetized points of said surface to form a powder image, said developer including particles whose shade is of the first of the p previously selected colors,

electric current-calibrating means (27) connected between the pulse generator (26) and each of the heads (13-1 through 13-n) so as to allow each of the current pulses emitted by said generator to be adjusted selectively to one of the p predetermined amplitude values and thus to form on the recording surface a latent magnetic image whose magnetized points (such as A_1, A_2, A_3) exhibit the same magnetic polarity but have different intensities of magnetization valued as J_1, J_2, $J_3 \ldots J_p$, each of said values $J_1 > J_2 > J_3 \ldots > J_p$, being associated with a corresponding one of said p values, such that the magnetized points, intended to produce image parts which, on the print carrier (21), appear in the same color, all having the same intensity of magnetization;

(p−1) other applicator means (42, 44) distributed along the path followed by the recording surface in the course of its displacement, each of said other applicator means capable of depositing onto each magnetized point of said surface a layer of each one of the (p−1) other powdery developers, each of said (p−1) developers having as a shade one each of said colors other than the first color;

(p−1) retouching means (41, 43) each fitted downstream, in relation to the direction of surface displacement, to each of said applicator means (40, 42), except the last one (44), the first of said retouching means (41) being arranged so as to remove the first developer (18) from the magnetized points (such as A_2, A_3) whose intensity of magnetization is less than J_1, the second retouching means (43) being arranged so as to remove the second developer (19) from the magnetized points (such as A_3) whose intensity of magnetization is less than J_2, and

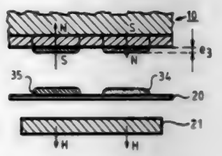
a transfer station (45) fitted downstream to the last applicator means (49) to transfer to the print carrier (21) all the various developer (18, 19, 20) layers which cover the magnetized points of the surface when said points move past said last applicator means.

4,449,133

PROCESS AND MACHINE FOR MAGNETOGRAPHIC PRINTING (IV)

Jean-Jacques Eltgen, Danjoutin, France, assignor to Compagnie Internationale pour L'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed May 20, 1982, Ser. No. 380,406
Claims priority, application France, Dec. 23, 1981, 81 24060
Int. Cl.³ G01D 15/12
U.S. Cl. 346—74.7 8 Claims



3. A magnetographic printing machine for obtaining on a carrier an image in two preselected colors comprising a recording element (10) having a magnetic recording surface, a plurality of magnetic heads (13-1 through 13-n) connected to be controlled by electric pulses and to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to produce thereon a group of magnetized points (A) which constitute a latent magnetic image, drive mechanism (25) adapted to bring about a relative displacement between the recording element and the magnetic heads, a pulse generator (26) connected to apply its electric output pulses selectively to said heads, an applicator means (40) for depositing a powdery developer onto said recording surface, said developer remaining applied only to the magnetized points of said surface in order to produce a powder image, a transfer station (41) for transferring said powder image to a print carrier (20), said first developer containing particles whose shade is one of the two preselected colors;

current-calibrating and reversing means (27) disposed between the magnetic heads (13-1 through 13-n) and the pulse generator (26) in order, on the one hand, to selectively reverse the current direction of the generator output pulses and, on the other, to adjust said pulses selectively to one of two values of predetermined amplitude and thus to produce on the recording surface a latent magnetic image whose magnetized amplitudes exhibit magnetization intensities of different amplitudes and of opposite magnetic polarities, the magnetized points adapted to produce images or parts thereof which, on the carrier, must appear in one of said colors all having magnetization intensities of the same amplitude J_1 and in the same direction, the magnetic polarity of said points being opposite to that of other magnetized points, said other magnetized points all having magnetization intensities of the same amplitude J_2, such that $J_2 < J_1$;

a first retouching means (41) located, with respect to the direction of movement of the surface, downstream of said applicator means (40) and designed to dislodge said first developer from the magnetized points whose magnetization intensity is less than J_1;

a second applicator means (42) located between the transfer station (45) and the first applicator means (40) designed to deposit a second powdery developer onto said recording surface, said second developer containing particles whose shade is that of the other of said colors, said second devel-

oper remaining applied only to the magnetized points of said surface; and

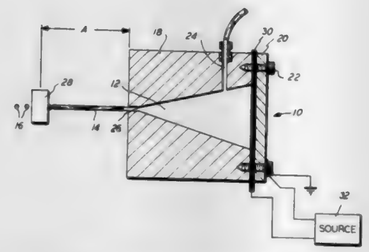
a second retouching means (43) downstream of said second applicator means (42) and comprising a magnetic field generator (56) to apply a constant magnetic field to said recording surface, said field being oriented in a direction opposite to the magnetization intensity J_1, the amplitude of said field being designed to modify the amplitudes of the magnetization intensities of the magnetized points and to render them practically equal when said magnetized points move past said second retouching means (43) so that, following said passage, each of the magnetized points, whose magnetization intensity was equal to J_2, is coated with a single layer of the second developer, while each of the magnetized points, whose magnetization intensity was equal to J_1, is coated with a single layer of the first developer, both developers thus forming a powder image in two colors on the recording surface.

4,449,134

COMPOSITE INK JET DRIVERS

Doyle P. Skinner, Jr., Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,683
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **8 Claims**



1. A method of fabricating a composite ink jet drive member comprising the steps of:

forming a planar base layer of polymeric material;

applying a first, substantially uniformly thick layer of discrete particles of piezoelectric ceramic material to said base layer;

covering said first layer of ceramic particles with a second planar layer of polymeric material to form a sandwich of ceramic particles between layers of polymeric material;

exerting a pressure on said sandwich of ceramic particles at an elevated temperature to form a composite drive member having two outer surfaces, so that said layers of polymeric material are squeezed towards each other to fill interstices between said ceramic particles while concurrently causing the ceramic particles to be continuously connected throughout the thickness of the composite drive member in the direction that the pressure is applied, said ceramic particles adjacent the outer surfaces of the composite drive member having surface portions which extend through the polymeric material for electrical contact at the outer surfaces of the composite drive member; and

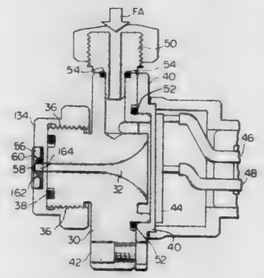
poling said composite drive member with an electric field to cause a piezoelectric response therefrom.

4,449,135

INK EJECTION HEAD

Michio Umezawa, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,038
Claims priority, application Japan, Dec. 23, 1981, 56-207139; Dec. 23, 1981, 56-207140
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



1. An ink ejection head having a body and a nozzle member fixed to the head through a nozzle holder, the nozzle member being machined to be formed with a generally cup-shaped recess first and then a nozzle hole, comprising:

an ink chamber formed within the head body to be supplied with ink from outside the head;

a spacer for filling a space defined between the wall of the cup-shaped recess and the nozzle holder; and

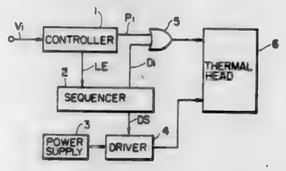
a through passageway formed in said spacer to provide fluid communication between the ink chamber and the nozzle hole.

4,449,136

DRIVING SYSTEM FOR THERMAL RECORDING HEAD

Hafuhiko Moriguchi, and Takashi Ohmori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 357,936
Claims priority, application Japan, Mar. 16, 1981, 56-36498
Int. Cl.³ G01D *15/10*; H05B *3/00*
U.S. Cl. 346—76 PH **9 Claims**



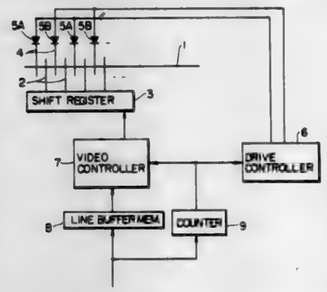
1. In a driving system for a thermal recording head, the timing of line information recording of which is non-periodic, the improvement comprising waste heat supplement signal generating means for periodically generating a waste heat supplement signal of uniform pulse width during an idle time between adjacent line recording operations, and a driver driven synchronously with said waste heat supplement signal, said thermal head being periodically excited with impressed energy to an extent so as not to cause recording during the idle time between line recording operations.

4,449,137

DRIVING METHOD FOR THERMAL RECORDING HEAD

Toshiharu Inui; Haruhiko Moriguchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1982, Ser. No. 361,158
Claims priority, application Japan, Mar. 24, 1981, 56-41715
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **6 Claims**



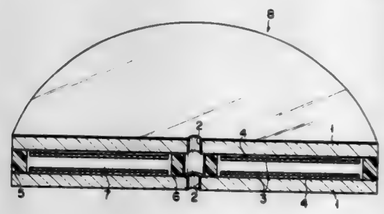
1. In a method of driving a thermal recording head of a thermal recorder which is provided with a plurality of heating elements actuated selectively according to a picture signal, the improvement comprising; examining a picture signal of each line to discriminate whether it includes information to be printed, and preheating said heating elements by driving them up to a predetermined temperature only when said picture signal contains no information to be printed, said predetermined temperature being selected so as to be less than a thermal recording temperature.

4,449,138

INFORMATION RECORDING MEDIUM

Hideo Ando, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 13, 1982, Ser. No. 368,088
Claims priority, application Japan, Apr. 15, 1981, 56-56718; Apr. 15, 1981, 56-56719; Apr. 16, 1981, 56-57552; Apr. 16, 1981, 56-57553; Apr. 17, 1981, 56-57890; Apr. 20, 1981, 56-59537
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **20 Claims**



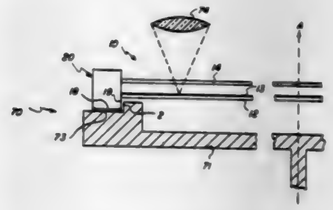
1. An information recording medium, comprising a pair of disk-shaped transparent substrates disposed apart from each other; intermediate transparent protective layers each formed on the inner surface of the substrate; and optical information recording layers each consisting of an energy-absorbing layer or light reflective layer and formed on the intermediate transparent layer.

4,449,139

OPTICAL DISC UNIT, FABRICATION METHOD AND COOPERATING WRITE AND/OR READ APPARATUS

Frederick F. Geyer, and Eric M. Leonard, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 264,313, May 18, 1981, Pat. No. 4,365,258. This application Aug. 26, 1982, Ser. No. 411,773
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ G01D *15/32*
U.S. Cl. 346—137 **27 Claims**



1. For use with optical disc apparatus of the kind adapted for the optical writing and/or reading of high density information and including lens means for focusing write and/or read light within an apparatus focal zone and turntable means having a surface which is rotatable about an axis in a first plane that is substantially normal to said axis and accurately located with respect to said lens means, an optical disc-unit comprising:

(a) an optical disc including a flexible, disc-shaped support and having a write and/or read portion;

(b) a disc cover opposing said record area and comprising a flexible, disc-shaped sheet which is highly transparent to such writing and/or reading light wavelengths; and

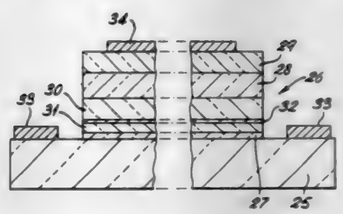
(c) annular retaining means, engaging said support and said sheet around their peripheral regions, for holding the write and/or read optical disc portions and opposing portions of the cover sheet in spaced relation, said disc-unit including means for positioning said unit on said surface of such apparatus turntable means so that said write and/or read portion is accurately located with respect to such apparatus focal zone.

4,449,140

SEMI-CONDUCTOR BARRIER SWITCHING DEVICES

Kenneth Board, Mayals, England, assignor to National Research Development Corporation, London, England

Filed Dec. 24, 1981, Ser. No. 334,382
Int. Cl.³ H01L *29/00, 29/90, 29/48, 29/12*
U.S. Cl. 357—7 **13 Claims**



1. A switching device comprising:

a body of semi-conductor material,

means for injecting carriers of one type into the body,

a first terminal coupled to the said means,

a barrier region of the body formed by semi-conductor material having the said one type of carriers as majority carriers, and barrier region separating adjacent first and

second further regions of the body, with the first region between the said means and the barrier region, and

a second terminal coupled to the body on that side of the second region which is remote from the barrier region,

the dimensions of the barrier region and its composition in relation to the first and second further regions being such that when the device is unbiassed the barrier region is substantially depleted of the said majority carriers, and

the concentration of any majority carriers of opposite type to the said one type in the first further region being not substantially more than twice as great, when the device is unbiassed, than in the second further region.

4,449,141

VARIABLE CAPACITOR

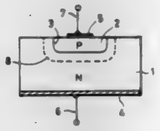
Yasuo Sato, and Takamasa Sakai, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,359

Claims priority, application Japan, Dec. 18, 1980, 55-180060

Int. Cl.³ H01L *29/92*

U.S. Cl. 357—14 **19 Claims**



10. A variable capacitor, comprising: a semiconductor substrate, said substrate having a different carrier concentration in the region of each of a plurality of spaced first locations thereon; plural depletion layer control electrode means, each said depletion layer control electrode means being provided on said substrate at a respective one of said first locations; plural capacitance electrode means, each said capacitance electrode means being provided on said substrate in the region of a respective one of said first locations and being connected to a common first terminal; a second terminal and means connecting said second terminal to a second location on said substrate which is spaced from each of said first locations; and means for applying a common variable bias voltage between said second terminal and each of said depletion layer control electrode means, said bias voltage producing a depletion layer in said substrate in the region of each said depletion layer control electrode means, each said depletion layer having a thickness which is dependent on the magnitude of said bias voltage and each said depletion layer inducing a capacitance between the associated capacitance electrode means and said second location, the magnitude of such capacitance being dependent on the magnitude of said bias voltage and on the carrier concentration of said substrate in the region of the associated capacitance electrode means, the total capacitance provided between said first and second terminals being the sum of the capacitances between said second terminal and each of said capacitance electrode means and decreasing progressively as said bias voltage is increased.

4,449,142

SEMICONDUCTOR MEMORY DEVICE

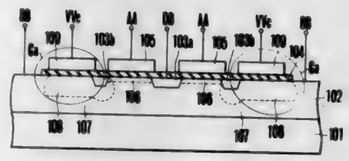
Toshiaki Tsuchiya, Iruma, and Manabu Itsumi, Hoya, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,460

Claims priority, application Japan, Oct. 8, 1980, 55-139917; Oct. 25, 1980, 55-149562

Int. Cl.³ H01L *27/04*; G11C *11/40*

U.S. Cl. 357—23 **13 Claims**



1. A semiconductor memory device comprising:

a substrate;

a first semiconductor region of a first conductivity type formed on said substrate;

a gate insulating film formed on said first semiconductor region;

a first gate electrode disposed on said gate insulating film;

a second semiconductor region of a second conductivity type formed in said first semiconductor region in relation with an end of said gate electrode;

a first charge storage portion formed apart from said second semiconductor region and in relation with the other end of said gate electrode; and

means for detecting conductivity of a buried channel formed between said substrate and a space charge layer which is formed in said first semiconductor region in accordance with an amount of electric charge supplied to said charge storage portion, said buried channel detecting means comprising a first external terminal connected to said second semiconductor region and a second external terminal connected to a portion of said first semiconductor region which is opposed to said gate electrode with said charge storage portion interposed therebetween, wherein the junction formed between said first and second semiconductor regions is forward biased during read-out.

4,449,143

TRANSCODEABLE VERTICALLY SCANNED HIGH-DEFINITION TELEVISION SYSTEM

Robert A. Dischert, Burlington, and Kerns H. Powers, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,847

Int. Cl.³ H04N *9/42*

U.S. Cl. 358—11 **15 Claims**

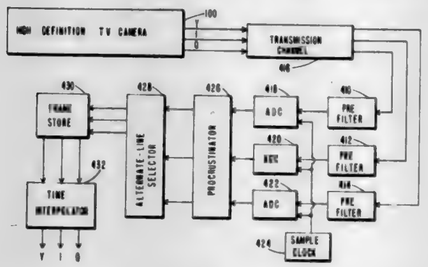
1. A mastering television video system adaptable for transcoding to systems having different numbers of horizontal lines per frame, comprising:

a controllable transducer for converting an image into a video signal by successive scans of the image;

scan control means coupled to said transducer for causing said transducer to scan said image in a vertical direction;

conversion means for converting from vertical to horizontal scan having a preselected number of horizontal lines per frame; and

coupling means for coupling said scan control means with said conversion means, said coupling means comprising prefiltering means for reducing aliasing resulting from the vertical-direction sampling represented by said conversion from vertical to horizontal scan.



4,449,144

APPARATUS FOR DETECTING MOVING BODY

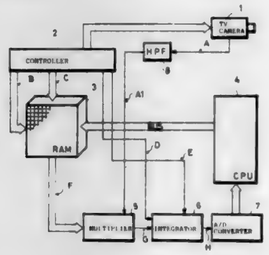
Masatoshi Suzuki, Shiga, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 25, 1982, Ser. No. 392,246

Claims priority, application Japan, Jun. 26, 1981, 56-100309; Jun. 30, 1981, 56-102698

Int. Cl.³ H04N *3/10*

U.S. Cl. 358—105 **9 Claims**



1. An apparatus for detecting a moving body comprising:

pickup means for picking up an object and delivering video signals thereof,

memory means for storing values of spatial filter function in corresponding relation to the picture elements of the pickup means,

means for successively reading out from the memory means the values of spatial filter function corresponding to the picture elements in synchronism with scanning by the pickup means,

means for multiplying the read-out spatial filter function values by the video signals from the pickup means,

means for integrating the multiplied signals for a required area, and

means for calculating required information as to the object from the result of integration.

4,449,145

INTELLIGENT TELETEXT DECODER

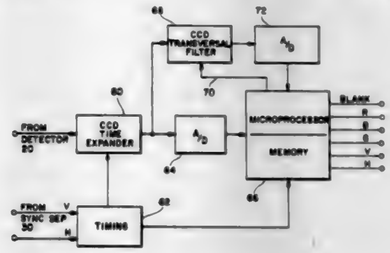
Walter S. Ciciora, Park Ridge, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 276,730, Jun. 24, 1981, abandoned, which is a division of Ser. No. 114,930, Jan. 24, 1980, Pat. No. 4,333,109. This application Jun. 13, 1983, Ser. No. 493,129

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.³ H04N *5/14, 7/04*

U.S. Cl. 358—147 **10 Claims**



1. A machine implemented method for use with a receiver which receives both transmitted digital format data signals and a transmitted reference signal, for equalizing said digital format data signals according to distortion exhibited by said reference signal and decoding said digital format data signals, comprising the steps of:

loading said reference signal into a time base expander having an input and an output in real time; then

applying the reference signal from the output of said time base expander at a selectable rate to another circuit and therein automatically and electronically calculating adjustment signals based on said reference signal for correcting said reference signal;

adjusting a filter having tap weights in accordance with an adjustment signal to obtain weighted taps;

loading said digital format data signals into said filter;

equalizing said digital format data signals in said filter, including generating weighted signals in accordance with the weighted taps and said digital format data signals in said filter thereby to obtain an equalized data signal; and then

decoding said equalized data signal.

4,449,146

INTEGRATOR CIRCUIT FOR SEPARATING VERTICAL SYNC PULSES

Gerald Lunn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,614

Int. Cl.³ H04N *5/10*

U.S. Cl. 358—154 **19 Claims**

1. An integrator circuit comprising;

a capacitor,

at least a first current source for discharging said capacitor,

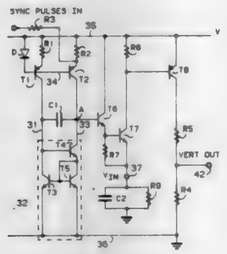
at least a second current source for charging said capacitor,

the magnitude of current provided by said second current source being greater than the magnitude of current provided by said first current source, and

a current mirror circuit having at least first and second current paths coupled to said first and second current sources, respectively.

19. The integrator according to claim 17 wherein

said integrator is incorporated as part of a TV receiver to separate vertical sync pulses from horizontal sync pulses and



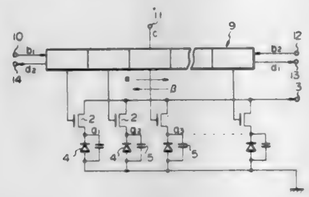
the magnitude of said bias is determined by the strength of a TV signal- received by said TV receiver.

4,449,147

SELF-SCANNING PHOTODIODE ARRAY

Fumihiro Ogasawara, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 207,102
Claims priority, application Japan, Nov. 19, 1979, 54-148909
Int. Cl.³ H04N *1/10, 3/12*
U.S. Cl. 358—212 **6 Claims**



1. A photosensor array including a plurality of photosensor elements characterized by comprising scanning means for selectively sequentially scanning the photosensor elements in a forward direction and a reverse direction;

the scanning means comprising a plurality of switch means connected between an output terminal of the array and the respective photosensor elements, shift register means having a plurality of parallel outputs connected to switch terminals of the respective switch means and shift means for shifting a signal through the shift register means, the signal turning on one of the switch means when the signal appears at the respective parallel output of the shift register means.

4,449,148

IMAGE DISPLAY APPARATUS

Shizuo Inohara, Toyonaka; Mitsuya Masuda, Kyoto; Sadahiro Iyehara, Suita; Minoru Ueda, Takatsuki, and Keisuke Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 28, 1982, Ser. No. 343,756
Claims priority, application Japan, Feb. 10, 1981, 56-18783; Feb. 18, 1981, 56-22729
Int. Cl.³ H04N *5/66, 9/12;* H04J *31/20*
U.S. Cl. 358—230 **8 Claims**

1. A video image display apparatus comprising:

an electron beam source for emitting at least an electron beam,

a phosphor screen having a phosphor layer which emits light at impingement by said electron beams,

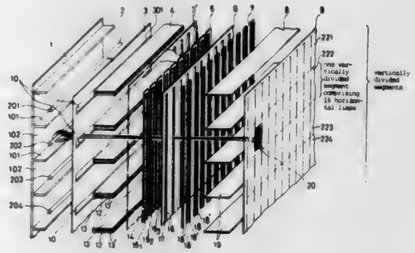
an electron beam convergence means for converging said electron beam in a manner that said electron beam is impinged on said phosphor screen forming a little spot,

an electrostatic deflection means for deflecting said electron beam prior to impingement on said phosphor screen,

an electron beam controlling means for controlling intensity of said electron beam thereby to control light emission from said phorphor screen,

said electron beam source being for emitting a predetermined number of horizontal rows of electron beams, for impinging corresponding vertically divided segments of said phorphor screen, and

said electrostatic deflection means being for at least vertical deflecting said electron beams thereby to display horizontal lines of a plural number in each vertically divided segment,



said electron beam source being for emitting a plural number of electron beams, simultaneously in a line at a time emission, which are disposed horizontally and

said each simultaneously emitted horizontal electron beams being deflected horizontally and vertically,

characterized in that a signal supplying means for supplying a signal for controlling said intensity of said electron beam to said electron beam controlling means,

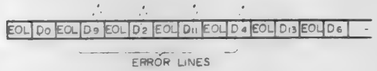
said signal supplying means comprises a pulse width modulation circuit which supplies a pulse signal, the width of which is modulated responding to a video signal information to be displayed, as said signal for controlling said intensity.

4,449,149

FACSIMILE APPARATUS

Mutsuo Ogawa, and Noboru Murayama, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,740
Claims priority, application Japan, Jul. 9, 1981, 56-106241
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **8 Claims**



1. A facsimile apparatus including a transmitter, comprising:

a scanner for scanning an original document and producing a continuous train of data carried on successive scan lines, the adjacent scan lines of data being distinguished from each other by an intervening end of line code;

scattering means for scattering the successive lines of data into a predetermined irregular order; and

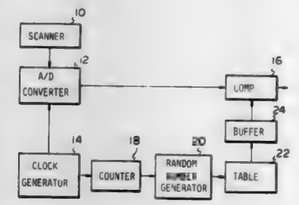
buffer means for storing the scattered scan lines of data and producing the stored data one scan line at a time in such a manner that after the "N" line of stored data has been fed out, the "N+M" line of stored data is fed out, where N and M are integers and M is not larger than +2 and not smaller than +2.

4,449,150

METHOD OF PROCESSING MEDIUM TONE PICTURE

Tomokazu Kato, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,417
Claims priority, application Japan, Jan. 19, 1981, 56-6151; Jan. 29, 1981, 56-12166
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—283 **19 Claims**



1. A method of processing a medium tone picture constituted by a plurality of picture elements comprising the steps of:

(a) scanning the medium tone picture and detecting the density levels of the picture elements;

(b) providing a plurality of threshold matrices, each matrix having a predetermined number of threshold components arranged in a pattern which is different from each other matrix;

(c) dividing the picture elements into a plurality of groups, each group having the same number of picture elements as the threshold components of each matrix;

(d) selecting one of the matrices at random and comparing the threshold components of the selected one of the matrices with the corresponding picture elements of one of the groups of picture elements respectively; and

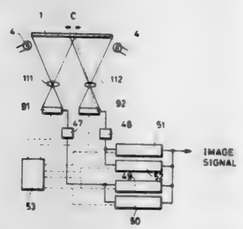
(e) determining the density level of each of the picture element to be a black density level when the density level of the picture element is higher than that of the corresponding threshold component and to be a white density level when the density level of the picture element is lower than that of the corresponding threshold component.

4,449,151

SOLID-STATE SCANNING APPARATUS

Takashi Yokota, Tokyo; Shigeru Yamazaki, Tanashi; Yoshiaki Kanmoto, Tokyo; Motoaki Kawazu, Kawasaki; Noboru Murayama, Machida, and Daisuke Abe, Misato, all of Japan, assignors to Ricoh Company, Ltd., Japan

Continuation-in-part of Ser. No. 270,119, Jun. 3, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,433
Int. Cl.³ H04N *1/02*
U.S. Cl. 358—293 **13 Claims**



1. A solid-state scanning apparatus for scanning the surface of an original to convert light information into an electrical image signal, comprising:

a housing;

holding means fixedly mounted to said housing for holding said original stationarily;

an optical system fixedly mounted on said housing including a solid-state line sensor and focusing means disposed in alignment with said solid-state line sensor which includes a plurality of image sensing devices arranged such that an overlapping scanning section is defined between the two adjacent scanning segments in a full single scanning line scanned by said plurality of image sensing devices;

a plurality of paired first and second storing means, each pair of which is connected to receive image data from the corresponding one of said plurality of image sensing devices;

control means for controlling the mode of operation of said first and second storing means such that while one of said first and second storing means is set is a write-in mode, the other is set in a read-out mode, said control means also controlling the operation of said plurality of image sensing devices and said plurality of paired first and second storing means in a predetermined manner in order to prevent the image information of said overlapping sections from appearing twice in a resulting output image signal;

a mirror system provided to reciprocate along a predetermined path for leading the light information of said original to said solid-state line sensor of said optical system; and

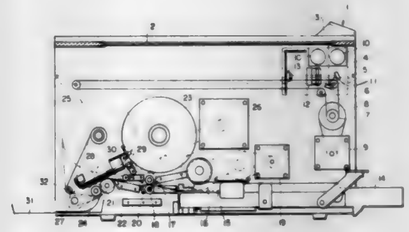
driving means for driving to move said mirror system along said predetermined path in a reciprocating manner.

4,449,152

COPYING MACHINE

Masami Kurata; Fujio Moriguchi; Yoshiki Kikuchi; Haruhiko Moriguchi, and Takashi Ohmori, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,468
Claims priority, application Japan, Dec. 10, 1980, 55-174069
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—296 **21 Claims**



1. A thermal recording type copying machine, comprising:

a platen for arranging an original thereon, said original having image information thereon;

a read unit for reading the image information of the original during relative movement of said platen and read unit and for converting the read image into electrical picture signals;

a stationary thermal recording head having heating elements for generating heat in accordance with said electrical picture signals;

conveying means for conveying an ink donor member and a sheet of cut paper in juxtaposition to each other, while being in close contact under pressure, past said heating elements of said thermal recording head; and

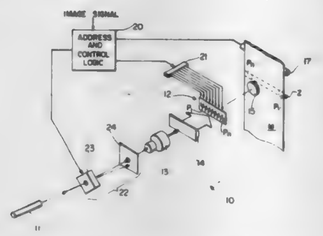
means for separating only said cut paper having an image recorded thereon from said ink donor member and for discharging said cut paper in a stacked fashion.

4,449,153

LIGHT VALVE IMAGING APPARATUS AND METHOD HAVING SUPPLEMENTAL EXPOSURE CONTROL

Pin-Seng Tschang, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 16, 1982, Ser. No. 389,121
Int. Cl.³ H01J 40/14; H04N 1/46, 1/12; G03G 15/01
U.S. Cl. 358—296 **8 Claims**



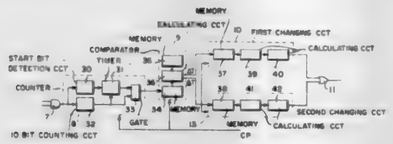
1. In electronic imaging apparatus of the type including (1) a linear light valve array which comprises a plurality of discrete, pixel portions independently activatable between light transmitting, "on," and non-transmitting, "off," conditions by selective application of an electrical field, (2) illuminating means for directing light uniformly toward all said pixel portions of said array and (3) addressing means for independently activating said pixel portions to appropriate "on-off" conditions according to image content of a line to be reproduced thus defining an information-address period, the improvement comprising supplemental exposure control means, positioned to control light passing between said illuminating means and said array and operative within each such information-address period, for modulating the intensity of light from said illuminating means.

4,449,154

SAMPLING TIME CONTROL CIRCUIT FOR USE IN AN AUDIO CASSETTE TAPE DATA PROCESSOR

Souichi Ohnishi, Yao, and Kensaku Komai, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 123,480, Feb. 21, 1980. This application Aug. 28, 1981, Ser. No. 297,357
Claims priority, application Japan, Feb. 21, 1979, 54-19962; Feb. 21, 1979, 54-22314[U]
Int. Cl.³ G11B 5/09
U.S. Cl. 360—51 **8 Claims**



1. Data reading means for determining a compatible data sampling interval for reading previously recorded data from a cassette tape, said tape having selected initial data thereon representative of actual data sampling intervals corresponding to the recorded speed of ensuing previously recorded data, comprising:

input means for reading out said selected initial data from said cassette tape;

regulating means having reference data sampling interval information stored therein and responsive to said input means for comparing said actual data sampling intervals for said recorded data with said reference data sampling interval information and providing a control signal representative of a compatible data sampling interval for reading ensuing data from said tape; and

data readout means, responsive to said control signal and said ensuing data from said cassette tape, for sampling said ensuing data over said compatible sampling intervals, said data readout means including,

normalized memory means for receiving and storing said control signal,

data receiving means for determining actual perceived data sampling time intervals for said ensuing data,

comparison means responsive to said stored control signal and said data receiving means for determining a condition of identity between said actual perceived data sampling and compatible time intervals and providing an enabling signal in response thereto;

holding memory means for receiving said ensuing data sampled over said compatible sampling time intervals; and

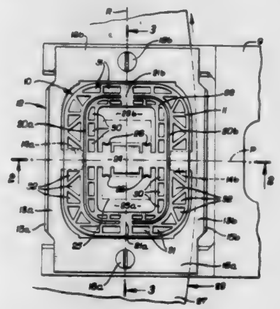
gate means, responsive to said enabling and control signals, for sampling said ensuing data over said compatible sampling time intervals and admitting the sampled data to said holding memory means.

4,449,155

GIMBAL ASSEMBLY FOR FLYING MAGNETIC TRANSDUCER HEADS

Markus Meier, Carpinteria, and David A. Sutton, Santa Ynez, both of Calif., assignors to DMA Systems Corporation, Goleta, Calif.

Filed Nov. 16, 1981, Ser. No. 321,336
Int. Cl.³ G11B 21/20, 5/60
U.S. Cl. 360—104 **3 Claims**



1. In an apparatus of the type including a transducer head adapted for flying on a fluid bearing in close proximity to a transducing surface and gimbal means to which said head is mounted for flying so as to provide flexural freedom of rotation of said head around predetermined axes parallel to said surface and flexural freedom of translation in the direction of an axis perpendicular to said surface while restraining rotation of said head about said axis perpendicular to said surface and translation of said means in directions parallel to said surface, said gimbal means comprising a thin, resilient, gimbal sheet having an external shape and interior openings defining a first ring attachable to gimbal sheet support means at substantially opposite points on said first ring and a second ring spaced apart from said first ring and attached to it by a pair of webs intersecting said first ring at opposite interior edges between the points at which said first ring is attached to said gimbal sheet support means, said second ring being attached to said transducer head at point between said two webs, the improvement wherein:

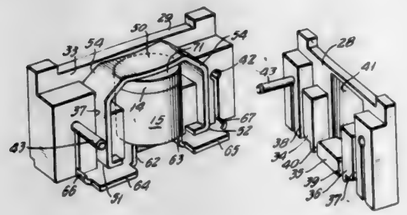
both of said first and second rings have material removed therefrom to form openings therein which form a truss-type structure to reduce the stiffness of said gimbal sheet in the direction of said axis perpendicular to said surface without significantly reducing the rigidity of said gimbal sheet in the plane thereof.

4,449,156

TELEPHONE CENTRAL OFFICE GAS TUBE REPLACEMENT PROTECTOR

Loren A. Singer, Jr., Mamaroneck, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,828
Int. Cl.³ H02H 7/20
U.S. Cl. 361—119 **1 Claim**



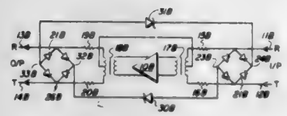
1. In an improved telephone protector module of a type having a channeled housing adapted to be engaged between a pair of resilient spring fingers on a protector block, the improvement comprising: a first contact element positioned within said housing and having an exposed surface thereon projecting externally of said housing to selectively contact one of said pair of spring fingers; a second contact element, positioned within said housing and having a second exposed surface thereon projecting externally in an opposite direction from said housing to simultaneously contact the other of said pair of spring fingers; a gas tube element, and a meltable solder washer disposed within said housing in aligned mutually contacting relation, one end surface of said pellet underlying said exposed surface of said first contact element, and one end of said gas tube element contacting said second contact element; said solder washer maintaining said first and second contacts in mutually spaced relation; whereby upon the engagement of said module between said first and second spring fingers, and the melting of said solder washer, the resultant force between said spring fingers serves to urge portions of said first and second contact elements into mutual contact to establish a path of conductivity bypassing said gas tube element.

4,449,157

SURGE PROTECTION FOR SIGNAL TRANSMISSION SYSTEMS

Peter E. K. Chow, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 27, 1982, Ser. No. 423,609
Int. Cl.³ H02H 9/04, 3/20, 7/20
U.S. Cl. 361—56 **7 Claims**



1. Surge protection means for a signal transmission system having a plurality of transmission lines each comprising a pair of conductors, said protection means comprising:

a first diode bridge having two cathode-anode nodes, each to be connected to a respective one of said pair of conductors of one transmission line;

a second diode bridge having two cathode-anode nodes each to be connected to a respective one of the pair of conductors of a second transmission line and;

a pair of surge diverter devices, one interconnecting a cathode-cathode node of said first bridge and an anode-anode node of said second bridge, the other device interconnecting an anode-anode node of said first bridge and a cathode-cathode node of said second bridge,

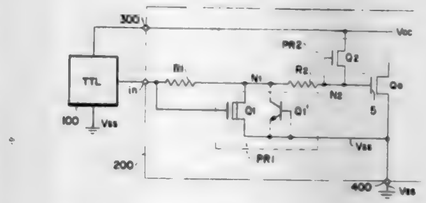
said surge diverter devices being adapted to switch from a high impedance state to a low impedance state when the voltage across the device exceeds a predetermined level.

4,449,158

INPUT PROTECTION CIRCUIT FOR MIS TRANSISTOR

Shigenobu Taira, Aizuwakamatsu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 4, 1981, Ser. No. 327,693
Claims priority, application Japan, Dec. 26, 1980, 55-186868
Int. Cl.³ H02H 9/04
U.S. Cl. 361—91 **7 Claims**



1. An input protection circuit formed on a substrate and connected to a main circuit MIS transistor having a first breakdown voltage, said MIS transistor to be protected from a high voltage applied to an input terminal, said protection circuit comprising:

receiving means for receiving supply voltage;

a first impedance element operatively connected to said input terminal;

a second impedance element operatively connected in series to said first impedance element at a first connecting point and operatively connected to said main circuit MIS transistor at a second connecting point;

first protection means, having a second breakdown voltage greater than said first breakdown voltage and a first mutual conductance, said first protection means including a first transistor and being operatively connected between said receiving means and said first connecting point, for preventing excess voltage at said main circuit MIS transistor; and

second protection means, having an ON and an OFF state, a third breakdown voltage lower than said first breakdown voltage, a second mutual conductance less than said first mutual conductance, said second protection means being operatively connected between said receiving means and said second connecting point at which said second impedance element and said main circuit MIS transistor are connected, for preventing excess voltage at said main circuit MIS transistor;

wherein said second impedance element has an impedance selected such that said second connecting point is at a voltage less than said first breakdown voltage when said second protection means is in said ON state.

4,449,159

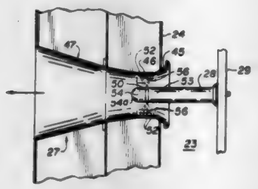
FOCUSING ELECTRODES FOR HIGH-INTENSITY IONIZER STAGE OF ELECTROSTATIC PRECIPITATOR

James J. Schwab, Seattle, Wash., and Owen J. Tassicker, Cupertino, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 785,470, Apr. 7, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,339

Int. Cl.³ B03C *3/00*

U.S. Cl. 361—230 **11 Claims**



1. A high-intensity gas ionizer for an electrostatic precipitator comprising:

venturi means for connecting a source of particulate laden gases with the electrostatic precipitator wherein a gas flow occurs through the venturi means;

a discharge electrode comprising a disk mounted within the throat of the venturi means and having a peripheral edge defining a maximum dimension transverse to the direction of the gas flow;

voltage means interconnected between the discharge electrode and the venturi means to establish a high-intensity electric field within the venturi means across the gas flow, the peripheral edge of the discharge electrode having at least one profile of sufficient curvature that the electric field establishes a corona current in a region between the discharge electrode and the venturi means; and

first and second cylindrical focusing electrodes mounted along the direction of the gas flow within the venturi means, extending coaxially in first and second directions away from the discharge electrode, said first focusing electrode extending upstream from said discharge electrode disk beyond said venturi means and said second focusing electrode extending downstream from said discharge electrode disk and terminating in a hemispherical cap, said first and second focusing electrodes being electrically coupled to the discharge electrode and maintained at approximately the same electrical potential as the discharge electrode, having respective diameters less than the maximum transverse dimension of the discharge electrode, and being sized so that corona discharge from the focusing electrodes is substantially non-existent; the first and second focusing electrodes being sized to increase the electric field strength at the fringes of the region of corona current to axially limit the region of corona current and thus reduce the surface area of the venturi means subjected to collection of particulates in the gases.

4,449,160

ARRANGEMENT FOR HOLDING A PART ATTACHED TO A SUPPORT FRAME HELD AGAINST A ROTATABLE MEMBER WHICH IS MOUNTED WITHIN THAT SUPPORT FRAME

Jean-Jacques Binder, Valdoie, and Jean G. Magnenet, Belfort, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 5, 1978, Ser. No. 966,576

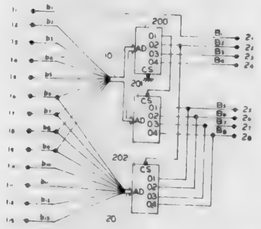
Claims priority, application France, Mar. 24, 1978, 78 08617

Int. Cl.³ G11B *21/16, 5/56, 21/24;* E04G *3/00*

U.S. Cl. 360—104 **9 Claims**

1. In a mechanical apparatus comprising a rigid support frame, a rotatable member mounted within said support frame and a part attached to said support frame, and provided with a sliding surface in contact with said rotatable member, said part having an axis of symmetry perpendicular to said sliding surface and the axis of rotation of said rotatable member, an arrangement for holding said part pressed against said rotatable member, said arrangement comprising:

an universal joint means disposed between said support frame and a first point of said part to attach said part to



said support frame, said universal joint means further allowing said part to move in translation in a direction perpendicular to said sliding surface, and

a return spring element between said support frame and a second point of said part to urge said part against said rotatable member, said first and second points being disposed on opposite sides of the axis of symmetry of said part.

4,449,161

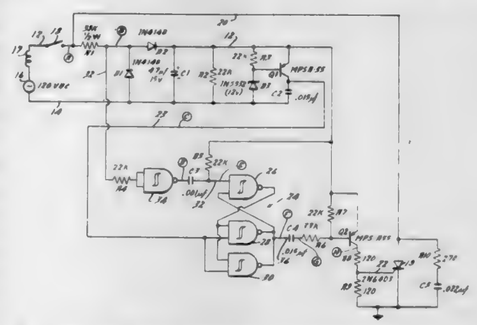
ONE SHOT FIRING CIRCUIT FOR POWER TOOLS

Larry K. Kling, Raleigh, N.C., assignor to The Black & Decker Manufacturing Company, Towson, Md.

Filed Jul. 16, 1982, Ser. No. 398,854

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—152 **33 Claims**



1. A one shot firing circuit for a portable electrical power tool having an inductive load adapted to be connected electrically in series with a source of alternating current electrical power, comprising:

manually operable normally open switch means, connected electrically in series with said inductive load and said source of alternating current electrical power, for controlling the supply of electrical power to both said firing circuit and said inductive load, such that when said normally open switch means is open the path of current flow to said inductive load is interrupted;

controlled conduction means, connected electrically in series with said normally open switch means, said inductive load and said source of alternating current electrical power, for controlling the flow of current through said inductive load after said normally open switch means is closed; and

timing circuit means, connected to said controlled conduction means and responsive to the closing of said normally open switch means, for providing a predeterminable delay after said normally open switch means is closed before enabling said controlled conduction means to conduct and permit a unidirectional current impulse to flow through said inductive load sufficient to energize said inductive load.

4,449,162

DRIVE CIRCUIT

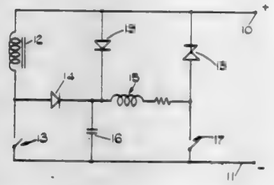
Keith Heppenstall, Greenford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 4, 1981, Ser. No. 318,267

Claims priority, application United Kingdom, Dec. 9, 1980, 8039419

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—156 **4 Claims**



1. A drive circuit for an electromagnetic device comprising first and second supply lines for connection to a low voltage d.c. supply, an inductor, first switch means connected between one terminal of said inductor and one of said supply lines, the other terminal of the inductor being connected to the other of said supply lines, a first diode connected between the one terminal of the inductor and one terminal of said device, second switch means connected between the other terminal of the device and said one supply line, and a capacitor connected between said one terminal of the device and said one supply line, a transient suppressor connected between said other terminal of the device and said other supply line, said first switch means being closable to connect the inductor across the supply lines thereby to cause current flow through the inductor, said second switch means when said first switch means is opened, being closable to connect the device in a series circuit including said inductor whereby the energy sorted in said inductor is utilized to initiate current flow to said device.

4,449,163

AC CAPACITOR AND IMPREGNANT THEREFOR

Andrew E. Dequasie, Pownal, Vt., and Sidney D. Ross, Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 28, 1983, Ser. No. 470,420

Int. Cl.³ H01G *4/22*

U.S. Cl. 361—315 **6 Claims**

1. An AC metallized film capacitor comprising a contiguously wound metallized film impregnated with a silicone dielectric fluid containing 2 to 10% of α-naphthyl isocyanate to improve capacitance retention.

4,449,164

ELECTRONIC MODULE COOLING SYSTEM USING PARALLEL AIR STREAMS

Douglas M. Carlson, Anoka, Minn.; Randall L. Ohman, San Antonio, Tex., and Lloyd M. Thorndyke, Edina, Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Sep. 27, 1982, Ser. No. 424,824

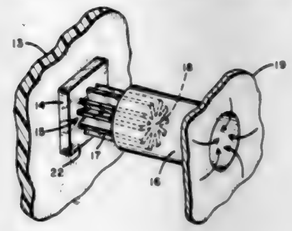
Int. Cl.³ H05K *7/20*

U.S. Cl. 361—384 **9 Claims**

1. In an assembly comprising a base, a circuit board mounted thereon, and a plurality of heat-generating electronic modules mounted on a side of the circuit board, an improved means for cooling the modules, comprising

(a) a plurality of heat conductive heat sinks each comprising a plurality of fins projecting from the circuit board, each heat sink attached in intimate thermal contact at one end to an electronic module;

(b) an air plenum mounted on the base having an air guiding side in facing, spaced apart relation with the side of the



circuit board on which the heat sinks are mounted, said air guiding side including a plurality of tube sections communicating with the plenum's interior, each extending toward and partially enclosing a heat sink, the exterior of each tube section being substantially sealed to the air guiding side; and

(c) means for creating an air pressure in the plenum different from the ambient.

4,449,165

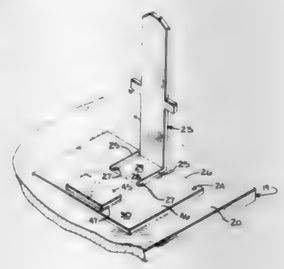
COMPACT CIRCUIT PACKAGE HAVING AN IMPROVED LEAD FRAME CONNECTOR

Lance R. Kaufman, 131 White Oak Way, Mequon, Wis. 53092

Filed Mar. 1, 1982, Ser. No. 353,177

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—386 **7 Claims**



7. A compact circuit package, comprising

an electrically insulating housing having a cavity formed by a base wall surrounded by a peripheral wall terminating at a rim to form a circuit receiving receptacle and including an aperture within said base wall to provide external electrical access to said cavity,

an electrically insulating heat conducting substrate connected to said housing adjacent to said rim and having a first side facing said cavity to substantially enclose said cavity,

a heat generating circuit located adjacent to said substrate first side and generating heat along said substrate first side in response to the selective conduction of current therethrough, and

a lead frame connector electrically connected to said heat generating circuit and extending through said base wall aperture and including

a substantially planar lead frame portion located adjacent to said substrate first side and including a pair of spaced

substantially parallel slots communicating with a side edge of said planar portion to define

a tab located between said slots and movable with respect to said substrate along a bend line located adjacent to an end of said slots and

a fixed section integrally joined to said tab through said bend line permanently affixed to said planar first side and

a lead frame extension integrally joined to said tab at said planar side edge and extending substantially normal to said fixed section along a longitudinal axis and including an outer portion located within said housing aperture and selectively electrically connected to provide external electrical connection to said heat generating circuit and

a pair of oppositely spaced lateral projections extending normal to said longitudinal axis and spaced from said tab and said outer portion to be located adjacent to said base wall and providing a pair of spaced ledges to engage said base wall in response to force along said longitudinal axis in a direction away from said tab

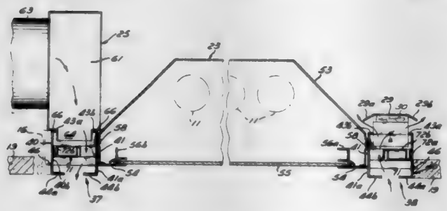
with said tab flexing along said bend line to permit limited movement of said lead frame extension along said longitudinal axis without disengaging said planar fixed section from said substrate.

4,449,166

LIGHTING FIXTURE AND AIR FLOW SUPPORT SYSTEM

Joseph F. Sharp, Norwalk, Calif., assignor to Ceiling Dynamics, Inc., Tucson, Ariz.

Filed Mar. 24, 1983, Ser. No. 478,501
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—149 **35 Claims**



1. A suspended composite ceiling light and air ventilation fixture comprising:

a light-producing means,

a light-reflection unit surrounding and containing said light-producing means,

a multi-function support frame surrounding and operatively attached to the light-reflection unit,

said support frame including air inlet means adjacent to and extending along a lateral side portion of the light-reflection unit,

an air discharge means laterally adjacent to and extending along the light reflection unit at a location opposite that of said air inlet means,

false air duct means laterally adjacent the light-relection unit, and located between opposing ends of the air discharge and air inlet means,

means joining said false air duct means to ends of the air discharge and air inlet means and forming a portion of said support frame, and

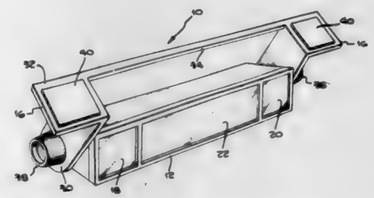
means for selectively positioning and attaching said support frame and combined components thereof to a suspended ceiling grid system.

4,449,167

ADJUSTABLE VEHICLE SAFETY LIGHT

Robert Cohen, 80-40 Lefferts Blvd., Kew Gardens, N.Y. 11415

Filed Jun. 6, 1983, Ser. No. 501,147
Int. Cl.³ F21V *21/26*
U.S. Cl. 362—269 **3 Claims**



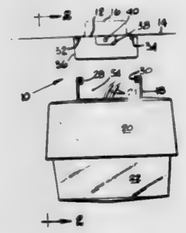
1. An auxiliary safety rear light assembly for vehicles comprising a lightable area which will illuminate in response to and signal vehicle action, pivot means on either end of the lightable area to pivot the lightable area on its horizontal axis, a mounting bracket having two dependent sides and a foot perpendicular to each of such sides, each side having means to accept a lightable area pivot means and locking means to lock the pivot means and hold the lightable area in a any desired position relative to such sides, and each foot having adhesive means on a surface thereof to fixedly attach the auxiliary safety rear light assembly to the vehicle.

4,449,168

QUICK INSTALL DEVICE FOR MOUNTING A LUMINAIRE

Robert L. Ewing, Newark, Ohio, assignor to Manville Service Corporation, Denver, Colo.

Filed Oct. 16, 1981, Ser. No. 311,833
Int. Cl.³ F21S *1/04*
U.S. Cl. 362—404 **6 Claims**



1. A light fixture assembly for mounting a luminaire on a flat surface such as a ceiling, a wall or the like, comprising:

(a) a mounting plate for fixedly attaching to the flat surface:

(b) a luminaire plate for fixedly attaching to the luminaire;

(c) a pair of horizontally longitudinally elongated holding legs fixedly attached to one of the plates and horizontally longitudinally elongated mating holding slots fixedly attached to the other plate for horizontally slidably engaging the plates together and attaching means for fixing one plate to the other plate; and

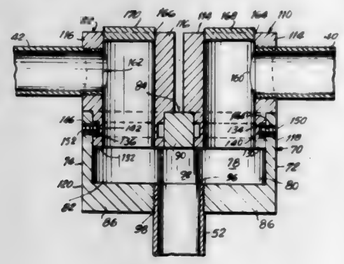
(d) a splice chamber for containing electrical splices used for the luminaire formed between the attached plates.

4,449,169

VERTICAL SWING BRACKET

Jerome Warshawsky, 3284 Bertha Dr., Baldwin Harbor, N.Y. 11510

Filed Oct. 15, 1982, Ser. No. 434,611
Int. Cl.³ F21S *1/12*
U.S. Cl. 362—413 **17 Claims**



1. A swing arm assembly for a lamp; comprising:

(a) swing arm means for supporting a light source;

(b) at least one swing unit means connected to said swing arm means and including a swing unit mounting portion substantially cylindrical in external configuration;

(c) vertical swing bracket means coacting with said swing arm means to mount same for rotation about a predetermined vertical axis of rotation;

(d) said vertical swing bracket means including at least one swing unit mounting seat sized and arranged to receive said swing unit mounting portion and to facilitate rotation of said swing unit means about said predetermined axis of rotation;

(e) said mounting portion of said swing unit means further including a circular groove formed in its external cylindrical surface;

(f) said mounting seat including retention means selectively movable between a first position wherein a portion of said retention means extends into said circular groove of said swing unit means and prevents movement of said swing unit means along said predetermined axis of rotation while not hindering rotation thereof about said predetermined axis of rotation, and a second position removed from said circular groove to permit movement of said swing unit means in a direction along said predetermined axis of rotation;

(g) said vertical swing bracket means further including mounting means to facilitate mounting same, said swing unit means, said swing arm means and any light source supported thereby.

4,449,170

LAMP SUPPORT

Jerome Warshawsky, 3284 Bertha Dr., Baldwin Harbor, N.Y. 11510

Filed Oct. 15, 1982, Ser. No. 434,547
Int. Cl.³ F21S *1/12, 3/12*
U.S. Cl. 362—413 **6 Claims**

1. A pharmacy type lamp; comprising:

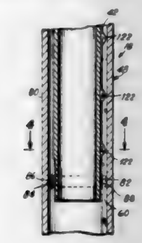
(a) a lamp base;

(b) a lamp support carried by said lamp base;

(c) a light source disposed proximately a predetermined end of said lamp support;

(d) said lamp support including a first support member of predetermined tubular configuration, and a second support member also of predetermined tubular configuration and sized so that at least a portion of said second support member is received within said first support member so as to be able to be slid and rotated therewithin;

(e) and at least one external stop member carried by said second support member for coaction with a rib-like track on and within said first support member, said rib-like track being part of said first support member and being formed within and extending a predetermined amount into said first support member but external to said second support member, to permit rotation of said second support member almost through 360°.

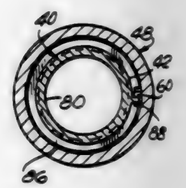


4,449,171

LAMP SUPPORT FOR PHARMACY-TYPE LAMP

Jerome Warshawsky, 3284 Bertha Dr., Baldwin Harbor, N.Y. 11510

Filed Oct. 15, 1982, Ser. No. 434,613
Int. Cl.³ F21S *1/12*
U.S. Cl. 362—413 **7 Claims**



1. A lamp support for a pharmacy-type lamp which comprises:

(a) a lamp base;

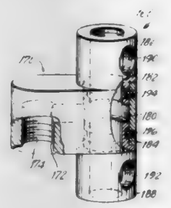
(b) a lamp support carried by said lamp base;

(c) a light source disposed proximately at a predetermined end of said lamp support;

(d) said lamp support including a first support member of predetermined tubular configuration; and a second support member, also of predetermined tubular configuration, and sized so that at least a portion of said second support member is received within said first support member, so as to be able to be slid and rotated therewithin; and

(e) at least one stop member carried by said second support member, for coaction with a rib-like track formed within and extending a predetermined amount into said first support member, to permit rotation of said second support member almost through 360°, said rib-like track being formed within said first support member by infolding oppositely disposed edges of said first support member, and pressing said infolded edges in juxtaposition with each other, so that the infolded edges are contiguous with each other.

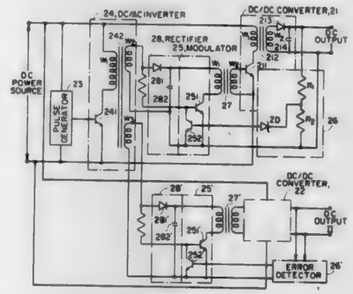
4,449,172
LAMP SWING UNITS
Jerome Warshawsky, 3284 Bertha Dr., Baldwin Harbor, N.Y. 11510
Filed Oct. 15, 1982, Ser. No. 434,545
Int. Cl.³ F21M *3/18*
U.S. Cl. 362—427 **21 Claims**



1. A swing arm assembly for a lamp; comprising:
(a) swing arm means for supporting a light source;
(b) swing unit means connected to said swing arm means and including a swing unit mounting portion substantially cylindrical in external configuration;
(c) support means coacting with said swing unit means to mount same for rotation about a predetermined axis of rotation;
(d) said support means including at least one swing unit mounting seat sized and arranged to receive said swing unit mounting portion and to facilitate rotation of said swing unit means about said predetermined axis of rotation;
(e) said mounting portion of said swing unit means further including a circular groove formed in its external cylindrical surface;
(f) said support means including retention means movable between a position wherein a portion of said retention means extends into said circular groove of said swing unit means and prevents movement of said swing unit means along said predetermined axis of rotation while not hindering rotation thereof about said predetermined axis of rotation, and a position removed from said circular groove to permit movement of said swing unit means in a direction along said predetermined axis of rotation;
(g) said support means further includng swing arm assembly mounting means to facilitate mounting said swing arm means.

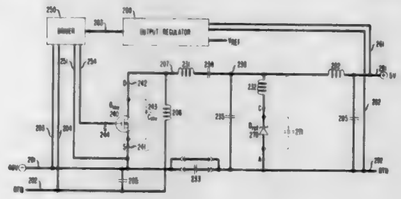
4,449,173
MULTI-OUTPUT-TYPE POWER SUPPLY DEVICES USING SEPARATELY-EXCITING-TYPE SWITCHING REGULATORS
Hisao Nishino, and Shigeru Kondo, both of Sendai, Japan, assignors to Tohoku Metal Industries, Inc., Sendai, Japan
Filed Mar. 30, 1982, Ser. No. 363,484
Claims priority, application Japan, Mar. 31, 1981, 56-46337
Int. Cl.³ H02M *3/335*; G05F *1/64*
U.S. Cl. 363—21 **3 Claims**

1. In a stabilized DC power supply device having a plurality of switching regulators for generating a plurality of different DC powers with regulated voltage levels from a DC power source, the improvement which comprises:
a single pulse generator means to which DC power is fed from said DC power source for generating a pulse signal with a predetermined repetition frequency;
switching transistor means coupled to said single pulse generator means and being turned on and off by the output pulse from said single pulse generator means;
a pulse transformer having a primary winding and a plurality of secondary windings, said primary winding being coupled to said DC power source through said switching transistor means, said plurality of secondary windings being coupled respectively with said plurality of switching regulators whereby said plurality of switching regulators are excited in synchronization with one another by pulse signals from said single pulse generator means; and
a plurality of rectifier means coupled with said plurality of secondary windings, respectively, to rectify the output



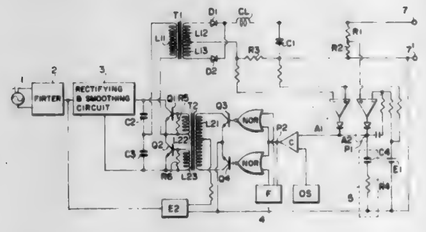
pulse signals on said respective secondary windings, each one of said plurality of rectifier means being coupled with a corresponding one of said plurality of switching regulators to provide a DC output thereto as its drive power source.

4,449,174
HIGH FREQUENCY DC-TO-DC CONVERTER
Norman G. Ziesse, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 30, 1982, Ser. No. 445,669
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **26 Claims**



1. A DC-to-DC converter comprising
a power signal modulating device including adjunct circuit capacitance, a main power signal conduction path and a control terminal for accepting signals to control the main conduction path conductivity,
input means for coupling a source of power to the main power signal conduction path of the power signal modulating device,
output means for accepting a load to be energized and including a rectifying device including a main power signal conduction path and adjunct circuit capacitance,
an impedance matching and harmonic rejection network interconnecting the power signal modulating device and the rectifying device and operative to transfer energy therebetween at a substantially single preselected frequency, and
driving signal input means for accepting a substantially continuous periodic drive signal and coupled to the control terminal of the power signal modulating device, the periodic drive signal being operative to alternately bias the main power signal conduction path into conducting and nonconducting modes of operation, the periodic drive signal having a frequency identical to the preselected frequency and the preselected frequency being selected sufficiently high so that the adjunct circuit capacitance of the power signal modulating device and the rectifying device are fully and positively utilized as integral components of the impedance matching and filtering network.

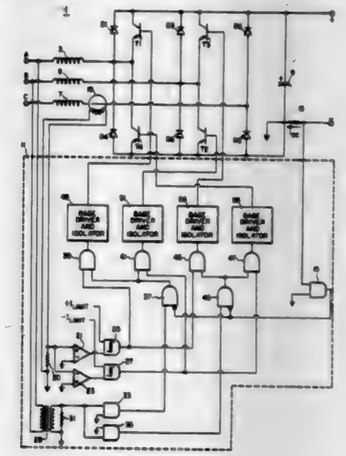
4,449,175
SWITCHING REGULATOR
Masanori Ishii, Kawagoe, and Hiroichi Ishikawa, Kawaguchi, both of Japan, assignors to Toko, Inc., Tokyo, Japan
Filed Apr. 23, 1982, Ser. No. 371,264
Claims priority, application Japan, Apr. 28, 1981, 56-64789
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—26 **3 Claims**



1. A switching regulator of the type wherein a pair of transistors are alternately turned on and off by a base input applied thereto so that a current which is alternately reversed in direction is caused to flow through a primary winding of a main transformer; and a voltage induced in a secondary winding of the main transformer is rectified to obtain a DC output; and the pulse width of said base input is controlled in accordance with the magnitude of a detected output voltage by means of a pulse-width modulator to maintain the output voltage constant, characterized in that said pulse-width modulator is provided, by an error amplifier, with an input corresponding to the magnitude of said detected output voltage; and variations in the input applied to the pulse-width modulator for increasing the pulse width of said base input are moderated by means of a time-constant circuit and a circuit for causing said time-constant circuit to be charged and discharged.

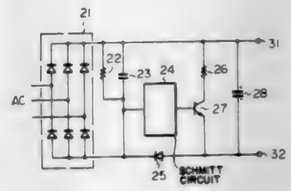
4,449,176
SINGLE PHASE REGENERATION WITH A POLYPHASE RECTIFICATION POWER CIRCUIT
Fred G. Turnbull, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed May 26, 1982, Ser. No. 382,332
Int. Cl.³ H02P *13/24*
U.S. Cl. 363—81 **7 Claims**

1. A circuit for supplying rectified power to a load from a three phase ac source and providing single phase regeneration from the load to the three phase source, comprising:
a three phase bridge rectifier including a plurality of rectifying elements, said rectifier adapted to be coupled to said three phase ac source;
controllable switch means with self-commutating ability coupled in inverse parallel with each of said rectifying elements respectively, in the first and second phases of said rectifier, said controllable switch means forming a single phase inverter;
first current sensing means for sensing current in the third phase of said rectifier;
second current sensing means for sensing the direction of current to the load; and
control means coupled to said switch means and said first and second current sensing means, said control means being responsive to direction and amplitude of current in the third phase of said rectifier for switching said switch means during regeneration, said control means including means for comparing relative voltages of said first and second phases of the ac source to determine conduction intervals of said switch means when providing regenerative current to the first and second phases of said source, and means coupled to said first current sensing means for



pulse width modulating said controllable switch means to maintain said third phase rectifier current within predetermined positive and negative current limits.

4,449,177
DISCHARGING CIRCUIT FOR POWER SOURCE DEVICE WITH RECTIFIER CIRCUIT
Yoshinori Kozai, Hino; Katsuo Kobari, Tachikawa, and Keiji Sakamoto, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan
PCT No. PCT/JP81/00142, 371 Date Feb. 22, 1982, 102(e) Date Feb. 22, 1982, PCT Pub. No. WO82/00070, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 20, 1981, Ser. No. 354,099
Claims priority, application Japan, Jun. 20, 1980, 55-82800
Int. Cl.³ H02M *7/06*
U.S. Cl. 363—126 **4 Claims**



1. A direct-current power supply comprising:
a rectifier connectable to an alternating-current power source for providing a direct-current output;
a pair of load terminals connected to said rectifier;
a smoothing capacitor connected between said load terminals;
a switching circuit connected between said load terminals in parallel with said smoothing capacitor;
a time constant selection circuit connected across the output of said rectifier;
a diode connected between said rectifier and one of said load terminals to permit flow of current from said rectifier to said load terminals and to prevent flow of current from said smoothing capacitor to said time constant selection circuit; and
a Schmitt circuit having its input connected to said time constant selection circuit and its output connected to said

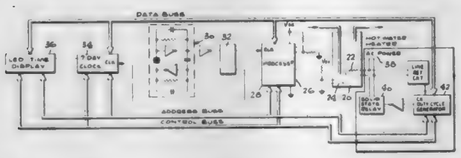
switching circuit and arranged to minimize said switching circuit in a non-conducting state when the rectified voltage across said time constant selection is substantially equal to the charged voltage of said smoothing capacitor and to turn on said switching circuit only when the voltage across said time constant selection circuit falls below a predetermined value lower than the charge voltage of said smoothing capacitor in response to disconnection of said power source, whereby said switching circuit operates to discharge said smoothing capacitor when said rectifier is disconnected from said power source.

4,449,178

METHOD AND APPARATUS FOR CONTROLLED OFF PEAK LOAD HOT WATER HEATING

Frederick Blau, Jr., Fountain Valley, and John M. Gross, San Jose, both of Calif., assignors to Fluidmaster, Inc., Anaheim, Calif.

Filed Feb. 27, 1981, Ser. No. 239,170
Int. Cl.³ G05D *23/19*; F24H *1/20*
U.S. Cl. 364—148 **14 Claims**



11. A method of heating water over a period of time comprising the steps of:

(1) determing the temperature of water in a water heater;

(2) computing and setting the heating means of the heater for that being required to raise the temperature of the water over a predetermined segment of the predetermined period of time an amount that is related to the total desired termperature increase over the entire predetermined period of time;

(3) waiting until the end of the predetermined segment of the predetermined period of time;

(4) determining the new temperature of the water in the heater;

(5) computing and resetting the heating means of the heater for that being required to raise the temperature of the water over another predetermined segment of the remaining portion of the predetermined period of time an amount that is related to the total desired temperature increase over the entire remaining portion of the predetermined period of time.

13. A device for controlling a hot water heater to heat water to a desired temperature by the end of a predetermined time period comprising:

means for keeping time;

temperature sensing means communicating with the water in said hot water heater for determining the temperature of the water;

adjustable heating means operationally connected to said hot water heater for heating water in said hot water heater;

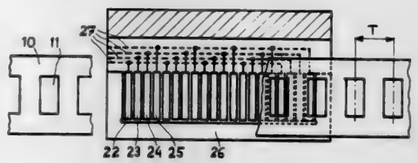
processing means operationally connected to said temperature sensing means, said time means, and said adjustable heating means for repeatedly determining the number of time segments remaining until the end of the time period, computing heating means necessary to raise the temperature of the water over the next segment of the time period an amount that is related to the total desired increase in temperature for the entire time period, and for setting said adjustable heating means to the computed proportion.

4,449,179

MEANS FOR CAPACITIVE MEASUREMENT OF DISPLACEMENTS

Hans U. Meyer, Rue des Taneurs 3, 1110 Morges, Switzerland

Filed May 26, 1981, Ser. No. 267,040
Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020411
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **5 Claims**



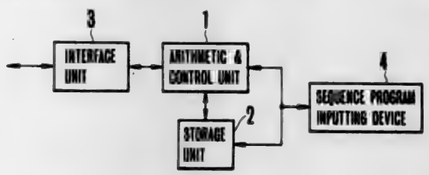
1. Means for capacitive measurement of displacements comprising, a scale and a measuring device (**20**) said measuring device provided with a series of transmitting electrodes (**22** to **25**) and at least one receiving electrode (**29**), characterized by the fact that said scale comprises an electrically conductive belt (**10**) having a plurality of regularly spaced openings (**11**), the distance (T) between the center axis of adjacent openings covering at least three transmitting electrodes said belt (**10**) passing through the measuring device (**20**) in such a way that the openings (**11**) comprise, together with said electrodes (**22** to **25** and **29**), a differential condenser formed by a plurality of elementary condensers, the capacity of which varies in function of the position of said belt (**10**) with respect to the measruing device (**20**).

4,449,180

SEQUENCE PROGRAM INPUTTING DEVICE

Yoshimitsu Ohshima, Tokyo; Norio Yokozawa, Fuchu, and Masayoshi Ohzeki, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 138,654, Apr. 9, 1980, abandoned. This application May 4, 1982, Ser. No. 374,870
Claims priority, application Japan, Apr. 11, 1979, 54-43065
Int. Cl.³ G06F *15/46, 9/00*
U.S. Cl. 364—147 **8 Claims**



1. A sequence program inputting device for providing a machine instruction sequence for executing controls defined by a ladder diagram to a sequence controller which provides control output signals in response to said machine instruction sequence, wherein said ladder diagram comprises a plurality of device symbols, line symbols for connecting said device symbols and reference symbols for indicating references of said device symbols, comprising:

first means for individually manually specifying said device symbols, said line symbols and said reference symbols;

second means for displaying patterns including a refresh memory which stores pattern codes for specifying patterns to be displayed at respective display positions;

third means for generating pattern codes for displaying said specified symbols and for storing said generated pattern codes in said refresh memory at storing positions thereof

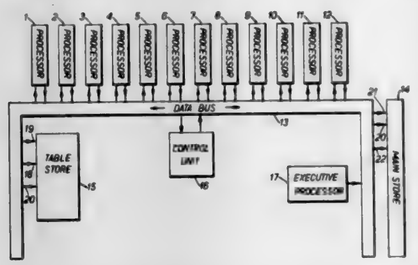
corresponding to display positions of said specified symbols, thereby allowing said second means to display said ladder diagram, wheren said third means further includes means for generating said machine instruction sequence by decoding said pattern codes stored in said refresh memory after said ladder diagram is displayed by said second means.

4,449,181

DATA PROCESSING SYSTEMS WITH EXPANDED ADDRESSING CAPABILITY

Arthur P. Young; Clive D. P. Gildersleeves; Brian W. Partridge, all of Chelmsford, and Keith L. Ryder, Brentwood, all of England, assignors to The Marconi Company Limited, Chelmsford, England

Continuation of Ser. No. 952,967, Oct. 20, 1978. This application Oct. 2, 1980, Ser. No. 193,080
Claims priority, application United Kingdom, Oct. 21, 1977, 43908/77
Int. Cl.³ G06F *1/00, 9/20*
U.S. Cl. 364—200 **1 Claim**



1. A data processing system for expanding the address capability of individual microprocessors sharing a common store, which comprises:

a plurality of processors each capable of internally generating a digital addressing word of A + B digits;

a main store common to all of said processors and having a plurality of storage regions each containing a plurality of storage areas, each storage area being addressable by a digital addressing word of Z + B digits where Z is greater than A;

a table store separate from said main store and common to all of said processors, said table store comprising a plurality of tables each providing a plurality of digital codewords of Z digits;

a shared data-bus connecting all of said microprocessors, said main store and said table store;

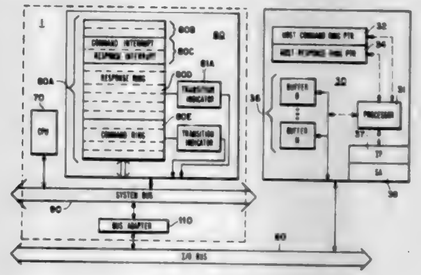
a control unit connected to said data-bus to control the data-bus for access by a selected processor to the table store and the main store and to address a particular table of said table store in accord with the selected processor, to pass the A digits of the addressing word of the selected processor to said particular table and thereby address a particular codeword of said particular table, and to pass the Z digits of said particular codeword, together with the B digits of said addressing word of the selected processor to address a particular storage area of said main store whereby to expand the address capability of the selected processor by the value $2^{(Z+B)}-2^{(A+B)}$.

4,449,182

INTERFACE BETWEEN A PAIR OF PROCESSORS, SUCH AS HOST AND PERIPHERAL-CONTROLLING PROCESSORS IN DATA PROCESSING SYSTEMS

Barry L. Rubinson; Edward A. Gardner; William A. Grace; Richard F. Lary, and Dale R. Keck, all of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 5, 1981, Ser. No. 308,826
Int. Cl.³ G06F *9/46, 15/16*
U.S. Cl. 364—200 **21 Claims**



1. In a data processing system which includes first and second processors (**70** and **31**), a memory (**80**) to which information can be written by each of said processors and from which information can be read by each of said processors, such memory having a plurality of locations for storing said information, and bus means (**60**) for interconnecting the first and second processors and said memory, to enable communications therebetween, said bus means being of the type which has no hardware interlock capability which is usable by the other of said processors to selectively prevent the other of said processors from accessing said memory locations, the improvement comprising:

communications control means for controlling communications between said processors and permitting the first processor to send a plurality of commands in sequence to the second processor via the bus means, and for permitting the second processor to send responses to those commands to the first processor via the bus means;

the communications control means including a plurality of locations in said memory, termed interface memory locations, adapted to serve as a communications interface between the first and second processors, all commands and responses being transmitted through such interface memory locations;

the interface memory locations comprising a pair of ring buffers;

a first one of said ring buffers being adapted to buffer the transmission of messages issued by the first processor and a second one of said ring buffers being adapted to buffer the reception of messages transmitted by the second processor;

each of said ring buffers including a plurality of memory locations adapted to receive from an associated one of said processors a descriptor signifying another location in said memory;

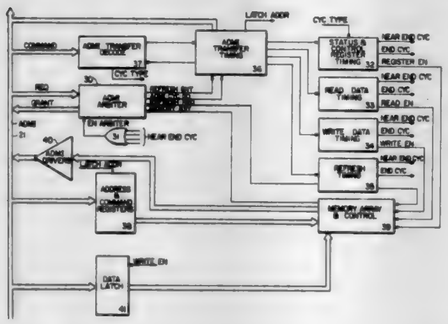
for said first ring buffer, the location signified by such descriptor being a location containing a message for transmission to the second processor;

for said second ring buffer, the location signified by such descriptor being a location for holding a message from the second processor; and

the communications control means permitting each of said processors to operate at its own rate, independent of the other of said processors, and to access a ring buffer for writing thereto only when the buffer does not contain information previously written to such buffer but not yet

read from it and for reading to such buffer only when the buffer contains information written to it but not yet read therefrom, thus preventing race conditions from developing across said bus means in relation to accessing the interface memory locations.

4,449,183
ARBITRATION SCHEME FOR A MULTIPORTED SHARED FUNCTIONAL DEVICE FOR USE IN MULTIPROCESSING SYSTEMS
Barry J. Flahive, Westford; John J. Grady, III, Woburn, and Peter J. Rado, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 55,769, Jul. 9, 1979, abandoned. This application Oct. 13, 1981, Ser. No. 310,825
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **11 Claims**



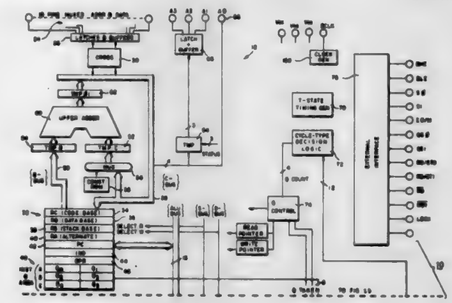
1. In a memory means for use in a data-processing system that includes plural requesting devices adapted to be enabled by receipt of grant signals, each requesting device generating request signals associated therewith and transmitting its associated request signals to said memory means, said memory means including storage locations, connection means for transferring information between said requesting devices and said storage locations, and memory-cycle control means operable by application of a start signal thereto to begin performance of a memory operation in which information is transferred over said connection means between said storage locations and an enabled requesting device and for subsequently generating an enabling signal to indicate that an arbitration operation can be commenced, an arbitration network comprising:

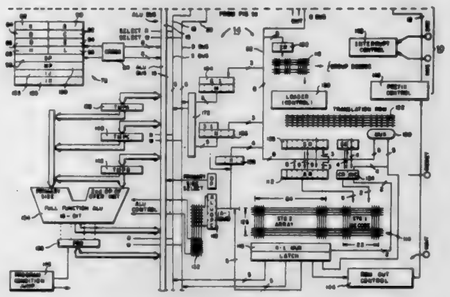
A. priority-determination means, connected to receive said request signals from said requesting devices, for determining priority and generating a grant signal associated with a requesting device determined according to a predetermined priority rule, priority determination by said priority-determination means commencing with said enabling signal if a request signal has been sent by a requesting device;

B. sole-request-detection means, connected to receive said request signals from said requesting devices, for transmitting a start signal to said memory-cycle control means in response to a sole-request condition before said priority-determination means has determined priority; and

C. arbitration-control means connected to receive said request signals from said requesting devices and said grant signals from said priority-determination means, said arbitration-control means being initiated by said enabling signal, if a requesting device generates a request signal, to forward as grant signals, if said sole-request-detection means detects a sole-request condition, request signals received from said requesting devices, and, if said sole-request-detection means has not detected a sole-request condition, to forward the grant signal from said priority-determination means to the requesting device associated with that grant signal and transmit a start signal to said memory-cycle control means after said priority-determination means has determined priority, a memory cycle thereby being started before priority determination has been finished if only one requesting device requests access to the memory.

4,449,184
EXTENDED ADDRESS, SINGLE AND MULTIPLE BIT MICROPROCESSOR
William Pohlman, III, Los Gatos; Bruce W. Ravenel, III, Sunnyvale; James F. McKevitt, III, San Jose, and Stephen P. Morse, San Francisco, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Division of Ser. No. 873,777, Jan. 31, 1984, Pat. No. 4,363,091. This application Nov. 18, 1981, Ser. No. 322,471
Int. Cl.³ G06F *9/38*
U.S. Cl. 364—200 **8 Claims**





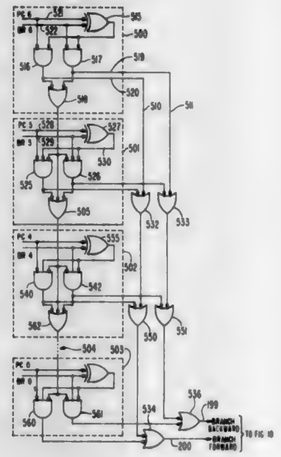
1. In a microprocessor chip, a data processing system for use with a memory external to the chip comprising;

upper control means for transferring digital information to and from said memory; and

lower control means for processing said digital information wherein the operation of said upper and lower control means are overlapping and asynchronous;

wherein said upper control means includes a file of registers, and wherein said file includes a plurality of registers forming an ordered, first-in-first-out queue of registers, and digital information in the nature of instructions obtained from said memory are temporarily stored in said queue until requested by said lower control means for execution.

4,449,185
IMPLEMENTATION OF INSTRUCTION FOR A BRANCH WHICH CAN CROSS ONE PAGE BOUNDARY
Joel R. Oberman, Somerville, and Russell G. Ott, Cranford, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 30, 1981, Ser. No. 326,162
Int. Cl.³ G06F *9/32*
U.S. Cl. 364—200 **3 Claims**



1. In a data processing system employing a program counter (PC), and a memory divided into pages each containing 2^N memory locations, and in which each of the memory location addresses comprises two bytes, an upper order byte, and a lower order byte, with each byte comprising N bits, an improved method for executing a branch instruction directing a branch from one memory address in one page of the memory to a second memory address in a location not beyond an adjacent page of the memory, but independent of whether the branch crosses a page boundary in the memory, and comprising the steps of:

determining if the binary value V1 represented by the (N-1) least significant bits (LSB's) of the lower order byte of the branch address is greater than the binary value V2 represented by the (N-1) LSB's of the lower order byte of the address to which the PC is pointing (the PC address);

determining if PC N≠BR N where PC N is the most significant bit of the lower order byte of the PC address and BR N is the most significant bit of the lower order byte of the branch address;

incrementing by 1 the upper order byte of the PC address if V1<V2, PC N=1, and PC N≠BR N;

decrementing by 1 the upper order byte of the PC address if V1>V2, PC N=0, and PC N≠BR N; and

replacing the lower order byte of the PC address with the lower order byte of the branch address.

4,449,186
TOUCH PANEL PASSENGER SELF-TICKETING SYSTEM
Guy M. Kelly, La Jolla; John B. Roes, San Diego; Samuel B. Walker, Coronado, and Bruce A. Beach, San Diego, all of Calif., assignors to Cubic Western Data, San Diego, Calif.
Filed Oct. 15, 1981, Ser. No. 311,906
Int. Cl.³ G07F *7/08*
U.S. Cl. 364—407 **5 Claims**

1. A passenger self-ticketing system for vending tickets based upon reservation data stored in a central host computer, the system being comprised of a plurality of ticket terminals which communicate with the host computer, each of the terminals including:

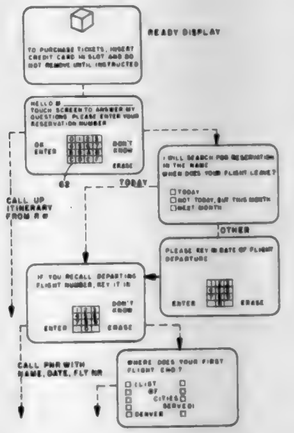
credit card reader means for reading data from a credit card inserted therein by a passenger;

video means including a CRT for displaying alphanumeric and graphic information including inquiries and visual response targets to the passenger;

touch input means for enabling the passenger to respond to inquiries displayed by the video means by placing a finger on a respectively corresponding visual response target displayed on the CRT;

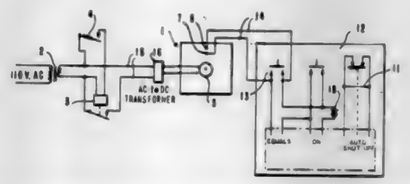
printer means for generating and dispensing a ticket based upon the reservation data;

interface means for communicating with the host computer; and



local computer means for receiving data from the credit card reader means, causing the video means to display a sequence of inquiries and visual response targets regarding any reservation data of the passenger, which may have already been stored in the central host computer, receiving passenger responses from the touch input means, and interrogating the host computer via the interface means to determine the passenger's reservation data stored in the central host computer, if any, and further for causing the video means to display the determined reservation data and a confirm inquiry to the passenger, receiving a confirmation response from the touch input means, causing the printer means to generate and dispense a ticket base upon the passenger's reservation data, and sending a transaction report to the host computer via the interface means.

4,449,187
DEVICE FOR INDIRECTLY MONITORING CUMULATIVE COST OF UTILITY CONSUMPTION
Charles F. Scott, 441 Beach St., Middleport, Ohio 45706
Filed Jul. 30, 1982, Ser. No. 403,721
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—464 **1 Claim**



1. In conjunction with a utility consumption apparatus having an ON/OFF switch controlling the consumption of the utility, a device for indirectly monitoring and displaying the

cumulative cost of the utility consumed by said apparatus without physically measuring the utility consumed by said apparatus, comprising:

an electrical clock having a face, a minute hand, an electrical contact brush located on said minute hand, an electric motor for moving said minute hand, and electrical contact surfaces on said face for forming a calculation triggering switch with said electrical contact brush;

an AC to DC transformer for connecting said electric motor and said ON/OFF switch for advancing said minute hand only when said utility consumption apparatus is operating to consume the utility to be monitored;

constant addend calculation means having a memory for storing a cumulative total and a constant monetary increment, an addition circuit for adding said constant monetary increment to said cumulative total, an equals switch for activating said addition circuit, and display means; and

a first electrical circuit including said electrical contact brush and said electrical contact surfaces for short circuiting said equals switch and activating said addition circuit to calculate the sum of said constant monetary increment and said cumulative total, to display said sum and to replace said cumulative total in said memory with said sum.

4,449,188

APPARATUS AND METHOD FOR CONTROLLING HUMIDITY

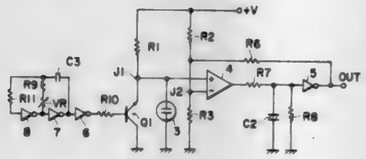
Takehiko Unoguchi, Kyoto; Seiro Hasegawa, Ikeda; Katsuyuki Fujito, Higashi-Osaka; Atsushi Nishino, Neyagawa, and Akihiko Yoshida, Taishi-bashi, all of Japan, assignors to Matsushita Electrical Industrial Co., Tokyo, Japan

Continuation of Ser. No. 128,877, Mar. 10, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,552

Claims priority, application Japan, Mar. 12, 1979, 54-29151

Int. Cl.³ G06G 7/66; G05D 22/02

U.S. Cl. 364—505 **18 Claims**



17. A method of controlling humidity, comprising the steps of sensing ambient relative humidity by exposing to an environment to be humidity controlled a humidity sensing element, an electrostatic capacitance of which varies in accordance with ambient relative humidity, charging by a DC voltage the electrostatic capacitance of the humidity sensing element in accordance with a pulse train signal, the width and duty cycle of said pulse train signal being selected such that a varying voltage across the humidity sensing element derived from the DC source rises to a predetermined voltage when the electrostatic capacitance of the humidity sensing element assumes a given value, comparing the voltage across the humidity sensing element with a reference voltage to detect an interval required for charging the humidity sensing element so that the voltage across the humidity sensing element equals the reference voltage, changing the pulse width of the pulse train signal for setting a reference humidity and applying the signal developed by the humidity sensing circuit to a humidity control means.

4,449,189

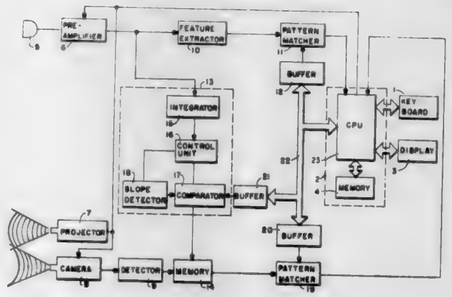
PERSONAL ACCESS CONTROL SYSTEM USING SPEECH AND FACE RECOGNITION

Wolfgang H. Feix, Mt. Laurel, N.J., and Hartwig E. Ruell, Fuerstenfeldbruck, Fed. Rep. of Germany, assignors to Siemens Corporation, Iselin, N.J.

Filed Nov. 20, 1981, Ser. No. 323,657

Int. Cl.³ G10L 1/00

U.S. Cl. 364—513.5 **13 Claims**



1. A method for identifying an individual through a combination of speech and face recognition which comprises:

(a) defining a characteristic sequence of features of the voice in response to the utterance of a predetermined key word by the individual to be identified;

(b) forming a momentary image of a voice-utterance varying portion of the individual's face upon the occurrence of a key event in the utterance of the key word; and

(c) using both the defined sequence of features and the momentary image in order to determine the identity or non-identity of the individual.

4,449,190

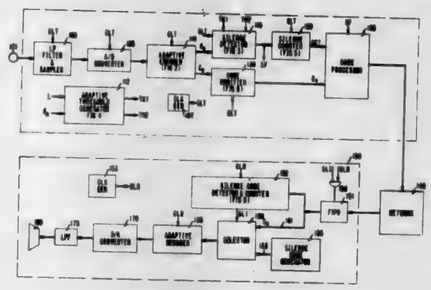
SILENCE EDITING SPEECH PROCESSOR

James L. Flanagan, Warren, and James D. Johnston, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 27, 1982, Ser. No. 343,238

Int. Cl.³ G10L 1/00

U.S. Cl. 364—513.5 **15 Claims**



1. A speech processing system comprising: means for converting a speech pattern into a sequence of adaptive digital coded signals; means for detecting intervals of silence in said speech pattern; means responsive to each detected silence interval for generating a digital coded signal representative thereof; and means for combining said adaptive digital coded signals and said silence interval representative digital coded signals to form a digital signal corresponding to said pattern; said converting means comprising: means for forming a signal corresponding to the adaptation step-size for each adaptive digital coded signal; means for generating first and second threshold signals, said second threshold signal being greater than said first threshold signal; said silence interval detecting means comprising: means responsive to said adaptation step-size corresponding signal diminishing below said first threshold signal for generating a signal indicative of a silence interval; and means jointly responsive to said silence interval signal and said adaptation step-size corresponding signal increasing above said second threshold signal for terminating said silence interval signal.

4,449,191

PROCESS AND AN APPARATUS FOR MEASURING AN ANGLE

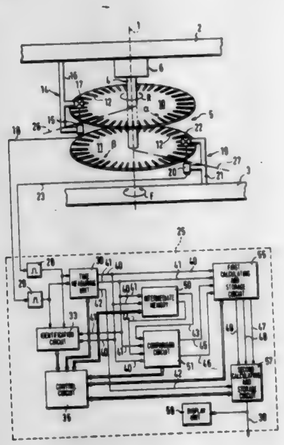
Walter Mehnert, Grillparzerstr. 6, D-8012 Ottobrunn, Fed. Rep. of Germany

Filed Apr. 21, 1981, Ser. No. 256,031

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018496

Int. Cl.³ G06F 15/20; G01B 7/30

U.S. Cl. 364—559 **46 Claims**



28. Apparatus for measuring the angle which two members enclose with respect to an axis of rotation about which they are rotatable with respect to each other, comprising a rotating mark carrier having marks disposed thereon at a certain distance apart in the direction of rotation, said mark carrier being attached to one of the two members so as to rotate about their mutual axis and of being driven by a drive means for rotating said mark carrier continuously independent of the rotation movement of the two members, a pair of sensors, one of said sensors being attached to the same member as the mark carrier and the other being attached to the other member, said sensors emitting a signal corresponding to each of said marks, and a measuring and evaluating circuit comprising an identification circuit which identifies the marks belonging to the signals emitted by the sensors, a time measuring unit which measures the time distances of the signals emitted by the sensors and a calculation and storage circuit which, after receiving a corresponding command signal, calculates and stores the angular distances, with respect to a zero point of the angular measurement, between the marks from the time distance values for signals assigned to identified marks and coming from the various sensors, from stored calibrating values for the absolute angular distances of identified marks, and from the instantaneous angular velocity of the mark carrier and which, upon subsequent rotations of the mark carrier, calculates the instantaneous angle between the two members from the time distance values for signals assigned to identified marks and coming from the various sensors, and from the stored angular distances of these marks, said angular distances being with respect to the zero point of the angular measurement, and from the instantaneous angular velocity of the mark carrier.

4,449,192

RADIO WAVE ANGLE OF INCIDENCE MEASUREMENT APPARATUS

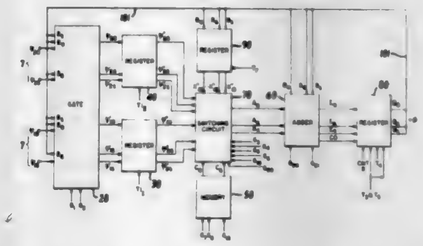
Masaru Watanabe; Nobuharu Yamauchi; Naoki Hashimoto, and Tetsuo Tamana, all of c/o Communications Equip. Works of Mitsubishi Denki K.K. No. 80, Nakano, Minami Shimizu, Amagasaki City, Hyogo Prefecture, Japan

Continuation-in-part of Ser. No. 24,667, Mar. 28, 1979, abandoned, which is a continuation of Ser. No. 476,157, Jun. 3, 1974, abandoned, which is a continuation-in-part of Ser. No. 859,911, Sep. 22, 1969, abandoned. This application Dec. 9, 1981, Ser. No. 329,030

Claims priority, application Japan, Sep. 5, 1968, 43-63942

Int. Cl.³ G06F 15/20; G01S 3/46, 3/48

U.S. Cl. 364—559 **8 Claims**



1. In a radio angle measurement apparatus the combination comprising:

(a) an antenna array comprising a plurality of radiator elements spaced with an inter-element spacing d which is considerably larger than one-half of the propagation wavelength λ of a radio-frequency electromagnetic signal incident on said antenna array, said antenna array exhibiting at least two different values of d/λ, said antenna array responding to the incident radio-frequency electromagnetic signal by developing respective electrical signals at said radiator elements, and the electrical signals developed at said respective radiator elements having mutually different relative phase values therebetween each of which varies as the incident angle of the received radio-frequency signal varies;

(b) digital phase difference measuring means for measuring the phase differences between the electrical signals developed by said radiator elements for at least two different values of d/λ and for developing digital output signals representative of the measured values of phase difference; and

(c) phase difference to incident angle converter means responsive to the digital output signals from said digital phase difference measuring means for generating an output signal representative of the incident angle of the radio-frequency electromagnetic signal relative to said antenna array and which varies monotonically as the incident angle varies, said phase difference to incident angle converter means comprising

a binary adder circuit responsive to control signals for performing addition, subtraction and multiplication operations on binary signals applied to said binary adder circuit and for developing a binary output signal having a binary value equal to the result of the operation performed by said binary adder circuit;

storage means responsive to control signals for temporarily storing in binary signal format the output signals from said digital phase difference measuring means and for temporarily storing in binary signal format the binary output signals from said binary adder circuit;

addressable memory means responsive to control signals for

storing and for reading out the following numerical constants in binary signal format,

$C_1=A\sin(\alpha+\beta)/\sin\beta$

$C_2=A\cos(\alpha+\beta)/\sin\beta$

$C_3=A\Psi_{1max}\sin(\alpha+\beta)/\sin\beta$

$C_4=A\Psi_{1max}\cos(\alpha+\beta)/\sin\beta$

$C_5=B\sin\alpha/\sin\beta$

$C_6=B\cos\alpha/\sin\beta$

$C_7=B\Psi_{1max}\sin\alpha/\sin\beta$

$C_8=B\Psi_{2max}\cos\alpha/\sin\beta$

$C_9=(A/\sin\beta)\{\Psi_{1max}\sin(\alpha+\beta)+\Psi_{2max}\cos(\alpha+\beta)\}$

$C_{10}=(B/\sin\beta)(\Psi_{1max}\sin\alpha+\Psi_{2max}\cos\alpha)$

$C_{11}=0.5$

$C_{12}=Y_{step}$

selecting means responsive to control signals for selecting among the temporarily stored output signals from said digital phase difference measuring means, the output signal of said binary adder circuit and the output of said addressable memory means to permit addition, subtraction and multiplication operations to be performed on the selected signals; and

control means for applying control signals to said storage means, said binary adder circuit, said selection means and said addressable memory circuit to operate said selection means and to operate said binary adder circuit to perform addition, subtraction and multiplication operations on the selected signals according to the following equations:

(i) transforming the digital output signals of said digital phase difference measuring means having values Ψ_1, Ψ_2 into signals having values X_1, Y_1 and temporarily storing the signals having values X_1, Y_1 in said storage means, wherein

$X_1=C_1\Psi_1-C_2\Psi_2$

$Y_1=-C_5\Psi_1+C_6\Psi_2$

(ii) if $Y_1\geqq 0$, performing the signal processing of (vi),

(iii) if $Y_1<0$, transforming the signals having values X_1, Y_1 into signals having values X, Y and temporarily storing the signals having values X, Y in said storage means, wherein

$X=X_1-C_3$

$Y=Y_1+C_7$

(iv) if $X_1<C_3$ and $Y_1\geqq -C_8$, transforming the signals having values X_1, Y_1 into signals having values X, Y and temporarily storing the signals having values X, Y in said storage means, wherein

$X=X_1-C_4$

$Y=Y_1+C_8$

(v) if $Y_1<C_8$, transforming the signals having values X_1, Y_1 into signals having values X, Y and temporarily storing the signals having values X, Y in said storage means, wherein

$X=X_1-C_9$

$Y=Y_1+C_{10}$

(vi) subtracting [Y] Ystep from Y, wherein [Y] is the integer value of Y, and if $Y-[Y]Ystep\geqq 0.5$ Ystep setting $Y=-[Y]+1$, and if $Y-[Y]Ystep<0.5$ Ystep setting $Y=[Y]$; and

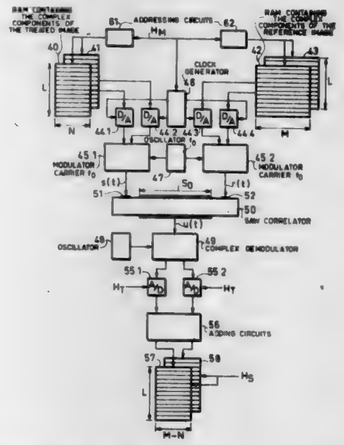
(vii) adding Y+X.

4,449,193

BIDIMENSIONAL CORRELATION DEVICE

Pierre Tournois, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 23, 1981, Ser. No. 256,929
Claims priority, application France, Apr. 25, 1980, 80 09386
Int. Cl.³ G06F *15/336*; G06G *7/195*
U.S. Cl. 364—604 **6 Claims**



1. A device for the bidimensional correlation between a reference image of a plane Oxy having lines oriented in the Ox direction and a scanned image obtained by scanning in the plane Oxy, the scanned lines being parallel to Ox, wherein said device comprises:

a correlation means including a surface wave convolver said correlation means connected to receive first signals corresponding to said reference image and second signals corresponding to said scanned image with said reference image being formed from K lines of M points and said scanned image being formed from L lines of N points, in which $L>K$ and $N<M$, wherein the K lines of the reference image are correlated line-by-line with all the systems of K lines such as i at $i+k-1$ of the scanned image in which l is less than or equal to i less than or equal to L minus K, whereby one line of the reference image is simultaneously inputted with one line of the scanned image in order to supply to said correlation means an electrical representation of a monodimensional correlation line formed from points corresponding to the displacement of said reference image and said scanned image thus supplying after summation for a same displacement α along Ox, (L-K) correlation lines of (M-N) points, wherein said first signals corresponding to the reference image are stored in a first pair of random access memories and said second signals corresponding to the scanned image are each stored in a second pair of random access memories which are read under the control of a clock with one of said first and second signals being read along Ox and the other of said first and second signals being read in the opposite direction along Ox;

digital to analog converter means connected to said random access memories for receiving the output of said random access memories;

modulation means for receiving the output of said digital-to-analog converter means and supplying a modulated signal placed on a frequency carrier f_O to said correlation means;

demodulation means for demodulating the output of said correlation means and applying said demodulated signal to an analog-digital converter;

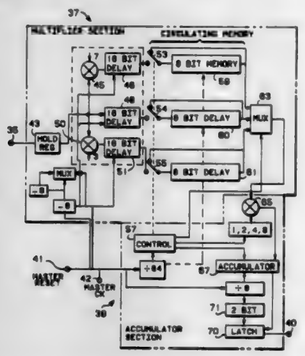
adder means which adds the output of said analog to digital converter and which thereby adds the signals for the points corresponding to one and the same displacement for said (M-N) monodimensional correlation lines of said reference image and said scanned image with the output of said adder means supplying a bidimensional correlation signal whereby said device for bidimensional correlation supplies a new bidimensional correlation line after each new scanned line of the image obtained by scanning.

4,449,194

MULTIPLE POINT, DISCRETE COSINE PROCESSOR

Randy L. Wilhelm, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Sep. 25, 1981, Ser. No. 305,584
Int. Cl.³ G06F *15/332, 7/52*
U.S. Cl. 364—725 **11 Claims**



1. A multiple point, discrete cosine processor for digital signals comprising:

(a) a premultiplier connected to receive the digital signals and to multiply each of the signals by a plurality of fixed, different factors, said premultiplier having an output for each of the different factors;

(b) signal selection circuitry connected to the outputs of said premultiplier and having a single output, said selection circuitry supplying premultiplied signals from the outputs of said premultiplier to the output of said selection circuitry in a predetermined order;

(c) a multiplier constructed to multiply each input signal by a selected one of a plurality of predetermined factors, said multiplier being connected to the output of said selection circuitry and providing the multiplied signals at an output;

(d) control circuitry connected to said selection circuitry and said multiplier and controlling the predetermined order of the premultiplied signals from said selection circuitry and the selection of the multiplying factors in said multiplier so the multiplied signals at the output of said multiplier represents the multiple points multiplied by an approximation of a discrete cosine transform matrix; and

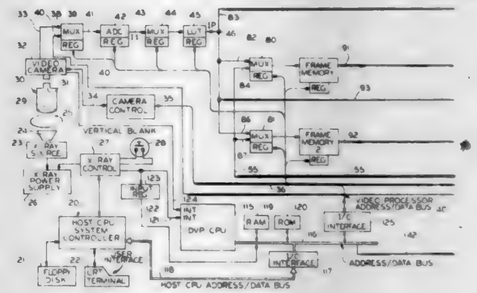
(e) an accumulator connected to the output of said multiplier for combining the multiplied signals into transformed terms.

4,449,195

DIGITAL FLUOROGRAPHIC PROCESSOR CONTROL

Edward W. Andrews, Brookfield; John E. Celek, Oconomowoc; Royal R. Morse, III, Wales, and Eugene W. Bergholz, Dousman, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,307
Int. Cl.³ G06F *9/40, 3/14*
U.S. Cl. 364—900 **4 Claims**



1. A method of controlling in real time a digital video processor (DVP) having hardwired data busses and functional components including any of multiplexers, multipliers, memories, look-up tables and arithmetic logic units, interconnected by said busses which components are conditioned to operate in a particular mode in response to being provided, respectively, with instruction code words that determine the input data to the component, said data busses being variously selected to effectuate data paths to any of said components for processing in any conditioned component digital pixel data representative of x-ray image frames obtained with a video camera in an x-ray fluorography system, host central processing unit (host CPU) and memory means for storing digital code instructions for defining a plurality of x-ray image acquisition and image processing procedures, and user interface means for requesting said host CPU to effect performance of any of the defined procedures, said method comprising:

down-loading from said host CPU to a digital memory coupled to a digital video processor-central processing unit (DVP-CPU) prior to the time a procedure is to be performed, a list of instruction words (a recipe) for effecting performance of an entire processing procedure under the control of said DVP-CPU, said recipe including a sequence of configuration command packets of digital words corresponding to instruction code words by which said functional components are commanded to process data transmitted on said data busses,

providing interrupts to said DVP-CPU coincident with the occurrence of the vertical blanking intervals for the frames of said video camera, said DVP-CPU responding to each interrupt by causing said instruction code words in a packet to be provided selectively to said functional components during the current blanking interval between frame times to condition said components to operate in the instructed mode when the data is transmitted.

4,449,196

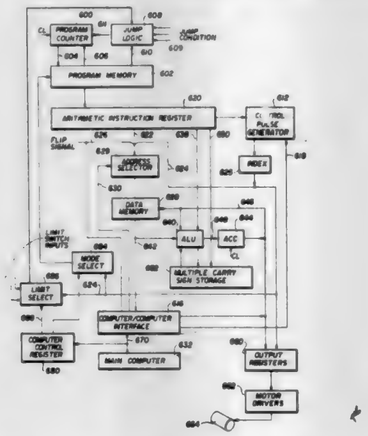
DATA PROCESSING SYSTEM FOR MULTI-PRECISION ARITHMETIC

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Division of Ser. No. 34,102, Apr. 27, 1979, Pat. No. 4,262,336.
This application Oct. 2, 1980, Ser. No. 193,028
Int. Cl.³ G06F *7/50*
U.S. Cl. 364—768 **8 Claims**

1. A computer for performing multiple precision arithmetic on three variables divided into a plurality of words comprising:

first means for storing each of said variables as a plurality of words;
second means for storing a carry bit for a first variable;
third means for storing a carry bit for a second variable;
means for performing arithmetic operations; and
fourth means for storing instructions to perform multiple precision arithmetic by incrementing in said arithmetic means a word of said second variable with a corresponding word of a third variable and the carry bit stored in said third means from a prior second variable word and incrementing a corresponding word of said first variable with the third variable and carry incremented word of said second variable and the carry bit stored in said second means for a prior first variable word before the next corresponding words of said second and third variables are incremented.



4,449,197

ONE-BIT FULL ADDER CIRCUIT

James L. Henry, Allentown, and Wendy A. Stocker, Center Valley, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 10, 1982, Ser. No. 356,765
Int. Cl.³ G06F *7/50*
U.S. Cl. 364—784 **2 Claims**



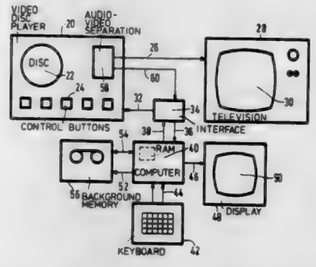
1. A one-bit full adder circuit comprising:
means forming a first NAND gate operatively connected for receiving first and second operand input signals and for producing a first output signal;
means forming a second NAND gate operatively connected for receiving complements of said first and second operand input signals and for producing a second output signal;
means forming a third NAND operatively connected for receiving said first and second output signals and for producing a third output signal;
means forming a fourth NAND gate operatively connected for receiving a carry input signal and said first and second output signals and for producing a fourth output signal;
means forming a fifth NAND gate operatively connected for receiving the complement of said carry input signal and said third output signal and for producing a fifth output signal;
means forming a sixth NAND gate operatively connected for receiving said first and fourth output signals and for producing a carry output signal;
means forming a first AND gate operatively connected for receiving said first and fourth output signals and for producing the complement of said carry output signal; and
means forming a second AND gate operatively connected for receiving said fourth and fifth output signals and for producing a sum output signal.

4,449,198

DEVICE FOR INTERACTIVE VIDEO PLAYBACK

Dirk J. Kroon, and Klaas H. J. Robers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1980, Ser. No. 114,489
Claims priority, application Netherlands, Nov. 21, 1979, 7908476
Int. Cl.³ H04N *5/76*; G06F *13/06*
U.S. Cl. 364—900 **7 Claims**



1. A system for interactive video playback, said system including a modified video playback apparatus (**20**) for a selectively addressable and optically readable video disc (**22**), said playback apparatus including manually activatable control means (**24**) for the selective activation of one of a number of playback and addressing modes, and also including a first output (**26**) for the video information read from a disc and organized in frames, characterized in that the system further comprises:
a. a first input (**32**) to said playback apparatus for receiving selection signals for the selective activation, in the same way as said manually activated control means, of one of said number of playback and addressing modes;
b. an extraction element (**58**) for receiving said video information and for detecting and extracting frame numbers therefrom for presentation to a second output (**60**);
c. a computer system comprising:
c1. interface means (**34**) for interfacing to said first input and second output;
c2. a second input (**36**) which is connected to said second output (**60**) via said interface means in order to receive said frame numbers;
c3. an internal random addressable read-write memory for storing the data of alpha-numerical characters, and of selection signals for said playback apparatus to be exclusively activatable by a request signal receivable within said read-write means;
c4. a third output (**38**) which is connected to said first input (**32**) via said interface means (**34**) in order to output an activated selection signal;
c5. an internal activation output for supplying control signals and data signals to said internal read/write memory;
c6. a fourth output (**46**) for supplying, under the control of a

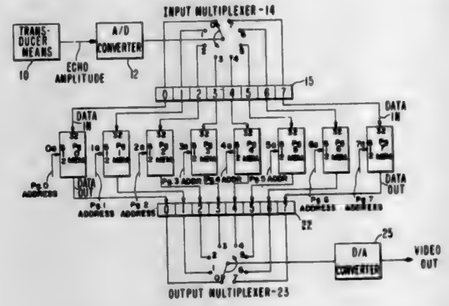
predetermined frame number which acts as data for the computer of said computer system, the data of a predetermined number of said alphanumerical characters as additional video information in order to display a playback or addressing mode, notably indicating a waiting situation while awaiting a request signal to be received;
c7. a keyboard (**42**) for inputting a request signal to said computer to activate, during a waiting situation, a change over to a next playback or addressing mode or waiting situation; and
d. said keyboard being suitable for inputting computer instructions which are organized according to a higher programming language;
e. an interface between said playback apparatus and said computer which includes, in addition to said extraction element, emulation switches for a number of said manually activatable control means in order to emulate electrically the activated condition of the associated control means.

4,449,199

ULTRASOUND SCAN CONVERSION AND MEMORY SYSTEM

Ronald E. Daigle, Sunnyvale, Calif., assignor to Diasonics Cardio/Imaging, Ind., Salt Lake City, Utah

Filed Nov. 12, 1980, Ser. No. 206,243
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 **30 Claims**



1. A memory arrangement for storing a two-dimensional array of M image memory columns and N image memory rows of data words and enabling parallel access for both said columns and said rows, wherein the improvement comprises:
X page memories comprising said memory arrangement, each page having a page number associated therewith and storing m page columns and n page rows of data words, wherein

$$m = M/X \text{ and } n = N$$

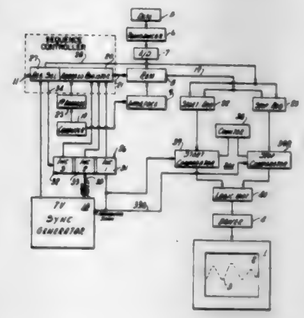
where X is an integer greater than 1
first means for providing a plurality of repetitive first blocks each comprising X data words corresponding to X successive data words along an image memory column,
second means coupled to said first means for selecting one of said page numbers and respective page row and column for each of said data words in each of said first blocks whereby each data word in a block is associated with a respective different page memory, and is associated with one of said page columns on its corresponding page according to its image memory column whereby the page column changes every X image columns, and wherein the page row of each data word is determined by adding the page number of the data word modulo X to the image column, said second means including means for causing each of said data words in said first blocks to be stored in the respective selected row and column of the respective selected page memory, and
means for reading second blocks from said page memories, said second blocks each comprising X data words corresponding to X successive data words along an image memory row, by accessing a particular page column and row of each of said plurality of page memories.

4,449,200

LINE SEGMENT VIDEO DISPLAY APPARATUS

James Utzerath, 12024 W. Kaul Ave., Milwaukee, Wis. 53225

Continuation of Ser. No. 21,098, Mar. 16, 1979, abandoned, which is a division of Ser. No. 695,100, Jun. 11, 1976, Pat. No. 4,145,754. This application Mar. 12, 1981, Ser. No. 243,216
Int. Cl.³ G06F *3/153*
U.S. Cl. 364—900 **6 Claims**



1. A graphical display apparatus including a line segment display generator and including a random access memory bank having sequential data word locations for storing digitized data samples in the form of data words each of which includes a like plurality of bits, comprising means for reading a signal input and including analog to digital converter means for creating said digitized data samples in the form of said data words and sequentially storing said data words in said data word locations of said random access memory bank, said data words including at least one bit combination designated as a control function word, said converter means being constructed to prevent generation and storing of said control function word, means for controlled loading of said control function word into any of said word locations, reading means for sequentially reading of the memory bank to produce related data display signals and control signals adapted to produce a line segment display, output and routing means for controlling the transmission of the display signals to the display means, and change means connected to said reading means for detecting the presence of at least one of said control function words and coupled to activate said output and routing means to change the transmission of data words to said display means in accordance with receipt of said control function words.

4,449,201

GEOMETRIC PROCESSING SYSTEM UTILIZING MULTIPLE IDENTICAL PROCESSORS

James H. Clark, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 30, 1981, Ser. No. 259,017
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 **6 Claims**

1. A processor for use in a geometric processing system comprising a plurality of identical function units, each of said function units operating on multiple bit data and comprising a plurality of one bit slice circuits each including arithmetic logic means for operating on a bit of said data with each of one bit slice circuit interconnected with like circuits including at least one lower order circuit for operating on a lower order bit an at

least one higher order circuit for operating on a higher order bit of said multiple bit data, each of said one bit slice circuits including a multiple level storage means which cooperatively functions as a dispersed data stack for said function unit, each one bit slice circuit comprising

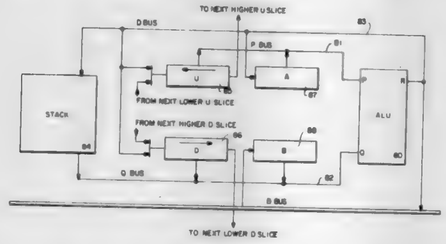
a single bit arithmetic logic unit having a first ALU input, a second ALU input, and an ALU output,

a first bus for transferring a data bit to said first ALU input,

a second bus for transferring a data bit to said second ALU input,

a third bus for transferring a data bit from said ALU output,

an upshifting register having an input and first and second outputs, said input operably connected to receive a data bit from a lower order circuit and said first output transferring the data bit to said first bus, and said first input operably connected to receive a data bit from said third bus and said second output transferring the data bit to a higher order circuit,



a downshifting register having an input and first and second outputs operably connected to receive a data bit from a higher order circuit and transferring the data bit to said second bus, and said first input operably connected to receive a data bit from said third bus and said second output transferring the data bit to a lower order circuit,

an accumulator register interconnected between said third bus and said first bus for receiving a data bit from said ALU output and applying said data bit to said first ALU input,

an interface register connected to said second bus for transferring a data bit from an input/output bus to said second bus, and

a multiple level register interconnected with said second and said third bus for saving and restoring bits for processing, and

control means for controlling said function units to cooperatively provide at least a portion of one of the functions including matrix transformations, clipping and scaling functions.

4,449,202

FULL DUPLEX INTEGRATED CIRCUIT COMMUNICATION CONTROLLER

George W. Knapp, Cambridge; Bernard B. Spaulding, The Plains, and John T. Tolbert, Cambridge, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 4, 1981, Ser. No. 327,650
Int. Cl.³ G06F *13/00*; H01L *25/00*
U.S. Cl. 364—900 **11 Claims**

1. An integrated circuit for controlling the transfer of a data message between a plurality of peripheral devices and an associated peripheral device each having a processor and a memory connected to said integrated circuit, said data message including encoded data signals, said integrated circuit comprising:

a transmission channel for transmitting data messages between said peripheral devices;

first storage means connected to said transmission channel for storing a data message transmitted over said transmission channel from another of said peripheral devices;

first means for controlling the storing of a data message in said storing means;

second storage means for storing a plurality of first control signals for controlling the operation of said controlling means;

said integrated circuit having first, second, third and fourth sequentially located edges;

said first storage means being located substantially closer to said third edge than to said first edge;

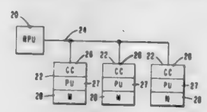
said first controlling means being located substantially closer to said fourth edge than to said second edge;

and said second storage means being located adjacent a corner formed by said third and fourth edges.

6. An integrated circuit for controlling the transfer of a data message between one of a plurality of peripheral devices and an associated peripheral device each having a processor and a memory connected to said integrated circuit, said data message including opening and closing control signals, address signals, encoded data signals and message validity signals, said integrated circuit comprising in combination:

a plurality of transmission lines for transmitting data messages between the peripheral devices and between the integrated circuit and its associated memory and processor;

first means connected to said transmission lines for receiving and storing a data message received over said transmission





lines, said first storing means including a plurality of shift registers, each of which stores a portion of the data message including the address signals;

first means connected to said transmission lines and to said first receiving and storing means for controlling the operation of said first storing means and for decoding the data signals in the received data message;

means connected to said storing means for checking the message validity signals in the received data message;

second means for storing the address of the associated peripheral device;

comparing means connected to said first and second storing means for generating a first control signal in response to the occurrence of a coincidence between the address of the associated peripheral device and the address signals of the received data message;

first control storage means for storing a plurality of second control signals for controlling the operation of said decoding means, said checking means and said comparing means thereby enabling said integrated circuit means to receive and transfer the data signals to the memory of its associated peripheral device in response to the generation of said second control signals;

second controlling means connected to said transmission lines and said first control storage means, said first storage means storing third control signals for enabling said second controlling means to transmit a data message over said transmission channel to another of said peripheral devices;

said integrated circuit having first, second, third and fourth sequentially located edges;

said transmission lines engaging said second, third and fourth edges;

said first receiving and storing means being located substantially closer to said third edge than to said first edge and arranged along said third edge to reduce the length of said third edge;

said first controlling means being located substantially closer to said fourth edge than to said second edge;

said checking means being located substantially closer to said third edge than to said first edge;

said second address storing means being located substantially closer to said third edge than to said first edge;

said second controlling means being located substantially closer to said first edge than to said fourth edge;

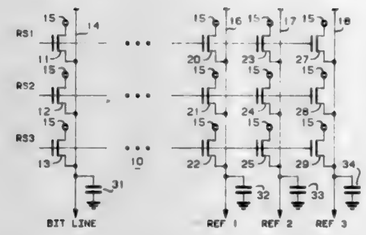
said comparing means being located substantially closer to said fourth edge than to said second edge adjacent said first and second storing means to reduce the length of the interconnecting lines and thereby the capacitance and resistance of the circuit and said first storage means being located adjacent the corner formed by said third and fourth edges.

4,449,203

MEMORY WITH REFERENCE VOLTAGE GENERATOR

Richard H. Adlhoch, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 25, 1981, Ser. No. 238,178
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—104 **9 Claims**



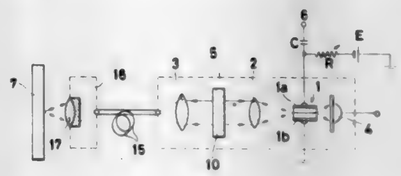
1. A read only memory having a plurality of memory cells arranged in columns and rows, the memory also comprising: the memory cells being capable of providing an output having more than two states; a plurality of comparators selectively coupled to the columns; a plurality of reference sources arranged in groups wherein each group is coupled to a different comparator, each of the reference sources is a transistor connected in a source follower configuration and each of the transistors is a field effect transistor and at least two of the transistors have threshold voltages different from each other; and logic means coupled to the comparators to receive an output provided by each comparator, the logic means providing digital bits representative of the state of a selected memory cell.

4,449,204

INFORMATION PROCESSING APPARATUS USING A SEMICONDUCTOR LASER DIODE

Junichi Shimada; Yoshinobu Mitsuhashi; Kenjiro Sakurai; Takitaro Morikawa, all of Ibaragi, and Shuichi Mitsuzuka, Toda, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,211
Claims priority, application Japan, Mar. 31, 1980, 55-40397
Int. Cl.³ G11C *13/08*
U.S. Cl. 365—127 **4 Claims**



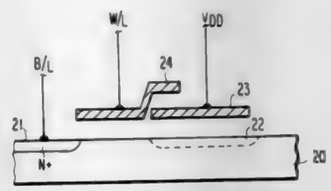
1. In an optical information processing apparatus comprising an information recording medium, means including a semiconductor laser diode, a current input means and a terminal voltage detector means adapted to issue a laser beam and an optical system adapted to direct the laser beam from the laser diode toward the information recording medium, and then return the reflected laser beam from said information recording medium to said semiconductor laser diode, the improvement wherein said optical system is provided with a λ/4 plate capable of rotating the plane of polarization of the reflected beam from said recording medium by 90° relative to the plane of polarization of the issued laser beam, thereby permitting a variation in the terminal voltage input to said detector means which corresponds to the variation in the intensity of the reflected beam being detected by said semiconductor diode and which is linearly related to the output of said current input means.

4,449,205

DYNAMIC RAM WITH NON-VOLATILE BACK-UP STORAGE AND METHOD OF OPERATION THEREOF

Charles R. Hoffman, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,479
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 **14 Claims**



3. A semiconductor memory device having a plurality of memory cells, each of said memory cells comprising:

an FET dynamic memory unit, said FET dynamic memory unit including a first FET having a source coupled to a bit line of said memory device, a drain coupled to a data node of the cell and a gate coupled to a word line of said memory device, and a first capacitor coupled between said data node and a first pulsed voltage source; and

a non-volatile memory unit coupled to said dynamic memory unit for storing data from said dynamic memory unit and transferring data to said dynamic memory unit in a

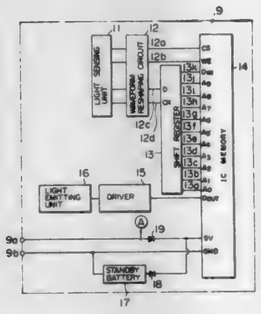
non-volatile manner, said non-volatile memory cell comprising a dual gate second FET having a source coupled to said data node, and a first gate comprising a floating gate, a second capacitor coupled between said floating gate and said data node, a third capacitor coupled between said floating gate and a second pulsed voltage source with a dielectric material of said second capacitor comprising DEIS material, and a second gate coupled to a third pulsed voltage source.

4,449,206

PORTABLE MEMORY DEVICE

Naoki Tokitsu, Chiryu; Toshihiko Itoh, Nagoya, and Toshitaka Fujiwara, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 4, 1981, Ser. No. 327,612
Claims priority, application Japan, Dec. 9, 1980, 55-174052
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—229 **5 Claims**



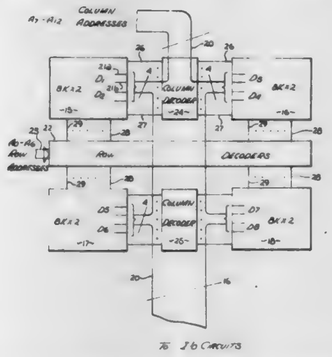
1. A portable memory device for receiving power from an external means and for transmitting and receiving various signals to and from the external means, said device comprising:
semiconductor memory means which can be written into and read from for storing data signals;
a converting circuit including nonconductive connector means for receiving write and read control signals and for receiving and transmitting data and for receiving address information in the form of nonconductive signals, and converting means for converting said nonconductive signals into electric signals and vice versa;
shift register means for effecting serial-to-parallel conversion of address signals and data between said converting circuit and said semiconductor memory means;
power circuit means for supplying power to said semiconductor memory means, said converting circuit, and said shift register;
conductive connector means for selectively providing power from said external means to said power circuit means;
a standby battery for providing a backup power supply for said semiconductor memory means when said conductor connector means is not providing power to said power circuit means;
diode means for preventing current from being supplied from said standby battery to said converting circuit and said shift register; and
a case accommodating said conductive connector means, said semiconductor memory means, said standby battery, said converting circuit, said shift register means, said power circuit means, and said diode means.

4,449,207

BYTE-WIDE DYNAMIC RAM WITH MULTIPLEXED INTERNAL BUSES

Roger I. Kung; Stephen T. Flannagan; Jonathan N. Spitz, all of Beaverton; Perry H. Pelley, III, Aloha; Robert S. Riley, Gaston, and Douglas J. Covert, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 29, 1982, Ser. No. 373,218
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—230 **15 Claims**



6. In a random-access memory disposed on a substrate an improvement comprising:
at least a first pair of input/output lines disposed within said memory;
a sense amplifier coupled to said first input/output lines for sensing data on said lines;
a write buffer coupled to said first input/output lines for writing data into said memory through said lines;
a memory input/output terminal;
a data-in buffer coupled to said terminal;
a data-out buffer coupled to said terminal;
a second pair of input/output lines interconnecting said data-in and data-out buffers with said sense amplifier and said write buffer;
multiplexing means for enabling said sense amplifier and data-out buffer and disabling said data-in buffer and write buffer when data is read out of said memory, and for enabling said write buffer and data-in buffer and disabling said data-out buffer and sense amplifier when data is read out of said memory;
whereby data is read into and out of said memory from said terminal via said first and second pair of input/output lines.

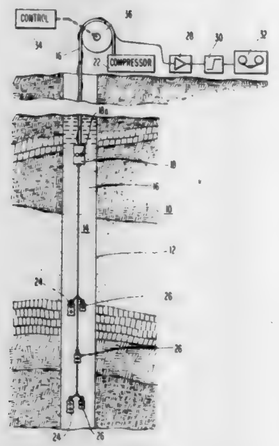
4,449,208

LITHOLOGIC STUDIES UTILIZING ACOUSTIC WAVE ATTENUATION

George P. Moeckel, Houston, and George C. Wallick, Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 23, 1981, Ser. No. 324,289
Int. Cl.³ G01V *1/40, 1/30*
U.S. Cl. 367—30 **11 Claims**

1. A tool for seismic exploration comprising:
a source of acoustic energy;
first paired sensor means, comprising means for detecting the flux of acoustic energy through a unit area, paired with means for detecting the absolute pressure, said first paired sensor means being spaced from said source of acoustic energy;
second paired sensor means comprising means for detecting the flux of acoustic energy through a unit area and means for detecting the absolute pressure, said second paired means being spaced from said source of acoustic energy and from said first pair, and
a third means for detection of pressure;



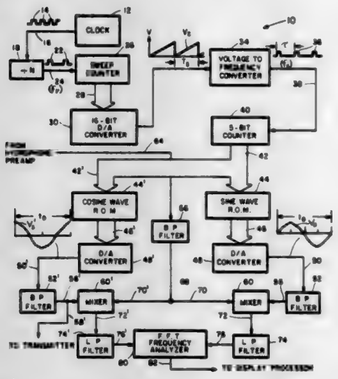
wherein said source of energy and said detectors are spaced from one another along a cable and are adapted to be raised and lowered within a borehole in the earth for seismic exploration purposes.

4,449,209

UTILIZATION OF ENTIRE TRANSMITTED BANDWIDTH IN CONTINUOUS TRANSMISSION FM SONAR

William J. Zehner, Lynn Haven, and David P. Skinner, Panama City, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1982, Ser. No. 338,787
Int. Cl.³ G01S *15/34*
U.S. Cl. 367—102 **6 Claims**



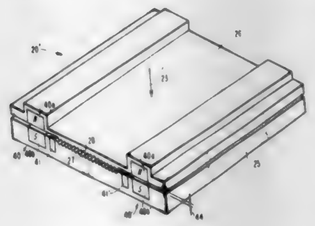
1. A continuous transmission frequency modulated sonar of the type wherein a target range signal is generated in proportion to the difference frequency between a varying transmission frequency that varies linearly during repetitive frequency sweeps and the frequency of a return signal, said sonar comprising:
signal generating means for simultaneously generating direct and quadrature signals at said varying transmission frequency, one of said direct and quadrature signals being used to project an insonification signal;
complex demodulator means, responsive to said direct and quadrature signals and to said return signal, for providing first and second outputs including first and second sum and first and second difference frequencies, respectively, said difference frequencies being characterized as positive when the target is at such a range that the return signal is received during a predetermined frequency sweep and being characterized as negative when the target is at such a range that the return signal is received during a subsequent sweep;
first and second filter means, responsive to said first and second outputs of said demodulator means for rejecting said sum frequencies and passing said first and second difference frequencies; and
means, responsive to said first and second difference frequencies, for providing target range signals corresponding only to said first and second difference frequencies characterized as positive, whereby ambiguous target range signals are avoided.

4,449,210

FIBER OPTIC HYDROPHONE TRANSDUCERS

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 21, 1981, Ser. No. 332,791
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—149 **12 Claims**



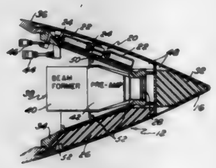
1. A fiber optic hydrophone for detecting applied acoustic signals, said hydrophone including a light source, a detector, a waveguide disposed to transmit light from said light source to said detector, and a first member having a plurality of ridges thereon positioned at a first predetermined pitch and a second ridged member having a plurality of ridges thereon positioned substantially parallel to said ridges on said first member to form first and second ridged members having parallel juxtaposed rippled surfaces in contact with the surface of said waveguide, wherein the improvement comprises:
one of said rippled surfaces having a first predetermined ripple pitch, the other of said rippled surfaces having a ripple pitch different than said first predetermined ripple pitch whereby the selection of the ripple pitch relationship determines the spatial sensitivity distribution of said hydrophone, so that applied acoustic signals modulate the light transmitted through said waveguide by means of microbend attenuation in the waveguide, the modulated light providing an indication of the presence of acoustic signals.

4,449,211

LOW DRAG BODY CONFORMAL ACOUSTIC ARRAY

Richard L. Schmidt; Edmund J. Sullivan, both of Portsmouth; Bernard J. Myers, Bristol, all of R.I., and Edward G. Liszka, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1982, Ser. No. 395,388
Int. Cl.³ H04B *13/00*
U.S. Cl. 367—153 **9 Claims**



1. A conformal array comprising:
a pressure hull, fixedly attached to the forward end of a torpedo midbody, having the general shape of a shell of revolution tapering from a diameter smaller than the diameter of said torpedo midbody to a point thereby forming a preselected shape, and being truncated a preselected distance from the torpedo end thereof to form a smaller diameter end said pressure hull having inner and outer surfaces of revolution;
a plurality of conformal array means, affixed to and conforming to the shape of the outer surface of said pressure hull, for receiving acoustic pressure signals and converting said pressure signals to proportional electrical signals;
beamforming means, located within and attached to the smaller end of said pressure hull, for receiving said proportional electrical signals from said array means;
connecting means, fixedly mounted on the smaller end of said pressure hull and connected to said beamforming means, for transmitting said proportional electrical signals from said array means to said beamforming means;
a thin and hence acoustically transparent outer fairing, having an identical tapered shell of revolution shape as that of said pressure hull and having a large diameter the same as that of said torpedo midbody, said fairing at the larger end thereof fixedly attaching to said pressure hull forming a conformal cavity therebetween within which said array means are disposed; and
pressure compensating means attached to said pressure hull within said cavity for equalizing pressure within said cavity with the sea pressure on the outer surface of said fairing.

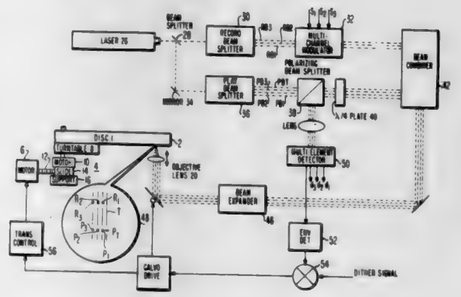
4,449,212

MULTI-BEAM OPTICAL RECORD AND PLAYBACK APPARATUS

Charles W. Reno, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,550
Int. Cl.³ G11B *7/00*; G02F *1/33*
U.S. Cl. 369—44 **11 Claims**

1. A data retrieval system for recovering data from a record medium, said data being recorded in a multiplicity of separate tracks on a surface of said record medium, said system comprising:
means for supporting said record medium;
a light source for providing a beam of light;
means for splitting said beam of light into a plurality of light beams, said splitting means effecting a dithering of one of said plurality of light beams such that said one of said plurality of light beams exhibits periodic excursions orthogonal to the elongated dimension of said tracks, said splitting means having a single transducer which is driven by a plurality of drive signals which deflect said beam of light to produce said plurality of light beams, the angle of deflection of each of said plurality of light beams being proportional to the frequency of the drive signal used to deflect said each of said light beams, one of said plurality of drive signals having a variable frequency for dithering said one of said plurality of light beams;
means for directing said plurality of said light beams toward said surface of said record medium;
means for focusing said plurality of said light beams, directed by said directing means, to produce diffraction limited spots on said surface of said record medium;



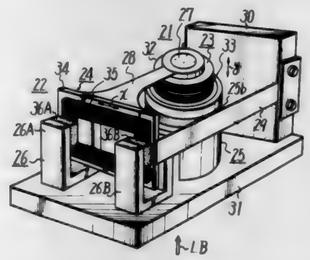
means for establishing relative motion between said light beam spots and said surface of said record medium;
said directing means including means for deflecting the direction of said plurality of beams during said relative motion;
means, responsive to the position of said light spot of said dithered light beam on said surface of said record medium, for generating a control signal for controlling said deflecting means; and
said deflecting means being moved to adjust the direction of said plurality of beams in response to said control signal from said generating means.

4,449,213

OPTICAL READING APPARATUS

Kazutaka Noborimoto, Tokyo; Keiji Maruta; Junichi Suzuki, both of Kanagawa, and Kenji Shintani, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,875
Claims priority, application Japan, Dec. 18, 1980, 55-179891
Int. Cl.³ G11B *7/08*
U.S. Cl. 369—45 **6 Claims**



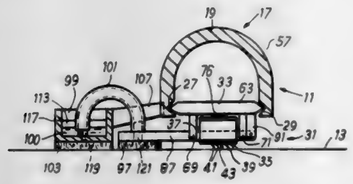
1. In an optical reading apparatus, the combination of:
a fixed support member;
a first pair of parallel, spaced apart leaf springs fixed at one ends thereof to said fixed support member and each having two opposed faces so as to be flexible substantially only in a first direction perpendicular to said faces of the first pair of leaf springs;
a movable support member extending between and connected to other ends of said leaf springs for movements relative to said fixed support member in said first direction;
a second pair of parallel, spaced apart leaf springs fixed at one ends thereof to said movable support member and extending from the latter generally parallel to said first pair of leaf springs in the direction toward said one ends of the latter, each of said second pair of leaf springs having two opposed faces which are oriented perpendicularly to said faces of said first pair of leaf springs so as to be flexible substantially only in a second direction at right angles to said first direction; and
objective lens means located intermediate said first pair of leaf springs and being mounted between other ends of said second pair of leaf springs for movements relative to said fixed support member in said first and second directions.

4,449,214

RECORD CLEANING MECHANISM

Alexander R. Rangabe, Stoneacre, Denmead, Portsmouth, England

Filed Sep. 18, 1981, Ser. No. 303,709
Claims priority, application United Kingdom, Sep. 26, 1980, 8031131
Int. Cl.³ G11B *3/58*
U.S. Cl. 369—72 **20 Claims**



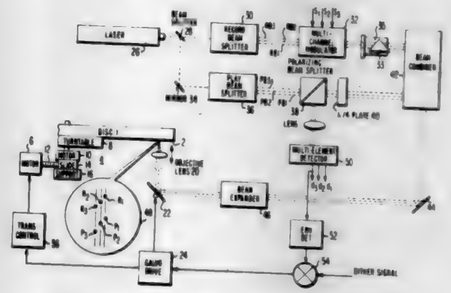
1. Cleaning mechanism for phonograph disc records, comprising a carrier, support means for positioning the carrier over a disc record groove when the latter is in operative location on a turntable and adapted to enable movement of the carrier in said operative location of the record in a direction generally towards the axis of rotation of the record, and a probe mounted on the carrier, said probe being a unitary element and generally rod-like and having a relatively stiff, hard wearing tip part which engages within the record groove at or substantially at the bottom of the groove, and a mounting part substantially longer than the tip part, extending from the tip part and supported on the carrier at a location remote from the tip part so as to impart flexibility to the mounting part, the mounting part and the tip part being mutually inclined so that, in operation, the mounting part is in a trailing attitude whilst the tip part is inclined at an acute angle relatively to the record with respect to the direction of travel of the point on the record engaged by the tip part, so as to maintain during rotation of the record a bulldozing action by the tip part to raise noise inducing particles out of the record groove, whilst the mounting part, through flexure thereof, enables the tip part to surmount obstructions in the groove.

4,449,215

APPARATUS FOR VARYING TRACK SPACING IN MULTI-TRACK OPTICAL RECORD SYSTEMS

Charles W. Reno, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1982, Ser. No. 361,220
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—111 **14 Claims**



1. A multiple beam optical information recording or retrieval apparatus for use in recording data on or playing back data from a surface of a disc-shaped record medium having a multiple track format, said apparatus comprising:
means for supporting said record medium;
means including a light source for providing a plurality of beams of light, each of said plurality of beams having a beam axis, the beam axes of said each of said plurality of beams being substantially aligned in a plane;
means for directing said plurality of said light beams to said surface of said record medium along a given light path;
means for focusing said plurality of said light beams to produce spots on said surface of said record medium;
means for establishing relative motion between said light beam spots and said surface of said record medium such that one of said light beam spots traces a predetermined path on said surface of said record medium;
said plurality of light beams being aligned such that said light spots are incident on said surface of said record medium and the centers of said spots lie on a straight line; and
means, positioned in said light path, for varying the angle formed between said predetermined path and said straight line through the center of said spots to adjust the track spacing between adjacent tracks in said multiple track format, said varying means being rotated about a given axis and being coaxial with a symmetrical axis of said plurality of beams.

4,449,216

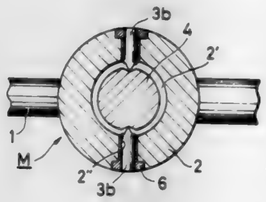
PICKUP ARM DEVICE

Shinichi Kudo, Neyagawa, and Haruyuki Otani, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Company, Kadoma, Japan

Filed Oct. 16, 1981, Ser. No. 312,011
Claims priority, application Japan, Oct. 17, 1980, 55-146162; Jun. 5, 1981, 56-87298
Int. Cl.³ G11B *3/10*
U.S. Cl. 369—255 **6 Claims**

1. A pickup arm device for a disc phonograph player comprising a pickup arm, a pivot holder integrally combined with said pickup arm and having an opening substantially at the center thereof to receive therein a pivot bearing and a pair of through-holes at opposite sides of said pivot holder, and a pair of pivots inserted into the pair of through-holes until they come into contact with said pivot bearing from the opposite sides, at least one of the paired pivots being a straight pivot free

of any irregularities on the side surface thereof and being fixedly secured to said pivot holder by means of a hardenable



adhesive cured while being biased against said pivot bearing under a preselected load.

4,449,217

PCM COMMUNICATION SYSTEM AND METHOD OF OPERATION

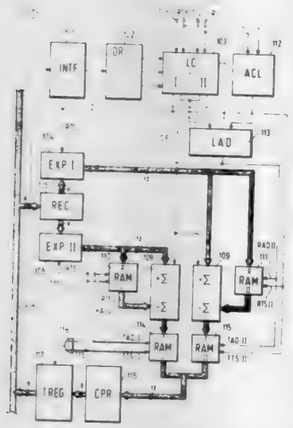
Joachim W. Simon, Goslar, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,816

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005739

Int. Cl.³ H04M *3/56*

U.S. Cl. 370—62 **9 Claims**



1. In a process for control of the transmission of PCM signals between stations of a PCM time-division multiplex communications network in a conference service by means of a central conference control circuit, said network being of the type in which a central processing unit allots to each station involved a transmitting time slot within a cyclically repeating time bracket of known lengths and a receiving time slot with said cyclically repeating time bracket, and, in which, in one time bracket, PCM signals transmitted from the conference-related stations and received in the central conference control circuit are summed algebraically, stored temporarily, and for transmission to the respective conference-related stations are subjected to a partial summation, with the elimination of the PCM signal emitted by each respective station, in which partial summation the PCM signals corresponding to the partial sums, are transmitted during another time bracket to the conference-related stations, and in which time slots are provided within predetermined portions of the respective time bracket for the transmission of signals not relevant to the conference; the improvement which comprises:

(a) performing said algebraic summation directly upon the receipt of the PCM signals,

(b) simultaneously with step (a) performing said temporary PCM signal storage in a manner specific to the station only until the expiration of the next succeeding time slots for signals not relevant to the conference,

(c) temporarily storing results of said partial summation in said slots for transmission of signal not relevant to the conference; and

(d) transmitting the PCM signals corresponding to the partial sums to the conference-related stations immediately after said slots.

4,449,218

ANALOG/DIGITAL TELECOMMUNICATION SUBSCRIBER STATION

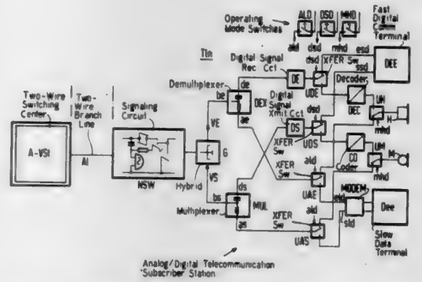
Herbert Strehl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,190

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040263

Int. Cl.³ H04J *1/08*

U.S. Cl. 370—69.1 **20 Claims**



1. An analog/digital two-party line system for connection to a two-wire line, comprising:

a frequency multiplexer including a multiplex signal output, an analog signal input and a digitial signal input and operable to multiplex analog signals in the telephone band and digital signals in a predetermined band outside of the telephone band;

a frequency demultiplexer including an analog signal output, a digital signal output and a multiplex signal input, and operable to demultiplex analog signals in the telephone band and digital signals in the predetermined band outside of the telephone band;

a broad-band hybrid including a two-wire input/output for connection to a two-wire line, a transmission branch connected to said multiplex signal output of said multiplexer, and a receiving branch connected to said multiplex signal input of said demultiplexer;

a digital transmission circuit connected to said digital signal input of said multiplexer;

a digital receiving circuit connected to said digital signal output of said multiplexer;

a first telephone transmitter and a first telephone receiver respectively connected to said analog signal input and said analog signal output;

an encoder and a decoder respectively connected to said digital transmission and receiving circuits; and

a second telephone transmitter and a second telephone receiver respectively connected to said digital transmission and receiving circuits.

4,449,219

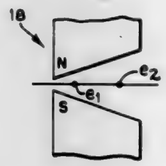
FREE ELECTRON LASER

Todd I. Smith, 2260 St. Francis Dr., Palo Alto, Calif. 94303; Luis R. Elias, 1560 Ashcroft Way, Sunnyvale, Calif. 94087, and John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94306

Filed Jul. 6, 1979, Ser. No. 55,163

Int. Cl.³ H01S *3/09*

U.S. Cl. 372—2 **11 Claims**



1. A free electron laser which comprises

means for directing a relativistic electron beam along a predetermined path,

means for dispersing electrons laterally and/or angularly in response to energy differences thereof, and

means disposed along said path for periodically deflecting the dispersed electrons transversely relative to said path in alternating opposite directions, said deflecting means establishing fields which vary between paths of dispersed electrons.

4,449,220

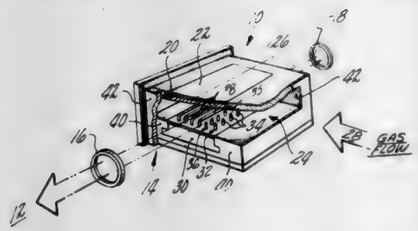
APPARATUS AND METHOD FOR DEPOSITION OF ELECTRICAL POWER IN AN ELECTRIC DISCHARGE LASER

Peter P. Chenausky; Robert H. Bullis, both of Avon; Clyde O. Brown, Newington, all of Conn., and Ernest B. Manning, deceased, late of Bolton, Conn. (by Anne M. Manning, heir), assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,961

Int. Cl.³ H01S *3/097*

U.S. Cl. 372—83 **22 Claims**



1. An apparatus for the deposition of electrical power into a gaseous medium flowing through a discharge region comprising:

an anode having a configuration of a plane and defining one side of a gas path through the discharge region;

a cathode, disposed in a spaced apart substantially parallel relation to the anode and defining another side of the gas path through the discharge region, including at least one row of preionization electrodes extending into the discharge region for applying a first electric potential to ionize gas flowing past the preionization electrodes and at least one power electrode disposed downstream of and substantially parallel to the row of preionization electrodes, extending into the discharge region, having a substantially parallel relation to the anode for applying a second electric potential to generate a discharge, substantially diffuse and stable, between the cathode and the anode; and

ballast means connected to the preionization electrodes for controlling electrical current passing from the preionization electrodes to the anode through the ionized gas.

4,449,221

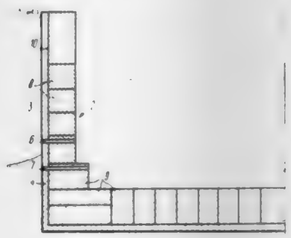
ORE-SMELTING ELECTRICAL FURNACE BATH

Viktor R. Keller, ulitsa Lenina, 4, kv. 48, poselok Pobugskoe, Golovanevsky raion, Kirovogradskaya oblast; Valery D. Linev, ulitsa Gertsena, 11/6, kv. 26, Leningrad; Sergei G. Mittsev, ulitsa Pirogova, 1, kv, 37, poselok Pobugskoe, Golovanevsky raion, Kirovogradskaya oblast; Mikhail Z. Zhivov, prospekt Engelsa, 28, kv. 107, Leningrad; Boris B. Pelts, ulitsa Lesnaya, 63/43, kv. 157, Moscow; Alexandr N. Popov, ulitsa Marshala Timoshenko, 28, kv. 58, Moscow; Vladimir L. Rozenberg, Leningradsky prospekt, 59, kv. 27, Moscow; Alexandr E. Burochkin, Pochtovy pereulok, 1, kv. 1, poselok Pobugskoe, Golovanevsky raion, Kirovogradskaya oblast; Jury A. Romanenkov, Svetlanovsky prospekt, 66, kv. 131, and Boris P. Onischin, naberezhnaya reki Fontanki, 50, kv. 44, both of Leningrad, all of U.S.S.R.

Filed Apr. 26, 1982, Ser. No. 371,812

Int. Cl.³ F27D *1/04*

U.S. Cl. 373—44 **4 Claims**



1. A bath for ore-smelting electrical furnace intended for reduction electrical smelting processes with electrodes buried into the melted slag, comprising a metallic jacket provided with means for its external cooling, a sealing layer adjacent to said jacket, and a lining adjacent to said sealing layer and forming the walls and bottom of the bath, said walls in the melted slag zone being made from graphitized refractory blocks having a thickness at which the total thermal resistance of these blocks and of said sealing layer ranges from 0.01 to 0.09 $m^2.hr.deg./kcal$, said walls below the melted slag zone and said bottom consisting of refractory carbon blocks.

4,449,222

DIGITAL MODULATION QUALITY MONITOR

Joseph A. Crossett, III, Richardson, and Paul R. Hartmann, Allen, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 23, 1981, Ser. No. 324,166

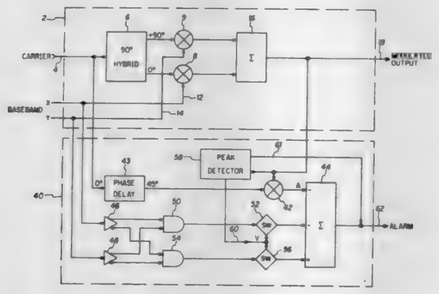
Int. Cl.³ H03K *13/32*

U.S. Cl. 375—10 **13 Claims**

1. In modulation of a carrier signal with a digital baseband signal, a technique for quality monitoring the modulated signal without full demodulation comprising:

partially demodulating said modulated signal so as to yield a partial signal set related to the set of baseband signal values by a predetermined mapping between the members thereof and the members of the partial signal set, said partial signal set having fewer members than the baseband signal set; and

translating said baseband signal, in accordance with said mapping, providing translated signal values corresponding to members of said partial signal set, for correlation against said signal which has been partially demodulated.

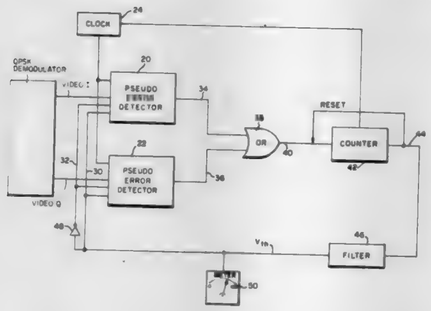


4,449,223

EYE OPENING MONITOR

Nathan A. Liskov, Waltham; Robert G. Curtis; Caesar J. Favaloro, both of Sudbury, all of Mass., and Geogory L. Pence, Allen Park, Mich., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 162,339, Jun. 23, 1980, abandoned.
This application Apr. 30, 1982, Ser. No. 373,763
Int. Cl.³ H03K *13/32*
U.S. Cl. 375—10 2 Claims



1. An eye opening monitor circuit for a QPSK demodulator, comprising:

means for comparing the in-phase signal from said demodulator to a voltage range defined by $-V_{th}$ to $+V_{th}$, the output of said in-phase comparing means being a first input to an OR gate;

means for comparing the quadrature-phase signal from said demodulator to said voltage range defined by $-V_{th}$ to $+V_{th}$, the output of said quadrature-phase comparing means being the second input to said OR gate;

means responsive to the output of said OR gate for generating said $-V_{th}$ and $+V_{th}$ voltages, the range of which is decreased when either said in-phase or quadrature-phase signal is within said range defined by $-V_{th}$ and $+V_{th}$ voltages;

said generating means comprising a clocked counter providing a carry-out pulse at a predetermined count, the period between carry-out pulses being altered by resetting said counter with said output of said OR gate; and

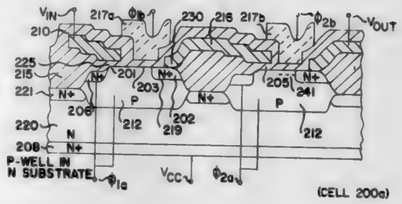
means for providing a visual display proportional to said range.

4,449,224

DYNAMIC MERGED LOAD LOGIC (MLL) AND MERGED LOAD MEMORY (MLM)

Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022

Filed Dec. 29, 1980, Ser. No. 220,491
Int. Cl.³ H01L *27/04, 29/78;* G11C *11/40*
U.S. Cl. 377—79 41 Claims



1. A dynamic logic element formed in semiconductor material comprising:

a semiconductor substrate of a first conductivity type;

a first region of second conductivity type formed in said substrate with a first PN junction formed between said first region and said substrate;

means for reverse biasing said first PN junction thereby to electrically isolate said first region from said substrate;

an MOS transistor with source and drain each of said first conductivity type formed in said first region with a second PN junction formed between said drain and said first region, said first region containing a channel region between said source and drain;

a bipolar load transistor possessing an emitter, a base and a collector, said emitter also comprising the drain of said MOS transistor, said base comprising said first region and said collector being disposed vertically below said MOS transistor in said semiconductor substrate;

insulation formed over said channel region;

a plurality of gates formed above said channel region on said insulation, each gate controlling the conductivity of a corresponding portion of said channel region underlying said gate so that the entire length of said channel can be controlled by said plurality of gates and at least one of said gates providing an input terminal for carrying an input signal to said logic element;

means for conducting charge, said means for conducting being in electrical contact with said drain-emitter region and forming an output terminal for said logic element;

means for applying signals to each of said plurality of gates, to said source region of said MOS transistor and to the base of said bipolar transistor, said means for applying signals including means for applying a first clock signal during a first time interval to the base of said bipolar transistor and means for applying a second clock signal during a second time interval to at least one of said plurality of gates, said first clock signal tending to leave the junction between said base and said emitter reverse biased during said second time interval following said first time interval, said second clock signal tending to induce an inversion layer in said first region under said at least one of said plurality of gates during said second time interval;

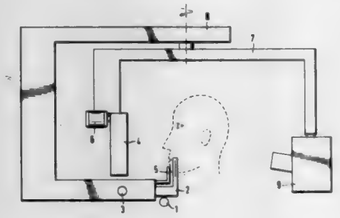
means for applying a selected potential to said collector of said bipolar transistor.

4,449,225

METHOD TO BE USED IN PANORAMIC X-RAY PHOTOGRAPHY AND AN APPARATUS FOR CARRYING OUT THE METHOD

Erkki Tammisalo, Linnunpäätie 3, SF-20840, Turku 84, Finland

Filed Feb. 16, 1982, Ser. No. 348,996
Claims priority, application Finland, Feb. 20, 1981, 810530
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—39 5 Claims



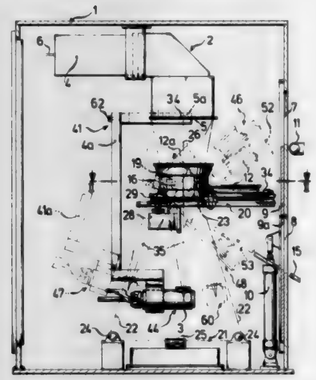
1. In a method to be used in panoramic X-ray photography for adjusting the shape of the layer which is photographed with precision to the correct point in relation to the patient before photographing is started, and of the type wherein an X-ray device performs a rotational movement and comprises an X-ray source and a moving film, and wherein the patient is supported by means of support members and, for the purpose of adjustment, a viewing member is moved to the correct point in relation to the patient, the improvement comprising maintaining the support members and the suspending point of the X-ray device in a stationary position in relation to each other and performing the pre-adjustment of the shape of the layer which is photographed with precision by preselecting, on the basis of the position or reading of the viewing member, the film speed.

4,449,226

VEHICLE WHEEL TESTING OR INSPECTION SYSTEMS

Wilhelm Collmann, Auf der Höhe 25, 2400 Lübeck, Fed. Rep. of Germany

Filed Apr. 12, 1982, Ser. No. 367,424
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115735
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—58 11 Claims



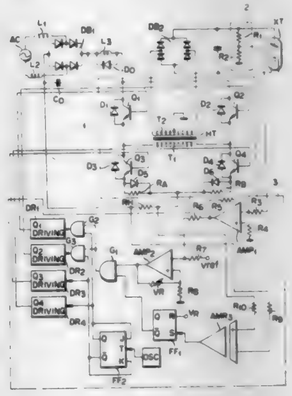
1. In a system for X-ray inspection of a motor vehicle wheel comprising a rim and an inner support structure, of the kind comprising an X-ray tube situated in a radiation-proof casing and a stationary X-ray screen with a post-positioned monitor, for totally transilluminating the wheel element held by sections in the beam path of the X-ray tube, the axial rim halves and the inner support structure being transilluminated in the corresponding testing or inspection position by rotation of the wheel, and a system for reception of the wheel which is fed in rim-down, for placing said wheel in the beam path as well as discharging the wheel after inspection, the invention which consists in that the system comprises a chute which is displaceable around a horizontal pivot spindle and intended for the wheel, said chute being pivotally displaceable into the positions in question for reception, immobilisation during inspection and discharge of the wheel, and wherein said pivot spindle of said chute extends parallel to said X-ray screen as well as to the working surface of said chute, said chute having a stop system for location of the inspection position of the wheel on said chute and a clamping mechanism for immobilising the wheel slipped into the inspection position, and wherein said X-ray tube is displaceable at least between a first operating position for transillumination of said axial rim halves and a second operating position for transillumination of said inner support structure of the wheel.

4,449,227

X-RAY APPARATUS

Teruaki Osako, 708 Chisan Mansion, 3-16, Naka-machi, Utsunomiya-shi, Tochigi-ken, Japan

Filed Sep. 10, 1981, Ser. No. 300,746
Claims priority, application Japan, Sep. 13, 1980, 55-127737
Int. Cl.³ H05G *1/30*
U.S. Cl. 378—112 2 Claims



1. An X-ray apparatus comprising:

an alternating current (AC) power source;

a first rectifier circuit connected to the AC power source to cause an alternating current input to be rectified;

a high-tension transformer connected to receive an output of said first rectifier circuit and generate a high-voltage output;

a bridge inverter comprising:

first and second switching elements coupled to said first rectifier circuit and arranged in first and second arms of said inverter, forming a closed circuit together with a primary winding of said high-tension transformer and each adapted to operate as a high-frequency chopper,

a third switching element and first parallel circuit arranged at a third arm of said inverter, said first parallel circuit being connected in series with said third switching element and comprised of a diode and resistor having a resistance value which causes energy accumulated in said primary winding to be dissipated at a steady, gradual pace when the polarity of said bridge inverter is reversed, and

a fourth switching element and second parallel circuit

arranged in a fourth arm of said inverter, said second parallel circuit being connected in series with said fourth switching element and comprised of a diode and resistor having a resistance value which causes energy accumulated in said primary winding to be dissipated at a steady, gradual pace when the polarity of said bridge inverter is reversed, said third and fourth arms being coupled to said first rectifier circuit and forming a closed circuit with said primary winding;

a second rectifier circuit connected to a secondary winding of said high-tension transformer to rectify a high-voltage output from the secondary winding;

an X-ray tube connected to said second rectifier circuit and adapted to receive said high-voltage output rectified by said rectifier circuit;

voltage detection means connected to said X-ray tube to detect said high-voltage which is applied to the X-ray tube; and

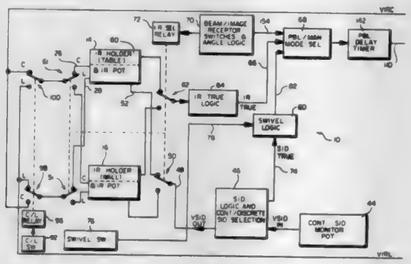
feedback control means, connected between said voltage detection means and said switching elements at the arms of said bridge inverter, for receiving an output detected by said voltage detection means and for controlling each of said switching elements in such a way that said detected output is between predetermined upper and lower limits to cause said high-voltage output applied to said X-ray tube to become a predetermined value.

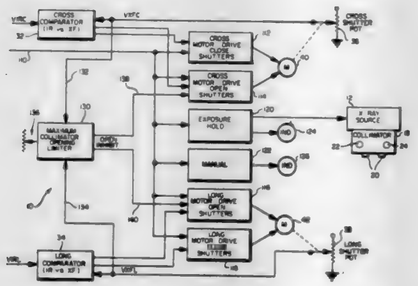
4,449,228

COLLIMATOR LOGIC CONTROL SYSTEM

Robert L. Burbury, Elgin, Ill., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Mar. 30, 1982, Ser. No. 363,702
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—151 **10 Claims**





1. In X-ray apparatus, including a source of X-rays, an image receptor locatable in a holder, a collimator having an adjustable shutter aperture, means for adjusting the shutter aperture in response to detected distances between the X-ray source and the image receptor to form a corresponding X-ray field size at a plane containing the image receptor, and means for positionally swivelling said adjustable shutter aperture angularly from a home position in a plane parallel to the image receptor plane, the improvement comprising means for:

i. disabling operation of said X-ray source during swivelling said adjustable shutter aperture from the home position while said image receptor is located in said holder, and

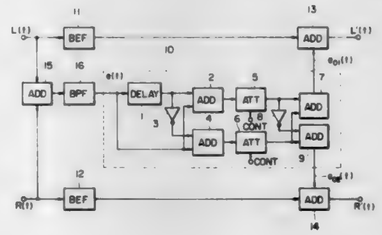
ii. enabling operation of said X-ray source during swivelling said adjustable shutter aperture from the home position while said image receptor is absent from said holder.

4,449,229

SIGNAL PROCESSING CIRCUIT

Shuichi Mori, Saitama, Japan, assignor to Pioneer Electronic Corporation, Saitama, Japan

Filed Oct. 22, 1981, Ser. No. 313,845
Claims priority, application Japan, Oct. 24, 1980, 55-149147; Oct. 24, 1980, 55-149149
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—2 **6 Claims**



3. A stereo reproducing device comprising:

means for subjecting particular band signals of two channel stereo signals to addition to provide an additive signal and extracting a particular band signal from said additive signal;

correlated signal generating means for generating two correlated signals having a desired correlation coefficient by using said extracted particular band signal and a delayed signal obtained by delaying said extracted particular band signal; and

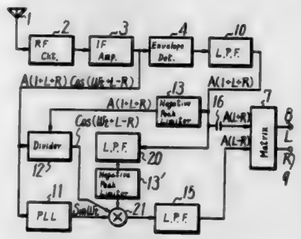
means for adding said two correlated signals respectively to said two channel stereo signals from which said particular band signal is eliminated to output channel stereo reproducing signals.

4,449,230

APPARATUS FOR DEMODULATING AN AM STEREOPHONIC SIGNAL

Satoshi Yokoya, Chofu, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,620
Claims priority, application Japan, Apr. 7, 1981, 56-52265
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—15 **17 Claims**



1. Apparatus for demodulating an AM stereophonic signal of the type having a carrier amplitude-modulated with the sum of

left and right channel stereophonic signals and the carrier phase-modulated with the difference of said left and right channel stereophonic signals, comprising:

tuning means for producing an intermediate frequency signal in response to said AM stereophonic signal, said intermediate frequency signal having a first amplitude component including amplitude-modulation information corresponding to said sum and also including level information;

detecting means responsive to said intermediate frequency signal for producing a sum signal corresponding to the sum of said left and right channel stereophonic signals and having an amplitude component equal to said first amplitude component;

means responsive to said intermediate frequency signal in combination with said sum signal for producing a difference signal corresponding to the difference between said left and right channel stereophonic signals with said first amplitude component being removed exactly therefrom;

means for producing from said sum signal a level information signal corresponding only to said level information, and having a second amplitude component including only said level information;

means for combining said level information signal with said difference signal to form a level adjusted difference signal having said second amplitude component; and

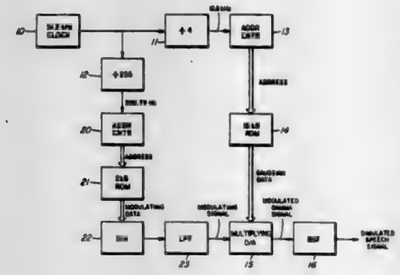
matrix means for reproducing said left and right channel stereophonic signals in response to said sum signal and said level adjusted difference signal.

4,449,231

TEST SIGNAL GENERATOR FOR SIMULATED SPEECH

Milan Chytil, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 25, 1981, Ser. No. 305,540
Int. Cl.³ G10L *1/10*
U.S. Cl. 381—51 **3 Claims**



1. A test signal generator for pseudo-simulated non-intelligible speech, comprising:

means for generating a random signal having a gaussian amplitude distribution;

means for generating a modulating signal having a power spectrum substantially equal to that of the modulation envelope of speech and a wave shape that results in a gamma amplitude distribution of a gaussian amplitude distributed signal, each cycle of the modulating signal having an identical wave shape and a varying wave period;

means for amplitude modulating the signal having a gaussian amplitude distribution by the modulating signal to generate a modulated gamma signal and

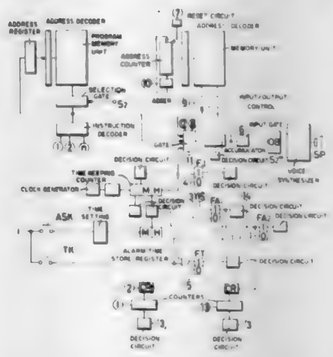
filter means for shaping the modulated signal to approximate the power spectrum of speech.

4,449,232

AUDIBLY ANNOUNCING APPARATUS

Shintaro Hashimoto, Ikoma; Sigeaki Masuzawa, Nara; Hiroshi Tsuda, Uji; Shinya Sibata, and Masahiro Nakano, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 132,181, Mar. 20, 1982. This application Jul. 26, 1982, Ser. No. 401,556
Claims priority, application Japan, Mar. 22, 1979, 54-33906
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—51 **10 Claims**



1. An apparatus capable of generating a plurality of audible sounds indicative, respectively, of a plurality of types of time information, said apparatus comprising:

means for developing a first instruction indicative of a first of said types of time information, the first type of time information being sharp time, said sharp time representing time information which is announced at a certain specific period of time for each hour;

means for developing a second instruction indicative of a second of said types of time information, the second type of time information being alarm time, said alarm time representing time information which is preset into said apparatus and is announced when an actual time equals the preset alarm time;

means for developing a third instruction indicative of a third type of time information, the third type of time information being updated real time information which is announced when a key on said apparatus is actuated, the development of the third instruction signal representing the need to develop an audible sound indicative of the updated real time;

logic means for determining whether the first, second and third instructions are being concurrently developed, said logic means further assigning relative priorities to the third, second and third instructions if the first, second and third instructions are concurrently developed; and

audible sound developing means sequentially generating audible sounds, indicative of the respective types of time information, in a descending order of priority from the highest to the lowest.

4,449,233

SPEECH SYNTHESIS SYSTEM WITH PARAMETER LOOK UP TABLE

George L. Brantingham, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

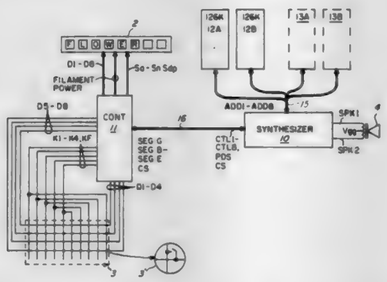
Division of Ser. No. 117,911, Feb. 4, 1980, Pat. No. 4,335,275, which is a continuation of Ser. No. 901,151, Apr. 28, 1978, abandoned. This application Mar. 5, 1982, Ser. No. 355,020
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—53 **12 Claims**

1. A speech synthesis system comprising: first memory means having a plurality of digital speech data stored therein at

a plurality of selected address locations, each speech data having a first predetermined number of bits;

second memory means storing a plurality of digital sets of first address data from which words in a human language may be derived for speech synthesis, each of said sets off first address data including first address data sequentially stored in said second memory means, and each first address data having fewer bits than said first predetermined number of bits of each said speech data stored in said first memory means and corresponding to a selected one address location within said first memory means;

third memory means operably coupled to said first and second memory means and having a plurality of second



address data stored therein, each of said second address data corresponding to a selected one of said plurality of sets of first address data stored in said second memory means; and

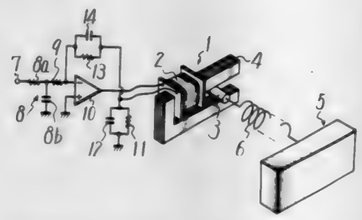
speech synthesis means for converting digital speech data into audible human speech, said speech synthesis means being coupled to said first memory means and at least operably associated with said third memory means for selectively receiving digital speech data from said first memory means in response to accessing of one said selected set of first address data from said second memory means as determined by a said second address data from said third memory means to which said one selected set of first address data corresponds.

4,449,234

REVERBERATION APPARATUS

Takashi Shibata, Kamakura, and Masaaki Nishimura, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 5, 1982, Ser. No. 346,110
Claims priority, application Japan, Feb. 13, 1981, 56-19803
Int. Cl.³ H03H *9/125*
U.S. Cl. 381—65 **9 Claims**



1. A reverberation apparatus, comprising:

a signal input terminal to be supplied with an input signal;

an operational amplifier having an inverted input terminal, a non-inverted input terminal and an output terminal, said inverted input terminal being connected to said signal input terminal through an input impedance, said non-inverted input terminal being connected to a reference point, said output terminal being connected to the reference point through an inductance as a load for the circuit and a first impedance;

a second impedance connected between the inverted input terminal of said operational amplifier and the connection point between said inductance and said first impedance, said inductance being connected such that it functions as a drive means of the reverberation apparatus;

said reverberation apparatus having a substantially flat frequency response from zero to a first cut-off frequency, a hump-shaped rising and then falling frequency characteristic from the first cut-off frequency determined by the first impedance to a higher second cut-off frequency determined by the second impedance, and a continued substantial fall-off at higher frequencies above the second cut-off frequency;

said first impedance being chosen to provide said rising frequency response near the first cut-off frequency; and

said second impedance being chosen to provide the falling frequency response near said second cut-off frequency,

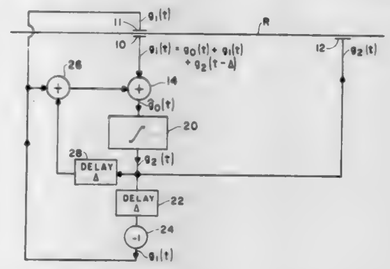
whereby a frequency band of a reverberation sound produced by the apparatus is expanded to a relatively high frequency band and a damping factor remains relatively small, while near the upper cut-off frequency the falling response reduces a level of electromagnetic noise being generated.

4,449,235

ELECTRONIC CANCELLING OF ACOUSTIC TRAVELING WAVES

Charles J. Swigert, Pacific Palisades, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 14, 1982, Ser. No. 398,131
Int. Cl.³ H04R *1/28*
U.S. Cl. 381—71 **7 Claims**



1. Apparatus for attenuating a selected acoustic wave mode of an acoustic disturbance traveling in a given direction in a medium, said apparatus comprising an input transducer for detecting acoustic wave energy at a first position along the medium to produce an input electric signal, processing means for performing operations on the input signal in electronic circuits to generate first and second output signals at first and second outputs respectively, output transducer means for converting the two output signals to acoustic wave energy and injecting them into said medium at spatially separate positions, said output transducer means comprising a first transducer located at said first position and a second transducer located at a second position in said given direction from the first position, said first and second outputs being coupled to the first and second transducers, respectively;

wherein said electronic circuits include summing means having an input from said input transducer, integrating means coupled from the summing means to said second output, first delay means in series with a minus-one circuit coupled from said second output to said first output and also to an input of the summing means, and second delay means coupled from the second output to an input of the summing means;

wherein said first and second delay means each provide a given delay time which is equal to the distance between said first and second positions divided by the velocity of the selected acoustic wave mode sensed by the input transducer and injected by said first and second output transducers, the output of the second delay means being a third signal which is equal to the second output signal as a function of time less said given delay;

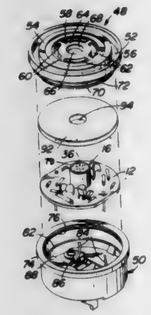
wherein said summing means comprises means to generate a signal which is equal to the sum of the first output signal and third signal subtracted from said input electrical signal, so that its output is an estimate of said acoustic disturbance, and wherein the integrating means forms the integral over time of said estimate.

4,449,236

ANTI-SIDE TONE TRANSMITTER

Wesley F. Walker, Jr., Ringgold, Ga., assignor to Walker Equipment Corporation, Ringgold, Ga.

Filed Apr. 8, 1982, Ser. No. 366,501
Int. Cl.³ H04R *1/04, 19/01*
U.S. Cl. 381—91 **7 Claims**



1. Anti-side tone transmitter insertable in a telephone handset having a cover, comprising:

a cup having a sidewall;

a cap secured to the cup so as to form an assembly insertable in the telephone handset;

a sound transducer element disposed below said cap within the interior of said assembly;

said transducer element having a casing provided with a single acoustic entrance disposed in a plane substantially flush with the underside of said cap;

said cap having a central opening aligned with and in acoustic communication with said acoustic entrance of said transducer element;

said cap having one or more annular openings spaced from said central opening and disposed inwardly of said cup sidewall and relative to said transducer element casing so that said one or more cap openings are not in acoustic communication with said acoustic entrance of said transducer element.

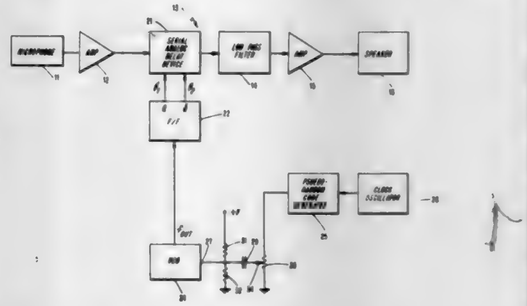
4,449,237

AUDIO FEEDBACK SUPPRESSOR

Elvin D. Stepp, Cincinnati, and Gary L. Claypoole, West Chester, both of Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Apr. 14, 1982, Ser. No. 368,463
Int. Cl.³ H04R *3/00*
U.S. Cl. 381—93 **26 Claims**

7. In combination, acoustic-electric transducer means for deriving an audio, information bearing electric signal, means responsive to the electric signal for randomly shifting the phase of the electric signal by an amount independent of any characteristic of the information bearing electric signal, and an electric-acoustic transducer responsive to the randomly phase



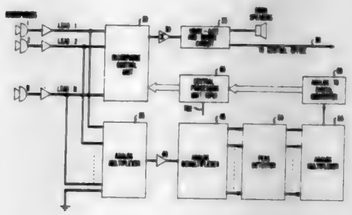
shifted electric signal, whereby the transducer derives an acoustic information signal that is not susceptible to acoustic feedback oscillations.

4,449,238

VOICE-ACTUATED SWITCHING SYSTEM

Byung H. Lee, Hazlet, and John F. Lynch, Jr., Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1982, Ser. No. 362,034
Int. Cl.³ H04M *3/56*
U.S. Cl. 381—110 **36 Claims**



1. A voice-actuated switching system for selectively connecting speech signals from a plurality of speech circuits to an output line, the system comprising:

a plurality of circuits for generating speech signals;

comparison means automatically operative in response to the signals from the speech circuits for selecting that one of the signals having the greatest magnitude;

means for connecting the selected one of the signals to the output line at an unattenuated level and for connecting unselected signals to the output line at an attenuated level; and

the comparison means determining the signal with the greatest magnitude by comparing the signals both with reference to each other and with reference to a ground potential, the comparing of the signals with the ground potential providing a means for nulling any extraneous signals being induced in the speech signals in determining the selected one of the speech signals.

4,449,239

METHOD AND CIRCUIT FOR SEGMENTATION OF CHARACTERS FROM A SERIALLY-READ CHARACTER SEQUENCE

Lutz Bernhardt, and Wilfried Kochert, both of Constance, Fed. Rep. of Germany, assignors to Computer Gesellschaft, Konstanz mbH, Fed. Rep. of Germany

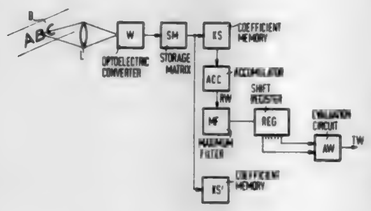
Filed Sep. 9, 1981, Ser. No. 300,500

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3034099

Int. Cl.³ G06K 9/34

U.S. Cl. 382—9

10 Claims



1. A method for segmenting characters in a printed character sequence comprising the steps of:

serially scanning said sequence in a column-by-column format for converting said characters into digital data;

intermediately storing portions of said digital data representing equal selected windows of said sequence as respective image pattern matrices each offset by one column width with respect to each other and each having a center column;

calculating a plurality of coefficients for each image pattern matrix according to selected characteristics of said image pattern matrix relating to the presence or absence of print in the portion of said sequence represented by said image pattern matrix;

summing the coefficients for each image pattern matrix for obtaining a series of margin values which are respectively associated with the center column for each image pattern matrix; and

selecting a maximum value from said series of margin values as a separating point value, and designating siad separating point value as a separating point between adjacent characters in said sequence, said separating point being specifically associated with one of said columns.

4,449,240

PATTERN RECOGNITION SYSTEM

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Japan

Continuation-in-part of Ser. No. 94,112, Nov. 14, 1979, abandoned. This application Aug. 12, 1981, Ser. No. 292,267

Claims priority, application Japan, Nov. 17, 1978, 53-141761

Int. Cl.³ G06K 9/62

U.S. Cl. 382—15

4 Claims

1. A method of pattern recognition comprising:

producing an electrical signal related to a standard object of a type exhibiting a pattern to be recognized;

storing characteristics of said electrical signal in a pattern recognition system to produce a stored standard signal;

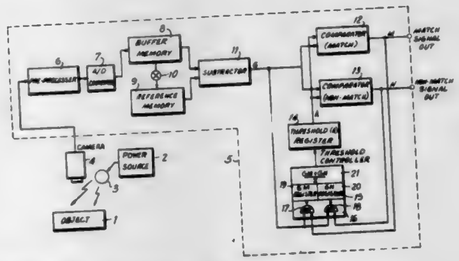
setting a predetermined value A for determining whether or not an electrical signal contains characteristics sufficiently close to said stored standard signal to be judged to be the same as said standard object;

producing a second electrical signal related to an object being inspected;

determining a difference between said second electrical signal and said stored standard signal;

outputting a match electrical signal indicating that said second electrical signal represents an object exhibiting said pattern if said difference differs from said predetermined value A by less than a threshold value;

outputting a non-match electrical signal indicating that said second electrical signal does not represent an object exhibiting said pattern if said difference differs from said predetermined value A by more than said threshold value;



increasing and decreasing a value of said predetermined value A with time in accordance with said difference; and

continuing the above steps of producing, determining and outputting for each object being inspected whereby said threshold A is varied according to changing external conditions.

4,449,241

TONER CLEANING APPARATUS

Shigeru Nakayama, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

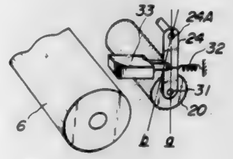
Filed May 27, 1982, Ser. No. 382,608

Claims priority, application Japan, May 30, 1981, 56-78310[U]

Int. Cl.³ G03G 21/00

U.S. Cl. 118—699

12 Claims



1. A toner cleaning apparatus for use in an electrophotographic copying machine in which a photosensitive drum is rotated during a copying operation and continues to rotate after the end of the copying operation for a predetermined number of revolutions to remove residual toners remaining on said drum after transferring onto a record paper a toner image obtained by developing with toners an electrostatic latent image formed on the photosensitive drum within a pictorial area, said apparatus comprising:

cleaning means arranged movably between a first position in which the cleaning means is separated from the photosensitive drum and a second position in which the cleaning means is brought into contact with the photosensitive drum to remove the residual toners;

driving means for moving the cleaning means between said first and second positions; and

controlling means for controlling said driving means in such a manner that the cleaning means is separated from said photosensitive drum as a time after the end of the copying operation, but before the rotation of the photosensitive drum is stopped.

4,449,242

FLEXIBLE, RESILIENT ANTI-CONTAMINATION BAFFLE

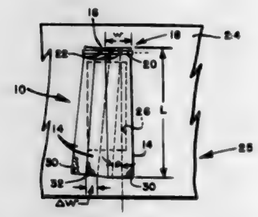
James G. Sliney, Jr., La Canada, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 31, 1982, Ser. No. 413,296

Int. Cl.³ B65D 51/16; F16K 15/14

U.S. Cl. 383—103

7 Claims



1. A package adapted to house a component therein for use in space-related applications comprising:

a surface on said package, said surface having an opening therein;

sealing means fixedly secured at one end thereof to said surface adjacent said opening for covering said opening when pressures on opposite sides of said opening are substantially equal and uncovering said opening by moving in a predetermined direction when said pressure on opposite sides of said opening are unequal or when an object is forced against said sealing means, said sealing means being formed of a plurality of overlapping sheets of material, said sheets of material being extremely thin and both flexible and resilient, and said sheets of material being angularly displaced on one another in a fanned fashion in said overlapping position; and

means operably associated with said sheets of material for providing loose adherence between said sheets of material while said sheets are covering said opening and for allowing said sheets to be released from one another while uncovering said opening;

whereby contaminants are prevented from passing through said opening when said sheets are covering said opening, and molecules can pass in said predetermined direction when said sheets are uncovering said opening.

4,449,243

VACUUM PACKAGE BAG

Charles Platel, Marck, France, assignor to Cafes Collet, Calais, France

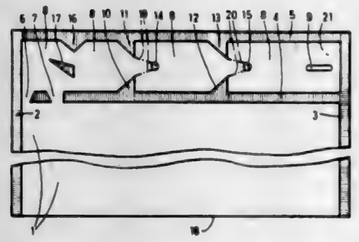
Filed Sep. 7, 1982, Ser. No. 415,739

Claims priority, application France, Sep. 10, 1981, 81 17160

Int. Cl.³ B65D 33/01

U.S. Cl. 383—103

7 Claims



1. A vacuum package bag comprising a pair of opposite walls having a gas exhaust valve extending along one end of said bag, said gas exhaust valve being formed by inner and outer parallel transverse weld lines joining said opposite walls and defining a channel at least 5 mm wide therebetween, said inner weld line having at least one gap in the vicinity of one side of said bag defining a passageway between the interior of said bag and an upstream end of said channel, an opening being provided in the vicinity of the opposite side of said bag for bringing a downstream end of said channel into communication with the surrounding atmosphere, the improvement which comprises providing said transverse weld lines with at least one first protuberance disposed between said gap in said inner weld line and said opening and at least one second protuberance facing and symmetrical to said first protuberance with respect to the longitudinal axis of said channel, said first and second protuberances defining a narrowed section in said channel, each of said protuberances having an oblique upstream side and a downstream side substantially perpendicular to said weld lines, and a spot weld being arranged along said longitudinal axis of said channel to attach the opposite walls of said bag in the vicinity of the point of intersection of the continuation of said oblique sides of said first and second protuberances.

4,449,244

DATA TRANSMISSION NETWORK EMPLOYING OPTICAL WAVE GUIDE

Jürgen Kopainsky, Fislisbach, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Switzerland

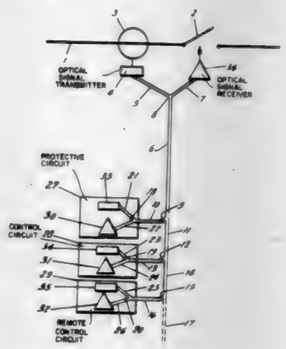
Filed Mar. 3, 1982, Ser. No. 354,360

Claims priority, application Switzerland, Mar. 5, 1981, 1469/81

Int. Cl.³ H04B 9/00

U.S. Cl. 455—603

6 Claims



1. A data transmission network for transmitting control and operating signals between electrical apparatus and remotely disposed control means for said electrical apparatus; said network including measurement transducer means and actuator means connected to said apparatus for producing, respectively, electrical output signals representative of an operating parameter of said apparatus and operating signals for modifying the operation of said apparatus, first and second optical signal transmitters connected to said measurement transducer means and said control means respectively for transmitting signals related respectively to said operating parameter and for modifying the operation of said apparatus; first and second optical receivers connected to said actuator means and control means respectively, and optical wave guide means having a main length and first and second ends each having first and second branches extending from first and second junctions respectively; the ends of said first and second branches of said first junction of said wave guide being coupled to said first optical signal transmitter and said first optical receiver respectively; the ends of said first and second branches of said second junction of said wave guide being coupled respectively to a third

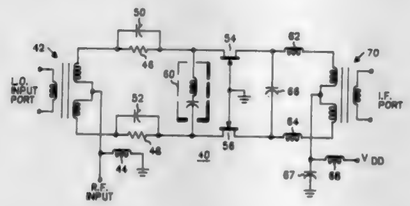
branch which extends to supplemental control locations and to a third junction; said third junction having fourth and fifth branches connected to said second optical signal transmitter and said second optical receiver respectively; said branched ends of said wave guide permitting transmission of optical signals between either of said second or third junction with said first junction and preventing communication between branches extending from a common junction.

4,449,245

HIGH GAIN BALANCED MIXER

Duane C. Rabe, Rolling Meadows, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Mar. 22, 1982, Ser. No. 360,511
Int. Cl.³ H04B 1/26
U.S. Cl. 455—319 **5 Claims**



1. An active balanced mixer for producing a predetermined IF signal, including at least two non-linear active devices with each non-linear active device having an input terminal, an output terminal and a control terminal coupled to the control terminal of at least one other of the active non-linear devices, said active balanced mixer comprising:

input means, coupled to the non-linear active devices, for differentially phase splitting into two signals a first RF signal coupled to the input means, and for coupling the two differential phase split signals respectively to the inputs of the non-linear active devices, said non-linear active devices mix the differential phase split signals with a second RF signal for producing differential IF signals at said output terminals;

output combining means, coupled to the output terminals of the non-linear active devices, for combining the differential IF signals to provide a single ended output;

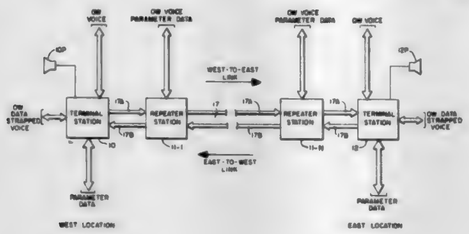
resonant circuit means, resonant at the IF signal frequency and coupled to the inputs of said active devices, for providing a resonant low impedance at the IF frequency.

4,449,246

ORDERWIRE COMMUNICATION SYSTEM

Norman C. Seiler, West Melbourne, Fla.; Thomas J. Nixon, Gaithersburg, Md., and George A. Waschka, Jr., Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 2, 1980, Ser. No. 146,164
Int. Cl.³ H04B 7/20
U.S. Cl. 455—9 **78 Claims**



1. For use in a communication system wherein information signals are to be conveyed among a plurality of stations distributed along a shared communication link, said link having a first portion for carrying messages in a first direction along said link and a second portion for carrying messages in a second direction along said link, a station transceiver for receiving messages transmitted to it and transmitting response messages in reply thereto comprising:

first means, coupled to said link, for receiving a first incoming message transmitted over said first portion of said link at a first prescribed carrier frequency; and

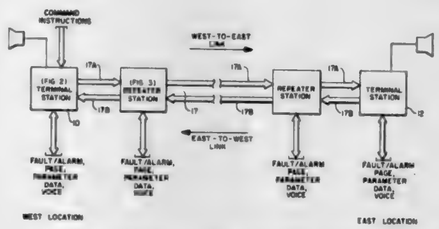
second means, coupled to said link, for transmitting an outgoing message over said second portion of said link at said first prescribed carrier frequency and over said first portion of said link at a second prescribed carrier frequency different from said first prescribed frequency.

4,449,247

LOCAL ORDERWIRE FACILITY FOR FIBER OPTIC COMMUNICATION SYSTEM

George A. Waschka, Jr., Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 30, 1980, Ser. No. 173,876
Int. Cl.³ H04B 7/20
U.S. Cl. 455—9 **20 Claims**



1. In a data scrambler in which incoming data is subjected to a prescribed scrambling code so as to produce an output scrambled data sequence, an arrangement for preventing said scrambler from locking into a continuous state comprising:

first means, coupled to said scrambler, for comparing selected contents of said scrambler with incoming data to be scrambled; and

second means, coupled to said first means and disposed in the data flow path between said incoming data and said scrambler, for altering the data to be coupled into said scrambler, in response to said first means detecting a potential lock condition.

4,449,248

BATTERY SAVING RADIO CIRCUIT AND SYSTEM

Samuel A. Leslie, and Robert C. Schwartz, both of Forest, Va., assignors to General Electric Company, Lynchburg, Va.

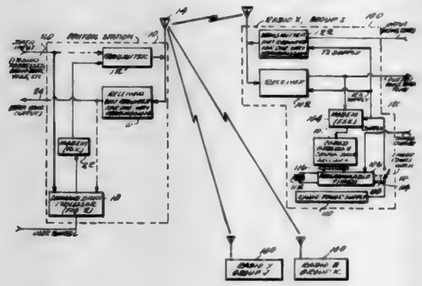
Filed Feb. 1, 1982, Ser. No. 344,730
Int. Cl.³ H04B 7/00, 1/16
U.S. Cl. 455—38 **22 Claims**

1. An improved battery saving radio system including plural groups of radio circuits each of said groups of radio circuits being associated with a respective, corresponding radio receiver and each said circuit group being of the type which only intermittently powers its associated radio receiver through a controllable power supply switch associated with such receiver so as to reduce the use of electrical power consumption, each of said radio circuit groups comprising:

programmable timing means connected to control said power supply switch and responsive to coded electrical signals received via said radio receiver, when powered, for changing an "off" time interval which occurs between two successive "on" intervals before the radio receiver is next supplied with power in an "on" interval to enable

receipt of further radio signals wherein each respectives receiver and its associated radio circuits in a given group include a decoder for responding to a particular coded address to the exclusion of other addresses meant for other receivers in order to allow the respective programmable timing means to change the "off" time intervals in accordance with transmitted time-off signals, and

said system further including a radio control station comprising:



control radio transmitting means for transmitting electromagnetic r.f. signals having coded address and time-off signals modulated thereon; and

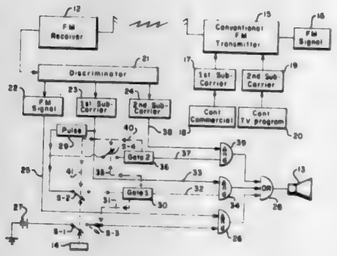
command processing means for generating said coded address and time-off signals during real time intervals synchronized with the "on" time intervals when power is supplied to each radio receiver respectively associated with a predetermined group of radio circuits via its respective power supply switch.

4,449,249

TELEVISON PROGRAMMING INFORMATION SYSTEM

Robert T. Price, 22515 Hartland St., Canoga Park, Calif. 91307

Filed Sep. 27, 1982, Ser. No. 423,708
Int. Cl.³ H04B 1/00, 1/70
U.S. Cl. 455—45 **4 Claims**



3. A radio receiving device for aurally reproducing up to date television programming information together with a commercial to a viewer of television, independent of the viewer's television set, including, in combination:

(a) aural reproduction means

(b) a radio signal receiver discriminating means for deriving synchronizing pulses along with said commercial from a first broadcast sub-carrier signal and for deriving up to date television program information from a second broadcast sub-carrier signal; and

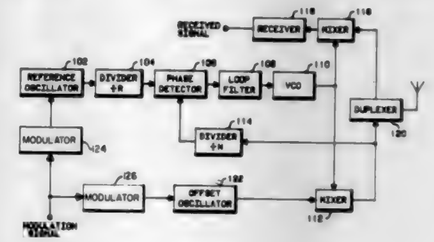
(c) control means coupled between said discriminating means and said aural reproduction means responsive to said synchronizing pulses for assuring that whenever said radio receiver is operated by a viewer for listening to program information, said commercial is coupled to said aural reproduction means before said television program information.

4,449,250

RADIO-FREQUENCY SYNTHESIZER FOR DUPLEX RADIOS

Christopher N. Kurby, Elmhurst, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1981, Ser. No. 332,432
Int. Cl.³ H04B 1/40; H04L 7/18; H03C 3/00
U.S. Cl. 455—76 **12 Claims**



5. Circuitry for synthesizing the frequency of a transmit carrier signal of a duplex radio transceiver, said frequency synthesizing circuitry comprising:

means for generating a reference signal having a predetermined frequency;

means for comparing the phase of the reference signal to the phase of a feedback signal and generating an error signal;

means for filtering the error signal;

voltage controlled oscillator (VCO) means for generating an injection signal having a frequency varying with the filtered error signal;

means for generating an offset signal having a predetermined frequency;

means for mixing the injection signal and the offset signal and generating the transmit carrier signal having a frequency that is substantially the sum or difference of the frequency of the injection signal and the frequency of the offset signal;

means for frequency dividing the transmit carrier signal by a pre-selected number to generate the feedback signal;

a signal source for providing an information signal;

means for modulating the frequency of the reference signal with the information signal; and

means for modulating the frequency of the offset signal with the information signal, whereby the modulation of the feedback signal is substantially cancelled by the modulation of the reference signal.

DESIGN PATENTS

GRANTED MAY 15, 1984

ERRATA

For CLASS	See PATENT NO.
D03–012	273,815
D03–038	273,816

273,814
CANINE BISCUIT
Gary Gellman, Pomona, N.Y.; George A. Erfurt, Lawrenceville, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.
Filed Jan. 28, 1982, Ser. No. 343,633
Term of patent 14 years
U.S. Cl. D1—27



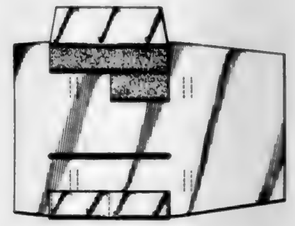


273,815
UMBRELLA HANDLE
James H. Allen, Covington, Ky., assignor to 'Totes', Incorporated, Loveland, Ohio
Filed Nov. 18, 1981, Ser. No. 322,525
Term of patent 14 years
U.S. Cl. D3—12





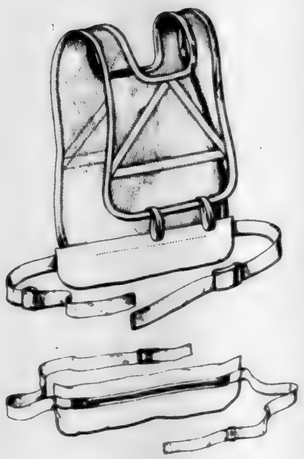
273,816
SNELL HOOK HOLDER
Nicholas P. Cerasari, 1103 Spruce Ave., Wilmington, Del. 19805
Filed Apr. 1, 1982, Ser. No. 339,856
Term of patent 14 years
U.S. Cl. D3—38



273,817
BRASSIERE
Phyllis Shonk, Glen Rock, N.J., assignor to International Playtex, Inc., Stamford, Conn.
Filed Feb. 8, 1982, Ser. No. 346,800
Term of patent 14 years
U.S. Cl. D2—24



273,818
SAFETY VEST FOR RUNNER
Caroline M. Spencer, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1982, Ser. No. 337,652
Term of patent 14 years
U.S. Cl. D2—27



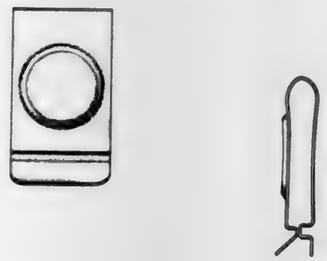
273,819
GOGGLE FRAME
James E. Yehl, 3160 Nebo Rd., Boulder, Colo. 80302
Filed Nov. 2, 1981, Ser. No. 317,085
Term of patent 14 years
U.S. Cl. D2—234



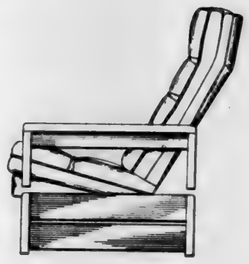
273,820
BACKSTOP FOR A BASEBALL OR SOFTBALL GLOVE
Saul Neidell, Fair Lawn, N.J., assignor to MacGregor Athletic Products, a division of The Equilink Corporation, East Rutherford, N.J.
Filed Feb. 26, 1982, Ser. No. 352,540
Term of patent 14 years
U.S. Cl. D2—361



273,821
BELT CLIP FOR A HOLSTER
John E. Bianchi, Fallbrook, Calif., assignor to Bianchi International, Temecula, Calif.
Filed Dec. 4, 1981, Ser. No. 327,416
Term of patent 14 years
U.S. Cl. D2—400



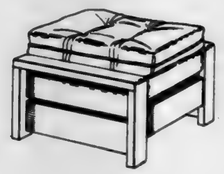
273,822
CHAIR
Charles Desnoyers, St-Pie de Bagot, Canada, assignor to Dutailier Inc., St-Pie de Bagot, Canada
Filed Dec. 28, 1981, Ser. No. 335,270
Term of patent 14 years
U.S. Cl. D6—50



273,823
CHAIR
Emilio Ambasz, New York, N.Y., and Giancarlo Piretti, Bologna, Italy, assignors to Center for Design Research and Development NV, Curacao, Netherlands Antilles
Division of Ser. No. 250,606, Apr. 3, 1981. This application Feb. 14, 1983, Ser. No. 466,601
Term of patent 14 years
U.S. Cl. D6—31



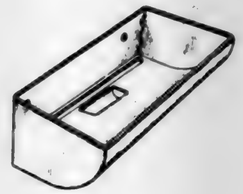
273,824
OTTOMAN
Charles Desnoyers, St-Pie de Bagot, Canada, assignor to Dutailier Inc., St-Pie de Bagot, Canada
Filed Dec. 28, 1981, Ser. No. 335,269
Term of patent 14 years
U.S. Cl. D6—36



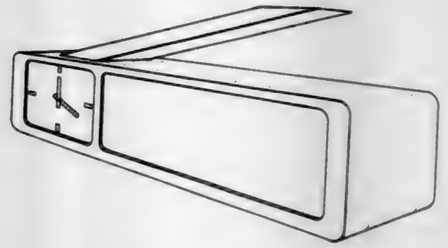
273,825
CYCLE SEAT
Charles Persons, Huron, Ohio, assignor to Persons-Majestic Manufacturing Company, Worchester, Mass.
Filed Mar. 2, 1981, Ser. No. 239,424
Term of patent 14 years
U.S. Cl. D6—48.1



273,826
COMBINED DISPENSING RACK FOR ROLLS OF INTERCONNECTED BAGS AND BAG CLOSURE HOLDER
Lyman V. Anderson, 2517 W. 95th St., Bloomington, Minn. 55431; Carolyn Smith, Minneapolis, Minn.; John B. Grant, St. Croix, Minn., and M. A. Roth, Jr., St. Paul., Minn., assignors to Lyman V. Anderson, Bloomington, Minn.
Filed Jun. 14, 1982, Ser. No. 388,074
Term of patent 14 years
U.S. Cl. D6—130



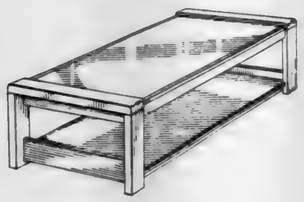
273,827
COMBINED HANGING DISPLAY CASE AND CLOCK
James B. Bowers, Tulsa, Okla., assignor to H and H Promotions, Inc., Tulsa, Okla.
Filed Dec. 31, 1981, Ser. No. 336,083
Term of patent 14 years
U.S. Cl. D6—172



273,828
COMBINATION EASEL AND TABLE
Margo J. Oshry, 50 Deer Park Ave., San Rafael, Calif. 94901
Filed Mar. 13, 1981, Ser. No. 243,467
Term of patent 14 years
U.S. Cl. D6—178



273,829
TABLE
Charles Desnoyers, St-Pie de Bagot, Canada, assignor to Dutailier Inc., St-Pie de Bagot, Canada
Filed Dec. 28, 1981, Ser. No. 335,271
Term of patent 14 years
U.S. Cl. D6—179



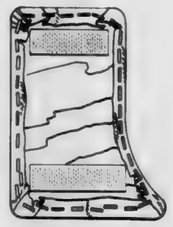
273,830
DATA PROCESSING STORAGE UNIT
Francis J. Jedziniak, 2352 W. 227th St., Torrance, Calif. 90501
Filed Nov. 27, 1981, Ser. No. 325,331
Term of patent 14 years
U.S. Cl. D6—181



273,831
CRIB FOOTBOARD
Merlin A. Brunner, New London; Harvey J. Draheim, Weyauwega, and Michael J. Schaffer, New London, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Nov. 9, 1981, Ser. No. 319,504
Term of patent 14 years
U.S. Cl. D6—191



273,832
TRAY ACCESSORY ATTACHMENT
Roger Chapman, 5683 Vineyard Rd., Oregon, Wis. 53575
Filed Nov. 27, 1981, Ser. No. 325,228
Term of patent 14 years
U.S. Cl. D6—199



273,833
INSULATED POUCH FOR BEER KEGS
William A. B. Taylor, 3003 Sunset Dr., Evans, Colo. 80620, and James Palatine, 8 Grove St. #2, Boston, Mass. 02114
Filed Jan. 18, 1982, Ser. No. 340,496
Term of patent 14 years
U.S. Cl. D7—77



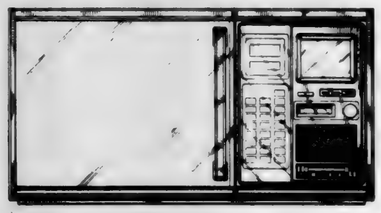


273,834
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 22, 1982, Ser. No. 341,661
Claims priority, application Japan, Jul. 23, 1981, 56-32864
Term of patent 14 years
U.S. Cl. D7—351

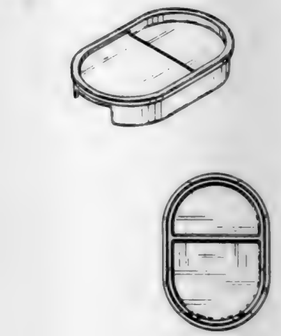


273,835
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 22, 1982, Ser. No. 341,663
Claims priority, application Japan, Jul. 23, 1981, 56-32867
Term of patent 14 years
U.S. Cl. D7—351

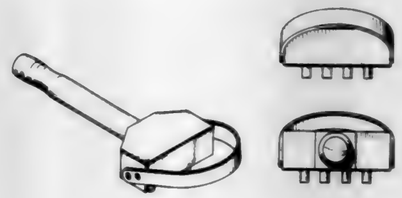
273,836
COMBINED MICROWAVE OVEN, TELEVISION RECEIVER, AND TAPE PLAYER
Yukiie Ohyama; Makoto Nakagawaji, and Hiroshi Endo, all of Shiga, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Nov. 29, 1982, Ser. No. 445,055
Claims priority, application Japan, May 31, 1982, 57-24096
Term of patent 14 years
U.S. Cl. D7—351



273,837
CONTAINER COVER OR THE LIKE
Pieter K. J. De Coster, Aalst, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Dec. 24, 1981, Ser. No. 334,285
Term of patent 14 years
U.S. Cl. D7—391



273,838
GARDEN TOOL
Fred T. Buffington, 551E - 975S, Fairmount, Ind. 46928
Filed Apr. 2, 1982, Ser. No. 364,809
Term of patent 14 years
U.S. Cl. D8—7



273,839
TILE REMOVING TOOL
Eugene Anderson, 614 - 32nd St., Oakland, Calif. 94609
Filed Feb. 8, 1982, Ser. No. 346,523
Term of patent 14 years
U.S. Cl. D8—89



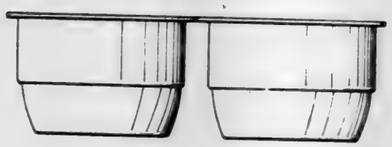
273,840
MAGNETIC FASTENER
Tamao Morita, 41-1, 6-chome, Arakawa-ku, Tokyo, Japan
Filed Apr. 27, 1981, Ser. No. 258,039
Term of patent 14 years
U.S. Cl. D8—382



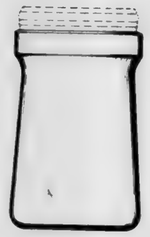
273,841
PLASTIC STRAP FOR LOBSTER POT
Thomas R. Chace, 227 River Rd., Westport, Mass. 02790
Filed Jul. 26, 1982, Ser. No. 401,499
Term of patent 14 years
U.S. Cl. D8—394



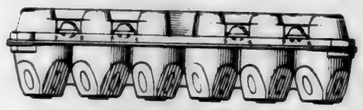
273,842
COMPARTMENTED PACKAGING CONTAINER FOR FOOD OR THE LIKE
Bernard Jeannin, Verrieres, France, assignor to Compagnie Gervais Danone, Levallois-Perret, France
Filed May 8, 1981, Ser. No. 233,080
Claims priority, application France, Jan. 23, 1981, 810222
Term of patent 14 years
U.S. Cl. D9—341



273,843
CONTAINER BODY
Kenard E. Urion, Woodbury, N.J., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Feb. 6, 1981, Ser. No. 232,279
Term of patent 14 years
U.S. Cl. D9—351



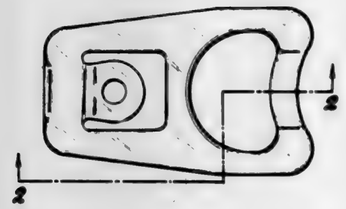
273,844
EGG CARTON
Kenneth D. Bixler, Huntington, N.Y.; Henry A. Lord, Cape Elizabeth, Me., and Richard F. Reifers, New Canaan, Conn., assignors to Diamond International Corporation, New York, N.Y.
Filed Sep. 29, 1981, Ser. No. 306,978
Term of patent 14 years
U.S. Cl. D9—345



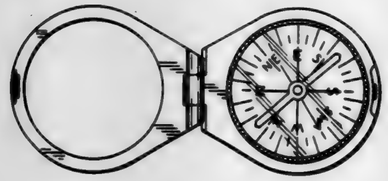
273,845
CAP FOR A BOTTLE
John J. Doblas, 1212 Sumach Dr., Windsor, Ontario, Canada (N8S 2S4)
Filed Mar. 2, 1981, Ser. No. 239,434
Term of patent 14 years
U.S. Cl. D9—438



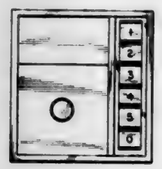
273,846
PULL TAB FOR A CONTAINER END
Ermal C. Fraze, 618 Greenmount Blvd., Dayton, Ohio 45419
Division of Ser. No. 91,073, Nov. 5, 1979. This application Dec. 31, 1981, Ser. No. 336,092
Term of patent 14 years
U.S. Cl. D9—438



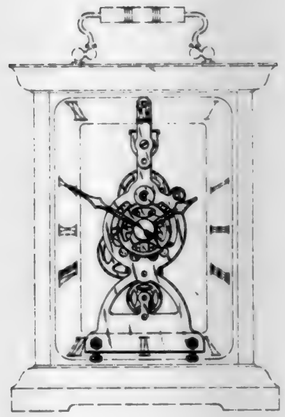
273,847
COMPASS
Toshikazu Yusa, No. 8-15 Ohyamacho, Shibuya-Ku, Tokyo, Japan
Filed Mar. 18, 1982, Ser. No. 359,273
Term of patent 14 years
U.S. Cl. D10—68

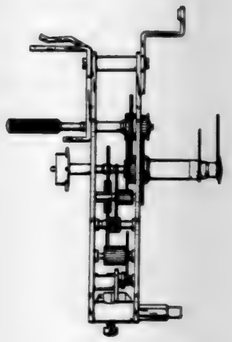


273,848
COMBINED AUDIBLE SIGNAL AND COMMUNICATOR
Justin J. Monahan, 614 N. Kings Way Rd. #39, Seffner, Fla. 33584
Filed Apr. 24, 1981, Ser. No. 257,193
Term of patent 14 years
U.S. Cl. D10—106

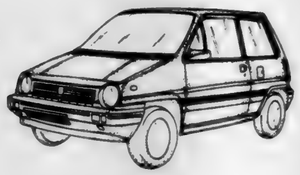


273,849
ELECTRIC CLOCK MOVEMENT
Jürgen Berges; Wolfgang Fehrenbacher, both of St. Georgen; Günter Neininger, VS-Villingen Schwenningen, and Erich Scheer, St. Georgen, all of Fed. Rep. of Germany, assignors to Kieninger & Obergfell, St. Georgen im Schwarzwald, Fed. Rep. of Germany
Filed Apr. 2, 1982, Ser. No. 364,657
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 8129149[U]
Term of patent 14 years
U.S. Cl. D10—129

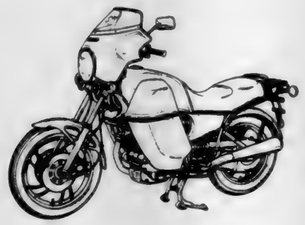




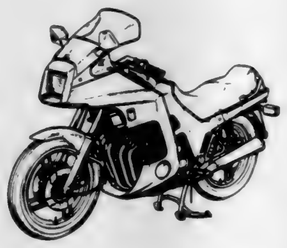
273,850
MOTORCAR
Hiroshi Zaima, Niiza, and Yusuke Saito, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 12, 1981, Ser. No. 320,688
Claims priority, application Japan, May 13, 1981, 56-20062
Term of patent 14 years
U.S. Cl. D12—91



273,851
MOTORCYCLE
Hideshiko Nagashima, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Feb. 25, 1982, Ser. No. 352,210
Claims priority, application Japan, Sep. 1, 1981, 56-38715
Term of patent 14 years
U.S. Cl. D12—110



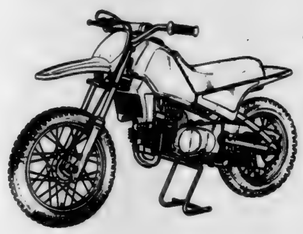
273,852
MOTORCYCLE
Atsushi Ishiyama, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Mar. 25, 1982, Ser. No. 361,773
Claims priority, application Japan, Sep. 29, 1981, 56-43436
Term of patent 14 years
U.S. Cl. D12—110



273,853
MOTORCYCLE
Tsunemi Kawashima, Tokyo; Toshiharu Shimizu, Saitama; Kiyoshi Hashimoto, and Seiji Higashihara, both of Shizuoka, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed May 5, 1982, Ser. No. 375,041
Claims priority, application Japan, Nov. 12, 1981, 56-50.363
Term of patent 14 years
U.S. Cl. D12—110



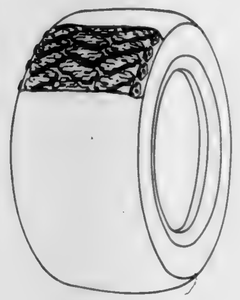
273,854
MOTORCYCLE
Atsushi Ishiyama, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed May 5, 1982, Ser. No. 375,050
Claims priority, application Japan, Nov. 12, 1981, 56-50.362
Term of patent 14 years
U.S. Cl. D12—110



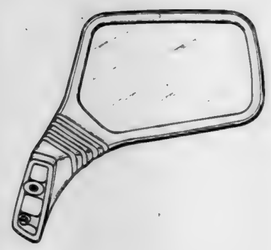
273,855
ATHLETIC WHEEL CHAIR FRAME
Carl L. Leach, 4175 Baldwin, Pontiac, Mich. 48056
Filed Jun. 8, 1981, Ser. No. 271,544
Term of patent 14 years
U.S. Cl. D12—131



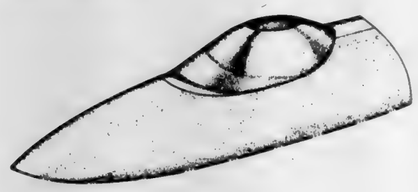
273,856
TIRE
Hans J. Vögler, Herzogenrath, Fed. Rep. of Germany, assignor to Uniroyal Englebert Reifen GmbH, Aachen, Fed. Rep. of Germany
Filed Jan. 27, 1982, Ser. No. 343,251
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, MR3277
Term of patent 14 years
U.S. Cl. D12—146



273,857
DRIVING SIDE MIRROR FOR MOTOR VEHICLE
Mamoru Matsui, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 23, 1981, Ser. No. 323,717
Claims priority, application Japan, May 25, 1981, 56-22493
Term of patent 14 years
U.S. Cl. D12—187



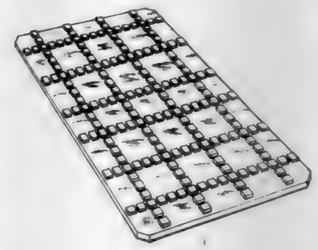
273,858
PROPELLER SPINNER
Edward J. Swearingen, Jr., San Antonio, Tex., assignor to Fairchild Swearingen Corporation, San Antonio, Tex.
Filed Oct. 2, 1981, Ser. No. 307,959
Term of patent 14 years
U.S. Cl. D12—214



273,859
MULTI PIN TERMINAL ELECTRICAL CONNECTOR RECEPTACLE
Albert Casciotti, Hershey, and Robert D. Holiyday, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed May 14, 1982, Ser. No. 378,035
Term of patent 14 years
U.S. Cl. D13—24



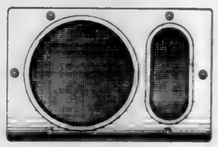
273,860
HOLDING PALLET FOR PC BOARDS
William S. Bolt, 1010 Cuyahoga Dr., Bartlett, Ill. 60103
Filed Sep. 8, 1981, Ser. No. 299,857
Term of patent 14 years
U.S. Cl. D13—99

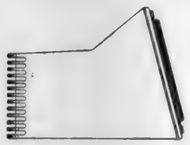


273,861
VIDEO TAPE MAGAZINE
Kimiyoshi Ban, Saitama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Division of Ser. No. 161,306, Jun. 24, 1980, Pat. No. Des. 264,966. This application Aug. 28, 1981, Ser. No. 297,269
Claims priority, application Japan, Jun. 9, 1980, 55-22674
Term of patent 14 years
U.S. Cl. D14—11

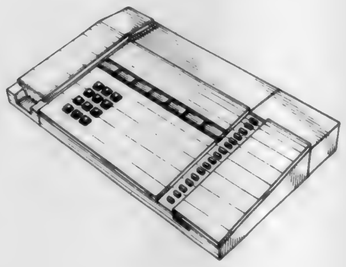


273,862
LOUDSPEAKER
Dennis C. Ward, 58 Ash Acre La., Worthing, Sussex, England (BN1 1EJ)
Filed Nov. 24, 1981, Ser. No. 324,531
Claims priority, application United Kingdom, Oct. 6, 1981, 81/1002845
Term of patent 14 years
U.S. Cl. D14—34

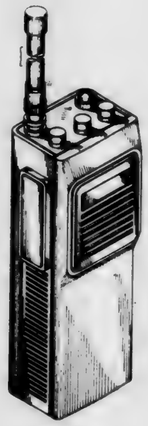




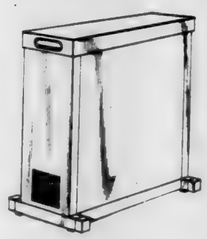
273,863
TELEPHONE
John W. Goodin, Long Beach, and Charlie A. Patterson, Costa Mesa, both of Calif., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 25, 1983, Ser. No. 517,168
Term of patent 14 years
U.S. Cl. D14—53



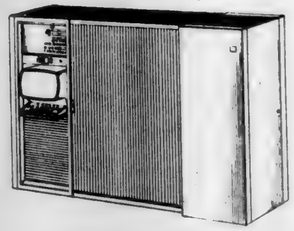
273,864
PORTABLE TWO-WAY RADIO OR SIMILAR ARTICLE
John A. Eckmann, Pompano Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 3, 1981, Ser. No. 327,304
Term of patent 14 years
U.S. Cl. D14—68



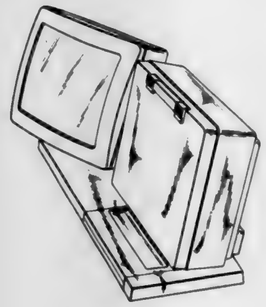
273,865
BASE UNIT FOR A DATA TERMINAL
Terence T. Caven, Beeston, and Ronald Ellis, Carlton, both of England, assignors to Plessey Overseas Limited, Ilford, England
Filed Sep. 14, 1981, Ser. No. 301,967
Claims priority, application United Kingdom, Mar. 14, 1981, 999434
Term of patent 14 years
U.S. Cl. D14—102



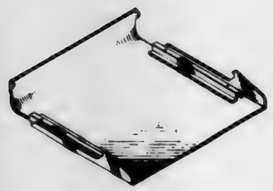
273,866
DATA PROCESSING SYSTEM
James J. LaDue, Wappingers Fall, N.Y., and Clifford I. Shelkofsky, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 178,263, Aug. 15, 1980, Pat. No. 267,490. This application Sep. 24, 1982, Ser. No. 423,483
Term of patent 14 years
U.S. Cl. D14—102



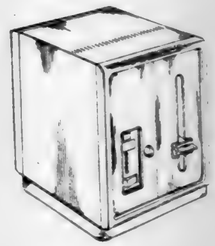
273,867
COMPUTER OR SIMILAR ARTICLE
Matthew H. L. Sanders, Cupertino; Scott H. Stillinger, Los Gatos, and Michael J. Nuttall, Palo Alto, all of Calif., assignors to Convergent Technologies, Inc., Santa Clara, Calif.
Filed Nov. 18, 1981, Ser. No. 322,593
Term of patent 14 years
U.S. Cl. D14—106



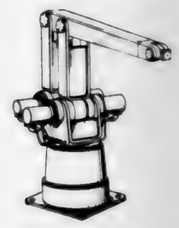
273,868
PAPER GUIDE FOR PRINTER TERMINAL
Jaime E. Dorman, Holladay, and Billy M. Jensen, Sandy, both of Utah, assignors to Micro Peripherals, Inc., Salt Lake City, Utah
Filed Oct. 5, 1981, Ser. No. 308,459
Term of patent 14 years
U.S. Cl. D14—114



273,869
INTERACTIVE TERMINAL CONTROLLER
Donald F. Lahey, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 14, 1981, Ser. No. 300,779
Term of patent 14 years
U.S. Cl. D14—107



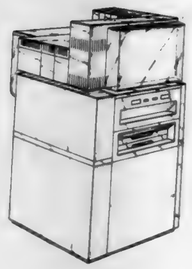
273,870
INDUSTRIAL ROBOT
Michinaga Kono; Yoshio Matsumoto, both of Yokohama; Hirosuke Katsumi, Tokyo, and Fumio Fukuchi, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 30, 1982, Ser. No. 428,975
Claims priority, application Japan, Oct. 5, 1979, 54-41673; Feb. 12, 1980, 55-4391; Mar. 26, 1980, 55-11412
Term of patent 14 years
U.S. Cl. D15—199



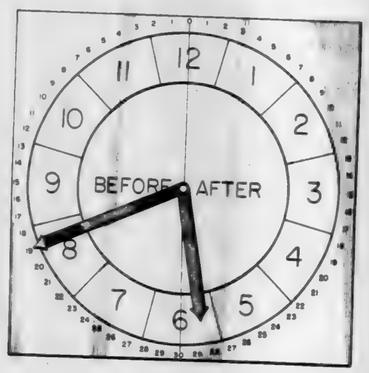
273,871
LOCKING DEVICE FOR A PHOTOGRAPHIC INTERCHANGEABLE LENS
Masaharu Shigoku, Yao; Ken Nagasaka, Sakai, and Masakazu Nakanishi, Hashimoto, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jul. 15, 1981, Ser. No. 283,693
Claims priority, application Japan, Jan. 21, 1981, 56-2020
Term of patent 14 years
U.S. Cl. D16—10



273,872
X-RAY-FILM-PROCESSOR
Norbert Schlagheck, Fuerstenfeldbruck, and Lutz Rabold, Söcking, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Dec. 12, 1980, Ser. No. 216,602
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 5 MR 587 G 175/80-3
Term of patent 14 years
U.S. Cl. D16—34



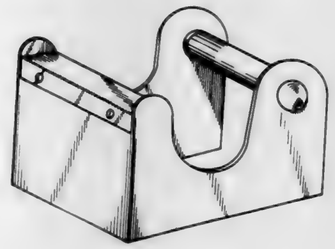
273,873
TEACHING CLOCK
Frank Alessio, 1572-79th St., Brooklyn, N.Y. 11228
Filed Jul. 13, 1981, Ser. No. 282,550
Term of patent 14 years
U.S. Cl. D19—64



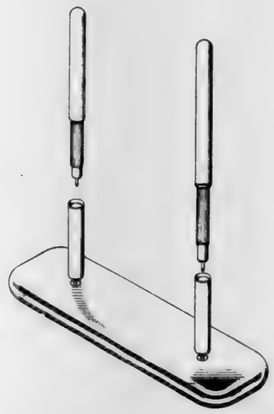
273,874
CORE FOR ELONGATED STRIP
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan
Division of Ser. No. 32,917, Apr. 24, 1979, Pat. No. Des. 263,400, which is a continuation-in-part of Ser. No. 715,250, Aug. 17, 1976, Pat. No. Des. 252,755, which is a continuation-in-part of Ser. No. 646,510, Jan. 5, 1976, abandoned. This application Jul. 2, 1981, Ser. No. 279,845
Term of patent 14 years
U.S. Cl. D19—67



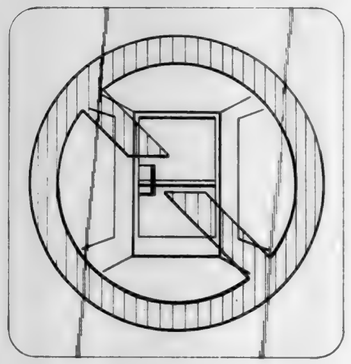
273,875
DISPENSER FOR A ROLL OF ALUMINUM FOIL
Steven G. Hill, P.O. Box 252, Redwood City, Calif. 94063
Filed Apr. 13, 1981, Ser. No. 253,603
Term of patent 14 years
U.S. Cl. D19—69



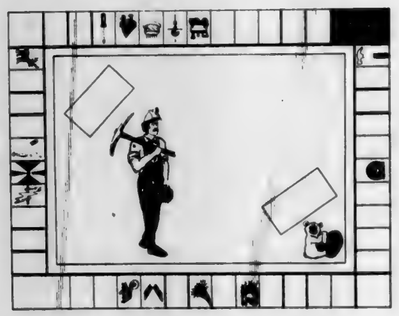
273,876
COMBINED DESK PEN SET AND STAND
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Apr. 15, 1982, Ser. No. 368,714
Term of patent 14 years
U.S. Cl. D19—75



273,877
NO ENTRY SYMBOL FOR GLASS DOOR AND THE LIKE
Jack Darrell, 1646 Old Spanish Tr., Houston, Tex. 77054
Filed Mar. 15, 1982, Ser. No. 358,152
Term of patent 14 years
U.S. Cl. D20—11



273,878
GAME BOARD
Carol A. Salus, R.R. 3, Harrisburg, Ill. 62946
Filed Dec. 10, 1980, Ser. No. 214,882
Term of patent 14 years
U.S. Cl. D21—30



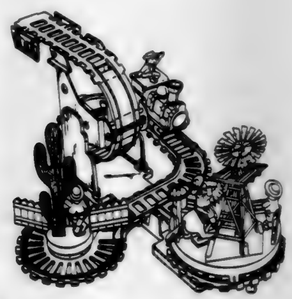
273,879
GAME PLAYING PIECE
Shawn D. Olfman, and Jerry A. Olfman, both of 70 Poison Ave., Winnipeg, Manitoba, Canada (R2W 0M2)
Continuation-in-part of Ser. No. 908,919, May 22, 1978. This application Jul. 16, 1981, Ser. No. 283,965
Claims priority, application Canada, Feb. 6, 1978, 16067716
Term of patent 14 years
U.S. Cl. D21—51



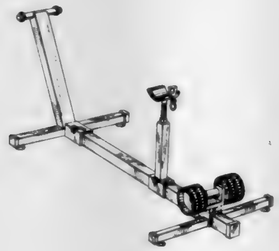
273,880
TOY BUBBLE BLOWER
Philip D. Bart, Coral Springs, Fla., assignor to M & B Toys, S.A., Colon, Panama
Continuation-in-part of Ser. No. 219,143, Dec. 30, 1980. This application Jun. 17, 1981, Ser. No. 274,479
Term of patent 14 years
U.S. Cl. D21—61



273,881
TOY TRACKWAY HAVING MOVING COMPONENTS
Man-Kwai Lee, Kowloon, Hong Kong, assignor to New Bright Industrial Company, Limited, Kowloon, Hong Kong
Filed Oct. 26, 1981, Ser. No. 315,257
Claims priority, application United Kingdom, Jul. 16, 1981, 81/1001522
Term of patent 14 years
U.S. Cl. D21—143



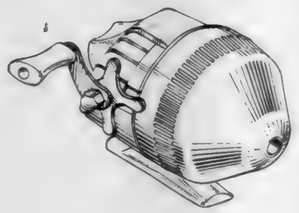
273,882
BICYCLE EXERCISE STAND
Richard M. Bryne, San Diego, Calif., assignor to SkidLid Specialties, Inc., San Diego, Calif.
Filed Nov. 23, 1981, Ser. No. 323,545
Term of patent 14 years
U.S. Cl. D21—191



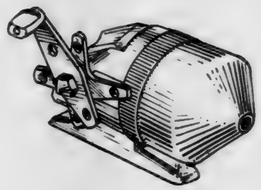
273,883
TRAPPING TACKLE
Berndt J. G. Sundberg, Solhemsgatan 23, S-570 80 Virserum, Sweden
Filed Sep. 15, 1981, Ser. No. 302,619
Claims priority, application Sweden, Jun. 18, 1981, 81-1414
Term of patent 14 years
U.S. Cl. D22—18



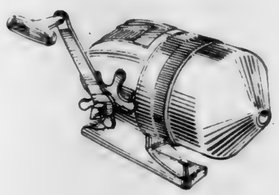
273,884
FISHING REEL
Robert W. Fee, Wichita, and Richard J. Robbins, Derby, both of Kans., assignors to Brunswick Corporation, Skokie, Ill.
Filed Apr. 5, 1982, Ser. No. 364,033
Term of patent 14 years
U.S. Cl. D22—25



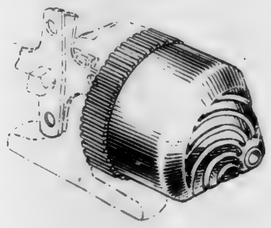
273,885
FISHING REEL
Richard J. Robbins, Derby, Kans., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 10, 1982, Ser. No. 386,627
Term of patent 14 years
U.S. Cl. D22—25



273,886
FISHING REEL
Robert W. Fee, Wichita, and Richard J. Robbins, Derby, both of Kans., assignors to Brunswick Corporation, Skokie, Ill.
Filed Jun. 10, 1982, Ser. No. 386,628
Term of patent 14 years
U.S. Cl. D22—25

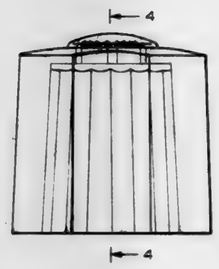


273,887
FISHING REEL CONE
John W. Puryear, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 24, 1982, Ser. No. 391,419
Term of patent 14 years
U.S. Cl. D22—25



273,888
COMBINED HANDLE AND CAP FOR A SANITARY FITTING
James E. Niemann, Louisville, Ky., assignor to American Standard, Inc., New York, N.Y.
Division of Ser. No. 169,538, Jul. 17, 1980. This application Dec. 20, 1982, Ser. No. 451,507
Term of patent 14 years
U.S. Cl. D23—28

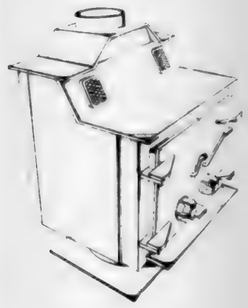




273,889
BATHTUB LEG
Christian Ragonot, Boulogne sur Seine, France, assignor to Societe Generale de Fonderie, Paris, France
Filed Dec. 17, 1981, Ser. No. 331,886
Claims priority, application France, Jun. 19, 1981, 81/2194
Term of patent 14 years
U.S. Cl. D23—70



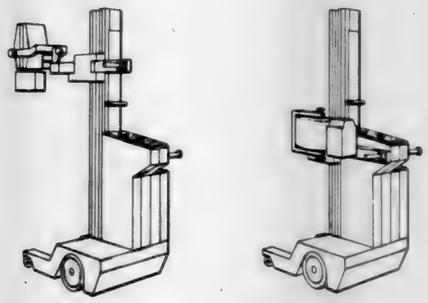
273,890
WOOD STOVE
Anthony A. Mote, 9808 Polk East, Tacoma, Wash. 98445
Division of Ser. No. 212,231, Dec. 2, 1980, Pat. No. Des. 269,542. This application Sep. 27, 1982, Ser. No. 432,991
Term of patent 14 years
U.S. Cl. D23—97



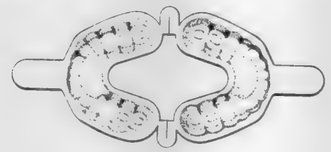
273,891
HEAT CONVECTOR
Jan Hiselius, PL 185 B, S-260 83 Vejbystrand, Sweden
Filed Dec. 29, 1981, Ser. No. 335,376
Claims priority, application Sweden, Jun. 29, 1981, 81-1473
Term of patent 14 years
U.S. Cl. D23—114



273,892
MOBILE X-RAY APPARATUS
Kenneth R. Fenne, Glen Ellyn, and Carl A. Wassell, Streamwood, both of Ill., assignors to Techny Industries, Inc., Glenview, Ill.
Filed Sep. 4, 1981, Ser. No. 299,626
Term of patent 14 years
U.S. Cl. D24—2

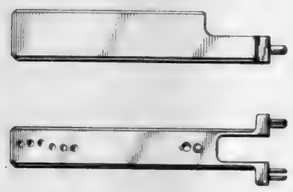


273,893
HINGED DENTAL TRAY
Stewart Weitzman, Lake Oswego, Oreg., assignor to Cooper Laboratories, Inc., Palo Alto, Calif.
Filed Oct. 19, 1981, Ser. No. 312,972
Term of patent 14 years
U.S. Cl. D24—16

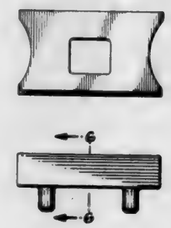




273,894
PIN HOLDER ALIGNMENT GUIDE FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.N.Y.
Filed Feb. 18, 1982, Ser. No. 350,012
Term of patent 14 years
U.S. Cl. D24—26



273,895
FEMORAL CUTTING JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,124
Term of patent 14 years
U.S. Cl. D24—26

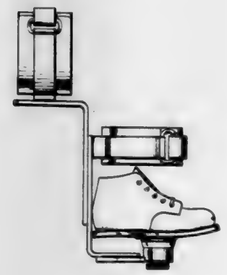


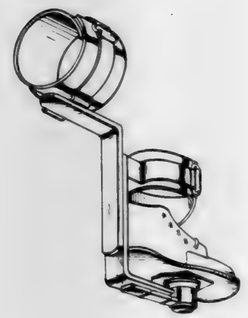
273,896
NATURAL NIPPLE
Ronald C. Fuller, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.
Filed Feb. 22, 1982, Ser. No. 351,078
Term of patent 14 years
U.S. Cl. D24—46



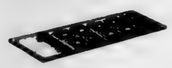


273,897
TIBIAL TORSION SPLINT
Ross L. Bremer, 1107 Margaret St. (at Five Points), Jacksonville, Fla. 32204
Filed Jul. 1, 1981, Ser. No. 279,513
Term of patent 14 years
U.S. Cl. D24—64



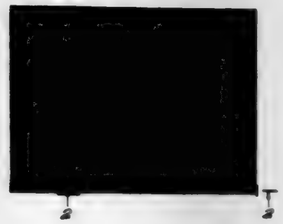


273,898
MICROSCOPE LABORATORY SLIDE
Donald W. Valencia, El Dorado Hills, Calif., assignor to Immuno Concepts, Inc., Sacramento, Calif.
Filed Jan. 9, 1981, Ser. No. 223,674
Term of patent 14 years
U.S. Cl. D24—99

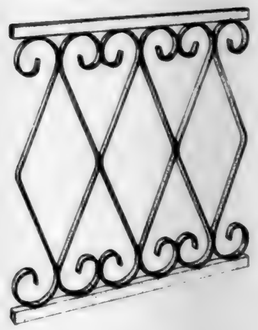




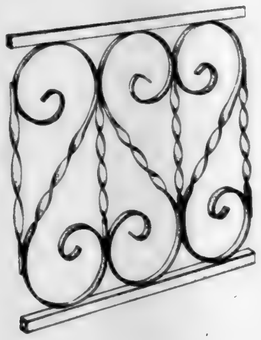
273,899
HAND-HEWN TEXTURED PANEL
Stephen J. Tellman, Patterson, N.Y., assignor to Champion International Corporation, Stamford, Conn.
Filed Jul. 27, 1981, Ser. No. 287,507
Term of patent 14 years
U.S. Cl. D25—85



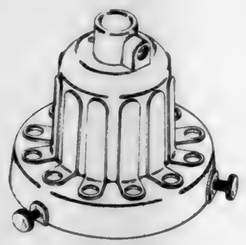
273,900
GRILL
Harvey Porter, Narberth, and Rubina M. Long, Philadelphia, both of Pa., assignors to Royal Factories, Inc., Philadelphia, Pa.
Filed May 28, 1982, Ser. No. 382,946
Term of patent 14 years
U.S. Cl. D25—87



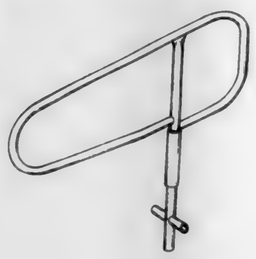
273,901
GRILL
Harvey Porter, Narberth, and Rubina M. Long, Philadelphia, both of Pa., assignors to Royal Factories, Inc., Philadelphia, Pa.
Filed Jun. 7, 1982, Ser. No. 385,836
Term of patent 14 years
U.S. Cl. D25—87



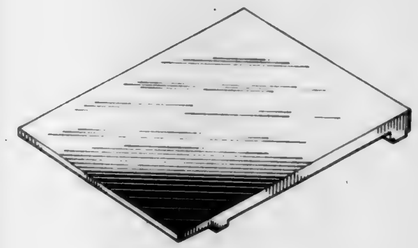
273,902
SHADE HOLDER
Warren E. Dennis, Pasadena, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Nov. 10, 1981, Ser. No. 319,935
Term of patent 14 years
U.S. Cl. D26—140



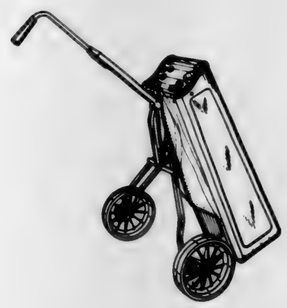
273,903
DIVIDER FOR A CATTLE STALL
Anthony M. Wilcenski, and Jerome A. Wilcenski, both of S47 W25161 Lawnsdale Rd.-Hwy. 1, Waukesha, Wis. 53186
Filed Jul. 22, 1982, Ser. No. 400,853
Term of patent 14 years
U.S. Cl. D30—2



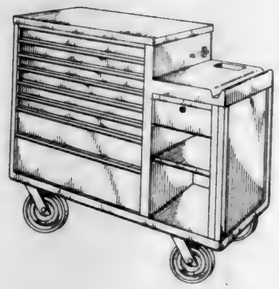
273,904
DISH DRAINER TRAY OR SIMILAR ARTICLE
Damien P. Pacheco, 1055 Komohana St., Hilo, Hi. 96720
Filed Nov. 16, 1981, Ser. No. 321,681
Term of patent 14 years
U.S. Cl. D32—56



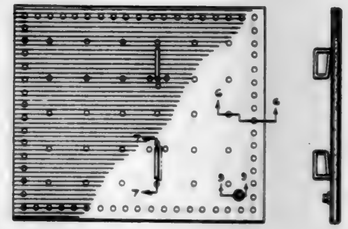
273,905
MOBILE GOLF CLUB CARRIER
Göran Rosén, Rådagatan 5, Lidköping, Sweden (53151)
Filed Oct. 1, 1981, Ser. No. 307,689
Claims priority, application United Kingdom, Apr. 1, 1981, 999750
Term of patent 14 years
U.S. Cl. D34—15



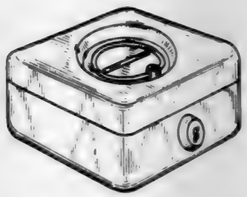
273,906
MEDICATION CART
Eric C. Norlin, Coatesville, Pa., assignor to Lionville Systems, Inc., Lionville, Pa.
Filed Nov. 5, 1981, Ser. No. 318,382
Term of patent 14 years
U.S. Cl. D34—19



273,907
AIR FLOTATION PALETTE
Warren C. Schroeder, Gellett Suite C-603, 2400 Virginia Ave. NW., Washington, D.C. 20037
Filed Apr. 22, 1981, Ser. No. 256,480
Term of patent 14 years
U.S. Cl. D34—38



273,908
MONEY-BOX OR SIMILAR ARTICLE
Eduard Hoogeveen, Leersum, Netherlands, assignor to Metaalwarenfabriek Hoogmerk B.V., Leersum, Netherlands
Filed Mar. 24, 1982, Ser. No. 361,202
Term of patent 14 years
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

"A" Company: *See—*
Williamson, Eugene; Thompson, Stephen M.; and Evans, Derek K., 4,448,203, Cl. 128-733.000.

AB Akerlund & Rausing: *See—*
Jeppsson, Jan B.; and Pollak, Zoltan, 4,448,324, Cl. 220-266.000.

Abbott Laboratories: *See—*
Pohl, Peter H., 4,448,011, Cl. 53-512.000.

Abe, Daisuke: *See—*
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.

Abe, Masahiro: *See—*
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Hirai, Kiyomiki, 4,448,949, Cl. 528-99.000.

Abe, Mitsuo; Tsuchikawa, Syuji; Fukuta, Teizo; and Asakawa, Tsugio, to Japan Synthetic Rubber Co., Ltd. Process for producing α-methyl styrene-methyl methacrylate-acrylonitrile thermoplastic resin. 4,448,580, Cl. 525-71.000.

Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, to Kabushiki Kaisha Komatsu Seisakusho. Method and device for tracer correction in a welding robot. 4,448,342, Cl. 228-102.000.

Abe, Seiko; and Watanabe, Kazuhide, to Nippon Soken, Inc. Fuel evaporator. 4,448,173, Cl. 123-549.000.

Abel, Edward P., to Eastman Kodak Company. Polymeric timing layer for color transfer assemblages. 4,448,874, Cl. 430-215.000.

Ace Pak Company Incorporated: *See—*
Nakajima, Mutsuhiko, 4,448,013, Cl. 53-565.000.

Ache, Rollin W.: *See—*
Fascenda, Anthony C.; Gregg, Daniel L.; and Ache, Rollin W., 4,449,114, Cl. 340-988.000.

Achtman, Malcolm S.: *See—*
Achtman, Myron B.; and Achtman, Malcolm S., 4,448,520, Cl. 355-74.000.

Achtman, Myron B.; and Achtman, Malcolm S. Photographic printing device. 4,448,520, Cl. 355-74.000.

Acrometal Products, Inc.: *See—*
Brunet, George A.; and Cowan, Richard J., 4,448,578, Cl. 432-72.000.

Acushnet Company: *See—*
Reid, Walter L., Jr.; Van Stone, Robert A.; and Delano, Ralph L., 4,448,290, Cl. 188-82.700.

Adachi, Hideo: *See—*
Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, 4,449,019, Cl. 179-110.00A.

Adams, Frederick J., to Cam Gears Limited. Rack bar and pinion assembly and a steering gear including such an assembly. 4,448,088, Cl. 74-422.000.

Adams, George C. Wall panel fastener. 4,448,007, Cl. 52-489.000.

Adams, Jack B. Fire escape device. 4,448,281, Cl. 182-5.000.

Adlhoch, Richard H., to Motorola, Inc. Memory with reference voltage generator. 4,449,203, Cl. 365-104.000.

Advance Enterprises, Inc.: *See—*
Faltin, Hans G., 4,448,408, Cl. 271-277.000.

Afonso, Adriano, to Schering Corporation. 2-(Amino acid-thio)-2-penem-3-carboxylic acids and congeners. 4,448,782, Cl. 424-270.000.

Agency of Industrial Science and Technology: *See—*
Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, 4,449,204, Cl. 365-127.000.

AGFA-Gevaert Aktiengesellschaft: *See—*
Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,448,508, Cl. 354-281.000.

Agnor, William C.; Lafferty, Edwin C.; and Toliver, Samuel, to General Electric Company. Circuit for controlling the output level of an electronic device. 4,449,104, Cl. 330-279.000.

Aichi Steel Works, Ltd.: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,448,617, Cl. 148-36.000.

Aiko Engineering Co. Ltd.: *See—*
Shimizu, Sachio, 4,448,574, Cl. 417-488.000.

Air Products and Chemicals, Inc.: *See—*
Fasolka, Michael J.; and Milligan, Barton, 4,448,939, Cl. 525-474.000.

Airco, Inc.: *See—*
Marancik, William G., 4,447,946, Cl. 29-599.000.

Aire, Tatsuo: *See—*
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.

Aisan Industry Co., Ltd.: *See—*
Kozawa, Tadashi, 4,448,594, Cl. 55-387.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Hashimoto, Nobuyuki; and Hattori, Takemi, 4,448,228, Cl. 141-114.000.
Katagiri, Masayoshi; and Kondo, Toshio, 4,448,287, Cl. 188-73.310.

Aitoku Company Limited: *See—*
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.

Ajiro, Shuichi: *See—*
Ishikawa, Yasuaki; Ajiro, Shuichi; and Wada, Masami, 4,448,269, Cl. 175-335.000.

Akagami, Akira: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Akasaka, Yoichi, to Mitsubishi Denki Kabushiki Kaisha. Method of fabricating semiconductor devices. 4,448,632, Cl. 156-603.000.

Akashi, Akira: *See—*
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.

Akesson, Yngve R., to Societe d'Assistance Technique pour Produits Nestle S.A. Process for producing elongated rod-shaped comminuted meat product. 4,448,793, Cl. 426-241.000.

Akita, Shigeyuki: *See—*
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.

Aktiebolaget Electrolux: *See—*
Lindqvist, Lennart S. A., 4,447,931, Cl. 15-365.000.

Aktiengesellschaft Adolf Saurer: *See—*
Viniczay, Gabriella F.; and Roehrich, Siegfried, 4,448,295, Cl. 192-125.00A.

Aktiengesellschaft Adolph Saurer: *See—*
Zwiener, Rudolf; Lucian, Anton; and Gattiker, Ernst, 4,448,220, Cl. 139-1.00E.

Akutsu, Fumihiko: *See—*
Takemura, Yasuhiko; and Akutsu, Fumihiko, 4,448,075, Cl. 73-626.000.

Akzona, Incorporated: *See—*
Moritz, George J., 4,448,682, Cl. 210-101.000.

Albany International Corp.: *See—*
Bolton, Joseph A.; and Feehery, George R., 4,447,924, Cl. 8-151.000.

Albrecht, Konrad: *See—*
Schumacher, Hans; Albrecht, Konrad; and Heinrich, Rudolf, 4,448,602, Cl. 71-90.000.

Albro, Carl S.: *See—*
Hackman, Donald J.; Caudy, Don W.; Wernli, Robert L.; and Albro, Carl S., 4,448,569, Cl. 405-190.000.

Aldinger, Darrell D.; and Van Wagoner, Roger B. Water faucet modifying apparatus. 4,448,351, Cl. 239-25.000.

Alexander, Donald: *See—*
Harlow, Stanley D.; and Alexander, Donald, 4,448,357, Cl. 241-32.000.

Alferness, Rodney C., to Bell Telephone Laboratories, Incorporated. Traveling wave, electrooptic devices with effective velocity matching. 4,448,479, Cl. 350-96.140.

Alfred Gutmann GmbH and Co., Firma: *See—*
Riedel, Erich O., 4,447,925, Cl. 15-104.06A.

Alger, David W. Conveyor system with frictionally driven conveyor belt. 4,448,301, Cl. 198-778.000.

Allen-Bradley Company: *See—*
Smith, Enoch P., 4,449,076, Cl. 315-312.000.

Allen, Constance C.: *See—*
Vicino, Robert K.; Cooper, Dale L.; Pembleton, Lauren M.; and Allen, Constance C., 4,447,974, Cl. 40-538.000.

Allen, Diane M.: *See—*
Bleile, Dennis M.; Allen, Diane M.; Tanaka, Steve K.; and Matarrese, Francis J., Jr., 4,448,888, Cl. 436-67.000.

Allen, Gary F., to Mobay Chemical Corporation. Catalytic hydrogenation of di(4-aminophenyl)methane. 4,448,995, Cl. 564-451.000.

Allen, Robert J.: *See—*
Kauffman, Ivan L.; and Allen, Robert J., 4,448,012, Cl. 53-563.000.

Allied Corporation: *See—*
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,618, Cl. 148-403.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,851, Cl. 428-606.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,852, Cl. 428-606.000.

Alipac Holding B.V.: *See—*
Rombouts, Rombout M., 4,448,233, Cl. 160-319.000.

Allunions-Forschungsinstitut fur physikaliachen Apparatebau: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Allunions-Forschungsinstitut fur Strahlentecknik: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Alsthom-Atlantique: *See*—
Duchene, Jean C., 4,449,110, Cl. 336-94.000.

Altantic Richfield Company: *See*—
Sun, Hsiang-Ning, 4,448,898, Cl. 502-350.000.

Althouse, James W., III, to Dow Chemical Company, The. Apparatus and method for controlling the level of a liquid in a tank. 4,448,210, Cl. 137-2.000.

Altman, Richard M., to Industrial Electronic Engineers, Inc. Rear end projection system employing aspherical lenses. 4,448,504, Cl. 353-36.000.

Aluminum Company of America: *See*—
Kutcher, Howard R., 4,449,053, Cl. 290-44.000.

Alwani, Dru W.: *See*—
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,448,710, Cl. 252-390.000.

Amagai, Akikazu: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Amagai, Akikazu, 4,448,931, Cl. 525-68.000.

Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., to International Business Machines Corporation. Method for selective electroless plating of copper onto a non-conductive substrate surface. 4,448,804, Cl. 427-98.000.

Amemori, Koichi; and Kawabe, Toshihiko, to Yanmar Diesel Engine Co., Ltd. Overhead cam type diesel engine. 4,448,166, Cl. 123-445.000.

American Artos Corporation: *See*—
Johnson, David F., 4,448,582, Cl. 8-149.100.

American Cyanamid Company: *See*—
Duzza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,448,973, Cl. 548-362.000.
Keeling, Ronald J.; Roe, Jin-Young K.; and Mollmann, Henry C., 4,448,849, Cl. 428-503.000.

American Hoechst Corporation: *See*—
Corso, Anthony J., 4,448,583, Cl. 8-527.000.
Gillich, Thomas N.; Walla, John E.; Wanat, Stanley F.; and Rozell, William J., 4,448,647, Cl. 204-33.000.
Walls, John E.; and Dhillon, Major S., 4,448,873, Cl. 430-157.000.

American Hoist & Derrick Company: *See*—
Delago, Pierre C., 4,448,396, Cl. 254-340.000.

American Home Products Corporation: *See*—
Klaubert, Dieter H.; Kreft, Anthony F., III; and Bell, Stanley C., 4,448,729, Cl. 260-465.00D.

American Hospital Corporation: *See*—
Wertz, Richard K.; Cook, Albert M.; and Hathaway, James C., 4,448,534, Cl. 356-435.000.

American Organics Corp.: *See*—
Martenson, Irvin W., 4,448,916, Cl. 524-106.000.

Ameritek, Inc.: *See*—
Davidian, Michael, 4,448,826, Cl. 428-35.000.

AMGAS B.V.: *See*—
van Hatten, Hendricus W. M., 4,448,219, Cl. 138-149.000.

Amos, Paul E. Furniture assembly for storage of articles. 4,448,463, Cl. 312-111.000.

AMP Incorporated: *See*—
Berry, Donald A.; and Fabian, David J., 4,448,471, Cl. 339-91.00R.
Coldren, Daniel R., 4,448,468, Cl. 339-74.00R.
Felix, Ronald G.; and Hoffman, Douglas R., 4,448,473, Cl. 339-99.00R.
Hilhorst, Jacques J.; and Stillie, Donald G., 4,449,023, Cl. 200-159.00B.
Weidler, Charles H., 4,448,467, Cl. 339-17.0LC.

Ampex Corporation: *See*—
Chang, Hao-Jan; and Nishimura, Akihiro, 4,448,846, Cl. 428-412.000.
Yonenaka, Thomas H., 4,448,465, Cl. 312-223.000.

Amsted Industries Incorporated: *See*—
Gain, Lorand H., Jr., 4,448,148, Cl. 116-277.000.

Anderson Bros. Mfg. Co.: *See*—
Stohlquist, Roger H.; Brown, Jonathan G.; and Baker, Kenneth V., 4,448,010, Cl. 53-450.000.

Anderson, Lowell R.: *See*—
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,448,710, Cl. 252-390.000.
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., 4,448,905, Cl. 521-164.000.

Anderson, Milan B. Collapsible hand truck. 4,448,434, Cl. 280-40.000.

Ando, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Information recording medium. 4,449,138, Cl. 346-135.100.

Ando, Masao: *See*—
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, 4,448,901, Cl. 521-60.000.

Andral Corporation: *See*—
Marques, Salvador A., 4,448,283, Cl. 182-164.000.

Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, to Daimler-Benz Aktiengesellschaft. Heat-exchanger with a bundle of parallelly extending pipes adapted to be acted upon by air. 4,448,241, Cl. 165-104.140.

Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgand, to Daimler-Benz Aktiengesellschaft. Heat-exchanger with a bundle of parallelly extending pipes adapted to be acted upon by air. 4,448,242, Cl. 165-104.140.

Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., to General Electric Company. Digital fluorographic processor control. 4,449,195, Cl. 364-900.000.

Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., to Mobil Oil Corporation. Process for the combined deashing/deasphalting of coal liquids. 4,448,672, Cl. 208-86.000.

Anscher, Bernard, to National Molding Corporation. Cable harness. 4,447,934, Cl. 24-16.0PB.

Anspaugh, Dennis J.; and Siegrist, Ronald R., to International Telephone and Telegraph Corporation. Motor mount structure for vehicle seat adjustment apparatus. 4,448,381, Cl. 248-394.000.

Anthony, Andrew J., to Combustion Engineering, Inc. Lateral support for nuclear fuel assemblies. 4,448,745, Cl. 376-448.000.

Aoki, Hachiro: *See*—
Takahashi, Seizi; and Aoki, Hachiro, 4,448,174, Cl. 123-502.000.

Aoki, Tsutomu: *See*—
Nagata, Wataru; and Aoki, Tsutomu, 4,448,720, Cl. 260-239.00A.

Aoyama, Jun; and Nakayama, Noboru, to Nippondenso Co., Ltd. Ignition system for internal combustion engines. 4,448,182, Cl. 123-605.000.

Aoyama, Keizo; and Yamauchi, Takahiko, to Fujitsu Limited. Buffer circuit for generating output signals having short recovery time. 4,449,066, Cl. 307-482.000.

Apeldoorn, Willem: *See*—
van der Weerdt, Antonius J. A.; and Apeldoorn, Willem, 4,448,712, Cl. 252-522.00R.

Aplenc, Andrej M. R., to Sperry Corporation. Downhole liquid trap for a geothermal pumping system. 4,448,022, Cl. 60-641.400.

Appenzeller, Valentin; and Mingers, Peter F., to Kusters, Eduard. Revolving hollow roll with a gap seal. 4,447,940, Cl. 29-116.0AD.

Apperson, Kenneth P.; and Morgan, Cecil D., to Hastings Fiber Glass Products, Inc. Insulator guard. 4,449,010, Cl. 174-5.00R.

Applied Fusion Research Corporation: *See*—
Bass, Robert W., 4,448,743, Cl. 376-103.000.

Aragou, Yvan. Heat exchanger with a capillary structure for refrigeration equipment and/or heat pumps and method of making the same. 4,448,043, Cl. 62-515.000.

Arakawa, Hiroshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for mounting weft guiding members in jet looms. 4,448,222, Cl. 139-435.000.

Arinobu, Mutsihiro; and Suzuki, Isamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Pressure wave attenuating main steam line apparatus. 4,448,023, Cl. 60-644.100.

Arney, Jonathon S.; and Wright, Richard F., to Mead Corporation, The. Developer roll. 4,448,516, Cl. 355-27.000.

Arnold, Fred E.: *See*—
Reinhardt, Bruce A.; and Arnold, Fred E., 4,449,001, Cl. 568-31.000.

Asahara, Toshio. Thermally insulated ceramic container and method for manufacture thereof. 4,448,825, Cl. 428-35.000.

Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, to Clarion Co., Ltd. Surface elastic wave element. 4,449,107, Cl. 333-150.000.

Asakawa, Tsugio: *See*—
Abe, Mitsuo; Tsuchikawa, Syuji; Fukuta, Teizo; and Asakawa, Tsugio, 4,448,580, Cl. 525-71.000.

Asayama, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Device for detecting the intake air flow rate in an internal combustion engine. 4,448,064, Cl. 73-118.200.

Ash, Philip S.; and Hider, Robert C., to National Research Development Corporation. Liposomes and their use in treating human or other mammalian patients. 4,448,765, Cl. 424-14.000.

Ashland Oil, Inc.: *See*—
Schafer, Robert J., 4,448,907, Cl. 523-139.000.

Asia Oil Company Limited: *See*—
Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, 4,448,896, Cl. 502-314.000.

Assil, Naim Z.; and Hughes, Richard H., to RCA Corporation. Color picture tube with focusing electrode having electrostatic field distortion aperture therein. 4,449,069, Cl. 313-412.000.

Associpak International Inc.: *See*—
Malthouse, Martin D.; and Groeger, Heinz K., 4,448,629, Cl. 156-510.000.

AT & T Technologies, Inc.: *See*—
Golinski, Stanley; and Rapp, Willard E., 4,447,948, Cl. 29-829.000.
Hardesty, Edwin C., 4,448,472, Cl. 339-97.00P.

Atlantic Richfield Company: *See*—
Gastinger, Robert G., 4,448,897, Cl. 502-350.000.
Mackenzie, John D.; and Horiuchi, Tetsuro, 4,448,599, Cl. 65-21.400.
Masologites, George P.; Sun, Jui-Yuan; Yoo, Jin S.; and Burk, Emmett H., Jr., 4,448,584, Cl. 44-1.0SR.
Sofranko, John A.; and Leonard, John J., 4,448,985, Cl. 562-579.000.
Yoo, Jin S., 4,448,585, Cl. 44-51.000.

Atlas Sound Division of American Trading & Production Corporation: *See*—
Seebinger, Frederick L., 4,449,020, Cl. 179-147.008.

Atsumi, Morihiro: *See*—
Fukazawa, Takeshi; Yamaguchi, Shunzo; and Atsumi, Morihiro, 4,449,039, Cl. 219-553.000.

Augusta, George V. Board game. 4,448,423, Cl. 273-272.000.

Ausnit, Steven, to Minigrip, Inc. Device for and method of joining sheet material. 4,447,935, Cl. 24-201.00C.

Auto Specialties Manufacturing Company: *See*—
Ladewski, Bernard F., 4,448,392, Cl. 254-103.000.

Automation Industrielle SA: *See*—
Kohler, Andreas, 4,448,829, Cl. 222-107.000.

Axelrod, Norman N.; Haas, Peter; and Noess, Rainer, to Information Retrieval Systems Corp. Automatic high speed microfilm searching system. 4,448,503, Cl. 353-26.00A.

B.A.T. Cigaretten-Fabriken GmbH: *See*—
Schumacher, Gerd; and Masurat, Heinz-Werner, 4,448,079, Cl. 73-789.000.

B. F. Goodrich Company, The: *See*—
Olson, Alan J., 4,448,658, Cl. 204-159.180.
Solomon, Thomas S., 4,448,813, Cl. 427-381.000.

Baba, Kiyokazu, to Kabushiki Kaisha Komatsu Seisakusho. Infeed mechanism for a press. 4,448,056, Cl. 72-422.000.

Babcock & Wilcox Company, The: *See*—
Dougan, Donald R.; Larue, Albert D.; and Wolf, John J., 4,448,135, Cl. 110-263.000.
Jabsen, Felix S., 4,447,942, Cl. 29-157.400.

Baber, Samuel C., to Texas Instruments Incorporated. Laser assisted lift-off. 4,448,636, Cl. 156-643.000.

Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., to Eli Lilly and Company. Hydroxyaminotetralincarboxamides. 4,448,990, Cl. 564-167.000.

Badesha, Santokh S.; and Loutfy, Rafik O., to Xerox Corporation. Process for preparation of high purity metals by the electrochemical reduction of chalcogenide esters. 4,448,646, Cl. 204-59.00M.

Badgley, Patrick R.; and Roselli, Andrew C., to Cummins Engine Company, Inc. Injector for diesel engine. 4,448,169, Cl. 123-467.000.

Badsey, William J. Land vehicle. 4,448,278, Cl. 180-210.000.

Bahr, Albert: *See*—
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.

Baker, Kenneth V.: *See*—
Stohlquist, Roger H.; Brown, Jonathan G.; and Baker, Kenneth V., 4,448,010, Cl. 53-450.000.

Ball Corporation: *See*—
Paddock, Kimberly A.; and Ruth, Roy L., 4,449,109, Cl. 335-212.000.

Bally Manufacturing Corporation: *See*—
Clark, Norman R.; and Christian, George, 4,448,417, Cl. 273-121.00A.

Balzers Aktiengesellschaft: *See*—
Buhl, Rainer; Moll, Eberhard; and Daxinger, Helmut, 4,448,802, Cl. 427-42.000.
Wegmann, Urs, 4,448,653, Cl. 204-298.000.

BancTec, Inc.: *See*—
Eaton, Charles K.; Nolting, Eugene C.; and Norman, Thomas J., Jr., 4,448,631, Cl. 156-521.000.

Banno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, to Olympus Optical Co., Ltd. Liquid distributing device for use in chemical analyzer. 4,448,752, Cl. 422-81.000.

Barbier, William J., to Sporlan Valve Company. Refrigeration control system for modulating electrically-operated expansion valves. 4,448,038, Cl. 62-212.000.

Barbieri, Louis C. Endless track attachment for a vehicle. 4,448,273, Cl. 180-9.210.

Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, to Lever Brothers Company. Article suitable for wiping hard surfaces. 4,448,704, Cl. 252-91.000.

Barclay, Donald J.; Morgan, William M.; and Vigar, James M., to International Business Machines Corporation. Trivalent chromium electroplating baths. 4,448,648, Cl. 204-51.000.

Barclay, Donald J.; Morgan, William M.; and Vigar, James M., to International Business Machines Corporation. Trivalent chromium electroplating baths. 4,448,649, Cl. 204-51.000.

Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, to Regie Nationale des Usines Renault. Differential type transit-time ionic pickup. 4,448,082, Cl. 73-861.050.

Barnwell, James W.; and Breton, Ernest J., to Deltech Engineering, Inc. Process for removing contaminants from compressed air. 4,448,757, Cl. 423-247.000.

Baron, Arthur L.; and Sivaramakrishnan, Parameswar, to Mobay Chemical Corporation. Polycarbonate having improved critical thickness. 4,448,950, Cl. 528-128.000.

Barrat, Christian R.; Walker, John R.; and Wevers, Jean, to Procter & Gamble Company, The. Laundry additive products containing amino-silanes. 4,448,699, Cl. 252-8.750.

Barrington, Burchus Q., to Halliburton Company. Tester valve with silicone liquid spring. 4,448,254, Cl. 166-373.000.

Barsa, Edward A.; and Sherwood, Philip W., to Upjohn Company, The. Compounds, compositions and process. 4,448,816, Cl. 427-388.200.

Barthell, Barry L.: *See*—
Duchane, David V.; and Barthell, Barry L., 4,448,622, Cl. 156-155.000.

Bartholic, David B., to Engelhard Corporation. Control of emissions in FCC regenerator flue gas. 4,448,674, Cl. 208-113.000.

Barzel, Eyal. Continuously variable torque transmitter. 4,448,087, Cl. 74-193.000.

BASF Aktiengesellschaft: *See*—
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,448,643, Cl. 203-34.000.
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,448,960, Cl. 544-282.000.
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.
Stutz, Herbert; Illers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, 4,448,946, Cl. 528-67.000.

BASF Farben & Fasern A.G.: *See*—
Lauke, Arno, 4,448,812, Cl. 427-377.000.

BASF Wyandotte Corporation: *See*—
Kim, Bongsub, 4,448,706, Cl. 252-108.000.
Patton, John T., Jr.; and Rupert, John P., 4,448,952, Cl. 528-129.000.
Rupert, John P.; and Patton, John T., Jr., 4,448,951, Cl. 528-129.000.

Bashford, Anthony J.; and Vandenham, Elbert H., to NCR Corporation. Dual directional document drive apparatus. 4,448,407, Cl. 271-8.00A.

Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, to TRW Inc. Fiber optic clamp. 4,448,481, Cl. 350-96.200.

Bass, Robert W., to Applied Fusion Research Corporation. Generation, insulated confinement, and heating of ultra-high temperature plasmas. 4,448,743, Cl. 376-103.000.

Bassett, Ronald M. Spinner for fishing lure, and fishing lure having spinner mounted thereon. 4,447,980, Cl. 43-42.140.

Bates, Jack R.; and Holtrop, John W., to United States of America, Navy. Elastomeric sway bracing and ejector system. 4,448,373, Cl. 244-137.00R.

Battelle-Institut e.V.: *See*—
Kolitsch, Jorg; Sparwell, Norbert; and Brockmann, Eugen, 4,448,081, Cl. 73-861.030.

Baucom, Robert M., to United States of America, National Aeronautics and Space Administration. Process of making medical clip. 4,447,943, Cl. 29-423.000.

Bauer, Paul E. Level-travelling fishing lure. 4,447,981, Cl. 43-42.210.

Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, to AGFA-Gevaert Aktiengesellschaft. Cut film cassette with two film chambers. 4,448,508, Cl. 354-281.000.

Bauer, Wolfgang; and Grosser, Werner, to Karl Schmidt GmbH. Single-spoke steering wheel. 4,448,091, Cl. 74-552.000.

Baumann, Hanns U.: *See*—
Maurer, Edward J., Jr.; Baumann, Hanns U.; and Watkins, Herbert E., 4,447,996, Cl. 52-79.100.

Baus, Heinz G. Method and device for manufacturing multi-ply sheets. 4,448,739, Cl. 264-132.000.

Bayer Aktiengesellschaft: *See*—
Coblenz, Rolf; Schulte, Klaus; Ebeling, Wilfried; and Evertz, Dieter, 4,448,902, Cl. 521-99.000.
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,448,914, Cl. 524-32.000.
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrichrich, 4,448,942, Cl. 525-540.000.

Baylor College of Medicine: *See*—
Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

BBC Brown, Boveri & Company, Limited: *See*—
Fischer, Melch; and Brunner, Kurt, 4,448,853, Cl. 428-607.000.
Kopainsky, Jugen, 4,449,244, Cl. 455-603.000.
Kyrian, Bohumil, 4,449,103, Cl. 330-123.000.

Beach, Bruce A.: *See*—
Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Besch, Bruce A., 4,449,186, Cl. 364-407.000.

Beall, Charles D., to Wayne H. Coloney Co., Inc. Stagger feed control circuit. 4,449,083, Cl. 318-602.000.

Bean, Lloyd F., to Xerox Corporation. Light means for exposing and light means for discharging in a electrophotographic printing machine. 4,448,512, Cl. 355-3.00R.

Beatty, William T. Convertible railway-highway vehicle. 4,448,132, Cl. 105-215.00C.

Beaver, Richard N.: *See*—
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,448,663, Cl. 204-270.000.

Beckenfeld, Ronald. Point of sale display container. 4,448,303, Cl. 206-44.00R.

Becker, Danny J.: *See*—
Kortering, Randall L.; and Becker, Danny J., 4,448,459, Cl. 305-38.000.

Becker, Kunibert; Kirchbrucher, Rudiger; and Elaner, Burckhard, to Gewerkschaft Eisenhutte Westfalia. Drilling apparatus. 4,448,263, Cl. 173-34.000.

Becker, Wilhelm; and Manz, Albrecht, to Hoechst Aktiengesellschaft. Heat hardenable binders comprising aqueous dispersions of solid epoxy resins, processes for the preparation thereof and the use thereof. 4,448,912, Cl. 523-414.000.

Becker, Willi, to Willi Becker Ingenieurburo GmbH. Rudder with a stabilizer fin. 4,448,146, Cl. 114-162.000.

Bees, Paul R.: *See*—
Mongoven, Michael A.; Bees, Paul R.; and Earl, David C., 4,449,073, Cl. 315-130.000.

Behrendt, Martin, to Wickmann-Werke AG. Holder for an electrical component. 4,448,376, Cl. 248-27.300.

Behringwerke Aktiengesellschaft: *See—*
Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, 4,448,908, Cl. 523-201.000.

Belko, Robert P.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.

Bell & Howell Company: *See—*
Frystak, Richard; Johnston, Robert F.; and Flint, John R., 4,448,364, Cl. 242-674.000.

Bell, James P.; and De Nicola, Anthony J., Jr., to Shell Oil Company. Process for improving steel-epoxy adhesion. 4,448,847, Cl. 428-413.000.

Bell, Stanley C.: *See—*
Klaubert, Dieter H.; Kreft, Anthony F., III; and Bell, Stanley C., 4,448,729, Cl. 260-465.00D.

Bell Telephone Laboratories, Incorporated: *See—*
Alferness, Rodney C., 4,448,479, Cl. 350-96.140.
Bergman, John G.; Liao, Paul F.; and Wokaun, Alexander J., 4,448,485, Cl. 350-162.200.
Brus, Louis E.; and Rossetti, Ronald, 4,448,524, Cl. 356-36.000.
Burke, Edmund T.; Catalano, Joseph F.; Henderson, James A., Jr.; and Smith, Nicholas K., 4,449,017, Cl. 179-27.00D.
Flanagan, James L.; and Johnston, James D., 4,449,190, Cl. 364-513.500.
Frazer, Gerald L., 4,449,102, Cl. 328-162.000.
Henry, James L.; and Stocker, Wendy A., 4,449,197, Cl. 364-784.000.
Lee, Byung H.; and Lynch, John F., Jr., 4,449,238, Cl. 381-110.000.
Ziesse, Norman G., 4,449,174, Cl. 363-21.000.

Bellamy, Norman W.: *See—*
Wood, Eric; and Bellamy, Norman W., 4,448,020, Cl. 60-398.000.

Bellocci, Rio, to Pont-A-Mousson S.A. Centrifugally cast tube of spheroidal graphite cast-iron and its method of manufacture. 4,448,610, Cl. 148-3.000.

Belter, Paul. Balancing game. 4,448,416, Cl. 273-110.000.

Benayache, Samir: *See—*
Jullien, Renee; and Benayache, Samir, 4,448,728, Cl. 260-464.000.

Bendix Corporation, The: *See—*
Gumkowski, Bert A.; and Schreiner, Peter J., 4,448,289, Cl. 188-73.450.
Peterson, Ann E., 4,448,470, Cl. 339-91.00R.
Rittema, Irving R.; and Johannesen, Donald D., 4,448,291, Cl. 188-218.0XL.

Benisek, Ladislav; and Craven, Penelope C., to Wool Development International Limited. Textile finishing of keratinous articles. 4,448,817, Cl. 427-412.000.

Bente, Alfred, to Messrs. Adidas Sportschuhfabriken Adi Dassler AG. Football boot. 4,447,971, Cl. 36-133.000.

Berberat, Alexis: *See—*
Wisagott, Ulrich; and Berberat, Alexis, 4,448,794, Cl. 426-267.000.

Berg, Alan: *See—*
Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, 4,448,481, Cl. 350-96.200.

Bergholz, Eugene W.: *See—*
Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., 4,449,195, Cl. 364-900.000.

Bergkuist, Carolyn: *See—*
Neri, Bruce P.; Liffmann, Stanley M.; and Bergkuist, Carolyn, 4,448,889, Cl. 436-74.000.

Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, to Multi-Arc Vacuum Systems Inc. Arc-initiating trigger apparatus and method for electric arc vapor deposition coating systems. 4,448,799, Cl. 427-37.000.

Bergman, John G.; Liao, Paul F.; and Wokaun, Alexander J., to Bell Telephone Laboratories, Incorporated. Harmonic generation using a surface of metal particles. 4,448,485, Cl. 350-162.200.

Bergquist, Everett J., to United Technologies Corporation. Shuttle for a tumbling operation. 4,447,992, Cl. 51-163.100.

Bergwerksverband GmbH: *See—*
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.

Berkowitz, Edward H., to Varian Associates, Inc. Dose compensation by differential pattern scanning. 4,449,051, Cl. 250-492.200.

Bernhardt, Lutz; and Kochert, Wilfried, to Computer Gesellschaft, Konstanz mbH. Method and circuit for segmentation of characters from a serially-read character sequence. 4,449,239, Cl. 382-9.000.

Bernhardt, Rainer: *See—*
Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., 4,448,365, Cl. 242-71.800.

Bernstein, Seymour: *See—*
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,448,973, Cl. 548-362.000.

Berry, Donald A.; and Fabian, David J., to AMP Incorporated. Polarized locking latch cover for an electrical connector. 4,448,471, Cl. 339-91.00R.

Bertels, Herbert: *See—*
Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, 4,448,836, Cl. 428-164.000.

Berthin, Jean-Claude, to Sea Tank Co. Method of constructing a concrete off-shore structure more than 200 m high stabilized on the sea bed by its own weight. 4,448,570, Cl. 405-204.000.

Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, to Hoechst Aktiengesellschaft. Process for the preparation of a polyolefin, and a catalyst for this process. 4,448,944, Cl. 526-119.000.

Best, Lorne A., to National Element, Inc. Ceramic heater support and spacer block. 4,449,016, Cl. 174-138.00J.

Biber, Klaus: *See—*
Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, 4,448,498, Cl. 350-516.000.

Bidwell, Malcolm A. Forced air flue heater device. 4,448,348, Cl. 237-55.000.

Billimoria, Rustom M.: *See—*
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., 4,448,665, Cl. 208-8.0LE.

Binder, Jean-Jacques; and Magnenet, Jean G., to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Arrangement for holding a part attached to a support frame held against a rotatable member which is mounted within that support frame. 4,449,160, Cl. 360-104.000.

Binfare, Francesco, to C.D. & C Centro Design & Communicazione S.r.l. Modular supporting structure for tables, small tables, chairs and the like. 4,448,378, Cl. 248-188.700.

Binger, Bernhard, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Gear transmission for the final drive of heavy motor vehicles. 4,448,092, Cl. 74-770.000.

Binstock, Morton H.; McCloskey, Thomas H.; and Podolsky, Leaman B., to Westinghouse Electric Corp. Turbine high pressure bypass pressure control system. 4,448,026, Cl. 60-662.000.

Bio-Rad Laboratories, Inc.: *See—*
Bleile, Dennis M.; Allen, Diane M.; Tanaka, Steve K.; and Matarrese, Francis J., Jr., 4,448,888, Cl. 436-67.000.

Biomedica Foscama Industria Chimico-Farmaceutica S.p.A.: *See—*
Cattani, Luciano; and Costrini, Renato, 4,448,771, Cl. 424-180.000.

Bishop, Gary E., to General Motors Corporation. Variable-permeability, two-layer pattern coating for lost foam casting. 4,448,235, Cl. 164-34.000.

Bishop, Wayne S.; and Marsh, Richard A., to United States of America, Air Force. Deactivation of thionyl chloride cells. 4,448,859, Cl. 429-50.000.

Bison, Gunter: *See—*
Thewalt, Klaus; Bison, Gunter; and Egger, Heinz, 4,448,999, Cl. 564-495.000.

BIW Cable Systems, Inc.: *See—*
Garschick, Alfred, 4,449,013, Cl. 174-103.000.

Bixler, Kenneth D.: *See—*
Lord, Henry A.; Bixler, Kenneth D.; and Reifers, Richard F., 4,448,344, Cl. 229-2.5EC.

Black, Charles E., III: *See—*
Halstead, Raymond T.; and Black, Charles E., III, 4,448,390, Cl. 251-176.000.

Black & Decker Inc.: *See—*
Wilson, Peter H., 4,449,062, Cl. 307-328.000.

Black & Decker Manufacturing Company, The: *See—*
Kling, Larry K., 4,449,161, Cl. 361-152.000.

Black, Denny E.; and Garrett, David W., to Owens-Corning Fiberglas Corporation. Size for glass fibers. 4,448,917, Cl. 524-160.000.

Blakely, Bill W.; and Reece, Robert. Tunable bass-tone device. 4,448,103, Cl. 84-1.010.

Blanchard, Jean F.; and Lasserre, Pierre P., to Sanofi. Use of MS salt in geriatric medicine. 4,448,779, Cl. 424-263.000.

Blankenhorn, David H.: *See—*
Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., 4,448,200, Cl. 128-653.000.

Blanquart, Philippe. Machine for applying a film. 4,448,630, Cl. 156-514.000.

Blau, Frederick, Jr.; and Gross, John M., to Fluidmaster, Inc. Method and apparatus for controlled off peak load hot water heating. 4,449,178, Cl. 364-148.000.

Bleile, Dennis M.; Allen, Diane M.; Tanaka, Steve K.; and Matarrese, Francis J., Jr., to Bio-Rad Laboratories, Inc. Compositions and method for correcting temperature dependence of hemoglobin assays. 4,448,888, Cl. 436-67.000.

Blodgett, Richard E.; and Furedi, Ervin J., to Furedi, Ervin J. Ratchet wrench. 4,448,095, Cl. 81-57.290.

Blomdahl, Sven G. R. Apparatus for sensing the distance between an object of electrically conductive material and a reference point. 4,449,030, Cl. 219-124.340.

Board, Kenneth, to National Research Development Corporation. Semi-conductor barrier switching devices. 4,449,140, Cl. 357-7.000.

Board of Trustees, Leland Stanford, Jr. University: *See—*
Sherby, Oleg D.; Oyama, Toshimasa; and Wadsworth, Jeffrey, 4,448,613, Cl. 148-12.00R.

Bockemuehl-Simon, Johannes J.: *See—*
Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., 4,448,365, Cl. 242-71.800.

Boden, Richard M., to International Flavors & Fragrances Inc. Branched ketones, organoleptic uses thereof and process for preparing same. 4,448,713, Cl. 252-522.00R.

Bodig, Bernd; Hohne, Gerd; and Kalkhof, Bernd, to Robert Bosch GmbH. Ignition system for an internal combustion engine. 4,448,180, Cl. 123-618.000.

Boeing Company, The: *See—*
Herndon, Gerald F., 4,448,375, Cl. 244-216.000.
Klees, Garry W., 4,448,019, Cl. 60-204.000.
Larson, Robert J., 4,448,372, Cl. 244-87.000.

Bognar, Daniel; and Kuhnert, Friedrich, to Miller-Johannisberg Druckmaschinen GmbH. Inker for printing presses. 4,448,126, Cl. 101-363.000.

Bohlen, Harald; Greschner, Johann; and Nehmiz, Peter, to International Business Machines Corporation. Shadow projection mask for ion implantation and ion beam lithography. 4,448,865, Cl. 430-5.000.

Bohner, Beat, to Ciba-Geigy Corporation. Chlorosulfonyl urea triazines. 4,448,959, Cl. 544-213.000.

Boldt, John: *See—*
Trezise, Richard; Boldt, John; and Gnutzman, Keith, 4,448,556, Cl. 400-208.000.

Boliden Aktiebolag: *See—*
Petersson, Stig A., 4,447,963, Cl. 34-12.000.

Bolton, Joseph A.; and Feehery, George R., to Albany International Corp. Moisture control system for controlling the amount of chemical added to a fabric. 4,447,924, Cl. 8-151.000.

Bond, Michael E.; and Taylor, Harry E., to USM Corporation. Setting tool for wall anchor. 4,447,923, Cl. 7-165.000.

Bopp, Richard C.; Golba, Joseph C., Jr.; and White, Scott A., to General Electric Company. Blends of polyetherimides and block poly(esteramides). 4,448,937, Cl. 525-432.000.

Borg-Warner Corporation: *See—*
Marsi, Joseph A., 4,448,428, Cl. 277-92.000.

Bosak, Shannon: *See—*
Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, 4,448,799, Cl. 427-37.000.

Bosch-Siemens Hausgerate: *See—*
Reichert, Rudolf; and Haftlmeier, Theo, 4,448,464, Cl. 312-214.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Nickel based brazing filler metals. 4,448,618, Cl. 148-403.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Homogeneous low melting point copper based alloys. 4,448,851, Cl. 428-606.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Homogeneous low melting point copper based alloys. 4,448,852, Cl. 428-606.000.

Bose, Karlheinz: *See—*
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, 4,448,441, Cl. 280-691.000.

Boston University, Trustees of: *See—*
Catsimpoolas, Nicholas, 4,448,150, Cl. 119-1.000.

Bott, John A. Combination of permanent luggage carrier adapters with selected and removable primary luggage carriers. 4,448,336, Cl. 224-309.000.

Bouvet, Jean-Marie: *See—*
Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, 4,448,082, Cl. 73-861.050.

BP Chemicals Limited: *See—*
Foster, Brian R.; and Woodfin, William T., 4,448,644, Cl. 203-37.000.

Brabon, David L. Coffee refreshener. 4,448,113, Cl. 99-290.000.

Bradbury, Ronald C.: *See—*
Nappholz, Tibor A.; Money, David K.; Swift, Stephen; and Bradbury, Ronald C., 4,448,197, Cl. 128-419.0PT.

Braithwaite, David; and Jones, Stanley P., to Emhart Industries, Inc. Mould opening and closing mechanism. 4,448,600, Cl. 65-360.000.

Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, to SKF Kugellagerfabriken GmbH. Clutch release bearing having vibration damping material. 4,448,294, Cl. 192-30.00V.

Brantingham, George L., to Texas Instruments Incorporated. Speech synthesis system with parameter look up table. 4,449,233, Cl. 381-53.000.

Brault, Bernard; and Marchal, Paul H., to Societe Anonyme dite: Air Industrie. Process and device for molding and drying objects made of fibrous materials. 4,448,640, Cl. 162-218.000.

Braun Aktiengesellschaft: *See—*
Hoffmann, Harald; and Raducanu, Dan-Corneliu, 4,449,086, Cl. 318-696.000.

Bray, Steven C., to General Electric Company. Process and apparatus for drying with latent heat recovery. 4,447,965, Cl. 34-27.000.

Breakey, Gerald A.: *See—*
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.

Breeden, John W., to Cuisinarts, Inc. Rotary slicing tool for a food processor. 4,448,100, Cl. 83-355.000.

Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., to Standard Oil Company, The. Preparation of improved mixed vanadium phosphorus oxide catalyst and their use in oxidation processes. 4,448,893, Cl. 502-209.000.

Brennan, Michael E., to Texaco Inc. Preparation of linear polyethylenepolyamines with an aluminum phosphate catalyst. 4,448,997, Cl. 564-479.000.

Brentham, Jerry D. Exercising device with double acting hydraulic cylinder. 4,448,412, Cl. 272-130.000.

Breton, Ernest J.: *See—*
Barnwell, James W.; and Breton, Ernest J., 4,448,757, Cl. 423-247.000.

Brezinsky, Richard H., to Dow Chemical Company, The. Plastic/metal laminates, cable shielding or armoring tapes, and electrical cables made therewith. 4,449,014, Cl. 174-107.000.

Briccetti, Mario F., to Carrier Corporation. Thermostat self-test apparatus and method. 4,448,033, Cl. 62-126.000.

Bridges, William F., to United States of America, Air Force. Three-wire static strain gage apparatus. 4,448,078, Cl. 73-766.000.

Bright of America: *See—*
Hodgson, Dale A., 4,448,310, Cl. 206-526.000.

Bright, Robert G., to Draftex Development AG. Hollow reinforced sealing strips. 4,448,430, Cl. 277-184.000.

Bristol-Myers Company: *See—*
Sleezer, Paul D.; and Smith, Richard R., 4,448,958, Cl. 544-20.000.

British Gas Corporation: *See—*
White, Martin, 4,448,136, Cl. 122-17.000.

British Petroleum Company Limited, The: *See—*
Critchlow, Keith B., 4,448,623, Cl. 156-169.000.

British Telecommunications: *See—*
Sinnadurai, F. Nihal; Cook, Anthony J.; and Gurnett, Keith W., 4,448,306, Cl. 206-331.000.

Brochman, Wilfred R., to Minnesota Mining and Manufacturing Company. Easy opening tape closure for beverage container. 4,448,326, Cl. 220-270.000.

Brochu, Henry D. Pillow apparatus. 4,447,922, Cl. 5-434.000.

Brockmann, Eugen: *See—*
Kolitsch, Jorg; Sparwell, Norbert; and Brockmann, Eugen, 4,448,081, Cl. 73-861.030.

Brodbeck, Hans; and Gallati, Harald, to Hoffmann-La Roche Inc. Stabilized peroxidase compositions. 4,448,882, Cl. 435-188.000.

Brookfield, David A. Viscometer with a continuously variable electronic readout. 4,448,061, Cl. 73-59.000.

Brooks, Martin F.: *See—*
Bruyninckx, Alphonse E.; Brooks, Martin F.; and Thorpe, David, 4,448,938, Cl. 525-457.000.

Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., to University of Southern California. System and method for dynamic background subtraction. 4,448,200, Cl. 128-653.000.

Brosy, Jacques: *See—*
Friedrich, Hermann; Ruf, Claude; and Brosy, Jacques, 4,448,208, Cl. 131-297.000.

Brousseau, Denise: *See—*
Clemente, Emmett; Fung, Ho-Leung; and Brousseau, Denise, 4,448,774, Cl. 424-243.000.

Broussely, Michel, to Societe Anonyme dite: GIPELEC. Lithium - manganese dioxide cell. 4,448,864, Cl. 429-194.000.

Brown, Clyde O.: *See—*
Chenausky, Peter P.; Bullis, Robert H.; Brown, Clyde O.; and Manning, Ernest B., deceased, 4,449,220, Cl. 372-83.000.

Brown, Jonathan G.: *See—*
Stohlquist, Roger H.; Brown, Jonathan G.; and Baker, Kenneth V., 4,448,010, Cl. 53-450.000.

Brown, Michael J.: *See—*
Liu, Kou-Chang; and Brown, Michael J., 4,448,982, Cl. 560-21.000.

Brown, William W., Jr.; Dahlke, Gerhard P.; and Lupul, Francis T., to International Business Machines Corporation. Apparatus for removably mounting and supplying mechanical and electrical energy to a vacuum chamber substrate holder. 4,448,149, Cl. 118-500.000.

Broyden, Robert H., to Columbus McKinnon Corporation. Pneumatic powered hoist. 4,448,397, Cl. 254-360.000.

Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, to Hoffmann-La Roche Inc. Cyclohexene derivatives. 4,448,991, Cl. 564-171.000.

Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, to Daimler-Benz Aktiengesellschaft. Independent front axle suspension for passenger cars. 4,448,441, Cl. 280-691.000.

Brunet, George A.; and Cowan, Richard J., to Acrometal Products, Inc. Curing oven for enameled wire and control system therefor. 4,448,578, Cl. 432-72.000.

Brunner, Bernhard: *See—*
Bucher, Karl; Matter, Max; Brunner, Bernhard; and Frey, Alfred, 4,448,776, Cl. 424-250.000.

Brunner, Kurt: *See—*
Fischer, Melch; and Brunner, Kurt, 4,448,853, Cl. 428-607.000.

Brunswick Corporation: *See—*
Puryear, John W., 4,448,367, Cl. 242-84.20A.

Brus, Louis E.; and Rossetti, Ronald, to Bell Telephone Laboratories, Incorporated. Reflective containment of electromagnetic radiation in matrix isolation thin films. 4,448,524, Cl. 356-36.000.

Bruyninckx, Alphonse E.; Brooks, Martin F.; and Thorpe, David, to Imperial Chemical Industries PLC. Modified isocyanate compositions, their production and uses for polyurethane manufacture. 4,448,938, Cl. 525-457.000.

Bryant, Bernard J., to Sumar Corporation. Preparation of monospecific male-specific antibody and the use thereof for increasing the percentage of mammalian offspring of either sex. 4,448,767, Cl. 424-85.000.

BSD Medical Corporation: *See—*
Turner, Paul F., 4,448,198, Cl. 128-422.000.

Bucher, Karl; Matter, Max; Brunner, Bernhard; and Frey, Alfred. Method of using certain substituted aliphatic secondary amines or their salts for easing breathing. 4,448,776, Cl. 424-250.000.

Buck Stove Corporation: *See—*
Buckner, Carrol E.; Cook, Clarence G.; and Kane, Thomas J., 4,448,185, Cl. 126-193.000.

Buckhorn Material Handling Group Inc.: *See—*
Tabler, Charles P., 4,448,296, Cl. 193-35.00C.

Buckner, Carrol E.; Cook, Clarence G.; and Kane, Thomas J., to Buck Stove Corporation. Air cooled door handle for heaters. 4,448,185, Cl. 126-193.000.

Buhl, Rainer; Moll, Eberhard; and Daxinger, Helmut, to Balzers Aktiengesellschaft. Method and apparatus for evaporating material under vacuum using both an arc discharge and electron beam. 4,448,802, Cl. 427-42.000.

Bullen, Ronald S. Proppant concentrator. 4,448,709, Cl. 252-359.00D.

Bullis, Robert H.: *See—*
Chenausky, Peter P.; Bullis, Robert H.; Brown, Clyde O.; and Manning, Ernest B., deceased, 4,449,220, Cl. 372-83.000.

Bulman Products, Inc.: *See—*
Templeton, John G., 4,448,101, Cl. 83-374.000.

Burack, Robert D.: *See—*
Kochka, Edgar L.; Burack, Robert D.; and Pfeiffer, Kenneth E., 4,448,343, Cl. 228-205.000.

Burbury, Robert L., to Litton Industrial Products, Inc. Collimator logic control system. 4,449,228, Cl. 378-151.000.

Burgbacher, Herbert, to Sulzer Brothers Limited. Lubricator for a power loom. 4,448,285, Cl. 184-55.00A.

Burgert, Herwig. Apparatus for mixing solid and liquid substances. 4,448,539, Cl. 366-132.000.

Burk, Emmett H., Jr.: *See—*
Masologites, George P.; Sun, Jui-Yuan; Yoo, Jin S.; and Burk, Emmett H., Jr., 4,448,584, Cl. 44-1.0SR.

Burke, Edmund T.; Catalano, Joseph F.; Henderson, James A., Jr.; and Smith, Nicholas K., to Bell Telephone Laboratories, Incorporated. ACD Combined handset and headset arrangement. 4,449,017, Cl. 179-27.00D.

Burl, Michael: *See—*
Young, Ian R.; and Burl, Michael, 4,449,097, Cl. 324-309.000.

Burnham, Robert D., to Xerox Corporation. Masking techniques in chemical vapor deposition. 4,448,797, Cl. 427-8.000.

Burochkin, Alexandr E.: *See—*
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, to VEB Kombinat Textima; Zentrales wissenschaftliches Forschungsinstitut der Baumwollindustrie; Allunions-Forschungsinstitut fur Strahlentecknik; and Allunions-Forschungsinstitut fur physikalischen Apparatebau. Continuous line for irradiation and chemical treatment of textile webs. 4,448,048, Cl. 68-5.00E.

Burroughs Wellcome Co.: *See—*
Siegel, Marvin I., 4,448,783, Cl. 424-273.00P.

Busch, Harris: *See—*
Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

Busch, Rose K.: *See—*
Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

Buschor, Karl, to Ransburg-Gema AG. Spray coating system. 4,448,819, Cl. 427-424.000.

Buschor, Karl, to Ransburg-Gema AG. Spray coating control system. 4,448,820, Cl. 427-424.000.

Buschor, Karl, to Ransburg-Gema AG. Spray coating system. 4,448,821, Cl. 427-424.000.

Bush, Harvey: *See—*
Holmes, James C.; Bush, Harvey; and Fink, Roger L., 4,448,824, Cl. 428-33.000.

Buske, Robert J., to Hughes Tool Company. Variable diameter earth boring bit. 4,448,270, Cl. 175-342.000.

Buxton, Keith, to Metal Box Limited. Monitoring circuits for electrical welding apparatus. 4,449,028, Cl. 219-109.000.

C.D. & C Centro Design & Communicazione S.r.l.: *See—*
Binfare, Francesco, 4,448,378, Cl. 248-188.700.

C. Hoegger & Cie. AG.: *See—*
Spiegelberg, Ulf, 4,447,933, Cl. 17-41.000.

Cafes Collet: *See—*
Platel, Charles, 4,449,243, Cl. 383-103.000.

California Institute of Technology: *See—*
Graf, James E.; and Rowlette, John J., 4,448,858, Cl. 429-49.000.

Cam Gears Limited: *See—*
Adams, Frederick J., 4,448,088, Cl. 74-422.000.

Campbell Soup Company: *See—*
Fulde, Roland C.; and Kwis, Stanley H., 4,448,791, Cl. 426-94.000.

Can and Bottle Systems, Inc.: *See—*
Hampson, Alfred A.; and Hutchins, Thomas B., deceased, 4,449,042, Cl. 235-464.000.

Canon Kabushiki Kaisha: *See—*
Fukuda, Tadaji; and Nishigaki, Yuji, 4,448,801, Cl. 427-39.000.
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,448,513, Cl. 355-8.000.
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.
Ishiwata, Junichi, 4,449,057, Cl. 307-43.000.
Isobe, Takashi; and Kamata, Shigeru, 4,448,496, Cl. 350-430.000.
Kageyama, Masahide; and Fujita, Takeshi, 4,448,798, Cl. 427-8.000.
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.
Ohkubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; and Nakagiri, Takashi, 4,448,867, Cl. 430-31.000.
Okubo, Yukitoshi, 4,448,491, Cl. 350-344.000.
Yamamoto, Hironori, 4,448,460, Cl. 308-5.00R.

Canzoneri, Anthony S.; and McDonald, Joseph V., to Process Development, Inc. Jet wash for ultrasonic streaming current detector. 4,449,101, Cl. 324-453.000.

Car, Joe P.: *See—*
Lollis, Glen R.; Marler, Marvin G.; Car, Joe P.; and John, Sam J., 4,448,340, Cl. 228-29.000.

Carl Schmale KG: *See—*
Freermann, Johannes, 4,448,138, Cl. 112-147.000.

Carl Still GmbH & Co. K.G., Firma: *See—*
Lucas, August, 4,448,641, Cl. 201-41.000.
Lucas, August, 4,448,642, Cl. 202-263.000.

Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See—*
Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, 4,448,498, Cl. 350-516.000.

Carleton, Karen L.: *See—*
Olson, Jerry M.; and Carleton, Karen L., 4,448,651, Cl. 204-60.000.

Carlson, Douglas M.; Ohman, Randall L.; and Thorndyke, Lloyd M., to Control Data Corporation. Electronic module cooling system using parallel air streams. 4,449,164, Cl. 361-384.000.

Carre, Jean-Jacques; and Thioux, Alain, to Societe Anonyme DBA. Device for automatically taking up play in a mechanical control. 4,448,090, Cl. 74-501.50R.

Carrera, Armando, to Tenex Corporation. Method of making a composite plastic mat. 4,448,625, Cl. 156-243.000.

Carrier Corporation: *See—*
Briccetti, Mario F., 4,448,033, Cl. 62-126.000.

Carroll, Michael B.: *See—*
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,448,672, Cl. 208-86.000.

Carson Alexion Corporation: *See—*
Rotolante, Ralph A.; and Koehler, Toivo, 4,449,044, Cl. 250-211.00J.

Carson, David L.: *See—*
Johnson, Leopold J.; and Carson, David L., 4,449,068, Cl. 310-316.000.

Carver, Robert G., to Don Coburn, Inc. Collapsible display carrier. 4,448,308, Cl. 206-426.000.

Casablanca Fan Company, Inc.: *See—*
Dennis, Warren E.; and Plambeck, Eric D., 4,448,388, Cl. 248-663.000.

Case, Richard V., to Midland Certified Reagent Company, The. Method of making lyophilized terminal deoxynucleotidyl transferase. 4,448,883, Cl. 435-194.000.

Casio Computer Co., Ltd.: *See—*
Hoshii, Toshifumi, 4,448,104, Cl. 84-1.010.
Muranaga, Yoshinobu, 4,449,123, Cl. 340-716.000.

Castner, Raymond P.: *See—*
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.

Catalano, Joseph F.: *See—*
Burke, Edmund T.; Catalano, Joseph F.; Henderson, James A., Jr.; and Smith, Nicholas K., 4,449,017, Cl. 179-27.00D.

Catallo, Frank. Method and apparatus utilizing an impact blade for the compressive treatment of fabric. 4,447,938, Cl. 26-18.600.

Catalog Corporation of America, Inc.: *See—*
Jones, Robert A., 4,448,443, Cl. 281-5.000.

Caterpillar Tractor Co.: *See—*
Kortering, Randall L.; and Becker, Danny J., 4,448,459, Cl. 305-38.000.

Catsimpoolas, Nicholas, to Boston University, Trustees of. Animal housing and activity monitor. 4,448,150, Cl. 119-1.000.

Cattani, Luciano; and Costrini, Renato, to Biomedica Foscama Industria Chimico-Farmaceutica S.p.A. Fructose-1,6-diphosphate preparation having protective action of erythrocyte membrane in patients undergoing extracorporeal circulation. 4,448,771, Cl. 424-180.000.

Caudy, Don W.: *See—*
Hackman, Donald J.; Caudy, Don W.; Wernli, Robert L.; and Albro, Carl S., 4,448,569, Cl. 405-190.000.

Cava, Michael P.; and Dominguez, Domingo, to University of Pennsylvania, The Trustees of the. Synthesis of 4-demethoxydaunomycinone. 4,448,724, Cl. 260-351.500.

Cavazza, Roberto, to SASIB S.p.A. Roll diameter sensing device. 4,447,957, Cl. 33-172.00F.

Cederholm, Carl: *See—*
Weindel, David; and Cederholm, Carl, 4,448,413, Cl. 273-1.0GB.

Ceiling Dynamics, Inc.: *See—*
Sharp, Joseph F., 4,449,166, Cl. 362-149.000.

Celanese Corporation: *See—*
Choe, Eui W.; and Conciatori, Anthony B., 4,448,954, Cl. 528-207.000.
Choe, Eui W.; and Conciatori, Anthony B., 4,448,955, Cl. 528-207.000.
Wang, Donald G. J., 4,448,687, Cl. 210-500.200.

Celek, John E.: *See—*
Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., 4,449,195, Cl. 364-900.000.

Centre National pour l'Exploitation des Oceans: *See—*
Hervieu, Rene , 4,448,145, Cl. 114-312.000.

Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement: *See—*
Grellet, Bernard; Emmanuel, Jean-Pierre; and Sipp, Bernard, 4,448,611, Cl. 148-6.110.

Centro Ricerche Fiat S.p.A.: *See—*
Milana, Emilio, 4,448,527, Cl. 356-237.000.

Champion International Corporation: *See—*
Roccaforte, Harry I.; and Scott, Raymond G., 4,448,309, Cl. 206-525.000.

Chang, Hao-Jan; and Nishimura, Akihiro, to Ampex Corporation. Radiation-cured magnetic media and process for making same. 4,448,846, Cl. 428-412.000.

Chang, John C. H.; and Dimitriou, Theodore, to Wallace Computer Services, Inc. Pressure-sensitive record system. 4,448,445, Cl. 346-206.000.

Chao, Shun-lung; and Vining, Richard A., to ECD-ANR Energy Conversion Company. Thermoelectric systems incorporating rectangular heat pipes. 4,448,028, Cl. 62-3.000.

Chauvel, Bernard: *See—*
Reeb, Roland; and Chauvel, Bernard, 4,448,923, Cl. 524-460.000.
Reeb, Roland; and Chauvel, Bernard, 4,448,924, Cl. 524-460.000.

Chemetals Incorporated: *See—*
Welsh, Jay Y.; DeCraene, Denis F.; and Sochol, Irving, 4,448,760, Cl. 423-605.000.

Chemische Werke Huls AG: *See—*
Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, 4,448,836, Cl. 428-164.000.

Chenausky, Peter P.; Bullis, Robert H.; Brown, Clyde O.; and Manning, Ernest B., deceased (by Manning, Anne M., heir), to United Technologies Corporation. Apparatus and method for deposition of electrical power in an electric discharge laser. 4,449,220, Cl. 372-83.000.

Cheng, Shang-I. Integrated gasification apparatus. 4,448,588, Cl. 48-99.000.

Cheron, Jacques: *See—*
Rojey, Alexandre; and Cheron, Jacques, 4,448,031, Cl. 62-101.000.

Cheung, Harry, to Union Carbide Corporation. Split column multiple condenser-reboiler air separation process. 4,448,595, Cl. 62-31.000.

Cheung, Mo-Fung; Garrett, David L., Jr.; and van Oene, Henk, to Ford Motor Company. Resin binder for fiber composite materials. 4,448,941, Cl. 525-528.000.

Chevron Research Company: *See—*
Wallman, P. Henrik, 4,448,666, Cl. 208-11.00R.

Chicago Rawhide Manufacturing Company: *See—*
Jackowski, Ronald A.; and Peisker, Glenn W., 4,448,426, Cl. 277-37.000.

Chino Works Ltd.: *See—*
Uesugi, Toshiaki; Ogitani, Kazutaka; and Inden, Toshikazu, 4,449,129, Cl. 346-61.000.

Chiou, Jackson K.: *See—*
Lee, Kung-You; Chiou, Jackson K.; and McMahon, Matthew A., 4,448,822, Cl. 427-430.100.

Chloride Group Limited: *See—*
Terrell, Christopher, 4,448,863, Cl. 429-178.000.

Chlorine Engineers Corp., Ltd.: *See—*
Ikegami, Tadao; and Miyamoto, Takeshi, 4,448,664, Cl. 204-286.000.

Choe, Eui W.; and Conciatori, Anthony B., to Celanese Corporation. Single stage production of improved high molecular weight polybenzimidazole with organosilicon halide catalyst. 4,448,954, Cl. 528-207.000.

Choe, Eui W.; and Conciatori, Anthony B., to Celanese Corporation. Production of improved high molecular weight polybenzimidazole with tin containing catalyst. 4,448,955, Cl. 528-207.000.

Chow, Peter E. K., to Northern Telecom Limited. Surge protection for signal transmission systems. 4,449,157, Cl. 361-56.000.

Christian, George: *See—*
Clark, Norman R.; and Christian, George, 4,448,417, Cl. 273-121.00A.

Christini, James N.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., 4,448,755, Cl. 423-56.000.

Chroma: *See—*
Trezise, Richard; Boldt, John; and Gnutzman, Keith, 4,448,556, Cl. 400-208.000.

Chu, Frank K.: *See—*
Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., 4,448,913, Cl. 523-455.000.

Chu, Pochen, to Mobil Oil Corporation. Silico-crystal ZSM-48 method of preparing same and catalytic conversion therewith. 4,448,675, Cl. 208-118.000.

Chun, Duk S.; Stermole, David A.; and Loehr, Clifford E., to PPG Industries, Inc. Method for separating particulate calcium hypochlorite and sodium chloride. 4,448,759, Cl. 423-474.000.

Chung, Alfred: *See—*
Ryan, James W.; and Chung, Alfred, 4,448,715, Cl. 260-112.50R.

Chung, Hun H. Centering device. 4,447,956, Cl. 33-172.00D.

Chuo Hatsujo Kabushiki Kaisha: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,448,617, Cl. 148-36.000.

Chytil, Milan, to Northern Telecom Limited. Test signal generator for simulated speech. 4,449,231, Cl. 381-51.000.

Ciabo, Renzo. People rescue device. 4,448,284, Cl. 182-234.000.

Ciba-Geigy Corporation: *See—*
Bohner, Beat, 4,448,959, Cl. 544-213.000.
Kristinsson, Haukur, 4,448,968, Cl. 548-136.000.
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,448,773, Cl. 424-211.000.
Schwander, Hansrudolf, 4,448,719, Cl. 260-152.000.

Ciciora, Walter S., to Zenith Radio Corporation. Intelligent teletext decoder. 4,449,145, Cl. 358-147.000.

Cincinnati Electronics Corporation: *See—*
Stepp, Elvin D.; and Claypoole, Gary L., 4,449,237, Cl. 381-93.000.

Cipolla, Thomas M., to General Electric Company. Versatile gripping device. 4,448,405, Cl. 269-32.000.

Citizen Watch Company Limited: *See—*
Hashimoto, Shingo; and Sekine, Mitsuo, 4,448,549, Cl. 374-170.000.

Civardi, Frank P., to Milliken Research Corporation. Leatherlike fabrics. 4,448,831, Cl. 428-91.000.

CL Industries, Inc.: *See—*
Kelley, Brian D.; and Stewart, Patrick H., 4,448,234, Cl. 164-16.000.

Claber S.p.A.: *See—*
Roman, Gianfranco, 4,448,355, Cl. 239-526.000.

Clare, Leslie P.: *See—*
Rhodes, Russell H.; Smith, James S.; and Clare, Leslie P., 4,448,606, Cl. 75-236.000.

Clarion Co., Ltd.: *See—*
Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,449,107, Cl. 333-150.000.
Sato, Yasuo; and Sakai, Takamasa, 4,449,141, Cl. 357-14.000.

Clark, Barry P.; Ross, William J.; and Todd, Alec, to Lilly Industries Limited. 6-Substituted pyranone compounds and their use as pharmaceuticals. 4,448,787, Cl. 424-283.000.

Clark, James H., to Leland Stanford Junior University, The Board of Trustees of the. Geometric processing system utilizing multiple identical processors. 4,449,201, Cl. 364-900.000.

Clark, Jean B., executrix: *See—*
Konrad, Charles E.; and Clark, Robert C., deceased, 4,449,080, Cl. 318-139.000.

Clark, Norman R.; and Christian, George, to Bally Manufacturing Corporation. Pinball game with simulated projectile display. 4,448,417, Cl. 273-121.00A.

Clark, Robert: *See—*
Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, 4,448,799, Cl. 427-37.000.

Clark, Robert C., deceased: *See—*
Konrad, Charles E.; and Clark, Robert C., deceased, 4,449,080, Cl. 318-139.000.

Clarke, David E.: *See—*
Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, 4,448,704, Cl. 252-91.000.

Claypoole, Gary L.: *See—*
Stepp, Elvin D.; and Claypoole, Gary L., 4,449,237, Cl. 381-93.000.

Clemente, Emmett; Fung, Ho-Leung; and Brousseau, Denise, to Fisons Corporation. Steroid formulation. 4,448,774, Cl. 424-243.000.

Clerc, Jean F.; and Robert, Jacques, to Commissariat a l'Energie Atomique. Matrix display device. 4,449,125, Cl. 340-752.000.

Clifford, Brad W. Multi-colored liquid crystal display device. 4,448,823, Cl. 428-1.000.

Coachmen Industries, Inc.: *See—*
Irelan, John A.; and Peterson, William E., 4,448,453, Cl. 296-27.000.

Coblenz, Rolf; Schulte, Klaus; Ebeling, Wilfried; and Evertz, Dieter, to Bayer Aktiengesellschaft. Method and a device for the production of a reaction mixture from flowable foam-forming or solid-forming components. 4,448,902, Cl. 521-99.000.

Cockrell, Star D.: *See—*
Jones, Larry L., Jr.; and Cockrell, Star D., 4,448,384, Cl. 248-443.000.

Cogez, Jean, to Essilor International (Compagnie Generale d'Optique). Eye glasses for experimentation and testing. 4,448,501, Cl. 351-128.000.

Cogliano, Joseph A., to W. R. Grace & Co. Construction barrier board. 4,448,830, Cl. 428-40.000.

Cohen, Abraham D., to Exxon Research & Engineering Co. Zeolite L catalyst for reforming. 4,448,891, Cl. 502-74.000.

Cohen, Robert. Adjustable vehicle safety light. 4,449,167, Cl. 362-269.000.

Coldren, Daniel R., to AMP Incorporated. Receptacle terminal having latching feature. 4,448,468, Cl. 339-74.00R.

Cole, Richard H.; and Lillie, Jerry H., to Plycraft Fabricating Corporation. Garage door weather seal. 4,447,988, Cl. 49-485.000.

Coleman Company, Inc., The: *See—*
Pollard, Jerry B., 4,448,142, Cl. 114-39.000.

Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., to Dart Industries Inc. Fast crystallizing polyethylene terephthalate compositions. 4,448,913, Cl. 523-455.000.

Colgate-Palmolive Company: *See—*
Gray, Frederick W., 4,448,705, Cl. 252-102.000.
Morton, Anthony J., 4,448,766, Cl. 424-52.000.

Collins, Bobby W. Flutter lift for torque wrench. 4,448,096, Cl. 81-57.390.

Collmann, Wilhelm. Vehicle wheel testing or inspection systems. 4,449,226, Cl. 378-58.000.

Colman, Geoffrey; and Russell, Roy R. B., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the. Protection against dental caries. 4,448,768, Cl. 424-92.000.

Colson, Eugene J., to N.V. Transworld Marine Agency CY S.A., naamloze vennootschap. Self-locking sling. 4,448,431, Cl. 294-74.000.

Colt Industries Operating Corp: *See—*
Miller, Robert J., 4,448,153, Cl. 123-25.00J.

Columbia University in the City of New York, The Trustees of: *See—*
Turro, Nicholas J., 4,448,657, Cl. 204-155.000.

Columbus McKinnon Corporation: *See—*
Broyden, Robert H., 4,448,397, Cl. 254-360.000.

Colvin, Roger, to Scientific Technology Incorporated. Light monitoring arrangement having optically coupled saturation preventing circuitry. 4,449,045, Cl. 250-214.0AG.

Combustion Engineering, Inc.: *See—*
Anthony, Andrew J., 4,448,745, Cl. 376-448.000.

Comfort, Yacov. Knockdown suitcase. 4,448,292, Cl. 190-107.000.

Commissariat a l'Energie Atomique: *See—*
Clerc, Jean F.; and Robert, Jacques, 4,449,125, Cl. 340-752.000.

Compagnie Francaise d'Articles de Sport: *See—*
Delery, Marc, 4,447,970, Cl. 36-121.000.

Compagnie Internationale pour l'Informatique Cii-Honeywell Bull: *See—*
Magnenet, Jean, 4,449,132, Cl. 346-74.700.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Binder, Jean-Jacques; and Magnenet, Jean G., 4,449,160, Cl. 360-104.000.
Eltgen, Jean-Jacques, 4,449,133, Cl. 346-74.700.
Magnenet, Jean, 4,449,130, Cl. 346-74.700.
Magnenet, Jean, 4,449,131, Cl. 346-74.700.

Computer Gesellschaft, Konstanz mbH: *See—*
Bernhardt, Lutz; and Kochert, Wilfried, 4,449,239, Cl. 382-9.000.

Conciatori, Anthony B.: *See—*
Choe, Eui W.; and Conciatori, Anthony B., 4,448,954, Cl. 528-207.000.
Choe, Eui W.; and Conciatori, Anthony B., 4,448,955, Cl. 528-207.000.

Conklin, Jerry R.: *See—*
Killat, George R.; and Conklin, Jerry R., 4,448,708, Cl. 252-344.000.

Conoco Inc.: *See—*
Peterson, Marvin L.; and Hein, Norman W., Jr., 4,448,062, Cl. 73-86.000.

Consiglio Nazionale Delle Ricerche: *See—*
Degani, Iacopo; Fochi, Rita; and Regondi, Valeria, 4,449,004, Cl. 568-38.000.

Contact Systems, Inc.: *See—*
Priscsak, Istvan, 4,447,945, Cl. 29-566.300.

Container Corporation of America: *See—*
Helms, Charles R., 4,448,345, Cl. 229-43.000.

Continental White Cap, Inc.: *See—*
Kapolas, William J., 4,448,320, Cl. 215-346.000.

Control Data Corporation: *See—*
Carlson, Douglas M.; Ohman, Randall L.; and Thorndyke, Lloyd M., 4,449,164, Cl. 361-384.000.

Cook, Albert M.: *See—*
Wertz, Richard K.; Cook, Albert M.; and Hathaway, James C., 4,448,534, Cl. 356-435.000.

Cook, Anthony J.: *See—*
Sinnadurai, F. Nihal; Cook, Anthony J.; and Gurnett, Keith W., 4,448,306, Cl. 206-331.000.

Cook, Clarence G.: *See—*
Buckner, Carrol E.; Cook, Clarence G.; and Kane, Thomas J., 4,448,185, Cl. 126-193.000.

Cook, Michael J.: *See—*
Matthews, Maurice A.; Cook, Michael J.; and Ivey, David E., 4,448,478, Cl. 350-96.210.

Cooke, Claude E., Jr.; and Robinson, Leon H., to Exxon Production Research Co. Method of freeing a hollow tubular member. 4,448,250, Cl. 166-255.000.

Cooper, Dale L.: *See—*
Vicino, Robert K.; Cooper, Dale L.; Pembleton, Lauren M.; and Allen, Constance C., 4,447,974, Cl. 40-538.000.

Cooper Industries, Inc.: *See—*
Vincent, Robert R., 4,448,262, Cl. 173-16.000.

Cooper, LaDreau V. Cartridge magazine mount. 4,447,976, Cl. 42-49.00A.

Cordes, Charles P. Drum construction. 4,448,105, Cl. 84-413.000.

Corniea, Donald G.: *See—*
Pankratz, Lawrence A.; and Corniea, Donald G., 4,448,008, Cl. 53-202.000.

Corso, Anthony J., to American Hoechst Corporation. Stable aqueous liquid composition of reactive dyes containing β-sulfatoethylsulfonyl groups. 4,448,583, Cl. 8-527.000.

Cosden Technology, Inc.: *See—*
Schwarz, Richard A., 4,448,900, Cl. 521-57.000.

Costrini, Renato: *See—*
Cattani, Luciano; and Costrini, Renato, 4,448,771, Cl. 424-180.000.

Coutsouradis, Dimitri: *See—*
Radtke, Schrade F.; Coutsouradis, Dimitri; and Pelerin, Jacques, 4,448,748, Cl. 420-514.000.

Covert, Douglas J.: *See—*
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.

Cowan, Richard J.: *See—*
Brunet, George A.; and Cowan, Richard J., 4,448,578, Cl. 432-72.000.

Crafco, Inc.: *See—*
Jacobson, Carl C., Jr.; and Manning, Mark C., 4,448,352, Cl. 239-125.000.

Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc. 4-Naphthyl and substituted naphthyl-3-hydroxy-3-pyrroline-2,5-diones and their use as inhibitors of glycolic acid oxidase. 4,448,786, Cl. 424-274.000.

Craig, Gary J., to Geosource Inc. Apparatus and method for testing a geophone during assembly. 4,448,057, Cl. 73-1.0DV.

Crain, Frank M. Tug boat cover rolling apparatus. 4,448,224, Cl. 114-242.000.

Craven, Penelope C.: *See—*
Benisek, Ladislav; and Craven, Penelope C., 4,448,817, Cl. 427-412.000.

Crawford, Charles D.: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.

Crawford, Donald W.: *See—*
Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., 4,448,200, Cl. 128-653.000.

Crawford, George M.: *See—*
Crawford, Russell C., III; Crawford, George M.; and Crawford, Russell C., Jr., 4,448,267, Cl. 175-218.000.

Crawford, Russell C., Jr.: *See—*
Crawford, Russell C., III; Crawford, George M.; and Crawford, Russell C., Jr., 4,448,267, Cl. 175-218.000.

Crawford, Russell C., III; Crawford, George M.; and Crawford, Russell C., Jr. Door drilling Kelly. 4,448,267, Cl. 175-218.000.

Cretin, Jacques: *See—*
Rialan, Joseph; and Cretin, Jacques, 4,449,120, Cl. 340-347.0AD.

Creusot-Loire: *See—*
Voillot, Herve , 4,448,299, Cl. 198-457.000.

Crisp, Richard D.: *See—*
Eckert, Kim; Crisp, Richard D.; and Ta, Lam, 4,449,064, Cl. 307-473.000.

Critchlow, Keith B., to British Petroleum Company Limited, The. Wetted filament dispenser and winding therewith. 4,448,623, Cl. 156-169.000.

Critikon, Inc.: *See—*
Kratochvil, Jiri; Ho, Nelson; and Janata, Jiri, 4,449,011, Cl. 174-52.0PE.

Crocker, Zenas, to Synergistics Chemicals Ltd. Process for producing foamed plastic articles. 4,448,738, Cl. 264-54.000.

Cronce, Gary M., to Masco Corporation. Article carrier. 4,448,337, Cl. 224-321.000.

Cronin, Kevin J.: *See—*
Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., 4,448,913, Cl. 523-455.000.

Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. N-Benzylimidazoles as selective inhibitors of the thromboxane synthetase enzyme. 4,448,781, Cl. 424-269.000.

Crossett, Joseph A., III; and Hartmann, Paul R., to Rockwell International Corporation. Digital modulation quality monitor. 4,449,222, Cl. 375-10.000.

Crounse, Nathan N., to Hilton-Davis Chemical Co., The. Phthalocyanines. 4,448,722, Cl. 260-245.100.

Crow, Robert W.: *See—*
Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.

Cubic Western Data: *See—*
Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., 4,449,186, Cl. 364-407.000.

Cuisinarts, Inc.: *See—*
Breeden, John W., 4,448,100, Cl. 83-355.000.

Cuisinarts Research & Development, Inc.: *See—*
Williams, James E., 4,448,360, Cl. 241-92.000.

Cummins Engine Company, Inc.: *See—*
Badgley, Patrick R.; and Rosselli, Andrew C., 4,448,169, Cl. 123-467.000.

Cunliffe, William J.; Eady, Elizabeth A.; and Holland, Keith T. Antibiotic polypeptide compounds prepared from staphlococcus bacteria. 4,448,714, Cl. 260-112.00R.

Cunningham, James L.; and Tatum, John M., to UOP Inc. Method of spot annealing tubing. 4,448,615, Cl. 148-13.000.

Cuomo, Jerome J.; DiStefano, Thomas H.; and Woodall, Jerry M., to International Business Machines Corporation. Photon energy conversion. 4,448,487, Cl. 350-164.000.

Currie, Richard A. Arithmetic instruction apparatus. 4,448,579, Cl. 434-203.000.

Curtis, Kenneth C.; and Densmore, John C., to Tuftco Corporation. Modular hook bar with gauge insert for tufting machine. 4,448,137, Cl. 112-79.00R.

Curtis, Robert G.: *See—*
Liskov, Nathan A.; Curtis, Robert G.; Favaloro, Caesar J.; and Pence, Geogory L., 4,449,223, Cl. 375-10.000.

Cuschera, Casper. Tamper-proof pop-up drain fitting. 4,447,918, Cl. 4-286.000.

Custom Creamery Systems, Inc.: *See—*
Mayer, David, 4,448,114, Cl. 99-494.000.

Cutler, John H.; D'Atre, John D.; and Walker, Loren H., to General Electric Company. Commutation failure correction scheme for a controlled current inverter. 4,449,088, Cl. 318-798.000.

Dahlke, Gerhard P.: *See—*
Brown, William W., Jr.; Dahlke, Gerhard P.; and Lupul, Francis T., 4,448,149, Cl. 118-500.000.

Daicel Chemical Industries, Ltd.: *See—*
Hiraishi, Masanori; and Sugata, Masashi, 4,448,637, Cl. 156-635.000.

Daigle, Ronald E., to Diasonics Cardio/Imaging, Ind. Ultrasound scan conversion and memory system. 4,449,199, Cl. 364-900.000.

Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,448,241, Cl. 165-104.140.
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgand, 4,448,242, Cl. 165-104.140.
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, 4,448,441, Cl. 280-691.000.
Schuech, Siegmund; Nagele, Karl-Heinz; Jambor, Arno; and Sacco, Bruno, 4,447,928, Cl. 15-250.210.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Nishida, Fumihiko; Yamanaka, Isamu; and Ijiri, Hiroshi, 4,448,518, Cl. 355-72.000.

Daishowa Seiki Co., Ltd.: *See—*
Tanaka, Yuzuru, 4,447,958, Cl. 33-174.00L.

D'Alessio, Lawrence M. Multi-channel laminar-flow fluid valve. 4,448,214, Cl. 137-625.460.

Damerau, Werner: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

D'Amico, John J., to Monsanto Company. Benzthiazolyl-2-thioalkanoic nitriles. 4,448,399, Cl. 548-165.000.

Dan Mamtirim: *See—*
Livne, Zvi, 4,448,353, Cl. 239-205.000.

Dana Corporation: *See—*
Yarnell, James A., 4,448,094, Cl. 74-872.000.

Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., to Dow Chemical Company, The. Double L-shaped electrode for brine electrolysis cell. 4,448,663, Cl. 204-270.000.

Darlington, William B.: *See—*
DuBois, Donald W.; and Darlington, William B., 4,448,662, Cl. 204-252.000.

Dart Industries Inc.: *See—*
Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., 4,448,913, Cl. 523-455.000.

Darvial, Bruce L.; Heintz, Phillip L.; Smith, John S.; and Walth, Lee A. Fuel apparatus. 4,448,175, Cl. 123-557.000.

Dataproducts Corporation: *See—*
Fortescue, Stephen M., 4,449,117, Cl. 340-347.0SY.

Dataspeed, Inc.: *See—*
Fascenda, Anthony C.; Gregg, Daniel L.; and Ache, Rollin W., 4,449,114, Cl. 340-988.000.

D'Atre, John D.: *See—*
Cutler, John H.; D'Atre, John D.; and Walker, Loren H., 4,449,088, Cl. 318-798.000.

Datta, Amitava: *See—*
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,618, Cl. 148-403.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,851, Cl. 428-606.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,852, Cl. 428-606.000.

Davidian, Michael, to Ameritek, Inc. Casket coating. 4,448,826, Cl. 428-35.000.

Davies, Thomas J., Jr., to Fairchild Camera & Instrument Corp. Trilevel input buffer. 4,449,065, Cl. 307-473.000.

Davis, Frances M.: *See—*
Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

Davis, George T., deceased (by Davis, Maureen A., administratrix); and Hydro, William R., to United States of America, Army. Dehydrohalogenation process. 4,449,005, Cl. 568-59.000.

Davis, James C., to Dow Chemical Company, The. Liquid chromatographic method and apparatus with hollow fiber device for post-column derivatization. 4,448,691, Cl. 210-656.000.

Davis, Maureen A., administratrix: *See—*
Davis, George T., deceased; and Hydro, William R., 4,449,005, Cl. 568-59.000.

Daxinger, Helmut: *See—*
Buhl, Rainer; Moll, Eberhard; and Daxinger, Helmut, 4,448,802, Cl. 427-42.000.

Day, Joseph G.; and Taylor, Jeffrey R., to Matthey Rustenburg Refiners (Pty) Limited. Recovery of precious metals from leach residues. 4,448,604, Cl. 75-63.000.

Dayco Corporation: *See—*
Marsh, Richard L.; and Wetzel, Robert E., 4,448,621, Cl. 156-138.000.

Deborde, Albert H.; and Remond, Pierre L., to Saurer Diederichs (Societe Anonyme). Device comprising a movable nozzle for the pneumatic insertion of the weft in a shuttle-less loom. 4,448,223, Cl. 139-435.000.

Decor Doors Manufacturing Ltd.: *See—*
Lesosky, Thomas, 4,447,987, Cl. 49-468.000.

DeCraene, Denis F.: *See—*
Welsh, Jay Y.; DeCraene, Denis F.; and Sochol, Irving, 4,448,760, Cl. 423-605.000.

DeCristofaro, Nicholas J.: *See—*
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,618, Cl. 148-403.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,851, Cl. 428-606.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,852, Cl. 428-606.000.

Deering, Roland F., to Union Oil Company of California. Process for retorting oil shale with maximum heat recovery. 4,448,668, Cl. 208-11.00R.

Degani, Iacopo; Fochi, Rita; and Regondi, Valeria, to Consiglio Nazionale Delle Ricerche. Process for preparing organic sulphides. 4,449,004, Cl. 568-38.000.

Deinet, Adolph J.; and Woods, William B., to Nuodex Inc. Surface-coating compositions. 4,448,906, Cl. 523-122.000.

Dekker, Lambert: *See—*
Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, 4,449,008, Cl. 568-353.000.

Delago, Pierre C., to American Hoist & Derrick Company. Heave motion compensation apparatus. 4,448,396, Cl. 254-340.000.

Delano, Ralph L.: *See—*
Reid, Walter L., Jr.; Van Stone, Robert A.; and Delano, Ralph L., 4,448,290, Cl. 188-82.700.

Delaunay, Jean, to Societe Anonyme DBA. Disc brake. 4,448,288, Cl. 188-73.450.

Delay, Francois, to Firmenich SA. Process for the preparation of cyclopentadec-4-ynone and of its 3-methyl homologue. 4,448,650, Cl. 204-59.00R.

Delery, Marc, to Compagnie Francaise d'Articles de Sport. Ski boot. 4,447,970, Cl. 36-121.000.

Delgado, Raul A., to Industria del Hierro, S.A. Drilling rig. 4,447,997, Cl. 52-120.000.

Delphax Systems: *See—*
Vandervalk, Casey S., 4,448,872, Cl. 430-126.000.

Deltech Engineering Inc.: *See—*
Barnwell, James W.; and Breton, Ernest J., 4,448,757, Cl. 423-247.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; and Morzycki, Jacek W., to Wisconsin Alumni Research Foundation. Hydroxyvitamin D_2 compounds and process for preparing same. 4,448,721, Cl. 260-239.500.

DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Smith, Connie M., to Wisconsin Alumni Research Foundation. Ring A- and triene-modified vitamin D compounds. 4,448,726, Cl. 260-397.200.

Demuth, Hans; Kropp, Peter; and Noll, Karl, to Wieland-Werke AG. Heat-transmitting device for heat pumps. 4,448,244, Cl. 165-141.000.

DeMuth, Raymond W., to Teletype Corporation. Light source mounting bracket for a facsimile document scanner. 4,448,379, Cl. 248-201.000.

De Nicola, Anthony J., Jr.: *See—*
Bell, James P.; and De Nicola, Anthony J., Jr., 4,448,847, Cl. 428-413.000.

Dennis, Warren E.; and Plambeck, Eric D., to Casablanca Fan Company, Inc. Canopy assembly. 4,448,388, Cl. 248-663.000.

Densmore, John C.: *See—*
Curtis, Kenneth C.; and Densmore, John C., 4,448,137, Cl. 112-79.00R.

de Palezieux, Jacques, to Runtal Holding Company S.A. Radiator. 4,448,245, Cl. 165-174.000.

Dequasie, Andrew E.; and Ross, Sidney D., to Sprague Electric Company. AC Capacitor and impregnant therefor. 4,449,163, Cl. 361-315.000.

Dessau, Ralph M., to Mobil Oil Corporation. Selective sorption by zeolites. 4,448,671, Cl. 208-26.000.

Dewaegheneire, Gabriel, to Leuven Research & Development. Temperature responsive warning device. 4,448,147, Cl. 116-216.000.

DeWalk, Arnold R., to Tee Nee Trailer Company, The. Boat trailer with improved aft support cradle. 4,448,438, Cl. 280-414.100.

Dhillon, Major S.: *See—*
Walls, John E.; and Dhillon, Major S., 4,448,873, Cl. 430-157.000.

Diamond International Corporation: *See—*
Lord, Henry A.; Bixler, Kenneth D.; and Reifers, Richard F., 4,448,344, Cl. 229-2.5EC.

Diamond Shamrock Corporation: *See—*
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, 4,448,803, Cl. 427-58.000.
Gestaut, Lawrence J.; and Simcox, P. David, 4,448,886, Cl. 435-262.000.

Diasonics Cardio/Imaging, Ind.: *See—*
Daigle, Ronald E., 4,449,199, Cl. 364-900.000.

Dickakian, Ghazi, to Exxon Research and Engineering Co. Aromatic pitch production from coal derived distillate. 4,448,670, Cl. 208-22.000.

Dickes, E. Jon, to Tektronix, Inc. Triangle waveform generator having a loop delay compensation network. 4,449,059, Cl. 307-228.000.

Dickinson, Roger P.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 4,448,781, Cl. 424-269.000.

Diedrich, Bernd: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.

Diery, Helmut; and Mees, Bernhard, to Hoechst Aktiengesellschaft. Addition products from triethanolamine condensation products and bisglycidyl ethers and their use. 4,448,992, Cl. 564-347.000.

Diesel Kiki Company, Ltd.: *See—*
Komada, Hideaki; Kojima, Yutaka; and Ohie, Tomonori, 4,448,168, Cl. 123-446.000.
Nakajima, Nobuyuki; and Hiruma, Katumi, 4,448,356, Cl. 239-533.500.
Takahashi, Seizi; and Aoki, Hachiro, 4,448,174, Cl. 123-502.000.

DiGiovanni, John; Vigh, Szabolcs M.; McVay, William P.; and Miksza, Anthony S., Jr., to Ethicon, Inc. Full stroke compelling mechanism for surgical instrument with drum drive. 4,448,194, Cl. 128-334.00R.

Digital Equipment Corporation: *See—*
Flahive, Barry J.; Grady, John J., III; and Rado, Peter J., 4,449,183, Cl. 364-200.000.
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.

Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., to Du Pont de Nemours, E. I., and Company. Apparatus and method for sedimentation field flow fractionation. 4,448,679, Cl. 209-155.000.

DiMatteo, Paul, to Robotic Vision Systems, Inc. Arrangement for addressing rays or planes of light in space. 4,448,505, Cl. 353-122.000.

Dimitriou, Theodore: *See—*
Chang, John C. H.; and Dimitriou, Theodore, 4,448,445, Cl. 346-206.000.

Dingwall, Andrew G. F.; and Zazzu, Victor, to RCA Corporation. Switching circuitry as for a flash A/D converter. 4,449,118, Cl. 340-347.0AD.

Dinklage, Horst: *See—*
Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, 4,448,945, Cl. 526-193.000.

Dischert, Robert A.; and Powers, Kerns H., to RCA Corporation. Transcodeable vertically scanned high-definition television system. 4,449,143, Cl. 358-11.000.

Disko, Harry: *See—*
Zaruba, John V.; and Disko, Harry, 4,448,421, Cl. 273-243.000.

DiStefano, Thomas H.: *See—*
Cuomo, Jerome J.; DiStefano, Thomas H.; and Woodall, Jerry M., 4,448,487, Cl. 350-164.000.

Distributeur Minute Inc.: *See—*
Millette, Germain; and Martin, Michel, 4,448,331, Cl. 222-181.000.

DMA Systems Corporation: *See—*
Meier, Markus; and Sutton, David A., 4,449,155, Cl. 360-104.000.

DMV-Campina B.V.: *See—*
Termote, Frank A. A., 4,448,795, Cl. 426-471.000.

Dobler, Klaus; and Hachtel, Hansjorg, to Robert Bosch GmbH. Noncontacting shaft position sensor. 4,448,084, Cl. 73-862.330.

Doemen, Benno, to Papst Motoren KG. Compensating outputs of hall generators to minimize effects of temperature variation and the like. 4,449,081, Cl. 318-254.000.

Doherty, Robert. Variable venturi, variable volume, air induction input for an air conditioning system. 4,448,111, Cl. 98-38.00E.

Doi, Kanya: *See—*
Wakayama, Hideaki; Fujiwara, Jyunji; and Doi, Kanya, 4,449,021, Cl. 200-144.00B.

Dominguez, Domingo: *See—*
Cava, Michael P.; and Dominguez, Domingo, 4,448,724, Cl. 260-351.500.

Dominguez, Richard J. G., to Texaco Inc. Reaction injection molded elastomer using a methylene bis(phenyliscoyanate) containing 2,4' isomer in amounts greater than about 10 percent. 4,448,904, Cl. 521-160.000.

Don Coburn, Inc.: *See—*
Carver, Robert G., 4,448,308, Cl. 206-426.000.

Donn Incorporated: *See—*
Worley, Robert F., 4,448,006, Cl. 52-488.000.

D'Onofrio, Anthony; and Gunzy, Jack, to Timex Corporation. Electroluminescent lamp driver. 4,449,075, Cl. 315-169.300.

Doriath, Gerard; Gaudry, Roger; and Hepner, Georges, to Thomson-CSF. Measuring head for magnetometer and magnetometer incorporating such a head. 4,449,096, Cl. 324-244.000.

Dorosz, Adolph S., to USM Corporation. Automatic thread changing sewing machine. 4,448,139, Cl. 112-221.000.

Doty, Warren R.; and Kinney, Timothy J., to OMI International Corporation. Oxidizing agent for acidic accelerator in electroless metal plating process. 4,448,811, Cl. 427-304.000.

Dougan, Donald R.; Larue, Albert D.; and Wolf, John J., to Babcock & Wilcox Company, The. Inline air-coal separator. 4,448,135, Cl. 110-263.000.

Dow Chemical Company, The: *See—*
Althouse, James W., III, 4,448,210, Cl. 137-2.000.
Brezinsky, Richard H., 4,449,014, Cl. 174-107.000.
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,448,663, Cl. 204-270.000.
Davis, James C., 4,448,691, Cl. 210-656.000.
Jakubowski, James J.; Meyer, Victor E.; and Pelletier, Ronald R., 4,448,845, Cl. 428-404.000.
Killat, George R.; and Conklin, Jerry R., 4,448,708, Cl. 252-344.000.
McLeod, David M., 4,448,540, Cl. 366-160.000.
Rubens, Louis C., 4,448,933, Cl. 525-123.000.
Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, 4,448,654, Cl. 204-70.000.

Dow Corning Corporation: *See—*
Falender, James R.; and Saam, John C., 4,448,927, Cl. 524-860.000.
Plueddemann, Edwin P., 4,448,694, Cl. 210-682.000.

Dow Corning Limited: *See—*
Westall, Stephen, 4,448,810, Cl. 427-302.000.

Draftex Development AG: *See—*
Bright, Robert G., 4,448,430, Cl. 277-184.000.

Dravo Corporation: *See—*
Karnofsky, George B., 4,448,667, Cl. 208-11.0LE.

Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, to BASF Aktiengesellschaft. Process and apparatus for monitoring the formation and propagation of cracks in machine parts and components. 4,448,080, Cl. 73-799.000.

Dresser Industries, Inc.: *See—*
Fuller, Dennis D., 4,448,268, Cl. 175-228.000.

Dria, Dennis E.: *See—*
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,448,893, Cl. 502-209.000.

Driemeyer, Reinhold G. F., to NCR Canada Ltd - NCR Canada Ltee. Sheet feeding apparatus having an expansible periphery. 4,448,554, Cl. 400-124.000.

Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, to Bayer Aktiengesellschaft. Aqueous preparation and its use in the production of ceramic compositions. 4,448,914, Cl. 524-32.000.

Drosen, Erich: *See—*
Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, 4,448,107, Cl. 89-36.00K.

DuBois, Donald W.; and Darlington, William B., to PPG Industries, Inc. Solid polymer electrolyte chlor-alkali electrolytic cell. 4,448,662, Cl. 204-252.000.

Duchane, David V.; and Barthell, Barry L., to United States of America, Energy. Composite polymeric film and method for its use in installing a very thin polymeric film in a device. 4,448,622, Cl. 156-155.000.

Duchene, Jean C., to Alsthom-Atlantique. Device for chocking an inverted type current transformer when transported on its side. 4,449,110, Cl. 336-94.000.

Duerksen, Walter K.; Googin, John M.; and Napier, Bradley, Jr., to United States of America, Energy. Aqueous cutting fluid for machining fissionable materials. 4,448,701, Cl. 252-49.300.

Dulling, Achim: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pimannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Dumont, Bernard, to Feudor S.A. Method of filling disposable gas lighter and device for filling same. 4,448,226, Cl. 141-2.000.

Duncan, James W., to Stencel Aero Engineering Corporation. Deployment sequencer. 4,448,374, Cl. 244-150.000.

Dunstan, Phillip E. Heat pump system using wastewater heat. 4,448,347, Cl. 237-2.00B.

Dunwald, Willi: *See—*
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrichrich, 4,448,942, Cl. 525-540.000.

Du Pont de Nemours, E. I., and Company: *See—*
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,448,679, Cl. 209-155.000.
Sogah, Dotsevi Y., 4,448,980, Cl. 556-446.000.

Durette, Philippe L., to Merck & Co., Inc. Chiral synthesis of thienamycin from D-gluocose. 4,448,976, Cl. 549-39.000.

Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, to American Cyanamid Company. Therapeutically active 3-substituted amino-1-phenyl and substituted phenyl-2-pyrazolines. 4,448,973, Cl. 548-362.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Thewalt, Klaus; Bison, Gunter; and Egger, Heinz, 4,448,999, Cl. 564-495.000.

E. R. Squibb & Sons, Inc.: *See—*
Karanewsky, Donald S., 4,448,772, Cl. 424-200.000.

E. R. Wagner Mfg. Co.: *See—*
Mueller, Ralph W., 4,447,932, Cl. 16-21.000.

Eady, Elizabeth A.: *See—*
Cunliffe, William J.; Eady, Elizabeth A.; and Holland, Keith T., 4,448,714, Cl. 260-112.00R.

Earl, David C.: *See—*
Mongoven, Michael A.; Bees, Paul R.; and Earl, David C., 4,449,073, Cl. 315-130.000.

Early, Judson H.: *See—*
Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., 4,448,626, Cl. 156-256.000.

Easco Corporation: *See—*
Orszulak, Stanley J., 4,448,564, Cl. 403-318.000.

Eastman Kodak Company: *See—*
Abel, Edward P., 4,448,874, Cl. 430-215.000.
Geyer, Frederick F.; and Leonard, Eric M., 4,449,139, Cl. 346-137.000.
Jessop, Thomas C., 4,448,335, Cl. 222-391.000.
Tschang, Pin-Seng, 4,449,153, Cl. 358-296.000.
Upson, Donald A.; and Steklenski, David J., 4,448,850, Cl. 428-510.000.

Eaton, Charles K.; Nolting, Eugene C.; and Norman, Thomas J., Jr., to BancTec, Inc. Encodable strip attachment apparatus. 4,448,631, Cl. 156-521.000.

Eaton Corporation: *See—*
Hillebrand, George A.; and Paar, Michael S., 4,448,155, Cl. 123-90.500.
Hoppie, Lyle O., 4,448,176, Cl. 123-558.000.

Ebeling, Wilfried: *See—*
Coblenz, Rolf; Schulte, Klaus; Ebeling, Wilfried; and Evertz, Dieter, 4,448,902, Cl. 521-99.000.

Eberhardt, H. Alfred; Hoffman, Kenneth F.; and Petersen, Raymond R., to Hale Fire Pump Company. Foam liquid proportioner. 4,448,256, Cl. 169-15.000.

Ebert, Chris W.; and Thall, Earle S., to RCA Corporation. Method of blackening surfaces of steel parts with wet nitrogen. 4,448,612, Cl. 148-6.350.

ECD-ANR Energy Conversion Company: *See—*
Chao, Shun-lung; and Vining, Richard A., 4,448,028, Cl. 62-3.000.

Eckberg, Richard P.: *See—*
Grenoble, Maurice E.; and Eckberg, Richard P., 4,448,815, Cl. 427-387.000.

Eckels, Robert Y. Panel system for slope protection. 4,448,571, Cl. 405-284.000.

Eckert, Kim; Crisp, Richard D.; and Ta, Lam, to Motorola, Inc. Three state output circuit. 4,449,064, Cl. 307-473.000.

Eckstein, Robert J.; and Mason, Roger L. Auxiliary power unit for vehicles. 4,448,157, Cl. 123-142.50R.

Edgar, Albert D., to International Business Machines Corp. Precompensated stroke cathode ray tube display system apparatus and method. 4,449,124, Cl. 340-739.000.

Edwards, Cyril K.; and Webb, Edward H., to Thomas Hunter Limited. Container closure. 4,448,325, Cl. 220-269.000.

Edwards, Donald K., to United States of America, Army. Heat-pipe-diode-charged thermal. 4,448,239, Cl. 165-47.000.

Edwin Cooper, Inc.: *See—*
O'Brien, Joseph P.; and Papay, Andrew G., 4,448,974, Cl. 548-550.000.

Egger, Heinz: *See—*
Thewalt, Klaus; Bison, Gunter; and Egger, Heinz, 4,448,999, Cl. 564-495.000.

Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, to Nippon Telegraph and Telephone Public Corporation. Method for the manufacture of semiconductor device using refractory metal in a lift-off step. 4,448,800, Cl. 427-39.000.

Eisai Co., Ltd.: *See—*
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.

Eisenstadt Company: *See—*
Weinzettel, Michael; and Weeks, Walter, 4,448,304, Cl. 206-223.000.

Ekern, Ronald J.: *See—*
Fleischer, Niles A.; and Ekern, Ronald J., 4,448,861, Cl. 429-105.000.

Eldredge, Peter G.: *See—*
Joseph, David A.; and Eldredge, Peter G., 4,448,532, Cl. 356-394.000.

Electric Power Research Institute, Inc.: *See—*
Schwab, James J.; and Tassicker, Owen J., 4,449,159, Cl. 361-230.000.

Electroade, Inc.: *See—*
Epting, Elmer E., Jr., 4,448,770, Cl. 424-153.000.

Elford, Howard L.: *See—*
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 4,448,730, Cl. 260-500.50H.

Eli Lilly and Company: *See—*
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,448,990, Cl. 564-167.000.
Shuman, Robert T., 4,448,717, Cl. 260-112.50E.

Elias, Luis R.: *See—*
Smith, Todd I.; Elias, Luis R.; and Madey, John M. J., 4,449,219, Cl. 372-2.000.

Elkins, James H., to United States of America, Navy. Device for underwater cryogenic cutting. 4,447,952, Cl. 30-361.000.

Ellegaard, Peer. Releasable auxiliary wheel coupling mechanism. 4,448,455, Cl. 301-36.00R.

Elsner, Burckhard: *See—*
Becker, Kunibert; Kirchbrucher, Rudiger; and Elsner, Burckhard, 4,448,263, Cl. 173-34.000.

Eltgen, Jean-Jacques, to Compagnie Internationale pour L'Informatique CII-Honeywell Bull (Societe Anonyme). Process and machine for magnetographic printing (IV). 4,449,133, Cl. 346-74.700.

Emery, Donald B.; and Herring, William M., to Standard Oil Company (Indiana). Continuous in-line melt flow rate control system. 4,448,736, Cl. 264-40.100.

Emhart Industries, Inc.: *See—*
Braithwaite, David; and Jones, Stanley P., 4,448,600, Cl. 65-360.000.

Emmanuel, Jean-Pierre: *See—*
Grellet, Bernard; Emmanuel, Jean-Pierre; and Sipp, Bernard, 4,448,611, Cl. 148-6.110.

Endo, Haruo, to Mikuni Kogyo Kabushiki Kaisha. Carburetor. 4,448,280, Cl. 181-229.000.

Endo, Haruyoshi; Makimoto, Mitsuo; Kikuchi, Ko; and Yamashita, Sadahiko, to Matsushita Electric Industrial Company, Limited. Band-stop filter for VHF-UHF band. 4,449,108, Cl. 333-202.000.

Endo, Hiroshi: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,448,181, Cl. 123-620.000.

Energy Conversion Devices, Inc.: *See—*
Yu, Terry T., 4,448,877, Cl. 430-346.000.

Energy Modification, Inc.: *See—*
Gleim, William K. T., 4,448,676, Cl. 208-136.000.

Energy Products of Idaho: *See—*
Foote, Jerry B., 4,448,134, Cl. 110-245.000.

Engelbrecht, Hans-Christian; Knisa, Helmut; and Wessel, Wolf, to Robert Bosch GmbH. Method and apparatus for determining the injected fuel quantity in internal combustion engines. 4,448,067, Cl. 73-119.00A.

Engelhard Corporation: *See—*
Bartholic, David B., 4,448,674, Cl. 208-113.000.

Engelson, David, to Page Accessories, Inc. Belt. 4,447,913, Cl. 2-338.000.

Enomoto, Hiromu: *See—*
Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, 4,449,063, Cl. 307-456.000.

Epting, Elmer E., Jr., to Electroade, Inc. Dietetic beverage. 4,448,770, Cl. 424-153.000.

Erdman, David M., to General Electric Company. Control system for an electronically commutated motor. 4,449,079, Cl. 318-138.000.

Erect-A-Tube, Inc.: *See—*
McQueen, Coy E.; and Twedt, Lynn O., 4,448,232, Cl. 160-207.000.

Ernst, William D., to Mechanical Technology Incorporated. Double angle seal forming lubricant film. 4,448,424, Cl. 277-30.000.

Erwin-Sick GmbH - Optik-Elektronik: *See—*
Krause, Gerhard, 4,448,529, Cl. 356-310.000.

Escamilla-Kelly, Ricardo. Upright game with insertable dice. 4,448,420, Cl. 273-241.000.

Escher Wyss GmbH: *See—*
Schnell, Hans; and Wenske, Rolf, 4,447,941, Cl. 29-121.100.

Espelage, Paul M.: *See—*
Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., 4,449,087, Cl. 318-723.000.

Esselte Rendaflex Corporation: *See—*
Holland-Letz, Gunter, 4,448,122, Cl. 101-91.000.

Essilor International (Compagnie Generale d'Optique): *See—*
Cogez, Jean, 4,448,501, Cl. 351-128.000.

Ethicon, Inc.: *See—*
DiGiovanni, John; Vigh, Szabolcs M.; McVay, William P.; and Miksza, Anthony S., Jr., 4,448,194, Cl. 128-334.00R.
Ivanov, Konstantin, 4,448,193, Cl. 128-326.000.

Ethyl Corporation: *See—*
Hinkamp, James B.; and Hanlon, John V., 4,448,587, Cl. 44-57.000.
Weidig, Charles F., 4,448,586, Cl. 44-55.000.

Evans, David W., to United States of America, Air Force. Varying bandpass of optical spatial filter by rotating mirrors having changing reflectivity. 4,448,486, Cl. 350-162.120.

Evans, Derek K.: *See—*
Williamson, Eugene; Thompson, Stephen M.; and Evans, Derek K., 4,448,203, Cl. 128-733.000.

Evertz, Dieter: *See—*
Coblenz, Rolf; Schulte, Klaus; Ebeling, Wilfried; and Evertz, Dieter, 4,448,902, Cl. 521-99.000.

Ewing, Robert L., to Manville Service Corporation. Quick install device for mounting a luminaire. 4,449,168, Cl. 362-404.000.

Ex-Cell-O Corporation: *See—*
Kauffman, Ivan L.; and Allen, Robert J., 4,448,012, Cl. 53-563.000.

Expert Maschinenbau GmbH: *See—*
Moller, Reinfried, 4,448,093, Cl. 74-821.000.

Exxon Production Research Co.: *See—*
Cooke, Claude E., Jr.; and Robinson, Leon H., 4,448,250, Cl. 166-255.000.

Exxon Research & Engineering Co.: *See—*
Cohen, Abraham D., 4,448,891, Cl. 502-74.000.
Dickakian, Ghazi, 4,448,670, Cl. 208-22.000.
Lundberg, Robert D.; and Peiffer, Dennis G., 4,448,926, Cl. 524-612.000.
Moss, Gerald, 4,448,030, Cl. 62-79.000.
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., 4,448,665, Cl. 208-8.0LE.

F. F. Seeley Nominees Pty. Ltd.: *See—*
Seeley, Frederic F., 4,448,213, Cl. 137-451.000.

Fabian, David J.: *See—*
Berry, Donald A.; and Fabian, David J., 4,448,471, Cl. 339-91.00R.

Fabian, Peter; and Heraeus Elektroden GmbH. Monitoring apparatus. 4,448,660, Cl. 204-225.000.

Fabricius, Hans-Ake; and Stahn, Roland, to Hooper Trading Company. High yield process for in vitro production of serum-free and mitogen-free interleukin-2. 4,448,879, Cl. 435-2.000.

Fabrique Nationale Herstal: *See—*
Gabriels, Andre J., 4,448,129, Cl. 102-487.000.

Fabris, Hubert J.: *See—*
Lenke, Gerd M.; Melby, Earl G.; and Fabris, Hubert J., 4,448,956, Cl. 528-312.000.

Factor, Arnold; and Sannes, Keith N., to General Electric Company. Color-stabilized halobisphenolethylene polycarbonates. 4,448,727, Cl. 260-463.000.

Fag Kugelfischer Georg Schafer & Co.: *See—*
Moller, Rainer; and Scharting, Gunter, 4,448,108, Cl. 89-37.00R.

Fairchild Camera & Instrument Corp.: *See—*
Davies, Thomas J., Jr., 4,449,065, Cl. 307-473.000.

Falco, Charles M.: *See—*
Schuller, Ivan K.; and Falco, Charles M., 4,448,854, Cl. 428-611.000.

Falender, James R.; and Saam, John C., to Dow Corning Corporation. Method of polymerizing oligomers of polydiorganosiloxane in the presence of filler. 4,448,927, Cl. 524-860.000.

Faltin, Hans G., to Advance Enterprises, Inc. Gripper clamps for conveying paper sheet products. 4,448,408, Cl. 271-277.000.

Fan, Liang-tseng; and Walawender, Walter P., to Kansas State University Research Foundation. Pyrolytic conversion of carbonaceous solids to fuel gas in quartz sand fluidized beds. 4,448,589, Cl. 48-197.00R.

Farber, Heinrich: *See—*
Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,448,508, Cl. 354-281.000.
Fascenda, Anthony C.; Gregg, Daniel L.; and Ache, Rollin W., to Dataspeed, Inc. System for identifying and displaying data transmitted by way of unique identifying frequencies from multiple vehicles. 4,449,114, Cl. 340-988.000.
Fasco Controls Corporation: *See—*
Gould, Richard E., 4,449,112, Cl. 338-39.000.
Gould, Richard E.; and Page, William P., 4,449,113, Cl. 338-39.000.
Fasolka, Michael J.; and Milligan, Barton, to Air Products and Chemicals, Inc. Polyurethanes prepated using poly(silyldiamines). 4,448,939, Cl. 525-474.000.
Favaloro, Caesar J.: *See—*
Liskov, Nathan A.; Curtis, Robert G.; Favaloro, Caesar J.; and Pence, Geogory L., 4,449,223, Cl. 375-10.000.
Fechner, Erhard A.: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.
Fedotov, Michail I.: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.
Feehery, George R.: *See—*
Bolton, Joseph A.; and Feehery, George R., 4,447,924, Cl. 8-151.000.
Feix, Wolfgang H.; and Ruell, Hartwig E., to Siemens Corporation. Personal access control system using speech and face recognition. 4,449,189, Cl. 364-513.500.
Feldmann, Daniel P., to Rockwell International Corporation. Load status monitoring apparatus. 4,449,058, Cl. 307-152.000.
Feldmuhle Aktiengesellschaft: *See—*
Gomoll, Volker, 4,449,085, Cl. 318-641.000.
Felix, Ronald G.; and Hoffman, Douglas R., to AMP Incorporated. Latching slotted beam terminal. 4,448,473, Cl. 339-99.00R.
Fenn & Company: *See—*
Fenn, George S., 4,448,707, Cl. 252-194.000.
Fenn, George S., to Fenn & Company. Material for drying cut plants and apparatus for facilitating such drying. 4,448,707, Cl. 252-194.000.
Fennekels, Peter; and Waltmann, Ernst, to Girmes-Werke AG. Process for washing dyed or printed textile materials. 4,448,581, Cl. 8-137.000.
Ferrari, Mario. Flexible container and expeller. 4,448,333, Cl. 222-214.000.
Ferris, Carlisle K. Camouflaged aircraft. 4,448,371, Cl. 244-1.00R.
Ferro Corporation: *See—*
Ramey, Chester E.; and Rostek, Charles J., Jr., 4,448,969, Cl. 548-301.000.
Feudor S.A.: *See—*
Dumont, Bernard, 4,448,226, Cl. 141-2.000.
FGP Instrumentation: *See—*
Gibert, Francis J. P., 4,448,069, Cl. 73-182.000.
Filtertech Inc.: *See—*
Green, James F., 4,448,683, Cl. 210-106.000.
Finike Italiana Marposs S.p.A.: *See—*
Golinelli, Guido; and Selleri, Narciso, 4,447,960, Cl. 33-178.00E.
Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, to Rohm GmbH. Method of making emulsion polymers. 4,448,945, Cl. 526-193.000.
Fink, Lothar, to Klockner-Werke AG. Method and apparatus for the injection molding and vulcanization of vehicle tires. 4,448,620, Cl. 156-125.000.
Fink, Roger L.: *See—*
Holmes, James C.; Bush, Harvey; and Fink, Roger L., 4,448,824, Cl. 428-33.000.
Finley, Arlington L.: *See—*
Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, 4,448,654, Cl. 204-70.000.
Firmenich SA: *See—*
Delay, Francois, 4,448,650, Cl. 204-59.00R.
Fischer, Hanspeter: *See—*
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,448,773, Cl. 424-211.000.
Fischer, Melch; and Brunner, Kurt, to BBC Brown, Boveri & Company, Limited. Layered active brazing material and method for producing it. 4,448,853, Cl. 428-607.000.
Fischli, Albert E.: *See—*
Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, 4,448,991, Cl. 564-171.000.
Fisons Corporation: *See—*
Clemente, Emmett; Fung, Ho-Leung; and Brousseau, Denise, 4,448,774, Cl. 424-243.000.
Flahive, Barry J.; Grady, John J., III; and Rado, Peter J., to Digital Equipment Corporation. Arbitration scheme for a multiported shared functional device for use in multiprocessing systems. 4,449,183, Cl. 364-200.000.
Flanagan, James L.; and Johnston, James D., to Bell Telephone Laboratories, Incorporated. Silence editing speech processor. 4,449,190, Cl. 364-513.500.
Flannagan, Stephen T.: *See—*
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.
Fleek, Arthur E.; and Tseng, Samuel C., to International Business Machines Corporation. Variable speed printing for dot matrix printers. 4,448,123, Cl. 101-93.040.
Fleischer, Niles A.; and Ekern, Ronald J., to Rayovac Corporation. Lithium-thionyl chloride cell with lithium surface alloys to reduce voltage delay. 4,448,861, Cl. 429-105.000.
Fleishman, Roc V.: *See—*
Pelka, David G.; and Fleishman, Roc V., 4,448,545, Cl. 374-41.000.
Flint, John R.: *See—*
Frystak, Richard; Johnston, Robert F.; and Flint, John R., 4,448,364, Cl. 242-674.000.
Flores, Robert J., to Sherwin-Williams Company, The. Process for the purification of triphenylmethane compounds and pressure sensitive copysheet containing same. 4,448,446, Cl. 346-224.000.
Fludzinski, Jan M., to Westinghouse Electric Corp. Coil diameter tracking system and tension regulation system using such tracking system. 4,448,366, Cl. 242-75.510.
Fluidmaster, Inc.: *See—*
Blau, Frederick, Jr.; and Gross, John M., 4,449,178, Cl. 364-148.000.
Fochi, Rita: *See—*
Degani, Iacopo; Fochi, Rita; and Regondi, Valeria, 4,449,004, Cl. 568-38.000.
Foley, Theodore A., to PyMaH Corporation. Steam sterilization indicator. 4,448,548, Cl. 374-160.000.
Foote, Jerry B., to Energy Products of Idaho. Uniform dispensing of granular material from a vessel. 4,448,134, Cl. 110-245.000.
Ford, Arthur J.; Kuhn, Patrick; and Long, William D., to Lilliston Corporation. Rubber spring for furrow opener. 4,448,259, Cl. 172-462.000.
Ford Motor Company: *See—*
Cheung, Mo-Fung; Garrett, David L., Jr.; and van Oene, Henk, 4,448,941, Cl. 525-528.000.
Hammerle, Robert H.; and Wu, Ching-Hsong, 4,448,756, Cl. 423-213.700.
Johnson, Robert C.; Nation, Thomas C.; and Perry, David L., 4,449,100, Cl. 324-378.000.
Forsberg, John W., to Lubrizol Corporation, The. Carboxylic solubilizer/surfactant combinations and aqueous compositions containing same. 4,448,703, Cl. 252-75.000.
Fortenberry, Charles K. Folding knife structure. 4,447,951, Cl. 30-161.000.
Fortescue, Stephen M., to Dataproducts Corporation. Encoder tracking digitizer having stable output. 4,449,117, Cl. 340-347.0SY.
Fortunato, James M.: *See—*
Glamkowski, Edward J.; and Fortunato, James M., 4,448,784, Cl. 424-274.000.
Foster, Brian R.; and Woodfin, William T., to BP Chemicals Limited. Method of producing ethanol-water azeotrope from crude ethanol. 4,448,644, Cl. 203-37.000.
Foster, Leslie W. Engine including means for retarding sparking operation to control engine overspeed. 4,448,179, Cl. 123-599.000.
Frain, John J. Method of producing stacks of ticket stacks. 4,448,127, Cl. 101-426.000.
Framatome: *See—*
Le Pargneux, Jacques, 4,448,561, Cl. 403-19.000.
Francis, Arthur W., Jr.; Nowotarski, Mark S.; and Solomon, Jack, to Union Carbide Corporation. Process for reducing backmixing. 4,448,616, Cl. 148-16.000.
Frank, Alick H.; and White, Joseph D., to United States of America, Navy. Passive maser using timesharing for control of the cavity and control of the oscillator on the line of stimulated emission. 4,449,105, Cl. 331-3.000.
Franke, Lutz: *See—*
Rehm, Gallus; and Franke, Lutz, 4,448,002, Cl. 52-223.00L.
Franke, Milton E.: *See—*
Reznick, Steven G.; and Franke, Milton E., 4,448,354, Cl. 239-265.170.
Franke, Rainer: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.
Franz, Joseph P., to General Electric Company. Single-stage, multiple outlet centrifugal blower. 4,448,573, Cl. 415-206.000.
Frazer, Gerald L., to Bell Telephone Laboratories, Incorporated. Adaptive threshold circuit. 4,449,102, Cl. 328-162.000.
Freeman, Maynard L. Control system for body organs. 4,448,190, Cl. 128-60.000.
Freermann, Johannes, to Carl Schmale KG. Machine for continuously folding over and stitching web edges. 4,448,138, Cl. 112-147.000.
Freid, Marvin G.: *See—*
Warner, Glenn H.; Theiling, Louis F., Jr.; and Freid, Marvin G., 4,448,977, Cl. 549-201.000.
French, Errol J. Sabre saw chuck. 4,448,432, Cl. 279-83.000.
Frerking, Marvin E., to United States of America, Air Force. Variable gain oven temperature control circuit. 4,449,032, Cl. 219-210.000.
Frey, Alfred: *See—*
Bucher, Karl; Matter, Max; Brunner, Bernhard; and Frey, Alfred, 4,448,776, Cl. 424-250.000.
Freyre, Frederick W., to Hazeltine Corporation. Acousto-optical signal detector. 4,448,494, Cl. 350-358.000.
Friedman, Bernard, to Oil Process Systems, Inc. Filter bag with integral agitator. 4,448,686, Cl. 210-238.000.
Friedrich, Hermann; Ruf, Claude; and Brosy, Jacques, to Philip Morris Incorporated. Tobacco extractor. 4,448,208, Cl. 131-297.000.

Friedrich, Wolfgang: *See—*
Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, 4,448,294, Cl. 192-30.00V.
Frystak, Richard; Johnston, Robert F.; and Flint, John R., to Bell & Howell Company. Reversible ribbon drive. 4,448,364, Cl. 242-674.000.
Fuesting, Michael L. Sterilization method. 4,448,750, Cl. 422-20.000.
Fuji Electric Co., Ltd.: *See—*
Kuwaki, Masami; Hatada, Youichi; and Umino, Satoru, 4,448,346, Cl. 236-46.00R.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Shibano, Kenji, 4,448,734, Cl. 261-26.000.
Fuji Photo Film Co., Ltd.: *See—*
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,448,869, Cl. 430-83.000.
Murakoshi, Makoto, 4,448,510, Cl. 354-289.120.
Okita, Tsutomu; and Naruo, Kyoichi, 4,448,848, Cl. 428-447.000.
Shiota, Kazuo, 4,448,521, Cl. 355-77.000.
Yamada, Yasuyuki; Shirahata, Ryuji; Yanai, Akio; and Kitamoto, Tatsuji, 4,448,843, Cl. 428-336.000.
Yamaguchi, Nobutaka; Tsuji, Nobuo; and Fujiyama, Masaaki, 4,448,842, Cl. 428-329.000.
Yamamuro, Kiyohiko; Hirano, Shigeo; and Iwasa, Yasuo, 4,448,878, Cl. 430-507.000.
Fuji Xerox Co., Ltd.: *See—*
Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,137, Cl. 346-76.0PH.
Kanzaki, Michio, 4,448,523, Cl. 355-133.000.
Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,152, Cl. 358-296.000.
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,136, Cl. 346-76.0PH.
Fujii, Yozo; Sakaguchi, Hirofumi; and Hirabayashi, Tsugio, to Konishiroku Photo Industry Co., Ltd. Split exposure optical system for copying machine. 4,448,514, Cl. 355-8.000.
Fujikawa, Misao, to Sodick Co., Ltd. Electrode mounting device. 4,449,027, Cl. 219-69.00E.
Fujikawa, Takao: *See—*
Moritoki, Masato; Fujikawa, Takao; and Miyanaga, Junichi, 4,448,747, Cl. 419-49.000.
Fujikawa, Tsuneo; Kamio, Kazuyoshi; and Takagishi, Haruyoshi, to Nissan Motor Company, Limited. Automatic vehicle-body assembling apparatus. 4,448,341, Cl. 228-45.000.
Fujimori, Ryo: *See—*
Banno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, 4,448,752, Cl. 422-81.000.
Fujimura, Hajime: *See—*
Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, 4,448,788, Cl. 424-313.000.
Fujino, Masahisa: *See—*
Sunouchi, Akio; Suzuki, Ryuji; Ichiyanagi, Toshikazu; and Fujino, Masahisa, 4,448,507, Cl. 354-173.000.
Fujisawa, Fumio: *See—*
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.
Fujita, Takeshi: *See—*
Kageyama, Masahide; and Fujita, Takeshi, 4,448,798, Cl. 427-8.000.
Fujito, Katsuyuki: *See—*
Unoguchi, Takehiko; Hasegawa, Seiro; Fujito, Katsuyuki; Nishino, Atsushi; and Yoshida, Akihiko, 4,449,188, Cl. 364-505.000.
Fujitsu Fanuc Limited: *See—*
Kozai, Yoshinori; Kobari, Katsuo; and Sakamoto, Keiji, 4,449,177, Cl. 363-126.000.
Fujitsu Limited: *See—*
Aoyama, Keizo; and Yamauchi, Takahiko, 4,449,066, Cl. 307-482.000.
Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, 4,449,063, Cl. 307-456.000.
Shibamata, Yoshiyuki; Onodera, Hideo; and Kiriseko, Tadashi, 4,449,037, Cl. 219-388.000.
Taira, Shigenobu, 4,449,158, Cl. 361-91.000.
Fujiwara, Jyunji: *See—*
Wakayama, Hideaki; Fujiwara, Jyunji; and Doi, Kanya, 4,449,021, Cl. 200-144.00B.
Fujiwara, Toshitaka: *See—*
Tokitsu, Naoki; Itoh, Toshihiko; and Fujiwara, Toshitaka, 4,449,206, Cl. 365-229.000.
Fujiyama, Masaaki: *See—*
Yamaguchi, Nobutaka; Tsuji, Nobuo; and Fujiyama, Masaaki, 4,448,842, Cl. 428-329.000.
Fukazawa, Takeshi; Yamaguchi, Shunzo; and Atsumi, Morihiro, to Nippondenso Co., Ltd. Ceramic heater. 4,449,039, Cl. 219-553.000.
Fukuda, Tadaji; and Nishigaki, Yuji, to Canon Kabushiki Kaisha. Process for forming deposition film. 4,448,801, Cl. 427-39.000.
Fukuhara, Toru: *See—*
Saegusa, Takashi; Maida, Osamu; and Fukuhara, Toru, 4,448,506, Cl. 354-431.000.
Fukuta, Teizo: *See—*
Abe, Mitsuo; Tsuchikawa, Syuji; Fukuta, Teizo; and Asakawa, Tsugio, 4,448,580, Cl. 525-71.000.
Fukuyoshi, Kenzo: *See—*
Matsudaira, Nagahisa; Yoshida, Kaneki; Fukuyoshi, Kenzo; and Masui, Kiyoshi, 4,448,493, Cl. 350-357.000.
Fulcher, Junius H., to Mosely, Neal J., a part interest. Building with illuminated sign. 4,447,995, Cl. 52-38.000.
Fulde, Roland C.; and Kwis, Stanley H., to Campbell Soup Company. Brownable dough for microwave cooking. 4,448,791, Cl. 426-94.000.
Fuller, Dennis D., to Dresser Industries, Inc. Rock bit with bearing lubricant reservoir. 4,448,268, Cl. 175-228.000.
Funahashi, Yasuyuki: *See—*
Hama, Hiroaki; Imanishi, Masami; Funahashi, Yasuyuki; and Kato, Seiichi, 4,448,037, Cl. 62-188.000.
Fung, Ho-Leung: *See—*
Clemente, Emmett; Fung, Ho-Leung; and Brousseau, Denise, 4,448,774, Cl. 424-243.000.
Funk, Hans G.; Neumann, Frank; and Schaefer, Dankmar, to Johannes Schaefer vormals Stettiner Schraubenwerke GmbH & Co. KG. Coupling for pressure lines. 4,448,447, Cl. 285-4.000.
Furedi, Ervin J.: *See—*
Blodgett, Richard E.; and Furedi, Ervin J., 4,448,095, Cl. 81-57.290.
Furuhashi, Kenji: *See—*
Uno, Hiroshi; and Furuhashi, Kenji, 4,449,022, Cl. 200-153.00J.
G. D. Searle & Co.: *See—*
Tsau, Josef H., 4,448,716, Cl. 260-112.50R.
Gabriels, Andre J., to Fabrique Nationale Herstal. Telescopic projectile. 4,448,129, Cl. 102-487.000.
GAF Corporation: *See—*
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,448,710, Cl. 252-390.000.
Lewis, David F., 4,448,875, Cl. 430-283.000.
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., 4,448,905, Cl. 521-164.000.
Liu, Kou-Chang; and Brown, Michael J., 4,448,982, Cl. 560-21.000.
Lorenz, Donald H.; and Williams, Earl P., 4,448,876, Cl. 430-296.000.
Ozari, Yehuda; Nelsen, Suzanne B.; and Klein, Andrew, 4,448,932, Cl. 525-78.000.
Gage, Charles H.: *See—*
Jalil, Asjed A.; Winslow, Earl S., Jr.; and Gage, Charles H., 4,448,401, Cl. 266-78.000.
Gahm, William J., to Graber-Rogg, Inc. Plastic container having a concealed hinge. 4,448,327, Cl. 220-341.000.
Gain, Lorand H., Jr., to Amsted Industries Incorporated. Post indicating valve assembly indicator. 4,448,148, Cl. 116-277.000.
Gallati, Harald: *See—*
Brodbeck, Hans; and Gallati, Harald, 4,448,882, Cl. 435-188.000.
Gardner, Edward A.: *See—*
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.
Gardner, Thomas A. Dryer drainage by recirculation with primary and secondary dryers. 4,447,964, Cl. 34-16.000.
Garlock Equipment Company: *See—*
Wyatt, Lloyd A., 4,448,398, Cl. 254-361.000.
Garneau, William L. Gutter construction and method. 4,447,994, Cl. 52-11.000.
Garrett, David L., Jr.: *See—*
Cheung, Mo-Fung; Garrett, David L., Jr.; and van Oene, Henk, 4,448,941, Cl. 525-528.000.
Garrett, David W.: *See—*
Black, Denny E.; and Garrett, David W., 4,448,917, Cl. 524-160.000.
Garschick, Alfred, to BIW Cable Systems, Inc. Oil well cable. 4,449,013, Cl. 174-103.000.
Gastinger, Robert G., to Atlantic Richfield Company. Method for producing a vanadium-titanium catalyst exhibiting improved intrinsic surface area. 4,448,897, Cl. 502-350.000.
Gattiker, Ernst: *See—*
Zwiener, Rudolf; Lucian, Anton; and Gattiker, Ernst, 4,448,220, Cl. 139-1.00E.
Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, to Chemische Werke Huls AG. Method for pretreating thermoplastic substrates containing carbonamide groups in the preparation of strongly adhering metal coatings. 4,448,836, Cl. 428-164.000.
Gaudry, Roger: *See—*
Doriath, Gerard; Gaudry, Roger; and Hepner, Georges, 4,449,096, Cl. 324-244.000.
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, to Diamond Shamrock Corporation. Process for manufacturng a polychelate coating. 4,448,803, Cl. 427-58.000.
Gearhart Industries, Inc.: *See—*
Schwind, Edward C., 4,448,248, Cl. 166-241.000.
Gebr. Henning GmbH: *See—*
Hennig, Kurt; Klein, Manfred; and Nuspl, Matthias, 4,447,929, Cl. 15-256.500.
Geimuplast Peter Mundt GmbH. & Co. KG.: *See—*
Pohl, Claus, 4,448,834, Cl. 428-122.000.
General Director of the Agency of Industrial Science and Technology: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.
General Dynamics, Pomona Division: *See—*
Speer, Spencer J., 4,448,130, Cl. 102-498.000.
General Electric Company: *See—*
Agnor, William C.; Lafferty, Edwin C.; and Toliver, Samuel, 4,449,104, Cl. 330-279.000.
Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., 4,449,195, Cl. 364-900.000.

Bopp, Richard C.; Golba, Joseph C., Jr.; and White, Scott A., 4,448,937, Cl. 525-432.000.
Bray, Steven C., 4,447,965, Cl. 34-27.000.
Cipolla, Thomas M., 4,448,405, Cl. 269-32.000.
Cutler, John H.; D'Atre, John D.; and Walker, Loren H., 4,449,088, Cl. 318-798.000.
Erdman, David M., 4,449,079, Cl. 318-138.000.
Factor, Arnold; and Sannes, Keith N., 4,448,727, Cl. 260-463.000.
Franz, Joseph P., 4,448,573, Cl. 415-206.000.
Golba, Joseph C.; and Hansen, Marion G., 4,448,943, Cl. 526-59.000.
Golba, Joseph C., Jr.; and Shete, Prakash K., 4,448,909, Cl. 523-303.000.
Grenoble, Maurice E.; and Eckberg, Richard P., 4,448,815, Cl. 427-387.000.
Iacovangelo, Charles D., 4,448,857, Cl. 429-41.000.
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Hirai, Kiyomiki, 4,448,949, Cl. 528-99.000.
Klein, Steven H.; and Smith, Alfred H., Jr., 4,448,928, Cl. 524-864.000.
Konrad, Charles E.; and Clark, Robert C., deceased, 4,449,080, Cl. 318-139.000.
Leslie, Samuel A.; and Schwartz, Robert C., 4,449,248, Cl. 455-38.000.
Levinson, Lionel M., 4,448,806, Cl. 427-102.000.
Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., 4,449,087, Cl. 318-723.000.
Mark, Victor, 4,448,975, Cl. 548-558.000.
Nied, Herman A., 4,449,029, Cl. 219-117.100.
Ohno, John M., 4,448,591, Cl. 51-298.000.
Rosenquist, Niles R.; Mark, Victor; and Hedges, Charles V., 4,448,953, Cl. 528-198.000.
Shimizu, Chiyuki; and Nakamura, Nobuo, 4,448,814, Cl. 427-387.000.
Tolentino, Luisito A., 4,448,981, Cl. 556-459.000.
Turnbull, Fred G., 4,449,176, Cl. 363-81.000.

General Motors Corporation: *See*—
Bishop, Gary E., 4,448,235, Cl. 164-34.000.
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,448,477, Cl. 339-258.0RR.
Romblom, Edward F.; and Sundeen, Arthur R., 4,448,066, Cl. 73-119.00A.

General Tire & Rubber Company, The: *See*—
Lenke, Gerd M.; Melby, Earl G.; and Fabris, Hubert J., 4,448,956, Cl. 528-312.000.

Genstar Waste Transfer, Inc.: *See*—
Maphis, Sam W., 4,448,690, Cl. 210-609.000.

Gentry, Cecil C., to Phillips Petroleum Company. Apparatus and method for beneficiation of lignite. 4,448,678, Cl. 209-3.000.

Gentry, Larry L.; Moss, Herbert H.; and Panicker, Narayana N., to Mobil Oil Corporation. Marine surface facility work station for subsea equipment handling. 4,448,568, Cl. 405-169.000.

George Fischer Ltd.: *See*—
Reich, Fritz; and Thalmann, Alfred, 4,449,038, Cl. 219-535.000.

Geosling, Christine E.: *See*—
Manuccia, Thomas J.; Peele, John R.; and Geosling, Christine E., 4,448,000, Cl. 52-208.000.

Geosource Inc.: *See*—
Craig, Gary J., 4,448,057, Cl. 73-1.0DV.

Gerber Garment Technology, Inc.: *See*—
Pearl, David R., 4,448,808, Cl. 427-208.600.

Gerlach Industries Inc.: *See*—
Iannelli, Frank M., 4,448,036, Cl. 62-178.000.

Gestaut, Lawrence J.; and Simcox, P. David, to Diamond Shamrock Corporation. Biodispersions. 4,448,886, Cl. 435-262.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Becker, Kunibert; Kirchbrucher, Rudiger; and Elsner, Burckhard, 4,448,263, Cl. 173-34.000.

Geyer, Frederick F.; and Leonard, Eric M., to Eastman Kodak Company. Optical disc unit, fabrication method and cooperating write and/or read apparatus. 4,449,139, Cl. 346-137.000.

Gibert, Francis J. P., to FGP Instrumentation. Airspeed sensing post for determining relative velocity of a fluid and a carrier. 4,448,069, Cl. 73-182.000.

Gibney, Ann: *See*—
Zuckerbrod, David; and Gibney, Ann, 4,448,856, Cl. 429-27.000.

Gier, Rolland H. Collapsible hand truck. 4,448,440, Cl. 280-655.000.

Giezendanner, Ruedi. Ladder formed as a multiple-purpose device. 4,448,282, Cl. 182-22.000.

Gilbreath, James C. Outboard motor support bracket. 4,448,387, Cl. 248-642.000.

Gildersleeves, Clive D. P.: *See*—
Young, Arthur P.; Gildersleeves, Clive D. P.; Partridge, Brian W.; and Ryder, Keith L., 4,449,181, Cl. 364-200.000.

Gill, Cyril A. Picture framing. 4,448,572, Cl. 408-115.00R.

Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., to American Hoechst Corporation. Electrochemically treated metal plates. 4,448,647, Cl. 204-33.000.

Gilligan, William H.: *See*—
Sitzmann, Michael E.; and Gilligan, William H., 4,449,000, Cl. 568-22.000.

Gipson, Robert M.: *See*—
McCoy, David R.; and Gipson, Robert M., 4,448,697, Cl. 252-8.55D.

Girard, Donald D., to Raytheon Company. Method of controlling antiaircraft fire. 4,449,041, Cl. 235-412.000.

Girmes-Werke AG: *See*—
Fennekels, Peter; and Waltmann, Ernst, 4,448,581, Cl. 8-137.000.

Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., to General Motors Corporation. Electric socket terminal. 4,448,477, Cl. 339-258.0RR.

Glamkowski, Edward J.; and Fortunato, James M., to Hoechst-Roussel Pharmaceuticals, Inc. 1-(Aminoalkylphenyl and aminoalkylbenzyl)-indoles and indolines and analgesic method of use thereof. 4,448,784, Cl. 424-274.000.

Glass, Cyril; Hursey, Leslie G.; and Inness-Turnbull, Ronald, to Sargom Company Limited, The. Flame retardant compositions for textiles and treated textiles. 4,448,841, Cl. 428-270.000.

Gleim, William K. T., to Energy Modification, Inc. Method of reforming gasoline to raise the octane thereof utilizing low valence chromium composited with non-oxidizing high surface area support. 4,448,676, Cl. 208-136.000.

Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., to Singer Company, The. Power head unit for carpet cleaning. 4,447,930, Cl. 15-322.000.

Global Marine, Inc.: *See*—
Wetmore, Sherman B.; and Knorr, Gordon D., 4,448,277, Cl. 180-127.000.

Glowny Instytut Gornictwa: *See*—
Paczkowski, Marian, 4,448,577, Cl. 431-190.000.

Gnutzman, Keith: *See*—
Trezise, Richard; Boldt, John; and Gnutzman, Keith, 4,448,556, Cl. 400-208.000.

Goetze AG: *See*—
Majewski, Klaus-Peter; Morsbach, Martin; and Schulz, Dietrich, 4,448,431, Cl. 277-325.00B.

Golba, Joseph C.; and Hansen, Marion G., to General Electric Company. Method for measuring polymerization process variables. 4,448,943, Cl. 526-59.000.

Golba, Joseph C., Jr.; and Shete, Prakash K., to General Electric Company. Method for determining compounding process variables. 4,448,909, Cl. 523-303.000.

Golba, Joseph C., Jr.: *See*—
Bopp, Richard C.; Golba, Joseph C., Jr.; and White, Scott A., 4,448,937, Cl. 525-432.000.

Golinelli, Guido; and Selleri, Narciso, to Finike Italiana Marposs S.p.A. Plug gauge for checking dimensions of bores of mechanical parts. 4,447,960, Cl. 33-178.00E.

Golinski, Stanley; and Rapp, Willard E., to AT & T Technologies, Inc. Technique for inserting keying members into backplanes. 4,447,948, Cl. 29-829.000.

Gomoll, Volker, to Feldmuhle Aktiengesellschaft. Control for operation of a machine tool. 4,449,085, Cl. 318-641.000.

Googin, John M.: *See*—
Duerksen, Walter K.; Googin, John M.; and Napier, Bradley, Jr., 4,448,701, Cl. 252-49.300.

Gordon, Edward C., Jr.; and Gordon, Glen D. Effluent water filter device and method. 4,448,695, Cl. 210-694.000.

Gordon, Glen D.: *See*—
Gordon, Edward C., Jr.; and Gordon, Glen D., 4,448,695, Cl. 210-694.000.

Goto, Satoshi: *See*—
Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.

Gotoh, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Charging generator for vehicles. 4,449,090, Cl. 322-95.000.

Gould, Richard E., to Fasco Controls Corporation. Oil pressure sender with rolling diaphragm. 4,449,112, Cl. 338-39.000.

Gould, Richard E.; and Page, William P., to Fasco Controls Corporation. Oil pressure sender with friction free resistor device. 4,449,113, Cl. 338-39.000.

Graber-Rogg, Inc.: *See*—
Gahm, William J., 4,448,327, Cl. 220-341.000.

Grace, William A.: *See*—
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.

Grady, John J., III: *See*—
Flahive, Barry J.; Grady, John J., III; and Rado, Peter J., 4,449,183, Cl. 364-200.000.

Graf, Eugen; and Kindle, Edwin, to Hilti Aktiengesellschaft. Pneumatic nail driver. 4,448,338, Cl. 227-8.000.

Graf, James E.; and Rowlette, John J., to California Institute of Technology. Chemically rechargeable battery. 4,448,858, Cl. 429-49.000.

Gragg, Frederick M.; Shen, Jian C.; and Jacobson, Carl L., to Occidental Research Corporation. Method of in situ oil shale retort ignition with oxygen control. 4,448,249, Cl. 166-251.000.

Grantz, Helmut: *See*—
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,448,241, Cl. 165-104.140.
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgand, 4,448,242, Cl. 165-104.140.

Gray, Frederick W., to Colgate-Palmolive Company. Monoperoxyphthalic acid bleaching composition containing DTPMP. 4,448,705, Cl. 252-102.000.

Green, James F., to Filtertech Inc. Liquid filtration system with level-responsive contaminant removal and air flow control for vacuum producer. 4,448,683, Cl. 210-106.000.

Greenblatt, Julius. Sofa bed with contoured mattress. 4,447,921, Cl. 5-12.00R.

Greer, Richard H.; and Newport, James B. Circuit breaker control device. 4,449,055, Cl. 307-38.000.

Gregg, Daniel L.: *See*—
Fascenda, Anthony C.; Gregg, Daniel L.; and Ache, Rollin W., 4,449,114, Cl. 340-988.000.

Grellet, Bernard; Emmanuel, Jean-Pierre; and Sipp, Bernard, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Process for improving the corrosion resistance of ferrous metal parts. 4,448,611, Cl. 148-6.110.

Grenoble, Maurice E.; and Eckberg, Richard P., to General Electric Company. Multi-component solventless silicone release coating system. 4,448,815, Cl. 427-387.000.

Greschner, Johann: *See*—
Bohlen, Harald; Greschner, Johann; and Nehmiz, Peter, 4,448,865, Cl. 430-5.000.

Greven, Johannes: *See*—
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.

Griffin, Kary A. Floor panel. 4,447,998, Cl. 52-126.600.

Griffith, Nellie S.: *See*—
Hotchkiss, Kenneth W.; Popken, John A.; and Griffith, Nellie S., 4,449,015, Cl. 174-138.00F.

Groeger, Heinz K.: *See*—
Malthouse, Martin D.; and Groeger, Heinz K., 4,448,629, Cl. 156-510.000.

Grois, Igor: *See*—
Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, 4,448,481, Cl. 350-96.200.

Gromelski, Stanley J., Jr.: *See*—
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., 4,448,905, Cl. 521-164.000.

Grosberg, Joseph J., to USM Corporation. Adjustable bore target and gage. 4,447,962, Cl. 33-286.000.

Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, to Mobil Oil Corporation. Apparatus for regenerating cracking catalyst. 4,448,753, Cl. 422-144.000.

Gross, John M.: *See*—
Blau, Frederick, Jr.; and Gross, John M., 4,449,178, Cl. 364-148.000.

Grosser, Werner: *See*—
Bauer, Wolfgang; and Grosser, Werner, 4,448,091, Cl. 74-552.000.

GTE Products Corporation: *See*—
Mizuhara, Howard, 4,448,605, Cl. 75-123.00H.
Rhodes, Russell H.; Smith, James S.; and Clare, Leslie P., 4,448,606, Cl. 75-236.000.
Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., 4,448,755, Cl. 423-56.000.
Shaffer, John W.; and Houseknecht, Gary L., 4,449,070, Cl. 313-557.000.
Weir, Colin B., 4,449,128, Cl. 343-858.000.

Guier, William. Apparatus for setting casing in an oil well. 4,448,246, Cl. 166-77.000.

Gulf & Western Manufacturing Company: *See*—
Hill, Frank W.; May, William L.; and Kent, Willard L., 4,449,116, Cl. 340-909.000.

Gumkowski, Bert A.; and Schreiner, Peter J., to Bendix Corporation, The. Disc brake assembly. 4,448,289, Cl. 188-73.450.

Gunther, Christian: *See*—
Weiland, Emil; and Gunther, Christian, 4,448,131, Cl. 105-182.00R.

Gunther, Dieter, to Hoechst Aktiengesellschaft. 2-Ketosulfonamides. 4,448,988, Cl. 564-95.000.

Gunther, Dieter: *See*—
Willms, Lothar; Gunther, Dieter; and Huttelmaier, Thomas, 4,448,731, Cl. 260-545.00R.

Gunzy, Jack: *See*—
D'Onofrio, Anthony; and Gunzy, Jack, 4,449,075, Cl. 315-169.300.

Gupalov, Viktor K.: *See*—
Rodnyansky, Lazar I.; and Gupalov, Viktor K., 4,448,191, Cl. 128-69.000.

Gurnett, Keith W.: *See*—
Sinnadurai, F. Nihal; Cook, Anthony J.; and Gurnett, Keith W., 4,448,306, Cl. 206-331.000.

Gushea, Roger B. Bubble-blowing apparatus. 4,447,982, Cl. 46-8.000.

Gutierrez, Pete. Baseball base. 4,448,414, Cl. 273-25.000.

Gyorkey, Ferenc: *See*—
Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

Gyorkey, Phyllis: *See*—
Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

Haas, Peter: *See*—
Axelrod, Norman N.; Haas, Peter; and Noess, Rainer, 4,448,503, Cl. 353-26.00A.

Habara, Hideaki: *See*—
Sugimori, Teruhiko; Suzuki, Fumio; and Habara, Hideaki, 4,448,537, Cl. 366-75.000.

Habegger, Willy; and Lauber, Ernst, to Willy Habegger AG. Apparatus for pulling in and letting out a cable. 4,448,393, Cl. 254-264.000.

Haberkorn, Herbert: *See*—
Stutz, Herbert; Illers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, 4,448,946, Cl. 528-67.000.

Hachtel, Hanjorg: *See*—
Dobler, Klaus; and Hachtel, Hanjorg, 4,448,084, Cl. 73-862.330.

Hackman, Donald J.; Caudy, Don W.; Wernli, Robert L.; and Albro, Carl S., to United States of America, Navy. Lift sling emplacement device. 4,448,569, Cl. 405-190.000.

Haddad, James H.: *See*—
Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, 4,448,753, Cl. 422-144.000.

Hafner, Hubertus: *See*—
Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, 4,448,836, Cl. 428-164.000.

Haftlmeier, Theo: *See*—
Reichert, Rudolf; and Haftlmeier, Theo, 4,448,464, Cl. 312-214.000.

Haggar Company: *See*—
Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., 4,448,626, Cl. 156-256.000.

Hagiwara, Isao: *See*—
Ogishi, Masaaki; Hagiwara, Isao; Yoshida, Yukio; and Oono, Kenzo, 4,449,078, Cl. 318-102.000.

Haines, Paul G., to Pennwalt Corporation. Preparation of methyl mercaptan from carbon oxides. 4,449,006, Cl. 568-70.000.

Haines, Richard M.; and Wong, Robert, to Owens-Corning Fiberglas Corporation. Aqueous compositions for sizing glass fibers containing emulsified epoxy resin and chloropropylsilane. 4,448,910, Cl. 523-402.000.

Haines, Richard M.; and Wong, Robert, to Owens-Corning Fiberglas Corporation. Aqueous epoxy sizing composition for glass fibers and fibers sized therewith. 4,448,911, Cl. 523-411.000.

Hajime Industries Ltd.: *See*—
Yoshida, Hajime, 4,449,240, Cl. 382-15.000.

Hale Fire Pump Company: *See*—
Eberhardt, H. Alfred; Hoffman, Kenneth F.; and Petersen, Raymond R., 4,448,256, Cl. 169-15.000.

Hall, John B.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Process for preparing 1(4-pentonoyl)-3,3-dimethylcyclohexane and intermediates used in a said process. 4,449,007, Cl. 568-343.000.

Hall, Thomas D. Mechanical knee. 4,447,916, Cl. 3-22.000.

Hallberg, Frederick C.; and Morgan, Clyde J., to United States of America, Administrator, National Aeronautics and Space Administration. Workpiece positioning vise. 4,448,406, Cl. 269-224.000.

Halliburton Company: *See*—
Barrington, Burchus Q., 4,448,254, Cl. 166-373.000.

Halling, Horace P.; and Sadoff, Bernard J., Jr. Flexible piping joint and method of forming same. 4,448,449, Cl. 285-263.000.

Halstead, Raymond T.; and Black, Charles E., III, to Indak Manufacturing Corp. Vacuum control valve for automotive heating and airconditioning systems. 4,448,390, Cl. 251-176.000.

Hama, Hiroaki; Imanishi, Masami; Funahashi, Yasuyuki; and Kato, Seiichi, to Mitsubishi Denki Kabushiki Kaisha. Combined air conditioning and hot water service system. 4,448,037, Cl. 62-188.000.

Hammerle, Robert H.; and Wu, Ching-Hsong, to Ford Motor Company. Process for treatment of exhaust gases. 4,448,756, Cl. 423-213.700.

Hampson, Alfred A.; and Hutchins, Thomas B., deceased (by Hutchins, Nancy K., executrix), to Can and Bottle Systems, Inc. Redeemable container with end closure redemption code. 4,449,042, Cl. 235-464.000.

Hanafee, James S.: *See*—
Perlman, Stanley; Herbert, William G.; Layton, Donald; and Hanafee, James S., 4,448,476, Cl. 339-203.000.

Hanemann, Gerhard: *See*—
Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, 4,448,498, Cl. 350-516.000.

Hanlet, Jacques M., to Intent Patent A.G. Fastening system. 4,448,321, Cl. 220-4.00R.

Hanlon, John V.: *See*—
Hinkamp, James B.; and Hanlon, John V., 4,448,587, Cl. 44-57.000.

Hanna, Craig A.; and Lancki, Edmund, to International Business Machines Corporation. Self-clocking serial decoder. 4,449,119, Cl. 340-347.0DD.

Hanna, Marie R.: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.

Hansen, Hanspeter: *See*—
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,448,960, Cl. 544-282.000.

Hansen, Marion G.: *See*—
Golba, Joseph C.; and Hansen, Marion G., 4,448,943, Cl. 526-59.000.

Hansen, Robert S. Adjustable telephone message holder. 4,448,383, Cl. 248-447.100.

Hanson, Robert B., to Standard Oil Company (Indiana). Injection moldable polymers containing phthalic anhydride. 4,448,925, Cl. 524-600.000.

Hanwa Elecyronic Co., Ltd.: *See*—
Otoi, Takashi, 4,449,091, Cl. 323-236.000.

Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Tire vulcanizing press. 4,448,575, Cl. 425-47.000.

Haq, Zia: *See*—
Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, 4,448,704, Cl. 252-91.000.

Hara, Hisao: *See*—
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, 4,448,035, Cl. 62-176.600.

Haramoto, Yutaka: *See—*
Ishigaki, Yukinobu; Haramoto, Yutaka; and Totsuka, Kaoru, 4,449,106, Cl. 333-14.000.

Harari, Eliyahou. Highly scalable dynamic RAM cell with self-signal amplification. 4,448,400, Cl. 365-185.000.

Harari, Eliyahou. Dynamic merged load logic (MLL) and merged load memory (MLM). 4,449,224, Cl. 377-79.000.

Hardesty, Edwin C., to AT&T Technologies, Inc. Slotted, substantially rigid multi-conductor electrical connector. 4,448,472, Cl. 339-97.00P.

Harlow, Stanley D.; and Alexander, Donald, to International Harvester Co. Rotary macerator. 4,448,357, Cl. 241-32.000.

Harmsen, Arlyn V.: *See—*
Harmsen, Wayne A.; and Harmsen, Arlyn V., 4,448,260, Cl. 172-777.000.

Harmsen, Wayne A.; and Harmsen, Arlyn V., to Harmsen, Wayne A. Pivotal blade spikes for tractors. 4,448,260, Cl. 172-777.000.

Harris Corporation: *See—*
Seiler, Norman C.; Nixon, Thomas J.; and Waschka, George A., Jr., 4,449,246, Cl. 455-9.000.
Waschka, George A., Jr., 4,449,247, Cl. 455-9.000.

Hartlapp, Jurgen: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.

Hartmann, Paul R.: *See—*
Crossett, Joseph A., III; and Hartmann, Paul R., 4,449,222, Cl. 375-10.000.

Hartog, Stefan; and Hollmark, Holger, to Svenska Traforskningsinstitutet. Method and apparatus for applying liquid to a moving surface. 4,448,818, Cl. 427-424.000.

Hasagawa, Yoshikazu: *See—*
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.

Hasbrouck, Gene B., to Hon Industries, Inc. Tube connections. 4,448,003, Cl. 52-239.000.

Hasegawa, Akira: *See—*
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Hasegawa, Keiji, to Ricoh Company, Ltd. Impact printing apparatus with interchangeable rotary type wheels. 4,448,555, Cl. 400-144.200.

Hasegawa, Seiro: *See—*
Unoguchi, Takehiko; Hasegawa, Seiro; Fujito, Katsuyuki; Nishino, Atsushi; and Yoshida, Akihiko, 4,449,188, Cl. 364-505.000.

Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, to Honda Motor Co., Ltd. Exhaust gas recirculation control system having variable valve lift correcting speed for exhaust gas recirculation valve. 4,448,177, Cl. 123-571.000.

Hashimoto, Naoki: *See—*
Watanabe, Masaru; Yamauchi, Nobuharu; Hashimoto, Naoki; and Tamama, Tetsuo, 4,449,192, Cl. 364-559.000.

Hashimoto, Nobuyuki; and Hattori, Takemi, to Aisin Seiki Kabushiki Kaisha. Air bag system having a branched joint. 4,448,228, Cl. 141-114.000.

Hashimoto, Shingo; and Sekine, Mitsuo, to Citizen Watch Company Limited. Temperature sensing device. 4,448,549, Cl. 374-170.000.

Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, to Sharp Kabushiki Kaisha. Audibly announcing apparatus. 4,449,232, Cl. 381-51.000.

Hass, Robert H., to Union Oil Company of California. Process for removing SO_x and NO_x compounds from gas streams. 4,448,899, Cl. 521-32.000.

Hastings Fiber Glass Products, Inc.: *See—*
Apperson, Kenneth P.; and Morgan, Cecil D., 4,449,010, Cl. 174-5.00R.

Hatada, Youichi: *See—*
Kuwaki, Masami; Hatada, Youichi; and Umino, Satoru, 4,448,346, Cl. 236-46.00R.

Hathaway, James C.: *See—*
Wertz, Richard K.; Cook, Albert M.; and Hathaway, James C., 4,448,534, Cl. 356-435.000.

Hatta, Takao: *See—*
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.

Hattori, Takemi: *See—*
Hashimoto, Nobuyuki; and Hattori, Takemi, 4,448,228, Cl. 141-114.000.

Hauk, Rolf: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Havlis, Jerome F. Counter flow separator. 4,448,688, Cl. 210-512.300.

Hawkins, Royal R., to Sundstrand Corporation. Anti-stall control. 4,448,021, Cl. 60-449.000.

Hayashi, Isao; and Moriya, Makoto, to Nissan Motor Co., Ltd. Safety fuel filler structure of a motor vehicle. 4,448,323, Cl. 220-86.00R.

Hayashi, Junichi, to Yamato Scale Company, Ltd. Device for measuring components of force and moment in plural directions. 4,448,083, Cl. 73-862.040.

Hayashi, Kiyoshi, to Nippon Kogaku K. K. Zoom lens system capable of very close range photography. 4,448,495, Cl. 350-428.000.

Hayashi, Masamichi, to Minolta Camera Kabushiki Kaisha. Drive controlling mechanism of optical member for use in copying apparatus. 4,448,517, Cl. 355-56.000.

Hazelrigg, Mark J., Jr.: *See—*
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,448,663, Cl. 204-270.000.

Hazeltine Corporation: *See—*
Freyre, Frederick W., 4,448,494, Cl. 350-358.000.

Heat Transfer Pty. Ltd.: *See—*
Pain, John R., 4,448,243, Cl. 165-134.00R.

Heath, Thomas K.: *See—*
Marling, John B.; and Heath, Thomas K., 4,448,500, Cl. 350-574.000.

Heckmann, Walter: *See—*
Stutz, Herbert; Illers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, 4,448,946, Cl. 528-67.000.

Hedges, Charles V.: *See—*
Rosenquist, Niles R.; Mark, Victor; and Hedges, Charles V., 4,448,953, Cl. 528-198.000.

Heger, Adolf: *See—*
Burov, Vadim K.; Vanjuakin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Heidelberger Druckmaschinen: *See—*
Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, 4,448,533, Cl. 356-416.000.

Heider, John G.: *See—*
Kathawala, Faizulla G.; and Heider, John G., 4,448,785, Cl. 424-274.000.

Hein, Norman W., Jr.: *See—*
Peterson, Marvin L.; and Hein, Norman W., Jr., 4,448,062, Cl. 73-86.000.

Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, to Kali-Chemie Pharma GmbH. 1-Phenylindazole-3-one compounds, process and intermediates for their preparation, and pharmaceutical compositions containing same. 4,448,777, Cl. 424-250.000.

Heinrich Josef Winter, Firma: *See—*
Kern, Josef, 4,448,319, Cl. 215-329.000.

Heinrich, Rudolf: *See—*
Schumacher, Hans; Albrecht, Konrad; and Heinrich, Rudolf, 4,448,602, Cl. 71-90.000.

Heintz, Phillip L.: *See—*
Darvial, Bruce L.; Heintz, Phillip L.; Smith, John S.; and Walth, Lee A., 4,448,175, Cl. 123-557.000.

Helms, Charles R., to Container Corporation of America. Composite lid. 4,448,345, Cl. 229-43.000.

Henault, Claude, to Regie Nationale des Usines Renault. Variable gas distribution device for internal combustion motors. 4,448,156, Cl. 123-90.170.

Henderson, James A., Jr.: *See—*
Burke, Edmund T.; Catalano, Joseph F.; Henderson, James A., Jr.; and Smith, Nicholas K., 4,449,017, Cl. 179-27.00D.

Henderson, Timothy M., to KMS Fusion, Inc. Glass-surface microcarrier for growth of cell cultures. 4,448,884, Cl. 435-241.000.

Henkel KGaA: *See—*
Preuss, Wolfgang, 4,448,725, Cl. 260-397.100.

Hennessy Products, Incorporated: *See—*
Wingate, W. Jack, 4,448,328, Cl. 221-13.000.

Hennig, Kurt; Klein, Manfred; and Nuspl, Matthias, to Gebr. Henning GmbH. Scraper device and assembly tool. 4,447,929, Cl. 15-256.500.

Henrick, Clive A., to Zoecon Corporation. Substituted cycloalkanediones. 4,448,965, Cl. 546-302.000.

Henrick, Clive A.: *See—*
Lindahl, George R., III; and Henrick, Clive A., 4,448,961, Cl. 544-311.000.

Henry, James L.; and Stocker, Wendy A., to Bell Telephone Laboratories, Incorporated. One-bit full adder circuit. 4,449,197, Cl. 364-784.000.

Hepner, Georges: *See—*
Doriath, Gerard; Gaudry, Roger; and Hepner, Georges, 4,449,096, Cl. 324-244.000.

Heppenstall, Keith, to Lucas Industries Limited. Drive circuit. 4,449,162, Cl. 361-156.000.

Heraeus Elektroden GmbH: *See—*
Fabian, Peter; and Heraeus Elektroden GmbH, 4,448,660, Cl. 204-225.000.

Herbert, William G.: *See—*
Perlman, Stanley; Herbert, William G.; Layton, Donald; and Hanafee, James S., 4,448,476, Cl. 339-203.000.

Hermans, Mathias L.: *See—*
van der Sluys, Willem L. N.; and Hermans, Mathias L., 4,448,596, Cl. 62-101.000.

Herndon, Gerald F., to Boeing Company, The. Folding truss mechanism for trailing edge flaps. 4,448,375, Cl. 244-216.000.

Herring, William M.: *See—*
Emery, Donald B.; and Herring, William M., 4,448,736, Cl. 264-40.100.

Herronen, John R.: *See—*
Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., 4,448,302, Cl. 198-781.000.

Hervieu, Rene , to Centre National pour l'Exploitation des Oceans. Unmanned submarine vehicle. 4,448,145, Cl. 114-312.000.

Hewlett Packard Company: *See—*
Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., 4,448,192, Cl. 128-204.260.

Hibino, Takashi; and Ito, Yoshinori, to Hoshizaki Electric Co., Ltd. Ice-making and fresh water dispensing apparatus. 4,448,032, Cl. 62-124.000.

Hidaka, Yoshiaki; and Tsuchiyama, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. V-Type internal combustion engine. 4,448,159, Cl. 123-195.00C.

Hider, Robert C.: *See—*
Ash, Philip S.; and Hider, Robert C., 4,448,765, Cl. 424-14.000.

Hijikata, Kazuo: *See—*
Banno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, 4,448,752, Cl. 422-81.000.

Hilhorst, Jacques J.; and Stillie, Donald G., to AMP Incorporated. Transparent switch having fine line conductors. 4,449,023, Cl. 200-159.00B.

Hill, Frank W.; May, William L.; and Kent, Willard L., to Gulf & Western Manufacturing Company. Actuated digital pretimed traffic controller. 4,449,116, Cl. 340-909.000.

Hillebrand, George A.; and Paar, Michael S., to Eaton Corporation. Guide for roller cam follower. 4,448,155, Cl. 123-90.500.

Hilti Aktiengesellschaft: *See—*
Graf, Eugen; and Kindle, Edwin, 4,448,338, Cl. 227-8.000.
Kousek, Heinz; and Wohlwend, Ernst, 4,448,261, Cl. 173-12.000.

Hilton-Davis Chemical Co., The: *See—*
Crounse, Nathan N., 4,448,722, Cl. 260-245.100.

Hinden, Jean M.: *See—*
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, 4,448,803, Cl. 427-58.000.

Hinkamp, James B.; and Hanlon, John V., to Ethyl Corporation. Synergistic cetane improver. 4,448,587, Cl. 44-57.000.

Hirabayashi, Tsugio: *See—*
Fujii, Yozo; Sakaguchi, Hirofumi; and Hirabayashi, Tsugio, 4,448,514, Cl. 355-8.000.

Hirai, Kiyomiki: *See—*
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Hirai, Kiyomiki, 4,448,949, Cl. 528-99.000.

Hiraishi, Masanori; and Sugata, Masashi, to Daicel Chemical Industries, Ltd. Etching method of conductive film. 4,448,637, Cl. 156-635.000.

Hirano, Shigeo: *See—*
Yamamuro, Kiyohiko; Hirano, Shigeo; and Iwasa, Yasuo, 4,448,878, Cl. 430-507.000.

Hirasawa, Kotaro: *See—*
Kuzunuki, Soshiro; and Hirasawa, Kotaro, 4,448,286, Cl. 187-29.00R.

Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, to Canon Kabushiki Kaisha. Image information recording apparatus. 4,448,513, Cl. 355-8.000.

Hiroshige, Nakayama. Straw-equipped liquid drink container. 4,448,316, Cl. 215-1.00A.

Hiruma, Katumi: *See—*
Nakajima, Nobuyuki; and Hiruma, Katumi, 4,448,356, Cl. 239-533.500.

Hitachi Chemical Co., Ltd.: *See—*
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.

Hitachi Construction Machinery Co., Ltd.: *See—*
Ishikawa, Yasuaki; Ajiro, Shuichi; and Wada, Masami, 4,448,269, Cl. 175-335.000.

Hitachi, Ltd.: *See—*
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshihige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.
Kimura, Tomoaki, 4,448,236, Cl. 164-423.000.
Koyama, Tohru; Wajima, Motoyo; and Mukai, Junji, 4,448,940, Cl. 525-504.000.
Kunugi, Yoshifumi, 4,448,040, Cl. 62-238.300.
Kuzunuki, Soshiro; and Hirasawa, Kotaro, 4,448,286, Cl. 187-29.00R.
Motojima, Kenji; and Kawamura, Fumio, 4,448,711, Cl. 502-74.000.
Ohahima, Yoshimitsu; Yokozawa, Norio; and Ohzeki, Masayoshi, 4,449,180, Cl. 364-147.000.
Ohyama, Yoshihige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kiriasawa, Tadashi, 4,448,070, Cl. 73-204.000.
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.
Sato, Yukihiro; and Shibuya, Yoshimichi, 4,448,489, Cl. 350-330.000.
Shibuya, Yoshimichi; and Takahashi, Masami, 4,448,490, Cl. 350-335.000.
Watanabe, Michinori, 4,448,369, Cl. 242-195.000.
Yamaguchi, Kiyoshi; and Maki, Naoki, 4,448,042, Cl. 62-505.000.

Ho, Nelson: *See—*
Kratochvil, Jiri; Ho, Nelson; and Janata, Jiri, 4,449,011, Cl. 174-52.0PE.

Hobart Corporation: *See—*
Meyers, Theodore F., 4,448,359, Cl. 241-46.060.

Hobbs, Charles F., to Monsanto Company. Catalyst and reverse disproportionation process. 4,448,894, Cl. 502-249.000.

Hodgson, Dale A., to Bright of America. Display package of pagemarkers. 4,448,310, Cl. 206-526.000.

Hoechst AG.: *See—*
Schindler, Peter; and Huber, Gerhard, 4,448,880, Cl. 435-18.000.

Hoechst Aktiengesellschaft: *See—*
Becker, Wilhelm; and Manz, Albrecht, 4,448,912, Cl. 523-414.000.
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.
Diery, Helmut; and Mees, Bernhard, 4,448,992, Cl. 564-347.000.
Gunther, Dieter, 4,448,988, Cl. 564-95.000.
Schumacher, Hans; Albrecht, Konrad; and Heinrich, Rudolf, 4,448,602, Cl. 71-90.000.
Willms, Lothar; Gunther, Dieter; and Huttelmaier, Thomas, 4,448,731, Cl. 260-545.00R.

Hoechst-Roussel Pharmaceuticals, Inc.: *See—*
Glamkowski, Edward J.; and Fortunato, James M., 4,448,784, Cl. 424-274.000.

Hoehn, Gustave L., to Mobil Oil Corporation. Recording decimated magnetotelluric measurements with coherence. 4,449,099, Cl. 324-350.000.

Hoffman, Charles R., to International Business Machines Corporation. Dynamic RAM with non-volatile back-up storage and method of operation thereof. 4,449,205, Cl. 365-182.000.

Hoffman, Douglas R.: *See—*
Felix, Ronald G.; and Hoffman, Douglas R., 4,448,473, Cl. 339-99.00R.

Hoffman, Kenneth F.: *See—*
Eberhardt, H. Alfred; Hoffman, Kenneth F.; and Petersen, Raymond R., 4,448,256, Cl. 169-15.000.

Hoffmann, Harald; and Raducanu, Dan-Corneliu, to Braun Aktiengesellschaft. Method and apparatus for controlling and regulating a motor with a permanent magnetic rotor. 4,449,086, Cl. 318-696.000.

Hoffmann-La Roche Inc.: *See—*
Brodbeck, Hans; and Gallati, Harald, 4,448,882, Cl. 435-188.000.
Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, 4,448,991, Cl. 564-171.000.

Hofinger, Hans-Peter: *See—*
Wieser, Franz; and Hofinger, Hans-Peter, 4,448,796, Cl. 427-4.000.

Hohne, Gerd: *See—*
Bodig, Bernd; Hohne, Gerd; and Kalkhof, Bernd, 4,448,180, Cl. 123-618.000.

Hohne, Hans-Jurgen: *See—*
Mista, Kresimir; and Hohne, Hans-Jurgen, 4,448,046, Cl. 66-205.000.

Holl, Wolfgang: *See—*
Kiehling, Brigitte; and Holl, Wolfgang, 4,448,693, Cl. 210-673.000.

Holland, Keith T.: *See—*
Cunliffe, William J.; Eady, Elizabeth A.; and Holland, Keith T., 4,448,714, Cl. 260-112.00R.

Holland-Letz, Gunter, to Esselte Rendaflex Corporation. Print wheels having means for rotating a selected print wheel and preventing the rotation of print wheels adjacent the rotated print wheel. 4,448,122, Cl. 101-91.000.

Hollmark, Holger: *See—*
Hartog, Stefan; and Hollmark, Holger, 4,448,818, Cl. 427-424.000.

Hollywood Accessories: *See—*
Vochelli, Julian P., 4,448,005, Cl. 52-473.000.

Holmes, James C.; Bush, Harvey; and Fink, Roger L., to Raychem Corporation. Wraparound protective closure. 4,448,824, Cl. 428-33.000.

Holmgren, Steven A. Multi-faceted firing device. 4,447,977, Cl. 42-51.000.

Holmstrom, Roy C., to Rockwell International Corporation. Method of stress rolling a metallic rim. 4,448,053, Cl. 72-102.000.

Holtrop, John W.: *See—*
Bates, Jack R.; and Holtrop, John W., 4,448,373, Cl. 244-137.00R.

Hon Corporation International: *See—*
Hon, David T., 4,448,435, Cl. 280-278.000.

Hon, David T., to Hon Corporation International. Foldable and portable vehicle. 4,448,435, Cl. 280-278.000.

Hon Industries, Inc.: *See—*
Hasbrouck, Gene B., 4,448,003, Cl. 52-239.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hidaka, Yoshiaki; and Tsuchiyama, Tadashi, 4,448,159, Cl. 123-195.00C.
Ohzono, Kohei, 4,448,436, Cl. 280-282.000.
Watanabe, Masaki; and Wakatsuki, Goroei, 4,448,279, Cl. 180-297.000.

Honda Motor Co., Ltd.: *See—*
Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, 4,448,177, Cl. 123-571.000.
Yamato, Akihiro; and Umesaki, Shigeo, 4,448,178, Cl. 123-571.000.

Honeywell Inc.: *See—*
Matthya, Robert J., 4,448,385, Cl. 248-476.000.

Hooper Trading Company: *See—*
Fabricius, Hans-Ake; and Stahn, Roland, 4,448,879, Cl. 435-2.000.

Hoppie, Lyle O., to Eaton Corporation. Method for reducing ignition delay of fuels. 4,448,176, Cl. 123-558.000.

Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, to Toyama Chemical Co., Ltd. 4-[4-(Thiazolyl-amino)benzyl]-2,3-dioxopiperazine derivatives, acid addition salts thereof and process for producing same. 4,448,963, Cl. 544-367.000.

Horiuchi, Tetsuro: *See—*
Mackenzie, John D.; and Horiuchi, Tetsuro, 4,448,599, Cl. 65-21.400.

Horn, Gary R.; and Shipp, Kenneth O., Jr., to International Business Machines Corporation. Method and means for inhibiting interleaving or cave-in among table text columns resulting from column insertion. 4,448,557, Cl. 400-279.000.

Horn, Theodor: *See—*
Seibel, Georg; Mues, Gunther; and Horn, Theodor, 4,449,036, Cl. 219-265.000.

Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., to GAF Corporation. Corrosion inhibitors including a 3-dialkylamino-3-phenylethenylprop-1-yne. 4,448,710, Cl. 252-390.000.

Hort, Eugene V.: *See—*
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., 4,448,905, Cl. 521-164.000.

Hoshii, Toshifumi, to Casio Computer Co., Ltd. Electronic apparatus having a tone generating function. 4,448,104, Cl. 84-1.010.

Hoshizaki Electric Co., Ltd.: *See—*
Hibino, Takashi; and Ito, Yoshinori, 4,448,032, Cl. 62-124.000.

Hosiden Electronics, Co., Ltd.: *See—*
Uno, Hiroshi; and Furuhashi, Kenji, 4,449,022, Cl. 200-153.00J.

Hotchkiss, Kenneth W.; Popken, John A.; and Griffith, Nellie S., to Proto Production Plastics, Inc. Connector cover with multiple mounting means. 4,449,015, Cl. 174-138.00F.

Houseknecht, Gary L.: *See—*
Shaffer, John W.; and Houseknecht, Gary L., 4,449,070, Cl. 313-557.000.

Houser, Edwin A., to Tech Ref, Inc. Sample cell. 4,448,311, Cl. 206-527.000.

Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel: *See—*
von Bergen, Ernst P., 4,448,425, Cl. 277-34.000.

Hoyt, Earl H., Jr.: *See—*
Quartino, Miguel A.; and Hoyt, Earl H., Jr., 4,448,183, Cl. 124-24.00R.

Hoyt/Easton Archery Co.: *See—*
Quartino, Miguel A.; and Hoyt, Earl H., Jr., 4,448,183, Cl. 124-24.00R.

HRI, Inc.: *See—*
Maruhnic, Peter, 4,448,060, Cl. 73-57.000.

Hsu, Charles J. Cartridge containing water expandable members. 4,448,027, Cl. 60-721.000.

Hubele, Adolf: *See—*
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,448,773, Cl. 424-211.000.

Huber, Gerhard: *See—*
Schindler, Peter; and Huber, Gerhard, 4,448,880, Cl. 435-18.000.

Huber-Krattiger, Rudolf. Foldable cantilever. 4,448,380, Cl. 248-235.000.

Huber, Wolfgang: *See—*
Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, 4,448,294, Cl. 192-30.00V.

Hudon, Paul. Operating device for a cylindrical gate. 4,448,389, Cl. 251-62.000.

Huffman, Edgar J. Safety trailer hitch. 4,448,439, Cl. 280-504.000.

Huffman, William A., to Minnesota Mining and Manufacturing Company. Cycloalkyl-type isotropic dyes for liquid crystal display devices. 4,448,492, Cl. 350-346.000.

Hugan Limited: *See—*
Williamson, Hugh E., 4,448,119, Cl. 100-231.000.

Huge, Gerald W., to Professional Positioners, Inc. Tooth positioner with harder areas. 4,448,735, Cl. 264-16.000.

Hughes Aircraft Company: *See—*
Myer, Jon H., 4,449,210, Cl. 367-149.000.

Hughes, Richard H.: *See—*
Assil, Naim Z.; and Hughes, Richard H., 4,449,069, Cl. 313-412.000.

Hughes Tool Company: *See—*
Buske, Robert J., 4,448,270, Cl. 175-342.000.

Hursey, Leslie G.: *See—*
Glass, Cyril; Hursey, Leslie G.; and Inness-Turnbull, Ronald, 4,448,841, Cl. 428-270.000.

Husbands, Charles R., to United States of America, Air Force. Optical power source control system. 4,449,043, Cl. 250-205.000.

Husky Injection Molding Systems Ltd.: *See—*
Schad, Robert D., 4,448,741, Cl. 264-251.000.

Hutchings, Neville: *See—*
Sampson, Michael J.; and Hutchings, Neville, 4,447,984, Cl. 47-58.000.

Hutchins, Nancy K., executrix: *See—*
Hampson, Alfred A.; and Hutchins, Thomas B., deceased, 4,449,042, Cl. 235-464.000.

Hutchins, Robert D. Latent-heat heating and cooling system. 4,448,039, Cl. 62-235.100.

Hutchins, Thomas B., deceased: *See—*
Hampson, Alfred A.; and Hutchins, Thomas B., deceased, 4,449,042, Cl. 235-464.000.

Huttelmaier, Thomas: *See—*
Willms, Lothar; Gunther, Dieter; and Huttelmaier, Thomas, 4,448,731, Cl. 260-545.00R.

Hydro, William R.: *See—*
Davis, George T., deceased; and Hydro, William R., 4,449,005, Cl. 568-59.000.

Iacovangelo, Charles D., to General Electric Company. Cathode composite for molten carbonate fuel cell. 4,448,857, Cl. 429-41.000.

Iannelli, Frank M., to Gerlach Industries Inc. Refrigeration system. 4,448,036, Cl. 62-178.000.

Ichidate, Minoru: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, 4,448,746, Cl. 419-31.000.

Ichiyanagi, Toshikazu: *See—*
Sunouchi, Akio; Suzuki, Ryuji; Ichiyanagi, Toshikazu; and Fujino, Masahisa, 4,448,507, Cl. 354-173.000.

ICI Americas Inc.: *See—*
Lynch, Matthew J., 4,448,778, Cl. 424-260.000.

ICI Australia Limited: *See—*
Mitchell, Kenneth A. W., 4,448,619, Cl. 149-21.000.

Ide, Yuuichi: *See—*
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.

Ido, Akinori: *See—*
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, 4,448,035, Cl. 62-176.600.

Iida, Hiroshi: *See—*
Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, 4,448,614, Cl. 148-12.100.

Iijima, Tetsuya: *See—*
Shimada, Yukio; Iijima, Tetsuya; and Tanino, Mikio, 4,448,034, Cl. 62-161.000.

Ijiri, Hiroshi: *See—*
Nishida, Fumihiko; Yamanaka, Isamu; and Ijiri, Hiroshi, 4,448,518, Cl. 355-72.000.

Ikeda, Eiichi; Kayama, Ikuo; and Izaki, Masahiro, to Oki Densen Kabushiki Kaisha. Pressure-sensitive conductive elastic sheet. 4,448,837, Cl. 428-215.000.

Ikeda, Kazuaki: *See—*
Yonezawa, Setsuo; and Ikeda, Kazuaki, 4,448,553, Cl. 400-121.000.

Ikeda, Nobuo; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Door seal construction for high frequency heating appliance. 4,449,025, Cl. 219-10.55D.

Ikeda, Shoji; Sakamoto, Fumio; Tsukamoto, Goro; and Yamabe, Shigeru, to Kanebo Ltd. Ester of 1,1-dioxopenicillanic acid, and use thereof as β-lactamase inhibitor. 4,448,769, Cl. 424-114.000.

Ikeda, Toshihisa: *See—*
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Ikegami, Tadao; and Miyamoto, Takeshi, to Chlorine Engineers Corp., Ltd. Anode for electrolysis. 4,448,664, Cl. 204-286.000.

Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, to Toyota Jidosha Kogyo Kabushiki Kaisha. Lubricating device for change-speed gearing units. 4,448,089, Cl. 74-467.000.

Ikemoto, Yutaka: *See—*
Washizuka, Isamu; Ikemoto, Yutaka; and Tsuda, Hiroshi, 4,448,542, Cl. 368-63.000.

Illers, Karl H.: *See—*
Stutz, Herbert; Illers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, 4,448,946, Cl. 528-67.000.

Illinois Tool Works Inc.: *See—*
Peterson, Francis C., 4,448,565, Cl. 403-408.000.

Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, to Canon Kabushiki Kaisha. Magnetic color toner. 4,448,870, Cl. 430-107.000.

Imai, Hiroshi: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Imai, Iwao: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,448,181, Cl. 123-620.000.

Imaizumi, Taketo: *See—*
Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, 4,449,063, Cl. 307-456.000.

Imamura, Nobuo: *See—*
Nagai, Kiyoshi; Shinohara, Hiroshi; and Imamura, Nobuo, 4,448,809, Cl. 427-239.000.

Imanishi, Masami: *See—*
Hama, Hiroaki; Imanishi, Masami; Funahashi, Yasuyuki; and Kato, Seiichi, 4,448,037, Cl. 62-188.000.

Imperial Chemical Industries PLC: *See—*
Bruyninckx, Alphonse E.; Brooks, Martin F.; and Thorpe, David, 4,448,938, Cl. 525-457.000.
Whittaker, Graham, 4,448,967, Cl. 546-345.000.

In Situ Technology, Inc.: *See—*
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,448,252, Cl. 166-263.000.

Indak Manufacturing Corp.: *See—*
Halstead, Raymond T.; and Black, Charles E., III, 4,448,390, Cl. 251-176.000.

Inden, Toshikazu: *See—*
Uesugi, Toshiaki; Ogitani, Kazutaka; and Inden, Toshikazu, 4,449,129, Cl. 346-61.000.

Industria del Hierro, S.A.: *See—*
Delgado, Raul A., 4,447,997, Cl. 52-120.000.

Industrial Electronic Engineers, Inc.: *See—*
Altman, Richard M., 4,448,504, Cl. 353-36.000.

Information Retrieval Systems Corp.: *See—*
Axelrod, Norman N.; Haas, Peter; and Noess, Rainer, 4,448,503, Cl. 353-26.00A.

Ingersoll-Rand Company: *See—*
Mudge, Ronald K.; and Rice, Edwin E., 4,448,063, Cl. 73-117.200.

Inness-Turnbull, Ronald: *See—*
Glass, Cyril; Hursey, Leslie G.; and Inness-Turnbull, Ronald, 4,448,841, Cl. 428-270.000.

Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, to Matsushita Electric Industrial Co., Ltd. Image display apparatus. 4,449,148, Cl. 358-230.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,448,655, Cl. 204-129.100.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Traveling-wire electroerosion machining electrode and method. 4,448,655, Cl. 204-129.100.

Inouye, Shigeharu: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Institut Francais du Petrol: *See—*
Rialan, Joseph; and Cretin, Jacques, 4,449,120, Cl. 340-347.0AD.
Rojey, Alexandre; and Cheron, Jacques, 4,448,031, Cl. 62-101.000.

Instrumentation Laboratory Inc.: *See—*
Neri, Bruce P.; Liffmann, Stanley M.; and Bergkuist, Carolyn, 4,448,889, Cl. 436-74.000.

Intel Corporation: *See—*
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.
Pohlman, William, III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., 4,449,184, Cl. 364-200.000.

Intent Patent A.G.: *See—*
Hanlet, Jacques M., 4,448,321, Cl. 220-4.00R.

International Business Machines Corporation: *See—*
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.
Barclay, Donald J.; Morgan, William M.; and Vigar, James M., 4,448,648, Cl. 204-51.000.
Barclay, Donald J.; Morgan, William M.; and Vigar, James M., 4,448,649, Cl. 204-51.000.
Bohlen, Harald; Greschner, Johann; and Nehmiz, Peter, 4,448,865, Cl. 430-5.000.
Brown, William W., Jr.; Dahlke, Gerhard P.; and Lupul, Francis T., 4,448,149, Cl. 118-500.000.
Cuomo, Jerome J.; DiStefano, Thomas H.; and Woodall, Jerry M., 4,448,487, Cl. 350-164.000.
Edgar, Albert D., 4,449,124, Cl. 340-739.000.
Fleek, Arthur E.; and Tseng, Samuel C., 4,448,123, Cl. 101-93.040.
Hanna, Craig A.; and Lancki, Edmund, 4,449,119, Cl. 340-347.0DD.
Hoffman, Charles R., 4,449,205, Cl. 365-182.000.
Horn, Gary R.; and Shipp, Kenneth O., Jr., 4,448,557, Cl. 400-279.000.
Krieg, Michael L., 4,449,052, Cl. 250-568.000.
McClure, Richard G.; Rakes, James M.; and Williams, Errol R., 4,449,033, Cl. 219-216.000.
Melnychenko, Walter, 4,448,474, Cl. 339-103.00M.
Sharon, Andre, 4,448,240, Cl. 165-80.00C.

International Design Corporation: *See—*
Woods, William D.; and Pigman, John H., 4,448,229, Cl. 144-129.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,448,713, Cl. 252-522.00R.
Hall, John B.; and Sprecker, Mark A., 4,449,007, Cl. 568-343.000.
Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, 4,449,008, Cl. 568-353.000.
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.
Tokarzewski, Richard J.; and Schreiber, William L., 4,449,009, Cl. 568-377.000.

International Harvester Co.: *See—*
Harlow, Stanley D.; and Alexander, Donald, 4,448,357, Cl. 241-32.000.

International Lead Zinc Research Organization, Inc.: *See—*
Radtke, Schrade F.; Coutsouradis, Dimitri; and Pelerin, Jacques, 4,448,748, Cl. 420-514.000.

International Telephone and Telegraph Corporation: *See—*
Anspaugh, Dennis J.; and Siegrist, Ronald R., 4,448,381, Cl. 248-394.000.
Matthews, Maurice A.; Cook, Michael J.; and Ivey, David E., 4,448,478, Cl. 350-96.210.

Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Driving method for thermal recording head. 4,449,137, Cl. 346-76.0PH.

Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Process for the preparation of cross-linked, sulfonated styrene polymers. 4,448,935, Cl. 525-343.000.

Irelan, John A.; and Peterson, William E., to Coachmen Industries, Inc. Apparatus and method for raising and lowering both roof and side walls of a recreational vehicle. 4,448,453, Cl. 296-27.000.

Irie, Nobuhiko: *See—*
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Irikura, Tsutomu; Suzue, Seigo; Ito, Akira; and Koga, Hiroshi, to Kyorin Seiyaku Kabushiki Kaisha. Substituted quinoline carboxylic acid derivatives. 4,448,962, Cl. 544-362.000.

Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikazu, to Mita Industrial Company Limited. Image forming apparatus. 4,448,519, Cl. 355-73.000.

Ishida, Tokuzi; and Yamamoto, Wataru, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Throttle control system for internal combustion engines. 4,448,158, Cl. 123-179.00G.

Ishida, Tokuzi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Intake passage construction for internal combustion engines. 4,448,164, Cl. 123-432.000.

Ishigaki, Yukinobu; Haramoto, Yutaka; and Totsuka, Kaoru, to Victor Company of Japan, Ltd. Noise reducing apparatus. 4,449,106, Cl. 333-14.000.

Ishihama, Hiroshi: *See—*
Shiratsuchi, Masami; Ishihama, Hiroshi; and Uchida, Yasumi, 4,448,989, Cl. 564-165.000.

Ishii, Masanori; and Ishikawa, Hiroichi, to Toko, Inc. Switching regulator. 4,449,175, Cl. 363-26.000.

Ishii, Tamaki: *See—*
Terada, Yutaka; Takahashi, Yukoh; Yachigo, Shinichi; and Ishii, Tamaki, 4,448,915, Cl. 524-93.000.

Ishikawa, Hiroichi: *See—*
Ishii, Masanori; and Ishikawa, Hiroichi, 4,449,175, Cl. 363-26.000.

Ishikawa, Masaaki: *See—*
Watanabe, Teruo; and Ishikawa, Masaaki, 4,447,959, Cl. 33-178.00E.

Ishikawa, Takuma, to Minolta Camera Kabushiki Kaisha. Control arrangement for continuous copying. 4,448,515, Cl. 355-14.00R.

Ishikawa, Yasuaki; Ajiro, Shuichi; and Wada, Masami, to Hitachi Construction Machinery Co., Ltd. Cutter head for pit-boring machine. 4,448,269, Cl. 175-335.000.

Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, to Nissan Motor Company, Limited. Plasma ignition system for an internal combustion engine. 4,448,181, Cl. 123-620.000.

Ishiwata, Junichi, to Canon Kabushiki Kaisha. Solar cell power supply device. 4,449,057, Cl. 307-43.000.

Isobe, Takashi; and Kamata, Shigeru, to Canon Kabushiki Kaisha. Zoom lens assembly having a mechanical lens system mounting mechanism operative to enable closeup operation. 4,448,496, Cl. 350-430.000.

Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, to Toyota Jidosha Kabushiki Kaisha. Monolithic catalyst catalytic converter with catalyst holding expansible retainer ring. 4,448,754, Cl. 422-179.000.

Itayama, Yoshiharu: *See—*
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Ito, Akira: *See—*
Irikura, Tsutomu; Suzue, Seigo; Ito, Akira; and Koga, Hiroshi, 4,448,962, Cl. 544-362.000.

Ito, Masanori: *See—*
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.

Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Hirai, Kiyomiki, to General Electric Company. Latent curing agents for epoxy resins. 4,448,949, Cl. 528-99.000.

Ito, Shunsuke: *See—*
Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, 4,448,788, Cl. 424-313.000.

Ito, Yoshinori: *See—*
Hibino, Takashi; and Ito, Yoshinori, 4,448,032, Cl. 62-124.000.

Itoh, Toshihiko: *See—*
Tokitsu, Naoki; Itoh, Toshihiko; and Fujiwara, Toshitaka, 4,449,206, Cl. 365-229.000.

Itsumi, Manabu: *See—*
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, 4,448,800, Cl. 427-39.000.
Tsuchiya, Toshiaki; and Itsumi, Manabu, 4,449,142, Cl. 357-23.000.

Ivanov, Konstantin, to Ethicon, Inc. Surgical clip applier with circular clip magazine. 4,448,193, Cl. 128-326.000.

Ivey, David E.: *See—*
Matthews, Maurice A.; Cook, Michael J.; and Ivey, David E., 4,448,478, Cl. 350-96.210.

Iwasa, Yasuo: *See—*
Yamamuro, Kiyohiko; Hirano, Shigeo; and Iwasa, Yasuo, 4,448,878, Cl. 430-507.000.

Iyehara, Sadahiro: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,449,148, Cl. 358-230.000.

Izaki, Masahiro: *See—*
Ikeda, Eiichi; Kayama, Ikuo; and Izaki, Masahiro, 4,448,837, Cl. 428-215.000.

J. W. Froehlich Machinenfabrik GmbH: *See—*
Meurer, Karl-Heinz, 4,448,065, Cl. 73-119.00R.

Jabsen, Felix S., to Babcock & Wilcox Company, The. Helical steam generator tube support. 4,447,942, Cl. 29-157.400.

Jackowski, Ronald A.; and Peisker, Glenn W., to Chicago Rawhide Manufacturing Company. Unitized oil seals. 4,448,426, Cl. 277-37.000.

Jacobson, Carl C., Jr.; and Manning, Mark C., to Crafco, Inc. Molten asphalt spray mechanism. 4,448,352, Cl. 239-125.000.

Jacobson, Carl L.: *See—*
Gragg, Frederick M.; Shen, Jian C.; and Jacobson, Carl L., 4,448,249, Cl. 166-251.000.

Jaffe, Michael B.; Luper, Charles R.; Mabry, Eric; and Reid, Howard J., to Sensormedics Corporation. Respiratory gas analysis instrument having improved volume calibration method and apparatus. 4,448,058, Cl. 73-23.000.

Jakob, Wolfgang: *See—*
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrichrich, 4,448,942, Cl. 525-540.000.

Jakubowski, Heinz: *See—*
Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, 4,448,498, Cl. 350-516.000.

Jakubowski, James J.; Meyer, Victor E.; and Pelletier, Ronald R., to Dow Chemical Company, The. Halogenated polar polymer treatment of inorganic fillers. 4,448,845, Cl. 428-404.000.

Jalil, Asjed A.; Winslow, Earl S., Jr.; and Gage, Charles H., to Morgan Construction Company. Apparatus for combined hot rolling and treating steel rod. 4,448,401, Cl. 266-78.000.

Jambor, Arno: *See—*
Schuech, Siegmund; Nagele, Karl-Heinz; Jambor, Arno; and Sacco, Bruno, 4,447,928, Cl. 15-250.210.

James Howden & Company Limited: *See—*
White, William W.; and MacDonald, Ian N., 4,448,552, Cl. 384-404.000.

James River-Dixie/Northern, Inc.: *See—*
Klowak, Bernard G., 4,448,638, Cl. 162-112.000.

Janata, Jiri: *See—*
Kratochvil, Jiri; Ho, Nelson; and Janata, Jiri, 4,449,011, Cl. 174-52.0PE.

Jannard, James H., to Oakley, Inc. Goggle. 4,447,914, Cl. 2-432.000.

Jantzen, Daniel E.: *See—*
Polak, Paul R.; and Jantzen, Daniel E., 4,448,110, Cl. 91-275.000.

Japan Exlan Company Limited: *See—*
Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, 4,448,740, Cl. 264-182.000.

Japan Marine Machinery Development Association: *See—*
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Abe, Mitsuo; Tsuchikawa, Syuji; Fukuta, Teizo; and Asakawa, Tsugio, 4,448,580, Cl. 525-71.000.

Jasserand, Daniel: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,448,777, Cl. 424-250.000.

Jeck, Arnulf: *See—*
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.

Jenkins, John W.; and Wolstenholme, John, to Johnson Matthey Public Limited Company. Colored inorganic complex for use as a pigment and compositions containing it. 4,448,608, Cl. 106-292.000.

Jeppsson, Jan B.; and Pollak, Zoltan, to AB Akerlund & Rausing. Container closure having weaker opening means. 4,448,324, Cl. 220-266.000.

Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, to Heidelberger Druckmaschinen. Apparatus for ensuring the quality of printed products. 4,448,533, Cl. 356-416.000.

Jessop, Thomas C., to Eastman Kodak Company. Incremental metering device having reset means. 4,448,335, Cl. 222-391.000.

Jimison, Holly B.: *See—*
Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., 4,448,192, Cl. 128-204.260.

JOBO Labortechnik GmbH & Co. KG.: *See—*
Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., 4,448,365, Cl. 242-71.800.

Johannes Schaefer vormals Stettiner Schraubenwerke GmbH & Co. KG: *See—*
Funk, Hans G.; Neumann, Frank; and Schaefer, Dankmar, 4,448,447, Cl. 285-4.000.

Johannesen, Donald D.: *See—*
Ritsema, Irving R.; and Johannesen, Donald D., 4,448,291, Cl. 188-218.0XL.

John, Sam J.: *See—*
Lollis, Glen R.; Marler, Marvin G.; Car, Joe P.; and John, Sam J., 4,448,340, Cl. 228-29.000.

Johnson, David E., to Mobil Oil Corporation. Method and apparatus for producing foamed products from a mix of reclaimed plastic foam material and foamable virgin plastic resin. 4,448,737, Cl. 264-53.000.

Johnson, David F., to American Artos Corporation. Process for continuous thermosol dyeing of textile fabrics. 4,448,582, Cl. 8-149.100.

Johnson, J. Ralph. Method of and apparatus for the tape loading and use of a single turntable in the rendition of a taped program. 4,448,362, Cl. 242-55.19R.

Johnson, James H. Automatic or semi-automatic firearm. 4,448,109, Cl. 89-141.000.

Johnson, James R. Boot for walking on soft materials. 4,447,969, Cl. 36-116.000.

Johnson, Leopold J.; and Carson, David L., to United States of America, Navy. Sonar compensation transformer. 4,449,068, Cl. 310-316.000.

Johnson Matthey Public Limited Company: *See—*
Jenkins, John W.; and Wolstenholme, John, 4,448,608, Cl. 106-292.000.

Johnson, Robert C.; Nation, Thomas C.; and Perry, David L., to Ford Motor Company. Ignition system tester. 4,449,100, Cl. 324-378.000.

Johnson, Steven L.; McLaren, George; and Robertson, George H., to Sun Chemical Corporation. Conditioning crude phthalocyanine pigments. 4,448,607, Cl. 106-19.000.

Johnston, James D.: *See—*
Flanagan, James L.; and Johnston, James D., 4,449,190, Cl. 364-513.500.

Johnston, Robert F.: *See—*
Frystak, Richard; Johnston, Robert F.; and Flint, John R., 4,448,364, Cl. 242-674.000.

Jones, John E.: *See—*
Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., 4,447,930, Cl. 15-322.000.

Jones, Larry L., Jr.; and Cockrell, Star D. Adjustable music/book holder. 4,448,384, Cl. 248-443.000.

Jones, Robert A., to Catalog Corporation of America, Inc. Continuous form book processing kit. 4,448,443, Cl. 281-5.000.

Jones, Stanley P.: *See—*
Braithwaite, David; and Jones, Stanley P., 4,448,600, Cl. 65-360.000.

Jop, Fiorenzo. Electronic circuit for controlling the supply voltage of electromagnets, electric motors, resistors, in single- and three-phase systems. 4,449,054, Cl. 307-31.000.

Joseph, David A.; and Eldredge, Peter G., to KLA Instruments Corporation. Automatic photomask inspection method and system. 4,448,532, Cl. 356-394.000.

Joseph, Joseph P.: *See—*
Duaza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,448,973, Cl. 548-362.000.

Jullien, Renee; and Benayache, Samir, to Roussel Uclaf. Preparation of cis ester-nitrile cyclopropane compounds. 4,448,728, Cl. 260-464.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Moritoki, Masato; Fujikawa, Takao; and Miyanaga, Junichi, 4,448,747, Cl. 419-49.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,448,342, Cl. 228-102.000.
Baba, Kiyokazu, 4,448,056, Cl. 72-422.000.
Maeda, Fujio, 4,448,293, Cl. 192-3.300.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Nakaho, Junichi, 4,448,488, Cl. 350-278.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Arakawa, Hiroshi, 4,448,222, Cl. 139-435.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kondo, Haruyoshi; and Takeuchi, Masaharu, 4,448,059, Cl. 73-35.000.

Kaes, Gertrude, to Lang & Co., Chemisch-Technische Produkte Kommanditgesellschaft. Freezing-point-lowering composition and method. 4,448,702, Cl. 252-70.000.

Kaga, Takashi; and Kobayashi, Nobuo, to Tomy Kogyo Co., Inc. Cartesian diving toy. 4,448,409, Cl. 272-8.00N.

Kageyama, Masahide; and Fujita, Takeshi, to Canon Kabushiki Kaisha. Coating method. 4,448,798, Cl. 427-8.000.

Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, to Mitsubishi Chemical Ind., Ltd.; and Asia Oil Company Limited. Hydrogenation catalyst for desulfurization and removal of heavy metals. 4,448,896, Cl. 502-314.000.

Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, to Murata Manufacturing Co., Ltd. Piezoelectric loudspeaker. 4,449,019, Cl. 179-110.00A.

Kali-Chemie Pharma GmbH: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,448,777, Cl. 424-250.000.

Kalkhof, Bernd: *See—*
Bodig, Bernd; Hohne, Gerd; and Kalkhof, Bernd, 4,448,180, Cl. 123-618.000.

Kamata, Shigeru: *See—*
Isobe, Takashi; and Kamata, Shigeru, 4,448,496, Cl. 350-430.000.
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.

Kamatani, Yoshio: *See—*
Miyake, Jun-ichi; Yamazaki, Kyuya; and Kamatani, Yoshio, 4,448,947, Cl. 528-73.000.

Kamhi, Ralph. Device for processing paper money. 4,449,050, Cl. 250-455.100.

Kamio, Kazuyoshi: *See—*
Fujikawa, Tsuneo; Kamio, Kazuyoshi; and Takagishi, Haruyoshi, 4,448,341, Cl. 228-45.000.

Kane, Michael W. Wire stripper. 4,447,949, Cl. 30-90.600.

Kane, Thomas J.: *See—*
Buckner, Carrol E.; Cook, Clarence G.; and Kane, Thomas J., 4,448,185, Cl. 126-193.000.

Kanebo Ltd.: *See—*
Ikeda, Shoji; Sakamoto, Fumio; Tsukamoto, Goro; and Yamabe, Shigeru, 4,448,769, Cl. 424-114.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, 4,448,901, Cl. 521-60.000.

Kanmoto, Yoshiaki: *See—*
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.

Kansai Paint Company: *See—*
Murase, Heihachi, 4,448,919, Cl. 524-394.000.

Kansas State University Research Foundation: *See—*
Fan, Liang-tseng; and Walawender, Walter P., 4,448,589, Cl. 48-197.00R.

Kanzaki, Michio, to Fuji Xerox Co., Ltd. Subassembly withdrawing device in a copying machine. 4,448,523, Cl. 355-133.000.

Kapmeyer, Wolfgang: *See—*
Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, 4,448,908, Cl. 523-201.000.

Kapolas, William J., to Continental White Cap, Inc. Closure with plastisol liner defining a retaining bead. 4,448,320, Cl. 215-346.000.

Karanewsky, Donald S., to E. R. Squibb & Sons, Inc. Phosphinylmethylaminocarbonyl imino acid compounds useful for treating hypertension. 4,448,772, Cl. 424-200.000.

Karasuno, Isamu: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, 4,448,746, Cl. 419-31.000.

Karger, Ludwig; and Lippert, Hans-Joachim, to Kraftwerk Union Aktiengesellschaft. Method of loading and/or unloading a nuclear reactor, and support member, especially for the foregoing method. 4,448,744, Cl. 376-262.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Mista, Kresimir; and Hohne, Hans-Jurgen, 4,448,046, Cl. 66-205.000.

Karl Schmidt GmbH: *See—*
Bauer, Wolfgang; and Grosser, Werner, 4,448,091, Cl. 74-552.000.

Karnofsky, George B., to Dravo Corporation. Process for solvent extraction of bitumen from oil sand. 4,448,667, Cl. 208-11.0LE.

Kasai, Shozo: *See—*
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.

Kasegawa, Norimichi: *See—*
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.

Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, to Hitachi, Ltd. Fuel injection apparatus. 4,448,172, Cl. 123-494.000.

Katagiri, Masayoshi; and Kondo, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Caliper housing in a disc brake. 4,448,287, Cl. 188-73.310.

Katayama, Nobuaki: *See—*
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,448,089, Cl. 74-467.000.

Katayama, Shitomi: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Kathawala, Faizulla G.; and Heider, John G., to Sandoz, Inc. N-Unsaturated fatty acid amides of tryptophan ester homologues and anti-cholesteric use thereof. 4,448,785, Cl. 424-274.000.

Kato, Seiichi: *See—*
Hama, Hiroaki; Imanishi, Masami; Funahashi, Yasuyuki; and Kato, Seiichi, 4,448,037, Cl. 62-188.000.

Kato, Tomokazu, to Ricoh Company, Ltd. Method of processing medium tone picture. 4,449,150, Cl. 358-283.000.

Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, to Canon Kabushiki Kaisha. Interchangeable lens barrel with signal transfer contacts. 4,448,509, Cl. 354-286.000.

Katz, Michael: *See—*
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, 4,448,803, Cl. 427-58.000.

Kauffman, Ivan L.; and Allen, Robert J., to Ex-Cell-O Corporation. Forming, filling and sealing machine. 4,448,012, Cl. 53-563.000.

Kauffman, Robert E.; Rhine, Wendell E.; and Saba, Costandy S., to United States of America, Air Force. Method for the particle size independent spectrometric determination of metal particles in lubricating oils and hydraulic fluids. 4,448,887, Cl. 436-60.000.

Kaufman, Lance R. Compact circuit package having an improved lead frame connector. 4,449,165, Cl. 361-386.000.

Kawabe, Toshihiko: *See—*
Amemori, Koichi; and Kawabe, Toshihiko, 4,448,166, Cl. 123-445.000.

Kawaguchi, Katuhiko: *See—*
Matsuda, Susumu; and Kawaguchi, Katuhiko, 4,448,559, Cl. 400-637.400.

Kawaguchi, Shoichi; and Sugiyama, Hiroyuki, to Komori Printing Machinery Co., Ltd. Sheet-fed rotary printing machine with a turnover mechanism. 4,448,125, Cl. 101-185.000.

Kawakami, Susumu: *See—*
Totoki, Takashi; and Kawakami, Susumu, 4,449,060, Cl. 307-247.00R.

Kawakami, Toshihiro: *See—*
Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, 4,448,896, Cl. 502-314.000.

Kawamura, Fumio: *See—*
Motojima, Kenji; and Kawamura, Fumio, 4,448,711, Cl. 502-74.000.

Kawamura, Masaharu: *See—*
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.

Kawamura, Tamio: *See—*
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.

Kawamura, Yoshimi: *See—*
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Kawauchi, Noboru: *See—*
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.

Kawazu, Motoaki: *See—*
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.

Kawneer Company, Inc.: *See—*
Whitmyer, Wayne E.; and Matthews, Thomas E., 4,448,001, Cl. 52-209.000.

Kayama, Ikuo: *See—*
Ikeda, Eiichi; Kayama, Ikuo; and Izaki, Masahiro, 4,448,837, Cl. 428-215.000.

KB Denver, Inc.: *See—*
Stracener, Steve W., 4,449,024, Cl. 200-317.000.

Keck, Dale R.: *See—*
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.

Keeling, Ronald J.; Roe, Jin-Young K.; and Mollmann, Henry C., to American Cyanamid Company. Hydroxylalkylmelamine containing resins and their use in heat and pressure consolidated laminates. 4,448,849, Cl. 428-503.000.

Keever, Joseph M.: *See—*
MacFadden, John A.; Keever, Joseph M.; and Zisa, William J., 4,449,094, Cl. 324-152.000.

Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., to Platt Saco Lowell Corporation. Method and apparatus for feeding, weighing and releasing fiber. 4,448,272, Cl. 177-1.000.

Keller, Hans-Hermann: *See—*
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, 4,448,441, Cl. 280-691.000.

Keller, Jean-Paul. Process for quick freezing and conditioning individual products, and apparatus for practicing this process. 4,448,029, Cl. 62-63.000.

Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P. Ore-smelting electrical furnace bath. 4,449,221, Cl. 373-44.000.

Kelley, Brian D.; and Stewart, Patrick H., to CL Industries, Inc. Method for forming sand cores and molds. 4,448,234, Cl. 164-16.000.

Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., to Cubic Western Data. Touch panel passenger self-ticketing system. 4,449,186, Cl. 364-407.000.

Kendall Company, The: *See—*
Taylor, Glenn N., 4,447,939, Cl. 128-760.000.

Kennel, John M., to United States of America, Air Force. Temperature controlled gyro. 4,448,086, Cl. 74-5.00R.

Kent, Willard L.: *See—*
Hill, Frank W.; May, William L.; and Kent, Willard L., 4,449,116, Cl. 340-909.000.

Kern, Josef, to Heinrich Josef Winter, Firma. Screw cap. 4,448,319, Cl. 215-329.000.

Kernforschungszentrum Karlsruhe GmbH: *See—*
Kiehling, Brigitte; and Holl, Wolfgang, 4,448,693, Cl. 210-673.000.

Kiba, Yasuo: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Kidwell, William J. Dimensionally woven composite. 4,448,832, Cl. 428-113.000.

Kiehling, Brigitte; and Holl, Wolfgang, to Kernforschungszentrum Karlsruhe GmbH. Method for partially desalinating water with a weakly acid and strongly basic ion exchanger materials and subsequently regenerating the ion exchanger materials. 4,448,693, Cl. 210-673.000.

Kihara, Naoto: *See—*
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.

Kijima, Shizumasa: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.

Kiko Co., Ltd.: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Kikuchi, Ko: *See—*
Endo, Haruyoshi; Makimoto, Mitsuo; Kikuchi, Ko; and Yamashita, Sadahiko, 4,449,108, Cl. 333-202.000.

Kikuchi, Yoshiki: *See—*
Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,152, Cl. 358-296.000.

Killat, George R.; and Conklin, Jerry R., to Dow Chemical Company, The. Use of quaternized polyamidoamines as demulsifiers. 4,448,708, Cl. 252-344.000.

Kim, Bongsub, to BASF Wyandotte Corporation. Defoaming detergent additives containing bleached tallow acid phosphates. 4,448,706, Cl. 252-108.000.

Kimura, Junichi: *See—*
Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, 4,448,177, Cl. 123-571.000.

Kimura, Tomoaki, to Hitachi, Ltd. Apparatus for producing thin metal sheet. 4,448,236, Cl. 164-423.000.

Kindle, Edwin: *See—*
Graf, Eugen; and Kindle, Edwin, 4,448,338, Cl. 227-8.000.

King, H. Hobson, to Mobil Oil Corporation. Method of making a load bearing surface using phosphogypsum and flyash. 4,448,566, Cl. 404-31.000.

King, James A., Jr.: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.

King, Richard M., to Procter & Gamble Company, The. Catalytic hydrogenation of N,N-disubstituted amides to amines. 4,448,998, Cl. 564-488.000.

King Stone Co., Ltd.: *See—*
Sup, Kim Y., 4,448,305, Cl. 206-315.800.

Kinney, Timothy J.: *See—*
Doty, Warren R.; and Kinney, Timothy J., 4,448,811, Cl. 427-304.000.

Kinoshita, Akira: *See—*
Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.

Kinugawa Rubber Industrial Co., Ltd.: *See—*
Yamaguchi, Toshiaki, 4,448,835, Cl. 428-147.000.

Kirchbrucher, Rudiger: *See—*
Becker, Kunibert; Kirchbrucher, Rudiger; and Elsner, Burckhard, 4,448,263, Cl. 173-34.000.

Kirchhoff, Werner: *See—*
Schulte, Heinz; and Kirchhoff, Werner, 4,448,862, Cl. 429-136.000.

Kirin Beer Kabushiki Kaisha: *See—*
Miyazawa, Takashi, 4,448,526, Cl. 356-237.000.

Kirisawa, Tadashi: *See—*
Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, 4,448,070, Cl. 73-204.000.

Kiriseko, Tadashi: *See—*
Shibamata, Yoshiyuki; Onodera, Hideo; and Kiriseko, Tadashi, 4,449,037, Cl. 219-388.000.

Kirk, James F.: *See—*
Yannas, Ioannis V.; and Kirk, James F., 4,448,718, Cl. 260-123.700.

Kirkland, Joseph J.: *See—*
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,448,679, Cl. 209-155.000.

Kirwan, Robin W.: *See—*
Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., 4,448,913, Cl. 523-455.000.

Kishimoto, Sumiko: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Torque sensor. 4,448,275, Cl. 180-79.100.

Kitagawa, Takaichi: *See—*
Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikazu, 4,448,519, Cl. 355-73.000.

Kitamoto, Tatsuji: *See—*
Yamada, Yasuyuki; Shirahata, Ryuji; Yanai, Akio; and Kitamoto, Tatsuji, 4,448,843, Cl. 428-336.000.

Kiwala, Jacob: *See—*
Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, 4,449,008, Cl. 568-353.000.

KLA Instruments Corporation: *See—*
Joseph, David A.; and Eldredge, Peter G., 4,448,532, Cl. 356-394.000.

Klaubert, Dieter H.; Kreft, Anthony F., III; and Bell, Stanley C., to American Home Products Corporation. Leucotriene antagonists. 4,448,729, Cl. 260-465.00D.

Klees, Garry W., to Boeing Company, The. Turbine bypass turbojet with mid-turbine reingestion and method of operating the same. 4,448,019, Cl. 60-204.000.

Klein, Andrew: *See—*
Ozari, Yehuda; Nelsen, Suzanne B.; and Klein, Andrew, 4,448,932, Cl. 525-78.000.

Klein, Manfred: *See—*
Hennig, Kurt; Klein, Manfred; and Nuspl, Matthias, 4,447,929, Cl. 15-256.500.

Klein, Steven H.; and Smith, Alfred H., Jr., to General Electric Company. Shelf-stable catalyst component for RTV silicone composition. 4,448,928, Cl. 524-864.000.

Kleinecke, John D.; and Little, Thomas R., to Siemens-Allis, Inc. Defeatable handle and interlock for electrical equipment enclosure. 4,448,450, Cl. 292-210.000.

Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Substituted methyl isopropyl cyclohexenones, organoleptic uses thereof and process for preparing same. 4,449,008, Cl. 568-353.000.

Klenk, Dennis C.: *See—*
Smith, Paul K.; and Klenk, Dennis C., 4,448,764, Cl. 424-1.100.

Kling, Larry K., to Black & Decker Manufacturing Company, The. One shot firing circuit for power tools. 4,449,161, Cl. 361-152.000.

Klinner, Wilfred E., to National Research Development Corporation. Apparatus for cutting crop. 4,448,014, Cl. 56-13.600.

Klockner-Werke AG: *See—*
Fink, Lothar, 4,448,620, Cl. 156-125.000.

Klowak, Bernard G., to James River-Dixie/Northern, Inc. Paper webs having high bulk and absorbency and process and apparatus for producing the same. 4,448,638, Cl. 162-112.000.

KMS Fusion, Inc.: *See—*
Henderson, Timothy M., 4,448,884, Cl. 435-241.000.

Knapp, George W.; Spaulding, Bernard B.; and Tolbert, John T., to NCR Corporation. Full duplex integrated circuit communication controller. 4,449,202, Cl. 364-900.000.

Knapp, Richard D., to McDonnell Douglas Corporation. Method of identifying hard targets. 4,448,106, Cl. 89-1.00A.

Kniss, Helmut: *See—*
Engelbrecht, Hans-Christian; Kniss, Helmut; and Wessel, Wolf, 4,448,067, Cl. 73-119.00A.

Knorr, Gordon D.: *See—*
Wetmore, Sherman B.; and Knorr, Gordon D., 4,448,277, Cl. 180-127.000.

Knothe, Frank: *See—*
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, 4,448,441, Cl. 280-691.000.

Knothe, George T.; and Mayfield, Robert A., to Unit Rig & Equip. Co. Shut-off cylinder for a supply accumulator of a hydraulic brake system. 4,448,458, Cl. 303-84.00A.

Kobari, Katsuo: *See—*
Kozai, Yoshinori; Kobari, Katsuo; and Sakamoto, Keiji, 4,449,177, Cl. 363-126.000.

Kobayashi, Nobuo: *See—*
Kaga, Takashi; and Kobayashi, Nobuo, 4,448,409, Cl. 272-8.00N.

Kobayashi, Ryohei: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,448,617, Cl. 148-36.000.

Kochert, Wilfried: *See—*
Bernhardt, Lutz; and Kochert, Wilfried, 4,449,239, Cl. 382-9.000.

Kochka, Edgar L.; Burack, Robert D.; and Pfeiffer, Kenneth E., to Westinghouse Electric Corp. Sleeve preparation method. 4,448,343, Cl. 228-205.000.

Kodal, Tassilo; and Kraus, Hubert, to Siemens Aktiengesellschaft. Electrical component member which is mounted in a housing centered and adjusted. 4,448,265, Cl. 174-52.0PE.

Koehler, Toivo: *See—*
Rotolante, Ralph A.; and Koehler, Toivo, 4,449,044, Cl. 250-211.00J.

Koerner, Ralph J., to Minnesota Mining and Manufacturing Company. Apparatus for detecting ferromagnetic material. 4,449,115, Cl. 340-941.000.

Koga, Hiroshi: *See—*
Irikura, Tsutomu; Suzue, Seigo; Ito, Akira; and Koga, Hiroshi, 4,448,962, Cl. 544-362.000.

Koga, Itsuo: *See—*
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.

Kohler, Andreas, to Automation Industrielle SA. Metal-plastic laminate tube construction with plastic tube head. 4,448,829, Cl. 222-107.000.

Kohler, Kurt-Albrecht: *See—*
Trinks, Walter; and Kohler, Kurt-Albrecht, 4,448,128, Cl. 102-476.000.

Koike, Takashi: *See—*
Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, 4,448,921, Cl. 524-443.000.

Kojima, Masaru: *See—*
Mochida, Shigeru; and Kojima, Masaru, 4,448,828, Cl. 428-36.000.

Kojima, Yutaka: *See—*
Komada, Hideaki; Kojima, Yutaka; and Ohie, Tomonori, 4,448,168, Cl. 123-446.000.

Kolitsch, Jorg; Sparwell, Norbert; and Brockmann, Eugen, to Battelle-Institut e.V. Method and device for the dynamic and density-independent determination of mass flow. 4,448,081, Cl. 73-861.030.

Komada, Hideaki; Kojima, Yutaka; and Ohie, Tomonori, to Diesel Kiki Company, Ltd. Fuel injection system. 4,448,168, Cl. 123-446.000.

Komai, Kensaku: *See—*
Ohnishi, Souichi; and Komai, Kensaku, 4,449,154, Cl. 360-51.000.

Komori Printing Machinery Co., Ltd.: *See—*
Kawaguchi, Shoichi; and Sugiyama, Hiroyuki, 4,448,125, Cl. 101-185.000.
Uno, Chiyomatsu; and Muto, Hiroshi, 4,448,121, Cl. 101-76.000.

Kondo, Eiji: *See—*
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Kondo, Haruyoshi; and Takeuchi, Masaharu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Engine vibration sensor. 4,448,059, Cl. 73-35.000.

Kondo, Shigeru: *See—*
Nishino, Hisao; and Kondo, Shigeru, 4,449,173, Cl. 363-21.000.

Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive composition and electrophotographic light-sensitive material using said composition. 4,448,869, Cl. 430-83.000.

Kondo, Toshio: *See—*
Katagiri, Masayoshi; and Kondo, Toshio, 4,448,287, Cl. 188-73.310.

Kondo, Yasuji: *See—*
Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, 4,448,788, Cl. 424-313.000.

Kondo, Yoshiteru, to USM Corporation. Capacitor charging circuit for discharge type welding tool. 4,449,092, Cl. 323-271.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fujii, Yozo; Sakaguchi, Hirofumi; and Hirabayashi, Tsugio, 4,448,514, Cl. 355-8.000.

Masuda, Keiji, 4,448,511, Cl. 355-3.0CH.

Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.

Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.

Kon'kov, Nikolaj G.: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Konnai, Makoto: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Konrad, Charles E.; and Clark, Robert C., deceased (by Clark, Jean B., executrix), to General Electric Company. Electric vehicle protection scheme. 4,449,080, Cl. 318-139.000.

Koomey, Inc.: *See—*
LeMoine, Joseph L., 4,448,394, Cl. 254-271.000.

Kopainsky, Jugen, to BBC Brown, Boveri & Company Limited. Data transmission network employing optical wave guide. 4,449,244, Cl. 455-603.000.

Korf Engineering GmbH: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Korhonen, Annika: *See—*
Sarkki, Marja-Leena; Soderstrom, Martti; Maunula, Hannu; and Korhonen, Annika, 4,448,790, Cl. 426-52.000.

Kornfeld, Edmund C.: *See—*
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,448,990, Cl. 564-167.000.

Kortering, Randall L.; and Becker, Danny J., to Caterpillar Tractor Co. Roadable track shoe with sealed grouser. 4,448,459, Cl. 305-38.000.

Korting, Reinhard: *See—*
Mollenkopf, Hans; Wurr, Jurgen; and Korting, Reinhard, 4,447,966, Cl. 34-108.000.

Kosoff, Harold. Electrically-powered baby swing. 4,448,410, Cl. 272-86.000.

Kossel, Horst K., to Paradox International, Incorporated. Internal combustion engine. 4,448,154, Cl. 123-58.0BB.

Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, to Krauss-Maffei Aktiengesellschaft. Round-handling system for a mobile weapon. 4,448,107, Cl. 89-36.00K.

Kotecki, Damian J., to Teledyne Industries, Inc. Tubular composite arc welding electrode for vertical up welding of stainless steel and nickel-base alloys. 4,449,031, Cl. 219-146.230.

Koumura, Takashi: *See—*
Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, 4,448,177, Cl. 123-571.000.

Kousek, Heinz; and Wohlwend, Ernst, to Hilti Aktiengesellschaft. Motorized hand tool for drilling. 4,448,261, Cl. 173-12.000.

Kovacs, Jenoe: *See—*
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.

Kowa Company, Ltd.: *See—*
Shiratsuchi, Masami; Ishihama, Hiroshi; and Uchida, Yasumi, 4,448,989, Cl. 564-165.000.

Koyama, Tohru; Wajima, Motoyo; and Mukai, Junji, to Hitachi, Ltd. Thermosetting resin composition and prepolymer thereof. 4,448,940, Cl. 525-504.000.

Kozai, Yoshinori; Kobari, Katsuo; and Sakamoto, Keiji, to Fujitsu Fanuc Limited. Discharging circuit for power source device with rectifier circuit. 4,449,177, Cl. 363-126.000.

Kozawa, Tadashi, to Aisan Industry Co., Ltd. Canister for volatile fuel controlling device. 4,448,594, Cl. 55-387.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Karger, Ludwig; and Lippert, Hans-Joachim, 4,448,744, Cl. 376-262.000.

Kraska, John L., to National Can Corporation. Metal container end. 4,448,322, Cl. 220-67.000.

Kratochvil, Jiri; Ho, Nelson; and Janata, Jiri, to Critikon, Inc. Method and apparatus for encapsulation of chemically sensitive field effect device. 4,449,011, Cl. 174-52.0PE.

Kraus, Hubert: *See—*
Kodal, Tassilo; and Kraus, Hubert, 4,448,265, Cl. 174-52.0PE.

Krause, Gerhard, to Erwin-Sick GmbH - Optik-Elektronik. Spectral analysis of a beam of radiation. 4,448,529, Cl. 356-310.000.

Krauss-Maffei Aktiengesellschaft: *See—*
Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, 4,448,107, Cl. 89-36.00K.

Kreft, Anthony F., III: *See—*
Klaubert, Dieter H.; Kreft, Anthony F., III; and Bell, Stanley C., 4,448,729, Cl. 260-465.00D.

Kremer, Walter: *See—*
Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., 4,448,365, Cl. 242-71.800.

Krieg, Michael L., to International Business Machines Corporation. Method of printing and detecting optimum bar code test patterns. 4,449,052, Cl. 250-568.000.

Krishnan, Sivaram; and Lazear, Nelson R., to Mobay Chemical Corporation. Polycarbonate blends having an improved impact strength. 4,448,930, Cl. 525-67.000.

Kristinsson, Haukur, to Ciba-Geigy Corporation. Process for the preparation of 1,3,4-thiadiazolone derivatives. 4,448,968, Cl. 548-136.000.

Kromrey, Robert V., to United States of America, Air Force. Low cost thermal protection system processing. 4,448,742, Cl. 264-270.000.

Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik: *See—*
Reich, Gerhard; and Wenner, Michael, 4,448,300, Cl. 198-633.000.

Kroon, Dirk J.; and Robers, Klaas H. J., to U.S. Philips Corporation. Device for interactive video playback. 4,449,198, Cl. 364-900.000.

Kropp, Peter: *See—*
Demuth, Hans; Kropp, Peter; and Noll, Karl, 4,448,244, Cl. 165-141.000.

Kruger, Karl-Heinz: *See—*
Riesland, Eberhard; and Kruger, Karl-Heinz, 4,448,403, Cl. 269-21.000.

Krupp Polysius AG: *See—*
Mollenkopf, Hans; Wurr, Jurgen; and Korting, Reinhard, 4,447,966, Cl. 34-108.000.

Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, to Sumitomo Metal Industries, Ltd. Process for producing alloy steel powder. 4,448,746, Cl. 419-31.000.

Kubota Ltd.: *See—*
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,448,749, Cl. 420-584.000.

Kudo, Shinichi; and Otani, Haruyuki, to Matsushita Electric Industrial Company. Pickup arm device. 4,449,216, Cl. 369-255.000.

Kudo, Yoshihiko: *See—*
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.

Kuhn, Patrick: *See—*
Ford, Arthur J.; Kuhn, Patrick; and Long, William D., 4,448,259, Cl. 172-462.000.

Kuhnert, Friedrich: *See—*
Bognar, Daniel; and Kuhnert, Friedrich, 4,448,126, Cl. 101-363.000.

Kuhnert, Gottfried, to Maschinenfabrik Dr. Rudolf Schieber GmbH & Co., KG. Slider needle. 4,448,044, Cl. 66-120.000.

Kuhnert, Gottfried, to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG. Slider needle. 4,448,045, Cl. 66-120.000.

Kuiken, Hendrik K.; and Tijburg, Rudolf P., to U.S. Philips Corporation. Method of etching cavities and apertures in substrates and device for carrying out said method. 4,448,635, Cl. 156-637.000.

Kukes, Semyon G.; and Shioyama, Tod K., to Phillips Petroleum Company. Olefin oxidation catalyst. 4,448,892, Cl. 502-164.000.

Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., to Intel Corporation. Byte-wide dynamic RAM with multiplexed internal buses. 4,449,207, Cl. 365-230.000.

Kunugi, Yoshifumi, to Hitachi, Ltd. Absorption type heat pump system. 4,448,040, Cl. 62-238.300.

Kunz, Paul. Cleaning and peeling machine. 4,448,118, Cl. 99-624.000.

Kupferdraht-Isolierwerk AG Wildegg: *See—*
Voser, Othmar, 4,449,012, Cl. 174-70.00A.

Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Copying machine. 4,449,152, Cl. 358-296.000.

Kurby, Christopher N., to Motorola, Inc. Radio-frequency synthesizer for duplex radios. 4,449,250, Cl. 455-76.000.

Kureha Kagku Kagyo Kabushiki Kaisha: *See—*
Nagai, Hirosi; and Nishimura, Yasushi, 4,448,758, Cl. 423-308.000.

Kurek, Paul R., to UOP Inc. Reduction of C-nitrosoarylamines. 4,448,994, Cl. 564-416.000.

Kurimoto, Mamoru: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,448,617, Cl. 148-36.000.

Kuroda, Nsoki; and Tsuge, Kimihiro, to Warner & Swasey Company, The. Work handling method. 4,448,099, Cl. 83-23.000.

Kuroiwa, Hiroshi: *See—*
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.
Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, 4,448,070, Cl. 73-204.000.

Kuromatsu, Akio, to Ohyo Jiki Labolatory Company Ltd. Electrolytic/electric discharge machining of a non-conductive workpiece. 4,448,656, Cl. 204-129.400.

Kusayama, Masahiro, to Yoshida Kogyo K K. Slide fastener with separable bottom end stop. 4,447,936, Cl. 24-433.000.

Kusters, Eduard: *See—*
Appenzeller, Valentin; and Mingers, Peter F., 4,447,940, Cl. 29-116.0AD.

Kutcher, Howard R., to Aluminum Company of America. Vertical axis wind turbine. 4,449,053, Cl. 290-44.000.

Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Air conditioning apparatus. 4,448,597, Cl. 62-176.600.

Kuwaki, Masami; Hatada, Youichi; and Umino, Satoru, to Fuji Electric Co., Ltd. Control system for automatic vending machines. 4,448,346, Cl. 236-46.00R.

Kuzunuki, Soshiro; and Hirasawa, Kotaro, to Hitachi, Ltd. Elevator group control system. 4,448,286, Cl. 187-29.00R.

Kwis, Stanley H.: *See—*
Fulde, Roland C.; and Kwis, Stanley H., 4,448,791, Cl. 426-94.000.

Kyo, Suizo: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Kyorin Seiyaku Kabushiki Kaisha: *See—*
Irikura, Tsutomu; Suzue, Seigo; Ito, Akira; and Koga, Hiroshi, 4,448,962, Cl. 544-362.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.

Kyrian, Bohumil, to BBC Brown, Boveri & Company, Limited. High power class B modulation amplifier for a broadcast transmitter. 4,449,103, Cl. 330-123.000.

Ladewski, Bernard F., to Auto Specialties Manufacturing Company. Thread stop for a screw jack. 4,448,392, Cl. 254-103.000.

Lafferty, Edwin C.: *See—*
Agnor, William C.; Lafferty, Edwin C.; and Toliver, Samuel, 4,449,104, Cl. 330-279.000.

Laido, Donald A. Alignment means for centrifugal blasting wheel. 4,447,993, Cl. 51-439.000.

Laing, Gordon E.: *See—*
Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., 4,447,930, Cl. 15-322.000.

LaMonica, Gaspare; Richelli, Federico, deceased; by Richelli, Angelo, heir; by Richelli, Giorgio, heir; by Richelli, Fabrizia, heir; by Richelli, Mauro, heir; and by Orini, Matilde, heir, to Samifi Babcock Samifi Internationale S.A. Pneumatic system for operating the mechanism of ice separation from evaporating plates in a plate or slab ice generator by using the condensing gas, simultaneously with circuit reversal for defrosting the ice product. 4,448,598, Cl. 62-352.000.

Lampert, Ingolf, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for polishing III-V-semiconductor surfaces. 4,448,634, Cl. 156-636.000.

Lancki, Edmund: *See—*
Hanna, Craig A.; and Lancki, Edmund, 4,449,119, Cl. 340-347.0DD.

Landgraf, Wolfgang; Scharf, Walter; and Simon, Heinrich, to Schott-Zwiesel-Glaswerke Aktiengesellschaft. Method for grinding or polishing curved surfaces of solid bodies and apparatus for carrying out this method. 4,447,991, Cl. 51-161.000.

Lang & Co., Chemisch-Technische Produkte Kommanditgesellschaft: *See—*
Kaes, Gertrude, 4,448,702, Cl. 252-70.000.

Lankamp, Herman, to SKF Industrial Trading and Development Co., B.V. Lubricating composition and method of making same. 4,448,700, Cl. 252-12.400.

Laporte Industries Limited: *See—*
Tear, Brian; and Othen, David G., 4,448,609, Cl. 106-308.00N.

Lapp, Karl: *See—*
Stutz, Hansruedi; and Lapp, Karl, 4,447,955, Cl. 33-129.000.

Larson, Robert J., to Boeing Company, The. Aircraft vertical fin-fuselage structural integration system. 4,448,372, Cl. 244-87.000.

Larue, Albert D.: *See—*
Dougan, Donald R.; Larue, Albert D.; and Wolf, John J., 4,448,135, Cl. 110-263.000.

Lary, Richard F.: *See—*
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.

Laserscope, Inc.: *See—*
Loeb, Marvin P., 4,448,188, Cl. 128-6.000.

Lasley, Robert A. Fluidic valve combination. 4,448,189, Cl. 128-25.00R.

Lasserre, Pierre P.: *See—*
Blanchard, Jean F.; and Lasserre, Pierre P., 4,448,779, Cl. 424-263.000.

Lathlaen, Richard A., to TRW Inc. Variable geometry optical fiber connector. 4,448,482, Cl. 350-96.210.

Lauber, Ernst: *See—*
Habegger, Willy; and Lauber, Ernst, 4,448,393, Cl. 254-264.000.

Lauke, Arno, to BASF Farben & Fasern A.G. Spray coating process, and an arrangement for carrying out the same. 4,448,812, Cl. 427-377.000.

Layton, Donald: *See—*
Perlman, Stanley; Herbert, William G.; Layton, Donald; and Hanafee, James S., 4,448,476, Cl. 339-203.000.

Lazear, Nelson R.: *See—*
Krishnan, Sivaram; and Lazear, Nelson R., 4,448,930, Cl. 525-67.000.

Lear Fan Corp.: *See—*
McClenahan, David H.; and Plumer, John A., 4,448,838, Cl. 428-251.000.

Lecomte, Jackie: *See—*
Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, 4,448,082, Cl. 73-861.050.

Lee, Byung H.; and Lynch, John F., Jr., to Bell Telephone Laboratories, Incorporated. Voice-actuated switching system. 4,449,238, Cl. 381-110.000.

Lee, Kung-You; Chiou, Jackson K.; and McMahon, Matthew A., to Texaco Inc. Apparatus and method for the production of gas filters. 4,448,822, Cl. 427-430.100.

Lee, Shih-Ying, to Setra Systems, Inc. Force transducer. 4,448,085, Cl. 73-862.640.

Lee, Shy-Fuh, to Zoecon Corporation. Substituted 2-pyridyloxy-phenoxy-alkanetriones. 4,448,966, Cl. 546-302.000.

Legner, Karl: *See—*
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.

Leinhos, Jurgen: *See—*
Wurth, Hans; and Leinhos, Jurgen, 4,448,055, Cl. 72-354.000.

Leland, John E., to Phillips Petroleum Company. Poly(arylene sulfide) composition containing titanium dioxide and 3-mercaptopropyltrimethoxysilane. 4,448,918, Cl. 524-262.000.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Clark, James H., 4,449,201, Cl. 364-900.000.

LeMoine, Joseph L., to Koomey, Inc. High low safety apparatus for drilling rigs. 4,448,394, Cl. 254-271.000.

Lemon, Gary K.: *See—*
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.

Lenke, Gerd M.; Melby, Earl G.; and Fabris, Hubert J., to General Tire & Rubber Company, The. Polymerization of lactam with graft copolymer promoter. 4,448,956, Cl. 528-312.000.

Leonard, Eric M.: *See—*
Geyer, Frederick F.; and Leonard, Eric M., 4,449,139, Cl. 346-137.000.

Leonard, John J.: *See—*
Sofranko, John A.; and Leonard, John J., 4,448,985, Cl. 562-579.000.

Le Pargneux, Jacques, to Framatome. Screwed safety assembly. 4,448,561, Cl. 403-19.000.

Lesher, George Y., to Sterling Drug Inc. N-(Lower-alkyl)-N'-[5-(pyridinyl)-2-pyridinyl]ureas and cardiotonic use thereof. 4,448,780, Cl. 424-263.000.

Leslie, Samuel A.; and Schwartz, Robert C., to General Electric Company. Battery saving radio circuit and system. 4,449,248, Cl. 455-38.000.

Lesosky, Thomas, to Decor Doors Manufacturing Ltd. Adjustable threshold and sill assembly. 4,447,987, Cl. 49-468.000.

Leuven Research & Development: *See—*
Dewaegheneire, Gabriel, 4,448,147, Cl. 116-216.000.

LeVeen, Eric G.: *See—*
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F., 4,448,195, Cl. 128-344.000.

LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F. Reinforced balloon catheter. 4,448,195, Cl. 128-344.000.

LeVeen, Robert F.: *See—*
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F., 4,448,195, Cl. 128-344.000.

Lever Brothers Company: *See—*
Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, 4,448,704, Cl. 252-91.000.

Levinson, Lionel M., to General Electric Company. Solderable largely base metal electrodes for metal oxide varistors. 4,448,806, Cl. 427-102.000.

Lewis, David F., to GAF Corporation. Electron beam sensitive mixture resist. 4,448,875, Cl. 430-283.000.

Lewis, Meirion F., to National Research Development Corporation. Methods of producing devices comprising metallized regions on dielectric substrates. 4,448,805, Cl. 427-100.000.

Liang, Tai-Ming; and Spitler, Keith G., to Mobay Chemical Corporation. Novel system for the production of polyurethanes. 4,448,903, Cl. 521-137.000.

Liao, Paul F.: *See—*
Bergman, John G.; Liao, Paul F.; and Wokaun, Alexander J., 4,448,485, Cl. 350-162.200.

Lichtenstein, Joseph, to Whitman Medical Corporation. Liquid crystal infiltration sensing system. 4,448,204, Cl. 128-736.000.

Lieber, Sidney: *See—*
Pinches, Philip B.; and Lieber, Sidney, 4,449,048, Cl. 250-308.000.

Liffmann, Stanley M.: *See—*
Neri, Bruce P.; Liffmann, Stanley M.; and Bergkuist, Carolyn, 4,448,889, Cl. 436-74.000.

Lillie, Jerry H.: *See—*
Cole, Richard H.; and Lillie, Jerry H., 4,447,988, Cl. 49-485.000.

Lilliston Corporation: *See—*
Ford, Arthur J.; Kuhn, Patrick; and Long, William D., 4,448,259, Cl. 172-462.000.

Lillwitz, Lawrence D., to Standard Oil Company (Indiana). Catalyzed hydrogenation of terephthalic acid to p-hydroxymethylbenzoic acid using a rhenium catalyst. 4,448,987, Cl. 562-473.000.

Lilly Industries Limited: *See—*
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,448,787, Cl. 424-283.000.

Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., to GAF Corporation. Alcohol substituted amides as chain extenders for polyurethanes. 4,448,905, Cl. 521-164.000.

Lindahl, George R., III; and Henrick, Clive A., to Zoecon Corporation. Substituted anilino pyrimidines. 4,448,961, Cl. 544-311.000.

Linde AG: *See—*
Linde, Gerhard, 4,448,592, Cl. 55-68.000.

Linde, Gerhard, to Linde AG. Adsorptive method for the separation of a gas mixture. 4,448,592, Cl. 55-68.000.

Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, to BASF Aktiengesellschaft. Isolation of isobutene from C_4-hydrocarbon mixtures containing isobutene. 4,448,643, Cl. 203-34.000.

Lindqvist, Lennart S. A., to Aktiebolaget Electrolux. Remotely controlled vacuum cleaner nozzle. 4,447,931, Cl. 15-365.000.

Lindsay, Erin J. Washer for paint rollers. 4,448,209, Cl. 134-141.000.

Linev, Valery D.: *See—*
Keller, Viktor R.; Linev, Valery D.; Mittaev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Lington, Christopher G.: *See—*
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., 4,448,665, Cl. 208-8.0LE.

Lippert, Hans-Joachim: *See—*
Karger, Ludwig; and Lippert, Hans-Joachim, 4,448,744, Cl. 376-262.000.

Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., to General Electric Company. Flux feedback firing control for a load commutated inverter. 4,449,087, Cl. 318-723.000.

Liquipak International, Inc.: *See—*
Pankratz, Lawrence A.; and Cornies, Donald G., 4,448,008, Cl. 53-202.000.

Liskov, Nathan A.; Curtis, Robert G.; Favaloro, Caesar J.; and Pence, Geogory L., to Raytheon Company. Eye opening monitor. 4,449,223, Cl. 375-10.000.

Liszka, Edward G.: *See—*
Schmidt, Richard L.; Sullivan, Edmund J.; Myers, Bernard J.; and Liszka, Edward G., 4,449,211, Cl. 367-153.000.

Little, Thomas R.: *See—*
Kleinecke, John D.; and Little, Thomas R., 4,448,450, Cl. 292-210.000.

Litton Business Systems, Inc.: *See—*
Salkeld, Stephen A.; Stock, Mark E.; and Welch, Robert J., 4,448,231, Cl. 160-135.000.

Litton Industrial Products, Inc.: *See—*
Burbury, Robert L., 4,449,228, Cl. 378-151.000.

Litton Systems, Inc.: *See—*
Zuckerman, Leonard; and Taddonio, Colin, 4,449,046, Cl. 250-235.000.

Liu, Kou-Chang; and Brown, Michael J., to GAF Corporation. Selective process for the preparation of hydroxy alkyl phenoxy benzoates. 4,448,982, Cl. 560-21.000.

Liu, William Y. Pastry and dumpling maker. 4,448,576, Cl. 425-89.000.

Livne, Zvi, to Dan Mamtirim. Pop-up sprinkler. 4,448,353, Cl. 239-205.000.

Ljutic, Albert V. Gun with reduced recoil. 4,447,975, Cl. 42-16.000.

Lloyd, John: *See—*
Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, 4,448,704, Cl. 252-91.000.

Lockheed Corporation: *See—*
Webber, Robert C., 4,448,624, Cl. 156-175.000.

Loeb, Marvin P., to Laserscope, Inc. Method for providing an oxygen bearing liquid to a blood vessel for the performance of a medical procedure. 4,448,188, Cl. 128-6.000.

Loehr, Clifford E.: *See—*
Chun, Duk S.; Stermole, David A.; and Loehr, Clifford E., 4,448,759, Cl. 423-474.000.

Loepfe Brothers Limited: *See—*
Stutz, Hansruedi; and Lapp, Karl, 4,447,955, Cl. 33-129.000.

Loeser, Werner: *See—*
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.

Loffler, Gerhard: *See—*
Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, 4,448,533, Cl. 356-416.000.

Lollis, Glen R.; Marler, Marvin G.; Car, Joe P.; and John, Sam J. Apparatus for replacing bolster rings. 4,448,340, Cl. 228-29.000.

Lombardi, Aurelio; and Occhini, Elio, to Societa Cavi Pirelli S.p.A. Optical fiber element with three layer protective covering. 4,448,484, Cl. 350-96.230.

Lombardino, Anthony V.; and Perfetto, Louis P. Chain saw guard. 4,447,953, Cl. 30-382.000.

Long, William D.: *See—*
Ford, Arthur J.; Kuhn, Patrick; and Long, William D., 4,448,259, Cl. 172-462.000.

Long, William J., to United States Gypsum Company. Mineral fiber-containing paper for the production of gypsum wallboard product prepared therewith. 4,448,639, Cl. 162-124.000.

Lord, Henry A.; Bixler, Kenneth D.; and Reifers, Richard F., to Diamond International Corporation. Egg cell construction. 4,448,344, Cl. 229-2.5EC.

Lorenz, Artur: *See—*
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,448,914, Cl. 524-32.000.

Lorenz, Donald H.; and Williams, Earl P., to GAF Corporation. Electron beam sensitive resist. 4,448,876, Cl. 430-296.000.

Loutfy, Rafik O.: *See—*
Badesha, Santokh S.; and Loutfy, Rafik O., 4,448,646, Cl. 204-59.00M.

Lowe, Allen D., to West Company, The. Tamper evident container-closure assembly. 4,448,318, Cl. 215-252.000.

Lowe, Henry E. Cat box filler system and method. 4,448,151, Cl. 119-1.000.

Lubrizol Corporation, The: *See—*
Forsberg, John W., 4,448,703, Cl. 252-75.000.

Lucas, August, to Carl Still GmbH & Co. K.G., Firma. Method for evacuating emissions of a coke oven. 4,448,641, Cl. 201-41.000.

Lucas, August, to Carl Still GmbH & Co. K.G., Firma. Apparatus for evacuating emissions of a coke oven. 4,448,642, Cl. 202-263.000.

Lucas Industries Limited: *See—*
Heppenstall, Keith, 4,449,162, Cl. 361-156.000.
Skinner, Robert T. J., 4,448,165, Cl. 123-179.00L.

Luchaco, David G., to Lutron Electronics Co., Inc. Excess light turn-off circuit. 4,449,074, Cl. 315-159.000.

Lucian, Anton: *See—*
Zwiener, Rudolf; Lucian, Anton; and Gattiker, Ernst, 4,448,220, Cl. 139-1.00E.

Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, to Bergwerksverband GmbH; and Ruhrkohle AG. Floatation arrangement. 4,448,681, Cl. 210-97.000.

Luijben, Henricus G. J. A. M.; and Meinders, Herman C., to U.S. Philips Corporation. Optically readable information disc comprising an envelope of cross-linked synthetic resin. 4,448,827, Cl. 428-35.000.

Lundberg, Robert D.; and Peiffer, Dennis G., to Exxon Research and Engineering Co. Viscosification of hydrocarbon fluids. 4,448,926, Cl. 524-612.000.

Lunn, Gerald, to Motorola, Inc. Integrator circuit for separating vertical sync pulses. 4,449,146, Cl. 358-154.000.

Luper, Charles R.: *See—*
Jaffe, Michael B.; Luper, Charles R.; Mabry, Eric; and Reid, Howard J., 4,448,058, Cl. 73-23.000.

Lupul, Francis T.: *See—*
Brown, William W., Jr.; Dahlke, Gerhard P.; and Lupul, Francis T., 4,448,149, Cl. 118-500.000.

Lutron Electronics Co., Inc.: *See—*
Luchaco, David G., 4,449,074, Cl. 315-159.000.

Luxtron Corporation: *See—*
Wickersheim, Kenneth A., 4,448,547, Cl. 374-131.000.

Lynch, John F., Jr.: *See—*
Lee, Byung H.; and Lynch, John F., Jr., 4,449,238, Cl. 381-110.000.

Lynch, Matthew J., to ICI Americas Inc. Maltitol containing gel base systems. 4,448,778, Cl. 424-260.000.

Mabry, Eric: *See—*
Jaffe, Michael B.; Luper, Charles R.; Mabry, Eric; and Reid, Howard J., 4,448,058, Cl. 73-23.000.

MacDonald, Ian N.: *See—*
White, William W.; and MacDonald, Ian N., 4,448,552, Cl. 384-404.000.

MacFadden, John A.; Keever, Joseph M.; and Ziss, William J., to Westinghouse Electric Corp. Temperature compensated magnetic damping assembly for induction meters. 4,449,094, Cl. 324-152.000.

Machida, Yoshimasa: *See—*
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.

MacInnis, Martin B.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., 4,448,755, Cl. 423-56.000.

Mackenzie, John D.; and Horiuchi, Tetsuro, to Atlantic Richfield Company. Hollow spheres produced from natural zeolites. 4,448,599, Cl. 65-21.400.

Madey, John M. J.: *See—*
Smith, Todd I.; Elias, Luis R.; and Madey, John M. J., 4,449,219, Cl. 372-2.000.

Maeda, Fujio, to Kabushiki Kaisha Komatsu Seisakusho. Pressure-responsive control for a power train of the type having a torque converter equipped with a lockup clutch. 4,448,293, Cl. 192-3.300.

Maeda, Hideo: *See—*
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.

Magerlein, Barney J., to Upjohn Company, The. Nargenicin derivatives. 4,448,970, Cl. 548-336.000.

Magin, Rudolf: *See—*
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.

Magnenet, Jean, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Process and machine for magnetographic printing (I). 4,449,130, Cl. 346-74.700.

Magnenet, Jean, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Process and machine for magnetographic printing (III). 4,449,131, Cl. 346-74.700.

Magnenet, Jean, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull. Process and machine for magnetographic printing (II). 4,449,132, Cl. 346-74.700.

Magnenet, Jean G.: *See—*
Binder, Jean-Jacques; and Magnenet, Jean G., 4,449,160, Cl. 360-104.000.

Maida, Osamu: *See—*
Saegusa, Takashi; Maida, Osamu; and Fukuhara, Toru, 4,448,506, Cl. 354-431.000.

Mailand, John J.; and Samuelson, Bruce E., to Minnesota Mining and Manufacturing Company. Adjustable weatherstrip assembly. 4,447,989, Cl. 49-488.000.

Majewski, Klaus-Peter; Morsbach, Martin; and Schulz, Dietrich, to Goetze AG. Cylinder head gasket. 4,448,431, Cl. 277-325.00B.

Maki, Naoki: *See—*
Yamaguchi, Kiyoshi; and Maki, Naoki, 4,448,042, Cl. 62-505.000.

Makimoto, Mitsuo: *See—*
Endo, Haruyoshi; Makimoto, Mitsuo; Kikuchi, Ko; and Yamashita, Sadahiko, 4,449,108, Cl. 333-202.000.

Malina, Frank. Aerating apparatus utilizing rotating impellier vane. 4,448,685, Cl. 210-219.000.

Malladi, Madhava: *See—*
Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, 4,448,753, Cl. 422-144.000.

Malless, George C., Jr. Gutter cleaning apparatus. 4,447,927, Cl. 15-236.00R.

Malthouse, Martin D.; and Groeger, Heinz K., to Associpak International Inc. Cutter assembly. 4,448,629, Cl. 156-510.000.

Maness, Riley C.: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.

Manning, Anne M., heir: *See—*
Chenausky, Peter P.; Bullis, Robert H.; Brown, Clyde O.; and Manning, Ernest B., deceased, 4,449,220, Cl. 372-83.000.

Manning, Ernest B., deceased: *See—*
Chenausky, Peter P.; Bullis, Robert H.; Brown, Clyde O.; and Manning, Ernest B., deceased, 4,449,220, Cl. 372-83.000.

Manning, Frank W., to United States of America, Energy. Portable battery-free charger for radiation dosimeters. 4,449,049, Cl. 250-377.000.

Manning, Mark C.: *See—*
Jacobson, Carl C., Jr.; and Manning, Mark C., 4,448,352, Cl. 239-125.000.

Mantel, Juval. Device for reducing static and dynamic pressures in pipelines, particularly of solid-borne sound in tubular conduits. 4,448,538, Cl. 181-227.000.

Manuccia, Thomas J.; Peele, John R.; and Geosling, Christine E., to United States of America, Navy. High temperature ultra-high vacuum infrared window seal. 4,448,000, Cl. 52-208.000.

Manville Service Corporation: *See—*
Ewing, Robert L., 4,449,168, Cl. 362-404.000.

Manz, Albrecht: *See—*
Becker, Wilhelm; and Manz, Albrecht, 4,448,912, Cl. 523-414.000.

Maphis, Sam W., to Genstar Waste Transfer, Inc. Subsurface waste disposal system. 4,448,690, Cl. 210-609.000.

Marancik, William G., to Airco, Inc. Method of fabricating multifilament intermetallic superconductor. 4,447,946, Cl. 29-599.000.

Marcellaro, Irene C. Jumpsuit. 4,447,911, Cl. 2-79.000.

Marchal, Paul H.: *See—*
Brault, Bernard; and Marchal, Paul H., 4,448,640, Cl. 162-218.000.

Marconi Company Limited, The: *See—*
Young, Arthur P.; Gildersleeves, Clive D. P.; Partridge, Brian W.; and Ryder, Keith L., 4,449,181, Cl. 364-200.000.

Marcy, Dewey R. Self-loading bale disintegrating machine. 4,448,361, Cl. 241-101.700.

Margolin, Mark: *See—*
Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, 4,448,481, Cl. 350-96.200.

Mark, Victor, to General Electric Company. Process for the preparation of substituted amidines. 4,448,975, Cl. 548-558.000.

Mark, Victor: *See—*
Rosenquist, Niles R.; Mark, Victor; and Hedges, Charles V., 4,448,953, Cl. 528-198.000.

Markovich, Voya: *See—*
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.

Marler, Marvin G.: *See—*
Lollis, Glen R.; Marler, Marvin G.; Car, Joe P.; and John, Sam J., 4,448,340, Cl. 228-29.000.

Marling, John B.; and Heath, Thomas K., to Marling, John Beaton. Telescope guider. 4,448,500, Cl. 350-574.000.

Marling, John Beaton: *See—*
Marling, John B.; and Heath, Thomas K., 4,448,500, Cl. 350-574.000.

Marques, Salvador A., to Andral Corporation. Portable fold-up ladder. 4,448,283, Cl. 182-164.000.

Marsh, Richard A.: *See—*
Bishop, Wayne S.; and Marsh, Richard A., 4,448,859, Cl. 429-50.000.

Marsh, Richard L.; and Wetzel, Robert E., to Dayco Corporation. Long synchronous belt and method for making the same. 4,448,621, Cl. 156-138.000.

Marsh, Walter H. W.: *See—*
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,448,141, Cl. 112-315.000.

Marshall, David E.: *See—*
Moorhouse, David; and Marshall, David E., 4,448,386, Cl. 248-564.000.

Marsi, Joseph A., to Borg-Warner Corporation. Mechanical seal assembly. 4,448,428, Cl. 277-92.000.

Martell, Michael D. Vented, aspirating syringe. 4,448,206, Cl. 128-765.000.

Martenson, Irvin W., to American Organics Corp. Resin antistatic and strengthening composition. 4,448,916, Cl. 524-106.000.

Martin, Michel: *See—*
Millette, Germain; and Martin, Michel, 4,448,331, Cl. 222-181.000.

Maruhnic, Peter, to HRI, Inc. Viscosity measurement using pressurized viscometer device. 4,448,060, Cl. 73-57.000.

Maruta, Keiji: *See—*
Noborimoto, Kazutaka; Maruta, Keiji; Suzuki, Junichi; and Shintani, Kenji, 4,449,213, Cl. 369-45.000.

Maruzen Pharmaceutical Co., Ltd.: *See—*
Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, 4,448,788, Cl. 424-313.000.

Marvin Glass & Associates: *See—*
Zaruba, John V.; and Disko, Harry, 4,448,421, Cl. 273-243.000.

Mas, Ramon B.: *See—*
Vilaseca, Hilario S.; and Mas, Ramon B., 4,448,329, Cl. 222-96.000.

Masaki, Katsumi: *See—*
Hirayama, Kazuhiro; Sato, Yasuhi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,448,513, Cl. 355-8.000.

Maschinenfabrik Dr. Rudolf Schieber GmbH & Co., KG: *See—*
Kuhnert, Gottfried, 4,448,044, Cl. 66-120.000.

Masco Corporation: *See—*
Cronce, Gary M., 4,448,337, Cl. 224-321.000.

Mashaw, Howard R., Jr., to Otis Engineering Corporation. Piston-expanded metallic seal for side door well valve. 4,448,427, Cl. 277-73.000.

Masologites, George P.; Sun, Jui-Yuan; Yoo, Jin S.; and Burk, Emmett H., Jr., to Atlantic Richfield Company. Process for removing sulfur from coal. 4,448,584, Cl. 44-1.0SR.

Mason, Roger L.: *See—*
Eckstein, Robert J.; and Mason, Roger L., 4,448,157, Cl. 123-142.50R.

Massachusetts Institute of Technology: *See—*
Yannas, Ioannis V.; and Kirk, James F., 4,448,718, Cl. 260-123.700.

Masu, Masanobu: *See—*
Sugio, Akitoshi; Masu, Masanobu; and Amagai, Akikazu, 4,448,931, Cl. 525-68.000.

Masuda, Keiji, to Konishiroku Photo Industry Co., Ltd. Electrophotographic recording apparatus with corona-discharge device having cover means between end of discharge wire and electrophotosensitive surface. 4,448,511, Cl. 355-3.0CH.

Masuda, Mitsuya: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,449,148, Cl. 358-230.000.

Masui, Kiyoshi: *See—*
Matsudaira, Nagahisa; Yoshida, Kaneki; Fukuyoshi, Kenzo; and Masui, Kiyoshi, 4,448,493, Cl. 350-357.000.

Masurat, Heinz-Werner: *See—*
Schumacher, Gerd; and Masurat, Heinz-Werner, 4,448,079, Cl. 73-789.000.

Masuzawa, Sigeaki: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.

Matarrese, Francis J., Jr.: *See—*
Bleile, Dennis M.; Allen, Diane M.; Tanaka, Steve K.; and Matarrese, Francis J., Jr., 4,448,888, Cl. 436-67.000.

Matsubara, Akitoshi: *See—*
Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.

Matsuda, Susumu; and Kawaguchi, Katuhiko, to Tokyo Electric Co., Ltd. Paper guide arrangement for printing apparatus. 4,448,559, Cl. 400-637.400.

Matsudaira, Nagahisa; Yoshida, Kaneki; Fukuyoshi, Kenzo; and Masui, Kiyoshi, to Toppan Printing Co., Ltd. Electrochromic display device. 4,448,493, Cl. 350-357.000.

Matsumoto, Kenzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital scan converter. 4,448,201, Cl. 128-660.000.

Matsumoto, Kouichi: *See—*
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Matsuo, Giichi, to Nippon Kokan Kabushiki Kaisha. Rotary trough type cooling bed run-in apparatus. 4,448,298, Cl. 198-451.000.

Matsuo, Seitaro: *See—*
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, 4,448,800, Cl. 427-39.000.

Matsuo, Takeshi: *See—*
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.

Matsuoka, Akira; and Tsukagoshi, Terukazu, to Omron Tateisi Electronics Co. Identification code determining apparatus for use in transaction processing apparatus. 4,449,040, Cl. 235-380.000.

Matsushima, Takeo: *See—*
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, 4,448,035, Cl. 62-176.600.

Matsushita Electric Industrial Company: *See—*
Kudo, Shinichi; and Otani, Haruyuki, 4,449,216, Cl. 369-255.000.

Matsushita Electric Industrial Company, Limited: *See—*
Endo, Haruyoshi; Makimoto, Mitsuo; Kikuchi, Ko; and Yamashita, Sadahiko, 4,449,108, Cl. 333-202.000.
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,449,025, Cl. 219-10.55D.
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,449,148, Cl. 358-230.000.

Matsushita Electrical Industrial Co.: *See—*
Unoguchi, Takehiko; Hasegawa, Seiro; Fujito, Katsuyuki; Nishino, Atsushi; and Yoshida, Akihiko, 4,449,188, Cl. 364-505.000.

Matsushita, Takao, to Toray Silicone Company, Ltd. Method for manufacturing a rubber sheet which is electrically insulating and thermally radiating and rubber sheets made therefrom with improve resistance to flexural fatigue. 4,448,840, Cl. 428-266.000.

Matter, Max: *See—*
Bucher, Karl; Matter, Max; Brunner, Bernhard; and Frey, Alfred, 4,448,776, Cl. 424-250.000.

Matthews, Maurice A.; Cook, Michael J.; and Ivey, David E., to International Telephone & Telegraph Corporation. Fiber optic connector. 4,448,478, Cl. 350-96.210.

Matthews, Thomas E.: *See—*
Whitmyer, Wayne E.; and Matthews, Thomas E., 4,448,001, Cl. 52-209.000.

Matthey Rustenburg Refiners (Pty) Limited: *See—*
Day, Joseph G.; and Taylor, Jeffrey R., 4,448,604, Cl. 75-63.000.

Matthys, Robert J., to Honeywell Inc. Stable alignment mechanism for laser mirrors. 4,448,385, Cl. 248-476.000.

Maunula, Hannu: *See—*
Sarkki, Marja-Leena; Soderstrom, Martti; Maunula, Hannu; and Korhonen, Annika, 4,448,790, Cl. 426-52.000.

Maurer, Edward J., Jr.; Baumann, Hanns U.; and Watkins, Herbert E. Factory built construction assembly. 4,447,996, Cl. 52-79.100.

May, William L.: *See—*
Hill, Frank W.; May, William L.; and Kent, Willard L., 4,449,116, Cl. 340-909.000.

Mayama, Mikao: *See—*
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Mayer, David, to Custom Creamery Systems, Inc. Apparatus for processing frozen comestibles and in particular to an improvement therein. 4,448,114, Cl. 99-494.000.

Mayfield, Robert A.: *See—*
Knothe, George T.; and Mayfield, Robert A., 4,448,458, Cl. 303-84.00A.

McCabe, Stanley G. Laundry spreader, counter, and folder. 4,447,972, Cl. 38-12.000.

McCartney, John R., to Norwood Industries, Inc. Coagulated polyurethane coating compositions. 4,448,922, Cl. 524-443.000.

McCarty, Fred B., to United States of America, Air Force. Process for making fluid-cooled electrical conductor. 4,447,947, Cl. 29-825.000.

McClenahan, David H.; and Plumer, John A., to Lear Fan Corp. Graphite fiber reinforced laminate structure capable of withstanding lightning strikes. 4,448,838, Cl. 428-251.000.

McCloskey, Thomas H.: *See—*
Binstock, Morton H.; McCloskey, Thomas H.; and Podolsky, Leaman B., 4,448,026, Cl. 60-662.000.

McClure, Richard G.; Rakes, James M.; and Williams, Errol R., to International Business Machines Corporation. Thermal print head temperature sensing and control. 4,449,033, Cl. 219-216.000.

McCoy, David R.; and Gipson, Robert M., to Texaco Inc. Secondary recovery process. 4,448,697, Cl. 252-8.55D.

McDonald, Joseph V.: *See—*
Canzoneri, Anthony S.; and McDonald, Joseph V., 4,449,101, Cl. 324-453.000.

McDonnell Douglas Corporation: *See—*
Knapp, Richard D., 4,448,106, Cl. 89-1.00A.

McKevitt, James F., III: *See—*
Pohlman, William, III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., 4,449,184, Cl. 364-200.000.

McLaren, George: *See—*
Johnson, Steven L.; McLaren, George; and Robertson, George H., 4,448,607, Cl. 106-19.000.

McLeod, David M., to Dow Chemical Company, The. Apparatus for mixing a liquid additive compound with vapor and liquid phases of anhydrous ammonia. 4,448,540, Cl. 366-160.000.

McMahon, Matthew A.: *See—*
Lee, Kung-You; Chiou, Jackson K.; and McMahon, Matthew A., 4,448,822, Cl. 427-430.100.

McManus, Acie J. Portable laser vertical collimator and plumb line indicator. 4,448,528, Cl. 356-250.000.

McNeill, Lockaley D. Surface projectile and target game. 4,448,418, Cl. 273-123.00A.

McQueen, Coy E.; and Twedt, Lynn O., to Erect-A-Tube, Inc. Bi-fold door assembly. 4,448,232, Cl. 160-207.000.

McRae, Douglas C., to National Research Development Corporation. Soil-separating assemblies. 4,448,257, Cl. 171-127.000.

McVay, William P.: *See—*
DiGiovanni, John; Vigh, Szabolcs M.; McVay, William P.; and Miksza, Anthony S., Jr., 4,448,194, Cl. 128-334.00R.

Mead Corporation, The: *See—*
Arney, Jonathon S.; and Wright, Richard F., 4,448,516, Cl. 355-27.000.
Wood, Prentice J., 4,448,452, Cl. 294-87.200.

Mechanical Technology Incorporated: *See—*
Ernst, William D., 4,448,424, Cl. 277-30.000.

Mediminder Development Limited Partnership: *See—*
Wirtschafter, Jonathan D., 4,448,541, Cl. 368-10.000.

Mees, Bernhard: *See—*
Diery, Helmut; and Mees, Bernhard, 4,448,992, Cl. 564-347.000.

Mehnert, Walter. Process and an apparatus for measuring an angle. 4,449,191, Cl. 364-559.000.

Mehrhoff, Friedrich-Wilhelm: *See—*
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.

Meier, Markus; and Sutton, David A., to DMA Systems Corporation. Gimbal assembly for flying magnetic transducer heads. 4,449,155, Cl. 360-104.000.

Meiji Seika Kaisha, Ltd.: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Meinders, Herman C.: *See—*
Luijben, Henricus G. J. A. M.; and Meinders, Herman C., 4,448,827, Cl. 428-35.000.

Meinken, George E.: *See—*
Richards, Powell; Srivastava, Suresh C.; and Meinken, George E., 4,448,762, Cl. 424-1.100.

Melby, Earl G.: *See—*
Lenke, Gerd M.; Melby, Earl G.; and Fabria, Hubert J., 4,448,956, Cl. 528-312.000.

Melgert, Frederik B.: *See—*
Oliesiagers, Henri G.; and Melgert, Frederik B., 4,448,866, Cl. 430-24.000.

Melnychenko, Walter, to International Business Machines Corporation. Strain relief device. 4,448,474, Cl. 339-103.00M.

Melone, Robert R., to Smith Investment Company. Power operated chair lift mechanism. 4,448,382, Cl. 248-421.000.

Menard, Jean G., to NL Chem Canada, Inc. High speed fluid grinding and disperser mill. 4,448,358, Cl. 241-39.000.

Mendelsohn, Lewis I. Ferromagnetic coin validator and method. 4,448,297, Cl. 194-100.00A.

Meno, Frank, to University of Pittsburgh. Positioning servo-mechanism or tachometer employing self-scanning light sensing array. 4,449,084, Cl. 318-640.000.

Mercier, Jacques H., to Normand Trust, The. Accumulator having bladder in expansion limiting contact with casing. 4,448,217, Cl. 138-30.000.

Merck & Co., Inc.: *See—*
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,448,786, Cl. 424-274.000.
Durette, Philippe L., 4,448,976, Cl. 549-39.000.

Messerschmitt-Bolkow Blohm Gesellschaft mit beschrankter Haftung: *See—*
Weiland, Emil; and Gunther, Christian, 4,448,131, Cl. 105-182.00R.

Messrs. Adidas Sportschuhfabriken Adi Dassler AG: *See—*
Bente, Alfred, 4,447,971, Cl. 36-133.000.

Metal Box Limited: *See—*
Buxton, Keith, 4,449,028, Cl. 219-109.000.

Metzger, Romain. Battery securing device. 4,448,469, Cl. 339-82.000.

Meurer, Karl-Heinz, to J. W. Froehlich Machinenfabrik GmbH. Method and apparatus for pneumatically measuring the volume of combustion chamber spaces in cylinder heads and the like. 4,448,065, Cl. 73-119.00R.

Meyer, Hans U. Means for capacitive measurement of displacements. 4,449,179, Cl. 324-61.00R.

Meyer, Karl-Heinrichrich: *See—*
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrichrich, 4,448,942, Cl. 525-540.000.

Meyer, Victor E.: *See—*
Jakubowski, James J.; Meyer, Victor E.; and Pelletier, Ronald R., 4,448,845, Cl. 428-404.000.

Meyers, Theodore F., to Hobart Corporation. Combination drain pump and grinding apparatus. 4,448,359, Cl. 241-46.060.

Midland Certified Reagent Company, The: *See—*
Case, Richard V., 4,448,883, Cl. 435-194.000.

Midway Fishing Tool Company: *See—*
Reed, Lehman T., 4,448,247, Cl. 166-82.000.

Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Wasa, Kenji, to Semiconductor Research Foundation. Crystal defects analyzer. 4,448,525, Cl. 356-73.000.

Miksza, Anthony S., Jr.: *See—*
DiGiovanni, John; Vigh, Szabolcs M.; McVay, William P.; and Miksza, Anthony S., Jr., 4,448,194, Cl. 128-334.00R.

Mikuni Kogyo Kabushiki Kaisha: *See—*
Endo, Haruo, 4,448,280, Cl. 181-229.000.

Milana, Emilio, to Centro Ricerche Fiat S.p.A. Method and apparatus for detecting surface defects in mechanical workpieces. 4,448,527, Cl. 356-237.000.

Milkowski, Wolfgang: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,448,777, Cl. 424-250.000.

Miller, Franklyn D.: *See—*
Muller, Werner C.; and Miller, Franklyn D., 4,448,881, Cl. 435-162.000.

Miller-Johannisberg Druckmaschinen GmbH: *See—*
Bognar, Daniel; and Kuhnert, Friedrich, 4,448,126, Cl. 101-363.000.

Miller, Michael J.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., 4,448,755, Cl. 423-56.000.

Miller, Robert J., to Colt Industries Operating Corp. Water injection system for a combustion engine. 4,448,153, Cl. 123-25.00J.

Millette, Germain; and Martin, Michel, to Distributeur Minute Inc. Dispenser for dispensing variable amounts of a granular material. 4,448,331, Cl. 222-181.000.

Milligan, Barton: *See—*
Fasolka, Michael J.; and Milligan, Barton, 4,448,939, Cl. 525-474.000.

Milliken Research Corporation: *See—*
Civardi, Frank P., 4,448,831, Cl. 428-91.000.

Minagawa, Shoichi: *See—*
Aasi, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,449,107, Cl. 333-150.000.

Mingers, Peter F.: *See—*
Appenzeller, Valentin; and Mingers, Peter F., 4,447,940, Cl. 29-116.0AD.

Minigrip, Inc.: *See—*
Ausnit, Steven, 4,447,935, Cl. 24-201.00C.
Sunouchi, Akio; Suzuki, Ryuji; Ichiyanagi, Toshikazu; and Fujino, Masahisa, 4,448,507, Cl. 354-173.000.

Ministry of International Trade and Industry: *See—*
Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, 4,449,204, Cl. 365-127.000.

Minnesota Mining and Manufacturing Company: *See—*
Brochman, Wilfred R., 4,448,326, Cl. 220-270.000.
Huffman, William A., 4,448,492, Cl. 350-346.000.
Koerner, Ralph J., 4,449,115, Cl. 340-941.000..
Mailand, John J.; and Samuelson, Bruce E., 4,447,989, Cl. 49-488.000.

Minolta Camera Kabushiki Kaisha: *See—*
Hayashi, Masamichi, 4,448,517, Cl. 355-56.000.
Ishikawa, Takuma, 4,448,515, Cl. 355-14.00R.
Tokumaru, Hisashi, 4,448,499, Cl. 350-573.000.

Missouri Pacific Railroad Company: *See—*
Wilkins, James H.; and Payne, Mark, 4,447,986, Cl. 49-426.000.

Mista, Kresimir; and Hohne, Hans-Jurgen, to Karl Mayer Textilmaschinenfabrik GmbH. Electromagnetically actuated jacquard control arrangement. 4,448,046, Cl. 66-205.000.

Mita Industrial Company Limited: *See—*
Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikazu, 4,448,519, Cl. 355-73.000.

Mitchell, Kenneth A. W., to ICI Australia Limited. Emulsion explosive composition. 4,448,619, Cl. 149-21.000.

Mitono, Yoshiharu: *See—*
Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, 4,449,063, Cl. 307-456.000.

Mitsubishi Chemical Ind., Ltd.: *See—*
Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, 4,448,896, Cl. 502-314.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Akasaka, Yoichi, 4,448,632, Cl. 156-603.000.
Asayama, Yoshiaki, 4,448,064, Cl. 73-118.200.
Gotoh, Hitoshi, 4,449,090, Cl. 322-95.000.
Hama, Hiroaki; Imanishi, Masami; Funahashi, Yasuyuki; and Kato, Seiichi, 4,448,037, Cl. 62-188.000.
Naruto, Masashi, 4,449,077, Cl. 318-6.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Sayama, Norio; and Nakamura, Hiromi, 4,448,018, Cl. 60-39.050.
Sugio, Akitoshi; Masu, Masanobu; and Amagai, Akikazu, 4,448,931, Cl. 525-68.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, 4,448,921, Cl. 524-443.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Yanagi, Yoshio; Yoneyama, Kunikazu; and Omori, Hiroyuki, 4,448,996, Cl. 564-467.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Sugimori, Teruhiko; Suzuki, Fumio; and Habara, Hideaki, 4,448,537, Cl. 366-75.000.

Mitsuhashi, Yasuo: *See—*
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.

Mitsuhashi, Yoshinobu: *See—*
Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, 4,449,204, Cl. 365-127.000.

Mitsuzuka, Shuichi: *See—*
Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, 4,449,204, Cl. 365-127.000.

Mittsev, Sergei G.: *See—*
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Peits, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
Seigo, Takahashi, 4,448,531, Cl. 356-374.000.
Watanabe, Teruo; and Ishikawa, Masaaki, 4,447,959, Cl. 33-178.00E.

Miura, Yasunao: *See—*
Yamaguchi, Shunzo; Takeuchi, Yukihisa; Miura, Yasunao; and Miwa, Naoto, 4,448,833, Cl. 428-116.000.

Miwa, Naoto: *See—*
Yamaguchi, Shunzo; Takeuchi, Yukihisa; Miura, Yasunao; and Miwa, Naoto, 4,448,833, Cl. 428-116.000.

Miyake, Jun-ichi; Yamazaki, Kyuya; and Kamatani, Yoshio, to Takeda Chemical Industries, Ltd. One-can type pressure-sensitive adhesive composition. 4,448,947, Cl. 528-73.000.

Miyake, Junichi: *See—*
Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, 4,448,177, Cl. 123-571.000.

Miyamoto, Takeshi: *See—*
Ikegami, Tadao; and Miyamoto, Takeshi, 4,448,664, Cl. 204-286.000.

Miyanaga, Junichi: *See—*
Moritoki, Masato; Fujikawa, Takao; and Miyanaga, Junichi, 4,448,747, Cl. 419-49.000.

Miyazawa, Takashi, to Kirin Beer Kabushiki Kaisha. Defect detecting method and device. 4,448,526, Cl. 356-237.000.

Miyazi, Kazumi; and Osanai, Akira, to Olympus Optical Company Limited. Tape transport mechanism. 4,448,370, Cl. 242-201.000.

Miyoshi, Takeshi: *See—*
Nakamoto, Hiromasa; and Miyoshi, Takeshi, 4,448,276, Cl. 180-90.000.

Mizelle, Ned W. Pocket knife. 4,447,950, Cl. 30-155.000.

Mizuhara, Howard, to GTE Products Corporation. Ductile brazing alloys containing reactive metals. 4,448,603, Cl. 75-123.00H.

Mobay Chemical Corporation: *See—*
Allen, Gary F., 4,448,995, Cl. 564-451.000.
Baron, Arthur L.; and Sivaramakrishnan, Parameswar, 4,448,950, Cl. 528-128.000.
Krishnan, Sivaram; and Lazear, Nelson R., 4,448,930, Cl. 525-67.000.
Liang, Tai-Ming; and Spitler, Keith G., 4,448,903, Cl. 521-137.000.
Sanderson, John R., 4,449,003, Cl. 568-33.000.

Mobil Oil Corporation: *See—*
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,448,672, Cl. 208-86.000.
Chu, Pochen, 4,448,675, Cl. 208-118.000.
Dessau, Ralph M., 4,448,671, Cl. 208-26.000.
Gentry, Larry L.; Moss, Herbert H.; and Panicker, Narayana N., 4,448,568, Cl. 405-169.000.
Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, 4,448,753, Cl. 422-144.000.
Hoehn, Gustave L., 4,449,099, Cl. 324-350.000.
Johnson, David E., 4,448,737, Cl. 264-53.000.
King, H. Hobson, 4,448,566, Cl. 404-31.000.
Moeckel, George P.; and Wallick, George C., 4,449,208, Cl. 367-30.000.
Oleck, Stephen M.; and Sherry, Howard S., 4,448,677, Cl. 208-216.0PP.
Shihabi, David S., 4,448,673, Cl. 208-111.000.
Young, Lewis B., 4,448,983, Cl. 560-241.100.

Mobilia, Crescenzo. Flush control device. 4,447,919, Cl. 4-325.000.

Mochida, Shigeru; and Kojima, Masaru, to NGK Insulators, Ltd. Ceramic honeycomb structural bodies. 4,448,828, Cl. 428-36.000.

Mochizuki, Noritaka: *See—*
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,448,513, Cl. 355-8.000.

Moeckel, George P.; and Wallick, George C., to Mobil Oil Corporation. Lithologic studies utilizing acoustic wave attenuation. 4,449,208, Cl. 367-30.000.

Mohrman, Robert H., to United States of America, Navy. Method of forming a tubular rivet in fastening relation to a plurality of laminates. 4,447,944, Cl. 29-512.000.

Molini, Alberto E.; and Zener, Clarence. Recovery of enthalpy from hot fluids. 4,448,024, Cl. 60-649.000.

Moll, Eberhard: *See—*
Buhl, Rainer; Moll, Eberhard; and Daxinger, Helmut, 4,448,802, Cl. 427-42.000.

Mollenkopf, Hans; Wurr, Jurgen; and Korting, Reinhard, to Krupp Polysius AG. Rotary drum. 4,447,966, Cl. 34-108.000.

Moller, Rainer; and Scharting, Gunter, to Fag Kugelfischer Georg Schafer & Co. Guide system for a gun barrel. 4,448,108, Cl. 89-37.00R.

Moller, Reinfried, to Expert Maschinenbau GmbH. Stepping drive mechanism. 4,448,093, Cl. 74-821.000.

Mollmann, Henry C.: *See—*
Keeling, Ronald J.; Roe, Jin-Young K.; and Mollmann, Henry C., 4,448,849, Cl. 428-503.000.

Monaco, Donald R., Jr. Rosin bag and towel attached together. 4,448,560, Cl. 401-200.000.

Mondon, Cary G.: *See—*
Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.

Money, David K.; and Nappholz, Tibor A., to Telectronics Pty. Ltd. Delta modulator for measuring voltage levels in a heart pacer. 4,448,196, Cl. 128-419.0PT.

Money, David K.: *See—*
Nappholz, Tibor A.; Money, David K.; Swift, Stephen; and Bradbury, Ronald C., 4,448,197, Cl. 128-419.0PT.

Mongoven, Michael A.; Bees, Paul R.; and Earl, David C., to Multi Electric Mfg. Inc. Runway approach lighting system with fault monitor. 4,449,073, Cl. 315-130.000.

Monroe, John N., to Sunoco Energy Development Co., a wholly-owned subsidiary of Sun Company, Inc. Airborne mineral exploration system. 4,449,047, Cl. 250-253.000.

Monsanto Company: *See—*
D'Amico, John J., 4,448,399, Cl. 548-165.000.
Hobbs, Charles F., 4,448,894, Cl. 502-249.000.
Mount, Ramon A.; and Wrobleski, James T., 4,448,978, Cl. 549-259.000.
Serlin, Irving, 4,448,807, Cl. 427-121.000.

Montague, Harry D. Foldable bicycle. 4,448,437, Cl. 280-287.000.

Moorhouse, David; and Marshall, David E., to UOP Inc. Low profile resilient suspension for vehicle seat. 4,448,386, Cl. 248-564.000.

Mordan, William J.: *See—*
Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., 4,448,192, Cl. 128-204.260.

Morgan, Cecil D.: *See—*
Apperson, Kenneth P.; and Morgan, Cecil D., 4,449,010, Cl. 174-5.00R.

Morgan, Clyde J.: *See—*
Hallberg, Frederick C.; and Morgan, Clyde J., 4,448,406, Cl. 269-224.000.

Morgan Construction Company: *See—*
Jalil, Aajed A.; Winslow, Earl S., Jr.; and Gage, Charles H., 4,448,401, Cl. 266-78.000.

Morgan, William M.: *See—*
Barclay, Donald J.; Morgan, William M.; and Vigar, James M., 4,448,648, Cl. 204-51.000.
Barclay, Donald J.; Morgan, William M.; and Vigar, James M., 4,448,649, Cl. 204-51.000.

Morgenthaler, Lee N.: *See—*
Southwick, Jeffrey G.; and Morgenthaler, Lee N., 4,448,253, Cl. 166-300.000.

Mori, Kiyoshi: *See—*
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, 4,448,901, Cl. 521-60.000.

Mori, Shuichi, to Pioneer Electronic Corporation. Signal processing circuit. 4,449,229, Cl. 381-2.000.

Moriguchi, Fujio: *See—*
Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,152, Cl. 358-296.000.

Moriguchi, Haruhiko; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Driving system for thermal recording head. 4,449,136, Cl. 346-76.0PH.

Moriguchi, Haruhiko: *See—*
Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,137, Cl. 346-76.0PH.
Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,152, Cl. 358-296.000.

Morikawa, Takitaro: *See—*
Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, 4,449,204, Cl. 365-127.000.

Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, to Nippon Steel Corporation. Process for cooling a cold rolled steel strip. 4,448,614, Cl. 148-12.100.

Morimoto, Takashi: *See—*
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, 4,448,800, Cl. 427-39.000.

Morinaga, Hiroshi: *See—*
Tsubaki, Kazumi; Morinaga, Hiroshi; and Yukawa, Joei, 4,448,948, Cl. 528-95.000.

Morioka, Masakazu: *See—*
Nakamura, Syuichi; and Morioka, Masakazu, 4,449,098, Cl. 324-326.000.

Moritoki, Masato; Fujikawa, Takao; and Miyanaga, Junichi, to Kabushiki Kaisha Kobe Seiko Sho. High density sintering method for powder molded products. 4,448,747, Cl. 419-49.000.

Moritz, George J., to Akzona, Incorporated. Production of purified brine. 4,448,682, Cl. 210-101.000.

Moriya, Makoto: *See—*
Hayashi, Isao; and Moriya, Makoto, 4,448,323, Cl. 220-86.00R.

Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air conditioner control system. 4,448,035, Cl. 62-176.600.

Mork, Orlan H. Soil leveling apparatus. 4,448,258, Cl. 172-197.000.

Moroney, John J., to Torrington Company, The. Bearing. 4,448,550, Cl. 384-127.000.

Morris, Hal C., to Rohm and Haas Company. Method of sizing hydrophobic yarn. 4,448,839, Cl. 428-267.000.

Morris, William. Container and dispenser for material in granular or powder form. 4,448,334, Cl. 222-230.000.

Morrison, Charles F., Jr., to VAC-TEC Systems, Inc. Method and apparatus for evaporation arc stabilization including initial target cleaning. 4,448,659, Cl. 204-192.00R.

Morrow, Rosemary K., to Putman, Philip A. Crippled hand assisting device. 4,447,912, Cl. 2-159.000.

Morsbach, Martin: *See—*
Majewski, Klaus-Peter; Morsbach, Martin; and Schulz, Dietrich, 4,448,431, Cl. 277-325.00B.

Morse, Royal R., III: *See—*
Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., 4,449,195, Cl. 364-900.000.

Morse, Stephen P.: *See—*
Pohlman, William, III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., 4,449,184, Cl. 364-200.000.

Morton, Anthony J., to Colgate-Palmolive Company. Dentifrice composition. 4,448,766, Cl. 424-52.000.

Morzycki, Jacek W.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Morzycki, Jacek W., 4,448,721, Cl. 260-239.500.

Mosely, Neal J.: *See—*
Fulcher, Junius H., 4,447,995, Cl. 52-38.000.

Moss, Gerald, to Exxon Research and Engineering Co. Combined staged air conditioner and heat store. 4,448,030, Cl. 62-79.000.

Moss, Herbert H.: *See—*
Gentry, Larry L.; Moss, Herbert H.; and Panicker, Narayana N., 4,448,568, Cl. 405-169.000.

Motojima, Kenji; and Kawamura, Fumio, to Hitachi, Ltd. Process for producing zeolite adsorbent and process for treating radioactive liquid waste with the zeolite adsorbent. 4,448,711, Cl. 502-74.000.

Motorola, Inc.: *See—*
Adlhoch, Richard H., 4,449,203, Cl. 365-104.000.
Eckert, Kim; Crisp, Richard D.; and Ta, Lam, 4,449,064, Cl. 307-473.000.
Kurby, Christopher N., 4,449,250, Cl. 455-76.000.
Lunn, Gerald, 4,449,146, Cl. 358-154.000.
Rabe, Duane C., 4,449,245, Cl. 455-319.000.
Wilhelm, Randy L., 4,449,194, Cl. 364-725.000.

Mount, Ramon A.; and Wrobleski, James T., to Monsanto Company. Process for preparing maleic anhydride. 4,448,978, Cl. 549-259.000.

Mudge, Ronald K.; and Rice, Edwin E., to Ingersoll-Rand Company. Engine cold testing. 4,448,063, Cl. 73-117.200.

Mudlake Holdings Ltd.: *See—*
Thorsell, Stanley E., 4,448,004, Cl. 52-241.000.

Mueller, Ralph W., to E. R. Wagner Mfg. Co. Caster including on center bearing arrangement. 4,447,932, Cl. 16-21.000.

Mues, Gunther: *See—*
Seibel, Georg; Mues, Gunther; and Horn, Theodor, 4,449,036, Cl. 219-265.000.

Mukai, Junji: *See—*
Koyama, Tohru; Wajima, Motoyo; and Mukai, Junji, 4,448,940, Cl. 525-504.000.

Mukenschnabl, Donald F. Rewinder apparatus. 4,448,363, Cl. 242-67.30R.

Mukoyama, Yoshiyuki: *See—*
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.

Muller, Jurgen: *See—*
Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,448,508, Cl. 354-281.000.

Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Operation microscope. 4,448,498, Cl. 350-516.000.

Muller, Werner C.; and Miller, Franklyn D., to National Distillers and Chemical Corporation. Fermentable sugar from the hydrolysis of starch derived from dry milled cereal grains. 4,448,881, Cl. 435-162.000.

Multi-Arc Vacuum Systems Inc.: *See—*
Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, 4,448,799, Cl. 427-37.000.

Multi Electric Mfg. Inc.: *See—*
Mongoven, Michael A.; Bees, Paul R.; and Earl, David C., 4,449,073, Cl. 315-130.000.

Munzel, Wolf-Dietrich: *See—*
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,448,241, Cl. 165-104.140.
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgand, 4,448,242, Cl. 165-104.140.

Murakami, Shohachi: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Murakawa, Kazunori: *See—*
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.

Murakoshi, Makoto, to Fuji Photo Film Co., Ltd. Camera shake detection apparatus. 4,448,510, Cl. 354-289.120.

Muramoto, Susumu: *See—*
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, 4,448,800, Cl. 427-39.000.

Muranaga, Yoshinobu, to Casio Computer Co., Ltd. Dot matrix type multi-layer liquid crystal display device. 4,449,123, Cl. 340-716.000.

Murase, Heihachi, to Kansai Paint Company. Anti-icing compositions. 4,448,919, Cl. 524-394.000.

Murata, Hideki: *See—*
Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.

Murata Manufacturing Co., Ltd.: *See—*
Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, 4,449,019, Cl. 179-110.00A.

Murayama, Noboru: *See—*
Ogawa, Mutsuo; and Murayama, Noboru, 4,449,149, Cl. 358-280.000.
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.

Murphy, Reuel A. Method and apparatus for shaft support for turbine pumps. 4,448,551, Cl. 384-252.000.

Murray, Avon R. Security tie-down apparatus. 4,448,049, Cl. 70-58.000.

Murray, James D., to Passavant Corporation. Spraying apparatus for cleaning filter plates. 4,448,221, Cl. 134-76.000.

Muta, Teruaki: *See—*
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Muto, Hiroshi: *See—*
Uno, Chiyomatsu; and Muto, Hiroshi, 4,448,121, Cl. 101-76.000.

Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, to Kyowa Hakko Kogyo Co., Ltd. 1,4-Dihydropyridine derivatives. 4,448,964, Cl. 546-194.000.

Muzzarelli, Gabriele. Apparatus for the dry salting of curd for cheese production. 4,448,116, Cl. 99-460.000.

Myer, Jon H., to Hughes Aircraft Company. Fiber optic hydrophone transducers. 4,449,210, Cl. 367-149.000.

Myers, Bernard J.: *See—*
Schmidt, Richard L.; Sullivan, Edmund J.; Myers, Bernard J.; and Liszka, Edward G., 4,449,211, Cl. 367-153.000.
Naarden International N.V.: *See—*
van der Weerdt, Antonius J. A.; and Apeldoorn, Willem, 4,448,712, Cl. 252-522.00R.
Nagai, Hiroshi; and Nishimura, Yasushi, to Kureha Kagku Kagyo Kabushiki Kaisha. Hydroxyapatite, ceramic material and process for preparing thereof. 4,448,758, Cl. 423-308.000.
Nagai, Kiyoshi; Shinohara, Hiroshi; and Imamura, Nobuo, to Taiyo Sanso Co., Ltd. Method of silver plating stainless steel vacuum bottle surfaces. 4,448,809, Cl. 427-239.000.
Nagai, Yasushi: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.
Nagano, Hironobu: *See—*
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.
Nagaoka, Kenji, to Sumitomo Chemical Company, Limited. Process for producing aromatic polyamide-imide. 4,448,957, Cl. 528-351.000.
Nagata, Wataru; and Aoki, Tsutomu, to Shionogi & Co., Ltd. Inversion of the 3α-amino group attached to the β-lactam ring. 4,448,720, Cl. 260-239.00A.
Nagatani, Kazuo, to Sakurai Machine Trading Co., Ltd. Apparatus for discharge of printed sheets from a cylinder type screen printing machine. 4,448,124, Cl. 101-118.000.
Nagele, Karl-Heinz: *See—*
Schuech, Siegmund; Nagele, Karl-Heinz; Jambor, Arno; and Sacco, Bruno, 4,447,928, Cl. 15-250.210.
Nagle, Michael: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.
Nakagawa, Nobuhiko: *See—*
Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, 4,449,019, Cl. 179-110.00A.
Nakagiri, Takashi: *See—*
Ohkubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; and Nakagiri, Takashi, 4,448,867, Cl. 430-31.000.
Nakahara, Akira: *See—*
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.
Nakaho, Junichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Tilting device for use in anti-glare mirror. 4,448,488, Cl. 350-278.000.
Nakajima, Kenji: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.
Nakajima, Mutsuhiko, to Ace Pak Company Incorporated. Automatic carton packing machine. 4,448,013, Cl. 53-565.000.
Nakajima, Nobuyuki; and Hiruma, Katumi, to Diesel Kiki Co., Ltd. Double-injection type fuel injection valve. 4,448,356, Cl. 239-533.500.
Nakajima, Tomoo, to Tamura Seisakusho Co., Ltd. Transformer. 4,449,111, Cl. 336-206.000.
Nakajima, Toyohei: *See—*
Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, 4,448,177, Cl. 123-571.000.
Nakamizo, Nobuhiro: *See—*
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.
Nakamoto, Akira; and Saito, Katsuhiko, to Shimadzu Corporation. Liquid chromatograph. 4,448,692, Cl. 210-656.000.
Nakamoto, Hiromasa; and Miyoshi, Takeshi, to Toyo Kogyo Co., Ltd. Clustered switch mounting means for use in automotive vehicles. 4,448,276, Cl. 180-90.000.
Nakamura, Akira: *See—*
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.
Nakamura, Hiromi: *See—*
Sayama, Norio; and Nakamura, Hiromi, 4,448,018, Cl. 60-39.050.
Nakamura, Kyoichi: *See—*
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, 4,448,901, Cl. 521-60.000.
Nakamura, Nobuo: *See—*
Shimizu, Chiyuki; and Nakamura, Nobuo, 4,448,814, Cl. 427-387.000.
Nakamura, Syuichi; and Morioka, Masakazu, to Osaka Gas Company Limited. Arrangement for detecting the location of an electrically insulative continuous item positioned underground. 4,449,098, Cl. 324-326.000.
Nakano, Joji: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.
Nakano, Masahiro: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.
Nakayama, Haruhiko; and Tatsuno, Takashi, to Rikagaku Kenkyusho. Herbicidal composition. 4,448,603, Cl. 71-92.000.
Nakayama, Noboru: *See—*
Aoyama, Jun; and Nakayama, Noboru, 4,448,182, Cl. 123-605.000.
Nakayama, Shigeru, to Olympus Optical Company Limited. Toner cleaning apparatus. 4,449,241, Cl. 118-699.000.
Nanba, Satoshi: *See—*
Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikazu, 4,448,519, Cl. 355-73.000.
Napier, Bradley, Jr.: *See—*
Duerksen, Walter K.; Googin, John M.; and Napier, Bradley, Jr., 4,448,701, Cl. 252-49.300.
Nappholz, Tibor A.; Money, David K.; Swift, Stephen; and Bradbury, Ronald C., to Telectronics Pty. Ltd. Heart pacer end-of-life detector. 4,448,197, Cl. 128-419.0PT.
Nappholz, Tibor A.: *See—*
Money, David K.; and Nappholz, Tibor A., 4,448,196, Cl. 128-419.0PT.
Naruo, Kyoichi: *See—*
Okita, Tsutomu; and Naruo, Kyoichi, 4,448,848, Cl. 428-447.000.
Naruto, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Chopper control equipment for electric railcars. 4,449,077, Cl. 318-6.000.
Nation, Thomas C.: *See—*
Johnson, Robert C.; Nation, Thomas C.; and Perry, David L., 4,449,100, Cl. 324-378.000.
National Can Corporation: *See—*
Kraska, John L., 4,448,322, Cl. 220-67.000.
National Distillers and Chemical Corporation: *See—*
Muller, Werner C.; and Miller, Franklyn D., 4,448,881, Cl. 435-162.000.
National Element, Inc.: *See—*
Best, Lorne A., 4,449,016, Cl. 174-138.00J.
National Molding Corporation: *See—*
Anscher, Bernard, 4,447,934, Cl. 24-16.0PB.
National Research Development Corporation: *See—*
Ash, Philip S.; and Hider, Robert C., 4,448,765, Cl. 424-14.000.
Board, Kenneth, 4,449,140, Cl. 357-7.000.
Klinner, Wilfred E., 4,448,014, Cl. 56-13.600.
Lewis, Meirion F., 4,448,805, Cl. 427-100.000.
McRae, Douglas C., 4,448,257, Cl. 171-127.000.
National Starch and Chemical Corporation: *See—*
Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 4,448,935, Cl. 525-343.000.
NCR Canada Ltd - NCR Canada Ltee: *See—*
Driemeyer, Reinhold G. F., 4,448,554, Cl. 400-124.000.
NCR Corporation: *See—*
Bashford, Anthony J.; and Vandenham, Elbert H., 4,448,407, Cl. 271-8.00A.
Knapp, George W.; Spaulding, Bernard B.; and Tolbert, John T., 4,449,202, Cl. 364-900.000.
Porter, Warren W., 4,448,466, Cl. 339-17.00M.
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, to Eisai Co., Ltd. 3-Carbamoyloxymethylcephem derivatives, and antibacterial drugs containing same. 4,448,775, Cl. 424-246.000.
Nehmiz, Peter: *See—*
Bohlen, Harald; Greschner, Johann; and Nehmiz, Peter, 4,448,865, Cl. 430-5.000.
Neilsen, Hildaur L. Key retaining device. 4,448,051, Cl. 70-389.000.
Nelsen, Suzanne B.: *See—*
Ozari, Yehuda; Nelsen, Suzanne B.; and Klein, Andrew, 4,448,932, Cl. 525-78.000.
Nepomiastchy, Alexis; and Pireyre, Guy R. F., to Societe Anonyme de Telecommunications. Machine for finishing ferrite magnetic pot cores. 4,447,990, Cl. 51-76.00R.
Neri, Bruce P.; Liffmann, Stanley M.; and Bergkuist, Carolyn, to Instrumentation Laboratory Inc. Fluid analysis. 4,448,889, Cl. 436-74.000.
Neumann, Frank: *See—*
Funk, Hans G.; Neumann, Frank; and Schaefer, Dankmar, 4,448,447, Cl. 285-4.000.
Newport, James B.: *See—*
Greer, Richard H.; and Newport, James B., 4,449,055, Cl. 307-38.000.
Nezu, Yuzo: *See—*
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.
NGK Insulators, Ltd.: *See—*
Mochida, Shigeru; and Kojima, Masaru, 4,448,828, Cl. 428-36.000.
NHK Spring Co., Ltd.: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.
Nick, Gunther: *See—*
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.
Nied, Herman A., to General Electric Company. Acoustic wave spot welder adaptive control. 4,449,029, Cl. 219-117.100.
Niedzielski, James H.: *See—*
Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., 4,448,302, Cl. 198-781.000.
Nihon Tokushu Noyaku Seizo K.K.: *See—*
Saito, Junichi; Shiokawa, Kozo; and Takemoto, Toshiyuki, 4,448,733, Cl. 260-985.000.
Nijhawan, Subash C.: *See—*
von Alpen, Ulrich; and Nijhawan, Subash C., 4,448,860, Cl. 429-57.000.
Niki, Motohiro. Apparatus for rearing small animals. 4,448,152, Cl. 119-22.000.

Ninomiya, Masakazu; and Suzuki, Atsushi, to Nippondenso Co., Ltd. Optimum control for internal combustion engines. 4,448,162, Cl. 123-419.000.
Ninomiya, Masakazu; and Suzuki, Atsushi, to Nippondenso Co., Ltd. Method and apparatus for optimum control of internal combustion engines. 4,448,171, Cl. 123-419.000.
Nippon Aroma Co., Ltd.: *See—*
Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, 4,448,921, Cl. 524-443.000.
Nippon Kogaku K. K.: *See—*
Hayashi, Kiyoshi, 4,448,495, Cl. 350-428.000.
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.
Wakamiya, Koichi, 4,448,497, Cl. 350-464.000.
Nippon Kogaku K.K.: *See—*
Saegusa, Takashi; Maida, Osamu; and Fukuhara, Toru, 4,448,506, Cl. 354-431.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Matsuo, Giichi, 4,448,298, Cl. 198-451.000.
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.
Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See—*
Ono, Tetsuji; Tsuchitani, Kazuo; Yamauchi, Shin; and Yonehara, Kiyoshi, 4,448,895, Cl. 502-304.000.
Nippon Soken, Inc.: *See—*
Abe, Seiko; and Watanabe, Kazuhide, 4,448,173, Cl. 123-549.000.
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.
Nippon Steel Corporation: *See—*
Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, 4,448,614, Cl. 148-12.100.
Nippon Telegraph and Telephone Public Corporation: *See—*
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, 4,448,800, Cl. 427-39.000.
Tsuchiya, Toshiaki; and Itsumi, Manabu, 4,449,142, Cl. 357-23.000.
Nippondenso Co., Ltd.: *See—*
Aoyama, Jun; and Nakayama, Noboru, 4,448,182, Cl. 123-605.000.
Fukazawa, Takeshi; Yamaguchi, Shunzo; and Atsumi, Morihiro, 4,449,039, Cl. 219-553.000.
Ninomiya, Masakazu; and Suzuki, Atsushi, 4,448,162, Cl. 123-419.000.
Ninomiya, Masakazu; and Suzuki, Atsushi, 4,448,171, Cl. 123-419.000.
Tokitsu, Naoki; Itoh, Toshihiko; and Fujiwara, Toshitaka, 4,449,206, Cl. 365-229.000.
Yamaguchi, Shunzo; Takeuchi, Yukihisa; Miura, Yasunao; and Miwa, Naoto, 4,448,833, Cl. 428-116.000.
Nishida, Fumihiko; Yamanaka, Isamu; and Ijiri, Hiroshi, to Dainippon Screen Seizo Kabushiki Kaisha. Photosensitive material holder for an upright printing machine. 4,448,518, Cl. 355-72.000.
Nishida, Tatehiko: *See—*
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, 4,448,901, Cl. 521-60.000.
Nishigaki, Yuji: *See—*
Fukuda, Tadaji; and Nishigaki, Yuji, 4,448,801, Cl. 427-39.000.
Nishikawa, Yukio, to Precision Monolithics, Inc. Low power, process and temperature insensitive FET bias circuit. 4,449,067, Cl. 307-570.000.
Nishimura, Akihiro: *See—*
Chang, Hao-Jan; and Nishimura, Akihiro, 4,448,846, Cl. 428-412.000.
Nishimura, Masaaki: *See—*
Shibata, Takashi; and Nishimura, Masaaki, 4,449,234, Cl. 381-65.000.
Nishimura, Yasushi: *See—*
Nagai, Hiroshi; and Nishimura, Yasushi, 4,448,758, Cl. 423-308.000.
Nishimura, Yutaka: *See—*
Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, 4,448,070, Cl. 73-204.000.
Nishino, Atsushi: *See—*
Unoguchi, Takehiko; Hasegawa, Seiro; Fujito, Katsuyuki; Nishino, Atsushi; and Yoshida, Akihiko, 4,449,188, Cl. 364-505.000.
Nishino, Hisao; and Kondo, Shigeru, to Tohoku Metal Industries, Inc. Multi-output-type power supply devices using separately-exciting-type switching regulators. 4,449,173, Cl. 363-21.000.
Nishizawa, Hiroshi: *See—*
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.
Nissan Chemical Industries, Ltd.: *See—*
Tsubaki, Kazumi; Morinaga, Hiroshi; and Yukawa, Joei, 4,448,948, Cl. 528-95.000.
Nissan Motor Company, Limited: *See—*
Fujikawa, Tsuneo; Kamio, Kazuyoshi; and Takagishi, Haruyoshi, 4,448,341, Cl. 228-45.000.
Hayashi, Isao; and Moriya, Makoto, 4,448,323, Cl. 220-86.00R.
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,448,181, Cl. 123-620.000.
Shimada, Yukio; Iijima, Tetsuya; and Tanino, Mikio, 4,448,034, Cl. 62-161.000.
Yoshida, Kenichi, 4,448,163, Cl. 123-422.000.
Nitta, Jun: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.
Nitto Boseki: *See—*
Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, 4,448,921, Cl. 524-443.000.
Nixdorf Computer AG: *See—*
Simon, Joachim W., 4,449,217, Cl. 370-62.000.
Nixon, Thomas J.: *See—*
Seiler, Norman C.; Nixon, Thomas J.; and Waschka, George A., Jr., 4,449,246, Cl. 455-9.000.
NL Chem Canada, Inc.: *See—*
Menard, Jean G., 4,448,358, Cl. 241-39.000.
Noborimoto, Kazutaka; Maruta, Keiji; Suzuki, Junichi; and Shintani, Kenji, to Sony Corporation. Optical reading apparatus. 4,449,213, Cl. 369-45.000.
Noess, Rainer: *See—*
Axelrod, Norman N.; Haas, Peter; and Noess, Rainer, 4,448,503, Cl. 353-26.00A.
Noll, Karl: *See—*
Demuth, Hans; Kropp, Peter; and Noll, Karl, 4,448,244, Cl. 165-141.000.
Nolting, Eugene C.: *See—*
Eaton, Charles K.; Nolting, Eugene C.; and Norman, Thomas J., Jr., 4,448,631, Cl. 156-521.000.
Nomura, Suguru: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.
Norman, Thomas J., Jr.: *See—*
Eaton, Charles K.; Nolting, Eugene C.; and Norman, Thomas J., Jr., 4,448,631, Cl. 156-521.000.
Normand Trust, The: *See—*
Mercier, Jacques H., 4,448,217, Cl. 138-30.000.
Northern Telecom Limited: *See—*
Chow, Peter E. K., 4,449,157, Cl. 361-56.000.
Chytil, Milan, 4,449,231, Cl. 381-51.000.
Norwood Industries, Inc.: *See—*
McCartney, John R., 4,448,922, Cl. 524-443.000.
Noseka, Tsutomu: *See—*
Satoh, Kazuo; and Noseka, Tsutomu, 4,448,627, Cl. 156-405.100.
Nouva Zarine S.p.A. Construzione Macchine E Stampi Per Calzature: *See—*
Zaino, Luigi, 4,447,967, Cl. 36-45.000.
Novex, Inc.: *See—*
Paros, Jerome M., 4,448,546, Cl. 374-117.000.
Nowotarski, Mark S.: *See—*
Francis, Arthur W., Jr.; Nowotarski, Mark S.; and Solomon, Jack, 4,448,616, Cl. 148-16.000.
Nugent, Leslie G.: *See—*
Nugent, Walter J.; and Nugent, Leslie G., 4,448,050, Cl. 70-223.000.
Nugent, Walter J.; and Nugent, Leslie G. Locks. 4,448,050, Cl. 70-223.000.
Nuodex Inc.: *See—*
Deinet, Adolph J.; and Woods, William B., 4,448,906, Cl. 523-122.000.
Nuspl, Matthias: *See—*
Hennig, Kurt; Klein, Manfred; and Nuspl, Matthias, 4,447,929, Cl. 15-256.500.
N.V. Transworld Marine Agency CY S.A., naamlose vennootschap: *See—*
Colson, Eugene J., 4,448,451, Cl. 294-74.000.
O & S Manufacturing Company: *See—*
Rose, John A., 4,448,562, Cl. 403-134.000.
Oakley, Inc.: *See—*
Jannard, James H., 4,447,914, Cl. 2-432.000.
Oberman, Joel R.; and Ott, Russell G., to RCA Corporation. Implementation of instruction for a branch which can cross one page boundary. 4,449,185, Cl. 364-200.000.
Obermeyer, James H., to Unarco Industries, Inc. Storage racks with spacer tabs. 4,448,315, Cl. 211-191.000.
O'Brien, Joseph P.; and Papay, Andrew G., to Edwin Cooper, Inc. Polyalkylene succinimide lubricant additives. 4,448,974, Cl. 548-550.000.
Occhini, Elio: *See—*
Lombardi, Aurelio; and Occhini, Elio, 4,448,484, Cl. 350-96.230.
Occidental Research Corporation: *See—*
Gragg, Frederick M.; Shen, Jian C.; and Jacobson, Carl L., 4,448,249, Cl. 166-251.000.
Ochi, Hisayuki: *See—*
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.
Oda, Kenichi. Process for recovering exhaust heat. 4,448,025, Cl. 60-651.000.
Odaka, Kentaro: *See—*
Yasuda, Nobuyuki; and Odaka, Kentaro, 4,449,061, Cl. 307-268.000.
Odebrecht, Wolfgand: *See—*
Andrea, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgand, 4,448,242, Cl. 165-104.140.
Odebrecht, Wolfgang: *See—*
Andrea, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,448,241, Cl. 165-104.140.
Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., to Haggar Company. Method and apparatus for applying a welt to a garment panel. 4,448,626, Cl. 156-256.000.

Ogasawara, Fumihiro, to Ricoh Company, Ltd. Self-scanning photodiode array. 4,449,147, Cl. 358-212.000.

Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, to Nippon Kogaku K. K. Device for holding a sheet-like sample. 4,448,404, Cl. 269-21.000.

Ogawa, Mutsuo; and Murayama, Noboru, to Ricoh Company, Ltd. Facsimile apparatus. 4,449,149, Cl. 358-280.000.

Ogishi, Masaaki; Hagiwara, Isao; Yoshida, Yukio; and Oono, Kenzo, to Yoshida Kogyo K. K. Apparatus for providing an optimal opening and closing of a door. 4,449,078, Cl. 318-102.000.

Ogitani, Kazutaka: *See*—
Uesugi, Toshiaki; Ogitani, Kazutaka; and Inden, Toshikazu, 4,449,129, Cl. 346-61.000.

O'Hara, Arthur C. Water injection system for internal combustion engine. 4,448,170, Cl. 123-25.00A.

Ohie, Tomonori: *See*—
Komada, Hideaki; Kojima, Yutaka; and Ohie, Tomonori, 4,448,168, Cl. 123-446.000.

Ohkubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; and Nakagiri, Takashi, to Canon Kabushiki Kaisha. Image forming method and device for same. 4,448,867, Cl. 430-31.000.

Ohman, Randall L.: *See*—
Carlson, Douglas M.; Ohman, Randall L.; and Thorndyke, Lloyd M., 4,449,164, Cl. 361-384.000.

Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, to Fujitsu Limited. Logic circuit with improved switching. 4,449,063, Cl. 307-456.000.

Ohmori, Motoji: *See*—
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.

Ohmori, Nobuo: *See*—
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.

Ohmori, Takashi: *See*—
Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,137, Cl. 346-76.0PH.
Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,152, Cl. 358-296.000.
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,136, Cl. 346-76.0PH.

Ohmstedt, Jeff: *See*—
Zeller, Chris; and Ohmstedt, Jeff, 4,448,433, Cl. 280-18.000.

Ohnishi, Souichi; and Komai, Kensaku, to Sharp Kabushiki Kaisha. Sampling time control circuit for use in an audio cassette tape data processor. 4,449,154, Cl. 360-51.000.

Ohno, Akira: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Ohno, John M., to General Electric Company. Cutting insert having unique cross section. 4,448,591, Cl. 51-298.000.

Ohshima, Yoshimitsu; Yokozawa, Norio; and Ohzeki, Masayoshi, to Hitachi, Ltd. Sequence program inputting device. 4,449,180, Cl. 364-147.000.

Ohsuga, Minoru: *See*—
Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, 4,448,070, Cl. 73-204.000.

Ohtsuki, Yoshihiko: *See*—
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.

Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, to Hitachi, Ltd. Hot-wire type flow velocity meter. 4,448,070, Cl. 73-204.000.

Ohyo Jiki Labolatory Company Ltd.: *See*—
Kuromatsu, Akio, 4,448,656, Cl. 204-129.400.

Ohzeki, Masayoshi: *See*—
Ohshima, Yoshimitsu; Yokozawa, Norio; and Ohzeki, Masayoshi, 4,449,180, Cl. 364-147.000.

Ohzono, Kohei, to Honda Giken Kogyo Kabushiki Kaisha. Locking system for rolling-type tricycle. 4,448,436, Cl. 280-282.000.

Oil Process Systems, Inc.: *See*—
Friedman, Bernard, 4,448,686, Cl. 210-238.000.

Okada, Yasunori: *See*—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.

Okamoto, Makoto: *See*—
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.

Okamoto, Takeshi: *See*—
Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,449,107, Cl. 333-150.000.

Oki Densen Kabushiki Kaisha: *See*—
Ikeda, Eiichi; Kayama, Ikuo; and Izaki, Masahiro, 4,448,837, Cl. 428-215.000.

Okita, Tsutomu; and Naruo, Kyoichi, to Fuji Photo Film Co., Ltd. Magnetic recording medium and process for producing the same. 4,448,848, Cl. 428-447.000.

Okubo, Yukitoshi, to Canon Kabushiki Kaisha. Image display apparatus. 4,448,491, Cl. 350-344.000.

Oleck, Stephen M.; and Sherry, Howard S., to Mobil Oil Corporation. Catalyst and process for residua demetalation and desulfurization. 4,448,677, Cl. 208-216.0PP.

Olieslagers, Henri G.; and Meigert, Frederik B., to U.S. Philips Corporation. Method of electrophotographically manufacturing a display screen for a color display tube. 4,448,866, Cl. 430-24.000.

Olschewski, Armin: *See*—
Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, 4,448,294, Cl. 192-30.00V.

Olson, Alan J., to B. F. Goodrich Company, The. Use of high-intensity rapidly-pulsating actinic radiation in the chlorination of polyvinyl chloride resin. 4,448,658, Cl. 204-159.180.

Olson, Jerry M.; and Carleton, Karen L., to United States of America, Energy. Process for producing silicon. 4,448,651, Cl. 204-60.000.

Olympus Optical Co., Ltd.: *See*—
Banno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, 4,448,752, Cl. 422-81.000.
Miyazi, Kazumi; and Osanai, Akira, 4,448,370, Cl. 242-201.000.
Nakayama, Shigeru, 4,449,241, Cl. 118-699.000.

OMI International Corporation: *See*—
Doty, Warren R.; and Kinney, Timothy J., 4,448,811, Cl. 427-304.000.

Omori, Hiroyuki: *See*—
Yanagi, Yoshio; Yoneyama, Kunikazu; and Omori, Hiroyuki, 4,448,996, Cl. 564-467.000.

Omron Tateisi Electronics Co.: *See*—
Matsuoka, Akira; and Tsukagoshi, Terukazu, 4,449,040, Cl. 235-380.000.
Suzuki, Masatoshi, 4,449,144, Cl. 358-105.000.

Onischin, Boris P.: *See*—
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Ono, Tetsuji; Tsuchitani, Kazuo; Yamauchi, Shin; and Yonehara, Kiyoshi, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Process for preparation of catalyst for cleaning exhaust gases and catalyst prepared by the process. 4,448,895, Cl. 502-304.000.

Onodera, Hideo: *See*—
Shibamata, Yoshiyuki; Onodera, Hideo; and Kiriseko, Tadashi, 4,449,037, Cl. 219-388.000.

Onuma, Kazuhiko: *See*—
Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, 4,448,896, Cl. 502-314.000.

Oono, Kenzo: *See*—
Ogishi, Masaaki; Hagiwara, Isao; Yoshida, Yukio; and Oono, Kenzo, 4,449,078, Cl. 318-102.000.

Orechov, Vsevolod D.: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Orini, Matilde, heir: *See*—
LaMonica, Gaspare; Richelli, Federico, deceased; Richelli, Angelo, heir; Richelli, Giorgio, heir; Richelli, Fabrizia, heir; Richelli, Mauro, heir; and Orini, Matilde, heir, 4,448,598, Cl. 62-352.000.

Orszulak, Stanley J., to Easco Corporation. Retaining means for impact drive socket. 4,448,564, Cl. 403-318.000.

Osada, Kimio, to Tokyo Shibaura Denki Kabushiki Kaisha. Compact fluorescent lamp. 4,449,072, Cl. 315-58.000.

Osada, Yoshiyuki: *See*—
Ohkubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; and Nakagiri, Takashi, 4,448,867, Cl. 430-31.000.

Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, to Hitachi Chemical Co., Ltd. Heat resistant resin and process for producing the same. 4,448,844, Cl. 428-375.000.

Osaka Gas Company Limited: *See*—
Nakamura, Syuichi; and Morioka, Masakazu, 4,449,098, Cl. 324-326.000.

Osako, Teruaki. X-Ray apparatus. 4,449,227, Cl. 378-112.000.

Osanai, Akira: *See*—
Miyazi, Kazumi; and Osanai, Akira, 4,448,370, Cl. 242-201.000.

Oshima, Toyoji: *See*—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.

Otani, Haruyuki: *See*—
Kudo, Shinichi; and Otani, Haruyuki, 4,449,216, Cl. 369-255.000.

Othen, David G.: *See*—
Tear, Brian; and Othen, David G., 4,448,609, Cl. 106-308.00N.

Otis Engineering Corporation: *See*—
Mashaw, Howard R., Jr., 4,448,427, Cl. 277-73.000.
Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.

Otoi, Takashi, to Hanwa Elecyronic Co., Ltd. Power controlling circuit for automatic regulating apparatus. 4,449,091, Cl. 323-236.000.

Ott, Russell G.: *See*—
Oberman, Joel R.; and Ott, Russell G., 4,449,185, Cl. 364-200.000.

Otto, Dennis L., to Timken Company, The. Self-venting seal. 4,448,461, Cl. 308-187.200.

Oulrey, Gary M.: *See*—
Shaffer, Donald U.; and Oulrey, Gary M., 4,448,255, Cl. 166-387.000.

Owens-Corning Fiberglas Corporation: *See*—
Black, Denny E.; and Garrett, David W., 4,448,917, Cl. 524-160.000.
Haines, Richard M.; and Wong, Robert, 4,448,910, Cl. 523-402.000.
Haines, Richard M.; and Wong, Robert, 4,448,911, Cl. 523-411.000.

Oy Vehna AB: *See*—
Sarkki, Marja-Leena; Soderstrom, Martti; Maunula, Hannu; and Korhonen, Annika, 4,448,790, Cl. 426-52.000.

Oyama, Toshimasa: *See*—
Sherby, Oleg D.; Oyama, Toshimasa; and Wadsworth, Jeffrey, 4,448,613, Cl. 148-12.00R.

Oyama, Yoshishige: *See*—
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.

Ozari, Yehuda; Nelsen, Suzanne B.; and Klein, Andrew, to GAF Corporation. Polyvinyl chloride modified with butadiene-containing core-shell composite polymers for enhanced impact strength. 4,448,932, Cl. 525-78.000.

Ozone, Toshio: *See*—
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,448,617, Cl. 148-36.000.

P & W Pumping-Jack Co.: *See*—
Polak, Paul R.; and Jantzen, Daniel E., 4,448,110, Cl. 91-275.000.

Paar, Michael S.: *See*—
Hillebrand, George A.; and Paar, Michael S., 4,448,155, Cl. 123-90.500.

Paaren, Herbert E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Smith, Connie M., 4,448,726, Cl. 260-397.200.

Pachonik, Horst, to Siemens Aktiengesellschaft. Device for the cathode sputtering of a metal. 4,448,652, Cl. 204-298.000.

Paczkowski, Marian, to Glowny Instytut Gornictwa. Device for production of inert gases. 4,448,577, Cl. 431-190.000.

Paddock, Kimberly A.; and Ruth, Roy L., to Ball Corporation. Magnet support collar. 4,449,109, Cl. 335-212.000.

Page Accessories, Inc.: *See*—
Engelson, David, 4,447,913, Cl. 2-338.000.

Page, William P.: *See*—
Gould, Richard E.; and Page, William P., 4,449,113, Cl. 338-39.000.

Pagel, Gene T.: *See*—
Weber, Ronald J.; and Pagel, Gene T., 4,447,985, Cl. 49-400.000.

Pain, John R., to Heat Transfer Pty. Ltd. Heat exchanger. 4,448,243, Cl. 165-134.00R.

Palko, Tadeusz: *See*—
Wajszczuk, Waldemar J.; Palko, Tadeusz; and Pawlicki, Grzegorz, 4,448,202, Cl. 128-709.000.

Panasik, Theodore: *See*—
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.

Panicker, Narayana N.: *See*—
Gentry, Larry L.; Moss, Herbert H.; and Panicker, Narayana N., 4,448,568, Cl. 405-169.000.

Pankratz, Lawrence A.; and Corniea, Donald G., to Liquipak International, Inc. Multiple mandrel carton erecting, filling and sealing machine with two-stage loading. 4,448,008, Cl. 53-202.000.

Papay, Andrew G.: *See*—
O'Brien, Joseph P.; and Papay, Andrew G., 4,448,974, Cl. 548-530.000.

Papst Motoren KG: *See*—
Doemen, Benno, 4,449,081, Cl. 318-254.000.

Paradis, Roland C., to Perkin-Elmer Corporation, The. Solvent pressurization system. 4,448,684, Cl. 210-198.200.

Paradox International, Incorporated: *See*—
Kossel, Horst K., 4,448,154, Cl. 123-58.0BB.

Parker, Michael S. Multi-use balance beam apparatus. 4,448,411, Cl. 272-111.000.

Paros, Jerome M., to Novex, Inc. Digital temperature sensor. 4,448,546, Cl. 374-117.000.

Parrish, John H., to Vital Metrics, Inc. Medical fluid measuring system. 4,448,207, Cl. 128-771.000.

Partridge, Brian W.: *See*—
Young, Arthur P.; Gildersleeves, Clive D. P.; Partridge, Brian W.; and Ryder, Keith L., 4,449,181, Cl. 364-200.000.

Passavant Corporation: *See*—
Murray, James D., 4,448,221, Cl. 134-76.000.

Patentverwertungs-und Finanzierungsgesellschaft SERANIA AG: *See*—
Schmid, August, 4,448,415, Cl. 273-54.00A.

Patry, Louison. Wheel balancing device. 4,448,073, Cl. 73-484.000.

Patton, John T., Jr.; and Rupert, John P., to BASF Wyandotte Corporation. Halogenated phenolic polyols and rigid cellular compositions made therefrom. 4,448,952, Cl. 528-129.000.

Patton, John T., Jr.: *See*—
Rupert, John P.; and Patton, John T., Jr., 4,448,951, Cl. 528-129.000.

Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, to Behringwerke Aktiengesellschaft. Latex, biologically active latex conjugates and a process for their preparation. 4,448,908, Cl. 523-201.000.

Pawlicki, Grzegorz: *See*—
Wajszczuk, Waldemar J.; Palko, Tadeusz; and Pawlicki, Grzegorz, 4,448,202, Cl. 128-709.000.

Payne, Mark: *See*—
Wilkins, James H.; and Payne, Mark, 4,447,986, Cl. 49-426.000.

Pearl, David R., to Gerber Garment Technology, Inc. Method for preparing pattern piece. 4,448,808, Cl. 427-208.600.

Peele, John R.: *See*—
Manuccia, Thomas J.; Peele, John R.; and Geosling, Christine E., 4,448,000, Cl. 52-208.000.

Peiffer, Dennis G.: *See*—
Lundberg, Robert D.; and Peiffer, Dennis G., 4,448,926, Cl. 524-612.000.

Peisker, Glenn W.: *See*—
Jackowski, Ronald A.; and Peisker, Glenn W., 4,448,426, Cl. 277-37.000.

Pekker, Valery. Electronic lock device and optical key therefor. 4,449,126, Cl. 340-825.320.

Pelerin, Jacques: *See*—
Radtke, Schrade F.; Coutsouradis, Dimitri; and Pelerin, Jacques, 4,448,748, Cl. 420-514.000.

Pelka, David G.; and Fleishman, Roc V., to Southern California Gas Company. Non-intrusive thermal power monitor and method. 4,448,545, Cl. 374-41.000.

Pelletier, Ronald R.: *See*—
Jakubowski, James J.; Meyer, Victor E.; and Pelletier, Ronald R., 4,448,845, Cl. 428-404.000.

Pelley, Perry H., III: *See*—
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.

Pelts, Boris B.: *See*—
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Pembleton, Lauren M.: *See*—
Vicino, Robert K.; Cooper, Dale L.; Pembleton, Lauren M.; and Allen, Constance C., 4,447,974, Cl. 40-538.000.

Pence, Geogory L.: *See*—
Liskov, Nathan A.; Curtis, Robert G.; Favaloro, Caesar J.; and Pence, Geogory L., 4,449,223, Cl. 375-10.000.

Pennwalt Corporation: *See*—
Haines, Paul G., 4,449,006, Cl. 568-70.000.

Perfetto, Louis P.: *See*—
Lombardino, Anthony V.; and Perfetto, Louis P., 4,447,953, Cl. 30-382.000.

Perkin-Elmer Corporation, The: *See*—
Paradis, Roland C., 4,448,684, Cl. 210-198.200.

Perlman, Stanley; Herbert, William G.; Layton, Donald; and Hanafee, James S., to Permonite Mfg. Co. Fuse holder. 4,448,476, Cl. 339-203.000.

Permonite Mfg. Co.: *See*—
Perlman, Stanley; Herbert, William G.; Layton, Donald; and Hanafee, James S., 4,448,476, Cl. 339-203.000.

Perry, David L.: *See*—
Johnson, Robert C.; Nation, Thomas C.; and Perry, David L., 4,449,100, Cl. 324-378.000.

Persson, Erik A., to Santrade Ltd. Earth boring device. 4,448,271, Cl. 175-364.000.

Pet Incorporated: *See*—
Wells, Harold D., 4,448,117, Cl. 99-331.000.

Petersen, Raymond R.: *See*—
Eberhardt, H. Alfred; Hoffman, Kenneth F.; and Petersen, Raymond R., 4,448,256, Cl. 169-15.000.

Peterson, Ann E., to Bendix Corporation, The. Coupling member and an electrical connector. 4,448,470, Cl. 339-91.00R.

Peterson, Francis C., to Illinois Tool Works Inc. Stress relieving nut member. 4,448,565, Cl. 403-408.000.

Peterson, Marvin L.; and Hein, Norman W., Jr., to Conoco Inc. Method and apparatus for erosion detection and location in hydrocarbon production systems and the like. 4,448,062, Cl. 73-86.000.

Peterson, William E.: *See*—
Irelan, John A.; and Peterson, William E., 4,448,453, Cl. 296-27.000.

Petersson, Stig A., to Boliden Aktiebolag. Method for producing a fuel from solid bituminous and/or lignocellulosic material. 4,447,963, Cl. 34-12.000.

Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., to JOBO Labortechnik GmbH & Co. KG. Film developing spool. 4,448,365, Cl. 242-71.800.

Pettigrew, Ronald. Nail driving and recessing tool. 4,448,339, Cl. 227-147.000.

Peyton, Jackie W. Ground rod driving pole. 4,448,264, Cl. 173-52.000.

Pfeiffer, Francis R., to SmithKline Beckman Corporation. Adamantyl containing intermediates. 4,448,972, Cl. 548-528.000.

Pfeiffer, Kenneth E.: *See*—
Kochka, Edgar L.; Burack, Robert D.; and Pfeiffer, Kenneth E., 4,448,343, Cl. 228-205.000.

Pfister, Rudolf: *See*—
Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, 4,448,991, Cl. 564-171.000.

Pfizer Inc.: *See*—
Cross, Peter E.; and Dickinson, Roger P., 4,448,781, Cl. 424-269.000.
Schnur, Rodney C., 4,448,971, Cl. 548-226.000.
Welch, Willard M., Jr., 4,448,732, Cl. 260-245.200.

Pfundstein, Dean W. Wire spoke wheel hub assembly. 4,448,456, Cl. 301-58.000.

Philip Morris Incorporated: *See—*
Friedrich, Hermann; Ruf, Claude; and Brosy, Jacques, 4,448,208, Cl. 131-297.000.
Phillips, Albert A. Railroad track stress transfer apparatus. 4,448,350, Cl. 238-231.000.
Phillips Petroleum Company: *See—*
Gentry, Cecil C., 4,448,678, Cl. 209-3.000.
Kukes, Semyon G.; and Shioyama, Tod K., 4,448,892, Cl. 502-164.000.
Leland, John E., 4,448,918, Cl. 524-262.000.
Scinta, James, 4,448,669, Cl. 208-11.0LE.
Picker International Limited: *See—*
Young, Ian R.; and Burl, Michael, 4,449,097, Cl. 324-309.000.
Pierce Chemical Company: *See—*
Smith, Paul K.; and Klenk, Dennis C., 4,448,764, Cl. 424-1.100.
Pigman, John H.: *See—*
Woods, William D.; and Pigman, John H., 4,448,229, Cl. 144-129.000.
Pinches, Philip B.; and Lieber, Sidney, to UPA Technology, Inc. Workpiece positioning system for beta ray measuring instruments. 4,449,048, Cl. 250-308.000.
Pinto, Akiva: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.
Pioneer Electronic Corporation: *See—*
Mori, Shuichi, 4,449,229, Cl. 381-2.000.
Shibazaki, Shigeru, 4,449,056, Cl. 307-38.000.
Pipe Master International Ltd.: *See—*
Tsuda, Yutaka, 4,448,567, Cl. 405-43.000.
Pireyre, Guy R. F.: *See—*
Nepomiastchy, Alexis; and Pireyre, Guy R. F., 4,447,990, Cl. 51-76.00R.
Pismannik, Konstantin D.: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.
Piziali, Robert: *See—*
Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., 4,448,192, Cl. 128-204.260.
Plambeck, Eric D.: *See—*
Dennis, Warren E.; and Plambeck, Eric D., 4,448,388, Cl. 248-663.000.
Platel, Charles, to Cafes Collet. Vacuum package bag. 4,449,243, Cl. 383-103.000.
Plath, Peter: *See—*
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,448,960, Cl. 544-282.000.
Platt Saco Lowell Corporation: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.
Plueddemann, Edwin P., to Dow Corning Corporation. Metal extraction from solution and immobilized chelating agents used therefor. 4,448,694, Cl. 210-682.000.
Plumer, John A.: *See—*
McClenahan, David H.; and Plumer, John A., 4,448,838, Cl. 428-251.000.
Plumlee, Karl W.: *See—*
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., 4,448,665, Cl. 208-8.0LE.
Plummer, Virgil C., Jr., to Vibranetics, Inc. Vibratory storage pile discharger means. 4,448,332, Cl. 222-196.000.
Plycraft Fabricating Corporation: *See—*
Cole, Richard H.; and Lillie, Jerry H., 4,447,988, Cl. 49-485.000.
Plyler, Robert G.: *See—*
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,448,477, Cl. 339-258.0RR.
Podolsky, Leaman B.: *See—*
Binstock, Morton H.; McCloskey, Thomas H.; and Podolsky, Leaman B., 4,448,026, Cl. 60-662.000.
Pohl, Claus, to Geimuplast Peter Mundt GmbH. & Co. KG. Foil and method for protecting film. 4,448,834, Cl. 428-122.000.
Pohl, Peter H., to Abbott Laboratories. Inert gas wheel assembly. 4,448,011, Cl. 53-512.000.
Pohlman, William, III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., to Intel Corporation. Extended address, single and multiple bit microprocessor. 4,449,184, Cl. 364-200.000.
Polak, Paul R.; and Jantzen, Daniel E., to P & W Pumping-Jack Co. Hydraulic pump. 4,448,110, Cl. 91-275.000.
Poll, Marian. Ellipsograph. 4,447,954, Cl. 33-30.00D.
Pollak, Zoltan: *See—*
Jeppsson, Jan B.; and Pollak, Zoltan, 4,448,324, Cl. 220-266.000.
Pollard, Jerry B., to Coleman Company, Inc., The. Boom assembly for sailboard. 4,448,142, Cl. 114-39.000.
Pollia, Andrew A., to Pollia, Raphael Theresa. Coupling system. 4,448,448, Cl. 285-112.000.
Pollia, Raphael Theresa: *See—*
Pollia, Andrew A., 4,448,448, Cl. 285-112.000.
Pomeroy, Glenn A.; and Scrivens, Carol L. Supporting device. 4,448,313, Cl. 211-71.000.
Pongratz, Leo: *See—*
Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, 4,448,107, Cl. 89-36.00K.
Pont-A-Mousson S.A.: *See—*
Bellocci, Rio, 4,448,610, Cl. 148-3.000.
Popken, John A.: *See—*
Hotchkiss, Kenneth W.; Popken, John A.; and Griffith, Nellie S., 4,449,015, Cl. 174-138.00F.
Popov, Alexandr N.: *See—*
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.
Porta Systems Corp.: *See—*
Singer, Loren A., Jr., 4,449,156, Cl. 361-119.000.
Porter, Robert E. Recessed top feed for sewing machines. 4,448,140, Cl. 112-311.000.
Porter, Warren W., to NCR Corporation. Low insertion force connector for printed circuit boards. 4,448,466, Cl. 339-17.00M.
Potts, Harold L. Deep water riser system for offshore drilling. 4,448,266, Cl. 175-7.000.
Powers, Kerns H.: *See—*
Dischert, Robert A.; and Powers, Kerns H., 4,449,143, Cl. 358-11.000.
PPG Industries, Inc.: *See—*
Chun, Duk S.; Stermole, David A.; and Loehr, Clifford E., 4,448,759, Cl. 423-474.000.
DuBois, Donald W.; and Darlington, William B., 4,448,662, Cl. 204-252.000.
Precision Monolithics, Inc.: *See—*
Nishikawa, Yukio, 4,449,067, Cl. 307-570.000.
Pressaco, Pierre, to Societe Anonyme DBA. Braking pressure corrector. 4,448,457, Cl. 303-22.00R.
Preuss, Wolfgang, to Henkel KGaA. Δ4-Steroid compounds and a process for their production. 4,448,725, Cl. 260-397.100.
Price, Robert T. Televison programming information system. 4,449,249, Cl. 455-45.000.
Prime, Ronald M.: *See—*
Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., 4,448,302, Cl. 198-781.000.
Prime & Weaver Investment Company: *See—*
Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., 4,448,302, Cl. 198-781.000.
Priscsak, Istvan, to Contact Systems, Inc. Cut and clinch mechanism for use in electrical component assembly apparatus. 4,447,945, Cl. 29-566.300.
Pritchard, Eric K. Data processing system for multi-precision arithmetic. 4,449,196, Cl. 364-768.000.
Process Development, Inc.: *See—*
Canzoneri, Anthony S.; and McDonald, Joseph V., 4,449,101, Cl. 324-453.000.
Procter & Gamble Company, The: *See—*
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,448,699, Cl. 252-8.750.
King, Richard M., 4,448,998, Cl. 564-488.000.
Professional Positioners, Inc.: *See—*
Huge, Gerald W., 4,448,735, Cl. 264-16.000.
Proto Production Plastics, Inc.: *See—*
Hotchkiss, Kenneth W.; Popken, John A.; and Griffith, Nellie S., 4,449,015, Cl. 174-138.00F.
Purdy, William C., to Sykes Pumps Limited. Improvements in and relating to winches. 4,448,395, Cl. 254-334.000.
Puryear, John W., to Brunswick Corporation. Spin casting type reel with drag reducing front cover. 4,448,367, Cl. 242-84.20A.
Putman, Philip A.: *See—*
Morrow, Rosemary K., 4,447,912, Cl. 2-159.000.
PyMaH Corporation: *See—*
Foley, Theodore A., 4,448,548, Cl. 374-160.000.
Quartino, Miguel A.; and Hoyt, Earl H., Jr., to Hoyt/Easton Archery Co. Adjustable cable anchors for a compound bow. 4,448,183, Cl. 124-24.00R.
Rabe, Duane C., to Motorola Inc. High gain balanced mixer. 4,449,245, Cl. 455-319.000.
Rado, Peter J.: *See—*
Flahive, Barry J.; Grady, John J., III; and Rado, Peter J., 4,449,183, Cl. 364-200.000.
Radtke, Schrade F.; Coutsouradis, Dimitri; and Pelerin, Jacques, to International Lead Zinc Research Organization, Inc. Zinc-aluminum alloys and coatings. 4,448,748, Cl. 420-514.000.
Raducanu, Dan-Corneliu: *See—*
Hoffmann, Harald; and Raducanu, Dan-Corneliu, 4,449,086, Cl. 318-696.000.
Rakes, James M.: *See—*
McClure, Richard G.; Rakes, James M.; and Williams, Errol R., 4,449,033, Cl. 219-216.000.
Rambausek, Hugo: *See—*
Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, 4,448,533, Cl. 356-416.000.
Ramey, Chester E.; and Rostek, Charles J., Jr., to Ferro Corporation. Cyclic ether or carbonate alkylation products of 2,2,5,5-tetramethylimidazolidin-4-one and derivatives, their preparation, and their use as stabilizers for synthetic polymers. 4,448,969, Cl. 548-301.000.
Randall, Paul G. Drafting table. 4,448,133, Cl. 108-9.000.
Rangabe, Alexander R. Record cleaning mechanism. 4,449,214, Cl. 369-72.000.
Ransburg-Gema AG: *See—*
Buschor, Karl, 4,448,819, Cl. 427-424.000.

Buschor, Karl, 4,448,820, Cl. 427-424.000.
Buschor, Karl, 4,448,821, Cl. 427-424.000.
Rapp, Karl: *See—*
Schmid, Werner; and Rapp, Karl, 4,448,167, Cl. 123-446.000.
Rapp, Willard E.: *See—*
Golinski, Stanley; and Rapp, Willard E., 4,447,948, Cl. 29-829.000.
Rauch, Hubert: *See—*
Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, 4,448,945, Cl. 526-193.000.
Raudat, John L., to Standard-Knapp, Inc. Finger assembly for a case loader. 4,448,009, Cl. 53-248.000.
Raush, Russell G., to RCA Corporation. Device for supporting and aligning photographic masters. 4,448,522, Cl. 355-78.000.
Ravenel, Bruce W., III: *See—*
Pohlman, William, III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., 4,449,184, Cl. 364-200.000.
Ray-Chaudhuri, Dilip K.: *See—*
Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 4,448,935, Cl. 525-343.000.
Raychem Corporation: *See—*
Holmes, James C.; Bush, Harvey; and Fink, Roger L., 4,448,824, Cl. 428-33.000.
Raymond Engineering Inc.: *See—*
Skalko, Edward S., 4,448,368, Cl. 242-186.000.
Rayovac Corporation: *See—*
Fleischer, Niles A.; and Ekern, Ronald J., 4,448,861, Cl. 429-105.000.
Raytheon Company: *See—*
Girard, Donald D., 4,449,041, Cl. 235-412.000.
Liskov, Nathan A.; Curtis, Robert G.; Favaloro, Caesar J.; and Pence, Geogory L., 4,449,223, Cl. 375-10.000.
RCA Corporation: *See—*
Assil, Naim Z.; and Hughes, Richard H., 4,449,069, Cl. 313-412.000.
Dingwall, Andrew G. F.; and Zazzu, Victor, 4,449,118, Cl. 340-347.0AD.
Dischert, Robert A.; and Powers, Kerns H., 4,449,143, Cl. 358-11.000.
Ebert, Chris W.; and Thall, Earle S., 4,448,612, Cl. 148-6.350.
Oberman, Joel R.; and Ott, Russell G., 4,449,185, Cl. 364-200.000.
Raush, Russell G., 4,448,522, Cl. 355-78.000.
Reno, Charles W., 4,449,212, Cl. 369-44.000.
Reno, Charles W., 4,449,215, Cl. 369-111.000.
Ream, Allen K.: *See—*
Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., 4,448,192, Cl. 128-204.260.
Reeb, Roland; and Chauvel, Bernard, to Rhone Poulenc Specialites Chimiques. Interpolymer latex, process for its preparation and use of the latex for coating paper. 4,448,923, Cl. 524-460.000.
Reeb, Roland; and Chauvel, Bernard, to Rhone-Poulenc Specialites Chimiques. Aqueous interpolymer emulsions, process for their preparation and use of the emulsions as binders for coating paper. 4,448,924, Cl. 524-460.000.
Reece, Robert: *See—*
Blakely, Bill W.; and Reece, Robert, 4,448,103, Cl. 84-1.010.
Reed, Claude E. Nail holding hammer. 4,448,230, Cl. 145-30.00A.
Reed, Lehman T., to Midway Fishing Tool Company. Geothermal well head clean out and shut off assembly. 4,448,247, Cl. 166-82.000.
Regents of the University of Washington, Board of the: *See—*
Schnepf, H. Ernest; and Whiteley, Helen R., 4,448,885, Cl. 435-253.000.
Regie Nationale des Usines Renault: *See—*
Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, 4,448,082, Cl. 73-861.050.
Henault, Claude, 4,448,156, Cl. 123-90.170.
Regnier, Alexis G.: *See—*
Wray, Daniel J.; and Regnier, Alexis G., 4,448,590, Cl. 51-297.000.
Regondi, Valeria: *See—*
Degani, Iacopo; Fochi, Rita; and Regondi, Valeria, 4,449,004, Cl. 568-38.000.
Rehm, Gallus; and Franke, Lutz, to Restra Patentverwertung GmbH. End-anchoring device for anchoring at least one bar made from a fibrous compound material and being used as tendon in pre-stressed concrete construction. 4,448,002, Cl. 52-223.00L.
Reich, Fritz; and Thalmann, Alfred, to George Fischer Ltd. Apparatus for welding a joint between plastic pipes. 4,449,038, Cl. 219-535.000.
Reich, Gerhard; and Wenner, Michael, to Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik. Device for blocking containers against moving on a conveyor. 4,448,300, Cl. 198-633.000.
Reichardt, Gerd: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.
Reichert, Rudolf; and Haftlmeier, Theo, to Bosch-Siemens Hausgerate. Cooling appliance, especially a household refrigerator or the like. 4,448,464, Cl. 312-214.000.
Reid, Howard J.: *See—*
Jaffe, Michael B.; Luper, Charles R.; Mabry, Eric; and Reid, Howard J., 4,448,058, Cl. 73-23.000.
Reid, Walter L., Jr.; Van Stone, Robert A.; and Delano, Ralph L., to Acushnet Company. Safety device for a cable wound drum. 4,448,290, Cl. 188-82.700.
Reifers, Richard F.: *See—*
Lord, Henry A.; Bixler, Kenneth D.; and Reifers, Richard F., 4,448,344, Cl. 229-2.5EC.
Reinhardt, Bruce A.; and Arnold, Fred E., to United States of America, Air Force. Oxy and thioaryl-phenylated aromatic biscyclopentadienones. 4,449,001, Cl. 568-31.000.
Remond, Pierre L.: *See—*
Deborde, Albert H.; and Remond, Pierre L., 4,448,223, Cl. 139-435.000.
Reno, Charles W., to RCA Corporation. Multi-beam optical record and playback apparatus. 4,449,212, Cl. 369-44.000.
Reno, Charles W., to RCA Corporation. Apparatus for varying track spacing in multi-track optical record systems. 4,449,215, Cl. 369-111.000.
Restra Patentverwertung GmbH: *See—*
Rehm, Gallus; and Franke, Lutz, 4,448,002, Cl. 52-223.00L.
Reznick, David. Method and apparatus for treatment of tinned metal surfaces and treated tinned metal surface. 4,448,475, Cl. 204-140.000.
Reznick, Steven G.; and Franke, Milton E., to United States of America, Air Force. Axisymmetric thrust augmenting ejector with discrete primary air slot nozzles. 4,448,354, Cl. 239-265.170.
Rhine, Wendell E.: *See—*
Kauffman, Robert E.; Rhine, Wendell E.; and Saba, Costandy S., 4,448,887, Cl. 436-60.000.
Rhodes, Russell H.; Smith, James S.; and Clare, Leslie P., to GTE Products Corporation. Molybdenum-tungsten based alloys containing hafnium carbide. 4,448,606, Cl. 75-236.000.
Rhone Poulenc Specialites Chimiques: *See—*
Reeb, Roland; and Chauvel, Bernard, 4,448,923, Cl. 524-460.000.
Reeb, Roland; and Chauvel, Bernard, 4,448,924, Cl. 524-460.000.
Rialan, Joseph; and Cretin, Jacques, to Institut Francais du Petrol. Method for amplifying multiplexed signals through different gain amplification units for selecting an optimum gain signal and device therefore. 4,449,120, Cl. 340-347.0AD.
Rice, Edwin E.: *See—*
Mudge, Ronald K.; and Rice, Edwin E., 4,448,063, Cl. 73-117.200.
Richards, Powell; Srivastava, Suresh C.; and Meinken, George E., to United States of America, Energy. Complex of transferrin with ruthenium for medical applications. 4,448,762, Cl. 424-1.100.
Richardson, Douglas A.: *See—*
Richardson, William A.; and Richardson, Douglas A., 4,448,120, Cl. 101-32.000.
Richardson, Edwin A., to Shell Oil Company. Apparatus for testing a nitrogen-gas-stabilized cement. 4,448,751, Cl. 422-68.000.
Richardson, William A.; and Richardson, Douglas A. Calligraphic apparatus and method and engraving tool for use in connection therewith. 4,448,120, Cl. 101-32.000.
Richelli, Angelo, heir: *See—*
LaMonica, Gaspare; Richelli, Federico, deceased; Richelli, Angelo, heir; Richelli, Giorgio, heir; Richelli, Fabrizia, heir; Richelli, Mauro, heir; and Orini, Matilde, heir, 4,448,598, Cl. 62-352.000.
Richelli, Fabrizia, heir: *See—*
LaMonica, Gaspare; Richelli, Federico, deceased; Richelli, Angelo, heir; Richelli, Giorgio, heir; Richelli, Fabrizia, heir; Richelli, Mauro, heir; and Orini, Matilde, heir, 4,448,598, Cl. 62-352.000.
Richelli, Federico, deceased: *See—*
LaMonica, Gaspare; Richelli, Federico, deceased; Richelli, Angelo, heir; Richelli, Giorgio, heir; Richelli, Fabrizia, heir; Richelli, Mauro, heir; and Orini, Matilde, heir, 4,448,598, Cl. 62-352.000.
Richelli, Giorgio, heir: *See—*
LaMonica, Gaspare; Richelli, Federico, deceased; Richelli, Angelo, heir; Richelli, Giorgio, heir; Richelli, Fabrizia, heir; Richelli, Mauro, heir; and Orini, Matilde, heir, 4,448,598, Cl. 62-352.000.
Richelli, Mauro, heir: *See—*
LaMonica, Gaspare; Richelli, Federico, deceased; Richelli, Angelo, heir; Richelli, Giorgio, heir; Richelli, Fabrizia, heir; Richelli, Mauro, heir; and Orini, Matilde, heir, 4,448,598, Cl. 62-352.000.
Ricoh Company, Ltd.: *See—*
Hasegawa, Keiji, 4,448,555, Cl. 400-144.200.
Kato, Tomokazu, 4,449,150, Cl. 358-283.000.
Ogasawara, Fumihiro, 4,449,147, Cl. 358-212.000.
Ogawa, Mutsuo; and Murayama, Noboru, 4,449,149, Cl. 358-280.000.
Umezawa, Michio, 4,449,135, Cl. 346-75.000.
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, to Ciba-Geigy Corporation. Microbicidal N-alkoxycarbonyl-alkyl-N-substituted acetyl-anilines and -naphthylamines. 4,448,773, Cl. 424-211.000.
Riedel, Erich O., to Alfred Gutmann GmbH and Co., Firma. Sluice apparatus for cleaning the interior of pipes. 4,447,925, Cl. 15-104.06A.
Riesland, Eberhard; and Kruger, Karl-Heinz, to Veb Zentrum fur Forschung und Technologie Mikroelekronik. Position drive. 4,448,403, Cl. 269-21.000.
Rieter Machine Works Ltd.: *See—*
Thalmann, Dieter, 4,448,016, Cl. 57-133.000.
Rikagaku Kenkyusho: *See—*
Nakayama, Haruhiko; and Tatsuno, Takashi, 4,448,603, Cl. 71-92.000.

Riley, Robert S.: *See—*
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.

Riley, William. System for efficiently exchanging heat with ground water in an aquifer. 4,448,237, Cl. 165-2.000.

Rinner, Bernhard: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Ritsema, Irving R.; and Johannesen, Donald D., to Bendix Corporation, The. Rotor for a disc brake assembly. 4,448,291, Cl. 188-218.0XL.

Roady, Daniel K.: *See—*
Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., 4,448,626, Cl. 156-256.000.

Robers, Klaas H. J.: *See—*
Kroon, Dirk J.; and Robers, Klaas H. J., 4,449,198, Cl. 364-900.000.

Robert Bosch GmbH: *See—*
Bodig, Bernd; Hohne, Gerd; and Kalkhof, Bernd, 4,448,180, Cl. 123-618.000.
Dobler, Klaus; and Hachtel, Hansjorg, 4,448,084, Cl. 73-862.330.
Engelbrecht, Hans-Christian; Kniss, Helmut; and Wessel, Wolf, 4,448,067, Cl. 73-119.00A.
Schmid, Werner; and Rapp, Karl, 4,448,167, Cl. 123-446.000.
Schmidt, Wolfgang, 4,448,074, Cl. 73-585.000.
Wurth, Hans; and Leinhos, Jurgen, 4,448,055, Cl. 72-354.000.

Robert, Jacques: *See—*
Clerc, Jean F.; and Robert, Jacques, 4,449,125, Cl. 340-752.000.

Robert S. Agar Inc.: *See—*
Thorsell, Stanley E., 4,448,004, Cl. 52-241.000.

Robertson, George H.: *See—*
Johnson, Steven L.; McLaren, George; and Robertson, George H., 4,448,607, Cl. 106-19.000.

Robertson, Glenn D., Jr., to United States of America, Air Force. Electroding of multi-layered epitaxial structures. 4,448,645, Cl. 204-15.000.

Robinson, Leon H.: *See—*
Cooke, Claude E., Jr.; and Robinson, Leon H., 4,448,250, Cl. 166-255.000.

Robison, Thomas E. Reaction gill net. 4,447,978, Cl. 43-10.000.

Robotic Vision Systems, Inc.: *See—*
DiMatteo, Paul, 4,448,505, Cl. 353-122.000.

Rocca, David. Driver tool. 4,448,097, Cl. 81-177.00M.

Roccaforte, Harry I.; and Scott, Raymond G., to Champion International Corporation. Container for expandable food pouch. 4,448,309, Cl. 206-525.000.

Rockwell International Corporation: *See—*
Crossett, Joseph A., III; and Hartmann, Paul R., 4,449,222, Cl. 375-10.000.
Feldmann, Daniel P., 4,449,058, Cl. 307-152.000.
Holmstrom, Roy C., 4,448,053, Cl. 72-102.000.
Vail, David K., 4,448,543, Cl. 368-202.000.

Rockwell Rimoldi, S.p.A.: *See—*
Romano, Rancati, 4,448,047, Cl. 66-207.000.

Rodnyansky, Lazar I.; and Gupalov, Viktor K. Implantable correctant of a spinal curvature and a method for treatment of a spinal curvature. 4,448,191, Cl. 128-69.000.

Rodson, Marius; and Scher, Herbert B., to Stauffer Chemical Company. Encapsulation process. 4,448,929, Cl. 525-57.000.

Roe, Jin-Young K.: *See—*
Keeling, Ronald J.; Roe, Jin-Young K.; and Mollmann, Henry C., 4,448,849, Cl. 428-503.000.

Roehrich, Siegfried: *See—*
Viniczay, Gabriella F.; and Roehrich, Siegfried, 4,448,295, Cl. 192-125.00A.

Roes, John B.: *See—*
Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., 4,449,186, Cl. 364-407.000.

Roggen, Rolf, to Swiss Aluminium Ltd. Device for measuring the bath temperature in a fused salt electrolytic cell used for the production of aluminum. 4,448,661, Cl. 204-243.00R.

Roggenkamp, Clyde L. Dental supply dispenser. 4,448,307, Cl. 206-369.000.

Rohm GmbH: *See—*
Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, 4,448,945, Cl. 526-193.000.

Rohm and Haas Company: *See—*
Morris, Hal C., 4,448,839, Cl. 428-267.000.

Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Dichloroacetamides, herbicides containing acetanilides as herbicidal active ingredients and the dichloroacetamides as antagonists, and the use of these herbicides in controlling undesired plant growth. 4,448,960, Cl. 544-282.000.

Rojey, Alexandre; and Cheron, Jacques, to Institut Francais du Petrol. Process for cold and/or heat production with use of carbon dioxide and a condensable fluid. 4,448,031, Cl. 62-101.000.

Rollinger, Bernt: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Roman, Gianfranco, to Claber S.p.A. Watering pistol. 4,448,355, Cl. 239-526.000.

Roman, Steven A., to Shell Oil Company. Preparation of (1R,cis)-oxyimino-substituted cyclopropanecarboxylic acids. 4,448,986, Cl. 562-506.000.

Romanenkov, Jury A.: *See—*
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Romano, Rancati, to Rockwell Rimoldi, S.p.A. Embroidery device for crochet machines. 4,448,047, Cl. 66-207.000.

Romblom, Edward F.; and Sundeen, Arthur R., to General Motors Corporation. Fuel per pulse indicator for a pulse engine fuel injection system. 4,448,066, Cl. 73-119.00A.

Rombouts, Rombout M., to Allpac Holding B.V. Pulling device. 4,448,233, Cl. 160-319.000.

Rooney, Clarence S.: *See—*
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,448,786, Cl. 424-274.000.

Rose, Donald G. Board game apparatus. 4,448,422, Cl. 273-271.000.

Rose, John A., to O & S Manufacturing Company. Bellows seal for ball and socket joints. 4,448,562, Cl. 403-134.000.

Rosen, Louis M. Convertible couch. 4,447,920, Cl. 5-12.00R.

Rosenquist, Niles R.; Mark, Victor; and Hedges, Charles V., to General Electric Company. Preparation of benzoate ester terminated polycarbonate with aroyl halide. 4,448,953, Cl. 528-198.000.

Ross, Sidney D.: *See—*
Dequasie, Andrew E.; and Ross, Sidney D., 4,449,163, Cl. 361-315.000.

Ross, William J.: *See—*
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,448,787, Cl. 424-283.000.

Rosselli, Andrew C.: *See—*
Badgley, Patrick R.; and Rosselli, Andrew C., 4,448,169, Cl. 123-467.000.

Rossetti, Ronald: *See—*
Brus, Louis E.; and Rossetti, Ronald, 4,448,524, Cl. 356-36.000.

Rostek, Charles J., Jr.: *See—*
Ramey, Chester E.; and Rostek, Charles J., Jr., 4,448,969, Cl. 548-301.000.

Rothenberger GmbH & Co.: *See—*
Rothenberger, Gunter, 4,447,926, Cl. 15-104.3SN.

Rothenberger, Gunter, to Rothenberger GmbH & Co. Pipe cleaning machine having a container to accommodate cleaning spirals of various diameter. 4,447,926, Cl. 15-104.3SN.

Rotolante, Ralph A.; and Koehler, Toivo, to Carson Alexion Corporation. Focal plane photo-detector mosaic array apparatus. 4,449,044, Cl. 250-211.00J.

Roussel Uclaf: *See—*
Jullien, Renee; and Benayache, Samir, 4,448,728, Cl. 260-464.000.

Roux, Pieter. Dispenser devices for flowable contents in compressible tubes. 4,448,330, Cl. 222-101.000.

Rowlette, John J.: *See—*
Graf, James E.; and Rowlette, John J., 4,448,858, Cl. 429-49.000.

Rozell, William J.: *See—*
Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., 4,448,647, Cl. 204-33.000.

Rozenberg, Vladimir L.: *See—*
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Rubens, Louis C., to Dow Chemical Company, The. Better foamable styrene and other olefin polymer compositions containing lightly crosslinked hydroxy and isocyanate linkages. 4,448,933, Cl. 525-123.000.

Rubey, Robert J., to Sterling Drug Inc. Check valve for use with high pressure pump. 4,448,212, Cl. 137-238.000.

Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., to Digital Equipment Corporation. Interface between a pair of processors, such as host and peripheral-controlling processors in data processing systems. 4,449,182, Cl. 364-200.000.

Rudolf, Peter: *See—*
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.

Ruell, Hartwig E.: *See—*
Feix, Wolfgang H.; and Ruell, Hartwig E., 4,449,189, Cl. 364-513.500.

Ruf, Claude: *See—*
Friedrich, Hermann; Ruf, Claude; and Brosy, Jacques, 4,448,208, Cl. 131-297.000.

Ruhrkohle AG: *See—*
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.

Runtal Holding Company S.A.: *See—*
de Palezieux, Jacques, 4,448,245, Cl. 165-174.000.

Rupert, John P.; and Patton, John T., Jr., to BASF Wyandotte Corporation. Phenolic polyols and rigid cellular compositions derived therefrom. 4,448,951, Cl. 528-129.000.

Rupert, John P.: *See—*
Patton, John T., Jr.; and Rupert, John P., 4,448,952, Cl. 528-129.000.

Russell, Roy R. B.: *See—*
Colman, Geoffrey; and Russell, Roy R. B., 4,448,768, Cl. 424-92.000.

Ruth, Roy L.: *See—*
Paddock, Kimberly A.; and Ruth, Roy L., 4,449,109, Cl. 335-212.000.

Ryan, James W.; and Chung, Alfred, to University of Miami. Tagged pyroglu-L-Phe-L-Arg derivatives, substrates and assays for kallikrein. 4,448,715, Cl. 260-112.50R.

Ryder, Keith L.: *See—*
Young, Arthur P.; Gildersleeves, Clive D. P.; Partridge, Brian W.; and Ryder, Keith L., 4,449,181, Cl. 364-200.000.

Ryley, James F., Jr., to TRW Inc. Optical fiber connectors with automatic supply of index matching fluid and reservoirs for same. 4,448,483, Cl. 350-96.210.

Saam, John C.: *See—*
Falender, James R.; and Saam, John C., 4,448,927, Cl. 524-860.000.

Saba, Costandy S.: *See—*
Kauffman, Robert E.; Rhine, Wendell E.; and Saba, Costandy S., 4,448,887, Cl. 436-60.000.

Sacco, Bruno: *See—*
Schuech, Siegmund; Nagele, Karl-Heinz; Jambor, Arno; and Sacco, Bruno, 4,447,928, Cl. 15-250.210.

Sadoff, Bernard J., Jr.: *See—*
Halling, Horace P.; and Sadoff, Bernard J., Jr., 4,448,449, Cl. 285-263.000.

Saegusa, Takashi; Maida, Osamu; and Fukuhara, Toru, to Nippon Kogaku K.K. Exposure control device of a camera. 4,448,506, Cl. 354-431.000.

Saikawa, Isamu: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Saito, Isao: *See—*
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasegawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.

Saito, Junichi; Shiokawa, Kozo; and Takemoto, Toshiyuki, to Nihon Tokushu Noyaku Seizo K.K. Production of alkylsulfinyl substituted organophosphoric acid esters. 4,448,733, Cl. 260-985.000.

Saito, Katsuhiko: *See—*
Nakamoto, Akira; and Saito, Katsuhiko, 4,448,692, Cl. 210-656.000.

Saito, Syuichiro: *See—*
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.

Saito, Takao: *See—*
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, 4,448,035, Cl. 62-176.600.

Sakaguchi, Hirofumi: *See—*
Fujii, Yozo; Sakaguchi, Hirofumi; and Hirabayashi, Tsugio, 4,448,514, Cl. 355-8.000.

Sakaguchi, Katsuyoshi: *See—*
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Sakai, Takamasa: *See—*
Sato, Yasuo; and Sakai, Takamasa, 4,449,141, Cl. 357-14.000.

Sakamoto, Fumio: *See—*
Ikeda, Shoji; Sakamoto, Fumio; Tsukamoto, Goro; and Yamabe, Shigeru, 4,448,769, Cl. 424-114.000.

Sakamoto, Keiji: *See—*
Kozai, Yoshinori; Kobari, Katsuo; and Sakamoto, Keiji, 4,449,177, Cl. 363-126.000.

Sakata, Takayoshi: *See—*
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.

Sakurai, Kenjiro: *See—*
Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, 4,449,204, Cl. 365-127.000.

Sakurai, Koichi: *See—*
Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, 4,448,614, Cl. 148-12.100.

Sakurai Machine Trading Co., Ltd.: *See—*
Nagatani, Kazuo, 4,448,124, Cl. 101-118.000.

Salkeld, Stephen A.; Stock, Mark E.; and Welch, Robert J., to Litton Business Systems, Inc. Panel system edge sealing means. 4,448,231, Cl. 160-135.000.

Sambucetti, Carlos J.: *See—*
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.

Samifi Babcock Samifi Internationale S.A.: *See—*
LaMonica, Gaspare; Richelli, Federico, deceased; Richelli, Angelo, heir; Richelli, Giorgio, heir; Richelli, Fabrizia, heir; Richelli, Mauro, heir; and Orini, Matilde, heir, 4,448,598, Cl. 62-352.000.

Sampson, Michael J.; and Hutchings, Neville. Process for obtaining improved yields from plants. 4,447,984, Cl. 47-58.000.

Samuelson, Bruce E.: *See—*
Mailand, John J.; and Samuelson, Bruce E., 4,447,989, Cl. 49-488.000.

Sanchez, Jose A., to Westinghouse Electric Corp. System and method for tracking targets in a multipath environment. 4,449,127, Cl. 343-7.00A.

Sanderson, John R., to Mobay Chemical Corporation. Process for the production of bis(4-hydroxyphenyl)biphenyl disulfone. 4,449,003, Cl. 568-33.000.

Sandoz, Inc.: *See—*
Kathawala, Faizulla G.; and Heider, John G., 4,448,785, Cl. 424-274.000.

Sankyo Company, Limited: *See—*
Terahara, Akira; and Tanaka, Minoru, 4,448,979, Cl. 549-292.000.

Sannes, Keith N.: *See—*
Factor, Arnold; and Sannes, Keith N., 4,448,727, Cl. 260-463.000.

Sano, Kenji: *See—*
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,448,869, Cl. 430-83.000.

Sanofi: *See—*
Blanchard, Jean F.; and Lasserre, Pierre P., 4,448,779, Cl. 424-263.000.

Santrade Ltd.: *See—*
Persson, Erik A., 4,448,271, Cl. 175-364.000.

Sargom Company Limited, The: *See—*
Glass, Cyril; Hursey, Leslie G.; and Innese-Turnbull, Ronald, 4,448,841, Cl. 428-270.000.

Sarkki, Marja-Leena; Soderstrom, Martti; Maunula, Hannu; and Korhonen, Annika, to Oy Vehna AB. Process for fractioning grain flour into components of food quality. 4,448,790, Cl. 426-52.000.

Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, to BASF Aktiengesellschaft. Preparation of acicular, ferrimagnetic iron oxides. 4,448,761, Cl. 423-632.000.

Sasaki, Kan: *See—*
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,448,089, Cl. 74-467.000.

Sasaki, Osamu: *See—*
Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.

SASIB S.p.A.: *See—*
Cavazza, Roberto, 4,447,957, Cl. 33-172.00F.

Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, to Eisai Co., Ltd.; and General Director of the Agency of Industrial Science and Technology. Polyprenyl sulfones. 4,449,002, Cl. 568-28.000.

Sato, Hideo: *See—*
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,448,869, Cl. 430-83.000.

Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, to Hitachi, Ltd. Vibration diagnosis method for rotary machine. 4,448,077, Cl. 73-660.000.

Sato, Yasuo; and Sakai, Takamasa, to Clarion Co., Ltd. Variable capacitor. 4,449,141, Cl. 357-14.000.

Sato, Yasushi: *See—*
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,448,513, Cl. 355-8.000.

Sato, Yukihiro; and Shibuya, Yoshimichi, to Hitachi, Ltd. Wide angle liquid crystal display that copes with interference coloring. 4,448,489, Cl. 350-330.000.

Satoh, Kazuo; and Nosaka, Tsutomu, to Sumitomo Rubber Industries, Ltd. Apparatus for applying a rubber sheet onto a tire making drum. 4,448,627, Cl. 156-405.100.

Satoh, Seiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. High frequency and steam heating method and apparatus. 4,449,026, Cl. 219-10.55B.

Saurer Diederichs (Societe Anonyme): *See—*
Deborde, Albert H.; and Remond, Pierre L., 4,448,223, Cl. 139-435.000.

Sawada, Kiyoshi: *See—*
Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.

Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, to Japan Exlan Company Limited. Process for producing acrylic fibers with excellent surface smoothness. 4,448,740, Cl. 264-182.000.

Sayama, Norio; and Nakamura, Hiromi, to Mitsubishi Gas Chemical Company, Inc. Method for adding water to a heat exchanging system. 4,448,018, Cl. 60-39.050.

Schad, Robert D., to Husky Injection Molding Systems Ltd. Method of molding plastic workpieces about slender permanent inserts. 4,448,741, Cl. 264-251.000.

Schaefer, Dankmar: *See—*
Funk, Hans G.; Neumann, Frank; and Schaefer, Dankmar, 4,448,447, Cl. 285-4.000.

Schaeflern, Henry: *See—*
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,448,141, Cl. 112-315.000.

Schafer, Robert J., to Ashland Oil, Inc. Process for casting lightweight metals. 4,448,907, Cl. 523-139.000.

Schafer, Werner: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.

Schaffarczyk, Paul: *See—*
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.

Schapel, Dietmar: *See—*
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,448,914, Cl. 524-32.000.

Scharf, Walter: *See—*
Landgraf, Wolfgang; Scharf, Walter; and Simon, Heinrich, 4,447,991, Cl. 51-161.000.

Scharting, Gunter: *See—*
Moller, Rainer; and Scharting, Gunter, 4,448,108, Cl. 89-37.00R.

Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., to GTE Products Corporation. Method for removal of tin from ammonium tungstates. 4,448,755, Cl. 423-56.000.

Scher, Herbert B.: *See—*
Rodson, Marius; and Scher, Herbert B., 4,448,929, Cl. 525-57.000.

Schering Corporation: *See—*
Afonso, Adriano, 4,448,782, Cl. 424-270.000.

Schierjott, Gunter. Circuit for measuring electrical properties. 4,449,093, Cl. 324-57.00R.

Schindler, Peter; and Huber, Gerhard, to Hoechst AG. Detection of β-lactamase utilizing a chromophoric cephalosporin composition. 4,448,880, Cl. 435-18.000.

Schirmer, Henry G., to W. R. Grace & Co., Cryovac Division. Pasteurizable and cook-in shrink bag constructed of a multilayer film. 4,448,792, Cl. 426-113.000.

Schmid, Alfred: *See—*
Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, 4,448,836, Cl. 428-164.000.

Schmid, August, to Patentverwertungs-und Finanzierungsgesellschaft SERANIA AG. Bowling pin sweeper moving apparatus. 4,448,415, Cl. 273-54.00A.

Schmid, Walter. Electrode for detecting bioelectrical signals. 4,448,199, Cl. 128-639.000.

Schmid, Werner; and Rapp, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,448,167, Cl. 123-446.000.

Schmidt, Daniel. Tool to supply, twist and cut ends of a metal wire or plastic filament to provide a fastener. 4,448,225, Cl. 140-119.000.

Schmidt, Richard L.; Sullivan, Edmund J.; Myers, Bernard J.; and Liazka, Edward G., to United States of America, Navy. Low drag body conformal acoustic array. 4,449,211, Cl. 367-153.000.

Schmidt, Wolfgang, to Robert Bosch GmbH. Soft-switching audiometer. 4,448,074, Cl. 73-585.000.

Schmitt, Albert, deceased; by Schmitt, Magdalena S., heir; by Schmitt, Thomas, heir; by Schmitt, Martin, heir; by Schmitt, Georg, heir; by Schmitt, Annette, heir; and Spreitzhofer, Ernst. Spectrophotometer. 4,448,530, Cl. 356-320.000.

Schmitt, Annette, heir: *See—*
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.

Schmitt, Georg, heir: *See—*
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.

Schmitt, Magdalena S., heir: *See—*
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.

Schmitt, Martin, heir: *See—*
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.

Schmitt, Thomas, heir: *See—*
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.

Schnell, Hans; and Wenske, Rolf, to Escher Wyss GmbH. Dewatering roll of a wire press. 4,447,941, Cl. 29-121.100.

Schnepf, H. Ernest; and Whiteley, Helen R., to Regents of the University of Washington, Board of the. Bacillus thuringiensis crystal protein in *Escherichia coli*. 4,448,885, Cl. 435-253.000.

Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Morzycki, Jacek W., 4,448,721, Cl. 260-239.500.
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Smith, Connie M., 4,448,726, Cl. 260-397.200.

Schnur, Rodney C., to Pfizer Inc. Hypoglycemic 5-phenyl-substituted oxazolidine-2,4-diones. 4,448,971, Cl. 548-226.000.

Schoeller & Co.: *See—*
Seibel, Georg; Mues, Gunther; and Horn, Theodor, 4,449,036, Cl. 219-265.000.

Schott-Zwiesel-Glaswerke Aktiengesellschaft: *See—*
Landgraf, Wolfgang; Scharf, Walter; and Simon, Heinrich, 4,447,991, Cl. 51-161.000.

Schreiber, William L.: *See—*
Tokarzewski, Richard J.; and Schreiber, William L., 4,449,009, Cl. 568-377.000.

Schreiner, Peter J.: *See—*
Gumkowski, Bert A.; and Schreiner, Peter J., 4,448,289, Cl. 188-73.450.

Schreitz, Richard G. Method and apparatus to digitally display the time of day. 4,448,544, Cl. 368-239.000.

Schuech, Siegmund; Nagele, Karl-Heinz; Jamboi, Arno; and Sacco, Bruno, to Daimler-Benz Aktiengesellschaft. Windshield wiper arrangement. 4,447,928, Cl. 15-250.210.

Schuller, Ivan K.; and Falco, Charles M., to United States of America, Energy. Coherent multilayer crystals and method of making. 4,448,854, Cl. 428-611.000.

Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrichrich, to Bayer Aktiengesellschaft. Process for the production of hydantoins. 4,448,942, Cl. 525-540.000.

Schulte, Heinz; and Kirchhoff, Werner, to Varta Batterie Aktiengesellschaft. Lead storage battery. 4,448,862, Cl. 429-136.000.

Schulte, Klaus: *See—*
Coblenz, Rolf; Schulte, Klaus; Ebeling, Wilfried; and Evertz, Dieter, 4,448,902, Cl. 521-99.000.

Schulz, Dietrich: *See—*
Majewski, Klaus-Peter; Morsbach, Martin; and Schulz, Dietrich, 4,448,431, Cl. 277-325.00B.

Schumacher, Gerd; and Masurat, Heinz-Werner, to B.A.T. Cigaretten-Fabriken GmbH. Process for determining the force acting on a test piece and the resultant change in parameters and a device for carrying out such a process. 4,448,079, Cl. 73-789.000.

Schumacher, Hans; Albrecht, Konrad; and Heinrich, Rudolf, to Hoechst Aktiengesellschaft. Herbicidal compositions. 4,448,602, Cl. 71-90.000.

Schuman, Eldor N. Vertical food holder. 4,448,312, Cl. 211-49.00R.

Schwab, James J.; and Tassicker, Owen J., to Electric Power Research Institute, Inc. Focusing electrodes for high-intensity ionizer stage of electrostatic precipitator. 4,449,159, Cl. 361-230.000.

Schwander, Hansrudolf, to Ciba-Geigy Corporation. Trifluoromethyl-substituted monoazo disperse dyes. 4,448,719, Cl. 260-152.000.

Schwartz, Robert C.: *See—*
Leslie, Samuel A.; and Schwartz, Robert C., 4,449,248, Cl. 455-38.000.

Schwarz, Richard A., to Cosden Technology, Inc. Expandable polystyrene composition and process. 4,448,900, Cl. 521-57.000.

Schwendemann, Kenneth L.: *See—*
Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.

Schwind, Edward C., to Gearhart Industries, Inc. Enhanced flow tool positioner. 4,448,248, Cl. 166-241.000.

Schwob, Pierre, to SEB S. A. Arrangement for mounting a thermistor-type temperature sensor in a metallic heating device. 4,449,035, Cl. 219-251.000.

Scientific Technology Incorporated: *See—*
Colvin, Roger, 4,449,045, Cl. 250-214.0AG.

Scinta, James, to Phillips Petroleum Company. Hydrocarbon recovery from diatomite. 4,448,669, Cl. 208-11.0LE.

Scott, Charles F. Device for indirectly monitoring cumulative cost of utility consumption. 4,449,187, Cl. 364-464.000.

Scott, Raymond G.: *See—*
Roccaforte, Harry I.; and Scott, Raymond G., 4,448,309, Cl. 206-525.000.

Scott, Wayne A. Adjustable automobile seat bracket. 4,448,454, Cl. 297-313.000.

Scrivens, Carol L.: *See—*
Pomeroy, Glenn A.; and Scrivens, Carol L., 4,448,313, Cl. 211-71.000.

Sea Energy Associates Ltd.: *See—*
Wood, Eric; and Bellamy, Norman W., 4,448,020, Cl. 60-398.000.

Sea Tank Co.: *See—*
Berthin, Jean-Claude, 4,448,570, Cl. 405-204.000.

Searson, D. James: *See—*
Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, 4,448,654, Cl. 204-70.000.

SEB S. A.: *See—*
Schwob, Pierre, 4,449,035, Cl. 219-251.000.

Seebinger, Frederick L., to Atlas Sound Division of American Trading & Production Corporation. Multi-position microphone stand support assembly. 4,449,020, Cl. 179-147.000.

Seeley, Frederic F., to F. F. Seeley Nominees Pty. Ltd. Water valve. 4,448,213, Cl. 137-451.000.

Seibel, Georg; Mues, Gunther; and Horn, Theodor, to Schoeller & Co. Electric cigar lighter with a snap disk forming a bimetallic switch. 4,449,036, Cl. 219-265.000.

Seigo, Takahashi, to Mitutoyo Mfg. Co., Ltd. Displacement measuring instrument. 4,448,531, Cl. 356-374.000.

Seikosha Co., Ltd.: *See—*
Yonezawa, Setsuo; and Ikeda, Kazuaki, 4,448,553, Cl. 400-121.000.

Seiler, Norman C.; Nixon, Thomas J.; and Waschka, George A., Jr., to Harris Corporation. Orderwire communication system. 4,449,246, Cl. 455-9.000.

Seino, Shunji: *See—*
Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, 4,448,921, Cl. 524-443.000.

Seitz, Ulrich: *See—*
Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, 4,448,908, Cl. 523-201.000.

Sekine, Mitsuo: *See—*
Hashimoto, Shingo; and Sekine, Mitsuo, 4,448,549, Cl. 374-170.000.

Selleri, Narciso: *See—*
Golinelli, Guido; and Selleri, Narciso, 4,447,960, Cl. 33-178.00E.

Selzer, Robert H.: *See—*
Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., 4,448,200, Cl. 128-653.000.

Semiconductor Research Foundation: *See—*
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Wasa, Kenji, 4,448,525, Cl. 356-73.000.

Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, to Kiko Co., Ltd.; and NHK Spring Co., Ltd. Heat resistant reflector. 4,448,855, Cl. 428-632.000.

Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Expanded particles of polyolefin resin and process for producing same. 4,448,901, Cl. 521-60.000.

Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, to Japan Marine Machinery Development Association; Aitoku Company Limited; and Nippon Kokan Kabushiki Kaisha. Method for opening, closing and rotating rigid marine sail. 4,448,144, Cl. 114-102.000.

Sensormedics Corporation: *See—*
Jaffe, Michael B.; Luper, Charles R.; Mabry, Eric; and Reid, Howard J., 4,448,058, Cl. 73-23.000.

Serlin, Irving, to Monsanto Company. Preparation of an electrographic recording material. 4,448,807, Cl. 427-121.000.

Serni Limited: *See—*
Wozniak, Jan C., 4,448,349, Cl. 238-62.000.

Setra Systems, Inc.: *See—*
Lee, Shih-Ying, 4,448,085, Cl. 73-862.640.

Shaffer, Donald U.; and Oulrey, Gary M. Rotary blowout preventer. 4,448,255, Cl. 166-387.000.

Shaffer, John W.; and Houseknecht, Gary L., to GTE Products Corporation. Tungsten-halogen lamp with variably positionable getter. 4,449,070, Cl. 313-557.000.

Sharon, Andre, to International Business Machines Corporation. Telescoping thermal conduction element for cooling semiconductor devices. 4,448,240, Cl. 165-80.00C.

Sharp, Joseph F., to Ceiling Dynamics, Inc. Lighting fixture and air flow support system. 4,449,166, Cl. 362-149.000.

Sharp Kabushiki Kaisha: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.
Ohnishi, Souichi; and Komai, Kensaku, 4,449,154, Cl. 360-51.000.
Washizuka, Isamu; Ikemoto, Yutaka; and Tsuda, Hiroshi, 4,448,542, Cl. 368-63.000.

Shell Oil Company: *See—*
Bell, James P.; and De Nicola, Anthony J., Jr., 4,448,847, Cl. 428-413.000.
Richardson, Edwin A., 4,448,751, Cl. 422-68.000.
Roman, Steven A., 4,448,986, Cl. 562-506.000.
Slaugh, Lynn H., 4,448,993, Cl. 564-402.000.
Southwick, Jeffrey G.; and Morgenthaler, Lee N., 4,448,253, Cl. 166-300.000.

Shen, Jian C.: *See—*
Gragg, Frederick M.; Shen, Jian C.; and Jacobson, Carl L., 4,448,249, Cl. 166-251.000.

Sherby, Oleg D.; Oyama, Toshimasa; and Wadsworth, Jeffrey, to Board of Trustees, Leland Stanford, Jr. University. Divorced eutectoid transformation process and product of ultrahigh carbon steels. 4,448,613, Cl. 148-12.00R.

Sherry, Howard S.: *See—*
Oleck, Stephen M.; and Sherry, Howard S., 4,448,677, Cl. 208-216.0PP.

Sherwin-Williams Company, The: *See—*
Flores, Robert J., 4,448,446, Cl. 346-224.000.

Sherwood, Philip W.: *See—*
Barsa, Edward A.; and Sherwood, Philip W., 4,448,816, Cl. 427-388.200.

Shete, Prakash K.: *See—*
Golba, Joseph C., Jr.; and Shete, Prakash K., 4,448,909, Cl. 523-303.000.

Shibamata, Yoshiyuki; Onodera, Hideo; and Kiriseko, Tadashi, to Fujitsu Limited. Method and apparatus for heating semiconductor wafers. 4,449,037, Cl. 219-388.000.

Shibano, Kenji, to Fuji Jukogyo Kabushiki Kaisha. Carburetor. 4,448,734, Cl. 261-26.000.

Shibata, Takashi; and Nishimura, Masaaki, to Sony Corporation. Reverberation apparatus. 4,449,234, Cl. 381-65.000.

Shibazaki, Shigeru, to Pioneer Electronic Corporation. Power supply control system of an installation including several devices having electric circuits. 4,449,056, Cl. 307-38.000.

Shibuya, Yoshimichi; and Takahashi, Masami, to Hitachi, Ltd. Liquid crystal matrix display cells piled with non-overlapping display elements. 4,448,490, Cl. 350-335.000.

Shibuya, Yoshimichi: *See—*
Sato, Yukihiro; and Shibuya, Yoshimichi, 4,448,489, Cl. 350-330.000.

Shiga, Motohiro: *See—*
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.

Shih, Stuart S.: *See—*
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,448,672, Cl. 208-86.000.

Shihabi, David S., to Mobil Oil Corporation. Aging resistance shape selective catalyst with enhanced activity. 4,448,673, Cl. 208-111.000.

Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Information processing apparatus using a semiconductor laser diode. 4,449,204, Cl. 365-127.000.

Shimada, Yukio; Iijima, Tetsuya; and Tanino, Mikio, to Nissan Motor Company, Limited. Air-conditioning system for an automotive vehicle. 4,448,034, Cl. 62-161.000.

Shimadzu Corporation: *See—*
Nakamoto, Akira; and Saito, Katsuhiko, 4,448,692, Cl. 210-656.000.

Shimbashi, Ichiro: *See—*
Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, 4,448,614, Cl. 148-12.100.

Shimizu, Chiyuki; and Nakamura, Nobuo, to General Electric Company. Method of forming film. 4,448,814, Cl. 427-387.000.

Shimizu, Sachio, to Aiko Engineering Co. Ltd. Extra-high pressure water pump. 4,448,574, Cl. 417-488.000.

Shimomura, Susumu: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Shinada, Junji. Plant irrigation system. 4,447,983, Cl. 47-58.500.

Shinkle, Kurt D., to United States of America, Air Force. Mounting arrangement for an inertial measurement unit. 4,448,377, Cl. 248-178.000.

Shinohara, Hiroshi: *See—*
Nagai, Kiyoshi; Shinohara, Hiroshi; and Imamura, Nobuo, 4,448,809, Cl. 427-239.000.

Shintani, Kenji: *See—*
Noborimoto, Kazutaka; Maruta, Keiji; Suzuki, Junichi; and Shintani, Kenji, 4,449,213, Cl. 369-45.000.

Shiohata, Koki: *See—*
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.

Shiokawa, Kozo: *See—*
Saito, Junichi; Shiokawa, Kozo; and Takemoto, Toshiyuki, 4,448,733, Cl. 260-985.000.

Shiomi, Yozo: *See—*
Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, 4,448,740, Cl. 264-182.000.

Shionogi & Co., Ltd.: *See—*
Nagata, Wataru; and Aoki, Tsutomu, 4,448,720, Cl. 260-239.00A.
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Shiota, Kazuo, to Fuji Photo Film Co., Ltd. Color film printing control method. 4,448,521, Cl. 355-77.000.

Shioyama, Tod K.: *See—*
Kukes, Semyon G.; and Shioyama, Tod K., 4,448,892, Cl. 502-164.000.

Shipp, Kenneth O., Jr.: *See—*
Horn, Gary R.; and Shipp, Kenneth O., Jr., 4,448,557, Cl. 400-279.000.

Shirahata, Ryuji: *See—*
Yamada, Yasuyuki; Shirahata, Ryuji; Yanai, Akio; and Kitamoto, Tatsuji, 4,448,843, Cl. 428-336.000.

Shiratsuchi, Masami; Ishihama, Hiroshi; and Uchida, Yasumi, to Kowa Company, Ltd. N-Nitroxyalkylene benzamide derivatives. 4,448,989, Cl. 564-165.000.

Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,448,717, Cl. 260-112.50E.

Shuskus, Alexander J., to United Technologies Corporation. Passivation of III-V semiconductor surfaces by plasma nitridation. 4,448,633, Cl. 156-610.000.

Sibata, Shinya: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.

Siegel, Marvin I., to Burroughs Wellcome Co. Substituted pyrazoline, and its use in treatment of gastro-intestinal disturbances. 4,448,783, Cl. 424-273.00P.

Siegrist, Ronald R.: *See—*
Anspaugh, Dennis J.; and Siegrist, Ronald R., 4,448,381, Cl. 248-394.000.

Siemens Aktiengesellschaft: *See—*
Kodal, Tassilo; and Kraus, Hubert, 4,448,265, Cl. 174-52.0PE.
Pachonik, Horst, 4,448,652, Cl. 204-298.000.
Strehl, Herbert, 4,449,218, Cl. 370-69.100.
Witte, Hans-Hermann, 4,448,480, Cl. 350-96.150.

Siemens-Allis, Inc.: *See—*
Kleinecke, John D.; and Little, Thomas R., 4,448,450, Cl. 292-210.000.

Siemens Corporation: *See—*
Feix, Wolfgang H.; and Ruell, Hartwig E., 4,449,189, Cl. 364-513.500.

Simcox, P. David: *See—*
Gestaut, Lawrence J.; and Simcox, P. David, 4,448,886, Cl. 435-262.000.

Simon, Heinrich: *See—*
Landgraf, Wolfgang; Scharf, Walter; and Simon, Heinrich, 4,447,991, Cl. 51-161.000.

Simon, Joachim W., to Nixdorf Computer AG. PCM Communication system and method of operation. 4,449,217, Cl. 370-62.000.

Singer Company, The: *See—*
Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., 4,447,930, Cl. 15-322.000.
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,448,141, Cl. 112-315.000.

Singer, Loren A., Jr., to Porta Systems Corp. Telephone central office gas tube replacement protector. 4,449,156, Cl. 361-119.000.

Singleton, Lewis, Jr.; and Whitney, James M. Heat exchange system and process for heating and cooling using geothermal energy. 4,448,238, Cl. 165-45.000.

Sinnadurai, F. Nihal; Cook, Anthony J.; and Gurnett, Keith W., to British Telecommunications. Integrated circuit chip carrier. 4,448,306, Cl. 206-331.000.

Siol, Werner: *See—*
Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, 4,448,945, Cl. 526-193.000.

Sipp, Bernard: *See—*
Grellet, Bernard; Emmanuel, Jean-Pierre; and Sipp, Bernard, 4,448,611, Cl. 148-6.110.

Sitzmann, Michael E.; and Gilligan, William H., to United States of America, Navy. 1:1:2 And 1:3 mixed polynitroethyl orthocarbonates via mixed trialkoxymethyl trichloromethyl disulfides. 4,449,000, Cl. 568-22.000.

Sivaramakrishnan, Parameswar: *See—*
Baron, Arthur L.; and Sivaramakrishnan, Parameswar, 4,448,950, Cl. 528-128.000.

Skalko, Edward S., to Raymond Engineering Inc. Control for tape drive system. 4,448,368, Cl. 242-186.000.

Skelly, Michael. Multiple flow control valve. 4,448,215, Cl. 137-625.460.

SKF Industrial Trading and Development Co., B.V.: *See—*
Lankamp, Herman, 4,448,700, Cl. 252-12.400.

SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, 4,448,294, Cl. 192-30.00V.

Skinner, David P.: *See—*
Zehner, William J.; and Skinner, David P., 4,449,209, Cl. 367-102.000.

Skinner, Doyle P., Jr., to Xerox Corporation. Composite ink jet drivers. 4,449,134, Cl. 346-75.000.

Skinner, Robert T. J., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,448,165, Cl. 123-179.00L.

Slaugh, Lynn H., to Shell Oil Company. Process for conversion of hydroxybenzenes to amines. 4,448,993, Cl. 564-402.000.

Sleezer, Paul D.; and Smith, Richard R., to Bristol-Myers Company. Purification of ceforanide. 4,448,958, Cl. 544-20.000.

Sliney, James G., Jr., to United States of America, Air Force. Flexible, resilient anti-contamination baffle. 4,449,242, Cl. 383-103.000.

Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., to Baylor College of Medicine. Detection of human cancer cells with antibodies to human cancer nucleolar antigens. 4,448,890, Cl. 436-508.000.

Smith, Alfred H., Jr.: *See—*
Klein, Steven H.; and Smith, Alfred H., Jr., 4,448,928, Cl. 524-864.000.

Smith, Connie M.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Smith, Connie M., 4,448,726, Cl. 260-397.200.

Smith, Enoch P., to Allen-Bradley Company. Light isolated pilot light. 4,449,076, Cl. 315-312.000.

Smith, George E. K. Device for increasing the efficiency of cooking on gas stoves. 4,448,186, Cl. 126-215.000.

Smith Investment Company: *See—*
Melone, Robert R., 4,448,382, Cl. 248-421.000.

Smith, James S.: *See—*
Rhodes, Russell H.; Smith, James S.; and Clare, Leslie P., 4,448,606, Cl. 75-236.000.

Smith, John S.: *See—*
Darvial, Bruce L.; Heintz, Phillip L.; Smith, John S.; and Walth, Lee A., 4,448,175, Cl. 123-557.000.

Smith, Nicholas K.: *See—*
Burke, Edmund T.; Catalano, Joseph F.; Henderson, James A., Jr.; and Smith, Nicholas K., 4,449,017, Cl. 179-27.00D.

Smith, Paul K.; and Klenk, Dennis C., to Pierce Chemical Company. Direct-acting iodinating reagent. 4,448,764, Cl. 424-1.100.

Smith, Randel P., to Steiner Corporation. Towel dispenser. 4,448,462, Cl. 312-38.000.

Smith, Richard R.: *See—*
Sleezer, Paul D.; and Smith, Richard R., 4,448,958, Cl. 544-20.000.

Smith, Todd I.; Elias, Luis R.; and Madey, John M. J. Free electron laser. 4,449,219, Cl. 372-2.000.

SmithKline Beckman Corporation: *See—*
Pfeiffer, Francis R., 4,448,972, Cl. 548-528.000.

Sochol, Irving: *See—*
Welsh, Jay Y.; DeCraene, Denis F.; and Sochol, Irving, 4,448,760, Cl. 423-605.000.

Societa Cavi Pirelli S.p.A.: *See—*
Lombardi, Aurelio; and Occhini, Elio, 4,448,484, Cl. 350-96.230.

Societe Anonyme DBA: *See—*
Carre, Jean-Jacques; and Thioux, Alain, 4,448,090, Cl. 74-501.50R.
Delaunay, Jean, 4,448,288, Cl. 188-73.450.
Pressaco, Pierre, 4,448,457, Cl. 303-22.00R.

Societe Anonyme de Telecommunications: *See—*
Nepomiastchy, Alexis; and Pireyre, Guy R. F., 4,447,990, Cl. 51-76.00R.

Societe Anonyme des Etablissements Adrien de Backer: *See—*
Toussaint, Etienne G., 4,448,444, Cl. 361-331.000.

Societe Anonyme dite: Air Industrie: *See—*
Brault, Bernard; and Marchal, Paul H., 4,448,640, Cl. 162-218.000.

Societe Anonyme dite: GIPELEC: *See—*
Broussely, Michel, 4,448,864, Cl. 429-194.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Akesson, Yngve R., 4,448,793, Cl. 426-241.000.
Wieser, Franz; and Hofinger, Hans-Peter, 4,448,796, Cl. 427-4.000.
Wisagott, Ulrich; and Berberat, Alexis, 4,448,794, Cl. 426-267.000.

Soderberg, Ramon. Ventilator. 4,448,112, Cl. 98-62.000.

Soderstrom, Martti: *See—*
Sarkki, Marja-Leena; Soderstrom, Martti; Maunula, Hannu; and Korhonen, Annika, 4,448,790, Cl. 426-52.000.

Sodick Co., Ltd.: *See—*
Fujikawa, Misao, 4,449,027, Cl. 219-69.00E.

Sofranko, John A.; and Leonard, John J., to Atlantic Richfield Company. Oxidation of isobutyric acid to alpha-hydroxyisobutyric acid. 4,448,985, Cl. 562-579.000.

Sogah, Dotsevi Y., to Du Pont de Nemours, E. I., and Company. Preparation of trialkylsilyl ethers. 4,448,980, Cl. 556-446.000.

Solomon, Jack: *See—*
Francis, Arthur W., Jr.; Nowotarski, Mark S.; and Solomon, Jack, 4,448,616, Cl. 148-16.000.

Solomon, Thomas S., to B. F. Goodrich Company, The. Preparation of cord for bonding to rubber. 4,448,813, Cl. 427-381.000.

Sone, Masazumi: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,448,181, Cl. 123-620.000.

Sony Corporation: *See—*
Noborimoto, Kazutaka; Maruta, Keiji; Suzuki, Junichi; and Shintani, Kenji, 4,449,213, Cl. 369-45.000.
Shibata, Takashi; and Nishimura, Masaaki, 4,449,234, Cl. 381-65.000.
Yasuda, Nobuyuki; and Odaka, Kentaro, 4,449,061, Cl. 307-268.000.
Yokoya, Satoshi, 4,449,230, Cl. 381-15.000.

Sosa, Jesus M. Jalousie with integral alarm circuit. 4,449,121, Cl. 340-550.000.

Southern California Gas Company: *See—*
Pelka, David G.; and Fleishman, Roc V., 4,448,545, Cl. 374-41.000.

Southwick, Jeffrey G.; and Morgenthaler, Lee N., to Shell Oil Company. Moderated borohydride-induced reservoir dewatering. 4,448,253, Cl. 166-300.000.

Southwire Company: *See—*
Verma, Deepak K., 4,448,052, Cl. 72-57.000.

Southworth, John V. D., Jr., to Trans Refrigeration International, Inc. Vacuum insulated walls for refrigerated containers and trailers. 4,448,041, Cl. 62-268.000.

Spademan, Richard G. Multidirectional dynamic fitting system for sport shoe. 4,447,968, Cl. 36-109.000.

Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, to Dow Chemical Company, The. Process and anode for molten salt electrolysis. 4,448,654, Cl. 204-70.000.

Sparwell, Norbert: *See—*
Kolitsch, Jorg; Sparwell, Norbert; and Brockmann, Eugen, 4,448,081, Cl. 73-861.030.

Spaulding, Bernard B.: *See—*
Knapp, George W.; Spaulding, Bernard B.; and Tolbert, John T., 4,449,202, Cl. 364-900.000.

Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., to Otis Engineering Corporation. Subsurface safety valve. 4,448,216, Cl. 137-630.000.

Speer, Spencer J., to General Dynamics, Pomona Division. Packaging kit for pyrotechnic materials loading. 4,448,130, Cl. 102-498.000.

Sperry Corporation: *See—*
Aplenc, Andrej M. R., 4,448,022, Cl. 60-641.400.

Spiegelberg, Ulf, to C. Hoegger & Cie. AG. Gut casing holding nozzle for a sausage filling machine. 4,447,933, Cl. 17-41.000.

Spiers, Walter A. Water air filter. 4,448,593, Cl. 55-227.000.

Spillers, Frank W.: *See—*
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,448,663, Cl. 204-270.000.

Spitler, Keith G.: *See—*
Liang, Tai-Ming; and Spitler, Keith G., 4,448,903, Cl. 521-137.000.

Spitz, Jonathan N.: *See—*
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.

Sporlan Valve Company: *See—*
Barbier, William J., 4,448,038, Cl. 62-212.000.

Spotzl, Markus: *See—*
Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, 4,448,107, Cl. 89-36.00K.

Sprague Electric Company: *See—*
Dequasie, Andrew E.; and Ross, Sidney D., 4,449,163, Cl. 361-315.000.

Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., to International Flavors & Fragrances Inc. Mono-oxomethyl substituted polyhydrodimethanonaphthalene derivatives. 4,448,984, Cl. 560-256.000.

Sprecker, Mark A.: *See—*
Hall, John B.; and Sprecker, Mark A., 4,449,007, Cl. 568-343.000.

Spreitzhofer, Ernst: *See—*
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.

Srivastava, Suresh C.: *See—*
Richards, Powell; Srivastava, Suresh C.; and Meinken, George E., 4,448,762, Cl. 424-1.100.

Stahn, Roland: *See—*
Fabricius, Hans-Ake; and Stahn, Roland, 4,448,879, Cl. 435-2.000.

Standard Abrasives, Inc.: *See—*
Wray, Daniel J.; and Regnier, Alexis G., 4,448,590, Cl. 51-297.000.

Standard-Knapp, Inc.: *See—*
Raudat, John L., 4,448,009, Cl. 53-248.000.

Standard Oil Company, The: *See—*
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,448,893, Cl. 502-209.000.
Trushenski, Scott P., 4,448,698, Cl. 252-8.55D.

Standard Oil Company (Indiana): *See—*
Emery, Donald B.; and Herring, William M., 4,448,736, Cl. 264-40.100.
Hanson, Robert B., 4,448,925, Cl. 524-600.000.
Lillwitz, Lawrence D., 4,448,987, Cl. 562-473.000.

Stanton, Austin N. Hearing aid. 4,449,018, Cl. 179-107.0FD.

Stark, Jean R. Jewelry chain loop element and method of assembly. 4,448,017, Cl. 59-80.000.

Stauffer Chemical Company: *See—*
Rodson, Marius; and Scher, Herbert B., 4,448,929, Cl. 525-57.000.

Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., to Hewlett Packard Company. Medical ventilator device parametrically controlled for patient ventilation. 4,448,192, Cl. 128-204.260.

Steiner Corporation: *See—*
Smith, Randel P., 4,448,462, Cl. 312-38.000.

Steingroever, Dietrich: *See—*
Steingroever, Erich; and Steingroever, Dietrich, 4,449,095, Cl. 324-223.000.

Steingroever, Erich; and Steingroever, Dietrich. Process and apparatus for recording hysteresis curves of magnetic materials. 4,449,095, Cl. 324-223.000.

Steklenski, David J.: *See—*
Upson, Donald A.; and Steklenski, David J., 4,448,850, Cl. 428-510.000.

Stencel Aero Engineering Corporation: *See—*
Duncan, James W., 4,448,374, Cl. 244-150.000.

Stenkvist, Bjorn G. Device for taking samples of cells from the cervix uteri. 4,448,205, Cl. 128-749.000.

Stepp, Elvin D.; and Claypoole, Gary L., to Cincinnati Electronics Corporation. Audio feedback suppressor. 4,449,237, Cl. 381-93.000.

Sterling Drug Inc.: *See—*
Lesher, George Y., 4,448,780, Cl. 424-263.000.
Rubey, Robert J., 4,448,212, Cl. 137-238.000.

Stermole, David A.: *See—*
Chun, Duk S.; Stermole, David A.; and Loehr, Clifford E., 4,448,759, Cl. 423-474.000.

Sternheim, Eliezer: *See—*
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.

Stewart, Patrick H.: *See—*
Kelley, Brian D.; and Stewart, Patrick H., 4,448,234, Cl. 164-16.000.

Stillie, Donald G.: *See—*
Hilhorst, Jacques J.; and Stillie, Donald G., 4,449,023, Cl. 200-159.00B.

Stine, Laurence O., to UOP Inc. In situ conversion of hydrocarbonaceous oil. 4,448,251, Cl. 166-263.000.

Stock, Mark E.: *See—*
Salkeld, Stephen A.; Stock, Mark E.; and Welch, Robert J., 4,448,231, Cl. 160-135.000.

Stocker, Wendy A.: *See—*
Henry, James L.; and Stocker, Wendy A., 4,449,197, Cl. 364-784.000.

Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., to In Situ Technology, Inc. Minimizing subsidence effects during production of coal in situ. 4,448,252, Cl. 166-263.000.

Stohlquist, Roger H.; Brown, Jonathan G.; and Baker, Kenneth V., to Anderson Bros. Mfg. Co. Method and apparatus for making bag-type packages. 4,448,010, Cl. 53-450.000.

Stone, Wayne B., Jr., to Wood Mfg. Co., Inc. Apparatus for increasing the self parking capacity of a parking lot. 4,447,999, Cl. 52-175.000.

Stott, Rexeene S. Segmental mandrel for making wound filament structures. 4,448,628, Cl. 156-425.000.

Stracener, Steve W., to KB Denver, Inc. Backlighted illuminated keyboard. 4,449,024, Cl. 200-317.000.

Strehl, Herbert, to Siemens Aktiengesellschaft. Analog/digital telecommunication subscriber station. 4,449,218, Cl. 370-69.100.

Strobel, Wolfgang: *See—*
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.

Strong, William A. Concrete mixer device. 4,448,536, Cl. 366-66.000.

Stulken, Leon. Device for heating absorbent surfaces within an enclosed space with solar thermal radiation. 4,448,187, Cl. 126-417.000.

Sturges, Robert H., Jr.: *See—*
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.

Stutz, Hansruedi; and Lapp, Karl, to Loepfe Brothers Limited. Method for determining the length of filamentary materials, such as yarn, wound upon a cross-wound package by means of a friction drive and a grooved drum. 4,447,955, Cl. 33-129.000.

Stutz, Herbert; Illers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, to BASF Aktiengesellschaft. Process for the preparation of noncellular polyurethane elastomers based on 4,4-diisocyanato-1,2-diphenylethane. 4,448,946, Cl. 528-67.000.

Sugata, Masao: *See—*
Ohkubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; and Nakagiri, Takashi, 4,448,867, Cl. 430-31.000.

Sugata, Masashi: *See—*
Hiraishi, Masanori; and Sugata, Masashi, 4,448,637, Cl. 156-635.000.

Sugaya, Toru: *See—*
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.

Sugimori, Teruhiko; Suzuki, Fumio; and Habara, Hideaki, to Mitsubishi Rayon Co., Ltd. Screw-type hydro-extracting extruder. 4,448,537, Cl. 366-75.000.

Sugio, Akitoshi; Masu, Masanobu; and Amagai, Akikazu, to Mitsubishi Gas Chemical Company, Inc. Polyphenylene ether resin. 4,448,931, Cl. 525-68.000.

Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, to Kubota Ltd. Heat resistant cast iron-nickel-chromium alloy. 4,448,749, Cl. 420-584.000.

Sugiyama, Hiroyuki: *See—*
Kawaguchi, Shoichi; and Sugiyama, Hiroyuki, 4,448,125, Cl. 101-185.000.

Sullivan, Edmund J.: *See—*
Schmidt, Richard L.; Sullivan, Edmund J.; Myers, Bernard J.; and Liszka, Edward G., 4,449,211, Cl. 367-153.000.

Sulzer Brothers Limited: *See—*
Burgbacher, Herbert, 4,448,285, Cl. 184-55.00A.
Weber, Bernhard G., 4,447,915, Cl. 3-1.900.

Sumar Corporation: *See—*
Bryant, Bernard J., 4,448,767, Cl. 424-85.000.

Sumerau, William R.: *See—*
Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., 4,447,930, Cl. 15-322.000.

Sumida, Yasuji: *See—*
Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikazu, 4,448,519, Cl. 355-73.000.

Sumitomo Chemical Company, Limited: *See—*
Nagaoka, Kenji, 4,448,957, Cl. 528-351.000.
Terada, Yutaka; Takahashi, Yukoh; Yachigo, Shinichi; and Ishii, Tamaki, 4,448,915, Cl. 524-93.000.

Sumitomo Metal Industries, Ltd.: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, 4,448,746, Cl. 419-31.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Satoh, Kazuo; and Nosaka, Tsutomu, 4,448,627, Cl. 156-405.100.

Sun Chemical Corporation: *See—*
Johnson, Steven L.; McLaren, George; and Robertson, George H., 4,448,607, Cl. 106-19.000.

Sun, Hsiang-Ning, to Altantic Richfield Company. Method for producing a vanadium-titanium-tin catalyst exhibiting improved intrinsic surface area. 4,448,898, Cl. 502-350.000.

Sun, Jui-Yuan: *See—*
Masologites, George P.; Sun, Jui-Yuan; Yoo, Jin S.; and Burk, Emmett H., Jr., 4,448,584, Cl. 44-1.0SR.

Sundeen, Arthur R.: *See—*
Romblom, Edward F.; and Sundeen, Arthur R., 4,448,066, Cl. 73-119.00A.

Sundstrand Corporation: *See—*
Hawkins, Royal R., 4,448,021, Cl. 60-449.000.

Sunoco Energy Development Co., a wholly-owned subsidiary of Sun Company, Inc.: *See—*
Monroe, John N., 4,449,047, Cl. 250-253.000.

Sunouchi, Akio; Suzuki, Ryuji; Ichiyanagi, Toshikazu; and Fujino, Masahisa, to Minigrip, Inc. Camera. 4,448,507, Cl. 354-173.000.

Sup, Kim Y., to King Stone Co., Ltd. Golf bag including stiffening structure. 4,448,305, Cl. 206-315.800.

Sutherland, Alexander L.; and Swenson, Richard C., to United States of America, Navy. Shallow water environmental/oceanographic measurement system. 4,448,068, Cl. 73-170.00A.

Sutton, David A.: *See—*
Meier, Markus; and Sutton, David A., 4,449,155, Cl. 360-104.000.

Suverison, Lyle B.: *See—*
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,448,477, Cl. 339-258.0RR.

Suzue, Seigo: *See—*
Irikura, Tsutomu; Suzue, Seigo; Ito, Akira; and Koga, Hiroshi, 4,448,962, Cl. 544-362.000.

Suzuki, Atsushi: *See—*
Ninomiya, Masakazu; and Suzuki, Atsushi, 4,448,162, Cl. 123-419.000.
Ninomiya, Masakazu; and Suzuki, Atsushi, 4,448,171, Cl. 123-419.000.

Suzuki, Fumio: *See—*
Sugimori, Teruhiko; Suzuki, Fumio; and Habara, Hideaki, 4,448,537, Cl. 366-75.000.

Suzuki, Isamu: *See—*
Arinobu, Mutsihiro; and Suzuki, Isamu, 4,448,023, Cl. 60-644.100.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See—*
Ishida, Tokuzi; and Yamamoto, Wataru, 4,448,158, Cl. 123-179.00G.
Ishida, Tokuzi, 4,448,164, Cl. 123-432.000.

Suzuki, Junichi: *See—*
Noborimoto, Kazutaka; Maruta, Keiji; Suzuki, Junichi; and Shintani, Kenji, 4,449,213, Cl. 369-45.000.

Suzuki, Makoto: *See—*
Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, 4,448,896, Cl. 502-314.000.

Suzuki, Masatoshi, to Omron Tateisi Electronics Co. Apparatus for detecting moving body. 4,449,144, Cl. 358-105.000.

Suzuki, Ryuji: *See—*
Sunouchi, Akio; Suzuki, Ryuji; Ichiyanagi, Toshikazu; and Fujino, Masahisa, 4,448,507, Cl. 354-173.000.

Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, to Konishiroku Photo Industry Co., Ltd. Electrophotographic photoreceptor with hydrazone derivative. 4,448,868, Cl. 430-58.000.

Svenska Traforskningsinstitutet: *See—*
Hartog, Stefan; and Hollmark, Holger, 4,448,818, Cl. 427-424.000.

Svin'in, Michail P.: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Swenson, Richard C.: *See—*
Sutherland, Alexander L.; and Swenson, Richard C., 4,448,068, Cl. 73-170.00A.

Swift, Stephen: *See—*
Nappholz, Tibor A.; Money, David K.; Swift, Stephen; and Bradbury, Ronald C., 4,448,197, Cl. 128-419.0PT.

Swigert, Charles J., to United States of America, Air Force. Electronic cancelling of acoustic traveling waves. 4,449,235, Cl. 381-71.000.

Swiss Aluminium Ltd.: *See—*
Roggen, Rolf, 4,448,661, Cl. 204-243.00R.

Sykes Pumps Limited: *See—*
Purdy, William C., 4,448,395, Cl. 254-334.000.

Synergistics Chemicals Ltd.: *See—*
Crocker, Zenas, 4,448,738, Cl. 264-54.000.

Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., to Singer Company, The. Sewing machine cam controlled feed engaging and disengaging mechanism. 4,448,141, Cl. 112-315.000.

Ta, Lam: *See—*
Eckert, Kim; Crisp, Richard D.; and Ta, Lam, 4,449,064, Cl. 307-473.000.

Tabak, Samuel A.: *See—*
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,448,672, Cl. 208-86.000.

Tabler, Charles P., to Buckhorn Material Handling Group Inc. Live guide system for gravity conveyors. 4,448,296, Cl. 193-35.00C.

Tachibana, Kunitaka: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Taddonio, Colin: *See—*
Zuckerman, Leonard; and Taddonio, Colin, 4,449,046, Cl. 250-235.000.

Taira, Shigenobu, to Fujitsu Limited. Input protection circuit for MIS transistor. 4,449,158, Cl. 361-91.000.

Taiyo Sanso Co., Ltd.: *See—*
Nagai, Kiyoshi; Shinohara, Hiroshi; and Imamura, Nobuo, 4,448,809, Cl. 427-239.000.

Takagi, Seiichi: *See—*
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.

Takagishi, Haruyoshi: *See—*
Fujikawa, Tsuneo; Kamio, Kazuyoshi; and Takagishi, Haruyoshi, 4,448,341, Cl. 228-45.000.

Takagiwa, Hiroyuki: *See—*
Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.

Takahara, Yoshimasa: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.

Takahashi, Makoto: *See—*
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,448,749, Cl. 420-584.000.

Takahashi, Masami: *See—*
Shibuya, Yoshimichi; and Takahashi, Masami, 4,448,490, Cl. 350-335.000.

Takahashi, Seizi; and Aoki, Hachiro, to Diesel Kiki Co., Ltd. Distributor type fuel injection pump adaptable to internal combustion engines with a wide range of the number of cylinders. 4,448,174, Cl. 123-502.000.

Takahashi, Yukoh: *See—*
Terada, Yutaka; Takahashi, Yukoh; Yachigo, Shinichi; and Ishii, Tamaki, 4,448,915, Cl. 524-93.000.

Takasumi, Masakazu: *See—*
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.

Takaya, Tadashi: *See—*
Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, 4,449,019, Cl. 179-110.00A.

Takeda Chemical Industries, Ltd.: *See—*
Miyake, Jun-ichi; Yamazaki, Kyuya; and Kamatani, Yoshio, 4,448,947, Cl. 528-73.000.

Takekawa, Hiroshi: *See—*
Banno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, 4,448,752, Cl. 422-81.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha, Ltd. Herbicidal compositions and herbicidal processes. 4,448,601, Cl. 71-86.000.

Takemoto, Toshiyuki: *See—*
Saito, Junichi; Shiokawa, Kozo; and Takemoto, Toshiyuki, 4,448,733, Cl. 260-985.000.

Takemoto, Yoshinori: *See—*
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.

Takemura, Yasuhiko; and Akutsu, Fumihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic scanning apparatus. 4,448,075, Cl. 73-626.000.

Takeno, Ryuko: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Takeuchi, Koji: *See—*
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Hirai, Kiyomiki, 4,448,949, Cl. 528-99.000.

Takeuchi, Masaharu: *See—*
Kondo, Haruyoshi; and Takeuchi, Masaharu, 4,448,059, Cl. 73-35.000.

Takeuchi, Masahiko: *See—*
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.

Takeuchi, Yukihisa: *See—*
Yamaguchi, Shunzo; Takeuchi, Yukihisa; Miura, Yasunao; and Miwa, Naoto, 4,448,833, Cl. 428-116.000.

Takita, Naka: *See—*
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.

Taleff, Alexander: *See—*
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.

Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Toner for developing an electrostatically charged image and manufacturing method thereof. 4,448,871, Cl. 430-109.000.

Tamama, Tetsuo: *See—*
Watanabe, Masaru; Yamauchi, Nobuharu; Hashimoto, Naoki; and Tamama, Tetsuo, 4,449,192, Cl. 364-559.000.

Tammisalo, Erkki. Method to be used in panoramic X-ray photography and an apparatus for carrying out the method. 4,449,225, Cl. 378-39.000.

Tamura, Eijiro: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, 4,448,746, Cl. 419-31.000.

Tamura Seisakusho Co., Ltd.: *See—*
Nakajima, Tomoo, 4,449,111, Cl. 336-206.000.

Tanabe, Yoshiyuki: *See—*
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.

Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, to Shionogi & Co., Ltd. Antibiotics PA-41746-B and C. 4,448,723, Cl. 260-245.20T.

Tanaka, Minoru: *See—*
Terahara, Akira; and Tanaka, Minoru, 4,448,979, Cl. 549-292.000.

Tanaka, Steve K.: *See—*
Bleile, Dennis M.; Allen, Diane M.; Tanaka, Steve K.; and Matarrese, Francis J., Jr., 4,448,888, Cl. 436-67.000.

Tanaka, Yuzuru, to Daishowa Seiki Co., Ltd. Touch sensor. 4,447,958, Cl. 33-174.00L.

Taniguchi, Kazuyoshi. Heating apparatus. 4,449,034, Cl. 219-217.000.

Tanino, Mikio: *See—*
Shimada, Yukio; Iijima, Tetsuya; and Tanino, Mikio, 4,448,034, Cl. 62-161.000.

Tao, Frank: *See—*
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., 4,448,665, Cl. 208-8.0LE.

Tassicker, Owen J.: *See—*
Schwab, James J.; and Tassicker, Owen J., 4,449,159, Cl. 361-230.000.

Tatsuno, Takashi: *See—*
Nakayama, Haruhiko; and Tatsuno, Takashi, 4,448,603, Cl. 71-92.000.

Tatum, John M.: *See—*
Cunningham, James L.; and Tatum, John M., 4,448,615, Cl. 148-13.000.

Taylor, F. Hoyt. Fish strike alarm. 4,447,979, Cl. 43-17.000.

Taylor, Glenn N., to Kendall Company, The. Device for collecting body liquids. 4,447,939, Cl. 128-760.000.

Taylor, Harry E.: *See—*
Bond, Michael E.; and Taylor, Harry E., 4,447,923, Cl. 7-165.000.

Taylor, Jeffrey R.: *See—*
Day, Joseph G.; and Taylor, Jeffrey R., 4,448,604, Cl. 75-63.000.

Tear, Brian; and Othen, David G., to Laporte Industries Limited. Process for the production of aqueous dispersions of pigmentary titonium dioxide. 4,448,609, Cl. 106-308.00N.

Tech Ref, Inc.: *See—*
Houser, Edwin A., 4,448,311, Cl. 206-527.000.

Tee Nee Trailer Company, The: *See—*
DeWalk, Arnold R., 4,448,438, Cl. 280-414.100.

Tektronix, Inc.: *See—*
Dickes, E. Jon, 4,449,059, Cl. 307-228.000.

Telectronics Pty. Ltd.: *See—*
Money, David K.; and Nappholz, Tibor A., 4,448,196, Cl. 128-419.0PT.
Nappholz, Tibor A.; Money, David K.; Swift, Stephen; and Bradbury, Ronald C., 4,448,197, Cl. 128-419.0PT.

Teledyne Industries, Inc.: *See—*
Kotecki, Damian J., 4,449,031, Cl. 219-146.230.

Teletype Corporation: *See—*
DeMuth, Raymond W., 4,448,379, Cl. 248-201.000.

Telnaes, Inge S. Electronic gaming device utilizing a random number generator for selecting the reel stop positions. 4,448,419, Cl. 273-143.00R.

Templeton, John G., to Bulman Products, Inc. Shear cutter. 4,448,101, Cl. 83-374.000.

Tenex Corporation: *See—*
Carrera, Armando, 4,448,625, Cl. 156-243.000.

Terada, Sadatugu: *See—*
Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.

Terada, Yutaka; Takahashi, Yukoh; Yachigo, Shinichi; and Ishii, Tamaki, to Sumitomo Chemical Co., Ltd. Acetylene carbamide derivatives, processes for their production, and antioxidants for organic substances which comprise such derivatives as active ingredients. 4,448,915, Cl. 524-93.000.

Terahara, Akira; and Tanaka, Minoru, to Sankyo Company, Limited. ML-236B Derivatives. 4,448,979, Cl. 549-292.000.

Terakura, Yukio: *See—*
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,448,089, Cl. 74-467.000.

Termote, Frank A. A., to DMV-Campina B.V. Process of concentrating acid whey. 4,448,795, Cl. 426-471.000.

Terrell, Christopher, to Chloride Group Limited. Electric storage batteries. 4,448,863, Cl. 429-178.000.

Terry, Ruel C.: *See—*
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,448,252, Cl. 166-263.000.

Texaco Inc.: *See—*
Brennan, Michael E., 4,448,997, Cl. 564-479.000.
Dominguez, Richard J. G., 4,448,904, Cl. 521-160.000.
Lee, Kung-You; Chiou, Jackson K.; and McMahon, Matthew A., 4,448,822, Cl. 427-430.100.
McCoy, David R.; and Gipson, Robert M., 4,448,697, Cl. 252-8.55D.

Texas Instruments Incorporated: *See—*
Baber, Samuel C., 4,448,636, Cl. 156-643.000.
Brantingham, George L., 4,449,233, Cl. 381-53.000.

Thall, Earle S.: *See—*
Ebert, Chris W.; and Thall, Earle S., 4,448,612, Cl. 148-6.350.

Thalmann, Alfred: *See—*
Reich, Fritz; and Thalmann, Alfred, 4,449,038, Cl. 219-535.000.

Thalmann, Dieter, to Rieter Machine Works Ltd. Method of lubricating a spinning or twisting spindle and a spindle lubricated according to the method. 4,448,016, Cl. 57-133.000.

Thayer, Theodore B.: *See—*
Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., 4,448,626, Cl. 156-256.000.

Theiling, Louis F., Jr.: *See—*
Warner, Glenn H.; Theiling, Louis F., Jr.; and Freid, Marvin G., 4,448,977, Cl. 549-201.000.

Thewalt, Klaus; Bison, Gunter; and Egger, Heinz, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of 2-aminopropanediol-1,3(serinol). 4,448,999, Cl. 564-495.000.

Thioux, Alain: *See—*
Carre, Jean-Jacques; and Thioux, Alain, 4,448,090, Cl. 74-501.50R.

Thomas, Guy A., to W. S. Shamban & Company. Elastomer energized seal. 4,448,429, Cl. 277-165.000.

Thomas Hunter Limited: *See—*
Edwards, Cyril K.; and Webb, Edward H., 4,448,325, Cl. 220-269.000.

Thompson, Mortimer S., to Tri-Tech Systems International, Inc. Tamper evident closures and packages. 4,448,317, Cl. 215-203.000.

Thompson, Stephen M.: *See—*
Williamson, Eugene; Thompson, Stephen M.; and Evans, Derek K., 4,448,203, Cl. 128-733.000.

Thomson-CSF: *See—*
Doriath, Gerard; Gaudry, Roger; and Hepner, Georges, 4,449,096, Cl. 324-244.000.
Tournois, Pierre, 4,449,193, Cl. 364-604.000.

Thomson Leeds Company, Inc.: *See—*
Weiller, Peter J., 4,448,314, Cl. 211-131.000.

Thorndyke, Lloyd M.: *See—*
Carlson, Douglas M.; Ohman, Randall L.; and Thorndyke, Lloyd M., 4,449,164, Cl. 361-384.000.

Thornton, Jack L. Compound miter saw stand. 4,448,102, Cl. 83-471.100.

Thorpe, David: *See—*
Bruyninckx, Alphonse E.; Brooks, Martin F.; and Thorpe, David, 4,448,938, Cl. 525-457.000.

Thorsell Holdings Ltd.: *See—*
Thorsell, Stanley E., 4,448,004, Cl. 52-241.000.

Thorsell, Stanley E., to Robert S. Agar Inc.; Thorsell Holdings Ltd.; and Mudlake Holdings Ltd. Channel and cut-out structure for removeable partition wall. 4,448,004, Cl. 52-241.000.

Thummel, Rudolph C.: *See—*
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,448,773, Cl. 424-211.000.

Tijburg, Rudolf P.: *See—*
Kuiken, Hendrik K.; and Tijburg, Rudolf P., 4,448,635, Cl. 156-637.000.

Timex Corporation: *See—*
D'Onofrio, Anthony; and Gunzy, Jack, 4,449,075, Cl. 315-169.300.

Timken Company, The: *See—*
Otto, Dennis L., 4,448,461, Cl. 308-187.200.

Titus, Robert D.: *See—*
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,448,990, Cl. 564-167.000.

Tobi, Nobuo: *See—*
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.

Todd, Alec: *See—*
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,448,787, Cl. 424-283.000.

Tohoku Metal Industries, Inc.: *See—*
Nishino, Hisao; and Kondo, Shigeru, 4,449,173, Cl. 363-21.000.

Tokarzewski, Richard J.; and Schreiber, William L., to International Flavors & Fragrances Inc. Acetyl dimethylbutylcyclohexene and organoleptic uses therefor. 4,449,009, Cl. 568-377.000.

Tokarzewski, Richard J.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.

Tokitsu, Naoki; Itoh, Toshihiko; and Fujiwara, Toshitaka, to Nippondenso Co., Ltd. Portable memory device. 4,449,206, Cl. 365-229.000.

Toko, Inc.: *See—*
Ishii, Masanori; and Ishikawa, Hiroichi, 4,449,175, Cl. 363-26.000.

Tokumaru, Hisashi, to Minolta Camera Kabushiki Kaisha. Image transmitter for copying apparatus of slit exposure scanning type. 4,448,499, Cl. 350-573.000.

Tokyo Electric Co., Ltd.: *See—*
Matsuda, Susumu; and Kawaguchi, Katuhiko, 4,448,559, Cl. 400-637.400.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ando, Hideo, 4,449,138, Cl. 346-135.100.
Arinobu, Mutsihiro; and Suzuki, Isamu, 4,448,023, Cl. 60-644.100.
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.
Matsumoto, Kenzo, 4,448,201, Cl. 128-660.000.
Osada, Kimio, 4,449,072, Cl. 315-58.000.
Satoh, Seiichi, 4,449,026, Cl. 219-10.55B.
Takemura, Yasuhiko; and Akutsu, Fumihiko, 4,448,075, Cl. 73-626.000.
Totoki, Takashi; and Kawakami, Susumu, 4,449,060, Cl. 307-247.00R.
Wakayama, Hideaki; Fujiwara, Jyunji; and Doi, Kanya, 4,449,021, Cl. 200-144.00B.
Yokoyama, Nobuo, 4,449,071, Cl. 315-53.000.
Yoshida, Syoichi, 4,448,211, Cl. 137-112.000.

Tolbert, John T.: *See—*
Knapp, George W.; Spaulding, Bernard B.; and Tolbert, John T., 4,449,202, Cl. 364-900.000.

Tolentino, Luisito A., to General Electric Company. Method of making organosiloxanes and alkyl halides from dialkyldialkoxysilanes. 4,448,981, Cl. 556-459.000.

Toliver, Samuel: *See—*
Agnor, William C.; Lafferty, Edwin C.; and Toliver, Samuel, 4,449,104, Cl. 330-279.000.

Tomi, Toshikazu: *See—*
Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikazu, 4,448,519, Cl. 355-73.000.

Tomy Kogyo Co., Inc.: *See—*
Kaga, Takashi; and Kobayashi, Nobuo, 4,448,409, Cl. 272-8.00N.

Toppan Printing Co., Ltd.: *See—*
Matsudaira, Nagahisa; Yoshida, Kaneki; Fukuyoshi, Kenzo; and Masui, Kiyoshi, 4,448,493, Cl. 350-357.000.

Toray Silicone Company, Ltd.: *See—*
Matsushita, Takao, 4,448,840, Cl. 428-266.000.

Torrington Company, The: *See—*
Moroney, John J., 4,448,550, Cl. 384-127.000.

Tota, Giuseppe. Spreadable bar for eyeglass frames provided with a spring hinge. 4,448,502, Cl. 351-153.000.

Totoki, Takashi; and Kawakami, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Preset circuit for a clocked flip-flop. 4,449,060, Cl. 307-247.00R.

Totsu, Katsuyuki. Electrically driven screw-driver. 4,448,098, Cl. 81-467.000.

Totsuka, Kaoru: *See—*
Ishigaki, Yukinobu; Haramoto, Yutaka; and Totsuka, Kaoru, 4,449,106, Cl. 333-14.000.

Tournois, Pierre, to Thomson-CSF. Bidimensional correlation device. 4,449,193, Cl. 364-604.000.

Toussaint, Etienne G., to Societe Anonyme des Etablissements Adrien de Backer. Power supply housings for exterior light apparatus. 4,448,444, Cl. 361-331.000.

Toyama Chemical Co., Ltd.: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Toyo Kogyo Co., Ltd.: *See—*
Nakamoto, Hiromasa; and Miyoshi, Takeshi, 4,448,276, Cl. 180-90.000.

Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, to Maruzen Pharmaceutical Co., Ltd. 11-Deoxoglycyrrhetinic acid hydrogen maleate, process for its production, and its use as a medicine. 4,448,788, Cl. 424-313.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,448,089, Cl. 74-467.000.
Katagiri, Masayoshi; and Kondo, Toshio, 4,448,287, Cl. 188-73.310.
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, 4,448,035, Cl. 62-176.600.

Trans Refrigeration International, Inc.: *See—*
Southworth, John V. D., Jr., 4,448,041, Cl. 62-268.000.

Trevitt, Donna J.: *See—*
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.

Trezise, Richard; Boldt, John; and Gnutzman, Keith, to Chroma. Cartridge for matrix printer. 4,448,556, Cl. 400-208.000.

Tri-Tech Systems International, Inc.: *See—*
Thompson, Mortimer S., 4,448,317, Cl. 215-203.000.

Trinks, Walter; and Kohler, Kurt-Albrecht. Hollow explosive body. 4,448,128, Cl. 102-476.000.

Triplett, John W., to University of Kentucky Research Foundation, The. Alteration of gallium biodistribution using indium complexes for enhanced early imaging. 4,448,763, Cl. 424-1.100.

Trushenski, Scott P., to Standard Oil Company. Selecting salinities in micellar flooding. 4,448,698, Cl. 252-8.55D.

TRW Inc.: *See—*
Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, 4,448,481, Cl. 350-96.200.
Lathlaen, Richard A., 4,448,482, Cl. 350-96.210.
Ryley, James F., Jr., 4,448,483, Cl. 350-96.210.

Tsau, Josef H., to G. D. Searle & Co. Dipeptide sweetener-metal complexes. 4,448,716, Cl. 260-112.50R.

Tschang, Pin-Seng, to Eastman Kodak Company. Light valve imaging apparatus and method having supplemental exposure control. 4,449,153, Cl. 358-296.000.

Tseng, Ching-Ho. Internal combustion rotary power plant system. 4,448,161, Cl. 123-237.000.

Tseng, Samuel C.: *See—*
Fleek, Arthur E.; and Tseng, Samuel C., 4,448,123, Cl. 101-93.040.

Tsubaki, Kazumi; Morinaga, Hiroshi; and Yukawa, Joei, to Nissan Chemical Industries, Ltd. Epoxy resin and the process for its production. 4,448,948, Cl. 528-95.000.

Tsubouchi, Kazuo: *See—*
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Wasa, Kenji, 4,448,525, Cl. 356-73.000.

Tsuchikawa, Syuji: *See—*
Abe, Mitsuo; Tsuchikawa, Syuji; Fukuta, Teizo; and Asakawa, Tsugio, 4,448,580, Cl. 525-71.000.

Tsuchitani, Kazuo: *See—*
Ono, Tetsuji; Tsuchitani, Kazuo; Yamauchi, Shin; and Yonehara, Kiyoshi, 4,448,895, Cl. 502-304.000.

Tsuchiya, Toshiaki; and Itsumi, Manabu, to Nippon Telegraph & Telephone Public Corporation. Semiconductor memory device. 4,449,142, Cl. 357-23.000.

Tsuchiyama, Tadashi: *See—*
Hidaka, Yoshiaki; and Tsuchiyama, Tadashi, 4,448,159, Cl. 123-195.00C.

Tsuda, Hiroshi: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.
Washizuka, Isamu; Ikemoto, Yutaka; and Tsuda, Hiroshi, 4,448,542, Cl. 368-63.000.

Tsuda, Hisatsugu: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Tsuda, Yutaka, to Pipe Master International Ltd. Method for installing lines, pipes or cables underground. 4,448,567, Cl. 405-43.000.

Tsuge, Kimihiro: *See—*
Kuroda, Naoki; and Tsuge, Kimihiro, 4,448,099, Cl. 83-23.000.

Tsuji, Naoki: *See—*
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Tsuji, Nobuo: *See—*
Yamaguchi, Nobutaka; Tsuji, Nobuo; and Fujiyama, Masaaki, 4,448,842, Cl. 428-329.000.

Tsujikado, Seiji: *See—*
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,448,342, Cl. 228-102.000.

Tsukagoshi, Terukazu: *See—*
Matsuoka, Akira; and Tsukagoshi, Terukazu, 4,449,040, Cl. 235-380.000.

Tsukamoto, Goro: *See—*
Ikeda, Shoji; Sakamoto, Fumio; Tsukamoto, Goro; and Yamabe, Shigeru, 4,448,769, Cl. 424-114.000.

Tsuruoka, Takashi: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Tsuruta, Hisato: *See—*
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshiahige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.

Tsuruta, Katsuji: *See—*
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,448,342, Cl. 228-102.000.

Tuftco Corporation: *See—*
Curtis, Kenneth C.; and Densmore, John C., 4,448,137, Cl. 112-79.00R.

Tupper, Leland C.: *See—*
Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., 4,449,087, Cl. 318-723.000.

Turnbull, Fred G., to General Electric Company. Single phase regeneration with a polyphase rectification power circuit. 4,449,176, Cl. 363-81.000.

Turner, Paul F., to BSD Medical Corporation. Invasive hyperthermia apparatus and method. 4,448,198, Cl. 128-422.000.

Turro, Nicholas J., to Columbia University in the City of New York, The Trustees of. Methods employing magnetic fields for controlling emulsion polymerization. 4,448,637, Cl. 204-155.000.

Tward, Emanuel, to Tward 2001 Limited. Method of measuring and indicating fluid levels. 4,448,071, Cl. 73-304.00C.

Tward, Emanuel, to Tward 2001 Limited. Fluid level measuring system. 4,448,072, Cl. 73-304.00C.

Tward 2001 Limited: *See—*
Tward, Emanuel, 4,448,071, Cl. 73-304.00C.
Tward, Emanuel, 4,448,072, Cl. 73-304.00C.

Twedt, Lynn O.: *See—*
McQueen, Coy E.; and Twedt, Lynn O., 4,448,232, Cl. 160-207.000.

Uchida, Yasumi: *See—*
Shiratsuchi, Masami; Ishihama, Hiroshi; and Uchida, Yasumi, 4,448,989, Cl. 564-165.000.

Uchide, Hitoshi: *See—*
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.

Uchigasaki, Isao: *See—*
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.

Uchiyama, Masaki: *See—*
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.

Ueda, Minoru: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,449,148, Cl. 358-230.000.

Uesugi, Toshiaki; Ogitani, Kazutaka; and Inden, Toshikazu, to Chino Works Ltd. Multiple position recorder. 4,449,129, Cl. 346-61.000.

Uhrig, Rudolf-Karl: *See—*
Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, 4,448,533, Cl. 356-416.000.

Umesaki, Shigeo: *See—*
Yamato, Akihiro; and Umesaki, Shigeo, 4,448,178, Cl. 123-571.000.

Umezawa, Michio, to Ricoh Company, Ltd. Ink ejection head. 4,449,135, Cl. 346-75.000.

Umino, Masahide: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, 4,448,746, Cl. 419-31.000.

Umino, Satoru: *See—*
Kuwaki, Masami; Hatada, Youichi; and Umino, Satoru, 4,448,346, Cl. 236-46.00R.

Unarco Industries, Inc.: *See—*
Obermeyer, James H., 4,448,315, Cl. 211-191.000.

Union Carbide Corporation: *See—*
Cheung, Harry, 4,448,595, Cl. 62-31.000.
Francis, Arthur W., Jr.; Nowotarski, Mark S.; and Solomon, Jack, 4,448,616, Cl. 148-16.000.
Warner, Glenn H.; Theiling, Louis F., Jr.; and Freid, Marvin G., 4,448,977, Cl. 549-201.000.

Union Oil Company of California: *See—*
Deering, Roland F., 4,448,668, Cl. 208-11.00R.
Hass, Robert H., 4,448,899, Cl. 521-32.000.

Uniroyal, Inc.: *See—*
Weaver, Ebon P., 4,448,934, Cl. 525-184.000.

Unit Rig & Equip. Co.: *See—*
Knothe, George T.; and Mayfield, Robert A., 4,448,458, Cl. 303-84.00A.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the: *See—*
Colman, Geoffrey; and Russell, Roy R. B., 4,448,768, Cl. 424-92.000.

U.S. Environmental Products, Inc.: *See—*
White, A. R., Jr., 4,448,696, Cl. 210-711.000.

United States Gypsum Company: *See—*
Long, William J., 4,448,639, Cl. 162-124.000.

United States of America

Administrator, National Aeronautics and Space Administration: *See—*
Hallberg, Frederick C.; and Morgan, Clyde J., 4,448,406, Cl. 269-224.000.

Air Force: *See—*
Bishop, Wayne S.; and Marsh, Richard A., 4,448,859, Cl. 429-50.000.
Bridges, William F., 4,448,078, Cl. 73-766.000.
Evans, David W., 4,448,486, Cl. 350-162.120.
Frerking, Marvin E., 4,449,032, Cl. 219-210.000.
Husbands, Charles R., 4,449,043, Cl. 250-205.000.
Kauffman, Robert E.; Rhine, Wendell E.; and Saba, Costandy S., 4,448,887, Cl. 436-60.000.
Kennel, John M., 4,448,086, Cl. 74-5.00R.
Kromrey, Robert V., 4,448,742, Cl. 264-270.000.
McCarty, Fred B., 4,447,947, Cl. 29-825.000.
Reinhardt, Bruce A.; and Arnold, Fred E., 4,449,001, Cl. 568-31.000.
Reznick, Steven G.; and Franke, Milton E., 4,448,354, Cl. 239-265.170.
Robertson, Glenn D., Jr., 4,448,645, Cl. 204-15.000.
Shinkle, Kurt D., 4,448,377, Cl. 248-178.000.
Sliney, James G., Jr., 4,449,242, Cl. 383-103.000.
Swigert, Charles J., 4,449,235, Cl. 381-71.000.

Army: *See—*
Davis, George T., deceased; and Hydro, William R., 4,449,005, Cl. 568-59.000.
Edwards, Donald K., 4,448,239, Cl. 165-47.000.

Energy: *See—*
Duchane, David V.; and Barthell, Barry L., 4,448,622, Cl. 156-155.000.
Duerksen, Walter K.; Googin, John M.; and Napier, Bradley, Jr., 4,448,701, Cl. 252-49.300.
Manning, Frank W., 4,449,049, Cl. 250-377.000.
Olson, Jerry M.; and Carleton, Karen L., 4,448,651, Cl. 204-60.000.
Richards, Powell; Srivastava, Suresh C.; and Meinken, George E., 4,448,762, Cl. 424-1.100.
Schuller, Ivan K.; and Falco, Charles M., 4,448,854, Cl. 428-611.000.
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.
Zuckerbrod, David; and Gibney, Ann, 4,448,856, Cl. 429-27.000.

National Aeronautics and Space Administration: *See—*
Baucom, Robert M., 4,447,943, Cl. 29-423.000.

Navy: *See—*
Bates, Jack R.; and Holtrop, John W., 4,448,373, Cl. 244-137.00R.
Elkins, James H., 4,447,952, Cl. 30-361.000.
Frank, Alick H.; and White, Joseph D., 4,449,105, Cl. 331-3.000.
Hackman, Donald J.; Caudy, Don W.; Wernli, Robert L.; and Albro, Carl S., 4,448,569, Cl. 405-190.000.
Johnson, Leopold J.; and Carson, David L., 4,449,068, Cl. 310-316.000.
Manuccia, Thomas J.; Peele, John R.; and Geosling, Christine E., 4,448,000, Cl. 52-208.000.
Mohrman, Robert H., 4,447,944, Cl. 29-512.000.
Schmidt, Richard L.; Sullivan, Edmund J.; Myers, Bernard J.; and Liszka, Edward G., 4,449,211, Cl. 367-153.000.
Sitzmann, Michael E.; and Gilligan, William H., 4,449,000, Cl. 568-22.000.
Sutherland, Alexander L.; and Swenson, Richard C., 4,448,068, Cl. 73-170.00A.
Zehner, William J.; and Skinner, David P., 4,449,209, Cl. 367-102.000.

U.S. Philips Corporation: *See—*
Kroon, Dirk J.; and Robers, Klaas H. J., 4,449,198, Cl. 364-900.000.
Kuiken, Hendrik K.; and Tijburg, Rudolf P., 4,448,635, Cl. 156-637.000.
Luijben, Henricus G. J. A. M.; and Meinders, Herman C., 4,448,827, Cl. 428-35.000.
Olieslagers, Henri G.; and Melgert, Frederik B., 4,448,866, Cl. 430-24.000.
van der Sluys, Willem L. N.; and Hermans, Mathias L., 4,448,596, Cl. 62-101.000.
van Heelsbergen, Teunis R., 4,448,076, Cl. 73-626.000.

United Technologies Corporation: *See—*
Bergquist, Everett J., 4,447,992, Cl. 51-163.100.
Chenausky, Peter P.; Bullis, Robert H.; Brown, Clyde O.; and Manning, Ernest B., deceased, 4,449,220, Cl. 372-83.000.
Shuskus, Alexander J., 4,448,633, Cl. 156-610.000.

Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG: *See—*
Kuhnert, Gottfried, 4,448,045, Cl. 66-120.000.

University of Kentucky Research Foundation, The: *See—*
Triplett, John W., 4,448,763, Cl. 424-1.100.

University of Miami: *See—*
Ryan, James W.; and Chung, Alfred, 4,448,715, Cl. 260-112.50R.

University of Pennsylvania, The Trustees of the: *See—*
Cava, Michael P.; and Dominguez, Domingo, 4,448,724, Cl. 260-351.500.

University of Pittsburgh: *See—*
Meno, Frank, 4,449,084, Cl. 318-640.000.

University of Southern California: *See—*
Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., 4,448,200, Cl. 128-653.000.

Uno, Chiyomatsu; and Muto, Hiroshi, to Komori Printing Machinery Co., Ltd. Rotary printing press and inspection method and apparatus therefor. 4,448,121, Cl. 101-76.000.

Uno, Hiroshi; and Furuhashi, Kenji, to Hosiden Electronics, Co., Ltd. Self-holding type push switch with heart type cam. 4,449,022, Cl. 200-153.00J.

Unoguchi, Takehiko; Hasegawa, Seiro; Fujito, Katsuyuki; Nishino, Atsushi; and Yoshida, Akihiko, to Matsushita Electrical Industrial Co. Apparatus and method for controlling humidity. 4,449,188, Cl. 364-505.000.

UOP Inc.: *See—*
Cunningham, James L.; and Tatum, John M., 4,448,615, Cl. 148-13.000.
Kurek, Paul R., 4,448,994, Cl. 564-416.000.
Moorhouse, David; and Marshall, David E., 4,448,386, Cl. 248-564.000.
Stine, Laurence O., 4,448,251, Cl. 166-263.000.

UPA Technology, Inc.: *See—*
Pinches, Philip B.; and Lieber, Sidney, 4,449,048, Cl. 250-308.000.

Upjohn Company, The: *See—*
Barsa, Edward A.; and Sherwood, Philip W., 4,448,816, Cl. 427-388.200.
Magerlein, Barney J., 4,448,970, Cl. 548-336.000.

Upson, Donald A.; and Steklenski, David J., to Eastman Kodak Company. Vinyl acetate polymers and latex compositions containing same. 4,448,850, Cl. 428-510.000.

Urawa, Motoo: *See—*
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.

USM Corporation: *See—*
Bond, Michael E.; and Taylor, Harry E., 4,447,923, Cl. 7-165.000.
Dorosz, Adolph S., 4,448,139, Cl. 112-221.000.
Grosberg, Joseph J., 4,447,962, Cl. 33-286.000.
Kondo, Yoshiteru, 4,449,092, Cl. 323-271.000.

Usui, Fumio. Winding method and apparatus. 4,448,015, Cl. 57-3.000.

Utzerath, James. Line segment video display apparatus. 4,449,200, Cl. 364-900.000.

VAC-TEC Systems, Inc.: *See—*
Morrison, Charles F., Jr., 4,448,659, Cl. 204-192.00R.

Vaeth, Guenter: *See—*
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.

Vail, David K., to Rockwell International Corporation. Time-of-day clock having a temperature compensated low power frequency source. 4,448,543, Cl. 368-202.000.

Valat, Claude R. Universal bench for the assembly, testing and repair of motor vehicles. 4,447,961, Cl. 33-180.0AT.

Vandenham, Elbert H.: *See—*
Bashford, Anthony J.; and Vandenham, Elbert H., 4,448,407, Cl. 271-8.00A.

van der Lely, Cornelis. Vehicle. 4,448,274, Cl. 180-15.000.

van der Sluys, Willem L. N.; and Hermans, Mathias L., to U.S. Philips Corporation. Method of operating a bimodal heat pump, as well as bimodal heat pump for using said method. 4,448,596, Cl. 62-101.000.

Vandervalk, Casey S., to Delphax Systems. Duplex imaging with pressure transfixing. 4,448,872, Cl. 430-126.000.

van der Weerdt, Antonius J. A.; and Apeldoorn, Willem, to Naarden International N.V. Perfume compositions and perfumed articles containing spiro-undecanones and -undecenones as perfume base. 4,448,712, Cl. 252-522.00R.

van Hatten, Hendricus W. M., to AMGAS B.V. Heat-insulating pipe element. 4,448,219, Cl. 138-149.000.

van Heelsbergen, Teunis R., to U.S. Philips Corporation. Method and device for examination by means of ultrasonic beams. 4,448,076, Cl. 73-626.000.

Vanjuskin, Boris M.: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

van Oene, Henk: *See—*
Cheung, Mo-Fung; Garrett, David L., Jr.; and van Oene, Henk, 4,448,941, Cl. 525-528.000.

Van Stone, Robert A.: *See—*
Reid, Walter L., Jr.; Van Stone, Robert A.; and Delano, Ralph L., 4,448,290, Cl. 188-82.700.

van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L. Hydroxybenzohydroxamic acids, benzamides and esters and related compounds as ribonucleotide reductase inhibitors. 4,448,730, Cl. 260-500.50H.

Van Wagoner, Roger B.: *See—*
Aldinger, Darrell D.; and Van Wagoner, Roger B., 4,448,351, Cl. 239-25.000.

Varian Associates, Inc.: *See—*
Berkowitz, Edward H., 4,449,051, Cl. 250-492.200.

Varta Batterie Aktiengesellschaft: *See—*
Schulte, Heinz; and Kirchhoff, Werner, 4,448,862, Cl. 429-136.000.
von Alpen, Ulrich; and Nijhawan, Subsah C., 4,448,860, Cl. 429-57.000.

Vaseen, Vesper A.: *See—*
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,448,252, Cl. 166-263.000.

VEB Kombinat Textima: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Veb Zentrum fur Forschung und Technologie Mikroelekronik: *See—*
Riessland, Eberhard; and Kruger, Karl-Heinz, 4,448,403, Cl. 269-21.000.

Vergason, Gary E.: *See—*
Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, 4,448,799, Cl. 427-37.000.

Verma, Deepak K., to Southwire Company. Hydrostatic assist during rolling of cast metal. 4,448,052, Cl. 72-57.000.

Vetter, Manfred. Apparatus for sealing leaks. 4,448,218, Cl. 138-99.000.

Vibranetics, Inc.: *See—*
Plummer, Virgil C., Jr., 4,448,332, Cl. 222-196.000.

Vicino, Robert K.; Cooper, Dale L.; Pembleton, Lauren M.; and Allen, Constance C. Inflatable bottle replica. 4,447,974, Cl. 40-538.000.

Victor Company of Japan, Ltd.: *See—*
Ishigaki, Yukinobu; Haramoto, Yutaka; and Totsuka, Kaoru, 4,449,106, Cl. 333-14.000.

Vigar, James M.: *See—*
Barclay, Donald J.; Morgan, William M.; and Vigar, James M., 4,448,648, Cl. 204-51.000.
Barclay, Donald J.; Morgan, William M.; and Vigar, James M., 4,448,649, Cl. 204-51.000.

Vigh, Szabolcs M.: *See—*
DiGiovanni, John; Vigh, Szabolcs M.; McVay, William P.; and Mikaza, Anthony S., Jr., 4,448,194, Cl. 128-334.00R.

Vilaseca, Hilario S.; and Mas, Ramon B. Dispenser for tubes of fluent material. 4,448,329, Cl. 222-96.000.

Vincent, Robert R., to Cooper Industries, Inc. Pneumatic hammer. 4,448,262, Cl. 173-16.000.

Viniczay, Gabriella F.; and Roehrich, Siegfried, to Aktiengesellschaft Adolf Saurer. Control apparatus for the electromagnetic brake of a weaving machine. 4,448,295, Cl. 192-125.00A.

Vining, Richard A.: *See—*
Chao, Shun-lung; and Vining, Richard A., 4,448,028, Cl. 62-3.000.

Vinzant, Michael B.: *See—*
Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.

Vital Metrics, Inc.: *See—*
Parrish, John H., 4,448,207, Cl. 128-771.000.

Vochelli, Julian P., to Hollywood Accessories. Interior automotive sunshade with ring hinges. 4,448,005, Cl. 52-473.000.

Vock, Manfred H.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.

Voest-Alpine AG: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Vogt, Martin C.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., 4,448,755, Cl. 423-56.000.

Voillot, Herve , to Creusot-Loire. Apparatus for advancing elongate objects around a curve. 4,448,299, Cl. 198-457.000.

Volk, Benjamin: *See—*
Volk, Joseph, Sr., 4,448,115, Cl. 99-574.000.

Volk, Joseph, Sr., to Volk, Benjamin. Apparatus for hulling pistachio nuts. 4,448,115, Cl. 99-574.000.

Volkamer, Klaus: *See—*
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,448,643, Cl. 203-34.000.

von Alpen, Ulrich; and Nijhawan, Subash C., to Varta Batterie Aktiengesellschaft. Galvanic element with integral getter. 4,448,860, Cl. 429-57.000.

von Bergen, Ernst P., to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel. Shaft seal assembly with inflatable annular member. 4,448,425, Cl. 277-34.000.

von Bonin, Wulf: *See—*
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,448,914, Cl. 524-32.000.

von Nordenskjold, Reinhart. Apparatus for final clearing of waste water. 4,448,689, Cl. 210-521.000.

Voser, Othmar, to Kupferdraht-Isolierwerk AG Wildegg. Overhead cable with tension-bearing means. 4,449,012, Cl. 174-70.00A.

Voskoboev, Anatolij E.: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Vosper, George W. Fuel injector. 4,448,160, Cl. 123-297.000.

W. R. Grace & Co.: *See—*
Cogliano, Joseph A., 4,448,830, Cl. 428-40.000.

W. R. Grace & Co., Cryovac Division: *See—*
Schirmer, Henry G., 4,448,792, Cl. 426-113.000.

W. S. Shamban & Company: *See—*
Thomas, Guy A., 4,448,429, Cl. 277-165.000.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Lampert, Ingolf, 4,448,634, Cl. 156-636.000.

Wada, Masami: *See—*
Ishikawa, Yasuaki; Ajiro, Shuichi; and Wada, Masami, 4,448,269, Cl. 175-335.000.

Wada, Tsuneo: *See—*
Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.

Wadsworth, Jeffrey: *See—*
Sherby, Oleg D.; Oyama, Toshimasa; and Wadsworth, Jeffrey, 4,448,613, Cl. 148-12.00R.

Wagner, Ulrich: *See—*
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,448,643, Cl. 203-34.000.

Wajima, Motoyo: *See—*
Koyama, Tohru; Wajima, Motoyo; and Mukai, Junji, 4,448,940, Cl. 525-504.000.

Wajszczuk, Waldemar J.; Palko, Tadeusz; and Pawlicki, Grzegorz. Biological signal amplifier system with noise level reduction. 4,448,202, Cl. 128-709.000.

Wakamiya, Koichi, to Nippon Kogaku K. K. Great aperture ratio lens. 4,448,497, Cl. 350-464.000.

Wakatsuki, Goroei: *See—*
Watanabe, Masaki; and Wakatsuki, Goroei, 4,448,279, Cl. 180-297.000.

Wakayama, Hideaki; Fujiwara, Jyunji; and Doi, Kanya, to Tokyo Shibaura Denki Kabushiki Kaisha. Vacuum circuit breaker. 4,449,021, Cl. 200-144.00B.

Walawender, Walter P.: *See—*
Fan, Liang-tseng; and Walawender, Walter P., 4,448,589, Cl. 48-197.00R.

Walker Equipment Corporation: *See—*
Walker, Wesley F., Jr., 4,449,236, Cl. 381-91.000.

Walker, John R.: *See—*
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,448,699, Cl. 252-8.750.

Walker, Loren H.: *See—*
Cutler, John H.; D'Atre, John D.; and Walker, Loren H., 4,449,088, Cl. 318-798.000.
Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., 4,449,087, Cl. 318-723.000.

Walker, Samuel B.: *See—*
Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., 4,449,186, Cl. 364-407.000.

Walker, Wesley F., Jr., to Walker Equipment Corporation. Anti-side tone transmitter. 4,449,236, Cl. 381-91.000.

Wallace Computer Services, Inc.: *See—*
Chang, John C. H.; and Dimitriou, Theodore, 4,448,445, Cl. 346-206.000.

Wallentowitz, Henning: *See—*
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, 4,448,441, Cl. 280-691.000.

Wallick, George C.: *See—*
Moeckel, George P.; and Wallick, George C., 4,449,208, Cl. 367-30.000.

Wallman, P. Henrik, to Chevron Research Company. Retorting process for hydrocarbonaceous solids. 4,448,666, Cl. 208-11.00R.

Walls, John E.; and Dhillon, Major S., to American Hoechst Corporation. Negative working diazo contact film. 4,448,873, Cl. 430-157.000.

Walls, John E.: *See—*
Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., 4,448,647, Cl. 204-33.000.

Walter, Klaus. Water pressure jet cleaner. 4,447,917, Cl. 4-256.000.

Walter, Lothar: *See—*
Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, 4,448,294, Cl. 192-30.00V.

Walth, Lee A.: *See—*
Darvial, Bruce L.; Heintz, Phillip L.; Smith, John S.; and Walth, Lee A., 4,448,175, Cl. 123-557.000.

Waltmann, Ernst: *See—*
Fennekels, Peter; and Waltmann, Ernst, 4,448,581, Cl. 8-137.000.

Wampler, Galen L.: *See—*
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 4,448,730, Cl. 260-500.50H.

Wanat, Stanley F.: *See—*
Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., 4,448,647, Cl. 204-33.000.

Wang, Chyuan-chyuan: *See—*
Wang, Huei-Hsiung; and Wang, Chyuan-chyuan, 4,448,936, Cl. 525-424.000.

Wang, Donald G. J., to Celanese Corporation. Process for the production of semipermeable polybenzimidazole membranes with low temperature annealing. 4,448,687, Cl. 210-500.200.

Wang, Huei-Hsiung; and Wang, Chyuan-chyuan. Polyurethane resin composition. 4,448,936, Cl. 525-424.000.

Warner, Glenn H.; Theiling, Louis F., Jr.; and Freid, Marvin G., to Union Carbide Corporation. Stabilized acetal-acid compositions. 4,448,977, Cl. 549-201.000.

Warner-Lambert Company: *See—*
Yang, Robert K., 4,448,789, Cl. 426-5.000.

Warner & Swasey Company, The: *See—*
Kuroda, Naoki; and Tsuge, Kimihiro, 4,448,099, Cl. 83-23.000.

Warshawsky, Jerome. Vertical swing bracket. 4,449,169, Cl. 362-413.000.

Warshawsky, Jerome. Lamp support. 4,449,170, Cl. 362-413.000.

Warshawsky, Jerome. Lamp support for pharmacy-type lamp. 4,449,171, Cl. 362-413.000.

Warshawsky, Jerome. Lamp swing units. 4,449,172, Cl. 362-427.000.

Wasa, Kenji: *See—*
Mikoahiba, Nobuo; Tsubouchi, Kazuo; and Wasa, Kenji, 4,448,525, Cl. 356-73.000.

Waschka, George A., Jr., to Harris Corporation. Local orderwire facility for fiber optic communication system. 4,449,247, Cl. 455-9.000.

Waschka, George A., Jr.: *See—*
Seiler, Norman C.; Nixon, Thomas J.; and Waschka, George A., Jr., 4,449,246, Cl. 455-9.000.

Washizuka, Isamu; Ikemoto, Yutaka; and Tsuda, Hiroshi, to Sharp Kabushiki Kaisha. Electronic timepiece. 4,448,542, Cl. 368-63.000.

Watanabe, Hideaki: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.

Watanabe, Kazuhide: *See—*
Abe, Seiko; and Watanabe, Kazuhide, 4,448,173, Cl. 123-549.000.

Watanabe, Masaki; and Wakatsuki, Goroei, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle drive unit. 4,448,279, Cl. 180-297.000.

Watanabe, Masaru; Yamauchi, Nobuharu; Hashimoto, Naoki; and Tamama, Tetsuo. Radio wave angle of incidence measurement apparatus. 4,449,192, Cl. 364-559.000.

Watanabe, Michinori, to Hitachi, Ltd. Tape threading device. 4,448,369, Cl. 242-195.000.

Watanabe, Minoru: *See—*
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.

Watanabe, Teruo; and Ishikawa, Masaaki, to Mitutoyo Mfg. Co., Ltd. Instrument for measuring internal dimensions. 4,447,959, Cl. 33-178.00E.

Watanabe, Tetsuro: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Watkins, Herbert E.: *See—*
Maurer, Edward J., Jr.; Baumann, Hanns U.; and Watkins, Herbert E., 4,447,996, Cl. 52-79.100.

Watkins, Hugh: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.

Watson-Bowman Associates, Inc.: *See—*
Watson, Stewart C., 4,448,920, Cl. 524-439.000.

Watson, Stewart C., to Watson-Bowman Associates, Inc. Reinforced elastomer products. 4,448,920, Cl. 524-439.000.

Wausau Metals Corporation: *See—*
Weber, Ronald J.; and Pagel, Gene T., 4,447,985, Cl. 49-400.000.

Wayne, Albert, to Westinghouse Electric Corp. Coil winding apparatus. 4,448,054, Cl. 72-146.000.

Wayne H. Coloney Co., Inc.: *See—*
Beall, Charles D., 4,449,083, Cl. 318-602.000.

Weaver, Ebon P., to Uniroyal, Inc. Blends of ionic elastomers and nylon. 4,448,934, Cl. 525-184.000.

Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., to Prime & Weaver Investment Company. Roller conveyor construction. 4,448,302, Cl. 198-781.000.

Webb, Edward H.: *See—*
Edwards, Cyril K.; and Webb, Edward H., 4,448,325, Cl. 220-269.000.

Webber, Robert C., to Lockheed Corporation. Method and apparatus for making filament wound cylindrical structres. 4,448,624, Cl. 156-175.000.

Weber, Andrew M.: *See—*
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,448,893, Cl. 502-209.000.

Weber, Bernhard G., to Sulzer Brothers Limited. Expandable medullary canal plug. 4,447,915, Cl. 3-1.900.

Weber-Henning, Hans; and Weber, Peter. Longitudinally adjustable ski pole. 4,448,442, Cl. 280-823.000.

Weber, Peter: *See—*
Weber-Henning, Hans; and Weber, Peter, 4,448,442, Cl. 280-823.000.

Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, to Korf Engineering GmbH; and Voest-Alpine AG. Apparatus for directly making liquid pig-iron from coarse iron ore. 4,448,402, Cl. 266-183.000.

Weber, Ronald J.; and Pagel, Gene T., to Wausau Metals Corporation. Window structure. 4,447,985, Cl. 49-400.000.

Webster, Douglas G. Motor speed control system. 4,449,082, Cl. 318-326.000.

Weeks, Walter: *See—*
Weinzettel, Michael; and Weeks, Walter, 4,448,304, Cl. 206-223.000.

Wegmann, Urs, to Balzers Aktiengesellschaft. Cathode arrangement for sputtering material from a target in a cathode sputtering unit. 4,448,653, Cl. 204-298.000.

Weidig, Charles F., to Ethyl Corporation. Corrosion inhibitor compositions for alcohol-base fuels. 4,448,586, Cl. 44-55.000.

Weidler, Charles H., to AMP Incorporated. Connector assembly having compact keying and latching system. 4,448,467, Cl. 339-17.0LC.

Weiland, Emil; and Gunther, Christian, to Messerschmitt-Bolkow Blohm Gesellschaft mit beschrankter Haftung. Suspension system for rail vehicles. 4,448,131, Cl. 105-182.00R.

Weiller, Peter J., to Thomson Leeds Company, Inc. Merchandise rack. 4,448,314, Cl. 211-131.000.

Weindel, David; and Cederholm, Carl, to Weindel, David. Amusement game device. 4,448,413, Cl. 273-1.0GB.

Weingarten, Joseph L. Computer printer paper support. 4,448,558, Cl. 400-529.000.

Weinzettel, Michael; and Weeks, Walter, to Eisenstadt Company. Remount kit for representations of stone-bearing rings. 4,448,304, Cl. 206-223.000.

Weir, Colin B., to GTE Products Corporation. Radio frequency transmitter coupling circuit. 4,449,128, Cl. 343-858.000.

Weiss, Guenther: *See—*
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schafferczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.

Weiss, Herbert W.: *See—*
Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., 4,449,087, Cl. 318-723.000.

Welch, Robert J.: *See—*
Salkeld, Stephen A.; Stock, Mark E.; and Welch, Robert J., 4,448,231, Cl. 160-135.000.

Welch, Willard M., Jr., to Pfizer Inc. 2-Oxo-1,3-dioxol-4-ylmethyl esters of penicillanic acid 1,1-dioxide. 4,448,732, Cl. 260-245.200.

Wells, Harold D., to Pet Incorporated. Humpback oven-broiler. 4,448,117, Cl. 99-331.000.

Welsh, Jay Y.; DeCraene, Denis F.; and Sochol, Irving, to Chemetals Incorporated. Continuous process for the preparation of manganite, MnOOH. 4,448,760, Cl. 423-605.000.

Welsh, Richard J. Sail cradle. 4,448,143, Cl. 114-90.000.

Wenner, Michael: *See—*
Reich, Gerhard; and Wenner, Michael, 4,448,300, Cl. 198-633.000.

Wenske, Rolf: *See—*
Schnell, Hans; and Wenske, Rolf, 4,447,941, Cl. 29-121.100.

Wernli, Robert L.: *See—*
Hackman, Donald J.; Caudy, Don W.; Wernli, Robert L.; and Albro, Carl S., 4,448,569, Cl. 405-190.000.

Wertz, Richard K.; Cook, Albert M.; and Hathaway, James C., to American Hospital Corporation. Antibiotic susceptibility testing. 4,448,534, Cl. 356-435.000.

Wessel, Wolf: *See—*
Engelbrecht, Hans-Christian; Kniss, Helmut; and Wessel, Wolf, 4,448,067, Cl. 73-119.00A.

West Company, The: *See—*
Lowe, Allen D., 4,448,318, Cl. 215-252.000.

West, Joe E., to Western Company of North America, The. Apparatus for blending additives into a liquid. 4,448,535, Cl. 366-13.000.

Westall, Stephen, to Dow Corning Limited. Treating textile fibres with quaternary salt polydiorganosiloxane. 4,448,810, Cl. 427-302.000.

Western Company of North America, The: *See—*
West, Joe E., 4,448,535, Cl. 366-13.000.

Westinghouse Electric Corp.: *See—*
Binstock, Morton H.; McCloskey, Thomas H.; and Podolsky, Leaman B., 4,448,026, Cl. 60-662.000.
Fludzinski, Jan M., 4,448,366, Cl. 242-75.510.
Kochka, Edgar L.; Burack, Robert D.; and Pfeiffer, Kenneth E., 4,448,343, Cl. 228-205.000.
MacFadden, John A.; Keever, Joseph M.; and Ziaa, William J., 4,449,094, Cl. 324-152.000.
Sanchez, Jose A., 4,449,127, Cl. 343-7.00A.
Wayne, Albert, 4,448,054, Cl. 72-146.000.

Wetmore, Sherman B.; and Knorr, Gordon D., to Global Marine, Inc. Skirts and skirt handling for air cushion vehicles. 4,448,277, Cl. 180-127.000.

Wetzel, Robert E.: *See—*
Marsh, Richard L.; and Wetzel, Robert E., 4,448,621, Cl. 156-138.000.

Wevers, Jean: *See—*
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,448,699, Cl. 252-8.750.

White, A. R., Jr., to U.S. Environmental Products, Inc. Process for recovering and recycling coagulant present in water treatment sludges. 4,448,696, Cl. 210-711.000.

White, Joseph D.: *See—*
Frank, Alick H.; and White, Joseph D., 4,449,105, Cl. 331-3.000.

White, Martin, to British Gas Corporation. Boiler with waste heat recovery. 4,448,136, Cl. 122-17.000.

White, Scott A.: *See—*
Bopp, Richard C.; Golba, Joseph C., Jr.; and White, Scott A., 4,448,937, Cl. 525-432.000.

White, William W.; and MacDonald, Ian N., to James Howden & Company Limited. Bearing lubrication system. 4,448,552, Cl. 384-404.000.

Whiteley, Helen R.: *See—*
Schnepf, H. Ernest; and Whiteley, Helen R., 4,448,885, Cl. 435-253.000.

Whitman Medical Corporation: *See—*
Lichtenstein, Joseph, 4,448,204, Cl. 128-736.000.

Whitmer, Melvin H. Proximity detector employing a crystal oscillator. 4,449,122, Cl. 340-562.000.

Whitmyer, Wayne E.; and Matthews, Thomas E., to Kawneer Company, Inc. Moisture dam system for curtain walls. 4,448,001, Cl. 52-209.000.

Whitney, James M.: *See—*
Singleton, Lewis, Jr.; and Whitney, James M., 4,448,238, Cl. 165-45.000.

Whittaker, Graham, to Imperial Chemical Industries PLC. Process for preparing chloro-trifluoromethyl pyridines. 4,448,967, Cl. 546-345.000.

Wickersheim, Kenneth A., to Luxtron Corporation. Optical temperature measurement technique utilizing phosphors. 4,448,547, Cl. 374-131.000.

Wickmann-Werke AG: *See—*
Behrendt, Martin, 4,448,376, Cl. 248-27.300.

Wieland-Werke AG: *See—*
Demuth, Hans; Kropp, Peter; and Noll, Karl, 4,448,244, Cl. 165-141.000.

Wieser, Franz; and Hofinger, Hans-Peter, to Societe d'Assistance Technique pour Produits Nestle S.A. Coating of plant seeds. 4,448,796, Cl. 427-4.000.

Wihlke, Hans. Album leaf with pockets for insertion of photographic paper prints and similar articles. 4,447,973, Cl. 40-159.000.

Wilde, Gotthard: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Wilhelm, Randy L., to Motorola Inc. Multiple point, discrete cosine processor. 4,449,194, Cl. 364-725.000.

Wilkins, James H.; and Payne, Mark, to Missouri Pacific Railroad Company. Adjustable boxcar door with double roller bogey traverse mechanism and methods for fabricating and installing same. 4,447,986, Cl. 49-426.000.

Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., to United States of America, Energy. Apparatus and method for classifying fuel pellets for nuclear reactor. 4,448,680, Cl. 209-564.000.

Willi Becker Ingenieurburo GmbH: *See—*
Becker, Willi, 4,448,146, Cl. 114-162.000.

Williams, Earl P.: *See—*
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., 4,448,905, Cl. 521-164.000.
Lorenz, Donald H.; and Williams, Earl P., 4,448,876, Cl. 430-296.000.

Williams, Errol R.: *See—*
McClure, Richard G.; Rakes, James M.; and Williams, Errol R., 4,449,033, Cl. 219-216.000.

Williams, Haydn W. R.: *See—*
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,448,786, Cl. 424-274.000.

Williams, James E., to Cuisinarts Research & Development, Inc. Continuous output vibrating deck food processor. 4,448,360, Cl. 241-92.000.

Williams, Joseph R.: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.

Williamson, Eugene; Thompson, Stephen M.; and Evans, Derek K., to "A" Company. Electromyographic diagnostic device. 4,448,203, Cl. 128-733.000.

Williamson, Hugh E., to Hugan Limited. Toggle press. 4,448,119, Cl. 100-231.000.

Wilms, Lothar; Gunther, Dieter; and Huttelmaier, Thomas, to Hoechst Aktiengesellschaft. 1,2-Dihalogenoalkylsulfonyl isocyanates and 1,2-di-halogenocycloalkylsulfonyl isocyanates and process for their manufacture. 4,448,731, Cl. 260-545.00R.

Willy Habegger AG: *See—*
Habegger, Willy; and Lauber, Ernst, 4,448,393, Cl. 254-264.000.

Wilson, Peter H., to Black & Decker Inc. Safety arrangement for a powered tool or implement. 4,449,062, Cl. 307-328.000.

Wingate, W. Jack, to Hennessy Products, Incorporated. Machine for vending articles such as newspapers, magazines and the like. 4,448,328, Cl. 221-13.000.

Winkler, Harry L. Battery chargers. 4,449,089, Cl. 320-15.000.

Winslow, Earl S., Jr.: *See—*
Jalil, Asjed A.; Winslow, Earl S., Jr.; and Gage, Charles H., 4,448,401, Cl. 266-78.000.

Wirtschafter, Jonathan D., to Mediminder Development Limited Partnership. Medical timer apparatus. 4,448,541, Cl. 368-10.000.

Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Morzycki, Jacek W., 4,448,721, Cl. 260-239.500.
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Smith, Connie M., 4,448,726, Cl. 260-397.200.

Wissgott, Ulrich; and Berberat, Alexis, to Societe d'Assistance Technique pour Produits Nestle S.A. Coating of artificially colored cherries. 4,448,794, Cl. 426-267.000.

Witte, Hans-Hermann, to Siemens Aktiengesellschaft. Optical fiber coupler. 4,448,480, Cl. 350-96.150.

Wohlwend, Ernst: *See—*
Kousek, Heinz; and Wohlwend, Ernst, 4,448,261, Cl. 173-12.000.

Wokaun, Alexander J.: *See—*
Bergman, John G.; Liao, Paul F.; and Wokaun, Alexander J., 4,448,485, Cl. 350-162.200.

Wolf, John J.: *See—*
Dougan, Donald R.; Larue, Albert D.; and Wolf, John J., 4,448,135, Cl. 110-263.000.

Wolstenholme, John: *See—*
Jenkins, John W.; and Wolstenholme, John, 4,448,608, Cl. 106-292.000.

Wong, Robert: *See—*
Haines, Richard M.; and Wong, Robert, 4,448,910, Cl. 523-402.000.
Haines, Richard M.; and Wong, Robert, 4,448,911, Cl. 523-411.000.

Wood, Eric; and Bellamy, Norman W., to Sea Energy Associates Ltd. Energy generating device. 4,448,020, Cl. 60-398.000.

Wood Mfg. Co., Inc.: *See—*
Stone, Wayne B., Jr., 4,447,999, Cl. 52-175.000.

Wood, Prentice J., to Mead Corporation, The. Bottle carrier. 4,448,452, Cl. 294-87.200.

Woodall, Jerry M.: *See—*
Cuomo, Jerome J.; DiStefano, Thomas H.; and Woodall, Jerry M., 4,448,487, Cl. 350-164.000.

Woodfin, William T.: *See—*
Foster, Brian R.; and Woodfin, William T., 4,448,644, Cl. 203-37.000.

Woods, William B.: *See—*
Deinet, Adolph J.; and Woods, William B., 4,448,906, Cl. 523-122.000.

Woods, William D.; and Pigman, John H., to International Design Corporation. Planing jig. 4,448,229, Cl. 144-129.000.

Wool Development International Limited: *See—*
Benisek, Ladislav; and Craven, Penelope C., 4,448,817, Cl. 427-412.000.

Worley, Robert F., to Donn Incorporated. Grid ceiling structure and method of converting. 4,448,006, Cl. 52-488.000.

Wozniak, Jan C., to Serni Limited. Rail sleepers with rail clamping devices. 4,448,349, Cl. 238-62.000.

Wray, Daniel J.; and Regnier, Alexis G., to Standard Abrasives, Inc. Flap-type rotary abrasive device. 4,448,590, Cl. 51-297.000.

Wright, Joseph M.: *See—*
Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., 4,448,302, Cl. 198-781.000.

Wright, Richard F.: *See—*
Arney, Jonathon S.; and Wright, Richard F., 4,448,516, Cl. 355-27.000.

Wrobleski, James T.: *See—*
Mount, Ramon A.; and Wrobleski, James T., 4,448,978, Cl. 549-259.000.

Wu, Ching-Hsong: *See—*
Hammerle, Robert H.; and Wu, Ching-Hsong, 4,448,756, Cl. 423-213.700.

Wuerzer, Bruno: *See—*
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,448,960, Cl. 544-282.000.

Wurr, Jurgen: *See—*
Mollenkopf, Hans; Wurr, Jurgen; and Korting, Reinhard, 4,447,966, Cl. 34-108.000.

Wurth, Hans; and Leinhos, Jurgen, to Robert Bosch GmbH. Method to manufacture pole pieces for dynamo electric machine, and so-made pole piece. 4,448,055, Cl. 72-354.000.

Wyatt, Lloyd A., to Garlock Equipment Company. Winch control system. 4,448,398, Cl. 254-361.000.

Xerox Corporation: *See—*
Badesha, Santokh S.; and Loutfy, Rafik O., 4,448,646, Cl. 204-59.00M.
Bean, Lloyd F., 4,448,512, Cl. 355-3.00R.
Burnham, Robert D., 4,448,797, Cl. 427-8.000.
Skinner, Doyle P., Jr., 4,449,134, Cl. 346-75.000.

Yachigo, Shinichi: *See—*
Terada, Yutaka; Takahashi, Yukoh; Yachigo, Shinichi; and Ishii, Tamaki, 4,448,915, Cl. 524-93.000.

Yamabe, Shigeru: *See—*
Ikeda, Shoji; Sakamoto, Fumio; Tsukamoto, Goro; and Yamabe, Shigeru, 4,448,769, Cl. 424-114.000.

Yamada, Kinsaku: *See—*
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.

Yamada, Yasuyuki; Shirahata, Ryuji; Yanai, Akio; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,448,843, Cl. 428-336.000.

Yamaguchi, Kiyoshi; and Maki, Naoki, to Hitachi, Ltd. Coolant supply and discharge device for superconductive rotor. 4,448,042, Cl. 62-505.000.

Yamaguchi, Nobutaka; Tsuji, Nobuo; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,448,842, Cl. 428-329.000.

Yamaguchi, Shunzo; Takeuchi, Yukihisa; Miura, Yasunao; and Miwa, Naoto, to Nippondenso Co., Ltd. Porous ceramic body and a method of manufacturing the same. 4,448,833, Cl. 428-116.000.

Yamaguchi, Shunzo: *See—*
Fukazawa, Takeshi; Yamaguchi, Shunzo; and Atsumi, Morihiro, 4,449,039, Cl. 219-553.000.

Yamaguchi, Toshiaki, to Kinugawa Rubber Industrial Co., Ltd. Window weather stripping and the manufacturing method. 4,448,835, Cl. 428-147.000.

Yamamoto, Hironori, to Canon Kabushiki Kaisha. Hydrostatic bearing. 4,448,460, Cl. 308-5.00R.

Yamamoto, Keisuke: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,449,148, Cl. 358-230.000.

Yamamoto, Osamu: *See—*
Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, 4,448,921, Cl. 524-443.000.

Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, to Aichi Steel Works, Ltd.; and Chuo Hatsujo Kabushiki Kaisha. Steel for a vehicle suspension spring having good sag-resistance. 4,448,617, Cl. 148-36.000.

Yamamoto, Wataru: *See—*
Ishida, Tokuzi; and Yamamoto, Wataru, 4,448,158, Cl. 123-179.00G.

Yamamuro, Kiyohiko; Hirano, Shigeo; and Iwasa, Yasuo, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,448,878, Cl. 430-507.000.

Yamanaka, Isamu: *See—*
Nishida, Fumihiko; Yamanaka, Isamu; and Ijiri, Hiroshi, 4,448,518, Cl. 355-72.000.

Yamane, Akira: *See—*
Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, 4,448,740, Cl. 264-182.000.

Yamashita, Sadahiko: *See—*
Endo, Haruyoshi; Makimoto, Mitsuo; Kikuchi, Ko; and Yamashita, Sadahiko, 4,449,108, Cl. 333-202.000.

Yamato, Akihiro; and Umesaki, Shigeo, to Honda Motor Co., Ltd. Electronic fuel supply control system for internal combustion engines, having exhaust gas recirculation control. 4,448,178, Cl. 123-571.000.

Yamato Scale Company, Ltd.: *See—*
Hayashi, Junichi, 4,448,083, Cl. 73-862.040.

Yamauchi, Hiroshi: *See—*
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasegawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.

Yamauchi, Nobuharu: *See—*
Watanabe, Masaru; Yamauchi, Nobuharu; Hashimoto, Naoki; and Tamama, Tetsuo, 4,449,192, Cl. 364-559.000.

Yamauchi, Shin: *See—*
Ono, Tetsuji; Tsuchitani, Kazuo; Yamauchi, Shin; and Yonehara, Kiyoshi, 4,448,895, Cl. 502-304.000.

Yamauchi, Takahiko: *See—*
Aoyama, Keizo; and Yamauchi, Takahiko, 4,449,066, Cl. 307-482.000.

Yamauchi, Teruo: *See—*
Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, 4,448,070, Cl. 73-204.000.

Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, to Mitsubishi Paper Mills, Ltd.; Nippon Aroma Co., Ltd.; and Nitto Boske. Rock wool composite material. 4,448,921, Cl. 524-443.000.

Yamazaki, Kyuya: *See—*
Miyake, Jun-ichi; Yamazaki, Kyuya; and Kamatani, Yoshio, 4,448,947, Cl. 528-73.000.

Yamazaki, Shigeru: *See—*
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.

Yanagi, Yoshio; Yoneyama, Kunikazu; and Omori, Hiroyuki, to Mitsubishi Petrochemical Co., Ltd. Process for preparing tertiary amines. 4,448,996, Cl. 564-467.000.

Yanai, Akio: *See—*
Yamada, Yasuyuki; Shirahata, Ryuji; Yanai, Akio; and Kitamoto, Tatsuji, 4,448,843, Cl. 428-336.000.

Yang, Robert K., to Warner-Lambert Company. Enhanced flavor-releasing agent. 4,448,789, Cl. 426-5.000.

Yanmar Diesel Engine Co., Ltd.: *See—*
Amemori, Koichi; and Kawabe, Toshihiko, 4,448,166, Cl. 123-445.000.

Yannas, Ioannis V.; and Kirk, James F., to Massachusetts Institute of Technology. Method for the preparation of collagen-glycosaminoglycan composite materials. 4,448,718, Cl. 260-123.700.

Yarnell, James A., to Dana Corporation. Apparatus for switching engine governor. 4,448,094, Cl. 74-872.000.

Yasuda, Nobuyuki; and Odaka, Kentaro, to Sony Corporation. Wave-shaping circuit for digital signal. 4,449,061, Cl. 307-268.000.

Yasuda, Yasushi: *See—*
Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, 4,449,063, Cl. 307-456.000.

Yau, Wallace W.: *See—*
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,448,679, Cl. 209-155.000.

Yavordios, Dimitri: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,448,777, Cl. 424-250.000.

Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, to Ricoh Company, Ltd. Solid-state scanning apparatus. 4,449,151, Cl. 358-293.000.

Yokoya, Satoshi, to Sony Corporation. Apparatus for demodulating an AM stereophonic signal. 4,449,230, Cl. 381-15.000.

Yokoyama, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp device. 4,449,071, Cl. 315-53.000.

Yokozawa, Norio: *See—*
Ohshima, Yoshimitsu; Yokozawa, Norio; and Ohzeki, Masayoshi, 4,449,180, Cl. 364-147.000.

Yonehara, Kiyoshi: *See—*
Ono, Tetsuji; Tsuchitani, Kazuo; Yamauchi, Shin; and Yonehara, Kiyoshi, 4,448,895, Cl. 502-304.000.

Yonenaka, Thomas H., to Ampex Corporation. Electrical cable protector. 4,448,465, Cl. 312-223.000.

Yoneyama, Kunikazu: *See—*
Yanagi, Yoshio; Yoneyama, Kunikazu; and Omori, Hiroyuki, 4,448,996, Cl. 564-467.000.

Yonezawa, Setsuo; and Ikeda, Kazuaki, to Seikosha Co., Ltd. Method of determining print starting positions for an impact type dot printer. 4,448,553, Cl. 400-121.000.

Yoo, Jin S., to Atlantic Richfield Company. Process for forming stable coal-oil mixtures. 4,448,585, Cl. 44-51.000.

Yoo, Jin S.: *See—*
Masologites, George P.; Sun, Jui-Yuan; Yoo, Jin S.; and Burk, Emmett H., Jr., 4,448,584, Cl. 44-1.0SR.

Yoshida, Akihiko: *See—*
Unoguchi, Takehiko; Hasegawa, Seiro; Fujito, Katsuyuki; Nishino, Atsushi; and Yoshida, Akihiko, 4,449,188, Cl. 364-505.000.

Yoshida, Chosaku: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Yoshida, Hajime, to Hajime Industries Ltd. Pattern recognition system. 4,449,240, Cl. 382-15.000.

Yoshida, Kaneki: *See—*
Matsudaira, Nagahisa; Yoshida, Kaneki; Fukuyoshi, Kenzo; and Masui, Kiyoshi, 4,448,493, Cl. 350-357.000.

Yoshida, Kenichi, to Nissan Motor Company, Limited. Ignition timing control device for internal combustion engines. 4,448,163, Cl. 123-422.000.

Yoshida Kogyo K K: *See—*
Kusayama, Masahiro, 4,447,936, Cl. 24-433.000.
Ogishi, Masaaki; Hagiwara, Isao; Yoshida, Yukio; and Oono, Kenzo, 4,449,078, Cl. 318-102.000.

Yoshida, Syoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Three-way valve. 4,448,211, Cl. 137-112.000.

Yoshida, Yukio: *See—*
Ogishi, Masaaki; Hagiwara, Isao; Yoshida, Yukio; and Oono, Kenzo, 4,449,078, Cl. 318-102.000.

Yoshimoto, Teruo: *See—*
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,448,749, Cl. 420-584.000.

Yoshimura, Hirofumi: *See—*
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,449,025, Cl. 219-10.55D.

Young, Arthur P.; Gildersleeves, Clive D. P.; Partridge, Brian W.; and Ryder, Keith L., to Marconi Company Limited, The. Data processing systems with expanded addressing capability. 4,449,181, Cl. 364-200.000.

Young Engineering, Inc.: *See—*
Young, William O., Jr., 4,447,937, Cl. 26-98.000.

Young, Ian R.; and Burl, Michael, to Picker International Limited. Nuclear magnetic resonance systems. 4,449,097, Cl. 324-309.000.

Young, Lewis B., to Mobil Oil Corporation. Preparation of alkyl carboxylates. 4,448,983, Cl. 560-241.100.

Young, Richard E. Squeeze grip valve. 4,448,391, Cl. 251-263.000.

Young, William O., Jr., to Young Engineering, Inc. Web edge decurling device. 4,447,937, Cl. 26-98.000.

Yu, Terry T., to Energy Conversion Devices, Inc. Tellurium imaging composition including water. 4,448,877, Cl. 430-346.000.

Yukawa, Joei: *See—*
Tsubaki, Kazumi; Morinaga, Hiroshi; and Yukawa, Joei, 4,448,948, Cl. 528-95.000.

Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., to Exxon Research and Engineering Co. Use of ammonia to reduce the viscosity of bottoms streams produced in hydroconversion processes. 4,448,665, Cl. 208-8.0LE.

Zahnradfabrik Friedrichshafen Aktiengesellchaft: *See—*
Binger, Bernhard, 4,448,092, Cl. 74-770.000.

Zaino, Luigi, to Nouva Zarine S.p.A. Construzione Macchine E Stampi Per Calzature. Shoe with its vamp zonally covered with injected plastics material securely bonded to the fabric. 4,447,967, Cl. 36-45.000.

Zanichelli, Giuseppe. Dressing or preserving liquid filling unit for vacuum filling machines. 4,448,227, Cl. 141-57.000.

Zankl, Robert H. Pivotal rivet assembly. 4,448,563, Cl. 403-161.000.

Zaruba, John V.; and Disko, Harry, to Marvin Glass & Associates. Board game having apertured, marker-receivable playing pieces. 4,448,421, Cl. 273-243.000.

Zazzu, Victor: *See—*
Dingwall, Andrew G. F.; and Zazzu, Victor, 4,449,118, Cl. 340-347.0AD.

Zehner, William J.; and Skinner, David P., to United States of America, Navy. Utilization of entire transmitted bandwidth in continuous transmission FM sonar. 4,449,209, Cl. 367-102.000.

Zeller, Chris; and Ohmstedt, Jeff. Toboggan platform. 4,448,433, Cl. 280-18.000.

Zener, Clarence: *See—*
Molini, Alberto E.; and Zener, Clarence, 4,448,024, Cl. 60-649.000.

Zenith Radio Corporation: *See—*
Ciciora, Walter S., 4,449,145, Cl. 358-147.000.

Zentrales wissenschaftliches Forschungsinstitut der Baumwollindustrie: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Zeugner, Horst: *See*—
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,448,777, Cl. 424-250.000.

Zhivov, Mikhail Z.: *See*—
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Ziesse, Norman G., to Bell Telephone Laboratories, Incorporated. High frequency DC-to-DC converter. 4,449,174, Cl. 363-21.000.

Zisa, William J.: *See*—
MacFadden, John A.; Keever, Joseph M.; and Zisa, William J., 4,449,094, Cl. 324-152.000.

Zmijewski, Raymond W. Sine bar grinding wheel dresser. 4,448,184, Cl. 125-11.00B.

Zoecon Corporation: *See*—
Henrick, Clive A., 4,448,965, Cl. 546-302.000.
Lee, Shy-Fuh, 4,448,966, Cl. 546-302.000.
Lindahl, George R., III; and Henrick, Clive A., 4,448,961, Cl. 544-311.000.

Zuckerbrod, David; and Gibney, Ann, to United States of America, Energy. Battery and fuel cell electrodes containing stainless steel charging additive. 4,448,856, Cl. 429-27.000.

Zuckerman, Leonard; and Taddonio, Colin, to Litton Systems, Inc. Start of line detection and synchronization circuit for optical scanning systems. 4,449,046, Cl. 250-235.000.

Zwiener, Rudolf; Lucian, Anton; and Gattiker, Ernst, to Aktiengesellschaft Adolph Saurer. Method for operating a two-phase gripper loom and two-phase gripper loom for performance of the method. 4,448,220, Cl. 139-1.00E.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adelberg, Marvin. Apparatus for regulating fluid flow through plastic tubing. Re. 31,584, Cl. 251-6.000.

Altex Scientific, Inc.: *See*—
Magnussen, Haakon T., Jr., Re. 31,586, Cl. 417-22.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Masahiro; and Sawada, Yoshio, Re. 31,585, Cl. 354-459.000.

Kawasaki, Masahiro; and Sawada, Yoshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Long time exposure preventing device for camera with electronic flash. Re. 31,585, Cl. 354-459.000.

Magnussen, Haakon T., Jr., to Altex Scientific, Inc. Liquid chromatography pump. Re. 31,586, Cl. 417-22.000.

Sawada, Yoshio: *See*—
Kawasaki, Masahiro; and Sawada, Yoshio, Re. 31,585, Cl. 354-459.000.

LIST OF DESIGN PATENTEES

Agfa-Gevaert AG: *See*—
Schlagheck, Norbert; and Rabold, Lutz, 273,872, Cl. D16-34.000.

Alessio, Frank. Teaching clock. 273,873, 5-15-84, Cl. D19-64.000.

Allen, James H., to 'Totes', Incorporated. Umbrella handle. 273,815, 5-15-84, Cl. D3-12.000.

Ambasz, Emilio; and Piretti, Giancarlo, to Center for Design Research and Development NV. Chair. 273,823, 5-15-84, Cl. D6-31.000.

American Standard, Inc.: *See*—
Niemann, James E., 273,888, Cl. D23-28.000.

AMP Incorporated: *See*—
Casciotti, Albert; and Hollyday, Robert D., 273,859, Cl. D13-24.000.

Anderson, Eugene. Tile removing tool. 273,839, 5-15-84, Cl. D8-89.000.

Anderson, Lyman V.; Smith, Carolyn; Grant, John B.; and Roth, M. A., Jr., to Anderson, Lyman V. Combined dispensing rack for rolls of interconnected bags and bag closure holder. 273,826, 5-15-84, Cl. D6-130.000.

Ban, Kimiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Video tape magazine. 273,861, 5-15-84, Cl. D14-11.000.

Bart, Philip D., to M & B Toys, S.A. Toy bubble blower. 273,880, 5-15-84, Cl. D21-61.000.

Berges, Jurgen; Fehrenbacher, Wolfgang; Neininger, Gunter; and Scheer, Erich, to Kieninger & Obergfell. Electric clock movement. 273,849, 5-15-84, Cl. D10-129.000.

Bianchi International: *See*—
Bianchi, John E., 273,821, Cl. D2-400.000.

Bianchi, John E., to Bianchi International. Belt clip for a holster. 273,821, 5-15-84, Cl. D2-400.000.

Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., to Diamond International Corporation. Egg carton. 273,844, 5-15-84, Cl. D9-345.000.

Bolt, William S. Holding pallet for PC boards. 273,860, 5-15-84, Cl. D13-99.000.

Bowers, James B., to H and H Promotions, Inc. Combined hanging display case and clock. 273,827, 5-15-84, Cl. D6-172.000.

Bremer, Rosa L. Tibial torsion splint. 273,897, 5-15-84, Cl. D24-64.000.

Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., to Simmons Universal Corporation. Crib footboard. 273,831, 5-15-84, Cl. D6-191.000.

Brunswick Corporation: *See*—
Fee, Robert W.; and Robbins, Richard J., 273,884, Cl. D22-25.000.
Fee, Robert W.; and Robbins, Richard J., 273,886, Cl. D22-25.000.
Puryear, John W., 273,887, Cl. D22-25.000.
Robbins, Richard J., 273,885, Cl. D22-25.000.

Bryne, Richard M., to SkidLid Specialties, Inc. Bicycle exercise stand. 273,882, 5-15-84, Cl. D21-191.000.

Buffington, Fred T. Garden tool. 273,838, 5-15-84, Cl. D8-7.000.

Casablanca Fan Company, Inc.: *See*—
Dennis, Warren E., 273,902, Cl. D26-140.000.

Casciotti, Albert; and Hollyday, Robert D., to AMP Incorporated. Multi pin terminal electrical connector receptacle. 273,859, 5-15-84, Cl. D13-24.000.

Caven, Terence T.; and Ellis, Ronald, to Plessey Overseas Limited. Base unit for a data terminal. 273,865, 5-15-84, Cl. D14-102.000.

Center for Design Research and Development NV: *See*—
Ambasz, Emilio; and Piretti, Giancarlo, 273,823, Cl. D6-31.000.

Cerasari, Nicholas P. Snell hook holder. 273,816, 5-15-84, Cl. D3-38.000.

Chace, Thomas R. Plastic strap for lobster pot. 273,841, 5-15-84, Cl. D8-394.000.

Champion International Corporation: *See*—
Tellman, Stephen J., 273,899, Cl. D25-85.000.

Chapman, Roger. Tray accessory attachment. 273,832, 5-15-84, Cl. D6-199.000.

Compagnie Gervais Danone: *See*—
Jeannin, Bernard, 273,842, Cl. D9-341.000.

Convergent Technologies, Inc.: *See*—
Sanders, Matthew H. L.; Stillinger, Scott H.; and Nuttall, Michael J., 273,867, Cl. D14-106.000.

Cooper Laboratories, Inc.: *See*—
Weitzman, Stewart, 273,893, Cl. D24-16.000.

Darrell, Jack. No entry symbol for glass door and the like. 273,877, 5-15-84, Cl. D20-11.000.

Dart Industries Inc.: *See*—
De Coster, Pieter K. J., 273,837, Cl. D7-391.000.
Goodin, John W.; and Patterson, Charlie A., 273,863, Cl. D14-53.000.

De Coster, Pieter K. J., to Dart Industries Inc. Container cover or the like. 273,837, 5-15-84, Cl. D7-391.000.

Dennis, Warren E., to Casablanca Fan Company, Inc. Shade holder. 273,902, 5-15-84, Cl. D26-140.000.

Desnoyers, Charles, to Dutailier Inc. Chair. 273,822, 5-15-84, Cl. D6-50.000.

Desnoyers, Charles, to Dutailier Inc. Ottoman. 273,824, 5-15-84, Cl. D6-36.000.

Desnoyers, Charles, to Dutailier Inc. Table. 273,829, 5-15-84, Cl. D6-179.000.

Diamond International Corporation: *See*—
Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., 273,844, Cl. D9-345.000.

Dobias, John J. Cap for a bottle. 273,845, 5-15-84, Cl. D9-438.000.

Dorman, Jaime E.; and Jensen, Billy M., to Micro Peripherals, Inc. Paper guide for printer terminal. 273,868, 5-15-84, Cl. D14-114.000.

Draheim, Harvey J.: *See*—
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 273,831, Cl. D6-191.000.

Dutailier Inc.: *See*—
Desnoyers, Charles, 273,822, Cl. D6-50.000.
Desnoyers, Charles, 273,824, Cl. D6-36.000.
Desnoyers, Charles, 273,829, Cl. D6-179.000.

Eckmann, John A., to Motorola, Inc. Portable two-way radio or similar article. 273,864, 5-15-84, Cl. D14-68.000.

Eldon Industries, Inc.: *See*—
Evenson, Mel, 273,876, Cl. D19-75.000.

Ellis, Ronald: *See*—
Caven, Terence T.; and Ellis, Ronald, 273,865, Cl. D14-102.000.

Endo, Hiroshi: *See*—
Ohyama, Yukiie; Nakagawaji, Makoto; and Endo, Hiroshi, 273,836, Cl. D7-351.000.

Erfurt, George A.: *See*—
Gellman, Gary; Erfurt, George A.; and Roe, James E., 273,814, Cl. D1-27.000.

Evenson, Mel, to Eldon Industries, Inc. Combined desk pen set and stand. 273,876, 5-15-84, Cl. D19-75.000.

Fairchild Swearingen Corporation: *See*—
Swearingen, Edward J., Jr., 273,858, Cl. D12-214.000.

Fee, Robert W.; and Robbins, Richard J., to Brunswick Corporation. Fishing reel. 273,884, 5-15-84, Cl. D22-25.000.

Fee, Robert W.; and Robbins, Richard J., to Brunswick Corporation. Fishing reel. 273,886, 5-15-84, Cl. D22-25.000.

Fehrenbacher, Wolfgang: *See*—
Berges, Jurgen; Fehrenbacher, Wolfgang; Neininger, Gunter; and Scheer, Erich, 273,849, Cl. D10-129.000.

Fenne, Kenneth R.; and Wassell, Carl A., to Techny Industries, Inc. Mobile x-ray apparatus. 273,892, 5-15-84, Cl. D24-2.000.

Fraze, Ermal C. Pull tab for a container end. 273,846, 5-15-84, Cl. D9-438.000.

Fukuchi, Fumio: *See—*
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, 273,870, Cl. D15-199.000.
Fuller, Ronald C., to Mead Johnson & Company. Natural nipple. 273,896, 5-15-84, Cl. D24-46.000.
Gellman, Gary; Erfurt, George A.; and Roe, James E., to Nabisco Brands, Inc. Canine biscuit. 273,814, 5-15-84, Cl. D1-27.000.
Goodin, John W.; and Patterson, Charlie A., to Dart Industries Inc. Telephone. 273,863, 5-15-84, Cl. D14-53.000.
Grant, John B.: *See—*
Anderson, Lyman V.; Smith, Carolyn; Grant, John B.; and Roth, M. A., Jr., 273,826, Cl. D6-130.000.
H and H Promotions, Inc.: *See—*
Bowers, James B., 273,827, Cl. D6-172.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,834, 5-15-84, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, to Sharp Corporation. Microwave oven. 273,835, 5-15-84, Cl. D7-351.000.
Hashimoto, Kiyoshi: *See—*
Kawashima, Tsunemi; Shimizu, Toshiharu; Hashimoto, Kiyoshi; and Higashihara, Seiji, 273,853, Cl. D12-110.000.
Higashihara, Seiji: *See—*
Kawashima, Tsunemi; Shimizu, Toshiharu; Hashimoto, Kiyoshi; and Higashihara, Seiji, 273,853, Cl. D12-110.000.
Hill, Steven G. Dispenser for a roll of aluminum foil. 273,875, 5-15-84, Cl. D19-69.000.
Hiselius, Jan. Heat convector. 273,891, 5-15-84, Cl. D23-114.000.
Hitachi, Ltd.: *See—*
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, 273,870, Cl. D15-199.000.
Hollyday, Robert D.: *See—*
Casciotti, Albert; and Hollyday, Robert D., 273,859, Cl. D13-24.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Matsui, Mamoru, 273,857, Cl. D12-187.000.
Zaima, Hiroshi; and Saito, Yusuke, 273,850, Cl. D12-91.000.
Hoogeveen, Eduard, to Metaalwarenfabriek Hoogmerk B.V. Money-box or similar article. 273,908, 5-15-84, Cl. D99-28.000.
Howmedica, Inc.: *See—*
Kenna, Robert V., 273,894, Cl. D24-26.000.
Kenna, Robert V., 273,895, Cl. D24-26.000.
Immuno Concepts, Inc.: *See—*
Valencia, Donald W., 273,898, Cl. D24-99.000.
International Business Machines Corporation: *See—*
LaDue, James J.; and Shelkofsky, Clifford I., 273,866, Cl. D14-102.000.
Lahey, Donald F., 273,869, Cl. D14-107.000.
International Playtex, Inc.: *See—*
Shonk, Phyllis, 273,817, Cl. D2-24.000.
Ishiyama, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 273,852, 5-15-84, Cl. D12-110.000.
Ishiyama, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 273,854, 5-15-84, Cl. D12-110.000.
Jeannin, Bernard, to Compagnie Gervais Danone. Compartmented packaging container for food or the like. 273,842, 5-15-84, Cl. D9-341.000.
Jedziniak, Francis J. Data processing storage unit. 273,830, 5-15-84, Cl. D6-181.000.
Jensen, Billy M.: *See—*
Dorman, Jaime E.; and Jensen, Billy M., 273,868, Cl. D14-114.000.
Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 273,874, Cl. D19-67.000.
Katsumi, Hirosuke: *See—*
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, 273,870, Cl. D15-199.000.
Kawaishi, Masayoshi: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,834, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,835, Cl. D7-351.000.
Kawashima, Tsunemi; Shimizu, Toshiharu; Hashimoto, Kiyoshi; and Higashihara, Seiji, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 273,853, 5-15-84, Cl. D12-110.000.
Kenna, Robert V., to Howmedica, Inc. Pin holder alignment guide for the implantation of a prosthetic knee. 273,894, 5-15-84, Cl. D24-26.000.
Kenna, Robert V., to Howmedica, Inc. Femoral cutting jig for the implantation of a prosthetic knee. 273,895, 5-15-84, Cl. D24-26.000.
Kieninger & Obergfell: *See—*
Berges, Jurgen; Fehrenbacher, Wolfgang; Neininger, Gunter; and Scheer, Erich, 273,849, Cl. D10-129.000.
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, to Hitachi, Ltd. Industrial robot. 273,870, 5-15-84, Cl. D15-199.000.
LaDue, James J.; and Shelkofsky, Clifford I., to International Business Machines Corporation. Data processing system. 273,866, 5-15-84, Cl. D14-102.000.
Lahey, Donald F., to International Business Machines Corporation. Interactive terminal controller. 273,869, 5-15-84, Cl. D14-107.000.
Leach, Carl L. Athletic wheel chair frame. 273,855, 5-15-84, Cl. D12-131.000.
Lee, Man-Kwai, to New Bright Industrial Company, Limited. Toy trackway having moving components. 273,881, 5-15-84, Cl. D21-143.000.
Lionville Systems, Inc.: *See—*
Norlin, Eric C., 273,906, Cl. D34-19.000.
Long, Rubina M.: *See—*
Porter, Harvey; and Long, Rubina M., 273,900, Cl. D25-87.000.
Porter, Harvey; and Long, Rubina M., 273,901, Cl. D25-87.000.
Lord, Henry A.: *See—*
Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., 273,844, Cl. D9-345.000.
M & B Toys, S.A.: *See—*
Bart, Philip D., 273,880, Cl. D21-61.000.
MacGregor Athletic Products, a division of The Equilink Corporation: *See—*
Neidell, Saul, 273,820, Cl. D2-361.000.
Matsui, Mamoru, to Honda Giken Kogyo Kabushiki Kaisha. Driving side mirror for motor vehicle. 273,857, 5-15-84, Cl. D12-187.000.
Matsumoto, Yoshio: *See—*
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, 273,870, Cl. D15-199.000.
Mattel, Inc.: *See—*
Spencer, Caroline M., 273,818, Cl. D2-27.000.
Mead Johnson & Company: *See—*
Fuller, Ronald C., 273,896, Cl. D24-46.000.
Metaalwarenfabriek Hoogmerk B.V.: *See—*
Hoogeveen, Eduard, 273,908, Cl. D99-28.000.
Micro Peripherals, Inc.: *See—*
Dorman, Jaime E.; and Jensen, Billy M., 273,868, Cl. D14-114.000.
Minolta Camera Kabushiki Kaisha: *See—*
Shigoku, Masaharu; Nagasaka, Ken; and Nakanishi, Masakazu, 273,871, Cl. D16-10.000.
Miyake, Takao: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,834, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,835, Cl. D7-351.000.
Monahan, Justin J. Combined audible signal and communicator. 273,848, 5-15-84, Cl. D10-106.000.
Morita, Tamao. Magnetic fastener. 273,840, 5-15-84, Cl. D8-382.000.
Mote, Anthony A. Wood stove. 273,890, 5-15-84, Cl. D23-97.000.
Motorola, Inc.: *See—*
Eckmann, John A., 273,864, Cl. D14-68.000.
Nabisco Brands, Inc.: *See—*
Gellman, Gary; Erfurt, George A.; and Roe, James E., 273,814, Cl. D1-27.000.
Nagasaka, Ken: *See—*
Shigoku, Masaharu; Nagasaka, Ken; and Nakanishi, Masakazu, 273,871, Cl. D16-10.000.
Nagashima, Hidehiko, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 273,851, 5-15-84, Cl. D12-110.000.
Nakagawaji, Makoto: *See—*
Ohyama, Yukiie; Nakagawaji, Makoto; and Endo, Hiroshi, 273,836, Cl. D7-351.000.
Nakanishi, Masakazu: *See—*
Shigoku, Masaharu; Nagasaka, Ken; and Nakanishi, Masakazu, 273,871, Cl. D16-10.000.
Neidell, Saul, to MacGregor Athletic Products, a division of The Equilink Corporation. Backstop for a baseball or softball glove. 273,820, 5-15-84, Cl. D2-361.000.
Neininger, Gunter: *See—*
Berges, Jurgen; Fehrenbacher, Wolfgang; Neininger, Gunter; and Scheer, Erich, 273,849, Cl. D10-129.000.
New Bright Industrial Company, Limited: *See—*
Lee, Man-Kwai, 273,881, Cl. D21-143.000.
Niemann, James E., to American Standard, Inc. Combined handle and cap for a sanitary fitting. 273,888, 5-15-84, Cl. D23-28.000.
Norlin, Eric C., to Lionville Systems, Inc. Medication cart. 273,906, 5-15-84, Cl. D34-19.000.
Numano, Masafumi: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,834, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,835, Cl. D7-351.000.
Nuttall, Michael J.: *See—*
Sanders, Matthew H. L.; Stillinger, Scott H.; and Nuttall, Michael J., 273,867, Cl. D14-106.000.
Ohyama, Yukiie; Nakagawaji, Makoto; and Endo, Hiroshi, to Sanyo Electric Co., Ltd. Combined microwave oven, television receiver, and tape player. 273,836, 5-15-84, Cl. D7-351.000.
Olfman, Jerry A.: *See—*
Olfman, Shawn D.; and Olfman, Jerry A., 273,879, Cl. D21-51.000.
Olfman, Shawn D.; and Olfman, Jerry A. Game playing piece. 273,879, 5-15-84, Cl. D21-51.000.
Oshry, Margo J. Combination easel and table. 273,828, 5-15-84, Cl. D6-178.000.
Pacheco, Damien P. Dish drainer tray or similar article. 273,904, 5-15-84, Cl. D32-56.000.
Palatine, James: *See—*
Taylor, William A. B.; and Palatine, James, 273,833, Cl. D7-77.000.

Patterson, Charlie A.: *See—*
Goodin, John W.; and Patterson, Charlie A., 273,863, Cl. D14-53.000.
Persons, Charles, to Persons-Majestic Manufacturing Company. Cycle seat. 273,825, 5-15-84, Cl. D6-48.100.
Persons-Majestic Manufacturing Company: *See—*
Persons, Charles, 273,825, Cl. D6-48.100.
Piretti, Giancarlo: *See—*
Ambasz, Emilio; and Piretti, Giancarlo, 273,823, Cl. D6-31.000.
Plessey Overseas Limited: *See—*
Caven, Terence T.; and Ellis, Ronald, 273,865, Cl. D14-102.000.
Porter, Harvey; and Long, Rubina M., to Royal Factories, Inc. Grill. 273,900, 5-15-84, Cl. D25-87.000.
Porter, Harvey; and Long, Rubina M., to Royal Factories, Inc. Grill. 273,901, 5-15-84, Cl. D25-87.000.
Puryear, John W., to Brunswick Corporation. Fishing reel cone. 273,887, 5-15-84, Cl. D22-25.000.
Rabold, Lutz: *See—*
Schlagheck, Norbert; and Rabold, Lutz, 273,872, Cl. D16-34.000.
Ragonot, Christian, to Societe Generale de Fonderie. Bathtub leg. 273,889, 5-15-84, Cl. D23-70.000.
Reifers, Richard F.: *See—*
Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., 273,844, Cl. D9-345.000.
Robbins, Richard J., to Brunswick Corporation. Fishing reel. 273,885, 5-15-84, Cl. D22-25.000.
Robbins, Richard J.: *See—*
Fee, Robert W.; and Robbins, Richard J., 273,884, Cl. D22-25.000.
Fee, Robert W.; and Robbins, Richard J., 273,886, Cl. D22-25.000.
Roe, James E.: *See—*
Gellman, Gary; Erfurt, George A.; and Roe, James E., 273,814, Cl. D1-27.000.
Rosen, Goran. Mobile golf club carrier. 273,905, 5-15-84, Cl. D34-15.000.
Roth, M. A., Jr.: *See—*
Anderson, Lyman V.; Smith, Carolyn; Grant, John B.; and Roth, M. A., Jr., 273,826, Cl. D6-130.000.
Royal Factories, Inc.: *See—*
Porter, Harvey; and Long, Rubina M., 273,900, Cl. D25-87.000.
Porter, Harvey; and Long, Rubina M., 273,901, Cl. D25-87.000.
Saito, Yusuke: *See—*
Zaima, Hiroshi; and Saito, Yusuke, 273,850, Cl. D12-91.000.
Salus, Carol A. Game board. 273,878, 5-15-84, Cl. D21-30.000.
Sanders, Matthew H. L.; Stillinger, Scott H.; and Nuttall, Michael J., to Convergent Technologies, Inc. Computer or similar article. 273,867, 5-15-84, Cl. D14-106.000.
Sanyo Electric Co., Ltd.: *See—*
Ohyama, Yukiie; Nakagawaji, Makoto; and Endo, Hiroshi, 273,836, Cl. D7-351.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Core for elongated strip. 273,874, 5-15-84, Cl. D19-67.000.
Schaffer, Michael J.: *See—*
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 273,831, Cl. D6-191.000.
Scheer, Erich: *See—*
Berges, Jurgen; Fehrenbacher, Wolfgang; Neininger, Gunter; and Scheer, Erich, 273,849, Cl. D10-129.000.
Schlagheck, Norbert; and Rabold, Lutz, to Agfa-Gevaert AG. X-Ray-film-processor. 273,872, 5-15-84, Cl. D16-34.000.
Schroeder, Warren C. Air flotation palette. 273,907, 5-15-84, Cl. D34-38.000.
Scott Paper Company: *See—*
Urion, Kenard E., 273,843, Cl. D9-351.000.
Sharp Corporation: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,834, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,835, Cl. D7-351.000.
Shelkofsky, Clifford I.: *See—*
LaDue, James J.; and Shelkofsky, Clifford I., 273,866, Cl. D14-102.000.
Shigoku, Masaharu; Nagasaka, Ken; and Nakanishi, Masakazu, to Minolta Camera Kabushiki Kaisha. Locking device for a photographic interchangeable lens. 273,871, 5-15-84, Cl. D16-10.000.
Shimizu, Toshiharu: *See—*
Kawashima, Tsunemi; Shimizu, Toshiharu; Hashimoto, Kiyoshi; and Higashihara, Seiji, 273,853, Cl. D12-110.000.
Shonk, Phyllis, to International Playtex, Inc. Brassiere. 273,817, 5-15-84, Cl. D2-24.000.
Simmons Universal Corporation: *See—*
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 273,831, Cl. D6-191.000.
SkidLid Specialties, Inc.: *See—*
Bryne, Richard M., 273,882, Cl. D21-191.000.
Smith, Carolyn: *See—*
Anderson, Lyman V.; Smith, Carolyn; Grant, John B.; and Roth, M. A., Jr., 273,826, Cl. D6-130.000.
Societe Generale de Fonderie: *See—*
Ragonot, Christian, 273,889, Cl. D23-70.000.
Spencer, Caroline M., to Mattel, Inc. Safety vest for runner. 273,818, 5-15-84, Cl. D2-27.000.
Stillinger, Scott H.: *See—*
Sanders, Matthew H. L.; Stillinger, Scott H.; and Nuttall, Michael J., 273,867, Cl. D14-106.000.
Sundberg, Berndt J. G. Trapping tackle. 273,883, 5-15-84, Cl. D22-18.000.
Swearingen, Edward J., Jr., to Fairchild Swearingen Corporation. Propeller spinner. 273,858, 5-15-84, Cl. D12-214.000.
Taylor, William A. B.; and Palatine, James. Insulated pouch for beer kegs. 273,833, 5-15-84, Cl. D7-77.000.
Techny Industries, Inc.: *See—*
Fenne, Kenneth R.; and Wassell, Carl A., 273,892, Cl. D24-2.000.
Tellman, Stephen J., to Champion International Corporation. Handhewn textured panel. 273,899, 5-15-84, Cl. D25-85.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ban, Kimiyoshi, 273,861, Cl. D14-11.000.
'Totes', Incorporated: *See—*
Allen, James H., 273,815, Cl. D3-12.000.
Tsujimoto, Kazuo: *See—*
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,834, Cl. D7-351.000.
Haruguchi, Kenichi; Miyake, Takao; Kawaishi, Masayoshi; Numano, Masafumi; and Tsujimoto, Kazuo, 273,835, Cl. D7-351.000.
Uniroyal Englebert Reifen GmbH: *See—*
Vogler, Hans J., 273,856, Cl. D12-146.000.
Urion, Kenard E., to Scott Paper Company. Container body. 273,843, 5-15-84, Cl. D9-351.000.
Valencia, Donald W., to Immuno Concepts, Inc. Microscope laboratory slide. 273,898, 5-15-84, Cl. D24-99.000.
Vogler, Hans J., to Uniroyal Englebert Reifen GmbH. Tire. 273,856, 5-15-84, Cl. D12-146.000.
Ward, Dennis C. Loudspeaker. 273,862, 5-15-84, Cl. D14-34.000.
Wassell, Carl A.: *See—*
Fenne, Kenneth R.; and Wassell, Carl A., 273,892, Cl. D24-2.000.
Weitzman, Stewart, to Cooper Laboratories, Inc. Hinged dental tray. 273,893, 5-15-84, Cl. D24-16.000.
Wilcenski, Anthony M.; and Wilcenski, Jerome A. Divider for a cattle stall. 273,903, 5-15-84, Cl. D30-2.000.
Wilcenski, Jerome A.: *See—*
Wilcenski, Anthony M.; and Wilcenski, Jerome A., 273,903, Cl. D30-2.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Ishiyama, Atsushi, 273,852, Cl. D12-110.000.
Ishiyama, Atsushi, 273,854, Cl. D12-110.000.
Kawashima, Tsunemi; Shimizu, Toshiharu; Hashimoto, Kiyoshi; and Higashihara, Seiji, 273,853, Cl. D12-110.000.
Nagashima, Hidehiko, 273,851, Cl. D12-110.000.
Yehl, James E. Goggle frame. 273,819, 5-15-84, Cl. D2-234.000.
Yusa, Toshikazu. Compass. 273,847, 5-15-84, Cl. D10-68.000.
Zaima, Hiroshi; and Saito, Yusuke, to Honda Giken Kogyo Kabushiki Kaisha. Motorcar. 273,850, 5-15-84, Cl. D12-91.000.

LIST OF PLANT PATENTEES

Boll, Herschel L.: *See—*
Cook, Albert B., 5,232, Cl. 48.000.
Cook, Albert B., to Boll, Herschel L. Distinct variety of strawberry plant—Ruby Red. 5,232, 5-15-84, Cl. 48.000.
Strohmaier, Alfred W., deceased: *See—*
Strohmaier, Loretta J.; Strohmaier, Phillip D.; and Strohmaier, Alfred W., deceased, 5,231, Cl. 38.000.
Strohmaier, Loretta J.; Strohmaier, Phillip D.; and Strohmaier, Alfred W., deceased. Plum tree, "Aleta Rose". 5,231, 5-15-84, Cl. 38.000.
Strohmaier, Phillip D.: *See—*
Strohmaier, Loretta J.; Strohmaier, Phillip D.; and Strohmaier, Alfred W., deceased, 5,231, Cl. 38.000.
Turner, Ted L., Sr. Tricolor variegated pittosporum plant. 5,233, 5-15-84, Cl. 54.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 15, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

79 4,447,911
159 4,447,912
338 4,447,913
432 4,447,914

CLASS 3

1.9 4,447,915
22 4,447,916

CLASS 4

256 4,447,917
286 4,447,918
325 4,447,919

CLASS 5

12 R 4,447,920
4,447,921
434 4,447,922

CLASS 7

165 4,447,923

CLASS 8

137 4,448,581
149.1 4,448,582
151 4,447,924
527 4,448,583

CLASS 15

104.06 A 4,447,925
104.3 SN 4,447,926
236 R 4,447,927
250.21 4,447,928
256.5 4,447,929
322 4,447,930
365 4,447,931

CLASS 16

21 4,447,932

CLASS 17

41 4,447,933

CLASS 24

16 PB 4,447,934
201 C 4,447,935
433 4,447,936

CLASS 26

18.6 4,447,938
98 4,447,937

CLASS 29

116 AD 4,447,940
121.1 4,447,941
157.4 4,447,942
423 4,447,943
512 4,447,944
566.3 4,447,945
599 4,447,946
825 4,447,947
829 4,447,948

CLASS 30

90.6 4,447,949
155 4,447,950
161 4,447,951
361 4,447,952
382 4,447,953

CLASS 33

30 D 4,447,954
129 4,447,955
172 D 4,447,956
172 F 4,447,957
174 L 4,447,958
178 E 4,447,959
4,447,960
180 AT 4,447,961
286 4,447,962

CLASS 34

12 4,447,963
16 4,447,964
27 4,447,965
108 4,447,966

CLASS 36

45 4,447,967
109 4,447,968
116 4,447,969
121 4,447,970
133 4,447,971

CLASS 38

12 4,447,972

CLASS 40

159 4,447,973
538 4,447,974

CLASS 42

16 4,447,975
49 A 4,447,976
51 4,447,977

CLASS 43

10 4,447,978
17 4,447,979
42.14 4,447,980
42.21 4,447,981

CLASS 44

1 SR 4,448,584
51 4,448,585
55 4,448,586
57 4,448,587

CLASS 46

8 4,447,982

CLASS 47

58 4,447,984
58.5 4,447,983

CLASS 48

99 4,448,588
197 R 4,448,589

CLASS 49

400 4,447,985
426 4,447,986
468 4,447,987
485 4,447,988
488 4,447,989

CLASS 51

76 R 4,447,990
161 4,447,991
163.1 4,447,992
297 4,448,590
298 4,448,591
439 4,447,993

CLASS 52

11 4,447,994
38 4,447,995
79.1 4,447,996
120 4,447,997
126.6 4,447,998
175 4,447,999
208 4,448,000
209 4,448,001
223 L 4,448,002
239 4,448,003
241 4,448,004
473 4,448,005
488 4,448,006
489 4,448,007

CLASS 53

202 4,448,008
248 4,448,009
450 4,448,010
512 4,448,011
563 4,448,012
565 4,448,013

CLASS 55

68 4,448,592
227 4,448,593
387 4,448,594

CLASS 56

13.6 4,448,014

CLASS 57

3 4,448,015
133 4,448,016

CLASS 59

80 4,448,017

CLASS 60

39.05 4,448,018
204 4,448,019
398 4,448,020
449 4,448,021
641.4 4,448,022
644.1 4,448,023
649 4,448,024
651 4,448,025
662 4,448,026
721 4,448,027

CLASS 62

3 4,448,028
31 4,448,595
63 4,448,029
79 4,448,030
101 4,448,031
4,448,596
124 4,448,032
126 4,448,033
161 4,448,034
176.6 4,448,035
4,448,597
178 4,448,036
188 4,448,037
212 4,448,038
235.1 4,448,039
238.3 4,448,040
268 4,448,041
352 4,448,598
505 4,448,042
515 4,448,043

CLASS 65

21.4 4,448,599
360 4,448,600

CLASS 66

120 4,448,044
4,448,045
205 4,448,046
207 4,448,047

CLASS 68

5 E 4,448,048

CLASS 70

58 4,448,049
223 4,448,050
389 4,448,051

CLASS 71

86 4,448,601
90 4,448,602
92 4,448,603

CLASS 72

57 4,448,052
102 4,448,053
146 4,448,054
354 4,448,055
422 4,448,056

CLASS 73

1 DV 4,448,057
23 4,448,058
35 4,448,059
57 4,448,060
59 4,448,061
86 4,448,062
117.2 4,448,063
118.2 4,448,064
119 A 4,448,066
4,448,067
119 R 4,448,065
170 A 4,448,068
182 4,448,069
204 4,448,070
304 C 4,448,071
4,448,072
484 4,448,073
585 4,448,074
626 4,448,075
4,448,076
660 4,448,077
766 4,448,078
789 4,448,079
799 4,448,080
861.03 4,448,081
861.05 4,448,082
862.04 4,448,083
862.33 4,448,084
862.64 4,448,085

CLASS 74

5 R 4,448,086
193 4,448,087
422 4,448,088
467 4,448,089
501.5 R 4,448,090
552 4,448,091
770 4,448,092
821 4,448,093
872 4,448,094

CLASS 75

63 4,448,604
123 H 4,448,605
236 4,448,606

CLASS 81

57.29 4,448,095
57.39 4,448,096
177 M 4,448,097
467 4,448,098

CLASS 83

23 4,448,099
355 4,448,100
374 4,448,101
471.1 4,448,102

CLASS 84

1.01 4,448,103
4,448,104
413 4,448,105

CLASS 89

1 A 4,448,106
36 K 4,448,107
37 R 4,448,108
141 4,448,109

CLASS 91

275 4,448,110

CLASS 98

38 E 4,448,111
62 4,448,112

CLASS 99

290 4,448,113
331 4,448,117
460 4,448,116
494 4,448,114
574 4,448,115
624 4,448,118

CLASS 100

231 4,448,119

CLASS 101

32 4,448,120
76 4,448,121
91 4,448,122
93.04 4,448,123
118 4,448,124
185 4,448,125
363 4,448,126
426 4,448,127

CLASS 102

476 4,448,128
487 4,448,129
498 4,448,130

CLASS 105

182 R 4,448,131
215 C 4,448,132

CLASS 106

19 4,448,607
292 4,448,608
308 N 4,448,609

CLASS 108

9 4,448,133

CLASS 110

245 4,448,134
263 4,448,135

CLASS 112

79 R 4,448,137
147 4,448,138
221 4,448,139
311 4,448,140
315 4,448,141

CLASS 114

39 4,448,142
90 4,448,143
102 4,448,144
162 4,448,146
242 4,448,224
312 4,448,145

CLASS 116

216 4,448,147
277 4,448,148

CLASS 118

500 4,448,149
699 4,449,241

CLASS 119

1 4,448,150
4,448,151
22 4,448,152

CLASS 122

17 4,448,136

CLASS 123

25 A 4,448,170
25 J 4,448,153
58 BB 4,448,154
90.17 4,448,156
90.5 4,448,155
142.5 R 4,448,157
179 G 4,448,158
179 L 4,448,165
195 C 4,448,159
237 4,448,161
297 4,448,160
419 4,448,162
4,448,171
422 4,448,163
432 4,448,164
445 4,448,166
446 4,448,167
4,448,168
467 4,448,169
494 4,448,172
502 4,448,174
549 4,448,173
557 4,448,175
558 4,448,176
571 4,448,177
4,448,178
599 4,448,179
605 4,448,182
618 4,448,180
620 4,448,181

CLASS 124

24 R 4,448,183

CLASS 125

11 B 4,448,184

CLASS 126

193 4,448,185
215 4,448,186
417 4,448,187

CLASS 128

6 4,448,188
25 R 4,448,189
60 4,448,190
69 4,448,191
204.26 4,448,192
326 4,448,193
334 R 4,448,194
344 4,448,195
419 PT 4,448,196
4,448,197
422 4,448,198
639 4,448,199
653 4,448,200
660 4,448,201
709 4,448,202
733 4,448,203
736 4,448,204
749 4,448,205
760 4,447,939
765 4,448,206
771 4,448,207

CLASS 131

297 4,448,208

CLASS 134

76 4,448,221
141 4,448,209

CLASS 137

2 4,448,210
112 4,448,211
238 4,448,212
451 4,448,213
625.46 4,448,214
4,448,215
630 4,448,216

CLASS 138

30 4,448,217
99 4,448,218
149 4,448,219

CLASS 139

1 E 4,448,220
435 4,448,222
4,448,223

CLASS 140

119 4,448,225

CLASS 141

2 4,448,226
57 4,448,227
114 4,448,228

CLASS 144

129 4,448,229

CLASS 145

30 A 4,448,230

CLASS 148

3 4,448,610
6.11 4,448,611
6.35 4,448,612
12 R 4,448,613
12.1 4,448,614
13 4,448,615
16 4,448,616
36 4,448,617
403 4,448,618

CLASS 149

21 4,448,619

CLASS 156

125 4,448,620
138 4,448,621
155 4,448,622
169 4,448,623
175 4,448,624
243 4,448,625
256 4,448,626
405.1 4,448,627
425 4,448,628
510 4,448,629
514 4,448,630
521 4,448,631
603 4,448,632
610 4,448,633
635 4,448,637
636 4,448,634
637 4,448,635
643 4,448,636

CLASS 160

135 4,448,231
207 4,448,232
319 4,448,233

CLASS 162

112 4,448,638
124 4,448,639
218 4,448,640

CLASS 164

16 4,448,234
34 4,448,235
423 4,448,236

CLASS 165

2 4,448,237
45 4,448,238
47 4,448,239
80 C 4,448,240
104.14 4,448,241
4,448,242
134 R 4,448,243
141 4,448,244
174 4,448,245

CLASS 166

77 4,448,246
82 4,448,247
241 4,448,248

251 4,448,249
255 4,448,250
263 4,448,251
4,448,252
300 4,448,253
373 4,448,254
387 4,448,255

CLASS 169

15 4,448,256

CLASS 171

127 4,448,257

CLASS 172

197 4,448,258
462 4,448,259
777 4,448,260

CLASS 173

12 4,448,261
16 4,448,262
34 4,448,263
52 4,448,264

CLASS 174

5 R 4,449,010
52 PE 4,448,265
4,449,011
70 A 4,449,012
103 4,449,013
107 4,449,014
138 F 4,449,015
138 J 4,449,016

CLASS 175

7 4,448,266
218 4,448,267
228 4,448,268
335 4,448,269
342 4,448,270
364 4,448,271

CLASS 177

1 4,448,272

CLASS 179

27 D 4,449,017
107 FD 4,449,018
110 A 4,449,019
147 4,449,020

CLASS 180

9.21 4,448,273
15 4,448,274
79.1 4,448,275
90 4,448,276
127 4,448,277
210 4,448,278
297 4,448,279

CLASS 181

227 4,448,538
229 4,448,280

CLASS 182

5 4,448,281
22 4,448,282
164 4,448,283
234 4,448,284

CLASS 184

55 A 4,448,285

CLASS 187

29 R 4,448,286

CLASS 188

73.31 4,448,287
73.45 4,448,288
4,448,289
82.7 4,448,290
218 XL 4,448,291

CLASS 190

107 4,448,292

CLASS 192

3.3 4,448,293
30 V 4,448,294
125 A 4,448,295

CLASS 193

35 C 4,448,296

CLASS 194

100 A 4,448,297

CLASS 198

451 4,448,298
457 4,448,299
633 4,448,300
778 4,448,301
781 4,448,302

CLASS 200

144 B 4,449,021
153 J 4,449,022
159 B 4,449,023
317 4,449,024

CLASS 201

41 4,448,641

CLASS 202

263 4,448,642

CLASS 203

34 4,448,643
37 4,448,644

CLASS 204

13 4,448,645
33 4,448,647
51 4,448,648
4,448,649
59 M 4,448,646
59 R 4,448,650
60 4,448,651
70 4,448,654
129.1 4,448,655
129.4 4,448,656
140 4,448,475
155 4,448,657
159.18 4,448,658
192 R 4,448,659
225 4,448,660
243 R 4,448,661
252 4,448,662
270 4,448,663
286 4,448,664
298 4,448,652
4,448,653

CLASS 206

44 R 4,448,303
223 4,448,304
315.8 4,448,305
331 4,448,306
369 4,448,307
426 4,448,308
525 4,448,309
526 4,448,310
527 4,448,311

CLASS 208

8 LE 4,448,665
11 LE 4,448,667
4,448,669
11 R 4,448,666
4,448,668
22 4,448,670
26 4,448,671
86 4,448,672
111 4,448,673
113 4,448,674
118 4,448,675
136 4,448,676
216 PP 4,448,677

CLASS 209

3 4,448,678
155 4,448,679
564 4,448,680

CLASS 210

97 4,448,681
101 4,448,682
106 4,448,683
198.2 4,448,684
219 4,448,685
238 4,448,686
500.2 4,448,687
512.3 4,448,688
521 4,448,689
609 4,448,690
656 4,448,691
4,448,692
673 4,448,693
682 4,448,694
694 4,448,695
711 4,448,696

CLASS 211

49 R 4,448,312
71 4,448,313
131 4,448,314
191 4,448,315

CLASS 215

1 A 4,448,316
203 4,448,317
252 4,448,318
329 4,448,319
346 4,448,320

CLASS 219

10.55 B 4,449,026
10.55 D 4,449,025
69 E 4,449,027
109 4,449,028
117.1 4,449,029
124.34 4,449,030
146.23 4,449,031
210 4,449,032
216 4,449,033
217 4,449,034
251 4,449,035
265 4,449,036
388 4,449,037
535 4,449,038
553 4,449,039

CLASS 220

4 R 4,448,321
67 4,448,322
86 R 4,448,323
266 4,448,324
269 4,448,325
270 4,448,326
341 4,448,327

CLASS 221

13 4,448,328

CLASS 222

96 4,448,329
101 4,448,330
107 4,448,829
181 4,448,331
196 4,448,332
214 4,448,333
230 4,448,334
391 4,448,335

CLASS 224

309 4,448,336
321 4,448,337

CLASS 227

8 4,448,338
147 4,448,339

CLASS 228

29 4,448,340
45 4,448,341
102 4,448,342
205 4,448,343

CLASS 229

2.5 EC 4,448,344
43 4,448,345

CLASS 235

380 4,449,040
412 4,449,041
464 4,449,042

CLASS 236

46 R 4,448,346

CLASS 237

2 B 4,448,347
55 4,448,348

CLASS 238

62 4,448,349
231 4,448,350

CLASS 239

25 4,448,351
125 4,448,352
205 4,448,353
265.17 4,448,354
526 4,448,355
533.5 4,448,356

CLASS 241

32 4,448,357
39 4,448,358
46.06 4,448,359
92 4,448,360
101.7 4,448,361

CLASS 242

55.19 R 4,448,362
67.3 R 4,448,363
71.8 4,448,365
75.51 4,448,366
84.2 A 4,448,367
186 4,448,368
195 4,448,369
201 4,448,370
674 4,448,364

CLASS 244

1 R 4,448,371
87 4,448,372
137 R 4,448,373
150 4,448,374
216 4,448,375

CLASS 248

27.3 4,448,376
178 4,448,377
188.7 4,448,378
201 4,448,379
235 4,448,380
394 4,448,381
421 4,448,382
443 4,448,384
447.1 4,448,383
476 4,448,385
564 4,448,386
642 4,448,387
663 4,448,388

CLASS 250

205 4,449,043
211 J 4,449,044
214 AG 4,449,045
235 4,449,046
253 4,449,047
308 4,449,048
377 4,449,049
455.1 4,449,050
492.2 4,449,051
568 4,449,052

CLASS 251

6 Re.31,584
62 4,448,389
176 4,448,390
263 4,448,391

CLASS 252

8.55 D 4,448,697
4,448,698
8.75 4,448,699
12.4 4,448,700
49.3 4,448,701
70 4,448,702
75 4,448,703
91 4,448,704
102 4,448,705
108 4,448,706
194 4,448,707
344 4,448,708
359 D 4,448,709
390 4,448,710
522 R 4,448,712
4,448,713

CLASS 254

103 4,448,392
264 4,448,393
271 4,448,394
334 4,448,395
340 4,448,396
360 4,448,397
361 4,448,398

CLASS 260

112 R 4,448,714
112.5 E 4,448,717
112.5 R 4,448,715
4,448,716
123.7 4,448,718
152 4,448,719
239 A 4,448,720
239.5 4,448,721
245.1 4,448,722
245.2 4,448,732
245.2 T 4,448,723
351.5 4,448,724
397.1 4,448,725
397.2 4,448,726
463 4,448,727
464 4,448,728
465 D 4,448,729
500.5 H 4,448,730
545 R 4,448,731
985 4,448,733

CLASS 261

26 4,448,734

CLASS 264

16 4,448,735
40.1 4,448,736
53 4,448,737
54 4,448,738
132 4,448,739
182 4,448,740
251 4,448,741
270 4,448,742

CLASS 266

78 4,448,401
183 4,448,402

CLASS 269

21 4,448,403
4,448,404
32 4,448,405
224 4,448,406

CLASS 271

8 A 4,448,407
277 4,448,408

CLASS 272

8 N 4,448,409
86 4,448,410
111 4,448,411
130 4,448,412

CLASS 273

1 GB 4,448,413
25 4,448,414
54 A 4,448,415
110 4,448,416
121 A 4,448,417
123 A 4,448,418
143 R 4,448,419
241 4,448,420
243 4,448,421
271 4,448,422
272 4,448,423

CLASS 277

30 4,448,424
34 4,448,4[illegible]
37 4,448,4[illegible]
73 4,448,427
92 4,448,428
165 4,448,429
184 4,448,430
325 B 4,448,431

CLASS 279

83 4,448,432

CLASS 280

18 4,448,433
40 4,448,434
278 4,448,435
282 4,448,436
287 4,448,437
414.1 4,448,438
504 4,448,439
655 4,448,440
691 4,448,441
823 4,448,442

CLASS 281

5 4,448,443

CLASS 285

4 4,448,447
112 4,448,448
263 4,448,449

CLASS 290

44 4,449,053

CLASS 292

210 4,448,450

CLASS 294

74 4,448,451
87.2 4,448,452

CLASS 296

27 4,448,453

CLASS 297

313 4,448,454

CLASS 301

36 R 4,448,455
58 4,448,456

CLASS 303

22 R 4,448,457
84 A 4,448,458

CLASS 305

38 4,448,459

CLASS 307

31 4,449,054
38 4,449,055
4,449,056
43 4,449,057
152 4,449,058
228 4,449,059
247 R 4,449,060
268 4,449,061
328 4,449,062
456 4,449,063
473 4,449,064
4,449,065
482 4,449,066
570 4,449,067

CLASS 308

5 R 4,448,460
187.2 4,448,461

CLASS 310

316 4,449,068

CLASS 312

38 4,448,462
111 4,448,463
214 4,448,464
223 4,448,465

CLASS 313

412 4,449,069
557 4,449,070

CLASS 315

53 4,449,071
58 4,449,072
130 4,449,073
159 4,449,074
169.3 4,449,075
312 4,449,076

CLASS 318

6 4,449,077
102 4,449,078
138 4,449,079
139 4,449,080
254 4,449,081
326 4,449,082
602 4,449,083
640 4,449,084
641 4,449,085
696 4,449,086
723 4,449,087
798 4,449,088

CLASS 320

15 4,449,089

CLASS 322

95 4,449,090

CLASS 323

236 4,449,091
271 4,449,092

CLASS 324

57 R 4,449,093
61 R 4,449,179
152 4,449,094
223 4,449,095
244 4,449,096
309 4,449,097
326 4,449,098
350 4,449,099
378 4,449,100
453 4,449,101

CLASS 328

162 4,449,102

CLASS 330

123 4,449,103
279 4,449,104

CLASS 331

3 4,449,105

CLASS 333

14 4,449,106
150 4,449,107
202 4,449,108

CLASS 335

212 4,449,109

CLASS 336

94 4,449,110
206 4,449,111

CLASS 338

39 4,449,112
4,449,113

CLASS 339

17 LC 4,448,467
17 M 4,448,466
74 R 4,448,468
91 R 4,448,469
4,448,470
97 P 4,448,471
99 R 4,448,472
103 M 4,448,473
203 4,448,474
258 RR 4,448,476
4,448,477

CLASS 340

347 AD 4,449,118
4,449,120
347 DD 4,449,119
347 SY 4,449,117
550 4,449,121
562 4,449,122
716 4,449,123
739 4,449,124
752 4,449,125
825.32 4,449,126
909 4,449,116
941 4,449,115
988 4,449,114

CLASS 343

7 A 4,449,127
858 4,449,128

CLASS 346

61 4,449,129
74.7 4,449,130
4,449,131
4,449,132
4,449,133
75 4,449,134
4,449,135
76 PH 4,449,136
4,449,137
135.1 4,449,138
137 4,449,139
206 4,448,445
224 4,448,446

CLASS 350

96.14 4,448,479
96.15 4,448,480
96.20 4,448,481
96.21 4,448,478
4,448,482
4,448,483
96.23 4,448,484
162.12 4,448,486
162.2 4,448,485
164 4,448,487
278 4,448,488
330 4,448,489
335 4,448,490
344 4,448,491
346 4,448,492
357 4,448,493
358 4,448,494
428 4,448,495
430 4,448,496
464 4,448,497
516 4,448,498
573 4,448,499
574 4,448,500

CLASS 351

128 4,448,501
153 4,448,502

CLASS 353

26 A 4,448,503
36 4,448,504
122 4,448,505

CLASS 354

173 4,448,507
281 4,448,508
286 4,448,509
289.12 4,448,510
431 4,448,506
459 Re.31,585

CLASS 355

3 CH 4,448,511
3 R 4,448,512
8 4,448,513
4,448,514
14 R 4,448,515
27 4,448,516
56 4,448,517
72 4,448,518
73 4,448,519
74 4,448,520
77 4,448,521
78 4,448,522
133 4,448,523

CLASS 356

36 4,448,524
73 4,448,525
237 4,448,526
4,448,527
250 4,448,528
310 4,448,529
320 4,448,530
374 4,448,531
394 4,448,532
416 4,448,533
435 4,448,534

CLASS 357

7 4,449,140
14 4,449,141
23 4,449,142

CLASS 358

11 4,449,143
105 4,449,144
147 4,449,145
154 4,449,146
212 4,449,147
230 4,449,148
280 4,449,149
283 4,449,150
293 4,449,151
296 4,449,152
4,449,153

CLASS 360

51 4,449,154
104 4,449,155
4,449,160

CLASS 361

56 4,449,157
91 4,449,158
119 4,449,156
152 4,449,161
156 4,449,162
230 4,449,159
315 4,449,163
331 4,448,444
384 4,449,164
386 4,449,165

CLASS 362

149 4,449,166
269 4,449,167
404 4,449,168
413 4,449,169
4,449,170
4,449,171
427 4,449,172

CLASS 363

21 4,449,173
4,449,174
26 4,449,175
81 4,449,176
126 4,449,177

CLASS 364

147 4,449,180
148 4,449,178
200 4,449,181
4,449,182
4,449,183
4,449,184
4,449,185
407 4,449,186
464 4,449,187
505 4,449,188
513.5 4,449,189
4,449,190
559 4,449,191
4,449,192
604 4,449,193
725 4,449,194
768 4,449,196
784 4,449,197
900 4,449,195
4,449,198
4,449,199
4,449,200
4,449,201
4,449,202

CLASS 365

104 4,449,203
127 4,449,204
182 4,449,205
185 4,448,400
229 4,449,206
230 4,449,207

CLASS 366

13 4,448,535
66 4,448,536
75 4,448,537
132 4,448,539
160 4,448,540

CLASS 367

30 4,449,208
102 4,449,209
149 4,449,210
153 4,449,211

CLASS 368

10 4,448,541
63 4,448,542
202 4,448,543
239 4,448,544

CLASS 369

44 4,449,212
45 4,449,213
72 4,449,214
111 4,449,215
255 4,449,216

CLASS 370

62 4,449,217
69.1 4,449,218

CLASS 372

2 4,449,219
83 4,449,220

CLASS 373

44 4,449,221

CLASS 374

41 4,448,545
117 4,448,546
131 4,448,547
160 4,448,548
170 4,448,549

CLASS 375

10 4,449,222
4,449,223

CLASS 376

103 4,448,743
262 4,448,744
448 4,448,745

CLASS 377

79 4,449,224

CLASS 378

39 4,449,225
58 4,449,226
112 4,449,227
151 4,449,228

CLASS 381

2 4,449,229
15 4,449,230
51 4,449,231
4,449,232
53 4,449,233
65 4,449,234
71 4,449,235
91 4,449,236
93 4,449,237
110 4,449,238

CLASS 382

9 4,449,239
15 4,449,240

CLASS 383

103 4,449,242
4,449,243

CLASS 384

127 4,448,550
252 4,448,551
404 4,448,552

CLASS 400

121 4,448,553
124 4,448,554
144.2 4,448,555
208 4,448,556
279 4,448,557
529 4,448,558
637.4 4,448,559

CLASS 401

200 4,448,560

CLASS 403

19 4,448,561
134 4,448,562
161 4,448,563
318 4,448,564
408 4,448,565

CLASS 404

31 4,448,566

CLASS 406

43 4,448,567
169 4,448,568
190 4,448,569
204 4,448,570
284 4,448,571

CLASS 408

115 R 4,448,572

CLASS 415

206 4,448,573

CLASS 417

22 Re.31,586
488 4,448,574

CLASS 419

31 4,448,746
49 4,448,747

CLASS 420

514 4,448,748
584 4,448,749

CLASS 422

20 4,448,750
68 4,448,751
81 4,448,752
144 4,448,753
179 4,448,754

CLASS 423

56 4,448,755
213.7 4,448,756
247 4,448,757
308 4,448,758
474 4,448,759
605 4,448,760
632 4,448,761

CLASS 424

1.1 4,448,762
4,448,763
4,448,764
14 4,448,765
52 4,448,766
85 4,448,767
92 4,448,768
114 4,448,769
153 4,448,770
180 4,448,771
200 4,448,772
211 4,448,773
243 4,448,774
246 4,448,775
250 4,448,776
4,448,777
260 4,448,778
263 4,448,779
4,448,780
269 4,448,781
270 4,448,782
273 P 4,448,783
274 4,448,784
4,448,785
4,448,786
283 4,448,787
313 4,448,788

CLASS 425

47 4,448,575
89 4,448,576

CLASS 426

5 4,448,789
52 4,448,790
94 4,448,791
113 4,448,792
241 4,448,793
267 4,448,794
471 4,448,795

CLASS 427

4 4,448,796
8 4,448,797
4,448,798
37 4,448,799
39 4,448,800
4,448,801
42 4,448,802
58 4,448,803
98 4,448,804
100 4,448,805
102 4,448,806
121 4,448,807
208.6 4,448,808
239 4,448,809
302 4,448,810
304 4,448,811
377 4,448,812
381 4,448,813
387 4,448,814
4,448,815
388.2 4,448,816
412 4,448,817
424 4,448,818
4,448,819
4,448,820
430.1 4,448,822

CLASS 428

1 4,448,823
33 4,448,824
35 4,448,825
4,448,826
4,448,827
36 4,448,828
40 4,448,830
91 4,448,831
113 4,448,832
116 4,448,833
122 4,448,834
147 4,448,835
164 4,448,836
215 4,448,837
251 4,448,838
266 4,448,840
267 4,448,839
270 4,448,841
329 4,448,842
336 4,448,843
375 4,448,844
404 4,448,845
412 4,448,846
413 4,448,847
447 4,448,848
503 4,448,849
510 4,448,850
606 4,448,851
4,448,852
607 4,448,853
611 4,448,854
632 4,448,855

CLASS 429

27 4,448,856
41 4,448,857
49 4,448,858
50 4,448,859
57 4,448,860
105 4,448,861
136 4,448,862
178 4,448,863
194 4,448,864

CLASS 430

5 4,448,865
24 4,448,866
31 4,448,867
58 4,448,868
83 4,448,869
107 4,448,870
109 4,448,871
126 4,448,872
157 4,448,873
215 4,448,874
283 4,448,875
296 4,448,876
346 4,448,877
507 4,448,878

CLASS 431

190 4,448,577

CLASS 432

72 4,448,578

CLASS 434

203 4,448,579

CLASS 435

2 4,448,879
18 4,448,880
162 4,448,881
188 4,448,882
194 4,448,883
241 4,448,884
253 4,448,885
262 4,448,886

CLASS 436

60 4,448,887
67 4,448,888
74 4,448,889
508 4,448,890

CLASS 485

9 4,449,246
4,449,247
38 4,449,248
45 4,449,249
76 4,449,250
319 4,449,245
603 4,449,244

CLASS 502

74 4,448,711
4,448,891
164 4,448,892
209 4,448,893
249 4,448,894
304 4,448,895
314 4,448,896
350 4,448,897
4,448,898

CLASS 521

32 4,448,899
57 4,448,900
60 4,448,901
99 4,448,902
137 4,448,903
160 4,448,904
164 4,448,905

CLASS 523

122 4,448,906
139 4,448,907
201 4,448,908
303 4,448,909
402 4,448,910
411 4,448,911
414 4,448,912
455 4,448,913

CLASS 524

32 4,448,914
93 4,448,915
106 4,448,916
160 4,448,917
262 4,448,918
394 4,448,919
439 4,448,920
443 4,448,921
4,448,922
460 4,448,923
4,448,924
600 4,448,925
612 4,448,926
860 4,448,927
864 4,448,928

CLASS 525

57 4,448,929
67 4,448,930
68 4,448,931
71 4,448,380
78 4,448,932
123 4,448,933
184 4,448,934
343 4,448,935
424 4,448,936
432 4,448,937
457 4,448,938
474 4,448,939
504 4,448,940
528 4,448,941
540 4,448,942

CLASS 526

59 4,448,943
119 4,448,944
193 4,448,945

CLASS 528

67 4,448,946
73 4,448,947
95 4,448,948
99 4,448,949
128 4,448,950
129 4,448,951
4,448,952
198 4,448,953
207 4,448,954
4,448,955
312 4,448,956
351 4,448,957

CLASS 544

20 4,448,958
213 4,448,959
282 4,448,960
311 4,448,961
362 4,448,962
367 4,448,963

CLASS 546

194 4,448,964
302 4,448,965
4,448,966
345 4,448,967

CLASS 548

136 4,448,968
165 4,448,399
226 4,448,971
301 4,448,969
336 4,448,970
362 4,448,973
528 4,448,972
550 4,448,974
558 4,448,975

CLASS 549

39 4,448,976
201 4,448,977
259 4,448,978
292 4,448,979

CLASS 556

446 4,448,980
459 4,448,981

CLASS 560

21 4,448,982
241.1 4,448,983
256 4,448,984

CLASS 562

473 4,448,987
506 4,448,986
579 4,448,985

CLASS 564

95 4,448,988
165 4,448,989
167 4,448,990
171 4,448,991
347 4,448,992
402 4,448,993
416 4,448,994
451 4,448,995
467 4,448,996
479 4,448,997
488 4,448,998
495 4,448,999

CLASS 568

22 4,449,000
28 4,449,002
31 4,449,001
33 4,449,003
38 4,449,004
59 4,449,005
70 4,449,006
343 4,449,007
353 4,449,008
377 4,449,009

CLASSIFICATION OF DESIGNS

D1—	27	273,814		181	273,830			273,846		34	273,862	D21—	30	273,878		26	273,894
D2—	24	273,817		191	273,831	D10—	68	273,847		53	273,863		51	273,879			273,895
	27	273,818		199	273,832		106	273,848		68	273,864		61	273,880		46	273,896
	234	273,819	D7—	77	273,833		129	273,849		102	273,865		143	273,881		64	273,897
	361	273,820		351	273,834	D12—	91	273,850			273,866		191	273,882		99	273,898
	400	273,821			273,835		110	273,851		106	273,867	D22—	18	273,883	D25—	85	273,899
D3—	12	273,815			273,836			273,852		107	273,869		25	273,884		87	273,900
	38	273,816		391	273,837			273,853		114	273,868			273,885			273,901
D6—	31	273,823	D8—	7	273,838			273,854	D15—	199	273,870			273,886	D26—	140	273,902
	36	273,824		89	273,839		131	273,855	D16—	10	273,871			273,887	D30—	2	273,903
	48.1	273,825		382	273,840		146	273,856		34	273,872	D23—	28	273,888	D32—	56	273,904
	50	273,822		394	273,841		187	273,857	D19—	64	273,873		70	273,889	D34—	15	273,905
	130	273,826	D9—	341	273,842		216	273,858		67	273,874		97	273,890		19	273,906
	172	273,827		345	273,844	D13—	24	273,859		69	273,875		114	273,891		38	273,907
	178	273,828		351	273,843		99	273,860		75	273,876	D24—	2	273,892	D99—	28	273,908
	179	273,829		438	273,845	D14—	11	273,861	D20—	11	273,877		16	273,893			

CLASSIFICATION OF PLANTS

P.—	38	5,231		48	5,232		54	5,233									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4 :	4,449,146		4,448,387		4,449,178		4,448,715		4,448,688		4,448,830
	4,449,203		4,448,388		4,449,184		4,449,058		4,448,716		4,449,000
6 :	4,448,207		4,448,399		4,449,186		4,449,083		4,448,736		4,449,005
	4,448,568		4,448,400		4,449,199		4,449,209		4,448,750		4,449,127
	4,449,082		4,448,428		4,449,201		4,449,246		4,448,764		4,449,196
	4,449,210		4,448,429		4,449,219		4,449,247		4,448,823	25 :	4,448,061
8 :	4,448,361		4,448,434		4,449,224	13 :	4,448,132		4,448,826		4,448,085
	4,449,024		4,448,435		4,449,235		4,448,137		4,448,854		4,448,139
9 :	4,448,368		4,448,448		4,449,242		4,448,203		4,448,925		4,448,140
	4,448,633		4,448,456		4,449,249		4,448,259		4,448,987		4,448,150
	4,448,934		4,448,465	08 :	4,448,110		4,448,281		4,448,994		4,448,154
	4,449,075		4,448,466		4,448,252		4,448,452		4,449,073		4,448,340
01 :	4,447,978		4,448,482		4,448,433		4,448,624		4,449,122		4,448,290
	4,448,221		4,448,500		4,448,651		4,449,236		4,449,145		4,448,317
	4,448,615		4,448,504		4,448,659	16 :	4,449,089		4,449,228		4,448,401
	4,449,010		4,448,532		4,448,690	17 :	4,447,916		4,449,245		4,448,423
04 :	4,447,922		4,448,534		4,449,015		4,447,939		4,449,250		4,448,564
	4,447,976		4,448,545		4,449,182		4,447,948	18 :	4,448,054		4,448,718
	4,448,039		4,448,547	09 :	4,447,919		4,447,954		4,448,289		4,448,774
	4,448,229		4,448,551		4,447,945		4,447,965		4,448,291		4,448,807
	4,448,352		4,448,556		4,447,962		4,447,980		4,448,307		4,448,872
	4,449,194		4,448,590		4,447,992		4,448,010		4,448,315		4,448,889
05 :	4,448,536		4,448,599		4,448,009		4,448,148		4,448,453		4,449,013
06 :	Re.31,584		4,448,605		4,448,100		4,448,157		4,448,717		4,449,041
	Re.31,586		4,448,613		4,448,217		4,448,188		4,448,953		4,449,043
	4,447,912		4,448,645		4,448,334		4,448,190		4,448,975		4,449,044
	4,447,914		4,448,666		4,448,360		4,448,232		4,448,990		4,449,128
	4,447,918		4,448,668		4,448,550		4,448,234		4,449,079		4,449,183
	4,447,947		4,448,742		4,448,684		4,448,251	19 :	4,449,032		4,449,223
	4,447,974		4,448,767		4,448,732		4,448,309	20 :	4,447,951	26 :	4,447,979
	4,448,005		4,448,797		4,448,745		4,448,320		4,448,439		4,447,994
	4,448,058		4,448,824		4,448,748		4,448,322		4,448,440		4,448,001
	4,448,071		4,448,846		4,448,808		4,448,357		4,448,589		4,448,007
	4,448,072		4,448,858		4,448,816		4,448,363	21 :	4,448,113		4,448,012
	4,448,086		4,448,888		4,448,847		4,448,364		4,448,264		4,448,028
	4,448,097		4,448,899		4,448,875		4,448,379		4,448,332		4,448,053
	4,448,102		4,448,916		4,448,913		4,448,382		4,448,763		4,448,063
	4,448,106		4,448,929		4,448,971		4,448,390		4,449,052		4,448,066
	4,448,111		4,448,932		4,449,220		4,448,417	22 :	4,448,096		4,448,094
	4,448,115		4,448,961	10 :	4,448,679		4,448,421		4,448,362		4,448,101
	4,448,130		4,448,965		4,448,757		4,448,426		4,448,579		4,448,151
	4,448,192		4,448,966		4,448,778		4,448,445		4,449,101		4,448,153
	4,448,200		4,449,045		4,448,980		4,448,454	23 :	4,448,344		4,448,155
	4,448,206		4,449,051	11 :	4,448,437		4,448,459		4,448,411		4,448,176
	4,448,239		4,449,055	12 :	4,448,078		4,448,462	24 :	4,447,927		4,448,202
	4,448,247		4,449,065		4,448,109		4,448,469		4,447,999		4,448,209
	4,448,255		4,449,067		4,448,127		4,448,476		4,448,000		4,448,230
	4,448,277		4,449,068		4,448,143		4,448,481		4,448,312		4,448,235
	4,448,301		4,449,114		4,448,297		4,448,565		4,448,406		4,448,302
	4,448,303		4,449,115		4,448,321		4,448,585		4,448,449		4,448,336
	4,448,311		4,449,117		4,448,543		4,448,625		4,448,472		4,448,337
	4,448,348		4,449,155		4,448,563		4,448,639		4,448,544		4,448,381
	4,448,373		4,449,166		4,448,593		4,448,685		4,448,760		4,448,392

4,448,540
4,448,562
4,448,586
4,448,587
4,448,591
4,448,654
4,448,691
4,448,694
4,448,706
4,448,708
4,448,756
4,448,845
4,448,877
4,448,884
4,448,927
4,448,933
4,448,941
4,448,952
4,448,970
4,449,016
4,449,100
27 : 4,447,949
4,447,977
4,447,989
4,448,008
4,448,021
4,448,052
4,448,179
4,448,258
4,448,326
4,448,385
4,448,396
4,448,398
4,448,443
4,448,492
4,448,541
4,448,578
4,448,799
4,449,109
4,449,164
28 : 4,447,952
4,448,022
4,448,068
29 : 4,447,921
4,447,944
4,447,986
4,448,038
4,448,117
4,448,183
4,448,262
4,448,304
4,448,621
4,448,894
4,448,974
4,448,978
30 : 4,448,175
4,448,351
31 : 4,448,049
4,448,187
4,448,340
32 : 4,447,968
4,448,391
4,448,419
4,448,838
33 : 4,449,102
34 : 4,447,911
4,447,946
4,448,017
4,448,051
4,448,060
4,448,095
4,448,105
4,448,120
4,448,141
4,448,169
4,448,189

4,448,193
4,448,194
4,448,204
4,448,214
4,448,237
4,448,327
4,448,333
4,448,371
4,448,410
4,448,479
4,448,483
4,448,485
4,448,524
4,448,548
4,448,588
4,448,618
4,448,647
4,448,657
4,448,671
4,448,672
4,448,673
4,448,674
4,448,675
4,448,677
4,448,705
4,448,710
4,448,713
4,448,753
4,448,772
4,448,782
4,448,784
4,448,785
4,448,789
4,448,791
4,448,831
4,448,851
4,448,852
4,448,873
4,448,876
4,448,905
4,448,906
4,448,926
4,448,935
4,448,954
4,448,955
4,448,972
4,448,976
4,448,982
4,448,983
4,448,984
4,449,007
4,449,008
4,449,009
4,449,017
4,449,020
4,449,034
4,449,118
4,449,143
4,449,174
4,449,185
4,449,189
4,449,190
4,449,212
4,449,215
4,449,238
35 : 4,448,622
4,448,811
36 : 4,447,913
4,447,920
4,447,924
4,447,934
4,447,935
4,447,938
4,447,953
4,447,982
4,448,027

4,448,033
4,448,041
4,448,087
4,448,114
4,448,149
4,448,170
4,448,186
4,448,314
4,448,335
4,448,339
4,448,366
4,448,397
4,448,405
4,448,416
4,448,424
4,448,470
4,448,474
4,448,487
4,448,494
4,448,503
4,448,505
4,448,512
4,448,576
4,448,595
4,448,616
4,448,646
4,448,683
4,448,727
4,448,737
4,448,762
4,448,780
4,448,804
4,448,806
4,448,815
4,448,822
4,448,850
4,448,857
4,448,874
4,448,881
4,448,909
4,448,920
4,448,928
4,448,937
4,448,943
4,448,958
4,448,973
4,448,981
4,449,029
4,449,046
4,449,048
4,449,050
4,449,087
4,449,119
4,449,126
4,449,134
4,449,139
4,449,153
4,449,156
4,449,167
4,449,169
4,449,170
4,449,171
4,449,172
4,449,176
37 : 4,447,950
4,448,123
4,448,185
4,448,328
4,448,374
4,448,384
4,448,582
4,448,584
4,448,696
4,448,783
4,449,023
4,449,094

4,449,112
4,449,113
4,449,161
4,449,205
39 : 4,447,981
4,447,988
4,448,006
4,448,011
4,448,135
4,448,296
4,448,308
4,448,313
4,448,354
4,448,359
4,448,438
4,448,446
4,448,461
4,448,477
4,448,486
4,448,516
4,448,558
4,448,569
4,448,607
4,448,658
4,448,703
4,448,759
4,448,813
4,448,849
4,448,859
4,448,886
4,448,887
4,448,893
4,448,907
4,448,910
4,448,911
4,448,917
4,448,951
4,448,956
4,448,969
4,448,998
4,449,001
4,449,014
4,449,168
4,449,187
4,449,202
4,449,237
40 : 4,448,062
4,448,210
4,448,246
4,448,254
4,448,350
4,448,367
4,448,458
4,448,669
4,448,678
4,448,698
4,448,892
4,448,918
41 : 4,447,969
4,448,103
4,448,414
4,448,695
4,448,707
4,449,042
4,449,059
4,449,207
42 : 4,447,923
4,448,003
4,448,026
4,448,184
4,448,224
4,448,231
4,448,256
4,448,318
4,448,343
4,448,345

4,448,383
4,448,408
4,448,422
4,448,463
4,448,467
4,448,468
4,448,471
4,448,473
4,448,522
4,448,560
4,448,573
4,448,606
4,448,612
4,448,667
4,448,680
4,448,682
4,448,686
4,448,724
4,448,729
4,448,755
4,448,786
4,448,839
4,448,856
4,448,897
4,448,898
4,448,903
4,448,922
4,448,939
4,448,985
4,449,006
4,449,031
4,449,053
4,449,069
4,449,070
4,449,074
4,449,084
4,449,197
43 : 4,448,024
4,449,121
44 : 4,448,413
4,448,583
4,449,211
45 : 4,447,930
4,447,937
4,448,036
4,448,195
4,448,272
4,448,670
4,448,722
4,448,770
4,448,792
47 : 4,448,267
4,448,377
4,448,432
4,448,701
4,449,049
48 : 4,447,972
4,447,995
4,447,996
4,447,998
4,448,057
4,448,133
4,448,161
4,448,215
4,448,216
4,448,238
4,448,248
4,448,249
4,448,250
4,448,253
4,448,268
4,448,270
4,448,394
4,448,412
4,448,420
4,448,427

4,448,450
4,448,528
4,448,535
4,448,557
4,448,571
4,448,626
4,448,631
4,448,636
4,448,662
4,448,663
4,448,665
4,448,697
4,448,751
4,448,883
4,448,900
4,448,904
4,448,986
4,448,993
4,448,997
4,449,003
4,449,018
4,449,033
4,449,047
4,449,064
4,449,099
4,449,116
4,449,124
4,449,208
4,449,222
4,449,233
49 : 4,448,198
4,448,628
4,448,743
4,449,011
50 : 4,449,163
51 : 4,447,942
4,447,943
4,448,566
4,448,730
4,449,080
4,449,088
4,449,104
4,449,105
4,449,248
53 : 4,447,975
4,448,019
4,448,134
4,448,142
4,448,273
4,448,347
4,448,372
4,448,375
4,448,546
4,448,676
4,448,832
4,448,885
4,449,159
54 : 4,448,310
4,448,950
4,448,977
4,448,995
55 : 4,447,932
4,447,964
4,447,985
4,447,993
4,448,212
4,448,260
4,448,638
4,448,721
4,448,726
4,448,735
4,448,861
4,449,076
4,449,165
4,449,195
4,449,200

DESIGN PATENTS

06 : 273,818
273,821
273,828
273,830
273,839
273,863
273,867
273,869
273,875
273,876
273,882

273,898
273,902
08 : 273,819
273,833
10 : 273,816
11 : 273,907
12 : 273,848
273,864
273,880
273,897
15 : 273,904

17 : 273,860
273,878
273,892
18 : 273,838
273,896
20 : 273,884
273,885
273,886
21 : 273,815
273,888

25 : 273,841
26 : 273,855
27 : 273,826
34 : 273,817
273,820
273,843
273,894
273,895
36 : 273,814
273,823

273,844
273,866
273,873
273,899
39 : 273,825
273,846
40 : 273,827
273,887
41 : 273,893
42 : 273,859

273,900
273,901
273,906
48 : 273,858
273,877
49 : 273,868
53 : 273,890
55 : 273,831
273,832
273,903

PLANT PATENTS

06 : 5,231
18 : 5,232
48 : 5,233

U.S. GOVERNMENT PRINTING OFFICE : O—1984

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM
ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

Route to:

**U.S.
DEPARTMENT
OF COMMERCE**

**Patent
and
Trademark
Office**

Vol. 1042 Number 4

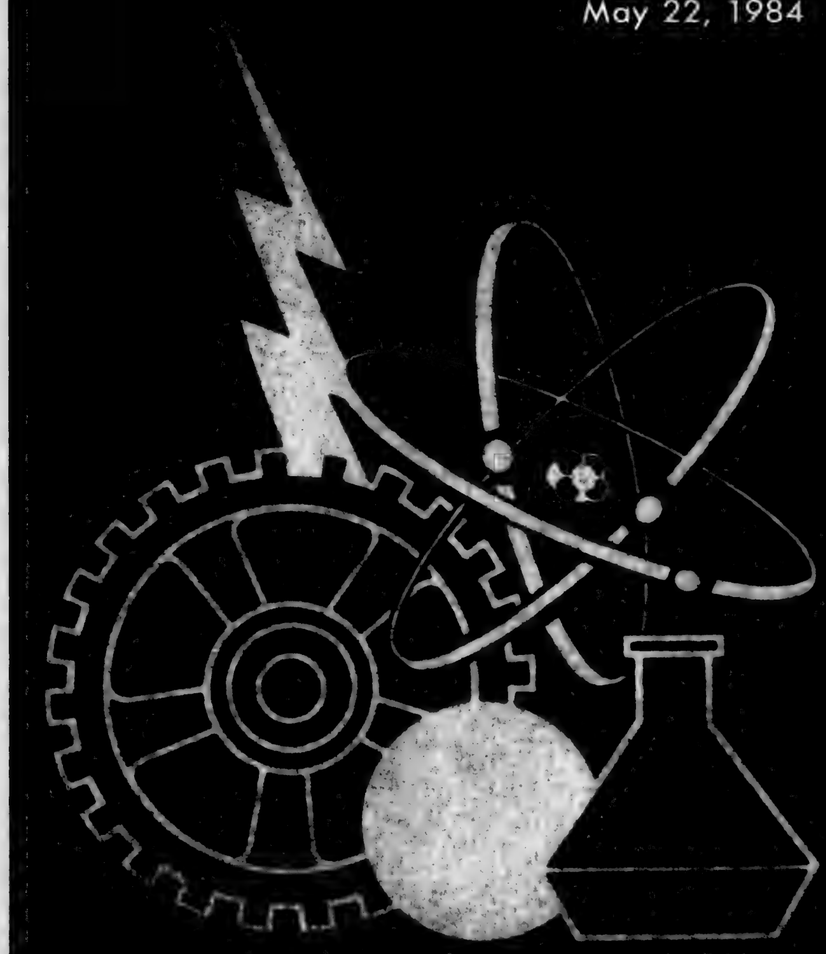
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 22, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
May 22, 1984 Volume 1042 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1042 OG 50
Reissue Applications Filed	1042 OG 50
Requests for Reexaminations Filed	1042 OG 50
Erratum	1042 OG 51
Patent Certificates of Correction	1042 OG 52
Disclaimers	1042 OG 52
Dedications	1042 OG 52
Disclaimers and Dedications	1042 OG 53
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1042 OG 54
Condition of Patent Applications	1042 OG 55
Reexaminations	1371
Reissue Patents Granted (31,587)	1375
Plant Patents Granted (5,234)	1377
Patents Granted	
General and Mechanical (4,449,251)	1379
Chemical (4,449,985)	1635
Electrical (4,450,314)	1725
Design Patents Granted (273,909)	1823
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 47
Classification of	
Patents (Including Reissues and Reexaminations)	PI 51
Designs and Plants	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 55
Designs and Plants	PI 56
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 13, 1984.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,965,600, Re. S.N. 579,256, Filed Feb. 13, 1984, Cl. 40/152.1, FRAME HANGER, Wayne H. Paskerian, Owner of Record: *M. W. Carr & Co., West Somerville, Mass.*, Attorney or Agent: James B. Lampert, Ex. Gp.: 333

4,313,912, Re. S.N. 574,802, Filed Jan. 30, 1984, Cl. 422/267, APPARATUS FOR THE CONTINUOUS EXTRACTION OF OILS AND SOLUBLE SUBSTANCES FROM SOLID MATERIALS, William M. Barger, Owner of Record: *French Oil Mill Machinery Co., Piqua, Ohio,* Attorney or Agent: Nathaniel R. French, et al., Ex. Gp.: 177

4,314,665, Re. S.N. 588,049, Filed Mar. 9, 1984, Cl. 236/46, ELECTRONIC THERMOSTAT, Michael R. Levine, Owner of Record: *Inventor,* Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 344

4,320,893, Re. S.N. 588,152, Filed Mar. 9, 1984, Cl. 271/94, TRANSPORT APPARATUS FOR TRANSPORTING FLEXIBLE SHEET-LIKE ARTICLES, Martin Blumle, Owner of Record: *Winkler & Dunnebier Maschinen Fabrik und Eisengiesserei GmbH & Co., ke Neuwied, Germany,* Attorney or Agent: Werner W. Kleeman, et al., Ex. Gp.: 312

4,322,080, Re. S.N. 580,447, Filed Feb. 15, 1984, Cl. 273/86B, IMAGE PROJECTING AMUSEMENT DEVICE, Hugh S. Pennington, Owner of Record: *David R. Capasso, Killingworth, Conn.*, Attorney or Agent: Joseph M. Fitzpatrick, et al., Ex. Gp.: 334

4,369,912, Re. S.N. 580,059, Filed Feb. 14, 1984, Cl. 229/5.6, COMPOSITE CAN WITH COMPRESSED END TO PROVIDE EASY OPENING, Harold D. Abner, Owner of Record: *Proctor & Gamble Co., Cincinnati, Ohio,* Attorney or Agent: Richard C. White, et al., Ex. Gp.: 241

4,378,484, Re. S.N. 581,197, Filed Feb. 17, 1984, Cl. 219/203, AUTOMOTIVE WINDSHIELD, Heinz Kunert, Owner of Record: *Vereinigte Glaswerke GmbH, Aachen, Germany,* Attorney or Agent: Stanton T. Lawrence, Jr., Ex. Gp.: 242

4,382,301, Re. S.N. 575,296, Filed Jan. 30, 1984, Cl. 2/22, SNAKE PROOF CHAPS, George H. Hightower, Jr., Owner of Record: *Thomaston Mills, Inc., Thomaston, Ga.*, Attorney or Agent: Harold L. Stowell, et al., Ex. Gp.: 353

4,386,908, Re. S.N. 579,359, Filed Feb. 13, 1984, Cl. 433/9, LINGUAL ORTHODONTIC APPLIANCE SYSTEM, Craven H. Kurz, Owner of Record: *Inventor,* Attorney or Agent: Keith D. Beecher, Ex. Gp.: 333

4,396,959, Re. S.N. 596,438, Filed Apr. 3, 1984, Cl. 360/77, DATA TRANSDUCER POSITION CONTROL SYSTEM FOR ROTATING DISK DATA STORAGE EQUIPMENT, Joel N. Harrison, et al., Owner of Record: *Quantum Corp., San Jose, Calif.,* Attorney or Agent: James W. Geriak, et al., Ex. Gp.: 235

4,414,463, Re. S.N. 579,441, Filed Feb. 13, 1984, Cl. 219/270, GLOW-PLUG, John T. Petrik, et al., Owner of Record: *Sun Chemical Corp., New York, N.Y.,* Attorney or Agent: Cynthia Berlow, et al., Ex. Gp.: 213

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,854,664, Reexam. No. 90/000,542, Requested: Apr. 16, 1984, Cl. 239/206, SPRINKLER SYSTEM, Edwin J. Hunter, Owner of Record: *Toro Manufacturing Corp., Riverside, Calif.*, Attorney or Agent: James W. Miller, Ex. Gp.: 310, Requester: Owner

3,906,134, Reexam. No. 90/000,537, Requested: Apr. 4, 1984, WELDABILITY OF ARTICLES MADE FROM PLASTIC FOAMS, Gerhard Pohl, Owner of Record: *Zwissler Ulrich, Gerstetten, Germany,* Attorney or Agent: Richard L. Johnston, Ex. Gp.: 150, Requester: Asahi Kasei Kogyo Kabushiki, Washington, D.C.

4,167,585, Reexam. No. 90/000,545, Requested: Apr. 18, 1984, Cl. 426/233, METHOD FOR HEATING AND COOLING FOODS IN A CLOSED TREATMENT CHAMBER BY MAINTAINING THETEMPERATURE AND MOISTURE CONTENT, Andrew

A. Caridis, et al., Owner of Record: *Heat and Control, Inc., San Francisco, Calif.,* Attorney or Agent: Flehr, Hohbach, et al., Ex. Gp.: 130, Requester: Stein Associates, Inc., Sandusky, Ohio

4,182,759, Reexam. No. 90/000,546, Requested: Apr. 18, 1984, Cl. 424/217, ARYLALKYL AND ARYLOXYALKYL PHOSPHONATES AND USE AS ANTIVIRAL AGENTS, Guy D. Diana, Owner of Record: *Sterling Drug, Inc., New York, N.Y.,* Attorney or Agent: B. Woodrow Wyatt, Ex. Gp.: 122, Requester: Owner

4,302,162, Reexam. No. 90/000,543, Requested: Apr. 17, 1984, Cl. 417/44, WATER PUMPING DEVICE, Jefferson J. Springston, Owner of Record: *Power House, Inc., Baltimore, Md.,* Attorney or Agent: LeBlanc, Nolan, et al., Ex. Gp.: 340, Requester: Offshore Horizons, Inc., New York, N.Y.

4,342,811, Reexam. No. 90/000,538, Requested: Apr. 9, 1984, Cl. 428/220, OPEN-CELLED MICROPOROUS SORBENT-LOADED TEXTILE FIBERS AND FILMS AND METHODS FABRICATING SAME, George Lopatin, et al., Owner of Record: *Albany International Corp., Albany, N.Y.,* Attorney or Agent: Kenway & Jenney, Ex. Gp.: 154, Requester: Owner

4,355,032, Reexam. No. 90/000,541, Requested: Apr. 9, 1984, Cl. 424/253, 9-(1,3-DIHYDROXY-2-PROPOXIMETHYL)-GUANINE AS ANTIVIRAL AGENT, Julien P. Verbeyden, Owner of Record: *Syntex (USA), Inc., Palo Alto, Calif.,* Attorney or Agent: Alan M. Krubiner & Annette M. Moore, Ex. Gp.: 120, Requester: Howard J. Schaeffer, Raleigh, N.C.

4,357,256, Reexam. No. 90/000,547, Requested: Apr. 20, 1984, Cl. 252/188.24, SODIUM HYDROSULFITE COMPOSITION, Takaaki Yamaguchi, Owner of Record: *Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan,* Attorney or Agent: R. Eugene Varndell, Ex. Gp.: 157, Requester: Morton Thiokol, Inc., Chicago, Ill.

4,365,692, Reexam. No. 90/000,539, Requested: Apr. 11, 1984, Cl. 187/8.72, ELEVATING CATWALK, Gary W. Craig, Owner of Record: *Loffland Brothers Co., Tulsa, Okla.,* Attorney or Agent: Head, Johnson & Stevenson, Ex. Gp.: 310, Requester: Mid-Western Energy Corp., Yukon, Okla.

4,393,911, Reexam. No. 90/000,540, Requested: Apr. 9, 1984, Cl. 152/158, SAFETY LINER FOR TIRES, Mason C. Winfield, Owner of Record: *Astronics Corp., Orchard Park, N.Y.,* Attorney or Agent: Schlesinger, Fitzsimmons & Schlesinger, Ex. Gp.: 130, Requester: Theodore C. Patecell, Flushing, N.Y.

4,415,355, Reexam. No. 90/000,536, Requested: Mar. 29, 1984, Cl. 71/121, DINITROANILINE HERBICIDAL COMPOSITIONS CONTAINING FREEZING POINT DEPRESSANT ADDITIONS, Ronald L. Cassell, et al., Owner of Record: *BASF Wyandotte Corp., Wyandotte, Mich.*, Attorney or Agent: David L. Hedden, Ex. Gp.: 120, Requester: Eli Lilly Co., Indianapolis, Ind.

Erratum

"All reference to Patent No. 4,443,391, to Bernd Melchior of Germany for 'PROCESS OF MAKING ARTICLES OF FOAMED POLYMETHYL METHACRYLATE' appearing in the Official Gazette of Apr. 17, 1984 should be deleted since no patent was granted."

PATENT NOTICES

Certificates of Correction for the Week of May 22, 1984

3,931,583	4,406,814	4,424,941	4,432,050
4,017,290	4,407,133	4,425,548	4,432,344
4,021,253	4,407,296	4,425,657	4,432,629
4,201,444	4,407,648	4,426,144	4,432,708
4,217,932	4,408,075	4,426,306	4,432,899
4,290,937	4,409,053	4,426,494	4,433,257
4,323,636	4,409,110	4,426,877	4,433,442
4,327,179	4,409,687	4,426,945	4,433,566
4,338,102	4,410,638	4,427,841	4,433,597
4,339,945	4,414,296	4,428,150	4,434,174
4,351,858	4,414,877	4,428,527	4,434,325
4,363,890	4,415,690	4,428,671	4,434,506
4,366,505	4,415,712	4,428,775	4,434,553
4,367,435	4,415,934	4,428,816	4,434,580
4,374,612	4,416,014	4,429,554	4,434,609
4,375,513	4,416,839	4,429,859	4,434,674
4,377,613	4,417,126	4,429,997	4,434,722
4,378,809	4,417,786	4,430,698	4,434,772
4,378,949	4,418,076	4,430,738	4,434,805
4,380,597	4,418,776	4,430,876	4,434,864
4,381,335	4,419,462	4,430,922	4,435,119
4,385,604	4,419,917	4,430,961	4,435,252
4,386,194	4,419,986	4,430,962	4,435,326
4,388,329	4,420,247	4,431,016	4,435,400
4,388,356	4,421,035	4,431,140	4,435,435
4,392,135	4,421,341	4,431,155	4,435,467
4,392,741	4,421,588	4,431,386	4,435,489
4,392,997	4,422,434	4,431,480	4,435,797
4,396,728	4,422,606	4,431,520	4,435,806
4,397,099	4,423,388	4,431,588	4,435,866
4,400,519	4,423,413	4,431,647	4,435,933
4,400,688	4,423,430	4,431,798	4,436,546
4,403,220	4,423,795	4,431,831	4,439,782
4,405,538	4,423,939	4,431,971	

Disclaimers

4,224,579.—*Calvin Jon Marlett,* La Crescenta; *Edwin A. Reed,* Upland; *Richard C. Johnson* and *William F. Hug,* Pasadena, Calif. METAL VAPOR LASER DISCHARGE TUBE. Patent dated Sept. 23, 1980. Disclaimer filed Apr. 2, 1984, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1-3 of said patent.

4,303,310.—*Hiroshi Morita,* Tokyo and *Hiroshi Washida,* Yokohama, Japan. ELECTROCHROMIC DISPLAY DEVICE. Patent dated Dec. 1, 1981. Disclaimer filed Apr. 9, 1984, by the assignee, *Tokyo Shibaura Denki Kabushiki Kaisha.*

Hereby enters this disclaimer to claim 1 of said patent.

4,390,676.—*Samuel Loshaek,* Chicago, Ill. ULTRAVIOLET ABSORBING LENSES. Patent dated June 28, 1983. Disclaimer filed Apr. 5, 1984, by the assignee, *Schering Corp.*

Hereby enters this disclaimer to claims 5, 6, 7 and 8 of said patent.

Dedications

3,970,530.—*Bohdan Maslowski; Dimitri Tzanos,* Geneva, Switzerland. METHOD OF AND SYSTEM FOR THE DESTRUCTION AND/OR LIMITATION OF THE REPRODUCTION OF MICRO-ORGANISMS IN NUTRITIVE MEDIA. Patent dated July 20, 1976. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,996,001.—*Manuel Sanz,* Grand-Lancy and *Georges Revillet,* Onex, Switzerland. METHOD OF AND DEVICE FOR THE ANALYSIS OF LIQUIDS. Patent dated Dec. 7, 1976. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,998,428.—*Erwin Zurcher,* Geneva, Switzerland. PROCESS AND APPARATUS FOR CONTINUOUSLY MEASURING THE VALUE OF THE TENSION IN A FILAMENT BEING DISPLACED FROM ONE POINT TO ANOTHER. Patent dated Dec. 28, 1976. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,034,567.—*Rolf Roggen,* Grand-Lancy, Switzerland. SELF-DRILLING THERMAL BOLT. Patent dated July 12, 1977. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,057,097.—*Benno Lux,* Veyrier; *Wilfried Kurz,* Lausanne, both of Switzerland; *Jean-Claude Hubert,* Saint-Maur; *Francois Mollard,* Gaillard, both of France and *Guido Walt,* Geneva, Switzerland. CASTING PROCESS WITH INSTANEOUS UNIDIRECTIONAL SOLIDIFICATION. Patent dated Nov. 8, 1977. Disclaimer filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,083,360.—*Jean-Claude F. Courvoisier* and *Jean-Luc CH. Meylan,* Geneva, Switzerland. DEVICE FOR COLLECTING SOLAR ENERGY. Patent dated Apr. 11, 1978. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,086,155.—*Pierre Jonville,* Plan-Les-Ouates, Switzerland. ELECTROLYZER WITH RELEASED GAS. Patent dated Apr. 25, 1978. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,089,801.—*Michel Schneider,* Grand Lancy, Switzerland. PROCESS FOR THE PREPARATION OF LIPOSOMES. Patent dated May 16, 1978. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,120,763.—*Frederic Breda* and *Pierre Jonville,* Geneva, Switzerland. HYDROGEN TRANSFER BY METAL HYDRIDE BETWEEN AQUEOUS MEDIUM AND ORGANIC COMPOUND. Patent dated Oct. 17, 1978. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Disclaimers and Dedications

4,215,791.—*Wilfred R. Brochman,* Oakland, Minn. EASY OPEN CLOSURE SYSTEM. Patent dated Aug. 5, 1980. Disclaimer and dedication filed Mar. 23, 1984, by the assignee, *Minnesota Mining and Manufacturing Co.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

4,233,568.—*Randolph W. Hamerdinger* and *Robert C. McQuillan,* Glendora, Calif. LASER TUBE MIRROR ASSEMBLY. Patent dated Nov. 11, 1980. Disclaimer and dedication filed Apr. 2, 1984, by the assignee, *Xerox Corp.*

Hereby disclaims and dedicates the entire term of said patent to the Public.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 14, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-08-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-18-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	1-26-81
DESIGN, GROUP 290—K. L. CAGE, Director	1-11-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	1-10-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-15-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,311,921 to 3,316,555, inclusive

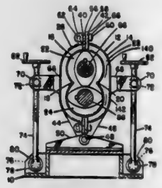
Plant Patents ..... Numbers 2,730 to 2,733 inclusive

REEXAMINATIONS

MAY 22, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,195,868 (193rd)
CONTINUOUS MIXER
Bernard A. Loomans, York, and Ambrose K. Brennan, Jr., Thomasville, both of Pa., assignors to Baker Perkins Inc., New York, N.Y.
Reexamination Request No. 90/000,380, May 11, 1983.
Reexamination Certificate for Patent No. 3,195,868, issued Jul. 20, 1965, Ser. No. 181,278, Mar. 21, 1962.
Int. Cl.[3] B01F *7/04*
U.S. Cl. 366—85



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.

1. A mixer comprising; housing means in the form of parallel intersecting cylinders, axially arranged pairs of radially inter-engaging rotatable members mounted on shafts, extending axially of said cylinders, for rotation therein, each member in cross section having convex flanks joined at both outer ends by arcuate crests formed on radii at least substantially equal to the radius of their associated cylinder, drive means for rotating said members in the same direction, and the flanks of each of said members being substantially generated by portions of the crests of the other member, whereby the crests of each of said members wipes the walls of its associated cylinder and the flanks of each of said members are wiped by portions of the crests of the other member.

B1 3,869,362 (194th)
PROCESS FOR REMOVING NOXIOUS GAS POLLUTANTS FROM EFFLUENT GASES BY IRRADIATION
Sueo Machi, Takasaki; Keita Kawamura, Yokohama; Waichiro Kawakami, Takasaki; Shingi Aoki, Fujisawa; Shoji Hashimoto; Keiichi Yotumoto, both of Takasaki, and Hiromi Sunaga, Isesaki, all of Japan, assignors to Ebara Manufacturing Co., Ltd. and Japan Atomic Energy Research Institute, both of Tokyo, Japan
Reexamination Request No. 90/000,309, Dec. 21, 1982.
Reexamination Certificate for Patent No. 3,869,362, issued Mar. 4, 1975, Ser. No. 431,925, Jan. 9, 1974.
Claims priority, application Japan, Jan. 11, 1973, 48-5607; Jan. 19, 1973, 48-7827; Aug. 15, 1973, 48-91547
Int. Cl.[3] B01J *19/12*
U.S. Cl. 204—157.1 R

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

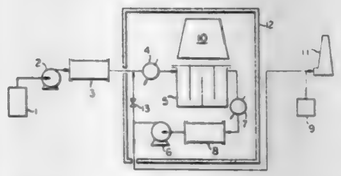
The patentability of claims **1–6** is confirmed.

Claims **8** and **9**, having been finally determined to be unpatentable, are cancelled.

Claim **7** is determined to be patentable as amended:

1. A process for removing NO_x and SO_2 from effluent gases comprising

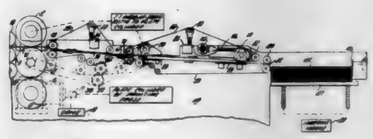
regulating the ratio of the NO_x content to the SO_2 content so as to be in the region of 0.1–3.0 before the gases are delivered to a reaction chamber inlet,



moving said gases through said reaction chamber and at the same time irradiating them with an ionizing radiation or ultraviolet light from a radiation source which is placed near or in said reaction chamber, thereby converting gaseous pollutants including NO_x and SO_2, to mist and/or solid particles, and then

collecting the particles thus produced by a mist and dust collector.

B1 3,994,221 (195th)
SHEETER FOR USE WITH PRINTING PRESS AND ADDING PROVISION FOR ARRESTING, SQUARING AND DIVERTING OF SHEET
F. John Littleton, Effingham, Ill., assignor to World Color Press, Inc., Effingham, Ill.
Reexamination Request No. 90/000,426, Jul. 28, 1983.
Reexamination Certificate for Patent No. 3,994,221, issued Nov. 30, 1976, Ser. No. 618,813, Oct. 2, 1975.
Int. Cl.[3] B41F *13/56*
U.S. Cl. 101—227



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** and **8** is confirmed.

Claim **7** is determined to be patentable as amended:

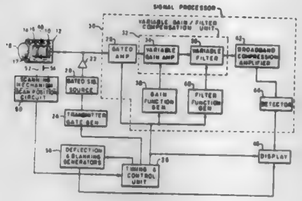
1. In a sheeter for receiving a printed web from a printing press at high speed and for feeding sheets in shingled relation to a point of collection, the combination comprising a cutting cylinder, a sheeter drive for rotating the cutting cylinder in rotational synchronism with the plate cylinder of the press, a first conveyor belt coupled to the drive for transporting the cut

sheets seriatim at high speed, a second conveyor belt having a length exceeding the length of the sheet and arranged at a slightly lower level than the first conveyor belt for receiving a sheet discharged from the latter at high speed, said second conveyor belt having an auxiliary loop of belt longitudinally arranged and spaced a short distance above it, the auxiliary loop of belt having a high speed driving connection with the drive for inducing prompt flow of sheets to the region above the second belt, the second conveyor belt having a plurality of transversely alined, widely spaced squaring rollers adjacent its downstream end, the squaring rollers bearing against the second conveyor belt and, with the second conveyor belt, serving to define a squaring nip for engaging the leading edge of the received sheet to square up the sheet on the second belt and to reduce its forward speed, the squaring rollers being mounted for idle rotation on a common shaft, means coupled to the drive for driving the second conveyor belt at a fraction of the speed of the first conveyor belt, a snubber in the form of a knock-down arm at the upstream end of the second conveyor belt, the knock-down arm being mounted for rotation in a vertical plane, driving means for the arm so phased with the arrival of the tail of the received sheet and so spaced with respect to the squaring rollers that the tail of the sheet is pressed by the end of the arm into engagement with the second conveyor belt thereby to decelerate the sheet to the speed of the second conveyor belt upon engagement of the leading edge of the sheet with the squaring rollers, and means for receiving sheets fed from the second conveyor belt.

B1 4,016,750 (196th)
ULTRASONIC IMAGING METHOD AND APPARATUS

Philip S. Green, Atherton, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Reexamination Request No. 90/000,351, Mar. 24, 1983.
Reexamination Certificate for Patent No. 4,016,750, issued Apr. 12, 1977, Ser. No. 629,594, Nov. 6, 1975.
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—629



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6, 9–12,** and **14–17** are determined to be patentable as amended:

Claims **7, 8, 13** and **18,** dependent on amended claims, are determined to be patentable.

New claims **19–20** are added and determined to be patentable.

1. In an ultrasonic system for the examination of the interior of objects, such as body parts, the combination comprising,

means for insonification of an object under examination with a broadband ultrasonic wave signal,

means for receiving echo signals from discontinuities over a range of depths within the insonified object and for converting the same to electrical signals,

means for filtering said electrical signals by bandpass filter means having a [filter transmission factor as a function of frequency which is] *continuously* variable, *unitary, passband,* and

means for compensating for depth dependent changes in the spectral distribution of the echo signals by time varying [the filter transmission factor versus frequency characteristic] *said unitary passband* of the bandpass filter means in accordance with the depth of the discontinuity from which the echo signal is reflected *while receiving the echo signals.*

B1 4,065,366 (197th)
PROCESS FOR PRODUCING ALKALI METAL HYDROXIDE

Yoshio Oda; Manabu Suhara, and Eiji Endo, all of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Reexamination Request No. 90/000,121, Dec. 3, 1981.
Reexamination Certificate for Patent No. 4,065,366, issued Dec. 27, 1977, Ser. No. 728,017, Sep. 29, 1976.
Claims priority, application Japan, Oct. 17, 1975, 50-124275
Int. Cl.³ C25B *1/16, 1/26, 13/08*
U.S. Cl. 204—98

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

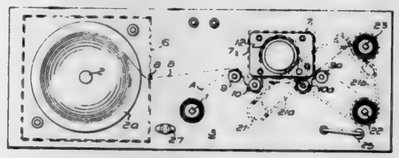
New claims **11–14** are added and determined to be patentable.

1. In a process for producing an alkali metal hydroxide which comprises electrolysis of an aqueous solution of an alkali metal chloride in an electrolytic cell having an anode compartment and a cathode compartment which are partitioned by a fluorinated cation exchange membrane, the improvement which comprises a fluorinated cation exchange membrane made of a fluorinated copolymer having carboxylic acid groups as the ion exchange group and having an ion exchange capacity of 0.5 to 2.0 meq/g dry polymer and concentration of carboxylic acid groups of 8 to 30 meq/g water absorbed by the membrane when contacted with an aqueous solution of the alkali metal hydroxide having about the same concentration of alkali metal hydroxide as that of catholyte during said electrolysis.

B1 4,265,533 (198th)
APPARATUS FOR THE PRODUCTION OF DUPLICATE, AND OTHER FILMS FROM ORIGINAL FILMS

Robert W. Gasse, 36 Fairfield Dr., Burnley, Lancashire, England

Reexamination Request No. 90/000,444, Sep. 15, 1983.
Reexamination Certificate for Patent No. 4,265,533, issued May 5, 1981, Ser. No. 94,386, Nov. 15, 1979.
Claims priority, application United Kingdom, Nov. 17, 1978, 45127/78
Int. Cl.³ G03B *27/10*
U.S. Cl. 355—110



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

New claim **5** is added and determined to be patentable.

1. Apparatus for the production of duplicate micro and other films from original films comprising a base board, a spindle passing through the base board, a spool containing an original developed film mounted on the spindle, a second spindle, a magazine containing a duplicate film mounted thereon of substantially greater length than the original film, a light tight casing enclosing the magazine, a lamp-house surrounding the casing, a lamp in the lamp-house, a transparent cylinder surrounding the lamp and a slotted opaque sleeve interposed between the lamp and the cylinder, an endless belt passing over the cylinder, means for driving the endless belt, the endless belt maintaining the films in contact on the cylinder, a meter for registering the length of film remaining in the magazine, a sensor for activating the meter and a sensor for stopping the apparatus after the last image on the original film has been exposed.

B1 4,287,739 (199th)
METHOD FOR PRODUCING A HELICALLY WOUND PIPE HAVING A PREDETERMINED DIAMETER

George L. Campbell, Scottsdale, Ariz., assignor to Syracuse Tank & Manufacturing, Phoenix, Ariz.

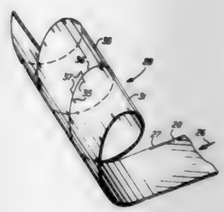
Reexamination Request No. 90/000,417, Jul. 11, 1983.
Reexamination Certificate for Patent No. 4,287,739, issued Sep. 8, 1981, Ser. No. 23,585, Mar. 26, 1979.
Int. Cl.³ B21C *51/00, 37/12*
U.S. Cl. 72—34

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6,** having been finally determined to be unpatentable, are cancelled.

New claims **7–12** are added and determined to be patentable.

***7.** A method of producing helically wound pipe of different diameters comprising the steps of selecting an elongated sheet having a longitudinal axis and a pair of edges extending parallel to said axis, marking said sheet adjacent each of its edges with indicia extending perpendicular to said axis, the spacing of said indicia along one edge of said sheet being uniform and the spacing of said indicia along the other edge of said sheet being uniform and equal to the spacing of the indicia along said one edge of the sheet, the positioning of indicia along said one edge in relation to the positioning of said indicia along the other edge being arbitrarily selected without regard to the diameter of pipe to be wound from said sheet, thereafter winding pipe of selected diameter from the sheet thus marked by feeding said sheet longitudinally into a*



pipe winding machine having means for varying the diameter of the pipe being wound, causing said machine to wind said sheet into a helically wound pipe having adjoining revolutions in such a manner that the indicia appearing along the edge of one revolution do not match up with the indicia appearing along the edge of an adjoining revolution, observing the displacement measured parallel to said longitudinal axis of indicia appearing along adjoining edges of adjoining revolutions and manipulating said diameter varying means while said machine is winding pipe to maintain a predetermined such displacement and thereby control the diameter of the pipe during winding.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,587

PROCESS FOR THE PREPARATION OF 3-IMINOMETHYL DERIVATIVES OF RIFAMYCIN SV

Leonardo Marsili, and Carmine Pasqualucci, both of Milan, Italy, assignors to ARCHIFAR Laboratori Chimico Farmacologici S.p.A., Corso Verona, Italy

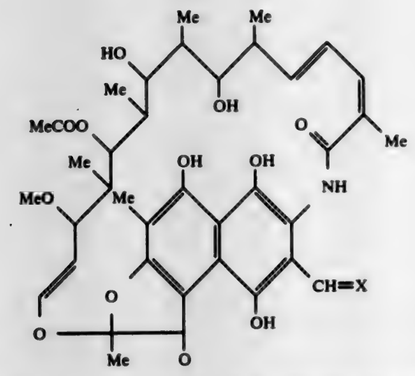
Original No. 3,963,705, dated Jun. 15, 1976, Ser. No. 472,887, May 23, 1974. Application for reissue Apr. 11, 1983, Ser. No. 483,683

Claims priority, application Italy, Jul. 25, 1973, 27066/73; Jan. 24, 1974, 19774/74

Int. Cl.³ C07D *491/08*

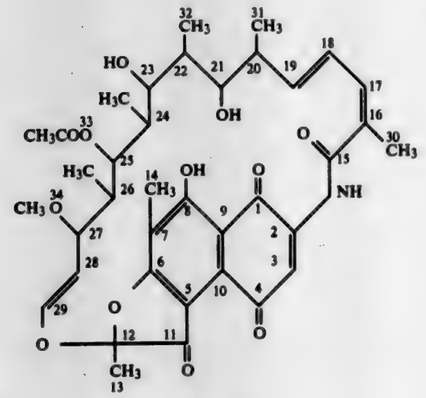
U.S. Cl. 260—239.3 P 10 Claims

1. A process for the preparation of 3-iminomethyl derivatives of rifamycin SV of formula



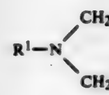
(III)

where X is the imino residue of the compound H_2X which is a primary amine, hydrazine, mono-substituted hydrazine or asymmetric di-substituted hydrazine which comprises reacting rifamycin S of formula



(II)

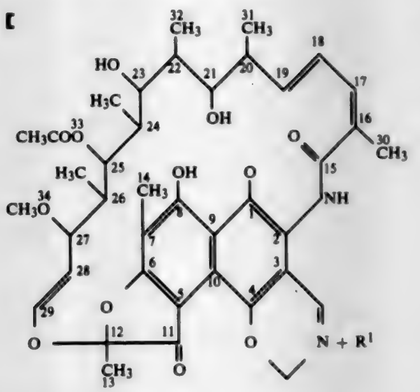
with a compound of formula



(V)

in which R^1 is lower alkyl, lower alkenyl, cycloalkyl having from 5 to 6 carbon atoms, phenyl, benzyl or α- or β-phenethyl and R^2 is hydrogen or lower alkyl, in a first inert organic solvent at a temperature ranging from 0° C. to the boiling temperature of the solvent to give a solution [of 1,3-oxazino(5,6-c)rifamycins of formula]

[



(IV)

]

in the first inert organic solvent of the intermediate compound (IV) which is the reaction product of (II) and (V), characterized by the presence of the rifamycin nucleus substituted at the 3-position by carbon which bears nitrogen to which R^1 *is attached* in which R^1 is as above defined, treating said solution *of the intermediate compound (IV)* with water and a second inert organic solvent immixible with water at a pH adjusted at a value from 4 to 6, then discharging the aqueous phase and treating the organic phase with a primary amine, hydrazine, mono-substituted hydrazine or asymmetric di-substituted hydrazine at a temperature from about 20° C. to about 80° C. under basic conditions, the derivatives (III) being finally isolated from the organic phase according usual techniques.

Re. 31,588

IMIDAZOLYLMETHYLTHIOETHYL ALKYNYL GUANIDINES

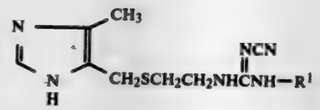
Ronnie R. Crenshaw, Dewitt, and George M. Luke, Lafayette, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Original No. 4,112,234, dated Sep. 5, 1978, Ser. No. 848,959, Nov. 7, 1977. Continuation-in-part of Ser. No. 826,796, Aug. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 803,009, Jun. 3, 1977, abandoned. Application for reissue Jun. 16, 1981, Ser. No. 274,291

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—342 10 Claims

1. A compound of the formula



wherein R^1 is a straight or branched chain alkynyl group containing from 3 to 9 carbon atoms, inclusive, or a nontoxic pharmaceutically acceptable acid addition salt thereof.

Re. 31,589

THERMAL INSULATION MOLTEN METAL

Richard C. Phoenix, Lakewood, and Edward J. Jago, Berea, both of Ohio, assignors to Foseco Trading A.G., Chur, Switzerland

Original No. 3,876,420, dated Apr. 8, 1975, Ser. No. 226,933, Feb. 16, 1972. Continuation of Ser. No. 851,745, Aug. 20, 1969, abandoned. Application for reissue Apr. 8, 1977, Ser. No. 786,037

Int. Cl.³ C21B *15/02*; B22D *7/00*

U.S. Cl. 75—27 **30 Claims**

30. In a shaped heat insulating article for forming a molten-metal contacting lining for metallurgical moulds or the like which comprises a refractory composite consisting essentially of an inorganic fibrous refractory material and a granular refractory filler material, an exothermic mixture of a fuel and an oxidising agent, and a binder, the improvement wherein said fibrous refractory material is a material selected from aluminosilicate fibres and said shaped article has a density of up to 0.5 grams per cubic centimeter.

PLANT PATENTS

GRANTED MAY 22, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,234

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Fremont, Calif., assignor to California-Florida Plant Corporation, Fremont, Calif.

Filed Apr. 9, 1982, Ser. No. 366,835

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinctive cultivar of chrysanthemum plant, substantially as herein described, and distinguished from its parent by a darker flower color, less prone to color fading, and less twisting and reflexing of the ray florets during maturation, giving the appearance of a fresher flower.

5,235

DISTINCT VARIETY OF STREPTOCARPUS NAMED SUSI

Emil Keller, Hedingen, Switzerland, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Dec. 28, 1982, Ser. No. 452,818

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

5,236

DISTINCT VARIETY OF STREPTOCARPUS NAMED VRENI

Emil Keller, Hedingen, Switzerland, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Dec. 28, 1982, Ser. No. 452,820

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

PATENTS

GRANTED MAY 22, 1984

ERRATA

For CLASS	See PATENT NO.
604–051	4,449,534
272–109	4,449,716
410–080	4,449,875
410–151	4,449,876
523–116	4,449,938
585–640	4,449,961
502–107	4,450,098
502–232	4,450,099
424–238	4,450,107
260–112	4,450,154
524–265	4,450,266
502–150	4,450,302
355–075	4,450,536

PATENTS

GRANTED MAY 22, 1984

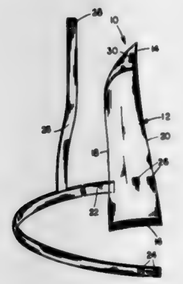
GENERAL AND MECHANICAL

4,449,251
NECK AND COLLARBONE PROTECTOR
Jean-Marc Gauthier, 84 Linwell Rd., St. Catharines, Ontario, Canada L2N 6B1
Continuation-in-part of Ser. No. 239,285, Mar. 2, 1981, abandoned. This application Feb. 11, 1982, Ser. No. 347,813
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **13 Claims**



1. A lightweight neck and clavicles protector for sports comprising:
a bib including a clavicle covering part comprising a layer of protective padding and at least one clavicle armour member mounted on the protective padding layer whereby with the protector in position on the wearer the clavicle armour member is positioned above the clavicles; and
a collar comprising a layer of protective padding and at least one throat armour member mounted on the protective padding whereby with the protector in position on the wearer the throat armour member is positioned over the throat;
the bib being attached to the collar along its entire length and the collar being provided with means for fastening it about the neck of the wearer, so that the collar holds the bib in place over the chest of the wearer and an object cannot pass between the collar and the bib.

4,449,252
PROTECTIVE GARMENT FOR A BOWLER
JoAnn J. Sullinger, 514 N. 76th St., Omaha, Nebr. 68114
Filed Jul. 1, 1982, Ser. No. 394,276
Int. Cl.³ A41D *27/12*
U.S. Cl. 2—46 **4 Claims**



1. A protective garment for a bowler, comprising,
a generally rectangular member having upper and lower ends adapted to be positioned over one of the bowler's breasts and generally extending from the bowler's shoulder to the bowler's waist,
a first elongated strap member secured at one end to said rectangular member above the lower end and adapted to be extended around the bowler's waist and detachably secured at its other end to said rectangular member,
a second elongated strap member secured at one end to the upper end of said rectangular member and adapted to extend therefrom over the bowler's shoulder and thence downwardly behind the bowler's back for connection, at its other end, to said first strap member intermediate the ends thereof.

4,449,253
QUICK EVACUATION FIREMAN'S COAT
Lon J. Hettinger, 605 N. H St., Imperial, Calif. 92251
Filed Sep. 16, 1981, Ser. No. 302,871
Int. Cl.³ A41D *1/00*
U.S. Cl. 2—93 **10 Claims**

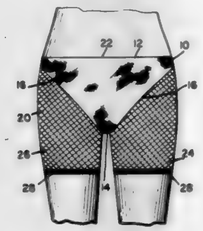


1. An emergency evacuation coat comprising:
(a) a fabric coat body having a trunk defining shoulders and a neck and sides;
(b) at least one strap secured at both ends at spaced positions on said body such that said strap tends to lie flat against said coat body, and releasable means for holding said strap against said coat body intermediate said ends such that said strap will normally be held flat against said fabric in use to prevent snagging and said releasable means can be released to permit the handle to be gripped in order to aid in dragging a wearer of said coat to safety under emergency conditions.

4,449,254
GARMENT
Walter K. Fogg, 45 Kensington St., Feeding Hills, Mass. 01030
Filed Dec. 2, 1981, Ser. No. 326,575
Int. Cl.³ A41B *9/04*
U.S. Cl. 2—407 **5 Claims**

1. A bikini-type garment having a hip portion and front, rear, and crotch portions there being high cut leg openings from the crotch to points adjacent the hip portion, and an undergarment therefor including a hip portion and legs, the legs extending

out through and beyond the leg openings and covering the high cut leg openings, said legs being snug and form fitting and



tending to cover skin imperfections exposed by the leg openings, and means securing the undergarment to the garment.

4,449,255

EYEPIECE FOR PROTECTIVE DEVICES

Frederick H. Dodd, Porton near Salisbury, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 6, 1981, Ser. No. 241,220

Claims priority, application United Kingdom, Mar. 11, 1980, 8008228

Int. Cl.³ A61F *9/04*

U.S. Cl. 2—428 **3 Claims**



1. A unitary transparent eyepiece adapted to be fitted into a complementary left-eye or right-eye socket in a face piece, comprising a planar outer rim having an inner edge and a circular circumferential outer edge; and a planar inner viewing zone having a circular circumferential outer edge connected to the inner edge of the planar outer rim, the angle between the planes being such that, when the planar outer rim is fitted into either complementary socket of the face piece, the inner viewing zone of the eyepiece is orthogonal to the line of forward vision of a wearer of the face piece.

4,449,256

LEG EXTENSION JUMPERS

Melvin L. Prueitt, 161 Cascabel, Los Alamos, N. Mex. 87544

Filed Feb. 23, 1981, Ser. No. 237,282

Int. Cl.³ A61F *3/00*

U.S. Cl. 3—4 **3 Claims**

1. A leg extension jumper device controlled by toe and heel action comprising in combination:

(a) vertical front and rear guide tube means,

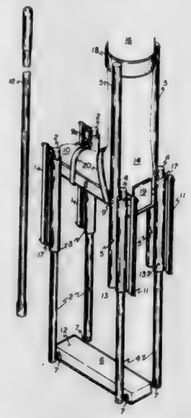
(b) an extension tube extending through each guide tube means,

(c) elastic means connecting the top portion of each extension tube and the bottom portion of its respective guide tube means,

(d) support tube means fixed to and extending above the level of the rear guide tube means,

(e) a leg strap fixed to the top of said support tube means,

(f) foot platform means pivotally connected at its front near the top of said front guide tube means and near its rear to the support tube means with the rear pivot being located directly under the ankle of a user,



(g) foot means associated with the bottoms of the front and rear extension tubes; and brace means pivotally connecting either the lower portions of the front and rear extension tube means, or the lower portion of the front guide tube means and the support tube means which, together with the foot platform means, creates a substantially pivoted parallelogram which is biased towards a rectangle by the elastic means.

4,449,257

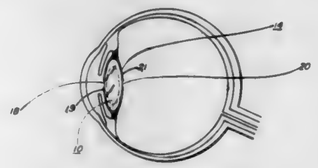
INTRAOCULAR LENS AND METHOD OF RETAINING IN PLACE

Erich A. Koeniger, Metairie, La., assignor to Barnes-Hind/Hydrocurve, Inc., Sunnyvale, Calif.

Filed May 3, 1982, Ser. No. 373,935

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **5 Claims**



1. An intraocular lens for placing in a posterior chamber capsule and comprising:

(a) plastic HEMA circular body means for emplacement when dry and contracted, and to expand in place when softened by acqueous humor uptake of the environment; and

(b) concentric groove means defined around peripheral margins on both sides of said body means for frictionally engaging the interior walls of said posterior capsule.

4,449,258

WATER-CLOSET WITH ROTARY DOUBLE PAN

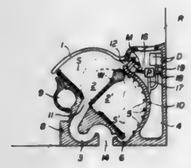
Remo Ackermann, and Walter Ackermann, both of 6986 Novaggio, Switzerland

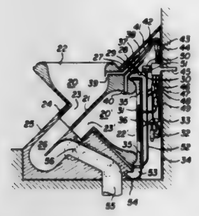
PCT No. PCT/CH81/00021, 371 Date Oct. 22, 1981, 102(e) Date Oct. 22, 1981, PCT Pub. No. WO81/02436, PCT Pub. Date Sep. 3, 1981

PCT Filed Feb. 24, 1981, Ser. No. 314,836

Int. Cl.³ E03D *1/00, 3/00, 5/00*

U.S. Cl. 4—300 **5 Claims**





1. Water-closet having a lavatory pan arrangement, whereby the lavatory pan arrangement consists of two essentially identical pans (2, 2'; 20) which are movable into each others position by rotating them around a common axis (R) each said pan defining a different water inlet and a water and waste exit in each position, both of the pans (2, 2'; 20, 20') being provided with edges (S, 22) which are designed as seats, and each of the edges taking alternatively a horizontal position in which the corresponding pan (2, 20) is ready for utilisation while the other one (2', 20') is exposed to a rinsing installation (5; 35, 36).

4,449,259

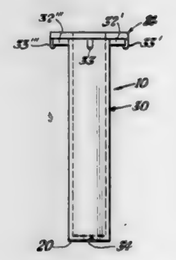
FLUSH TANK METERING DEVICE

Evan Davies, 1130 SW. 6 St., Fort Lauderdale, Fla. 33312, and John C. Marmon, Jr., 2597 Hinda Rd., Lake Park, Fla. 33403

Filed Sep. 3, 1982, Ser. No. 414,892

Int. Cl.³ E03D *1/00*

U.S. Cl. 4—415 **1 Claim**



1. An insertable flush tank water metering device for a conventional flush tank type toilet with a generally vertical vent tube in fluid communication with a toilet bowl trap, and a filler water tube for dispensing filler water connected to said vent tube, comprising:

a stationary conduit metering means having an upper means for causing excess filler water to aid in filling the flush tank, and lower means for measuring water to the toilet bowl trap, said metering means constructed and arranged for inserting into the vent tube for receiving and metering of a selected quantity of filler water from the filler water tube to fill the toilet bowl trap and for causing any excess quantity of filler water received into the vent tube to overflow out of the vent tube into the flush tank as a result of metering a lesser amount of filler water out said lower means of said metering means during refilling of the toilet bowl trap and holding means for holding stationary said conduit metering means within said vent tube, said metering means is a conduit with an upper inlet; said upper means is a flange connected around said inlet; said lower means is an aperture smaller than said inlet; and said holding means includes said inlet and said flange provides direct access of flush tank water to overflow into the vent tube.

4,449,260

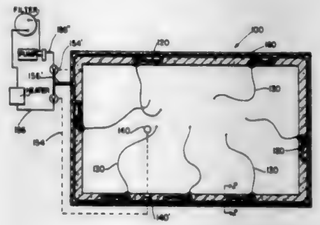
SWIMMING POOL CLEANING METHOD AND APPARATUS

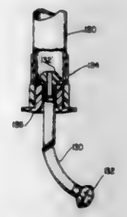
Brackston T. Whitaker, 6020 E. Speedway, Tucson, Ariz. 85712

Filed Sep. 1, 1982, Ser. No. 413,708

Int. Cl.³ E04H *3/18, 3/20*

U.S. Cl. 4—490 **11 Claims**





1. In the hydraulic cleaning of fluid reservoirs, said reservoirs having a fluid circulating system, comprising in sequence reservoir, reservoir drain line, pump, filter and return line, interconnected to each other:

(A) plural, extensible and retractable, open-end flexible conduits removably housed in walls of the reservoir, said conduits each having a pressure-responsive head fixed to ends thereof, responsive to the flow of fluids therethrough, to extend and retract said conduit means into and out of the fluid reservoir, for submersible fluid injecting interruption contact with each other:

(B) a valve assembly having in-line valves interposed within the fluid circulating system, comprising multichambered control to regulate modes of: first, normal filtering run of the reservoir with retracted conduits; secondly, cleaning and filtering same with extended conduits and thirdly, retracting the conduit means, precedent to return to normal run;

(B 1) a first of said valve assembly having as single control stem, said first valve interconnecting reservoir, pump return and conduits, said valve connecting the reservoir return and pump in the normal run and connecting to open end conduits in the cleaning mode;

(B 2) a second of said valve having a single control stem, interconnecting the conduits, drain and pump, whereby upon coordinate actuation of the respective valves the three modes of operation may be effected; whereby the

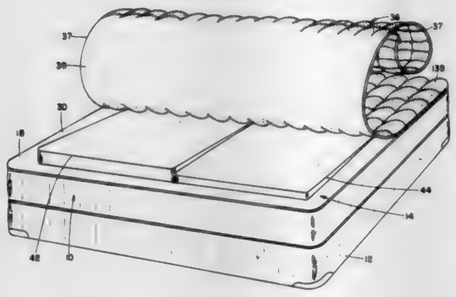
volume and pressure applied to the conduits may be selectively controlled to effect the speed of extension for retraction and the distance of extension thereof.

4,449,261

BED MATTRESS HAVING AN IMPROVED PILLOW TOP

Robert A. Magnusson, Atlanta, Ga., assignor to Simmons U.S.A. Corp., Atlanta, Ga.

Filed Jun. 22, 1981, Ser. No. 275,955
Int. Cl.³ A47C *23/04, 27/05, 27/14*
U.S. Cl. 5—465 **18 Claims**



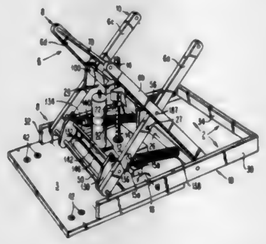
1. A mattress comprising a border portion having a top, bottom and outer side, said border portion extending in a continuous configuration and further comprising a plurality of coil springs, said coil springs transversely extending the entire height of said border portion and having an individually pocketed configuration; said border portion defining a periphery of a cavity disposed therein; at least one mattress core receptably received with said cavity and comprising a plurality of spring coils placed therein, each of said coils being individually enveloped with a pocketing material to form a plurality of pocketed coils; said mattress further comprising a removable pillow top having differing physical characteristics on the opposite surfaces thereof, said pillow top having slideable fastener means for removably and reversibly fastening said pillow top along the periphery thereof to the top of said border portion along the outer periphery of said border portion of the mattress.

4,449,262

MEDICAL COUCH INCORPORATING A LIFTING MECHANISM

Hendrick Jahsman, Berkeley, and George Menor, Martinez, both of Calif., assignors to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Sep. 8, 1981, Ser. No. 299,881
Int. Cl.³ A61G *7/00*
U.S. Cl. 5—63 **6 Claims**



1. A medical couch, comprising in combination:
(a) a lower frame arranged in a first horizontal plane;
(b) an upper frame for carrying a patient table top, said upper frame being arranged in a second horizontal plane above said first horizontal plane;
(c) a scissors action link mechanism interconnecting said lower frame with said upper frame for moving said upper frame parallel to said lower frame between lowered and raised positions, and vice versa, said link mechanism including a single first and a single second pair of pivotally interconnected support arms, said first pair of support arms being vertically arranged between one side of said lower frame and one side of said upper frame, and said second pair of support arms being vertically arranged between the opposite sides of said lower and upper frames;
(d) an electric motor drive system containing an electric motor and a lead screw, said lead screw being rotatable by said motor and being longitudinally fixed with respect to said drive system, said electric motor drive system comprising a housing having a circular opening in each of two opposite sides thereof;
(e) lower pivoting means for pivotally connecting said electric motor drive system to said lower frame and for pivoting said drive system about a stationary lower horizontal axis, said lower pivoting means comprising two pins arranged horizontally, said pins defining said stationary lower horizontal axis, said pins being firmly connected with said lower frame and extending into a corresponding one of said openings, said lower pivoting means thereby rotating about said pins, said lead screw thereby extending towards said upper frame and pivoting in a plane which is parallel to said pivotal support arms;
(f) a nut element arranged between said first and said second pairs of support arms, said nut element being mounted on said lead screw for travelling therealong;
(g) upper pivoting and supporting means connected to said nut element for pivoting said nut element about an upper horizontal axis and for supporting said link mechanism, said upper horizontal axis being movable parallel to and being arranged elevated above said lower horizontal axis, such that said upper pivoting and supporting means selectively adjusts the elevation of said link mechanism above said lower frame when said motor is in operation and when said nut element travels along said lead screw, thereby moving said upper frame to a selected position; and
(h) security means for preventing a sudden return of said upper frame from said raised position to said lowered position.

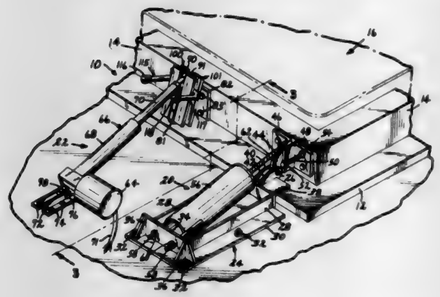
4,449,263

POWERED FOLDING SUPPORT STRUCTURE

Kermit H. Wilson, Edina, and Richard C. Bue, Chaska, both of Minn., assignors to Sico Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 99,655, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 69,588, Aug. 24, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 216,982
Int. Cl.³ A47C *17/40*
U.S. Cl. 5—133 **4 Claims**

1. A drive coupling for a power operated folding support structure comprising:
a first force transmitting member comprising a friction plate, and means attaching said friction plate to the folding structure and projecting outwardly therefrom; and
second force transmitting members comprising a pair of friction members, and means including a pair of clamping members, one positioned alongside each of the friction members, and including bolts for urging the clamping members together to apply friction force to the friction plate, to provide a normally operative drive coupling between the folding support structure and the power operating apparatus, and to permit slippage between the



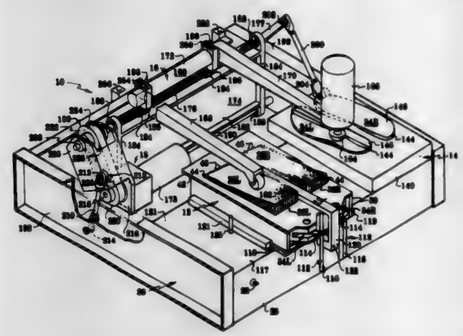
force transmitting members in the event of the application of excessive force to the folding support structure.

4,449,264

SYSTEM FOR FORMING CUSTOM-MADE SHOE INSERTS

Vern R. Schwartz, Boulder Creek, Calif., assignor to AMFIT, Inc., Sunnyvale, Calif.

Filed Jul. 23, 1981, Ser. No. 286,245
Int. Cl.³ A43D *9/00*
U.S. Cl. 12—1 R **1 Claim**



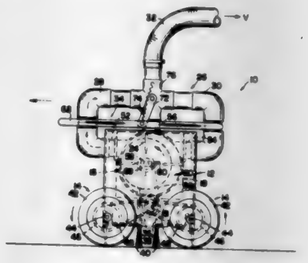
1. A system for forming a custom-made shoe insert for a person's foot, said system comprising:
impression means for forming and releasably retaining an impression of the contour of the undersurface of the person's foot;
holding means for holding a blank;
shaping means for sensing the impression and cutting away material from the blank in conformance with the sensed impression;
drive means for automatically driving the shaping means both laterally and to-and-fro across the impression and the blank to automatically form the custom-made shoe insert from the blank in conformance with the impression; and
sensing and switching means for automatically stopping the drive means when the shaping means is in both a desired lateral position and a desired to-and-fro position.

4,449,265

SWIMMING POOL SWEEP

James S. Hoy, 7340 Filbert La., Tampa, Fla. 33617

Filed Mar. 1, 1983, Ser. No. 471,048
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **6 Claims**



1. A vacuum powered automatic swimming pool sweep for cleaning the bottom of a swimming pool comprising a hollow housing supported by at least one pair of reversible wheels, a reversible impeller disposed within said hollow housing, said reversible impeller including an impeller housing having an impeller chamber formed therein, a reversible impeller member having at least one pair of opposing vanes coupled thereto operatively disposed within the impeller chamber and interconnected to said pair of reversible wheels, a fluid flow conduit including a first and second fluid flow path coupled between an external vacuum line and said impeller chamber, a directional control movable between a first and second position in communication with said fluid flow conduit to selectively direct water from the pool through said impeller chamber to impinge on said vanes coupled to said reversible impeller member to drive the pair of reversible wheels, said directional control causing water to flow through said first fluid flow path when in said first position to drive said swimming pool sweep in one direction and causing water to flow through said second fluid flow path when in said second position to drive said swimming pool sweep in the opposite direction.

4,449,266

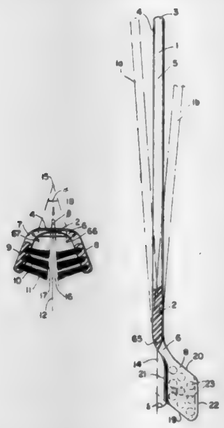
TOOTHBRUSH WITH TWO SEGMENTS OF BRISTLES

Karl-Heinz Nörthemann, Ringstrasse 18, D-3501 Schauenburg, 4, and Heinrich Krahn, Schönfelderstrasse 4, D-3507 Baunatal 5, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 946,835, Sep. 27, 1978, abandoned, which is a division of Ser. No. 684,184, Jul. 1, 1976, Pat. No. 4,131,967. This application Mar. 9, 1982, Ser. No. 356,409
Int. Cl.³ A46B *9/04*
U.S. Cl. 15—167 A **16 Claims**

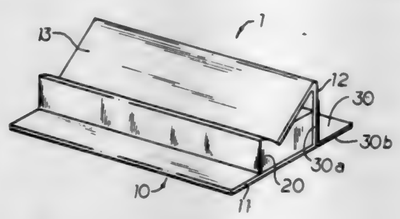
1. A toothbrush made of a thermoplastically deforming plastic comprising
an elongate handle having a grip portion, a front end segment with a tapered portion directed away from the grip portion, a back end, an upper side, and a longitudinal axis, the handle having defined therethrough a first, center plane containing said longitudinal axis,
a pair of bristle-bearing segments;
a plurality of bristle bundles mounted in said pair of bristle-bearing segments, each bundle having free ends of bristles, and
a pair of short, thermoplastically shaped connection arms joining said pair of bristle-bearing segments to said front end segment at said tapered portion, said connection arms, bristle-bearing segments and handle forming a fork having two prongs, each prong containing one bristle-bearing segment and one connection arm, said prongs being located on opposite sides of said first center plane and substantially below a second center plane perpendicular to

said first center plane and containing said longitudinal axis, said bristle-bearing segments having mutually facing inside surfaces sloping toward each other in a gable-manner, planar extensions of said inside surfaces intersecting above said upper side of said handle at a first angle of less than 55°, said plurality of bristle bundles being mounted



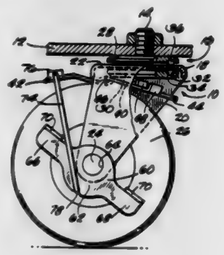
on said inside surfaces, said free ends of said bristle bundles bounding a gap and defining side surfaces for contact in use with teeth, said side surfaces sloping in a gable-manner toward each other, planar extensions of said side surfaces intersecting above said gap at a second angle which is less than said first angle.

4,449,267
FLOOR SEAL STRIP
Edward D. Siemion, 1027 Arlington Ave., Grand Haven, Mich. 49417
Filed May 26, 1982, Ser. No. 382,143
Int. Cl.³ A47L *13/50*
U.S. Cl. 15—257 R **13 Claims**



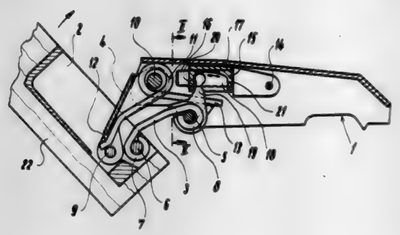
1. A floor sealing strip, comprising:
a fluid impermeable base element;
a fluid impermeable barrier element connected to and extending upward from said base element;
means for affixing the sealing strip to a floor, said affixing means barring fluid communication between said base element and the floor beneath said base element when said base element is in a position of use, said affixing means extending from said barrier element in the same plane as said base element in a direction opposite said base element;
a cushion element in abutment with said barrier element and which extends laterally from said barrier element and extends above said base element;
whereby said sealing strip when in a position of use prevents the flow of fluid past said sealing strip, and when said sealing strip is placed in a position of use abutting a door, said cushion element abuts said door.

4,449,268
CASTER WHEEL BRAKE HAVING AN OVERCENTER LATCH
Henry A. Schnuell, Milwaukee, Wis., assignor to E. R. Wagner Mfg. Co., Milwaukee, Wis.
Filed Jan. 29, 1982, Ser. No. 343,889
Int. Cl.³ B60B *33/00*
U.S. Cl. 16—35 R **5 Claims**



1. A caster comprising
a support member adapted to be connected to a load to be supported by the center,
a yoke including a pair of parallel spaced arms joined by a horizontal web, said arms including lower ends rotatably supporting a wheel for rotation about a horizontal axis, and said web including a lower surface,
means for rotatably joining said yoke to said support member for rotation about a vertical axis, said means for rotatably joining including a disc member fixed to said support member and positioned adjacent the lower surface of said web, and
means for braking said wheel against said rotation and said yoke against rotation about said vertical axis, said means for braking including
a brake member having opposite ends, said brake member being pivotally supported by said yoke for pivotal movement about an axis parallel to the axis of rotation of said wheel, one end of said brake member including means for selectively positively engaging said disc member positioned adjacent the lower surface of said web for preventing rotation of said yoke with respect to said disc member, and the other end of said brake member being adapted to selectively engage said wheel to brake said wheel against rotation, and
means for causing selective pivotal movement of said brake member from a first position wherein said one end of said brake member is spaced from said disc member positioned adjacent the lower surface of said web and said other end of said brake member is spaced from said wheel, and a second position wherein said one end of said brake member engages said disc member positioned adjacent the lower surface of said web and wherein said other end of said brake member engages said wheel, said means for causing selective pivotal movement of said brake member including
a brake lever having opposite ends and being supported for pivotal movement about said axis of rotation of said wheel between a first position wherein said brake member is in said first position and a second position wherein said brake member is in said second position, and
means for joining said other end of said brake member to said brake lever and for moving said brake member to said brake member first position when said brake lever is moved to said brake lever first position and for moving said brake member to said brake member second position when said brake lever is moved to said brake lever second position, said means for joining including an elongated member having an upper end joined to said other end of said brake member and a lower end pivotally joined to said brake lever intermediate its opposite ends and below said axis of rotation, said lower end of said elongated member moving past said axis of rotation of said wheel when said brake lever moves from said brake lever first position to said brake lever second position.

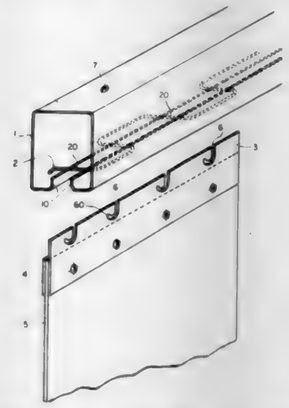
4,449,269
SPRING BIASED FURNITURE HINGE HAVING A BRAKE MECHANISM
Günter Sundermeier; Ulrich Benke, both of Bünde, Fed. Rep. of Germany, assignor to Paul Hettich & Co., Kirchlengern, Fed. Rep. of Germany
Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120201
Int. Cl.³ E05F *3/20*
U.S. Cl. 16—50 **11 Claims**



1. A furniture hinge for two housing parts movable relative to one another, comprising
a housing mounted on one furniture part;
a hinge arm mounted on the other furniture part;
two pivotable hinge plates pivotally connecting said housing with said hinge arm;
locking means provided with a spring mounted on one of the hinge plates;
a cylinder-and-piston unit having a piston pivotally mounted on said hinge arm and having a first sliding surface, and a brake cylinder slidably movable relative to said piston and having a second sliding surface;
a cam lever mounted on another of said hinge plates and arranged to move said brake cylinder relative to said piston; and
means for increasing friction between said brake cylinder and said piston and including a friction-increasing coating provided on at least one of said first and second sliding surfaces.

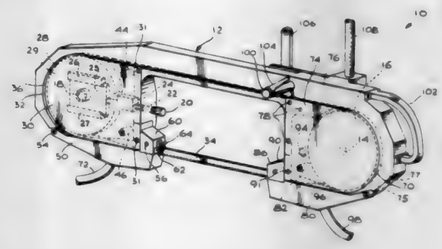
4,449,270
HANGING DEVICE FOR CURTAIN STRAPS OUT OF RESILIENT PLASTIC MATERIAL FOR CLOSING BUILDING OPENINGS
Henri Brabant, La Cote, 43220 Dunieres, France
PCT No. PCT/FR81/00014, 371 Date Oct. 7, 1981, 102(e) Date Oct. 7, 1981
PCT Filed Feb. 6, 1981, Ser. No. 309,892
Claims priority, application France, Feb. 8, 1980, 80 02832
Int. Cl.³ A47H *1/04*
U.S. Cl. 16—87.4 R **2 Claims**

1. A hanging device for hanging straps out of resilient plastic material adapted to be a screen or a curtain for closing apertures, partitioning or insulating premises, which comprises:
an elongated hollow girder in the form of an inverted U opening downwardly, and
rigid strap hanging members having lower parts, each of said parts being secured to the upper end of a strap,
each hanging member (3) comprising at its upper part, several equidistantly spaced openings (6) each beginning at the upper edge of the hanging member and being prolongated interiorly towards at least a same lateral direction so as to constitute spaced hooks arranged for engagingly cooperating with parallel and equidistant transveral complementary members sustained by the girder (20;8),
said complementary members having a thickness lesser than the width of said openings (6) and extending transversally inside said girder (1,1') above the plane of the lower edges of said girder,
said transversal complementary members being made of a single piece with a hooking structure introduced within the girder (1) comprises a rod (2) formed with a series of



U-shaped alternate folds extending in a same plane, wherein the grider (1) has wings (10), the end portions of which are folded inwardly in the direction one towards each other and further extend slightly upwardly inside the grider while being separated one from each other, the transversal complementary members (2) bearing upon the inner edges of said folded and inwardly extending wings.

4,449,271
CARCASS SAW
Ralph Karubian, 7100 S. Avalon Blvd., Los Angeles, Calif. 90003
Filed Oct. 15, 1982, Ser. No. 432,344
Int. Cl.³ A22B *5/20*; B27B *13/02*
U.S. Cl. 17—23 **10 Claims**



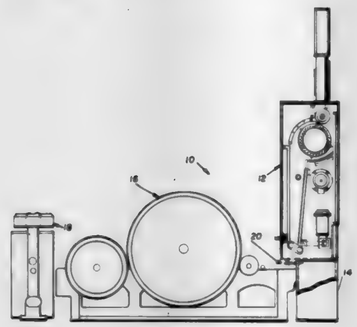
1. An improved carcass saw; including:
a frame;
first and second rims spaced from each other and each rotatably supported from said frame;
a common saw blade carried by both said rims;
a pair of guide blocks supported from said frame adjacent respective ones of said rims for orienting said blade;
first cover means supported from said frame and covering said first rim;
second cover means supported from said frame and covering said second rim; and,
first and second troughs rotatably supported from said frame beneath said first and second rims, respectively.

4,449,272

CHUTE FEED ADJUSTMENT FOR CARD EVENNESS

Leonard D. Cash, Gastonia, N.C., assignor to Fiber Controls Corporaton, Gastonia, N.C.

Filed Apr. 22, 1982, Ser. No. 370,843
Int. Cl.³ D01G 15/42
U.S. Cl. 19—105 9 Claims



1. For a card inlet web supply means that is adapted to be juxtaposed behind a card, upon a card inlet web supply means support,

apparatus for adjusting side-to-side uniformity in density of the card outlet web, comprising:

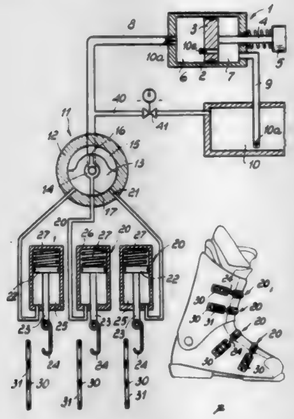
means for adjustably pivoting the card inlet web supply means about a generally vertical axis in such a sense as to bring one lateral end of the card inlet web supply means relatively closer to and further from the card without consequently correspondingly bringing the opposite lateral end of the card inlet web supply means closer to and further from the card, thereby regulating the horizontal angle of web feed to the card in order to regulate side-to-side uniformity in card outlet web density.

4,449,273

HYDRAULIC DEVICE PARTICULARLY FOR SKI BOOT FASTENING

Giorgio Baggio, S. Martino di Lupari, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Jan. 20, 1982, Ser. No. 340,948
Claims priority, application Italy, Jan. 28, 1981, 19384 A/81
Int. Cl.³ A43B 11/00
U.S. Cl. 24—68 SK 3 Claims



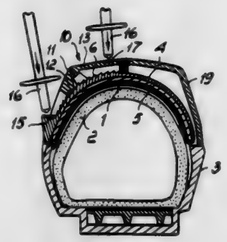
1. A device for fastening ski boots, comprising a fluid reservoir, a pumping means connected to said reservoir for pumping fluid out of said reservoir, a selector assembly having an inlet chamber connected to said pumping means for receiving fluid pumped by said pumping means and further connected to said reservoir for returning fluid into said reservoir, valve means associated to said pumping means for allowing feeding of fluid from said reservoir toward said inlet chamber and preventing fluid from passing through said pumping means toward said reservoir, valve means between said selector assembly and said reservoir for controlling return of fluid from said selector assembly to said reservoir, a plurality of fluid-operated driving members arranged on a portion of said ski boot and having means for fastening said portion with another portion of said ski boot, control conduits each connecting one of said driving members with said selector assembly, and means in said selector assembly for selectively connecting at least one of said control conduits with said inlet chamber to operate at least one of said driving members and fastening means.

4,449,274

DEVICE FOR CONTROLLING THE FITTING-ON OF SKI BOOTS AND THE LIKE

Renzo Balbinot, Vittorio Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Jan. 20, 1982, Ser. No. 340,947
Claims priority, application Italy, Jan. 28, 1981, 19382 A/81
Int. Cl.³ A43B 11/00, 5/04; A43C 11/00
U.S. Cl. 24—70 SK 5 Claims



1. A device for controlling the fitting-on of ski boots and the like, comprising a pressure band extending transverse to the boot at a middle front portion thereof and having one end secured to the boot at a side portion thereof, a tension band extending above said pressure band and having one end connected to another end of said pressure band, and releasable locking means for operation on another end of said tension band to tension said pressure band, said tension band being actuatable by a skiing stick, wherein said releasable locking means comprises a substantially saw-tooth serration formed at said another end of said tension band and an oscillating lever element supported by the boot and having a pawl portion at one end for engaging said serration, said pawl portion having a serration enabling a translation of said tension band in a pulling direction and preventing a translation thereof in an opposite direction.

4,449,275

DEVICE TO SECURE BELTS AND SIMILAR PARTS TO RESIN STRUCTURES, HELMETS IN PARTICULAR

Pier L. Nava, Via Carnovali 100/C, Bergamo, Italy

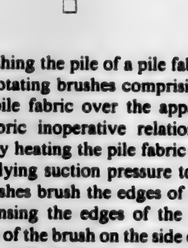
Filed Sep. 8, 1982, Ser. No. 415,966
Claims priority, application Italy, Oct. 1, 1981, 24257 A/81
Int. Cl.³ A44B 17/00
U.S. Cl. 24—458 12 Claims

1. Device for securing belts and similar items to a wall of a structure, comprising

a block made of resilient material, said block having a first end, a second end and a body, said body of the block having a bore going there through, said body of the block having slot means crossing said body from said bore to said second end;

a removable member inserted within said bore of the block;

belt means passing first time through said slot means bending around said removable member located within the bore and passing second time said slot means, so that two ends of said belt protrudes from said second end of the block;



said wall of the structure having at least one opening adapted to accommodate an outside surface of said block;

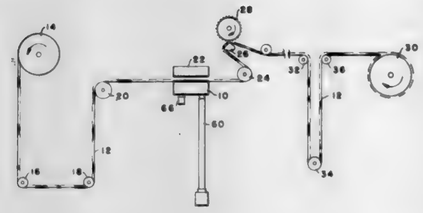
whereby in an assembled condition of said device said first end and outside surface of the block engage with said wall and said opening of the structure for tight securing of the belt inside of said bore and said slot means of the block.

4,449,276

METHOD FOR SMOOTHING AND BRUSHING PILE FABRIC

Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

This application Jul. 21, 1982, Ser. No. 400,768
Int. Cl.³ D06C 3/06, 27/00
U.S. Cl. 26—2 R 1 Claim



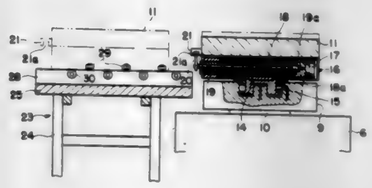
1. A method of brushing the pile of a pile fabric on an apparatus having spaced rotating brushes comprising the steps of: supplying a web of pile fabric over the apparatus with the edges of the pile fabric inoperative relationship with the brushes, simultaneously heating the pile fabric on the pile side of said fabric and applying suction pressure to the other side while the rotating brushes brush the edges of the fabric in an outward direction, sensing the edges of the pile fabric and cutting off the rotation of the brush on the side of the apparatus to which the edge of the pile fabric has moved laterally beyond a pre-determined point and allowing the other rotating brush to pull the pile fabric laterally in the opposite direction until it moved laterally inward beyond the pre-determined point, brushing the heated pile of the pile fabric, allowing the pile to cool and taking up the brushed fabric.

4,449,277

MACHINE TOOL WITH A PALLET CHANGE FUNCTION

Toshifumi Hasegawa, Kariya, and Norikazu Kanli, Chita, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 21, 1982, Ser. No. 420,638
Claims priority, application Japan, Sep. 24, 1981, 56-149370
Int. Cl.³ B23Q 41/02
U.S. Cl. 29—33 P 5 Claims



1. A machine tool with a pallet change function comprising:

a machine frame;

a tool spindle rotatably supported on said machine frame;

a work table movable on said machine frame, relative to said tool spindle;

a work pallet for supporting a workpiece thereon;

a pallet clamp member having a pallet guide way for guiding said work pallet thereonto, said pallet clamp member vertically movably mounted on said work table for clamping and unclamping said work pallet onto and releasing it from the work table;

pallet support means having first and second support stations for supporting said work pallet to be loaded onto said work table and for receiving said work pallet unloaded from said work table;

positioning means for effecting relative movement between said work table and said pallet support means so as to establish a predetermined positional relation between said work table and a selected one of said first and second support stations;

pallet transfer means for transferring said work pallet between said work table in said predetermined positional relation and said selected one of said first and second support stations, said pallet transfer means further comprising

a rod means provided in said pallet clamp member and movable in a direction parallel with said pallet guide way;

a first engaging member secured to said work pallet;

a second engaging member secured to one end of said rod means and engageable with said first engaging member; and

rod feed means provided in said pallet clamp member for moving said rod means between an extended and a retracted position such that in said extended position said second engaging member is positioned under said first engaging member of said work pallet on said selected one of said first and second support stations and in said retracted position said second engaging member is positioned under said first engaging member of said work pallet on said work table; and

a clamp actuator provided in said work table for vertically moving said pallet clamp member so as to selectively clamp and unclamp said work pallet onto and releasing it from said work table and to selectively engage and disengage said second engaging member with and from said first engaging member of said work pallet on said selected one of said first and second support stations.

4,449,278

ROLLER FOR SUPPORTING MATERIAL SENSITIVE TO RADIATION AND, METHOD OF MAKING THE SAME

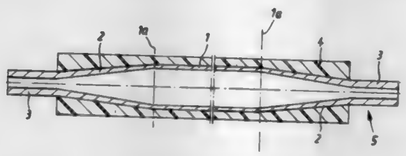
Erwin Geyken, Neubiberg; Horst Köninger, and Günter Schirk, both of Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 352,004

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111923

Int. Cl.³ B21B *31/08*; B21D *31/00*

U.S. Cl. 29—132 **37 Claims**



1. A roller for supporting material sensitive to radiation, particularly for transporting and/or squeezing sheet-like photographic material, consisting essentially of:

(a) an elongated supporting member having a central portion of predetermined cross-sectional area and ends of smaller cross-sectional area constituting journals for said roller, said member being devoid of mechanical connectors and frictional connections for holding the same together; and

(b) a protective coating on said member.

18. A method of making a roller for supporting material sensitive to radiation, particularly for transporting and/or squeezing sheet-like photographic material, comprising the steps of:

(a) providing an elongated blank having opposite end portions;

(b) subjecting the end portions to deforming forces which reduce the cross-sectional areas of said end portions to thereby form an elongated supporting member having a central portion of predetermined cross-sectional area flanked by two opposite ends of smaller cross-sectional area, said blank and said member being devoid of mechanical connectors and frictional connections for holding the same together; and

(c) applying a protective coating to said member to thereby form a roller consisting essentially of said elongated supporting member and said protective coating, said member constituting a core and said opposite ends constituting journals for said roller.

4,449,279

BAG SYSTEM FOR TRANSPORTATION OF BULK LIQUIDS

Seiji Takeuchi, Burlington, Canada, assignor to Don Fell Limited and Lawrence Fell Limited, Hamilton, Canada

Division of Ser. No. 235,836, Feb. 19, 1981. This application Apr. 21, 1983, Ser. No. 487,056

Claims priority, application Canada, Jan. 7, 1981, 368021

Int. Cl.³ B23P *7/00*

U.S. Cl. 29—401.1 **2 Claims**

1. A method of using a bag of tough, flexible sheet material for the one-way transportion of liquid in bulk, said bag being filled tight except for controlled access means for filling and emptying the bag, said bag having a series of spaced-apart tie down means secured to said material,

said method comprising

(a) mounting the bag in a freight container and thereupon filling it with bulk liquid,

(b) transporting the freight container to a desired destination and there emptying the liquid from the bag, and



(c) cutting the bag to form a sheet with said tie down means disposed around the periphery thereof to render the same suitable for use as a tarpaulin.

4,449,280

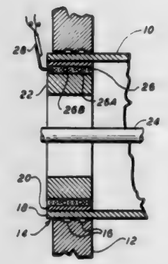
EXPLOSIVE TUBE EXPANSION

Joseph W. Schroeder, Clark, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 9, 1981, Ser. No. 319,334

Int. Cl.³ B23P *17/00*; B21D *53/00*

U.S. Cl. 29—421 E **9 Claims**



1. Apparatus for expanding a tube within a tube sheet comprising:

an insert sized to fit coaxially within said tube;

detonation means encircling said insert and operable to produce upon detonation an explosive force; and

an annular buffer sized to fit between said tube and said detonation means, said buffer having an axial length comparable to the thickness of said tube sheet and sized and positioned to avoid bulging of said tube beyond at least one side of said tube sheet, said buffer being a band of plastic material having an axial length equivalent to that of said detonation means.

4,449,281

METHOD OF PRODUCING MULTIPLE-WALL, COMPOSITE TUBULAR STRUCTURES

Toshio Yoshida, Kobe; Shigetomo Matsui, Higashiosaka, and Toshio Atsuta, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Mar. 16, 1982, Ser. No. 358,800

Int. Cl.³ B23P *17/00*

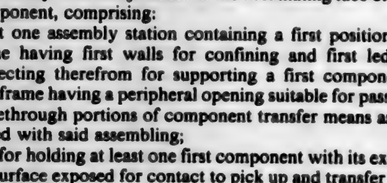
U.S. Cl. 29—421 R **5 Claims**

1. A method of producing multiple-wall composite tubes, said method comprising:

inserting an inner tube into an outer tube;

applying pressure to the interior of said inner tube and thereby causing said inner tube to expand plastically into tight contact with said outer tube;

with said inner and outer tubes in such state of tight contact, and while said pressure is maintained applying heat from the outside to said outer tube only without applying substantially any heat to said inner tube and thereby creating a temperature difference between said inner and outer tubes and causing said outer tube to expand in diameter, said applying heat comprising establishing, by high-frequency induction heating means, a locally heated zone of said outer tube substantially around the circumference thereof, and causing said heated zone to travel from one



end to the other end of said outer tube, thereby causing said outer tube to successively expand locally in the traveling heated zone; and

then removing said pressure from the interior of said inner tube, and permitting said tubes thereafter to obtain ambient temperature and obtain a fit of high degree of interference therebetween.

4,449,282

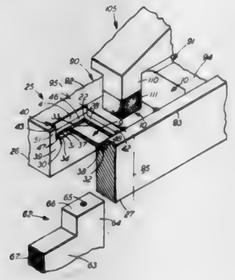
ASSEMBLING COMPONENTS SUCH AS LIDS TO CHIP ENCLOSURES

Bruce C. Abraham, Limekiln; Charles R. Fegley, Laureldale, and Jerry C. Hurst, Reading, all of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Aug. 18, 1982, Ser. No. 409,381

Int. Cl.³ B23Q *7/00*

U.S. Cl. 29—467 **10 Claims**



1. Apparatus for assembling at least one first component having an external surface opposite a first mating face to at least one second component having a second mating face complementary with and joinable to the first mating face of the first component, comprising:

at least one assembly station containing a first positioning frame having first walls for confining and first ledges projecting therefrom for supporting a first component, said frame having a peripheral opening suitable for passing therethrough portions of component transfer means associated with said assembling;

means for holding at least one first component with its external surface exposed for contact to pick up and transfer the same to the assembly station;

means for transferring at least one first component including at least one finger having means proximate a free end for contacting the external surface to pick up a first component and for releasably retaining the same, said transfer means being movable between the holding means and the first positioning frame along a path such that the finger passes through the peripheral opening in said frame in an inverted orientation and deposits the first component with its mating face turned upward upon the first ledges, confined by the first walls of said frame; and

means, in communication with the assembly station, for guidably delivering thereto at least one second component with its mating face downward and in registration with the first mating face of a first component to thereby assemble the first and second components.

4,449,283

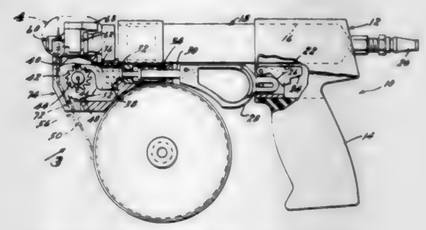
SEMI-AUTOMATIC INSERT TOOL

Imre Berecz, El Toro; Dennis Schultz, Riverside, and Leroy O. Daniel, Anaheim, all of Calif., assignors to Microdot Inc., Darien, Conn.

Filed Jun. 16, 1982, Ser. No. 369,022

Int. Cl.³ B23P *19/02*

U.S. Cl. 29—566.1 **1 Claim**



1. A semi-automatic helical insert tool comprising

a frame,

a motor on said frame having an insert driving head thereon,

a feed strip having a plurality of drive notches therein,

a plurality of inserts in said feed strip,

a circular magazine on said frame having a rotatable spool therein for supporting said feed strip,

a feed dial having teeth engageable in the notches in said feed strip,

a manually operable trigger,

mechanical means comprising an index gear having ratchet teeth thereon rotatable with said feed dial, and a pawl actuatable by said trigger and engageable with said ratchet teeth, said means being actuatable upon a predetermined first increment of travel of said trigger in one direction for advancing said feed dial and one insert on said feed strip to a drive position in alignment with the tool on said motor each time said trigger is pulled, and

control means for said motor energizable upon a predetermined travel of said trigger in said one direction to energize said motor to advance said tool into engagement with an insert and advance said insert into a workpiece.

4,449,284

METHOD OF MANUFACTURING AN INTEGRATED CIRCUIT DEVICE HAVING VERTICAL FIELD EFFECT TRANSISTORS

Masafumi Shimbo, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,064

Claims priority, application Japan, Aug. 30, 1979, 54-110891; Aug. 30, 1979, 54-110892

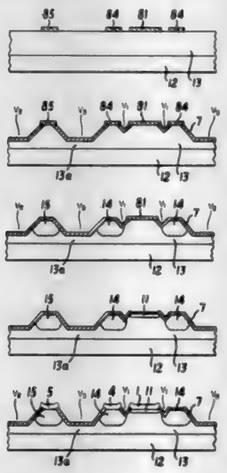
Int. Cl.³ H01L *21/95*

U.S. Cl. 29—571 **6 Claims**

1. A method of manufacturing an integrated circuit device including at least one vertical field effect transistor, comprising the steps of:

forming a first single crystal semiconductor layer of one conductivity type and of a low impurity density on a second single crystal semiconductor layer of one conductivity type and of a high impurity density;

depositing a masking film including a nitride over a whole surface of said first layer;
removing selected portions of said masking film while leaving at least first and second portions thereof intact where said second portion circumscribes said first portion;
forming a first recess between said first and second portions of the masking film and a second recess at least partially outside of said second portion of the masking film in said first layer by use of said masking film at least as a mask for etching said first layer;
selectively oxidizing the exposed surface of said first layer by use of the intact masking film;
forming a second single crystal region of opposite conductivity type to said one conductivity type in said first layer through the window opened by removing an insulator film of said second portion of the masking film; and
forming a first single crystal region of one conductivity type and of a high impurity density in said first layer through the window opened by removing an insulator film of said first portion of the masking film;
whereby a transistor is formed by using said first layer, said second layer, said first region and said second region as the channel region, source region, drain region and the gate region, respectively, of the transistor.

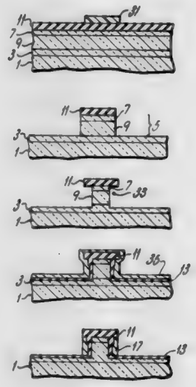


5. A method of manufacturing an integrated circuit device including at least one vertical field effect transistor as claimed in claim 1; comprising the steps of:
forming said first layer on said second layer;
depositing said masking film on said first layer;
removing selected portions of said masking film while leaving at least said first and second portions and a third portion thereof intact where said third portion is formed spaced from the outside of said second region;
forming said first and second recesses and a third recess between said second and third portions of the masking film in said first layer;
selectively oxidizing the exposed surface of said first layer by use of said intact masking film;
forming said second region and a third region of said opposite conductivity in said first layer thorugh the windows opened by removing an insulator film of said second and third portions of the masking film; and
forming said first region;
whereby said transistor and a lateral transistor are formed, the latter of which is composed of said third region as an emitter or an injector, said first layer as a base, said second layer as a base electrode region and said second region as a collector.

4,449,285
METHOD FOR PRODUCING A VERTICAL CHANNEL TRANSISTOR

Timothy W. Janes, Worcester, and John C. White, Malvern, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 12, 1982, Ser. No. 397,342
Claims priority, application United Kingdom, Aug. 19, 1981, 8125375
Int. Cl.³ H01L *21/20, 21/285, 21/302*
U.S. Cl. 29—571 **5 Claims**



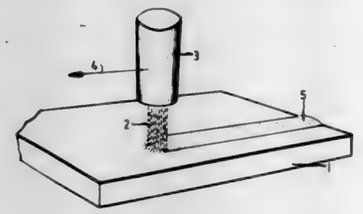
1. A method for producing a vertical channel transistor, the method including the following steps:
providing a semiconductor substrate, and forming a steep-walled mesa of semiconductor material, the mesa having over its upper surface a thick layer of insulating material;
undercutting mesa material beneath the layer of insulating material;
forming a thin insulating layer over the mesa side walls and over the substrate material;
depositing conductive material over the insulated mesa and substrate, backfilling thereby the undercut region of the mesa; and
ion beam milling the mesa and substrate to remove excess conductive material, to leave a vertical insulated gate electrode in the undercut region of the mesa.

4,449,286
METHOD FOR PRODUCING A SEMICONDUCTOR LAYER SOLAR CELL

Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 169,128, Jul. 15, 1980, abandoned. This application Oct. 27, 1981, Ser. No. 315,641
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941908
Int. Cl.³ H01L *31/18*; B05D *1/00*
U.S. Cl. 29—572 **22 Claims**

1. In a method for producing a semiconductor layer solar cell by applying a semiconductor layer to a substrate by plasma spraying, in which a semiconductor material is brought out of the plasma zone of the plasma spraying means, the improvement comprising maintaining the energy density in the plasma zone sufficiently high such that the semiconductor vaporizes and is brought out of the plasma zone in the form of a vapor jet, and condensing the vapor jet on the substrate in the form of a semiconductor layer.

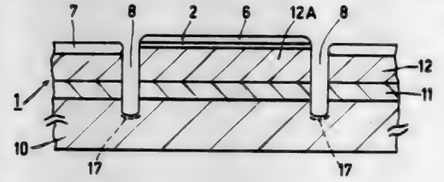


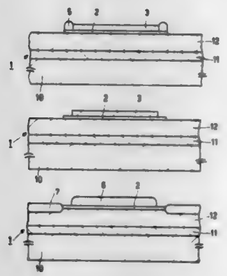
13. Method as defined in claim 1, additionally comprising providing a pn-junction near the surface on one side of the semiconductor layer.

4,449,287
METHOD OF PROVIDING A NARROW GROOVE OR SLOT IN A SUBSTRATE REGION, IN PARTICULAR A SEMICONDUCTOR SUBSTRATE REGION

Henricus G. R. Maas, and Johannes A. Appels, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1982, Ser. No. 447,844
Claims priority, application Netherlands, Dec. 10, 1981, 8105559
Int. Cl.³ H01L *21/302*
U.S. Cl. 29—580 **20 Claims**





1. A method of providing a narrow groove in a substrate region, the width of the groove being determined in a self-aligning manner, characterized in that on a surface of the substrate region there is provided at least a first oxidation-preventing layer and on this layer an oxidizable layer, in that the oxidizable layer is removed selectively above part of the surface of the substrate region, whereupon an edge portion of the remaining part of the oxidizable layer is selectively oxidized throughout its thickness and the remainder of the oxidizable layer is selectively oxidized at most only through part of its thickness, and in that then at least the uncovered part of the first oxidation-preventing layer is selectively removed, the exposed part of the substrate region is thermally oxidized through part of its thickness and the substrate region is exposed in a self-aligning manner substantially only at the area of the oxidized edge portion and is etched away through at least part of its thickness to obtain the groove, the said remaining part of the oxidizable layer inclusive of the oxidized edge portion being removed.

4,449,288
PROCESS FOR MAKING A WINDING FOR A LOW-POWER ALTERNATOR STATOR

Jacques Disclaire, Charbonnieres, and Claude Mignotte, Saint Priest, both of France, assignors to Societe de Pariset du Rhone S.A., Lyons, France

Filed May 27, 1981, Ser. No. 267,452
Claims priority, application France, May 30, 1980, 80 12475
Int. Cl.³ H02K *15/06*
U.S. Cl. 29—596 **4 Claims**

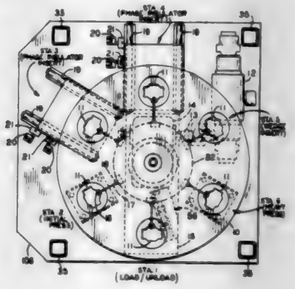


1. A process for making the winding of a stator, more especially an alternator stator for motor vehicles, comprising the steps of:
forming a flat circular coil having a desired number of turns externally of the stator for each phase of said alternator,
preforming the coil externally of the stator into an undulating star shape with the undulations corresponding to the number of poles and notches of the stator,
maintaining the coil in its substantially flat shape during said preforming step,
inserting said coil into the notches of said stator, and
preforming said inserting step by tilting selected portions of said preformed star shaped coil out of the plane of flatness of said coil established during said forming and preforming steps towards the other end face of said stator.

4,449,289
AUTOMATIC SYSTEM AND METHOD FOR COMPRESSING COIL TURNS AND INSERTING INSULATORS IN SLOTS OF A SLOTTED STATOR CORE

Alan L. Kindig, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 173,052, Jul. 28, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,936
Int. Cl.³ H05K *15/10*
U.S. Cl. 29—596 **29 Claims**



1. An automatic system for compressing coil turns and in-

serting insulators in stator slots of a dynamoelectric machine comprising:

a movable worktable having a plurality of stator holding stations spaced about the worktable, the stators initially including slot liners terminating in end cuffs projecting from each end face of the stator and at least a first set of windings loosely inserted in the stator slots;

a plurality of work stations spaced about the worktable including (a) a combined loading/unloading station, (b) an initial press station for compressing coil turns in the stator slots and for clearing coil end turns from the vicinity of the stator bore, (c) at least one winding insulation insertion station, and (d) a heavy press station for further compressing the coil turns with the inserted insulation in the stator slots;

means for actuating the worktable to index the holding stations sequentially through the work stations in a repetitive manner;

a cuff support assembly means mounted on the worktable at each holding station for positioning and irremovably holding a stator loaded into each holding station while the stator is indexed through the various work stations;

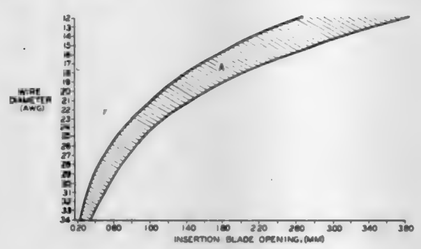
and cuff support actuating means at the loading/unloading work station for engaging the cuff supports with the cuffs of a freshly loaded stator at the beginning of the indexing of the stator through the work stations and for disengaging the cuff supports from the stator cuffs after the stator has indexed through all the work stations so that the stator may be unloaded and a new stator loaded into the holding station.

4,449,290

POWER INSERTABLE NYLON COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 312,214, Oct. 19, 1981, Pat. No. 4,410,592. This application Jun. 29, 1983, Ser. No. 508,786
Int. Cl.³ B32B *27/00*; H01B *7/00*
U.S. Cl. 29—596 **13 Claims**



1. A method of coating an electrically insulated magnet wire having an outer coating of nylon insulation comprising applying aliphatic hydrocarbon solvent solution of hydrogenated triglyceride and paraffin wax onto the nylon insulation, the paraffin wax present in the solution at about 0.1% to about 4% by weight having a melting point of 50° C. to 52.8° C., a refractive index of 1.4270 at 80° C., a specific gravity of 0.839 at 15.6° C., and a flash point of 212.8° C., the hydrogenated triglyceride present at about 0.1% to about 10% by weight, having a melting point of 47° C. to 50° C., an Iodine Number of 22 to 35, a Saponification Number of 188 to 195, a maximum Acid Number of 5 and approximate fatty acid component proportions of 8% C_{14}, 34% C_{16}, 27% C_{18}, 16% C_{20} and 15% C_{22} fatty acids, in such amounts as to enable the resultant coated wire to be power inserted into coil slots in its locking wire size range without damage, and drying the coated wire.

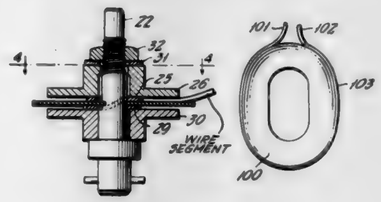
8. In the process of power inserting prewound lubricated magnet wire into coil slots with substantially no evidence of wire damage in subsequent surge failure testing, the improvement comprising reliably power inserting magnet wire in the locking wire size range having an outer layer of nylon insulation coated with an external lubricant mixture of paraffin wax and hydrogenated triglyceride in a ratio by weight of about 1:30 to about 30:1, the paraffin wax having a melting point of 50° C. to 52.8° C., a refractive index of 1.4270 at 80° C., a specific gravity of 0.839 at 15.6° C., and a flash point of 212.8° C., the hydrogenated triglyceride having a melting point of 47° C. to 50° C., an Iodine Number of 22 to 35, a Saponification Number of 188 to 195, a maximum Acid Number of 5 and approximate fatty acid component proportions of 8% C_{14}, 34% C_{16}, 27% C_{18}, 16% C_{20} and 15% C_{22} fatty acids.

4,449,291

METHOD OF MAKING A MULTIPLE LAYER COIL WINDING SYSTEM

Irwin L. Rothman, Goshen, N.Y., assignor to Loral Corporation, Yonkers, N.Y.

Filed Nov. 4, 1981, Ser. No. 318,399
Int. Cl.³ H01F *7/06*
U.S. Cl. 29—605 **3 Claims**



1. A method for winding an electrical coil which comprises the steps of:

providing a shaft having a pair of spaced compression plates between which the coil is wound;

providing a slotted planar divider selectively positioned on said shaft between said compression plates;

providing a predetermined length of wire used for winding a coil, and determining its substantial midpoint;

engaging said wire upon said slotted divider so that a segment of wire will lie on each side of said divider; and

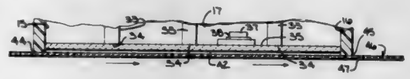
winding said predetermined length upon said shaft commencing at said midpoint between said compression plates to form a pair of coil sections wound in the same direction, as viewed from an end of the shaft, and interconnected at the inner peripheries thereof at said midpoint.

4,449,292

METHOD OF CLAMPING A CIRCUIT PACKAGE TO ENHANCE HEAT TRANSFER

Lance R. Kaufman, 131 W. White Oak Way 96N, Mequon, Wis. 53092

Filed Mar. 26, 1982, Ser. No. 362,498
Int. Cl.³ H01B *19/00*
U.S. Cl. 29—631 **5 Claims**



1. A method to form a compact circuit package with improved construction for clamping to enhance heat transfer, comprising the steps of

forming an insulating housing with a circuit retaining cavity substantially surrounded by a peripheral side wall including a wall portion terminating at a rim located substantially within a first plane,

providing said housing with means to limit the depth of entry into said cavity,

placing a heat conducting electrically insulating substrate into engagement with said depth limiting means to substantially enclose said cavity with a first side of said substrate facing said cavity and containing a heat generating electrical component and a second oppositely disposed side located substantially within a second plane spaced from said first plane so that said rim extends outward from said substrate second side, and

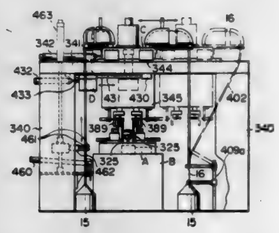
removing an outer portion of said rim substantially along said second plane to provide a reduced rim located substantially within said second plane so that said reduced rim and said second substrate side form a clamping surface to be clamped to an external heat dissipating object to permit increased substantial clamping pressure without damaging said substrate and said side wall.

4,449,293

COIL WINDING AND INSERTING MACHINE

Fumikazu Itoh, Fujisawa; Yasuhiro Fujita, Yokosuka; Takashi Kobayashi, Fujisawa, and Takao Mifune, Ichikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 8, 1982, Ser. No. 338,075
Int. Cl.³ H02K *15/06*
U.S. Cl. 29—736 **5 Claims**



1. A coil winding and inserting machine in which flyers are rotated around winding forms constituted by tooling blades arranged on a circle and auxiliary plates disposed at an outer side of said tooling blades to thereby wind multiphase coils, each phase having N poles, around said winding forms, and the coils are directly inserted into a stator core from said tooling blades together with wedges, said coil winding and inserting machine comprising:

an inserter tooling means for forming the winding forms for individual phases of the coils during a coil winding, said inserter tooling means including a plurality of independently liftable tooling blades and a plurality of independently liftable auxiliary plates arranged around said tooling blades, each of said winding forms being formed by two tooling blades and at least one auxiliary plate in a lifted position; and

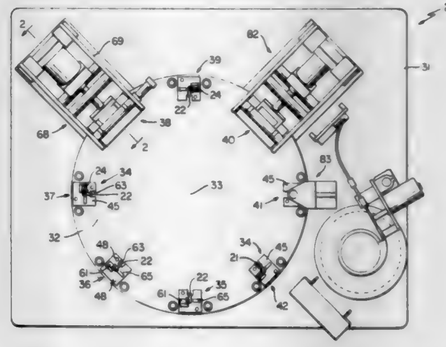
a winding means including a rotatably indexable supporting means for supporting said flyers arranged at a 120° interval on a circle centered at an axis of rotation of said supporting means so as to oppose said winding forms, said flyers being rotatable simultaneously and independently, whereby the winding of coils for a first pole of each phase is effected by independently rotating said flyers simultaneously or sequentially, and the winding for the Nth pole of each phase is effected after an indexing rotation of said supporting means by an angle which is obtained by dividing 360° by the number of poles.

4,449,294

APPARATUS FOR JOINING TWO ABUTTING METAL MEMBERS TOGETHER AND METHOD OF MAKING SUCH APPARATUS

James C. Gunter, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 28, 1982, Ser. No. 372,630
Int. Cl.³ B23P *11/00, 19/00*; B23Q *7/00*
U.S. Cl. 29—792 **30 Claims**



1. In an apparatus for joining two metal members together with a lancing and staking operation that comprises the lancing and forming of a part of one of said members through an unblanked part of the other of said members and thereafter the staking of said formed part of said one member to an adjacent surface means of said other member to secure said members together in abutting relation, said apparatus having a punch and a reciprocating head that cooperate together to perform said lancing and staking operation on said members, the improvement comprising an indexible carrier means for indexing said members to said head for said lancing and staking operation thereon and then away from said head after said lancing and staking operation, said carrier means supporting and carrying said punch therewith whereby said punch moves with said carrier means relative to said head.

4,449,295

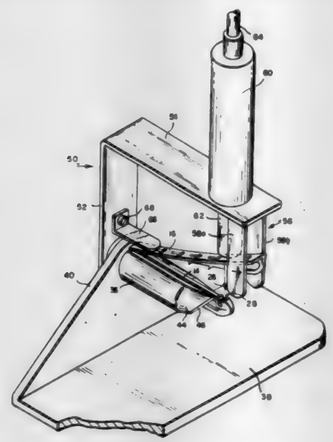
DEVICE TO INSTALL DRAPERY HOOKS

Alfred Alexander, Jr., Westport, Mass., assignor to Robertson Factories, Inc., Taunton, Mass.

Filed Jun. 28, 1982, Ser. No. 393,106
Int. Cl.³ B23P *19/00, 11/00*; B25B *27/14*
U.S. Cl. 29—798 **8 Claims**

1. A device for attaching hangers to drapes of the kind having a pleated top defining transverse spaced pockets for receiving hangers embodying interengageable parts, comprising an anvil dimensioned to be received within a pocket, said anvil containing a groove within which one of the parts of the hanger can be positioned such that said one part is disposed within the pocket and the other is disposed outside the pocket, means defining constraining guides positioned above the anvil for receiving the other of the parts outside the pocket and holding it in alignment with the limb inside the pocket and a

driver supported for movement toward the anvil in a direction to force the part outside the pocket rectilinearly toward the



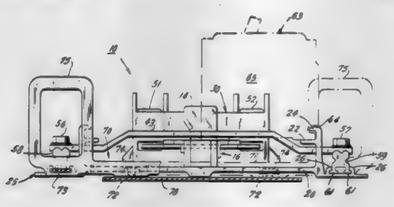
part inside the pocket as constrained by the guide into locking engagement with the part inside the pocket.

4,449,296

METHOD OF FORMING ELECTRIC DISTRIBUTION PANEL

Roger D. Luke, Norcross, and John M. Rhodes, Atlanta, both of Ga., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Continuation of Ser. No. 920,153, Jun. 29, 1978, abandoned.
This application Dec. 17, 1979, Ser. No. 104,101
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—883 **3 Claims**



1. A method for forming an electrical power distribution device comprising the steps of:

forming a base by extruding insulating plastic material flowing in an extruding direction;

simultaneously forming both circuit breaker and neutral bus mounting means integrally with said base during said extrusion step, said circuit breaker mounting means extending in said extruding direction and being adapted to support circuit breakers when the latter are operatively mounted to said device, said neutral bus mounting means including first and second channels extending in said extruding direction and being adapted to slidably receive first and second neutral bus bars, respectively;

slidably inserting said first and second neutral bus bars into said first and second channels, respectively;

and

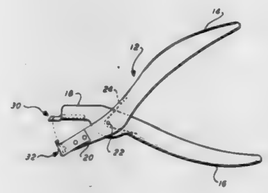
securing a main bus bar having a line contact array connected thereto to the front of said base, said line contact array being adapted to engage said circuit breakers when the latter are operatively mounted to said device.

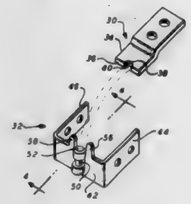
4,449,297

CLIPPING APPARATUS

Dorothy J. Fuchs, and Francis J. Fuchs, Jr., both of 593 104th Ave., Naples, Fla. 33940

Filed Sep. 30, 1982, Ser. No. 431,228
Int. Cl.³ A45D *29/00*
U.S. Cl. 30—29 **1 Claim**





1. Clipping apparatus for clipping a claw and for providing said claw with a smooth contoured surface in the plane of clawing, comprising:

a first cutter provided with a smooth, contoured shearing edge, said first cutter including a generally planar member having a front edge provided with an inclined surface into which is formed an inwardly extending cylindrically shaped surface the bottom edge of which is generally circular;

a second cutter provided with a smooth, contoured shearing surface complementary in configuration to said shearing edge, said second cutter including a generally U-shaped member having a base and legs, the legs extend inwardly and are spaced apart a predetermined distance to permit said first cutter to enter therebetween, the base portion of said U-shaped member provided at its center with an upwardly extending generally cylindrically shaped post having a generally flat circular upper surface;

said U-shaped member provided with a pair of upwardly extending safety membes on either side of said post, said safety members spaced from said post a predetermined distance to prevent said claw from being inserted therebetween a distance sufficient to cause said blood vessel to be sheared upon said clipping; and

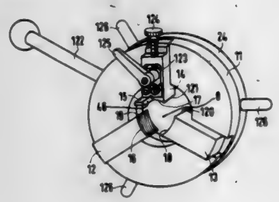
upon said claw being placed between said shearing edge and said shearing surface and oriented such that the shearing surface is in said plane of clawing and upon said shearing edge being advanced towards and into engagement with said shearing surface, said shearing edge and said shearing surface cooperate to shear and clip said claw and provide said claw with said smooth contoured surface in said plane of clawing.

4,449,298

HAND-OPERATED APPARATUS FOR PEELING OFF THE OUTER JACKET LAYER OF ELECTRIC LINES AND CABLES

Wilhelm Putz, Kersbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,441
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3129014; Apr. 19, 1982, 3214479
Int. Cl.³ H02G *1/12*
U.S. Cl. 30—90.1 **13 Claims**



1. In a hand-operated device for peeling off the outer jacket layer of an electric cable, said device having an adjustable peeling knife which can be adjusted to the diameter of the cable, the improvement comprising:

support disc means having an aperture therein for receiving said cable and operating handle means for turning said support disc means fastened thereto;

guide means having three radially adjustable guide jaws movably mounted to said support disc means and directed toward the center of said aperture, each of said guide jaws having a concave end for engaging said cable, said concave end having a truncated threaded surface so that when said support disc means is turned said cable will be fed into said peeling knife;

means for adjustably fastening the peeling knife to one of said guide jaws so that said peeling knife is continuously movable in the radial direction with respect to said guide jaw and the cutting edge of said peeling knife can be extended past said concave end of said guide jaw to cut into said cable; and

rotatable adjusting disc means adjacent said support disc means and having an aperture therein for receiving said cable disposed in alignment with said aperture in said support disc means, said adjusting disc means including a spiral slot for each guide jaw engaging said guide jaw so that each said guide jaw is radially adjustable to the diameter of said cable;

whereby when said operating handle means is turned around said cable, said peeling knife engages the outer jacket of said electric cable and peels said outer jacket from said cable.

4,449,299

COMBINATION SCRAPING PLANE

James F. Mulrooney, R.F.D. 2 Box 279, Epping, N.H. 03042

Filed Sep. 28, 1981, Ser. No. 306,365
Int. Cl.³ B27G *17/00*
U.S. Cl. 30—169 **9 Claims**

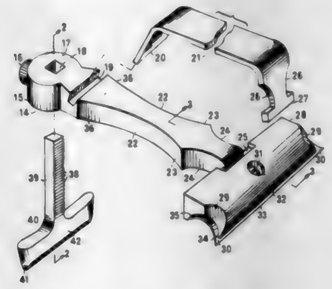
1. In hand tools, a combined plane and scraper comprising:

a primary handle constructed to conform to the shape of the hand of the user;

a blade adjustably secured to one end of the primary handle provided with a tensioning means for the blade, the cutting edge of which blade extends below the bottom of the handle and beyond the end of the handle and which blade is acutely angled downwardly from the horizontal centerline of the primary handle;

a vertical opening through the primary handle near the non-blade end thereof;

a convertible foot/handle which is adjustably secured within the vertical opening in the primary handle, wherein the convertible foot/handle protrudes above the main body of the primary handle to form an auxillary facilitating handle;



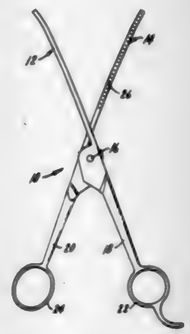
an adjustable tightening means through the body of the primary handle into the opening to secure the convertible foot/handle.

4,449,300

HAIR TRIMMING SHEARS

Susan D. Maledon, 1224 Warrington, Deerfield, Ill. 60015

Filed Nov. 19, 1981, Ser. No. 323,138
Int. Cl.³ B26B *13/00*
U.S. Cl. 30—230 **5 Claims**



1. A pair of hair trimming shears comprising:

two pivotally connected shear blades, each blade having a plurality of cutting teeth of generally triangular cross-sectional configuration extending across the surface of the blade facing the other blade and projecting outwardly of that surface toward the other blade, the teeth of each blade being aligned with the inter-teeth spaces in the other blade in one-for-one relation for meshing engagement of the teeth on the two blades when the blades are closed on each other,

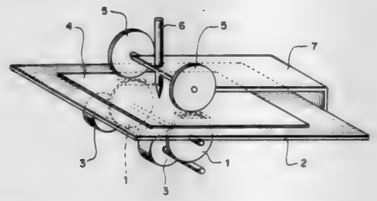
the teeth on each blade being of varying cross-sectional configurations such that each tooth has a different cross-sectional configuration from any adjacent tooth on the blade to afford a non-uniform zig-zag trim cut.

4,449,301

APPARATUS AND METHOD FOR DRAWING CURVES

Bo G. Backman, Vesslingegataw 11, 711 00 Lindesberg, Sweden

PCT No. PCT/SE81/00154, 371 Date Jan. 26, 1982, 102(e) Date Jan. 26, 1982, PCT Pub. No. WO81/03561, PCT Pub. Date Dec. 10, 1981
PCT Filed May 26, 1982, Ser. No. 346,031
Claims priority, application Sweden, Jun. 3, 1980, 8004140
Int. Cl.³ B43L 13/00
U.S. Cl. 33—32 E 18 Claims



1. An apparatus for drawing curves on a recording surface, the apparatus comprising:

a chassis having a first side and a second side;

first and second wheels;

means for rotatively mounting the first wheel to the first side of the chassis and for rotatively mounting the second wheel to the second side of the chassis such that said first and second wheels rotate about a common axis;

first and second stepper motors mounted on the chassis for rotatively driving a respective one of said first and second wheels;

a drawing implement having an operative end abutting the recording surface at a contact point; and

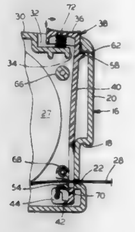
means for mounting said drawing implement to the chassis such that when said first and second wheels are both driven at a first selected rate in an opposite direction, a change of angle will occur between the common axis and the recording surface with a center of rotation at the contact point, and when said first and second wheels are both driven at a second selected rate in an identical direction, a linear movement between the drawing implement and the recording surface will occur.

4,449,302

POWER RETURNABLE COILABLE RULE WITH IMPROVED BLADE LOCKING ASSEMBLY

Mark A. Drechsler, Southington, and Walter J. Hutchins, West Hartford, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Dec. 7, 1982, Ser. No. 447,681
Int. Cl.³ G01B 3/10; B65H 75/48
U.S. Cl. 33—138 26 Claims



1. In a power returnable coilable rule, the combination comprising:

A. a casing having a pair of spaced end walls and a sidewall extending peripherally thereabout, said end and side walls defining a chamber therewithin, said sidewall having a blade passage therethrough to said chamber and a locking means aperture therethrough spaced from said blade passage;

B. a coiled blade within said chamber of said casing and extending outwardly of said casing through said blade passage;

C. blade locking means movable in said chamber of said casing including (1) an elongated lock arm extending along said sidewall between said blade passage and locking means aperture, and having an aperture therein through which said blade extends, (2) an actuator button at the end of said lock arm adjacent said locking means aperture and disposed outwardly of said casing for movement relative thereto, (3) and lock means at the other end of said lock arm engageable with the surface of said blade disposed away from said actuator button;

D. anvil means on said casing within said chamber adjacent the other surface of said blade cooperating with said lock means for clamping said blade therebetween to frictionally engage said blade in an extended position; and

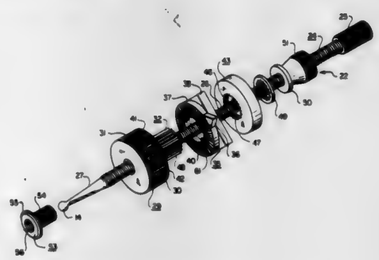
E. biasing means normally biasing said lock arm in the direction of said actuator button to press said lock means against said blade and thereby clamp said blade between said lock means and said anvil means, said actuator button being movable to overcome said biasing means and move said lock arm longitudinally in the direction away from said actuator button and said lock means away from said blade and thereby release said blade for movement freely inwardly and outwardly of said casing.

4,449,303

SIGHTING SCREW UNIT FOR AND WITH ARCHERY BOWS

Marlow W. Larson, 2735 S. 4050 West, Ogden, Utah 84401

Filed Apr. 28, 1983, Ser. No. 489,500
Int. Cl.³ F41G 1/00
U.S. Cl. 33—265 12 Claims



1. A sighting screw unit for archery bows, said sighting screw unit including, in combination: a sighting screw having a manually graspable end, a sighting bead, and a threaded shank integrally disposed therebetween; adjustment means threadedly mounted upon said threaded shank and having a graspable rotatable knob and an axially projecting pinion of less radial dimension than said knob; a backing washer having a splined recess constructed to keyingly engage said pinion, said washer being provided with a central bore the surace of which frictionally engages said threaded shank; and nut means backing said washer.

4,449,304

DRAWING INSTRUMENT AND LOCKING APPARATUS THEREFOR

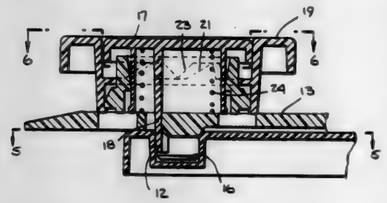
Ronald E. Underwood, South Somerville, N.J., assignor to Binney & Smith Inc., Easton, Pa.

Filed Jan. 24, 1983, Ser. No. 460,150
Int. Cl.³ B43L 5/02, 13/14
U.S. Cl. 33—437 12 Claims

1. A drawing instrument displaceable on a flat surface having a groove therein comprising:

an elongated member having a straight edge and having at least one protrusion on the bottom surface thereof for seating in the groove of the flat surface;

a displaceable member mounted on said elongated member and displaceable into the groove in a depressed condition and out of the groove in a raised condition and in said depressed condition having a wall cooperative with said protrusion to engage the groove to lock the instrument in position by a friction fit of said protrusion and said wall in the groove,



an outer ring member rotatably mounted on said elongated member and freely rotatable through 360 degrees around said displaceable member when said displaceable member is in said raised condition and including means for engaging said displaceable member when said displaceable member is in said depressed condition upon rotation of said ring member to raise said displaceable member by applying thereto a force overcoming said friction fit;

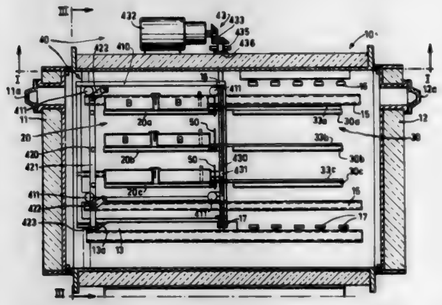
and spring means for maintaining said displaceable member in said raised condition until said displaceable member is depressed.

4,449,305

FREEZE-DRYING APPARATUS

Michel Baron, Plaisir, and Philippe Larrat, Beynes, both of France, assignors to Societe d'Utilisation Scientifique et Industrielle du Froid Usifroid, Maurepas, France

Filed Jun. 17, 1982, Ser. No. 389,405
Claims priority, application France, Jul. 1, 1981, 81 12926
Int. Cl.³ F26B 13/30, 5/06
U.S. Cl. 34—92 8 Claims



1. Apparatus for freeze-drying products contained in vessels, the apparatus comprising:

an enclosure defining a single compartment;

a plurality of freezing shelves and heating shelves housed within said enclosure and arranged in two separate groups;

cooling means thermally coupled to said freezing shelves to maintain said freezing shelves at a temperature below 0° C. during operation of said freeze-drying apparatus;

heating means thermally coupled to said heating shelves to maintain said heating shelves at a temperature above 0° C. during operation of said freeze-drying apparatus;

means for transferring the vessels containing the products to be freeze-dried from the freezing shelves to the heating shelves; and

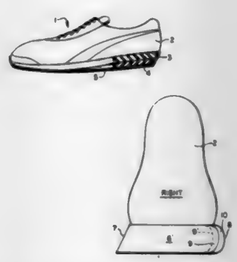
means for selectively creating a vacuum in said single compartment.

4,449,306

RUNNING SHOE SOLE CONSTRUCTION

Peter R. Cavanagh, Pine Grove Mills, Pa., assignor to PUMA-Sportschuhfabriken Rudolf Dassler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Oct. 13, 1982, Ser. No. 434,047
Int. Cl.³ A43B 13/04, 13/12, 13/18
U.S. Cl. 36—30 R 20 Claims



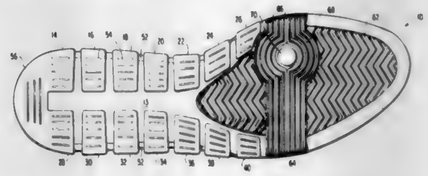
1. A running shoe sole construction comprising a cushioning sole layer having a midsole layer and a heel lift portion, and an outer sole layer covering the bottom of the cushioning sole layer, said midsole layer and heel lift portion being formed of resilient cushioning material and said outer sole layer being formed of a relatively hard, wear-resistant material, wherein the circumferentially-extending border of the sole construction is provided with a convexly curved shape having a relatively large radius of curvature located along at least a heel area of an outer, longitudinally-extending, side of the cushioning sole layer and is provided with a flaring or the like at an inner longitudinally-extending side of the cushioning sole layer.

4,449,307

BASKETBALL SHOE SOLE

Jerry D. Stubblefield, Portland, Oreg., assignor to Pensa, Inc., Tigard, Oreg.

Filed Apr. 3, 1981, Ser. No. 250,899
Int. Cl.³ A43B 13/04, 13/18, 5/00
U.S. Cl. 36—32 R 20 Claims

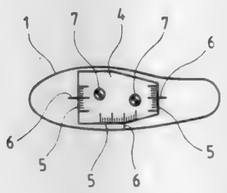




1. An outer sole for a shoe comprising:

an inner surface having a central portion and a peripheral portion;
an outer surface having a central portion and a peripheral portion;
a side wall formed on said peripheral portion of said inner surface, said side wall having a downwardly and inwardly inclined lower portion;
substantially rigid pedestal means formed on said central portion of said inner surface;
cavity means extending along said peripheral portion of said inner surface;
a plurality of resilient tread members extending downwardly and outwardly from said peripheral portion of said outer surface, each of said tread members including a downwardly and outwardly inclined upper wall; and
a groove formed by said inclined upper walls of said tread members and said inclined lower portion of said side wall;
wherein said cavity means and said groove facilitate flexing of said tread members upon foot-induced impact with a surface.

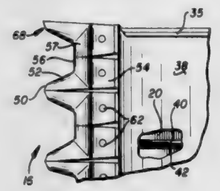
4,449,308
ATHLETIC FOOTWEAR FOR BICYCLISTS
Hugo Schär, Hilti 2, 8444 Henggart, Switzerland
Filed Mar. 29, 1982, Ser. No. 363,076
Claims priority, application Switzerland, Apr. 16, 1981, 2542/81
Int. Cl.³ A43B *5/00*
U.S. Cl. 36—131 **16 Claims**



1. A sport shoe for a bicyclist, especially for a bicycle racer and used with a bicycle pedal having a lengthwise direction of extent, comprising:
a shoe sole having a contact region intended to come into contact with a bicycle pedal and possessing a substantially arcuate-shaped curvature which is substantially constant over the extent of said contact region in order to enable the bicyclist to carry out adjustments of the sport shoe in lengthwise direction relative to the lengthwise direction of extent of the bicycle pedal;
a guide plate;
said guide plate having a curved contact surface coming into contact with the contact region of the shoe sole and which is substantially identical to the substantially constant arcuate-shaped curvature of the contact region of the shoe sole; and
means for adjustably mounting said guide plate within the contact region of substantially constant arcuate-shaped curvature of the shoe sole.

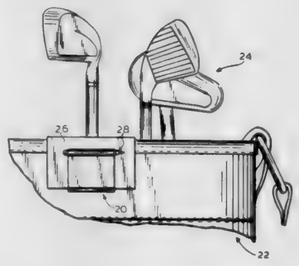
4,449,309
FLAT BOTTOM BUCKET AND DIGGING TEETH
Charles W. Hemphill, Duncanville, Tex., assignor to GH Hensley Industries, Inc., Dallas, Tex.
Filed Mar. 5, 1979, Ser. No. 17,443
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—141 R **18 Claims**

1. A digging bucket having spaced sides, a rear wall, and a flat bottom which lies in a plane at the forward marginal end thereof and then curves into joined relationship respective to the rear wall;
the sides and rear wall are joined together and to the bottom, with the bucket having an opening defined by the edges of a peripheral wall surface which includes the edges of the spaced sides and rear wall;
the forward marginal end of the bottom is in the form of a tooth supporting lip, lift means attached to the bucket by which the bucket can be manipulated;
said lip having opposed ends joined to said spaced sides, a plurality of teeth, means by which said teeth are mounted to the lip, each of said teeth includes a primary digging member and a secondary digging member, said primary digging member extends in advance of said secondary digging member; adjacent teeth are mirror images of one another; said teeth are positioned laterally respective to



one another and substantially abut each other; the primary digging members of some adjacent teeth abuttingly engage one another and cooperate together to present a single forward directed digging member; the secondary digging members of other adjacent teeth abuttingly engage one another and cooperate together to present a rearward cutting edge which lies rearwardly of the single forward directed digging member; the cutting edges of said forwardly directed digging member and said rearward cutting edge jointly cooperate together to form a continuous cutting edge which extends across the entire width of the bucket;
so that when the bucket is moved in a forward direction, the teeth can jointly engage and remove material from the earth and cause the removed earth to be received within the bucket; while the forward edge of the bucket lip is precluded from engaging the ground.

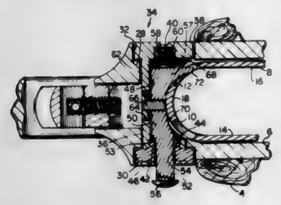
4,449,310
GOLF CLIP
Michael S. Kline, 166 N. Middaugh St., Somerville, N.J. 08876
Continuation-in-part of Ser. No. 215,539, Dec. 11, 1980, abandoned. This application Jun. 24, 1982, Ser. No. 391,545
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—11 R **6 Claims**



1. A golf clip for a golf bag containing golf clubs comprising; an elongated strip of spring material, the strip being formed into a configuration including a first leg having a free end and bent at the other end into a second leg overlying the first leg to

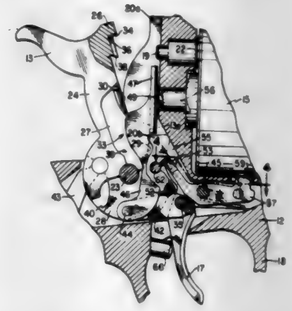
form a mounting recess to receive the upper end of the golf bag therebetween, the configuration of the mounting recess conforming to the configuration of the upper end of the golf bag and insertion of the golf bag into the recess will force the first and second legs apart whereby the tendency to return to the relaxed configuration will resiliently mount the clip on the golf bag, the second leg being bent at the end opposite to the end connected to the first leg to form a third leg overlying the second leg on the side opposite to the side forming the first leg, the second and third legs being resiliently displaceable from one another to permit insertion of a golf score card therebetween and to hold the score card in position, the end of the third leg opposite to the end connected to the second leg being bent into a hollow tubular configuration to receive and retain a marking implement for the score card therein, the third leg being shorter than the second leg to provide access to the golf card held in the clip for marking of indicia thereon and to space the marking implement from the upper end of the golf bag on which the clip is mounted, the first leg being shorter than the second leg thereby minimizing interference with golf club selection with respect to the golf bag, the recess between the second and third legs for holding the golf card being open at both side edges to permit use of the clip with a variety of different size golf cards, the third leg having a reduced diameter width with respect to the second leg so as to provide at least one spaced marginal edge part at the bend connecting the second leg to the third leg, and an aperture in each of the spaced marginal edge parts so as to permit partial insertion of a golf tee therein to hold the golf tee in position on the clip and permit removal of the golf tee for use.

4,449,311
REVERSIBLE MAGAZINE LATCH SYSTEM FOR PISTOLS
Paul S. Giragosian, 66 Lake St., Arlington, Mass. 02174
Filed Sep. 24, 1982, Ser. No. 423,323
Int. Cl.³ F41C *25/06*
U.S. Cl. 42—7 **6 Claims**



1. A reversible magazine latch system for pistols having a grip portion in which there is provided a cavity for a magazine, said system comprising a latch seat disposed in said pistol, a magazine latch assembly adapted for disposition in and retention by said seat, and a magazine adapted to be engaged by said latch assembly, said seat comprising an opening extending through said pistol and adapted to receive said latch assembly at either end of said opening and retain said latch assembly therein, said magazine having two lateral slots, a selected one of said slots being accessible to said latch assembly when said magazine is disposed in said cavity, said magazine latch assembly comprising a body portion having a first head portion on a first end thereof and a chamber therein, a second head portion threadedly connected to said body portion at a second end of said body portion, a latch portion movably disposed in said chamber, and detent means extending from said latch portion and through an opening in said body portion, said detent means being adapted to engage said selected one of said magazine slots.

4,449,312
MECHANISM ADAPTABLE FOR SINGLE ACTION REVOLVERS
William B. Ruger, Southport, and Roy L. Melcher, Stratford, both of Conn., assignors to Sturm, Ruger & Company, Inc., Southport, Conn.
Filed Oct. 20, 1981, Ser. No. 313,215
Int. Cl.³ F41C *17/04, 17/08, 1/00*
U.S. Cl. 42—66 **6 Claims**

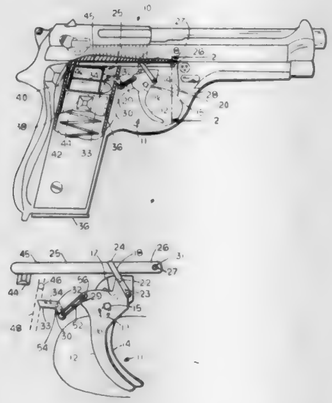


1. In a firearm having a hammer, a trigger and a frame which hammer is rotated rearwardly manually by the operator to a cocked position without trigger pull by the operator and having a reciprocating firing pin positioned above the trigger in the frame to be struck in a forward direction by the hammer, the improvement comprising
(a) a trigger bar mounted on the trigger;
(b) trigger bar biasing means biasing the trigger bar rearwardly;
(c) the hammer having a front facing the frame and two sides substantially perpendicular to such front, the hammer being sized and shaped to include full-cock and loading notches and a plurality of front and side recesses, said recesses being defined by the exterior size and shape of the hammer front and sides and said exterior side recesses providing space for the trigger bar to rest in and to move into and out of as the trigger, hammer, and biasing means position the bar in rest, load, full-cock and fired positions; and
(d) a hammer projection on the front of the hammer in close proximity to the trigger bar in the load position
whereby the trigger bar is positioned substantially below the firing pin in the load position and is deformable if the hammer is dealt a substantial forward blow to move the hammer toward the frame and the trigger bar is positioned as high as and behind the firing pin in the full-cock position.

4,449,313
ANNUNCIATING TRIGGER DEVICE
John G. Hackett, 2414J Rustic Ridge, Overland, Mo. 63114
Filed Jul. 8, 1981, Ser. No. 281,357
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—69 R **17 Claims**

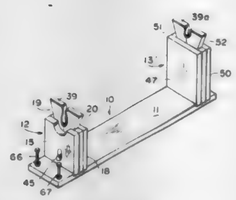
13. A firearm comprising a frame having a chamber for receiving a supply of ammunition into the firearm, a clip movable into said chamber, said clip having a follower engagable with the last to be used round of ammunition remaining in said clip, a spring in said clip biasing said follower in a direction to push ammunition into firing position in the firearm, a cam member on said follower projecting from the clip and movable with said follower, a deflection bar having a free end and a second end including connection means for pivotally engaging the second end with said frame, the free end of said deflection bar being positioned to be engaged by the cam member when a predetermined number of rounds of ammunition remain in said clip, said cam member pivotally moving said deflection

bar, a pair of adjacent trigger members mounted on said frame and movable between a normal position wherein said trigger members are in alignment and an annunciating position wherein said trigger members are angularly displaced relative to each other, a releasable catch engagable with at least one of



the trigger members for maintaining the trigger members in their normal aligned condition, and a tab member having a first portion engagable with said deflection bar and a second portion positioned to disengage said releasable catch from said one trigger member when the first portion of the tab is moved by engagement with the deflection bar.

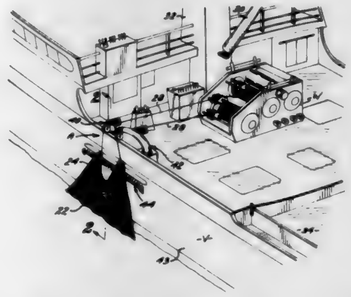
4,449,314
FIREARM SUPPORT
Richard L. Sorensen, Rte. 1, Box 182, Bandera, Tex. 78003
Filed Sep. 7, 1982, Ser. No. 415,665
Int. Cl.³ F41C *29/00*
U.S. Cl. 42—94 **7 Claims**



1. A firearm support comprising
an elongated base,
first and second transversely extending and longitudinally spaced support members on said base,
first and second asymmetrical and coacting wedges carried in said first support member,
first and second symmetrical and coacting wedges carried in said second support member,
said wedges in said first and second support members adapted to firmly grip selected parts of a firearm carried therein.

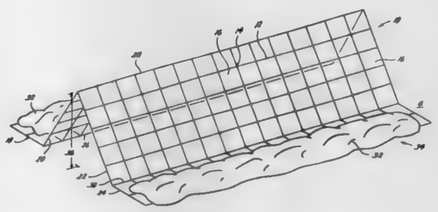
4,449,315
PURSE RING CONTROL APPARATUS FOR FISHING VESSELS
Mario J. Puretic, P.O. Box 58070, Tierra Verde, Fla. 33715
Filed Aug. 24, 1982, Ser. No. 410,934
Int. Cl.³ A01K *73/00*
U.S. Cl. 43—8 **15 Claims**

1. Apparatus for handling the purse rings of a net as such net is brought alongside a fishing vessel by the net's purse line, said purse rings being carried by said purse line, said apparatus comprising:
davit means mounted adjacent a sidewall of said vessel and having a free end supporting said purse line;
power-operated means to move the free end of said davit means between a first position wherein said free end extends outwardly of said vessel sidewall and a second position wherein said free end is disposed adjacent said vessel sidewall; and



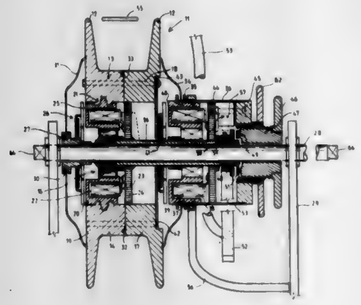
purse ring support means mounted adjacent said vessel's sidewall below said davit means and movable between a retracted position when said davit means is in said second position and an extended position when said davit means is in said first position, whereby said support means temporarily supportingly engages said purse rings in said extended position for sequential removal of said purse rings from said support means.

4,449,316
SNAKE TRAP
Albert B. Moorhead, P.O. Box 413, Conroe, Tex. 77301
Division of Ser. No. 128,399, Mar. 10, 1980, Pat. No. 4,370,823.
This application Aug. 31, 1982, Ser. No. 413,565
Int. Cl.³ A01M *23/08*
U.S. Cl. 43—10 **3 Claims**



1. A device for the trapping of snakes and similar animals, comprising:
at least four areas of netting;
said netting areas being serially adjacently connected;
the first and last of said netting areas being adapted to be placed substantially flat on the ground;
other of said netting areas being substantially non-horizontal to the ground; and,
the interstices of said netting areas varying in size from area to area.

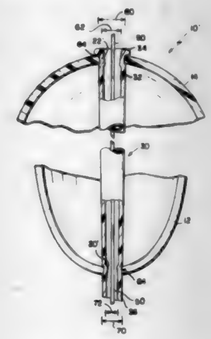
4,449,317
FISHING APPARATUS
Marcus T. Brodribb, Wharf St., Currie, King Island, Tasmania; Anthony G. Brodribb, Bunton Ave., Triabunna, Tasmania, and David H. Baillie, 2 Salacia Ave., Mermaid Waters, Queensland, all of Australia
Filed Dec. 31, 1981, Ser. No. 336,336
Claims priority, application Australia, Oct. 8, 1981, PF1111
Int. Cl.³ A01K *89/017, 89/02*
U.S. Cl. 43—15 **12 Claims**



1. Fishing apparatus including:
a rotatable driving shaft;
a fixed lay shaft supported concentrically about said driving shaft;
a reel assembly mounted rotatably about said driving shaft for supporting a fishing line;
a clutch assembly operable for selectively connecting said reel assembly to said driving shaft to reel in said line and including a driving clutch member rotatable with said driving shaft, a driven clutch member rotatable with said reel assembly, and electro-magnetic clutch actuating means supported on said lay shaft for coupling said clutch members;
a brake assembly within a housing for selectively connecting said reel assembly to said lay shaft to stop rotation of said reel assembly and including a fixed braking member supported on said lay shaft, a rotatable braking member rotatable with said reel assembly, and electro-magnetic brake actuating means supported on said lay shaft for coupling said braking members; and
a line monitoring means for monitoring the fishing line tension and for controlling said clutch and brake actuating means in response to changes in fishing line tension, said line monitoring means having a first control position at which said brake actuating means is actuated to couple said braking members to stop the reel assembly, and a second control position at which said clutch actuating means is actuated to couple said clutch members to connect said reel assembly to said driving shaft for rotation therewith.

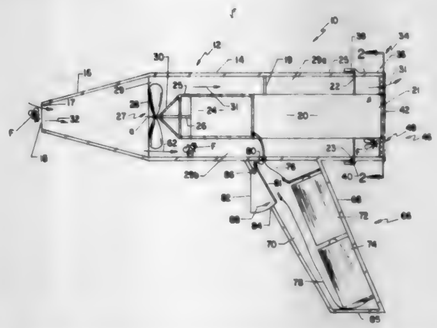
4,449,318
FISHING BOBBER
Garnett S. Lane, 301 Green Rd., Madison, Ind. 47250
Continuation-in-part of Ser. No. 157,336, Jun. 9, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,639
Int. Cl.³ A01K *93/00*
U.S. Cl. 43—44.9 **1 Claim**

1. A fishing bobber, comprising a preformed plastic egg-shaped shell having a generally hollow semispherical-shaped top section and a generally hollow conical-shaped bottom section, a chemical weld connection providing a seal between the top and bottom sections, diametrically opposed apertures formed in the top and bottom sections of the shell, each having a predetermined cross-sectional dimension, the dimension of the aperture in the top section being larger than the dimension of the aperture in the bottom section, an elongated tapered resilient tube exhibiting substantially non-memory properties and engaging said apertures and extending longitudinally through the shell, the tube including a first end having a first cross-sectional dimension which is about 0.020 to 0.025 inch greater than the cross-sectional dimension of the aperture in the top section to form a compression seal between the top section and the tube, the tube further including a second end having a second cross-sectional dimension which is about 0.020 to 0.025 inch greater than the cross-sectional dimension of the aperture in the bottom section to form a compression seal between the bottom section and the tube, the first and having



a greater cross-sectional dimension than the second end, so that when the tube is inserted into the shell, there is no deformation of the top shell aperture or the tube bottom until the final seating of the top of the tube with the top shell aperture and the bottom of the tube with the bottom shell aperture, the first end including a peripheral flange extending radially therefrom for engaging the top section of the shell, the second end of the tube including a line guide opening having a cross-sectional dimension which is slightly greater than the cross-sectional dimension of the line, the second end projecting beyond the periphery of the bottom section of the shell to provide a fulcrum for stabilizing the shell in an upright position on a liquid surface with minimum weight on the line beneath the surface.

4,449,319
FLY EXTERMINATOR
Gerry R. Garcia, 4180 Rosewood, Saginaw, Mich. 48603
Filed May 26, 1981, Ser. No. 267,051
Int. Cl.³ A01M *3/00*
U.S. Cl. 43—139 **19 Claims**



18. Hand-held insect exterminating apparatus comprising:
a hollow elongate housing including a forward terminal end provided with a forwardly disposed air inlet, said housing

further including a hollow cylindrical jacket terminating in a rearward end defining a rearwardly opening air outlet, and a passage between said inlet and outlet;

suction creating means disposed in said passage for drawing a stream of air in a downstream path of travel into said passage through said inlet and outwardly therefrom through said outlet;

perforate means, disposed on said housing in the path of said stream of air, for axially passing said stream of air but interrupting the passage of any insects entrained in said air stream;

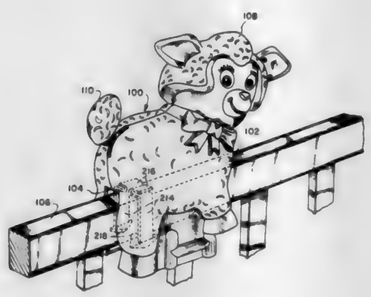
a rearward hollow cylindrical reservoir casing detachably mounted on said rearward end of said jacket for receiving and storing any insects impacting said perforate means; and

a cylindrical core member having a forward portion received by and fixed to said jacket and a rear portion received by said reservoir casing;

said perforate means comprising a stationary central screen mounting member axially aligned with said cylindrical core member and an annular screen spanning said rearward hollow reservoir casing and said central screen mounting member.

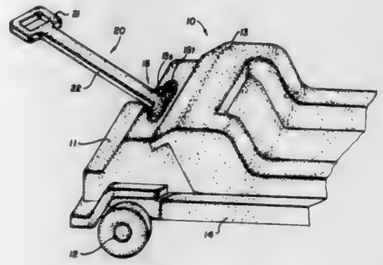
4,449,320
Patent Not Issued For This Number

4,449,321
CRIB TOY
Walter S. Reiling, Livingston, N.J., assignor to Meritus Industries, Inc., Florham Park, N.J.
Filed Dec. 23, 1982, Ser. No. 452,813
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—113 **18 Claims**



1. Crib toy comprising a reversing mechanism housed in an outer shell and moving means mounted in said shell and driven by said reversing mechanism for moving said crib toy along a crib rail, said reversing mechanism comprising first and second gears arranged on a support plate adjacent a portion of said moving means, said support plate being pivotally mounted within said shell between a first and second position, rotating means for rotating said first and second gears, and pivoting means for pivoting said support plate to alternately engage said first and second gears with said moving means whereby said crib toy is driven along said crib rail in a forward and then reverse direction, said pivoting means comprising a cam and cam follower, said cam being rotated by said rotating means and said cam follower having a member engaging a portion of said support plate.

4,449,322
HANDLE OPERABLE VEHICLES
Martin Blumenthal, 99 Longview Ave., Chatham, N.J. 07928
Filed May 27, 1982, Ser. No. 382,631
Int. Cl.³ A63H *11/10*; B62B *3/00*
U.S. Cl. 46—202 **6 Claims**



1. A vehicle comprising

a housing;

an aperture in said housing;

an accessory which is receivable in siad aperture and engageable in said housing for use in the operation of said vehicle and is also releasable thereform for auxiliary uses in connection therewith;

said accessory comprising a handle that can be used in manuevering said vehicle and being provided with a shovel blade at the portion thereof which is engageable in said aperture; said aperture forming a "T"-shaped slot with the "T" portion thereof receiving the shovel blade and the stem of the "T" portion guiding said handle and the housing includes an internal semicircular track to permit the rotation of said blade.

4,449,323
ADJUSTABLE SPINNING TOY VEHICLE
David R. Fisher, Rancho Palos Verdes, Calif., assignor to Zee Toys, Inc., Long Beach, Calif.
Filed May 20, 1982, Ser. No. 380,218
Int. Cl.³ A63H *17/26, 17/38*
U.S. Cl. 46—211 **9 Claims**

1. A toy vehicle comprising:

a body;

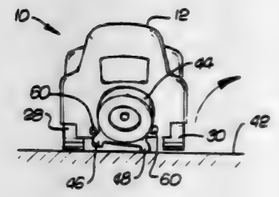
at least one front wheel positioned toward a forward end of said body;

a pair of spaced-apart rear wheels positioned toward a rearward end of said body;

motor means for driving said rear wheels to propel the vehicle;

a counterbalance weight positioned toward said rearward end of said body, rearward of said rear wheels, to provided a downwardly directed counterbalance force which, in conjunction with the torque on said rear wheels produced by said motor means, causes said at least one front wheel to raise off the ground as the vehicle moves forward; and

a support member having attached thereto a pair of spaced-apart skids and being adjustable to selectively position one or the other of said skids to engage the ground at a point located adjacent to and rearward of either one or the other of said rear wheels as the vehicle moves forward with said at least one front wheel off the ground, such that the vehicle may be caused to spin substantially in circles, with the direction of rotation of the spin depending upon the position preselected for said support member.



4,449,324
WIND VANE HANGING PLANT CONTAINER
Adam R. Ostarly, Rte. 1, Box 651F, Covington, La. 70433
Filed Aug. 30, 1982, Ser. No. 412,606
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—67 **19 Claims**

1. A hanging plant container, comprising:

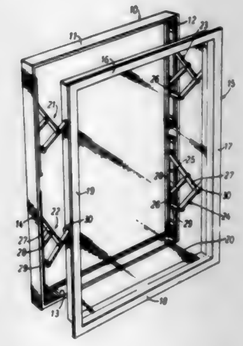
a. container means for holding soil and a plant, wherein said container means comprises bottom and side walls defining an open cavity;

b. at least one support arm having an elongated bottom base portion rigidly attached to said bottom wall of said container means near the center of gravity thereof to prevent tilting of said container means; a medial portion integrally connected to said bottom base portion and rigidly attached to said side wall of said container means and extending upwardly alongside the side wall of said container means beyond the top thereof, said medial portion being attached to said sidewall adjacent its upper part; a wind vane-like top portion, integrally connected to said medial portion and extending at approximately 45° angle from the top of said medial portion inwardly and upwardly in relation to said open cavity to a point approximately above its vertical center axis, said top portion being relatively wide in its vertical plane and relatively narrow in its horizontal plane to act as a wind vane and substantially inhibit rotational movement of said container means beyond a maximum rotational arc of 90°;



c. adjustable hanging means associated with said support arm for selectively suspending said container means from any overhead structure.

4,449,325
ADJUSTABLE WINDOW ASSEMBLY
David E. Rawlings, Cheltenham, England, assignor to Consort Aluminium Limited, Tewkesbury, England
Filed Jun. 29, 1982, Ser. No. 393,624
Int. Cl.³ E05D *15/52*
U.S. Cl. 49—192 **3 Claims**



1. A window assembly comprising a rectangular open frame which, in use, is fixed; a rectangular vent frame which is movable into and out of engagement with the open frame; and four extensible linkages connecting the vent frame to the open frame, which linkages are symmetrically disposed on each of two opposite sides of the assembly, each linkage comprising a track mounted on a side member of one of the frames so as to extend longitudinally thereof, a slider movable along the track, a strut pivotally connected to the track, a brace pivotally connected between the slider and the strut, a link pivotally connected to the slider, and a bar pivotally connected between the link and the strut and pivotally connected at its end to a side member of the other of the frames, whereby the vent may

be selectively adjusted angularly with respect to the frame by differential extension of at least certain of the linkages.

4,449,326

GLASS PANE HOLDER FOR WINDOW REGULATOR

Syunichi Hori, 8-24-301, Shimomeguro 6-chome, Meguro-ku, Tokyo, and Isao Kurihashi, 67-3, Nakaechi, Atsugi-shi, Kanagawa, both of Japan

Filed May 4, 1982, Ser. No. 374,647

Claims priority, application Japan, Jun. 6, 1981, 56-87345; Jun. 6, 1981, 56-87346

Int. Cl.³ E05F *11/38*

U.S. Cl. 49—375 **6 Claims**



1. A glass pane holder for coupling a glass pane to a window regulator including a flexible elongated drive member which slidably extends through a guide track having a lengthwise extending slotted opening; comprising

a bracket molded from a hard resin and having a pair of opposite walls which define a transversely extending elongate slot therebetween which receives an edge portion of the glass pane;

and a connection member detachably mounted on the bracket and engageable with the flexible elongated drive member through the slotted opening formed in the guide track;

the connection member being formed by a single foldable material and including a pair of wings which lie in a common plane, a grip located intermediate the wings and formed, by a press operation, into substantially Ω-configuration in section which define a closed groove in which the flexible elongated drive member of the window regulator is received, and a neck formed between the pair of wings and the grip, the grip including means engageable with the drive member which extends through the closed groove.

4,449,327

TILTING WINDOW, ESPECIALLY FOR INSTALLATION IN AN INCLINED ROOF

Elgard Nielsen, Ostbirk, Denmark, assignor to V. Kann Rasmussen Holding A/S, Soborg, Denmark

PCT No. PCT/DK81/00082, 371 Date Apr. 26, 1982, 102(e) Date Apr. 26, 1982, PCT Pub. No. WO82/00842, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 8, 1981, Ser. No. 375,275

Claims priority, application Denmark, Sep. 10, 1980, 3850/80

Int. Cl.³ E05D *15/00*

U.S. Cl. 49—390 **5 Claims**

1. A tilting window arrangement, particularly intended for installation in an inclined roof structure, comprising

a main frame including a top member, two spaced lateral members and a bottom member,

an intermediate frame including two lateral members which in the closed position of the window extend at least along the upper half of said main frame lateral members,

hinge means between the top portions of said main and intermediate frames and defining an axis that is parallel to said main frame top member,

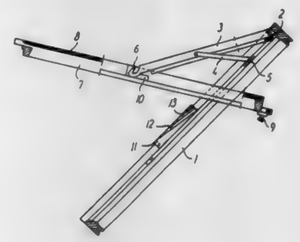
means operative to urge said intermediate frame away from its closed position by swinging about said hinge means,

a pane supporting sash,

pivot means arranged adjacent the horizontal center line of said sash and tiltingly connecting said sash to said intermediate frame lateral members,

manually releasable locking means operative between the upper portions of said sash and said intermediate frame, and

cooperative arresting means on said sash and said main frame



to hold the sash in a predetermined position when said locking means are engaged,

the arresting means of the sash being located at a slight distance from the tilting axis defined by said pivot means to be automatically caught by and released from the associated arresting means of said main frame upon tilting of said sash in its closing and opening direction, respectively, in relation to said intermediate frame in the almost closed position thereof.

4,449,328

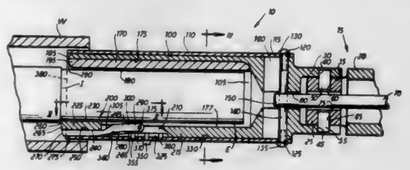
INSIDE, OUTSIDE HONING TOOL

Robert H. Gillette; Terrence N. Brammall; Kent Shelton, and Chris Cramer, all of Angola, Ind., assignors to Brammall, Inc., Angola, Ind.

Division of Ser. No. 138,700, Apr. 9, 1980, Pat. No. 4,323,646. This application Feb. 5, 1982, Ser. No. 346,109

Int. Cl.³ B24B *5/00*

U.S. Cl. 51—73 R **1 Claim**



1. In a honing tool suitable to hone a cylindrical surface substantially to a terminating surface, including an elongated cylindrical hollow tool body with a plurality of tool holders circumferentially mounted on a selected end region thereof, with each tool holder supporting a honing stone, an improvement wherein: said tool body is formed with a cylindrical wall having a selected essentially constant thickness, and includes a plurality of elongated slots formed in said cylindrical wall in said selected end region of said tool body, said slots are circumferentially spaced around said end region, each said slot has two parallel, spaced apart axially oriented side surfaces formed in said cylindrical wall; each said tool holder is positioned essentially completely within a corresponding slot in said cylindrical wall between said spaced apart axially oriented surfaces; means for pivotally attaching each tool holder to said tool body, each said means for attaching is positioned to extend between said spaced apart axially oriented surfaces within a corresponding slot and is attached to at least one selected region within said cylindrical wall, each said means is adapted to pivotally attach an end of a said respective tool holder positioned within said slot to said cylindrical wall; means for

expansion, said means for expansion substantially surrounds the tool body, is axially movable, and is operative to engage a region located within a corresponding slot on each said tool holder and pivot each member of said plurality of tool holders inwardly toward the surface being honed, wherein the hollow cylindrical tool body is adapted to receive therein a workpiece with a cylindrical surface to be honed and wherein said means for expansion includes a hollow cylindrical outer portion with a plurality of surfaces offset with respect to an axis of said cylindrical outer portion, and wherein said means for expansion and each said means for pivotally attaching cooperate to pivot each tool holder inwardly toward the surface of the workpiece to be honed in response to axial movement of said means for expansion in a selected direction along said cylindrical tool body, and wherein each said pivotally mounted tool holder supports the associated honing stone with a selected end region of the stone exposed to hone the reference cylindrical surface adjacent a terminating surface, and wherein said means for expansion engages each of said tool holders at a location between said means for pivotally attaching each of said tool holders to said tool holder and said selected end, and a plurality of elongated plastic members mounted in slots in said cylindrical wall in said selected end region of said tool body so as to engage said cylindrical surface.

4,449,329

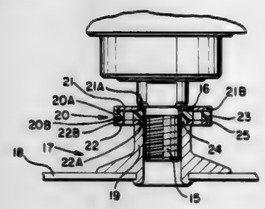
COMPOSITE WASHER ASSEMBLY

William D. Sauerwein, Westminster, Md.; Daniel H. Sides, New Freedom, Pa.; Steven A. Weber, Glyndon, and James R. Horney, Cockeysville, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 6, 1982, Ser. No. 406,086

Int. Cl.³ B24B *41/04*

U.S. Cl. 51—168 **15 Claims**



1. For use with a portable grinder or other power tool of the type having a tool element subassembly and further having a spindle provided with an annular shoulder, an annular composite washer assembly received over the spindle and disposed axially between the shoulder and the tool element subassembly, said washer assembly comprising a first annular washer, a second annular washer spaced axially from the first washer, substantially parallel thereto and aligned coaxially therewith, the washers having respective inner and outer diameters, and an annular resilient body between the first and second washers and integrally molded thereto, the body having a first integral annular band extending radially inwardly of the washers and joined to the respective inner diameters thereof, and the body further having a second integral annular band extending radially outwardly of the washers and joined to the respective outer diameters thereof, whereby the washer assembly forms a soft mount for the tool element subassembly.

4,449,330

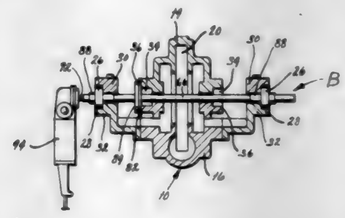
RESURFACING PROCESS AND TOOL FOR INSTALLING CATRIDGE-TYPE

Cornelius J. McCarthy, 1412 Widefields, St. Louis, Mo. 63138, and George E. Aplin, 888 Stacey La., Fenton, Mo. 63026

Filed Apr. 14, 1982, Ser. No. 368,123

Int. Cl.³ B24B *15/00*

U.S. Cl. 51—241 S **21 Claims**



1. A tool for resurfacing the surface of a pump casing where a shaft, that is supported on bearings, emerges from the casing, said tool comprising: an arbor adapted to fit into the pump casing in lieu of the shaft; a grinding wheel carried by the arbor and configured to locate opposite the surface of the casing that is to be resurfaced; means connected to the arbor for rotating the arbor, and thrust applying means capable of being mounted upon the pump for exerting an axially directed force on the arbor as it rotates, with the force being oriented such that the grinding wheel is urged against the casing for resurfacing the casing in the region where the shaft normally emerges from the casing, the thrust applying means including a mount that is capable of being attached securely to the pump, a lever that pivots on the mount, and means for coupling the lever and the arbor such that a force exerted on the lever is transmitted into an axially directed force on the arbor.

4,449,331

SHOT BLASTING MACHINERY

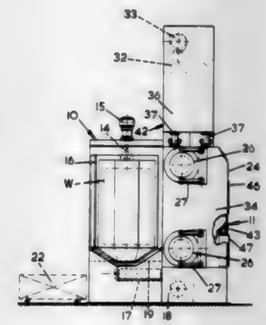
William R. MacMillan, Sale, England, assignor to Tighman Wheelabrator Limited, Altrincham, England

Filed Mar. 4, 1982, Ser. No. 354,693

Claims priority, application United Kingdom, Mar. 17, 1981, 8108333

Int. Cl.³ B24C *3/04*

U.S. Cl. 51—425 **13 Claims**



1. A shot blasting machine comprising;

(1) a blast cabinet module into which a workpiece to be shot blasted can be conveyed; and

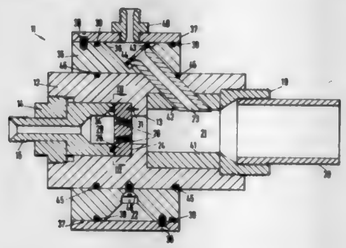
(2) a shot blasting module directly connected to the blast cabinet module in communicating relationship therewith, the shot blasting module including:

(A) a casing open to the interior of the blast cabinet module,

(B) a swing-out door pivoted on the casing and openable to permit access to the interior thereof,
(C) an abrasive throwing wheel assembly mounted on the internal surface of the swing-out door and including a rotatable throwing wheel for impelling abrasive into the blast cabinet module,
(D) a motor drivingly coupled to the throwing wheel and mounted on the external surface of the swing-out door,
(E) means for delivering spent abrasive and contaminants from the blast cabinet module into a lower region of the shot blasting module,
(F) an abrasive/contaminant separator in an upper region of the shot blasting module,
(G) an abrasive storage hopper intermediate the upper and lower regions of the shot blasting module for receiving clean abrasive from the separator,
(H) a two stage vertical conveyor means adapted simultaneously to direct the spent abrasive and contaminants from the lower region of the shot blasting module into the separator and to deliver clean abrasive from the separator into the storage hopper,
(I) a delivery pipe extending from an outlet of the storage hopper to the throwing wheel assembly,
(J) a valve at the storage hopper outlet for controlling flow of clean abrasive from the storage hopper into the delivery pipe, and
(K) a feed spout forming part of the abrasive throwing wheel assembly and aligned with the outlet of the delivery pipe when the swing-out door is closed to receive clean abrasive from the delivery pipe and direct it into the throwing wheel.

4,449,332
DISPENSER FOR A JET OF LIQUID BEARING PARTICULATE ABRASIVE MATERIAL

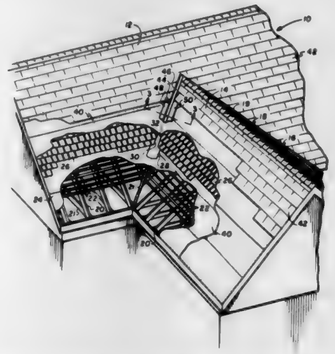
Norman J. Griffiths, 35 Weston Park Ave., Shelton Lock, Derby, England
Continuation of Ser. No. 62,570, Jul. 31, 1979, abandoned. This application May 13, 1981, Ser. No. 263,324
Int. Cl.³ B24C *5/04*
U.S. Cl. 51—439 **3 Claims**



1. In a dispenser for dispensing a jet of liquid bearing particulate abrasive material, comprising in combination:
a hollow body defining a bore;
liquid inlet means at one end of the bore;
outlet means at the other end of the bore for discharging the liquid bearing particulate abrasive material;
a mixing chamber disposed between the liquid inlet means and the outlet means;
abutment means provided within the bore, between said one end of the bore and the mixing chamber, so as to face said one end of the bore;
a nozzle holder seated against the abutment means;
a plurality of inlet nozzles mounted in the nozzle holder for directing a flow of liquid through the mixing chamber, each said inlet nozzle being dimensioned and arranged so that, in the use of the dispenser, the radial cross-section of the flow of liquid through the mixing chamber is smaller than the cross-section of the mixing chamber;
each said inlet nozzle having a discharge end or tip lying within the mixing chamber at a first axial location relative to the direction of the flow of liquid, and the plurality of inlet nozzles being arranged so as to direct liquid along intersecting axes which are angularly inclined, in the same sense, to radial planes containing the central axis through the mixing chamber;
locking means for preventing rotation of the nozzle holder;
a supply chamber for the particulate material;
passage means for transferring the particulate material from the supply chamber to the mixing chamber, and comprising a plurality of passages which respectively extend along axes convergent with the direction of the flow of the liquid;
entry ports in the wall of the mixing chamber by which particulate material leaves the passages and enters the mixing chamber, the entry ports lying at a second axial location relative to the direction of the flow of liquid and axially downstream relative to said first axial location; and
said mixing chamber having a portion of axial length as defined between said first and second axial locations wherein the flow of liquid directed by each said inlet nozzle travels within the mixing chamber but wherein no particulate material flows after entering the mixing chamber by way of the entry ports due to said entry ports being at the downstream axial end of said portion.

4,449,333
VALLEY STRIP FOR ROOF STRUCTURE

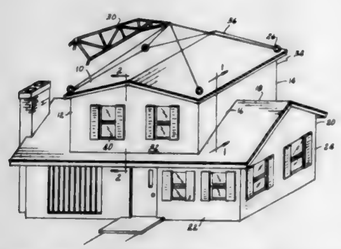
David G. Stratton, 1301 16th St., Plano, Tex. 75074
Filed Jun. 18, 1982, Ser. No. 389,761
Int. Cl.³ E04D *1/36*
U.S. Cl. 52—13 **6 Claims**



1. In a roof structure including at least two sloping roof surfaces intersecting at an angle to form a valley, said roof structure including a first roof covering on said roof surfaces, each of said first roof coverings being formed with adjacent spaced apart parallel edges, a second roof covering overlying said first roof covering and including a valley strip being defined by an elongated sheet member having a channel portion formed by a flat bottom wall and two spaced apart sidewalls extending substantially vertically upward from said bottom wall, opposed flange portions of said valley strip extending from said sidewalls and underlying said second roof covering on said roof surfaces, respectively, said valley strip extending to a ridge formed by the intersection of at least one of said roof surfaces with an opposed roof surface, said bottom wall of said valley strip extending over said ridge and at least partially along said opposed roof surface, and the depth of said channel portion being reduced at said ridge by said sidewalls being folded toward each other to overlie said bottom wall to flatten said valley strip at said ridge.

4,449,334
DORMER STRUCTURE AND METHOD

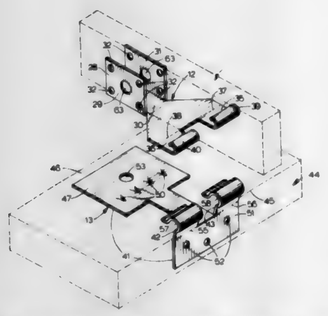
Sheldon Shacket, Southfield, and Robert Helfman, Franklin, both of Mich., assignors to Trus-Us, Inc., Royal Oak, Mich.
Filed Jan. 26, 1983, Ser. No. 461,024
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—79.3 **7 Claims**



1. In combination an original building structure having at least two parallel spaced apart bearing walls and roof structure and a later constructed dormer room addition to the original building structure positioned in the roof structure of the original building structure and extending completely between and bearing on only the spaced apart bearing walls of the original building structure wherein the later constructed dormer room addition includes at least two spaced apart walls extending between the bearing walls of the original building structure and wherein the spaced apart walls of the dormer room addition form beams between the bearing walls of the original building structure which beams carry the full weight of the dormer room addition and transfer the weight of the dormer room addition to the bearing walls of the original building structure.

4,449,335
ROOF FRAMING SYSTEM

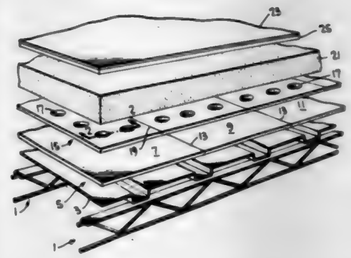
Patrick Fahey, 2609 W. 52nd St., Minneapolis, Minn. 55410
Filed Jun. 3, 1982, Ser. No. 384,745
Int. Cl.³ E04B *7/02, 1/38*
U.S. Cl. 52—90 **2 Claims**



1. A roof framing system for a roof having a plurality of rafters extending between top sill plates, each rafter having upper and lower ends, comprising the combination of an apex bracket,
the apex bracket comprising a first section for grasping the upper end of a first rafter, a second section for grasping the upper end of a second rafter, and an intermediate section operably coupling said first and second sections for setting the pitch between said first and second rafters, and two bracket assemblies, each bracket assembly comprising a rafter bracket and a sill plate bracket,
the rafter bracket comprising a rafter grasping section and two arms adjustably extending from said rafter grasping section, said arms being separated by a distance sufficient to allow one of said rafters to be disposed therebetween, and each arm including an outermost section comprising a lip formed by bending said arm back upon itself, and
the sill plate bracket comprising a mounting section for grasping one of said top sill plates, two arms adjustably extending from said mounting section, said arms separated by a distance sufficient to allow one of said rafters to be disposed therebetween, and a rafter bracket receiving section connected to each of said arms for detachably receiving said rafter bracket lips.

4,449,336
FIRE BARRIER RESERVOIR

Thomas L. Kelly, 21 Sands St., Waterbury, Conn. 06710
Continuation-in-part of Ser. No. 160,948, Jun. 19, 1980, abandoned. This application Jul. 19, 1982, Ser. No. 399,213
Int. Cl.³ E04B *1/00*; E04C *2/00*; E04D *5/00*; E04B *1/76*
U.S. Cl. 52—105 **20 Claims**



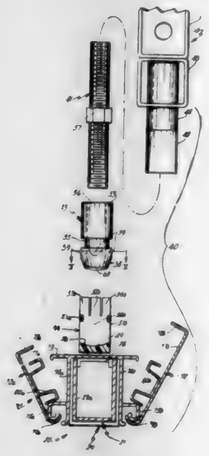
1. A roof structure including, in combination, a supporting means, a fireproof member mounted on said supporting means and comprising a plurality of sections with their adjacent edges in abutting relationship providing seams therebetween, a reservoir board mounted on and secured to said sections of the fireproof member, said reservoir board being provided with an aperture therein extending at least partially through the reservoir board, insulation mounted on said reservoir board, the insulation being meltable into a molten flowable mass when subjected to heat, and means covering the top surface of said insulation.

4,449,337
ADJUSTABLE BASE FOR OFFICE LANDSCAPING SYSTEM

Larry P. Gzym, Rockford; Lloyd G. Ritzema, Lowell, and David K. Haadsma, Jr., Wyoming, all of Mich., assignors to Stow Davis Furniture Company, Grand Rapids, Mich.
Filed Mar. 15, 1982, Ser. No. 358,091
Int. Cl.³ E04G *21/00*
U.S. Cl. 52—126.4 **23 Claims**

1. A wall panel base construction comprising:
means for supporting a wall panel;
foot means for supporting said base construction on a surface;
a block member defining a threaded bore;
means for supporting said block member within said foot means for tilting and shifting movement with respect to said foot means; and
an upwardly extending threaded member having a lower threaded portion adjustably secured within said threaded bore within said block member, said threaded member having an upper portion supporting said wall panel support means, said threaded member thereby operatively supporting said panel support means on said foot means, whereby the height of said panel supporting means above said foot means can be adjusted by rotating said threaded

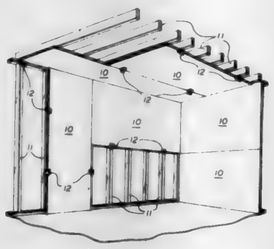
member, and whereby said block member tilts and shifts to accommodate tilting and shifting of said threaded member with respect to said foot means to prevent said threaded member from jamming within said block member.



4,449,338
TEMPORARY RESTRAINING CLAMP FOR WALLBOARD

James E. Reicherts, Cary, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jun. 28, 1982, Ser. No. 392,444
Int. Cl.³ E02D *35/00*
U.S. Cl. 52—127.8 6 Claims



1. A clamp adapted for the temporary support of a building panel during installation, said clamp comprising an L-shaped body, one leg being adapted for contact with said panel, and a screw projecting from the other leg of the L through and beyond the panel contacting leg and perpendicular to said panel contacting leg.

4,449,339
SIDE-WALL DISCHARGE SYSTEM

Charles E. Bubb, Tulsa, and Fred E. Mauch, Sapulpa, both of Okla., assignors to Parkersburg Tank, Division of Maloney Crawford Corporation, Tulsa, Okla.

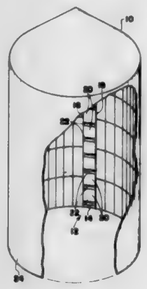
Filed Oct. 5, 1981, Ser. No. 308,619
Int. Cl.³ E04H *7/00*
U.S. Cl. 52—195 3 Claims

1. In a storage tank for particulate material having exterior sidewalls resting on a foundation and attached to interior vertical structural members that directly support the roof, the specific improvement comprising:

(a) at least two of said support members being adjacent and essentially parallel from the foundation to the top of said storage tank sidewall;

(b) a sidewall discharge means located between said adjacent support members through which stored particulate material is withdrawn; and

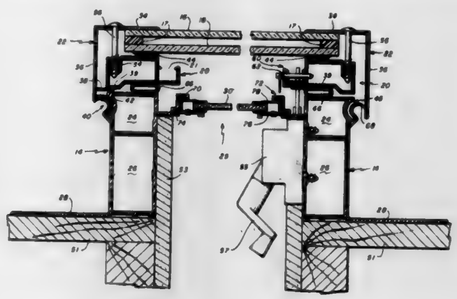
(c) a plurality of essentially vertical flat surfaces periodically mounted along the inside of said pair of adjacent vertical support members leaving openings between successive surfaces wherein said support members, sidewall and vertical flat surfaces form an interior chute with a plurality of openings in communication with said discharge means that allows selected flow of said stored particulate material during discharge, from successive top strata.



4,449,340
VENTILATING SKYLIGHT

Arthur P. Jentoft, Kennebunkport, and Paul A. Couture, Emery Mills, both of Me., assignors to Wasco Products, Inc., Sanford, Me.

Filed Jan. 22, 1982, Ser. No. 341,773
Int. Cl.³ E04B *7/18*
U.S. Cl. 52—200 14 Claims



1. A skylight construction for an opening in a building or the like comprising;

a frame means extending about the opening and including means secureable about the opening,

translucent or transparent means covering the opening and extending at edges to overlie the frame means,

means for retaining the covering means on the frame means,

said frame means comprising a base frame and a support frame overlying the base frame,

said frame means having at least said base frame comprised of a rigid plastic core having high temperature resistant properties, and a plastic capping material extruded over the external exposed surface of the core to protect the core from weathering,

said base frame having at least one flexible gasket integrally formed with said plastic core,

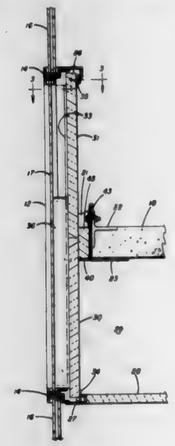
said integral flexible gasket comprising a gasket extending from and integral with a top horizontally-disposed wall of the base frame and disposed sandwiched between the base frame and overlying support frame,

said plastic capping material being substantially thinner than the thickness of the base frame, being less rigid than the plastic core and terminating at the base of the flexible gasket so that the gasket is absent a covering of the capping material so that the gasket maintains its flexibility.

4,449,341
FIRE CONTAINMENT ARRANGEMENT FOR CURTAIN WALL CONSTRUCTION

Philip C. Taglianetti, Brooklyn, and Andrew M. Burkard, Port Washington, both of N.Y., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 1, 1982, Ser. No. 364,285
Int. Cl.³ E04B *1/74*; E04H *1/04*
U.S. Cl. 52—235 11 Claims



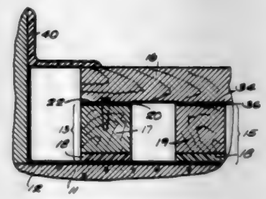
1. In a multi-level building having an elevated floor slab structure and an exterior curtain wall that includes spandrel glazing panels mounted opposite and spaced from the pheriphery of the floor slab structure; a fire containment arrangement comprising: a fire resistant insulation sheet between a spandrel glazing unit and the floor slab structure extending parallel to the spandrel glazing unit and covering substantially the area of the spandrel glazing panel below the level of the floor slab structure, heat resistant means supporting the insulation sheet on the floor slab structure independently from the curtain wall, and a body of fire resistant material filling space between the insulation sheet and the perimeter of the floor slab structure, whereby paths for fire propagation around the periphery of the floor slab structure in the spandrel area are blocked.

4,449,342
FLOORING SYSTEM

Carl W. Abendroth, 210 Crystal Ave., Crystal Falls, Mich. 49920

Filed Jun. 10, 1982, Ser. No. 387,184
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—393 11 Claims

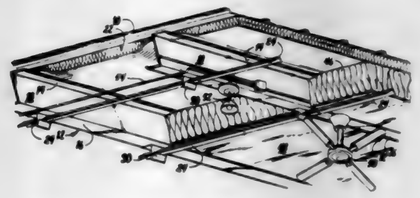
1. A flooring system comprising a foundation, support members on said foundation, floating members on said foundation and located between and generally parallel to said support members, floorboards superposed on said support members and said floating members, strips of resilient material between said floating members and said floorboards, and means for fastening said floorboards to said support members so that said strips of resilient material are in compression between said floorboards and said floating members.



4,449,343
INSULATION SUSPENSION SYSTEM

Dennis N. Henningsen, Highway 18 East, P.O. Box 310, Mason City, Iowa 50401

Filed May 3, 1982, Ser. No. 374,341
Int. Cl.³ E04B *1/74, 5/55*
U.S. Cl. 52—404 6 Claims



1. An insulation suspension system for a roof having a plurality of elongated purlins on the under surface of said roof, said purlins having longitudinal axes extending in parallel spaced relation to one another, each of said purlins having in cross-section an upstanding web and a horizontal flange connected to the bottom edge of said web, said horizontal flange having a downwardly presented surface, at least one electrical appliance connected to said downwardly presented surface and protruding downwardly therefrom; said system comprising:

a plurality of elongated parallel support members extending transversely to the longitudinal axes of said purlins and spanning the space between said spaced apart purlins,

clip means operatively attached to said purlins and retentively engaging said support members at opposite ends thereof so as to hold said support members in close proximity to said downwardly presented surfaces of said purlins,

a sheet of insulation material filling the space between said webs of said spaced apart purlins, said sheet having a downwardly presented surface which is positioned approximately in the same horizontal plane as said horizontal flange and which is fitted above said horizontal flange so as to leave said downwardly presented surface and said downwardly protruding appliance exposed from below;

said support members underlying and providing support to said sheet of insulation between said purlins.

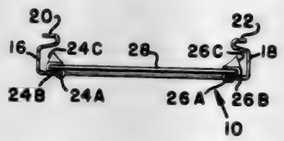
4,449,344
CEILING PANEL AND LENS

James Dodich, New Milford, N.J., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.

Filed Jan. 4, 1982, Ser. No. 336,572
Int. Cl.³ E04B *5/57*
U.S. Cl. 52—475 1 Claim

1. For use in a suspended ceiling: an elongated ceiling panel having elongated flanges for suspending said ceiling panel, and

an elongated bottom integral with said flanges, an elongated opening in said bottom extending over a substantial portion of said bottom and being defined by elongated parallel edges in said bottom; two elongated moldings respectively located along said elongated parallel edges and having essentially the same length as said edges, each molding being essentially S-shaped in cross section and in cross section having a relatively narrow first portion below said bottom, a second portion parallel to and wider than the said first portion and located above



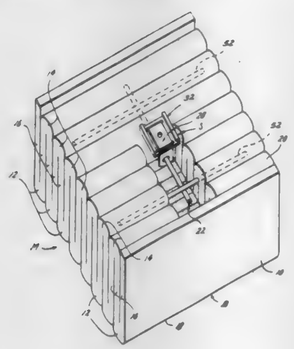
said bottom, said second portion being integral with said first portion and connected thereto by a portion placed around the respective edge, and a third portion spaced outwardly away from said opening and located above said bottom; and an elongated lens wider than said opening and slidably received in said panel between said third portions of said two moldings, said lens being supported by said second portions of said two moldings and being held onto said panel by spaced downwardly bent areas of said third portions of said two moldings, said moldings in turn being held against said edges by said lens.

4,449,345

INSULATION MODULE HARDWARE

Mack A. Hounsel, and Carlisle O. Byrd, Jr., both of Houston, Tex., assignors to Manville Service Corporation, Denver, Colo.

Division of Ser. No. 245,946, Mar. 20, 1981, Pat. No. 4,381,634. This application Apr. 29, 1983, Ser. No. 490,012
Int. Cl.³ E04B *1/80*
U.S. Cl. 52—506 **10 Claims**



1. Attachment hardware adapted for mounting an insulation module on one surface of a furnace, said module having a hot face and a cold face which between them define a module thickness, a pair of side faces which between them define a module length, and a top face and a bottom face which between them define a module width, said hardware comprising:

suspension arm means extending along some portion of the length and width of the cold face of the module, said suspension arm means having a plurality of suspension tabs extending from the cold face toward the hot face for some predetermined distance into the thickness of said module intermediate said two side faces;

at least one set of aligned apertures in said suspension tabs;

support bar means extending longitudinally through at least some portion of the length of the module, said support bar means being received in said at least one set of aligned apertures in the plurality of suspension tabs and penetrating said module, said portion of the length of the module being less than the full length whereby said suspension tabs and said support bar means are fully contained internally of said module; and

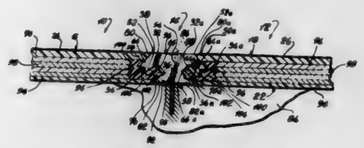
means for securing said suspension arm means to said furnace wall.

4,449,346

PANEL ASSEMBLY

J. Gerard Tremblay, 8361 Place Fonteneau, Montreal, Quebec, Canada (H1K 4S2)

Filed Nov. 12, 1980, Ser. No. 206,150
Int. Cl.³ E04B *1/38*; E04C *1/40*
U.S. Cl. 52—509 **15 Claims**



1. A panel assembly including at least two panels and a connector member for mounting the panels to a support surface, said panels being positioned edge-to-edge in coplanar relationship with respective confronting edges thereof spaced apart, said connector member being between said confronting panel edges and interlocking said panels together by being compressively and fixedly secured to said support surface; each panel having first and second surfaces lying respectively in first and second parallel planes and having on its respective confronting edge a tongue and a groove, said tongue and groove having generally parallel projecting surfaces extending along said panel edge and between said first and second planes, and respectively projecting and opening angularly towards said first plane; said connector member comprising an elongated body filling the space between the confronting edges and having on each side thereof a tongue and a groove respectively projecting and opening angularly towards said second plane, said tongue and groove on either side of said connector member being complementary to and lockingly engaging with the respective groove and tongue on the adjacent confronting edges of said panels, said connector member being offset with respect to the second plane of said panels for forming a gap above the support surface and cooperating with said panels to urge said panels towards one another in tight locking engagement as a result of a compressive force being exerted on said connector member in a direction towards said support surface when said connector member is compressingly secured to said support surface.

4,449,347

SOLAR COLLECTOR BUILDING TRUSS

Floyd H. Rooney, 3124 Bunker Lake Rd., Anoka, Minn. 55303

Division of Ser. No. 907,788, May 17, 1978, Pat. No. 4,237,869. This application Nov. 17, 1980, Ser. No. 207,299
Int. Cl.³ C04B *7/02*
U.S. Cl. 52—639 **8 Claims**

1. A solar heat collector building truss, comprising:

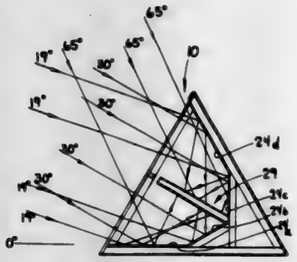
(a) a base beam;

(b) a sunward beam extending upward from and over the base beam;

(c) a rear beam extending downward from an apex between said rear beam and the sunward beam;

(d) an upright central beam connected to and extending downward from the rear beam toward the base beam, said upright central beam being substantially perpendicular to the base beam and truncating a projected apex between the rear and base beams; and

(e) an inclined central beam spaced rearward of said sunward beam between the upright central beam and the base beam said central beams forming between themselves an



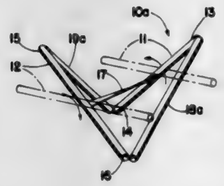
obtuse angle with the concave surfaces of the obtuse angle facing the sunward beam.

4,449,348

COMPOSITE STATIC STRUCTURE

James R. Jacobs, 2210 Murray Hill Rd., (#3), Cleveland, Ohio 44106

Filed Oct. 16, 1981, Ser. No. 312,289
Int. Cl.³ E04H *12/00*
U.S. Cl. 52—648 **10 Claims**



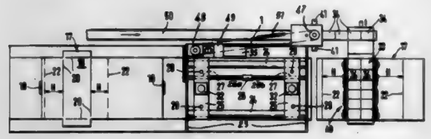
1. A static structure component comprising at least two rigid struts spaced along and extending perpendicular to a common axis, and lying in planes that intersect along said axis, a torsion member extending along said axis and connecting said struts, said torsion member being stressed in torsion, and means connecting said struts to one another at locations equally spaced from said axis and approximately at the ends thereof, in a manner to resist the torsional force of said torsion member and to retain said component in a static condition.

4,449,349

PACKING MACHINE WITH ADJUSTABLE MEANS FOR WEAKENING SELECTED PORTIONS OF CARDBOARD BLANKS OR THE LIKE

Oskar Roth, Zufikon, Switzerland, assignor to Involvo AG, Bünzen, Switzerland

Filed Nov. 23, 1981, Ser. No. 324,134
Claims priority, application Switzerland, Dec. 3, 1980, 8922/80
Int. Cl.³ B65B *59/02*
U.S. Cl. 53—66 **10 Claims**



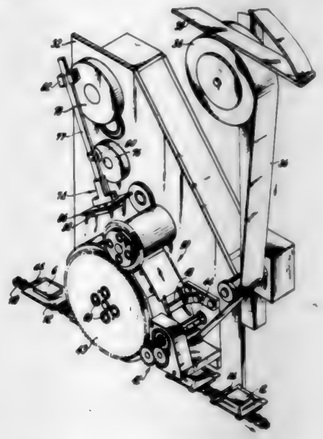
1. In a packing machine wherein commodities are draped into blanks having weakened portions constituting fold lines for conversion of such blanks into envelopes for the respective commodities, the combination of means for transporting a succession of blanks in a predetermined direction along a predetermined path; a packing station adjacent to a first portion of said path; means for feeding commodities of varying dimensions to said first portion of said path; a blank treating unit adjacent to a second portion of said path ahead of said first portion, as considered in said direction, said unit comprising blank weakening means including a pair of tools, means for moving said tools at least once toward and away from said path into and from engagement with successive balnks on advancement of such blanks into said second portion of said path, support means for said tools, said tools being movable with reference to said support means between a plurality of different positions relative to said second portion of said path so that the tools can engage and weaken different portions of a blank in each of said different positions thereof, means for moving said tools between said different positions including reversible prime mover means and means for moving said tools nearer to and further away from each other in response to actuation of said prime mover means, and first and second guide means on said support means, one for each of said tools, said tools being movable in the respective guide means toward and away from the blanks in said second portion of said path; means for monitoring the dimensions of commodities which are about to be draped into blanks in said first portion of said path, including means for generating signals which denote the height of commodities; means for actuating said prime mover means in response to said signals to that the selected distance between said tools is a function of the height of monitored commodities; and means for moving said monitoring means between a plurality of different positions in response to actuation of said prime mover means so that each position of said tools corresponds to a different position of said monitoring means, including a mobile carrier for said monitoring means, a feed screw meshing with said carrier and means for transmitting torque from said prime mover means to said feed screw.

4,449,350

METHOD AND APPARATUS FOR MAKING SEALED PACKAGES FOR SPREADABLE PRODUCTS

Redmond Sanford, 1385 York Ave., New York, N.Y. 10021

Continuation of Ser. No. 180,062, Aug. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 80,141, Sep. 28, 1979, abandoned. This application Sep. 9, 1982, Ser. No. 416,400
Int. Cl.³ B65B *47/06, 61/18*
U.S. Cl. 53—412 **22 Claims**



1. A method for high speed production of a sealed package for storing, shipping and handling an individual service portion

of a spreadable product and for supporting said spreadable product for use after opening said package, comprising the steps of:

(a) continuously rotating a drum having a plurality of shaping stations located on the peripheral surface thereof, each of which includes a shaping cavity formed and substantially completely surrounded by a plurality of walls, at uniformly spaced intervals;

(b) continuously feeding a supply of indefinite length, flexible sheet material;

(c) continuously cutting individual predetermined lengths of said sheet material from said supply thereof;

(d) continuously feeding and directing individual predetermined cut lengths of said sheet material to each of said shaping stations at uniformly synchronized time intervals;

(e) synchronizing the movement of said shaping stations with the speed of said feeding and cutting of said sheet material so that each of said individual cut lengths thereof is deposited in centered register over one of said shaping cavities;

(f) applying a suction substantially completely about the perimeter of each of said shaping cavities so as to pick up and slidably hold the margin portions of said individual cut length of sheet material and cause said material to lie in a substantially flat configuration in centered register across said shaping cavity;

(g) bringing mechanical pressure into shaping register with said shaping cavity along a radial line extending through the axis of rotation of said rum and the center of said shaping cavity to force said sheet material into each of said shaping cavities without stretching during continuous movement of said shaping stations and while simultaneously continuing to apply said suction about the perimeter of said shaping cavity and synchronizing the movement of said mechanical pressure with the speed of said shaping station,

thereby causing said margin portions of said sheet material to slide longitudinally and transversely inwardly along the plane of the perimeter of said shaping cavity while said center portion thereof is pressed into said shaping cavity to form said sheet material into a three-dimensional cover member having

a substantially flat center portion,

a substantially flat margin portion extending laterally outwardly from said center portion in a separate plane generally parallel thereto, and

side walls connecting said center portion to said margin portion;

(h) removing said mechanical pressure from each of said formed three-dimensional cover members during continuous movement of said shaping stations and while continuing to apply said suction to said margin portion of said cover member, said suction fixedly retaining said cover member at said shaping station in said three-dimensional shape, said mechanical pressure is applied to and removed from each of said shaping cavities along said radial line throughout said shaping step while said drum and said shaping stations constantly rotate;

(i) inverting each of said shaping stations by the continued rotation of said drum to a position where each of said shaping stations is located directly above and in said moving register with one of said moving base members while said cover member is fixedly retained therein so that said center portion of said cover member is positioned above said margin portion thereof;

(j) at a station remote from said plurality of shaping stations, placing an individual service portion of a spreadable product on the approximate center of a substantially flat, relatively stiff base member having margins surrounding said spreadable product;

(k) continuously transporting said base members at uniformly spaced intervals into moving register with each of said inverted cover members fixedly retained at said shaping stations;

(l) releasing each of said inverted cover members from said shaping stations;

(m) compressing the margins of each of said released cover members on to the margins of one of said base members during said moving register therebetween so that said center portion of said cover member encloses said spreadable product carried on said base member; and

(n) removably sealably adhering said margin portion of said cover member to said margins on said base member to sealingly enclose said spreadable product therebetween.

4,449,351

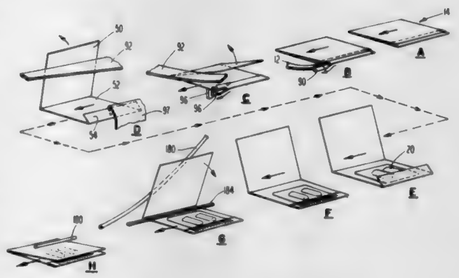
BLISTER PACK LOADING MACHINE

Matthew P. Henderson, East Rochester, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 22, 1981, Ser. No. 276,100

Int. Cl.³ B65B *43/38*

U.S. Cl. 53—569 **22 Claims**



1. Machine for automatically loading articles into covers comprising

endless conveyor means,

means for moving and interrupting movement of said conveyor means,

feeder means containing said covers in a folded condition mounted at one end of said machine,

means for withdrawing said folded covers from said feeder means for depositing said folded covers for transport with said conveyor means,

means for opening said folded covers,

magazine means mounted at other end of said machine for containing said articles,

means for withdrawing said articles from said magazine means,

means for inserting said withdrawn articles into said opened covers,

means for folding said covers over said inserted articles to secure said articles therewithin, and

other means for synchronizing said means for withdrawing said folded covers and means for withdrawing said articles with said means for moving and interrupting movement of said conveyor means, and

additional means cooperating with said means for withdrawing said articles from said magazine means and insertion means for heat-sealing said articles into said opened covers.

4,449,352

BEAN HARVEST APPARATUS

Douglas E. Brown, R.R. #1, Mazon, Ill. 60444

Filed Sep. 24, 1982, Ser. No. 422,648

Int. Cl.³ A01D *45/22, 46/00*

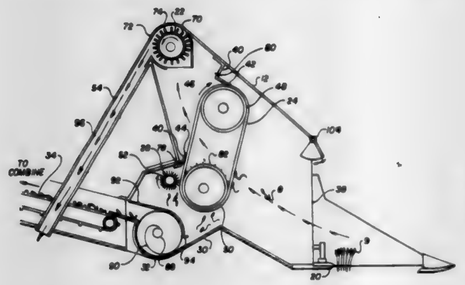
U.S. Cl. 56—13.1 **16 Claims**

1. A bean harvesting apparatus comprising a housing mounted on the forward end of a motorized combine; said housing being open along its leading edge for the reception of bean stalks;

power driven cutter means for the cutting of said bean stalks and thereby the deposition of said bean stalks in said housing;

power driven suction means for creating a vacuum in said housing means, thereby urging said bean stalks upwardly and into said housing;

a power driven conveyor belt disposed coincident with the longitudinal axis of housing; said conveyor belt being sufficiently porous to allow the drawing of a vacuum therethrough;



scraper means for scraping said bean stalks from said conveyor belt proximate the bottom thereof, thereby dropping said bean stalks into the bottom of said housing;

power driven auger means disposed proximate the bottom of said housing for the conveyance of said beans and bean stalks from said housing to said combine; and

exhaust means for the venting of air drawn into said housing by said suction means.

4,449,353

GUT STRING FOR SPORTS RACKETS

Amad Tayebi, Westford, Mass., assignor to United States Tennis Gut Association, Inc., Emerson, N.J.

Filed Aug. 6, 1982, Ser. No. 405,913

Int. Cl.³ D02G *3/10, 3/40, 3/44*

U.S. Cl. 57—242 **53 Claims**



1. A gut string for sports rackets, comprising at least two gut strands, each strand comprising a plurality of gut ribbons twisted together in a first direction, which strands are combined and retwisted in a direction opposite to the first direction.

4,449,354

DISC TYPE YARN TENSION CONTROL

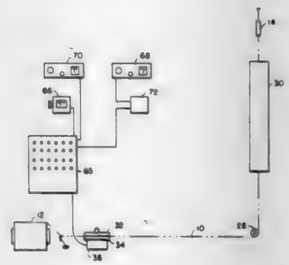
James R. Moore, Inman, and Charles E. Warner, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 18, 1982, Ser. No. 434,909

Int. Cl.³ D01H *7/18;* D02G *3/34;* D02H *13/22;* B05H *59/22*

U.S. Cl. 57—284 **11 Claims**

1. An electromagnetically actuated tension device comprising: an electromagnet, a post member operably associated with said electromagnet, a first metallic disc member mounted on said post, a second metallic disc member mounted on said post adjacent said first disc member, a D.C. circuit supplying D.C. voltage to said electromagnet and means supplying A.C. voltage to said electromagnet to periodically allow said first and second disc members to move relative to one another and relative to the electromagnet.



4,449,355

A.C.-D.C. SLOTTED TYPE YARN TENSION CONTROL

James R. Moore, Inman; William J. Schroder, Spartanburg; Charles E. Warner, Spartanburg, and Edgar H. Pittman, Spartanburg, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 18, 1982, Ser. No. 435,053

Int. Cl.³ D01H *7/18;* D02G *3/34;* D02H *13/22;* B65H *59/22*

U.S. Cl. 57—284 **7 Claims**



1. An electromagnetically actuated tension device comprising: an electromagnet, a post member operably associated with said electromagnet, a first metallic disc member mounted on said post, a second metallic disc member mounted on said post adjacent said first disc member, means forming a yarn path in said post between said disc members which is off-set from the centerline of said post, a D.C. circuit supplying D.C. voltage to said electromagnet and means supplying an A.C. voltage to said electromagnet to periodically allow said first and second disc members to move relative to one another and relative to said electromagnet.

4,449,356

CONTINUOUS A.C. TENSION CONTROL

Charles E. Warner, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

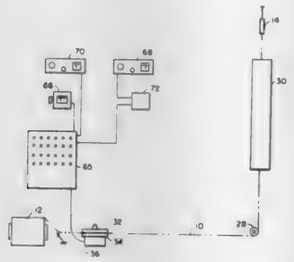
Filed Nov. 10, 1982, Ser. No. 440,498

Int. Cl.³ D01H *7/18;* D02G *3/34;* D02H *13/22;* B65H *59/22*

U.S. Cl. 57—284 **11 Claims**

1. An electromagnetically actuated tension device comprising: an electromagnet, a post member operably associated with said electromagnet, a first metallic disc member mounted on said post, a second metallic disc member mounted on said post adjacent said first disc member, a D.C. circuit supplying D.C. voltage to said electromagnet, means continuously supplying alternating current to said electromagnet and means in said

D.C. circuit to periodically and momentarily interrupt the flow of direct current to said electromagnet to periodically



allow said first and second disc members to move suddenly relative to one another and relative to said electromagnet.

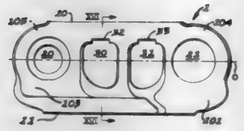
4,449,357

TRACK CHAIN LINK AND FORGING PROCESS FOR THE MANUFACTURE OF TRACK CHAIN LINKS

Paul Balitch, Grenoble, France, assignor to Caterpiller Tractor Co., Peoria, Ill.

Filed Jul. 14, 1982, Ser. No. 398,176
Claims priority, application France, Jul. 24, 1981, 81 14496
Int. Cl.³ B21L *3/04*
U.S. Cl. 59—30 **10 Claims**





1. A forging process for the manufacture of track chain links, including the steps of:

heating a metal billet (1') having a mass substantially equivalent to that of a finished link and the mass of the flash (1'') and burrs (1''') remaining after a subsequent levelling operation, said heating being carried out in an electric furnace;

preforming the heated billet (1') in a press to a first predetermined dimension, said first predetermined dimension being greater than final desired dimensions of the finished link in a heated state;

flat stamping the preformed piece to nominal dimensions of the finished link in a heated state;

simultaneously shaping and precision levelling the stamped piece in the heated state, including removing the burrs (1''') and flash (1'') from the link and forming a plurality of parallel articulation planes (101, 103, 104, 105) on lateral surfaces of the link;

controllably sizing the link (1) including forming an attachment mounting surface (10) and an opposed link contact surface in parallel relationship (11) at a predetermined distance one from the other;

hardening and tempering the sized link (1); and,

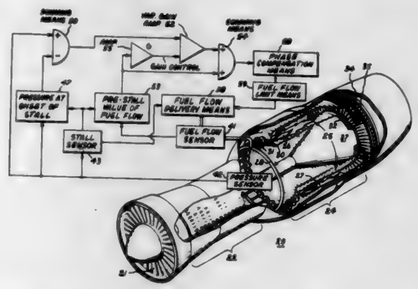
machining a pair of bores (20, 21) and drilling a pair of attachment holes (30, 31) for a track shoe in the hardened link (1).

4,449,358

METHOD AND APPARATUS FOR PROMOTING A SURGE CONDITION IN A GAS TURBINE

Ramani Mani, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1981, Ser. No. 286,431
Int. Cl.³ F02C *9/28*
U.S. Cl. 60—39.02 **38 Claims**



1. A method of promoting a surge condition in a stalled gas turbine engine having a combustor plenum disposed between a compressor and a turbine, comprising:

(a) monitoring pressure in said combustor plenum of said gas turbine engine;

(b) determining an onset of a stall in said gas turbine engine; and

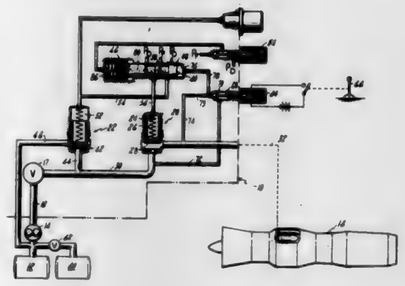
(c) modulating a time-varying component of a first operating parameter of said engine substantially in phase with a time-varying component of said combustor plenum pressure in response to and only after said onset of said stall, whereby a surge condition is promoted in said gas turbine engine.

4,449,359

AUTOMATIC VENT FOR FUEL CONTROL

Edward F. Cole, Glastonbury, and Dean H. Crombie, Ellington, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,492
Int. Cl.³ F02C *9/28*
U.S. Cl. 60—39.094 **1 Claim**



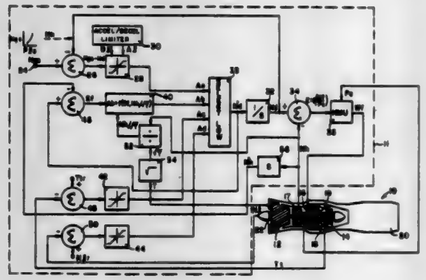
1. A fuel system for a gas turbine engine having a burner and fuel feeding means including a fuel line interconnecting the fuel control and burner, at least a fuel tank and an alternate fuel tank and means for sequentially placing either fuel tank on line so as to interconnect with said fuel control, fuel pumping means in said fuel line interconnected to alternately either of said fuel tanks, in combination with said fuel control which has a minimum pressure and shut-off valve between the fuel metering means of the fuel control and said burner so that fuel is admitted to said burner solely upon reaching a predetermined minimum value, means for expunging trapped air captured in said fuel feeding means including a bypass line bypassing a portion of fuel metered by the fuel metering means around the minimum pressure and shut-off valve, means for actuating said fuel control, means including a fixed restriction and a moveable valve responsive to said actuating means in said bypass line for automatically interconnecting said bypass means to lead air around said minimum pressure and shut-off valve to said burner and a windmill bypass line that interconnects fuel downstream of the fuel metering means and the inlet of said pump and being disposed in parallel flow relationship with said minimum pressure and shut-off valve, and a selector valve also responsive to said actuating means for rendering said windmill bypass line operative whenever said minimum pressure and shut-off valve is actuated closed and said bypass line is actuated open to lead ait to said burner.

4,449,360

STALL DETECTOR AND SURGE PREVENTION FEATURE FOR A GAS TURBINE ENGINE

Rowland M. Evans, Terrasse Vaudreuil, Canada, assignor to Aviation Electric Ltd., Montreal, Canada

Filed Apr. 30, 1981, Ser. No. 259,317
Int. Cl.³ F02C *9/28*
U.S. Cl. 60—39.281 **10 Claims**



1. A fuel control system for a gas turbine engine comprising:

means for generating an actual speed signal proportional to the actual turbine speed of the gas turbine engine;

means for generating a scheduled speed signal proportional to a desired output power;

means for generating a demanded speed signal proportional to the time integral of a difference signal;

means for generating said difference signal proportional to the difference between said scheduled speed signal and said demanded speed signal;

means for generating an error signal proportional to the difference between said demanded speed signal and said actual speed signal;

means for controlling the fuel flow to the gas turbine engine as a function of said error signal;

means for generating a stall factor as a function of the difference between the rate of change of the demanded speed signal and the rate of change of the actual speed signal, said stall factor being indicative of the degree of stall the engine is experiencing; and

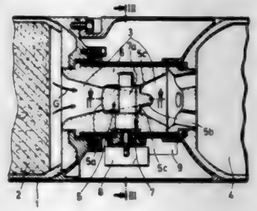
means for modifying the rate of change of the demanded speed signal as a function of the stall factor.

4,449,361

RAM JET ENGINE CONSTRUCTION AND A VALVE CONTROL FOR PROPORTIONING FUEL RICH GAS OF RAM JET ROCKET ENGINES

Thomas Hähnel, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,627
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115187
Int. Cl.³ F02K *9/00, 7/08*
U.S. Cl. 60—254 **12 Claims**



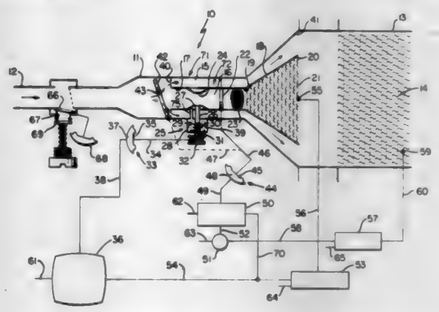
1. A valve particularly for controlling fluid flow between a precombustion chamber to a main combustion chamber of a ram jet engine, comprising a valve housing having a flow passage therethrough with a valve seat defining a throat area, a valve in said housing having at least one valve shaft portion journalled in said housing having a valve body portion extending across said passage, said valve body portion being fixed to said shaft portion for rotation therewith and being of a cylindrical wedge-shaped configuration tapering from a widest part adjacent one end to a narrowest part at a diametrically opposite end, said one end being of a size to completely close said throat area in a closed position and said diametrically opposite end being of a size to open at least a portion of said throat area in an open position.

4,449,362

EXHAUST SYSTEM FOR AN INTERNAL COMBUSTION ENGINE, BURN-OFF UNIT AND METHODS THEREFOR

Alfred A. Frankenberg, and Douglas R. Scott, both of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 2, 1981, Ser. No. 326,527
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—274 **26 Claims**



1. In an exhaust system for an internal combustion engine which burns a hydrocarbon fuel mixture and which produces a carbonaceous particle carrying exhaust gas stream that passes through a filter means of said system that retains at least part of said particles therein, said system having burn-off means for periodically burning said retained particles in said filter means to tend to periodically clean said filter means of said retained particles thereof, said burn-off means comprising means for raising the temperature of said exhaust gas stream intermediate

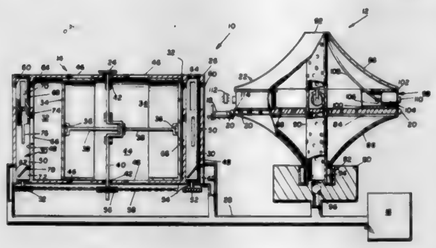
said engine and said filter means to raise the temperature of said filter means to particle burning temperature thereof, said means for raising the temperature of said exhaust gas stream comprising means for injecting and burning a certain amount of said fuel mixture in said exhaust gas stream intermediate said engine and said filter means, the improvement wherein said means for injecting and burning comprises means for aspirating said certain amount of said fuel mixture into said exhaust gas stream intermediate said engine and said filter means and said means for raising the temperature of said exhaust gas stream comprises an electrical heater means and a catalyst bed in which said injected fuel mixture is to burn, said electrical heater means being disposed upstream from said catalyst bed, said means for aspirating said fuel mixture being disposed upstream of said catalyst bed, said heater means being disposed intermediate said means for aspirating said fuel mixture and said catalyst bed, said means for raising the temperature of said exhaust gas stream also comprising passage defining means having an inlet for receiving said exhaust gas stream from said engine and an outlet for directing said received exhaust gas stream to said filter means, said passage defining means having first and second passages respectively between said inlet and said outlet, said catalyst bed and said heater means being disposed in said second passage, said means for aspirating said fuel mixture being disposed to feed said fuel mixture to said second passage upstream of said heater means therein, said passage defining means having valve means for directing said exhaust gas stream to said filter means only through said first passage during the time said filter means is not being cleaned and for directing said exhaust gas stream to said filter means through said second passage during the time said filter means is to be cleaned, said valve means comprising a first valve disposed in said second passage between said means for aspirating said fuel mixture and said heater means for closing said second passage between said inlet and said outlet and a second valve disposed in said passage defining means for closing said first passage between said inlet and said outlet.

4,449,363

ATMOSPHERIC PRESSURE MOTOR

Willard R. Custer, 1905 W. Washington St., Hagerstown, Md. 21740

Filed Jun. 10, 1981, Ser. No. 272,103
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—370 **7 Claims**



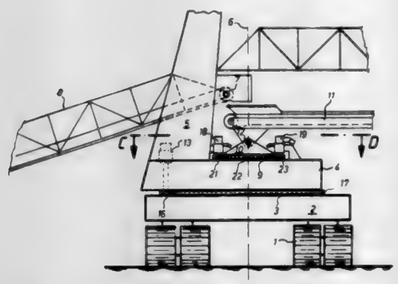
1. An atmospheric pressure engine, comprising:
at least two opposed pistons slidingly received in casing means including respective cylinders each having means providing a closed chamber in front of the respective piston and being vented to atmosphere to the rear of the respective piston;
said casing means including valve chamber means for each piston;
a suction source communicated to each valve chamber means via a suction port, said suction source comprising a vacuum tank communicated to a suction line means that is communicated to the respective said suction ports of said valve chamber means;
vacuum pump means communicated to said suction source for replenishing said suction source by withdrawing air therefrom;
said vacuum pump means being constituted by a mechanical lung, comprising:
a base;
a rotor journalled for rotation on said base about an at least generally vertical axis;
means for rotating the rotor about said axis;
a plurality of equi-angularly distributed weights slidably mounted on the rotor for reciprocation along respective radial paths;
a cylinder mounted on said rotor sleeve for each weight, and sliding by each respective weight piston-fashion, each sleeve having an effectively open radially outer end, and a radially inner end;
means for modulating the rotational speed of said rotor;
mechanical means for retracting each piston upon braking or stopping of the rotor;
housing means sealingly communicated to the radially inner end of each rotor and conduit means connecting the housing means to said suction source, this conduit means incorporating a one-way check valve which opens said conduit means only for sucking air from said suction source, so that as said rotor is rotated with the weights retracted, the weights extend radially outwards in the respective cylinder sleeves due to centrifugal force, thus increasing the volume of, and therefore tending to decrease the pressure in, said housing means, and thus withdrawing air from the suction source, whereupon rotation of the rotor may be slowed or stopped and said mechanical means may be operated to retract the pistons for a next cycle of operation;
a vent port to atmosphere provided to each valve chamber means;
means defining a suction port between each valve chamber means; and the respective said closed chamber;
means defining a vent port between each valve chamber means and the respective said closed chamber;
for each said piston, the respective valve chamber means receiving a first valve member means mounted for movement between a first condition wherein the said vent port of the respective closed chamber and the corresponding said vent port to atmosphere are cut-off from communicating with one another thus isolating the respective closed chamber from atmosphere and a second condition wherein these two vent ports are in communication with one another thus venting the respective closed chamber to atmosphere;
for each said piston, the respective valve chamber means receiving a second valve member means including a cavity, said second valve member means being mounted for movement between a first condition wherein the cavity is communicated to the respective closed chamber via the respective suction port but said cavity is isolated from said suction source, a second condition wherein the cavity is communicated to the suction source via the respective suction port but said cavity is isolated from the respective closed chamber, and a third condition wherein the respective cavity is isolated from both the respective closed chamber and the respective suction source;
for each piston, first means coordinating movement of the respective first and second valve member means to repeatingly provide the following cycle:
that as the respective piston is in a fully retracted condition, and the respective cavity is at least partially evacuated and thus at below-atmospheric pressure, that cavity is communicated to the respective closed chamber causing the respective piston to at least partially extend;
that the respective cavity is then isolated from the respective closed chamber and first communicated to, then isolated from the suction source, in order to again partially evacuate the respective cavity; and
that after the respective piston has extended, the respective closed chamber is vented to atmosphere and then isolated therefrom;
second means coordinating the movement of the respective first and second valve member means for all of said at least two pistons to provide an even distribution of phases of operation at least so that for each two mutually opposed pistons, one is being caused to retract as the other is being caused to extend;
a crank shaft means journalled for rotation;
connecting arm means joining each piston to the crank shaft means so that coordinated reciprocation of said pistons produces rotation of said crank shaft means; and
rotary power take-off means connected to said crank shaft means to receive rotary power therefrom.

4,449,364

SLUING DRIVE FOR EXCAVATOR

Reinhard Trümper, Offendorf, Fed. Rep. of Germany, assignor to O & K Orenstein & Koppel AG, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,142
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102532
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—403 **14 Claims**



1. A sluing device for a machine having a carriage, a turntable rotatable about an axis to the carriage, a superstructure connected to the turntable, and a discharge boom assembly rotatably mounted to the turntable about the axis, comprising:
first drive means having at least one drive motor connected between the carriage and turntable for rotating the turntable;
second drive means connected between the turntable and boom assembly for driving the boom assembly, said first and second drive means connected to each other so that rotation of the turntable with respect to the carriage in one direction causes rotation of the boom assembly in an opposite direction by an amount to maintain a position of the boom assembly with respect to the carriage as the superstructure rotates with respect to the carriage; and
further drive means having a drive motor connected between the turntable and boom assembly for maintaining engagement between the turntable and boom assembly with failure of said second drive means, said further drive means motor providing a torque which is less than that provided by said at least one first drive means motor.

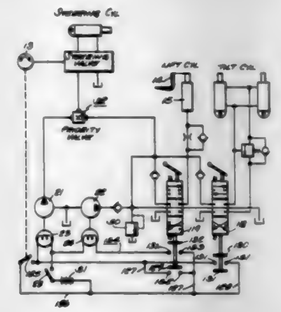
4,449,365

LIFT, TILT AND STEERING CONTROL FOR A LIFT TRUCK

Peter D. Hancock, Muskego, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 95,923, Nov. 19, 1979, abandoned. This application Oct. 15, 1981, Ser. No. 311,592
Int. Cl.³ B62D *5/06*; F15B *11/16, 13/06*
U.S. Cl. 60—422 **1 Claim**

1. A lift truck hydraulic control system for a lift truck of the type having a hydraulic lift cylinder controlled by a lift control valve having a lower position, a hold position and first and second pressure fluid delivery positions for expanding the lift cylinder, a hydraulic tilt cylinder controlled by a tilt control valve having a hold position and a pair of pressure fluid delivery positions for effecting expansion and contraction of said tilt cylinder and a steering mechanism including a hydraulic steering motor controlled by a steering control valve having a neutral position and fluid pressure delivery positions for effecting operation of the steering motor, the control system characterized by
first and second hydraulic pumps;
first and second electric motors connected in driving relation to said first and second pumps, respectively;
a single priority valve having
an input connected in fluid receiving relation to said first pump,
a high priority output connected in fluid delivery relation to said steering control valve and
a low priority output connected in direct fluid delivery relation to each of said tilt and lift control valves;



a fluid delivery circuit connecting said second pump in fluid delivery relation to said lift control valve independent of said priority valve;
first control means associated with each of said steering control valve, tilt control valve, and lift control valve for automatically causing said first electric motor to drive said first pump when at least one of the following three shifting movements occurs:
said steering control valve is shifted from its neutral position to one of its pressure fluid delivery positions,
said tilt control valve is shifted from its hold position to one of its fluid pressure delivery positions,
said lift control valve is shifted to its first pressure fluid delivery position; and
second control means automatically causing said second electric motor to drive said second pump when said lift control valve is moved to its second pressure fluid delivery position whereby said second pump delivers pressure fluid to said cylinder by way of said lift control valve.

4,449,366

HYDRAULIC CONTROL SYSTEM FOR OFF-HIGHWAY SELF-PROPELLED WORK MACHINES

Hideyori Sato, Funabashi, and Mitsuru Arai, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,235
Claims priority, application Japan, May 30, 1980, 55-71491; May 30, 1980, 55-71492
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—444 **5 Claims**

1. A hydraulic control system for an off-highway self-propelled work machine of the type having at least one variable displacement pump for delivering hydraulic fluid under pressure to at least one hydraulically driven component such as

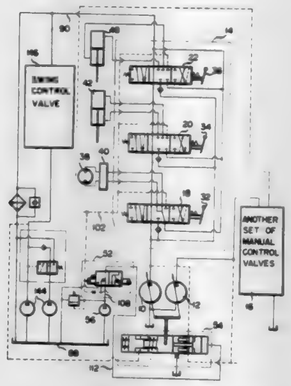
an implement actuator or a propelling motor, the control system comprising:

(a) a hydraulically actuated adjustment mechanism for reducing the per-cycle displacement of said pump to a minimum on actuation;

(b) at least one manual control valve for selectively placing said pump in and out of communication with said driven component;

(c) means provided to said manual control valve for producing a fluid pressure signal indicative of whether said pump is in or out of communication with said driven component;

(d) an additional source of fluid under pressure;



(e) a sensing valve responsive to the fluid pressure signal for directing the pressurized fluid from said additional source to said adjustment mechanism when said pump is placed out of communication with said driven component by said manual control valve;

(f) said signal producing means comprising a pilot port in communication with said additional pressurized fluid source via said sensing valve and a reservoir port placed in and out of communication with said pilot port depending upon whether said pump is in or out of communication with said driven components.

4,449,367

KNOCKING CONTROL DEVICE FOR TURBOCHARGED INTERNAL COMBUSTION ENGINE

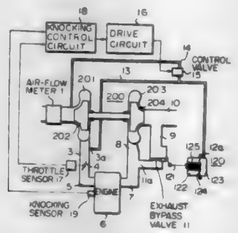
Koichi Moriguchi, Nagoya; Kenzi Iwamoto, Nishio; Ryuichi Matushiro, Okazaki; Hisasi Kawai, Toyohashi; Nobutaka Mizuno, and Yasuhiro Ikuta, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 14, 1982, Ser. No. 398,272

Claims priority, application Japan, Jul. 18, 1981, 56-111546

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—602 **3 Claims**



1. A knocking control device for a turbocharged internal combustion engine, comprising:

intake pipe means for introducing air to an engine;

a throttle valve located in said intake pipe means;

turbocharger means including a compressor for supplying compressed air to the engine and an exhaust turbine for driving said compressor;

bypass pipe means provided so that the exhaust gas of the engine bypasses said exhaust turbine;

an exhaust bypass valve located in the middle of said bypass pipe means and controlling the exhaust gas bypassed through said bypass pipe means;

a diaphragm actuator for driving said exhaust bypass valve;

a pressure pipe for transmitting the pressure at the exit of said compressor to said diaphragm actuator;

a control valve for adjusting the pressure which is transmitted to said diaphragm actuator;

knocking sensor means for detecting knocking of the engine;

throttle sensor means for detecting the opening degree of said throttle valve; and

control means for receiving the output signals of said knocking sensor means and said throttle sensor means,

said control means controlling said control valve in accordance with a signal from said knocking sensor means so as to increase the opening degree of said exhaust bypass valve when knocking occurs and reduce the opening degree of said exhaust bypass valve when knocking does not occur,

said control means determining upper and lower limits which are changed in accordance with a signal from said throttle sensor means and controlling the opening degree of said control valve using said determined upper and lower limits.

4,449,368

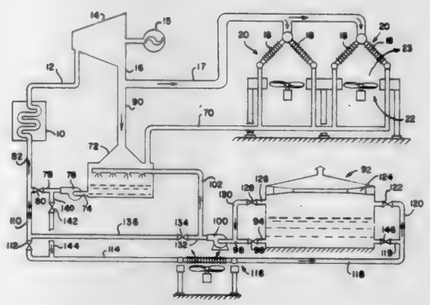
APPARATUS AND METHODS OF COOLING AND CONDENSING EXHAUST STEAM FROM A POWER PLANT

Timothy J. Haynie, Lockport, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 2, 1983, Ser. No. 490,536

Int. Cl.³ F01K *9/00*

U.S. Cl. 60—652 **6 Claims**



1. A method of operating a steam driven turbine comprising:

conveying a stream of the exhaust steam from the turbine to a primary cooling means to condense the steam and feeding the resulting condensate to a boiler for conversion to steam to drive the turbine so long as the heat rejection capacity of the primary cooling means is adequate to condense all of the steam;

supplementing the cooling capacity of the primary cooling means, when it provides inadequate cooling to condense all of the steam, by peak shaving cooling by contemporaneously also withdrawing boiler quality cold cooling water from a cold water reservoir and feeding the cold cooling water into the exhaust steam to thereby condense a sufficient portion of the steam to water such that the remaining portion of the steam is condensed to water by the primary cooling means;

feeding part of the hot condensed water, from the primary cooling and the peak shaving cooling, directly to the boiler used to produce the steam which drives the turbine, and part of the hot condensed water to a hot water reservoir, during such times as the cooling capacity of the primary cooling means is supplemented as described; and

when the cooling capacity of the primary cooling means has excess cooling capacity to condense steam, feeding cold condensed water from the primary cooling means to the cold water reservoir, and withdrawing hot water from the hot water reservoir and feeding it hot to the boiler.

4,449,369

POWER ASSISTED HYDRAULIC CONTROL SYSTEM

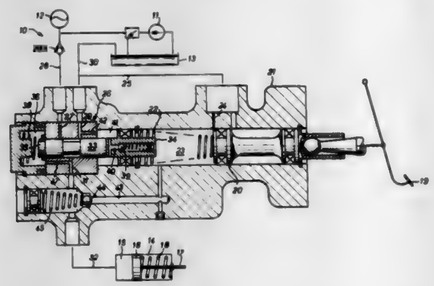
Jean L. R. Dauvergne, Fosses, France, assignor to Valeo Societe Anonyme, Paris, France

Filed Apr. 9, 1981, Ser. No. 252,292

Claims priority, application France, Apr. 15, 1980, 80 08374

Int. Cl.³ B60T *13/20*

U.S. Cl. 60—556 **10 Claims**



1. A power assisted hydraulic control system, comprising a master cylinder, a master piston mounted for sliding in the master cylinder and defining a control chamber, a hydraulic assistance unit including fluid-pressure means and a reservoir, a distributor having a slide-valve plunger one end of which is subjected to the pressure in said control chamber and the other end of which is subjected to the pressure in a receiver, said slide-valve plunger being adapted to place the receiver under pressure in response to pressure generated by the master piston in the control chamber, said slide-valve plunger and said master piston being disposed on opposite sides of said control chamber, a bypass channel connecting the control chamber of the master cylinder to a conduit connecting the distributor to the receiver, and a bypass valve controlling fluid flow through said bypass channel, said bypass valve being operated in response to two opposing pressures, one of which is the pressure in said receiver and the other of which is the pressure in the control chamber, whereby said bypass valve normally remains closed and opens only in case of failure of the power assistance, to permit manual emergency operation.

4,449,370

DIESEL ENGINE CATALYTIC COMBUSTOR SYSTEM

Lloyd W. Ream, N. Canton, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 6, 1980, Ser. No. 157,150

Int. Cl.³ F02B *37/00;* **F01N** *3/36*

U.S. Cl. 60—606 **3 Claims**

1. In combination with an intermittent combustion engine of the type having a turbocharger with a turbine wheel driven by engine exhaust gases directed thereto by an exhaust conduit and with a blower which provides air under pressure to said engine through an intake conduit, said blower being mechanically connected to said turbine:

(1) a catalytic combustor disposed in said exhaust conduit, and comprising:

an elongated housing having a closed end and an open end, said open end communicating with said turbine wheel, and further having slots which communicate with said engine through said exhaust conduit, said slots being disposed in said housing in the form of an annular row;

a catalytic element disposed at the open end of said catalytic combustor;

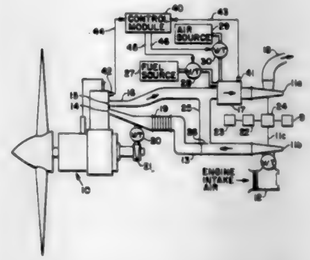
a cylindrical combustion chamber disposed between the closed end of said elongated housing and said slots which communicate with said engine;

means for injecting fuel into said combustion chamber;

means for injecting air into said combustion chamber;

means for igniting said fuel injected into said combustion chamber;

a flared apertured tube disposed coaxially outwardly of said combustion chamber and extending toward said



slots which communicate with said engine to inhibit flameout and to uniformly heat said catalytic element;

(2) a fuel supply connected to said means for injecting fuel through a first valve which may be closed to terminate injection of fuel into said combustion chamber;

(3) an air supply connected to said means for injecting air through a second valve which may be closed to terminate injection of air into said combustion chamber;

(4) means for automatically adjusting said first and second valves when said catalytic element attains a predetermined temperature whereby overheating of said catalytic element is prevented;

(5) means coacting with said means for adjusting said first and second valves to close said first and second valves when said catalytic element is at or above a temperature of 400° F. and said engine is operating whereby combustor restart is automatic when said first and second valves reopen; and,

(6) an intercooler disposed in said intake conduit to reduce the temperature of the air being provided to said engine.

4,449,371

AIR BY-PASS SYSTEM IN AN INTERNAL COMBUSTION ENGINE WITH A SUPERCHARGER

Shigeru Sone, Toyota; Yasuhiro Ikuta, Okazaki; Kazuaki Komiya, Toyota; Kazuhide Kihira, Toyota, and Nobutaka Mizuno, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 22, 1980, Ser. No. 180,421

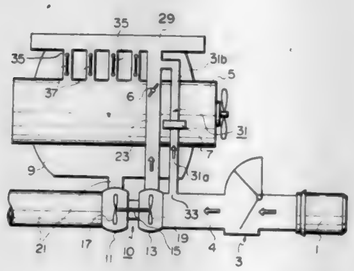
Claims priority, application Japan, Jul. 1, 1980, 55/88470

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—611 **1 Claim**

1. In an internal combustion engine with a turbocharger comprising an exhaust gas driven turbine in an exhaust pipe of the engine and a compressor in an intake pipe of the engine, said compressor being driven by the turbine to turbocharge suction air fed to the engine through a throttle valve in an air connecting pipe connecting the compressor to the engine, an air by-pass system comprising a suction air by-pass passage

fluidly connecting an area upstream from and in fluid communication with the compressor and an area downstream from and in fluid communication with the throttle valve, a temperature controlled air valve for controlling the amount of air to be



by-passed through said by-pass passage, and means for actuating the air valve to an open position at the time of engine ignition to by-pass air through said by-pass passage and for actuating said air valve to a closed position after a period of time sufficient to permit the engine to warm-up.

4,449,372

GAS POWERED MOTORS

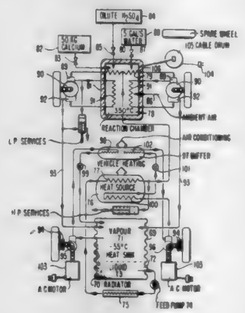
John W. Rilett, The Gables, Hawkers Hill, Bibury, Gloucestershire, England

Division of Ser. No. 72,561, Sep. 4, 1979, Pat. No. 4,327,533. This application Jan. 22, 1982, Ser. No. 341,881

Claims priority, application United Kingdom, Sep. 5, 1978, 35603/78

Int. Cl.³ F01K *25/10*

U.S. Cl. 60—671 **36 Claims**



1. In combination,

a gas-powered motor;

means for holding liquified gas;

means for evaporating said liquified gas;

conduit means to deliver gas from said evaporating means to said motor to power said motor;

receiving means for expanded gas from said motor;

condensing buffer substance means in thermal communication with the expanded gas flowing into said receiving means; and

refrigeration means to pump heat from and cool said condensing buffer substance means to a temperature low enough to condense said expanded gas.

4,449,373

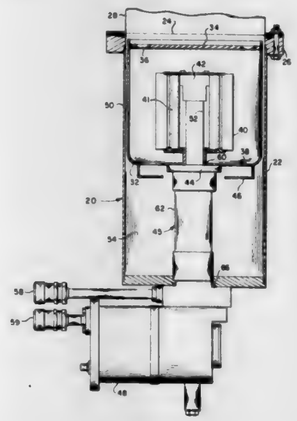
REDUCED VACUUM CRYOPUMP

John F. Peterson, Lynnfield, and Allen J. Bartlett, Milford, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Feb. 28, 1983, Ser. No. 470,914

Int. Cl.³ B01D *8/00*

U.S. Cl. 62—55.5 **8 Claims**



1. A cryopump for differentially pumping water vapor and inert gases comprising:

a. a cryopump housing incorporating a pumping port for attachment to a work chamber;

b. a refrigerator within said housing having first and second stages;

c. a second stage cryopanel mounted directly to a low temperature heat sink on the second stage;

d. a radiation shield partially enclosing the second stage cryopanel, and in thermal contact with a higher temperature heat sink on the first stage;

e. a frontal inlet orifice plate extending across the pumping port and in thermal communication with the radiation shield, so as to act as part of the radiation shield, the orifice plate restricting flow of low condensing temperature gas from the work chamber to the second stage cryopanel in order to allow a moderate pressure of low condensing temperature gas in the work chamber while condensing higher condensing temperature gases; and

f. a gas flow path provided through the radiation shield at a position removed from the pumping port such that the radiation shield is surrounded by a vacuum at a lower pressure than the work chamber.

4,449,374

COMBINATION HOT GAS AND AIR DEFROST REFRIGERATED DISPLAY CASE

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

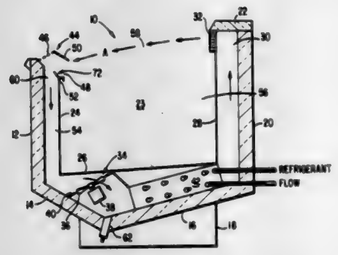
Continuation-in-part of Ser. No. 225,997, Jan. 19, 1981, Pat. No. 4,338,792, which is a continuation-in-part of Ser. No. 60,459, Jul. 25, 1980, Pat. No. 4,295,340, which is a continuation-in-part of Ser. No. 8,111, Jan. 21, 1979, Pat. No. 4,329,852, Ser. No. 11,804, Feb. 14, 1979, abandoned, Ser. No. 25,350, Mar. 30, 1979, Pat. No. 4,308,726, Ser. No. 70,882, Aug. 29, 1979, and Ser. No. 308,147, Oct. 2, 1980, which is a division of Ser. No. 145,859, May 1, 1980, Pat. No. 4,314,457. This application Jul. 13, 1982, Ser. No. 397,692

Int. Cl.³ A47F *3/04*

U.S. Cl. 62—81 **57 Claims**

56. In a refrigerated display case having a product display space and an unimpeded access opening thereto and at least one air conduit formed between front, bottom, rear and side walls and spaced inner panels, and having a refrigeration coil means located within said air conduit; and an air moving means for propelling an air band in a first direction through said air conduit during a refrigeration cycle; the improvement comprising:

defrost means for enabling the supply of hot refrigerant gas to said refrigeration coil means and the formation of a unidirectional ambient air band for movement through said air conduit and about said refrigeration coil means during the entire defrost cycle and the formation of a defrost air band by heat exchange with said refrigeration coil means, said unidirectional ambient air band adapted for defrosting said air conduit and said refrigeration coil means simultaneously with the defrost by said hot refrigeration gas, said defrost means enabling said unidirectional ambient air band and said defrost air band to flow into and out of said air conduit in a manner to prevent ambient air from being forced into said product display space through said access opening, said defrost means including ejector means for enabling said defrost air band to be expelled outwardly away from said display space of said case, in order to avoid comingling with ambient air and contact thereof with products stored in said display space, and said cabinet having an open front wall which forms said access opening and wherein said ejector means is located near the bottom of said access opening.



4,449,375

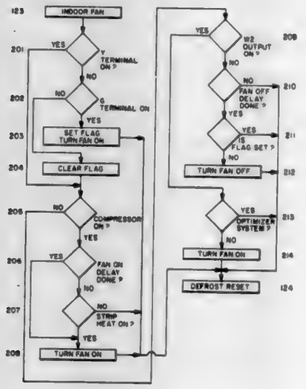
METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF AN INDOOR FAN ASSOCIATED WITH AN AIR CONDITIONING UNIT

Mario F. Briccetti, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,789

Int. Cl.³ F25D *17/06*

U.S. Cl. 62—89 **8 Claims**



1. A method of operating an air conditioning system including a refrigeration circuit having a compressor, a microprocessor control, a thermostat for sensing a need for heating or cooling including means for selectively operating an indoor fan continuously without regard to operation of the refrigeration circuit, said thermostat supplying a first signal to the microprocessor when fan operation is desired and a second signal to the microprocessor when compressor operation is desired which comprises the steps of:

energizing the indoor fan in response to the first signal from the thermostat;

energizing the compressor in response to the second signal from the thermostat;

setting an indicator when the first signal is sensed and the second signal is not sensed;

sensing if the thermostat is supplying a second signal and the compressor is not operating;

detecting if the indicator is set; and

operating the fan continuously if the step of sensing determines the compressor is not operating and the thermostat is supplying a second signal and the step of detecting determines that the indicator is set.

4,449,376

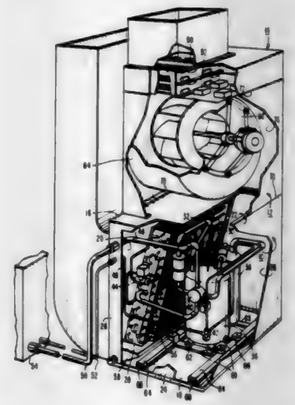
INDOOR UNIT FOR ELECTRIC HEAT PUMP

Robert Draper, Churchill; Robert S. Lackey, Pittsburgh; Thomas J. Fagan, Jr., Penn Hills; Stephen E. Veyo, Murrysville, all of Pa., and Joseph R. Humphrey, Grand Rapids, Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 18, 1983, Ser. No. 468,006

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—259.1 **6 Claims**



1. An indoor unit of an electric heat pump, comprising:

first and second independent modules adapted to be connected in air flow communication in several different ways;

said first module being of right parallelopiped exterior form having a top face, bottom face, one and an opposite longitudinal faces, and one and an opposite lateral faces, and containing therein a refrigerant coil comprised of horizontally extending tubes and fins thereon disposed with their planes in a substantially vertical orientation, said coil extending longitudinally of said module and having its lower longitudinal edge adjacent one lower longitudinal corner of said first module, said coil being tilted inwardly to a degree that its upper longitudinal edge is adjacent the midpoint of the lateral dimension of said first module, said first module further containing a refrigerant compressor in the space adjacent the inner face of said coil;

a second module of right parallelopiped exterior shape having an inlet face and an outlet face, and a lateral dimension substantially the same as the lateral dimension of said first

module, the interior space of said second module being substantially split laterally into a first space and a second space, said first space containing a single width, single inlet blower having its inlet open to said second space and its outlet open at said outlet face;

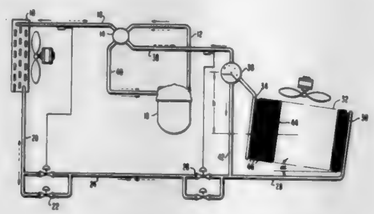
said second module being adapted to be mounted upon said first module in one position in which said blower is above said coil and air flow through said modules is in a sequence through said one longitudinal face of said first module, said coil and past said compressor to said blower inlet and, alternatively, mounted in another position 180° from said one position and in which said blower overlies said compressor and air flow through said module is in sequence through either of said lateral faces or said bottom face or said opposite longitudinal face, past said compressor, and through said coil to said blower inlet.

4,449,377

THERMOSYPHON COIL ARRANGEMENT FOR HEAT PUMP OUTDOOR UNIT

Robert Draper, Churchill, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 14, 1983, Ser. No. 474,934
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—324.1 **6 Claims**



1. For an air-to-air heat pump having both a heating mode and a cooling mode of operation, an outdoor unit refrigerant coil and refrigerant flow arrangement therefor, comprising:

an extended surface coil of fins on tubes which have a slight upward inclination from one portion serving as the inlet of the coil to another portion serving as the outlet of the coil in the heating mode of said pump;

a refrigerant flow arrangement for said coil operable in a thermosyphon fashion in the heating mode of said pump, said arrangement including means for feeding said one portion refrigerant, means receiving refrigerant passed through said coil from said another portion of said coil, said receiving means being at an elevated height relative to the level of the centroid of said coil, and downcomer means connecting said receiving means to said feeding means to recirculate liquid refrigerant back to said coil in said heating mode of operation of said pump.

4,449,378

INSULATED CHEST

Kenneth J. Thorpe, Brooklyn, N.Y., assignor to Mitchell B. Shenkman, Brooklyn, N.Y.

Filed Jan. 20, 1982, Ser. No. 341,135
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—371 **7 Claims**

1. An insulated chest, for the storage and transportation of hot and cold foods to be carried as a backpack comprising,

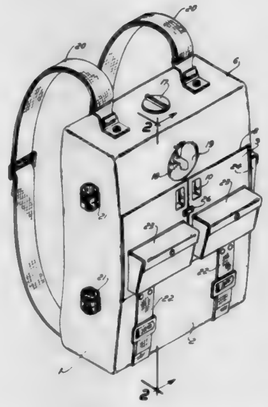
(a) a hollow box-like body portion having a top, bottom and four side walls made of heat insulating material, with one of the side walls having a first opening,

(b) a door made of heat insulating material adapted to be mounted on said body portion for closing said first opening,

(c) a removable first divider disposed in the interior of the body below the first opening in the side wall, which first divider is detachably connected to the side walls and spaced above the bottom wall, dividing the interior of the body portion into an upper and lower area,

(d) means attached to the exterior of the body portion for carrying the chest on a person's back,

(e) a second divider disposed in the interior of the body above the first opening which divider is sealingly attached to each of the side walls so as to define an upper chamber adapted to hold liquid,



(f) a spigot mounted to a side wall and extending through the side wall into the liquid-holding chamber,

(g) said top of the body having a second opening into the liquid-holding chamber through which the liquid-holding chamber can be filled with a liquid, and

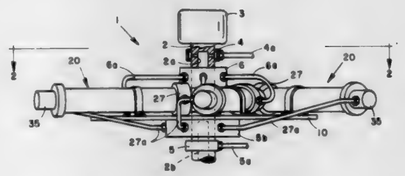
(h) means for sealing the second opening when liquid is in the liquid-holding chamber.

4,449,379

METHOD AND APPARATUS FOR EXTRACTING HEAT AND MECHANICAL ENERGY FROM A PRESSURED GAS

Edwin W. Dibrell, San Antonio, Tex., assignor to Centrifugal Piston Expander Inc., San Antonio, Tex.

Filed Oct. 25, 1982, Ser. No. 436,412
Int. Cl.³ F25D *9/00*
U.S. Cl. 62—401 **39 Claims**



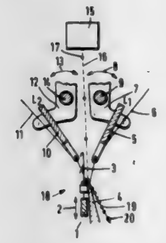
1. Apparatus for extracting heat and mechanical energy from a pressured gas comprising: a body rotatable about an axis; power means for rotating said body; a plurality of cylinder elements secured to said rotating body in an equi-spaced array around said axis; each said cylinder element defining an elongated fluid pressure chamber; a free piston movable longitudinally in each said fluid pressure chamber; said cylinder elements being fixed on said rotatable body with the path of movement of each piston extending from a position proximate to said axis to a position remote from said axis; whereby centrifugal force will move said free piston to said remote position; inlet valve means communicating between a source of pressured gas and the remote end of each said cylinder element; means for opening said inlet valve means only when said free pistons respectively approach said remote positions to receive a charge of pressured gas in the respective fluid pressure chamber; and exhaust valve means respectively communicating with said fluid pressure chambers and operable only when said free pistons respectively approach said proximate position, whereby each charge of pressured gas imparts rotational energy to said body and is discharged in a cooled expanded condition.

4,449,380

WARP KNITTED FABRIC AND PROCESS FOR ITS PRODUCTION

Christian Wilkens, Heusenstamm, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 348,796
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107816
Int. Cl.³ D04B *23/06*
U.S. Cl. 66—84 A **13 Claims**



1. A warp knitting machine using warp and weft threads, comprising:

a needle bed;

a least one forward thread system for forming stitches at said needle bed;

at least one rearward thread system for forming stitches at said needle bed, said rearward system being operable to move its warp thread into contact with said needle bed to enable said bed to grasp and pull into stitches the warp thread of said rearward thread system, said rearward thread system being successively operable to reciprocally form a common stitch with a corresponding pair of the warp threads of said forward thread system; and

weft thread laying means for repetitively laying said weft threads over the full length of the needle bed placing said weft threads between said forward and said rearward thread system, said forward thread system being successively operable to reciprocally lay a portion of each of its warp threads at one of two corresponding, alternate wales over at least one of said weft threads, said rearward thread system being operable to lay its warp threads behind said weft threads.

4,449,381

WARP KNITTING MACHINE WITH JACQUARD ATTACHMENT

Karl Kohl, Obertshausen, Fed. Rep. of Germany, assignor to Morton Jablin, Tenafly and Johann Winter, Paramus, both of, N.J., part interest to each

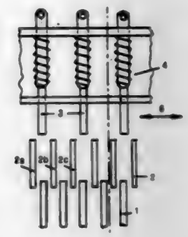
Filed Feb. 17, 1982, Ser. No. 349,625
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130555
Int. Cl.³ D04B *23/00*
U.S. Cl. 66—203 **6 Claims**

1. A warp knitting machine with Jacquard attachment; comprising:

(a) a plurality of knitting needles arranged in spaced and side by side relationship;

(b) a plurality of eye-pointed needles arranged in spaced and side by side relationship and disposed for coaction with said knitting needles;

(c) each successive adjacent pair of said eye-pointed needles



including a first eye-pointed needle and a second eye-pointed needle;

(d) a plurality of urging feeder pins arranged in spaced and side by side relationship and disposed for coaction with said eye-pointed needles;

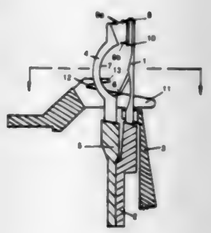
(e) their being only a single urging feeder pin for each said pair of eye-pointed needles.

4,449,382

WARP KNITTING MACHINE EQUIPPED WITH LATCH-TYPE NEEDLES

Karl Kohl, Obertshausen, Fed. Rep. of Germany, assignor to Morton Jablin, Tenafly and Johann Winter, Paramus, both of, N.J., part interest to each

Filed Feb. 17, 1982, Ser. No. 349,626
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132958
Int. Cl.³ D04B *23/00*
U.S. Cl. 66—203 **12 Claims**



1. A warp knitting machine equipped with latch-type needles each having a head extending to a predetermined height and each having a needle latch of predetermined length carried by the needle for movement in a predetermined orbit section about a latch pivot at a predetermined location thereon, a trace or stitch comb, a plurality of guide bars for underlapping purposes, and hole needles or guides; characterized by:

(a) keep-off rail means mounted behind at least several of the latch-type needles and for synchronized movement therewith;

(b) said keep-off rail means running from the hole needles or guides to the latch-type needles;

(c) said keep-off rail means extending in the direction of the height of the latch-type needles to an end located at a predetermined position which exceeds in height said predetermined location of said latch pivot;

(d) said keep-off rail means being of a predetermined configuration including at least a portion of said end which is

spaced from the latch-type needle a distance less than said predetermined length of said needle latch;

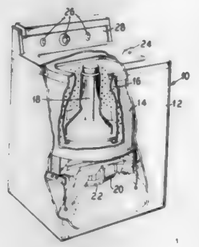
(e) said predetermined configuration of said keep-off rail means being such as to not interfere with the movement of the needle latches.

4,449,383

COMBINATION LID AND EXCURSION SWITCH AND ALARM FOR AUTOMATIC WASHERS

Roger J. Cartier, Benton Harbor, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 20, 1982, Ser. No. 380,087
Int. Cl.³ D06F *23/04, 33/02, 37/42*
U.S. Cl. 68—12 R **9 Claims**



2. An interruption control means with an audible alarm means for use with an appliance having an openable door and a power driven load carrying rotatable member susceptible to rotating in an off-balance manner comprising:

first switch means operable in a first state to disconnect power from said rotatable member;

second switch means operable in a first state to sound said alarm means;

a detection mechanism interconnecting said first and second switch means comprising a first lever means and a second lever means,

said first lever means normally biasing said second switch means into a second state and being acted upon by said door to bias said first switch means into a second state when said door is closed and to release said first switch means into said first state when said door is open;

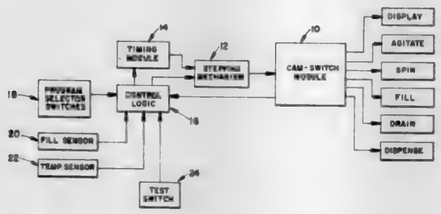
said second lever means acted upon by said rotatable member during an off-balance condition to in turn act upon said first lever means to release said first and second switch means to their respective first states.

4,449,384

WASHING APPLIANCE CONTROL CIRCUITRY

William H. Jones, Villa Park, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 4, 1982, Ser. No. 405,029
Int. Cl.³ D06F *33/02*
U.S. Cl. 68—12 R **8 Claims**



1. An electrical control circuit including an escapement device for controlling operation of a washing appliance comprising:

a source of electrical energy for powering said escapement device;

timer interval selector switch means for generating selective control signals;

timer decoder means for translating said selective control signals into associated timer signals, said decoder means comprising a binary-coded-decimal to decimal decoder/-driver in operative connection to a plurality of selected capacitance means and an interval timer, each of said plurality of selected capacitance means being selectively chargeable in response to an associated one of said control signals of said timer interval selector for associated selective control of said timer signals; and,

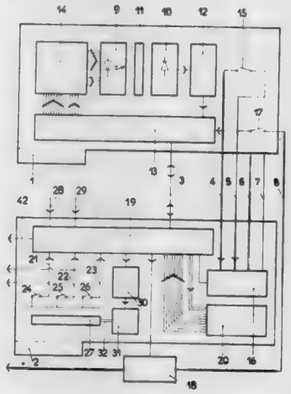
advancing circuit means for advancing said timer interval selector switch means in response to said timer signals of said timer/decoder means.

4,449,385

ELECTRO-MECHANICAL ANTI-THEFT DEVICE FOR AUTOMOBILE VEHICLES

Andre Thirion, Chevigny-Saint-Sauveur; Antoine Sorba, Le Mesnil Saint Denis; Jean-Claude Dany, Saint Cyr l'Ecole; Andre Pacaud, Saclay, Orsay, and Gerard Attal, Fresnes, all of France, assignors to Antivols Simplex, Dijon-Saint-Apollinaire, France

Filed Oct. 20, 1981, Ser. No. 313,151
Int. Cl.³ E05B *47/00*
U.S. Cl. 70—277 **11 Claims**



1. An anti-theft device for an automotive vehicle comprising:

electronic lock means comprising:

a coded key; control means for receiving said coded key and for activating said anti-theft device during introduction and extraction of said coded key; and reading means for reading the coded key in said control means and providing coded key signals corresponding to the code of the key; and

bolt means located in an inaccessable housing remote from said lock means and comprising:

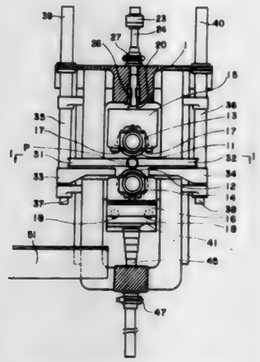
a movable locking bolt; bolt actuator means for controling movement of said locking bolt; memory means for storing coded signals; comparator means for comparing the coded key signals with the stored coded signals from said memory means and providing an enable signal when the coded key signals correspond to the stored coded signals; signal responsive switch means for alternatively supplying and interrupting electrical operating power to force said vehicle; contact means responsive to positions of said locking bolt for providing corresponding bolt position signals; and electrical control means responsive to said enable signal and said bolt position signals for actuating said bolt actuator means and for providing a signal to operate said switch means.

4,449,386

STEEL PIPE ROLLING MILL

Shinji Akita; Masayuki Hatanaka, both of Yokohama, and Akira Uemura, Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1982, Ser. No. 394,110
Claims priority, application Japan, Jul. 10, 1981, 56-106873
Int. Cl.³ B21B *31/08*
U.S. Cl. 72—100 **6 Claims**



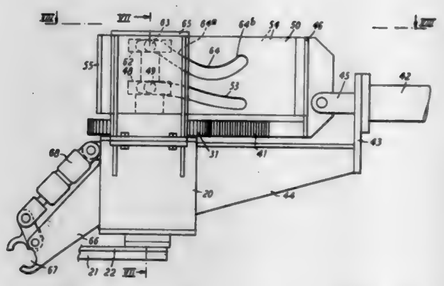
1. In a steel pipe rolling mill in which two cradles each holding a rolling mill roll are arranged one above the other and a heated material is passed between the top and bottom rolls thereby producing a hollow crude pipe, the improvement wherein a plurality of wheels are mounted on the lower surface of each of said top and bottom cradles, and wherein a supporting bed is vertically movably positioned below said bottom cradle and a track is provided on the upper surface of said supporting bed whereby when one of said cradles is placed on said supporting bed the wheels of said one cradle are engaged with said track thereby allowing transverse movement of said one cradle.

4,449,387

TUBE BENDING MACHINE

Anthony C. Hamill, Glasgow, Scotland, and Ronald J. Hawkins, Morden, England, assignors to Babcock Power Limited, London, England

Filed Dec. 15, 1981, Ser. No. 330,807
Claims priority, application United Kingdom, Dec. 17, 1980, 8040450; Apr. 1, 1981, 8110280
Int. Cl.³ B21D *7/04, 11/06*
U.S. Cl. 72—215 **11 Claims**



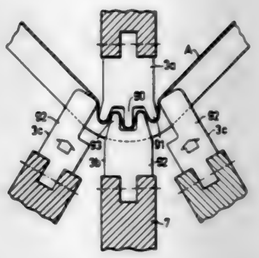
1. In a tube bending machine having a body with shaft means rotatably mounted therein and first and second arms carried by said shaft means with the first arm holding a roller means for engaging a tube and serving as a bending fulcrum for said tube and the second arm holding a roller means for engaging the tube to apply a bending moment to the tube about said bending fulcrum in the operation of said machine contemporaneous with operating means imposing an angular movement on said shaft means about its axis to effect an arcuate bending of the tube, the improvement comprising said shaft means including a first shaft with said first arm carried thereby and a second shaft with said second arm carried thereby, one of said shafts being rotatably mounted in said body and coaxially mounting the other of the said shaft, said mountings allowing independent axial movements of said arms, a first and second cam means carried by said body with said first cam means arranged to impose a predetermined axial movement on the first shaft simultaneously with the rotary movement thereof and said second cam means arranged to impose a predetermined axial movement on the second shaft simultaneously with the rotary movement thereof whereby operation of the machine effects a predetermined non-planar arcuate bending of the tube.

4,449,388

METHOD OF BENDING SHAPED METAL SHEET AND APPARATUS FOR CARRYING OUT THE METHOD

Seard Aberg, Gammelstad, Sweden, assignor to Groko Maskin AB, Stockholm, Sweden

PCT No. PCT/SE81/00054, 371 Date Oct. 27, 1981, 102(e) Date Oct. 27, 1981, PCT Pub. No. WO81/02535, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 2, 1981, Ser. No. 315,609
Claims priority, application Sweden, Mar. 4, 1980, 8001670-2
Int. Cl.³ B21D *7/06*
U.S. Cl. 72—381 **2 Claims**



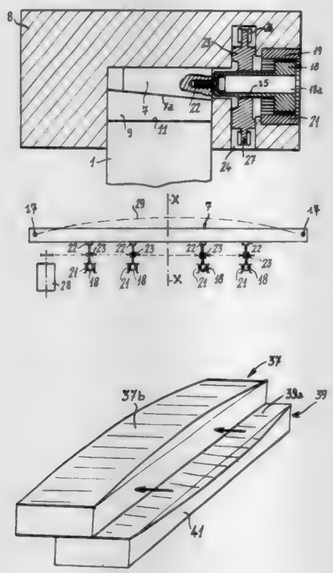
1. An apparatus for bending a sheet metal shape having at least one corrugation formed by interspaced ridges and a valley between the ridges, about an axis perpendicular to the corrugation, by forming a plurality of adjoining sheet-bending corrugations inwardly in the valley, the apparatus comprising a primary die and a punch positioned cooperatively opposite to each other and adapted to be moved together when the shape is positioned transversely between them with the inside of the valley in contact with the primary die, the primary die having two interspaced fingers which transversely engage said inside and the punch having three fingers which contact the valley's outside and mesh with the primary die's fingers when the primary die and punch are closed together, actuating means for moving the primary die and punch together so as to form one and on both sides thereof partially form two more of the sheet-bending corrugations in the valley and partially bend to shape about said axis, means for holding the primary die and punch together so as to clamp the shape's valley therebetween, and secondary dies on both sides of said primary die and which are movable towards the valley's inside so as to overlap the punch's two outer fingers, and means for moving said secondary dies towards the punch so as to bend the shape's valley about the punch's two outer fingers and completely form three bending corrugations in the shape's valley.

4,449,389

DEVICE FOR BENDING A TOOL HOLDER OF A FOLDING PRESS OR THE LIKE

Pierre Cros, Saint-Cloud, France, assignor to Promecam Sisson-Lehmann, Saint-Denis, France

Filed Jun. 3, 1982, Ser. No. 384,662
Claims priority, application France, Jun. 16, 1981, 81 11805
Int. Cl.³ B21D 9/05
U.S. Cl. 72—389 **8 Claims**



1. Device for bending the tool holder of a folding press comprising a fixed beam (1) and a movable beam (2) adapted to keep a constant distance between the cooperating tools fastened to said beams (1, 2) during the folding of a sheet metal between said beams, the device comprising a single wedge (7) extending throughout the length of one of the tool holders (8) associated with said beams (1, 2), said wedge having one major face (7*a*) inclined transversely to the folding direction and in sliding bearing engagement with a supporting member (9), and means for exerting transverse thrusts at different points disposed at spaced intervals along said wedge (7) in order to cause an elastic deformation of said wedge (7) by causing its inclined face (7*a*) to slide and thus bend the tool holder (8) and the tool carried thereby, wherein the means for controlling the deformation of said wedge (7) comprise at each transverse thrust point a hollow screw (18) engaged in a socket (21) rigid with the tool holder (8) but adapted to move only axially in said socket (21), a member (22) for securing said screw (18) to the wedge (7), a sprocket (23) mounted coaxially to said screw (18) and formed with internal screw threads engaging the male threads of said screw (18), for controlling the axial position of said screw (18) in said socket (21), and a single system (26) for controlling the rotation of all the sprockets of the folding press and consequently the movement of the wedge through the thrusts exerted by said hollow screw (18) on said wedge (7), said exerting means moving different portions of said wedge different distances upon actuation of said single system thereby to deform the wedge.

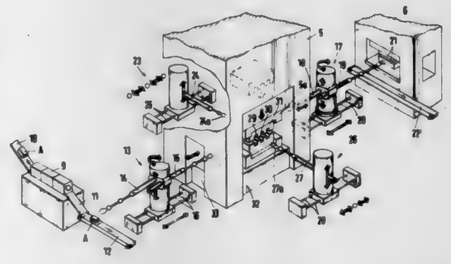
7. Device for bending the tool holder of a folding press comprising a fixed beam and a movable beam adapted to keep a constant distance between the cooperating tools fastened to said beams during the folding of a sheet metal between said beams, the device comprising a single wedge extending throughout the length of one of the tool holders associated with said beams, said wedge having one major face inclined transversely to the folding direction and in sliding bearing engagement with a supporting wedge member, and means for exerting transverse thrusts at different points disposed at spaced intervals along said wedge in order to cause an elastic deformation of said wedge by causing its inclined face to slide and thus bend the tool holder and the tool carried thereby, wherein the means for controlling the deformation of said wedge comprise at each transverse thrust point a hollow screw engaged in a socket rigid with the tool holder but adapted to move only axially in said socket, a member for securing said screw to the wedge, a sprocket mounted coaxially to said screw and formed with internal screw threads engaging the male threads of said screw, for controlling the axial position of said screw in said socket, and a single system for controlling the rotation of all the sprockets of the folding press and consequently the movement of the wedge through the thrusts exerted by said hollow screw on said wedge, said movable wedge (37) and its supporting wedge member (39) consisting of two identical members extending from one end to the opposite end of the tool holder (8), each wedge (37, 39) having a longitudinal surface (37*a*, 39*a*) coupled to the corresponding longitudinal surface of the other wedge and a variable transverse slope such that when the top wedge (37) is turned upside down on the bottom wedge (39) with the vertical faces (40, 41) of both wedges disposed in a common vertical plane, said coupled surfaces (37*a*, 39*a*) engage each other at all points thereof, and the transverse translation of the top wedge (37) on the variable-inclination surface (39*a*) of the bottom wedge (39) and throughout its length causes the bending of the top wedge (37) and of the corresponding beam.

4,449,390

AUTOMATIC UNIT FOR HOT MOLDING AND TRIMMING OF METAL PARTS

Giovanni Pontini, Turin, Italy, assignor to Teksid, S.p.A., Turin, Italy

Filed Dec. 14, 1981, Ser. No. 330,070
Claims priority, application Italy, Dec. 29, 1980, 69005 A/80
Int. Cl.³ B21J 9/00
U.S. Cl. 72—405 **4 Claims**



1. A unit for automatically hot molding and trimming metal parts comprising:

a molding press having two opposed and relatively movable mold parts, the mold parts defining between them a series of molding stations, each of the stations including a mold cavity portion in one of the mold parts opposite a corresponding mold cavity portion in the other mold part and two notches in each mold part adjacent to, and on opposite sides of, each mold cavity portion,

a pair of robots located on opposite sides of the molding press, each robot having an arm terminating in a gripping means adapted to grasp the flashing produced on a workpiece being operated upon by the molding press, and each robot having means for moving its arm from one molding station to the next in sequence and in synchronization with movement of the other robot arm,

the notches being so sized and shaped that at each molding station, the end of each gripping means, carried by each arm, is fully accommodated within the opening defined by two opposed notches in the mold parts when the mold parts are closed, so that the arms need not be moved prior and subsequent to closing of the mold parts when a molding operation is performed on a workpiece, and

means for trimming the workpiece after it has been operated upon in the last of the series of molding stations.

4,449,391

METHOD FOR SEPARATING CLOSED BOLLS OF COTTON BY MATURITY

William S. Anthony, Stoneville, Miss., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 4, 1982, Ser. No. 385,162
Int. Cl.³ G01N 9/10, 9/36
U.S. Cl. 73—32 R **8 Claims**

1. A method for separating or classifying closed bolls of a given variety of cotton by maturity comprising:

(a) receiving unopened cotton bolls harvested from an agricultural field;

(b) immersing said bolls of cotton in a series of solutions, said solutions having a specific gravity of less than one, and thus separating said bolls by means of the differences in the specific gravity readings;

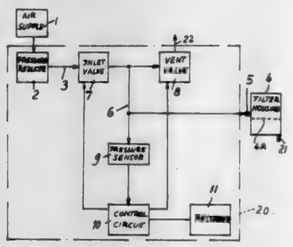
(c) correlating said specific gravity readings with moisture content of the bolls and subsequently translating said moisture content into known maturity dates of said cotton bolls.

4,449,392

DEVICE FOR TESTING FILTERS, PARTICULARLY STERILE FILTERS

Bruno Huschke, Hauptstr. 12, D-8931 Reichertshofen, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,309
Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117399
Int. Cl.³ G01M 3/26
U.S. Cl. 73—40 **7 Claims**



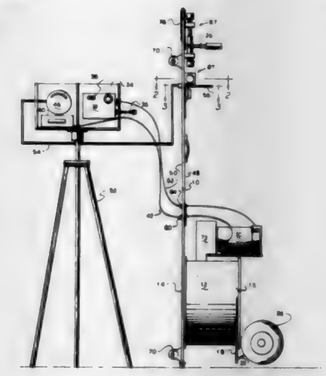
1. In a device for testing a filter, including a filter housing having an air inlet and an air outlet and adapted to receive a filter which is to be tested, an inlet line connected to said air inlet, the air pressure in said inlet line being regulated by an inlet valve, and means for recording the air pressure in said inlet line; the improvement comprising: pressure-regulating means capable of producing a continuous and evenly increasing air pressure in said inlet line, including an electronic pressure sensor which monitors the air pressure in said inlet line, an electronic evaluating and control circuit having a time switch, an adjustable threshold device for effecting pressure adjustment and a peak pressure sensor, said evaluating and control circuit controlling said inlet valve and being responsive to said electronic pressure sensor, said adjustable threshold device and said peak pressure sensor; and including a vent valve which is connected to said inlet line and said recording means and is controlled by said evaluating and control circuit; said pressure regulating means causing the air pressure to increase in said inlet line until it reaches a preselected pressure-resisting test pressure which can be adjusted by means of said adjustable threshold device, said inlet valve then being closed by said pressure regulating means for a time interval set on said time switch, a further increase of the air pressure in said inlet line then being effected by said pressure regulating means until said peak pressure sensor indicates no further air-pressure increase is occurring, thereby indicating a bubble point has been reached, said peak pressure sensor then causing said evaluating and control circuit to open said vent valve and simultaneously close said inlet valve.

4,449,393

ENERGY (TEST) DOOR

Jeffrey C. Tucker, 4216 - 50th St., Suite F, Lubbock, Tex. 79413; H. Dale Edmundson, P.O. Box 1416, Grants, N. Mex. 87020; David L. Wigley, and Mark F. Vallo, both of 4216 - 50th St., Suite F, Lubbock, Tex. 79413

Filed Nov. 16, 1981, Ser. No. 322,019
Int. Cl.³ G01M 3/26
U.S. Cl. 73—40 **1 Claim**



1. A door adapted to be mounted in the doorway of a house comprising:

a. a main panel having
   i. an inside face, and
   ii. an outside face
b. a fan housing attached to the outside face of the main panel,
c. a fan housing having a
   i. a yoke side, and
   ii. a door side which is the side attached to the main panel,
d. a yoke attached to the yoke side of the fan housing,
e. an axle attached to the yoke,
f. wheels journaled to said axle,
g. a fan journaled within said fan housing
h. a motor supported on said fan housing and having driving relationship with said fan,
i. a speed controller electrically connected to said motor for controlling the speed thereof,
j. a tachometer connected to said motor for indicating the speed thereof,
k. a differential pressure gauge inside of the door having a probe extending to the outside face of the door,
l. rollers attached to the inside face of the main panel,
m. a side flap slidingly attached to the side of the main panel,
n. a top flap slidingly attached to the top of the main panel,
o. each of said flaps having a core,
p. each of said flaps having a metal plate attached to either side of the core and straddling the main panel,
q. a corner flap slidingly attached to the top flap,
r. thumb screws to hold the corner flap in adjusted position,

s. spring means for biasing the top and side panels outward,
t. each spring means including a spring within
u. a tube secured to the main panel,
v. said springs biasing a plunger outward,
w. said plunger being telescoped within said tube and attached to one of said flaps,
x. latch means interconnecting each of the flaps on said main panel for holding the flaps in a retracted position,
y. rubber seal means extending along the outer edges of the flaps and the exposed edge of the main panel for providing an air seal between the door and the doorway, and
z. post attached to the outside face of the main panel near the top thereof whereby the air leakage of the house is determined by the motor speed and differential pressure.

4,449,394

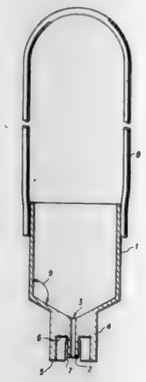
EFFLUX VISCOSITY CUP

Allan J. Hegedus, Bolingbrook, Ill., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 327,547, Dec. 4, 1981, Pat. No. 4,400,973. This application Feb. 26, 1982, Ser. No. 352,624

Int. Cl.³ G01N *11/04*

U.S. Cl. 73—55 **9 Claims**



1. In an efflux viscosity cup consisting essentially of a cup-like resevoir externally and communicatively joined at its bottom to a capillary, a collar coaxially oriented with said capillary and attached at one open end to said bottom of said resevoir, said collar having an internal diameter substantially larger than the external diameter of said capillary and a height sufficient to extend it beyond the capillary thereby protecting the exit orifice of said capillary from damage, the improvement whereby increasing the accuracy of the viscometer, which comprises:

including one or more apertures in said collar, the size and location of said apertures being effective to substantially reduce the standard deviation of measurements made with said viscometer.

4,449,395

PHEOLOGICAL MEASUREMENT METHOD AND APPARATUS

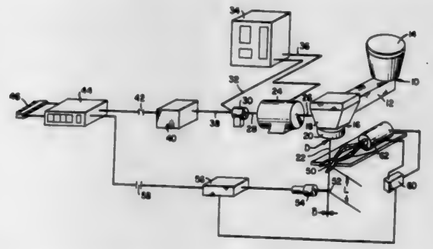
Stuart J. Kurtz, Martinsville, N.J.; Terry A. De Rossett, Hastings-on-Hudson, N.Y., and Montgomery T. Shaw, Mansfield Center, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 8, 1982, Ser. No. 366,723

Int. Cl.³ G01N *11/04*

U.S. Cl. 73—56 **4 Claims**

1. The method for testing a product stream of molten thermoplastic material to obtain a viscosity measurement and an elasticity measurement for said material comprising: passing a fractional, continuous, molten and flowable sample of such stream of said material to and successively through each of either a controllable pumping zone maintained at constant temperature and pressure or controllable pressure zone maintained at constant flow rate and temperature, and a die zone to form a continuous strand of such material of any resultant shape; measuring the viscosity of said material in said pumping



and die zones; providing a measurement of elasticity by obtaining a measurement or percentage of cross-section area swell in said strand in passage from said die zone over a constant length distance downstream of a point of strand marking to a point of mark sensing; and combining said viscosity measurement with said elasticity measurement to provide fuller rheological characterization data for said material.

4,449,396

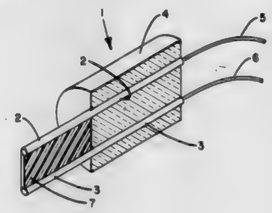
PROBE FOR MEASURING ELECTRICAL CONDUCTANCE

Joseph A. Bzdula, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,768

Int. Cl.³ G01N *27/06*

U.S. Cl. 73—61.1 R **5 Claims**



1. A probe for measuring electrical conductance of a fluid containing water, comprising:

a pair of electrically conducting electrodes;

means to hold the electrodes in spaced relationship; and

a bridge of relatively electrically insulating protein gel spanning the electrodes, said protein gel being water absorbent and being rendered electrically conductive in proportion to the amount of water absorbed and said protein gel including a mixture of gelatin and a water permeable substance which provides rigidity for the gelatin to prevent erosion of the gelatin by fluid flow around the probe.

4,449,397

APPARATUS FOR MEASURING THE MASS OF A PULSATING MEDIUM FLOWING IN A FLOW CROSS-SECTION

Heinz Lauterbach, Esslingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

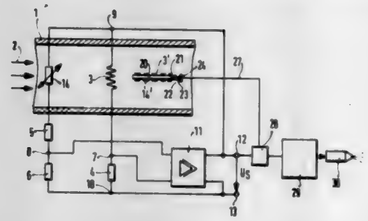
Filed Aug. 17, 1982, Ser. No. 408,979

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135794

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—118 **7 Claims**

1. An apparatus for measuring the aspirated air mass of internal combustion engines, which represents a pulsating flowing medium, comprising at least one temperature-dependent measuring resistor disposed in the flow cross-section, the temperature and resistance of which is regulated in accordance with the flowing mass and a regulator output measurement



signal (U_S), a pressure-sensing element which is subjected to the flow medium, said pressure-sensing element producing an output which influences the measurement signal (U_S) representing the flowing mass of medium in accordance with the direction of flow of the medium.

4,449,398

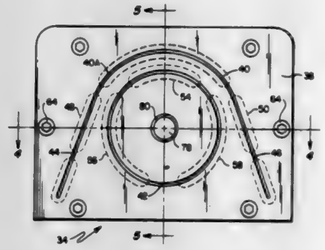
SHEET PROPERTY SENSOR WITH SHEET WRINKLE REMOVER

Paul Williams, Columbus, Ohio, assignor to Accuray Corporation, Columbus, Ohio

Filed Jun. 24, 1982, Ser. No. 391,496

Int. Cl.³ G01B *13/06*

U.S. Cl. 73—159 **6 Claims**



1. Apparatus for sensing a property of a sheet that is moving longitudinally downstream along a nominal sheet path, comprising

a sensor element adapted to be placed alongside the sheet path,

a base member adapted to be positioned on one side of the sheet and in sliding contact with one surface thereof,

traversing means for guiding the sensor element and the base member for movement generally along at least one nominal sensor path transverse to the sheet path so that the sensor element is enabled to produce a sheet property sensing interaction with the sheet in a limited region of the sheet path, the interaction region being movable to any one of a plurality of sensing locations spaced across the width of the sheet,

the base member having a pair of groove portions forming gas conducting channels with open sides exposed to the sheet surface in contact with the base member, each of the groove portions having a part extending upstream of the interaction region with respect to the sheet movement, the groove portions diverging from each other as they extend in the downstream direction with respect to the sheet movement, and

a source of subambient gas pressure communicating with the groove portions for reducing the gas pressure therein so that the contacting surface of the sheet is at least nominally depressed into the groove portions to such an extent that the divergence of the grooves and the longitudinal movement of the sheet exert thereon a transverse tension sufficient to substantially smooth out longitudinally extending wrinkles from a portion of the sheet at least slightly wider than the interaction region during the approach of the sheet portion thereto.

4,449,399

APPARATUS FOR DETECTING THE PASSAGE OF MULTIPLE SUPERPOSED DOCUMENTS ALONG A FEED PATH

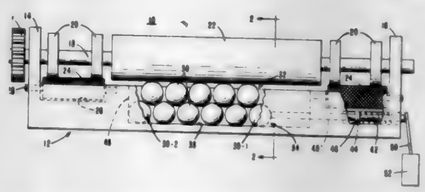
David A. Hain, Monifieth, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 2, 1982, Ser. No. 414,152

Claims priority, application United Kingdom, Jan. 12, 1982, 8200793

Int. Cl.³ G01B *5/06*; B65H *7/12*

U.S. Cl. 73—159 **9 Claims**



1. An apparatus for detecting the passage of multiple superposed documents along a feed path, comprising:

an elongated housing;

a stop means at one end of the housing;

a movable actuating member at the other end of the housing;

first and seond superposed rows of substantially non-compressible elements retained in said elongated housing, the elements extending between said stop means at one end of the housing and said movable actuating member at the other end of the housing with each row of elements being in contact with the other row and with the centers of all the elements being spaced apart along the housing;

roller means having a fixed axis of rotation and postioned in contact with, and extending along the length of, said first row of elements;

means for urging said actuating member into engagement with the end element at said other end of said housing whereby the end element at said one end of said housing is urged against said stop means;

means for feeding documents along said feed path between said roller means and said first row of elements in a direction transverse to the axis of said roller means whereby there is brought about a movement of said actuating member away from said stop means; and

means for detecting a movement of said actuating member away from said stop means in excess of a predetermined amount.

4,449,400

RADIONUCULIDE COUNTING TECHNIQUE FOR MEASURING WIND VELOCITY AND DIRECTION

Jag J. Singh, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 24, 1982, Ser. No. 444,149

Int. Cl.³ G01F *1/28*; G01W *1/00*

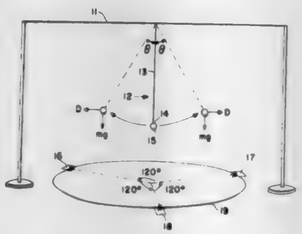
U.S. Cl. 73—189 **5 Claims**

1. A method for measuring wind velocity and direction comprising the steps of:

providing a radiation source on the end of a pendulum with the pendulum being substantially perpendicular to the wind direction when in its no wind position and with the

pendulum moving the radiation source to a position indicative of both the velocity and direction of the wind when there is wind;

measuring the radiation from the radiation source at three equally spaced locations on a circle in a plane perpendicular to said pendulum in its stable position;



obtaining two ratios of the three measurements of the radiation from the radiation source; and

determining from the two ratios the velocity and direction of the wind.

4,449,401

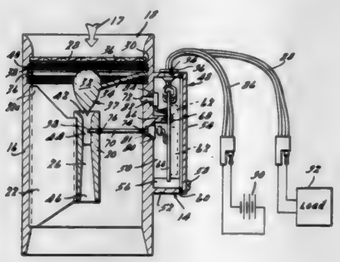
HOT FILM/SWIRL FLUID FLOWMETER

Hermann Kaiser, Utica, and Jerry A. Olson, Dearborn, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 19, 1981, Ser. No. 265,119

Int. Cl.³ G01F *1/68, 5/00*

U.S. Cl. 73—202 **42 Claims**



1. A fluid flowmeter comprising:

means defining a main passage for the flow of a fluid therethrough;

means defining a secondary passage extending substantially parallel to said main passage and including an inlet for receiving a portion of the fluid flowing in said main passage, a throat and an outlet for discharging the portion back into the main passage;

a constant temperature thermal anemometer operative to monitor the rate of flow of said portion while within said throat and to generate a total flow rate output signal as a function thereof; and

means operative to receive at least a portion of the remaining fluid in said main passage and impart a velocity vector thereto tangential to said axis for creating a reduced pressure area at the outlet of said secondary passage.

4,449,402

APPARATUS FOR MEASURING THE FLOW VELOCITY OF GASES AND LIQUIDS

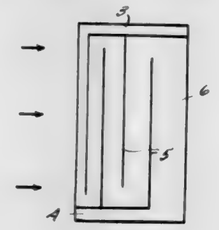
Kurt Elermann, Pfungstadt; Eberhard Horlebein, Mainaschaff; Kurt Lissmann, Rodenbach, and Wolfgang Schafer, Frankfurt, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,463

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127081

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **7 Claims**



1. An anemometer apparatus for the measurement of velocity of a flowing medium comprising:

a temperature dependent electrical film resistance positioned so as to be in heat contact with said flowing medium, said resistance comprising an electrically insulating carrier and a thin metal layer formed on said carrier, said thin metal layer being cut to define resistance paths dimensioned such that the resistance per unit of surface area is a constant ratio to a corresponding local heat transfer coefficient; and

a control circuit for heating said resistance.

4,449,403

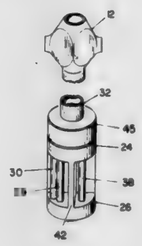
GUIDE TUBE INSERTED LIQUID LEVEL SENSOR

Malcolm M. McQueen, 1755 La Costa Meadows Dr., San Marcos, Calif. 92069

Filed Jun. 29, 1981, Ser. No. 278,336

Int. Cl.³ G01F *23/22*

U.S. Cl. 73—295 **7 Claims**



1. A system for sensing fluid level and properties in a vessel comprising a plurality of spaced resistance temperature detector sensor assemblies, each sensor assembly comprising a first and second temperature sensor, a heater adjacent one temperature sensor and isolated from the second temperature sensor, means for detecting differential heat responses between the temperature sensors, means to measure differential heat responses between the temperature sensors and means to sense individual temperatures of the two temperature sensors of each sensor assembly.

4,449,404

THERMOELECTRIC LEVEL MEASURING DEVICE

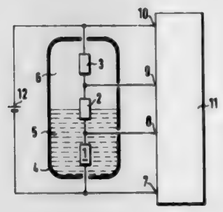
Rolf Böhme, Bad Friedrichshall; Heinz Rinderle, and Jürgen Sieber, both of Heilbronn, all of Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Apr. 15, 1982, Ser. No. 368,624

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115776

Int. Cl.³ G01F *23/24*

U.S. Cl. 73—295 **15 Claims**



1. A thermoelectric level measuring device for measuring the level of a material within a container which has a free space above the material comprising: three sensing resistors connected electrically in a series connection and disposed in the container, said series connection presenting a beginning, an end, and first and second connection points between said sensing resistors, with a first one of said sensing resistors being surrounded by the material, a second one of said sensing resistors being partly surrounded by the material and partly by the free space and a third one of said sensing resistors being surrounded by the free space and arranged between said first sensing resistor and said second sensing resistor of said series connection; and an evaluation circuit having inputs connected to said series connection, one at the beginning of said series connection, one to said first connection point between said sensing resistors, one to said second connection point between said sensing resistors and one at said end.

4,449,405

ROD-LIKE PROBE FOR THE CAPACITIVE MEASUREMENT OF THE LEVEL IN A CONTAINER

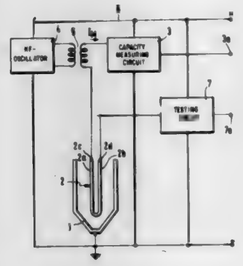
Han-Jürgen Franz, Schopfheim, and Volker Dreyer, Lörrach-Haagen, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Jul. 14, 1981, Ser. No. 283,209

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029352

Int. Cl.³ G01F *23/26*

U.S. Cl. 73—304 C **15 Claims**



1. A capacitance level measuring arrangement for the capacitive measurement of the level in a container, said arrangement comprising:

a probe extending from the container interior to the container exterior, the probe forming one electrode and the container the other electrode of a capacitor whose capacitance depends on the level in the container, wherein the probe includes two electrical conductors insulated from each other which are electrically connected together at the ends of the conductors facing the container interior and at the ends of which remote from the container interior are provided with electrical terminals separate from each other;

means for measuring capacitance between one of said terminals on said probe and said container; and

means for testing continuity between said electrical terminals, the existence of continuity comprising an indication said probe is intact.

4,449,406

METHOD AND DEVICE FOR MEASURING THE FAT CONTENT OF MEAT

Lambertus F. W. van Haren, Druten, Netherlands, assignor to Protecon B.V., AG Oss, Netherlands

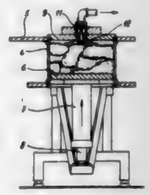
PCT No. PCT/NL81/00017, 371 Date Jan. 29, 1982, 102(e) Date Jan. 29, 1982, PCT Pub. No. WO81/03547, PCT Pub. Date Dec. 10, 1981

PCT Filed Jun. 2, 1981, Ser. No. 348,055

Claims priority, application Netherlands, Jun. 2, 1980, 8003203

Int. Cl.³ G01N *9/02*

U.S. Cl. 73—433 **6 Claims**



1. A method for measuring the fat content of meat by determining the specific gravity comprising the steps of first weighing a quantity of meat outside a device to compress it, the compression device comprising an upstanding cylinder open at its top with a bottom movable up and down, subsequently placing the weighted quantity of meat in, closing said cylinder from above when the meat is placed in it, compressing the weighed quantity in the closed space by moving the bottom upwardly until the meat in the cylinder is under a certain compression, and measuring the compressed volume in the compressed condition by determining the position of the movable bottom and determining the fat content from the portion of said weight to said volume, and opening the cylinder at its top after the compression and moving the movable bottom upwardly further to remove the meat from the cylinder.

4,449,407

DRIVE SHAFT MOUNTING ASSEMBLY FOR DYNAMIC WHEEL BALANCING MACHINE

Donald B. Curchod, c/o Dynabal Corporation, 151 Laura La., Palo Alto, Calif. 94303

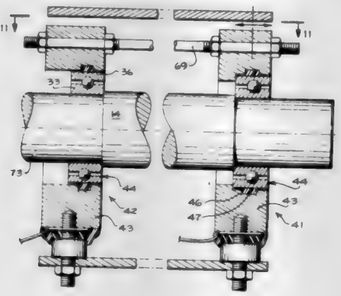
Filed Sep. 14, 1982, Ser. No. 417,849

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—462 **11 Claims**

1. In a wheel balancing machine of the type for rotating an unbalanced wheel/tire assembly providing imbalance forces thereof, a driven shaft adapted to carry a wheel/tire assembly to rotate therewith, an elongate bearing housing, a plurality of bearing block assemblies within said housing spaced axially along said shaft and supporting said shaft for rotation, the periphery of each said assembly being spaced from the interior walls of said housing, force sensing means disposed substantially in the plane of each said assembly for generating an

electrical signal proportional to imbalance forces acting thereon, and elongate rod means extending between said bear-



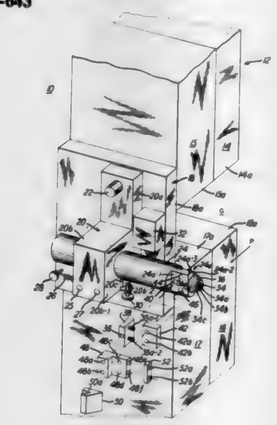
ing block assemblies, the last named means being disposed and arranged to absorb axial forces applied thereto.

4,449,408

EMAT TEST APPARATUS HAVING RETRACTABLE PROBE

Robert A. Brooks, Rye, N.Y.; Terrance R. Banach, Danbury, Conn.; Erik Barman, Spring Valley, and Michael R. Livia, Brooklyn, both of N.Y., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,831
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—643 **13 Claims**



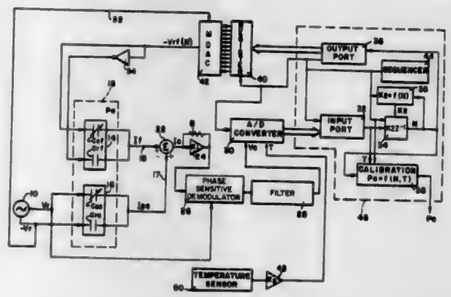
1. Apparatus for electromagnetic acoustic wave examination of an object, comprising:
(a) means for generating a magnetic field;
(b) flux coupler means fixedly disposed relative to said field generating means for coupling magnetic flux therefrom;
(c) flux receiving and issuing means supported for movement relative to said flux coupler means for receiving magnetic flux therefrom in such movement and directionally issuing such received flux; and
(d) transducer means for electromagnetic generation of an acoustic wave supported with said flux receiving means for movement therewith.

4,449,409

PRESSURE MEASUREMENT SYSTEM WITH A CONSTANT SETTLEMENT TIME

Frank J. Antonazzi, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 13, 1981, Ser. No. 282,977
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—724 **12 Claims**



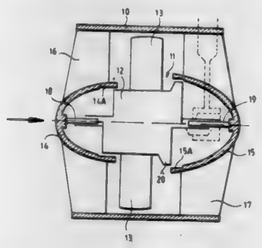
1. A pressure measuring system including a pressure sensitive input impedance configuration fed by at least a first alternating reference signal, a pressure sensitive feedback impedance configuration fed by a second alternating reference signal 180° out of phase with the first alternating reference, means for differencing the outputs of the input and feedback impedance configurations to produce an error signal, means for incrementing a digital signal N at a predetermined rate while the error is non zero, and means for feeding said digital signal N to said feedback impedance configuration to generate a feedback signal to null the error signal wherein the improvement comprises:
means for maintaining the time it takes for nulling the error signal substantially constant, said maintaining means having means for varying the feedback signal inversely to changes in gain generated by the measuring system.

4,449,410

AXIAL TURBINE FLOWMETERS

Roland Lett, Yerres, France, assignor to Flonic S.A., Montrouge, France

Filed Sep. 23, 1982, Ser. No. 422,504
Claims priority, application France, Sep. 30, 1981, 81 18374
Int. Cl.³ G01F *1/10*
U.S. Cl. 73—861.91 **2 Claims**



1. A fluid flowmeter comprising, in a tubular conduit intended to be traversed by a fluid to be measured, a turbine carrying blades at the periphery of a cylindrical hub and mounted for free axial rotation between two fixed fairings, one upstream and the other downstream, means for creating a zone of reduced pressure of approximately constant value beside the upstream face of the said hub, and means for providing a zone of pressure beside the downstream face of the said hub,

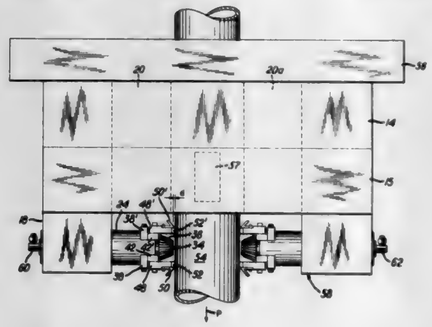
wherein the said means for providing a zone of pressure beside the downstream face of the hub comprises a combination of the relative profiles of the downstream extremity of the hub and of the downstream fairing, the profile of the hub having at this location an increased diameter, and the profile of the fairing having a hollow cylindrical portion dimensioned to allow the downstream extremity of the hub to extend into the interior of the said fairing, such that the hydrodynamic pressure on the turbine arising from the flow of fluid is continuously balanced by the difference in pressures created on either side of the hub of the turbine.

4,449,411

MAGNETIC AND ULTRASONIC OBJECTS TESTING APPARATUS

Peter J. Suhr, Westbury; Robert A. Brooks, Rye, both of N.Y., and Terrance R. Banach, Danbury, Conn., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,830
Int. Cl.³ G01N *29/04*; G01R *33/12*
U.S. Cl. 73—643 **15 Claims**



1. Apparatus for nondestructive object testing comprising:
(a) a source generating magnetic flux;
(b) first and second pole piece means for receiving respective portions of such generated flux and for transferring received flux therefrom;
(c) detector means responsive to flux transferred to said object by said first pole piece means for determining characteristics of said object; and
(d) electromagnetic acoustic transducer means coactive with flux transferred to said object by said second pole piece means for determining characteristics of said object.

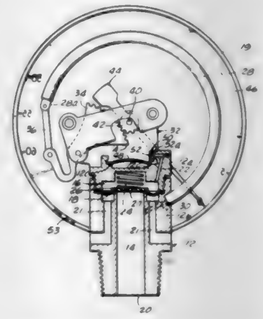
4,449,412

SAFETY PRESSURE GAGE

Merton R. Fallon, Thousand Oaks, Calif., and Thomas W. Clements, Ambler, Pa., assignors to Draft Systems, Inc., Northridge, Calif.

Filed Sep. 28, 1982, Ser. No. 425,670
Int. Cl.³ G01L *7/04, 19/06*
U.S. Cl. 73—738 **12 Claims**

1. A combination fluid pressure gage and pressure relief device for interconnection with a source of fluid under pressure, said device being adapted to measure fluid pressure within a predetermined range and being adapted to automatically vent to atmosphere upon over pressurization of the device beyond the predetermined pressure range, said device comprising:
(a) a housing having first and second chambers, said first chamber having a fluid inlet in communication with the source of fluid under pressure and said second chamber having first and second passageways adapted to communicate with atmosphere upon over pressurization of the device;
(b) a diaphragm carried by said housing normally separating said first and second chambers, said diaphragm being movable from a first position closing said first passageway of said second chamber to a second position opening said first passageway and being provided with a fluid passageway interconnecting said first and second chambers;
(c) valve means carried by said housing for normally closing said second passageway of said second chamber; and
(d) fluid pressure measuring means carried by said housing for measuring the pressure exerted by fluid within said



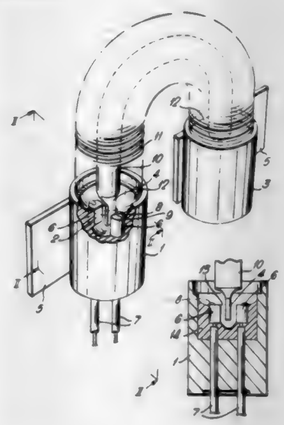
fluid inlet within a range of zero pressure to a predetermined maximum pressure, said means comprising:
(1) pressure sensing means for sensing fluid pressure within said first chamber; and
(2) operating means operably associated with said pressure sensing means for operating said valve means to open said second passageway of said second chamber to atmosphere upon the fluid pressure within said inlet exceeding the predetermined maximum pressure.

4,449,413

EXTENSOMETERS

Harold Pugh, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 28, 1982, Ser. No. 402,573
Claims priority, application United Kingdom, Aug. 14, 1981, 8124945
Int. Cl.³ G01B *7/22*
U.S. Cl. 73—780 **4 Claims**



1. An extensometer of the electrical capacitance kind comprising, static complementary capacitance surfaces, and a capacitance modulating member disposed between the capaci-

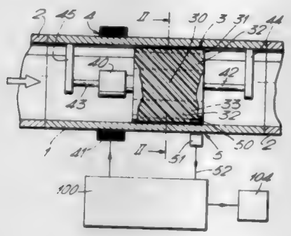
tance surfaces so that the modulating member is adapted for displacement relative to the capacitance surfaces in response to strain of a workpiece, characterized in that the modulating member is of arcuate form between its ends, and the extensometer is encapsulated in a flexible envelope of corresponding arcuate form.

4,449,414

FLUID-RESPONSIVE APPARATUS

Terence J. Coates, Chiddingfold, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Apr. 26, 1982, Ser. No. 371,885
Claims priority, application United Kingdom, May 21, 1981, 8115667
Int. Cl.³ G01F *1/80*
U.S. Cl. 73—861.37 **18 Claims**



1. Fluid-responsive apparatus comprising turbine means defining a passage through which fluid is to flow; means resiliently mounting said turbine means for limited angular displacement about an axis substantially parallel to the flow of fluid; drive means coupled with said turbine means for applying oscillatory drive to said turbine means about said axis such that fluid within said passage is given a component of displacement at right angles to the direction of flow through said passage; means for sensing angular displacement of said turbine means about said axis, said means for sensing said angular displacement of said sensor means including timer means for deriving an indication of the time difference between application of drive to said turbine means and angular displacement of said turbine means; computer means; and means for supplying signals to said computer means representative of torque applied by said drive means and angular displacement of said turbine means, the computer means deriving an indication of the mass flow of fluid from the phase difference between the torque applied to said turbine means and its angular displacement.

4,449,415

TRACTION FLUID AND TRACTION DRIVE SYSTEM CONTAINING SAID FLUID

Eugene D. Groenhof, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 23, 1981, Ser. No. 304,726
Int. Cl.³ F16H *55/32*; C10M *1/16, 1/54*
U.S. Cl. 74—214 **27 Claims**

1. A traction fluid consisting essentially of

(A) 30–70% by weight of a trimethylsiloxy endblocked siloxane fluid of (MeRSiO) units and, optionally, (Me_2SiO) units where Me is a methyl radical and R is selected from the group consisting of phenyl radicals and cyclohexyl radicals, where there are about 1.6 to 14 methyl radicals for each R radical, said siloxane fluid having a kinematic viscosity of about 20 to 200 centistokes at 77° F.; and

(B) 30–70% by weight of a cycloaliphatic hydrocarbon or a mixture of cycloaliphatic hydrocarbons, where said cycloaliphatic hydrocarbon contains from about 12 to 70 carbon atoms and at least one saturated ring containing at least six carbon atoms;

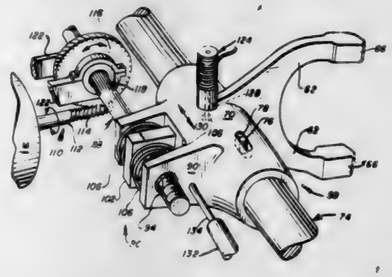
where components (A) and (B) of said traction fluid remain compatible and miscible when cooled to −40° F. and said traction fluid has a kinematic viscosity of less than 15,000 centistokes at −20° F.

4,449,416

TRANSMISSION CONTROL SYSTEM

Thomas W. Huitema, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 4, 1981, Ser. No. 299,318
Int. Cl.³ F16H *5/42*; B60K *20/02*; G05G *5/10*; F16D *19/00*
U.S. Cl. 74—336 R **31 Claims**



1. For a transmission including input and output shafts and gear coupling means movable axially of said output shaft between a first neutral non-power-transmitting position and a second power-transmitting position wherein power is transmitted from said input shaft to said output shaft, a gear shifting arrangement for moving said coupling means between said first and second positions comprising:

shift fork means engageable with said coupling means and displaceable generally parallel to said output shaft for moving said coupling means axially thereof,

rotatable shaft means including a threaded portion disposed adjacent to said fork means,

motor means for selectively rotating said shaft means, and

drive means including a drive element which is displaced axially with respect to said shaft means threaded portion during rotation thereof for operatively connecting said shaft means with said fork means, whereby selective rotation of said shaft means by said motor means in one direction displaces said fork means to move said coupling means from said first position toward said second position, and rotation of said shaft means in the other direction displaces said fork to move said coupling means from said second position toward said first position.

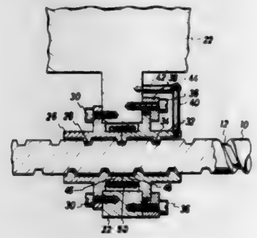
4,449,417

CARRIER MOVING MECHANISM

Masao Sasaki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1982, Ser. No. 357,725
Claims priority, application Japan, Mar. 16, 1981, 56-35380[U]
Int. Cl.³ F16H *55/18, 1/18, 1/20*
U.S. Cl. 74—409 **4 Claims**

1. A carrier moving mechanism comprising a screw shaft, having a lead having opposite side faces, said screw shaft being rotated in a direction, first and second nuts having teeth to be engaged with the lead of the screw shaft and a carrier to which the first and second nuts are secured, wherein the teeth of the first nut are brought into contact with one side face of said opposite side faces of the lead of the screw shaft, the teeth of the second nut are brought into contact with the other side face of said opposite side faces of the lead of the screw shaft and the carrier is moved through the first and second nuts by rotation of the screw shaft, said carrier moving mechanism being characterized in that said carrier moving mechanism further comprises a supporting mechanism which supports one of the first and second nuts on the carrier so that said nut can be rotated in the rotation direction of the screw shaft but the movement



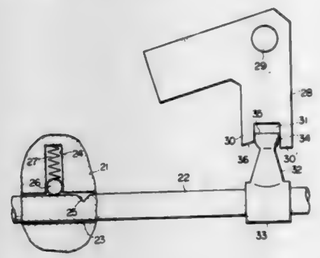
of said nut in the axial direction of the screw shaft is restricted, bias means for biasing said nut to rotate said nut in a direction to eliminate backlash and an inhibiting mechanism for inhibiting said nut from rotating in the direction opposite to said direction to eliminate backlash.

4,449,418

GEARSHIFT DEVICE

Kaoru Shori, Fuji, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 21, 1982, Ser. No. 341,265
Claims priority, application Japan, Feb. 9, 1981, 56-16956
Int. Cl.³ G05G *5/06, 9/12*
U.S. Cl. 74—475 **4 Claims**



1. A gearshift device for a manually operable transmission unit having a transmission case housing gears therein, comprising:

a control rod having a center axis and movable along the center axis thereof with respect to said transmission case,

a control lever securely mounted on said control rod and having a free end portion, and

a shift fork having a pivot axis fixed with respect to said transmission case and pivotable about the pivot axis, the shift fork having one end portion bifurcated for forming a pair of protrusions and a recess between the protrusions, the free end portion of said control lever being received in the recess, the shift fork having the other end portion operably connected to the gears of said transmission unit,

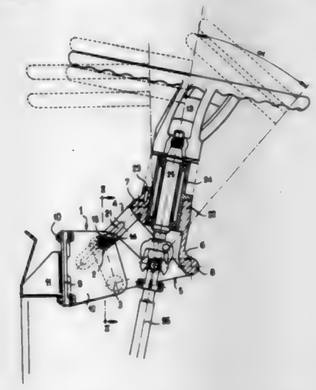
wherein the free end portion of said control lever and one of said protrusions are respectively formed with flat surfaces contactable with each other when the gears of the transmission unit are held in mesh with one another.

4,449,419

SYSTEM FOR ADJUSTING THE POSITION OF A STEERING WHEEL ON A VEHICLE

Raimon Soler Bruguera, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed Jul. 15, 1981, Ser. No. 283,591
Claims priority, application Spain, Jul. 30, 1980, 494.694
Int. Cl.³ B62D *1/18*
U.S. Cl. 74—493 **6 Claims**



1. A system for adjusting the position of a vehicle steering wheel comprising a rotating support for a shaft holding said steering wheel, said support being hinged to a fixed structure of the vehicle so that it is movable in a plane including the steering wheel shaft, said support comprising a four link articulated quadrilateral mechanism comprised of a base link fastened to the fixed structure of the vehicle and provided with two hinge means located at different levels, two crank links one adjustable longitudinally and the other one adjustable arcuately relative to said base link, both crank links being hinged to said base link and to a rod link supporting said shaft and locking means for locking both crank links in selected positions with respect to said base link.

4,449,420

STEERING APPARATUS

Masanao Baba, Takarazuka, Japan, assignor to Nippon Cable System Inc., Hyogo, Japan

Filed Dec. 14, 1981, Ser. No. 330,475
Claims priority, application Japan, Dec. 15, 1980, 55-177629
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **7 Claims**

1. In a steering apparatus comprising an operating unit and a steering unit connected together by two pull control cables to remotely control a rudder means, the improvement wherein

a. said operating unit comprises an operating-side casing;

a drive shaft having an outer surface supported in said operating-side casing and rotated by a steering wheel;

an operating main shaft having inner and outer surfaces, said inner surface being arranged on the outer surface of said driving shaft and engaged with said driving shaft;

an operating pulley having inner and outer surfaces, said inner surface being arranged on said outer surface of said operating main shaft and engaged therewith so as to be rotatable therewith and moveable axially thereon, and an engaging hole being perforated in said outer surface of said inner pulley; and

an inner cable having first and second ends and having an engaging member fixed to each of said ends, said engaging member fixed to said first end being fixed in said engaging hole;

b. said steering unit comprises a working-side casing;

a steering screw supported in said working-side casing, said

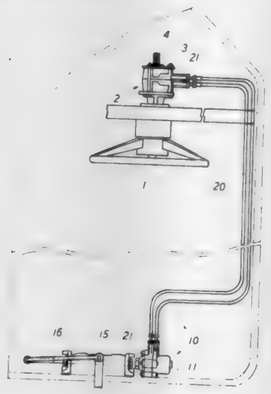
steering screw being provided with a male screw having a suitable length on one end portion, and being secured to a center gear on the other end;

a guide pipe covering said male screw so as to provide a gap therebetween, and secured to said working-side casing at one end;

a steering pipe having inner and outer surfaces inverted into the gap between said steering screw and said guide pipe so as to be moveable axially, and having a female screw engagable with said male screw at a certain region of the inner surface of one end thereof, and connected with a steering rod at the other end thereof;

an over-drive means engaging with said center gear;

a working shaft having inner and outer surfaces combined with said over-drive means; and



a working pulley having inner and outer surfaces, said inner surface being arranged on the outer surface of said working shaft so as to be moveable axially and engageable with said working shaft, and an engaging hole being perforated on the outer surface of said working pulley to engage with said engaging member fixed to said second end of said inner cable, and

c. two conduits connecting said operating unit and said steering unit, a tension-adjusting member being arranged on at least one end thereof, and inner cables inverted into each of said conduits, one end portion of each inner cable being wound round said operating pulley, the other end portion being wound round said working pulley.

4,449,421

LEVER MECHANISM WITH PROGRESSIVE TRANSMISSION

Armin Olschewski; Zoltan Laszlofalvi, and Heinrich Kunkel, all of Schweinfurt, Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 27, 1982, Ser. No. 343,231

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 31042635

Int. Cl.³ G05G *1/04*

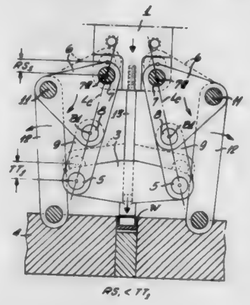
U.S. Cl. 74—516 **6 Claims**

1. A lever system for increasing the force in a press having a movable platen (3), a ram (1) operable to produce a predetermined force, and a support platen (4) for a workpiece, comprising:

a first connecting rod (12), pivotally connected at one end to said support platen (4);

a second connecting rod (9), pivotally connected at one end to said movable platen (3); and

a lever yoke (6) having three non-aligned fulcrum points (7, 8, 11) in a triangular array, pivotally connected at a first fulcrum point (7) to said ram and defining a center line between said first fulcrum point and the pivotal connection (5) between said second connecting rod and said movable platen, said yoke also being pivotally connected at a second fulcrum point (8) to said second connecting rod (9) and spaced from the pivotal connection of said second connecting rod (9) to said movable platen (3), and pivotally connected at a third fulcrum point (11) to said first connecting rod and spaced from the pivotal connection of said first connecting rod to said support platen (4),



said second fulcrum point (18) being movable across said center line in response to movement of said ram toward said support platen (4), whereby as said second fulcrum point moves across said center line and said third fulcrum point (11) moves away from said center line, the force delivered by said lever system to said movable platen increases progressively relative to the predetermined force of said ram.

4,449,422

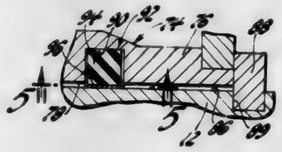
TRANSMISSION CENTER SUPPORT MOUNTING

Reece R. Fuehrer, Danville, and Richard L. Hess, Columbus, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 17, 1982, Ser. No. 379,039

Int. Cl.³ F16H *57/04, 57/02;* **F02F** *5/00;* **F16C** *9/00*

U.S. Cl. 74—606 R **4 Claims**



1. In a transmission having a normal elevated operating temperature and including a case having a main bore defining an internal cylindrical surface, a center support disposed in said main bore with a cylindrical outer surface thereof juxtaposed with said internal cylindrical surface, an oil supply port in said case, intersecting said internal cylindrical surface, and an oil gallery in said center support intersecting said outer surface generally in register with said oil supply port, the improvement comprising, resilient intermediate means disposed in compression between said center support member and said case operative to exert on said center support balanced and radially directed forces centralizing said center support on a longitudinal axis of said transmission, said resilient intermediate means being fabricated from a material having a coefficient of thermal expansion sufficiently exceeding at least one of the coefficients of thermal expansion of said case and said center support to maintain said intermediate means in compression and said center support centralized throughout the operating temperature range of said transmission.

4,449,423

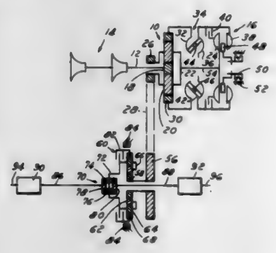
TRACTION DRIVE AUTOMATIC TRANSMISSION FOR GAS TURBINE ENGINE DRIVELINE

Donald L. Carriere, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 9, 1982, Ser. No. 396,550

Int. Cl.³ F16H *47/08, 37/06*

U.S. Cl. 74—688 **5 Claims**



1. A power transmission for an automotive vehicle comprising:

an input shaft;

a first planetary gearset having a first sun gear connected to the input shaft, a first ring gear, a first set of planet pinions engaging the first sun gear and the first ring gear, and a first carrier on which the planet pinion set is rotably mounted;

a traction drive unit having a first member connected to the first ring gear, a second member, and drive rollers engaging the first and second members for transmitting power therebetween, the unit being adapted to produce a continuously variable range of ratios of the speed of the second member to the speed of the first member;

a torque converter having an impeller connected to the second member of the traction drive unit, a turbine in hydrodynamic drive relationship with the impeller connected to the first carrier and selectively connectable to the second member of the traction drive unit, and a stator mounted on a clutch that provides a one-way driving connection between the stator and the transmission casing; and

a first clutch for selectively connecting the torque converter turbine to the second member of the traction drive unit and to the impeller of the torque converter.

4,449,424

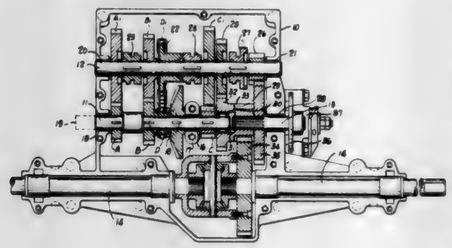
MULTI-SPEED TRANSAXLE

Hans Hauser, Chippewa Lake, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Oct. 30, 1981, Ser. No. 316,564

Int. Cl.³ F16H *37/08, 57/02*

U.S. Cl. 74—701 **8 Claims**



1. In a transmission having a housing for containing gears and a pair of axially aligned shafts carrying the gears, the housing having side walls and a connecting wall, the shafts having facing ends separated from each other, the improvement of a supporting member carried by a side wall of the housing a distance from the end walls of the housing, said supporting member supporting one of the shafts of said aligned shafts at a location spaced from the end of said shaft, the end of said shaft supported by the supporting member protruding from said supporting member, a gear having a centrally disposed hole carried on the end of one of the shafts of said aligned shafts, said gear being non rotatably carried by the other shaft of said aligned shafts, the said protruding end of the shaft supported by the supporting member extending into the centrally disposed hole of said gear, the arrangement providing for the bearing support of said non-supported shaft by said supporting member through dependence on the supported shaft while permitting the shafts to rotate independently of each other.

4,449,425

MOTION TRANSMITTING DEVICES

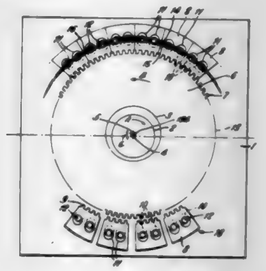
John C. Carden, Nassau, The Bahamas, assignor to Quadrant Drive BV, Leersum, Netherlands

Filed Feb. 2, 1982, Ser. No. 345,114

Claims priority, application United Kingdom, Feb. 9, 1981, 8103860

Int. Cl.³ F16H *1/28;* **F18H** *55/12*

U.S. Cl. 74—804 **63 Claims**



1. A motion transmitting device including eccentric means, wheel means, non-linked and non-rotatable independently movable elements adapted to engage said wheel means and movement-limiting means including a datum member with first profiles, second profiles in said independently movable elements and individual connector elements each engaging a first profile and a second profile to be held in captive dependency thereby wherein rotation of the eccentric means causes said movable elements sequentially to become engaged with a portion of the wheel means and subsequently to become disengaged therefrom, said independently movable elements being individually guided by said movement-limiting means within predetermined limits of orbital motion relative to said datum member such that one or more of said independently movable elements is/are in engagement with and stationary relative to a respective portion or portions of the wheel means, said first and second profiles constraining the independently movable elements to move into engagement with the wheel means and to remain in engagement therewith over an arc of less than a semicircle and disengaging means constraining the independently movable elements to disengage from and to remain disengaged from the wheel means over the remaining arc.

4,449,426

LAMINATED SEPARATOR PLATE MEANS FOR RECALIBRATING AUTOMATIC TRANSMISSIONS

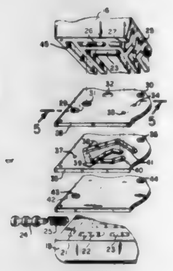
Gilbert W. Younger, 2621 Merced Ave., El Monte, Calif. 91733

Continuation-in-part of Ser. No. 824,271, Aug. 15, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 63,051

Int. Cl.³ F16K *1/00*; F16H *57/02*

U.S. Cl. 74—867

3 Claims



1. In a transmission system having a casing defining transmission oil passages to various apply units (clutch plates and clutch bands) and having a valve body with passages including shift valves interconnecting certain ones of said passages, and wherein there is provided a separator plate between said valve body and casing for routing oil between various ones of said passages to provide hydraulic oil pressure to various given ones of said apply units as a result of movement of said shift valve in response to changes in oil pressure resulting from changes in the transmission shaft speed and shaft torque to thereby automatically shift gears in said transmission, the combination of said valve body and casing with a laminated separator plate means for substitution in place of said separator plate to recalibrate the operation of said valve body, said laminated separator plate means comprising:

(a) a first plate having various openings of given dimensions and positions;

(b) a second plate; and

(c) a third plate having various openings of given dimensions and positions similar to those on said first plate sandwiching said second plate between itself and said first plate, said second plate having some openings of given dimensions and positions similar to those on said first plate and including one other opening of a diameter such as to change the oil flow rate between at least one passage in said casing and valve body whereby the time period between the start of a given shift and its completion is recalibrated to a different time by said separator plate means.

4,449,427

MACHINE FOR MACHINING CIRCULAR SAW BLADES

Ernst Beck, Maselheim; Peter Lenard, Biberach an der Riss, and Erich Pokorny, Schemmerhofen, all of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed Dec. 16, 1981, Ser. No. 331,210

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048738; Dec. 23, 1980, 3048739

Int. Cl.³ B23D *63/14*

U.S. Cl. 76—77

4 Claims

1. A machine for machining circular saw blades, including an arbor (63) for a saw blade S,

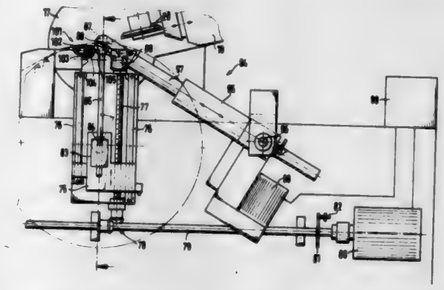
and a feed device for intermittently rotating the saw blade (S),

a guide (85) adapted to be swivelled about the axis (64) of the arbor (63) and carrying at an adjustable radial distance from said axis (64) a pawl bearing (89) to which a feed pawl (91) is mounted for engaging behind each saw tooth (Z), and further including

a swivel drive (94) for swivelling the guide (85) to and fro, wherein

the guide (85) is adapted to be shifted longitudinally in a guide slideway (83) and to be clamped by a clamping device (86),

the guide slideway (83) for the swivelling of the guide (85) is mounted to a guide carriage (75) which, for adjustment to



different saw diameters, is radially adjustable relative to the arbor (63),

the swivel drive (94) can be fixed in a position in which the guide (85) extends in the adjusting direction of the guide carriage (75),

and a holding means (101) is associated with the guide (85) for holding it in the said position while the clamping means (86) is open for adjusting the guide carriage (75).

4,449,428

METHOD OF MANUFACTURING RAZOR BLADE ASSEMBLIES

John F. Francis, Horsell Woking, England, assignor to The Gillette Company, Boston, Mass.

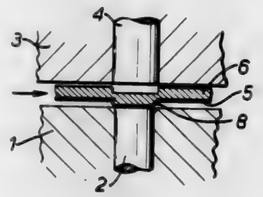
Filed Aug. 16, 1982, Ser. No. 408,312

Claims priority, application United Kingdom, Aug. 24, 1981, 8125748

Int. Cl.³ B21K *11/00*; B23P *11/00*; B21J *15/00*

U.S. Cl. 76—104 R

4 Claims



1. A method of attaching a razor blade member to a support member of cold deformable material, employing tool means comprising a die having a blade member support surface and at least one through hole opening on to said surface; a co-operating pressure pad; and a punch supported by said pressure pad in registry with said hole; said method comprising the steps of:

(a) locating said blade member against said support surface and superposing said support member on said blade member;

(b) impacting said punch against said support member thus causing said support member to undergo plastic deformation and to pierce the blade member and form a projection displacing a slug of material from said blade member into said hole, said slug remaining connected to the remainder of said blade member over a minor portion of its periphery; and

(c) subjecting the said slug to impact to deform said projection to form a rivet head securing the blade member to the support member.

4,449,429

POWER TOOL FOR TENSIONING HOSE CLAMPS AND THE LIKE

Heinz Sauer, Ronneburg; Willi Stichel, Maintal, and Gerhard Wachter, Büdingen, all of Fed. Rep. of Germany, assignors to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

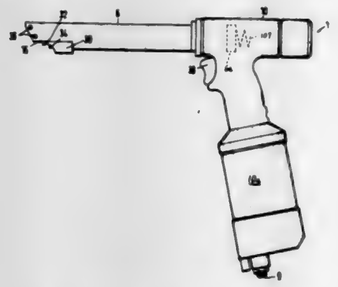
Filed Jul. 2, 1982, Ser. No. 394,654

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1981, 3126632

Int. Cl.³ B25B *25/00*

U.S. Cl. 81—9.3

17 Claims



1. A tool for tensioning a hose clamp or a like device wherein a strap of flexible material defines a loop and has two end portions one of which has a laterally extending projection and wherein the exertion of a pull upon the projection entails a reduction of the size of the loop, comprising a tubular barrel provided with an inlet for insertion of the one end portion of a strap; a tensioning element reciprocably received in said barrel and having an entraining portion engageable with the projection of the inserted one end portion; a bearing interposed between said element and said barrel and reciprocable in the latter with a small amount of friction; and means for moving said element, and said bearing through the medium of said element, relative to said barrel in a direction to exert a pull upon the projection of the inserted one end portion.

4,449,430

PIPE GRIPPING TOOLS

Masahiko Nakamura, and Takashi Yokoyama, both of Mie, Japan, assignors to MCC Corporation, Mie, Japan

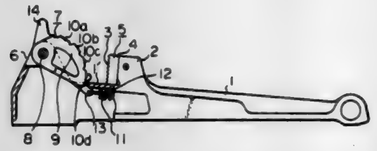
Filed Apr. 29, 1981, Ser. No. 258,551

Claims priority, application Japan, Aug. 13, 1980, 55-111488

Int. Cl.³ B25B *13/28*

U.S. Cl. 81—98

1 Claim



1. A foot operated pipe gripping tool for gripping pipes having different diameters, said tool comprising:

an elongated body having a base portion for supporting said body on a support surface, said body having forward and rear ends;

a fixed jaw extending upwardly from said body at a position intermediate between said forward and rear ends thereof, said fixed jaw having a bite face directed toward said forward end of said body;

a movable jaw pivoted to said forward end of said body by means of a pivot pin, said movable jaw having a plurality of distanct and separate bite faces spaced from each other along an edge of said movable jaw defined in a generally vertically extending plane and directed generally toward said bite face of said fixed jaw, said bite faces of said movable jaw being spaced at different distances from said bite face of said fixed jaw, thereby for gripping pipes of different diameter in cooperation with said bite face of said fixed jaw;

said fixed jaw and said movable jaw defining therebetween a generally upwardly directed space for the insertion in a generally downward direction of a pipe to be gripped;

return spring means, connected at a first end thereof to said movable jaw and at a second end thereof to said body, for urging said movable jaw to pivot about the axis of said pivot pin in a first generally upwardly direction toward said fixed jaw into a pipe gripping position;

projection means, extending generally upwardly from said movable jaw, for enabling manual operation for pivoting said movable jaw about said axis of said pivot pin in a second generally downward direction against the force of said spring means away from said fixed jaw to a pipe release position;

each said bite face of said movable jaw comprising a plurality of saw teeth constructed such that the distance between said axis of said pivot pin and the crest of each said tooth is a maximum at the lowermost said tooth, such distance decreases successively upwardly tooth-by-tooth, and such distance is a minimum at the uppermost said tooth; and

said bite faces of said movable jaw being constructed such that the pitch between adjacent said teeth is a maximum at the uppermost said bite face, and the pitch between adjacent said teeth decreases successively downwardly bite face-by-bite face toward the lowermost said bite face.

4,449,431

SCREW WRENCH

Bengt B. Brunosson, Enköping, Sweden, assignor to AB Bahco Verktyg, Enköping, Sweden

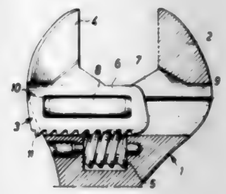
Filed Jan. 27, 1982, Ser. No. 343,312

Claims priority, application Sweden, Feb. 20, 1981, 8101151

Int. Cl.³ B25B *13/16*

U.S. Cl. 81—165

5 Claims



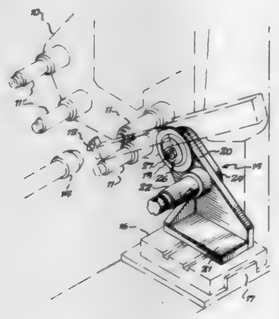
1. An adjustable spanner or screw wrench including a head having a fixed jaw, which is arranged on a slide glidably accommodated in the wrench head, said slide being adjustable in optional position by means of an adjusting means, the slide having a web in the form of a substantially planar plate running in a slot in the wrench head, there being a rod in engagement with grooves in the side walls of the slot for retaining the slide in the slot, characterized in that the rod constitutes a separate body, which is inserted in an elongate opening in the slide web, said opening having its longitudinal axis in the direction of travel of the slide and substantially parallel to the longitudinal axis of said rod, there being play between the opening and the rod, allowing the rod to move laterally in the slide web, said rod being longitudinally movable together with said slide.

4,449,432

CUTOFF DEVICE FOR AUTOMATIC SCREW MACHINE

James R. Smith, Orchard Park, N.Y., assignor to Curtis Screw Company, Inc., Buffalo, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,025
Int. Cl.³ B23B 3/34; B23D 23/00
U.S. Cl. 82—3 5 Claims



1. A rotary saw cutoff device for cutting workpieces, said device being usable with an automatic screw machine wherein a plurality of metal cutting operations are performed on bar stock sections which are advanced in a circular path to a plurality of work stations for sequential presentation to a plurality of cutting tools; said cutoff device comprising:

a base (21) positionable on a machine slide (17) for transverse movement towards and away from the bar stock;

an upstanding frame (20) which extends generally transversely to the axis of said circular path and having spaced apart first and second portions, the first portion being supported by said base (21) and the second portion being disposed adjacent said circular path;

rotatable means (27, 26, 15, 13 and 28) extending through the second portion of said frame (20) and including a rotatable saw (13) secured thereto and mounted on one side of said frame (20) and a driven element (28) disposed on the other side of said frame;

drive means including a motor (22) secured to said one side of said frame (20) between the first and second portions of said frame and a drive element (37) rotatably driven by said motor (22) and disposed on said other side of said frame (20), said drive element (37) being interconnected with said driven element (28) for driving the same;

a cover (24) secured to said other side of said frame (20) and enclosing said drive and driven elements (37, 28); and

bearing means (30, 29) disposed within said frame (20) and cover (24) for rotatably journaling said rotatable means.

4,449,433

CUTTING DEVICE FOR TAG WEB

Takehiko Miyamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Feb. 23, 1982, Ser. No. 351,459
Claims priority, application Japan, Feb. 23, 1981, 56-24234
Int. Cl.³ B26D 5/20
U.S. Cl. 83—76 13 Claims

1. A cutting device for cutting tags, or the like, from a continuous web thereof, the device comprising:

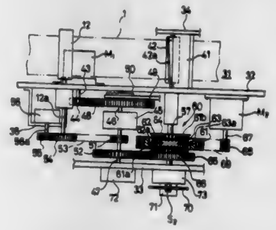
means for feeding a tag web along a path;

a rotary blade positioned at a fixed location along the path and being rotatable about a rotary axis, and including a cutting blade projecting outwardly thereof and extending generally axially thereof, the cutting blade being placed for engaging the web as the rotary blade rotates past the web, and the cutting blade being for severing the web as the blade engages the web;

a first motor for continuously rotating the rotary blade about its axis; a first power transmission mechanism connected to the first motor for transmitting the rotation of the first motor;

a differential gear mechanism connected between the first power transmission mechanism and the rotary blade for rotating the rotary blade when the differential gear mechanism is operated through the first power transmission mechanism;

timing control means for adjusting the rotation of the rotary blade, thereby to correct the cutting timing; the timing control means including a second motor operable independently of the first motor, a second power transmission



mechanism connected between the second motor and the differential gear mechanism for operating the differential gear mechanism to change the rotation of the rotary blade; and

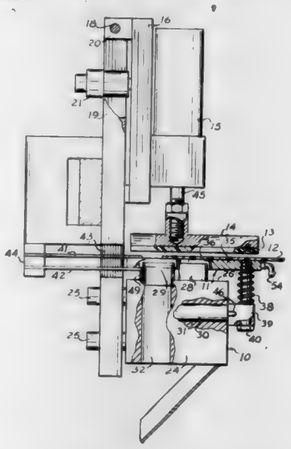
reference position means including tag positioning means for positioning the tag web at a reference position thereof, and a rotary blade positioning means for positioning the rotary blade at a respective reference position thereof, the tag positioning means including a limit switch for detecting whether the tag web is in its reference position, and the rotary blade positioning means comprising a brake for braking the rotary blade when it is controlled.

4,449,434

HOLE PUNCHING APPARATUS FOR THERMOPLASTIC FILM

James R. Johnson, 3819 Greenhill Dr., Chamblee, Ga. 30341

Filed Apr. 12, 1982, Ser. No. 367,690
Int. Cl.³ B26D 7/10, 7/18; B26F 1/12
U.S. Cl. 83—98 5 Claims



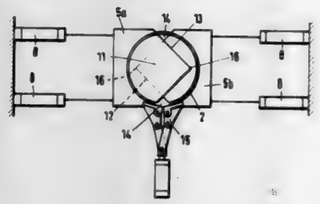
1. Apparatus for punching holes and the like in thermoplastic film comprising a steel rule die having an upwardly facing cutting edge, die heating means for heating said die, a platen above said die for selective engagement with said die, and means for moving said platen towards said die, said die heating means including a die block for carrying said die, and heating means for heating said die block, said die defining an opening therein to receive scrap cut from thermoplastic film, said die block defining an opening therein for allowing said scrap to pass through said die block, said die block and said die being heated to a temperature above the melting temperature of said scrap, a stripper between said die and said platen, said stripper defining an opening therein sufficient to receive said die therethrough, spring means for biasing said stripper to a position above said die block, the arrangement being such that said thermoplastic film normally lies along the upper surface of said stripper and said film is moved into contact with said die by said platen, said stripper defining an air passage therein and a plurality of holes connecting said air passage with said upper surface of said stripper, and air supply means for selectively passing air through said air passage, out said plurality of holes, and against said film for lifting said film from said upper surface of said stripper and for cooling said stripper and said film.

4,449,435

APPARATUS FOR BUNCHING AND SEVERING WIRE COILS

Werner Colditz, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 12, 1982, Ser. No. 367,773
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116089
Int. Cl.³ B21F 11/00
U.S. Cl. 83—167 2 Claims



1. An apparatus for severing strands of continuous wire coils to create individual wire coil bunches, comprising:

(a) a cylindrically-shaped wall defining a vertical shaft;

(b) a wire bunch collecting station located at the bottom of said shaft;

(c) a wire bunch collecting shelf located above said bottom, said shelf comprising two opposed, symmetrical and similarly shaped edge defined halves, one of said halves being vertically offset with respect to the other of said halves;

(d) said halves being selectively reciprocable into said shaft from a first fully retracted position to a second projected position, said second projected position causing said halves to overlap one another and substantially cover the cross section of said shaft, the uncovered section of said cross section of said shaft defining two wire strand cutting areas; and

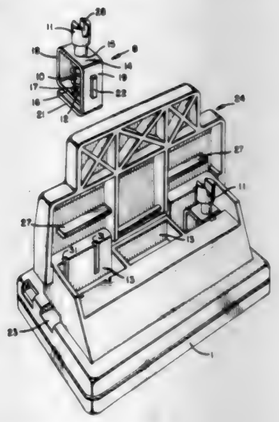
(e) a pair of cutting shears located at the same level, in said shaft, as said shelf, one of said pair being located at each of said cutting areas.

4,449,436

SHEET PUNCH DEVICE

Joseph K. Semerjian, Franklin Park, and Glenn R. Lodge, Mt. Prospect, both of Ill., assignors to Wilson Jones Company, Chicago, Ill.

Filed Mar. 12, 1982, Ser. No. 357,736
Int. Cl.³ B26F 1/02
U.S. Cl. 83—571 4 Claims



1. A sheet punch device comprising

(a) a base;

(b) a housing supported on and spaced from the base to provide an opening for receiving sheets to be punched;

(c) a plurality of elongated punch dies with axes generally vertically oriented mounted in portable die mounts;

(d) at least one walled elongated recess in the housing having walls which walls include first alignment means generally extending a distance substantially parallel to the axes of the punch dies for positioning the die mounts in the recess;

(e) complementary alignment means on the portable mounts for engaging said recess alignment means when one or more portable die mounts are placed in the recess;

(f) the first alignment means and complementary alignment means being sized and shaped such that each die punch is aligned when and as it is placed in the recess; and

(g) lever means mounted on the housing for movement toward and away from the dies such that when moved toward the dies it engages with the dies as mounted in the elongated recess to drive the dies through the sheets.

4,449,437

AUTOMATIC PIANO

Robert B. Cotton, Jr., Erlanger, Ky., and Dale M. Uetrecht, Colerain Township, Hamilton County, Ohio, assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Sep. 21, 1981, Ser. No. 304,404
Int. Cl.³ G10H 1/38, 1/46, 7/00
U.S. Cl. 84—1.01 47 Claims

41. In an electronic musical instrument having an array of playing keys, each of which by its playing action initiates the onset of a corresponding musical tone and which by the power of its playing action controls the volume of the corresponding musical tone, apparatus connected to the keys of a limited range of said array for generating an automatic sequential pattern of musical notes, said apparatus comprising:

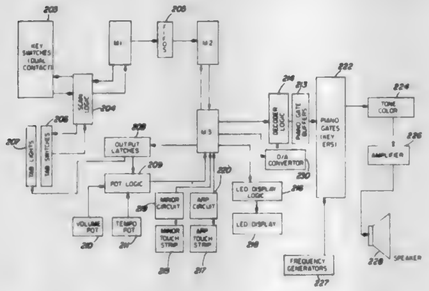
memory means for providing fixed, stored data corresponding to the notes of an automatic sequential pattern;

key detecting means for sensing the playing of a key within said limited range;

processing means for generating notes from the data in said memory means, the notes being a function of a key being

manually played within said limited range as sensed by said key detecting means; and

audio output for generating and sounding, while at least one key is being manually played within said limited range, the tones of said automatic sequential pattern according to the



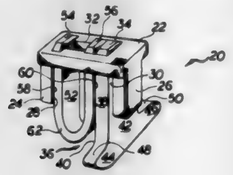
notes generated by said processing means, whereby an automatic sequential pattern of musical tones commences upon the playing of a key in said limited range and continues for so long as at least one key in said range is being manually played.

4,449,438

MUTE FOR STRINGED INSTRUMENTS

Richard Goldner, 3717 Toad Lake Rd., Bellingham, Wash. 98225

Filed Sep. 13, 1982, Ser. No. 416,984
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—310 **10 Claims**



1. A device for muting the sound produced by a stringed instrument having a bridge member and a tall piece comprising:

a holder;

a first engaging surface for engaging a first major surface of said bridge member;

a second engaging surface for engaging a second major surface of said bridge member;

means for mounting said first and second engaging surfaces to said holder in a generally facing, movable and pivotable relation one to another; and

means mounted to said holder for biasing said first and second engaging surfaces toward one another with a force sufficient to retain said device on said bridge member and adapt the orientation of said first and second engaging surfaces to the orientation of said first and second major surfaces of said bridge member, respectively.

4,449,439

MOUTHPIECE FOR WOODWIND INSTRUMENTS

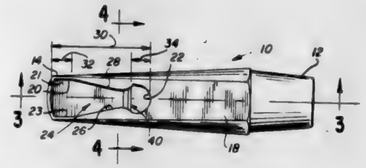
Frank E. Wells, 14514 Wallace Ave., Riverdale, Ill. 60627

Filed Sep. 28, 1982, Ser. No. 425,720
Int. Cl.³ G10D *9/02*
U.S. Cl. 84—383 R **5 Claims**

1. An improved mouthpiece for a woodwind instrument of the type which generally includes a collar end for engaging an instrument neck at one end and a mouth engaging portion at the opposed end thereof extending from the tip end of the mouthpiece inwardly for a distance in the direction of the opposed collar end, the mouth engaging portion having an upper inclined surface along the top portion thereof and a horizontally flattened surface along the lower portion thereof, and a wind channel traversing the entire length of said mouthpiece, the improvement comprising in combination,

a slotted cut-out section bounded by opposed side edges formed in said horizontally flattened surface along the lower portion thereof,

said slotted cut-out section extending from the tip end of said mouthpiece inwardly for a distance in the direction of said collar end of said mouthpiece and terminating in a circular inner end,



said slotted cut-out section having a key-slot configuration formed by a pair of opposed curvilinear flanges extending inwardly from the opposed side edges thereof for a portion of the distance between said tip end and said circular inner end thereof,

said curvilinear flanges having a thickness which is less than the diameter of said wind channel thereby to create a wind compression chamber formed in said wind channel and extending for a distance along the length of said wind channel,

whereby said wind compression chamber formed by said opposed curvilinear flanges formed in said slotted cut-out section will operate to create back pressure and have the effect of smoothing out the vibrational rate of the air as it enters the instrument thereby to improve the tonal qualities of the instrument throughout the entire tonal range thereof.

4,449,440

ADJUSTABLE STAND FOR HIGH-HAT CYMBAL

Yoshihiro Hoshino, Nagoya, Japan, assignor to Hoshino Gakki Company, Limited, Japan

Filed Sep. 30, 1982, Ser. No. 431,018
Claims priority, application Japan, Nov. 30, 1981, 56-178346
Int. Cl.³ G01D *13/00*
U.S. Cl. 84—422 R **12 Claims**

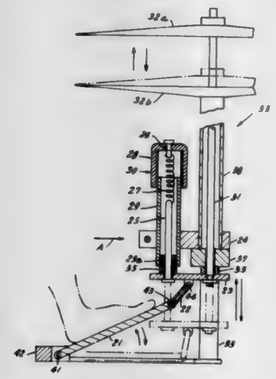
1. A high-hat cymbal stand, comprising:

a pedal movable between an upraised, start position and a lowered position; a cymbal moving rod connected with the pedal for being movable lengthwise by movement of the pedal between its positions; a first cymbal attached to the rod for being moved by the rod as the rod moves lengthwise; a second cymbal held in position on the stand for being struck by the first cymbal as the first cymbal is moved by the pedal being moved to the lowered position of the pedal;

a spring connected with the pedal for returning the pedal to the start position and for correspondingly moving the pedal, the rod and the first cymbal together; and

a pedal height adjusting device for adjusting the height of the pedal at the start position thereof, for varying the distance over which the pedal moves from the start to the lowered positions; the pedal height adjusting device comprising:

the stand including a holder fixed against movement as the pedal moves; a spring container for being secured to the holder and for containing the spring within it; clamping means for clamping the spring container to the holder at an adjustable, selected height with respect to the lowered position of the pedal; the spring container including a bottom which moves together with the spring container and the bottom being positioned for being engaged by the pedal at the start position of the pedal, whereby adjustment of the height of the spring container on the holder correspondingly adjusts the height of the bottom of the spring container and adjusts the start position of the pedal in engagement with the bottom of the spring container, and the spring in the container is readjusted in its height along with the spring container without readjustment of the spring force of the spring.

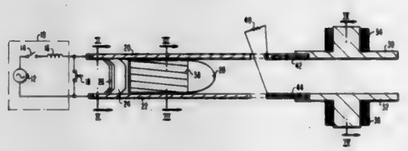


4,449,441

ELECTROMAGNETIC PROJECTILE LAUNCHER WITH MAGNETIC SPIN STABILIZATION

Dan R. McAllister, Sunnyvale, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 9, 1982, Ser. No. 356,587
Int. Cl.³ F41F *1/02*
U.S. Cl. 89—8 **11 Claims**



1. A parallel rail electromagnetic projectile launcher comprising:

a first conductive rail having an arcuate surface;

a second conductive rail having an arcuate surface and being disposed parallel to said first conductive rail, to form a cylindrical bore between said rails, wherein the arcuate surfaces of said rails define a portion of the perimeter of said bore;

a source of high current;

means for commutating said current to said rails;

means for conducting current between said rails and for propelling a cylindrical projectile along said bore;

means for generating a magnetic flux field through which said projectile passes during a launch, wherein said magnetic flux field is distinct from electromagnetic fields produced by current flowing through said rails which are used to propel said projectile; and

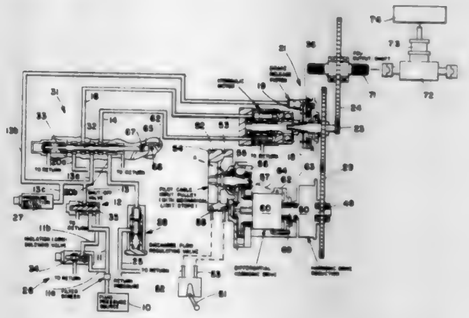
means for imparting electromagnetically induced spin to said projectile in response to the passing of said projectile through said magnetic flux field.

4,449,442

HYDRAULIC VALVE CONTROL AND FEEDBACK UTILIZING A HARMONIC DRIVE DIFFERENTIAL

Steven J. Ebbing, and Robert J. Hermans, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 5, 1982, Ser. No. 337,193
Int. Cl.³ F15B *15/26*
U.S. Cl. 91—44 **14 Claims**



1. A motor control means and feedback arrangement to minimize the effects of backlash in a rotary output system, said system comprising:

a source of energy,

said motor control means having means moveable from a null position, said motor control means coupled to said source of energy and to a motor which in turn is coupled to said rotary output and to a second input of a differential harmonic drive that has first and second inputs and an output, said first input coupled to a rotational command input means and said output drivingly coupled to said moveable means in response to a given rotational command input when said second input is in an initial static position, whereupon said motor is coupled to said source of energy through said motor control means and said rotary output is driven a precise number of revolutions dependent upon said given rotational command input, said second input being simultaneously driven a given number of revolutions in a direction to provide feedback such that said differential harmonic drive output moves to return said moveable means to said null condition and said system is then in a condition to respond to an additional rotational command input.

4,449,443

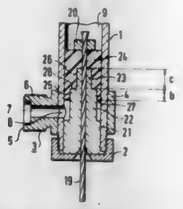
CYLINDER/PISTON DRIVE, ESPECIALLY FOR RETIGHTENER SYSTEMS IN AUTOMATIC SAFETY BELT WINDING DEVICES

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Oct. 2, 1981, Ser. No. 307,883
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037707; Sep. 18, 1981, 3137263
Int. Cl.³ F15B *15/20*; F01B *9/00*
U.S. Cl. 91—392 **5 Claims**

1. Cylinder/piston drive especially for retightening systems in automatic safety belt winding devices, comprising a cylinder, a movable drive piston in the cylinder, said piston being free of passageways for the flow of fluid therethrough, a pressure accumulator from which fluid under pressure will be released adapted to be connected to the interior of the cylinder, an opening in the cylinder wall for flow of fluid under pressure from the pressure accumulator through said opening into the interior of the cylinder, a guide part in the cylinder

formed of a base with a protrusion which extends from the base into the piston to initially reduce the cross sectional area of the piston exposed at an end face to the fluid under pressure and upon movement of the piston and withdrawal of the piston



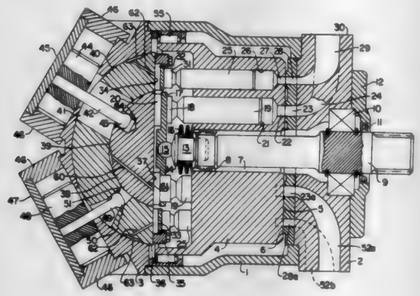
from the protrusion of the guide part to expose a greater cross sectional area of the piston to the fluid under pressure, said protrusion being free of a passageway for the flow of fluid therethrough.

4,449,444

AXIAL PISTON PUMPS

Franz Forster, Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,757
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1980, 3026765
Int. Cl.³ F01B *13/04*; F04B *1/26*
U.S. Cl. 91—506 **7 Claims**



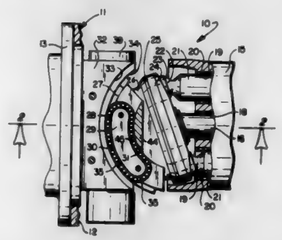
1. An axial piston pump for producing two streams that can be regulated independently of each other with respect to size and pressure comprising a housing, a revolving cylindrical drum in said housing, a drive shaft connected to said drum for rotating the same, a plurality of spaced holes in said drum on two different pitch diameters generally parallel to the drum axis and opening to a common end face of said drum, a plurality of pistons reciprocable in said holes, a rotary slide control valve acting on the opposite end face of said drum, a first tapered washer bearing on one end of said pistons moving in the holes of the smaller pitch diameter, a second tapered washer surrounding the first tapered washer and bearing on one end of the pistons moving in the holes of larger pitch diameter, means engaging said first and second tapered washers independently to move them relatively to one another at an angle to the axis of the drum and a pair of separate outlet ports on said rotary valve receiving fluid independently from each of the pistons of different pitch diameter and delivering the same from the pump, said control rotary slide valve having a first generally semi-circular channel at least on the discharge side communicating with the piston and holes located on the smaller pitch diameter and a second separate generally semi-circular channel communicating with the pistons and holes located on the larger pitch diameter and two separate discharge lines, one connected to each of said channels, said two tapered washer bodies being of generally hemispherical shape, the one of smaller pitch diameter rotatably received in a hemispherical recess of the one of larger pitch diameter.

4,449,445

RECIRCULATING ROLLER BEARING ROCKER CAM SUPPORT

Alan H. Viles, Columbus, Ohio, assignor to Abex Corporation, Stamford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,678
Int. Cl.³ F01B *13/04*; F04B *1/30*
U.S. Cl. 92—12.2 **1 Claim**



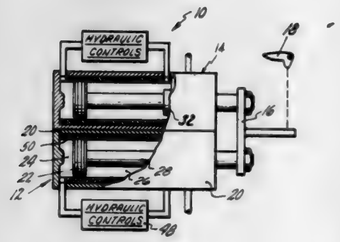
1. A variable displacement fluid energy translating device having a housing, a barrel rotatably supported in the housing, a plurality of cylinders formed in the barrel and aligned parallel with the axis of rotation thereof, a piston mounted for reciprocation in each cylinder, a shoe connected to the end of a piston projecting from each cylinder, a rocker cradle, an arcuate surface formed on the rocker cradle, a rocker cam, means for pivotally supporting the rocker cam on the arcuate surface for movement about an axis perpendicular to the axis of rotation of the barrel, a flat thrust surface on the rocker cam on which the piston shoes slide, means for retaining the shoes against the thrust surface such that the pistons reciprocate within the cylinders when the cam surface is inclined, and means connected to the rocker cam for pivoting the rocker cam within the rocker cradle, characterized by the pivotal support means including a pair of continuous roller surfaces formed one on each side of the rocker cam, each of the roller surfaces having a first convex arcuate portion complementary to and adjcent the arcuate surface formed on the rocker cradle, a second concave arcuate portion parallel to and spaced from the first arcuate portion and a pair of rounded end surfaces which connect each end of the first and second parallel surfaces, a pair of roller complements which engage and circulate on each of the roller surfaces, wherein the rollers in the roller complements which engage the complementary first convex arcuate portion of the roller surfaces simultaneously engage the arcuate surface of the roller cradle to provide a roller bearing support for the rocker cam on the rocker cradle, means for retaining the roller complements in engagement with the roller surfaces, and means for holding the rocker cam and rollers in the roller complements against the rocker cradle, including a holddown plate having an inner surface which is complementary to and adjacent the second concave arcuate portion of the roller surface and engages the roller complement as it circulates between the inner holddown plate surface and the second concave arcuate portion of the roller surface.

4,449,446

BALLISTICALLY TOLERANT CONTROL SYSTEM

William G. Degnan, Huntington, Conn., and John D. Fansler, Street, Md., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 73,833, Sep. 10, 1979, abandoned. This application Aug. 28, 1981, Ser. No. 297,482
Int. Cl.³ F01B *1/00*; F16J *15/18, 11/04*
U.S. Cl. 92—146 **2 Claims**



1. A control including:
(1) a cylinder-piston assembly comprising:
a. a cylinder having a bore portion,
b. a piston positioned in said cylinder bore for reciprocation therewithin and defining a pressure chamber on at least one side thereof within said bore,
c. a piston rod extending from said piston longitudinally along said bore and terminating at a station external thereof,
d. a fixed wall member supported from said cylinder and having an aperture enveloping said piston rod and constituting the structural end wall of said pressure chamber,
e. a laminated, frangible, anisotropic cylindrical sleeve fabricated of a plurality of superposed layers of wound and plastic bonded high tensile strength filament, and with the filaments of each layer being substantially parallel to each other and extending in a direction substantially different from the filament of at least one of the other layers so that each layer and hence said sleeve is anisotropic, and wherein said sleeve is bonded to said cylinder bore and extends substantially the full length thereof and envelops said piston, and wherein said sleeve has a thin, brittle, wear-resistant inner nickel plated surface on the inner diameter of the sleeve to present a wear-resistant contact surface in sealing engagement with said piston and being of selected wall thickness and frangibility so that when said cylinder is subjected to sharp impact, the cylinder will deform and the sleeve with said inner surface will disintegrate locally in the vicinity of the sharp impact and cylinder deformation, and the piston will be able to reciprocate within the cylinder with the sleeve so disintegrated,
(2) means to control the flow of pressurized fluid to said pressure chamber to cause said piston to move within said cylinder during normal operation, and
(3) a fluid actuator means operatively connected to said cylinder-piston assembly to cause said piston to reciprocate within said cylinder when cylinder is so deformed and said sleeve so disintegrated due to sharp impact.

4,449,447

BRAKE PISTON OF DISK TYPE

Kouichiro Yanagi, Hanyu, Japan, assignor to Akebono Brake Industry Company, Ltd., Tokyo, Japan

Filed May 13, 1981, Ser. No. 263,054
Claims priority, application Japan, May 20, 1980, 55-66671
Int. Cl.³ F16J *1/00*
U.S. Cl. 92—248 **1 Claim**



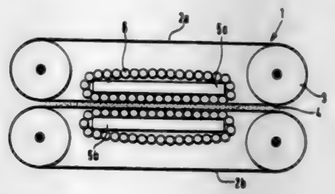
1. Brake piston of disk type comprising a piston body made of resinous material and having an opening end, a circumferential seal groove adjacent said opening end, and a hollow interior, characterized in that an annular heat resisting ring is joined to said opening end by simultaneous casting, said ring has a plurality of perforations extending axially of the piston body, said opening end has formed thereon by said simultaneous casting a plurality of protrusions filling said perforations, and said ring is made of a material selected from the group consisting of a ceramic, a sintered alloy, steel, and woven carbon fiber.

4,449,448

DOUBLE BAND PRESS

Gerhard Stäbler, Murr, and Konrad Schermutzki, Remseck, both of Fed. Rep. of Germany, assignors to Santrade Ltd., Luzern, Switzerland

Filed Sep. 22, 1982, Ser. No. 421,061
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140548
Int. Cl.³ B30B *3/00*
U.S. Cl. 100—153 **17 Claims**



1. A double band press comprising:
a pair of endless metal bands arranged such that a working flight of each band travels opposite a working flight of the other band to press material therebetween,
a pair of pressure plates, each positioned adjacent respective ones of said working flights,
a pair of pressure roller assemblies positioned adjacent respective ones of said pressure plates, each pressure roller assembly comprising:
a plurality of pressure rollers arranged to travel between one of said pressure plates and its respective metal band to transmit pressure from the former to the latter, the axes of said pressure rollers being oriented perpendicular to the direction of band travel, and

a pair of guide chains disposed on opposite sides of the respective pressure rollers and connected to respective ends of each of said presure rollers, each guide chain comprising a plurality of links interconnected in series by means of pins,

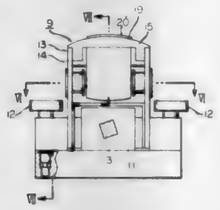
at least some of said links being connected to said ends of said pressure rollers at locations offset from said fasteners in a direction generally transverse to the plane of the working flight of the associated band, the ratio of the quantity of said rollers to the quantity of said pins in each chain being greater than 1:1.

4,449,449

DATA STAMP DEVICE FOR AUTOMATIC PRINTING APPARATUS OF COPIER

Yutaka Watanabe, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,603
Claims priority, application Japan, Aug. 5, 1981, 56-121798
Int. Cl.³ B41J *1/60*
U.S. Cl. 101—111 **14 Claims**



1. A data stamp device for an automatic printing apparatus of a copier, comprising:

a data stamp unit having an opening on a surface thereof;

at least one endless belt having a plurality of seals thereon;

means for mounting and driving said at least one endless belt within said unit so that a desired seal projects out of said opening;

means for swiveling said data stamp unit so that said desired seal comes in contact with a sheet, said swiveling means including;

a first swivel shaft about which said data stamp unit swivels;

a second swivel shaft coupled to a driving system which moves said sheet through said copier;

an idler shaft;

a plurality of belt and pulley means for interconnecting said first and second swivel shafts and said idler shaft; and

clutch plate means disposed on said first swivel shaft and being selectively engageable with one of said plurality of belt and pulley means to selectively transmit rotation of said second swivel shaft to said first swivel shaft.

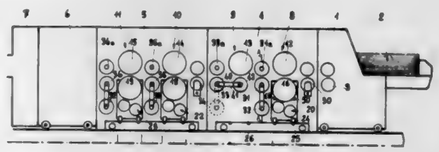
4,449,450

RETRACTABLE PROPULSION APPARATUS FOR CARDBOARD BOX PRINTING MACHINE

Jean-Jacques Barny, Villefranche, and Bernard Capdeboscq, St. Just Chaleyssim, both of France, assignors to S.A. Martin, Villeurbanne, France

Filed Jul. 28, 1982, Ser. No. 402,677
Int. Cl.³ B41F *5/06, 21/00, 13/34*
U.S. Cl. 101—232 **1 Claim**

1. Cardboard forming and printing machine, comprising printing modules equipped with means enabling lateral translation of a block-holder cylinder assembly comprising at least a block-holder cylinder, said machine comprising in addition a retractable propulsion device for cardboard positionable when said block-holder cylinder is retracted laterally so as to continue to assure the propelling function of the cardboard that the latter assured before its lateral translation, said propulsion device being positioned at the end of at least one oscillating lever having its axis of rotation coaxial with that of the lower propulsion device which follows the printer module associated with said block-holder cylinder and at a distance from said axis



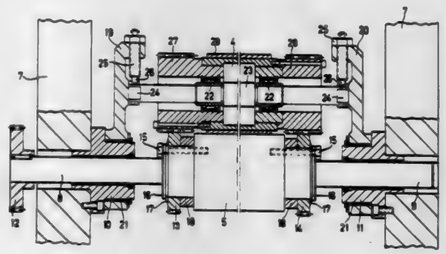
equal to the longitudinal component of the distance separating said axis from the axis of the preceding printing roll.

4,449,451

INKING UNIT FOR PRINTING PRESSES

Rudi Junghans, Wilhelmsfeld, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen, Heidelberg, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,311
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109584
Int. Cl.³ B41F *31/14, 31/26;* B41L *27/28*
U.S. Cl. 101—350 **7 Claims**



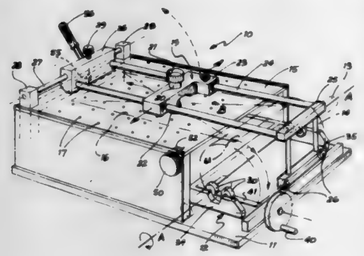
1. In an inking unit for a printing press having an ink duct with an ink-duct roller revolvable at a given speed therein, a transfer roller in rolling contact with the ink-duct roller, the transfer roller having an outer cylindrical surface formed with a plurality of helical ridges thereon, a distributor roller, and means for revolving the distributor roller at press speed greater than the given speed of the ink-duct roller, the transfer roller being rollable on the distributor roller for transporting ink film from the ink-duct roller farther into the inking unit, the improvement therein comprising mutually meshing gear means carried by the transfer roller and the distributor roller, the transfer roller being drivable by the distributor roller via said gear means, and means for applying yielding contact pressure of such magnitude between the transfer roller and the distributor roller during rolling of the transfer roller on the distributor roller that there is continuous contact between the surface of the distributor roller and the surface of the transfer roller located between the ridges, the ridges being in relatively low-pressure contact with the ink-duct roller revolving more slowly than the distributor roller, the ridges are bordered by recesses formed in the outer cylindrical surface of the transfer roller and defined by a cylindrical base coaxial with the outer cylindrical surface and only slightly deeper than the outer cylindrical surface, the helical ridges being formed by surface portions of the transfer roller extending from said cylindrical base with a slight inclination from opposite sides towards an apex, the ridges being narrow compared to the width of the recesses therebetween.

4,449,452

RAPID PLATE MOUNTER

George B. Mansell, Cremorne, Australia, assignor to Rapid Packaging Services Pty. Ltd., New South Wales, Australia

Filed May 23, 1983, Ser. No. 496,860
Claims priority, application Australia, May 28, 1982, PF4202
Int. Cl.³ B41F *27/00*
U.S. Cl. 101—382 MV **11 Claims**



1. A printing plate mounting device including,

a frame;

a print cylinder support, mounted on the frame so as to locate the longitudinal axis of a print cylinder at a predetermined location;

a printing plate receiving surface located on the frame enabling transfer of a printing plate on the surface to said cylinder;

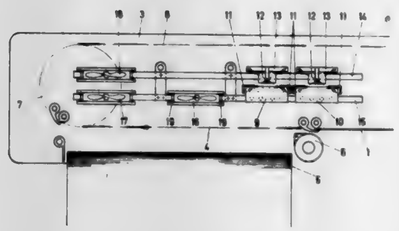
location means to aid in the location of the printing plate on said surface for correct alignment with said cylinder, said location means comprising an optical magnifier movably supported on said frame so as to be locatable at two spaced locations defining a line normal to said longitudinal axis, said magnifier having optical alignment markings so that a user can position the plate on said surface by alignment with said markings when at said locations.

4,449,453

DEVICE FOR DRYING PRINTED SHEETS ON OFFSET PRINTING PRESSES

Julius Staffer, Mauer; Karl-Heinz Walther, and Hans-Georg Jahn, both of Wiesenbach, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen, Heidelberg, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,390
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143089
Int. Cl.³ B41F *23/04*
U.S. Cl. 101—416 A **6 Claims**



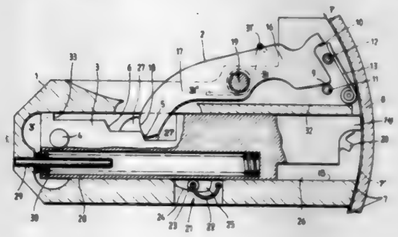
1. Device for drying printed sheets on an offset printing machine, comprising infrared radiators disposed above a delivery pile of the sheets and between an upper and a lower run of an endless delivery chain, said infrared radiators being substantially vertically displaceable transversely to said upper and lower means from a rest position into a working position thereof directly above the sheets, blowers displaceable substantially horizontally and parallel to said upper and said lower runs between a rest position thereof, which is located above the delivery pile of the sheets and intermediate said upper and said lower runs, and a working position thereof coinciding with said working position of said infrared radiators, first means for displacing said infrared radiators out of said working position thereof and into said rest position thereof, and second means for displacing said blowers individually from said rest position thereof into said working position thereof after said infrared heaters have been displaced into said rest position thereof whereby said infrared radiators are replaceable by individual ones of said blowers to change the mode of operation of the device.

4,449,454

SAFETY MECHANISM FOR AN EXPLOSIVE BODY

Josef Liebhardt, Schrobenhausen; Rudolf Fuhrer, Baar, and Erich Dautel, Schrobenhausen, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Oct. 19, 1982, Ser. No. 435,325
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1981, 3143514
Int. Cl.³ F42C *9/06, 15/04, 15/28*
U.S. Cl. 102—226 **10 Claims**



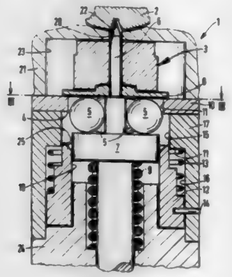
1. A safety mechanism for an explosive body adapted for expulsion from a launching tube in which the explosive body may rest with its outer contour in sliding contact with the inner surface of a launching tube, comprising a fuse mechanism including a detonator forming a link in a firing chain, housing means (1) insertable into an explosive body, a slide member (3) having a plurality of stop shoulders (5, 6, 33) and carrying said detonator (4) for moving said detonator as a link into said firing chain, said slide member (3) being movably received in said housing means, first spring means (30) in said housing means urging said slide member (3) in a predetermined direction, locking lever means (2), journal means (19) tiltably supporting said locking lever means in said housing means for cooperation with at least two of said locking shoulders of said slide member (3) in a plurality of different slide member positions corresponding to different angular positions of said locking lever means (2), second spring means (31) biasing said locking lever means (2) in said plurality of positions, whereby each of said stop shoulders corresponds to a different angular position, a first of said angular positions defining the safety-on position of the slide member (3), a second of said angular positions defining an intermediate safety position of the slide member (3), a third of said angular positions defining the safety-off position of the slide member (3), whereby said slide member (3) in said first position permits the insertion of an explosive body into a launching tube, but prevents such insertion when the slide member is in its second or third position.

4,449,455

INERTIA FUSE WITH A SELF-DESTRUCT DEVICE FOR USE IN SPINNING PROJECTILES

Andreas Halssig, Schramberg, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed May 4, 1982, Ser. No. 374,712
Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119369
Int. Cl.³ F42C 15/26
U.S. Cl. 102—234 10 Claims



1. An inertia fuse for spinning projectiles, said fuse being of the self-destruct type having a detonator, an impact responsive firing pin arranged to ignite the detonator, a detonator spring for urging the firing pin toward a detonating position, and a plurality of centrifugally-responsive bodies arranged in a locking position during spinning of the projectile to resist spring-induced movement of the firing pin to its detonating position, and an inertia member for accelerating the occurrence of detonation in response to impact, the improvement wherein:

said fuse includes a housing having sharp edge means,

said centrifugal bodies, in said locking position, are urged by said spring against said sharp edge means of said housing, to prevent said spring from pushing said firing pin to a detonating position,

said inertia member comprises a sleeve disposed behind said bodies and including impact edge means arranged to engage said bodies at impact locations disposed outwardly of those areas of the bodies against which the forces of the spring are applied when said bodies are in said locking position, to displace said bodies inwardly and out of engagement with said sharp edge means to release said spring in response to impact, and

safety means for opposing movement of said inertia member to prevent premature release of said spring.

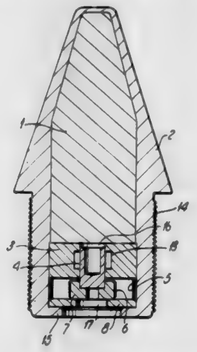
4,449,456

SAFETY DEVICE FOR A PROJECTILE

Morten Foss, Tollerudbakken, and Kaare R. Strandli, Lyngveien, both of Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Filed Jan. 26, 1982, Ser. No. 342,811
Claims priority, application Norway, Sep. 21, 1981, 813195
Int. Cl.³ F42C 15/22, 15/34
U.S. Cl. 102—240 9 Claims

1. A safety device for a projectile, adapted to make a barrier between an ignition charge in the forward end of the projectile and one or more incendiary and/or explosive charges behind the ignition charge, said device comprising two discs having concentric apertures and being situated behind the ignition charge, the disc nearer the ignition charge being called the foremost disc and the disc further from the ignition charge being called the rearmost disc, each of said foremost and rearmost discs having an aperture extending therethrough, wherein means adapted to make the barrier comprise a plug situated in the aperture through the foremost disc, and a split ring which is held together by a spring supports said plug, said split ring being supported by the rearmost disc, and at least one portion of said plug is adapted to seal the aperture in the foremost disc when being exposed to pressure developed by the ignition charge prior to arming of the projectile.

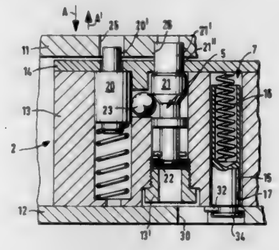


4,449,457

SAFETY DEVICE FOR THE FUZES OF NONSPINNING OR SLOWLY SPINNING PROJECTILES

Andreas Halssig, Schramberg, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 351,865
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108659
Int. Cl.³ F42C 15/24
U.S. Cl. 102—251 5 Claims



1. A safety arrangement in fuzes for projectiles of the non-spinning and slow spinning type, said safety arrangement being of the type including a frame, a rotatably driven rotor mounted on said frame and carrying a detonator, and first safety means for preventing rotation of said rotor to an active position and movable in response to acceleration of the projectile upon firing to release the rotor, the improvement comprising second safety means which includes:

a bolt carried by said rotor and including a base on its lower side,

said bolt being arranged for movement in the direction of acceleration,

stop means on said frame including a collar overlying said base when said second safety means is in a locking position, to prevent movement of said bolt in said direction of acceleration,

said stop means permitting rotation of said rotor and bolt within a limited safety range,

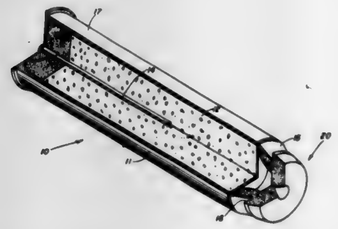
an orifice disposed in said frame and sized at least as large as said base and positioned to be in alignment with said base only after a predetermined amount of rotation of said rotor, to permit said base to travel past said collar in said direction of acceleration after said predetermined amount of rotation of said rotor.

4,449,458

CARTRIDGE CASE CLOSURE PLUG

Michael E. Buckley; Thomas N. Tschirn, both of Dahlgren; Donald R. McClure, King George, all of Va., and Michael S. Wieland, Clairton, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1982, Ser. No. 360,273
Int. Cl.³ F42B 5/02
U.S. Cl. 102—430 7 Claims



1. A plug for closing the open end of a propellant-containing cartridge case which has an inturned rim at its open end comprising:

a plug body of low density resilient foam material having a forward end and a rearward end;

said plug body including a tapered peripheral portion adjacent its rearward end adapted to be inserted into the cartridge case open end for complementary seating resiliently against the inturned rim for temporarily restraining it therein under pressure of gases when the propellant is activated;

a depression in the forward end of the plug body;

a cavity in the rearward end of the plug body to reduce the mass thereof and to reduce the thickness of the plug between the depression and the cavity to define a membrane;

whereby propellant combustion gases reaching the cavity first rupture the membrane while still exerting a force circumferentially on the cartridge case rim for momentarily holding the plug tapered portion in place thereagainst to allow reduction of pressure gradient across the membrane to reduce pressure forces propelling plug complete breakup fragments forward.

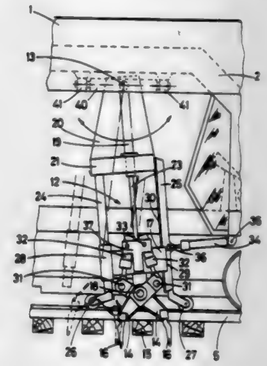
4,449,459

PIVOTING HEAD CONTINUOUS TAMPER

Ivo Cicin-Sain, Bussigny, Switzerland, assignor to Canron Corp., West Columbia, S.C.

Filed Jan. 21, 1982, Ser. No. 341,344
Claims priority, application Switzerland, Jan. 23, 1981, 428/81
Int. Cl.³ E01B 27/16
U.S. Cl. 104—12 12 Claims

1. In a railroad track tamping machine of the continuous movement type including a machine frame, a tamping unit depending from said machine frame and penduously mounted thereon about a frame lateral axis, on mounting means; extensible positioning means connected on the one hand to said tamping unit and on the other hand to said frame and adapted to swing the tamping unit, during machine frame track movement, in pendulous fashion forwardly longitudinally of the frame from one track tamping location to a succeeding track tamping location and, in operation, to position said tamping unit at a track tamping location to enable said tamping unit to perform a tamping operation thereat, during machine frame track movement.

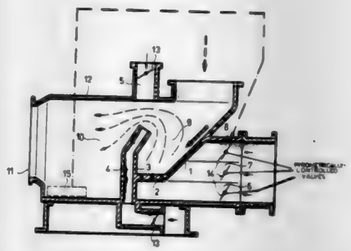


4,449,460

PROCESS AND APPARATUS, MAINLY FOR BURNING AGRICULTURAL PLANT REFUSE

Bátyi Béla; Gulyás Géza, both of Budapest; Bozsó Zoltán, Dunakeszi; Csákány István, and Bartucz János, both of Budapest, all of Hungary, assignors to Láng Gépgyár, Budapest, Hungary

Filed Mar. 16, 1982, Ser. No. 358,811
Claims priority, application Hungary, Mar. 17, 1981, 670/81
Int. Cl.³ F23B 5/00
U.S. Cl. 110—214 4 Claims



1. An apparatus for burning agricultural materials having a moisture content no greater than 45% by weight comprising:

a housing;

a baffle wall formed in said housing and dividing same into preburning and afterburning spaces, said wall having an upper portion inclined toward said preburning space and being further formed with at least one secondary air inlet;

a first grating arranged horizontally in said preburning space adjacent said baffle wall;

a second grating arranged in said preburning space adjacent said first grating and inclined upwardly therefrom, said second grating being juxtaposed with an inlet for the introduction of said material in a constant flow;

a first air duct connected to an upper portion of said second grating for delivering a first portion of primary air thereto for the removal of moisture from said material;

a second air duct connected to a lower portion of said grate for delivering a second portion of primary air thereto for the air-deficient burning of the dried material and the production of combustible gases;

a third air duct connected to said first grate for delivering a third portion of primary air thereto for driving said com-

bustible gases along said baffle wall for the deflection of said gases in a counterflow to the flow of said material, said gases mixing with secondary air introduced through said secondary air inlet for the complete burning of said mixture in said afterburning space to produce a hot gas; and

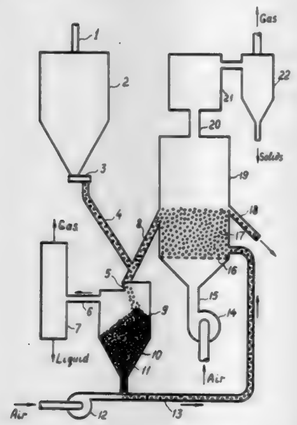
an outlet in said afterburning space for the removal of said hot gas.

4,449,461

PROCESS AND APPARATUS FOR HYDROCARBONS RECOVERY FROM SOLID FUELS

Jacob Gorbulsky, 128 Milton Ave., Ballston Spa, N.Y. 12020

Filed Nov. 10, 1981, Ser. No. 367,554
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—229 **7 Claims**



1. Apparatus for volatile matter recovery from solid fuels comprising:

(a) a fluidized-bed combustor for burning pyrolyzed solid fuel, and

(b) a fixed bed pyrolyzer in a connecting relationship with the combustor for receiving hot material from the combustor for heating fresh solid fuel, the pyrolyzer further having an outlet that communicates with the combustor for transporting the pyrolyzed solid fuel to the combustor, and also having an outlet for volatile matter discharge.

4,449,462

COAL BURNING APPARATUS

Michael F. Robb, Bismarck, N. Dak., assignor to King Coal Furnace Corporation, Bismarck, N. Dak.

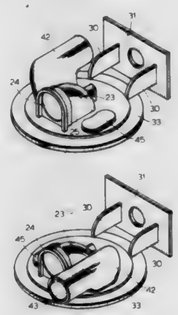
Filed Sep. 28, 1982, Ser. No. 425,547
Int. Cl.³ F23K *3/10*
U.S. Cl. 110—288 **11 Claims**

9. A coal burning apparatus actuated by an auger-type stoker including a burner base plate, a coal inlet tube extending generally horizontally below the base plate, said inlet tube forming an elbow and extending upwardly through the center portions of said base plate to define a coal discharge port a distance above the upper surface of said base plate;

a first ring portion at the periphery of said base plate forming a generally upwardly facing planar annular surface and defining an annular recessed trough adjacent the outer edge of the base plate;

a plurality of burner rings supported on said base plate and stacked in vertical direction, said burner rings having open central portions surrounding the inlet tube and having outer peripheral surfaces of decreasing size in vertical upward direction, said burner rings being spaced apart in vertical direction to form generally horizontal air discharge passageways between adjacent burner rings that provide airflow paths extending generally parallel to the adjacent burner rings beyond the outer edges of the lower of the adjacent burner rings for each such airflow path, the upper one of the burner rings surrounding the coal discharge port and receiving coal discharged therefrom, the lowermost burner ring having an outer peripheral edge spaced inwardly from the first ring portion, each burner ring having an upwardly facing annular surface exposed to support coal supplied from the coal discharge port and moving downwardly toward the trough under gravity;

means comprising large port means to provide a supply of combustion air under pressure to the open central portions of the burner rings, air diffuser means between the port



means and the open central portions to distribute air to the open central portions prior to being directed substantially horizontally outwardly through the air discharge passageways;

a rotating ash ring rotatably mounted for rotational movement on the upwardly facing planar surface of said first ring portion and being spaced outwardly from the burner rings and supported only on the first ring portion, said rotating ash ring having an inner edge surface that is beveled outwardly in upward direction and terminating at a level above the lowermost burner plate; and

means actuated by said stoker drive to rotate said rotating ash ring to cause ashes forming between the burner rings and said rotating ash ring to be engaged by the ash ring and discharged outwardly as the ashes build up.

4,449,463

FABRIC TENSIONING DEVICE

Andrew J. Gilbride, Swampscott; Edward S. Malecki, South Peabody; Edward H. Winslow, III, Beverly, and Robert F. Coleman, Danvers, all of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Feb. 12, 1982, Ser. No. 348,460
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.26 **9 Claims**

1. A mechanism for tensioning a web of material during stitching thereof by a sewing machine arranged on a work supporting base, said mechanism comprising:

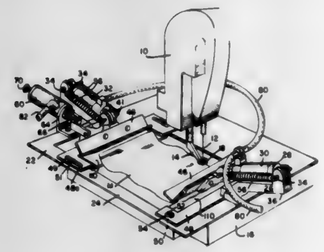
a frame movably arranged on said supporting base;

an arrangement of clamping means disposed on said frame, adapted to secure said web of material to said frame;

a biasing means for moving at least one of said clamping means with respect to said frame to effectuate the tensioning of said web of material between said clamping means;

said clamping means comprising a clamping bar which is pivotable about a support axis to effect pressure against a bracket disposed on said frame; said clamping means being

arranged on said bracket slidably disposed on said frame; and



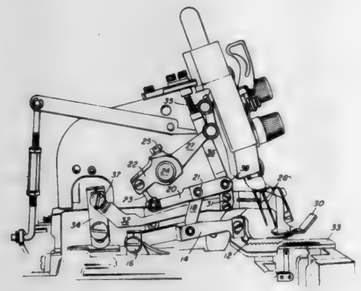
an adjustment means arranged with said biasing means to control the distance any material is being tensioned.

4,449,464

WALKING FOOT FEED FOR SEWING MACHINES

Robert E. Porter, 18 Tally Ho Dr., Hamilton, Mass. 01936

Filed Oct. 4, 1982, Ser. No. 435,281
Int. Cl.³ D05B *27/06*
U.S. Cl. 112—311 **9 Claims**



1. In a sewing machine having a source of driving power, a presser foot and a walking foot top feed, the combination of a beam supporting said walking foot top feed, an arm supporting said presser foot, an independent pivoting beam, means pivotally connecting said independent beam to said arm and to said walking-foot supporting beam and means connecting said independent beam to said source of driving power to cause said walking-foot top feed to travel in a substantially out-of-phase relationship with said presser foot.

4,449,465

UNIVERSAL STITCHING GUIDE

Dorothy Y. Kirby, 633 Linden St., Clermont, Fla. 32711

Filed Sep. 16, 1982, Ser. No. 419,021
Int. Cl.³ D05B *55/06*
U.S. Cl. 112—153 **6 Claims**

1. A stitching guide adapted to be used with a sewing machine having a steel needle plate and bed plate comprising:

a guide plate fabricated from flexible magnetized rubber-like material, said guide plate having at least one straight edge and one convexly curved edge; and

a thin steel mounting plate having a top side and a bottom side, said bottom side having a coating of pressure sensitive adhesive, said mounting plate adapted to be attached by said adhesive to the bed plate of a sewing machine, said guide plate thereby magnetically mountable on said steel

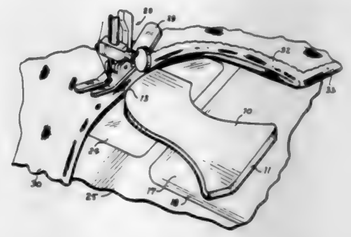


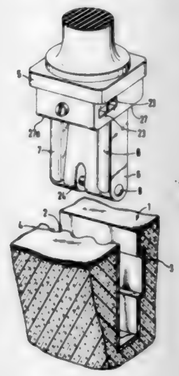
plate to place said edges selectively in position to permit guiding of material being stitched.

4,449,466

SAILBOARD

Hannes Marker, Hauptstrasse 51-53, 8100 Garmisch-Partenkirchen, and Otto Hüss, Wallgau, both of Fed. Rep. of Germany, assignors to Hannes Marker, Garmisch-Partenkirchen, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,249
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046230; Jan. 19, 1981, 3101465
Int. Cl.³ B63B *15/00*
U.S. Cl. 114—91 **30 Claims**



1. An apparatus for detachably connecting a mast having a mast base to a sailboard, said apparatus comprising a tongue connected to the mast base; an elongated recess in the top of the sailboard for receiving said tongue, said elongated recess extending in the longitudinal direction of the top of the sailboard; vertically-extending parallel grooves which are located in a lateral surface of said elongated recess, said grooves being longer in length than said tongue; at least one projection on a side of said tongue said projection being provided to engage with said vertically-extending parallel grooves.

4,449,467

VARIABLE WEIGHT CLOTH ROLLER-FURLING SAIL

Herbert A. Hild, Rye, and Walter Scanlon, Bronx, both of N.Y., assignors to Hild Sails, Inc., Bronx, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,680
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—103 **6 Claims**

1. A roller furling sail of Scotch-cut design including a plurality of integral panels of varying weight sail cloth wherein an outermost panel that runs along the leach of said sail and the lowermost panel that runs along the foot of the sail are made of

the heaviest weight sail cloth; said sail further including at least one inner panel arranged parallel to said outermost panel that runs along the leach and said lowermost panel that runs along the foot of said sail, said inner panels being lighter weight cloth



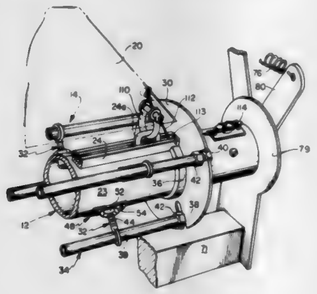
than said outermost and lowermost panels such that the weight of each panel decreases progressively towards the luff of said sail, all panels of said varying weight sail cloth being of substantially the same width.

4,449,468

ADJUSTABLE ROLLER FURLING SPAR

Walter A. Schulz, Portsmouth, and John H. Procter, East Providence, both of R.I., assignors to Schulz Marine Systems, Inc., Bristol, R.I.

Filed May 19, 1983, Ser. No. 495,960
Int. Cl.³ B63H *9/10*
U.S. Cl. 114—104 **22 Claims**



1. An adjustable roller furling spar for a sailboat comprising:
a. an elongated substantially rigid spar base member rotatably securable on said boat;
b. adjustable periphery means attached to said spar base member adjustably defining the effective winding cross section of said spar at a plurality of points spaced along substantially the entire longitudinal extent thereof;
c. means for securing a sail to said spar; and
d. means for rotating said spar base member and the periphery means attached thereto and for adjustably securing them in a selected rotated position.

4,449,469

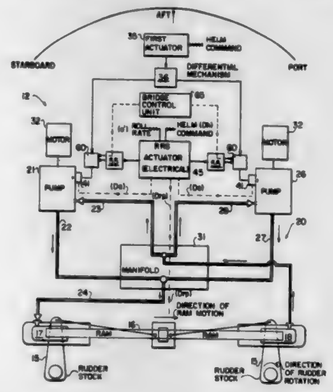
MECHANICAL CLUTCH/DECOUPLER FOR HYDRAULIC PUMPS

Dennis A. Woolaver, Rockville, Md., and A. Erich Baitis, Stafford, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1981, Ser. No. 247,486
Int. Cl.³ B63H *25/22*
U.S. Cl. 114—150 **7 Claims**

1. In a ship steering system having pump means controlling hydraulically actuated rudders, a first actuation means for translating a helm command signal into a mechanicl control signal for the pump means, and a second actuation means for translating a combined helm and ship roll reduction command signal into a mechanical control signal for the pump means, the improvement comprising:

coupling means for decoupling the first actuation means



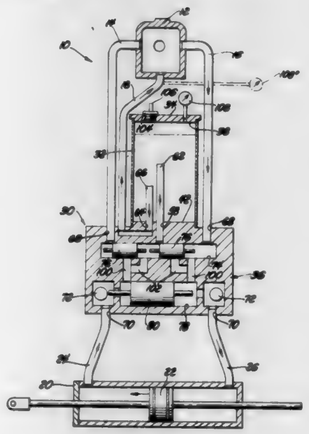
from the pump means and for coupling the second actuation means with the pump means upon activation of the second actuation means, said coupling means coupling the first actuation means with the pump means and decoupling the second actuation means from the pump means upon deactivation of the second actuation means.

4,449,470

HYDRAULIC CONTROL PACKAGE FOR A MARINE STEERING SYSTEM

Martin Rump, North Vancouver, Canada, assignor to Teleflex Incorporated, Limerick, Pa.

Filed Feb. 18, 1982, Ser. No. 349,734
Int. Cl.³ B63H *25/22*
U.S. Cl. 114—150 **19 Claims**



1. A hydraulic control assembly (30) for use in a marine steering system (10) of the type having a steering pump (12) with port and starboard fluid outlets (14, 16) and a return inlet (18), a steering cylinder (20) with a piston (22) therein and port and starboard inlets (24, 26) for hydraulically moving the piston (22) back and forth in the cylinder (20) in response to fluid delivered from the pump (12), said assembly (30) comprising; a fluid reservoir (32, 34, 36) for supplying fluid to said steering system (10) and control valve means for controlling fluid flow in said system, said assembly (30) being characterized by including a tube (32) having first and second open ends, a cap member (34) in sealing engagement with said first end of said tube, a valve body (36) in sealing engagement with said second end of said tube (32) to define said fluid reservoir, said valve body (36) including said control valve means, said valve body (36) including a central portion (52) extending in a direction away from said second end of said tube (32) and a pair of side portions (54) extending along opposite sides of said central portion (52) and being removably attached to said central portion (52), each of said side portions (54) including a cylinder passage (70) for establishing fluid communication between said central portion (54) and one of the steering cylinder outlets (24, 26), each of said side portions (54) including a pump inlet passage (68) communicating with said central portion (52) for receiving fluid from one of the pump outlets (14, 16), a check valve (72) disposed in said cylinder passage (70) in each of said side portions (54), said central portion (52) having a shuttle bore (74) extending therethrough between said side portions (54) and communicating with said pump inlet passages (68), shuttle valve means (76) slidably disposed in said shuttle bore (74), said central portion (54) having a spool bore (78) extending therethrough between said side portions (54) and communicating with said cylinder passages (70), spool valve means (80) slidably disposed in said spool bore (78), each of said side portions (54) having a first pocket (82) therein about said cylinder passage (70) and facing said spool bore (78), a first valve seat (84) disposed in said first pocket (82) and engaging said central portion (54), said check valve (72) being a ball disposed in said cylinder passage (70), a spring reacting between the side portion and said ball for urging said ball into sealing engagement with said first valve seat (84), said central portion (54) having a relief cavity (92) extending therethrough between said side portions (54), each of said side portions (54) having a relief passage (94) communicating between said cylinder passage (70) and said relief cavity (92) in said central portion (54), each side portion (54) having a second pocket therein about said relief passage (94) and facing said relief cavity (92), a second valve seat (96) disposed in said second pocket and engaging said central portion (54), a relief (98) disposed in each end of said relief cavity (92) and engaging said second valve seat (84), said central portion (54) having passages (100, 101) therein communicating between said shuttle bore (74) and said spool bore (78) and controlled by said shuttle valve means (76), said central portion (52) including a reservoir inlet passage (62) extending to a first opening into said tube (32) and a pump outlet passage extending from a second opening into said tube (32) to the pump return outlet (18), and a passage (58) between said relief cavity (97) and said reservoir inlet passage (62), said spool valve means (80) including extensions from each end thereof for opening said check valves (72).

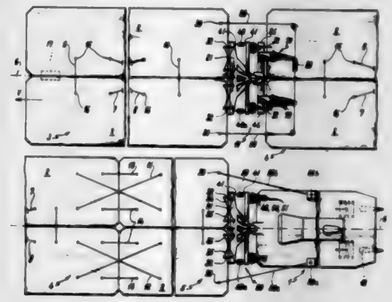
4,449,471

STEERING COMBINATION OF PUSHER TUG AND BARGES

Johannes van Roon, A 74, 2975 BC Ottoland, Netherlands

Filed Dec. 12, 1980, Ser. No. 215,913
Claims priority, application Netherlands, Dec. 13, 1979, 7908998
Int. Cl.³ B63B *21/62*
U.S. Cl. 114—249 **20 Claims**

1. A steerable pushing means for connecting together a combination of a pusher tug with a barge unit, said pushing means comprising:
(a) a support frame slidably connected at each end to dual side stemsons of the tug by vertically slidable means, said support frame being vertically movable relative to the tug during use;
(b) a pusher beam having a relatively flat front pusher surface rigidly connectable to a barge unit, said pusher beam having a central substantially vertical pivot column which is substantially perpendicular to the centerline of the tug and barge combination, said pivot cooperating with a substantially vertical trough portion of a central main stemson attached to the pusher tug, said pusher beam being supported by said support frame;
(c) dual vertical guiding elements located at the outer ends of said support frame and slidably connecting the support frame to said side stemsons rigidly attached to the pusher tug; and
(d) extendable and retractable means flexibly connecting the outer ends of said support frame to the outer ends of said pusher beam, whereby pushing and lateral steering forces are transmitted from the tug successively through the support frame to the pusher beam and thence to the pushed barge unit.



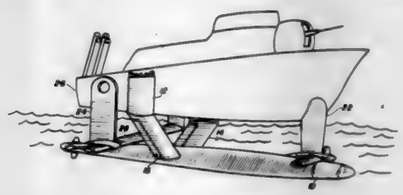
16. A method for connecting a steerable pushing means onto a barge unit, comprising
(a) providing a first pushing means having vertically adjustable guide means and having an opening on its upper side and being attached to a tug boat;
(b) placing said first pushing means under a second pushing means having a downwardly directed pin on its lower side and being attached to a barge unit;
(c) loosening attachment means between said second pushing means and the barge unit and lifting said second pushing means from the barge by raising said guide means on said first pushing means; and
(d) transporting said second pusher means to another barge unit and installing the second pusher means thereon.

4,449,472

DETACHABLE STORAGE TANK FOR HYDROFOILS

John R. Meyer,Jr., Deerwood, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1982, Ser. No. 383,074
Int. Cl.³ B63B *1/24, 1/28*
U.S. Cl. 114—274 **6 Claims**



1. A submerged storage tank for a hydrofoil ship, said storage tank comprising:
an elongated torpedo shaped hull;
a plurality of hull foils permanently connected to said hull and separate from the foils of said ship;
a plurality of struts extending generally upwardly from said hull foils; and

at least one attachment means at the upper end of each strut detachably connecting said storage tank to the hull of said ship;

said ship being operable with the attachment of said storage tank using both the ship foils and the hull foils; and with the detachment of said storage tank using the ship foils;

whereby the attachment of said storage tank or lack thereof does not detrimentally affect the operation of said hydrofoil ship.

4,449,473

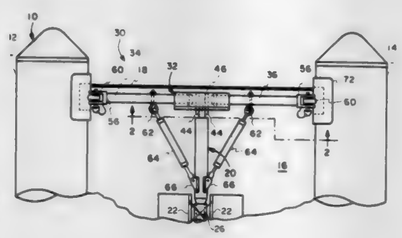
INFLATABLE BOAT WITH DEMOUNTABLE TRANSOM

William W. McCrory; William B. Quigley, and William A. Garnett, all of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 29, 1982, Ser. No. 437,708

Int. Cl.³ B63C 9/04; B63B 7/08

U.S. Cl. 114—354 **8 Claims**



1. In combination with an inflatable boat having spaced, parallel side sponsons joined by a transverse floor, and a rigid keelson, a demountable transom for supporting an outboard motor, said transom comprising:

a pad structure comprising spaced front and rear walls, web means interconnecting said walls, and means for connecting said pad structure to the aft end of said keelson;

first and second attachment arms each having an inner end pivotally connected to said pad structure for movement between folded, side-by-side positions and opened, axially aligned end-to-end positions, said arms having first connecting means at their outer ends for releasable connection to cooperating second connecting means on said side sponsons; and

brace means for connecting intermediate portions of said arms to said keelson.

4,449,474

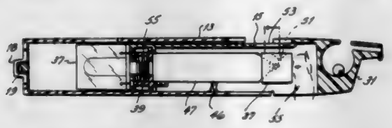
PERSONAL SECURITY DEVICE

James F. Mariol, Cincinnati, Ohio, assignor to Suzi Stone Enterprises, Inc., Cincinnati, Ohio

Filed Aug. 13, 1982, Ser. No. 407,729

Int. Cl.³ G08B 15/02, 7/00

U.S. Cl. 116—2 **13 Claims**



1. A personal security device comprising:

an inner housing having an open interior;

an outer housing formed to receive said inner housing therewith, said inner housing being movable within said outer housing between a closed position wherein the interior of said inner housing is covered by said outer housing and an extended position wherein at least a portion of said inner housing interior is exposed;

protection means disposed within said inner housing, said protection means including:

flash means having at least one electrical contact;

a canister movable within said inner housing and containing a fluid irritant, said canister having a trigger adapted to be depressed for moving said canister within said inner housing and for releasing said fluid irritant from said canister; and

activation means disposed between said flash means and said canister, said activation means being operable to engage said electrical contacts for activating said flash means, whereby upon movement of said inner housing to said extended position said trigger is uncovered and then depressed to release said fluid irritant from said canister and move said activation means into engagement with said electrical contacts.

4,449,475

CLEANING DEVICE FOR THE INTERMEDIATE IMAGE CARRIER OF AN ELECTROPHORETIC PRINTER

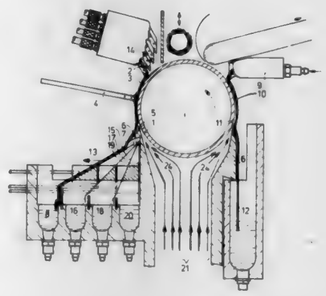
Franz Schinke, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 11, 1982, Ser. No. 357,249

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 31110878

Int. Cl.³ G03G 15/01, 15/06

U.S. Cl. 118—645 **5 Claims**



1. A device for the removal of toner suspension of different colors and/or a cleaning liquid from an endless intermediate image carrier upon which carrier toner suspension of different colors are successively applied and on which a color image is electrophoretically recorded, after which recording residues of the toner suspension are removed from the intermediate image carrier by means of forced air in order to be deposited in associated collecting reservoirs, characterized in that upper edges (5, 11) of a stationary air duct (21) which is arranged underneath the intermediate image carrier (1) approach the intermediate image carrier (1) on both sides so closely that they form two narrow air gaps in conjunction therewith, each upper edge (5, 11) of the air duct (21) being joined to the upper edge of a wiper (6) projecting therefrom, each of which wiper (6) is directed away from the intermediate image device (1), several chutes (13, 15, 17, 19) being situated on one side of the air duct (21), said chutes being displaceable so that the upper side of a chute may be positioned underneath the wiper (6) on the said one side of the air duct (21) and its lower side may be positioned over the inlet opening of the associated, stationary collecting reservoir (8, 16, 18, 20), all of the chutes (13, 15, 17, 19) and the collecting reservoirs (8, 16, 18, 20) for each of the toner suspensions (3) being situated on the said one side of the air duct and on the side of the air duct (21) which is situated opposite the collecting reservoir (8, 16, 18, 20) for the toner

suspension (3) there being arranged a collecting reservoir (12) for cleaning liquid (10).

4,449,476

APPARATUS FOR COATING OR IMPREGNATING A GUIDED SUBSTRATE IN THE FORM OF A WEB

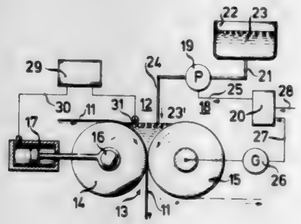
Gerhard Voswinckel, Aachen, and Joachim Trauter, Denkendorf, both of Fed. Rep. of Germany, assignors to Gebrueder Sucker, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,064

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1982, 3203087

Int. Cl.³ B05B 7/06

U.S. Cl. 118—674 **12 Claims**



1. Apparatus for coating or impregnating a guided web-shaped substrate with a flowable medium, comprising a feeding location through which the substrate is moved and is impinged by the flowable medium, means disposed in vicinity of said feeding location for controllably transferring the flowable medium to the substrate, a metering device for the flowable medium having an outlet in communication with said feeding location and an inlet, a storage tank for the flowable medium being connected to said inlet, means operatively connected to said metering device for measuring the rate of travel of the substrate, and means operatively connected to said transferring means for regulating and constantly maintaining the amount of flowable medium at said feeding location.

4,449,477

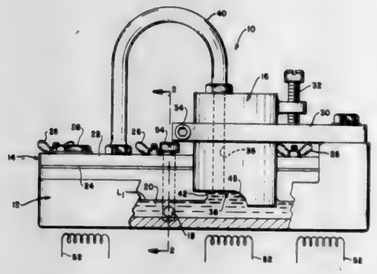
LIQUID DISPENSER

Paul A. Davignon, Uxbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 16, 1982, Ser. No. 349,102

Int. Cl.³ B05C 3/09

U.S. Cl. 118—694 **8 Claims**



1. A liquid dispenser comprising:

an open dispensing tray;

a closed reservoir, there being a tray filling opening extending from said reservoir to said tray at a point beneath a level of a liquid to be provided to and maintained in said tray;

and an adjustable liquid level control nozzle having a level sensing surface positioned in said tray to maintain a desired tray liquid level and an air passage extending from said sensing surface into said closed reservoir;

wherein a portion of said level sensing surface of said nozzle extends approximately parallel to the liquid level to be maintained in said tray and said air passage extends away from said portion of said nozzle sensing surface;

whereby, when the tray liquid level drops below the level to be maintained, a liquid meniscus traverses past said air passage, thereby venting said air passage and allowing air to enter said closed reservoir, releasing a liquid which is provided to said closed reservoir to flow through said tray filling opening into said open tray;

whereby, when the tray liquid level rises to the level to be maintained, the liquid meniscus traverses past said air passage in a reverse direction, thereby closing said air passage and preventing further liquid flow from said closed reservoir through said tray filling opening.

4,449,478

ARRANGEMENT FOR COATING SUBSTRATES BY VACUUM DEPOSITION

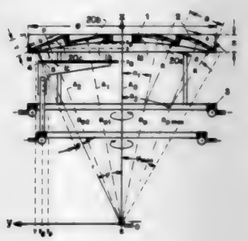
Thaddäus Kraus, Triesen, Switzerland, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Mar. 11, 1982, Ser. No. 357,334

Claims priority, application Switzerland, Mar. 13, 1981, 1720/81

Int. Cl.³ C23C 13/08

U.S. Cl. 118—720 **2 Claims**



1. An arrangement for coating substrates in an apparatus for vacuum deposition, comprising a rotatable substrate holding structure, means supporting said holding structure for rotation about a rotational axis, at least one evaporative source provided close to said rotational axis, a vapor beam correction screen located between said evaporative source and said holding structure, supporting means supporting said vapor beam correction screen for rotation in an opposite direction about the same rotational axis, said holding structure comprising a circular plate provided with holders for substrates located such as to hold said substrates in discreet circular rows around the rotational axis, each with their axes positioned in a singular circular row which intersect the axis of rotation, said point of intersection of the substrate axes with the axis of rotation coinciding with the center of curvature of said substrates.

4,449,479

CRAYFISH, HARVESTING, SHELTERING AND SPACING APPARATUS

Howard J. Saucier, Rt. 2, Box 267-B, St. Martinville, La. 70582

Filed May 2, 1983, Ser. No. 490,392

Int. Cl.³ A01K 61/00

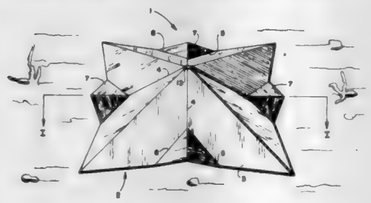
U.S. Cl. 119—2 **3 Claims**

1. A method of harvesting crayfish in a pond comprising:

(a) positioning in spaced apart fashion in said pond devices, each comprising a submersible body positionable on the bottom of the pond and having a center cavity opening to the pond bottom, said body being further provided with at

least one opening sized and positioned to allow crayfish to enter said cavity;

(b) placing young crayfish about said devices;



(c) placing crayfish traps during crayfish harvesting time periods near at least some of said devices; and

(d) periodically removing said crayfish traps to remove the crayfish found therein.

4,449,480

CULTURE OF FRESHWATER MUSSEL GLOCHIDIA IN AN ARTIFICIAL HABITAT UTILIZING COMPLEX LIQUID GROWTH MEDIA

Billy G. Ison, Killen, Ala., and Robert G. Hudson, Clinton, S.C., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 369,691, Apr. 19, 1982, abandoned, which is a continuation of Ser. No. 328,307, Dec. 7, 1981, abandoned. This application Oct. 29, 1982, Ser. No. 437,817

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—4 **18 Claims**

1. A process for the transformation of glochidia of freshwater mussels to the juvenile stage wherein the normal period of presumed host specific parasitism on fish is reproduced in an artificial habitat, which process comprises the steps of:

(1) removing from gravid mussels the glochidia therein and transferring same into sterile deionized water wherefrom are removed the undesirable portions thereof including tissue debris, dead glochidia, bacteria, and protozoa;

(2) removing at least a portion of the resulting decontaminated glochidia from said sterile deionized water and transferring same into a mixture of complex artificial growth medium and fish blood plasma, said complex artificial growth medium having an adjusted pH of about 7.8 to about 8.0 and said complex artifical growth medium and said fish blood plasma containing predetermined quantities of antibiotics and antimycotics, said mixture of artificial growth medium and blood plasma ranging from about 20 to about 80 percent and about 80 percent to about 20 percent, respectively; said predetermined quantities of antibiotics and antimycotics in said artificial growth medium and said blood serum ranging in concentrations therein as follows:

Compound	Concentration
Antibiotics	
Streptomycin sulfate	400–2000 μg/ml
Penicillin G. sodium salt	400–2000 U/ml
Oxytetracycline	50–300 μg/ml
Antimycotic	
Amphotericin B	1–25 μg/ml

and said complex artificial growth medium comprising predetermined quantities of inorganic salts, amino acids, including essential amino acids and nonessential amino acids, vitamins, and other compounds including glucose as follows:

Compound	Concentration, mg/l
Inorganic salts	
$CaCl_2$	600–1400
$MgCl_2.6H_2O$	500–1200
NaCl	700–1700
KCl	50–125
$NaHCO_3$	1100–2400
Essential Amino Acids	
L-arginine	10–120
L-cystine	2–26
L-histidine	3–35
L-isoleucine	5–55
L-leucine	5–55
L-lysine	5–60
L-methionine	1–20
L-phenylalanine	3–35
L-threonine	5–50
L-tryptophane	1–12
L-tyrosine	3–40
L-valine	5–50
Nonessential Amino Acids	
L-alanine	1–12
L-asparagine	1–15
L-aspartic acid	1–15
glycine	1–10
L-glutamic acid	1–20
L-proline	1–15
L-serine	1–15
taurine	3–35
L-ornithine	1–12
Vitamins	
choline chlorine	0.1–2
folic acid	0.1–2
inositol	0.2–4
nicotinamide	0.1–2
calcium pantothenate	0.1–2
pyridoxal	0.1–2
riboflavin	0.1–2
thiamine	0.1–2
Other Compounds	
glucose	100–1500
phenol red - optional	1–15

(3) subjecting said glochidia in said mixture of artificial complex growth medium and said blood plasma to incubation means wherein the temperature is maintained from about 18° C. to about 28° C. and wherein carbon dioxide enriched air is introduced and withdrawn in sufficient quantities to effectively control the pH in said mixture in the range from about 7.2 to about 8.3;

(4) subsequently and periodically removing from contact with said glochidia the resulting culture medium comprising said mixture of complex artificial growth medium and fish blood plasma and substituting therefor a quantity of fresh culture medium, the length of time between said periodic substitution of fresh culture medium ranging from about 1 day to about 3 days and the number of substitutions being sufficient to ensure the maturing of said glochidia to the juvenile stage; and

(5) subsequently removing from said incubation means the resulting juvenile mussels and returning same to natural habitat.

4,449,481

CALF CART

Buck Dear, and Tim Spencer, both of 2312 Ninth Ave. S., Great Falls, Mont. 59405

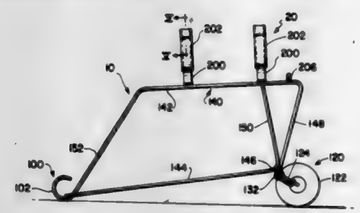
Filed Aug. 24, 1982, Ser. No. 411,026

Int. Cl.³ A61D *3/00*

U.S. Cl. 119—96 **10 Claims**

1. A cart for transporting a new-born calf permitting its mother to closely follow comprising:

a frame, said frame including a front ground-engaging portion, rear ground-engaging portions, at least one central longitudinal member interconnecting said front and rear portions, a lateral frame member interposed between said rear ground-engaging portions, a verticle post extending upwardly from said lateral frame member, an upper main member comprising said central longitudinal member, said main member being connected to said vertical post perpendicularly of said lateral frame member, a forward extension interconnecting said main member to said front



ground-engaging portion, a pair of vertical supports extending between said lateral frame member and said main member, and apair of lower longitudinal members extending between said lateral frame member and said front ground-engaging portion and

means supported on and positioned above said central longitudinal member for cradling the newborn calf in an upright position with its legs dangling and unable to touch ground with a minimum amount of structure being visible.

4,449,482

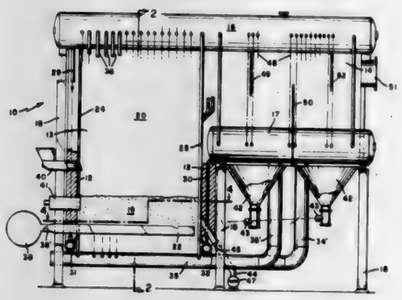
FLUIDIZED BED BOILERS

Albert M. Leon, Mamaroneck, N.Y., and Daniel E. McCoy, Williamsport, Pa., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Apr. 28, 1982, Ser. No. 372,853

Int. Cl.³ F22B *1/02*; F23D *19/02*

U.S. Cl. 122—4 D **4 Claims**



1. A fluidized bed boiler comprising a housing, a reaction chamber within said housing, an air distributor or grate in the lower portion of said reaction chamber comprising a plurality of spaced sparge pipes, a fluidized bed region immediately above said grate which, in operation, contains a bed of fluidized solid particulate material, a shielding region below said grate which, in operation, is occupied by a body of quiescent particulate material resting on the bottom of said housing, feed means for supplying solid particulate matter to said fluidized bed region, a freeboard region extending upward from said fluidized bed region to the top of said housing, a convection heat exchange chamber in horizontal communication with said freeboard region, a horizontally oriented steam drum extending through said freeboard region at the top thereof into the top of said convection heat exchange chamber, a horizontally oriented water drum extending across the bottom of said convection chamber, at least one water header below said grate in the reaction chamber, water-cooled walls being provided in said reaction chamber and said convection heat exchange chamber by tube and web panels, the vertically oriented tubes of said panels joining the water header or headers of said reaction chamber to said steam drum, convection bank tubes joining said water drum to said steam drum in said convection heat exchange chamber, a plurality of vertically oriented heat exchange tubes connected at the lower end thereof to said water header and passing through said shielding region below said grate, between adjacent sparge pipes of said grate and vertically upward into and through said fluidized bed region and said freeboard region to terminate in said steam drum, said heat exchanged tubes in said shielding region being isolated by said quiescent body of particulate material therein from the erosive conditions prevailing in said fluidized bed region, said heat exchange tubes being distributed in said reaction chamber so as to form a central firing aisle clear of heat exchanger tubes into which said feed means may introduce solid particulate fuel and other particulate feed, said sparge pipes being removably mounted in said housing and passing through said water-cooled walls, the tubes of said water-cooled wall in the region of penetration of said sparge pipes being splayed and of decreased diameter to accommodate passage of said sparge pipes, an air header located externally of said housing and horizontally connected to said sparge pipes, a plurality of air ports along the length of said sparge pipes for introduction of fluidizing air to fluidize the bed of particulate matter above said grate in said fluidized bed region, individually operable control means for each sparge pipe to open or close said sparge pipe to air flow, an exhaust stack communicating with said convection heat exchange chamber for exhausting combustion gases which have traversed said convection heat exchange chamber and an ash removal means communicating with said reaction chamber.

4,449,483

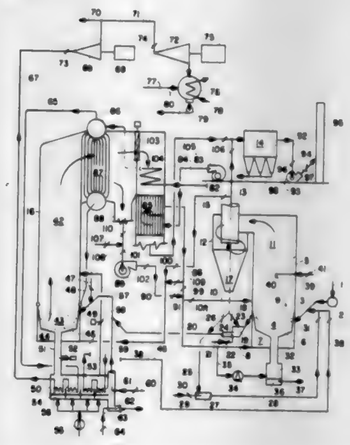
UNFIRED DRYING AND SORTING APPARATUS FOR PREPARATION OF SOLID FUEL AS A FEEDSTOCK FOR A COMBUSTOR

Charles Strohmeyer, Jr., Gladwyne, Pa., assignor to Electrodyne Research Corporation, Gladwyne, Pa.

Continuation-in-part of Ser. No. 456,586, Jan. 7, 1983, Pat. No. 4,442,796. This application Feb. 3, 1983, Ser. No. 464,062

Int. Cl.³ F22B *1/00*

U.S. Cl. 122—4 D **7 Claims**



1. An unfired drying and sorting apparatus for preparation of solid fuel for feed to the combustor of a steam generator comprising:

a vertical chamber;

a fluidized bed consisting of a mixture of sized moisture bearing particles of solid fuel and inert material;

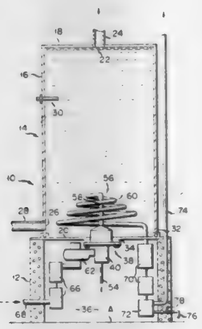
a sorter at the base of said vertical chamber having a floor for supporting said fluidized bed within said vertical chamber;
a plenum located below and part of said sorter floor;
means including hot combustion gases produced by said steam generator combustor continuously furnishing unsaturated hot air/gas to said plenum;
ports in said sorter floor passing said hot air/gas from said plenum directionally and in a distributed pattern over said sorter floor fluidizing said mixture of sized particles of solid fuel and inert material and causing at least a portion of said mixture to migrate in a retraceable path, said unsaturated hot air/gas upflow through said bed removing moisture from said particles;
a first point in the periphery of said vertical chamber including means for adding a continuous supply of said sized particles to said bed for drying and sorting;
a second point in/at said sorter floor including means for removal of said inert particles;
a third point located at the top of said bed including means for removal and transport of said solid fuel particles to said steam generator combustor;
said second and third points located substantially downstream in said bed migrating retraceable path with reference to said first point providing retention time for said particles in said bed and causing particles from said first point in a fluidized state to flow to said second or third points selectively by virtue of particle density and over a period of time to facilitate separation;
a fourth point located at the outlet of said vertical chamber for removal of air/gas and water vapor;
means connected to said forth point separating solid particles entrained in said air/gas and water vapor stream.

4,449,484

HOT WATER SUPPLY SYSTEM

Moriyoshi Sakamoto, and Toshihiko Saito, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 26, 1982, Ser. No. 444,367
Claims priority, application Japan, Nov. 30, 1981, 56-192194
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—13 R **16 Claims**



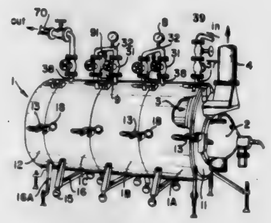
1. A hot water supply system comprising:
a base of a substantially cylindrical shape;
a storage tank supported on the base, the storage tank having an upper end plate and a lower end plate supported on the base and defining, together with an inner face of the base, a soundproofing chamber;
a pulse combustor including a pulse burner attached to the lower end plate and having a combustion chamber, and a tail pipe for discharging an exhaust gas which tail pipe communicates with the combustion chamber and is arranged inside the storage tank next to the lower end plate to function as a heat exchanger, the tail pipe having an ascending portion which extends upward from the pulse burner, said ascending portion having such a length that condensation of the exhaust gas does not occur in the ascending portion, and a descending portion which spirally extends from the topmost end of the ascending portion toward the lower end plate in such a manner that it is located around the ascending portion, said descending portion extending into the soundproofing chamber through the lower end plate to discharge water generated during combustion which condenses in the descending portion;
a blower arranged inside the soundproofing chamber to supply air to the pulse burner at an earlier stage of combustion;
a suction muffler arranged inside the soundproofing chamber and communicating with the biower;
an exhaust muffler arranged inside the soundproofing chamber and communicating with the descending portion of the tail pipe; and wherein
the base includes a soundproofing layer to shield noises generated in the soundproofing chamber.

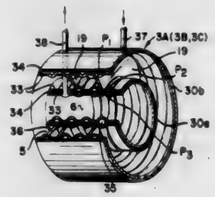
4,449,485

SEPARABLE COMBINATION BOILER

P. Lu-John Tan, No. 6, Hsia Yuan Rd., Ta Li Hsiang, Taichung Hsien, Taiwan

Filed Jul. 20, 1982, Ser. No. 400,121
Int. Cl.³ F22B *23/06*
U.S. Cl. 122—209 R **10 Claims**





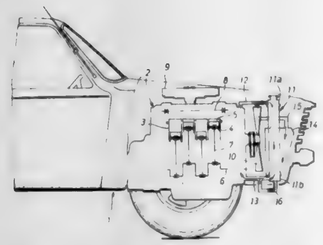
1. A separable combination boiler comprising a boiler body including:
at least two horizontally aligned cylindrical boiler units each of which has in each end wall a central opening and a gas port above the central opening for the passage of combustion gases, and a front cover plate and a rear cover plate which are laid over the central opening in the front end wall of the foremost boiler unit and the central opening in the rear end wall of the rearmost boiler unit respectively, said boiler units and front and rear cover plates being separably joined together by fastening means provided thereon;
a heat exchanger contained within said boiler body and divided by said boiler units into an equal number of heat exchanging elements which are interconnected by tubes to allow an uninterrupted flow of heat-transfer medium therethrough;
a burner mounted on said front cover plate with its flame spout extending through a central opening in the front cover plate and the central opening in the front end wall of the foremost boiler unit;
a stack mounted on said boiler body and communicating with an exhaust port formed in one of said cover plates which faces the end of a combustion gas passage defined by said boiler body and heat exchanger;
wherein each heat exchanging element is constructed of at least one inner cylinder serving as a combustion chamber and one outer cylinder which are concentrically arranged within each boiler unit and spaced apart from each other by a helical plate surrounding the inner cylinder so as to form therebetween a helical passage for combustion gases, said helical passage extending from the gas port in one end wall of the boiler unit to the gas port in the other end wall thereof.

4,449,486

COOLING SYSTEM FOR WATER-COOLED ENGINES FOR VEHICLES

Chinei Kin, 2-13, Kotobuki-cho 2-chome, Higashi-Osaka-shi, Osaka-fu, Japan

Continuation-in-part of Ser. No. 446,026, Dec. 1, 1982, abandoned, which is a continuation-in-part of Ser. No. 214,133, Dec. 12, 1980, abandoned. This application Jun. 1, 1983, Ser. No. 498,682
Claims priority, application Japan, Jul. 8, 1980, 55-97337[U]
Int. Cl.³ F01D *3.18*
U.S. Cl. 123—41.29 **11 Claims**



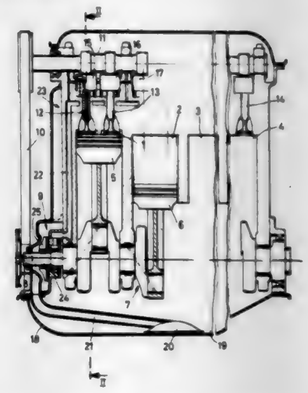
1. A cooling system for a water-cooled, multicylindered, piston engine having a cooling water jacket for use in a land vehicle, the cooling system comprising a cooling water jacket having a cooling means including a cooling fan and a single radiator with an upper tank and a lower tank, an outlet pipe coupled between the radiator and the cooling water jacket for supplying cooling water from a lower portion of the lower tank to a lower portion of the cooling water jacket, an inlet pipe coupled between the cooling water jacket and the radiator for feeding cooling water from an upper portion of the cooling water jacket to an upper portion of the upper tank, at least one auxiliary tank in the form of a closed box containing cooling water capable of being circulated in parallel with the radiator, the tank being adapted to release heat to the atmosphere from its outer surface without a fan and having a capacity to selectively maintain the engine cooling water at a temperature of between about 30° C. to about 50° C. by selectively additionally using at least between about 15 to about 16 liters of cooling water in a parallel flow with the radiator selectively to afford an increased amont of cooling water in a flow to the water jacket when going up a slope, a lower communication pipe means connecting a lower portion of the auxiliary tank to the outlet pipe such that the cooling water in the lower communication pipe means flows into the outlet pipe and mixes with the cooling water in the outlet pipe, and an upper communication pipe means connecting the inlet pipe to an upper portion of the auxiliary tank such that a portion of the cooling water in the outlet pipe flows through the upper communication pipe means into the auxiliary tank, and wherein at least one of the upper and lower communication pipe means is provided with a water valve for selectively controlling the flow of cooling water therethrough when going up a slope, and said auxiliary tank is capable of being in parallel with the radiator so as to selectively circulate the cooling water from the cooling water jacket directly to the top of the radiator and then back to the cooling water jacket in a first cooling water path, and also from the cooling water jacket to the top of the box and then back to the cooling water jacket in a second cooling water path.

4,449,487

INTERNAL-COMBUSTION ENGINE HAVING LUBRICATING AND COOLING OIL CIRCUITS

Hermann Krüger, and Hermann Deutsch, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 18, 1981, Ser. No. 322,723
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044603
Int. Cl.³ F01P *1/06, 3/12*
U.S. Cl. 123—41.34 **13 Claims**



1. An internal combustion engine comprising in combination:
(a) an oil reservoir;
(b) a lubricating oil circuit being in communication with and including said oil reservoir;
(c) a lubricating oil pump in said lubricating oil circuit for drawing oil from said oil reservoir and driving the oil in said lubricating oil circuit;
(d) a cooling oil circuit being in communication with and including said oil reservoir;
(e) a cooling oil pump in said cooling oil circuit for drawing oil from said oil reservoir with the circumvention of said lubricating oil pump and driving the oil in said cooling oil circuit; said cooling oil pump having a lower output pressure than said lubricating oil pump; and
(f) engine components being in communication with said cooling oil circuit for exposure to oil driven by said cooling oil pump in said cooling oil circuit.

4,449,488

FREE PISTON INTERNAL COMBUSTION ENGINE

William C. Heaton, Decatur, Ga., assignor to Rondal P. Howell, Brewton, Ala., a part interest

Division of Ser. No. 157,517, Jun. 9, 1980, Pat. No. 4,344,288. This application Jul. 20, 1982, Ser. No. 400,071
Int. Cl.³ F02B *71/00*
U.S. Cl. 123—46 R **4 Claims**

1. A reciprocating piston apparatus for an internal combustion engine, comprising:
a housing defining a cylindrical piston chamber and having

a first end and a second end, said housing defining through the cylindrical wall thereof a first vaporized fuel opening adjacent to said first end of said housing, and a second vaporized fuel opening adjacent to said second end of said housing;

an outer cylindrical piston having a first end and a second end, fitted within said housing for reciprocal movement, said outer piston defining a first annular channel in the cylindrical surface thereof, a first interior cylindrical cavity therein, and a first passageway connecting said first annular channel and said first interior cavity;

an inner cylindrical piston fitted within said interior cavity of said outer piston for reciprocal movement, said inner piston defining a second interior cavity therein, a second annular channel in the cylindrical surface thereof, a second passageway connecting said second annular channel to said second interior cavity and first valve means for alternately providing a passageway between said second interior cavity and said first interior cavity of said outer piston at alternate ends of said inner piston;

said first end of said outer piston defining a third passageway therein between said first interior cavity of said outer piston and said piston chamber adjacent to said first end of said housing, said third passageway including second valve means for permitting passage of vaporized fuel therethrough only toward said piston chamber;

said second end of said outer piston defining a fourth passageway therein between said first interior cavity of said outer piston and said piston chamber adjacent to said second end of said housing, said fourth passageway including third valve means for permitting passage of vaporized fuel therethrough only toward said piston chamber;

said first end of said housing defining a first exhaust opening therein including fourth valve means for selectively opening and closing said first exhaust opening;

said second end of said housing defining a second exhaust opening therein including fifth valve means for selectively opening and closing said second exhaust opening;

first ignition means for selectively igniting vaporized fuel between said first end of said outer piston and said first end of said housing; and

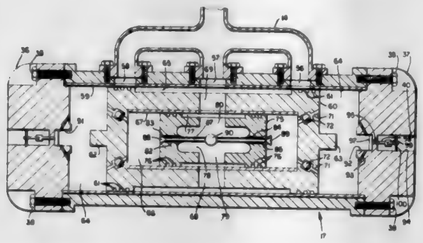
second ignition means for selectively igniting vaporized fuel between said second end of said outer piston and said second end of said housing;

said first vaporized fuel opening in said housing communicating with said piston chamber between said first end of said outer piston and said first end of said housing, and said second vaporized fuel opening communicating with said first annular channel in said outer piston, when said outer piston moves toward said second end of said housing;

said second vaporized fuel opening communicating with said piston chamber between said second end of said outer piston and said second end of said housing, and said first vaporized fuel opening communicating with said first annular channel in said outer piston, when said outer piston moves toward said first end of said housing;

and

said first passageway defined by said outer piston communicating with said second annular channel of said inner piston.

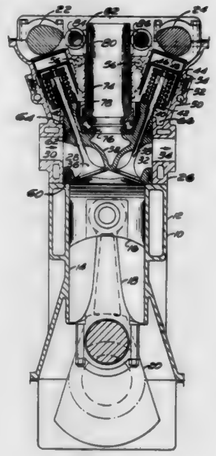


4,449,489

VARYING GEOMETRIC COMPRESSION RATIO ENGINE

Gerald J. Williams, R.R. #2, Nolalu, Ontario, Canada (POT 2KO)

Filed May 21, 1981, Ser. No. 266,086
Int. Cl.³ F02B 75/04
U.S. Cl. 123—48 R **66 Claims**



1. An internal combustion engine, including geometric compression ratio varying means, comprising in combination

a cylinder block having one or more cylinders in a row,

a piston in each cylinder,

a crankshaft rotatably supported in the cylinder block and connected with the piston or pistons to convert the reciprocating motion of same to rotational motion of the crankshaft,

a cylinder head disposed on top of said cylinder bank, said cylinder head including a cylindrical valve carrier cavity, coaxial with and directly above each cylinder of the said cylinders, and communicating downwardly with said cylinder, said cylindrical valve carrier cavity defining a shallow bore in diameter approximately equal to the diameter of said cylinder and further including one lateral intake port means communicating with said cylindrical valve carrier cavity and air and fuel intake means, and lateral exhaust port means communicating with said cylindrical valve carrier cavity and an exhaust means, and further including a jackscrew support means, coaxial with and in line with each said cylindrical valve carrier cavity,

one or two camshafts carried in said cylinder head for rotation on an axis parallel with the axis of the said crankshaft, said camshaft or camshafts being driven in timed relation with the movement of the piston or pistons,

a valve carrier disposed in each said cylindrical valve carrier cavity, and to thereby close the top of the said cylinder, said valve carrier defining a cylindrically machined casting closely matching the said cylindrical valve carrier cavity in diameter, and reciprocatably, within limits, disposed within said cavity and prevented from rotation within same, said valve carrier including ports communicating with said cylinder and the respective said intake port means and the said exhaust port means in the said cylinder head, and poppet valves movable to control the opening and closing of said ports, said poppet valves being spring biased towards the closed position,

valve actuating means between said camshaft or camshafts and said poppet valves for actuating said valves in timed relation with the motion of the piston or pistons, said valve actuating means including a means to continuously eliminate play between the lobes on said camshaft or camshafts and the ends of the stems of said poppet valves during reciprocation of said valve carrier,

a jack screw, carried by said jackscrew support means and engageable with said valve carrier on a seating surface located coaxially, said jack screw defining a hollow cylinder, threaded over some length to match thread in said jack screw support means, said threads engaging so that upon rotation of said jack screw, in either direction, said jack screw will either move up or down, said jack screw also rotatably engaging said valve carrier in a manner so that upon rotation of said jack screw in either direction, within limits, said valve carrier will either move up or down within limits, said jack screw including a jack screw drive means,

a jack screw power actuation means defining a means engageable with said jack screw drive means to rotate same in either direction within limits,

a jack screw power actuation control means, operatively connected with said power actuation means, and defining a control which will determine the gas charge mass admitted into the cylinder or cylinders during each combustion cycle and which will direct the operation of said jack screw power actuation means according to pre-programmed instructions,

an ignition means,

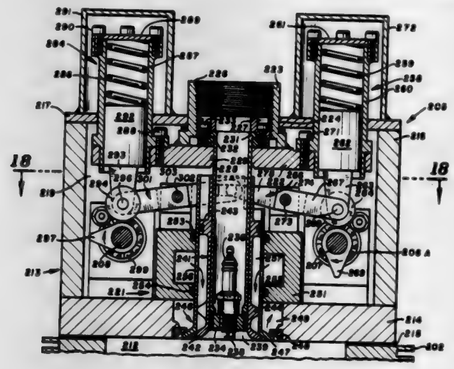
whereby an engine is provided in which the geometric compression ratio is varied to compress the gas charge to identical or nearly identical absolute pressure values regardless of the quantity of the gas charge mass admitted during each combustion cycle, during all or most of the power output range.

4,449,490

CONCENTRIC INTAKE AND EXHAUST VALVE ASSEMBLY

Craig N. Hansen, Minnetonka, Minn., assignor to Hansen Engine Corporation, Minnetonka, Minn.

Filed May 19, 1982, Ser. No. 379,637
Int. Cl.³ F01L 1/28
U.S. Cl. 123—79 C **23 Claims**



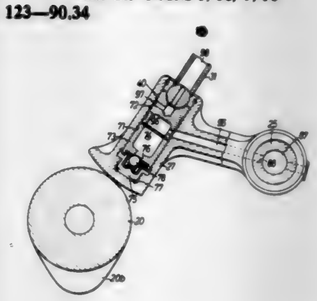
1. An internal combustion engine comprising: a block having at least one cylindrical wall surrounding a combustion chamber, a piston means located in said combustion chamber, means operable to reciprocate the piston means in said chamber, a head means mounted on the block covering said chamber, said head means having an air and fuel intake passage and an exhaust gas passage, an intake and exhaust valve assembly mounted on the head means for controlling a flow of air and fuel into the chamber and a flow of exhaust gas from the combustion chamber, said valve assembly having an exhaust gas valve movably mounted on the head means for movement between an open position and a closed position for controlling the flow of the exhaust gas from the combustion chamber and an intake valve concentrically located relative to the exhaust gas valve movable to an open position and a closed position, a tubular member having a passage, means mounting the tubular member on the head means to align the tubular member with the combustion chamber, a spark plug mounted on the tubular member and located in said passage, said spark plug having electrodes exposed to the combustion chamber, said intake valve including a sleeve slidably mounted about the tubular member, an annular outwardly directed flange secured to the sleeve, said exhaust gas valve having an annular rim surrounding and engageable with the flange when the intake valve is closed, and means operable to sequentially move the intake valve and exhaust gas valve between their open and closed positions in timed relation with the movement of the piston means whereby said engine has an intake, compression, power, and exhaust strokes.

4,449,491

LUBRICATING DEVICE FOR INTERNAL COMBUSTION ENGINE

Tadashi Tsuchiyama, and Yoshiaki Hidaka, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,785
Claims priority, application Japan, Jan. 30, 1981, 56/12648; Jan. 30, 1981, 56/12649; Feb. 9, 1981, 56/17811
Int. Cl.³ F01M 1/06, 9/10
U.S. Cl. 123—90.34 **7 Claims**



1. In a lubricating system for an internal combustion engine having intake and exhaust valves and a valve operating device for the intake and exhaust valves mounted on the engine body, the improvement comprising, in combination: a cam shaft turnably mounted in bearing means supported on the engine body, the cam shaft having an oil passage formed therein in communication with said bearing means, a cam on said cam shaft, a rocker arm shaft mounted on the engine body and having an oil passage therein, a rocker arm turnably mounted on the rocker arm shaft and having contacting means engaging said cam, an oil pump adapted to be driven by said engine, an oil chamber formed in the engine body and communicating with said oil pump, a first oil path connecting said oil chamber to said oil passage in the cam shaft, and a second oil path connecting said oil chamber to said oil passage in the rocker arm shaft, whereby lubricating oil supplied from said oil pump is fed independently to the cam shaft and to the rocker arm shaft by way of said first and second oil paths, respectively.

4,449,492

ATTACHMENT FOR A HEAT SHIELD

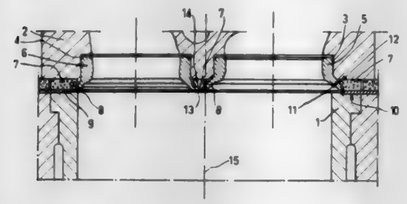
Jean-Paul Reynaud, St. Georges d'Esperanche, France, assignor to Renault Vehicules Industries, Lyon, France

Filed Jul. 8, 1982, Ser. No. 396,445
Claims priority, application France, Jul. 10, 1981, 81 13612
Int. Cl.³ F02F 1/26
U.S. Cl. 123—193 CH **3 Claims**

1. In a cylinder head of a combustion engine having at least one bore for a valve seat insert, a first surface defining a portion of a combustion chamber, and a valve seat insert including

an annular peripheral rim, one said insert being fixed in each said bore, a heat shield comprising:

a flat plate formed of a heat insulating material, said plate including an aperture for each said valve seat insert, said plate being positioned on said first surface and having a first portion held between said first surface and each said rim,



wherein said cylindrical head is connected to an engine cylinder via an elastic gasket, wherein an edge portion of said heat shield is elastically held between said gasket and said first surface, and wherein said first portion of said heat shield is fixed to said cylinder head solely by said insert being fixed in said bore.

4,449,493

SLOSH BAFFLE FOR OIL PAN OF INTERNAL COMBUSTION ENGINE

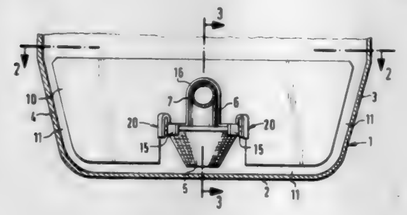
Eduard Kopec, Remseck, and Wolfgang Oberknapp, Marbach, both of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,698

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 8124422[U]

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 A **9 Claims**



1. In an internal combustion engine, particularly of the in-line type as used in automotive vehicles, which engine has an oil suction strainer arranged centrally near the bottom of its elongated oil pan and a substantially horizontally extending oil suction line connected to the top of the strainer by means of an elbow, in such an engine, a slosh baffle assembly for the stabilization of the oil level against longitudinal flowoff to either oil pan extremity comprising in combination:

a slosh baffle in the form of a panel extending substantially vertically and transversely to the oil pan, so as to form narrow flow gaps with the walls of the oil pan, thereby subdividing the latter into two oil chambers linked by said flow gaps;

a saddle portion extending substantially horizontally from the slosh baffle so as to engage the elbow of the oil suction line from above, to secure the transverse orientation of the slosh baffle;

a substantially horizontal peripheral rim on the upper end of the oil suction strainer; and

means for attaching the slosh baffle to the rim of the oil suction strainer at multiple circumferentially spaced points, to secure the vertical position of the slosh baffle.

4,449,494

INTERNAL COMBUSTION ENGINE

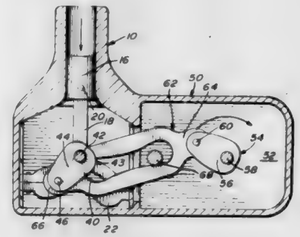
Normand Beaudoin, Le Gardeur, Canada, assignor to Compagnie du Moteur Energitique C.M.E. Inc., Quebec, Canada

Continuation-in-part of Ser. No. 436,823, Oct. 26, 1982, abandoned. This application Feb. 7, 1983, Ser. No. 464,144

Claims priority, application Canada, Oct. 29, 1981, 389266

Int. Cl.³ F02B *75/32*

U.S. Cl. 123—52 A **5 Claims**



1. In an internal combustion engine:

a block;

a series of pistons reciprocally displaceable in said block along respective axes;

a connecting rod for each piston, each said rod having one end attached to an associated piston and the opposite end having an enlarged portion defining a track therein; said track extending laterally of the displacement axis of said piston;

a plurality of individual crankshafts rotatably mounted in said block, each crankshaft having throw means cooperatingly engaging an associated track and being displaceable therein; each said track having a shape including a curved portion which causes reduction of loss of power into the respective crankshafts on said connecting rod for a given travel distance of the crankshaft element in the track;

a master crankshaft;

a series of single levers connecting the throw means of individual crankshafts to said master crankshaft and having a slot;

a plurality of pivot means for each lever, each said pivot means being mounted to said block and located between said master crankshaft and its associated individual crankshaft, each said pivot means biasing the operation of its associated lever.

4,449,495

ENGINE WITH AUTOMATIC CUT-OFF DEVICE

Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 6, 1981, Ser. No. 281,231

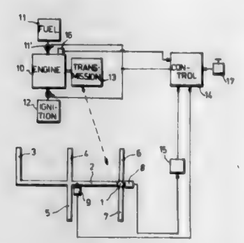
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1980, 3025539

Int. Cl.³ F02B *75/12*

U.S. Cl. 123—198 DB **7 Claims**

1. In a vehicle having an internal combustion driving engine, a manually operated transmission connectable to the driving

engine, and a shift lever for controlling the manually operable transmission and having a neutral position, the improvement



comprising a control device responsive to placing of the shift lever in the neutral position to cut off the driving engine.

4,449,496

CYLINDER-NUMBER-CONTROLLED ENGINE

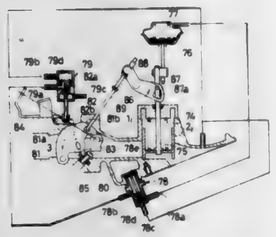
Hiroichi Mokuya; Masao Yokko, both of Shizuoka; Hiroyuki Komatsu, Hamamatsu; Katsuhisa Suzuki, Hamana, and Takeo Kitayama, Shizuoka, all of Japan, assignors to Suzuki Motor Company Limited, Japan

Filed Aug. 28, 1981, Ser. No. 297,178

Claims priority, application Japan, Sep. 10, 1980, 55-125546; Dec. 2, 1980, 55-169763; Dec. 4, 1980, 55-171395; May 29, 1981, 56-82034

Int. Cl.³ F02D *17/02*

U.S. Cl. 123—198 F **9 Claims**



1. In an engine having a plurality of cylinders, with a manifold pipe for an air fuel mixture flow to the cylinders and a plurality of intake pipe connected between the manifold pipe and each cylinder respectively, the improvement comprising;

a throttle valve movably mounted in the manifold pipe from a closed position to an open position;

a cam connected to said throttle valve and movable therewith;

a control valve movably mounted in at least one of the intake pipes from a closed position to an open position;

a control valve rod connected to said control rod and movable therewith;

actuator means connected to said control valve for instantaneously opening said control valve to a selected open position, said actuator means operatively connected to said throttle valve from its closed position, said selected open position being less than a fully open position of said control valve, said actuator means comprising a vacuum actuator having a pressure chamber bounded by a movable element which is connected to said control valve rod, and switching means connected to said vacuum actuator and operatively engaged with said throttle valve cam, for communicating said pressure chamber with one of the intake pipes to establish a partial vacuum in said pressure chamber and instantaneously open said control valve;

linkage means connected between said throttle valve and said control valve for causing movement of said control valve beyond said selected open position with movement of said throttle valve beyond a selected open position thereof, said means comprising a linkage rod connected to said cam, a pivotably mounted linkage lever connected to said linkage rod having a slot therein and pivotable with movement of said throttle valve, and a pin connected to said control valve rod and disposed in said slot for movement of said control valve only after movement of said throttle valve beyond said selected open position of said throttle valve; and

throttle valve drive means connected to said position.

4,449,497

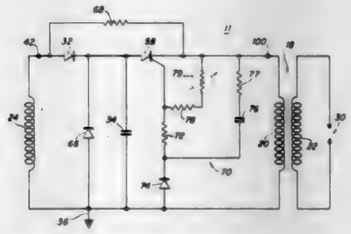
CAPACITOR DISCHARGE IGNITION SYSTEM

Ronald J. Wolf, Zanesville; Richard F. Jereb, Fort Wayne, and Mark Farmer, Farmersburg, all of Ind., assignors to Wabash, Inc., Huntington, Ind.

Filed Jul. 23, 1982, Ser. No. 401,232

Int. Cl.³ F02P *9/00*

U.S. Cl. 123—335 **15 Claims**



1. In a capacitor discharge ignition system for use with and for positioning adjacent a flywheel of an engine that generates a rotating magnetic field provided by a permanent magnet carried by the flywheel, the combination of:

means for generating in response to each passage of the permanent magnet and in operative sequence a charging supply and a triggering supply in response to induced voltages and currents resulting from the rotating magnetic field, said generating means comprising a control winding;

ignition coil means for receiving energy and for generating an ignition voltage in response to received energy; and

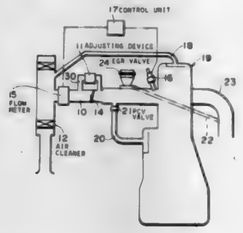
means responsive to said generating means and being charged in response to said charging supply for storing said energy delivered from said charging supply and for controlling the discharge of said stored energy into said ignition coil means, said storing and discharge controlling means comprising engine speed control means for inhibiting the charging of said storing and discharge controlling means when the speed of the engine exceeds a predetermined speed, said storing and discharge controlling means comprising electronic switch means having a control connection, said engine speed control means comprising resistive-capacitive circuit means being connected to said triggering supply and said control connection for rendering said electronic switch means conductive to discharge said stored energy into said ignition coil means when the speed of the engine is less than said predetermined speed and for maintaining said electronic switch means conductive when the speed of the engine exceeds said predetermined speed from one revolution of the flywheel to the next revolution of the flywheel and from one occurrence of said triggering supply throughout at least the duration of the next occurrence of said charging supply.

4,449,498

IDLE-ADJUSTING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Tomofusa Horiuchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 29, 1982, Ser. No. 428,707
Claims priority, application Japan, Dec. 7, 1981, 56-182014
Int. Cl.³ F02B *3/00;* **F02D** *9/02;* **F02M** *25/06*
U.S. Cl. 123—339 **5 Claims**



1. An idle-adjusting device for an engine having an air intake passage, a throttle valve disposed in the air intake passage, and an auxiliary passage communicating with the air intake passage in such a manner as to bypass the throttle valve, the adjusting device comprising:

(a) a first variable restriction provided in the auxiliary passage, the first restriction adjustably reducing the local cross-sectional area of the auxiliary passage; and

(b) a second variable restriction provided in the auxiliary passage downstream of the first restriction, the second restriction adjustably reducing the local cross-sectional area of the auxiliary passage;

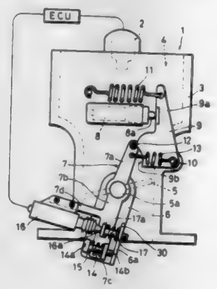
(c) the first and second restrictions adjustably determining the effective cross-sectional area of the auxiliary passage.

4,449,499

FUEL INJECTION SYSTEM

Shoji Ito, Aichi, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Dec. 16, 1982, Ser. No. 450,226
Claims priority, application Japan, Jan. 21, 1982, 57-7881[U]
Int. Cl.³ F02D *11/10, 1/04;* **F02M** *1/12, 3/00*
U.S. Cl. 123—339 **3 Claims**



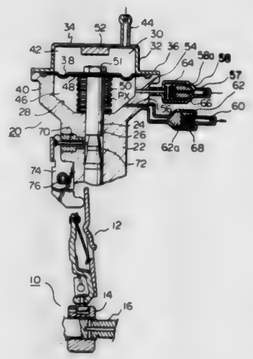
1. In combination with a fuel injection system having a fuel cut mechanism for detecting an idling condition of an engine by an idle switch and for stopping fuel supply at the idling condition in response to the engine condition such as engine temperature and engine speed, the improvement comprising a body thereof, a thermo-sensitive element fixed outside of said body and adapted to expand and contract in response to the engine temperature, a cam provided outside of said body and adapted to rotate in response to expansion and contraction of said thermo-sensitive element, an air intake passage provided inside of said body, a throttle valve provided inside of said air intake passage and rotatably fixed to said throttle shaft, a lever rotatably supported by said throttle shaft and carrying an idle switch thereon, said idle switch being maintained at on-condition through angular moment of said throttle shaft in its closed direction when an acceleration pedal is released, said lever being rotated in association with the rotation of said cam with the opening degree of said throttle valve at idling operation being controlled by said lever so as to adjust the opening degree of said throttle valve at idling operation to suit with the engine temperature.

4,449,500

INJECTION COMPENSATOR FOR FUEL INJECTION PUMP

Hisatsugu Kawatei; Hidetoshi Saito, and Hisashi Nakamura, all of Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,607
Claims priority, application Japan, Jun. 5, 1981, 56-86573
Int. Cl.³ F02D *23/02*
U.S. Cl. 123—380 **5 Claims**



1. An injection compensating apparatus for a fuel injection pump which includes a plunger or piston, a control sleeve movably coupled over the plunger, and a tension lever rotatably about a pin in operative connection with the control sleeve comprising:

a housing mounted on the pump;

a pressure sensitive member dividing the interior of the housing into a first chamber and a second chamber, the first chamber being communicated to variable atmospheric and boost pressures;

constant pressure maintaining means for maintaining a pressure inside the second chamber at a substantially constant reference level;

the constant pressure maintaining means comprising a first check valve and a second check valve through which the second chamber is communicated to a source of vacuum supply and to the atmosphere, respectively, the first check valve opening when a pressure in the second chamber is higher than the reference level while the second check valve opening when the pressure is lower than the reference level; and

a cam and follower mechanism for operative connection between the pressure sensitive member and the tension lever;

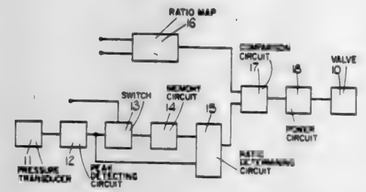
whereby the pressure sensitive member controls a position of the control sleeve through the cam and follower mechanism and the tension lever in response to a pressure differential between the first and second chambers.

4,449,501

DEVICE FOR ADJUSTING ENGINE TIMING

Godfrey Greeves, Hatch End, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 24, 1981, Ser. No. 324,601
Claims priority, application United Kingdom, Dec. 31, 1980, 8041548
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—425 **6 Claims**



1. An engine system comprising a reciprocating piston engine means for feeding fuel to the engine, means operable to effect an adjustment of the commencement of fuel injection in a diesel engine or ignition timing in a spark ignition engine, pressure transducer means for providing an electrical signal representative of the peak pressure attained within a combustion space of the engine, means for providing a signal representing the desired peak pressure, said last named means being provided with information relative to the engine speed and the fuel quantity, and means for comparing said signals, the output of said comparing means acting as a control signal for the means operable to effect an adjustment of the commencement of fuel injection in a diesel engine or ignition timing in a spark ignition engine and said pressure transducer means including a ratio determining circuit, means for supplying to the ratio determining circuit a peak pressure signal obtained during a fueled working stroke of the engine and a no fuel pressure signal obtained at an instant during a working stroke when no fuel is in the combustion chamber, said means for providing a signal representing the desired peak pressure comprising a ratio map.

4,449,502

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Toshio Furuhashi, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 11, 1981, Ser. No. 301,132
Claims priority, application Japan, Sep. 12, 1980, 55-126089
Int. Cl.³ F02M *7/12*
U.S. Cl. 123—440 **13 Claims**

1. A control system for an internal combustion engine comprising:

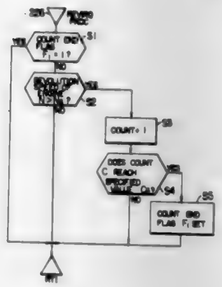
counting means for accumulating a count value in synchronism with a rotation of the engine from a time when the engine starts, wherein said counting means accumulates said count value only when the engine speed exceeds a predetermined value;

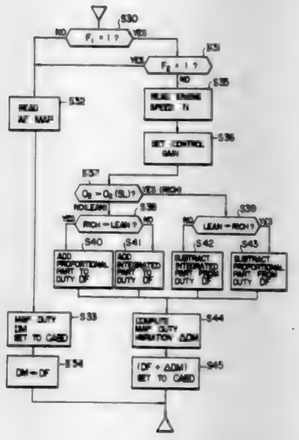
displaying means set when the accumulated value of said counting means reaches a predetermined value;

electrically controlled valve means provided in at least one of an air and fuel supplying system to control the air/fuel ratio of a fuel-air mixture being supplied to the engine;

a sensor provided in an exhaust system of the engine to generate an output signal proportional to an oxygen concentration in the exhaust gas of the engine; and

control units for supplying to said electrically controlled valve means a control output signal in response to the output signal from said sensor after said display means is set, and a control output signal independent of the output signal from said sensor before said display means is set.





4,449,503

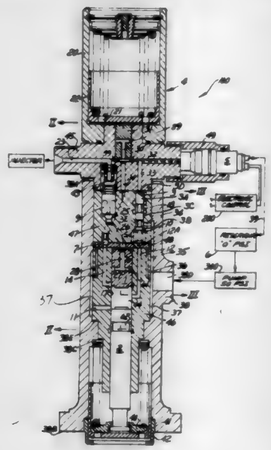
FUEL INJECTION PUMP

Douglas A. Luscomb, Mt. Upton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 276,608, Jun. 28, 1981, Pat. No. 4,422,424. This application Sep. 22, 1982, Ser. No. 421,606
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—447 **6 Claims**

1. In a fuel injection pump for supplying pressurized fuel to an engine, and of the type having a housing assembly provided with an internal bore defining a pressure chamber having an inlet/outlet port for receiving and discharging fuel and a metering chamber having an inlet for receiving a metered quantity of fuel and an outlet for discharging pressurized fuel, a plunger connectably driven by the engine for reciprocation in the pressure chamber, a floating piston movably disposed within said bore in spaced relation to the plunger, a control valve chamber located within said housing assembly and having a first port communicating with the pressure chamber port a second port communicating with the metering chamber inlet and a drain outlet, a valve member movable within the control valve chamber between seated and unseated positions, an accumulator pressurized by reciprocation of the plunger to provide high pressure fuel to the pump, the accumulator providing fuel to the control valve chamber and to the metering chamber and having a recess for receiving a sufficient amount of pressurized fuel, a pilot valve adapted to be energized and de-engergized to selectively establish first and second states of

flow for communicating fuel between the accumulator and the control valve chamber the energized state causing the valve member to be seated and the deenergized state causing the valve member to be unseated, a normally closed delivery valve operable by a predetermined pressure to open and communicate the metered quantity of fuel in the metering chamber through the outlet to the engine, the communication of the metered quantity of fuel representing an injection phase of the pump operation, means for terminating the injection phase as a result of piston being displaced upwardly in the bore, said termination means including a spill port in said housing assem-



bly communicating with an annular groove in said housing and passages in said piston communicating with metering chamber such that when piston is driven upwardly, the passages communicate with spill port and communicate fuel from the metering chamber to the spill port whereupon the predetermined pressure in metering chamber falls and delivery valve closes, thereby terminating injection of fuel to the engine, the improvement characterized by:

a normally closed check valve communicating with said spill port and operable by a predetermined pressure to open and allow escape of residual fuel from said metering chamber following said injection phase.

4,449,504

DISTRIBUTOR TYPE FUEL INJECTION PUMP

Yasuhiro Furuhashi; Yukinori Miyata, both of Kariya, and Osamu Hishinuma, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 29, 1983, Ser. No. 480,129

Claims priority, application Japan, Mar. 31, 1982, 57/46277[U]

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—447 **9 Claims**

1. A distributor type fuel injection pump for injecting high-pressure fuel into each combustion chamber of an internal combustion engine, comprising:

a pump housing defining a low-pressure fuel supply chamber therein;

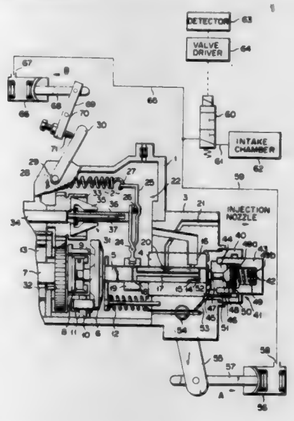
a distribution head coupled to the pump housing and having as many discharge ports as cylinders in the internal combustion engine;

a pump cylinder housed in the distribution head and defining a fuel compression chamber therein;

a plunger fitted into the pump cylinder, so as to be able to reciprocate and rotate in synchronism with the operation of the internal combustion engine and having a distribution groove thereon, said distribution groove being selectively connected to each of the discharge ports and communicating with the fuel compression chamber, whereby the fuel is sucked from the fuel supply chamber into the fuel compression chamber, to be pressurized therein for each stroke of the plunger, and the high-pressure fuel is injected from a specified discharge port into the combustion chamber of the internal combustion engine as the distribution groove is connected to the specified discharge port in accordance with the rotation position of the plunger;

injection quantity adjusting means opening with a given timing a passage connecting the fuel compression chamber and the fuel supply chamber, thereby adjusting the injection quantity of the fuel delivered under pressure from the fuel compression chamber, in accordance with the operating condition of the internal combustion engine;

an accumulator fixed to the distribution head and having therein a communication chamber connected to the fuel supply chamber,



said accumulator including:

cylinder means having a piston and defining therein an accumulation chamber capable of being connected to the fuel compression chamber, and

a spring housed in the communication chamber and urging with a fixed force the piston in the direction to reduce the capacity of the accumulation chamber;

a valve disposed in a passage connecting the fuel compression chamber, the accumulator and the fuel supply chamber so that the accumulator is prevented from operating when the valve is closed; and

compensating means for opening the valve in at least one of the states in which the internal combustion engine is in low-speed rotation and in which said engine is in low-load operation and for compensating the operation of the injection quantity adjusting means so that the fuel injection quantity is increased to a predetermined degree.

4,449,505

INTERNAL COMBUSTION ENGINE

Etsuhiro Tezuka, Hamamatsu; Koichiro Kaji, Iwata, and Toru Ichinose, Fukuroi, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

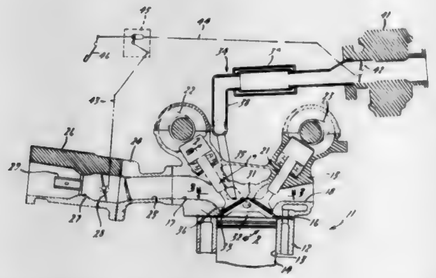
Continuation-in-part of Ser. No. 839,360, Oct. 4, 1977 and Ser. No. 854,260, Nov. 23, 1977, both abandoned. This application Mar. 8, 1978, Ser. No. 884,410

Claims priority, application Japan, Mar. 12, 1977, 52-27429

Int. Cl.³ A02B *15/00;* **F02B** *13/00*

U.S. Cl. 123 **55 Claims**

1. In an internal combustion engine having a variable volume chamber in which combustion occurs and a main intake passage communicating with said chamber through a main intake port for delivering a charge therethrough, the charged delivered to said chamber through said main intake port from said main intake passage being substantially unrestricted, the improvement comprising a sub-intake passage communicating with said combustion chamber through a sub-intake port, said sub-intake passage having an effective cross-sectional area substantially less than the effective cross-sectional area of said main intake passage for causing a given mass flow of charge through said sub-intake port to enter said chamber at a significantly greater velocity, said sub-intake port and said sub-intake passage being oriented so that its discharge is in a different direction than the discharge from said main intake passage and for effecting a swirl of the charge entering said chamber through said sub-intake port of sufficient magnitude to be



maintained during the induction and compression strokes, and valve means for controlling the ratio of the communication of said ports with said chamber during a given cycle operation of said engine, said valve means being effective to cause a substantial portion of the load requirements of the chamber to be supplied through one of said intake passages at a certain running condition so that the flow generated by that passage predominates the flow pattern in said chamber during that running condition and a substantial portion of the charge requirements of the chamber at another running condition to be supplied through the other of said intake passages so that the flow generated by that intake passage predominates the flow pattern in said chamber during that other running condition.

4,449,506

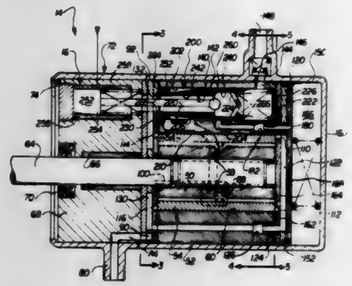
FUEL SUPPLY SYSTEM

Gilbert H. Drutchas, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Nov. 25, 1981, Ser. No. 324,689

Int. Cl.³ F02D *5/02;* **F02M** *51/00*

U.S. Cl. 123—458 **16 Claims**



3. Apparatus for delivering fuel to an engine, said apparatus comprising

a fuel pump driven by the engine,

an outlet conduit means for directing fuel from said pump to the engine,

means for providing an electrical signal indicative of the fuel flow to be delivered from said pump to the engine,

a control valve for controlling the fuel flow through said outlet conduit means to the engine in response to said electrical signal when said means for providing an electrical signal is functioning and in response to changes in pump speed upon failure of said means for providing an electrical signal,

said means for providing an electrical signal comprising a microprocessor, and sensor means for sensing at least one engine operating parameter and providing a signal to said microprocessor, and

said control valve including a valve spool and solenoid means actuated by said electrical signal for moving said valve spool in response to said electrical signal.

4,449,507

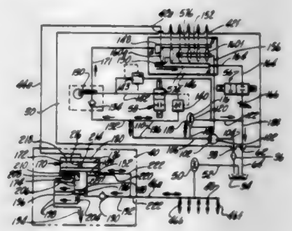
DUAL PRESSURE METERING FOR DISTRIBUTOR PUMPS

Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 17, 1980, Ser. No. 217,312

Int. Cl.³ F02B *3/00;* **F02M** *59/42*

U.S. Cl. 123—467 **27 Claims**



1. A fuel injection system for a diesel engine having an injectof and metering modes of operation for delivering fuel from a fuel reservoir to the cylinders of a engine comprising:

a plurality of fuel injectors wherein each of said fuel injectors comprise:

a housing having a first port (45) adapted to receive fuel at a first determinable pressure level, a second port (47) adapted to receive fuel at a second determinable pressure level and a nozzle (194), and further having metering chamber means (186) connected to said second port, for storing a premetered quantity of fuel, during the metering mode of operation, prior to the injection of said premetered quantity of fuel into the engine during the injection mode of operation;

piston means (170) responsive to the differential fuel pressure applied thereacross having a first pressure receiving surface (176) in fluid communication with said first port and a second pressure receiving surface (188) in fluid communication with said second port for reciprocatively moving within said housing or selectively compressing and for causing said premetered quantity of fuel to exit said metering chamber means and to be injected into said engine, through said nozzle, during the injection mode and for selectively permitting fuel to reenter said metering chamber means during a subsequent metering mode;

manifold means for connecting in fluid communication each of second ports of each of said fuel injector;

pressure regulating means connected between said manifold means and the fuel reservoir for regulating and for supplying fuel at said second determinable pressure to said second inlet port of each of said injectors and for returning to the reservoir excess fuel received from said injectors;

distributor pump means connected to the said first port of each of said fuel injectors and to the fuel reservoir for sequentially pressurizing said first port of a particular fuel

injector at a pressure greater than the pressure established by said pressure regulating means causing said piston to stabilize at the bottom of its stoke and sequentially thereafter lowering said first pressure level to a pressure lower than that of the pressure established by said pressure regulating means thereby causing said piston to move causing said premetered quantity of fuel to enter said metering chamber means of a particular one of said fuel injectors through said second port and for sequentially thereafter increasing said first pressure level thereby causing said piston to pressurize the fuel within said metering chamber means to initiate fuel injection into the engine through said nozzle.

4,449,508

ELECTRICALLY CONTROLLED OR REGULATED FUEL METERING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

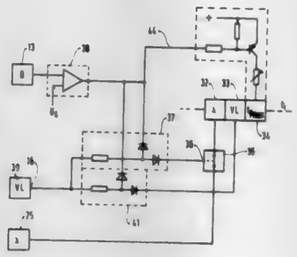
Otto Glöckler, Renningen; Dieter Günther, Murr; Michael Horbelt, Schwieberdingen, and Ulrich Steinbrenner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 416,995

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1981, 3139988

Int. Cl.³ F02B 3/00

U.S. Cl. 123—492 **13 Claims**



1. In an electronically controlled fuel metering system for controlling control variables upon the instance of a full-load condition for an internal combustion engine having one sensor means each for the air flow in an intake tube of said engine and for the position of a throttle valve of said engine, comprising a signal generating means for generating a full-load signal in accordance with a logical linkage of signals from said sensor means for said air flow and said throttle valve position.

4,449,509

GASEOUS FUEL CARBURETION

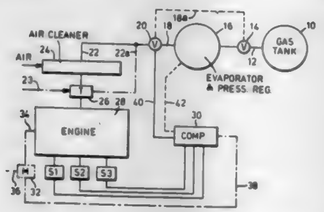
Colin G. Young, Mississauga, Canada, assignor to Emco Wheaton (International) Limited, London, Canada

Filed Apr. 23, 1982, Ser. No. 371,469

Claims priority, application Austria, May 1, 1981, PE8679

Int. Cl.³ F02B 43/00

U.S. Cl. 123—527 **6 Claims**



1. In a gaseous fuel carburetion system in which air and gaseous fuel are mixed prior to induction into an internal combustion engine, and in which the rate of flow of the induction air is controlled by throttling the intake of the air/fuel mixture, and in which gaseous fuel is supplied to the system from a pressurized source, an improved method of regulating the supply of gaseous fuel to the engine comprising the steps of;

(a) sensing the speed of rotation of said engine and generating a first control signal which is a measure of the displaced volume rate of the engine in use,

(b) sensing the pressure in the induction manifold and generating a second control signal which is a measure of the density of the air induced by the engine which varies according to the load applied to the engine,

(c) combining said first and second control signals to generate a third control signal which is measure of the amount of fuel required for optimum combustion of the measured displaced volume rate adjusted to reflect the measured air density such that said third signal varies in response to changes in the induction air flow rate,

(d) controlling the rate of flow of the gaseous fuel from the source to the engine by means of said third control signal whereby the rate of flow of the gaseous fuel varies in response to the sensed changes in the parameters related to the air flow rate.

4,449,510

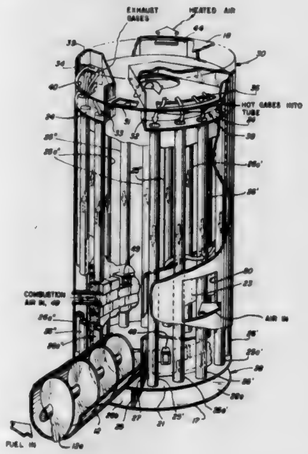
BIOMASS HEAT EXCHANGER FURNACE

Eugene G. Sukup, Dougherty, Iowa

Filed Apr. 14, 1983, Ser. No. 484,981

Int. Cl.³ F24H 3/00

U.S. Cl. 126—99 A **13 Claims**



1. A biomass heat exchanger furnace in combination with biomass fuel receiving means and a biomass fuel conveying means connecting said receiving means with said heat exchanger furnace; said furnace comprising a first housing; a second housing disposed within said first housing and defining a combustion chamber having an inlet in communication with said conveying means and an outlet for combustion gases generated within said combustion chamber; a plenum chamber formed between said first and second housings; a first manifold disposed at one end of said plenum chamber and communicating with said outlet; a second manifold disposed at a second end of said plenum chamber; an inlet formed in said first housing and communicating with said plenum chamber for a gaseous fluid; an outlet formed in said first housing and communicating with said plenum chamber and spaced substantially from said inlet for the gaseous fluid; means for circulating the gaseous fluid through said plenum chamber; means defining a plurality of passageways for the combustion gases disposed within said plenum chamber and interconnecting said first and second manifolds whereby the combustion gases flow successively between said manifolds and are in heat exchange relation with the gaseous fluid circulating through said plenum chamber; vent means formed in said first housing and in communication with said passageways whereby the combustion gases are discharged from the furnace subsequent to having successively flowed through said passageways and said manifolds; and means for causing said combustion gases to flow through said manifolds, passageways and vent means.

4,449,511

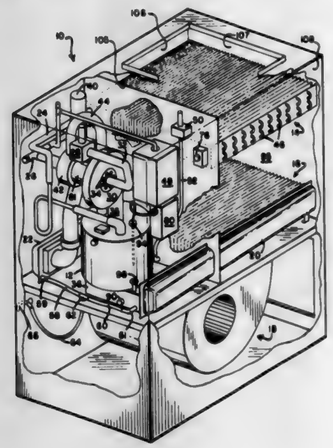
RECUPERATIVE FURNACE

Herbert G. Hays, Amana, and Warren W. Kulpers, Cedar Rapids, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 6, 1983, Ser. No. 456,172

Int. Cl.³ F24H 3/02

U.S. Cl. 126—110 R **8 Claims**



1. A forced air furnace, comprising:

means for combusting fuel;

a first heat exchanger positioned in thermal communication with the heat of combustion of said combusting means, said first heat exchanger transferring heat from said heat of combustion to a fluid;

a second heat exchanger;

means for recirculating said fluid between said first and second heat exchangers;

a third heat exchanger communicating with said combusting means wherein products of combustion from said combusting means are passed through said third heat exchanger;

an air blower having its output coupled to said third heat exchanger for preheating said air from thermal transfer from said products of combustion and from heat of condensation resulting from a portion of said products of combustion condensing within said third heat exchanger; and

said preheated air from said third heat exchanger being coupled to said second heat exchanger for thermal transfer from said fluid.

4,449,512

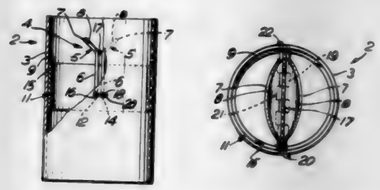
ENERGY EFFICIENT DAMPER FOR A FURNACE

Alfred Hebert, Skidmore Rd., Pleasant Valley, N.Y. 12569

Filed Jan. 26, 1982, Ser. No. 342,817

Int. Cl.³ F23L 3/00

U.S. Cl. 126—292 **3 Claims**



1. A damper for sealing and unsealing a vertical furnace exhaust flue pipe to minimize the escape of heat when the furnace is not operating, said damper comprising a cylindrical body adapted to form a section of vertical flue pipe having inner and outer walls, said cylindrical body having a top opening and a bottom opening, at least one transverse hinge rod horizontally transversing said body carried by opposed apertures in opposing wall portions of the body, an annular rim mounted on the inner wall of the body, a pair of oppositely extending gull-wing shaped damper shutters pivotably mounted on said hinge rod, each of said pair of gull-wing shaped damper shutters having a lower section and an outer upper section, said outer upper section further including upper and lower surfaces, and outer and lower edges, and in the closed condition the lower sections of the shutters extending upwardly and outwardly at approximately a 45° angle and the outer upper sections of the shutters extending horizontally to slightly spaced from the inner wall of the damper section, the lower edges of the outer upper sections engaging said annular rim so as to prevent the lower edges from becoming wedged against the inner wall of the damper section, said gull-wing shaped damper shutters opening to a vertical position when said furnace is operating and closing by gravity when said furnace is not operating.

4,449,513

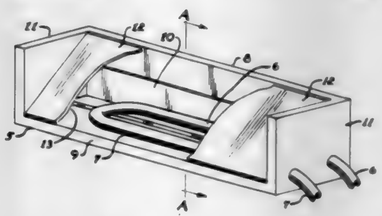
SOLAR HEATER

George Lover, 4773 Beach Ridge Rd., Lockport, N.Y. 14094

Filed Aug. 2, 1983, Ser. No. 519,681

Int. Cl.³ F24J 3/02

U.S. Cl. 126—416 **20 Claims**



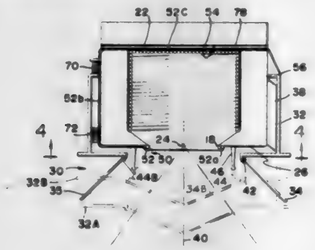
1. A solar heater for swimming pool water comprising a heat exchange housing, water inlet means, and water outlet means, said housing elements comprising insulated end portions, an insulating back portion, an insulating base portion, and a diagonally disposed glass facing, said elements forming an elongated triangular structure, positioned within said housing is sheet metal plate in contact with said back portion and said base portion, positioned on and in heat contact with said metal plate is at least one of said water inlet and outlet means, said water outlet means continuous with said inlet means and adapted to permit water flow into it from said inlet means.

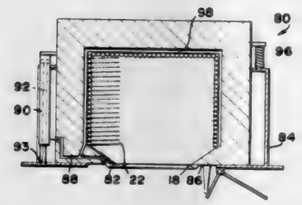
4,449,514

SOLAR CONCENTRATOR PROTECTIVE SYSTEM

M. Kudret Selcuk, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 25, 1982, Ser. No. 392,103
Int. Cl.³ F24J 3/02
U.S. Cl. 126—418 8 Claims





1. In a solar concentrator system which includes a solar radiation receiver with an opening and a concentrator which concentrates solar radiation onto said receiver opening, the improvement of a protective system for blocking solar radiation comprising:

a shutter mechanism including at least one shutter, said mechanism moveable between open and closed configurations; and

means for storing said shutter mechanism near said receiver and in an open configuration to avoid blocking the receiver opening, and for moving said shutter mechanism toward said concentrator to a second position spaced from said receiver opening by at least about the width of said receiver opening, as measured along an imaginary centerline that connects the middle of said concentrator and said receiver opening, and closing said shutter mechanism and holding it closed at said second position, whereby to reduce the concentration of solar radiation on the shutter in the closed configuration.

2. In a solar concentrator system which includes a solar radiation receiver with an opening and a concentrator which concentrates solar radiation onto said receiver opening, the improvement of a protective system for blocking solar radiation comprising:

a shutter mechanism releaseable to move from an open configuration to a closed configuration; and

means for releasing said shutter mechanism including a wire having a fuse portion extending around the receiver opening so the fuse portion can be broken by concentrated sunlight falling thereon, and means responsive to breaking of said fuse portion for releasing said shutter mechanism to move to said closed configuration.

6. In a solar concentrator system which includes a solar radiation receiver with an opening and a concentrator which concentrates solar radiation onto said receiver opening, the improvement of a protective system for blocking solar radiation comprising:

a shutter mechanism including at least one shutter, said mechanism moveable between open and closed configurations; and

means for storing said shutter mechanism near said receiver and in an open configuration to avoid blocking the receiver opening, and for moving said shutter mechanism toward said concentrator to a second position and closing said shutter mechanism and holding it closed at said second position;

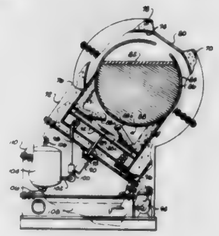
said shutter mechanism includes a shutter frame moveable toward said concentrator and a plurality of shutter elements pivotally mounted on said frame to pivot between open and closed positions, each element including a cam follower, said shutter mechanism also including a plurality of cams mounted on said receiver and positioned to pivot said cam followers to close said shutter elements as said frame moves toward said concentrator.

4,449,515

APPARATUS FOR COLLECTING, INTENSIFYING AND STORING SOLAR ENERGY

Jack E. Nilsson, Sr., Easley, S.C., assignor to Seige Corporation, Greenville, S.C.

Continuation-in-part of Ser. No. 57,733, Jul. 16, 1979, Pat. No. 4,280,482.
PCT No. PCT/US81/00293, § 371 Date Jul. 9, 1982, § 102(e) Date Jul. 9, 1982
This PCT application filed Mar. 9, 1982, Ser. No. 425,071
Int. Cl.³ F24J 3/02
U.S. Cl. 126—430 7 Claims



1. An apparatus for collecting, intensifying or sustaining, and storing solar energy comprising:

a hollow vessel having an interior wall;

a window provided in said wall of said vessel for allowing concentrated rays from the sun to enter into the interior of said vessel;

a solar collector carried adjacent the center of said vessel spaced from the interior walls of said vessel, said solar collector including;

(i) a container,

(ii) a substantially black fluid heat absorbing surface positioned for being contacted by said rays passing through said window,

(iii) heat absorbing means carried in said container supporting said substantially black fluid heat absorbing surface for absorbing and storing thermal energy from said heat absorbing surface and for heating said container causing radiant energy to be emitted from said container, and

(iv) said heat absorbing means being metal that goes from a solid state to a liquid state upon absorbing thermal energy from said substantially black heat absorbing surface, and

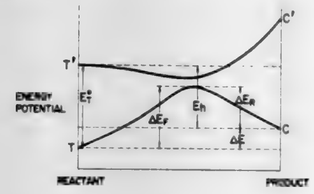
a polished reflective surface carried on an interior wall of said vessel for reflecting radiant energy back to said container intensifying the temperature of said heat absorbing means.

4,449,516

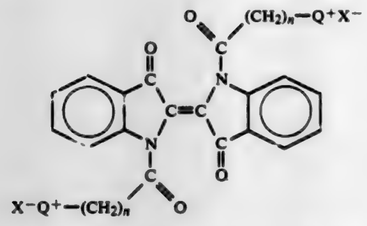
SUNLIGHT-ENERGY-STORING METHOD

Teijiro Kitao, Tondabayashi; Jun-ichiro Setsune, Sakai; Shoichi Ishihara, Katano, and Ryoichi Yamamoto, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 25, 1983, Ser. No. 460,897
Claims priority, application Japan, Jan. 29, 1982, 57-13910
Int. Cl.³ F24J 3/02
U.S. Cl. 126—430 7 Claims



1. A method for storing sunlight energy, which comprises exposing an indigo derivative whose trans-isomer has the stuctural formula:



wherein n is zero or an integer of 1 or larger; X^- is a monovalent anion; and Q is a nitrogen-containing heterocyclic ring system comprising at least one member selected from the group consisting of a pyridyl group, a pyridazinyl group, a pyrimidinyl group, a pyrazinyl group, an N-alkylimidazolyl group, an N-alkylpyrazolyl group, an oxazolyl group, an isoxazolyl group, a thiazolyl group, an isothiazolyl group, a quinolyl group, an isoquinolyl group, a cinnolinyl group, a quinoxalinyl group an N-alkylbenzimidazolyl group, a benzoxazolyl group, a benzisoxazolyl group, a benzthiazolyl group, a benzisothiazolyl group, an N-alkylindazolyl group, an α-naphthoquinolyl group, a β-naphthoquinolyl group, an acridinyl group, a naphthyridinyl group, a phenazinyl group, a purinyl group, a phenanthrolinyl group, a 4,4-bipyridyl group, a 2,2-bipyridyl group and derivatives of the above-mentioned groups to sunlight in order to convert the trans-isomer into the cis-isomer, thus storing the aforesaid sunlight energy, and liberating the aforesaid collected energy as heat by the addition of a catalyst and/or a heat trigger.

4,449,517

SOLAR HEAT PLANT

Tatsuo Tani; Sinji Sawata; Tadayoshi Tanaka; Koichi Sakuta, all of Ibaraki; Yasunobu Nakamoto, Yokohama; Hideshi Sekiya; Masanobu Morita, both of Tokyo, and Norio Yamagata, Tomakomai, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

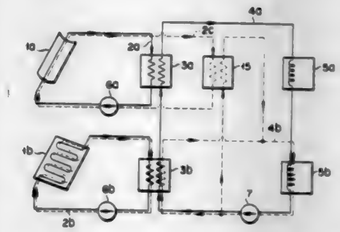
Filed Mar. 5, 1982, Ser. No. 355,093
Claims priority, application Japan, Mar. 13, 1981, 56-35392
Int. Cl.³ F24J 3/02
U.S. Cl. 126—435 10 Claims

1. A solar heat plant comprising:

a first system including a first heat collector for changing solar energy to high temperature heat energy under usual sunshine and to low temperature heat energy under poor sunshine to supply said heat energy to a first medium;

a first heat load which works under usual sunshine using said heat energy supplied to the first medium;

a second system including a second heat collector for changing solar energy to low temperature heat energy under



usual or poor sunshine to supply said heat energy to a second medium; and

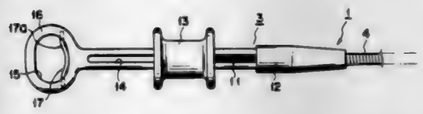
a second heat load which works under usual sunshine using said heat energy supplied to the second medium and also works under poor sunshine using said heat energies supplied to the first and second media.

4,449,518

DISINFECTION INDICATOR FOR MEDICAL EQUIPMENT

Yutaka Konomura, and Yasuhiko Omagari, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1982, Ser. No. 364,972
Claims priority, application Japan, Apr. 13, 1981, 56-55407; Apr. 13, 1981, 56-55408; Apr. 13, 1981, 56-55409; Apr. 13, 1981, 56-55410; Apr. 13, 1981, 56-55411
Int. Cl.³ A61B 17/00; G01L 5/00; G01K 1/02
U.S. Cl. 128—4 10 Claims



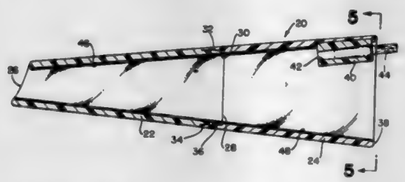
1. A disinfection indicator mounted on medical equipment which is repeatedly used after thermal sterilization, comprising a deformable portion made of a shape memory alloy having a one-way shape memory effect, which is deformable plastically by an external force exerted as a result of use of the medical equipment, from a shape indicating disinfection of the medical equipment to an initial deformed shape which it has when the medical equipment is in use, said deformable portion being modified from the initial deformed shape to the shape indicating disinfection of the medical equipment when the medical equipment is heated to a temperature higher than a predetermined temperature, whereby it can be determined whether or not the medical equipment has been used by the shape of the deformable portion.

4,449,519

ENDOSCOPE

Robert J. Sarrine, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 190,528, Sep. 24, 1980, Pat. No. 4,350,147. This application May 17, 1982, Ser. No. 378,468
The portion of the term of this patent subsequent to Sep. 21, 1999, has been disclaimed.
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **6 Claims**



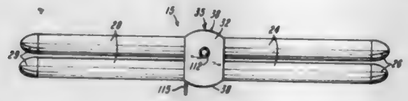
1. An endoscope (20) comprising means defining a hollow, conical cylinder divided into multiple sections (22), (24), each section being detachably connected to (30), (32)–(36) adjacent sections whereby said means provides endoscopes of various lengths and of different size openings (26), (34) for use in engaging a presenting part (16) at different stages in the birth process.

4,449,520

PENILE PROSTHESIS DEVICE

Juan M. Palomar, 10 Southmoor Cir., NW., Kettering, Ohio 45429, and Gary M. Bird, 510 Glenn Ave., New Carlisle, Ohio 45344

Filed Sep. 2, 1982, Ser. No. 414,568
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **6 Claims**



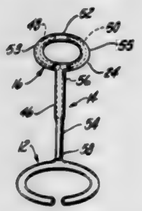
1. A penile prosthesis device adapted to be implanted in the right and left corpora cavernosa to provide for a mechanical erection, said device comprising a pump unit adapted to be implanted at the base of the penis transecting the medial corporal septum, said pump unit having a forward end and a rearward end, a pair of separate erecting tubes of flexible material and extending from said forward end of said pump unit, a pair of separate reservoir tubes of flexible material and extending from said rearward end of said pump unit, said erecting and reservoir tubes being adapted to receive a noncompressible liquid, said pump unit including a valve body defining a first set of passages connected to both of said reservoir tubes and a second set of passages connected to both of said erecting tubes, said pump unit defining an inlet passage extending from said first set of passages and adapted to be connected to an auxiliary liquid supply container located within the scrotum, a set of one way valves located within said first and second sets of passages, laterally actuating pump means effective to pump liquid from said reservoir tubes and said inlet passage through said first set of passages to said second set of passages and said erecting tubes for pressurizing said erecting tubes in response to the application of squeezing pressure laterally to opposite sides of the penis at the base, a return passage connecting said first and second sets of passages, and said pump unit including a pressure release valve within said return passage and effective to release the pressure of the liquid within both said erecting tubes for return of the liquid to both said reservoir tubes through said first and second set of passages.

4,449,521

SEXUAL AID

Jack S. Panzer, 12930 Denmark, Detroit, Mich. 48217

Continuation-in-part of Ser. No. 300,301, Sep. 11, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,996
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **7 Claims**



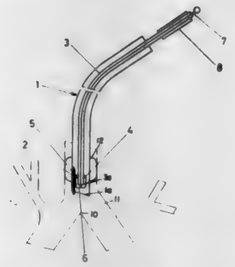
1. A sexual aid for use by a human male comprising:
a base collar;
a support collar comprising an arcuate member having two free ends spaced apart from one another and a flexible tube attachable to said two free ends and forming a complete ring whereby said support collar is adjustable to accomodate penises of varying thicknesses and said flexible tube expands upon expansion of the penis;
an adjustably fixable support column means interposed between said base collar and said support collar for maintaining said base collar and said support collar in a fixed position relative to one another; and
an elastically extendable means surrounding said support column.

4,449,522

POSITIONING DEVICE FOR USE WITH A TRACHEAL TUBE WHICH IS INSERTABLE INTO A PERSON'S TRACHEA FOR RESPIRATION PURPOSES

Marcel Baum, Vienna, Austria, assignor to Drägerwerk A.G., Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 376,156
Claims priority, application Fed. Rep. of Germany, May 19, 1981, 3119854
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—200.26 **6 Claims**



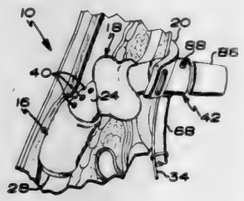
1. A positioning device for use with a tracheal tube which is insertable into a person's trachea particularly one of the type having a respirator gas jet discharge which must be positioned relative to a carina of the trachea, comprising an elastic measuring probe adapted to be inserted into the tracheal tube and having a distal end which is adapted to be pushed out of an end of the tracheal tube when the tracheal tube is in the trachea, a carina engaging stop end portion foldably mounted on said distal end of said probe and adapted to be brought into contact with the carina, said measuring probe having an opposite end adapted to extend out of the tube and the person's trachea, said opposite end including means for manipulating said stop end portion so that said distal end can be accurately engaged on the carina, said probe having a length greater than said tracheal tube and at least as great as the length of the trachea from the person's mouth to the carina, said carina engaging stop portion comprising a pair of foldable and unfoldable substantially straight arms, and said manipulating means comprising a connecting member engaged with said arms, extending through said elastic probe and being manipulatable from the outside of the probe at the opposite end thereof to unfold said foldable and unfoldable sections, said foldable arms forming an inverted V-shaped crown for engaging the carina when they are unfolded and being disposed back against said measuring probe when they are folded, and a measuring sleeve mounted on said measuring probe at said opposite end for indicating an amount of projection of said distal end of said probe from the end of the tracheal tube.

4,449,523

TALKING TRACHEOSTOMY TUBE

Edward H. Szachowicz, St. Louis Park, and John Walsh, LaCrescent, both of Minn., assignors to Implant Technologies, Inc., Edina, Minn.

Filed Sep. 13, 1982, Ser. No. 417,727
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—200.26 **13 Claims**



1. In a tracheostomy tube for insertion through an incision in the neck of a patient and into the trachea to support breathing including a cannula having a first end for placement within the trachea for directing air or oxygen towards the lungs of the patient and a second end located outside of the trachea and the neck of the patient for receiving air or oxygen, and first means for sealing between the cannula and the trachea for substantially preventing air or oxygen from escaping from the first end of the cannula upward in the trachea towards the larynx, with the improvement comprising means for allowing the patient utilizing a tracheostomy tube to phonate comprising, in combination: second means for introducing air or oxygen above the first sealing means in the trachea for movement towards the larynx of the patient; and third means comprising an annular member positioned on said cannula such as to be located within the annular space between the cannula and the stoma of the patient for sealing between the cannula and the stoma of the patient for preventing the air or oxygen introduced by the second means from escaping through the stoma in the neck of the patient around the cannula of the tracheostomy tube.

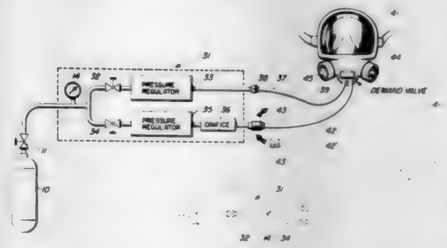
4,449,524

SELF-CONTAINED BREATHING APPARATUS WITH PROVISION FOR SHARED USE

Robert E. Gray, Clearwater, Fla., assignor to Litton Systems, Inc., Frederica, Del.

Filed Mar. 15, 1982, Ser. No. 358,504
Int. Cl.³ A62B *7/04*
U.S. Cl. 128—202.27 **3 Claims**

1. A self-contained breathing apparatus comprising, an air tank containing a supply of highly compressed air and adapted for carriage on the person of a user of the system;
a modular housing containing
(1) a main shut-off valve,
(2) a main pressure regulator,
(3) a bypass shut-off valve and
(4) a bypass pressure regulator;
an air tank hose connecting said air tank to said housing for supplying high pressure air thereto,
said housing including first conduit means for supplying air received from said tank hose to the inlets of said main and said bypass shut-off valves, second conduit means connecting the outlet of said main shut-off valve with the inlet of said main pressure regulator, third conduit means connecting the outlet of said bypass shut-off valve with the inlet of said bypass pressure regulator, a main supply outlet fitting, a bypass supply outlet fitting, fourth conduit means connecting the outlet of said main pressure regulator with said main supply outlet fitting and fifth conduit means connecting the outlet of said bypass pressure regulator with said bypass supply outlet fitting,
said main and said bypass shut-off valves respectively controlling the flow of air from said tank to the inlets of said



main and said bypass pressure regulators, said main and said bypass pressure regulators respectively regulating the high pressure of air received from said main and bypass shut-off valves to a first substantially constant moderate pressure and to a second substantially constant pressure substantially below said first moderate pressure, said modular housing being adapted for carriage on the body of a user of the system;
a face mask;
a demand valve mounted on said face mask, said demand valve controlling the pressure and flow of air released therefrom in accordance with the requirements of a user of the system;
a main supply hose connecting said main supply outlet fitting with the inlet of said demand valve; and
a bypass supply hose for connecting bypass supply outlet fitting with the interior of said face mask;
said bypass supply outlet being of the manually operable, quick connect/disconnect type.

4,449,525

PULMONARY RESUSCITATOR

Daniel S. White, Rte. 1, Box 25A, Sunrise Beach, Mo. 65079, and Jerald L. Nave, P.O. Box 414, Oak Grove, Mo. 64110

Filed Feb. 8, 1981, Ser. No. 232,652
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—203.11 **12 Claims**

1. A pulmonary resuscitator for use by a single rescuer administering artificial respiration to a patient while simultaneously administering an external cardiac massage to the patient including:
(a) an elongate air tube means having a first end and a second end and defining an airflow passage therethrough between said ends;
(b) a mouthpiece attached to said first end of said air tube means adapted to communicate with the mouth of the rescuer;
(c) patient air flow means attached to said second end of said air tube means, said air flow means providing communica-

tion between the lungs of the patient and said air tube means and including securing means to hold said air flow means to said patient so as to free the hands of a rescuer;

(d) bipositional valve means positioned within said air tube means intermediate said first and second ends and near said second end, said valve means including:

(1) a valve body having an inner chamber therein, said chamber communicating through said air tube means with said patient air flow means;

(2) a passageway interconnecting said chamber with said air tube means and said mouthpiece and defining an opening leading into said chamber;

(3) an exhaust port through said valve body and communicating said chamber with ambient air surrounding said valve body;

(4) a butterfly flap positioned within said valve body and including an outer surface and an inner surface; said flap being alternatively positionable between a first position, wherein said flap outer surface sealably abuts against said passageway opening and blocks air flow from said chamber to said passageway such that air exhaled from said patient is directed through said exhaust port and prevented from passing through said valve body passageway to said rescuer, and a second position, wherein said flap inner surface sealably abuts against said exhaust port such that air exhaled by said rescuer passes through said chamber of said air tube means to the lungs of said patient and is prevented from exiting said exhaust port;



(5) hinge means connecting said flap to said valve body and maintaining said flap within the air flow stream passing through said valve body such that reciprocal breathing motivates said flap to rotate between said first and second positions; and

(6) positional means for maintaining said flap within the air flow stream passing through said valve body such that a directional change in the air flow stream motivates said flap to rotate from one of said flap positions to the other of said flap position; and

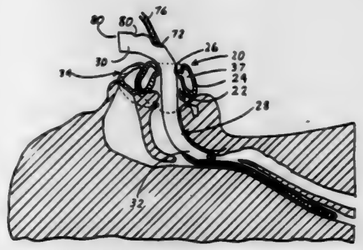
(e) a compressed oxygen tap adapted to be connected to a compressed oxygen source and communicating freely and without restriction with said air flow passage of said air tube means to provide continuous flow from said compressed oxygen source to said airflow passage; said tap being located near said valve means and said tube means being valveless between said tap and said mouthpiece so as to allow continuous filling of said tube means through said tap; said air tube means providing a reservoir for said oxygen between said mouthpiece and said tap; and said air tube means providing substantially unrestricted and free flow of said oxygen between said mouthpiece and said tap.

4,449,526

MASK BREATHING SYSTEM

James O. Elam, 1822 Canelo St., Dallas, Tex. 75323

Filed Nov. 27, 1981, Ser. No. 325,259
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—206.21 43 Claims



21. A mouth mask, comprising:

a unitary member having an inner wall portion, said inner wall portion being adapted to seal about the lips of a patient by resting on the perioral area overlying the maxilla and mandible, said unitary member including an outer wall portion spaced outwardly of said inner wall portion;

an opening extending through said inner and outer wall portions of said unitary member;

said inner wall portion and said outer wall portion connected to each other along their peripheral edges and the edges of said opening; and

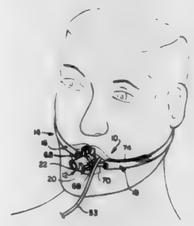
a tube adapted to be inserted through said opening in said unitary member for the purpose of ventilating and managing the upper airway of said patient, said tube being a generally S-shaped airway having a proximal end adapted to be disposed externally of said patient and a distal end adapted to be disposed internally of said patient in the region of the lower pharynx, said generally S-shaped airway having a generally straight intermediate portion with oppositely curved proximal and distal end portions, said generally S-shaped airway having a hole in said curved proximal end portion and a hole in said curved distal end portion, said holes being substantially aligned with said straight intermediate portion, and including a sump tube adapted to be passed through said holes for guided insertion into the esophagus of said patient.

4,449,527

ENDOTRACHEAL TUBE HOLDER

Deborah L. Hinton, 225 Virginia Dr., Hueytown, Ala. 35023

Filed Oct. 21, 1981, Ser. No. 313,623
Int. Cl.³ A61M *25/02*
U.S. Cl. 128—207.17 18 Claims



1. An endotracheal tube holder for securing an endotracheal tube within a patient's mouth comprising:

(a) a clamping means of variable diameter for permitting the securement of any one of a plurality of endotracheal tubes of different diameter in a patient's mouth without rotation of the tube with respect to said clamping means, said clamping means having a cylindrical section with an axis of rotation, an interior surface which is variable in diameter for securement to any one of said endotracheal tubes of different diameter, an exterior cylindrical surface whereby the thickness of the clamping means is minimized, a cut in said cylindrical section extending generally axially with respect to said axis of rotation of said cylindrical section to form first and second ends which may be displaced circumferentially from each other with respect to said axis of rotation of said cylindrical section and means for adjusting the circumferential displacement of the first and second ends from each other to permit clamping of said endotracheal tubes which range in diameter and first and second attachment means which are respectively attached to opposed sections of the exterior cylindrical surface for permitting securement of a strap to said exterior cylindrical surface of said cylindrical section, and

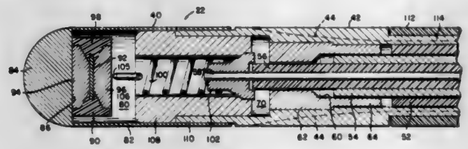
(b) a strap having at least first and second ends, the first and second ends each respectively having first and second end attachment means which are respectively attachable to and detachable from the first and second attachment means, the width of the first and second end attachment means of the first and second ends in proximity to the patient's mouth being equal to or less than the outside diameter of the cylindrical section so as to not occlude access to and visualization of the patient's mouth.

4,449,528

FAST PULSE THERMAL CAUTERY PROBE AND METHOD

David C. Auth, Bellevue; Dale M. Lawrence, Lynnwood, and Tim R. Majoch, Tacoma, all of Wash., assignors to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 131,897, Mar. 20, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 285,366
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 30 Claims



1. An apparatus for heating tissue without causing deep tissue damage, comprising:

an electrically powered thermal probe having a heating element and an active heat-transfer portion which is in direct thermal contact with said heating element so that heat is transferred to said heat-transfer portion principally by conduction, said heat-transfer portion having a unit heat capacity of less than 1 joule/°C. to allow said probe to cool from a temperature sufficiently high to coagulate within a sufficiently short period to prevent excessive heat penetration; and

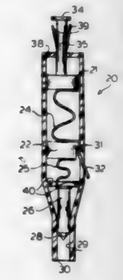
power-generating means connected to the heating element of said probe applying an electric current pulse to said heating element during a heating cycle having sufficient energy to allow said probe to coagulate tissue during said heating cycle.

4,449,529

AUTOMATIC RETRACTABLE LANCET ASSEMBLY

James A. Burns, Elizabeth, and Edward L. Nugent, N. Caldwell, both of N.J., assignors to Becton Dickinson and Company, Paramus, N.J.

Filed Nov. 18, 1981, Ser. No. 322,345
Int. Cl.³ A61B *17/34*
U.S. Cl. 128—314 13 Claims



1. A throw-away single use automatically retractable lancet assembly, comprising

(a) a housing:

(b) an aperture positioned in one end of said housing;

(c) a lancet in said housing adjacent said aperture, said lancet mounted for reciprocable movement through said aperture;

the improvement characterized by

(d) lancet actuating means mounted in said housing in the end thereof opposite said aperture;

(e) a first spring mounted in said housing and positioned between said lancet actuating means and said lancet;

(f) said first spring being movable from a first compressed position to a second relaxed position upon release to cause movement of said lancet outward through said aperture for penetration of the skin of a patient;

(g) means for dissociating said first spring in said second position from further movement of said lancet;

(h) said lancet actuating means movable through said housing end from a first non-charge position to a second charge position for moving said first spring from a relaxed state to a compressed state;

(i) release means in said housing for retaining said first spring in said first position and for the release of said first spring to cause the said movement thereof from said first position to said second position for causing outward movement of said lancet through said aperture;

(j) a second spring positioned between and connecting said first spring and said lancet;

(k) said second spring being movable from a first relaxed position maintained at both the non-charged and charged position of said actuating means with said lancet withdrawn from said aperture;

(l) to a momentarily extended condition momentarily thrusting said lancet through said aperture back to a relaxed position with the lancet withdrawn from the aperture.

4,449,530

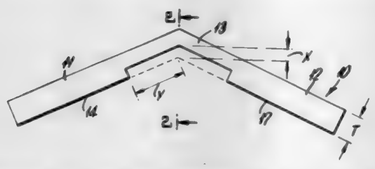
HEMOSTATIC CLIPS AND METHOD OF MANUFACTURE

Lee P. Bendel, Lebanon, and Timothy Sardelis, Somerset, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 15, 1981, Ser. No. 283,692
Int. Cl.³ A61B *17/12, 17/00*
U.S. Cl. 128—325 6 Claims

1. A metal hemostatic clip comprising a pair of leg members connected at their proximal ends by a thinned hinge area, said hinge area being at least from 8% to 30% thinner than the thickness of a leg member and said thinned area being slightly

wider than and extending a distance along each leg member from the proximal end thereof towards the distal end thereof a distance of from ¼ to 3 times the thickness of a leg member, said



distance being such that whereby on closing of the clip, the clip bends in the thinned area and when the clip is closed there is substantially no gap between the leg members.

4,449,531

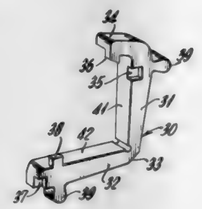
NON-METALLIC, BIO-COMPATIBLE HEMOSTATIC CLIPS WITH INTERLOCKING LATCH MEANS

Robert J. Cerwin, Pittstown, N.J.; Madhusudan Joshi, E. Aurora, N.Y.; John R. Menges, Woodbridge, N.J.; Robert W. Mericle, Lebanon, N.J., and William J. Zwaskis, Carteret, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Aug. 27, 1981, Ser. No. 296,672

Int. Cl.³ A61B *17/12, 17/00*

U.S. Cl. 128—325 **5 Claims**



1. A sterile hemostatic clip for application to a blood vessel and the like by utilizing a clip applying instrument, said clip comprising first and second leg members, each member having first and second sides joined by an outer surface and an elongated vessel clamping inner face in opposition to a vessel clamping inner face of the other leg member, said leg members being connected at their proximal ends by a resilient hinge means, said first leg member terminating at its distal end in a return bend hook portion, said second leg member terminating at its distal end in a complementary latch means for engagement by said hook portion of said first leg member, the hook portion of the distal end of said first leg member including a protrusion which is engagable in a recess in the distal end of said second leg member when said clip is in a closed position and said second leg member including a protrusion adjacent the distal end thereof which is engagable in a recess adjacent the distal end of said first leg member; said clip having each of said protrusions in each of said recesses contiguous with the same side of said first and second sides so that when said clip is in the closed position, with engagement between respective protrusions and recesses, lateral movement between said vessel clamping inner face is prevented.

4,449,532

DILATOR TO FACILITATE ENDOSCOPE INSERTION INTO THE BODY

Karl Storz, Auf dem Schildrain 39, 7200 Tuttlingen, Fed. Rep. of Germany

Filed Jun. 30, 1981, Ser. No. 280,057

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025785

Int. Cl.³ A61M *29/00*

U.S. Cl. 128—341 **8 Claims**



1. A dilator for opening a path in the human body for the subsequent introduction of an endoscope shaft, said dilator having a distal end to enter the body, and a proximal end, comprising: a probe comprising a stiff rod and a ball on the end of said rod; and a plurality of expansion tubes adapted sequentially to enlarge a path formed by the introduction of the probe, ball first, into the body, each said tube having an inside and an outside diameter, the outside diameter of one tube being substantially equal to the inside diameter of the next larger tube, whereby to permit a close sliding axial telescopic fit, said rod being within and extending beyond said expansion tubes whereby the path opened by the ball can be incrementally opened by pressing next sequential tubes toward said ball.

4,449,533

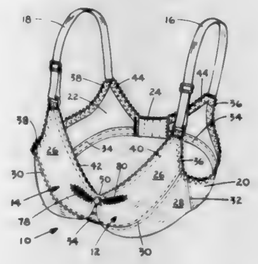
BRASSIERE

Flavia DiTullio, New York, N.Y., assignor to Consolidated Foods Corporation, Winston-Salem, N.C.

Filed Jul. 12, 1982, Ser. No. 397,365

Int. Cl.³ A41C *3/00*

U.S. Cl. 128—494 **7 Claims**



1. A brassiere comprising a pair of breast cups, a pair of back bands connected respectively to the outer edges of the breast cups, means for releasably connecting the free ends of said back bands, shoulder strap means attached to said breast cups and to said back bands for positioning over the shoulders of a wearer, each cup including upper and lower panels of selected configurations joined together to impart a desired shape to the cups, a member secured to the upper panels of said pair of breast cups, and ring-like means intermediate said pair of cups, and attached to said upper cup panels for coupling first inner peripheral edges of said upper panel of each of said pair of cups, said member and said ring-like means being in spaced relation.

4,449,534

LIQUID-FLOW MEASURING DEVICES, PARTICULARLY USEFUL FOR DRIP CHAMBERS

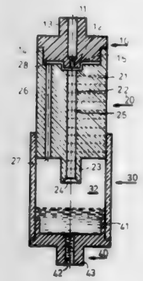
Leibinsohn Saul, 11 Oleh Hagardom St., Rishon Lezion, Israel

Filed Apr. 14, 1981, Ser. No. 253,801

Claims priority, application Israel, Apr. 16, 1980, 59850; Mar. 10, 1981, 62337

Int. Cl.³ A61M *5/16*

U.S. Cl. 604—51 **11 Claims**



1. A liquid-flow measuring device particularly useful as a drip chamber for infusion administration sets and including a housing having an internal chamber for accumulating the liquid dripping thereinto by gravity introduced via an inlet port at one end, and for feeding the liquid therefrom via an outlet port at the opposite end; characterized in that said inlet port terminates in a first bore leading to a second bore at a juncture between the two bores, the housing further including an air passage leading to said juncture of the first and second bores, such that the liquid flowing through said first bore forms a liquid column in said second bore which liquid column grows downwardly by gravity and breaks away into said chamber before forming a drop at the bottom of said second bore, the length and/or rate said liquid columns grow before breaking away into the chamber thereby providing a measurement of the rate of flow of the liquid through said device.

4,449,535

APPARATUS FOR MEASURING IN SITU THE STATE OF OXIDATION-REDUCTION OF A LIVING ORGAN

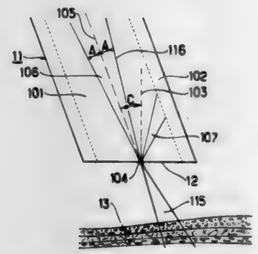
Guy Renault, Paris, France, assignor to Compagnie Industrielle des Lasers Cilas Alcatel, Marcoussis, France

Filed Mar. 25, 1982, Ser. No. 362,012

Claims priority, application France, Mar. 25, 1981, 81 05948; Feb. 12, 1982, 82 02323

Int. Cl.³ A61B *5/00, 6/08*

U.S. Cl. 128—634 **13 Claims**



1. In an apparatus for measuring the oxidation-reduction state of a living organ in situ, said apparatus having:

means for illuminating the organ with ultra-violet radiation and with radiation at another wavelength;

a first photoelectric receiver means for detecting the intensity of fluorescence emitted by the organ in response to illumination by the ultra-violet radiation; and issuing an electric signal corresponding to the intensity of fluorescence and

a second photoelectric receiver means for detecting the intensity of beam reflected by the organ in response to illumination by said radiation at another wavelength; and issuing an electric signal corresponding to the intensity of said reflected beam and

wherein the means for illuminating the organ include:

a first laser generator adapted to limit pulses of ultra-violet radiation;

a second laser generator adapted to emit pulses of radiation at said other wavelength;

means for concentrating said pulses of both wavelengths onto a single point; and

a single optical fibre having a core with a transmission axis, a cladding surrounding said core which has a lower refractive index than said core said fiber further having a first end adapted to be disposed in said organ and a second end disposed at said single point so as to:

convey said pulses in one direction from the second end to the first end for illuminating said organ; and

convey in the opposite direction firstly the fluorescence emitted by the organ in response to illumination by the ultra-violet pulses and secondly part of the other radiation reflected by the organ in response to illumination by the pulses at said other wavelength and processor means for calculating the oxygen-reduction state of the organ from the signals from said first and second photoelectric receivers, the improvement wherein;

the first and second ends of the fibre have a first plane end surface and a second plane end surface respectively, said first plane surface having a normal forming an angle with the transmission axis that is greater than the limit angle of the fibre.

4,449,536

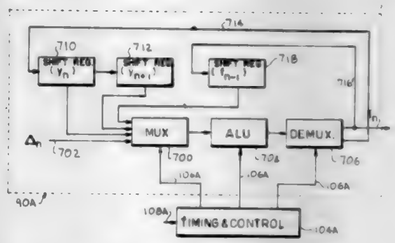
METHOD AND APPARATUS FOR DIGITAL DATA COMPRESSION

Charles S. Weaver, Palo Alto, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Oct. 31, 1980, Ser. No. 202,457

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—696 **26 Claims**



1. In a system for processing a plurality of simultaneously occuring analog signals, which system includes,

a plurality of analog to digital converter means responsive to individual analog signals for converting the same to fixed length digital sample signals,

a plurality of digital compression filter means individually responsive to outputs from said analog to digital converter means for generating a plurality of difference signals related to the difference between the sample signal input thereto and an estimated value thereof,

digital encoder means, and

digital signal multiplexer means for sequentially connecting said difference signals from said digital compression filter means to said digital encoder means for sequentially en-

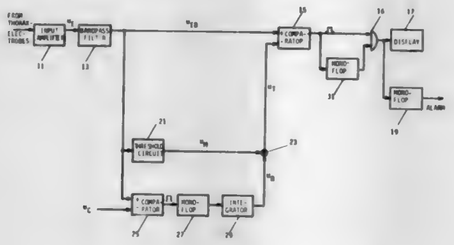
coding said difference signals and providing a serial stream of digital encoded difference signals.

4,449,537

RESPIRATION MONITOR

Gerhard Pross, Weil im Schönbuch, and Frank Rochlitzer, Altdorf, both of Fed. Rep. of Germany, assignors to Hewlett-Packard GmbH, Boblingen, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,961
Int. Cl.³ A61B 5/05
U.S. Cl. 128—723 **9 Claims**



1. Apparatus for monitoring the respiration activity of a patient and for suppressing disturbing and spurious signals comprising:

respiration detector means connectable to a patient for providing a variable respiration signal corresponding to the patient's respiration activity;

first threshold circuit means coupled to said respiration detector means for producing an amplitude threshold decreasing at most to a given minimum value in response to a decreasing amplitude of said variable respiration signal;

first comparator means coupled to receive said variable respiration signal and a fixed amplitude threshold for suppressing said variable respiration signal below said fixed amplitude threshold;

second threshold circuit means receiving the output of said first comparator means and coupled to raise said amplitude threshold if the frequency of said variable respiration signal decreases below a predetermined frequency limit; and

second comparator means coupled to said respiration detector means and said first and second threshold circuit means for producing a valid respiration indication in response to said variable respiration signal only if said variable respiration signal exceeds said amplitude threshold produced, in combination, by said first and second threshold circuit means.

4,449,538

MEDICAL-ELECTRONIC BODY FLUID ACCOUNTING SYSTEM

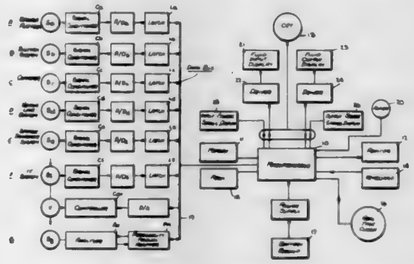
John Corbitt, 1617 N. Fed. Hwy., Lake Worth, Fla. 33460, and Thomas J. Michel, 1011 NW. 198th St., Miami, Fla. 33169

Filed Jan. 25, 1982, Ser. No. 342,365
Int. Cl.³ A61M 1/00
U.S. Cl. 128—760 **16 Claims**

1. A body fluid medical-electronic accounting system for use in surgical procedures to afford a running account of fluid balance constituted by the ratio of the total fluid intake to a patient to the total fluid outtake therefrom, said system comprising:

A. a digital computer;

B. a plurality of data channels coupled to the computer related to the prevailing fluid input and output sources associated with the patient in the course of a given surgical procedure, each data channel including a sensor to sense a respective fluid to produce an analog signal as a function thereof, one of said output source channels having its sensor coupled to means for measuring the amount of blood and other fluids extracted from the patient by a sponge in the course of said surgical procedure, and means to convert the signal from each of the sensors in the system into a corresponding digital value to be entered into



the computer, the computer digesting the data acquired by the respective channels and performing computations to yield a fluid input total and a fluid output total; and

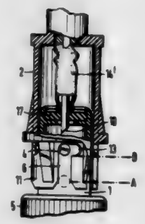
C. display means coupled to the computer to indicate said input and output totals to provide a reading of the fluid balance.

4,449,539

BLOOD EXTRACTION DEVICE

Walter Sarstedt, Nümbrecht, Fed. Rep. of Germany, assignor to Walter Sarstedt Kunstoff-Spritzgusswerk, Fed. Rep. of Germany

Filed Dec. 30, 1981, Ser. No. 335,902
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1980, 3049503
Int. Cl.³ A61B 5/00
U.S. Cl. 128—764 **6 Claims**



1. In a blood extraction device comprising:

a cylindrical extraction tube;

a piston movable in an air-tight manner within said tube;

a closure cap carrying a projection at the front end of said tube;

a tubular guide sleeve which can be pushed over said projection and which carries a cannula having front and rear ends provided with respective cutting edges;

a closure plug puncturable by the cannula arranged in said projection, with said plug being self-sealing on removal of said cannula, wherein said front end of said cannula projects out of said guide sleeve and is provided for insertion into a vein and wherein said rear end of said cannula is sealingly covered by a thin hose having a closed rear end and projects sufficiently far into said guide sleeve that, on pushing said guide sleeve onto said projection, said rear end of said cannula first punctures said closed rear end of said hose and then punctures said closure plug; and

connecting means provided between said guide sleeve and said projection, said connecting means comprising a slot provided on one of said guide sleeve and said projection and a cooperating lug engageable with said slot on the other one of said guide sleeve and said projection;

the improvement wherein:

said slot has (a) a first axially extending portion operative as the rear cutting edge of the cannula punctures said closed rear end of said hose and said closure plug to prevent relative rotation between said guide sleeve and said projection, and (b) a second peripherally extending portion permitting relative rotation between said guide sleeve and said projection to a locked position preventing relative axial movement therebetween, wherein the length of the axial slot and the arrangement of the retaining lug are so chosen that the retaining lug is guided in the axial slot up to a position at which the rear cutting edge of the cannula has already fully punctured the closure plug, and

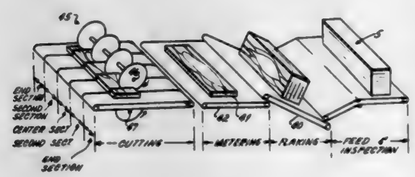
said thin hose is of resilient material and is adapted to generate an axially directed resilient force for retaining said guide sleeve in said locked position thereby preventing unintentional release of said guide sleeve from said projection.

4,449,540

SEPARATION OF LAMINA FROM STEMS IN BALED TOBACCO

Charles W. Marshall; William F. Lineberger, and Samuel A. Parker, Jr., all of Maysville, Ky., assignors to Parker Tobacco Company, Maysville, Ky.

Filed Feb. 17, 1982, Ser. No. 349,521
Int. Cl.³ A24B 5/00, 7/12
U.S. Cl. 131—290 **26 Claims**



1. A process for separating the lamina portions of baled tobacco leaves from stem portions thereof, comprising,

conveying baled tobacco in the form of either a whole bale or a layer of tobacco leaves separated from a bale, wherein the leaves are oriented with their stems at the ends of the baled tobacco and their tips are inward,

cutting said baled tobacco into at least three tranverse sections, including a center section and two second sections, one on each side of the center section, the center section comprising a portion which was at the longitudinal middle of the bale and having a substantially lower proportion of stem than the second sections,

directly after such cutting, conveying the second sections separately from the center section, thereby to separate the center section from the second sections,

coarsely threshing the second sections,

separating the threshed second sections into a first light fraction and a first heavy fraction,

finely threshing the first heavy fraction to dislodge additional lamina portions thereof,

separating the finely threshed material into a second light fraction and a second heavy fraction, the latter comprising principally stem portions, and

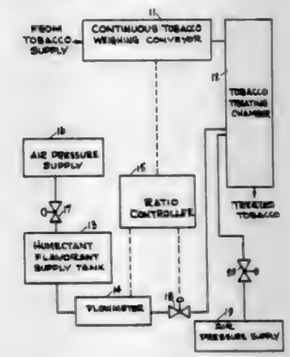
combining the center section with the first and second light fractions, thereby forming a fraction comprising principally lamina portions.

4,449,541

TOBACCO TREATMENT PROCESS

Charles D. Mays, Lewisville; Max A. Wagoner, and Daniel G. Williard, both of Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 2, 1981, Ser. No. 269,086
Int. Cl.³ A24B 3/12
U.S. Cl. 131—302 **27 Claims**



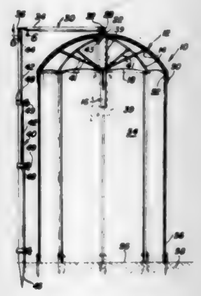
1. A continuous process for treating cut, shredded or otherwise comminuted tobacco which comprises subjecting a moving stream of cut, shredded or otherwise comminuted tobacco to a liquid spray comprising a volatile flavoring additive in a carrier medium containing a polyhydric alcohol as the principal component of said carrier medium, the quantity of said liquid spray being controlled with respect to the feed rate of said stream of tobacco by flow control means associated with a flow measuring device based on mass flow, regenerative sonics, magnetic flow or turbine flow principles which measures the flow rate of said carrier medium and the volatile flavoring additive contained therein.

4,449,542

PORTABLE HUNTING BLIND

Thad M. McSwain, 2103 Cherry, and Elbert A. McCracken, 509 S. Main, both of Stuttgart, Ark. 72160

Filed Dec. 23, 1981, Ser. No. 333,728
Int. Cl.³ A45B 11/00
U.S. Cl. 135—98 **9 Claims**



1. A portable hunting blind assembly comprising a collapsible umbrella roof means having a plurality of ribs extending from a central cylinder to the periphery of the roof means, the distal ends of the ribs defining points for sides of a polygon edge, the central cylinder extending from the roof means centrally within the roof means for a length proximate the free ends of the ribs, an inner sleeve member for sliding within the

length of the central cylinder from end-to-end thereof and having a projection extending from the sleeve member external of the central cylinder, a telescopic member connected by pivot means at one end to the projection and having an arm termination at the other end, an outer sleeve member for sliding on the exterior of the central cylinder, the outer sleeve member being provided with braces connected to the respective ribs, means connecting the inner and outer sleeve members for movement in unison lengthwise of the central cylinder, a telescopic stake means having its telescopic sections comparable to the length of the central cylinder and with a recess at one end of the telescopic stake means for receiving the arm termination and with a spike point at the other end, and means forming a circumferential wall of flexible sheet fabric depending from the peripherally defined sides of the polygon of the roof means for enclosing with the roof to define the portable hunting blind.

4,449,543

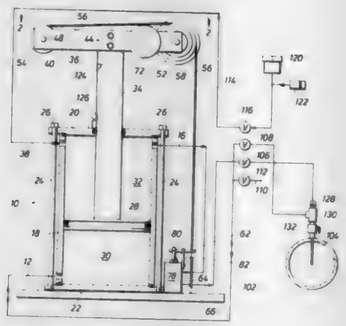
FLUID INJECTING METHOD AND APPARATUS

George J. Greene, Jr., 616 N. Eldridge, Houston, Tex. 77079

Continuation-in-part of Ser. No. 253,242, Apr. 13, 1981, abandoned. This application Nov. 30, 1982, Ser. No. 445,677

Int. Cl.³ F04B *13/00*; B67D *5/08*

U.S. Cl. 137—3 **12 Claims**



11. The method of injecting a fluid into a flowline including the steps of

delivering pressure fluid from the flowline to a pressure responsive positive displacement pumping means,

supplying fluid to be injected to said pumping means,

mechanically closing flow of fluid from said pumping means to said flowline responsive to excessive rate of movement of the pumping means and mechanically opening flow of fluid from said pumping means to said flowline responsive to insufficient rate of movement of the pumping means by mechanically interconnecting the pumping means, the controlling means and a timing means, and

delivering fluid pumped by said pumping means to said flowline.

4,449,544

BLOWDOWN VALVE

Roy E. Soderberg, N. Kingstown, R.I., assignor to Crosby Valve & Gage Company, Wrentham, Mass.

Continuation of Ser. No. 195,251, Oct. 8, 1980. This application Jun. 18, 1982, Ser. No. 389,853

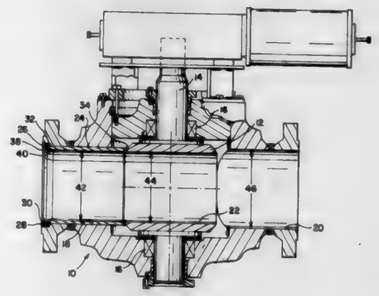
Int. Cl.³ F16K *5/20*

U.S. Cl. 137—15 **24 Claims**

1. A method of purging a pipeline of unwanted materials therein, comprising the steps of:

providing a valve within said pipeline, said valve including a valve body having inlet and outlet passageways, a valve ball having a bore therethrough and being journalled in said body to rotate said bore into and out of alignment with said passageways, and a gap defined between said valve body and ball establishing permanent fluid communication between said inlet and outlet passageways, said gap being relatively small in comparison to said bore and capable of passing only a relatively small amount of fluid therethrough;

positioning said valve ball in a closed position wherein fluid communication is established between said inlet and outlet passageways only by said gap;



admitting pressurized steam into said valve, said steam passing through said gap until the temperature within the portion of said pipeline downstream from said valve normalizes; and

quickly opening said valve such that said bore is aligned with said passageways, thereby creating a sudden pressure drop within said pipeline whereupon unwanted materials are expelled therefrom.

4,449,545

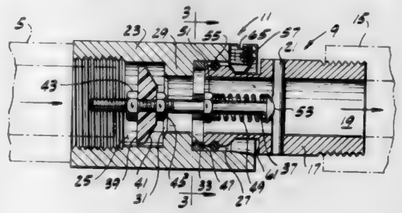
BREAKAWAY SAFETY VALVE

Oliver W. Vernor, 5 Prince Dr., Florissant, Mo. 63034, and Arthur M. Brockman, 1906 Brassie Dr., Overland, Mo. 63114

Filed Jan. 13, 1982, Ser. No. 339,094

Int. Cl.³ F16K *13/04*

U.S. Cl. 137—68 R **6 Claims**



1. A breakaway safety valve comprising interengageable plug and socket components, the socket component having a fluid flow passage therethrough with inlet and outlet ends, the outlet end forming a chamber for receiving said plug component therein, a valve seat in the passage, a valve member in the passage engageable with the valve seat, the valve member being movable in the passage between a closed position in which it is in sealing engagement with the valve seat to block flow therepast, and an open position in which it is spaced away from the valve seat to permit flow through the passage, spring means biasing the valve member toward its closed position, said plug component being engageable with the valve member for holding it open against the bias of said spring means to permit flow through the passage past the valve seat, and breakaway means holding the plug and socket components in assembly with the plug component received in said chamber and engaging the valve member to hold it open, said breakaway means being adapted to break when the valve is subjected to a force of predetermined magnitude tending to pull the plug and socket components apart thereby to permit separation of the components without damage thereto, said valve member, at the time of said separation, being adapted to move in the passage under the bias of said spring means into sealing engagement with the valve seat to cut off flow therepast, said plug component having an outside diameter substantially smaller than the inside diameter of said socket chamber to provide a relatively large clearance therebetween, and the outlet end of said socket component being internally chamfered, said chamfer and clearance being sufficiently large relative to the distance which the plug component extends into the socket component to permit withdrawal of the plug component from the socket component without substantial damage to either component when an angular non-axial force is applied to the plug component, said plug component comprising a tubular plug body having inlet and outlet ends and an axial passage therethrough, said plug body having an external circular groove therein, said breakaway means comprising three shear pins threaded in radial bores spaced at intervals around the socket body, each pin projecting into said socket chamber and into said external circular groove in the tubular plug body to hold the latter in fixed position in said socket chamber, said valve member comprising valve stem means having upstream and downstream ends, and sealing means on the upstream end of the valve stem means engageable with said valve seat when the valve member is in its closed position, the downstream end of the valve stem means extending into said socket chamber and being engageable by said plug component, said socket component comprising a tubular body having an internal annular shoulder therein, said shoulder having a first face facing generally upstream and forming said valve seat, and a second face facing generally downstream, said valve stem means comprising a valve stem and abutment means on the downstream end of the valve stem, and a perforated disk around the valve stem seated against the downstream face of said internal annular shoulder, said spring means being constituted by a coil compression spring on the valve stem between said disk and said abutment means for biasing the valve member toward its closed position, said sealing means comprising a sealing member on the upstream end of the valve stem.

4,449,546

CONTROLLER WITH ADJUSTABLE PROPORTIONALITY RANGE

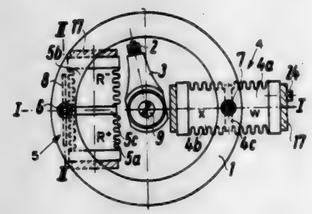
Horst Bader, Fliderstadt, Fed. Rep. of Germany, assignor to Eckardt AG, Fed. Rep. of Germany

Filed Jun. 16, 1981, Ser. No. 274,501

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023316

Int. Cl.³ F01B *19/00*; F16J *3/04*; F15B *5/00*

U.S. Cl. 137—86 **28 Claims**



1. A controller arrangement with an adjustable proportionality range, the controller arrangement comprises at least first and second measuring units adapted to be acted upon by a pressure, a ring means adapted to be positioned in response to a pressure differential in the measuring units, and a pivotable nozzle means cooperable with the ring means,

the measuring units are coupled at the ring means in a diametrically opposite manner and the axis of effectiveness of one measuring unit extends radially and the axis of effectiveness of the other measuring unit extends in a direction which is one of tangentially and in parallel to the tangential direction but not through the axis of the ring means.

4,449,547

LONG LIFE GATE VALVE

Rafael Krakovsky, 19581 Transhire Rd., Gaithersburg, Md. 20879

Continuation-in-part of Ser. No. 210,786, Nov. 26, 1980, Pat. No. 4,373,546. This application Feb. 1, 1983, Ser. No. 462,988

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.³ F16K *29/00*

U.S. Cl. 137—330 **3 Claims**



1. In a long life gate valve having a pair of rotatable closure discs mounted for longitudinally positioning into partial or full registration with mating valve seats to control fluid flow, the improvement for extending valve life by distributing wear about the periphery of the disc resulting from fluid flow thereacross substantially about the entire disc periphery for even wear thereabout, comprising in combination,

means presenting two spaced valve seats with flat surfaces surrounding flow apertures of different size that define a fluid flow path through the valve from a larger upstream aperture to a smaller downstream aperture,

a mating circular closure disc having a flat surface for mating with each said valve seat surface in a registration position for fully closing said fluid flow path,

movement means for longitudinally moving the center of both circular disc surfaces in unison along a straight line axis into and out of seated registration on said seat surfaces to restrict and close the fluid flow path,

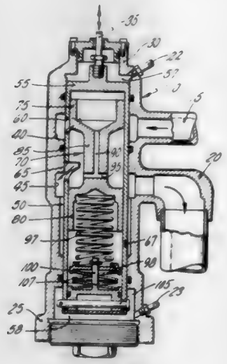
means for holding at least the downstream closure disc in a freely rotatable mode about its center as it is moved along said axis into and out of seated registration so that it is rotatable by fluid flow in unseated transit positions,

and aperture structure defined by said valve seats to present a fluid flow path asymmetrically disposed about the rotatable downstream disc whereby the fluid flow and pressure through the aperture structure and fluid flow path imparts a turning moment to the freely rotatable disc thereby to randomly present different portions of the disc edge to the fluid flow path through the valve seat in response to said turning moment when the discs are longitudinally moved in and out of registration

4,449,548
FLOW CONTROL DEVICE

Herbert W. Tutherly, Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 23, 1982, Ser. No. 421,758
Int. Cl.³ G05D 7/01
U.S. Cl. 137—468 8 Claims



1. A flow control device comprising a housing having fluid inlet and fluid outlet passages therein, a first valve element disposed within said housing, a second valve element disposed within said first valve element, said first and second valve elements being disposed in selective communication with said inlet and outlet passages, said flow control device being characterized by:

said first valve element comprising a metering element having inlet and outlet windows therein corresponding to, and communicating with said fluid inlet and outlet passages, respectively, said metering valve element being selectively positionable within said housing such that one of said windows is disposed in selectively variable registry with the corresponding passage for adjusting the effective flow area therebetween;

said second valve element comprising a pressure regulating element having first and second ends thereof and including a first portion in variable registry with the other of said windows in said metering element for adjusting the flow therethrough;

means providing fluid communication between said corresponding passage and said second end of said pressure regulating element;

means providing fluid communication between said one window on a side thereof opposite said corresponding passage and said first end of said pressure regulating element; and

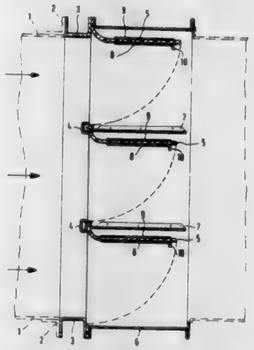
means for balancing said pressure regulating element against fluid pressure on said first and second ends thereof for establishing a registry between said other window and said first portion of said pressure regulating valve element necessary to maintain a relatively constant pressure drop across said one window.

4,449,549
SHUTTER DEVICE FOR AIR CONDUIT OR THE LIKE

Franz Weck, Herzogenrath, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Herzogenrath, Fed. Rep. of Germany

Filed Feb. 7, 1983, Ser. No. 464,351
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 8207890[U]
Int. Cl.³ F16K 15/03, 15/16
U.S. Cl. 137—512.1 6 Claims

1. A chatter resistant shutter device for an air conduit or the like comprising a rectangular attachment section adapted to be mounted to a conduit end, a rectangular frame section affixed to an end of said attachement section, said frame section including side wall portions and upper and lower wall portions, a plurality of mutually spaced apart parallel web members extending between said side wall portions adjacent the interface of said sections, said webs defining therebetween a series of generally rectangular openings, a plurality of generally rectangular elastomeric lamellae in number corresponding to

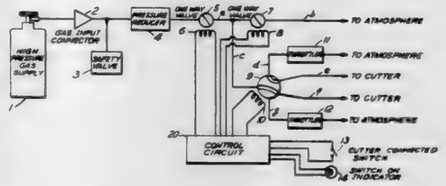


the number of said openings, each said lammelae having an upper edge portion affixed to a said web, said lamellae being shiftable within said frame section responsive to flow in said conduit between a closed position whereat said lamellae are normal to the longitudinal axis of said frame in mutually overlapping position and an open position generally parallel to said axis, and a guide plate member fixed to each said web and extending parallel to said axis.

4,449,550
CONTROL SYSTEM FOR INTRAOCULAR SURGICAL DEVICE

Domenico Ranalli, Rome, Italy, assignor to Optikon Oftalmologia, S.p.A., Rome, Italy, 5n 20 Paul Fields McAulay, Fields, Fisher et al. 405 Lexington Ave. New York, NY 10174 S

Filed Nov. 2, 1981, Ser. No. 317,115
Int. Cl.³ F15B 21/08; A61F 9/00
U.S. Cl. 137—624.13 7 Claims



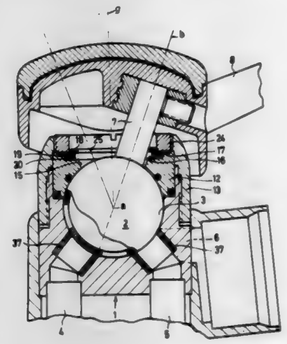
1. A control system for an intraocular surgical device comprising: gas input means receptive of a supply of high pressure gas; first and second actuatable one-way valves connected in series with the gas input means, with the input of the first valve connected to the output of the gas input means and the output of the second valve vented to the atmosphere, wherein each valve is actuatable between a closed state and an open state wherein the input and output are in communication; five-way actuatable valve means having an input connected to the series connection between the first and second valves, two outputs vented to the atmosphere and two outputs connectable to a surgical device, wherein the valve means is actuatable between a first state wherein the input is in communication with one device output and the other device output is in communication with one venting output and a second state wherein the input is in communication with the other device output and the one device output is in communication with the other venting

output; and control means for maintaining the first and second valves in the closed and open states respectively and responsive to the connection of a device to said control system for thereafter reversing said states and for selectively actuating the five-way valve means between the first and second states only when the first valve is open and the second valve is closed.

4,449,551
MIXING VALVE

Werner Lorch, Schramberg, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co., Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,672
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024518
Int. Cl.³ F16K 11/087
U.S. Cl. 137—625.41 39 Claims



1. In a mixing valve for liquids, having: a ball-like valve plug with liquid inlet and liquid outlet ports therein, said ports being joined together within said plug; a valve housing having a valve seat face of the same form as the plug with said plug resting thereon, said plug and said housing having a common middle point about which said plug is rotatable relative to said housing, said housing having inlet ducts for the liquids to be mixed and an outlet duct for the mixed liquids, said ducts having ports in said face; and, a driving part fixed to said plug, rockable in a plane of rocking therewith about a rocking axis perpendicular to the rocking plane, for changing the outlet flow rate of liquid from the valve and rotatable therewith for changing the mixing ratio of the two liquids, said driving part having a lengthwise axis, the invention comprising: a guide plate for said driving part, said plate having a slot in and along which said driving part is movable, but keyed against rotation relative to said slot, said guide plate being turnable in a plane parallel to said rocking axis, said plug being rotatable only about a plug rotation axis which is perpendicular to said guide plate plane, runs through said middle point and is fixed relative to said valve housing but not said plug, and said driving part being rockable only about said rocking axis, which runs through said middle point and is fixed relative to said plug but not said valve housing.

4,449,552
PRESTRESSED ASSEMBLED OLEO-PNEUMATIC ACCUMULATORS

Louis C. Porel, Rambervillers, France, assignor to Hydro Rene Leduc, Baccarat, France

Filed Feb. 11, 1982, Ser. No. 457,702
Claims priority, application France, Feb. 27, 1981, 81 03926; May 8, 1981, 81 09206
Int. Cl.³ F16L 55/04
U.S. Cl. 138—30 15 Claims

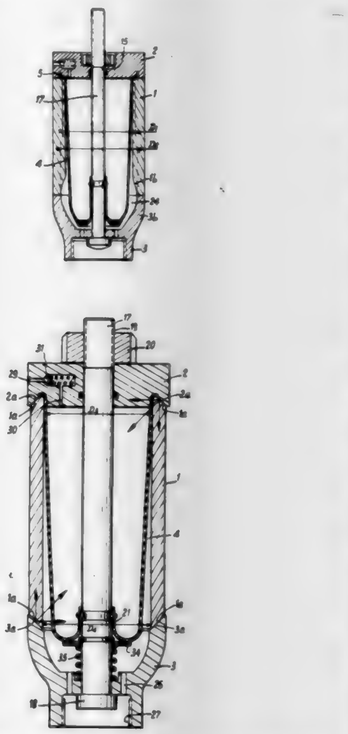
1. An oleopneumatic accumulator having a first chamber adapted to receive a pressurized gas, and a second chamber adapted to receive pressurized hydraulic fluid and a flexible membrane therebetween, comprising:

a cylindrical shell having first and second open ends the inner boring of said shell having a larger section at its second end then its first end;

a first plug disposed in said cylindrical shell first open end, a peripheral edge of said membrane being disposed therebetween;

a second plug disposed in said cylindrical shell second open end; and

at least one pretensioned tierod having a tension corresponding to a predetermined hydraulic fluid pressure and having first and second ends, one of said ends being coupled to one of said plugs and the other of said ends being threaded to receive a nut for couplig to said remaining plug, whereby said cylindrical shell will separate from said second plug when said predetermined pressure is



exceeded bringing about a decrease in hydraulic pressure and returning said pressure to a value less then said predetermined pressure.

6. An oleopneumatic accumulator having a first chamber adapted to receive pressurized gas, and a second chamber adapted to receive a pressurized hydraulic fluid and a flexible membrane disposed between said first and second chambers, said accumulator comprising:

a cylindrical shell having first and second open ends, the inner boring of said shell having a larger section of its second end than its first end;

a first plug disposed in said cylindrical shell first open end, a peripheral edge of said membrane being disposed between said first plug and said first open end;

a second plug disposed in said cylindrical shell second open end; and

at least one elastic tierod having first and second ends, one of said ends being coupled to one of said plugs and the other

of said ends being threaded to receive a nut for coupling to said remaining plug, said tierod being set under a tension prior to coupling to said plugs, said tension corresponding to a predetermined hydraulic fluid pressure;

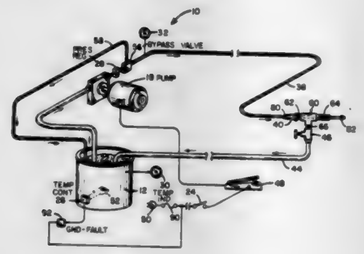
whereby said cylindrical shell will separate from said second plug when said predetermined pressure is exceeded, bringing about a decrease in hydraulic pressure and returning said pressue to a value less than said predetermined pressure.

4,449,553

ELECTRICALLY HEATED PIPE THAWING APPARATUS

Edward F. Sullivan, 18450 Thorpe Rd., Wayzata, Minn. 55391; Patrick Sullivan, 18645 Rutledge Rd., Wayzata, Minn. 55391, and Walter C. Schultz, 4390 Coolidge Ave., Edina, Minn. 55424

Filed Nov. 24, 1980, Ser. No. 209,976
Int. Cl.³ E03B *7/14*; F24H *1/20*
U.S. Cl. 138—35 **1 Claim**



1. In combination, pipe thawer system for thawing a pipe having a frozen blockage therein, said system comprising:

a. means for securing onto one end of a pipe having a frozen blockage therein, said securing means including a means forming a compression seal about a small diameter, quarter-inch outer diameter polyurethane flexible hose, said securing means including conical shaped pipe reducer including an inflow and an outflow end, a hole in said inflow end through which said flexible hose slidably extends, a threaded circumference about said inflow end, and a nut with a compression washer threaded over said circumference for engaging and securing about said hose to form said compression seal;

b. wheeled portable means for containing a predetermined quantity of water, said means including a substantially rectangular upstanding container means for supporting said system, four wheels spaced about an underside of said container means for rolling motion, and including a separating plate for isolating fifty-five gallons of liquid in a lower portion of said container, a discharge outlet in the bottom of said container means and a liquid-fill vent valve on one side of said container means slightly below said separating plate;

c. said flexible hose piping water from said container means and through said inflow end of said securing means towards said frozen blockage, said flexible hose supported on a substantially circular reel means on one side of said container means;

d. means for pumping water from said container to said flexible hose, said pumping means supported in a top portion of said container means and including a foot pedal connected to said pump means for actuating said pump means and a pressure regulator means in line with said flexible hose and a bypass line hose means connected between said pressure regulator means and said container means;

e. variable temperature control means including electric heater means immersed in said container means for heating said water to a predetermined temperature of 100°–150° F.;

f. electrical circuit means supported in said container means powering said pump means and said variable temperature control means, said electrical circuit means including circuit breaker means and ground fault indicating means connected between said pump means and said variable temperature control means and a source of power, and said electrical circuit means and pump means supported above said separating plate and isolated from liquid in a lower portion of said container means; and,

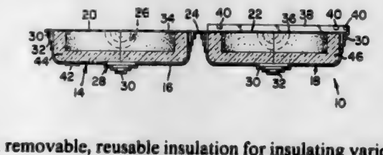
g. return hose means for piping return water from a T-shaped return means to said container means, said T-shaped return means connected between said outflow end of said pipe reducer and said pipe with said frozen blockage, a leg of said T-shaped return means connected to said return hose means, said return hose means supported on a substantially circular reel means on an other side of said container means whereby said water is piped from said container under pressure by said pump means through said flexible hose towards said frozen blockage, forcing return water from the area of said frozen blockage through said T-shaped return means and said return hose means into said container thereby providing a closed-loop, self-contained pipe thawer system including feedback fluid from said frozen blockage and avoiding liquid spillage.

4,449,554

UNIVERSAL REMOVABLE INSULATION

Richard O. Busse, 12863 Ingersoll Ave., Hugo, Minn. 55038

Continuation-in-part of Ser. No. 360,355, Mar. 22, 1982, abandoned. This application Jan. 25, 1983, Ser. No. 460,906
Int. Cl.³ F16L *59/02*; F16K *51/00*
U.S. Cl. 138—149 **17 Claims**



1. A removable, reusable insulation for insulating various hot and cold fluid conduit fittings, comprising a shell bifurcated along a plane to define a pair of engagable edges and having a plurality of defined cut-outs formed therein with a portion of each of said cut-outs formed in each of said edges, said cut-outs being positioned relative to one another so that angularly spaced portions of a fitting can pass through different of said cut-outs.

4,449,555

DEVICE FOR TRANSFERRING ARTICLES

Jacobus H. Luyten, Va Steyl, Netherlands, assignor to Helmes Machinefabriek B.V., Netherlands

Filed Apr. 5, 1982, Ser. No. 365,479
Claims priority, application Netherlands, Apr. 6, 1981, 8101689
Int. Cl.³ B27F *1/00*
U.S. Cl. 144—198 R **10 Claims**

10. A tenoning machine for an article, the tenoning machine having a tending side and being operated from the tending side, the tenoning machine comprising:

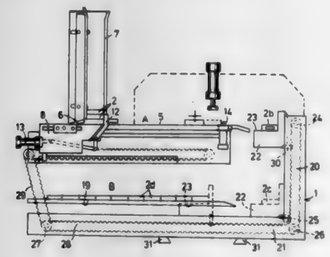
a working path having a first end at the tending side and a second end opposite the tending side;

conveying means for displacing the article from the first end to the second end of the working path;

a discharge path lower than the feed path, the discharge path comprising a support rail below the working path, the article moving on the support rail toward the tending side;

a guide track comprising a vertical component situated at the second end of the working path for changing the direction of movement of the article when the article leaves the second end of the working path, the guide track

further comprising a horizontal component below the level of the support rail for bringing the article to the discharge path in a pre-oriented position;



a movable carrier mounted on the guide track for carrying the article along the vertical and horizontal components after tenoning;

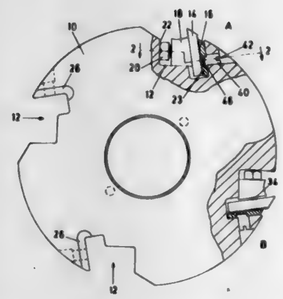
driving means connected to the conveying means for driving the carrier.

4,449,556

ROTARY CUTTER HEADS

Peter M. Colton, Leicester, England, assignor to Wadkin plc, Leicester, England

Continuation-in-part of Ser. No. 409,994, Aug. 20, 1982, abandoned. This application Sep. 28, 1982, Ser. No. 425,504
Int. Cl.³ B27G *13/04*
U.S. Cl. 144—230 **26 Claims**



1. A rotary cutter head for woodworking machinery comprising:

a cylindrical cutterblock body;

a plurality of inwardly divergent recesses formed in said cutterblock body;

a cutter blade positioned in each of said recesses;

clamp means in each of said recesses, said clamp means each comprising a wedge and screw means associated with the wedge, the screw means being tightenable against a face of a recess to urge the wedge into direct contact with an associated cutter blade positioned in the said recess to clamp the blade in the recess; and

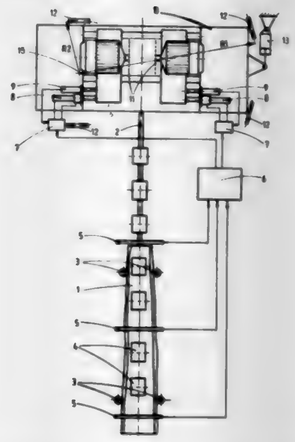
resilient means in each recess, each resilient means acting on an associated clamp means to lightly hold the cutter blade in position on slackening of the associated screw means.

4,449,557

METHOD AND APPARATUS FOR SAWING A PIECE OF TIMBER

Olavi Mäkelä, Karhula; Osmi Suntio, Neuvoton, and Jorma Tuomaala, Karhula, all of Finland, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Jun. 1, 1982, Ser. No. 383,572
Claims priority, application Finland, Jun. 12, 1981, 811830
Int. Cl.³ B27B *1/00*
U.S. Cl. 144—357 **4 Claims**



1. An apparatus for sawing and edging a board which has two unfinished sides which comprises means for centering the board symmetrically in relation to a feed line, means for measuring the optimum sawing direction and width of the board, a sawing machine for edging the sides of the board and for sawing the board, the sawing machine comprising blades, a cylinder connected to said sawing machine, the sawing machine being pivotally mounted upon said cylinder, said cylinder carrying out a pivotal movement around a pivot axis which is in a line transverse to the feed line passing through the sawing points.

4. The method of sawing and edging a board which has two unfinished sides which consists of:

(1) centering the board symmetrically in relation to the feed line;

(2) determining the optimum width and direction of the board by means of a plurality of gates;

(3) transferring the board though an edger comprising sawing blades which move laterally in relation to the feed direction;

(4) pivoting the edger around a vertical pivot axis which is transverse to the feed line and passes through the sawing points;

(5) turning the blades in relation to the feed direction so as to set them in the sawing direction.

4,449,558

METHOD AND APPARATUS FOR TRIMMING WOODEN BOARDS

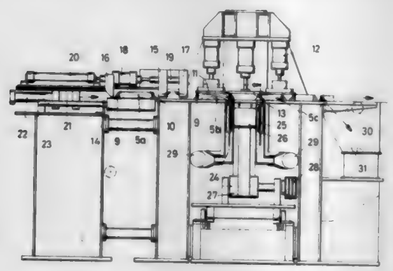
Karl-Wolfram Wiegand, Bochum, Fed. Rep. of Germany, assignor to Dimter GmbH Maschinenfabrik, Illertissen, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,313
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1980, 3049258
Int. Cl.³ B27M *1/08*; B27B *1/00*
U.S. Cl. 144—367 **13 Claims**

1. A method for trimming wooden boards comprising the steps of: fixing and cutting two positioning short cuts at the

ends of each longitudinal edge of the boards to be cut and trimming the boards wherein the positioning short end cuts of one longitudinal edge of the board are used to move that longitudinal board edge into a first cutting plane of a cutting device and the positioning short end cuts of the other longitudinal edge of the board are used to move that longitudinal board edge into a second cutting plane of the cutting device.

2. An apparatus for trimming wooden boards comprising: means for fixing and cutting two positioning short cuts at the ends of each longitudinal edge of the board for defining a proposed trimming line therebetween and means for trimming the longitudinal edges of the board using the positioning short end cuts, said trimming means including cutting means for cutting the front longitudinal edge of a board along a first cutting plane and the rear longitudinal edge of the board along a second cutting plane, stop means for engaging the positioning short end cuts of the untrimmed front longitudinal edge of the board and which stop means is associated with and parallel to



the first cutting plane of the cutting means for cutting the front longitudinal edge of the board, slide means for advancing the board and moving the positioning short end cuts of the front longitudinal edge of the board against the stop means, ejector means for engaging the positioning short end cuts of the untrimmed rear longitudinal edge of the board, and which ejector means is associated with and parallel to the second cutting plane of the cutting means for cutting the rear longitudinal edge of the board, wherein the slide means, stop means and ejector means are jointly displaceable and move the rear longitudinal edge of a first board into the second cutting plane of the cutting means and move the front longitudinal edge of a second board into the first cutting plane of the cutting means and wherein the cutting means cuts the rear and front longitudinal edges of the two respective boards along the proposed trimming lines defined between the positioning short cuts at the ends of the rear and front longitudinal edges of the two respective boards.

4,449,559

HAND TOOL WITH HANDLE STORAGE OF INTERCHANGEABLE ELEMENTS

Werner W. Martinmaas, 3461 Cashill Blvd., Reno, Nev. 89509

Continuation-in-part of Ser. No. 218,435, Dec. 19, 1980, abandoned, which is a continuation of Ser. No. 37,908, May 10, 1979, abandoned. This application Sep. 10, 1981, Ser. No. 300,819

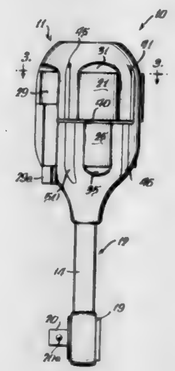
Int. Cl.³ B25G *1/08*

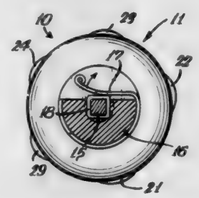
U.S. Cl. 145—62 **5 Claims**

1. In a hand tool which has a generally cylindrical handle provided with a bore, and mounting means to selectively mount any of a plurality of interchangeable tool elements, said mounting means including a shank non-rotatably mounted in said bore in the handle, and means at the end of the shank remote from the handle to operatively receive one of said tool elements at a time, the improvement comprising:

the interchangeable tool elements are socket wrench socket elements each of which is cylindrical with a first end portion having an axially extending square drive hole and a second end portion having an axially extending hexagonal socket, said socket elements being of various diameters, all of said drive holes being identical with one another, and all of said hexagonal sockets being of different sizes each of which is adapted to slidably and non-rotatably engage a hexagonal fastener of a predetermined size;

the means to operatively receive said tool elements is a socket wrench ratchet drive with a square mounting stub which projects laterally from the shank and slidably engages in a square drive hole of a socket element;





and the handle has a plurality of longitudinally extending pockets about its periphery for storing all said socket elements, said plurality of pockets being arranged in sets of two pockets which are end-to-end, there is a partition separating the two pockets of each set, and the pockets are of various diameters each of which snugly receives and stores a particular one of the socket elements, each socket element being individually removable by digital manipulation from the pocket in which it is stored.

4,449,560

HEAVY DUTY PNEUMATIC TIRE

Hikaru Tansei, Higashimurayama, and Hiroyoshi Takigawa, Kodaira, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,824

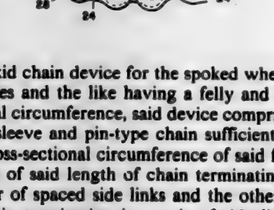
Claims priority, application Japan, May 13, 1981, 56-68774[U]; May 13, 1981, 56-68775[U]; May 13, 1981, 56-68776[U]

Int. Cl.³ B60C *11/12*

U.S. Cl. 152—209 R **8 Claims**

1. A heavy duty pneumatic tire comprising; a tread surface divided along circumferential directions by at least two zigzag tread grooves having sides extending into said tread surface to form a plurality of circumferential zigzag ribs whose at least one side edge adjacent to said zigzag tread groove is formed with a plurality of narrow cuts opening into said tread grooves and substantially in parallel with an axial direction of the tire, said narrow cuts being formed so as to substantially continuously increase a rigidity of said rib from extending corners to retracting corners of said rib without any abrupt rigidity difference, and the depths of said narrow cuts are gradually reduced from those in said extending corners to those in said retracting corners.

4. A heavy duty pneumatic tire comprising a tread surface divided along circumferential directions by at least two zigzag tread grooves having sides extending into said tread surface to form a plurality of circumferential zigzag ribs whose at least one side edge adjacent to said zigzag tread groove is formed with a plurality of narrow cuts opening into said tread grooves and substantially in parallel with an axial direction of the tire,



the improvement comprising said narrow cuts being formed so as to substantially continuously increase a rigidity of said rib from extending corners to retracting corners of said rib without any abrupt rigidity difference; said cuts between said extending and retracting corners are inclined relative to radial surfaces of the tire passing through openings of said cuts at said tread surface such that bottoms of the cuts are shifted away from said radial surfaces towards radial surfaces passing through the extending corners to form angles with their radial surfaces, said angles being progressively larger as said cuts are nearer said extending corners.

4,449,561

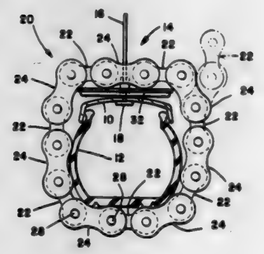
NON-SKID DEVICE FOR WHEELCHAIRS AND THE LIKE

Randall T. Head, 2937 Butte Ave., Santa Clara, Calif. 95051

Filed Mar. 21, 1983, Ser. No. 477,508

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—213 R **15 Claims**



1. A non-skid chain device for the spoked wheels of wheelchairs, bicycles and the like having a felly and tire of given cross-sectional circumference, said device comprising a length of side link, sleeve and pin-type chain sufficient to surround said given cross-sectional circumference of said felly and tire, with one end of said length of chain terminating in the free ends of a pair of spaced side links and the other end of said length of chain terminating in a pair of side links interconnected by a sleeve adapted to be received between said free ends of said spaced side links of said one end of said length of chain; a slotted plate member having transverse dimensions greater than the transverse dimensions of said length of chain rigidly fixed to said one end of said length of chain with the slot of said slotted plate member dimensioned to receive a spoke of said spoked wheels centrally disposed and aligned between said spaced side links of said one end of said length of chain, said slot terminating between said spaced side links centrally thereof and opening at said free ends of said spaced side links; and a removable pin for selectively interconnecting the ends of said length of chain.

4,449,562

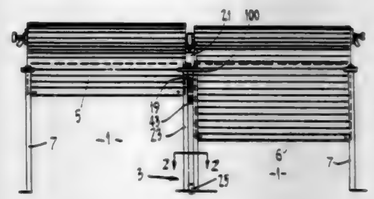
MULLION SECTION MEMBER

Simon Leivenzon, and Steven Leivenzon, both of Caulfield, Australia, assignors to Firmagroup Australia Pty. Ltd., Cheltenham, Australia

Continuation-in-part of Ser. No. 250,253, Apr. 2, 1981, abandoned, which is a continuation of Ser. No. 83,650, Oct. 11, 1979, abandoned. This application Jun. 26, 1981, Ser. No. 278,219

Int. Cl.³ E06B *3/48*

U.S. Cl. 160—113 **7 Claims**



1. A mullion section member for fitting between a pair of adjacent roller shutter doors in a door opening, said mullion section member being of a suitable length and having opposed channels at opposite sides each for slidably receiving the edge of the curtain of a respective roller shutter door, a portion bridging the two channels, and behind said portion on the inside face of the mullion section member, flange means which extend the length of the mullion section and define a recess behind said portion in which a plate-like tongue member is slidably received to slide longitudinally of the length of the mullion section member, means fastened to said flange means slidably securing said tongue in said recess at one end of the mullion section member whereby the mullion section can be cut to the required length and said plate-like tongue member located in the correct operative position by said securing means then being secured at the required position on said flange means.

4,449,563

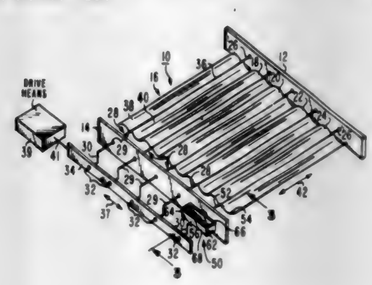
COUNTERBALANCE SYSTEM FOR SAGGING ROTATING ELEMENT

Minoru Toda, and Susumu Osaka, both of Tokyo, Japan, assignors to RCA Corporation, New York, N.Y.

Filed May 26, 1982, Ser. No. 382,200

Int. Cl.³ E05D *15/18*

U.S. Cl. 160—184 **10 Claims**



6. In combination:

an element of a thickness and material which tends to bend

a first value in a given direction in response to the force of gravity on the mass center of said element when said element is in one angular orientation and a second different value when in a second different angular orientation;

means for rotatably supporting the element between two spaced points for rotation about an axis from one to the other of said angular orientations, said axis passing through the mass center of said element in the unbent state, said bent element mass center being offset from said axis in a first range of values, each value in said range corresponding to a different angular orientation of said element about said axis, said offset mass center due to bending of the element creating in response to the force of gravity a first torque about said axis having a value in a second range of values corresponding to each said offset values in said first range of values when the element is rotated about said axis; and

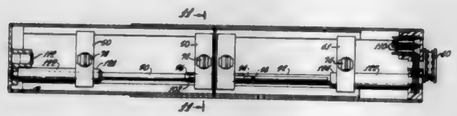
counter-torque means secured to said element for creating a second torque equal in value and opposite in sense to said first torque value as said element is rotated.

4,449,564

ADJUSTABLE TRACK FOR LOUVER DRAPES OR BLINDS

Don Hansen, 1703 E. Heritage Cir., Anaheim, Calif. 92804, and Joseph C. Ranftl, 20192 Big Bend La., Huntington Beach, Calif. 92646

Filed Aug. 27, 1981, Ser. No. 297,048
Int. Cl.³ E06B *9/26*
U.S. Cl. 160—166 A **1 Claim**



1. Adjustable support and positioning means for vertical louver drapes of the type in which louvers are suspended from multiple trucks, comprising:

multiple trucks for suspending said louvers,

a pair of axially aligned elongated frame means adapted for nesting one within the other and telescoping between an extended position and a retracted position, and

a pair of elongated shafts each having substantially uniform noncircular cross sections and being mounted within said frame means and adapted to support and permit sliding movement of said trucks along said shafts,

said shafts being capable of sliding in relation to each other between extended and retracted positions corresponding to the extended and retracted position of said frame means,

each of said multiple trucks having

a driving gear,

a driven gear operatively connected to said driving gear,

a housing for said gears, said housing being longitudinally slidably mounted within said elongated frame means relative to at least one of said shafts, such that said driving gear remains slidably engaged with said noncircular shaft when said housing and gear are moved therealong and when said frame and shafts are in any position from fully extended to fully retracted, and

a supporting means for suspending a louver therefrom, said supporting means being rotatably mounted within said housing and operatively connected with said driven gear, whereby when said shafts are rotated about their longitudinal axes, said driving gear is rotated therewith and rotates said driven gear and said supporting means,

said shafts being axially aligned and one of said pair of shafts being tubular and having an inside diameter sufficient to permit the other of said pair to telescope therein between said extended and retracted positions,

the outer shaft of said pair of shafts including engaging means affixed along its outer surface for slidably engaging said driving gears of said trucks and having a slot through the wall of said outer shaft parallel to the axis thereof,

the inner shaft of said pair of shafts including engaging means affixed along its outer surface and sized to extend outwardly through said slot through the wall of said outer shaft for slidably engaging said driving gears.

4,449,565

CONNECTING ARRANGEMENT FOR SUPPORT MEMBERS COOPERATING WITH A LIQUID PERMEABLE WEB

Heinrich Bartelmuss, No. 63, Steiermark, A 8833 Teufenbach, Austria

Continuation of Ser. No. 48,078, Jun. 13, 1979, abandoned. This application Sep. 17, 1980, Ser. No. 188,033
Int. Cl.³ D21F *7/00*
U.S. Cl. 162—352 **7 Claims**



1. A connecting assembly for a hard-material member and a rigid support member in flat contact with one another along planar juxtaposed surfaces whereby the hard-material member of an oxide ceramic forms a support for a water-permeable layer for the dewatering of a pulpy mass, said assembly comprising in combination with said members, a plurality of U-shaped spring clips interconnecting same and bridging said surfaces, the bights of said clips being received in said rigid support member, the hard-material member being formed with circular-arc grooves opening inwardly from the respective one of said surfaces and formed in pairs, each of said clips having a pair of shank ends received in a respective pair of grooves each individual to one shank end and being of circular-arc curvature, each shank end being bent outwardly with a circular-arc curvature measured in a plane of a longitudinal dimension of the shank of radius R, each shank end further being bent transversely to its longitudinal dimension to be outwardly concave with a circular curvature of said radius R, the free edges of the ends of the shanks of the clips having radius r that is at least 0.5% greater than the inner radius r ' of the respective grooves whereby each of said ends bears upon the material of said hard-material member with the force of at least 1 g but not more than 5% of the rupture strength of the material of said hard-material member, said ends of the shanks of said clips conforming to spheroidal segments of an imaginary sphere having said radius R of at least 3 mm and up to a maximum of 500 mm, the free edges of said shanks lying along a cutting circle whose radius r is at least 1 mm and up to 90% of the radius R of the imaginary sphere.

7. A paper-making machine having a liquid-permeable layer for the dewatering of a pulpy mass and a drainage region across which said layer is displaced and formed with at least one assembly as defined in claim 1.

4,449,566

FOUNDRY SAND RECLAMATION

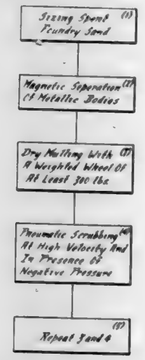
Anthony J. Filipovitch, Dearborn, and Julius M. Bleuenstein, Rockwood, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 9, 1979, Ser. No. 28,134
Int. Cl.³ B22C *5/00*
U.S. Cl. 164—5 **8 Claims**

1. A method of conditioning a spent foundry sand mixture, said mixture containing 0.1–12% clay, said clay forming a shell on the grains of said mixture, the method comprising:

(a) while under ambient pressure and temperature conditions and without the addition of water, subjecting said mixture to a high-stress, low-kinetic energy squeezing action effective to slowly rub the mixture grains against each other and to fragment at least part of the shells on substantially each sand grain in said mixture,

(b) while in the presence of a negative pressure or suction,



propelling said squeezed mixture grains against a target and/or against each other in a high-kinetic energy stream, the sand mixture in said stream having flow rate of 1000–10,000 pounds per hour through a discharge opening having a diameter of 0.6–2 inches, whereby the remaining fragments of said shells on said mixture grains are dislodged and many particles finer than 200 mesh are separated by said suction, and

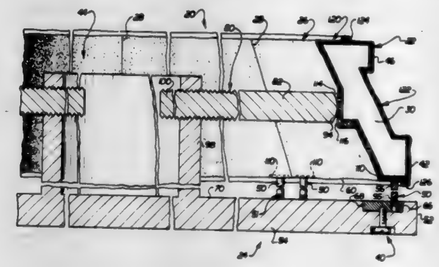
(c) subject said mixture of burst shells and sand grains to classification for separation.

4,449,567

METHOD AND APPARATUS FOR USE IN CASTING AN ARTICLE

William S. Blazek, Valley City, and Thomas S. Piwonka, Solon, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 6, 1979, Ser. No. 63,860
Int. Cl.³ B22D *33/04*
U.S. Cl. 164—137 **25 Claims**



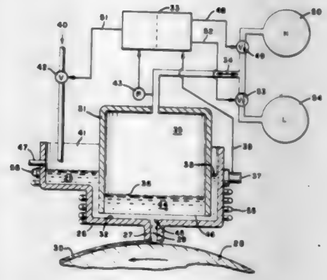
1. A method of assembling a mold which is utilized to cast an article, said method comprising the steps of positioning a plurality of mold wall segments in an array having circular upper and lower end portions, changing the diameter of the lower end portion of the array of mold wall segments relative to the diameter of the upper end portion of the array of mold wall segments by moving lower end portions of the mold wall segments relative to upper end portions of the mold wall segments, and changing the diameter of the upper end portion of the array of mold wall segments relative to the diameter of the lower end portion of the array of mold wall segments by moving the upper end portions of the mold wall segments relative to the lower end portions of the mold wall segments.

4,449,568

CONTINUOUS CASTING CONTROLLER

Mandayam C. Narasimham, Flanders, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 125,722, Feb. 28, 1980, abandoned, which is a continuation of Ser. No. 971,618, Dec. 20, 1978, abandoned. This application Oct. 19, 1981, Ser. No. 312,208
Int. Cl.³ B22D *11/06, 11/10, 11/16*
U.S. Cl. 164—453 **5 Claims**



1. Apparatus for the continuous casting of continuous filaments of glassy metal alloy comprising:

(a) a chill roll having cooling means for quenching a stream of molten metal at a quench rate sufficient for glass formation;

(b) a nozzle which has an orifice disposed so as to direct a stream of molten metal onto the chill surface of said chill roll; and

(c) extrusion means for continuously and indefinitely extruding molten metal through said nozzle at a substantially constant pressure from a non-pressurized reservoir containing molten metal and communicating with said nozzle, said reservoir having a pressure bell disposed internally thereof for applying pressure to said molten metal and being constructed to minimize the volume of molten metal in said reservoir outside said bell, maximize the change in level of the molten metal outside said bell in response to a change in bell pressure, provide a substantially constant pressure at said orifice and provide a nearly instantaneous on-off capability to interrupt extrusion, said pressure bell being inverted, disposed in said reservoir, spaced from the bottom surface thereof and having its side walls partially immersed below the level of molten metal contained in said reservoir; and said extrusion means further comprising:

(1) a gas regulator for regulating a quantity of inert gas in said bell to selectively apply pressure on the surface of the molten metal contained therein;

(2) a pressure sensor for sensing the pressure of the gas within said bell;

(3) level detection means for sensing a preselected height of the molten metal contained in said reservoir outside said bell, which corresponds to a preselected pressure head;

(4) first control means for maintaining a substantially constant pressure at said nozzle orifice by controlling the quantity of gas in said bell in response to said level detection means to thereby provide said substantially constant pressure at said nozzle orifice; and

(5) second control means for maintaining the level of the molten metal within said bell by controlling an input flow of molten metal to said reservoir in response to said pressure sensor.

3. A method for the continuous casting of continuous filaments of glassy metal alloy, comprising:

(a) moving a chill surface of a chill roll, having cooling means for quenching a continuous flow of molten metal at a quench rate sufficient for glass formation, past a nozzle which has an orifice disposed so as to direct a stream of molten metal onto the chill surface of said chill roll; and

(b) continuously and indefinitely extruding molten metal through said nozzle orifice at a substantially constant pressure from a non-pressurized reservoir, which contains molten metal and communicates with said nozzle, by application of pressure to a portion of said molten metal within a pressure bell disposed internally of said reservoir, the volume of molten metal within said bell being much greater than the volume of molten metal in said reservoir outside said bell, while maintaining a nearly instantaneous on-off capability to interrupt said extrusion, said pressure bell being inverted, spaced from the bottom surface of said reservoir, and having its side walls at least partially immersed below the level of the molten metal contained in said reservoir, and said extrusion step further comprising the steps of

(1) regulating a quantity of inert as in said bell to selectively apply pressure on the surface of the molten metal contained therein;

(2) sensing the pressure of the gas within said bell;

(3) sensing a preselected height of molten metal contained in said reservoir outside said bell, which corresponds to a preselected pressure head;

(4) maintaining a substantially constant pressure at said nozzle orifice by controlling the quantity of gas in said bell in response to changes from said preselected molten metal height outside of said bell to thereby provide said substantially constant pressure at said nozzle orifice; and

(5) maintaining the level of the molten metal within said bell by controlling an input flow of molten metal to said reservoir in response to the gas pressure within said bell.

4,449,569

METHOD AND APPARATUS FOR REGULATING FLUID FLOWS IN PARALLEL-CONNECTED CONDUITS (E.G. IN FURNACE INSTALLATIONS HAVING AIR PREHEATERS AND BY-PASS CONDUITS)

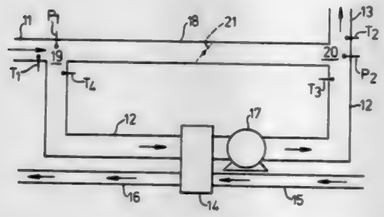
Edward L. Lisi, Morristown, N.J.; Juul A. Melleby, and Arne Andersson, both of Tolvsroed, Norway, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 8, 1982, Ser. No. 354,920

Claims priority, application United Kingdom, Mar. 24, 1981, 8109212

Int. Cl.³ G05D *23/00, 15/00;* B60H *1/00;* F28F *27/00*

U.S. Cl. 165—1 **8 Claims**



1. A method of regulating fluid flow from a first conduit via a second conduit including an air preheater and fluid-propelling means to a third conduit wherein a fourth conduit extends between the (first) junction of the first and second conduits and the (second) junction of the second and third conduits, the method comprising sensing the fluid temperature T_1, in the first conduit adjacent the first junction, sensing the fluid temperature T_2 in the third conduit adjacent the second junction, sensing the fluid temperature T_3 in the second conduit adjacent the second junction, sensing the fluid temperature T_4 in the second conduit adjacent the first junction, and providing power to said fluid-propelling means to propel fluid through the second conduit in an amount sufficient to overcome the fluid pressure drop in said air-preheater and in accordance with the summation of $(T_1-T_4)-(T_2-T_3)$ to modulate the amount of power to said fluid-propelling means and thereby regulate the relative flows of fluid through the second and fourth conduits.

4,449,570

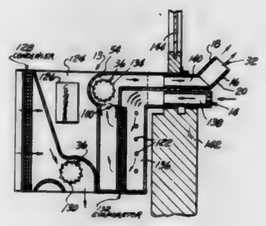
AIR CIRCULATION APPARATUS

Howard W. Locker, 820 N. Ocean Blvd., Delray Beach, Fla. 33444

Continuation of Ser. No. 91,095, Nov. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 17,412, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 817,222, Jul. 20, 1977, Pat. No. 4,142,456. This application Nov. 2, 1981, Ser. No. 317,075

Int. Cl.³ F24F *7/00*

U.S. Cl. 165—65 **5 Claims**



1. A portable elongated air circulation apparatus comprising an elongated parallelepipedonal enclosure having four elongated sides and two opposite end walls, an electrically driven elongated tangential flow impeller circulating air from an inlet disposed in a first elongated side of said enclosure to an outlet disposed in a second elongated side of said enclosure, said first and second sides being consecutive elongated sides of said enclosure, a shroud surrounding partially said elongated tangential flow impeller for directing air circulated through said enclosure by said elongated tangential flow impeller from said inlet to said outlet, a support base having a pair of lateral flanges, means connecting said enclosure end walls and said flanges for adjustably positioning said enclosure relative to said support base around a longitudinal axis of said enclosure for orienting said outlet in an appropriate direction, and throttle means for gradually throttling the flow of air through said inlet, wherein said inlet is in the form of a rectangular box-like duct provided with at least one row of regularly disposed stationary nozzles dividing the flow of air through said outlet into separate diverging air streams, said nozzles have substantially parallel opposite sidewalls, said nozzles are substantially square in section and have longitudinal axes mutually disposed at a constant predetermined angle, said constant angle being in the range of about 15° to about 30°, and said nozzles are formed between two opposite parallel sidewalls of said duct by wedge-shaped rigid and stationary fin members each having a flat outer face of a width equal to at least one-half the width of each of said nozzles and a pair of rearwardly converging sidewalls forming an angle equal to the angle of divergence of said nozzles, wherein said throttle means comprises at least one substantially rectangular plate hinged at a longitudinal edge relative to said enclosure at said inlet, said plate being controllably and progressively hingedly movable from a position masking a substantial area of said inlet to a position substantially unmasking said inlet.

4,449,571

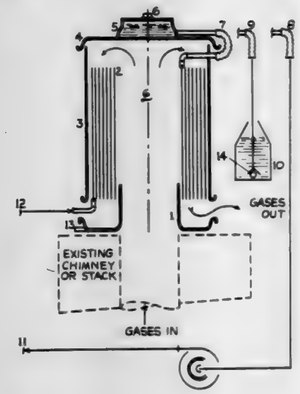
HEAT RECOVERY SYSTEM

Arthur R. Kramert, 1410 Del Rio Rd., Roseburg, Oreg. 97470

Continuation-in-part of Ser. No. 187,091, Aug. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 17,485, Mar. 5, 1979, abandoned. This application Nov. 16, 1981, Ser. No. 321,189

Int. Cl.³ F28F *00/00*

U.S. Cl. 165—1 **1 Claim**



1. A method for recovery of wasteheat from any source by placing a gas to liquid exchanger atop a chimney or stack within a housing providing for routing all the gases through the exchanger which has the requisite area, all its surfaces directly in the gas stream and low by-pass factor to maximize approach; extracting all the latent heats in the condensibles; and orienting the surface so that wetting by the condensates is exploited to further enhance the total heat transfer;

wherein the improvement lies in locating such an efficient exchanger at the apex of a chimney or stack so that the entire column of gases below remains hot and—thus without loss of natural draft—recovery of heat is constrained only by the temperature level of the liquid side.

4,449,572

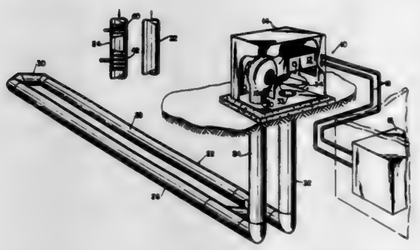
SUBTERRANEAN HEATING AND COOLING SYSTEM

Roland Lambert, Longwood, Fla., assignor to Ladek Corporation, Longwood, Fla.

Division of Ser. No. 248,427, Mar. 27, 1981, Pat. No. 4,369,635, which is a continuation-in-part of Ser. No. 51,405, Jun. 25, 1979, Pat. No. 4,279,291. This application Jan. 24, 1983, Ser. No. 460,186

Int. Cl.³ F24J *3/02*

U.S. Cl. 165—1 **3 Claims**



1. A method of heating or cooling a building utilizing a heat exchanger and a source of forced air for passing over said heat exchanger, said method comprising the steps of:

providing an underground pathway for air travel, said pathway having an inlet and an outlet;

locating said heat exchanger in said underground pathway;

forcing a quantity of air through said pathway;

recycling a portion of the air traveling along said pathway;

increasing the velocity of said recycled air as the latter commences travel along said pathway; and

directing air emanating from said pathway outlet to said building.

4,449,573

REGENERATIVE HEAT EXCHANGERS

Birger Pettersson, Älta, and Kurt Karlsson, Tyresö, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Continuation of Ser. No. 38,567, May 14, 1979, abandoned, which is a continuation of Ser. No. 785,586, Apr. 7, 1977, abandoned, which is a continuation of Ser. No. 641,307, Dec. 16, 1975, abandoned, which is a continuation of Ser. No. 473,823, May 28, 1974, abandoned, which is a continuation of Ser. No. 176,141, Aug. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 45,135, Jun. 10, 1970, abandoned. This application Apr. 30, 1982, Ser. No. 373,434

Claims priority, application United Kingdom, Jun. 16, 1969, 30314/69; Nov. 2, 1970, 51926/70

Int. Cl.³ F28D *19/04*

U.S. Cl. 165—10 **27 Claims**



1. A pack of heat transfer plates for regenerative air preheaters comprising a plurality of superimposed profiled plates, each pair of plates together forming elongated, substantially straight open-ended channels for substantially free flow therethrough in either direction of heat exchanging fluids substantially without deflecting the straight flowing heat exchanging fluids flowing through said open-ended channels from their substantially straight flow path, said channels extending between two opposite end surfaces of the pack and being closed on their sides by said pair of adjacent plates, each plate being provided with a plurality of spaced sets of straight continuous parallel double ridges extending obliquely to said end surfaces from one edge of the plate to another, the double ridges of each set having opposed crests protruding symmetrically from both opposite sides of each of said plates, adjacent sets of double ridges of each of said plates being separated by separating plate portions of a width greater than the height of said double ridges above the median plane of the plate, said double ridges each having an interior wall defined by an intermediate contact pressure resisting web portion joining the opposed crests of the double ridge, said intermediate web portion being steeply sloping relative to said median plane of the plate to effectively resist the contact pressure between said superimposed plates, each ridge of said double ridges having an outer wall which extends from the respective crest to the separating plate portion adjacent the respective crest, said outer walls symmetrically sloping relative to said separating plate portion and having a substantially lower slope relative to said median plane than said intermediate web portion, said separating plate portions being provided with undulations substantially parallel with the ridges, said undulations having a ratio of undulation height over the middle plane of the plate to undulation pitch amounting to 0 to 1/6, and said plates being so disposed relative to each other that the ridges of one plate lie transverse to the ridges of adjacent plates so that the ridges of the adjacent plates cross each other at respective crossing portions of the

crests of the ridges thereof, and said adjacent plates supporting each other solely by direct contact at the crossing portions of the crests of the ridges to form said flow channels between adjacent plates, the angle between the ridges and said end surfaces of the plate pack being between 40° and 75°, and being smaller than 75° when said ratio is equal to 0 and smaller than 70° when said ratio is greater than 0,

whereby each time a heat exchanging fluid flowing in a given flow channel reaches a crossing portion of the crests of the ridges of adjacent plates, the fluid is split up into sub-flows, one sub-flow portion flowing to an adjacent flow channel to at least partly be mixed with the fluid of said adjacent flow channel, and another sub-flow portion remaining in said given flow channel.

4,449,574

VENTILATION DEVICE

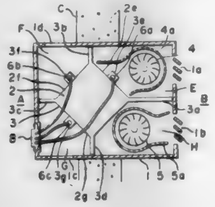
Masataka Yoshino; Yoshiki Hashimoto, and Yasunori Ushikosi, all of Nakatsugawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,863

Claims priority, application Japan, Oct. 23, 1981, 56-157997[U]; Oct. 23, 1981, 56-157998[U]; Oct. 23, 1981, 56-157999[U]; Oct. 23, 1981, 56-158000[U]

Int. Cl.³ G01K *13/00*

U.S. Cl. 165—11 R **4 Claims**



1. A ventilation device including a heat-exchanging means, said heat-exchanging means including an air-feeding passage having an inlet and an outlet and an air-discharging passage having an inlet and an outlet, comprising:

a first thermosensitive element placed at said inlet of said air-feeding passage to detect an outdoor air temperature;

a second thermosensitive element placed at said outlet of said air-feeding passage such that a fed air temperature is detected after the outdoor air has been thermally conditioned by said heat-exchanging means as the outdoor air circulates through said air-feeding passage of said heat-exchanging means;

a third thermosensitive element placed at said inlet of said air-discharging passage such that a room air temperature is detected prior to the room air being thermally conditioned by said heat-exchanging means as the room air circulates through said air-discharging passage of said heat-exchanging means to exit via said outlet of said air-discharging passage; and

a display unit for showing said outdoor air temperature, said fed-air temperature and said room air temperature detected by said first thermosensitive element, said second thermosensitive element and said third thermosensitive element, respectively.

4,449,575

FLUIDIZED BED HEATING APPARATUS

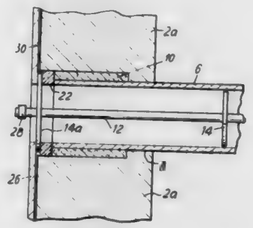
William R. Laws, 19 Tudor Ave., Worcester Park, Surrey, and Geoffrey R. Reed, 8 Beechdene, Tadworth, Surrey, both of England

Filed Mar. 27, 1981, Ser. No. 248,043

Claims priority, application United Kingdom, Mar. 28, 1980, 8010442

Int. Cl.³ F28F *7/00, 9/04*

U.S. Cl. 165—82 **12 Claims**



1. Heat exchange apparatus for high temperature gas heating comprising a chamber for a first heat exchange medium containing a fluidised bed material, conduit means below said chamber and communicating with said chamber for the supply of fluidising and combustion material to said chamber for maintaining fluidised bed combustion in said chamber as a heating medium, a multiplicity of ceramic tubes for a gaseous medium to be heated extending through the fluidised bed in said chamber to opposite and mutually transverse pairs of side walls bounding said chamber, each said side wall comprising a series of parallel ceramic blocks superimposed on each other edge to edge, recesses formed in said edges of the blocks providing seatings between adjacent blocks for said ceramic tubes extending through the chamber, sealing means in said seatings for sealing between the ends of the tubes and the side walls, said tubes being arranged in a series of banks at different levels in said chamber and sucessive banks of tubes at successive levels extending transversely to each other, whereby the seatings at said successive levels are provided in alternate pairs of said mutually transverse pairs of side walls of the chamber, said sealing means comprising flexible seal elements engaging the end faces of the tubes and retaining means bearing on said seal elements at their axially outer ends.

4,449,576

HEAT-PRODUCING ELEMENTS WITH HEAT PIPES

Walter Baum, Hanover; Michael Still, Langenhagen, and Erich Becker, Seeheim-Jugenheim, all of Fed. Rep. of Germany, assignors to Kabel- und Metallwerke, Hanover, Fed. Rep. of Germany

Filed Nov. 27, 1981, Ser. No. 325,574

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044314

Int. Cl.³ F28D *15/00;* H01L *23/42*

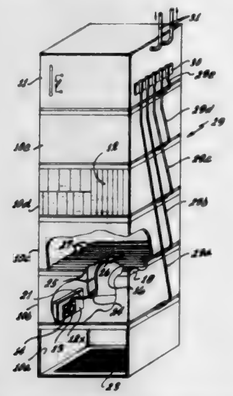
U.S. Cl. 165—104.33 **10 Claims**

1. An enclosure for receiving PC-boards, of which one or more carry at least one electric or electronic power element that develops significant amounts of heat, comprising:

the enclosure being air-tightly sealed, and having a top, there being ducts in the top filled with an evaporating working fluid;

first means including a working fluid containing tubular or

hollow means disposed for conducting thermal energy from the interior of the enclosure to said top; and



second means coupled to the top outside said enclosure for removing said conductive thermal energy.

4,449,577

METHOD OF STORING ENERGY AND SYSTEM FOR CARRYING OUT THIS METHOD

Hannes Alfvén, Lillängsvägen 3, S-183 64 Täby; Nicolai Herlofson, Marknadsvägen 291 NB, S-183 34 Täby; Miroslav Babic, Kallkärrsvägen 1, S-141 41 Huddinge, and Ernst-Ake Brunberg, Frejavägen 34, S-182 64 Djursholm, all of Sweden

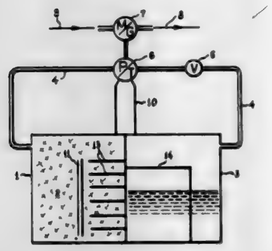
PCT No. PCT/SE80/00314, 371 Date Jul. 31, 1981, 102(e) Date Jul. 31, 1981, PCT Pub. No. WO81/01726, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 4, 1980, Ser. No. 287,749

Claims priority, application Sweden, Dec. 11, 1979, 7910174

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—104.12 **8 Claims**



1. Method for the storing of energy in a two-vessel system, whose one vessel contains a first substance which comprises two components, one of which is driven off and is brought to become absorbed, respectively, by the other component at the supply of energy to and the withdrawal of energy from the system, respectively, said method comprising the steps of storing mechanical energy in the system by pumping said one component out of said one vessel and into the other vessel, while maintaining the two vessels of the system substantially in thermal equilibrium with each other, and maintaining a substantially higher pressure in said other vessel than in said one vessel during said storing of mechanical energy.

4,449,578

DEVICE FOR RELEASING HEAT

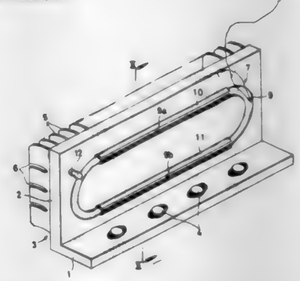
Masaaki Munekawa, Tochigi, Japan, assignor to Showa Aluminum Corporation, Osaka, Japan

Filed Jun. 12, 1981, Ser. No. 273,087

Claims priority, application Japan, Jun. 16, 1980, 55-84452[U]; Jun. 16, 1980, 55-84453[U]; Jun. 16, 1980, 55-84454[U]

Int. Cl.³ F28D *15/00;* H01L *23/42*

U.S. Cl. 165—104.33 **3 Claims**



1. A device for releasing heat comprising an extruded aluminum main body having a predetermined cross section and including a horizontal wall to serve as a portion for attaching heat emitting elements thereto and a vertical wall to serve as a finned portion, and a heat pipe portion provided on one side of the vertical wall, the vertical wall being formed with fins on at least one of its opposite sides to serve as the finned portion, said fins being integral with the main body and formed by gouging the main body at a multiplicity of locations spaced apart by a specified distance, the heat pipe portion being provided by a looped pipe having a vacuum interior and containing a working fluid enclosed therein.

4,449,579

COOLING APPARATUS FOR A CLOSED HOUSING

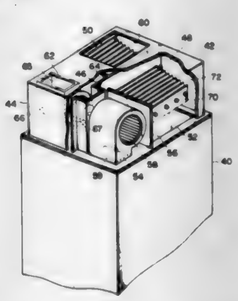
Yoshiro Miyazaki, Tokyo; Toshio Yasunaga, and Tomiya Sasaki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 20, 1982, Ser. No. 341,055

Claims priority, application Japan, Jan. 30, 1981, 56-11509

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.33 **7 Claims**



1. A cooling apparatus for a housing which is provided with an opening at the upper part thereof, comprising:

a casing located on the upper part of the housing and including a bottom plate to close the opening and a chamber;

a partition wall provided in the casing to divide the chamber into a first chamber section and a second chamber section;

said bottom plate having a first inlet opening and a first outlet opening, said first chamber section communicating with the interior of the housing by means of the first inlet opening and the first outlet opening, and said casing hav-

ing a second inlet opening and a second outlet opening, said second chamber section communicating with the exterior of the housing by means of the second inlet opening and the second outlet opening;

heat exchange means including a plurality of heat pipes provided in the casing through the partition wall with coolant therein for exchanging heat in the first chamber section with heat in the second chamber section, each of said heat pipes having one end portion in the second chamber section above the first inlet opening and the other end portion in the second chamber section under the second inlet opening, wherein said plurality of heat pipes are disposed in an inclined plane such that said one end portion is located lower than said other end portion;

a first fan provided in the first chamber section to generate a first air stream passing through the first inlet opening and the first outlet opening and passing by the one end portion of the heat pipe;

a second fan provided in the second chamber section to generate a second air stream passing through the second inlet opening and the second outlet opening and passing by the other end portion of said heat pipe; and

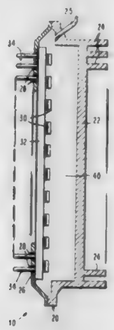
driving means provided in the casing for driving the first and second fans.

4,449,580

VERTICAL WALL ELEVATED PRESSURE HEAT DISSIPATION SYSTEM

Arnold Reisman; Melvin Berkenblit, both of Yorktown Heights, and Charles J. Merz, III, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 280,149
Int. Cl.³ F28D *15/00*; H01L *23/46*
U.S. Cl. 165—104.34 **15 Claims**



1. A heat dissipating system for cooling a heat source comprising:

an encased module having side walls;

said heat source being mounted within said encased molule such that there is a definite spacing for promoting a natural convection between said heat source and said module side walls, said heat source being at a desired operating temperature;

the temperature of the walls of said encased module being lower than said operating temperature of said heat source; and

a gas at an elevated pressure for promoting said natural convection, and being contained within said encased module for providing an enhanced thermal coupling between said heat source and the walls of said encased module primarily by natural convection of said gas;

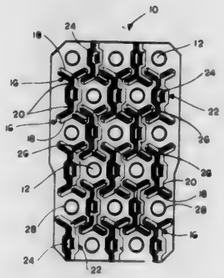
whereby heat removal from said heat source is increased.

4,449,581

HEAT EXCHANGER FIN ELEMENT WITH DOG-BONE TYPE PATTERN OF CORRUGATIONS

Wayne G. Blystone, and Gerald W. Lemmon, both of Mount Vernon, Ill., assignors to Chromalloy American Corporation, St. Louis, Mo.

Filed Aug. 30, 1982, Ser. No. 413,246
Int. Cl.³ F28F *1/32*
U.S. Cl. 165—151 **7 Claims**



1. A heat exchanger core assembly adaptable for allowing the passage of a first fluid medium therethrough comprising a plurality of substantially parallel tubular members extending through said core assembly, a plurality of spaced apart fin elements having a plurality of openings extending therethrough adapted for receiving said tubular members, said tubular members being disposed through said fin openings and adapted for receiving and carrying a second fluid medium therewithin, said fin elements being disposed in a substantially parallel relationship with each other and each pair of said fin elements defining a passageway therebetween for allowing said first fluid medium to flow therethrough, each of said fin elements having oppositely facing surfaces associated therewith and each including a uniform discontinuous corrugated surface pattern extending in surrounding relationship around each of said tubular members, each of said corrugated patterns being displaced from the general plane of said fin elements so as to form a discontinuous six-sided shaped indentation around each of said tubular members on one of said fin surfaces and a corresponding discontinuous six-sided shaped projection around each of said tubular members on the other of said fin surfaces, each respective side of said six-sided shaped indentations and projections extending in a non-radial pattern around each of said tubular members, said corrugated surface patterns operatively directing at least a portion of the first fluid medium over said fin elements and around said tubular members to the downstream side of said tubular members.

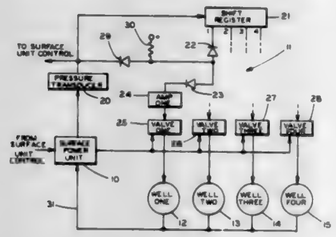
4,449,582

SEQUENCED PRODUCTION INCORPORATING FLUID ROD PUMP

Daniel G. Peterson, Los Angeles; John W. Erickson, Huntington Beach, and Horace M. Robinson, Los Angeles, all of Calif., assignors to Kobe, Inc., City of Commerce, Calif.

Filed Aug. 23, 1982, Ser. No. 410,300
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—64 **8 Claims**

1. An apparatus for pumping production fluid from a plurality of subterranean wells, a common source pump means, a plurality of downhole pump means with one of said downhole pump means in each of said wells, a plurality of valve means having input and output means, means connecting said common source pump means to the input means of each of said valve means, means for connecting the output means of one of said valve means to one of said downhole pump means for each of said plurality of downhole pump means, means for generating sequential electronic signals for enabling each of valve means in a predetermined sequence, means for connecting one of said enabling signals to one of said valve means for each of said plurality of valve means, each of said valve means being responsive to an associated one of said enabling signals to connect said common source pump means to said downhole



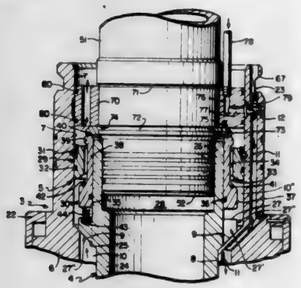
pump means in said predetermined sequence to produce cycles of pressurized fluid, and means for disabling said enabling signals connected to said means for connecting said enabling signals.

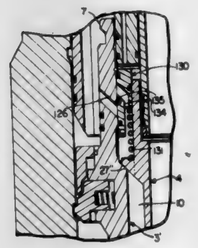
4,449,583

WELL DEVICES WITH ANNULUS CHECK VALVE AND HYDRAULIC BY-PASS

John E. Lawson, London, England, assignor to ARMCO Inc., Middletown, Ohio

Filed Sep. 21, 1981, Ser. No. 304,078
Int. Cl.³ E21B *34/10, 34/12*
U.S. Cl. 166—72 **31 Claims**





25. A well having an annulus check valve, the combination comprising:

a well head lower body having a vertical bore therein;

an upper tubular member receivable on said well head lower body;

a hanger member supported in said vertical bore;

a hanger mandrel supported in said hanger member and having tubing extending downwardly therefrom;

said hanger mandrel and hanger member being spaced to define a fluid passageway therebetween;

a normally closed check valve, including a longitudinally slidable, annular valve member, located in and spanning said fluid passageway to prevent fluid flow in said fluid passageway; and

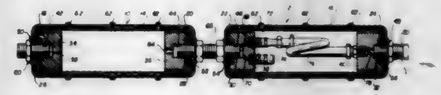
means, carried by said upper tubular member, for opening said check valve when said upper tubular member is received on said well head lower body.

4,449,584

INFLATABLE FLOWING HOLE PLUG

Byron Christensen, Box 626, Innisfail, Alberta, Canada (T0M 1A0)

Filed Aug. 12, 1982, Ser. No. 407,580
Int. Cl.³ E21B *33/127*
U.S. Cl. 166—187 **14 Claims**



1. A flowing hole plug system, comprising:

(a) two longitudinally and laterally extensible fluid inflatable hole plugs, including an upper plug and a lower plug;

(b) flexible extensible duct means disposed in said upper plug;

(c) first means for connecting said upper plug to a fluid supply line;

(d) second means for connecting said plugs so as to allow fluid communication between said plugs;

(e) said duct means disposed in said upper plug connecting said first and second means; and,

(f) valve system means disposed in said upper plug for controlling inflation of said upper and lower plugs.

4,449,585

APPARATUS AND METHOD FOR IN SITU CONTROLLED HEAT PROCESSING OF HYDROCARBONACEOUS FORMATIONS

Jack E. Bridges, Park Ridge, and Allen Taflove, Wilmette, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Jan. 29, 1982, Ser. No. 343,903
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—248 **59 Claims**

1. A method for the controlled in situ heat processing of hydrocarbonaceous earth formations comprising the steps of:

placing a plurality of electrodes into a particular volume of hydrocarbonaceous material in a pattern which bounds said volume and defines a waveguide structure having said bounded volume present as a dielectric medium bounded therein, and which is configured such that the direction of propagation of aggregate modes of wave propogation therein is approximately parallel to an elongate axis of said electrodes, said structure having first and second axially displaced ends;

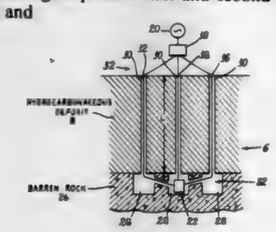
supplying electromagnetic energy to said waveguide structure at a frequency selected to confine said electromagnetic energy substantially in said structure and to dissipate said electromagnetic energy substantially to the earth formations; and

terminating one end of said structure with different effective termination impedances at different times to produce electric field standing waves of different respective phase at said one end at the selected frequency.

51. A system for the controlled in situ heat processing of hydrocarbonaceous earth formations, comprising

a waveguide structure comprising a plurality of elongate electrodes and configured such that the direction of propagation of aggregate modes of wave propagation therein is approximately parallel to an elongate axis of said electrodes and bounding a particular volume of earth forma-

tions as a dielectric medium bounded therein, said structure having respective first and second axially separated ends; and



means for supplying electromagnetic energy to said waveguide structure at each of said ends thereof at a frequency selected to confine said electromagnetic energy substantially in said structure and to dissipate said electromagnetic energy substantially to the earth formations.

4,449,586

PROCESS FOR THE RECOVERY OF HYDROCARBONS FROM OIL SHALE

Peter Urban, Northbrook; Russell W. Johnson, Villa Park, and Lee Hilfman, Mt. Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 378,024, May 13, 1982. This application Jun. 11, 1982, Ser. No. 387,404
Int. Cl.³ C10G *1/04*; E21B *43/24*
U.S. Cl. 166—303 **15 Claims**

1. A process for the recovery of hydrocarbons from oil shale containing hydrocarbons which comprises:

(a) heating said shale in the presence of a gas comprising hydrogen sulfide at subcritical conditions of said gas including a temperature from about 650° F. to about 825° F. to produce a solvent extractable material and to liberate at least a first portion of the hydrocarbon contained therein; and

(b) contacting the resulting solvent extractable material with a normally-liquid solvent at subcritical, reflux conditions of said solvent to liberate at least a second portion of the hydrocarbon contained in said solvent extractable material.

14. A process for the in situ recovery of hydrocarbons from oil shale containing hydrocarbons which comprises:

(a) heating said shale in the presence of gas comprising hydrogen sulfide at subcritical conditions of said gas including a temperature from about 650° F. to about 825° F. to produce a solvent extractable material and to liberate at least a first portion of the hydrocarbon contained therein; and

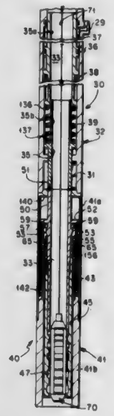
(b) contacting the resulting solvent extractable material from step (a) with a normally-liquid solvent at subcritical, reflux conditions of the solvent including a temperature from about 100° F. to about 900° F. and a pressure from about atmospheric to about 2000 psig to liberate at least a second portion of the hydrocarbon contained in the solvent extractable material.

4,449,587

SURFACE CONTROLLED SUBSURFACE SAFETY VALVES

Charles M. Rodenberger, Carrollton; Phillip S. Sizer, Dallas, both of Tex., and Kevin C. O'Malley, Mar Vista, Calif., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Jan. 6, 1983, Ser. No. 456,333
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—323 **17 Claims**



1. A well tool for locking open the valve closure means of a surface controlled subsurface safety valve, comprising:

a. housing means with a longitudinal passageway extending therethrough;

b. means for attaching the housing means to the safety valve below its valve closure means;

c. a lock-open sleeve slidably disposed in the longitudinal passageway having a first position which does not affect operation of the valve closure means and a second position which holds the valve closure means in its open position;

d. means for releasably securing the lock-open sleeve in its first position;

e. means for biasing the lock-open sleeve to shift from its first to its second position;

f. a sleeve slidably disposed in the longitudinal passageway;

g. a portion of the lock-open sleeve telescoped partially into the sliding sleeve; and

h. means for contacting the releasable securing means by the sliding sleeve whereby the lock-open sleeve is released from its first position.

4,449,588

FIRE EXTINGUISHER MOUNTING UNIT

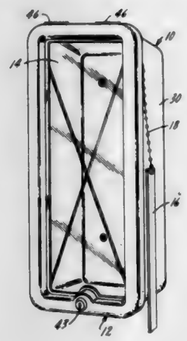
Leon Benlolo, 9370 NW. 13th St., Plantation, Fla. 33322, and Carl O. Tolf, Jr., 300 Delnor Ave., St. Charles, Ill. 60174

Filed Jan. 18, 1982, Ser. No. 339,853
Int. Cl.³ A62C *25/00*
U.S. Cl. 169—48 **2 Claims**

1. A fire extingusher mounting unit including a cabinet, a frame and an access panel, said cabinet and frame being formed from a flame retardant, high impact plastic with said access panel being formed of a grooved acrylic sheet,

said cabinet being generally rectangular and having a rear wall and four tapered side walls integral therewith, each of said side walls having an offset ledge remote from the rear wall thereof, with the interior surface of said ledge being generally continuous and providing a support for mounting said access panel,

said frame having a generally U-shaped cross section with the outer edge of said side walls extending into the open side of said frame generally the entire depth of said generally U-shaped cross section frame when the frame is mounted upon said access panel and cabinet, the interior wall of said frame having an inwardly-extending flat portion which is positioned against the exterior of said access



panel with the interior surface of said ledge and the inward side of said frame inwardly-extending flat portion being spaced apart a distance generally equal to the thickness of said access panel whereby the access panel is held between said inwardly-extending flat portion and said offset ledge,

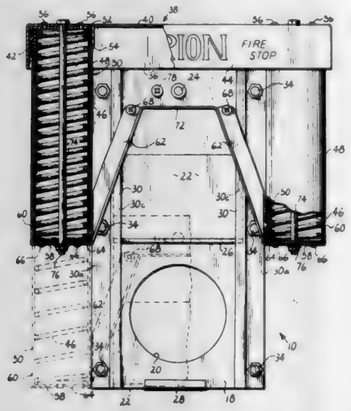
said cabinet being mountable either with the rear wall positioned against a support or recessed whereby the exterior of said offset ledge is peripherally positioned against a support.

4,449,589

FIRE CONTAINMENT DEVICE AND METHOD

John T. McCoy, 613 N. 5th St., Kansas City, Kans. 66101

Filed Oct. 16, 1981, Ser. No. 312,142
Int. Cl.³ A62C *7/00*
U.S. Cl. 169—48 **5 Claims**



1. Fire containment apparatus operable under fire conditions to close a building opening which extends through a building surface and which receives a fusible member such as a conduit or the like, said apparatus comprising:

a plate member adapted to be mounted to the building surface and having an opening for alignment with the building opening to permit the conduit to extend through the aligned openings with the aligned openings providing the sole passage through the building surface;

a blade having a cutting edge adapted to cut through the condut;

means for mounting said blade on the plate member in a manner to slide thereon between a normal position wherein the blade is offset from said opening in the plate member and an activated position wherein said blade covers the opening in the plate member, said blade being held closely against said plate member in the activated position to completely close the aligned opeings;

means for forcefully biasing said blade toward the activated position thereof,

said biasing means including a spring acting in a manner to forcefully urge said blade toward the activated position and a fire resistant tube substantially enclosing said spring therein to provide a heat shield for the spring;

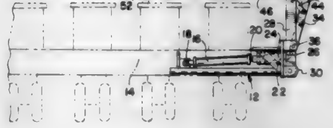
temperature sensitive means for holding said blade in the normal position at temperatures below a predetermined level indicative of fire conditions, said temperature sensitive means releasing the blade when said preselected temperature level is reached, whereby under fire conditions the blade moves to the activated condition and cuts through the conduit under the influence of said biasing means to completely close the aligned openings to prevent fire from spreading through the building opening.

4,449,590

ROW MARKER ARM ASSEMBLY

Gerald E. Williamson, Macomb, Ill., assignor to Yetter Manufacturing Co., Colchester, Ill.

Filed Sep. 21, 1982, Ser. No. 420,800
Int. Cl.³ A01B *17/00*
U.S. Cl. 172—126 **3 Claims**



1. An agricultural row marker assembly comprising:

a base member connectable to a tool bar;

a first arm pivotally connected to said base member;

a second arm having a first end, a second end and a tail piece fixed to the first end, said first end pivotally connected to said first arm;

a third arm pivotally connected to the second end of said second arm and having a row marker device mounted on said third arm;

a hydraulic cylinder mounted to said base and including an extendable rod;

a first link having one end pivotally mounted to said extendable rod and another end pivotally mounted to said first arm;

a second link having one end pivotally mounted to said base and another end having a pin pivotally and slidably mounted in an elongated slot defined in said tail piece, said slot aligned to permit vertical deflection of said row marker when the assembly is fully extended but not permitting lost motion when the assembly is being retracted; and

a cable having one end fixed to said second link at a point intermediate the two ends of said second link and another end fixed to said third arm whereby extension of said extendable rod urges said first arm into an extended posi-

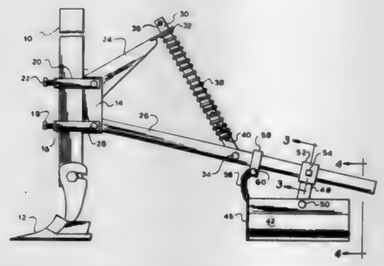
tion and applies tension to said cable urging said first, second and third arms into substantially linear alignment.

4,449,591

AGRICULTURAL CLEAN-OUT DRAG

George L. Brown, Idalou, Tex., and Lindell E. Lee, Jr., P.O. Box 402, Idalou, Tex. 79329, assignors to Lindell E. Lee, Jr., Idalou, Tex.

Filed Dec. 10, 1981, Ser. No. 329,293
Int. Cl.[3] A01B *13/00*; E02F *5/02*
U.S. Cl. 172—195 12 Claims



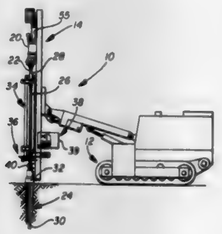
1. A drag for cleaning out agricultural furrows behind plows comprising:
   a. a semi-cylinder shell open at the back and top,
   b. a flat semi-circular plate attached to the front of the shell closing it,
   c. a bail pivoted to the shell rearward of the center of the shell,
   d. a boom adapted to be attached to a plow shank,
   e. said bail attached to the boom, and
   f. a flexible tension element extending from the boom to the flat plate at the front of the shell.

4,449,592

AUTOMATIC DRILL STRING SECTION CHANGER

James R. Mayer, Englewood, Colo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 23, 1981, Ser. No. 246,310
Int. Cl.[3] E21B *19/14*
U.S. Cl. 175—52 47 Claims



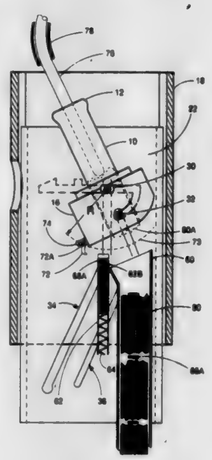
1. A storage rack for storing drill string sections for use with a drill unit having a mast, comprising:
   upper and lower support arms secured at spaced apart positions along the mast;
   a pivot shaft mounted between said upper and lower support arms to allow for pivotal motion;
   upper and lower swing arm members secured at first ends to said pivot shaft adjacent said upper and lower support arms, respectively;
   a center shaft rotatably mounted between said upper and lower swing arm members at the ends opposite said first ends;
   an upper rack member mounted for rotation to said center shaft adjacent said upper swing arm member and having four arms extending outwardly, each arm comprising a fixed finger having a generally planar inner surface for contacting a first side of a coupling on a drill string section, a clamping finger having a generally arcuate inner surface with a notch formed therein for contacting the opposite side of the coupling at least at two points, means pivotally mounting said clamping finger to said arm, spring means for biasing the inner surface of said clamping finger toward the inner surface of said fixed finger to form a clamp for clamping the coupling therebetween, and a fixed stop for limiting the motion of said inner surface of said clamping finger toward said inner surface of said fixed finger such that motion of said arm toward the coupling after the coupling contacts said fixed and clamping fingers pivots said clamping finger to admit the coupling between the inner surfaces of said fingers to clamp the coupling; and
   a lower rack member mounted for rotation to said center shaft adjacent to said lower swing arm member and having four arms extending outwardly, each arm being aligned with an arm in said upper rack member and comprising a fixed finger having a generally planar inner surface for contacting a first side of a drill string section, a clamping finger having an inner surface conforming to the cross sectional shape of the drill string section for contacting the drill string section, means pivotally mounting said clamping finger to said arm, spring means for biasing the inner surface of said clamping finger toward the inner surface of said fixed finger to form a clamp for clamping the drill string section therebetween, and a fixed stop for limiting the motion of said inner surface of said clamping finger toward said inner surface of said fixed finger such that motion of said arm toward a drill string section after the section contacts said fixed and clamping fingers pivots said clamping finger to admit the drill string section between the inner surfaces of said fingers to clamp the section.

4,449,593

GUIDE FOR SIDEWALL CORING BIT ASSEMBLY

Alfred H. Jageler; Gary D. Bruce, and Houston B. Mount, II, all of Tulsa, Okla. 74135, assignors to Standard Oil Company, Chicago, Ill.

Filed Sep. 29, 1982, Ser. No. 426,304
Int. Cl.[3] E21B *49/06*
U.S. Cl. 175—58 17 Claims



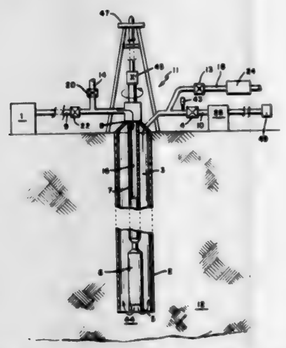
1. An apparatus for drilling a sidewall core comprising:
   an elongated housing having an opening in the wall thereof;
   a fixed plate means secured to said housing and having a guide slot substantially perpendicular to the longitudinal axis of the housing and an arcuate section at one end thereof;
   a drive plate adjacent said fixed plate means and movable with respect to said housing and having a first and a second slot, said first slot having a first section parallel to the axis of said housing and a second section forming a selected angle with said first section;
   said second slot having a lower section parallel to said second section and an upper section making a second selected angle with said lower section;
   drive means to move said drive plate;
   a bit assembly mounted to said housing and having guide means engaging said guide slot means and said first and second slot to extend and retract said assembly through said opening of said housing in response to the movement of said drive plate.

4,449,594

METHOD FOR OBTAINING PRESSURIZED CORE SAMPLES FROM UNDERPRESSURIZED RESERVOIRS

Ronald L. Sparks, Midland, Tex., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 30, 1982, Ser. No. 403,841
Int. Cl.[3] E21B *25/08*
U.S. Cl. 175—59 10 Claims



1. A method for obtaining a balanced, pressurized core sample from an underpressurized geological reservoir formation, comprising the steps of:
   (a) drilling a pressure core sampling well to a preselected depth;
   (b) determining a bottom hole reservoir pressure at the bottom of said well which is to be balanced;
   (c) drilling a pressurized core sample while a stable foam coring fluid, having a preselected composition, is introduced into said well at a predetermined empirically correlated control pressure selected to produce a resultant bottom hole foam pressure at the bottom of said well that substantially balances said reservoir pressure; and
   (d) encapsulating said core sample, while said reservoir pressure within said core sample is substantially balanced with said bottom hole foam pressure, to produce said balanced, pressurized core sample.

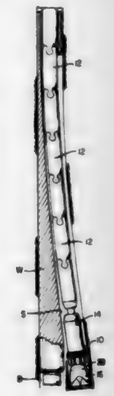
4,449,595

METHOD AND APPARATUS FOR DRILLING A CURVED BORE

Don R. Holbert, 6637 W. Hinsdale Ave., Littleton, Colo. 80123

Filed May 17, 1982, Ser. No. 378,786
Int. Cl.[3] E21B *10/30*
U.S. Cl. 175—79 12 Claims

7. In apparatus for use in combination with a radial whipstock assembly wherein a drill bit is connected to the lower end of a rotary drill string for advancement along a guide surface of the whipstock in drilling a curved bore, the improvement comprising:
   a reamer assembly rigidly connected to and directly behind said drill bit, said reamer assembly having a front stabilizer section directly connected to said drill bit and a plurality



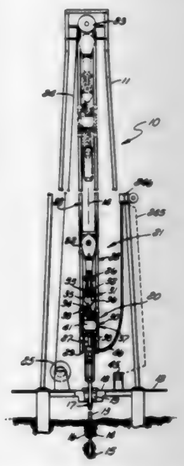
of cutter blades of a greater effective cutting diameter than said drill bit at a trailing end of said stabilizer section, each cutter blade having a leading end portion in facing relation to said drill bit and at least one cutting edge extending rearwardly in a direction away from said drill bit and from said leading end portion.

4,449,596

DRILLING OF WELLS WITH TOP DRIVE UNIT

George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Aug. 3, 1982, Ser. No. 404,896
Int. Cl.[3] E21B *19/06*
U.S. Cl. 175—85 40 Claims



1. Well drilling apparatus comprising:
   a top drive assembly to be received at the upper end of a drill string and which is movable upwardly and downwardly with the string;
   said assembly including an element to be connected to the upper end of the string for rotation therewith and motor

means for power rotating said element and the connected string;

a powered torque wrench at the lower end of said assembly operable to apply torque in opposite directions to said string and said element;

an elevator at the lower end of said assembly adapted to engage a section of said drill string at a location beneath the torque wrench and suspend said section for movement by the elevator;

connecting means attaching said torque wrench and said elevator to said top drive assembly for movement upwardly and downwardly therewith and in a relation suspending said torque wrench and said elevator and a section of the drill string carried by the elevator from said top drive assembly;

said connecting means being constructed to enable movement of said torque wrench and elevator vertically relative to one another.

4,449,597

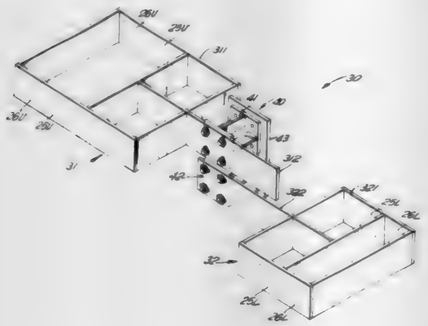
FLEXURE WEIGHING SYSTEM

Ronald J. Ricciardi, Woodcliff Lake, and Otto J. Rudolph, Oakland, both of N.J., assignors to Acrison, Incorporated, Moonachie, N.J.

Filed Apr. 23, 1982, Ser. No. 371,457

Int. Cl.³ G01G *21/08, 23/14, 23/06*

U.S. Cl. 177—256 **21 Claims**



1. A highly stable flexure based industrial weighing apparatus having a low center of gravity and high resistance to noise forces due to vibration and similar influences in the industrial work environment comprising a split-beam assembly including two beams, each beam having an interconnecting end and a load-bearing end, the interconnecting ends of said beams being flexurally connected by a flexure linkage assembly including at least two flexures,

a rectangular frame having two sidewalls and two endwalls with each sidewall connected to two points between the two ends of each beam by a flexure,

the two points between the two ends of each beam being equidistant from their respective end walls so that each set of two points defines a pivot axis for its respective beam,

a weighting platform located above the beams and connected to one end of each of a plurality of mounting studs,

the other end of each of the plurality of mounting studs being connected to the load-bearing end of one or the other of the beams, with the load-bearing end of each beam connected to at least one stud,

the plurality of mounting studs supporting the weighing platform and transmitting a load force from the weighing platform to the load-bearing ends of the beams when an object to be weighed is on the weighing platform,

each of the flexures connecting the frame to the beams comprising a plurality of cross-members spaced about the pivot axis for the beam so that each flexure is resistant to noise forces which are not applied parallel to the load force,

said load force causing each of the flexures connecting the frame to the beams to flex about its pivot axis thereby causing each of the beams to rotate slightly about its pivot axis, and

means for sensing vertical movement of a predetermined point proximate to the interconnecting end of one of the beams and producing a signal indicative of that movement and consequently indicative of the weight of the object placed upon the weighing platform.

4,449,598

METHOD AND APPARATUS FOR STEERING A VEHICLE WITH FIXED-POSITION WHEELS

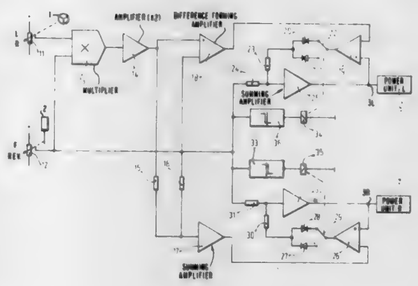
Helmut Hönes, Korntal, and Hubert Mohaupt, Bietigheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 21, 1982, Ser. No. 390,205

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 13135485

Int. Cl.³ B62D *11/02*

U.S. Cl. 180—6.5 **12 Claims**



1. Method of steering a vehicle in a predetermined path which includes a curve, having right (R) and left (R) rotating drive elements or wheels (8, 9) at the sides of the vehicle, respectively, by controlling the speed and direction of rotation of the wheels, having

a steering wheel (1) and a steering wheel position transducer (11) coupled thereto and providing a right-left (R-L) turning signal;

a direction control element (2) and a control element position transducer (12) coupled thereto and providing a forward-reverse (F-REV) direction drive signal;

and separate drive motors (6, 7) controlling the respective rotation of the L and R wheels (8, 9),

comprising the steps of

multiplying the turning signal and the direction signal and obtaining a combined signal;

adding said combined signal to the direction signal and obtaining a first turning control direction signal;

subtracting said combined signal from the direction signal and obtaining a second turning control direction signal;

controlling the wheel at the inside of the curve by, selectively, the first or the second turning control direction signal, respectively, in dependence on the relative level thereof;

and controlling the wheel at the outside of the curve of the turning direction in dependence on the driving direction signal.

4,449,599

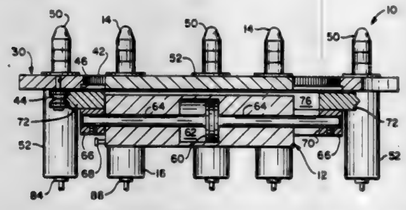
FINGER WALKER FOR TUBE SHEET

Ronald B. Creek, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 27, 1982, Ser. No. 423,976

Int. Cl.³ B25J *5/02*; F28G *15/04*

U.S. Cl. 180—8.1 **7 Claims**



1. An apparatus for remotely traversing a flat surface having a regular array of identical openings on a uniform pitch, comprising:

a rectangular base having four base fingers disposed in a rectangular pattern, the base fingers being adapted to selectively and in unison engage with and disengage from respective openings;

base finger insertion means carried by the base for selectively moving said base fingers perpendicularly toward and away from the surface;

an annular platform surrounding the base and connected thereto by bearing means for relative rotational motion between the base and platform in a plane substantially parallel to the surface;

a plurality of platform fingers uniformly disposed about the platform, the platform fingers being adapted to selectively and in unison engage with and disengage from respective openings when said base fingers are engaged in respective openings;

platform finger insertion means carried by the platform for selectively moving said platform fingers perpendicularly toward and away from the surface; drive means for rotating the platform relative to the base;

means selectively advancing the platform relative to the base in increments of at least one pitch along the major axis of the base;

control connection means for receiving remote control signals to advance the apparatus one cycle such that,

(a) the platform fingers are inserted into and engaged with respective openings,

(b) the base fingers are withdrawn from the surface,

(c) the base is rotated within the platform until the major axis of the base is aligned with the intended direction of travel along the surface,

(d) the base fingers are inserted into and engaged with respective openings,

(e) the platform fingers are disengaged and withdrawn from the surface,

(f) the platform is advanced a pitch multiple relative to the base along the axis direction; and

(g) the platform fingers are inserted into and engaged with respective openings as in (a) above, whereby the entire apparatus has cycled.

4,449,600

MOBILE CRANES OR AERIAL LIFT PLATFORMS

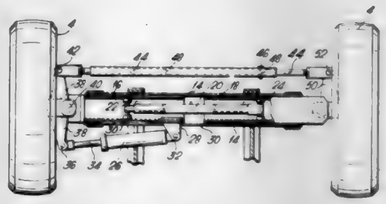
James D. Telfer, Sunderland, Great Britain, assignor to Coles Cranes Limited, England

Filed Aug. 27, 1981, Ser. No. 297,283

Claims priority, application United Kingdom, Sep. 3, 1980, 8028470

Int. Cl.³ B62D *21/14*

U.S. Cl. 180—132 **13 Claims**



1. A mobile weight lifting vehicle comprising a chassis and a weight lifting boom mounted thereto,

forward and rearward axle means mounted to said chassis,

wheel mounting means mounted to said forward and rearward axle means,

at least one said axle means being of variable track width and comprising a pair of coaxially housed sliding beams each carrying pivotally mounted thereon wheel mounting means at one end and mounted in an axle housing,

means for extending and retracting said sliding beams within said axle housing,

a steering arm mounted to each said wheel mounting means,

means for adjustably connecting the steering arms to one another,

a steering actuator having first and second ends, said first end mounted to one of said sliding beams and said second end mounted to one of said steering arms, whereby on extension or retraction of said variable track width axle the distance between the first and second ends remains the same.

4,449,601

POWER-ASSISTED STEERING GEAR ASSEMBLY

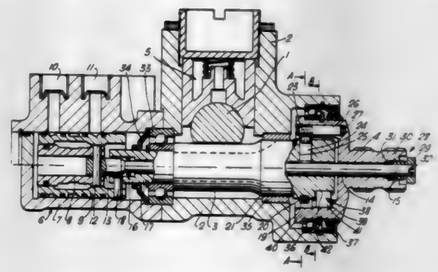
Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, England

Filed May 28, 1982, Ser. No. 382,816

Claims priority, application United Kingdom, Jun. 3, 1981, 8117028

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—148 **8 Claims**



1. A power assisted steering gear assembly comprising a steering input, a toothed driving member of tubular form which is rotatable about its axis, a toothed driven member whose teeth cooperate with those of the driving member for

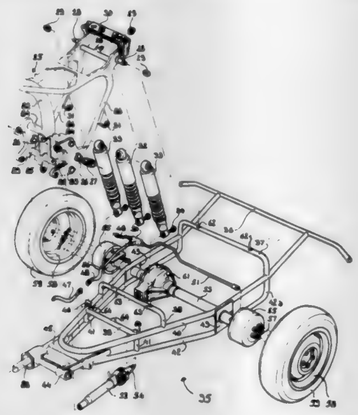
displacement of the driven member in response to rotation of the driving member to provide a steering output, fluid pressure-operated means associated with the driven member and adapted to provide power assistance to displacement of the driven member with rotation of the driving member, rotary valve means adapted to control distribution of said fluid to the power assistance means and comprising two concentric relatively rotatable valve members which are coaxial with the driving member and located on the side of said driving member remote from the steering input, one of the valve members coupled for rotation with the driving member, a torsionally rigid transmission member extending axially through the driving member and drivingly coupling the other of the valve members with the steering input, and spring means biasing the driving member and the steering input rotationally relative to each other and rotationally biasing the two valve members to a neutral condition.

4,449,602

REAR SUSPENSION AND STORAGE BOX FOR A THREE-WHEEL MOTORCYCLE

Fred M. Dittmann, Jr., Lake Zurich, Ill., assignor to Municipal Industries, Inc., Chicago, Ill.

Filed Jul. 9, 1982, Ser. No. 396,639
Int. Cl.³ B62K *5/06*
U.S. Cl. 180—215 **17 Claims**



1. A swing-arm type rear frame and suspension assembly for three-wheel motor vehicles comprising in operative combination:

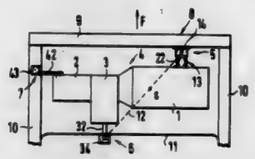
(a) A generally U-shaped frame having its closed end disposed forward and open end disposed rearwardly;
(b) said closed end of said frame having means for retaining a transverse disposed swing arm pivot member;
(c) said swing-arm pivot member being adapted to be pivotally received in a main frame member of said vehicle;
(d) said open end of said frame terminating in a transverse bumper member;
(e) a rigid axle having means for retaining wheels at each end disposed medially of the ends of said frame and parallel to said bumper member and said swing-arm pivot member;
(f) said rigid axle having an off-center differential;
(g) said swing-arm pivot member being adapted to receive a drive shaft therethrough transverse to the pivotal axis of said swing arm, said drive shaft being aligned with said off-center differential;
(h) at least one resilient member connecting said rear frame to said main frame, said resilient member being oriented generally vertically and inclined forwardly from bottom to top;
(i) means for retaining said bottom end of said resilient member disposed on said frame intermediate said swing-arm pivot and said axle;
(j) said main frame having a seat for a rider disposed thereon;
(k) means for retaining said top end of at said resilient member disposed beneath said main frame seat member; and
(l) means for securing a load carrying member disposed on rear frame intermediate the ends thereof.

4,449,603

SUSPENSION FOR A FRONT, ESPECIALLY A TRANSVERSELY-MOUNTED MOTOR VEHICLE POWER PLANT

Rolf Langwieder, Heimsheim; Rolf Rebmann, Kornwestheim; Erich Stotz, Kernen; Franz-Rudolf Wierschem, Kehrig, and Fred Trick, Münsingen, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,691
Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117378
Int. Cl.³ B60K *5/12*
U.S. Cl. 180—232 **22 Claims**



1. A suspension for a motor vehicle power plant arranged in an engine compartment defined by a frame structure on mounts located forwardly, rearwardly and laterally of the power plant, wherein one of said mounts comprises an energy-absorbing, high bending-strength longitudinal support that is connected by an elastic bearing to a transverse member of the frame structure forming an external end of the engine compartment, and is connected rigidly to the power plant; and in that at least one other of said mounts comprises a slide bearing means for permitting relative motion between the power plant and the frame structure.

4,449,604

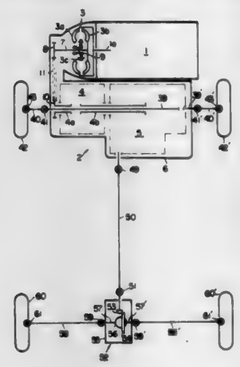
FOUR-WHEEL DRIVE SYSTEM FOR AUTOMOTIVE VEHICLE

Kunihiko Suzuki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 20, 1982, Ser. No. 380,292
Claims priority, application Japan, Jul. 15, 1981, 56-110434
Int. Cl.³ B60K *17/34*
U.S. Cl. 180—233 **17 Claims**

1. A four-wheel drive system for a vehicle having at least two pairs of road wheels consisting of a pair of front road wheels and a pair of rear road wheels, comprising:

a power unit having an output shaft rotatable about an axis in a lateral direction of the vehicle;
a power transmission gear unit including transmission input and output shafts having respective axes of rotation aligned with each other and substantially parallel with the axis of rotation of the output shaft of the power unit, and gears mounted on the transmission input and output shafts and arranged to be capable of selectively producing a plurality of ratios between the speeds of rotation of the transmission input and output shaft;
a first wheel drive gear unit comprising power splitting gear means operative to split driving power from said transmission output shaft into first and second driving power components, and a first differential gear assembly including gears arranged to split the first driving power component into two output power components to be respectively transmitted to one of said two pairs of road wheels, the power splitting gear means and the first differential gear assembly being positioned substantially in alignment with said transmission input and output shafts in a lateral direction of the vehicle; and
a second wheel drive gear unit comprising a second differential gear assembly including gears arranged to split the second driving power component into two output power components to be respectively transmitted to the other of said two pairs of road wheels;
wherein said first wheel drive gear unit further comprises final reduction gear means positioned axially between said power splitting gear means and said first differential gear assembly, and power transfer gear means intervening between said power splitting gear means and said second wheel drive gear unit and operative to transmit therethrough said second driving power component to said second differential gear assembly and wherein said power splitting gear means, said first differential gear assembly and said final reduction gear means are axially aligned with said transmission input and output shafts,



said final reduction gear means comprising a final-reduction planetary gear assembly including an externally toothed sun gear rotatable about an axis substantially aligned with the axes of rotation of the transmission input and output shafts, an internally toothed ring gear coaxially encircling the sun gear and rotatable about the axis of rotation of the sun gear, at least two planet pinions each held in mesh with the sun gear and the ring gear and rotatable about an axis of rotation substantially parallel with the axis of rotation of the sun gear, and a pinion carrier interconnecting the planet pinions together and rotatable about the common axis of rotation of the sun gear and the ring gear, said planetary gear assembly having an input member constituted by one of said sun gear, said ring gear and said pinion carrier and an output member constituted by one of the remaining two of the sun gear, ring gear and pinion carrier, said transmission output shaft being held in driving engagement with said input member, said output member being held in driving connection to said first differential gear assembly.

4,449,605

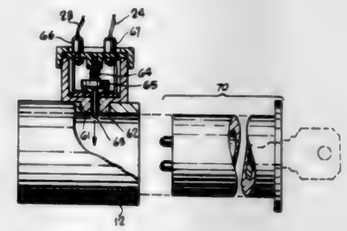
DEVICE FOR PREVENTING THEFT OF MOTOR VEHICLES

William A. Read, 35631 Cabral Dr., Fremont, Calif. 94536

Filed Mar. 23, 1981, Ser. No. 246,853
Int. Cl.³ B60R *25/08*
U.S. Cl. 180—287 **14 Claims**

1. An anti-theft system for a motor vehicle having an electrical ignition system and a fuel line, comprising:

valve means attached to said fuel line for allowing or inhibiting the flow of fuel in the line in response to an electrical signal;
first circuit means connecting said valve means to the ignition switch of said vehicle, whereby the flow of fuel is turned on or off when the ignition switch is on or off, respectively;
electrical relay means connected to and actuated by said ignition switch; and
second circuit means connecting said relay means to the coil of said ignition system, such that said coil is either supplied voltage or grounded in response to the actuation or deactuation of said relay means;
wherein the ignition switch which is connected to and actuates said relay means includes a housing support holding a key



cylinder and switch contacts, such that said switch contacts are closed by rotating said key cylinder in said housing support, and such that said ignition switch is operated by a key inserted into said key cylinder and connects an electrical power source to the motor vehicle electrical system said anti-theft system further comprising:
switching means actuatable by the removal of the key cylinder from said system;
fuse means in the electrical circuit of the power source for said system; and
third circuit means connecting said switching means to said fuse means, such that said power source is disconnected from portions of said electrical system by said fuse means upon removal of said key cylinder and connection of its switch contacts.

4,449,606

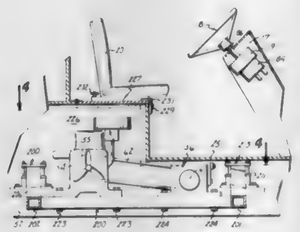
VEHICLE FRAME ASSEMBLY

Floyd E. Buschbom, Long Lake, and Glen D. Hansen, Maple Plain, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Division of Ser. No. 170,145, Jul. 18, 1980, Pat. No. 4,373,600. This application Sep. 29, 1982, Ser. No. 428,186
Int. Cl.³ B62D *61/06*; B60K *7/00*
U.S. Cl. 180—297 **8 Claims**

1. A vehicle comprising: a frame having first and second longitudinal horizontal side beams, said side beams being laterally spaced from each other, wheel means operably connected to the frame to support the frame for movement along a surface, fluid operated motor means drivably connected to the wheel means, a pump assembly for supplying fluid under pressure to the motor means whereby said motor means operates to drive said wheel means, engine means for operating said pump assembly, sub-frame means mounted on the frame, said sub-

frame comprising first and second transverse members, said transverse members being laterally spaced from each other, each transverse member having a generally horizontal mid-section located in the horizontal plane of the side beams and upwardly and outwardly end sections, a plurality of longitudinal members extended between and secured to the mid-sections



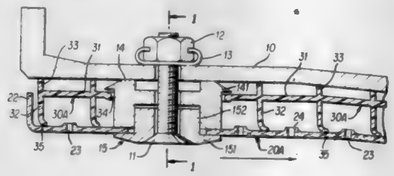
of the transverse members, mount means connecting said end sections to the side beams, said mount means including resilient means located between the end sections and the side beams, and means mounting the pump assembly and engine means for operating said pump assembly on said longitudinal members of the sub-frame means.

4,449,607

SOUNDPROOFING FOR A GAS PIPE, IN PARTICULAR FOR THE FAN JET OF A TURBOJET, AND EQUIPMENT FOR ITS FABRICATION

Alexandre Forestier, Vaux le Penil; Alain A. Pluquet, Melun; Roger A. Rosa, Morangis; Mansour Tabet, Melun, and Pierre M. Teysseyre, Juvisy sur Orge, all of France, assignors to S.N.E.C.M.A., Paris, France

Filed Jan. 26, 1982, Ser. No. 342,733
Claims priority, application France, Jan. 29, 1981, 81 01670
Int. Cl.³ E04B *1/82*
U.S. Cl. 181—213 **8 Claims**



1. A soundproof lining for the wall of a gas jet, said lining comprising:

a plurality of thin panels having overlapping ends and extending parallel to said wall;

means for fixing said panels directly to said wall and at a distance from said wall whereby said wall and panels define a space therebetween;

an intermediate ductile panel in said space, said ductile panel and said thin panels together defining a multiplicity of resonant acoustical cavities, wherein said intermediate panel comprises a thin polymer resin sheet having portions contacting said wall, said sheet including first ribs, the distal ends of said first ribs contacting said thin sheet to define said acoustical cavities; and

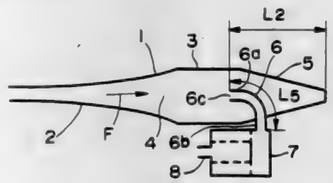
a plurality of acoustical vents for said cavities, said vents comprising perforations in said thin panels.

4,449,608

EXHAUST DEVICE FOR 2-CYCLE ENGINE

Makizo Hirata, and Yoshiteru Ueda, both of Kakogawa, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 19, 1981, Ser. No. 312,217
Claims priority, application Japan, Oct. 20, 1980, 55-149970[U]
Int. Cl.³ F01N *7/08*
U.S. Cl. 181—228 **8 Claims**



1. An exhaust device for a 2-cycle engine comprising:

an exhaust pipe connected at its upstream end to an exhaust port of the engine and having its cross-sectional area increased gradually from the upstream end in going toward the downstream end so that the exhaust pipe has an expanded section in its downstream portion; and

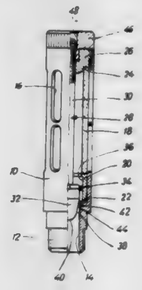
an outlet pipe having one part thereof inserted in the expanded portion of the exhaust pipe and opening at its upstream end in a position in which the open end faces the direction of flow of the exhaust gas and at its downstream end at one side of the exhaust pipe, whereby the exhaust gas flowing through the exhaust pipe can be led out of the exhaust pipe through the outlet pipe.

4,449,609

MUFFLER FOR PNEUMATIC APPARATUS

Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 403,168
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130292
Int. Cl.³ F01N *1/10, 1/18*
U.S. Cl. 181—230 **6 Claims**



1. In a muffler for use on pneumatic apparatus, said muffler having a hollow cylindrical housing with a connector means at one end and outlet openings, a hollow cylindrical damper cartridge made of a porous material and mounted inside said housing, wihin which hollow cartridge is arranged an axially adjustable choke member, said choke member having a choke head on an end thereof which faces said connector means, which together with a housing-fixed portion defines a variable choke gap therebetween, and a releasable knob member for axially fixedly orienting said damper cartridge in said housing, the improvement comprising wherein said outlet openings consist of elongate outlet slots which are provided in the peripheral wall of said housing and provides communication

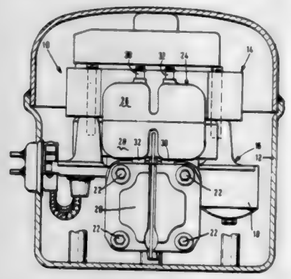
between the interior and exterior of said housing through said damper cartridge, wherein said choke head has a conically-shaped control section converging to a partial spherical end section, wherein said housing-fixed portion is a chamfered conically-shaped surface and wherein said choke head is provided with plural guide noses which slidingly engage a housing-fixed guide surface intermediate said housing-fixed portion and said damper cartridge to maintain a desired and thereby controlled spacing between the peripheral surface of said choke head and said guide surface as well as said housing-fixed portion.

4,449,610

MUFFLER FOR COMPRESSOR FOR REFRIGERATING APPARATUSES

Alfredo Bar, Pavia, Italy, assignor to Necchi Societa per Azioni, Pavia, Italy

Filed Feb. 17, 1982, Ser. No. 349,475
Claims priority, application Italy, Feb. 24, 1981, 42906 A/81
Int. Cl.³ F01N *1/08, 7/18;* F25D *3/02*
U.S. Cl. 181—243 **2 Claims**



1. A muffler for compressors which compressors consist of a hermetically sealed shell, a driving electric motor, a cylinder, and a head for said cylinder in which are located the intake and compression chambers of the refrigerant gas, said muffler consisting of two overlapping half-shells of identical structure, assembled by bringing their open walls together and rotating one half-shell 180° with respect to the other, each half-shell defining two extensions therefrom, one of said extensions in each half-shell defining a conduit therethrough communicating with the interior of said half-shell, said extension with conduit located on the upper half-shell conveying the refrigerant gas from the hermetically sealed shell into the muffler and the extension with conduit on the lower half-shell communicating the interior of said muffler with the intake chamber located in said head.

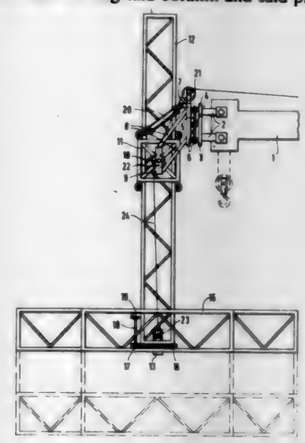
4,449,611

WORKING PLATFORM

Paul Frey-Wigger, Zeigerwald, CH-6247 Schötz, Switzerland

Division of Ser. No. 793,970, May 5, 1977, Pat. No. 4,274,793.
This application Nov. 19, 1980, Ser. No. 208,174
Claims priority, application Switzerland, May 5, 1976, 5611/76
Int. Cl.³ E04G *1/22, 1/36*
U.S. Cl. 182—63 **5 Claims**

1. A crane, comprising an extensible boom having an end portion, said boom being turnable about a vertical axis; a pivot bearing; means for detachably securing said pivot bearing to the end portion of said boom; a second bearing on which said pivot bearing is mounted; an elongated, substantially upright column on which said second bearing is reciprocably mounted, said column having an upper portion above and a lower portion below said second bearing; a platform; meanns for movably mounting said platform on one of said portions of said column; and means for moving said column and said platform



with respect to said second bearing, said moving means including a cable.

4,449,612

TREE STEP

Benny S. Southard, Rte. 1, Box 177, Summerfield, N.C. 27358

Filed Jun. 1, 1983, Ser. No. 499,833
Int. Cl.³ A63B *27/00, 29/04*
U.S. Cl. 182—92 **6 Claims**



1. A tree step comprising; an integral angle bracket having a foot-supporting portion and a projecting leg portion, said projecting leg portion having a tree-engaging end portion, a projecting supporting arm having opposite ends, one of said ends being secured to said angle bracket intermediate its ends, and the other said end being free, said other free end having a tree-engaging securing means thereon for supporting said integral angle bracket whereby upon retaining the projecting supporting arm in a horizontal position in a tree, said foot-supporting portion is substantially horizontal and said projecting leg portion forms a hypotenuse of a right triangle upon tree engagement by said tree-engaging end portion of said supporting arm.

4,449,613

OIL DRAIN VALVE WITH REMOTE CONTROL MEANS

Ralph J. Price, 7636 Upper Miamisburg Rd., Miamisburg, Ohio 45342

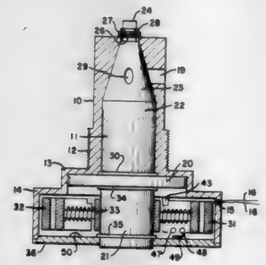
Filed Sep. 27, 1982, Ser. No. 424,437
Int. Cl.³ F01M *11/04*
U.S. Cl. 184—1.5 **5 Claims**

1. A remotely controlled oil drain valve assembly for an internal combustion engine crankcase comprising:

(a) a valve body having a tubular section with external threads suitable for connection to a threaded opening in the crankcase, stepped cylindrical bases of two different

diameters in juxtaposition below the threads, said lesser diameter base being in closest proximity to the threads and said larger diameter base forming the bottom of the valve body, further wherein the larger diameter base has an opening through which a source of electricity can pass, the valve body having an opening starting at the bottom surface of the larger diameter base, extending through the tubular section and piercing the top portion thereof, further wherein a valve seat formed within the valve body by the opening has a truncated conical surface with the narrow end in proximity of the top portion of the valve body and a port in the tubular section through which oil in the crankcase can flow;

(b) a valve core slideably mounted in the valve body, said valve core having a shoulder of a size for mating with the interior of the lesser diameter base found on the valve body, a tube member extending from the shoulder a length sufficient to extend at least to the bottom of the larger diameter base of the valve body when the valve core is mounted therewithin, and a hollow member with a conical section extending from the shoulder with the end



farthest removed being truncated for reception in the truncated valve seat of the valve body and having a protuberance extending from the top of the truncated end of a length sufficient to fit through the opening on the top portion of the valve body, further wherein the protuberance has means for securing such that when the valve core is slideably mounted in the valve body it is secured from vertical motion by the securing means and further having a port rotatable into registry with the port in the valve body, said valve core port communicating with a passageway in the valve core which extends through the valve core to the bottom of the tube member;

(c) means within the larger diameter base for effecting rotary motion to the valve core in response to an electric signal from a remote source so as to rotate said core valve to an open position such that the valve core port is in alignment with the valve body port or to a close position such that the valve core port and valve body port are not in alignment; and

(d) a dust cap of a size for securely fitting over the opening found in the bottom of valve body and having a hole into which the tube member of the valve core extends.

4,449,614

LIFT DEVICE

Minoru Matsuda, Hamura, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Nov. 30, 1981, Ser. No. 326,117
Claims priority, application Japan, Nov. 28, 1980, 55-167790
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 R **3 Claims**

1. A lift device comprising:

a base member;

a pair of outer masts vertically secured on the base member parallel to each other;

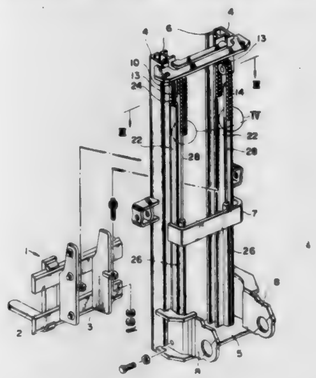
a pair of inner masts slidably mounted in said outer masts;

a load carrier slidably mounted on said pair of inner masts;

a pair of chains, one end of each of which is connected to said load carrier;

a pair of gears for engaging with said chains;

a pair of first hydraulic cylinders having first cylinder rods connected at their free ends to brackets for said gears;



a pair of second hydraulic cylinders having second cylinder rods, the free ends of which are connected to the free ends of said chains, the inner diameters of said first and second cylinders being defined by the following formula in order to actuate said second hydraulic cylinder prior to said first hydraulic cylinder:

$$\pi/4 \times D_1^2 \times p < 2\{\pi/4 \times (D_2^2 - d_2^2) \times p\} + W_M + R_W$$

wherein D_1 represents the inner diameter of the first cylinder; D_2 represents the inner diameter of the second cylinder; d_2 represents the outer diameter of the second cylinder rod; W_M represents the weight of the inner mast; R_W represents the friction resistance between the load carrier and the inner mast; and p represents the pressure force applied to the cylinders;

and a cylinder actuating means for actuating said first cylinders and second cylinders, said cylinder actuating means containing a fluid pressure feeding source, a main fluid passage connected to said fluid pressure feeding source, a first fluid passage connected between said main fluid passage and a bottom of said first cylinder, and a second fluid passage connected between said main fluid passage and a top of second cylinder;

whereby said second cylinder rod can be moved downward before said first cylinder rod is moved upward.

4,449,615

HYDRAULIC RAM SAFETY DEVICE WITH CIRCULAR BRAKE

Robert W. Beath, Burbank, and John R. McDonald, San Francisco, both of Calif., assignors to McDonald Elevator, San Francisco, Calif.

Filed Aug. 4, 1981, Ser. No. 290,018
Int. Cl.³ B60S *13/00*; F15B *15/26*
U.S. Cl. 188—67 **7 Claims**

1. A hydraulic ram safety brake of the type including braking members adapted to engage the ram or piston to stop movement of the piston when the braking members are released in the direction of piston travel in a failure condition, comprising:

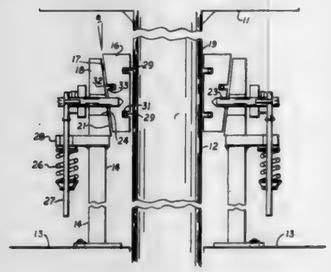
a housing surrounding a portion of the piston and fixedly mounted with respect to fixed structure adjacent to the piston, the housing having a tapered inner surface generally in the shape of a truncated cone;

a plurality of brake sections positioned in a circular array between the housing and the piston, the brake sections

together forming an outer surface in the general shape of a truncated cone, generally matching the inner surface of the housing and being engaged against it;

at least one recess in a face of each brake section, the recesses being aligned in a circular array, and a holding wire in a generally circular configuration extending through each recess to hold the brake sections in registry;

said brake sections being spaced apart when the safety brake



is in the normal, inoperative position with the brake sections spaced away from the engaged position and outwardly from the piston;

means for holding the brake sections in the inoperative pistion under normal operating conditions;

means urging the brake sections, together, toward the position of engagement with the piston, and

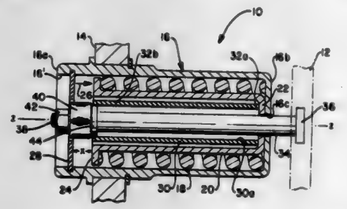
means for releasing the holding means under a failure condition.

4,449,616

NON-REVERSIBLE BRAKE ADJUSTER

Lester W. Musser, Jr., Barberton, and Lee A. Germain, Tallmadge, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 3, 1979, Ser. No. 99,353
Int. Cl.³ F16D *55/02*
U.S. Cl. 188—71.8 **8 Claims**



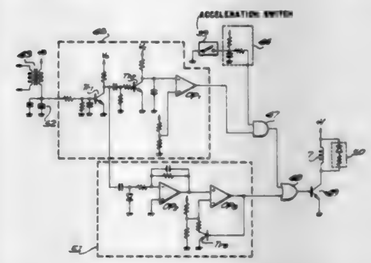
1. An improvement in disc brake assemblies including automatic adjusting apparatus to compensate for brake wear, said adjusting apparatus including pin means interconnecting a brake pressure plate at one end and a metal swaging device at the opposite end and oriented axially within a deformable tube such as to radially deform the tube to the shape of the swaging device as the device moves into the bore of the tube in response to brake wear, the improvement comprising means cooperating with said pin and positioned relative to the swaging device within the tube to move easily with the pin and swaging device in the swaging direction but which prevents movement in the reverse direction by reason of the deformed shape of the tube.

4,449,617

ELECTRO-MAGNETIC CLUTCH CONTROL SYSTEM FOR AUTOMOBILES

Ryuzo Sakakiyama, and Toshio Takano, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 276,325
Claims priority, application Japan, Jul. 16, 1980, 55-97360
Int. Cl.³ F16D *43/22, 27/00*
U.S. Cl. 192—0.033 **18 Claims**



1. A system for controlling an electro-magnetic clutch for an engine powered car, which has an accelerator pedal, an ignition device for an engine of said car, and a magnetizing coil for coupling said electro-magnetic clutch, comprising

an acceleration detecting circuit responsive to the depression of said accelerator pedal for producing an output signal,

an engine speed detecting circuit adapted to produce an output signal when the engine speed exceeds a predetermined speed, said output signal being retained until said engine speed falls below a speed different from said predetermined speed,

current means for producing an output for increasing the current passing through said magnetizing coil,

gate means responsive to outputs of said acceleration detecting circuit and said means for producing a first output for increasing the current passing through said magnetizing coil and further responsive to said output of said engine speed detecting circuit for producing a second output for a rated current of said magnetizing coil, and

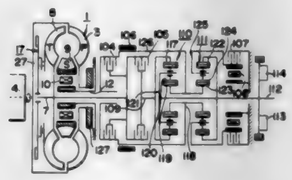
switch means provided in the circuit of said magnetizing coil and responsive to outputs of said gate means for allowing the current to pass through said magnetizing coil.

4,449,618

LOCK-UP CONTROL SYSTEM FOR LOCK-UP TYPE AUTOMATIC TRANSMISSION

Masaaki Suga, Yokohama; Yoshiro Morimoto, and Hideo Hamada, both of Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 26, 1981, Ser. No. 247,906
Claims priority, application Japan, Mar. 27, 1980, 55-38151; Sep. 26, 1980, 55-133007
Int. Cl.³ B60K *41/22*
U.S. Cl. 192—3.31 **13 Claims**



1. A lock-up type automatic transmission for use with an

engine in an automotive vehicle, said lock-up type automatic transmission being shiftable between a plurality of gear ratios including a first gear ratio, a second gear ratio and a third gear ratio and comprising:

a torque converter having a pump impeller adapted to be driven by said engine and a turbine runner;

a lock-up clutch having a clutch piston drivingly connected to said turbine runner, said lock-up clutch being selectively engageable with said pump impeller;

gear ratio determining means operatively connected to said lock-up type automatic transmission for determining which of said plurality of gear ratios said lock-up type automatic transmission is operating in and generating a corresponding gear ratio indicative signal;

vehicle speed sensor means for detecting a vehicle speed of the automotive vehicle and generating a vehicle speed indicative signal;

means, coupled to said gear ratio determining means and to said vehicle speed sensor means, for generating a lock-up signal according to a predetermined pattern, wherein said lock-up signal is generated when said vehicle speed indicative signal is higher than a predetermined first lock-up vehicle speed value under a condition wherein a first gear ratio indicative signal is present or when said vehicle speed indicative signal is higher than a predetermined second lock-up vehicle speed value under a condition wherein a second gear ratio indicative signal is present or when said vehicle speed indicative signal is higher than a predetermined third lock-up vehicle speed value under a condition wherein a third gear ratio indicative signal is present;

control means, coupled to said generating means, for engaging said lock-up clutch in response to said lock-up signal;

temperature sensor means operatively connected to said engine for detecting a temperature of said engine and for generating a low temperature signal when the temperature of said engine is lower than a predetermined temperature value;

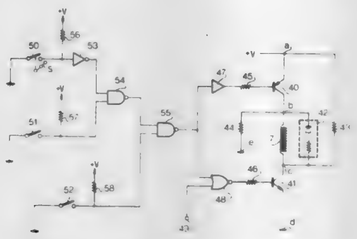
means responsive to said low temperature signal for preventing said lock-up signal from being coupled to said control means in said predetermined pattern.

4,449,619

SYSTEM FOR CONTROLLING AN ELECTROMAGNETIC CLUTCH FOR AUTOMOBILES

Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,420
Claims priority, application Japan, Sep. 30, 1980, 55-137221
Int. Cl.³ F16D *27/16*; B60K *41/28*
U.S. Cl. 192—0.052 **13 Claims**



1. In a system for controlling an electro-magnetic clutch of an internal combustion engine mounted on a vehicle which has an accelerator pedal, a drive member secured to a crankshaft of said internal combustion engine, a driven member adjacent said drive member, a transmission secured to said driven member and having multi-stage change gears and a shift lever therefor, a magnetizing coil provided in one of said members, and an electric circuit means including said magnetizing coil which is capable of passing excitation current through said magnetizing coil in a normal direction, the improvement comprising

shift lever switch means for producing an output signal having one logic level during a shifting operation of the shift lever of said transmission,

a neutral switch means for producing an output signal having one logic level in a neutral position of the shift lever,

a clutch hold switch means for producing an output signal having one logic level when said accelerator pedal is depressed,

logic circuit means responsive to said output signals of said shift lever switch means, said clutch hold switch means and said neutral switch means for providing an output signal having logic levels,

said electric circuit means being responsive to said output signal of said logic circuit means for controlling the current flowing through said magnetizing coil, and

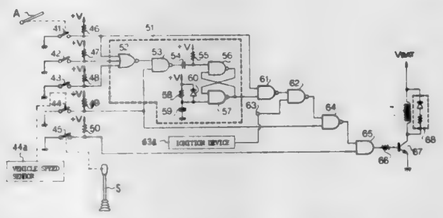
said electric circuit means being so arranged that the current flows through said magnetizing coil with inverted polarity when the output signal from said logic circuit means has one logic level in the neutral position of said shift lever and that the excitation current flows through said magnetizing coil in said normal direction when the output signal of said logic circuit means has another logic level when said accelerator pedal is depressed in the neutral position of said shift lever for causing a double clutch operation.

4,449,620

ELECTROMAGNETIC CLUTCH CONTROL SYSTEM FOR VEHICLES

Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 323,800
Claims priority, application Japan, Nov. 28, 1980, 55-168414
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—0.052 **3 Claims**



1. A system for controlling an electromagnetic clutch having a magnetizing coil for coupling said electromagnetic clutch of a vehicle powered by an engine having a transmission with a multi-stage change gears, said magnetizing coil being connected in a circuit to voltage, comprising

acceleration detecting means for producing an output signal upon an acceleration action condition of said vehicle,

vehicle speed detecting means for producing an output signal when vehicle speed exceeds a predetermined speed,

vehicle travelling detecting means for producing an output signal when said vehicle is driven at a high speed transmission ratio of said transmission,

a trouble detecting circuit comprising, first gate means responsive to said acceleration detecting means, said vehicle speed detecting means and said vehicle travelling detecting means, and a flip-flop operatively connected to said gate means so as to provide a trouble output signal when said output signal of said vehicle speed detecting means is not applied to said gate means when said output signals of said accelerating detecting means and of vehicle travelling detecting means occur,

second gate means hving gates and being responsive to said trouble output signal, said vehicle speed detecting means, and said acceleration detecting means, said second gate means for producing a first output signal dependent on said trouble output signal, and respectively, for producing a second output signal dependent on said output signal of said vehicle speed detecting means,

switch means provided in the circuit of said magnetizing coil and responsive to the respective said output signals of said second gate means for allowing the current to pass through said magnetizing coil depending on the condition of said switch means,

means for applying pulses to an input of one of the gates in said second gate means, and

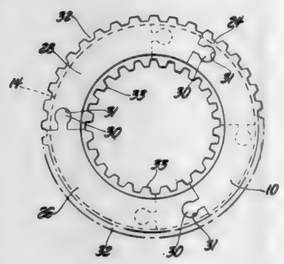
said second gate means for producing pulses as said first output signal in response to said trouble output signal, so that said magnetizing coil is intermittently energized so as to partially engage the clutch.

4,449,621

SEGMENTED CLUTCH PLATES

Erwin F'Geppert, Oakland, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 12, 1981, Ser. No. 292,308
Int. Cl.³ F16D *13/52, 13/68*
U.S. Cl. 192—70.13 **1 Claim**



1. A rotary disk clutch assembly comprising a first set of annular clutch plates equipped with serrated outer edges to engage splines on a rotary casing, and a second set of annular clutch plates equipped with serrated inner edges to engage splines on a rotary hub concentric with the casing, individual plates in the first set being interposed between individual plates in the second set to form frictional drive connections between the casing and hub;

each clutch plate in said first set of clutch plates being formed of at least three plate segments of identical size and configuration; each clutch plate in said second set of clutch plates being formed of at least three plate segments of identical size and configuration;

the number of plate segments in individual plates of the first set being different than the number of plate segments in the individual plates of the second set, whereby the facing surfaces of any two adjacent clutch plates can have a maximum of only two segment joints in axial alignment with one another at any one instant;

each of said clutch plate segments in the first and second sets of plates having a key-shaped tab at one end and a key-hole-shaped notch of the same size and shape at its other end, said tabs and notches extending entirely through each associated plate segment for the full plate segment thickness, the arrangement being such that the tab of one segment locks into the notch of an adjacent segment to form a rigid unitary clutch plate wherein the segments are precluded from separation in axial, radial or circumferential directions;

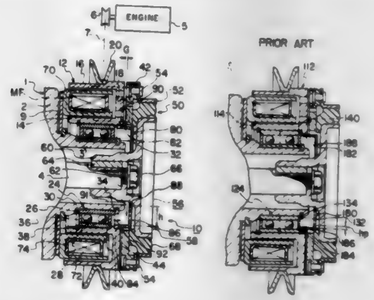
the clutch plates in said first set of plates having their faces directly exposed to the faces of adjacent plates in said second set of plates whereby the application of an axial operating force on the disk clutch assembly causes adjacent clutch plate faces to have frictional engagement with one another.

4,449,622

COVER MEMBER FOR A MAGNETICALLY OPERATED CLUTCH

Reijiro Okano, Chiryu, and Kiyoshi Usami, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 20, 1982, Ser. No. 380,251
Claims priority, application Japan, May 21, 1981, 56-76849
Int. Cl.³ F16D *27/06*
U.S. Cl. 192—84 C **11 Claims**



1. An electromagnetic clutch for respectively connecting and disconnecting a drive source to and from a driven device having a fixed hollow cylindrical projection and a rotatable shaft extending within said hollow projection in concentric relation thereto, said electromagnetic clutch comprising:

a rotatable body made of magnetizable material and disposed around said hollow cylindrical projection of said driven device in concentric relation thereto, said rotatable body being drivingly connectable to said drive source for rotation around an axis of said shaft and having an inner peripheral surface faced to said cylindrical projection and opposite axial end faces;

a bearing disposed between an outer peripheral surface of said cylindrical projection and the inner peripheral surface of said rotatable body for rotatably supporting said rotatable body on said cylindrical projection;

an annular armature made of magnetizable material and connectable to said shaft of said driven device for rotation therewith, said armature being faced to one of the opposite axial end faces of said rotatable body, but normally spaced therefrom by a suitable gap, said armature being movable between an engaging position where said armature is attracted and abuts against said one axial end face of said rotatable body to allow the rotation of said rotatable body by said drive source to be transmitted to said shaft and a disengaging position where said armature is spaced from said one axial end face of said rotatable body by said suitable gap to prevent the rotation of said rotatable body from being transmitted to said shaft;

an exciting solenoid associated with said armature for moving the same between said engaging and disengaging position in response to energization and deenergization of said solenoid; and

a cylindrical cover member made of thermoplastic material and fixedly mounted, independently of said bearing, on a portion of the inner peripheral surface of said rotatable body between said one axial end face thereof and said bearing, said cover member having a cylindrical peripheral wall having an axial length thereof extending so as to cover said gap between said one axial end face of said rotatable body and said annular armature and also cover an inner peripheral surface of said annular armature, said cylindrical cover further having an annular end wall

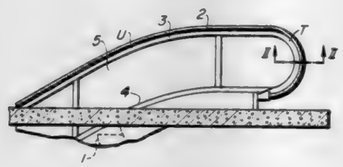
radially inwardly extending from one axial end of said peripheral wall of said cylindrical cover member remote from said bearing, to a location where an opening defined by an inner peripheral edge of said annular end wall is located adjacent to a free end of said hollow cylindrical projection of said driven device, said peripheral wall and said annular end wall of said cover member cooperating with each other to define a reservoir space having a relatively large volume for oil leaking out of said driven device and grease flowing from said bearing.

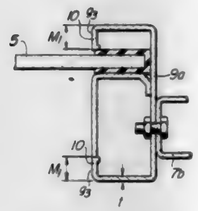
4,449,623

PASSENGER CONVEYOR BALUSTRADE

Chuichi Saito; Katsuya Teranishi; Katsuyoshi Baba, and Yoshihiro Osumi, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 84,593, Oct. 15, 1979, abandoned, which is a continuation of Ser. No. 848,327, Nov. 3, 1977, abandoned. This application Feb. 10, 1983, Ser. No. 465,619
Claims priority, application Japan, Nov. 12, 1976, 51-135399
Int. Cl.³ B66B *9/14*
U.S. Cl. 198—335 **1 Claim**





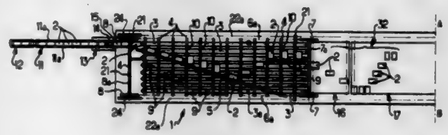
1. In a balustrade for use with passenger conveyors including a handrail guide for guiding a handrail adapted to be moved in synchronism with an endless series of steps, a first stainless steel deck member and a second stainless steel deck member connected to the first deck member, each deck member having a U-shaped cross-section with an opening thereof facing an opposite side of the handrail, each of said first and second deck members being bent to have arcuate-shaped sections at landings of the conveyors, the improvement comprising deformation preventing strips for preventing creation of wrinkles and deformations in the stainless steel in an area of the arcuate-shaped sections, the deformation preventing strips are provided adjacent the opening about the arcuate-shaped sections of the deck members and bent inwardly, wherein each of said deformation preventing strips is formed such that it projects from the deck member for a distance which is over 1.5 times the thickness of the deck member.

4,449,624

DEVICE FOR CONVEYING AND REDISTRIBUTING OBJECTS

Didier Lemaire, Cherisy-Vernouillet, and Gérard Lebret, Saint Lubin des Joncherets, both of France, assignors to E. P. Remy et Cie, Dreux, France

Filed Nov. 16, 1981, Ser. No. 321,543
Claims priority, application France, Dec. 19, 1980, 80 27117
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—412 **7 Claims**



1. Conveyor apparatus for transporting objects in a predetermined line of travel and for selectively distributing said objects transversely with respect to the line of travel, the apparatus including an object-supporting surface having an entrance end, an exit end, and two side margins extending parallel to the line of travel, an endless flight bar conveyor extending parallel to the line of travel, the flight bar conveyor having a plurality of spaced bars extending transversely to the line of travel from one side margin to the other side margin of the object-supporting surface, and means for driving the flight bar conveyor for moving the flight bars above the object-supporting surface for contacting successive objects at the entrance end of the object-supporting surface and moving said objects on the supporting surface in the direction of the line of travel to the exit end of the supporting surface, wherein the improvement comprises:

means for moving the object-supporting surface continuously from one side margin toward the other side margin in a direction transverse to the line of travel, thereby causing each object to slide laterally against the respective flight bar as the flight bar moves said object forward in the line of travel and

an elongated stop member fixed to each flight bar at a predetermined lateral position between the side margins of the supporting surface, the stop member extending forwardly from the flight bar substantially parallel to the line of travel and having a length sufficient to stop further lateral movement of the object being conveyed.

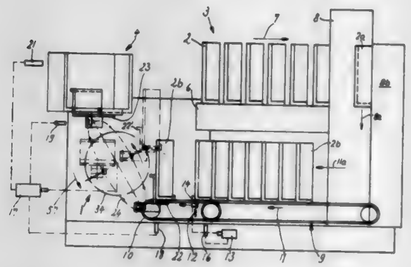
4,449,625

APPARATUS FOR TRANSPORTING TRAYS FOR CIGARETTES OR THE LIKE

Karl H. Grieben, Schwarzenbek, and Günter Menge, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,266
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3037065
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—472 **33 Claims**

1. Apparatus for transporting trays or analogous containers for cigarettes, filter rod sections or other rod-shaped articles from a first station to a second station, comprising first drive means having a portion arranged to orbit along a first circular path, said first drive means comprising a first lever rotatable about a fixed axis and said portion of said first drive means being remote from said fixed axis and defining a second axis; means for rotating said first lever about said fixed axis at a first angular velocity; second drive means mounted on said portion of said first drive means and having a portion arranged to orbit along a second circular path superimposed upon said first circular path, said second drive means comprising a second lever rotatable about said second axis and said portion of said second drive means being remote from said second axis; means for rotating said second lever about said second axis at a second angular velocity which is twice said first angular velocity; and conveyor means for containers, said conveyor means being



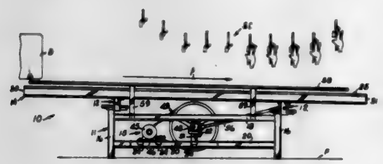
rotatably mounted in said portion of said second drive means and said first and second drive means defining an elliptical path for said conveyor means.

4,449,626

POULTRY CONVEYOR

Ned T. Dodd, Rte. 2, Lula, Ga. 30554

Filed Sep. 24, 1981, Ser. No. 305,097
Int. Cl.³ B65G *27/08*
U.S. Cl. 198—765 **7 Claims**



1. A poultry conveyor for conveying birds in a poultry processing plant comprising:

a support frame;

an elongated conveying trough having an infeed end and an opposed downstream end and defining a conveying surface thereon extending along the length thereof and retaining means to maintain the birds on the conveying surface;

mounting means for movably mounting said conveying trough on said support frame for movement of said trough with respect to said support frame along a horizontal rectilinear path extending longitudinally of said conveyor trough, said mounting means including a plurality of mounting assemblies, each of said mounting assemblies including an elongate horizontally oriented inverted V-shaped angle member fixedly mounted on said support frame and extending longitudinally thereof, said angle member defining an elongate guide surface thereon; a guide roller rotatably mounted on said conveyor trough about a rotational axis extending transversely of and fixed with respect to said conveyor trough, said roller defining a peripheral V-shaped groove therearound adapted to rotationally engage said angle member to movably support said conveyor trough thereon; a pair of keeper plates mounted on said conveyor trough and located on opposite sides of said angle member when said roller is supported thereon; and at least one keeper pin mounted between said keeper plates and extending under said angle member to limit the vertical movement of said conveyor trough and maintain said groove in said roller in conforming contact with said angle member, said mounting assemblies mounting said conveyor trough so that said conveying surface angles with respect to the horizontal with said downstream end lower than said infeed end; and

drive means for reciprocating said trough along said rectilinear path to cause birds deposited on said conveying surface on said conveying trough to be moved along said conveying surface from said infeed end of said trough toward said downstream end of said trough.

4,449,627

ANTI-BACKBEND BELTS

Ralph W. Kell, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 191,230, Sep. 26, 1980, abandoned, which is a division of Ser. No. 115,829, Jan. 28, 1980, Pat. No. 4,267,921, which is a division of Ser. No. 944,485, Sep. 21, 1978, abandoned. This application Jun. 9, 1982, Ser. No. 386,542
Int. Cl.³ B65G *15/34*
U.S. Cl. 198—847 **3 Claims**



1. An anti-backbend, endless flexible belt means for operation between a plurality of pulleys, including at least one flexible belt having an elastomeric body and opposite inside and outside surfaces, the inside surface of any belt of said belt means being directed toward the pulley axis when the belt means are in use, said one belt including a molded body of generally rectangular cross section; an abrasion resistant elastomer-impregnated fabric inside surface layer; a layer of cushion elastomer having a plurality of longitudinally extending high tensile modulus cords embedded therein next to the abrasion resistant layer and positioned close to the inside surface of the belt; and an outside layer of substantially incompressible elastomer next to the cushion layer and having a plurality of continuous, low tensile, high compression modulus monofilaments embedded longitudinally therein nearer to the outside surface than the inside surface of said one belt and spaced outwardly from the tensile cords, the monofilaments tending to stretch when passing around pulleys but resisting compression when straightened between the pulleys such that the cooperative effect of the spaced-apart high compression modulus monofilaments and the high tensile modulus cords provides an anti-backbend characteristic to said one belt.

4,449,628

MAGNETIC DISK STORAGE CASE

Robert A. Egly, 1630 Marguerite Dr., Corona del Mar, Calif. 92625, and Patrick Sullivan, 1752 Brookshire Ave., Tustin, Calif. 92680

Continuation-in-part of Ser. No. 226,621, Jan. 21, 1981, Pat. No. 4,369,879. This application Sep. 13, 1982, Ser. No. 417,691
Int. Cl.³ B65D *85/57, 1/24*
U.S. Cl. 206—45.18 **14 Claims**

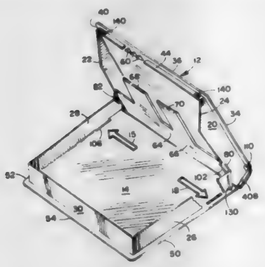
1. A container for magnetic storage material such as disks, magnetic cards and the like comprising:

a clamshell-like opening and closing container having a bottom portion which generally provides a base and a receptacle for a top portion of said clamshell container which has been hinged thereto and which has a ledge within said top portion of said container for receipt of magnetic memory storage members between the ledge and the inner surface of said container;

means for resiliently hinging said bottom and top member formed from a continuous hinge member between said top and bottom member; and,

means for holding said top member open in a resting mode on said bottom member for exposure and access of magnetic storage members resting on said ledge between said top member and said ledge comprising an opening and a pin for

seating in said opening on either the top or bottom member for holding them in the open position wherein the pin is such that it interfaces between the walls of said top and bottom



member and specifically extends into the margin between said top and bottom member and can be biased for movement into or out of the opening by virtue of at least one of said walls flexing in order to bias said pin.

4,449,629

DISPLAY AND STORAGE CONTAINER FOR MULTIPLE TOOL PARTS AND THE LIKE

Paul B. Barrieau, Farmington, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Mar. 29, 1983, Ser. No. 480,141
Int. Cl.³ B65D *1/24, 85/62;* A45C *11/26*
U.S. Cl. 206—45.19 **18 Claims**



1. A unitized display and storage container for multiple items including:

A. a base member of synthetic resin having a body section of generally U-shaped cross section defined by a bottom wall and sidewall providing an upwardly opening cavity therebetween, and a peripheral flange extending outwardly from the upper edge of said sidewall and about at least the major portion of the periphery thereof;

B. a seat member of synthetic resin material having a body section with a peripheral flange extending outwardly and about at least the major portion of the periphery thereof and overlying said flange of said base member, said seat member also having an upstanding pedestal portion within said peripheral flange and comprising a peripheral sidewall extending upwardly from said peripheral flange and a central wall portion inwardly of said sidewall defining a multiplicity of upwardly opening recesses, the central wall portion at the bottom of at least one recess extending below the plane of the peripheral flanges of said seat and base members and into the cavity defined by said base member, another of said recesses being divided by ribs spaced along it length into a multiplicity of upwardly opening elongated compartments extending between its sides, the central wall defining the base of said compartments being lower adjacent said sides than in the center thereof, whereby elongated elements stored therein may be readily gripped by pressing one end of the associated element downwardly to pivot the other end upwardly;

C. a cover sheet overlying another one of said recesses of said seat member and adhered to said central wall portion thereabout to mask the recess thereunder;

D. a closure member having a body section with a central wall portion overlying said central wall portion of said seat member, a sidewall portion extending downwardly therefrom along the exterior surface of said peripheral sidewall of said seat member, and a peripheral flange portion extending outwardly about at least the major portion of the periphery of said sidewall and overlying said flange of said seat member, said sidewall of said closure member frictionally engaging said sidewall of said seat member in the closed position thereof; and

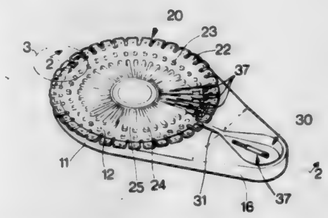
E. a band of transparent synthetic resin material tightly encircling said base member and closure member.

4,449,630

PACKAGE FOR DENTAL TOOLS

Stuart J. Filhol, Castlefreke, County Cork, Ireland

Filed Jan. 18, 1982, Ser. No. 340,479
Int. Cl.³ B65D *85/24, 85/20*
U.S. Cl. 206—369 **10 Claims**



1. A package for articles comprising a base member, a rotary member carried on the base member for rotation relative to the base member, a circular space defined between the base member and the rotary member, and compartments in said space extending radially of the axis of rotation of the rotary member, the radial compartments being defined by radially directed portions of the rotary member and being arranged to contain the articles, and the base member defining an outlet chute leading to a receiving pocket and communicating with said space whereby each of the radial compartments is able to be aligned in registration with the chute upon rotation of the rotary member to enable an article in a compartment in registration with the chute to be passed from the compartment into the receiving pocket.

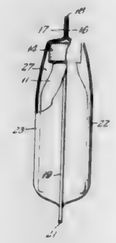
4,449,631

TAMPER PROOF PACKAGING

Nat Levenberg, and Alvin Levenberg, both of 1345 Halsey St., Brooklyn, N.Y. 11237

Filed Mar. 7, 1983, Ser. No. 473,126
Int. Cl.³ B65D *85/56, 81/20, 33/34*
U.S. Cl. 206—459 **3 Claims**

3. As a new article of manufacture, a tamperproof package comprising: an enclosed article; a pair of flexible planar laminae, the peripheral area of which are heat-sealed to enclose said article, the heat-sealed areas having a printed pattern on the exposed surfaces thereof; said laiminae being inflated inwardly of said heat-sealed areas by air and trapped during a



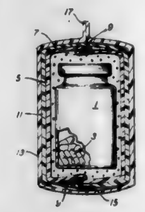
sealing operation, and further inflated by a subsequent heat-shrinking operation.

4,449,632

TAMPER-PROOF PACKAGE AND METHOD

Frank Marusiak, Jr., 73 Ann St., Newark, N.J. 07105

Filed Dec. 15, 1982, Ser. No. 449,846
Int. Cl.³ B65D *85/56, 81/20, 83/04;* B65B *25/06*
U.S. Cl. 206—540 **17 Claims**



1. A package for an article comprising:

a first container into which the article is placed;

a substantially gas impermeable, flexible second container completely enclosing said first container, a void existing between said first and second containers, said void being pressurized with a gas; and

a first elastic layer surrounding said second container, said elastic layer tightly stretched about said second container.

4,449,633

OVENABLE PAPERBOARD CARTON

Harold D. Johnson, Bourbonnais, Ill.; Earle C. Sherman, West Monroe, La., and Leonard M. Cooper, Bradley, Ill., assignors to Manville Service Corporation, Denver, Colo.

Continuation of Ser. No. 963,871, Nov. 27, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,626
Int. Cl.³ B65D *5/54, 5/68*
U.S. Cl. 206—612 **5 Claims**

1. An improved ovenable paperboard carton for use in a microwave and conventional oven, comprising:

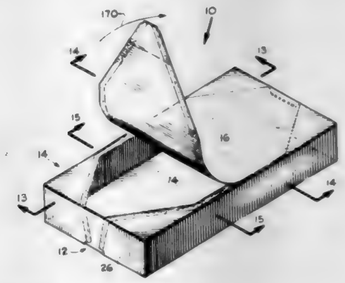
(a) a generally rectangular shaped bottom tray comprising a central bottom panel and having hingedly attached thereto a plurality of bottom side panels;

(1) each adjacent pair of bottom side panels having hingedly attached thereto a pair of gusset panels, hingedly attached to each other and to the bottom side panels;

(b) a generally rectangular shaped upper lid for positioning over the bottom tray, comprising a central top panel and having at least three top side panels hingedly attached thereto;

(1) a pair of three directional reverse cuts, forming a tear-off portion, positioned on the upper lid and initiating at an edge of one top side panel and running in a first direction to a central portion upper edge of an adjacent side panel, thereafter running in a second direction on the top panel in juxtaposition to the adjacent side panel edge and thereafter running in a third direction and terminating in the central portion of the top side panel opposite to the top side panel where the reverse cuts initiated, the reverse cuts so positioned and running in the first and third directions forming triangular shaped corner reinforcements on the upper lid located at each corner of the lid, the reverse cuts running in the second direction also forming an elongated section in the second direction on two opposite sides of the carton, the two elongated sections being substantially parallel to each other and connecting the triangular shaped corner reinforcements; and

(2) adhesive means, associated with the upper lid and the bottom tray for fixedly adhering the top side panels of



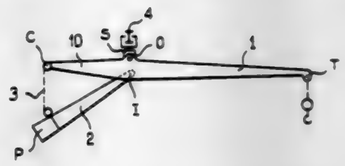
the upper lid to at least three bottom side panels of the bottom tray whenever the upper lid has been positioned over the bottom tray, the adhesively glued upper lid and bottom tray forming rigid double thickness side panels on at least three of the sides of the paperboard carton, the pair of three directional reverse cuts forming the triangular shaped corner reinforcements along with the substantially parallel elongated sections in combination with the glued upper lid and bottom tray serving to improve the twisting tendencies of the carton whenever the tear-off portion on the upper lid is removed leaving the triangular shaped corner reinforcements and the substantially parallel elongated sections intact as a unit and whenever the carton is removed from an oven thereby improving torsional stability of the package when used.

4,449,634

HOISTING ASSEMBLY WITH A BOOM AND A COUNTERWEIGHT HAVING ADJUSTABLE RESPECTIVE POSITIONS

Lilian Buzzichelli, and Kléber Roy, both of Toulouse, France, assignors to Enterprises Buzzichelli, L'Union, France

Filed Jul. 6, 1981, Ser. No. 280,315
Claims priority, application France, Jul. 4, 1980, 80 14991
Int. Cl.³ B66C *23/72*
U.S. Cl. 212—196 **3 Claims**



1. A hoisting assembly for hoisting loads, comprising:

a boom for suspending loads having a main portion having a

longitudinal axis and a load suspending end; said load suspending end having means for suspending a load;

a counterweight;

a counterweight support extending in a generally opposite direction from said boom while in the same vertical plane as said boom and supporting said counterweight; and

adjustable connecting means interconnecting said boom and said counterweight, said connecting means being adjustable independently of said means for suspending a load, said boom and said counterweight support being idly mounted on a main support so as to constitute with said connecting means a pendular assembly adapted to freely swing about a horizontal swing axis, said boom including an extension having substantially the same longitudinal axis as the main portion of said boom, said extension being located on the same side as said counterweight with respect to said horizontal swing axis, said boom and said counterweight support being supported about said horizontal swing axis so that the angular relationship therebetween may be selectively modified by said connecting means extending between said counterweight and the end of said extension of said boom.

4,449,635

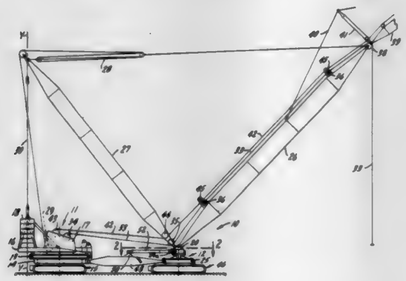
IMAGINARY PIVOT LIFT CRANE

Percy R. Helm, and James G. Morrow, Sr., both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Continuation-in-part of Ser. No. 128,139, Mar. 7, 1980, Pat. No. 4,358,021. This application Aug. 2, 1982, Ser. No. 404,435

Int. Cl.³ B66C *23/74*

U.S. Cl. 212—196 **5 Claims**



1. A lift crane with a separated front ring segment and rear works comprising, in combination, rear works including a counterweight supported by a rear transporter assembly; a frame carrying an arcuate horizontal track segment supported by a front transporter assembly; means connecting said rear works to said frame; a carrier mounted for horizontal movement on said track; a forwardly inclined boom and rearwardly inclined mast pivotally mounted for vertical movement on said carrier; means interconnecting the tip of said boom and the rearwardmost point of said mast to said rear works; means for moving said carrier across said track; a horizontal bracket mounted on said connection means between said frame and said rear works; and two equal-length elongated members, each having first and second ends, said first ends being pivotally connected to opposite sides of said carrier and said second ends being pivotally connected to the respective opposite sides of said bracket, said elongated members, bracket and carrier forming a quadrilateral in the shape of a truncated isosceles triangle when said carrier is centered on said track, the imaginary vertex of said truncated triangle being located on a vertical axis running through said rearwardmost point of said mast and constituting the center of rotation of said carrier as it traverses said track so that as said carrier, mast and boom traverse said track, said center of rotation remains substantially on said vertical axis keeping said rearwardmost point of said mast substantially stationary.

4,449,636

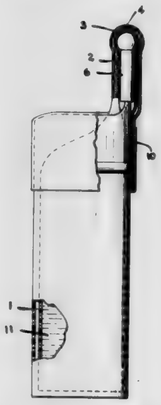
NURSING BOTTLE WITH DISPOSABLE INSERT

Wen-Yu Wu, 28925 Pinecastle Dr., Rancho P.V., Calif. 90274

Filed Jun. 3, 1982, Ser. No. 384,667

Int. Cl.³ A61J *9/00*

U.S. Cl. 215—11 E **12 Claims**



1. A disposable insert for a nursing bottle comprising: a flexible container having an opening at one end; a first perforated nipple integral with the wall of the container and projecting outwardly therefrom; a second smaller, imperforate nipple located diametrically opposite of said first nipple and projecting inwardly from said wall.

4,449,637

ANTI-TAMPERING DEVICES FOR BOTTLES

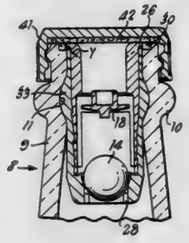
Robert Snedker, Hemel Hemstead, England, assignor to Seagram Distillers Limited, Paisley, Scotland

Continuation-in-part of Ser. No. 242,352, Mar. 10, 1981, Pat. No. 4,377,242. This application Sep. 28, 1982, Ser. No. 425,757

Claims priority, application United Kingdom, Mar. 12, 1980, 8008356; Jan. 29, 1982, 8202517

Int. Cl.³ B65D *49/02*

U.S. Cl. 215—21 **19 Claims**



1. An anti-tampering bottle closure comprising an outer member in the form of a sleeve which is insertable into a neck of a bottle, an inner member in the form of a tubular valve body made of a substantially more rigid material than that of the sleeve and a ball valve trapped within the valve body and adapted to allow liquid to be poured from the bottle when it is inverted but prevent liquid from being poured into the bottle when it is upright, said sleeve having a thickened wall portion and the valve body being axially insertable into the sleeve whereupon the insertion of the valve body into the sleeve and neck causes the thickened wall portion to permanently compress against the neck of a bottle and thereafter resist radially inward deformation of the thickened wall portion of the sleeve to thereby lock the closure in the neck of a bottle.

4,449,638

TAMPER-RESISTANT AND CHILD-RESISTANT CLOSURE AND CONTAINER ASSEMBLY

Eugene E. Davis, Ilford, England, assignor to Johnsen & Jorgensen (Plastics) Ltd., London, England

Filed Jun. 23, 1983, Ser. No. 507,120

Claims priority, application United Kingdom, Dec. 9, 1982, 8235090

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—211 **8 Claims**



1. A container and closure assembly wherein the container has an open mouth, a rim around the mouth, a cut-out in the rim and annular closure retaining means below the rim and wherein the closure has a top to close the mouth of the container, an inner depending plug to enter the mouth of the container, a tear band, means shaped to engage with the closure retaining means on the container and thumb-receiving recess in the plug.

4,449,639

TAMPER-RESISTANT AND CHILD-RESISTANT CLOSURES

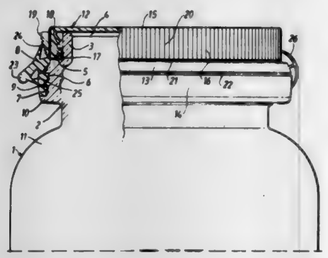
Eugene E. Davis, Ilford, England, assignor to Johnsen & Jorgensen (Plastics) Ltd., London, England

Filed Feb. 28, 1983, Ser. No. 470,508

Claims priority, application United Kingdom, Dec. 13, 1982, 8235409

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—224 **10 Claims**



1. A closure for a container which has a hollow body and a mouth through which access can be obtained to the inside of the body, a rim around the mouth and a substantially horizontal outwardly projecting arcuate bead below the rim, wherein the closure has a cap part with a depending skirt, at the top, a tear band in the middle and a captive band at the bottom and wherein the tear band is connected to the skirt of the cap part and to the captive band by lines of weakness to facilitate tearing away of the tear band, the skirt of the cap part having an internal projection which can pass through the opening in the arcuate bead on the container so that the internal projection can cooperate with the projecting bead in such a way that the cap part can be removed only when the projection is in vertical alignment with the opening characterised by the provision of a tell tale bridge member which is normally intact but which is broken when the tear band is removed to give immediate visual evidence that the contents of the container may have been tampered with.

4,449,640

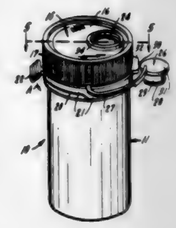
TAMPER-RESISTANT PHARMACEUTICAL VIAL AND CAP ASSEMBLY

Sam D. Finkelstein, Canton, Ohio, assignor to MPL, Inc., Canton, Ohio

Continuation of Ser. No. 413,623, Sep. 1, 1982. This application Sep. 19, 1983, Ser. No. 533,329

Int. Cl.³ B65D *53/00*

U.S. Cl. 220—270 **10 Claims**



1. In a tamper-resistant pharmaceutical vial and cap assembly comprising an open-top vial for dispensation of a predetermined dosage of a pharmaceutical preparation and a molded cap of resilient material mounted on and covering the top of the vial, said vial and cap assembly comprising:

a fill hole in the top of the cap affording access to the interior of the vial for filling the vial with the cap mounted on the vial; and

a stopper insertable in the fill hole to close and seal the fill hole after filling of the vial, the stopper having a configuration effectively precluding manual removal of the stopper from the fill hole after insertion therein.

4,449,641

CONTAINER OF PLASTIC MATERIAL WITH A LID

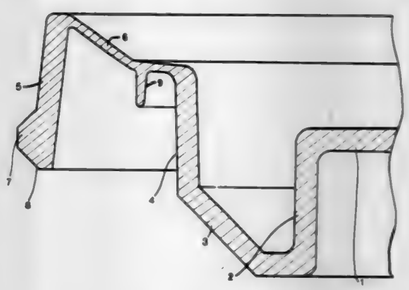
Knud E. Jorgensen, Haarby, and Ole Ingemann, Tasinge, both of Denmark, assignors to D.M.E. Plastic A/S, Haarby, Denmark

Filed Jun. 4, 1982, Ser. No. 385,119

Claims priority, application Denmark, Jun. 11, 1981, 2561/81

Int. Cl.³ B65D *41/16, 41/18*

U.S. Cl. 220—306 **8 Claims**



1. A container and lid assembly formed of a plastics material, said container comprising a container wall having at its upper

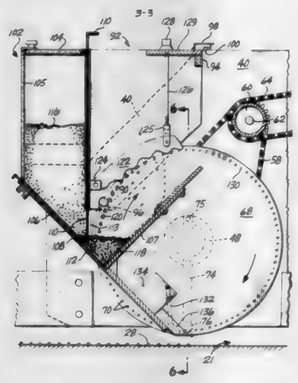
edge an exterior annular protecting member having a flange extending substantially parallel to said container wall over substantially the full periphery of the container and forming therebetween an upwardly facing annular recess, said protecting member being connected with the exterior side of the container wall through an inclined wall sloping downwardly from the container wall toward the lower edge of the flange, said lid having a skirt depending from the outer periphery of said lid and fitting into the upwardly facing annular recess of the container, the flange of the protecting member being provided at its upper edge with an inwardly extending bead and the skirt of the lid being provided at its lower edge with an outwardly extending bead which in the closed position of the lid is located below the inner bead of the flange of the protecting member and is in locking contact with that flange.

4,449,642

SEED PLANTER

James H. Dooley, Federal Way, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 18, 1983, Ser. No. 476,737
Int. Cl.³ A01C 7/04
U.S. Cl. 221—211 **20 Claims**



1. In a sower unit for a seed planter of the type having opposed rotating vacuum-type seeder discs, an easily removed seed hopper which comprises:

a. a frame containing a seed reservoir having a downwardly sloping bottom member adapted to fit snugly between the seeder discs, said member further having an angularly attached seed retainer plate which defines a seed supply trough between the discs;

b. indexing means associated with the frame for mounting the hopper in a precise predetermined location with respect to the seeder discs;

c. latch means for securing the hopper in operating position; and

d. a seed drain gate means located in the sloping bottom member of the reservoir adjacent to the seed retainer plate, to enable seed within the reservoir and supply trough to be drained into a container and be recovered without loss when it is desirable to empty the reservoir or remove the seed hopper from the seed planter.

4,449,643

KNOCK-DOWN VENDING RACK

Ronald C. Voegeli, Venice, Fla., assignor to Leco Engineering & Machine, Inc., Venice, Fla.

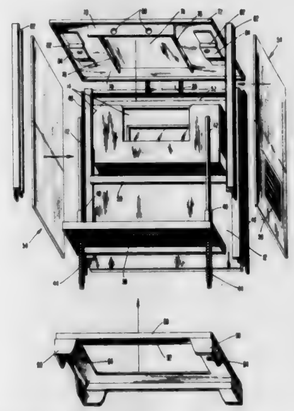
Filed Jul. 21, 1981, Ser. No. 285,441
Int. Cl.³ B65H 1/04
U.S. Cl. 221—226 **18 Claims**

1. A knock-down vending rack suitable for transport in an unassembled state and adapted to be readily assembled in situ, comprising:

a rectangular top frame member having means defining a channel adjacent each of the peripheral edges thereof;

a rectangular bottom frame member having means defining a channel adjacent each of the peripheral edges thereof;

four wall panels each having a top edge and a bottom edge adapted to be received in respective channels in said top and bottom frame members;



a pair of rods each comprising a single member whose opposite ends are respectively connected to said top and bottom frame members to inhibit displacement of said frame members relative to one another and thereby clamp said wall panels in their associated channels between said frame members to define an enclosure, said rods being disposed within said enclosure when connected between said top and bottom members; and

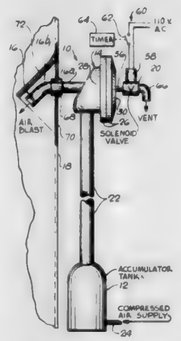
an elevator platform disposed within said enclosure and adapted for sliding movement along said rods.

4,449,644

BLAST AERATOR FOR FLUIDIZING GRANULAR MATERIAL

Carl G. Matson, Little Rock, Ark., assignor to Ludlow Industries, Inc., Elburn, Ill.

Filed Jun. 18, 1981, Ser. No. 274,737
Int. Cl.³ B65D 88/70
U.S. Cl. 222—3 **20 Claims**



1. A blast for quickly releasing a volume of compressed air to form an aerating air blast for facilitating the flow of granular material or the like, comprising

a container for holding a volume of compressed air,

means for supplying compressed air to said container,

an aerator valve including a valve casing,

air blast outlet means connected to said valve casing,

air conduit means connected between said container and said valve casing,

said valve casing having a diaphragm chamber therein,

a flexible resilient diaphragm extending across said diaphragm chamber and dividing said diaphragm chamber into first and second chamber portions on opposite sides of said diaphragm,

said valve casing including outlet port means communicating with said first diaphragm chamber portion and connecting with said air blast outlet means,

said diaphragm having a valve member for selectively closing and opening said outlet port means,

said valve member and said diaphragm being movable between a closed position in which said outlet port means is closed by said valve member and an open position in which said valve member is moved away from said outlet port means to open said outlet port means,

said valve member being biased toward said closed position by the resilience of said diaphragm,

said valve casing having an inlet opening affording communication between said first diaphragm chamber portion and said air conduit means,

said valve casing including a vent opening communicating with said second diaphragm chamber portion,

said aerator valve including bleed means forming restricted communication between said first and second diaphragm chamber portions for supplying compressed air to said second diaphragm chamber portion when compressed air is supplied to said first diaphragm chamber portion from said container through said air conduit means,

and valve means connecting with said vent opening and operable between closed and open positions for selectively closing and opening communication between said second diaphragm chamber portion and a low pressure exhaust connection,

said valve means when closed being effective to allow said first and second diaphragm chamber portions to become pressurized with compressed air while said valve member is in its closed position,

said valve means when open being effective to exhaust the compressed air from said second diaphragm chamber portion whereupon the compressed air in said first diaphragm chamber portion acts upon said diaphragm to move said valve member to its open position whereby the compressed air in said container is quickly released and discharged as an air blast from said air blast outlet means,

said valve member thereupon being returned to its closed position by the resilience of said diaphragm,

said container and said aerator valve being separate modules,

said air conduit means being in the form of a pipe connected between said container and said aerator valve.

4,449,645

DENTAL CONTAINER AND AMALGAM DISPENSING METHOD

Paul Korwin, 150-09 77th Ave., Flushing, N.Y. 11367, and Robert Korwin, 3400 Red Lion Rd., Philadelphia, Pa. 19113

Filed Jun. 15, 1981, Ser. No. 273,914
Int. Cl.³ A61C 5/06
U.S. Cl. 222—49 **14 Claims**

1. A dental container for receiving and separately storing at least two dental preparation ingredients until they are subsequently brought together and mixed within the container, for making a settable, semi-solid dental preparation ready for use, said container comprising:

(a) a housing having a longitudinal axis, a filler opening at one end region of the housing, a discharge port at the opposite end region of the housing, a discharge port at the opposite end region of the housing, and interior wall portions bounding an interior multi-compartment chamber which extends longitudinally intermediate the filler opening and the discharge port, said chamber having a first storage compartment in which one of the ingredients is initially receivable, a second storage compartment in which the other of the ingredients is receivable, and a transfer compartment intermediate the storage compartments;

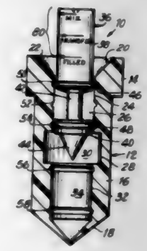
(b) a longitudinally-extending plunger mounted within the chamber for londitudinal movement therealong, said plunger having a main shaft portion, an auxiliary shaft portion spaced londitudinally from the main shaft portion, and a reduced cross-section connecting shaft portion intermediate the main and auxiliary shaft portions;

(c) first and second sealing means respectively mounted on the main and auxiliary shaft portions for joint movement therewith;

(d) said plunger being manually movable in direction longitudinally of the chamber among

(1) a filled position in which the first and second sealing means sealingly engage longitudinally spaced-apart wall portions of the chamber to thereby define in the circumambient region of the connecting shaft portion the first storage compartment wherein said one ingredient is sealingly contained prior to mixing,

(2) a transfer position in which the second sealing means is disengaged from the wall portions bounding the first storage compartment, and in which the first and second storage compartments communicate with each other via the transfer compartment, to thereby permit transfer



of said one ingredient through the transfer compartment and thereupon to the second storage compartment, and

(3) a mix position in which the second sealing means sealingly engages wall portions of the chamber which are longitudinally spaced from the discharge port to define therebetween the second storage compartment wherein both ingredients are sealingly contained during mixing;

(e) openable closure means at the discharge port for permitting discharge of the mixed ingredients upon opening of the closure means;

(f) indicator means displayed on the plunger for visually indicating each of said filled, transfer and mix plunger positions to a dental operator; and

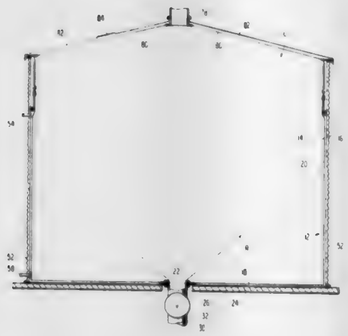
(g) tactile sensory means for manually detecting each of said filled, transfer and mix plunger positions by the dental operator, said tactile sensory means including a plurality of grooves formed in the interior wall portions of the chamber for receiving at least one of the sealing means with snap-in locking action in each of said filled, transfer and mix plunger positions, said first and second sealing means being received in a first and a second groove in the filled position, said first sealing means being received in a third groove in the transfer position, and said first and second sealing means being received in the second and a fourth groove in the mix position, whereby the dental operator is simultaneously visually and tactilely advised of each of said plunger positions.

4,449,646

BIN FOR STORING AND DISCHARGING FREE-FLOWING GRANULAR MATERIAL

Timothy C. Bonerb, and Vincent C. Bonerb, both of P.O. Box 1997, Buffalo, N.Y. 14219

Continuation-in-part of Ser. No. 257,604, Apr. 27, 1981. This application Sep. 30, 1981, Ser. No. 307,089
Int. Cl.[3] B65D *88/62*
U.S. Cl. 222—95 7 Claims



1. A bin for storing and discharging free-flowing granular material, comprising;

(a) a cup-shaped bag of flexible, fluid-impervious material having two walls capable of holding a fluid under low pressure therebetween, the cup-shaped bag having a bottom and inner and outer side walls.

(b) a discharge opening extending through the two walls of the cup-shaped bag in the bottom thereof,

(c) a floor supporting the entire bottom of the cup-shaped bag and having a discharge opening corresponding to the discharge opening in the bottom of the cup-shaped bag,

(d) means for supporting and holding up the top only of the side walls of the flexible cup-shaped bag,

(e) means for fixedly anchoring the bottom of the outer side wall only of the cup-shaped bag to the floor,

(f) means for creating slack in the inner side wall of flexible material of the cup-shaped bag wall near the top thereof and at a position which is always above the maximum height of the top of the free-flowing material after it has assumed its angle of repose, the means creating slack eliminating undue stress in the flexible material forming the inner side wall,

(g) means for controlling flow of the granular material from the discharge opening,

(h) means for supplying fluid material between the walls of the cup-shaped bag in the area of the created side wall slack so that when said fluid is supplied after the free-flowing granular material has been discharged down to its angle of repose, the flexible innermost wall of the cup-shaped bag will expand inwardly from the top moving downwardly to completely discharge the contents of the bin, and

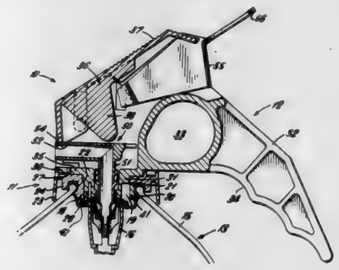
(i) a back-up wall outside the outer side wall of the cup-shaped bag.

4,449,647

HANDLE ASSEMBLY FOR A PRESSURIZED DISPENSING CONTAINER

Norman L. Reed, and Trevor D. Parkin, both of Kings Lynn, England, assignors to Bespak Industries Limited, Norfolk, England

Filed Aug. 2, 1982, Ser. No. 403,967
Claims priority, application United Kingdom, Aug. 10, 1981, 8124415
Int. Cl.[3] B67B *5/00*; B67D *5/32*
U.S. Cl. 222—153 11 Claims



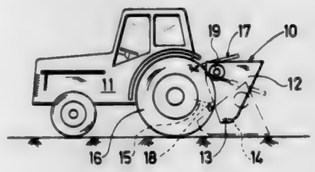
1. A handle assembly for a pressurized dispensing container having a valve closing off an open end of the end of the container and including a valve cup with an inward-facing peripheral groove, the handle assembly comprises a collar for fitting over the valve cup of a container to which the handle assembly is fitted in use, and a handle, includes the collar at least one resilient leg having a bulbous portion for engaging the peripheral groove, interengaging means being provided on the handle and the collar for attaching the handle to the collar, said interengaging means including means for engaging at least one leg of the collar when assembled whereby to prevent disengagement of the leg from the groove.

4,449,648

MOBILE SPREADER UNIT

Kurt Gustavsson, Pilagarden, Fjäras, Sweden (430 33)

Filed May 4, 1981, Ser. No. 259,974
Claims priority, application Sweden, Jan. 26, 1979, 7900705
Int. Cl.[3] A01C *5/00*
U.S. Cl. 222—164 1 Claim



1. A mobile spreader unit, comprising a tractor having front wheels, big, spaced apart rear wheels and tool supporting brackets between said big rear wheels and inside the perimeter thereof, as well as a detachable hopper for optional connection to said brackets,

said hopper being defined by front, rear and side walls, the breadth between said side walls permitting the hopper, in use, to fit in between said big, spaced apart rear wheels, and said front and rear walls tapering downwardly towards an elongate spreader opening,

agitator means in said hopper adjacent to said opening and driving means for said agitator means, including a roller mounted at one of said side walls adjacent to said front wall, and adapted to be brought into contact with one of said big rear wheels,

pivot means at said front wall adjacent to said spreader opening for attachment to said brackets and located so the point of gravity of said hopper tends to tilt the hopper away from the tractor when the hopper is mounted on said brackets, said pivot means permitting a tilting movement of the hopper until said rear wall occupies a substantially horizontal position, the distance between said front and said rear walls at the level of said pivot means corresponding to about the distance between the ground and said pivot means,

said supporting brackets defining lower struts connected at one end to lower attachment points of said tractor and at the other end to said pivot means, and

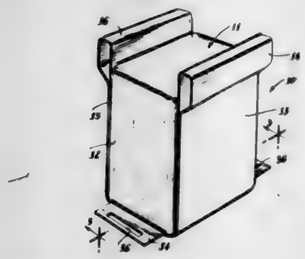
pressure fluid actuated means, connecting the upper portion of said front wall with an upper attachment point of said tractor for raising said hopper from a position where said rear wall occupies a substantially horizontal position, to an upright position where said agitator driving roller contacts one of said big tractor rear wheels, said pressure fluid actuator means defining an upper strut and comprising a hydraulic cylinder assembly having a fixed piston connected to said tractor at said upper attachment point and a moveable cylinder attached, intermediate the ends thereof, to said upper portion of said front wall.

4,449,649

BULK MATERIAL CONTAINER

Jerry E. Flannigan, Century, Fla., assignor to St. Regis Paper Company, West Nyack, N.Y.

Continuation-in-part of Ser. No. 316,219, Oct. 29, 1981, abandoned. This application Jan. 15, 1982, Ser. No. 339,423
Int. Cl.[3] B67D *5/06*
U.S. Cl. 222—181 11 Claims



1. A bulk material container comprising:

a sidewall,

a bottom wall closing one end of said sidewall, said bottom wall including a dispensing opening therethrough,

a multi-ply looped sling extension wrapped around said container to enclose said bottom wall and opposite portions of said sidewall, thereby forming a sling for supporting and transporting said container, each of the plies of said looped sling extension which are adjacent said bottom wall including a dispensing opening therethrough, said dispensing openings all being in registration with each other;

slide valve means between a pair of adjacent plies of said multi-ply looped sling extension for controlling the rate of flow of bulk material dispensed from said container through said dispensing openings, said slide valve means including:

a push-pull plate so proportioned and constructed as to permit pushing and pulling at each end of the plate against the load of the material and having an opening extending therethrough which is adapted to be placed in and out of or in partial registration with the registered openings in said bottom wall and the plies of said looped sling extension, and

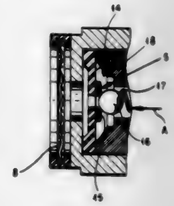
handle means on each end of said push-pull plate for gripping and pushing and pulling said push-pull plate from opposite sides thereof.

4,449,650

METERING PUMP ESPECIALLY FOR VOLATILE MATERIALS

Harry Sawatzki, Vaduz, Liechtenstein, assignor to Censor Patent- Und Versuchs-Anstalt, Vaduz, Liechtenstein

Filed Nov. 19, 1981, Ser. No. 323,082
Int. Cl.[3] B65D *88/54*; B67D *5/40*
U.S. Cl. 222—309 3 Claims



1. A dosing pump, especially for a flowable material containing a volatile substance, comprising:

a pump housing formed with a pump chamber;

a drive member displaceable in said chamber to vary the effective volume thereof in a feed stroke driving said material from said chamber and an intake stroke drawing said material into said chamber;

means connected to said drive member for displacing same in said chamber;

an intake valve connected to said chamber for unidirectionally admitting said material to said chamber during said intake stroke;

a discharge valve connected to said chamber for unidirectionally permitting outflow of said material from said chamber;

a discharge passage connected to said discharge valve for conducting said material therefrom; and

displacement means including a displacement body disposed between said discharge passage and said chamber and displaceable during an initial portion of said feed stroke to force a quantity of said material along said passage, said quantity of material being less than the quantity of material displaced by said drive member during said feed stroke and determined by the extent of movement of said displacement body whereby movement of said displacement body during said intake stroke retracts material in said passage, thereby reducing exposure of a boundary surface of said material to the environment, said displacement body comprising a membrane disposed in a path between said passage and said chamber, a stop formed by an end of said passage proximal to said membrane for limiting the deflection of said membrane during said feed stroke, said discharge valve including a valve seat formed on said membrane, said membrane being prestressed in a manner tending to draw it toward said chamber.

4,449,651

TUBULAR METERING OR DOSING MECHANISM FOR DISPENSING LIQUID FROM A CONTAINER IN SUCCESSIVE QUANTUMS OF UNIFORM VOLUME

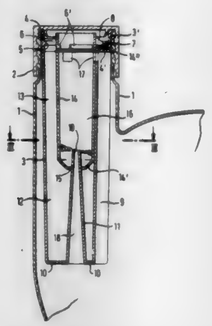
Eberhard Roder, deceased, late of Bad Schwartau, Fed. Rep. of Germany; by Hans-Dieter Borchers, administrator, Lübeck, Fed. Rep. of Germany, and Wolfgang Düsing, Zarpen, Fed. Rep. of Germany, assignors to Gottfried Roder Kunststoffwerk, Lübeck, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,050

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111503

Int. Cl.³ G01F *11/26*

U.S. Cl. 222—455 **14 Claims**



1. For mounting in the dispenser neck of an invertable container for liquid for dispensing liquid from the container in successive quantums of substantially uniform volume upon successive inversions of the container,

a tubular dosing mechanism, comprising:

external wall means having outer peripheral surface means constructed and arranged to circumferentially sealingly engage the dispenser neck when the tubular dosing mechanism is introduced into the dispenser neck;

first wall means defining a discharge channel having an axial extent, being outwardly open, relative to the dispenser neck into which the tubular dosing mechanism is to be introduced, and having an opposite, inner end closed by base wall means;

second wall means defining a dosing channel extending axially internally of said first wall means and including means closing the outer end thereof relative to the dispenser neck into which the tubular dosing mechanism is to be introduced;

said second wall means providing a partition between said discharge channel and said dosing channel, said partition terminating axially outwardly of said base wall means, so that between said base wall means of the discharge channel-defining first wall means and where said partition terminates a collecting region is provided, said collecting region connecting with both the dosing channel and the discharge channel, and having a volume at least as large as said uniform volume;

means defining a liquid inlet opening into said tubular dosing mechanism and means defining a liquid outlet opening from said tubular dosing mechanism, both said openings being communicated to externally of the tubular dosing mechanism for communication internally of the container for liquid when the tubular dosing mechanism is introduced and sealed in the dispenser neck of such container;

the axial spacing between said inlet and outlet openings being such as to cause there to be admitted from the container to the tubular dosing mechanism upon inversion of the container when the tubular dosing mechanism is introduced and sealed in the dispenser neck of such container an amount of liquid corresponding to said uniform volume;

the axial spacing between said outlet opening and where said partition terminates providing a storage region having a volume that is as large as half that of the maximum free liquid which occurs upon an inversion of the container when the tubular dosing mechanism is introduced and sealed in the dispenser neck of such container;

said outlet opening being located axially inwardly of said inlet opening;

wall means defining an axially extending tubular channel opening externally through said base wall means at an inner end and having said outlet opening defined at an outer end thereof, said outlet opening being located within said dosing channel; and

an orifice plate mounted in place covering said inner end of said tubular channel, said orifice plate having an orifice having a diameter which is one-half to one-fifth the diameter of said inner end of said tubular channel axially outwardly adjacent to said orifice plate.

4,449,652

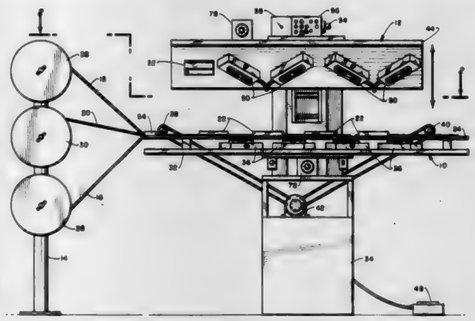
PREFABRICATED BOW FORMING MACHINE

Timothy G. Coppins, 10737 Rose Ave., Ontario, Calif. 91761, and Jerry B. Coppins, 4538 Bodega Ct., Montclair, Calif. 91763

Filed Jan. 5, 1983, Ser. No. 455,749

Int. Cl.³ A41H *43/00*

U.S. Cl. 223—46 **8 Claims**



1. A machine for forming prefabricated bows comprising:

a lower assembly having means forming a guide track;

a movably mounted upper assembly being movable to and away from a position juxtaposed to said lower assembly;

supply means for supplying preselected lengths of mated ribbon material having a strap centrally disposed therebetween to the track on said lower assembly;

fastening means securely fastening said preselected lengths of ribbon material and said strap together at one end;

a plurality of heating elements on said lower assembly;

a plurality of heating elements on said upper assembly;

said upper assembly heating elements mating with said lower assembly with said preselected length of ribbon and strapping material therebetween when said upper assembly is moved toward said lower assembly;

said heating elements on said upper and lower assemblies being constructed and arranged to bond said ribbons together at preselected intervals by producing a plurality of heat welded seams with adjacent seams being at angles opposite to one another and at approximately 45 degrees.

4,449,653

BICYCLE STORAGE TRUNK

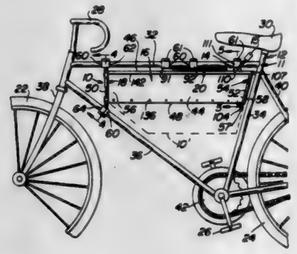
Robert J. Pirolli, 6500 Torresdale Ave., Philadelphia, Pa. 19135

Filed Dec. 11, 1981, Ser. No. 329,628

Int. Cl.³ B62J *7/02*

U.S. Cl. 224—35 **2 Claims**

1. For a closed frame bicycle which includes a frame portion comprising a top tube, a down tube and a seat tube collectively defining an open space therebetween, said frame portion lying in a common plane, a storage trunk comprising an enclosed housing, entrance means for affording access into the interior of said enclosed housing, means for pivotably mounting said housing on said bicycle frame within said open space and enabling said housing to be pivoted between a first and a second position and vice versa, whereupon when said housing is in said first position said housing is disposed generally within said plane, with a part of said frame precluding access into said housing through said entrance means, and when said housing is



in said second position said housing is disposed at an angle from the plane of said frame portion to expose said entrance means to enable one to have access into said housing therethrough, and means for locking said housing in said first position, wherein said housing further includes a first end and a second end such that the first end is pivotably connected to said top tube and to said down tube of said frame to enable said second end of said housing to rotate out of said common plane, and said locking means includes means for releasably securing a portion of said housing adjacent said second end, to said top tube.

4,449,654

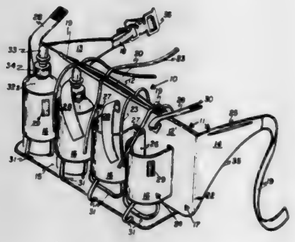
BELT SUPPORTED BACKPACK

Lona P. Cappis, 30 Glenview Ct., Los Alamos, N. Mex. 87544

Continuation-in-part of Ser. No. 217,859, Dec. 18, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,277

Int. Cl.³ B65D *23/08*

U.S. Cl. 224—148 **11 Claims**



1. A belt-support fluid-carrying backpack adapted to be secured around the midriff which comprises in combination (a) an alongated flexible belt having a relatively wide intermediate section and sections tapering from said intermediate section to straps forming the free ends of said belt, (b) fastener means at at least one of the free ends of said belt for releasing and adjustably securing said free ends together, (c) a plurality of substantially vertical, open topped, open bottomed pockets affixed to said intermediate section of said belt, said pockets adapted to provide easy access thereto for removal and replacement of objects carried therein by the person carrying the pack while said person is running, walking, or skiing, (d) means at the base of said pockets for supporting objects in place in said pockets, and (f) a plurality of potable fluid-carrying containers in place in said pockets.

4,449,655

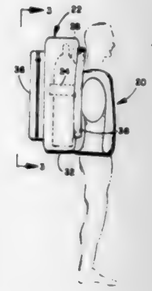
COMBINATION BACKPACK AND GEAR BAG

Patrick P. Germe, Irvine, Calif., assignor to U.S.D. Corp., Santa Ana, Calif.

Filed Oct. 5, 1981, Ser. No. 308,145

Int. Cl.³ A45F *3/00*

U.S. Cl. 224—153 **4 Claims**



1. A gear bag for receiving a backpack connected thereto comprising:

opening and closing means so that said bag can be opened and closed;

a major surface of said bag having a passage therethrough for receipt of a breathing gas tank connection means extending from a backpack so that said gear bag can receive a breathing gas tank therein and can be carried by being supported thereon when said breathing gas tank is held by a backpack carried by a user;

an external compartment in surrounding relationship to said passage therethrough having a major flap for providing said compartment with means wherein said compartment can receive the backpack therein when said gear bag is not being carried by the backpack; and,

closure means for said compartment by means of attaching said flap in said overlying relationship to said backpack as it is received within said compartment.

4,449,656

LOAD CARRIER FOR VEHICLES

Adriaan v. d. Wouden, Ulvenhout, Netherlands, assignor to Industri AB Thule, Hillerstorp, Sweden

Filed Apr. 14, 1983, Ser. No. 484,967

Claims priority, application Sweden, Apr. 21, 1983, 8202491

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—320 **5 Claims**



1. A luggage carrier for vehicles comprising a support rod (2) and support legs (4) connected with the ends of the support rod, the support legs having fastening devices (8,10) for fastening the luggage carrier to a vehicle, the support rod (2) comprising two telescoping portions (18,20) which are telescopically displaceable in relation to each other in order to allow adjustment of the length of the support rod whereby the luggage carrier may be adapted to the width of the vehicle, and to allow the support rod to be dismounted or its portions to be

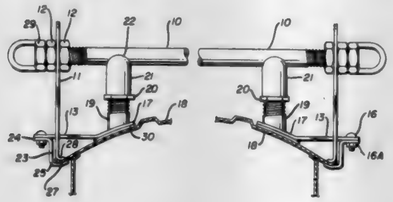
pushed together to a space-saving relationship, the support rod also comprising a locking device (22) for securing the two portions of the support rod in the desired relative position, said locking device comprising two complementary, interengageable locking means (20, 30, 32), one of said locking means being on and belonging to each of the portions (18, 20) of the support rod, for securing the portions of the support rod in fixed relation to each other when the locking means are in engagement with each other and allowing the support rod to be dismounted or its portions to be pushed together when the locking means are out of engagement with each other, characterized by means for securing at least one (24–30) of the locking means of the locking device (22) to the portion (20) of the support rod (2) belonging thereto at any desired position within a range of positions along the length of the last-mentioned portion regardless of the relative positions of the two telescoping portions and regardless of whether or not the two portions of the support rod are secured together by the locking device, whereby the relative position of the portions of the support rod when the locking means of the locking device engage each other can be established by securing said one of the locking means to its portion of the support rod before installation of the luggage carrier on a vehicle.

4,449,657

AUTO LUGGAGE CARRIER

Frank Moran, 5214 Viola Dr., Austintown, Ohio 44515

Filed Jul. 21, 1982, Ser. No. 400,463
Int. Cl.³ B60R 9/04
U.S. Cl. 224—329 **5 Claims**



1. An auto luggage carrier for mounting on the roof of a vehicle, said carrier having multiple support units, each unit comprising at least one bar positioned transversely of said vehicle's roof, dual means for adjustably supporting said bar on said vehicle, threaded end portions on said ends of said bars, a pair of spaced threaded nuts on said threaded end, an apertured bracket secured to said bar between said spaced nuts and extending to the roof of said vehicle, a post having threads adjacent an end, a sleeve movably positioned on said post, a bifurcated bracket secured to said post and removably secured to said apertured bracket, means for securing said apertured bracket and said bracket to a vehicle's top and wherein said dual means for adjustably supporting said bar are spaced with respect to one another.

4,449,658

ADJUSTABLE INPUT SHAFT FOR PRESS FEED

Joseph P. Gentile, Pittsburgh, Pa., assignor to Vamco Machine & Tool, Inc., Pittsburgh, Pa.

Filed Nov. 26, 1982, Ser. No. 444,604
Int. Cl.³ B65H 17/26
U.S. Cl. 226—138 **10 Claims**

1. Apparatus for intermittently feeding a workpiece to a press comprising,

press drive means for generating continuous rotation at a predetermined speed,

a machine frame,

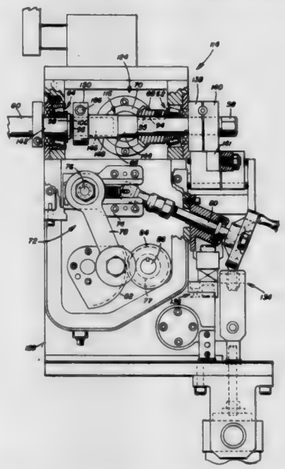
an input shaft supported for rotation in said machine frame, said input shaft having a first portion and a second portion,

clamp means for releasably engaging said input shaft first portion to said input shaft second portion to permit relative rotation between said input shaft first and second portions,

said press drive means being drivingly connected to said input shaft first portion to rotate said input shaft at said predetermined speed,

feed means supported in said frame for intermittently feeding a preselected length of the workpiece to the press,

rotation transmission means supported in said machine frame for drivingly connecting said input shaft second portion to



said feed means to convert the continuous rotation of said input shaft to intermittent rotation of said feed means and intermittently feed a preselected length of the workpiece to the press in timed relation with the press operation, and

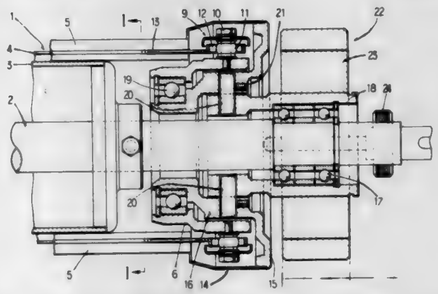
said clamp means being releasable to drivingly disconnect said input shaft first portion from said input shaft second portion to permit relative rotation between said first and second portions and allow adjustments in the timed relation between the feeding of the workpiece to the press and the operation of the press on the workpiece.

4,449,659

ROLLER FOR ADJUSTING THE WIDTH OF A TRAVELLING WEB

Isamu Tuchida, No. 1-24, Ōyamasakihiroshiki, Ōyamasaki-cho Otokuni-gun, Kyoto-fu, Japan

Filed Jun. 2, 1982, Ser. No. 384,425
Int. Cl.³ B65H 17/20
U.S. Cl. 226—190 **4 Claims**



1. In a roller for adjusting the width of a travelling web including:

a core member;

a pair of inclinedly movable tension setting members disposed at the ends of said core members having a plurality of universal joints arranged adjacent to the periphery of the roller; and

a plurality of elastic bands having surface frictional resistance which are axially arranged in a cylindrical shape around the circumference of said core member and stretchingly held between said tension setting members to which said bands are attached at each end;

said cylindrically arranged elastic bands being axially moved in succession according to the inclined movement of said tension setting members, while being rotated by the contact of the travelling web with said elastic bands,

the axial movement during rotation of said cylindrically arranged elastic bands causing the web to be similarly axially moved to a predetermined position, thereby to properly adjust the width of the travelling web;

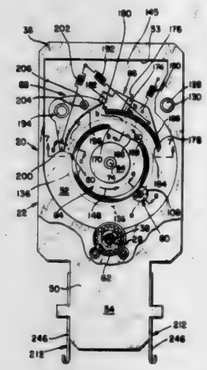
said roller characterized in that the both ends of said elastic bands are connected to said tension setting members through said universal joints.

4,449,660

FASTENER TOOL

Somers H. Smith, III, Columbia, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Apr. 30, 1981, Ser. No. 259,456
Int. Cl.³ B25C 1/06
U.S. Cl. 227—8 **23 Claims**



1. A fastener tool system, comprising:

(a) a source of rotational energy connected to the tool, and said source rotatable through a first cycle;

(b) a fastener to be driven by the tool;

(c) a drive member moveable in the tool through a second cycle defined by a power stroke to drive the fastener and a return stroke,

(d) means in the tool for linking the source of rotational energy to the drive member to drive the drive member through the power stroke and the return stroke, said means further including means for terminating successive second cycles while the source of rotational energy is continuously rotated.

4,449,661

STAPLING APPARATUS

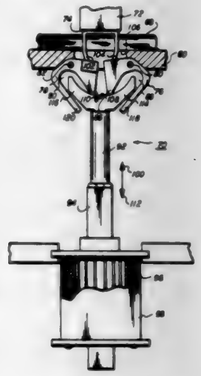
C. W. Spehrley, Jr., Quechee, Vt., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 427,388, Sep. 29, 1982, abandoned, which is a continuation of Ser. No. 907,646, May 22, 1978, abandoned. This application Sep. 28, 1983, Ser. No. 535,551
Int. Cl.³ B27F 7/19, 7/36
U.S. Cl. 227—155 **12 Claims**

1. An apparatus for stapling articles, including:

means for driving a staple through the articles so that a portion of the staple legs extend therethrough;

means for bending the portion of the staple legs protruding through the articles into substantial contact therewith so that the staple is clinched; and



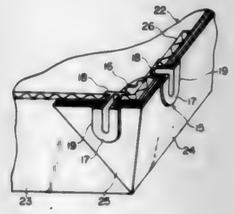
means for applying a force to said bending means which varies as the function of the distance said applying means translates, said bending means exerting a clinching force on the legs of the staple which varies as a function of the distance said applying means translates in substantially the same manner as the force applied thereon by said applying means.

4,449,662

CORNER HOLDER FOR USE WITH BOXES

Kouichi Okamura, Fukuoka; Yukio Eriguchi, Dazaifu; Katsushige Hagio, Kasuga, and Setsuo Yamamoto, Ashiya, all of Japan, assignors to Matsushita Electric Industrial Co., Osaka, Japan

Filed Aug. 10, 1982, Ser. No. 406,834
Int. Cl.³ B65D 6/24, 5/44
U.S. Cl. 229—49 **16 Claims**



1. A corner holder for use with a collapsible box including a plurality of sidewalls having end flaps bent around box corners into superimposed relation to adjacent ones of the sidewalls, said sidewalls and end flaps which are superimposed having a pair of slots adjacent to each of said corners, said corner holder comprising:

a pair of inserts insertable substantially fully in the slots in the sidewalls of the box and each including a base plate having a substantially U-shaped peripheral edge and a continuous flange of an L-shaped cross section extending outwardly adjacent said peripheral edge, said base plate and said continuous flange jointly defining a substantially U-shaped groove opening outwardly along said U-shaped peripheral edge, said U-shaped groove being receptive of an edge of one of the slots in the sidewalls of the box when said insert is inserted in said slot; and

a flexible web interconnecting the base plates of said inserts and adapted to be positioned inside of the box corner

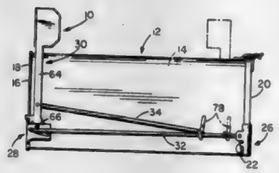
when said inserts are inserted respectively in the sidewalls of the box.

4,449,663

MAILBOX SIGNAL DEVICE

Harry C. Schluter, 94 Piney Ridge Dr., Hendersonville, N.C. 28739

Filed Sep. 19, 1983, Ser. No. 533,757
Int. Cl.³ B65D *91/00*; A47G *29/12*
U.S. Cl. 232—35 **10 Claims**



1. A signal device for attachment to a mailbox having an elongated mail receptacle closed at its rear end and a door hingedly connected to the mail receptacle at its front end for pivotal movement about a horizontal axis between open and closed position, the door in its closed position forming a closure for the front end of the mail receptacle, said signal device comprising a rear bracket for mounting on the mail receptacle and having an elongated slot therein, means for mounting said rear bracket in fixed position on said receptacle, a signal member pivotally supported on said rear bracket for movement between an inactive position and a signalling position and having a cam surface thereon, said cam surface extending transversely of said slot when said signal member is in its inactive position and extending in generally parallel relation to said slot when said signal member is in its signalling position, a front bracket, mounting means for securing said front bracket in fixed position to the door to move therewith, operating means for moving said signal member from its inactive position to its signalling position in response to movement of the door toward its open position and including an operating rod having one end portion connected to said front bracket and an opposite end extending through said slot to travel within said slot and cammingly engage said cam surface, and detent means for releasably securing said signal member in its signalling position.

4,449,664

AIR QUANTITY REGULATING APPARATUS FOR AIR CONDITIONING

Kuniaki Mithuhira, Higashi-Hiroshima; Keiji Kamata, Yamato, and Hikoshiro Suzuki, Sagamihara, all of Japan, assignors to Topre Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 275,650, Jun. 22, 1981, abandoned. This application Jan. 19, 1983, Ser. No. 459,255
Claims priority, application Japan, Jun. 27, 1980, 55-90998
Int. Cl.³ F24F *13/10*
U.S. Cl. 236—49 **9 Claims**

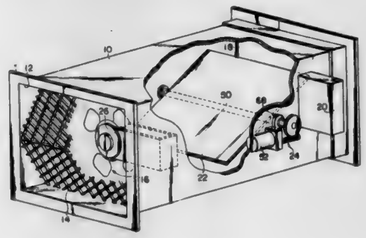
1. An air quantity regulating apparatus for air conditioning, which is used in a system for supplying air from an air conditioner to a plurality of zones to be air-conditioned through a duct so as to regulate an air-quantity supplied to each of the plurality of zones at a predetermined quantity regardless of a difference between pressures at different locations in the duct and a change in pressure at a signal location in the duct, comprising:

(a) a duct member which is disposed in the duct to supply the air from the air conditioner to the zone to be air-conditioned;

(b) an air quantity detector which is disposed in an air flow in said duct member to measure the quantity of air flowing from the air conditioner and which includes a rotary member rotated at a rotational frequency proportional to an air speed and a rotational frequency detector for detecting the rotational frequency of said rotary member;

(c) a throttle valve mechanism which is diposed downstream of said air quantity detector in said duct member to control the quantity of air flowing in said duct member;

(d) a driving means which is reversibly operated to drive said throttle valve mechanism;



(e) an air quantity setter which sets the quantity of air flowing in said duct member; and

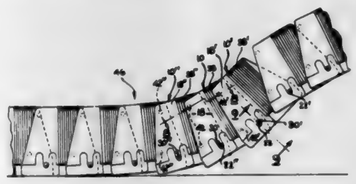
(f) a control means for controlling said driving means to make a preset air quantity set by said air quantity setter coincide with a detected air quantity detected by said air quantity detector.

4,449,665

ADJUSTABLE TRACK

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph Eddy Goldfarb, Westlake Village, Calif.

Filed Feb. 10, 1982, Ser. No. 347,450
Int. Cl.³ A63H *18/04*; E01B *23/00*
U.S. Cl. 238—10 R **16 Claims**



1. An adjustable toy track element comprising:

a toy roadbed section; and

connecting means coupled to said roadbed section for fixedly but releasably locking said roadbed section at a selected generally vertical angle with a roadbed section having a like connecting means coupled thereto to form an adjustable track having a self-sustaining selected elevational contour.

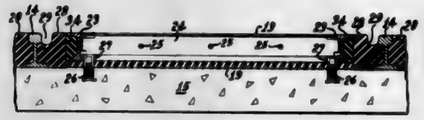
4,449,666

CONCRETE RAILROAD TIE FOR SUPPORTING GRADE CROSSING PANELS

Harvey E. Hales, and Edmund R. Fredrick, both of St. Augustine, Fla., assignors to Railroad Concrete Crosstie Corporation, St. Augustine, Fla.

Division of Ser. No. 69,292, Aug. 24, 1979, Pat. No. 4,267,969. This application May 8, 1981, Ser. No. 261,775
Int. Cl.³ E01B *3/28*; E01C *9/04*
U.S. Cl. 238—84 **2 Claims**

1. An elongated reinforced prestressed concrete railroad tie for positioning beneath and supporting throughout its length interior panels between railroad rails and exterior panels adjacent to and outwardly of each of the rails with the panels and rail upper surfaces being substantially in the same plane, said tie being generally square in cross section and approximately twice as long as the gauge of the rails it is designed to support, said tie having a multiplicity of non-adjustable spaced studs embedded therein and projecting vertically upward from the upper surface of said tie and entering outwardly unexposed



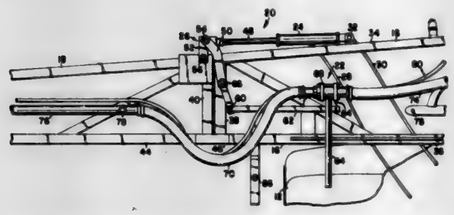
portions of the exterior and interior panels between the rails and the exterior panels adjacent to and outwardly of each of the rails and for permitting vertical movement of the interior and exterior panels with respect to said tie, said studs being the sole attachment to and non-supportive of the interior and exterior panels, said tie being adapted to be placed beneath and attached to the rails to support same thereon.

4,449,667

APPARATUS FOR FOLDING AN OUTBOARD BOOM ON A LIQUID SPRAYING IMPLEMENT

Loren E. Tyler, Benson, Minn., assignor to Lor-Al Corporation, Benson, Minn.

Filed Apr. 26, 1982, Ser. No. 371,817
Int. Cl.³ B05B *1/20*
U.S. Cl. 239—167 **5 Claims**



1. Apparatus for folding an outboard portion of a boom and controlling substance flow to ejection devices supported thereon, said boom having also an inboard portion, said apparatus comprising:

hinge means for pivotably connecting the inboard and outboard portions of said boom;

a valve connected between a source container in fluid communication with said ejection devices and said ejection devices on the outboard portion of said boom, said valve having an actuating member;

means for moving the outboard portion of said boom about the pivoted axis of said hinge means and simultaneously moving said valve actuating member, said moving means being attached directly to one of said inboard and outboard portions;

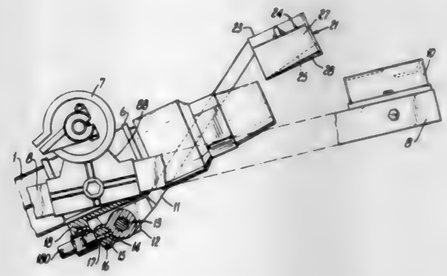
linkage means for connecting said moving means and the other of said inboard and outboard portions, said linkage means forming a common axis with a first element connected to said other of said inboard and outboard portions and a second element connected to said valve, said moving means moving said outboard portion and said valve actuating member simultaneously by moving said common axis.

4,449,668

IMPACT IRRIGATORS IN GENERAL

Arno Drechsel, Via Weggenstein, 29-39100 Bolzano, Italy

Filed Apr. 21, 1981, Ser. No. 256,193
Claims priority, application Italy, May 23, 1980, 46841 A/80
Int. Cl.³ B05B *3/02, 3/14*
U.S. Cl. 239—230 **6 Claims**



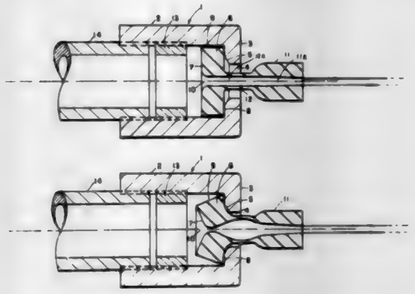
1. An improved impact irrigator of the type having an independent deflector for rapid return disposed at the end of a lever controlled by a reversing linkage, to rock between a position in which the deflector is completely outside the jet and a position in which the deflector is completely immersed in the jet for rapid return movement, of the irrigator wherein the reversing linkage which controls the rocking movements of the lever carrying the deflector comprises at least one connecting means movable between a first position in which the deflector is locked outside the jet, and a second position in which the deflector can enter the jet to cause rapid return, said connecting means comprising an element movable over-center to said first position and back through center to said second position, and wherein an inadvertent external force applied to said lever or said deflector tending to move the deflector toward said jet when said connecting means is in said first position acts to more firmly maintain said element in said over-center position and said lever in said first position in which the deflector is locked outside the jet thereby preventing inadvertent and accidental rapid return as a result of engagement of the lever or deflector by an operator working on the irrigator so that possible injury to the operator is avoided.

4,449,669

IRRIGATION DEVICE

Raphael Mehoudar, 36 Yehuda Hanassi St., Tel-Aviv, Israel

Filed Jul. 23, 1981, Ser. No. 286,354
Claims priority, application Israel, Aug. 6, 1980, 60775
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—533.1 **8 Claims**



1. A water sprinkler device, including a nozzle housing, an aperatured end wall of the housing forming a rim defining an

aperture of said housing; and a nozzle unit, said nozzle unit comprising,

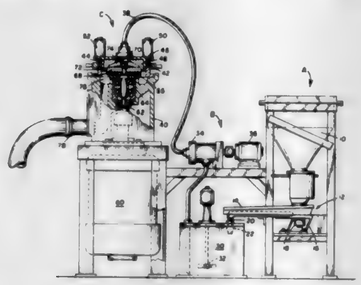
a resiliently flexible annular portion, a resiliently flexible intermediate tubular portion of substantially lesser wall thickness than that of the annular portion and an outlet tubular portion, said portions forming an integral unit with said annular portion merging continuously with the outlet tubular portion via said intermediate tubular portion and defining with the outlet tubular portion and the intermediate tubular portion a continuous bore, said outlet tubular portion extending through said housing aperture with said rim surrounding said intermediate tubular portion, the outer dimensions of which are less than those of said rim, thereby forming an annular gap, said annular portion being located within said housing so as to abut the rim of the housing aperture said outlet tubular portion being of greater rigidity than said resiliently flexible intermediate tubular portion, said flexible intermediate tubular portion constituting means for deforming radially outwardly at least partially within said annular gap when water pressure of water acting on the annular portion increases.

4,449,670

COMMINUTING APPARATUS WITH IMPROVED FEED SYSTEM

James J. Tloczynski, Parma; Clifford J. Ahola, Cleveland; Nicholas D. Rosenstein, Beachwood, all of Ohio, and James C. Rine, Lake City, Fla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 29, 1981, Ser. No. 316,216
Int. Cl.³ B02C *7/12*
U.S. Cl. 241—35 **14 Claims**



1. A comminuting apparatus comprising:

a hopper for holding pellets to be comminuted;

pellet feeding means for feeding the pellets from the hopper into a mixing tank at a selectable rate;

a level controlled valve for feeding a fluid into a mixing tank such that the fluid level in the mixing tank is maintained substantially constant;

agitator means for mixing the pellets and fluid in the mixing tank into a slurry;

concentration control means for controlling the pellet feeding means such that the concentration of pellets in the slurry is maintained generally constant;

pumping means for pumping the pellet and fluid slurry from the mixing tank to a slurry receiving region;

a stator having (i) a receiving region surface for defining one surface of the slurry receiving region and (ii) a generally peripheral abrasive surface disposed peripherally around the stator receiving region surface;

a rotor having (i) a receiving region surface for defining another surface of the slurry receiving region and (ii) a generally peripheral abrasive surface disposed peripherally around the rotor receiving region surface such that the slurry receiving region is defined generally between the rotor and stator receiving region surfaces and a grinding zone is defined between the rotor and stator peripheral abrasive surfaces; and

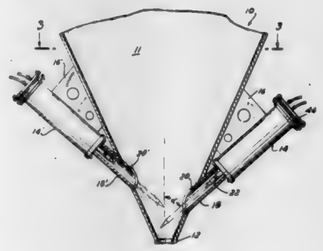
rotating means for rotating the rotor relative to the stator.

4,449,671

APPARATUS FOR SEPARATING AGGLOMERATED PARTICULATE MATTER

Enrique R. Martinez-Vera, and Gilberto Guerra-Garcia, both of Monterrey, Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Continuation-in-part of Ser. No. 254,441, Apr. 15, 1981, abandoned. This application Aug. 4, 1981, Ser. No. 289,998
Int. Cl.³ B02C *23/00*
U.S. Cl. 241—36 **26 Claims**



1. A containment and cluster-breaker apparatus for handling flowing particulate matter, comprising a moving bed reduction vessel for making sponge iron which particulate matter is subject to agglomeration,

said vessel for containing said particulate matter having a narrowed bottom discharge port and further having a defined direction of flow of particulate matter contained therein,

a probe mounted on the exterior of said vessel,

a probe port into the interior of said vessel shaped to accommodate said probe and to prevent escape of particulate matter therethrough,

actuating means for forcefully extending said probe from a retracted position into the vessel and retracting it back out completely therefrom through said port, said actuating means being adapted to move said probe along a line which extended downwardly makes an acute angle (α) relative to the direction of flow of said particulate matter.

4,449,672

MACHINE FOR LOADING AND DISINTEGRATING LARGE BALES OF FORAGE MATERIAL

Ruben D. Morlock, Jamestown; Ivyl D. Kopecky, Ypsilanti, both of N. Dak.; Robert R. Anderson, Windsor, and Dewey R. Marcy, Greeley, both of Colo., assignors to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed May 29, 1981, Ser. No. 268,341
Int. Cl.³ B02C *18/22*
U.S. Cl. 241—101.7 **17 Claims**

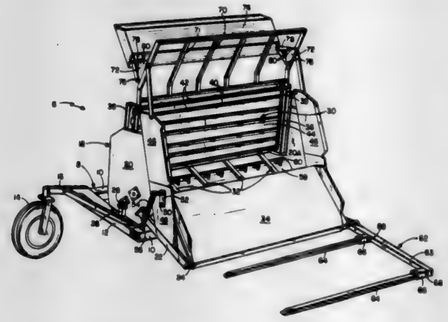
1. A machine for grinding large bales of forage material comprising a support frame;

bale support means mounted on said frame and positioned so that a bale supported on said bale support means is urged under gravity to a first location on the bale support means said bale support including a movable conveyor moving in a direction tending to rotate the bale supported on said movable conveyor;

rotary bale grinding means mounted on the frame in position generally below the bale support means and positioned to engage a bale supported in the first location;

said bale support means including means on a lateral side of the bale grinding means and overlying the bale grinding means and inclining upwardly from a low point above the axis of the bale grinding means for guiding and supporting a bale in position on the bale support means to have the periphery of such bale engaged by the bale grinding means, and

means on said frame adjacent said rotary bale grinding means providing a guide wall extending around and below



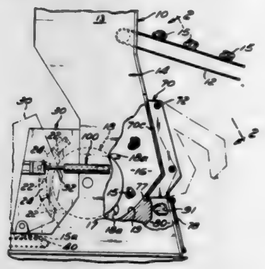
the rotary bale grinding means for guiding ground material ground by the bale grinding means to form a laterally facing outlet opening positioned below the level of the bale support means and extending along substantially the entire length of said bale grinding means to eject material laterally of the support frame in a direction generally perpendicular to the axis of the bale grinding means.

4,449,673

REDUCTION MILL

Wallace C. Cameron, San Pedro, Calif., assignor to Copper Alloys Corporation, Beverly Hills, Calif.

Filed Sep. 29, 1981, Ser. No. 306,758
Int. Cl.³ B02C *13/286*
U.S. Cl. 241—186 R **10 Claims**



1. In a reduction mill having a rotary hammer mill and an anvil wall in a mill cage zone, and a grate assembly structure, including grate components, pivotally displaceable with respect to said rotary hammer mill to provide access to both said grate assembly structure and said rotary hammer mill, and said grate assembly structure containing all of the said grate components for said reduction mill, including a product discharge section, the improvement which comprises:

a pivotally displaceable by-pass door for uncrushable materials, said by-pass door being displaceable from a position abutting the anvil wall of said reduction mill to an intermediate position adjacent a lower rear wall of said reduction mill to thereby expose an opening from said mill cage zone to a cavity means behind said anvil wall and thereby permit passage of uncrushable material from said mill cage zone to said cavity means without interrupting operation of said rotary hammer mill, said cavity means being angularly spaced from said grate assembly structure; and

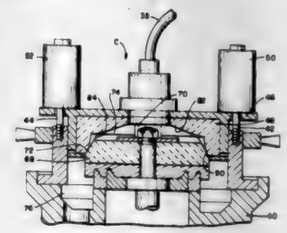
a common power means connected to each of said by-pass door and said grate assembly structure, each of said by-pass door and said grate assembly structure being selectively displaceable by said common power means to a position displaced from their normal operating positions in said reduction mill.

4,449,674

COMMINUTING APPARATUS WITH IMPROVED IMPELLER CONSTRUCTION

James J. Tloczynski, Parma, Ohio; Melvin Budzol, Schaumburg, Ill.; Clifford J. Ahola, Cleveland, Ohio, and James C. Rine, Lake City, Fla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 29, 1981, Ser. No. 316,149
Int. Cl.³ B02C *7/11*
U.S. Cl. 241—245 **10 Claims**



1. A comminuting apparatus comprising:

a stator having a generally central abrasive surface defining a generally central region and a generally peripheral abrasive surface for defining a grinding zone;

a rotor which is rotatable relative to the stator, the rotor having a surface defining the generally central region spaced from and generally opposite the stator central abrasive surface both abrasive surfaces defining a receiving region between the central region and a generally peripheral abrasive surface on the rotor defining the grinding zone and disposed in a cooperative relationship with the stator peripheral abrasive surface; and

an impeller rotatably disposed in the receiving region, the impeller including a plurality of generally vertically disposed vanes which extend substantially from the rotor central region surface to the stator central region abrasive surface, such that the stator central region abrasive surface grinds the impeller vanes at a rate commensurate with the rate of wear between the rotor and stator peripheral abrasive surfaces, whereby a fluid seal is maintained between the impeller vanes and the stator central region abrasive surface to improve the impelling action.

4,449,675

FABRIC REWIND SYSTEM

John C. Parry, 6729 Brookmont Dr., Baltimore, Md. 21207

Filed Sep. 30, 1981, Ser. No. 306,944
Int. Cl.³ B65H *35/02, 17/08*
U.S. Cl. 242—56.2 **8 Claims**

1. In a fabric rewind device, having a fabric rewind means, and a fabric slitting capability, and an improved fabric rewind system, comprising:

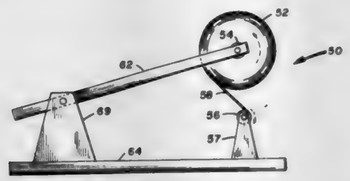
a structural frame means, said structural frame means consisting of a first support component, a second support component, and a base means, said first support component having a support member and a pivoted cantilever member, said first and second support components being suitably affixed to said base means;

a quantity of fabric, said quantity of fabric serving as a fabric supply, said fabric supply having width and length, said fabric supply having a first end and a second end, said first

and second ends being across said width, said length being considerably longer than said width;

a first core means, said first end of said fabric supply being suitably and removably affixed to said first core means, said length of said fabric supply being rolled upon said first core means in succeeding spiral-like layers to form a supply roll, said supply roll being suitably and removably supported by said pivoted cantilever member of said first support component of said structural frame means, said supply roll being located at the distal end of the longer arm of said pivoted cantilever member said pivoted cantilever member being in a substantially horizontal mode in relation to the vertical alignment of said support member;

a first second core means, said first second core means being positioned in said second support component directly under, longitudinally parallel with, and vertically in line



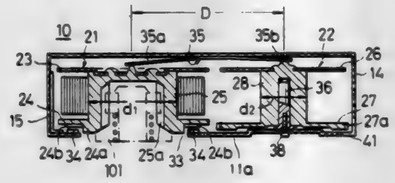
with said supply roll, said second end of said fabric supply being suitably and removably affixed to said first second core means, said length of said fabric supply being rewound upon said first second core means in succeeding spiral-like layers to form a rewind roll of said fabric, said fabric peeling from said supply roll as said fabric is rewound upon said first second core means, the direction of turning of said first second core means during the rewinding being counter to direction of turning of said supply roll as fabric is peeled therefrom, said rewinding being performed without any use of any intermediate rolls or idler means, said supply roll on said pivoted cantilever member resting upon and riding on said rewind roll and turning freely therewith from a position directly above said rewind roll as fabric is peeled from said supply roll and rewound upon said first second core means.

4,449,676

TAPE CASSETTE HAVING A REEL DISPLACEMENT LIMITING MECHANISM

Haruki Ogata, Sagamihara, and Hiroyuki Umeda, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 22, 1982, Ser. No. 390,953
Claims priority, application Japan, Jun. 30, 1981, 56-97438[U]
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **6 Claims**



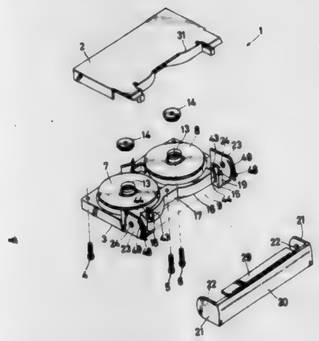
1. A tape cassette loaded with respect to a recording and/or reproducing apparatus having a reel driving mechanism including at least one reel driving shaft, said tape cassette comprising a cassette case, a reel provided within said cassette case, for winding a tape, and a reel displacement limiting mechanism for limiting displacement of said reel, said reel displacement limiting mechanism comprising: a first teeth part having crests and valleys, formed on the lower surface of said reel; a second teeth part having crests and valleys, formed on a bottom plate of said cassette case at a position opposing the first teeth part of said reel; urging means for urging said reel towards the bottom plate of said cassette case so that said first and second teeth parts mesh with each other; and displacement limiting means for limiting displacement of said reel along a radial direction thereof in a state where said first and second teeth parts are meshed to a quantity smaller than a displacement quantity of said reel along the radial direction thereof in a state where said reel is lifted against the urging force of said urging means and said mesh between said first and second teeth parts is released.

4,449,677

TAPE CASSETTE

Shuichi Ohta, Fujima, and Atsuhiro Kumagai, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,983
Claims priority, application Japan, Jun. 22, 1981, 56-96246
Int. Cl.³ G03B *1/04*; G11B *15/32, 23/04*
U.S. Cl. 242—199 **11 Claims**



1. A tape cassette comprising:

a housing containing reels on which a supply of tape is wound and having an opening along one side of the housing and a cutout in the bottom of the housing communicating with said opening along a portion of said opening, wherein said tape is guided between said reels in a path extending along said opening;

a front cover mounted on said housing and movable relative thereto between a closed position for covering said opening in front of said tape and an opened position for exposing said opening and the front of said tape; and

an inner cover movable with said front cover, said inner cover being positioned behind said tape to enclose said tape between said inner cover and said front cover when said front cover is in said closed position and the back of said tape being exposed when said front cover is in said opened position so that said tape can be engaged through said cutout for withdrawal of the tape through said opening.

4,449,678

PRESSURE BALANCE NONAXISYMMETRIC HIGH ASPECT RATIO AFTERBURNER CONVERGENT NOZZLE

Donald W. Hapke, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1981, Ser. No. 306,744
Int. Cl.³ F02K *1/06*; B64D *27/18*
U.S. Cl. 244—12.5 **22 Claims**

1. In a jet propulsion engine of the type adapted to be suspended from an airfoil's wing spar structure and having a jet nozzle defining a minimal included angle θ between the wing chord reference plane and the trailing edge line-of-sight into the jet nozzle, an improved nonaxisymmetric high aspect ratio afterburner exhaust nozzle assembly comprising, in combination:

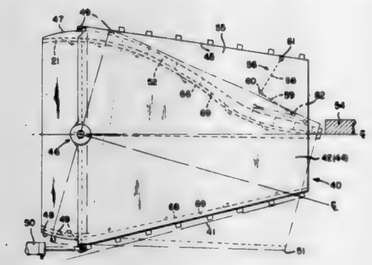
(a) a stationary nozzle casing fixedly mounted on the engine suspended from the airfoil's wing spar structure, said nozzle casing defining: (i) a stationary nozzle duct; and (ii), a rearwardly extending stationary duct member;

(b) said stationary nozzle duct defining a smooth, circumferentially continuous, frusto-spherical sealing surface;

(c) said rearwardly extending stationary duct member defining a smooth continuation of the upper portion of said smooth, circumferentially continuous, frusto-spherical sealing surface and forming a rearwardly extending stationary upper wall of said jet nozzle;

(d) a rotatable nozzle having a lower transverse floor, a pair of spaced upstanding nozzle sidewalls, and a transverse upper cover with the forward extremity of said rotatable nozzle being complementary in shape to, and dimensioned to fit snugly about, said smooth, circumferentially continuous, frusto-spherical sealing surface on said stationary nozzle duct;

(e) means for mounting said rotatable nozzle on said stationary nozzle duct with said rearwardly extending stationary duct member projecting rearwardly into and extending through said rotatable nozzle, and with said rotatable nozzle being free for rotational movement about a transverse axis passing through the forward end of said rotat-



able nozzle and said smooth, circumferentially continuous, frusto-spherical sealing surface on said stationary nozzle duct;

(f) a transversely extending foldable pressure bulkhead hingedly secured along its lower transverse edge to said rearwardly extending duct member adjacent the rear transverse edge thereof and hingedly secured along its upper transverse edge to said transverse upper cover on said rotatable nozzle;

(g) a first circumferentially continuous, non-deflecting wiping seal mounted on the forward extremity of said rotatable nozzle and in circumferentially continuous wiping sealing engagement with said smooth, circumferentially continuous, frusto-spherical sealing surface on said stationary nozzle duct;

(h) second non-deflecting wiping seals mounted adjacent the opposed lateral edges of said foldable pressure bulkhead and in wiping sealing engagement with said upstanding nozzle sidewalls;

(i) third non-deflecting seals mounted on the opposed longitudinal edges of said rearwardly extending stationary duct member in sealing relation with said upstanding nozzle sidewalls; said first, second and third non-deflecting seals being cooperable with the associated ones of said: (i) rotatable nozzle; (ii) stationary nozzle duct; (iii) stationary duct member; (iv) upstanding nozzle sidewalls; and (v), foldable pressure bulkhead so as to form a totally enclosed, sealed, variable volume, static pressure balance chamber in the space bounded by the upper surface of said rearwardly extending stationary duct member, the lower surface of said transverse upper cover, the inner surfaces of said spaced upstanding nozzle sidewalls, and the inner surface of said transversely extending foldable pressure bulkhead; and,

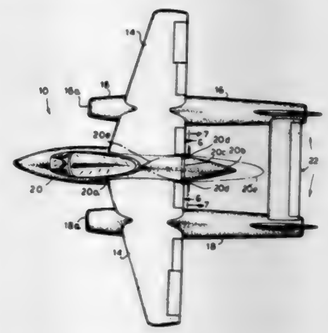
(j) means for rotating said rotatable nozzle about said transverse axis between: (i) a *cruise* position wherein said foldable pressure bulkhead is in its unfolded state and said bounding surfaces of said static pressure balance chamber define the maximum volume of enclosed space; and (ii), an *afterburn* position wherein said foldable pressure bulkhead is in its folded state and said bounding surfaces of said static pressure balance chamber define the minimum volume of enclosed space.

4,449,679

MULTI ROLE AIRCRAFT

Jean McComas, West Babylon, N.Y., assignor to Fairchild Industries, Inc., Germantown, Md.

Filed Mar. 5, 1982, Ser. No. 355,024
Int. Cl.³ B64C *1/22, 7/00*
U.S. Cl. 244—118.2 **8 Claims**



1. An aircraft comprising a fuselage member, propulsion means for the aircraft disposed in a spaced relationship to said fuselage member, said fuselage member including a forward section and a separable aft section, said aft section being located in proximity to said aircraft's center of gravity, said aft section including a protruding portion, said protruding portion extending forward from said aft section, said protruding portion having a forward end portion containing discharge means in communication with the interior of said aft section for material contained within said aft section to be discharged from said aircraft through said forward end portion means whereby said aft section and said forward section are integrally connected to form a single fuselage member, said fuselage connecting means comprising complementary members extending between said forward section and said aft section in a substantially longitudinal direction, said complementary members being cooperatively engaged with one another, and latching means adapted to secure said forward section and said aft section in operative engagement.

4,449,680

AERODYNAMICALLY CONTOURED, LOW DRAG WING ENGINE AND ENGINE NACELLE COMBINATION

Louis B. Gratzer, Seattle, and Walter B. Gillette, Issaquah, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 000,697, Jan. 3, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,737
Int. Cl.³ B64C *1/38*; B64D *29/02*
U.S. Cl. 244—130 **15 Claims**

1. In an aircraft having a longitudinal axis and designed for flight at a predetermined design speed through a main airstream having a main flow direction, a combination of an

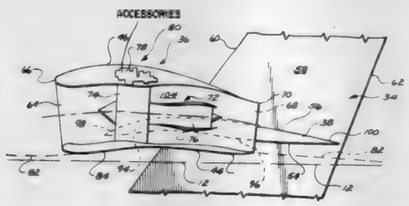
airfoil, engine and engine nacelle, said combination comprising:

a. an airfoil having a leading edge, a trailing edge, and an upper aerodynamic surface, said airfoil having a predetermined sweep angle of at least 10°, and having an outboard end and an inboard end;

b. a nacelle mounted near said airfoil at a location spaced above and forwardly of said airfoil, said nacelle having an upper nacelle surface and a lower nacelle surface, said lower nacelle surface comprising an inboard nacelle surface portion extending from a lower centerline of said lower surface in an inboard side line where said lower nacelle surface joins to said upper nacelle surface, and an outboard lower nacelle surface portion extending from said lower centerline to an outboard sideline where said lower nacelle surface joins to said upper nacelle surface, said lower nacelle surface being spaced upwardly and forwardly from said upper aerodynamic surface, said lower nacelle surface having a rear end positioned rearwardly of said leading edge and a forward end positioned forwardly of said leading edge;

c. an engine mounted in said nacelle;

d. said airfoil being characterized in that in a situation where the airfoil would be passing in flight through said airstream at the design speed, but without aerodynamic interference from other objects in proximity thereto, said airfoil would create in said airstream an airstream flow pattern having a plurality of streamlines which approach the leading edge and pass over the airfoil, with the airfoil creating in said airstream flow pattern a critical zone, which zone includes a general area in said airstream flow



proximate said airfoil, where at least one of the following conditions occur:

1. a local pressure coefficient in said airstream flow has an absolute magnitude greater than 0.05;

2. said airstream flow about said airfoil is supersonic

e. said nacelle having a critical surface region which comprises a one of the lower nacelle surface portions which is adjacent an airfoil portion that sweeps laterally and forwardly from the nacelle;

f. said nacelle having a critical contour area which comprises an area where any portion of the critical surface region is within said critical zone;

g. the critical contour area of the nacelle being in substantial contour alignment with the streamlines immediately adjacent the critical contour area to thereby reduce interference between said nacelle and said airfoil, which streamlines form a stream sheet, said critical contour area having a forward portion forward of the leading edge and sloping rearwardly in an upward direction slanted from said main flow direction in a direction of rearward sweep of said airfoil, said critical contour area having a rear portion rearward of said leading edge sloping rearwardly in a direction from said main flow direction oppositely to the direction of rearward sweep of the airfoil;

h. the upper nacelle surface and the lower nacelle surface portion which is not included in the critcal contour area being collectively a non-critical contour area, said non-critical contour area having at least a substantial portion thereof shaped to conform to configuration requirements of said engine, with at least part of the substantial portion of the non-critical contour area departing from substantial contour alignment with adjacent streamlines.

4,449,681

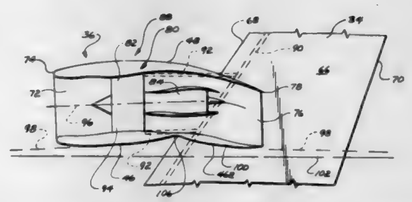
AERODYNAMICALLY CONTOURED, LOW DRAG WING, ENGINE AND ENGINE NACELLE COMBINATION

Louis B. Gratzer, Seattle, and Walter B. Gillette, Issaquah, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 000,699, Jan. 3, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,738

Int. Cl.³ B64C *1/38*; B64D *29/02*

U.S. Cl. 244—130 **15 Claims**



1. In an aircraft having a longitudinal axis and designed for flight at a predetermined design speed through a main airstream having a main flow direction, a combination of an airfoil, engine and engine nacelle, said combination comprising:

(a) an airfoil having a leading edge, a trailing edge, and an upper aerodynamic surface, said airfoil having a predetermined sweep angle of at least 10°, and having an outboard end and an inboard end,

(b) a nacelle mounted directly adjacent to said airfoil at a location above and forwardly of said airfoil, said nacelle having a forward section extending forwardly of the leading edge and a rear section positioned rearwardly of the leading edge, said nacelle having an inboard side surface portion and an outboard side surface portion,

(c) an engine mounted in said nacelle,

(d) said airfoil being characterized in that in a situation where the airfoil would be passing in flight through said airstream at the design speed, but without aerodynamic interference from other objects in proximity thereto, said airfoil would create in said airstream an airstream flow pattern having a plurality of streamlines which approach the leading edge and pass over the airfoil, with the airfoil creating in said airstream flow pattern a critical zone, which zone includes a general area in said airstream flow proximate said airfoil, where at least one of the following conditions occur:

1. a local pressure coefficient in said airstream flow has an absolute magnitude greater than 0.05,

2. said airstream flow about said airfoil is supersonic,

(e) said nacelle having a critical surface region which comprises a one of the nacelle side surface portions which is adjacent an airfoil portion that sweeps laterally and forwardly from the nacelle,

(f) said nacelle having a critical contour area which comprises an area where any portion of the critical surface region is within said critical zone,

(g) the critical contour area of the nacelle being in substantial contour alignment with the streamlines immediately adjacent the critical contour area to thereby reduce interference between said nacelle and said airfoil, which streamlines form a stream sheet, said critical contour area having a forward portion forward of the leading edge and sloping rearwardly in a direction slanted from said main flow direction in a direction of rearward sweep of said airfoil, said critical contour area having a rear portion rearward of said leading edge sloping rearwardly in a direction from said main flow direction oppositely to the direction of rearward sweep of the airfoil,

(h) other nacelle surface portions which are not included in the critical contour area being collectively a non-critical contour area, said non-critical contour area having at least a substantial portion thereof shaped to conform to configuration requirements of said engine, with at least part of the substantial portion of the non-critical contour area departing from substantial contour alignment with adjacent streamlines.

4,449,682

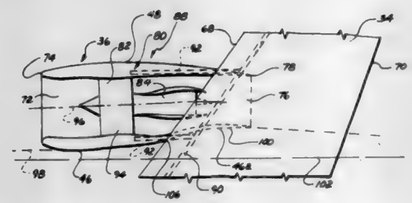
AERODYNAMICALLY CONTOURED, LOW DRAG WING, ENGINE AND ENGINE NACELLE COMBINATION

Louis B. Gratzer, Seattle, and Walter B. Gillette, Issaquah, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 698, Jan. 3, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,829

Int. Cl.² B64D *29/02*

U.S. Cl. 244—130 **14 Claims**



1. In an aircraft having a longitudinal axis and designed for flight at a predetermined design speed through a main airstream having a main flow direction, a combination of an airfoil, engine and engine nacelle, said combination comprising:

(a) an airfoil having a leading edge, a trailing edge, and a lower aerodynamic surface, said airfoil having a predetermined (weeep) sweep angle of at least 10°, and having an outboard end and an inboard end,

(b) a nacelle mounted directly adjacent to said airfoil at a location below and forwardly of said airfoil, said nacelle having a forward section extending forwardly of the leading edge and a rear section positioned rearwardly of the leading edge, said nacelle having an inboard side surface portion and an outboard side surface portion,

(c) an engine mounted in said nacelle,

(d) said airfoil being characterized in that in a situation where the airfoil would be passing in flight through said airstream at the design speed, but without aerodynamic interference from other objects in proximity thereto, said airfoil would create in said airstream an airstream flow pattern having a plurality of streamlines which approach the leading edge and pass under the airfoil, with the airfoil creating in said airstream flow pattern a critical zone, which zone includes a general area in said airstream flow proximate said airfoil, where at least one of the following conditions occur:

1. a local pressure coefficient in said airstream flow has an absolute magnitude greater than 0.05,

2. said airstream flow about said airfoil is supersonic,

(e) said nacelle having a critical surface region which comprises the nacelle side surface portions adjacent an airfoil portion that sweeps laterally and forwardly from the nacelle,

(f) said nacelle having a critical contour area which comprises an area where any portion of the critical surface region is within said critical zone,

(g) the critical contour area of the nacelle being in substantial contour alignment with the streamlines immediately adjacent the critical contour area to thereby reduce interference between said nacelle and said airfoil, which streamlines form a stream sheet, said critical contour area having a forward portion forward of the leading edge and sloping rearwardly in a direction slanted from said main flow direction in a direction of rearward sweep of said airfoil, said critical contour area having a rear portion rearward of said leading edge sloping rearwardly in a direction from said main flow direction also in the direction of rearward sweep of the airfoil,

(h) other nacelle surface portions which are not included in the critical contour area being collectively a non-critical contour area, said non-critical contour area having at least a substantial portion thereof shaped to conform to configuration requirements of said engine, with at least part of the substantial portion of the non-critical contour area departing from substantial contour alignment with adjacent streamlines.

4,449,683

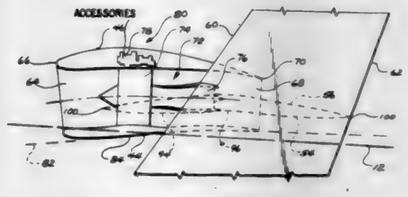
AERODYNAMICALLY CONTOURED, LOW DRAG WING ENGINE AND ENGINE NACELLE COMBINATION

Louis B. Gratzer, Seattle, and Walter B. Gillette, Issaquah, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 000,754, Jan. 3, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,847

Int. Cl.³ B64C *1/38*; B64D *29/02*

U.S. Cl. 244—130 **14 Claims**



1. In an aircraft having a longitudinal axis and designed for flight at a predetermined design speed through a main airstream having a main flow direction, a combination of an airfoil, engine and engine nacelle, said combination comprising:

(a) an airfoil having a leading edge, a trailing edge, and an upper and a lower aerodynamic surface, said airfoil having a predetermined sweep angle of at least 10°, and having an outboard end and an inboard end,

(b) a nacelle mounted near said airfoil at a location spaced below and forwardly of said airfoil, said nacelle having an upper nacelle surface and a lower nacelle surface, said upper nacelle surface comprising an inboard nacelle surface portion extending from an upper center line of said upper surface to an inboard side line where said upper nacelle surface joins to said lower nacelle surface, and an outboard upper nacelle surface portion extending from said upper centerline to an outboard sideline where said upper nacelle surface joins to said lower nacelle surface, said upper nacelle surface being spaced downwardly and forwardly from said lower aerodynamic surface, said upper nacelle surface having a rear end positioned rearwardly of said leading edge and a forward end positioned forwardly of said leading edge,

(c) an engine mounted in said nacelle,

(d) said airfoil being characterized in that in a situation where the airfoil would be passing in flight through said airstream at the design speed, but without aerodynamic interference from other objects in proximity thereto, said airfoil would create in said airstream an airstream flow pattern having a plurality of streamlines which approach the leading edge and pass beneath the airfoil, with the airfoil creating in said airstream flow pattern a critical zone, which zone includes a general area in said airstream

flow proximate said airfoil, where at least one of the following conditions occur:

1. a local pressure coefficient in said airstream flow has an absolute magnitude greater than 0.05,
2. said airstream flow about said airfoil is supersonic,

(e) said nacelle having a critical surface region which comprises a one of said upper nacelle surface portions that is adjacent an airfoil portion that sweeps laterally and forwardly from the nacelle,

(f) said nacelle having a critical contour area which comprises an area where any portion of the critical surface region is within said critical zone,

(g) the critical contour area of the nacelle being in substantial contour alignment with the streamlines immediately adjacent the critical contour area to thereby reduce interference between said nacelle and said airfoil, which streamlines form a stream sheet, said critical contour area having a forward portion forward of the leading edge and sloping rearwardly in a direction slanted from said main flow direction in a direction of rearward sweep of said airfoil, said critical contour area having a rear portion rearward of said leading edge sloping rearwardly in a direction from said main flow direction also in the direction of rearward sweep of the airfoil,

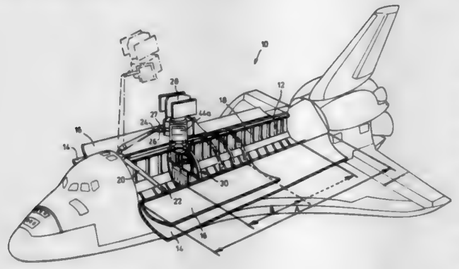
(h) the lower nacelle surface and the upper nacelle surface portion which is not included in the critical contour area being collectively a non-critical contour area, said non-critical contour area having at least a substantial portion thereof shaped to conform to configuration requirements of said engine, with at least part of the substantial portion of the non-critical contour area departing from substantial contour alignment with adjacent streamlines.

4,449,684

SATELLITE SERVICING

Charles M. Hinds, Weston, Canada, assignor to Spar Aerospace Limited, Mississauga, Canada

Continuation of Ser. No. 54,829, Jul. 3, 1979, Pat. No. 4,273,305.
This application Jun. 2, 1981, Ser. No. 269,746
The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.
Int. Cl.³ B64G *1/14*
U.S. Cl. 244—160 **2 Claims**



1. In a space shuttle orbiter having a cargo bay formed therein which has a longitudinal extent in a first direction extending from the crew compartment located at one end thereof, an improved payload distribution system comprising:

(a) a remote manipulator arm having a proximal end mounted in said cargo bay adjacent said one end thereof, said manipulator arm being operable to perform manipulating functions within a predetermined range along the longitudinal extent of the cargo bay,

(b) a plurality of mounting means located at intervals along said cargo bay within said operational range of said remote manipulator arm adapted to operably locate payload assemblies at a plurality of positions along the length of said cargo bay,

(c) a first primary payload assembly located in said cargo bay and releasably mounted on a first of said mounting means within the operational range of said manipulator arm at a convenient location along the length of said cargo bay to provide a free length of cargo bay at a position of opportunity along the length of said cargo bay,

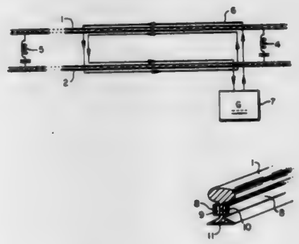
(d) a secondary payload assembly disposed in said free length of said cargo bay within the operational range of said manipulator arm and releasably mounted on said mounting means, thereby to permit optimal utilization of said cargo bay, said secondary payload assembly comprising a replacement module support assembly which consists of a short generally planar support frame having a support face extending transversely of the cargo bay, said support face facing said one end of the cargo bay, and a plurality of replacement modules releasably mounted on said support face in a side-by-side generally planar array so as to be accessible to said manipulator arm and being adapted to be released by operation of said manipulator arm in use.

4,449,685

COUPLING FOR INDUCING A CURRENT IN THE RAILS OF A RAILROAD TRACK

Jean P. Salmon, Aulnay sous Bois, and Claude P. Theze, Montigny les Cormeilles, both of France, assignors to Jeumont Schneider Corporation, Puteaux, France

Filed Jun. 26, 1981, Ser. No. 277,853
Claims priority, application France, Jul. 7, 1980, 80 15045
Int. Cl.³ B61L *27/00*; H04B *5/00*
U.S. Cl. 246—8 **6 Claims**



1. A coupling for inducing a high-frequency alternating current in the two rails of a railway, each of said rails having a cross section approximating the form of a mushroom, in which a lower end of a central vertical rib is flattened to form a horizontal flange, and characterized by the fact that said coupling comprises two conducting coils, each having a strip of conductive material attached to a strip of insulating material, the strips of conductive material having portions that are arranged in planes parallel to the sides of the central vertical rib of each rail and on opposite sides of each rib, with said strip of insulating material having portions separating the central vertical rib from corresponding portions of the strip of conductive material, the strips having width that is substantially greater than the thickness thereof, and the width of said portions being arranged vertically.

4,449,686

DISPLAY FIXTURE MOUNTING BRACKET

Melvin L. Kersey, Paragould, Ark., assignor to Darling Store Fixtures, Paragould, Ark.

Filed May 17, 1982, Ser. No. 378,918
Int. Cl.³ A47B *96/06*; A47G *55/00*
U.S. Cl. 248—215 **19 Claims**

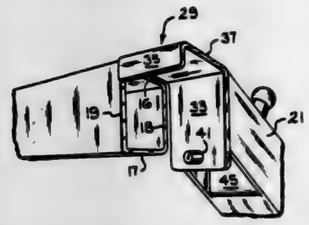
1. A mounting bracket for a display fixture comprising:

a hangrod positioned on said display fixture;

a hanger arm for mounting on said display fixture;

a mounting bracket positioned on one end of said hanger arm, said bracket being disposed for engaging said hangrod to mount said hanger arm thereon;

a pin movably positioned in said mounting bracket, a first end of said pin extending from said bracket towards said hangrod, a second end of said pin extending from said bracket towards said hanger arm;



a flange disposed in said pin; and

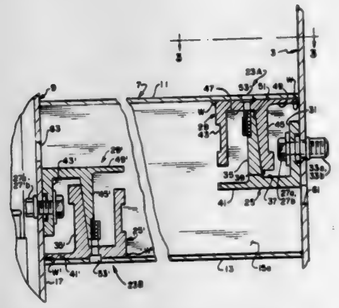
a spring disposed for engaging said flange on said pin, said spring biasing said movable pin towards said hangrod whereby said first end of said pin engages said hangrod to maintain said bracket and hanger arm in position on said hangrod.

4,449,687

SYSTEM AND METHOD OF MOUNTING A LAMP HOLDER ON A SUPPORT

Vincent M. Karaktin, Nassau County, assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 136,435, Apr. 2, 1980, Pat. No. 4,317,164.
This application Oct. 2, 1981, Ser. No. 308,047
Int. Cl.³ F16B *3/00*
U.S. Cl. 248—225.2 **4 Claims**



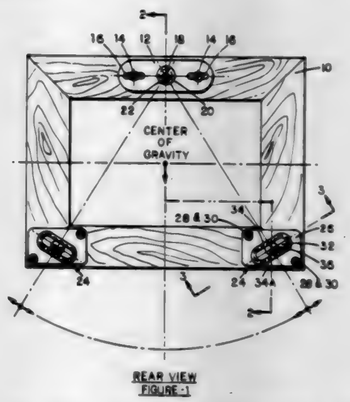
1. A system for mounting a member to a support, said system including a member, a support and a pair of mounting brackets, one mounting bracket mounted on the member and the other mounting bracket mounted on the support, said brackets being of a common extrusion, each of said brackets having a coupling flange, one of said pair of brackets being installed on said support with its coupling flange extending in one direction, the other of said pair of brackets being secured to said member with its coupling flange extending in another direction opposite said one direction, said coupling flanges being so arranged relative to one another so that upon said member and said support being brought into relative abutting relation, said coupling flanges are wedgingly engageable with one another as said member and said support are moved relative to one another in opposite directions so as to wedgingly draw and to hold said member in secure abutting relation on said support.

4,449,688

MEANS FOR CAUSING A SUSPENSIBLE PICTURE FRAME

Thomas S. Robins, 2151 Palomino Dr., Warrington, Pa. 18976

Continuation of Ser. No. 236,668, Feb. 23, 1981, abandoned.
This application Apr. 11, 1983, Ser. No. 482,274
Int. Cl.³ A47G *1/16*
U.S. Cl. 248—498 **8 Claims**



REAR VIEW
FIGURE-1

1. For a first means, comprising a picture frame, a mirror, and the like, which is suspended from a substantially vertical second means, such as a door, a wall, and the like, means for interpositioning between such first and second means for causing said first means, automatically, to assume a plumb disposition, comprising:

a single, one-piece component which defines a rolling element retainer;

said rolling element retainer having means for holding a rolling element therewithin; and

a single rolling element held by said retainer; wherein

said rolling element comprises a ball, of a given diameter, rotatable about a plurality of axes;

said holding means of said retainer comprises means for accommodating rotation of said rolling element about a plurality of axes; and

said retainer comprises a substantially uniplanar plate, and a pair of substantially parallel members, joined to said plate, said plate and pair of members defining an elongate track of a given length; wherein

said rolling element makes only rolling point contacts with said pair of members, during rotation thereof; and

said given length of said track is greater in dimension than said given diameter of said ball and, as a consequence thereof, a portion of said track defines a void (a) open to said rolling element, and (b) along which said rolling element is free to displace from a first position thereof relative to said track to a second position thereof, relative to said track, which is spaced apart from said first position.

4,449,689

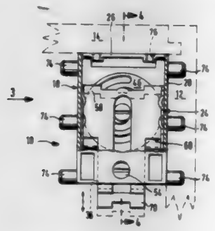
ADJUSTABLE HANGER FOR WALL-HUNG CABINETS AND THE LIKE

Karl Lautenschläger, Reinheim, and Gerd Viniol, Ober-Mossau, both of Fed. Rep. of Germany, assignors to Karl Lautenschläger KG, Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 276,931
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023760; Oct. 1, 1980, 3036984
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—544 **25 Claims**

1. A hanger for a wall-hung cabinet or the like, having: a casing adapted to be fastened in a rearward part of a cabinet

and a hook member adapted to be hung onto a wall hook or a wall-mounted rail, and displaceably disposed at right angles to a wall and also perpendicularly parallel to the wall, said casing being in the form of a substantially rectangular frame of relatively shallow depth and having a frame with frame elements disposed substantially vertically in their properly fastened position, a mounting part for mounting said hook member being mounted between said frame elements so as to be able to



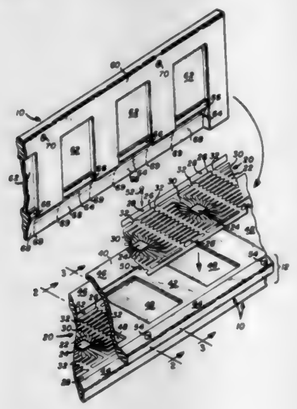
swing about a substantially horizontally disposed axis and be locked at selectable intermediate positions, said hook member being disposed on the mounting part for displacement in a substantially vertical direction, and a cam disposed between the mounting part and the hook member, said cam being mounted rotatably at the mounting part and having a spiral groove in a flat side thereof facing the hook member, and a projection of the hook member engaging said groove.

4,449,690

APPARATUS FOR ENCAPSULATION CASTING

Jon M. Schroeder, 10835 Morgan Territory Rd., Livermore, Calif. 94550, assignor to Jon M. Schroeder, Livermore, Calif.

Division of Ser. No. 224,658, Jan. 13, 1981, Pat. No. 4,374,080.
This application Jul. 28, 1982, Ser. No. 402,714
Int. Cl.³ B28B *9/00*
U.S. Cl. 249—85 **6 Claims**



1. A unitary matrix element for cast encapsulation of an item comprising:

a first surface shaped and adapted to receive and secure an item to be encapsulated, the first surface being shaped to establish a portion of a molding cavity for enclosing an item to be encapsulated and a portion of an orifice surface extending from said molding cavity surface; and

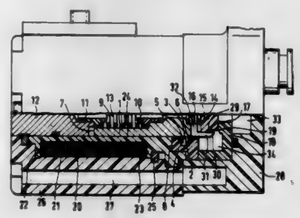
a second surface located on an opposite side of the matrix element from the first surface, the second surface being shaped to mate with the first surface of another similar matrix element and to establish the remainder of said molding cavity surface and said orifice surface when two of such matrix elements are stacked together.

4,449,691

ELECTROMAGNET

Egon Führer, 35, Hopfenstrasse; Dieter Kleinert, 9, Nelkenweg; Gerd Pfrogner, 20, Dresdener Strasse, all of D 8940 Memmingen, and Max Egg, 28, Gartenstrasse, D 8941 Erkheim, all of Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 332,836
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132396
Int. Cl.³ F16K *25/00, 31/02*
U.S. Cl. 251—85 **7 Claims**



1. In an electromagnet comprising a core, a coil mounted on a coil body adjacent said core, an armature guide in said coil body and movable against said core in response to energization of said coil, and a spring for returning said armature on de-energization of said coil, the improvement comprising a buffer body of resilient material mounted on said coil body adjacent said armature, a recess in said buffer body having opposed end walls and an outwardly-extending annular flange on said armature and surrounding said armature projecting into said recess in the buffer body so that said flange is substantially fully enclosed within said buffer body and alternately abuts said opposed end walls of the recess to determine and dampen the stroke of the armature.

5. An electromagnet according to claim 1 wherein the electromagnet is operatively associated with a fluid valve having a valve seat and a movable valve closure member, and further comprising a valve recess in the end of said armature, said valve closure member being engaged within said valve recess so that it is operated by said armature between open and closed positions.

6. An electromagnet according to claim 5, wherein a spring is provided between said valve closure member and said armature to resiliently urge said valve closure member axially outwardly with respect to said armature.

4,449,692

DRAIN CONSTRUCTION FOR A RADIATOR

Eugene E. Rhodes, Belleville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1982, Ser. No. 441,337
Int. Cl.³ F16K *51/00, 5/00*
U.S. Cl. 251—144 **3 Claims**

1. A drain construction for a radiator which is characterized by:

a header for containing a fluid handled by the radiator, said header including a drain area having an inner surface facing into an interior fluid handling portion of said header and an outer surface facing outwardly from said drain area of said header;

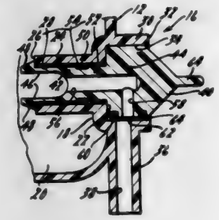
a first annular pipe extending from said inner facing surface of said drain area of said header to a free end thereof within said interior fluid handling portion of said header, said first annular pipe having an interior axially extending opening of a first fixed diameter extending therethrough from said outer surface of said drain area of said header to said free end of said first annular pipe;

a second annular pipe extending from said outer surface of said drain area of said header to a free end thereof above said outer surface of said header, said second annular pipe having an interior axially extending opening of a second fixed diameter extending therethrough from said outer surface of said drain area of said header to said free end of said second annular pipe, said opening of said first annular pipe and said second annular pipe being coaxial with one another with said second fixed diameter of said second annular pipe being larger than said first fixed diameter of said first annular pipe;

a third annular pipe intersecting said second annular pipe and providing a passageway from said opening of said second fixed diameter of said second annular pipe to the exterior of said header;

a plug received in part in said opening of said first annular pipe and in part in said opening of said second annular pipe, said plug having both a lower portion of circular cross section with a diameter slightly smaller than said first fixed diameter of said first annular pipe and an upper portion of circular cross section with a diameter slightly smaller than said second fixed diameter of said second annular pipe;

said lower portion of said plug having a bifurcated section at its free end with each of said bifurcations having a locking foot associated therewith, the length of said lower portion of said plug from said upper portion of said plug to said locking feet of said bifurcations being slightly greater than the length of said first annular pipe from said outer surface



of said header to said free end of said first annular pipe whereby said locking feet of said bifurcations are received over said free end of said first annular pipe to hold said plug in place;

a circumferential groove formed in an unbifurcated section of said lower portion of said plug;

an O-ring of resilient material received in said circumferential groove to provide a fluid tight seal between said unbifurcated section of said lower portion of said plug and said first annular pipe;

passageway defining means for forming a passageway through said lower portion and said upper portion of said plug whereby said interior fluid handling portion of said header may be interconnected with said third annular pipe when said portion of said passageway defining means located in said upper portion of said plug is aligned with said passageway of said third annular pipe;

a groove formed about an opening formed by said passageway defining means in said upper portion of said plug;

sealing means in said groove for providing a fluid tight seal between said opening formed by said passageway defining means in said upper portion of said plug and the surface of second fixed diameter of said second annular pipes; and

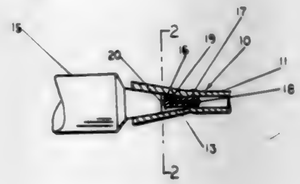
knob means on said upper portion of said plug for turning said plug between an open position in which said opening formed by said passageway defining means in said upper portion of said plug is aligned with said passageway of said third annular pipe and a closed position where said mentioned elements are not aligned.

4,449,693

CATHETER CHECK VALVE

Gordon A. Gereg, 159 Sawpit Hill Rd., Woodbury, Conn. 06798

Filed Sep. 30, 1982, Ser. No. 428,886
Int. Cl.³ F16L *37/28*
U.S. Cl. 251—149.8 **7 Claims**



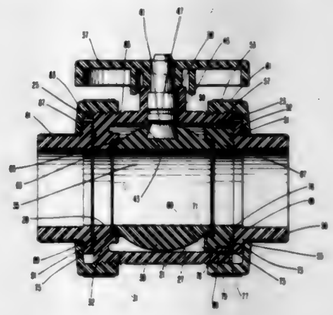
1. A check valve to govern fluid flow in tubing said tubing being resilient and elastic enough to be distorted by an axially tapered plug said plug being essentially oval in cross section at least at one end and having dimensions such that the major axis distorts the tubing into which the plug is installed into a flattened shape with a minor axis dimension considerable smaller than the tubing diameter so that a rigid tube or other device of slightly larger outer diameter than the tubings inner diameter when inserted into said resilient tube causes the resilient tubing to take the shape and size of the rigid tube at the minor axis of the plug thereby partially separating the resilient tubing from sealing contact with the tapered plug forming a passage for fluid flow past the tapered plug until the rigid tube is removed and the resilient tubing again returns to tight contact with the tapered plug thereby closing the flow passage.

4,449,694

BLOCKED BALL VALVE

Ralph J. Hobart; Robert D. Rupp, both of Westerville, and Paul F. Mastro, Dublin, all of Ohio, assignors to Nibco, Inc., Elkhart, Ind.

Continuation of Ser. No. 205,403, Nov. 10, 1980, abandoned.
This application Mar. 22, 1982, Ser. No. 360,236
Int. Cl.³ F16K *5/20*
U.S. Cl. 251—171 **1 Claim**



1. A valve having a housing, an axial passageway for fluids through said housing communicating between first and second ends thereof, a ball rotatably seated in and between the ends of said passageway for controlling the movement of fluid through the passageway, an annular seal member having an external diameter that is less than the internal diameter of said axial passageway whereby said annular seal member is axially slidably received in one end of said passageway said annular seal member having a ball engaging seal element on one end, said valve characterized in that said seal member has an external annular recess at its outer end forming an outwardly facing

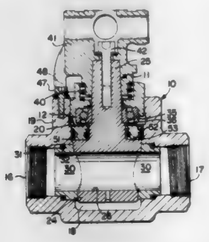
shoulder, a locking ring threadedly mounted in said one end of said passageway and seated in said recess and engaging said shoulder to hold said annular seal member with the seal element in engagement with the ball and restrained against outward axial movement when the outer end of said locking ring is substantially flush with the end of the housing, said locking ring having an axial length that is less than the axial length of said external annular recess and said locking ring having an interior diameter that is greater than the exterior diameter of said recess whereby said annular seal member is axially inwardly movable with respect to said ring and the other end thereof projects outwardly beyond the end of said locking ring and said housing; a seal pressurizing means threadedly secured to the said one end of said housing and engaging the projecting end of said seal member for shifting said seal member toward said ball to increase the seal pressure and thus eliminate fluid leakage, a seat disposed on said housing at the face of said ball opposite from said one end of said ball for supporting said ball against axial movement under axial pressure exerted by said annular seal member, said seat comprising an annular compressible seal engaging said ball, said seal pressurizing means comprising a connecting sleeve flanged at one end, the flanged end seating against the projecting end of said annular seal member and an annular cap internally threaded to engage said one end of said housing and having an annular portion seated over said flanged end of said sleeve, first compressible seal means disposed between the projecting end of said annular seal member and said flange, and second compressible seal means disposed between at least one of said annular seal member and said locking ring, said annular seal member and an interior wall of said housing and said locking ring and an interior wall of said housing.

4,449,695

FIRE SAFE PLUG VALVE

William H. Alexander, and Roy R. Dare, both of Houston, Tex., assignors to Vapor Corporaion, Chicago, Ill.

Filed Aug. 19, 1982, Ser. No. 409,430
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—214 **2 Claims**



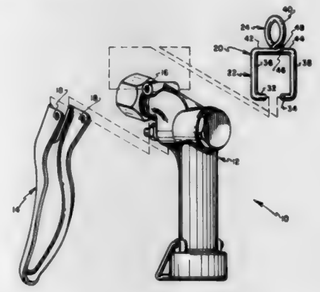
1. In a high pressure plug valve including a hollow body with opposed inlet and outlet ports adapted to be connected to pipeline to control high pressure fluid flow and a bonnet extending perpendicular to said body, seats at said openings, a plug rotatably mounted in said body between said seats, a stem extending upward from said plug and bearingly received in the bonnet and extending out of the body for wrench engagement to rotate the plug between open and closed positions, and a packing plate above the plug and in the bonnet to seal between the body and the stem, the improvement in the packing plate which includes an annular metal ring with O-ring grooves opposite the respective surfaces of the body and stem to be sealed and on the plug side of the stem, resilient O-rings in each of said grooves, notches in the metal ring above each of the O-ring grooves, and nonresilient high temperature graphite ring seals along each of said notches directly backing up each of the O-rings, whereby the fluid under pressure in the valve body which leaks by the mating surfaces of the plug and seats causes the O-rings and ring seals to coact and seal between the metal ring and adjacent bonnet and stem surfaces.

4,449,696

VALVE WITH HANDLE-MOUNTING RING

Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060

Continuation-in-part of Ser. No. 313,456, Oct. 21, 1981, abandoned. This application Jun. 1, 1983, Ser. No. 499,822
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—231 **3 Claims**



1. A handle-operated flow control valve, comprising:
(a) a valve body having valving means for controlling a flow of fluid through the body, and body portions an opposed slides thereof which define a pair of oppositely opening mounting formations that extend along a common axis;
(b) handle means for operating the valving means and having handle portions which extend closely alongside the body portions and which have mounting holes formed therethrough that coaxially align with the mounting formations; and,
(c) a one piece handle mounting ring formed from a single piece of resilient metal wire and having axially aligned end portions which extend coaxially with respect to and through the mounting holes and into the mounting formations to pivotally mount the handle means on the valve body for movement about the common axis, the mounting ring having a pair of support formations formed intermediate the end portions, the support formation defining first and second hook-engageable loops, with the first of the loops extending in a first plane which includes the common axis, with the second of the loops extending in a second plane that is substantially perpendicular to the first plane, and with the first and second loops being interconnected by a pair of curved transitional portions that are formed by twisting overlapping portions of the metal wire to form curved transitional portions that wrap snugly about each other to assist in inhibiting movement of the axially aligned end portions in directions relatively apart from each other.

4,449,697

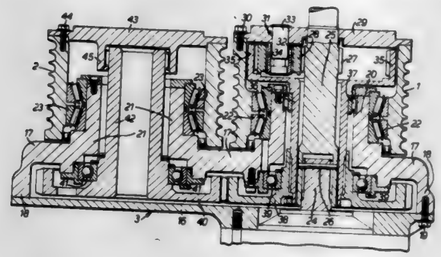
MULTIPLE DRUM WINCHES

Raymond J. Hicks, Llandrindod Wells, Great Britain, assignor to Hicks Transmissions Limited, Powys, Great Britain

PCT No. PCT/GB81/00121, 371 Date Mar. 2, 1982, 102(e) Date Mar. 2, 1982, PCT Pub. No. WO82/00133, PCT Pub. Date Jan. 21, 1982
PCT Filed Jul. 2, 1981, Ser. No. 359,711
Claims priority, application United Kingdom, Jul. 3, 1980, 8021899
Int. Cl.³ B65D *1/74*
U.S. Cl. 254—297 **7 Claims**

1. A multiple drum winch comprising a base, two parallel drums carried side by side on the base for entrainment by a common cable, an input shaft, a sun gear on the input shaft

co-axial with the first drum, planet pinions carried by the first drum meshing with the sun gear, an internally toothed annulus



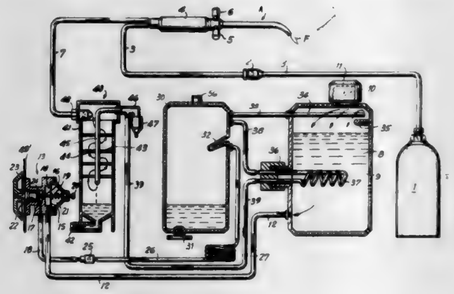
mounted co-axially with the first drum and meshing with the planet pinions, and a positive transmission between the second drum and said annulus.

4,449,698

AUTOGENOUS PORTABLE WELDING APPARATUS

Rinaldi Renato, Modena, Italy, assignor to Uniox SRL Welding & Cutting, Bologna, Italy

Filed Mar. 31, 1983, Ser. No. 480,784
Int. Cl.³ B23K *7/00*
U.S. Cl. 266—48 **32 Claims**



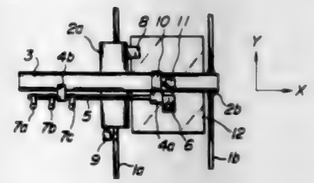
1. Autogenous portable welding apparatus comprising a container for receiving a readily decomposable liquid capable of yielding a combustible gas; conversion means having an input thereof connected to said container for receiving the decomposable liquid and for effecting conversion at a rate which is a function of the rate of flow of the decomposable liquid thorough said conversion means; means for selectively releasing the combustible gas to a torch; conduit means for transmitting the increased pressures developed at the output of said conversion means during the conversion process to said container to increase the rate of flow of the decomposable liquid through said conversion means; and liquid flow control means disposed between said container and said conversion means for regulating the flow of the decomposable liquid through said conversion means as a function of the pressure in said container to thereby maintain a desired gas generation rate.

4,449,699

METHOD OF CONTROLLING AN OPERATION OF A COPY-CUTTING APPARATUS

Takeshi Ashizawa, Tokyo, and Motoaki Yasumura, Kawagoe, both of Japan, assignors to Kabushiki Kaisha Tanaka Seisakusho, Tokyo, Japan

Division of Ser. No. 102,515, Dec. 11, 1979, Pat. No. 4,328,050. This application Sep. 9, 1981, Ser. No. 300,426
Claims priority, application Japan, Dec. 11, 1978, 53-152039
Int. Cl.³ B23K *7/10*; G05B *19/42*
U.S. Cl. 266—58 **10 Claims**



1. An apparatus for controlling an operation of a copying apparatus which includes a tracer for tracing a contour of a pattern to be copied and a working machine having a working head being movable in conjunction with the tracer in a given relationship for effecting a given working operation for an object to be worked comprising:
means for detecting coordinates of the tracer at operational points including at least a work start point, a copy start point and a copy end point;
means for storing the detected coordinates;
means for reading the stored coordinates out of the storing means;
means for setting a position of the tracer by means of the readout coordinates;
means for switching the copying apparatus between a position setting mode and a copying mode; and
means for controlling the above means in such a manner that during the actual working operation the movement of the tracer is controlled by the readout coordinates, while the switching means being in the position setting mode, whereas in the copying mode the movement of the working head is controlled by the movement of the tracer which follows the pattern.

4,449,700

METHOD AND APPARATUS FOR SAMPLING OR MEASURING A PARAMETER OF A METAL MELT

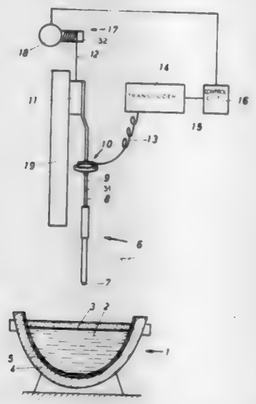
Jean Erpelding, Hautcharage, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Nov. 22, 1982, Ser. No. 443,633
Claims priority, application Luxembourg, Nov. 26, 1981, 83789
Int. Cl.³ G01F *23/00*
U.S. Cl. 266—79 **8 Claims**

4. An apparatus for measuring temperature or sampling at a predetermined location below the surface of a molten metal melt comprising:
an upwardly open receptacle receiving said melt;
a probe adapted to be lowered into said melt to said location;
guide means above said receptacle forming a terminal path and including a carriage shiftable upwardly and downwardly along said path;
an electrically operated winch having a cable connected to said carriage for raising and lowering said probe;
a rod connecting said probe to said carriage and having upper and lower portions;
a contact detector responsive to retardation of said lower portion of said rod relative to the upper portion of said rod as said probe is lowered into contact with said surface for controlling said winch;

melt sampling means on said rod for measuring temperature or taking a sample at said location, said contact detector including a transducer generating an electric signal; and

circuit means between said transducer and said winch for halting said winch a predetermined time interval from the generation of the signal at said transducer on contact of



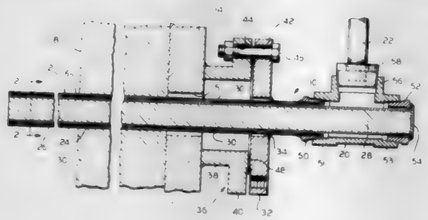
said probe on said surface, said contact detector also including a housing formed on said upper portion and provided internally with a membrane connected to said lower portion, said membrane subdividing said housing into a pair of compartments, one of said compartments being connected to said transducer.

4,449,701

TUYERE FOR THE INJECTION OF GASES INTO A METALLURGICAL VESSEL

Ken Pitzer, New Castle; James F. Cunningham, and Jai Pearce, both of Pittsburgh, all of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1982, Ser. No. 410,312
Int. Cl.³ C21C 5/48
U.S. Cl. 266—218 **7 Claims**



1. A tuyere for injecting a non-oxidizing gas into a metallurgical vessel comprising a first tuyere pipe,

means for fixing said first tuyere pipe to the wall of a metallurgical vessel with one end of said pipe extending inwardly into said vessel and the opposite end extending away from said wall,

a second tuyere pipe disposed within said first tuyere pipe and having an outer diameter less than the inner diameter of the first tuyere pipe,

first means for securing said second tuyere pipe against axial movement relative to said first tuyere pipe,

second means disposed between said pipes for maintaining the same in a spaced apart relation and to define a gap therebetween, gas inlet means coupled to said gap, and refractory material disposed within said inner tuyere pipe and filling the same whereby gas introduced at said gas inlet means flows through said gap and adjacent the walls of the first and second tuyere pipes for cooling the same as said gas is introduced into said vessel.

4,449,702

FULL EXTENSION LOCKING DEVICE FOR DAMPER

Mitsuhiro Hasegawa, Gifu, Japan, assignor to Kayaba Kogyo Kabushiki Kaisha, Japan

Filed Dec. 30, 1981, Ser. No. 335,672
Int. Cl.³ F16F 9/32
U.S. Cl. 267—64.12 **7 Claims**



1. A damper comprising:

a cylinder defining a space and having a longitudinal axis;

a piston rod slidable in said space and lying on said longitudinal axis;

pressure means in said space for urging said piston rod into an extended position with respect to said cylinder, said piston rod having an end remote from said cylinder and a length between said end and said cylinder;

a sleeve shaped elastic cover connected to said piston rod end and extending over said piston rod; and

a stopper connected to said cylinder at an end of said cylinder into which said piston rod is slidable, said elastic cover having a length from said piston rod end to said cylinder which is about equal to the length of said piston rod between said end of said piston rod and said cylinder when said piston rod is in its extended position, said elastic cover sliding over said cylinder when said piston rod is out of its extended position;

one of said stopper and said elastic cover having a cross section transverse to said longitudinal axis which is elongated and has a large diameter and a small diameter, with a pair of large diameter sections and a pair of small diameter sections, the other of said stopper and elastic cover having a medium diameter between said large diameter and said small diameter so that, with said piston rod in its extended position, said elastic cover is engaged on said stopper to retain said piston rod in its extended position, and for moving said piston rod out of its extended position, said elastic cover is deformable to reduce the distance between said large diameter sections and increase the distance between said small diameter sections to permit said elastic cover to pass said stopper.

4,449,703

APPARATUS FOR BONDING MAIN ROTOR BLADES

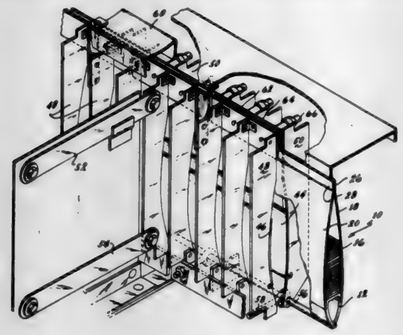
Frank D. Robinson, Rancho Palos Verdes, Calif., assignor to Robinson Helicopter Company, Torrance, Calif.

Continuation of Ser. No. 127,112, Mar. 4, 1980, abandoned, which is a division of Ser. No. 938,930, Sep. 1, 1978, Pat. No. 4,223,429. This application Aug. 6, 1982, Ser. No. 406,027
Int. Cl.³ B23Q 1/04
U.S. Cl. 269—71 **4 Claims**

1. A fixture referenced to an XYZ orthogonal coordinate system for clamping the component parts of a rotor blade assembly during a bonding process, said rotor blade assembly having a long axis, a leading edge and a trailing edge parallel to said long axis and skins extending between said leading edges, comprising:

a frame;

a plurality of clamp means for suporting said rotor blade assembly with said long axis initially in substantial alignment with the Y-axis, said leading and trailing edges being



substantially contained in the X-Y plane, and said clamp means exerting compressive force upon said assembly directed generally along said Z-axis;

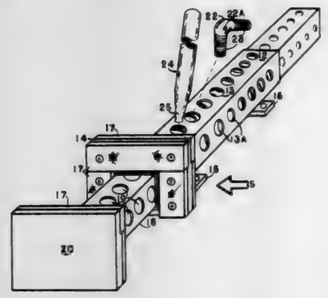
means constraining said clamps against rotation about said Y-axis, each of said clamp means being mounted to said frame for movement along said X-axis in response to the warping of said rotor blade assembly during the bonding process.

4,449,704

REVERSIBLE VERNIER VISES, CLAMPS, AND FORCE TOOLS

Victor H. Goulter, 485 Molimo Dr., San Francisco, Calif. 94127

Filed May 22, 1981, Ser. No. 266,500
Int. Cl.³ B25B 1/00
U.S. Cl. 269—88 **17 Claims**



1. A force-applying tool, comprising:

first and second members, each having a plurality of separated passageways therealong, adjacent passageways in each of said members having a uniform spacing therebetween, the spacing between adjacent passageways of said first member being different from those of said second member, such that when said members are positioned adjacent each other in a first positional relationship such that their respective passageways are also adjacent each other, at least one pair of passageways of said respective members will be partially aligned to define a common passageway through both members, and at least one other pair of passageways will be substantially completely aligned to define another common passageway through both members,

means for forcing said members to move with respect to one another, said means comprising a free lever which can be inserted into said partially-aligned common passageways of said two members and then rotated about its points of contact with the edges of said partialy-aligned passageways to force said partially-aligned passageways into more complete alignment, thereby to cause said members to move with respect to each other to a new positional relationship, and

locking means for holding said members in said new relationship, whereupon said lever may be removed,

said first and second members each being fitted with a vise jaw, said vise jaws being positioned so that they can be brought into facing alignment when said members are moved axially to a predetermined position,

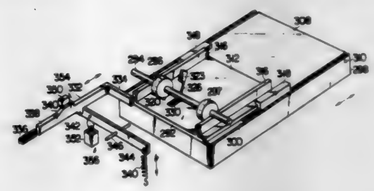
whereby said members can be moved rapidly and reversibly through a wide range of relative positions, then adjusted rapidly and securely with force multiplication and tactile feedback, and finally locked in position with substantially infinite resolution of adjustment.

4,449,705

PAPER FEED DEVICE

Kunihiro Shibuya, Yokohama, and Kohachi Uchida, Sagamihara, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 18, 1981, Ser. No. 236,283
Claims priority, application Japan, Feb. 18, 1980, 55-18694; Feb. 22, 1980, 55-21187; Feb. 22, 1980, 55-21188; Feb. 26, 1980, 55-22917; Feb. 29, 1980, 55-25081; Jun. 4, 1980, 55-75153; Jun. 4, 1980, 55-75154
Int. Cl.³ B65H 3/44
U.S. Cl. 271—9 **11 Claims**



1. A paper feed device comprising:

(a) a paper feed cassette accommodating paper sheets;

(b) a paper feed mechanism for feeding paper from said paper feed cassette;

(c) a manual paper supply guide means provided on or near said paper feed cassette and movable between a position to permit cassette paper supply and a position to permit manual paper supply; and

(d) locking means for holding said manual paper supply guide means in said position to permit manual paper supply at the time of manual paper supply mode and for releasing said guide means from said manual paper supply position to automatically switch the manual paper supply mode to a cassette paper supply mode according to an externally coupled signal for bringing about the cassette supply mode.

4,449,706

DRIVE SYSTEM FOR A COLLATOR

Donald L. Snellman, 2807 W. Galer, Seattle, Wash. 98199, and Bernard A. Pearson, King County, Wash., assignors to Donald L. Snellman, Seattle, Wash.

Filed Jun. 29, 1981, Ser. No. 278,360
Int. Cl.³ B65H 29/58
U.S. Cl. 271—290 **19 Claims**

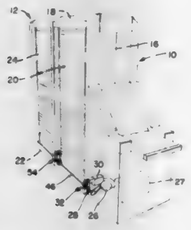
1. In a collator having sheet-feeding means, sheet-conveying

means, a row of trays forming a bin unit to receive collated sheets, and a deflector assembly to deflect sheets from the sheet-conveying means into the trays, the improvement to the drive system of the collator comprising:

(a) a direct current motor having a power output shaft;

(b) a drive shaft for powering components of the collator including at least one sprocket;

(c) means for coupling the output shaft of the motor to the drive shaft; and



(d) a power takeoff operatively associated with the sprocket of the drive shaft to power the components when the output shaft of the motor turns, the takeoff including a driven sprocket on a driven shaft and a three-dimensional endless belt to couple the sprocket of the drive shaft to the driven sprocket of the driven shaft; wherein the three-dimensional belt engages the sprocket of the drive shaft in a first plane and engages the driven sprocket in a plane substantially orthogonal to the first plane, without twisting of the belt.

4,449,707

GOLF CLUB HEAD OF CARBON FIBER REINFORCED PLASTIC

Keijiro Hayashi, Takatsuki; Toshimi Awano, Ohgaki; Masayuki Yoshikawa, Iwate; Kouzou Yazawa, Gifu, and Takashi Ito, Ohgaki, all of Japan, assignors to Mizuno Corporation, Osaka, Japan

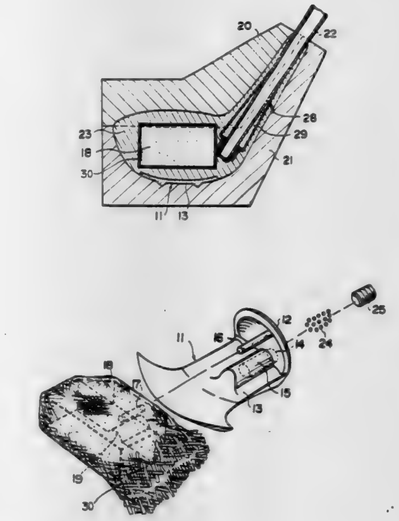
Filed May 20, 1983, Ser. No. 496,640

Claims priority, application Japan, May 22, 1982, 57-87137; Aug. 31, 1982, 57-152439

Int. Cl.³ A63B *53/06*

U.S. Cl. 273—171 **4 Claims**

1. A golf club head comprising a shell of carbon fiber reinforced plastic, a core embedded in the center portion of said shell to reduce the head weight, a reinforcement of carbon fiber fabric surrounding the core and extending into the neck portion of the head to strengthen the head and the neck portion, a metal sole member including integral side and sole portions so arranged as to cover the side and the bottom of said shell, respectively, at least one projection of said metal sole member inserted into said core to position and retain it in said shell, and pocket means in said metal sole member for containing weights to be used for adjustment of the head or balance adjustment.



4,449,708

GOLF PRACTICE DEVICE

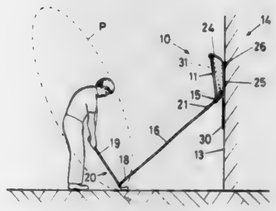
Michael N. R. Humphrey, 39 Princes Rd., Kingswood, S.A. 5062, Australia

Filed Aug. 18, 1982, Ser. No. 409,109

Claims priority, application Australia, Aug. 21, 1981, PF0375

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—186 A **19 Claims**



1. A golf practice device to be used with and for guiding a golf club in a path of movement which lies generally in a first plane and deviates only slightly from that first plane, comprising a track, means for securing the track to a fixed stationary mounting surface, the track being smaller in dimension and similar in shape to the path of movement and lying generally in a second plane parallel to but spaced from the first plane;

a carriage movable along and guided by the track;

a flexible tension member;

first means for securing one end of the tension member to the carriage and having second securing means for securing the other end of the tension member to a shaft of the golf club, and

length adjustment means on the tension member by which the distance between a head of the golf club and the carriage is adjustable.

4,449,709

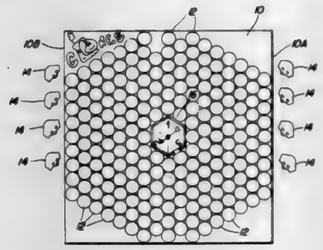
BOARD GAME HAVING MEANS FOR EJECTION OF PLAYING PIECES

Robert McKay, 221 N. Hemlock Rd., Wood Dale, Ill. 60191

Filed Jun. 1, 1982, Ser. No. 383,522

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—248 **6 Claims**



1. A board game comprising

a. a board having marked positions extending from at least two edges of the board to the center;

b. at least one master playing element which is flexible and hollow, said master element being adapted to receive and retain a secondary playing element;

c. at least one secondary playing element of a size adapted to fit within the master element;

d. a control device adapted to be placed in the center of the board and the marked positions; said control device including selection means for determining the number of marked positions which the elements may be moved and release means for ejecting the secondary playing elements from the master playing elements.

4,449,710

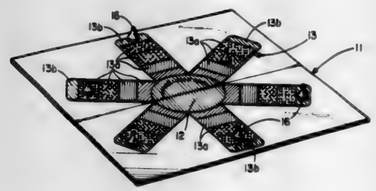
GAME BOARD, DIE AND REWARD DETERMINING GAME APPARATUS

Norman A. Davis, 2835 Rice St., Apt. 710, Minneapolis, Minn. 55113

Filed Jul. 28, 1980, Ser. No. 173,055

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—249 **3 Claims**



1. Game apparatus comprising,

a. a game board including

(1) a winner's circle

(2) a plurality of player ramps extending radially of said circle, each ramp having a plurality of color coded spaces with

(3) a starting space at the end of each ramp remote from the circle,

b. a playing piece for each player initially placed on the starting space of one of the ramps,

c. a playbook having a plurality of life situation problems set forth therein with a plurality of multiple choice responses to be selected by the player, and

d. a selection die having color coded surfaces thereon to provide the means for determining which of a plurality of different actions a player should take,

certain of said die colors corresponding to the colors of the ramp spaces,

at least one other die surface having a color which is different from the die colors corresponding to the ramp space colors,

when the die turns up the color on the next ramp space toward the winner's circle from the ramp space on which the player's playing piece resides, the player moves his piece onto said next ramp space,

when the die turns up said different color, the player is directed to answer a problem in the playbook, by means of which said player may make a "correct" response which entitles him to move his playing piece one space on the ramp toward the winner's circle,

each player reaching the winner's circle receiving a reward.

4,449,711

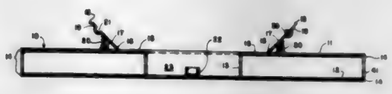
BOARD GAME SIMULATING BUSINESS PRINCIPLES INVOLVING PETROLEUM COMMODITIES

Danny L. Calloway, 3814-6 Chamberlayne, Richmond, Va. 23227

Filed Mar. 29, 1982, Ser. No. 363,039

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—256 **1 Claim**



1. A board game apparatus comprising:

(a) a rigid playing board of rectangular perimeter having an upper playing face and printed indicia thereon, and a depressed central region having a lower playing face and indicia thereon,

(b) status signs capable of standing upright upon said board and containing indicia denoting nationalization status,

(c) a first set of cards carrying indicia representing a business charter,

(d) a second set of cards carrying indicia representing insurance matters,

(e) a multidenominational set of token money,

(f) number-selecting means,

(g) playing pieces adapted to be moved by a player a number of playing spaces dictated by said number-selecting means,

(h) at least one spring activated catapult device mounted upon said playing board,

(i) a ball adapted to be thrown by said catapult device, and

(j) a cup centered in said depressed central region and adapted to catch said ball.

4,449,712

METHOD OF PLAYING A CESTABALL GAME WITH A SCOOP DEVICE

Joseph C. Benedyk, Highland Park, Ill.; Homer C. Amos, Palm Springs, Calif.; Carl E. Scheie, Libertyville, and William R. McGlone, Northfield, both of Ill., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 158,267, Jun. 10, 1980, abandoned. This application May 13, 1982, Ser. No. 377,806

Int. Cl.³ A63B *59/02*

U.S. Cl. 273—326 **45 Claims**

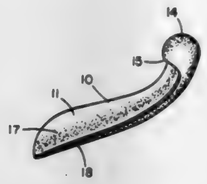
1. A method of playing a ball game comprising the steps of:

(A) providing a rectangular court having a floor and two pairs of oppositely facing walls, one pair of walls comprising side walls and being approximately 40 feet long and the other pair of walls comprising a front wall and a back

wall, each being about 20 feet long, the walls being at least 10 feet high;

(B) providing a ball having a weight ranging from 70 to 90 grams;

(C) providing at least one catching and throwing element comprising a scoop means having an inner and outer surface with a distal end and a proximal end, and a ball holding cup means having inner and outer surfaces with an open edge and a closed edge, the closed edge secured to the proximal end thereby defining a scoop-cup means, the scoop means having an elongated central first axis extending from the distal end to the proximal end, a portion of the scoop means along the first axis having a portion thereof in the configuration of a segment of a hyperbolic spiral, the spiral having a formula in which the polar coordinates RO equal a constant C ($R\theta=C$) and wherein the values of R range from 1.5 to 60 centimeters and the values of the constant C range from 10 to 30 centimeter-radians when θ is measured in radians; and,



(D) using the element for attempting to throw the ball toward the front wall and using means for attempting to catch the ball rebounding from the front wall, side walls, or floor before the ball touches the floor twice and then immediately attempting to throw the ball toward the front wall so that the ball does not touch the floor before it strikes the front wall.

4,449,713

AQUEOUSLY-SWELLING WATER STOPPER AND A PROCESS OF STOPPING WATER THEREBY

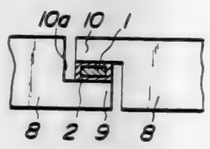
Yoshinobu Ishido, and Hideo Tanaka, both of Fukuyama, Japan, assignors to Hayakawa Rubber Company Limited, Fukuyama, Japan

Division of Ser. No. 226,896, Jan. 21, 1981, Pat. No. 4,366,224. This application Apr. 19, 1982, Ser. No. 369,624

Claims priority, application Japan, Oct. 17, 1980, 55-145358; Oct. 17, 1980, 55-145359

Int. Cl.³ E02D *29/16*

U.S. Cl. 277—1 **4 Claims**



1. A process of stopping water at a gap in a building structure, comprising the steps of forming a water stopper by securing at least one layer of an aqueously-swelling water-stopping composition on an outer peripheral surface of an elongated core member with high tensile strength; and placing the water stopper in the gap of the building structure, whereby the water stopper swells by absorbing water from the outside thereof so as to fill up that portion of the gap where said water stopper is placed, wherein said aqueously-swelling water-stopping composition consists of 10 to 40 weight % of rubber whose main ingredient is reclaimed rubber blended with less than 30 weight % of virgin rubber, 10 to 20 weight % of a silicic compound selected from the group consisting of silicic acid anhydride, hydrous silicic acid and calcium silicate, 10 to 60 weight % of bentonite, and 10 to 40 weight % of plasticizer.

4,449,714

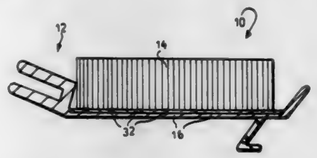
TURBINE ENGINE SEAL AND METHOD FOR REPAIR THEREOF

John W. Meier, West Hartford, Conn., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Mar. 22, 1983, Ser. No. 477,717

Int. Cl.³ F16J *15/44*; F01D *11/08*; B05D *1/08*

U.S. Cl. 277—9 **20 Claims**



12. A method for repairing a worn or damaged seal of a gas turbine engine, said seal including a backing plate having a backing wall and a honeycomb seal attached to said backing wall, comprising the steps of:

removing said honeycomb seal from said backing wall, thereby reducing the thickness of said backing wall;

low pressure plasma spraying the surface of said backing wall from which said honeycomb seal was removed, thereby restoring said backing wall to a desired thickness; and

applying a new honeycomb seal to said sprayed surface of said backing wall.

4,449,715

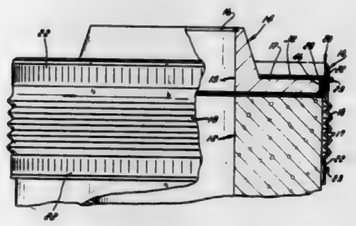
EXTERNAL MANHOLE SEAL

Michael Gagas, 5558 N. Shoreland Ave., Whitefish Bay, Wis. 53217

Filed Aug. 19, 1982, Ser. No. 409,644

Int. Cl.³ F16J *15/10*; E02D *29/14*

U.S. Cl. 277—12 **8 Claims**



1. An external manhole sealing assembly comprising

a flexible sleeve for spanning the joint between a manhole frame having a radially extending flange and a manhole casing,

first means for forming a first seal between said sleeve and the flange of the manhole frame, said first means including a U-shaped circular band adapted to be mounted on the flange and a vertical flange extending upwardly from the band to form a sealing surface for said sleeve, and

a compressible sealing strip located between the flange and the U-shaped band to seal the space between the band and the flange, and

second means for forming a second seal between said sleeve and the exterior of said manhole casing, thereby forming a continuous seal about the joint between the frame and the casing.

4,449,716

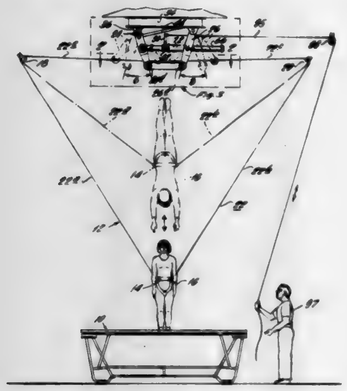
TRAINING DEVICE FOR ATHLETES

Robert I. Goldy, 61 W. 62nd St., Apt. 17H, New York, N.Y. 10023, and R. Clyde Herrick, 1707 Penns La., Ambler, Pa. 19002

Filed Sep. 29, 1982, Ser. No. 426,656

Int. Cl.³ A63B *7/00*

U.S. Cl. 272—109 **11 Claims**



1. A training device for athletes for automatically taking up slack in and providing the braking force to the suspension line of a training rig, said device comprising a frame assembly, a pair of spaced arms, each of said arms rotatably mounted adjacent one end thereof to said frame assembly for angular motion in a common plane, means at the free end of each of said arms for receiving a portion of said suspension line and returning said portion toward said other arm biasing, means continuously acting on said arms tending to angularly separate the free ends of said arms, and braking means for selectively slowing or arresting the movement of said arms.

4,449,717

SEALING MECHANISM FOR BEARINGS

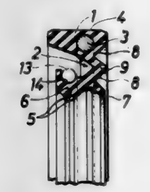
Michio Kitawaki, Kyoto, and Masao Annaka, Kobe, both of Japan, assignors to Mutsubishi Rubber Co., Ltd., Japan

Filed Oct. 21, 1982, Ser. No. 435,850

Claims priority, application Japan, Oct. 21, 1981, 56-167036; Oct. 21, 1981, 56-155363[U]

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—153 **11 Claims**



1. A sealing mechanism comprising a cylindrical housing adapted to concentrically surround an axially extending shaft and a bearing to which a lubricating oil is supplied to apply a lubricating effect to said shaft, and a pair of elastic oil seals ringedly interposed between said housing and said shaft adjacent to said bearing for preventing leakage of said lubricating oil from said bearing, each of said oil seal being characterized in that:

(a) an elastic prop ring is buried in and extends through a radially outer portion of said oil seal, said prop ring being partly cut out and thus providing a radially outwardly directed elasticity;

(b) one of annular side surfaces of said oil seal has a V-shaped annular groove which is cut out to a depth greater than half a width of said oil seal;

(c) the other annular side surface of said oil seal has a W-shaped annular groove which cooperates with said V-shaped groove to form a dog-legged portion integrally with said radially outer portion, said dog-legged portion improving an elasticity of said oil seal in a radial direction; and

(d) a radially inner portion of said oil seal comprises an oil sealing lip formed integrally with said dog-legged portion.

4,449,718

PACKING FOR HYDRAULIC PISTONS OR PISTON RODS

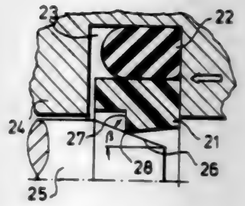
Heinz K. Müller, Waiblingen, Fed. Rep. of Germany, assignor to Busak & Luyken, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,109

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225906

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—170 **3 Claims**



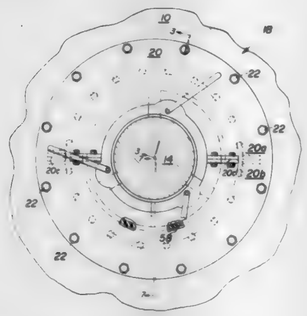
1. Packing for hydraulic pistons and piston rods with a packing ring comprised of a tough elastic synthetic material as a contact packing between a stationary machine part comprising an annular groove and a moving machine part comprising an initial slope and of a rubber clamping ring clamping the packing ring radially and providing a sealing action with respect to the annular groove in the stationary machine part, in which the peripheral surface of the packing ring adjacent the moving machine part as seen in the axial direction comprises a step in the region of its centre, the end face of which step is adjacent the high pressure side and starting from the step towards the low pressure side forms a conical surface opening with a small wedge angle, so that a sealing edge is located between the end face of the step and the conical surface, wherein located between the conical surface forming the wedge angle and the step is an annular surface which with the conical surface forms an obtuse angle of such a value that when the packing travels in over the initial slope located on the moving machine part, the resultant F_{res} of the contact normal force F_N and the frictional force F_R at least approximately halves the sealing edge angle.

4,449,719

EMERGENCY SEAL

Jon J. Radosay, Morton Grove, and John R. Wilson, Lisle, both of Ill., assignors to John Crane Houdaille, Inc., Morton Grove, Ill.

Filed Apr. 1, 1982, Ser. No. 364,522
Int. Cl.³ E21B *33/06*; F16J *9/00*
U.S. Cl. 277—192 **12 Claims**



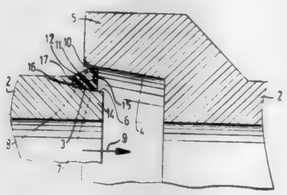
1. A seal for selectively sealing the annular space between a housing and a rotatable shaft, said seal comprising;
(a) an annular, split housing having two components adapted to be affixed about the shaft and to the housing;
(b) said housing having radially extending flanges to define an annular, radially extending compartment in which seal members may be mounted for radial movement;
(c) at least two seal members, each defining a sector or a circle mounted in said compartment, said seal members having a sealing means on their interior circumference for sealingly engaging the shaft; and gasket means for sealingly engaging one another and said compartment;
(d) bias means extending about said seal members for urging said members into contact with said shaft; and
(e) cam means carried by said seal members for engaging one another and, alternatively, caming said members against said bias means and away from said shaft, or, permitting said bias means to move said seal members into sealing engagement with said shaft.

4,449,720

WATERTIGHT SEAL BETWEEN TWO CONCRETE ELEMENTS

Tjako A. Wolters, Zeist, and Aloysius G. Roggekamp, Alphen an der Rijn, both of Netherlands, assignors to Ballast-Nedam Groep N.V., Amstelveen and Waco Beton B.V., Ijssel, both of, Netherlands

Filed Nov. 17, 1981, Ser. No. 322,178
Claims priority, application European Pat. Off., Jan. 8, 1981, 81200017.2
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—207 A **5 Claims**



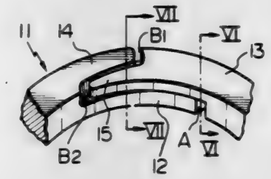
1. A seal for forming a watertight seal between two tubular members, one having a female portion receiving a male portion of the other in which the male and female portions define an annular space when the tubular members are axially shifted together such that said male portion is entered into said female portion, said male portion having a stepped end of reduced diameter which defines a shoulder, said annular space being defined between said male portion and an inwardly tapering surface of said female portion, said seal comprising an annular member of resilient material seated upon said stepped end of the male portion, said annular member having an inner face seated on said stepped end, a first side face seated against said shoulder, a second side face of greater width than said first side face and generally parallel to said shoulder, and an outer face sloping outwardly from said first side face to said second side face whereat a ridge is defined, said seal having an outer diameter greater than that of at least a portion of said inwardly tapering surface whereby said annular member is radially inwardly compressed when said tubular members are brought together, said annular member having an annular channel formed therewithin in the vicinity of said ridge for causing said annular member to collapse during radial inward compression thereof and preferentially bulge said ridge and said second end face deeper into said annular space.

4,449,721

SPLIT PISTON RING HAVING STEPPED ENDS

Kazuo Tsuge, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Dec. 15, 1981, Ser. No. 331,129
Claims priority, application Japan, Dec. 18, 1980, 55-182563[U]
Int. Cl.³ F16J *9/00*
U.S. Cl. 277—221 **2 Claims**



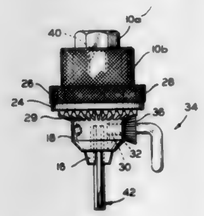
1. A piston ring comprising :
an annular member of resilient material surrounding a longitudinal axis; said annular member having opposing high pressure and low pressure sides bounded radially by opposing radially inner and outer surfaces; a radial slit dividing said high pressure and low pressure sides along an arc generally perpendicular said axis; a radially and circumferentially extending gap through said low pressure side communicating with said slit at one end of said arc so as to form from said low pressure side within said arc a circumferentially extending resilient lip, and from said low pressure side adjacent said arc, a circumferentially extending projection; said circumferentially and radially extending gap separating said lip and said projection; said lip having a radially outer face; said projection having a radially inner face confronting said radially outer face; said lip being located substantially radially inwardly of said projection; said annular member further having a straight through gap radially extending from said radially inner surface to said radially outer surface through said high pressure side communicating with said slit at the other end of said arc, whereby at least a portion of said radially outer face of said lip is pressed against said radially inner face of said projection when pressure is applied to said radially inner surface, said at least a portion of said radially outer face being pressed against said radially inner face even when the width of said radially and circumferentially extending gap is substantially increased by wear of said ring.

4,449,722

DRIVER FOR ALLEN HEAD SCREWS

Roy E. Knaggs, 10520 Whiteford Rd., Ottawa Lake, Mich. 49267

Continuation-in-part of Ser. No. 184,108, Sep. 4, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 387,813
Int. Cl.³ B23B *5/22*
U.S. Cl. 279—62 **1 Claim**



1. A tool for Allen head screws, comprising:
(a) an elongate operating rod having a polygonal cross-section;
(b) a body having an external annular groove, the body section above said groove having a cylindrical portion and a polygonal cross-sectional portion adjacent its upper terminal end, the outer surface of said cylindrical portion being provided with a high coefficient of friction surface, an axial passageway extending through said body, said passageway being of uniform size throughout its entire length and adapted to receive said operating rod from either axial end of said passageway, and a plurality of channels converging on and opening into said passageway adjacent the lower terminal end thereof;
(c) clamping jaws slidably mounted in the channels of said body and having screw threads on the outer sides, said clamping jaws including flat surfaces on the inner clamping side of said clamping jaws for close abutting contact with said operating rod;
(d) a nut rotatably mounted in said groove and having a threaded connection with said jaws for shifting the same to a clamping or retracting position relative to said operating rod; and
(e) an operating ring surrounding said nut and internally secured thereto for actuating the same and having the outer surface of said ring provided with a high coefficient of friction surface whereby an operator may quickly position and clamp said body along the length of said operating rod, rotate said operating rod closely adjacent an associated Allen head screw and apply torque directly to said body obviating the loosening of the jaws clamping the operating rod to the body.

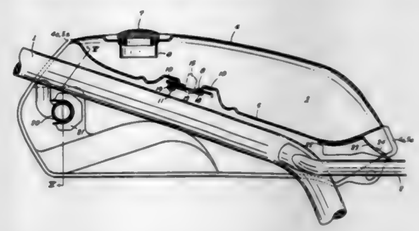
4,449,723

VEHICLE FUEL TANK

Kouji Shiratsuchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,321
Claims priority, application Japan, Apr. 28, 1981, 56-60630
Int. Cl.³ B60K *15/02*
U.S. Cl. 280—5 H **7 Claims**

1. A vehicle fuel tank comprising:
upper and lower fuel tank sections which are joined together to form said fuel tank, said lower fuel tank section comprising an upper wall and a pair of side walls so as to form an inverted U-shaped portion for straddling a vehicle frame;
a fuel inlet positioned within said upper fuel tank section;
an aperture provided in said upper wall of said lower fuel tank section;
a fuel level detector adapted to be inserted through said aperture into said fuel tank and mounted on said upper wall of said lower fuel tank section;
a base means connected to said fuel level detector and positioned so as to close said aperture;



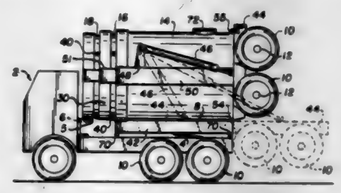
means for fixedly mounting said base means on said lower fuel section; and
sealing means positioned around said aperture and between said base means and said lower fuel tank section for being held under pressure therebetween.

4,449,724

TELESCOPIC TANKER FOR CARRYING FLUID

Min H. Ahn, 5111 Maple Rd., Richmond, British Columbia, Canada

Filed May 7, 1982, Ser. No. 375,794
Int. Cl.³ B60P *3/22*
U.S. Cl. 280—5 C **15 Claims**



1. A tanker comprising:
a chassis;
wheels mounted on the chassis;
a first section to contain a fluid;
at least one other section able to telescope within the first section;
means to move the sections between a telescoped and an untelescoped position;
means to attach the tanker to a towing vehicle;
said chassis being extendible and comprising;
first members attached to the first section;
second members each able to telescope relative to a first member;
said wheels being mounted on the second members;
means to move the second members inwardly and outwardly relative to the first members.

4,449,725

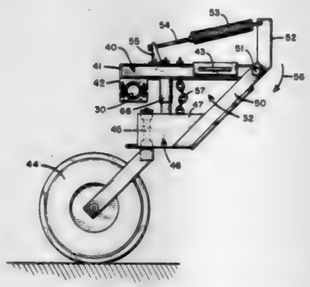
SUPPORT FOR BOOMS AND OTHER FIELD EQUIPMENT

William G. Robison, deceased, late of Jackson, Minn., and by Luann Robison, executrix, Box 16, Alpha, Minn. 56111

Filed May 8, 1981, Ser. No. 261,917
Int. Cl.³ B60B *33/00*; B62D *61/00*
U.S. Cl. 280—78 **3 Claims**

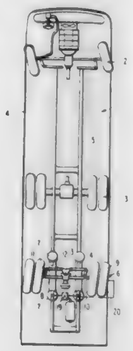
1. A wheeled support comprising, in combination:

a generally horizontal support platform having first and second ends;
securing means at said first end of said platform for fastening said platform to an object to be supported;
a bracket having a portion below and generally aligned with said platform;
means connecting said bracket to said second end of said platform for pivotal movement in opposite senses about a first, normally horizontal axis;



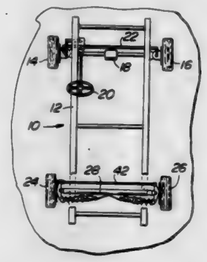
means resiliently opposing said pivotal movement in said first sense;
shock absorber means connected to said platform and said portion of said bracket and acting therebetween in a plane orthogonal to said first axis; and
a caster wheel carried by said bracket for swiveling movement about a second axis orthogonal said first axis.

4,449,726
CONTROL FOR FOLLOW-UP STEERING AXLES
Paul Strifler, Dettingen; Heinrich Geissler; Dieter Lüdtke, both of Stuttgart; Rudolf Maurath, Esslingen, and Rudolf Steinecke, Weinstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 186,645, Sep. 12, 1980, abandoned. This application May 4, 1983, Ser. No. 491,451
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936766
Int. Cl.³ B62D 9/00
U.S. Cl. 280—81 A **9 Claims**



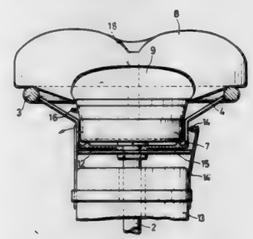
1. A control arrangement for a follow-up steering axle of a motor vehicle, wherein means are provided for stabilizing the follow-up steering axle in a direction of a straight-ahead driving position in dependence upon a speed and a load of the motor vehicle,
the motor vehicle is at least a single-unit motor vehicle including at least three axles, and characterized in that
said means are capable of locking the follow-up steering axle in the straight-ahead driving position.

4,449,727
SKID CONTROL CAR
Bertil Roos, Box 221, Blakeslee, Pa. 18610
Filed Aug. 30, 1982, Ser. No. 412,756
Int. Cl.³ B62D 9/00
U.S. Cl. 280—91 **12 Claims**



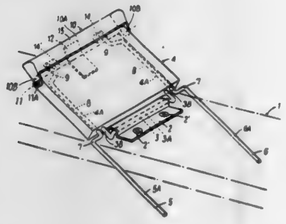
1. An automotive vehicle for training drivers in skid control wherein said vehicle has a set of front wheels, said front wheels being steerable, said rear wheels being pivotable and having a positive caster, said caster causing said rear wheels to steer away from the direction of a turn executed by the driver of the vehicle, said rear wheels being connected together by a transverse rod for causing the wheels to turn by the same amount, and wheel bias means to bias said rear wheels to a normally straight position.

4,449,728
ANTI-CRASH APPARATUS FOR MOTORVEHICLES
Bernd Pilatzki, Franzstrasse 27, D-5000 Köln 41, Fed. Rep. of Germany
Filed Dec. 9, 1981, Ser. No. 328,859
Int. Cl.³ B60R 21/08
U.S. Cl. 280—731 **9 Claims**



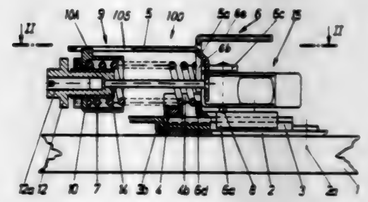
1. In an anticrash apparatus for motorvehicles with an airbag designed to be automatically inflated on deceleration of the vehicle being greater than a certain rate, the airbag being placed on the driver's side of a steering wheel shaft, which is at a slope of 10° to 60° to the horizontal, within the steering wheel and on the driver's side of a steering wheel spoke, the invention residing in that the airbag is so placed and designed that on inflation thereof, it takes up a position on the driver's side of a generally top third of the circumference of the steering wheel, its size measured in a direction normal to the plane of the steering wheel being less than 20 cm, a cushioning box is provided within the steering wheel for housing the folded-up airbag, and a part is provided which is fixed in relation to the rest of said vehicle and at least two linking parts for joining said cushioning box with said part, said linking part being designed to be moved by said steering wheel in such a way that at least one linking part is in its linking position all the time while an other linking part is moved back out of its linking position for letting past a spoke.

4,449,729
SKI BRAKE
Erwin Krob, and Helmut Bauer, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland
Filed Dec. 4, 1981, Ser. No. 327,392
Claims priority, application Austria, Dec. 12, 1980, 6049/80
Int. Cl.³ A63C 7/10
U.S. Cl. 280—605 **14 Claims**



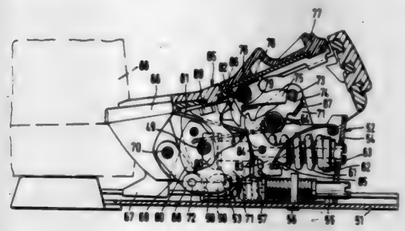
1. A ski brake mountable on a ski, comprising a base; a pedal supported on said base for pivotal movement about a transversely extending, substantially horizontal first axis between a braking position in which said pedal extends upwardly at an angle to the ski and a retracted position in which said pedal is adjacent and substantially parallel to an upper surface of the ski; first resilient means for yieldably urging said pedal toward said braking position; two elongate braking members supported on said pedal, each said braking member having a first section which is rotatably supported on said pedal and extends generally radially of said first axis, a second section which is parallel to and radially offset from said first section, and a third section which connects said first and second sections in the region of said first axis, rotation of said first section of each said braking member effecting movement of said second section thereof between a first position spaced laterally outwardly of a respective side wall of the ski and a second position located laterally inwardly of such side wall, each said braking member having at an end of said first section remote from said first axis means defining a crank, each said crank including a crank segment which is radially offset from and generally parallel to said first section of such braking member; a control part supported on said pedal at an end thereof remote from said first axis for pivotal movement relative to said pedal between third and fourth positions about a second axis which is substantially parallel to said first axis, said control part having means defining two laterally spaced guide slots in a surface thereof which faces said pedal, each said guide slot receiving said crank segment of a respective said crank therein and said guide slots, in response to pivotal movement of said control part, coacting with said cranks so as to effect rotation of said first sections of said braking members; and second resilient means for yieldably urging pivotal movement of said control part about said second axis in a direction toward said third position, said second resilient means being stronger than said first resilient means so that, in response to a downward force exerted on said control part by a ski boot, said control part will remain in said third position until said pedal has been moved from said braking position substantially to said retracted position and will thereafter move from said third position to said fourth position, thereby effecting rotation of said first sections of said braking members; and wherein said control part is generally U-shaped and includes a bight and two legs, said legs straddling said end of said pedal remote from said first axis and each having an opening therein, said pedal having means defining pins on opposite sides thereof which are coaxial with said second axis and received in respective said openings in said legs of said control part for effecting said pivotal support of said control part on said pedal, said guide slots being provided in said bight of said control part.

4,449,730
FRONT JAW FOR A SAFETY SKI BINDING
Gerhard Oberleitner, and Theodor Nitschko, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland
Filed Oct. 28, 1981, Ser. No. 315,814
Claims priority, application Austria, Nov. 4, 1980, 5410/80
Int. Cl.³ A63C 9/08
U.S. Cl. 280—625 **14 Claims**



10. A safety ski binding jaw which is adapted to be mounted on a ski, comprising: a guide arrangement which can be secured to the ski; a support member which is supported on said guide arrangement for movement longitudinally of the ski; two sole holders supported on said support member for pivotal movement about respective, spaced, generally vertical axes, each said sole holder having first and second arms, said first arms being adapted to engage a ski boot and said second arms extending inwardly toward each other in directions generally transverse to the ski; resilient means cooperable with said sole holders for yieldably urging pivotal movement of each said sole holder in a first direction corresponding to movement of said second arm thereof in a direction toward the tip of the ski; and means on said support member for limiting pivotal movement of said sole holders in said first direction; said guide arrangement including a projection which engages said second arm of at least one said sole holder at a location thereon spaced from said pivot axis thereof.

4,449,731
HEEL HOLDER FOR SAFETY SKI BINDINGS
Walter Knabel, Murnau; Ludwig Wagner, Farchant, and Manfred Richert, Muechem, all of Fed. Rep. of Germany, assignors to Marker-Patentverwertungsgesellschaft mbH, Baar, Switzerland
Filed Jun. 24, 1982, Ser. No. 391,527
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3206052
Int. Cl.³ A63C 9/08
U.S. Cl. 280—632 **7 Claims**



1. A heel holder for a safety ski binding, said ski binding having a toe holder for releasably holding the toe of a ski boot, said heel holder having a closed condition for retaining the heel of a ski boot and an open condition for releasing the heel of a ski boot, said heel holder comprising:
carriage means for supporting components of said heel

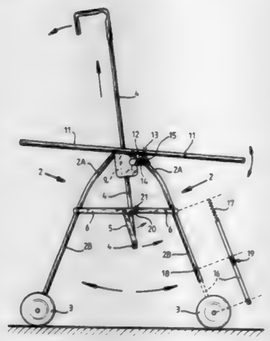
holder, said carriage means being movable between forward and rearward positions;
pressure spring means for biassing said carriage means toward the forward position;
a sole holder pivotally mounted on said carriage means for movement between a closed position for engaging a ski boot heel and an open position for releasing a ski boot heel;
opening spring means for biassing said sole holder to the open position;
connecting means movably connected to said sole holder for movement between a locking position for locking said sole holder in the closed position and an unlocking position for enabling said sole holder to assume the open position;
retaining means mounted on said sole holder for movement between a retaining position for retaining said connecting means in the locking position and a releasing position for releasing said connecting means for movement to the unlocking position;
attaching means connected with said connecting means for engaging said retaining means to hold said connecting means in the locking position when said retaining means is in the retaining position, and for disengaging said retaining means when said releasing means is in the releasing position to enable movement of said connecting means to the unlocking position; and
interim releasing means mounted on said carriage means, said interim releasing means moving said retaining means from the retaining position to the releasing position in response to movement of said carriage means from the rearward to the forward position upon release from a ski boot in the binding from the toe piece.

4,449,732

REVERSIBLE FOLDABLE PUSH-CHAIR FOR CHILDREN

Patrick Surot, Cholet, France, assignor to Ampafrance S.A., Castres, France

Filed Feb. 10, 1982, Ser. No. 347,607
Claims priority, application France, Feb. 13, 1981, 81 02878; Jun. 24, 1981, 81 12404
Int. Cl.³ B62B *7/06*
U.S. Cl. 280—644 **7 Claims**



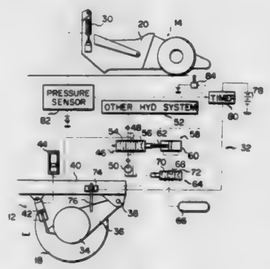
1. A reversible foldable push-chair of the slidable umbrella type adapted for folding; or when unfolded displaying either a facing rearward, "facing mother" position, or a facing forward, "look ahead" position, supporting a hammock and comprising on each side of the hammock,
a tipping core,
two wheel carrier branches hingedly mounted to said tipping core and having a wheel at one end of each of said branches,
a pushing arm slidably mounted and traversing said tipping core so that said pushing arm can slidably move through said tipping core and in a tipping motion in relation to the push-chair thereby rotating the position of said tipping core,
and link means connecting said pushing arm to said two wheel carrier branches
whereby dependent upon the direction of the tipping motion of the handle and of rotation of the position of said tipping core, the push-chair is spread out for displaying and locked in either a "facing mother" position or in a "look ahead" position.

4,449,733

ELEVATIONALLY ADJUSTABLE FLUID SUSPENSION SYSTEM FOR A WHEEL TRACTOR SCRAPER OR THE LIKE

Akio Iida, Kawasaki, and Osamu Kurihara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,473
Claims priority, application Japan, Dec. 27, 1980, 55-185051
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—707 **7 Claims**



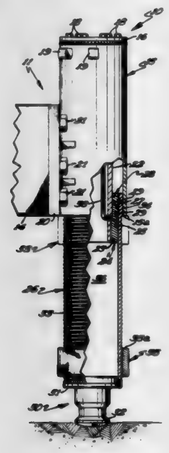
1. An elevationally adjustable fluid suspension system for use in a vehicle, the vehicle having a vehicle frame, an axle connected to the vehicle frame for movement toward and away from the same, and a seperate fluid system the suspension system comprising:
(a) a source of fluid under pressure;
(b) a fluid suspension jack adapted to be operatively connected between the axle and the vehicle frame for varying the distance therebetween;
(c) a directional control valve for normally communicating the pressurized fluid source with said separate fluid system of the vehicle and, on actuation, selectively communicating the fluid suspension jack with the pressurized fluid source and with a fluid drain;
(d) an externally controllable timer means for producing a signal for a predetermined amount of time;
(e) means for actuating the timer means connected thereto;
(f) an elevation sensor means connected to the timer means and adapted to be operatively connected between the axle and the vehicle frame, said elevation sensor means being actuated by the signal from the timer means for putting out a signal representative of the elevation of the vehicle frame from the axle during the predetermined amount of time; and
(g) valve actuating means operatively connected to the directional control valve responsive to the output signal from the elevation sensor means for operating the directional control valve.

4,449,734

MECHANICAL LOCKING OUTRIGGER HYDRAULIC JACK FOR AN OUTRIGGER ASSEMBLY

William W. Cory, Clear Lake, Iowa, assignor to Hydra-Jack, Inc., Clear Lake, Iowa

Filed Jul. 7, 1982, Ser. No. 395,995
Int. Cl.³ B66C *23/78*; B60R *9/18*; B66F *3/24*
U.S. Cl. 280—766.1 **1 Claim**



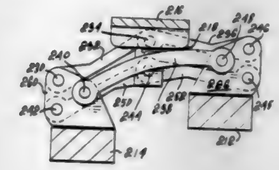
1. In a crane including a housing, outrigger arms extendably and retractably mounted in said housing, an outrigger assembly comprising:
(a) A vertically disposed cylindrical locking sleeve, said sleeve being open at it lower end, a cap fixed to and closing the upper end of said sleeve, means for connecting said sleeve to an associated one of said outrigger arms, a valve block located within said sleeve at the upper end thereof, means for attaching said valve block to said cap;
(b) a first elongated vertically disposed cylindrical member fixed at it upper end to said valve block, said cylindrical member having an open lower end, first annular element fixed to and surrounding said lower end of said cylindrical member and projecting radially outwardly therefrom;
(c) a second elongated vertically disposed cylindrical member movably mounted in said sleeve, said second member having of a larger diameter than said first member and being concentrically disposed about said first member, means attached to the lower end of said second member for engaging a crane supporting surface, said second member having a closed lower end formed by said means for engaging a crane supporting surface, a second annular element fixed to the upper end of said second member and engageable with the external surface of said first member to form a fluid seal between said members, annular bearing means mounted at the upper end of said second member for engagement with the internal surface of said locking sleeve;
(d) a variable extension chamber defined by the interior volume of said first member and the interior volume of said second member that is located below said first annular element, a variable retraction chamber defined by the annular volume between said members located above said first annular element;
(e) means in said valve block for directing pressurized fluid to a a selected one of said chambers for extending or retracting said second member relative to said sleeve, said fluid direction means including a first orifice, conduit means extending from said orifice through the major portions of the length of said first member to said retracting chamber, passage means with an orifice in communication relationship with said extension chamber;
(f) said second member including threads on the external surface throughout the major portion of its length, said threads being located radially inwardly of said bearing means, a lock nut threadedly engaging said threads and movable longitudinally along said second member to a position to engage the lower end of said locking sleeve to support said second member in an extended position.

4,449,735

SKIING APPARATUS

David A. McDougall, C. P. 5, Ste-Agathe. Quebec, Canada

Filed Aug. 28, 1981, Ser. No. 297,313
Int. Cl.³ A63C *5/00*
U.S. Cl. 280—818 **1 Claim**



1. A skiing apparatus comprising at least two longitudinal co-extensive runners, each runner having control edges, a platform provided between the runners and extending parallel thereto, at least a quadrilateral linkage arrangement between each runner and said platform, each quadrilateral linkage arrangement including a plurality of link members pivotally connected to the runners with their respective pivoting axes extending longitudinally of the ski apparatus and parallel thereto such that any tilting movement applied to the platform will result in translatory movement of the runners in relative intersecting arcs whereby there is always at least two control edges adapted to contact the skiing surface, wherein the linkage arrangements include at least a pair of parallel link member extending between the outer extremity of one runner and the platform and forming a parallelogram therewith, a further pair of link members extending between the other runner and the platform and pivotally connected at the outer extremity of the runner and at the platform forming a parallelogram therewith, and a further link member extending between the runner and being curved in an arc facing away from the runners and the platform including a support surface adapted to bear on the arc-shaped link member such that as the linkage arrangement is tilted, the fulcrum point of the platform is shifted towards the uphill runner.

4,449,736

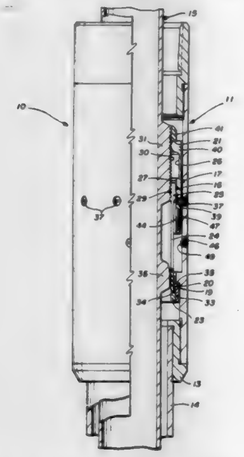
RELEASABLE TUBING STRING CONNECTOR

Henry W. Blackwell, Venus, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 16, 1981, Ser. No. 331,415
Int. Cl.³ F16L *37/08*
U.S. Cl. 285—3 **7 Claims**

1. A connector for releasably latching an upper section of a tubing string to a lower section including a tubular housing, a retaining sleeve mounted within said housing, said sleeve having an inner surface with an annular recess formed therein, a shear pin connected between said housing and said retaining sleeve and supporting said sleeve in a locking position, catch means on said housing and said sleeve for acting between said housing and said sleeve to support said sleeve in a release position within said housing spaced from said locking position, a latching member telescoped within said retaining sleeve including an upwardly facing shoulder formed at one end thereof, a corresponding downwardly facing shoulder formed in said housing and connected to abutting said upwardly facing shoulder to support said latching member against being pulled

upwardly out of said housing, said latching member further including a plurality of spring biased elements extending radially inward therefrom, a stinger telescoped into said housing and including a latch section disposed within said latching member and mated with said elements with said inner surface of said retaining sleeve blocking said elements against radial movement out of engagement with said stinger when said



sleeve is in its locking position, a bearing shoulder on said stinger engagable with said retaining sleeve to shift said sleeve downwardly and shear said pin when setting down on said tubing string to thereby shift said retaining sleeve into its release position with said elements being free to move radially out of said mating engagement with said stinger into said annular recess when said retaining sleeve is in its release position to enable said stinger to be pulled out of said housing.

4,449,737

HOSE COUPLER LOCKING ARRANGEMENT

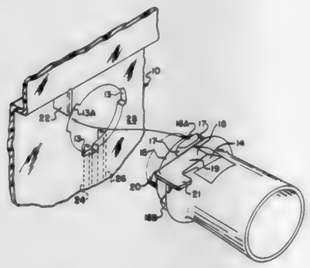
Glenn E. Specht, Massillon, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed May 7, 1982, Ser. No. 376,221

Claims priority, application United Kingdom, Apr. 21, 1982, 8211534

Int. Cl.³ A47L *9/24*; F16L *35/00*, *5/00*

U.S. Cl. 285—7 **3 Claims**



1. A coupling arrangement including;
(a) a female coupling part,
(b) a male coupling part,
(c) said male coupling part disposed in said female coupling part,
(d) one of said coupling parts being rotatable to uncouple said male and female coupling parts, and
(e) one of said coupling parts extending axially and including a cantilevered, deformable straight finger formed integral with it to project transversely from said one of said coupling parts, said straight, transversely extending finger engaging an abutment fixed relative to the other of said coupling parts to prevent said relative rotation between said coupling parts, said finger being deformable away from said abutment to allow relative rotation of said coupling parts.

4,449,738

ROTARY FLUID COUPLING

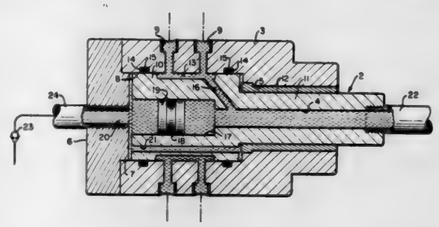
Karl Hotger, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H., Bochum, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,618

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952272

Int. Cl.³ F16L *17/00*

U.S. Cl. 285—11 **4 Claims**



1. A rotary fluid coupling for interconnecting a liquid-conveying duct in a shaft element to a duct in a hub element, at least one of said elements being rotatable relative to the other, said fluid coupling comprising a bore in said hub element which receives said shaft element, said bore and said shaft element having cooperating large diameter portions communicating with smaller diameter portions, the large diameter portion of the bore terminating at one end in an end wall and at its other end in a shoulder which separates the large and small diameter portions of the bore, said end wall and shoulder limiting axial movement of said shaft element within said hub element, an axial passageway extending through the shaft element and adapted to be connected at one end to a source of fluid under high pressure and at its other end to a high-viscosity sealing material, and piston means in the axial passageway to separate the fluid under high pressure from said sealing material, an annular groove in the periphery of said large diameter shaft portion, radial passageway means connecting high pressure fluid in said passageway to said annular groove in the periphery of said large diameter shaft portion, and means connecting the high-viscosity sealing material in said passageway to both ends of said large diameter shaft portion to prevent the escape of fluid from said annular groove.

4,449,739

ROTARY COUPLING

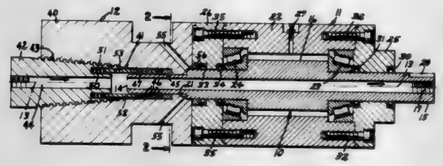
Roger Raether, Ortonville, Minn., assignor to Hi-Tec, Inc., Milbank, S. Dak.

Continuation-in-part of Ser. No. 139,293, Apr. 11, 1980, abandoned. This application Mar. 31, 1982, Ser. No. 364,189

Int. Cl.³ F16L *27/00*

U.S. Cl. 285—14 **7 Claims**

1. A rotary coupler for conducting high pressure fluid from a stationary source to a rotatable utilization device, said coupler comprising:
a hollow rotatable shaft having a first upstream end in fluid communication with said source and a second downstream end in fluid communication with said utilization device, said shaft having an enlarged portion with a first axial length;
first and second roller bearings on opposite sides of said enlarged portion from one another, said first and second bearings having first and second widths;
first means for housing said first and second bearings, said first housing means including a cylindrical wall and a pair of end caps, said cylindrical wall fitting closely in a radial dimension about said first and second bearings, said cylindrical wall having a second axial length shorter than a total distance of the first axial length of said enlarged portion and the first and second widths of said first and second bearings, each of said first and second bearings extending before compression a short distance axially beyond said cylindrical wall, said first housing means including means for fastening said end caps to said cylindrical wall to axially compress said bearings against said enlarged portion of said shaft when said end caps are fastened to said cylindrical wall, said first housing means



including low pressure packing means for sealing said bearings from low pressure fluids and debris;
second means for housing the first upstream end of said shaft, said second housing means being attached to said first housing means, said stationary source being in fluid communication with said second housing means allowing said fluid to flow from said stationary source to said rotatable utilization device through said second housing means and said hollow shaft;
high pressure packing means, within said second housing means, for sealing between the first end of said shaft and said second housing means;
whereby said first housing means provides steady support for said shaft allowing said high pressure packing means to seal between said shaft and said second housing means with respect to said high pressure fluid.

4,449,740

PRESSURE HOSE

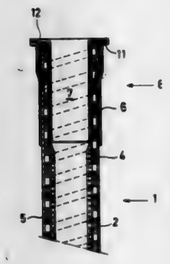
Günther Buzzi, Schiltach, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co., Fed. Rep. of Germany

Filed Mar. 3, 1982, Ser. No. 354,304

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109359

Int. Cl.³ F16L *39/02*

U.S. Cl. 285—149 **5 Claims**



1. A pressure hose comprising:
an inner hose;
an outer hose;
a reinforcing helix arranged between the outer hose and the inner hose;
a plurality of axially directed reinforcing threads; disposed along the inner hose and,
at least one connecting nipple having concentric inner and outer sleeves of substantially circular cross-section, and between which sleeves is clamped one end of the pressure hose;
the inner hose and the reinforcing threads at end being longer than the outer hose and the reinforcing helix, the end of the inner hose and the reinforcing threads projecting beyond the reinforcing helix and the outer hose, said end of the inner hose and the reinforcing threads being wrapped around about 180° over the reinforcing helix and the outer hose, and clamped between said concentric sleeves.

4,449,741

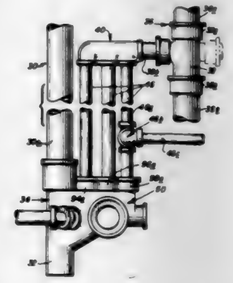
WASTE PLUMBING INSTALLATION AND FITTINGS THEREFOR

Robert L. Litvin, 180 E. Pearson St., Chicago, Ill. 60611, and David W. Price, 8749 S. Kenneth Ave., Hometown, Ill. 60456

Filed Mar. 31, 1981, Ser. No. 249,627

Int. Cl.³ F16L *41/00*

U.S. Cl. 285—153 **1 Claim**



1. In a waste plumbing installation, for use upon each of respective dwelling stories in a multiple storied building that is equipped with both a vertical plumbing waste stack and a separate vertical plumbing vent stack, said waste stack and vent stack being laterally spaced, and each story of the building being provided with a unitary waste plumbing manifold into which multiple waste lines, from plumbing fixtures on the story, discharge for transfer and discharge into the waste stack;
the improvement comprising, in combination: said unitary waste plumbing manifold being shaped and arranged to provide a vertical waste pipe segment which serves as part of the waste stack and a laterally elongated waste manifold section projecting laterally of the waste pipe segment, said manifold section including a horizontal shelf with a plurality of laterally aligned, and laterally spaced, vent outlet openings therethrough, each vent outlet opening being surrounded by a horizontal seat, with each vent outlet opening and seat being surrounded by a sleeve that extends upwardly of said shelf, the uppermost extent of said sleeves being located in a common plane spaced below the upper end of the waste pipe segment portion of the waste plumbing manifold;
each story of the building also being provided with a laterally elongated, unitary, vent manifold that connects at one end thereof to the vent stack that is laterally spaced from the plumbing waste stack and which projects laterally from its connection to the vent stack to a location spaced vertically above said laterally elongated manifold section of the waste plumbing manifold;
said elongated vent manifold providing therein a plurality of laterally aligned, female threaded, downwardly facing, vent inlets, in numbers, and lateral spacing between pair of inlets, equal to the number and spacing of lateral vent outlet openings in the manifold section vertically therebe-

low, and said threaded, vent inlets being located in the same plane;

and a plurality of vertical vent pipe means, each of equal effective length extending between the plurality of the vent outlets and plurality of vent inlets, each vent pipe means being threaded at its upper end into one of the female threaded vent inlets of the vent manifold, to be supported from said vent manifold, and each vent pipe means being of an effective length to have its lower end telescope into one of said seat-surrounding sleeves of the waste manifold section that is located vertically below the vent manifold;

said seats in the waste manifold that surround the plurality of vent outlet openings therein being of a size adapted to be engaged by the lower ends of the multiple vent pipe means to provide initial support for said plurality of vent pipe means before each of said vent pipe means is screw-threadedly secured to and supported from the vent manifold thereabove, and with the lower end of each vent pipe means, that is supported by the vent manifold, being spaced above the seat therefor in the waste manifold, but being positioned with the corresponding surrounding sleeve.

4,449,742

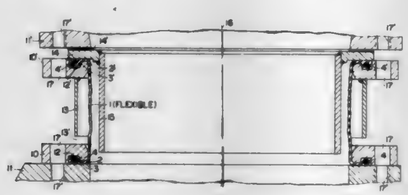
FLEXIBLE SLEEVE TYPE CONNECTING STRUCTURE

Ludger Toerner, Eppertshausen; Dieter Garvens, Pfungstadt; Günter Hager, Untersteinach, and Anton Rettinger, Frankfurt, all of Fed. Rep. of Germany, assignors to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,219

Int. Cl.³ F16L *21/00, 11/00*

U.S. Cl. 285—236 **12 Claims**



1. A flexible sleeve type connecting and sealing device having a longitudinal central axis for enclosing in a sealing manner a passage between a movable member and a stationary member, comprising a first flexible bellows type sleeve portion, a second flange portion extending substantially radially outwardly from each end of said first portion, and a third bulging ring portion near the circumference of each of said flange portions, said first, second and third portions being made of a three layer material including a webbing which has a high tear resistance and which is sandwiched between an inner silicone layer adhesively bonded by a silicone type adhesive bond to said webbing and an outer silicone coating on said webbing also adhesively bonded to said webbing by a silicone type adhesive bond, said three layer material merging integrally from said first cylindrical portion into said second flange portions, said webbing having threads extending at an angle of about 45° relative to said longitudinal central axis in said first portion for an improved flexibility, especially in the axial direction, said sandwiched three layer material having a high heat resistance and a high resistance to rupture as a result of sudden pressure increases inside the sealing device.

12. The use of a flexible sleeve type connecting and sealing device having a longitudinal central axis comprising a first flexible bellows type sleeve portion, a second flange portion extending substantially radially outwardly from each end of said first bellows type sleeve portion, and a third bulging ring portion near the circumference of each of said flange portions, said first, second and third portions being made of a three layer material including a webbing which has a high tear resistance and which is sandwiched between an inner silicone layer adhesively bonded by a silicone type adhesive bond to said webbing and an outer silicone coating on said webbing also adhesively bonded to said webbing by a silicone type adhesive bond, said three layer material merging integrally from said first cylindrical portion into said second flange portions, said webbing having threads extending at an angle of about 45° relative to said longitudinal central axis in said first bellows type portion for an improved flexibility, especially in the axial direction, said sandwiched three layer material having a high heat resistance to temperatures up to about 200° C., said sandwiched three layer material having a high resistance to rupture as a result of sudden pressure increases up to about 10 bar gage pressure inside said sealing device, for sealing and enclosing in an explosion proof manner a passage between a movable weigh hopper of a scale and a stationary member.

4,449,743

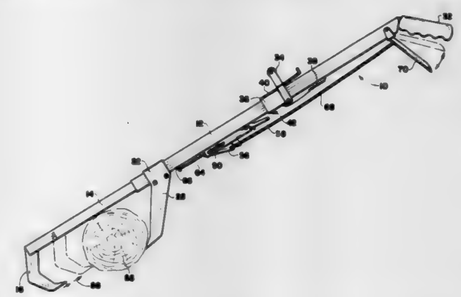
LOG HANDLING TOOL

Orlando K. Pankratz, 833 N. Vancouver, Tulsa, Okla. 74127

Filed Nov. 2, 1981, Ser. No. 317,137

Int. Cl.³ A47J *49/00;* **B66C** *1/42*

U.S. Cl. 294—11 **7 Claims**



1. A log handling tool comprising barrel means, shaft means reciprocally disposed within said barrel means, tine means secured to the outer end of the shaft means, prong means secured to the barrel means for cooperation with the tine means to retrieve and carry and release a log, pawl means and ratchet means cooperating between the shaft means and barrel means for securing the shaft means in selected longitudinal position with respect to the barrel means, latch means cooperating with the pawl means and ratchet means for providing movement of the shaft means in at least one longitudinal direction with respect to the barrel means, and handle means provided on said barrel means for facilitating handling of the log engaged by the tine means and prong means, spring means operably secured to the pawl means for constantly urging the pawl means in a direction toward the ratchet means, said latch means being spring urged in a direction toward the ratchet means, trigger means operably connected with the latch means for selective actuation thereof, and wherein the handle means comprises a first handle member secured to one end of the barrel means, and a second handle means secured to the barrel means substantially centrally between the opposite ends thereof for providing an efficient balance of the tool when a log is engaged by the tine means and prong means.

4,449,744

CARRYING OR HOLDING DEVICE FOR AT LEAST ONE CUP OR THE LIKE VESSEL AS WELL AS A BLANK THEREFORE

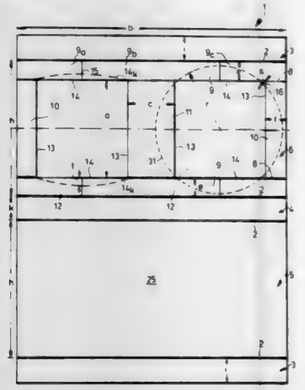
Franz Vossen, Stockach, Fed. Rep. of Germany, assignor to Meurer Non Food Product GmbH, Radolfzell, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 288,025

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 3029047

Int. Cl.³ B65D *71/00, 85/62*

U.S. Cl. 294—87.2 **8 Claims**



1. A carrying or holding device for a cup having a cantilever ring edge, said device comprising a flat sheet of material having a pair of spaced fold lines centrally located in said sheet to form a middle strip and two plate regions of equal size extending on opposite sides of said strip, each of said plate regions including a respective edge strip foldably connected to the remainder of the associated plate region remote from said middle strip, said edge strips having a width in relation to said middle strip such that with said plate regions folded about said fold lines into juxtaposed position and said strips overlapped and secured a rectangular shaped case is formed, one of said plate regions being plain, the other being provided with a cut out and adjoining frame edges respectively foldably connected to said middle strip and the edge strip associated with said other plate region, said frame edges each being provided with a straight transverse cut extending to said cut-out and being foldable inwardly towards said plain plate region upon insertion of a cup with a cantilever ring edge thereon to form respective triangular shaped edge portions for said case which rip the inserted cup and which form free edges on said edge portions which hold the cantilever ring edge of the cup.

4,449,745

TOGGLE ACTION JAW-TYPE GRIPPER

Leland F. Blatt, P.O. Box 220, Fraser, Mich. 48026

Filed Feb. 16, 1982, Ser. No. 348,945

Int. Cl.³ B66C *1/42*

U.S. Cl. 294—88 **6 Claims**

1. A toggle action jaw-type gripper comprising:

a hollow jaw body including an apertured mount flange at one end adapted for connection to an actuating unit having a projecting reciprocal rod end, and a pair of parallel spaced opposed side plates; there being opposed undercut guide slots formed upon the interior of said side plates longitudinally thereof;

an apertured clevis within said body slidably mounted and supported within said guide slots for reciprocal movements, and adapted for connection to said rod end;

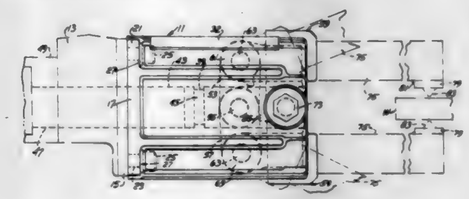
a pair of opposed jaw spacers of L-shape, each jaw spacer having spaced apertured trunions at one end and a central apertured pivot arm at its other end;

the trunions of one jaw spacer being assembled over and receiving the pivot arm of the other jaw spacer;

a pivot bolt supportably extending through said assembled trunions and pivot arm extending transversely through and spanning said side plates and secured thereto, providing a pivot mounting for said jaw spacers;

the respective other jaw arm and trunions of said jaw spacers extending rearwardly of said pivot bolt and spaced from said clevis;

first link at one end pivotally connected to said clevis upon a first transverse axis, and at its other end pivotally connected to the trunions of one of said jaw spacers upon a second transverse axis;



a second link at its one end pivotally connected to said clevis along said first axis, and at its other end pivotally connected to the pivot arm of the other jaw spacer upon a third transverse axis;

a jaw link mounted upon each jaw spacer intermediate its ends;

and a pair of opposed spaced jaw arms at their one ends extending into said body, selectively nested within said jaw links respectively at a preselected included angle and welded thereto; the other ends of said jaw arms when brought together on movement of said clevis in one direction adapted to retainingly secure a workpiece therebetween.

4,449,746

MOBILE COMPUTERIZED TOMOGRAPHY UNIT

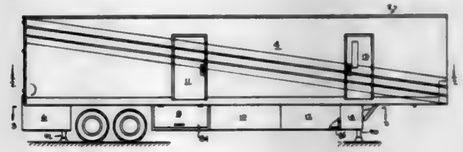
Ronald G. Clark, Gainesville, Fla., assignor to Synergetics, Inc., Gainesville, Fla.

Continuation of Ser. No. 826,527, Aug. 22, 1977, Pat. No. 4,181,347. This application May 9, 1979, Ser. No. 37,264

The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.

Int. Cl.³ B62D *39/00;* **B60P** *3/00, 3/32*

U.S. Cl. 296—1 R **5 Claims**



1. A mobile computerized tomography unit comprising:

a vehicle trailer;

a CT-scanner gantry and patient table;

means for mounting the CT-scanner gantry and patient table as a unit and to prevent shock vibration from being transmitted to the CT-scanner gantry and patient table during travel of the mobile unit;

a mini-computer system for display and data processing of the CT-scanner mounted in the trailer;

means for mounting the mini-computer components to prevent shock vibration from being transmitted to each mini-computer component;

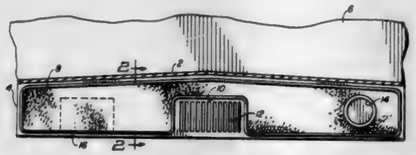
means for rigidly supporting the unit when the van is stationary.

4,449,747

INSULATING DASHBOARD COVER HAVING ANTIGLARE AND HEAT RESISTANT CHARACTERISTICS

Martin B. Morgan, 2609 W. Southern, Sp. 309, Tempe, Ariz. 85282; Marvin C. Morgan, 3232 E. Coronado, Phoenix, Ariz. 85008, and John W. Linde, 11611 N. 50 Ave., Glendale, Ariz. 85304

Filed Aug. 18, 1981, Ser. No. 294,010
Int. Cl.³ B60J 3/00
U.S. Cl. 296—97 E 6 Claims



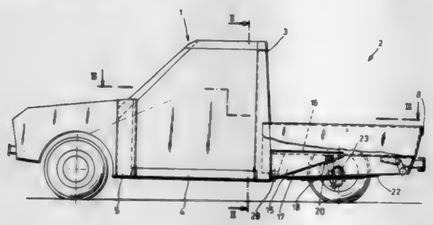
1. A method of covering a dashboard, comprising:
placing a layer of foil on the exterior surface of a vehicle windshield;
contouring the layer of foil to the general shape of the vehicle's dashboard which is visible through the windshield;
placing the contoured layer of foil on said dashboard;
trimming the contoured layer of foil to form a pattern;
placing said pattern on a covering material; and
cutting said covering material to form a cover for said dashboard.

4,449,748

UTILITY VEHICLE BODY

Ernst Fiala; Fritz Schael, and Reiner Schoedder, all of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 918,473, Jun. 23, 1978, abandoned. This application Mar. 13, 1981, Ser. No. 243,475
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730425
Int. Cl.³ B62D 23/00
U.S. Cl. 296—183 11 Claims



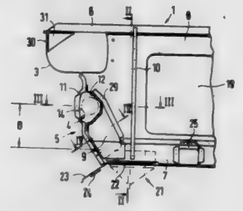
1. A self supporting body for a utility vehicle comprising a closed cab portion, having front, rear, and side walls, mounted only on the front wheels of said vehicle and an open cargo portion mounted only on the rear wheels of said vehicle, said cab portion having a bending and torsion resistant construction, including a torsion resistant frame having a closed cross sectional configuration and forming a structural component extending around the entire circumference of said rear wall of said cab portion, and said cargo portion having an approximately U-shaped transverse cross-section, said cargo portion being of itself bending resistant in the longitudinal direction of the vehicle and torsion yielding, and said cargo portion being rendered torsion resistant by attachment to said torsion resistant frame.

4,449,749

PASSENGER CAR BODY END WALL

Georg Eger, Pleidelsheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,796
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114415
Int. Cl.³ B62D 31/00
U.S. Cl. 296—194 15 Claims



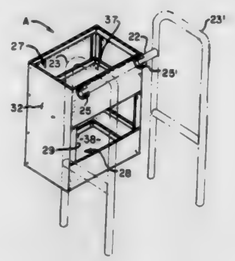
1. A car body end wall, extending generally perpendicularly to the direction of vehicle travel, having a transverse wall interconnecting fenders of the car and attached to fender walls and longitudinal supports of the fenders; comprising a frame system including upper and lower transverse members which are mounted higher and lower than said longitudinal supports, respectively, plate means flanged and disposed vertically at a distance from the median longitudinal plane of the car body for joining the upper and lower transverse members and the transverse wall, said plate means extending in the longitudinal direction of the vehicle and having rigidifying shaped portions, and reinforcing means for connecting the lower transverse member to the longitudinal supports.

4,449,750

ACCESSORIES FOR WHEELCHAIRS AND THE LIKE

Martin D. Pultman, 550 Coeur De Royale Dr., St. Louis, Mo. 63141

Filed Sep. 9, 1982, Ser. No. 416,268
Int. Cl.³ A47C 7/62; B60R 11/00
U.S. Cl. 297—188 8 Claims



1. A container accessory for a walker or like mobility aid having a transversely extending tubular frame member located at the front of the user, said accessory comprising a framework and parallel members supported by said framework to define upper and lower rectangular compartments located in aligned over-and-under relationship one above the other, the upper compartment being open at the top, to define a rectangular upper opening facing upwardly in front of the user, the lower compartment being of bin-like configuration and defining a rectangular lower opening facing rearwardly toward the user in always open condition, the lower compartment being closed entirely on three sides by side wall panels and a front wall

panel but being only partly closed rearwardly by a rear wall panel extending below said lower opening, whereby a major extent of said lower compartment is located below said lower opening for reliable containment of items, the lower opening thereby being presented to the user for permitting access to said lower compartment only by the user while concealing said lower compartment for out-of-sight containment of items, said framework and panel members being of strong, lightweight material for avoiding objectionable addition to the weight of the walker such as would disturb its balance or prevent its convenient use as a mobility aid, and resilient securement means for removable resilient securement of the container accessory to said transversely extending tubular frame members with said container accessory located in front of the user and with said upper compartment opening proximate said tubular frame member, said resilient securement means comprising at least first and second spring clips carried by said container accessory at a location above the center of gravity of said accessory for suspending of said accessory from said transversely extending tubular frame member, said spring clips being located at opposite sides of said rear wall proximate the opening of said upper compartment for resiliently gripping said transversely extending tubular frame member, thereby to reliably support said accessory.

2. A container accessory for removable securement to a wheelchair having first and second tubular frame members, said accessory comprising a framework and panel members supported by said framework to define at least one compartment, said framework being self-supporting, said framework and panel members being of strong, lightweight material, and at least first and second resilient securement means carried by said framework at locations upon said framework for resiliently engaging portions of said tubular frame members to cause said framework to be reliably supported by said tubular frame members, said resilient securement means comprising respective spring clips, said spring clips being located above the center of gravity of said accessory for suspending of said accessory from said tubular frame members, first and second ones of said spring clips resiliently engaging respective first and second ones of said tubular frame members for suspending said accessory above said center of gravity, said framework including a lower extension member below said center gravity for extending laterally toward said wheelchair, said extension member having an outer end carrying a third spring clip for resiliently gripping a tubular frame member of said wheelchair to maintain said accessory in stable orientation spaced from said wheelchair.

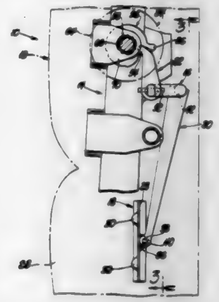
4,449,751

SEAT BACKREST HAVING AN ADJUSTABLE LUMBAR SUPPORT

Randall T. Murphy, Farmington Hills, and Dennis H. Heling, Canton, both of Mich., assignors to Lear Siegler, Inc., Livonia, Mich.

Filed May 26, 1981, Ser. No. 267,127
Int. Cl.³ A47C 3/00, 7/46
U.S. Cl. 297—284 4 Claims

1. A lumbar support regulating apparatus comprising:
a seat back having a rigid frame;
a bar pivotally mounted on the frame for pivoting around a horizontal axis;
a lumbar support plate;
a cantilevered element supported by said bar for, in turn, supporting said lumbar support plate;
a rigid follower having first and second end portions, the first end portion of the follower being attached at one end of the bar to rotate therewith;
regulating means rotatably mounted on said frame and including a cam rotatable about a cam axis, the cam having a radially disposed external cam surface circumferentially extending in a first direction from a first lumbar support position through at least one intermediate lumbar support position to a last lumbar support position proximate the first lumbar support position, the cam surface being adapted for engagement with the second end portion of said follower wherein rotation of said regulating means in the first direction away from the first support position and towards the last lumbar support positions pushes the follower away from the axis of rotation of the cam to rotate said bar to thereby vary the position of the support plate, wherein a first radial distance between the cam axis and the cam surface at the first lumbar support position is less than a second radial distance between the cam axis and the cam surface at the intermediate lumbar support position which, in turn, is less than a third radial distance between the cam axis and the cam surface at the last lumbar support position and wherein the ratio of the difference between the first and second radial distances to the circumferential distance between the first and the intermediate lumbar support positions is greater than the ratio of the different between the second and third radial distances to the circumferential distance between the intermediate and last



lumbar support position to thereby provide the cam with a greater and greater amount of mechanical advantage as the cam is rotated in the first direction, said second end portion of said follower including a tongue projection engageable with said cam surface, said cam surface having a recessed portion at each lumbar support position for receiving said tongue projection to hold said cam in a selected lumbar support position, said cam including a stop protuberance extending radially above said cam surface immediately adjacent and between the first and last lumbar support positions to prevent rotation of said cam beyond the last lumbar position said recessed portion at said first lumbar position extending radially deeper into said cam than the remaining recessed portions to lock said tongue projection into said first recessed portion against said stop protuberance to prevent movement in the opposite direction as said tongue projection is prevented by said first recessed portion and said stop protuberance from moving therepast.

4,449,752

VEHICLE SEAT POSITION CONTROL MECHANISM WITH NEUTRAL MEMORY

Jun Yasumatsu, Toyota; Mamoru Mori, Okazaki; Toshihito Nishiwaki, and Akira Owada, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sep. 27, 1979, Ser. No. 79,567
Claims priority, application Japan, Mar. 6, 1979, 54-28270[U]
Int. Cl.³ B60N 1/04
U.S. Cl. 297—341 4 Claims

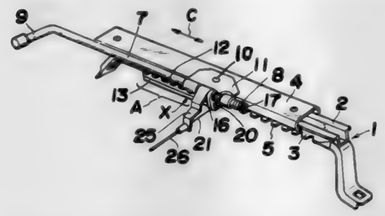
1. A neutral position return mechanism for a vehicle seat having a seat track including a lower rail, a locking plate secured to the lower rail, an upper rail slidably carried on the lower rail, a locking lever engageable with a series of locking teeth of the locking plate and a maneuverable shaft fixedly secured to the locking lever which is always rotatably urged

by the rotating force of a torsion spring in a seat locking direction comprising:

a memory member, elastically disposed at a side end thereof and outside the locking teeth of the locking plate, extending along the zone of the locking teeth of the locking plate from a neutral position of the seat toward the forward portion of the vehicle, said memory member being spaced from said locking plate so that a gap is formed between said memory member and said locking plate,

a rotatable member rotatably journaled with the maneuverable shaft and disposed at the end thereof within the gap between said memory and the locking plate so that the side end of said memory member is located within a rotating trace of said rotatable member at positions along the length of said locking plate, and

a connecting means between said rotatable member and a back of said vehicle seat for rotating said rotatable member against a biasing force of said torsion spring in a disengaging direction upon forward tilting of the back of said vehicle seat,



said rotatable member being rotatable by movement of said connecting means in a disengaging direction from a locking position of the locking lever, where it engages the locking teeth of said locking plate, to a disengaged position, where the locking lever is disengaged from the teeth of the locking plate and the end of the rotatable member moved out of said side end of said memory member, and

said memory member being disposed at said side end thereof outside the teeth of the locking plate and disposed within the rotating trace of the end of said rotatable member so that the surface of said rotatable member nearest said locking lever retains the locking lever in the disengaged position when the end of said rotatable member contacts the outside of said side end of said memory member.

4,449,753

METHOD FOR BULKING FULL A RETORT

Thomas E. Ricketts, Grand Junction, Colo., and Allan Sass, Los Angeles, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 1, 1982, Ser. No. 383,508
Int. Cl.³ E21B *43/247*; E21C *41/10*
U.S. Cl. 299—2 **57 Claims**

1. A method for forming an in situ oil shale retort in a retort site in a subterranean formation containing oil shale, the in situ retort containing a body of expanded oil shale formation and having top, bottom, and generally vertically extending side boundaries of unfragmented formation, the method comprising the steps of:

forming a lower portion of the body of expanded oil shale formation comprising a fragmented permeable mass of formation particles; and thereafter

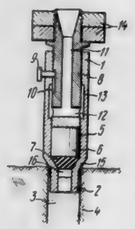
explosively expanding a layer of unfragmented formation downwardly toward the lower portion of the body of expanded formation for forming the remaining portion of the body of expanded formation, the layer having a volume sufficient to provide that the available void fraction for expansion of the layer is no more than about ten percent so that the remaining portion of the body of expanded formation completely fills the retort to its top boundary.

4,449,754

DEVICE FOR BREAKING MONOLITHIC STRUCTURES BY PULSEWISE LIQUID PRESSURE

Naum Y. Orlov, Kharkov, and Taras P. Dotsenko, Moscow, both of U.S.S.R., assignors to Vsesojuzny Proektno-Izyskatelsky I Nauchno-Issledovatelsky Institut "Gidropoekt" Imeni S.Ya. Zhuka, Moscow, U.S.S.R.

Filed Jun. 10, 1982, Ser. No. 386,919
Claims priority, application U.S.S.R., Nov. 24, 1980, 3006632; Dec. 3, 1981, 3356551
Int. Cl.³ E21C *37/12*
U.S. Cl. 299—21 **9 Claims**



1. A device for breaking monolithic structures by the pulsating pressure of a liquid occupying a hole pre-drilled in the structure to be shattered, comprising:

a tubular housing;

a cavity in said housing to accommodate an explosive charge;

a partition of an elastomeric material secured inside said housing to close said cavity at one end of said housing;

a pipe portion at the end of said housing adjacent to said partition adapted to fit into a mouth of said hole and to be filled with the liquid so as to form an air gap between the surface of the liquid and said partition;

means for retaining said housing inside the hole when a pulsating liquid pressure is induced, said means being provided with an inertia element; and

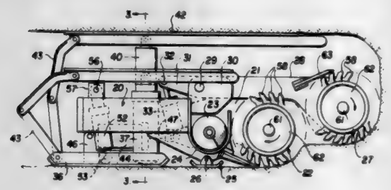
a partially-movable joint connecting said element with said housing.

4,449,755

THIN SEAM MINING MACHINE

Rodney L. Nelson, Box N, Falls Creek, Pa. 15840

Filed Sep. 30, 1982, Ser. No. 431,720
Int. Cl.³ C21C *27/24*
U.S. Cl. 299—31 **14 Claims**



1. A thin seam mining machine comprising a main frame having a forward boom extension, a first rotary cutter head on said boom extension, a cross conveyor for cuttings on the main frame rearward of the first rotary cutter head, the main frame having a transverse axis fulcrum, a boom pivotally mounted upon the main frame for vertical swinging on a transverse pivot axis and projecting forwardly of said boom extension, a second rotary cutter head on said boom in advance of the first rotary cutter head and somewhat above the latter, the first and second rotary cutter heads counter-rotating in the operation of the machine to deliver cuttings to said conveyor, a power cylinder connected between the rear end of said boom and said main frame rearward of the boom pivot and being operable to swing the boom on its pivot, at least a power cylinder connected with the main frame rearward of the fulcrum and being operable to rock the main frame on said fulcrum, side-by-side pairs of connected floor and roof engaging plates disposed above and below the main frame and rearward of the first and second rotary cutter heads, alternately operating jacks connected between the pairs of floor and roof engaging plates to expand and retract the pairs of plates alternately, and a pair of parallel longitudinal axis side-by-side power cylinders connected between the floor engaging plates of the pairs and the main frame and being alternately operable in timed relationship with the operation of said jacks to advance the main frame into a seam and to pull forwardly the inactive pair of floor and roof engaging plates preparatory to another advancement of the main frame.

4,449,756

TRACKED VEHICLE ROAD WHEEL

James B. Weeks, Haslett, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Mar. 9, 1982, Ser. No. 356,457
Int. Cl.³ B60B *3/00, 7/02*
U.S. Cl. 301—37 P **15 Claims**



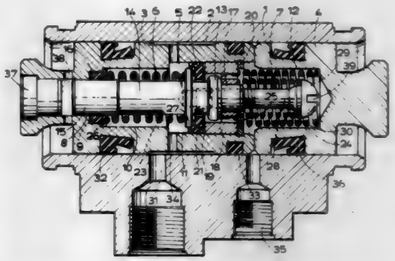
1. A composite wheel for tracked vehicles and the like comprising a generally cup-shaped disc wheel including a disc and an annular rim extending axially from the periphery of said disc, and a body of elastomeric material affixed to said wheel internally of said rim and having a pitched outer surface of closed cellular water-resistant construction extending axially and radially from said disc at a radially inner surface edge to adjacent the disc-remote edge of said rim at a radially outer surface edge and being sealed to adjoining surface portions of said disc and rim at said edges, said surface being concave and having a slope at said radially inner surface edge which is at a greater angle with respect to the axis of said wheel than is the slope at said radially outer edge, and with no portion of said surface facing radially outwardly.

4,449,757

HYDRAULIC ACTUATOR FOR A VEHICLE INTERNAL SHOE-DRUM BRAKE

Heinrich B. Rath, Vallendar, and Alfred W. Thomas, Koblenz, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Aug. 20, 1981, Ser. No. 294,432
Claims priority, application United Kingdom, Aug. 23, 1980, 8027508; Mar. 6, 1981, 8107147
Int. Cl.³ F16D *65/24*; B60T *11/34*
U.S. Cl. 303—6 C **7 Claims**



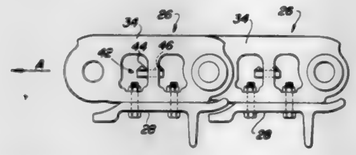
1. An hydraulic actuator for a vehicle internal shoe-drum brake, said actuator comprising a piston and cylinder assembly having relatively movable parts, said assembly having a housing, means defining a bore in said housing, and one of said relatively movable parts comprising a first piston working in said bore, means defining a pressure chamber in said actuator, fluid in said pressure chamber acting between said relatively movable parts to apply said brake, and said actuator incorporates a proportioning valve, said proportioning valve comprising a valve head for engagement with a seating, first and second stems projecting from said head in each of two opposite directions, at least one said stem projecting through said first piston, each said stem being of an area smaller than that of said head, said first stem being provided with a shoulder, and said second stem being provided with an enlargement, a seal located between said first stem and said first piston, an abutment adjacent said seal, a first spring acting between said abutment and said shoulder on said first stem to urge said head in a first direction away from said seating and into engagement with a stop, and a second spring acting on said enlargement on said second stem also to urge said head in said first direction and to augment the force in said first spring, and the other of the said relatively movable parts being provided with a longitudinally extending recess, said second stem and said second spring both projecting into said recess.

4,449,758

SPROCKET RECEPTACLE CLEANER EMBODIED IN A TRACK SECTION

William P. Wohlford, Bettendorf, Iowa, and Howard V. Beitel, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Feb. 1, 1982, Ser. No. 344,670
Int. Cl.³ B62D 55/20, 55/24
U.S. Cl. 305—12 7 Claims



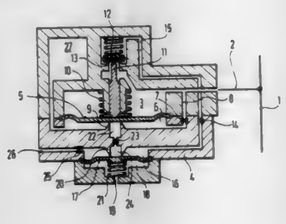
1. A track section for forming part of an endless track for a track laying vehicle, comprising: a link assembly, which, as viewed from the top as it would appear in a lower track run, includes right- and left-hand, spaced-apart rail portions; a sprocket-engaging portion interconnecting respective first ends of the rails portions and defining a cylindrically-curved, upwardly-facing surface adapted for engagement with receptacles formed between and defined at least partly by adjacent teeth of a drive sprocket; a receptacle-cleaning portion interconnecting the rail portions at respective locations located in parallel spaced relationship to the sprocket-engaging portions with the distance between the sprocket-engaging and receptacle-cleaning portions being substantially equal to the pitch of a sprocket with which the link is adapted to be used; and said receptacle-cleaning portion having at least one upwardly-projecting, beveled rib dimensioned for sweeping close to a sprocket receptacle surface as the link becomes drivingly engaged by the sprocket.

4,449,759

SERVICE BRAKE ACCELERATOR FOR RAIL VEHICLE AIR BRAKE SYSTEMS

Herbert Eder, Markt Schwaben, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,501
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127775
Int. Cl.³ B60T 15/38
U.S. Cl. 303—38 3 Claims



1. A pulsating device brake accelerator for rail vehicle air brake systems, said accelerator cyclically venting air from a main air supply to atmosphere, and returning to a neutral position between its working cycles and at the end of a brake line pressure drop, said accelerator comprising

(a) a first movable abutment (5) subject to the pressure in a line chamber (3) connected to a main air supply (1), and, against the force of a spring (10), to the pressure in a reference pressure chamber (6) connected to said main air supply through a nozzle (7);

(b) said first movable abutment, upon application of overbalancing pressure, effecting the opening of a first valve means (5, 9) in a connection, through a first choke (23), between said reference pressure chamber and a first chamber (24) bounded by a valve seat (20);

(c) a second movable abutment (17) seatable upon said valve seat under pressure of a spring (21) so as to close said valve seat, and forming a second valve means (17, 20) in combination with said valve seat;

(d) a second chamber (16) separated from said first chamber by said valve seat, said second chamber being in continuous communication with atmosphere through a ventilation channel (26) with a second choke (25);

(e) a channel (15) with a third choke (14), connecting said main air supply with atmosphere, through a shut-off valve (12, 13) adapted to be opened laggingly after one of said valve means by a said movable abutment;

(f) said shut-off valve (12, 13) being disposed for opening by said first movable abutment (5) laggingly after said first valve means (5, 9);

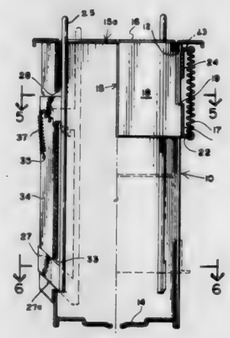
(g) said channel (15) terminating in said second chamber (16).

4,449,760

SELF-LEVELING PLATE DISPENSER

Bruce F. House, Miami, Fla., assignor to Shelley Manufacturing Company Division of Allo Food Service Equipment Company, Miami, Fla.

Filed Feb. 14, 1983, Ser. No. 440,852
Int. Cl.³ A47F 1/10
U.S. Cl. 312—42 6 Claims



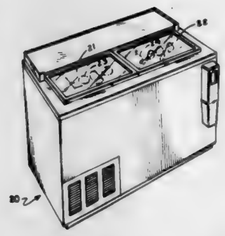
1. In a self-leveling plate dispenser of the type having a vertically-extending, open-top tank for receiving stacked plates, dishes or platters to be dispensed and including mechanism resiliently constraining the stacked plates, dishes or platters therein in the upward direction from underneath for dispensing from the top of the tank, the improvement comprising, mechanism for vertically guiding within the tank any one, selectively, of an incrementally increasing range of peripheral sizes of such stacked plates, dishes or platters, said vertically guiding mechanism comprising a plurality of vertically-disposed guide rods circularly spaced within the tank, means for independently stepwisely adjusting each of said guide rods along a range of distances extending radially outwardly of the central longitudinal axis of the tank, said guide rods serving as abutment slide means for guiding peripheral edge portions of any selected one of a range of incrementally increasing sizes and peripheral shapes of stacked plates, dishes or platters placed in the tank for dispensing, said guide rod adjusting means for each of said stepwise adjusting means comprising hook means fixed to and extending radially outwardly of said guide rod and projecting through a slot in the tank, said hook means comprising a hook member having a plurality of vertically-extending recesses of incrementally increasing depth from the inner to the outer end along the bottom thereof, resilient means normally constraining said hook member and its associated guide rod in a downward, longitudinal direction within the tank, the recesses of said hook member being selectively placeable over the lower edge of said tank slot for adjustably positioning said guide rod in a predetermined radially-outward distance with respect to the central longitudinal axis of the tank.

4,449,761

TRANSPARENT REFRIGERATOR DOORS WITH FROSTED PRODUCT LOGO THEREON

Charles L. Davis, Atlanta, and G. Merle Bachman, Stone Mountain, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Nov. 25, 1981, Ser. No. 324,683
Int. Cl.³ A47B 77/08; A47F 3/04
U.S. Cl. 312—116 12 Claims



1. A display type of refrigeration unit for storing a multiplicity of beverage containers of the type having a source-identifying logo thereon, the beverage being of the type generally served chilled, the unit comprising

a cabinet open at one side and having means therein for displaying the beverage containers in a manner suitable for use in a commercial environment, and

at least one door attached to the cabinet in such a manner as to cover the opening in the cabinet and by relative movement with respect to the cabinet permitting access to beverage containers stored in the cabinet, the door comprising

a first transparent substrate having on a first surface thereof the source-identifying logo enlarged so as to extend over a significant portion of the first surface, the source-identifying logo being applied by silk screen and being colored so as to convey to a customer a frosted effect, and

a second transparent substrate juxtaposed to the first transparent substrate and incorporating the source-identifying logo therebetween such that an inexpensive construction is provided wherein the frosted source-identifying logo serves to suggest to the customer an impression associated with the cool refreshment of the beverage in the containers stored therein.

4,449,762

COMPUTER DESK

Jeffrey A. Turner, 2901 W. Laurel La., Phoenix, Ariz. 85029

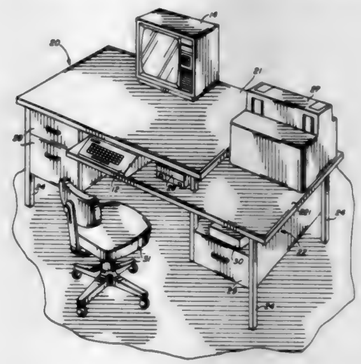
Filed Mar. 23, 1981, Ser. No. 246,143
Int. Cl.³ A47B 21/00; G06C 7/02
U.S. Cl. 312—196 8 Claims

1. A computer desk for use with a computer, keyboard terminal, and peripherial devices while preserving a clear desk top work space comprising:

an unencumbered horizontal planar desk top work surface;

means for emplacing and fully supporting a computer, keyboard terminal, and peripherial devices directly below said desk top work surface comprising a support surface coupled below said desk top work surface a distance sufficient to provide support for a computer, keyboard terminal, and peripherial devices between the two surfaces; and

said desk top work surface and said support surface each comprises an edge nominally facing a user seated at said desk and said edge of said support surface is advanced toward said user to permit support of a computer, keyboard terminal, and peripherial devices while providing



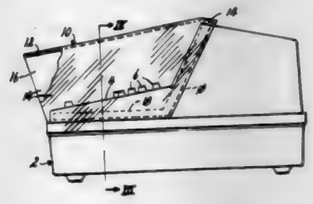
convenient usable access to the keyboard of a terminal so emplaced and supported unimpeded by said desk top work surface.

4,449,763

PROTECTIVE COVER FOR KEYBOARD MACHINES

Loren A. Barnett, 920 Durward Hall Dr., Carthage, Mo. 64836

Filed Oct. 23, 1981, Ser. No. 314,123
Int. Cl.³ A47B 21/00, 97/00
U.S. Cl. 312—208 6 Claims



1. A protective cover for a keyboard machine having a housing presenting an upwardly facing keyboard carrying pushbuttons operable by depression thereof, said cover comprising:

a. a hood including a transparent top wall generally parallel with and spaced above said keyboard by a distance sufficient to permit insertion of an operator's hand therebetween, but sufficiently small to require the operator to press said pushbuttons principally with finger movements and with only minimal movements of his whole hand normally to the keyboard, and to prevent any substantial whole-hand movements normally to the keyboard, said hood being open at one side to permit said insertion, and

b. means operable to attach said hood firmly to the housing of said machine.

4,449,764

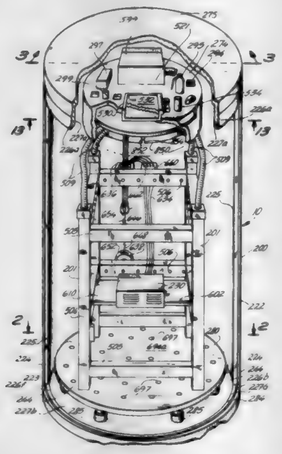
DATA PROCESSING EQUIPMENT ENCLOSURES

Otis H. Hastings, Mahwah, N.J., assignor to Transaction Security, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 119,816, Feb. 8, 1980, abandoned, which is a continuation of Ser. No. 1,264, Jan. 5, 1979, abandoned, and a continuation-in-part of Ser. No. 952,782, Oct. 19, 1978, Pat. No. 4,348,966, which is a division of Ser. No. 827,593, Aug. 25, 1977, Pat. No. 4,121,523, which is a continuation-in-part of Ser. No. 602,404, Aug. 7, 1975, abandoned, and a continuation-in-part of Ser. No. 825,174, Aug. 16, 1977, abandoned, which is a continuation of Ser. No. 602,404, Aug. 7, 1975, abandoned. This application Jul. 13, 1981, Ser. No. 282,708

Int. Cl.³ A47B *77/08*; F25D *23/12*

U.S. Cl. 312—236 **33 Claims**



1. A transaction processing enclosure for housing of electronic data processing equipment and the like comprising, in combination, at least one access means to the interior of said enclosure; closure means registrable with said access means; said enclosure including a frame comprising hollow conduit support members arrayed at spaced intervals to provide a unitary support structure adapted to receive and store said data processing equipment components; a number of said hollow conduit support members being interconnected in a manner such as to distribute a fluid therethrough.

4,449,765

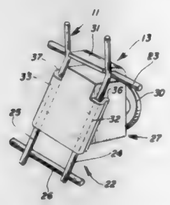
DISHRACK WHEEL ASSEMBLY FOR A DISHWASHER

William T. Lampman, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 7, 1982, Ser. No. 385,855

Int. Cl.³ A47B *88/04*

U.S. Cl. 312—311 **8 Claims**



1. In a dishwasher having a cabinet defining outer sidewalls at opposite sides of a dishwashing space within the cabinet, horizontal tracks on the sidewalls, and a dishrack, a pair of improved wheel assemblies for movably carrying the dishrack on the sidewall tracks for movement into and from the dishwashing space, each said wheel assembly comprising:

a wheel having a hub and a track-engaging peripheral portion;

support means on said dishrack including a horizontal top element extending longitudinally parallel to the track, and a pair of downwardly and inwardly inclined spaced side elements; and

a carrier having means for journaling the hub of the wheel for rolling on the tracks, a top hook opening horizontally when hooked onto said top element for retaining the carrier against downward displacement, and opposed side hooks embracing said inclined side elements for retaining the carrier in a preselected position against outward swinging movement about said top element.

4,449,766

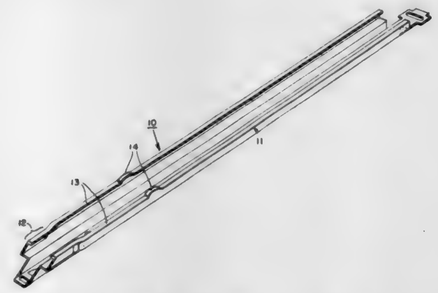
DRAWER GUIDE

James G. Shook, Goldsboro, N.C., assignor to Kemp Furniture Industries, Inc., Goldsboro, N.C.

Continuation of Ser. No. 383,237, May 28, 1982. This application Aug. 11, 1982, Ser. No. 407,142

Int. Cl.³ A47B *88/04*

U.S. Cl. 312—348 **3 Claims**



1. A drawer guide for mounting in a housing for slideably engaging a drawer having a flexible engaging means comprising: a stationary slide member, said slide member having a relatively short frontal neck portion and an extended body portion, said neck portion for facilitating initial drawer insertion into the housing, said slide member having first and second c-shaped rail means, said first and second c-shaped rail means being opposingly spaced, said rail means having a close forward opposition and less close rearward opposition, a pair of mound-like stop means, one of said pair of stop means situated on said first c-shaped rail means and the other of said pair of stop means being positioned on said second c-shaped rail means, said pair of mound-like stop means for contacting the engaging means for retarding movement of the drawer whereby sufficient pressure will cause the engaging means to flex and override said stop means.

4,449,767

CONNECTOR ASSEMBLY HAVING IMPROVED KEYING AND LATCHING SYSTEM

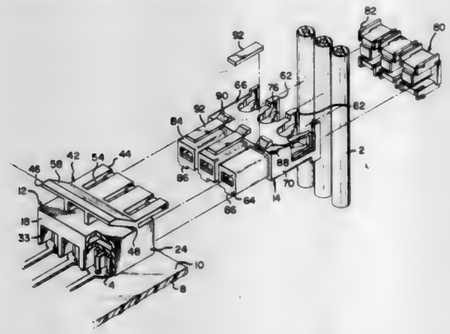
Charles H. Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburgh, Pa.

Filed Aug. 30, 1982, Ser. No. 412,685

Int. Cl.³ H05K *1/00*; H01R *13/62*

U.S. Cl. 339—17 LC **10 Claims**

1. An electrical connector assembly of the type comprising first and second connector housings, each of the housings having a mating face and a rearward face which faces oppositely with respect to the mating face, external housing walls extending from the mating face to the rearward face, the external walls comprising oppositely facing sidewalls and oppositely facing endwalls, terminals in the housings which are coupled to each other when the housings are mated with each other, at least one latch arm on the first housing, the latch arm having a latching end and an actuating end and being hinged to one of the external housing walls intermediate its ends, the actuating end being proximate to the rearward face and the latching end being proximate to the mating face, the second housing having latching shoulder means thereon on one of the external walls thereof for cooperation with the latching end to latch the housings to each other when they are in a mated condition, the actuating end being movable towards the plane of the one external wall with concomitant movement of the latching end away from the plane of the one external wall thereby to unlatch the housings, and a keying system on the housings for keying the housings to each other, the connector assembly being characterized in that:



the keying system comprises a plurality of parallel keyways in the first housing and a like plurality of removable keys on the second housing, the keyways being in the one external housing wall and extending inwardly from the mating face of the first housing, the latch arm extending over, and in covering relationship to, the keyways, the latch arm having inspection slots therein which are in alignment with the keyways to permit inspection of the keyways,

the keys being on the one external wall of the second housing which corresponds to the one external wall of the first housing, the keys being in alignment with, and being dimensioned to be received in, the keyways whereby, the first and second housings can be distinctly keyed to each other by removing one of the keys from the second housing and placing a key plug in the corresponding keyway in the first housing, and the location of the key plug can be determined from the inspection slots so that the first and second housings can be recognized as associated housings.

4,449,768

SHIELD CONNECTOR

Kenneth J. Koncelik, Brook Park, and Erwin H. Goetter, Chesterland, both of Ohio, assignors to Preformed Line Products Company, Mayfield Village, Ohio

Filed Jul. 23, 1981, Ser. No. 286,335

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—14 R **14 Claims**

1. In a shield connector for shielded cables, said connector being of the type including inner and outer metal plates respectively positionable on inner and outer sides of a cable shield, said inner plate having shield penetration means projecting therefrom toward said outer plate for penetrating a cable shield when said plates are clamped together, said outer plate including a generally planar main portion having opposite legs extending therefrom for normally maintaining said main portion in spaced relationship relative to said inner plate, and adjustable fastener means for clamping said plates together on opposite sides of a cable shield, the improvement comprising:

an intermediate plate positioned between said outer plate and the outer surface of the cable shield, said intermediate plate being engageable by said legs on said outer plate and having penetration means extending therefrom toward said inner plate for penetrating a cable sheath when said plates are clamped together, said intermediate plate having opposite end portions which extend transversely of the longitudinal axis of a cable on which said connector is used, one of said end portions being substantially flat and the other of said end portions being arcuately curved to generally correspond with the curvature of the cable.



4,449,769

SUBSTRATE FOR MOUNTING ELECTRIC PARTS

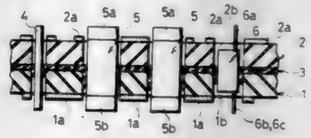
Mikio Kobayashi, and Kingo Kuritani, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 138,653, Apr. 8, 1980, abandoned. This application Jun. 11, 1982, Ser. No. 387,497

Claims priority, application Japan, Apr. 11, 1979, 54-43795

Int. Cl.³ H05K *1/18*

U.S. Cl. 339—17 C **3 Claims**



1. A two-sided printed circuit board comprising first and second substrates arranged back-to-back with printed circuit patterns being formed on their respective outer faces, said substrates having aligned openings defining passageways through said circuit board for receiving portions of electric components to be soldered to said circuit patterns, said passageways each being wider than its component portion adapted to be received therein to enable said portions to be fitted easily within said passageways, and means including a tape having adhesive material on each side interposed between said substrates and extending at least partially across said passageways for holding said substrates together while providing portions of adhesive tape within said passageways that can be deflected along wall portions of said passageways upon insertion of said components thereinto for holding electric components therewithin during soldering of said components to said circuit patterns, the portions of said tape deflected along said wall being substantially a full thickness thereof.

4,449,770

SOCKETLESS SEPARABLE CONNECTOR

Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 22, 1981, Ser. No. 266,399

Int. Cl.³ H01R *23/72*

U.S. Cl. 339—17 CF **4 Claims**

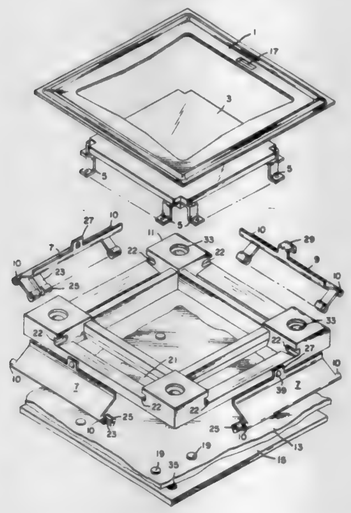
1. A separable electrical connector, comprising:

a semiconductor chip carrier having leads extending therefrom;

a frame adjacent to said carrier, said leads extending through said frame;

circuit board means adjacent to said frame and having electrically conductive pads thereon in alignment with said leads, each of said leads being disposed on one of said pads;

a spring means disposed on each side of said frame, said spring means having a plurality of electrically insulating



tips for engaging each of said leads so as to cause said leads to be compressed against the pads thereby providing electrical communication between said leads and said pads, said spring means further having a finger extending upward from said spring means for engagable engaging a yoke means;

yoke means pivotally attached to one of said fingers for engaging remaining said fingers so as to cause said spring members and thereby said tips to exert a contact-mating force between said leads and said pads.

4,449,771

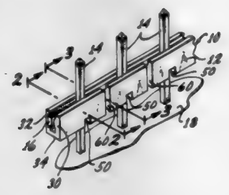
BUS BAR

David W. Carr, 7325 Muslo La., Carlsbad, Calif. 92008

Filed Dec. 10, 1979, Ser. No. 102,230

Int. Cl.³ H01R *13/02*

U.S. Cl. 339—19 **2 Claims**



1. In combination with a series of spaced terminal pins arranged in a row, a bus bar, comprising:

(a) an elongated bus bar body formed of non-conductive plastic material,

(b) said body being of U-shaped cross-section defined by parallel legs and a connecting web between said legs,

(c) said web having spaced openings therealong mating with said terminal pins which extend therethrough, each opening being formed in said body by a slot removing the base of said U-shaped cross-section including said connecting web,

(d) each of said legs having on its inner surface facing the other leg a conductive metal strip extending parallel to the longitudinal axis of said body and positioned to bear on said pins, each of said legs having a groove therein and said strips being partially embedded in said grooves, the side of each groove toward said openings being undercut at an acute angle to the associated leg and each strip having a contour matching the associated groove so that each strip has a side toward said openings which is at an acute angle to the direction of entry of said pins through said openings whereby said pins will strike said side of each strip at a camming angle for ease of passage by each strip,

(e) said strips having non-conductive surface coverings at least at some of the locations of said openings and said pins, and said surface coverings being partly removed at locations corresponding at least to some of said pins for electrical conduction with said strips, and

(f) said plastic material being resilient and said strips thereby being resiliently pressed against said pins to insure that portions of said strips exposed to said pins will maintain electrical conduction therewith and so that said pins will be gripped for bus bar body retention thereon.

4,449,772

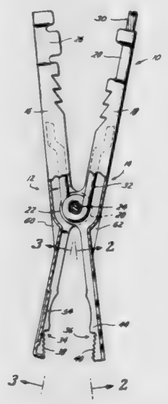
ELECTRICAL CONNECTOR FOR TOP AND SIDE MOUNT BATTERY TERMINALS

Thomas B. Johnson, III, St. Charles, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 17, 1982, Ser. No. 419,288

Int. Cl.³ H01R *11/24, 27/00*

U.S. Cl. 339—29 B **5 Claims**



1. An electrical connector for top and side-mount battery terminals, comprising:

(a) a first member having a jaw for engaging a top-mount battery terminal and a terminal engaging surface for engaging the top of a side-mount battery terminal bolt head;

(b) a second member pivotally mounted with said first member having a jaw for engaging a top-mount battery terminal and two spaced prongs defining an open slot therebetween for receiving and electrically engaging the shoulder of a side-mount battery terminal bolt head; and

(c) spring means for biasing said first and second members to pivot toward each other for mutually clamping engagement about a current carrying member.

4,449,773

LOW INSERTION FORCE CONNECTOR

Wilhelm C. J. Esser, Tilburg, and Adrianus van den Nosterum, Boxtel, both of Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 7, 1982, Ser. No. 376,067

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—59 M **4 Claims**



1. An electrical connector adapted for low insertion or withdrawal forces on a conductor and comprising a sheet metal contact mounted in an insulating housing having a passageway for receipt of the conductor, the contact having a spring finger presenting a contact portion projecting into the passageway and, forwardly of the contact portion, a forward portion extending in forwardly and outwardly inclined manner from the passageway into a cavity, which is in the housing, at a side thereof and having a housing part bordering a side of the passageway at the side of the cavity and moveably mounted on the housing adjacent the forward end of the passageway, the housing part being moveable into the cavity to engage the forward contact portion at a surface of the housing part facing away from the passageway to flex the spring finger and move the contact portion outwardly of the passageway, the housing part being connected to the housing by an integral hinge which extends beside, and parallel to, the passageway, the hinge being spaced from the passageway to allow the housing part to move along an arcuate path into the cavity.

4,449,774

ELECTROCONDUCTIVE RUBBERY MEMBER AND ELASTIC CONNECTOR THEREWITH

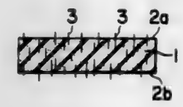
Nogami Takashi, Tokyo, and Mitsuhashi Masayuki, Saitama, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1982, Ser. No. 343,346

Claims priority, application Japan, Feb. 5, 1981, 56-16209; Feb. 24, 1981, 56-25742

Int. Cl.³ H01R *9/00*

U.S. Cl. 339—59 M **15 Claims**



1. An electroconductive rubbery member which comprises a shaped body made of an electroconductive rubbery elastomer having two opposite surfaces and a multiplicity of electroconductive fibrous bodies each having a length substantially smaller than the thickness of the said shaped body between the two opposed surfaces and embedded in the said shaped body in such oriented dispersion that each of the fibrous bodies lies approximately along a line which intersects at least one of the said opposed surfaces, at least a part of the fibrous bodies being protruded out of at least one of the said two opposed surfaces of the shaped body.

4,449,775

CONNECTOR FOR PORTABLE OBJECTS SUCH AS CREDIT CARDS

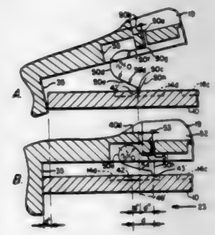
Bertrand J. C. H. de Pommery, St-Nom-La-Breteche; Gérard L. R. Petiot, Champigny S/Marne; Jean-Claude E. Vergne, Angers, and Jean-Paul C. Goupil, Sevres, all of France, assignors to Compaganie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Division of Ser. No. 105,654, Dec. 20, 1979. This application Jan. 12, 1982, Ser. No. 339,052

Claims priority, application France, Dec. 27, 1978, 78 36544; Mar. 6, 1979, 79 05761; Aug. 14, 1979, 79 20644

Int. Cl.³ H01R *13/629*

U.S. Cl. 339—75 MP **11 Claims**



1. A connector adapted to have a portable object having contact terminals on one surface engage with contact elements within the connector upon insertion therein comprising a case, a chamber within said case, an opening leading into said chamber and adapted to receive said portable object along a predetermined direction, connecting means in said chamber for electrically connecting said portable object upon insertion into said chamber, said connecting means including electrical contact elements disposed to be actuated from a first stable idle position of the connecting means to a second operating position of the connecting means to cause landing of said contact elements on respective contact terminals and establish an electrical connection therebetween upon displacement of the portable object within the chamber, each of said contact elements being flexible and having, respectively, one fixed extremity affixed to said connecting means and one free contact extremity directed towards said opening, the free contact extremity being positioned to engage its respective contact terminal on the object upon the object being inserted into the chamber, and the contact element being formed to flex upon such engagement such that the free contact extremity moves in an opposite direction to the direction of insertion of the object and such that the relative movement between the free contact extremity and the respective contact terminal is greater than said displacement of the portable object within the chamber after landing of the contact element on the respective contact terminals.

4,449,776

ELECTRICAL CONNECTOR HAVING OPPOSED LOCKING RAMP MEMBERS

Robert A. Carmo, Placentia, and Ernest W. Dietz, Torrance, both of Calif., assignors to Pacific Electricord Company, Gardena, Calif.

Filed Sep. 13, 1982, Ser. No. 416,931

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—91 R **3 Claims**

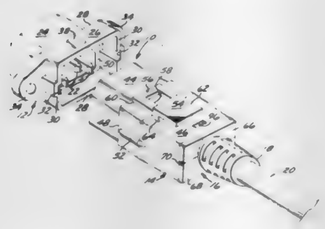
1. An electrical connector having opposed locking ramp members to resist connector and power cord separation forces, said electrical connector comprising:

a hollow first connector body including interiorly located,

axially extending electrical connector blades, and exteriorly located first ramp means;

a hollow second connector body adapted to fit within said first connector body in an insert position, said second connector body having an open end, ramp engaging means, and exteriorly located pivotable lock means adapted to ride up upon and latch behind said first ramp means in said insert position to lock said second connector body within said first connector body;

a strain relief fitting for mounting upon a power cord having axially extending electrical contacts for receiving said connector blades, said strain relief fitting including a collar; and



an insert assembly insertable into said open end of said second connector body and adapted to mount said electrical contacts, said insert assembly including a collar recess for receiving said collar and for constraining said strain relief fitting against axial movement relative to said insert assembly, said insert assembly further including exteriorly located second ramp means adapted to engage said ramp engaging means whereby axial forces on said strain relief fitting are transferred from said insert assembly to said second connector body by means of said second ramp means, and to said first connector body by means of said first ramp means.

4,449,777

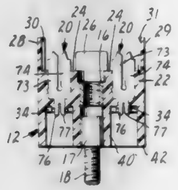
DROP WIRE CONNECTOR

Gary A. Baribeau, Troy, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 1, 1982, Ser. No. 353,050

Int. Cl.³ H01R *4/24, 13/58*

U.S. Cl. 339—103 R **11 Claims**



1. A drop wire connector comprising an insulating body member containing a central threaded socket insert and, at opposite sides thereof, two separate spring compression reserve contact elements retained within the central mass of said body, each of said elements having an upper bifurcate end for receiving and making electrical contact with an insulated copper-coated steel drop wire and a lower bifurcate end for receiving and making electrical contact with an insulated copper wire; an insulating cap member fitting over said body member and carrying a centrally positioned screw member for coacting with said socket insert, in forcing said cap against or away from said body, said cap member being doubly channeled to provide a wire receiving channel in alignment with each of said contact elements and being slotted to provide access for said elements into said channels; said body including centrally channeled upward end extensions and said cap including central end bulges slidably fitting within the channels of said end extensions and arms extending downwardly from front and rear edges; and means, including said end extensions, and said arms, for enclosing the space surrounding said upper bifurcate ends of said contact elements when said connector is in its extended open position.

4,449,778

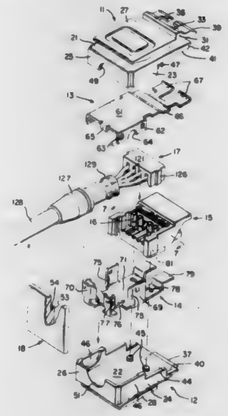
SHIELDED ELECTRICAL CONNECTOR

David Lane, Greensboro, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 22, 1982, Ser. No. 452,171

Int. Cl.³ H01R *13/648*

U.S. Cl. 339—143 R **5 Claims**



1. An electrical connector shield comprising base and closure members each stamped and formed in one piece from sheet metal with a rear braid connecting portion and a front, contact portion, the braid connecting portion of the base member comprising a panel from respective opposite sides and the rear of which upstand flanges formed respectively with cable receiving apertures opening away from the panel, respective opposite sides of each aperture being provided with resilient, inturned cable gripping lips, the braid connecting portion of the closure member comprising a panel from opposite sides of which depend flanges formed with cable receiving apertures, aligned latching detents and apertures being provided on the flanges of the base and closure members so that the closure member can be latched to the base member substantially completely surrounding and retaining a cable with exposed braid shield received as a press fit between the lips of preselected one of the apertures in the base and the contact portions being adapted to mate with contact portions of another similar electrical connector shield.

4,449,779

ELECTRICAL CONNECTOR

Michael J. Hampshire, 792 Halifax Rd., Liversedge, West Yorkshire, England

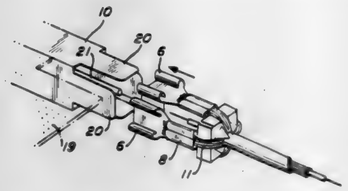
Continuation of Ser. No. 152,028, May 21, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,102

Claims priority, application United Kingdom, May 23, 1979, 7917909

Int. Cl.³ H01R *17/06*

U.S. Cl. 339—177 R **13 Claims**

1. An electrical connector having mating connector halves for use with a coaxial cable having an outer conductor comprised of a plurality of strands and a central conductor covered with an insulating sheath and surrounded by the outer conductor, wherein one connector half comprises a plurality of first connector parts each adapted to receive and be connected to one of a number of component groups into which the individual conductors of the outer sheath of a coaxial cable are split portions of each of said first connector parts being deformable



to grip and positively connect strands of the group to the respective first connector part, the other connector half comprises a plurality of second connector parts complementary to and engageable with the first connector parts, and a connector for the central conductor of the coaxial cable surrounded by said second connector parts.

4,449,780

LIGHT PIPE, LASER WINDOW AND CHARGE STOCK THEREFOR

Carl F. Swinehart, University Heights, Ohio, assignor to Harshaw/Filtrol Partnership, Cleveland, Ohio

Division of Ser. No. 241,566, Mar. 9, 1981, Pat. No. 4,341,654, which is a division of Ser. No. 931,323, Aug. 7, 1978, Pat. No. 4,277,303. This application Jul. 12, 1982, Ser. No. 397,553

Int. Cl.³ G02B *1/02*

U.S. Cl. 350—1.1 **1 Claim**

1. A laser window produced from a melt-grown ingot of an alkali metal halide by addition to the melt from about 5 ppm to about 1000 ppm by weight of said melt, of each component of a combination getter consisting essentially of at least a slightly melt-soluble reactive oxide of boron as one component, and an insoluble but active silicon dioxide as the other component, and superheating said melt for a period of time sufficient to react at least some of each component with trace impurities present in said melt, said window having a breakdown threshold greater than about 6 J/cm² as measured for a 10.6 micron pulsed laser.

4,449,781

MULTIMODE OPTICAL FIBER COUPLER

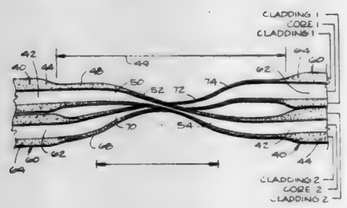
Alexander W. Lightstone, Montreal; H. Keith Eastwood, Beaconsfield, and Frank Szarka, Elmira, all of Canada, assignors to Her Majesty the Queen in Right of Canada as represented by the Minister of National Defense, Toronto, Canada

Continuation of Ser. No. 78,730, Sep. 25, 1979, abandoned. This application Nov. 20, 1981, Ser. No. 323,581

Claims priority, application Canada, Jul. 4, 1979, 331176

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.15 **11 Claims**



1. An optical fiber coupler made from at least one source fiber having a predetermined ratio of cladding thickness to core diameter, said coupler being operative to couple together at least two optical fibers each of which includes a core of a light transmitting material having a high index of refraction, and a cladding of light transmitting material having a low index of refraction, said coupler comprising;

a portion of a first optical fiber having a biconally tapered section therein, and in which portion there is a first region of fiber on which the ratio of cladding thickness to core diameter is said predetermined ratio of one of said source fibers, the core thickness being between 50 and 75 microns and the cladding thickness being between 25 and 40 microns and in which there is a second region which includes the biconically tapered section, in which second region the cladding thickness has been reduced thus decreasing said predetermined ratio to one in which the cladding thickness to core diameter is not more than 25%; and

a portion of at least one other optical fiber having a biconically tapered section therein, and in which portion of said other optical fiber there is also a first region of fiber on which the ratio of cladding thickness to core diameter is the predetermined ratio of one of said source fibers, the core thickness being between 50 and 75 microns and the cladding thickness being between 25 and 40 microns and in which there is a second region which includes said biconically tapered section of said other optical fiber, in which second region the cladding thickness has been reduced hence decreasing said predetermined ratio to one in which the cladding thickness to core diameter is not more than 25%, the biconically tapered sections of each fiber extending in contact with one another and being fused over a portion of said biconically tapered sections.

4,449,782

MODULAR, OPTICAL FIBER COMMUNICATION SYSTEM

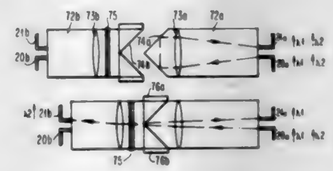
Hans-Erdmann Korth, Stuttgart, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1981, Ser. No. 258,990

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019956

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.16 **8 Claims**



1. For use in an optical communication system including an optical fiber bus, a self-collimating coupler for selectively coupling energy into or out of the bus, said coupler including:

a first component having an optical input from the bus, an optical output to the bus, and a reference fare capable of reflecting input optical energy to the output, said first component being permanently coupled to the bus;

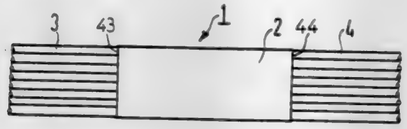
a second removable component having an optical output and a reference face, said second component being capable of being retained with at least a portion of its reference face in contact with the reference face of said first component, whereby optical energy applied at the input to said first component is coupled through both reference faces to the output from said second component.

4,449,783

OPTICAL STAR COUPLER WITH A PLANAR MIXER ELEMENT

Hans H. Witte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,870
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3011059
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.16 **13 Claims**



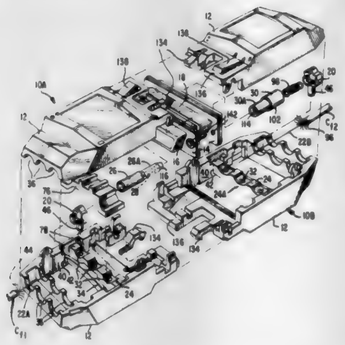
1. An optical star coupler for multi-mode light conducting fibers of a fiber optical system, said coupler including a mixing element and coupler fibers, said mixing element consisting of a planar waveguide having an input end and an output end, said ends being interconnected to two groups of said coupler fibers with a packing density of each group of coupler fibers at the input and output ends being as high as possible, said planar waveguide having a thickness being approximately equal to the diameter of each of the star coupler fibers, said coupler fibers being coupled to the input and output ends and being in the same plane with the mixing element, and each of the coupler fibers having a diameter approximately equal to a core diameter of the light conducting fibers of the fiber optical system so that substantially all of the light coupled from a fiber of the system into the coupler fiber is coupled into the mixing element and the losses of light being coupled from the mixing element through the coupler fiber to the fiber of the system are only due to losses from packing density.

4,449,784

HYBRID OPTICAL/ELECTRICAL CONNECTOR

Emma Basov, Des Plaines, and Igor Grois, Lincolnwood, both of Ill., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 22, 1981, Ser. No. 275,845
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **19 Claims**



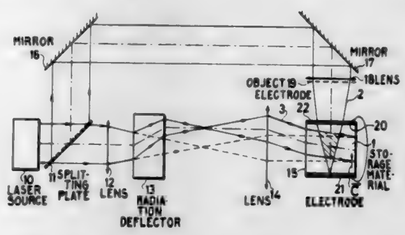
1. A hybrid optical and electrical connector comprising:
a housing for receiving an optical cable including an optical fiber and an electrical cable and having a mating end;
first clamp means in said housing for clamping at least said optical cable to said housing with an end portion of the optical fiber extending beyond said clamp means toward said mating end;
at least one electrical contact in said housing to be connected to said electrical cable and having an end exposed toward said mating end;
second clamp means in said housing to be clamped to said optical fiber end portion;
gauge means in said housing between said second clamp means and said mating end having an end exposed toward said mating end;
means supporting said second clamp means and said gauge means in said housing for movement toward and away from said mating end; and
spring means urging said second clamp means and gauge means toward said mating end.

4,449,785

MULTIPLE HOLOGRAM BULK OPTICAL STORAGE DEVICE

Jean-Pierre Huignard, and Jean-Pierre Herriau, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 11,924, Feb. 13, 1979, abandoned, which is a continuation of Ser. No. 781,450, Mar. 25, 1977, abandoned. This application Sep. 3, 1981, Ser. No. 299,224
Claims priority, application France, Mar. 30, 1976, 76 09209
Int. Cl.³ G03H 1/02, 1/28
U.S. Cl. 350—3.61 **6 Claims**



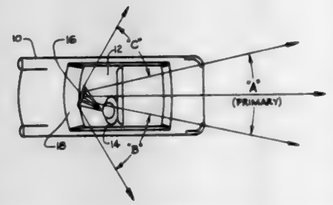
1. A multiple bulk optical holographic storage device, comprising:
a thick photosensitive electro-optical material capable of storing information by the photovoltaic effect, and having reference and object faces forming a right angle;
a source of monochromatic light;
means for splitting the monochromatic light into first and second beams;
means for forming the first beam into a collimated reference beam impinging onto the reference face with a variable optical axis with respect thereto;
a convergent optical element;
means for passing the second beam through the convergent optical element to form an object beam impinging on the object face without any zero-order stop;
means interposed between the convergent optical element and the object face for modulating the object beam with information to be recorded within the electro-optical material, the modulated object and reference beams interfering within the material so as to be recorded as variations in refractive index within the material; and
transparent electrodes attached to all of the faces of said material and electrically short circuited to one another so as to maintain a zero electrical potential difference therebetween to prevent elementary storage zones of said material from tending toward saturation after several successive storage operations.

4,449,786

REARVIEW MIRROR

Robert C. McCord, 6220 Burton, Romulus, Mich. 48174

Continuation-in-part of Ser. No. 916,598, Jun. 19, 1978, Pat. No. 4,264,144. This application Apr. 24, 1981, Ser. No. 257,490
Int. Cl.³ G02B 5/10
U.S. Cl. 350—293 **33 Claims**



1. A mirror having a viewing surface with a curvature substantially in accordance with the following mathematical relationship, expressed in incremental field angular relationships:

$$\Delta\delta_n = \Delta\delta_{(n-0)}[1+X]$$

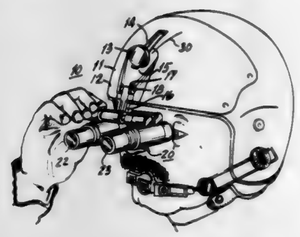
in which (n) defines the point of interest along a substantially horizontal line of the mirror's surface, beginning at the optical design axis at which point the line of sight of an observer located substantially in the normal operator's position with respect to the mirror is reflected straight rearward with respect to the vehicle's forward direction; or beginning at the interface with a primary viewing surface, wherein: (n−1) defines the point of interest immediately preceding (n); δ_n defines the accumulated field angle from the optical design axis of the mirror, or from the interface with a primary viewing surface, to the point of interest (n); $\Delta\delta_n$ defines the incremental field angle between (n) and (n−1); X is the constant factor generating a constant rate of horizontal optical distortion with respect to $\Delta\delta_{(n-1)}$, which is chosen to produce a desired total field of view across the variable-radius surface, all other factors remaining unchanged; and $\Delta\theta$ is the constant vision angle increment to which all $\Delta\delta_n$ values are related.

4,449,787

NIGHT VISION IMAGING SYSTEM ADAPTED FOR HELMET MOUNTING

James H. Burbo; Louis P. Hartman, both of Roanoke, Va.; Douglas M. Spranger, New York, N.Y.; Malcolm J. Brookes, New York, N.Y., and Paul J. Mulhauser, New York, N.Y., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 171,223, Jul. 22, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,727
Int. Cl.³ G02B 23/12
U.S. Cl. 350—538 **25 Claims**



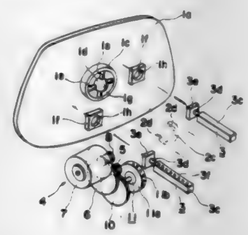
1. A night vision imaging apparatus for mounting on a helmet comprising:
a helmet mount assembly secured to said helmet at a front surface above the position of the eyes of a user when said helmet is being worn, said assembly containing a first pivot receptacle positioned on said assembly closest to the eyes of said user,
an image intensifier assembly having a first and a second tubular housing each containing a night vision imaging optical system and spaced apart according to the separation of the eyes of said user, said assembly including a central support arm centrally positioned between said tubular housings and having a second pivot means for engaging said first pivot receptacle and including locking means for enabling said intensifier assembly to be "flipped-up" and locked in position away from the eyes of said user and to maintain said position and to be "flipped-down" by said user from said locked position to cause said tubular housings to be respectively positioned in front of said user's eyes,
said first pivot receptacle comprising a "U" shaped receptacle, and said second pivot means comprising a pivot rod coupled to the top of said central support arm and transverse thereto for coacting with said "U" shaped receptacle, and at least one locking shoulder positioned beneath said rod and adapted to coact with said "U" shaped receptacle when said intensifier assembly is positioned in the "flipped-up" mode.

4,449,788

MAGNETIC ANGLE ADJUSTING ARRANGEMENT FOR MIRROR OF MOTOR VEHICLE

Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Mar. 16, 1982, Ser. No. 358,795
Claims priority, application Japan, Mar. 31, 1981, 56-47525[U]
Int. Cl.³ G02B 5/08; F16H 13/12
U.S. Cl. 350—289 **6 Claims**



1. An angle adjusting arrangement for mirror of a motor vehicle and the like, comprising: a mirror case; a mirror in said mirror case; a casing which is fixedly provided within said mirror case at a position behind a mirror; a back cover member supporting the mirror; means pivotally connecting the central portion of the rear face thereof to said casing; mirror push-pull control shafts each loosely connected, at corresponding ends thereof, to the back cover member, at an upper or lower side, and at a right or left side with respect to said central pivotal connection of the back cover member; and driving mechanisms coupled to the other ends of said push-pull control shafts for selective advancing and retraction of said mirror push-pull control shafts in the axial direction thereof, each of said push-pull control shafts including a main portion which is made of magnetic material and which has its one surface alternately magnetized in N and S poles in the longitudinal direction thereof, each of said driving mechanisms having an operating plate provided with a peripheral surface made of magnetic material, and connected for rotation to said driving mechanism and confronting said magnetized surface of said push-pull control shaft, said operating plate having said peripheral surface alternately magnetized in N and S poles so as to correspond to said magnetized surface of said push-pull control shaft

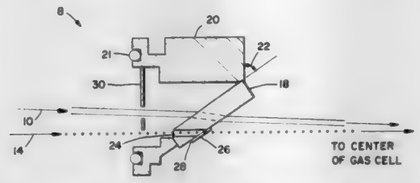
for magnetic coupling between said operating plate and said push-pull control shaft.

4,449,789

VACUUM TIGHT WINDOW THROUGH WHICH A HIGH POWER LASER BEAM AND A HIGH ENERGY PARTICLE BEAM CAN BE TRANSMITTED WITHIN CLOSE PROXIMITY TO EACH OTHER

Wayne D. Kimura, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 9, 1982, Ser. No. 416,526
Int. Cl.³ G02B *27/00*
U.S. Cl. 350—319 **9 Claims**



1. A vacuum-tight window for installation in a gas cell through which a high-power laser beam and a high-energy particle beam can be transmitted within close proximity to each other comprising:

(a) a cylindrical holding block having a central bore along its longitudinal axis aligned parallel to the longitudinal axis of said gas cell, said holding block positioned and sealed within said gas cell by at least one O-ring;

(b) a disc of a first material capable of transmitting laser beams and having a drilled hole near its perimeter at a predetermined angle to the surface of said disc, said disc of said first material positioned within said central bore of said holding block such that said disc of said first material completely spans said central bore and such that the longitudinal axis of said drilled hole is parallel to said longitudinal axis of said central bore;

(c) a circular film of a second material about said drilled hole on said disc of said first material on its surface internal to said gas cell;

(d) a disc of said second material bonded over said drilled hole and within said circular film pattern; and

(e) a disc of a third material bonded to said disc of said second material and to said circular film of said second material, said disc of said third material having a thin film of said second material about its rim completely touching said circular film on said disc of said first material.

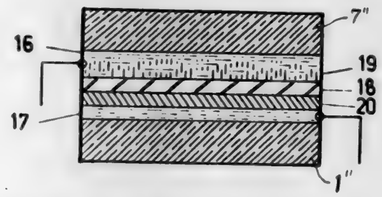
4,449,790

ELECTROCHROMIC LAYER SYSTEM

Werner Thöni, Maienfeld, Switzerland, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Jun. 23, 1981, Ser. No. 276,490
Claims priority, application Switzerland, Jul. 7, 1980, 5183/80
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **12 Claims**

1. An electrochromic layer system, comprising a pair of spaced apart electrodes, a layer of an electrochromic material between said electrodes, at least one additional layer having a matrix of solid inorganic substance acting as a carrier of an electrolyte arranged on said electrochromic material layer between said material layer and one of said electrodes, at least one additional layer being transparent, and free atoms of a polyvalent metal embedded between said at least one additional layer and the one of said electrodes forming a finely dispersed mixture with the matrix of solid inorganic substance near the one of said electrodes.

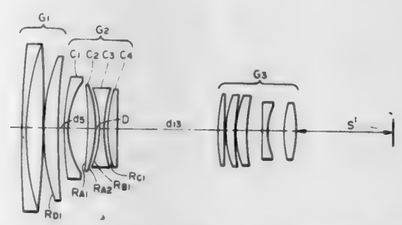


4,449,791

THREE-GROUP ZOOM LENS

Hidenori Terasawa, Kawasaki, and Kiyoshi Hayashi, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 14, 1981, Ser. No. 292,436
Claims priority, application Japan, Aug. 22, 1980, 55-115373
Int. Cl.³ G02B *15/16*
U.S. Cl. 350—427 **10 Claims**



1. A three-group zoom lens having, in succession from a remoter imaging conjugate plane side, a convergent first group, a divergent second group and a convergent third group and in which by moving said second group and said third group in different manners of movement, the focal length of the entire system can be varied while maintaining the image plane constant, characterized in that said second group has, in succession from said first group side, a first component including at least one negative meniscus lens having its convex surface facing said first group, a second component which is a positive meniscus lens having its concave surface facing said first group, a third component which is a negative lens, and a fourth component which is a positive lens, and further characterized in that said zoom lens satisfies the following conditions:

$$|1.5f_{II}| < f_A < |4.0f_{II}| \quad (1)$$

$$-5.0 < \frac{R_{A2} + R_{A1}}{R_{A2} - R_{A1}} < -1.5 \quad (2)$$

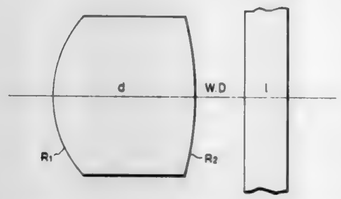
where f_A represents the focal length of the positive meniscus lens which is the second component, R_{A1} represents the radius of curvature of the surface of said second component which is adjacent to said first group, R_{A2} represents the radius of curvature of the surface of said second component which is adjacent to said third group, and f_{II} represents the combined focal length of said second group.

4,449,792

LARGE-APERTURE SINGLE LENS WITH ASPHERICAL SURFACES

Norikazu Arai, Komae; Shozo Ishiyama, and Tadashi Kojima, both of Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,863
Claims priority, application Japan, Oct. 31, 1980, 55-152158
Int. Cl.³ G02B *13/08*
U.S. Cl. 350—432 **6 Claims**



1. A large-aperture single lens with aspherical surfaces having both of a first surface and second surface formed as aspherical surfaces having positive refractive powers, said single lens with aspherical surfaces satisfying the following conditions:

$$1 < \frac{R_1}{(n-1)f} < 1.7$$

$$-3 < k_1 < 0$$

where,

R_1: Radius of curvature of first surface ($=1/c_1$)
k_1: Coefficient of cone of first surface
f: Focal length of lens
n: Refractive index of lens

when said aspherical surfaces are expressed by the following formula:

$$x = \frac{ch^2}{1 + \sqrt{1 - (1+k)c^2h^2}} + \sum_{i=2} A_{2i}h^{2i}$$

where,

x: Distance of point on aspherical surface at height h from optical axis from tangential plane at apex of aspherical surface
h: Height from optical axis
c: Curvature at apex of aspherical surface ($=1/R$)
k: Constant of cone
A_{2i}: Coefficient of aspherical surface of 2ith order (i represents an integer of 2 or over).

4,449,793

INVERTED TELEPHOTO TYPE WIDE ANGLE LENS SYSTEM

Akiyoshi Nakamura, Sakai, and Hisashi Tokumaru, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Higashi, Japan

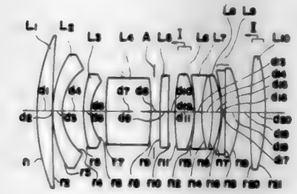
Filed Jul. 30, 1981, Ser. No. 288,286
Claims priority, application Japan, Aug. 12, 1980, 55-111352
Int. Cl.³ G02B *13/04*
U.S. Cl. 350—458 **19 Claims**

1. An inverted telephoto type wide angle lens system comprising:

an aperture stop;

a first lens group located at the object side of the aperture stop; and

a second lens group located at the image side of the aperture stop, the second lens group including at least two movable focusing lens units with at least one variable air space being located between the two movable focusing lens units, the focusing being practiced by only the movement



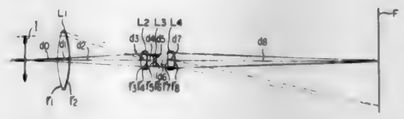
of the focusing lens units to cause a change in the variable air space, said system including other lens units which remain stationary.

4,449,794

IMAGING OPTICAL SYSTEM

Kenji Yamada, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 324,989
Claims priority, application Japan, Dec. 10, 1980, 55-173122
Int. Cl.³ G02B *9/34*
U.S. Cl. 350—472 **5 Claims**



1. An imaging optical system for photographing an object or a subtantially flat object image at a short distance, including, in succession from the object side, a first positive lens for converging light rays from the object or the substantially flat object image, a second positive lens having of meniscus shape convex toward the object side and disposed with a great air space from said first positive lens, a biconcave negative lens having its surface of sharper curvature on the image side, and a third positive lens having its surface of sharper curvature facing the image side.

4,449,795

STEREOSCOPE WITH TONGUE AND GROOVES

Toshikatsu Yamada, Tokyo, Japan, assignor to k. k. Yamada Kogaku Seisakusho, Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,929
Claims priority, application Japan, Aug. 21, 1981, 56-124536[U]; Aug. 21, 1981, 56-124535[U]
Int. Cl.³ G02B *21/22, 27/02*
U.S. Cl. 350—516 **3 Claims**

1. A stereoscope comprising:

a. a frame;

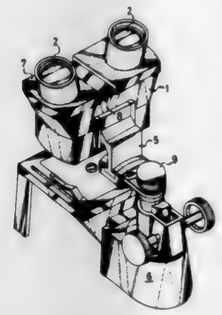
b. an objective lens having an optical axis, said objective lens being mounted in said frame;

c. a pair of eye pieces each having an optical axis which intersect said objective lens at points laterally spaced from its optical axis;

d. a pair of carriers, one for each of said eye pieces; and

e. tongue and grooves included on the said frame and carriers for mounting said carriers on said frame and for mov-

ing said carriers relative to said frame to adjust the distance between the optical axis of said eye pieces and their



points of insection with said objective lens relative to its optical axis.

4,449,796

STREAMLINED ADJUSTABLE EXTERIOR REARVIEW MIRROR

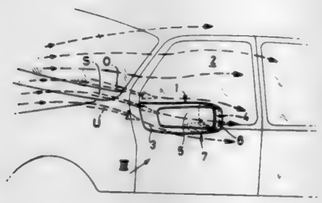
Lutz J. Janssen, Munich, and Patrick Le Quement, Cologne, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 26, 1982, Ser. No. 401,448

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132400

Int. Cl.³ G02B *5/08, 7/18*

U.S. Cl. 350—582 **2 Claims**



1. An exterior rear-view mirror for motor vehicles, having a streamlined housing including a mirror adjustable therein, and wherein the flow around the rear-view mirror is improved by air-guide devices located on the housing in the form of air-guide surfaces, characterized in that the streamlined housing is arranged to rest against the front side window and consists of a fixed housing part circumscribing the mirror and of a movable housing part adjoining said fixed housing part and carrying the mirror, the fixed housing part being provided, at least in its lower region, with an air-guide surface, and the movable housing part having a drawn-in outer contour and the air-guide surface being arranged to prevent air flow separation from this outer contour.

4,449,797

BINOCULAR OPHTHALMOSCOPE

Jakob Kocher, Wiesenweg 19, 7401 Dusslingen, and Michael Foerster, Borbeck 23, 4300 Essen 16, both of Fed. Rep. of Germany

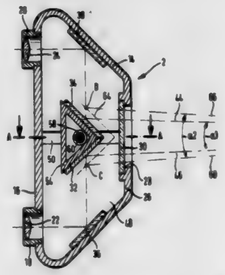
Filed May 19, 1981, Ser. No. 265,121

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020750

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—205 **9 Claims**

1. In a binocular ophthalmoscope for indirect observation of an eye to be examined, the ophthalmoscope having an observation unit, an illumination unit, means for connecting said observation unit to said illumination unit, and means including means for mounting two mirrors in a wedge in said observation unit for reflecting two observation beams from said eye to be examined respectively to the eyes of the observer, said observation beams defining an observation plane, and wherein said illumination unit includes a light source and at least one mirror



for directing the light from said light source along an illumination beam to said eye to be examined, the improvement comprising: means for enabling displacement of said means for mounting said two mirrors within said observation unit in said observation plane towards and away form said eyes of said observer and means for enabling movement of said illumination beam towards and away from said observation plane.

4,449,798

EYE FUNDUS OBSERVATION APPARATUS

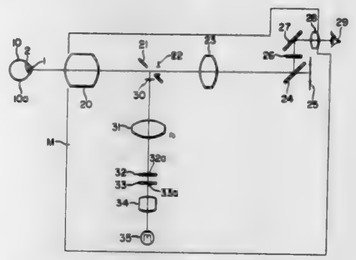
Masao Nohda, Yokosuka, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 353,910

Claims priority, application Japan, Mar. 27, 1981, 56-44122

Int. Cl.³ A61B *3/14*; G03B *29/00*

U.S. Cl. 351—207 **6 Claims**



1. In an eye fundus observation apparatus wherein light-intercepting members for eliminating flare are provided at predetermined positions in an illumination optical path which are substantially conjugate with the cornea and the front surface of the crystalline lens of an eye being examined in a condition in which said apparatus is focused to the fundus of the eye, the improvement comprising:

an observation opening formed at a position substantially conjugate with a position between the cornea and the front surface of the crystalline lens of the eye whereat the magnification of the reflected image on the rear surface of the crystalline lens is approximately one-to-one magnification in a condition in which said apparatus is focused to the fundus of the eye.

4,449,799

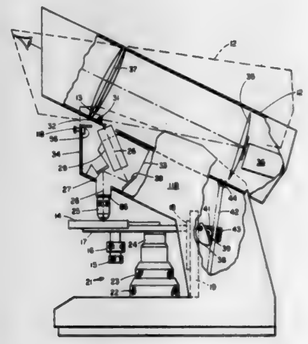
OPTICAL PROJECTION VIEWING SYSTEM

Roger S. Turner, 620 Carpenter La., Philadelphia, Pa. 19119

Filed May 20, 1982, Ser. No. 380,107

Int. Cl.³ G02B *21/36*

U.S. Cl. 353—39 **25 Claims**



1. An optical projection viewing system comprising:

a fixed base,

an object supporting work station,

a viewing housing,

a viewing screen fixed in said housing for displaying a projected image thereon,

said viewing housing being mounted for pivotal movement relative to said base on pivot means remote from said viewing screen to provide vertical arcuate displacement of said viewing screen and height adjustment for a person viewing said screen,

an optical system comprising a projection lens and an objective lens mounted intermediate said viewing screen and said work station,

light bending means pivotally mounted on a fixed axis at a fixed distance from said viewing screen and said objective lens,

said light bending means further comprising adjusting means for maintaining the optical path of said viewing system relatively unchanged with respect to said viewing housing, and

said pivot means being remote from said viewing screen and intermediate said base and said viewing housing for pivoting said viewing housing to provide said vertical height adjustment of said viewing screen.

4,449,800

PORTABLE OVERHEAD PROJECTOR

Vincent E. De Longis, Yonkers, N.Y., and Henry Kyhl, Leonia, N.J., assignors to buhl Industries, Inc., Hawthorne, N.J.

Filed Jan. 26, 1983, Ser. No. 461,164

Int. Cl.³ G03B *21/30*

U.S. Cl. 353—119 **10 Claims**

1. A portable overhead projector comprising:

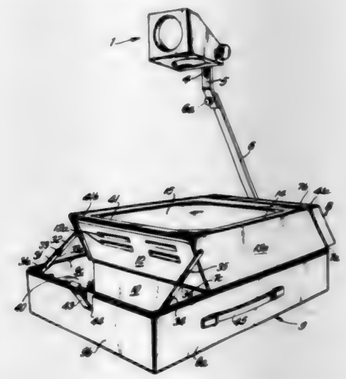
a housing having an open top, a first side wall, a second side wall, a third side wall, and a fourth side wall, said sidewalls defining said housing, said first side wall and said second side wall being opposite each other, and said third side wall and said fourth side wall being opposite each other;

a projecting lamp disposed in the housing;

a planar lens;

lens mounting means for mounting the lens on the housing for pivotal movement from a storage position wherein the lens is adjacent the open top of the housing to an operative position wherein the lens is spaced above the open top of the housing and the projecting lamp, said lens mounting means including a rectangular lens frame, a first member hingedly connected to one edge of the frame and to the upper portion of the first side wall, and a second said member hingedly connected to the opposite edge of the frame and to said housing at a point spaced from said second side wall;

a projector head assembly;



projector mounting means for operationally mounting the projector head assembly on the housing when the lens is in the operative position to dispose the projector head assembly thereabove; and

a cover connectable to the housing for covering the lens when in the storage position.

4,449,801

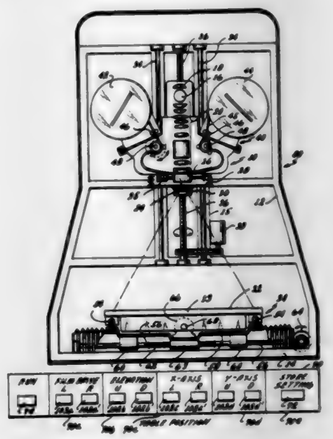
METHOD AND PROJECTING TYPOSITOR FOR COMPOSING TYPOGRAPHICAL ARTWORK ON COLOR SENSITIVE PHOTOGRAPHIC MEDIUM

John W. Millerburg, 2057 Castilian Dr., Hollywood, Calif. 90068

Filed May 21, 1982, Ser. No. 380,782

Int. Cl.³ B41B *13/00*

U.S. Cl. 354—12 **14 Claims**



1. A method of composing a typographical layout on a color sensitive photographic medium comprising the steps of:

projecting the image of a selected type character onto a projection surface;

positioning the projected image at a selected location on the projection surface;

repeating said projecting and positioning steps to visually compose a desired typographical layout;

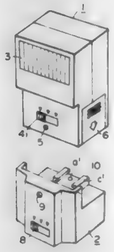
recording the identity and position of each projected type character in the composed layout;
placing a color sensitive photographic material onto said projection surface; and
duplicating the recorded composition on said color sensitive photographic material.

4,449,802

ADAPTER DEVICE

Zenzo Nakamura, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 250,281, Apr. 2, 1981, abandoned, which is a division of Ser. No. 79,598, Sep. 27, 1979, Pat. No. 4,315,679. This application Jun. 21, 1983, Ser. No. 505,024
Claims priority, application Japan, Dec. 25, 1978, 53-163545; Apr. 28, 1979, 54-57153[U]; Apr. 28, 1979, 54-57154[U]; Apr. 28, 1979, 54-57155[U]; Apr. 28, 1979, 54-57156[U]
Int. Cl.³ G03B *7/099, 15/05*
U.S. Cl. 354—416 **16 Claims**



1. An adapter device for use with a light adjusting flash device and a camera, said flash device having charge completion signal forming means for putting out a charge completion signal when the charge level of a capacitor for flashlight emission reaches a predetermined value, and having light adjusting circuit means for stopping the flashlight emission when the quantity of light reflected from an object and received by a light receiving element reaches a predetermined level, and said camera having a day-light aperture signal forming circuit for forming an aperture value signal for day-light mode, an aperture control circuit for controlling an aperture on the basis of a signal from the day-light aperture signal forming circuit in a day-light mode and for controlling an aperture on the basis of a flash aperture value signal suitable for flash photography in flashlight mode, an aperture control mode selection circuit for selecting one of the day-light and flashlight modes, a ground terminal, a first external terminal being connected to said aperture mode selection circuit, second external terminal being connected to said aperture control circuit, and a voltage source being connected between said ground terminal and said first external terminal, for applying a voltage to at least one of said aperture control and mode selection circuits; said adapter device comprising:
(a) first terminal means adapted to be connected to said charge completion signal forming means in the flash device;
(b) second terminal means adapted to be connected to said mode selection circuit in the camera;
(c) transistor means having a control electrode connected to said first terminal means, a first main electrode connected to a ground and a second main electrode connected to said second terminal means, said transistor means being turned on in response to an application of said charge completion signal to said control electrode to change the electrical condition at said second terminal means to operate said mode selecting circuit so that it selects the flashlight mode selection;
(d) flashlight aperture signal forming means for forming said flash aperture value signal; and
(e) third terminal means connected to said flashlight aperture signal forming means and adapted to be connected to said second external terminal for transmitting said flash aperture value signal to said aperture control circuit.

4,449,803

INDICATING APPARATUS FOR ELECTRONIC FLASH SYSTEM OF TTL LIGHT MEASUREMENT TYPE

Masanori Yamada, and Akira Hiramatsu, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,618
Claims priority, application Japan, Nov. 13, 1980, 55-159906
Int. Cl.³ G03B *7/16*
U.S. Cl. 354—416 **8 Claims**



5. An annunciating apparatus for use with an electronic flash system, said flash system including trigger means for generating a trigger signal at a time of test light emission, and a light producing means responsive to the trigger signal for initiating the operation of said light producing means whereby light is emitted therefrom, said annunciating apparatus comprising:
(a) light sensitive means arranged to receive light passed through the photographic taking lens and being operative to produce a first electrical signal corresponding to an amount of light from said scene;
(b) signal generating means for producing a second electrical signal corresponding to an aperture value preset on a camera at the time of test light emission for said electronic flash system;
(c) comparison means for receiving said first and second electrical signals and for producing a control signal when said first electrical signal has reached a predetermined level;
(d) light terminating means responsive to said control signal for initiating the operation of said light terminating means whereby said emitted light is terminated; and
(e) annunciating means responsive to said control signal and for annunciating whether a correct exposure obtains.

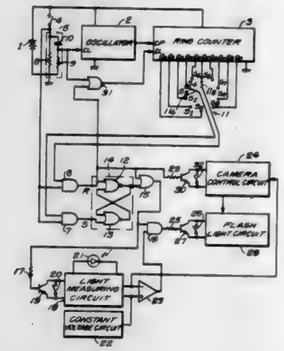
4,449,804

INTERVAL TIMER DEVICE

Yoshitaka Watanabe, Tokyo, and Jiro Kazumi, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,561
Claims priority, application Japan, May 23, 1981, 56-78398
Int. Cl.³ G03B *15/05, 17/40*
U.S. Cl. 354—418 **5 Claims**

2. A photographic system comprising:
(a) interval timer for producing a first signal with a certain interval and producing a second signal with a certain time delay after said first signal is produced;
(b) flash device having a main capacitor, a flash means and a charging means for charging the main capacitor;
(c) photographic operation control means for performing photographic operation in response to said second signal; and
(d) detecting means for detecting an intensity level of object light and producing a signal when the intensity level is lower than the predetermined level, said charging means becomes operative and performing the operation in response to said first signal when the detecting means produces said signal.

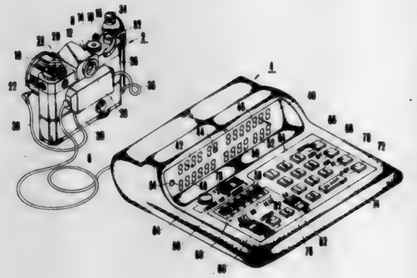


4,449,805

DATA REGISTRATION DEVICE

Nobuaki Sakurada, Yokohama; Masaharu Kawamura, Tokyo; Shohei Ohtaki, Yokohama; Soichi Nakamoto, Tokyo, and Nobuhiko Shinoda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 896,614, Apr. 14, 1978, Pat. No. 4,169,186, which is a continuation of Ser. No. 789,838, Apr. 22, 1977, abandoned, which is a continuation of Ser. No. 650,900, Jan. 21, 1976, abandoned. This application Jul. 20, 1981, Ser. No. 285,433
Claims priority, application Japan, Jan. 24, 1975, 50-10284
The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
Int. Cl.³ G03B *17/24*
U.S. Cl. 354—105 **7 Claims**



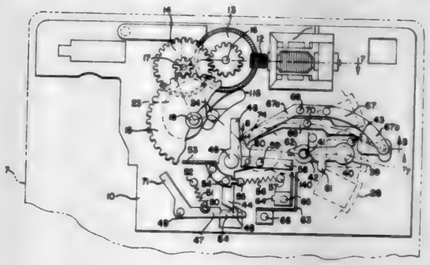
1. For a camera with a release and defining a film recording location, a camera data recording system, comprising:
(a) ten-key means to set numerical information,
(b) blank information setting means to set blank space information,
(c) a memory circuit for memorizing the numerical information and the blank information, said memory circuit having a plurality of memory portions,
(d) a light emitting display circuit for directing the numerical information memorized in said memory circuit toward the recording location,
said display circuit having a plurality of alpha-numeric display elements which can emit light for displaying the numerical information with a plurality of digits, each of the display elements being arranged to display numerical information memorized in a prescribed memory portion, and
(e) a control circuit having a programming portion containing a program for controlling the recording of data, said program containing an instruction to have the numerical information and the blank space information memorized in prescribed memory portions in sequence as the ten-key means and the blank information setting means are operated, and an instruction to have the numerical information recorded on the recording surface with the numerical information memorized in each memory portion displayed by a prescribed alpha-numeric display element designated by each memory portion in response to a release action of the camera and, at the same time, to have the blank space information prevent the display element assigned to the memory portion in which said blank space information is memorized from performing a light emitting operation.

4,449,806

FILM ADVANCE MECHANISM FOR DISC CAMERA

Wan C. Wong, North Point, Hong Kong, and Shigeru Oshima, Tokyo, Japan, assignors to W. Haking Enterprises Limited, Hong Kong, Hong Kong

Filed Jun. 1, 1983, Ser. No. 499,906
Int. Cl.³ G03B *1/00, 19/02*
U.S. Cl. 354—121 **14 Claims**



1. In an electrically driven still camera having a housing with a film chamber defined in part by a rear film chamber wall having a projecting hub support adapted to received a disc film cassette, said film cassette comprising a thin housing with an exposure window and having a film disc rotatable therein, said film disc having a central hub portion with a generally circular aperture to fit over said hub support and an eccentrically disposed slot, said film disc having a peripheral notch opposite each film frame, and motor drive means disposed within said housing for rotatingly advancing said film disc to present successive frames thereof for exposure in said window to image-forming light, the improvement wherein said hub support on the outer face of said rear chamber wall forms a stationary or non-driven pivot support for said film disc hub portion and there is provided in said housing a film disc driving member driven by said motor drive means and having a portion for engaging one of said peripheral notches of said film disc and advancing said film disc one frame distance after each frame exposure; and sensing means on the portion of said rear chamber wall disposed opposite said eccentric film disc hub slot for detecting the presence of said film disc slot only after the last frame of said film disc has been moved opposite said exposure window; and control means responsive to said sensing means for detecting the presence of said hub disc slot and disabling said motor means so as to prevent further film advancement when said eccentric slot is advanced to a position indicative of an end-of-film condition.

4,449,807

AUTOMATIC SYSTEM AND INTERCHANGEABLE OPTICAL INSTRUMENT THEREFOR

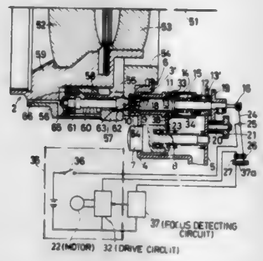
Yukio Miki, and Takeshi Egawa, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 7, 1982, Ser. No. 366,323

Claims priority, application Japan, Apr. 18, 1981, 56-58976; Apr. 23, 1981, 56-61938; Apr. 24, 1981, 56-63103

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—195.1 **22 Claims**



1. An optical apparatus employing an automatic focusing system comprising:

an optical instrument main body having driving means for automatic focusing operation;

an interchangeable optical instrument releasably mounted on said main body and having an optical system defining an optical axis and driven means driveable by said driving means for moving the optical system;

position restricting means for restricting mutual positions of said interchangeable optical instrument and said main body when said interchangeable optical instrument is mounted on said main body;

a rotatable driving shaft provided in said main body so as to extend in parallel with said optical axis of said optical system and connected to said driving means to be rotated thereby;

a rotatable driven shaft extending in parallel with said optical axis of said optical system and connected to said driven means for driving the same and disposed in said interchangeable optical instrument to align with said driving shaft when said interchangeable optical instrument is mounted on said main body;

clutch portions provided on respective end faces of said driving shaft and said driven shaft confronting each other so as to be connected with each other;

supporting means for supporting said driving shaft movably between a connecting position where said clutch portions are connected with each other and a disconnecting position where said clutch portions are disconnected from each other;

urging means for urging said driving shaft to said connecting position when said interchangeable optical instrument is mounted on said main body; and

manual operating means operable for moving said driving shaft to said disconnecting position.

4,449,808

ELECTROSTATIC DETACK APPARATUS AND METHOD

Cristian O. Abreu, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1982, Ser. No. 385,624

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR **4 Claims**

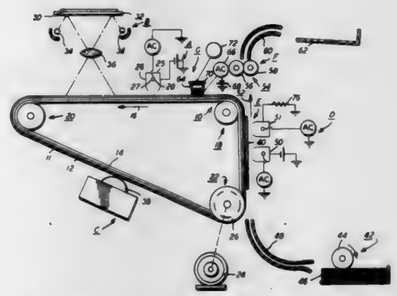
1. In a xerographic reproduction machine, apparatus for partially neutralizing charge on the backside of a copy sheet electrostically adhered to a photoconductive surface, said apparatus comprising:

a dicorotron electrode including a conductive wire having an insulative outer coating, said coating being sufficiently thick that with an a.c. voltage applied to said conductive wire there is substantially no net d.c. current flow from the wire in the absence of an external electrostatic field;

a conductive shield;

a resistor operatively connecting said shield to ground; and

means for moving said copy sheet with charge on its backside past said dicorotron electrode whereby an external electrostatic field is established between said conductive shield and said copy sheet thereby causing a net d.c. current to flow from said dicorotron electrode to said copy sheet and through said resistor via said shield whereby the voltage drop across said resistor provides a suitable bias voltage for said shield.



4,449,809

DRIVE UNIT MOUNTING MECHANISM FOR REPRODUCING APPARATUS

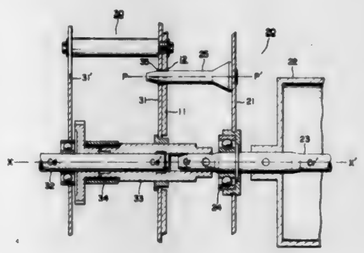
Takashi Tamura, Higashimine, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,820

Claims priority, application Japan, Dec. 28, 1981, 56-197905

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 DR **3 Claims**



1. In a reproducing apparatus having a machine frame, a drive unit provided at one side of said machine frame and a driven member provided at the other side of said machine frame, a drive unit mounting mechanism comprising: a drive shaft projected from said drive unit through said machine frame and adapted to drive said driven member; an insertion pin projected from a carrier for carrying said driven member and insertion holes formed in said machine frame and in said drive unit so as to receive said insertion pin when said carrier is mounted on said machine frame to connect said drive shaft and said driven member with said drive unit correctly aligned with said machine frame.

4,449,810

ELECTROPHOTOGRAPHIC COPYING MACHINE WITH MEANS FOR MIXING AND REMOVING TONER AND AN INTEGRAL EXPOSURE PLATE

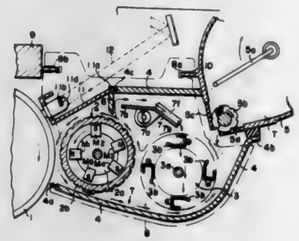
Masumi Ikesue, Tokyo, and Nobuyuki Yanagawa, Chigasaki, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 12, 1982, Ser. No. 397,229

Claims priority, application Japan, Jul. 10, 1981, 56-107798; Jul. 15, 1981, 56-110353

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—3 DD **10 Claims**



1. In a dry type development apparatus comprising (1) a developer container for holding a two-component type toner therein, disposed near a photoconductor on which latent electrostatic images are formed, (2) a developer replenishment tank, (3) a development roller, disposed within said developer container, comprising a rotatable non-magnetic sleeve and inner magnets which are supported stationarily within said non-magnetic sleeve, said nonmagnetic sleeve being in proximity to the peripheral surface of said photoconductor and capable of forming a magnetic brush thereon from which the toner is supplied to the latent electrostatic image-bearing photoconductor for development of the latent images during the rotation of said non-magnetic sleeve, (4) a rotatable bucket wheel disposed near said developer roller in the development container, for supplying the toner to said development roller, which bucket wheel rotates and scoops up the toner which flows from a lower portion of said development roller along the bottom of said development container and supplies the scooped up toner to the development roller, and (5) a doctor blade which is fixed to a stationary portion of the development apparatus and is directed towards the peripheral surface of said non-magnetic sleeve of said development roller so as to form thereon a toner layer with a predetermined thickness by scraping the excess toner off said toner layer,

the improvement wherein said development roller and said bucket wheel are rotated in the same direction, and the toner which flows from the lower portion of said developer roller to the lower buckets of said bucket wheel is carried upwards by said bucket wheel towards the upper portion of said development roller,

and wherein said apparatus further comprises a separator which is disposed near to, but spaced apart from, said doctor blade and extends over said bucket wheel for guiding the toner scrapped off by said doctor blade away from the development roller onto said bucket wheel or to said developer container, and said doctor blade is disposed with a positive rake angle with respect to the perpendicular to the tangent to said development roller at a point of nearcontact therewith midway between a pair of inner magnets of said development roller,

whereby the toner scraped off the toner layer by said doctor blade is carried onto said separator, and is returned onto said bucket wheel or to said development container, and, in the meantime, the toner deposited in the form of a toner layer on said development roller is carried to a development section of said photoconductor for development of latent electrostatic images formed on said photoconductor, and the excess toner which is not used for the development is carried below said development roller and is then carried along the bottom of said developer container towards said bucket wheel.

4,449,811

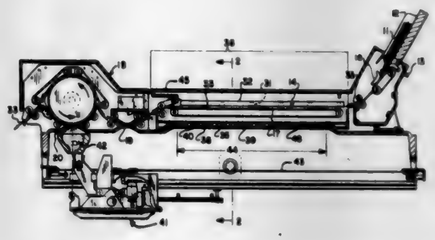
PLATEN COVER

Frank A. Betron, Plano; James W. Davis, Richardson; Barry C. Kockler, Lewisville, and Lonnie K. Spears, Murphy, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 355,975

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **9 Claims**



1. In a copying machine comprising a frame, a platen mounted on said frame for exposing bulky documents, a scan station mounted on said frame separate from said platen for exposing sheet-type documents, sheet transport means for transporting said sheet-type documents to said scan station, a platen cover for covering said platen, means pivotally mounting said platen cover on said frame, and counter-balancing means acting between said frame and said platen cover for aiding in the lifting of said platen cover; the improvement wherein said means mounting said platen cover pivots along an axis parallel to the direction of movement of sheet-type documents through said transport means, said transport means includes a plurality of transport belts and pressure means for holding said sheet-type documents against said belts during their movement through said transport means, said transport means is mounted within said platen cover and is covered by a lid which is detachably latched within said platen cover and which is pivotally attached to said frame for pivotal movement about the same axis as said cover for opening while said platen cover is closed and, linkage means mounted between said platen and said cover for supporting said pressure means so that when said lid is pivoted relative to said cover said pressure means is removed from said transport belts for removing jammed documents therefrom.

4,449,812

PAPER LEAF HANDLING APPARATUS

Katsushi Furuichi, and Naomi Takahata, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1981, Ser. No. 311,448

Claims priority, application Japan, Oct. 17, 1980, 55-145272; Oct. 17, 1980, 55-145276; Oct. 17, 1980, 55-145294; Oct. 17, 1980, 55-145298; Dec. 18, 1980, 55-180199

Int. Cl.³ G03G *15/00*

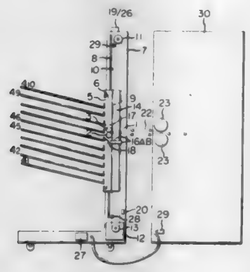
U.S. Cl. 355—14 SH **21 Claims**

1. A paper leaf handling apparatus, comprising:

a paper leaf receiving unit having a plurality of trays;

moving means for moving said paper leaf receiving unit upwardly or downwardly, to position said plurality of trays in alignment with a paper leaf carry-out port so that paper leaves are received into said plurality of trays;

means for preventing said plurality of trays from falling; means for releasing said preventing means; and



control means, responsive to the operation of said releasing means, for causing said moving means to initiate the downward movement of said paper leaf receiving unit.

4,449,813

COLLATING APPARATUS FOR COPYING MACHINE

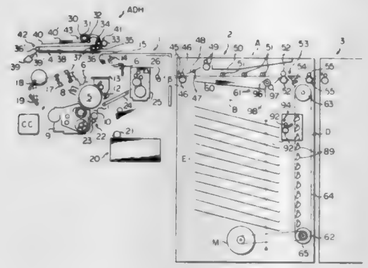
Hideo Kikuchi; Sunao Ikeda; Yohtaro Kakitani; Kunio Hibi, and Tugio Okuzawa, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 167,993, Jul. 14, 1980, abandoned. This application Jan. 3, 1983, Ser. No. 455,138

Claims priority, application Japan, Jul. 19, 1979, 54-90928; Jul. 31, 1979, 54-97872; Sep. 29, 1979, 54-126002

Int. Cl.³ B65H *7/02*; G03G *15/00*

U.S. Cl. 355—14 R **7 Claims**



1. A collating apparatus including a plurality of bins, deflector means for deflecting sheets into selected bins, feed means for feeding the sheets to the deflector means and discharge sensor means for sensing discharge of sheets from the deflector means into the bins, characterized by comprising:

sheet number storage means for storing a number representing the quantity of sheets to be collated;

discharge counter means for counting a number of sheets discharged into the bins;

comparator means for comparing the number of sheets discharged into the bins with the number of sheets to be collated and producing a next collating operation enable signal when said numbers are equal;

inlet sensor means for sensing entry of sheets into the feed means, inlet counter means for counting a number of sheets which entered the feed means, jam sensor means for sensing a sheet jam and producing a jam signal in response thereto; and

a copying machine for copying a document and feeding the sheets in the form of copies of the document to the feed means, the copying machine comprising copy counter means for counting a number of copies produced, the apparatus further comprising means for directly transferring a count in the discharge counter means which represents the number of sheets discharged into the bins into the copy counter means to constitute a new count in the copy counter means in response to the jam signal.

4,449,814

EXPOSURE DEVICE

Siegfried Theimer, Rohler Strasse 12, D-6484 Obersotzbach, Fed. Rep. of Germany

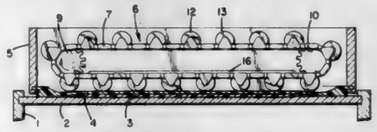
PCT No. PCT/DE82/00118, 371 Date Feb. 4, 1983, 102(e) Date Feb. 4, 1983, PCT Pub. No. WO82/04333, PCT Pub. Date Dec. 9, 1982

PCT Filed Jun. 2, 1982, Ser. No. 466,334

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122707

Int. Cl.³ G03B *27/04*

U.S. Cl. 355—85 **11 Claims**



1. An exposure device for the exposure of photosensitive material through a master, comprising a glass plate; a rubber mat having a front side and a rear side and being arranged to be pressed against said glass plate; means for applying negative pressure between said glass plate and said front side of said rubber mat whereby said photosensitive material and said master may be inserted between the glass plate and the front side of said rubber mat and an exposure may be effected through said glass plate, said device further comprising a pressure roll; and means for rolling said pressure roll over the rear side of said rubber mat for smoothing said rubber mat, said rolling means comprising a drive with two endless drive members mounted over the rear side of said rubber mat with said pressure roll extending between and being carried by said endless drive members.

4,449,815

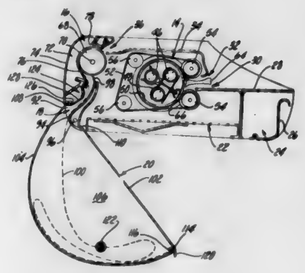
DIAZO COPIER

Hugh J. Staffan, 25525 Koontz, Roseville, Mich. 48066

Filed Jun. 21, 1982, Ser. No. 390,655

Int. Cl.³ G03D *7/00*; G03B *27/30*

U.S. Cl. 355—106 **4 Claims**



1. In a machine for developing light sensitive copy material by contact with ammonia developing gasses having a developer chamber constructed and arranged to contact light sensitvie copy material with ammonia gasses to develop such copy material, a pump driven by an electric motor and constructed and arranged to deliver ammonia gasses to said developer chamber when operated by said electric motor, a degasser passage constructed and arranged for developed copy material to pass through after being contacted with the ammonia developing gasses, heater means cooperating with said degasser passage and constructed and arranged to heat the developed copy material to an elevated temperature to accelerate the release of ammonia vapor from the copy material, the improvement comprising an enclosed receptacle communicating with said degasser passage and constructed and arranged to receive developed copy material from said degasser passage, said receptacle having an outlet which can be opened and closed and when opened through which developed copy material can be removed from said receptacle, at least one air inlet communicating with the interior of said receptacle, said pump having sufficient capacity when continuously operated by said electric motor to supply a greater quantity of ammonia gasses to said developer chamber than the minimum quantity of ammonia gasses required to develop such copy material, a control device connected with said electric motor, said control device having a variable duty cycle and being constructed and arranged to intermittently operate said electric motor to intermittently drive said pump such that only essentially the minimum quantity of ammonia gasses needed to develop such copy material can be supplied by said pump to said developer chamber, and a blower constructed and arranged to move a stream of air through said inlet, around developed copy material in said receptacle and through at least a portion of said degasser passage adjacent said heater means such that essentially all ammonia is removed from developed copy material received in said receptacle before such developed copy material is removed from said receptacle.

4,449,816

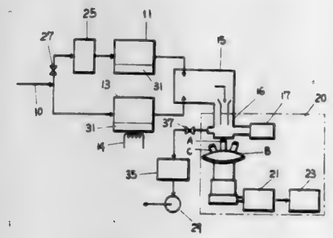
METHOD FOR MEASURING THE NUMBER OF HYPERFINE PARTICLES AND A MEASURING SYSTEM THEREFOR

Yasuo Kohsaka, Sakai; Yoshihiro Nonaka, and Hideo Tachibana, both of Fujiidera, all of Japan, assignors to Nitta Gelatin Kabushiki Kaisha, Osaka, Japan

Filed May 11, 1981, Ser. No. 262,550

Int. Cl.³ G01N *1/00*, *15/02*

U.S. Cl. 356—37 **13 Claims**



1. A method for measuring the number of hyperfine particles in an aerosol comprising the steps of producing saturated vapor aerosols by dividing an incoming unfiltered aerosol to flow along first and second paths, passing the unfiltered aerosol flowing on said first path through a first vapor chamber saturated with a solvent and at a first temperature, passing the unfiltered aerosol flowing on said second path through a second vapor chamber saturated with the solvent and at a second temperature higher than the first temperature, thereafter delivering the two vapor saturated aerosols to a mixing chamber, so that the vapors are condensed from the resulting supersaturated mixture on the aerosol particles as the nuclei, thereby achieving growth of the aforementioned fine particles, and measuring the number of such fine particles so grown.

4,449,817

CELESTIAL NAVIGATOR

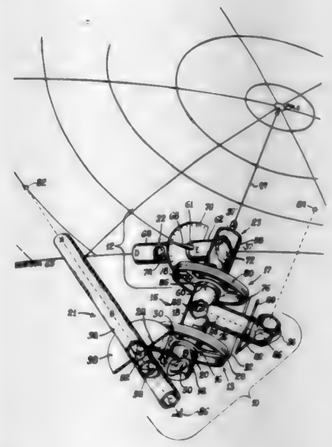
William L. Abler, 3350 S. Michigan Ave., Chicago, Ill. 60616

Filed Mar. 2, 1981, Ser. No. 239,504

The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.

Int. Cl.³ G01C *1/00*, *1/14*; G02B *23/04*

U.S. Cl. 356—145 **10 Claims**



1. A celestial navigation and position locating instrument comprising in operative combination:

(a) a sky assembly having means for simultaneous sighting of two celestial objects and superimposing the images thereof centered on crosshairs in a single field of view, at least one of which celestial objects is viewed by direct sighting;

(i) positions of said celestial objects sighting means being adjustable with respect to each other; and

(ii) the positions of said celestial objects sighting means being settable for Sidereal Hour Angle and Polar Distance for preselected celestial objects; and

(b) a horizon assembly movably secured to said sky assembly and having means for sighting a horizon,

(i) the position of said horizon sighting means being adjustable with respect to said sky assembly so that local latitude and Local Hour Angle of Aries are locatable on setting means associated with said horizon sighting means and said sky assembly, respectively,

(ii) an image of said horizon is visible in an annular region around the central field of view of said celestial objects, and

(iii) said horizon sighting means being adjustable so that a horizon line thereof can be set to coincide with the local horizon.

4,449,818

METHOD OF INSPECTING MICROSCOPIC SURFACE DEFECTS

Kazuo Yamaguchi, Sagamihara; Asahiro Kuni, Nakamachi; Nobuyuki Akiyama, Yokohama, and Juro Endo, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,248

Claims priority, application Japan, Feb. 10, 1981, 56-17547

Int. Cl.³ G01N *21/00*

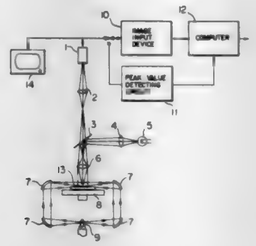
U.S. Cl. 356—237 **8 Claims**

1. A method of inspecting defects in the surface of an object to be inspected, comprising:

alternately applying oblique lighting and perpendicular lighting to a location on the surface of the object where a defect or a foreign substance possibly exists;

sensing reflected brightness from said surface of said object during the application of said oblique and perpendicular lighting;

determining the presence of a convex shaped foreign substance at said location on said surface of said object by evaluating the reflected brightness from said location



during the application of oblique lighting to sense the presence of a foreign substance based on its reflection of said oblique lighting; and

detecting the presence of a concave shaped defect by evaluating the reflected brightness from said location during the application of perpendicular light to said location.

4,449,819

ARRANGEMENT FOR DETERMINING THE CONCENTRATION OF A SUBSTANCE IN A MIXTURE OF SUBSTANCES

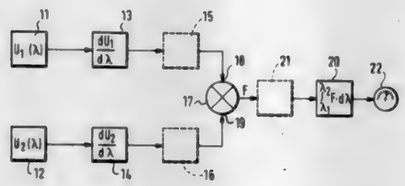
Gerhard Krause, Rosenheim, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,280

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029945

Int. Cl.³ G01J *3/00*

U.S. Cl. 356—300 **28 Claims**



1. Apparatus for the generation of a detectable signal related to the concentration of a preselected substance in a mixture of substances from a comparison of the optical spectrum of said mixture over an independent variable with a reference spectrum, said apparatus comprising:

means for storing said reference spectrum or a transformed function thereof, and for generating a signal related thereto,

a detector adapted to detect the optical spectrum of said mixture or a transformed function thereof,

means for suppressing the mean value of at least one of the signals generated by said storing means and said detector,

a controlled transfer stage containing a controlling input, a controlled input and an output, said controlling input adapted to receive the signal generated by said storing means and said controlled input adapted to receive the signal generated by said detector, and

means for integrating the output signal from said controlled transfer stage over said independent variable.

4,449,820

ZEEMAN ATOMIC ABSORPTION SPECTROPHOTOMETER

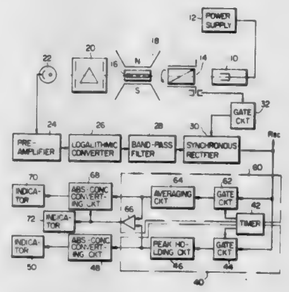
Hideaki Koizumi; Hideo Yamada, both of Katsuta, and Kounosuke Oishi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 299,109

Claims priority, application Japan, Sep. 24, 1980, 55-131617

Int. Cl.³ G01N *21/72*

U.S. Cl. 356—307 **14 Claims**



1. A Zeeman atomic absorption spectrophotometer comprising:

a light source;

an atomizing portion which is irradiated with light from the light source and where a sample is introduced into a chemical flame and atomized;

a detector which receives the light from said light source after it has been absorbed by the atoms in the atomizing portion, and which converts the received light into electric signals;

a magnet which applies the magnetic field to at least either one of said light source or said atomizing portion; and

means for measuring peak values of signals of atomic absorption, which have been corrected for background absorption, while the concentration of sample vapor in the atomizing portion is changing after the sample has been introduced into said atomizing portion, and which measures the concentration of the sample by relying upon the peak values, said means for measuring including means for detecting peak values, means for obtaining a value of atomic absorption signals in the period after the sample has been introduced into said atomizing portion during which the concentration of sample vapor in said atomizing portion remains nearly constant, and means of obtaining concentration values corresponding to atomic absorption signals in response to the magnitudes of the peak values and the value of atomic absorption.

4,449,821

PROCESS COLORIMETER

Jerald D. Lee, Mendenhall, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 14, 1982, Ser. No. 398,385

Int. Cl.³ G01J *3/42*

U.S. Cl. 356—319 **9 Claims**

1. A colorimeter for measuring color of an object comprising:

(a) a single light source that provides a light beam,

(b) a controller electrically connected to the light source,

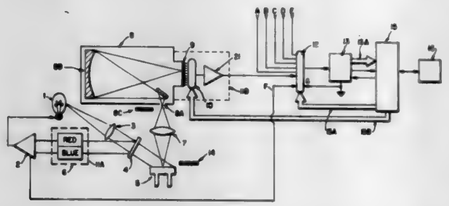
(c) first beam-shaping optics for collimating and directing the light beam to the object,

(d) a beam-splitter positioned between the object and the first beam-shaping optics which divides the light beam into a reference and analytical light beam,

(e) blue and red intensity sensors electrically connected to the controller, which sensors measure the blue and red spectral intensities of the reference light beam incident on these sensors and produce: (1) electrical feedback signals to the controller which maintains the light source at a constant color temperature level; and (2) a color intensity reference signal,

(f) second beam-shaping optics for directing a portion of the analytical light beam that is reflected from the object into a monochromator,

(g) a grating monochromator with an entrance slit through which the reflected portion of the analytical light beam passes,



(h) a detector array which converts the spectra of the light beam dispersed by the monochromator, into discrete individual electrical signals,

(i) a first multiplexer system which receives electrical signals from the detector array and selectively transmits these signals to a second multiplexer,

(j) a second multiplexer system which receives the signal from said first multiplexer system and the color intensity reference signal from one of the color intensity sensors to output a signal representing standardized color values of the object measured.

4,449,822

EXPOSURE INDICATOR

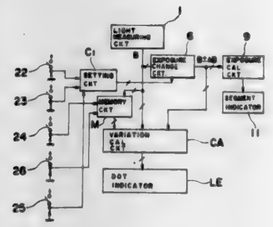
Yoshio Yuasa, Kawachinagano, and Kazuhiko Naruse, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1981, Ser. No. 324,955

Claims priority, application Japan, Nov. 28, 1980, 55-168951

Int. Cl.³ G01J *1/42*

U.S. Cl. 356—227 **22 Claims**



1. An exposure indicator comprising:

light measuring means including a light receiving element for producing an electrical signal as a function of the light received by said light receiving element;

change means for changing the electrical signal obtained from the light measuring means and for producing a changed signal;

setting means provided in association with said change means for setting an amount of change of the electric signal;

first indicator means for indicating a value of an exposure parameter based on said changed signal;

means for determining, based on said amount of change, the density of a photographic sensitized material that is anticipated to be reproduced when a photograph is taken for the measured light with an exposure condition in compliance with the value of the exposure parameter indicated by said first indicator; and

second indicator means for indicating the determined film density.

4,449,823

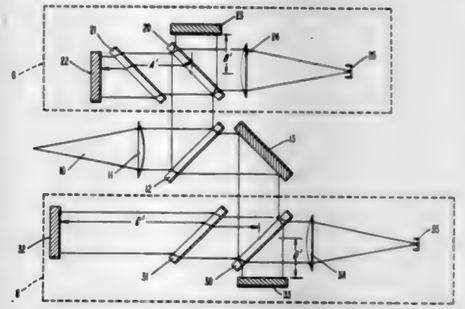
DEVICE FOR MEASUREMENT OF THE SPECTRAL WIDTH OF NEARLY MONOCHROMATIC SOURCES OF RADIANT ENERGY

Ronald L. Schwiesow, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Feb. 12, 1982, Ser. No. 348,575

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—346 **9 Claims**



1. A method of measuring the spectral width of a nearly monochromatic source of radiant energy whose spectral distribution is known or assumed, comprising the steps of:

dividing a beam from said nearly monochromatic source of radiant energy into two separate beams;

supplying each of said separate beams to separate interferometers, said interferometers each having an output which varies in accordance with an optical path difference taken by the beam internal to the interferometer;

adjusting said interferometers such that the optical path difference in one interferometer is different from the optical path difference in the other interferometer; and

deriving said spectral width of said nearly monochromatic source of radiant energy by evaluating the signal transmission from one interferometer with the signal transmission from the other interferometer.

4,449,824

LASER GYRO OUTPUT OPTICS STRUCTURE

James B. Matthews, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 200,709, Oct. 27, 1980, abandoned, which is a continuation of Ser. No. 942,106, Sep. 13, 1980, abandoned, which is a continuation of Ser. No. 758,228, Jan. 10, 1977, abandoned. This application Apr. 29, 1983, Ser. No. 489,392

The portion of the term of this patent subsequent to Feb. 17, 1996, has been disclaimed.

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **1 Claim**

1. A laser gyroscope comprising:

(a) a laser gyroscope cavity comprising:

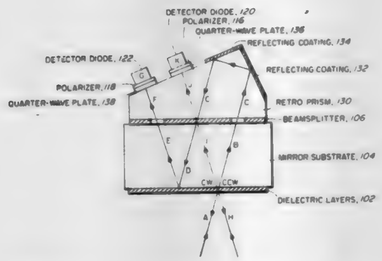
a laser gain medium; and

a polarization dispersive structure for producing two pairs of circularly polarized waves, each one of such waves having a different frequency, such cavity comprising a plurality of reflecting means disposed to form a closed path through the gain medium for supporting the two pairs of waves, the waves in each of the two pairs of

waves traveling in opposite directions, the pair of waves in the first one of the two pairs of waves having a first sense of circular polarization and frequencies f_1 and f_2, and the pair of waves in the second one of the two pairs of waves having a second, opposite sense of circular polarization and frequencies f_3, f_4, at least one of said reflecting means being a cavity output window having a first region of a surface thereof partially transmitting of waves in the two pairs of waves incident thereon to produce a pair of cavity output beams, a first one of the pair of cavity output beams comprising a portion of one of the waves of the first one of the two pairs of waves traveling in the first direction and a portion of one of the waves in the second pair of the two pairs of waves traveling in the first direction and a second one of the pair of cavity output beams comprising a portion of one of the waves in the first one of the two pairs of waves traveling in the second direction and a portion of one of the waves in the second one of the two pairs of waves traveling in the second direction, the waves in each of the two cavity output beams having opposite senses of polarization;

(b) a beam splitter;

(c) means for directing a first one of the pair of cavity output beams along a first path and a second one of the pair of cavity output beams along a second path to a common region of the beam splitter, said directing means including a retro-reflector disposed in the second path to redirect the second one of the pair of cavity output beams, such



beam splitter transmitting a portion of a first one of the cavity output beams and reflecting a portion of the redirected, second one of the cavity output beams along a first common path to produce a first composite beam and for transmitting a portion of the redirected, second one of the cavity output beams and reflecting a portion of the first one of the cavity output beams to produce a second composite beam, such second composite beam being reflected by a second region of the surface of the cavity output window to direct such second composite beam along a second, different common path, both the first composite beam and the second composite beam having waves of frequencies f_1, f_2, f_3 and f_4;

(d) means disposed in the first and second common paths of the composite beams and displaced from the first and second paths of the cavity output beams for converting the waves in the first composite beam and the second composite beam to substantially linear polarization, the waves of opposite sense of polarization being converted to substantially orthogonal linear polarization; and

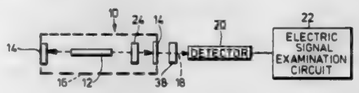
(e) detecting means responsive to the energy in the converted first and second composite beams for producing a pair of electrical signals, a first one of the pair of electrical signals representing the difference in the frequencies f_1, f_2 of the waves in the cavity in the first one of the two pairs of waves and the second one of the pair of electrical signals representing the difference in the frequencies f_3, f_4 of the waves in the cavity in the second one of the two pairs of waves.

4,449,825

OPTICAL MEASURING APPARATUS EMPLOYING A LASER

Albert D. May, Toronto, Canada, assignor to The University of Toronto Innovations Foundation, Toronto, Canada

Filed Jun. 11, 1981, Ser. No. 272,520
Claims priority, application Canada, Jun. 16, 1980, 354108
Int. Cl.³ G01B 9/02
U.S. Cl. 356—349 **11 Claims**



1. Optical measuring apparatus comprising:

laser, including a laser gain tube;

exciting means for exciting a laser beam to be produced by the gain tube, said laser beam having a laser beam axis;

reflecting means located opposite respective ends of the gain tube;

the reflecting means and the laser gain tube forming a laser cavity, the laser being tunable by the exciting means to provide at least two orthogonal polarization modes of the laser beam, said modes each having a frequency;

optical means locatable within the laser cavity between one end of the laser gain tube and one of the reflecting means, the optical means comprising at least two spaced quarter-wave plates located substantially perpendicular to the laser beam axis, at least one of the quarter-wave plates being rotatable relative to the other quarter-wave plate substantially about the laser beam axis, the polarization modes passing through the optical means and the laser cavity and forming a laser cavity output;

detector means for receiving the laser cavity output and providing a corresponding electrical signal;

signal examination means connected to the detector means for receiving and processing the electrical signal;

whereby, in use, the at least one rotatable quarter-wave plate is rotated relative to the other quarter-wave plate about the laser beam axis in response to a physical parameter being measured, the relative rotation between the quarter-wave plates causing the polarization modes and frequencies of the polarization modes to change, the different frequencies being detected and processed to provide a beat signal which is a direction function of the physical parameter being measured.

4,449,826

APPARATUS FOR PREPARING MORTAR OR THE LIKE

Paul Mathis, Merdingen, and Anton Wachter, Hindelang, both of Fed. Rep. of Germany, assignors to Mathis Systemtechnik GmbH, Merdingen and Wachter KG Baustoffwerk, Hindelang/Allgäu, both of, Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,685
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041107
Int. Cl.³ B28C 1/16, 5/14
U.S. Cl. 366—13 **55 Claims**

1. Apparatus for making mortar and analogous building materials comprising:

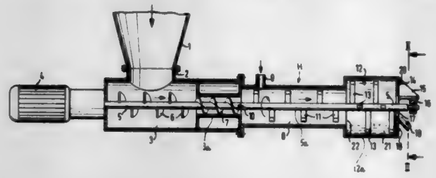
(a) a housing defining a mixing chamber which communicates with a source of air;

(b) admitting means for supplying solid and liquid constituents of a building material to a first section of said mixing chamber;

(c) mixing and advancing means for forming an air-containing mixture of the solid and liquid constituents and for advancing the mixture towards a second section of said mixing chamber; and

(d) impeding means for impeding discharge of the mixture

from said housing and causing accumulation of the mixture in said second section to thereby permit additional air to be mixed into the mixture, said housing having a discharge opening connecting said mixing chamber with the exterior of said housing, and said mixing and advancing means being arranged to discharge the mixture through



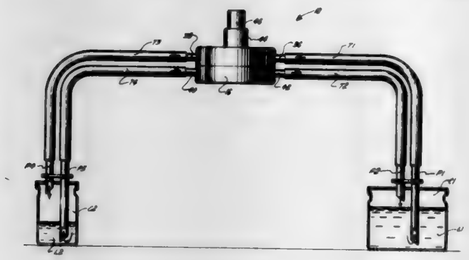
said discharge opening against the action of said impeding means at a rate such that an air space is substantially continuously maintained in said second section, said housing being devoid of driven means for assisting said mixing and advancing means in the discharge of the mixture through said discharge opening to thereby prevent the action of said impeding means from being nullified.

4,449,827

MIXING DEVICE

Kenneth G. Karkiewicz, Richmond, Va., assignor to Ethyl Molded Products Company, Richmond, Va.

Filed Oct. 29, 1982, Ser. No. 437,733
Int. Cl.³ B01F 15/02, 5/12
U.S. Cl. 366—131 **20 Claims**



1. A mixing device for mixing together the liquid contents of a first and second container, whereby, after mixing, the resultant mixture resides in both containers, said mixing device comprising:

(a) a hollow pump chamber;

(b) a flexible pumping diaphram which traverses said pump chamber whereby said pumping chamber is divided into a separate upper chamber and a separate lower chamber, and whereby said flexible pumping diaphram is flexibly movable to a first position which, simultaneously, decreases the volume of said lower chamber and increases the volume of said upper chamber and to a second position which, simultaneously, increases the volume of said lower chamber and decreases the volume of said upper chamber;

(c) a first valving means for opening and closing ingress of fluid from said first container into said upper chamber and a second valving means for opening and closing egress of fluid from said upper chamber to said second container, said first and second valving means being opened and closed, respectively, when said flexible pumping diaphram is in said first position and being closed and opened, respectively, when said flexible pumping diaphram is in said second position;

(d) a third valving means for opening and closing ingress of fluids from said second container into said lower chamber and a fourth valving means for opening and closing egress of fluid from said lower chamber to said first container, said third and fourth valving means being opened and closed, respectively, when said flexible pumping diaphram is in said second position, and being closed and opened, respectively, when said flexible pumping diaphram is in said first position; and

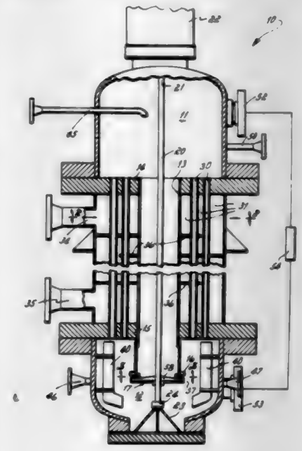
(e) moving means for moving said flexible pumping diaphram from one of its said positions to the other of its said positions.

4,449,828

MIXING APPARATUS

Maher L. Mansour, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 200,956, Oct. 27, 1980, abandoned.
This application Mar. 17, 1983, Ser. No. 476,363
Int. Cl.³ B01F 7/26
U.S. Cl. 366—147 **7 Claims**



1. Chemical mixing apparatus for mixing liquids having a tendency to gel during mixing comprising,

a vessel, said vessel including an upper section, a middle section and a lower section, said upper section being connected to said middle section and the interior of said upper section being open to the interior of said middle section and

said middle section being attached to said lower section and the interior of said middle section being open to the interior of said lower section;

means to detach said upper section from said middle section;

means to detach said middle section from said lower section;

said upper section, said middle section and said lower section joining together to define a pressurizable mixing area;

a large, vertical draft tube open at both ends in the central portion of the middle section of the vessel,

a plurality of vertical heat exchanger tubes, open at both ends, surrounding said draft tube, said tubes positioned within the middle section of said vessel,

a centrifugal impeller at one end of said draft tube to circulate fluids between said draft tube and said heat exchanger tubes,

a means for circulating heat exchange fluid around said heat exchanger tubes, and

means to measure the pressure differential between said upper and said lower sections.

4,449,829

SPEECH SYNTHESIZER TIMEPIECE

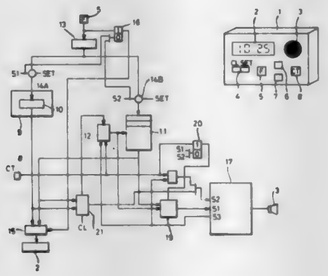
Yutaka Ikemoto, Shiki-gun, and Akira Tanimoto, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1981, Ser. No. 288,331

Claims priority, application Japan, Jul. 30, 1980, 55-109099[U]

Int. Cl.³ G04B *21/08*

U.S. Cl. 368—63 **2 Claims**



1. An audio output timepiece comprising:

timekeeping means;

means associated with said timekeeping means for setting a plurality of alarm times;

speech synthesizer output means for delivering audible indications of hours and minutes at each of said alarm times;

memory means for storing data representing a plurality of additional messages;

means associated with said memory means and said speech synthesizer output means for further delivering a selected one of said additional messages at each of said alarm times; and

selector means associated with said memory means and said speech synthesizer means for delivering a verbal indication of each of said additional messages and for selecting respective ones of said additional messages to be delivered at said alarm times.

4,449,830

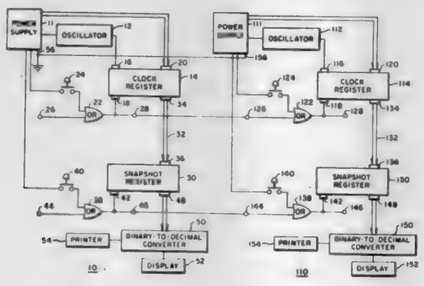
METHOD AND APPARATUS FOR MEASURING ELAPSED TIME BETWEEN AN INITIATING EVENT AND A DEPENDENT EVENT

Lawrence W. Bulgier, West Suffield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 31, 1981, Ser. No. 288,842

Int. Cl.³ G04F *8/00, 10/00*

U.S. Cl. 368—119 **8 Claims**



1. A timing system for determining the time interval between the occurrence of an initiating event and a dependent event, comprising:

a first timing means comprising, a first power supply having a signal ground; a first oscillator for generating periodic clock pulses of a known frequency; a first resettable clock register for counting clock pulses generated by said first oscillator, powered by said first power supply; means for resetting said first clock register; a first snapshot register; means for initiating the transfer of the number of counted clock pulses stored in said first clock register to said first snapshot register; means for transferring the number of counted clock pulses stored in said first clock register to said first snapshot register; means for displaying said number of counted clock pulses stored in said first snapshot register;

a second timing means comprising, a second power supply having a signal ground; a second oscillator for generating periodic clock pulses of said known frequency, powered by said second power supply, a second resettable clock register for counting clock pulses generated by said second oscillator; means for resetting said second clock register; a second snapshot register; means for intiating the transfer of the number of counted clock pulses stored in said second clock register to said second snapshot register; means for transferring the number of counted clock pulses stored in said second clock register to said second snapshot register; means for displaying said number of counted clock pulses stored in said second snapshot register;

means for interconnecting said signal ground of said first power supply and said signal ground of said second power supply;

means for interconnecting said means for resetting said first clock register and said means for resetting said second clock register; and

means for interconnecting said means for intiating the transfer of the number of counted clock pulses stored in said first clock register to said first snapshot register and said means for intiating the transfer of the number of counted clock pulses stored in said second clock register to said second snapshot register, whereby said first and second timing means are adapted to be interconnected for synchronization, capable of being separated for timing and adapted to be interconnected again subsequent to the timing to determine an absolute time.

4,449,831

PENDULUM ARRANGEMENT FOR CLOCK MOVEMENT

Masaru Itami, Nagano, and Kunio Tatusawa, Saitama, both of Japan, assignors to Rhythm Watch Co., Ltd., Tokyo, Japan

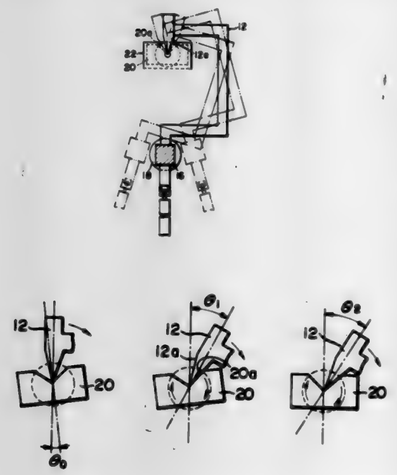
Filed Jul. 28, 1982, Ser. No. 402,585

Claims priority, application Japan, Jul. 31, 1981, 56-114215[U]; Jun. 3, 1982, 57-82534[U]

Int. Cl.³ G04F *5/00*; G04B *15/00*

U.S. Cl. 368—165 **4 Claims**

1. A pendulum arrangement for a clock movement in which said arrangement has a pendulum arm being mounted to swing freely at a pendulum arm supporting means which is installed on a clock movement housing, and said pendulum arm supporting means consists of a pendulum arm supporter which is pivotally held with free rotation on the clock movement housing so that the pendulum arm supporter can rotate and adjust its supporting position in accordance with the swinging state of the pendulum arm and the inclination of the clock movement,



said pendulum arm supporter consisting of a V-shaped groove which receives a knife edge of the pendulum.

4,449,832

PROGRAM INPUT AND/OR TIME SETTING DEVICE

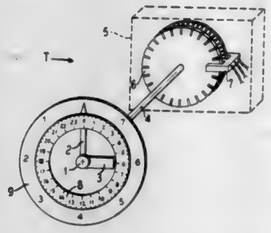
Gerd Kammerer, St. Georgen, Fed. Rep. of Germany, assignor to Dieter Graessiin Feinwerktechnik, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 359,036

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110947

Int. Cl.³ G04C *9/00*; G04B *29/00*; G08C *9/08*

U.S. Cl. 368—187 **7 Claims**



1. Apparatus for setting a digital-electronic time switch system comprising a command encoder means for emitting digital signals to a data memory means for controlling said time switch means, said command encoder means having transducer means for converting mechanical rotational movement in a forward or reverse direction into digital signals, and an adjustable dial assembly comprising a dial face formed with an annular time scale, at least one dial arm means selectively rotatable in forward and reverse directions about said dial face, and a train means mechanically connecting said dial arm means and said transducer means for varying the digital signals to said data memory, said transducer means comprising a rotatable slotted disk, a light barrier means for receiving an annular edge of said disk and generating light pulses by passage of said disk slots therethrough, and a pulse counter means connected to said light barrier means for converting said light pulses into digital signals and said light barrier means having a fork-shaped housing portion defining an opening through which said disk slots are passed, one arm of said housing portion containing a light transmitter and the other arm of said housing portion containing a pair of adjacent receivers for intercepting light from said transmitter passed through said disk slots, such that when one receiver is engaged by light from said transmitter the other receiver is shaded by said disk enabling said light barrier means to discern relative direction of movement of said disk.

4,449,833

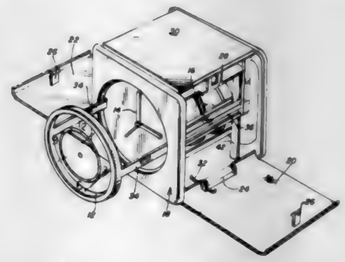
BREAK AWAY ALARM CLOCK

John R. Montgomery, IV, 2830 N. Burling (Unit D), Chicago, Ill. 60657, and Donald R. Richardson, 15340 Larkspur, Orland Park, Ill. 60462

Filed Feb. 27, 1981, Ser. No. 238,927

Int. Cl.³ G04B *13/00*

U.S. Cl. 368—262 **11 Claims**



1. A clock comprising

a clock face, a casing, and a clock mechanism positioned within said casing,

said casing including a plurality of separable walls,

said separable walls being mounted for outward movement from a closed, casing-defining configuration to an open configuration separated from said casing and exposing at least a portion of the interior of the casing,

latch means operatively coupled to said plurality of walls and having an engaged position for normally retaining said walls in said closed, casing-defining position and a released position permitting said outward movement from said closed configuration to said open configuration,

force applying means coupled to said separable walls for causing said outward movement,

striker means mounted on said casing and being operatively connected to said latch means, said striker means being responsive to a manual force to cause said latch means to change from said engaged position to said released position, said force applying means automatically moving said plurality of separable walls outward to said open configuration upon said latch means changing to said released position.

4,449,834

AEROSTATIC AXIAL THRUST BEARING

Adrianus Franken, and Johannes L. M. Hagen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,441

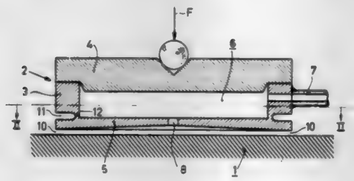
Claims priority, application Netherlands, May 11, 1981, 8102286

Int. Cl.³ F16C *32/06*

U.S. Cl. 384—99 **1 Claim**

1. An aerostatic axial thrust bearing comprising a movable part and a stationary part, one of said parts being constructed as a cup-shaped member having an upright wall, a closure member and a bottom comprising a diaphragm which faces the other bearing part to define therewith a bearing gap, said

upright wall and said diaphragm forming an integral unit, said diaphram having a central opening, the side of said diaphragm which faces the other bearing part being shaped so that the bearing gap between the two parts becomes narower from the central opening in the diaphragm towards the outer edge thereof, and the cup-shaped member having an inlet for the admission of a gaseous pressure medium to the space inside the cup-shaped member, characterized in that the diaphragm is



connected to the upright wall of the cup-shaped member only at a location (1) between the central opening and the outer edge of the diaphragm and (2) spaced from the outer edge of the diaphragm, the upright wall being provided with a deep circumferential groove so that only a portion of material remains that is substantially thinner than adjacent portions of said upright wall between the diaphragm and the upright wall to connect the diaphragm to the wall.

4,449,835

PRINTING DEVICE

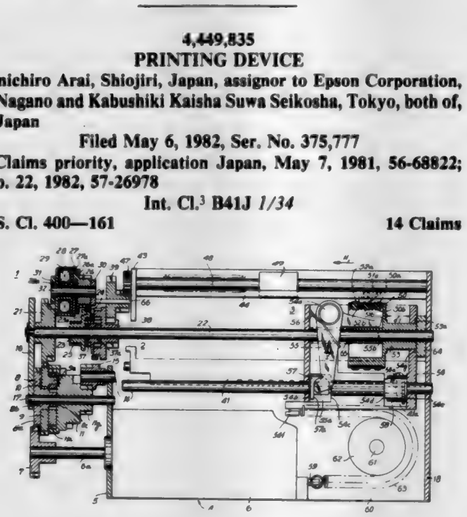
Kenichiro Arai, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed May 6, 1982, Ser. No. 375,777

Claims priority, application Japan, May 7, 1981, 56-68822; Feb. 22, 1982, 57-26978

Int. Cl.³ B41J *1/34*

U.S. Cl. 400—161 **14 Claims**



1. A printing device for printing on a recording medium, comprising:

a type member having a plurality of characters and symbols thereon, said characters and symbols being individually subject to positioning for printing by impact with said recording medium;

a carriage supported by a frame, said type member being supported on said carriage;

means for selection of characters and symbols on said type member for printing;

means for driving selected characters to said recording medium for impact therewith and recording thereon;

a motor operating said printing device;

switch means for alternately switching the output of said motor between said selection means and said driving and impact means, in a first mode said selection means being powered from said motor to position said characters and symbols subject to selection, in a second mode said means for driving and impact being powered from said motor to move selected characters to said medium for printing, said switch means including at least first, second and third gears, said first gear being driven by a rotating output of said motor and turning said second gear, said second gear engaging said third gear, and a first cam surface having a locking portion thereon, said first cam surface being connected to said third gear for rotation therewith, said second gear travelling around the toothed periphery of said third gear when said first cam surface is fixed in position, motor power being applied in said first mode to said selection means by said second gear travel, said third gear and said first cam surface rotating by action of said second gear when said first cam surface is free to rotate, motor power being applied in said second mode to said driving and impact means by rotation of said third gear;

pawl means, said pawl means when engaged with said locking portion holding said first cam surface and third gear in said fixed position, said pawl means when disengaged from said locking portion releasing said first cam surface and said third gear for said rotation in response to rotation of said second gear;

means for disengaging said pawl means from said locking portion in said first cam surface, said means for disengaging cooperating with said selection means to release said pawl means from said locking portion when a selection is made on said type member for printing.

4,449,836

PRINTING HEAD FOR WIRE DOT PRINTER

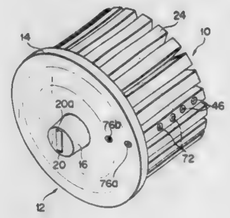
Noboru Yamada, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 4, 1982, Ser. No. 405,084

Claims priority, application Japan, Aug. 24, 1981, 56-132505

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **5 Claims**



1. A printing head for wire dot printer comprising:

a plurality of printing wires having front and back end portions arranged in a predetermined distribution, respectively; and

wire driving means for driving the back ends of said printing wires to move said printing wires both in a dot printing direction and in a returning direction, each of said wire driving means including an armature moved in a first direction so as to drive the back end of said printing wire, a magnetic frame comprising a plurality of magnetic members arranged in a reference plane including said first direction and having at least one permanent magnet and at least one soft magnetic member, said plural magnetic members being connected in series to form a magnetic circuit provided with an air gap, at least one connecting portion of said plural magnetic members included in said magnetic frame being defined by two of said magnetic members which are slidable relative to one another in the first direction, at connecting sliding surfaces so that the length of the air gap may be adjusted by the sliding movement, said sliding surfaces defining sliding planes including both a second direction perpendicular to the reference plane and the first direction, said connecting portion having screws arranged substantially perpendicular to said sliding surfaces and pressing said two magnetic members one against the other and substantially perpendicular to said both of said sliding surfaces, an exciting coil wound around said magnetic frame and generating a magnetomotive force, when excited, to substantially off-set the magnetomotive force of said permanent magnet, and an armature support means attached to said magnetic frame to resiliently support said armature movable in the air gap in the first direction, said armature support means being slidable in both the first and second directions relative to said magnetic frame, to thereby adjust the free position of said armature in the air gap.

4,449,837

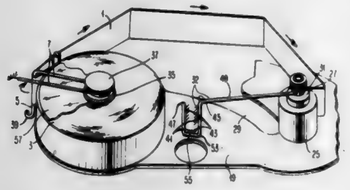
RIBBON CARTRIDGE WITH BACK CHECK

James A. Craft, 1734 Cameron Ct., Lexington, Ky. 40505

Filed Sep. 25, 1981, Ser. No. 305,763

Int. Cl.³ B41J *33/14*

U.S. Cl. 400—208 **5 Claims**



1. A ribbon cartridge having a supply spool mounted for rotation in the cartridge and a take-up spool hub mounted in said cartridge to receive ribbon which extends from said supply spool, out of said cartridge, and then back into said cartridge, said cartridge comprising a flexible member mounted inside said cartridge with a part in contact with said hub, said part being positioned to engage said hub when said hub turns counter to the take-up direction to stop movement of said hub and to slide on said hub when said hub turns in the take-up direction to permit movement of said hub.

4,449,838

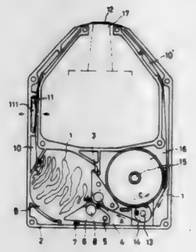
INK RIBBON CASSETTE FOR PRINTER

Yasushi Okamura; Harukazu Manabe, and Norihide Sato, all of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 28, 1982, Ser. No. 402,806

Int. Cl.³ B41J *32/02, 35/08*

U.S. Cl. 400—234 **8 Claims**



1. An ink ribbon cassette including:

an ink ribbon,

an ink-impregnated body,

an ink transfer roller turned by contact friction with the running of said ink ribbon, thereby making contact of said ink transfer roller with said ink ribbon and said ink-impregnated body via said ink transfer toller to said ink ribbon,

the improvement comprising:

at least one pressing force switching device movable between a pressing state and a non-pressing state for changing the pressing force applied to said ink ribbon said switching device being located in a narrow ink ribbon path wherein said ink ribbon is pressed by said pressing force switching device when said switching device is in a pressing state,

said cassette further comprises a pressing force device provided in sequence with said pressing force switching device, said cassette having a wall, said wall having a hole for receiving a tool insertable therethrough, said hole being adjacent said switching device for exposing said pressing force switching device to be moved by said tool for moving said pressing force switching device between said pressing and said non-pressing states.

4,449,839

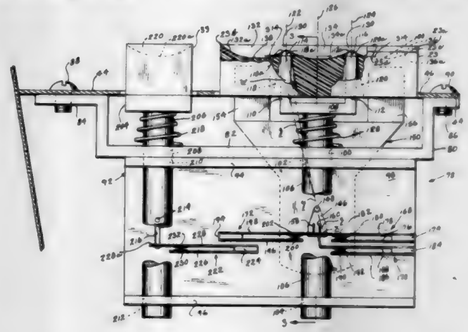
KEYBOARD WITH ELONGATE KEYS

Keith T. Bleuer, 1663 Wilshire Dr., NE., Rochester, Minn. 55901

Filed Sep. 22, 1982, Ser. No. 421,586

Int. Cl.³ B41J *5/28, 5/10, 5/12*

U.S. Cl. 400—485 **87 Claims**



1. Finger operated controlling mechanism including an elongated key having a finger thrust surface on which finger pressure can be applied for moving the key, means for mounting said key so that it can be moved on a thrust axis generally normal to said finger thrust surface and including transverse axis forming means for swingingly mounting the key so that it can be swung longitudinally of the key to have different rotative positions, three control devices, and an actuating member carried by said key so disposed that it can selectively actuate each of said control devices due to the movement of said key and actuating member on an operative stroke on said thrust axis with the particular one of said rotative positions determining which of said control devices is actuated on the operative stroke of the key, said finger operated controlling mechanism including means providing three slots and a part carried by said actuating member adapted to respectively enter the three slots for three different rotative positions of said key, said control devices being respectively in alignment with said slots to be actuated by said part when it moves through the three slots.

4,449,840

BINDER ASSEMBLY OF THE RING TYPE

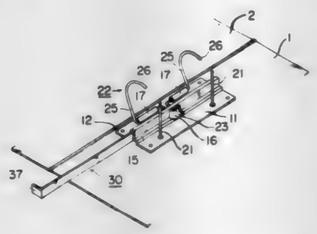
Kiyoshi Ohminato, Tokyo, Japan, assignor to King Jim Co., Ltd., Japan

Continuation of Ser. No. 185,758, Sep. 10, 1980, abandoned. This application Jun. 30, 1983, Ser. No. 509,593

Claims priority, application Japan, Dec. 27, 1979, 54-182451[U]

Int. Cl.³ B42F *3/04*

U.S. Cl. 402—34 **2 Claims**



1. A binder assembly of the ring type comprising a slide support member, an operable slide member, fixed holder rods and a turnable holder rod having a pair of spaced apart free ends, with said free ends being arranged in a face-to-face relation to the free ends of the fixed holder rods; said slide support member having a longitudinal upright angle guide portion centrally disposed therein and a longitudinal step section on one side thereof; said slide member comprising a keep formed by a lateral base plate, and an upright plate having a cam opening, the cam opening comprising an upper horizontal step section, a central inclined ramp section, and a lower horizontal keep section; said slide member being fitted into said slide support member with said upright plate disposed in said upright angle guide portion and said base plate disposed in said step section; and said turnable holder rod having a central U-shaped essentially horizontally disposed follower portion in engagement with said cam opening by way of a through-hole provided in the central lower end of the upright angle guide portion;

said slide support member being a unitary metal plate comprising said upright angle guide portion and a pair of bottom flat side plates extending outwardly therefrom, one of said side plates containing a pair of hollow pivot portions for pivotally mounting said turnable holder rod, and the other of said side plates containing said step section adjacent said angle guide portion for receiving said keep on said slide member.

4,449,841

FASTENING MEANS FOR AXIALLY SECURING MACHINE ELEMENTS AND METHOD THEREFOR

Manfred Brandenstein, Eussenheim, and Rüdiger Hans, Niederwerrn, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

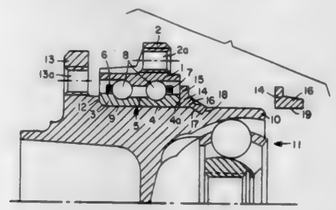
Filed Aug. 10, 1982, Ser. No. 406,908

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132443

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—24 **6 Claims**

1. Means for securing a machine element such as a bearing assembly on a shaft member or the like having an annular groove (17) comprising an angular ring (14) having a radially outwardly directed leg portion (15) which abuts against an axial end face of the inner ring component to be secured, and an axial leg portion (16) which is pressed into said annular groove (17) at least at a plurality of circumferentially spaced locations about its periphery and a second ring member mounted on the shaft member and having a portion which



overlies and engages the axial leg portion of said angular ring (14).

4,449,842

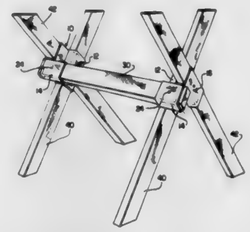
SLEEVE BRACKET

William Reichman, Jr., Greentown, Pa., assignor to Custom Wrought Products, Co., Greentown, Pa.

Filed Oct. 21, 1981, Ser. No. 313,604

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—25 **11 Claims**



5. A structure comprising at least a pair of sleeve brackets in spaced relationship,

each sleeve bracket comprising at least three sleeves, each sleeve being in angularly offset relationship, to each other sleeve, each sleeve defining a hollow interior channel,

each sleeve being positioned in perpendicular relationship to the other two sleeves; and a plurality of frame members respectively inserted into the interior channels of the sleeves,

at least one said frame member extending horizontally between a pair of spaced sleeve brackets and the other of said frame member being oriented in angular relationship to both a horizontal plane and a vertical plane.

4,449,843

OCTA HUB

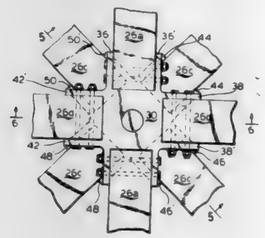
Wendel R. Wendel, Plainview, N.Y., assignor to Space Structures International Corp., Plainview, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,802

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—173 **8 Claims**

1. A connection for structural members including a plurality of hub components each of which has projecting ears constructed and arranged to receive the end of a structural member, said hub components being rotated to define angles between the respective ears of adjacent hub components, said hub components being precompressed together by bolt means



to form a structural unit capable of transferring axial and shear loads from said structural members attached to said ears.

4,449,844

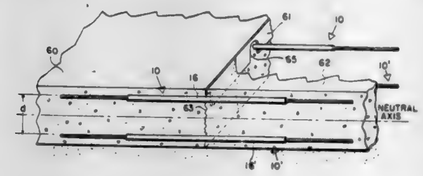
DOWEL FOR PAVEMENT JOINTS

Torbjorn J. Larsen, 3719 NW. 29th St., Gainsville, Fla. 32605

Filed Sep. 24, 1982, Ser. No. 422,672

Int. Cl.³ E01C *11/14, 11/02*

U.S. Cl. 404—60 **2 Claims**



1. A device for simultaneously controlling the width of a joint between concrete pavement slab sections, transferring vertical shear stresses across said joint, and transferring bending moments across said joint, comprising:

a pair of elastic bars, each of said bars having two end portions and a central portion and having a length short relative to the length of the slab sections, said pair of bars disposed symmetrically and longitudinally across said joint wherein one bar of said pair is disposed with its central portion near the top surface of the slab sections, and the other one of said pair is disposed with its central portion near the bottom surface of the slab sections, and arranged to transfer vertical loads and bending moments caused by a traffic load of a desired maximum value applied to one slab section across said joint to the adjacent slab section, said pair of bars selected to withstand such vertical loads and bending moments without deformation, each of said pair of elastic bars formed to dispose said end portions of said bars essentially along the neutral axis of the concrete slab sections; and

means for partially transferring longitudinal stress comprising bonding means associated with said end portions of said bars for bonding said end portions to the concrete slab sections along the neutral axis, and bonding prevention means associated with said central portion of said bars for allowing movement of said central portion with respect to the concrete slab sections, said stress transferring means partially transferring longitudinal stress in the concrete slab sections due to contraction and expansion of said pair of elastic bars, said elastic bars also selected to operate within their elastic limit over a desired stress range in such concrete slab sections to limit the joint gap width to a selected value.

4,449,845

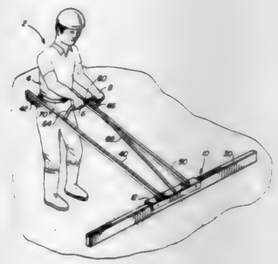
SCREED BOARD APPARATUS

Ernest V. Carrillo, 597 W. Gary Dr., Chandler, Ariz. 85224

Filed Oct. 13, 1981, Ser. No. 310,504

Int. Cl.³ E01C *19/22*; E04G *21/10*

U.S. Cl. 404—118 **7 Claims**



1. Walking screed apparatus, comprising, in combination:

a screed;

bracket means securable to the screed;

handle means secured to the bracket means, including

a first handle,

a first leg secured to the first handle and extending upwardly substantially perpendicularly to the first handle,

a second handle spaced apart from the first handle,

a second leg secured to the second handle and extending upwardly substantially perpendicularly to the second handle, and

a bar extending between the first and second legs for holding by a user to maneuver the screed;

a brace secured to and extending between the bar and the bracket means; and

flexible harness means secured to the handle means and adapted to be secured to the torso of a user for securing the screed apparatus to the user, and the bar is disposed between the harness means and the bracket means.

4,449,846

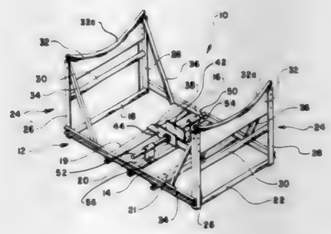
TRANSVERSE SADDLE TYPE BOAT CRADLE

James W. Price, Rte. 1 Box 87, Grifton, N.C. 28530

Filed Apr. 22, 1982, Ser. No. 370,838

Int. Cl.³ B63C *5/05*

U.S. Cl. 405—7 **9 Claims**



1. A fore-and-aft transverse saddle type boat cradle for supporting a boat, wherein said boat cradle is capable of assuming a collapsed, folded down position in order that respective boat cradle can be stacked one on top of another for economical and practical transport, comprising:

A. a base frame structure including a generally rectangular frame having two laterally spaced apart longitudinally extending frame members and a plurality of transverse frame members operatively interconnected between said longitudinal frame members;

B. fore-and-aft vertical support frame assemblies secured to

said base frame structure and in an operative boat supporting mode extend upwardly for transversely engaging and supporting a boat at fore-and-aft areas, each of said fore-and-aft vertical support frame assemblies including:

1. means movably mounting said vertical support frame assembly to said base frame structure for movement from a vertical support position inwardly toward said base structure to a generally horizontal folded position overlying said base structure, and visa versa, wherein in said generally horizontal folded position said support frame assembly lies adjacent said base frame structure such that a plurality of cradles may be stacked one over the other for transport;
2. a transverse hull support panel that extends substantially across said vertical support frame assembly and includes an upper support surface selectively shaped and curved to generally comform to the shape of a boat hull to be supported;

C. diagonal brace means connected between said vertical support frame assembly and said base frame structure for diagonally bracing said vertical support frame assemblies when the latter is positioned upright in a supporting mode of operation, said diagonal brace means including a pair of diagonal braces detachably connected between each vertical support frame assembly and said base frame structure; and

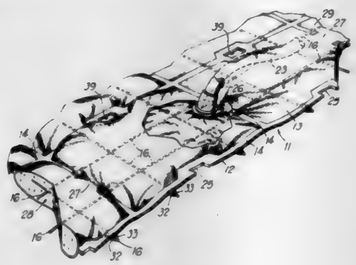
D. keel restraining means mounted on at least one of said transverse frame members of said base frame structure for generally preventing the keel from moving laterally, thereby assuring that the boat being supported is supported in a generally upright posture said keel restraining means including a pair of laterally spaced restraining panels that normally and generally extend in vertical planes and which define therebetween a space for receiving the keel of a boat being supported whereby the presence of said panels about opposite sides of the keel tends to restrict the lateral movement of the keel.

4,449,847

REVETMENT PANEL

John M. Scales, Norcross, and Bernard F. Wolcott, Roswell, both of Ga., assignors to Nicolon Corporation, Norcross, Ga.

Filed Sep. 27, 1982, Ser. No. 424,563
Int. Cl.³ E02B 3/12
U.S. Cl. 405—19 20 Claims



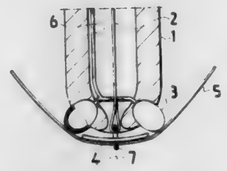
1. A web comprising:
(a) an upper and a lower fabric layer;
(b) a plurality of interconnected compartments, the walls of which are formed where the fabric layers are woven separately;
(c) selvage separating the compartments, formed by interweaving the fabric layers;
(d) a plurality of cable slots formed in the selvage, where the fabric layers are woven separately, each of the cable slots communicating with one or more of the compartments; and
(e) a plurality of cables passing through the cable slots and interconnecting the compartments.

4,449,848

MEANS FOR PROVIDING A VERTICAL DRAIN IN SOIL

Mauno O. Juhola, Lounaisväylä 2, 00200 Helsinki 20, Finland

Filed Feb. 9, 1983, Ser. No. 465,045
Int. Cl.³ E02D 3/10
U.S. Cl. 405—50 2 Claims



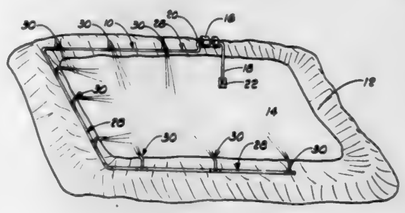
1. Improvement in a means for providing a vertical drain in soil, comprising a push tube to be pushed into the soil and which carries within itself a prefabricated drain provided with a plate-like anchor on the lower end, said anchor resting against the lower end of the push tube and keeping the prefabricated drain stationary while the push tube is pulled upwards, wherein the improvement comprises that the lower end of the push tube is provided with at least one pouch-like pressure member located between said push tube and the anchor and which can be inflated by the aid of a pressurezed fluid so that it will push the anchor off the lower end of the push tube and spread it out in opened position.

4,449,849

METHOD OF REMOVING WATER FROM EARTHEN PITS

Spencer C. Horn, Ft. Cobb, and Alan A. Mogg, Lookeba, both of Okla., assignors to S & A Oil Field Services, Inc., Ft. Cobb, Okla.

Filed Jul. 19, 1982, Ser. No. 399,441
Int. Cl.³ E02B 1/00
U.S. Cl. 405—52 5 Claims



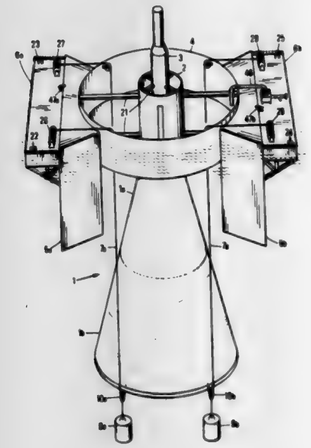
1. A method of removing an earthen pit containing aqueous well drilling fluid from the site thereof comprising the steps of:
allowing solids suspended in said drilling fluid to settle to the bottom portion of said pit;
placing a plurality of spray nozzles around the periphery of said pit, said nozzles being directed towards the center of said pit;
pumping water from the top portion of said pit through said spray nozzles whereby said water is sprayed towards the center of said pit until a major portion of said water is removed therefrom by evaporation; and
covering the remaining minor portion of water and settled solids and filling in said pit with earth to thereby remove said pit.

4,449,850

ANTIPOLLUTION DEVICE FOR RECOVERING FLUIDS LIGHTER THAN WATER ESCAPING FROM AN UNDERWATER SOURCE

Maurice Cessou, and Lucien Perez, both of Communay, France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 14, 1980, Ser. No. 207,044
Claims priority, application France, Nov. 16, 1979, 79 28354
Int. Cl.³ E02B 15/04
U.S. Cl. 405—60 10 Claims



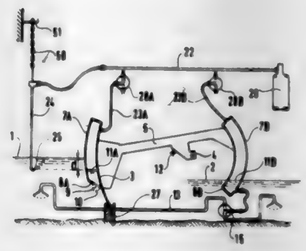
1. An antipollution device for recovering fluids lighter than water, escaping from an underwater source (8), comprising:
(a) a collector element (1) adapted for capping said source (8) for trapping the fluids escaping therefrom, said collecting element (1) comprising a lower part (1*b*) and an upper part (1*a*) with at least said lower part (1*b*) being flexible and foldable, and the wall of said lower part (1*b*) being permeable;
(b) collecting means (2, 2*a*) connected to said collector element (1) and positioned above said collector element (1) for collecting escaping fluids trapped by said collector element (1), said collecting means comprising a recovery chamber (2, 2*a*) located above said collector element (1), said recovery chamber (2, 2*a*) being connected to said collector element (1), and operatively associated with gas-liquid separation means (3,16) for separating said collected escaping fluids into a liquid phase and a gas phase;
(c) an annular tank (4) surrounding said recovery chamber (2, 2*a*) for recovering the separated liquid phase, and said annular tank (4) being open at its lower part and provided with adjustable bouyancy means (5, 5*a*) comprising two vertically extending ballast chambers (5*a*, 5*b*) defining two annular sectors diametrically located at the periphery of said annular tank (4), and secured thereto; and
(d) handling means (7*a*, 7*b*) operatively connected to said lower part (1*b*) for unfolding said lower part (1*b*) from a folded position at the water surface during positioning of said collector element (1) over a source of escaping fluid.

4,449,851

ENERGY-EFFICIENT AUTOMATIC SLUICE GATE FOR SUSTAINING A FLUID LEVEL

Gilles Combes, Grenoble, and Germain Delage, Saint-Ismier, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Dec. 13, 1982, Ser. No. 449,292
Claims priority, application France, Jan. 12, 1982, 82 00344
Int. Cl.³ E02B 7/42
U.S. Cl. 405—93 7 Claims



1. An energy-efficient automatic sluice gate for sustaining a fluid level, wherein said gate controls the flow of water from an upstream pool to a downstream pool and comprising:
a closing baffle carried by a framework movable about a horizontal rotating shaft located downstream from the baffle such that rotation of said framework about said shaft controls a section of water flowing from upstream to downstream, said baffle constituting one segment of a revolving cylinder with said rotating shaft as its axis;
and at least one box member carried by said framework, which dips into the pool, the level of which must be maintained so that the angular position of said framework is determined by the water level therein, said at least one box member having an opening at the bottom for the passage of water and an opening at the top for the passage of air to enable the amount of water in the box member to be varied;
said at least one box member comprising an upstream box member and a downstream box member, both carried by the framework, located opposite one another across from said shaft such as to be held partially immersed respectively in the upstream and downstream pools, the pools being separated by the above-mentioned baffle with both box members having openings in their tops and bottoms;
and pressure regulating means operatively communicating with said openings via switching valves such that they may be caused to operate alternately in an upstream regulation mode and a downstream regulation mode, said regulation means controlling the water level in a regulating box member, constituting said upstream box member in the upstream regulation mode and said downstream box member in the downstream regulation mode, so as to automatically maintain the water level in a regulated pool or basin, being the one in which the regulating box member dips, with said switching valves allowing water and air to flow through the openings in the other, non-regulating box member to balance the water levels obtaining in said non-regulating box member and in the unregulated pool.

4,449,852

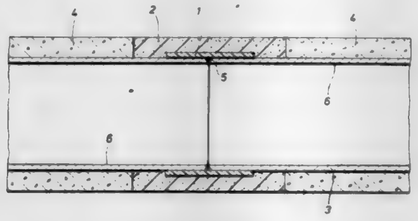
BUCKLE ARRESTOR

Larry C. Muszynski, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 30, 1982, Ser. No. 403,377
Int. Cl.³ F16L 1/00, 9/22
U.S. Cl. 405—168 10 Claims

1. A pipeline buckle arrestor or preventor secured to the

outside circumference of a minor portion of a steel pipeline comprising a fiber-reinforced resin cover immediately adjacent



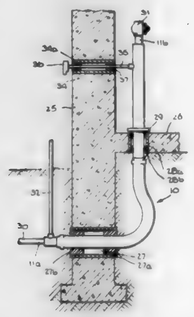
to the pipeline and a polymer-concrete formulation encapsulating the resin cover.

4,449,853

FLEXIBLE SLEEVE ELBOW FOR GAS SERVICE LINES

Robert J. Mennella, 252-48 60th Ave., Little Neck, N.Y. 11362, and David Davidowitz, 17 Colts Brook Rd., Marlboro, N.J. 07746

Filed Apr. 11, 1983, Ser. No. 483,667
Int. Cl.³ F16L *5/00*
U.S. Cl. 405—184 **3 Claims**



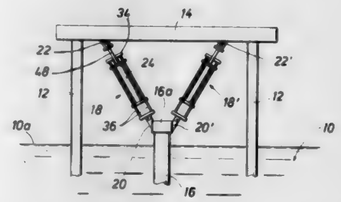
1. The method of installing a gas service line leading from an underground exterior location past the building line of a building or the like and upwardly through a ground slab to a location within the building, comprising the steps of providing a small opening through said ground slab in the vicinity of said exterior location of said gas service line, providing a narrow passage in the earthen fill between said ground slab opening and said gas service line, snaking a flexible sleeve elbow unit downwardly through said ground slab opening and said passage and thence horizontally past said building line, said flexible sleeve elbow unit comprising an inner corrugated gas service pipe having respective projecting rigid pipe upper end and lower end portions, and an outer casing pipe comprising a corrugated length portion surrounding said inner corrugated gas carrier pipe to provide an annular spacing therebetween, and respective rigid pipe upper and lower end portions attached in gas-tight sealing relationship to the respective of said upper and lower rigid pipe end portions of said gas carrier pipe, attaching said projecting lower end portion of said gas carrier pipe to said gas service line at said underground exterior location of the building with at least said rigid lower end portion of said casing pipe projecting exteriorly beyond said building line, said upper end portion of said gas carrier pipe and at least a portion of said rigid upper end portion of said rigid upper end portion of said casing pipe then projecting above said ground slab at said location within said building, securing said elbow unit in place by filling said passage with filling material within the area thereof which surrounds said elbow unit and closing said slab opening around said elbow unit, and providing a gas vent extending from said annular space to the atmosphere exterior of said building.

4,449,854

MOTION COMPENSATOR SYSTEM

Douglas W. J. Nayler, Kingwood, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Feb. 12, 1981, Ser. No. 233,832
Int. Cl.³ E02D *21/00*; E21B *7/128, 19/09*; F16F *9/18*
U.S. Cl. 405—195 **9 Claims**



1. A motion compensation system for disposition between an offshore support structure in a body of water and a riser-type pipe structure mounted to the floor of said body of water, said structures having respective upper portions normally disposed above the surface of the water,

said compensation system including a pair of motion compensators disposed generally on opposite sides of said riser-type pipe structure, each of said compensators comprising:

a cylinder having one end directed generally toward a connection area on said upper portion of one of said structures and the other end directed generally toward a connection area on said upper portion on the other of said structures;

a piston reciprocably mounted within said cylinder;

a piston rod adjoining said piston and protruding outwardly through said one end of said cylinder;

first connection means connecting said cylinder to said connection area of said one structure;

second connection means connecting the protruding part of said piston rod to said connection area of said other structure independently of said first connection means and of said cylinder;

and a compressible fluid disposed between said piston and said other end of said cylinder to resist movement of said piston toward said other end of said cylinder and thereby resist relative movement of said connection areas of said structures away from each other;

and said pair of motion compensators being angularly oriented with respect to vertical and oppositely to each other to compensate for both lateral and vertical relative movement of said structures.

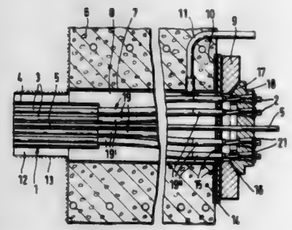
4,449,855

ANCHOR HEAD FOR A CORROSION-PROTECTED INJECTED ANCHOR

Otmar Langwadt, Munich, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 17, 1982, Ser. No. 389,562
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125166
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—260 **3 Claims**

1. An anchor head for a corrosion-protected prestressable injected anchor for use as a permanent ground anchor or rock anchor comprising a tension member arranged to extend through and out of a borehole, said tension member comprising a plurality of individual steel members arranged in a bundle, an abutment member arranged to be located spaced outwardly from the borehole, an anchor plate supported on said abutment member on the opposite side thereof from the borehole, said anchor plate having bores therethrough each for an individual one of said steel members, said anchor plate having a first surface facing in the direction of said bundle of steel members and an oppositely directed second surface, said bundle of steel members being in closely spaced relation within the borehole and fanned outwardly relative to one another between the borehole and said abutment member, a corrosion sheathing on each of said steel members, a closure plate located on the first



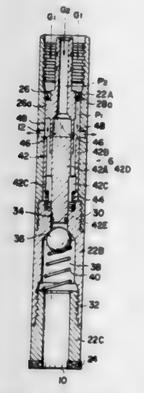
surface side of said anchor plate and spaced from said anchor plate by said abutment member, said closure plate having a number of openings therethrough corresponding to the number of said steel members, said steel members extend through said openings in said closure plate, a sleeve tube laterally encloses each of said steel members and said corrosion sheathing on said steel members in the fanned-out region thereof and in the region where the steel members extend through said closure plate so that said steel members extend through said closure plate in a sealed manner, and means cooperating with said another plate for fixing the ends of said steel members in said anchor plate.

4,449,856

GROUT INJECTION METHOD AND APPARATUS

Takehiko Tokoro, Iruma; Shoichi Kashima, Sagamihara, and Mineo Murata, Tokyo, all of Japan, assignors to Nihon Soil Engineering Co., Ltd.; Nihon Sogo-Bosui Co., Ltd. and Yamaguchi Kikai Kogyo Co., Ltd., all of Tokyo, Japan

Filed Feb. 3, 1982, Ser. No. 345,445
Claims priority, application Japan, Dec. 16, 1981, 56-204047
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—269 **15 Claims**



1. A method of injecting grout into soil, the grout being prepared by mixing a first liquid and a second liquid to form a grout, the method being performed by using an injection pipe comprising an outer pipe member and an inner pipe member coaxially disposed in said outer pipe member, said outer pipe member having a nozzle at the tip end thereof for jetting a boring fluid therefrom, an axially extending guide passageway in said outer pipe member spaced upwardly from said tip end thereof, injection orifice means in the peripheral wall of said outer pipe member spaced upwardly from said guide passageway, said inner pipe member extending from the upper end of said injection pipe partway along the length thereof to a location close to said injection orifice means, said inner pipe member having exit port means at or close to the lower end thereof, an axially slidable spool valve fitted in said outer pipe member between the lower end of said inner pipe member and said guide passageway, resilient means continuously urging said spool valve upwardly in a direction away from the tip end of said outer pipe member to a first upper position, said spool valve being movable toward said tip end to a second lower position in which said spool valve closes said guide passageway, said spool valve having an upright central spool portion axially slidably receivable in said inner pipe member to close said exit port means when said spool valve is in said first position and to open said exit port means when said spool valve is in said second position, said central spool valve portion having an upper surface adapted to be acted on by the pressure of the liquid fed into said inner pipe member so that said spool valve can be moved from said first position to said second position against the urging of said resilient means when pressurized liquid is fed into said inner pipe member, said spool valve having a peripheral shutter portion integral with said spool portion and axially slidably disposed in the space between said inner and outer pipe members for closing said injection orifice means when said spool valve is in said first position and for opening said injection orifice means when said spool valve is in said second position, said inner and outer pipe members defining a first passage therebetween, said inner pipe member defining a second passage therewithin, said inner and outer pipe members and said spool valve defining a mixing chamber in said first passage when said spool valve is in said second position, said mixing chamber being located between and communicating with said exit port means and said injection orifice means, said spool valve having axially extending through holes located between said spool portion and said shutter portion and providing communication between said first passage and said guide passageway, said method comprising the steps of feeding only a boring fluid into said first passage while said spool valve is maintained in said first position so that the boring fluid flows through said first passage, said through holes, said guide passageway and thence out the top of said injection pipe whereby to bore a hole in the ground; then feeding said first and second liquids through said first and second passages, respectively, the pressure of said second liquid being effective to shift said spool valve to said second position whereby to block said guide passageway, open said exit port means and said injection orifice means and form said mixing chamber so that the first and second liquids meet, contact and mix with each other in the mixing chamber and the mixture thereof is injected through the injection orifice means into the ground.

4,449,857

RETAINED EARTH SYSTEM WITH THREADED CONNECTION BETWEEN A RETAINING WALL AND SOIL REINFORCEMENT PANELS

Edgar A. Davis, San Jose, Calif., assignor to VSL Corporation, Los Gatos, Calif.

Filed Oct. 26, 1981, Ser. No. 314,699
Int. Cl.³ E02D *29/02*
U.S. Cl. 405—286 **5 Claims**

1. A soil retaining system comprising

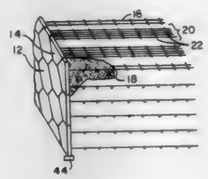
(a) an upright soil retaining wall comprising interlinked modular facing panels,

(b) a plurality of soil reinforcement panels, each comprising a plurality of spaced generally parallel wires and spaced crossbars rigidly mounted at crossover points of said

parallel wires in generally perpendicular relationship, one end of said parallel wires terminating in enlarged bulbous portions,

(c) a plurality of cylindrical internally threaded female members anchored in the back sides of said facing panels, said female members forming at least one tandem, spaced, generally horizontal row,

(d) a plurality of cylindrical externally threaded interconnecting male members mating with said female members and disposed therein, each of said male members having a



forward end wall directed toward said retaining wall, each of said male members defining an axially aligned bore of a width larger than the diameter of one of said wires, but smaller than the bulbous portions, whereby said wire is rotatable with respect to said bore when seated therein, said bores being spaced to register with the parallel wires of said mesh panels, and

(e) the wires of one of said mesh panels being disposed in said bores with the bulbous portions seated to bear against said forward end walls of said male members to interconnect corresponding facing panels and mesh panels.

4,449,858

METHODS AND/OR APPARATUS FOR INCREASING THE OVERTURNING RESISTANCE OF RETAINING WALLS

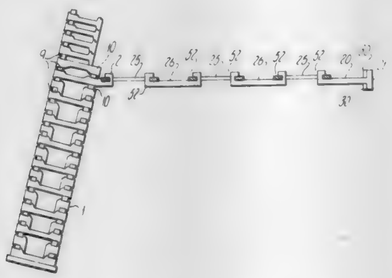
John R. Hynds, Auckland, New Zealand, assignor to J. R. Hynds Limited, Auckland, New Zealand

Filed Jun. 21, 1982, Ser. No. 390,371

Claims priority, application New Zealand, Jun. 24, 1981, 197519

Int. Cl.³ E02D *17/00*

U.S. Cl. 405—286 **6 Claims**



1. Restraining means for increasing the resistance to overturning of a crib retaining wall comprising, a restraining header adapted to be incorporated in said crib wall as a part thereof intermediate the height of said wall, a hook member integral with said restraining header and extending outwardly therefrom in the direction of restraining, a plurality of interlinking block members each comprising hook shaped end portions interconnected by a longitudinal intermediate portion, said hook ends of said block members being interlinked to form an elongated chain of said interlinking block members and the free hook at one end of said chain being interlinked with said hook member on said restraining header, a deadman adjacent the other end of said chain of interlinking block members, and means to connect the free hook at said other end to said deadman.

4,449,859

MINERAL MINING INSTALLATION

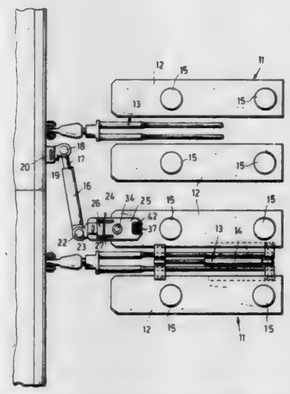
Günter Terhorst, Dülmen; Karl-Heinz Plester, Lunen; Harry Rosenberg, Ludinghausen, and Friedrich Eggenstein, Bergkamen-Oberaden, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 384,877

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1981, 3122952

Int. Cl.³ E21D *15/00*

U.S. Cl. 405—291 **10 Claims**



1. In a mineral mining installation including a longwall structure and a roof support unit, the roof support unit being provided with a substantially horizontal hydraulic bracing ram disposed at an acute angle to the longwall structure and acting on said structure to brace said structure longitudinally, the bracing ram being attached to a floor sill of the roof support unit by a bracket, the bracket having connection means for connecting the bracket to the floor sill and a pivot joint member for connection to the bracing ram, the improvement comprising forming the bracket by first and second bracket parts, the second bracket part being rigidly connected to the first bracket part, the first bracket part comprising said connection means and being of a plate-like construction carrying a claw at one end thereof which is engageable with a free end of the floor sill, the first bracket part having an apertured boss adjacent to the claw, there being a coupling pin which is received in the apertured boss and which is engageable in an aperture in said floor sill, and the second bracket part forming an extension of the first bracket part and carrying the pivot joint member.

4,449,860

MINE ROOF SUPPORTS

Kunibert Becker, Werl; Burckhard Elsner, Lunen, and Rudiger Kirchbrucher, Dortmund-Brackel, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Apr. 12, 1982, Ser. No. 367,513

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 3115984

Int. Cl.³ E21D *17/054*

U.S. Cl. 405—293 **15 Claims**

1. In or for a mine roof support, a multipart extendible roof contacting structure comprising: a main roof-contacting structure (1), an auxiliary roof-contacting structure (3) pivotably connected to the main structure, and an appliance for pivoting

the auxiliary structure about the main structure between an operative position aligned with the main structure and an inoperative position stowed beneath the main structure, wherein said appliance employs at least one piston and cylinder unit (7) supported by the main structure, at least one pivotable guide lever (5) connected between the auxiliary structure and



the piston and cylinder unit, and slidable guide means between the piston and cylinder unit and the main structure, and wherein the slidable guide means comprises guideways (14) on the main structure, and a guide member (13) slidably engaging in the guideways and coupled to the piston and cylinder unit for direct movement therewith.

4,449,861

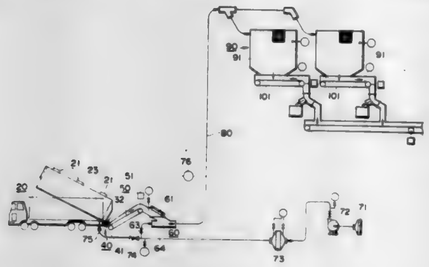
SYSTEM FOR TRANSPORTING PLASTICS ARTICLES

Hisatoshi Saito; Shuzo Fujii; Itaru Takase; Akihiko Nakamura, and Yoshihiro Hara, all of Tokyo, Japan, assignors to Q.P. Corporation and Denka Engineering Kabushiki Kaisha, both of, Japan

Filed Feb. 9, 1982, Ser. No. 347,327

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—39 **6 Claims**



1. A system for transporting hollow plastics articles comprising in combination vehicle means for transporting the articles, said vehicle means having a tiltably mounted container which comprises heat-insulating walls and which is provided, at its upper portion, with a plurality of inlets for the articles and, at its rear portion, with an outlet for the articles and means for introducing pressurized air into said container, said tiltably mounted container being also provided, at the outlet thereof, with folding guide means comprising a bellows secured at one end to said rear portion and a pliable guide cylinder located on the inside thereof for guiding the articles to be discharged out of said container, a hopper device having a hopper adapted to be interconnected with said outlet through said folding guide means, a feed device coupled to said hopper device and arranged to convey the hollow plastics articles received from said hopper device, a pipeline through which the articles are transported and which comprises individual pipe sections, injector means interconnected with said feed device and said pipeline for pneumatically injecting into and conveying through said pipeline the articles conveyed from said feed device, said injector means and said pipeline being lined with a sheet of pliable and elastic material at least at their inner surfaces with which the articles may come into contact, and a storage device installed at the delivery end of said pipeline and having means for discharging the hollow plastics articles stored therein, said storage device comprising a storage having at its upper portion an inlet port to which the delivery end of said pipeline is connected and at its bottom portion an outlet port, said storage also having baffle plates disposed therein and tilted at an angle of 20° to 30° in a zig-zag manner, respectively, each of the individual pipe sections of said pipeline having a square cross-section shape and being constructed such that at least one of the longitudinally extending walls thereof can be fully opened so that the linings of each said pipe section may be cleaned and repaired.

4,449,862

VORTEX INJECTION METHOD AND APPARATUS

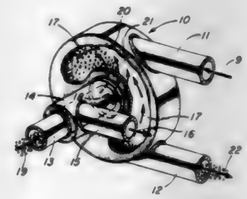
Jeffrey L. Beck, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Dec. 22, 1980, Ser. No. 218,857

The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.

Int. Cl.³ B65G *53/30*

U.S. Cl. 406—93 **29 Claims**



18. A method of converting a low pressure slurry to a high pressure slurry comprising:

(a) injecting a high pressure fluid tangentially into a generally cylindrical chamber having a central axis, thus forming a low pressure vortex;

(b) removing a portion of said injected high pressure fluid along a path concentric to said central axis from said low pressure vortex;

(c) injecting a low pressure slurry along said central axis into said low pressure vortex wherein said low pressure slurry mixes with said high pressure fluid to form a high pressure slurry;

(d) separately removing said formed high pressure slurry tangentially from said chamber.

4,449,863

PIPE SWITCH FOR PNEUMATIC CONVEYING DEVICES

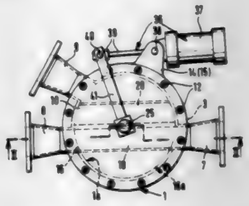
Klaus Ullner, Braunschweig, Fed. Rep. of Germany, assignor to Bühler-Miag GmbH, Braunschweig, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,728

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102384

Int. Cl.³ B65G *53/56*

U.S. Cl. 406—182 **6 Claims**



1. A pipe switch for pneumatic conveyors, comprising a housing enclosing an inner space and being formed with a feeding connection for pulverized or granular material, and a plurality of discharging connections arranged opposite said

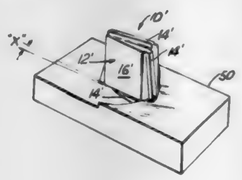
feeding connection; a plug disposed for rotation in said space and having a plurality of transverse channels corresponding in number to said discharging connections; control means coupled to said plug for rotating the same into a plurality of switching positions in which one of said channels connects said feeding connection to a selected discharge connection; sealing means embedded in said plug and including two closed loops surrounding respectively the inlets and the outlets of said channels in the plug, said sealing loops being spaced apart in circumferential direction from the adjoining sides of said inlets and outlets respectively about a distance which exceeds the breadth of said inlets and outlets in circumferential direction so that during rotation of said plug between said switching positions, the sealing loops do not override said adjoining sides of the inlets and outlets.

4,449,864

CONSUMABLE SELF-REGENERATIVE LEDGE CUTTING INSERT

Sazzadul Haque, 3290 Wolverine, Troy, Mich. 48084, and Terry A. Schroeder, 35905 Fredericksburg, Farmington Hills, Mich. 48018

Filed Dec. 7, 1981, Ser. No. 328,194
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—113 **16 Claims**



1. A consumable self-regenerative ledge cutting insert comprising:

a planar body member having opposed, generally parallel surfaces which are spaced to define peripheral edge surfaces, at least one peripheral edge surface including an elongated, projecting ledge having improved cross-sectional configuration extending along the length thereof and formed unitary therewith, said ledge being of smaller width that the width between the spaced surfaces of the body member and defining a cutting edge of the cutting insert whereby during a cutting operation one end of the elongated ledge continually contacts a workpiece and is continuously consumed so as to define a new cutting edge along the length of the ledge, the ledge having angled, tapered or arcuate cross-sectional geometric configuration.

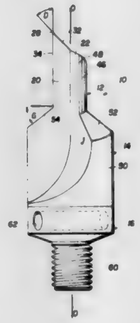
9. An indexable consumable self-regenerative ledge cutting insert comprising a planar body member of generally rectangular configuration including opposed, generally parallel surfaces which are spaced to define peripheral edge surfaces, said planar body member formed unitary with elongated projecting ledges respectively extending from each said peripheral edge surface, each elongated projecting ledge extending along at least a portion of the length of the associated peripheral edge surface and being of smaller width than the width of the peripheral edge surface, each said elongated ledge extending diagonally across said respective peripheral edge surface such that each said elongated ledge defines a cutting edge disposed at a radial rake angle whereby during the cutting operation, one end of an elongated ledge continually contacts the workpiece and is continuously consumed in a manner to define a new cutting edge along the length of said ledge until such time as the ledge is consumed, after which the cutting insert may be indexed to the next ledge cutting edge.

4,449,865

METHOD AND TOOL FOR GENERATING COUNTERSUNK HOLES IN COMPOSITE MATERIALS

Alexander Yankovoy, and Theodore Ozer, both of Wallingford, Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 18, 1981, Ser. No. 322,625
Int. Cl.³ B23B *35/00, 51/00*
U.S. Cl. 408—1 R **8 Claims**



7. A method of generating a countersunk hole in a composite of at least a first material and a second material having a higher modulus of elasticity than the first material, the hole being generated having a longitudinal axis, a countersunk portion which extends axially inward from an outer surface of the composite, and an inner portion which extends axially inward from the countersunk portion, the hole inner portion having a constant minimum diameter and the hole countersunk portion having a diameter which increases from the minimum diameter at the hole inner portion to a maximum diameter at the composite outer surface, the method comprising the steps of:

cutting and continuously penetrating the composite at a minimum circumferential surface limit of the hole corresponding to the minimum hole diameter and at a point which travels about the minimum circumferential surface and in the inward direction of the longitudinal axis of the hole being generated;

simultaneously cutting the composite continuously about the minimum circumferential surface and along a revolving radius of the hole being generated, wherein the revolving radius is inclined relative to the longitudinal axis of the hole; and

cutting the composite continuously along at least one revolving, radially-extending line which also travels in the inward direction of the hole axis, the revolving line being inclined relative to the hole axis so that the composite is progressively cut along said revolving line, starting at the junction of the hole minimum circumferential surface and the composite outer surface, said revolving line travelling axially inward until a point of the revolving line adjacent the composite outer surface cuts the composite along a maximum circumferential surface limit corresponding to the maximum hole diameter.

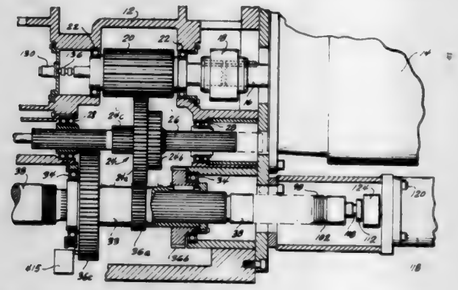
4,449,866

SERVO-CONTROLLED SPINDLE DRIVE SYSTEM

Earl R. Lohneis, Milwaukee, and Richard E. Stobbe, Greenfield, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Jul. 24, 1981, Ser. No. 286,371
Int. Cl.³ B23B *47/14, 47/22;* F16H *5/16*
U.S. Cl. 408—9 **4 Claims**

1. In a spindle drive system for driving a machine tool spindle that is adapted to carry a rotary cutting tool; an electric motor having an output shaft; a transducer coupled directly to said output shaft for rotation in unison therewith; a gear train connected to transmit the drive from said output shaft to said spindle; a shiftable gear in said gear train for meshing engagement with any one of a plurality of gears selectively for varying the speed of said spindle; and retaining means in said gear train for retaining the individual gears of said gear train locked against rotation relative to each other during the movement of



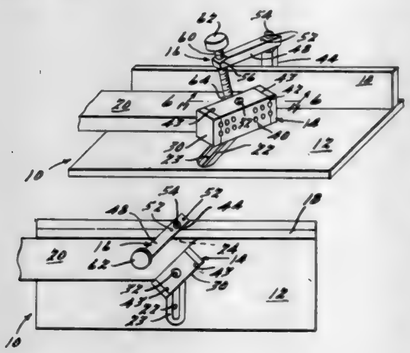
said shiftable gear so that the gears always remain in the same rotary position relative to each other to retain the constant synchronism between said transducer and the spindle.

4,449,867

DOWEL DRILL FIXTURE

Stephen J. Dergo, 7821 Timor St., Long Beach, Calif. 90808

Continuation-in-part of Ser. No. 100,504, Dec. 5, 1979, Pat. No. 4,332,514. This application May 25, 1982, Ser. No. 381,681
Int. Cl.³ B23B *47/28*
U.S. Cl. 408—103 **12 Claims**



1. A drill fixture comprising:

a base plate having a slot therein;

a drill guide block having at least one first pair of bores adapted to guidingly receive a drill bit therein and a second bore adapted to receive a pivot means therein;

pivot means located in said second bore and slidably received in said slot for pivotally attaching said drill guide block to said base plate; said pivot means including slide locking means for selectively fixing the position of said pivot means in said slot without interfering with the pivoting of said drill guide block; and pivot locking means for selectively fixing the pivotal position of said drill guide block.

4,449,868

APPARATUS FOR THREADING HOLES

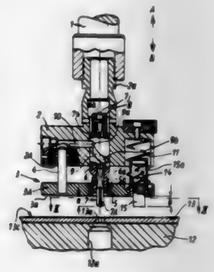
Karl Steinsberger; Albert Maier, and Walter Herrmann, all of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,577
Int. Cl.³ B23Q *5/027;* B23G *3/04*
U.S. Cl. 408—138 **22 Claims**

1. Apparatus for threading a tapping hole having internal projections which alternate with recesses for externally threaded ridges of a fluted tap, said apparatus comprising:

(a) a hold-down device having a side movable against a workpiece provided with a tapping hole to be threaded, said device also having an internally threaded portion;

(b) a holder mounted for rotation and having external threads meshing with the internal threads of said internally threaded portion so that rotation of said holder entails axial movement thereof and said holder is guided by said device;



(c) a tap mounted in said holder and having substantially parallel flutes alternating with substantially parallel, externally threaded ribs;

(d) a carrier for said device movable with reference to the latter;

(e) cooperating guide means on said carrier and said holder arranged to rotate said holder in response to relative movement of said carrier and said device; and

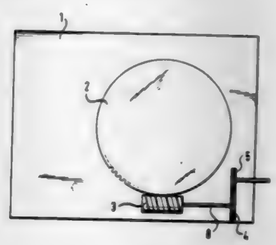
(f) limiting means for limiting rotation of said holder to a predetermined angle which corresponds to a fractional revolution of said tap.

4,449,869

DEVICE FOR THE MANUFACTURE OF GEAR WHEELS FOR LOW NOISE GEARINGS

Kurt Maier, Karlsruhe, Fed. Rep. of Germany, assignor to BHS-Dr. Ing. Hofler Maschinenbau GmbH, Ettlingen-Oberweier, Fed. Rep. of Germany

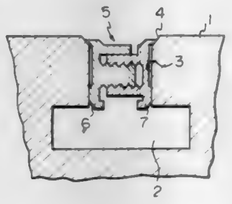
Filed Nov. 6, 1980, Ser. No. 204,542
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951876
Int. Cl.³ B23F *5/22*
U.S. Cl. 409—11 **15 Claims**



1. In a gear cutting machine including a cutter support, a cutter and cutter drive, a work support, a work support drive and a gear train interconnecting said cutter drive and said work support drive for synchronous rotation of said cutter and a workpiece, said work support drive including a workslide (1), an indexing worm gear (2) mounted on said workslide and driven by a worm (3) mounted on a worm shaft (8) driven by at least one gear wheel (4) and a drive gear (5), said shaft including an extension portion (20) terminating in a threaded

section (21) configured to receive a locking nut (22) thereon; an eccentric socket (12) mounted on said extension portion and adjustably supporting said gear wheel (4) thereon for relative rotative adjustment with respect thereto, and locking means selectively interconnecting said shaft, said eccentric socket and said gear wheel in a selected relative position and against relative rotation with respect to each other, whereby the eccentric mounting of the gear wheel may be adjusted to produce cyclic variation of the work rotation with respect to the cutter.

4,449,870
T-SLOT COVER
Masakazu Suzuki, Ibaraki, Japan, assignor to Suzuki Iron Works Co., Ltd., Tokyo, Japan
Filed Jul. 9, 1982, Ser. No. 396,862
Claims priority, application Japan, Oct. 29, 1981, 56-173464
Int. Cl.³ B23Q *11/08*
U.S. Cl. 409—134 **5 Claims**

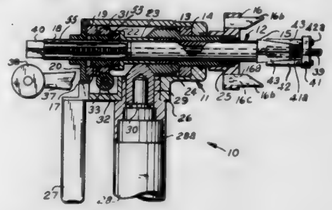


1. A T-slot cover for covering generally inverted T-shaped slots (T-slots) in such as a table of a machine tool, said cover comprising two elongated section members, each of said section members having in the crosssection a vertically extending web having a sidewisely and outwardly projecting projection for engaging with a chamfered upper edge portion of said T-slot thereby retaining the T-slot cover in the T-slot, and a sidewisely and outwardly projecting guide portion on the lower end portion thereof for engaging with the side wall of said T-slot, one of said section members having in the crosssection a sidewisely and inwardly extending first arm defining generally flat upper and lower surfaces and a sidewisely and inwardly extending second arm spaced downwards from said first arm and defining thereon saw tooth or wave like indentations, the other of said section members having in the crossection a sidewisely and inwardly extending arm defining on the upper surface thereof a generally flat surface for slidably engaging with the flat lower surface of said first arm of said one section member and on the lower surface thereof correspondingly shaped indentations for adjustably engaging with said indentations of said second arm of said one section member, whereby the width of said T-slot cover as defined by the distance between said guide portions can be adjusted to conform with the width of the T-slot.

4,449,871
PORTABLE TUBE MILLING TOOL
Tollief O. Hillestad, H & S Tool Inc., 212 W. Bergey St., Wadsworth, Ohio 44281
Filed Dec. 8, 1980, Ser. No. 213,814
Int. Cl.³ B23C *3/00*
U.S. Cl. 409—178 **7 Claims**

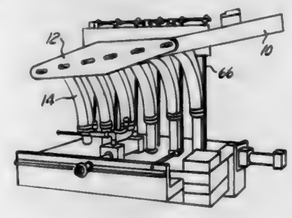
1. A portable tube milling machine, comprising:

in combination, a housing, a hollow shaft received in said housing, a collet removably received on said hollow shaft for locking and centering said hollow shaft in a boiler tube that is to be machined, while in a boiler, a drive gear freely rotatably received on said hollow shaft and in engagement with a gear secured to a motor secured to said housing, a hand crank with gear means secured to said housing for controlling the rate of feed of a cutting tool holder, said holder being secured to, and driven by, said drive gear, and a feed nut matingly engaging the periphery of said hollow shaft for advancing said hollow shaft in said housing and in said drive gear, by means of said hand crank,



said hollow shaft having splines on one end thereof, a housing closure cap having projections thereon, said projections engaging said splines.

4,449,872
BROACHING MACHINE
Leonard A. Gabriele, Warren, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Jun. 1, 1981, Ser. No. 269,311
Int. Cl.³ B23D *37/10, 41/06*
U.S. Cl. 409—252 **29 Claims**



1. An automatic precision machine tool for simultaneously performing a precision machining operation on a plurality of flat workpieces of circular cross-section, comprising

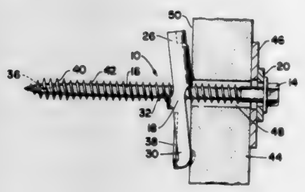
a work station having a flat horizontal support surface on which flat sided workpieces are supported with flat sides thereof on said support surface, metal-cutting means at said work station comprising a plurality of vertically movable broaches arranged in lateral alignment at uniform spacing, and individual fixed locating means on said surface engageable with the workpieces in broaching position,

loading means comprising an elongated inlet guide along which a solid array of workpieces is advanced with the flat sides thereof in vertical planes and edges in contact, a stop engaging the leading workpieces in said inlet guide, said workpieces being dimension such that nonconsecutive workpieces are in approximate alignment with said individual locating means and corresponding broaches, turnover means including an arcuate turn-over means extending through an arc of 90° having an upper horizontally presented inlet and a lower vertically arranged outlet, pusher means for pushing non-consecutive workpieces spaced apart distances approximating the spacing of said broaches and individual locating means from said inlet guide into the inlet of said turn-over means to deposit the plurality of workpieces on said support surface spaced from said individual fixed locating means, means for advancing the workpieces over said surface into engagement with said locating means

means for actuating said broaches, and

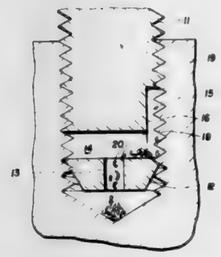
unloading means comprising an elongated outlet guide, and means operable after actuation of said broaches for displacing the finished workpieces from said work station to said outlet guide.

4,449,873
FASTENER FOR ATTACHING ARTICLES TO A PENETRABLE SURFACE
Gerald D. Barth, South Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Feb. 25, 1982, Ser. No. 352,281
Int. Cl.³ F16B *21/00*
U.S. Cl. 411—341 **5 Claims**



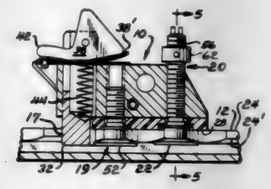
1. A fastener assembly for attaching articles to a penetrable surface comprising a threaded fastener having a threaded shank and an anchor member piercedly capturing said threaded shank, said anchor member lying in a first position substantially parallel to the axis of said threaded shank and partially embracing said threaded shank while said fastener, carrying said anchor member, pierces said surface, said threaded shank having a length sufficiently greater than the length of said anchor member to allow said threaded shank to extend beyond both ends of said anchor member when said anchor member is in said first position; said anchor member further having spring means for aiding rotation of said anchor member from said first position after said anchor member has passed fully through said surface to a second position substantially oblique to the axis of said threaded shank; said threaded shank having at least two thread segments of different major diameters with the thread segment having the largest major diameter being first to pierce said surface during installation of the fastener assembly whereby when said fastener is subjected to a force in a direction to retract said fastener through said surface after said anchor member has rotated toward said second position and said anchor member is brought to bear against said surface, thereby positioning said fastener to be threadedly advanced through said anchor member, said threaded shank will be prevented, by said larger major diameter threaded segment bearing against said anchor member, from pulling through said anchor member and allowing said anchor member to fall free.

4,449,874
SELF-THREADING BOLT
Blake McKinney, P.O. Box 67, Marietta, Ohio 45750
Filed Dec. 1, 1981, Ser. No. 326,185
Int. Cl.³ F16B *25/00*
U.S. Cl. 411—418 **1 Claim**



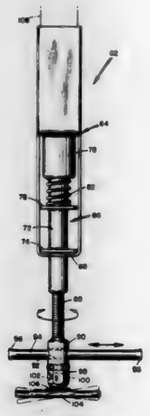
1. A threaded fastener adapted to recut damaged or imperfect metal screw-threads in a threaded opening into which the fastener is inserted, the fastener comprising a uniform diameter screw-threaded shank having standard metal threads, the shank being provided in its forward end with a central axial opening terminating somewhat rearwardly from said forward end, the shank also having a transverse through opening at right angles to the central axial opening and intersecting the central axial opening somewhat rearwardly of the forward end of the shank, the central axial opening and transverse through opening being in open communication and the transverse through opening forming the rear terminus of the central axial opening, and the shank further being provided in its threaded periphery with a longitudinal uniform depth substantially rectangular cross-section groove which is somewhat deeper than the radial depth of the screw-threads on the shank, said groove being of the same width as the transverse through opening and intersecting the latter at right angles and being in open communication with the transverse through opening, said groove starting from the forward side of the transverse through opening and extending longitudinally rearwardly on the shank to a point substantially rearwardly of said through opening, whereby metal particles produced during the installation of said fastener into a threaded opening may collect in said groove and pass from the forward end of the groove into the transverse through opening and from the latter into and through the central axial opening for collection in the bottom of the screw-threaded opening.

4,449,875
SEAT BACK MOUNTING SYSTEM
René J. Brunelle, Wolcott, Conn., assignor to UOP Inc., Des Plaines, Ill.
Filed Jul. 22, 1982, Ser. No. 400,785
Int. Cl.³ B60P *1/64*; B63B *25/24*
U.S. Cl. 410—80 **4 Claims**



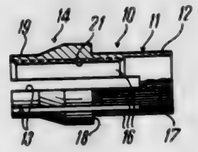
1. A track fitting assembly for anchoring a load to a slotted floor track in an aircraft or other conveyance, said slotted floor track having lips defining said slot, said assembly comprising an elongated housing having at least two headed studs extending downwardly therefrom and a shear pin movable vertically into and out of engagement with the floor track, one of said headed studs having a helically threaded shank portion in engagement with complementary threads formed in a vertical aperture passing completely through said housing, the upper end of said shank portion extending above said housing and being slotted to permit said one stud to be manually rotated and moved vertically relative to said housing after said studs and shear pin have been placed in operative engaging relationship with a slotted floor track, collar means affixed to said shank portion, said collar means being adapted to engage an upper surface of said housing to limit downward movement of said one headed stud when said shank portion is rotated in a first direction, said collar means being movable vertically upwardly with said shank portion away from said housing when said shank portion is rotated in a second direction, said movement in said second direction causing the upper surface of the headed portion of said one headed stud to contact the undersurface of lip portions of said slotted track and thereby force the housing into firm engagement with said slotted track.

4,449,876
CARGO BRACE
Thomas J. Glanton, Oxford, Ga., assignor to Guelda Gene Glanton, Conyers, Ga.
Filed Sep. 14, 1981, Ser. No. 302,187
Int. Cl.³ B50P 7/14; B51D 45/00
U.S. Cl. 410—151 **36 Claims**



1. A brace, comprising:
a rod;
an elongate bar;
a substantially elongate casing having a first end portion and a second end portion, the first end portion comprising spaced walls defining a box-like receptacle open at said first end portion of said casing, one end of the bar being received within the box-like receptacle and extending outwardly of the casing in a direction essentially parallel to the longitudinal axis of the rod to engage a surface of an object against the free end of the bar, thereby extending the effective length of the brace;
means disposed interiorly of the casing for precluding communication between the bar and the rod;
means carried by the casing at the second end portion thereof and receiving a portion of the rod for maintaining the rod in position relative to the casing when the rod is at rest and for allowing displacement of the rod relative to the casing on movement of the rod to cause the length of the combined rod and the casing to vary, at least the free end of the rod extending beyond and externally of the second end portion of the casing, the rod being threaded along at least a portion of its length engaging the maintaining means and at least a portion of the maintaining means being threaded to matingly receive the threaded portion of the rod thereinto to cause displacement of the rod relative to the casing on relative rotation of the rod and of the maintaining means;
a foot plate carried by the free end of the rod;
a housing mounted to an inner surface of the foot plate and having an aperture formed centrally therein to freely receive the distal end of the rod therethrough;
means formed on the distal end of the rod and disposed within the housing for retaining the distal end of the rod within said housing, the foot plate being freely mounted for rotation on the rod; and,
means formed on the rod proximate to the housing for facilitating rotation of the rod, the last-mentioned means comprising a nut permanently mounted to the rod and being disposed adjacent the housing in abutting relation thereto and transmitting force from the rod to the foot plate through the housing, the nut being engageable with a wrench or similar tool to allow rotation of the rod.

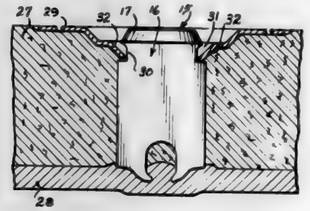
4,449,877
PEG FOR ENGAGEMENT IN COUNTERSUNK SECTION OF A BORE
Juergen Kessler, Stuttgart, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 21, 1980, Ser. No. 142,256
Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917611
Int. Cl.³ F16B 13/00, 13/08
U.S. Cl. 411—57 **2 Claims**



1. A peg for implantation in a bore in a masonry, brickwork and the like, which bore is provided internally with a radial enlargement, said peg comprising an axially elongated sleeve having an inner thread for receiving a fastening screw and said sleeve having a leading end arranged to be inserted first into the bore and a trailing end, said sleeve comprising a leading part longitudinally slotted from the leading end to provide a plurality of axially extending segments separated by axial slots terminating between said leading end and trailing end, a trailing annular part extending from the end of said slots closer to said trailing end toward said trailing end, said sleeve having a relaxed condition and a flexed condition where said segments are compressed radially inwardly from the relaxed condition, said leading part having a greater outside diameter, in the relaxed condition than said adjoining trailing annular part of the sleeve, the outside diameter of said leading part being variable in the flexed condition to enable said segments forming said leading part to be pushed into the bore and to be released into the relaxed condition and snapped into the enlargement in the bore to inhibit withdrawal of the peg from the bore, characterized therein that the annular trailing part and the leading part of the sleeve are integral and the leading part is provided externally and segmentally with an axially extending annular radially thickened section, said leading part of the sleeve is provided integrally at the leading end toward the radially thickened section with an axially extending cylindrically shaped extension segmented by the axial slots, the outer diameter of said extension in the relaxed condition being equal to the diameter of the annular trailing part and being less than the diameter of said radially thickened section, and that the said inner thread is provided in the axial region of the leading part including the extension of the sleeve, and in its relaxed condition, said sleeve is of substantially the same inner diameter over the complete axial length thereof, said segments of the leading part are integrally connected through bridge pieces with a ring forming at least part of the trailing part, and the leading part merges into the bridge pieces through a steep radially inwardly directed conical taper.

4,449,878
FLAT CLINCH TYPE NAIL
Robert L. Hallock, 7136 NE. 8th Dr., Boca Raton, Fla. 33432
Filed Aug. 31, 1981, Ser. No. 298,222
Int. Cl.³ F16B 15/00
U.S. Cl. 411—495 **8 Claims**

1. A clinch type nail for driving into metal comprising a shank which is made from a metal stock material, head means formed at one end of said shank, a pair of separate spaced apart penetrating portions formed at the other end of said shank, each of said penetrating portions having inner and outer side walls, said inner and outer side walls of each of said penetrating portions being disposed at an angle relative to one another and intersecting one another so as to form generally straight line penetrating edges, said generally straight line penetrating edges of said penetrating portions extending generally parallel with respect to one another, said outer side walls of said penetrating portions being inclined toward the elongated axis of said shank as they extend toward said straight line penetrating edges, said outer side walls of each of said penetrating portions



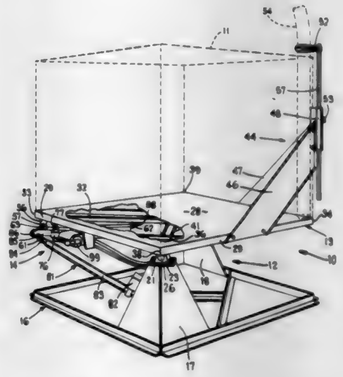
being inclined toward the elongated axis of said shank toward the straight line penetrating edges at a greater angle than said inner walls of said penetrating portions, said outer side walls presenting a greater resistance to penetration of the metal than said inner side walls, whereby when the nail is driven into the metal the greater resistance to penetration of said outer side walls causes said penetrating portions to clinch inwardly toward each other capturing a strip of metal therebetween.

4,449,879
DRY WALL LIFT
James E. Mercer, Dallas, Tex., assignor to Henry A. McAdams, Dallas, Tex., a part interest
Filed Mar. 22, 1982, Ser. No. 360,369
Int. Cl.³ E04F 21/18
U.S. Cl. 414—11 **1 Claim**



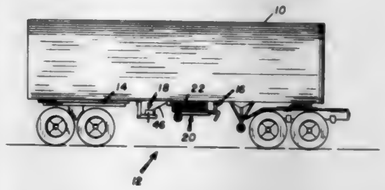
1. A dry wall panel lift with work frame comprising:
(a) a vertical support having spaced apart legs of about ceiling height and at least two crossbars, one at ceiling height and one at worktable height;
(b) a work frame having a pivotal detachable connection at one end thereof to one of said crossbars and having legs of worktable height at the other end thereof extending away from a work surface of said frame;
(c) a stiff leg pivotally connected to the end of said work frame opposite said connection and of length about equal ceiling height; and
(d) a work stop extending across said work frame in the region remote from said connection whereby with one end of said work frame lowered to slope downwardly from said connection, said stop will support a ceiling panel on said work frame preparatory to elevating said panel to ceiling height, said work frame being connectable to either of said bars for selectively functioning as a ceiling panel lift or for a worktable support.

4,449,880
TILTABLE PLATFORM
John E. Hartman, Park, Mich., assignor to National Bulk Equipment, Inc., Holland, Mich.
Filed Sep. 30, 1982, Ser. No. 430,163
Int. Cl.³ B65G 65/30
U.S. Cl. 414—421 **12 Claims**



1. An apparatus for supporting a load, comprising a base, support means adapted to support the load and supported on said base for movement between first and second positions, said support means becoming increasingly tilted with respect to a horizontal reference as it moves from said first to said second position, drive means cooperable with said support means for effecting said movement thereof between said first and second positions, and control means cooperable with said drive means for automatically actuating said drive means to effect movement of said support means toward said second position in response to a shift in the distribution of the load on said support means, whereby said support means becomes increasingly tilted and the force of gravity effects a redistribution of the load thereon.

4,449,881
REMOVABLE TIRE CARRIER
Joseph E. Lane, 1204 Dorchester Ave., Baltimore, Md. 21207
Filed Jan. 19, 1982, Ser. No. 340,816
Int. Cl.³ B62D 43/04
U.S. Cl. 414—428 **2 Claims**



1. A spare tire carrier for wheeled vehicles to be positioned under the vehicle frame, comprising:
a tire carrier means for transporting said spare tire when removed from said vehicle, and for supporting said spare tire securely against said vehicle frame when lifted into a position under said vehicle, consisting of:
(a) a load supporting frame, consisting of a frame and a bottom plate, for supporting said spare tire, the side surface of said spare tire resting on the front face of said frame, the edge of said spare tire resting on said bottom plate;

(b) a handle containing a tubular shaft having a straight portion and a portion bent away from the front face of said supporting frame fixedly connected to said straight portion, the upper end portion of said load supporting frame acting as a handle when said tire carrier means is removed from said wheel;

(c) two wheels mounted on opposite sides of the lower portion of said load supporting frame, for wheeling said tire carrier means when removed from said vehicle; and,

(d) a connecting means consisting of a cable having hooks affixed to each end, each of said hooks engaging holes spaced on opposite sides of said bottom plate;

a means for engaging said handle of said tire carrier means, consisting of a U-shaped bar fixedly mounted under said vehicle frame, said handle being insertable into said U-shaped bar such that said tire carrier means can pivot securely when being lifted to said vehicle frame, and such that said bent portion of said handle tends to keep said handle secured in said U-shaped bar when said tire carrier means is placed under said vehicle frame;

a means for lifting said tire carrier means to a position under said vehicle, consisting of:

(a) a winch, fixedly mounted under said vehicle frame;

(b) a pully mounted under said vehicle frame in a substantially parallel relationship between said winch and said engaging means;

(c) a cable running through said pulley, having one end attached to said winch and the other end attached to a hook, said hook engageable with said connecting means on said tire carrier means; and,

a means for locking said spare tire consisting of:

(a) a hanger, fixedly mounted under said vehicle frame in a first area adjacent to the outer circumference of said spare tire, when said spare tire is lifted under said vehicle;

(b) a U-bolt, fixedly mounted under said vehicle frame, at a second area on said vehicle frame adjacent to said spare tire outer circumference, said second area being oppositely disposed along said spare tire circumference from said first area; and,

(c) a locking bar which fits around said tire carrier means and said spare tire, when said tire carrier means is lifted under said vehicle, having one end to engage said hanger and the other end to engage said U-bolt.

4,449,882
APPARATUS FOR CARRYING EMPTY CARGO CONTAINERS
Lynn F. Perrott, Portland, Oreg., assignor to Scott S. Corbett, Jr., Portland, Oreg., a part interest
Filed May 20, 1982, Ser. No. 380,051
Int. Cl.³ B66F *9/14*
U.S. Cl. 414—665 **20 Claims**

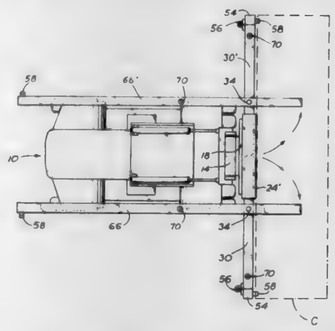
1. For attachment to the vertically movable carriage of a lift truck or other vehicle, a cargo container carrier comprising:

(a) a main frame arranged for removable attachment to the vertically movable carriage of a vehicle,

(b) laterally spaced, vertically extending pivot means mounted on said frame,

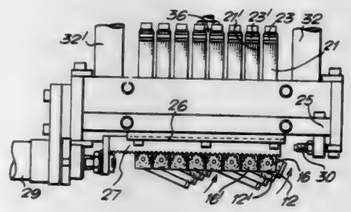
(c) a container lifting beam configured in two sections each supported on one of said pivot means for pivotal adjustment of the beam sections between an operative position of longitudinal extension and a retracted position extending substantially parallel to each other adjacent opposite sides of the vehicle,

(d) locking means on the beam sections for releasably securing them together in said operative position, and



(e) container connecting means on the beam sections arranged to releasably engage a cargo container.

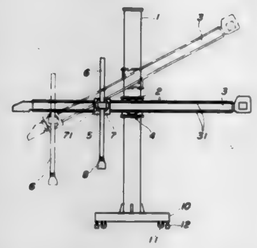
4,449,883
CONTACT POSITIONING APPARATUS
Georg Kampfmann, Darmstadt-Eberstadt, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Mar. 22, 1982, Ser. No. 360,141
Claims priority, application United Kingdom, Mar. 24, 1981, 8109205
Int. Cl.³ B65G *47/26*
U.S. Cl. 414—744 A **3 Claims**



1. Contact positioning apparatus adapted to receive a plurality of contacts arranged at a first pitch and to deliver the contacts arranged at a second, different pitch characterised by a plurality of contact holding portions (11, 11') mounted in a carriage (19) for individual rotation about different radii (13, 13') from a contact receiving portion in which they are spaced at the first pitch and a contact delivering position in which they are spaced at the second pitch, the contact holding portions (11, 11') extending perpendicularly from first ends of respective arms (13, 13') and being mounted in aligned coplanar relation, the arms (13, 13') being of progressively increased length and arranged in parallel relation, second ends of the arms (13, 13') being mounted for rotation about parallel axes (14, 14') perpendicular to the arms (13, 13') which are staggered axially.

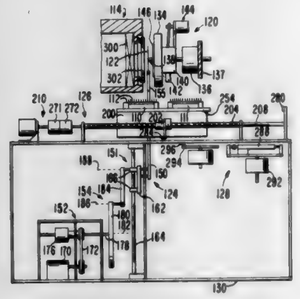
4,449,884
UNIVERSAL ROBOT
Kenro Motoda, Tokyo, Japan, assignor to Motoda Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 25, 1981, Ser. No. 305,853
Claims priority, application Japan, Nov. 25, 1980, 55-165653
Int. Cl.³ B25J *5/04*
U.S. Cl. 414—749 **6 Claims**

1. A universal robot wherein an X-axis arm is mounted on a support means provided on a post and a Z-axis arm is mounted on a slider slideable on the X-axis arm in the longitudinal direction thereof, said X-axis arm having a length, which robot is characterized in that said X-axis arm is mounted solely on said support means through a rotating mechanism which is rotatable into and lockable in a desired position, said X-axis



arm extends in opposite directions on both sides of said post, said Z-axis arm is mounted on said slider through a rotating mechanism which is rotatable into and lockable in a desired position, said slider is slideable along the entire length of said X-axis arm, and said support means is mounted on said post moveably in the vertical direction.

4,449,885
WAFER TRANSFER SYSTEM
Richard J. Hertel, Bradford, and Edward D. MacIntosh, Gloucester, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.
Filed May 24, 1982, Ser. No. 381,085
Int. Cl.³ B65G *1/00*
U.S. Cl. 414—750 **11 Claims**



1. In an automated wafer transfer system, apparatus for accurately positioning a cassette of the type having outwardly extending ribs along opposite sides thereof for access to individual wafers from below by a vertical wafer lift mechanism, said apparatus comprising:

a cassette holder comprising

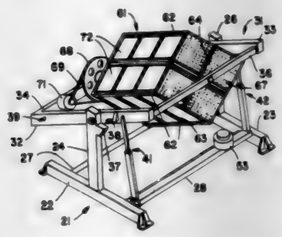
a housing having a generally open top and bottom for access by said lift mechanism,

cassette adaptor means including an adaptor plate mountable to the top of said housing and having an aperture corresponding in size to said cassette and cassette support means positioned for support of the cassette in said aperture by said outwardly extending ribs, and

cassette retention means including a spring-loaded retention bar operative to bear against an end of the cassette and to retain it in a predetermined position in said cassette holder; and

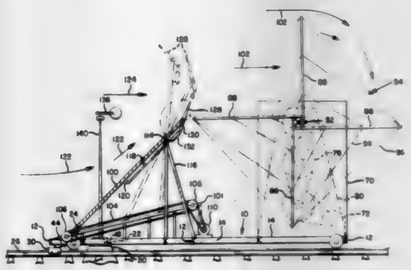
means for positioning said cassette holder relative to said vertical wafer lift mechanism.

4,449,886
APPARATUS FOR FINING BOTTLED WINE
John Kalua, 3416 Solano Blvd., Napa, Calif. 94558
Filed Mar. 17, 1982, Ser. No. 359,159
Int. Cl.³ C12G *1/00*
U.S. Cl. 414—776 **15 Claims**



1. An apparatus for rotating and tipping a large plurality of bottles filled with wine, comprising a base frame, a pair of stanchions extending upwardly from said base frame, a support frame disposed between said stanchions, first means for joining said support frame to said stanchions in pivotal fashion to rotate about a first axis, a housing disposed within said support frame and adapted to support a large plurality of bottles disposed with their longitudinal axes extending in parallel fashion, second means for joining said housing to said support frame in pivotal fashion about a second axis, said second axis being non-parallel to said first axis, means for rotating said support frame about said first axis, including a pair of telescoping strut assemblies extending between said base frame and said support frame, each of said pair of strut assemblies including a first telescoping member secured at one end to said base frame, a second telescoping member slidably received in said first member and having a distal end pivotally joined to said support frame, a threaded shaft extending through said first and second telescoping members, means secured to said second telescoping member for engaging the threads of said shaft, and means for rotating said housing about said second axis.

4,449,887
HORIZONTAL AXIS WINDMILL
Ivan W. Mundhenke, 11390 SW. Ironwood Loop, Tigard, Oreg. 97223
Filed Sep. 14, 1981, Ser. No. 301,879
Int. Cl.³ F03D *7/06*
U.S. Cl. 415—4 **1 Claim**



1. A windmill comprising

a base frame having opposite ends and front and rear portions,

horizontal shaft means supported on said frame,

a wind driven member secured on said shaft means,

said wind driven member including a plurality of elongated longitudinally extending vanes projecting radially from said shaft means and having wind engaging surfaces,

said vanes comprising lightweight framing and being braced one with the other by tie lines,

said vanes having a wind driving position on one side of said shaft means and having a return position on the other side of said shaft means,

a wind deflecting member disposed at the front of said base frame protecting the return position of said vanes from the wind and having an upwardly disposed face surface terminating in top and bottom longitudinal edges, with said top edge positioned such that deflected wind is arranged to engage said wind driven member for driving the latter,

a transverse support on said base frame guiding said wind deflecting member adjacent the top edge of the latter in a pivoting slidable connection,

drive means on said base frame supporting said wind deflecting member at the bottom thereof and arranged to move the bottom of said wind deflecting member toward or away from said wind driven member,

said drive means being inclined upwardly in a direction toward said wind driven member,

said drive means, upon moving the bottom edge of said wind deflecting member toward said wind driven member, causing the top edge of said wind deflecting member to pivot rearwardly on said transverse support and to move upwardly and away from said wind driven member, thus controlling the deflection of the wind and the exposure of said wind driven member to the wind by actuation of said drive means,

and a pivotal blade extension on the upper end of said wind deflector means.

4,449,888

FREE SPOOL INDUCER PUMP

Otto E. Baljé, 3363 Charleston Way, Los Angeles, Calif. 90068

Filed Apr. 23, 1982, Ser. No. 371,258

Int. Cl.³ F04D *29/44*

U.S. Cl. 415—143 **4 Claims**

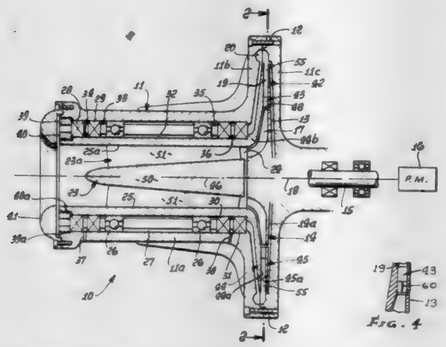


FIG. 4

1. In fluid pumping apparatus, the combination comprising

(a) a housing,

(b) an impeller rotable in the housing about an axis to discharge fluid centrifugally outwardly,

(c) a rotary spool having an inducer section through which intake fluid passes to the impeller,

(d) a rotary radial diffuser connected with the rotary spool and having driving vanes located at the inlet of the diffuser and outwardly of the impeller periphery for rotatably driving the spool in response to outward flow of said discharged fluid against and between the vanes,

(e) said driving vanes having inner ends substantially adjacent the impeller periphery, and outwardly thereof,

(f) said impeller having blades which spiral radially and circumferentially outwardly in one rotary direction about the impeller axis, said driving vanes spiralling radially and circumferentially outwardly in the opposite rotary direction about said axis and from said inner ends, and entirely outwardly of the impeller,

(g) said spool at all times being rotatable free of connection to the impeller,

(h) there being Tesla ring means on the spool and located radially of the driving vanes.

4,449,889

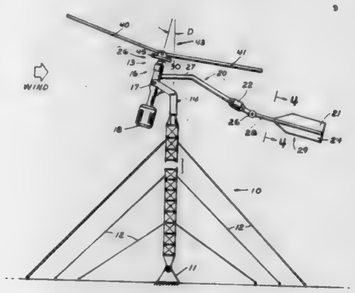
WINDMILL

Ralph A. Belden, 4th Floor #2, Lane 141, Chung-Shan N. Rd., Sec. 7, Taipei, Taiwan

Filed Jan. 20, 1983, Ser. No. 459,367

Int. Cl.³ F03D *7/00*

U.S. Cl. 416—16 **17 Claims**



1. A windmill for rotating in a wind comprising:

a pivot head pivotally mounted to a supporting structure for pivotal movement about an approximately vertical pivot head axis;

a tilting assembly having a rotor head which is pivotally connected to the pivot head of an approximately horizontal tilt pivot, the tilting assembly further comprising:

(a) a rotor shaft rotatably mounted to the rotor head for rotation about a longitudinal axis of the rotor shaft; said longitudinal axis of the rotor shaft being oriented in an upstanding position and inclined backwardly toward said vertical pivot head axis;

(b) at least one rotor blade connected to the rotor shaft in an approximately transverse relationship to the longitudinal axis of the rotor shaft; said rotor blade having a cross-sectional shape forming an airfoil; said airfoil having a negative angle of attack with respect to a plane perpendicular to the longitudinal axis of the rotor shaft;

(c) a control tail connected to the rotor head and extending outwardly therefrom beneath the rotor blade in order to catch the wind and orient the rotor shaft so that it inclines backwardly in the direction the wind travels; the control tail also including at least one vane thereon opposite from the rotor head; said vane being properly shaped and oriented to generate an increasing lifting force when exposed to increasing velocity winds to automatically tilt the tilting assembly into more upright positions to reduce aerodynamic forces on the rotor blade, automatically controlling the rotational speed of the rotor under varying wind conditions.

4,449,890

DEVICE FOR CONTROLLING A LIQUID METAL FLOW IN A TUBE

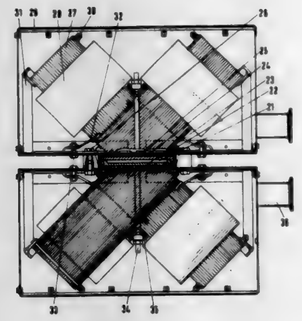
Joachim Barzantny, Kürten-Eichof; Joachim Beske, Bergisch Gladbach; Rainer Hans, Bergisch Gladbach, and Theodor Lauhoff, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Siemens Interatom, Intl. Atomreaktorbau GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,240

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924116

Int. Cl.³ H02N *4/20*

U.S. Cl. 417—50 **6 Claims**



1. Device for controlling a liquid metal flow in a tube having a substantially rectangular cross section with two relatively elongated and two relatively short sides comprising a plurality of comb-like slotted magnet cores grouped at the two relatively elongated sides of the tube and extending parallel to the flow direction of the liquid metal, electromagnetic coils for generating magnetic traveling waves respectively connected to one of the phases of a polyphase alternating current and mounted respectively on teeth of said plurality of comb-like magnet cores, said teeth extending in a direction orthogonal to the direction of flow through the tube and having a shape matching the contour of the tube, n.x of said coils of which n equals an optional whole number and X equals the number of a-c phases being mounted on each of said magnet cores, said electromagnetic coils being distributed on at least four said comb-like magnet cores, respectively, disposed in planes extending at an angle other than 90° to said relatively elongated sides of the tube, said planes wherein said magnet cores are disposed being mutually symmetrical with respect to central planes of the tube.

4,449,891

AGGREGATE FOR SUPPLYING FUEL FROM SUPPLY CONTAINER TO INTERNAL COMBUSTION ENGINE

Ulrich Kemmner, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 356,157

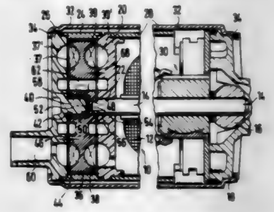
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123579

Int. Cl.³ F04D *29/04*

U.S. Cl. 417—423 R **16 Claims**

1. An aggregate for supplying a fuel from a supply container to an internal combustion engine, comprising a driven shaft having an axis; means forming a pump chamber and including a wall transverse to said axis of said shaft; an impeller driven by said shaft in said pump chamber; and means for supporting said impeller and having a central recess provided in said impeller, and a bearing projection provided on said wall of said pump chamber and extending into said recess of said impeller.

15. An aggregate as defined in claim 1; and further comprising an electric motor having an armature shaft formed by said driven shaft, at least one further wall forming together with said first-mentioned wall said pump chamber, and a tubular



housing surrounding said electric motor with said walls of said pump chamber.

4,449,892

PUMP WITH ROTARY SONIC PRESSURE WAVE GENERATOR

Arthur P. Bentley, P.O. Box 1952, Roswell, N. Mex. 88201

Continuation-in-part of Ser. No. 396,119, Jul. 7, 1982, which is a continuation-in-part of Ser. No. 254,451, Apr. 15, 1981, Pat. No. 4,381,777, which is a continuation-in-part of Ser. No. 253,317, Apr. 13, 1981, Pat. No. 4,398,870, which is a continuation-in-part of Ser. No. 160,934, Jun. 19, 1980, Pat. No. 4,341,505, which is a continuation-in-part of Ser. No. 958,552, Nov. 8, 1978, Pat. No. 4,259,799. This application Aug. 30, 1982, Ser. No. 412,802

Int. Cl.³ F04F *7/00*

U.S. Cl. 417—240 **16 Claims**



1. A sonic pressure wave operated pump for pumping liquids and having a column of liquid therein, said pump comprising:

(a) a sonic pressure wave generator having a liquid discharge port and having a rotor and a stator therein;

(b) a metallic production tube coupled to said sonic pressure wave generator and extending therefrom toward the liquid to be pumped;

(c) said rotor and said stator having complimentary elements of a liquid impacting means formed therein for generating sonic pressure waves which move through said production tube along the inner walls thereof toward the liquid to be pumped; and

(d) a pumping unit on the extending end of said production tube and in communication with the liquid to be pumped, said pumping unit having means for receiving the generated sonic pressure waves from said production tube and reflecting them back through the center of said production tube and reacting to the reflection by intaking the

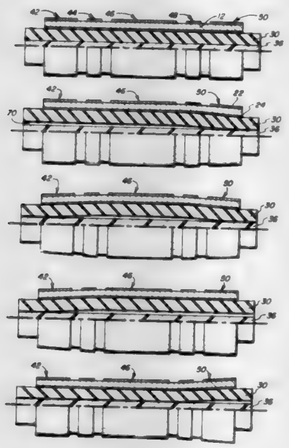
liquid to be pumped to allow the reflected sonic pressure waves to carry the intaken liquid through said production tube and said sonic pressure wave generator to the liquid discharge port thereof.

4,449,893

APPARATUS AND METHOD FOR PIEZOELECTRIC PUMPING

John B. Beckman, Cedartown, and Martin J. Blickstein, Austell, both of Ga., assignors to The Abet Group, Rome, Ga.

Filed May 4, 1982, Ser. No. 374,890
Int. Cl.³ F04B *43/12, 45/08*
U.S. Cl. 417—322 14 Claims



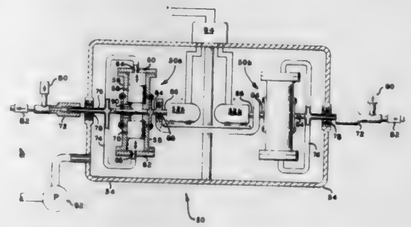
1. A pump comprising:
a piezoelectric tube having an outer surface and an inner surface defining a cavity;
an inner electrode disposed adjacent said inner surface;
first and second valve electrodes disposed adjacent said outer surface to define first and second valve regions;
a reservoir electrode disposed adjacent said outer surface to define a reservoir region interposed between said first and second valve regions;
a first guard electrode disposed adjacent said outer surface to define a first guard region interposed between said first valve region and said reservoir region;
a second guard electrode disposed adjacent said outer surface to define a second guard region interposed between said second valve region and said reservoir region;
said first and second guard electrodes being electrically connected to said inner electrode to electrically shield said first valve region, said second valve region, and said reservoir region; and
means for apply electrical signals to said outer surface through said first and second valve electrodes, said reservoir electrode and said inner electrode, said electrical signals selectively phased such that said valve and reservoir regions expand and contract to pump a fluid through said cavity.

4,449,894

CENTRIFUGAL-RECIPROCATING COMPRESSOR

Walter H. Higa, Kaneohe, Hi., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 037,194, May 8, 1979. This application Jul. 23, 1982, Ser. No. 401,288
Int. Cl.³ F04B *17/00, 17/02*
U.S. Cl. 417—328 17 Claims



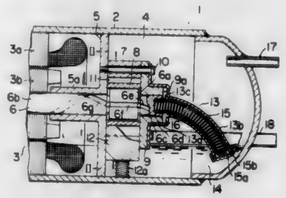
1. A centrifugal compressor for periodically compressing a charge of fluid comprising:
a cylinder supported for rotation about a fixed axis of rotation which is transverse to the longitudinal axis of the cylinder, said cylinder being supported in fixed relation with said axis of rotation;
means including a vent valve to supply fluid to the cylinder during an intake stroke and including an outlet valve to remove fluid from said cylinder during a compressing stroke;
a free-floating piston head seated in the cylinder and supported for rectilinear displacement along a path normal to said axis of rotation; and
means for reciprocating said piston head within said cylinder including motion producing means for imparting an intake stroke to the head, and for imparting a compression stroke to the head, said motion producing means comprising selectively operable drive means connected in driving relation with the cylinder for imparting angular displacement to the cylinder.

4,449,895

REFRIGERANT COMPRESSOR

Takahisa Kurahayashi, Fujisawa, Japan, assignor to Matsushita Reiki Co., Ltd., Osaka, Japan

Filed Dec. 21, 1981, Ser. No. 333,063
Claims priority, application Japan, Dec. 23, 1980, 55-186118[U]; Mar. 6, 1981, 56-32787; Mar. 6, 1981, 56-32788
Int. Cl.³ F04B *39/02, 35/04;* F04D *29/28;* F16N *13/20*
U.S. Cl. 417—368 14 Claims



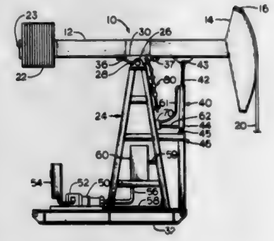
1. A refrigerant compressor comprising:
a closed casing;
a compressor section and an electric motor section adapted for driving the compressor section, said compressor section and said electric motor section are encased by the closed casing; and a crank shaft having a main shaft portion fixed to the rotor of said electric motor section, an eccentric portion for driving said compressor section and an end journal portion, said main shaft portion being supported by a main bearing while said journal portion is supported by a bearing, said eccentric portion of said crank shaft being provided at its portion of minimum eccentricity with a peripheral oil groove extending substantially parallel to the axis of the crankshaft and which is communicated at its one end with an oil groove formed in the peripheral surface of said main shaft portion and at its other end with an oil groove formed in the peripheral surface of said journal portion.

4,449,896

HYDRAULIC OPERATED SURFACE PUMPING UNIT

Robert Klepper, Arvada, and Daryld W. Bomar, Littleton, both of Colo., assignors to Energy 2000, Inc., Golden, Colo.

Filed Sep. 14, 1981, Ser. No. 302,158
Int. Cl.³ F04B *47/04*
U.S. Cl. 417—399 29 Claims



1. In apparatus for producing reciprocal mechanical motion for lifting and lowering a well pump rod string, the improvement comprising:
a double acting hydraulic cylinder and valve means adapted to direct hydraulic fluid under pressure to the rod end of said cylinder while allowing hydraulic fluid to drain from the blind end of the cylinder to tank to produce a phase of the reciprocal motion in one direction, and then alternatively in cycle to direct hydraulic fluid pressure to both the rod end and the blind end of said cylinder simultaneously through a fluid connection common to both said rod and blind ends while prohibiting fluid from either said rod and blind ends of the cylinder to escape to tank to produce a phase of the reciprocal motion in the opposite direction said valve means also including an intermediate position adapted to direct hydraulic fluid pressure to one end of said cylinder while prohibiting escape of hydraulic fluid from the other end of the cylinder as said valve means is in transition during cycling between said phases of reciprocal motion.

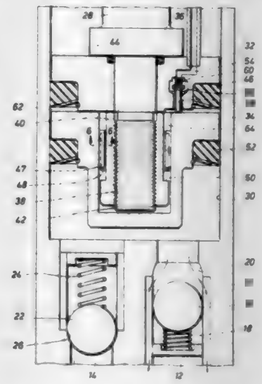
4,449,897

SINGLE-ACTING PISTON PUMP HAVING TWO HEADS

William R. Garrett, 24 Palmer Dr., Conroe, Tex. 77302

Filed Sep. 21, 1981, Ser. No. 304,828
Int. Cl.³ F04B *39/00*
U.S. Cl. 417—437 14 Claims

1. A dual seal piston, comprising:
a first piston head for being affixedly secured to a piston rod for operating in a pump chamber and having a forward seal in contact with the wall of said chamber;
a second piston head for being secured to said piston rod and having a foward seal in contact with the wall of said chamber, there being a recess at least partially between said first piston head and said second piston head in communication with a port connectable to a clean and controlled pressure fluid source for providing clean fluid to the foward side of said first piston head and the rearward side of said second piston head;
a controlled pressure fluid source connecting: clean fluid to said port, said controlled fluid source including;
regulating means controlled by contact with said first piston head connected to the downstream side of said



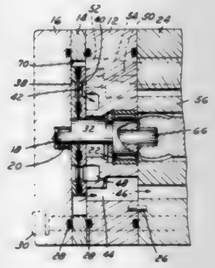
chamber for providing clean fluid from said source to the forward side of said first piston head at a small pressure differential with respect to the pressure in said chamber throughout the forward and rearward strokes of said piston.

4,449,898

POWER TRANSMISSION

Raymond P. Lambeck, Bloomfield Hills, Mich., assignor to Vickers, Incorporated, Troy, Mich.

Filed Jun. 7, 1982, Ser. No. 385,462
Int. Cl.³ F04C *2/10;* F03C *2/00*
U.S. Cl. 418—61 B 5 Claims

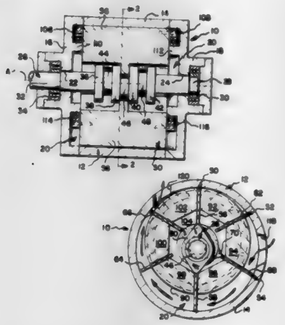


1. In a Gerotor type hydraulic motor or pump wherein a rotary valve selectively provides communications to ports, the improvement wherein said rotary valve comprises
a commutator adapted to be positioned between spaced surfaces and moved in an orbital path with respect to said surfaces,
said commutator comprising spaced members,
means extending between said members such that they are moved in unison,
said members having contacting faces for engaging the respective surfaces, one member engaging one surface and the other engaging the other surface,
and sealing means between said members yieldingly urging said members against their respective contacting surfaces at all times.

4,449,899
ROTARY VANE MACHINE

Ronald E. Smolinski, Dayton, Ohio, assignor to Ecton Corp., Dayton, Ohio

Filed Apr. 29, 1982, Ser. No. 373,077
Int. Cl.³ F04C 18/00
U.S. Cl. 418—255 6 Claims



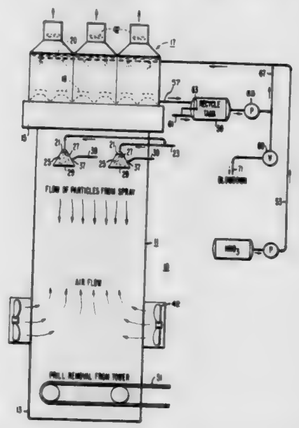
1. A rotary vane machine comprising:
a stator housing having an inner surface defining a substantially cylindrical stator chamber having a central stator axis, and having inlet and outlet ports through said housing into said chamber;
a substantially cylindrical rotor mounted within said chamber for rotation about a rotor axis offset from said stator axis;
a crank axle having a crank axis and including a plurality of crank pins offset from said crank axis;
means for rotatably mounting said crank axle within said chamber such that said crank axis is offset from said stator and rotor axes; and
a plurality of vane pairs, each of said vane pairs including two opposing vane members slidably received in said rotor, and means for connecting said opposing vane members together and rotatably connecting said vane pairs to different ones of said crank pins, whereby rotation of said crank axle causes said vane pairs to rotate, said vane members urging against and thereby rotating said rotor.

4,449,900
PRILLING

Bernard J. Lerner, 727 Orchard Hill Dr., Pittsburgh, Pa. 15238

Division of Ser. No. 394,297, Jul. 1, 1982, Pat. No. 4,424,072.
This application Aug. 24, 1983, Ser. No. 525,987
Int. Cl.³ B29C 23/00
U.S. Cl. 425—6 13 Claims

11. Apparatus, in whose operation fumes are suppressed, for producing prills including a vertical prilling tower having a prilling head near the top thereof, means, connected to said prilling head, for injecting into said prilling head a melt of the material of which the prills are composed to disperse the melt into a spray which is conducted under gravitational force through the tower, a shroud, means mounting said shroud about the prilling head, means, connected to said shroud for injecting into said shroud a gas which suppresses fumes from the tower, and means for injecting a stream of air into said tower in counterflow relationship to the spray to cool the

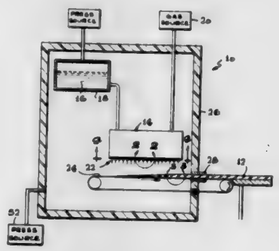


spray and to convert the spray particles into prills and means for collecting the prills.

4,449,901
APPARATUS FOR FORMING A CONTINUOUS LIGHTWEIGHT MULTICELL MATERIAL

Taylor G. Wang, Glendale; Daniel D. Elleman, San Marino, and James M. Kendall, Jr., Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jul. 6, 1982, Ser. No. 395,506
Int. Cl.³ B22D 11/01
U.S. Cl. 425—6 7 Claims

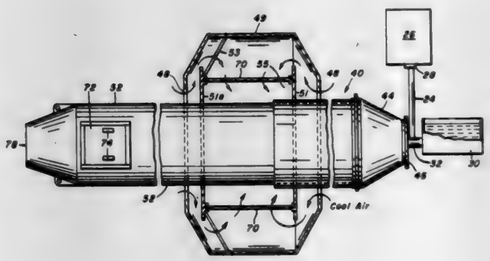


1. An apparatus for producing a continuous lightweight multicell material, comprising:
(a) means to form a plurality of hollow gas-filled spherical shells, said means having a plurality of nozzle assemblies, each of said assemblies comprising an outer nozzle for flowing largely vertically downwardly, an annular stream of liquid to be formed into shells, and an inner nozzle for flowing a gas stream within said annular liquid stream to form and fill said hollow spherical shells;
(b) means to supply a heated molten shell-forming liquid to the outer nozzles to form said annular streams and to supply gas streams through the inner nozzles to form said liquid streams into a plurality of gas-filled shells, which harden upon cooling;
(c) receiving means positioned substantially vertically below said nozzle assemblies, to collect said gas-filled shells while said shells are at least partially molten, to permit the coalescence of said shells into a continuously formed multicelled material thereupon, and wherein,
said plurality of nozzle assemblies are arranged in a matrix pattern of largely horizontal rows and columns, and being positioned a distance above said receiving means to direct and to maintain the relative positions of said formed shells upon said receiving means in substantially the same relative positions said shells assumed upon being formed below said matrix pattern of nozzle assemblies.

4,449,902
APPARATUS FOR CONTROL OF PARTICLE SIZE IN THE PRODUCTION OF ATOMIZED METAL

Robert A. Ramser, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 12, 1982, Ser. No. 440,967
Int. Cl.³ B22F 9/00
U.S. Cl. 425—7 10 Claims



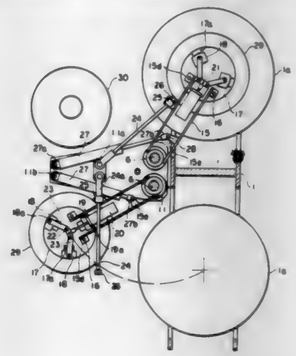
1. An apparatus for controlling the size of particles in the production of atomized metal comprising:
(a) a containment vessel comprising a first cylindrical wall, a second cylindrical wall, and an end plate through which atomizing gas and molten metal from a molten metal source enter said vessel through nozzle means sealed thereto;
(b) a restricted air ingress port between said first and second cylindrical walls in said vessel spaced from said end plate, one of said cylinder walls and end plate cooperating with said nozzle means to seal off the interior of said vessel and the metal particles therein from the area adjacent the source of molten metal; and
(c) means for maintaining a predetermined pressure on the molten metal entering said vessel through said nozzle means to control the particle size of the atomized metal produced in said apparatus.

4,449,903
APPARATUS FOR LOADING AND UNLOADING TIRES FOR A TIRE VULCANIZING MACHINE

Akira Hasegawa, and Katsuyoshi Sakaguchi, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1983, Ser. No. 513,667
Claims priority, application Japan, Jul. 14, 1982, 57-122607; Jul. 15, 1982, 57-123301
Int. Cl.³ B29H 5/02
U.S. Cl. 425—38 16 Claims

1. An apparatus for loading or unloading tires for a tire vulcanizing machine, characterized in that said apparatus essentially comprises a pair of vertically extending guide rods fixedly secured to a housing of the tire vulcanizing machine, a common board slidably fitted onto said guide rods so as to be displaced in the vertical direction with the aid of driving means, a pair of booms adapted to be displaced in the vertical direction together with said common board, each of said booms being turnable about the guide rod, tire grasping means including a plurality of grasping pawls disposed at the one end of each of the booms, said grasping pawls being adapted to

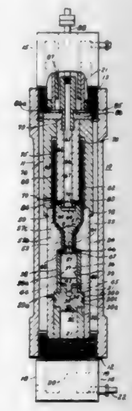


expand or contract, and means for limiting the extent of turning movement of the boom.

4,449,904
APPARATUS FOR THE HYDROSTATIC EXTRUSION OF THERMOPLASTIC POLYMERS

Alfred R. Austen, Center Valley, and Darral V. Humphries, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 202,282, Oct. 30, 1980, Pat. No. 4,363,611, which is a division of Ser. No. 72,807, Sep. 5, 1979, Pat. No. 4,282,277, which is a continuation-in-part of Ser. No. 941,116, Sep. 8, 1978, abandoned. This application Dec. 13, 1982, Ser. No. 449,289
The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.
Int. Cl.³ B30B 11/30
U.S. Cl. 425—97 7 Claims



1. Apparatus whereby a thermoplastic polymer preform is hydrostatically extruded while in a solid state into a conduit by compressive pressure, comprising:
(a) outer support means having two ends connected by load supporting members,
(b) a hydraulic pressurizing means axially aligned and contiguous with one end of the outer support means,
(c) a container means including a shell having an outer surface and an inner surface and two end surfaces coaxially aligned within and contiguous with the hydraulic pressurizing means,

(d) a die section formed on the inner surface of the shell at the other end thereof and including a converging first section, a first generally cylindrical land surface axially aligned with respect to the apparatus, a second generally cylindrical land surface larger in diameter than the first generally cylindrical land surface and parallel thereto and a diverging conical surface connecting the first and second generally cylindrical parallel land surfaces and forming an angle α of between 15° and 45° with the axis of the apparatus,

(e) an extrudate receiving means coaxially aligned within the other end of the outer support means and including a shell having an outer surface and an inner surface and two end surfaces, one end surface being contiguous with the end of the container assembly having the die section,

(f) a base section contiguous with the other end of the end surface and supporting the extrudate receiving means and contiguous with the other end of the outer support means,

(g) a mandrel coaxially aligned within the outer shell and having two ends, one end of which is fixedly attached to the base section and the other end supporting a mandrel-head in spaced relation with the surface of the die section, and having a recessed base surface, a generally conical upper portion which forms an angle β of between 20° and 50° with the axis of the apparatus and a generally cylindrical nose portion,

(h) an annular orifice formed by the spaced surfaces of the mandrel-head and the die section comprised of:

(i) a generally converging entrance,

(ii) a generally cylindrical sealing zone,

(iii) a generally conically shaped expanding zone having a generally converging cross-sectional area and a diametrically diverging geometry,

(iv) a generally cylindrical sizing zone parallel to the sealing zone and having a smaller cross-sectional area and a median diameter which is at least 100 percent larger than the median diameter of the sealing zone, and

(v) transition zones of desired radii and smooth surfaces between any two of the zones whereby the billet is substantially simultaneously expanded circumferentially at least 100 percent and axially elongated at least 50 percent, and

(i) sealing means formed by the surfaces of the mandrel-head in contact with the inner surface of the billet and the die surfaces in contact with the outer surface of the billet in the container assembly.

4,449,905

METHOD OF AND ARRANGEMENT FOR MANUFACTURING ENCLOSED BLOCKS

Heinz Züllig, Niederweningen, Switzerland, assignor to Bucher-Guyer AG, Niderweningen, Switzerland

Filed Aug. 6, 1982, Ser. No. 405,874

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133663

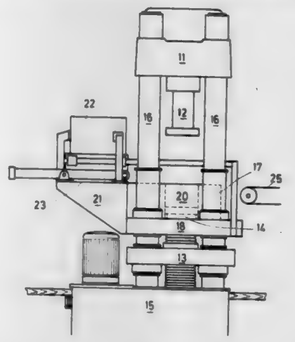
Int. Cl.³ B29C *3/04*; B28B *3/24*

U.S. Cl. 425—117 **9 Claims**

1. Apparatus for manufacturing blocks having a casing assembled from upper and lower parts and filled with a filling material to be pressed in a press having upper and lower pressing dies with an axis and a mold supported on an axially movable mold table and having a mold chamber through which the pressing dies can move, comprising

inserting means movable into a pressing region between upper and lower pressing dies in a direction transverse to the axis of the pressing dies and so arranged that upper and lower parts of a block casing can be inserted into the inserting means,

pushing means provided in said inserting means and arranged to displace the upper and lower casing parts towards the upper and lower pressing dies, and



holding means arranged to hold the upper part of the block casing on the upper pressing die and automatically to release the same during pressing.

4,449,906

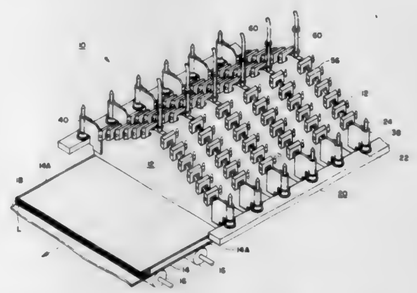
EXTRUSION NOZZLE ARRANGEMENT

Boleslaw Sienkiewicz, Pearl River; Franklin Kramer, Briarcliff Manor, both of N.Y.; Imrich Klein, Highland Park, N.J.; C. G. Peter Oldershaw, Halifax, Canada, and Locus Y. Chuang, Plainsboro, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,908

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—131.1 **16 Claims**



1. An extrusion nozzle including a bottom orifice for extruding a continuous layer of a generally viscous solution; said nozzle comprising an upright front plate; an upright back plate, means for clampingly engaging said front plate and said back plate so as to form a solution flow space therebetween; solution inlet means in one said plate communicating with the upper end of said solution flow space and with a supply source for said solution, said orifice being a narrow, elongate slot extending along the bottom surfaces of said front and back plates; and insert means in said nozzle located upstream of and being longitudinally coextensive with said orifice in close proximity therewith, said insert means forming predetermined solution flow directing and restricting means protruding into the flow path of said solution so as to impart a predetermined cross-section to the layer being extruded through said orifice, said front plate and back plate each comprising a generally flat plate having upper surfaces sloping from an upper central point towards a wide bottom surface defining said elongate orifice; a recess formed in the inner wall of one said plate extending along approximately the length of said orifice in parallel relationship therewith, said insert means being positioned in said recess and being clamped between said front and back plates, said insert means being removably arranged in said recess so as to be interchangeable with and replaceable by another insert means.

4,449,907

DIES EXCHANGING DEVICE FOR A MACHINE USING DIES

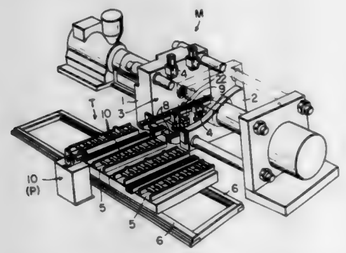
Keitaro Yonezawa, Itamishi, and Tadao Utsumi, Aichiken, both of Japan, assignors to Aioi Seiki Kabushiki Kaisha, Japan

Filed Jul. 11, 1983, Ser. No. 512,663

Claims priority, application Japan, Feb. 4, 1982, 57-14808

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—183 **7 Claims**



1. A dies exchanging device for a machine using dies for exchanging a pair of dies clamped to a stationary plate and a movable plate thereof comprising a first roller transfer means, carriage cars and a push-pull device, wherein:

said first roller transfer means for transferring a pair of dies longitudinally is provided on a stationary plate and a movable plate in the lower part of a die mounting space between said stationary plate and said movable plate;

said carriage cars, at least a pair thereof, are laterally movable in front of said machine and are adapted to be able to stop in front of said die mounting space, and each carriage car is provided with a second roller transfer means of the top thereof;

said push-pull device comprises a main unit independent of said carriage car placed on the floor in front said die mounting space across said carriage car, a drive means on said main unit, a bendable driving band adapted to be driven forward or backward by said drive means between said main unit and said carriage car, a guide means provided on each carriage car for guiding said driving band restraining its bending and a push-pull hook means connected to the forward end of said driving band and is engageable detachably with the mating member of said dies; and

said dies are exchangeable between said die mounting space and either of said carriage cars which is stopped in front of said die mounting space, with said push-pull device and said first roller transfer means and said second roller transfer means, by means of engaging said push-pull hook means with said mating member and guiding said driving band with said guide means.

4,449,908

DOUGH PUMP

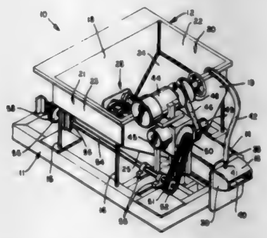
Sterrett P. Campbell, 3095 Kingston Ct., Norcross, Ga. 30071

Continuation-in-part of Ser. No. 58,120, Jul. 16, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,261

Int. Cl.³ A21C *1/06*

U.S. Cl. 425—204 **14 Claims**

1. Apparatus for dispensing dough and the like comprising a dough hopper including converging side walls and opposite end walls, a discharge conduit in communication with the lower portion of said hopper through an end wall, a screw conveyor positioned in the lower portion of said hopper and extending from one end wall to the other end wall and into said discharge conduit, said screw conveyor including a pair of parallel juxtaposed oppositely threaded helical screw elements with the thread of each element projecting into the spaces formed by the thread of the other element and each thread defining an outer periphery, a conveying surface and a following surface, the conveying surfaces of the portions of said screw elements in the lower portion of said hopper extending continuously from said one end wall to said other end wall and being concave and inclined at their peripheries toward said



discharge conduit and forming with the outer periphery of its screw element a spiral cutting edge with said spiral cutting edge and said concave conveying surface facing said discharge conduit, and means for venting air from about the helical screw elements, whereby when a mass of dough is placed in the hopper and moves toward the screw conveyor the spiral cutting edges of the screw conveyor slice some of the dough from the bottom of the mass of dough and the concave conveying surfaces of the threads maintain the dough in the confines of the threads and move the dough toward the discharge conduit.

4,449,909

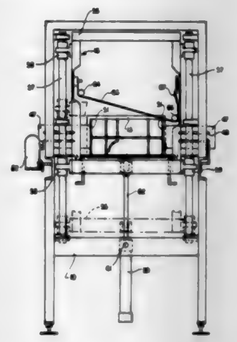
DIE-CUT BRICK MACHINE FOR SPECIAL BRICK SHAPES

Samuel P. Kenworthy, Southern Pines, N.C., assignor to Basic Machinery Co., Inc., Siler City, N.C.

Filed Jul. 23, 1982, Ser. No. 401,102

Int. Cl.³ B29C *17/14*

U.S. Cl. 425—296 **9 Claims**



1. An apparatus for producing special shaped die-cut brick comprising a frame providing a support surface for supporting an elongated green clay slug having a generally rectangular first cross section substantially perpendicular to the length of said slug, a cutting box operable to cut from said slug a core having a second cross section substantially perpendicular to the length of said slug smaller than said first cross section, said core extending lengthwise of a slug resting on said platform, said core having a cross section of the desired brick, power means operable to produce relative movement of said cutting

box and said slug longitudinally with respect to said slug causing said core to be cut lengthwise of said slug, and cutoff means operable to slice laterally through said core along a plane substantially perpendicular to the length of said core and produce a plurality of bricks.

4,449,910

APPARATUS FOR MAKING PROFILED PLASTIC TUBE

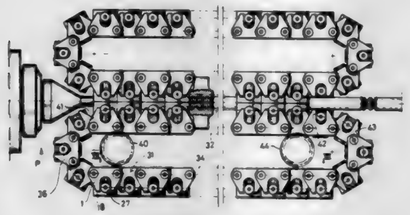
Arnoldus W. J. Leloux, Dedemsvaart, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Jun. 8, 1982, Ser. No. 386,280

Claims priority, application Netherlands, Jun. 15, 1981, 8102869; Jul. 8, 1981, 8103254

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—325 **11 Claims**



11. An apparatus for making profiled plastic tube by means of an extruder, said apparatus comprising two opposite circulating chains, each making a plurality of molds or mold halves (18) move along with the tube (2) produced by and coming from the extruder, these molds or mold halves together constituting, in a rectangular portion (32) of the paths (31) of said chains, a mold cavity in which the tube is being given its profile, wherein the molds (18) are arranged movably relative to the chain links (1,2) in a direction perpendicular to the direction of movement (P) of the links, the machine frame being provided with guides (33, 35, 37) for the molds, of which at least a guide (33) in the operative rectilinear portion (32) of the path, is located interiorly with respect to the chain loop and guides (37) in the curved portions (36, 43) of the path are located exteriorly with respect to the loop, said guides (37) for the molds, at the entrance and the exit end, at least at the location of a transition (38,42) to the operative portion (32) of the path, being situated more outwardly than those portions of the guides which lie at a greater distance from said operative portion of the path, said transitions at the entrance and the exit ends of the path (31) being bending points of mathematically calculated paths and the operative straight path tangentially joins said transitional portions (41,42), and braking means comprising sets of auxiliary toothed wheels (54,55) one (54) of which is mounted on a spindle of a driven toothed wheel at the entrance end, the other one (55) being an idle guiding wheel for the drive chain near the exit end, said auxiliary wheel (54) being fixedly mounted relative to the main drive wheel (40) and one of said auxiliary wheels (55) being rotatable over a certain angular distance relative to said main wheel (44), there being provided sets of springs (63) inbetween the two (44, 55) and a chain (56) being passed over the set of auxiliary toothed wheels (54, 55).

4,449,911

LATEX GLOVE METHOD AND APPARATUS FOR MAKING THE SAME

Bernard M. Brasfiel, Arlington, Tex., assignor to Surgikos, Inc., Arlington, Tex.

Division of Ser. No. 129,543, Mar. 12, 1980, Pat. No. 4,371,987. This application Oct. 26, 1981, Ser. No. 314,830

Int. Cl.³ B29H *3/04*

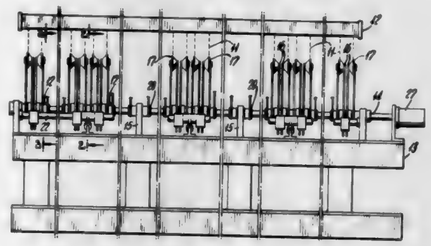
U.S. Cl. 425—374 **4 Claims**

1. Apparatus to form a ring rolled bead on the cuff of an elastomeric glove applied to the surface of a glove form comprising:

a rack containing a plurality of glove forms,

a pair of drive shafts located on opposite sides of the rack containing said glove forms,

a series of arms independently mounted on each of the shafts through free turning bearings,



a wheel located on the free end of each of the arms, means to rotate the wheels,

means to move the free ends of arms toward and away from the forms, and

means to move the forms relative to the center of rotation of the wheels so that the wheels first contact the wrist portion of the glove form and move toward the hand portion of the glove form.

4,449,912

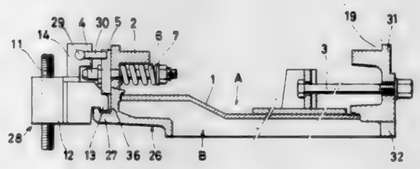
APPARATUS FOR THE AUTOMATIC EJECTION OF CONCRETE PIPES

Mitsuharu Ogura, 1192, Enza-cho, Takamatsu, Kagawa, Japan

Filed Oct. 22, 1982, Ser. No. 435,988

Int. Cl.³ B28B *13/06*

U.S. Cl. 425—444 **3 Claims**



1. An apparatus for manufacturing concrete pipes comprising:

(a) a molding flask, said molding flask comprising a cylindrical body having a bell end and a spigot end, a flange secured to said bell end of said cylindrical body and having an inside annular shoulder and an outside annular shoulder, a plurality of bolts inserted through said flange so as to allow the axes of said bolts to run parallel with the axis of said cylindrical body, a clasp rotatably fitting on each of said bolts in abutment with said outside annular shoulder of said flange, a means for constantly pressing said clasp against said outside annular shoulder of said flange, a first end ring fitting in said flange and held in place by means of said clasps, said first end ring having an outwardly projecting portion which is provided with an annular groove in the surface facing said bolts, and a second end ring fitting in said spigot end of said cylindrical body;

(b) a device for detaching said first end ring from a concrete pipe hardened in said molding flask, said device comprising a means for subjecting said device to reciprocation in the axial direction of said molding flask, a plurality of threaded bolts arranged radially in such a manner that a plane formed thereby is made perpendicular to the axis of said molding flask and that the extension of the axis of said molding flask passes through the point where the axes of said threaded bolts intersect, a means engaging each of said threaded bolts and adapted for catching said outwardly projecting portion of said first end ring, and a means for giving a kick at said clasp, said means for giving a kick at said clasp being mounted on said means engaging each of said threaded bolts; and

(c) a means for giving an inward push to said second end ring.

4,449,913

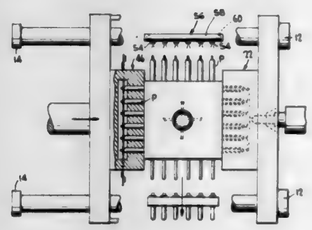
ROTARY INJECTION TURRET FOR THE MAKING OF PREFORMS

Suppayan M. Krishnakumar; Leuan L. Harry, both of Nashua, and Martin H. Beck, Brookline, all of N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 236,960, Feb. 23, 1981. This application Sep. 30, 1982, Ser. No. 429,706

Int. Cl.³ B29D *23/02*

U.S. Cl. 425—548 **11 Claims**



1. A preform injection molding and treating apparatus comprising an injection mold having plural preform cavities arranged in rows and columns, an extruder coupled to said preform mold for simultaneously injecting plastic material into all of said preform cavities, a turret having a plurality of support faces spaced equally about an axis, means mounting said turret for indexing about said axis, each of said support faces having projecting therefrom a plurality of cores equal in number to said preform cavities and arranged in rows and columns with the same spacing as said preform cavities, each of said cores being cooperable with a respective preform cavity to define a preform having a sprue tail, a conditioning mold angularly displaced from said injection mold about said turret, said conditioning mold having a plurality of conditioning cavities equal in number to said preform cavities and arranged in rows and columns with the same spacing as said preform cavities, each of said conditioning cavities being of a greater size than said preform cavities to provide a space around a preform positioned therein for the circulation of a conditioning fluid, sprue tail removal means associated with each conditioning cavity, each conditioning cavity having an exhaust port for the removal of conditioning fluid and a removed sprue tail; means for effecting relative movement between said injection mold, said turret and said conditioning mold to effect the selective opening and closing of said preform cavities and said conditioning cavities; and means for rotating said turret to sequentially present said cores to said preform cavities and then to said conditioning cavities.

4,449,914

INJECTION MOLD WITH DEMOLDING DEVICE

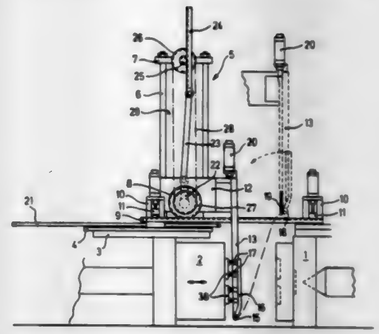
Kurt Schmidts; Walter Schuett, both of Kehl, Fed. Rep. of Germany; Edmond Zeysolff, Meistratzheim, France, and Wilhelm Saumer, Emmendingen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 23, 1982, Ser. No. 452,423

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1982, 8200184[U]

Int. Cl.³ B29F *1/14*

U.S. Cl. 425—556 **4 Claims**



1. An injection mold comprising a fixed and a movable mold half and a demolding device for the moldings which is connected to the movable mold half and which consists of one or more grippers guided in a pair of rails by means of a holder plate, a mounting plate for the pair of rails, a pinion which is rotatably held on the mounting plate and can roll on a rack which can be firmly connected to the fixed mold half or to the mounting plate, and a kinematic chain which converts the rotary movement of the pinion into a rectilinear movement of the holder plate for the grippers, wherein, in order to form the kinematic chain, the pinion is connected to a crank and the latter in turn is connected, via a hinged connecting rod, with an oscillating crank constructed as a rack for driving a further pinion, and the shaft of this pinion is coupled to a chain drive, to whose transport chain is fixed the holder plate for the grippers.

4,449,915

CLOSURE SYSTEM FOR LIQUID INJECTION APPARATUSES

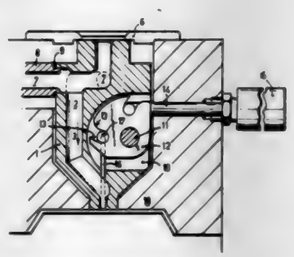
Anthonie van den Brink, Westmaas, Netherlands, assignor to Eurotool B.V., Westmaas, Netherlands

Filed Feb. 18, 1982, Ser. No. 349,731

Claims priority, application Netherlands, Feb. 18, 1981, 8100791

Int. Cl.³ B29F *1/03*

U.S. Cl. 425—564 **12 Claims**



1. A closure system for use in liquid injection apparatuses for

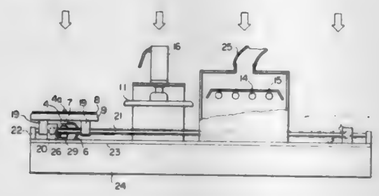
interrupting the injection of liquids into cavities, in particular liquids under a relatively high pressure and/or at relatively high temperatures, like plastics which are injected into injection moulds via a liquid passage, defined by a central body (1), said closure system having a closure rod which can be retractably placed in a gating of the liquid passage, said liquid passage (2) extending in a bended manner, the closure rod (16) extending through a wall of the central body (1), said gating being located at a bend in said liquid passage, said bend being situated above cross-sectional termination of said liquid passage in said central body, said closure rod having cross-sectional dimensions which are substantially equal to the dimensions of said gating, the closure rod (16) being totally retracted from the liquid passage (2) so as to expose the latter completely, said central body (1) comprising two cylindrical chambers (10), in each of which a cam (12) is placed, said chambers being separated by a wall with a spindle opening, an intermediate shaft (11) extending through said opening and connecting the cams so that they rotate simultaneously, each cam having two cavities angularly spaced by approximately 90°, said cavities being defined by involute pressure areas (13), one of said cavities of said cam being coupled to the closure rod (16) and the other cavity of said cam being coupled to a pull rod (14), whereby rotation of shaft (11) simultaneously closes a plurality of liquid passages.

4,449,916

DEVICE FOR MANUFACTURING INFORMATION RECORDING MEDIUMS

Keisuke Ito, Kashiwara; Toshiaki Kashihara, Hirakata, and Yoshihiro Okino, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 16, 1981, Ser. No. 321,562
Claims priority, application Japan, Nov. 20, 1980, 55-163893; Apr. 1, 1981, 56-49862
Int. Cl.³ B28B *17/00*
U.S. Cl. 425—174.4 **7 Claims**



1. A device for manufacturing an information recording medium made from a radiation curable layer-forming liquid resin, comprising:

(a) a first movable base;

(b) a first planar stamper carrying an information recording signal pattern to be transcribed, said first planar stamper being mounted on said first movable base;

(c) first injecting means mounted in the center part of said first movable base, retractably projecting upward from and through the center of said first stamper and having an injection nozzle which is closed after injection, for injecting said liquid resin;

(d) a first planar flexible carrier member having at least one carrying surface and adapted to be held by said first injecting means so as to define a first gap together with said first stamper, said liquid resin being injected into said first gap from said first injecting means, said first carrier member being mounted to said first injecting means when said movable base is located in a first carrier member mounting section;

(e) first pressing means positioned in a first liquid resin injecting and pressing section, for pressing a hold member against said first carrier member so as to uniformly distribute the liquid resin injected from said first injecting means all over the surface of said first carrier member;

(f) first irradiating means positioned in a first radiant ray irradiating section, for irradiating radiant rays to said liquid resin in said first gap so as to form at least a portion of an information recording medium;

(g) first separating means positioned in a first carrier member separating section, for separating said first carrier member so as to remove and obtain said at least a portion of said information recording medium; and

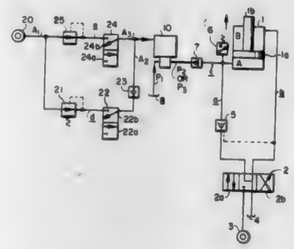
(h) first shifting means for shifting said first movable base together with said first stamper and first carrier member from said first carrier member mounting section, sequentially through said first liquid resin injecting and pressing section and said first radiant ray irradiating section, to said first carrier member separating section, and then returning the same to said first carrier member mounting section.

4,449,917

HYDRAULIC VULCANIZING PRESS

Akira Hasegawa, and Yoshinori Miyamoto, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 508,006
Int. Cl.³ B30B *15/22, 15/00*
U.S. Cl. 425—149 **4 Claims**



1. A hydraulic vulcanizing press characterized in that there are provided a pneumatic booster for supplying a hydraulic pressure to a hydraulic circuit on a pressurizing actuation side of a pressing hydraulic cylinder in said hydraulic vulcanizing press in order to pressurize and hold the pressure in the pressing hydraulic cylinder, and a switching device for switching a pressurized air fed to said pneumatic booster between a high pressure air for boosting a hydraulic pressure to a desired hydraulic pressure and a low pressure air for holding said desired hydraulic pressure after said desired hydraulic pressure has been attained.

4,449,918

APPARATUS FOR REGULATING FURNACE COMBUSTION

Richard F. Spahr, Ambler, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Jul. 6, 1981, Ser. No. 280,994
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—76 **2 Claims**

1. Apparatus for regulating flow of combustion air to a furnace thereby to maintain a relatively optimum fuel-air mixture for high combustion efficiency in response to a measured level of carbon dioxide in furnace gas after combustion thereof, comprising:

a. gas analyzer for sensing relative level of carbon dioxide in furnace gas after combustion thereof and producing an electrical signal proportional to sensed carbon dioxide level;

b. amplifier means, receiving said electrical signal from said gas analyzer, for boosting said signal to a second signal level;

c. a first loop circuit having said second signal applied to respective terminals thereof, said first loop circuit including:

i. an inductor defining an input coil of a relay;

ii. a capacitor;

iii. variable resistance means in series connection with said capacitor for tuning the resultant resistor-capacitor combination;

iv. first switching means, in series with said capacitor-variable resistor combination, for open circuiting said resistor-capacitor combination with respect to said inductor; and

v. second switching means, in parallel with said first switching means-resistor-capacitor combination, for short circuiting said first switching means-resistor-capacitor combination;

d. said relay having its output connected in series with a second loop circuit;

e. said second loop circuit including;

i. a meter for visibly indicating current flow around said circuit;

ii. an input coil to a second relay;

iii. an output winding of a transformer;

iv. rectifier means for rectifying said transformer output; and

v. third switching means for opening said second loop circuit;

f. said transformer having its input winding connected to line voltage;

g. second relay output being movable between respective input terminals of an electric motor for selective connection thereof with line voltage;

h. said electric motor having an output shaft rotating in respective opposite directions according to which of said respective input terminals is contacted by said second relay output;

i. a damper, controlling flow of combustion air to said furnace, connected to said electric motor output shaft, opening further and closing further upon rotation of said motor shaft in respective opposite directions;

j. fourth switching means for open circuiting said electric motor; and

k. a timer operatively connected to said fourth switching means, for sequentially

i. opening said second and fourth switching means while maintaining said first and third switching means closed;

ii. opening said first and third switching means while maintaining said second and fourth switching means closed;

iii. closing said second, third and fourth switching means while maintaining said first switching means open;

iv. opening said second, third and fourth switching means while maintaining said first switching means closed; and

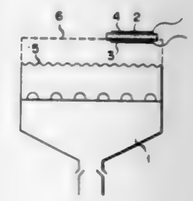
v. closing said first and third switching means while maintaining said second and fourth switching means open.

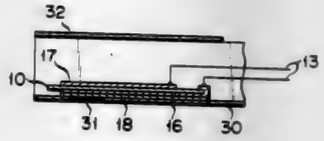
4,449,919

GAS COMBUSTION APPARATUS CAPABLE OF DETECTING ENVIRONMENTAL OXYGEN DEFICIENCY

Osamu Takikawa, Chigasaki; Masaki Katsura, Yokosuka; Chiaki Tanuma, Tokyo, and Katsunori Yokoyama, Ebina, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 2, 1981, Ser. No. 269,757
Claims priority, application Japan, Jul. 10, 1980, 55-96210[U]; Jul. 10, 1980, 55-96211[U]
Int. Cl.³ F23H *5/24*
U.S. Cl. 431—76 **5 Claims**





1. A gas combustion apparatus including at least one burner for producing a flame, said apparatus including a flat oxygen sensor for producing a control signal for control of the combustion apparatus, said flat oxygen sensor being arranged to be exposed to said flame of only one said at least one burner, said sensor having electrodes on both a measuring side and a reference side thereof and which is capable of detecting oxygen deficiency of combustion exhaust gas wherein said flat oxygen sensor is prefixed in a position relative to said burner such that, under a normal combustion condition, said electrodes at both the measuring side and the reference side are in the combustion exhaust gas and, under an oxygen deficiency condition wherein said flame is elongated in size by the incomplete combustion said flame is in contact only with said measuring side electrode, and wherein said oxygen sensor is mounted to a holder of a heat-resistant metal having an opening such that the position of at least part of said measuring side electrode corresponds with said opening.

4,449,920

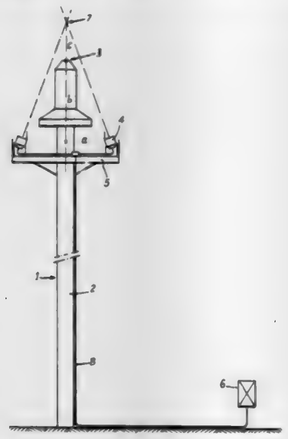
DEVICE FOR IGNITING A TORCH

André Lerouge, Argent sur Sauldre; Jean-Louis Andre, Vitry, and Pierre Coutin, Paris, all of France, assignors to R. Alkan & Cie, Valenton and Elf France, Paris, both of, France

Filed Jun. 30, 1982, Ser. No. 393,797
Claims priority, application France, Jul. 3, 1981, 81 13170
Int. Cl.³ F41H *9/02*
U.S. Cl. 431—91 **7 Claims**

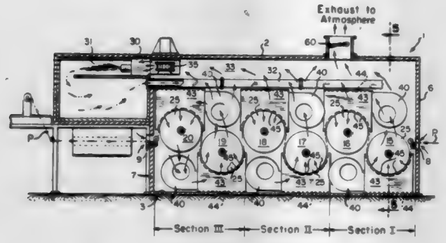
1. A device for igniting a torch by means of pyrotechnical cartridges, wherein each cartridge is placed in a casing located at a first distance of one to ten meters from the geometrical axis of the torch and at a second distance of two to twenty meters below the orifice of said torch, said casing being provided with a cover adapted to be moved from a closed position wherein the cartridges within the casing are contained in a thermally

isolated tight compartment to an open position wherein each cartridge is aimed at a selected point located on the torch axis at a third distance of one to ten meters above the torch orifice, said second distance being greater than said third distance, and



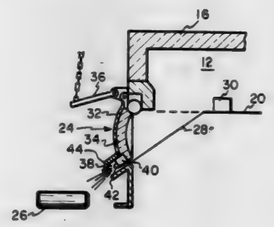
said first, second and third distances being selected in such a manner that a/(b+c) has a value comprised between tangent 45° and tangent 20°, wherein a represents said first distance, b represents said second distance, and c represents said third distance.

4,449,921
COMBINED OVEN AND FUME INCINERATOR AND METHOD OF OPERATING SAME
Frank Catallo, 84 Wheatley Rd., Old Westbury, N.Y. 11568
Filed Sep. 2, 1982, Ser. No. 414,397
Int. Cl.³ F27B *9/28*
U.S. Cl. 432—8 **10 Claims**



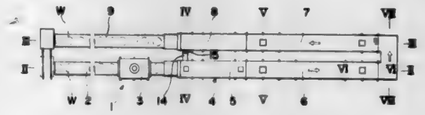
10. A method of operating a combined oven and fume incinerator to treat a product having an enclosed housing, a combustion chamber forming a fume incinerator and a source of heat for said oven, a plurality of process zones in said housing, a cool air inlet passage extending from said process zones to said combustion chamber, a hot air duct extending from said combustion chamber to said process zones, a blower means for circulating air in said housing through said combustion chamber into said hot air duct to said process zones and from said process zones to said air inlet passage and from said air inlet passage into said combustion chamber, and an exhaust fan for exhausting a portion of the air from said cool air inlet passage; comprising the steps of simultaneously exhausting a portion of the air circulating in said cool air inlet which is least contaminated with fume to a point exterior of the housing and recycling the remaining air in said cool air inlet passage through said combustion chamber.

4,449,922
REHEAT FURNACE DROP OUT DOOR SEAL
Harry P. Finke, Pittsburgh, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.
Filed Aug. 30, 1982, Ser. No. 412,777
Int. Cl.³ F24F *9/00*; F23M *11/02*; F27D *1/18*
U.S. Cl. 432—64 **7 Claims**



1. In a reheat furnace having a furnace exit door, a drop out slope extending from a hearth line inward of the door and internal of the furnace extending to a passline external of said door and furnace, the improvement comprising fluid curtain means connected to the door at substantially a bottom end thereof and exiting at an elevation below the hearth line and directed along the drop out slope and away from the furnace to prevent air from entering the furnace along the drop out slope in the area of the door.

4,449,923
CONTINUOUS HEAT-TREATING FURNACE
Yoshikazu Shimosato, Yawata, Japan, assignor to Chugai Ro Kogyo Co., Ltd., Osaka, Japan
Filed May 4, 1982, Ser. No. 374,903
Int. Cl.³ F27D *15/02*; F28D *13/00*
U.S. Cl. 432—82 **18 Claims**

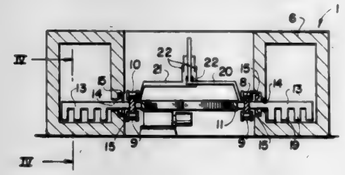


1. A continous heat-treating furnace comprising:
a housing structure having an entrance and an exit defined at its opposite ends, respectively, and also having defined therein a preheating zone adjacent the entrance, a cooling zone adjacent the exit and a high temperature zone intermediate between the preheating and cooling zones, a recirculating duct providing a fluid connection with a portion of the housing structure approximately adjacent the entrance of the preheating zone to another portion of the housing structure approximatedly adjacent the exit of the cooling zone, and
means for forcibly drawing gas from the preheating zone and introducing it into the cooling zone through the recirculating duct.

4,449,924
INDUSTRIAL FURNACE
Claudia Ceretti, Via Ida Braggio n. 1, Domodossola, Italy
Filed Apr. 7, 1982, Ser. No. 366,210
Claims priority, application Italy, Apr. 14, 1981, 67513 A/81
Int. Cl.³ F27B *9/16*; B66C *17/08*; F23K *3/00*
U.S. Cl. 432—138 **12 Claims**

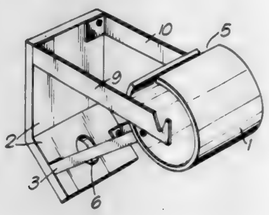
1. An industrial furnace for heating particulate material, comprising:

a plurality of refractory walls defining a chamber having a floor;
heating means associated with said chamber for heating contents of said chamber;
at least one of said refractory walls including an inlet orifice communicating with said chamber for receiving particulate material into said chamber and a discharge orifice communicating with said chamber for discharging particulate material from said chamber;
at least one arm movable in said chamber in a substantially horizontal plane and over said floor for pushing particulate material toward said discharge orifice; and



drive means connected to said arm for moving said arm in said chamber;
said arm including a plurality of spaced apart downwardly projecting teeth for stirring and moving particulate material on said floor of said chamber, said arm including a first passageway defined therein for the circulation of a coolant for cooling said arm with said teeth and a second passageway defined therein and communicating with said chamber through said teeth for the passage of particulate material into said chamber.

4,449,925
HEATING DEVICE AND METHOD OF HEATING ARTICLES
Alan E. Williams, 9 Wilies Rd., Leamington Spa, Warwickshire, and Andrew R. Gibbs, 19, Bishops Rd., Sutton Coldfield, West Midlands, both of England
Continuation of Ser. No. 147,066, May 6, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,366
Claims priority, application United Kingdom, May 12, 1979, 7916545; Feb. 2, 1980, 8003582
Int. Cl.³ F24J *3/00*
U.S. Cl. 432—225 **2 Claims**



1. A device suitable for heating an article with a gas heating tool, which integrally comprises:
(a) an element in the form of a hollow, substantially tubular right circular cylinder that is open at each end and that is arranged to be heated by a flame from the tool and to radiate thermal energy onto at least a major part of the surface of the article;
(b) means for receiving the gas heating tool oriented so that a flame from the tool heats the element,
(c) locating means for locating the article in a position spaced apart from the element where at least part of the element is curved around the position in which the article is located, said locating means preventing the article from touching the element, in which spaced apart position the article receives radiant thermal energy from the element, and
(d) means for retaining the element in a position between the article and the tool to receive at least a major portion of the flame and to shield the article from the flame,
wherein the element has a slot extending from one end to the other to allow the article to be located within the element.
2. A tool for heating an article which integrally comprises:
(a) means for holding a gas burner,
(b) an element in the form of a hollow substantially tubular right circular cylinder that is open at each end and that is arranged to be heated by a flame from the burner and to radiate thermal energy onto at least a major part of the surface of the article,
(c) means for locating the article in a position spaced apart from the element where at least part of the element is curved around the position in which the article is located, said locating means preventing the article from touching the element, in which spaced apart position the article receives radiant thermal energy from the element, and
(d) means for retaining the element in a position between the article and the tool to receive at least a major portion of the flame and to shield the article from the flame,
wherein the element has a slot extending axially from one end to the other to allow the article to be located within the element.

4,449,926
DENTAL ELECTROSURGERY ELECTRODES AND METHOD OF USE
Peter A. Weiss, 501 Greendale Ave., Needham, Mass. 02192
Continuation of Ser. No. 183,035, Sep. 2, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 323,804
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—32 **9 Claims**

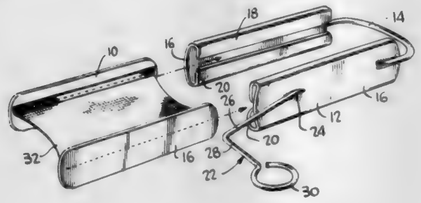


1. An electrosurgery tip for dental use for forming a uniform thin groove in the gum groove that is naturally defined about a tooth to receive the margin of crowns or inlays and comprising a metallic tip having on a limited portion of its radiating surfaces an electrical insulation material for providing a non-incinerating contact between the tip and tooth, whereby when the electrosurgery tip is placed in the gum groove the insulation material is in contact with the associated tooth, whereby the incinerating surface or surfaces of the tip can be guided by contact of the non-incinerating surface with and relative to said tooth in a desired path of incineration without causing incineration of said tooth, said incinerating surface or surfaces presenting a radiating surface to the lateral wall of the gum groove to form the uniform thin groove about the periphery of the tooth meant to receive the margin of the crown or inlay, said tip being of about one-quarter millimeter thickness to thus form the uniform thin groove of like width, said radiating and insulating surfaces of the tip being substantially oppositely faced.

4,449,927
DENTAL BITE RELATOR

James C. Taylor, P.O. Box 1019, and Leonard B. Barber, Jr., 820 Fleming St., both of Hendersonville, N.C. 28793

Filed Mar. 8, 1982, Ser. No. 355,383
Int. Cl.³ A61C 9/00
U.S. Cl. 433—38 1 Claim

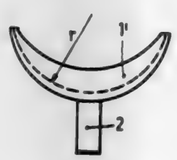


1. A dental instrument for simultaneously taking an impression of prepared teeth and the bite registration thereof with respect to the arch quadrants opposing said prepared teeth comprising a pair of parallel laterally spaced apart, oppositely disposed elongated bite tray holders adapted to hold and support a bite tray therebetween, each of said bite tray holders having inner elongate faces provided with a longitudinally extending channel, said channels being open at each end and disposed in facing relation to receive a portion of a bite tray, an arcuate wire member fixed to and extending between complementary ends of the bite tray holders outwardly thereof for maintaining them in spaced apart, oppositely and complementarily disposed relation, said tray holders having outer faces and a one-piece handle member angularly projecting from and fixed to the outer face of one tray holder adjacent its end opposite the end connected to the other tray holder, said handle member having an inner end portion fixed to and projecting forwardly and only slightly angularly outwardly from its associated tray holder and having an outer end portion disposed at an acute angle to the inner end portion said handle member being a one-piece rod-like element with the outer end portion of the handle member being disposed substantially at a right angle to the inner end portion which is fixed to the associated tray holder at a slight obtuse angle thereto.

4,449,928
UNIVERSAL CERVICAL MATRIX FOR DENTAL USE

Beat von Weissenfluh, Gentilino, Switzerland, assignor to Hawe-Neos Dental Dr. H. v. Weissenfluh SA, Gentilino, Switzerland

Filed Sep. 28, 1982, Ser. No. 426,184
Claims priority, application Switzerland, Nov. 9, 1981, 7334/81
Int. Cl.³ A61C 9/00
U.S. Cl. 433—40 5 Claims

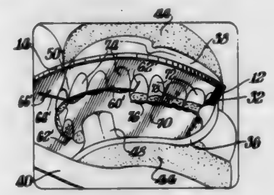


1. A universal cervical matrix for dental use transparent to ultraviolet rays and to rays of the visible spectrum to permit rapid hardening by polymerization of the filling material and of a material which does not adhere to that of the said filling, characterized by a concave elastic lamina (1) with radius of curvature (r) less than that of the various teeth to which it may be applied and tapered to thin edges (1') to be able to penetrate under the gum, the lamina being provided at the rear with a stem (2) adapted to be grasped with forceps so as to press it strongly against the tooth to be treated so that by thus increasing its radius of curvature it can be adapted perfectly to the shape of the tooth to which it is applied.

4,449,929
DENTURE ALIGNMENT KIT

Russell I. Reese, Ontario, Calif., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 230,071, Jan. 30, 1981, abandoned. This application Aug. 11, 1982, Ser. No. 407,210
Int. Cl.³ A61C 11/00
U.S. Cl. 433—56 1 Claim



1. A method of facilitating the accurate positioning of artificial teeth during the setup stage in the fabrication of full dentures, which comprises the steps of

contacting a lower record base with an occlusal guide comprising a rigid transparent sheet with a rear edge, said contact being between said rear edge and the retromolar pads of said base, while said guide is positioned in the contemplated occlusal plane of said dentures,

contacting a cusp ridge locator comprising a rigid wedge-shaped sheet having adjacent first and second edges meeting at an acute angle at said first edge with the ridge crest of said lower record base, said locator being wedged between said guide and said lower record base in a position substantially normal to said guide with said second edge of said locator resting against the lower surface of said guide, and

visually projecting the contact point of said first edge with said ridge crest onto said guide with the aid of one of a series of parallel lines inscribed on a surface of said locator normal to said second edge and extending from said second to said first edge, and marking said projection on the upper surface thereof,

repeating said contacting and projecting steps to establish a progression of said projected contact points constituting transfer of the crest line of said lower ridge crest to said upper guide surface.

4,449,930
DENTAL MODEL ARTICULATOR

Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.

Continuation-in-part of Ser. No. 261,562, May 7, 1981, Pat. No. 4,382,787. This application Apr. 20, 1983, Ser. No. 486,897
Int. Cl.³ A61C 11/00
U.S. Cl. 433—64 35 Claims

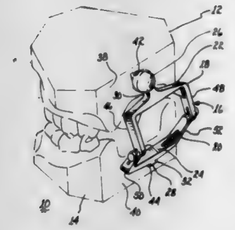
11. An articulator for correlating the casts of a dental model, each of the casts including a mounting, said articulator comprising in combination:

(a) pair of resiliently flexible brackets, each said bracket terminating at one end;

(b) means for pivoting the one end of one bracket with the one end of the other bracket about a common pivot axis; and

(c) means for interconnecting each of the casts with another end of one bracket of said pair of brackets, said interconnecting means including a ball and socket joint wherein one of the ball and socket of said ball and socket joint is defined by the mounting and wherein the other of the ball and socket of said ball and socket joint is formed by said bracket;

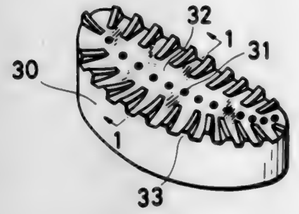
whereby, the angular relationship between each cast and the interconnected one of said pair of brackets may be fixed after registration of the casts relative to one another by adjusting the angular relationship between each mounting and its engaged one of said pair of brackets and by adjusting the angular relationship about the pivot axis between the pivotally connected ends of said pair of brackets.



4,449,931
TOOL FOR MAKING SEPARATED TOOTH MODEL

Koji Saito, Shiga, Japan, assignor to Kyoto Ceramic Co., Ltd., Japan

Filed Mar. 10, 1982, Ser. No. 356,828
Claims priority, application Japan, Mar. 17, 1981, 56-37937[U]; Dec. 28, 1981, 56-212275
Int. Cl.³ A61C 19/00
U.S. Cl. 433—74 7 Claims



1. A tool for making separated tooth models comprising:

a tray having a plurality of holes made vertically in the surface of said tray, the tray having a sunken portion in the surface thereof gradually deepening from the circumference of said tray to the central portion of the surface of said tray, and

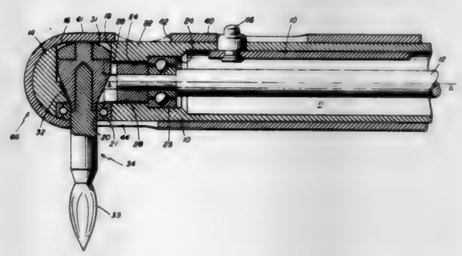
a plurality of pins, each of said pins having a leg portion and a head portion, wherein said leg portion is removably engaged with said holes and said head portion is positioned above the surface of said tray.

4,449,932
CONTRA-ANGLE HEAD FOR DENTISTRY

Leopold P. Lustig, 304 Greenwood St., Newton Center, Mass. 02159

Filed Jun. 17, 1982, Ser. No. 389,408
Int. Cl.³ A61C 1/08, 1/12
U.S. Cl. 433—126 7 Claims

1. A contra-angle head for a dental handpiece comprising a rigid tubular housing member elongated on its axis to provide an alley open at a first end for receiving a drive shaft and having at the second end a chamber with an access opening though a side of said housing member for receiving in said chamber a dental tool for rotation on a tool axis that is transverse to said housing member axis, said chamber having a tool shaft opening through a diametrically-opposite side of said housing member from said access opening for passing a dental tool shaft, means in said tool shaft opening to support said dental tool shaft, when present, for rotation around said tool axis, a latch member in the form of a thin-walled tubular shell slidingly enclosing a portion of said housing member including said second end and being movable relative to said housing member, said latch member having a first latch aperture which is large enough to allow a tool to pass through said first access opening from outside said shell and a second elongated latch aperture the width of which is approximately the same as the diameter of said tool shaft opening, said latch apertures being located diametrically opposite each other in said shell, means for locating said latch member on said housing member and operative to put said latch member alternatively in a first location on said housing member in which said first latch aperture is in register with said access opening and in a second location on said housing member in which a cover portion of said shell overlies said access opening, said second latch aperture being long enough and so oriented as to leave said tool shaft opening uncovered when said latch member is in each of said locations and at all positions between them.



4,449,933
INTERPROXIMAL DENTAL STIMULATOR AND CLEANING APPARATUS

William J. Forni, 2911 Montecito Ave., Santa Rosa, Calif. 95404

Filed Feb. 1, 1982, Ser. No. 344,312
Int. Cl.³ A61L 3/00
U.S. Cl. 433—141 33 Claims



1. An interproximal dental stimulator and cleaning apparatus of the type which is manipulated by handle means, for use in the dental sulcus region between a tooth and adjacent interproximal gingival papilla, comprising:

a first flexible member, having a broad end, a tip, and a longitudinal axis which extends from the broad end to the tip, the broad end of the member being attached to the handle means,

the member including, first and second elongated, wing-like structures which extend along, and project a predetermined outward distance from, the longitudinal axis, the outward distance being largest at the broad end of the member and decreasing in magnitude toward the

tip, so that the member has a generally arrowhead-like shape,

wherein each wing-like structure comprises a plurality of fingers which provide cleaning and stimulating surfaces, and

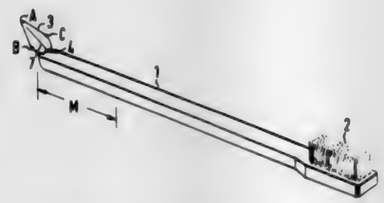
furtherwherein the member is shaped so that it can be inserted between adjacent teeth so that the interproximal gingival papilla between the teeth is accepted between the first and second wing-like structures, and so that the structures occupy and can be manipulated within the dental sulcus regions between the papilla and teeth.

4,449,934

PLAQUE REMOVER

Hassan P. A. Salam, London, England, assignor to Unisplay, S.A., Geneva, Switzerland

Filed Nov. 4, 1981, Ser. No. 318,237
Int. Cl.³ A61C *17/00*
U.S. Cl. 433—143 **29 Claims**



1. An instrument for removing plaque from natural teeth, comprising:

a member arranged to replaceably fit onto a handle;

a blade of thin flexible sheet-like material tapering in width from a base portion to an apex, said blade being stiffened by having a fold forming a valley extending along the direction from said base portion to said apex;

means securing said blade to said member arranged so that said blade extends away from said member and arranged to maintain said fold at said base portion;

the combination of said blade and said member being compact in the direction in which said blade extends away from said member facilitating placement of said combination in the mouth for scraping the back surfaces of the front teeth and each side surface of each of the other teeth, said blade and said securing means being arranged to resist buckling when said blade is subjected to forces in the direction onto its concave side normal to its surface arising from said scraping.

4,449,935

TOOTH CROWN REMOVER

William H. Harris, Oklahoma City, Okla., assignor to Hampton Research & Engineering, Inc., Oklahoma City, Okla.

Filed Feb. 22, 1983, Ser. No. 468,814
Int. Cl.³ A61C *3/08*
U.S. Cl. 433—151 **2 Claims**

1. A tooth crown remover, comprising:

an elongated handle having an end surface forming an anvil;

a mandrel coaxially secured to the anvil end of said handle, the end portion of said mandrel opposite the handle coaxially converges away from the handle and terminates in an annular shoulder facing the handle normal to the mandrel axis;

a sleeve-like hammer longitudinally slidably surrounding the end portion of said mandrel adjacent said handle; and,

spring means interposed between said hammer and said mandrel for biasing said hammer toward said handle,



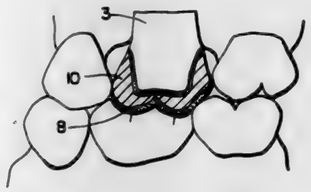
the end portion of said mandrel adjacent said handle being diametrically reduced to form an annular space for nesting said spring means.

4,449,936

PROCESS FOR THE PREPARATION OF DENTURES

Peter Bayer, Nassauerstrasse 6, D-6272 Niedernhausen, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,933
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 3135469
Int. Cl.³ A61C *9/00*
U.S. Cl. 433—214 **8 Claims**



1. A process for preparing a workpiece for use as denture parts or denture models comprising the steps of:

(a) arranging a working model to which the workpiece is to be secured and a counter bite model in an articulator;

(b) arranging a mold between opposing surfaces of said models in the area between said working model and counter bite model;

(c) filling said mold with a hardenable material;

(d) bringing together said working model and counter bite model in said articulator so that parallel planes which include the opposing surfaces of said models are spaced apart by a distance d, said distance corresponding to the wall thickness of said mold in the direction normal to said planes;

(e) allowing said hardenable material to solidify; and

(f) removing said mold, whereby a hardened workpiece is formed.

4,449,937

DENTAL ANCHOR

Bernard Weissman, New York, N.Y., assignor to Ipco Corporation, White Plains, N.Y.

Filed Dec. 3, 1981, Ser. No. 326,851
Int. Cl.³ A61C *5/08*
U.S. Cl. 433—225 **13 Claims**



1. A dental anchor for securing a superstructure to a tooth understructure, comprising:

an elongated anchoring portion having a specific length for insertion within a channel extending into the tooth understructure, the channel having a predetermined length greater than said specific length of said anchoring portion;

said anchoring portion including a threaded section;

a coaxial, elongated retaining portion having a non-circular cross section for embedding within the superstructure;

depth-limiting means integrally disposed between said anchoring portion and said retaining portion for limiting depth of insertion of said anchoring portion into the channel so that said anchoring portion is spaced from a bottom of the channel;

a manipulating end portion for facilitating insertion of said anchoring portion into the channel;

a frangible reduced thickness portion interposed between said manipulating end portion and said retaining portion to permit severing of said manipulating end portion from said retaining portion after said anchoring portion is inserted into said channel; and

said depth-limiting means including a frustro-conical section outwardly flaring from said elongated anchoring portion for seating in a countersink at an upper end of the channel in the understructure;

whereby the seating of said frustro-conical section in the channel countersink causes the severing of said manipulating end portion from said retaining portion.

4,449,938

ENDODONTIC FILLING AND SEALING COMPOSITION

Richard B. Pollak, Los Angeles, Calif., assignor to Lee Pharmaceuticals, Inc., So. El Monte, Calif.

Filed Feb. 19, 1982, Ser. No. 350,404
Int. Cl.³ A61K *6/08*
U.S. Cl. 523—116 **12 Claims**

1. A biologically compatible non-toxic composition suitable, when mixed, as an in situ curing endodontic filling material which comprises two separately packaged components as follows:

(a) a paste component comprising a low viscosity hydroxy terminated polydialkylsiloxane and a non-reactive hydroxy-free silicone oil diluent having a viscosity of from about 20 to 20,000 centistokes at 25° C. and comprising a polydialkylsiloxane; and

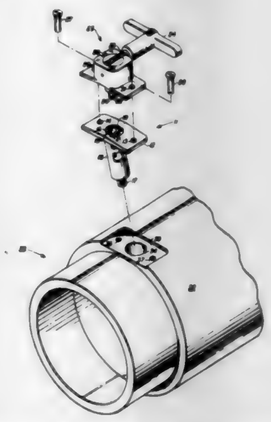
(b) a liquid component comprising (i) the reaction product obtained by refluxing at ambient pressure and a temperature of about 150° to about 175° C. under a nitrogen blanket in the absence of air and moisture (1) a dialkyltindicarboxylate in which the alkyl groups have from 1 to about 8 carbon atoms and the carboxylate groups contain from about 10 to about 18 carbon atoms and (2) a tetraalkyl orthosilicate, in the molar ratio of 1 to 3; (ii) uncombined alkyl orthosilicate and (iii) a non-reactive hydroxy-free silicone oil diluent having a viscosity of from about 20 to 120,000 centistokes at 25° C. and comprising a polydialkylsiloxane.

4,449,939

SAFE-ARM TRAINING SIMULATOR

William R. Matteson, Ridgecrest, Calif., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 8, 1983, Ser. No. 502,404
Int. Cl.³ F41F *27/00*; G09B *9/00*
U.S. Cl. 434—12 **17 Claims**



1. A two-position, self-locking, safe-arm training device, comprising:

a baseplate having at least one hole through said baseplate;

a shaft mounted through said hole in said baseplate and having first and second holes in said shaft;

a spring mounted around said shaft and anchored at one end of said spring to said first hole in said shaft;

a housing mounted around said spring for keeping said spring under tension and for anchoring the other end of said spring, and having at least one roll slot in said housing;

a roll pin mounted in said second hole in said shaft and extending through said roll slot of said housing for confining said shaft in said housing, and for allowing said shaft to be switched between two set 90° positions, one of which corresponds to a safe position, and the other of which corresponds to an arm position, such that said spring returns said shaft to said safe position unless locked in said arm position.

4,449,940

SIMULATOR FOR WIND SURFING

Pierre L. Berger, 83310 Cogolin, La Mole, France

Filed Nov. 9, 1981, Ser. No. 319,393
Claims priority, application France, Nov. 12, 1980, 80 24009
Int. Cl.³ G09B *9/06*
U.S. Cl. 434—66 **13 Claims**

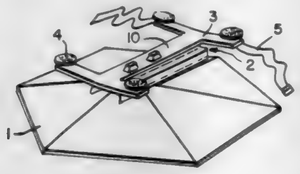
1. A simulator for a wind surfer adapted to be placed on a variety of surfaces comprising:

(a) a foundation comprising at least one webbed element;

(b) means for supporting a wind surfer;

(c) means for pivotably connecting said foundation and said supporting means;

(d) means for braking pivotal movement of said supporting means; and



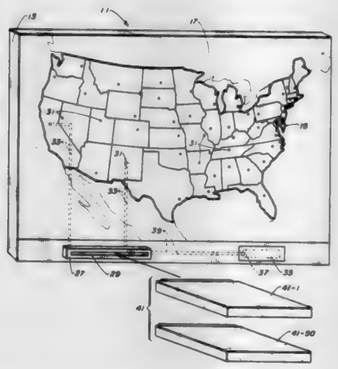
(e) means for longitudinally and transversely oscillating said supporting means with respect to said foundation.

4,449,941

EDUCATIONAL DEVICE FOR LEARNING GEOGRAPHICAL NAMES AND LOCATIONS

John McGuire, 2930 Joseph Ave., Sacramento, Calif. 95825, and David G. Bories, 8421 Ascolano Ave., Fair Oaks, Calif. 95628

Filed Jan. 31, 1983, Ser. No. 462,421
Int. Cl.³ G09B *29/10*
U.S. Cl. 434—153 **7 Claims**



1. An educational aid comprising:
a. a board having a front surface,
b. a map of a political area imprinted on the front surface,
c. a separate lamp mounted on the top surface within the bounds of each subarea,
d. a battery,
e. a receptable mounted on the board and having a different set of contacts connected to each lamp and connecting means for connecting to the battery, and
f. a plurality of cartridges, one for each subarea, adapted to be inserted into the receptable one at a time, each cartridge connecting one of said lamps to said battery when inserted into said receptacle.

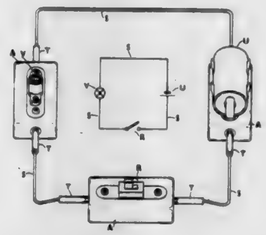
4,449,942

KIT FOR THE ASSEMBLY OF ELECTRICAL CIRCUITS

Yechiel Salit, 12 Alexander Yanai St., Tel-Aviv, Israel

Filed Jun. 25, 1982, Ser. No. 392,328
Claims priority, application Israel, Jul. 3, 1981, 63231
Int. Cl.³ G09B *23/18*
U.S. Cl. 434—224 **10 Claims**

1. A kit for the assembly of electrical circuitry, particularly for didactical purposes, comprising:
a selection of electrical or electronics components;
each component being mounted on an insulated board having extentions of a conductive material to which the component's terminals are electrically connected;
the boards being adapted to be interchangeably and releasably mounted on a base in the form of a prismatic block made of a rigid, electrical insulating material having a bottom, side and top surfaces;
metallic sockets installed within the blocks;



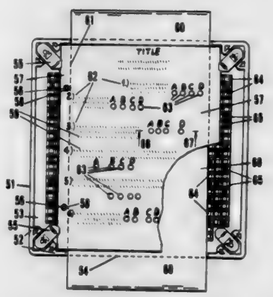
means for releasably fastening the boards to the blocks, thereby establishing electrical connection between a conductive extention thereof and a socket; and
openings formed in side surfaces of the block and in each socket for the insertion of wire plugs thereinto.

4,449,943

TEACHER PREPARED FORMATS FOR INSTRUCTIONAL APPARATUS

James R. Harte, 10 W. Concord, Kansas City, Mo. 64112

Filed Aug. 2, 1982, Ser. No. 384,234
Int. Cl.³ G09B *3/08*
U.S. Cl. 434—334 **2 Claims**



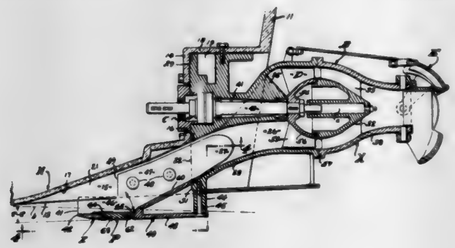
1. What is claimed is: an invention comprised of two parts, the first part being a sheet of paper, plastic, or similar material, through which holes have been punched in a precise manner so that these holes correspond to shallow and / or deep depressions contained in a holding frame used in conjunction with this invention; and a second part of this invention being a sheet of paper, plastic, or similar material, that has printed on its surface a precise pattern of dots or other indicating means, that when used in conjunction with the first part of this invention by placing the second sheet under the first sheet in such a manner that it will indicate to an instructor which of the through holes in the first part will be above shallow depressions, and which of the holes in the sheet will be above deep depressions that are contained in a holding frame that is used with this invention: this arrangement allows an instructor to rapidly and economically prepare instructional formats in any area the instructor chooses; said formats providing the student with immediate feedback as to the correctness or incorrectness of his or her answer choices, when said formats are used in conjunction with the instructional apparatus in previously noted patents.

4,449,944

VARIABLE INLET HYDROJET BOAT DRIVE

Kenneth R. Baker, Woodland Hills, and Robert T. De Vault, Simi Valley, both of Calif., assignors to Maritec Corporation, Canoga Park, Calif.

Filed Jan. 2, 1979, Ser. No. 591
Int. Cl.³ B63H *11/04*
U.S. Cl. 440—47 **20 Claims**



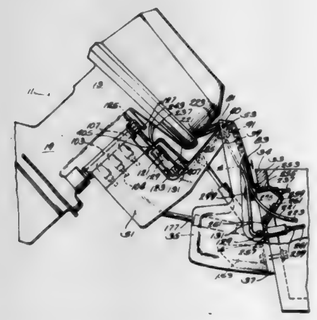
1. In combination:
a boat hull having a tunnel opening flush at the bottom thereof for the reception of propulsion water and inclined upwardly as it extends rearwardly to an interface opening at the stern thereof;
a hydrojet drive unit having a pump housing secured to the boat hull and with a propulsion water flow passage continuing rearwardly from a lip at the hull bottom and from said interface opening, and a prime mover driven impeller in said passage to deliver propulsion water through a nozzle;
and a ram-scoop extending forwardly from the lip of the hydrojet drive unit and with a planar bottom spaced below the hull bottom and enclosing the tunnel and defining a restricted inlet opening for high speed boat operation, there being a secondary inlet opening in the planar bottom of the ram-scoop and closed by a panel coplanar therewith and free to open in response to an imbalance between exterior slipstream pressure and interior tunnel pressure so as to augment the flow of propulsion water into the tunnel for low speed boat operation.

4,449,945

OUTBOARD MOTOR MOUNTING ARRANGEMENT

Arthur R. Ferguson, Northbrook, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 17, 1981, Ser. No. 293,324
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—53 **42 Claims**



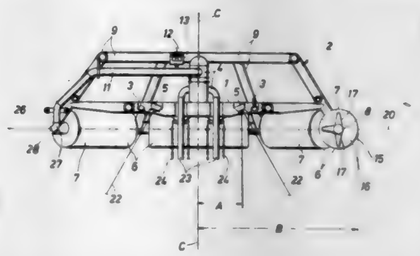
1. A marine propulsion device comprising a transom bracket including a portion which is adapted for mounting to the rear of a boat transom and which includes an uppermost part, and a pair of laterally spaced arms extending upwardly from said mounting portion above said uppermost part and without extending forwardly of the rear of the transom and including respective upper ends, a swivel bracket comprising a lower unit mounting portion having therein a bore, and a pair of laterally spaced arms extending upwardly from said swivel bracket mounting portion and including respective upper ends, means adjacent said upper ends of said swivel bracket arms for mounting said swivel bracket to said transom bracket for pivotal movement about a tilt axis which is horizontal when said transom bracket is boat mounted and relative to a running position with said swivel bracket mounting portion located adjacent said transom bracket mounting portion, a propulsion unit including an internal combustion engine and a propeller mounted for rotation and driven by said engine, and means including a king pin fixed to said propulsion unit and received in said bore of said swivel bracket mounting portion so as to connect said propulsion unit to said swivel bracket for common movement of said propulsion unit with said swivel bracket about said tilt axis and for pivotal steering movement of said propulsion unit relative to said swivel bracket about a second axis transverse to said tilt axis.

4,449,946

SINGLE-POINT MOORING SYSTEM FOR TRANSFERRING FLUIDS

Jan Versluis; Johan deGroot, and Anton van Baalen, all of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 25, 1982, Ser. No. 436,226
Claims priority, application Netherlands, Nov. 16, 1981, 8105167
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—4 **2 Claims**

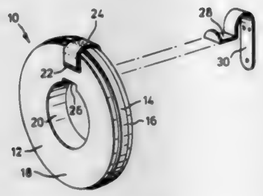


1. A single-point mooring system for transferring fluids, comprising a central element, connecting means carried by said central element for operatively securing anchor cables thereto, a rotatable line coupling and a rotatable element rotatably connected to the central element, the rotatable element being provided with a substantially annular buoyancy unit, with means for mooring a ship and with a fluid line connected to the rotatable line coupling, characterized in that the distance between any point on the outer circumference of the buoyancy unit and the axis of rotation is at least twice as large as the distance between each anchor cable connecting means and the axis of rotation, and being further characterized in that the central element is connected to the rotatable element by means of a bearing capable of absorbing both axial and radial forces, said bearing being fitted in such a manner that the bearing is entirely above the water surface during normal operation, with said rotatable element comprising a supporting frame that is on one side connected to the buoyancy unit and on the other side to the bearing.

4,449,947
FLOTATION DEVICE

Richard A. Brault, 283 Sherbourne St., Apt. 2, Toronto, Canada

Filed Jun. 29, 1982, Ser. No. 393,508
Int. Cl.³ B63C 9/10
U.S. Cl. 441—81 4 Claims

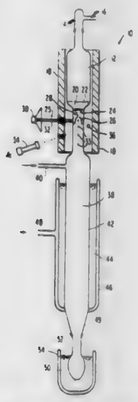


1. A flotation device comprising:
(a) a flotation member comprising a disc shaped buoyant body of resiliently flexible foamed plastics material having a cylindrical shaped support face extending about a perimeter thereof and across the full width thereof, said buoyant body being sufficiently resilient at said support surface to permit said support surface to be resiliently deformed,
(b) a retrieval member comprising an elongated web of flexible material, said web being connected to said flotation member and adapted so as to be locatable in an operable position extending from its connection with said flotation member and a storage position extending about and resiliently depressing said support face to be retained thereon by the resilient reaction of the body.

4,449,948
METHOD OF INTRODUCING SODIUM AMALGAM INTO LAMPS AND LAMP CONTAINING SODIUM AMALGAM PARTICLES

Scott Anderson, Champaign, Ill., assignor to APL Anderson, Inc., Oakwood Village, Ohio

Division of Ser. No. 177,391, Aug. 12, 1980, Pat. No. 4,386,050, which is a division of Ser. No. 070,839, Aug. 29, 1979, Pat. No. 4,238,173, which is a division of Ser. No. 654,416, Feb. 2, 1976, Pat. No. 4,216,178. This application Mar. 17, 1983, Ser. No. 476,125
Int. Cl.³ H01J 9/395
U.S. Cl. 445—18 8 Claims

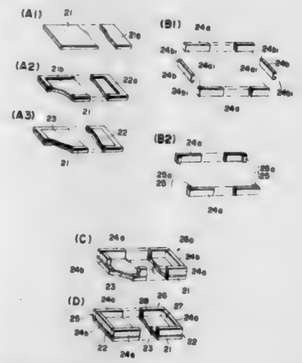


1. A method of filling a gas discharge lamp with an accurately controllable quantity of high purity sodium amalgam comprising the steps of:
(a) providing a volume of free-flowing amalgam particles composed of from about 2 to about 30 weight percent sodium and from about 98 to about 70 weight percent mercury, said particles containing less than 10 ppm of sodium oxides;
(b) portioning out a volume of the particles corresponding to a desired quantity of sodium amalgam; and
(c) introducing the portioned volume of amalgam particles into a gas envelope of a gas discharge lamp.

4,449,949
METHOD OF MANUFACTURING A FLAT-TYPE FLUORESCENT DISPLAY TUBE

Goro Eto; Atsushi Nishimuro, and Noriyoshi Fukuda, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Division of Ser. No. 149,748, May 14, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 422,085
Claims priority, application Japan, May 16, 1979, 54-59089
Int. Cl.³ H01J 9/2
U.S. Cl. 445—24 3 Claims

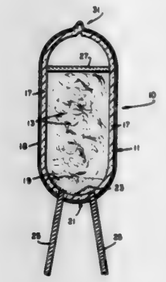


1. A method of manufacturing a front plate used in an envelope of flat-type fluorescent display tube comprising the steps of:
preparing a flat glass upper plate,
applying a fusion bonding glass paste formed essentially of a low-melting frit glass to inside edge portions of said upper plate by a screen printing technique,
firing said upper plate to which the fusion bonding glass paste is applied,
spraying a mist of transparent electrically-conductive film forming liquid on the inside surface of said upper plate at the time of the firing, thereby to deposite a transparent conductive film on the inside surface of said upper plate simultaneously with the firing of the fusion bonding glass paste, and
bonding side wall plates consisting of pillared glass blocks to the periphery of said upper plate using a sealing medium formed essentially of a low-melting frit glass, therby to form a box lid shaped front plate consisting of said flat upper plate and the pillared side wall plates, with only the inside surface of the upper plate of said box lid shaped front plate being coated with the transparent conductive film.

4,449,950
METHOD OF MAKING PHOTOFLASH LAMP TO PREVENT SHRED MIGRATION INTO TIP PORTION OF LAMP ENVELOPE DURING SEALING THEREOF

Andre C. Bouchard, Peabody, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 1, 1982, Ser. No. 353,317
Int. Cl.³ F21K 5/02; H01J 9/40
U.S. Cl. 445—28 6 Claims



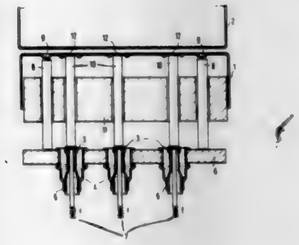
1. A method of making a photoflash lamp, said method comprising:
providing an elongated, light-transmitting glass tubular member having opposing open ends;
sealing a first open end of said glass tubular member, said sealed first end including a pair of lead-in wires secured therein each having an end portion having access to the interior of said tubular member;
positioning a quantity of primer material within said tubular member through an opposing, second open end thereof, said quantity of primer material electrically connected to said end portions of said lead-in wires;
positioning a predetermined quantity of combustible, light-producing material within said tubular member through said opposing, second open end thereof;
frictionally positioning a thin member having an external configuration substantially similar to the internal configuration of said tubular member within said tubular member through said opposing, second open end thereof, said thin member engaging said combustible, light-producing shred material to prevent migration of said material toward said opposing, second open end of said glass tubular member;
introducing a combustion-supporting gas within said tubular member through said opposing, second open end; and
thereafter sealing said second end of said tubular member above said thin member to define an envelope.

4,449,951
METHOD OF ADJUSTING THE ELECTRODE SPACINGS IN SYSTEMS OF ELECTRON-BEAM TUBES

Eberhard Nill, Esslingen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 3, 1981, Ser. No. 298,848
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3035970
Int. Cl.³ H01J 9/18
U.S. Cl. 445—34 3 Claims

1. A method of adjusting the electrode spacings in an electron-beam tube of the type wherein a cathode electrode mounting plate is provided with at least one cathode electrode mounted in a holding sleeve and wherein said mounting plate is mounted within a second electrode having electron apertures therein which are respectively axially aligned with each of the cathode electrodes and separated therefrom by a predetermined electrode spacing, said method comprising the steps of:
(a) inserting a guide plate into said second electrode, said guide plate having at least one guide hole therein respectively axially aligned with said apertures and having at least one spacing hole therein which is spaced apart from said guide holes;
(b) inserting an axially extending cathode jig member into each of said guide holes until one end portion thereof engages said second electrode, and each cathode jig member having a predetermined axial length;
(c) inserting an axially extending spacing jig member into each of said spacing holes until one end portion thereof engages said second electrode, and each spacing jig having a predetermined axial length which is less than the



axial length of said cathode jig member by an amount equal to said predetermined electrode spacing;
(d) moving said mounting plate into engagement with the other end of said spacing jig member;
(e) moving said cathode electrodes in said sleeve until the ends of said cathode electrodes engage the other ends of said cathode jig members;
(f) fastening said cathode electrodes to said sleeves;
(g) removing said guide plate from said second electrode;
(h) inserting said mounting plate with its fastened cathode electrodes into said second electrode; and,
(i) fastening said mounting plate to said second electrode.

4,449,952
METHOD OF OPERATING A COLD CATHODE-COLD RESERVOIR THYRATRON

Arthur Tauber, Long Branch; Robert D. Finnegan, West Long Branch, and Frederick Rothwarf, Toms River, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

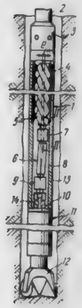
Filed Oct. 9, 1979, Ser. No. 83,071
Int. Cl.³ H01J 7/18
U.S. Cl. 445—55 4 Claims

1. Method of providing a cold cathode-cold reservoir thyratron for laser/radar and other systems with an operating pressure plateau of approximately 10^{-3} atmosphere in the thyratron, comprising forming the hydride of a compound that simultaneously exhibits a large capacity for storing hydrogen, a desorption pressure plateau between 10^{-3} and 10^{-4} atmosphere of hydrogen and rapid desorption and recovery rate, placing the hydrided compound in the cathode structure of the thyratron, and then pumping the tube down to its operating pressure plateau of approximately 10^{-3} atmosphere, the hydrided compound acting as a ballast to maintain that partial pressure of hydrogen at room temperature.

4,449,953
ARTICULATED COUPLING

Samuil S. Nikomarov; Anatoly M. Kochnev; Vladimir B. Goldobin; Jury M. Sarapulov, all of Perm, and Isaak Y. Valdman, Kungur Permskoi, all of U.S.S.R., assignors to Permsky Filial Vsesojuznogo Nauchno-Issledovatelskogo Instituta Burovoi Tekhniki, U.S.S.R.

Filed Sep. 10, 1981, Ser. No. 301,023
Claims priority, application U.S.S.R., Sep. 12, 1980, 2981886
Int. Cl.³ E21B *4/02, 17/02*
U.S. Cl. 464—19 6 Claims

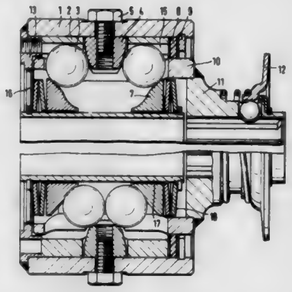


1. An articulated coupling, comprising
a first cylindrical half-coupling having an end face;
a second cylindrical half-coupling disposed substantially coaxially with said first half-coupling and having an end face facing the end face of said first half-coupling;
a first recess formed in said end face of said first half-coupling facing said second half-coupling, said first recess being shaped as a cylindrical annular groove having external and internal walls;
a second recess formed in said end face of said second half-coupling facing said first half-coupling, said second recess being shaped as a cylindrical annular groove having external and internal walls;
a hollow cylindrical cage installed substantially coaxially in said grooves of said half-couplings with a clearance from said walls of said recesses;
openings formed in said first half-coupling and passing radially through said external and internal walls of said first recess groove;
openings formed in said second half-coupling and passing radially through said external and internal walls of said second recess groove;
openings formed through said cage substantially coaxially with said openings of the first and second half-couplings;
rollers installed with a clearance in said substantially coaxial openings of said first and second half-couplings and said cage and resting on both walls of said groove and on said cage; and
means for retaining said rollers in said openings comprising a casing and elastic gaskets, said casing being mounted on said gaskets outside said half-couplings with a clearance from said half-couplings.

4,449,954
OVERLOAD CLUTCH

Werner Krude, Siegburg-Kaldauen, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,601
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023541
Int. Cl.³ F16D *7/06*
U.S. Cl. 464—36 7 Claims



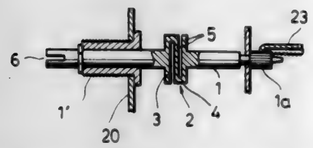
1. An overload clutch comprising a driving member and a driven member adapted to be placed in torque transmitting relationship with each other, a cage nonrotatably connected with one of said driving member and said driven member and formed with apertures, a plurality of dog members received in said apertures, axially spring-biased cam means mounted on said one member engaging said dog members to urge said dog members to move at least in directions radially of said clutch, a plurality of cam elements mounted on the other of said driving and driven members adapted to engage said dog members, control ring means operatively interposed between said driving and driven members, windows formed in said control ring means having said cam elements extending therethrough, said windows being formed with a circumferential dimension greater than the circumferential dimension of said cam elements to enable said control ring means to undergo limited circumferential movement relative to said other member, and formations in said control ring means adapted to receive said dog members therein thereby to effect torque transmitting engagement of said clutch, said cam elements and said axially spring-biased cam means being configured to control movement of said dog members into and out of torque transmitting engagement relative to said formations in accordance with the relative circumferential positioning between said control ring means and said other member.

4,449,955
OPERATING SHAFT MECHANISM IN A PUSHBUTTON TUNER

Tadaaki Watanabe, and Yoshio Tanaka, both of Saitama, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,442
Claims priority, application Japan, Aug. 8, 1980, 55-111724[U]
Int. Cl.³ F16D *3/52;* F16H *35/18;* H03J *5/06*
U.S. Cl. 464—78 3 Claims

1. An operating shaft for a tuner, comprising an integral shaft member formed from a plastic material, said shaft member including a manual shaft portion, a driven shaft portion and an enlarged portion which connects said manual and driven shaft portions, said enlarged portion having first means defining a plurality of first slits therein for imparting flexibility to said enlarged portion, and second means provided at an end of said manual shaft portion remote from said enlarged portion for facilitating support of a knob on said end of said manual shaft portion, said second means including two spaced, axially extending wall portions at said end of said manual shaft portion, which wall portions define an axially extending second slit, said second means including an axially extending strengthening rib disposed in said second slit and extending between said wall portions, said rib being integral with said shaft member and being capable of elastic deformation when a large force

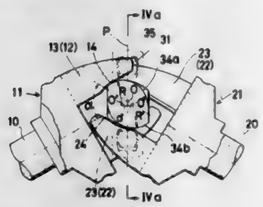


is applied thereto as a knob is pressed onto said end of said manual shaft portion of said shaft member, and wherein said rib is disposed in the central region of said second slit and extends axially from the bottom of said second slit partway to the open axially outer end of said second slit so that the axially outer end portion of said second slit is free of said rib, the thickness of said rib being substantially smaller than the width of said second slit.

4,449,956
CONSTANT-VELOCITY UNIVERSAL JOINT

Yasuo Ueno, 3-17-3-209 Higashinogawa, Komae-shi, Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,151
Claims priority, application Japan, Jun. 17, 1980, 55-81661; Jun. 17, 1980, 55-81660; Oct. 28, 1980, 55-151044
Int. Cl.³ F16D *3/30*
U.S. Cl. 464—149 1 Claim

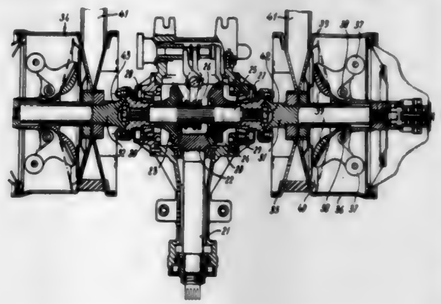


1. A constant-velocity universal joint for transmitting a rotary motion from a driving shaft to a driven shaft, comprising:
a yoke member formed at the leading end of the driving shaft and provided with a plurality of yokes spaced circumferentially and containing flat lateral contact surfaces;
a yoke member formed on the driven shaft and provided with a plurality of yokes meshed across circumferential gaps with the yokes of the yoke member of the driving member and containing lateral contact surfaces, the opposed lateral contact surfaces of the adjacent yokes of the yoke members of the driving shaft and the driven shaft held in a meshed condition being substantially parallel with the lines perpendicularly intersecting the tangential lines of the pitch circle of said yoke members; and
a transmission member consisting of a plurality of rotary members each formed in the shape of a cylinder having a substantially straight longitudinal side wall and set in position in the gaps formed between the opposed lateral contact surfaces of the yokes of the yoke members of the driving shaft and the driven shaft, a retainer formed of frames for retaining the rotary members on the pitch circle thereof in the plane perpendicular to the axis of the retainer and a guide member serving to retain the frames at a fixed circumferential pitch and to hold in position the yokes of the driving shaft and the driven shaft, each of said rotary members being provided with a rotation axis in the radial direction of the retainer, said guide member being provided with two sets of spherical surfaces having respective centers deviating equally from the intersection of the axes of the driving and driven shafts in the opposite directions on the rotational axis of the retainer, one set of the spherical surfaces serving to retain the circumferential surfaces of the yokes of the driving shaft in the radial direction thereof and the other set thereof serving to retain the yokes of the driven shaft in the radial direction thereof.

4,449,957
AUTOMATICALLY VARIABLE DRIVE APPARATUS HAVING AT LEAST ONE V-BELT RUNNING OVER VARIABLE DIAMETER PULLEYS

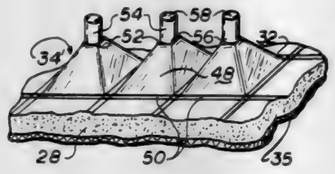
Hendrikus J. Kapaan, Ijsselstein, Netherlands, assignor to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Nov. 15, 1978, Ser. No. 960,924
Claims priority, application Netherlands, Nov. 16, 1977, 7712625
Int. Cl.³ F16H *55/56, 3/14;* F16D *21/04*
U.S. Cl. 474—14 7 Claims



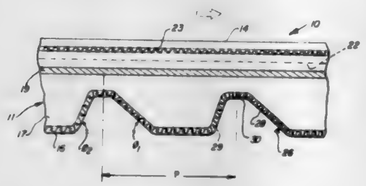
1. In an automatically variable drive apparatus including a driving section and a driven section which are coupled together by means of at least one V-belt running over adjustable diameter pulleys, in which each pulley comprises a first half-pulley member fixed on for rotation with a first shaft rotatably mounted in a housing in each of said drive and driven sections and a second half-pulley member axially slidably mounted on said first shaft for rotation therewith, said pulley including means for adjusting the relative axial location of said second half-pulley member in response to the rotational velocity of said shaft, said first shaft of the driving section being driven by a driving shaft via a drive conical gear mounted on said driving shaft which engages with at least one first conical gear mounted for free rotation around said first shaft, means for selectively coupling said first conical gear to said first shaft for rotation therewith; the improvement wherein said first shaft of the driving section comprises at least one bearing supported central shaft around which said first conical gear can rotate, a first flange at one end of said central shaft, said flanged central shaft together with said driving section being a first integral assembly, at least one lateral shaft on which is mounted one of said adjustable diameter pulleys which is provided at one end with a second flange to form a lateral section being a second integral assembly, the second flange being removeably fixed to the first flange of the central shaft, thereby allowing a detachable construction of said two integral assemblies.

4,449,958
POSITIVE TRACKING PULLEY AND BELT CONSTRUCTION
Rene A. Conrad, 215 Olive Hill La., Woodside, Calif. 94062
Filed Sep. 24, 1981, Ser. No. 305,288
Int. Cl.³ F16G 1/28; F16H 7/02; B65G 23/06
U.S. Cl. 474—205 1 Claim



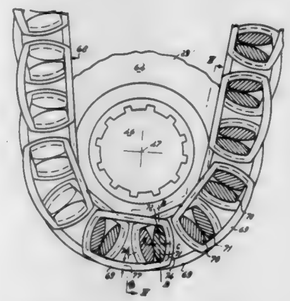
1. An endless belt apparatus comprising:
an endless belt including a planar net having a longitudinal extent and a pair of parallel surfaces, a plurality of truncated pyramidal projections converging away from one of the surfaces of the web, each truncated pyramidal projection including one cylindrical portion extending from the truncated pyramid and away from one of the surfaces of the web, the truncated pyramidal projections arranged in a plurality of columns for forming a matrix; and
a pulley having a cylindrical shape in combination with the belt, provided with a plurality of grooves circumferential of the cylindrical outer surface of the pulley and arranged for receiving columns of projections provided on one of the surfaces of the web with the belt and assuring proper tracking of the belt.

4,449,959
CROSS GROOVED BANDED DRIVE BELT
Kaname Matsumura, Akashi, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan
Filed Oct. 10, 1980, Ser. No. 196,111
Int. Cl.³ F16G 5/00, 5/20
U.S. Cl. 474—238 20 Claims



1. In a power transmission belt having a plurality of V-belt elements retained in longitudinally extending laterally spaced relationship by a tie band, the improvement comprising
the provision of longitudinally spaced grooves in said V-belt elements opening away from the tie band, the grooves of the respective V-belt elements being substantially aligned transversely of the belt, each of said grooves being defined by an inclined transverse leading surface, a reversely inclined transverse trailing surface, and a bottom surface, the inclination of said leading and trailing surfaces to the longitudinal extent of the tie band being different whereby the groove defines an asymmetrical configuration in longitudinal cross section.

4,449,960
TORQUE CONVERTER
Cornelis van der Lely, 7, Brüschenrain, ZUG, Switzerland
Division of Ser. No. 969,703, Dec. 15, 1978. This application Oct. 27, 1980, Ser. No. 201,367
Int. Cl.³ F16G 51/80, 13/02
U.S. Cl. 474—242 28 Claims

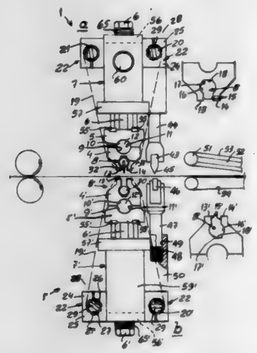


1. A torque converter comprising an input shaft connected to an output shaft through a change speed mechanism, said mechanism comprising a first pair of flanges that form a pulley on said input shaft and a second pair of flanges on said output shaft that form a further pulley, at least one flange of each pair being axially displaceable relative to the other flange of said pair, an endless chain being mounted between the flanges of each pair, said chain including relatively movable links and transverse link members which connect said links to form said chain, each said link member having lugs with end faces for engaging said flanges, said end faces being substantially flat and parallel to the surface of the adjoining said flange, hydraulic means displacing said one flange of each pair in relative opposite directions, at least one of said links enclosing a space in which three said link members are located, the portion of each said link member enclosed by said link being symmetrical about a plane approximately perpendicular to the length of said chain.

4,449,961
PROCESS FOR LIGHT OLEFIN PRODUCTION
Nancy P. Forbus, Newtown, Pa., and Margaret M. Wu, Belle Mead, N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 449,912, Dec. 15, 1982, abandoned, which is a continuation-in-part of Ser. No. 335,796, Dec. 30, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 474,842
Int. Cl.³ C07C 1/20
U.S. Cl. 585—640 20 Claims

1. In a catalytic process for converting a feedstock comprising the organic reactants methanol, methyl ether or mixtures thereof to a hydrocarbon product rich in ethylene and propylene, which process comprises contacting said feedstock under conversion conditions including a temperature between about 200° C. and 500° C. and a weight hourly space velocity for the organic reactants of between about 0.05 and 30, in a reaction zone with a catalyst comprising a crystalline aluminosilicate zeolite material characterized by a crystalline structure having pore windows formed by 8-membered rings of oxygen atoms, the improvement for enhancing catalyst lifetime comprising:
(i) simultaneously co-feeding to said reaction zone a catalyst lifetime enhancing amount of a gaseous elemental hydrogen-containing diluent, said diluent being co-fed into said reaction zone at a weight hourly space velocity of from about 0.003 to 20; and
(ii) maintaining said feedstock at a pressure between about 50 and 500 psig.

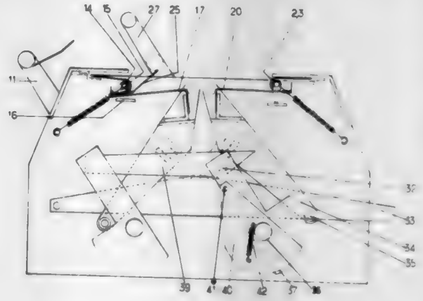
4,449,962
CUTTING/SEALING DEVICE FOR PLASTIC BAG MAKING MACHINES
Carlos R. D. S. Copia, Sao Paulo, Brazil, assignor to Maquinas Npu Ltda., Sao Paulo, Brazil
Filed Feb. 12, 1982, Ser. No. 348,161
Claims priority, application Brazil, Mar. 12, 1981, 8101449
Int. Cl.³ B31B 1/64
U.S. Cl. 493—209 8 Claims



1. In a cutting/sealing device for plastic bag making machines of the type having upper and lower machine sections which are aligned vertically and are adapted to move toward and away from each other in a guillotine-like manner responsive to the action of machine cams, whereby the device may cut and seal a plastic film passing between the machine sections horizontally to produce plastic bags, said upper and lower machine sections including upper and lower sealing bars secured to heating bars in turn connected to upper and lower support members, said sealing bars being provided in their opposing faces with channel members of irregular cross section and in their opposite faces adjacent to the heating bars with semi-circular cross section channels, said semi-circular cross section channels being juxtaposed to like channels of the heating bars to provide upper and lower ducts adapted to receive electrical heating resistances to heat spaced forward and rear sealing surfaces of the upper and lower sealing bars immediately adjacent to said channel members of irregular cross section which seal the lateral sides or bottom of a plastic bag immediately following cutting of the plastic film, the improvement comprising said upper and lower channel members of irregular cross section each having flat parallel spaced wall sections defining mouths of the channel members, opposing intermediate concave wall sections leading from said flat parallel wall sections, short spaced parallel wall sections extending from the concave sections and being aligned with said flat parallel wall sections and flat bottom portions extending orthogonally between the ends of the short straight wall sections remote from the mouths of the channel members.

4,449,963
MACHINE FOR FOLDING LARGE-SIZE DRAWINGS OR DOCUMENTS
Marcel Archambault, Tours, France, assignor to Chapel Reprographie, Saint-Alban-Leysse, France
Filed Apr. 13, 1982, Ser. No. 367,902
Claims priority, application France, Apr. 4, 1981, 81 07005
Int. Cl.³ B65H 45/20
U.S. Cl. 493—414 6 Claims

1. A machine for folding a sheet of flexible material, said machine comprising (1) means for defining two spaced apart folding and stop surfaces; (2) two corresponding fold-forming and fold-holding presser components respectively associated with said folding and stop surfaces; (3) a pair of blades; (4) support means for respectively supporting said blades in a mutually opposing relationship; and (5) means for oscillating said blades so that said blades are movable each in a predetermined direction of movement to respectively cooperate with said two folding and stop surfaces and said presser components so as to alternatively form folds in said sheet, wherein the improvement comprises:
said means for defining said folding and stop surfaces respectively include a pair of half-platens;
means for movably mounting and biasing each of said presser components towards a respective one of said half-platens;
support means for pivotally mounting each of the said half-platens so that each of said half-platens is pivotable with respect to a corresponding one of said presser components

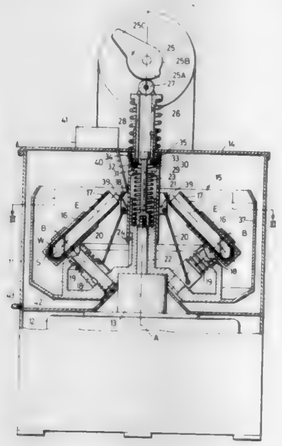


about an axis substantially normal to the direction of movement of a corresponding one of said blades;
cam means mounted for rotation in response to movement of at least one of said blades;
lever means movable in response to the rotation of said cam means and cooperative with each of said half-platens so that as one of said blades moves toward a respective one of said half-platens and corresponding presser components, (a) said one-half platen and presser component are spaced from one another so that said blade can extend and fold said sheet inbetween said half-platen and presser component and (b) the other of said half-platens presses the portion of said sheet disposed between said other half-platen and corresponding other presser component against said other presser component.

4,449,964
DECANTING CENTRIFUGE
J. Eric H. Westberg, Lidingö, and H. Peter O. Unger, Stockholm, both of Sweden, assignors to Separex Teknik AB, Stockholm, Sweden
Filed Feb. 17, 1983, Ser. No. 467,387
Int. Cl.³ B04B 5/02
U.S. Cl. 494—16 10 Claims

1. A decanting centrifuge, comprising
a motor,
a rotor having a vertical axis and drivingly connected with the motor for rotation about said axis,
at least one sample tube holder supported eccentrically on the rotor for rotation therewith and adapted to hold at least one generally cylindrical sample tube having an open end and adapted to contain liquid material, the sample tube holder being rotable with respect to the rotor and
means for selectively moving the sample tube holder and a sample tube held thereby between a first position wherein the open end of the sample tube is substantially closer to the rotor axis than is the opposite end, and a second position for centrifugally decanting a portion of the liquid sample from the sample tube the generatrix of the inner surface of the sample tube which is farthest from the rotor

axis being tangent at a point spaced from said opposite end of the sample tube to an imaginary circular cylindrical



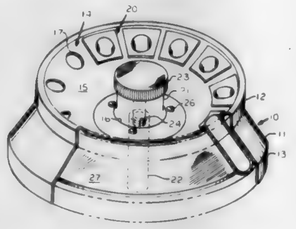
surface coaxial with the rotor and having an angle with the plane containing said rotor axis and said tangent point.

4,449,965

SHELL TYPE CENTRIFUGE ROTOR HAVING CONTROLLED WINDAGE

David H. Strain, Los Gatos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 4, 1982, Ser. No. 432,488
Int. Cl.[3] B04B *5/02*
U.S. Cl. 494—16 6 Claims



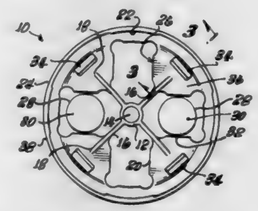
1. A shell-type centrifuge rotor comprising:
a frustoconical shell having a circular rim adjacent at least one end thereof, the lower end of said shell being open and the upper end having a coaxial recess and central opening, said recess having an inverted frustoconical sidewall, said sidewall having a plurality of apertures equally spaced and disposed an equal distance from said central opening;
a tube holder mounted one in each of said apertures for receiving a centrifuge test tube;
a hub, said hub mounted in said central opening and adapted for coupling said frustoconical shell to a drive means; and
means secured to said hub for partially enclosing the lower end of said frustoconical shell to reduce the windage of said rotor to a predetermined level.

4,449,966

CENTRIFUGE ROTOR BALANCING BOSSES

Alireza Piramoon, Santa Clara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 19, 1982, Ser. No. 399,166
Int. Cl.[3] B04B *5/02, 9/14*
U.S. Cl. 494—20 3 Claims



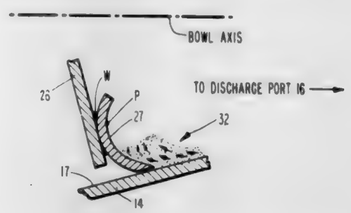
1. A centrifuge rotor comprising:
a central post;
a plurality of arms extending out from said central post;
a support ring connected to the outer ends of said arms, said ring being the highest stress area in said rotor during centrifugation means within said rotor for holding fluid samples; and
a plurality of projecting bosses located on said arms, said bosses being selectably machined to establish perfect balance of said rotor when it rotates on said spin axis.

4,449,967

CONVEYOR FLIGHT CONFIGURATION

John W. Caldwell, Glenside, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 17, 1982, Ser. No. 389,313
Int. Cl.[3] B04B *3/04*
U.S. Cl. 494—54 13 Claims



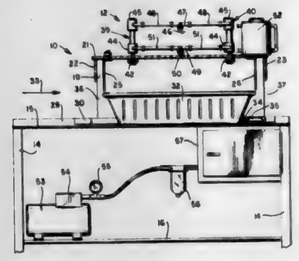
1. Apparatus for the continuous separation of solids/liquids mixtures into separate components by centrifugal action comprising an elongated bowl having an inner bowl surface, and including a cylindrical portion adapted to receive said solids/liquids mixtures and a trunco-conical portion having a discharge port adapted to the discharge of solids separated from said mixture, said bowl being mounted for rotation about its longitudinal axis and conveying means including at least one blade having a leading surface facing in the direction of said port and a distal edge, said blade being helically and coaxially mounted within said bowl through the length of said bowl surface with the distal edge of said blade in a closely spaced, sweeping relationship to said bowl surface and means for rotating said bowl and said blade at a speed differential, the improvement which comprises providing along said leading surface of said blade and adjacent said distal edge thereof at least within part of said trunco-conical portion an arcuate surface portion of defined curvature and shape adapted to contact said solids after separation, said arcuate surface portion being defined by a concavity in said leading surface, said curvature of said arcuate surface having a profile defined in a plane through said axis whereby (i) a straight, first line tangent to the slope of said profile adjacent said distal edge and a second line disposed in said plane and perpendicular to said bowl surface subtend an angle α within said concavity of between about 10° and 70° and (ii) a straight, third line tangent to the slope of said profile most distant from said distal edge and a fourth line disposed in said plane and perpendicular to said axis, subtends an angle β within said concavity of between about 7° and 90°, said arcuate surface portion, in use, propelling and tumbling separated solids towards said solids discharge port during rotation of said bowl and said blade at said speed differential.

4,449,968

POULTRY VACCINATION SYSTEM

Walter L. Peterson, Gainsville, Ga., assignor to Select Laboratories, Inc., Gainesville, Ga.

Continuation-in-part of Ser. No. 241,495, Mar. 9, 1981, Pat. No. 4,316,464. This application Feb. 22, 1982, Ser. No. 350,597
The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.
Int. Cl.[3] A61M *11/00*
U.S. Cl. 604—24 13 Claims



1. A method of vaccinating poultry comprising placing a multiple number of chicks in an open top container, moving the container along a path until the container is located beneath at least one spray nozzle, ejecting a vaccine spray from the nozzle downwardly onto the upper portions of and into the eyes of the chicks in droplets wherein at least about 80 percent of the droplets are in a size range from about 90 microns in diameter to about 190 microns in diameter, removing the container from beneath the spray nozzle, and retaining the chicks in the container for a period sufficient for the normal movement of the chicks with respect to one another to cause some of the droplets of vaccine on the bodies of some of the chicks to make contact with the bodies of adjacent chicks.

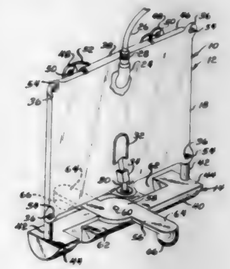
4,449,969

DRAINAGE RECEPTACLE WITH SUPPORT FRAME

Russell J. Schweizer, Crystal Lake, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 3, 1982, Ser. No. 345,504
Int. Cl.[3] A61M *1/00*
U.S. Cl. 604—322 4 Claims

1. A drainage receptacle and frame combination comprising:
a flat, generally rectangular container means having a pair of opposed flexible walls defining a chamber for receiving body fluids, and aperture means formed through the walls of said container at the four corners thereof;
a generally rectangular, substantially uniplanar frame means having a base, a pair of spaced, generally vertically oriented and parallel posts fixed to and extending upwardly from the base, each of said posts including an upper and a lower boss means for receiving respectively, upper and lower apertures of said rectangular container to fixedly mount said container means on said frame means, said base having a leg pivotally mounted centrally of the base, said leg having opposed end portions, said leg having an overall length less than that of said base and being movable from a first inoperative position with said opposed end portions of the leg located adjacent the base, generally parallel thereto, and a second operative position with opposed end portions of the leg extending outwardly from the base, at substantially right angles thereto, said leg being free of connection to the container;
an elongated cord means on the frame for supporting the container and frame; and



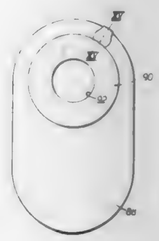
means for securing spaced portions of the cord to the frame; whereby, in use, said frame means and container means combination may be selectively supported either by said cord means, from a suitable support structure such as a bed rail, or by said base with said leg extended to said second operative position, by placing said base on a horizontal support surface such as a floor.

4,449,970

VENTING DEVICE FOR STOMA BAGS

David R. Bevan, Carshalton Beeches, and Jeremy Layman, London, both of England, assignors to Downs Surgical Limited, Mitcham, England

Filed Sep. 3, 1981, Ser. No. 299,199
Claims priority, application United Kingdom, Sep. 9, 1980, 8029029
Int. Cl.[3] A61M *1/00*
U.S. Cl. 604—333 12 Claims



1. A venting device for attachment in a folded reentrant position over the peripheral edge of a stoma bag, said stoma bag having two opposed external walls with opposed perforations in said walls wherein the filter covers the opposed perforations in each of the two external walls of the stoma bag, the filter comprising
a first elongated web,
a second web,
at least one gas-permeable pad containing an odourabsorbing substance and sandwiched between said webs, each pad having two major surfaces and an edge.
at least a portion of that major surface of each pad adjacent said second web being arranged such that, in use, it is exposed to and aligned with at least one of said opposed perforations,

a second portion of each pad being, in use, exposed to the atmosphere for venting of gas from the bag,

the said second web containing at least one perforation through which such portions of each gas-permeable pad are exposed, and such perforations in said second web being positioned for alignment respectively with the opposed perforations in the two external walls of the stoma bag,

an adhesive coating for attachment of the filter to the stoma bag being provided on that side of said second web remote from such pads and on any part of that side of said first web adjacent to such pads that extend beyond the edge of the second web.

4,449,971

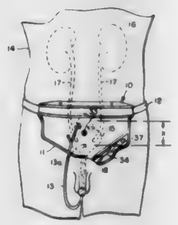
URINE COLLECTION METHOD

Charles D. Cawood, 11527 N. Lou Al Ct., Houston, Tex. 77024

Filed May 24, 1982, Ser. No. 381,071

Int. Cl.³ A61M *31/00*

U.S. Cl. 604—54 **2 Claims**



1. A method of collecting urine from an ambulatory patient wearing a urethral catheter having an externally-disposed proximal end and a distal end located within the patient's bladder, and an external urine collection bag communicating with the proximal end of said catheter for collecting urine from the bladder, comprising the steps of

locating said bag over the patient's abdomen with the upper portion of said bag disposed at the height of the patient's waist and the lower portion thereof located over the patient's pelvic region, supporting said bag from the patient's waist by means of a belt, and connecting said proximal end of said catheter to said bag for the discharge of urine into the interior thereof at a level slightly above the height of the distal end of said catheter, whereby, intraperitoneal positive pressure exerted on the patient's bladder during normal body activity causes urine to travel from the bladder upwardly through the catheter and into said collection bag, and preventing reverse flow of urine from said bag into said catheter by means of an anti-refluxing valve.

4,449,972

STOMACH FLUSHING DEVICES

Christian Krüger, Curtiusstrasse 4,, 2400 Lübeck, Fed. Rep. of Germany

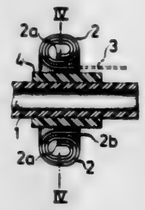
Filed Aug. 9, 1982, Ser. No. 406,512

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134251

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—96 **2 Claims**

1. A device for flushing and/or draining a patient's stomach comprising a tube for introduction into the stomach through the oesophagus, and a balloon in the form of a double-walled hollow cylinder elastically and hermetically encircling said tube periphery at a predetermined point and in close contact therewith, said balloon being releasably joined to said tube and being inflatable through a thin pipe extending to the proximal extremity of said tube, including an obliquely-slotted sleeve member which is slidable on said tube, said balloon being rolled up in the manner of a cuff on said sleeve member prior to introduction through the oesophagus, said balloon being



subsequently unrollable from said sleeve member to lie flat against said tube.

4,449,973

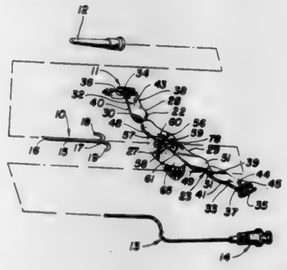
SMALL GAUGE, PRE-SPLIT CANNULA AND PROCESS FOR MANUFACTURE

Ronald B. Luther, Newport Beach, Calif., assignor to Luther Medical Products, Inc., Costa Mesa, Calif.

Filed Jun. 26, 1982, Ser. No. 397,059

Int. Cl.³ A61M *5/32*

U.S. Cl. 604—161 **11 Claims**



1. A cannula needle for insertion of a catheter therethrough, comprising:

A. A cannula including: a barrel portion having a longitudinal axis, distal and proximal ends, and internal and external walls;

i. one or more weakening grooves formed along the internal wall and parallel to the longitudinal axis;

ii. the barrel portion being produced by the sequential steps of grooving flatstock having parallel edges, and a thickness of about 2–8 mils, rolling the flatstock to form the barrel, and reducing the barrel in diameter to form a 14–36 gauge barrel diameter of continuous shape, closed, registered edges, and closed grooves in the internal wall, a cannula length of about ¾"–6", and a uniform groove depth of about 30%–60% of the flatstock thickness using a 304–316 stainless steel, the barrel being work hardened, and the grooves and enclosed edges being embrittled by rolling and cold drawing;

iii. pre-split proximal ends and a needle portion being formed on the barrel; and,

B. separable wing holders, including a reinforcing barrel surrounding the proximal end of the cannula, a pre-split end being mounted within a separate wing; whereby,

i. during use, the cannula is adapted for minimal leakage of blood through the closed edges and grooves and for aspiration of blood through the cannula; and, ii. following use, the cannula is adapted to be split open, commencing from the proximal ends and continuing along the grooves, thereby enabling the cannula to be separated from the catheter, the wing holders being adapted to secure each pre-split end of the cannula when being split open.

4,449,974

BODY FLUID DRAINAGE TUBE

Walter Messingschlager, Rheinallee 1a, 4000 Dusseldorf 11, Fed. Rep. of Germany

Filed Jun. 29, 1982, Ser. No. 393,482

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206834

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—175 **7 Claims**



1. A drainage tube for insertion through an access in a body wall to a body cavity, said tube comprising

a main body portion having a proximal front end portion and a distal bottom end portion with a drainage channel extending from a fluid inlet opening at the proximal front end to a fluid outlet opening at the distal bottom end, at least one wall segment of the distal end portion having a convex arch-like cross-section running from the proximal portion to the outlet opening, wherein the distal end provides a shield for protecting the drainage channel from being blocked,

a flexible flange member extending radially outwardly from the fluid inlet opening, and

a hollow stem member extending from the distal end of the main body portion as a continuation of, and in the same general direction as, the convex wall segment and away from the drainage channel, said hollow stem member extending in a substantially straight path which is substantially parallel to said flange member, and further wherein said hollow stem member has a cut-out portion extending along the entire length thereof on the side of the stem member which is furthest from the inlet opening, said cut-out stem member forming an open channel which is an extension of said drainage channel;

whereby when said drainage tube is inserted into said access the flange member will prevent the tube from being dislodged from said body cavity and body fluids may be drained through the drainage channel and the hollow stem member.

4,449,975

INTRAVENOUS ANCHOR AND WOUND SHIELD

Michael K. Perry, 3711 NE. Winn Rd., Kansas City, Mo. 64117

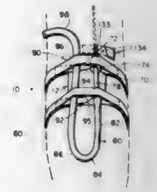
Filed Nov. 9, 1981, Ser. No. 319,693

Int. Cl.³ A61M *25/02*

U.S. Cl. 604—179 **8 Claims**

1. An intravenous catheter and anchoring set comprising:

a substantially flexible anchor-base having forward and rearward sides and right and left end portions, said base being elongated from right to left, said base having a first side that can form the inner skin-facing side of said base when said base is wrapped around a patient's arm, end-connecting means connecting said right and left end portions of said base together, and a catheter assembly, said catheter assembly having a hollow I.V. catheter having one end insertible into a patient's limb, a flexible tube attached to the other end of said catheter, and means securing said catheter assembly to said base, a skin anchor means of skin-gripping adhesive material secured to said base on and facing away from said inner skin-facing first side thereof and capable of adhering to the skin of a patient sufficiently to assist the attachment of said base to the arm of a patient by holding said base in place, said base having a notch means formed in at least one end thereof and providing forward and rearward bands and an interconnecting portion extending transversly to and between



said band connecting said bands, the length of said base, each of said bands having a right end and a left end, said bands each having a length and flexibility for freely wrapping substantially completely about a patient's arm,

means releasably attaching the ends of at least one of said bands together in an adjustable manner accomplishing variations in size of the space enclosed by said one band and defining said end-connecting means.

4,449,976

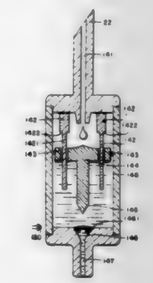
DEVICE FOR PRESERVING CONTINUITY OF INTRAVENOUS FLOW

Dean L. Kamen, Bedford, N.H., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 266,072, May 21, 1981. This application Nov. 9, 1981, Ser. No. 319,222

Int. Cl.³ A61M *5/14*

U.S. Cl. 604—254 **8 Claims**



1. A device for preserving continuity of fluid flow from a reservoir, such device comprising:

a housing defining a chamber having an input for receiving fluid from the reservoir and an output port;

a float, within the housing, responsive to the fluid level in the chamber;

a mating valve and seat, located in the fluid path between the output port and the chamber;

such valve being mechanically linked to the float, and disposed so as to mate at an area of contact with the seat when the fluid level has fallen to a predetermined level;

such seat being formed as an annular face of the housing and defining an opening to the output port;

at least one of the valve and the seat having a groove on its surface extending entirely across the area of contact, so that when the valve is seated there is permitted flow only at a reduce rate through the groove past the valve to the output port, whereby the flow of fluid abruptly shifts to a

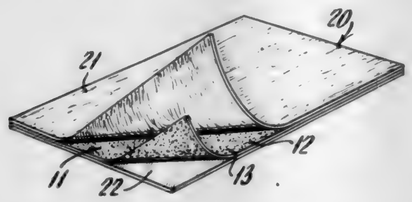
reduced rate when the fluid level has fallen to the predetermined level.

4,449,977

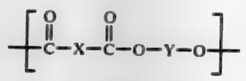
ABSORBENT PRODUCTS, PROCESSES AND COMPOSITIONS

Ralf Korpman, Bridgewater, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

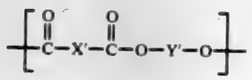
Continuation-in-part of Ser. No. 088,882, Oct. 29, 1979, abandoned. This application Dec. 11, 1981, Ser. No. 329,642
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—366 **9 Claims**



2. A flexible non-disintegrative absorbent product which is capable of absorbing and retaining water, comprising a water-insoluble substantially non-swelling matrix of a thermoplastic co-polyester polymer bearing uniformly dispersed particulate, water-insoluble, water-swellable organic polymer absorbent, wherein said co-polyester is a polymeric ester of at least two different ester units, each ester unit being a condensation product of a dicarboxylic acid and an aliphatic diol, said ester units being represented by the formulas:



and



wherein X and X′ are nuclei of dicarboxylic acids and Y and Y′ are nuclei of aliphatic diols, and wherein the co-polyester polymer possesses a thermal softening temperature below about 225° C., said product having been manufactured using a hot melt and in the absence of water.

4,449,978

NONWOVEN PRODUCTS HAVING LOW RESIDUAL FREE FORMALDEHYDE CONTENT

John G. Iacoviello, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 297,583, Aug. 31, 1981, abandoned. This application Apr. 1, 1983, Ser. No. 481,216
Int. Cl.³ A61F *13/16*; B05D *3/02*; B32B *23/16*; D04H *1/64*
U.S. Cl. 604—372 **46 Claims**

27. A nonwoven fabric having a low residual free formaldehyde content comprising a loosely assembled web of fibers bonded together with a binder which comprises an interpolymer of vinyl acetate/ethylene/N-methylol acrylamide/acrylamide, the interpolymer containing about 5 to 40 wt% ethylene and an amount of N-methylol acrylamide and acrylamide which is about 3.0 to 10 wt% of the interpolymer, the N-methylol acrylamide being about 1.75 to 3.5 wt% and the acrylamide about 1.25 to 8.25 wt%, the nonwoven fabric characterized by a free formaldehyde content after drying and curing of less than 50 to 60 ppm at a 10 to 100 wt% binder add-on, on a dry basis.

30. The invention of claim 27 in which the nonwoven fabric is a disposable diaper.

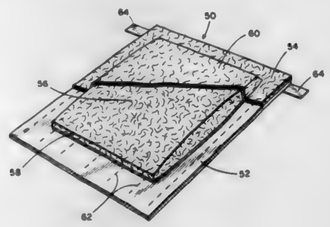
37. A method for the preparation of a nonwoven product which comprises applying to a nonwoven mass of fibers a latex comprising an interpolymer of vinyl acetate/ethylene/an N-methylol acrylamide/an acrylamide dispersed in water, the interpolymer containing about 5 to 40 wt% ethylene and an amount of the N-methylol acrylamide and acrylamide which is about 3 to 10 wt% of the interpolymer, the N-methylol acrylamide being about 1.75 to 3.5 wt% and the acrylamide about 1.25 to 8.25 wt%, heating to remove the water and to bond the fibers together with the interpolymer, the latex being applied to the nonwoven mass of fibers to provide a sufficient amount of interpolymer add-on to bind the fibers together to form a self-sustaining web, and the nonwoven product characterized by a low free formaldehyde content.

4,449,979

ABSORBENT STRUCTURE HAVING GRADIENT DENSITIES

Dennis C. Holtman, Orland Park, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Aug. 26, 1980, Ser. No. 181,539
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—379 **14 Claims**



1. An absorbent structure comprising an absorbent batt of loosely compacted cellulosic fibers substantially of rectangular shape wherein the longitudinal sides are longer than the transverse ends, said batt having gradient densities whereby the density of the batt increases along a longitudinal line starting from the central portion of the batt to each transverse end, the density in a cross direction being substantially constant on any given line.

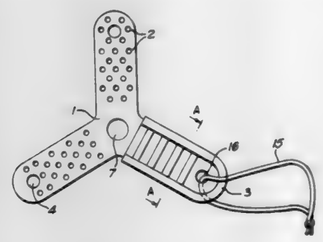
4,449,980

METHODS OF MAKING INTRA-VAGINAL DEVICES AND/OR INTRA-VAGINAL DEVICES

Thomas D. Millar, and David M. Miller, both of Hamilton, New Zealand, assignors to AHI Operations Limited, Manukau City, New Zealand

Filed Jun. 3, 1981, Ser. No. 269,974
Claims priority, application New Zealand, Jun. 9, 1980, 193976
Int. Cl.³ A61M *7/00*
U.S. Cl. 604—890 **15 Claims**

1. An intravaginal device for the sustained release of a physiologically active substance into the vagina of a mammal when inserted therein, including a resilient physiologically-inactive supporting skeleton and a polymeric coating having a physiologically-active ingredient incorporated therein moulded over said skeleton to form a physiologically-active skin thereupon, said physiologically active ingredient and said skin affording a sustained release of said physiologically-active ingredient during contact with the body fluids of said mammal, and said skeleton including means for increasing the surface area of the physiologically-active skin exposed to said body fluids comprising at least three broad lobes radiating in a plane from a central body portion, each of which lobes is perforated with a



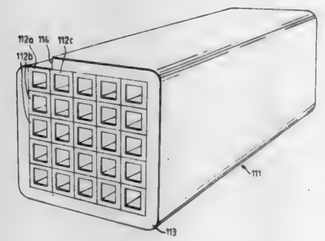
network of holes over which the skin is moulded to provide an undulated skin surface over said skeleton and increase the skin surface area exposed to body fluids.

4,449,981

GLASS ENCAPSULATED MATERIALS

Cyril F. Drake, Harlow, and John R. Brocklehurst, Bishop's Stortford, both of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 10, 1981, Ser. No. 272,144
Claims priority, application United Kingdom, Jun. 12, 1980, 8019261; Dec. 10, 1980, 8039566
Int. Cl.³ A61K *9/26*
U.S. Cl. 604—890 **13 Claims**



1. A device for the controlled release of an active material into a liquid medium over a predetermined period, characterised in that the device comprises a body formed of one or more water soluble glass materials surrounded by a casing of material having a relatively low or zero dissolution rate, said body having a plurality of capillary cavities for containing the active material, said casing having an access port or a region that readily dissolves to provide an access port, whereby a portion of the body is exposable to dissolving action by the liquid, the body being so constructed that it is dissolved by the liquid to release in a sequential manner the active material contained in the capillary cavities.

4,449,982

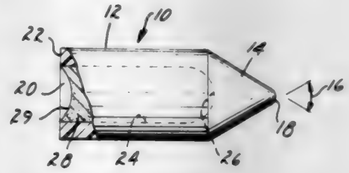
PROJECTILE

Jay W. Gould, III, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 740,663, Nov. 10, 1976, abandoned. This application Nov. 30, 1978, Ser. No. 965,102
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—891 **2 Claims**

1. A method of implanting a medicament or device in the flesh of an animal comprising the steps of:

combining the medicament or device in a projectile having an average density of no greater than 5 grams per cubic centimeter, an elongated body portion with a diameter between 0.177 and 0.30 inch and a central axis, and a generally conical nose portion coaxial with and projecting from one end of said body portion, said nose portion having a base corresponding generally in cross sectional area with the adjacent cross sectional area of said body portion, an apex angle of greater than 45 degrees and up to 75 degrees, and having a 0.015 to 0.02 inch radius on its apex; and



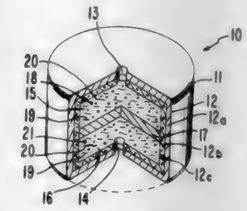
propelling the projectile nose portion first at sub-sonic speeds through the hide and into the flesh of the animal so that the nose portion causes only a slit in the hide of the animal where the projectile enters which slit is shorter in length than the diameter of the projectile, and the projectile will make limited penetration of the flesh of the animal with limited damage thereto.

4,449,983

SIMULTANEOUS DELIVERY OF TWO DRUGS FROM UNIT DELIVERY DEVICE

Richard Cortese, San Jose; Brian Barclay, Menlo Park, and Felix Theeuwes, Los Altos, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Mar. 22, 1982, Ser. No. 360,589
Int. Cl.³ A61M *31/00*
U.S. Cl. 604—892 **18 Claims**



1. An osmotic therapeutic device for the controlled delivery of beneficial drugs to a biological environment, the device consisting essentially of:

(a) a wall formed of a semipermeable material permeable to the passage of an external fluid present in the environment and substantially impermeable to the passage of drug, the semipermeable wall surrounding and forming;

(b) a first compartment containing a drug formulation that exhibits an osmotic pressure gradient across the semipermeable wall against an external fluid;

(c) a second compartment containing a drug formulation that exhibits an osmotic pressure gradient across the semipermeable wall against an external fluid;

(d) a partition positioned between the first and second compartments, which partition is formed of a hydrogel that expands in the presence of fluid;

(e) a first orifice in the wall communicating with the first compartment and the exterior of the device for delivering drug formulation from the first compartment to the environment over a prolonged period of time; and,

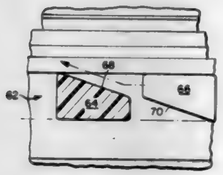
(f) a second orifice in the wall communicating with the second compartment and the exterior of the device for delivering drug formulation from the second compartment to the environment over a prolonged period of time.

4,449,984

CONTAINER HAVING AN AIR TIGHT SEAL

Exequiel D. Cruz, Palatine, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Jun. 24, 1982, Ser. No. 391,914
Int. Cl.³ A61F 5/44; B65D 25/14
U.S. Cl. 604—319 9 Claims



1. A medical suction container comprising:
a canister;
a liner mounted within said canister having an open end and formed of a flexible material;
a lid for said canister having a vacuum conduit port which is adapted to be attached to a suction line to create a vacuum within said liner, and a patient conduit port for receiving fluid from a patient during a medical suction procedure;
a sealing means comprising a liner sealing assembly for providing a seal between said liner and said lid, and a canister sealing assembly for providing a seal between said canister and said liner;
said liner sealing assembly comprises a sealing protrusion on said lid and a first upwardly extending liner portion and a second upwardly extending liner portion between which is formed a liner notch at the open end of said liner;
said canister sealing assembly is disposed below said liner sealing assembly and comprises a first upwardly extending canister portion and a second upwardly extending canister portion between which is formed a canister notch; and
a forcing means for forcing said sealing protrusion into said liner notch and extending said flexible material of said liner into said canister notch thereby forming a seal between said lid and said liner, and said liner and said canister.

4,449,985

DYE COMPOSITIONS CONTAINING PARTIALLY HYDROLYZED POLYVINYL ESTER

Joseph R. Ditzer, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 304,772, Sep. 23, 1981, abandoned. This application Jun. 28, 1982, Ser. No. 392,483
Int. Cl.³ D06P 67/00
U.S. Cl. 8—528 8 Claims

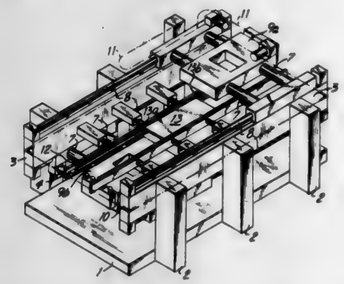
1. A composition for use in preparing thickened thermosol dye baths or print paste, comprising an aqueous system of from about 5% to about 30% by weight of a substantially water insoluble disperse dye component and from about 2% to about 12% by weight of polyvinyl alcohol comprised of hydrolyzed polyvinyl ester.

4,449,986

MACHINE FOR GUIDING NUMERICALLY CONTROLLED SUPPORTS FOR TOOLS USED IN WOODWORKING OPERATION

Kurt Held, Alte Strasse 1,, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,566
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018760; Dec. 12, 1980, 3046766
Int. Cl.³ B23B 39/00
U.S. Cl. 29—26 A 3 Claims



1. Machine for guiding numerically controlled supports for tools used for various woodworking operations such as boring, milling and the like, comprising a base plate having two pairs of opposite sides with one pair of sides extending in a first direction and the other pair of sides extending in a second direction substantially perpendicular to the first direction, frame supports connected to and extending upwardly from said base plate transversely of the first and second directions, guidance supports mounted on said frame supports and extending in the first direction transversely of the upward direction of said frame supports, means located on said guidance supports for conveying at least one workpiece to be processed, said means comprising conveyor members extending in the first direction, an upper tool support located above said conveyor members and a lower tool support located below said conveyor members, means for movably supporting said upper and lower tool supports from said guidance supports so that said first and second tool supports can be moved relative to the workpiece in the first and second directions, at least one first gripping member on said upper tool support and at least one second gripping member on said lower tool support, said first and second gripping members being movable with said upper and lower tool supports, a third stationary gripping member at each of the opposite ends of said guidance supports spaced apart in the first direction whereby using said first, second and third gripping members the speed of movement of the workpiece being processed can be synchronized with the processing time for the workpiece and an edge of the workpiece extending transversely of the first direction can be utilized as a reference edge such as by photo-optically checking the location of the edge for effecting the location of the processing operations of the workpiece, and for operating said gripping members in accordance with the processing operations being performed.

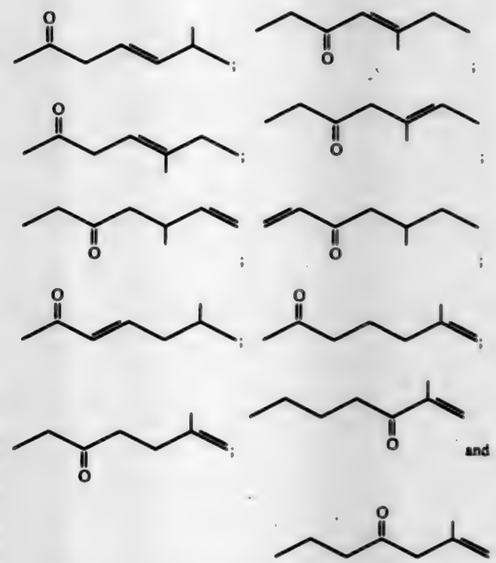
4,449,987

FRAGRANT INSECT REPELLENT COMPOSITION AND COMBUSTIBLE CANDLE COMPOSITION CONTAINING SAME

Jerome I. Lindauer, Hillsdale, N.J., assignor to Avon Products, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 316,180, Oct. 29, 1981, abandoned. This application Jan. 18, 1983, Ser. No. 458,891
Int. Cl.³ C11C 5/00; C10L 5/00
U.S. Cl. 44—7.5 10 Claims

1. A candle comprising a molded hydrocarbon wax composition having a protruded wick embedded therein, said molded hydrocarbon wax composition consisting essentially of:
(a) A crystalline paraffin wax; and
(b) A perfuming and insect repelling quantity of a composition of matter consisting essentially of:
(i) From 1 up to 30 parts by weight of at least one methyl heptenone having a structure selected from the group consisting of:



(ii) From 1 up to 10 parts by weight of coumarin; and
(iii) From 1 up to 15 parts by weight of indole.

4,449,988

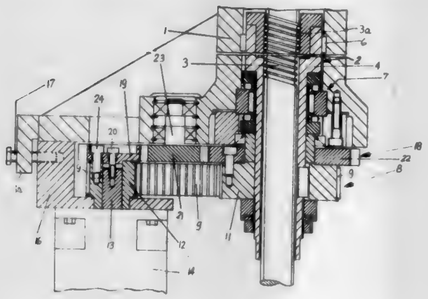
MACHINE TOOL FEED SCREW DRIVE

Werner Redeker, Börnsen, and Uwe Uhlig, Buchholz, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,739
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106238
Int. Cl.³ B24B 47/02
U.S. Cl. 51—165.8 10 Claims

1. In a machine tool, particularly in a surface grinding machine, the combination of a displacing unit including a first component constituting an upright feed screw and a second component constituting a nut coaxial to and meshing with said feed screw, one of said components being rotatable relative to the other of said components to thereby move one of said components axially; prime mover means; a first torque trans-

mitting unit interposed between said prime mover means and said rotatable component to normally rotate said rotatable component, said first torque transmitting unit comprising an endless toothed belt; and a second torque transmitting unit interposed between said prime mover means and said rotatable



component to prevent uncontrolled rotation of said rotatable component in the event of breakage of said belt, said second torque transmitting unit comprising a gear train of mating gears and the transmission ratio of said gear train at least approximating the transmission ratio of said first torque transmitting unit.

4,449,989

COATED SILICON NITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 26, 1983, Ser. No. 536,109
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—295 **9 Claims**

1. A coated ceramic cutting tool comprising a densified silicon nitride substrate having at least one intermediate adherent refractory coating layer and an outer adherent alumina coating layer:

said densified silicon nitride substrate consisting essentially of a first phase of silicon nitride and a second refractory phase, said second refractory phase consisting essentially of silicon nitride and an effective amount of a densification aid selected from the group consisting of silicon dioxide, aluminum oxide, magnesium oxide, yttrium oxide, hafnium oxide, zirconium oxide, the lanthanide rare earth oxides, and mixtures thereof.

4,449,990

METHOD AND APPARATUS FOR FRACTIONING OXYGEN

Richard A. Tedford, Jr., Middletown, Conn., assignor to Invacare Respiratory Corp., Elyria, Ohio

Filed Sep. 10, 1982, Ser. No. 416,578
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—26 **18 Claims**

1. A method of fractionating components of a gaseous mixture in which each cycle has a preselected cycle duration, the method comprising cyclically repeating the steps of:

supplying the gaseous mixture to one of first and second beds which each contain a physical separation medium which selectively adsorbs at least one adsorbable component and passes at least one substantially nonadsorbable component of the gaseous mixture, collecting the nonadsorbable component passed by the gaseous mixture supplied bed, and evacuating the other of the first and second beds;

before reaching the capacity of the gaseous mixture supplied bed to adsorb the adsorbable component and while continuing the steps of supplying the gaseous mixture to and evacuating the beds, allowing gas to flow between the beds at a rate which would bring the beds into pressure equilibrium in less than 7 percent of said cycle duration to bring the beds toward pressure equilibrium;

substantially ¼ percent to 4 percent of the cycle duration after commencement of the equalizing step, before the pressure equalizing gas flow commences being evacuated from the evacuated bed, and while continuing the pressure equalizing gas flow between the beds, reversing the supply of gaseous mixture to and the evacuation of the beds; and,

subsequent to reversing the beds, terminating the pressure equalizing gas flow and collecting the nonadsorbable component.

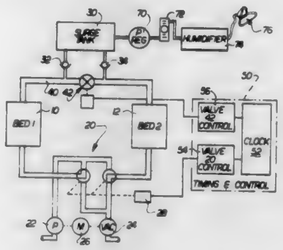
17. An apparatus for physically separating molecules of oxygen from a nitrogen, water vapor, and oxygen containing gaseous mixture, the apparatus comprising:

(a) a first bed of a physical separation material which is traversed by oxygen molecules and which adsorbs at least nitrogen and water vapor molecules from the gaseous mixture, the first bed having an inlet and an outlet;

(b) a second bed of said physical separation material, the second bed having an inlet and an outlet;

(c) a cross-over valving means for selectively connecting the inlet and one of the first and second beds with a supply of the gaseous mixture under pressure and the inlet of the other bed with a vacuum source;

(d) a timing and control means including a first valve control means for causing the cross-over valving means to connect the first bed inlet cyclically with the gaseous mixture



supply and the vacuum source and the second bed inlet cyclically with the vacuum source and the gaseous mixture supply, such that the cross-over valving means is actuated twice during each cycle;

(e) a flow path connecting the first bed outlet and second bed outlet, the flow path having a gas flow capacity such that the flow path is sufficient to being the first and second beds substantially into pressure equilibrium in less than 7 percent of the duration of the cycle;

(f) a pressure equalization valve for selectively permitting and preventing gas flow through the flow path, the pressure equalization valve being operatively connected with the timing and control means, said timing and control means further including pressure equalization valve controlling means for causing the pressure equalization valve to commence permitting gas flow more than ¼ and less than 2 percent of said cycle duration before the cross-over valving means is actuated and causing the pressure equalization valve to commence preventing gas flow more than ¼ and less than 3 percent of said cycle duration after actuation of the cross-over valving means;

(g) a surge tank operatively connected with the first bed outlet and second bed outlet by undirectional valving means to receiving oxygen molecules from the first and second beds; and,

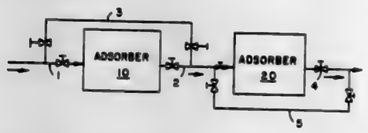
(h) humidifier means operatively connected with the surge tank for adding water vapor to the oxygen rich gas therein.

4,449,991

REMOVAL OF SULFUR FROM PROCESS STREAMS

Judeth H. Brannon, and James J. Schorfheide, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 20, 1982, Ser. No. 451,102
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—73 **9 Claims**



1. In a process for the removal of sulfur from a sulfur-containing process-stream wherein said sulfur-containing process stream is passed through a fixed bed of sorbent, sulfur removed on said sorbent, and passage of said sulfur-containing process stream through said fixed bed of sorbent continued until breakthrough of sulfur from the exit side of said fixed bed of sorbent

the improvement comprising

discontinuing, and reversing without desorption of the sulfur from the sorbent the direction of flow of the sulfur-containing process stream through said fixed-bed of sorbent, and further removing sulfur on said sorbent until breakthrough of sulfur from the former entry side of the sorbent.

4,449,992

HEAT-AND-MOISTURE EXCHANGER

Takeyoshi Yamada; Shizuka Kurisu; Shizuo Azuma, all of Iwakuni; Shoji Kawase, Koganei, and Makoto Sano, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 54,405, Jul. 3, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,548
Claims priority, application Japan, Dec. 14, 1978, 53-153722
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—158 **8 Claims**



1. A heat-and-moisture exchanger comprising a thin film-like porous material as a stationary partitioning element for heat and moisture exchanges between two gases separated by said porous material, said porous material containing numerous pores having an average diameter of not more than 5 microns and opened to both surfaces thereof, and having a thickness of not more than 500 microns, a specific surface area of at least 0.3 m^2/g, and a gas permeability having a value of at least 100 seconds/100 cc.

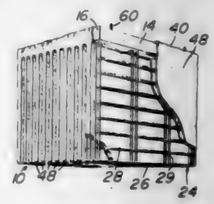
4,449,993

FILTER MODULE FOR DUST COLLECTOR SYSTEM

Willard Bergeron, Drummondville, Canada, assignor to Equifab, Inc., Beloeil, Canada

Filed Jul. 19, 1982, Ser. No. 399,496
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—379 **8 Claims**

1. A filter module comprising a frame, a plurality of spaced-apart arch members supported therefrom to bridge over a one side thereof, a one-piece filter bag having a mouth portion generally circumscribing said frame and a plurality of pockets opening into the mouth, each said pocket enveloping a respective one of said arch members, said frame comprising two



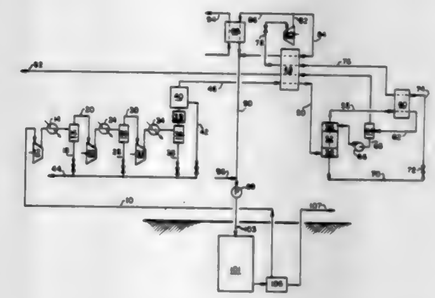
opposing sides and, on each side thereof, a first, fixed member and a second movable member spaced therefrom, and means for urging said movable member towards said fixed member to clamp the legs of said arch members therebetween.

4,449,994

LOW ENERGY PROCESS FOR SEPARATING CARBON DIOXIDE AND ACID GASES FROM A CARBONACEOUS OFF-GAS

William P. Hegarty, Wescosville, and William P. Schmidt, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 15, 1982, Ser. No. 339,359
The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.
Int. Cl.³ F25J *3/00*
U.S. Cl. 62—17 **23 Claims**



1. A process for separating a carbonaceous off-gas containing acid gases, such as: carbon dioxide, hydrogen sulfide and carbonyl sulfide by separating said off-gas into an essentially sulfur-free fuel gas and a sulfur containing acid gas stream, comprising the steps of:

(a) compressing and after cooling an off-gas from an off-gas producing operation;

(b) removing any butane and higher boiling hydrocarbons from the off-gas of step (a) by absorption in lean solvent and drying the compressed and cooled off-gas to remove moisture from said gas;

(c) cooling the off-gas from step (b) against product gas streams in a heat exchanger;

(d) separating the cooled off-gas in a rectifying column without the use of an external solvent into an initial sulfur-free fuel gas stream as an overhead fraction and a carbon dioxide and sulfide stream as a bottom liquid fraction;

(e) expanding the initial carbon dioxide and sulfide stream in order to cool by autorefrigeration the initial fuel stream in a heat exchanger;

(f) separating said cooled fuel stream into a final sulfur-free

fuel stream and a sulfur-free reflux stream that is reintroduced into the head of the rectifying column;

(g) further expanding the carbon dioxide and sulfide stream in an autorefrigeration cycle to provide additional refrigeration for the cooling of the off-gas in the heat exchanger of step (c);

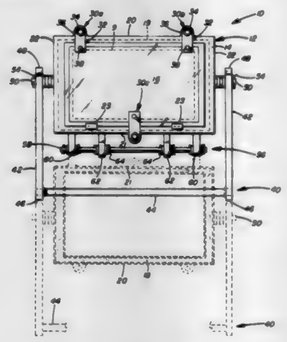
(h) sending said CO_2 and sulfides to a carbon dioxide utilizing process.

4,449,995

HINGED WINDOW CLOSURE FOR FLOAT GLASS PROCESSING CHAMBER

Harold M. Koelbl, Burkburnett, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 22, 1982, Ser. No. 400,808
Int. Cl.³ C03B 5/16
U.S. Cl. 65—158 **6 Claims**



1. A cover for an opening in a chamber wall of a glass manufacturing chamber, the opening providing access to the interior of the chamber, comprising:

a frame having an exterior supporting surface, an interior surface and opposite side portions;

a plate;

means mounted on said frame and engaging said plate for securing said plate on the exterior supporting surface of said frame;

means for pivotally mounting said frame to wall portions of the opening to pivotally move said frame into a first position overlying the opening and toward a second position away from the opening;

a handle having a pair of spaced longitudinal members each having a first end portion and an opposite second end portion and a transverse member interconnecting the first end portion of each of said longitudinal members;

means between end portions of each of said longitudinal members for pivotally mounting a one of said pair of longitudinal members to each of said side portions of said frame; and

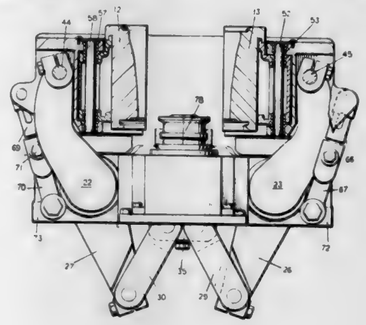
latching means for biasing said frame toward the opening, said latching means including a first element mounted on exterior wall portions of the opening or the chamber wall and a second element mounted on the second end portion of each of said longitudinal members of said handle such that said second element of said latching means engages said first element of said latching means when said frame overlies the opening and said first and said second elements of said latching means cooperate with one another to (1) bias said frame toward the opening when said handle is pivoted into a locking position such that the transverse member of said handle does not overlie said plate and (2) release said frame from the opening when said handle is pivoted away from the locking position.

4,449,996

PARALLEL MOTION BLANK MOLD OPERATING MECHANISM

George W. Irwin, Holland, Ohio, and Eustace H. Mumford, Ottawa Lake, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 22, 1982, Ser. No. 452,174
Int. Cl.³ C03B 9/34
U.S. Cl. 65—305 **10 Claims**



1. Apparatus for opening and closing a plurality of parison molds simultaneously in a confined space comprising a base, a pair of horizontal, parallel drive shafts supported in bearings above said base, a pair of crank arms formed at one end of each drive shaft, a pair of opposed mold holder carriers positioned above said base and each adapted to hold at least one mold half, a horizontal pivot pin adjacent the upper portion of each mold holder, means connecting the other end of said crank arms to said first pivot pins for supporting the mold holder carriers above the base, a second pair of arms pivotally connected between the base and the mold hold carrier, said second arms being generally parallel to said crank arms to thereby serve as parallel connections between the base and each mold holder carriers, a plurality of neck molds extending up from the base into position between the parison mold halves, drive means connected to said drive shafts for simultaneously rotating said drive shafts each in opposite directions, said drive means moving said mold holder carriers toward each other until the mold halves carried thereby are in abutting relationship and in engagement with the neck molds, with the centers of rotation of the drive shafts and the pivot pins being in a plane that is at an angle with respect to a vertical plane defined by the parting line of the mold halves, with the axes of the pivot pins being closer to the vertical plane than the axes of the drive shafts.

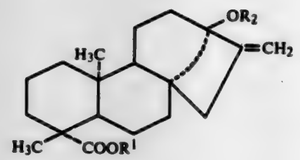
4,449,997

PLANT GROWTH REGULATOR

Junichi Iwamura, 621-1, Ooazatakaida, Kashiwara, Osaka, and Koichiro Komai, 38, Yakushiyamahigashi-cho, Oomiya, Kita-ku, Kyoto, both of Japan, assignors to Junichi Iwamura; Gakko Hojin Kinki Daigaku (Educational Foundation Kinki Univ.), both of Osaka and Koichiro Komai, Kyoto, all of, Japan

Filed Oct. 6, 1981, Ser. No. 308,970
Claims priority, application Japan, Apr. 2, 1981, 56-50194
Int. Cl.³ A01N 43/16
U.S. Cl. 71—88 **6 Claims**

1. A method for promoting the growth of a plant which comprises applying to the plant an effective amount of at least one diterpene glucoside of the formula:



wherein R^1 is a hydrogen atom or any other cation and R^2 is β-glucopyranosyl-(1-2)-β-glucopyranosyl or 2,3-di-O-)β-glucopyranosyl- β-glucopyranosyl, or R^1 is β-glucopyranosyl and R^2 is α rhamnopyranosyl-(1-2) -β-glucopyranosyl, β-glucopyranosyl-(1-2)-β-glucopyranosyl, 2,3-di-O-(β-glucopyranosyl)-β-glucopyranosyl or (3-Oβ-glucopyranosyl)-(2-O-α-rhamnosyl-β-glucopyranosyl).

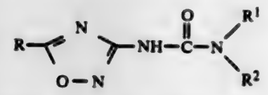
4,449,998

HERBICIDALLY ACTIVE OXADIAZOLE UREAS

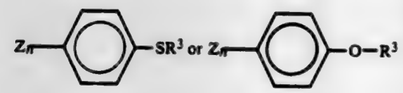
Jerome M. Lavanish, Akron, and Barry Van Gemert, Massillon, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 20, 1982, Ser. No. 380,191
Int. Cl.³ C07D 271/06; A01N 43/82
U.S. Cl. 71—92 **6 Claims**

1. A compound represented by the formula:



wherein R is alkyl of up to 6 carbon atoms; cycloalkyl of from 3 to 8 carbon atoms; alkenyl or alkynyl of up to 5 carbon atoms; $—R^3—O—R^4$ or $R^3—S—R^4$ wherein R^3 is alkylene of up to 6 carbon atoms and R^4 is alkyl of up to 6 carbon atoms; or



wherein:

Z is nitro, halogen, trifluoromethyl or R^4, and n is 0, 1, 2, or 3; and

R^1 and R^2 are hydrogen or the same or different alkyl or alkoxy of up to 6 carbon atoms, provided that only one of R^1 or R^2 may be hydrogen.

5. A herbicidal composition containing an agronomically acceptable carrier and a herbicidally effective amount of a compound or mixture of compounds defined in claim 1.

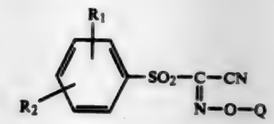
4,449,999

SULFUR-CONTAINING OXIME COMPOUNDS, PROCESSES FOR PRODUCING THEM, AND THEIR USE FOR PROTECTING CULTIVATED PLANTS

Elmar Sturm, Aesch; Heinrich Schempp, Arlesheim, and Henry Martin, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 68,123, Aug. 20, 1979, Pat. No. 4,278,613. This application May 4, 1981, Ser. No. 260,648
Claims priority, application Switzerland, Aug. 28, 1978, 9081/78
Int. Cl.³ A01N 25/32
U.S. Cl. 71—73 **71 Claims**

1. A composition for protecting cereal plants against the action of a herbicide selected from the group consisting of herbicidal 1,3,5-triazines, halogenoacetanilides, substituted phenoxyphenoxyacetic acid esters and -propionic acid esters, and substituted pyridineoxy-phenoxy-acetic acid esters and -propionic acid esters derivatives, which comprises a compound of the formula:



wherein each of R_1 and R_2, independently of the other, is hydrogen, halo or alkyl of 1 to 4 carbon atoms, and Q is $—CH_2CONH_2$ or —CONH—alkyl in which alkyl has from 1 to 4 carbon atoms, in an amount sufficient to afford protection to the cereal plant against the herbicidal effects of said herbicide and a carrier therefor.

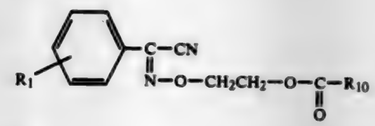
4,450,000

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,735. This application Jul. 14, 1982, Ser. No. 398,172
Claims priority, application Switzerland, Aug. 31, 1978, 9201/78
Int. Cl.³ A01N 37/34; C07C 121/52
U.S. Cl. 71—105 **5 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, halogen or cyano, and

R_{10} is lower alkyl optionally substituted by halogen.

4,450,001

ANIONIC BIOCIDE EMULSIONS IN AQUEOUS SOLUTIONS OF STRONGLY IONIZABLE SALTS

Thomas M. Kaneko, Trenton; Daniel R. Dutton, and Bongsub Kim, both of Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 19, 1980, Ser. No. 122,209
Int. Cl.³ A01N 37/18, 33/02
U.S. Cl. 71—118 **14 Claims**

1. An emulsifiable concentrate adapted for use in forming aqueous emulsions suitable for spray application comprising about 90 to 99 percent by weight of at least one liquid biocide and about 1 to about 10 percent by weight of at least one polyoxyalkylene ester surfactant said ester being the reaction product of a polybasic acid or anhydride with a polyoxyalkylene glycol ethoxylate having the formula

$$Y[(A)_n(C_2H_4O)_m H]_x$$

wherein A is an alkylene oxide having 4 carbon atoms and selected from the group consisting of oxybutylene, the residue of tetrahydrofuran, and mixtures thereof; Y is an initiator having up to 20 carbon atoms and free of elements other than carbon, hydrogen, oxygen and nitrogen and x is an integer of at least 2, n is an integer such that the molecular weight is about 1000 to about 2500, m is an integer such that the oxyethylene content of the entire compound, mx oxyethylene groups,

constitutes about 20 to about 80 percent by weight of the total oxyalkylene content or

the surfactant blend comprising said polyoxyalkylene ester surfactant and at least one other anionic, alkyl aromatic sulfur- or phosphorus-containing ester surfactant having an HLB of at least 15 and about 9 to about 18 carbon atoms in the alkyl group.

4,450,002

HEAVY METAL REMOVAL PROCESS

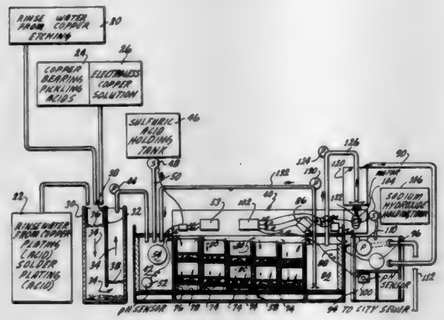
Richard G. Durkee, 16780 Tin Mountain Cir., Foutain Valley, Calif. 92212

Continuation-in-part of Ser. No. 115,039, Jan. 24, 1980, Pat. No. 4,294,434, which is a continuation-in-part of Ser. No. 173,321, Jul. 29, 1980, Pat. No. 4,304,599. This application Oct. 13, 1981, Ser. No. 310,989

The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.

Int. Cl.³ C22B *15/12*

U.S. Cl. 75—0.5 A **4 Claims**



1. A method of reclaiming heavy metal from a heavy metal finishing process, which produces a liquid comprising an aqueous solution of the heavy metal, comprising the steps of:

a. establishing the aqueous solution to a pH less than 3.3 to establish in said solution heavy metal in ionic form;

b. flowing at a rate at least faster than that rate generated by gravity the aqueous solution containing the heavy metal in a path including a supply of substantially pure aluminum metal, the aluminum having a relative electrode potential greater than that of the reclaimed heavy metal in the aqueous solution to precipitate the heavy metal and replace it with ionic aluminum in the aqueous solution; and,

c. mechanically separating the heavy metal in metallic form from said aqueous solution while maintaining the aqueous solution substantially free of clouds formed by aluminum salts resulting from said ionic aluminum.

4,450,003

PROCESS AND APPARATUS FOR THE RECOVERY OF COMBUSTIBLE GASES IN AN ELECTROMETALLURGY FURNACE

Robert Herold, and Francis Dubrous, both of Sallanches, France, assignors to Societe Francaise d'Electrometallurgie Sofrem, Paris, France

Filed Nov. 1, 1982, Ser. No. 438,262

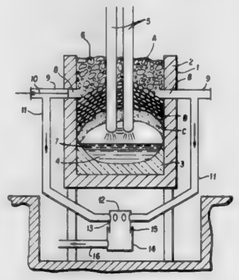
Claims priority, application France, Dec. 1, 1981, 81 22881

Int. Cl.³ C21B *7/22*; C21C *5/38, 5/40*

U.S. Cl. 75—10 R **10 Claims**

1. A process for the recovery of combustible gases in an electrometallurgical furnace, said furnace comprising an external metal casing and an internal refractory lining, in which at least one oxidized compound is reduced by means of carbon, the different components being introduced into the furnace in the form of a particulate charge which progressively moves downward towards a reaction region, passing through a sintering region, said process comprising:

collecting the combustible gases produced in the reaction region by suction, by means of a plurality of apertures



provided in the external metal casing and internal refractory lining and disposed at a level corresponding to the level of the charge immediately above said sintering region.

4,450,004

DEPHOSPHORIZATION AND DESULFURIZATION METHOD FOR MOLTEN IRON ALLOY CONTAINING CHROMIUM

Tohru Matsuo, Hyogo, and Takeo Aoki, Kawanishi, both of Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 2, 1983, Ser. No. 471,238

Claims priority, application Japan, Mar. 3, 1982, 57-33549

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—53 **10 Claims**

1. A method of dephosphorizing and desulfurizing a molten iron alloy containing chromium, comprising adding to the molten iron alloy (a) a flux comprised of at least one alkaline-earth metal oxide and at least one alkaline-earth metal halide and (b) an oxidizing agent in an amount sufficient to achieve dephosphorization and to prevent solidification of generated slag.

4,450,005

METAL REFINING METHOD

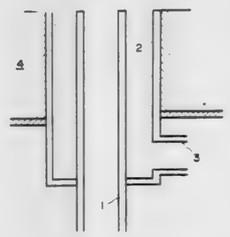
Yasuyuki Nakao; Yosuke Hoshijima, both of Himejishi, and Kazuo Okohira, Kitakyusyushi, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 4, 1982, Ser. No. 345,917

Claims priority, application Japan, Oct. 26, 1981, 56-170198

Int. Cl.³ C21C *5/34*

U.S. Cl. 75—60 **5 Claims**



1. In a method of refining a metal by blowing a refining gas surrounded by a cooling gas into the melt of the metal to be refined using a concentric multi-tube system nozzle situated beneath the surface of the melt in a refining vessel, the improved metal refining method which comprises controlling the flow rate of the cooling gas passing through the passageway for the cooling gas formed between the outermost tube and the adjacent inner tube of the nozzle as defined by the following equation:

$$\frac{600 \times \pi Di \times \Delta T}{A} \leq B \leq \frac{1400 \times \pi Di \times \Delta T}{A}$$

wherein A is the cooling capacity of the cooling gas; B is the flow rate of the cooling gas; πDi is the inside circumference of the outermost tube; and T is the wall thickness of the outermost tube.

4,450,006

MARTENSITIC STAINLESS STEEL

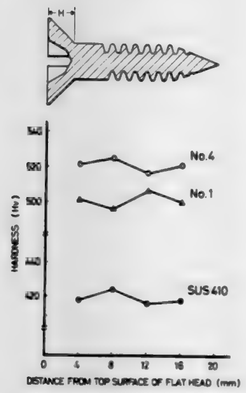
Norioki Uyehara, 26-1 Mashida-Kitamachi, Inazawa, Aichi-ken; Susumu Abe, 4-21 Kanazawa-Higashitora, Chita, Aichi-ken, and Yasuhiro Kimura, 12-29 Shirasawa-Kitaishine, Agui, Aichi-ken, all of Japan

Filed Oct. 21, 1981, Ser. No. 313,671

Claims priority, application Japan, Oct. 22, 1980, 55-147791

Int. Cl.³ C22C *38/16*

U.S. Cl. 75—125 **5 Claims**



1. A martensitic stainless steel of high mechanical strength and suitable for processing by cold pressing, which steel consist of 0.20 to 0.50% of C, 0.01 to 0.50% of Si, 0.30 to 2.0% of Mn, 1.0 to 3.0% of Cu, up to 0.20% of Ni, 13.0 to 17.0% of Cr and 0.02 to 0.10% of N, and the balance being Fe and inevitable impurities.

4,450,007

PROCESS FOR ELECTROSLAG REMELTING OF MANGANESE-BASE ALLOYS

Robert B. Herchenroeder, Kokomo, and Boyd A. Heath, Tipton, both of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Filed Dec. 13, 1982, Ser. No. 449,323

Int. Cl.³ C22B *4/06*

U.S. Cl. 75—10 C **10 Claims**

1. In a process for refining a metal by partially immersing a consumable electrode of said metal in a layer of molten slag and passing current between said consumable electrode and a second electrode through said slag layer under conditions which gradually melt said consumable electrode so that drops of molten metal from said consumable electrode move downwardly through said slag layer and resolidify as an ingot thereunder, the improvement comprising the steps of immersing a consumable electrode of a manganese-base alloy in a slag characterized by a liquidus temperature of more than 300° F. (149° C.) above the melting point of said consumable electrode and passing current between said consumable electrode and said second electrode through said slag, said slag being comprised of Al_2O_3, CaO and CaF_2.

4,450,008

STAINLESS STEEL

Rockne J. Andreini, Redmond; Audley J. Farmer, Kent, and Svetlana Yaguchi, Renton, all of Wash., assignors to Earle M. Jorgensen Co., Seattle, Wash.

Filed Dec. 14, 1982, Ser. No. 449,608

Int. Cl.³ C22C *38/04*

U.S. Cl. 75—128 A **5 Claims**

1. A fully austenitic, substantially nonmagnetic stainless steel, consisting essentially of, by weight:

16–20% Manganese,
12–15% Chromium,
5.0% Molybdenum max.,
2.5% Nickel max.,
1.0% Copper max.,
0.75% Silicon max.,
0.2–0.5% Nitrogen,
0.04% Phosphorus max.,
0.01% Sulfur max.,
0.035% Carbon max.,
Columbium at a concentration of at least ten times the Carbon concentration, and
the remainder being essentially Iron with incidental impurities.

4,450,009

METHOD OF PREPARING A LIGHT WEIGHT CEMENT COMPOSITION FROM SEA WATER

Jerry D. Childs, Duncan; Lance E. Brothers, Lawton, and Mary J. Taylor, Sterling, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 29, 1983, Ser. No. 490,088

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—76 **20 Claims**

1. A method of preparing a cement composition having a density of from about 11.0 to about 16.0 pounds per gallon comprising:

(a) adding to sea water a hydroxide compound selected from the group consisting of an alkali metal hydroxide, ammonium hydroxide and mixtures thereof said hydroxide compound being present in the range of about 0.2 percent to about 2.0 percent by weight of sea water;

(b) adding to the mixture of step (a) a silicate compound selected from the group consisting of an aqueous alkali metal silicate, an aqueous ammonium silicate and mixtures thereof; and

(c) adding to the mixture of step (b) a hydraulic cement; wherein said sea water is present in the range of from about 42 percent to about 190 percent by weight of hydraulic cement and said silicate compound is present in the range of from about 0.40 percent to about 3.40 percent by weight of hydraulic cement.

4,450,010

WELL CEMENTING PROCESS AND GASIFIED CEMENTS USEFUL THEREIN

John F. Burkhalter; Jerry D. Childs, and David L. Sutton, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 29, 1983, Ser. No. 489,909

Int. Cl.³ C04B *7/35, 21/02*

U.S. Cl. 106—87 **20 Claims**

1. A cement composition for cementing an oil or gas well comprising

(a) a hydraulic cement;

(b) water;

(c) a gas generating composition selected from the group consisting of:

I. a nitrogen gas generating material selected from the group

consisting of hydrazine, hydrazine sulfate, carbazide, and mixtures thereof;
an oxidizing agent selected from the group consisting of hydrogen peroxide, sodium peroxyborate tetrahydrate, sodium peroxyborate monohydrate, potassium dichromate, and mixtures thereof; and
a reaction rate control material selected from the group consisting of sodium sulfate, calcium sulfate hemihydrate, copper sulfate hemihydrate, copper sulfate, calcium hydroxide, and mixtures thereof;

II. a nitrogen gas generating material selected from the group consisting of hydrazine, hydrazine sulfate, carbazide, and mixtures thereof;
an oxidizing agent selected from the group consisting of calcium peroxide, zinc peroxide, and mixtures thereof; and,
a reaction rate control material comprising copper sulfate;

III. a nitrogen gas generating material selected from the group consisting of an ammonium salt of an organic or inorganic acid, hydroxylamine sulfate, carbamide, azodicarbonamide, and mixtures thereof;
an oxidizing agent selected from the group consisting of hydrogen peroxide, sodium peroxyborate tetrahydrate, sodium peroxyborate monohydrate, and mixtures thereof;
a reaction rate control material comprising copper sulfate; and,

IV. a nitrogen gas generating material comprising azodicarbonamide;
an oxidizing agent comprising calcium peroxide; and,
a reaction rate control material comprising copper sulfate; and,

V. mixtures of I, II, III, or IV.

4,450,011

CATIONIC BITUMINOUS EMULSIONS

Peter Schilling, and Hans G. Schreuders, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,906
Int. Cl.³ C08L 95/00
U.S. Cl. 106—269 **22 Claims**

1. A cationic bituminous emulsion comprising from about 30% to about 80% by weight of bitumen, from about 0.1% to about 10% by weight of an emulsifier selected from the group consisting of reaction products of polyamines reacted with sulfonated carboxylic acids selected from the group consisting of sulfonated tall oil fatty acid and sulfonated oleic acid, and water to make up 100% by weight, the emulsion having a pH in the range of from 2-7.

4,450,012

FLOCCULATION-RESISTANT, MIXED PHASE PIGMENTS HAVING A RUTILE STRUCTURE, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Dieter Messer; Volker Wilhelm; Robert Endres, all of Cologne, and Heinrich Heine, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,992
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137384
Int. Cl.³ C09C 1/36, 1/00
U.S. Cl. 106—300 **9 Claims**

1. Coated rutile mixed phase pigments comprising a mixed phase rutile pigment having a first coating of an oxide or hydrated oxide of a metal selected from tetravalent titanium, zirconium, tin and mixtures thereof, and a final coating of an oxide or hydrated oxide of aluminium.

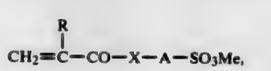
4,450,013

GRINDING OR DISPERSING AGENTS FOR PIGMENTS

Guenter Hirsch, Mutterstadt, and Gregor Ley, Wattenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 387,196
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123732
Int. Cl.³ C09C 3/00
U.S. Cl. 106—308 N **4 Claims**

1. A stable, highly concentrated aqueous slurry of an inorganic pigment selected from the group consisting of chalk, clay from primary and secondary deposits, satin white, titanium dioxide, kaolin, and dolomite, said slurry having a viscosity largely unaffected by temperature change between 25° C. and 70° C.; wherein the slurry is stabilized by a dispersant which is a copolymer of:
(a) 40 to 90 percent by weight of an ethylenically unsaturated aliphatic carboxylic acid selected from the group consisting of acrylic and methacrylic acids,
(b) 10 to 60 percent by weight of a compound having the formula:



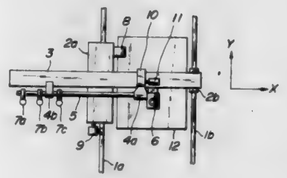
where
R is hydrogen or methyl
X is —NH— or —O—
A is C_1 to C_8 alkylene or C_1 to C_3 substituted alkylene, and
Me is hydrogen, sodium potassium, or ammonium; and
(c) 0 to 10 percent by weight of another ethylenically unsaturated copolymerizable monomer selected from the group consisting of acrylate and methacrylate esters of C_1-C_4 alcohols, C_1-C_4 esters or half esters of maleic acid, acrylo- and methacrylonitrile, acryl- and methacrylamide;
said copolymer dispersant having a K-value of 15 to 50 and an adjusted pH value of 7 to 8 in one percent solution at 20° C. and being used in an amount of 0.05 to 1.0 percent by weight based on the amount of pigment being dispersed.

4,450,014

METHOD OF CONTROLLING AN OPERATION OF A COPY-CUTTING APPARATUS

Hidehiko Hayasaki, Ohmiya, and Motoaki Yasumura, Kawagoe, both of Japan, assignors to Kabushiki Kaisha Tanaka Seisakusho, Tokyo, Japan

Filed Jul. 21, 1983, Ser. No. 515,736
Claims priority, application Japan, Jul. 23, 1982, 57-128426
Int. Cl.³ B23K 7/02, 7/10
U.S. Cl. 148—9 R **25 Claims**



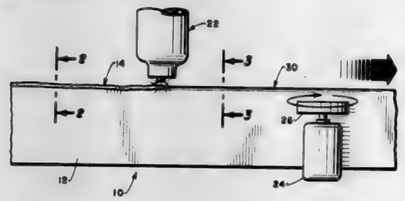
1. A method of controlling the operation of a copying apparatus which includes a tracer for tracing automatically a contour of a pattern to be copied and a working machine having a working head movable in conjunction with the tracer in a given relationship for effecting a given working operation for an object to be worked comprises the steps of:
(a) prior to an actual working operation, moving the tracer manually with respect to the pattern to be traced to detect point data representing coordinates of the tracer at respective operational points which include at least a working start point, a copy start point, and a copy end point;
(b) storing the point data thus detected in memory means;
(c) moving automatically the tracer by reading the stored point data from the memory means until the tracer reaches the copy start point, and when the tracer has reached the copy start point, the tracer is moved automatically along the pattern to detect pattern data representing coordinates of the tracer on the pattern;
(d) storing the pattern data thus detected in the memory means; and
(e) controlling the movement of the tracer under the point data and pattern data read out of the memory.

4,450,015

APPARATUS AND METHOD FOR PROVIDING A SMOOTH EDGE ON SHEARED METAL

William L. Arter, 1214 Margarita Dr., Fullerton, Calif. 92633, and Byron L. Russell, 24882 Rollingwood Rd., El Toro, Calif. 92630

Filed Aug. 9, 1982, Ser. No. 406,444
Int. Cl.³ B23K 7/00
U.S. Cl. 148—9 R **8 Claims**



7. In a method of reducing the sheared edge of a metallic sheet, the steps of: placing said sheet in a supporting fixture; and causing relative translation between an edge of said sheet and a heating element to reduce said edge to a smooth radius.

4,450,016

METHOD OF MANUFACTURING CLADDING TUBES OF A ZIRCONIUM-BASED ALLOY FOR FUEL RODS FOR NUCLEAR REACTORS

Gunnar Vesterlund, Västerås, and Erik T. Anderson, Sandviken, both of Sweden, assignors to Santrade Ltd., Lucerne, Switzerland

Filed Jul. 10, 1981, Ser. No. 282,061
Int. Cl.³ C22F 1/18
U.S. Cl. 148—11.5 F **4 Claims**

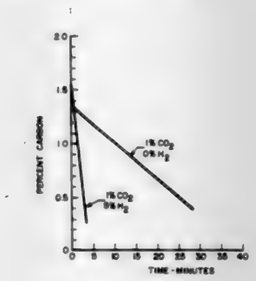
1. In a method of manufacturing cladding tubes of a zirconium-based alloy for fuel rods for nuclear reactors, the zirconium-based alloy containing 1.2 to 1.7 percent by weight tin, 0.07 to 0.24 percent by weight iron, 0.05 to 0.15 percent by weight chromium, 0 to 0.08% nickel and the balance zirconium and ordinary impurities, the zirconium-based alloy being extruded and the extruded product being subjected to cold rollings and at least one annealing, intermediate annealing, between two consecutive cold rollings and a β-quenching prior to the last cold rolling, the improvement wherein the extruded product is β-quenched prior to a cold rolling, after said cold rolling at least one intermediate annealing is performed at a temperature of 500° to 610° C. said intermediate annealing being performed prior to a further cold rolling.

4,450,017

GASEOUS DECARBURIZING MIXTURES OF HYDROGEN, CARBON DIOXIDE AND A CARRIER GAS

Kerry R. Berger, Lehighton, Pa.; Jelle H. Kaspersma, Hazerswoude-Dozp, Netherlands; Joseph R. Luybli, Hellertown, Pa.; Barry Millward, La Place, La., and Robert H. Shay, Kutztown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 21, 1982, Ser. No. 435,834
Int. Cl.³ C21D 1/00
U.S. Cl. 148—16 **7 Claims**



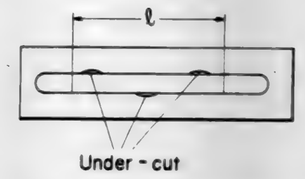
1. A method of decarburizing thin sheet steel articles comprising the steps of:
charging the articles into a heating furnace maintained at a temperature of between 1200° F. (649° C.) and 1700° F. (927°);
injecting a mixture consisting essentially of from 1 to 20% by volume hydrogen selected from the group consisting essentially of gaseous hydrogen, and hydrogen derived from the decomposition of liquid methanol, 1-50% by weight carbon dioxide balance nitrogen into said furnace whereby a decarburizing atmosphere is created inside said furnace;
holding the articles at temperature and under atmosphere for a period sufficient to produce the desired level of thorough decarburization; and
cooling the articles to room temperature.

4,450,018

FUSED FLUX FOR INCLINED SUBMERGED ARC WELDING

Katsuyuki Suga; Toyofumi Kitada; Yutaka Naganawa, and Hirotaka Nakagawa, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,614
Claims priority, application Japan, Apr. 9, 1982, 57-58020
Int. Cl.³ B23K 35/34; C22B 9/10
U.S. Cl. 148—26 **2 Claims**



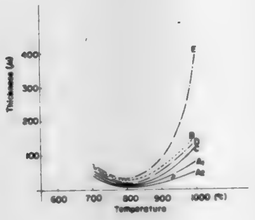
1. Fused flux for inclined submerged arc welding, consisting essentially of Al_2O_3 20 to 30 wt%, SiO_2 15 to 30 wt%, MnO 15 to 30 wt%, TiO_2 10 to 25 wt% and total iron oxide (FeO and Fe_2O_3) not more than 10 wt%.

4,450,019

DUCTILE CAST IRON

Kazuo Satou, Higashihiroshima, and Masashi Yoritaka, Hiroshima, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 30, 1983, Ser. No. 480,572
Claims priority, application Japan, Apr. 1, 1982, 57-55053
Int. Cl.³ C22C *37/10*
U.S. Cl. 148—35 **3 Claims**



1. A ductile cast iron excellent in resistance to both oxidation at high temperatures and thermal fatigue, which consists essentially of carbon in an amount of 2.5 to 3.8 wt%, silicon in an amount of 3.5 to 4.8 wt%, manganese in an amount of 1.0 wt% or less, phosphorus in an amount of 0.1 wt% or less, sulfur in an amount of 0.1 wt% or less, molybdenum in an amount of 0.5 to 2.0 wt%, magnesium in an amount of 0.03 to 0.1 wt%, at least one of cerium and lanthanum in an amount of 0.02 to 0.5 wt% and iron in the balance.

4,450,020

METHOD OF MANUFACTURING CLADDING TUBES OF A ZIRCONIUM-BASED ALLOY FOR FUEL RODS FOR NUCLEAR REACTORS

Gunnar Vesterlund, Västeras, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland

Continuation-in-part of Ser. No. 282,061, Jul. 10, 1981. This application Oct. 4, 1982, Ser. No. 432,687
Claims priority, application Sweden, Jul. 1, 1982, 8204072
The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.
Int. Cl.³ C22F *1/18*
U.S. Cl. 148—11.5 F **8 Claims**

1. A method of manufacturing cladding tubes of a zirconium-based alloy for fuel rods for nuclear reactors, said zirconium-based alloy containing 1.2–1.7 percent by weight tin, 0.07–0.24 percent by weight iron, 0.05–0.15 percent by weight chromium and 0–0.08 percent by weight nickel, the method comprising:

(a) extruding the zirconium-based alloy into an extruded product;

(b) subjecting the extruded product to a plurality of cold rollings;

(c) prior to one of said cold rollings, subjecting the extruded product to β-quenching;

(d) after said β-quenching and the associated cold rolling, subjecting the extruded product to an intermediate annealing at a temperature of 500° to 675° C.;

(e) subjecting the extruded product to a final cold rolling; and

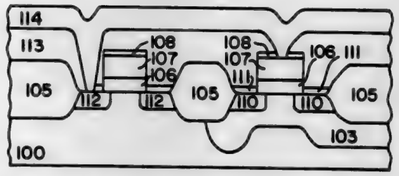
(f) subjecting the extruded product to a final annealing.

4,450,021

MASK DIFFUSION PROCESS FOR FORMING ZENER DIODE OR COMPLEMENTARY FIELD EFFECT TRANSISTORS

Tarsaim L. Batra, Cupertino, and Scott Bowden, San Jose, both of Calif., assignors to American Microsystems, Incorporated, Santa Clara, Calif.

Filed Feb. 22, 1982, Ser. No. 351,075
Int. Cl.³ H01L *21/22, 21/265*
U.S. Cl. 29—571 **5 Claims**



1. The method of forming a complementary metal oxide-silicon device within a substrate of first conductivity type comprising the steps of:

forming within said substrate a well region of a second conductivity type which is opposite said first conductivity type;

forming a field region in all areas where active devices are not to be formed, thus exposing active regions on the surface of said substrate in which active devices are to be formed;

forming a gate dielectric layer within said active regions;

forming a gate region on said gate dielectric layer;

masking said substrate with a first protective layer;

patterning said first protective layer and said gate insulation layer to expose only those active regions on the surface of said well region;

doping source and drain regions to said first conductivity type within said well region which are not protected by said gate regions or said field regions;

forming a second protective layer on the surface of said substrate not protected by said first protective layer, said field region or said gate region;

removing said first protective layer; and

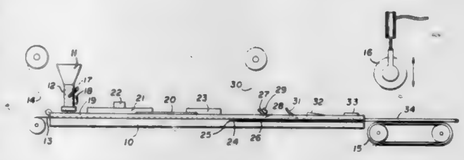
doping source and drain regions to a second conductivity type within said substrate which are not protected by said second protective layer, said field region or said gate region.

4,450,022

METHOD AND APPARATUS FOR MAKING REINFORCED CEMENT BOARD

Richard E. Galer, Hanover Park, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jun. 1, 1982, Ser. No. 383,674
Int. Cl.³ B28B *1/30, 23/02;* B32B *31/00*
U.S. Cl. 156—42 **19 Claims**



1. A method for manufacturing a reinforced cementitious panel comprising:

continuously forming a slurry comprising a cementitious material and water;

continuously towing an indefinitely long carrier sheet over a support surface;

continuously laying an indefinitely long span of reinforcing fibers over said sheet;

placing said sheet and its fiber overlay under longitudinal tension;

continuously depositing said slurry on said overlay and distributing it across the breadth of the overlay;

creating a gap between said sheet and said overlay to be filled by said slurry, said gap substantially spanning the breadth of the overlay and being created by urging a first transverse zone of said sheet to travel through a higher plane than a second transverse zone immediately adjacent to and downstream from the first zone;

thereby causing said slurry to embed said fibers; and

cutting the reinforced panel into the desired lengths.

16. Apparatus for the continuous manufacture of reinforced cementitious paneling, said apparatus comprising:

a forming table and a conveyor belt for continuously feeding a carrier sheet along a predetermined path, means for continuously laying reinforcing fibers over the advancing sheet, means for urging a first transverse zone of said sheet to travel through a higher plane than a second transverse zone of said sheet immediately adjacent to and downstream from the first zone thereby creating a gap transverse to said path between said sheet and the fiber overlay, means for depositing a cementitious slurry on the advancing fiber overlay upstream from said gap-creating means, means for leveling said slurry and distributing it transversely to said path, whereby said slurry is caused to fill said gap and embed said fiber overlay during its passage over said gap-creating means.

4,450,023

THERMOCHROMIC COMPOSITION

Francis J. A. M. C. De Blauwe, Lubbeek, Belgium, assignor to N.V. Raychem S.A., Kessel, Belgium

Filed Jun. 12, 1981, Ser. No. 273,179
Int. Cl.³ B32B *31/00;* C09K *3/00;* G01K *11/12*
U.S. Cl. 156—64 **18 Claims**

1. A heat recoverable article which is to be heated to a pre-selected temperature during installation or use having on a surface thereof a thermochromic composition comprising at least one organic binder and at least one organic material which undergoes a transformation when the article is heated to said pre-selected temperature, to produce a visible color change; said binder interacting with the transformed organic material to inhibit leaching thereof from the composition; whereby a substantially non-reversible color change of said composition takes place when said article is heated to said preselected temperature.

4. An article according to claim 1 or 2, capable of forming an enclosure about a body, having a meltable sealant on the surface which will face the interior of the enclosure, and the thermochromic composition on the surface which will be visible when the article is enclosing the body.

17. A method of enclosing a body, comprising positioning around the body a heat-recoverable article according to claim 4, and heating the article so as to recover it about the said body or so as to cause said sealant to melt or to soften, and to cause the thermochromic composition to undergo the visible colour change.

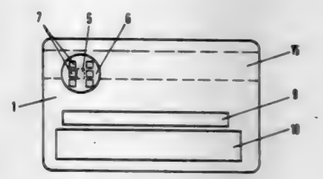
18. A thermochromic composition capable of adhering to a surface of a heat recoverable article which is to be heated to a pre-selected temperature during installation or use, said composition comprising at least one organic binder and at least one organic material which undergoes a transformation when the article is heated to said pre-selected temperature to produce a visible color change; said binder interacting with the transformed organic material to inhibit leaching thereof from the composition.

4,450,024

IDENTIFICATION CARD WITH AN IC-MODULE AND METHOD FOR PRODUCING IT

Yahya Haghiri-Tehrani, and Joachim Hoppe, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft fiir Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,496
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029939
Int. Cl.³ B60J *1/00*
U.S. Cl. 156—108 **12 Claims**



1. A method for producing a multi-layer identification card having an IC-module for processing electrical signals, the IC-module with its connection leads being arranged on a separate carrier element that is small relative to the identification card, said method avoiding localized pressures on the carrier element during production of the card and comprising the steps of:

providing an identification card assembly including an internal layer having a recess for the carrier element and at least one covering layer heat sealable to the internal layer, at least one of said layers being thermally softenable;

inserting the carrier element in the recess;

before or after inserting the carrier element in the recess, establishing a buffer proximate to the carrier element for limiting the application of force to the carrier element prior to thermal softening of the card layer; and

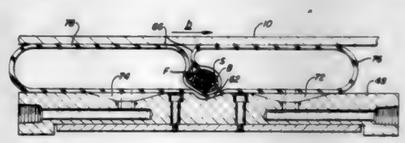
applying heat and pressure to the identification card assembly to heat seal the layers together, said buffer limiting the application of force to the carrier element prior to softening of the thermally softenable layer to avoid localized pressure on the carrier element.

4,450,025

METHOD AND APPARATUS FOR WRAPPING A TIRE BEAD RING

Virgil E. Henley, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jan. 31, 1983, Ser. No. 462,284
Int. Cl.³ B29H *17/12, 17/34*
U.S. Cl. 156—132 **1 Claim**



1. A method of wrapping a bead ring comprising the steps of:

(a) placing a bead covering strip on a deflated bladder that extends across a circumferentially extending recess in the surface of an expansible drum, so that said bead covering strip extends around said drum and said bladder extends over said recess;

(b) radially expanding said drum to receive said bead ring in said recess, with said bead covering strip and said bladder being interposed between said bead ring and said drum;

(c) inflating said bladder on one lateral side of said bead ring to raise a first edge portion of said covering strip, and rolling an outwardly facing wall of said bladder axially to carry said bladder over said bead ring and wrap said first edge portion of said strip over the radially outwardly facing side of said bead ring and press said first edge portion against the other edge portion of said strip on the opposite lateral side of said bead ring;

(d) inflating the portion of said bladder on the opposite lateral side of said bead ring from the side inflated in step (c) to raise the other edge portion of said covering strip, and rolling the outwardly facing wall of said bladder portion in the opposite direction from the direction of said rolling in step (c) so that said bladder wraps both of said edge portions of said covering strip over the radially outwardly facing side of said bead ring; and

(e) while rolling the outwardly facing wall of said bladder portion in said opposite direction, deflating said bladder on the first mentioned lateral side of said bead ring to release the outwardly facing wall of said bladder on said first mentioned lateral side from contact with said bead covering strip, and then continuing to roll said outwardly facing wall of said bladder portion in said opposite direction to press the edge portions of said covering strip tight against the outer surface of said strip.

4,450,026

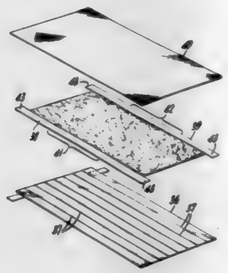
METHOD OF FORMING A CONFORMABLE GARMENT WITH "KILLED" ELASTIC PORTIONS

Heinz A. Pieniak, Chicago, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Division of Ser. No. 106,336, Dec. 21, 1979, Pat. No. 4,337,771, which is a continuation-in-part of Ser. No. 872,860, Jan. 27, 1978, abandoned. This application Jun. 23, 1982, Ser. No. 391,326

Int. Cl.³ A61F *13/16;* **B32B** *31/08, 31/18*

U.S. Cl. 156—164 **10 Claims**



1. A method for forming a conformable garment having one or more discrete elasticized areas, said method comprising:

(a) providing a garment component having a central portion defined between two end portions;

(b) stretching at least one ribbon of thermoplastic elastomeric material;

(c) subjecting at least one discrete portion of said stretched ribbon to heat so as to "kill" the elastic properties thereof in each heated portion while leaving the elastic properties of each unheated portion unaltered;

(d) before, during, or after step (c), securing at least part of the stretched ribbon to said garment component substantially end-to-end of the garment component with one heated portion of the ribbon secured in an end portion of said garment component and with an unheated portion of the ribbon secured to the central portion of said garment component whereby, when said ribbon is permitted to contract with said garment component, said garment component central portion is elasticized to gather while at least one end portion of said garment component remains inelastic and ungathered.

4,450,027

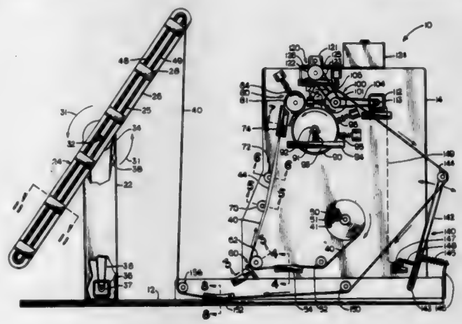
METHOD AND APPARATUS FOR FABRICATING HONEYCOMB INSULATING MATERIAL

Wendell B. Colson, 1611 Belero St., Broomfield, Colo. 80020

Filed Aug. 9, 1982, Ser. No. 406,319

Int. Cl.³ B29C *17/00*

U.S. Cl. 156—193 **20 Claims**



1. The method of fabricating expandable honeycomb material, comprising the steps of:

continuously folding a continuous length of tubular material at diametrically opposite sides into a flat tubular form

passing said length of tubular material over a heated surface and heating the tubular material uniformly across its entire transverse cross section and then passing said length of tubular material over a cold surface and cooling the tubular material uniformly across its entire transverse cross section, while continuously maintaining a uniform tension on said tubular material as it passes over the heated and cold surfaces and while maintaining the folds during heating and cooling by pressing a plurality of rollers against the folded tubular material on said heated and cold surfaces;

applying an adhesive material longitudinally along the length of said folded tubular material;

stacking the continuous length of tubular material on a rack that has an elongated flat surface in such a manner that the tubular material is stacked on the flat surfaces in a plurality of adjacent layers one on another with the adhesive material positioned between each layer;

allowing the adhesive material to adhere one layer to another to form a unitary stack on said flat surface; and

cutting a straight section of the unitary stack on the flat surface away from the remainder of the stacked tubular material and removing it from the rack.

4,450,028

METHOD OF MAKING LAMINATED MULTI-LAYERED FILM ENCLOSURES

Leonard J. Vilutis, Frankfort, Ill., assignor to Vilutis and Co., Inc., Frankfort, Ill.

Filed Dec. 2, 1981, Ser. No. 326,701

Int. Cl.³ B29C *17/00;* **B32B** *31/20*

U.S. Cl. 156—198 **4 Claims**

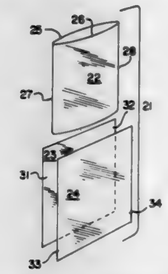
1. A method for making a multi-layered enclosure comprising:

selecting a length of extruded tubing having two panels integral with each other, said panels being integrally joined along two longitudinal edges that are continuous with both of said two tubing panels;

juxtaposing one length of film sheeting in overlying relationship to one of said tubing panels, said one length of film sheeting having two longitudinal edges complementary to said tubing longitudinal edges;

juxtaposing another length of film sheeting in overlying relationship to the other of said tubing panels, said another length of film sheeting having two longitudinal edges complementary to said tubing longitudinal edges; and

laminating together each of said length of extruded tubing, said one length of film sheeting and said another length of film sheeting to form a multi-layered enclosure, said laminating step including laminating said one length of film sheeting to substantially the entire outside surface of one of said tubing panels, and laminating said another length of film sheeting to substantially the entire outside surface of the other of said tubing panels, said laminating step further



including simultaneously laminating one of said two longitudinal edges of the one length of film sheeting to one of said two longitudinal edges of the another length of film sheeting in order to form a first laminated edge section, and simultaneously laminating the other of said two longitudinal edges of the one length of film sheeting to the other of said two longitudinal edges of the another length of film sheeting in order to form a second laminated edge surface, wherein said laminating step simultaneously adheres substantially the entire outside surface of the tubing, the length of film sheeting and the another length of film sheeting together while avoiding any significant change in the structure or the thickness of the tubing or the lengths of film sheeting.

4,450,029

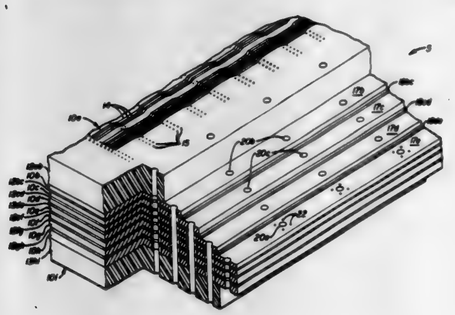
BACKPLANE FABRICATION METHOD

Kenneth W. Holbert, Sunnyvale, and Edwin M. Massey, San Jose, both of Calif., assignors to Elxsi, San Jose, Calif.

Filed Jan. 13, 1982, Ser. No. 339,033

Int. Cl.³ B32B *31/18;* **H05K** *1/04*

U.S. Cl. 156—250 **13 Claims**



1. A method of fabricating a backplane power distribution system comprising the steps of:

providing a first dielectric layer having a signal layer on one side thereof;

providing a conductive layer;

providing a second dielectric layer;

applying a release agent to a substantial area of the conductive layer;

laminating, in order, the first dielectric layer, the conductive layer, and the second dielectric layer to produce a rigid laminated structure with the signal layer on the outside and the conductive layer and the first and second dielectric layers generally coextensive; and

removing a portion of the first dielectric layer to expose the substantial area of the conductive layer.

4,450,030

ADHESIVE BONDING METHOD EMPLOYING TWO-PART COMPOSITION WITH ACTIVATOR ENRICHED WITH DIHYDROPYRIDINE INGREDIENTS

David P. Melody, Castlenock; Seamus M. Grant, Ballinteer, and Francis R. Martin, Templeogue, all of Ireland, assignors to Loctite Corporation, Newington, Conn.

Division of Ser. No. 321,643, Nov. 16, 1981, Pat. No. 4,430,480. This application Nov. 21, 1983, Ser. No. 553,712

Claims priority, application Ireland, Nov. 21, 1980, 2423/80

Int. Cl.³ C09J *5/02*

U.S. Cl. 156—307.3 **7 Claims**

1. In a method of bonding a pair of substrates comprising coating an activator comprising condensation products of butryaldehyde and aniline onto at least one of said substrates, applying a free radical catalyzed polymer in monomer type adhesive onto at least one of said substrates and joining the two substrates for sufficient time to permit the adhesive to cure, the improvement comprising that the concentration of N-phenyl-3,5-diethyl-2-propyl-1,2-dihydropyridine in said activator is present in an amount of about 70% or more of said condensation products.

4,450,031

ION SHOWER APPARATUS

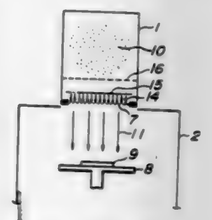
Toshiro Ono, and Seitaro Matsuo, both of Isehara, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Sep. 8, 1983, Ser. No. 530,424

Claims priority, application Japan, Sep. 10, 1982, 57-156842; Oct. 4, 1982, 57-173270

Int. Cl.³ C23F *1/02;* **C03C** *15/00;* **B44C** *1/22;* **H01L** *21/306*

U.S. Cl. 156—345 **9 Claims**



1. An ion shower apparatus comprising:

a plasma formation chamber in which a plasma is produced so as to produce ions;

a single ion extraction electrode disposed in one portion of said plasma formation chamber and for extracting said ions from said plasma formation chamber so as to form an ion beam in the form of shower;

a specimen chamber in which the surface of a specimen is irradiated with said ion beam in the form of shower; and

a shield electrode disposed in the vicinity of said ion extraction electrode in said plasma formation chamber and spaced apart from the thickness of the plasma sheath produced over said ion extraction electrode, said shield electrode permitting the passage of said plasma therethrough and preventing the electric field produced by said

ion extraction electrode substantially from extending to the remaining region of said plasma formation chamber.

4,450,032

APPARATUS FOR BANDING PARCELS AND THE LIKE

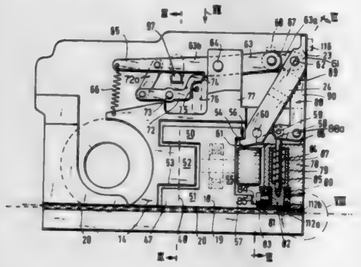
Hubert Wehr, Bornheim, Fed. Rep. of Germany, assignor to Cyklop International Emil Hoffmann KG, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,578

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118710

Int. Cl.³ B29C *27/08;* B65B *13/32*

U.S. Cl. 156—353 **13 Claims**



1. An apparatus for securing a band around an article, comprising:

a rotatable tensioning wheel for applying tension to a band;

a unidirectional drive means;

coupling means operationally intermediate said drive means and said wheel whereby said wheel is rotatable by said drive means;

at least one frictional element arranged to be reciprocable by said drive means;

urging means for urging said at least one friction element against a first portion of a band which overlies a second portion of the band, said portions being tensionable by said tensioning wheel, while said at least one element is reciprocated by said drive means, whereby the first band portion is reciprocable relative to and in contact with the second band portion;

wherein said coupling means includes means for maintaining band tension and means sensitive to the torque transmitted from the drive means to the wheel, said torque sensitive means being actuated when the torque attains a predetermined value to automatically actuate said urging means to effect said urging of said at least one friction element, and to control the torque transmitted to the wheel, and wherein on sensing said predetermined torque value said torque sensitive means automatically actuates uncoupling of the tensioning wheel from the drive means and automatically actuates said means for maintaining band tension by preventing the uncoupled tensioning wheel from rotating.

4,450,033

FRONT SURFACE METALLIZATION AND ENCAPSULATION OF SOLAR CELLS

Roger G. Little, Bedford, Mass., assignor to Spire Corp., Bedford, Mass.

Division of Ser. No. 310,793, Oct. 13, 1981, which is a continuation of Ser. No. 181,106, Aug. 25, 1980, abandoned. This application Aug. 30, 1982, Ser. No. 412,993

Int. Cl.³ B32B *19/02;* C03B *23/20, 33/08;* H01C *7/08*

U.S. Cl. 156—380.8 **5 Claims**

1. Apparatus for the front surface metallization and encapsulation of solar cells comprising:

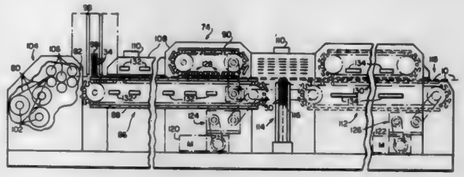
(a) means for forming a single dimensional mesh of metallic wires with a conductive bus and for depositing a transparent plate onto said mesh of metallic wires;

(b) means for bringing a front surface of a semiconductor wafer into contact with said plate and said mesh of metallic wires thereon;

(c) means for electrostatically bonding said transparent plate to said semiconductor wafer, with said mesh of metallic wires encapsulated therebetween; and

(d) means for pressing said transparent plate to said semiconductor wafer while effecting said electrostatic bonding therebetween.

2. Apparatus for the front surface metallization and encapsulation of solar cells comprising:



(a) means for forming a single-dimensional mesh of metallic wires with a conductive bus and for depositing a transparent plate onto said mesh of metallic wires;

(b) means for heating said plate and for pressing said mesh of metallic wires into a softened surface of said plate;

(c) means for bringing a front surface of semiconductor wafer into contact with said surface of said plate and said mesh of metallic wires embedded therein;

(d) means for electrostatically bonding said plate surface to said front surface of said semiconductor wafer, with said mesh of metallic wires encapsulated therebetween; and

(e) means for pressing said plate surface to said front surface of said semiconductor wafer while effecting said electrostatic bonding therebetween.

4,450,034

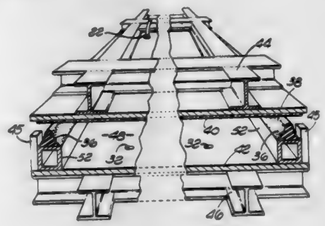
LAMINATOR FOR LARGE WORKPIECES

Michael J. Stern, Chatsworth, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 10, 1982, Ser. No. 387,100

Int. Cl.³ B30B *15/34*

U.S. Cl. 156—382 **2 Claims**



1. Apparatus for use in making laminated products comprising:

(a) a lower plate unit for receiving a workpiece and having a first offset peripheral edge porition and being of generally U-shaped cross section and having a recessed substantially planar interior and terminating with an outwardly extending continuous peripheral flange portion and a plurality of elongated members forming frames about the periphery of said lower plate unit secured to said flange portion for reinforcing the edge portion of said generally U-shaped lower plate;

(b) an upper plate unit for providing a hood over said lower unit and having a second offset peripheral edge portion and being of generally U-shaped cross section and having a recessed substantially planar interior and terminating with an outwardly extending continuous peripheral flange portion and a plurality of elongated members forming frames about the periphery of said upper unit secured to said flange portion for reinforcing the edge portion of said generally U-shaped upper plate;

(c) flexible diaphragm means disposed between said upper and lower plate units and defining upper and lower chambers;

(d) adhesive means for securing said diaphragm means to the peripheral edge of said upper plate unit;

(e) said first and second peripheral edges being in abutting relationship with said diaphragm therebetween when said upper and lower plate units are closed;

(f) a peripheral rib of molded elastomeric material for providing a peripheral sealable relationship between said diaphragm means and said upper and lower plate units so that said chambers may be rendered air tight; and

(g) evacuating means for evacuating said upper and lower chambers.

4,450,035

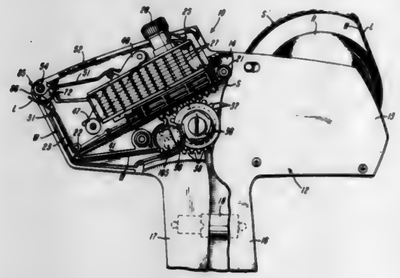
LABEL PRINTING AND APPLYING APPARATUS

Paul H. Hamisch, Jr., Franklin, and James A. Makley, Miamisburg, both of Ohio, assignors to Monarch Marking Systems, Inc., Miamisburg, Ohio

Filed Mar. 15, 1983, Ser. No. 475,396

Int. Cl.³ B65C *9/18, 11/02*

U.S. Cl. 156—384 **15 Claims**



1. Apparatus for successively printing and applying a series of pressure sensitive labels carried by a web of supporting material, the apparatus comprising a platen, printing means cooperable with the platen for successively printing the labels, delaminating means disposed for separating each label from the web after the label is printed, means for feeding the web to present each label to the platen and printing means and then past the delaminating means, a roller for directing the labels or the carrier web, an adaptor supporting the roller for rotation on a first axis when the apparatus is assembled for printing relatively short labels, means for supporting the adaptor, and the adaptor supporting means being effective to support the roller or another roller for rotation on a second axis spaced parallel to the first axis when the apparatus is assembled without the adaptor printing longer labels.

4,450,036

PORTABLE LABELING MACHINE

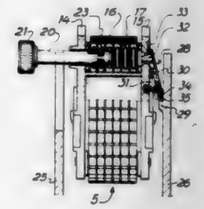
Heinrich Volk, Beerfelden-Gammelsbach, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Jun. 3, 1982, Ser. No. 384,718

Claims priority, application Switzerland, Jul. 17, 1981, 4695/81

Int. Cl.³ B65C *11/02*

U.S. Cl. 156—384 **4 Claims**



1. A portable labeling machine having a housing extended by a handle with control lever and comprising at least a movable printhead driven by the control lever to imprint by striking movements selected characters on self-adhesive labels supported by a continuous strip, said printhead being provided with a character selection shank rotatively and axially movable along its longitudinal axis from a rest inward position up to outward selection positions and with stop means for maintaining said character selection shank in any one of said positions, and a safety device adapted to prevent the striking movements of the printhead when the character selection shank is not completely in its rest inward position, which safety device comprises a retractable movable abutment and a stationary counter-abutment, said retractable movable abutment having a protruding position in which it engages said counter-abutment in the rest position of the printhead to prevent the striking movements of the printhead and a retracted position in which said retractable movable abutment does not engage said counter-abutment and does not prevent the striking movements of the printhead, wherein one of said retractable movable abutment and stationary counter-abutment is mounted on the printhead and the other is mounted on the housing, spring means in contact with said retractable movable abutment to permanently bias said retractable movable abutment to urge it into the protruding position, wherein an antagonist thrust member is axially bound to the character selection shank to urge said retractable movable abutment into retracted position at the end of the inward stroke of said character selection shank, and wherein the bias of said spring means is lower than the retaining force of the stop means acting on said character selection shank.

4,450,037

ENVELOPE FLAP SEALING DEVICE

German Gavronsky, Stamford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 22, 1983, Ser. No. 506,913

Int. Cl.³ B05C *1/02*

U.S. Cl. 156—441.5 **6 Claims**

1. In a mailing machine, an envelope flap sealing device, comprising:

a moistener separator blade;

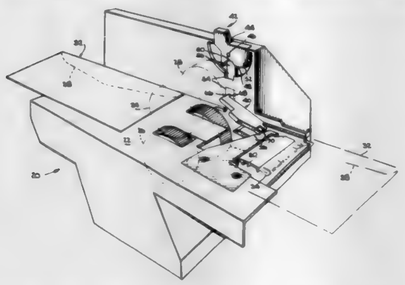
a moistening brush attached to and located downstream of said separator blade;

at least one pair of feed rollers for transporting envelopes past said moistening brush;

a pivotable, deflecting baffle situated intermediate said feed rollers and said separator blade; and

a selector knob having a camming surface, said knob being operatively connected to said deflecting baffle for pivoting said baffle about its downstream end whereby the

upstream end of said baffle is translatable between a raised position and a flat position, wherein the raised position guides an envelope flap under said moistening brush to



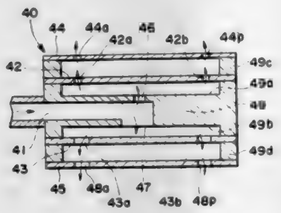
thereby seal said flap and the flat position causes said envelope flap to pass over said moistening brush and not be sealed.

4,450,038

HOT AIR BLAST WELDING APPARATUS FOR THERMOPLASTIC PARTS

Masami Ishii, Toyota; Hitoshi Sugimoto, Nagoya; Shinji Takeda, Toyota, and Susumu Shibata, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 18, 1982, Ser. No. 349,713
Claims priority, application Japan, Feb. 26, 1981, 56-28150
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—497 **3 Claims**



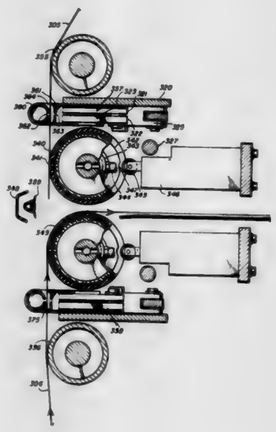
1. A hot-air-blast welding apparatus comprising a pair of opposed, work-holding arms which are movable toward and away from each other and respectively have means for holding hollow works having edges to be welded together, hot-air blasting means including hot-air blast nozzle means movable between an operative position in which said nozzle means are located between the works held on said arms and a retracted position in which said nozzle means are retracted so that the works on the arms can be brought into abutting engagement with each other by moving the arms toward each other, and including a conduit connected to said nozzle means for supplying hot air to said nozzle means, said nozzle means being formed with first nozzle openings facing toward one work held on one of the arms and second nozzle openings facing toward the other work held on the other arm, said conduit commonly supplying hot air to said first and second nozzle openings, said nozzle means having means for directing different amounts of hot air respectively to the first and second nozzle openings including air ports respectively leading to the first and second nozzle openings, said ports having different effective areas.

4,450,039

WEB SPLICING APPARATUS

Orfeo J. Salvucci, Holbrook; John M. Hobby, Sherborn; James J. Hennessy, Woburn, all of Mass., and Ronald R. Young, Pawtucket, R.I., assignors to Harris Graphics Corporation, Westerly, R.I.

Filed Aug. 23, 1982, Ser. No. 410,508
Int. Cl.³ B65H *19/08, 19/22*; B32B *31/00*; B26F *3/02*
U.S. Cl. 156—504 **26 Claims**



1. In web splicing apparatus having a ready roll of web material and an expiring roll of web material, a pair of resilient nip rollers operable to splice the leading edge of web material from said ready roll to the trailing edge of web material from said expiring roll, an idler roller to guide said leading edge to one of said nip rollers, and means operable during splice preparation and a splicing operation for holding and trimming said leading edge adapted to become engaged with either of said nip rollers, the improvement comprising:

means for positioning said one nip roller in a splice preparation position and for holding said one nip roller in a splicing position rotated from said splice preparation position,

means located between said idler roller and said one nip roller, said means being operable during splice preparation for drawing a slack loop of web material of precise, predetermined length between said idler roller and said one nip roller so that sad one nip roller can be rotated to said splicing position and during a splicing operation there is substantially no slack in said web material between said idler roller and said one nip roller.

9. In web splicing apparatus having a ready roll of web material and an expiring roll of web material, a pair of resilient nip rollers operable to splice the leading edge of web material from said ready roll to the trailing edge of web material from said expiring roll, and an idler roller to guide said leading edge to one of said nip rollers, the improvement comprising:

a trimming blade for trimming the leading edge of said ready roll during splice preparation, and

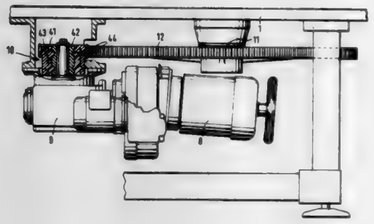
means operable to position said trimming blade in front of either nip roller during splice preparation in a position so as to allow said leading edge to be ripped off against said blade.

4,450,040

NOISEPROOFED LABELING MACHINE

Rodolf Zodrow, and Rainer Buchholz, both of Düsseldorf, Fed. Rep. of Germany, assignors to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,931
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112067
Int. Cl.³ B65C *9/02*; F16H *55/14*
U.S. Cl. 156—567 **8 Claims**



1. In a labeling machine comprising a machine frame, a turret in said frame, a concentrically disposed gear carried by said turret for rotation of said turret, a plurality of turntables carried by said turret, a drive mounted in the machine frame, a pinion driven by said drive and driving said concentrically disposed gear and turret, an infeed starwheel and an outfeed starwheel each meshing with the concentrically disposed gear, and a labeling station driven by a pinion meshing with the turret gear, the improvement which comprises providing each gear of the infeed and outfeed starwheels, of each pinion of the drive and of the labeling station, and any further pinions meshing with the gear of the turret and driving, in synchronism with the turret, other mechanisms mounted in the machine frame, with a hub, a toothed ring and a polyurethane elastomer damping element between each hub and toothed ring so as to isolate said hub and said toothed ring from each other with respect to solid-borne sound, each toothed ring and hub having beveled regions bounding the space between them, each damping element having been formed by temporarily surrounding the space with a collar to form a closed space, casting into said space a polyurethane-forming material which sets to an elastomer with shrinkage, allowing the material to set so that in shrinking the elastomer in at least one point is drawn against the beveled regions so as to center itself in the manner of a chucking cone, thereby constituting the damping connection, and removing the temporary collar.

4,450,041

CHEMICAL ETCHING OF TRANSFORMED STRUCTURES

Monti E. Aklufi, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1982, Ser. No. 390,458
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00*; H01L *21/306*
U.S. Cl. 156—628 **1 Claim**



1. A method of selectively etching a metal comprising the steps of:

(a) subjecting a predetermined region of a layer of metal to impingement by a silicon ion beam so as to ion implant said predetermined region;

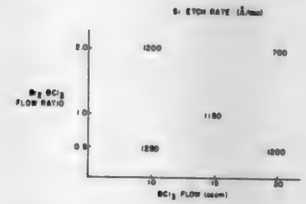
(b) applying a chemical etch to said layer of metal and to said ion implanted region whereby said ion implanted region etches at a slower rate than the portion of said metal outside said predetermined region.

4,450,042

PLASMA ETCH CHEMISTRY FOR ANISOTROPIC ETCHING OF SILICON

Andrew J. Purdes, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 6, 1982, Ser. No. 395,205
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **17 Claims**



1. The method for selectively etching a layer of a silicon-bearing material in an integrated circuit, comprising the steps of:

providing a patterned masking material over said silicon-bearing material to expose only the areas of said silicon-bearing material which are to be etched;

passing a gaseous mixture over said layer; and

creating a plasma discharge in said gaseous mixture adjacent to said layer of silicon-bearing material;

wherein said gaseous mixture comprises bromine and a chlorine-bearing species.

4,450,043

METHOD FOR RECOVERING PULP FROM PRESSURE-SENSITIVE CARBONLESS COPYING PAPER WASTE

William J. Schulz, Cloquet, Minn., assignor to Appleton Papers Inc., Appleton, Wis.

Filed Mar. 12, 1982, Ser. No. 357,400
Int. Cl.³ D21C *5/02*
U.S. Cl. 162—5 **7 Claims**

1. A process for the recovery of fibers from pressure-sensitive carbonless copying paper waste having color former containing microcapsules, comprising the steps of:

(a) defibrating the waste in aqueous media in two steps without substantial rupture of the microcapsules wherein one defibrating step is performed under acidic conditions and the other step is performed under basic conditions;

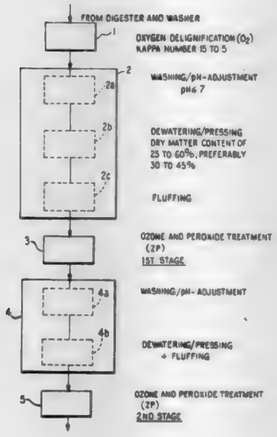
(b) treating the defibrated waste with an enzyme for starch saccharification; and,

(c) separating the fibers from the non-fibrous components in a sidehill screen equipped with a washing shower.

4,450,044
METHOD FOR BLEACHING OXYGEN DELIGNIFIED CELLULOSE-CONTAINING PULP WITH OZONE AND PEROXIDE

Bjorn H. Fritzvold, Hosle, and Nicolai Soteland, Oslo, both of Norway, assignors to Myrens Verksted A/S, Oslo, Norway

Continuation of Ser. No. 161,871, Jun. 23, 1980, abandoned, which is a continuation of Ser. No. 26,644, Apr. 3, 1979, abandoned. This application Jul. 19, 1982, Ser. No. 400,115
Claims priority, application Norway, Apr. 4, 1978, 781190
Int. Cl.³ D21C 9/16
U.S. Cl. 162—65 13 Claims



1. In a method of bleaching coniferous wood pulp wherein said pulp is first oxygen delignified to a kappa number of 5 to 15 and then bleached by treatment with ozone and peroxide, the improvement consisting essentially of the sequential steps of:

(A) a first stage having

(1) an ozone treatment comprising the sequential steps of washing and pH adjustment with an acid to a pH≦7, dewatering to 25–60% dry matter, fluffing, and treatment with ozone, and immediately following the ozone treatment

(2) an alkaline peroxide treatment comprising treatment with a composition consisting essentially of water, an alkaline, a complex former, and a peroxide; and

(B) a second stage having

(1) an ozone treatment comprising the sequential steps of washing and pH adjustment with an acid to a pH≦7, dewatering to 25–60% dry matter, fluffing, and treatment with ozone, and immediately following the ozone treatment

(2) an alkaline peroxide treatment comprising treatment with a composition consisting essentially of water, an alkaline, a complex former, and a peroxide;

with the proviso that 55–85% of the total quantity of chemicals are used in the first stage.

4,450,045
PREPARATION OF WATER-SOLUBLE, NITROGEN-CONTAINING CONDENSATES AND THEIR USE IN PAPERMAKING

Otto Hertel, Ludwigshafen; Friedrich Linhart, Heidelberg, and Emil Scharf, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 10, 1982, Ser. No. 416,614
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135830
Int. Cl.³ D21H 3/58
U.S. Cl. 162—164.3 6 Claims

1. A process for the production of paper by drainage of an aqueous fiber slurry, comprising: adding to said slurry, prior to drainage thereof, an aqueous solution comprising water-soluble, nitrogen-containing condensates useful as retention aids, flocculants and drainage aids, said condensates being prepared by a process consisting of;

reacting a crosslinking agent obtained by

(a) condensing one mole of a dicarboxylic acid of 4–10 carbon atoms with from 1–2 moles of a polyalkylene polyamine, having 3–10 basic nitrogen atoms in the molecule, to give a polyamidoamine and,

(b) reacting the polyamidoamine with epichlorohydrin and/or dichlorohydrin in aqueous solution at a pH of from 4.5 to 8.5 and at not more than 100° C., from 1 to 130 parts by weight of epichlorohydrin and/or dichlorohydrin being employed per 100 parts by weight of the polyamidoamine from (a), with

(c) a diamine consisting of ethylenediamine, such that the resulting water-soluble resin has a viscosity of not less than 100 m PAS, measured in 20% strength aqueous solution at 20° C.

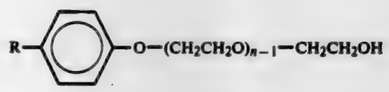
4,450,046
METHOD FOR INCREASING THE WET BULK DENSITY OF COKING COALS

David A. Rice, Hellertown; Robert R. Greenbaum, Coopersburg, and Thomas J. Conarty, Jr., Lehighton, all of Pa., assignors to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Jun. 14, 1982, Ser. No. 388,000
Int. Cl.³ C10B 57/06, 57/08
U.S. Cl. 201—20 8 Claims

1. An improved method for increasing the wet bulk density of moist coking coals charged to coke ovens to an optimum level and controlling and maintaining the wet bulk density of the coals in the moisture range of 6 to 13 weight percent at the optium level wherein the coals are prepared from raw coals which are treated and washed in coal preparation plants and crushed in the coke plants, the improvement comprising;

(a) preparing an aqueous dispersion containing between about 5 and 20 weight percent of an aliphatic, linear, non-ionic compound of an alkylphenoxypoly (ethyleneoxy) ethanol surfactant having a general structure



wherein:

R is an alkyl group containing between 8 and 12 carbon atoms, and

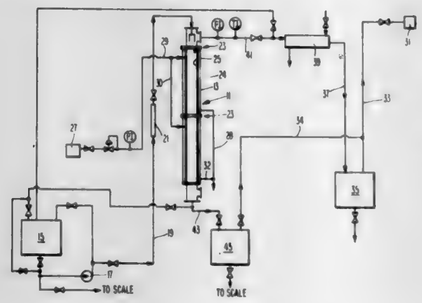
n is an integer between 2 and 30, where said surfactant is characterized by an HLB number within the range of about 8 and 16, and

(b) spraying the aqueous dispersion on the surfaces of the coals in amounts equivalent to between about 0.5 and 2.5 pounds of the surfactant per ton of coals (0.227 and 1.135 kg. of surfactant per 907.2 kg of coals) to increase and maintain the wet bulk density thereof at a level between about 47 and 50 pounds per cubic foot, as determined by standard ASTM D291-60.

4,450,047
PROCESS FOR RECOVERING ANHYDROUS ALKANESULFONIC ACIDS BY REDUCED PRESSURE, FALLING FILM EVAPORATION

Dale E. Malzahn, Dearborn Heights, Mich., assignor to Penwalt Corporation, Philadelphia, Pa.

Filed Jan. 28, 1983, Ser. No. 461,776
Int. Cl.³ B01D 3/10, 1/22; C07C 143/02
U.S. Cl. 203—15 12 Claims

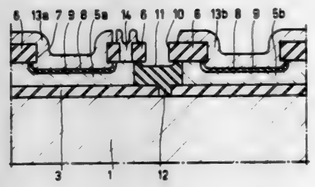


1. A process for reducing the water content of a lower-alkanesulfonic acid comprising placing a mixture containing water and said lower-alkanesulfonic acid onto the internal surface of an evaporator column so as to form a falling film of said mixture on said surface, operating said column at subatmospheric pressure and heating said surface so that water is vaporized from said mixture as said film flows down said surface, removing water vapor at the top of said column, and removing lower-alkanesulfonic acid having a water content of less than 2 percent and no detectable amounts of carcinogenic decomposition products at the bottom of said column.

4,450,048
METHOD OF MANUFACTURING CAPACITORS INTEGRATED IN MICROELECTRONIC STRUCTURE

Yves Gaulier, Herouville, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,531
Claims priority, application France, Jul. 9, 1982, 82 12137
Int. Cl.³ C25D 11/04, 11/12
U.S. Cl. 204—15 4 Claims

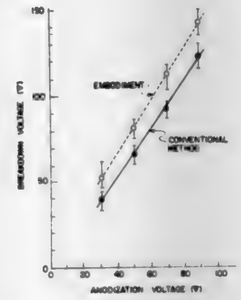


1. A method of manufacturing capacitors integrated in a microelectronic structure at the surface of a semiconductor body, the plates of these capacitors being obtained from two metal layers which are superimposed, are insulated at least in part from the said semiconductor body and are mutually separated by a layer of insulating material, the dielectric of the said capacitors and their lateral insulation being formed by means of islands and vertical partition walls, respectively, obtained by local anodic oxidation of the lower metal layer, which method is characterized in that, after deposition of the said lower metal layer and of the layer of insulating material covering it, through a first series of apertures provided in the said layer of insulating material, local recesses are provided in this metal layer in order to form therein cavities, in which the dielectric layers in the form of islands of the capacitors are then formed, and in that then through a second series of apertures provided in this same layer of insulating material new recesses are provided in the lower metal layer, in which the vertical partition walls are formed, thus giving the lower plates of the capacitors their ultimate form by insulating them simultaneously electrically from each other.

4,450,049
METHOD OF FORMING TANTALUM CAPACITOR ANODES AND MAKING THE CAPACITORS

Koreaki Nakata, Takarazuka; Jiro Ueno, and Yasuhiro Ogawa, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 19, 1982, Ser. No. 359,837
Claims priority, application Japan, Mar. 19, 1981, 56-11198; Aug. 20, 1981, 56-131127
Int. Cl.³ C25D 5/44, 3/66, 11/00
U.S. Cl. 204—35 N 3 Claims



1. A method for making a solid tantalum electrolytic capacitor comprising:

anodizing a tantalum sintered body for substantial dielectric film growth in a substantially aqueous electrolyte;

anodically treating said anodized tantalum body in at least one fused salt selected from the group of nitrates of alkali metals, nitrates of alkaline earth metals and nitrites of alkali metals with an applied voltage which is as high as possible but within a range wherein capacitance-decrease of the anode formed in the aqueous electrolyte is not caused; and

anodically treating said fused salt-treated tantalum body in a substantially aqueous electrolyte with an applied voltage which is as high as possible but within a range wherein reanodization will not occur,

wherein the temperature of said fused salt is in the range of 250° C. to 350° C., and the concentration of alkaline oxide in said fused salt is less than 1.5×10^{-4} mol. per gram of said fused salt.

4,450,050
PROCESS FOR BONDING HIGH EFFICIENCY CHROMIUM ELECTRODEPOSITS

Hyman Chessin, Brick Township, Ocean County, and Edmund C. Knill, Tinton Falls, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Feb. 3, 1983, Ser. No. 463,465
Int. Cl.³ B01D 15/00; C25D 3/04
U.S. Cl. 204—41 11 Claims

1. A method of consistently forming an adherent chromium deposit on a metal substrate comprising the steps of:

(a) plating the substrate metal with iron or an iron alloy from

an iron salt containing bath for a time and at a current density sufficient to produce an adherent iron or iron alloy plating on the substrate metal;

(b) depositing chromium on the iron or iron alloy plated metal substrate from a chromic acid bath containing a halogen releasing compound selected from the group consisting of iodine releasing compounds, bromine releasing compounds and mixtures thereof and chromic acid for a time and at a current density sufficient to produce an aherent chromium plating.

4,450,051

BRIGHT NICKEL-IRON ALLOY ELECTROPLATING BATH AND PROCESS

Robert A. Tremmel, Woodhaven, Mich., assignor to OMI International Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 224,773, Jan. 13, 1981, abandoned, and Ser. No. 224,774, Jan. 13, 1981, abandoned. This application Aug. 23, 1982, Ser. No. 410,685

Int. Cl.³ C25D *3/56*

U.S. Cl. 204—43 T **21 Claims**

1. An aqueous bath suitable for the electrodeposition of bright, high-leveling nickel-iron alloy deposits comprising nickel ions, iron ions, an iron solubilizing agent present in an amount to maintain the desired concentration of iron ions in solution, a buffering agent, a primary brightening agent present in an amount sufficient to produce a bright nickel-iron deposit, hydrogen ions to provide a pH of about 2.6 to about 4.5 and at least one bath soluble additive agent present in an amount of at least about 2 mg/l, selected from propargyl sulfonic acid, 1-butyne-3-sulfonic acid, 1-pentyne-5-sulfonic acid, 2-butyne-1-sulfonic acid and the alkali metal and ammonium salts thereof.

4,450,052

ZINC AND NICKEL TOLERANT TRIVALENT CHROMIUM PLATING BATHS

Warren H. McMullen, East Brunswick; Hyman Chessin, Brick Township, Ocean County, both of N.J., and Denise Siracusa, Staten Island, N.Y., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Jul. 28, 1982, Ser. No. 402,657

Int. Cl.³ C25D *3/06*

U.S. Cl. 204—51 **13 Claims**

1. In a trivalent chromium electroplating bath contaminated with zinc and/or nickel, the improvement comprising an effective amount to overcome contamination effects of a compound represented by the formula R-S, where:

S is selected from the group consisting of sulfinates, and the acids and soluble salts thereof, and

R is an aliphatic group having from 1 to 6 carbons, or an aromatic, alkyl aromatic or heterocyclic group having up to 12 carbons.

7. In a trivalent chromium electroplating bath contaminated with zinc and/or nickel, the improvement comprising an effective amount to overcome contamination effects of a compound represented by the formula R-S, where:

S is selected from the group consisting of vinyl sulfonate, allyl sulfonate, propargyl sulfonate and mixtures thereof; and

R is an aliphatic group having from 1 to 6 carbons, or an aromatic, alkyl aromatic or heterocyclic group having up to 12 carbons.

4,450,053

DEVICE FOR FEEDING ELECTROLYTIC CELLS AND METHOD OF OPERATING THE SAID DEVICE

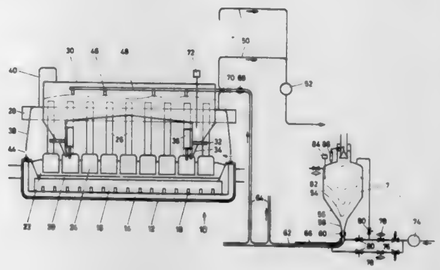
Walter Merz, Küsnacht, and Hans Friedli, Steg, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 13, 1980, Ser. No. 177,729

Claims priority, application Switzerland, Aug. 28, 1979, 7854/79

Int. Cl.³ C25C *3/14*

U.S. Cl. 204—67 **16 Claims**



1. A device for the automatic controlled feeding of an alumina mixture to an electrolytic cell used in the production of aluminum comprising:

at least one electrolytic cell;

an alumina mixture storage bunker positioned above said at least one electrolytic cell, said alumina mixture storage bunker being provided with means for feeding an alumina mixture to said at least one electrolytic cell;

a pressure chamber, said pressure chamber being provided with means for charging said pressure chamber with the alumina mixtures;

a feed system for transporting the alumina mixture from said pressure chamber to said alumina mixture storage bunker by means of compressed air, said feed system comprising an elongated material feed pipe, a plurality of compressed air inlet means provided over the entire length of said elongated material feed pipe, and means associated with said plurality of compressed air inlet means for equalizing the amount of compressed air entering said elongated material feed pipe over the entire length thereof; and

sensing means in said alumina mixture storage bunker for sensing the level of the alumina mixture for charging said pressure chamber in response to said sensed condition and feeding the alumina mixture from said pressure chamber to said alumina mixture storage bunker.

4,450,054

ALUMINA REDUCTION CELL

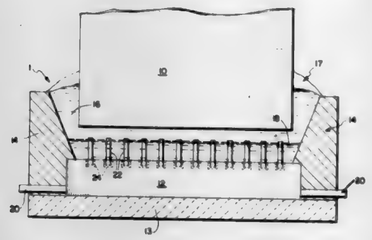
Alton T. Tabereaux, Sheffield, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 28, 1983, Ser. No. 536,707

Int. Cl.³ C25C *3/06, 3/08, 11/12*

U.S. Cl. 204—67 **5 Claims**

1. In an alumina reduction cell having an anode, a carbonaceous cathode forming the floor of said cell and a plurality of refractory hard metal (RHM) shapes extending vertically upwardly from said carbonaceous cathode the improvement comprising inert refractory sleeves imbedded in said carbonaceous cathode, said RHM shapes being mounted within said sleeves without being affixed thereto to thereby eliminate any RHM-carbonaceous material interface and to permit removal and replacement of said RHM shapes during operation of said cell.



4,450,055

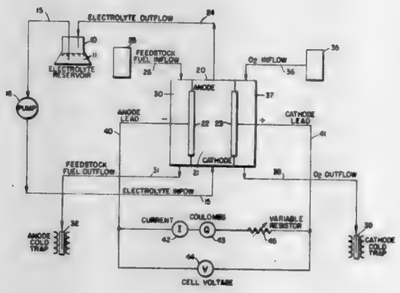
ELECTROGENERATIVE PARTIAL OXIDATION OF ORGANIC COMPOUNDS

Gery R. Stafford, Warren, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,441

Int. Cl.³ C25B *3/02*

U.S. Cl. 204—78 **12 Claims**



1. A continuous electrochemical process for partial oxidation of organic compounds which comprises contacting a palladium anode with a methyl-substituted hydrocarbon in a fuel cell containing an acidic aqueous electrolyte at a temperature between about 40°–200° C. to form corresponding aldehyde and carboxylic acid products, wherein the electrogenerative current density is in the range between about 0.5–20 milliamperes per square centimeter at a resistive load of 1–150 ohms, the anodic potential is controlled at a selected level in the range between about 0–0.55 volts with reference to a saturated calomel electrode, and the molar selectivity of methyl-substituted hydrocarbon conversion to aldehyde and carboxylic acid is at least about 80 percent, and wherein the oxidation occurs at the methyl-substituent of the hydrocarbon starting material.

4,450,056

RANEY ALLOY COATED CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 324,188, Nov. 23, 1981, Pat. No. 4,419,208. This application Mar. 28, 1983, Ser. No. 479,588

Int. Cl.³ C25B *11/08*; B01J *35/00*

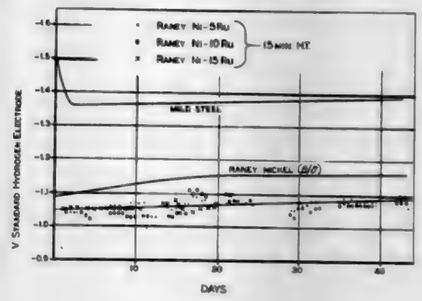
U.S. Cl. 204—98 **29 Claims**

1. A method of producing a low overvoltage electrode for use as a hydrogen evolution cathode in an electrolytic cell which comprises the steps of:

(a) coating with aluminum the surface of a clean non-porous conductive base metal structure, said surface comprising a nickel-ruthenium alloy having a weight percent ruthenium within the range of from 5 to about 15 and a weight percent nickel within the range of from about 95 to about 85;

(b) heat treating said coated surface by maintaining said surface at a temperature within the range of from about 660° to about 750° C. for a time from about 1 minute to about 30 minutes to interdiffuse a portion of said aluminum into the outer portions of said surface to produce an integral nickel-ruthenium-aluminum Beta structured ternary alloy layer in said outer portions consisting predominantly of Beta structured grains and further having an inner portion consisting predominantly of Gamma structured grains in said alloy layer; and

(c) leaching out the residual aluminum and intermetallics from said interdiffused alloy layer until a Raney nickel ruthenium layer is formed integral with said structure.



4,450,057

PROCESS FOR REMOVING ALUMINUM AND SILICA FROM ALKALI METAL HALIDE BRINE SOLUTIONS

Pilar P. Kelly, Knoxville, Tenn., assignor to OLIN Corporation, New Haven, Conn.

Filed Nov. 18, 1983, Ser. No. 552,958

Int. Cl.³ C25B *1/16, 1/26*

U.S. Cl. 204—98 **14 Claims**

1. In a process for purifying an alkali metal halide brine anolyte for an electrolytic cell, wherein the pH of said brine is raised so as to substantially remove dissolved calcium and magnesium therefrom, the improvement comprising:

(a) adjusting the pH of said purified brine to between about 2.0 and about 3.0;

(b) contacting said brine with a strong macroreticular cationic chelating resin to remove dissolved aluminum and silica therefrom, said contact causing the pH of said brine to increase and continuing the contacting of said brine with said resin for as long as the pH of the brine on discharge is above about 5.5; and

(c) separating said brine from said resin for use in said cell.

4,450,058

METHOD FOR PRODUCING BRIGHT STAINLESS STEEL

Paul T. Lovejoy, Verona, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Jul. 29, 1983, Ser. No. 518,500

Int. Cl.³ C25F *1/06*

U.S. Cl. 204—145 R **8 Claims**

1. A method for processing stainless steel strip after cold rolling to produce a scale-free, bright surface, said method comprising continuously annealing said strip in air, then descaling said annealed strip by making said annealed strip an

anode and applying electric current to said strip with said strip in an electrolyte consisting essentially of an aqueous solution of at least one neutral salt selected from the group consisting of chloride, sulfate and nitrate of an alkali metal including ammonium with the pH of said electrolyte being maintained between 1 and 7.

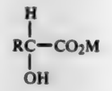
4,450,059

PHOTOCHEMICAL DECARBOXYLATION OF A METAL SALT OF AN ALPHA-HYDROXY CARBOXYLIC ACID

Abolghassem Eskamani, Aurora; Helen D. Dernar, Parma, and Rosemary Bartoszek-Loza, Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Sep. 2, 1983, Ser. No. 528,763
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R **12 Claims**

1. A process for the photochemical decarboxylation of a metal salt of an alpha-hydroxy carboxylic acid wherein the alpha-hydroxy carboxylic acid metal salt may be represented by the formula:



wherein;

R is hydrogen or an alkyl, alkenyl, aryl, alkaryl, cycloalkyl or cycloalkenyl having 1 to about 20 carbon atoms; and

M is a metal selected from the group consisting of Group IB, IIB, IIIB, IVB, VB, VIB, VIIB, and VIIIB elements, Ce, Al, Ca, Mg and Sn;

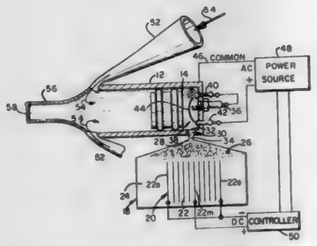
and wherein said alpha-hydroxy carboxylic acid metal salt is present in an aqueous solution at a concentration of from about 0.01 percent to about 50 percent by weight based on the total weight of the solution, and is exposed to light at a temperature between about 0° C. and about 100° C. in the absence of a photosensitizing agent.

4,450,060

BIPOLAR ELECTROLYTIC CELL

Ernesto Gonzalez, c/o Howard, Brawner & Lovett, 131 Dade Savings Bldg., 119 E. Flagler St., Miami, Fla. 33131

Division of Ser. No. 207,938, Nov. 18, 1980, Pat. No. 4,332,219. This application Dec. 3, 1981, Ser. No. 327,187
Int. Cl.³ C25B *9/00, 11/02, 11/10, 1/06*
U.S. Cl. 204—268 **7 Claims**



1. An electrolytic cell for separating hydrogen and oxygen gases from water, comprising:

a sealed container, having a vent for withdrawing the hydrogen and oxygen gases;

a charge of water disposed in the container;

a charge of bicarbonate of soda dissolved in the water, forming an electrolytic solution;

at least one set of a plurality of bipolar electrodes spaced from one another but otherwise, disposed in a closely packed row and substantially immersed in the electrolytic solution, each of the bipolar electrodes being a lamination of a flat inner member formed from a sheet of a first metal and a flat outer member formed from a sheet of a second metal, the peripheral edges of the outer member being folded around the peripheral edges of the inner member;

means for holding the plurality of bipolar electrodes in the closely packed row; and,

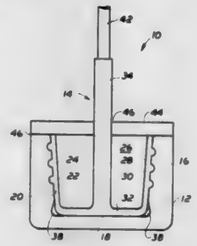
means for connecting the terminals of a direct current electrical source to the set of electrodes, whereby upon application of the direct current, hydrogen and oxygen gases are generated in stoichiometric proportion.

4,450,061

METAL STUB AND CERAMIC BODY ELECTRODE ASSEMBLY

Richard L. Rolf, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 20, 1982, Ser. No. 451,068
Int. Cl.³ C25C *7/02*; C25B *11/04*; C25D *17/12*
U.S. Cl. 204—286 **7 Claims**



1. An electrode assembly comprising:

an electrically conductive ceramic electrode body having an opening therein;

a metal stub comprising a cup having an end wall and a side wall projecting upwardly therefrom at least partially within the body opening and attached to said body opening with attaching means; and

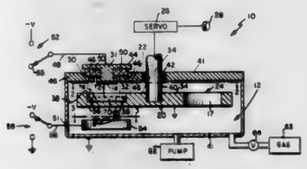
expansion and contraction means within said stub to allow said stub to expand and contract without cracking or otherwise fracturing said body.

4,450,062

SPUTTERING APPARATUS AND METHODS

Alexander Macaulay, Cupertino, Calif., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 333,532, Dec. 22, 1981, Pat. No. 4,410,407. This application Aug. 5, 1983, Ser. No. 520,407
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **1 Claim**



1. Sputtering apparatus, comprising:

(a) means, including an ionization chamber, for producing ions in the ionization chamber;

(b) means, disposed within the ionization chamber, for supporting a target material;

(c) means, disposed within the chamber, for supporting an object to be deposited with particles ejected from the target material by bombardment of such target material with the ions produced within the ionization chamber; and

(d) a shield, disposed in the ionization chamber between the target supporting means and the object supporting means, such shield having a lip disposed about the object supporting means.

4,450,063

PROBE FOR ALUMINA CONCENTRATION METER

Thomas J. Johnston, Rogersville; Nolan E. Richards, Florence, and Alton T. Tabereaux, Sheffield, all of Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed Sep. 28, 1983, Ser. No. 536,708
Int. Cl.³ G01N *27/26*
U.S. Cl. 204—400 **10 Claims**



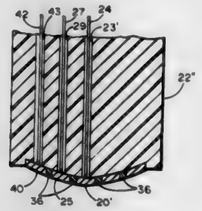
1. In a probe for measuring alumina concentration in a bath comprising an anode, electrical insulation surrounding said anode and a cathode surrounding said electrical insulation, the improvement wherein the working surfaces of said anode, insulation and cathode lie on a common, inclined surface.

4,450,064

ELECTROCHEMICAL GAS SENSOR AND METHOD FOR PRODUCING THE SAME

John N. Harman, III, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 21, 1983, Ser. No. 477,098
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—412 **14 Claims**



1. An improved method for producing an electrode assembly that includes a plurality of electrodes comprising:

(a) forming an electrically nonconductive mounting member having a plurality of conductor routing holes,

(b) forming an electrode blank from an electrically conductive material,

(c) attaching a plurality of conductors to predetermined points on one surface of the electrode blank,

(d) passing said conductors through respective ones of said conductor routing holes,

(e) attaching the electrode blank to the mounting member, and

(f) cutting away sections of the electrode blank to partition the same into electrically isolated regions that are attached to different respective conductors.

7. An improved electrochemical gas sensor of the type having a gas permeable membrane, a housing defining an electrolyte chamber for receiving an electrolyte solution, and a mounting member for mounting a plurality of electrodes in the electrolyte chamber in the vicinity of the gas permeable membrane, said gas sensor being produced by:

(a) providing a plurality of conductor routing holes through the mounting member,

(b) providing an electrode blank having a thickness that is small in relation to its length and width,

(c) electrically connecting a plurality of conductors to one surface of the electrode blank,

(d) passing the conductors through respective ones of said routing holes,

(e) attaching the electrode blank to the mounting member, and

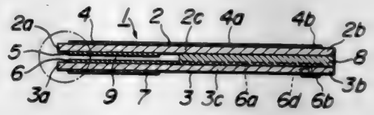
(f) cutting said blank into electrically isolated regions that are attached to different conductors.

4,450,065

OXYGEN SENSOR

Tetsuyo Yamada, and Yutaka Nakayama, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jul. 26, 1982, Ser. No. 402,071
Claims priority, application Japan, Mar. 9, 1982, 57-36973
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—412 **9 Claims**



1. An oxygen sensor, comprising an oxygen pump element having a first oxygen-ion-conductive solid electrolyte board with electrode layers attached to opposite surfaces at one end of the first board, an oxygen concentration cell element having a second oxygen-ion-conductive solid electrolyte board with electrode layers attached to opposite surfaces at one end of the second board, and a means for coupling said oxygen pump element and said oxygen concentration cell element in parallel to each other with a gap between the electrode layers attached to the opposing surfaces of the first board and the second board, the edges of said gap being open to the surrounding atmosphere along at least three sides thereof, whereby said oxygen concentration cell element generates electromotive force caused by the difference between oxygen concentration in said gap and oxygen concentration of a gas surrounding the outside of the oxygen sensor while said oxygen pump element performs oxygen transportation therethrough from said gap to the outside of the oxygen sensor or vice versa to cause said oxygen concentration difference therebetween.

4,450,066

HYDROTHERMAL PRETREATMENT TO PREVENT SCALE DURING LIQUEFACTION OF CERTAIN SOLID CARBONACEOUS MATERIALS

John B. Stone, Houston, and Frank M. Floyd, Baytown, both of Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 183,479, Sep. 2, 1980, abandoned. This application Nov. 8, 1982, Ser. No. 440,062
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—8 LE **7 Claims**

1. A process for the liquefaction of a lower ranking coal or

similar solid carbonaceous material containing from about 20 to about 40 weight percent moisture consisting essentially of the steps of:

(a) hydrothermally pretreating said coal or carbonaceous material by heating the coal or solid carbonaceous material to a temperature within the range from about 500° to about 700° F. at a total pressure at least 10% above the vapor pressure of water at the pretreating temperature to reduce the amount of alkaline earth metal humates therein;

(b) liquefying the thus treated coal at liquefaction conditions to produce a petroleum-like product; and

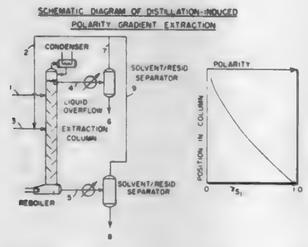
(c) recovering the liquid product from the unliquefied portion of the pretreated coal or similar carbonaceous material.

4,450,067

DISTILLATION-INDUCED EXTRACTION PROCESS

Philip J. Angevine, West Deptford; Michael B. Carroll, Mantua; Stuart S. Shih, Cherry Hill, and Samuel A. Tabak, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,113
Int. Cl.³ C10G *21/02*; C10C *3/08*
U.S. Cl. 208—86 **7 Claims**



1. An improved method of producing low CCR maltenic fractions and high CCR asphaltenic fractions from hydrocarbonaceous residua and other heavy oils by multisolvent-distillation-induced polarity gradient extraction comprising contacting two or more suitable solvents with said residua in a liquid flooded distillation column operating in a liquid continuous mode, said solvents having a high and a low boiling point with respect to one another, said higher boiling solvent having a higher relative polarity than said lower boiling solvent and each of said boiling points being sufficiently lower than that of the residua so that the solvents are distillted into high and low polarity fractions thereby forming a low CCR maltenic overhead stream and a high CCR asphaltenic bottoms stream and thereafter recovering the solvents from the overhead stream and the bottoms stream, and recycling the solvents for reuse.

4,450,068

DEMETALLIZATION OF HYDROCARBON CONTAINING FEED STREAMS

Semyon Kukes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 20, 1982, Ser. No. 451,292
Int. Cl.³ C10G *45/00*; B01J *27/14*
U.S. Cl. 208—251 H **17 Claims**

1. A process for the demetallization of a hydrocarbon containing feed stream, which contains metals, comprising the step of contacting said hydrocarbon containing feed stream under suitable demetallization conditions with hydrogen and a catalyst composition comprising zirconium phosphate and a metal phosphate where the metal is selected from the group consisting of nickel, iron, vanadium and cobalt.

4,450,069

METHOD FOR UPGRADING DIENE-CONTAINING HYDROCARBON MIXTURES

Louis E. Kidwell, Jr., and Dysart E. Holcomb, both of Shreveport, La., assignors to Pennzoil Company, Houston, Tex.

Continuation-in-part of Ser. No. 116,863, Jan. 30, 1980, Pat. No. 4,302,255. This application Sep. 8, 1981, Ser. No. 300,450
The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.
Int. Cl.³ C10G *29/02*; C07C *7/177*
U.S. Cl. 208—255 **7 Claims**

1. A method for the upgrading of by-product hydrocarbon mixtures to reduce their content of gum precursors, the process comprising:

(a) obtaining a hydrocarbon mixture containing about 60–90 wt.% of aromatic components, about 3–40 wt.% of dienes and pseudodienes, and up to about 6 wt.% of relatively unreactive organic compounds;

(b) raising elemental sulfur to a temperature of about 115°–135° C. in a reaction vessel;

(c) adding said hydrocarbon mixture to said elemental sulfur in the approximate weight ratio of about 5–95 wt.% of the hydrocarbon mixture with about 95–5 wt.% of elemental sulfur to form a reaction mixture;

(d) maintaining said reaction mixture at the temperature range of about 115°–135° C. for a time period of 10 minutes to 24 hours, with good mixing of said sulfur and said hydrocarbon mixture; and

(e) removing the unreacted hydrocarbon materials by distillation.

4,450,070

IMIDAZOLINE CONDITIONER FOR THE FLOTATION OF OXIDIZED COAL

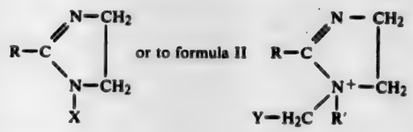
Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 13, 1981, Ser. No. 320,989
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—3 **5 Claims**

1. A froth flotation process for beneficiating coal having an oxidized surface which comprises the steps of:

(a) classifying the coal to separate particles of flotation size; and

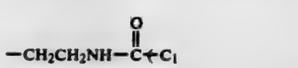
(b) floating the sized coal in a frothing aqueous medium comprising a fuel oil collector and an effective amount of a compound corresponding to the formula



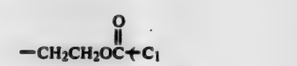
wherein

R in formula I and II is a C_6 to C_{22} alkyl or C_6 to C_{22} alkenyl;

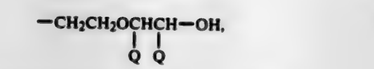
X is —H, C_1 to C_{22} alkyl,



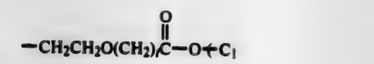
to C_{22} alkyl, C_2 to C_{22} alkenyl or —H), $-CH_2CH_2NH_2$, $-CH_2CH_2OH$,



to C_{22} alkyl, C_2 to C_{22} alkenyl or —H),



each Q being independently —H or $-CH_3$, or

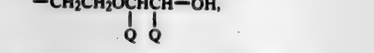


to C_{22} alkyl, C_2 to C_{22} alkenyl or —H), t being an integer 1 to 2;

Y is —H, C_1 to C_{21} alkyl, $-CH_2OH$,

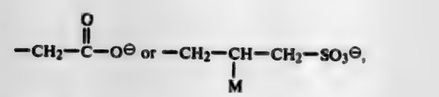


to C_{22} alkyl, C_2 to C_{22} alkenyl) or

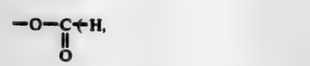


each Q being independently —H or $-CH_3$; and

R′ is



M being —H, —OH or



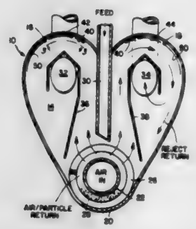
C_1 to C_{22} alkyl or C_2 to C_{22} alkenyl).

4,450,071

ADJUSTABLE PARTICLE CLASSIFIER

Norman K. Trozzi, West Caldwell, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jul. 9, 1982, Ser. No. 396,944
Int. Cl.³ B04C *5/103*
U.S. Cl. 209—144 **13 Claims**



1. In a classifier for separating particles suspended in a fluid stream and having means defining a curved passageway through which the fluid stream is directed, such means including a inwardly facing reject surface at the outer boundary of the curved passageway and toward which surface particles are directed by centrifugal force, the classifier also having an outlet for accepted particles remaining in the stream throughout the length of said curved passageway, the improvement comprising:

a plurality of spaced, generally parallel fingers extending along the inner surface of said curved passageway in the direction of fluid stream flow and having leading and trailing ends in relation to said direction of fluid flow;

means to pivotally support said fingers at the leading ends thereof; and

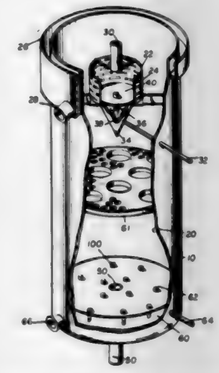
means for selectively pivoting said fingers to and from a projected position in which their trailing end portions project into said fluid stream.

4,450,072

AIR FLOTATION CELL

John C. Suplicki, 1813 Michelle La., Lakeland, Fla. 33803

Filed Nov. 17, 1982, Ser. No. 442,299
Int. Cl.³ B03D *1/24*
U.S. Cl. 209—170 **12 Claims**



1. Air flotation cell for separation of floatable and non-floatable particles from an aqueous pulp feed by froth flotation comprising,

(a) an air flotation chamber to receive said aqueous pulp,

(b) pulp feed means for introducing aqueous pulp feed into said flotation chamber,

(c) froth overflow means disposed adjacent to the upper end of the flotation chamber for discharging therefrom particles of said aqueous pulp,

(d) a plenum chamber disposed adjacent to the bottom of the flotation chamber, said plenum chamber being adapted to contain an upper layer of air and a bottom layer of water,

(e) a substantially horizontal flotation chamber floor plate disposed between said flotation chamber and said plenum chamber,

(f) means for introducing air and water into said plenum chamber,

(g) underflow means for discharging a non-float fraction containing unfloated particles of said aqueous pulp from said flotation chamber, said underflow means including a discharge duct which opens through said flotation chamber floor plate,

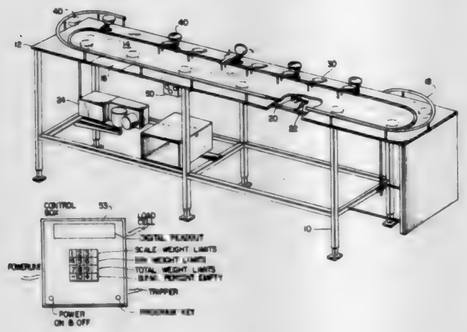
(h) a plurality of static shear tubes for aerating water extending through said flotation chamber floor plate and connecting said plenum chamber with said flotation chamber wherein said static shear tubes conduct air and water from said plenum chamber into said flotation chamber, and wherein said static shear tube comprises a tube having two ends and an enclosed wall disposed between said two ends, one of said ends being open and the other end having a partially open distribution cap thereon, a static shear element inside the tube adjacent the end having the distribution cap, and at least one open inlet slot in said wall.

4,450,073

AUTOMATIC WEIGHT GRADING AND SORTING APPARATUS

C. H. Burnett, deceased, late of Gainesville, Ga., and by Betty L. C. Burnett, administrator, Rte. #12, Box 489, Newton Dr., Gainesville, Hall Co., Ga. 30501

Filed Dec. 24, 1981, Ser. No. 334,177
Int. Cl.³ B07C 5/28; G01G 13/14
U.S. Cl. 209—564 15 Claims



1. A weight grading and sorting apparatus comprising:
a base having a top surface;
trolley means riding on said top surface and having tippable means for carrying contents to be weighed and sorted;
endless conveyor means mounted on said base for conveying said trolley means around said top surface;
means in said base for individually successively weighing each of said trolley means and contents;
tare means riding on said top surface having a weight equal to an empty tippable means;
means in said weighing means for zeroing said weighing means;
means associated with said conveyor means for signalling to said weighing means and said tipping means that said tare means is present on said weighing means; and
means associated with said means for weighing for selectively tipping each means for carrying at a predetermined position, remote from said means for weighing, based on the weight of said contents.

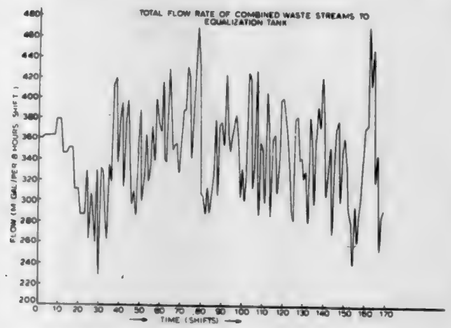
4,450,074

CONTROL OF ANAEROBIC FILTER

Shinya Ochiai, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 209,813, Nov. 24, 1980, Pat. No. 4,349,435. This application Aug. 13, 1982, Ser. No. 408,088
The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.
Int. Cl.³ C02C 1/02
U.S. Cl. 210—96.1 12 Claims

7. An anaerobic reactor system comprising
a recycling anaerobic filter for converting organic compounds in an aqueous watewater stream into methane and carbon dioxide by the action of methanogenic bacteria in said anaerobic filter,
means for feeding said aqueous organic wastewater stream to said anaerobic filter,
means for withdrawing an aqueous liquid effluent stream from said anaerobic filter,
means for withdrawing a gaseous stream comprising methane from said anaerobic filter,
means for measuring the rate at which oxygen demand is fed to said anaerobic filter in said waste stream and for generating a signal which is representative of said measured feed oxygen demand,
means for measuring the rate of flow of methane in said gaseous stream and for generating a signal representative of said measured methane flow rate,
an estimating filter, receiving said signals, for estimating the oxygen demand in said effluent stream and for generating



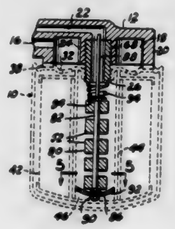
a signal representative of said estimated effluent oxygen demand, and
means, responsive to said signal for estimated effluent oxygen demand, for controlling the rate at which said aqueous organic waste stream is fed to said anaerobic filter.

4,450,075

MAGNETIC OIL FILTER INSERT

Cecil J. Krow, P.O. Box 249, Ralston, Okla. 74650

Filed Apr. 28, 1983, Ser. No. 489,449
Int. Cl.³ B01D 35/06
U.S. Cl. 210—223 2 Claims



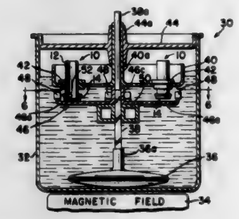
1. In an engine oil filter system having an oil filter support head provided with a centrally bored boss for coaxial sealing connection with one end of a cylindrical oil filter having a central cylindrical chamber open toward said boss, the improvement comprising:
an elongated tube loosely received by the filter chamber;
a plurality of permanent magnets surrounding said tube in spaced-apart relation with like poles of the magnets juxtaposed;
an elongated rod extending through said tube and projecting, at one end portion, into the bore of said boss;
fastener means on the rod at respective ends of the tube for preventing longitudinal movement of said rod relative to said tube and maintaining the respective endmost magnet on the adjacent end portion of said tube; and,
a spring having a width less than its length and having a length at least slightly greater than the inside diameter of the filter chamber and secured medially its ends by said fastener means adjacent the other end portion of said rod for centering the adjacent end of said tube in the filter chamber.

4,450,076

SMALL-SAMPLE DIALYZER

Gustav K. Medicus, and Rudolf G. Medicus, both of 7521 W. Hyland Dr., Dayton, Ohio 45424

Filed Aug. 20, 1982, Ser. No. 409,881
Int. Cl.³ B01D 31/00
U.S. Cl. 210—242.1 1 Claim



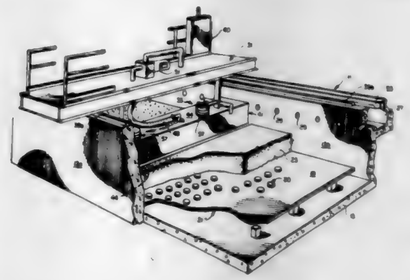
1. A small-sample dialyzer comprising:
(a) a plurality of dialysis cells for holding fluid samples, each comprising: a circular elongated tube open at both ends, a dialysis membrane covering one open end of said tube, and a retaining ring for holding said membrane in position on said tube;
(b) a plurality of magnetic balls for placing within said dialysis cells;
(c) a substantially flat bottomed open top container of non-magnetic material for holding a liquid into which an ingredient in said fluid samples is to dialyze;
(d) a plurality of seal rings longitudinally adjustable and surrounding the tube on each of said dialysis cells;
(e) a circular dished cell holding tray for floating on the liquid in said container and having a coaxial elongated upward extending circular hub containing a coaxial circular bore through said holding tray, and further having a plurality of apertures in the bottom of said circular holding tray coaxially spaced about the circular bore through said holding tray, said apertures receiving in firm resilient engagement said seal rings on each of said dialysis cells and vertically positioning said dialysis cells containing said magnetic balls with the membrane on said dialysis cells in contact with the liquid in said container;
(f) an agitator having two opposing long arms horizontally extending from a central hub and extending beyond the outer extremity of said dialysis cells mounted in said holding tray, and two opposing short arms horizontally extending from said central hub at substantially right angles to said long arms and of a length short of the inner extremity of said dialysis cells mounted in said holding tray, each of said arms supporting a permanent magnet at the outer extremity of said arms, said central hub extending upward from said arms and abutting against the lower side of said holding tray for establishing a predetermined vertical distance between said holding tray and said agitator arms within which vertical distance the lower ends of said dialysis cells are to be positioned, said central hub further having a vertical square aperture therethrough;
(g) a driving permanent magnet sheathed in plastic having an upward extending hub with a vertical socket therein of square cross-section, said magnet being in the bottom of said container for rotation by an external rotating magnetic field;
(h) an elongated drive shaft having a lower end of square cross-section for engaging the socket in said driving magnet and extending upward through the square aperture in the hub of said agitator for rotating said agitator with the magnets on the arms of said agitator moving said magnetic balls to-and-fro in said dialysis cells, said drive shaft further having a circular upper end rotationally extending through the circular bore in said cell holding tray; and,
(i) a guide member supported by the open end of said container, said guide member having a vertically extending hub having a longitudinal bore therethrough for rotationally receiving the hub on said holding tray.

4,450,077

GRANULAR MEDIA FILTER

Brent C. Black; Bruce D. Bradley, and Ralph B. Haymore, all of Salt Lake City, Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Aug. 6, 1982, Ser. No. 405,813
Int. Cl.³ B01D 23/24
U.S. Cl. 210—275 9 Claims



1. A filtering machine comprising:
(a) an open, liquid-holding tank;
(b) a bed of granular filter media which is contained in said tank;
(c) means mounted with said tank for supporting the bed of granular filter media while permitting passage of filtrate through the bed from below;
(d) means for distributing influent liquid containing suspended solids across the upper surface of the bed for percolation downward therethrough;
(e) a partitioning means mounted on said tank and a carriage mechanism to selectively convey said partitioning means across the upper surface of the bed, said partitioning means including a partitioning chamber selectively insertable into the bed to isolate one section from the remainder of the bed; and
(f) means to selectively allow insertion of said partitioning chamber into the bed and removal of said partitioning chamber from the bed;
(g) pump means in communication with the interior of said partitioning chamber to draw liquid through the bed within the isolated section to backwash the isolated section while filtration proceeds in the remainder of the bed.

4,450,078

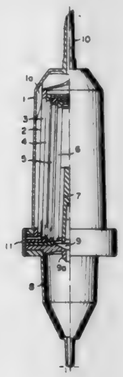
MICROFILTRATION DEVICE FOR THE FILTRATION OF COAGULA AND MICROAGGREGATES FROM BLOOD

Wolfram H. Walker, Rödermark; Karl H. Gänshirt, Dreieich, and Hans Schleussner, Frankfurt, all of Fed. Rep. of Germany, assignors to Biotest-Serum-Institut GmbH, Frankfurt-Niederrad, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,234
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 31453201
Int. Cl.³ B01D 25/04, 39/16
U.S. Cl. 210—315 4 Claims

1. In a microfiltration device for the filtration of coagula and microaggregates from blood and blood components, comprising a hermetically sealable casing having an attaching nozzle and an outlet, a filter cone with a series of truncoconical filter elements within said casing, the elements from the outermost inwardly having filtering surfaces of successively diminishing pore size and surface area, and a piece provided with an open-

ing separating the inside of the casing into a filter chamber in which the filter cone is located and a drip chamber, the improvement wherein the filter chamber and filter cone have different angles of inclination, the inclination of the filter cone from the inlet to the outlet being greater than the inclination of the filter chamber, and the distance between filter cone and filter chamber amounting to no more than about 3 mm, the filter cone has from two to four filter elements and has a spacer



extending into the filter element with the smallest pore size and the smallest surface area and supporting same, and each of the filter elements is equipped with at least two substantially opposite ribs running from the base to the apex of the truncated cone, which extend no more than 3 mm into the interior of the truncated cone, and the spacer is so constructed that it serves simultaneously as support for the ribs and as support of the filter surface of the filter element, the device having a capacity of less than about 100 ml.

4,450,079

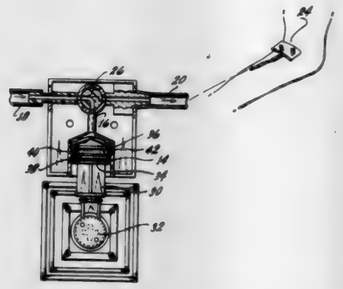
CASSETTE FOR PROVIDING A CONTROLLED FLOW OF FLUID

Andrew F. Farr, Spring Valley, Calif., assignor to IMED Corporation, San Diego, Calif.

Continuation of Ser. No. 073,097, Sep. 6, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,192

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—152 **20 Claims**



1. In combination in a vertically disposed cassette for providing a controlled flow of fluid between a source and a patient,

a chamber having a wall defining a substantially constant cross sectional area,

a piston member disposed in the chamber and reciprocable in a first substantially downward direction for receiving the fluid into the chamber and reciprocable in an opposite substantially upward direction for transferring fluid from the chamber,

plunger means at the end of the piston member and including a recessed wall and a land at the end of the recessed wall for engaging the chamber during the reciprocation of the piston member in the upward and downward directions, the land being disposed at the leading end of the recess in the movement of the plunger means in the downward direction, there being a lubricating fluid in the space between the recessed wall and the wall of the chamber, and

a porous washer member supported on the piston member at a position below the land and at a position slightly displaced from the bottom end of the land, there being a lubricating fluid in the pores of the washer member for facilitating the flow of the lubricating fluid into the space between the recessed wall and the wall of the chamber during the upward movement of the washer member.

4,450,080

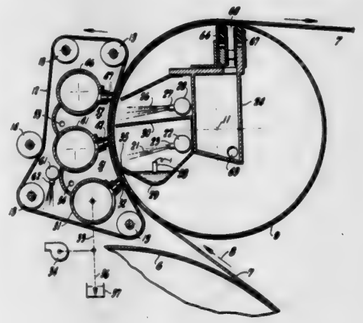
APPARATUS FOR REMOVING EXCESS LIQUID AND CONTAMINANTS FROM BELT FILTER CAKE

Joseph C. Dodd, 6745 Alisal St., Pleasanton, Calif. 94566

Filed Sep. 28, 1982, Ser. No. 425,323

Int. Cl.³ B01D *33/04, 33/36*

U.S. Cl. 210—391 **8 Claims**



1. An apparatus for removing excess liquid from filter cake solids comprising a filtration drum rotatable in one direction about an axis, a perforated separation drum arranged adjacent to said filtration drum and simultaneously rotatable in the opposite direction about a parallel axis, a main perforated belt having an inside surface on which said cake is deposited and having an outside surface and disposed with said outside surface engaging said filtration drum and with said inside surface engaging said separation drum, an anti-wear belt having an outside surface and an inside surface, means for mounting said anti-wear belt in a closed loop having one portion with said outside surface of said anti-wear belt in contact with said outside surface of said main belt in a predetermined portion of said main belt lying against said separation drum, a main suction box within said separation drum and having an inlet in substantial communication with the interior surface of said separation drum in a zone of said separation drum contacted by said main belt, at least one suction header with a suction slot defined by seals disposed in substantial contact with said inside surface of said anti-wear belt in said one portion thereof and means within said separation drum for directing wash liquid toward the interior surface of said separation drum in said one portion thereof exteriorly contacted by said anti-wear belt.

4,450,081

TRANSMISSION FLUID FILTER AND METHOD OF MANUFACTURE

David L. Anderson, Muskegon, Mich.; Robert F. Hitchcock, Glendale Hts., and Robert M. Tamburrino, Chicago, both of Ill., assignors to Sealed Power Corporation, Muskegon, Mich.

Filed Jul. 16, 1981, Ser. No. 284,078

Int. Cl.³ F01M *11/03*

U.S. Cl. 210—445 **15 Claims**



1. In a transmission fluid filter comprising a first member of plastic construction, a second member of sheet metal construction, means about the periphery of said first and second members fastening said members to each other to form an internal fluid cavity and filter means carried by said members for filtering fluid during passage through said cavity, the improvement wherein said fastening means about the periphery of said first and second members comprises a bead integrally extending around the periphery of said first member, said bead having an arcuate surface facing in a direction away from said second member, and a flange integrally extending from said second member over said arcuate surface around the peripheries of said first and second members sealingly capturing said bead.

8. In a method of manufacturing a transmission fluid filter which includes the steps of providing separate sheet metal and plastic filter members and crimping an integral peripheral flange on said sheet metal member over a peripheral lip on said plastic member around the peripheries of the respective said members, the improvement for reducing residual stresses in said plastic member wherein said step of providing said plastic filter member includes the step of forming a continuous bead around said lip, and wherein said step of crimping said flange over said lip comprises the step of deforming said flange onto said bead around said peripheries sealingly to capture said bead.

4,450,082

METHOD FOR OBTAINING UNIFORM STREAM IN ADSORPTION COLUMN

Masatoshi Tanouchi, Arcadia, Calif., and Yoshiyuki Asahina, Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 1, 1982, Ser. No. 383,693

Claims priority, application Japan, Jun. 11, 1981, 56-88812; Jun. 11, 1981, 56-88813; Oct. 29, 1981, 56-172096; Nov. 2, 1981, 56-174434

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—660 **11 Claims**



1. A method for obtaining a uniform stream in an adsorption column for adsorbing and separating a substance to be separated from a mixture, the adsorption column having at least one single-flow passage in which the ratio of the inner diameter of the column to the average particle size of a packing to be packed in the adsorption column is at least 20, the method comprising classifying the packing to be packed into the adsorption column so that the classification latitude of each fraction is within 10% of the average particle size of the packing before the classification, and packing the fractions of the packing into the adsorption column in the order of particle size.

4,450,083

AGENT FOR DISSOLVING INSOLUBLE IRON(III) COMPOUNDS IN HIGHLY ALKALINE TEXTILE TREATMENT LIQUORS

Werner Streit, Bobenheim; Klaus Lorenz, Worms, and Norbert Leppert, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 4, 1983, Ser. No. 472,207

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210004

Int. Cl.³ D06L *3/10*; B08B *3/00*

U.S. Cl. 252—8.6 **3 Claims**

1. An aqueous formulation, based on reducing agents and complexing agents, for dissolving insoluble iron(III) compounds in aqueous textile treatment baths which are at a pH of 10 or more, which formulation has the following composition:

(a) from 4 to 65% by weight of one or more water-soluble hydroxycarbonyl compound or of an N- or O-acetal thereof, as the reducing agent,

(b) from 10 to 80% by weight of one or more complexing agent which complexes Fe^{++} ions at a pH of 10 or more and

(c) water in an amount equal to 100% minus the amounts of (a) and (b).

4,450,084

OIL RECOVERY PROCESS EMPLOYING A NON-IONIC GLUCAN IN COMBINATION WITH CLAY FLOCCULANT

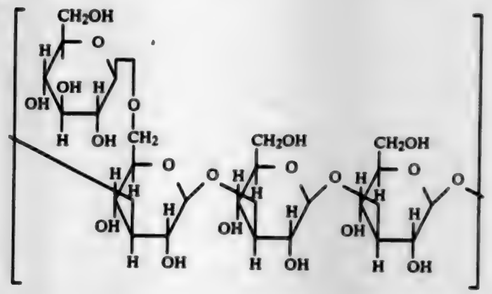
Milton K. Abdo, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 229,372, Jan. 29, 1981, Pat. No. 4,347,146. This application Jun. 8, 1982, Ser. No. 386,461

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **2 Claims**

1. In an improved process for producing petroleum from a petroleum-bearing subterranean formation wherein an aqueous driving fluid containing a poly(glycosylglucan) thickening agent, the glycosylglucan having the structural formula:



is injected into said formation through an input well and passed through the formation to an output well, the improvement comprising employing in combination with said poly(glycosylglucan) between about 5 ppm and about 50 ppm of a sacrifical clay flocculant which is a long chain polyethylene oxide, having a molecular weight of about 100,000 to 7,000,000 and the structure $(—O—CH_2—CH_2—)n$ wherein n is about 200 to

100,000, whereby adsorption of said poly(glycosylglucan) by clays is minimized.

4,450,085

DETERGENT SOFTENER COMPOSITIONS

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 259,728, May 1, 1981, Pat. No. 4,326,971, which is a continuation-in-part of Ser. No. 201,168, Oct. 27, 1980, Pat. No. 4,329,237, which is a continuation-in-part of Ser. No. 96,370, Nov. 21, 1979, Pat. No. 4,298,480, which is a continuation-in-part of Ser. No. 968,532, Dec. 11, 1978, Pat. No. 4,230,590. This application Apr. 22, 1982, Ser. No. 370,850

Int. Cl.³ C11D *9/10, 10/04, 13/18;* **D06M** *13/48*

U.S. Cl. 252—8.75 **10 Claims**

1. A process for preparing soap-containing particles which dissolve rapidly in cold water, comprising:

(a) mixing 40–90 weight percent of a fatty acid soap, 2–40 weight percent of a nonionic organic surfactant, and 1–15 weight percent magnesium sulfate, to form a substantially homogeneous, plastic mass; and

(b) shaping the mixture into particles.

4,450,086

PRODUCTION OF CADMIUM SULFIDE COMPOSITIONS HAVING UNUSUAL MAGNETIC AND ELECTRICAL PROPERTIES

Clarke G. Homan, Schenectady; David P. Kendall, Brunswick, and Robert K. MacCrone, Colonie, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 16, 1981, Ser. No. 283,714

Int. Cl.³ C04B *35/00;* **C01G** *11/02*

U.S. Cl. 252—62.51 **4 Claims**

1. A process for producing a cadmium sulfide composition which has a black color, contains lenticular platelets, has a structural morphology containing retained high pressure NaCl phase, and exhibits increased electrical conduction and large diamagnetism and large paramagnetism, which comprises pressure quenching a cadmium sulfide composition containing between about 0.5% and 3.0% by weight chlorine obtained by precipitation from an aqueous cadmium chloride solution with hydrogen sulfide to produce a precipitate consisting essentially of a mixture of cadmium sulfide and a complex compound of cadmium sulfide and cadmium chloride together with adhering uncomplexed cadmium chloride, and washing the precipitate with water to remove uncomplexed cadmium chloride.

4,450,087

VAPOR LOCK RESISTANT HYDRAULIC FLUIDS

Herbert F. Askew, 68 Foxcote, Kiln Ride, Wokingham, Berkshire, England; Colin J. Harrington, 19 St. Pauls Gate, Wokingham, Berkshire, England, and Terry J. P. Bridgwater, 520 Reading Rd., Winnersh, Berkshire, England

Continuation of Ser. No. 188,517, Sep. 18, 1980, abandoned, which is a continuation of Ser. No. 095,350, Nov. 19, 1979, abandoned, which is a continuation of Ser. No. 875,611, Feb. 6, 1978, , which is a continuation of Ser. No. 799,096, May 20, 1977, abandoned, which is a continuation of Ser. No. 717,207, Aug. 24, 1977, abandoned, which is a continuation of Ser. No. 549,096, Jul. 8, 1975, abandoned. This application Mar. 18, 1983, Ser. No. 476,561

Claims priority, application United Kingdom, Jul. 12, 1974, 31036/74; Mar. 27, 1975, 13113/75

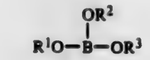
Int. Cl.³ C10M *1/26, 1/54*

U.S. Cl. 252—73 **7 Claims**

1. A composition of matter suitable for use as a hydraulic fluid which comprises

(a) at least 20%, by weight, of a lubricating oil which is a member selected from the group consisting of a mineral oil, a synthetic hydrocarbon oil, a synthetic carboxylic acid ester, a siloxane or a phosphate ester;

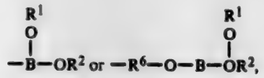
(b) 1 to 50%, by weight, of oil-soluble borate ester which is a compound, or mixture of compounds, having the formula:



wherein:

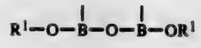
(i) R^1, R^2 and R^3 are the same or different and each is an aryl group or a straight or branched chain alkyl group or alicyclic group containing from 4 to 20 carbon atoms, or is a group of the formula $—R^4O)_nR^5$ wherein each R^4 is the same or different and each is an alkylene group selected from ethylene, propylene or butylene, R^5 is an alkyl group containing from 1 to 18 carbon atoms, or an aryl group, and n is an integer, from 1 to 10; or

(ii) R^1 and R^2 are the same or different and as defined above and R^3 is a group of the general formula:



wherein R^1 and R^2 are as defined above and R^6 is an alkylene group containing from 4 to 20 carbon atoms, or is an oxyalkylene radical of the formula $—R^4—OR^4)_n$ wherein R^4 and n are as defined above; or

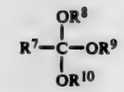
(iii) R^1 is as defined above and R^2 and R^3 together form the group



wherein R_1 is as defined above;

(c) 0.5 to 20%, by weight, of an amine which prevents deposition of oil insoluble hydrolysis products of the borate ester; and

(d) 1 to 50%, by weight, of an oil soluble orthoester of the formula:



wherein R^7 is hydrogen or lower alkyl; R^8, R^9 and R^{10} are the same or different and each is a straight or branched chain alkyl containing from 4 to 20 carbon atoms, benzyl or the group $—(R^{11}—O)_m—R^{12}$ where R^{11} is a lower alkylene group and R^{12} is an alkyl group containing 1 to 20 carbon atoms; and m is an integer from 2 to 10.

4,450,088

CORROSION INHIBITED ALCOHOL COMPOSITIONS

Joe C. Wilson, Woodhaven, and Stanley T. Hirozawa, Birmingham, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

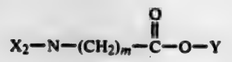
Filed May 19, 1983, Ser. No. 496,009

Int. Cl.³ C09K *15/00, 15/20, 15/30;* **C23F** *11/14*

U.S. Cl. 252—75 **8 Claims**

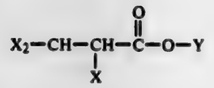
1. An antifreeze concentrate composition excluding alkali metal nitrites consisting essentially of in admixture, an alcohol selected from the group consisting of at least one of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol and, as an inhibitor, an effective amount of

(A) an amino acid or derivative having the formula:



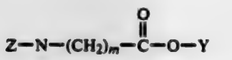
(I)

wherein m is an integer of 1–6, Y is selected from a group consisting of H, an alkali metal, and NH_4 and X is selected from a group consisting of CH_2CH_2OH, C_1–C_6 alkyl, phenyl, and H; or



(II)

wherein Y is selected from a group consisting of H, an alkali metal, and NH_4 and X is selected from a group consisting of phenyl, H, and NH_2; wherein at least one X is NH_2; or



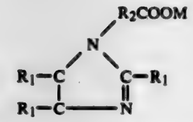
(III)

wherein m is an integer of 1–6, Y is selected from a group consisting of H, an alkali metal, and NH_4 and Z is C_2–C_5 alkylene,

(B) a conventional corrosion inhibitor selected from the group consisting of at least one of the alkali metal carbonates, borax, the alkali metal dichromates, the alkali metal dichromates, the alkali metal silicates, the alkali metal nitrates, phosphorous acid, phosphoric acid, an alkali metal tungstate, an alkali metal salt of benzoic or toluic acid, an alkali metal salt of a phenol, benzotriazole, tolyltriazole, and an organo-silicone compound;

(C) about 0.5 percent to about 15 percent by weight of an alkali metal phosphate; and

(D) about 0.03 percent to about 2 percent by weight of a heterocyclic nitrogen compound having the formula:



wherein R_1 is individually selected from hydrogen or a monovalent radical selected from the group consisting of straight or branched chain monovalent alkyl radicals having 1 to 18 carbon atoms, a monovalent cycloalkyl or alkoxy radical having up to 18 carbon atoms, a monovalent alkylene radical having 1 to 18 carbon atoms, a monovalent aryl radical, a monovalent alkylaryl radical having 1 to 18 carbon atoms in the alkyl portion thereof, or wherein each R_1 is combined into a single divalent alkyl radical having 2 to 18 carbon atoms; wherein R_2 is a divalent radical selected from the group consisting of alkyl and alkoxy radicals having 2 to about 18 carbon atoms, and where alkoxy, said radical is derived from an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide, tetrahydrofuran, and mixtures thereof; and wherein M is an alkali metal.

4,450,089

STABILIZED BLEACHING AND LAUNDERING COMPOSITION

Guy Broze, Grace-Hollogne, and Leopold Laitem, Orp-le-Grand, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,829

Int. Cl.³ C11D *7/18, 7/56, 3/37*

U.S. Cl. 252—95 **15 Claims**

1. A particulate bleaching detergent composition comprising

(a) from about 2 to 50%, by weight, of a bleaching agent consisting essentially of an alkali metal perborate in combination with an activator therefor;

(b) from about 0.1 to about 5%, by weight, of a polymer containing monomeric units of the formula



wherein R_1 and R_2 independently represent hydrogen or an alkyl group containing from 1 to 3 carbon atoms, and M represents hydrogen, or an alkali metal, an alkaline earth metal or ammonium cation;

(c) from about 3 to 50%, by weight, of at least one detergent surface active agent selected from the group consisting of anionic, cationic, nonionic, ampholytic and zwitterionic detergents;

(d) from about 0 to 10%, by weight, of a non-polymeric sequestering agent;

(e) from about 1 to 60%, by weight, of a detergent builder salt other than that defined in (b) and (d); and

(f) the balance comprising water and optionally filler salts.

4,450,090

THICKENED ALPHA-OLEFIN SULFONATE CONTAINING FORMULATIONS

James Kinney, Ramsey, N.J., assignor to Clairol Incorporated, New York, N.Y.

Filed May 16, 1983, Ser. No. 494,756

Int. Cl.³ C11D *1/14, 3/48*

U.S. Cl. 252—106 **14 Claims**

11. A liquid soap composition comprising

Ingredient	Amount (Weight %)
(a) Alpha-olefin sulfonate surfactant	2–40
(b) C_{12}–C_{22} unsaturated fatty acid diester of a glucoside polyethoxylated with from 110 to 150 moles of (OCH_2CH_2)	1–20
(c) At least one C_8–C_{18} fatty acid alkanolamide foam boosting aid	0–10
(d) At least one C_8–C_{18} alkyl betaine foam boosting aid	0–10
(e) Propylene glycol solubilizing agent	1–5
(f) Preservative	0.05–0.5
(g) Perfume	0–1
(h) Color	0–0.1
(i) Water	q.s. to 100%.

4,450,091

HIGH FOAMING LIQUID SHAMPOO COMPOSITION

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Mar. 31, 1983, Ser. No. 480,756
Int. Cl.³ A61K 7/06; C11D 17/00, 1/83
U.S. Cl. 252—174.21 11 Claims

1. A liquid shampoo having a viscosity greater than about 6400 centipoise comprising by weight about 2 to 25 percent nonionic surfactant, about 1 to 5 percent anionic surfactant, about 4 to 20 percent amphoteric surfactant, about 1 to 5 percent alkanolamide, about 1 to 5 percent polyoxyalkylene glycol di fatty acid ester and about 40 to 85 percent by weight water, said nonionic surfactant being a cogeneric mixture of conjugated polyoxybutylene-polyoxyethylene compounds containing in their structure oxybutylene groups, oxyethylene groups and an organic radical derived from a water-soluble organic compound containing a plurality of reactive hydrogen atoms and 2 to 12 carbon atoms; the compounds being characterized in that all of the oxybutylene groups are present in polyoxybutylene chains that are attached to the organic radical at the site of a reactive hydrogen atom thereby constituting a polyoxybutylene polymer; the oxyethylene groups being attached to the polyoxybutylene polymer in polyoxyethylene chains; the average molecular weight of the polyoxybutylene polymers in the mixture being at least 500, as determined by hydroxyl number, and the oxyethylene groups present constituting 65 to 80 percent, by weight, of the mixture.

4,450,092

REDUCING TURBIDITY IN TURBID WATERS

Shu-Jen W. Huang, Schaumburg, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 11, 1982, Ser. No. 387,546
Int. Cl.³ C02F 5/12
U.S. Cl. 252—181 15 Claims

1. A composition for reducing turbidity in turbid waters consisting essentially of an aqueous solution of:

(a) a substance selected from the group consisting of aluminum chloride, aluminum sulfate, ferric chloride and ferric sulfate, and

(b) a water soluble organic positively charged polymeric coagulant having an average molecular weight of at least 2000 which is a polydiallyl dimethylammonium chloride polymer,

the weight ratio of (a) to (b) being within the range of 0.75:1 to 4:1.

4,450,093

INDOLIZINONE DYES AND COMPOSITIONS, ELEMENTS AND METHODS USING SAME

George L. Fletcher, Pittsford, and Donald H. Wadsworth, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 278,023, Jun. 29, 1981, Pat. No. 4,373,021.
This application Nov. 22, 1982, Ser. No. 443,788
Int. Cl.³ C09K 3/00; G03C 5/24
U.S. Cl. 252—182 6 Claims

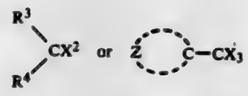
1. A composition reactable with pyridine to form a dye, said composition comprising

a cyclopropenone having the structural formula



I

and either a compound having the structural formula



2a 2b

wherein

R^1 and R^2 are individually alkyl of 1 to 5 carbon atoms, aryl of 6 to 10 nuclear carbon atoms, or a heterocyclic group of from 5 to 6 nuclear atoms selected from the group consisting of carbon, oxygen, and sulfur;

R^3 is selected from the group consisting of aryl of 6 to 10 nuclear carbon atoms and bearing a bathochromic substituent; nitro; carbonyl; amide; sulfonyl; and cyano;

R^4 is hydrogen, alkyl of 1 to 5 carbon atoms, halogen, or one of the group of R^3;

X is halogen;

and Z represents the non-metallic atoms necessary to complete one, two or three fused rings of 5 to 14 nuclear atoms selected from the group consisting of carbon and nitrogen.

4,450,094

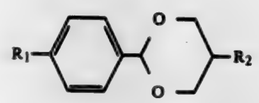
NEMATIC LIQUID CRYSTAL COMPOSITIONS FOR DISPLAY APPARATUSES

Hideo Sato; Yasuyuki Goto; Hideo Saito; Shinichi Sawada, all of Yokohamashi; Keiichi Matsunami, Kawasakishi, and Kohzo Hirata, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 24, 1980, Ser. No. 219,921
Claims priority, application Japan, Dec. 28, 1979, 54-172753; Jan. 18, 1980, 55-4235
Int. Cl.³ C09K 3/34; C02F 1/13
U.S. Cl. 252—299.61 2 Claims

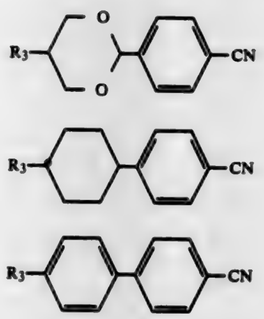
1. In a multiplexed drive liquid crystal display, the improvement wherein the liquid-crystalline composition comprises

(a) 15 to 75% by weight of at least one compound having the formula

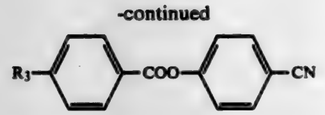


wherein R_1 represents an alkoxy group of 1 to 10 carbon atoms and R_2 represents an alkyl group of 1 to 10 carbon atoms, and

(b) 25 to 76% by weight of at least one compound selected from the group consisting of

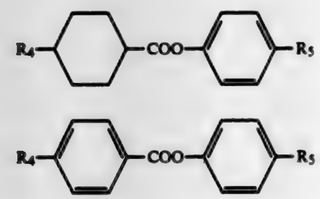


-continued



wherein R_3 represents an alkyl group having 1 to 7 carbon atoms.

2. The display containing the liquid-crystalline composition according to claim 1 wherein the composition contains up to 30% by weight of at least one compound selected from the group expressed by the formulas:



wherein R_4 and R_5 each represent an alkyl group or an alkoxy group of 1 to 7 carbon atoms.

4,450,095

ORGANOPHILIC CLAY GELLANT HAVING ENHANCED DISPERSIBILITY

Claude M. Finlayson, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,544
Int. Cl.³ B01J 13/00
U.S. Cl. 252—315.2 6 Claims

1. An organophilic clay gellant having enhanced dispersibility in organic systems and capable of increasing the viscosity of a liquid organic system without the addition of a polar organic dispersant, comprising the reaction product of a methyl or benzyl trialkyl ammonium compound, wherein the alkyl group contains 14 to 20 carbon atoms, and a bentonite clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay, and wherein the amount of said ammonium compound is from 100 to 120 milliequivalents per 100 grams of said clay, 100% active clay basis.

4,450,096

METAL HYDROCARBYL PHOSPHORODITHIOATES AND LUBRICANTS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,691
Int. Cl.³ C10M 1/48
U.S. Cl. 252—32.7 E 17 Claims

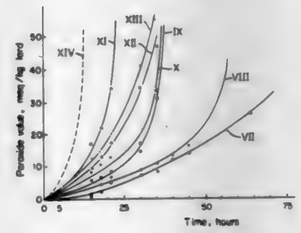
1. A reaction product formed by reacting a 1,2-C_{15} through C_{18} alkane vicinal diol mixture with a phosphorus polysulfide, followed by reacting the product thus obtained with a metal containing compound.

4,450,097

ANTIOXIDATIVE COMPOUND, METHOD OF EXTRACTING SAME FROM ROSEMARY, AND USE OF SAME

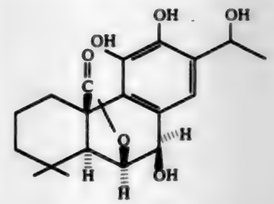
Nobuji Nakatani, Tokyo; Reiko Inatani, Osaka, and Tadashi Konishi, Kanagawa, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Feb. 23, 1982, Ser. No. 351,631
Claims priority, application Japan, Feb. 26, 1981, 56-27434; Mar. 29, 1981, 56-45783
Int. Cl.³ C09K 15/08, 15/34; A23L 1/28
U.S. Cl. 252—404 8 Claims



6. A method for preventing oxidation of an organic material which comprises admixing the organic material with 7β,11,12-trihydroxy-6,10-(epoxymethano)abieta-8,11,13-trien-20-one.

7. 7β,11,12-Trihydroxy-6,10-(epoxymethano)abieta-8,11,13-trien-20-one expressed by the following structural formula:



8. A method for the preparation of 7β,11,12-trihyroxy-6,10-(epoxymethano)abieta-8,11,13-trien-20-one which comprises the steps of

(a) extracting rosemary with a non-polar organic solvent to give an extracted material in the solvent,

(b) extracting the extracted material obtained in the step (a) above with an aqueous alkaline solution having a pH of at least 1.5 to give a weakly acidic fraction,

(c) subjecting the weakly acidic fraction to column chromatography.

4,450,098

PROCESS FOR PREPARING A POLYMERIZATION CATALYST AND PREPARATION OF ETHYLENE POLYMERS WITH THIS CATALYST

Lambertus J. M. A. van de Leemput, Echt, and Godefridus A. H. Nooijen, Helden-Panningen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Aug. 5, 1982, Ser. No. 405,372
Claims priority, application Netherlands, Aug. 6, 1981, 8103700
Int. Cl.³ C08F 4/62
U.S. Cl. 502—107 7 Claims

1. A process for preparing a chromium-containing catalyst component which, upon activation with heat at a temperature of from 200° to 1200° C. will effect the polymerization of alpha-olefins, which process comprises:

a. applying to an inert inorganic support the reaction product of

(1) a chromium compound, with

(2) one or more group II or III metal hydrocarbyl compounds, wherein the hydrocarbyl groups contain 1-20 carbon atoms; and

b. thereafter treating the product of step (a) with an atmosphere containing molecular oxygen at a temperature less than 100° C., or an organic compound containing one or more hydroxygroups reactive with the hydrocarbyl groups of said product to decompose the reactive hydrocarbyl-groups thereon.

4,450,099

BARIUM HYDRIDE MODIFIED ALUMINUM/SILICEOUS COMPOSITIONS

Robert M. Lewis, Sugarland, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 21, 1983, Ser. No. 477,182
Int. Cl.³ B01J *21/08, 29/00, 21/10, 23/08*
U.S. Cl. 502—232 **8 Claims**

1. A process for preparing a metal oxide gel composition having bonded thereto barium oxide, which process comprises contacting a substantially anhydrous metal oxide gel with a powdered barium hydride in a slurry phase with the slurrying medium being an anhydrous, non-hydroxyl-containing organic liquid whereby the barium hydride reacts with the metal oxide gel, and subsequently drying the gel to remove the organic liquid.

4,450,100

PASTE FOR FORMING TRANSPARENT CONDUCTIVE COATING FILM

Mitsuru Kano, and Yoshimi Kamijyo, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 30, 1982, Ser. No. 431,322
Claims priority, application Japan, Nov. 25, 1981, 56-188887
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—518 **1 Claim**

1. A paste for forming a transparent conductive coating film comprising $In(acac)_3$, $(CH_3)_2SN(acac)_2$, about 13 to 17 weight percent of deacidified nitrocellulose, and a solvent consisting essentially of the following components in the weight percents indicated:

Butyl carbitol . . . 40 to 44
Butyl cellosolve . . . 20 to 30
Butyl acetate . . . 20 to 22
Dimethyl phthalate . . . 10 to 22.

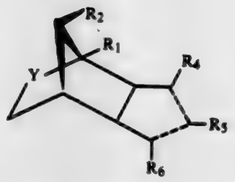
4,450,101

ORGANOLEPTIC COMPOSITIONS WITH SUBSTITUTED TRICYCLODECANE COMPOUNDS

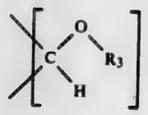
Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 220,628, Dec. 29, 1980, abandoned, which is a division of Ser. No. 144,898, Apr. 29, 1980, Pat. No. 4,275,251.
This application Aug. 20, 1981, Ser. No. 294,732
Int. Cl.³ A61K *7/46*
U.S. Cl. 252—522 R **1 Claim**

1. A patchouli perfume composition comprising a patchouli perfume base and intimately admixed therewith a mixture of chemical compounds comprising a major proportion of at least one compound defined according to the structure:

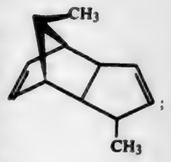


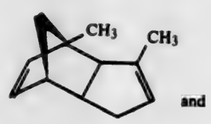
wherein Y is the moiety having the structure:



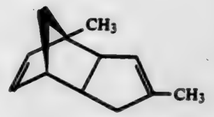
wherein both of the dashed lines represent carbon-carbon single bonds; wherein R_1 and R_2 represent hydrogen or methyl with the proviso that one of R_1 and R_2 is hydrogen and the other of R_1 and R_2 is methyl; wherein R_4, R_5 and R_6 represent hydrogen or methyl with the proviso that one of R_4, R_5 and R_6 is methyl and the other two of R_4, R_5 and R_6 is hydrogen and wherein R_3 is hydrogen produced by the process comprising the steps of:

(a) reacting in the presence of a protonic acid catalyst or a Lewis acid catalyst a dimethyl cyclopentadiene isomer having a structure selected from the group consisting of:





and



with at least one C_1-C_2 alkanoic acid or at least one C_1-C_2 alkanoic acid anhydride at a temperature in the range of from about 0° C. up to about 50° C. in the presence of an acid catalyst with the concentration of acid catalyst in the reaction mass varying from about 0.01% up to 1 mole percent based on the weight of reaction mass;

(b) hydrolyzing the resultant ester using a hydrolysis agent which is from 10 up to 50% by weight of the reaction mass of an alkali metal hydroxide at a hydrolysis temperature of from about 40° C. up to reflux; and

(c) reacting the resulting product with hydrogen using a hydrogenation catalyst selected from the group consisting of Raney nickel, supported palladium on carbon or calcium carbonate and supported platinum on carbon or calcium carbonate at a temperature of reaction of from about 10° C. up to about 50° C. and a reaction pressure of from about 25 psig up to 300 psig in the presence of an inert solvent.

4,450,102

SULFUR BASED METAL CLEANERS AND CORROSION INHIBITORS

Merlin R. Lindstrom; Gary D. Macdonell; Rector P. Louthan, and Donald H. Kubicek, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1982, Ser. No. 438,553
Int. Cl.³ C07C *145/00, 149/26;* C07D *207/12;* C23G *1/18*
U.S. Cl. 252—542 **3 Claims**

1. An aqueous composition having as the active ingredient 2-(N-2-pyrrolidino)ethyl-2-hydroxyethyl sulfide present in an amount of from about 0.25 to 20.0 weight percent of the composition.

2. An aqueous composition having as the active ingredient 2-(N-2-pyrrolidonyl)ethyl-2-carboxylethyl sulfide present in an amount of from about 0.25 to 20.0 weight percent of the composition.

3. An aqueous composition having as the active ingredient bis(2-[N-2-pyrrolidonyl]ethyl) disulfide present in an amount of from about 0.25 to 20.0 weight percent of the composition.

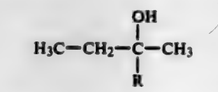
4,450,103

PROCESS FOR RECOVERING HUMAN IFN-β FROM A TRANSFORMED MICROORGANISM

Michael W. Konrad, Alameda, and Leo S. Lin, Fremont, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed Mar. 1, 1982, Ser. No. 353,360
Int. Cl.³ C07G *7/00;* C12P *21/00, 21/02;* A61K *45/02*
U.S. Cl. 260—112 R **29 Claims**

1. A process for extracting unglycosylated human IFN-β solubilized with an appropriate solubilizing agent from an aqueous medium comprising contacting the aqueous medium containing the unglycosylated human IFN-β with an organic extractant of the formula



where R is hydrogen or methyl under conditions wherein an aqueous and an organic phase are formed.

4,450,104

WATER INSOLUBLE GEL MATRIX CONTAINING LECTIN BOUND TO ANTITHROMBIN

Robert E. Jordan, Concord, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Division of Ser. No. 192,286, Sep. 30, 1980, Pat. No. 4,386,025.
This application Sep. 29, 1982, Ser. No. 426,560
Int. Cl.³ C07G *7/00;* A61K *31/725*
U.S. Cl. 260—112 B **5 Claims**

1. A composition for fractionating heparin into components of differing activity by virtue of differing affinity for antithrombin, which comprises a lectin-containing, water-insoluble gel matrix having reversibly bound thereto antithrombin specific for gradiently binding the components of differing activity in heparin.

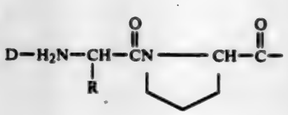
4,450,105

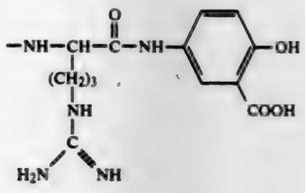
SUBSTRATES FOR MEASURING THROMBIN

Takeshi Nagasawa; Katsumasa Kuroiwa, and Katsuyuki Takabayashi, all of Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

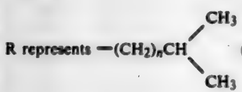
Filed Aug. 6, 1982, Ser. No. 406,025
Claims priority, application Japan, Sep. 28, 1981, 56-153472
Int. Cl.³ C07C *103/52;* C12Q *1/38*
U.S. Cl. 260—112.5 R **1 Claim**

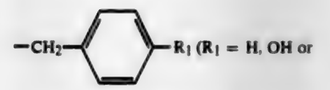
1. A novel substrate for measuring thrombin which has chromophoric and fluorescent properties on thrombin or thrombin-like enzymes and is represented by a compound of the following general formula or a salt thereof:



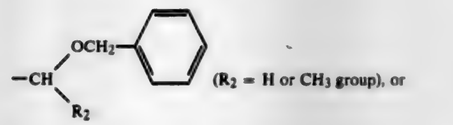


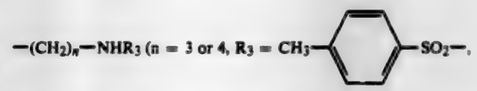
wherein

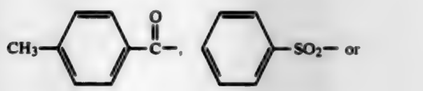
R represents  (n = 0,1 or 2),

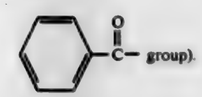
 (R_1 = H, OH or

 group),

 (R_2 = H or CH_3 group), or

 (R_3 = CH_3



 group).

4,450,106

LIGNIN PRODUCT FOR LOWERING THE VISCOSITY OF CEMENT AND OTHER FINELY-DIVIDED MINERAL MATERIAL SUSPENSIONS

Bengt Forss, Pargas, Finland, assignor to Flowcon Oy, Toijala, Finland

Continuation of Ser. No. 374,755, May 4, 1982, abandoned, which is a continuation of Ser. No. 204,002, Nov. 4, 1980, abandoned. This application Jul. 8, 1983, Ser. No. 511,994
Claims priority, application Finland, Nov. 5, 1979, 793453
Int. Cl.³ C07G *1/00*; D21C *3/20*
U.S. Cl. 260—124 R **3 Claims**

1. In a method for producing a lignin product suitable for dispersing cement or other finely divided mineral materials which comprises adding amines, quinone or anthraquinone derivatives as catalysts to a pulping cook to prevent the splitting and dissolution of carbohydrates and to stabilize the cellulose and the hemicellulose during the cooking, the improvement wherein said lignin product is isolated from the spent liquor by ultrafiltration and/or ion exchange to produce a lignin sulfonate product in which at least 40 percent of the molecules have molecular weights higher than 10,000 and which product has a degree of sulfonation lower than 0.4.

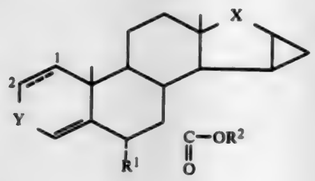
4,450,107

7α-ALKOXYCARBONYL-15β,16β-METHYLENE-4-ANDROSTENES, PROCESS FOR THE PREPARATION THEREOF, AND USE THEREOF AS MEDICINAL AGENTS

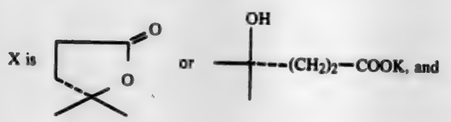
Klaus Nickisch; Henry Laurent; Rudolf Wiechert, and Jorge Casals-Stenzel, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,164
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1981, 3111951
Int. Cl.³ A61K *31/58*
U.S. Cl. 424—238 **15 Claims**

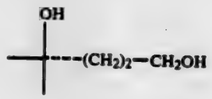
1. A 7α-alkoxycarbonyl-15β,16β-methylene-4-androstene of the formula



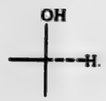
wherein
R^1 is hydrogen or methyl,
R^2 is alkyl or 1–4 carbon atoms,
(a) when the bond between the C-1 and C-2 carbon atoms is a single bond or double bond



Y is carbonyl, and
(b) when the bond between the C-1 and C-2 carbon atoms is a single bond, X and Y can also be
X is



and
Y is



12. A method of achieving a diuretic effect in a patient in need of such treatment comprising administering to the patient a diuretically effective amount of a compound of claim 1.

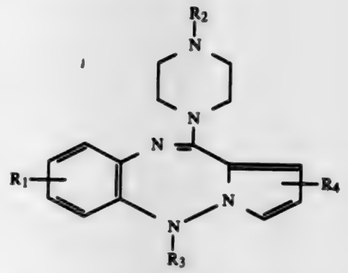
4,450,108

PYRROLOBENZOTRIAZEPINES

Rudolf Fischer, Kehrsatz; Franz M. Künzle, Berne, and Jean Schmutz, Muri, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Dec. 17, 1980, Ser. No. 217,528
Claims priority, application Switzerland, Dec. 21, 1979, 11415/79
Int. Cl.³ C07D *403/14*
U.S. Cl. 260—243.3 **12 Claims**

1. A compound of formula I,



I

wherein
R_1 and R_4 are each independently hydrogen, halogen, (C_{1-4})alkyl, (C_{1-4})alkoxy, (C_{1-4})alkylthio or trifluoromethyl,
R_2 is hydrogen, (C_{1-4})alkyl, (C_{2-4})-hydroxyalkyl or alkanoyl (C_{1-4})-oxyalkyl, and
R_3 is hydrogen, (C_{1-4})alkyl, (C_{3-5})alkenyl or benzyl,
said compound being in free base or in pharmaceutically acceptable acid addition salt form.

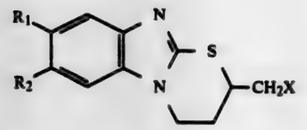
4,450,109

THIAZINOBENZIMIDAZOLE DERIVATIVES

Hiromichi Eto, Abiko; Teruo Kohmoto, Chiba; Tadayuki Kouda, Narita; Youichiro Ogawa, Chiba; Susumu Sato, Chiba; Tadayuki Kuraishi, Chiba, and Toshiaki Nakashima, Higashi-shisui, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 240,219, Mar. 3, 1982, Pat. No. 4,369,309. This application Sep. 13, 1982, Ser. No. 417,596
Claims priority, application Japan, Jun. 20, 1980, 55-83710
Int. Cl.³ C07D *513/04*
U.S. Cl. 260—243.3 **1 Claim**

1. A thiazinobenzimidazole derivative represented by formula (I):

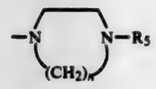


(I)

wherein R_1 and R_2 are each a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms or halogen atom, and X represents a hydroxy group, a tosyloxy group, an azide group, an alkylcarbonyloxy group having 1 to 6 carbon atoms, a trimethoxyphenylcarbonyloxy group, a thioether group, an alkyloxy group having 1 to 6 carbon atoms, an alkenyloxy group, a phenyloxy group, a benzyloxy group, a morpholino group,



wherein R_3 is a hydrogen atom or alkyl group having 1 to 6 carbon atoms, and R_4 is a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, alkyl group having 1 to 2 carbon atoms and substituted by hydroxyl, alkyloxycarbonyl, cyclohexyl, furanyl or indolyl; phenyl which may be substituted by alkyl, alkoxy or halogen atom; benzyl, phenylamino,



wherein R_5 represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, hydroxyethyl, pyrrolidinocarbonylmethyl, pyrrolidinopropyl, trimethoxy phenylcarbonyloxypropyl or trimethoxyphenylcarbonyl, and n represents an integer of 2 or 3;



wherein m represents an integer of 4, 6 or 7; or piperidino which may be substituted by alkyl having 1 to 6 carbon atoms, hydroxy, alkyloxycarbonyl or benzyl.

4,450,110

AZIDO NITRAMINE

Ronald L. Simmons, Destin, and Herbert L. Young, Shalimar, both of Fla., assignors to Hercules Incorporated, Wilmington, Del.

Filed Mar. 24, 1983, Ser. No. 478,437
Int. Cl.³ C07C *117/00*
U.S. Cl. 260—349 **1 Claim**

1. The azidonitramine composition 1,5-diazido-3-nitraza pentane.

4,450,111

PROCESS FOR THE PURIFICATION OF ANTHRAQUINONE

Tatsuyoshi Komatsu, Kamakura; Shigeaki Numata, Yokohama, and Kazuhiro Maruyama, Kawasaki, all of Japan, assignors to Kawasaki Kasei Chemicals Ltd., Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,106
Claims priority, application Japan, Jun. 9, 1981, 56-87499
Int. Cl.³ C07C *49/68*
U.S. Cl. 260—369 **8 Claims**

1. In a process for purifying crude anthraquinone obtained by the oxidation of the adduct obtained from the Diels-Alder reaction of butadiene with 1,4-naphthoquinone, said naphthoquinone being obtained by the catalytic vapor phase oxidation of naphthalene with molecular oxygen in an aqueous alkali metal hydroxide solution, the improvement comprising:
subjecting said crude anthraquinone to oxidation in an aqueous medium containing hypochlorite ion as the sole oxidizing agent.

4,450,112

PROCESS FOR CONVERTING NITRILES TO CARBOXYLIC ESTERS

Stanley S. Wreford, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 25, 1981, Ser. No. 325,028
Int. Cl.³ C11C *3/02*
U.S. Cl. 260—410.9 R **15 Claims**

1. A process for making carboxylic acid esters and recyclable ammonia comprising reacting a nitrile of 2 to 18 carbons, an alcohol and water in the presence of a catalyst selected from the group consisting of one or more complexes of a metal with hydroxo and tertiary phosphine moieties, at a temperature between about 100° C. to 250° C., wherein the metal is selected from the group consisting of rhodium, iridium and platinum, and wherein the nitrile is selected from the group consisting of alkanenitriles of at least two carbons, alkanedinitriles of at least 3 carbons, alkenenitriles of at least 4 carbons, and alkenedinitriles of at least 6 carbons.

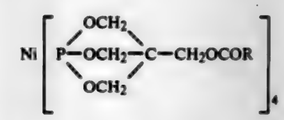
4,450,113

ZEROVALENT NICKEL PHOSPHITE COMPLEXES

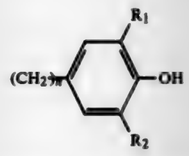
Ingenuin Hechenbleikner, West Cornwall; William P. Enlow, Falls Village, both of Conn., and David C. Lankin, Schaumburg, Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 9, 1982, Ser. No. 406,732
Int. Cl.³ C07F *15/04*
U.S. Cl. 260—439 R **6 Claims**

1. A zerovalent nickel complex having the structural formula



where R is alkyl of 1–18 carbon atoms, phenyl, alkylphenyl wherein the alkyl contains 1–6 carbon atoms, hydroxyphenyl or



where R_1 and R_2 are lower alkyl, and n is 0–2.

4,450,114

PROCESS FOR PRODUCTION OF SULFURIC ACID SEMIESTERS

Taira Fujita, Nishinomiya; Hiroyuki Nakagawa, Kawanishi; Mikio Sugihara, Takatsuki; Kimiyuki Kobayashi, Minoo, and Katuhiko Okamoto, Kyoto, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 116,623, Jan. 29, 1980, Pat. No. 4,351,765. This application May 20, 1982, Ser. No. 380,334

Claims priority, application Japan, Feb. 13, 1979, 54-15791

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.³ C07C *141/16*

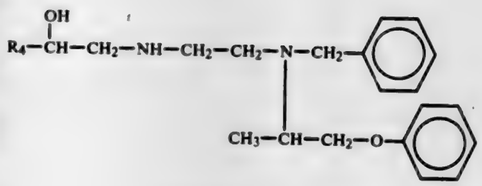
U.S. Cl. 260—458 C **3 Claims**

1. In a process for producing an esterified compound having one β-sulfatoethylsulfone group of the formula $-SO_2CH_2CH_2OSO_3M$, wherein M is hydrogen or an alkali metal, which comprises reacting a starting compound having one β-hydroxyethylsulfone group of the formula, $\beta-SO_2CH_2CH_2OH$, with an esterifying agent, the improvement comprising:

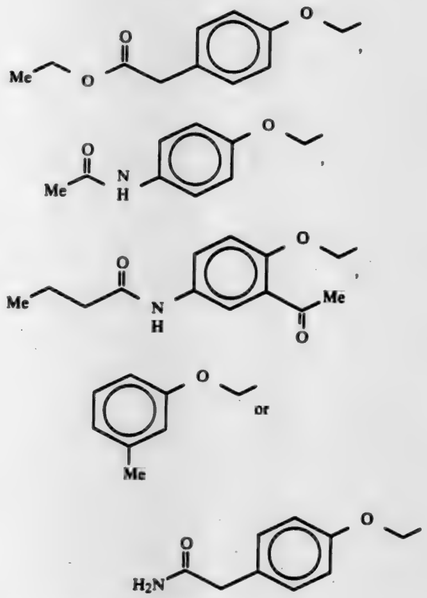
(1) conducting the reaction in the presence of a water-insoluble organic solvent and a secondary amine selected from the group consisting of diheptylamine, dioctylamine, didecylamine, didodecylamine, ditetradecylamine, dihexadecylamine, dioctadecylamine, dibenzylamine, di-α-methylbenzylamine, di-2-ethylhexylamine, bis-(2-methylcyclohexylmethyl)amine, N-methyldodecylamine, N-(2-ethylhexyl)-2-pentylnonylamine, N-benzyldodecylamine, N-benzyltetradecylamine, N-α-methylbenzyl-2-ethylhexylamine, N-3-phenylpropyl-n-tetradecylamine, N-methyltetradecylamine and N-methyloctadecylamine, or a tertiary amine selected from the group consisting of trihexylamine, trioctylamine, tridecylamine, tridodecylamine, N-methyldioctylamine, N-methyldidecylamine, N-methyldidodecylamine, N-methyldioctadecylamine, N-methyldiethylhexylamine, N-dodecyldimethylamine, N-dodecyldiethylamine, N-dodecyldibutylamine, N-dodecyldihexylamine, N-dodecyldibenzylamine (dibenzyldodecylamine), N-benzyldidodecylamine, N-propyldidecylamine, N-butyldidodecylamine, N-tetradecyldibenzylamine, N-isooctyldibenzylamine, di(methylbenzyl)dodecylamine, dibenzyloctadecylamine, dibenzyloctylamine and dibenzyldecylamine; the starting compound being an aromatic intermediate for the production of dyes selected from the group consisting of azo dyes, anthraquinone dyes, naphthalene dyes, pyrazolone dyes, and phthalocyanine dyes; the esterifying agent being one member selected from the group consisting of sulfamic acid and sulfuric acid, and being used in an amount of from 1 to 10 moles per β-hydroxyethylsulfone group of the starting compound, the amount of the amine being from 1 to 10 moles per mole of the starting compound, and the reaction being carried out at a temperature of from about 60° to about 180° C., while azeotropically removing water when sulfuric acid is used as the esterifying agent;

(2) washing the resulting reaction mixture with water or a weakly alkaline aqueous solution to remove excess of the esterifying agent; and

(3) subjecting the reaction mixture to extraction with a weakly alkaline aqueous solution, whereby an aqueous solution containing the desired product is obtained.

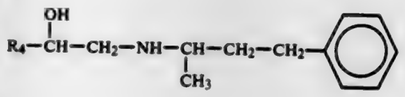


wherein R_4 represents

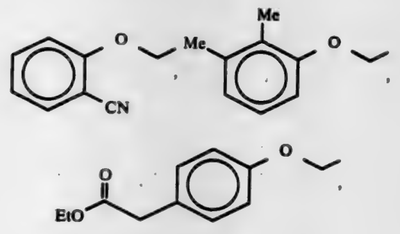


wherein Me represents a methyl group.

2. A compound of the formula



wherein R_4 represents H_2N



4,450,115

AMINO-ALCOHOL DERIVATIVES

Hiroshi Takizawa; Yoshimasa Oiji, and Kazuhiro Kubo, all of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 131,490, Mar. 18, 1980, Pat. No. 4,381,398. This application Jul. 9, 1981, Ser. No. 281,874

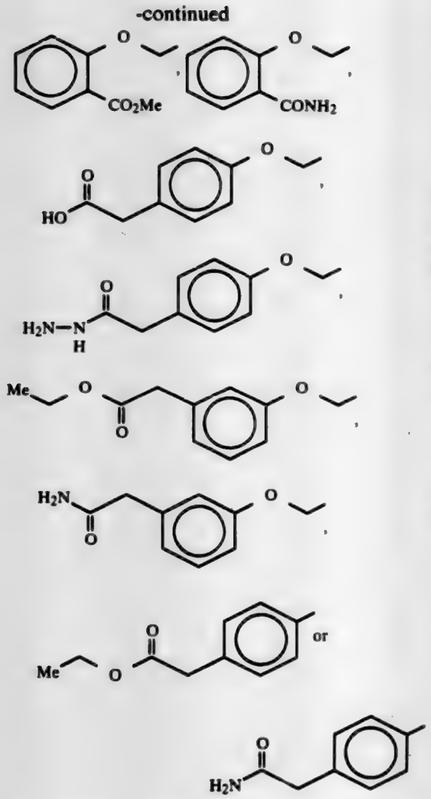
Claims priority, application Japan, Mar. 20, 1979, 54-31750

Int. Cl.³ C07C *121/80, 95/08, 103/29*

U.S. Cl. 260—465 E **23 Claims**

1. A compound of the formula

-continued



wherein Me represents a methyl group and Et represents an ethyl group.

4,450,116

3-OXYPROPYLENEIMINO-BIS-(METHYLENE PHOSPHONIC ACIDS) AND THEIR SALTS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE

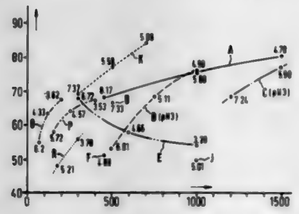
Hans-Joachim Morawietz, Kelkheim; Erich Hoffman; Johann Hansuer, both of Kriftel, and Kurt Bauer, Kelsterbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,097

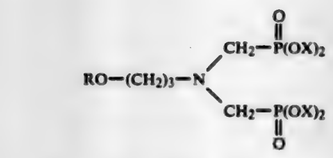
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1981, 3128755

Int. Cl.³ C07F *9/36*; C22B *1/00*

U.S. Cl. 260—502.5 E **2 Claims**



1. A compound of the formula



wherein R is straight-chain or branched alkyl having from 2 to 20 carbon atoms, and X is hydrogen, an alkali metal, alkaline earth metal, ammonium, alkylammonium or polyalkylene polyammonium ion.

4,450,117

VARIABLE VENTURI-TYPE CARBURETOR

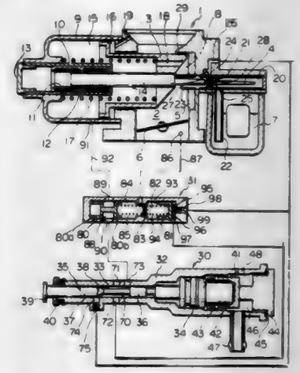
Norihiko Nakamura; Takaaki Ito; Takashi Katou, all of Mishima; Yozo Ota, Chiryu, and Toshiharu Morino, Mie, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

Filed Sep. 14, 1982, Ser. No. 417,907

Claims priority, application Japan, Dec. 21, 1981, 56-205201

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—39 A **15 Claims**



1. A variable venturi-type carburetor comprising:

an intake passage formed in said carburetor and having an inner wall;

a casing having therein an interior chamber which extends perpendicular to said intake passage;

a suction piston movably inserted into said casing and having a tip face which projects into said intake passage and defines a venturi portion, said suction piston dividing the interior chamber of said casing into an atmospheric pressure chamber and a vacuum chamber which is connected to said venturi portion for moving said suction piston in response to a change in the amount of air flowing within said intake passage;

a throttle valve arranged in said intake passage located downstream of said suction piston;

a fuel passage having a metering jet therein and being open to said intake passage for feeding fuel into said intake passage;

a needle fixed onto the tip face of said suction piston and extending through said fuel passage and said metering jet;

an air bleed passage having an air inlet and an air outlet which is open to said fuel passage, said air inlet being open to the atmosphere;

an air feed passage having an air inlet and an air outlet which is open to said vacuum chamber, said air inlet being open to the atmosphere; and

control means arranged in said air bleed passage and said air feed passage and controlling the flow areas of said air

bleed passage and said air feed passage in response to a change in vacuum produced in said intake passage located downstream of said throttle valve for opening said air feed passage and shutting off said air bleed passage when the level of said vacuum is smaller than a predetermined level and for shutting off said air feed passage and opening said air bleed passage when the level of said vacuum is greater than the predetermined level, said control means having a delay device for delaying the shutting-off operation of said air feed passage and/or the opening operation of said air bleed passage for a period of time after the level of said vacuum becomes greater than the predetermined level.

4,450,118

APPARATUS FOR SATURATING A GAS WITH THE VAPOR OF A LIQUID

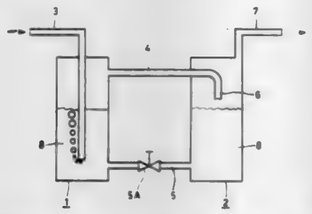
Hermanus N. Tuin, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,790

Claims priority, application Netherlands, Apr. 29, 1981, 8102105

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—147 **2 Claims**



1. An apparatus for saturating a gas with a liquid vapor of the type wherein the gas is bubbled through the liquid characterized in that said apparatus comprises:

(a) a first liquid holding chamber containing a first portion of said liquid maintained at a temperature above the saturation temperature of said gas for said vapor of said liquid,

(b) a gas inlet means having an outlet end located below the surface of said first portion of said liquid for bubbling said gas into said first portion of said liquid,

(c) a second liquid holding chamber containing a second portion of said liquid maintained at the saturation temperature of said gas for said vapor of said liquid,

(d) a gas conduit means connecting said first liquid holding chamber to said second liquid holding chamber the inlet of said gas conduit means being located in said first said liquid holding chamber above the surface of said first portion of said liquid and the outlet of said gas conduit means being located in said second liquid holding chamber above the surface of said second portion of said liquid.

4,450,119

VARIABLE VENTURI CARBURETOR

Keiun Kodo, 1-9, 4-chome, Sakuragaoka, Minoo, Osaka 562, Japan

Filed Sep. 30, 1982, Ser. No. 428,799

Claims priority, application Japan, Jan. 27, 1982, 57-12405

Int. Cl.³ F02M *9/12*

U.S. Cl. 261—44 D **2 Claims**

1. A variable venturi carburetor for an internal combustion engine comprising,

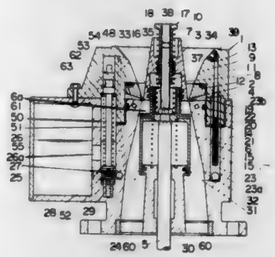
a tubular housing having an induction passage extending downwardly therethrough;

a throat extending into said passage from the inner wall of the housing and having an annular orifice opened to the interior of the housing;

a float chamber interconnected to said orifice through fuel supply passage means for feeding fuel to the orifice;

a movable head being axially movable within the housing along an upright axis and cooperating with said throat to form therebetween an annular venturi zone whose cross sectional area is increased with lowering position of the movable head;

said movable head comprising a lower member which is adapted to be connected to an accelerator pedal for the engine so as to move downwardly in response to the depression of the accelerator pedal and a upper venturi member which is movable along the upright axis relative to the lower member and is biased upwardly, said upper member defining said venturi zone and cooperating with the lower member to provide a negative pressure chamber therebetween which communicates only with the lower



region of the induction passage so as to introduce therein the negative pressure developed behind the venturi zone, whereby the upper venturi member is in response to the degree of such negative pressure pulled downwardly against the upwardly biasing force in a direction to increase the cross sectional area of said venturi zone while the lower member being maintained at the position set by the operation of the accelerator pedal; and

said fuel supply passage means comprising a main fuel passage having a main jet therein and an auxiliary fuel passage having therein a power jet which is operative to open only when the negative pressure developed behind the venturi zone is above a predetermined level.

4,450,120

CONCRETE FORM AND METHOD OF ASSEMBLING AND DISMANTLING THE SAME

Josef Maier, Schwimmbadstr. 3, D-7611 Steinach, Fed. Rep. of Germany

Filed Sep. 15, 1981, Ser. No. 302,378

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036306

Int. Cl.³ E04G *11/10*

U.S. Cl. 264—31 **41 Claims**



1. For use in a method of dismantling a form for casting ceiling or roofs of concrete or like materials wherein at least two panels are assembled to define the form and the panels are dismantled subsequent to at least partial hardening of the cast material, the improvement comprising dismantling the panels by mounting a dismantling device having a supporting portion on one of the panels so that the supporting unit extends beneath and defines a gap with the other of the panels; lowering the other panel onto the supporting portion; and pivoting the other panel on the supporting portion to thereby separate the panels.

4,450,121

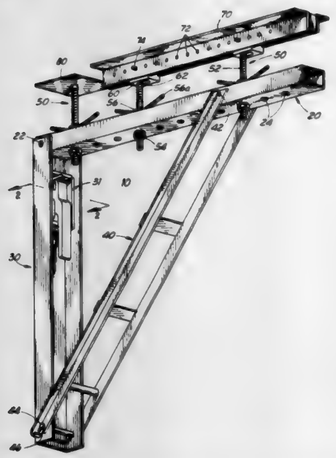
APPARATUS AND METHOD FOR BRIDGE DECK CONSTRUCTION

Noah L. Bequette, Route 1, Box 663, Cedar Hill, Mo. 63016

Filed Mar. 5, 1982, Ser. No. 354,158

Int. Cl.³ E04B *1/16*

U.S. Cl. 264—31 **19 Claims**



1. A method of supporting decking or forms needed for the installation of roadways on bridges which comprises attaching a plurality of apparatus, each of which comprises a first elongated member, a second elongated member pivotally connected at one end to said first elongated member, third elongated member connecting separated points on said first and second elongated members so as to maintain said first and second elongated members in a fixed angular relationship, which third elongated member is pivotally connected to the first elongated member and detachably connected to the second elongated member; positioning means attached to said first elongated member, which positioning means supports a fourth elongated member, which fourth member is adapted to support the forms or decking and attaching means on said second elongated member for removably installing the apparatus on a substantially vertical surface of a support structure, which attaching means comprises toggle locking means particularly suited to engage a concave recess in a steel pin protruding from a substantially vertical surface of the support structure to a plurality of steel pins, each of which has a concave recess particularly designed to engage the toggle locking means of one of the apparatus, which pins are protruding from a substantially vertical surface of the support structure; and individually adjusting the fourth elongated member of each of said apparatus to support the forms or decking in the desired position.

4,450,122

METHOD AND APPARATUS FOR MANUFACTURING FOOT SUPPORTS WITH ANATOMICALLY CONTOURED SHANK PORTIONS

Rolando Gallina, Via Monte Pelmo, 3, Montebelluna (Province of Treviso), Italy

Filed Oct. 2, 1980, Ser. No. 193,196

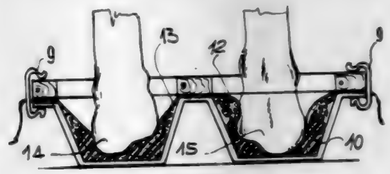
Claims priority, application Italy, Oct. 9, 1979, 41620 A/79

Int. Cl.³ B29D *27/04*

U.S. Cl. 264—46.4 **5 Claims**

1. A method of manufacturing foot supports such as insoles and the like with an anatomically configurated surface corresponding to the bottom of user's foot, comprising the steps of:

arranging on a supporting surface at least one pad of spongy material, impregnating said pad with a foamable hardenable reactive chemical composition, positioning the user's foot onto the impregnated pad and causing the impression of the user's foot to be formed onto said impregnated pad, leaving the user's foot in position onto said pad until the reactive chemical composition has attained a sufficient



degree of hardness to maintain the impression unaltered, removing the foot thereafter from the pad and cutting and trimming the impressed and hardened pad to obtain a foot support therefrom with desired contour.

4,450,123

PROCESS FOR PRODUCING MICROCAPSULES

Setsuya Egawa, and Masahiro Sakamoto, both of Kanagawa, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 392,142

Claims priority, application Japan, Jul. 17, 1981, 56-110918

Int. Cl.³ B01J *13/02*

U.S. Cl. 264—4.7 **15 Claims**

1. Process for producing microcapsules which use an amino resin as a capsule-wall in a system in which hydrophobic core material is dispersed in an aqueous acidic solution containing an anionic colloidal substance, wherein said anionic colloidal substance comprises an anionic, water-soluble copolymer consisting of at least three monomers including acrylic acid, hydroxyalkylacrylate or hydroxyalkylmethacrylate and styrenesulfonic acid and said anionic, water-soluble copolymer is used in amount of 2 to 10 parts by weight per 100 parts by weight of said hydrophobic core material.

4,450,124

PRODUCTION OF COMPACTED, LARGE-CALIBER EXPLOSIVE CHARGES

Wolfgang Christmann, Bergisch-Gladbach; Gerhard Lindner, Rosrath, and Paul Lingens, Odenthal, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 98,947

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852334

Int. Cl.³ C06B *21/00*

U.S. Cl. 264—3 R **3 Claims**

1. A process for the production of compacted large-caliber explosive charges with a primary charge and a prefabricated booster charge, which comprises pressing the explosive of the booster charge into a dimensionally rigid housing so that the booster charge explosive withstands the maximum compacting pressure during subsequent combined compacting with the primary charge, forming the primary charge into at least one rough-compacted body and then further compacting the at least one rough-compacted body of the primary charge together with the explosive of the booster charge in the dimensionally rigid housing within a preformed casing.

4,450,125
PROCESS FOR THE PRODUCTION OF POLYPROPYLENE FIBRIDS

Georges Voituron, Vilvoorde, and Jean-Pierre Pleska, Paturages, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed May 7, 1979, Ser. No. 37,399
Claims priority, application France, May 5, 1978, 78 13600
Int. Cl.³ D21F 11/00
U.S. Cl. 264—13 17 Claims

1. A process for the production of polypropylene fibrids by abrupt expansion of a liquid mixture which contains molten polypropylene and a predominant amount of alkane and which is at a high pressure and high temperature, by ejecting the liquid mixture through an expansion orifice to instantaneously vaporize the alkane and to solidify the polypropylene, which comprises:

forming a liquid mixture comprised of said molten polypropylene, said alkane solvent for the polypropylene and a minor amount of a liquid which is a non-solvent for the polypropylene, said non-solvent liquid being dissolved in the liquid mixture, and wherein the amount of said non-solvent liquid which is present in said liquid mixture in the form of a distinct phase having a predominant content of non-solvent liquid is a zero amount; and

abruptly expanding said liquid mixture containing said non-solvent liquid by ejection through said expansion orifice to instantaneously vaporize said alkane and to solidify said polypropylene.

4,450,126
HIGH STRENGTH NYLON BLEND MEMBRANES

Robert E. Kesting, Irvine, Calif., assignor to Puropore, Inc., Tustin, Calif.

Filed Apr. 21, 1982, Ser. No. 370,340
Int. Cl.³ B29D 27/00; B29H 7/20; C08V 9/28
U.S. Cl. 264—41 1 Claim

1. In the process of manufacturing dry phase inversion microporous membranes which comprises forming a casting solution comprising solvent and polymer, casting the solution, and evaporating solvent, the improvement comprising the steps of:

(a) forming the casting solution consisting essentially of formic acid and two nylon polymers, an high molecular weight extrusion grade nylon homopolymer and a multipolymer nylon, the total nylon content of the solution being in the general range of from about ten to about thirty-grams per one hundred milliliters of solution, the ratio of high molecular weight homopolymer nylon to multipolymer nylon being in the general range of from about 1:1 to 9:1, optimally in the ratio of about 4:1;

(b) casting a film or fiber of said solution; and

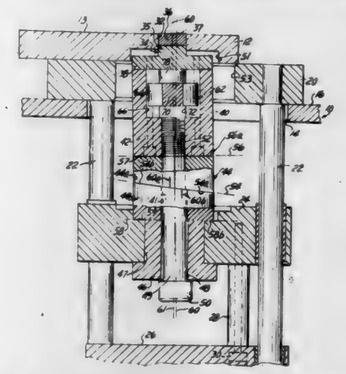
(c) evaporating the formic acid.

4,450,127
METHOD FOR COMPACTING POWDER MATERIAL WITH ADJUSTABLE DIE AND PUNCH ASSEMBLY

Raymond P. DeSantis, Troy, and Herbert J. Puffer, Jr., Garden City, both of Mich., assignors to PTX Pentronix, Inc., Lincoln Park, Mich.

Continuation-in-part of Ser. No. 351,482, Feb. 23, 1982, Pat. No. 4,390,335. This application Sep. 20, 1982, Ser. No. 419,827
Int. Cl.³ C04B 33/32
U.S. Cl. 264—56 2 Claims

1. In a method for compacting powder material in a die cavity in a die plate having an upper surface, a bore through said die plate, a punch having an end slidably disposed in said bore in said die plate, said punch having an end face normally substantially parallel to said die plate upper surface, a punch base member, a reciprocal platen supporting said punch base member, and means for reciprocating said platen, said die cavity being defined in said bore between said punch end face and said die plate upper surface, said method comprising filling said die cavity with powder material by means of a dispenser unit in the form of an open bottom enclosure having a bottom edge in sliding engagement with said upper surface, displacing said powder dispenser unit for wiping said powder material in said die cavity to a surface level relatively flush with said die plate upper surface, subsequently placing an anvil face over said die cavity and compacting said powder material in said die cavity between said anvil face and said punch end face for forming articles compacted of said powder material, wherein uneven filling of said die cavity prior to compacting said powder material in said die cavity causes the compacted articles to

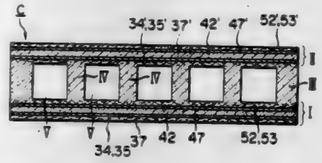


warp during sintering, said uneven filling being caused by said wiping action of the bottom edge of said powder material dispenser unit upon said powder material surface level, said improvement comprising adjustably inclining said punch for disposing said punch end face non-parallel to said die plate upper surface and substantially parallel to the surface level of powder material after wiping of said surface level by said bottom edge of said powder material dispenser unit, compacting a plurality of articles, sintering said articles, and readjusting the inclination of said punch and repeating said compacting, sintering and measuring steps until the least amount of warpage of said articles after sintering is achieved.

4,450,128
GLASS FIBER-REINFORCED CEMENT PLATES

Shigeru Takeuchi, Osaka, Japan, assignor to Kurimoto Iron Works, Ltd., Osaka, Japan

Division of Ser. No. 191,801, Sep. 29, 1980, Pat. No. 4,335,177. This application Dec. 10, 1981, Ser. No. 329,455
Claims priority, application Japan, Oct. 3, 1979, 54-129019; Jul. 16, 1980, 55-99041; Jul. 21, 1980, 55-99647
Int. Cl.³ B28B 1/08
U.S. Cl. 264—70 17 Claims



12. A process for manufacturing a laminated, glass fiber-reinforced, hydraulic cement plate comprising:

dispensing chopped glass-fiber strands and continuous glass fibers onto an endless conveyor belt which is constantly moving at a fixed speed to form a bottom layer comprising at least one sublayer of said chopped glass-fiber strands and at least one sublayer of continuous glass fibers, said bottom layer being substantially free of hydraulic cement mortar;

then dispensing onto said bottom layer, as said bottom layer continues moving on said conveyor belt, a fluid mortar containing regulated set hydraulic cement, while vibrating said bottom layer with vibrating means, so that said fluid mortar permeates into said bottom layer and also forms an intermediate layer on top of said bottom layer which is adhered to said bottom layer;

then dispensing onto said intermediate layer, as said bottom and intermediate layers continue moving on said conveyor belt, chopped glass-fiber strands and continuous glass fibers which are substantially free of hydraulic cement mortar to form a top layer on said intermediate layer comprising at least one sublayer of said chopped glass-fiber strands and at least one sublayer of said continuous glass fibers, so that said fluid mortar permeates into said top layer and thereby adheres said top layer to said intermediate layer, thereby forming an assembly of said bottom, intermediate and top layers;

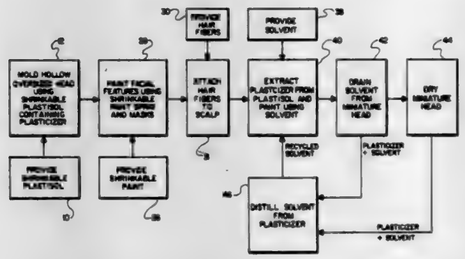
then curing the assembly of said bottom, intermediate and top layers by moving same through a curing zone by means of said conveyor belt; and

then moving said assembly out of said curing zone to obtain said laminated, glass fiber-reinforced hydraulic cement plate.

4,450,129
METHOD OF MAKING MINIATURE DOLL HEADS

Ralph Dunn, Playa Del Rey, and Leonard R. Coleman, Long Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 24, 1983, Ser. No. 460,347
Int. Cl.³ B29C 5/12; B29D 9/00
U.S. Cl. 264—132 9 Claims



1. A method of making a miniature doll head comprising the steps of:

providing a plastisol material including a plastic resin and an extractable plasticizer;

forming an oversized hollow doll head from the plastisol where the oversized doll head is larger than the desired size of the miniature doll head;

providing a solvent shrinkable paint capable of decreasing in size as the substrate to which it is applied decreases in size;

applying the paint to the face of the oversized doll head to form facial features which realistically simulate the facial features of the oversized doll head;

providing doll hair formed of plastic strands; and

attaching the doll hair to the scalp of the oversized doll head, where the hair is spaced apart on the scalp a greater distance than the desired spacing on the miniature doll head so that when the oversized doll head is reduced in size the spacing of the doll hair will be reduced to the desired spacing on the miniature doll head;

providing an extraction solvent capable of extracting the plasticizer from the plastisol and said paint;

immersing the oversized doll head in the solvent until sufficient plasticizer is extracted to achieve the desired size reduction;

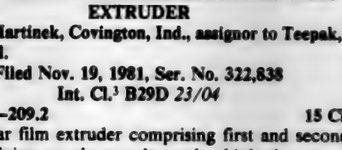
draining excess solvent from the part; and

heating the part to accelerate drying and to cause excess solvent to migrate out of the doll head.

4,450,130
METHOD OF FIXTURING SHOE COMPONENT

Daniel M. Doerer, Chesterfield, Mo., assignor to Brown Group, Inc., St. Louis, Mo.

Filed May 3, 1982, Ser. No. 374,390
Int. Cl.³ B23C 5/00
U.S. Cl. 264—154 5 Claims



1. A method for fixturing a shoe component while cutting the component from a starting block of rigid machinable material while supported on a work surface, said method comprising:

(a) cutting a first cavity in one side of the starting block to shape a first surface of the shoe component with the cutting of the first cavity being greater than the shape of the first surface to provide a marginal surface peripheral to the shape of the first surface;

(b) applying a mold release agent to only the first surface of the shoe component;

(c) filling the cavity in the starting block with a rigid material capable of adhering to the marginal surface peripheral to the shape of the first surface in the cavity but not to the surface of the shoe component to which the mold release agent is applied;

(d) cutting a second cavity in the side of the starting block opposite to said first cavity to partially shape a further surface of the shoe component with an exposed marginal surface surrounding the further surface;

(e) establishing a temporary attachment between the rigid machinable material and the shoe component for supporting that component;

(f) completing the shoe component by further cutting into the starting block in the second cavity to remove the starting block material between the first and the further surface of the shoe component such that a peripheral surface of the shoe component is cut to match the first surface and the further surface; and

(g) removing the temporary attachment to release the shoe component from the rigid machinable material and the filling material.

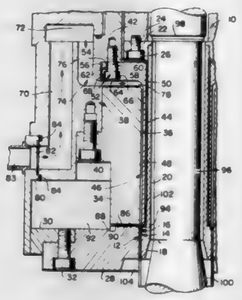
4,450,131
ZERO RUNOUT COUNTER-ROTATING FILM EXTRUDER

Thomas W. Martinek, Covington, Ind., assignor to Teepak, Inc., Chicago, Ill.

Filed Nov. 19, 1981, Ser. No. 322,838
Int. Cl.³ B29D 23/04
U.S. Cl. 264—209.2 15 Claims

1. A tubular film extruder comprising first and second die members defining an elongated annular high shear passage, said die members having adjacent generated surfaces of rotation with one of said first and second die members presenting a first surface of said high shear passage, the other of said first and second die members presenting a second surface concentric with said first surface, one of said surfaces being disposed about an axis, means for mounting the other of said surfaces so

said other surface is hydrostatically radially shiftable and positionable about said axis, and means for rotating at least said one surface with extrudate flowing between said surfaces forming means for automatically centering said other surface relative to said one surface.



13. A process of extruding tubular films, said process comprising the steps of providing an elongated annular high shear passage defined by concentric generated surfaces of rotation at least one of which is rotating about an axis and the other of said surfaces is hydrostatically radially shifted about said axis to be concentric with said one surface with substantially zero runout to provide a uniform extrudate supply.

4,450,132

PLASTIC CRATE OR TRAY WITH SLIDE WALL INJECTION MOLDING POINTS

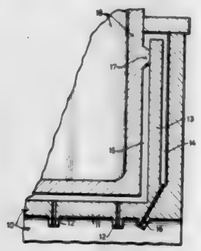
Ernst Ettema, Hardenberg; Coenraad J. B. M. Benraad, Dedemsvaart, and Klaas Roskam, Hardenberg, all of Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Continuation of Ser. No. 147,183, May 7, 1980, abandoned. This application May 19, 1982, Ser. No. 379,972

Claims priority, application Netherlands, May 11, 1979, 7903735

Int. Cl.³ B29F *1/04*

U.S. Cl. 264—328.8 **1 Claim**



1. The method of injection molding a plastic container having a bottom and vertical side walls having portions at least double walled having an upstanding partition (13) separating said side walls comprising injecting plastic in an injection mold having an open mold space for the whole container at a first injection molding point (12) at the bottom of the mold to form the container bottom and inside portion of the side walls while simultaneously injecting plastic at a second injection molding point in the mold at the bottom to form the outer container vertical wall without deflecting said upstanding partition (13).

4,450,133

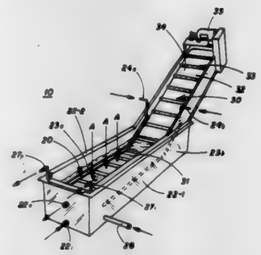
STABILIZATION OF MOLDED PARTS

Ralph J. Cafarelli, 228 Stone St., Clinton, Mass. 01510

Continuation-in-part of Ser. No. 097,495, Nov. 26, 1979, Pat. No. 4,246,917. This application Oct. 29, 1980, Ser. No. 201,778

Int. Cl.³ B29C *7/00*

U.S. Cl. 264—336 **8 Claims**



1. A method for stabilizing molded plastic parts comprising the steps of

(a) preparing a bath having a isothermal temperature distribution therein;

(b) expelling plastic parts from a mold into said bath to subject the exterior surfaces of the expelled parts to a differential temperature change that produces skin effect rigidity and;

wherein a chemical diluent is added to said bath to facilitate the wetting of said plastic parts and their entry into said bath.

4,450,134

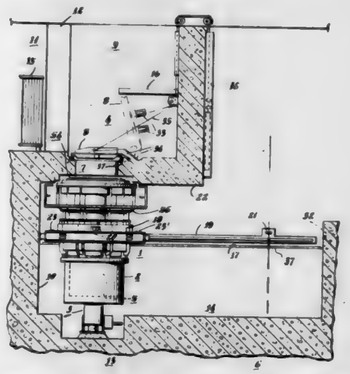
METHOD AND APPARATUS FOR HANDLING NUCLEAR FUEL ELEMENTS

Olaf Soot, 9 Tomahawk La., Greenwich, Conn. 06830, and Alexander H. McPhee, 89 The Waterway, Plandome Heights, N.Y. 11030

Continuation-in-part of Ser. No. 056,061, Jul. 9, 1981, abandoned. This application Aug. 12, 1981, Ser. No. 291,466

Int. Cl.³ G21C *19/20*

U.S. Cl. 376—262 **20 Claims**



10. An improved method for transferring nuclear fuel elements between a fuel storage pool of a nuclear facility and a nuclear fuel transfer cask comprising the steps of:

(a) positioning a wheeled transport means which travels on elevated tracks in a corridor between first and second terminal locations of a nuclear facility at a first terminal location, said transport means including a frame defining an aperture formed therein and a cask tank positioned vertically in and extending through said aperture and supported on said transport, said cask tank extending below said transport means;

(b) lowering a nuclear fuel element cask into said tank at said first terminal location and establishing a fluid sealed barrier between inner and outer surfaces of said cask;

(c) advancing said transport means, said vertically supported tank and said cask in a horizontal direction to a said second location adjacent an overhead port of said nuclear fuel storage pool;

(d) unweighting said tank from said transport by vertically advancing said tank into engagement with said port and supporting said tank from beneath by a rigid structure;

(e) establishing a fluid sealed channel between said port and an interior of said cask;

(f) flooding the sealed channel;

(g) actuating a port closure to an open position for establishing clear access through said port between said pool and said cask; and

(h) transferring fuel elements between said cask and said pool.

4,450,135

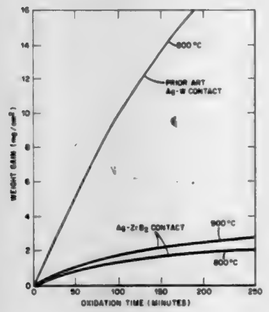
METHOD OF MAKING ELECTRICAL CONTACTS

Thomas E. Peters, Chelmsford; John C. Gustafson, Harvard, both of Mass., and Boon Wong, Reseda, Calif., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 4, 1982, Ser. No. 336,648

Int. Cl.³ B22F *1/00, 3/00*

U.S. Cl. 419—12 **12 Claims**



1. A method for making electrical contacts consisting essentially of about 20 to about 50 weight percent conductive metallic constituent, from about 0.2 to about 1.0 weight percent metallic wetting agent with the balance consisting essentially of substantially completely oxide-free zirconium diboride comprising the steps of blending particulate zirconium diboride with from about 0.5 to about 2.0 weight percent of a particulate reducing agent consisting essentially of a mixture of carbon and boron, heating the mixture of zirconium diboride and reducing agent in an inert atmosphere at a temperature and for a period of time sufficient to produce zirconium diboride substantially completely free of oxides, blending the oxide-free zirconium diboride with from about 20 to about 50 weight percent of a particulate conductive metallic constituent and from about 0.2 to about 1.0 weight percent of a particulate metallic wetting agent, compacting the blended powder mixture, and liquid phase sintering the compacted powder in an oxygen free atmosphere to form a sintered body containing substantially completely oxide-free zirconium diboride.

4,450,136

CALCIUM/ALUMINUM ALLOYS AND PROCESS FOR THEIR PREPARATION

David M. Dudek, Salisbury, and Mark A. Lambert, Barkhamsted, both of, assignors to Pfizer, Inc., New York, N.Y.

Filed Mar. 9, 1982, Ser. No. 356,580

Int. Cl.³ C22C *1/00*

U.S. Cl. 420—590 **13 Claims**

1. A process for the preparation of a substantially homogeneous passive calcium/aluminum alloy having a calcium-/aluminum atomic ratio of from about 60/40 to 80/20, which comprises adding elemental aluminum to molten elemental calcium under an inert atmosphere to obtain a melt of a desired composition, the temperature of said melt during said addition being maintained at from about 550° to 1100° C., said aluminum being added at a rate to prevent substantial solids formation in said melt during said addition.

4,450,137

PROCESSES FOR INHIBITING CORROSION USING COMPOUNDS CONTAINING SULFUR AND AMINO GROUPS

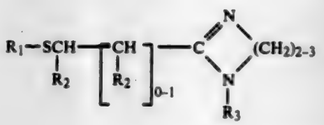
Neil E. S. Thompson, Creve Coeur; Derek Redmore, Webster Groves; Bernardus A. Oude Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, all of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

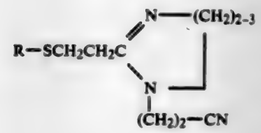
Division of Ser. No. 320,048, Nov. 10, 1981, Pat. No. 4,393,026, which is a division of Ser. No. 161,198, Jun. 19, 1980, Pat. No. 4,332,967. This application Oct. 29, 1982, Ser. No. 437,778

Int. Cl.³ C23F *11/04*

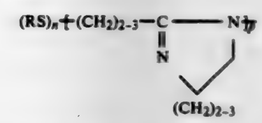
U.S. Cl. 422—12 **6 Claims**

1. A process for inhibiting corrosion which is characterized by treating a metal with a composition comprising a compound of the formula

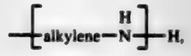




or



where R, R_1 are hydrocarbon groups, R_2 is H or alkyl, R_3 is H, alkyl,



or alkanol, n and p are one or more; or mixtures thereof.

4,450,138

PROCESSES FOR INHIBITING CORROSION USING COMPOUNDS CONTAINING SULFUR AND AMINO GROUPS

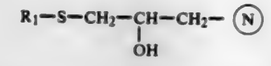
Neil E. S. Thompson, Creve Coeur; Derek Redmore, Webster Groves; Bernardus A. Oude Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, all of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 320,048, Nov. 10, 1981, Pat. No. 4,393,026, which is a division of Ser. No. 161,198, Jun. 19, 1980, Pat. No. 4,332,967. This application Oct. 29, 1982, Ser. No. 437,588

Int. Cl.³ C23F *11/04*

U.S. Cl. 422—12 **4 Claims**

1. A process for inhibiting corrosion which is characterized by treating a metal with a composition comprising a compound of the formula,



where R_1 is a hydrocarbon group, and (N) is an amino moiety.

4,450,139

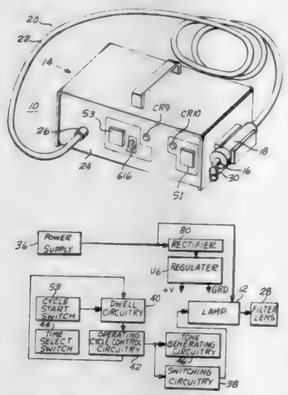
LIGHT GENERATING APPARATUS FOR CURING DENTAL RESTORATIVE COMPOSITES

Ronald L. Bussiere, Edmonds, and Robert J. Smith, Lynnwood, both of Wash., assignors to Solid State Systems, Corporation, Lynnwood, Wash.

Filed May 3, 1982, Ser. No. 374,517

Int. Cl.³ B01J *1/10, 1/12*

U.S. Cl. 422—186.3 **22 Claims**



1. An apparatus for interconnecting an alternating current source with light generating means for a time cycle beginning after an initial dwell time, comprising:

(a) time delay means;

(b) cycle control means operatively coupled to said time delay means, said cycle control means being activated for a preselected time interval after activation of said time delay means; and

(c) switch means coupled with said cycle control means and interconnected between the alternating current source and the light generating means, said switch means:

in response to the activation of said cycle control means, interconnecting the alternating current source with the light generating means when the alternating current source crosses a zero voltage point in the alternating current cycle; and

in response to the deactivation of said cycle control means, disconnecting the alternating current source from the light generating means.

18. An apparatus for photochemically curing organic composites used to repair teeth, comprising:

(a) light generating means;

(b) means for applying the light produced by said light generating means on the organic composites;

(c) time delay means for producing an output signal at a preselected time period after activation of said time delay means;

(d) cycle control means operably coupled to said time delay means to produce a control signal for a preselected time interval in response to said output signal; and

(e) switch means coupled with said cycle control means and interconnected between an alternating current source and said light generating means, said switch means:

in response to said control signal, interconnecting the alternating current source with said light generating means at the point in the alternating current cycle when the alternating current crosses a zero voltage level; and

upon termination of said control signal, disconnecting the alternating current source from said light generating means.

4,450,140

Patent Not Issued For This Number

4,450,141

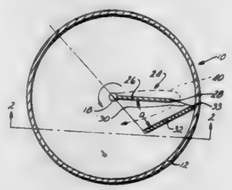
CENTRIFUGAL REACTION CHAMBER

Ronald K. Linde, Chicago, Ill., assignor to Envirosonics, Inc., Chicago, Ill.

Filed Jun. 16, 1982, Ser. No. 388,751

Int. Cl.³ B01F *7/20*; B01J *19/10*

U.S. Cl. 422—225 **2 Claims**



1. A centrifugal reaction chamber comprising:

a substantially cylindrical vessel for holding the chemical reactants, one of which is a liquid, a shaft journaled for rotation in the vessel and coaxial with the cylindrical vessel, one or more rotating mixing elements in the vessel secured to the shaft, and means for rotating the shaft and mixing elements, each mixing element including a pair of panels and means securing the panels in a fixed closely spaced relationship to form a radially extending passage between the panels, a first panel of each mixing element extending radially outwardly from the shaft and terminating in an outer edge adjacent to but spaced from the cylindrical wall of the vessel, a second panel of each mixing element having an outer edge positioned at the cylindrical wall and extending inwardly from the cylindrical wall for a distance to overlap a substantial portion of the radial extent of said first panel and, thereby, provide a passage therebetween, the panels lying in planes which converge at an acute angle and intersect adjacent the point on the wall of the vessel nearest said outer edge of the first panel, said means for rotating the shaft moving the said first panel ahead of the second panel and forcing the reactants radially outwardly into engagement with the second panel at the wall of the vessel, the second panel forcing the reactants radially inwardly toward the center of the vessel along the backside of said first panel through said passage between the panels.

4,450,142

PROCESS FOR RECOVERING A URANIUM-CONTAINING CONCENTRATE AND PURIFIED PHOSPHORIC ACID

Cornelis A.M. Weteringa, Stein, and Johannes A. Janssen, Schinveld, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Jul. 22, 1981, Ser. No. 285,322

Claims priority, application Netherlands, Jul. 23, 1980, 8004221

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—8 **6 Claims**

1. A process for recovering a uranium-containing concentrate and purified phosphoric acid from wet-process phosphoric acid in the presence of a reducing agent effective to reduce uranium VI to uranium IV by treatment with first a lower alkyl ketone in the presence of said reducing agent, and thereafter adding, with agitation, an inorganic fluoride compound and separating off the uranium-containing precipitate, wherein said treatment and addition is conducted at ambient temperatures.

4,450,143

PROCESS FOR REDUCING THE ORGANIC SOLVENT LOSSES IN THE TREATMENT OF A SUSPENSION RESULTING FROM THE ACID ATTACK ON AN ORE

Antoine Floreancig, Saint-Genis-Laval; Bernard Siffert, Hoschstatt, and Jean-Jacques Trescol, Nogent-sur-Oise, all of France, assignors to Pechiney, France

PCT No. PCT/FR80/00174, 371 Date Jul. 1, 1981, 102(e) Date Jul. 1, 1981, PCT Pub. No. WO81/01577, PCT Pub. Date Jun. 11, 1981

PCT Filed Dec. 2, 1980, Ser. No. 279,529

Claims priority, application France, Dec. 5, 1979, 79 30275

Int. Cl.³ C22B *60/02, 34/22, 34/34*; B01D *11/00*

U.S. Cl. 423—10 **8 Claims**

1. A process for treating a hydrometallurgical suspension resulting from the acid attack on an ore containing at least one metal element which is to be put to use, and non-attackable mineral materials, a fraction of which is formed by clays, comprising extracting the useful metal element which has gone into solution in the attack operation, by means of an organic solvent belonging to the group formed by alkylphosphate acids, characterised in that, in order to limit the losses due to adsorption of the organic extraction solvent by the clays, a condensed mineral phosphate is introduced into the ore attack medium.

2. A treatment process according to claim 1 characterised in that the condensed phosphate selected from the group consisting of metaphosphates, polyphosphates, combinations of metaphosphates which contain both cyclic anion and long chain anions, or transverse-bound phosphates.

4,450,144

AMMONIUM HYDROXIDE STRIPPING OF TUNGSTEN FROM ORGANIC SOLVENTS

John M. Laferty, Wheat Ridge; Paul B. Queneau, Golden, and Leo W. Beckstead, Arvada, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Continuation of Ser. No. 225,903, Jan. 19, 1981, abandoned. This application Jul. 21, 1982, Ser. No. 400,539

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—54 **6 Claims**

1. A process for stripping tungsten values from a tungsten-bearing acidic liquid organic phase with a basic aqueous ammoniacal phase which comprises: establishing in a stripping unit an intimate mixture of the organic and aqueous phase, the aqueous phase being the continuous phase; establishing a zone of high shear, equivalent to the shear that would be imparted to the mixture adjacent the outside edges of a 1¾ inch diameter radial shrouded turbine impeller rotated in the mixture at about 1400 rotations per minute, within the mixture and near the lower portion of the stripping unit with a high shear mixing device; feeding a stream of the tungsten-bearing acidic liquid organic phase to the zone of high shear and separately feeding the basic aqueous ammonical phase to the mixture while maintaining the aqueous phase as the continuous phase, the organic and aqueous phase being fed to the stripping unit at organic to aqueous volumetric ratios between about 0.5 and about 3, whereby the pH gradient between the organic and aqueous phases is maximized and whereby tungsten values are stripped from the organic phase without precipitating ammonia paratungstate; and withdrawing the mixture from the top of the stripping unit.

4,450,145

PROCESS FOR THE REMOVAL OF SO_2 FROM GAS STREAMS

John E. Klepeis, New Fairfield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 27, 1982, Ser. No. 437,044

Int. Cl.³ C01B *17/00*; B01D *19/00*

U.S. Cl. 423—242 **18 Claims**

1. A process for the removal of SO_2 from two or more gas streams each having a differing SO_2 content which comprises:

(a) providing a flow of lean liquid absorbent for the SO_2 through at least one absorbent zone; and

(b) supplying the gas streams containing the SO_2 to the absorbent flow so that the gas streams are supplied to the flow in ascending order of SO_2 concentration such that each more dilute SO_2-containing stream is supplied to the flow upstream from each more concentrated SO_2-containing stream in order to increase the amount of SO_2 absorbed by the absorbent flow.

4,450,146

HEAT RECOVERY IN P_2O_5 PRODUCTION PROCESS

John E. Klepeis, New Fairfield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 30, 1982, Ser. No. 430,088
Int. Cl.³ C01B 15/16, 25/01, 25/02
U.S. Cl. 423—304 5 Claims

1. A process for the manufacture of phosphorus pentoxide wherein heat valuse are recovered comprising the steps of:
(a) burning elemental phosphorus in the air to produce P_2O_5 containing combustion gases
(b) allowing the hot combustion gases to pass through at least one fluidized bed containing inert, high melting point solid particles whereby the solid particles are heated
(c) recovering the P_2O_5 containing combustion gases, and
(d) contacting the heated bed particles with water to produce steam and thereby recover heat values.

4,450,147

PROCESS FOR MAKING ALKALI METAL HYPOPHOSPHITE SOLUTIONS

Georg Elsner, Hürth-Knapsack, and Hermann Hack, Erftstadt, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 464,984
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207716
Int. Cl.³ C01B 25/12, 25/165
U.S. Cl. 423—304 5 Claims

5. A method for oxidizing PH_3 produced as a byproduct of the reaction which occurs in the reaction mixture comprising yellow phosphorus and an alkaline aqueous solution, said method comprising the steps of:
adding hydrogen peroxide to said reaction mixture to oxidize the PH_3 substantially as it is formed in said reaction mixture, whereby substantially no PH_3 escapes from said reaction mixture, and
permitting alkali metal hypophosphite to form in said reaction mixture as a result of the oxidizing of the PH_3.

4,450,148

PREPARATION OF MANGANITE, MNOOH

Jay Y. Welsh, Catonsville, Md., assignor to Chemetals Incorporated, Baltimore, Md.

Filed Sep. 30, 1982, Ser. No. 428,539
Int. Cl.³ C01G 45/02
U.S. Cl. 423—605 4 Claims

1. A process for preparing alkali and alkaline-earth free manganite, comprising the steps of:
contacting an aqueous solution containing manganese (II) nitrite with an active surface to promote the formation of manganite,
heating said aqueous solution containing manganese (II) nitrite to a temperature sufficient to effect formation of manganite, and
decomposing said aqueous solution containing manganese (II) nitrite to form an alkali and alkaline-earth free manganite having a high surface area.

4,450,149

RADIOHALOGENATION METHOD

George W. Kabalka, Knoxville, Tenn., assignor to Research Corporation, New York, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,858
Int. Cl.³ A61K 43/00, 49/00
U.S. Cl. 424—1.1 29 Claims

1. A method of radiohalogenating an organic compound, comprising:
reacting a radiohalide salt with an organoborane compound derived from said organic compound in the presence of a mild oxidizing agent.

4,450,150

BIODEGRADABLE, IMPLANTABLE DRUG DELIVERY DEPOTS, AND METHOD FOR PREPARING AND USING THE SAME

Kenneth R. Sidman, Wayland, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 896,552, Apr. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 596,444, Jul. 16, 1975, which is a continuation-in-part of Ser. No. 361,182, May 17, 1983, abandoned. This application May 11, 1981, Ser. No. 262,149
Claims priority, application Canada, May 10, 1974, 199552; United Kingdom, May 14, 1974, 21361/74; Switzerland, May 16, 1974, 6744/74; Fed. Rep. of Germany, May 17, 1974, 2424169; Japan, May 17, 1974, 48-54595; France, Nov. 10, 1974, 74 34307
Int. Cl.³ A61K 43/00, 37/24, 9/06
U.S. Cl. 424—1.1 28 Claims

1. A depot suitable for implanting within a living host for the controllable release of at least one substance within said host, said depot not in the form of a film or suture, comprising a matrix structure containing said substance in releasable form said matrix being formed of a poly(glutamic acid-co-ethyl glutamate) in which the mole percent of glutamic acid ranges between about 5 and about 50 and having a viscosity average molecular weight of about 80,000 to about 500,000 and which is hydrophilic and of uniform composition throughout.

2. A depot in accordance with claim 1 wherein said structure is a cylindrical shape.

5. A depot in accordance with claim 2 wherein the concentration of said substance is uniform throughout said rod.

4,450,151

POWDER AEROSOL COMPOSITION

Takahiro Shinozawa, Tokyo, Japan, assignor to Toyo Aerosol Industry Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1979, Ser. No. 47,910
Claims priority, application Japan, Aug. 21, 1978, 53-101559
Int. Cl.³ A61K 9/12
U.S. Cl. 424—46 11 Claims

1. A powder aerosol composition obtained by mixing a suspension comprising 5 to 60 wt % of at least one hydrophobic powdered substance having a pH in the range 5 to 9, 5 to 80 wt % of alcohol whose number of carbon atoms is in the range 1 to 7 and 5 to 80 wt % of water with 5 to 40 wt % of a propellant having a specific gravity lower than that of said suspension, the resulting suspension having a pH in the range of 5 to 9 and a viscosity in the range of 50 to 1000 cps.

4,450,152

COMPOSITION USED TO GROOM HAIR

Isao Ona; Asao Harashima; Masaru Ozaki, and Yoichiro Taki, all of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 386,860
Claims priority, application Japan, Oct. 29, 1981, 56-173253
Int. Cl.³ A61K 7/06, 7/08, 7/15
U.S. Cl. 424—70 4 Claims

1. A hair grooming composition consisting essentially of 0.01 to 10 percent by weight of an organopolysiloxane having at least one alkylamino substituent having the general formula

$$-R'(NHCH_2CH_2)_aNR^2R^3$$

wherein R' is a divalent hydrocarbon group, R^2 and R^3 are selected from the group consisting of hydrogen and monovalent hydrocarbon groups, and a has a value of 0 to 5 and at least one substituent selected from the group consisting of oxyalkylene, polyoxyalkylene, and hydroxyalkyl groups, the oxyalkylene and polyoxyalkylene substituents having the general formula

$$-R_b^4O(C_mH_{2m}O)_cR^5$$

wherein R^4 is a divalent hydrocarbon group, R^5 is selected from the group consisting of hydrogen and end-blocking groups, b has a value of 0 to 1, m has a value of 1 to 5, and c has a value of 1 to 100, and the hydroxyalkyl substituent having the general formula R^4OH wherein R^4 is a divalent hydrocarbon group, said organopolysiloxane having a viscosity range of 1 to 100,000 centistokes at 25° C. and a carrier selected from the group consisting of an aqueous solution, an emulsion and an organic solvent.

4,450,153

ALCOHOL REMOVAL FROM BLOOD WITH ALCOHOL OXIDASE

Thomas R. Hopkins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 30, 1982, Ser. No. 429,758
Int. Cl.³ A61K 37/48
U.S. Cl. 424—94 39 Claims

1. A process for reducing the alcohol content of human blood comprising contacting said alcohol with the enzyme alcohol oxidase wherein said alcohol oxidase, present in an injectable solution, is injected into the human body in the amount from about 1 to about 100 mg/Kg of body weight of the recipient.

4,450,154

ANTITUMOR HYBRID AND PROCESS FOR THE PREPARATION THEREOF

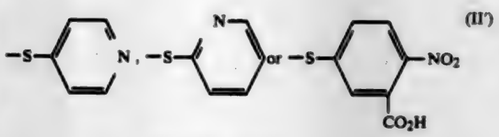
Yasuhiko Masuho, Hino, and Takeshi Hara, Hachioji, both of Tokyo, Japan, assignors to Teijin Limited, Tokyo, Japan

Division of Ser. No. 170,332, Jul. 21, 1980, Pat. No. 4,350,626. This application Dec. 21, 1981, Ser. No. 333,214
Claims priority, application Japan, Jul. 20, 1979, 54-91634
Int. Cl.³ C07G 7/00; A61K 37/00; C07C 103/52
U.S. Cl. 260—112 R 3 Claims

1. A process for preparing an antitumor protein hybrid which is expressed by the following formula (II'), which process comprises reacting the substantial fragment Fab of an antitumor immunogloblin which has at least one S-sulfo radical or an active disulfide radical expressed by the following formula (V) with the subunit A of ricin which has at least one thiol radical in the fragment:

$$-S-Z \qquad (V)$$

where Z indicates



(II')

$$Fab\leftarrow S_1-S_2-RA)_m$$

wherein Fab indicates a moiety which is substantially the fragment Fab of an antitumor immunoglobulin; RA indicates a moiety which is the subunit A of ricin; S_1 and S_2 are both sulfur atoms, S_1 indicating a sulfur atom arising fron the disulfide bond in the immunoglobulin and S_2 a sulfur atom arising from the disulfide bond in ricin; and m represents an integer of 1 to 5.

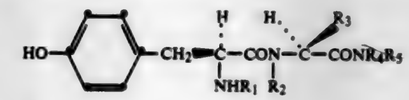
4,450,155

ANALGESIC DIPEPTIDE AMIDES AND METHOD OF USE AND COMPOSITIONS THEREOF

Barry A. Morgan, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 286,672, Jul. 24, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 423,054
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 424—177 13 Claims

1. 2-(L-N^2-R_1-N-R_2-tyrosylamino)-2-R_3-N-R_4-N-R_5-acetamide having the structural formula



wherein
R_1 is hydrogen, alkyl of one to five carbon atoms, allyl, cyclopropylmethyl, formyl, acetyl or propionyl;
R_2 taken together with R_3 is dimethylene, trimethylene or tetramethylene;
R_4 is $(CH_2)_nY$, wherein n is an integer from 2 through 10 and Y is phenyl or phenyl substituted by fluoro, chloro, methyl or methoxy; and
R_5 is hydrogen, alkyl of one to five carbon atoms or $(CH_2)_nY$ as defined for R_4;
or a pharmaceutically acceptable acid addition salt thereof.

4,450,156

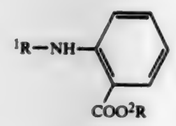
PHARMACEUTICAL COMPOSITION CONTAINING A DERIVATIVE OF ORTHO-AMINOBENZOIC ACID AS AN ACTIVE INGREDIENT

Chikao Yoshikumi, No. 2-19-46, Higashi, Kunitachi-shi, Tokyo; Yoshio Ohmura, No. 5-48-3, Maebara-Higashi, Funabashi-shi, Chiba-ken; Fumio Hirose, No. 2-3-9, Zenpukuji, Suginami-ku, Tokyo; Masanori Ikuzawa, No. 1-25-20, Wakaba-cho, Tachikawa-shi, Tokyo; Kenichi Matsunaga, No. 3-26-1, Hyakunin-cho, Shinjuku-ku, Tokyo; Takayoshi Fujii, No. 5-11-21, Towa, Adachi-ku, Tokyo; Minoru Ohkara, No. 19-25, Fujimi-cho, Itabashi-ku, Tokyo, and Takao Ando, No. 5-31-1, Matsubara, Setagaya-ku, Tokyo, all of Japan

Division of Ser. No. 84,467, Oct. 12, 1981, Pat. No. 4,322,409, which is a continuation-in-part of Ser. No. 24,092, Mar. 26, 1977, abandoned. This application Aug. 20, 1981, Ser. No. 294,502
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.
Int. Cl.³ A61K 31/70
U.S. Cl. 424—180 15 Claims

1. A pharmaceutical composition in dosage unit form which comprises a dosage effective for the treatment of hypertension, hyperglycemia, hyperlipemia, inflammatory disease, pain due

to the accentuation of central nerve, pyrexia due to accentuation of central nerve of a compound of the formula:



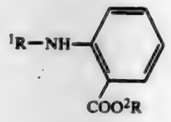
wherein

^1R denotes one member selected from the group consisting of the residual groups formed by removing OH at 1(alpha) or 1(beta) position from arabinose, xylose, glucose, galactose, rhamnose and mannose, and

^2R is hydrogen or methyl group,

or a pharmaceutically acceptable salt thereof; and a carrier or a diluent therefor.

15. A method for the treatment of hyperglycemia, which comprises administering to a mammal suffering from hyperglycemia an effective amount of a compound of the formula:



wherein

^1R denotes one member selected from the group consisting of the residual groups formed by removing OH at 1(alpha) or 1(beta) position from arabinose, xylose, glucose, galactose, rhamnose and mannose, and

^2R is hydrogen or methyl group,

or a pharmaceutically acceptable salt thereof.

4,450,157

THIAZOLINE DERIVATIVES

Christoph Lüthy, Schwerzenbach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

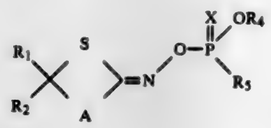
Filed Jun. 11, 1982, Ser. No. 387,305

Claims priority, application Switzerland, Jun. 19, 1981, 4072/81; Apr. 14, 1982, 2257/82

Int. Cl.³ A01N *57/16*; C07F *9/65*

U.S. Cl. 424—200 **19 Claims**

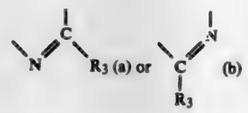
1. A compound of the formula



I

wherein

A is a group



R_1 and R_2 are hydrogen, lower alkyl or cycloalkyl, or together with the carbon atom to which they are attached area 4- to 6-membered, saturated hydrocarbon ring,

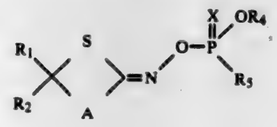
R_3 is lower alkyl, cycloalkyl or lower alkylthio,

X is oxygen or sulfur,

R_4 is lower alkyl,

R_5 is lower alkoxy, lower alkylthio, lower alkenylthio, lower alkynylthio, lower alkylamino or di (lower alkyl) amino, with the proviso that R_1, R_2 and R_3 are lower alkyl groups when A represents a group (b).

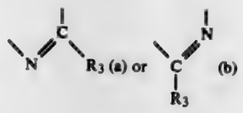
12. A pesticidal composition which comprises an inert carrier material and, as the active ingredient, an amount which is effective as a pesticide of a compound of the formula



I

wherein

A is a group



R_1 and R_2 are hydrogen, lower alkyl or cycloalkyl, or together with the carbon atom to which they are attached are a 4- to 6-membered, saturated hydrocarbon ring,

R_3 is lower alkyl, cycloalkyl or lower alkylthio,

X is oxygen or sulphur,

R_4 is lower alkyl,

R_5 is lower alkoxy, lower alkylthio, lower alkenylthio, lower alkynylthio, lower alkylamino or di(lower alkyl) amino, with the proviso that R_1, R_2 and R_3 are lower alkyl groups when A represents a group (b).

4,450,158

S-TERTIARY ALKYL PHOSPHOROAMIDODITHIOATE PESTICIDES

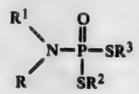
Mohamed A. H. Fahmy, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 13, 1982, Ser. No. 377,651

Int. Cl.³ A01N *57/28*; C07F *9/44*

U.S. Cl. 424—220 **6 Claims**

1. An S-tertiary alkyl phosphoroamidodithioate of the formula



in which

R and R^1 are alkyl groups of 1 to 4 carbon atoms,

R^2 is a tertiary butyl or pentyl group, and R^3 differs from R^2 and is a straight or branched chain alkyl group of 1 to 6 carbon atoms or a cyclic alkyl group of 5 or 6 carbon atoms.

2. A method for controlling soil-borne insects and nematodes which comprises applying to plant roots or to the soil in which plants are planted or are to be planted an insecticidally and nematicidally effective amount of the compound of claim **1**.

4,450,159

CARBAMIC ACID DERIVATIVES AS SELECTIVE IMMUNOSUPPRESIVE AGENTS

David J. Anderson, Kalamazoo, and Barbara E. Loughman, Richland, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

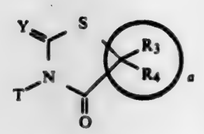
Filed Aug. 8, 1979, Ser. No. 64,783

Int. Cl.³ A61K *31/54, 31/425*

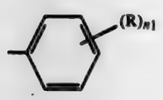
U.S. Cl. 424—246 **16 Claims**

1. A method of treating a mammal exhibiting allographic rejection phenomena from tissue transplantation which comprises:

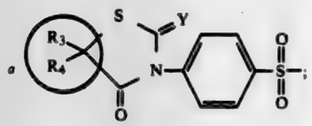
systemically administering to said mammal in a pharmaceutically acceptable dosage form a compound selected from the group consisting of:



wherein T is selected from the group consisting of hydrogen; lower alkyl, of from one to four carbon atoms, amino; carboxybenzylideneamino; chlorobenzylideneamine; anilino; α-alkylbenzyl with alkyl of from one to four carbon atoms, inclusive; cycloalkyl, and



wherein R is selected from the group consisting of hydrogen; alkyl, of from one to four carbon atoms, inclusive; alkoxy, of from one to four carbon atoms; thioalkoxy, of from one to four carbon atoms, inclusive; alkylcarbonyl, with alkyl of from one to four carbon atoms, inclusive; acyloxy with acyl of from one to four carbon atoms, inclusive; nitro; acylamino of from one to four carbon atoms, inclusive; and



wherein

a is the integer one and R_3 and R_4 are different and are selected from the group consisting of hydrogen, methyl, carboxymethyl, ethoxymethylene, and indanylmethylene such that at least one selection is hydrogen,

wherein n_1 is an integer of from one to three;

wherein Y is sulfur; in not less than a non-toxic amount effective to prolong the viability of the transplanted tissue.

4,450,160

1,2-DIHYDROPYRIDO[3,4-b]-PYRAZINES AND METHOD AND INTERMEDIATES FOR PREPARING SAME

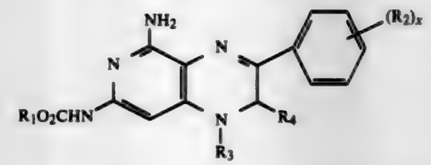
Carroll G. Temple, Jr.; John A. Montgomery; Robert D. Elliott, and Glynn P. Wheeler, all of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Continuation-in-part of Ser. No. 327,928, Dec. 7, 1981, abandoned, which is a continuation-in-part of Ser. No. 247,158, Mar. 24, 1981, abandoned. This application Mar. 3, 1982, Ser. No. 354,164

Int. Cl.³ C07D *471/04, 213/75*

U.S. Cl. 424—250 **12 Claims**

1. A 1,2-dihydropyrido[3,4-b]pyrazine having the formula:



wherein x has a value of 1,2 or 3, R_1 is a lower alkyl group, R_2 is a member selected from the group consisting of hydrogen, alkyl radicals having from one to 12 carbon atoms, alkenyl radicals having from two to 15 carbon atoms, cycloalkyl radicals having from three to 20 carbon atoms, aralkyl and alkaryl radicals having from seven to 20 carbon atoms, a halogen radical, provided that when x has a value of 1 and R_2 is in the para position and R_3 and R_4 are both hydrogen, R_2 is not chlorine; hydroxyl, amino, alkoxy, aryloxy, carboxyl, alkylcarboxyl radicals having from one to 10 carbon atoms, alkylthio and arylthio radicals having from one to 20 carbon atoms, a sulfonic acid group, alkylsulfonyl and arylsulfonyl radicals having from one to 20 carbon atoms, alkylsulfinyl and arylsulfinyl radicals having from one to 20 carbon atoms, alkylamino and aryl- amino radicals having from one to 20 carbon atoms, and, when taken together with the aromatic ring to which it is attached, naphthyl; and R_3 and R_4 are either both hydrogen or one is hydrogen and the other is a lower alkyl group; and pharmaceutically acceptable salts thereof.

12. A pharmaceutical composition in dosage unit form comprising an amount of a compound as defined by claim **1** effective to treat fungal diseases in association with a pharmaceutical carrier.

4,450,161

PYRIMIDONE SALT AND ITS PREPARATION

George R. White, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed May 26, 1982, Ser. No. 382,027.

Int. Cl.³ C07D *403/12*; A61K *31/505*

U.S. Cl. 424—251 **7 Claims**

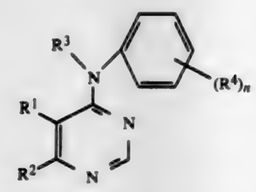
1. 2-[2-(5-Methyl-4-imidazolylmethylthio)ethylamino]-5-[5-(1,3-benzodioxolyl)methyl]-4-pyrimidone di(methanesulphonate).

4,450,162
PYRIMIDINE DERIVATIVES AND A PHARMACEUTICAL COMPOSITION CONTAINING THEM

Toshiharu Kamioka; Isao Nakayama, both of Hiromachi; Takeo Honda, Ube; Takashi Kobayashi, Ube; Tokio Obata, Ube; Katsutoshi Fujii, Ube; Mikio Kojima, Ube, and Yuji Akiyoshi, Ube, all of Japan, assignors to Sankyo Company, Limited, Tokyo and Ube Industries Limited, Ube, both of, Japan

Filed Jun. 2, 1982, Ser. No. 384,416
Claims priority, application Japan, Jun. 5, 1981, 56-86555
Int. Cl.³ A61K *31/505*; C07D *239/42*
U.S. Cl. 424—251 11 Claims

1. Compounds of formula (I):



(I)

(wherein:

R^1 and R^2 are the same or different and each represents a C_1–C_6 alkyl group or R^1 and R^2 together represent a C_3–C_5 alkylene group;

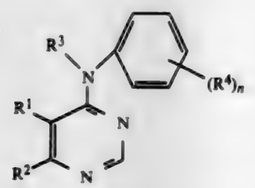
R^3 represents a hydrogen atom or a C_1–C_6 alkyl group;

n is 0, 1 or 2; and

R^4 represents a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, a C_1–C_6 haloalkyl group, a halogen atom, a nitro group, a C_1–C_6 alkanesulphonyl group, a cyano group, a carboxy group or a C_2–C_7 alkoxycarbonyl group and, when n is 2, the two groups represented by R^4 may be the same or different or they may together represent a methylenedioxy group)

and pharmaceutically acceptable acid addition salts thereof.

8. A pharmaceutical composition comprising an effective amount of an antidepressant compound in admixture with a pharmaceutically acceptable carrier or diluent, wherein the antidepressant compound is selected from compounds of formula (I):



(I)

(wherein:

R^1 and R^2 are the same or different and each represents a C_1–C_6 alkyl group or R^1 and R^2 together represent a C_3–C_5 alkylene group;

R^3 represents a hydrogen atom or a C_1–C_6 alkyl group;

n is 0, 1 or 2; and

R^4 represents a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, a C_1–C_6 haloalkyl group, a halogen atom, a nitro group, a C_1–C_6 alkanesulphonyl group, a cyano group, a carboxy group or a C_2–C_7 alkoxycarbonyl group and, when n is 2, the two groups represented by R^4 may be the same or different or they may together represent a methylenedioxy group)

and pharmaceutically acid addition salts thereof.

4,450,163
PROCESS FOR THE PREPARATION OF 1,3,7-TRIALKYL XANTHINES AND DI(3,7-DIMETHYLXANTHIN-1-YL)METHANE AS A MEDICAMENT

Georges Philippossian, Lausanne, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation of Ser. No. 210,785, Nov. 26, 1980, abandoned, which is a continuation-in-part of Ser. No. 148,045, May 8, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 308,039
Claims priority, application Switzerland, May 22, 1979, 4780/79
Int. Cl.³ C07D *473/12*; A61K *31/52*
U.S. Cl. 424—253 3 Claims

1. Di(3,7-dimethylxanthin-1-yl)methane.

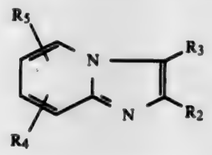
3. A pharmaceutical composition containing an effective quantity of di(3,7-dimethylxanthin-1-yl)methane to produce an immunosuppressant activity.

4,450,164
IMIDAZO[1,2-A]PYRIDINES AND USE

James A. Bristol, Ann Arbor, Mich., and Chester Puchalski, Dover, N.J., assignors to Schering Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 277,576, Jun. 26, 1981, abandoned, which is a continuation-in-part of Ser. No. 114,473, Jan. 23, 1980, abandoned. This application Dec. 20, 1982, Ser. No. 450,885
Claims priority, application South Africa, Jan. 13, 1981, 81/0219; European Pat. Off., Jun. 21, 1981, 82105411.1
Int. Cl.³ A61K *31/435*; C07D *471/04*
U.S. Cl. 424—256 42 Claims

1. A compound represented by the formula



I

and the 2,3-dihydro,5,6,7,8-tetrahydro and 2,3,5,6,7,8-hexahydro derivatives thereof, and the pharmaceutically acceptable salts thereof, wherein:

R_2 is hydrogen, lower alkyl or hydroxyloweralkyl;

R_3 is lower alkyl, $—CH_2CN$, hydroxyloweralkyl, —NO, $—CH_2N{=}C$ or



(wherein R_6 and R_7 are independently selected from the group consisting of hydrogen and lower alkyl) or hydrogen, provided R_2 is not hydrogen;

R_4 is Z-T-W wherein Z represents —O—, —NH— or a single bond; T represents a straight or branched chain lower alkylene group and when Z is a single bond, T also represents an ethenylene or a propenylene group wherein the unsaturated carbon is at the single bond and when Z is —O—, T also represents an allylene group wherein the saturated carbon is at the oxygen;

W represents Ar and when T is allylene and Z is —O—, W represents hydrogen;

Ar represents thienyl, pyridinyl, furanyl, phenyl and substituted phenyl wherein there are one or more substituents on the phenyl independently selected from halogen or lower alkyl; and

R_5 is hydrogen, halogen or lower alkyl.

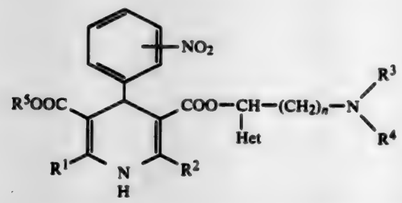
40. A pharmaceutical formulation for use in the treatment of ulcers which comprises a compound of claim 1 in a therapeutically effective amount sufficient to alleviate the symptoms of peptic ulcer disease together with a non-toxic, pharmaceutically acceptable carrier.

4,450,165
DIHYDROPYRIDINE COMPOUNDS

Kazuhiko Araki; Hideki Ao, both of Nakatsu; Tomohiko Kimura, Izumi, and Kenichi Aihara, Yoshitomi, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Jun. 4, 1982, Ser. No. 385,141
Claims priority, application Japan, Jun. 4, 1981, 56-86383
Int. Cl.³ A61K *31/47*; C07D *215/58, 213/79*
U.S. Cl. 424—258 10 Claims

1. A dihydropyridine compound of the formula:



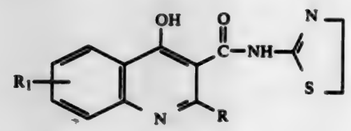
or a pharmaceutically acceptable acid addition salt thereof, wherein Het is 5- or 6-membered aromatic heteroaryl selected from the group consisting of furyl, thienyl, pyridyl, thiazolyl, oxazolyl, isooxazolyl, pyrrolyl, imidazolyl, pyrimidinyl or 3,4-dihydrocarbostyril, and said heteroaryl being unsubstituted or substituted by a lower alkyl or halogen, R^1 and R^2 are each lower alkyl, R^3 is lower alkyl, R^4 is hydrogen, lower alkyl or aralkyl, R^5 is lower alkyl or aralkyl, and n is 1 or 2.

4,450,166
N-(4,5-DIHYDRO-THIAZOL-2-YL)-3-QUINOLINE-CARBOXAMIDES HAVING ANXIOLYTIC ACTIVITY

Francois Clemence, Paris; Peter F. Hunt, Gonesse; Odile Le Martret, Paris, and Daniel Humbert, Fontenay Sous Bois, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jun. 9, 1982, Ser. No. 386,597
Claims priority, application France, Jun. 12, 1981, 81 11607; Mar. 15, 1982, 82 04331
Int. Cl.³ A61K *31/47*; C07D *215/56*
U.S. Cl. 424—258 27 Claims

1. A compound selected from the group consisting of N-(4,5-dihydro-thiazol-2-yl)-4-hydroxy-3-quinoline-carboxamides of the formula



I

wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and R_1 is selected from the group consisting of hydrogen, halogen, linear alkyl of 1 to 4 carbon atoms, branched alkyl of 3 to 5 carbon atoms, alkoxy of 1 to 4 carbon atoms, CF_3—, CF_3O—, CF_3S— and CH_3S— in the 6- or 7-position and their non-toxic, pharmaceutically acceptable acid addition salts.

10. An anxiolytic composition comprising an anxiolytically effective amount of at least one compound of claim 1 and a pharmaceutical carrier.

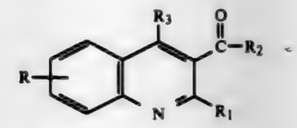
19. A method of inducing anxiolytic activity in warm-blooded animals comprising administering to warm-blooded animals an anxiolytically effective amount of at least one compound of claim 1.

4,450,167
3-QUINOLINE CARBOXAMIDES HAVING ANXIOLYTIC ACTIVITY

Odile Le Martret, Paris; Daniel Humbert, Fontenay-sous-Bois, and Peter F. Hunt, Gonesse, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jul. 15, 1982, Ser. No. 398,575
Claims priority, application France, Jul. 17, 1981, 81 13957
Int. Cl.³ A61K *31/47*; C07D *215/54, 215/56*
U.S. Cl. 424—258 16 Claims

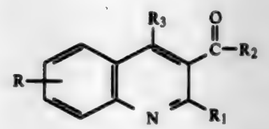
1. A compound selected from the group consisting of 3-quinoline-carboxamides of the formula



wherein R is in 6 or 7-position and is selected from the group consisting of hydrogen, halogen, and alkoxy of 1 to 6 carbon atoms R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, phenyl and benzyl, R_2 is $—NHR_4$, R_4 is alkyl of 2 to 6 carbon atoms, and R_3 is —OH and their non-toxic, pharmaceutically acceptable acid addition salts.

5. An anxiolytic composition comprising an anxiolytically effective amount of at least one compound of claim 1 and a pharmaceutical carrier.

9. A method of inducing anxiolytic activity in warm-blooded animals comprising administering to warm-blooded animals an anxiolytically effective amount of at least one compound of 3-quinoline-carboxamides of the formula



I

wherein R is in 6- or 7-position and is selected from the group consisting of hydrogen, halogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkoxy of 1 to 6 atoms, $—CF_3$, $—SCF_3$ and CH_3S—, R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, phenyl and benzyl, R_2 is $—NHR_4$, R_4 is selected from the group consisting of alkyl of 2 to 6 carbon atoms, substituted aryl of 6 to 10 carbon atoms and substituted pyridyl, said substituents being at least one member of the group consisting of halogen, methyl, methoxy, methylthio, trifluoromethyl, trifluoromethylthio, —OH, $—NH_2$ and alkylamino and dialkylamino of 1 to 6 alkyl carbon atoms with the proviso that when R_4 is a mono substituted aryl or heterocycle, the substituent is different from R of the quinoline when it is a halogen and R_3 is selected from the group consisting of hydrogen and —OH and their non-toxic, pharmaceutically acceptable acid addition salts.

4,450,168

PHARMACEUTICAL COMPOSITIONS CONTAINING COMPOUNDS HAVING ACTION ON HISTAMINE RECEPTORS

David E. Bays, and Roger Hayes, both of Hertfordshire, England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 401,152, Jul. 22, 1982, abandoned. This application Jul. 14, 1983, Ser. No. 513,750

Claims priority, application United Kingdom, Jul. 22, 1981, 8122607

Int. Cl.[3] A61K *31/44;* C07D *403/12*

U.S. Cl. 424—267 12 Claims

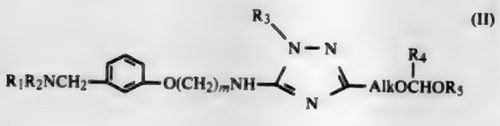
5. A pharmaceutical composition for the treatment of conditions mediated through histamine H_2-receptors comprising an effective amount of a compound selected from

1-methyl-N-[3-[3-(1-piperidinylmethyl)phenoxy]propyl]-3-[(tetrahydro-2-pyranyl)oxymethyl]-1H-1,2,4-triazole-5-amine;

3-[(ethoxymethoxy)methyl]-1-methyl-N-[3-[3-(1-piperidinylmethyl)phenoxy]propyl]-1H-1,2,4-triazole-5-amine;

and physiologically acceptable salts thereof, together with at least one pharmaceutically acceptable carrier or diluent.

7. A compound of the formula (II)



(II)

or a physiologically acceptable salt or hydrate therof in which R_1R_2N is a pyrrolidino, piperidino or hexamethylenimino ring; m is 3 or 4; R_3 represents hydrogen or methyl; Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms; and R_4 represents a hydrogen atom and R_5 represents a C_{1-4} alkyl group; or R_4 and R_5 together with the atoms to which they are attached form a tetrahydropyranyl ring.

4,450,169

INSECTICIDAL ESTERS

Francois Nezot, Thiais; Pierre Girault, Paris; Jean Tessier, Vincennes, and Jacques Martel, Bondy, all of France, assignors to Roussel Uclaf, Paris, France

Filed Feb. 25, 1982, Ser. No. 352,257

Claims priority, application France, Feb. 26, 1981, 81 03831

Int. Cl.[3] C07D *417/12;* A61K *31/425;* C07D *277/30, 277/34*

U.S. Cl. 424—270 3 Claims

1. (2-benzyl-5-thiazolyl)-methyl (1R,3S) 2,2-dimethyl-3-[(dihydro-2-oxo-3-(2H)-thienylidene)-methyl]-cyclopropane-1-carboxylate.

4,450,170

TREATMENT OF DIARRHOEA WITH 2-AMINOIMIDAZOLINE DERIVATIVES

Lee J. Beeley, Dorking, and Peter M. Newsome, Worcester Park, both of England, assignors to Beecham Group Limited, England

Filed Jun. 24, 1981, Ser. No. 277,034

Claims priority, application United Kingdom, Jul. 9, 1980, 8022407; Feb. 20, 1981, 8105339

Int. Cl.[3] A61K *31/415*

U.S. Cl. 424—273 R 7 Claims

2. A mehthod for treating diarrhoea in animals including man, which comprises administering an effective, non-toxic amount of p-amino clonidine or a pharmaceutically acceptable N-carboxylic acid acyl derivative and/or pharmaceutically acceptable acid addition salt thereof, to an animal, including man, suffering from diarrhoea.

4. A method for treating diarrhoea in animals including man, which comprises administering an effective, non-toxic amount of a compound of formula (I):

A—B—C (I)

wherein

A is 2-imidazolinyl optionally substituted on a nitrogen atom with C_{1-4} alkyl;

B is NR^3, where R^3 is C_{1-4} alkyl or hydrogen; and

C is phenyl being substituted by unsubstituted guanidino or guanidino substituted by one or more C_{1-4} alkyl; said phenyl being optionally substituted by one or two groups, each selected from halogen, (C_{1-4}) alkyl, (C_{1-4}) alkoxy and hydroxy;

or a pharmaceutically acceptable N-carboxylic acid acyl derivative and/or pharmaceutically acceptable acid addition salt thereof, to an animal, including man, suffering from diarrhoea.

4,450,171

ANTIHYPERCHOLESTEROLEMIC COMPOUNDS

William F. Hoffman; Robert L. Smith, both of Lansdale, Pa., and Alvin K. Willard, Wilmington, Del., assignors to Merck & Co., Inc., Rahway, N.J.

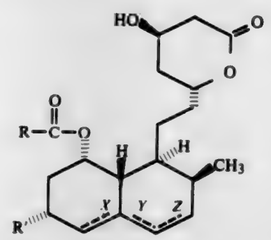
Continuation-in-part of Ser. No. 217,640, Dec. 18, 1980, which is a continuation-in-part of Ser. No. 175,460, Aug. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 118,051, Feb. 4, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 388,372

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[3] C07C *69/74;* A61K *31/335;* C07D *309/30*

U.S. Cl. 424—279 9 Claims

1. A compound of the formula:



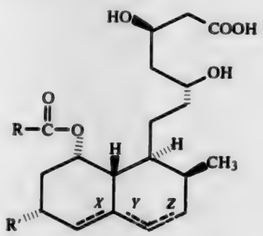
wherein

R′ is H or CH_3;

R is 1-ethyl-1-methylpropyl, 1,1-diethylpropyl, 1,1-dimethyethyl, or 1,1-diethylbutyl,

the dotted lines at X, Y and Z represent possible double bonds, said double bonds, when any are present, being either X and Z in combination or X, Y or Z alone; or

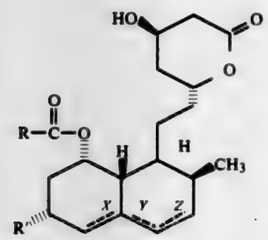
the corresponding dihydroxy acid of the formula:



or a pharmaceutically acceptable salt of said acid, a C_{1-4}alkyl ester of said acid, a phenyl- dimethylamino-, or acetylamino-substituted-C_{1-4} alkyl ester or α-monoglyceride of said acid.

4. A pharmaceutical antihypercholesterolemic composition

comprising a pharmaceutical carrier and an antihypercholesterolemic effective amount of a compound of structural formula:



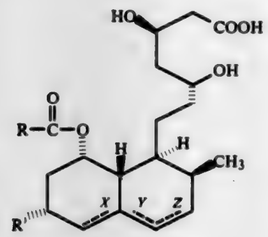
in which

R′ is H, or CH_3;

R is 1-ethyl-1-methylpropyl, 1,1-diethylpropyl, 1,1-dimethyethyl, or 1,1-diethylbutyl,

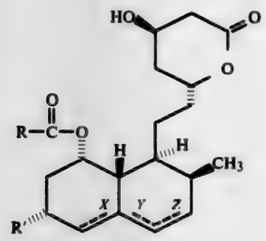
the dotted lines at X, Y and Z represent possible double bonds, said double bonds, when any are present, being either X and Z in combination or X, Y or Z alone; or

the corresponding dihydroxy acid of the formula:



or a pharmaceutically acceptable salt of said acid, a C_{1-4}alkyl ester of said acid, a phenyl- dimethylamino-, or acetylamino-substituted-C_{1-4} alkyl ester or α-monoglyceride of said acid.

7. A method of treating hypercholesterolemia in a patient in need of such treatment which comprises administration of an antihyperchloesterolemic effective amount of a compound of structural formula:



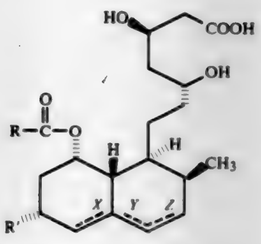
wherein

R′ is H or CH_3;

R is 1-ethyl-1-methylpropyl, 1,1-diethylpropyl, 1,1-dimethyethyl, or 1,1-diethylbutyl,

the dotted lines at X, Y and Z represent possible double bonds, said double bonds, when any are present, being either X and Z in combination or X, Y or Z alone; or

the corresponding dihydroxy acid of the formula:



or a pharmaceutically acceptable salt of said acid, a C_{1-4}alkyl ester of said acid, a phenyl- dimethylamino-, or acetylamino-substituted-C_{1-4} alkyl ester or α-monoglyceride of said acid.

4,450,172

ANTIHYPERTENSIVE POLYHALOHYDROXYISOPROPYL PHENYLALKA(E)NOIC ACID ESTERS OF ALKYLAMINOHYDROXYPROPYLOXYPHENYLALKYL ALCOHOLS

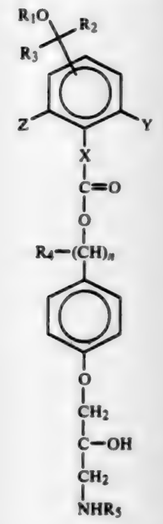
Sung-eun Yoo, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 10, 1982, Ser. No. 356,712

Int. Cl.[3] C07C *69/612, 69/618;* A61K *31/235*

U.S. Cl. 424—309 12 Claims

1. A compound having the formula:



(I)

wherein

R_1 is H, alkyl of 1-6 carbon atoms, acyl of 2-12 carbon atoms, benzoyl, benzyl, or benzyl or benzoyl monosubstituted with CN, OCH_3 or Cl;

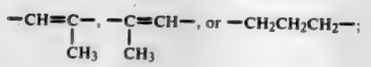
R_2 and R_3 are independently CF_3, CF_2Cl or CF_2H;

Y and Z are independently H, NO_2, alkoxy of 1-3 carbon atoms, alkylthio of 1-3 carbon atoms, halo(Cl, Br, F), dialkylamino of 1-3 carbon atoms, alkyl of 1-4 carbon atoms, or CF_3;

X is

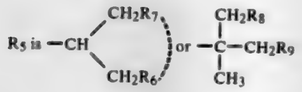
$-CH_2CH_2-$, $-\underset{CH_3}{CHCH_2}-$, $-CH_2\underset{CH_3}{CH}-$, $-CH{=}CH-$,

-continued



n is 0, 1, 2, or 3;

R_4 is H, alkyl of 1–7 carbon atoms, CF_3, or aralkyl where the alkyl is 1–7 carbon atoms;

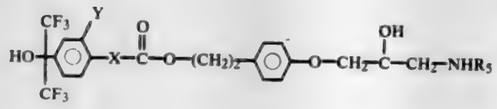


where

R_6, R_7, R_8 and R_9 are independently H, alkyl of 1–4 carbon atoms, phenyl, phenyl monosubstituted with CN, OCH_3or Cl, benzyl, or benzyl monosubstituted with CN, OCH_3 or Cl; or

R_6 and R_7 taken together are $(CH_2)_m$ where m is 0, 1, 2 or 3; or a pharmaceutically acceptable salt thereof.

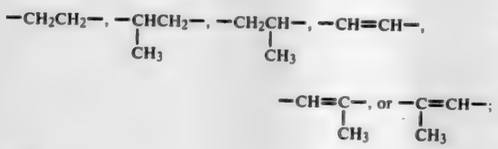
10. A compound of the formula:



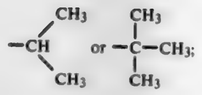
wherein

Y is N or NO_2;

X is



R_5 is



a pharmaceutically acceptable salt thereof.

11. A pharmaceutical composition consisting essentially of an antihypertensive amount of a compound of claim 1 or claim 2 or claim 3 or claim 4 or claim 5 or claim 6 or claim 7 or claim 8 or claim 9 or claim 10 and a pharmaceutically acceptable carrier.

12. A method of treating hypertension in a mammal consisting essentially of administering to a hypertensive mammal an antihypertensive amount of a compound of claim 1 or claim 2 or claim 3 or claim 4 or claim 5 or claim 6 or claim 7 or claim 8 or claim 9 or claim 10.

4,450,173

COMPOUNDS AND METHOD FOR TREATMENT OR PROPHYLAXIS OF CARDIAC DISORDERS

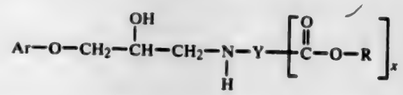
Paul W. Erhardt, and Robert J. Borgman, both of Mundelein, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 211,340, Nov. 28, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,629

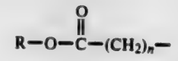
Int. Cl.³ A61K *31/24*; C07C *101/42*

U.S. Cl. 424—309 **20 Claims**

1. A method for the treatment or prophylaxis of cardiac disorders in a mammal, comprising administering by intravenous infusion into a mammal having a critical cardiac illness a β-blocking ester compound of the formula



wherein Y is a straight or branched carbon chain of from 1 to about 10 carbon atoms or aralkyl of from 8 to about 20 carbon atoms; R is lower alkyl, lower alkenyl, lower alkynyl, aryl or aralkyl; x is an integer from 1 to about 3, provided that when x is greater than 1, different occurrences of the —COOR group may be the same or different; Ar is phenyl or naphthyl, optionally additionally substituted with lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halogen, acetamido, amino, nitro, lower alkylamino, hydroxy, lower hydroxyalkyl, cyano or a group of the formula



wherein n is an integer from 0 to about 10 and R is as defined above; or a pharmaceutically acceptable salt thereof; which β-blocking ester compound rapidly converts to inactive metabolites upon in vivo enzymatic cleavage; wherein said β-blocking ester compound is intravenously infused at a rate sufficient to establish an effective β-blockade in said mammal, and said infusion is then terminated to effect substantial recovery of said mammal from the β-blocking effects of said compound.

4,450,174

DECYL QUATERNARY AMMONIUM COMPOUNDS

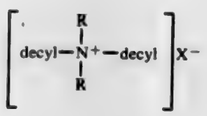
Harold A. Green, Havertown, Pa.; Alfonso N. Petrocci, Glen Rock, and Zdzislaw W. Dudzinski, Clifton, both of N.J., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Filed May 27, 1982, Ser. No. 382,399

Int. Cl.³ C07C *87/30*; A61K *31/14*

U.S. Cl. 424—329 **16 Claims**

1. A quaternary ammonium compound having the structural formula



wherein R is a lower alkyl group of from 1 to 4 carbon atoms, and X is either a halogen having an atomic weight greater than 30, methosulfate or ethosulfate, the term decyl referring to a mixture of primary branched chain alkyl groups, each of which has 10 carbon atoms and consists of a straight chain having at least two branches.

8. A method of inhibiting bacteria in an aqueous solution which comprises applying to said bacteria an inhibitorally effective amount of the compound of claim 1.

4,450,175

METHOD AND COMPOSITIONS FOR TREATING ACNE

Thelma G. Warshaw, 519 E. Broad St., Westfield, N.J. 07960

Filed Sep. 23, 1982, Ser. No. 422,293

Int. Cl.³ A61K *31/04*

U.S. Cl. 424—349 **5 Claims**

1. The method of treating acne which comprises applying topically to the locus of an acne papule a composition having a therapeutic component consisting essentially of an nitrate or nitrite having local vasodilating activity, said nitrate or nitrite being admixed with a topically acceptable and compatible pharmaceutical carrier, in a quantity sufficient to effect topical vasodilation without systemic vasodilation.

4,450,176

METHOD OF TREATING SOYBEAN MATERIAL

Nancy G. Stahel, Minneapolis, Minn., assignor to Land O'-Lakes, Inc., Arden Hills, Minn.

Filed Aug. 23, 1982, Ser. No. 410,351

Int. Cl.³ A23L *1/20*; A23K *1/18*

U.S. Cl. 426—2 **15 Claims**

1. A process for treating a particulate soybean material, comprising:

mixing a lower alcohol with a proteinaceous soybean material in a ratio that is at least approximately 9 pounds of alcohol to 60 pounds of soybean material in a closed vessel such that

the proteinaceous soybean material/alcohol mixture is fluidized;

introducing steam directly to the proteinaceous soybean material/alcohol mixture to heat the material to a treatment temperature to a maximum of approximately 280° F. thereby vaporizing the alcohol such that the alcohol is placed in intimate contact with the soybean material under superatmospheric pressure;

stopping the steam flow to the proteinaceous soybean material/alcohol mixture after the treatment temperature has been reached;

holding the soybean material/alcohol in a temperature range of approximately 190° F. to 280° F. without further introduction of steam in direct contact with the soybean material and until the soybean material reaches a PDI of approximately less than 10; and

venting the lower alcohol vapors from the enclosed vessel only after the soybean material has reached a PDI of approximately 10 to subatmospheric pressure while holding the temperature of the proteinaceous soybean material above the boiling point of the lower alcohol at the subatmospheric pressure thereby removing substantially all of the lower alcohol from the proteinaceous soybean material.

4,450,177

METHOD OF PRODUCING FROZEN YEAST-LEAVENED DOUGH

Robert W. Larson, Croton-on-Hudson; Wen C. Lou, Yorktown Heights; Vivian C. DeVito, Tuckahoe, and Karen A. Neidinger, Ossining, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 248,147, Apr. 30, 1981, Pat. No. 4,406,911, which is a continuation of Ser. No. 164,374, Jun. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 953,807, Oct. 23, 1978, abandoned. This application Sep. 26, 1983, Ser. No. 535,978

Claims priority, application Canada, Oct. 19, 1979, 338082

The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.

Int. Cl.³ A21D *8/00*

U.S. Cl. 426—19 **4 Claims**

1. A method for producing a frozen, proofed yeast-leavened dough which can be placed in an oven in the frozen state and fully baked within about one hour's time after removal from the freezer comprising the steps of:

(a) formulating and mixing a yeast-containing dough under ambient temperature;

(b) fermenting the resultant dough for a period of at least five minutes at a temperature between 20° C. and 30° C.;

(c) dividing the fermented dough into separate portions;

(d) forming the fermented dough portions in a desired shape;

(e) permitting the formed dough pieces to proof such that additional carbon dioxide is generated by the yeast;

(f) freezing the proofed dough pieces to a core temperature of between −1° C. to −25° C. and, thereafter;

(g) storing the frozen dough at a temperature of from −30° C. to −10° C.

4,450,178

METHOD AND A SYSTEM FOR TREATING LARGE STRAW BALES, PARTICULARLY ROUND BALES, WITH AMMONIA OR OTHER LYE AGENTS

Ebbe Korsgaard, Agerövej 14, Karby, Denmark

PCT No. PCT/DK81/00071, 371 Date Mar. 15, 1982, 102(e) Date Mar. 15, 1982, PCT Pub. No. WO82/00235, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 14, 1981, Ser. No. 361,913

Claims priority, application Denmark, Jul. 15, 1980, 3048/80

Int. Cl.³ A23K *1/22*

U.S. Cl. 426—69 **4 Claims**

1. A method of treating compacted straw bales with ammonia or lye comprising loading a compacted bale on a bale handling implement of a tractor, said implement having injection and gripping means including at least one spear, transporting the loaded compacted bale on the bale handling implement of the tractor from a receiving position to a final storage position, and while transporting or loading said bale introducing the ammonia or lye into said compacted bale through at least one spear of said injection means during transporting and loading of the bale, said introducing step includes forcing said injection means into the compacted bale by movement of the bale handling implement.

4,450,179

TWO COMPONENT SOFT CANDY

Walter V. Vink, Purdys, N.Y., and Deborah G. Aldrich, Stamford, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 25, 1982, Ser. No. 392,425

Int. Cl.³ A23G *3/00*

U.S. Cl. 426—103 **13 Claims**

1. A two-component soft candy composition comprising:

a supportive moisture stable shell portion comprising

a hydrophilic component selected from the group consisting of corn syrup, invert sugar, and hydrogenated starch hydrolysates;

a hydrophobic component selected from the group consisting of sugar and hydrogenated sugar, in proportions such that said shell portion has an equilibrium relative humidity of from about 30% to about 70% at a temperature of about 24° C. and the gain and loss of moisture of said shell portion at 24° C. is not more than about 2% by weight; and

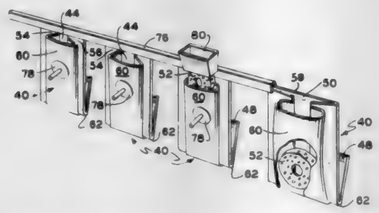
a core portion containing flavoring, sweetening, and coloring ingredients which are hydrophobic in nature.

4,450,180

PACKAGE FOR INCREASING THE VOLUMETRIC YIELD OF MICROWAVE COOKED POPCORN

James D. Watkins, Golden Valley, Minn., assignor to Golden Valley Foods Inc., Eden Prairie, Minn.

Filed Jul. 7, 1980, Ser. No. 166,373
Int. Cl.³ B65D *81/34*; B65B *29/08*
U.S. Cl. 426—107 **7 Claims**



1. A package for shipping and popping popcorn within a microwave oven comprising,

a bag formed from flexible sheet material transparent to microwave energy and having two opposed face panels including a first relatively large face panel with side edges and a second parallel face panel of reduced width including side edges spaced centrally from the side edges of the first panel,

sections of extensible interconnecting folded sheet material defining centrally projecting gussets extending between the side edges of the first and second panels,

a transverse end seal on at least one end of the bag bonding the sheet material together,

a change of popcorn and fat is contained therein intermediate the ends of the bag and spaced apart from said ends,

said charge being located between the centrally projecting gussets and said second face panel,

said centrally projecting gussets approaching each other closely enough to divide the bag into a pair of collateral tubes including a first longitudinally extending tube including said first panel and of a relatively large cross-sectional area and

a second longitudinally extending tube including said second panel and of a smaller cross-section,

the charge of popcorn and fat is confined substantially entirely in the tube of smaller cross-section,

said tubes being in communication with each other between the gussets so that the popcorn can pass from the smaller tube to the larger tube during popping within the bag,

means as part of the bag to temporarily restrain the charge at the center of the bag and in only one tube,

the charge of popcorn and fat confined in the small tube having a broad face adapted to rest adjacent a floor portion of said microwave oven during popping whereby microwave energy is efficiently absorbed to achieve a popped volume on the order of 10% to 15% or more greater than an equivalent package with tubes of equal cross-section.

4,450,181

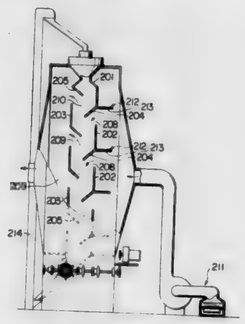
METHOD OF HUMIDIFYING POLISHED RICE

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 175,507, Aug. 5, 1980, abandoned. This application May 19, 1983, Ser. No. 496,175
Claims priority, application Japan, Aug. 10, 1979, 54-101284
Int. Cl.³ A23L *1/10*
U.S. Cl. 426—507 **8 Claims**

1. A method of humidifying polished rice, comprising the step of:

adding moisture to the polished rice at a rate to cause the rice to adsorb the moisture progressively so that its moisture content increases gradually and continuously or almost continuously at approximately 0.2 to 0.3 percent by



weight of the polished rice per one hour, until the desired moisture content is achieved.

4,450,182

PROCESS FOR MODIFYING A DAIRY MEDIA FOR USE AS A FOAMING AGENT

Howard D. Stahl, Scarsdale, and Raymond C. Yuan, North Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,770
Int. Cl.³ A23C *3/04*
U.S. Cl. 426—565 **13 Claims**

1. A process for preparing a frozen foam composition containing a dairy medium and having an extended, thawed, refrigerated storage stability comprising the steps of:

(a) reducing the calcium activity of the dairy medium by at least about 70%;

(b) dispersing the reduced calcium activity dairy medium, an emulsifier, gum, and a carbohydrate in water;

(c) preparing a lipid solution;

(d) combining the aqueous dispersion of step b and the lipid solution of step c so as to form an admixture;

(e) homogenizing said admixture at a pressure in excess of about 6000 psig so as to form an emulsion;

(f) cooling said emulsion to a temperture effective to allow the lipid to crystallize;

(g) whipping and aerating said cooled emulsion to an overrun of at least about 150% by volume; and

(h) freezing said whipped emulsion.

4,450,183

PROCESS FOR MANUFACTURING DRIED MEAT EMULSIONS

Marvin P. Steinberg, 4 O'Connor Ct., Champaign, Ill. 61820, and Theodore S. Lioutas, Urbana, Ill., assignors to Marvin P. Steinberg, Champaign, Ill.

Filed Jun. 18, 1982, Ser. No. 389,590
Int. Cl.³ A23B *4/04*; A23L *1/31*
U.S. Cl. 426—646 **7 Claims**

1. The process for manufacturing a dried meat emulsion in thin sheets readily rehydratable to a product with good meat texture, consisting essentially of the following combination of steps:

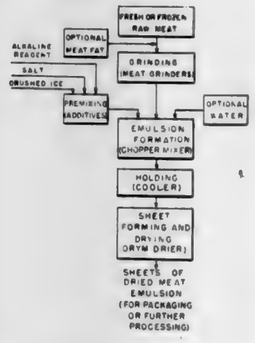
(a) combining finely-divided fat-containing raw meat with added salt (NaCl) and added water or ice to form a mixture convertible into a meat emulsion;

(b) if the pH of said mixture is below 6.0, adjusting the mixture pH to a pH within the range from 6.0 to 8.0 so that the pH of the mixture is similar to the pH of fresh prerigor meat;

(c) converting said raw meat-containing mixture under

shearing conditions into a uniform emulsion paste having a continuous water phase and a dispersed fat phase;

(d) applying said emulsion paste to the exterior surface of an internally heated drum and forming a thin layer thereon; and then



(e) rapidly drying the applied layer on said drum to a moisture content of from 5 to 40% by weight to obtain the dried meat emulsion.

4,450,184

HOLLOW SPHERE CERAMIC PARTICLES FOR ABRADABLE COATINGS

Frank N. Longo, East Northport; Nicholas F. Bader, III, Farmingdale, and Mitchell R. Dorfman, East Meadow, all of N.Y., assignors to METCO Incorporated, Westbury, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,288
Int. Cl.³ B05D *1/10, 5/02*
U.S. Cl. 427—34 **5 Claims**

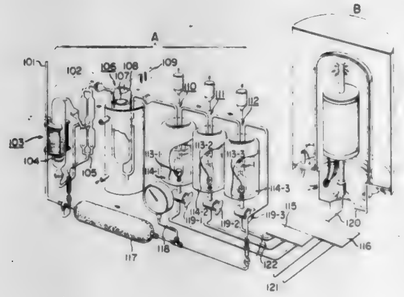
1. A process for producing an abradable porous coating comprising flame spraying hollow spheres made of a refractory metal oxide selected from the group consisting of zirconium oxide and magnesium zirconate where each hollow sphere has a size between about −100 mesh, U.S. standard screen size, and +5 microns.

4,450,185

PROCESS FOR FORMING AMORPHOUS SILICON FILM

Isamu Shimizu, Yokohama; Kyosuke Ogawa, and Eiichi Inoue, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,186
Claims priority, application Japan, Mar. 12, 1981, 56-36266
Int. Cl.³ H01L *45/00*
U.S. Cl. 427—39 **4 Claims**



1. Process for providing a source of gaseous film-forming material capable of forming on a substrate in a deposition chamber, a substantially uniform film over a broad substrate surface area having enhanced photoconductive properties which comprises continuously:

(a) introducing a gaseous source containing silicon into a discharge reaction chamber;

(b) causing a discharge in said chamber in the presence of said gaseous atmosphere sufficient to form a gaseous reaction product having silicon oligomers;

(c) fractionating said gaseous reaction product to separate and collect a gaseous, film-forming material comprising silicon oligomers;

(d) introducing said gaseous film forming material into said deposition chamber and;

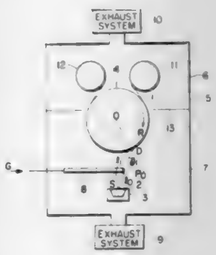
(e) forming a film from said gaseous film-forming material in said deposition chamber.

4,450,186

METHOD AND DEVICE FOR MANUFACTURING MAGNETIC RECORDING MEDIUM

Koichi Shinohara, Hyogo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 19, 1982, Ser. No. 409,608
Claims priority, application Japan, Aug. 20, 1981, 56-131176; Sep. 9, 1981, 56-142698; Oct. 9, 1981, 56-161624
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—42 **4 Claims**



1. A method for manufacturing a magnetic recording medium comprising the step of depositing a ferromagnetic material on a polymeric base body which is moved along a cooling support body in a vacuum chamber using an incident angle control mask for controlling a vapor flow, while spraying a gas from the vicinity of an incident angle control portion of said mask.

4,450,187

IMMERSION DEPOSITED CATHODES

Lawrence J. Gestaut, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Apr. 9, 1982, Ser. No. 366,880
Int. Cl.³ B05D *5/12*; C23C *3/02*
U.S. Cl. 427—125 **16 Claims**

1. A process for the electroless plating of a metal upon a substrate metal comprising the steps of:

selecting a substrate metal capable of adsorbing hydrogen;

interdiffusing surfaces of the substrate metal with a second metal;

leaching a preponderance of the second metal from the interdiffused surface to leave a surface tending to include adsorbed hydrogen; and

immersing the substrate metal into a plating bath containing ions of the metal to be plated upon the substrate.

4,450,188

PROCESS FOR THE PREPARATION OF PRECIOUS METAL-COATED PARTICLES

Shinroku Kawasumi, 5-7-17, Inamuragasaki, Kamakura-shi, Kanagawa Prefecture, Japan

Filed Apr. 7, 1981, Ser. No. 251,746
Claims priority, application Japan, Apr. 18, 1980, 55-51516; Aug. 26, 1980, 55-116482
Int. Cl.³ B05D 7/14, 5/12; H01B 1/02
U.S. Cl. 427—217 8 Claims

1. A process for the preparation of precious metal-coated particles which comprises adding a non-metallic reducing agent to an aqueous suspension containing (A) homogeneously suspended core material particles having a mean diameter of less than 10μ; (B) homogeneously suspended precious metal salts particles; and (C) dissolved precious metal ions, in which the ratio of the amount of the core material against the total amount of the precious metal contained in both forms in the suspension ranges from 1/9 to 7/3, in an aqueous acidic medium having little dissolving capacity for the core material, so as to produce precious metal-coated particles through formation of gelling state which breaks as the coating proceeds, and recovering the so-produced precious metal-coated particles.

4,450,189

METHOD OF TREATING A POLYMERIZING REACTOR

Paul Laroche, and Jean-Bernard Pompon, both of Saint Auban, France, assignors to Chloe Chimie, Puteaux, France

Filed Jun. 14, 1982, Ser. No. 387,924
Claims priority, application France, Jun. 26, 1981, 81 12579
Int. Cl.³ C08F 2/00
U.S. Cl. 427—236 14 Claims

1. A method of treating a polymerizing reactor to minimize polymer build-up comprising coating the internal surfaces within the reactor with a modified rosin, said rosin being chemically modified by reaction with double bonds of the abietic acids present in the rosin, prior to carrying out the polymerization reaction in the reactor.

4,450,190

PROCESS FOR SENSITIZING ARTICLES FOR METALLIZATION AND RESULTING ARTICLES

Francis J. Nuzzi, Freeport; Edward J. Leech, Oyster Bay; Richard W. Charm, Huntington Station, and Joseph Polichette, South Farmingdale, all of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 796,809, May 13, 1977, Pat. No. 4,199,623, which is a continuation of Ser. No. 520,355, Nov. 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 407,555, Oct. 18, 1973, and Ser. No. 270,861, Jul. 11, 1972. This application Oct. 1, 1979, Ser. No. 80,488
The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.
Int. Cl.³ C23C 3/02
U.S. Cl. 427—304 4 Claims

1. A process for the electroless deposition of metal on a non-metallic surface, said process comprising the steps of:
(a) pre-sensitizing the non-metallic surface to the electroless deposition of metal by contacting said non-metallic surface with a liquid medium comprising an admixture of a polar liquid, a halide, cupric ions and cuprous ions in a weight ratio of cuprous ions to cupric ions of at least 0.4:1;
(b) Rinsing said contacted surface with an aqueous solution and forming an adherent water-insoluble derivative of said liquid medium adsorbed on said non-metallic surface;
(c) treating said rinsed surface with an electroless metal deposition bath containing a reducing agent to render said insoluble derivative catalytic to the electroless deposition of metal; and
(d) contacting said catalytically sensitive surface with an electroless metal deposition bath to form an electroless deposit of metal thereon.

4,450,191

AMMONIUM IONS USED AS ELECTROLESS COPPER PLATING RATE CONTROLLER

Donald A. Arcilesi, Mt. Clemens, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed Sep. 2, 1982, Ser. No. 413,225
Int. Cl.³ C23C 3/02
U.S. Cl. 427—443.1 12 Claims

1. In a process for applying electroless copper plating to a substrate which process includes contacting the substrate with a solution comprising copper, a complexing agent, a reducing agent, and a pH adjuster, the improvement comprising contacting the substrate with said solution wherein said solution further comprises ammonium ions present in an amount of from about 50–600 mg/l, effective to function as a plating rate controller.

4,450,192

CONSTRUCTION BARRIER BOARD

Joseph A. Cogliano, Pasadena, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,747
Int. Cl.³ B32B 1/04, 3/02, 3/12, 11/04
U.S. Cl. 428—40 21 Claims



1. A performed sheet-like barrier consisting essentially of
(a) a substantially rigid, porous, closed-cellular, substantially planar structure having a first and a second major surface and edges defining the dimensions of said structure, said structure having a thickness of from about 0.25 inch to 10 inches;
(b) an adhesive bituminous sheet formed from blends of bituminous material and a natural or synthetic rubber or resin, said sheet having a first and a second major surface and edges defining the dimensions of sheet and having a thickness of at least 0.01 inch, wherein the first major surface of said sheet is in contact with and self adhered to the substantial entire first major surface of said porous structure;
(c) a coating which is substantially non-adherent with respect to said adhesive bituminous sheet, said coating being a removable sheet which is substantially coextensive and congruent with the second major surface of the adhesive bituminous sheet or said coating being a film of substantially non-adherent material applied to at least the substantial entire second major surface of said structure; said porous structure (a) and said sheet (b) are each substantially in the form of a quadrilateral parallelogram, each of two adjacent edges of said sheet extend beyond each of two adjacent edges of said porous structure, respectively, are in contact with each other at one corner section of the barrier and are substantially parallel to each of the two adjacent edges of said porous structure; and each of the two remaining adjacent edges of said sheet are substantially congruent with each of the two remaining adjacent edges of said porous structure, respectively.

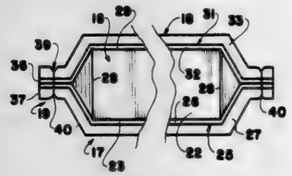
4,450,193

MAT ASSEMBLY

Raymond Staebler, 411 Zanzibar Pl., Billings, Mont. 59105

Filed Jul. 5, 1983, Ser. No. 510,971
Int. Cl.³ B32B 3/06, 3/18
U.S. Cl. 428—71 8 Claims

1. A mat assembly including a pad portion, a base portion, a face portion, a fastening portion and a securing portion; said pad portion including a foam layer, said foam layer having a thickness between about 3/16th and $\frac{1}{2}$th of an inch; said base portion being disposed adjacent to a major surface of said foam layer, said base portion including a flexible laminate including a fabric backing layer in contact with said foam layer and an outer plastic layer integral therewith, said base portion having a length and a width slightly larger than said foam layer so that the base portion extends beyond the periphery of said foam layer on all edges thereof; said face portion being disposed adjacent to a major surface of said foam layer opposite to said base portion, said face portion including a flexible laminate including a fabric backing layer in contact with said foam layer



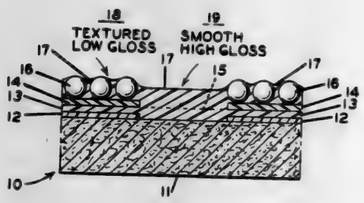
and an outer plastic layer integral therewith, said face portion having a length and a width substantially the same as said base portion and slightly larger than said foam layer with said face portion extending beyond the periphery of said foam layer on all edges thereof, the edges of said face portion being aligned with the edges of said base portion; said fastening portion including means for affixing together the adjacent peripheral sections of said face and base portions that extend beyond the edges of said foam layer; said securing portion including tie means extending from one of the shorter edges of said assembly; whereby said mat assembly can be rolled into a cylindrical configuration when not in use and secured by said tie means to facilitate storage.

4,450,194

DECORATIVE LAMINATE

William J. Kauffman, Lititz, and Ralph W. Wright, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jul. 29, 1982, Ser. No. 402,954
Int. Cl.³ B32B 3/00, 5/16
U.S. Cl. 428—172 32 Claims



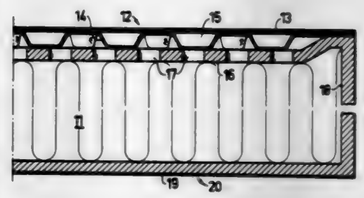
1. A decorative laminate having differential surface texture and differential gloss suitable as a floor covering comprising
a substrate having a printed image thereon;
PVC resin particles of type GP PVC resin adhered to said substrate in register with at least a portion of said printed image; and
a layer of transparent synthetic organic polymer adhered to the surface of said PVC resin particles and the portion of said substrate intermediate said PVC resin particles;
whereby the regions of said decorative laminate overlying said PVC resin particles exhibit a rougher surface texture and a lower gloss than the regions of said decorative laminate intermediate said PVC resin particles.

4,450,195

HYGIENIC ABSORBENT AND USE OF A PLASTIC FOIL IN THE ABSORBENT

Gunnar Hagbjer, Malmö, Sweden, assignor to IFM Akustikbyran AB, Stockholm, Sweden

PCT No. PCT/SE80/00137, 371 Date Dec. 31, 1980, 102(e) Date Dec. 31, 1980, PCT Pub. No. WO80/02580, PCT Pub. Date Nov. 27, 1980
PCT Filed May 9, 1980, Ser. No. 221,693
Claims priority, application Sweden, May 11, 1979, 7904166
Int. Cl.³ B32B 3/12
U.S. Cl. 428—178 7 Claims



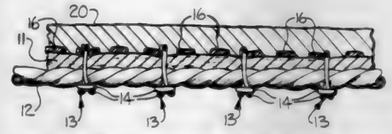
1. A hygienic sound absorbent comprising:
a layer of sound absorbing material;
a tight surface layer having at least a portion thereof connected to said layer of sound absorbing material;
means for defining a plurality of mutually-spaced, gas-filled cushions or blisters located between said tight surface layer and said layer of sound-absorbing material to thereby space said tight-surface layer from said sound-absorbing material, at least a portion of said cushion-defining means being connected to said tight surface layer, at least some of said gas-filled cushions or blisters being sized in accordance with the frequency-range of the sounds that are to be absorbed.

4,450,196

COMPOSITE FUSIBLE INTERLINING FABRIC AND METHOD

Dattatraya V. Kamat, Jenkintown, Pa., assignor to Crown Textile Company, Jenkintown, Pa.

Filed Feb. 17, 1983, Ser. No. 467,238
Int. Cl.³ B32B 3/00
U.S. Cl. 428—197 8 Claims



1. A composite fusible interlining fabric adapted to be fused to a base fabric and characterized by the smooth surface characteristics of nonwoven interlining fabric and the strength, bulk, resiliency, and drapability characteristics of woven and knit interlining fabrics, said interlining fabric comprising a layer of nonwoven fabric of closely compacted fibers, a layer of inlaid weft yarns positioned against one side of said layer of nonwoven fabric, stitch yarn knit through said layer of nonwoven fabric and said layer of inlaid weft yarns and securing said inlaid weft yarns to said layer of nonwoven fabric, and a coating of thermoactive adhesive material on the side of said layer of nonwoven fabric opposite the side against which said layer of inlaid weft yarns is positioned, said coating of thermoactive adhesive material being fusible at a predetermined temperature which is lower than the temperature at which said layer of nonwoven fabric, said layer of inlaid weft yarns, said knit stitch yarn and the base fabric will be adversely affected, so that said composite interlining fabric may be fused to one side of the

base fabric by the application of heat thereto, said layer of nonwoven fabric providing a barrier to prevent strike back of said adhesive coating material when said composite interlining fabric is fused to the base fabric.

4,450,197

POLYTETRAFLUOROETHYLENE-IMPREGNATED BUNDLES OF SIZED GLASS FIBERS

Thomas P. Hager, Reynoldsburg, and Larry W. Ferguson, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 14, 1982, Ser. No. 368,074

Int. Cl.³ D03D *3/00*; B05D *3/05*

U.S. Cl. 428—232 **5 Claims**

1. A method for impregnating a bundle of sized glass fibers which comprises:

(a) providing an essentially continuous bundle of glass fibers individually coated with a size comprising starch and a lubricant;

(b) impregnating said bundle with an aqueous impregnating composition comprising:

(i) emulsified polytetrafluoroethylene resin,

(ii) emulsified acrylic resin coalesceable to form a coherent film upon drying an aqueous dispersion thereof at temperatures as low as about 10° C.,

(iii) a thickening agent comprising base-solubilized polyacrylic acid, and

(iv) a polyhydrolyzable organosilane having non-hydrolyzable amine functionality and/or hydrolysis and/or condensation products thereof;

(c) drying the bundle containing said impregnating composition to deposit the non-volatile residue thereof in the interstices and on the outer surface of said bundle in contact with the sized glass fibers comprising said bundle.

2. A method according to claim 1 wherein said bundle of sized glass fibers is impregnated by immersion in a body of said aqueous impregnating composition to wet said bundle and then drawing the wetted bundle through a stripper die to remove excess aqueous impregnating composition from the bundle and to enhance penetration of said aqueous impregnating composition into the interstices of said bundle.

3. A method according to claim 1 wherein said size further comprises an acrylic resin, coalesceable to form a coherent film upon drying an aqueous dispersion thereof at temperature as low as about 10° C.

4. An impregnated bundle of glass fibers produced according to the method of claims 1, 2 or 3.

4,450,198

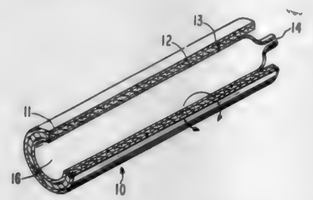
MICROPOROUS FILM WITH POLYMER IN PORES FOR REGULATING PASSAGE OF FLUID

Alan S. Michaels, San Francisco, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 115,750, Jan. 28, 1980, Pat. No. 4,304,232, which is a continuation-in-part of Ser. No. 862,363, Dec. 20, 1977, abandoned. This application Aug. 17, 1981, Ser. No. 293,696

Int. Cl.³ B32B *5/18*

U.S. Cl. 428—315.5 **1 Claim**



1. A microporous film comprising a microporous polymer selected from the group consisting of a microporous polyolefin, polyamide, polycarbonate, polyester, polystyrene, polysulphone, polyimide, polyvinyl chloride, polyaldehyde, polyarylate, polyhaloolefin polyacetyl, polyacrylate, and polyurethane, housing in its micropores a solid polymer selected from the group consisting of polyhydroxylalkyl acrylate, polyhydroxyalkyl methacrylate, polyacrylamide, poly(methacrylamide), polyvinyl pyrrolidone, polyvinyl alcohol, polyvinyl lactam acrylate, and polyvinyl piperidone.

4,450,199

MAGNETIC RECORDING MEDIUM

Eiichi Tadokoro; Masaaki Fujiyama, and Goro Akashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 7, 1981, Ser. No. 251,826

Claims priority, application Japan, Apr. 7, 1980, 55-45408; Apr. 7, 1980, 55-45409

Int. Cl.³ G11B *5/70*; B32B *3/10*

U.S. Cl. 428—317.9 **8 Claims**

1. A magnetic recording medium comprising a nonmagnetic support and a magnetic layer formed thereon, said magnetic layer comprising a magnetic powder and a binder which comprises a thermosetting resin, said magnetic layer having a center-line average surface roughness of not more than $2.1\times10^{-2}\mu$, and at least one property selected from an average particle size of at least 500 Å and a porosity of at least 30%.

4,450,200

COATING COMPOSITION AND COATED ARTICLE

Susumu Iwato, Urayasu; Tatuo Nakamura, and Takeo Kurauchi, both of Tokyo, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Aug. 17, 1982, Ser. No. 408,843

Int. Cl.³ B32B *5/16, 15/08*

U.S. Cl. 428—323 **6 Claims**

1. A multilayer coated article having an intermediate coat derived from a coating composition comprising:

A. at least one polyester resin derived from (1) at least one acid component selected from the group consisting of dibasic acids and the esters and the ester-forming derivatives thereof and (2) at least one alcohol component selected from the group consisting of polyhydric alcohols and the ester-forming derivatives thereof; and

B. at least one aminoplast resin having a number-average molecular weight of 800 to 1400,

said polyester resin containing at least 20% by weight, based on the total amount of the acid component, of an aliphatic dibasic acid having 4 to 10 carbon atoms and at least 20% by weight, based on the total amount of the alcohol component, of a dihydric alcohol having 2 to 6 carbon atoms, and

C. 2% to 20% by weight of ultrafine talc, 2% to 40% by weight of ultrafine barium sulfate, or 20% to 40% by weight of a mixture of ultrafine talc and ultrafine barium sulfate, said amounts of ultrafine talc and ultrafine barium sulfate being based on the total solid amount of said composition,

said polyester resin having a number-average molecular weight of 2000 to 4000, a hydroxyl number of 30 to 75, and an acid number of 5 to 15,

the weight ratio, in terms of a solid content, of the polyester resin to the aminoplast resin being 60/40 to 95/5,

wherein said coated film of said coating composition has an elongation of 20% and a static glass transition temperature of −10° C. to 20° C.

2. A coated article as claimed in claim 1, wherein said ultrafine talc has an average particle diameter of 2μ or less and a particle diameter of at least 90% by weight of the primary particles of less than 5μ.

4,450,201

MULTIPLE-LAYER HEAT BARRIER

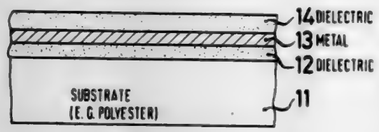
Klaus Brill, Korntal, and Wolfgang Grothe, Tiefenbronn, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 283,513, Jul. 15, 1981, abandoned. This application Oct. 13, 1981, Ser. No. 311,065

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039821

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—336 **21 Claims**



1. Multilayer heat barrier system having:

a transparent substrate;

a transparent metal layer;

at least one transparent layer applied to the side of the metal layer remote from the substrate, constituting an outer dielectric cover layer, said at least one layer comprising a mixture of (1) at least one compound selected from the group consisting of the oxides of titanium, silicon, tantalum and zirconium, zinc sulfide (2) at least one nitrogen compound having the same metal ion as said oxide or sulfide.

4,450,202

TRANSPARENCIES PRODUCED FROM EPOXY RESINS CURED WITH ADDUCTS OF BOROXINES AND INTERLAYERS OF MERCAPTAN RESINS

John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 232,054, Feb. 5, 1981, Pat. No. 4,343,928, and a continuation-in-part of Ser. No. 204,424, Nov. 6, 1980, Pat. No. 4,352,848, each is a continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886. This application Jul. 1, 1982, Ser. No. 394,205

Int. Cl.³ B32B *27/38*

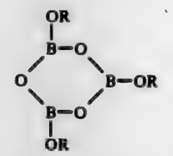
U.S. Cl. 428—412 **2 Claims**

1. A transparent composite having resistance to intense heat, comprising:

a transparent layer of a reaction product of a blend having

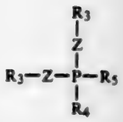
(a) from about 80 to about 100 parts by weight of an epoxy resin;

(b) from about 5 to about 30 parts by weight of a boroxine having the formula:



where R is a compound having from 1 to 18 carbon atoms, and

(c) from about 1 part to about 40 parts by weight of an organic phosphorus compound having the following formula:



where R_3 is selected from the group consisting of hydrocarbon radicals having from 1 to 24 carbon atoms, halo-substituted organic radicals having from 1 to 24 carbon atoms, and multihalo-substituted organic radicals having from 1 to 24 carbon atoms; and where R_3's may be the same or different radicals;

where R_4 is selected from the group consisting of all the radicals of R_3, oxygen, and radicals of the formula: —O—R_6, where R_6 is selected from the group consisting of all the radicals of R_3, organo-phosphorus polymeric radicals, and organo-phosphorus esters;

where R_5 is selected from the group consisting of hydrogen, hydroxyl, oxygen, sulfur, halogens or no radical at all;

where Z is selected from the group consisting of oxygen, sulfur, or no radical at all; and

where said transparent blend is contiguously sandwiched between transparent materials selected from the group consisting of acrylic, polycarbonate, polyurethane, silicate glass, and combinations thereof, to produce a composite transparency having an inside ply and an outside ply.

4,450,203

ELECTROGRAPHIC COATINGS CONTAINING ACRYLAMIDE COPOLYMERS

Frank J. Ragas, Willow Springs; Ralph L. Minnis, Des Plaines, and Gerson E. Beauchamp, Park Ridge, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Oct. 4, 1982, Ser. No. 432,683

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.³ B32B *23/08, 27/10*; B05D *5/12*

U.S. Cl. 428—514 **9 Claims**

1. Electrically conductive paper coated with an insulating coating comprising an organic solvent-soluble solution copolymer of monoethylenically unsaturated monomers comprising from about 1% to about 8% of copolymerized acrylamide or a monoethylenic derivative thereof in combination with from 4% to 10% of copolymerized monoethylenically unsaturated carboxylic acid including from ¼th to ¾ths of methacrylic acid based on total carboxylic acid monomer.

4,450,204

SILVER MATERIAL SUITABLE FOR BACKING OF SILVER-CADMIUM OXIDE CONTACTS AND CONTACTS EMPLOYING SAME

Han J. Kim, Greensburg, and Richard C. Bevington, Delmont, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 17, 1982, Ser. No. 383,416

Int. Cl.³ B22F *7/02*

U.S. Cl. 428—552 **3 Claims**

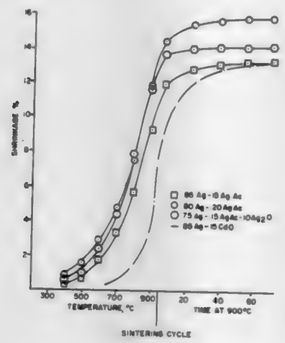
1. A process for producing a silver material suitable as a backing for silver-cadmium oxide contact materials comprising

(a) forming a relatively uniform admixture consisting essentially of from about 1% by weight to about 15% by weight of silver oxide, from about 10% by weight to about 20% by weight of silver acetate, balance silver powder,

(b) pressing said admixture at a pressure of from about 8,000 psi to about 50,000 psi to form a compacted material having a density of from about 5.0 to about 6.5 grams/cc.

(c) heating said compacted material to increase its tempera-

ture at a rate of from about 10° C./minute to about 25° C./minute to a temperature of about 900° C., and



(d) holding said compacted material at about 900° C. to form a silver material having a density of at a temperature of least about 9.9 grams/cc.

4,450,205

SURFACE-COATED BLADE MEMBER OF SUPER HARD ALLOY FOR CUTTING TOOLS AND PROCESS FOR PRODUCING SAME

Takeshi Itaba; Shotaro Matsumoto, and Takeshi Abe, all of Tokyo, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 192,628, Sep. 30, 1980, abandoned. This application Jul. 19, 1982, Ser. No. 399,802

Claims priority, application Japan, Oct. 26, 1979, 54-138572

Int. Cl.³ B32B *15/04; C23C 11/08, 13/02, 13/04*

U.S. Cl. 428—552 **6 Claims**

1. In a surface-coated blade member for cutting tools which comprises:

a substrate, and

a coating on at least one surface of said substrate, said coating being composed of (1) a layer of vapor deposited titanium metal on the surface of said substrate, and (2) at least one layer of vapor deposited titanium compound on said layer of titanium metal,

said layer of titanium compound being selected from the group consisting of titanium carbide, titanium nitride, titanium carbo-nitride, titanium oxy-carbide and titanium oxy-carbo-nitride,

said layer of titanium metal being no larger than 2 μm thick and said layer of titanium compound being from 0.5 to 10 μm thick,

the improvement wherein said substrate is a cemented carbide containing 2 to 30% by weight of at least one metal selected from the iron family, and a major proportion of at least one compound selected from the group consisting of carbides, nitrides and carbo-nitrides of metals in Groups IV_A, V_A and VI_A of the Periodic Table

said surface-coated blade member produced by the process comprising the steps of:

(a) placing a cemented carbide substrate in a vacuum chamber;

(b) vapor depositing a layer of titanium metal no larger than 2 μm thick on at least one surface of said substrate; and

(c) subsequently vapor depositing at least one layer of titanium compound on said layer of titanium metal to form a coating on said substrate, said layer of titanium compound being 0.5 to 10 μm thick, and said titanium compound being selected from the group consisting of titanium carbide, titanium nitride, titanium carbo-nitride, titanium oxy-carbide and titanium oxy-carbo-nitride;

provided that during steps (b) and (c) said substrate is maintained at a temperature between about 700° C. to 800° C.

5. In a process for producing a surface-coated blade member for cutting tools, which process comprises the steps of:

(a) placing a substrate in a vacuum chamber;

(b) vapor depositing no larger than 0.9 μm thick layer of titanium metal on at least on surface of said substrate; and

(c) subsequently vapor depositing at least one layer of titanium compound onto said layer of titanium to form a coating on said substrate, said layer of titanium compound being 0.5 to 10 μm thick thereby imparting maximum wear resistance to said coating, and said titanium compound being selected from the group consisting of titanium carbide, titanium nitride, titanium carbo-nitride, titanium oxy-carbide and titanium oxy-carbo-nitride,

the improvement wherein

(1) said substrate is a cemented carbide containing 2 to 30% by weight of at least one metal selected from the iron family, and a major proportion of at least one compound selected from the group consisting of carbides, nitrides and carbo-nitrides of metals in Groups IV_A, V_A and VI_A of the Periodic Table, and wherein

(2) said substrate is maintained at temperatures between about 700° C. and 800° C. during the vapor deposition.

4,450,206

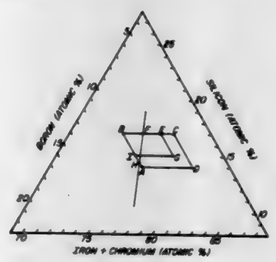
AMORPHOUS METALS AND ARTICLES MADE THEREOF

S. Leslie Ames, Sarver; Thomas H. Gray, Pittsburgh, and Lewis L. Kish, Sarver, all of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed May 27, 1982, Ser. No. 382,823

Int. Cl.³ B21C *37/00*

U.S. Cl. 428—606 **8 Claims**



1. An amorphous metal alloy strip article made by rapid solidification of a molten alloy, said article having a thickness of at least 0.001 inch and being suitable for transformers, said alloy consisting essentially of 6–10% boron, 14–17% silicon and 0.5–3.0% chromium, by atomic percentages, no more than incidental impurities, and the balance iron, said article being at least singularly ductile, and said alloy characterized by enhanced castability while maintaining a good combination of magnetic properties of magnetic saturation (B_{75H}) of at least 14 kilogauss, core loss of less than 0.163 watts per pound at 12.6 kilogauss, at 60 Hertz, and coercive force of less than 0.045 oersted.

4,450,207

FIBER REINFORCED METAL TYPE COMPOSITE MATERIAL WITH HIGH PURITY ALUMINUM ALLOY CONTAINING MAGNESIUM AS MATRIX METAL

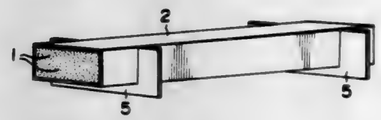
Tadashi Donomoto; Atsuo Tanaka; Yoshiaki Tatematsu, and Tsugio Akai, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 24, 1983, Ser. No. 525,899

Claims priority, application Japan, Sep. 14, 1982, 57-161397

Int. Cl.³ B22D *19/14;* **B21D** *37/00;* **C22C** *21/06*

U.S. Cl. 428—614 **6 Claims**



1. A fiber reinforced metal type composite material, composed essentially of a mass of reinforcing fibers selected from the group consisting of alumina fibers, carbon fibers, and mixtures thereof, intimately compounded with a matrix metal which is an alloy consisting essentially of between about 0.5% and about 4.5% magnesium, less than about 0.2% each of copper and titanium, less than about 0.5% each of silicon, zinc, iron, and manganese, and remainder aluminum.

4,450,208

COMPOSITE ARTICLE FOR A SEMICONDUCTOR DEVICE

Joseph M. Hunt, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 431,506

Int. Cl.³ H01L *29/00*

U.S. Cl. 428—620 **4 Claims**

1. A composite article comprising a first layer of metal having an irregular stainless steel metal surface, a second layer consisting essentially of a phosphate, silicate or a combination thereof on said irregular metal surface, said second layer having a thickness sufficient to provide a smooth surface over said irregular metal surface and having a thickness of 0.000001 to 0.0001 inch after curing, and applied by a method selected from the group consisting of reverse roller coating, dipping and spraying, and a third layer of a semiconductor material on said smooth surface.

4,450,209

MULTI-LAYER SURFACE-TREATED STEEL PLATE HAVING ZINC-CONTAINING LAYER

Tomihiro Hara; Masahiro Ogawa, and Masaaki Yamashita, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,523

Claims priority, application Japan, Dec. 8, 1981, 56-196316

Int. Cl.³ C25D *3/22;* **E32G** *15/08*

U.S. Cl. 428—626 **8 Claims**

1. A multi-layer surface-treated steel plate consisting essentially of a zinc-containing plating layer, a lithium silicate film layer formed on said plating layer and an organic composite silicate film layer composed of colloidal silica and an organic resin, which is formed on the lithium silicate film layer.

4,450,210

CLAD MATERIAL

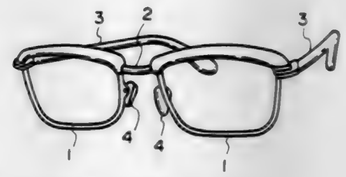
Masayuki Takamura, and Kazuo Kurahashi, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Oct. 21, 1982, Ser. No. 435,875

Claims priority, application Japan, Oct. 23, 1981, 56-169782

Int. Cl.³ B32B *15/01*

U.S. Cl. 428—660 **4 Claims**



1. An improved clad material comprising

a Ti base metallic core, and

a Ni base metallic covering clad to said Ti base metallic core and including 75 to 98% weight of Ni, 0.5 to 20% by weight of Cu and 0.1 to 5.0 by weight of Cr.

4,450,211

ELECTROCHEMICAL GENERATOR COMPRISING A THIN GAS ELECTRODE

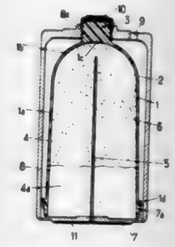
René Vignaud, Aulnay-Sous-Bois, France, assignor to Societe les Piles Wonder, Saint-Quen, France

Filed Apr. 13, 1982, Ser. No. 367,992

Claims priority, application France, Apr. 13, 1981, 81 07409

Int. Cl.³ H01M *12/06*

U.S. Cl. 429—27 **5 Claims**



1. Electrochemical generator of the metal/air type comprising:

(a) a cylindrical container;

(b) a thin positive air electrode constituting a cathode and being constituted by a slightly truncated conical portion, closed at its smaller diameter end by a substantially hemispherical cap portion, integral with said truncated cone portion, a solid cylindrical nipple crowning the hemispherical cap, said electrode being located inside said container at a certain distance from the internal surface of said container so as to leave a volume of air between said surface and the external surface of said electrode;

(c) an anodic mass located inside said electrode, said mass occupying a substantial portion of the volume inside said electrode;

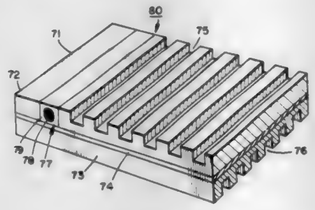
(d) a first current collector associated with said electrode, said first current collector being constituted by a thin porous metallic film adhering on at least a part of the external surface of said electrode;

(e) a second current collector associated with said anodic mass; and

(f) a separator between said electrode and said anodic mass,

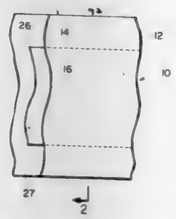
said separator being applied against the internal surface of said electrode.

4,450,212
EDGE SEAL FOR A POROUS GAS DISTRIBUTION PLATE OF A FUEL CELL
Haim Feigenbaum, Highland Park; Sheldon Pudick, Sayreville, and Rajindar Singh, Ridgewood, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.
Filed Sep. 30, 1982, Ser. No. 430,142
Int. Cl.³ H01M 4/88, 8/02
U.S. Cl. 429—35 **13 Claims**



1. A porous sealed gas distribution plate for a fuel cell comprising:
(a) an impervious layer covering a face of said plate;
(b) a seal adjacent at least one of said plate, said seal comprising:
(c) a groove extending along said edge and through said porous plate to said impervious layer;
(d) a member of resinous material arranged within said groove; and
(e) a paste surrounding said member and substantially filling said groove whereby a gas impervious seal is provided which is resistant to deterioration by electrolyte of said cell.

4,450,213
CELL HAVING IMPROVED ABUSE RESISTANCE
Arabinda N. Dey, Needham, and Robert W. Holmes, Arlington, both of Mass., assignors to Duracell Inc., Bethel, Conn.
Filed Jan. 18, 1982, Ser. No. 339,819
Int. Cl.³ H01M 4/36
U.S. Cl. 429—105 **9 Claims**



1. A method for making a non-aqueous electrochemical cell having improved abuse resistance wherein a cathode, an alkali or alkaline earth metal anode and a fluid non-aqueous electrolyte are placed in operative association within a cell container to make said cell, characterized in that said method comprises the steps of placing and substantially totally enclosing a substantially perforation-free layer of copper within said anode metal prior to placing said anode metal within said cell container and filling said cell container with a fluid non-aqueous electrolyte in which said copper is soluble or ionizable.

9. An abuse resistance cell made in accordance with the method of claims 1,7 or 8.

4,450,214
LITHIUM HALIDE ADDITIVES FOR NONAQUEOUS CELL SYSTEMS
Stephen G. Davis, Rocky River, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.
Filed Jun. 14, 1982, Ser. No. 388,478
Int. Cl.³ H01M 6/14
U.S. Cl. 429—194 **14 Claims**

1. A nonaqueous cell comprising a lithium anode, a liquid orgaic electrolyte solution compound of a solvent and solute, and an active cathode selected from the group consisting of an iron sulfur-containing cathode and a MnO_2-containing cathode; the improvement wherein at least one lithium halide is added to the cell, said lithium halide being different from the solute used in the electrolyte solution.

4,450,215
COLOR FILTER ELEMENTS COMPRISING HEXAALKOXYMETHYLMELAMINE BARRIER LAYERS
Raymond F. Reithel, and Armin K. Weiss, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 6, 1983, Ser. No. 501,225
Int. Cl.³ G02B 5/22
U.S. Cl. 430—7 **10 Claims**

1. A color filter element comprising at least two differently colored sets of color arrays and having a barrier layer separating the sets characterized in that the barrier layer is an optically clear polymerized, crosslinked hexaalkoxymethylmelamine monomer.

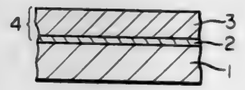
4,450,216
METHOD FOR IMPROVING THE SENSITOMETRIC RESPONSE OF A PERSISTENTLY CONDUCTIVE PHOTORECEPTOR
George G. Fulmer, Victor, and John R. Lawson, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 22, 1982, Ser. No. 443,786
Int. Cl.³ G03G 13/052, 13/22
U.S. Cl. 430—31 **12 Claims**

1. A method for improving the sensitometric response of a zinc oxide-free persistently conductive photoreceptor having a period of persistence comprising the steps of:
(a) uniformly charging said photoreceptor to a surface potential, Vo, of a given polarity,
(b) imagewise-exposing said charged photoreceptor to actinic radiation to form a latent electrostatic image thereon and,
(c) during its period of persistence, and prior to development, recharging said photoreceptor to a second surface potential of the same polarity as Vo, thereby producing a developable, modified latent electrostatic image.

4,450,217
CHALCOGENOPENTALENE COMPOUNDS IN ELECTROPHOTOGRAPHY
Michael R. Detty, and Jerome H. Perlstein, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 15, 1983, Ser. No. 475,675
Int. Cl.³ G03G 5/09, 5/14, 5/06
U.S. Cl. 430—58 **8 Claims**

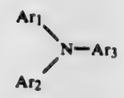
1. A multi-active electrophotographic element comprising a conductive support having thereon a charge generation layer containing a chalcogenopentalene having a tellurium or a selenium atom in the 6a position in electrical contact with a charge transport layer containing an electron donor.

4,450,218
PHOTOCONDUCTIVE RECEPTOR FOR AN ELECTROPHOTOGRAPHY
Yoshiaki Takei; Yoshihide Fujimaki, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Sep. 22, 1982, Ser. No. 421,489
Claims priority, application Japan, Oct. 1, 1981, 56-157096
Int. Cl.³ G03G 5/14
U.S. Cl. 430—59 **14 Claims**



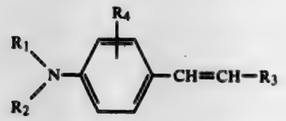
1. In a photoconductive receptor for use in electrophotography, said receptor being provided on a conductive support and having a photoconductive layer, said photoconductive layer comprising a carrier generating layer and a carrier transport layer, said carrier transport layer comprising an amine derivative represented by formula (A) and at least 1% by weight of a styryl compound represented by formula (B), based on the total weight of said amine derivative and said styryl compound;

Formula [A]



wherein, Ar_1 and Ar_2 each represent a phenyl group or a substituted phenyl group, said substituted phenyl group having at least one substituent selected from the group consisting of a halogen atom, an alkyl group, a nitro group and an alkoxy group; and Ar_3 is selected from the group consisting of a phenyl group, a naphthyl group, an anthryl group, a fluorenyl group, and a 5-7 membered heterocyclic ring, wherein said groups and said heterocyclic ring may be substituted with at least one substituent selected from the group consisting of a halogen atom, an alkyl group, a hydroxy group, an alkoxy group, an aryloxy group, a nitro group, a piperidino group, a morpholino group, a naphthyl group, an anthryl group and an amino group, said amino group may be substituted with at least one substituent selected from the group consisting of an acyl group, an alkyl group, an aryl group and an aralkyl group;

Formula [B]



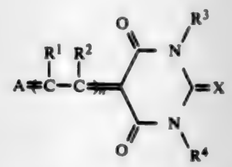
wherein, R_1 and R_2 are each selected from the group consisting of an alkyl group, a substituted alkyl group, a phenyl group and a substituted phenyl group, wherein said substituted alkyl group and said substituted phenyl group have at least one substituent selected from the group consisting of an alkyl group, an alkoxy group and a phenyl group; R_3 is selected from the group consisting of a phenyl group, a naphthyl group, an anthryl group, a fluorenyl group and a carbazolyl group, wherein said R^3 groups may have at least one substituent selected from the group consisting of a halogen atom, a hydroxy group, an alkyl group, an alkoxy group and a phenyl group; and R_4 is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a mono-alkyl amino group and a di-alkyl amino group.

4,450,219
ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH THIOBARBITURIC ACID DERIVATIVE
Seiji Horie; Junji Nakano, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 24, 1982, Ser. No. 391,755
Claims priority, application Japan, Jun. 24, 1981, 56-97996
Int. Cl.³ G03G 5/06
U.S. Cl. 430—59 **15 Claims**



1. An electrophotographic photoreceptor comprising an electrophotographic photoreceptive layer containing a charge generating material and a charge transporting material, said charge generating material being a compound which has a barbituric acid nucleus or a thiobarbituric acid nucleus represented by the following general formula (I):

(I)



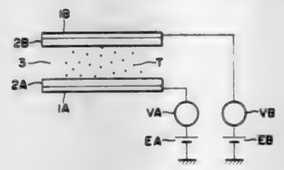
wherein n represents 0, 1 or 2; X represents an oxygen atom or a sulfur atom; R^1 and R^2 independently represent a hydrogen atom, an alkyl group, an aralkyl group or an aryl group; R^3 and R^4 independently represent a hydrogen atom, an alkyl group, an aralkyl group or a phenyl group, wherein the alkyl, aralkyl or phenyl groups may be substituted; and A represents a divalent group derived from a heterocyclic ring selected from a group consisting of imidazoles, 3H-indoles, thiazoles, benzothiazoles, naphthothiazoles, thianaphtheno-7',6',4,5-thiazoles, oxazoles, benzoxazoles, naphthoxazoles, selenazoles, benzoselenazoles, naphthoselenazoles, thiazolines, quinolines, isoquinolines, benzimidazoles and pyridines.

3. The electrophotographic photoreceptor as claimed in claim 1, wherein said electrophotographic photoreceptive layer consists of the combination of a charge generating layer containing the charge generating material and a charge transporting layer containing the charge transporting material.

4,450,220
METHOD OF CHARGING ELECTROSTATIC DEVELOPER
Satoshi Haneda, Hachioji; Takashi Itoh, Tokyo; Ken Nakamura, and Makoto Tomono, both of Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Feb. 18, 1982, Ser. No. 349,999
Claims priority, application Japan, Feb. 25, 1981, 56-25390; Feb. 25, 1981, 56-25391; Feb. 25, 1981, 56-25392; Feb. 25, 1981, 56-25393; Mar. 9, 1981, 56-32417; Mar. 9, 1981, 56-32418; Mar. 9, 1981, 56-32419; Mar. 9, 1981, 56-32420; Mar. 9, 1981, 56-32421; Mar. 9, 1981, 56-32422
Int. Cl.³ G03G 13/08
U.S. Cl. 430—102 **39 Claims**

9. A method for developing an electrostatic latent image comprising:
providing a developer comprising electrically insulating particles;
providing oppositely disposed charging members defining a charging space therebetween;

providing an electrostatic latent image;
introducing said developer into said charging space which is provided between said charging members,
generating an a.c. field in said charging space having a voltage below the corona discharge level and having a frequency at which said developer can move by applying an a.c. voltage to said charging members,
oscillating and electrically charging said developer by said a.c. field in said charging space between said charging members so that said developer becomes electrically



charged due to friction resulting from developer particles impinging against each other and against said charging members, and developing said electrostatic latent image by said electrically charged developer.

17. A method for developing an electrostatic latent image according to claims **9**, **10**, **11**, **12**, **13** or **15**, wherein further comprises:
moving at least one of said charging members along a passage reaching a developing region, and
transferring said charged developer into said developing region by said charging member.

4,450,221

ENCAPSULATED LYOPHILIC MAGNETIC PARTICLE AND RESIN TONER

Sadatugu Terada; Satoshi Haneda, both of Hachioji; Makoto Tomono, and Syunji Matsuo, both of Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,828
Claims priority, application Japan, Jul. 10, 1981, 56-108444
Int. Cl.³ G03G *13/20, 9/14*
U.S. Cl. 430—106.6 **21 Claims**

1. A magnetic toner comprising a nuclear particle which comprises lyophilic magnetic particles and a resin having a low softening point, said particles being encapsulated within a resin wall, wherein said magnetic particles are made lyophilic by treatment with a titanate coupling agent and/or a silane coupling agent.

4,450,222

USE OF CARBON ADSORPTION DEACTIVATING COMPOUNDS IN IMAGE TRANSFER ELEMENTS

Kenneth C. Mattes, Rochester, and Harold C. Warren, Rush, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,586
Int. Cl.³ G03C *1/40, 5/54, 1/84*
U.S. Cl. 430—220 **25 Claims**

1. In a photographic element comprising a support having thereon a dye image-receiving layer, an opaque layer comprising carbon black, and at least one silver halide emulsion layer having associated therewith a dye image-providing material,
the improvement wherein said carbon black has a ballasted deactivating compound adsorbed thereto in such an amount so that said dye image-providing material can diffuse through said opaque layer without any substantial adsorption thereof to said carbon black, said deactivating compound being incapable of releasing any dye moiety therefrom during photographic processing of said element to form a dye image.

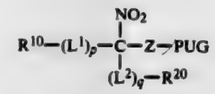
4,450,223

DIFFUSION TRANSFER MATERIAL AND PROCESS

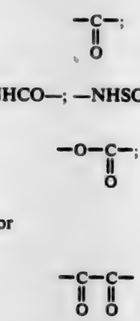
Raphaël K. Van Poucke, Berchem; Christian C. Van de Sande, Belsele, and Andreé Verhecken, Mortsel, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 14, 1983, Ser. No. 466,316
Claims priority, application United Kingdom, Mar. 16, 1982, 8207583
Int. Cl.³ G03C *1/40, 1/10, 5/54, 1/48*
U.S. Cl. 430—223 **14 Claims**

1. A photographic silver halide material comprising a support carrying at least one unexposed alkali-permeable silver halide hydrophilic colloid emulsion layer and containing a compound, which is immobile in an alkali-permeable colloid medium when contacted with an alkaline liquid and which is capable of being reduced by a silver halide developing agent at a rate slower than that of image-wise developable silver halide in the photographic material and in reduced state is capable of releasing a photographically useful group, characterized in that said compound corresponds to the following general formula:



wherein:
R^{10} and R^{20} (same or different)
(1) represent an alkyl group, a cycloalkyl group, an alkenyl group, a cycloalkenyl group or an aralkyl group,
(2) represent an aryl group, or
(3) represent a heterocyclic ring residue, or
R^{10} and R^{20} are ringclosed, either R^{10} or R^{20} containing a ballasting group conferring diffusion resistance to the compound in hydrophilic colloid media when penetrated by an aqueous alkaline liquid;
L^1 and L^2 (same or different) represent a



group;
p and q (same or different) represent an integer 0 or 1;
Z represents an atom or an atom group which is electronegative with respect to carbon, and
PUG represents together with Z a releasable photographically useful group.

8. A photographic material according to claim 1, characterized in that the material is a film unit that is adapted to be processed by passing said unit between a pair of juxtaposed pressure-applying members, said unit comprising (1) a photosensitive element, which contains a silver halide emulsion layer having associated therewith said compound that is initially immobile in an alkali-permeable colloid medium and where-

from through the reducing action of a silver halide developing agent a dye is split off in diffusible state, (2) an image dye-receiving layer, (3) means for discharging an alkaline processing composition within the film unit, said means being a rupturable container, which is adapted to be positioned during processing of the film so that a compressive force applied to the container by the pressure-applying members will effect a discharge of the container's contents within the film, and (4) a silver halide developing agent, which is soluble in an alkaline processing composition located within said film unit.

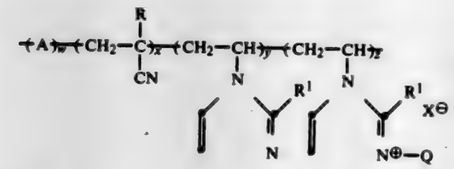
4,450,224

POLYMERIC MORDANTS

Gerald W. Klein; Robert A. Snow, both of Pittsford, and Richard C. Sutton, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1983, Ser. No. 511,129
Int. Cl.³ G03C *1/40, 5/54;* C08F *26/06, 126/06*
U.S. Cl. 430—213 **33 Claims**

1. In a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material, said support also having thereon a dye image-receiving layer comprising a mordant,
the improvement wherein said mordant is a polymer comprising recurring units having the formula:



wherein
A represents recurring units derived from an α,β-ethylenically unsaturated monomer;
R represents hydrogen or methyl;
each R^1 independently represents hydrogen or an alkyl group of 1 to about 4 carbon atoms;
Q represents an alkyl, substituted alkyl, cycloalkyl, aryl or substituted aryl group;
$X^{\ominus}$ represents an anion;
w is from about 0 to about 25 mole percent;
x is from about 30 to about 90 mole percent;
y is from about 8 to about 65 mole percent;
and
z is from about 2 to about 9 mole percent.

4,450,225

SILVER HALIDE EMULSION PREPARED BY CONVERTING SILVER PHOSPHATE

Edith Weyde, Kuerten; Harald von Rintelen, Leverkusen; Wilhelm Saleck, Bergisch Gladbach, and Heinz-Horst Teitscheid, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 305,949, Sep. 28, 1981, abandoned. This application Jun. 2, 1982, Ser. No. 499,421
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1980, 3037385
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—567 **11 Claims**

1. A light-sensitive photographic material of improved sensitivity for producing photographic images on imagewise exposure comprising at least one self-supporting or supported light-sensitive silver salt emulsion layer of improved sensitivity containing primarily silver halide wherein the silver halide contained in said silver salt emulsion is obtained by converting inorganic silver phosphate grains with a water-soluble halide.

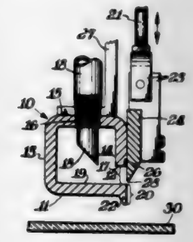
2. The material as claimed in claim 1 wherein the silver halide grains of the emulsion have an average grain size of at most 0.6 μm.

4,450,226

METHOD AND APPARATUS FOR PRODUCING A PRINTING PLATE

William Bloothoofd, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 315,092, Oct. 26, 1981, Pat. No. 4,403,566, which is a continuation-in-part of Ser. No. 161,847, Jun. 23, 1980, abandoned. This application Dec. 8, 1982, Ser. No. 447,741
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—300 **1 Claim**



1. A method for the preparation of a polymerized printing plate comprising the steps of:
(a) providing a horizontal platemaking surface above an actinic light source, which platemaking surface is transparent to such light source;
(b) positioning a negative of the image to be printed on said platemaking surface;
(c) covering said negative with a thin sheet of protective film which is transparent to the actinic light source;
(d) providing a uniform layer of a liquid photopolymerizable resin with an apparatus comprising: said horizontal platemaking surface;
a manifold spanning the width of the platemaking surface vertically nonadjustable with respect to the platemaking surface during movement thereover and moveable along the lengthwise direction of said surface, which manifold is approximately C-shaped in cross-section having a closed bottom side having a wedge shaped lip projecting downward from its forward edge and forming a doctor blade, a back facing side, an upper side, and a forward facing side depending toward but not in contact with the forward edge of said bottom side and defining an opening across the length of said manifold adjacent said bottom side, one of said upper or back facing sides being closed and the other having a plurality of openings for the attachment of resin supply tubes, and closed ends;
a gate being essentially the same length as said manifold, disposed before the opening in the manifold adjacent the bottom side and vertically adjustable so that, when adjusted upward, its lower edge will define with the opening in the manifold an adjustable orifice slot extending the length of the opening in the manifold and when adjusted downwardly completely closing the opening in the manifold;
means to vertically adjust said gate upward and downward;
means to prevent air from entering the apparatus between the gate and the upper section of the forward facing side of the manifold; and
means to supply a regulated flow of liquid photopolymerizable resin material from a pressurized external reservoir through said resin supply tubes attached to said plurality of openings in said manifold;
(e) providing over said layer a sheet of protective film;

(f) exposing the assembly of step (e) to uniform radiation from the actinic light source through the negative to selectively expose and polymerize portions of the photopolymerizable resin layer; and

(g) removing the remaining unexposed photopolymerizable material.

4,450,227

DISPERSED IMAGING SYSTEMS WITH TETRA (HYDROCARBYL) BORATE SALTS

Brian N. Holmes, Oakdale, Minn.; Rex J. Dalzell, Sommerset, Wis., and Steven M. Aasen, Lakeland, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 25, 1982, Ser. No. 436,264
Int. Cl.³ G03C *1/72*
U.S. Cl. 430—339 **10 Claims**

1. A light-sensitive positive-acting imaging material comprising a first phase comprising a tetra(hydrocarbyl)borate salt in reactive association with a bleachable dye in a solid or liquid medium and said first phase dispersed in a second phase.

4,450,228

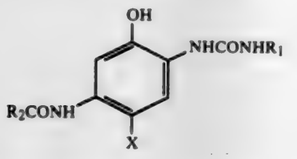
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Satoru Shimba; Kenji Ito; Yasuo Tsuda, and Hiroshi Sugita, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

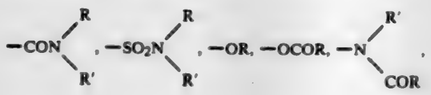
Filed Feb. 22, 1983, Ser. No. 468,400
Claims priority, application Japan, Feb. 25, 1982, 57-30391
Int. Cl.³ G03C *1/46*
U.S. Cl. 430—505 **10 Claims**

1. A light-sensitive silver halide color photographic material, having a blue sensitive silver halide emulsion layer, a green sensitive silver halide emulsion and a red sensitive silver halide emulsion on a support, wherein said red sensitive silver halide emulsion contains at least one compound of formula wherein the amount of silver halide contained in all of the aforesaid light-sensitive silver halide emulsion layers is at least 7.5 g/m² as calculated on silver, and the amount of the silver halide contained in said red sensitive silver halide emulsion is at least 3.5 g/m² as calculated on silver:

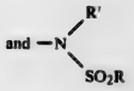
Formula [I]



wherein, X represents a hydrogen atom or a group capable of being eliminated by a coupling reaction with an oxidized product of an aromatic primary amine color developing agent; R_1 represents a naphthyl group or a heterocyclic group (provided that a carbon atom of said heterocyclic group is bonded to the ureido group), or a phenyl group having at least one substituent (with the proviso that when one of said substituents is cyano at the p-position of said phenyl group relative to the ureido group, the four ortho and meta positions of said phenyl group relative to the ureido group cannot have hydrogen atoms at the same time) selected from the group consisting of a trifluoromethyl, nitro, cyano, —COR, —COOR, $-SO_2R$, $-SO_2OR$,



-continued



(wherein R represents an aliphatic group or an aromatic group, and R′ is a hydrogen atom, an aliphatic group or an aromatic group); and R_2 represents an aliphatic group or an aromatic group necessary to impart diffusion resistance to the cyan dyes formed from the cyan couplers represented by formula and the cyan dyes to be formed from said cyan coupler.

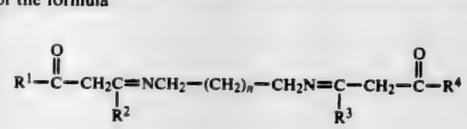
4,450,229

STABILIZATION OF LATENT IMAGES IN PHOTOTHERMOGRAPHIC ELEMENTS

Jack E. Reece, Forest Lake Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 13, 1983, Ser. No. 494,262
Int. Cl.³ G03C *1/02, 1/34*
U.S. Cl. 430—523 **15 Claims**

1. A photothermographic element comprising a binder, light sensitive silver halide in catalytic proximity to a light insensitive silver source material in said element which contains a reducible source of silver ions, a reducing agent for silver ion and an effective latent image stabilizing amount of a compound of the formula



wherein

R^1 and R^4 are independently selected from hydrogen and alkyl groups of 1 to 4 carbon atoms,

R^2 and R^3 are independently selected from hydrogen and alkyl groups of 1 to 4 carbon atoms, and

n is zero or a positive whole integer between 1 and 4.

4,450,230

PHOTOGRAPHIC ELEMENTS WITH IMPROVED SURFACE CHARACTERISTICS

Gerolamo Delfino, Savona, and Simone Franco, Ferrania/-Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 18, 1982, Ser. No. 434,969
Claims priority, application Italy, Oct. 23, 1981, 49559 A/81
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—539 **19 Claims**

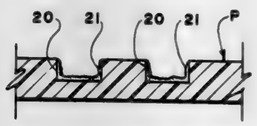
1. Photographic element comprising a support and a plurality of gelatin layers which comprise at least a silver halide emulsion layer and an external gelatin protective layer, characterized in that said external protective layer comprises, in a proportion of 10 to 60% by weight of the gelatin in said protective layer, a water-soluble vinyl polymer containing methylolamide moieties as pendant groups on 50 to 100 weight percent of ethylenic groups in said vinyl polymer in a quantity sufficient to reduce brightness.

4,450,231

IMMUNOASSAY FOR DETERMINATION OF IMMUNE COMPLEXES WITH POLYMER-COATED PLASTIC BASE

Adil N. Ozkan, Denver, Colo., assignor to Biostar Medical Products, Inc., Boulder, Colo.

Filed Mar. 31, 1982, Ser. No. 363,967
Int. Cl.³ G01N *33/54*
U.S. Cl. 435—7 **16 Claims**



1. In a method of performing an immunoassay of a fluid specimen to determine immune complexes therein, the steps comprising:

treating a solid phase, plastic base having means for receiving the fluid specimen to be assayed, to produce a layer of a non-proteinaceous non-ionic polymer on said means, said polymer adhering to said plastic base and having the capability of absorbing immune complexes which may be present in such specimen;

placing the fluid specimen to be assayed on said receiving means;

permitting said polymer layer to absorb immune complexes present in said specimen; and

treating said layer in a manner to produce an indication of the amount of immune complexes in said layer.

4,450,232

INCORPORATION OF PYRIDOXAL PHOSPHATE IN DRY ANALYTICAL ELEMENTS FOR THE DETERMINATION OF ENZYMES

Karl J. Sanford; John W. Sutherland, and Jon N. Eikenberry, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,844
Int. Cl.³ C12Q *1/00, 1/26, 1/52, 1/48*
U.S. Cl. 435—15 **9 Claims**

1. A dry analytical element for the determination of an analyte in a liquid sample wherein said analyte is an enzyme activated by pyridoxal phosphate, said element comprising a support having thereon a layer comprising a reagent composition capable of producing a detectable change in response to the presence of the activated form of said enzyme

wherein said element contains a layer comprising pyridoxal phosphate at a coverage such that the multiplication product of said coverage and the spreading coefficient of the element results in a substantially uniform reaction mixture concentration of pyridoxal phosphate of greater than about 0.9 mmole per liter.

8. A method for activating an enzyme in a liquid sample with pyridoxal phosphate, said method comprising the step of contacting said sample with a dry element comprising a support having thereon at least one layer comprising pyridoxal phosphate at a coverage such that the multiplication product of said coverage and the spreading coefficient of the element results in a substantially uniform reaction mixture concentration of pyridoxal phosphate is greater than about 0.9 mmole per liter.

4,450,233

IMMOBILIZATION OF MICROORGANISMS IN A POLYMER GEL

Akio Mimura; Katsumi Yuasa, and Mitsuru Shibukawa, all of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 15, 1981, Ser. No. 330,916
Claims priority, application Japan, Dec. 23, 1980, 55-181383
Int. Cl.³ C12N *11/10, 11/08, 11/04*
U.S. Cl. 435—178 **6 Claims**

3. A polymer gel containing immobilized microorganisms made by a process comprising adding microorganism cells to an aqueous solution of a mixture of a polymerizable starch and a polymerizable vinyl monomer, said polymerizable starch being prepared by introducing an acrylamidomethyl group into starch and said polymerizable starch being present in an amount of about 5 to 80 weight percent based on the total weight of the polymerizable starch and the polymerizable monomer, and, thereafter, polymerizing the mixture to prepare a polymer gel with microorganism cells enclosed therein.

4,450,234

ANTIBIOTIC C-15003 PHM AND PRODUCTION THEREOF

Toru Hasegawa, Kawanishi, Motowo Izawa, Amagasaki, and Seiichi Tanida, 2-chome, Nagaokakyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 188,242, Sep. 17, 1980, Pat. No. 4,331,598. This application Feb. 10, 1982, Ser. No. 347,724
Claims priority, application Japan, Sep. 19, 1979, 54-121234
Int. Cl.³ C12N *1/20;* C12R *1/365*
U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of *Nocardia* sp. No. N-1231, ATCC 31565, which is capable of producing antibiotic C-15003 PHM of the structural formual.

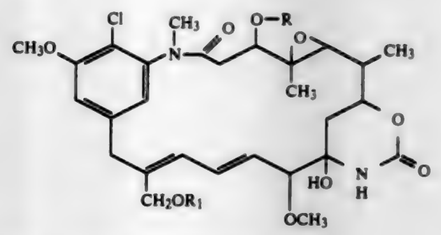
4,450,235

ASPOROGENIC MUTANT OF BACILLUS SUBTILIS USEFUL AS A HOST IN A HOST-VECTOR SYSTEM

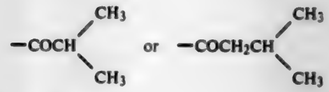
Donald H. Dean, Worthington, and Daniel M. Ellis, Columbus, both of Ohio, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Apr. 21, 1982, Ser. No. 370,432
Int. Cl.³ C12N *1/20, 15/00;* C12R *1/25*
U.S. Cl. 435—253 **2 Claims**

1. A biologically pure culture of asporogenous *B. subtilis* DE100 (ATCC 39,094) suitable for use as a host component in a host-vector system characterized in that it has a frequency of reversion to spore formers of less than about 10^{-7} when grown



wherein R is —$COCH_3$, —$COCH_2CH_2$,



and R_1 is hydrogen.

under conditions of aeration and having the following genetic markers: thy A1, thy B1, trp C2, pyr D1, and spo OAΔ677.

4,450,236

ASPOROGENIC MUTANT OF *BACILLUS SUBTILIS* USEFUL AS A HOST IN A HOST-VECTOR SYSTEM

Donald H. Dean, Worthington, and Daniel M. Ellis, Columbus, both of Ohio, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Apr. 21, 1982, Ser. No. 370,239
Int. Cl.³ C12N *1/20, 15/00;* C12R *1/25*
U.S. Cl. 435—253 **2 Claims**

1. A biologically pure culture of asporogenous *B. subtilis* DE101 (ATCC 39,095) suitable for use as a host component in a host-vector system characterized in that it has a frequency of reversion to spore formers of less than about 10^{-7} when grown under conditions of aeration and having the following genetic markers: thy A1, thy B1, pyr D1, and spo OAΔ677.

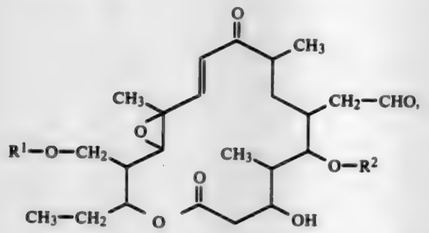
4,450,237

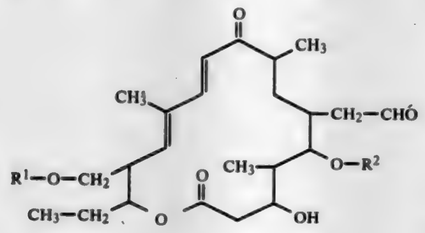
***STREPTOMYCES ALBUS* SUBSPECIES INDICUS**

Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

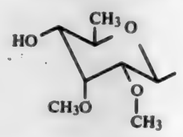
Division of Ser. No. 374,223, May 3, 1982, Pat. No. 4,411,892.
This application Sep. 6, 1983, Ser. No. 529,802
Int. Cl.³ C12N *1/20;* C12P *19/62;* C12R *1/47*
U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of the microorganism *Streptomyces albus* subsp. indicus, ATCC 39012, said culture being capable of producing, in a recoverable quantity, upon cultivation in an aqueous nutrient medium containing assimilable sources of nitrogen and carbon, a compound selected from the group consisting of

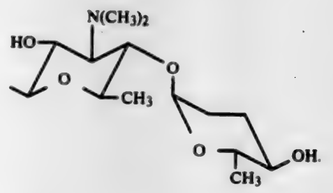




and the pharmaceutically-acceptable acid addition salts thereof; wherein R^1 is the group of the formula



and R^2 is the group of the formula



4,450,238

BIOLOGICALLY PURE CULTURE OF *SACCHAROMYCES CEREVISIAE*

Vincenza Vitobello; Paolo Branduzzi, and Nadia Cimini, all of Rome, Italy, assignors to E. N. I. Ente Nazionale Idrocarburi, Rome, Italy

Division of Ser. No. 213,657, Dec. 5, 1980, Pat. No. 4,376,167.
This application Nov. 5, 1982, Ser. No. 439,378
Claims priority, application Italy, Feb. 1, 1980, 19618 A/80
Int. Cl.³ C12N *1/18, 9/40;* C13J *1/00;* C12R *1/865*
U.S. Cl. 435—256 **2 Claims**

1. A biologically pure culture of a strain of *Sacharomyces cerevisiae,* NRRL-Y-12056, said culture being capable of producing alpha-galactosidase in culture medium devoid of galactose.

4,450,239

METHOD OF DETERMINING PREGNANEDIOL IN FEMALE URINE AND TEST DEVICE FOR USE THEREIN

Robert T. Chatterton, River Forest, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Sep. 23, 1981, Ser. No. 304,803
Int. Cl.³ G01N *33/52, 33/54, 33/58, 21/00*
U.S. Cl. 436—510 **13 Claims**

1. The method of determining the concentration of pregnanediol glucuronide (PG) in a female, comprising:

(a) adding to a measured sample of said urine a predetermined quantity of antibodies binding to PG, said antibodies being labeled with a substance capable of providing a visual color indication;

(b) contacting the reacted urine sample with a predetermined quantity of a 20-α reagent immobilized on a color indicator support, said reagent consisting essentially of 20α-hydroxy-4-pregnen-3-one, the unreacted labeled antibodies from said urine binding to said 20-α reagent on said support; and

(c) determining from the intensity of color developed the concentration of PG in the urine sample.

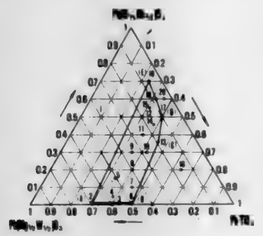
4,450,240

CERAMIC COMPOSITIONS HAVING HIGH DIELECTRIC CONSTANT AND HIGH SPECIFIC RESISTIVITY

Haruhiko Miyamoto, and Masatomo Yonezawa, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,538
Claims priority, application Japan, Mar. 17, 1982, 57-42167; Apr. 8, 1982, 57-58563; Apr. 8, 1982, 57-58564; Apr. 8, 1982, 57-58565; Apr. 8, 1982, 57-58566
Int. Cl.³ C04B *35/00, 35/46*
U.S. Cl. 501—136 **6 Claims**

1. A ceramic composition consisting essentially of lead magnesium tungstate $[Pb(Mg_{\frac{1}{3}}W_{\frac{1}{3}})O_3]$, lead titanate $[PbTiO_3]$ and lead nickel niobate $[Pb(Ni_{\frac{1}{3}}Nb_{\frac{1}{3}})O_3]$ wherein the composition is expressed by $[Pb(Mg_{\frac{1}{3}}W_{\frac{1}{3}})O_3]_x[PbTiO_3]_y[Pb(Ni_{\frac{1}{3}}Nb_{\frac{1}{3}})O_3]_z$ where $x+y+z=1.00$, said composition lies on lines interconnecting five points ($x=0.693$, $y=0.297$, $z=0.01$) ($x=0.495$, $y=0.495$, $z=0.01$), ($x=0.195$, $y=0.455$, $z=0.35$), ($x=0.10$, $y=0.40$, $z=0.50$) and ($x=0.06$, $y=0.24$, $z=0.70$) and in a region bounded by said lines.

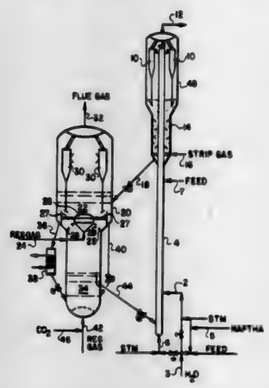


4,450,241

ENDOTHERMIC REMOVAL OF COKE DEPOSITED ON CATALYTIC MATERIALS DURING CARBO-METALLIC OIL CONVERSION

William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland, both of Ky., and James F. Hoffman, Huntington, W. Va., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 290,277, Aug. 5, 1981. This application Aug. 16, 1982, Ser. No. 418,880
Int. Cl.³ B01J *29/38, 21/20;* C10G *11/05, 11/04*
U.S. Cl. 502—34 **14 Claims**



1. In a process for regenerating a finely divided hydrocarbon cracking catalyst having deposited thereon a substantial quantity of hydrocarbonaceous coke by contacting said catalyst at an elevated temperature with a gas rich in carbon dioxide to endothermically convert said hydrocarbonaceous coke substantially to carbon monoxide and water; the improvement which consists essentially of:

(a) heating said catalyst to a temperature in a range from about 1350° F. to about 1600° F.,

(b) contacting said catalyst with said carbon dioxide rich gas for a time sufficient to endothermically convert a substantial portion of said hydrocarbonaceous coke to carbon monoxide and water while maintaining said catalyst at a temperature in the range of about 1250° F. to about 1600° F. throughout said contacting period, and

(c) recovering said catalyst from step (b);

said catalyst being further characterized by having about 0.2 to 5.0 weight % copper deposited thereon by being impregnated with an aqueous solution of a water soluble copper salt.

4. A process of claim 1 in which titanium also is deposited on the cracking catalyst.

5. A continuous process for regenerating a finely divided hydrocarbon cracking catalyst having deposited thereon (1) about 0.2 to 5.0 weight % of copper, and (2) a substantial quantity of hydrocarbonaceous coke and recovering regenerated catalyst having a hydrocarbonaceous coke level sufficiently low so that the catalyst will efficiently crack a high-boiling hydrocarbon feed stock having a Conradson carbon content of at least about 6 weight % and less than 200 ppm of metals consisting of Ni, V, Fe, and Cu, said process consisting essentially of:

(a) continuously introducing into a first catalyst regeneration zone finely divided hydrocarbon cracking catalyst having deposited thereon about 0.2 to 5.0 weight % of copper and a substantial quantity of hydrocarbonaceous coke, said catalyst having an introduction temperature of less than about 1100° F.,

(b) contacting the catalyst in the first regeneration zone with an oxygen containing gas to partially burn the hydrocarbonaceous coke thereon,

(c) maintaining the oxygen concentration and the catalyst contact time in the first regenerating zone so that the catalyst temperature is elevated to and maintained within a range of from about 1250° F. to about 1600° F.,

(d) continuously transferring catalyst from said first regeneration zone to a second regeneration zone,

(e) contacting the catalyst in the second regeneration zone with a carbon dioxide rich gas to convert the remainder of the hydrocarbonaceous coke on the catalyst substantially to carbon monoxide and water,

(f) maintaining the carbon dioxide concentration and the contact time in the second regeneration zone so that the catalyst temperature therein is maintained within a range of from about 1250° F. to about 1600° F. and the hydrocarbonaceous coke on the catalyst is reduced to a level sufficiently low so that the regenerated catalyst will efficiently crack a high-boiling hydrocarbon feed stock having a Conradson carbon content of at least about 6 weight % and less than 200 ppm of metals consisting of Ni, V, Fe, and Cu, and

(g) continuously recovering regenerated catalyst from said second regenerating zone;

said catalyst being further characterized by having the copper deposited thereon by being impregnated with an aqueous solution of a water soluble copper salt.

10. A continuous process for regenerating a finely divided hydrocarbon cracking catalyst having deposited thereon (1) about 0.2 to 5.0 weight % copper, and (2) a substantial quantity of hydrocarbonaceous coke and recovering regenerated catalyst having a hydrocarbonaceous coke level sufficiently low so that the catalyst will efficiently crack a high-boiling hydrocarbon feed stock having a Conradson carbon content of at least about 6 weight % and less than 200 ppm of metals consisting of Ni, V, Fe, and Cu, said process consisting essentially of:

(a) continuously withdrawing from a hydrocarbon cracking zone finely divided hydrocarbon cracking catalyst at a temperature of less than about 1100° F., said catalyst having deposited thereon about 0.2 to 5.0 weight % of copper and a substantial quantity of hydrocarbonaceous coke,

(b) heating the catalyst withdrawn in step (a) to a temperature in a range from about 1250° F. to about 1600° F.,

(c) continuously transferring the heated catalyst from step (b) to a first regeneration zone,

(d) contacting the catalyst in the first regeneration zone with a carbon dioxide-rich gas to convert a substantial portion of the hydrocarbonaceous coke on the catalyst substantially to carbon monoxide and water while maintaining the carbon dioxide concentration at a level such that the catalyst is maintained at a temperature in the range of from about 1250° F. to about 1600° F.,

(e) continuously transferring catalyst from said first regeneration zone to a second regeneration zone,

(f) contacting the catalyst in the second regeneration zone with an oxygen containing gas to burn substantially the remainder of the hydrocarbonaceous coke on the catalyst,

(g) maintaining the oxygen concentration and the contact time in the second regeneration zone so that the catalyst temperature therein is maintained within a range of from about 1250° F. to about 1600° F. and the hydrocarbonaceous coke on the catalyst is reduced to a level sufficiently low so that the regenerated catalyst will efficiently crack a high-boiling hydrocarbon feed stock having a Conradson carbon content of at least about 6 weight % and less than 200 ppm of metals consisting of Mi, V, Fe, and Cu, and

(h) continuously recovering regenerated catalyst from said second regenerating zone;

said catalyst being further characterized by having the copper deposited thereon by being impregnated with an aqueous solution of a water soluble copper salt.

4,450,242

CATALYST FOR POLYMERIZING OLEFINS

Robert I. Mink, Yonkers, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 9, 1982, Ser. No. 405,977
Int. Cl.³ C08F 4/64
U.S. Cl. 502—105 **45 Claims**

29. A process for producing a component containing titanium halide of a catalytic system for polymerizing olefins comprising:

(i) copulverizing a substantially anhydrous magnexium compound containing halogen or manganese compound containing halogen with: a phenol, an organic polymer containing silicon, a titanium halide, and an electron-donor compound to produce a copulverized product, and

(ii) reacting the copulverized product with a liquid titanium compound containing halogen.

4,450,243

CARRIER FOR OLEFIN POLYMERIZATION CATALYST

Kazuo Matsuura, Ota; Nobuyuki Kuroda, Yokohama; Takeichi Shiraishi, Kawasaki; Yutaka Shikatani, Yokohama, and Mituji Miyoshi, Fujisawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Feb. 2, 1983, Ser. No. 463,078
Claims priority, application Japan, Feb. 12, 1982, 57-19801
Int. Cl.³ C08F 4/64, 4/68
U.S. Cl. 502—131 **8 Claims**

1. A carrier for an olefin polymerization catalyst, said carrier comprising a substance obtained by adding a liquid organic compound not dissolving a magnesium halide into a liquid medium having dissolved therein a substance which contains the magnesium halide as at least one component, said liquid medium further containing an oxide of Group II–IV metal or metals in the Periodic Table, followed by coolihg to a temperature not higher than 0° C. and subsequent heat treatment at a temperature in the range of 40° to 200° C.

7. An olefin polymerization catalyst comprising the combination of a titanium compound and/or a vanadium compound supported on the carrier of claim 1 and an organometallic compound.

4,450,244

CATALYST FOR THE COMBUSTION OF HARMFUL SUBSTANCES CONTAINED IN EXHAUST GASES OF INTERNAL COMBUSTION ENGINES OPERATED WITH ALCOHOL AND PROCESS FOR THE PRODUCTION OF THE CATALYST

Rainer Domesle, Maintal; Herbert Völker, Hanau; Edgar Koberstein, Alzenau, and Hans-Dieter Pletka, Freigericht, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,635
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137169
Int. Cl.³ B01J 21/04, 23/10, 23/58
U.S. Cl. 502—185 **16 Claims**

1. A catalyst for the combustion of harmful substances contained in exhaust gases of internal combustion engines operated with alcohol, comprising a matrix having continuous channels along a main axis, said matrix being made of smooth and corrugated layers of high temperature resistant and scale resistant steel or a steel having a correspondingly resistant surface, which layers are disposed in alternate arrangement, said layer having a coating thereon comprising an aluminum oxide of the transition series and an amount of palladium of about 0.03–3% by weight, in relation to the total weight of coating and palladium, being deposited on said coating.

4,450,245

SUPPORTED CATALYSTS AND METHOD FOR THEIR PRODUCTION

Noel J. Adair; Robert W. Carlisle, both of Carrickfergus; Michael E. Stubbs, and John J. Rooney, both of Belfast, all of Ireland, assignors to Gallaher Limited, London, England

Filed Mar. 25, 1982, Ser. No. 361,880
Claims priority, application United Kingdom, Mar. 26, 1981, 8109574; Jun. 4, 1981, 8117198
Int. Cl.³ B01J 21/04, 23/44, 23/72
U.S. Cl. 502—211 **11 Claims**

1. A method of making an oxidation catalyst comprising forming a solution containing copper ions and aluminum ions and causing formation of a gel precipitate of copper aluminate by adding a base to the solution, drying the gel, forming a shaped catalyst support from the gel, and depositing on the shaped support a catalytic material selected from the group consisting of transition metal oxides and materials that will form a redox couple with the copper of the support.

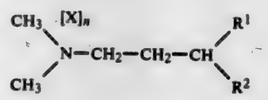
4,450,246

NOVEL POLYURETHANE CATALYSTS IN POLYURETHANE FOAM PROCESS

Felek Jachimowicz, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

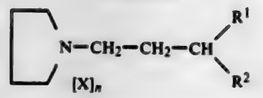
Filed Oct. 26, 1982, Ser. No. 436,814
Int. Cl.³ C08G 18/14, 18/18
U.S. Cl. 521—129 **19 Claims**

1. A process for forming a polyurethane comprising reacting an organic polyisocyanate with a polyol selected from an organic polyether polyol or polyester polyol in the presence of a catalytic amount of an amine selected from the group having the structural formula:



or

-continued



wherein R^1 is a methyl or ethyl group and R^2 is a hydrogen or methyl group such that when R^1 is methyl, R^2 is methyl and when R^1 is ethyl, R^2 is hydrogen, X is an organic mono or dicarboxylic acid and n is a number from 0 to up to 1.

4,450,247

AIR DRYING COATINGS HAVING LONG TERM WATER REPELLENCY

William B. Crockatt, Mississauga, and John Rimma, Scarborough, both of Canada, assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Apr. 14, 1982, Ser. No. 368,136
Int. Cl.³ C08L 91/08
U.S. Cl. 523—518 **9 Claims**

1. An air drying coating adapted to deposit coatings possessing long term water repellency comprising, a solution of high viscosity unsaturated hydroxy functional oil-modified alkyd resin in mineral spirits, and from 13–63 parts by weight of dissolved paraffin wax having an average melting point in the range of 50° C. to 70° C. per 100 parts of said alkyd resin, said wax being incorporated by adding granules of said wax having an average diameter of less than 1 mm to said alkyd resin solution and vigorously agitating the mixture to increase the temperature to at least about 35° C.

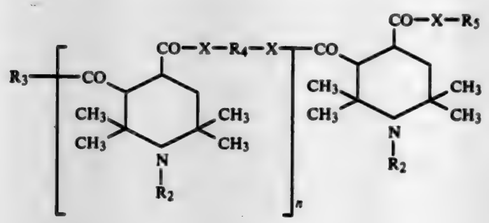
4,450,248

HINDERED PIPERIDYL LIGHT STABILIZERS

William E. Leistner, Atlantic Beach, N.Y., and Charles G. Overberger, Ann Arbor, Mich., assignors to Phoenix Chemical Corporation, Atlantic Beach, N.Y.

Continuation of Ser. No. 184,637, Sep. 8, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 293,048
Int. Cl.³ C08K 5/39; C08F 12/30; C07D 401/00
U.S. Cl. 524—99 **18 Claims**

1. A piperidine-4-carboxylic acid derivative of the formula



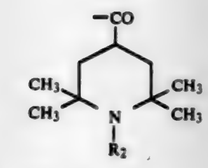
wherein:

R_2 is hydrogen, alkyl having from one to four carbon atoms, or oxyl;

R_3 is $-XR_5$ or $-CN$;

R_4 is alkylene having from two to twelve carbon atoms; cycloalkylene having from three to twelve carbon atoms; arylene having from six to twelve carbon atoms; or aralkylene having from seven to twelve carbon atoms;

R_5 is hydrogen, alkyl having from one to twenty carbon atoms, cycloalkyl having from five to six carbon atoms; or alkenyl having from three to twenty carbon atoms; or



X is —O— or —NH—; and
n is 0 to 10;
and the acid addition salts thereof.

4,450,249

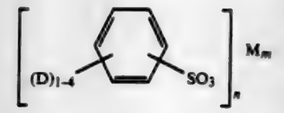
INTERNAL ANTISTATIC AGENTS FOR POLYCARBONATES AND FOR POLYCARBONATE FILMS

Manfred Schmidt, Krefeld; Joachim Wank, Dormagen-Hons; Eckart Reese, Dormagen; Dieter Freitag, Krefeld-Traar; Klaus Wangermann, Krefeld, and Wolfgang Cohnen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 172,048, Jul. 25, 1980, abandoned. This application Aug. 19, 1982, Ser. No. 409,463
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931172
Int. Cl.³ C08K 5/42
U.S. Cl. 524—132 **8 Claims**

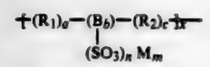
1. A polycarbonate composition characterized by its antistatic properties consisting of a polycarbonate resin and a member selected from a group consisting of alkali metal salts or alkaline earth metal salts of

(i) the monomeric aromatic sulfonic acid of the general formula (I)



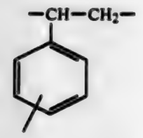
in which
D denotes C_4–C_{20}-alkyl or alkenyl, and
M denotes Li and
m=n=1, or
M denotes Ca and
m=1 and
n=2,

(ii) the polymeric aromatic (poly)-sulfonic acid of the general formula (II)



(II)

wherein
R_1 and R_2 independently denote a C_2–C_6-alkylene radical,
B denotes



M denotes an alkali metal and m=n=1 or
M denotes an alkaline earth metal in which case M=1 and n=2; a, b and c denote integers equal to or greater than

1 with the proviso that b=3 to 30 and a+b+c=100 and x denotes a number such that the polymeric salt has an average molecular weight (weight-average molecular weight) of 800 to 10^6;

(iii) the monomeric aromatic phosphonic acid of the general formula (III)

$$(R_1)_t\text{—A—}(PO_3)M_p]_z \quad \text{(III)}$$

wherein

A denotes an aryl radical containing 1–4 aromatic rings,

R_1 denotes C_4–C_{20}-alkyl, alkenyl, C_6–C_{20}-cycloalkyl or cycloalkenyl,

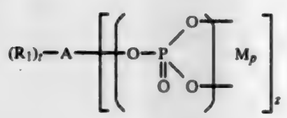
t is an integer of from 1–4,

M denotes an alkali metal and

p=2, or

M denotes an alkaline earth metal, in which case, p=1 and z denotes 1 or 2;

(iv) the monomeric partial aromatic phosphoric acid ester of the general formula (IV)

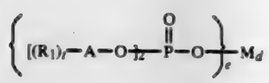


(IV)

wherein

A, R_1, t, M, p and z are as defined for formula (III);

(V) the monomeric partial aromatic phosphoric acid ester of the general formula (V)



(V)

wherein

A, R_1 and t are as defined for formula (III) and

M denotes an alkali metal and

d=e=1 or

M denotes an alkaline earth metal, in which case, d=1 and e=2.

4,450,250

POLYESTER ADHESIVES

Richard L. McConnell; Max F. Meyer, Jr., and Frederick D. Petke, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,609

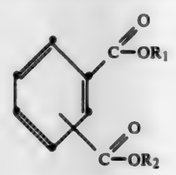
Int. Cl.³ C08K *5/12, 5/52;* C08L *67/02*

U.S. Cl. 524—141 **5 Claims**

1. Adhesive composition comprising:

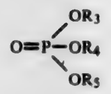
(a) an amorphous or a crystallizable polyester having a melting point of about 80° C. to about 230° C. and a heat of fusion of 0 to about 18 calories per gram, and

(b) from about 1 to about 35% by weight of a compound selected from the group consisting of



(1)

wherein R_1 is benzyl or phenyl and R_2 is benzyl, phenyl or an alkyl group containing 1 to 10 carbon atoms, and



(2)

wherein R_3 is phenyl or benzyl, R_4 is phenyl or benzyl and R_5 is an alkyl group containing 1 to 10 carbon atoms.

4,450,251

THERMOSETTING AQUEOUS VARNISH COMPOSITIONS

Edwin A. Zychowski, Des Plaines, and Ronald L. Richards, Oak Park, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 9, 1983, Ser. No. 473,546

Int. Cl.³ C08K *5/18*

U.S. Cl. 524—251 **8 Claims**

1. An aqueous thermosetting coating composition comprising a substantially stable dispersion including

(A) about 20 to about 40 weight percent of a solution copolymer polymerized from monomers consisting essentially of (a) about 50 to about 75 weight percent vinyl acetate, (b) about 10 to about 45 weight percent of C_1–C_8 alkyl acrylate or methacrylate ester and (c) about 5 to about 15 weight percent of a mixture of (i) at least about 0.5 weight percent monoethylenically unsaturated C_3–C_5 carboxylic acid and (ii) at least about 2 weight percent C_2–C_4 hydroxyalkyl acrylate or methacrylate, wherein said copolymer has a calculated T_g value of about −10° to about +15° C. and is polymerized at a temperature of at least about 110° C. at a non-volatile solids content of about 65 to about 80 percent;

(B) about 35 to about 55 weight percent water;

(C) about 7 to about 15 weight percent water-miscible organic solvent;

(D) about 7 to about 15 weight percent cross-linking agent; and

(E) an amount of volatile amine sufficient to disperse said copolymer in said water and said water-miscible organic solvent.

4,450,252

CONTACT ADHESIVE AND ADHESIVE SYSTEM FOR EPDM AND RELATED ELASTOMERS

John W. Fieldhouse, Mogadore, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 30, 1982, Ser. No. 431,403

Int. Cl.³ C08L *61/10, 61/14, 47/00*

U.S. Cl. 524—353 **7 Claims**

1. An adhesive composition for bonding cured layers of EPDM together comprising:

(a) a neutralized surfonated EPDM elastomeric terpolymer having from about 10 to about 100 milliequivalents of neutralized sulfonate groups per 100 grams of terpolymer;

(b) from about 500 to about 1700 parts by weight per 100 parts by weight of said terpolymer of an organic hydrocarbon solvent or mixture of an organic hydrocarbon solvent and an aliphatic alcohol;

(c) from about 25 to about 100 parts by weight per 100 parts by weight of said terpolymer of a para-alkylated phenol formaldehyde or an N-methylol morpholine-modified para-alkylated phenol formaldehyde tackifying resin; and

(d) from about 12.5 to about 75 parts by weight per 100 parts by weight of said terpolymer of an alkylphenol or ethoxylated alkylphenol.

7. The composition of claim 1 wherein said alkylphenol is p-nonylphenol or p-dodecylphenol.

4,450,253

PROPELLANT-ACTIVE CARRIER SYSTEM FOR WATER-BASED PAINTS

Albert Suk, Richmond Hill, Canada, assignor to CCL Industries Inc., Willowdale, Canada

Continuation-in-part of Ser. No. 237,189, Mar. 3, 1981, which is a continuation-in-part of Ser. No. 192,454, Sep. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 97,152, Nov. 23, 1979, Pat. No. 4,265,797, which is a continuation-in-part of Ser. No. 968,277, Dec. 11, 1978, abandoned. This application Nov. 12, 1982, Ser. No. 441,278

Int. Cl.³ C08K *5/06*

U.S. Cl. 524—378 **15 Claims**

1. An aerosol water-based paint composition suitable for spray application to a substrate surface and air drying to a continuous durable film thereon, comprising:

(a) about 6 to about 25 wt. % of at least one film-forming polymer which is a drying oil-modified ester polymer which is rendered water soluble by neutralization with a volatile base and which is capable of air drying to a water-resistant coating film upon volatilization of said volatile base after spraying the polymer onto a substrate surface,

(b) about 20 to about 60 wt. % of dimethyl ether,

(c) about 20 to about 40 wt. % of water,

(d) about 0.1 to about 30 wt. % of at least one water-soluble polar organic solvent,

(e) 0 to about 3 wt. % of at least one surfactant,

(f) 0 to about 15 wt. % of at least one pigment,

(g) 0 to about 1 wt. % of at least one pH stabilizer,

(h) 0 to about 2 wt. % of at least one antifoam agent,

(i) 0 to about 2 wt. % of at least one plasticizer, and

(j) 0 to about 0.5 wt. % of at least one drier for said film-forming polymer,

said dimethyl ether, water, and at least one polar organic solvent being present in proportions to provide a single liquid phase propellant-active carrier solution having a pH of about 7.2 to about 10 and in which said film-forming polymer is dissolved and the remainder of the components of the composition are dissolved or suspended.

4,450,254

IMPACT IMPROVEMENT OF HIGH NITRILE RESINS

Ralph E. Isley, Northfield; Dorothy C. Prem, Sagamore Hills, and June T. Duke, Chagrin Falls, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 203,022, Nov. 3, 1980, abandoned. This application Jun. 25, 1982, Ser. No. 392,392

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—399 **6 Claims**

1. An impact resistant resin composition which comprises an intimate mixture of (1) a copolymer produced by the polymerization of a major proportion of a mono-unsaturated nitrile and a minor proportion of at least one monovinyl monomer component copolymerizable therewith in the presence of a preformed diene rubber; and (2) a metal carboxylate selected from the group consisting of calcium pelargonate, calcium laurate, aluminum pelargonate, aluminum laurate and aluminum distearate.

4,450,255

ALUMINA-CONTAINING ORGANOSILICON RESINS

Ronald H. Baney, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jan. 10, 1983, Ser. No. 456,657

Int. Cl.³ C08K *3/22*

U.S. Cl. 524—430 **20 Claims**

1. A composition of matter comprising colloidal aluminum oxide and colloidal silica in a water-alcohol solution of the partial condensate of a silanol having the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 inclusive carbon atoms or the phenyl radical, at least 10 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 1 to 45 weight percent solids, said solids consisting essentially of 1 to 60 weight percent of colloidal aluminum oxide, 1 to 50 weight percent of colloidal silica and 35 to 90 weight percent of said partial condensate.

4,450,256

PROCESS FOR PRODUCING THERMOPLASTIC RESIN

Sigemi Matsumoto, Takasago, and Fumiya Nagoshi, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1983, Ser. No. 457,378

Claims priority, application Japan, Jan. 12, 1982, 57-3769

Int. Cl.³ C08F *279/04*

U.S. Cl. 525—316 **1 Claim**

1. A process for producing a thermoplastic resin which is outstanding in impact resistance and heat distortion resistance and is discolored only little by heat, said process comprising the steps of:

polymerizing, in the presence of diene type synthetic rubber, 2 to 40 parts by weight of a monomer mixture (A) composed of acrylonitrile and styrene, the ratio of acrylonitrile to styrene being 10–40/90–60 by weight,

adding 50 to 90 parts by weight of (B) a monomer mixture containing more than 80 wt% of α-methylstyrene, after most of monomer mixture (A) has polymerized, and then

stepwise adding (C) a monomer mixture containing more than 70 wt% of acrylonitrile while continuing polymerization, the ratio of α-methylstyrene to acrylonitrile in monomer mixtures (B) and (C) being 95–65/5–35 by weight,

whereby 95 to 70 parts by weight of mixture of monomers containing acrylonitrile, styrene and α-methyl styrene are polymerized in the presence of 5 to 30 parts by weight of said diene type synthetic rubber.

4,450,257

PROCESS FOR PRODUCING PHOSPHORIC ACID GROUP CONTAINING POLYESTER RESINS AND THEIR USE AS PAINT BINDERS

Lukas K. Behmel, and Bertram Zückert, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Jul. 28, 1983, Ser. No. 517,952

Claims priority, application Austria, Jul. 29, 1982, 2923/82; Apr. 14, 1983, 1326/83

Int. Cl.³ C08G *63/76*

U.S. Cl. 525—437 **12 Claims**

1. A process for producing polyester resins containing phosphoric acid groups with substantial total linking of the phosphoric acid or derivative thereof to the polyester resin system, characterized in that at least 0.1 mole/kg of the polyacid of the final product is phosphoric in the form of polyphosphoric acid; an acidic phosphoric acid ester of mono- or polyhydric alcohols, and mixtures thereof; the esterification reaction of the polyester components and the phosphoric acid group containing component being carried out in a 40 to 80 percent by weight of solids containing solution of one or more diluents inert towards the raw materials used, the reaction being continued until substantially total linking of the phosphoric acid occurs and the product has an intrinsic viscosity of from about 3.0 to 25.0 ml/g (DMF, 20° C.).

4,450,258

COATING COMPOSITIONS

Denis R. Pauze, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 63,137, Jul. 31, 1979, abandoned, which is a continuation of Ser. No. 923,729, Jul. 11, 1978, Pat. No. 4,218,550, which is a continuation of Ser. No. 538,079, Jan. 2, 1975, abandoned. This application Oct. 7, 1983, Ser. No. 540,084

Int. Cl.³ C08G *18/83*

U.S. Cl. 525—440 **9 Claims**

1. A polyester urethane containing coating composition having free carboxyl groups wherein all of the free carboxyl

groups are neutralized with a compound selected from the group consisting of amine, ammonia and ammonium hydroxide, said compound being used in at least fifty percent excess over that necessary to neutralize said free carboxyl groups.

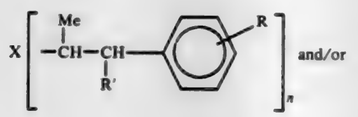
4,450,259

MULTIFUNCTIONAL ANIONIC INITIATORS AND THEIR USE

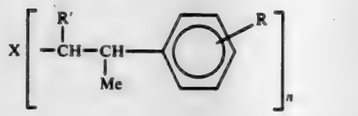
Arnaldo Roggero; Mario Bruzzone, both of S. Donato Milanese, and Alberto Gandini, Milan, all of Italy, assignors to Enoxy Chimica, S.p.A., Sassari, Italy

Filed Dec. 16, 1982, Ser. No. 450,271
Claims priority, application Italy, Dec. 22, 1981, 25751 A/81
Int. Cl.³ C08F *4/46*
U.S. Cl. 526—173 **13 Claims**

1. Multifunctional anionic initiators having the general formula



and/or



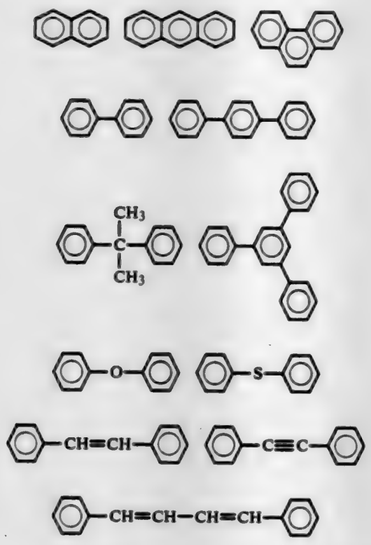
wherein

Me is an alkali metal

n is an integer comprised between 2 and 6 but is preferably 2 and 3

R′ is an alkyl, a hydrogen atom or an amide group

X is a divalent or a polyvalent derivatives of the following structures:



and R is hydrogen, an alkyl radical (having preferably a tertiary carbon atom directly bonded to the aromatic ring), a cycloalkyl radical, an alkoxy radical or an aromatic radical and contains from 0 to 18 carbon atoms.

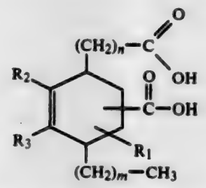
4,450,260

EMULSION POLYMERIZATION

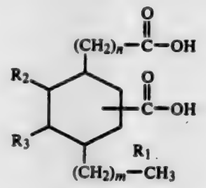
George A. Von Bodungen, and Rudy F. Karg, both of Baton Rouge, La., assignors to Copolymer Rubber & Chemical Corp., Baton Rouge, La.

Filed Feb. 7, 1983, Ser. No. 464,706
Int. Cl.³ C08F *2/26*
U.S. Cl. 526—213 **21 Claims**

1. In a process for the emulsion polymerization of at least one monomer, the improvement comprising carrying out the emulsion polymerization in the presence of an emulsifier of a diacid derivative of a cyclic or alkene selected from the group consisting of a compound or its salt having the structure:



and a compound or its salt having the structure:



wherein n is an integer from 1 to 25, m is 0 or an integer from 1 to 25 and each of R_1, R_2 and R_3 is selected from the group consisting of hydrogen and C_1 to C_{25} alkyl.

4,450,261

PREPARATION OF LOW MOLECULAR WEIGHT STYRENE-MALEIC ANHYDRIDE COPOLYMERS AND SULFONATED COPOLYMERS THEREOF

Wen B. Chiao, Piscataway, and Dilip K. Ray-Chaudhuri, Bridgewater, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 22, 1983, Ser. No. 468,256
Int. Cl.³ C08F *2/38, 8/36, 236/10*
U.S. Cl. 526—214 **19 Claims**

1. An improved process for preparing a copolymer of styrene and maleic anhydride in the molecular weight range of about 500 to 10,000 by polymerizing styrene and maleic anhydride monomers in a molar ratio of about 1:1 to 9:1 in 1,2-dichloroethane at 70°–100° C. in the presence of a free radical generating polymerization catalyst and a mercaptan chain transfer agent, wherein the improvement comprises carrying out the polymerization in the presence of about 0.5–5%, based on the weight of the monomers, of 3-mercaptopropionic acid or methyl-3-mercaptopropionate as the chain transfer agent, whereby a substantially odorless copolymer which remains soluble in said 1,2-dichloroethane results.

4,450,262

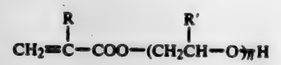
HYDROPHILIC COPOLYMER COMPOSITIONS USEFUL AS CONTACT LENSES

Nancy J. Drake, Painesville, Ohio; Michael D. Hilston, League City, Tex., and Mary A. O'Malley, Cleveland, Ohio, assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Aug. 11, 1982, Ser. No. 407,270
Int. Cl.³ C08F *220/20, 220/28, 220/34*
U.S. Cl. 526—234 **10 Claims**

1. A hydrophilic copolymer adapted to the fabrication of soft contact lenses resistant to the diffusion of proteins and other lens opacifying agents therein, which polymer comprises

(a) at least about 93% by weight of polymerized units of a hydroxy containing acrylate or alkacrylate having the structural formula:



wherein R represents hydrogen or alkyl from 1 to 6 carbon atoms; R′ represents hydrogen or alkyl from 1 to 6 carbon atoms; and n is an integer of 1 to 6; and

(b) at least about 0.6% to about 7.0% by weight of polymerized units of a p-nitrophenyl acrylate or methacrylate.

4,450,263

FLUOROPOLYMER GUM OF VINYLIDENE FLUORIDE, HEXAFLUOROPROPENE, AND BROMODIFLUOROETHYLENE

Arthur C. West, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 70,926, Aug. 30, 1979, Pat. No. 4,263,414. This application Aug. 29, 1980, Ser. No. 182,608
Int. Cl.³ C08F *14/16, 14/22, 14/28*
U.S. Cl. 526—249 **3 Claims**

1. A fluoropolymer gum whose interpolymerized units consist essentially of 60 to 85 mol percent of units derived from vinylidene fluoride, 10 to 40 mol percent of units derived from hexafluoropropene, and 0.15 to 3 mole percent of units derived from 1-bromo-2,2-difluoroethylene, which gum cures in the presence of free-radical initiators under vulcanization conditions to produce an elastomeric vulcanizate.

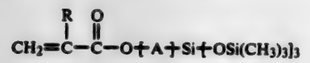
4,450,264

SILOXANE-CONTAINING POLYMERS AND CONTACT LENSES THEREFROM

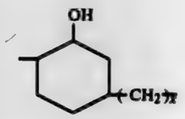
Edward Cho, Westfield, N.J., assignor to Polymatic Investment Corp., N.V., Curacao, Netherlands

Filed Aug. 9, 1982, Ser. No. 406,582
Int. Cl.³ C08F *30/08, 130/08, 230/08*
U.S. Cl. 526—279 **21 Claims**

1. An organosiloxane of the formula

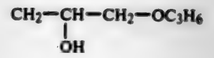


wherein R is hydrogen or methyl, and wherein A is the unit (I)

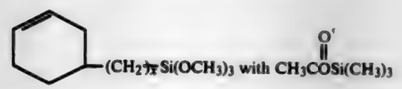


(I)

wherein x is 0 to 4

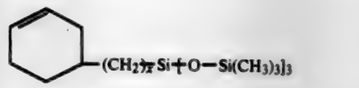


18. A process of preparing compounds of claim 1 comprising (1) reacting a compound of the formula (I)



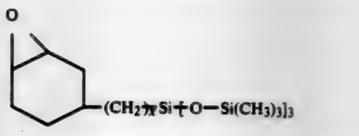
(I)

under acidic conditions to form a compound of the formula II



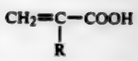
(II)

(2) reacting the thus formed compound (II) with an epoxidizing compound capable of epoxidizing the double bond in the cyclohexene ring to form a compound of the formula (III)



(III)

(3) reacting the compound of formula (III) with a compound of the formula



in the presence of an esterification catalyst to form the compounds of claim 1.

4,450,265

ADDITIVES FOR CYANOACRYLATE ADHESIVES

Stephen J. Harris, Dublin, Ireland, assignor to Loctite Corporation, Newington, Conn.

PCT No. PCT/GB81/00170, 371 Date Apr. 28, 1982, 102(e) Date Apr. 28, 1982, PCT Pub. No. WO82/00829, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 27, 1981, Ser. No. 375,140
Claims priority, application Ireland, Aug. 28, 1980, 1812/80
Int. Cl.³ C08F *120/34*
U.S. Cl. 526—298 **5 Claims**

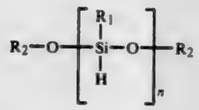
1. An adhesive composition comprising a polymerizable constituent the major part of which comprises at least one ester of 2-cyanoacrylic acid, characterized in that the composition additionally comprises a proportion of phthalic anhydride effective for favorably influencing the strength and/or durability of adhesive bonds formed from said composition, under exposure to moisture or elevated temperature.

4,450,266
USE OF SILOXANES FOR THE MODIFICATION OF HIGH MOLECULAR WEIGHT P-POLYPHENYLENE SULPHIDES

Karsten Idel; Dieter Freitag, both of Krefeld, and Josef Merten, Korschenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 465,012
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3205993
Int. Cl.³ C08K 5/54
U.S. Cl. 524—265 **5 Claims**

1. High molecular weight stabilized polymer composition comprising p-polyphenylene sulphide having a content of from 0.1 to 2% by weight, based on the total weight of the composition, of a siloxane of the formula



wherein

R_1 represents a C_1-C_{18} alkyl, C_5-C_6 cycloalkyl, C_2-C_{18} alkenyl, C_5-C_6 cycloalkenyl or C_6-C_{12} aryl,

R_2 has the same meaning as R_1 and may represent trimethylsilyl, and

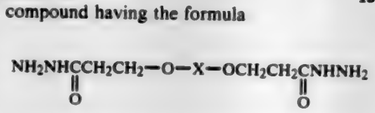
n represents an integer from 1 to 100.

4,450,267
LATENT CURING AGENTS FOR EPOXY RESINS

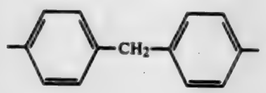
Nobuo Ito, Ooisomachi; Koji Takeuchi, Yokohama; Masahiro Abe, Kawasaki, and Tsuneo Ishiguro, Yokosuka, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,214
Claims priority, application Japan, Jan. 29, 1982, 57-12891
Int. Cl.³ C08G 59/44
U.S. Cl. 528—99 **13 Claims**

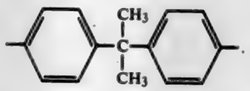
1. A compound having the formula



wherein X is an aromatic hydrocarbon residue of a dihydric phenol,



or

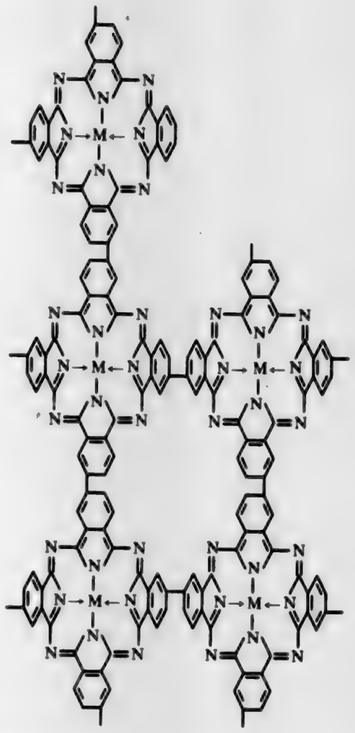


4,450,268
METAL PHTHALOCYANINE POLYMERS

Bappalige N. Achar, Mysore, India; George M. Fohlen, Millbrae, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 8, 1982, Ser. No. 415,880
Int. Cl.³ C08G 73/00
U.S. Cl. 528—327 **12 Claims**

1. A method of preparing a heat stable and oxidation resistant sheet polymer of a metal phthalocyanine which comprises heating a metal 4,4',4'',4'''-tetracarboxylic phthalocyanine to a temperature sufficient to result in the formation of gaseous products and to form a sheet polymer having the repeating structure



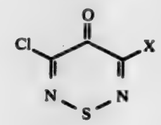
wherein M is a metal.

4,450,269
MONO-5-SUBSTITUTED-3-CHLORO-4H-1,2,6-THIADIAZIN-4-ONE ANTIFUNGAL AGENTS

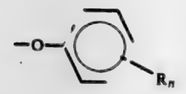
Clinton J. Peake; Wayne N. Harnish, both of Medina, and Bruce L. Davidson, Middleport, all of N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 904,828, May 11, 1978, abandoned, which is a continuation of Ser. No. 782,860, Mar. 30, 1977, Pat. No. 4,097,594. This application Dec. 18, 1980, Ser. No. 217,644
Int. Cl.³ C07D 285/16
U.S. Cl. 544—8 **6 Claims**

1. A compound of the formula



in which X is naphthoxy or substituted phenoxy having the formula



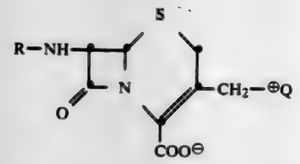
wherein each R group is a substituent independently selected from the group consisting of lower alkyl, halo, hydroxy, lower alkoxy, nitro, cyano, amino, carboxyl, lower acyl, lower acylamino, lower alkoxycarbonyl, carboxy(lower)alkyl, lower alkylureido, phenylureido, trihalomethyl, cyano(lower)alkyl, phenyl(lower)alkoxycarbonyloxy, lower alkylaminocarbonyloxy, phenylaminocarbonyloxy, lower alkylthio, lower alkylsulfinyl and lower alkylsulfonyl, wherein n has a value of 1 to 3 inclusive, except when each R is halogen when n has a value of 1 to 5 inclusive.

4,450,270
DIOXIMINO CEPHALOSPORIN ANTIBIOTICS

William H. W. Lunn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 307,983, Oct. 2, 1981, Pat. No. 4,402,955. This application Jun. 3, 1983, Ser. No. 500,729
Int. Cl.³ C07D 501/38; A61K 31/545
U.S. Cl. 544—24 **3 Claims**

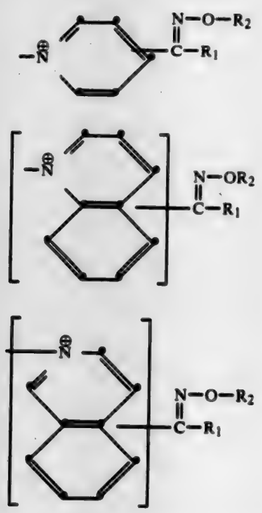
1. A compound of the formula



wherein

R is hydrogen, or formyl

Q is an oximino substituted pyridinium, quinolinium or isoquinolinium group of the formulas



wherein

R_1 is hydrogen or C_1-C_3 alkyl; R_2 is hydrogen or C_1-C_3 alkyl; and the pharmaceutically acceptable non-toxic salts thereof.

4,450,271
PREPARATION OF 2-HYDROXYQUINOXALINE

Tsung-Tsan Su, and Yu-Chen Cheng, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 19, 1982, Ser. No. 399,275
Int. Cl.³ C07D 241/44
U.S. Cl. 544—354 **3 Claims**

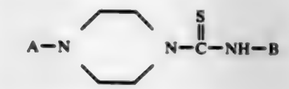
1. A process for preparing 2-hydroxyquinoxalines comprising the steps of reacting a dialkyl tartrate with a periodate, adjusting the pH of the resulting reaction mixture to 6-7, and condensing said mixture with an o-phenylenediamine.

4,450,272
ANTIATHEROSCLEROTIC 1-PIPERAZINE-THICARBOXAMIDES

Mila T. Du, Suffern, N.Y., and Robert G. Shepherd, Selbyville, Del., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 6, 1982, Ser. No. 375,526
Int. Cl.³ C07D 403/04, 401/04; A61K 31/495
U.S. Cl. 544—357 **6 Claims**

1. A compound of the formula:



wherein A is selected from the group consisting of pyrazinyl, quinolyl, and methoxypyrazinyl and B is selected from the group consisting of, benzyl, phenethyl, and phenyl substituted with at least one substituent selected from the group consisting of C_1-C_4 carboalkoxy, carboxy, and cyano.

4,450,273
NN' PARA METHOXY BENZYL PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID DIIMIDE

Fritz Graser, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,506
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101885
Int. Cl.³ C09B 5/62
U.S. Cl. 546—37 **1 Claim**

1. A perylene-3,4,9,10-tetracarboxylic diimide of the formula

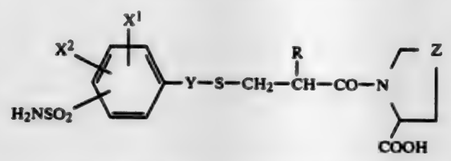


4,450,274
PREPARATION OF ETHAMBUTOL-DIISONIAZIDE METHANE SULFONIC ACID SALT
Sang-Woo Park, Seoul, Rep. of Korea, assignor to Korean Advanced Institute of Science and Technology, Seoul, Rep. of Korea
Filed Jun. 10, 1982, Ser. No. 387,037
Claims priority, application Rep. of Korea, Jul. 7, 1981, 2455
Int. Cl.³ C07D *401/12*
U.S. Cl. 546—262 10 Claims

1. A process for preparing an d(+) 2,2-(ethylene diimino) dibutanol-diisoniazide-methane-sulfonate comprising reacting isoniazid with ethylene diimino dibutanol-chloro-methane sulfonate.

4,450,275
CYCLIC IMINOCARBOXYLIC ACID DERIVATIVES
Katsuo Arimura, Oita; Shu Murakami, Fukuoka, and Taichi Oka, Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan
PCT No. PCT/JP79/00249, 371 Date Jun. 5, 1980, 102(e) Date Jun. 5, 1980, PCT Pub. No. WO80/00700, PCT Pub. Date Apr. 17, 1980
PCT Filed Sep. 28, 1980, Ser. No. 227,104
Claims priority, application Japan, Oct. 5, 1978, 53-123189
Int. Cl.³ C07D *207/16, 277/04*
U.S. Cl. 548—201 3 Claims

1. A cyclic iminocarboxylic acid of the formula



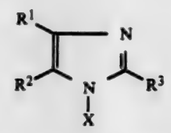
or a salt thereof, wherein X^1 is chlorine at the 4-position, X^2 is hydrogen, the H_2NSO_2-group is at the 3-position, Y is —CO—, Z is —CH_2— or —S—, and R is hydrogen or lower alkyl.

4,450,276
PROCESS FOR THE PREPARATION OF D(+)-BIOTIN
Jürgen Gehlhaus, Port Chester, N.Y., and Claus P. Herz, Heidelberg, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany
Filed Jun. 7, 1982, Ser. No. 386,134
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122562
Int. Cl.³ C07D *495/04*
U.S. Cl. 548—303 5 Claims

1. In a process for preparing D(+)-biotin comprising reacting a 3,4-isopropylidine-D-arabinose with alkoxycarbonyl-prop-1-en-3-ylidenetriphenylphosphorane to give a product from which an ester of 6,9-dihydroxy-7,8-isopropylidenedioxynonanoic acid is obtained and converting the latter into D(+)-biotin, the improvement, comprising reacting 3,4-isopropylidene-D-arabinose in which the OH group in the 2-position is not protected, with said phosphorane essentially in the absence of alkaline components, to produce the corresponding ester of 6,9-dihydroxy-7,8-isopropylidenedioxynona-2,4-dienoic acid; catalytically hydrogenating the latter to form the corresponding ester of 6,9-dihydroxy-7,8-isopropylidenedioxynonanoic acid; and then converting the latter into D(+)-biotin.

4,450,277
PREPARATION OF 1-SUBSTITUTED IMIDAZOLES
Fritz Graf, Speyer, and Leopold Hupfer, Friedelsheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Sep. 25, 1980, Ser. No. 190,901
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940709
Int. Cl.³ C07D *233/58, 233/60, 233/61*
U.S. Cl. 548—346 3 Claims

1. A process for the preparation of imidazoles of the formula



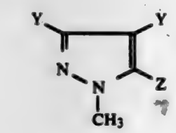
where R^1 and R^2 are hydrogen, straight-chain or branched alkyl of 1 to 5 carbon atoms, phenyl or naphthalene which alkyl, phenyl and naphthyl may be substituted by HO—, H_3COOC— or H_3CO—groups, R^3 is hydrogen, straight-chain or branched alkyl of 1 to 8 carbon atoms which may be substituted by phenyl or HO—, H_3COOC— or H_3CO—groups, or phenyl which may be substituted by alkyl, HO— or H_3COOC—groups, X is a straight-chain or branched, saturated or unsaturated hydrocarbon radical of 1 to 20 carbon atoms which may be substituted by HO—, CH_3—NH—, $(CH_3)_2N$—, H_5C_2NH—, H_5C_2O—, H_3CO— or ether groups, or is a cycloaliphatic radical or is a phenyl radical which may be substituted by H_3CO—, $(CH_3)_2N$—, H_5C_2NH— or H_3COOC—groups, wherein an α-dicarbonyl compound of the formula

$$R^1—CO—CO—R^2,$$

ammonia, an aldehyde of the formula R^3—COH and a primary amine of the formula X—NH_2 are reacted in one step at from 20° to 150° C.

4,450,278
INTERMEDIATES FOR 1-METHYL-3,4-DIHALO-5-THIO-(2-HYDROXYETHYL)-PYRAZOLE
Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Jun. 28, 1982, Ser. No. 393,214
Int. Cl.³ C07D *231/18*
U.S. Cl. 548—376 2 Claims

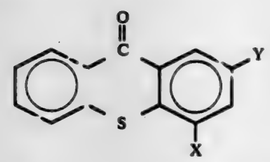
1. A compound of the formula:



wherein Y is chloro or bromo, and Z is the group —SCH_2C-H_2OH—.

4,450,279
DIALKYLTHIOXANTHONES
Tsutomu Shirosaki, Tokyo, and Seiki Fukunaga, Yono, both of Japan, assignors to Nippon, Kayaku, Kabushiki, Kaisha, Tokyo, Japan
Filed Mar. 2, 1982, Ser. No. 354,230
Claims priority, application Japan, Mar. 16, 1981, 56-36493
Int. Cl.³ C07D *335/16*
U.S. Cl. 549—27 4 Claims

1. A dialkylthoxanthone compound of the general formula:

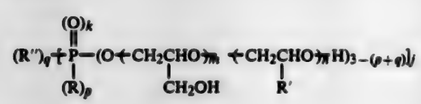


(I)

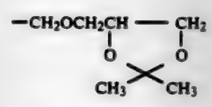
wherein X and Y may be the same or different, and represent a straight-chain or branched alkyl group having 1–12 carbon atoms with a proviso that sum of carbon atoms of alkyl groups X and Y is in the range of 3–15.

4,450,280
PHOSPHOROUS-CONTAINING POLYETHER POLYOLS
Chester E. Pawloski, Bay City, and Sally P. Ginter, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Mar. 4, 1982, Ser. No. 354,567
Int. Cl.³ C07F *9/40*; C07D *317/24*
U.S. Cl. 549—221 7 Claims

1. A phosphorus-containing polyether polyol corresponding to the formula:



wherein:
R is a monovalent moiety having up to 6 carbons selected from the group consisting of alkyl, phenyl, haloalkyl, halophenyl, alkoxy and haloalkoxy;
R′ is C_{1-6} alkyl, C_{1-6} haloalkyl, phenyl, halophenyl, tertiary alkoxy methyl, phenoxy methyl, halophenoxy methyl, or



R″ is a moiety of valence j having up to 10 carbons selected from the group consisting of R, alkanediyl, alkanetriyl, alkanetetryl, alkenylene, alkylenedioxy and halo-, haloalkyl-, phenyl- or halophenyl-substituted derivatives thereof;
j is an integer from 1 to 4;
k is zero or one;
m is a positive rational number less than about 25;
n is a rational number from zero to about 25; and
p and q are integers independently equal to either zero or 1.

4,450,281
PROCESS FOR THE PREPARATION OF A POLYALKENYL SUCCINIC ANHYDRIDE
Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Dec. 29, 1982, Ser. No. 454,398
Int. Cl.³ C07D *307/60*
U.S. Cl. 549—255 8 Claims

1. In a method for preparing a substituted carboxylic acid or derivative thereof which comprises reacting (A) an alkylating hydrocarbon containing two or more double bonds with (B) at least one of maleic acid, fumaric acid, itaconic acid and anhydrides and esters of any of these acids, at least part of the reaction being conducted thermally, the improvement which comprises conducting said thermal reaction in the presence of a furan-type compound.

4,450,282
CATALYST FOR A PROCESS FOR PRODUCING SILICONES
Alan Ritzer, Sand Lake, and Heine Lapidot, Latham, both of N.Y., assignors to General Electric Company, Waterford, N.Y.
Filed Jul. 29, 1981, Ser. No. 288,175
Int. Cl.³ C07F *7/16*
U.S. Cl. 556—472 39 Claims

1. An efficient direct process for producing organohalosilanes and particularly diorganodihalosilanes, comprising (1) passing an organohalide in contact with metal in the presence of a catalyst comprising partially oxidized copper particles having a surface areas of at least 3.5 meters square per gram as determined by the B.E.T. Method wherein the catalyst particles have a particle size distribution in which 100% of the particles are less than 35 μm and 100% of the particles are greater than 0.7 μm, and (2) removing a product stream of organohalosilanes from the reaction area where the organo group is a monovalent hydrocarbon radical.

4,450,283
PLATINUM-STYRENE COMPLEXES WHICH PROMOTE HYDROSILATION REACTIONS
Richard C. McAfee, Tecumseh; James Adkins, Adrian, and Richard L. Miskowski, Jackson, all of Mich., assignors to SWS Silicones Corporation, Adrian, Mich.
Division of Ser. No. 230,462, Feb. 2, 1981, Pat. No. 4,394,317. This application Feb. 18, 1983, Ser. No. 468,118
Int. Cl.³ C07F *7/08, 7/10, 7/18*
U.S. Cl. 556—479 10 Claims

1. A process for the addition of an organosilicon compound containing silicon-bonded hydrogen to an organic compound having carbon-carbon unsaturation which comprises mixing an organosilicon compound having silicon-bonded hydrogen with an organic compound having carbon-carbon unsaturation in the presence of a platinum-olefinic hydrocarbon complex

containing more than one but less than 4 gram atoms of halogen per gram atom of platinum, said platinum-olefinic hydrocarbon complex is obtained from the reaction of a platinum halide and an olefinic hydrocarbon selected from the group consisting of styrene and ring substituted styrenes in the presence of a basic material.

4,450,284

METHOD FOR PURIFYING N-BENZYLOXYCARBONYL ASPARTIC ACID

Avinash T. Sathe, Mundelein, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 291,584, Aug. 10, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 483,057

Int. Cl.³ C07C *125/06*

U.S. Cl. 560—163 **19 Claims**

1. A process for purifying N-benzyloxycarbonyl aspartic acid containing minor contaminating amounts of N-benzyloxycarbonyl aspartyl aspartic acid, which comprises (a) admixing alkali metal hydroxide with an aqueous slurry of said contaminated N-benzyloxycarbonyl aspartic acid until the pH of the resulting aqueous solution is within the range of from about 10 to 12, digesting said resulting aqueous solution within said pH range and at temperatures of from 30° C. to 100° C. for a time sufficient to hydrolyze substantially all of the N-benzyloxycarbonyl aspartyl aspartic acid (b) acidifying the digested aqueous solution with mineral acid, thereby to crystallize N-benzyloxycarbonyl aspartic acid substantially free of N-benzyloxycarbonyl aspartyl aspartic acid, and (c) recovering said crystallized N-benzyloxycarbonyl aspartic acid.

10. A process for purifying N-benzyloxycarbonyl aspartic acid containing minor contaminating amounts of N-benzyloxycarbonyl aspartyl aspartic acid, which comprises digesting an aqueous solution of an alkali metal salt of said N-benzylcarbonyl aspartic acid at a pH of from about 10 to less than 12 and at temperatures of from 50° C. to 100° C. for a time sufficient to hydrolyze substantially all of the N-benzyloxycarbonyl aspartyl aspartic acid.

4,450,285

PREPARATION OF ESTERS

Edmund P. Woo, and Daniel J. Murray, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1982, Ser. No. 350,853

Int. Cl.³ C07C *67/36*

U.S. Cl. 560—206 **10 Claims**

1. A process for the preparation of a β,γ-unsaturated ester corresponding to the formula:

$$R_1R_2C{=}CR_3CR_4R_5C(O)OR_6$$

wherein:

R_1–R_5 independently each occurrence are selected from the group consisting of hydrogen and R_6; and

R_6 is a moiety of up to about 10 carbons selected from the group consisting of alkyl, aryl, alkenyl and halo-, cyano-, nitro-, alkoxycarbonyl- or alkoxy-substituted derivatives thereof,

which comprises contacting a β,γ-unsaturated carbonate compound corresponding to the formula

$$R_1R_2C{=}CR_3CR_4R_5OC(O)OR_6,$$

wherein R_1–R_6 are as previously defined, with carbon monoxide at elevated temperatures and pressures in the presence of a metal catalyst capable of catalyzing the carbonylation reaction selected from the metals of group VIII of the Periodic Table.

4,450,286

BUTENYL ACETATE PRODUCTION

Timm E. Paxson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 21, 1982, Ser. No. 380,637

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.³ C07C *67/04, 69/145*

U.S. Cl. 560—241 **3 Claims**

1. A process for producing butenyl acetate which comprises reacting butadiene and acetic acid at a temperature ranging from about 0° to about 150° C. in the presence of a catalyst comprising styrene-divinylbenzene sulfonic acid ion exchange resin wherein from about 2 to about 20% of the sulfonic acid moieties of the resin are exchanged with a ferrocenyl salt having a cationic ferrocenyl moiety wherein the ferrocenyl moiety is substituted with one or more moieties having the following general formula

$$-CH_2)_nX^+R_1R_2R_3$$

where n ranges from 0 to about 10; R_1, R_2 and R_3 are alkyl having carbon numbers ranging from 1 to about 20, X is nitrogen or phosphorus, and an anionic moiety selected from hydroxide or an anion from a strong or weak acid.

4,450,287

BUTENYL ACETATE PRODUCTION

Timm E. Paxson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 21, 1982, Ser. No. 380,638

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.³ C07C *67/04, 69/145*

U.S. Cl. 560—241 **5 Claims**

1. A process for producing butenyl acetates which comprises reacting butadiene and acetic acid at a temperature ranging from about 0° to about 150° C. in the presence of a catalyst comprising styrene-divinylbenzene sulfonic acid ion exchange resin wherein from about 2 to about 20% of the sulfonic acid moieties of the resin are exchanged with a quaternary ammonium salt wherein the quaternary ammonium moiety of the quaternary ammonium salt has a carbon number of greater than about 30.

4,450,288

BUTENYL ACETATE PRODUCTION

Timm E. Paxson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 21, 1982, Ser. No. 380,639

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.³ C07C *67/04, 69/145*

U.S. Cl. 560—241 **4 Claims**

1. A process for producing butenyl acetates which comprises reacting butadiene and acetic acid at a temperature ranging from about 0° to about 150° C. in the presence of a catalyst comprising styrene-divinylbenzene sulfonic acid ion exchange resin wherein from about 2 to about 20% of the sulfonic acid moieties of the resin are exchanged with an alkyl pyridinium salt.

4,450,289

BUTENYL ACETATE PRODUCTION

Paxson, Timm E., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 21, 1982, Ser. No. 380,640

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.³ C07C *67/04, 69/145*

U.S. Cl. 560—241 **5 Claims**

1. A process for producing butenyl acetates which comprises reacting butadiene and acetic acid at a temperature ranging from about 0° to about 150° C. in the presence of a catalyst comprising styrene-divinylbenzene sulfonic acid ion exchange resin wherein from about 2 to about 20% of the sulfonic acid moieties of the resin are exchanged with a quaternary phosphonium salt wherein the quaternary phosphonium moiety of the quaternary phosphonium salt has a carbon number of greater than about 15.

4,450,290

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER TRANSITION METAL BORATES IN THE PRESENCE OF ACETIC ACID

John R. Sanderson; Lewis W. Watts, Jr., and Walter H. Brader, Jr., all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,663

Int. Cl.³ C07C *67/05*

U.S. Cl. 560—246 **9 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and acetic acid, wherein the improvement comprises conducting the reaction in the presence of one or more transition metal borate catalysts in which the transition metal is selected from the group of elements consisting of manganese, cobalt, nickel, yttrium and zirconium.

4,450,291

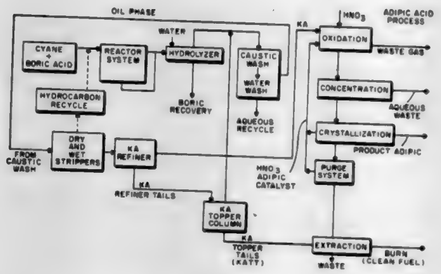
DECONTAMINATION OF KA OIL REFINEMENT WASTE STREAM

Ching T. Chi, and J. Harvey Lester, Jr., both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed May 2, 1983, Ser. No. 490,636

Int. Cl.³ C07C *51/245*

U.S. Cl. 562—530 **14 Claims**



1. A process for the decontamination of a waste stream refinement residue from the process comprising oxidizing cyclohexane to KA oil, the waste stream residue comprising high boiling organics, and caustic, the process comprising washing the residue with a by-product of the process comprising:

(a) oxidizing KA oil with a strong oxidizing acid into a product stream comprising adipic acid with minor amounts of glutaric and succinic acids and the strong acid;

(b) removal of most of the strong acid from the product stream;

(c) crystallizing adipic acid from the product leaving the by-product stream comprising glutaric acid, succinic acid, residual amounts of adipic acid, residual amounts of the strong oxidizing acid, and water.

4,450,292

DERIVATIVES OF PHENYL ALIPHATIC CARBOXYLIC ACIDS, AND USE THEREOF IN TREATING GASTRIC AND GASTRO-DUODENAL AILMENTS

Yani Christidis, and Robert Fournex, both of Paris, France, assignors to Roussel Uclaf, Paris, France

Filed Apr. 14, 1982, Ser. No. 368,208

Claims priority, application France, Apr. 17, 1981, 81 07801

Int. Cl.³ C07C *65/03*

U.S. Cl. 562—463 **3 Claims**

1. A compound selected from the group consisting of 4-(3,4,5-trimethoxyphenyl)-4-oxo-2-butenoic acid, and pharmaceutically acceptable alkali metal, alkaline-earth metal, and amine salts thereof.

4,450,293

PREPARATION OF α-HYDROXYISOBUTYRIC ACID USING A THALLIC HALIDE CATALYST

John A. Sofranko, West Chester, and John J. Leonard, Springfield, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 13, 1982, Ser. No. 449,300

Int. Cl.³ C07C *59/00*

U.S. Cl. 562—579 **14 Claims**

1. A process for the preparation of α-hydroxyisobutyric acid which comprises reacting in an aqueous solution isobutyric acid with molecular oxygen at partial pressures of between about 1 psig to 500 psig and at a temperature in the range of about 75° C. to 250° C. in the presence of a catalyst mixture of

(a) from about 0.1 to 10 weight percent of a Tl^{+3} halide salt selected from thallic chloride and thallic bromide, or mixtures thereof,

(b) from 0.1 to 10 weight percent of a copper (I), copper (II), tin (II), tin (IV), iron (II) or iron (III) bromide or chloride co-oxidant salt or mixtures thereof, and recovering the desired α-hydroxyisobutyric acid.

4,450,294

PROCESS FOR RECOVERING OXYGENATED ORGANIC COMPOUNDS FROM DILUTE AQUEOUS SOLUTIONS EMPLOYING SOLID SORBENT

Julian Feldman, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 325,450, Nov. 27, 1981, Pat. No. 4,359,593. This application Nov. 1, 1982, Ser. No. 438,068

The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.

Int. Cl.³ C07C *41/36, 45/79, 51/47, 29/76*

U.S. Cl. 562—608 **9 Claims**

1. A process for recovering an oxygenated organic compound from a dilute aqueous solution thereof which comprises contacting said dilute aqueous solution with crosslinked polyvinylpyridine resin or nuclear substituted derivative thereof under such conditions that at least a portion of the compound will be sorbed by said resin and thereafter desorbing the compound from said resin.

4,450,295

METHOD OF MANUFACTURING ANHYDROUS 2-HYDROXY-3-CHLOROPROPANE TRIMETHYLAMMONIUM CHLORIDE

Hendrikus J. H. van der Mass, Zullichem, Netherlands, assignor to Chemische Fabriek Zaltbommel, B.V., Zaltbommel, Netherlands

Filed Dec. 18, 1981, Ser. No. 332,117

Claims priority, application Netherlands, Dec. 31, 1980, 8007126

Int. Cl.³ C07C *89/00*

U.S. Cl. 564—294 **5 Claims**

1. Process for manufacturing anhydrous 2-hydroxy-3-chloropropane trialkylammonium chloride by the conversion of trialkylammonium chloride with epichlorohydrin, which

process comprises forming an aqueous solution of the trialkylammonium chloride in an organic solvent which is non-reactive towards epichlorohydrin and does not readily form a solution with water but combines with water to form an azeotrope which boils at temperatures up to the boiling point of the solvent, except for tetrachloroethane; distilling off the azeotrope as it is formed, separating off the water to form a suspension of trialkylammonium chloride in solvent reaction product; and reacting the reaction product in the solvent with epichlorohydrin at a temperature of 20° to 120° C.

4,450,296

PROCESS FOR THE PRODUCTION OF ARYLALKANONE AND INTERMEDIATE

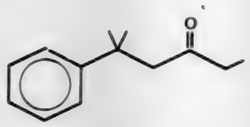
Takao Yoshida, West Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 188,563, Sep. 18, 1980, Pat. No. 4,298,542. This application Feb. 5, 1981, Ser. No. 231,772

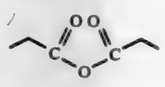
Int. Cl.³ C07C *45/45*

U.S. Cl. 568—316 **1 Claim**

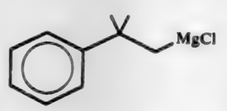
1. A process for preparing 2-methyl-2-phenyl-4-hexanone having the structure:



comprising the step of intimately admixing propionic anhydride having the structure:



with neophymagnesium chloride having the structure:



in the presence of an inert solvent selected from the group consisting of diethylether, toluene and tetrahydrufuran, the reaction taking place in the presence of or in the absence of a cuprous chloride catalyst; the mole ratio of propionic anhydride:neophylmagnesium chloride being from 0.5:1 up to about 2:1; the temperature of reaction being from −10° C. up to 0° C.; the concentration of propionic anhydride in solvent being from about 1 up to about 5 moles of propionic anhydride per liter of solvent; the time of addition of one reactant to the other varying from 0.5 hours up to 4 hours and the time of aging of the reaction mass being from 0.5 up to 4 hours.

4,450,297

PREPARATION OF O-NITROBENZALDEHYDE

Michael Preiss; Wolfgang Gau, both of Wuppertal, and Horst Behre, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,093

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212069

Int. Cl.³ C07C *45/78, 79/36, 76/06*

U.S. Cl. 568—424 **6 Claims**

1. A process for the preparation of o-nitrobenzaldehyde, comprising converting to the corresponding acetals a mixture of nitrated benzaldehyde which contains about 10 to 30% of o-nitrobenzaldehyde and about 70 to 90% of m-nitrobenzaldehyde, removing the o-nitrobenzaldehyde acetal by distillation, and then converting the o-nitrobenzaldehyde acetal to o-nitrobenzaldehyde.

4,450,298

VAPOR PHASE CATALYTIC HYDROLYSIS OF BENZAL CHLORIDE OR ITS HALOGEN- OR TRIFLUOROMETHYL-SUBSTITUTE TO FORM BENZALDEHYDE OR SUBSTITUTE

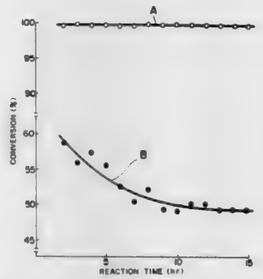
Takeshi Kondow, Kamifukuoka; Koshi Okazaki, Saitama; Yutaka Katsuhara, and Kimiaki Matsuoka, both of Kawagoe, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jul. 20, 1982, Ser. No. 400,011

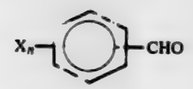
Claims priority, application Japan, Jul. 21, 1981, 56-112977; Aug. 12, 1981, 56-125374

Int. Cl.³ C07C *45/43*

U.S. Cl. 568—437 **15 Claims**



1. In a process of preparing a compound expressed by the general formula (I), the process having the step of carrying out a vapor phase contact reaction between water and a compound expressed by the general formula (II) at an elevated temperature in the presence of a catalyst,



(I)



(II)

in both the formulas (I) and (II) X representing a halogen atom or a trifluoromethyl group and n being 0, 1 or 2,

the improvement comprising said catalyst comprising activated carbon treated with an inorganic acid selected from the group consisting of sulfuric acid, hydrofluoric acid and phosphoric acid.

4,450,299

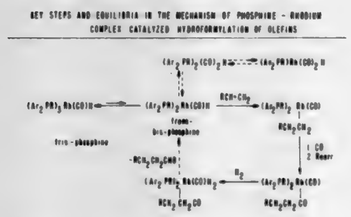
HOMOGENEOUS HYDROFORMYLATION CATALYSIS WITH SILYL SUBSTITUTED ALKYL DIARYL PHOSPHINE METAL COMPLEXES

Alexis A. Oswald, Mountainside, N.J.; Torris G. Jermansen, Staten Island, N.Y.; Andrew A. Westner, Paramus, and I-Der Huang, Upper Saddle River, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 192,810, Oct. 1, 1980, which is a division of Ser. No. 11,238, Feb. 12, 1979, Pat. No. 4,298,541. This application Aug. 21, 1981, Ser. No. 295,193

Int. Cl.³ C07C *49/50*

U.S. Cl. 568—454 **56 Claims**



1. A hydroformylation process for converting a C_n olefinically unsaturated organic compound to a C_{n+1} aldehyde comprising reacting an olefinically unsaturated organic compound with CO and H_2 at a temperature in the range of about 50° to 200° C. and a total pressure in the range of about 15 to 2000 psia, in the presence of a reaction mixture comprising a homogeneous, non-charged catalyst complex of the formula:

$$[(Ar_2PQ)_ySiR_{4-y}]_g(MX_n)_s$$

wherein Ar is a substituted or unsubstituted C_6 to C_{10} aromatic radical, Q is an unsubstituted or substituted C_1 to C_{30} saturated open chain alkylene radical; R is an unsubstituted or monosubstituted C_1 to C_{10} hydrocarbyl radical, M is a Group VIII transition metal selected from the group consisting of Co, Rh, Ir, Ru, Fe or Os, X is an anion or organic ligand, excluding halogen, satisfying the valence and coordination sites of the metal, y is 1 to 4, g is 1 to 6 with the proviso that g times y is 1 to 6, n is 2 to 6, s is 1 to 3, said substituents on said aromatic radical, on said alkylene radical and on said hydrocarbyl radical, being chemically unreactive with materials 20 used in, and the products of, the hydroformylation reaction.

4,450,300

PROCESS FOR THE CONTINUOUS MANUFACTURE OF N-BUTYRALDEHYDE BY SELECTIVE HYDROGENATION OF CROTONALDEHYDE IN THE LIQUID PHASE IN THE PRESENCE OF A PALLADIUM-ALUMINUM OXIDE CATALYST

Lothar Fischer; Manfred Z. Hausen, and Kurt Wember, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,451

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151086

Int. Cl.³ C07C *45/62*

U.S. Cl. 568—462 **12 Claims**

1. A process for the continuous production of n-butyraldehyde by selective hydrogenation of crotonaldehyde, comprising conducting the hydrogenation in the liquid phase in the presence of hydrogen and in the presence of a palladium-aluminum oxide supported catalyst, under an absolute pressure of 5–50 bar and at a temperature of 20°–100° C. with a flow rate under STP conditions for crotonaldehyde in the range of 0.3–1.0 l/l catalyst.h and for hydrogen in the range of 80–270 l/l catalyst.h, and the catalyst having a particle size of 1–5 mm and the palladium being contained therein in the outer thickness of 0.05–0.2 mm of the support, the catalyst having a total specific pore volume of 0.4–0.6 cm^3/g, a specific internal surface area of 130–160 m^2/g, having 40–60% of its pore volume in the form of pores having a diameter above 7.5 mm, and the palladium content of the catalyst being 0.1–0.6% by weight.

4,450,301

PROCESS FOR CONVERTING METHANOL TO FORMALDEHYDE

William P. McMillan; Charles C. Hobbs, Jr.; H. Robert Gerberich, all of Corpus Christi, Tex., and Michael L. Junker, Lake Charles, La., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,848

Int. Cl.³ C07C *47/052*

U.S. Cl. 568—473 **5 Claims**

1. In a process for converting methanol to formaldehyde by (a) passing a gaseous first-stage feedstock mixture comprising methanol, water, and molecular oxygen at an elevated temperature of about 90° to 170° C. and substantially atmospheric pressure through a first bed of silver catalyst operating at about 550° to 700° C. to form a gasesous first-stage reaction product comprising formaldehyde and methanol; (b) cooling said first-stage reaction product to about 120° to 250° C.; and (c) passing a gaseous second-stage feedstock mixture comprising said cooled first-stage reaction product at an elevated temperature of about 120° to 250° C. through a second bed of silver catalyst operating at about 550° to 700° C., which bed comprises particulate silver, to form a gaseous second-stage reaction product, the improvement which comprises:

adjusting the composition of said gasesous second-stage feedstock mixture so as to maintain the molar ratio of formaldehyde to methanol therein within the range of about 0.9:1 to about 2.7:1 while also controlling the specific reaction rate of methanol in said second bed of silver catalyst within the range of about 10 to 60 grams of methanol converted per hour per square centimeter of cross-section of said second bed of silver catalyst.

4,450,302

PEROXIDE BLENDS

Chester R. Willis, East Marlborough Township, Chester County, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 9, 1982, Ser. No. 406,406

Int. Cl.³ C07C *179/06*

U.S. Cl. 502—150 **6 Claims**

1. As a new composition of matter, a peroxide blend having a melting point of about 5° C. and lower consisting essentially of:

(1) from about 40% to about 60% t-butyl cumyl peroxide;

(2) from about 5% to about 25% of a mixture of the meta and para isomers of bis(α-t-butylperoxyisopropyl) benzene, the mixture of meta and para isomers being in the proportion of between 1.5:1 to 4:1; and

(3) dicumyl peroxide in an amount sufficient to make the total of (1), (2) and (3) equal to 100%.

4,450,303

PROCESS FOR THE OXIDATION OF SECONDARY-ALKYL SUBSTITUTED BENZENES

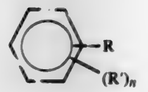
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 23, 1983, Ser. No. 468,823

Int. Cl.³ C07C *179/02*

U.S. Cl. 568—574 **11 Claims**

1. A process for the production of a secondary alkyl substituted benzene hydroperoxide comprising heating a secondary alkyl substituted benzene of the formula



wherein R is a C_3 to C_{20} secondary alkyl, cycloalkyl, or secondary alkaryl radical, R' is a C_1 to C_{10} alkyl, aryl or alkaryl radical, and n is 0 to 5, in the presence of oxygen and from about 0.05 to 5 weight percent based on the weight of said said secondary-alkyl substituted benzene, of a samarium salt of the formula R"COOSm wherein R" is a C_1 to C_{20} alkyl, aryl, alkaryl, or aralkyl radical, at a temperature of about 60° C. to 200° C.

4,450,304

POLYETHER DISPERSANTS

Helmut Diery, Kelkheim; Reinhold Deubel, Bad Soden am Taunus, and Joachim Weide, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

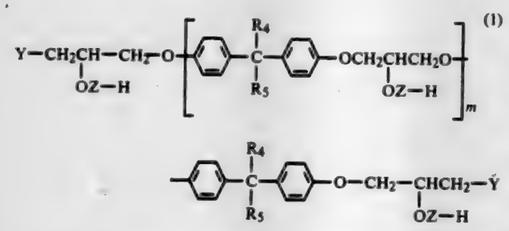
Filed Jul. 21, 1982, Ser. No. 400,274

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130609

Int. Cl.³ C07C *43/205*

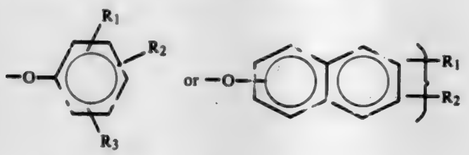
U.S. Cl. 568—609 **2 Claims**

1. A compound of the formula I

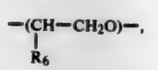


(I)

in which Y denotes a group of the formulae



R_1, R_2, R_3 denote hydrogen, a C_1–C_{18}-alkyl radical, chlorine or bromine, R_4 and R_5 denote hydrogen or C_1–C_4-alkyl, m denotes 0 to 12 and Z denotes polyalkylene glycol radicals having a total of about 8 to about 200 ethylene glycol units —(CH_2—CH_2O)— or up to about 200 ethylene glycol units and alkylene glycol units of the formula



in which R_6 is methyl or ethyl and in which a total of at least 8 ethylene glycol units are present.

4,450,305

POLY(ETHYLENEOXY)-SUBSTITUTED-9,10-BIS(-PHENYLETHYNYL)ANTHRACENES

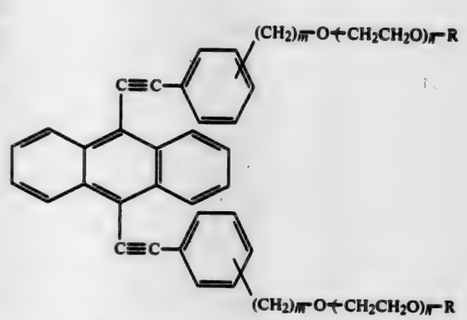
Victor M. Kamhi, Skillman, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 25, 1982, Ser. No. 436,210

Int. Cl.³ C07C *43/166*

U.S. Cl. 568—611 **3 Claims**

1. A compound having the structural formula



(I)

wherein m is an integer from 1 to 5, n is an integer from 1 to 20, and R represents hydrogen, or C_1–C_5 alkyl.

4,450,306

SELECTIVE CATALYTIC ALKYLATION OF PHENOLS TO ALKYL ARYL ETHERS

Victoria Eskinazi, Cleveland Heights, Ohio, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 8, 1982, Ser. No. 440,133

Int. Cl.³ C07C *41/09*

U.S. Cl. 568—630 **17 Claims**

1. In a method for the alkylation of phenols by alcohols to yield alkyl aryl ethers, the improvement which comprises the use of $Sr(HSO_4)_2$ or $Ba(HSO_4)_2$ catalysts or mixtures thereof.

4,450,307

HYDROXY-CONTAINING BICYCLOALKANE ETHER COMPOUNDS

Philip H. Moss, and Edward C. Y. Nieh, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,425

Int. Cl.³ C07C *43/10, 43/11*

U.S. Cl. 568—665 **4 Claims**

1. A new compound comprising 5-(2-hydroxyethoxy) 2- and 3-alkyl norbornane.

2. A new compound comprising 5-(2-hydroxyethoxy) 2- and 3-octyl norbornane.

3. A new compound comprising 5-(2-hydroxyethoxy) 2- and 3-hexyl norbornane.

4. A new compound comprising 5-(2-hydroxyethoxy) 2- and 3-butyl norbornane.

4,450,308

PROCESS FOR THE PREPARATION OF TRIFLUOROMETHYLPHENYL OXYPHENYL ETHER COMPOUNDS

Heinz Forster, Wuppertal, and Uwe Priesnitz, Solingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

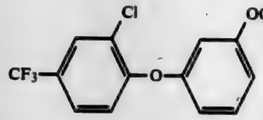
Continuation of Ser. No. 226,348, Jan. 19, 1981. This application Nov. 30, 1981, Ser. No. 325,809

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004695

Int. Cl.³ C07C *41/16*

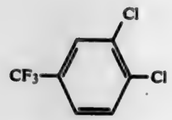
U.S. Cl. 568—637 **2 Claims**

1. Process for the preparation of (2-chloro-4-trifluoromethyl-phenyl)-(3-methoxy-phenyl)-ether of the formula



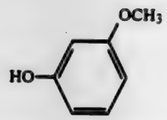
(I)

which process comprises reacting 1,2-di-chloro-4-trifluoromethylbenzene of the formula



(II)

in the presence of a diluent, selected from the group consisting of dimethylformamide, dimethylsulfoxide, toluene or xylene and at a temperature of between 90° and 100° C. with resorcinol monomethyl ether of the formula



(III)

and potassium hydroxide, or with a salt formed from resorcinol monomethyl ether of the formula (III) and potassium hydroxide, the respective molar ratios of formula (II) to formula (III) to potassium hydroxide being 1:1–1.5:1–2.

4,450,309

PROCESS FOR THE PREPARATION OF UNSATURATED GEMINAL DIHALOGEN COMPOUNDS

Rudolf Soós; József Nemes; László Vidra, , assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyar Rt., Budapest, Hungary

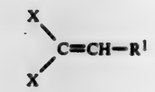
Filed Jun. 24, 1982, Ser. No. 391,866

Claims priority, application Hungary, Jul. 3, 1981, 1945/81

Int. Cl.³ C07C *17/33*

U.S. Cl. 570—217 **7 Claims**

1. A process for the preparation of a compound of the formula (I)

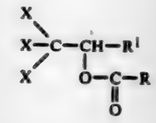


(I)

wherein

X is halogen,

R^1 is a straight or branched chain alkenyl group having 2 to 6 carbon atoms, which comprises reacting a compound of the formula (II)



(II)

wherein

X and R' have the same meaning as defined above, and

R is hydrogen, a straight or branched chain alkyl group having 1 to 6 carbon atoms or an optionally substituted aryl or aralkyl group, with 1 to 2 mol-equivalents of zinc, aluminum, tin, iron or magnesium and 0.01 to 1.5 mol.-equivalents of a mineral acid and/or acidic salt thereof, in a watermiscible organic solvent, at a temperature between 0° C. and 200° C.

4,450,310

CONVERSION OF METHANE TO OLEFINS AND HYDROGEN

Joseph R. Fox, Solon; Benedict S. Curatolo, Maple Heights, and Frederick A. Pesa, Aurora, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 4, 1983, Ser. No. 471,970

Int. Cl.³ C07C *3/44*

U.S. Cl. 585—400 **21 Claims**

1. A process for the conversion of methane comprising contacting methane in the absence of oxygen and in the absence of water at a temperature of at least 500° C. with a catalyst comprising the mixed oxides of a first metal selected from lithium, sodium, potassium, rubidium, cesium and mixtures thereof and a second metal selected from beryllium, magnesium, calcium, strontium, barium and mixtures thereof.

4,450,311

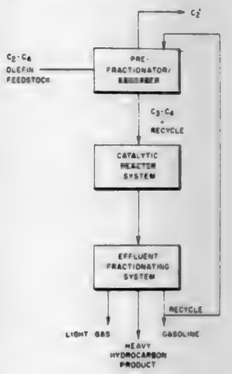
HEAT EXCHANGE TECHNIQUE FOR OLEFIN FRACTIONATION AND CATALYTIC CONVERSION SYSTEM

Bernard S. Wright, East Windsor; Hartley Owen, Belle Mead, and Chung H. Hsia, Matawan, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 29, 1983, Ser. No. 508,907

Int. Cl.³ C07C *2/00, 6/08*

U.S. Cl. 585—413 **6 Claims**



1. A continuous catalytic process for converting an olefinic feedstock comprising ethylene and C_3^+ olefins to heavier liquid hydrocarbon product comprising the steps of (a) pre-fractionating the olefinic feedstock to obtain a gaseous stream rich in ethylene and a liquid stream containing C_3^+ olefin; (b)

vaporizing and contacting the liquid stream from the prefractionating step with hydrocarbon conversion oligomerization catalyst in at least one exothermic catalytic reaction zone to provide a heavier hydrocarbon effluent stream comprising distillate, gasoline and lighter hydrocarbons; (c) cooling and fractionating the effluent stream to recover distillate, gasoline and lighter hydrocarbons separately; (d) recycling at least a portion of the recovered gasoline as a liquid sorbent stream to prefractionating step (a); (e) further reacting the recycled gasoline together with sorbed C_3^+ olefin in the catalytic reactor system of step (b); and (f) exchanging heat between hot effluent from said exothermic reaction zone and at least a portion of prefractionating liquid rich in C_3^+ olefin in a prefractionator reboiler loop.

4,450,312

HYDROCARBON CONVERSION

Ivan J. S. Lake, Middlesbrough, and Thomas V. Whittam, Darlinton, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 17, 1981, Ser. No. 331,830

Claims priority, application United Kingdom, Dec. 17, 1980, 8040398

Int. Cl.³ C07C *5/24, 5/30*

U.S. Cl. 585—481 **10 Claims**

1. A process for isomerisation of an alkylbenzene or a mixture of alkylbenzenes, which method comprises contacting a feed of an alkylbenzene or a mixture of alkylbenzenes under isomerisation conditions in the vapor or liquid phase with a catalyst comprising zeolite Nu5 having a molar composition expressed by the formula:

$$0.5 \text{ to } 1.5\ R_2O:Y_2O_3:45 \text{ to } 100\ XO_2:0 \text{ to } 2000\ H_2O$$

wherein R is a monovalent cation or 1/n of a cation of valency n, X is silicon and/or gerdmanium, Y is either aluminum or aluminum and one or more of iron, chromium, arsenic, manganese and gallium, and H_2O is water of hydration additional to water notionally present when R is H, and having an X-ray diffraction pattern as set out in Table 1.

4,450,313

OXIDATIVE DEHYDROGENATION OF PARAFFINS

Alan D. Eastman, and James B. Kimble, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 21, 1983, Ser. No. 487,366

Int. Cl.³ C07C *5/00*

U.S. Cl. 585—624 **10 Claims**

1. A process for the catalytic oxidative dehydrogenation of a paraffin having from 2 to 5 carbon atoms comprising the step of contacting said paraffin under suitable oxidative dehydrogenation conditions with a catalyst composition comprising lithium and titanium, wherein the atomic ratio of lithium to titanium is above about 1.8:1.

4,450,314

THERMOCOUPLE FOR MEASURING TEMPERATURES AND METHOD OF MAKING THE THERMOCOUPLE

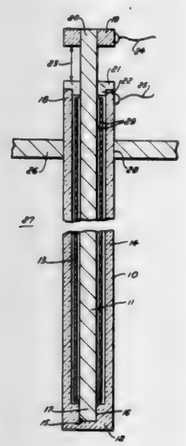
Werner Huther, Karlsfeld, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 2, 1982, Ser. No. 404,014

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132237

Int. Cl.³ H01L *35/02*

U.S. Cl. 136—230 **4 Claims**



1. A method of making a thermocouple comprising the steps of providing a sinterable silicon carbide tube preform, the tube having a closed end and a blind hole in the closed end opening into the interior of the tube, inserting a carbon rod into the tube so that one end of the rod seats in the blind hole, and thereafter sintering the tube, the shrinkage of the tube material due to sintering causing it to tightly grip the rod end located within the blind hole.

4. A thermocouple for measuring temperatures, the thermocouple including a silicon carbide tube, a carbon rod within and along the whole tube, the rod and tube being radially spaced from each other, one end of the tube being closed, and one end of the rod engaging the interior of the closed tube end to form the hot junction of the thermocouple, the hot junction being within the tube, and a tube or powder of electrical insulating material within the space between the rod and tube, the thickness of the insulating tube being equal to or less than the radial spacing between the rod and tube.

4,450,315

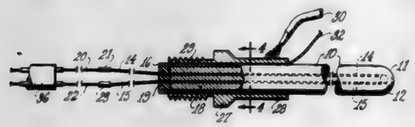
THERMOCOUPLE ASSEMBLY

Roger S. Waterman, 20801 Higgins Ct., Palos Verdes, Calif. 90501

Filed Sep. 29, 1982, Ser. No. 426,818

Int. Cl.³ H01L *35/02*

U.S. Cl. 136—230 **6 Claims**



1. A process for forming a thermocouple apparatus, comprising the steps of

(a) providing a tubular, electrically conductive, casing constituting a probe and characterized by a distant closed end and a proximate open end, the interior of said casing enclosing a pair of thermocouple wires joined together to form a thermocouple junction located adjacent said closed end, the wires thence extending lengthwise, insulatingly spaced apart laterally, and having their respective ends projecting beyond said open end,

(b) providing a two-piece tubular transition fitting consisting of a body piece and a nose piece separable from said body piece, said pieces having cooperable coupling means, and the proximate end of said casing being lengthwise insertable for a short distance into said nose piece,

(c) inserting the proximate end of said casing including said projecting thermocouple wires extending therethrough into said nosepiece and forming a fixed union by brazing the casing to the nose piece,

(d) forming soldered unions between said projecting ends of the thermocouple wires and respective extension wires, adapted to transmit current developed at the thermocouple junction to a remote utilization device, and

(e) joining said transition fitting to said nose piece by said cooperable coupling means and inserting into the tubular fitting encapsulation material positioned to hold said soldered unions insulatingly spaced apart and sealed within the fitting.

4. A thermocouple apparatus comprising in combination:

a tubular electrically conductive casing constituting a probe and enclosing a pair of thermocouple wires joined together to form a thermocouple junction located adjacent a closed end of the probe, said wires extending lengthwise, insulatingly spaced apart and projecting from an open end of the casing,

a two piece transition fitting having cooperable coupling means carried by its two pieces, which pieces consist of a tubular body and a separable tubular nose piece, said casing and nose piece being joined together in a brazed union and said tubular body and nose piece being detachably connected and jointly forming a housing for a pair of soldered unions formed between the respective thermocouple wires and corresponding extension wires which latter extend out of the body, said tubular body containing encapsulation material which holds said wires and soldered unions insulatingly spaced apart and holds said two pieces together as a permanent union.

4,450,316

AMORPHOUS SILICON PHOTOVOLTAIC DEVICE HAVING TWO-LAYER TRANSPARENT ELECTRODE

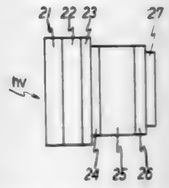
Yoshihiro Hamakawa, Kawanishi, and Yoshihisa Tawada, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 19, 1982, Ser. No. 399,312

Claims priority, application Japan, Jul. 17, 1981, 56-112571; Jul. 17, 1981, 56-112572

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—256 **4 Claims**



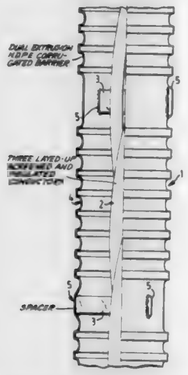
1. In an amorphous silicon derivative PIN junction photovoltaic device, the improvement comprising a two layer transparent electrode consisting of ITO and SnO_2 layers that are provided on the P or N layer located on the light impinging side so that the SnO_2 layer is in contact with said P or N layer, said SnO_2 layer having a thickness of about 30 to about 500 angstroms.

4,450,317

HIGH VOLTAGE, GAS-FILLED ELECTRIC CABLE WITH SPACERS BETWEEN CONDUCTOR AND SHEATH

John A. Baskwell, Winchester, and Christopher Larrive, Southampton, both of England, assignors to Pirelli General Public Limited Company, London, England

Filed Feb. 4, 1982, Ser. No. 345,578
Claims priority, application United Kingdom, Feb. 13, 1981, 8104595
Int. Cl.³ H01B 9/06, 13/22; H02G 1/00
U.S. Cl. 174—27 7 Claims



1. An electric power cable for transmitting electric power, said cable comprising:

a plurality of separate, inner conductors which are twisted together;

an integrally formed, extruded plastic sheath surrounding said twisted conductors and having an internal diameter substantially greater than the overall external diameter of the twisted conductors whereby a void is defined around the twisted conductors within the sheath;

an insulating gas in said void around the twisted conductors;

a plurality of spacers supporting the plurality of twisted conductors within the plastic sheath at locations which are spaced apart from one another along the axis of the cable, each of said spacers being formed of solid dielectric material and having a number of generally radial webs engaged with the twisted conductors and extending into contact with the inner wall of said plastic sheath, each inner conductor being between a different pair of the generally radial webs;

said plastic sheath having a plurality of recesses at the inner wall thereof which correspond to and receive the outermost ends of the generally radial webs, each said recess having a wall which engages and at least partially surrounds the outermost end of the generally radial web received thereby and the wall of each recess complementing in shape the shape of the end of the generally radial web received thereby thus providing for reduction of the electrical stresses at the outermost ends of said generally radial webs.

4,450,318

MEANS AND METHOD FOR PROVIDING INSULATION SPLICE

Virgil R. Scardina, deceased, late of Norwood, Ohio, and by Annette Scardina, executrix, Milford, Ohio, assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Sep. 29, 1981, Ser. No. 307,080
Int. Cl.³ H01R 4/70
U.S. Cl. 174—84 R 12 Claims

1. The method of forming a water-tight splice in the insulation of two electrical cables, comprising the steps of

securing the ends of the conductors of the cables together in electrically conductive relationship;

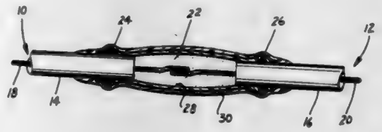
applying an insulative filler material having a putty-like consistency about the secured ends of the conductors;

disposing an O-ring about the insulation of each of said cables at points spaced from the secured ends of the conductors;

applying at least one layer of a flexible tape extending from the insulation of one cable to that of the other and covering said O-rings;

disposing a layer of shrinkable insulating material over said tape; and

causing said shrinkable insulating material to shrink.



10. An improved water-tight insulating joint for an insulated cable having a section of exposed conductor, comprising

a mass of insulation material disposed about said exposed conductor;

an O-ring disposed about the insulation of said cable at a point spaced from said exposed conductor;

at least one layer of resin-filled tape extending from a point on said insulation spaced from said O-ring, on the side of the O-ring remote from the exposed conductor, at least to a point about said exposed conductor; and

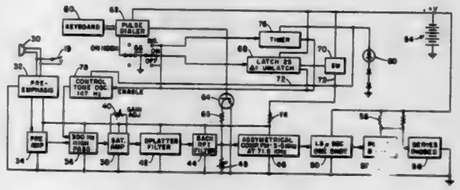
a layer of shrinkable polyester material extending over said resin-filled tape, said polyester material exerting a compressive stress on said tape and said O-ring.

4,450,319

INFRARED TELEPHONE EXTENSION CONTROL SYSTEM

Robert E. Lucey, Sudbury, Mass., assignor to Controlonics Corporation, Westford, Mass.

Filed Jul. 31, 1981, Ser. No. 288,736
Int. Cl.³ H04B 9/00
U.S. Cl. 179—2 EA 14 Claims



1. A portable telephone network extension system comprising:

a portable unit for transmission and reception of audio and control signals comprising:

means for emitting infrared radiation positioned to emit in a pattern external to said unit;

means for receiving FM infrared radiation, said radiation containing control and audio information transmitted by a telephone network coupled means;

means for generating audible signals representative of said audio information;

means for generating dial pulses representative of a telephone number to be called;

means for generating an electrical signal in response to a user voice input;

means for providing FM pulse activation of said infrared emitting means at pulse frequencies modulated in accordance with said electrical signal;

means for providing FM pulse activation of said infrared emitting means at an extreme pulse frequency coterminous with said dial pulses;

telephone network coupled means including:

means for receiving infrared emissions from said portable unit and for providing FM pulse demodulation thereof to recover said electrical signal;

means for applying said electrical signal to said telephone network;

means for receiving network signals from said telephone network; and

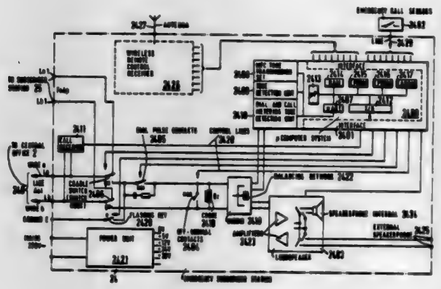
means for emitting FM infrared radiation modulated in accordance with said network signals.

4,450,320

DIALING DEVICE WITH CALLING NUMBER AND IDENTIFICATION MEMORY AND METHOD FOR USING SAME

Bernd Ostermann, Weissach, and Paul Lissner, Backnang, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,140
Int. Cl.³ H04M 11/04
U.S. Cl. 179—5 R 11 Claims



11. A dialing device for use at a calling station of a common dial network comprising a central office, a central station and a plurality of other calling stations, said calling stations being coupled to said central office by subscriber lines for automatic connection therebetween, wherein the dialing device comprises a memory for storing a calling number for said central station and a calling number and identification signal for said calling station in response to signals transmitted from said central station.

4,450,321

CIRCUIT FOR PRODUCING NOISE GENERATION FOR SOUND MASKING

William D. Quigley, 132 Oakridge Ave., Nutley, N.J. 07110, and Philip H. Nelson, 42 Harmony Rd., Spring Valley, N.Y. 10977

Filed Dec. 8, 1981, Ser. No. 328,787
Int. Cl.³ H04R 3/00
U.S. Cl. 179—1.5 M 9 Claims

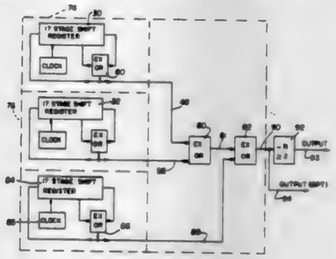
1. Apparatus and circuit for generating audible masking noise which is a yield of a random bit stream with an indeterminate period to repeat its pattern, said noise producing apparatus including:

(a) at least two multi-stage shift registers, each with a first conducting means as an input to a first exclusive OR gate;

(b) an input signal carried from an intermediate shift from said multi-stage shift register and providing another input to said first exclusive OR gate;

(c) an asynchronous clock connected to each stage of said multi-stage register, said clock associated with each and only one multi-stage register and to feed pulse signals to each shift used in said register;

(d) output conducting means from said first exclusive OR gate with said output leading from said first exclusive OR gate to and as an input to the multi-stage shift register and from this same output feeding to a conducting means an output signal;



(e) a second exclusive OR gate which receives as inputs the output signals from the two first exclusive OR gates, and

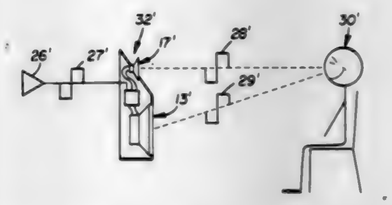
(f) an output signal from this second exclusive OR gate as a random bit stream with an indeterminate period to repeat its pattern.

4,450,322

ADJUSTABLE SPEAKER SYSTEM AND METHOD OF ADJUSTMENT

David A. Wilson, 147 San Felipe Way, Novato, Calif. 94947

Filed Nov. 2, 1981, Ser. No. 317,053
Int. Cl.³ H04R 1/28, 1/02
U.S. Cl. 179—146 E 12 Claims



1. In a speaker assembly including a plurality of drivers, the improvement comprising mounting means for independently supporting the plurality of drivers, the mounting means for at least selected drivers of the plurality of drivers including means for independently adjusting the respective selected drivers relative to a critical listening point in a listening environment in order to establish increased sound coherency for the plurality of drivers at the critical listening point of the listening environment by establishing a desired time or phase alignment for the drivers, the adjustment means including calibration means allowing repeatable alignment of drivers within the system relative either to each other or to one or more critical listening points within a listening environment in order to establish a desired time or phase alignment, and which means facilitates the interchange of drivers within the speaker system while maintaining said desired time or phase relationship.

4,450,323
REVERSIBLE SWITCH

Takeshi Iitsuka, Katsuta, Japan, assignor to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,578
Int. Cl.³ H01H 9/00, 19/38
U.S. Cl. 200—1 V **16 Claims**



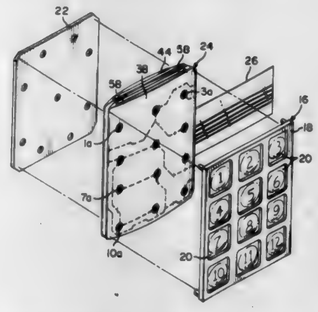
1. A reversible switch comprising:
(a) a base;
(b) four fixed contact members mounted on said base and having arcuate contacts, respectively, spaced angularly from each other and jointly defining an interrupted circular wall;
(c) a substantially cylindrical rotatable body fitted in said circular wall for angular movement about its own axis, said cylindrical body having a pair of grooves;
(d) a pair of movable contact members resiliently accommodated in said grooves respectively, and each having contact ends slidable into contact respectively with adjacent two of said fixed contact members, said rotatable body being angularly movable through an angular interval between a first position in which each movable contact member electrically connects a pair of said adjacent fixed contact members and a second position in which each movable contact member electrically connects another pair of said adjacent fixed contact members;
(e) a cover mounted on said base and supporting said rotatable body for angular movement thereof; and
(f) means on said rotatable body and said cover for angularly moving said rotatable body through said angular interval between said first and second positions, said grooves extending generaly rectilinearly parallel to each other respectively on each side of said axis at one axial end through said cylindrical rotatable body, each of said four fixed contact members being non-elastically fitted in said base, said arcuate contacts having concave contact surfaces of substantially equal dimensions.

4,450,324
ENCODED KEYBOARD SWITCH

Kazutoyo Fukukura, Reading, and Richard A. Martinez, Stoneham, both of Mass., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 8, 1983, Ser. No. 502,369
Int. Cl.³ H01H 13/70
U.S. Cl. 200—5 A **5 Claims**

1. An encoded keyboard switch of the type comprising a single sheet of flexible insulating material which has been folded along fold lines to produce a stack of four sections of film in parallel aligned relationship, the stack comprising a first section, a second section, a third section, and a fourth section, the first and second sections having opposed surfaces on which there are provided a plurality of first switch sites, the third and fourth sections having opposed surfaces on which there are provided a plurality of second switch sites, each first switch site being in alignment with a second switch site, first switch electrodes on the opposed surfaces of the first and second sections at first switch sites, second switch electrodes on the opposed surfaces of the third and fourth sections at second switch sites, a common ground conductor and a plurality of signal bit conductors on the opposed surfaces, selected conductors extending across the folds of the single sheet, and a tail extending from the sheet, the signal bit conductors and the ground conductor extending onto the tail, the switch assembly being characterized in that:
selected first switch sites and selected second switch sites are electrically isolated from the signal bit conductors and from the common ground conductor,
selected second switch electrodes on the second section are two pole electrodes and all switch electrodes on the first, third and fourth sections are single pole electrodes,
all second switch electrodes on the third section and selected first switch electrodes on the first section are connected to the common ground conductor, and
the routing of the signal bit conductors is in accordance with



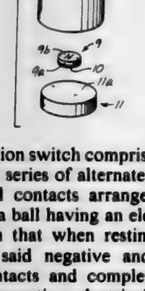
an encoding scheme which produces a unique signal in the bit conductors on the tail when a specific switch site on the first section is depressed, the signal being a multi-bit signal and being produced in a plurality of signal bit conductors on the tail when some switch sites are depressed and being a single bit signal and being produced in a single signal bit conductor on the tail when other switch sites are depressed whereby, upon depression of the first section at a location above a predetermined first switch site, the opposed surfaces of the predetermined first switch site will be moved into contact with each other, and thereafter the opposed surfaces of the second switch site which is beneath the predetermined first switch site will be moved into contact with each other, and a unique signal will be produced by a circuit extending from the ground conductor on the tail through signal bit conductors to at least one signal bit conductor on the tail, and when the unique signal is a multi-bit signal, the circuit will not be completed by the ground conductor until all of the switch electrodes required for the production of the multi-bit signal have been electrically connected to each other.

4,450,325
ELECTRO-MECHANICAL HAND CONTROLLER

Tom R. Luque, 22000 Romar St., Chatsworth, Calif. 91311

Continuation of Ser. No. 275,595, Oct. 8, 1981, abandoned. This application Apr. 6, 1983, Ser. No. 480,777
Int. Cl.³ H01H 25/00, 29/00, 35/00, 9/00
U.S. Cl. 200—52 R **10 Claims**

1. An inclination sensitive control handle, comprising:
a generally cylindrical handle controllable by an operator by tilting of said handle from a preselected position, said handle being at least slightly compressible radially inwardly in response to manual squeezing thereof;
a plurality of tilt switches mounted within said handle, each of said tilt switches being oriented for actuation or deactuation upon tilting of said handle away from said preselected position; and
a squeeze responsive control switch in a nonexposed position within said handle for controllably connecting and disconnecting supply of electrical power to said tilt switches in response to squeezing of said handle.

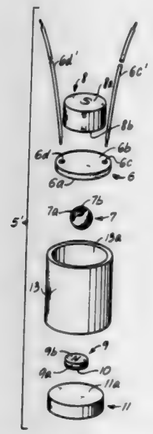


2. The inclination sensitive control handle of claim 1 further including a finger-depressible switch mounted generally at one end of said handle.

4,450,326
ANTI-THEFT VIBRATION DETECTOR SWITCH AND SYSTEM

Curtis G. Ledger, 1-A New Walnut St., North Plainfield, N.J. 07060

Filed Oct. 19, 1981, Ser. No. 312,690
Int. Cl.³ H01H 35/02
U.S. Cl. 200—61.45 M **9 Claims**

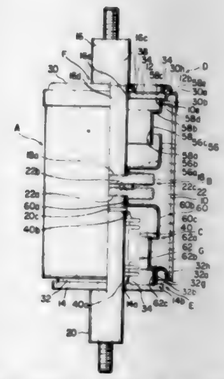


1. A vibration detection switch comprising in combination: a circuit board having a series of alternately occuring negative and positive electrical contacts arranged in a substantially circular arrangement, a ball having an electrically conductive surface of a size such that when resting between any two consecutive ones of said negative and positive electrical contacts, the ball contacts and completes electrical circuit between the two consecutive electrical contacts, said ball being of a material conductive of magnetic flux such that the ball is magnetically responsive to lines of magnetic flux of a magnet, confining means for preventing the ball from rolling off said series on said board, a magnet having first pole thereof extending substantially transversely of said board substantially centrally of said circular arrangement such that said ball is magnetically attracted and held in contact with said two consecutive ones of said negative and positive contacts, and said confining means being positioned to substantially circumscribe said series and said ball when the ball is magnetically held by said first pole, and a magnet having a second pole of a magnetic-pole charge identical to that of the first pole, the second pole being positioned extending substantially transversely of said board substantially centrally of said circular arrangement in a position of opposing relationship to said first pole and spaced from said ball when said ball is held magnetically by said first pole such that like-pole magnetic fluxes from said first and second poles cause said ball to be repelled by the second pole toward said confining means whereby at all times of rest the ball is forced to maintain contact and completed electrical circuit with said two electrical contacts except when jolted by a vibration resulting from a blow at which time there is movement of one or the other of the circuit board and the ball relative to one another sufficient to break electrical circuitry momentarily after which magnetic flux lines promptly reestablish contact and electrical circuitry between said two electrical contacts.

4,450,327
VACUUM INTERRUPTER

Hifumi Yanagisawa, Sagamihara; Junichi Warabi, Shizuoka, and Yoshiyuki Kashiwagi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Jul. 16, 1981, Ser. No. 283,866
Claims priority, application Japan, Jul. 21, 1980, 55-99693
Int. Cl.³ H01H 33/00
U.S. Cl. 200—144 B **17 Claims**



1. A vacuum interrupter comprising in combination:
an envelope including a cylindrical housing made of stainless steel and having a first end portion and a second end portion, a disc-shaped upper end plate made of ceramic insulating material having an aperture in the center portion thereof and a disc-shaped lower end plate made of a ceramic insulating material having an aperture in the center portion thereof;
an electrical contact member including a stationary contact rod inserted into said envelope through said aperture of the upper end plate, a stationary electrical contact secured to said stationary contact rod, a movable contact rod inserted into said envelope through said aperture of the lower end plate and a movable electrical contact secured to said movable contact rod;
shielding means for shielding an inner surface of said envelope;
first sealing means including a first auxiliary sealing member made of a plastically deformable metallic material which is deformable by the thermal stress generated during a cooling process after brazing and a metallized portion provided between said first auxiliary sealing member and said upper end plate and for sealing hermetically the upper

end plate to said first end portion of said housing by plastically deforming said first auxiliary sealing member after brazing the first sealing member to said housing;

second sealing means including a second auxiliary sealing member made of a plastically deformable metallic material which is deformable by the thermal stress generated during a cooling process after brazing and a metallized portion provided between said second auxiliary sealing member and said lower end plate and for sealing hermetically said lower end plate to said second end portion of said housing by plastically deforming said second auxiliary sealing member after brazing the second sealing member to said lower end plate and said housing;

first supporting means including a third auxiliary sealing member made of a plastically deformable metallic material which is deformable by the thermal stress generated during a cooling process after brazing and a metallized portion provided between said upper end plate and said third auxiliary sealing member and for supporting and securing hermetically said stationary contact rod to said upper end plate by plastically deforming said third auxiliary sealing member after brazing the third sealing member to said upper end plate and said stationary contact rod;

said first, second and third auxiliary sealing members having different coefficients of thermal expansion from those of said upper and lower end plates;

hermetic seal means for sealing movably and hermetically said movable contact rod to said lower end plate including a bellows for securing said movable contact rod to said lower end plate and a metallized portion provided between said lower end plate and said bellows; and

stress absorbing means for absorbing thermal stress and mechanical stress and provided in at least one of said first and second auxiliary sealing members, each sealing member having a flange portion and a tubular portion and at least one curved portion, said first sealing means having at least one surface-to-surface sealing portion provided between a vacuum side surface of one end portion of said first auxiliary sealing member and the first end portion of said housing or an outer end portion of said upper end plate, said second sealing means having at least one surface-to-surface sealing portion provided between a vacuum side surface of one end portion of said second auxiliary sealing member and the second end portion of said housing or an outer end portion of said lower end plate.

4,450,328

ELECTROMAGNETIC CONTACTOR MEANS WITH IMPROVED ARC RUNNER

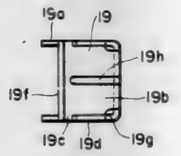
Shizutaka Nishizako, and Hiroaki Tazawa, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 301,866

Claims priority, application Japan, Sep. 19, 1980, 55-133200[U]

Int. Cl.³ H01H *33/10*

U.S. Cl. 200—144 R **8 Claims**



1. In an electromagnetic contactor of the type having first and second contacts which engage and disengage in response to electromagnetic controls and which create an arc between said contacts upon disengaging, and an arc runner having a driving part comprising a back plate facing said contacts and side plates on opposite sides of said contacts and having an overhanging plate above said contacts, the improvement comprising:

stopper means on said overhanging plate adapted to engage said side plates for preventing said overhanging plate from bending toward the inside of said arc runner, said overhanging plate and back plate having first and second arc lead parts, respectively, said first arc lead part of said overhanging plate being disposed at an end thereof above said contact and being bent outwards above an intermediate portion of said side plate.

4,450,329

GAS CIRCUIT BREAKER

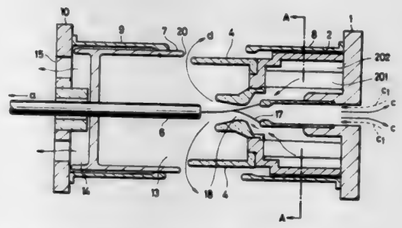
Satomi Arimoto; Shigeru Yamaji, and Chikato Ishitobi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,355

Claims priority, application Japan, May 19, 1981, 56-73119[U]

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **5 Claims**



1. A gas circuit breaker, comprising;

fixed and movable main contacts, and fixed and movable arc contacts, said main contacts being opened before said arc contacts, a pressure chamber and a chamber of negative pressure, and a passageway between the said two chambers openable by moving said movable arc contact, an inside surface of said pressure chamber being provided with axially extending radially inwardly directed projections for preventing a vortex flow in said pressure chamber when a fluid in said pressure chamber is made to flow.

4,450,330

ELECTRIC SWITCH WITH TWO QUENCHING NOZZLES HAVING AN IMPROVED QUENCHING MEDIUM FLOW

Karl Zückler, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

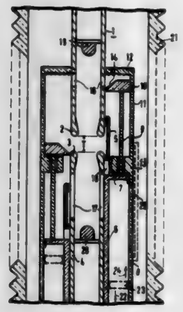
Filed Aug. 20, 1982, Ser. No. 410,064

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3134200

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 A **6 Claims**

1. In an electric switch including: two quenching nozzles arranged opposite each other to form a switching gap distance, across which an arc is generated during switching, one of which is mounted at a stationary contact tube and the other at a stationary guide tube; a longitudinally movable switching tube for bridging the switching gap; a pressure piston/pressure cylinder arrangement, including a movable pressure piston, for generating a quenching medium flow acting on the arc; and a common drive to which the switching tube and the movable pressure piston of the pressure piston/pressure cylinder arrangement are coupled, the improvement comprising: the pressure cylinder being a stationary pressure cylinder one end of which surrounds the contact tube, the pressure piston being rigidly connected to the switching tube and disposed in said stationary pressure cylinder; passage openings in the contact tube connecting the pressure cylinder in the region of its end surrounding the contact tube, to the interior of the contact tube; a suction cylinder having one end facing the pressure cylinder, a suction piston in said suction cylinder, the pressure



piston being connected rigidly to said suction piston, said suction cylinder being stationary and surrounding the guide tube; and holes in said guide tube connecting said suction cylinder, in the region of its end facing the pressure cylinder, to the interior thereof.

4,450,331

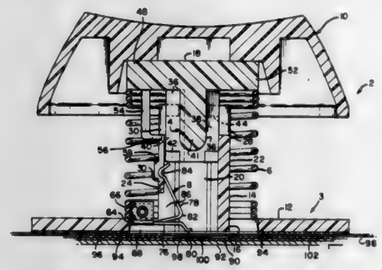
KEY SWITCH ASSEMBLY HAVING MOMENTARY CLOSED INTERVAL

Kazutoyo Fukukura, Reading, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 8, 1983, Ser. No. 502,368

Int. Cl.³ H01H *13/52*

U.S. Cl. 200—160 **9 Claims**



1. A key switch assembly of the type comprising a panel-like support, a pair of spaced-apart switch contacts on the support at a switch site, a frame on the support proximate to the switch site, the frame comprising a column extending normally of the support and having a fixed end and a free end, a plunger on the column which is normally maintained in an extended position relative to the support by a biasing spring, the plunger being movable towards the support to a depressed position, and a switch closing lever pivotally mounted on the frame which is movable in response to movement of the plunger and which is effective electrically to connect the switch contacts to each other, the key switch assembly being characterized in that:

the switch closing lever is a bell crank having a pivotal axis, a switch closing arm, and a cam follower arm, the pivotal axis being adjacent to the switch site and extending parallel to the plane of the panel-like support, the switch closing arm extending from the pivotal axis towards the switch site and having a free end which is proximate to, but normally spaced from, the switch contacts, the camming arm extending from the pivotal axis beside the plunger and having a free end which is spaced from the pivotal axis, the camming arm having a cam follower portion,

the plunger having a stiffly flexible camming rod extending from the upper end thereof towards the inner end, the camming rod having a camming portion which is angularly spaced from the cam follower portion of the camming arm, relative to the axis of the plunger, and which moves past the cam follower portion during movement of the plunger to the depressed position, and

a cam deflector on the frame proximate to the cam follower portion of the camming arm, the cam deflector having a deflecting surface which is engaged by the camming portion of the camming rod when the plunger is moved to the depressed position, the deflecting surface causing flexing of the camming rod laterally towards the cam follower portion of the camming arm with resulting engagement of the cam follower portion by the camming portion of the camming rod and arcuate movement of the bell crank whereby the free end of the switch closing arm is moved towards the switch contacts and causes closing of the switch,

the deflecting surface being of limited extent whereby the camming rod returns to its normal position when the camming portion moves past the deflecting portion with resulting movement of the free end of the switch closing arm away from the switch contacts and opening of the switch whereby

the switch contacts are electrically connected to each other only during a beief interval during movement of the plunger from the extended position to the depressed position.

4,450,332

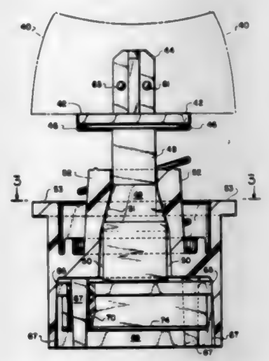
KEYSWITCH DESIGN

Russell D. Stamm, and Manfred J. Wullschleger, both of El Paso, Tex., assignors to General Instrument Corporation, New York, N.Y.

Filed Aug. 25, 1982, Ser. No. 411,435

Int. Cl.³ H01H *3/12*

U.S. Cl. 200—340 **10 Claims**



1. In a keyswitch comprising a housing, a plunger which is spring-loaded into a first position within said housing, a channel in said housing through which said plunger can slide from said first position to a second position, a keytop attached to one end of said plunger, and a switch actuator coupled to the other end of said plunger, the improvement comprising:

a shaft portion on said plunger which is tapered at an angle of approximately 16°; and

a frustrum shaped interior portion in said channel which extends substantially along the length of said tapered shaft portion and mates therewith when said plunger is in said first position;

whereby the mating of said frustrum shaped interior portion and said tapered shaft portion aligns the plunger in the housing

and minimizes the lateral movement thereof to prevent the plunger from rattling when in said first position.

8. In a keyswitch comprising a housing, a plunger which is spring-loaded into a first position within said housing, a channel in said housing through which said plunger can slide from said first position to a second position, a key top attached to one end of said plunger, and a switch actuator coupled to the other end of said plunger, the improvement comprising:

a plurality of tapered ribs on said plunger; and

a plurality of tapered grooves in said channel adapted to mate with said tapered ribs when said plunger is in said first position;

wherein said ribs are tapered at an angle of approximately 16°.

4,450,333

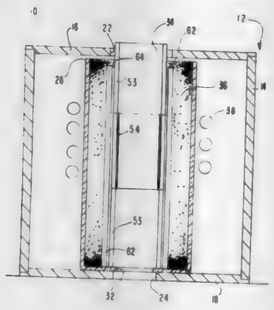
ZIRCONIA INDUCTION FURNACE

Matthew J. Andrejco, North Hanover Township, Burlington County; Un C. Paek, West Windsor Township, Mercer County, and Charles M. Schroeder, Jr., North Hanover Township, Burlington County, all of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 28, 1982, Ser. No. 383,386

Int. Cl.³ H05B *6/30*; C03B *27/02*; F27B *14/10*

U.S. Cl. 219—10.49 R **6 Claims**



1. In an induction furnace for heating a lightguide preform and drawing a fiber therefrom, the furnace having a centrally located tubular susceptor surrounded by an insulating grain and an induction coil, comprising:

a thin coating of the lightguide preform material on at least a portion of the inside surface of the susceptor; and

an insulating cylinder positioned about and spaced from the susceptor, interposed between the insulating grain and the susceptor wherein said cylinder substantially eliminates the migration of small particles of the grain to the preform and/or the fiber.

4,450,334

MICROWAVE PIZZA MAKER

Robert F. Bowen, Burlington, and Thomas J. Martel, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 24, 1981, Ser. No. 256,889

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 E **6 Claims**

1. A utensil for heating pizza in a microwave oven, comprising:

a horizontal annular base having a plurality of spaced slots around the peripheral region of said annular base, said base being made of a first microwave transparent material;

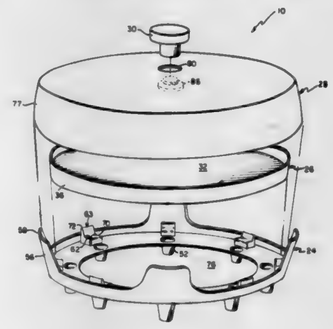
support pedestals inserted into said slots, the top of each of said pedestals having a substantially horizontal inward surface and a raised outer member, said pedestals being made of a second microwave transparent material which is a higher temperature material than said first microwave transparent material;

a metallic pan having a substantially flat bottom with a raised side, sid pan being removably supported in fixed horizontal alignment by said horizontal inward surfaces of said pedestals;

a layer comprising ferrite particles bonded to the underside of said bottom and directly facing the floor of said microwave oven for producing heat by absorption of microwave energy, said heat being conducted through said pan to heat pizza therein, said layer being spaced from said pedestals;

said base having a plurality of legs, the downward ends of said legs being spaced more than an inch from said removably supported pan;

a metallic cover removably supported by said base, said



cover having a peripheral region overlapping said raised side for a distance of greater than 0.25 inches in a direction perpendicular to the edge of said side, said region being spaced and substantially parallel to said side for forming a partial microwave choke to limit the amount of microwave energy in the interior defined by said pan and said cover; and

the opening of said annular base providing a path for natural convection air to be drawn inwardly from between said legs to replace air heated adjacent to said microwave absorbing layer and convected outwardly between said spaced pedestals thereby limiting the temperature to which said base, support pedestals, and the floor of said microwave oven are subjected.

4,450,335

DOOR OPENING APPARATUS FOR HEATING APPLIANCE

Toshiki Shimizu, and Kazuyuki Inoue, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 29, 1982, Ser. No. 343,733

Claims priority, application Japan, Feb. 2, 1981, 56-14798

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—10.55 C **7 Claims**

6. A door opening apparatus for a heating appliance comprising:

a housing having a heating cavity therein, said heating cavity having an opening;

a door supported on said housing for selectively opening and closing said heating cavity;

at least one locking member disposed in the door;

at least one engaging member disposed in the housing to be engaged with said locking member to lock the door in its closed position;

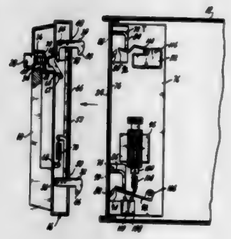
at least one releasing member for releasing the engagement of said locking member and engaging member to unlock the door;

a plunger solenoid for moving said releasing member;

a power supply circuit to supply a power voltage to said plunger solenoid;

a foot switch disposed outside of the housing and connected to said power supply circuit to supply said power voltage in response to the operation of said switch;

at least one safety switch disposed proximate said releasing member for stopping the heating operation of said appliance when the door is opened, said releasing member being spaced from said safety switch when the door is in the open position so that the heating operation of the



appliance is prevented and being brought in contact with the safety switch to change the condition of the switch when the door is closed so that the heating operation of the appliance can be initiated;

at least one stop switch for stopping the operation of the plunger solenoid when the door is opened; and

at least one spring for coupling said plunger solenoid and said releasing member,

whereby once the door is opened by the operation of the plunger solenoid, the solenoid and the appliance are rendered inoperative.

4,450,336

SUPER-FINE FINISH EDM METHOD AND APPARATUS

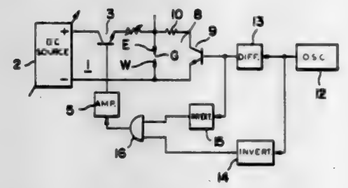
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jul. 29, 1981, Ser. No. 288,054

Claims priority, application Japan, Aug. 5, 1980, 55-107395

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M **30 Claims**



1. A method of electrical-discharge-machining an electrically conductive workpiece wherein a tool electrode is spacedly juxtaposed with the workpiece to define a machining gap therewith filled with a dielectric liquid, which method comprises:

effecting a succession of localized, time-spaced and repetitive machining electrical discharges between said tool electrode and said workpiece across said machining gap to produce stock removal from said workpiece over the surface thereof juxtaposed with said tool electrode; and

improving the surface finish of said stock-removed surface of the workpiece by discharging electrical charge stored due to a stray capacitance across said tool electrode and said workpiece during each time interval between the successive machining electrical discharges, through an electrical shunt circuit in parallel with said machining gap immediately prior to initiation of each of said machining electrical discharges across said machining gap.

4,450,337

EDM METHOD AND APPARATUS WITH A CONTINUOUS DC SUPPLY USING STRAY GAP CAPACITANCE TO TRIGGER DISCHARGE

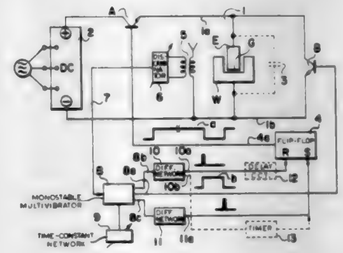
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 16, 1982, Ser. No. 358,875

Claims priority, application Japan, Mar. 20, 1981, 56-40768

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M **17 Claims**



1. A method of machining a workpiece by effecting successive electrical discharges between a tool electrode and the workpiece across a dielectric-filled machining gap, comprising the steps of.

(a) connecting a first switch in a series circuit between a DC source and said machining gap, having a stray capacitance distributed therein;

(b) connecting a second switch across said machining gap in parallel with said DC source;

(c) turning said first switch on to apply a DC output directly to said machining gap and to permit said stray capacitance to repetitively charge and discharge the charge thereon, thereby producing a succession of successive, discrete electrical discharges through said machining gap between the tool electrode and the workpieces;

(d) sensing the magnitude of high-frequency signals contained in said successive electrical discharges and, upon the sensed magnitude falling below a predetermined threshold level, issuing a gap-shunting signal;

(e) in response to said gap-shunting signal, turning said second switch on and thereby short-circuiting said machining gap to terminate said successive electrical discharges while permitting said first switch to be turned off; and

(f), subsequent to step (e), establishing a time interval in which said machining gap is free from current flow from said DC source and repeating steps (c), (d) and (e) in sequence to progressively machine said workpiece.

4,450,338

METHOD OF FABRICATING A TRUSS CORE SANDWICH PANEL

Charles E. Conn, Jr., Riverside, Calif., assignor to TRE Corporation, Beverly Hills, Calif.

Filed May 4, 1982, Ser. No. 374,766

Int. Cl.³ B23K *11/00, 11/06*

U.S. Cl. 219—78.12 **14 Claims**

1. A method of fabricating a truss core sandwich panel of the type including first and second face sheets secured on opposite sides of a corrugated sheet, comprising the steps of:

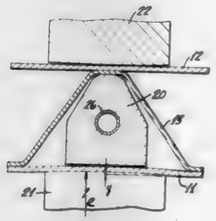
(a) welding said first face sheet to one side of said corrugated sheet;

(b) positioning said second face sheet in contact with the other side of said corrugated sheet;

(c) positioning a conductive mandrel between said first face

sheet and said corrugated sheet, the height of said mandrel being less than the distance between said first face sheet and said corrugated sheet by a given amount;

(d) applying a force to said first and second face sheets to deflect said first face sheet so that opposite sides of said mandrel are in contact with said first face sheet and said



corrugated sheet, said given amount being such that said deflection of said first face sheet will not exceed the yield point of said first face sheet;

(e) welding said second face sheet to said corrugated sheet; and

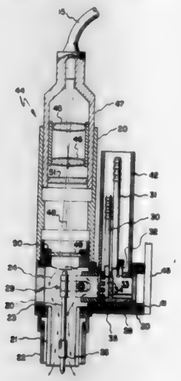
(f) releasing said welding force.

4,450,339

WELDING TORCH WITH VISION ATTACHMENT

Nelson R. Corby, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,473
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—124.34 **8 Claims**



1. An improved gas tungsten arc welding torch with an integral vision sensor comprising:

a housing which supports a gas cup and an integral optical vision system having an optical axis that passes through said gas cup;

a metal torch body in said housing which has cover gas, electrical power, and coolant connections and an integral slim profile electrode holder in the form of a projecting arm for securing a tungsten electrode approximately on the optical axis and in said gas cup, said torch in operation establishing an electric arc between said electrode and the workpiece;

said optical vision system being directly above said electrode and holder and providing on the face of a fiber optic bundle an image of the workpiece weld puddle and weld area with said holder out of focus and not evident; and

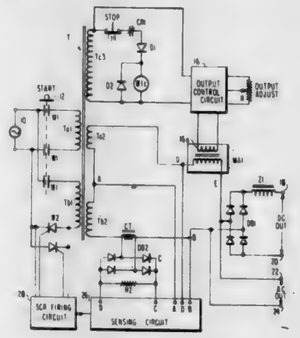
a blocking device on said electrode having a cross section tailored to shield the arc from being imaged and eliminate image distortions caused by the presence of the bright arc and any artifacts.

4,450,340

ARC WELDER POWER SUPPLY WITH FAIL-SAFE VOLTAGE REDUCING CIRCUIT

Don J. Corrigall, and Marvin L. Schiedermayer, both of Appleton, Wis., assignors to Miller Electric Manufacturing Company, Appleton, Wis.

Filed Dec. 10, 1982, Ser. No. 448,866
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—132 **6 Claims**



1. In an arc welding power supply of the type including transformer means having its primary side connectable to an A.C. power source and having its secondary side connected across output terminals connectable to a welding electrode and a work piece, respectively, the improvement:

wherein the primary side of said transformer means comprises first and second primary windings connected in parallel, and the secondary side of said transformer means comprises first and second secondary windings connected in series, so that full open circuit voltage is applied across said output terminals when both primary windings are connected to the power source, and so that a standby voltage lower than the full open circuit voltage is applied across said output terminals when only one of said primary windings is connected to the power source; and comprising

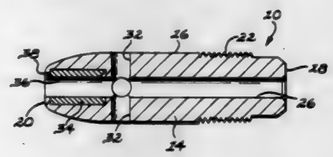
voltage-reducing circuit means, connected in said secondary side of said transformer means and responsive to the absence of welding current in said secondary side for a first predetermined time period, for disconnecting said second primary winding from the power source to reduce the voltage across said terminals to said lower standby voltage.

4,450,341

CONTACT TIP FOR A WELDING HEAD

Earl T. Dietrick, Euclid, and Timothy F. Prayner, Mentor, both of Ohio, assignors to Townmotor Corporation, Mentor, Ohio

Filed Nov. 30, 1981, Ser. No. 340,585
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—137.52 **6 Claims**



1. A contact tip for a welding head comprising:

a body formed of a first material and having an external surface, an electrode receiving end, an electrode discharge end, and a longitudinal passageway extending between said ends and having a construction sufficient for physically and electrically contacting a wire electrode of a predetermined diameter substantially along the entire length of said passageway and for directing the wire electrode while it passes through said longitudinal passageway;

as single wear-resistant member formed of a different second material and having a first end, a spaced second end, and an inner passageway extending between said first end and said second end, said passageway having a diameter substantially equal to the predetermined diameter of said electrode, said wear resistant member being mounted in said body with its first end disposed adjacent the electrode discharge end of said body, and the inner passageway of said member being aligned with the longitudinal passageway of said body; and

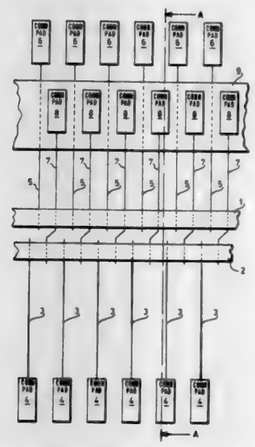
at least one transverse passageway in said body adjacent only the second end of said wear resistant member for communicating said longitudinal passageway with said external surface of the body.

4,450,342

THERMAL PRINT HEAD

Willie Goff, Jr., Austin; James M. Rakes, Leander, and Errol R. Williams, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 452,994
Int. Cl.³ H05B *3/00*; G01D *15/10*; B41J *3/20*
U.S. Cl. 219—216 **7 Claims**



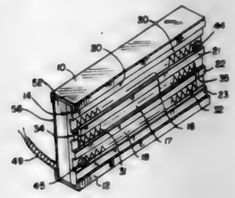
5. A thermal print head comprising an electrically insulating substrate carrying a first row of equally spaced connector pads, a first row of connector leads extending in parallel from the first row of connector pads to a position at which they underlie, and connect to, a first electrically resistive, continuous, print bar longitudinally extending normal to the first row of connector leads, a second row of equally spaced connector leads extending in parallel from a second row of connector pads to a position at which they underlie, and connect to, a second electrically resistive, continuous, print bar longitudinally extending normal to the second row of connectors and in parallel with the first print bar, and a third row of equally spaced connector leads extending in parallel from a third row of connector pads and normal to the print bars to a position at which they underlie, and connect to, the first print bar, each lead in the third row including an extension which underlies and is connected to, the second print bar.

4,450,343

HIGH OUTPUT, LONG DURATION, QUICK RESPONSE, RADIANT ELECTRICAL HEATER

Gerard M. Dundon, 1353 Valley Rd., Apt. B, Wayne, N.J. 07470

Filed Oct. 19, 1981, Ser. No. 312,230
Int. Cl.³ H05B *3/26*
U.S. Cl. 219—357 **5 Claims**



1. A heating apparatus and mounting means for electrically energized heaters, including:

(a) a continuous wire form in which the energized elements are disposed in a generally flat and planar array and in secured condition are disposed in a plane, said wire formed into a plurality of lengths, each length wound or formed in a flat planar array and in a serpentine pattern with sloped adjacent portions disposed in substantially straight extents and with said sloped portions having a turned end portion with and including a determined radius to accommodate the wire size and convolution, each length and said serpentine pattern having the wire arranged in an accordion shaped array and with each length having at least one end disposed to provide a substantially transverse portion and connection to an adjoining and adjacent length;

(b) a support member having an electrical insulating capability with a high "R" value as a heat insulating member, said support member having the capability to retain and support electrical resistance wires when heated by current passing therethrough at and to temperatures up to thirty-two hundred degrees Fahrenheit;

(c) a plurality of substantially parallel and planar grooves formed in the outer face of the support member, each groove having a width and length sufficient to accept and freely retain the lengths of wire and having a formed depth sufficient to retain the wire below the outer surface of the support when and while the wire is mounted therein, said lengths disposed to be mounted against and to the base of the support member in said grooves, the area between grooves providing insulating ribs adapted to prevent unwanted and potential shorting of adjacent lengths of wire;

(d) a crossover groove formed in the face of said support member and adapted to accept the transverse portion of wire extending between lengths;

(e) a multiplicity of metal retaining means for engaging the wire at a selected spacing and pattern, each metal retaining means adapted to locally secure a sloped portion of a wire intermediate the end of a straight extent and to retain this serpentine patterned wire in a planar groove and against the support member so that changes of length of the wire because of heating and cooling does not cause dislocation of the retained wire in the groove and the length of wire so retained does not change as to its radiant energized heating capability, each of said retaining means carried by and secured to the support member;

(f) a metal frame adapted to retain the support member without approaching or encroaching upon the lengths of wire to increase or decrease their energizing capability;

(g) an electrical insulating member disposed to the rear of the apparatus and opposite the face of the support member, said insulating member adapted to prevent shorting and/or contact with the metal supporting means, and

(h) insulated electrical conducting means disposed to engage

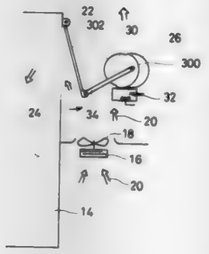
the unconnected ends of the wire and provide means for conducting electrical energy from an external source to said wire form.

4,450,344

DAMPER DRIVE SYSTEM IN A COMBINED MICROWAVE AND ELECTRIC HEATER OVEN

Yasuhiro Sakoda, Wakayama, and Kazuyuki Matsubayashi, Amagasaki, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 8, 1982, Ser. No. 346,535
Claims priority, application Japan, Feb. 12, 1981, 56-18812[U]
Int. Cl.³ H05B 6/68
U.S. Cl. 219—400 **8 Claims**



1. A cooking apparatus comprising:
an oven cavity defined by an oven wall, said oven wall having an aperture formed therein;
fan means for creating a forced air flow along an outer surface of said oven wall in such a manner that a portion of said forced air flow is introduced into said oven cavity through said aperture;
damper means for selectively closing said aperture formed in said oven wall for precluding the introduction of said forced air flow into said oven cavity; and
a damper drive system for selectively placing said damper means in a closed condition and an open state, said damper drive system including:
a damper motor having a drive shaft; means for rotating said drive shaft of said damper motor;
transfer means for transferring the rotation of said drive shaft of said damper motor to said damper means;
switch means operatively connected to said transfer means for selectively being turned off and on;
detection means for sensing a voltage indicative of said switch means being in said on position and developing a first detection signal when said damper means is in the closed condition, and for sensing a voltage indicative of said switch means being in said off position and developing a second detection signal when said damper means is in the open state; and
a motor drive unit for terminating the rotation of said drive shaft of said damper motor when said first detection signal or said second detection signal is developed.

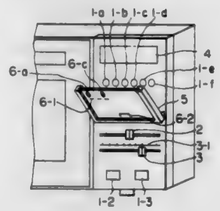
4,450,345

FOODSTUFFS HEATING APPARATUS WITH SELECTIVE HEATING FUNCTIONS

Kouichi Hotta, Yachiyo; Yukichi Yazawa, Kashiwa, and Osami Tatsukawa, Matsudo, all of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Chiba, Japan

Filed Apr. 22, 1981, Ser. No. 256,619
Claims priority, application Japan, May 12, 1980, 55-62494; May 12, 1980, 55-62495
Int. Cl.³ H05B 1/02
U.S. Cl. 219—491 **10 Claims**

1. A foodstuffs heating apparatus wherein a plurality of different heating function modes are selectively effected and heating temperature and heating time are settable, comprising:
a plurality of selector switches provided corresponding to said plurality of different heating function modes and each adapted to be actuated to select a corresponding one of the heating function modes, for causing said apparatus to operate in the selected heating function mode;
cooking cards prepared in one to one correspondence relationship with various different foodstuffs to be heated in said apparatus;
card holder means for removably holding a selected one of said cooking cards, in use;
through holes formed in each of said cooking cards at portions thereof so that when the selected cooking card is located in said card holder means, predetermined ones of said plurality of selector switches which are not required to be selectively actuated in connection with the object of cooking represented by the cooking card oppose said through holes so that said predetermined selector switches



cannot be actuated by the selected cooking card, while the remaining one or more selector switches which are required to be selectively actuated do not oppose the through-holes so that they are actuated by the selected cooking card;
means for generating a control signal when the foodstuffs represented by the selected cooking card requires the setting of heating temperature and a specified switch of said plurality of selector switches is actuated by the selected cooking card for at least one of selecting and operating a heating function mode requiring the setting of heating temperature; and
selector switch function change means responsive to said control signal generated by said control signal generating means, for changing the function of preselected ones of said plurality of selector switches other than said specified switch from a purpose of heating function mode selection to another purpose of heating temperature setting so that said preselected ones of said plurality of selector switches thereby set a predetermined heating termperature.

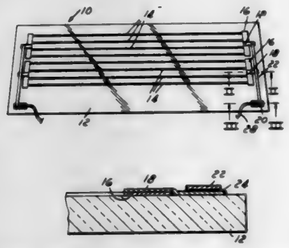
4,450,346

ELECTRIC HEATER PLATE

Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 14, 1981, Ser. No. 263,637
Int. Cl.³ H05B 3/06
U.S. Cl. 219—522 **6 Claims**

1. An electric heater plate comprising:
a base material of electrically nonconductive material having at least a first surface to which metallic materials may be bonded;
a plurality of thin lines of a nonprecious metal which acts as a resistor when electrical energy flows therethrough, said plurality of thin lines being bonded to said first surface of said base material and extending from a first location on said first surface to a second location on said first surface;
at least two interconnection areas of a nonprecious metal which acts as a resistor when electrical energy flows therethrough, said interconnection areas being bonded to said first surface of said base material, one of said interconnection areas physically and electrically interconnecting said plurality of thin lines at said first location on said first surface and a second of said interconnection areas physically and electrically interconnecting said plurality of thin lines at said second location on said first surface;
a terminal area of silver ceramic material associated with each of said interconnection areas, each of said terminal



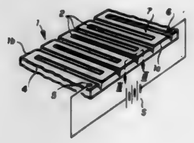
areas having both a first portion thereof overlying and physically and electrically bonded to an associated interconnection area and a second portion thereof overlying and bonded to said first surface of said base material and not in contact with said associated interconnection area; and
an electrical lead bonded to each of said terminal areas for making electrical connection to said plurality of thin lines.

4,450,347

HEATING BODY

Guy Courvoisier, and Simon Arieh, both of Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/CH81/00125, 371 Date Jun. 24, 1982, 102(e) Date Jun. 24, 1982, PCT Pub. No. WO82/01799, PCT Pub. Date May 27, 1982
PCT Filed Nov. 10, 1981, Ser. No. 395,018
Claims priority, application Switzerland, Nov. 12, 1980, 8385/80
Int. Cl.³ H05B 3/34
U.S. Cl. 219—549 **4 Claims**





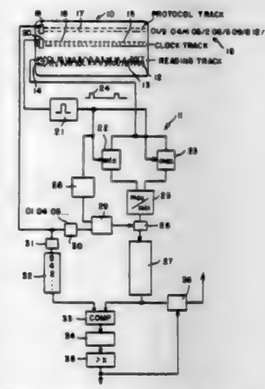
1. A heating body comprising a metal sheet attached by at least one of its faces to a surface of an insulating support and having parallel slots extending alternately from two opposite edges of this sheet and terminating at a distance from the edge opposite to that from which they start in order to form a resistive conductor over the entire surface of the sheet, designed to be connected to a current source at opposite ends, these slots being provided by punching and being spaced from one another by deformation of the portion of the conductor adjacent to at least one of the said edges of these slots into the surface of the support, said slots passing through the said support only, at the most, over a portion of their length in order to laterally connect the parallel portions of the said conductor mechanically to one another at both ends of each slot while providing electrical interconnection of adjacent parallel portions only at one end of each slot.

4,450,348

METHOD AND DEVICE FOR CHARACTERIZING AND IDENTIFYING FALSIFICATION PROOF DATA BOARDS

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Str. 36, D-7730 Villingen, both of Fed. Rep. of Germany

Continuation of Ser. No. 221,547, Dec. 31, 1980, abandoned.
This application Sep. 3, 1982, Ser. No. 414,645
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000560
Int. Cl.³ G06K 5/00
U.S. Cl. 235—380 **4 Claims**



1. A system for authenticating and updating a data support, providing protection against falsification, imitation, or duplication thereof, the data support comprising an area with a random uncoded pattern to be read, data storage means having prerecorded data stored therein corresponding to measurement data representative of a physical property of said area to be read, and a correspondence track having means to indicate which portions of the area are to be measured when the data support is compared with the prerecorded data in said data storage means, said system comprising first means for measuring a physical property of the data support, second means for comparing said measured physical property with the prerecorded data corresponding to the physical property of said data support to determine if the data support is authentic, and third means for recording in said data storage means the measured physical property in place of the prerecorded physical property stored by said data storage means in the event said data support is recognized as authentic, whereby if in sequental use of the data support the measured physical property is related to the previous recorded physical property within acceptable limits, the updating of the measured property will allow the further use of an authentic data support as the authentic data support ages.

4,450,349

BAR CODE WITH OPTICAL READING DEVICE

Siegfried Apitz, Pforzheim, and Rolf Nonnenmann, Karlsbad, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 5, 1982, Ser. No. 355,017
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 310928
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—462 **12 Claims**



1. Bar code readable with an optical reading device comprising

a plurality of characters each formed by a certain sequence of code bars and intervening spaces separating said code bars from one another, the widths of the spaces between the code bars and the widths of the code bars amounting to at least one predetermined modular pattern width; and

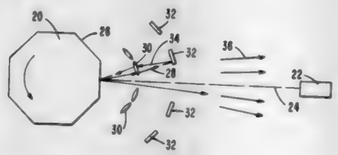
means for optically subdividing those of said spaces whose widths amount to at least twice said modular pattern width into separate spaces, including counting marks interposed in said spaces at a spacing of at least one modular pattern width from the respective neighboring code bar, said counting marks having such optical properties that the amount of light reflected during scanning of the respective counting marks lies between that reflected by said space and that reflected by said code bar.

4,450,350

LOW SPEED LASER SCANNING APPARATUS

James A. Hardy, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 28, 1982, Ser. No. 392,448
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—467 **18 Claims**



1. A system for scanning coded indicia comprising:

means for providing a beam of radiant energy;

a rotating scanning means having a first reflective surface located in the optical path of said beam for reflecting said beam along a first predetermined path;

first optical means orientated at an angle to said first reflective surface and located in said first predetermined path for reflecting the beam towards said reflective surface which reflects the beam along a second predetermined path;

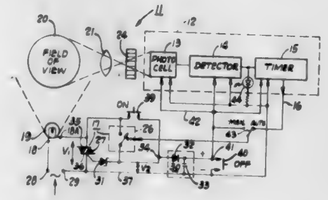
and means located in said second predetermined path for directing the reflected beam onto a scan area in the form of a multi-line intersecting scan pattern through which passes the coded indicia to be scanned.

4,450,351

MOTION DISCONTINUANCE DETECTION SYSTEM AND METHOD

Jacob Fraden, Hamden, Conn., assignor to Bio/Optical Sensor Partners, Ltd., Oberlin, Ohio

Continuation of Ser. No. 249,068, Mar. 30, 1981. This application Feb. 24, 1983, Ser. No. 469,467
Int. Cl.³ H05B *39/04*
U.S. Cl. 250—221 **23 Claims**



13. A motion detection system, comprising, in combination:

an electrical circuit having a detector connected to the output of photosensitive means;

imaging means to establish illumination on said photosensitive means from a given field of view;

alternating condition image distortion means included in one of said imaging means and said photosensitive means to establish nonuniform electrical output of said photosensitive means upon motion of objects in said given field of view;

a housing for said electrical circuit;

shield means in said housing establishing at least a part of said given field of view and shielding said photosensitive means from direct illumination from electrical illuminating means of said field of view;

timer means connected to the output of said detector adapted to maintain energization of the terminals of the illuminating means upon motion of objects in said given field of view and de-energization of the terminals of the illumination means upon passage of a given time period subsequent to discontinuance of motion of objects in said given field of view; and

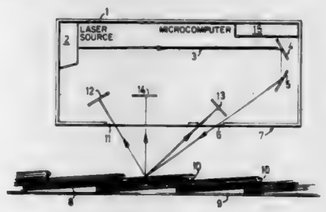
electrical means including an amplifier having an output change responsive to the initial change of illumination upon de-energization of the terminals of the illumination means to establish continued de-energization of said illumination means terminals.

4,450,352

METHOD AND DEVICE FOR COUNTING SHEET MATERIAL

Christer H. K. Olsson, Enskede, Sweden, assignor to Dagens Nyheters AB, Gothenburg, Sweden

Continuation of Ser. No. 269,759, Jun. 2, 1981, abandoned. This application Oct. 5, 1983, Ser. No. 538,839
Claims priority, application Sweden, Jun. 4, 1980, 8004165
Int. Cl.³ G06M *7/06*
U.S. Cl. 250—223 R **2 Claims**



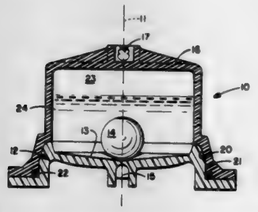
1. Apparatus for counting overlapping objects such as newspapers, printed matter and the like, comprising means for advancing the objects in a single plane in a series with their overlapping edges facing all in the same direction, means for directing an exact parallel light laser beam obliquely against the objects in a direction opposite said facing direction of the overlapping edges at an acute angle to said plane and to an imaginary line which is perpendicular to said plane, at least two measuring cells for detecting the light of the laser beam that is reflected from the objects, one said cell being positioned to receive light that is reflected along one line that is inclined at an acute angle to said plane on the opposite side of said imaginary line from said beam, another of said cells being positioned to receive light that is reflected along another line that is disposed between said one line and said laser beam, whereby the overlapping edge of each object, upon reaching the vicinity of said one line, will produce a diminution of the quantity of light reflected along said one line relative to the quantity of light reflected along said another line, and means for counting said diminutions as a measure of the number of said objects whose overlapping edges pass through said beam.

4,450,353

TILT DETECTOR WITH PYRAMIDAL SURFACE

John R. Sjolund, Arden Hills, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 8, 1981, Ser. No. 299,910
Int. Cl.³ G01D *5/34*; G01C *9/06*
U.S. Cl. 250—231 R **7 Claims**



1. A tilt detecting device adapted for use in an application where greater tilt can be tolerated in one direction than in another direction and including a light source, a light responsive device, a spherical opaque body, and means supporting said body for rolling movement transverse to an axis extending between said source and said device in response to tilting of said housing away from a position in which said body is on said axis and occludes said light responsive device from said source, said supporting means comprising a concave basin generally symmetrical about said axis and having a bottom configured as the surfaces of planes intersecting along lines passing through a common point on said axis in which a first pair of said lines defines a first plane and a second pair of said lines defines a second plane perpendicular to said first plane and wherein said second pair of said lines intersects said axis at angles greater than the angles at which said first pair of said lines intersects said axis.

4,450,354

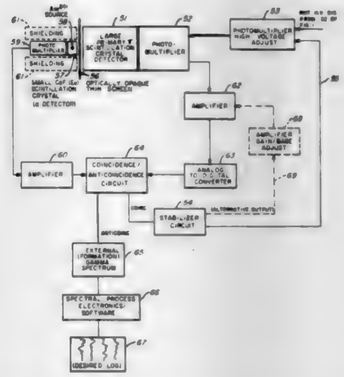
GAIN STABILIZED NATURAL GAMMA RAY DETECTION OF CASING THICKNESS IN A BOREHOLE

Harry D. Smith, Jr., and Carl A. Robbins, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 395,517, Jul. 6, 1982. This application Apr. 8, 1983, Ser. No. 483,400
Int. Cl.³ G01V *5/00*; G01T *1/20*
U.S. Cl. 250—256 **24 Claims**

1. A method of gamma ray spectral logging of a well borehole to determine the casing thickness of a cased well borehole, substantially independently of borehole conditions, comprising the steps of:

(a) measuring by detection in a gain stabilized energy responsive detection system in a logging tool the energy spectrum of gamma rays from outside a casing in the vicinity of a well borehole said gamma ray spectrum being divided into gamma ray intensities measured in two energy bands and wherein said gain stabilization is accomplished by use of a reference gamma ray energy emitter which coincidently emits a charged particle, and



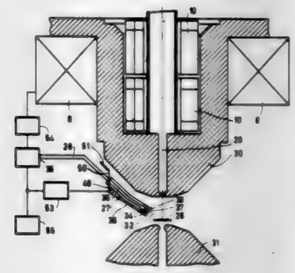
(b) combining the gamma ray count rate data in one energy band in which photoelectric absorption in iron is significant with the gamma ray count rate data in one energy band where photoelectric absorption in iron is not significant to form an output signal indicative of casing thickness.

4,450,355

ELECTRON MICROSCOPE COMPRISING AN X-RAY DETECTOR

Hendricus C. J. Marien, and Michael N. Thompson, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,936
Claims priority, application Netherlands, Jan. 30, 1981, 8100449
Int. Cl.³ G01N *23/225*; H01J *37/256*
U.S. Cl. 250—310 **7 Claims**



1. An electron microscope comprising:

at least one electromagnetic lens controlling an electron beam,

an object receiving said electron beam and producing radiation,

detector means adjacent to said object for measuring said radiation from said object,

an electron absorbing shield movable into position between said object and said detector means, and

means for moving said shield into and out of said position in accordance with energization of said electromagnetic lens, said shield being moved into said position at low

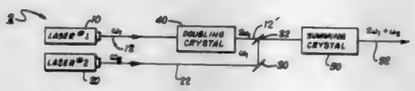
energization of said electromagnetic lens and being moved out of said position at high energization of said electromagnetic lens.

4,450,356

FREQUENCY-MIXED CO_2 LASER RADAR FOR REMOTE DETECTION OF GASES IN THE ATMOSPHERE

Edward R. Murray; Jan E. van der Laan, both of Palo Alto; Arne Rosengreen, Los Altos, and Robert L. Byer, Stanford, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jun. 7, 1982, Ser. No. 385,490
Int. Cl.³ G01N *21/39*
U.S. Cl. 250—339 **10 Claims**



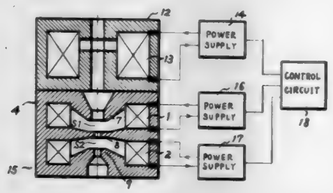
10. An improved method for detecting the presence of one or more preselected gases in the atmosphere which comprises:
a. generating a laser beam from a first laser beam source having a frequency in the infrared spectrum;
b. doubling the frequency of said laser beam;
c. generating a laser beam from a second laser beam source having a frequency in the infrared spectrum;
d. adding the doubled frequency from one of said laser beams to the frequency of the other laser beam to obtain a laser beam at a third frequency;
e. tuning at least one of said laser beams so that the third frequency produced by doubling one of the beam frequencies and adding it to the other frequency is a preselected frequency highly absorbed by said preselected gas;
f. transmitting said highly absorbable third frequency laser beam through the atmosphere toward a reflecting target;
g. detecting the reflected beam;
h. retuning at least one of said lasers so that the resultant third frequency laser beam is not highly absorbed by said preselected gas;
i. transmitting said resultant low absorption third frequency laser beam toward the same target;
j. detecting the reflected signal from said low absorption laser beam; and
k. comparing the strength of the reflected highly absorbable laser beam with the reflected low absorption second laser beam to determine the amount of absorption of said first beam to thereby determine the presence or absence of said preselected gas in the atmosphere.

4,450,357

ELECTRON LENS EQUIPPED WITH THREE MAGNETIC POLE PIECES

Katsushige Tsuno, Tokyo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 310,735
Int. Cl.³ H01J *29/64*
U.S. Cl. 250—356 ML **6 Claims**



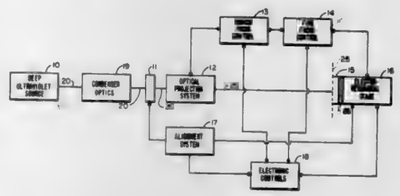
1. An electron lens in which three adjacent magnetic pole pieces define two gaps therebetween for generating two magnetic fields of opposite polarities therein at high magnification above about several tens of thousands times, characterized in that the magnetomotive forces of the magnetic fields in the two gaps are selected to be different, said magnetomotive force of the magnetic field in the upper gap being set at a value close to the magnetomotive force providing a minimum focal length under the condition that the magnetomotive forces in both gaps are equal to each other, and said magnetomotive force of the magnetic field in the lower gap being set larger than that of the magnetic field in the upper gap whereby radial and spiral distortions are minimized and the focal length is shortened.

4,450,358

OPTICAL LITHOGRAPHIC SYSTEM

George O. Reynolds, Waban, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 22, 1982, Ser. No. 421,623
Int. Cl.³ H01L *21/76*; B23K *9/00*
U.S. Cl. 250—492.1 **18 Claims**



1. An optical lithographic system for fabricating small linewidths, said system comprising:
A. a first substrate suitable for the construction of an integrated circuit;
B. an ultraviolet source of illumination;
C. an optical condenser coupled to receive said illumination from said ultraviolet source;
D. a mask including a desired pattern of lines to be exposed on said first substrate;
E. an ultraviolet sensitive photoresist layer on said first substrate whose sensitivity is substantially matched to that of said ultraviolet source of illumination;
F. an optical imaging system for imaging a reduced representation of said mask onto said photoresist layer; and
G. means for focusing said reduced representation of said mask produced by said optical system onto said photoresist layer to within a depth of focus, P, where:

$$P = \pm k \cdot L(2f/d)^2$$

where L is the operating wavelength of said source of illumination, f is the focal length of said optical imaging system, d is the diameter of said optical imaging system, and k is a constant.

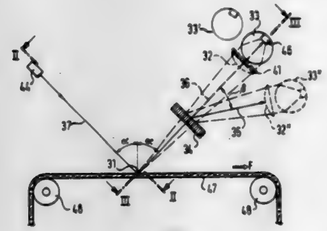
4,450,359

FAULT DETECTION APPARATUS FOR MATERIAL WEBS

Dieter Röss, Planegg, and Klaus Ostertag, Munich, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,694
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006072
Int. Cl.³ G01N *21/88*
U.S. Cl. 250—572 **48 Claims**

1. Fault detection apparatus for material webs comprising a light transmitting device for directing light onto the surface of a web along a line to effect line-wise scanning thereof, said web having a width; an elongate light receiving device extending parallel to said line and spaced therefrom to receive light scattered from said web in a reception plane defined by said line and said elongate light device, said elongate light receiving device extending over at least said width of said web and having first and second ends, and also a continuous elongate light inlet surface extending over the width of said web and acting to transmit light incident on said light inlet surface to one of said first and second ends; a photoelectric detector means associated with said elongate light receiving device and positioned to receive light from said one end, for generating an



electrical signal from the light received by said light receiving device; an elongate angular range filter disposed between said line of light and said elongate light receiving device; wherein said elongate angular range filter extends over at least said width of said web parallel to said line and to said elongate light receiving device, and wherein said elongate angular range filter if adapted to discriminate between first and second ranges of angles of light beams leaving said line and to allow only light lying in said first range to reach said elongate light receiving device.

4,450,360

ALKYLARYLIODONIUM SALTS AND METHOD FOR MAKING

James V. Crivello, Clifton Park, and Julia L. Lee, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1982, Ser. No. 357,435
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.³ C07F *9/66*
U.S. Cl. 260—440 **10 Claims**

1. Arylalkyliodonium salts having the formula,

$$[R\text{-}I\text{-}Y]^+MF_d^-$$

where R is a $C_{(6-13)}$ aryl radical, Y is a monovalent aliphatic or cycloaliphatic group selected from

$$-C(R^1)(R^2)(R^3) \text{ and } -C(R^4)(R^5)(R^6),$$

R^1 and R^4 are selected from hydrogen and $C_{(1-8)}$ alkyl radical R^2 and R^3 are

$$-C(=O)-R^7,$$

or a mixture of

$$-C(=O)-R^7 \text{ and } -C(OR^1)=R^8,$$

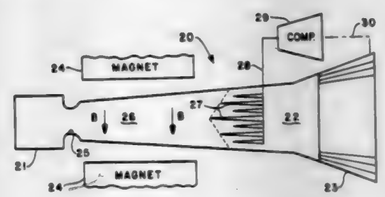
where R^7 and R^8 are selected from $C_{(1-13)}$ organic radicals which together can form a $C_{(6-13)}$ aromatic radical, $C_{(5-13)}$ heterocyclic radical, or two $C_{(6-13)}$ aryl radicals, a mixture of $C_{(1-8)}$ alkyl and $C_{(6-13)}$ aryl, and a mixture of alkyl and oxyalkyl or alkyl and oxyaryl, and R^5 and R^6 are monovalent electron withdrawing groups selected from nitrile and a mixture of nitro and $C_{(6-13)}$ aryl M is a metal or metalloid selected from antimony, arsenic, phosphorus and boron, and d is an integer equal to from 4–6 inclusive.

4,450,361

COUPLING OF MHD GENERATOR TO GAS TURBINE

James F. Holt, 3795 Osborn Rd., Medway, Ohio 45341

Filed Aug. 26, 1982, Ser. No. 411,947
Int. Cl.³ H02N *4/02*; H02K *45/00*; F02K *5/00*
U.S. Cl. 290—1 R **5 Claims**



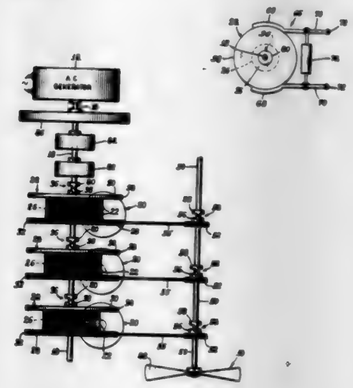
1. An improved power plant comprising:
a. means providing a source of high temperature gaseous flow;
b. a rotary turbine driven by said gaseous flow;
c. means defining a duct for conducting said gaseous flow from said source to said turbine;
d. a magnetohydrodynamic generator adjacent said duct and intermediate said source and said turbine, said generator interacting with said gaseous flow to generate electrical power; and
e. a plurality of cooling fins disposed within said duct intermediate said generator and said turbine for cooling said gaseous flow.

4,450,362

WIND ENERGY APPARATUS

Paul H. Gallagher, 2530 Crawford Ave., Evanston, Ill. 60201

Filed Feb. 17, 1982, Ser. No. 349,202
Int. Cl.³ F03D *9/00*; F03G *3/00*
U.S. Cl. 290—55 **1 Claim**

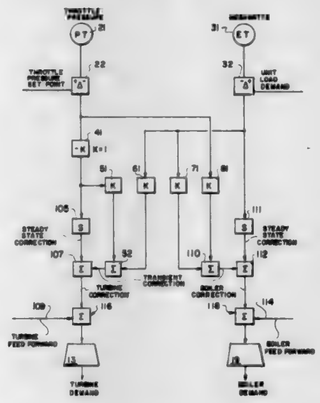


1. Energy generating apparatus comprising,
a load to be driven including a rotary member,
a horizontal first common shaft,

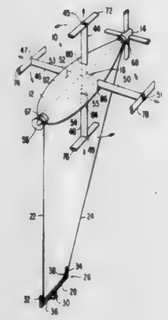
means operably connecting the first common shaft to the rotary member of the load,
a plurality of weights,
a plurality of drums individual to the weights, mounted on the first common shaft and free running thereon,
a cable secured to each weight and connected to the corresponding drum and capable of being wound on the drum, each drum including a pair of end plates forming flanges, a first of the flanges having a groove and constituting a driven pulley, and the second flange constituting a rotary braking member,
a clutch associated with each drum including a first part fixed to the drum and free running on the shaft and a second part fixed on the shaft for rotation therewith and axially slidable thereon into and out of driving connection with the first part,
a horizontal second common shaft parallel with the first common shaft,
a plurality of driving pulleys mounted on the second common shaft, individual to the drums and being free running on the shaft,
a clutch associated with each driving pulley including a first part fixed to the pulley and free running on the shaft, and a second part fixed on the shaft for rotation therewith and axially slidable thereon into and out of driving connection with the first part,
drive belts interconnecting the respective driving pulleys and driven pulleys,
brake means operably associated with each rotary braking member,
a windmill for driving the second common shaft,
the foregoing members being operable for enabling selectively and individually clutching the driving pulleys on the second common shaft for driving the respective drums and thereby winding up the corresponding cables thereon and lift the corresponding weights, and enabling selectively and individually clutching the drums to the first common shaft for rotating the latter and driving the load,
brake means operative for holding the first common shaft and thus the load stationary against the tendency of the weights to drive them, and
means operable for regulating the speed of rotation of the first common shaft and thus the load.

4,450,363
COORDINATED CONTROL TECHNIQUE AND ARRANGEMENT FOR STEAM POWER GENERATING SYSTEM
Thomas D. Russell, Montville, and Robert R. Walker, Euclid, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed May 7, 1982, Ser. No. 375,798
Int. Cl.³ F01K *13/02*
U.S. Cl. 290—40 C **3 Claims**

1. A method of operating an electric power generation system, the system being of the type having an electric generator, a steam turbine connected to the electric generator, a steam generator for supplying steam to the turbine, a flow line interconnected between the steam generator and the turbine for the passage of steam, throttle valve means in the flow line for regulating turbine throttle pressure, and fuel flow regulating means for regulating heat input to the steam generator, comprising the steps of measuring throttle pressure, producing a feed-forward proportional signal based on load demand for the turbine, developing a throttle pressure error signal representative of the difference between said measured throttle pressure signal and a throttle pressure setpoint, measuring electrical load output of the electric generator, producing a feedforward proportional signal based on load demand for the boiler, developing a megawatt error signal representative of the difference between said measuring electrical output signal and a unit load demand, and further comprising, during transient operation, combining said throttle pressure error signal and said megawatt error signal to produce (1) a first combined signal corresponding to the difference of said megawatt error signal and said throttle pressure error signal, and biasing the throttle valve controls by means responsive to said first combined signal, and (2) a second combined signal corresponding to the sum of said megawatt error signal and said throttle pressure error signal, and biasing the fuel flow control by means responsive to said second combined signal.

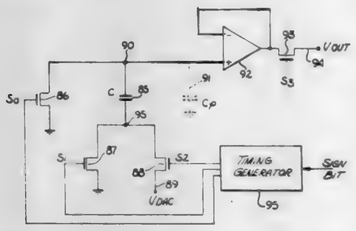


4,450,364
LIGHTER THAN AIR WIND ENERGY CONVERSION SYSTEM UTILIZING A ROTATING ENVELOPE
William R. Benoit, 336 Pleasant St., Laconia, N.H. 03246
Filed Mar. 24, 1982, Ser. No. 361,176
Int. Cl.³ F03D *9/00, 1/04*
U.S. Cl. 290—55 **24 Claims**



1. A buoyant device comprising:
an envelope filled with a lighter-than-air gas having an longitudinal axis;
means connected to said envelope for allowing wind-rotation of said envelope about said axis; and
means supported by said envelope for generating electricity in response to rotation of said envelope.

4,450,365
DIGITAL LOGIC BUFFER FOR CONVERTING SINGLE POLARITY ANALOG SIGNALS TO DUAL POLARITY ANALOG SIGNALS
Marcian E. Hoff, Jr.; Marshall A. Townsend, and Stephen F. Dreyer, all of Sunnyvale, Calif., assignors to Intel Corporation, Santa Clara, Calif.
Division of Ser. No. 120,701, Feb. 11, 1980, which is a continuation-in-part of Ser. No. 85,247, Oct. 16, 1979, abandoned, which is a continuation of Ser. No. 927,029, Jul. 24, 1978, abandoned. This application Sep. 14, 1981, Ser. No. 302,318
Int. Cl.³ H03K *17/66, 5/156*
U.S. Cl. 307—262 **2 Claims**



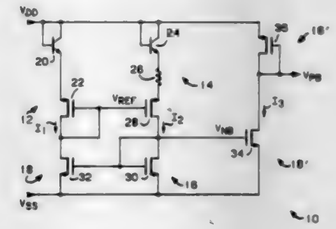
1. A buffer for converting a first signal having a single polarity to a second signal having a dual polarity, comprising:
a capacitor having a first and second terminal;
a first switching means, coupled to a first control line for controlling switching, for selectively coupling said first terminal of said capacitor to a source of said first signal and charging said capacitor;
a second switching means, coupled to a second control line for controlling switching, for selectively coupling said first terminal of said capacitor to a first potential, and for discharging the charge on said capacitor;
a third switching means, coupled to a third control line for controlling switching, for coupling said second terminal of said capacitor to said first potential and discharging said capacitor;
a computer means for selecting which polarity of said dual polarities is required;
a waveform generation means, coupled through said first, second and third control lines to said first, second and third switching means, and coupled to said selecting means, for generating a first set of waveforms to control said first, second and third switching means when one polarity of said dual polarities is selected, and a second set of waveforms to control said first, second and third switching means when the other polarity of said dual polarities is selected;
said first set of waveforms for first causing said second and third switching means to couple said first and second terminal of said capacitor to said first potential, next causing said third switching means to decouple said second terminal from said first potential, and then causing said first switching means to couple said first terminal to said first signal having a single polarity, and
said second set of waveforms for first causing said first switching means to couple said first terminal of said capacitor to said first signal having a single polarity and said third switching means to couple said second terminal of said capacitor to said first potential; and then causing said third switching means to decouple said second terminal from said first potential and said second switching means to couple said first terminal to said first potential;
whereby said second signal having said dual polarity is generated from said first signal at said second terminal of said capacitor.

4,450,366
IMPROVED CURRENT MIRROR BIASING ARRANGEMENT FOR INTEGRATED CIRCUITS
Satwinder D. Malhi, 24 Brunswick Ave., Toronto, Ontario, Canada (M5S 2L7), and Clement A. Salama, 66 Castlewood Rd., Toronto, Ontario, Canada (M5N 2L2)
Filed Sep. 23, 1981, Ser. No. 304,999
Claims priority, application Canada, Sep. 26, 1980, 362481
Int. Cl.³ H03F *3/345, 3/16*; H03L *5/00*
U.S. Cl. 307—297 **6 Claims**



1. Biased electronic circuit of current mirror type comprising:
(a) an pnp transistor having its emitter connected to a voltage source;
(b) an npn transistor having its collector connected to the collector of the pnp transistor and having its emitter coupled to a reference voltage, and having its base for controlling a current through its collector;
(c) two field effect transistors having their drain-source current paths connected in series said voltage source and said reference voltage, the gates of the field effect transistors being connected respectively to the emitter and collector of the pnp transistor and the base of the pnp transistor being connected to the junction of the two field effect transistors;
(d) at least one other pnp transistor having its base connected to the base of the first-mentioned pnp transistor and having its emitter-collector current path coupled to said voltage source for supply of bias voltage therefrom; and
(e) at least the field effect transistor having its base connected to the pnp transistor collector being operated at negligible gate current whereby the collector current of the npn transistor determines the said bias voltage.

4,450,367
DELTA V_{BE} BIAS CURRENT REFERENCE CIRCUIT
Roger A. Whatley, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 14, 1981, Ser. No. 330,062
The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.
Int. Cl.³ G05F *3/16*; H03L *1/00, 5/00*
U.S. Cl. 307—297 **11 Claims**



1. A ΔV_{BE} bias current reference circuit comprising:

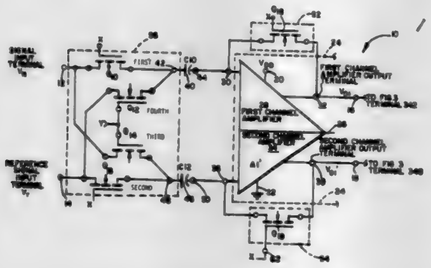
reference voltage means comprising a first bipolar transistor, for providing a reference voltage proportional to a bias current;
reference current means coupled to the reference voltage means comprising a second bipolar transistor coupled in series with a resistor, for providing a reference current proportional to the ratio of the difference in the base to emitter voltages, ΔV_{BE}, of said first and second bipolar transistors and the resistance of said resistor;
bias voltage means coupled to the reference current means, for providing a bias voltage proportional to said reference current; and
bias current means coupled to both the reference voltage means and the bias voltage means, for providing the bias current proportional to the bias voltage for said reference voltage means.

4,450,368

AC COUPLED CHOPPER STABILIZED DIFFERENTIAL COMPARATOR

John R. Spence, Villa Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 21, 1981, Ser. No. 332,634
Int. Cl.³ H03K *3/023, 5/24*
U.S. Cl. 307—362 **15 Claims**



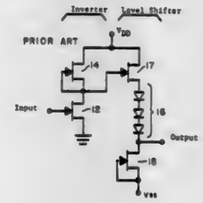
1. An ac coupled differential comparator circuit characterized as receiving a differential signal voltage applied between a signal input terminal and a reference signal input terminal, providing differential outputs at a first and second differential output terminal and being characterized as operating from a voltage source with respect to a reference potential comprising:
amplifier means, characterized by a first stage differential amplifier having
a first channel amplifier having an input terminal and an output terminal, said first channel amplifier output terminal being connected to said first differential output terminal, and
a second channel amplifier having an input terminal and an output terminal, said second channel amplifier output terminal being connected to said second differential output terminal, and having a gain essentially equal to the gain of said first channel amplifier;
a first channel input capacitor having a first and second terminal, said second terminal being connected to said first channel amplifier input terminal,
a second channel input capacitor, having a first and second terminal, said second terminal being connected to said second channel amplifier input terminal,
a clock signal means, having a first clock signal and a second clock signal,
means responsive to said first clock signal for connecting said first and second channel amplifier output terminals to their respective input terminals,
signal input selection means for connecting said signal input terminal to said first channel input capacitor first terminal, and for connecting said reference signal input terminal to said second channel input capacitor first terminal, in response to only said first clock signal,
said signal input selection means connecting said signal input terminal to said second channel input capacitor first terminal and connecting said reference signal input terminal to said first channel input capacitor first terminal, in response to only said second clock signal,
whereby said differential signal voltage between said signal input terminal and said reference signal input terminal is amplified, said amplified differential voltage being provided as a differential output voltage between said first and second channel amplifier output terminals having reduced amplifier offset voltage error.

4,450,369

DYNAMIC MESFET LOGIC WITH VOLTAGE LEVEL SHIFT CIRCUIT

Fritz L. Schuermeyer, 1759 Southview Dr., Yellow Springs, Ohio 45433

Filed May 7, 1981, Ser. No. 261,358
Int. Cl.³ H03K *19/094, 19/20, 23/08*
U.S. Cl. 307—450 **5 Claims**



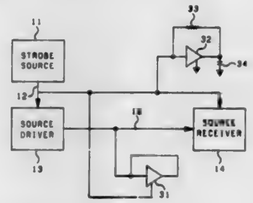
1. A circuit having an inverting logic stage, comprised of FET devices, which includes a load device connected between a dc bias supply and a junction point, logic means connected between said junction point and a reference point, voltage level shift means connected between said junction point and an output of said inverting logic stage, a next stage having an input, with an FET device having a Schottky barrier between said input and the reference point, and a connection from said output of the inverting logic stage to said input of the next stage;
the improvement wherein said voltage level shift means comprises: a capacitor connected between said junction point of said FET inverting logic stage and said Schottky barrier input of the next stage FET device, in an overall dynamic logic circuit in which said capacitor is self-biased only by active logic signals having a period which is insignificant relative to the capacitor discharge time.

4,450,370

ACTIVE TERMINATION FOR A TRANSMISSION LINE

Thomas T. Davis, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 31, 1979, Ser. No. 8,149
Int. Cl.³ H03K *19/003, 19/092*
U.S. Cl. 307—475 **1 Claim**



1. Apparatus comprising:

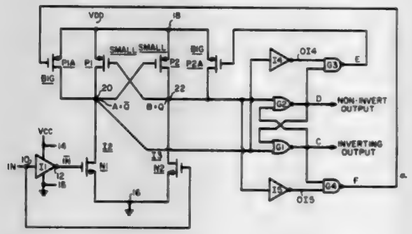
a source of electrical strobe signals;
a transmission line means for transmitting said electrical strobe signals;
an enabled tri-state buffer means;
a resistor;
means for electrically connecting the output of said enabled tri-state buffer means to the input of said enabled tri-state buffer means through said resistor;
means for electrically connecting said transmission line to the input of said enabled tri-state buffer means;
a capacitor; and
means for electrically connecting the output of said tri-state buffer means to ground through said capacitor.

4,450,371

SPEED UP CIRCUIT

Otto H. Bismarck, Fords, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,434
Int. Cl.³ H03K *5/12, 19/017*
U.S. Cl. 307—475 **7 Claims**



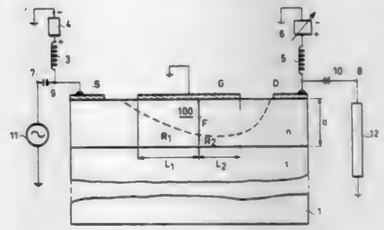
1. The combination comprising:
first and second power terminals for the application thereto of first and second operating potentials, respectively;
first and second input terminals for the application thereto of complementary input signals;
first and second outputs at which are produced output signals in response to said input signals;
first and second switching transistors, each having a conduction path and a control electrode;
means connecting the conduction paths of said first and second transistors between said first and second outputs, respectively, and said first power terminal;
means connecting the control electrodes of said first and second transistors to said first and second input terminals, respectively;
third, fourth, fifth and sixth transistors each having a conduction path and a control electrode; said third and fourth transistors, when turned-on, having a much higher impedance than the ON-impedance of said first, second, fifth and sixth transistors;
means connecting the conduction paths of said third and fifth transistors in parallel between said first output and said second power terminal;
means connecting the conduction paths of said fourth and sixth transistors in parallel between said second output and said second power terminal;
means coupling the control electrode of said third transistor to said second output and the control electrode of said fourth transistor to said first output; and
means responsive to the signal at said first and second outputs coupled to the control electrodes of said fifth and sixth transistors for momentarily turning-on the fifth transistor and maintaining the sixth transistor turned-off when said second transistor is initially turned-on; and for momentarily turning-on the sixth transistor and maintaining said fifth transistor turned off when said first transistor is initially turned-on.

4,450,372

ELECTRONIC CONTROL VARIABLE PHASE SHIFT DEVICE COMPRISING A LONG GATE FIELD EFFECT-TRANSISTOR AND A CIRCUIT USING SUCH A DEVICE

Félix Diamand, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 28, 1982, Ser. No. 372,797
Claims priority, application France, Apr. 30, 1981, 81 08664
Int. Cl.³ G01R *25/00*
U.S. Cl. 307—511 **3 Claims**



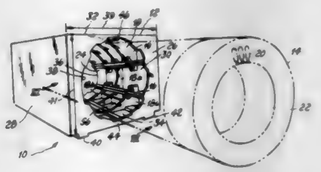
1. An electronic control variable phase shift device operable in a very high frequency range of 10 GHz, comprising:
at least one field effect transistor having a high resistivity substrate, an n type active layer formed on said substrate, and source and drain electrodes and a respective single gate electrode formed on said active layer, said active layer having a thickness at least equal to one micron and said single gate electrode having a length at least twice the thickness of said active layer so that at a predetermined frequency of use, under a predetermined negative bias condition, a phase shift in the range of 85–140 sexagesinal degrees is derived between an input signal applied between said source and gate electrodes and at output signal derived across said drain and gate electrodes; and
a variable d.C. bias supply applied between said drain and gate electrodes to cause said phase shift to vary.

4,450,373

APPARATUS FOR VIBRATION REDUCTION IN DYNAMOELECTRIC MACHINES

William H. Miller, Albany, and Joseph J. Frank, Esperance, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

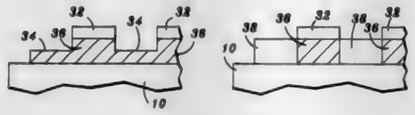
Filed Sep. 12, 1983, Ser. No. 531,556
Int. Cl.³ H02K *5/24, 1/12*
U.S. Cl. 310—51 **12 Claims**



1. Apparatus for reducing vibration in a motor comprising a rotor; a stator; and a sheet metal box type motor housing including first and second apertured ends in alignment with said rotor;
a pair of end shields containing bearing support members for containing bearings rotatably supporting said rotor and

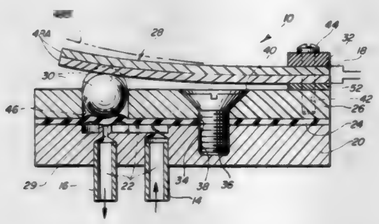
adapted to close said apertured ends upon a partially recessed assembly therewith and therein;
first and second mounting rails axially disposed along a bottom of said housing parallel with said rotor and effective to permit mounting said motor to a mounting surface;
first and second axially disposed gussets spaced on opposite sides of said stator support member adjacent said mounting rails;
stiffening means adjacent to a portion of the lower inside surface of said first and second ends and welded thereto;
said end shield and said motor housing having force transmission means incorporated therein for transmitting bearing forces to said stiffening means and passing vibrational loads from said rotor through said end shields and said stiffening means to said first and second support rails.

4,450,374
OXYGEN-PLASMA PASSIVATED AND LOW SCATTER ACOUSTIC WAVE DEVICES
Frederick Y. Cho, Scottsdale, and Fred S. Hickernell, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.
Filed May 27, 1982, Ser. No. 382,758
Int. Cl.³ H03H 9/42
U.S. Cl. 310—313 B **3 Claims**



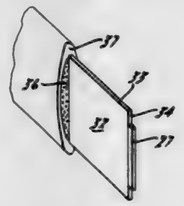
1. A low-scatter surface acoustic wave device comprising:
a substrate;
at least one transducer on said substrate having a plurality of inter-digital fingers; and
a plurality of insulating regions, each of said insulating regions lying in a gap between adjacent ones of said plurality of inter-digital fingers and filling said gap, said inter-digital fingers and said insulating regions being formed from a single layer of metal.

4,450,375
PIEZOELECTRIC FLUID CONTROL DEVICE
Burton L. Siegal, Skokie, Ill., assignor to KIWI Coders Corporation, Wheeling, Ill.
Filed Nov. 12, 1982, Ser. No. 440,966
Int. Cl.³ H01L 41/08
U.S. Cl. 310—331 **14 Claims**



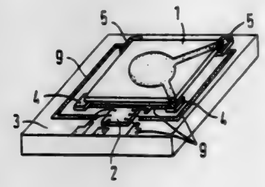
1. A piezoelectric device for selectively dispensing desired quantities of a fluid under pressure comprising:
A. a valve body having a fluid chamber and inlet and outlet means communicating with said chamber with said inlet means adapted to be connected to a source of said fluid under pressure; and
B. fluid control valve means for controlling such fluid dispensation through said outlet means comprising:
I. said body having at least one valve seat communicating with said outlet means;
II. a deformable member mounted on the valve body in cooperation with said valve seat effective to control communication with said outlet means about said valve seat and impacting means directly engageable with the deformable member for selectively distorting said member proximate said valve seat to change the condition of said deformable member about said valve seat so as to establish or disrupt such communication with said outlet means as desired; and
C. piezoelectric bender means mounted on the valve body isolated from said fluid chamber and adapted to be electrically connected to a D.C. source; said bender means including a deflectable portion engaging said impacting means to move same selectively upon energizing or deenergizing of said piezoelectric bender means for selectively distorting the deformable member without either said impacting means or said bender means contacting said fluid.

4,450,376
TRANSMISSION MEDIUM FOR APPLICATION IN ELECTRICAL AND ACOUSTICAL CONTROL SYSTEMS
Allen H. Meitzler, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Division of Ser. No. 331,721, Dec. 17, 1981. This application May 18, 1983, Ser. No. 495,899
Int. Cl.³ H01L 41/08; H01B 7/00
U.S. Cl. 310—334 **6 Claims**



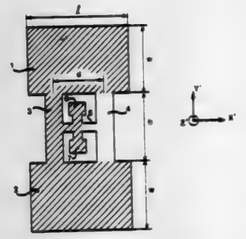
1. An insulated transmission medium defining a path for propagating both ultrasonic waves and electromagnetic energy therealong, comprising:
an elongated strip of metal having low resistance properties with respect to both ultrasonic wave propagation and electromagnetic energy conduction and having a width dimension which is at least 20 times greater than its thickness dimension;
a core of insulating material extending substantially over the length and width of said strip and having the properties of a high dielectric and negligible damping to ultrasonic waves propagating along the strip; and
an outer insulator encasing said core insulator and said strip, and contacting at least the edges of said strip substantially along its length and having properties of a high dielectric and high damping to ultrasonic waves occurring at the edges of said strip.

4,450,377
INTEGRATED CIRCUIT WITH PIEZOELECTRIC RESONATOR MOUNTED ON BLOCKS COMPRISING CAPACITORS
Wolfgang Briese, Berlin, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Sep. 28, 1981, Ser. No. 306,558
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038261
Int. Cl.³ H01L 41/08, 41/04
U.S. Cl. 310—348 **6 Claims**



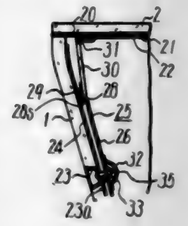
1. An assembly comprising:
a substrate;
an electronic circuit positioned on said substrate;
a piezoelectric resonator; and
a plurality of blocks joining said piezoelectric resonator with said substrate at the vibration nodes of said resonator and spacing the resonator and the substrate a predetermined distance apart, at least one of said blocks being constructed as a capacitor.

4,450,378
ZT-CUT PIEZO-ELECTRIC RESONATOR
Jean Hermann, Neuchatel, and Claude Bourgeois, Bole, both of Switzerland, assignors to Centre Electronique Horloger S.A., Switzerland
Filed Jan. 25, 1983, Ser. No. 460,910
Claims priority, application France, Feb. 16, 1983, 82 02497
Int. Cl.³ H01L 41/08
U.S. Cl. 310—361 **11 Claims**



1. A clamped piezoelectric resonator fabricated in a ZT-cut quartz substrate comprising two thin rectangular plates connected together by at least one resonant arm, said resonant arm being coupled to at least one support zone and said resonant arm having a resonant frequency which is substantially the same as the resonant frequency of said plates.

4,450,379
CATHODE RAY TUBE
Masahiro Kikuchi, Yokohama; Hisashi Utena, Funabashi, and Shinzo Takei, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 255,171, Apr. 17, 1981, abandoned. This application May 26, 1983, Ser. No. 498,584
Claims priority, application Japan, Apr. 30, 1980, 55-60437[U]
Int. Cl.³ H01J 31/00
U.S. Cl. 313—477 HC **4 Claims**



1. A cathode ray tube, comprising, an envelope consisting of a flat panel, a funnel and a neck, said flat panel having a phosphor layer and a conductive layer respectively coated on its inner surface, said funnel being provided with an anode button, and an anode contactor attached to said anode button at its inner end on an axis of support, said anode contactor comprising an electrically conducting planar member having a first end and a second end formed with an opening near said first end through which said anode button extends to make electrical contact, a projection extending transversely from said second end of said planar member and making contact with the inner surface of said funnel, and a first planar flexible electrically conducting finger having two ends, one of said two ends extending from the second end of said planar member and orientated so that its width dimension lies in a plane which is at right angles to the plane of said planar member extending parallel with the funnel from the transversely extending projection and the other of said two ends of said first flexible finger moveable in a plane perpendicular to said axis of support and making flexible contact with said conductive layer on the inner surface of said flat panel.

4,450,380
MULTI-ELECTRODE ARRAY FOR A BEAM MODE FLUORESCENT LAMP
Joseph M. Proud, Wellesley Hills; Leslie A. Riseberg, Sudbury; Wojciech W. Byszewski, Arlington, and A. Bowman Budinger, Westford, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Jan. 4, 1982, Ser. No. 336,794
Int. Cl.³ H01J 1/62, 63/04
U.S. Cl. 313—485 **10 Claims**

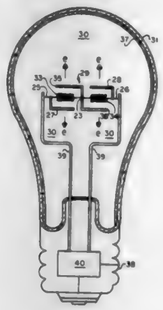
1. A multi-electrode beam mode fluorescent lamp comprising:
a light transmitting envelope enclosing a fill material which emits ultraviolet radiation upon excitation;
a phosphor coating, which emits visible light upon absorption of ultraviolet radiation, on an inner surface of said envelope;
a thermionic cathode having a first and a second end located within said envelope for emitting electrons, said cathode including a plurality of thermionic cathode segments connected in series;
means for coupling AC voltage to said ends of said thermionic cathode;
a plurality of anodes including an initial anode, at least one intermediate anode and a final anode, each of said anodes located within said envelope for accelerating electrons

and alternately forming corresponding first and second pluralities of electron beams, each plurality of electron beams in response to a corresponding cycle of said AC voltage applied between said anodes and said cathode, each of said anodes being spaced apart from said cathode by a distance which is approximately less than the electron range in said fill material and having a structure which permits said electron beams to pass thereby;

said initial anode being L-shaped and connected to said first end of said cathode and extending under a first cathode segment of said plurality;

said final anode being L-shaped, said final anode connected to said second end of said cathode and extending opposite to said initial anode a last cathode segment of said plurality;

said intermediate anode being Z-shaped with first and second horizontal members, each of said intermediate anodes connected at a common point to one of said series connections of said cathode segments, said first horizontal member of each of said intermediate anodes extending over one of said series connected cathode segments and said second horizontal member extending opposite to said first horizontal member; and



first and second pluralities of drift regions, each drift region located within said envelope through which said first and said second pluralities electron beams drift after passing through said plurality anodes, each of said drift regions having a dimension in the direction of travel of said respective electron beam which is greater than the electron range in said fill material, so that the electrons in each of said electron beams collide with the atoms of said fill material in said respective drift region, thereby causing excitation of a substantial portion of said fill material atoms and emission of ultraviolet radiation and causing ionization of another substantial portion of said fill material atoms and emission of secondary electrons, said secondary electrons causing emission of additional ultraviolet radiation and resulting in a substantial amount of visible light;

said electron beams in said first plurality of drift regions all in one direction and alternately said electron beams in said second plurality of drift regions all in a direction opposite to said electron beams of said first plurality of drift regions.

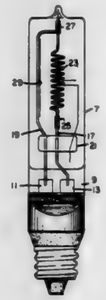
4,450,381

TUNGSTEN-HALOGEN LAMP WITH PREFERENTIAL TUNGSTEN DEPOSITION SITE

George B. Kendrick, Lexington, Ky.; George L. Duggan, Bedford, Mass., and Carlos Ochoa, El Paso, Tex., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 5, 1982, Ser. No. 365,667
Int. Cl.³ H01K *1/04*
U.S. Cl. 313—579 **10 Claims**

1. A tungsten-halogen incandescent lamp having a hermetically sealed light-transmitting envelope containing a fill of inert gas and halogen and a coiled tungsten filament supported within the envelope and characterized by the improvement



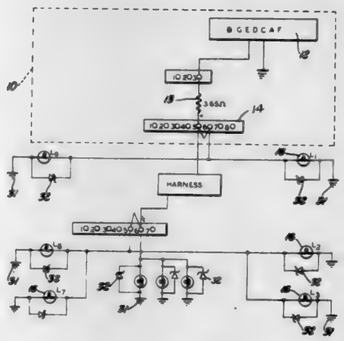
wherein a preferential tungsten deposition site of palladium material is located within said envelope.

4,450,382

D.C. LAMP BURN-OUT PROTECTION

Steven Sawka; Vincent Moretti, and Sam F. Heal, all of Macomb, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 21, 1982, Ser. No. 390,426
Int. Cl.³ B60Q *1/02*
U.S. Cl. 315—082 **3 Claims**



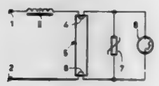
1. In a trailer electrical lighting system comprising a first electrical receptacle (12) adapted to be coupled to a remote D.C. voltage source on a tractor, a second receptacle (14), and resistor means (13) between the receptacles for dropping the voltage at the second receptacle to a voltage rating V_s; a number of lamps mounted on the vehicle at selected points thereon; individual energizer wires extending from the second receptacle to individual lamps and groups of lamps; ground means for the various lamps; and a zener diode connecting each energizer wire to the ground means in a reverse biased orientation to thereby control the maximum voltage applied to the individual lamps; the collective wattage ratings of the zener diodes being equal to the arithmetical product of the D.C. voltage V_s and the summation of safe amperages drawn by all lamps in the system, whereby the zener diodes collectively protect the lamps against over-voltage and/or overamperage; each zener diode having a breakdown voltage V_z that is only slightly greater than the voltage V_s, whereby transient increases in voltage V_s produce a current flow through the zener diodes.

4,450,383

ELECTRIC ARRANGEMENT FOR STARTING AND SUPPLYING A LOW-PRESSURE DISCHARGE LAMP

Johannes A. J. M. van Vliet, and Auke G. van der Kooi, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,112
Claims priority, application Netherlands, Jul. 24, 1981, 8103507
Int. Cl.³ H05B *41/18*
U.S. Cl. 315—106 **6 Claims**





1. An electric arrangement for starting and supplying a low-pressure discharge lamp of the type having a discharge space containing a metal vapor and a rare gas, a discharge path in said space between two electrodes, and a shunt path in said space which shunts at least a portion of the discharge path, which shunt path has a thickness H of not more than 2 mm and a length L (in mm), the lamp requiring a minimum of A volts between the electrodes for starting a discharge in the discharge path, the arrangement comprising an inductive stabilization ballast for connection in series with the discharge path between two terminals intended for connection to an A.C. voltage source, characterized in that the arrangement further comprises a glow-discharge starter and a voltage-limiting element each arranged for connection to the lamp in parallel with the discharge path, said element having a threshold voltage of D volts which satisfies the equations

$$\log D < [2 + (\log L/5Hf)], \text{ and}$$

$$A < D,$$

where f is the ratio of the length of the discharge path shunted by the gap to the length of the whole discharge path.

4,450,384

DC LIGHT DIMMER CONTROL SYSTEM

William G. Krokaugger, Chatsworth, Calif., assignor to Mole-Richardson Company, Hollywood, Calif.

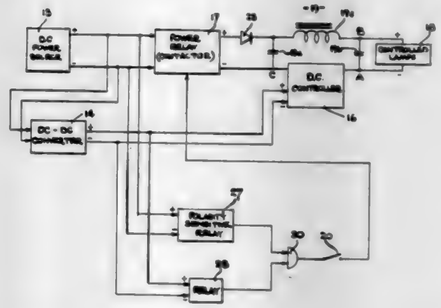
Filed Aug. 4, 1982, Ser. No. 405,278
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—127 **5 Claims**

1. A light dimmer control system for controlling the current supplied from a DC power source to a high power illuminating lamp comprising

DC-DC converter means connected to said DC power source for generating a DC voltage substantially lower than that of said power source,

DC controller means including a manually operable control, the controller means being connected in the current path between the lamp and the DC power source for controlling the current supplied to the lamp in response to said manually operable control, said DC controller means receiving its operating power from the DC-DC converter, and

logical control circuit means responsive to the outputs of said power source and said DC-DC converter for preventing the connection of said DC power source to the con-



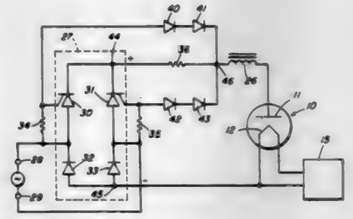
troller means and lamp except when both the polarity of the output of the DC power source is correct and the output of the DC-DC converter is present.

4,450,385

INDUCTIVE BALLASTING OF DIRECT CURRENT GAS DISCHARGES

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 9, 1982, Ser. No. 406,601
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—205 **3 Claims**



1. A ballast circuit for gaseous electrical discharge devices comprised of

(a) means for connecting said circuit to a gaseous discharge device;

(b) an inductor in series with said device for storing excess energy;

(c) a rectifier bridge having positive and negative outputs and having ports for coupling to a source of alternating voltage, said bridge including: a first and a second thyristor, each thyristor having an anode, a cathode and a gate, and a maximum gate to cathode voltage drop; and a first and second rectifying diode;

the cathode of said thyristors connected together and forming the positive output of the bridge;

the anodes of the diodes connected together and forming the negative output of the bridge;

the anode of the first thyristor and the cathode of the first diode connected together and to one input port;

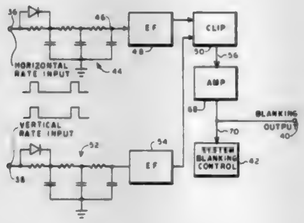
the anode of the second thyristor and the cathode of the second diode connected together and to another input port;

(d) means for coupling said input ports to a source of alternating voltage;

(e) a resistor connected between the connected cathodes of said thyristors and said inductor;

(f) means for supplying a voltage to the gate of said first thyristor;
(g) means for supplying a voltage to the gate of said second thyristor;
(h) first diverting means connected between the gate of said first thyristor and the junction of said resistor and said inductor; and
(i) second diverting means connected between the gate of said second thyristor and the junction of said resistor and inductor,
each diverting means having a maximum voltage drop and diverts gate current from its corresponding thyristor when the sum of the voltage drops across gate and cathode of the corresponding thyristor and said resistor exceed voltage drop of the diverting means.

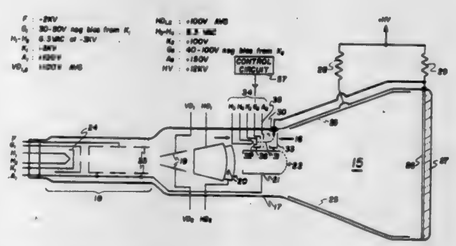
4,450,386
ELECTRONIC TELEVISION PICTURE FRAMING CIRCUIT
Stanley E. Lehnert, Addison, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.
Filed Nov. 30, 1981, Ser. No. 325,783
Int. Cl.³ H01K *29/56*
U.S. Cl. 315—371 **11 Claims**



1. In a television system which develops horizontal rate pulses and vertical rate pulses for application to a blanking control circuit, an electronic image framing circuit for eliminating the effects of pincushion distortion at the edges of a television image, comprising:
a pulse processor responsive to the horizontal and vertical rate pulses for developing blanking pulses whose widths are varied at a vertical rate for blanking the portions of each video line which extend beyond a desired image boundary; and
means for coupling the blanking pulses to the blanking control circuit.

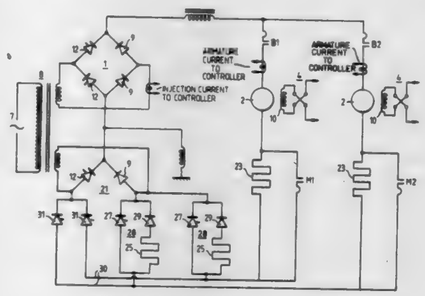
4,450,387
CRT WITH INTERNAL THERMIONIC VALVE FOR HIGH VOLTAGE CONTROL
Ronald G. Reed; Robin R. Schmuckal, and Robert K. McCullough, all of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 30, 1981, Ser. No. 248,925
Int. Cl.³ H01J *29/80*
U.S. Cl. 315—375 **9 Claims**

1. A split anode penetration cathode ray tube comprising:
an evacuated envelope including funnel and faceplate portions;
electron gun means for producing an electron beam to strike the faceplate;
a conductive layer of beam penetration phosphors, located upon the interior surface of the faceplate poriton of the envelope, for producing a visible indication at the location of the impact of the electron beam upon the faceplate;
a conductive coating upon the inside surface of the funnel portion of the envelope for accelerating the electron beam toward the faceplate, the conductive coating electrically isolated from the conductive layer of beam penetration phosphors;
a cathode for emitting electrons;
plate means, electrically connected to the conductive layer of beam penetration phosphors, for attracting the electrons emitted by the cathode, and for controlling the magnitude of the voltage applied to the conductive layer of beam penetration phosphors;
grid means, located between the cathode and the plate means, for controlling the quantity of emitted electrons reaching the plate means;



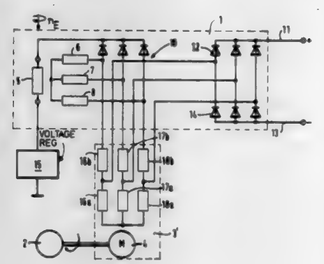
a source of high voltage;
a first resistance connected between the source of high voltage and the conductive layer of beam penetration phosphors;
a second resistance connected between the source of high voltage and the conductive coating inside the funnel portion; and
control means, coupled to the grid means, for controlling the voltage applied to the conductive layer of beam penetration phosphors.

4,450,388
DYNAMIC BRAKING OF DIRECT CURRENT MOTORS
John D. Markham, Droylsden, England, assignor to Associated Electrical Industries Limited, England
Filed Oct. 22, 1982, Ser. No. 435,951
Claims priority, application United Kingdom, Oct. 26, 1981, 8132208
Int. Cl.³ H02P *3/12*
U.S. Cl. 318—87 **8 Claims**



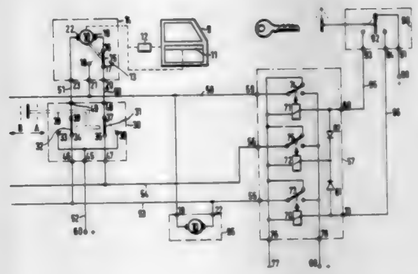
1. A dynamic braking system for a D.C. motor, the system comprising a undirectional current path including a controllable current source, a motor armature and a brake resistance, said brake resistance comprising a portion associated with bypass means, the system further comprising means for reversing the relative directions of field and armature current to permit rheostatic braking by the dissipation in said brake resistance of energy generated by the motor in a braking condition and to permit injection braking by reverse driving of the motor, and control means responsive to the total armature current in a braking condition to effect first rheostatic braking then additionally injection braking, said control means being responsive to injected armature current to effect bypassing of said portion of brake resistance at a predetermined braking condition.

4,450,389
VEHICULAR-TYPE GENERATOR AND FORCED AIR COOLING BLOWER COMBINATION
Manfred Frister, Schwieberdingen, and Bernhard Fakler, Easlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 5, 1982, Ser. No. 405,534
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133880; Nov. 12, 1981, 3144957
Int. Cl.³ H02P *7/66*
U.S. Cl. 318—140 **12 Claims**



1. Vehicular generator-forced air circulation blower combination having
a three-phase alternator (1) adapted to be driven at widely varying speeds (n_G) from a vehicular-type engine to supply a self-contained network (11, 13) with direct current power having
a field winding (5);
a plurality of armature windings (6, 7, 8) corresponding to the phases of the alternator;
a power rectifier system (12, 14) connected to the respective armature windings and providing direct current output for the self-contained network (11, 13),
a blower (2) providing forced air circulation (A);
and comprising
an induction motor (4) mechanically connected to the blower (2) to drive the blower with a drive torque which depends on frequency of the alternating current output from the alternator; and
wherein the motor is a three-phase motor having three motor armature windings, the motor armature windings being subdivided into motor winding portions (16*a*, 16*b*; 17*a*, 17*b*; 18*a*, 18*b*), one of the motor winding portions (16*a*, 17*a*, 18*a*) of the motor armature windings being voltage windings connected in parallel across the armature windings (6, 7, 8) of the alternator, and the other motor armature winding portions (16*b*, 17*b*, 18*b*) of the motor armature winding being current windings, serially connected between the respective armature windings (6, 7, 8) of the alternator and the rectifier system (12, 14).

4,450,390
WINDOW LIFTER AND DOOR LOCKING SYSTEM
Marcel Andrei-Alexandru, and Hans Prohaska, both of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Apr. 16, 1982, Ser. No. 369,259
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116737
Int. Cl.³ B60R *25/04*
U.S. Cl. 318—282 **8 Claims**

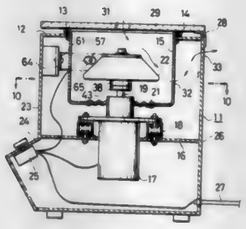


1. A control circuit for a combined motor-driven window lifter and door locking system having a plurality of reversible motors each of which are respectively assigned to a door having window lifter and door locking devices therein and wherein continued rotation of said motors past their window closed positions results in a door locking operation, said control circuit comprising:
a plurality of position switches (13) respectively coupled to each of said motors, each of said switches having a movable contact (15) connected to one terminal (19) of its associated motor and which is actuated by its associated motor (10) from a first contact (17) at a first switch position corresponding to the unlocked door and window open positions of said motor in a first rotational direction to a second contact (18) at a second switch position corresponding to the window closed end position of said motor (10) in the opposite rotational direction;
a plurality of reversing switches (30) respectively coupled to the terminals of each of said motors through said first contact (17) of said position switches (13) for reversing the polarity of the voltage source applied to the terminals of its associated motor (10), thereby to open or close the window;
a central switch (90) having door locking and door unlocking switch positions; and,
means responsive to said central switch (90) for selectively applying one pole (60) of said voltage source to said second contact (18) of said motors or to the terminal (22) of said motors other than said one terminal thereby to respectively lock or unlock said door locking device.

4,450,391
CENTRIFUGE PROTECTIVE CIRCUITS FOR PREVENTING EXCESSIVE SPEED OF DIFFERENT ROTOR TYPES
Minoru Hara, Sakado, Japan, assignor to Kabushiki Kaisha Kubota Seisakusho, Tokyo, Japan
Filed Feb. 8, 1983, Ser. No. 464,813
Claims priority, application Japan, Feb. 17, 1982, 57-21823[U]
Int. Cl.³ G05B *9/00, 11/12, 11/18*
U.S. Cl. 318—313 **11 Claims**

1. An automatic rotor type discriminator for a centrifuge adapted so that different types of rotors can be mounted on a motor shaft, comprising:
a light emitting element disposed in an outer housing of the centrifuge, for emitting light;
a photo detector disposed in said outer housing in opposing

relation to said light emitting element, for receiving and converting light from said light emitting element into an electric signal, said light emitting element and said photo detector being positioned so that when a first type of rotor is mounted on said motor shaft, the optical path between said light emitting element and said photo detector is not intercepted by said first type of rotor, but that when a second type of rotor different from said first type of rotor



is mounted on said motor shaft, said optical path is intercepted by said second type of rotor;

deciding means for determining from the output of said photo detector whether said optical path is intercepted by the rotor mounted on said motor shaft; and

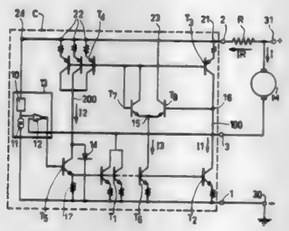
maximum revolving speed setting means for setting a maximum revolving speed of said rotor mounted on said motor shaft in accordance with the determination of said deciding means.

4,450,392

ELECTRONIC SPEED REGULATOR FOR A D.C. MOTOR

Jean-Pierre Gaslonde, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,167
Claims priority, application France, Mar. 20, 1981, 81 05631
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—317 **4 Claims**



1. An electronic speed regulator, for controlling an associated d.c. motor having first and second connection points, which comprises:

a power supply having first and second poles; a resistor; an integrated circuit having first, second and third terminals, said first terminal of said integrated circuit being connected to said first pole of said power supply, said second terminal of said integrated circuit being connected to said second pole of said power supply via said resistor, and said third terminal of said integrated circuit being connected to said first connection point of said motor;

said second connection point of said motor being connected to said second pole of said power supply,

said integrated circuit comprising means enabling a substantially constant voltage to be maintained across said second and third terminals thereof regardless of the load on the motor, said means comprising a voltage reference stage, an arrangement of first and second transistors of a first type which are interconnected by their bases to form a first current mirror,

said first transistor being arranged between said first and third terminals, said second transistor supplying a current which is the image of that supplied by said first transistor and is arranged in series in a first circuit branch situated between said first and second terminals of said integrated circuit, and a source which supplies a base current to said first and second transistors,

said source comprising an arrangement of third and fourth transistors of a second type opposite to said first type, said third and fourth transistors being interconnected by their bases to form a second current mirror, said third transistor being arranged in said first circuit branch in series between said second transistor and said second terminal of said integrated circuit, said fourth transistor, which supplies a current which is the image of that from said third transistor, being arranged in a second circuit branch between said first and said second terminals of said integrated circuit,

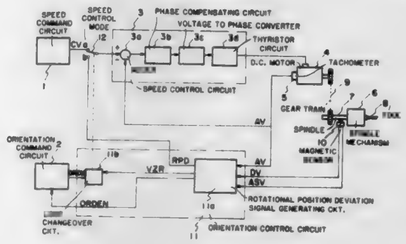
said second branch being further connected to the bases of said first and said second transistors, said means including means for comparing the voltage between the second and third terminals with a reference voltage from said voltage reference stage and controlling in response thereto the voltage on the base terminals of the first and second transistors to maintain the voltage between the second and third terminals.

4,450,393

SPINDLE ORIENTATION CONTROL APPARATUS

Yoshinori Kohzai, Hino; Yoshiki Fujioka, Higashiyamato, and Naoto Ota, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,762
Claims priority, application Japan, Oct. 30, 1980, 55-152702
Int. Cl.³ G05B *11/18*
U.S. Cl. 318—592 **4 Claims**



1. A spindle orientation control apparatus operatively connected to receive an orientation command signal and a speed command signal, comprising:

a spindle having an angular position and a specified rotational direction;

a motor having an actual speed, operatively connected to said spindle;

speed control means having an input operatively connected to receive said speed command signal and an output operatively connected to said motor, for controlling the actual speed of said motor and for feeding back the actual speed of said motor to said input of said speed control means;

orientation control means, having a first input operatively connected to receive the orientation command signal, having a second input operatively connected to said spindle, and having an output, for selectively providing at said output one of a coarse position deviation signal responsive to the integral of the actual speed of said motor and a fine position deviation signal;

switching means, operatively connected between said output of said orientation control means and said input of said

speed control means, for selectively providing, as an output to said speed control means, one of said speed command signal and said output of said orientation control means, in response to the orientation command signal; and

magnetic sensing means, operatively connected between said spindle and said second input of said orientation control means, for generating the fine position deviation signal responsive to the difference between a predetermined angular position of said spindle and the current position of said spindle, and for generating an approach signal responsive to a specified portion of said spindle being in the vicinity of said predetermined angular position of said spindle;

said magnetic sensing means comprising:

a magnetic body, operatively connected to said spindle, including at least two magnets having magnetic fields and arranged such that the strengths of the respective magnetic fields change from south to north in the direction of said specified rotational direction of said spindle; and

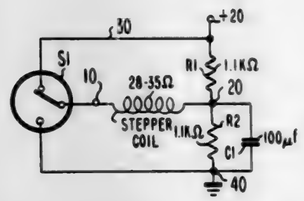
a sensing circuit, operatively connected to said orientation control means and positioned near said spindle, for sensing said magnetic body, and including two saturable reactors having coils wound thereon, for producing said fine position deviation signal and said approach signal, respectively.

4,450,394

STEPPER MOTOR DRIVE CIRCUIT

Kevin C. Kelleher, Plainfield, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 5, 1982, Ser. No. 355,101
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **3 Claims**



1. Circuitry for providing bipolar drive to a motor winding, said winding having first and second terminals, comprising:

first and second supply terminals for applying relatively positive and relatively negative supply potentials respectively;

switch means for alternately coupling said first winding terminal to said first and second supply terminals;

first and second resistive means respectively connected between the first and second supply terminals and the second winding terminal; and

a capacitor connected between the second winding terminal and a point of fixed potential.

4,450,395

SYSTEM FOR CONTROLLING SYNCHRONOUS MOTORS

Akira Kawamura, Numazu, and Tadahiro Ono, Shizuoka, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha and Toei Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,776
Int. Cl.³ H02P *5/28*
U.S. Cl. 318—700 **3 Claims**

1. A control system for driving a synchronous motor at speeds greater than rated speed, to which a desired speed signal and a signal representing the rotational position of the rotor of said motor are applied comprising:

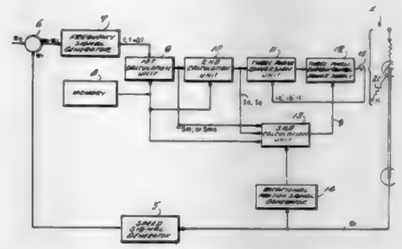
speed signal generating means for generating a rotational speed signal representing the rotational speed of said rotor;

rotational position signal generating means for generating a signal representing the rotational position of the field pole of said motor;

means for producing a difference signal between said desired speed signal and said rotational speed signal;

calculating means for calculating first armature current component value (Id) and second armature current component value (Iq) for said synchronous motor, and for calculating a power factor (ϕ) and producing signals in accordance with said calculations; and

power supplying means for supplying armature current to said armature windings of said motor in accordance with the signals of said calculating means so that the magnitude



of the armature current and voltage remain substantially constant.

3. Control system for driving a synchronous motor as in claim 1, wherein

said calculating means comprises

a frequency signal generator which produces first and second frequency signals from said difference signal;

a memory for storing values of characteristics concerning said synchronous motor;

first calculating means for calculating a torque angle value from said stored values and said frequency signals and producing a torque value signal;

second calculating means for calculating said first and second armature current values from said torque angle value signal and said stored values; and

third calculating means for calculating the phase difference between induced electromotive force and armature current.

4,450,396

ELECTRICALLY CONTROLLED SYNCHRONOUS MACHINE

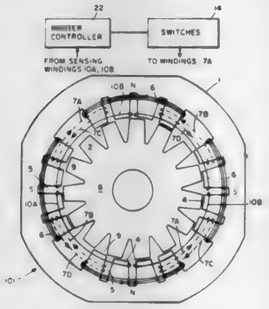
Richard D. Thornton, Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 23, 1980, Ser. No. 190,019
Int. Cl.³ H02P *5/28*
U.S. Cl. 318—721 **28 Claims**

1. An electronically controlled synchronous machine that comprises: a magnetically-permeable cylindrical rotor comprising a periodic tooth structure and radial airgap;

a stator having stator windings comprising at least two armature windings and one field winding, the stator windings being situated about the stator such that self inductance in the armature windings and the field winding is substantially independent of rotor position, but the mutual induction between the armature windings and the field winding is variable with relative position between the rotor and the stator whereby continuous torque is produced when appropriately shaped and synchronized current waveforms are introduced into the armature windings; and

rotor position detector means for sensing a voltage in at least one of the stator windings and for relating that voltage to the relative position between the rotor and the stator so as



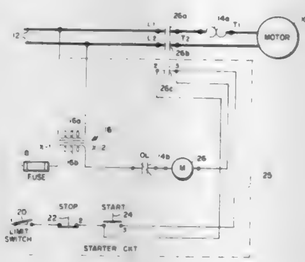
to permit the proper synchronizing of the armature current waveforms with relative position between rotor and stator.

4,450,397

ELECTRONIC AC INDUCTION MOTOR BRAKE

Walter C. Painter, Venetia, Pa.; David J. Luttmer, Chicago, and Alvin J. Galloway, Oak Park, both of Ill., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 429,803
Int. Cl.³ H02P *3/24*
U.S. Cl. 318—762 **24 Claims**



1. A braking control circuit for an alternating current motor having a winding and operative with an energizing control circuit for connecting a source of AC voltage to and for disconnecting the source of AC voltage from the winding, the motor coupled to rotatively drive a tool, the rotating tool developing a momentum to be braked, said braking control circuit comprising:

(a) selectively controlled rectifying means operative in a first conductive mode for applying rectified current pulses of variable conduction angles to the winding to brake the motor with corresponding effect and in a second non-conductive mode; and

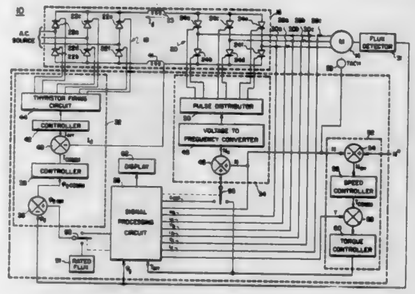
(b) sequential conduction angle control means coupled to said rectifying means and responsive to the disconnecting of the source of AC voltage from the winding for operating said rectifying means at a first, relatively large conduction angle to brake the motor at a corresponding first braking rate, and thereafter for operating said rectifying means at a second conduction angle less than said first conduction angle to brake the motor at a second, lower braking rate, whereby a controlled braking profile is effected to improve the braking efficiency of the motor.

4,450,398

MICROPROCESSOR-BASED EFFICIENCY OPTIMIZATION CONTROL FOR AN INDUCTION MOTOR DRIVE SYSTEM

Bimal K. Bose, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,720
Int. Cl.³ H02P *5/34*
U.S. Cl. 318—803 **6 Claims**



1. A method of controlling an induction machine drive during steady state operation using a microcomputer having stored machine constants, the machine drive having an stator current control loop and a stator frequency control loop, said method comprising the steps of:

(1) measuring induction machine slip, torque and air gap flux;

(2) determining machine stator copper loss, rotor copper loss and iron loss from measured variables and machine constants;

(3) determining machine efficiency from machine losses and power input to the machine;

(4) processing machine efficiency as a function of air gap flux to determine whether air gap flux should be increased or decreased to increase machine efficiency;

(5) varying air gap flux by a predetermined amount in the direction determined in step 4;

(6) varying frequency so that the previously determined torque is maintained;

(7) commanding the new values of air gap flux and frequency in said stator current control loop and said stator frequency control loop, respectively; and

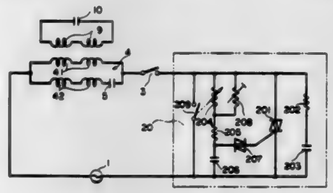
(8) repeating steps 1–8.

4,450,399

INDUCTION MOTOR

Masaru Tanaka, Hyogo, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed May 28, 1982, Ser. No. 383,310
Claims priority, application Japan, Jan. 27, 1982, 57-12431; Feb. 9, 1982, 57-10937[U]
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—814 **14 Claims**



1. An induction motor adapted to be energized by an alternating current voltage source for supplying an alternating current voltage, said induction motor comprising:

conduction control means for controlling conduction of said alternating current voltage to said motor, said conduction control means repetitively interrupting said alternating current voltage thereby changing the effective voltage of said alternating current voltage;

a field winding coupled to said alternating current voltage source through said conduction control means,

a control winding electromagnetically coupled to said field winding, and

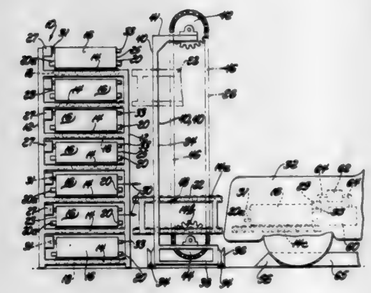
closed loop means coupled to said control winding constituting a closed loop therewith for generating an induced current in said control winding.

4,450,400

BATTERY REPLACEMENT SYSTEM FOR ELECTRIC VEHICLES

Marion V. Gwyn, 8035 Coolidge, Center Line, Macomb, Mich. 48015

Filed Dec. 4, 1981, Ser. No. 327,318
Int. Cl.³ B60K *1/04*
U.S. Cl. 320—2 **4 Claims**



1. In association with battery-powered vehicles, the combination comprising an upright battery charging station that includes first horizontal roller support units constructed to receive battery modules for charging purposes; said support units being arranged in vertical rows, adjacent ones of the rows being in side-by-side relationship; an upright battery module transfer mechanism movable horizontally along one face of the battery charging station for selective registration with different ones of the vertical rows of horizontal roller support units in said station; an elevator carried by the transfer mechanism for selective registration with different ones of the battery modules in any given vertical row; said elevator including a second roller support unit for supporting at least one battery module thereon; and a third battery module roller support unit located within an automobile for registration with a module roller support unit on the elevator after the vehicle has been driven to a prespecified location near the path traversed by the aforementioned transfer mechanism; each battery module support unit comprising a number of horizontal rollers adapted to rollably engage the undersurface of a battery module; the various module roller support units being sufficiently close to one another when the vehicle is in the prespecified location that a given battery module can be moved horizontally from the third roller support unit to a second roller support unit and thence onto selected ones of the first roller support units; each battery module comprising a rectangular box and a plurality of batteries disposed therein; two sets of external terminals on opposite ends of the box, and electrical connections between said batteries and said external terminals; said charging station including a first electrical receptacle located above each one of the first roller support units for electrical engagement by one set of terminals on a battery box when the box is moved to its intended position in the charging station; and a second electrical receptacle located above the third roller support unit in the vehicle for electrical engagement by the other set of terminals on the battery box when the box is moved to its intended position in the vehicle.

4,450,401

CONTROL CIRCUIT FOR AUTOMATIC BATTERY CHARGERS

Frederic J. Lambert, Morrisville, Pa.; Donald J. Bosack, Barrington, and David K. Johansen, Lake in the Hills, both of Ill., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Jul. 9, 1982, Ser. No. 396,951
Int. Cl.³ H02J *7/00*
U.S. Cl. 320—22 **8 Claims**



1. In an apparatus for automatically charging different types of batteries to a preselected full charge state, the apparatus having charging means for charging the battery, sensing means for sensing the state of the battery during charging thereof by said charging means, and means for establishing first and second predetermined reference states, an improved charge control circuit comprising:

means for initiating operation of the charging means to charge the battery at a preselected initial charging level for an initial time period;

means for establishing a first finish time period;

first means for determining a first time at which the state of the battery reaches said first predetermined reference state during said initial time period;

means for causing the charging means to continue to charge the battery at a preselected first charging level after the determination of said first time;

means for establishing a second finish time period;

second means for determining a second time at which the state of the battery reaches said second predetermined reference state during said first finish time period;

means for terminating the charging of the battery if the state of the battery does not reach said second predetermined reference state during said first finish time period; and

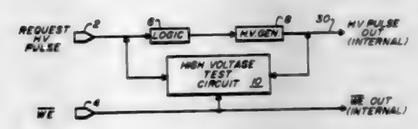
means for causing the charging means to continue to charge the battery at a preselected second charging level for a second finish time period in the event the battery reached said second predetermined reference state during said first finish time period.

4,450,402

INTEGRATED CIRCUIT TESTING APPARATUS

William H. Owen, III, Mountain View, Calif., assignor to Xicor, Inc., Milpitas, Calif.

Filed Apr. 8, 1981, Ser. No. 252,232
Int. Cl.³ G01R *31/28*
U.S. Cl. 324—73 R **15 Claims**



1. In an integrated circuit having a plurality of external pins through which one or more logic level signals are fed to the integrated circuit during normal operation, said circuit including means for generating a high voltage pulse of amplitude greater than the amplitude of said logic level signals at a prede-

termined internal point in said circuit, a testing circuit comprising:

means for detecting at a first one of said external pins an external signal of predetermined voltage amplitude in excess of any logic level signal normally input thereto;

means responsive to the detection of said external signal for coupling the present amplitude of said high voltage pulse at said internal point to a second one of said external pins; and

means responsive to the absence of said external signal for isolating said internal point from said second external pin so as to enable the normal operation of said integrated circuit.

4,450,403

METHOD AND APPARATUS FOR DETERMINING ROTATIONAL SPEED

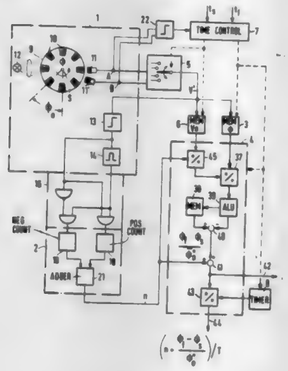
Walter Dreiseitl, Erlangen; Manfred Koch, Bamberg, and Wilhelm Linden, Erlangen-Buechenbach, all of Fed. Rep. of Germany, assignors to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 348,833

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107938

Int. Cl.³ G01P *3/48, 3/54*

U.S. Cl. 324—166 **9 Claims**



1. In an apparatus for determining the rotational speed of a rotating member having

a digital tachometer signal generator which produces an angular signal that varies steadily at least section-wise and approximately periodically with the angle of rotation of the rotating member, the respective cycle length of said signal being defined by angular regions traversed by the rotating member between approximately equidistant discrete angular positions defined by the intersection of the angular signal with a reference value, and the instantaneous amplitude of said signal corresponding to the respective instantaneous angle of rotation relative to an adjacent one of the discrete angular positions, and which delivers a counting pulse whenever the instantaneous value of the angular signal is equal to the reference value; and

a counter which counts the number of count pulses delivered within the measurement period for determining the number of said traversed angular regions, the improvement comprising:

an output terminal on said signal generator for delivering the angular signal from the signal generator;

a memory connected to the output terminal to receive and store until the end of the measurement period, in response to an initializing pulse, the amplitude of the angular signal corresponding to the instantaneous angle of rotation of the member at the beginning of the measurement period; and

computation circuitry connected to receive, in response to an end pulse at the end of the measurement period, the amplitude of the angular signal corresponding to the instantaneous angle of rotation of the member at the end of the measurement period and the stored amplitude from the memory, to define a correction factor corresponding to the difference in the instantaneous angles of rotation at the beginning and end of the measurement period, and to compute a corrected total angular displacement based on the counted member of traversed angular regions and the defined correction factor.

4,450,404

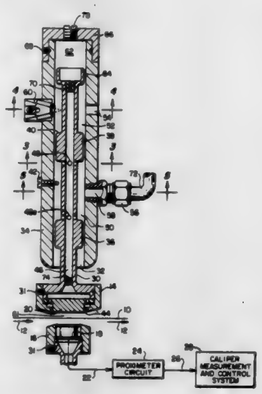
PNEUMATIC SURFACE FOLLOWER WITH NEGATIVE FEEDBACK OF A VARIABLE FORCE COUNTERACTING THE LEVITATING FORCE

Paul Williams, Columbus, and Dan R. Landis, Bexley, both of Ohio, assignors to Accuray Corporation, Columbus, Ohio

Filed Oct. 26, 1981, Ser. No. 315,173

Int. Cl.³ G01B *7/10, 13/04;* G01N *27/72*

U.S. Cl. 324—226 **30 Claims**



1. Gauging apparatus for sheet materials and the like comprising a surface follower body which during a gauging operation is constrained without substantial solid bodily contact and guided for movement along a surface follower path that intersects the path of a traveling sheet to be gauged, the body having a passage which during a gauging operation carries a flow of pressurized gas that is provided by a pressurized gas supply means and which gas is discharged against one surface of the sheet, the discharge of the gas being effective when the body is at a predetermined distance from the surface to generate a levitating force urging the body away from the sheet surface, the gas pressure in the passage being subject to variation as a result of changes in the gas supply and changes in the distance of the surface follower body from the surface,

means responsive to the pressure of the gas in the passage for exerting on the body a counteracting force that tends to move the body closer to the surface, the counteracting force increasing when the pressure increases and decreasing when the pressure decreases, and coacting with the levitating force in such a manner that the predetermined distance of the body from the surface is normally maintained substantially constant and is relatively unaffected by minor variations in the pressure of the gas in the passage.

4,450,405

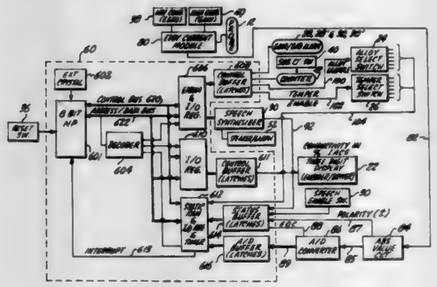
ALLOY TESTING APPARATUS USING EDDY CURRENT CONDUCTIVITY PROBE

Bruce S. Howard, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 14, 1980, Ser. No. 168,625

Int. Cl.³ G01N *27/72;* G01R *33/12;* G05B *19/02*

U.S. Cl. 324—234 **14 Claims**



5. An apparatus for testing alloy parts by eddy current probing for conductivity, comprising the combination of:

eddy current conductivity measurement means including a probe means for producing an analog signal representing the conductivity of the test part when said probe means is moved into proximity therewith;

analog-to-digital conversion means for receiving said analog signal representing the conductivity of the test part and for converting such analog signal to a digitized conductivity signal;

probe-on-part processor means including threshold means for establishing a predetermined threshold level between a first range of levels of said digitized conductivity signal that exists when said probe means is remote from a test part and a second range of levels of said digitized conductivity signal that exists when said probe means is brought into proximity with a test part, said probe-on-part processor means detecting proximity of said probe means to the test part by sensing a charge in level of said digitized conductivity signal in which such signal crosses said predetermined threshold into said second range of levels;

peak detection processor means, controlled by said probe-on-part processor means, for receiving said digitized conductivity signal and detecting a decreasing level thereof when said probe-on-part processor means has detected proximity of said probe means to the test part; and

data output means responsive to said peak detection processor means for outputting a peak value of conductivity represented by said digitized conductivity signal.

4,450,406

TRIAXIAL OPTICAL FIBER SYSTEM FOR MEASURING MAGNETIC FIELDS

Lloyd C. Bobb, Willow Grove, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1981, Ser. No. 308,310

Int. Cl.³ G01R *33/032;* G02F *1/09;* G02B *5/172*

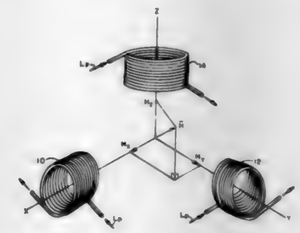
U.S. Cl. 324—247 **15 Claims**

1. A system for measuring a single magnetic field, comprising:

a source of polarized light;

three fiber-optic means orthogonally disposed in a triaxial arrangement and optically coupled to said source for propagating the polarized light in three separate orthogonal directions through the field;

photodetector means optically connected to said fiber-optic means for producing a plurality of respective analog signals indicative of characteristic changes caused by the magnetic field in the polarized light propagated in each direction through the field; and



processor means electrically connected to said photodetector means for digitally determining the respective orthogonal components of the magnetic field in the directions of the propagated light.

4,450,407

MAGNETIC RESONANCE CELL AND METHOD FOR ITS FABRICATION

Tae M. Kwon, Thousand Oaks, and William P. Debley, Sepulveda, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 2, 1981, Ser. No. 307,995

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—304 **62 Claims**

1. A process for treating the inner surface of a magnetic moment gas container to increase the relaxation time constant of aligned magnetic moments of at least one magnetic moment gas contained within, comprising:

(a) coating said inner surface of said magnetic moment gas container with an alkali metal hydride; and

(b) introducing into said container at least one magnetic moment gas selected from the group consisting of xenon-131 and krypton-83.

4,450,408

LOW LOSS WIDE BAND FRONT END FOR NMR RECEIVER

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,791

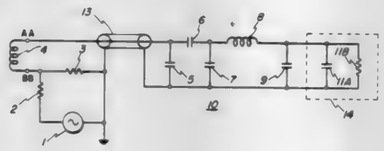
Int. Cl.³ G01R *33/08*

U.S. Cl. 324—318 **6 Claims**

1. A low loss, wide band front end for sensing and coupling

an NMR signal to a preamplifier of an NMR imaging receiver comprising:

a multi-pole impedance transforming bandpass network having first and second sets of coupled resonant circuits each formed by respective sets of inductive and capacitive elements, wherein the inductive elements in said first set of resonant circuits are operable simultaneously as a pick-up coil to sense said NMR signal and as operative elements of said multipole impedance transforming bandpass network; and wherein



said second set of resonant circuits is operable to transform the input impedance of said preamplifier to an impedance level which matches the combined resistance of said first set of inductive elements in said first set of resonant circuits more closely than the untransformed input impedance of said preamplifier, wherein the transformed impedance level appears in parallel with said first set of resonant circuits and is operable to broaden the signal bandwidth thereof.

4,450,409

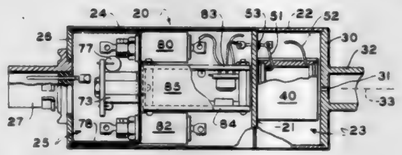
PRESSURE SENSOR AND LEAK DETECTOR

B. Wayne Castleman, Kenneth City; Robert F. Donehoo, Clearwater; Rudolph G. Oswald, Seminole; Kenneth L. Reed, Safety Harbor, and George H. Shipley, Seminole, all of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 9, 1981, Ser. No. 310,183

Int. Cl.³ G01N *27/62*; G01T *1/185*

U.S. Cl. 324—460 **1 Claim**



1. A leak detector comprising, in combination:

a housing having an axis and first and second compartments spaced along said axis and hermetically separated by a partition;

means for placing said first compartment in communication with an evacuated space to be monitored for leakage;

an ionization cell in said first compartment producing an electric current determined by gas in said first compartment;

means in said second compartment for performing a control function in accordance with the current supplied by said cell, including a cup shaped shield spaced from and opening away from said partition, a relay mounted in said shield, and feed-through filtering means having first ends extending through the bottom of said cup shield and second ends within said compartment beyond said shield;

and hermetically sealed feed-through means for making electrical connection with said cell through said partition into said second compartment, said partition being of aluminum and said hermetically sealed feed-through means comprising a solderable conductor, a metallic tube surrounding and insulated from said conductor and having a first end portion of stainless steel, a second end portion of aluminum, a solid state diffusion bond joining said end portions, means sealing said first end of said tube to said conductor including a ceramic layer sealed to said conductor and a stainless steel portion sealed to said ceramic layer and welded to said first end portion of said tube, and means welding said second end portion of said tube to said partition to surround an aperture for traversal by said conductor.

4,450,410

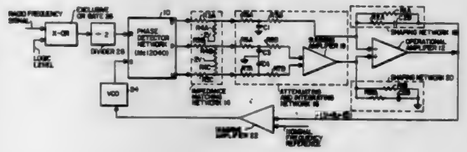
PHASE-LOCK LOOP CONTROL CIRCUITRY

Isaac E. Kliger, Lexington; William C. Brown, Jr., Littleton, and David S. Goldstein, Framingham, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1982, Ser. No. 356,698

Int. Cl.³ H03D *13/00*; H03L *7/08*

U.S. Cl. 328—155 **1 Claim**



1. In a control circuit using a charge-pump phase detector coupled to an operational amplifier to produce a bipolar D.C. signal indicative of the phase relationship between a first and a second radio frequency signal, such charge-pump phase detector having first and second inputs and three outputs incorporating a pair of bistable multivibrators actuated by the input signal and the second radio-frequency signal to produce signals designated D, U and $\overline{D}$, where D at said output and U are pulse signals representative of the set states of the bistable multivibrator and $\overline{D}$ is the complement of D, the duty cycles of the signals designated D, U and $\overline{D}$ being indicative of the difference in phase between the input signal and the second radio-frequency signal, the improvement comprising:

(a) frequency divider means coupled with its output to said first input of said detector and responsive to the first radio-frequency signal for producing an input signal for the charge-pump phase detector at a frequency half the frequency of the first radio frequency signal coupled to said second input of said detector;

(b) integrating, attenuating and combining means coupled to said detector outputs and responsive to the signals designated D, U and $\overline{D}$, for producing a bipolar D.C. signal equal to D plus 2U minus 3$\overline{D}$; and

(c) means coupled to said bipolar DC input producing means and responsive at least in part to the bipolar D.C. signal, for adjusting the frequency of the second radio-frequency signal into phase coincidence with the frequency of the first radio frequency signal.

4,450,411

AUTOMATIC CALIBRATION SYSTEM FOR SIGNAL AMPLIFIER CIRCUITS

Robert N. Spurr, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 27, 1982, Ser. No. 402,393

Int. Cl.³ G01R *19/00*

U.S. Cl. 330—2 **19 Claims**

1. A calibration system for signal amplifier circuits comprising

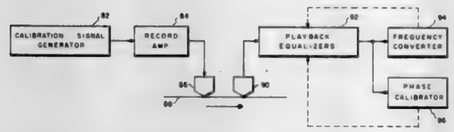
signal generating means for producing a single complex output signal having a plurality of predetermined frequencies at respective preselected amplitudes,

recording means for recording said output signal,

reproducing means for reproducing said recorded output signal,

signal amplifier means having an adjustable gain characteristic for amplifying said reproduced output signal,

frequency conversion means for measuring the frequency components of said amplified output signal corresponding to said predetermined frequencies and



means for providing a correction feedback control for adjusting said gain of said signal amplifier means to produce an amplitude correspondence of said amplified output signal to said output signal from said signal generating means.

4,450,412

BALANCED AMPLIFIER OUTPUT STAGE

Bengt O. Berg, Solna, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

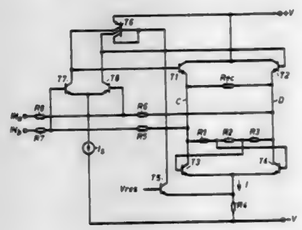
PCT No. PCT/SE80/00114, 371 Date Jan. 4, 1981, 102(e) Date Dec. 23, 1980, PCT Pub. No. WO80/02488, PCT Pub. Date Nov. 13, 1980

PCT Filed Apr. 21, 1980, Ser. No. 227,082

Claims priority, application Sweden, May 4, 1979, 7903931

Int. Cl.³ H03F *3/45, 3/26*

U.S. Cl. 330—255 **6 Claims**



1. A current stabilized balanced amplifier comprising: a source of operating voltage having first and second terminals; first and second output amplifiers connected in parallel, each of said amplifiers comprising first and second transistors with emitter-collector paths serially connected, in each amplifier junction means at junction of the emitter of one of the transistors and the collector of the other transistor; a load connected between said junction means; first connecting terminal means for connecting the collectors of said first transistors to the first terminal of said source of operating voltage; second connecting terminal means for connecting the emitters of said second transistors to the second terminal of said source of operating voltage; one of said connecting terminal means including sensing means for sensing the sum of the current passing through said output amplifiers; regulating means for controlling the current passing through said output amplifiers; and control means including a representation of a reference current and responsive to said sensing means for controlling the operation of said regulating means to control the sum of the current to a given constant value directly related to the value of the referred current and thereby fixing a constant operating point for said output amplifiers.

4,450,413

AUTOMATIC SIGNAL LEVEL CONTROL DEVICE

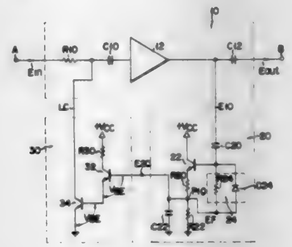
Kenji Fujibayashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1982, Ser. No. 352,644

Claims priority, application Japan, Mar. 10, 1981, 56-34295; Mar. 10, 1981, 56-34296

Int. Cl.³ H03G *3/30*

U.S. Cl. 330—279 **22 Claims**



2. An automatic signal level control device comprising:

a variable impedance element having a impedance which is varied as a function of the level of control signal applied thereto;

a variable gain circuit coupled to said variable impedance element and providing an output signal with a gain which is varied as a function of the impedance of said variable impedance element; and

detector means coupled to said variable impedance element and to said variable gain circuit, for generating said control signal upon receipt of the output signal from said variable gain circuit;

said detector means comprising:

a bipolar transistor having a base which is supplied with a first signal which is a function of the output signal from said variable gain circuit and an emitter from which there is drawn out a second signal having a potential which is a function of that of said first signal;

a feedback element coupled between the base and emitter of said transistor, said feedback element including:

a PN junction type diode, the base-emitter PN junction of said bipolar transistor being coupled in parallel with the PN junction of said PN junction type diode such that the PN junctions of said bipolar transistor and of said diode are coupled in mutually opposite directions; and

a feedback resistor coupled in parallel with said base-emitter PN junction of said bipolar transistor; and

a capacitor coupled between the emitter of said transistor and a circuit having substantially no AC potential, for storing a charge corresponding to said second signal, a beedback signal corresponding to the charged potential of said capacitor being fed back to the base of said transistor through said feedback element, and wherein said second signal corresponds to said control signal.

4,450,414

HIGH TEMPERATURE CURRENT MIRROR AMPLIFIER

Raymond B. Patterson, III, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 23, 1982, Ser. No. 351,443

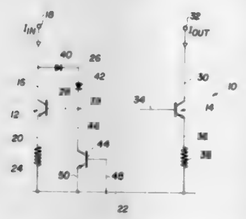
Int. Cl.³ H03F *3/10*

U.S. Cl. 330—288 **7 Claims**

1. In a current mirror amplifier having an input transistor whose collector is connected to its base in a transdiode connection, its emitter connected to a voltage supply terminal and its collector connected to an input terminal and output transistor whose base is connected to the base of said input transistor, its emitter connected to said voltage supply terminal and its col-

lector connected to an output terminal, the improvement comprising:

biasing means in said transdiode connection of said input transistor for producing a voltage to maintain the base-collector junction of said input transistor reversed-biased; and



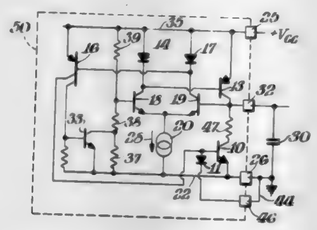
current means connected to said base of said input transistor for maintaining a current through said biasing means at high temperatures so that said biasing means produces said voltage at high temperatures, said current means being operative above a selected temperature and inoperative below said selected temperature.

4,450,415

ALTERABLE MODE OSCILLATOR

Walter S. Gontowski, Jr., Thompson, Conn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 27, 1981, Ser. No. 296,749
Int. Cl.³ H03K *4/04, 5/159, 3/282*
U.S. Cl. 331—111 **2 Claims**



1. An alterable mode oscillator comprising:

a capacitor;

a pair of DC power supply busses;

a charger current-mirror circuit having an output branch connected in a series circuit with said capacitor which series circuit is connected between said pair of DC supply busses;

a discharger current-mirror circuit having a series connected output branch comprising a resistor and an output transitor, said output branch being connected in parallel with said capacitor;

a constant current source means for producing a constant value DC current;

an oscillating switching means for alternately directing said constant current to the input branches of said charger and discharger current-mirror circuits, respectively, so that in a first operating mode, the ratio of the rates of charging to discharging of said capacitor is determined by the magnitude of said current from said constant current source and the area of the paralleled junctions of said current-mirror circuits; and

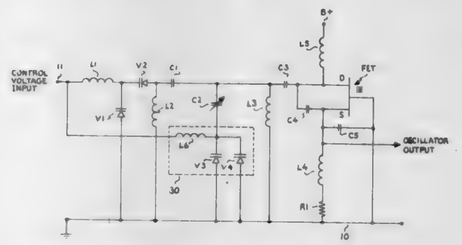
a mode changing means for disconnecting in said discharging current-mirror circuit the reference p-n junction of said output transistor so that when said constant current is directed to the input branch of said discharger current-mirror circuit, said output transistor is driven harder and the increased rate of discharge of said capacitor tends to be exponential with time constant equal to the RC product of said resistor and capacitor.

4,450,416

VOLTAGE CONTROLLED OSCILLATOR

Gregory N. Mears, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Aug. 17, 1981, Ser. No. 293,395
Int. Cl.³ H03B *5/00*
U.S. Cl. 331—117 FE **7 Claims**



1. An improved voltage controlled oscillator comprising:

a. a source of voltage;

b. an active device having electrodes coupled to said source of voltage;

c. a circuit regeneratively coupled to the electrodes of said active device to cause said active device to produce electrical oscillations;

d. a frequency determining circuit comprising at least one capacitor coupled to said active device;

e. a control terminal;

f. a first varactor coupled between said control terminal and said frequency determining circuit;

g. at least one varactor coupled in series with said one capacitor of said frequency determining circuit;

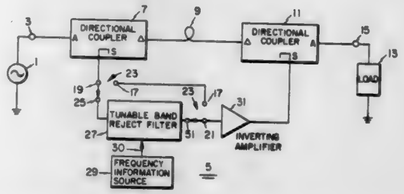
h. and means coupling said conrol terminal to said at least one varactor.

4,450,417

FEED FORWARD CIRCUIT

Andrew F. Folkmann, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 28, 1981, Ser. No. 334,859
Int. Cl.³ H03H *11/04, 11/02*
U.S. Cl. 333—24 R **15 Claims**



1. An isolation circuit comprising:

a first signal means having first, second and third terminals for providing at said first terminal a signal which is the sum of the signals on said second and third terminals;

amplifier means for amplifying a signal on said second terminal and providing an amplified output; and

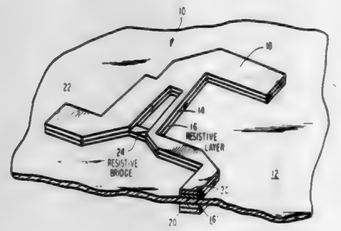
second signal means having fourth, fifth and sixth terminals for providing a signal on said sixth terminal which is the difference between a signal on said fourth and fifth terminals, said third terminal being coupled to said fourth terminal and said fifth terminal being coupled to receive said amplified output.

4,450,418

STRIPLINE-TYPE POWER DIVIDER/COMBINER WITH INTEGRAL RESISTOR AND METHOD OF MAKING THE SAME

Lawrence H. Yum, Los Angeles, and Fu-Chuan Chen, Culver City, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 28, 1981, Ser. No. 335,130
Int. Cl.³ H01P *5/12*
U.S. Cl. 333—128 **11 Claims**



6. A high frequency power divider comprising:

(a) a dielectric substrate;

(b) a first resistive material layer adjacent a first major surface of said substrate; and

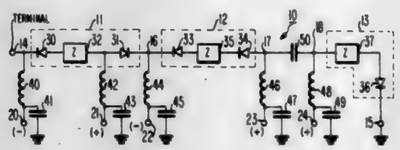
(c) a first metal layer, adjacent said first resistive material layer, said first metal layer patterned so as to have a first power input strip commonly connected to a pair of first power output strips, said first resistive material layer being correspondingly patterned and uniformly underlying said first patterned metal layer, said resistive material layer including a first resistive material bridge extending between those portions of said first resistive material layer respectively underlying said output strips.

4,450,419

MONOLITHIC REFLECTION PHASE SHIFTER

Alfred Schwarzmann, Mt Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 428,242
Int. Cl.³ H01P *1/185*
U.S. Cl. 333—164 **9 Claims**



1. A reflection phase shifter comprising:

a plurality of serially-connected fractional phase shifters including at least one transmission-type phase shifter coupled to a reflection-type phase shifter, wherein said at least one transmission-type fractional phase shifter comprises serially-connected PIN diodes and a transforming section and said reflection-type fractional phase shifter comprises a transforming section coupled to a terminated PIN diode; and

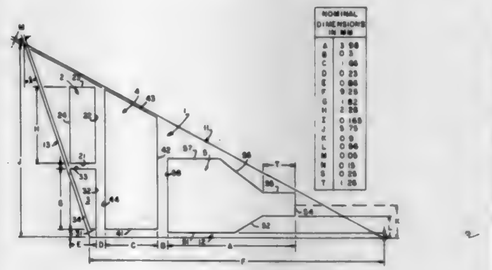
means coupled to said fractional phase shifters for applying bias signals to said fractional phase shifters.

4,450,420

SURFACE ACOUSTIC WAVE FILTER

Pol Buckinx, Diepenbeek, Belgium, assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 13, 1982, Ser. No. 339,246
Int. Cl.³ H03H *9/64*
U.S. Cl. 333—194 **10 Claims**



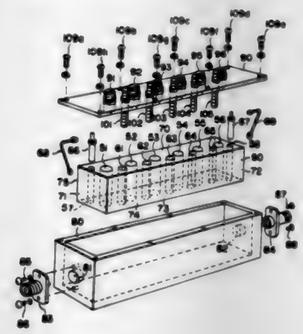
1. In a surface acoustic wave filter comprising an input transducer, an output transducer, a 3db coupler and a reflector, all of the above deposited on the surface of a piezoelectric substrate, the improvement comprising a substrate exhibiting a triangular perimeter, whereby the triangular substrate configuration reduces both the amount of substrate material required and the degree of signal reflection encountered.

4,450,421

DIELECTRIC FILTER

Takeshi Meguro, and Yukio Ito, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 30, 1982, Ser. No. 393,534
Claims priority, application Japan, Jun. 30, 1981, 56-100520
Int. Cl.³ H01P *1/205, 7/00*
U.S. Cl. 333—202 **9 Claims**



1. A dielectric filter comprising:

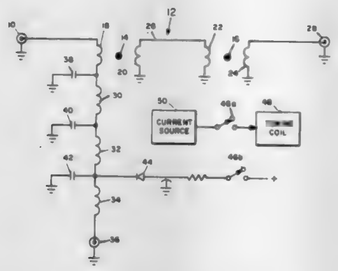
a dielectric block;

a plurality of resonator holes made in the dielectric block at predetermined intervals for forming resonators; and

a hole made in the dielectric block between each adjacent pair of the resonator holes, for adjusting the coupling between the resonators, the interior surfaces of the resonator holes and the surface of the dielectric block, except the interior surface of each coupling adjustment hole, being at least partly covered with a conductor layer;

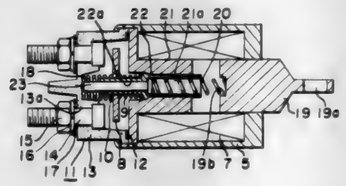
wherein each said coupling adjustment hole is disposed apart from the line joining the centers of the resonator holes.

4,450,422
ELECTRONIC FILTER DEVICES
Larry R. Lockwood, McMinnville, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Sep. 28, 1982, Ser. No. 425,732
Int. Cl.³ H01P 1/218, 1/213
U.S. Cl. 333—202 7 Claims



1. An electronic filter device, comprising:
an input connection;
a high frequency section having an input coupling loop connected to said input connection, a gyromagnetic resonance element and a first output connection; and
at least one inductor and at least one capacitor connected to said input coupling loop and forming a low frequency filter section therewith, said low frequency filter section having a second output connection.

4,450,423
MAGNETIC SWITCH
Akira Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1982, Ser. No. 343,768
Claims priority, application Japan, Feb. 10, 1981, 56-18056[U]
Int. Cl.³ H01H 51/08
U.S. Cl. 335—131 2 Claims

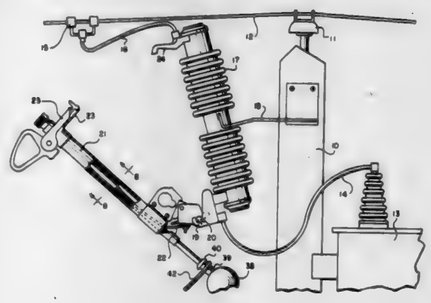


1. In a magnetic switch comprising an electromagnetic coil, a movable iron core, a stationary iron core for forming a part of a magnetic path by the actuation of said electromagnetic coil, a movable contact assembly having a contact at one end which is fitted to a inner hole of said stationary iron core so as to be slidable in the axial direction wherein said contact assembly further includes a movable contact axially facing said stationary iron core to be attractive to said stationary iron core depending upon actuation of said electromagnetic coil, a pair of stationary contacts brought into contact with said movable contact of the movable contact assembly when moved by said movable iron core, and a cap for holding said pair of stationary contacts to provide a contact chamber, an improvement wherein said movable contact assembly further comprises a hollowed movable contact rod and a compressive coil spring placed in said hollowed movable contact rod which has one end contacting an end surface of said movable iron core and the other end operably arranged in said movable contact assembly to bias said movable iron core away from said movable contact assembly.

4,450,424
ELECTRICAL INSULATING SYSTEM
Fred S. Sadler, Jessup, Pa.; Paul F. Hettwer; Vu H. Viet, both of Franksville, Wis., and Clarence R. Acker, Zanesville, Ohio, assignors to McGraw-Edison Company, Rolling Meadows, Ill.
Filed May 10, 1982, Ser. No. 376,525
Int. Cl.³ H01F 27/32; H01B 3/18
U.S. Cl. 336—94 2 Claims

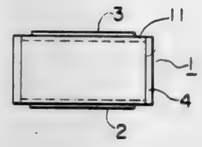
1. A distribution-class transformer, comprising:
a container,
a plurality of sheet-like electrical conductors wound in a transforming relationship and disposed in said container,
a liquid dielectric within the container surrounding said electrical conductors, and
kraft paper having an initial density of approximately 0.80 gm/cm³ and a generally uniform nitrogen content of approximately 4% by weight achieved through impregnation with dicyandiamide, said paper being applied as layer insulation between said conductors and impregnated with said liquid dielectric,
whereby the voltage stress distribution within said kraft paper is more uniformly distributed relative to a kraft paper having an initial density of approximately 0.80 gm/cm³ and not so treated with dicyandiamide.

4,450,425
APPARATUS FOR REMOTE CLOSING OF FUSE CIRCUITS
Donald R. Manning, Susquehanna Ave., Milton, Pa. 17847
Filed Nov. 19, 1980, Ser. No. 208,258
Int. Cl.³ H01H 71/10
U.S. Cl. 337—171 8 Claims



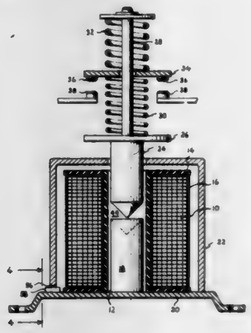
1. Apparatus for the remote closing of a pivotally mounted fuse carrying switch member which member includes a fuse tube carried by an insulating support and latching members for retaining such switch member in operating position which apparatus comprises
a rod,
said rod having a portion for insertion in said fuse tube and a portion extending beyond said fuse tube with a cushioned head thereon, and
an actuating cord connected to said second mentioned rod portion contiguous to said head for moving said apparatus and said switch member for switch member engagement by said latching members.

4,450,426
NONLINEAR RESISTOR AND PROCESS FOR PRODUCING THE SAME
Tadahiko Miyoshi; Takeo Yamazaki; Kunihiro Maeda; Ken Takahashi, all of Hitachi, and Siniti Oowada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 6, 1981, Ser. No. 251,543
Claims priority, application Japan, Apr. 7, 1980, 55-44606
Int. Cl.³ H01C 7/12
U.S. Cl. 338—21 26 Claims



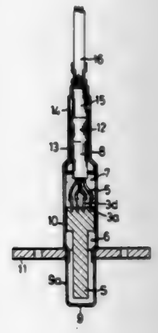
1. A nonlinear resistor comprising a sintered body containing zinc oxide as a major component and at least bismuth oxide and boron oxide, the sintered body having upper and lower surface layers forming the upper and lower surfaces of the sintered body, and at least one electrode formed on at least one of the upper and lower surfaces of the sintered body, characterized in that at least one of the upper and lower surface layers of the sintered body contain a higher γ-form bismuth oxide phase concentration than the inner portion of the sintered body and the periphery portions of the at least one of the upper and lower surface layers have a lower γ-form bismuth oxide phase concentration than the inner portions of the at least one of the upper and lower surface layers.

4,450,427
CONTACTOR WITH FLUX SENSOR
Ronald E. Gareis, Charlottesville, Va., assignor to General Electric Company, Charlottesville, Va.
Filed Dec. 21, 1981, Ser. No. 332,732
Int. Cl.³ H01L 43/04
U.S. Cl. 338—32 H 6 Claims



1. An electromagnetic contactor assembly comprising:
a magnetic circuit including a fixed core member, a moveable armature, a variable air gap between said fixed core member and said moveable armature and a fixed air gap in said core member;
an electrically energizable actuating coil arranged for establishing an operating magnetic flux in said core member;
a spring member arranged for biasing said armature in a position wherein said variable air gap is at a maximum; and
a magnetic flux sensor mounted in said fixed air gap for providing an output signal representative of the magnitude of flux in said core member.

4,450,428
GAS DETECTING SENSOR
Minoru Ohta; Yutaka Hattori, both of Okazaki; Tomio Kawakami, Nishio, and Michitosi Onoda, Toyohashi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Dec. 31, 1981, Ser. No. 336,402
Claims priority, application Japan, May 25, 1981, 56-79708
Int. Cl.³ H01L 7/00
U.S. Cl. 338—34 11 Claims

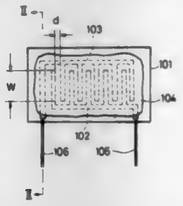


1. A gas detecting sensor for detecting the partial pressure of oxygen gas contained within exhaust gases, comprising:
a base body made of ceramic material having a characteristic of generating heat when an electric current is supplied thereto;
one pair of electrodes which are fixed to said base body at a predetermined interval, one end of each of said one pair of electrodes being directly fixed to said base body so as to form an electric path crossing said base body therebetween while the other portion of each of said one pair of electrodes being fixed to said base body through a first insulating layer;
a sensing element made of ceramic material having electrical characteristic in response to the partial pressure of oxygen gas, which is closely fixed to said base body through a second insulating layer in the vicinity of said electric path;
another pair of electrodes which are fixed to said base body so as to be electrically insulated therefrom and to be contacted with said sensing element for supplying an electric current to said sensing element; and
two pairs of lead members, one pair of said lead members being connected to said one pair of electrodes for supplying an electric current to said base body while the other pair of said lead members being connected to said another pair of electrodes for supplying an electric current to said sensing element.

4,450,429
HUMIDITY SENSITIVE RESISTANCE DEVICE
Michihiro Murata, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan
Filed Oct. 26, 1982, Ser. No. 436,663
Int. Cl.³ H01L 7/00
U.S. Cl. 338—35 16 Claims

1. A humidity sensitive resistance device wherein a humidity sensitive resistance film is formed on electrodes opposed to each other, and the resistivity of the humidity sensitive resistance film increases with an increase of an ambient relative humidity, characterized in that said humidity sensitive resis-

tance film comprises a hydrophilic polymer and a conductive powder, and has a zirconium compound unevenly distributed



on the side of surface of said film, and the surface of said film being dehydrated.

4,450,430

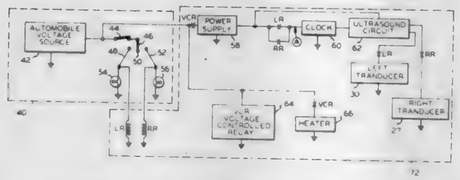
LANE CHANGE GUIDANCE SYSTEM

Boris M. Barishpolsky, 712 Farmington Ave., Apt. 304, West Hartford, Conn. 06119, and Eugene L. Filstein, 178 Brunswick Ave., West Hartford, Conn. 06107

Filed Apr. 24, 1981, Ser. No. 257,120

Int. Cl.³ G08G *1/00*; B60Q *1/34*

U.S. Cl. 340—904 **15 Claims**



1. In an automobile having left and right turn-signal lamps connected by left and right signal lines, respectively, to a manual turn-signal activation device having a neutral state and left-turn and right-turn states in which it applies actuating signals to the left and right signal lamps, respectively, along the left and right signal lines, an ultrasonic object-detection device comprising:

a. ultrasonic signal means selectively operable to transmit ultrasonic pulses into left and right target regions disposed to the left- and right-hand sides of the automobile, respectively, to detect echoes of said pulses from objects in the left and right target regions and to generate electrical echo-reception signals to indicate the reception of ultrasonic echoes, said ultrasonic signal means including means electrically connected for operation upon transmission of actuating signals on said left and right signal lines to transmit ultrasonic pulses that travel through the target regions without reaching the ground and that reach the ground after traveling beyond the target regions, said ultrasonic signal means receiving ultrasonic echoes of said ultrasonic pulses and producing electrical echo-reception signals representing the time of reception of the ultrasonic echoes;

b. alarm means electrically connected for reception of the echo-reception signals from said ultrasonic signal means and operable in response to the echo-reception signals to present an alarm signal to a driver of the automobile, said alarm means including an alarm indication to the driver of the automobile in response to the echo-reception signals only upon application of enablement signals thereto;

c. circuit means electrically connected to the left and right signal lines for detecting actuating signals thereon and operating said ultrasonic signal means to transmit ultrasonic pulses to the left target region when actuating signals are transmitted on the left signal lines and to transmit ultrasonic pulses to the right target region when actuating signals are transmitted on the right signal line, said alarm means thereby notifying the driver of the presence of objects in the right target region during the period of time the turn-signal switching device has been operated to its right-turn state and notifying the driver of the presence of objects in the left target regions during the period of time the turn-signal switching device has been operated to its left-turn state, said circuit means being operable upon movement of said activation device into left-turn and right-turn states and continuing in operation during the time said switching device is in its left-turn and right-turn states.

4,450,431

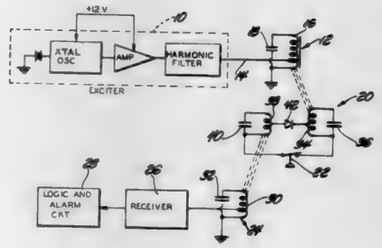
CONDITION MONITORING SYSTEM (TIRE PRESSURE)

Peter A. Hochstein, 14020 Fifteen Mile Rd., Sterling Heights, Mich. 48077

Filed May 26, 1981, Ser. No. 267,258

Int. Cl.³ B60C *23/00*

U.S. Cl. 340—58 **12 Claims**



1. A tire condition monitoring system for monitoring the condition of a wheel mounted tire comprising; exciter means for establishing an electromagnetic energy field having a first frequency, passive converter means responsive to said first frequency for creating energy having a second frequency, sensing means for changing amplitude of said energy at said second frequency by said converter means in response to a predetermined change of the tire condition, receiver means responsive to said energy at said second frequency for providing an indication regarding said energy at said second frequency, said converting means including harmonic multiplier means for making said second frequency a harmonic of said first frequency, said exciter means being inductively coupled to said converter means through a magnetic field, said receiver means including an E-field antenna for receiving an E-field from said converter means.

4,450,432

BINARY MOS PARALLEL COMPARATORS

Friedrich Schmidtpott, Gundelfingen, and Reiner Backes, Freiburg, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Aug. 26, 1981, Ser. No. 296,399

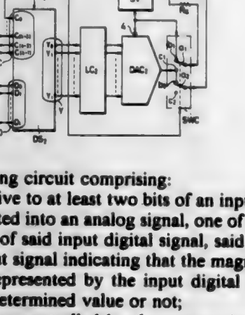
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036065

Int. Cl.³ G06F *7/02, 7/04*

U.S. Cl. 340—146.2 **17 Claims**

1. A monolithic integrated binary MOS parallel comparator using insulated-gate field-effect transistors of the same conductivity type to compare a first n-digit binary word with a second n-digit binary word comprising:

n successively weighted stages each including a NOR block having at least two inputs each receiving a correspondingly weighted digit of a different one of said first and second words, an additional logic circuit receiving said correspondingly weighted digit of said first and second



words, and a transfer transistor and a load transistor connected in series between the output of said NOR block and a supply voltage source, the output of said additional logic circuit being coupled to the gate of said transfer transistor; and

circuit means coupling a first output terminal to at least one of said n stages to provide an output signal for said comparator.

4,450,433

D/A CONVERTING CIRCUIT HAVING TWO D/A CONVERTERS FOR DECODING AND CONVERTING A DIGITAL SIGNAL INTO AN ANALOG SIGNAL

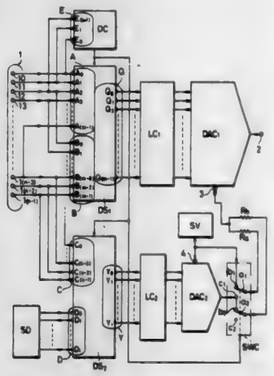
Masaru Moriyama, Yamato, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jan. 27, 1982, Ser. No. 343,158

Claims priority, application Japan, Jan. 28, 1981, 56-11167

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **6 Claims**



1. A D/A converting circuit comprising:

(a) a decoder responsive to at least two bits of an input digital signal to be converted into an analog signal, one of said two bits being an MSB of said input digital signal, said decoder producing an output signal indicating that the magnitude of an analog signal represented by the input digital signal is greater than a predetermined value or not;

(b) a first data selector controlled by the output signal from said decoder for selecting, as its output data, one of two sets of consecutive bits of said input digital signal, one of said two sets including said MSB and the other including an LSB of said input digital signal;

(c) a first D/A converter having an external reference voltage input terminal, and being responsive to the output data from said first data selector for producing an output analog signal by using a first reference voltage applied to said external reference voltage input terminal;

(d) a digital data generator for producing a predetermined digital data;

(e) a second data selector controlled by said output signal from said decoder for selecting, as its output data, one of a set of consecutive bits of said input digital signal including said LSB, and said predetermined digital data from said digital data generator;

(f) a second D/A converter having an external reference voltage input terminal, and being responsive to the output data from said second data selector for producing an output analog signal by using a second reference voltage applied to said external reference voltage input terminal, said second D/A converter producing a voltage having a specific relationship with respect to said second reference voltage when said predetermined digital data is applied thereto via said second data selector;

(g) a D.C. voltage source for producing a predetermined voltage which is fed to said external reference voltage input terminal of said second D/A converter as said second reference voltage; and

(h) means for producing said first reference voltage fed to said external reference voltage input terminal of said first D/A converter, said means being controlled by said output signal from said decoder for supplying said external reference voltage input terminal of said first D/A converter with the sum of said second reference voltage and the output voltage of said second D/A converter, or only said second reference voltage.

4,450,434

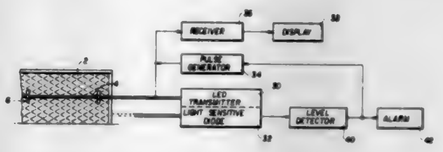
APPARATUS FOR DETERMINING BREAK LOCATIONS IN FENCING

Paul H. Nielsen, Mahomet, and Ray G. McCormack, St. Joseph, both of Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1981, Ser. No. 265,886

Int. Cl.³ G08B *29/00, 13/00*

U.S. Cl. 340—506 **5 Claims**



1. An apparatus for intrusion detection, comprising,

a cable comprising at least one optical fiber having an electrical transmission line running therealong,

means for generating light energy into one end of said at least one optical fiber,

means for receiving said light energy at the other end of said at least one optical fiber,

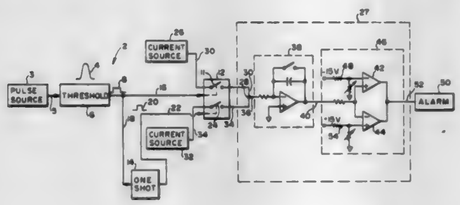
electrical pulse generator means, responsive to said light energy receiving means, for transmitting electrical pulses into one end of said transmission line, when said optical fiber is broken,

electrical pulse receiver means for receiving said electrical pulses at the same end of said transmission line that said pulses are transmitted into, and

indicator means, responsive to said electrical pulse receiver means and said electrical pulse generator means, for indi-

cating the time difference between the time said pulses are transmitted and the time they are received.

4,450,435
ANALOG DEBRIS ALARM
Bobby D. James, 7184 W. 2nd La., Hialeah, Fla. 33014, assignor to Bobby Dencil James, Hialeah, Fla.
Filed Nov. 30, 1981, Ser. No. 325,789
Int. Cl.³ G08B *29/00*; G01N *27/00*
U.S. Cl. 340—511 **9 Claims**



1. A debris alarm for use with a particle analyzing apparatus for studying particles in suspension, said apparatus including a particle sensing aperture through which said particles in suspension are passed, means for passing an electric current through said aperture simultaneously with passage of a particle through said aperture, and detecting means responsive to impedance variations for generating a discrete particle pulse with the passage of said particle through said aperture, said debris alarm comprising:

pulse threshold means, being electrically coupled to said detecting means, for generating a threshold pulse for each particle pulse which exceeds a predetermined threshold level, said threshold pulse having a duration which is a function of the width of said particle pulse at said predetermined threshold level;

fixed length pulse generating means, being electrically coupled to said pulse threshold means, for generating a fixed length pulse of predetermined duration substantially corresponding to that of said threshold pulses for normal said particle pulses, said fixed length pulse generating means operative to generate one said fixed length pulse for each said threshold pulse;

first current generating means, being electrically coupled to said pulse threshold means, for providing an electrical first current in an amount directly proportional to the charge of said threshold pulses;

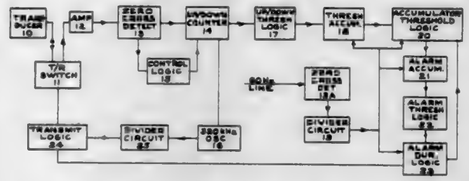
second current generating means, being electrically coupled to said fixed length pulse generating means, for providing an electrical second current in an amount directly proportional to the charge of said fixed length pulses;

current comparing means, including different means, for receiving said first currents and said second currents, for accumulating the electrical charges of said currents and for providing as an output a difference voltage proportional to the difference in the cumulative charges of said first currents and said second currents;

said current comparing means further including window detector means, being electrically coupled to said difference means, for determining when said difference voltage exceeds a positive upper threshold voltage or falls below a negative lower threshold voltage, said upper and lower threshold voltages defining a predetermined comparison window; and

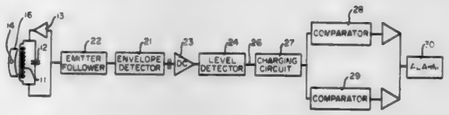
debris indicator means, being electrically coupled to said window detector means, for indicating that said difference voltage has fallen out of said predetermined comparison window.

4,450,436
ACOUSTIC ALARM REPEATER SYSTEM
Donald P. Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees
Continuation-in-part of Ser. No. 073,309, Sep. 7, 1979, abandoned. This application Sep. 20, 1982, Ser. No. 420,156
Int. Cl.³ G08B *17/00*
U.S. Cl. 340—531 **25 Claims**



1. In combination in an acoustic alarm repeater system, means for the recognition of a coded audible alarm signal, said coded alarm signal characterized in that the frequency of said signal lies within a specified audible frequency band, and further characterized in that said coded audible signal has a specified repetitive characteristic, and still further characterized in that the average intensity level of said coded alarm signal may vary over a dynamic range greater than 20 dB, said signal recognition means including an electroacoustic transducer for converting said coded audible alarm signal into an electrical signal, means for amplifying said electrical signal, an autocorrelator for detecting the presence of the repetitive characteristic of said coded alarm signal, said autocorrelator characterized in that it produces an output signal when said coded alarm signal is present, means for generating a warning alarm signal, means for activating said warning alarm signal generating means, said activating means responsive to said autocorrelator output signal when it is present.

4,450,437
MOTION ALARM SYSTEM
Eugene Y. Ho, San Carlos, Calif., assignor to Techne Electronics, Ltd., Palo Alto, Calif.
Filed Jul. 10, 1981, Ser. No. 281,957
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—540 **6 Claims**



1. A system for providing an alarm when motion is not sensed comprising

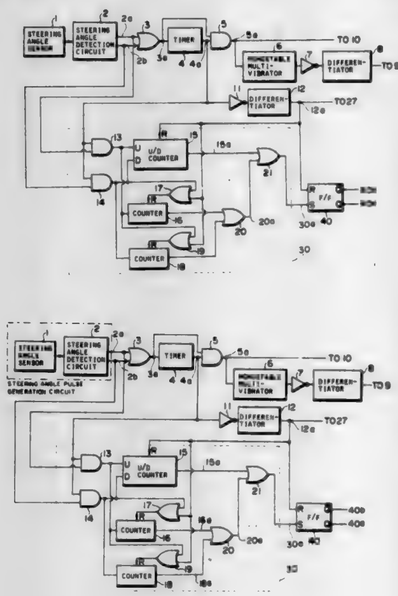
a motion detecting means for providing

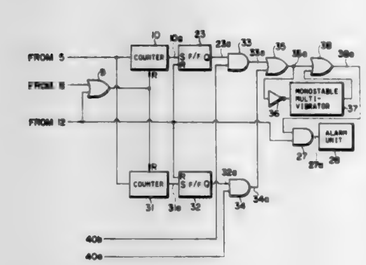
a motion signal whose amplitude varies with motion

a level detector connected to receive said output motion signal and provide an output signal when the amplitude of said motion signal is greater than a first amplitude or less than a second amplitude

means for receiving the level detector output signal and generating a voltage whose amplitude decreases in the absence of a level detector output signal and means responsive to said voltage for providing an alarm signal when the voltage decreases to a predetermined level due to the absence of a level detector output signal for a predetermined time.

4,450,438
DROWSINESS ALARM SYSTEM FOR A VEHICLE
Yasutoshi Seko, Yokohama; Takayuki Yanagishima, Yokosuka, and Noburu Fukasawa, Kamakura, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan
Filed Oct. 5, 1981, Ser. No. 309,012
Claims priority, application Japan, Oct. 6, 1980, 55-139663
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—576 **11 Claims**





1. A drowsiness alarm system for a vehicle for producing a warning in the event of driver drowsiness as determined from vehicle steering changes, comprising:

(a) a steering angle pulse generation circuit which produces a clockwise steering angle pulse at one of two output terminals whenever the steering wheel is rotated clockwise through an angle equal to a predetermined angular increment and produces a counterclockwise steering angle pulse at the other output terminal whenever the steering wheel is rotated counterclockwise through an angle equal to the predetermined angular increment;

(b) a first steering angle pulse counting circuit which counts the number of both clockwise and counterclockwise steering angle pulses inputted thereto sequentially to one another within a first predetermined period of time and outputs a first voltage signal whenever the counted number reaches a first predetermined number within a second predetermined period of time;

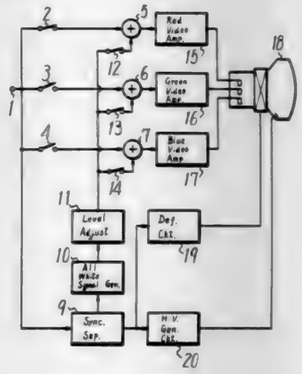
(c) a second steering angle pulse counting circuit which counts the number of both clockwise and counterclockwise steering angle pulses inputted thereto sequentially to one another within the first predetermined period of time and outputs a second voltage signal whenever the counted number reaches a second predetermined number within the second predetermined period of time;

(d) a curved road detection circuit which counts the number of the clockwise and counterclockwise steering angle pulses, separately, inputted thereto within the second predetermined period of time and outputs a pulse whenever the counted number of either of the clockwise or counterclockwise steering angle pulses inputted thereto reaches a third predetermined number or whenever the difference of the counted numbers between the clockwise and counterclockwise steering angle pulses reaches a fourth predetermined number;

(e) a signal switching circuit, connected between said first and second steering angle pulse counting circuits and said curved road detection circuit, which selectively enables the passage of either of the first or second voltage signals depending on whether said curved road detection circuit sends the output pulse thereto; and

(f) an alarm section which produces an alarm in a predetermined form in response to a pulse received when said signal switching circuit enables the passage of either of the first or second voltage signals.

4,450,439
COLOR VIDEO DATA DISPLAY APPARATUS
Katsumi Kobayashi, Machida, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 2, 1981, Ser. No. 317,178
Claims priority, application Japan, Nov. 6, 1980, 55-156241
Int. Cl.³ G09G *1/28*
U.S. Cl. 340—703 **7 Claims**



1. A display apparatus comprising:

a video signal input terminal supplied with a first video signal to be displayed, said first video signal having a horizontal period and containing a sync signal;

a plurality of video signal amplifiers, each producing an output signal as a primary color signal;

sync signal separating means for separating said sync signal from said first video signal;

signal generating means for receiving said sync signal and generating a second video signal therefrom having a predetermined constant amplitude during said horizontal period;

first means for supplying said first video signal to at least one of said video signal amplifiers;

second means for supplying said second video signal to at least another of said video signal amplifiers; and

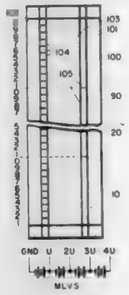
selectively operable summing means for selectively summing said first and second video signals and supplying the summed signal to at least a selected one of said video signal amplifiers.

4,450,440

CONSTRUCTION OF AN EPID BAR GRAPH

Roger P. White, Yonkers, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,110
Int. Cl.³ G09G 3/00
U.S. Cl. 340—753 **12 Claims**



1. An electrophoretic bar graph display comprising

two separated substrates with at least one substrate being transparent,

an electrophoretic fluid having suspended pigment particles filling the space between said substrates,

a first electrode structure formed on the surface of one of said substrates facing said fluid and a second electrode structure formed on a surface of the other of said substrates facing said fluid with at least one of said electrode structures being substantially transparent,

said first electrode structure providing a plurality of electrodes and said second electrode structure providing an equal number of electrodes for each of said plurality of electrodes,

means for providing at least one of three voltages to each of said first electrodes, and

means for providing at least one of two voltages to each of said second electrodes, said two voltages alternating in value with said three voltages.

4,450,441

DOT MATRIX PLASMA DISPLAY AND METHOD FOR DRIVING SAME

Herman R. Person; Joseph F. Hesse, and Steven R. Hall, all of Columbus, Nebr.

Filed Aug. 27, 1981, Ser. No. 296,790
Int. Cl.³ G09G 3/28
U.S. Cl. 340—773 **4 Claims**

1. A direct current dot matrix digital display device comprising:

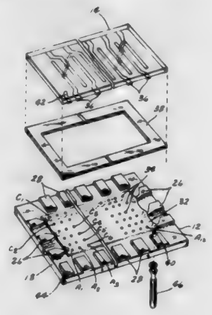
a dielectric substrate having a flat upper surface,

a plurality of elongated cathode strips mounted on the upper surface of said substrate and being arranged in parallel spaced relation to one another,

a printed dielectric layer on said substrate and said cathode strips and having a plurality of openings therethrough each communicating with a portion of said cathode strips, said openings being formed in rows and columns to form a matrix, and rows of openings each being aligned over one of said cathod strips,

a transparent top plate having an under surface and sealed to the perimeter of said substrate by sealing means and positioned above and in spaced relation to said dielectric layer to create an envelope of space above, in communication with, and completely enveloping said matrix of openings;

a plurality of elongated anode strips mounted on the undersurface of said top plate within said envelope of space and in spaced relation to said dielectric layer, said anode strips extending perpendicular to and above said cathode strips and each being spaced above and in registered alignment with one of said columns in said matrix of openings in said dielectric layer,



a mass of ionizable gas filling said envelope of space and said matrix of openings in said dielectric layer whereby said anode strips are all in direct contact with said mass of ionizable gas,

said anode strips and said cathode strips being the only electrodes positioned in alignment with said matrix of openings,

said envelope being substantially free of barriers between said rows and column of openings, and

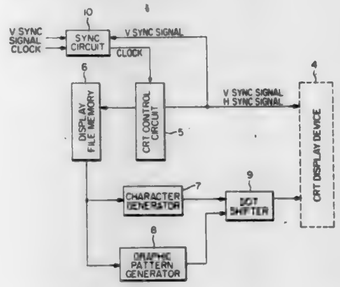
terminal means for said anode and cathode strips.

4,450,442

DISPLAY PROCESSOR FOR SUPERIMPOSED-PICTURE DISPLAY SYSTEM

Kazuyuki Tanaka, Kanagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 11, 1981, Ser. No. 329,740
Claims priority, application Japan, Dec. 26, 1980, 55-186399
Int. Cl.³ G09G 1/00
U.S. Cl. 340—814 **3 Claims**



1. In a superimposed-picture display system for displaying a plurality of pictures in a mutually superimposed relationship, a plurality of display processors for generating display signals for displaying said plurality of pictures, respectively, each display processor being of the type comprising:

(a) a display file memory with a storage capacity capable of storing one of at least one display file of character information and graphic patterns, which can be displayed as one frame on the screen of a raster-display type cathode-ray tube, and

(b) a cathode-ray-tube control circuit which divides the frequency of a clock pulse which is supplied from another display processor to generate

(i) address signals which in turn are delivered to said display file memory so that each of said address signals specifies a memory location in which is stored video information to be displayed at a predetermined location on the screen of said raster-display type cathode-ray tube, and

(ii) vertical and horizontal sync signals which in turn are delivered to said raster-display type cathode-ray tube,

characterized by the provision that each said display processor further comprises:

(A) a comparator circuit for comparing the vertical sync signal generated by said cathode-ray-tube control circuit with an external vertical sync signal which is supplied from another display processor, and for producing an output in response thereto,

(B) a first memory means which stores the output from said comparator means in response to said clock pulse and which produces an output in response thereto,

(C) a second memory means which stores the output from said first memory means in response to the vertical sync signal generated by said cathode-ray-tube control circuit and which produces an output in response thereto,

(D) a two-input AND gate having one input of which is supplied with the output of said second memory means and another input of which is applied with said clock pulse, the AND gate applying an output in response thereto to said cathode-ray-tube control circuit, and

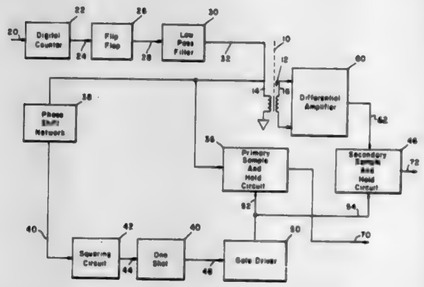
(E) means for resetting said first and second memory means in response to said external vertical sync signal.

4,450,443

POSITION TRANSDUCER FOR DIGITAL SYSTEMS

Carlisle R. Dolland, Torrance, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 18, 1982, Ser. No. 359,349
Int. Cl.³ G08C 19/06; G01B 7/14
U.S. Cl. 340—870.36 **23 Claims**



1. Position transducer apparatus for indicating the position of a displaceable core means of a linear variable differential transformer comprising

primary means producing a primary waveform,

secondary means producing a secondary waveform,

displaceable core means for causing attenuation in the secondary waveform in direct proportion to the displacement thereof,

means for generating pulse signals at a predetermined frequency,

filter means for receiving said pulse signals and producing sinusoidal signals for input to the primary means,

phase shift means for receiving said sinusoidal signals to produce a predetermined phase shifted output,

means including a one shot for receiving said phase shifted output and producing gate timing signals,

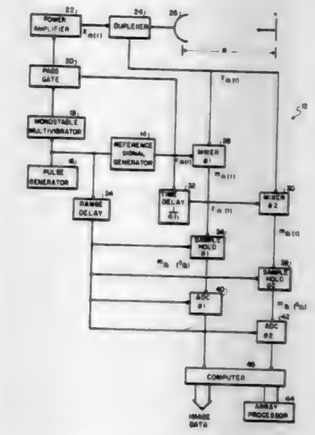
primary and secondary sample and hold means receiving signals from said primary and secondary means, respectively, as a first input and said gate timing signals as a second input to produce DC level outputs proportional to the primary and secondary waveforms, respectively.

4,450,444

STEPPED FREQUENCY RADAR TARGET IMAGING

Donald R. Wehner, and Michael J. Prickett, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1981, Ser. No. 268,501
Int. Cl.³ G01S 9/00
U.S. Cl. 343—5 CM **9 Claims**



1. A device for enabling radar target imaging comprising:

a pulse generator for generating a series of pulses;

first means connected to said pulse generator for generating a series of N identical signal bursts, each burst comprising n pulses and each of said n pulses being a different frequency;

second means connected to said first means for transmitting at least a portion of said series of N identical signal bursts as a radar signal and for receiving a series of radar echos from said radar signal;

third means connected to said second means for separating said series of radar echos into n in-phase and n quadrature phase components for each of said N bursts;

means connected to said third means for sampling and holding said n in-phase and n quadrature phase components for each of said N bursts;

fourth means connected to said sampling and holding means for converting said n in-phase and n quadrature phase components for each of said N bursts to a digital format;

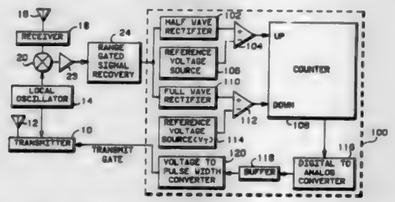
fifth means connected to said fourth means for calculating and storing the relative amplitude of each of said echos, for calculating and storing the phase of each of said radar echos relative to the phase of the corresponding one of said n transmitted pulses for each of said N bursts, for calculating and storing the n element inverse Fourier Transform of each set of n echo signals resulting from each of said N bursts to thereby generate an n×N inverse Fourier Transform array having n range cells for each of said N bursts, and for calculating and storing the N element Fourier transform of each of said n range cells.

4,450,445

RANGE RATE DEPENDENT PULS[illegible] CONTROL APPARATUS AND METHOD THEREFOR

Leo B. Conner, Jr., Phoenix, and Robert N. Nelson, Scottsdale, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 25, 1981, Ser. No. 305,562
Int. Cl.[3] G01S 9/02
U.S. Cl. 343—7.5 **12 Claims**



1. In a Doppler radar having a transmitter for periodically transmitting pulses of electrical energy and a receiver for receiving reflected portions of energy of the transmitted pulses, a pulse control apparatus comprising:

first means for providing pulses only when a predetermined threshold is exceeded having an input and an output, said input being responsive to signals present in the receiver;

second means for providing pulses only when a predetermined threshold is exceeded having an input and an output, said input being responsive to signals present in the receiver; and

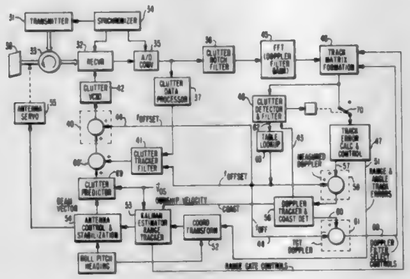
means for counting pulses having a first input coupled to said output of said first means for providing pulses, said means for counting pulses having a second input coupled to said second means for providing pulses such that said first means for providing pulses increases the width and amplitude of the pulses transmitted by the transmitter by a first fixed increment and said second means for providing pulses decreases the width and amplitude of the pulses transmitted by the transmitter, by a second fixed increment, said first means for counting pulses providing an output for determining the width and amplitude of pulses transmitted by the transmitter.

4,450,446

METHOD AND SYSTEM FOR TRACKING TARGETS IN A PULSE DOPPLER RADAR SYSTEM

Steven J. Clancy, Elkridge, and Robert A. Phillips, Crownsville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1981, Ser. No. 268,545
Int. Cl.[3] G01J 13/32
U.S. Cl. 343—7.7 **7 Claims**



1. A method of continuing the tracking of targets in a pulse doppler radar system having a clutter notch filter and a tracking filter matrix, at times when the doppler frequency of the target approximates the doppler frequency of clutter, comprising

eliminating the rejection effect of the clutter notch filter on received echo signals at said times to not reject the clutter or the target signals,

providing a threshold value for the received unrejected echo signals,

comparing the amplitude of the received unrejected echo signals having selected ranges and doppler frequencies approximating the doppler frequency of the target with the threshold value, and

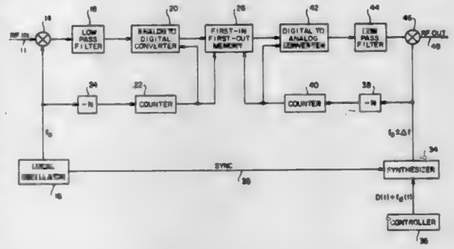
continuing the tracking of the target in accordance with the amplitude comparison of the unrejected target and clutter signals.

4,450,447

SYNTHETIC APERTURE RADAR TARGET SIMULATOR

Howard A. Zebker, Palo Alto; Daniel N. Held, Altadena; Richard M. Goldstein, and Thomas C. Bickler, both of La Canada, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 17, 1981, Ser. No. 284,287
Int. Cl.[3] G01S 7/40
U.S. Cl. 343—17.7 **5 Claims**



1. A synthetic aperture radar target simulator for altering the frequency and time delay of an input rf signal by an amount related to range curvature information and Doppler frequency information associated with a simulated target, said simulator comprising:

a local oscillator for generating a signal of frequency f_o;

means for mixing said input rf signal and said local oscillator output signal to provide a first baseband signal;

means for converting said first baseband signal to a plurality of input digital words to be stored in memory means, each of said digital words being related to an instantaneous amplitude of said first baseband signal;

means responsive to said signal of frequency f_o for clocking said digital words into said memory;

means for generating a signal having a nominal output frequency related to said local oscillator output frequency by a difference $\pm\Delta f$;

means for controlling said signal generating means to alter said nominal output frequency by an amount related to the instantaneous range and Doppler shift of a simulated target;

means for accessing each of said plurality of input digital words stored in said memory means at a rate related to said altered nominal output frequency, said digital words being accessed on a first-in first-out basis;

means for converting said accessed memory means digital output words to an analog second baseband signal; and

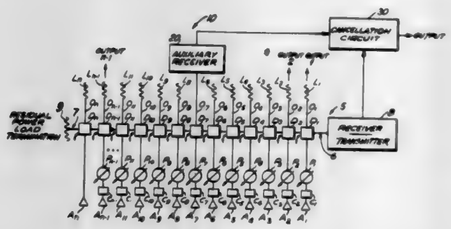
means for mixing said second baseband signal and said nominal output signal to provide an output rf signal that simulates a return signal that has frequency characteristics related to both range curvature information and Doppler information that would be contained in a return signal from an actual target.

4,450,448

APPARATUS AND METHOD FOR IMPROVING ANTENNA SIDELOBE CANCELLATION

Victor J. Albanese, Valley Stream, and Charles J. Schmidt, Islip, both of N.Y., assignors to Grumman Aerospace Corporation, New York, N.Y.

Filed Aug. 28, 1981, Ser. No. 297,181
Int. Cl.[3] G01S 3/16, 3/28
U.S. Cl. 343—379 **9 Claims**



1. An electronically scannable array antenna comprising

n individual antenna elements;

feed means for feeding said antenna elements in series, said feed means having an input end portion adjacent the first antenna element and a load termination end portion adjacent said n^{th} antenna element;

phase shifter means connected to each antenna element; and

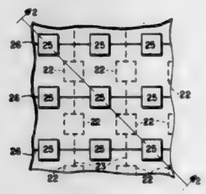
a plurality of directional coupler means, each being responsive to one of said antenna elements and the portion of said feed means disposed between said one antenna element and the antenna element adjacent thereto, closest to said load termination end portion of said feed means and having a first port for providing a first output signal for forming a primary radiation pattern having a main beam and sidelobes, said first output signal being defined in the receive operation of the antenna by the sum of a portion of the signal flowing through its associated antenna element and the signal flowing in said feed means from said load termination end portion to said respective directional coupler, at least one of said directional coupler means having a second port for providing a second output signal which is defined in the receive operation of the antenna by the difference between a portion of the signal received from its associated antenna element and a portion of the signal flowing in said feed means from said load termination end portion to said respective directional coupler for forming an auxiliary radiation pattern having a notch in the direction of the main beam of said primary radiation pattern and a relatively flat output in all other directions.

4,450,449

PATCH ARRAY ANTENNA

Harold S. Jewitt, Hennepin County, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 25, 1982, Ser. No. 352,490
Int. Cl.[3] H01Q 1/38
U.S. Cl. 343—700 MS **6 Claims**



1. An antenna comprising, in combination:

a first nonconductive substrate;

a conductive ground plane on one surface of said substrate;

a plurality of conductive patches mutually spaced in an array extending over the other surface of said substrate;

means for conductively energizing said patches to comprise a first antenna with said ground plane;

a second nonconductive substrate overlying said plurality of patches;

a second plurality of conductive patches mutually spaced in a second array extending over the outer surface of said second substrate, and positioned in the spaces between the patches of said first array;

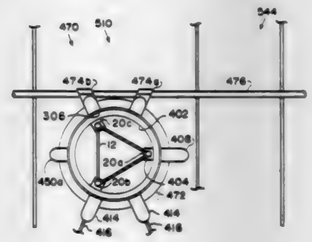
and means for conductively energizing said second plurality of patches to comprise a second antenna with said ground plane.

4,450,450

ANTENNA TOWER ASSEMBLY

Gary L. Ellingson, Thief River Falls, Minn., and Wendell E. Miller, Warsaw, Ind., assignors to Polar Research, Inc., Thief River Falls, Minn.

Division of Ser. No. 272,313, Jun. 10, 1981. This application Mar. 23, 1983, Ser. No. 477,983
Int. Cl.[3] H01Q 3/02
U.S. Cl. 343—758 **14 Claims**



1. A tower and rotationally positionable mount assembly (**538**, **542**, or **544**) which comprises a tower (**12**) having three vertically-disposed tower legs (**20***a*–**20***c*), having bracing (**22**) intermediate of adjacent pairs of said legs that defines a plurality of faces (**534***a*–**534***c*) of said tower, and having a neutral axis (**26**) that is disposed intermediate of said faces;

first mounting portion means (**170**+**204**, or **402**) for operative attachment to one of said faces of said tower;

second mounting portion means (**142**, **406**, or **472**), having a tower-receiving opening (**548**), and having said tower inside said tower-receiving opening, for circumscribing all of said tower legs, for being rotationally positioned around said tower, and for mounting a device thereto;

one (**142** or **402**) of said mounting portion means comprises first (**152** or **432**) and second (**154** or **434**) circumferential surfaces being circumferentially disposed around a second axis (**24**) that is substantially parallel to said neutral axis, and circumscribing all of said tower legs;

a plurality of roller shafts (**182**, **188**, **218**, or **310**) being disposed radially outward from said second axis, being spaced circumferentially around said second axis, and being operatively attached to said other (**170**+**204**, **406**, or **472**) mounting portion means;

a plurality of rollers (**160**, **186**, **219**, or **308**) being operatively attached to said roller shafts, and having roller surface means (**162**+**164**, **194**+**196**, or **320**) for cooperating with said first circumferential surface;

attaching means, comprising said rollers, and comprising both of said circumferential surfaces, for supportingly attaching said second mounting portion means to said first mounting portion means by operative engagement of said roller surface means with said first circumferential surface, for permitting said second mounting portion means

to be rotationally positioned about said second axis, for vertically restraining said second mounting portion means, and for radially guiding said second mounting portion means; and

rotational positioning means for rotationally positioning said second mounting portion means with respect to said first mounting portion means.

4,450,451

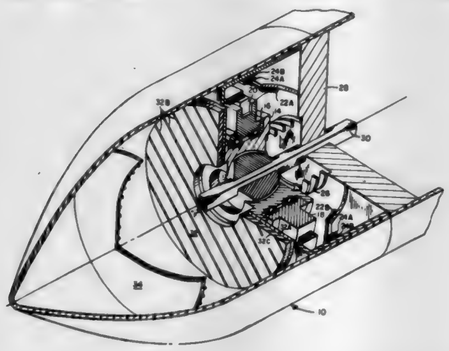
GIMBAL ASSEMBLY FOR MONOPULSE RADAR ANTENNA

Richard R. La Torre, Bedford, and Robert A. Phaneuf, Chelmsford, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1982, Ser. No. 356,697

Int. Cl.³ H01Q *3/02, 1/28*

U.S. Cl. 343—765 **3 Claims**



1. A tripartite gimbal assembly for a gyroscopically stabilized monopulse antenna installed in a moving vehicle having a longitudinal axis, such assembly comprising:

(a) an innermost section affixed to the moving vehicle, such section including a spherical bearing centered at a point on the longitudinal axis of such vehicle;

(b) a central section, generally annular in shape, having an inner surface matching the spherical bearing;

(c) an outermost section rotatably mounted on the central section;

(d) means for rotating the outermost section to gyroscopically stabilize such section and the central section;

(e) means for precessing the outermost section thereby to gimbal the central section on the innermost section;

(f) means, connected between the moving vehicle and the central section, for preventing rotation of the central section and for allowing such section to gimbal on the innermost section; and

(g) means for mounting a reflector for the monopulse antenna on the central section.

4,450,452

DATA RECORDING MEDIUM

Hideo Ando, Tokyo; Toshiharu Nakagawa, Yokohama, and Yoshinori Fujimori, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 1, 1982, Ser. No. 344,713

Claims priority, application Japan, Feb. 5, 1981, 56-14981

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 **9 Claims**

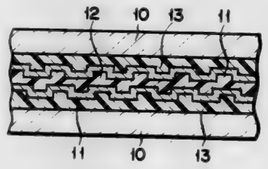
1. A medium capable of recording and reproducing data comprising:

a pair of disc-shaped substrates opposing each other at a distance;

a radiation-sensitive recording layer having a thickness of less than 5,000 Å formed on an opposing surface of each of said substrates, optical data having not yet been recorded in said recording layer;

a protective layer formed on each of said recording layers; and

an adhesive layer which fills a space defined between said



protective layers and which is bonded to said protective layers, and wherein

an indented layer with tracking guides is formed between said substrate and said recording layer and a surface of said protective layer to be bonded to said adhesive layer is formed flat.

4,450,453

OVERLAY RECORDING DEVICE FOR RECORDING A PLURALITY OF INFORMATION IN SUPERIMPOSITION

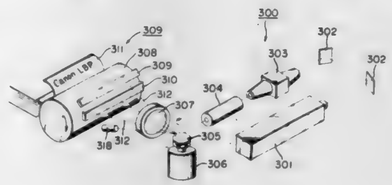
Takashi Kitamura, Yokohama; Asao Watanabe, Higashikurume; Takashi Nakano, Yokohama; Katsumi Masaki, Kodaira; Kazuhiro Hirayama, Yokohama; Yasushi Sato, Kawasaki, and Taisuke Tokiwa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 831,919, Sep. 9, 1977, Pat. No. 4,232,954, which is a division of Ser. No. 616,675, Sep. 25, 1975, Pat. No. 4,059,833. This application Jul. 2, 1980, Ser. No. 164,524

Claims priority, application Japan, Feb. 3, 1975, 50-14544; Feb. 4, 1975, 50-14530; Feb. 4, 1975, 50-14534; Feb. 13, 1975, 50-18528; Mar. 1, 1975, 50-25120

Int. Cl.³ B41B *15/00*

U.S. Cl. 346—108 **11 Claims**



1. An overlay recording device for recording a plurality of informations in superimposition, said device comprising:

A. means for receiving recording informations for recording purposes, including:

(a) first storing means, in which first information is stored;

(b) first reading means for reading out said first information from said first storing means;

(c) second storing means, in which second information is stored; and

(d) second reading means for reading out said second information from said second storing means;

B. instruction means for giving instruction as to whether said recording informations as received by said receiving means are to be stored in said first storing means or said second storing means; and

C. control means for controlling said recording informations as received by said receiving means to be stored in one of said first storing means and said second storing means, on the basis of instructions from said instruction means, said control means further including:

(a) drive means for driving said first and second reading means synchronously;

(b) recording means for dot-recording informations as read out from said first and second storing means; and

(c) means for applying said first and said second informations corresponding to certain dots onto said recording means by synthesizing said first and said second informations, when said certain dots are to be recorded by said recording means.

4,450,454

SMALL SIZE INK JET PRINTER

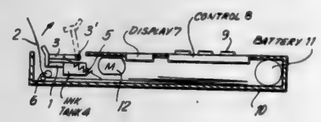
Haruhiko Koto, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Nov. 19, 1981, Ser. No. 323,008

Claims priority, application Japan, Nov. 20, 1980, 55-166517[U]; Nov. 20, 1980, 55-166518[U]; Nov. 21, 1980, 55-167247[U]; Nov. 21, 1980, 55-167250[U]; May 12, 1981, 56-68317[U]

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **14 Claims**



1. In a small printer device having an ink jet print head of the ink-on-demand type including a nozzle, the improvement therein comprising:

nozzle cover means for pressing against and blocking the discharge opening of said nozzle;

means for moving said nozzle cover means between a first position and a second position, said nozzle being blocked by said nozzle cover means in said first position and being unobstructed by said nozzle cover means in said second position;

a timer, said timer being in circuit with said print head and adapted to commence operation after printing is completed and to generate a signal after a preselected interval of time;

at least one supplemental function, said at least one supplemental function, when enabled, being subject to performance upon ocurrence of said timer signal; and

means for enabling said at least one supplemental function, said means for enabling cooperating with said nozzle cover means, said at least one supplemental function being enabled only when said nozzle cover means is in said second position.

4,450,455

INK JET HEAD

Hiroshi Sugitani, Machida; Masakazu Ozawa; Hiroto Matsuda, both of Yokohama; Masami Ikeda, Chiba, and Haruyuki Matsumoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

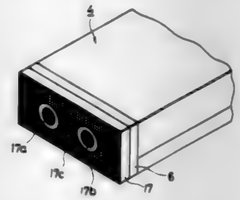
Filed May 28, 1982, Ser. No. 383,099

Claims priority, application Japan, Jun. 18, 1981, 56-94881; Jun. 18, 1981, 56-94882

Int. Cl.³ G01Q *15/16*

U.S. Cl. 346—140 R **7 Claims**

6. An ink jet head comprising an orifice plate made of a hardened film of a photosensitive resin and having an orifice which extends therethrough in the direction of its thickness, wherein on a surface of said plate at least the periphery of said



orifice has a smooth surface, with other regions of the surface being of a rough surface.

4,450,456

CASSETTE COMPRISING A CAPPING DEVICE AND A CLEANING DEVICE FOR AN INK JET PRINTER

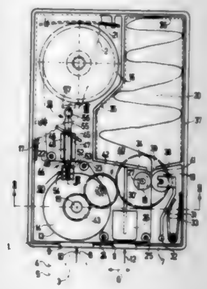
Gerd Jekel, and Franz Obenaus, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 28, 1982, Ser. No. 393,203

Claims priority, application Austria, Jul. 21, 1981, 3220/81

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **5 Claims**

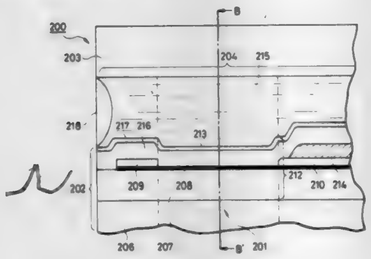


1. A cassette comprising a capping device and a cleaning device for the capping and cleaning, respectively, of the jet nozzle surface (8) of a printing head (3) of an ink jet printer, said capping device comprising a drivable capping cushion (14) having an endless surface (13) and means for passing said endless surface (13) of said capping cushion (14) along a capping position (10) accessible through a window (9) in a wall (7) of said cassette, said cleaning device comprising a drivable cleaning tape (17), driving means for unwinding said cleaning tape (17) from a feed reel (16), for passing said cleaning tape (17) along a cleaning position (12) accessible through a window (17) in said wall (7) and for passing said cleaning tape (17) along a part of the surface (17) of said capping cushion (14) in order to remove contaminations from said surface (13), characterized in that said driving means comprises two rotatably journalled rollers (18, 19) cooperating at their circumferences to drive said cleaning tape (17), passing between and contacting said cooperating circumferences, from said feed reel (16), first along a part of the surface (13) of said capping cushion (14), subsequently through the cleaning position (12) to said rollers (18, 19) and then to a storage space (20) formed in said cassette and wherein one of said rollers (18, 19) may be coupled to a drive device of said ink jet printer.

4,450,457
LIQUID-JET RECORDING HEAD

Takeshi Miyachi, Yokohama; Hisanori Tsuda, Tokorozawa; Toshitami Hara, Tokyo, and Yukio Kasugayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1982, Ser. No. 409,504
Claims priority, application Japan, Aug. 24, 1981, 56-132477
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 7 Claims

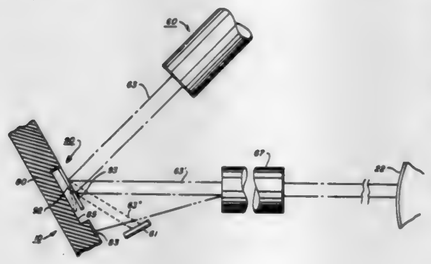


1. A liquid-jet recording head provided with a liquid ejecting section comprising a liquid flow path communicating with an orifice of said liquid ejection section for ejecting a liquid to form flying droplets and having as a portion thereof a heat action zone where thermal energy for forming said droplets acts on the liquid and with an electro-thermal transducer comprising at least one pair of opposing electrodes electrically connecting to a heat-generating resistance layer formed on a base plate and a heat generating part formed between the electrodes, characterized by said electro-thermal transducer having a protective layer composed of a first layer of an organic material and a second layer of an inorganic material which are laminated on the portion of the electrode under the liquid flow path in that order from the electrode.

4,450,458
MULTI-FUNCTION REPRODUCTION APPARATUS

Mehdi N. Araghi, West Webster, and Joseph J. Daniele, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1982, Ser. No. 394,602
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—155 7 Claims

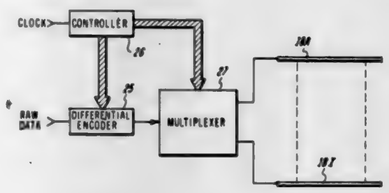


1. A combined read/write micro-deflector array comprising:
(a) a substrate;
(b) a linear succession of bendable reflecting fingers on said substrate interposable in the path of a sheet of light, said fingers being selectively deflected in a pattern commensurate with a line of image signals applied thereto to either reflect light along a first image producing path or along a second path to a stop; and
(c) a linear succession of photosensors on said substrate opposite and parallel to said fingers for converting image rays striking said photosensors to image signals.

4,450,459
DIFFERENTIAL ENCODING FOR FRINGE FIELD RESPONSIVE ELECTRO-OPTIC LINE PRINTERS

William D. Turner, San Marino, and Robert A. Sprague, Saratoga, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1980, Ser. No. 187,916
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—160 10 Claims

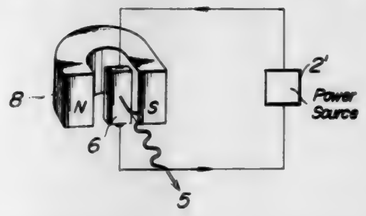


1. In an electro-optic line printer for printing an image on a photosensitive recording medium in response to successive sets of input data samples having magnitudes representing exposure values for picture elements on successive lines of said image, the combination comprising,
a multi-gate light valve having an optically transmissive electro-optic element and a plurality of spaced apart, individually addressable electrodes, said electrodes being disposed on one side of said electro-optic element and being intimately coupled thereto;
means for transmitting a sheet-like, collimated light beam through an interaction region of said electro-optic element;
encoding means for differentially encoding said input samples to provide differentially encoded data samples sample-to-sample voltage drops corresponding to the magnitudes of respective input data samples; and
means coupled between said encoding means and said electrodes for applying said encoded samples to said electrodes, thereby creating successive electric fringe field patterns within the interaction region of said electro-optic element for sequentially spatially modulating said light beam in accordance with the input data samples for successive lines of said image.

4,450,460
MAGNETIC-INFRARED-EMITTING DIODE

Takeshi Morimoto, Kyoto, Japan, assignor to Kyoto University, Kyoto, Japan

Filed Sep. 24, 1981, Ser. No. 305,218
Claims priority, application Japan, Sep. 25, 1980, 55-132279
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 10 Claims

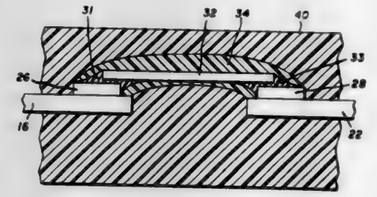


1. A magneto-infrared-emitting diode formed of a plate of an intrinsic semiconductor having a narrow energy gap which does not exceed substantially 0.6 eV, said semiconductor being equipped with no injection electrode and including:
a magnet for applying a magnetic field upon said magneto-infrared-emitting diode in parallel with said plate, and
a current source for supplying a current to said magneto-infrared-emitting diode in parallel with said plate as well as orthogonal to said magnetic field so as to emit an infrared radiation of a wavelength greater than 2.1 μm from said magneto-infrared-emitting diode substantially perpendicular to said plate at least at room temperature.

4,450,461
LOW COST HIGH ISOLATION VOLTAGE OPTOCOUPLER WITH IMPROVED LIGHT TRANSMISSIVITY

James S. Cook, Tully, N.Y., and J. Anthony Lennon, Newry, Northern Ireland, assignors to General Electric Company, Syracuse, N.Y.

Filed Jul. 24, 1981, Ser. No. 286,628
Int. Cl.³ H01L *33/00, 31/12, 23/26;* G02B *5/14*
U.S. Cl. 357—19 1 Claim

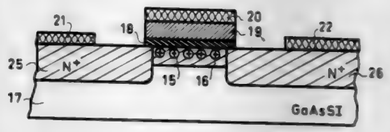


1. A semiconductor optocoupler comprising
an electrically insulative supporting substrate on which is situated first and second finger-like terminals having inner ends confronting each other in spaced relation across an expanse of said substrate,
an emitter responsive to an electrical input signal to generate a light output signal and mounted on one of said terminals adjacent its inner end;
a detector responsive to said light output signal to generate an electrical output signal and mounted on the other of said terminals adjacent its inner end, said detector being spaced apart from said emitter by at least the spacing of the inner ends of said terminals to provide electrical isolation therebetween;
a rod-shaped optically transmissive dielectrical member of glass having a transverse sectional area approximately that of said emitter and detector and having a flat bottom face at one end mounted on and supported by said emitter and in light receiving relation with said emitter, said rod-shaped member having a flat bottom face at its other end mounted on and supported by said detector and in light transmitting relation with said detector, said rod-shaped member spanning the gap across said substrate between the emitter and detector and being operative to optically couple light from said emitter to said detector while maintaining electrical isolation therebetween;
a first layer of optically transmissive coupling material disposed between said emitter and said one end of said rod-shaped member and operative to enhance the coupling of said light output signal from said emitter to said one end, and a second layer of optically transmissive coupling material disposed between said detector and the other end of said rod-shaped member and operative to enhance the coupling of said light output signal from said other end to said detector;
a reflective layer of electrically non-conductive optically reflective material bonded to and covering substantially all of the surface of said rod-shaped member;
a body of electrically non-conductive opaque material enclosing said rod-shaped member and emitter and detector; the outer ends of said respective terminals extending from said body and providing external electrical connections for said emitter and detector.

4,450,462
GAAS FIELD EFFECT TRANSISTOR WITH A NON-VOLATILE MEMORY

Trong L. Nuyen, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 19, 1981, Ser. No. 294,382
Claims priority, application France, Aug. 20, 1980, 80 18186
Int. Cl.³ H01L *29/78, 29/161, 27/12*
U.S. Cl. 357—23 9 Claims

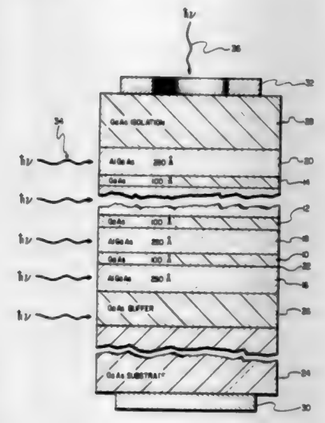


1. A field effect transistor with a non-volatile memory effect, comprising: supported by a semi-insulating substrate, two access regions called the source and the drain, respectively and a control region constituted by an active layer on said substrate and by a control grid on said active layer and itself formed by a semi-insulating layer in contact with the active layer and an insulating layer on said semi-insulating layer in contact with a control metallization, wherein the semi-insulating layer has a thickness below 100 angströms so as to permit the passage of electrons by the tunnel effect and wherein it is made from a material from the group of III-V semiconductors having a broader forbidden band than that of the material forming the active layer and having a structure and crystalline parameters close to those of the material of said active layer.

4,450,463
MULTIPLE-QUANTUM-LAYER PHOTODETECTOR

Raymond Chin, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 29, 1981, Ser. No. 278,804
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 4 Claims



1. A multiple-quantum-layer detector for responding to photons having a predetermined amount of energy, comprising:

a plurality of layers of a first semiconducting material having a first conduction band energy level; and

a plurality of layers of a second semiconducting material having a second conduction band energy level differing from said first conduction band energy level by no more than said predetermined energy,

said second layers alternating with said first layers to establish therebetween a plurality of heterojunctions,

said second layers being sufficiently thin to prevent the recapture of electrons photoexcited from said second layers, said first layers being sufficiently thick to accelerate said photoexcited electrons under the influence of said electric potential.

4,450,464

SOLID STATE AREA IMAGING APPARATUS HAVING A CHARGE TRANSFER ARRANGEMENT

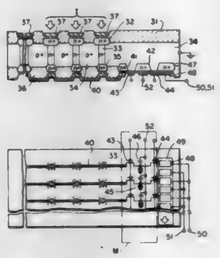
Takahiro Yamada, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 22, 1981, Ser. No. 285,317

Claims priority, application Japan, Jul. 23, 1980, 55-101617; Jul. 23, 1980, 55-101618

Int. Cl.³ H01L *27/14, 31/00, 29/80, 29/78*

U.S. Cl. 357—30 **6 Claims**



1. A solid state imaging apparatus having a charge transfer arrangement and including a plurality of photosensor elements disposed in a matrix and a charge transfer means for transferring charges generated and accumulated in a photoelectric converting region of said matrix, said charges being transferred from a front surface area of a substrate to a back surface area of said substrate through said substrate, each of said plurality of photosensor elements comprising:

a first semiconductor region of a first type of conductivity disposed at said front surface area of said substrate and electrically isolated by an insulator region from first regions of the other of said plurality of photosensor elements, said first region being irradiated by an incident light;

a second semiconductor region of said first type of conductivity disposed at said back surface area of said substrate and electrically isolated by an insulator region from second regions of the other of said plurality of photosensor elements;

a third semiconductor region of said first type of conductivity and having a low impurity concentration which extends between and is in contact with said first and second regions; and

a fourth semiconductor region of a second type of conductivity disposed around said third region so as to substantially isolate said third region from third regions of the other of said plurality of photosensor elements; said fourth region being supplied with a control voltage, whereby a channel is formed in said third region between said first and second regions.

4,450,465

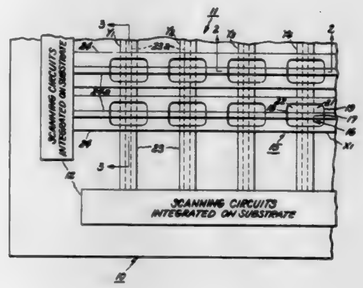
RADIATION TRANSMISSIVE ELECTRODE STRUCTURE

Joseph M. Pimbley, Schenectady, and Herbert R. Philipp, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 23, 1981, Ser. No. 304,733

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **5 Claims**



1. A radiation sensing array comprising

a substrate of semiconductor material having a major surface,

said substrate having a plurality of surface regions arranged in a line,

a thick layer of insulating material having a plurality of thin portions overlying said major surface, each thin portion in registry with a respective one of said surface regions, each thin portion including a first part centrally located therein, a second part contiguous with one side of said first part, and a third part contiguous with the other side of said first part,

a first strip of a conductive material of high electrical conductivity having electrode portions overlying first parts of the thin portions of said thick layer of insulating material,

a second strip of doped polycrystalline silicon having electrode portions overlying said first strip and in contact therewith and second and third parts of said thin portions of said thick layer of insulating material, said electrode portions of said first strip and said second strip constituting the conductors of a plurality of conductor-insulator-semiconductor capacitors formed with the thin portions of said insulating material and said surface regions of said substrate, said second strip being substantially wider than said first strip, said second strip being substantially thinner than said first strip,

means for making electrical connections to said substrate and to said first and second strips.

4,450,466

SEMICONDUCTOR IMAGE SENSOR

Jun-ichi Nishizawa; Tadahiro Ohmi, both of Sendai, and Seiji Matsumoto, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Dec. 2, 1981, Ser. No. 326,883

Claims priority, application Japan, Dec. 5, 1980, 55-171898

Int. Cl.³ H01L *27/14, 29/78, 27/12, 27/04*

U.S. Cl. 357—30 **3 Claims**

1. A semiconduction image sensor comprising:

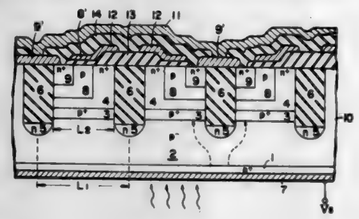
a low resistivity first region of a first conductivity type;

a high resistivity second region of a selected conductivity type;

a low resistivity third region of a second conductivity type reverse from the first type;

a low resistivity fourth region of the first conductivity type, the first to fourth regions being sequentially formed one on another in a semiconductor substrate inwardly thereof from its surface;

an insulating isolation region extending through the third and fourth regions for isolating at least two portions of the third and fourth regions from each other in a lateral direction;



a fifth region of a conductivity type reverse from the selected type taperingly extending into the second region in a vertical direction from a portion of the insulating isolation region facing towards the first region and being between the at least two portions of the third and fourth regions;

an electrode disposed in contact with the fourth region; and readout means connected to the fourth region.

4,450,467

GATE TURN-OFF THYRISTOR WITH SELECTIVE ANODE PENETRATING SHORTS

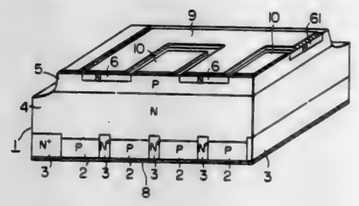
Takahiro Nagano, Hitachi; Isamu Sanpei, Kitaibaraki; Shuroku Sakurada, and Masaru Nakagawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 74,523, Sep. 11, 1979, abandoned. This application Jun. 12, 1981, Ser. No. 273,035

Claims priority, application Japan, Sep. 14, 1978, 53-112257

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **12 Claims**



1. A gate turn-off thyristor, comprising:

a semiconductor substrate having first and second major surfaces;

said semiconductor substrate having four semiconductor layers including:

an anode layer of a first conductivity type and a predetermined thickness, said anode layer having a first layer surface lying in said first major surface and having a second layer surface;

a lightly doped anode-base layer of a second conductivity type having a first layer surface contiguous with the second layer surface of said anode layer and having a second layer surface;

a cathode-base layer of a first conductivity type having a first layer surface contiguous with the second layer surface of said anode-base layer and having a second layer surface; and

a cathode layer of said second conductivity type having a first layer surface contiguous with the second layer surface of said cathode-base layer and having a second layer surface lying in said second major surface,

wherein said anode-base layer further comprises selected portions of highly doped semiconductor material of said second conductivity type extending deeper than said thickness of said anode layer from said first major surface through said anode layer into said lightly doped anode-base layer;

at least one of said highly doped selected portions of said anode-base layer serving as a shorting region for said gate turn-off thyristor to short across said anode layer to couple said lightly doped anode-base layer to said first major surface;

a part of said anode layer and the cathode layer being superposed with respect to each other when the part of said anode layer is projected onto the cathode layer in a direction perpendicular to said major surfaces of the substrate;

an anode electrode provided at said first major surface in contact with said anode layer and said highly doped selected portions of said anode-base layer;

a cathode electrode connected only to said cathode layer; and

a gate electrode provided at the cathode-base layer for controlling the on and off operation of the thyristor by controlling a current flow between said cathode and anode electrodes in accordance with a gate signal applied to said gate electrode.

4,450,468

GALLIUM ARSENIDE ISL GATE WITH PUNCHED-THROUGH BIPOLAR DRIVER TRANSISTOR

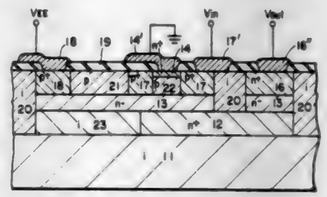
Junichi Nishizawa, and Tadahiro Ohmi, both of Miyagi, Japan, assignors to Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation of Ser. No. 116,415, Jan. 29, 1980, abandoned. This application Aug. 24, 1982, Ser. No. 411,121

Claims priority, application Japan, Jan. 31, 1979, 54-10828

Int. Cl.³ H01L *27/04*; H03K *19/091*

U.S. Cl. 357—51 **3 Claims**



1. A gallium arsenide static induction transistor integrated circuit formed in a semiconductor body comprising:

a semi-insulating substrate; an epitaxial layer grown on said semi-insulting substrate; a static induction transistor; and a resistor connected as a load of said static induction transistor, and resistor and said static induction transistor being formed on said epitaxial layer;

wherein said static induction transistor comprises an n^+ source region formed in contact with a main surface of said epitaxial layer; a p^+ gate region formed in contact with said main surface of said epitaxial layer with said gate region substantially surrounding said source region; an n^+ buried drain region adjacent to said semi-insulating substrate; a low impurity concentration current path region substantially surrounded by said source, gate and drain regions, said current path region including a low impurity p region adjacent to at least said source region, said current path region having dimensions and impurity concentrations so as to be completely covered with a depletion region at a zero, off-state gate bias; and at least one Schottky contact connected as an output terminal to said drain region; and

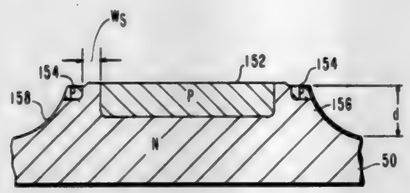
wherein said resistor comprises a p region formed in contact with said main surface of said epitaxial region; and at least a semi-insulating region between said p region and said semi-insulating substrate.

4,450,469

MESA TYPE SEMICONDUCTOR DEVICE WITH GUARD RING

Takeski Yamamoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,637
Claims priority, application Japan, Mar. 10, 1980, 55-30649
Int. Cl.³ H01L 29/74, 29/34, 29/06
U.S. Cl. 357—56 3 Claims



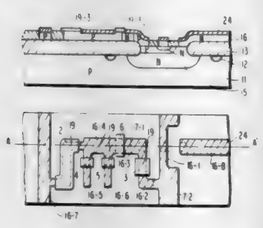
1. A mesa-type semiconductor device comprising a body of semiconductor material, said body having a top surface, a bottom surface and an edge portion extending between said top and bottom surfaces, a first region, having a first-type of conductivity, extending from a portion of said top surface into said body to a depth less than the thickness of said body, a second region having a second type of conductivity, said second region forming a p-n junction with said first region, said second region extending to said top surface around said first region, a third region, said third region having said first type of conductivity, said third region extending from said top surface into said body to a depth less than said first region, said third region being spaced apart from said first region by said second region, the edge portion of said body being beveled from said top surface, adjacent to said third region, to a depth equal to approximately twice the depth of said third region.

4,450,470

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Hiroshi Shiba, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1979, Ser. No. 11,582
Claims priority, application Japan, Feb. 10, 1978, 53-14251; Feb. 10, 1978, 53-14252
Int. Cl.³ H01L 27/04, 29/04, 23/52, 27/13
U.S. Cl. 357—59 1 Claim



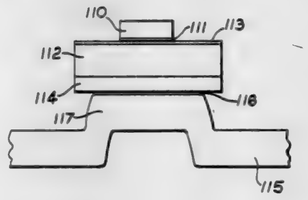
1. An integrated circuit device comprising a semiconductor substrate, an insulating film covering at least a part of one major surface of said substrate, a thin polycrystalline silicon layer formed on said insulating film, said silicon layer having a common portion and first and second branch portions connected at their one ends to said common portion and running in parallel with each other, first, second, and third PN junctions formed in said silicon layer from the upper surface to the bottom of said layer, a highly conductive layer covering the upper surface of said silicon layer except predetermined portions where diodes are to be formed, said first PN junction being located in said common portion and shorted by said highly conductive layer, and said second and third PN junctions being located in said first and second branch portions, respectively, said highly conductive layer being absent at said second and third PN junctions to form diodes there, and means coupled to the respective other ends of said first and second branch portions for applying signals to said diodes formed in said first and second branch portions.

4,450,471

SEMI-CONDUCTOR POWER DEVICE ASSEMBLY AND METHOD OF MANUFACTURE THEREOF

Felicitas Wellhöefer, Birmingham, England; David W. Stacey, deceased, late of Birmingham, England, and by Lesley A. Stacey, legal representative, Solihull, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jun. 12, 1981, Ser. No. 272,960
Claims priority, application United Kingdom, Jun. 21, 1980, 8020407
Int. Cl.³ H01L 23/14, 23/34
U.S. Cl. 357—80 10 Claims



1. In an assembly containing a semi-conductor power device and a base material heat sink, the improvement comprising:
a heat spreader interposed between said power device and said base material;
a ceramic, electrically insulating, heat conducting, layer spray-bonded to the bottom of the heat spreader;
an electrically conducting and heat conducting bonding layer means for bonding the base material to the ceramic layer;
a thin metallic plate layer bonded to the top of the heat spreader; and
a solder layer bonding the metallic plate layer to the semiconductor power device.

4,450,472

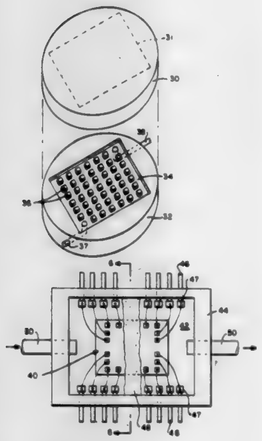
METHOD AND MEANS FOR IMPROVED HEAT REMOVAL IN COMPACT SEMICONDUCTOR INTEGRATED CIRCUITS AND SIMILAR DEVICES UTILIZING COOLANT CHAMBERS AND MICROSCOPIC CHANNELS

David B. Tuckerman, and Roger F. W. Pease, both of Stanford, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Mar. 2, 1981, Ser. No. 239,407
Int. Cl.³ H01L 25/04; F28F 7/00
U.S. Cl. 357—82 17 Claims

1. A heat generating device having improved heat removal capability comprising: a body portion having an external surface for cooling; a plurality of microscopic channels defined by fins in intimate contact with said external surface, the width of said channels being defined by

$$W_C = \sqrt{\frac{36\ Nu\ \mu k_f L^2}{\rho C P}}$$



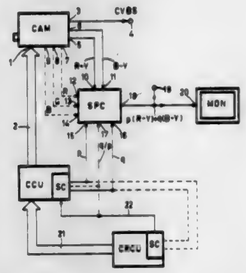
where
μ = viscosity of coolant in poise ($g\ cm^{-1}\ s^{-1}$)
k_f = thermal conductivity of coolant ($W\ cm^{-1}\ K^{-1}$)
ρC = volumetric heat capacity of coolant ($J\ K^{-1}\ cm^{-3}$)
P = driving pressure for forced convection (dynes $cm.^{-2}$)
L = length of circuit substrate in direction of flow (cm)
W_C = width of channels (cm)
Nu = Nusselt number;
a coolant input chamber and a coolant output chamber, said chambers being connected by said channels; and a cover attached to said fins and to said chambers, to confine the flow of a coolant fluid through said channels.

4,450,473

CAMERA SYSTEM FOR COLOR TELEVISION

Nicolaas J. L. Van Der Valk, Breda, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,835
Claims priority, application Netherlands, Dec. 2, 1980, 8006546
Int. Cl.³ H04N 9/62
U.S. Cl. 358—10 2 Claims



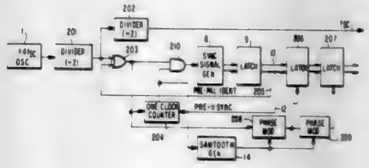
1. A camera system for color television comprising a color television camera, a camera control unit and a signal processing circuit, the camera unit being coupled to the signal processing unit to supply signals containing color information and luminance information, the camera control unit being coupled to the color television camera and the control unit, the signal processing unit generating a composite color difference signal p(R−Y)+q(B−Y), wherein p and q are combination factors, Y is the luminance signal, R is the red color signal, and B is the blue color signal, the improvement comprising a selection circuit included in said signal processing circuit having means for generating three pre-determined test signals, each test signal having a fixed ratio between the combination factors p and q, one of said three test signals being coupled to said signal processing circuit, said signal processing circuit generating a composite color difference signal R−G, R−B and B−G, respectively for said test signals wherein R is the red color signal, B is the blue color signal and G is the green color signal.

4,450,474

PAL SYSTEM SYNCHRONIZING SIGNAL GENERATING APPARATUS

Mineo Mizukami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,683
Claims priority, application Japan, Apr. 3, 1981, 56-50083
Int. Cl.³ H04N 9/46, 5/06
U.S. Cl. 358—19 8 Claims



1. In a PAL system of the type having 625 lines per frame and two fields per frame of a television signal having a color subcarrier frequency f_{sc}, a PAL system synchronizing signal generating apparatus comprising:
means for producing a reference signal having a frequency ($2f_{sc}$) which is twice that of said color subcarrier frequency (f_{sc});
generating means for generating 569 cycles of said reference signal during one line in each field and 568 cycles of said reference signal during all other lines;
means responsive to the output of said generating means for producing a pre-synchronizing signal; and
means for shifting the phase of said pre-synchronizing signal to produce a synchronizing signal, the amount of phase shift varying linearly with respect to elapsed time during each field from zero at the start of each field to $1/2f_{sc}$ at the end of each field.

4,450,475

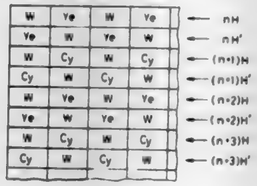
SOLID STATE COLOR IMAGING APPARATUS

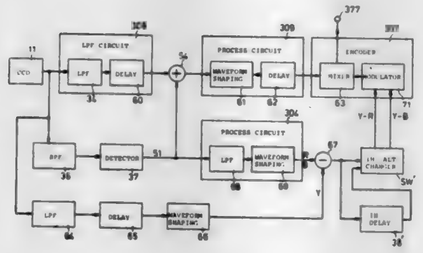
Kiyotsugu Ishikawa, Takatsuki; Yoshiaki Sone, Toyonaka; Susumu Hashimoto, Moriyama; Masanori Ōmae, Nagaokakyo, and Takao Kuni, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 5, 1982, Ser. No. 346,152
Claims priority, application Japan, Feb. 10, 1981, 56-18789
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 7 Claims

1. A solid state color imaging device comprising:
a solid state photoelectric device,
a color filter disposed in front of said solid state photoelectric device, said color filter has a number of minute filter elements of transparent parts, a first complementary color parts and a second complementary color parts, and
a signal processing circuit for processing output signal of said solid state photoelectric device,
said filter elements being disposed forming a number of parallel vertical columns and at the same time forming a number of horizontal rows, said vertical columns forming a sequence of said transparent part, said first complementary color part, said transparent part and said second

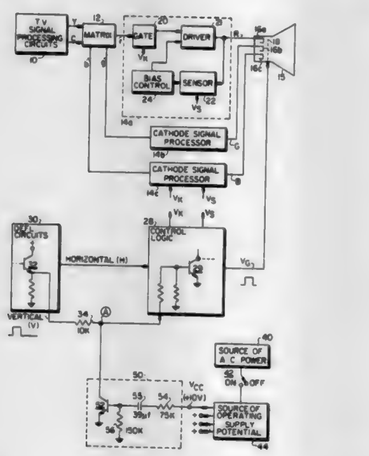
complementary color part and repetition of the same, every two vertical columns having the same kinds of elements on the same horizontal row, and with regard to each other neighboring two vertical columns said trans-





parent part neighbors with either said first complementary color part or said second complementary color part, thereby said transparent parts forming chequered disposition.

4,450,476
DELAYED REACTION AUTOMATIC KINESCOPE BIASING SYSTEM
James C. Tallant, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Jun. 23, 1982, Ser. No. 391,416
Int. Cl.[3] H04N *5/68, 9/20*
U.S. Cl. 358—74 **8 Claims**



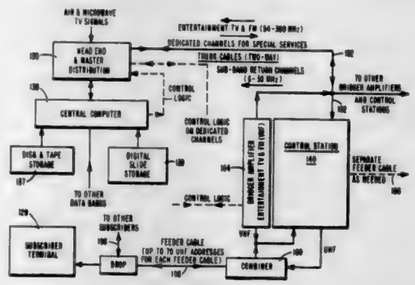
1. In a video signal processing system including a kinescope for displaying an image in response to image representative video signals applied thereto said kinescope exhibiting an initial conduction characteristic during an initial interval commencing when said system is initially energized, and exhibiting a normal conduction characteristic afterwards; means for supplying system operating voltages when said system is energized; and bias control means coupled to said kinescope and operative in response to a timing signal supplied thereto via a timing signal coupling path, for automatically controlling the bias of said kinescope; apparatus comprising:

timing control means for inhibiting said timing signal during said initial interval so that said bias control means is rendered inoperative for the duration of said initial interval, said timing control means comprising

a time constant network coupled to said operating voltage supplying means; and

a threshold conduction network with an input coupled to said time constant network and an output coupled to said timing signal path, said threshold network exhibiting first and second conductive states in response to bias provided from said time constant network substantially independent of the amplitude and duty cycle of said timing signal; wherein said threshold network exhibits (a) said first conductive state during said timing signal in said signal path, and (b) said second conductive state at the end of said initial interval for then enabling said timing signal in said signal path.

4,450,477
TELEVISION INFORMATION SYSTEM
Bruce E. Lovett, 1005 Congress La., McLean, Va. 22101
Filed Mar. 31, 1982, Ser. No. 363,959
Int. Cl.[3] H04H *7/18*
U.S. Cl. 358—86 **38 Claims**



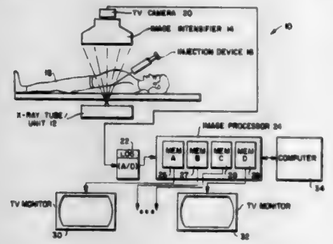
1. A cable television information system for transmitting video picture information to television receivers at subscriber terminals on a cable distribution system, said cable distribution system including a head end, at least one trunk line connected to said head end, at least one bridger amplifier connected to said trunk line and at least one feeder cable connected between said bridger amplifier and said subscriber terminals, said cable television information system comprising:

information storage means for storing video picture information;

information retrieval means coupled to said head end and said information storage means for retrieving video picture information from said information storage means and supplying the video picture information to said head end for transmission on said trunk lines of said cable distribution system;

control means associated with at least one of said bridger amplifiers and at least one of said feeder lines for capturing and storing the video picture information on said trunk line, said control means including transmission means for transmitting the video picture information to one of said subscriber terminals on a television channel dedicated to said one subscriber terminal.

4,450,478
DIGITAL FLUOROGRAPHIC METHOD AND SYSTEM
Robert S. Ledley, Silver Spring, Md., assignor to Georgetown University, Washington, D.C.
Filed Sep. 9, 1981, Ser. No. 300,587
Int. Cl.[3] H04N *7/18*
U.S. Cl. 358—111 **21 Claims**



1. A digital fluorographic method, comprising the steps of:

(a) obtaining an x-ray picture of a subect, said x-ray picture comprising a plurality of frames;

(b) digitizing and storing said x-ray picture as digital x-ray picture data divided into frames;

(c) averaging and convolving a predetermined number of said frames of said digital x-ray picture data to develop first processed picture data and displaying by a first display means said first processed picture data;

(d) injecting a contrast medium into the subject;

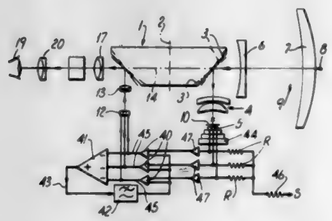
(e) obtaining a further x-ray picture of the subject;

(f) digitizing and storing said further x-ray picture as further digital x-ray picture data;

(g) operating on said further digital x-ray picture data to develop second processed picture data and displaying by a second display means said second processed picture data; and

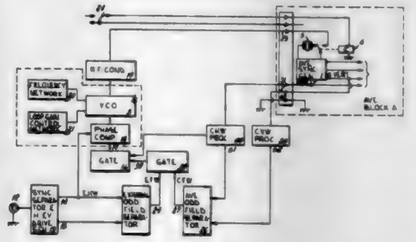
(h) subtractively combining said first and second processed picture data to produce picture information corresponding to a pictorial representation of differences between said x-ray picture prior to injection of said contrast medium and said further x-ray picture after injection of said contrast medium and displaying by a third display means said pictorial representation of differences whereby there is a simultaneous display by said first, second and third display means.

4,450,479
THERMAL IMAGING APPARATUS
David R. Horne, Crowborough, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 15, 1982, Ser. No. 368,782
Claims priority, application United Kingdom, Apr. 29, 1981, 8113286
Int. Cl.[3] H04N *7/18*
U.S. Cl. 358—113 **6 Claims**



1. Thermal imaging apparatus for producing a visible version of a scene represented by thermal infrared radiation, said apparatus comprising an objective lens arranged to form an infrared image of said scene upon an array of infrared radiation detectors, means for scanning said image transversely relative to said array, display means for reconstructing a visible version of said scene from the electrical output signals of the detectors, a summing device for forming an output signal derived from the sum of all detector output signals, and means for adding the output signal in negative feedback to each of the detector outputs.

4,450,480
SYNCHRONIZATION INTERFACE DEVICE FOR AUTONOMUS VIDEO EQUIPMENT
Juan De La Cierva, Key Biscayne, Fla., assignor to Scitech Corporation, Miami, Fla.
Filed Apr. 5, 1982, Ser. No. 365,786
Int. Cl.[3] H04N *5/04*
U.S. Cl. 358—149 **4 Claims**



1. An interface device to be used in conjunction with an external video signal to synchronize and manipulate the video signals from video equipment provided with built-in generators of internal synchronization signals including horizontal and vertical drive signals, comprising, in operative combination:

(A) switch means for bypassing the crystal input to said generator;

(B) means for separating the horizontal and vertical sync components from said external video signal, including two generators of continuously running pulses triggered by said horizontal and vertical sync components;

(C) means for separating the odd field of each of said internal video signal scan frame connected to the horizontal and vertical drive signals of said built-in generator;

(D) means for separating the odd field of each of said external video signal scan frame connected to the output of said two generators of continuously running pulses;

(E) first means for gating having its two inputs connected to the outputs of said means for separating the odd fields of said external and internal video signal scan frame thereby causing the output of said first gating means to be at a predetermined state when the external and internal video signals are in synchronization;

(F) second means for gating having one of its two inputs connected to the output of said first means for gating and the other input being connected to the horizontal drive signal of said built-in generator;

(G) phase comparator means having one of its two inputs connected to the output of said second means for gating and the other input being connected to the output of said generator of continuously running pulses triggered by the external horizontal sync component;

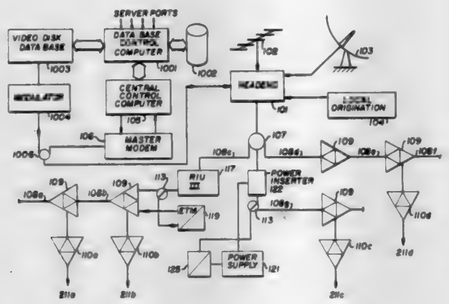
(H) voltage controlled oscillator means driven by the output of said phase comparator means and having its output connected to said switch means for bypassing the crystal of said built-in generator.

4,450,481

TAMPER-RESISTANT, EXPANDABLE COMMUNICATIONS SYSTEM

Robert V. C. Dickinson, Berkeley Heights, N.J., assignor to E-Com Corporation, Milford Square, Pa.

Filed Aug. 25, 1981, Ser. No. 296,171
Int. Cl.³ H04N 7/16, 7/10
U.S. Cl. 358—114 **6 Claims**



1. In combination in a broadbandwidth multichannel cable network including a plurality of subscriber drops or terminal devices and a headend:

a plurality of remote interrogator units connected in a branch of said network for receiving and storing subscriber drop channel allocation information from said headend and for selectively passing communications information to said headend and

a plurality of groups of expansion modules connected in said branch of said network; each module of said groups controlling a respective plurality of said subscriber drops or terminal devices; all of said expansion modules of one of said groups having means for being selectively sequentially accessed by one of said remote interrogator units;

band stop filter means associated with each of said remote interrogator units and interposed in said branch of said network to isolate a group of said expansion modules in a segment of said branch for control by only one of said plurality of remote interrogator units, whereby control of others of said groups of expansion modules in other segments of said branch may be simultaneously maintained by others of said plurality of remote interrogator units in said branch.

4,450,482

DIGITAL REAL-TIME VIDEO IMAGE PROCESSING DEVICE

Rudolf Ackermann, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,373
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107901
Int. Cl.³ H04N 5/20
U.S. Cl. 358—160 **5 Claims**

1. A digital real-time video image processing system according to the principle of non-linear manipulation of the brightness distribution of video pictures by means of matching the brightness distribution (histogram) to a prescribed function F(H), characterized in that an arithmetic unit with a histogram memory is provided for determining the histogram of a video image, said histogram memory having an address input for receiving digitized image point information and being operable for storing a set of histogram values based on said information; in that a processing circuit is connected to the histogram memory, said processing circuit calculating correction values from the stored histogram values for converting received image point information into corrected image point information in accord with the prescribed function F(H), said processing circuit including a correction memory for storing the corrected values, said correction memory having an address input, and means for supplying image point information of a video

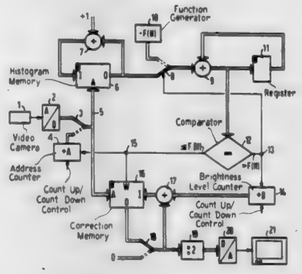


image to the address input of the correction memory for conversion in accord with the correction values stored there,

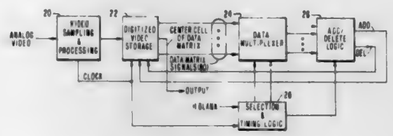
characterized in that the prescribed function F(H) is a constant which corresponds to the mean value of the histogram parameters of the system.

4,450,483

CIRCUIT FOR IMPROVING THE QUALITY OF DIGITIZED LINE IMAGES

John W. Coviello, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 2, 1981, Ser. No. 298,557
Int. Cl.³ H04N 5/14
U.S. Cl. 358—166 **6 Claims**



1. A system for producing a line drawing, comprising in combination:

(a) apparatus for processing a sampled video signal to produce a digital signal comprising a plurality of bits wherein each sampling point of the video signal is represented by a single bit digit digital signal;

(b) means for storing a predetermined number of said single bit digital signals to produce a data matrix, said data matrix comprising a predetermined number of sample points;

(c) means for comparing a selected element of said data matrix to a predetermined number of other elements of said data matrix to determine if the quality of said line drawing can be improved by changing the value of said selected element; and

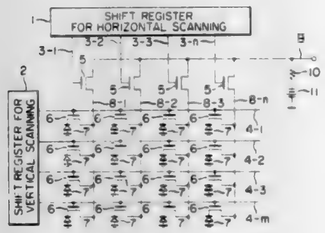
(d) means for selectively changing said selected element to improve the quality of said line drawing.

4,450,484

SOLID STATES IMAGE SENSOR ARRAY HAVING CIRCUIT FOR SUPPRESSING IMAGE BLOOMING AND SMEAR

Sumio Terakawa, Osaka, and Kenju Horii, Shiga, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed May 20, 1981, Ser. No. 265,582
Claims priority, application Japan, May 22, 1980, 55-68358
Int. Cl.³ H04N 3/14
U.S. Cl. 358—213 **2 Claims**



1. A solid-state image sensor comprising:

a plurality of photoelectric transducer elements arranged in a matrix array consisting of m columns and n rows, for storing charge corresponding to a light image impinging thereon;

first charge transfer means comprising metal-insulator-semiconductor vertical shift resister means and switching means for transferring the light image charge stored in said photoelectric transducer elements to corresponding vertical transmission lines;

second charge transfer means for transferring the charge transferred from said transducer elements to said vertical transmission lines, to corresponding charge-coupled horizontal shift register means;

first storage capacitor means having a capacitance lower than that of said vertical transmission lines;

means for applying a first pulse voltage to one electrode of said first storage capacitor means, the other electrode thereof serving as a storage means;

first transfer gate means responsive to a second pulse voltage for effecting charge transfer between said storage means and said vertical transmission lines;

second transfer gate means responsive to a third pulse voltage for effecting charge transfer from said storage means to said horizontal shift register means;

third charge transfer means interposed between said first storage capacitor means and said second charge transfer gate means and comprising a second storage capacitor means;

means for applying a voltage to one electrode of said second storage capacitor means, the other electrode thereof serving as storage means;

fourth transfer gate means and drain means adjacent said second storage means, for discharging the charge therein except for said light signal charge; and

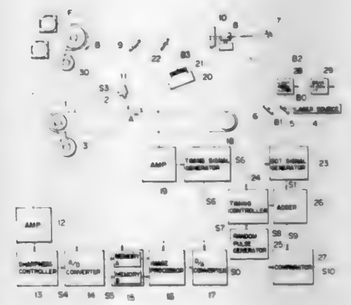
fourth charge transfer means coupled to said fourth transfer gate means for discharging the charge except said light signal charge to one electrode of a corresponding one of each of said vertical transmission lines.

4,450,485

IMAGE SCANNING AND RECORDING METHOD

Yuji Oshikoshi, and Toshitaka Agano, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 18, 1982, Ser. No. 379,343
Claims priority, application Japan, May 22, 1981, 56-78329
Int. Cl.³ H04N 1/40
U.S. Cl. 358—298 **8 Claims**



1. An image scanning and recording method for scanning a continuous tone original and recording a reproduction thereof on a recording medium, said method comprising the steps of:

adding a random pulse signal to a selected one of an image signal obtained by scanning the continuous tone original and a dot signal controlled synchronously with said scanning of the original;

comparing said image signal with said dot signal to obtain a randomized dot image signal;

on-off modulating a light beam in accordance with said randomized dot image signal; and

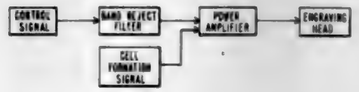
scanning a photosensitive recording medium with said on-off modulated light beam so as to record thereon a dot image corresponding to said continuous tone original.

4,450,486

ENGRAVING APPARATUS AND METHOD

Lester W. Buechler, Dayton, Ohio, assignor to Ohio Electronic Engravers, Inc., Dayton, Ohio

Division of Ser. No. 056,623, Jul. 11, 1979, Pat. No. 4,357,633.
This application Sep. 24, 1982, Ser. No. 422,652
Int. Cl.³ H04N 1/40
U.S. Cl. 358—299 **2 Claims**



1. Apparatus for engraving cells in the surface of a gravure printing cylinder, comprising an engraving head, means supporting said head for relative movement adjacent the surface, said head including a shaft and an engraving stylus having a pointed tip, means on said shaft and supporting said stylus eccentrically of the axis of said shaft with said tip projecting in a tangential direction, spring means rigidly secured to said head and supporting said shaft for oscillation on its axis to effect angular oscillating movement of said stylus tip in a radial plane for producing cells within the surface, the oscillating components including said shaft and said stylus and said stylus supporting means having a natural frequency, power operated drive means for oscillating said components, a power supply connected to said oscillating drive means, and said power supply including an electrically compensating circuit having a

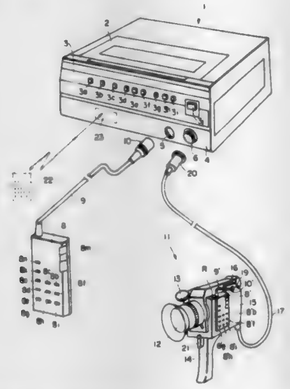
filter with a band rejection characteristic effective to compensate for the natural frequency of said oscillating components.

4,450,487

TELEVISON CAMERA AND REMOTE-CONTROLLABLE VIDEO SIGNAL RECORDING/REPRODUCING APPARATUS

Hajime Koide, Ichikawa, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 6, 1981, Ser. No. 319,103
Claims priority, application Japan, Nov. 7, 1980, 55-159379[U]; Nov. 7, 1980, 55-159380[U]
Int. Cl.³ A04N 5/76
U.S. Cl. 358—335 **4 Claims**



2. A video tape recording/reproducing system comprising:

(a) a television camera for producing an output electrical signal indicative of images of a subject, the camera including:

a body;

a lens system attached to said body;

a photosensitive element held in said body and being responsive to light rays from said lens system for producing a video signal;

a camera cable for transmitting the output signal of said television camera, said camera cable having a plurality of wires;

first means for holding a remote-control unit so that said remote-control unit is detachably attached to said body;

second means for receiving remote-control signals from said remote-control unit; and

third means for transmitting said remote-control signals received by said second means to said camera cable;

and

(b) a video tape recording/reproducing apparatus, including:

fourth means for driving a recording medium;

fifth means for processing an input signal to record the same on said recording medium;

sixth means for receiving signals from said television camera via said camera cable, said sixth means having a plurality of conductors respectively contactable with said wires of said camera cable, some of said conductors being connected to said fifth means for feeding said fifth means with the output video signal from said television camera;

seventh means for receiving signals from said remote-control unit which has been detached from said television camera, said seventh means having a plurality of conductors connected to said fourth means for controlling the operation of said video signal recording/reproducing apparatus in response to remote-control signals from said remote control unit; and

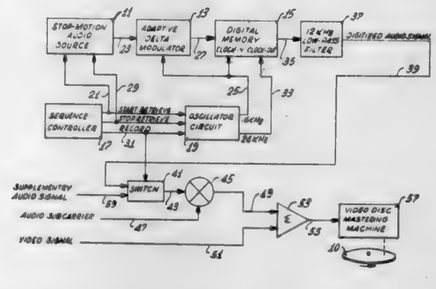
eighth means having a plurality of conductors connected between said conductors of said seventh means and some of said conductors of said sixth means so that remote-control signals fed via said television camera cable are fed to said fourth means when said remote-control unit is attached to said television camera.

4,450,488

SYSTEM FOR RECORDING CONTINUOUS-PLAY AND STOP-MOTION SIGNAL

Scott M. Golding, Costa Mesa, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 202,840, Oct. 31, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 470,827
Int. Cl.³ H04N 5/76
U.S. Cl. 358—342 **12 Claims**



1. A method of recording a video signal and a stop-motion audio signal on a record medium, the video signal representing a plurality of continuous-play video frames and a stop-motion video frame associated with the stop-motion audio signal, the method comprising steps of:

combining the stop-motion audio signal and the portion of the video signal representing the continuous-play video frames, to form a composite signal;

recording the composite signal on a first portion of the record medium; and

recording the portion of the video signal representing the stop-motion video frame on a second downstream portion of the record medium.

4,450,489

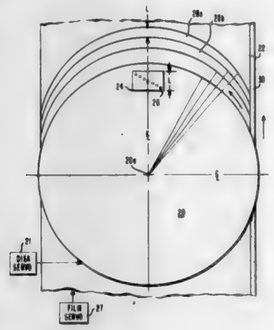
FLOATING DISC PHOTOCONDUCTIVE FILM READER

James D. Barry, Los Angeles, and Joseph M. Denney, Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 28, 1981, Ser. No. 334,945
Int. Cl.³ H04N 5/86
U.S. Cl. 358—348 **12 Claims**

1. In a photoconductive film reader for reading a filmstrip having electrostatically recorded information, the combination comprising:

a disc having a bottom face, said disc rotatable over said film at a sufficiently high rate so that said bottom face may float upon said filmstrip in the presence of a fluid or gaseous medium, wherein said filmstrip is moveable beneath said disc; and



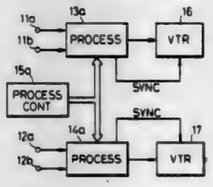
a read head attached to said disc at said bottom face, and including means for sensing electrostatic charge stored in said filmstrip.

4,450,490

SYSTEM FOR OBTAINING SYNCHRONIZED REPRODUCTION FROM A PLURALITY OF REPRODUCING APPARATUSES

Yasuhiko Fujii, Yamato; Mitsuru Kikuchi, Yokohama, and Hiroyuki Saito, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 26, 1981, Ser. No. 315,082
Claims priority, application Japan, Oct. 28, 1980, 55-151067
Int. Cl.³ G11B 27/02, 15/46
U.S. Cl. 360—13 **8 Claims**



1. A system for obtaining synchronized reproduction from a plurality of reproducing apparatuses by obtaining mutually synchronized reproduced signals from a plurality of reproducing apparatuses, each of said plurality of reproducing apparatuses reproducing recorded signals from a recording medium, each recording medium being pre-recorded with mutually identical address signals for each predetermined data signal block, said system for obtaining synchronized reproduction comprising:

stopping means for temporarily and individually stopping reproducing operations of said plurality of reproducing apparatuses when a reproduced address coincides with a preset address in each of said plurality of reproducing apparatuses, and for resuming the reproducing operations of said plurality of reproducing apparatuses so that the address is substantially matched with respect to each recording medium;

control means for controlling reproducing operations of said plurality of reproducing apparatuses so that one reproducing apparatus with respect to another reproducing apparatus among said plurality of reproducing apparatuses performs reproduction in a state advanced by a predetermined quantity on the recording medium;

detection means for comparing and detecting a difference between address signals reproduced by said plurality of reproducing apparatuses; and

memory means controlled for writing-in and reading-out operations by a detection output received from said detection means, for producing a reproduced signal from said one advanced reproducing apparatus after delaying the reproduced signal, so that the delayed reproduced signal from said one advanced reproducing apparatus is in synchronism with a reproduced signal received from said other reproducing apparatus.

4,450,491

OPERATION LEVER MECHANISM FOR MAGNETIC TAPE RECORDING/REPRODUCING APPARATUS

Satoshi Takagi; Toshio Watanabe, and Masao Ito, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 24,705, Mar. 28, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 257,648
Claims priority, application Japan, Mar. 31, 1978, 53-36704; Mar. 31, 1978, 53-36703
Int. Cl.³ G11B 15/00
U.S. Cl. 360—96.5 **3 Claims**



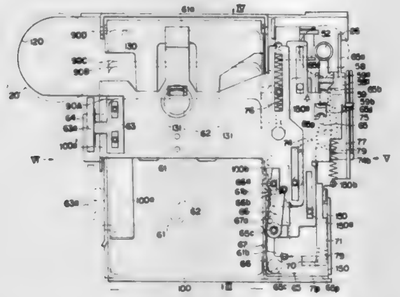
1. Operating mechanism for a magnetic tape recording/reproducing apparatus which comprises: a plurality of depressible operation members provided in said magnetic tape recording/reproducing apparatus; support means on which a magnetic head is mounted, said operation members including at least a play-operation member for advancing said support means, a stop-operation member for withdrawing said support means, a fast forward-operation member and a rewind-operation member; locking means for releasably locking at least the depressed member other than said stop-operation member in its operative depressed state; an interlocking member is provided in association with said stop-operation member for carrying out a cassette ejecting operation when fully moved with the same, said interlocking member having a salient portion and said stop operation member having an engaging portion; stop operation means responsive to the movement of said stop-operation member while one of the other operation members is depressed by preventing the movement of said interlocking member with said stop-operating member to stop an ejection operation; and ejecting operation means responsive to the movement of said stop-operation member while no other operation member is depressed for allowing movement of said interlocking member therewith to effect said cassette ejecting operation; said salient portion of said interlocking member being adapted to be brought into engagement with said engaging portion of said stop operation member by said ejecting operation means, and said salient portion being adapted to be kept from engagement with said engaging portion by said locking means.

4,450,492

INTERLOCKING GEAR CONTROL MECHANISM IN MAGNETIC TAPE RECORDING/PLAYING APPARATUS

Hitoshi Okada; Kazuki Takai, and Katsumi Yamaguchi, all of Saitama, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,810
Int. Cl.³ G11B *15/66, 21/22*
U.S. Cl. 360—105 **3 Claims**



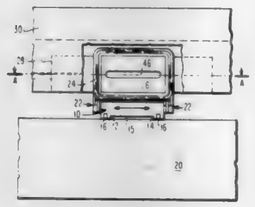
1. A gear control mechanism in a magnetic tape recording/-playing apparatus of the type having a magnetic head and capable of receiving a pack of magnetic tape to be driven past said magnetic head, the mechanism comprising:
- a motor for driving a said magnetic tape in said apparatus;
- a rotary means driven by said motor;
- a driven gear to be engaged with said rotary means for driving thereby;
- a gear lock member responsive to insertion of a tape pack into said apparatus for interengaging said driven gear with said rotary means so as to drive said driven gear;
- a rack member engaged with said driven gear and responsive to driving of the latter due to said insertion of a tape pack for effecting auto-loading operation of the tape pack;
- an eject means for ejecting said tape pack loaded into said apparatus; and
- a disengagement means responsive to completion of said operation of said rack member for disengaging said driven gear from said rotary means and for maintaining the disengagement between said driven gear and said rotary means until completion of the eject operation by said eject means.

4,450,493

MAGNETIC HEAD SLIDER AND ACTUATOR ASSEMBLY

Robert B. Watrous, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1981, Ser. No. 320,167
Int. Cl.³ G11B *5/55, 5/60, 21/10, 5/10*
U.S. Cl. 360—106 **6 Claims**



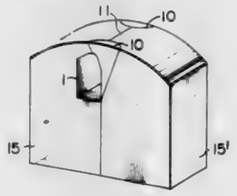
1. A magnetic head and actuator assembly for use in transferring information to and from the magnetic surface of a rotating disk of a disk file comprising in combination:
- an air bearing slider on which said magnetic head is disposed including an air bearing surface for maintaining said magnetic head in a data transferring relationship to said magnetic surface as said slider is moved by said actuator relative to said disk to position said head at selected concentric recording tracks on said magnetic surface;
- said actuator including a stator and a flat planar armature comprising a planar rectangular bearing element and an energizable flat coil wound on the edge perimeter of said planar bearing element, said rectangular bearing element including a pair of separate continuous air bearing surfaces each disposed adjacent said perimeter to define a shallow air plenum on each of the opposite surfaces of said bearing element, said stator including a channel having a pair of opposed parallel air bearing surfaces which cooperate with said bearing surfaces of said armature to guide the movement of said head along a radial linear path to thereby eliminate any undesirable yaw or tangential motion while allowing movement of said armature within said channel in a role motion around an axis parallel to said disk and said radial direction and in a direction normal to said disk surface to permit said head to follow any flutter of said disk surface;
- means associated with said stator for establishing a flux field extending normal to and between said parallel air bearing surfaces;
- means for supplying air to said plenum to maintain said stator and said armature in an air bearing relationship;
- means for supplying current to said coil to cause movement of said armature relative to said flux field; and
- means for attaching said slider to said armature to allow said slider to pivot about an axis parallel to said direction of movement in order to follow the surface of said disk while restraining movement of said slider relative to said armature in all other directions.

4,450,494

MAGNETIC HEAD

Hideo Fujiwara, Tokorozawa; Mitsuhiro Kudo, Tokyo; Teizo Tamura, Katsuta; Nobuyuki Sugishita, Yokosuka; Yoshihiro Shiroishi; Takeshi Kimura, both of Higashimurayama; Kiminari Shinagawa, Kanagawa, and Noriyuki Kumasaka, Ome, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,612
Claims priority, application Japan, Sep. 22, 1980, 55-130734
Int. Cl.³ G11B *5/12, 5/22*
U.S. Cl. 360—125 **28 Claims**



1. A magnetic head having a magnetic core formed by facing a pair of magnetic substances through a working gap at a head section confronting a magnetic recording medium, comprising an oblique part made by at least one of said magnetic substances in the neighborhood of said working gap for forming said working gap, an inner wall of said oblique part being inclined at an angle with a face confronting said magnetic recording medium, said oblique part being made of a magnetic material having magnetic anisotropy, an angle α between a direction having a maximum magnetic permeability in a main magnetic circuit plane of said oblique part and said face confronting said magnetic recording medium being larger than an orientation angle of said direction for making minimum a magnetic reluctance of a main magnetic circuit of said magnetic core by an angle β, said angle β being given by the following formula:

$$\left(\frac{20D}{L^*} - 10\right)^\circ < \beta < \min\left[\left(\frac{30D}{L^*} + 20\right)^\circ, 50^\circ\right],$$

wherein D indicates a depth of said working gap, L^*, indicates an effective length of said oblique part, and min

$$\left[\left(\frac{30D}{L^*} + 20\right)^\circ, 50^\circ\right]$$

indicates the smaller of

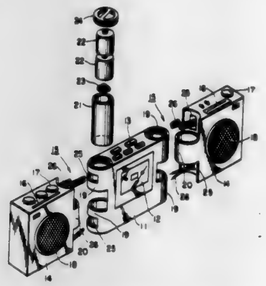
$$\left(\frac{30D}{L^*} + 20\right)^\circ \text{ and } 50^\circ.$$

4,450,495

PORTABLE ACOUSTIC DEVICE

Toshimasa Naruki, Fukushima, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1981, Ser. No. 309,754
Claims priority, application Japan, Oct. 9, 1980, 55-141550; Oct. 9, 1980, 55-141551; Oct. 9, 1980, 55-144098; Oct. 9, 1980, 55-144099; Oct. 9, 1980, 55-144100; Oct. 9, 1980, 55-144101; Oct. 9, 1980, 55-144102; Feb. 9, 1981, 56-16920[U]; Feb. 9, 1981, 56-16921[U]; Feb. 9, 1981, 56-16922[U]; Feb. 9, 1981, 56-16923[U]; Feb. 9, 1981, 56-16924[U]; Feb. 9, 1981, 56-16925[U]; Feb. 9, 1981, 56-16926[U]; Feb. 9, 1981, 56-16927[U]; Feb. 9, 1981, 56-16928[U]
Int. Cl.³ G11B *5/02*
U.S. Cl. 360—137 **27 Claims**



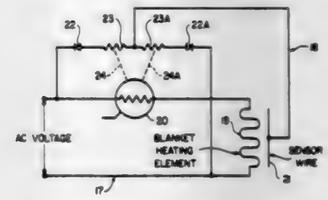
1. A portable acoustic device in which sound recorded on a magnetic tape is reproduced through at least one loudspeaker, said device comprising:
- a body unit for generating signals corresponding to the sound recorded on a magnetic tape, said body unit having a first hollow hinge part with cylindrical inner walls and positioned on at least one side of said body unit;
- at least one loudspeaker unit receiving said signals for reproducing said recorded sound, said at least one loudspeaker unit having a second hollow hinge part thereon, said second hollow hinge part having cylindrical inner walls of substantially the same diameter as those of said first hollow hinge part;
- at least one cylindrical shaft passing through said first and second hollow hinge parts to thereby act as a hinge shaft about which said body unit and a least one loudspeaker unit are relatively rotatable, said shaft being of a form such that a battery can be fit therein;
- electrical signal connecting means between said body unit and said at least one loudspeaker unit; and
- electrical power connecting means between the interior of said shaft and said body unit.

4,450,496

PROTECTION OF CERTAIN ELECTRICAL SYSTEMS BY USE OF PTC DEVICE

Frank A. Doljack, Pleasanton, and Lee M. Middleman, Portola Valley, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 67,207, Aug. 16, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,347
Int. Cl.³ H02H *3/08, 3/06*
U.S. Cl. 361—58 **8 Claims**



1. An electrical system comprising:
- (a) a power circuit comprising a load, a PTC device connected in series with the load and means for connecting the power circuit to a direct current or alternating current power source; and
- (b) a control circuit which includes at least one resistive heating element and the current through which becomes significant when a fault condition occurs in the power circuit;

said PTC device being in a low temperature low resistance state under normal steady state operating conditions of the system and being thermally coupled to said resistive element by a metal strap which at least partially encircles said resistive element and extends over at least a portion of the surface of said PTC device, the PTC device and the resistive element being such that
- (1), when the power circuit is connected to a power source and a fault condition develops in the power circuit, current flowing through the control circuit causes heating of said resistive element, and the heat generated by said resistive element rapidly raises the temperature of the PTC device, causing the PTC device to change to a high resistance state thus substantially reducing the current through said load in the power circuit; and
- (2) when said fault condition is removed and the power circuit is disconnected from the power source, the PTC device cools to a low temperature, low resistance state, and reconnection of the power circuit results in restoration of normal steady state operating conditions.

4,450,497

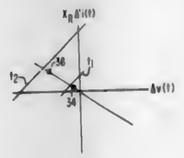
ULTRA-HIGH-SPEED RELAY

Allan M. Bignell, Mississauga, Canada, assignor to Westinghouse Canada, Hamilton, Canada

Filed Oct. 22, 1982, Ser. No. 436,101
Int. Cl.³ H02H *3/40*
U.S. Cl. 361—82 **12 Claims**

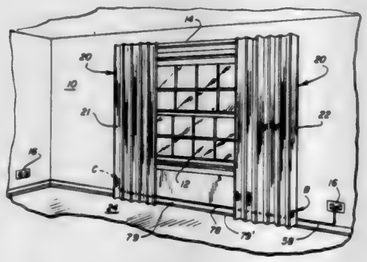
1. A protective relay for determining the direction to a fault, from a measuring point on an electrical power transmission line energized by an ac power source, said protective relay comprising:
- first means for providing a current-derived signal as a function of time, said current-derived signal being representa-

tive of the fault-generated current deviation from the steady-state pre-fault current;
second means for providing a voltage-derived signal as a function of time, said voltage-derived signal being representative of the fault-generated voltage deviation from the steady-state pre-fault voltage;
filter means for removing transients due to traveling wave activity from each of said current-derived and voltage-derived signals, thereby producing a filtered current-derived signal and a filtered voltage-derived signal;
third means for transforming at least one of said filtered current-derived signal and said filtered voltage-derived signal such that the transformation results in the order of differentiation of said filtered current-derived signal being



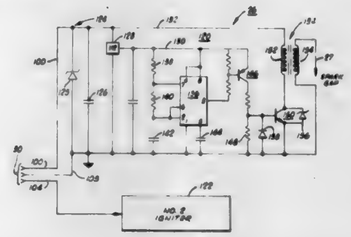
one order higher than the order of said filtered voltage-derived signal, with said filtered voltage-derived signal and said filtered current-derived signal of different order being referred to as first and second signals respectively;
fourth means for generating a time-varying trajectory in an X-Y plane using said first and second signals as X and Y coordinates respectively;
fifth means for generating a time-varying threshold boundary in at least two predetermined quadrants of said X-Y plane;
and sixth means for determining when said time-varying trajectory exceeds said time-varying threshold boundary for a predetermined time thereby indicating that the fault is in a first direction from the measuring point.

4,450,498
ELECTRICALLY GROUNDED, STATIC ABSORBING DRAPERY INSTALLATION
Burton L. Siegal, Skokie, Ill., assignor to Coral Industrial Sales Co., Chicago, Ill.
Filed Sep. 15, 1982, Ser. No. 418,243
Int. Cl.³ H05F *3/02*
U.S. Cl. 361—212 **11 Claims**



1. In a drapery installation which includes at least one panel of decorative fabric having electrically conductive fibers or filaments fabricated thereinto; said fabric panel being adapted to be hung from a traverse rod with one side edge geneally vertically stationary and a second side edge to be traversed thereby; an electrical connector assembly of component parts strategically installed on the panel for minimal movement therewith during opening and closing of the drapery comprising:
(a) electrically conductive plate means secured to a face of said panel adjacent said generally stationary side edge in electrical connection with said conductive fibers or filaments;
(b) a first terminal member secured in electrical connection to said plate means;
(c) a second terminal member electrically connected to said first terminal member and selectively disconnectable and reconnectable therewith without dissembling the plate means from the panel; and
(d) an elongate electrical conductor member having an end terminal member for connecting said conductor to ground;
(e) said conductor being electrically connected to said second terminal member to electrically ground said panel for dissipating static electric charge accumulated on the panel to said ground without interfering with optimum movement, use and cleaning of the drapery.

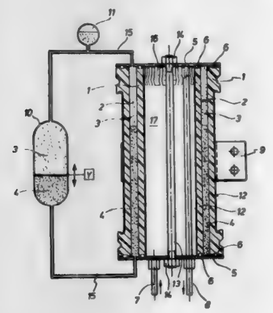
4,450,499
FLARE IGNITION SYSTEM
Roland R. Sorelle, 812 Standifer Rd., Elk City, Okla. 73644
Filed Dec. 21, 1981, Ser. No. 332,666
Int. Cl.³ F23Q *3/00*
U.S. Cl. 361—253 **9 Claims**



1. Apparatus for controlled ignition of combustible gases at a designated flare point, comprising:
first and second spark gaps disposed at said flare point;
first and second igniter circuits each connected to a respective one of the first and second spark gaps;
switching means normally operating in a first mode for repetitively energizing the first igniter circuit and first spark gap, and having an alternative second operating mode for energizing the second igniter circuit and second spark gap;
means for sensing the first igniter circuit to generate an ignition control signal upon detection of energization; and
pulse generating means responsive to said ignition control signal to generate first and second outputs to said switching means to control selection of respective first and second mode operations.

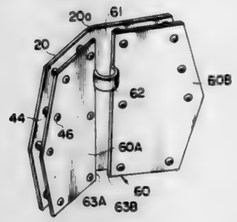
4,450,500
ELECTRIC CAPACITOR OF VARIABLE CAPACITANCE
Werner Wollenschläger, Marktredwitz, Fed. Rep. of Germany, assignor to Draloric Electronic GmbH, Fed. Rep. of Germany
Filed May 26, 1983, Ser. No. 498,244
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245523
Int. Cl.³ H01G *5/00, 4/04*
U.S. Cl. 361—277 **23 Claims**

1. An electric capacitor of variable capacitance, comprising:
a dielectric body comprised of densely sintered ceramic material; the body having a hollow space extending through it for holding liquid dielectric therein; the body having spaced apart surfaces generally at opposite sides of the hollow space;
capacitor plates in the form of metal layers on the spaced apart surfaces of the body, and the plates being separated by the hollow space for defining the capacitor plates; the capacitor plates both having a respective height dimension;



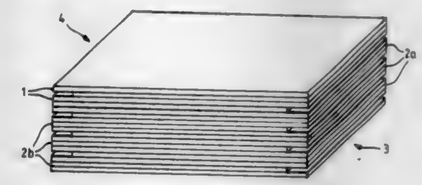
a first liquid dielectric material of relatively higher dielectric constant present up to a variable height in the hollow space, and the variable height being in the electric field of the capacitor; and
a second liquid dielectric material of relatively lower dielectric constant and of lesser density than the first liquid located in the hollow space above the first liquid.

4,450,501
LIQUID QUANTITY SENSOR OF CAPACITOR TYPE
Hiroshi Kobayashi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan
Filed May 24, 1983, Ser. No. 497,494
Claims priority, application Japan, Jul. 6, 1982, 57-116240
Int. Cl.³ H01G *5/28*; G01F *23/00*
U.S. Cl. 361—284 **6 Claims**



1. In a sensor for detecting the quantity of a liquid existing in a container, the sensor having at least one set of a first electrode plate and a second electrode plate which are substantially vertically disposed in the container and spaced from each other in a parallel arrangement so as to provide a capacitor, wherein said first electrode plate is of an angled shape and has at least one bent region as a border between two flat areas,
the improvement comprising said second electrode plate being of a split form and comprising two flat portions and a junction portion which is made of an electrically conductive material and fixed to said two flat portions so as to provide a gap between said two flat portions and to keep said two flat portions at an angle corresponding to the angle between said two flat areas of said first electrode plate, said second electrode plate being fastened in said two flat portions thereof to said two flat areas of said first electrode plate such that said gap is located right opposite and parallel to said bent region of said first electrode plate, said junction portion being so shaped and arranged as to become more spaced from said first electrode plate than said two flat portions.

4,450,502
MULTILAYER CERAMIC DIELECTRIC CAPACITORS
John H. Alexander, Hertfordshire, England, assignor to ITT Industries, Inc., New York, N.Y.
Filed Feb. 28, 1983, Ser. No. 470,760
Claims priority, application United Kingdom, Mar. 30, 1982, 8209283
Int. Cl.³ H01G *1/14, 4/10, 7/00*
U.S. Cl. 361—309 **11 Claims**



11. A multilayer ceramic dielectric capacitor comprising:
a plurality of ceramic dielectric layers;
electrodes located in between the layers and extending to the ends of the layers;
porous conductive end terminations located on the ends of the layers and connected to the electrodes; and
a sulphide layer located on the end terminations.

4,450,503
POWER OUTLET FACILITY
Michael J. Warner, Yorba Linda, Calif., assignor to Myers Electric Products Inc., Montebello, Calif.
Filed Sep. 28, 1982, Ser. No. 425,483
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—356 **9 Claims**



1. A power metering facility for metering power to a pair of adjacent power utilizing sites comprising:
a metal box having a bottom, sidewalls and an open top;
partitions dividing said box into an elongated meter compartment and separate customer service compartments along the opposite sides thereof;
a pair of covers for closing respective adjacent portions of said meter compartment and each having an opening sized to accommodate the insertion of a power meter therethrough;
a pair of insulated meter sockets supported adjacent one another in said meter compartment and supported intermediate said box bottom and top by bracket means rigidly

secured to the inner side of said bottom and the inner side of an associated one of said pair of covers by means including fasteners accessible for assembly only through said openings in said covers;

bus bars rigidly connected to and supported by said meter sockets; and

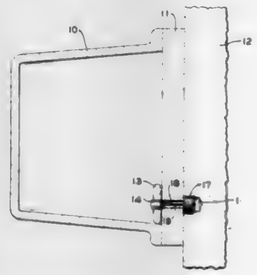
separate circuit breakers and power service receptacles in each of said customer service compartments connected in circuit with a respective one of said meter sockets.

4,450,504

METER TAMPERING INDICATOR

Asbjorn M. Severson, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 429,346
Int. Cl.³ H02B 9/00
U.S. Cl. 361—369 **6 Claims**



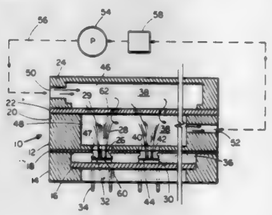
1. An apparatus for indicating watthour meter tampering, said apparatus comprising: a watthour meter having a base member, a plug-in mechanism mounting member and a cover glass fixed to the mechanism mounting member, and wherein an easily rupturable, sealed hollow container is juxtaposed the mechanism mounting member of the watthour meter and fixed through said mounting member to the meter base in a manner such that attempts to unplug the mounting member from the base will cause said sealed hollow container to rupture and thereby indicate meter tampering.

4,450,505

APPARATUS FOR COOLING INTEGRATED CIRCUIT CHIPS

Faquir C. Mittal, Audubon, Pa., and Joseph S. Mathias, Riverton, N.J., assignors to Sperry Corporation, New York, N.Y.

Filed Jun. 9, 1982, Ser. No. 386,557
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 **3 Claims**



1. An integrated circuit chips cooling apparatus, comprising:

a housing including a board having integrated circuit chips mounted thereon, said chips having a substantially planar surface;

means mounted in the housing and forming first and second cooling portions, said chips being in said first portion, said second cooling portion including an entrance chamber separated from an exit chamber by a plate having a plurality of apertures formed therein;

first means being a flexible bellows having a first end connected to said mounted means and a second end extending into said first cooling portion and conforming contact with said planar surface said bellows having an inside width;

second means being a bunch of heat conducting strands having a first end connected to said bellows and a second end extending into said second cooling portion and terminating adjacent said apertures, said first end of said bunch of strands having a first width and said second end having a second width wider than said first width, said first width being less than said inside width and said second width being at least as wide as said inside width;

a fluid inlet in said entrance chamber; and

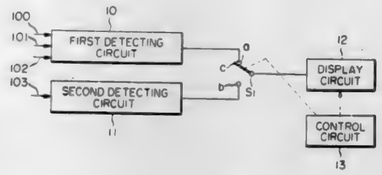
a fluid outlet in said exit chamber.

4,450,506

AUTOMATIC LIGHT-QUANTITY-CONTROL SPEED LIGHT

Hiroshi Hasegawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 214,886, Dec. 10, 1980, abandoned. This application Apr. 25, 1983, Ser. No. 486,298
Claims priority, application Japan, Dec. 27, 1979, 54-171444
Int. Cl.³ G03B 15/02
U.S. Cl. 362—4 **15 Claims**



1. In an automatic light-quantity-control speed light capable of operating in direct and indirect illumination modes, and in which proper light quantity control requires that the quantity of light emitted by the speed light be automatically controlled to be less than a maximum quantity of light which the speed light is capable of emitting in a predetermined time interval, a device for indicating whether or not proper light quantity control for preset exposure factors can be effected in the direct illumination mode and for indicating whether or not proper light quantity control has been effected in the indirect illumination mode, comprising first circuit means for producing a first output signal when a guide number determined by the preset exposure factors is inside of a guide number range in which proper light quantity control can be effected, and for producing a second output signal when said guide number is outside of said guide number range, second circuit means for producing a third output signal when proper light quantity control has been effected during an exposure, and for generating a fourth output signal when proper light quantity control has not been effected during said exposure, display means adapted to be driven from each of said circuit means for providing said indicating, means for driving said display means in a first drive mode in response to said first output signal and third output signal, and for driving said display means in a second drive mode different from said first drive mode in response to said second output signal and fourth output signal, and means for applying output signals from the first circuit means to the driving means when the speed light is in the direct illumination mode and for applying output signals from the second circuit means to the driving means when the speed light is in the indirect illumination mode.

4,450,507

COMPOSITE PHOTOMETRIC METHOD

Myron K. Gordin, Oskaloosa, Iowa, assignor to Mycro-Group Company, Oskaloosa, Iowa

Filed Sep. 15, 1982, Ser. No. 418,451
Int. Cl.³ B60Q 1/00
U.S. Cl. 362—61 **5 Claims**



1. A method of producing a composite beam of uniform light from a plurality of luminaires, each having defined beams, and each mounted on a luminaire assembly adapted for use with a mobile mounting structure, said method comprising:

determining the field size and description, the number of pole locations, and the fixture configuration for each pole;

ascertaining the required light intensity needed over said field to provide the pre-selected, defined illumination model;

ascertaining the individual beam characteristics of the defined single beam projected by each fixture of said total fixture configuration;

determining the horizintal and vertical coordinates of each such fixture relative to the luminaire cross arm assembly upon which it is mounted;

aligning each of said individual fixtures of said total fixture configuration in accordance with the pre-determined horizontal and vertical coordinates such that when lit, they combine to form a composite photometric beam; and

moving said mobile luminaire assemnly to said field and placing it in location, and aligning said mobile cross arm assebmly by aiming one of said fixtures to a preselected aiming point, and

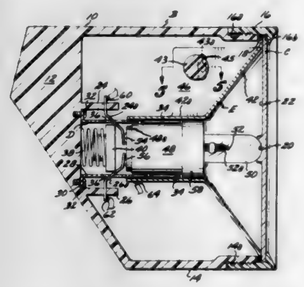
thereafter locking said cross-arm assembly to said pre-aimed position.

4,450,508

SELF CENTERING UNDERGROUND MINE LAMP

James A. Carley, 1502 W. 228th St., Torrance, Calif. 90501

Filed Mar. 21, 1983, Ser. No. 477,180
Int. Cl.³ F21L 15/14
U.S. Cl. 362—105 **3 Claims**



1. In combination with a miners head piece of the type that includes a housing having a forward and rearward end, a lens secured to said forward end, a tubular socket that projects forwardly in said housing, a plurality of spring loaded, forwardly biased electrical conducting members rearwardly disposed in said socket, a reflector disposed in the forward interior portion of said housing, said reflector including a tubular rearwardly extending extension that has an interior surface and is slidably mounted on said socket, manually operated means for adjustably moving said reflector longitudinally relative to said socket, a self centering lamp for use with said miners head piece, said lamp including:

a. a cylindrical base having a forward and rearward end, said base including at least one electrical conducting filament supported forwardly thereof, and a plurality of electrical contact terminals electrically connected to said filament and in engagement with said electrical conducting members when said base is disposed in said socket;

b. a cylindrical bushing that encircles said bore adjacent said forward end and snuggly and slidably engages said interior surface of said reflector extension, said bushing of sufficient width that said base will not pivot relative to said extension; and

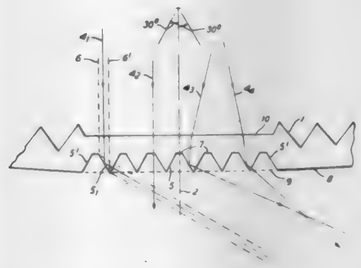
c. a transparent rigid envelope that extends forwardly from said base, said envelop of sufficient length that said forwardly biased electrical conducting members will maintain the forward extremity of said envelope in pressure contact with said lens to at all times maintain said lamp in a centered position relative to said reflector.

4,450,509

LANTERNS FOR AREA LIGHTING

Ivor C. Henry, Enfield, England, assignor to Thorn Emi plc, London, England

Filed Aug. 17, 1982, Ser. No. 408,885
Int. Cl.³ F21S 5/00
U.S. Cl. 362—216 **19 Claims**



1. A lantern, for an area light, including a transparent or translucent bowl whose exterior includes a substantially central area having, in alternation, regions acting as reflecting prisms to light passing therethrough and substantially flat regions substantially perpendicular to the vertical axis of the lantern.

4,450,510

INCANDESCENT-FLUORESCENT COMPATIBLE LIGHTING PRODUCTS

Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

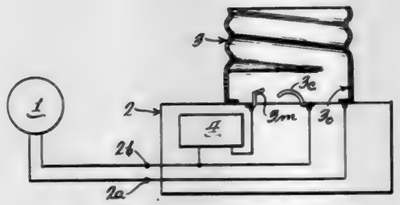
Filed Apr. 5, 1982, Ser. No. 365,553
Int. Cl.³ F21S 3/00
U.S. Cl. 362—221 **10 Claims**

1. A lighting product adapted to connect with a pair of regular electric utility power lines and to receive, hold, and power a fluorescent lamp or, alternately and interchangeably, an incandescent lamp, said fluorescent lamp having a first and a second fluorescent lamp contact means, said incandescent lamp having a first and a second incandescent lamp contact means, said product comprising:

a socket adapted to receive and hold either the fluorescent

lamp or, alternately and interchangeably, the incandescent lamp and having a first, a second, and a third socket contact means, said first and second socket contact means being adapted to make contact with said first and second fluorescent lamp contact means whenever said fluorescent lamp is inserted into the socket, said first and third socket contact means being adapted to make contact with said first and second incandescent lamp contact means whenever an incandescent lamp is inserted into the socket,

a fluorescent lamp ballasting means, and



connection means adapted to connect said first socket contact means directly with one of said pair of electric utility power lines, said second socket contact means indirectly by way of said ballasting means with the other one of said pair of electric utility power lines, and said third socket means directly with said other one of said pair of electric utility power lines,

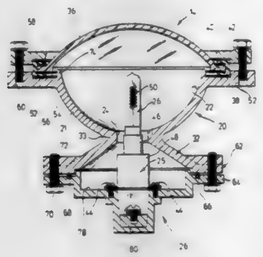
whereby: whenever the fluorescent lamp is placed into the socket, it gets powered from the power line by way of the ballasting means; but, whenever the incandescent lamp is placed into the lamp socket, it gets powered directly from the power line.

4,450,511

SUBMERSIBLE HIGH INTENSITY LAMP

Peter Micha, Richmond Hill, Canada, assignor to Pem Fountain Co., Richmond Hill, Canada

Filed Apr. 13, 1982, Ser. No. 367,805
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **14 Claims**



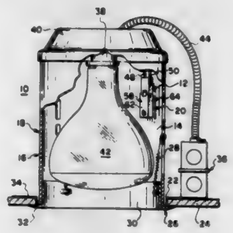
1. A water submersible, hermetically sealed light fixture comprising a light bulb housing having formed therein an interior concave light reflective surface, a support for a light socket mounted on said housing beneath said reflective surface, said support being adapted for sealing engagement with said housing, an elongate high temperature operation light bulb replaceably set in said light socket which is secured to said support, said housing having an aperture at the base of said reflective surface and aligned with said light socket, a transparent cover for the open end of said housing which is sealingly mounted on said housing, said elongate light bulb extending through said aperture into the spaced defined by said reflective surface, the longitudinal axis of said bulb being coincident with the major axis of said concave surface, said housing being in direct contact with the water when in use to cool and maintain said concave light reflective surface as exposed to high temperature produced by said light bulb during operation, said light fixture being adapted to provide different degrees of focused light according to length of said light bulb and positioning of said light socket relative to said concave reflective surface.

4,450,512

ARRANGEMENT FOR MOUNTING A THERMAL PROTECTIVE DEVICE IN A RECESS MOUNTED LIGHTING FIXTURE

Paul J. Kristofek, Hickory Hills, Ill., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 13, 1982, Ser. No. 416,880
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—276 **15 Claims**



1. In a lighting fixture adapted for recessed mounting in a ceiling or the like support surface, said lighting fixture including an electrically operated lamp for illuminating an area adjacent said support surface and a thermal protective device connected electrically to said lamp for discontinuing the operation thereof in response to the temperature in an area adjacent the outside of said fixture reaching a predetermined temperature, said thermal protective device including temperature sensing means, a mounting arrangement for mounting said thermal protective device at a preselected location on said lighting fixture, said mounting arrangement including in combination:

a housing in which said electrically operated lamp is mounted, said housing including a side wall having interior and exterior surfaces, said housing being of a predetermined height and having an open end through which light from said lamp emanates, said side wall of said housing defining an aperture therein, said aperture being predeterminedly located along said side wall;

receptacle means for receiving said thermal protective device;

means for mounting said receptacle means on the interior surface of said side wall, said mounting means locating said thermal protective device with said temperature sensing means in alignment with said aperture defined in said side wall, whereby the temperature of the area adjacent said exterior surface of said housing side wall is sensed.

4,450,513

LIGHTING FIXTURE FOR OPPOSITE DIRECTION REFLECTION

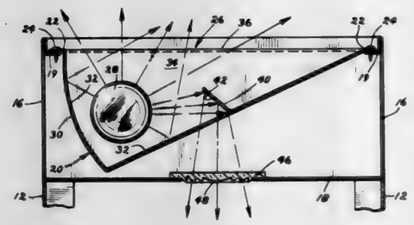
Arthur R. Guggemos, Winsted, Minn., assignor to Sterner Lighting Systems Incorporated, Winsted, Minn.

Filed Jan. 25, 1982, Ser. No. 342,233
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—299 **8 Claims**

1. A light fixture comprising:

a primary reflector having a wall, the wall having a reflector surface defining a cavity, the cavity having an opening facing generally in a first direction, the primary reflector being positioned for directing light beams from an illumination source in the first direction and having a second opening smaller than the cavity defined through the wall; and

a secondary reflector positioned within the cavity at a location so as to direct light beams from the same illumination source in a second direction generally opposite from the first direction through the second smaller opening through the wall of the primary reflector.

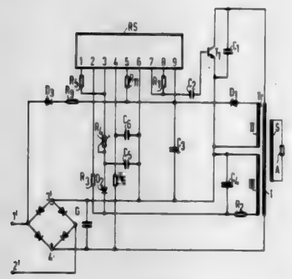


4,450,514

SWITCHED MODE POWER SUPPLY

Günther Peruth, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,431
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1980, 3032034
Int. Cl.³ H02P *13/20*
U.S. Cl. 363—37 **1 Claim**



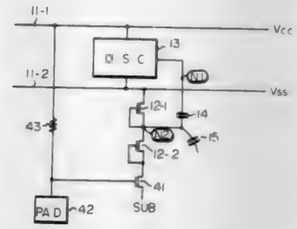
1. Semiconductor circuit for supplying power to electrical equipment, comprising a transformer having a primary winding connected, via a parallel connection of a collector-emitter path of a transistor with a first capacitor, to both outputs of a rectifier circuit supplied, in turn, by a line a-c voltage; said transistor having a base controlled via a second capacitor by an output of a control circuit acted upon, in turn by the rectified a-c line voltage as actual value and by a reference voltage; said transformer having a first secondary winding to which the electrical equipment to be supplied is connected; said transformer having a second secondary winding with one terminal thereof connected to the emitter of said transistor and the other terminal thereof connected to an anode of a first diode leading to said control circuit; said transformer having a third secondary winding with one terminal thereof connected, on the one hand, via a series connection of a third capacitor with a first resistance, to the other terminal of said third secondary winding and connected, on the other hand, to the emitter of said transistor, the collector of which is connected to said primary winding; a point between said third capacitor and said first resistance being connected to the cathode of a second diode; said control circuit having nine terminals including a first terminal delivering a reference voltage and connected, via a voltage divider formed of a third and fourth series-connected resistances, to the anode of said second diode; a second terminal of said control circuit serving for zero-crossing identification being connected via a fifth resistance to said cathode of said second diode; a third terminal of said control-circuit serving as actual value input being directly connected to a divider point of said voltage divider forming said connection of said first terminal of said control circuit to said anode of said second diode; a fourth terminal of said control circuit delivering a sawtooth voltage being connected via a sixth resistance to a terminal of said primary winding of said transformer facing away from said transistor; a fifth terminal of said control circuit serving as a protective input being connected, via a seventh resistance to the cathode of said first diode and, through the intermediary of said seventh resistance and an eighth resistance, to the cathode of a third diode having an anode connected to an input of said rectifier circuit; a sixth terminal of said control circuit carrying said reference potential and being connected via a fourth capacitor to said fourth terminal of said control circuit and via a fifth capacitor to the anode of said second diode; a seventh terminal of said control circuit establishing a potential for pulses controlling said transistor being connected directly and an eighth terminal of said control circuit effecting pulse control of the base of said transistor being connected through the intermediary of a ninth resistance to said first capacitor leading to the base of said transistor; and a ninth terminal of said control circuit serving as a power supply input of said control circuit being connected both to the cathode of said first diode as well as via the intermediary of a sixth capacitor to a terminal of said second secondary winding as well as to a terminal of said third secondary winding.

4,450,515

BIAS-VOLTAGE GENERATOR

Yoshihiro Takemae, Yokohama; Tomio Nakano; Masao Nakano, both of Kawasaki; Norihisa Tsuge, Kamakura, and Tsuyoshi Ohira, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 14, 1982, Ser. No. 388,194
Claims priority, application Japan, Jun. 12, 1981, 56-89460
Int. Cl.³ H02M *3/18*; H03K *3/01*
U.S. Cl. 363—60 **14 Claims**



1. A bias-voltage generator having a first and second power sources operatively connectable thereto and applying a bias voltage to a semiconductor substrate having a MOS integrated circuit, comprising:

an oscillator operatively connectable to the first and second power sources;

a charge-pumping circuit operatively connected to the first power source, having a one-way charge path formed between the first power source and the semiconductor substrate and being driven by said oscillator;

a charge-pumping switch, operatively connected between said charge pumping circuit and the semiconductor substrate, in said one-way charge path; and

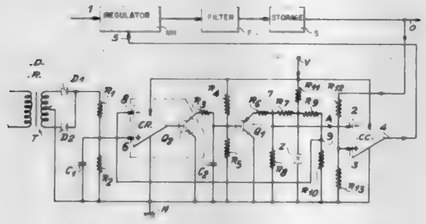
an external electrode, operatively connected to said charge-pumping switch, for controlling the ON or OFF of said charge-pumping switch.

4,450,516

DEVICE FOR CONTROLLING THE REGULATING FACILITIES IN AN ELECTRIC HIGH-POWER AC-DC CONVERTER

Andre Gérard, Ecquevilly, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 23, 1981, Ser. No. 333,769
Claims priority, application France, Dec. 30, 1980, 80 27769
Int. Cl.³ H02P *13/26*
U.S. Cl. 363—84 **7 Claims**



1. For use with an AC-DC converter of the type comprising regulator means having an input connected to an AC voltage network for producing a regulated voltage, filter means connected to an output of the regulator means, and voltage storage means connected to an output of the filter means and providing a DC output voltage from the converter, control apparatus comprising a control comparator responsive to a first voltage related to the output voltage from the converter and to a reference voltage for generating an error signal for controlling the regulator means so as to limit the level of the regulated voltage applied to the filter means upon the first voltage being greater than the reference voltage, the reference voltage having a predetermined nominal value when the converter is normally powered by the AC network, means connected to the AC network for detecting a limit value of the AC voltage of the network corresponding to a cutoff of the AC network and below which the converter is incapable of supplying a useful output voltage to a load, and reference means connected to the control comparator and to the detecting means for generating said reference voltage and for supplying the reference voltage to the control comparator, the reference voltage generating means including means responsive to the AC voltage decreasing to said limit value for decreasing the reference voltage to another predetermined value below said predetermined nominal value and, upon the AC network voltage subsequently increasing above said limit value upon recovery of the network, gradually increasing the reference voltage to said predetermined nominal value so as to limit the regulated voltage applied to the filter means at the moment of recovery to be at most equal to the output voltage from the converter.

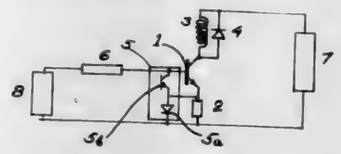
4,450,517

CURRENT CONTROL CIRCUIT WITH PARTICULAR APPLICATION IN BIPOLAR CONSTANT CURRENT CONTROL OF STEP MOTORS

Karl E. Sundström, 114, ch de la Montagne, 1224 Chene-Bougeries, Geneva, Switzerland

Filed Jan. 16, 1981, Ser. No. 225,690
Int. Cl.³ H02M *7/00*
U.S. Cl. 363—124 **2 Claims**

1. A switch mode current control circuit comprising:
a first transistor having a base emitter junction, a first resistor, a coil and a first voltage source, all connected in series;
an optocoupler having a second transistor and a light emitting diode connected thereto, said second transistor connected across said base emitter junction;



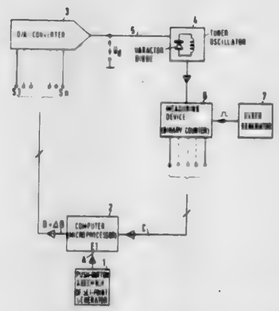
a second resistor connected across said base emitter junction and a second voltage source connected to said second resistor; and
a diode connected across said coil.

4,450,518

CONTROL SYSTEM FOR ADJUSTING A PHYSICAL QUANTITY

Heinz Klee, Freiburg-Opfingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 15, 1981, Ser. No. 274,039
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025358
Int. Cl.³ G05B *15/02*; H03J *5/02*; H03B *3/04*
U.S. Cl. 364—183 **8 Claims**



1. A control system for adjusting a physical quantity to a digital set point by means of an adjusting element of a device having said physical quantity to which an analog adjusting signal is applied comprising:
first means to provide said set point in the form of a digital word A;
second means having an output, a first input coupled to said first means and a second input coupled to said device having said physical quantity to receive a digital word C indicative of the actual value of said physical quantity, said second means converting said word A to a digital word B, comparing said word A with said word C to provide a digital correcting value ΔB and to provide a new word B at said output said new word B equalling the sum of sad word B and said ΔB;
a digital-to-analog (D/A) converter coupled to said output of said second means and said adjusting element to provide said analog adjusting signal proportional to said word B+said ΔB for said adjusting element; and
said D/A converter including
an output line coupled to said adjusting element
a current-to-voltage converter coupled between said output line and summing line of at least two D/A converter sections, a first of said two sections having a finely stepped current range and a second of said two sections having a coarsely stepped current range, the sum of the currents of said finely stepped range being greater than the current of a first step of said coarsely stepped range, the current of the next adjacent step of said coarsely stepped range being either equal to or twice the current of said first step of said coarsely stepped range.

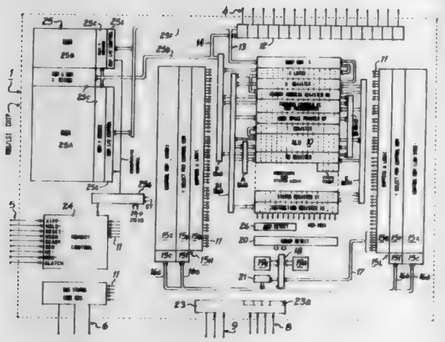
5. An oscillator arrangement for a receiver tuner comprising:
a voltage controlled oscillator;
a digital-to-analog converter having input terminals and having an output coupled to said voltage controlled oscillator for supplying a frequency determining voltage thereto in response to a first digital word said input terminals;
a measuring circuit for measuring the frequency of said voltage controlled oscillator and providing a second digital word representing said measured frequency;
means for generating an indication of a desired frequency;
processing means for converting said indication to a third digital word, for generating said first word in accordance with said third word, for comparing said third word to said second word and for providing a correction value in accordance with said comparison, said first word being modified in accordance with said correction value;
said D/A converter including:
an output line coupled to said output;
a current-to-voltage converter coupled between said output line and a summing line of at least two D/A converter sections, a first of said two sections having a finely stepped current range and a second of said two sections having a coarsely stepped current range, the sum of the currents of said finely stepped range being greater than the current of a first step of said coarsely stepped range, the current of said first step of said coarsely stepped range being equal to the current of the next adjacent step of said coarsely stepped range.

4,450,519

PSUEDO-MICROPROGRAMMING IN MICROPROCESSOR IN SINGLE-CHIP MICROPROCESSOR WITH ALTERNATE IR LOADING FROM INTERNAL OR EXTERNAL PROGRAM MEMORIES

Karl M. Guttag, Houston, and Gerald E. Laws, Austin, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 24, 1980, Ser. No. 210,106
Int. Cl.³ G06F *9/00, 13/00, 9/44*
U.S. Cl. 364—200 **16 Claims**



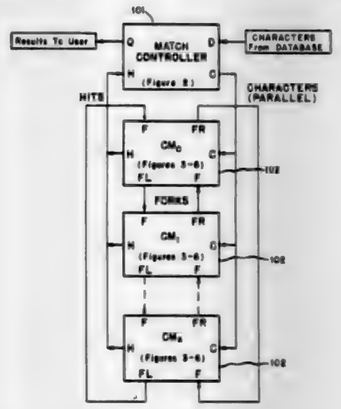
6. A microprocessor system comprising:
a main memory (2) containing a plurality of locations defined by an address range,
a central processing unit in a semiconductor unit (1) separate from said main memory (2), said central processing unit including an arithmetic logic unit (10), a plurality of address/data registers, an instruction register (IR) for receiving program instructions for execution by the central processing unit, such program instructions being of a first type and a second type, and control means (15) responsive to a program instruction of said first type in said instruction register to produce a plurality of controls (11) for defining the operation of the arithmetic logic unit and address/data registers in the central processing unit and responsive to a program instruction of said second type in said instruction register to produce an auxiliary control,
an auxiliary storage unit (25A, 25B) containing a plurality of locations defined by a set of addresses within said address range, wherein said set may overlap addresses of said plurality of locations of said main memory,
and means (25G,25D,25F) initiated by said auxiliary control from the control means for transferring sequences of program instructions of said first type from such auxiliary storage unit to said instruction register.

4,450,520

METHOD AND SYSTEM FOR MATCHING ENCODED CHARACTERS

Lee A. Hollaar, Salt Lake City, Utah, and Roger L. Haskin, Los Gatos, Calif., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Mar. 11, 1981, Ser. No. 242,789
Int. Cl.³ G06F *7/22*
U.S. Cl. 364—200 **24 Claims**



17. A system for detecting matches between strings of input characters from a database and one or more patterns, each pattern comprising elements consisting of tokens, employing a finite state automaton, responsive to said strings of input characters, comprising a plurality of character matchers acting in concert; each character matcher being characterized as capable of existing in one of a plurality of states, each such state having (a) one token from a pattern, to be compared against a current input character, (b) first instructions, which govern transitions to the next state of said character matcher, and (c) second instructions, which force other character matchers into specified states, each character matcher being responsive to one or more memories, comprising control words and storing tokens and instructions for a particular state; each character matcher being further characterized as having at least an initial state, to be occupied by said character matcher at the start of the matching procedure, and an idle state, to be occupied by said character matcher after an unsuccessful comparison between the token specified in the current state of said character matcher and the current input character; the respective states being partitioned among said character matchers to avoid any sequence of input characters requiring any character matcher to be simultaneously in more than one state; said system, for each string of input characters to be matched and a corresponding character matcher, comprising:

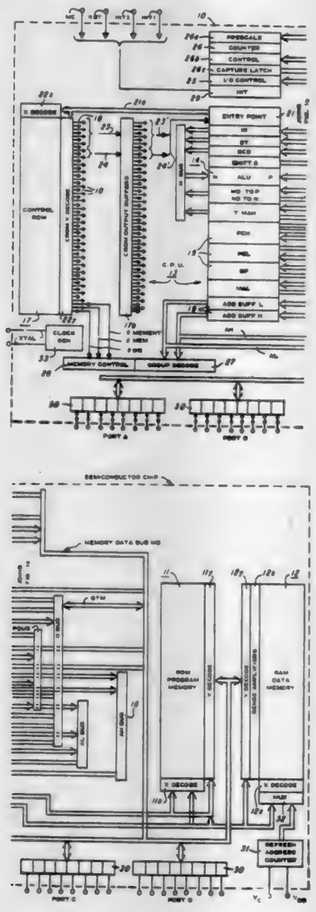
(a) reading means, for reading said input characters from said database;
(b) comparison means, for sequentially comparing each input character against the token associated with the current state of said character matcher;
(c) determinant means, for determining a succeeding state of said character matcher based on a successful comparison of the current input character against the token specified in said character matcher's current state; and
(d) forcing means, operative for said character matcher to force other character matchers into specified states.

4,450,521

DIGITAL PROCESSOR OR MICROCOMPUTER USING PERIPHERAL CONTROL CIRCUITRY TO PROVIDE MULTIPLE MEMORY CONFIGURATIONS AND OFFSET ADDRESSING CAPABILITY

Kevin C. McDonough; John W. Mayn, both of Houston; Gary L. Swoboda, Austin, and Jeffrey D. Bellay, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1981, Ser. No. 253,642
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **21 Claims**



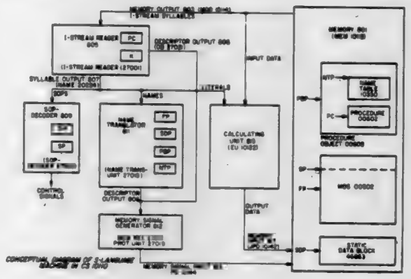
1. An electronic digital processor device constructed in a single-chip semiconductor unit, comprising:
(a) internal read/write memory means for storage of data and internal read-only memory means for storage of instructions which define operations on said data; said read/write and read-only memory means being addressed within a given address range;
(b) arithmetic and logic means for performing said operations on said data;
(c) data register means for temporary storage of said data and address register means for temporary storage of addresses within said given range for accessing said internal read/write and read only memory means;
(d) a plurality of data paths which couple said internal memory means, said arithmetic and logic means, and said register means;
(e) control and timing circuitry connected to receive instructions from said read-only memory means and generating command signals coupled to said internal memory means, to said arithmetic and logic means, to said data paths and to said register means for execution of said instructions,
(f) a peripheral file including a plurality of address locations within said given address range and separate from said data and address register means, a plurality of input/output ports included within said peripheral file, a plurality of directional control registers for the input/output ports included within said peripheral file, an interval timer including a plurality of counter and control registers within said peripheral file, interrupt control circuitry including at least one interrupt control register within said peripheral file and having outputs coupled to said control and timing circuitry, said peripheral file being coupled to said data paths for transferring addresses and data, and receiving command signals from said control and timing circuitry.

4,450,522

APPARATUS FOR DERIVING ADDRESSES OF DATA USING DISPLACEMENTS FROM BASE ADDRESSES WHICH CHANGE ONLY ON CALL AND RETURN

John F. Pilat, Raleigh, N.C.; Michael S. Richmond, Beaverton, Oreg.; Walter A. Wallach, Jr., San Jose, Calif., and Stephen I. Schleimer, Chapel Hill, N.C., assignors to Data General Corporation, Westboro, Mass.

Filed Sep. 11, 1981, Ser. No. 301,999
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **25 Claims**



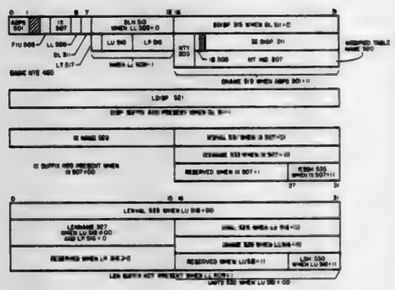
1. In a digital computer system including
(A) memory means for performing memory operations including storing and providing items of data including instructions in response to memory commands, each one of said memory commands specifying one said memory operation and an address of one of said items of data in said memory means, and
(B) processor means connected to said memory means for providing said memory commands in response to said instructions,
and wherein
said processor means performs
(1) a call operation for suspending an execution of any sequence of said instructions by said processor means and commencing a new said execution of any said sequence and
(2) a return operation for terminating said execution of any said sequence and resuming said suspended execution which was suspended to commence said terminated execution,
means for providing said addresses of said items comprising:
(1) architectural base register means accessible to said processor means for storing and outputting an architectural base address of said addresses;
(2) means in said processor means responsive only to said call operation and to said return operation for obtaining a current said architectural base address for said execution being commenced or resumed and loading said architectural base register means with said current architectural base address;
(3) immediate names of said items representing other said items, each said immediate name containing a displacement specifier specifying a displacement from said current architectural base address; and
(4) name translation means in said processor means responsive to said immediate names for receiving any said immediate name, using said displacement specified by said displacement specifier in said received immediate name and said current architectural base address to produce said address of said item represented by said received immediate name.

4,450,523

APPARATUS FOR DERIVING THE CURRENT LENGTH OF VARYING-LENGTH DATA ITEMS IN A DIGITAL DATA PROCESSING SYSTEM

John F. Pilat, Raleigh; Anastasia J. Czerniakiewicz, Durham, both of N.C.; David B. Kinder, Portland, Oreg., and Gary Davidian, Raleigh, N.C., assignors to Data General Corporation, Westboro, N.C.

Filed Sep. 11, 1981, Ser. No. 302,264
Int. Cl.³ G06F *9/34*
U.S. Cl. 364—200 **17 Claims**



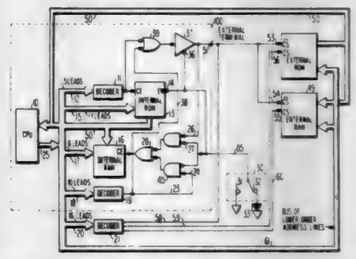
1. In an improved digital computer system including
(A) memory means for performing memory operations including storing and providing items of data including instructions in response to memory commands, each one of said memory commands specifying one said memory operation, an address of one of said items of data in said memory means, and a length of said one data item and
(B) processor means connected to said memory means for providing said memory commands in response to said instructions,
and wherein
said items further include names representing other said items;
said names include table names, each said table name being associated with a name table entry of said items;
said instructions contain said names;
said items further include
varying-length items, each one of said varying length items containing a varying number of data elements of a single size and
current length items associated with said varying-length items, said current length item associated with each of said varying-length items serving to specify the current length of said associated varying-length item; and
said processor means includes name processing means responsive to said names for producing said address and said length of said represented item in response to said name representing said represented item, said name processing means including table name processing means responsive to said table names and to said name table entries associated with said table names for producing said address and said length of said item represented by said table name by processing said associated name table entry,
the improvements comprising:
(1) a current number of elements item of said current length items whose value is the current number of said elements in said associated varying-length item;
(2) an improved said name table entry associated with said table names representing said varying-length items, said improved name table entry including
(a) a current number of elements item specifier specifying said address of said current number of elements item associated with said represented varying-length item and
(b) an element size specifier specifying said single size of said elements in said represented varying-length item; and
(3) an improved said name processing means responsive to said number of elements item specifier and to said element size specifier for deriving said address of said current number of elements item associated with said represented varying-length item from said current number of elements item specifier, fetching said current number of elements item from said memory means to said processor means, deriving said single size of said elements from said size specifier, and deriving a current said length of said represented varying-length item using said value of said number of elements item and said single size.

4,450,524

SINGLE CHIP MICROCOMPUTER WITH EXTERNAL DECODER AND MEMORY AND INTERNAL LOGIC FOR DISABLING THE ROM AND RELOCATING THE RAM

Joel R. Oberman, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 23, 1981, Ser. No. 304,785
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **6 Claims**



1. In a data processor system having a total memory capacity and including an integrated circuit chip having a central processing unit (CPU), an internal ROM, an internal RAM, and first decoder means formed thereon with said first decoder means responsive to addresses supplied thereto for determining

the location of said internal RAM in said total memory capacity, means for disabling said internal ROM from said CPU and for relocating said internal RAM in said total memory capacity and comprising:

means for generating a first control signal having a first and a second state;

said internal ROM reponsive to the first state of said first control signal to become disabled;

first means including first gating means responsive to the first state of said first control signal to disable said internal ROM and to disconnect the output of said first decoder means from said internal RAM;

a second decoder means positioned externally of said chip and responsive to predetermined addresses supplied thereto from said CPU to generate an enabling output signal selectively defining a location of said internal RAM in said total memory capacity;

means for supplying said predetermined addresses from said CPU to said second decoder means; and

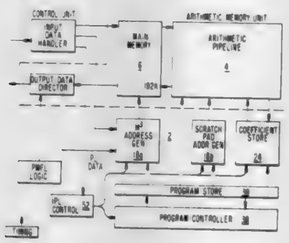
second means including second gating means responsive to the first state of said first control signal to supply the enabling output signal of said second decoder means to said internal RAM to define the location of said internal RAM in said total memory capacity.

4,450,525

CONTROL UNIT FOR A FUNCTIONAL PROCESSOR

Gordon L. Demuth; John E. Hinkle, and J. Thomas Moran, all of Manassas, Va., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,167
Int. Cl.³ G06F *9/22, 9/28*
U.S. Cl. 364—200 **69 Claims**



1. A controller for a signal processing computer, comprising:

a microinstruction storage having an address input and a microinstruction word output, for storing microinstruction words, each having a page control field, a microinstruction address stack sequencing pointer field, and a main memory pointer field;

a first clock connected to said microinstruction storage, for producing a first clock signal at a first repetition rate to signal said microinstruction storage to output said microinstruction words at said first repetition rate, each microinstruction word respectively accessed at an address applied to said address input thereof during a corresponding microinstruction interval;

a microinstruction address stack having a clock input connected to said first clock, having a page address input connected to the page control field of said microinstrudtion storage output, having a pointer address input connected to the microinstruction address stack sequencing pointer field of said microinstruction storage output, and having an output connected to said address input of said microinstruction storage, for storing microinstruction word addresses in a plurality of page groups, each page group being accessed by said page address input, each respective page group having a plurality of said microword addresses which are accessed by said pointer address input, said microinstruction address stack selectively accessing new microinstruction words from said microinstruction storage in response to said page field and sequencing pointer field of a current microinstruction word at said first repetition rate;

a main memory address stack having a clock input connected to said first clock, having a page address input connected to said page control field of said microinstruction storage output, having a pointer address input connected to the main memory pointer field of said microinstruction storage output, and having an output connected to an address input of a main data memory, for storing main data memory addresses in a plurality of page groups, each page group being accessed by said page address input thereof, each respective page group having a plurality of said main data memory addresses which are accessed by said pointer address input thereof, said main memory address stack selectively accessing data words from said main data memory in response to said page field and main memory pointer field of said current microinstruction word at said first repetition rate;

said microinstruction words further including a first scratch pad pointer field and a second scratch pad pointer field;

a second clock having an output, for producing a second clock signal at a second repetition rate which is twice said first repetition rate, producing two second clock pulses initiating the first half and the second half, respectively of said microinstruction interval;

a first multiplexer having a clock input connected to said second clock, having a first input connected to the first scratch pad pointer field of said microinstruction storage output, having a second input connected to the second scratch pad pointer field of said microinstruction storage output, and having an output, for connecting said output thereof to said first input thereof during said first half of said microinstruction interval and to said second input thereof during said second half of said microinstruction interval;

a first scratch pad memory having a clock input connected to said second clock, having an address input connected to said output of said first multiplexer, having a data input connected to a data output of said data memory and having a data output connected to a first input to a first arithmetic element, for reading a first data word from a first location therein, and outputting it to said arithmetic element, in response to said first scratch pad pointer field during said first half of said microinstruction interval and writing a second data word into a second location therein applied at said data input thereof from said main memory, in response to said second scratch pad pointer field during said second half of said microinstruction interval;

whereby said first scratch pad is controlled by said microinstruction word to operate at twice the rate at which said microinstructions are accessed from said microinstruction storage.

4,450,526

MONEY PRESET IN AN ELECTRONIC CASH REGISTER

Hiroshi Nakatani, Yamatokoriyama, and Hachizou Yamamoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 2, 1981, Ser. No. 298,626
Claims priority, application Japan, Sep. 5, 1980, 55-123692
Int. Cl.³ G06F *7/48, 15/20*
U.S. Cl. 364—405 **10 Claims**

1. An electronic cash register comprising:

input means for introducing transaction data into said cash register;

processor means responsive to said input means for conducting arithmetic calculations on said introduced transaction data;

transaction memory means responsive to said processor means for storing the results of said arithemetic calculations;

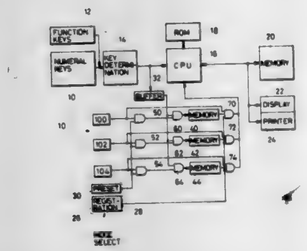
at least one variable money amount entry key means for allowing an operator to select preset numerical amount information;

means for selecting between a preset mode and a normal registration mode; and

preset means for presetting the numerical amount information of said variable money amount key means when said register is in said preset mode, said preset means including,

means for selecting between a preset mode and a normal registration mode; and

preset means for presetting the numerical amount information of,



said variable money amount key means when said register is in said preset mode; said preset means including,

amount memory means for storing the numerical amount information of said variable money amount key means,

means for introducing said numerical amount information into said memory when said cash register is in said preset mode, and

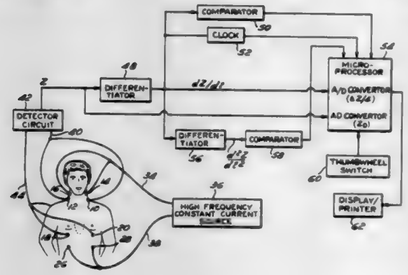
means responsive to actuation of said variable money amount key means when said cash register is in said normal registration mode for transferring said numerical amount information stored in said amount memory means to said processor means.

4,450,527

NONINVASIVE CONTINUOUS CARDIAC OUTPUT MONITOR

Bohumir Sramek, Irvine, Calif., assignor to BoMed Medical Mfg. Ltd., Irvine, Calif.

Filed Jun. 29, 1982, Ser. No. 393,429
Int. Cl.³ G06F *15/42;* H03K *13/02;* A61B *5/02, 5/04*
U.S. Cl. 364—415 **14 Claims**



1. Noninvasive apparatus for continuously monitoring cardiac output of a patient during normal respiratory functions, comprising:

means for producing an electrical signal indicative of thoracic impedance as a function of time;

means for eliminating effects of respiration from the thoracic impedance signal to produce a pulsatile impedance signal indicative of changes in thoracic impedance due to cardiovascular activity as a function of time;

means for processing the pulsatile impedance signal to produce a signal indicative of the maximum rate of change thereof as a function of time;

means for processing the pulsatile impedance signal to produce a signal indicative of ventricular ejection time; and

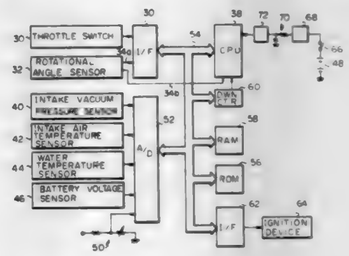
computing means, responsive to the ventricular ejection time signal and to the maximum rate of change of pulsatile impedance signal, for producing a signal indicative of stroke volume.

4,450,528

METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF AN INTERNAL COMBUSTION ENGINE

Takehisa Yaegashi, Mishima; Keiji Aoki, and Kenzo Hashikawa, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 27, 1981, Ser. No. 248,444
Claims priority, application Japan, Mar. 31, 1980, 55-40164
Int. Cl.³ F02B *3/12;* F02P *17/00*
U.S. Cl. 364—431.05 **10 Claims**



6. An apparatus for controlling the operation of an internal combustion engine, comprising:

means for detecting the actual operating condition of said engine and for producing at least one first electrical signal indicating said detected operating condition of said engine;

storage means for preliminarily storing a plurality of constant values;

voltage instructing means for generating an instruction voltage which was predetermined before operating said engine and maintaining said instruction voltage constant during engine operation, said voltage instructing means operating independently of said detecting means;

means for converting said predetermined instruction voltage generated by said voltage instructing means into a second electrical signal in binary form;

processing means for (1) determining a calculation coefficient by processing one of said constant values stored in said storage means in accordance with said second electrical signal, and (2) arithmetically calculating at least one value corresponding to a setting for adjusting the operation of said engine from said first electrical signal and said calculation coefficient; and

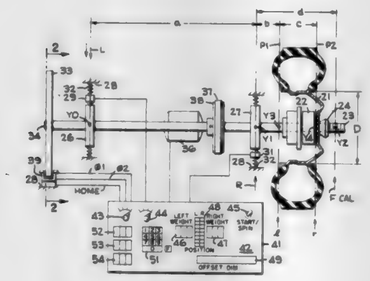
means for controlling the operation of said engine in response to said value corresponding to the setting.

4,450,529

METHOD AND APPARATUS FOR DETERMINING ENCODER ACCURACY MARGIN IN A WHEEL BALANCER

Jerry M. Hill, North Little Rock, and Joel T. Lipe, Little Rock, both of Ark., assignors to FMC Corporation, Chicago, Ill.

Filed Jul. 28, 1980, Ser. No. 172,723
Int. Cl.³ G01M *1/22*; G06F *15/20*
U.S. Cl. 364—508 17 Claims



1. A method of determining a shaft encoder operating characteristics wherein the encoder provides angular position information outputs indicative of the position of a shaft which is mounted for rotation in a framework and which is driven by a motor coupled thereto, wherein a display is provided and a processor is included to monitor the encoder outputs and to provide signals which are coupled to the display and which are indicative of data obtained with respect to the encoder outputs, wherein memory is associated with the processor, such memory operating to store the angular position information, and wherein such information includes a reference indication and angular increment indications, comprising the steps of

rotating the shaft,

retrieving the stored angular position information from memory,

retrieving the current angular increment indications from memory during shaft rotation, comparing current angular increment indications with stored information, and updating the stored angular position information with the current angular increment and reference indication information where the comparison is indicative of change therein, so that when the stored angular position information is coupled to the display, indications are provided thereby of the number of angular increments between reference indications and of the current encoder angular position.

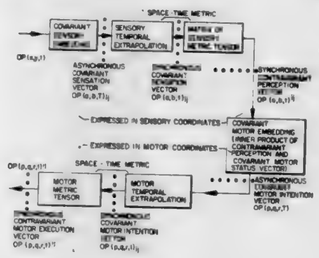
14. Apparatus for portraying the operation of an off-the-car wheel unbalance measuring system having a rotationally driven wheel mounting shaft supported in a frame or pedestal, a pair of force transducers mounted in the pedestal in mechanical communication with and spaced along the shaft, a shaft encoder providing a "home" reference pulse once each shaft revolution and a plurality of angular shaft position increment pulses for each shaft revolution in the form of a dual signal providing encoder states which have a predetermined phase relationship, structure adapted to receive and retain a rotating body to be balanced on the shaft, a shaft drive motor coupled to the shaft and operating to drive the shaft rotationally, a first display and a second display, comprising random access memory receiving current encoder states, and a shaft angular increment count register, means coupling the first display to said random access memory to display the current encoder states, and means coupling the second display to said angular increment count register to display the current shaft position, whereby encoder angular position relative to the shaft as well as encoder electro-optical integrity is monitored.

4,450,530

SENSORIMOTOR COORDINATOR

Rodolfo R. Llinas, and Andras J. Pellionisz, both of New York, N.Y., assignors to New York University, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 286,979
Int. Cl.³ G06G *7/60*; G06F *15/42*
U.S. Cl. 364—513 15 Claims



1. An information processing system to coordinate sensory input signals with motor-effector means, using oblique systems of coordinates for processing sensory input information in covariant vectorial form and providing output motor-effector information in contravariant vectorial form, comprising:

(a) covariant embedding means for expressing sensory input signals in an n-dimensional vector by N components in a covariant vectorial expression, where N is greater than n;

(b) covariant-contravariant transformation means for obtaining contravariant expressions from said covariant vectorial expression, said transformation means expressible as a tensorial transformation; and

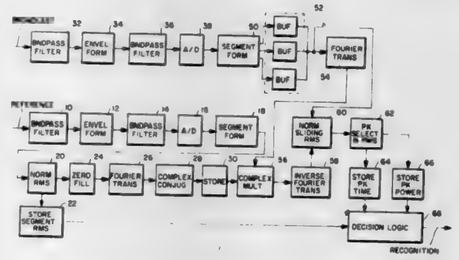
(c) contravariant vectorial expression means for providing output information to a motor effector means relative to an external invariant.

4,450,531

BROADCAST SIGNAL RECOGNITION SYSTEM AND METHOD

Stephen C. Kenyon, Stafford, Va.; Laura J. Simkins, Clarksburg, Md.; Leroy L. Brown, Springfield, and Richard Sebastian, Lorton, both of Va., assignors to Enseo, Inc., Springfield, Va.

Filed Sep. 10, 1982, Ser. No. 416,664
Int. Cl.³ G06J *1/00*; H04B *1/00*
U.S. Cl. 364—604 25 Claims



1. A method for the automatic electronic recognition of a program unit broadcast by radio waves which includes:

a. processing said program unit to obtain a plurality of digitized reference signal segments;

b. successively processing a broadcast signal to generate successive digitized broadcast signal segments;

c. correlating a plurality of successive digitized broadcast signal segments with an equal number of digitized reference signal segments to obtain correlation function peaks for each resultant correlation segment, and

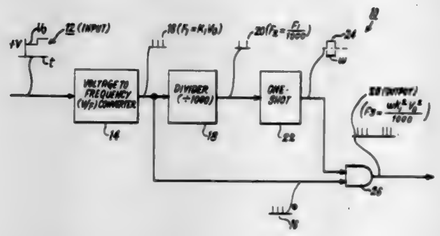
d. comparing the spacing between correlation function peaks for each correlation segment to determine whether such spacing is substantially equal to the reference signal segment length.

4,450,532

VOLTAGE TO FREQUENCY CONVERTER

William A. Massey, Mt. Holly, N.J., assignor to General Electric Company, King of Prussia, Pa.

Filed Apr. 19, 1982, Ser. No. 369,441
Int. Cl.³ H03L *7/00*
U.S. Cl. 364—703 5 Claims



1. A circuit arrangement for receiving an applied, analog type electrical signal V_0 and generating a pulse train output signal whose average frequency F_3 is proportional to the square of the applied analog type electrical signal V_0, said circuit arrangement comprising:

(a) analog to frequency converter means for converting said applied analog signal V_0 to a first digital output signal comprising a string of pulses of a frequency $F_1 = K_1 V_0$, where K_1 is a predetermined analog to digital conversion constant;

(b) means for dividing said first output signal by a predetermined divisor D so as to develop a second output signal comprising a string of pulses whose frequency is $F_2 = F_1/D$; said frequency F_2 being relatively lower than said frequency F_1;

(c) means responsive to said second output signal for generating a third output signal having a pulse rate whose frequency is equal to said frequency F_2 of said second output signal and a pulse width of a predetermined duration W which is less than the period of the second output signal;

(d) means receiving said first and third output signals and responsive to coincidence between said first and third output signals for developing a pulse in response to each such coincidence, thereby generating a train of pulses whose average frequency F_3 equals $(W K_1^2 V_0^2)/D$, thus rendering F_3 proportional to V_0^2.

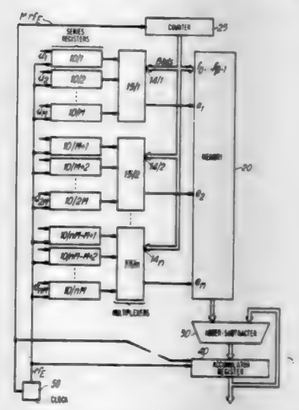
4,450,533

DISTRIBUTED ARITHMETIC DIGITAL PROCESSING CIRCUIT

Jean-Pierre Petit, 16, rue Le Peletier, 22220 Treguier, and Xavier Maitre, Rte. de Pennker, Le Bourg, 22300 Lannion, both of France

Filed Aug. 17, 1981, Ser. No. 293,367
Claims priority, application France, Aug. 27, 1980, 80 18580
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 3 Claims

1. A digital processing circuit forming a weighted sum of digital signals, comprising n groups each of M series registers into which are introduced signals to be processed, n multiplexers each with M inputs and one output, said M inputs of each multiplexer being connected to the outputs of said M series registers of one of the groups, a memory containing precalculated quantities characteristic of the weighted sum to be formed, said memory having a capacity of $2^{\beta+n}$ words distributed into different blocks, a modulo M counter with β outputs, said memory having β inputs for addressing the different blocks ($f_0, f_1 \ldots, f_{\beta-1}$) connected to the β outputs of said counter and n inputs for addressing a word into a block ($e_1, e_2 \ldots e_n$) connected to the outputs of the n multiplexers, an adder-subtracter connected to said memory, an accumulator register connected to said adder-subtracter and a clock actuating said counter, said series registers and said accumulator register, the number M being less than 2^{β}, said memory being subdivided into $M-(2^{\beta}-M)$ blocks each of 2^n words and into $(2^{\beta}-M)$ blocks each of 2^{n+1} words, said blocks being selected by the bits supplied by the outputs of said counter, said digital processing circuit comprising supplementary series registers, whose number is at the most equal to $2^{\beta}-M$, said supplementary series registers receiving supplementary signals to be processed, said digital processing circuit also comprising a multiplexing means having inputs connected to the outputs of said supplementary series registers, as well as to the outputs of said counter which can supply bits which are not significant with respect to the addressing of the memory blocks, said multiplexing means being controlled by the outputs of said counter indicating the appearance of the non-significant bits, certain of the addressing inputs of the memory blocks being connected to the outputs of said multiplexing means in such a way that they are connected across said multiplexing means either to said supplementary series registers when these non-significant bits appear at the output of said counter or to said counter when such bits are absent.



4,450,534

MULTIPROCESSOR WITH DEDICATED DISPLAY

Duane Solimeno, Newington, Conn.; Sammy K. Brown, Midland, Tex.; Peter L. Koeppen, Houston, Tex., and Gerald Rogers, Sugarland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 14, 1981, Ser. No. 263,795
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 4 Claims

1. An electronic displaying apparatus comprising:

input means;

display means;

an electronic digital processor system dedicated to control the display means and including;

memory means for storing of display data and commands which define operations on said data;

arithmetic and logic means for performing said operations on said data;

first and second independent and simultaneously operable central processing units for executing said commands on said data,

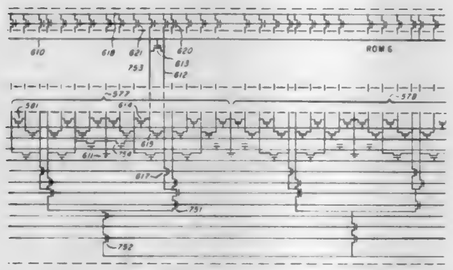
the first independent and simultaneously operable central

processing unit for updating data from the input means, and

the second independent and simultaneously operable central processing unit for performing display operations on the display means;

control circuitry for alternately connecting the first independent and simultaneously operable central processing unit to said memory means while connecting the second central processing unit to said arithmetic and logic means and connecting the first independent and simultaneously operable central processing unit to the arithmetic and logic means while connecting the second independent and simultaneously operable processing unit to the memory means;

first processor input means connected to said input means for providing input to said first central processing unit;



first processor output means connected to said input means to provide a terminal for acknowledging the reception of input data;

second processor output means connected to said display means for displaying output data from said second central processing unit;

a plurality of data paths that connect said first central processing unit via said control circuitry to said memory means, said arithmetic and logic means, said first input means, said first processor output means and said control circuitry;

and connect said second central processing unit via said control circuitry to said memory means, said arithmetic and logic means, said control circuitry and said second processor output means.

4,450,535

SYSTEM AND METHOD FOR AUTHORIZING ACCESS TO AN ARTICLE DISTRIBUTION OR SERVICE ACQUISITION MACHINE

Bertrand de Pommery, St Nom la Breteche, and Michel Ugon, Maurepas, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

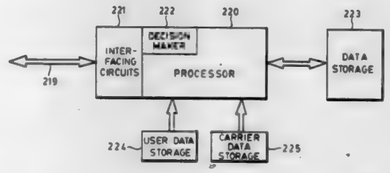
Filed Sep. 15, 1981, Ser. No. 302,621
Claims priority, application France, Sep. 16, 1980, 80 19951
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 **19 Claims**

1. System for authorizing the distribution of articles or services comprising:

first means for receiving first and second detachable data carriers, each data carrier having processing means, data storage means, decision-making means and interfacing circuits;

second means for processing information from the first and second detachable data carriers;

third means for providing bi-directional communication between the first and second detachable data carriers and said second means, the second detachable data carrier having means necessary for enabling said bi-directional communication between the first detachable data carrier and said second means; and



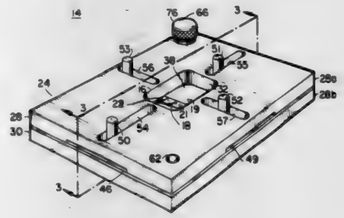
fourth means responsive to said information processed by the second means for authorizing delivery of the articles or services.

4,450,536

OPTICAL COMPOSING STAGE

Warren E. Schroeder, 134 Main St., Hackensack, N.J. 07601

Filed Feb. 5, 1982, Ser. No. 346,207
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **4 Claims**



1. In an optical composing stage having a variable-area aperture for successively presenting selected portions of an object transparency mounted thereon for imaging by transmission therethrough of light from an illuminating light source incident on one side of the aperture onto an optical recording medium by means of a lens system having an angle of view for viewing light transmitted through to the other side of the aperture, the improvement comprising:

a movable aperture-defining blade, having a light source proximal surface, a light source distal surface and a leading edge; the leading edge of which is shaped so that diffused light incident thereon from the light source will be directed out of the angle of view of the lens system, whereby image flaring due to edge reflection is prevented.

4,450,537

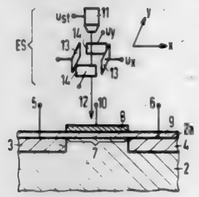
MONOLITHICALLY INTEGRATED READ-ONLY MEMORY

William G. Oldham, El Cerrito, Calif., assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,303
Int. Cl.³ G11C *11/40, 7/00*
U.S. Cl. 365—217 **8 Claims**

1. A monolithically integrated read-only memory system, comprising: a plurality of word lines, a plurality of read lines which cross the word lines to form intersections; the read lines being connected via load elements with a supply voltage; field effect transistors connected to the read and word lines at the intersections, the transistors being connected to be selectable via the word lines and to function as coupling elements between the read lines and a circuit point carrying a reference potential; the field effect transistors being formed of gate insulating layers on a semiconductor body connected to a reference voltage; means for selectively altering a charge state of

the gate insulating layers of the transistors at certain predetermined intersections so as to program the entire memory system prior to use and application of specific control voltages to the intersection transistors in read-only memory fashion, the altered charge states changing a threshold voltage of the transistor so as to determine whether or not it can be employed as a coupling element; and said means for selectively altering comprising a scanning electron beam which scans over all of the intersection transistors on the semiconductor body along individual lines parallel to one another and which is activated only



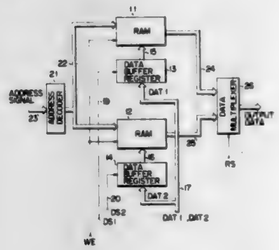
when the beam is scanning across said predetermined intersections, a current density, acceleration voltage, and local influence time of the electron beam being selected such that charge carrier pairs form in the gate insulating layer, negative charge carriers of the pairs flowing off to the semiconductor body connected to the reference voltage while positive charge carriers of the pairs remain in the gate insulating layer and charge it positively, a size of the positive charging being essentially determined by a product of the current density and influence duration of the electron beam.

4,450,538

ADDRESS ACCESSED MEMORY DEVICE HAVING PARALLEL TO SERIAL CONVERSION

Hisatoshi Shirasaka, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 102,836, Dec. 12, 1979. This application Feb. 5, 1982, Ser. No. 346,145
Claims priority, application Japan, Dec. 23, 1978, 53/160706; Dec. 23, 1978, 53/160707; Dec. 23, 1978, 53/160708
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—219 **10 Claims**



1. A memory device for receiving, storing, and outputting data groups, said memory device comprising:

a plurality of registers, each of said registers for receiving and storing a data group and for outputting a said stored data group following the storing thereof;

a pluarlity of memory means for addressably storing and outputting data groups, each of said memory means having individually addressable memory locations and each memory means being associated with a different one of said registers for receiving said data groups outputted by said associated register;

address control means for supplying in parallel the same address information to each of said memory means to cause each of said memory means to output the data groups stored in the individually addressable memory locations designated by said supplied address information; and

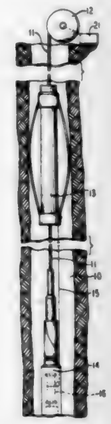
parallel-to-serial converting means coupled to said plurality of memory means for receiving data groups outputted therefrom and for selectively supplying said received data groups in a serial manner.

4,450,539

APPARATUS FOR MEASURING THE RELATIVE POSITION OF A DOWNHOLE TOOL IN A BORE HOLE

Gary R. Bright, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 29, 1981, Ser. No. 287,999
Int. Cl.³ G01V *1/00, 9/00*
U.S. Cl. 367—35 **5 Claims**



1. An apparatus for determining the relative distance between points at differing elevations within a segment of a bore hole comprising: a bore hole wall engaging anchor detachably connected to a downhole tool carried by a wireline; means controllable from the surface for detaching said anchor from said downhole tool to permit vertical separation of said tool and anchor, said anchor remaining stationary in said bore hole; a distance sensing cable carried by a reel attached to the tool and having its free end attached to said anchor; and an electrical pulse transmitter actuated as the sensing cable pays off of said reel and connected through a pair of conductors in the wireline to a distance indicator located at the surface.

4,450,540

SWEPT ENERGY SOURCE ACOUSTIC LOGGING SYSTEM

A. J. Mallett, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 129,952, Mar. 13, 1980, abandoned. This application Aug. 20, 1982, Ser. No. 410,165
Int. Cl.³ G01V *1/40, 1/28*
U.S. Cl. 367—41 **3 Claims**

1. A well logging system for measuring and recording the acoustic energy propagation characteristic of earth formations penetrated by a well borehole comprising:

a fluid tight hollow body member sized and adapted for passage through a well borehole;

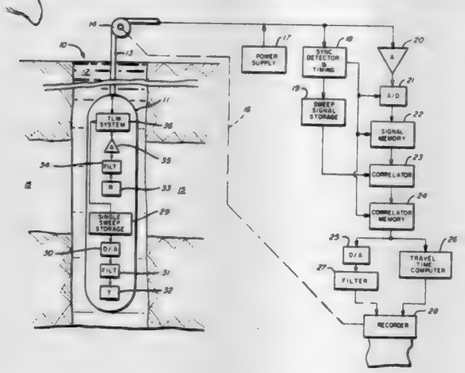
means in said body member for repetitively generating swept frequency acoustic energy outputs having a linearly varying range of frequencies from a lowest frequency of approximately two kilohertz to a highest frequency of approximately twelve kilohertz in a characteristic pattern,

said pattern having a duration of approximately four milliseconds;

means for digitizing said characteristic swept frequency signal and for providing a digital signal representative of said characteristic signal at said generating means;

receiver means longitudinally spaced from said generating means by a distance of from eight to twelve feet in said body member, for detecting acoustic energy propagated from said generating means through the borehole and earth formations in the vicinity of the borehole and for generating digital signals representative of said detected acoustic energy;

means for cross correlating said digital signal representative of said characteristic signal at said generating means and said digital signal representative of said detected acoustic energy and for providing a correlator output signal repre-



sentative of the arrival at said receiver means of different modes of propagation of acoustic energy in the borehole and earth formations in the vicinity of the borehole;

computer means responsive to said correlator output signal for deriving therefrom measurements of the speed of propagation of said different modes of propagation of acoustic energy in the earth formations in the vicinity of the well borehole;

means for recording said measurements of the speed of propagation of said different modes of acoustic energy as a function of borehole depth, thereby providing on a record medium a well log of speed of propagation of different modes of acoustic energy; and

means for recording as a function of borehole depth said correlator output signal, thereby providing a well log indicative of the time of arrival at said receiver means of different modes of propagation of acoustic energy.

4,450,541

BIAS COMPENSATED OPTICAL GRATING HYDROPHONE

Byron W. Tietjen, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,252
Int. Cl.³ H04R *23/00*
U.S. Cl. 367—149 **9 Claims**

1. A hydrophone comprising:

a housing including a chamber closed by acoustic wave sensing means movable in response to an acoustic wave incident thereon;

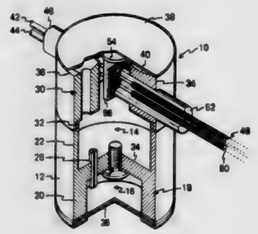
means disposed within said chamber for transmitting first and second light beams therein;

first and second light beam receiving means disposed within said chamber and having said first and second light beams respectively directed thereon;

first intensity modulating means comprising a first pair of optical gratings of which one is coupled to said acoustic wave sensing means for movement in accordance with motion thereof and the other is relatively fixed so as not to move with motion of said acoustic wave sensing means, the gratings of said first grating pair being in optical alignment with each other and with said first light beam whereby that beam as received at said first light beam receiving means is modulated in intensity in accordance with relative movement of the gratings resulting from motion of said acoustic wave sensing means;

second intensity modulating means comprising a second pair of optical gratings one of which is coupled to said acoustic wave sensing means for movement in accordance with motion thereof and the other is relatively fixed so as not to move with motion of said acoustic wave sensing means, the gratings of said second grating pair being in optical alignment with each other and with said second light beam whereby that beam as received at said second light beam receiving means is modulated in intensity in accordance with relative movement of the gratings resulting from motion of said acoustic wave sensing means, the two gratings of said second grating pair being positioned relative to each other with a spatial displacement of 90 degrees from the relative position of the two gratings of said first grating pair whereby the modulation of said second beam by said second grating pair is phase displaced by 90 degrees with respect to the modulation of said first beam by said first grating pair;

first and second photodetector means respectively connected to said first and second beam receiving means for detecting said first and second light beams as modulated by the grating pair through which each beam is received



at its respective receiving means, to provide first and second modulator output signals respectively representative of the modulated intensities of said first and second light beams; and

a detector circuit including means responsive to said first and second modulator output signals to select the one thereof then within a linear region of its modulation and to derive from the signal thus selected a hydrophone output signal representative of the amplitude of the incident acoustic wave.

7. A method for detecting acoustic waves comprising the steps of:

transmitting first and second input light beams through a hydrophone;

modulating the intensity of said first input light beam in accordance with a received acoustic wave to produce a first modulated output light beam;

modulating the intensity of said second input light beam in accordance with said received acoustic wave to produce a second modulated output light beam the modulation of which has a 90 degree phase displacement with respect to said first output light beam;

detecting each of said first and second output light beams;

converting said first output light beam into a first electrical output signal;

converting said second output light beam into a second electrical output signal; and

selecting as an output signal indicative of the presence of an acoustic wave the one of said first and second electrical

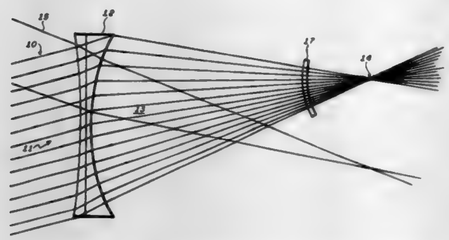
output signals which is then within a linear region of its modulation.

4,450,542

MULTIPLE BEAM LENS TRANSDUCER FOR SONAR SYSTEMS

Jacob A. Kritz, Westbury, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 5, 1982, Ser. No. 354,973
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—150 **12 Claims**



1. An apparatus for transmitting and receiving a plurality of sonar beams comprising:

lens means having a central axis and a focal surface, for converting incident plane sound waves to sound waves that converge at a focal region in said focal surface such that plane waves incident in different predetermined directions converge to different focal regions, and for converting sound waves emitted from said focal regions to plane sound waves radiating from said lens means in said predetermined directions, and

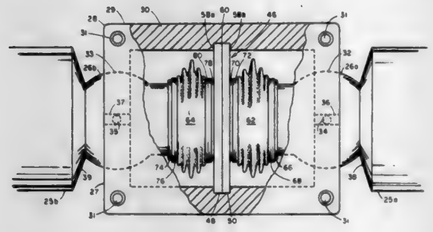
a plurality of electroacoustic transducers, configured as segments of spherical shells, said spherical shells having centers in said focal regions, said transducers disposed between said lens means and said centers to receive focused sound waves.

4,450,543

SECTIONALIZED MARINE SEISMIC CABLE

Walter P. Neeley, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 19, 1982, Ser. No. 359,960
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—154 **2 Claims**



1. A marine seismic cable comprising:

a. a plurality of marine seismic cable sections,

b. a plurality of articulated connector assemblies joining said cable sections to form a sectionalized marine seismic cable, each articulated connector assembly comprising:

i. a housing having first and second sockets provided in opposite ends thereof;

ii. a pair of diametrically opposed grooves in the inner surface of each of said first and second sockets and extending longitudinally relative to said housing;

iii. a first strain member to which one end of a first seismic cable section is affixed and having a ball-like member at one end thereof;

iv. a second strain member to which one end of a second seismic cable section is affixed and having a ball-like member at one end thereof; and

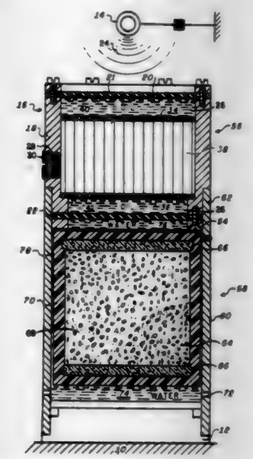
v. a pair of pins extending from opposite sides of said ball-like members of said first and second strain members and extending into the grooves in the first and second sockets of said housing, whereby two degrees of freedom of movement of said first and second cable sections relative to one another is permitted during seismic exploration operations, a first degree of said movement being effected by rotational movement of said pins within said grooves and a second degree of said movement being effected by translational movement of said pins along said grooves.

4,450,544

ABSORPTIVE SONAR BAFFLE

Alfred Denaro, Commack, and George Rand, Franklin Square, both of N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,851
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—176 **12 Claims**



1. A baffle for absorbing acoustical energy comprising:

fluid containment means having a sidewall and opposed end walls for defining therein a first fluid chamber, one of said end walls comprising a first elastic diaphragm,

viscous fluid contained within said first fluid chamber,

first screen member disposed within said first fluid chamber defining a first fluid region between said first screen and said first elastic diaphragm, said first screen member having a plurality of restricted orifices therethrough which communicate with said first fluid region,

second screen member disposed within said first fluid chamber having a plurality of restricted orifices therethrough,

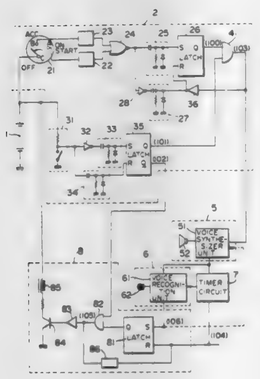
channel means positioned between said first and second screen members having a plurality of fluid passages for controlling flow of said viscous fluid between said orifices of said first and second screen members.

4,450,545

VOICE RESPONSIVE DOOR LOCK SYSTEM FOR A MOTOR VEHICLE

Norimasa Kishi; Kazunori Noso, and Yasuhisa Takeuchi, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Mar. 9, 1982, Ser. No. 356,481
Claims priority, application Japan, Mar. 11, 1981, 56-33999
Int. Cl.³ E05B *49/00*; B60Q *1/00*
U.S. Cl. 367—198 **11 Claims**



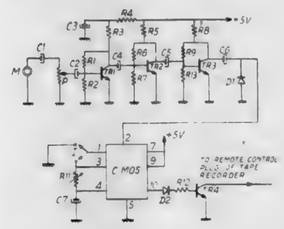
1. A voice responsive door lock system for a motor vehicle having a door and a door lock device, comprising:
- a status detection means for producing a standstill indication signal when the vehicle is at standstill;
- a door position sensing means for producing a door open indication signal when the door is open and a door closure indication signal when the door is closed;
- a gate means for producing an indication command signal upon presence of said standstill indication signal and said door open indication signal;
- an indication means responsive to said indication command signal for indicating a question to an operator as to the necessity of locking the door upon receiving said indication command signal and producing a voice recognition start signal upon completion of indication of the question;
- a timer means responsive to said voice recognition start signal for producing a stop command signal when a predetermined time period has elapsed after receiving said voice recognition start signal;
- a voice recognition means responsive to said voice recognition start signal and said stop command signal for discriminating preselected words of the operator to determine whether or not the door should be locked, and for producing a door lock command signal upon determination of locking the door; and
- a door lock control means responsive to said door lock command signal and said door closure indication signal for actuating the door lock device upon reception of said door lock command signal and said door closure indication signal.

4,450,546

SPEECH CONTROLLED START-STOP OF TAPE RECORDER IN RECORD AND REPRODUCE MODES BY SEPARATE MICROPHONE

Louis Kanny, rue Savier, 35, Malakoff, France 92240

PCT No. PCT/FR81/00085, 371 Date Feb. 25, 1982, 102(e) Date Feb. 25, 1982, PCT Pub. No. WO82/00217, PCT Pub. Date Jan. 21, 1982
PCT Filed Jun. 29, 1981, Ser. No. 355,755
Claims priority, application France, Jul. 1, 1980, 80 14601
Int. Cl.³ G11B *15/18*
U.S. Cl. 369—24 **7 Claims**



1. Electronic device permitting by the speech action to control the automatic start and stop of a tape recorder comprising a microphone for producing low frequency input signals, an input signal re-shaping circuit, a flip-flop, and an electronic switch for controlling the motor of the tape recorder, characterized in that the microphone is constituted by an additional element which is autonomous from the recording microphone, and completely independent from the tape recorder recording and playing back circuits, and in that the device further comprises a two-position switch associated with the flip-flop to authorize an automatic control of the start-stop of the tape recorder when the latter is in a playing back position or in a recording position, a first position of the switch corresponding to the playing back operation of the tape recorder and triggering the stop through speech and the start through absence of the speech, and a second position of the switch corresponding to a recording operation of the tape recorder and triggering the start through speech and the stop through absence of speech.

4,450,547

FOCAL POSITION DETECTING OPTICAL APPARATUS

Shigeru Nakamura, Hachioji; Takeshi Maeda, Kokubunji; Toshimitsu Kaku, Hachioji; Yoshito Tsunoda, Mitaka; Wasao Takasugi, Higashiyamato, and Tokuya Kaneda, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,218
Claims priority, application Japan, Dec. 26, 1980, 55-183911
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—45 **20 Claims**



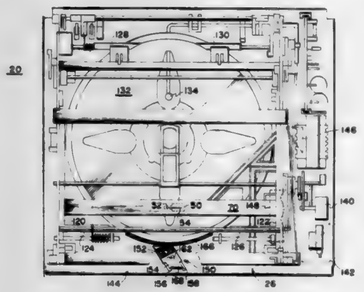
1. A focal position detecting optical apparatus comprising:
- a first optical system for illumination of a focused light beam onto an object to be irradiated;
- a second optical system disposed in a path of a light beam reflected from or transmitted through the object, said second optical system including first optical means having a unidirectional lens action for condensing the reflected or transmitted light beam and forming focal point images of the light beam at two foci spaced apart from each other, and second optical means disposed between the two foci for extracting a part of the light beam from the first optical means by splitting the light beam along a splitting line; and
- detector means disposed rearwardly of the two foci for detecting a light beam pattern formed by said second optical system, the light beam pattern being rotated in accordance with the focal position of said first optical system.

4,450,548

DISC RECORD PLAYER HAVING STYLUS CLEANER

Larry M. Hughes, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 426,008
Int. Cl.³ G11B *3/58*
U.S. Cl. 369—71 **8 Claims**



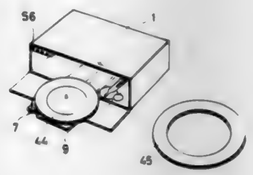
1. In a record player including a pickup stylus subject to engagement with a turntable-supported record for recovering prerecorded information disposed thereon during playback; said stylus being mounted at one end of a stylus arm having the other end yieldably supported in a carriage which is subject to translatory motion along a first path between an off-record rest position and playback positions over said record; said player further having means mounted in said carriage for lifting and lowering said stylus in a manner causing said stylus to protrude from said carriage to effect engagement and disengagement of said stylus with a record disposed on said turntable; stylus cleaning apparatus comprising:
- (A) a cleaning element;
- (B) a holder carrying said cleaning element;
- (C) means for mounting said holder for motion along a second path such that said carriage engages said holder to cause displacement of said cleaning element along said second path away from the center of said turntable during translation of said carriage toward said rest position;
- (D) means for causing displacement of said cleaning element along said second path toward said turntable center during translation of said carriage away from said rest position; and
- (E) means for selectively energizing said stylus lifting/lowering means to cause engagement of said stylus with said cleaning element at points beyond the periphery of a turntable-supported record to effect cleaning of said stylus during travel of said carriage between said rest position and an intermediate position between said rest position and said playback positions, and while said cleaning element is in motion along said second path.

4,450,549

COMPACT BOOKSHELF TYPE RECORD PLAYER

Yuji Ikedo; Isami Kenmotsu, and Nobuyuki Isobe, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 293,798
Claims priority, application Japan, Aug. 18, 1980, 55-112689
Int. Cl.³ G11B *1/00, 25/04*
U.S. Cl. 369—75.1 **19 Claims**



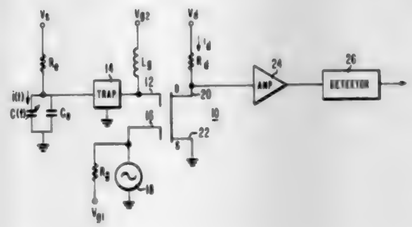
1. A compact record player comprising:
- a slide base slidably movable along a receiving position in which a record cannot be played, a play position on a front side of said receiving position, and a record disc change position on a front side of said play position such that said player has a reduced effective lateral depth;
- switch means for producing an electrical control signal, and means for moving said slide base in response to said control signal;
- a rack member movable back and forth on said slide base;
- rack member drive means for driving said rack member; and
- locking means movably mounted on said slide base;
- wherein said locking means can be selectively engaged with said rack member to thereby control a movement of said slide base.

4,450,550

PICKUP CIRCUIT FOR VIDEO DISC INCLUDING DUAL-GATE FET WITH INJECTED RF

Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,023
Int. Cl.³ G11B *9/06*
U.S. Cl. 369—126 **8 Claims**



1. In a video disc playback system for use in recovering an information signal recorded in a first given frequency band along an information track on a surface of a record disc, said information being recorded as variations in the geometry of said information track, an apparatus comprising:
- a stylus having a conductive electrode, said stylus being adapted to track said information track, said conductive electrode sensing signals which vary in accordance with variations in the capacitance between said electrode and a conductive property of said information track said capacitance variations corresponding to variations in the geometry of said information track;
- a dual-gate field-effect transistor having a first gate of said

dual-gate transistor coupled to said conductive electrode; and

a source of radio frequency signals coupled to a second gate of said dual-gate transistor;

said dual-gate field-effect transistor detecting said variations in capacitance and mixing said detected variations in capacitance with said radio frequency signals from said source to provide an output signal of a second given frequency band.

4,450,551

KEEL-TIPPED STYLUS, AND METHOD AND DEVICE FOR MAKING KEEL-TIPPED STYLUS

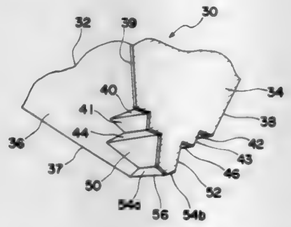
Toshiyuki Kudo, Hirakata; Kazuo Itoh, Matsubara, and Masafumi Kitamura, Nara, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 15, 1982, Ser. No. 388,634

Claims priority, application Japan, Jun. 19, 1981, 56-95494; Sep. 14, 1981, 56-145166

Int. Cl.³ G11B *9/06, 3/00*

U.S. Cl. 369—173 **8 Claims**



1. A keel-tipped stylus for reading prerecorded information on a disc record groove, said keel-tipped stylus comprising:

a body made of electrically non-conductive, hard and brittle material, said body comprising:

first and second surfaces bevelled with each other and intersecting at a prow line;

a front surface extending between said first and second bevelled surfaces with a predetermined acute angle contained between said prow line and said front surface, said front surface being tapered;

a pair of first shoulders extending, respectively, from opposite sides of said front surface to said first and second bevelled surfaces;

a pair of second shoulders provided adjacent to said first shoulders on a tapered side and extending, respectively, from opposite sides of said front surface to said first and second bevelled surfaces;

a pair of first side surfaces joining said first shoulders to said second shoulders, respectively; and

a fore-and-aft constricted terminal portion defined by a pair of second side surfaces extending from said second shoulders, respectively, and a bottom surface extending between said second side surfaces; and

an electric conductive film, deposited on said front face of the body.

4,450,552

LINEAR VELOCITY CONTROL MEANS

Angelo R. Marcantonio, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1982, Ser. No. 363,809

Int. Cl.³ G11B *19/24*

U.S. Cl. 369—240 **4 Claims**

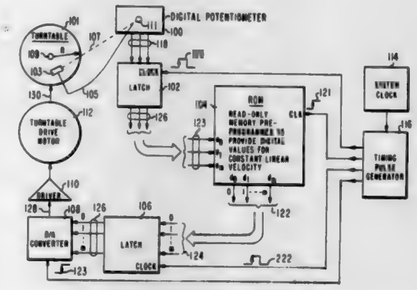
1. A velocity control for a rotating disc comprising:

a digital potentiometer controllable by an arm rotatable about a fixed axis to produce a first series of digital output signals whose values are proportional to the simultaneous angular displacement of said arm;

a rotating disc with a spiralling track thereon;

a stylus secured to said arm;

said arm, said disc, and said stylus being relatively positioned so that said stylus will follow said track across said disc in an arcuate path whose radius is equal to the distance between said fixed axis and the point of projection of said stylus upon said disc so that the angular movement of said arm is a measure of the position of said stylus along said arcuate path;



signal generating means responsive to said first series of digital output signals to produce a control signal whose amplitude varies as a predetermined function of the values of said first series of digital output signals;

prime mover means responsive to said control signal to rotate said disc at an angular velocity to cause the portion of the track directly underneath said stylus to have a velocity which is a function of the position of said stylus along said arcuate path, said last-mentioned function being determined by said predetermined function.

4,450,553

MULTILAYER INFORMATION DISC

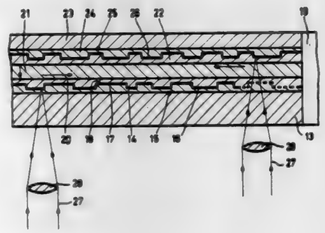
Peter L. Holster, and Johannes M. Wittkämper, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1979, Ser. No. 6,609

Claims priority, application Netherlands, Mar. 22, 1978, 7803069

Int. Cl.³ G11B *7/24*

U.S. Cl. 369—275 **13 Claims**



1. A multilayered record containing information in optically readable form, said record comprising a planar member of a material substantially transparent to radiation with which the information is to be read, an optical structure extending over at least a portion of each of two opposite surfaces of said planar member, said optical structures each having a plurality of planar information areas arranged in an information track and disposed in a first plane generally parallel to the plane of said planar member, said information areas being spaced from each other in the track direction by regions spaced from said first plane in a direction perpendicular thereto and being adapted to be read by a beam of radiation from a source positioned on one side of said planar member, and a first and second reflective layer covering the entire optical structure on said one side of said planar member and the entire optical structure on the other side of said planar member, respectively, at least said first reflective layer being partially transmissive to said radiation whereby the optical structure on said other side is read by radiation which passes through said first reflective layer and is incident onto said optical structure on said other side, the information recorded on said optical structure on said other side being derived from the portion of the radiation reflected by said second reflective layer.

4,450,554

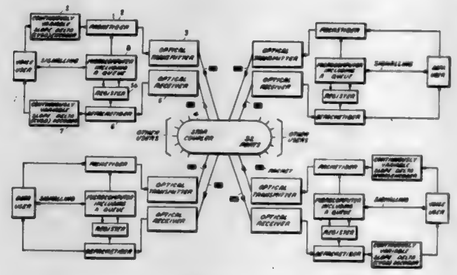
ASYNCHRONOUS INTEGRATED VOICE AND DATA COMMUNICATION SYSTEM

Peter D. Steensma, Midland Park; Murray Weinberg, Union; Robert W. Smid, Wykoff, and Thomas E. Finley, Pompton Lakes, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,690

Int. Cl.³ H04J *3/16*

U.S. Cl. 370—4 **33 Claims**



1. An asynchronous integrated voice and data communication system comprising:

a plurality of data users;

a plurality of voice users;

a fiber optic transmission medium enabling each of said plurality of data and voice users to receive packet type transmissions from all others of said plurality of data and voice users at any completely random time;

a plurality of first means each coupled to a different one of said plurality of voice users to convert voice signals to coded signals and vice versa;

a plurality of second means each coupled to said transmission medium, certain ones of said plurality of second means each being coupled to certain ones of said plurality of second means each being coupled to a different one of said plurality of first means and other ones of said plurality of second means each being coupled to a different one of said plurality of data users to enable each of said plurality of data and voice users to have completely random pocket type access to said transmission medium at any time; and

a plurality of third means each coupled to a different one of said second means and an associated one of said plurality of data and voice users to enable any one of said plurality of data and voice users to establish communication with any other selected one of said plurality of data and voice users at any completely random time.

4,450,555

DEVICE FOR MINIMIZING FAR-END CROSSTALK BETWEEN HALF-DUPLEX DIGITAL TRANSMISSION LINES

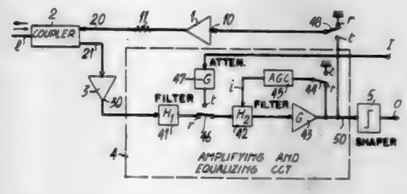
Gérard J. P. Pays, Chemin de Toul-ar-laan, Perros-Guirec, France (22700)

Filed Oct. 7, 1981, Ser. No. 309,512

Claims priority, application France, Oct. 8, 1980, 80 21483

Int. Cl.³ H04B *1/44*

U.S. Cl. 370—31 **11 Claims**



1. Device for minimizing far-end crosstalk between digital transmission lines, said device being included in a half-duplex digital transmission station linked to one end of a section of one of said lines, said one line section having another end that is a grouping point for said lines, and an attenuation less than a pre-determined maximum attenuation of a section of one of the lines having the greatest attenuation between a half-duplex digital transmission station and said grouping point, said device comprising equalizing means included in a receiving channel of said station linked to said one end, said equalizing means including a filter having a transfer gain substantially equal to the difference between the attenuation of said line section connected to said one end and said maximum attenuation, and switching means for connecting said filter in series into a transmitting channel of said station during each transmission operation of the half-duplex cycle of said station.

4,450,556

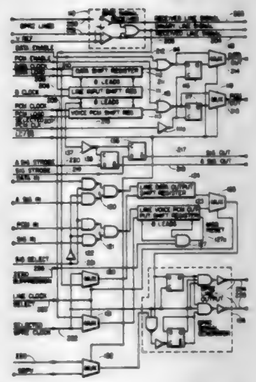
DIGITAL SIGNAL SUBSCRIBER LOOP AND INTERFACE CIRCUIT

Alberto Boleda, Menlo Park, Calif., and Terence N. Thomas, Ontario, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 17, 1980, Ser. No. 197,939

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—58 **5 Claims**



1. A telephone system having a time division multiplex (TDM) facility with subscriber ports, for connection with remote telephone user terminals via associated single channel codecs, each single channel codec being for receiving analog

signals from an associated one of the telephone user terminals, for coupling corresponding digital signals in an operating signal format of the TDM facility to an associated subscriber port, for accepting digital signals in the operating signal format of the TDM facility from the associated subscriber port, and for transmitting corresponding analog signals to the user telephone terminal the telephone system being characterized by:

digital signal transmit and receive paths terminated at line interface units, the line interface units being for interfacing digital signals in an operating format of the transmit and receive paths with the operating format of the codec and the TDM facility, each line interface unit including;

a store and forward circuit for accepting digital signal information bytes corresponding to two channels of information bytes per frame in the operating format of the TDM switching facility in response to select signals and input timing signals; and for transmitting signals corresponding to the accepted information bytes via one of the paths and at a bit rate having a maximum corresponding to twice the average single channel bit rate in the operating format of the TDM switching system in response to a periodic transmission timing signal;

an accumulate and forward circuit for accepting and accumulating information bytes bit by bit from one of the transmit and receive paths in response to a periodic acceptance timing signal, and for outputting accumulated information bytes in the operating format of the TDM facility in response to output timing signals;

timing circuitry, being alternately programmable;

(a) to be responsive to select signals and periodic system timing signals from the TDM facility for generating the input timing signals, the periodic transmission timing signal and the output timing signals, and to be responsive to signal transitions in signals from the transmit path for generating the periodic acceptance timing signal, or

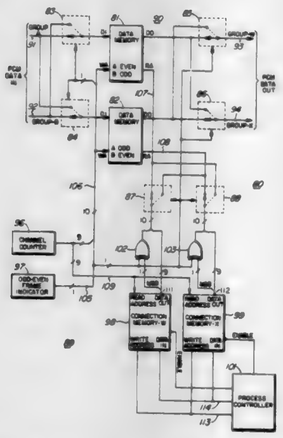
(b) to be responsive to signal transitions in signals from the receive path and periodic timing signals from a local clock source for generating the select signal, the input timing signal, the periodic transmission timing signal. the output timing signal and the periodic acceptance timing signal.

4,450,557

SWITCHING NETWORK FOR USE IN A TIME DIVISION MULTIPLEX SYSTEM

Ernst A. Munter, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 9, 1981, Ser. No. 319,198
Int. Cl.³ H04J *3/08*
U.S. Cl. 370—58 **31 Claims**



8. A switching network for use in a TDM (time division multiplex) system for switching digital signals carried in timeslots on P pairs of incoming buses to timeslots on P pairs of outgoing buses, wherein P is a positive integer, P≧1, said network comprising:

P pairs of memory means, each said pair of memory means responsive to a pair of incoming buses, in a one to one relationship, each said memory means comprising P storage means; and

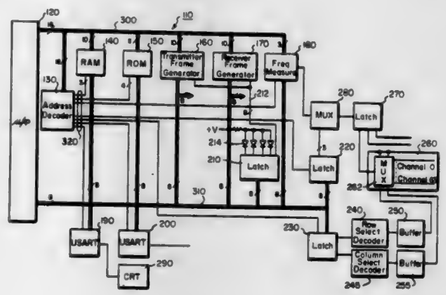
each pair of outgoing buses being responsive to a distinct group of 2P storage means, each said group of storage means comprising one storage means from each of said memory means.

4,450,558

METHOD AND APPARATUS FOR ESTABLISHING FRAME SYNCHRONIZATION

Dean A. Hampton, Watertown; Christian C. Jacobsen, Brookfield, and Gary A. Profet, Watertown, all of Conn., assignors to General Datacomm Industries, Inc., Danbury, Conn.

Filed Jan. 12, 1981, Ser. No. 224,338
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—106 **19 Claims**



1. In a time division multiplexer for multiplexing data and control signals from a plurality of individual data channels so as to produce a single stream of signals on an aggregate transmission line, said multiplexer including a frame generator which generates select signals that are used to select for transmission either data from individual data channels or overhead signals including synchronization signals, a method of synchronizing a local and a remote station by transmission of frame synchronization signals comprising the steps of:

generating a first frame which provides for the transmission of a frame synchronization pattern at least twice and contains no customer-generated signals that are as long as said frame synchronization pattern,

transmitting signals from said local station to said remote station in accordance with said first frame until frame synchronization is established,

generating a second frame of longer duration than the first frame which provides for the transmission of a preponderance of data signals and at least one frame synchronization signal, and

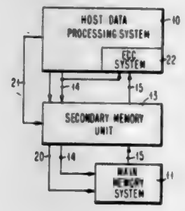
transmitting signals from said local station to said remote station in accordance with said second frame after frame synchronization is established.

4,450,559

MEMORY SYSTEM WITH SELECTIVE ASSIGNMENT OF SPARE LOCATIONS

George L. Bond, Fishkill, and Akella V. S. Satya, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,343
Int. Cl.³ G06F *11/20*; G11C *29/00*
U.S. Cl. 371—10 **11 Claims**



1. In a data processing system having a central processing unit including a memory input bus and a memory output bus each having K lines for transferring a data word consisting of K bit positions between the CPU and a main memory which comprises a large plurality of memory locations each of which includes K failure independent bit cells with each said location being individually addressable through a memory address bus, and an error correcting system for correcting predetermined types of errors in data words transferred from said main memory, the improvement comprising:

a control system for selectively replacing defective bit cells in said main memory, said control system including:

a plurality (N) of replacement sections, each of which is associated with a different group of (K/N) bit positions of said data word, each said section comprising a separate failure independent memory for each bit position of said group, each said memory element comprising a plurality of individually addressable bit cells;

means for partially addressing said memory element of each said replacement section with a first subset of address signals directly from said main memory address bus, each said replacement section being further characterized by a writable index which includes a plurality of control data storage locations which are individually addressable by a second subset of address signals from said main memory address bus to provide at least a third subset of address signals which when combined with said first subset of address signals comprise the complete address for said memory element, and means for developing control signals for each said writable index based on the distribution of defective bit cells in each data word storage location of said main memory.

4,450,560

TESTER FOR LSI DEVICES AND MEMORY DEVICES

George W. Conner, Newbury Park, Calif., assignor to Teradyne, Inc., Boston, Mass.

Filed Oct. 9, 1981, Ser. No. 309,981
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—25 **11 Claims**

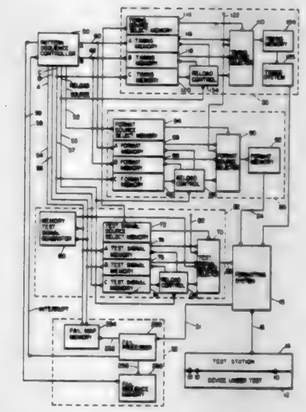
1. Apparatus for testing LSI and memory devices by injecting test signals and comparing resulting output signals with standards, said devices each having a multiplicity of pins, said pins of said memory devices comprising address pins and data pins, said apparatus comprising:

a sequence controller for sequencing the injections of said test signals and the comparisons of said resulting output signals with said standards,

a storage element for storing said test signals and said standards for said LSI devices,

a generator for generating said test signals and said standards for said memory devices,

source switching circuitry responsive to said sequence controller, said source switching circuitry being connected to selectably route said test signals and said standards for said



LSI devices from said storage element to said pins, or said test signals and said standards for said memory devices from said generator to said data pins, and

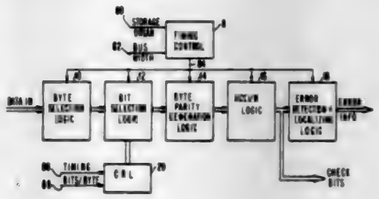
a comparator for comparing said resulting output signals with said standards.

4,450,561

METHOD AND DEVICE FOR GENERATING CHECK BITS PROTECTING A DATA WORD

Volkmar Götze, Grafenau, and Günther Potz, Sindelfingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1982, Ser. No. 358,737
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122381
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—37 **12 Claims**



1. Generalized apparatus for generating check bits of an error correction code (ECC) protecting a data word comprising:

means for dividing the data word into successive data bytes,

N logic means each for combining in parallel any combination of the N bits in each successive byte to generate a partial sum of all ECC check bits for each successive byte,

N program controlled gating means for selecting different combinations of bits out of the full data bytes to the N logic means,

means for storing data for programming said N programmable gating means to each possible different combinations of bits for successive data bytes of the N logic means in accordance with the H matrix of the ECC code,

means for modulo 2 summing all partial sums of each check bit to generate the check bit whereby the same apparatus

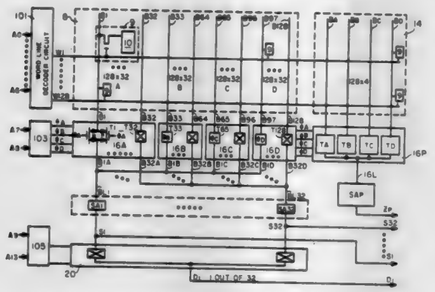
may be used to generate check bits for a number of different combinations of data word lengths and ECC codes.

4,450,562

TWO LEVEL PARITY ERROR CORRECTION SYSTEM

Ihor T. Wacyk, Bridgewater, and Roger G. Stewart, Neshanic Station, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,465
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—51 **10 Claims**



1. An integrated circuit (chip) suitable for use in a memory system comprising:

a random access memory (RAM) array having R·C bit locations arranged in R rows and C colums, said RAM being organized into W "internal" words of L bits each; where W·L is equal to R·C and where R, C, W and L are digits greater than 1;

a parity array section of W bits for storing a parity bit for each one of said W "internal" words;

decoding means coupled to said RAM for selectively reading one of said "internal" words and for selectively reading-out a particular data bit (D) out of the L bits of said selected one of said "internal" words;

parity checking means responsive to the parity of the L bits of a selected internal word and to its associated parity bit for producing a first parity signal having a first value to indicate the presence of a parity error and having a second value to indicate the absence of a parity error;

a control terminal for the application thereto of a system parity signal, produced externally to the chip, having either a first value indicative of a system error or a second value indicating the absence of a system error; and

first logic means coupled to said control terminal and to said parity checking means responsive to said system parity signal and to said first parity signal for producing at its output a control signal having one binary value in response to said first parity signal and said system parity signal indicating the presence of errors and having the other binary value when only one or none of said first parity and system parity signals indicate the presence of an error.

4,450,563

RAPIDLY TURNABLE LASER SYSTEM

Stephen J. Bepko, Catonsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 23, 1982, Ser. No. 371,100
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—23 **8 Claims**

1. A laser system rapidly tunable between at least two preselected laser wavelengths comprising:

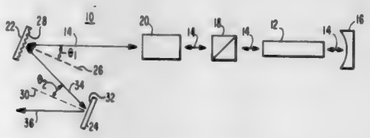
a lasing cell having two ends and operative to emit a coherent beam of radiation therefrom along an optical path;

a mirror optically separated from one end of the lasing cell along the optical path for reflecting said radiation beam back along the optical path to said lasing cell;

means operative to rapidly modulate the emitted radiation beam between at least two polarization states;

a first reflecting means optically separated from the other end of said lasing cell along the optical axis and fixedly aligned to have a first predetermined incident angle with said polarized radiation beam, said first reflecting means being operative in response to incident radiation in one polarization state to retroreflect a first portion of said radiation beam at substantially one wavelength which is unique to said first predetermined incident angle and to specularly reflect a second portion of said radiation beam along a first path, and operative in response to incident radiation in another polarization state to specularly reflect said radiation beam along said first path; and

a second reflecting means optically separated from said first reflecting means along said first path and fixedly aligned to have a second predetermined incident angle with the



radiation beam reflected along said first path, said second reflecting means being operative in response to incident radiation in said other polarization state to retroreflect a third portion of said radiation beam at substantially another wavelength which is unique to said second predetermined incident angle and to specularly reflect a fourth portion of said radiation beam along a second path, and operative in response to incident radiation in said one polarization state to specularly reflect a fifth portion of said radiation beam along said second path, said retroreflected first and third portions of said radiation beam being sufficient to cause resonance at said one and another wavelengths, respectively, whereby when said emitted radiation beam is modulated in said one polarization state the laser system is tuned to said one wavelength and when said emitted radiation beam is modulated in said other polarization state the laser system is tuned to said other wavelength and whereby said modulating means is operative to rapidly modulate therebetween.

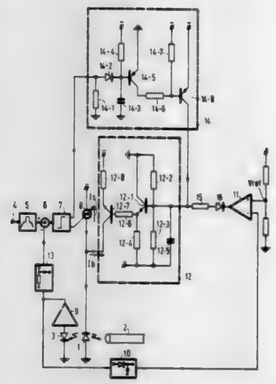
4,450,564

APPARATUS FOR MODULATING THE OUTPUT SIGNAL OF A CONVERTER

Lambertus J. Meuleman; Abram van de Grijp, and Engel Roza, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1981, Ser. No. 299,436
Claims priority, application Netherlands, Sep. 15, 1980, 8005153
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—26 **11 Claims**

1. An arrangement for modulating the output signal of an electric signal converter comprising: an analog signal input terminal, a subtraction device having first and second inputs and an output, a signal limiter coupled to the output of the subtraction device for producing a pulse-shaped output signal for controlling the signal converter, a signal demodulator, means coupling the first input of the subtraction device to said input terminal, and means connecting the subtraction device, the limiter, the signal converter and the demodulator in a feedback loop wherein the demodulator demodulates a portion of the converter output signal to supply a feedback signal to the second input of the subtraction device whereby the feedback signal is subtracted from the analog input signal, an output signal of the subtraction device controlling the limiter which produces said pulse-shaped output signal for controlling the converter, whereby a self-excited oscillation is produced in



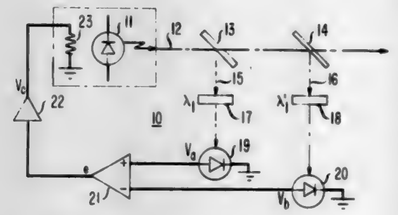
the feedback loop with an analog signal dependent modulation of the pulse width and/or pulse density of the limiter output signal.

4,450,565

SPECTRALLY STABILIZED LASER

John A. Copeland, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 23, 1982, Ser. No. 410,260
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—32 **6 Claims**



1. In combination:

a semiconductor laser having a preferred operating mode;

means for measuring the output powers in a pair of side modes of said laser located adjacent to said preferred mode;

means for comparing said output powers and forming an error signal;

and means, responsive to said error signal, for controlling the operating temperature of said laser.

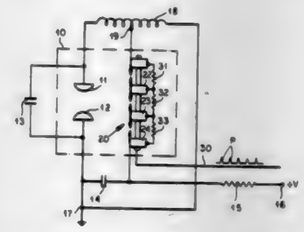
4,450,566

PRE-IONIZING TRIGGER SYSTEM FOR A GAS LASER

Renato Marchetti; Eugenio Penco, and Ugo Perito, all of Rome, Italy, assignors to Selenia, Industrie Elettroniche Associate, S.p.A., Rome, Italy

Filed Feb. 17, 1982, Ser. No. 349,513
Claims priority, application Italy, Feb. 20, 1981, 47851 A/81
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—38 **5 Claims**

1. In a laser having a gas-filled cavity, a pair of spaced-apart excitation electrodes in said cavity, a pumping capacitor continuously charged by a source of electrical energy with a grounded terminal and a high-voltage terminal, and a discharge circuit including a trigger switch connecting said pumping capacitor across said excitation electrodes, the improvement wherein one of said excitation electrodes is directly connected to ground and said trigger switch comprises a non-conductive support in said cavity provided with a plurality of spaced-apart metallic bodies forming a condenser chain between the other of said excitation electrodes and said high-voltage terminal, said bodies having pointed extensions confronting each other across intervening gaps, and a conductor



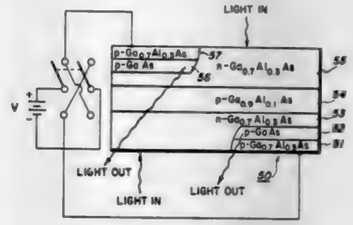
juxtaposed with said support in the vicinity of one of said gaps and connected to a generator of recurrent control pulses for periodically modifying the electric field set up across said condenser chain by the charge of said pumping capacitor to initiate spark discharges between said confronting extensions for establishing a conductive path across said gaps, thereby closing said discharge circuit.

4,450,567

OPTICAL REPEATER INTEGRATED LASERS

Donald R. Scifres, Los Altos; William Streifer, Palo Alto, and Robert D. Burnham, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 056,765, Jul. 12, 1979, Pat. No. 4,316,156. This application Jan. 4, 1982, Ser. No. 336,750
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—50 **9 Claims**



1. A bilateral switch comprising a plural layer semiconductor diode laser which is electrically biased to the point wherein light input causes the laser to commence lasing from an active semiconductor layer, such that the improvement is characterized by:

a first plural layer diode laser switch of intermixed layers of n and p type semiconductor material, the junction of two of said intermixed layers being forward biased at the application of the electrical bias of one polarity such that laser light is emitted from a first active semiconductor layer,

a second plural layer diode laser switch on the same crystalline structure as said first laser switch of intermixed layers of n and p type semiconductor material, the junction of two different intermixed layers being reverse biased at the application of said electrical bias of one polarity,

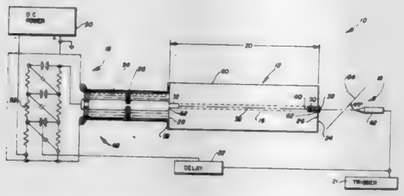
wherein said first laser switch is reverse biased at the application of an electrical bias of a second polarity and said second laser switch is forward biased at the application of said electrical bias of a second polarity, such that laser light is emitted from a second active semiconductor layer.

4,450,568

PUMPING A PHOTOLYTIC LASER UTILIZING A PLASMA PINCH

John F. Asmus, La Jolla, Calif., assignor to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Nov. 13, 1981, Ser. No. 321,118
Int. Cl.³ H01S 3/09
U.S. Cl. 372—76 21 Claims



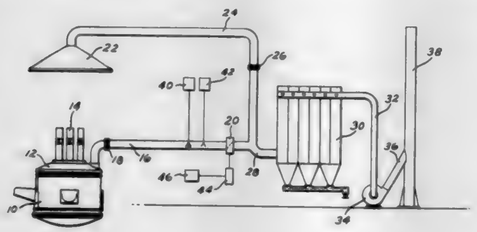
1. In a photolytic gas laser with a resonator chamber confining a gas that upon ionization in a plasma radiates in the vacuum ultraviolet, said gas including a laser medium, said laser medium being photodissociable by vacuum ultraviolet radiation to produce particles having an upper laser state whence they undergo spontaneous transition to a lower laser state by laser action, pumping apparatus comprising:
a pair of spaced electrodes within said chamber;
preconditioning means for preferentially exciting gas particles along an elongated channel within the chamber and between said electrodes;
discharge means for passing electric current between said electrodes to form from preferentially excited gas particles within said channel a plasma pinch in the gas that radiates in the vacuum ultraviolet without substantial expansion of the plasma into the surrounding gas during such radiation.

4,450,569

METHOD AND STRUCTURE FOR MAINTAINING EFFLUENT PRESSURE RANGE WITHIN AN ELECTRIC ARC MELTING FURNACE

Willem J. Hagendoorn, 1219 Constitution Dr., Louisville, Ky. 40214

Filed Sep. 1, 1982, Ser. No. 413,718
Int. Cl.³ F27D 7/00
U.S. Cl. 373—9 7 Claims



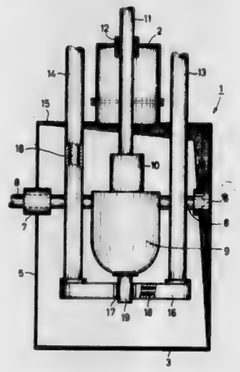
3. A metal melting furnace installation having an off-gas duct structure for conducting gaseous effluent away from the furnace, a draft-regulating means within the duct for selectively varying the rate of effluent flow through the duct, sensors on the duct structure for constantly monitoring variable physical characteristics of the effluent flow within the duct, and program-reactive control means operatively connected to the draft-regulating means and adapted to electronically interpret and process data transmitted from the sensors pursuant to a pre-established program utilizing correlations between furnace internal and off-gas duct structure physical characteristics and thereby automatically operate the draft regulating means to maintain static pressure in the furnace within a preferred range.

4,450,570

VACUUM ARC MELTING AND CASTING FURNACE WITH A VACUUM CHAMBER AND A TILTING CRUCIBLE

Ernst Weingärtner, Gelnhausen, Fed. Rep. of Germany, and Klaus Samietz, Tokyo, Japan, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 18, 1982, Ser. No. 435,130
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1981, 3141312
Int. Cl.³ F27D 11/08
U.S. Cl. 373—69 10 Claims



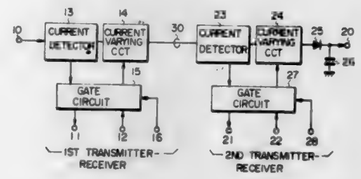
5. A vacuum arc melting and casting furnace, comprising:
(a) a vacuum chamber;
(b) a crucible in the vacuum chamber;
(c) means tiltably supporting the crucible in the vacuum chamber for pouring out the contents thereof;
(d) an electrode extendable downwardly into the crucible coaxially thereof when the crucible is not tilted;
(e) a first electrical contact projecting from the bottom of the crucible; and
(f) a second, rigid electrical contact means fixed in the vacuum chamber for electrical connection with the first electrical contact when the crucible is not tilted and separation therefrom when the crucible is tilted.

4,450,571

TWO-WAY SIGNAL TRANSMISSION AND ONE-WAY DC POWER SUPPLY USING A SINGLE LINE PAIR

Takashi Hirayama, Tachikawa, and Yuichi Igarashi, Sukagawa, both of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1981, Ser. No. 256,598
Claims priority, application Japan, Apr. 22, 1980, 55-52316
Int. Cl.³ H04L 5/14
U.S. Cl. 375—7 2 Claims



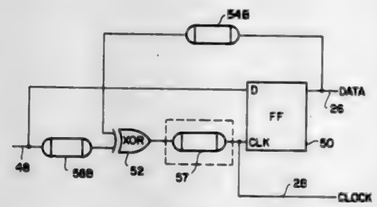
1. A pulse signal transmission system for performing two-way signal transmission between a first transmitter-receiver and a second transmitter-receiver interconnected via a pair of signal lines and supplies a DC current from the first transmitter-receiver to the second one through said pair of signal lines, characterized in that the first transmitter-receiver comprises a first current varying a signal line current in response to a first transmission pulse signal and means effective for varying the signal line current so that the signal line current has a value in a predetermined current region lower than a minimum level of a load current to the second transmitter-receiver during transmission of a signal pulse from the first transmitter-receiver; the second transmitter-receiver having a second detector for detecting a current or voltage variation in the signal line current, a second current varying circuit for varying the signal line current in response to a second transmission pulse signal and means effective for varying the signal line current so that it has a value in the predetermined current region during transmission of the signal pulse, a gate circuit for blocking the detected output from the second detector while the second transmission pulse signal is transmitted by the second current varying circuit; and the first transmitter-receiver having a first current detector for detecting a current variation in the signal line current in response to the second transmission pulse, and another gate circuit for blocking the detected output from the first current detector while the first transmission pulse signal is transmitted.

4,450,572

INTERFACE FOR SERIAL DATA COMMUNICATIONS LINK

Robert E. Stewart, Stow, Mass.; John E. Buzynski, Windham, and Robert Giggi, Merrimack, both of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 7, 1982, Ser. No. 376,069
Int. Cl.³ H03K 5/13
U.S. Cl. 375—87 11 Claims



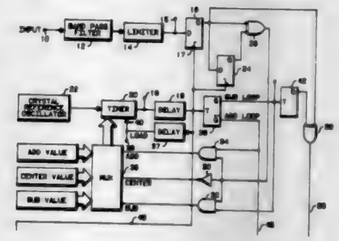
1. An interface for connecting a device (12*c*) to a communications link (14, 15, 16) having at least one serial data channel over which information signals comprising combined clocking and data signals are transmitted and wherein said data signals include at least one synchronizing character, said interface comprising:
A. decoder means (22) for separating the clocking and data signals,
B. serial register means (30) for serially receiving the data signals under control of the clocking signals, and
C. said decoder means comprising
i. a flip-flop (50) having a data input for receiving the information signals,
ii. an exclusive-OR gate (52) which receives at one input thereof the data output of the flip-flop, said exclusive-OR gate being coupled for clocking the clocking input of the flip-flop,
iii. a delay means (58A or 58B) having an output coupled to a second input of said exclusive-OR gate and an input for receiving the information signals, and
iv. the propagation delay through the flip-flop and the exclusive-OR gate being sufficient to provide at the clocking input of the flip-flop a clocking pulse of sufficient duration to satisfy the clock pulse width requirements of the flip-flop,
thereby to generate decoded clocking signals at the output of the exclusive-OR gate and decoded data signals at the non-inverting output of the flip-flop.

4,450,573

BIT DATA OPERATED SQUELCH

Scott W. Noble, Bedford, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 7, 1981, Ser. No. 328,359
Int. Cl.³ H04B 1/10
U.S. Cl. 375—104 10 Claims



1. A digital bit data operated squelch circuit for a demodulator detector which provides demodulated baseband samples of bits of a digital signal synchronized with the bit edge, and clock pulses synchronized to the bit edge, said data operated squelch circuit comprising:
synchronization register means for storing the synchronized demodulated baseband samples, including at least one sample from the adjacent bit in response to a clock pulse;
logic means, coupled to the synchronization register, for generating a transition signal in response to a difference between the edge bit sample and the adjacent bit sample, and for generating a control signal in response to non-equality of at least two additional non-edge samples;
counter means, coupled to the logic means, for accumulating a count by incrementing in response to a clock pulse when the transition signal occurs, and decrementing in response to a clock pulse when a control signal occurs; and
first comparator means, coupled to the counter means, for generating a bit squelch signal in response to the counts exceeding a first predetermined threshold.

4,450,574

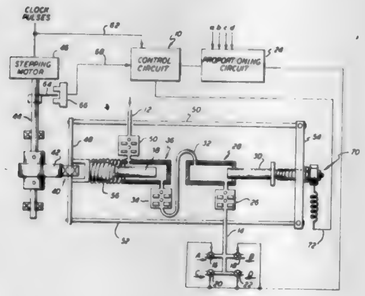
CONTROL CIRCUIT FOR LIQUID CHROMATOGRAPH

Arnold Schwartz, Bridgeport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 29, 1982, Ser. No. 343,805
Int. Cl.³ G06F 15/46
U.S. Cl. 377—2 24 Claims

1. A circuit for producing a plurality of control signals comprising:
means for producing a selected number of pulses during a given time period;
a plurality of counters each settable to a given value prior to the start of said time period, the sum of the values set into said counters being less than or equal in number of said selectable number of pulses;
means to selectively apply said pulses to one of said counters at a time to cause that counter to count down to zero and thereafter apply pulses to another said counter causing it to count down, said selective pulse applying means being operative to count all said counters to zero during said given period in a prescribed sequence;
means responsive to all but one of said counters as each said counter is counted down to produce a unique control

signal indicative of a particular one of said counters being counted down; and



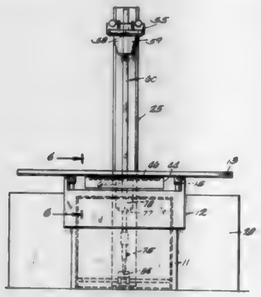
means responsive to said one remaining counter to produce another unique control signal whenever said one counter is not zero or when all said counters are zero.

4,450,575

X-RAY TOMOGRAPHY TABLE HAVING A VIRTUAL FULCRUM ARM PIVOT

Robert J. Mueller, Brookfield, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,608
Int. Cl.³ A61B *6/02*
U.S. Cl. 378—26 **9 Claims**



1. Diagnostic x-ray table apparatus comprising means for performing tomography and other x-ray procedures and having a base, an x-ray transmissive table top supported from the base, a column extending above and below the table top and mounted for moving longitudinally of the table top, means for moving the column, carriage means for an image receptor having an imaging plane, said carriage means mounted below the table top for moving longitudinally of said top, x-ray tube means and means supporting said tube means from said column above said table top for said tube means to angulate about an axis that extends laterally of the table top and is substantially perpendicular to the plane of column movement, said means for performing tomography including:

support means under the table top and means for securing said support means at a predetermined distance from said imaging plane,

extensible and contractible link means and means for pivotally connecting said link means intermediate of its ends to said support means for enabling said link means to swing about a laterally extending pivot axis, one end of said link means being pivotally connected to one side of said pivot axis to said receptor carriage means and the other end being pivotally connected on the other side of said pivot axis to said movable column,

fulcrum arm means pivotally connected at one end to said image receptor carriage means for pivoting about a laterally extending axis coincident with said image receptor imaging plane and coupled at its other end to said x-ray tube supporting means for angulating with said x-ray tube supporting means during longitudinal movement of said column in a manner that maintains the central ray of the beam from the x-ray tube in substantial parallelism with the fulcrum arm means and directs said ray to substantially the same point on said image receptor plane during a tomographic procedure,

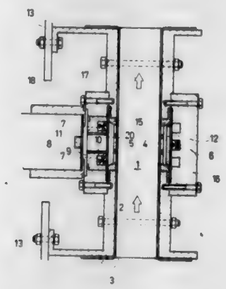
movement of said column in one direction causing said link means to swing on its support means and move said image receptor carriage in the opposite direction and causing said arm means to swing about a laterally extending virtual axis coincident with a plane of interest in a body positioned on said table top which plane of interest is at a distance from said image plane determined by the distance at which said link means pivot axis is set relative to said image plane such that an x-ray beam projected by said x-ray tube through said body will produce a tomographic image of said plane of interest on said receptor image plane.

4,450,576

APPARATUS FOR CONTINUOUSLY MEASURING THE ELEMENT CONTENT IN SLURRIES

Andrzej Lubecki, Stutensee; Kurt Wiese, Stutensee-Büchig, and Karl Winkler, Steinweiler, all of Fed. Rep. of Germany, assignors to Gesellschaft mit Kernforschungszentrum Karlsruhe beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 141,698, Apr. 18, 1980, Pat. No. 4,388,530. This application Mar. 22, 1982, Ser. No. 360,888
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915986; Mar. 20, 1981, 3110944; Mar. 21, 1981, 3111187
Int. Cl.³ G01N *23/20*; G21K *1/00*
U.S. Cl. 378—47 **6 Claims**



1. In an apparatus for the continuous measurement by X-ray fluorescence analysis of the elemental contents of a slurry independent of the slurry density and slurry composition comprising: a measuring chamber having a slurry flow channel, a first measuring window provided at one side of the channel and a second measuring window provided at the other side of the channel, a detector disposed behind the first measuring window, a first source of primary radiation and a target disposed behind the second measuring window, the target being disposed between the second measuring window and the first source wherein the first source excites the target to emit target radiation and excites the slurry contents to emit X-ray radiation, and the primary radiation from the first source, the target radiation, and the excited X-ray are transmitted to and detected by the detector, the improvement comprising:

collimator means forming an open passage between said detector and said first measuring window, and

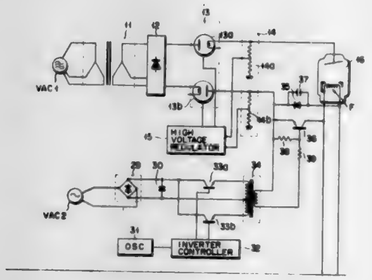
an annular source of primary radiation for irradiating the slurry contents to excite additional X-ray radiation therefrom located between said detector and said first measuring window and about said open passage, wherein said collimator means collimates the primary radiation, target radiation and X-ray radiation excited by said first source and said annular source of primary radiation.

4,450,577

X-RAY APPARATUS

Hideki Sato, Ootawara, and Hiroshi Asshina, Tochigi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 14, 1982, Ser. No. 418,000
Claims priority, application Japan, Sep. 18, 1981, 56-146312
Int. Cl.³ H05G *1/30, 1/34*
U.S. Cl. 378—109 **4 Claims**



1. An X-ray apparatus comprising:

an X-ray tube;

a high voltage generating circuit for applying a high voltage between the anode and the cathode of said X-ray tube;

a direct current filament heating circuit for heating a filament of said X-ray tube;

first switching element connected between one terminal of said filament and the negative bus of said high voltage generating circuit;

second switching element connected between the other terminal of said filament and the negative bus of said high voltage generating circuit; and

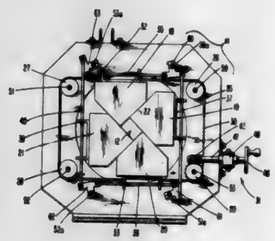
switching circuit means for alternately switching said first and second switching elements at a given period to switch the tube current paths.

4,450,578

VARIABLE APERTURE COLLIMATOR FOR HIGH ENERGY RADIATION

Ronald A. Hill, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 3, 1982, Ser. No. 354,552
Int. Cl.³ G21F *5/04*
U.S. Cl. 378—152 **10 Claims**



1. A variable aperture energy beam collimator apparatus comprising:

a frame member having a central aperture therethrough;

a block assembly which includes a plurality of beam-opaque blocks and variable aperture adjustment means, said adjustment means comprising guide means carried by the frame member and including an individual guide member for slidably carrying each block, each said block having interfacing edges in sliding contact with adjacent blocks and forming a completely beam-opaque surface when in a closed position; and

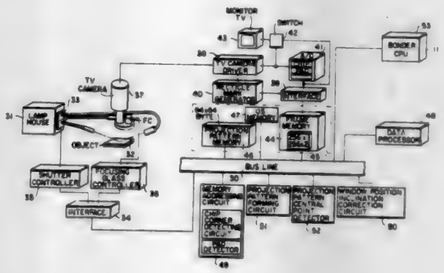
a first operator member carried by the frame member and first linkage means operably connected between the first operator member and the block assembly for simultaneously sliding all of the blocks along their respective guide members with respect to each other while maintaining the sliding interfaces in contact for providing an aperture of desired size.

4,450,579

RECOGNITION METHOD AND APPARATUS

Masato Nakashima, Yokohama; Tetsuo Koezuka, Tokyo, and Takefumi Inagaki, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 10, 1981, Ser. No. 272,368
Claims priority, application Japan, Jun. 10, 1980, 55-78235; Dec. 29, 1980, 55-187258
Int. Cl.³ G06K *9/32*
U.S. Cl. 382—8 **23 Claims**



1. A method for recognizing a position of an object having an absolute position and orientation and having a surface and a pattern thereon, and for recognizing a desired portion of the pattern, said method comprising the steps of:

(a) sensing an image within a predetermined area of the object and forming a first and a second resolution image signal corresponding to the object and pattern respectively;

(b) detecting the position of the object in accordance with the first resolution image signal;

(c) receiving data representing a positional relation between the object and the pattern;

(d) determining a predetermined area of the object in accordance with the data representing the positional relation between the object and the pattern;

(e) detecting the position of the desired portion of the pattern in accordance with the second resolution image signal within the predetermined area, wherein the first resolution is lower than the second resolution.

4,450,580

ONE-PIECE SHOPPING BAG HANDLES

Alexander Lindsay, New York, N.Y., assignor to Modern Arts Packaging, Inc., New York, N.Y.

Filed Mar. 11, 1982, Ser. No. 357,307
Int. Cl.³ B65D *33/06*
U.S. Cl. 383—6 **4 Claims**

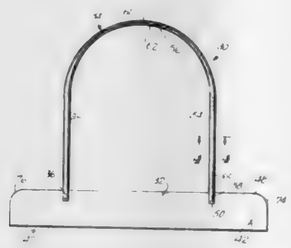
1. A shopping bag, comprising:

a container having an upper openable end, a lower closed

end, and side walls located between the ends and circumferentially bounding an interior space in which objects may be received, said side walls having upper marginal portions bounding the upper end, said container having an inner hem folded inwardly along a fold line and juxtaposed with the upper marginal portions, and openings formed along the fold line at opposite sides of the container;

a pair of one-piece handles mounted at the opposite sides of the container, each handle including a substantially planar elongated base located between a respective upper marginal portion at a respective side of the container and its respectively juxtaposed hem, each base having a first major adhesive contact surface facing and spaced from its respectively juxtaposed hem, and a second major adhesive contact surface facing and spaced from its respectively juxtaposed upper marginal portion, each handle having a predetermined thickness and being constituted of a moldable plastic material,

each handle also including an elongated bail constituted of the same moldable plastic material as its respective base to form a one-piece molded plastic construction therewith, each bail having an end portion integrally and rigidly connected to both major surfaces of its respective base at a predetermined location thereon, an opposite end portion integrally and rigidly connected to both major surfaces of



its respective base at another location thereon which is longitudinally spaced from the predetermined location, and an intermediate bight portion between the bail end portions and extending through a respective opening away from the upper end of the container,

each bail end portion having a tapered end which decreases in thickness towards both major surfaces of its respective base from a larger thickness to a smaller thickness which corresponds to said predetermined thickness of its respective base, each bail end portion having smooth opposite outer surfaces facing the respectively juxtaposed upper marginal portion and the hem,

each intermediate bight portion having a twisted hand-engaging portion which has a smooth lower surface facing the upper end of the container and which is free of sharp edges to facilitate gripping each handle and supporting the container; and

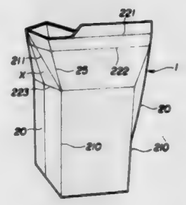
an adhesive layer applied over each major contact surface of each handle, for securely adhering the handles at the opposite sides of the container, each adhesive layer being located in the spaces between the respective contact surface and the respectively juxtaposed upper marginal portion and the hem to thereby impart an esthetically pleasing, generally flat appearance to the shopping bag both at its exterior upper marginal portion and at its interior hem which overlie the bail end portions.

4,450,581

CONVENIENCE CONTAINER WITH CORNERED BOTTOM

Isao Hirata, Sagamihara, Japan, assignor to Tokai Metals Company, Limited, Yokohama, Japan

Filed Nov. 3, 1982, Ser. No. 438,726
Claims priority, application Japan, Nov. 6, 1981, 56-177258
Int. Cl.³ B65D 73/02, 85/42
U.S. Cl. 383—42 **19 Claims**



1. A method for making a convenience container having a cornered bottom, comprising:

(a) forming a pounch by:

(i) providing a generally rectangular blank of flexible pouch material, and folding that blank into the form of a pouch that is medially W-shaped in vertical cross-sectional shape, along three substantially parallel, laterally extending lines so as to superimpose both ends of the blank along the upper margin of the pouch form and so as to dispose the central one of the three fold lines as a single top fold line located intermediate the height of the pouch form and the other two of the three fold lines as two bottom fold lines located at the bottom edge of the pouch form, thereby defining an outer front panel, an inner front panel, an inner rear panel and an outer rear panel; all four of these panels having superimposed left margins and superimposed right margins although the left and right margins of said inner panels are not as tall as the left and right margins of said outer panels;

(ii) sealing the left margins of said outer panels to one another therealong above said single top fold line and sealing the right margins of said outer panels to one another therealong above said single top fold line;

(iii) sealing the outer front panel to the inner front panel at the left and at the right, and the outer rear panel to the inner rear panel at the left and at the right, along four respective oblique lines each running obliquely upwardly generally from the bottom edge of the pouch form from a point substantially short of half way across the width of the pouch form, to the respective side margin of the pouch form;

(b) forming a blank for a flexible outer shell for the pouch by:

(i) providing a generally rectangular blank of flexible outer shell material having a height which is substantially equal to the height of said pouch, and a width which is somewhat greater than twice the lateral distance across said pouch neglecting the sealed side margins of the pouch;

(ii) providing two substantially vertical fold lines on said rectangular blank flexible outer shell material intermediate the width of said rectangular blank, these two fold lines being laterally spaced from one another by a distance which is substantially equal to the lateral distance across said pouch neglecting the sealed margins of the pouch;

(iii) defining three bonding strips on said rectangular blank of flexible outer shell material, including a first one extending laterally along the upper margin thereof, a second one extending laterally along the lower margin thereof, and a third extending vertically along one side margin thereof;

(c) assembling the pouch with a flexible outer shell,

(i) superimposing said pouch upon said rectangular blank of flexible outer shell material so that the bottom edge of the pouch is superimposed on the second bonding strip, the sealed left margin of the pouch lies to the left of the leftmost one of said two substantially vertical fold lines, the sealed right margin of the pouch lies to the right of the rightmost one of said two substantially vertical fold lines, and the upper margin of the outer rear panel of the pouch is superimposed on the first bonding strip;

(ii) activating the first, second and third bonding strips; and

(iii) sequentially doubling over said rectangular blank of flexible outer shell material along said two substantially vertical fold lines, so as to perimetrically enclose said pouch with said rectangular blank of flexible outer shell material, bond said pouch to said blank along said first and second bonding strips and bond said rectangular blank of flexible outer shell material to itself along said third bonding strip,

(iv) providing four generally vertical container-assembling fold lines on said rectangular blank of flexible outer shell material, each extending upwards from the bottom edge of said rectangular blank of flexible outer shell material at a given lateral distance respectively to the left or the right of one or the other of said two substantially vertical fold lines laterally to the vicinity of said first bonding strip, said given distance being substantially equal to the lateral distance from where each of said four respective oblique lines intersects the bottom edge of said pouch at the respective said point, to the respective sealed side margin of the pouch, neglecting the width of the respective sealed side margin of the pouch, and thereby defining a generally flat fronted/flat backed,

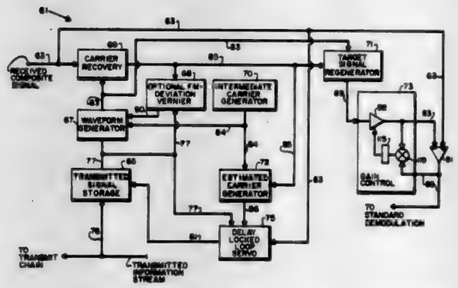
open topped/closed bottomed article which may be filled through its open top, in connection with medially bulging its front and back away from one another along said four generally vertical container-assembling fold lines and moving said two substantially vertical fold lines laterally towards one another at least below said first bonding strip, and bulging the bottom of the pouch centrally downwards along said single top fold line to provide a generally flat, cornered bottom of the pouch.

4,450,582

METHOD AND APPARATUS FOR INCREASING THE CAPACITY OF A SATELLITE TRANSPONDER BY REUSE OF BANDWIDTH

Steven P. Russell, Palo Alto, Calif., assignor to Vitalink Communications Corporation, Mountain View, Calif.

Filed Sep. 14, 1981, Ser. No. 301,566
Int. Cl.³ H04B 7/185
U.S. Cl. 455—12 **17 Claims**



1. A method of communicating between correspondent pairs of earth stations through an earth orbiting satellite and comprising,

transmitting signals from the earth stations simultaneously in channels that have at least a partial overlap in bandwidth,

retransmitting from the satellite to the earth stations a composite signal which is a composite of the signals transmitted by the two earth stations,

storing at each receiving earth station information constituting a base band representation of the signal transmitted by the receiving earth station,

delaying the stored information by an amount of time equal to the satellite round trip delay,

preparing an estimate of the portion of the composite signal that is transmitted by the receiving earth station by processing the composite signal using the stored information,

subtracting from the composite signal received at each earth station the portion of the composite signal transmitted by that earth station to provide a desired signal corresponding to the signal transmitted by the other earth station of the correspondent pair, and

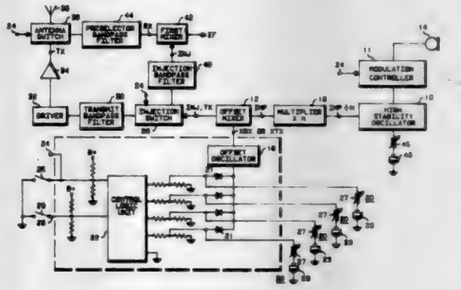
demodulating the desired signal.

4,450,583

MULTI-CHANNEL TRANSCEIVER USING A SINGLE HIGH-STABILITY ELEMENT

Russell A. Strobel, Sunrise, Fla.; Jawdat Rihani, Cairo, Egypt, and Richard E. Lunquist, Pompano Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1981, Ser. No. 324,205
Int. Cl.³ H04B 1/40
U.S. Cl. 455—86 **19 Claims**



1. A method of producing a transmission signal and a local-oscillator signal in a transceiver comprising the steps of:

(a) producing an input signal at a frequency that is maintained with relatively high stability;

(b) producing an offset signal at a frequency that is maintained with relatively low stability;

(c) mixing the input signal and the offset signal to produce a sum and difference signal, one of said sum and difference signal representing an injection signal and the other of said sum and difference signal representing the transmission signal;

(d) selecting the transmission signal to transmit from a transmitter portion of the transceiver; and

(e) selecting the injection signal to serve as the local-oscillator signal for a receiver portion of the transceiver.

4,450,584

MICROWAVE INTEGRATED CIRCUIT MIXER

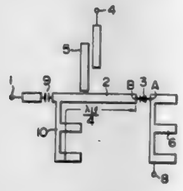
Hiroshi Saka, Kyoto, and Toshihide Tanaka, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 25, 1982, Ser. No. 392,158

Claims priority, application Japan, Jun. 30, 1981, 56-102830; Jun. 30, 1981, 56-102842

Int. Cl.³ H04B 1/26

U.S. Cl. 455—325 9 Claims



1. A single-ended microwave integrated circuit stripline or microstrip mixer, comprising a main line which connects an RF signal input terminal to one end of a mixer diode to transmit an RF signal to said mixer diode; means for applying an LO signal to said mixer diode; a first low-pass filter connected to the other end of said mixer diode for taking out an IF signal with a frequency equal to the difference between the frequencies of said RF signal and said LO signal; an IF signal interruption circuit provided in the RF signal path said main line and to pass said RF signal and provide an open-circuit impedance against said IF signal; and a second low-pass filter connected to said main line in the vicinity of said IF signal interruption circuit at a point distant from a mount point of said mixer diode to said main line for short-circuiting said IF siganl at said mount point.

4,450,585

SIGNAL SWITCHING AND COMBINING SYSTEMS FOR DIVERSITY RADIO RECEIVING SYSTEMS

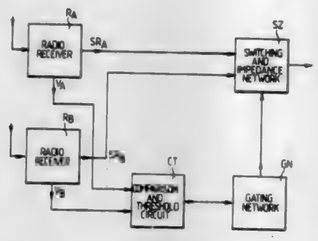
Howard T. Bell, Edinburgh, Scotland, assignor to Ferranti plc, Cheshire, England

Filed Mar. 18, 1982, Ser. No. 359,312

Claims priority, application United Kingdom, Mar. 26, 1981, 8109470

Int. Cl.³ H04B 1/16, 7/02

U.S. Cl. 455—135 8 Claims



1. A signal switching and combining system for a radio communication system having two receivers each providing a coherent radio signal output and an output proportional to the signal to noise ratio of the radio signal, the two radio signals being approximately in phase and of approximately equal amplitude, which includes a comparator operable to determine at any instant which of the two signal to noise ratio outputs is greater, a threshold detector including means for determining the difference between the signal to noise ratios and operable to determine whether at any instant the difference between the two signal to noise ratios exceeds either of two of predetermined threshold levels, a gating network responsive to the output of the comparator and of the threshold detector to derive one or more control signals, a switching circuit responsive to said one or more control signal outputs to connect to an output load either one of the coherent radio signals or a combination of the two coherent radio signal outputs in one of a number of predetermined ratios, and a matching network connected to the switching circuit for presenting an electrical impedance and a radio signal amplitude to the load such that said impedance and signal amplitude remain substantially constant.

4,450,586

AUTOMATIC TUNING DEVICE FOR FM RECEIVER

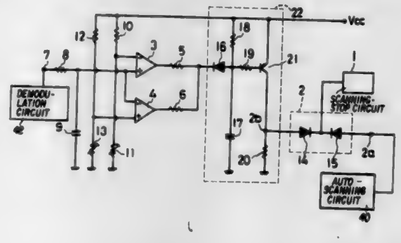
Shoji Fujino, Tokyo, Japan, assignor to Nippon Atsudenki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 266,386, May 22, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,826

Claims priority, application Japan, May 26, 1980, 55-72175

Int. Cl.³ H03J 7/18

U.S. Cl. 455—161 4 Claims



1. An automatic tuning device of a FM receiver comprising:
an auto-scanning circuit for outputting a squelch signal,
a scanning-stop circuit for outputting a tuning-stop signal,
an integrating circuit, a demodulation circuit, means for coupling the demodulation circuit to the integrating circuit, the integrating circuit extracting a DC component from a demodulation signal outputted from the demodulation circuit, within a constant range around a tuning frequency,
a window comparator and means for coupling the integrating circuit to the window comparator, the window comparator detecting whether or not the DC component is within the range to output the demodulated signal,
a timing circuit and means for coupling the window comparator to the timing circuit, the timing circuit being switched on by the demodulated signal outputted from the window comparator being continued for a given time, and
an AND circuit, means for coupling the scanning-stop circuit to the AND circuit, means for coupling the timing circuit to the AND circuit, and means for coupling the auto-scanning circuit to the AND circuit, the AND circuit outputting to the scanning-stop circuit an output signal which brings into action the scanning-stop circuit only when the timing circuit is switched on and the squelch signal is outputted.

4,450,587

TUNING ARRANGEMENT FOR PROVIDING RELATIVELY UNIFORM AUTOMATIC FINE TUNING SENSITIVITY

Billy W. Beyers, Jr., Greenfield, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,313

Int. Cl.³ H04B 1/26

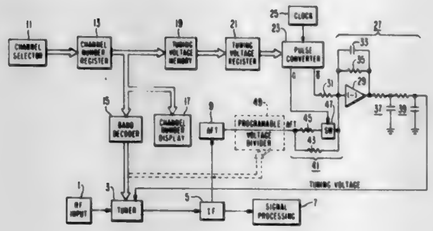
U.S. Cl. 455—182 6 Claims

1. In a receiver including a channel selector for selecting a channel from a plurality of channels, a tuner responsive to the

magnitude of a tuning voltage for selecting and heterodyning the RF signal corresponding to the selected channel to produce an IF signal including an information bearing carrier, and an automatic fine tuning (AFT) circuit responsive to said IF signal for producintg a continuous AFT voltage which by its polarity and magnitude represents the sense and magnitude of a deviation between the frequency of said information bearing carrier and a nominal value, apparatus comprising:

register means coupled to said channel selector for storing a digital word representing the magnitude of the tuning voltage corresponding to the selected channel;

pulse converter means for converting said digital word to a pulse signal having pulses the duration which is related to the magnitude of said tuning voltage for the selected channel;



filter means responsive to said pulse signal and said AFT voltage for producing said tuning voltage in accordance with the average value of said pulse signal as modified by the amplitude of said AFT voltage;

switchable impedance means included within said filter means for controlling a gain factor of said filter means and selectively having one of first and second different impedance values which define respective different effective amplitudes of said AFT voltage by which said tuning voltage is modified by said AFT voltage; and

switchable impedance control means coupled to said switchable impedance means and responsive to said pulse signal for causing said switchable impedance to have said first impedance value during the entire duration of each of said pulses of said pulse signal and said second impedance value during the entire duration of each interval between adjacent ones of said pulses of said pulse signal.

4,450,588

TUNING SYSTEM FOR A HIGH FREQUENCY RECEIVER UTILIZING A CONTROLLABLE INDUCTOR

Manfred Röhrich, Marxzell-Burbach, and Stefan Brinkhaus, Remchingen-Wilferdingen, both of Fed. Rep. of Germany, assignors to Becker Autoradiowerk GmbH, Ittersbach, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,316

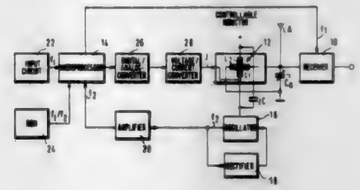
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115291

Int. Cl.³ H04B 1/16

U.S. Cl. 455—192 22 Claims

1. A tuning system for a high frequency receiver comprising at least one tunable resonance circuit the resonance frequency of which is determined by a variable inductivity element formed by a signal winding of a controllable inductor and a control winding fed by a tuning control current,

an auxiliary variable frequency oscillator having an oscillating frequency determined by said control winding, said control winding being used as a frequency determinative inductance of said auxiliary variable frequency oscillator; and a frequency control loop connected between said auxiliary variable frequency oscillator and said resonant circuit for controlling said oscillating frequency of said auxiliary variable frequency oscillator for a predetermined constant ratio of said resonance frequency of said tunable resonance circuit to said oscillating frequency, said frequency control loop comprising



comparing means for comparing a frequency value corresponding to said resonance frequency of said tunable resonance circuit with said oscillating frequency of said auxiliary variable frequency oscillator and generating a control signal representing the difference between said resonance and oscillating frequencies, and

converting means for converting said control signal into said control current for feeding said control winding of said controllable inductor.

4,450,589

FM RECEIVER FOR RECEPTION OF SPECIAL ANNOUNCEMENTS AND GENERAL PROGRAMS

Norbert Eilers, Hildesheim, and Peter Brügas, Itzum, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,655

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121034

Int. Cl.³ H04B 1/16

U.S. Cl. 455—205 34 Claims



29. For use in an FM radio receiver having a tuner, an RF stage, an output audio stage including switching means switchable among various audio signal sources in addition to the FM receiver, the improvement comprising means for detecting amplitude modulation of an auxiliary subcarrier at a prese-

lected frequency of a first recognition signal and for producing an output when the percent amplitude of modulation level of the first recognition signal is below a predetermined value, and means responsive to the output from said means for detecting for controlling said switching means to connect the receiver to its audio stage when said modulation below the predetermined value is detected.

4,450,590

DISCRIMINATOR CIRCUIT FOR FREQUENCY MODULATION RECEIVERS

Edwin C. Lafferty, and James H. Gibson, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Jun. 12, 1979, Ser. No. 47,689
Int. Cl.³ H03D *3/02*; H03K *9/06*
U.S. Cl. 455—214 **5 Claims**

1. An improved discriminator for demodulating frequency modulated information on a relatively low frequency carrier signal comprising:

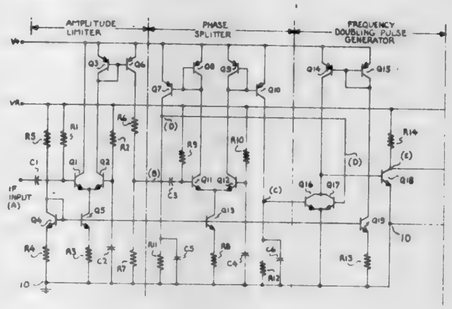
a. an input for said low frequency carrier signal;

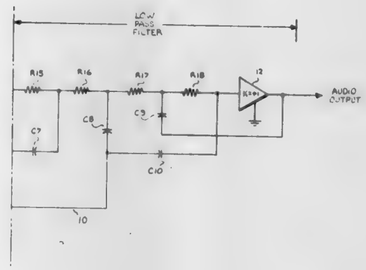
b. an amplitude limiter connected to said imput;

c. a phase splitter connected to said amplitude limiter for producing two signals having a phase difference of substantially 180 degrees, and each having substantially the same frequency as said low frequency carrier signal;

d. a frequency doubling pulse generator connected to said phase splitter for producting a sequence of pulses whose frequency is twice the frequency of said low frequency signal, and whose average direct current value varies inversely as a function of the frequency of said low frequency signal;

inversely as a function of the frequency of said low frequency signal;





e. and a low pass filter connected to said frequency doubling pulse generator for producing an audio output.

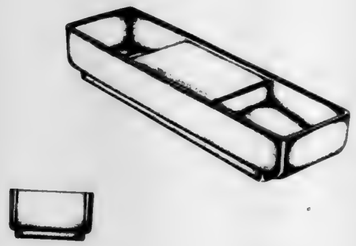
DESIGN PATENTS

GRANTED MAY 22, 1984

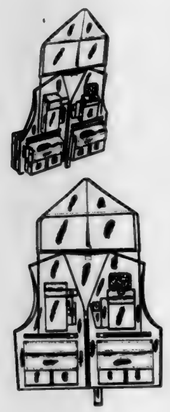
ERRATA

For CLASS	See PATENT NO.
D14–060	273,909

273,909
TELEPHONE STAND
Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 5, 1983, Ser. No. 455,912
Term of patent 14 years
U.S. Cl. D14—60

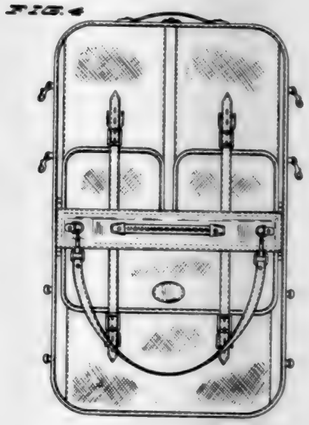


273,910
FISHING VEST WITH INTEGRAL HOOD
Jim A. Teeny, 2281 SE. Kelly, Gresham, Oreg. 97030
Filed Feb. 12, 1982, Ser. No. 348,603
Term of patent 14 years
U.S. Cl. D2—186

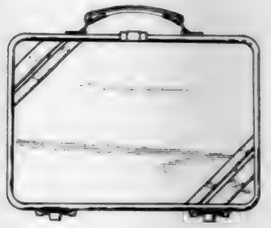


273,911
GARMENT BAG
Joseph Y. Pelavin, North Bergen, N.J., assignor to CPG Products Corp., Minneapolis, Minn.
Filed May 4, 1981, Ser. No. 260,225
Term of patent 14 years
U.S. Cl. D3—71

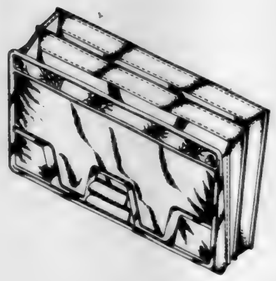
FIG. 4



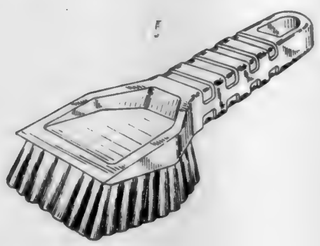
273,912
LUGGAGE CASE
Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.
Filed Mar. 5, 1982, Ser. No. 354,147
Term of patent 14 years
U.S. Cl. D3—71



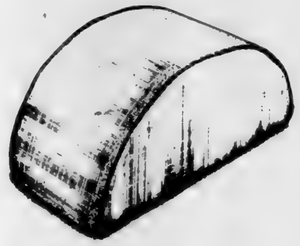
273,913
PORTFOLIO FOR AN ATTACHE CASE OR THE LIKE
Mark B. Nordstrom, Denver, and David E. Workman, Evergreen, both of Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed Jan. 27, 1982, Ser. No. 343,255
Term of patent 14 years
U.S. Cl. D3—76



273,914
BRUSH
Robin V. Colemore-Williams, Auckland, New Zealand, assignor to Merryware Industries, Ltd., Auckland, New Zealand
Filed Apr. 24, 1981, Ser. No. 257,400
Claims priority, application New Zealand, Mar. 26, 1980, 16478
Term of patent 14 years
U.S. Cl. D4—12



273,915
INVERTIBLE LEG REST
Douglas C. M. Pike, Sudbury, England, assignor to Cloche Houses Limited, England
Filed Oct. 5, 1981, Ser. No. 308,665
Claims priority, application United Kingdom, Apr. 9, 1981, 999911
Term of patent 14 years
U.S. Cl. D6—3



273,916
CHAIR
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed Nov. 4, 1982, Ser. No. 439,083
Term of patent 14 years
U.S. Cl. D6—26



273,917
CHAIR
Charles W. Pelly, Calabasas, and John Krieger, Palos Verdes Estates, both of Calif., assignors to Unitex Corporation, Monrovia, Calif.
Filed Feb. 12, 1982, Ser. No. 348,567
Term of patent 14 years
U.S. Cl. D6—30



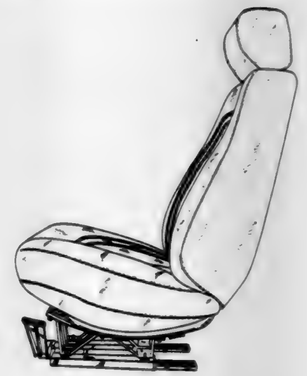
273,918
PEDESTAL BASED ARM CHAIR
Robert A. Keeler, Grand Rapids, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.
Filed Dec. 7, 1981, Ser. No. 328,459
Term of patent 14 years
U.S. Cl. D6—31



273,919
STEP STOOL, OR SIMILAR ARTICLE
Ralph R. Pasinski, 777 S. Matilda, Apt. 135, Sunnyvale, Calif. 94087
Filed Feb. 2, 1982, Ser. No. 344,993
Term of patent 14 years
U.S. Cl. D6—32



273,920
SEAT FOR MOTOR CAR OR THE LIKE
Michel Tixier, Boulogne Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne, France
Filed Sep. 9, 1981, Ser. No. 300,473
Claims priority, application France, Mar. 31, 1981, 811182
Term of patent 14 years
U.S. Cl. D6—48



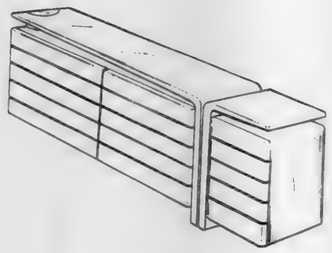
273,921
TABLE
Gail S. Woolaway, 18 Glen Dr., Sausalito, Calif. 94965
Filed Sep. 14, 1981, Ser. No. 301,952
Term of patent 14 years
U.S. Cl. D6—57



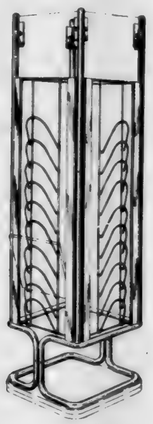
273,922
DISPOSABLE CHAIR
Francois M. Geneve; Luc M. D. Heiligenstein, and Stephen B. Melamed, all of Chicago, Ill., assignors to Tres Design Co., Inc., Chicago, Ill.
Filed May 27, 1983, Ser. No. 498,748
Term of patent 14 years
U.S. Cl. D6—66



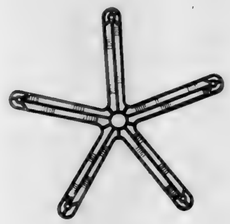
273,923
CREDENZA
Jan H. Matthias, Beverly Hills, Calif., assignor to Casa Bella Imports, Inc., Miami, Fla.
Filed Jan. 19, 1982, Ser. No. 340,885
Term of patent 14 years
U.S. Cl. D6—166



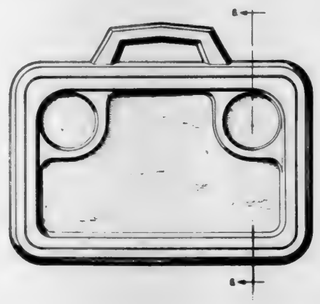
273,924
DISPLAY RACK FOR RECORD ALBUM, VIDEO DISC OR SIMILAR ARTICLE
Myron L. Denhoff, New York, N.Y., assignor to Myden Industries, Inc., New York, N.Y.
Filed Sep. 24, 1981, Ser. No. 305,156
Term of patent 14 years
U.S. Cl. D6—188



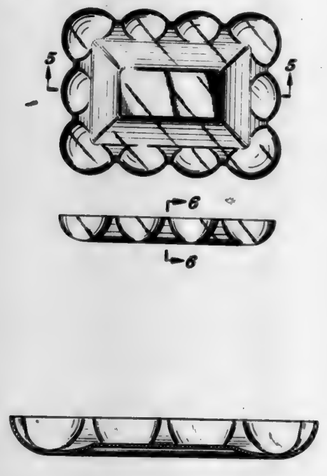
273,925
BASE FOR A BUSINESS CHAIR
Jerome Caruso, Lake Forest, Ill., assignor to Litton Business Systems, Inc., York, Pa.
Division of Ser. No. 142,259, Apr. 21, 1980. This application Sep. 2, 1982, Ser. No. 414,428
Term of patent 14 years
U.S. Cl. D6—196



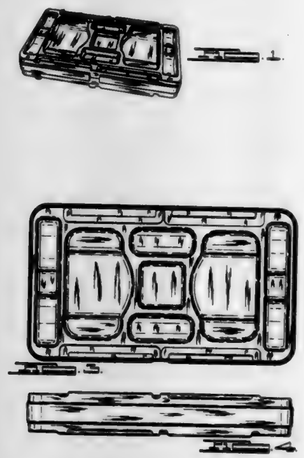
273,926
COMBINED STADIUM SEAT AND TRAY
James E. Byrns, 86 Sixteenth Ave. N., Clinton, Iowa 42732, and Samuel W. Williams, 807 W. Summit, Maquoketa, Iowa 52060
Filed Oct. 13, 1981, Ser. No. 311,151
Term of patent 14 years
U.S. Cl. D6—201



273,927
FOOD BOWL
Lawrence M. Knutson, Prior Lake, Minn., assignor to Decra Stone, Inc., Prior Lake, Minn.
Filed Jun. 20, 1980, Ser. No. 161,313
Term of patent 14 years
U.S. Cl. D7—1



273,928
INSULATED FOOD SERVICE TRAY
Richard A. Tarozzi, Gales Ferry, Conn., assignor to King-Seeley Thermos Co., Norwich, Conn.
Filed Nov. 16, 1981, Ser. No. 321,908
Term of patent 14 years
U.S. Cl. D7—38



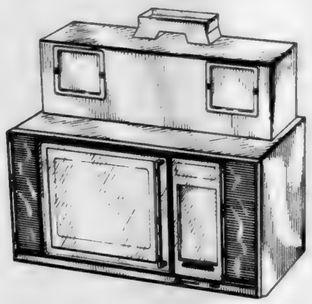
273,929
COMBINED TACO HOLDER AND SERVER
Ernest P. Rolli, Jr., c/o Del-Rey Manufacturing, Inc., 9282 Arlington Rd., Brookville, Ohio 45309, assignor to Ernest P. Rolli, Jr. and Robert Hood, both of Brookville, Ohio, a part interest
Filed Dec. 28, 1981, Ser. No. 334,960
Term of patent 14 years
U.S. Cl. D7—76



273,930
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jun. 24, 1982, Ser. No. 391,947
Term of patent 14 years
U.S. Cl. D7—137



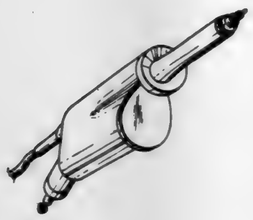
273,931
COMBINATION MICROWAVE OVEN AND EXHAUST VENT HOOD
James P. Stevens, Oak Park, and Chester J. Wojtowicz, Prospect Height, both of Ill., assignors to Amana Refrigeration, Inc., Amana, Iowa
Filed Jan. 15, 1982, Ser. No. 339,743
Term of patent 14 years
U.S. Cl. D7—351



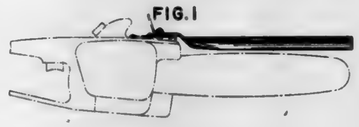
273,932
COMBINED WATER BRACKET AND CAM-TYPE LATCH
H. Gordon Gates, Denver, Colo., assignor to Gates & Sons, Inc., Denver, Colo.
Filed Jun. 15, 1981, Ser. No. 273,482
Term of patent 14 years
U.S. Cl. D8—330



273,933
SOLDERING/DESOLDERING TOOL
Alan L. Royston, Victoria, Australia, assignor to Royel International Pty. Ltd., Victoria, Australia
Filed Aug. 17, 1981, Ser. No. 293,507
Term of patent 14 years
U.S. Cl. D8—30



273,934
CHAIN SAW GUARD
Henry J. Servicky, 4420 W. 51st St., Cleveland, Ohio 44144
Filed Sep. 3, 1981, Ser. No. 298,871
Term of patent 14 years
U.S. Cl. D8—70



273,935
BICYCLE HANDGRIP
Gary Bolster, and Chris Shepley, both of Walla Walla, Wash., assignors to Neotech International Corporation, Walla Walla, Wash.
Filed Jan. 11, 1982, Ser. No. 338,429
Term of patent 14 years
U.S. Cl. D8—303



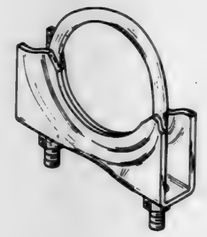
273,936
SET OF GRIPS FOR BICYCLE HANDLEBARS
Rainer Schmid, Eugene, Oreg., assignor to Orthopedic Design, Inc., Eugene, Oreg.
Filed Mar. 3, 1982, Ser. No. 354,198
Term of patent 14 years
U.S. Cl. D8—303



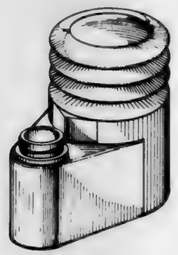
273,937
STRIKE PLATE OR SIMILAR ARTICLE
Robert O. Ruff, Cincinnati, Ohio, assignor to American Standard, Inc., New York, N.Y.
Filed Dec. 27, 1982, Ser. No. 453,204
Term of patent 14 years
U.S. Cl. D8—344



273,938
MUFFLER CLAMP
Michael H. Piper, 6901 SE. 14th St., Apt. 158, Des Moines, Iowa 50320
Filed Jul. 31, 1981, Ser. No. 289,000
Term of patent 14 years
U.S. Cl. D8—396



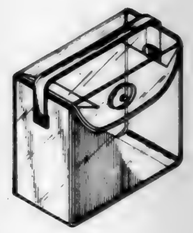
273,939
COMBINED BELLOWS PUMP AND FLUID DISPENSING CONTAINER
Robert Bennett, 170 Sturbridge Rd., Easton, Conn. 06425
Continuation-in-part of Ser. No. D. 292,651, Aug. 13, 1981. This application Sep. 18, 1981, Ser. No. 303,352
Term of patent 14 years
U.S. Cl. D9—301



273,940
CONTAINER FOR LIQUIDS
Vili Soos, Toronto, Canada, and Edmund A. Weaver, Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Dec. 10, 1981, Ser. No. 329,450
Term of patent 14 years
U.S. Cl. D9—337



273,941
PRODUCT PACKAGING CONTAINER
Maurice Farber, Memphis, Tenn., assignor to Farber Brothers, Inc., Memphis, Tenn.
Filed Dec. 28, 1981, Ser. No. 334,473
Term of patent 14 years
U.S. Cl. D9—420



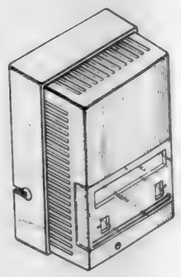
273,942
BOTTLE FERRULE
Daniel A. Brueck, Libertyville, Ill., and Charles J. Hershey, Crystal Falls, Mich., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Jan. 25, 1982, Ser. No. 342,294
Term of patent 14 years
U.S. Cl. D9—434



273,943
CLOCK
John C. Dillon, Ridgewood, N.J., assignor to SportsClocks, Inc., Charlotte, N.C.
Filed May 17, 1982, Ser. No. 379,120
Term of patent 14 years
U.S. Cl. D10—6



273,944
THERMOSTAT
David F. Koeneman, Mt. Prospect; Harold P. Adams, Norridge, both of Ill., and Robert W. Blee, Terrace Park, Ohio, assignors to Mark Controls Corporation, Evanston, Ill.
Filed Feb. 12, 1982, Ser. No. 348,420
Term of patent 14 years
U.S. Cl. D10—50



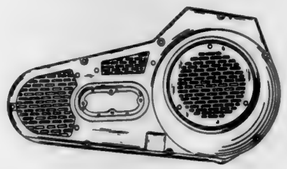
273,945
CAMBER MEASURING DEVICE
Clifford J. Homer, Attleboro, Mass., and Raymond Kaszyk, Pawtucket, R.I., assignors to Newman-Crosby Steel, Inc., Pawtucket, R.I.
Filed Oct. 26, 1981, Ser. No. 315,241
Term of patent 14 years
U.S. Cl. D10—65



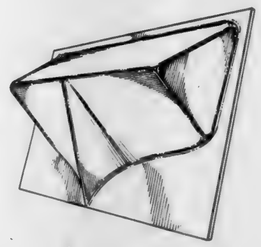
273,946
INFILTROMETER
Wayne C. T. Cole, Winnipeg, Canada, assignor to Ener-Corp. Management Limited, Winnipeg, Canada
Filed Nov. 18, 1981, Ser. No. 322,591
Claims priority, application Canada, May 19, 1981, D19-05-81
Term of patent 14 years
U.S. Cl. D10—96



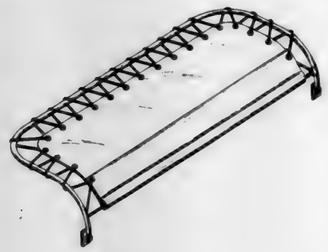
273,947
OPEN MOTORCYCLE PRIMARY COVER
Stanley A. Johnson, Brookfield, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.
Filed Mar. 22, 1982, Ser. No. 360,588
Term of patent 14 years
U.S. Cl. D12—127



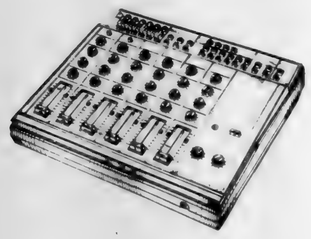
273,948
WIND DEFLECTOR FOR VEHICLES
Erven R. Walker, 633 Shadydale, La Puente, Calif. 91744
Filed Oct. 6, 1980, Ser. No. 194,363
Term of patent 14 years
U.S. Cl. D12—181



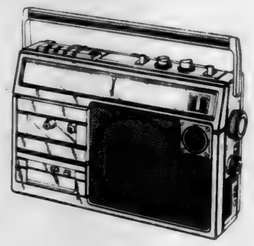
273,949
SAILBOAT PLATFORM
Steven H. Curran, 7514 W. 91st St., Los Angeles, Calif. 90045, and Alfred G. Kumalae, 2616 Clay, Newport Beach, Calif. 92660
Filed Jan. 29, 1982, Ser. No. 343,774
Term of patent 14 years
U.S. Cl. D12—317



273,950
AUDIO MIXER
Masafumi Itoh; Sigeru Hasegawa; Haruki Takita, all of Musashino, and Kouzi Suzuki, Niza, all of Japan, assignors to Teac Corporation, Musashino, Japan
Filed Nov. 4, 1981, Ser. No. 318,206
Claims priority, application Japan, Jul. 14, 1981, 56-30931
Term of patent 14 years
U.S. Cl. D14—1



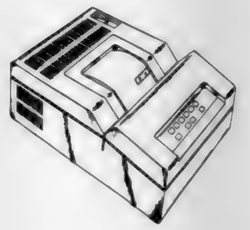
273,951
COMBINED RADIO AND CASSETTE TAPE RECORDER
Teruyuki Nishimoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 6, 1981, Ser. No. 309,137
Claims priority, application Japan, Apr. 8, 1981, 56-15033
Term of patent 14 years
U.S. Cl. D14—5



273,952
EMERGENCY TELEPHONE DIALING PAD
Benjamin H. Stansbury, Jr., Beverly Hills, and Lanny A. Gorton, Sunland, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 2, 1982, Ser. No. 345,185
Term of patent 14 years
U.S. Cl. D14—66



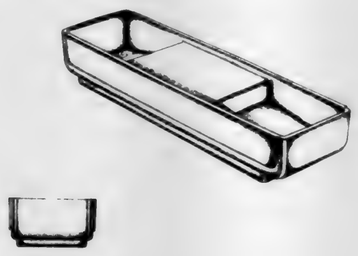
273,953
INTERACTIVE TERMINAL PRINTER
Donald F. Lahey, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 14, 1981, Ser. No. 300,781
Term of patent 14 years
U.S. Cl. D14—111



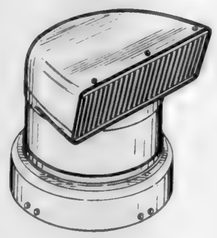
273,954
ATTENDANT CONSOLE
James W. M. Bee, Palo Alto, Calif., assignor to Northern Telecom Limited, Montreal, Canada
Filed Oct. 28, 1981, Ser. No. 315,886
Term of patent 14 years
U.S. Cl. D14—58



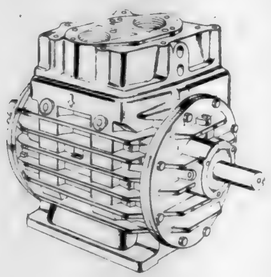
273,955
TELEPHONE STAND
Kenneth B. Brown, Jr., Greenwood, Ind.; Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 5, 1983, Ser. No. 455,880
Term of patent 14 years
U.S. Cl. D14—60



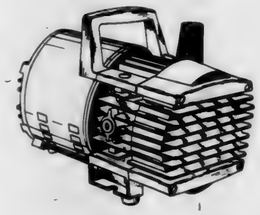
273,956
AIR PRECLEANER FOR AN INTERNAL COMBUSTION ENGINE
Ross K. Petersen, c/o Medalie Manufacturing Co. 4701 Humboldt Ave. N., Minneapolis, Minn. 55430
Filed Jul. 31, 1981, Ser. No. 289,045
Term of patent 14 years
U.S. Cl. D15—5



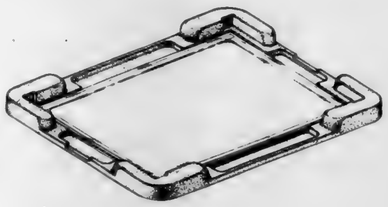
273,957
AIR PUMP
Gordon H. Boswell, Auckland, New Zealand, assignor to Mason & Porter Limited, Auckland, New Zealand
Filed Jun. 30, 1980, Ser. No. 163,997
Term of patent 14 years
U.S. Cl. D15—9



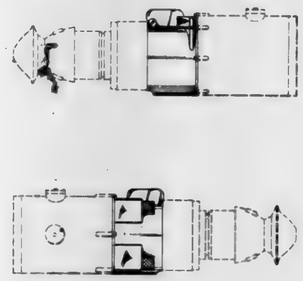
273,958
PORTABLE AIR COMPRESSOR
James F. Mariol, 481 Deanview Dr., Cincinnati, Ohio 45224
Filed Apr. 9, 1982, Ser. No. 367,089
Term of patent 14 years
U.S. Cl. D15—9



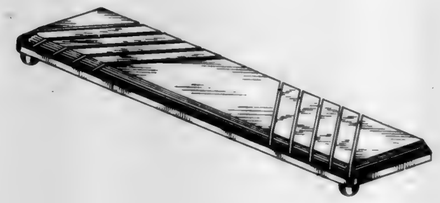
273,959
TRANSPARENCY FRAME FOR OVERHEAD PROJECTOR
Peter VanDyken, Jr., 235 S. A St., Tustin, Calif. 92680
Filed Dec. 7, 1981, Ser. No. 328,455
Term of patent 14 years
U.S. Cl. D16—26



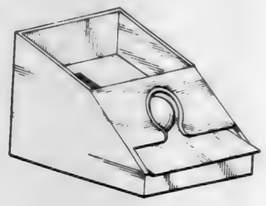
273,960
BATTERY HOUSING OF RIFLE SCOPE OR SIMILAR ARTICLE
Carl P. Kummer, Winter Park, Fla., assignor to Applied Devices Corporation, Kissimmee, Fla.
Filed Jun. 25, 1981, Ser. No. 277,185
Term of patent 14 years
U.S. Cl. D16—132



273,961
MULTIPLE GREETING CARD HOLDER
Karolin M. Bassey, 20 Moonlawn Rd., Troy, N.Y. 12180
Filed Sep. 25, 1981, Ser. No. 305,546
Term of patent 14 years
U.S. Cl. D19—90



273,962
DISPENSER FOR PLAYING CARDS OR THE LIKE
Stephen J. Fromm, 533 N. Shore Rd., Absecon, N.J. 08201
Filed May 13, 1981, Ser. No. 263,213
Term of patent 14 years
U.S. Cl. D21—57



273,963
SCOOTER
Beltram F. O. Mayers, 986 McBride Ave., Mississauga, Ontario, Canada (L5C 1L6)
Filed Mar. 31, 1982, Ser. No. 328,659
Claims priority, application Canada, Dec. 23, 1981, 2312812
Term of patent 14 years
U.S. Cl. D21—81



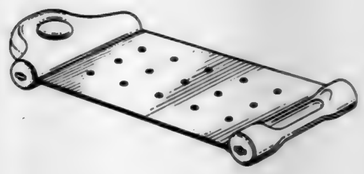
273,964
SIMULATIVE TOY JIGSAW PUZZLE OR SIMILAR ARTICLES
Daniel L. Roth, 914 Fleetwood Place Dr., Houston, Tex. 77079
Filed Feb. 11, 1982, Ser. No. 347,956
Term of patent 14 years
U.S. Cl. D21—104



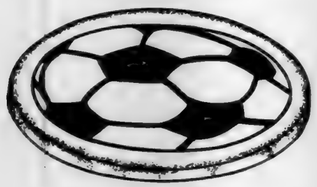
273,965
SHUTTLECOCK
Kent Lin, No. 131, Yuyuan Rd., Shinjuang Village, Lonjing County, Taichun Hsian, Taiwan
Filed Jan. 4, 1982, Ser. No. 336,594
Term of patent 14 years
U.S. Cl. D21—207



273,966
FLOATING MATTRESS
Ralph H. Piel, 16605 Oldham St., Encino, Calif. 91316
Filed Oct. 29, 1981, Ser. No. 316,133
Term of patent 14 years
U.S. Cl. D21—237



273,967
SWING SEAT
Donald F. Budde, St. Louis, Mo., assignor to Urethane Roller Specialists, Inc., Eureka, Mo.
Filed Mar. 6, 1981, Ser. No. 241,438
Term of patent 14 years
U.S. Cl. D21—246



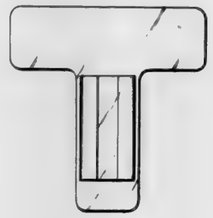
273,968
GOLF CLUB COVER
Betty K. Masai, Torrance, and Chikako Watanabe, Los Angeles, both of Calif., assignors to Masai and Watanabe, Los Angeles, Calif.
Filed Feb. 16, 1982, Ser. No. 349,004
Term of patent 14 years
U.S. Cl. D21—221



273,969
TRIANGULAR-SHAPED FISHING REEL HOLDER
Walter L. Hitchens, Knoxville, Tenn., assignor to Commercial Plastics & Supply Co., Inc., Cornwells Heights, Pa.
Filed Oct. 14, 1980, Ser. No. 196,894
Term of patent 14 years
U.S. Cl. D22—13



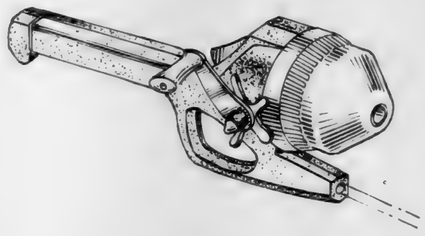
273,970
T-SHAPED FISHING REEL HOLDER
Walter L. Hitchens, Knoxville, Tenn., assignor to Commercial Plastics & Supply Co., Inc., Cornwells Heights, Pa.
Filed Oct. 14, 1980, Ser. No. 196,896
Term of patent 14 years
U.S. Cl. D22—13



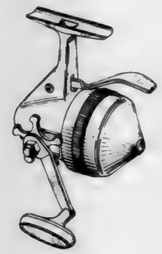
273,971
COLLAPSIBLE FISHING ROD HOLDER
Lester G. Nelson, Rural Route, and M. A. Windmueller, 405 Seventh Ave. West, both of Lemmon, S. Dak. 57638
Filed Apr. 5, 1982, Ser. No. 365,372
Term of patent 14 years
U.S. Cl. D22—13



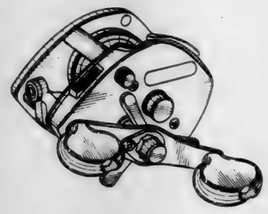
273,972
COMBINED FISHING ROD HANDLE AND REEL
Robert W. Fee, Wichita, Kans., assignor to Brunswick Corporation, Skokie, Ill.
Filed Apr. 5, 1982, Ser. No. 364,032
Term of patent 14 years
U.S. Cl. D22—26



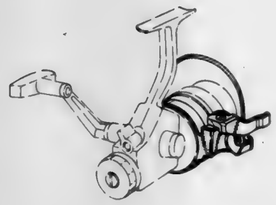
273,973
FISHING REEL
John J. Mack, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jul. 22, 1982, Ser. No. 399,591
Term of patent 14 years
U.S. Cl. D22—25



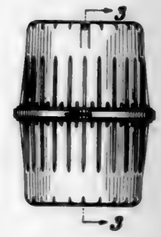
273,974
FISHING REEL
Seiji Myojo, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Nov. 15, 1982, Ser. No. 441,782
Claims priority, application Japan, May 20, 1982, 57-22228
Term of patent 14 years
U.S. Cl. D22—25



273,975
FISHING REEL BAIL ARM
Akinori Sakumoto, and Kanji Iinuma, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed May 19, 1982, Ser. No. 379,816
Claims priority, application Japan, Dec. 29, 1981, 56-58707
Term of patent 14 years
U.S. Cl. D22—25



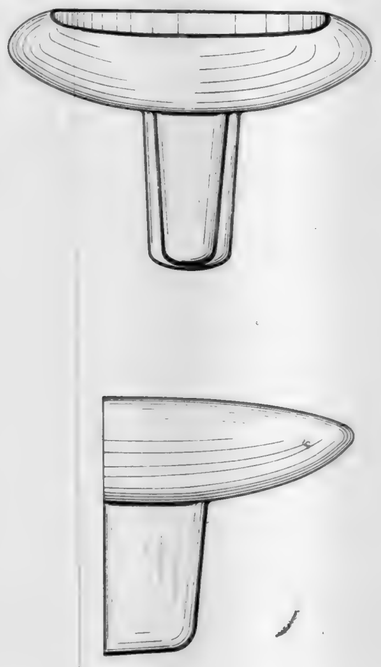
273,976
WATER RESERVOIR FOR A REVERSE OSMOSIS SYSTEM
Bruce D. Burrows, 25145 West Ave. Stanford, Valencia, Calif. 91355
Filed Sep. 15, 1981, Ser. No. 302,464
Term of patent 14 years
U.S. Cl. D23—2



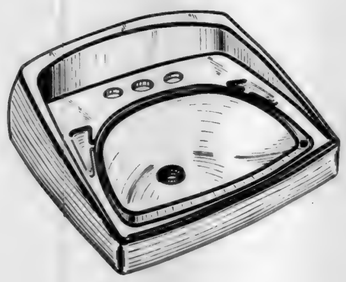
273,977
WATER RESERVOIR FOR A REVERSE OSMOSIS SYSTEM
Bruce D. Burrows, 25145 West Ave. Stanford, Valencia, Calif. 91355
Filed Sep. 15, 1981, Ser. No. 302,466
Term of patent 14 years
U.S. Cl. D23—2



273,978
LAVATORY
Axel Enthoven, Wijnegen, Belgium, assignor to American Standard, Inc., New York, N.Y.
Filed Apr. 12, 1982, Ser. No. 367,326
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1981, 20 MR 1910
Term of patent 14 years
U.S. Cl. D23—58

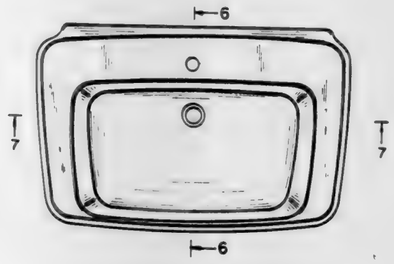


273,979
LAVATORY OR SIMILAR ARTICLE
Henry M. Stair, Jr., Neshanic, N.J., assignor to American Standard, Inc., New York, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,424
Term of patent 14 years
U.S. Cl. D23—58



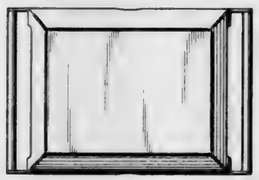
273,980
PEDESTAL LAVATORY OR THE LIKE
Jack N. Kaiser, Danville, Ky., assignor to American Standard, Inc., New York, N.Y.
Filed Jan. 7, 1982, Ser. No. 337,634
Term of patent 14 years
U.S. Cl. D23—61



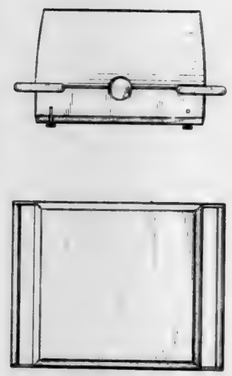


273,981
RECTANGULAR GAMMA CAMERA HEAD WITH COLLIMATOR
Edward A. Kroll, Chardon, and Allan J. Perusek, Mentor, both of Ohio, assignors to Technicare Corporation, Solon, Ohio
Continuation-in-part of Ser. No. 260,239, May 4, 1981. This application Aug. 11, 1981, Ser. No. 292,104
Term of patent 14 years
U.S. Cl. D24—02





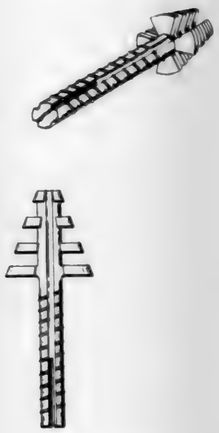
273,982
SQUARE GAMMA CAMERA HEAD WITH COLLIMATOR
Edward A. Kroll, Chardon, Ohio, assignor to Technicare Corporation, Solon, Ohio
Filed Aug. 11, 1981, Ser. No. 292,105
Term of patent 14 years
U.S. Cl. D24—02



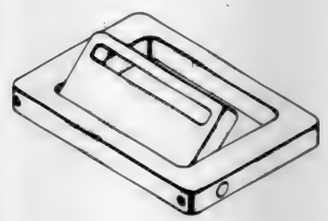
273,983
THERAPEUTIC INVERSION DEVICE
Wayne H. McGowen, 4930 Mill Creek, Dallas, Tex. 75234
Filed Mar. 4, 1983, Ser. No. 472,228
Term of patent 14 years
U.S. Cl. D24—3



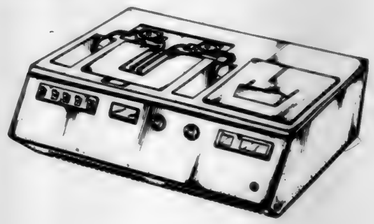
273,984
DENTAL POST
David G. Vlock, 12 Fifth Ave., New York, N.Y. 10011
Filed Dec. 30, 1981, Ser. No. 336,007
Term of patent 14 years
U.S. Cl. D24—10



273,985
DENTAL BURR TOOL HOLDER
Thomas J. Schulstad, 1450 Olympic View Dr., Edmonds, Wash. 98020
Filed Jan. 11, 1982, Ser. No. 338,232
Term of patent 14 years
U.S. Cl. D24—16



273,986
DESIGN FOR A BLOOD CLOT DETECTION INSTRUMENT
Edward J. Johnson, Furlong, Pa., assignor to Warner Lambert Technologies, Inc., Southbridge, Mass.
Division of Ser. No. 39,085, May 14, 1979. This application Jul. 8, 1981, Ser. No. 281,440
Term of patent 14 years
U.S. Cl. D24—17



273,987
REAGENT CASSETTE (OR THE LIKE)
James T. Holen, Mundelein; Julius S. Becker, Vernon Hills, and Robert Case, Chicago, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Aug. 20, 1981, Ser. No. 294,664
Term of patent 14 years
U.S. Cl. D24—17

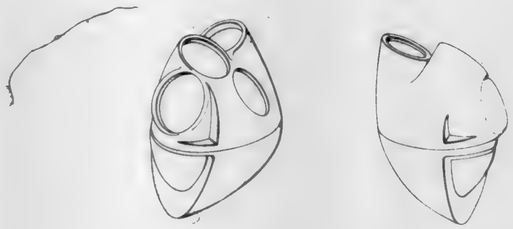


273,988
COMPARTMENTED MEDICAL TEST TRAY
Ernest F. Kiraly, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jan. 11, 1982, Ser. No. 338,756
Term of patent 14 years
U.S. Cl. D24—31





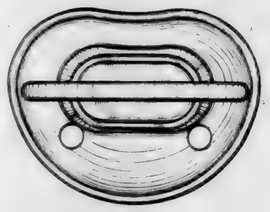
273,989
HUMAN ARTIFICIAL HEART
Didier Lapeyre, Chaignes 27120, Pacy sur Eure, France
Filed Sep. 11, 1981, Ser. No. 301,291
Claims priority, application France, Mar. 17, 1981, 810 969
Term of patent 14 years
U.S. Cl. D24—33



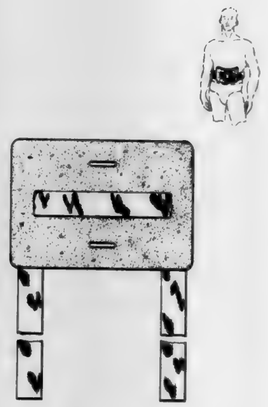
273,990
MANIPULATIVE PACIFIER TOY
Jeanne W. Lamsam, 4401 Shore Acres Rd., Monona, Wis. 53716
Filed Aug. 26, 1981, Ser. No. 296,554
Term of patent 14 years
U.S. Cl. D24—45



273,991
BABY SOOTHER
Ronald K. Moore, Kempsey, England, assignor to Lewis Woolf Griptight Limited, Birmingham, England
Filed Sep. 15, 1981, Ser. No. 302,461
Claims priority, application United Kingdom, Jun. 25, 1981, 1001183
Term of patent 14 years
U.S. Cl. D24—46



273,992
ANTI-SEASICKNESS BELT DEVICE
Leo J. Burby, 2851 E. Overlook Rd., Cleveland, Ohio 44118, and Henry P. Evans, 17618 Walnut Trail, Chagrin Falls, Ohio 44022
Filed Nov. 16, 1981, Ser. No. 321,637
Term of patent 14 years
U.S. Cl. D24—99



273,993
CATHETER CLIP
Rudolf R. Schulte, Santa Barbara, and Alfons Heindl, Goleta, both of Calif., assignors to Pudenz-Schulte Med, Research Corp., Goleta, Calif.
Filed Feb. 5, 1982, Ser. No. 346,367
Term of patent 14 years
U.S. Cl. D24—99



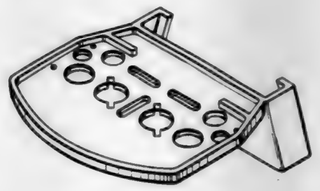
273,994
ACCESS DOOR
Hiromitsu Naka, Yashio, Japan, assignor to Kabushiki Kaisha Naka Gijutsu Kenkyusho, Sapporo, Japan
Filed Jan. 4, 1982, Ser. No. 336,588
Term of patent 14 years
U.S. Cl. D25—48



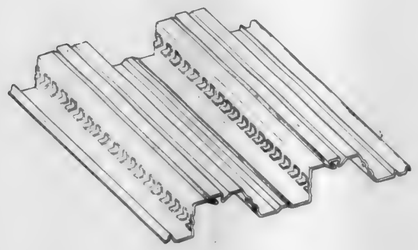
273,995
ACCESS DOOR
Hiromitsu Naka, Yashio, Japan, assignor to Kabushiki Kaisha Naka Gijutsu Kenkyusho, Sapporo, Japan
Filed Jan. 4, 1982, Ser. No. 336,589
Term of patent 14 years
U.S. Cl. D25—48



273,996
LADDER-MOUNTED UTILITY SHELF
Raymond E. Rasler, E. College Ave., R.R. #2, Greenville, Ill. 62246
Filed Jun. 14, 1982, Ser. No. 387,805
Term of patent 14 years
U.S. Cl. D25—68



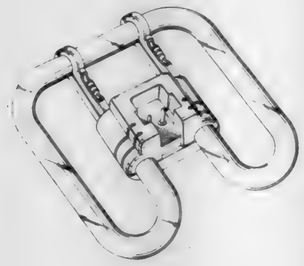
273,997
FLOOR DECK
Thomas G. Ryan, Bethel Park, Pa., assignor to Cyclops Corporation, Pittsburgh, Pa.
Filed Mar. 23, 1982, Ser. No. 361,094
Term of patent 14 years
U.S. Cl. D25—75



273,998
FLOORING UNIT
Robert K. Ballantine, Mullaloo Perth, Australia, assignor to BCM Manufacturing Ltd., Calgary, Canada
Filed Feb. 12, 1982, Ser. No. 348,392
Claims priority, application Canada, Aug. 20, 1981, 2008819
Term of patent 14 years
U.S. Cl. D25—91



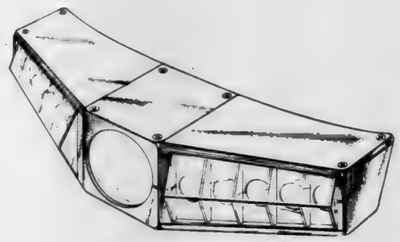
273,999
FLUORESCENT LAMP
John M. Chapman, Bexley, and Basil Antonis, London, both of England, assignors to Thorn EMI Limited, London, England
Filed Aug. 4, 1981, Ser. No. 290,011
Claims priority, application United Kingdom, Feb. 6, 1981, 998795
Term of patent 14 years
U.S. Cl. D26—3



274,000
HEADLIGHT
Francois Bailly, Neuilly sur Seine, France, assignor to Equipements Automobiles Marchal S.A., Issy-les-Moulineaux, France
Filed Oct. 22, 1982, Ser. No. 436,530
Term of patent 14 years
U.S. Cl. D26—29



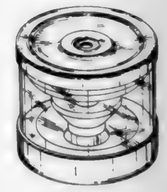
274,001
VEHICLE EMERGENCY LIGHT
Thomas L. Sailers, P.O. Box 414, Belmont, CA 94002
Filed Aug. 16, 1979, Ser. No. 67,177
Term of patent 14 years
U.S. Cl. D26—35



274,002
COMBINED LAMP AND TORCH
Tit-Wing Poon, 12F Lam Uk Village, Chaiwan, Hong Kong
Filed Sep. 11, 1981, Ser. No. 301,357
Claims priority, application United Kingdom, Apr. 27, 1981, 1000157
Term of patent 14 years
U.S. Cl. D26—42



274,003
INDIRECT LIGHTING FIXTURE
Dennis E. Johnson, Grafton, Wis., assignor to McGraw-Edison, Rolling Meadows, Ill.
Filed Jan. 15, 1982, Ser. No. 339,834
Term of patent 14 years
U.S. Cl. D26—85



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Makela, Olavi; Suntio, Osai; and Tuomaala, Jorma, 4,449,557, Cl. 144-357.000.

A/S Raufoss Ammunisjonsfabrikker: *See*—
Foas, Morten; and Strandli, Kaare R., 4,449,456, Cl. 102-240.000.

Aasen, Steven M.: *See*—
Holmes, Brian N.; Dalzell, Rex J.; and Aasen, Steven M., 4,450,227, Cl. 430-339.000.

AB Bahco Verktyg: *See*—
Brunosson, Bengt B., 4,449,431, Cl. 81-165.000.

Abdo, Milton K., to Mobil Oil Corporation. Oil recovery process employing a non-ionic glucan in combination with clay flocculant. 4,450,084, Cl. 252-8.55D.

Abe, Masahiro: *See*—
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Ishiguro, Tsuneo, 4,450,267, Cl. 528-99.000.

Abe, Susumu: *See*—
Uyehara, Norioki; Abe, Susumu; and Kimura, Yasuhiro, 4,450,006, Cl. 75-125.000.

Abe, Takeshi: *See*—
Itaba, Takeshi; Matsumoto, Shotaro; and Abe, Takeshi, 4,450,205, Cl. 428-552.000.

Abendroth, Carl W. Flooring system. 4,449,342, Cl. 52-393.000.

Aberg, Seard, to Groko Maskin AB. Method of bending shaped metal sheet and apparatus for carrying out the method. 4,449,388, Cl. 72-381.000.

Abet Group, The: *See*—
Beckman, John B.; and Blickstein, Martin J., 4,449,893, Cl. 417-322.000.

Abex Corporation: *See*—
Viles, Alan H., 4,449,445, Cl. 92-12.200.

Abler, William L. Celestial navigator. 4,449,817, Cl. 356-145.000.

Abraham, Bruce C.; Fegley, Charles R.; and Hurst, Jerry C., to AT&T Technologies, Inc. Assembling components such as lids to chip enclosures. 4,449,282, Cl. 29-467.000.

Abreu, Cristian O., to Xerox Corporation. Electrostatic detack apparatus and method. 4,449,808, Cl. 355-3.0TR.

Accuray Corporation: *See*—
Williams, Paul, 4,449,398, Cl. 73-159.000.
Williams, Paul; and Landis, Dan R., 4,450,404, Cl. 324-226.000.

Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., to United States of America, National Aeronautics and Space Administration. Metal phthalocyanine polymers. 4,450,268, Cl. 528-327.000.

Acker, Clarence R.: *See*—
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarence R., 4,450,424, Cl. 336-94.000.

Ackermann, Remo; and Ackermann, Walter. Water-closet with rotary double pan. 4,449,258, Cl. 4-300.000.

Ackermann, Rudolf, to Siemens Aktiengesellschaft. Digital real-time video image processing device. 4,450,482, Cl. 358-160.000.

Ackermann, Walter: *See*—
Ackermann, Remo; and Ackermann, Walter, 4,449,258, Cl. 4-300.000.

Acrison, Incorporated: *See*—
Ricciardi, Ronald J.; and Rudolph, Otto J., 4,449,597, Cl. 177-256.000.

Adair, Noel J.; Carlisle, Robert W.; Stubbs, Michael E.; and Rooney, John J., to Gallaher Limited. Supported catalysts and method for their production. 4,450,245, Cl. 502-211.000.

Adams, Frederick J., to Cam Gears Limited. Power-assisted steering gear assembly. 4,449,601, Cl. 180-148.000.

Adkins, James: *See*—
McAfee, Richard C.; Adkins, James; and Miskowski, Richard L., 4,450,283, Cl. 556-479.000.

Agano, Toshitaka: *See*—
Oshikoshi, Yuji; and Agano, Toshitaka, 4,450,485, Cl. 358-298.000.

Agency of Industrial Science and Technology: *See*—
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Geyken, Erwin; Koninger, Horst; and Schirk, Gunter, 4,449,278, Cl. 29-132.000.
Steinsberger, Karl; Maier, Albert; and Herrmann, Walter, 4,449,868, Cl. 408-138.000.
Weyde, Edith; von Rintelen, Harald; Saleck, Wilhelm; and Teitscheid, Heinz-Horst, 4,450,225, Cl. 430-567.000.

AGFA-Gevaert, N.V.: *See*—
Van Poucke, Raphael K.; Van de Sande, Christian C.; and Verhecken, Andree , 4,450,223, Cl. 430-223.000.

AHI Operations Limited: *See*—
Millar, Thomas D.; and Miller, David M., 4,449,980, Cl. 604-890.000.

Ahn, Min H. Telescopic tanker for carrying fluid. 4,449,724, Cl. 280-5.00C.

Ahola, Clifford J.: *See*—
Tloczynski, James J.; Ahola, Clifford J.; Rosenstein, Nicholas D.; and Rine, James C., 4,449,670, Cl. 241-35.000.
Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., 4,449,674, Cl. 241-245.000.

Aihara, Kenichi: *See*—
Araki, Kazuhiko; Ao, Hideki; Kimura, Tomohiko; and Aihara, Kenichi, 4,450,165, Cl. 424-258.000.

Aioi Seiki Kabushiki Kaisha: *See*—
Yonezawa, Keitaro; and Utsumi, Tadao, 4,449,907, Cl. 425-183.000.

Air Products and Chemicals, Inc.: *See*—
Berger, Kerry R.; Kaspersma, Jelle H.; Luybli, Joseph R.; Millward, Barry; and Shay, Robert H., 4,450,017, Cl. 148-16.000.
Eskinazi, Victoria, 4,450,306, Cl. 568-630.000.
Hegarty, William P.; and Schmidt, William P., 4,449,994, Cl. 62-17.000.
Iacoviello, John G., 4,449,978, Cl. 604-372.000.

Aisan Industry Co., Ltd.: *See*—
Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,450,117, Cl. 261-39.00A.

Aisan Kogyo Kabushiki Kaisha: *See*—
Ito, Shoji, 4,449,499, Cl. 123-339.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Ishii, Masami; Sugimoto, Hitoshi; Takeda, Shinji; and Shibata, Susumu, 4,450,038, Cl. 156-497.000.

Ajinomoto Company Incorporated: *See*—
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Ishiguro, Tsuneo, 4,450,267, Cl. 528-99.000.

Akai, Tsugio: *See*—
Donomoto, Tadashi; Tanaka, Atsuo; Tatematsu, Yoshiaki; and Akai, Tsugio, 4,450,207, Cl. 428-614.000.

Akashi, Goro: *See*—
Tadokoro, Eiichi; Fujiyama, Masaaki; and Akashi, Goro, 4,450,199, Cl. 428-317.900.

Akebono Brake Industry Company, Ltd.: *See*—
Yanagi, Kouichiro, 4,449,447, Cl. 92-248.000.

Akita, Shinji; Hatanaka, Masayuki; and Uemura, Akira, to Nippon Kokan Kabushiki Kaisha. Steel pipe rolling mill. 4,449,386, Cl. 72-100.000.

Akiyama, Nobuyuki: *See*—
Yamaguchi, Kazuo; Kuni, Asahiro; Akiyama, Nobuyuki; and Endo, Juro, 4,449,818, Cl. 356-237.000.

Akiyoshi, Yuji: *See*—
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.

Aklufi, Monti E., to United States of America, Navy. Chemical etching of transformed structures. 4,450,041, Cl. 156-628.000.

Albanese, Victor J.; and Schmidt, Charles J., to Grumman Aerospace Corporation. Apparatus and method for improving antenna sidelobe cancellation. 4,450,448, Cl. 343-379.000.

Aldrich, Deborah G.: *See*—
Vink, Walter V.; and Aldrich, Deborah G., 4,450,179, Cl. 426-103.000.

Alexander, Alfred, Jr., to Robertson Factories, Inc. Device to install drapery hooks. 4,449,295, Cl. 29-798.000.

Alexander, John H., to ITT Industries, Inc. Multilayer ceramic dielectric capacitors. 4,450,502, Cl. 361-309.000.

Alexander, William H.; and Dare, Roy R., to Vapor Corporaion. Fire safe plug valve. 4,449,695, Cl. 251-214.000.

Alfven, Hannes; Herlofson, Nicolai; Babic, Miroslav; and Brunberg, Ernst-Ake. Method of storing energy and system for carrying out this method. 4,449,577, Cl. 165-104.120.

Allegheny Ludlum Steel Corporation: *See*—
Ames, S. Leslie; Gray, Thomas H.; and Kish, Lewis L., 4,450,206, Cl. 428-606.000.
Hunt, Joseph M., 4,450,208, Cl. 428-620.000.
Lovejoy, Paul T., 4,450,058, Cl. 204-145.00R.

Allied Corporation: *See*—
Narasimham, Mandayam C., 4,449,568, Cl. 164-453.000.
Sparks, Ronald L., 4,449,594, Cl. 175-59.000.

Allis-Chalmers Corporation: *See*—
Hancock, Peter D., 4,449,365, Cl. 60-422.000.

Alps Electric Co., Ltd.: *See*—
Kano, Mitsuru; and Kamijyo, Yoshimi, 4,450,100, Cl. 252-518.000.
Kobayashi, Mikio; and Kuritani, Kingo, 4,449,769, Cl. 339-17.00C.

Alsthom-Atlantique: *See—*
Combes, Gilles; and Delage, Germain, 4,449,851, Cl. 405-93.000.
Aluminum Company of America: *See—*
Ramser, Robert A., 4,449,902, Cl. 425-7.000.
Rolf, Richard L., 4,450,061, Cl. 204-286.000.
ALZA Corporation: *See—*
Cortese, Richard; Barclay, Brian; and Theeuwes, Felix, 4,449,983, Cl. 604-892.000.
Michaels, Alan S., 4,450,198, Cl. 428-315.500.
Amana Refrigeration, Inc.: *See—*
Hays, Herbert G.; and Kuipers, Warren W., 4,449,511, Cl. 126-110.00R.
Amax Inc.: *See—*
Laferty, John M.; Queneau, Paul B.; and Beckstead, Leo W., 4,450,144, Cl. 423-54.000.
American Cyanamid Company: *See—*
Du, Mila T.; and Shepherd, Robert G., 4,450,272, Cl. 544-357.000.
Kamhi, Victor M., 4,450,305, Cl. 568-611.000.
American Hospital Supply Corporation: *See—*
Erhardt, Paul W.; and Borgman, Robert J., 4,450,173, Cl. 424-309.000.
American Microsystems, Incorporated: *See—*
Batra, Tarsaim L.; and Bowden, Scott, 4,450,021, Cl. 29-571.000.
American Optical Corporation: *See—*
Davignon, Paul A., 4,449,477, Cl. 118-694.000.
Ames, S. Leslie; Gray, Thomas H.; and Kish, Lewis L., to Allegheny Ludlum Steel Corporation. Amorphous metals and articles made thereof. 4,450,206, Cl. 428-606.000.
AMFIT, Inc.: *See—*
Schwartz, Vern R., 4,449,264, Cl. 12-1.00R.
Amos, Homer C.: *See—*
Benedyk, Joseph C.; Amos, Homer C.; Scheie, Carl E.; and McGlone, William R., 4,449,712, Cl. 273-326.000.
AMP Incorporated: *See—*
Esser, Wilhelm C. J.; and van den Nosterum, Adrianus, 4,449,773, Cl. 339-59.00M.
Fukukura, Kazutoyo; and Martinez, Richard A., 4,450,324, Cl. 200-5.00A.
Fukukura, Kazutoyo, 4,450,331, Cl. 200-160.000.
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,449,770, Cl. 339-17.0CF,
Kampfmann, Georg, 4,449,883, Cl. 414-744.00A.
Lane, David, 4,449,778, Cl. 339-143.00R.
Weidler, Charles H., 4,449,767, Cl. 339-17.0LC.
Ampafrance S.A.: *See—*
Surot, Patrick, 4,449,732, Cl. 280-644.000.
Anderson, David J.; and Loughman, Barbara E., to Upjohn Company, The. Carbamic acid derivatives as selective immunosuppresive agents. 4,450,159, Cl. 424-246.000.
Anderson, David L.; Hitchcock, Robert F.; and Tamburrino, Robert M., to Sealed Power Corporation. Transmission fluid filter and method of manufacture. 4,450,081, Cl. 210-445.000.
Anderson, Erik T.: *See—*
Vesterlund, Gunnar; and Anderson, Erik T., 4,450,016, Cl. 148-11.50F.
Anderson, Robert R.: *See—*
Morlock, Ruben D.; Kopecky, Ivyl D.; Anderson, Robert R.; and Marcy, Dewey R., 4,449,672, Cl. 241-101.700.
Anderson, Scott, to APL Anderson, Inc. Method of introducing sodium amalgam into lamps and lamp containing sodium amalgam particles. 4,449,948, Cl. 445-18.000.
Andersson, Arne: *See—*
Lisi, Edward L.; Melleby, Juul A.; and Andersson, Arne, 4,449,569, Cl. 165-1.000.
Ando, Hideo; Nakagawa, Toshiharu; and Fujimori, Yoshinori, to Tokyo Shibaura Denki Kabushiki Kaisha. Data recording medium. 4,450,452, Cl. 346-135.100.
Ando, Takao: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,450,156, Cl. 424-180.000.
Andre, Jean-Louis: *See—*
Lerouge, Andre; Andre, Jean-Louis; and Coutin, Pierre, 4,449,920, Cl. 431-91.000.
Andrei-Alexandru, Marcel; and Prohaska, Hans, to ITT Industries, Inc. Window lifter and door locking system. 4,450,390, Cl. 318-282.000.
Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, to Earle M. Jorgensen Co. Stainless steel. 4,450,008, Cl. 75-128.00A.
Andrejco, Matthew J.; Paek, Un C.; and Schroeder, Charles M., Jr., to AT&T Technologies, Inc. Zirconia induction furnace. 4,450,333, Cl. 219-10.49R.
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., to Mobil Oil Corporation. Distillation-induced extraction process. 4,450,067, Cl. 208-86.000.
Annaka, Masao: *See—*
Kitawaki, Michio; and Annaka, Masao, 4,449,717, Cl. 277-153.000.
Anthony, William S., to United States of America, Agriculture. Method for separating closed bolls of cotton by maturity. 4,449,391, Cl. 73-32.00R.
Antivols Simplex: *See—*
Thirion, Andre; Sorba, Antoine; Dany, Jean-Claude; Pacaud, Andre; and Attal, Gerard, 4,449,385, Cl. 70-277.000.
Antonazzi, Frank J., to Bendix Corporation, The. Pressure measurement system with a constant settlement time. 4,449,409, Cl. 73-724.000.
Ao, Hideki: *See—*
Araki, Kazuhiko; Ao, Hideki; Kimura, Tomohiko; and Aihara, Kenichi, 4,450,165, Cl. 424-258.000.
Aoki, Keiji: *See—*
Yaegashi, Takehisa; Aoki, Keiji; and Hashikawa, Kenzo, 4,450,528, Cl. 364-431.050.
Aoki, Takeo: *See—*
Matsuo, Tohru; and Aoki, Takeo, 4,450,004, Cl. 75-53.000.
Aoyagi, Edward I., to Chevron Research Company. Intermediates for 1-methyl-3,4-dihalo-5-thio-(2-hydroxyethyl)-pyrazole. 4,450,278, Cl. 548-376.000.
Apitz, Siegfried; and Nonnenmann, Rolf, to International Standard Electric Corporation. Bar code with optical reading device. 4,450,349, Cl. 235-462.000.
APL Anderson, Inc.: *See—*
Anderson, Scott, 4,449,948, Cl. 445-18.000.
Aplin, George E.: *See—*
McCarthy, Cornelius J.; and Aplin, George E., 4,449,330, Cl. 51-241.00S.
Appels, Johannes A.: *See—*
Maas, Henricus G. R.; and Appels, Johannes A., 4,449,287, Cl. 29-580.000.
Appleton Papers Inc.: *See—*
Schulz, William J., 4,450,043, Cl. 162-5.000.
Araghi, Mehdi N.; and Daniele, Joseph J., to Xerox Corporation. Multi-function reproduction apparatus. 4,450,458, Cl. 346-155.000.
Arai, Kenichiro, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Printing device. 4,449,835, Cl. 400-161.000.
Arai, Mitsuru: *See—*
Sato, Hideyori; and Arai, Mitsuru, 4,449,366, Cl. 60-444.000.
Arai, Norikazu; Ishiyama, Shozo; and Kojima, Tadashi, to Konishiroku Photo Industry Co., Ltd. Large-aperture single lens with aspherical surfaces. 4,449,792, Cl. 350-432.000.
Araki, Kazuhiko; Ao, Hideki; Kimura, Tomohiko; and Aihara, Kenichi, to Yoshitomi Pharmaceutical Industries, Ltd. Dihydropyridine compounds. 4,450,165, Cl. 424-258.000.
Arbed S.A.: *See—*
Erpelding, Jean, 4,449,700, Cl. 266-79.000.
Archambault, Marcel, to Chapel Reprographie. Machine for folding large-size drawings or documents. 4,449,963, Cl. 493-414.000.
Arcilesi, Donald A., to OMI International Corporation. Ammonium ions used as electroless copper plating rate controller. 4,450,191, Cl. 427-443.100.
Arieh, Simon: *See—*
Courvoisier, Guy; and Arieh, Simon, 4,450,347, Cl. 219-549.000.
Arimoto, Satomi; Yamaji, Shigeru; and Ishitobi, Chikato, to Mitsubishi Denki Kabushiki Kaisha. Gas circuit breaker. 4,450,329, Cl. 200-148.00A.
Arimura, Katsuo; Murakami, Shu; and Oka, Taichi, to Yoshitomi Pharmaceutical Industries, Ltd. Cyclic iminocarboxylic acid derivatives. 4,450,275, Cl. 548-201.000.
ARMCO Inc.: *See—*
Lawson, John E., 4,449,583, Cl. 166-72.000.
Armstrong World Industries, Inc.: *See—*
Kauffman, William J.; and Wright, Ralph W., 4,450,194, Cl. 428-172.000.
Arter, William L.; and Russell, Byron L. Apparatus and method for providing a smooth edge on sheared metal. 4,450,015, Cl. 148-9.00R.
Arthur D. Little, Inc.: *See—*
Sidman, Kenneth R., 4,450,150, Cl. 424-1.100.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Mimura, Akio; Yuasa, Katsumi; and Shibukawa, Mitsuru, 4,450,233, Cl. 435-178.000.
Tanouchi, Masatoshi; and Asahina, Yoshiyuki, 4,450,082, Cl. 210-660.000.
Asahina, Hiroshi: *See—*
Sato, Hideki; and Asahina, Hiroshi, 4,450,577, Cl. 378-109.000.
Asahina, Yoshiyuki: *See—*
Tanouchi, Masatoshi; and Asahina, Yoshiyuki, 4,450,082, Cl. 210-660.000.
Ashizawa, Takeshi; and Yasumura, Motoaki, to Kabushiki Kaisha Tanaka Seisakusho. Method of controlling an operation of a copy-cutting apparatus. 4,449,699, Cl. 266-58.000.
Ashland Oil, Inc.: *See—*
Hettinger, William P., Jr.; Kovach, Stephen M.; and Hoffman, James F., 4,450,241, Cl. 502-34.000.
Mansour, Maher L., 4,449,828, Cl. 366-147.000.
Askew, Herbert F.; Harrington, Colin J.; and Bridgwater, Terry J. P. Vapor lock resistant hydraulic fluids. 4,450,087, Cl. 252-73.000.
Asmus, John F., to Maxwell Laboratories, Inc. Pumping a photolytic laser utilizing a plasma pinch. 4,450,568, Cl. 372-76.000.
Associated Electrical Industries Limited: *See—*
Markham, John D., 4,450,388, Cl. 318-87.000.
AT&T Technologies, Inc.: *See—*
Abraham, Bruce C.; Fegley, Charles R.; and Hurst, Jerry C., 4,449,282, Cl. 29-467.000.
Andrejco, Matthew J.; Paek, Un C.; and Schroeder, Charles M., Jr., 4,450,333, Cl. 219-10.49R.
Atlantic Richfield Company: *See—*
Sofranko, John A.; and Leonard, John J., 4,450,293, Cl. 562-579.000.
Stern, Michael J., 4,450,034, Cl. 156-382.000.
Atsuta, Toshio: *See—*
Yoshida, Toshio; Matsui, Shigetomo; and Atsuta, Toshio, 4,449,281, Cl. 29-421.00R.

Attal, Gerard: *See—*
Thirion, Andre; Sorba, Antoine; Dany, Jean-Claude; Pacaud, Andre; and Attal, Gerard, 4,449,385, Cl. 70-277.000.
Austen, Alfred R.; and Humphries, Darral V., to Bethlehem Steel Corporation. Apparatus for the hydrostatic extrusion of thermoplastic polymers. 4,449,904, Cl. 425-97.000.
Auth, David C.; Lawrence, Dale M.; and Majoch, Tim R., to University of Washington. Fast pulse thermal cautery probe and method. 4,449,528, Cl. 128-303.100.
Aviation Electric Ltd.: *See—*
Evans, Rowland M., 4,449,360, Cl. 60-39.281.
Avon Products, Inc.: *See—*
Lindauer, Jerome I., 4,449,987, Cl. 44-7.500.
Awano, Toshimi: *See—*
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,449,707, Cl. 273-171.000.
Azuma, Shizuo: *See—*
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Kawase, Shoji; and Sano, Makoto, 4,449,992, Cl. 55-158.000.
Baba, Katsuyoshi: *See—*
Saito, Chuichi; Teranishi, Katsuya; Baba, Katsuyoshi; and Osumi, Yoshihiro, 4,449,623, Cl. 198-335.000.
Baba, Masanao, to Nippon Cable System Inc. Steering apparatus. 4,449,420, Cl. 74-501.00R.
Babcock Power Limited: *See—*
Hamill, Anthony C.; and Hawkins, Ronald J., 4,449,387, Cl. 72-215.000.
Babcock & Wilcox Company, The: *See—*
Russell, Thomas D.; and Walker, Robert R., 4,450,363, Cl. 290-40.00C.
Babic, Miroslav: *See—*
Alfven, Hannes; Herlofson, Nicolai; Babic, Miroslav; and Brunberg, Ernst-Ake, 4,449,577, Cl. 165-104.120.
Bachman, G. Merle: *See—*
Davis, Charles L.; and Bachman, G. Merle, 4,449,761, Cl. 312-116.000.
Backes, Reiner: *See—*
Schmidtpott, Friedrich; and Backes, Reiner, 4,450,432, Cl. 340-146.200.
Backman, Bo G. Apparatus and method for drawing curves. 4,449,301, Cl. 33-32.00E.
Bader, Horst, to Eckardt AG. Controller with adjustable proportionality range. 4,449,546, Cl. 137-86.000.
Bader, Nicholas F., III: *See—*
Longo, Frank N.; Bader, Nicholas F., III; and Dorfman, Mitchell R., 4,450,184, Cl. 427-34.000.
Baggio, Giorgio, to Nordica S.p.A. Hydraulic device particularly for ski boot fastening. 4,449,273, Cl. 24-68.0SK.
Baillie, David H.: *See—*
Brodribb, Marcus T.; Brodribb, Anthony G.; and Baillie, David H., 4,449,317, Cl. 43-15.000.
Baitis, A. Erich: *See—*
Woolaver, Dennis A.; and Baitis, A. Erich, 4,449,469, Cl. 114-150.000.
Baker, Kenneth R.; and De Vault, Robert T., to Maritec Corporation. Variable inlet hydrojet boat drive. 4,449,944, Cl. 440-47.000.
Balbinot, Renzo, to Nordica S.p.A. Device for controlling the fitting-on of ski boots and the like. 4,449,274, Cl. 24-70.0SK.
Baldwin Piano & Organ Company: *See—*
Cotton, Robert B., Jr.; and Uetrecht, Dale M., 4,449,437, Cl. 84-1.010.
Balitch, Paul, to Caterpiller Tractor Co. Track chain link and forging process for the manufacture of track chain links. 4,449,357, Cl. 59-30.000.
Balje, Otto E. Free spool inducer pump. 4,449,888, Cl. 415-143.000.
Ballast-Nedam Groep N.V.: *See—*
Wolters, Tjako A.; and Roggekamp, Aloysius G., 4,449,720, Cl. 277-207.00A.
Balzers Aktiengesellschaft: *See—*
Kraus, Thaddaus, 4,449,478, Cl. 118-720.000.
Thoni, Werner, 4,449,790, Cl. 350-357.000.
Banach, Terrance R.: *See—*
Brooks, Robert A.; Banach, Terrance R.; Barman, Erik; and Livia, Michael R., 4,449,408, Cl. 73-643.000.
Suhr, Peter J.; Brooks, Robert A.; and Banach, Terrance R., 4,449,411, Cl. 73-643.000.
Baney, Ronald H., to Dow Corning Corporation. Alumina-containing organosilicon resins. 4,450,255, Cl. 524-430.000.
Bar, Alfredo, to Necchi Societa per Azioni. Muffler for compressor for refrigerating apparatuses. 4,449,610, Cl. 181-243.000.
Barber, Leonard B., Jr.: *See—*
Taylor, James C.; and Barber, Leonard B., Jr., 4,449,927, Cl. 433-38.000.
Barclay, Brian: *See—*
Cortese, Richard; Barclay, Brian; and Theeuwes, Felix, 4,449,983, Cl. 604-892.000.
Baribeau, Gary A., to Minnesota Mining and Manufacturing Company. Drop wire connector. 4,449,777, Cl. 339-103.00R.
Barishpolsky, Boris M.; and Filstein, Eugene L. Lane change guidance system. 4,450,430, Cl. 340-904.000.
Barman, Erik: *See—*
Brooks, Robert A.; Banach, Terrance R.; Barman, Erik; and Livia, Michael R., 4,449,408, Cl. 73-643.000.
Barnes-Hind/Hydrocurve, Inc.: *See—*
Koeniger, Erich A., 4,449,257, Cl. 3-13.000.
Barnett, Loren A. Protective cover for keyboard machines. 4,449,763, Cl. 312-208.000.
Barny, Jean-Jacques; and Capdeboscq, Bernard, to S.A. Martin. Retractable propulsion apparatus for cardboard box printing machine. 4,449,450, Cl. 101-232.000.
Baron, Michel; and Larrat, Philippe, to Societe d'Utilisation Scientifique et Industrielle du Froid Usifroid. Freeze-drying apparatus. 4,449,305, Cl. 34-92.000.
Barrieau, Paul B., to Stanley Works, The. Display and storage container for multiple tool parts and the like. 4,449,629, Cl. 206-45.190.
Barry, James D.; and Denney, Joseph M., to Hughes Aircraft Company. Floating disc photoconductive film reader. 4,450,489, Cl. 358-348.000.
Bartelmuss, Heinrich. Connecting arrangement for support members cooperating with a liquid permeable web. 4,449,565, Cl. 162-352.000.
Barth, Gerald D., to Illinois Tool Works Inc. Fastener for attaching articles to a penetrable surface. 4,449,873, Cl. 411-341.000.
Bartlett, Allen J.: *See—*
Peterson, John F.; and Bartlett, Allen J., 4,449,373, Cl. 62-55.500.
Bartoszek-Loza, Rosemary: *See—*
Eskamani, Abolghassem; Dernar, Helen D.; and Bartoszek-Loza, Rosemary, 4,450,059, Cl. 204-158.00R.
Barzantny, Joachim; Beske, Joachim; Hans, Rainer; and Lauhoff, Theodor, to Siemens Interatom, Intl. Atomreaktorbau GmbH. Device for controlling a liquid metal flow in a tube. 4,449,890, Cl. 417-50.000.
BASF Aktiengesellschaft: *See—*
Graf, Fritz; and Hupfer, Leopold, 4,450,277, Cl. 548-346.000.
Grasser, Fritz, 4,450,273, Cl. 546-37.000.
Hertel, Otto; Linhart, Friedrich; and Scharf, Emil, 4,450,045, Cl. 162-164.300.
Hirsch, Guenter; and Ley, Gregor, 4,450,013, Cl. 106-308.00N.
Schmidts, Kurt; Schuett, Walter; Zeysolff, Edmond; and Saumer, Wilhelm, 4,449,914, Cl. 425-556.000.
Streit, Werner; Lorenz, Klaus; and Leppert, Norbert, 4,450,083, Cl. 252-8.600.
BASF Wyandotte Corporation: *See—*
Kaneko, Thomas M.; Dutton, Daniel R.; and Kim, Bongsub, 4,450,001, Cl. 71-118.000.
Schmolka, Irving R., 4,450,091, Cl. 252-174.210.
Wilson, Joe C.; and Hirozawa, Stanley T., 4,450,088, Cl. 252-75.000.
Basic Machinery Co., Inc.: *See—*
Kenworthy, Samuel P., 4,449,909, Cl. 425-296.000.
Baskwell, John A.; and Larrive, Christopher, to Pirelli General Public Limited Company. High voltage, gas-filled electric cable with spacers between conductor and sheath. 4,450,317, Cl. 174-27.000.
Basov, Emma; and Grois, Igor, to TRW Inc. Hybrid optical/electrical connector. 4,449,784, Cl. 350-96.210.
Batra, Tarsaim L.; and Bowden, Scott, to American Microsystems, Incorporated. Mask diffusion process for forming Zener diode or complementary field effect transistors. 4,450,021, Cl. 29-571.000.
Battelle Memorial Institute: *See—*
Courvoisier, Guy; and Arieh, Simon, 4,450,347, Cl. 219-549.000.
Bauer, Helmut: *See—*
Krob, Erwin; and Bauer, Helmut, 4,449,729, Cl. 280-605.000.
Bauer, Kurt: *See—*
Morawietz, Hans-Joachim; Hoffman, Erich; Hanauer, Johann; and Bauer, Kurt, 4,450,116, Cl. 260-502.50E.
Baum, Marcel, to Dragerwerk A.G. Positioning device for use with a tracheal tube which is insertable into a person's trachea for respiration purposes. 4,449,522, Cl. 128-200.260.
Baum, Walter; Still, Michael; and Becker, Erich, to Kabel- und Metallwerke. Heat-producing elements with heat pipes. 4,449,576, Cl. 165-104.330.
Baxter Travenol Laboratories, Inc.: *See—*
Kamen, Dean L., 4,449,976, Cl. 604-254.000.
Bayer Aktiengesellschaft: *See—*
Forster, Heinz; and Priesnitz, Uwe, 4,450,308, Cl. 568-637.000.
Idel, Karsten; Freitag, Dieter; and Merten, Josef, 4,450,266, Cl. 524-265.000.
Messer, Dieter; Wilhelm, Volker; Endres, Robert; and Heine, Heinrich, 4,450,012, Cl. 106-300.000.
Preiss, Michael; Gau, Wolfgang; and Behre, Horst, 4,450,297, Cl. 568-424.000.
Schmidt, Manfred; Wank, Joachim; Reese, Eckart; Freitag, Dieter; Wangermann, Klaus; and Cohnen, Wolfgang, 4,450,249, Cl. 524-132.000.
Bayer, Peter. Process for the preparation of dentures. 4,449,936, Cl. 433-214.000.
Bays, David E.; and Hayes, Roger, to Glaxo Group Limited. Pharmaceutical compositions containing compounds having action on histamine receptors. 4,450,168, Cl. 424-267.000.
Beath, Robert W.; and McDonald, John R., to McDonald Elevator. Hydraulic ram safety device with circular brake. 4,449,615, Cl. 188-67.000.
Beauchamp, Gerson E.: *See—*
Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., 4,450,203, Cl. 428-514.000.
Beaudoin, Normand, to Compagnie du Moteur Energitique C.M.E. Inc. Internal combustion engine. 4,449,494, Cl. 123-52.00A.
Beck, Ernst; Lenard, Peter; and Pokorny, Erich, to Vollmer Werke Maschinenfabrik GmbH. Machine for machining circular saw blades. 4,449,427, Cl. 76-77.000.
Beck, Jeffrey L., to Conoco Inc. Vortex injection method and apparatus. 4,449,862, Cl. 406-93.000.

Beck, Martin H.: *See—*
Krishnakumar, Suppayan M.; Harry, Leuan L.; and Beck, Martin H., 4,449,913, Cl. 425-548.000.
Becker Autoradiowerk GmbH: *See—*
Rohrich, Manfred; and Brinkhaus, Stefan, 4,450,588, Cl. 455-192.000.
Becker, Erich: *See—*
Baum, Walter; Still, Michael; and Becker, Erich, 4,449,576, Cl. 165-104.330.
Becker, Kunibert; Elsner, Burckhard; and Kirchbrucher, Rudiger, to Gewerkschaft Eisenhutte Westfalia. Mine roof supports. 4,449,860, Cl. 405-293.000.
Beckman Instruments, Inc.: *See—*
Harman, John N., III, 4,450,064, Cl. 204-412.000.
Piramoon, Alireza, 4,449,966, Cl. 494-20.000.
Strain, David H., 4,449,965, Cl. 494-16.000.
Beckman, John B.; and Blickstein, Martin J., to Abet Group, The. Apparatus and method for piezoelectric pumping. 4,449,893, Cl. 417-322.000.
Beckstead, Leo W.: *See—*
Laferty, John M.; Queneau, Paul B.; and Beckstead, Leo W., 4,450,144, Cl. 423-54.000.
Becton Dickinson and Company: *See—*
Burns, James A.; and Nugent, Edward L., 4,449,529, Cl. 128-314.000.
Beecham Group Limited: *See—*
Beeley, Lee J.; and Newsome, Peter M., 4,450,170, Cl. 424-273.00R.
Beeley, Lee J.; and Newsome, Peter M., to Beecham Group Limited. Treatment of diarrhoea with 2-aminoimidazoline derivatives. 4,450,170, Cl. 424-273.00R.
Behmel, Lukas K.; and Zuckert, Bertram, to Vianova Kunstharz, A.G. Process for producing phosphoric acid group containing polyester resins and their use as paint binders. 4,450,257, Cl. 525-437.000.
Behre, Horst: *See—*
Preiss, Michael; Gau, Wolfgang; and Behre, Horst, 4,450,297, Cl. 568-424.000.
Beitel, Howard V.: *See—*
Wohlford, William P.; and Beitel, Howard V., 4,449,758, Cl. 305-12.000.
Bela, Batyi; Geza, Gulyas; Zoltan, Bozso; Istvan, Csakany; and Janos, Bartucz, to Gepgyar, Lang. Process and apparatus, mainly for burning agricultural plant refuse. 4,449,460, Cl. 110-214.000.
Belden, Ralph A. Windmill. 4,449,889, Cl. 416-16.000.
Bell, Howard T., to Ferranti plc. Signal switching and combining systems for diversity radio receiving systems. 4,450,585, Cl. 455-135.000.
Bell Telephone Laboratories, Incorporated: *See—*
Copeland, John A., 4,450,565, Cl. 372-32.000.
Bellay, Jeffrey D.: *See—*
McDonough, Kevin C.; Mayn, John W.; Swoboda, Gary L.; and Bellay, Jeffrey D., 4,450,521, Cl. 364-200.000.
Bendel, Lee P.; and Sardelis, Timothy, to Ethicon, Inc. Hemostatic clips and method of manufacture. 4,449,530, Cl. 128-325.000.
Bendiberica S.A.: *See—*
Soler Bruguera, Raimon, 4,449,419, Cl. 74-493.000.
Bendix Corporation, The: *See—*
Antonazzi, Frank J., 4,449,409, Cl. 73-724.000.
Luscomb, Douglas A., 4,449,503, Cl. 123-447.000.
Mayer, Endre A., 4,449,507, Cl. 123-467.000.
Benedyk, Joseph C.; Amos, Homer C.; Scheie, Carl E.; and McGlone, William R., to Brunswick Corporation. Method of playing a cestaball game with a scoop device. 4,449,712, Cl. 273-326.000.
Benlolo, Leon; and Tolf, Carl O., Jr. Fire extinguisher mounting unit. 4,449,588, Cl. 169-48.000.
Benoit, William R. Lighter than air wind energy conversion system utilizing a rotating envelope. 4,450,364, Cl. 290-55.000.
Benraad, Coenraad J. B. M.: *See—*
Ettema, Ernst; Benraad, Coenraad J. B. M.; and Roskam, Klaas, 4,450,132, Cl. 264-328.800.
Bentley, Arthur P. Pump with rotary sonic pressure wave generator. 4,449,892, Cl. 417-240.000.
Bepko, Stephen J., to Westinghouse Electric Corp. Rapidly turnable laser system. 4,450,563, Cl. 372-23.000.
Bequette, Noah L. Apparatus and method for bridge deck construction. 4,450,121, Cl. 264-31.000.
Berecz, Imre; Schultz, Dennis; and Daniel, Leroy O., to Microdot Inc. Semi-automatic insert tool. 4,449,283, Cl. 29-566.100.
Berg, Bengt O., to Telefonaktiebolaget L M Ericsson. Balanced amplifier output stage. 4,450,412, Cl. 330-255.000.
Berger, Kerry R.; Kaspersma, Jelle H.; Luybli, Joseph R.; Millward, Barry; and Shay, Robert H., to Air Products and Chemicals, Inc. Gaseous decarburizing mixtures of hydrogen, carbon dioxide and a carrier gas. 4,450,017, Cl. 148-16.000.
Berger, Pierre L. Simulator for wind surfing. 4,449,940, Cl. 434-66.000.
Bergeron, Willard, to Equifab, Inc. Filter module for dust collector system. 4,449,993, Cl. 55-379.000.
Berkenblit, Melvin: *See—*
Reisman, Arnold; Berkenblit, Melvin; and Merz, Charles J., III, 4,449,580, Cl. 165-104.340.
Beske, Joachim: *See—*
Barzantny, Joachim; Beske, Joachim; Hans, Rainer; and Lauhoff, Theodor, 4,449,890, Cl. 417-50.000.
Bespak Industries Limited: *See—*
Reed, Norman L.; and Parkin, Trevor D., 4,449,667, Cl. 222-153.000.
Bethlehem Steel Corporation: *See—*
Austen, Alfred R.; and Humphries, Darral V., 4,449,904, Cl. 425-97.000.
Rice, David A.; Greenbaum, Robert R.; and Conarty, Thomas J., Jr., 4,450,046, Cl. 201-20.000.
Betron, Frank A.; Davis, James W.; Kockler, Barry C.; and Spears, Lonnie K., to Mead Corporation, The. Platen cover. 4,449,811, Cl. 355-3.0SH.
Bevan, David R.; and Layman, Jeremy, to Downs Surgical Limited. Venting device for stoma bags. 4,449,970, Cl. 604-333.000.
Bevington, Richard C.: *See—*
Kim, Han J.; and Bevington, Richard C., 4,450,204, Cl. 428-552.000.
Beyers, Billy W., Jr., to RCA Corporation. Tuning arrangement for providing relatively uniform automatic fine tuning sensitivity. 4,450,587, Cl. 455-182.000.
BHS-Dr. Ing. Hofler Maschinenbau GmbH: *See—*
Maier, Kurt, 4,449,869, Cl. 409-11.000.
Bickler, Thomas C.: *See—*
Zebker, Howard A.; Held, Daniel N.; Goldstein, Richard M.; and Bickler, Thomas C., 4,450,447, Cl. 343-17.700.
Bignell, Allan M., to Westinghouse Canada. Ultra-high-speed relay. 4,450,497, Cl. 361-82.000.
Binney & Smith Inc.: *See—*
Underwood, Ronald E., 4,449,304, Cl. 33-437.000.
Bio/Optical Sensor Partners, Ltd.: *See—*
Fraden, Jacob, 4,450,351, Cl. 250-221.000.
Biostar Medical Products, Inc.: *See—*
Ozkan, Adil N., 4,450,231, Cl. 435-7.000.
Biotest-Serum-Institut GmbH: *See—*
Walker, Wolfram H.; Ganshirt, Karl H.; and Schleusaner, Hans, 4,450,078, Cl. 210-315.000.
Bird, Gary M.: *See—*
Palomar, Juan M.; and Bird, Gary M., 4,449,520, Cl. 128-79.000.
Bismarck, Otto H., to RCA Corporation. Speed up circuit. 4,450,371, Cl. 307-475.000.
Black, Brent C.; Bradley, Bruce D.; and Haymore, Ralph B., to Envirotech Corporation. Granular media filter. 4,450,077, Cl. 210-275.000.
Black & Decker Inc.: *See—*
Sauerwein, William D.; Sides, Daniel H.; Weber, Steven A.; and Horney, James R., 4,449,329, Cl. 51-168.000.
Smith, Somers H., III, 4,449,660, Cl. 227-8.000.
Blackwell, Henry W., to Dresser Industries, Inc. Releasable tubing string connector. 4,449,736, Cl. 285-3.000.
Blatt, Leland F. Toggle action jaw-type gripper. 4,449,745, Cl. 294-88.000.
Blaupunkt-Werke GmbH: *See—*
Eilers, Norbert; and Bragas, Peter, 4,450,589, Cl. 455-205.000.
Blazek, William S.; and Piwonka, Thomas S., to TRW Inc. Method and apparatus for use in casting an article. 4,449,567, Cl. 164-137.000.
Bleuenstein, Julius M.: *See—*
Filipovitch, Anthony J.; and Bleuenstein, Julius M., 4,449,566, Cl. 164-5.000.
Bleuer, Keith T. Keyboard with elongate keys. 4,449,839, Cl. 400-485.000.
Blickstein, Martin J.: *See—*
Beckman, John B.; and Blickstein, Martin J., 4,449,893, Cl. 417-322.000.
Bloom Engineering Company, Inc.: *See—*
Finke, Harry P., 4,449,922, Cl. 432-64.000.
Bloothoofd, William, to Hercules Incorporated. Method and apparatus for producing a printing plate. 4,450,226, Cl. 430-300.000.
Blumenthal, Martin. Handle operable vehicles. 4,449,322, Cl. 46-202.000.
Blystone, Wayne G.; and Lemmon, Gerald W., to Chromalloy American Corporation. Heat exchanger fin element with dog-bone type pattern of corrugations. 4,449,581, Cl. 165-151.000.
Boaz, Premakaran T., to Ford Motor Company. Electric heater plate. 4,450,346, Cl. 219-522.000.
Bobb, Lloyd C., to United States of America, Navy. Triaxial optical fiber system for measuring magnetic fields. 4,450,406, Cl. 324-247.000.
Boeing Company, The: *See—*
Gratzer, Louis B.; and Gillette, Walter B., 4,449,680, Cl. 244-130.000.
Gratzer, Louis B.; and Gillette, Walter B., 4,449,681, Cl. 244-130.000.
Gratzer, Louis B.; and Gillette, Walter B., 4,449,682, Cl. 244-130.000.
Gratzer, Louis B.; and Gillette, Walter B., 4,449,683, Cl. 244-130.000.
Hapke, Donald W., 4,449,678, Cl. 244-12.500.
Howard, Bruce S., 4,450,405, Cl. 324-234.000.
Yankovoy, Alexander; and Ozer, Theodore, 4,449,865, Cl. 408-1.00R.
Bohme, Rolf; Rinderle, Heinz; and Sieber, Jurgen, to Telefunken Electronic GmbH. Thermoelectric level measuring device. 4,449,404, Cl. 73-295.000.
Boleda, Alberto; and Thomas, Terence N., to Northern Telecom Limited. Digital signal subscriber loop and interface circuit. 4,450,556, Cl. 370-58.000.
Bomar, Daryld W.: *See—*
Klepper, Robert; and Bomar, Daryld W., 4,449,896, Cl. 417-399.000.
BoMed Medical Mfg. Ltd.: *See—*
Sramek, Bohumir, 4,450,527, Cl. 364-415.000.

Bond, George L.; and Satya, Akella V. S., to International Business Machines Corporation. Memory system with selective assignment of spare locations. 4,450,559, Cl. 371-10.000.
Bonerb, Timothy C.; and Bonerb, Vincent C. Bin for storing and discharging free-flowing granular material. 4,449,646, Cl. 222-95.000.
Bonerb, Vincent C.: *See—*
Bonerb, Timothy C.; and Bonerb, Vincent C., 4,449,646, Cl. 222-95.000.
Borchers, Hans-Dieter, administrator: *See—*
Roder, Eberhard, deceased; Borchers, Hans-Dieter, administrator; and Dusing, Wolfgang, 4,449,651, Cl. 222-455.000.
Borg-Warner Chemicals, Inc.: *See—*
Hechenbleikner, Ingenuin; Enlow, William P.; and Lankin, David C., 4,450,113, Cl. 260-439.00R.
Borgman, Robert J.: *See—*
Erhardt, Paul W.; and Borgman, Robert J., 4,450,173, Cl. 424-309.000.
Bories, David G.: *See—*
McGuire, John; and Bories, David G., 4,449,941, Cl. 434-153.000.
Bosack, Donald J.: *See—*
Lambert, Frederick J.; Bosack, Donald J.; and Johansen, David K., 4,450,401, Cl. 320-22.000.
Bose, Bimal K., to General Electric Company. Microprocessor-based efficiency optimization control for an induction motor drive system. 4,450,398, Cl. 318-803.000.
Bouchard, Andre C., to GTE Products Corporation. Method of making photoflash lamp to prevent shred migration into tip portion of lamp envelope during sealing thereof. 4,449,950, Cl. 445-28.000.
Bourgeois, Claude: *See—*
Hermann, Jean; and Bourgeois, Claude, 4,450,378, Cl. 310-361.000.
Bowden, Scott: *See—*
Batra, Tarsaim L.; and Bowden, Scott, 4,450,021, Cl. 29-571.000.
Bowen, Robert F.; and Martel, Thomas J., to Raytheon Company. Microwave pizza maker. 4,450,334, Cl. 219-10.55E.
Boyadjieff, George I., to Varco International, Inc. Drilling of wells with top drive unit. 4,449,596, Cl. 175-85.000.
Brabant, Henri. Hanging device for curtain straps out of resilient plastic material for closing building openings. 4,449,270, Cl. 16-87.40R.
Brader, Walter H., Jr.: *See—*
Sanderson, John R.; Watts, Lewis W., Jr.; and Brader, Walter H., Jr., 4,450,290, Cl. 560-246.000.
Bradley, Bruce D.: *See—*
Black, Brent C.; Bradley, Bruce D.; and Haymore, Ralph B., 4,450,077, Cl. 210-275.000.
Bragas, Peter: *See—*
Eilers, Norbert; and Bragas, Peter, 4,450,589, Cl. 455-205.000.
Brammall, Inc.: *See—*
Gillette, Robert H.; Brammall, Terrence N.; Shelton, Kent; and Cramer, Chris, 4,449,328, Cl. 51-73.00R.
Brammall, Terrence N.: *See—*
Gillette, Robert H.; Brammall, Terrence N.; Shelton, Kent; and Cramer, Chris, 4,449,328, Cl. 51-73.00R.
Brandenstein, Manfred; and Hans, Rudiger, to SKF Kugellagerfabriken GmbH. Fastening means for axially securing machine elements and method therefor. 4,449,841, Cl. 403-24.000.
Branduzzi, Paolo: *See—*
Vitobello, Vincenza; Branduzzi, Paolo; and Cimini, Nadia, 4,450,238, Cl. 435-256.000.
Brannon, Judeth H.; and Schorfheide, James J., to Exxon Research and Engineering Co. Removal of sulfur from process streams. 4,449,991, Cl. 55-73.000.
Brasfiel, Bernard M., to Surgikos, Inc. Latex glove method and apparatus for making the same. 4,449,911, Cl. 425-374.000.
Brault, Richard A. Flotation device. 4,449,947, Cl. 441-81.000.
Briccetti, Mario F., to Carrier Corporation. Method and apparatus for controlling the operation of an indoor fan associated with an air conditioning unit. 4,449,375, Cl. 62-89.000.
Bridges, Jack E.; and Taflove, Allen, to IIT Research Institute. Apparatus and method for in situ controlled heat processing of hydrocarbonaceous formations. 4,449,585, Cl. 166-248.000.
Bridgestone Tire Company Limited: *See—*
Tansei, Hikaru; and Takigawa, Hiroyoshi, 4,449,560, Cl. 152-209.00R.
Bridgwater, Terry J. P.: *See—*
Askew, Herbert F.; Harrington, Colin J.; and Bridgwater, Terry J. P., 4,450,087, Cl. 252-73.000.
Briese, Wolfgang, to International Standard Electric Corporation. Integrated circuit with piezoelectric resonator mounted on blocks comprising capacitors. 4,450,377, Cl. 310-348.000.
Bright, Gary R., to Standard Oil Company (Indiana). Apparatus for measuring the relative position of a downhole tool in a bore hole. 4,450,539, Cl. 367-35.000.
Brill, Klaus; and Grothe, Wolfgang, to Robert Bosch GmbH. Multiple-layer heat barrier. 4,450,201, Cl. 428-336.000.
Brinkhaus, Stefan: *See—*
Rohrich, Manfred; and Brinkhaus, Stefan, 4,450,588, Cl. 455-192.000.
Bristol, James A.; and Puchalski, Chester, to Schering Corporation. Imidazo[1,2-A]pyridines and use. 4,450,164, Cl. 424-256.000.
Brocklehurst, John R.: *See—*
Drake, Cyril F.; and Brocklehurst, John R., 4,449,981, Cl. 604-890.000.
Brockman, Arthur M.: *See—*
Vernor, Oliver W.; and Brockman, Arthur M., 4,449,545, Cl. 137-68.00R.
Brodribb, Anthony G.: *See—*
Brodribb, Marcus T.; Brodribb, Anthony G.; and Baillie, David H., 4,449,317, Cl. 43-15.000.
Brodribb, Marcus T.; Brodribb, Anthony G.; and Baillie, David H. Fishing apparatus. 4,449,317, Cl. 43-15.000.
Brookes, Malcolm J.: *See—*
Burbo, James H.; Hartman, Louis P.; Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 4,449,787, Cl. 350-538.000.
Brooks, Robert A.; Banach, Terrance R.; Barman, Erik; and Livia, Michael R., to Magnetic Analysis Corporation. EMAT Test apparatus having retractable probe. 4,449,408, Cl. 73-643.000.
Brooks, Robert A.: *See—*
Suhr, Peter J.; Brooks, Robert A.; and Banach, Terrance R., 4,449,411, Cl. 73-643.000.
Brothers, Lance E.: *See—*
Childs, Jerry D.; Brothers, Lance E.; and Taylor, Mary J., 4,450,009, Cl. 106-76.000.
Brown, Douglas E. Bean harvest apparatus. 4,449,352, Cl. 56-13.100.
Brown, George L.; and Lee, Lindell E., Jr., to Lee, Lindell E., Jr. Agricultural clean-out drag. 4,449,591, Cl. 172-195.000.
Brown Group, Inc.: *See—*
Doerer, Daniel M., 4,450,130, Cl. 264-154.000.
Brown, Leroy L.: *See—*
Kenyon, Stephen C.; Simkins, Laura J.; Brown, Leroy L.; and Sebastian, Richard, 4,450,531, Cl. 364-604.000.
Brown, Sammy K.: *See—*
Solimeno, Duane; Brown, Sammy K.; Koeppen, Peter L.; and Rogers, Gerald, 4,450,534, Cl. 364-900.000.
Brown, William C., Jr.: *See—*
Kliger, Isaac E.; Brown, William C., Jr.; and Goldstein, David S., 4,450,410, Cl. 328-155.000.
Broze, Guy; and Laitem, Leopold, to Colgate-Palmolive Company. Stabilized bleaching and laundering composition. 4,450,089, Cl. 252-95.000.
Bruce, Gary D.: *See—*
Jageler, Alfred H.; Bruce, Gary D.; and Mount, Houston B., II, 4,449,593, Cl. 175-58.000.
Brunberg, Ernst-Ake: *See—*
Alfven, Hannes; Herlofson, Nicolai; Babic, Miroslav; and Brunberg, Ernst-Ake, 4,449,577, Cl. 165-104.120.
Brunelle, Rene J., to UOP Inc. Seat back mounting system. 4,449,875, Cl. 410-80.000.
Brunosson, Bengt B., to AB Bahco Verktyg. Screw wrench. 4,449,431, Cl. 81-165.000.
Brunswick Corporation: *See—*
Benedyk, Joseph C.; Amos, Homer C.; Scheie, Carl E.; and McGlone, William R., 4,449,712, Cl. 273-326.000.
Bruzzone, Mario: *See—*
Roggero, Arnaldo; Bruzzone, Mario; and Gandini, Alberto, 4,450,259, Cl. 526-173.000.
Bubb, Charles E.; and Mauch, Fred E., to Parkersburg Tank, Division of Maloney Crawford Corporation. Side-wall discharge system. 4,449,339, Cl. 52-195.000.
Bucher-Guyer AG: *See—*
Zullig, Heinz, 4,449,905, Cl. 425-117.000.
Buchholz, Rainer: *See—*
Zodrow, Rodolf; and Buchholz, Rainer, 4,450,040, Cl. 156-567.000.
Buckinx, Pol, to GTE Products Corporation. Surface acoustic wave filter. 4,450,420, Cl. 333-194.000.
Buckley, Michael E.; Tschirn, Thomas N.; McClure, Donald R.; and Wieland, Michael S., to United States of America, Navy. Cartridge case closure plug. 4,449,458, Cl. 102-430.000.
Budinger, A. Bowman: *See—*
Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, 4,450,380, Cl. 313-485.000.
Budzol, Melvin: *See—*
Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., 4,449,674, Cl. 241-245.000.
Bue, Richard C.: *See—*
Wilson, Kermit H.; and Bue, Richard C., 4,449,263, Cl. 5-133.000.
Buechler, Lester W., to Ohio Electronic Engravers, Inc. Engraving apparatus and method. 4,450,486, Cl. 358-299.000.
buhl Industries, Inc.: *See—*
De Longis, Vincent E.; and Kyhl, Henry, 4,449,800, Cl. 353-119.000.
Buhler-Miag GmbH: *See—*
Ullner, Klaus, 4,449,863, Cl. 406-182.000.
Buhrer, Carl F., to GTE Laboratories Incorporated. Inductive ballasting of direct current gas discharges. 4,450,385, Cl. 315-205.000.
Bulgier, Lawrence W., to Combustion Engineering, Inc. Method and apparatus for measuring elapsed time between an initiating event and a dependent event. 4,449,830, Cl. 368-119.000.
Buljan, Sergej-Tomislav: *See—*
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,449,989, Cl. 51-295.000.
Burbo, James H.; Hartman, Louis P.; Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., to International Telephone and Telegraph Corporation. Night vision imaging system adapted for helmet mounting. 4,449,787, Cl. 350-538.000.
Burkard, Andrew M.: *See—*
Taglianetti, Philip C.; and Burkard, Andrew M., 4,449,341, Cl. 52-235.000.
Burkhalter, John F.; Childs, Jerry D.; and Sutton, David L., to Halliburton Company. Well cementing process and gasified cements useful therein. 4,450,010, Cl. 106-87.000.

Burnett, Betty L. C., administrator: *See—*
Burnett, C. H., deceased; and Burnett, Betty L. C., administrator, 4,450,073, Cl. 209-564.000.

Burnett, C. H., deceased; and by Burnett, Betty L. C., administrator. Automatic weight grading and sorting apparatus. 4,450,073, Cl. 209-564.000.

Burnham, Robert D.: *See—*
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,450,567, Cl. 372-50.000.

Burns, James A.; and Nugent, Edward L., to Becton Dickinson and Company. Automatic retractable lancet assembly. 4,449,529, Cl. 128-314.000.

Busak & Luyken: *See—*
Muller, Heinz K., 4,449,718, Cl. 277-170.000.

Buschbom, Floyd E.; and Hansen, Glen D., to Veda, Inc. Vehicle frame assembly. 4,449,606, Cl. 180-297.000.

Busse, Richard O. Universal removable insulation. 4,449,554, Cl. 138-149.000.

Bussiere, Ronald L.; and Smith, Robert J., to Solid State Systems, Corporation. Light generating apparatus for curing dental restorative composites. 4,450,139, Cl. 422-186.300.

Buzynski, John E.: *See—*
Stewart, Robert E.; Buzynski, John E.; and Giggi, Robert, 4,450,572, Cl. 375-87.000.

Buzzi, Gunther, to Hans Grohe GmbH & Co. Pressure hose. 4,449,740, Cl. 285-149.000.

Buzzichelli, Lilian; and Roy, Kleber, to Enterprises Buzzichelli. Hoisting assembly with a boom and a counterweight having adjustable respective positions. 4,449,634, Cl. 212-196.000.

Byer, Robert L.: *See—*
Murray, Edward R.; van der Laan, Jan E.; Rosengreen, Arne; and Byer, Robert L., 4,450,356, Cl. 250-339.000.

Byrd, Carlisle O., Jr.: *See—*
Hounsel, Mack A.; and Byrd, Carlisle O., Jr., 4,449,345, Cl. 52-506.000.

Byszewski, Wojciech W.: *See—*
Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, 4,450,380, Cl. 313-485.000.

Bzdula, Joseph A., to Carrier Corporation. Probe for measuring electrical conductance. 4,449,396, Cl. 73-61.10R.

Cabot Corporation: *See—*
Herchenroeder, Robert B.; and Heath, Boyd A., 4,450,007, Cl. 75-10.00C.

Cafarelli, Ralph J. Stabilization of molded parts. 4,450,133, Cl. 264-336.000.

Caldwell, John W., to Pennwalt Corporation. Conveyor flight configuration. 4,449,967, Cl. 494-54.000.

California Institute of Technology: *See—*
Wang, Taylor G.; Elleman, Daniel D.; and Kendall, James M., Jr., 4,449,901, Cl. 425-6.000.

Calloway, Danny L. Board game simulating business principles involving petroleum commodities. 4,449,711, Cl. 273-256.000.

Cam Gears Limited: *See—*
Adams, Frederick J., 4,449,601, Cl. 180-148.000.

Cameron, Wallace C., to Copper Alloys Corporation. Reduction mill. 4,449,673, Cl. 241-186.00R.

Campbell, Sterrett P. Dough pump. 4,449,908, Cl. 425-204.000.

Canon Kabushiki Kaisha: *See—*
Furuichi, Katsushi; and Takahata, Naomi, 4,449,812, Cl. 355-14.0SH.
Kitamura, Takashi; Watanabe, Asao; Nakano, Takashi; Masaki, Katsumi; Hirayama, Kazuhiro; Sato, Yasushi; and Tokiwa, Taisuke, 4,450,453, Cl. 346-108.000.
Miyachi, Takeshi; Tsuda, Hisanori; Hara, Toshitami; and Kasugayama, Yukio, 4,450,457, Cl. 346-140.00R.
Nakamura, Zenzo, 4,449,802, Cl. 354-416.000.
Sakurada, Nobuaki; Kawamura, Masaharu; Ohtaki, Shohei; Nakamoto, Soichi; and Shinoda, Nobuhiko, 4,449,805, Cl. 354-105.000.
Shimizu, Isamu; Ogawa, Kyosuke; and Inoue, Eiichi, 4,450,185, Cl. 427-39.000.
Sugitani, Hiroshi; Ozawa, Masakazu; Matsuda, Hiroto; Ikeda, Masami; and Matsumoto, Haruyuki, 4,450,455, Cl. 346-140.0PQ.
Watanabe, Yoshitaka; and Kazumi, Jiro, 4,449,804, Cl. 354-418.000.
Yamada, Masanori; and Hiramatsu, Akira, 4,449,803, Cl. 354-416.000.

Canron Corp.: *See—*
Cicin-Sain, Ivo, 4,449,459, Cl. 104-12.000.

Capdeboscq, Bernard: *See—*
Barny, Jean-Jacques; and Capdeboscq, Bernard, 4,449,450, Cl. 101-232.000.

Cappis, Lona P. Belt supported backpack. 4,449,654, Cl. 224-148.000.

Carden, John C., to Quadrant Drive BV. Motion transmitting devices. 4,449,425, Cl. 74-804.000.

Carl Schenck AG: *See—*
Toerner, Ludger; Garvens, Dieter; Hager, Gunter; and Rettinger, Anton, 4,449,742, Cl. 285-236.000.

Carley, James A. Self centering underground mine lamp. 4,450,508, Cl. 362-105.000.

Carlisle, Robert W.: *See—*
Adair, Noel J.; Carlisle, Robert W.; Stubbs, Michael E.; and Rooney, John J., 4,450,245, Cl. 502-211.000.

Carmer, Richard V.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,449,290, Cl. 29-596.000.

Carmo, Robert A.; and Dietz, Ernest W., to Pacific Electricord Company. Electrical connector having opposed locking ramp members. 4,449,776, Cl. 339-91.00R.

Carr, David W. Bus bar. 4,449,771, Cl. 339-19.000.

Carrier Corporation: *See—*
Briccetti, Mario F., 4,449,375, Cl. 62-89.000.
Bzdula, Joseph A., 4,449,396, Cl. 73-61.10R.

Carriere, Donald L., to Ford Motor Company. Traction drive automatic transmission for gas turbine engine driveline. 4,449,423, Cl. 74-688.000.

Carrillo, Ernest V. Screed board apparatus. 4,449,845, Cl. 404-118.000.

Carroll, Michael B.: *See—*
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,450,067, Cl. 208-86.000.

Cartier, Roger J., to Whirlpool Corporation. Combination lid and excursion switch and alarm for automatic washers. 4,449,383, Cl. 68-12.00R.

Casals-Stenzel, Jorge: *See—*
Nickisch, Klaus; Laurent, Henry; Wiechert, Rudolf; and Casals-Stenzel, Jorge, 4,450,107, Cl. 424-238.000.

Cash, Leonard D., to Fiber Controls Corporaton. Chute feed adjustment for card evenness. 4,449,272, Cl. 19-105.000.

Castleman, B. Wayne; Donehoo, Robert F.; Oswald, Rudolph G.; Reed, Kenneth L.; and Shipley, George H., to Honeywell Inc. Pressure sensor and leak detector. 4,450,409, Cl. 324-460.000.

Catallo, Frank. Combined oven and fume incinerator and method of operating same. 4,449,921, Cl. 432-8.000.

Caterpiller Tractor Co.: *See—*
Balitch, Paul, 4,449,357, Cl. 59-30.000.

Cavanagh, Peter R., to PUMA-Sportschuhfabriken Rudolf Dassler KG. Running shoe sole construction. 4,449,306, Cl. 36-30.00R.

Cawood, Charles D. Urine collection method. 4,449,971, Cl. 604-54.000.

CCL Industries Inc.: *See—*
Suk, Albert, 4,450,253, Cl. 524-378.000.

Celanese Corporation: *See—*
McMillan, William P.; Hobbs, Charles C., Jr.; Gerberich, H. Robert; and Junker, Michael L., 4,450,301, Cl. 568-473.000.
Ochiai, Shinya, 4,450,074, Cl. 210-96.100.
Stafford, Gery R., 4,450,055, Cl. 204-78.000.

Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. *Streptomyces albus* subspecies indicus. 4,450,237, Cl. 435-253.000.

Censor Patent- Und Versuchs-Anstalt: *See—*
Sawatzki, Harry, 4,449,650, Cl. 222-309.000.

Central Glass Company, Limited: *See—*
Kondow, Takeshi; Okazaki, Koshi; Katsuhara, Yutaka; and Matsuoka, Kimiaki, 4,450,298, Cl. 568-437.000.

Centre Electronique Horloger S.A.: *See—*
Hermann, Jean; and Bourgeois, Claude, 4,450,378, Cl. 310-361.000.

Centrifugal Piston Expander Inc.: *See—*
Dibrell, Edwin W., 4,449,379, Cl. 62-401.000.

Ceretti, Claudia. Industrial furnace. 4,449,924, Cl. 432-138.000.

Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., to Ethicon, Inc. Non-metallic, bio-compatible hemostatic clips with interlocking latch means. 4,449,531, Cl. 128-325.000.

Cessou, Maurice; and Perez, Lucien, to Institut Francais du Petrole. Antipollution device for recovering fluids lighter than water escaping from an underwater source. 4,449,850, Cl. 405-60.000.

Cetus Corporation: *See—*
Konrad, Michael W.; and Lin, Leo S., 4,450,103, Cl. 260-112.00R.

Chapel Reprographie: *See—*
Archambault, Marcel, 4,449,963, Cl. 493-414.000.

Charm, Richard W.: *See—*
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,450,190, Cl. 427-304.000.

Chatterton, Robert T., to Northwestern University. Method of determining pregnanediol in female urine and test device for use therein. 4,450,239, Cl. 436-510.000.

Chemetals Incorporated: *See—*
Welsh, Jay Y., 4,450,148, Cl. 423-605.000.

Chemische Fabriek Zaltbommel, B.V.: *See—*
van der Mass, Hendrikus J. H., 4,450,295, Cl. 564-294.000.

Chemische Werke Huels Aktiengesellschaft: *See—*
Fischer, Lothar; Hausen, Manfred Z.; and Wember, Kurt, 4,450,300, Cl. 568-462.000.

Chen, Fu-Chuan: *See—*
Yum, Lawrence H.; and Chen, Fu-Chuan, 4,450,418, Cl. 333-128.000.

Cheng, Yu-Chen: *See—*
Su, Tsung-Tsan; and Cheng, Yu-Chen, 4,450,271, Cl. 544-354.000.

Chessin, Hyman; and Knill, Edmund C., to M&T Chemicals Inc. Process for bonding high efficiency chromium electrodeposits. 4,450,050, Cl. 204-41.000.

Chessin, Hyman: *See—*
McMullen, Warren H.; Chessin, Hyman; and Siracusa, Denise, 4,450,052, Cl. 204-51.000.

Chevron Research Company: *See—*
Aoyagi, Edward I., 4,450,278, Cl. 548-376.000.
Wollenberg, Robert H., 4,450,281, Cl. 549-255.000.

Chi, Ching T.; and Lester, J. Harvey, Jr., to Monsanto Company. Decontamination of KA oil refinement waste stream. 4,450,291, Cl. 562-530.000.

Chiao, Wen B.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Preparation of low molecular weight styrene-maleic anhydride copolymers and sulfonated copolymers thereof. 4,450,261, Cl. 526-214.000.

Chicago Bridge & Iron Company: *See—*
Haynie, Timothy J., 4,449,368, Cl. 60-652.000.

Childs, Jerry D.; Brothers, Lance E.; and Taylor, Mary J., to Halliburton Company. Method of preparing a light weight cement composition from sea water. 4,450,009, Cl. 106-76.000.

Childs, Jerry D.: *See—*
Burkhalter, John F.; Childs, Jerry D.; and Sutton, David L., 4,450,010, Cl. 106-87.000.

Chin, Raymond, to Rockwell International Corporation. Multiple-quantum-layer photodetector. 4,450,463, Cl. 357-30.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyar Rt.: *See—*
Soos, Rudolf; Nemes, Jozsef; Vidra, Laszlo; Szelestei, Miklos; Kovacs, Gabor; and Szekeley, Istvan, 4,450,309, Cl. 570-217.000.

Chisso Corporation: *See—*
Sato, Hideo; Goto, Yasuyuki; Saito, Hideo; Sawada, Shinichi; Matsunami, Keiichi; and Hirata, Kohzo, 4,450,094, Cl. 252-299.610.

Chloe Chimie: *See—*
Laroche, Paul; and Pompon, Jean-Bernard, 4,450,189, Cl. 427-236.000.

Cho, Edward, to Polymatic Investment Corp., N.V. Siloxane-containing polymers and contact lenses therefrom. 4,450,264, Cl. 526-279.000.

Cho, Frederick Y.; and Hickernell, Fred S., to Motorola Inc. Oxygen-plasma passivated and low scatter acoustic wave devices. 4,450,374, Cl. 310-313.00B.

Christensen, Byron. Inflatable flowing hole plug. 4,449,584, Cl. 166-187.000.

Christidis, Yani; and Fournex, Robert, to Roussel Uclaf. Derivatives of phenyl aliphatic carboxylic acids, and use thereof in treating gastric and gastro-duodenal ailments. 4,450,292, Cl. 562-463.000.

Christmann, Wolfgang; Lindner, Gerhard; and Lingens, Paul, to Dynamit Nobel Aktiengesellschaft. Production of compacted, large-caliber explosive charges. 4,450,124, Cl. 264-3.00R.

Chromalloy American Corporation: *See—*
Blystone, Wayne G.; and Lemmon, Gerald W., 4,449,581, Cl. 165-151.000.

Chuang, Locus Y.: *See—*
Sienkiewicz, Boleslaw; Kramer, Franklin; Klein, Imrich; Oldershaw, C. G. Peter; and Chuang, Locus Y., 4,449,906, Cl. 425-131.100.

Chugai Ro Kogyo Co., Ltd.: *See—*
Shimosato, Yoshikazu, 4,449,923, Cl. 432-82.000.

Ciba-Geigy Corporation: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,450,000, Cl. 71-105.000.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,449,999, Cl. 71-73.000.

Cicin-Sain, Ivo, to Canron Corp. Pivoting head continuous tamper. 4,449,459, Cl. 104-12.000.

Cimini, Nadia: *See—*
Vitobello, Vincenza; Branduzzi, Paolo; and Cimini, Nadia, 4,450,238, Cl. 435-256.000.

Clairol Incorporated: *See—*
Kinney, James, 4,450,090, Cl. 252-106.000.

Clancy, Steven J.; and Phillips, Robert A., to Westinghouse Electric Corp. Method and system for tracking targets in a pulse doppler radar system. 4,450,446, Cl. 343-7.700.

Clarion Co., Ltd.: *See—*
Okada, Hitoshi; Takai, Kazuki; and Yamaguchi, Katsumi, 4,450,492, Cl. 360-105.000.
Takagi, Satoshi; Watanabe, Toshio; and Ito, Masao, 4,450,491, Cl. 360-96.500.
Watanabe, Tadaaki; and Tanaka, Yoshio, 4,449,955, Cl. 464-78.000.

Clark, Ronald G., to Synergetics, Inc. Mobile computerized tomography unit. 4,449,746, Cl. 296-1.00R.

Clemence, Francois; Hunt, Peter F.; Le Martret, Odile; and Humbert, Daniel, to Roussel Uclaf. N-(4,5-Dihydro-thiazol-2-yl)-3-quinolinecarboxamides having anxiolytic activity. 4,450,166, Cl. 424-258.000.

Clements, Thomas W.: *See—*
Fallon, Merton R.; and Clements, Thomas W., 4,449,412, Cl. 73-738.000.

Coates, Terence J., to Smiths Industries Public Limited Company. Fluid-responsive apparatus. 4,449,414, Cl. 73-861.370.

Coca-Cola Company, The: *See—*
Davis, Charles L.; and Bachman, G. Merle, 4,449,761, Cl. 312-116.000.

Cogliano, Joseph A., to W. R. Grace & Co. Construction barrier board. 4,450,192, Cl. 428-40.000.

Cohnen, Wolfgang: *See—*
Schmidt, Manfred; Wank, Joachim; Reese, Eckart; Freitag, Dieter; Wangermann, Klaus; and Cohnen, Wolfgang, 4,450,249, Cl. 524-132.000.

Colditz, Werner, to Mannesmann Aktiengesellschaft. Apparatus for bunching and severing wire coils. 4,449,435, Cl. 83-167.000.

Cole, Edward F.; and Crombie, Dean H., to United Technologies Corporation. Automatic vent for fuel control. 4,449,359, Cl. 60-39.094.

Coleman, Leonard R.: *See—*
Dunn, Ralph; and Coleman, Leonard R., 4,450,129, Cl. 264-132.000.

Coleman, Robert F.: *See—*
Gilbride, Andrew J.; Malecki, Edward S.; Winslow, Edward H., III; and Coleman, Robert F., 4,449,463, Cl. 112-121.260.

Coles Cranes Limited: *See—*
Telfer, James D., 4,449,600, Cl. 180-132.000.

Colgate-Palmolive Company: *See—*
Broze, Guy; and Laitem, Leopold, 4,450,089, Cl. 252-95.000.
Wixon, Harold E., 4,450,085, Cl. 252-8.750.

Colson, Wendell B. Method and apparatus for fabricating honeycomb insulating material. 4,450,027, Cl. 156-193.000.

Colton, Peter M., to Wadkin plc. Rotary cutter heads. 4,449,556, Cl. 144-230.000.

Combes, Gilles; and Delage, Germain, to Alsthom-Atlantique. Energy-efficient automatic sluice gate for sustaining a fluid level. 4,449,851, Cl. 405-93.000.

Combustion Engineering, Inc.: *See—*
Bulgier, Lawrence W., 4,449,830, Cl. 368-119.000.
Creek, Ronald B., 4,449,599, Cl. 180-8.100.

Compaganie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
de Pommery, Bertrand J. C. H.; Petiot, Gerard L. R.; Vergne, Jean-Claude E.; and Goupil, Jean-Paul C., 4,449,775, Cl. 339-75.0MP.

Compagnie du Moteur Energitique C.M.E. Inc.: *See—*
Beaudoin, Normand, 4,449,494, Cl. 123-52.00A.

Compagnie Industrielle des Lasers Cilas Alcatel: *See—*
Renault, Guy, 4,449,535, Cl. 128-634.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
de Pommery, Bertrand J. C. H.; and Ugon, Michel, 4,450,535, Cl. 364-900.000.
Gerard, Andre, 4,450,516, Cl. 363-84.000.

Conarty, Thomas J., Jr.: *See—*
Rice, David A.; Greenbaum, Robert R.; and Conarty, Thomas J., Jr., 4,450,046, Cl. 201-20.000.

Conn, Charles E., Jr., to TRE Corporation. Method of fabricating a truss core sandwich panel. 4,450,338, Cl. 219-78.120.

Conner, George W., to Teradyne, Inc. Tester for LSI devices and memory devices. 4,450,560, Cl. 371-25.000.

Conner, Leo B., Jr.; and Nelson, Robert N., to Motorola Inc. Range rate dependent pulse control apparatus and method therefor. 4,450,445, Cl. 343-7.500.

Conoco Inc.: *See—*
Beck, Jeffrey L., 4,449,862, Cl. 406-93.000.

Conrad, Rene A. Positive tracking pulley and belt construction. 4,449,958, Cl. 474-205.000.

Consolidated Foods Corporation: *See—*
DiTullio, Flavia, 4,449,533, Cl. 128-494.000.

Consort Aluminium Limited: *See—*
Rawlings, David E., 4,449,325, Cl. 49-192.000.

Continental Group, Inc., The: *See—*
Krishnakumar, Suppayan M.; Harry, Leuan L.; and Beck, Martin H., 4,449,913, Cl. 425-548.000.

Controlonics Corporation: *See—*
Lucey, Robert E., 4,450,319, Cl. 179-2.0EA.

Cook, James S.; and Lennon, J. Anthony, to General Electric Company. Low cost high isolation voltage optocoupler with improved light transmissivity. 4,450,461, Cl. 357-19.000.

Cooper Industries, Inc.: *See—*
Johnson, Thomas B., III, 4,449,772, Cl. 339-29.00B.
Mayer, James R., 4,449,592, Cl. 175-52.000.

Cooper, Leonard M.: *See—*
Johnson, Harold D.; Sherman, Earle C.; and Cooper, Leonard M., 4,449,633, Cl. 206-612.000.

Copeland, John A., to Bell Telephone Laboratories, Incorporated. Spectrally stabilized laser. 4,450,565, Cl. 372-32.000.

Copia, Carlos R. D. S., to Maquinas Npu Ltda. Cutting/sealing device for plastic bag making machines. 4,449,962, Cl. 493-209.000.

Copolymer Rubber & Chemical Corp.: *See—*
Von Bodungen, George A.; and Karg, Rudy F., 4,450,260, Cl. 526-213.000.

Copper Alloys Corporation: *See—*
Cameron, Wallace C., 4,449,673, Cl. 241-186.00R.

Coppins, Jerry B.: *See—*
Coppins, Timothy G.; and Coppins, Jerry B., 4,449,652, Cl. 223-46.000.

Coppins, Timothy G.; and Coppins, Jerry B. Prefabricated bow forming machine. 4,449,652, Cl. 223-46.000.

Coral Industrial Sales Co.: *See—*
Siegal, Burton L., 4,450,498, Cl. 361-212.000.

Corbett, Scott S., Jr.: *See—*
Perrott, Lynn F., 4,449,882, Cl. 414-665.000.

Corbitt, John; and Michel, Thomas J. Medical-electronic body fluid accounting system. 4,449,538, Cl. 128-760.000.

Corby, Nelson R., Jr., to General Electric Company. Welding torch with vision attachment. 4,450,339, Cl. 219-124.340.

Corrigall, Don J.; and Schiedermayer, Marvin L., to Miller Electric Manufacturing Company. Arc welder power supply with fail-safe voltage reducing circuit. 4,450,340, Cl. 219-132.000.

Cortese, Richard; Barclay, Brian; and Theeuwes, Felix, to ALZA Corporation. Simultaneous delivery of two drugs from unit delivery device. 4,449,983, Cl. 604-892.000.

Cory, William W., to Hydra-Jack, Inc. Mechanical locking outrigger hydraulic jack for an outrigger assembly. 4,449,734, Cl. 280-766.100.

Cotton, Robert B., Jr.; and Uetrecht, Dale M., to Baldwin Piano & Organ Company. Automatic piano. 4,449,437, Cl. 84-1.010.

Courvoisier, Guy; and Arieh, Simon, to Battelle Memorial Institute. Heating body. 4,450,347, Cl. 219-549.000.

Coutin, Pierre: *See—*
Lerouge, Andre; Andre, Jean-Louis; and Coutin, Pierre, 4,449,920, Cl. 431-91.000.

Couture, Paul A.: *See—*
Jentoft, Arthur P.; and Couture, Paul A., 4,449,340, Cl. 52-200.000.

Coviello, John W., to Westinghouse Electric Corp. Circuit for improving the quality of digitized line images. 4,450,483, Cl. 358-166.000.

CPC International Inc.: *See—*
Dean, Donald H.; and Ellis, Daniel M., 4,450,235, Cl. 435-253.000.
Dean, Donald H.; and Ellis, Daniel M., 4,450,236, Cl. 435-253.000.

Craft, James A. Ribbon cartridge with back check. 4,449,837, Cl. 400-208.000.

Cramer, Chris: *See—*
Gillette, Robert H.; Brammall, Terrence N.; Shelton, Kent; and Cramer, Chris, 4,449,328, Cl. 51-73.00R.

Creek, Ronald B., to Combustion Engineering, Inc. Finger walker for tube sheet. 4,449,599, Cl. 180-8.100.

Crivello, James V.; and Lee, Julia L., to General Electric Company. Alkylaryliodonium salts and method for making. 4,450,360, Cl. 260-440.000.

Crockatt, William B.; and Rimma, John, to DeSoto, Inc. Air drying coatings having long term water repellency. 4,450,247, Cl. 523-518.000.

Crombie, Dean H.: *See—*
Cole, Edward F.; and Crombie, Dean H., 4,449,359, Cl. 60-39.094.

Cros, Pierre, to Promecam Sisson-Lehmann. Device for bending a tool holder of a folding press or the like. 4,449,389, Cl. 72-389.000.

Crosby Valve & Gage Company: *See—*
Soderberg, Roy E., 4,449,544, Cl. 137-15.000.

Crown Textile Company: *See—*
Kamat, Dattatraya V., 4,450,196, Cl. 428-197.000.

Cruz, Exequiel D., to Respiratory Care, Inc. Container having an air tight seal. 4,449,984, Cl. 604-319.000.

Cullen, Walter P.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,450,237, Cl. 435-253.000.

Cunningham, James F.: *See—*
Pitzer, Ken; Cunningham, James F.; and Pearce, Jai, 4,449,701, Cl. 266-218.000.

Curatolo, Benedict S.: *See—*
Fox, Joseph R.; Curatolo, Benedict S.; and Pesa, Frederick A., 4,450,310, Cl. 585-400.000.

Curchod, Donald B. Drive shaft mounting assembly for dynamic wheel balancing machine. 4,449,407, Cl. 73-462.000.

Curtis Screw Company, Inc.: *See—*
Smith, James R., 4,449,432, Cl. 82-3.000.

Custer, Willard R. Atmospheric pressure motor. 4,449,363, Cl. 60-370.000.

Custom Wrought Products, Co.: *See—*
Reichman, William, Jr., 4,449,842, Cl. 403-25.000.

Cutter Laboratories, Inc.: *See—*
Jordan, Robert E., 4,450,104, Cl. 260-112.00B.

Cyklop International Emil Hoffmann KG: *See—*
Wehr, Hubert, 4,450,032, Cl. 156-353.000.

Czerniakiewicz, Anastasia J.: *See—*
Pilat, John F.; Czerniakiewicz, Anastasia J.; Kinder, David B.; and Davidian, Gary, 4,450,523, Cl. 364-200.000.

D.M.E. Plastic A/S: *See—*
Jorgensen, Knud E.; and Ingemann, Ole, 4,449,641, Cl. 220-306.000.

Dagens Nyheters AB: *See—*
Olsson, Christer H. K., 4,450,352, Cl. 250-223.00R.

Dahlberg, Reinhard, to Licentia Patent-Verwaltungs GmbH. Method for producing a semicondiuctor layer solar cell. 4,449,286, Cl. 29-572.000.

Daimler-Benz Aktiengesellschaft: *See—*
Strifler, Paul; Geissler, Heinrich; Ludtke, Dieter; Maurath, Rudolf; and Steinecke, Rudolf, 4,449,726, Cl. 280-81.00A.

Dalzell, Rex J.: *See—*
Holmes, Brian N.; Dalzell, Rex J.; and Aasen, Steven M., 4,450,227, Cl. 430-339.000.

Daniel, Leroy O.: *See—*
Berecz, Imre; Schultz, Dennis; and Daniel, Leroy O., 4,449,283, Cl. 29-566.100.

Daniele, Joseph J.: *See—*
Araghi, Mehdi N.; and Daniele, Joseph J., 4,450,458, Cl. 346-155.000.

Dany, Jean-Claude: *See—*
Thirion, Andre; Sorba, Antoine; Dany, Jean-Claude; Pacaud, Andre; and Attal, Gerard, 4,449,385, Cl. 70-277.000.

Dare, Roy R.: *See—*
Alexander, William H.; and Dare, Roy R., 4,449,695, Cl. 251-214.000.

Darling Store Fixtures: *See—*
Kersey, Melvin L., 4,449,686, Cl. 248-215.000.

Data General Corporation: *See—*
Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; and Schleimer, Stephen I., 4,450,522, Cl. 364-200.000.
Pilat, John F.; Czerniakiewicz, Anastasia J.; Kinder, David B.; and Davidian, Gary, 4,450,523, Cl. 364-200.000.

Dautel, Erich: *See—*
Liebhardt, Josef; Fuhrer, Rudolf; and Dautel, Erich, 4,449,454, Cl. 102-226.000.

Dauvergne, Jean L. R., to Valeo Societe Anonyme. Power assisted hydraulic control system. 4,449,369, Cl. 60-556.000.

Davidian, Gary: *See—*
Pilat, John F.; Czerniakiewicz, Anastasia J.; Kinder, David B.; and Davidian, Gary, 4,450,523, Cl. 364-200.000.

Davidowitz, David: *See—*
Mennella, Robert J.; and Davidowitz, David, 4,449,853, Cl. 405-184.000.

Davidson, Bruce L.: *See—*
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,450,269, Cl. 544-8.000.

Davies, Evan; and Marmon, John C., Jr. Flush tank metering device. 4,449,259, Cl. 4-415.000.

Davignon, Paul A., to American Optical Corporation. Liquid dispenser. 4,449,477, Cl. 118-694.000.

Davis, Charles L.; and Bachman, G. Merle, to Coca-Cola Company, The. Transparent refrigerator doors with frosted product logo thereon. 4,449,761, Cl. 312-116.000.

Davis, Edgar A., to VSL Corporation. Retained earth system with threaded connection between a retaining wall and soil reinforcement panels. 4,449,857, Cl. 405-286.000.

Davis, Eugene E., to Johnsen & Jorgensen (Plastics) Ltd. Tamper-resistant and child-resistant closure and container assembly. 4,449,638, Cl. 215-211.000.

Davis, Eugene E., to Johnsen & Jorgensen (Plastics) Ltd. Tamper-resistant and child-resistant closures. 4,449,639, Cl. 215-224.000.

Davis, James W.: *See—*
Betron, Frank A.; Davis, James W.; Kockler, Barry C.; and Spears, Lonnie K., 4,449,811, Cl. 355-3.0SH.

Davis, Norman A. Game board, die and reward determining game apparatus. 4,449,710, Cl. 273-249.000.

Davis, Stephen G., to Union Carbide Corporation. Lithium halide additives for nonaqueous cell systems. 4,450,214, Cl. 429-194.000.

Davis, Thomas T., to Phillips Petroleum Company. Active termination for a transmission line. 4,450,370, Cl. 307-475.000.

De La Cierva, Juan, to Scitech Corporation. Synchronization interface device for autonomus video equipment. 4,450,480, Cl. 358-149.000.

Dean, Donald H.; and Ellis, Daniel M., to CPC International Inc. Asporogenic mutant of bacillus subtilis useful as a host in a host-vector system. 4,450,235, Cl. 435-253.000.

Dean, Donald H.; and Ellis, Daniel M., to CPC International Inc. Asporogenic mutant of *Bacillus subtilis* useful as a host in a host-vector system. 4,450,236, Cl. 435-253.000.

Dear, Buck; and Spencer, Tim. Calf cart. 4,449,481, Cl. 119-96.000.

De Blauwe, Francis J. A. M. C., to N.V. Raychem S.A. Thermochromic composition. 4,450,023, Cl. 156-64.000.

Debley, William P.: *See—*
Kwon, Tae M.; and Debley, William P., 4,450,407, Cl. 324-304.000.

Deere & Company: *See—*
Wohlford, William P.; and Beitel, Howard V., 4,449,758, Cl. 305-12.000.

Degnan, William G.; and Fansler, John D., to United Technologies Corporation. Ballistically tolerant control system. 4,449,446, Cl. 92-146.000.

deGroot, Johan: *See—*
Versluis, Jan; deGroot, Johan; and van Baalen, Anton, 4,449,946, Cl. 441-4.000.

Degussa Aktiengesellschaft: *See—*
Domesle, Rainer; Volker, Herbert; Koberstein, Edgar; and Pletka, Hans-Dieter, 4,450,244, Cl. 502-185.000.
Eiermann, Kurt; Horlebein, Eberhard; Lissmann, Kurt; and Schafer, Wolfgang, 4,449,402, Cl. 73-204.000.

Delage, Germain: *See—*
Combes, Gilles; and Delage, Germain, 4,449,851, Cl. 405-93.000.

Delfino, Gerolamo; and Franco, Simone, to Minnesota Mining and Manufacturing Company. Photographic elements with improved surface characteristics. 4,450,230, Cl. 430-539.000.

De Longis, Vincent E.; and Kyhl, Henry, to buhl Industries, Inc. Portable overhead projector. 4,449,800, Cl. 353-119.000.

Demuth, Gordon L.; Hinkle, John E.; and Moran, J. Thomas, to International Business Machines Corporation. Control unit for a functional processor. 4,450,525, Cl. 364-200.000.

Denaro, Alfred; and Rand, George, to Sperry Corporation. Absorptive sonar baffle. 4,450,544, Cl. 367-176.000.

Denka Engineering Kabushiki Kaisha: *See—*
Saito, Hisatoshi; Fujii, Shuzo; Takase, Itaru; Nakamura, Akihiko; and Hara, Yoshihiro, 4,449,861, Cl. 406-39.000.

Denney, Joseph M.: *See—*
Barry, James D.; and Denney, Joseph M., 4,450,489, Cl. 358-348.000.

de Pommery, Bertrand J. C. H.; Petiot, Gerard L. R.; Vergne, Jean-Claude E.; and Goupil, Jean-Paul C., to Compaganie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Connector for portable objects such as credit cards. 4,449,775, Cl. 339-75.0MP.

de Pommery, Bertrand J. C. H.; and Ugon, Michel, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). System and method for authorizing access to an article distribution or service acquisition machine. 4,450,535, Cl. 364-900.000.

Dergo, Stephen J. Dowel drill fixture. 4,449,867, Cl. 408-103.000.

Dernar, Helen D.: *See—*
Eskamani, Abolghassem; Dernar, Helen D.; and Bartoszek-Loza, Rosemary, 4,450,059, Cl. 204-158.00R.

De Rossett, Terry A.: *See—*
Kurtz, Stuart J.; De Rossett, Terry A.; and Shaw, Montgomery T., 4,449,395, Cl. 73-56.000.

DeSantis, Raymond P.; and Puffer, Herbert J., Jr., to PTX Pentronix, Inc. Method for compacting powder material with adjustable die and punch assembly. 4,450,127, Cl. 264-56.000.

DeSoto, Inc.: *See—*
Crockatt, William B.; and Rimma, John, 4,450,247, Cl. 523-518.000.
Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., 4,450,203, Cl. 428-514.000.
Zychowski, Edwin A.; and Richards, Ronald L., 4,450,251, Cl. 524-251.000.

Detty, Michael R.; and Perlstein, Jerome H., to Eastman Kodak Company. Chalcogenopentalene compounds in electrophotography. 4,450,217, Cl. 430-58.000.

Deubel, Reinhold: *See—*
Diery, Helmut; Deubel, Reinhold; and Weide, Joachim, 4,450,304, Cl. 568-609.000.

Deutsch, Hermann: *See—*
Kruger, Hermann; and Deutsch, Hermann, 4,449,487, Cl. 123-41.340.

De Vault, Robert T.: *See—*
Baker, Kenneth R.; and De Vault, Robert T., 4,449,944, Cl. 440-47.000.

DeVito, Vivian C.: *See—*
Larson, Robert W.; Lou, Wen C.; DeVito, Vivian C.; and Neidinger, Karen A., 4,450,177, Cl. 426-19.000.

Dey, Arabinda N.; and Holmes, Robert W., to Duracell Inc. Cell having improved abuse resistance. 4,450,213, Cl. 429-105.000.

Diamand, Felix, to Thomson-CSF. Electronic control variable phase shift device comprising a long gate field effect-transistor and a circuit using such a device. 4,450,372, Cl. 307-511.000.

Diamond Shamrock Chemicals Company: *See—*
Drake, Nancy J.; Hilston, Michael D.; and O'Malley, Mary A., 4,450,262, Cl. 526-234.000.

Diamond Shamrock Corporation: *See—*
Gestaut, Lawrence J., 4,450,187, Cl. 427-125.000.

Dibrell, Edwin W., to Centrifugal Piston Expander Inc. Method and apparatus for extracting heat and mechanical energy from a pressured gas. 4,449,379, Cl. 62-401.000.

Dickinson, Robert V. C., to E-Com Corporation. Tamper-resistant, expandable communications system. 4,450,481, Cl. 358-114.000.

Diery, Helmut; Deubel, Reinhold; and Weide, Joachim, to Hoechst Aktiengesellschaft. Polyether dispersants. 4,450,304, Cl. 568-609.000.

Diesel Kiki Company, Ltd.: *See—*
Kawatei, Hisatsugu; Saito, Hidetoshi; and Nakamura, Hisashi, 4,449,500, Cl. 123-380.000.

Dieter Graesslin Feinwerktechnik: *See—*
Kammerer, Gerd, 4,449,832, Cl. 368-187.000.

Dietrick, Earl T.; and Prayner, Timothy F., to Townmotor Corporation. Contact tip for a welding head. 4,450,341, Cl. 219-137.520.

Dietz, Ernest W.: *See—*
Carmo, Robert A.; and Dietz, Ernest W., 4,449,776, Cl. 339-91.00R.

Digital Equipment Corporation: *See—*
Stewart, Robert E.; Buzynski, John E.; and Giggi, Robert, 4,450,572, Cl. 375-87.000.

Dimter GmbH Maschinenfabrik: *See—*
Wiegand, Karl-Wolfram, 4,449,558, Cl. 144-367.000.

Disclaire, Jacques; and Mignotte, Claude, to Societe de Pariset du Rhone S.A. Process for making a winding for a low-power alternator stator. 4,449,288, Cl. 29-596.000.

Discovision Associates: *See—*
Golding, Scott M., 4,450,488, Cl. 358-342.000.

Dittmann, Fred M., Jr., to Municipal Industries, Inc. Rear suspension and storage box for a three-wheel motorcycle. 4,449,602, Cl. 180-215.000.

DiTullio, Flavia, to Consolidated Foods Corporation. Brassiere. 4,449,533, Cl. 128-494.000.

Ditzer, Joseph R., Jr., to Eastman Kodak Company. Dye compositions containing partially hydrolyzed polyvinyl ester. 4,449,985, Cl. 8-528.000.

Dr. Ing. h.c.F. Porsche AG: *See—*
Eger, Georg, 4,449,749, Cl. 296-194.000.
Langwieder, Rolf; Rebmann, Rolf; Stotz, Erich; Wierschem, Franz-Rudolf; and Trick, Fred, 4,449,603, Cl. 180-232.000.

Dodd, Frederick H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Eyepiece for protective devices. 4,449,255, Cl. 2-428.000.

Dodd, Joseph C. Apparatus for removing excess liquid and contaminants from belt filter cake. 4,450,080, Cl. 210-391.000.

Dodd, Ned T. Poultry conveyor. 4,449,626, Cl. 198-765.000.

Dodich, James, to Levolor Lorentzen, Inc. Ceiling panel and lens. 4,449,344, Cl. 52-475.000.

Doerer, Daniel M., to Brown Group, Inc. Method of fixturing shoe component. 4,450,130, Cl. 264-154.000.

Doljack, Frank A.; and Middleman, Lee M., to Raychem Corporation. Protection of certain electrical systems by use of PTC device. 4,450,496, Cl. 361-58.000.

Dolland, Carlisle R., to Garrett Corporation, The. Position transducer for digital systems. 4,450,443, Cl. 340-870.360.

Domesle, Rainer; Volker, Herbert; Koberstein, Edgar; and Pletka, Hans-Dieter, to Degussa Aktiengesellschaft. Catalyst for the combustion of harmful substances contained in exhaust gases of internal combustion engines operated with alcohol and process for the production of the catalyst. 4,450,244, Cl. 502-185.000.

Don Fell Limited: *See—*
Takeuchi, Seiji, 4,449,279, Cl. 29-401.100.

Donehoo, Robert F.: *See—*
Castleman, B. Wayne; Donehoo, Robert F.; Oswald, Rudolph G.; Reed, Kenneth L.; and Shipley, George H., 4,450,409, Cl. 324-460.000.

Donomoto, Tadashi; Tanaka, Atsuo; Tatematsu, Yoshiaki; and Akai, Tsugio, to Toyota Jidosha Kabushiki Kaisha. Fiber reinforced metal type composite material with high purity aluminum alloy containing magnesium as matrix metal. 4,450,207, Cl. 428-614.000.

Dooley, James H., to Weyerhaeuser Company. Seed planter. 4,449,642, Cl. 221-211.000.

Dorfman, Mitchell R.: *See—*
Longo, Frank N.; Bader, Nicholas F., III; and Dorfman, Mitchell R., 4,450,184, Cl. 427-34.000.

Dorr-Oliver Incorporated: *See—*
Leon, Albert M.; and McCoy, Daniel E., 4,449,482, Cl. 122-4.00D.

Dotsenko, Taras P.: *See—*
Orlov, Naum Y.; and Dotsenko, Taras P., 4,449,754, Cl. 299-21.000.

Dow Chemical Company, The: *See—*
Hefner, Robert E., Jr., 4,450,070, Cl. 209-3.000.
Pawloski, Chester E.; and Ginter, Sally P., 4,450,280, Cl. 549-221.000.
Woo, Edmund P.; and Murray, Daniel J., 4,450,285, Cl. 560-206.000.

Dow Corning Corporation: *See—*
Baney, Ronald H., 4,450,255, Cl. 524-430.000.
Groenhof, Eugene D., 4,449,415, Cl. 74-214.000.

Downs Surgical Limited: *See—*
Bevan, David R.; and Layman, Jeremy, 4,449,970, Cl. 604-333.000.

Draft Systems, Inc.: *See—*
Fallon, Merton R.; and Clements, Thomas W., 4,449,412, Cl. 73-738.000.

Dragerwerk A.G.: *See—*
Baum, Marcel, 4,449,522, Cl. 128-200.260.

Drake, Charles A., to Phillips Petroleum Company. Process for the oxidation of secondary-alkyl substituted benzenes. 4,450,303, Cl. 568-574.000.

Drake, Cyril F.; and Brocklehurst, John R., to ITT Industries, Inc. Glass encapsulated materials. 4,449,981, Cl. 604-890.000.

Drake, Nancy J.; Hilston, Michael D.; and O'Malley, Mary A., to Diamond Shamrock Chemicals Company. Hydrophilic copolymer compositions useful as contact lenses. 4,450,262, Cl. 526-234.000.

Draloric Electronic GmbH: *See—*
Wollenschlager, Werner, 4,450,500, Cl. 361-277.000.

Draper, Robert; Lackey, Robert S.; Fagan, Thomas J., Jr.; Veyo, Stephen E.; and Humphrey, Joseph R., to Westinghouse Electric Corp. Indoor unit for electric heat pump. 4,449,376, Cl. 62-259.100.

Draper, Robert, to Westinghouse Electric Corp. Thermosyphon coil arrangement for heat pump outdoor unit. 4,449,377, Cl. 62-324.100.

Drechsel, Arno. Impact irrigators in general. 4,449,668, Cl. 239-230.000.

Drechsler, Mark A.; and Hutchins, Walter J., to Stanley Works, The. Power returnable coilable rule with improved blade locking assembly. 4,449,302, Cl. 33-138.000.

Dreiseitl, Walter; Koch, Manfred; and Linden, Wilhelm, to Siemens AG. Method and apparatus for determining rotational speed. 4,450,403, Cl. 324-166.000.

Dresser Industries, Inc.: *See—*
Blackwell, Henry W., 4,449,736, Cl. 285-3.000.

Dreyer, Stephen F.: *See—*
Hoff, Marcian E., Jr.; Townsend, Marshall A.; and Dreyer, Stephen F., 4,450,365, Cl. 307-262.000.

Dreyer, Volker: *See—*
Franz, Han-Jurgen; and Dreyer, Volker, 4,449,405, Cl. 73-304.00C.

Drutchas, Gilbert H., to TRW Inc. Fuel supply system. 4,449,506, Cl. 123-458.000.

Du, Mila T.; and Shepherd, Robert G., to American Cyanamid Company. Antiatherosclerotic 1-piperazine-thicarboxamides. 4,450,272, Cl. 544-357.000.

Dubrous, Francis: *See—*
Herold, Robert; and Dubrous, Francis, 4,450,003, Cl. 75-10.00R.

Dudek, David M.; and Lambert, Mark A., to Pfizer, Inc. Calcium-/aluminum alloys and process for their preparation. 4,450,136, Cl. 420-590.000.

Dudzinski, Zdzislaw W.: *See—*
Green, Harold A.; Petrocci, Alfonso N.; and Dudzinski, Zdzislaw W., 4,450,174, Cl. 424-329.000.

Duggan, George L.: *See—*
Kendrick, George B.; Duggan, George L.; and Ochoa, Carlos, 4,450,381, Cl. 313-579.000.

Duke, June T.: *See—*
Isley, Ralph E.; Prem, Dorothy C.; and Duke, June T., 4,450,254, Cl. 524-399.000.

Dundon, Gerard M. High output, long duration, quick response, radiant electrical heater. 4,450,343, Cl. 219-357.000.

Dunn, Ralph; and Coleman, Leonard R., to Mattel, Inc. Method of making miniature doll heads. 4,450,129, Cl. 264-132.000.

Du Pont de Nemours, E. I., and Company: *See—*
Lee, Jerald D., 4,449,821, Cl. 356-319.000.
Wreford, Stanley S., 4,450,112, Cl. 260-410.90R.
Yoo, Sung-eun, 4,450,172, Cl. 424-309.000.

Duracell Inc.: *See—*
Dey, Arabinda N.; and Holmes, Robert W., 4,450,213, Cl. 429-105.000.

Durkee, Richard G. Heavy metal removal process. 4,450,002, Cl. 75-0.50A.

Dusing, Wolfgang: *See—*
Roder, Eberhard, deceased; Borchers, Hans-Dieter, administrator; and Dusing, Wolfgang, 4,449,651, Cl. 222-455.000.

Dutton, Daniel R.: *See—*
Kaneko, Thomas M.; Dutton, Daniel R.; and Kim, Bongsub, 4,450,001, Cl. 71-118.000.

Dyckerhoff & Widmann Aktiengesellschaft: *See—*
Langwadt, Ottmar, 4,449,855, Cl. 405-260.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Christmann, Wolfgang; Lindner, Gerhard; and Lingens, Paul, 4,450,124, Cl. 264-3.00R.

E-Com Corporation: *See—*
Dickinson, Robert V. C., 4,450,481, Cl. 358-114.000.

E. N. I. Ente Nazionale Idrocarburi: *See—*
Vitobello, Vincenza; Branduzzi, Paolo; and Cimini, Nadia, 4,450,238, Cl. 435-256.000.

E. P. Remy et Cie: *See—*
Lemaire, Didier; and Lebret, Gerard, 4,449,624, Cl. 198-412.000.

E. R. Wagner Mfg. Co.: *See—*
Schnuell, Henry A., 4,449,268, Cl. 16-35.00R.

Earle M. Jorgensen Co.: *See—*
Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, 4,450,008, Cl. 75-128.00A.

Eastman, Alan D.; and Kimble, James B., to Phillips Petroleum Company. Oxidative dehydrogenation of paraffins. 4,450,313, Cl. 585-624.000.

Eastman Kodak Company: *See—*
Detty, Michael R.; and Perlstein, Jerome H., 4,450,217, Cl. 430-58.000.
Ditzer, Joseph R., Jr., 4,449,985, Cl. 8-528.000.
Fletcher, George L.; and Wadsworth, Donald H., 4,450,093, Cl. 252-182.000.
Fulmer, George G.; and Lawson, John R., 4,450,216, Cl. 430-31.000.
Klein, Gerald W.; Snow, Robert A.; and Sutton, Richard C., 4,450,224, Cl. 430-213.000.
Mattes, Kenneth C.; and Warren, Harold C., 4,450,222, Cl. 430-220.000.
McConnell, Richard L.; Meyer, Max F., Jr.; and Petke, Frederick D., 4,450,250, Cl. 524-141.000.
Reithel, Raymond F.; and Weiss, Armin K., 4,450,215, Cl. 430-7.000.
Sanford, Karl J.; Sutherland, John W.; and Eikenberry, Jon N., 4,450,232, Cl. 435-15.000.

Eastwood, H. Keith: *See—*
Lightstone, Alexander W.; Eastwood, H. Keith; and Szarka, Frank, 4,449,781, Cl. 350-96.150.

Eaton Corporation: *See—*
Jones, William H., 4,449,384, Cl. 68-12.00R.
Kaiser, Hermann; and Olson, Jerry A., 4,449,401, Cl. 73-202.000.

Ebbing, Steven J.; and Hermans, Robert J., to Sundstrand Corporation. Hydraulic valve control and feedback utilizing a harmonic drive differential. 4,449,442, Cl. 91-44.000.

Eckardt AG: *See—*
Bader, Horst, 4,449,546, Cl. 137-86.000.

Ecton Corp.: *See—*
Smolinski, Ronald E., 4,449,899, Cl. 418-255.000.

Eder, Herbert, to Knorr-Bremse GmbH. Service brake accelerator for rail vehicle air brake systems. 4,449,759, Cl. 303-38.000.

Edmundson, H. Dale: *See—*
Tucker, Jeffrey C.; Edmundson, H. Dale; Wigley, David L.; and Vallo, Mark F., 4,449,393, Cl. 73-40.000.

Egawa, Setsuya; and Sakamoto, Masahiro, to Jujo Paper Co., Ltd. Process for producing microcapsules. 4,450,123, Cl. 264-4.700.

Egawa, Takeshi: *See—*
Miki, Yukio; and Egawa, Takeshi, 4,449,807, Cl. 354-195.100.

Eger, Georg, to Dr. Ing. h.c.F. Porsche AG. Passenger car body end wall. 4,449,749, Cl. 296-194.000.

Egg, Max: *See—*
Fuhrer, Egon; Kleinert, Dieter; Pfrogner, Gerd; and Egg, Max, 4,449,691, Cl. 251-85.000.

Eggenstein, Friedrich: *See—*
Terhorst, Gunter; Plester, Karl-Heinz; Rosenberg, Harry; and Eggenstein, Friedrich, 4,449,859, Cl. 405-291.000.

Egly, Robert A.; and Sullivan, Patrick. Magnetic disk storage case. 4,449,628, Cl. 206-45.180.

Eiermann, Kurt; Horlebein, Eberhard; Lisamann, Kurt; and Schafer, Wolfgang, to Degussa Aktiengesellschaft. Apparatus for measuring the flow velocity of gases and liquids. 4,449,402, Cl. 73-204.000.

Eikenberry, Jon N.: *See—*
Sanford, Karl J.; Sutherland, John W.; and Eikenberry, Jon N., 4,450,232, Cl. 435-15.000.

Eilers, Norbert; and Bragas, Peter, to Blaupunkt-Werke GmbH. FM Receiver for reception of special announcements and general programs. 4,450,589, Cl. 455-205.000.

Elam, James O. Mask breathing system. 4,449,526, Cl. 128-206.210.

Electrodyne Research Corporation: *See—*
Strohmeyer, Charles, Jr., 4,449,483, Cl. 122-4.00D.

Elf France: *See—*
Lerouge, Andre; Andre, Jean-Louis; and Coutin, Pierre, 4,449,920, Cl. 431-91.000.

Eli Lilly and Company: *See—*
Lunn, William H. W., 4,450,270, Cl. 544-24.000.

Elleman, Daniel D.: *See—*
Wang, Taylor G.; Elleman, Daniel D.; and Kendall, James M., Jr., 4,449,901, Cl. 425-6.000.

Ellingson, Gary L.; and Miller, Wendell E., to Polar Research, Inc. Antenna tower assembly. 4,450,450, Cl. 343-758.000.

Elliott, Robert D.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,450,160, Cl. 424-250.000.

Ellis, Daniel M.: *See—*
Dean, Donald H.; and Ellis, Daniel M., 4,450,235, Cl. 435-253.000.
Dean, Donald H.; and Ellis, Daniel M., 4,450,236, Cl. 435-253.000.

Elsner, Burckhard: *See—*
Becker, Kunibert; Elsner, Burckhard; and Kirchbrucher, Rudiger, 4,449,860, Cl. 405-293.000.

Elsner, Georg; and Hack, Hermann, to Hoechst Aktiengesellschaft. Process for making alkali metal hypophosphite solutions. 4,450,147, Cl. 423-304.000.

Elxsi: *See—*
Holbert, Kenneth W.; and Massey, Edwin M., 4,450,029, Cl. 156-250.000.

Emco Wheaton (International) Limited: *See—*
Young, Colin G., 4,449,509, Cl. 123-527.000.

Emerson Electric Co.: *See—*
Karaktin, Vincent M., 4,449,687, Cl. 248-225.200.

Endo, Juro: *See—*
Yamaguchi, Kazuo; Kuni, Asahiro; Akiyama, Nobuyuki; and Endo, Juro, 4,449,818, Cl. 356-237.000.

Endres, Robert: *See—*
Messer, Dieter; Wilhelm, Volker; Endres, Robert; and Heine, Heinrich, 4,450,012, Cl. 106-300.000.

Endress u. Hauser GmbH u. Co.: *See—*
Franz, Han-Jurgen; and Dreyer, Volker, 4,449,405, Cl. 73-304.00C.

Energy 2000, Inc.: *See—*
Klepper, Robert; and Bomar, Daryld W., 4,449,896, Cl. 417-399.000.

Engelhard Corporation: *See—*
Feigenbaum, Haim; Pudick, Sheldon; and Singh, Rajindar, 4,450,212, Cl. 429-35.000.

Engels, Walter, to Milliken Research Corporation. Method for smoothing and brushing pile fabric. 4,449,276, Cl. 26-2.00R.

Enlow, William P.: *See—*
Hechenbleikner, Ingenuin; Enlow, William P.; and Lankin, David C., 4,450,113, Cl. 260-439.00R.

Enoxy Chimica, S.p.A.: *See—*
Roggero, Arnaldo; Bruzzone, Mario; and Gandini, Alberto, 4,450,259, Cl. 526-173.000.

Ensco, Inc.: *See—*
Kenyon, Stephen C.; Simkins, Laura J.; Brown, Leroy L.; and Sebastian, Richard, 4,450,531, Cl. 364-604.000.

Enterprises Buzzichelli: *See—*
Buzzichelli, Lilian; and Roy, Kleber, 4,449,634, Cl. 212-196.000.

Envirosonics, Inc.: *See—*
Linde, Ronald K., 4,450,141, Cl. 422-225.000.

Envirotech Corporation: *See—*
Black, Brent C.; Bradley, Bruce D.; and Haymore, Ralph B., 4,450,077, Cl. 210-275.000.

Epson Corporation: *See—*
Arai, Kenichiro, 4,449,835, Cl. 400-161.000.
Koto, Haruhiko, 4,450,454, Cl. 346-140.00R.

Equifab, Inc.: *See—*
Bergeron, Willard, 4,449,993, Cl. 55-379.000.

Erhardt, Paul W.; and Borgman, Robert J., to American Hospital Supply Corporation. Compounds and method for treatment or prophylaxis of cardiac disorders. 4,450,173, Cl. 424-309.000.

Erickson, John W.: *See—*
Peterson, Daniel G.; Erickson, John W.; and Robinson, Horace M., 4,449,582, Cl. 166-64.000.

Eriguchi, Yukio: *See—*
Okamura, Kouichi; Eriguchi, Yukio; Hagio, Katsushige; and Yamamoto, Setsuo, 4,449,662, Cl. 229-49.000.

Erpelding, Jean, to Arbed S.A. Method and apparatus for sampling or measuring a parameter of a metal melt. 4,449,700, Cl. 266-79.000.

Erwin Sick GmbH Optik-Elektronik: *See—*
Krause, Gerhard, 4,449,819, Cl. 356-300.000.
Ross, Dieter; and Ostertag, Klaus, 4,450,359, Cl. 250-572.000.

Eskamani, Abolghassem; Dernar, Helen D.; and Bartoszek-Loza, Rosemary, to Standard Oil Company, The. Photochemical decarboxylation of a metal salt of an alpha-hydroxy carboxylic acid. 4,450,059, Cl. 204-158.00R.

Eskinazi, Victoria, to Air Products and Chemicals, Inc. Selective catalytic alkylation of phenols to alkyl aryl ethers. 4,450,306, Cl. 568-630.000.

Esselte Pendaflex Corporation: *See—*
Volk, Heinrich, 4,450,036, Cl. 156-384.000.

Esser, Wilhelm C. J.; and van den Nosterum, Adrianus, to AMP Incorporated. Low insertion force connector. 4,449,773, Cl. 339-59.00M.

Essex Group, Inc.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,449,290, Cl. 29-596.000.

Ethicon, Inc.: *See—*
Bendel, Lee P.; and Sardelis, Timothy, 4,449,530, Cl. 128-325.000.
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,449,531, Cl. 128-325.000.

Ethyl Molded Products Company: *See—*
Karkiewicz, Kenneth G., 4,449,827, Cl. 366-131.000.

Eto, Goro; Nishimuro, Atsushi; and Fukuda, Noriyoshi, to Futaba Denshi Kogyo K.K. Method of manufacturing a flat-type fluorescent display tube. 4,449,949, Cl. 445-24.000.

Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, to SS Pharmaceutical Co., Ltd. Thiazinobenzimidazole derivatives. 4,450,109, Cl. 260-243.300.

Ettema, Ernst; Benraad, Coenraad J. B. M.; and Roskam, Klaas, to Wavin B.V. Plastic crate or tray with slide wall injection molding points. 4,450,132, Cl. 264-328.800.

Eurotool B.V.: *See—*
van den Brink, Anthonie, 4,449,915, Cl. 425-564.000.

Evans, Rowland M., to Aviation Electric Ltd. Stall detector and surge prevention feature for a gas turbine engine. 4,449,360, Cl. 60-39.281.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,449,665, Cl. 238-10.00R.

Exxon Research and Engineering Co.: *See—*
Brannon, Judeth H.; and Schorfheide, James J., 4,449,991, Cl. 55-73.000.
Lisi, Edward L.; Melleby, Juul A.; and Andersson, Arne, 4,449,569, Cl. 165-1.000.
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,450,299, Cl. 568-454.000.
Stone, John B.; and Floyd, Frank M., 4,450,066, Cl. 208-8.0LE.

Fagan, Thomas J., Jr.: *See—*
Draper, Robert; Lackey, Robert S.; Fagan, Thomas J., Jr.; Veyo, Stephen E.; and Humphrey, Joseph R., 4,449,376, Cl. 62-259.100.

Fahey, Patrick. Roof framing system. 4,449,335, Cl. 52-90.000.

Fahmy, Mohamed A. H., to FMC Corporation. S-Tertiary alkyl phosphoroamidodithioate pesticides. 4,450,158, Cl. 424-220.000.

Fairchild Industries, Inc.: *See—*
McComas, Jean, 4,449,679, Cl. 244-118.200.

Fakler, Bernhard: *See—*
Frister, Manfred; and Fakler, Bernhard, 4,450,389, Cl. 318-140.000.

Fallon, Merton R.; and Clements, Thomas W., to Draft Systems, Inc. Safety pressure gage. 4,449,412, Cl. 73-738.000.

Fansler, John D.: *See—*
Degnan, William G.; and Fansler, John D., 4,449,446, Cl. 92-146.000.

Farmer, Audley J.: *See—*
Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, 4,450,008, Cl. 75-128.00A.

Farmer, Mark: *See—*
Wolf, Ronald J.; Jereb, Richard F.; and Farmer, Mark, 4,449,497, Cl. 123-335.000.

Farr, Andrew F., to IMED Corporation. Cassette for providing a controlled flow of fluid. 4,450,079, Cl. 604-152.000.

Fegley, Charles R.: *See—*
Abraham, Bruce C.; Fegley, Charles R.; and Hurst, Jerry C., 4,449,282, Cl. 29-467.000.

Feigenbaum, Haim; Pudick, Sheldon; and Singh, Rajindar, to Engelhard Corporation. Edge seal for a porous gas distribution plate of a fuel cell. 4,450,212, Cl. 429-35.000.

Feldman, Julian, to National Distillers and Chemical Corporation. Process for recovering oxygenated organic compounds from dilute aqueous solutions employing solid sorbent. 4,450,294, Cl. 562-608.000.

Ferguson, Arthur R., to Outboard Marine Corporation. Outboard motor mounting arrangement. 4,449,945, Cl. 440-53.000.

Ferguson, Larry W.: *See—*
Hager, Thomas P.; and Ferguson, Larry W., 4,450,197, Cl. 428-232.000.

Ferranti plc: *See—*
Bell, Howard T., 4,450,585, Cl. 455-135.000.

F'Geppert, Erwin, to United States of America, Army. Segmented clutch plates. 4,449,621, Cl. 192-70.130.

Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Engine with automatic cut-off device. 4,449,495, Cl. 123-198.0DB.

Fiala, Ernst; Schael, Fritz; and Schoedder, Reiner, to Volkswagenwerk Aktiengesellschaft. Utility vehicle body. 4,449,748, Cl. 296-183.000.

Fiber Controls Corporaton: *See—*
Cash, Leonard D., 4,449,272, Cl. 19-105.000.

Fieldhouse, John W., to Firestone Tire & Rubber Company, The. Contact adhesive and adhesive system for EPDM and related elastomers. 4,450,252, Cl. 524-353.000.

Filhol, Stuart J. Package for dental tools. 4,449,630, Cl. 206-369.000.

Filipovitch, Anthony J.; and Bleuenstein, Julius M., to Ford Motor Company. Foundry sand reclamation. 4,449,566, Cl. 164-5.000.

Filstein, Eugene L.: *See—*
Barishpolsky, Boris M.; and Filstein, Eugene L., 4,450,430, Cl. 340-904.000.

Filterwerk Mann & Hummel GmbH: *See—*
Kopec, Eduard; and Oberknapp, Wolfgang, 4,449,493, Cl. 123-196.00A.

Finke, Harry P., to Bloom Engineering Company, Inc. Reheat furnace drop out door seal. 4,449,922, Cl. 432-64.000.

Finkelstein, Sam D., to MPL, Inc. Tamper-resistant pharmaceutical vial and cap assembly. 4,449,640, Cl. 220-270.000.

Finlayson, Claude M., to NL Industries, Inc. Organophilic clay gellant having enhanced dispersibility. 4,450,095, Cl. 252-315.200.

Finley, Thomas E.: *See—*
Steensma, Peter D.; Weinberg, Murray; Smid, Robert W.; and Finley, Thomas E., 4,450,554, Cl. 370-4.000.

Finnegan, Robert D.: *See—*
Tauber, Arthur; Finnegan, Robert D.; and Rothwarf, Frederick, 4,449,952, Cl. 445-55.000.

Firestone Tire & Rubber Company, The: *See—*
Fieldhouse, John W., 4,450,252, Cl. 524-353.000.

Firmagroup Australia Pty. Ltd.: *See—*
Leivenzon, Simon; and Leivenzon, Steven, 4,449,562, Cl. 160-113.000.

Fischer, Lothar; Hausen, Manfred Z.; and Wember, Kurt, to Chemische Werke Huels Aktiengesellschaft. Process for the continuous manufacture of n-butyraldehyde by selective hydrogenation of crotonaldehyde in the liquid phase in the presence of a palladium-aluminum oxide catalyst. 4,450,300, Cl. 568-462.000.

Fischer, Rudolf; Kunzle, Franz M.; and Schmutz, Jean, to Sandoz Ltd. Pyrrolobenzotriazepines. 4,450,108, Cl. 260-243.300.

Fisher, David R., to Zee Toys, Inc. Adjustable spinning toy vehicle. 4,449,323, Cl. 46-211.000.

Flannigan, Jerry E., to St. Regis Paper Company. Bulk material container. 4,449,649, Cl. 222-181.000.

Fletcher, George L.; and Wadsworth, Donald H., to Eastman Kodak Company. Indolizinone dyes and compositions, elements and methods using same. 4,450,093, Cl. 252-182.000.

Flonic S.A.: *See—*
Lett, Roland, 4,449,410, Cl. 73-861.910.

Floreancig, Antoine; Siffert, Bernard; and Trescol, Jean-Jacques, to Pechiney. Process for reducing the organic solvent losses in the treatment of a suspension resulting from the acid attack on an ore. 4,450,143, Cl. 423-10.000.

Flowcon Oy: *See—*
Forss, Bengt, 4,450,106, Cl. 260-124.00R.

Floyd, Frank M.: *See—*
Stone, John B.; and Floyd, Frank M., 4,450,066, Cl. 208-8.0LE.

FMC Corporation: *See—*
Fahmy, Mohamed A. H., 4,450,158, Cl. 424-220.000.
Hill, Jerry M.; and Lipe, Joel T., 4,450,529, Cl. 364-508.000.
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,450,269, Cl. 544-8.000.

Foerster, Michael: *See—*
Kocher, Jakob; and Foerster, Michael, 4,449,797, Cl. 351-205.000.

Fogg, Walter K. Garment. 4,449,254, Cl. 2-407.000.

Fohl, Artur, to REPA Feinstanzwerk GmbH. Cylinder/piston drive, especially for retightener systems in automatic safety belt winding devices. 4,449,443, Cl. 91-392.000.

Fohlen, George M.: *See—*
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,450,268, Cl. 528-327.000.

Folkmann, Andrew F., to Rockwell International Corporation. Feed forward circuit. 4,450,417, Cl. 333-24.00R.

Forbus, Nancy P.; and Wu, Margaret M., to Mobil Oil Corporation. Process for light olefin production. 4,449,961, Cl. 585-640.000.

Ford Motor Company: *See—*
Boaz, Premakaran T., 4,450,346, Cl. 219-522.000.
Carriere, Donald L., 4,449,423, Cl. 74-688.000.
Filipovitch, Anthony J.; and Bleuenstein, Julius M., 4,449,566, Cl. 164-5.000.
Janssen, Lutz J.; and Le Quement, Patrick, 4,449,796, Cl. 350-582.000.
Meitzler, Allen H., 4,450,376, Cl. 310-334.000.
Rhodes, Eugene E., 4,449,692, Cl. 251-144.000.

Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., to S.N.E.C.M.A. Soundproofing for a gas pipe, in particular for the fan jet of a turbojet, and equipment for its fabrication. 4,449,607, Cl. 181-213.000.

Forni, William J. Interproximal dental stimulator and cleaning apparatus. 4,449,933, Cl. 433-141.000.

Forss, Bengt, to Flowcon Oy. Lignin product for lowering the viscosity of cement and other finely-divided mineral material suspensions. 4,450,106, Cl. 260-124.00R.

Forster, Franz, to Linde Aktiengesellschaft. Axial piston pumps. 4,449,444, Cl. 91-506.000.

Forster, Heinz; and Priesnitz, Uwe, to Bayer Aktiengesellschaft. Process for the preparation of trifluoromethylphenyl oxyphenyl ether compounds. 4,450,308, Cl. 568-637.000.

Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,450,000, Cl. 71-105.000.

Foss, Morten; and Strandli, Kaare R., to A/S Raufoss Ammunisjonsfabrikker. Safety device for a projectile. 4,449,456, Cl. 102-240.000.

Foster Wheeler Energy Corporation: *See—*
Schroeder, Joseph W., 4,449,280, Cl. 29-421.00E.
Trozzi, Norman K., 4,450,071, Cl. 209-144.000.

Fournex, Robert: *See—*
Christidis, Yani; and Fournex, Robert, 4,450,292, Cl. 562-463.000.

Fox, Joseph R.; Curatolo, Benedict S.; and Pesa, Frederick A., to Standard Oil Company, The. Conversion of methane to olefins and hydrogen. 4,450,310, Cl. 585-400.000.

Fraden, Jacob, to Bio/Optical Sensor Partners, Ltd. Motion discontinuance detection system and method. 4,450,351, Cl. 250-221.000.

Francis, John F., to Gillette Company, The. Method of manufacturing razor blade assemblies. 4,449,428, Cl. 76-104.00R.

Franco, Simone: *See—*
Delfino, Gerolamo; and Franco, Simone, 4,450,230, Cl. 430-539.000.

Frank, Joseph J.: *See—*
Miller, William H.; and Frank, Joseph J., 4,450,373, Cl. 310-51.000.

Franken, Adrianus; J. J.; and Hagen, Johannes L. M., to U.S. Philips Corporation. Aerostatic axial thrust bearing. 4,449,834, Cl. 384-99.000.

Frankenberg, Alfred A.; and Scott, Douglas R., to Robertshaw Controls Company. Exhaust system for an internal combustion engine, burn-off unit and methods therefor. 4,449,362, Cl. 60-274.000.

Franz, Han-Jurgen; and Dreyer, Volker, to Endress u. Hauser GmbH u. Co. Rod-like probe for the capacitive measurement of the level in a container. 4,449,405, Cl. 73-304.00C.

Fredrick, Edmund R.: *See—*
Hales, Harvey E.; and Fredrick, Edmund R., 4,449,666, Cl. 238-84.000.

Freitag, Dieter: *See—*
Idel, Karsten; Freitag, Dieter; and Merten, Josef, 4,450,266, Cl. 524-265.000.
Schmidt, Manfred; Wank, Joachim; Reese, Eckart; Freitag, Dieter; Wangermann, Klaus; and Cohnen, Wolfgang, 4,450,249, Cl. 524-132.000.

Frey-Wigger, Paul. Working platform. 4,449,611, Cl. 182-63.000.

Friedli, Hans: *See—*
Merz, Walter; and Friedli, Hans, 4,450,053, Cl. 204-67.000.

Frister, Manfred; and Fakler, Bernhard, to Robert Bosch GmbH. Vehicular-type generator and forced air cooling blower combination. 4,450,389, Cl. 318-140.000.

Fritzvold, Bjorn H.; and Soteland, Nicolai, to Myrens Verksted A/S. Method for bleaching oxygen delignified cellulose-containing pulp with ozone and peroxide. 4,450,044, Cl. 162-65.000.

Fuchs, Dorothy J.; and Fuchs, Francis J., Jr. Clipping apparatus. 4,449,297, Cl. 30-29.000.

Fuchs, Francis J., Jr.: *See—*
Fuchs, Dorothy J.; and Fuchs, Francis J., Jr., 4,449,297, Cl. 30-29.000.

Fuehrer, Reece R.; and Hess, Richard L., to General Motors Corporation. Transmission center support mounting. 4,449,422, Cl. 74-606.00R.

Fuhrer, Egon; Kleinert, Dieter; Pfrogner, Gerd; and Egg, Max. Electromagnet. 4,449,691, Cl. 251-85.000.

Fuhrer, Rudolf: *See—*
Liebhardt, Josef; Fuhrer, Rudolf; and Dautel, Erich, 4,449,454, Cl. 102-226.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Sakakiyama, Ryuzo; and Takano, Toshio, 4,449,617, Cl. 192-0.033.
Sakakiyama, Ryuzo, 4,449,619, Cl. 192-0.052.
Sakakiyama, Ryuzo, 4,449,620, Cl. 192-0.052.

Fuji Photo Film Co., Ltd.: *See—*
Horie, Seiji; Nakano, Junji; and Sato, Hideo, 4,450,219, Cl. 430-59.000.
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Matsumoto, Seiji, 4,450,466, Cl. 357-30.000.
Oshikoshi, Yuji; and Agano, Toshitaka, 4,450,485, Cl. 358-298.000.
Tadokoro, Eiichi; Fujiyama, Masaaki; and Akashi, Goro, 4,450,199, Cl. 428-317.900.

Fuji Xerox Co., Ltd.: *See—*
Watanabe, Yutaka, 4,449,449, Cl. 101-111.000.

Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Automatic signal level control device. 4,450,413, Cl. 330-279.000.

Fujii, Katsutoshi: *See—*
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.

Fujii, Shuzo: *See—*
Saito, Hisatoshi; Fujii, Shuzo; Takase, Itaru; Nakamura, Akihiko; and Hara, Yoshihiro, 4,449,861, Cl. 406-39.000.

Fujii, Takayoshi: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,450,156, Cl. 424-180.000.

Fujii, Yasuhiko; Kikuchi, Mitsuru; and Saito, Hiroyuki, to Victor Company of Japan, Ltd. System for obtaining synchronized reproduction from a plurality of reproducing apparatuses. 4,450,490, Cl. 360-13.000.

Fujimaki, Yoshihide: *See—*
Takei, Yoshiaki; Fujimaki, Yoshihide; and Nomori, Hiroyuki, 4,450,218, Cl. 430-59.000.

Fujimori, Yoshinori: *See—*
Ando, Hideo; Nakagawa, Toshiharu; and Fujimori, Yoshinori, 4,450,452, Cl. 346-135.100.

Fujino, Shoji, to Nippon Atsudenki Kabushiki Kaisha. Automatic tuning device for FM receiver. 4,450,586, Cl. 455-161.000.

Fujioka, Yoshiki: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,450,393, Cl. 318-592.000.

Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, to Sumitomo Chemical Company, Limited. Process for production of sulfuric acid semiesters. 4,450,114, Cl. 260-458.00C.

Fujita, Yasuhiro: *See—*
Itoh, Fumikazu; Fujita, Yasuhiro; Kobayashi, Takashi; and Mifune, Takao, 4,449,293, Cl. 29-736.000.

Fujitsu Fanuc Limited: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,450,393, Cl. 318-592.000.

Fujitsu Limited: *See—*
Meguro, Takeshi; and Ito, Yukio, 4,450,421, Cl. 333-202.000.
Nakashima, Masato; Koezuka, Tetsuo; and Inagaki, Takefumi, 4,450,579, Cl. 382-8.000.
Takemae, Yoshihiro; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,450,515, Cl. 363-60.000.

Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugiahita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, to Hitachi Ltd. Magnetic head. 4,450,494, Cl. 360-125.000.

Fujiyama, Masaaki: *See—*
Tadokoro, Eiichi; Fujiyama, Masaaki; and Akashi, Goro, 4,450,199, Cl. 428-317.900.

Fukasawa, Noburu: *See—*
Seko, Yasutoshi; Yanagishima, Takayuki; and Fukasawa, Noburu, 4,450,438, Cl. 340-576.000.

Fukuda, Noriyoshi: *See—*
Eto, Goro; Nishimuro, Atsushi; and Fukuda, Noriyoshi, 4,449,949, Cl. 445-24.000.

Fukukura, Kazutoyo; and Martinez, Richard A., to AMP Incorporated. Encoded keyboard switch. 4,450,324, Cl. 200-5.00A.

Fukukura, Kazutoyo, to AMP Incorporated. Key switch assembly having momentary closed interval. 4,450,331, Cl. 200-160.000.

Fukunaga, Seiki: *See—*
Shirosaki, Tsutomu; and Fukunaga, Seiki, 4,450,279, Cl. 549-27.000.

Fulmer, George G.; and Lawson, John R., to Eastman Kodak Company. Method for improving the sensitometric response of a persistently conductive photoreceptor. 4,450,216, Cl. 430-31.000.

Furuhashi, Toshio, to Hitachi, Ltd. Control system for internal combustion engine. 4,449,502, Cl. 123-440.000.

Furuhashi, Yasuhiro; Miyata, Yukinori; and Hishinuma, Osamu, to Nippondenso Co., Ltd. Distributor type fuel injection pump. 4,449,504, Cl. 123-447.000.

Furuichi, Katsushi; and Takahata, Naomi, to Canon Kabushiki Kaisha. Paper leaf handling apparatus. 4,449,812, Cl. 355-14.0SH.

Futaba Denshi Kogyo K.K.: *See—*
Eto, Goro; Nishimuro, Atsushi; and Fukuda, Noriyoshi, 4,449,949, Cl. 445-24.000.

Gabriele, Leonard A., to Lear Siegler, Inc. Broaching machine. 4,449,872, Cl. 409-252.000.

Gagas, Michael. External manhole seal. 4,449,715, Cl. 277-12.000.

Gakko Hojin Kinki Daigaku (Educational Foundation Kinki Univ.): *See—*
Iwamura, Junichi; and Komai, Koichiro, 4,449,997, Cl. 71-88.000.

Galer, Richard E., to United States Gypsum Company. Method and apparatus for making reinforced cement board. 4,450,022, Cl. 156-42.000.

Gallagher, Paul H. Wind energy apparatus. 4,450,362, Cl. 290-55.000.

Gallaher Limited: *See—*
Adair, Noel J.; Carlisle, Robert W.; Stubbs, Michael E.; and Rooney, John J., 4,450,245, Cl. 502-211.000.

Gallina, Rolando. Method and apparatus for manufacturing foot supports with anatomically contoured shank portions. 4,450,122, Cl. 264-46.400.

Galloway, Alvin J.: *See—*
Painter, Walter C.; Luttmer, David J.; and Galloway, Alvin J., 4,450,397, Cl. 318-762.000.

Gandini, Alberto: *See—*
Roggero, Arnaldo; Bruzzone, Mario; and Gandini, Alberto, 4,450,259, Cl. 526-173.000.

Ganshirt, Karl H.: *See—*
Walker, Wolfram H.; Ganshirt, Karl H.; and Schleussner, Hans, 4,450,078, Cl. 210-315.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Haghiri-Tehrani, Yahya; and Hoppe, Joachim, 4,450,024, Cl. 156-108.000.

Garcia, Gerry R. Fly exterminator. 4,449,319, Cl. 43-139.000.

Gareis, Ronald E., to General Electric Company. Contactor with flux sensor. 4,450,427, Cl. 338-32.00H.

Garnett, William A.: *See—*
McCrory, William W.; Quigley, William B.; and Garnett, William A., 4,449,473, Cl. 114-354.000.

Garrett Corporation, The: *See—*
Dolland, Carlisle R., 4,450,443, Cl. 340-870.360.

Garrett, William R. Single-acting piston pump having two heads. 4,449,897, Cl. 417-437.000.

Garvens, Dieter: *See—*
Toerner, Ludger; Garvens, Dieter; Hager, Gunter; and Rettinger, Anton, 4,449,742, Cl. 285-236.000.

Gaslonde, Jean-Pierre, to U.S. Philips Corporation. Electronic speed regulator for a d.c. motor. 4,450,392, Cl. 318-317.000.

Gau, Wolfgang: *See—*
Preiss, Michael; Gau, Wolfgang; and Behre, Horst, 4,450,297, Cl. 568-424.000.

Gaulier, Yves, to U.S. Philips Corporation. Method of manufacturing capacitors integrated in microelectronic structure. 4,450,048, Cl. 204-15.000.

Gauthier, Jean-Marc. Neck and collarbone protector. 4,449,251, Cl. 2-2.000.

Gavronsky, German, to Pitney Bowes Inc. Envelope flap sealing device. 4,450,037, Cl. 156-441.500.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H.: *See—*
Hotger, Karl, 4,449,738, Cl. 285-11.000.

Gebruder Junghans GmbH: *See—*
Halssig, Andreas, 4,449,455, Cl. 102-234.000.
Halssig, Andreas, 4,449,457, Cl. 102-251.000.

Gebrueder Sucker: *See—*
Voswinckel, Gerhard; and Trauter, Joachim, 4,449,476, Cl. 118-674.000.

Gehlhaus, Jurgen; and Herz, Claus P., to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the preparation of D(+)-biotin. 4,450,276, Cl. 548-303.000.

Geissler, Heinrich: *See—*
Strifler, Paul; Geissler, Heinrich; Ludtke, Dieter; Maurath, Rudolf; and Steinecke, Rudolf, 4,449,726, Cl. 280-81.00A.

General Datacomm Industries, Inc.: *See—*
Hampton, Dean A.; Jacobsen, Christian C.; and Profet, Gary A., 4,450,558, Cl. 370-106.000.

General Electric Company: *See—*
Bose, Bimal K., 4,450,398, Cl. 318-803.000.
Cook, James S.; and Lennon, J. Anthony, 4,450,461, Cl. 357-19.000.
Corby, Nelson R., Jr., 4,450,339, Cl. 219-124.340.
Crivello, James V.; and Lee, Julia L., 4,450,360, Cl. 260-440.000.
Gareis, Ronald E., 4,450,427, Cl. 338-32.00H.
Kindig, Alan L., 4,449,289, Cl. 29-596.000.
Lafferty, Edwin C.; and Gibson, James H., 4,450,590, Cl. 455-214.000.
Mani, Ramani, 4,449,358, Cl. 60-39.020.
Massey, William A., 4,450,532, Cl. 364-703.000.
Mears, Gregory N., 4,450,416, Cl. 331-117.0FE.
Miller, William H.; and Frank, Joseph J., 4,450,373, Cl. 310-51.000.
Mueller, Robert J., 4,450,575, Cl. 378-26.000.
Pauze, Denis R., 4,450,258, Cl. 525-440.000.
Pimbley, Joseph M.; and Philipp, Herbert R., 4,450,465, Cl. 357-30.000.
Ritzer, Alan; and Lapidot, Heine, 4,450,282, Cl. 556-472.000.
Tiemann, Jerome J., 4,450,408, Cl. 324-318.000.
Tietjen, Byron W., 4,450,541, Cl. 367-149.000.

General Foods Corporation: *See—*
Larson, Robert W.; Lou, Wen C.; DeVito, Vivian C.; and Neidinger, Karen A., 4,450,177, Cl. 426-19.000.
Sienkiewicz, Boleslaw; Kramer, Franklin; Klein, Imrich; Oldershaw, C. G. Peter; and Chuang, Locus Y., 4,449,906, Cl. 425-131.100.
Stahl, Howard D.; and Yuan, Raymond C., 4,450,182, Cl. 426-565.000.

General Instrument Corporation: *See—*
Stamm, Russell D.; and Wullschleger, Manfred J., 4,450,332, Cl. 200-340.000.

General Motors Corporation: *See—*
Fuehrer, Reece R.; and Hess, Richard L., 4,449,422, Cl. 74-606.00R.

General Tire & Rubber Company, The: *See—*
Henley, Virgil E., 4,450,025, Cl. 156-132.000.

Gentile, Joseph P., to Vamco Machine & Tool, Inc. Adjustable input shaft for press feed. 4,449,658, Cl. 226-138.000.

Georgetown University: *See—*
Ledley, Robert S., 4,450,478, Cl. 358-111.000.

Gepgyar, Lang: *See—*
Bela, Batyi; Geza, Gulyas; Zoltan, Bozso; Istvan, Csakany; and Janos, Bartucz, 4,449,460, Cl. 110-214.000.

Gerard, Andre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Device for controlling the regulating facilities in an electric high-power AC-DC converter. 4,450,516, Cl. 363-84.000.

Gerberich, H. Robert: *See—*
McMillan, William P.; Hobbs, Charles C., Jr.; Gerberich, H. Robert; and Junker, Michael L., 4,450,301, Cl. 568-473.000.

Gereg, Gordon A. Catheter check valve. 4,449,693, Cl. 251-149.800.

Germain, Lee A.: *See—*
Musser, Lester W., Jr.; and Germain, Lee A., 4,449,616, Cl. 188-71.800.

Germe, Patrick P., to U.S.D. Corp. Combination backpack and gear bag. 4,449,655, Cl. 224-153.000.

Gesellschaft mit Kernforschungszentrum Karlsruhe beschrankter Haftung: *See—*
Lubecki, Andrzej; Wiese, Kurt; and Winkler, Karl, 4,450,576, Cl. 378-47.000.

Gestaut, Lawrence J., to Diamond Shamrock Corporation. Immersion deposited cathodes. 4,450,187, Cl. 427-125.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Becker, Kunibert; Elsner, Burckhard; and Kirchbrucher, Rudiger, 4,449,860, Cl. 405-293.000.
Terhorst, Gunter; Plester, Karl-Heinz; Rosenberg, Harry; and Eggenstein, Friedrich, 4,449,859, Cl. 405-291.000.

Geyken, Erwin; Koninger, Horst; and Schirk, Gunter, to Agfa-Gevaert Aktiengesellschaft. Roller for supporting material sensitive to radiation and, method of making the same. 4,449,278, Cl. 29-132.000.

Geza, Gulyas: *See—*
Bela, Batyi; Geza, Gulyas; Zoltan, Bozso; Istvan, Csakany; and Janos, Bartucz, 4,449,460, Cl. 110-214.000.

GH Hensley Industries, Inc.: *See—*
Hemphill, Charles W., 4,449,309, Cl. 37-141.00R.

Gibbs, Andrew R.: *See—*
Williams, Alan E.; and Gibbs, Andrew R., 4,449,925, Cl. 432-225.000.

Gibson, James H.: *See—*
Lafferty, Edwin C.; and Gibson, James H., 4,450,590, Cl. 455-214.000.

Giggi, Robert: *See—*
Stewart, Robert E.; Buzynski, John E.; and Giggi, Robert, 4,450,572, Cl. 375-87.000.

Gilbride, Andrew J.; Malecki, Edward S.; Winslow, Edward H., III; and Coleman, Robert F., to USM Corporation. Fabric tensioning device. 4,449,463, Cl. 112-121.260.

Gillette Company, The: *See—*
Francis, John F., 4,449,428, Cl. 76-104.00R.

Gillette, Robert H.; Brammall, Terrence N.; Shelton, Kent; and Cramer, Chris, to Brammall, Inc. Inside, outside honing tool. 4,449,328, Cl. 51-73.00R.

Gillette, Walter B.: *See—*
Gratzer, Louis B.; and Gillette, Walter B., 4,449,680, Cl. 244-130.000.
Gratzer, Louis B.; and Gillette, Walter B., 4,449,681, Cl. 244-130.000.
Gratzer, Louis B.; and Gillette, Walter B., 4,449,682, Cl. 244-130.000.
Gratzer, Louis B.; and Gillette, Walter B., 4,449,683, Cl. 244-130.000.

Ginter, Sally P.: *See—*
Pawloski, Chester E.; and Ginter, Sally P., 4,450,280, Cl. 549-221.000.

Giragosian, Paul S. Reversible magazine latch system for pistols. 4,449,311, Cl. 42-7.000.

Girault, Pierre: *See—*
Nezot, Francois; Girault, Pierre; Tessier, Jean; and Martel, Jacques, 4,450,169, Cl. 424-270.000.

Glanton, Guelda Gene: *See—*
Glanton, Thomas J., 4,449,876, Cl. 410-151.000.

Glanton, Thomas J., to Glanton, Guelda Gene. Cargo brace. 4,449,876, Cl. 410-151.000.

Glaxo Group Limited: *See—*
Bays, David E.; and Hayes, Roger, 4,450,168, Cl. 424-267.000.

Glockler, Otto; Gunther, Dieter; Horbelt, Michael; and Steinbrenner, Ulrich, to Robert Bosch GmbH. Electrically controlled or regulated fuel metering system for an internal combustion engine. 4,449,508, Cl. 123-492.000.

GNB Batteries Inc.: *See—*
Lambert, Frederick J.; Bosack, Donald J.; and Johansen, David K., 4,450,401, Cl. 320-22.000.

Goetter, Erwin H.: *See—*
Koncelik, Kenneth J.; and Goetter, Erwin H., 4,449,768, Cl. 339-14.00R.

Goff, Willie, Jr.; Rakes, James M.; and Williams, Errol R., to International Business Machines Corporation. Thermal print head. 4,450,342, Cl. 219-216.000.

Golden Valley Foods Inc.: *See—*
Watkins, James D., 4,450,180, Cl. 426-107.000.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph Eddy. Adjustable track. 4,449,665, Cl. 238-10.00R.

Goldfarb, Adolph Eddy: *See—*
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,449,665, Cl. 238-10.00R.

Golding, Scott M., to Discovision Associates. System for recording continuous-play and stop-motion signal. 4,450,488, Cl. 358-342.000.

Goldner, Richard. Mute for stringed instruments. 4,449,438, Cl. 84-310.000.

Goldobin, Vladimir B.: *See—*
Nikomarov, Samuil S.; Kochnev, Anatoly M.; Goldobin, Vladimir B.; Sarapulov, Jury M.; and Valdman, Isaak Y., 4,449,953, Cl. 464-19.000.

Goldstein, David S.: *See—*
Kliger, Isaac E.; Brown, William C., Jr.; and Goldstein, David S., 4,450,410, Cl. 328-155.000.

Goldstein, Richard M.: *See—*
Zebker, Howard A.; Held, Daniel N.; Goldstein, Richard M.; and Bickler, Thomas C., 4,450,447, Cl. 343-17.700.

Goldy, Robert L.; and Herrick, R. Clyde. Training device for athletes. 4,449,716, Cl. 272-109.000.

Gontowski, Walter S., Jr., to Sprague Electric Company. Alterable mode oscillator. 4,450,415, Cl. 331-111.000.

Gonzalez, Ernesto. Bipolar electrolytic cell. 4,450,060, Cl. 204-268.000.

Goodyear Aerospace Corporation: *See—*
Musser, Lester W., Jr.; and Germain, Lee A., 4,449,616, Cl. 188-71.800.
Uram, John R., Jr., 4,450,202, Cl. 428-412.000.

Goodyear Tire & Rubber Company, The: *See—*
Kell, Ralph W., 4,449,627, Cl. 198-847.000.
Tloczynski, James J.; Ahola, Clifford J.; Rosenstein, Nicholas D.; and Rine, James C., 4,449,670, Cl. 241-35.000.
Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., 4,449,674, Cl. 241-245.000.

Gorbulsky, Jacob. Process and apparatus for hydrocarbons recovery from solid fuels. 4,449,461, Cl. 110-229.000.

Gordin, Myron K., to Mycro-Group Company. Composite photometric method. 4,450,507, Cl. 362-61.000.

Goto, Yasuyuki: *See—*
Sato, Hideo; Goto, Yasuyuki; Saito, Hideo; Sawada, Shinichi; Matsunami, Keiichi; and Hirata, Kohzo, 4,450,094, Cl. 252-299.610.

Gottfried Roder Kunststoffwerk: *See—*
Roder, Eberhard, deceased; Borchers, Hans-Dieter, administrator; and Dusing, Wolfgang, 4,449,651, Cl. 222-455.000.

Gotze, Volkmar; and Potz, Gunther, to International Business Machines Corporation. Method and device for generating check bits protecting a data word. 4,450,561, Cl. 371-37.000.

Gould, Jay W., III, to Minnesota Mining and Manufacturing Company. Projectile. 4,449,982, Cl. 604-891.000.

Goulter, Victor H. Reversible vernier vises, clamps, and force tools. 4,449,704, Cl. 269-88.000.

Goupil, Jean-Paul C.: *See—*
de Pommery, Bertrand J. C. H.; Petiot, Gerard L. R.; Vergne, Jean-Claude E.; and Goupil, Jean-Paul C., 4,449,775, Cl. 339-75.0MP.

Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. Socketless separable connector. 4,449,770, Cl. 339-17.0CF.

Graf, Fritz; and Hupfer, Leopold, to BASF Aktiengesellschaft. Preparation of 1-substituted imidazoles. 4,450,277, Cl. 548-346.000.

Grant, Seamus M.: *See—*
Melody, David P.; Grant, Seamus M.; and Martin, Francis R., 4,450,030, Cl. 156-307.300.

Graser, Fritz, to BASF Aktiengesellschaft. NN' Para methoxy benzyl perylene-3,4,9,10-tetracarboxylic acid diimide. 4,450,273, Cl. 546-37.000.

Gratzer, Louis B.; and Gillette, Walter B., to Boeing Company, The. Aerodynamically contoured, low drag wing engine and engine nacelle combination. 4,449,680, Cl. 244-130.000.

Gratzer, Louis B.; and Gillette, Walter B., to Boeing Company, The. Aerodynamically contoured, low drag wing, engine and engine nacelle combination. 4,449,681, Cl. 244-130.000.

Gratzer, Louis B.; and Gillette, Walter B., to Boeing Company, The. Aerodynamically contoured, low drag wing, engine and engine nacelle combination. 4,449,682, Cl. 244-130.000.

Gratzer, Louis B.; and Gillette, Walter B., to Boeing Company, The. Aerodynamically contoured, low drag wing engine and engine nacelle combination. 4,449,683, Cl. 244-130.000.

Gray, Robert E., to Litton Systems, Inc. Self-contained breathing apparatus with provision for shared use. 4,449,524, Cl. 128-202.270.

Gray, Thomas H.: *See—*
Ames, S. Leslie; Gray, Thomas H.; and Kish, Lewis L., 4,450,206, Cl. 428-606.000.

Gray, Thomas J., to Olin Corporation. Raney alloy coated cathode for chlor-alkali cells. 4,450,056, Cl. 204-98.000.

Green, Harold A.; Petrocci, Alfonso N.; and Dudzinski, Zdzislaw W., to Millmaster Onyx Group, Inc. Decyl quaternary ammonium compounds. 4,450,174, Cl. 424-329.000.

Greenbaum, Robert R.: *See—*
Rice, David A.; Greenbaum, Robert R.; and Conarty, Thomas J., Jr., 4,450,046, Cl. 201-20.000.

Greene, George J., Jr. Fluid injecting method and apparatus. 4,449,543, Cl. 137-3.000.

Greeves, Godfrey, to Lucas Industries Limited. Device for adjusting engine timing. 4,449,501, Cl. 123-425.000.

Grieben, Karl H.; and Menge, Gunter, to Hauni-Werke Korber & Co. KG. Apparatus for transporting trays for cigarettes or the like. 4,449,625, Cl. 198-472.000.

Griffiths, Norman J. Dispenser for a jet of liquid bearing particulate abrasive material. 4,449,332, Cl. 51-439.000.

Groenhof, Eugene D., to Dow Corning Corporation. Traction fluid and traction drive system containing said fluid. 4,449,415, Cl. 74-214.000.

Grois, Igor: *See—*
Basov, Emma; and Grois, Igor, 4,449,784, Cl. 350-96.210.

Groko Maskin AB: *See—*
Aberg, Seard, 4,449,388, Cl. 72-381.000.

Grothe, Wolfgang: *See—*
Brill, Klaus; and Grothe, Wolfgang, 4,450,201, Cl. 428-336.000.

Grumman Aerospace Corporation: *See—*
Albanese, Victor J.; and Schmidt, Charles J., 4,450,448, Cl. 343-379.000.

GTE Laboratories Incorporated: *See—*
Buhrer, Carl F., 4,450,385, Cl. 315-205.000.
Peters, Thomas E.; Gustafson, John C.; and Wong, Boon, 4,450,135, Cl. 419-12.000.
Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, 4,450,380, Cl. 313-485.000.
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,449,989, Cl. 51-295.000.

GTE Products Corporation: *See—*
Bouchard, Andre C., 4,449,950, Cl. 445-28.000.
Buckinx, Pol, 4,450,420, Cl. 333-194.000.
Kendrick, George B.; Duggan, George L.; and Ochoa, Carlos, 4,450,381, Cl. 313-579.000.
Kim, Han J.; and Bevington, Richard C., 4,450,204, Cl. 428-552.000.

Guerra-Garcia, Gilberto: *See—*
Martinez-Vera, Enrique R.; and Guerra-Garcia, Gilberto, 4,449,671, Cl. 241-36.000.

Guggemos, Arthur R., to Sterner Lighting Systems Incorporated. Lighting fixture for opposite direction reflection. 4,450,513, Cl. 362-299.000.

Gulf & Western Industries, Inc.: *See—*
Meier, John W., 4,449,714, Cl. 277-9.000.

Gunter, James C., to Robertshaw Controls Company. Apparatus for joining two abutting metal members together and method of making such apparatus. 4,449,294, Cl. 29-792.000.

Gunther, Dieter: *See—*
Glockler, Otto; Gunther, Dieter; Horbelt, Michael; and Steinbrenner, Ulrich, 4,449,508, Cl. 123-492.000.

Gustafson, John C.: *See—*
Peters, Thomas E.; Gustafson, John C.; and Wong, Boon, 4,450,135, Cl. 419-12.000.

Gustavsson, Kurt. Mobile spreader unit. 4,449,648, Cl. 222-164.000.

Guttag, Karl M.; and Laws, Gerald E., to Texas Instruments Incorporated. Psuedo-microprogramming in microprocessor in single-chip microprocessor with alternate IR loading from internal or external program memories. 4,450,519, Cl. 364-200.000.

Gwyn, Marion V. Battery replacement system for electric vehicles. 4,450,400, Cl. 320-2.000.

Gzym, Larry P.; Ritzema, Lloyd G.; and Haadsma, David K., Jr., to Stow Davis Furniture Company. Adjustable base for office landscaping system. 4,449,337, Cl. 52-126.400.

H. Krantz GmbH & Co.: *See—*
Weck, Franz, 4,449,549, Cl. 137-512.100.

Haadsma, David K., Jr.: *See—*
Gzym, Larry P.; Ritzema, Lloyd G.; and Haadsma, David K., Jr., 4,449,337, Cl. 52-126.400.

Hack, Hermann: *See—*
Elsner, Georg; and Hack, Hermann, 4,450,147, Cl. 423-304.000.

Hackett, John G. Annunciating trigger device. 4,449,313, Cl. 42-69.00R.

Hagbjer, Gunnar, to IFM Akustikbyran AB- Warfvinges vag 26. Hygienic absorbent and use of a plastic foil in the absorbent. 4,450,195, Cl. 428-178.000.

Hagen, Johannes L. M.: *See—*
Franken, Adrianus; J. J.; and Hagen, Johannes L. M., 4,449,834, Cl. 384-99.000.

Hagendoorn, Willem J. Method and structure for maintaining effluent pressure range within an electric arc melting furnace. 4,450,569, Cl. 373-9.000.

Hager, Gunter: *See—*
Toerner, Ludger; Garvens, Dieter; Hager, Gunter; and Rettinger, Anton, 4,449,742, Cl. 285-236.000.

Hager, Thomas P.; and Ferguson, Larry W., to Owens-Corning Fiberglas Corporation. Polytetrafluoroethylene-impregnated bundles of sized glass fibers. 4,450,197, Cl. 428-232.000.

Haghiri-Tehrani, Yahya; and Hoppe, Joachim, to GAO Gesellschaft fur Automation und Organisation mbH. Identification card with an IC-module and method for producing it. 4,450,024, Cl. 156-108.000.

Hagio, Katsushige: *See—*
Okamura, Kouichi; Eriguchi, Yukio; Hagio, Katsushige; and Yamamoto, Setsuo, 4,449,662, Cl. 229-49.000.

Hahnel, Thomas, to Messerschmitt-Bolkow-Blohm GmbH. Ram jet engine construction and a valve control for proportioning fuel rich gas of ram jet rocket engines. 4,449,361, Cl. 60-254.000.

Hain, David A., to NCR Corporation. Apparatus for detecting the passage of multiple superposed documents along a feed path. 4,449,399, Cl. 73-159.000.

Hales, Harvey E.; and Fredrick, Edmund R., to Railroad Concrete Crosstie Corporation. Concrete railroad tie for supporting grade crossing panels. 4,449,666, Cl. 238-84.000.

Hall, John B.: *See—*
Sprecker, Mark A.; and Hall, John B., 4,450,101, Cl. 252-522.00R.

Hall, Steven R.: *See—*
Person, Herman R.; Hesse, Joseph F.; and Hall, Steven R., 4,450,441, Cl. 340-773.000.

Halliburton Company: *See—*
Burkhalter, John F.; Childs, Jerry D.; and Sutton, David L., 4,450,010, Cl. 106-87.000.
Childs, Jerry D.; Brothers, Lance E.; and Taylor, Mary J., 4,450,009, Cl. 106-76.000.
Mallett, A. J., 4,450,540, Cl. 367-41.000.
Smith, Harry D., Jr.; and Robbins, Carl A., 4,450,354, Cl. 250-256.000.

Hallock, Robert L. Flat clinch type nail. 4,449,878, Cl. 411-495.000.

Halssig, Andreas, to Gebruder Junghans GmbH. Inertia fuse with a self-destruct device for use in spinning projectiles. 4,449,455, Cl. 102-234.000.

Halssig, Andreas, to Gebruder Junghans GmbH. Safety device for the fuzes of nonspinning or slowly spinning projectiles. 4,449,457, Cl. 102-251.000.

Hamada, Hideo: *See—*
Suga, Masaaki; Morimoto, Yoshiro; and Hamada, Hideo, 4,449,618, Cl. 192-3.310.

Hamakawa, Yoshihiro; and Tawada, Yoshihisa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Amorphous silicon photovoltaic device having two-layer transparent electrode. 4,450,316, Cl. 136-256.000.

Hamill, Anthony C.; and Hawkins, Ronald J., to Babcock Power Limited. Tube bending machine. 4,449,387, Cl. 72-215.000.

Hamisch, Paul H., Jr.; and Makley, James A., to Monarch Marking Systems, Inc. Label printing and applying apparatus. 4,450,035, Cl. 156-384.000.

Hampshire, Michael J. Electrical connector. 4,449,779, Cl. 339-177.00R.

Hampton, Dean A.; Jacobsen, Christian C.; and Profet, Gary A., to General Datacomm Industries, Inc. Method and apparatus for establishing frame synchronization. 4,450,558, Cl. 370-106.000.

Hampton Research & Engineering, Inc.: *See—*
Harris, William H., 4,449,935, Cl. 433-151.000.

Hanauer, Johann: *See—*
Morawietz, Hans-Joachim; Hoffman, Erich; Hanauer, Johann; and Bauer, Kurt, 4,450,116, Cl. 260-502.50E.

Hancock, Peter D., to Allis-Chalmers Corporation. Lift, tilt and steering control for a lift truck. 4,449,365, Cl. 60-422.000.

Handotai Kenkyu Shinkokai: *See—*
Nishizawa, Junichi; and Ohmi, Tadahiro, 4,450,468, Cl. 357-51.000.

Haneda, Satoshi; Itoh, Takashi; Nakamura, Ken; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Method of charging electrostatic developer. 4,450,220, Cl. 430-102.000.

Haneda, Satoshi: *See—*
Terada, Sadatugu; Haneda, Satoshi; Tomono, Makoto; and Matsuo, Syunji, 4,450,221, Cl. 430-106.600.

Hans Grohe GmbH & Co.: *See—*
Buzzi, Gunther, 4,449,740, Cl. 285-149.000.
Lorch, Werner, 4,449,551, Cl. 137-625.410.

Hans, Rainer: *See—*
Barzantny, Joachim; Beske, Joachim; Hans, Rainer; and Lauhoff, Theodor, 4,449,890, Cl. 417-50.000.

Hans, Rudiger: *See—*
Brandenstein, Manfred; and Hans, Rudiger, 4,449,841, Cl. 403-24.000.

Hansen, Craig N., to Hansen Engine Corporation. Concentric intake and exhaust valve assembly. 4,449,490, Cl. 123-79.00C.

Hansen, Don; and Ranftl, Joseph C. Adjustable track for louver drapes or blinds. 4,449,564, Cl. 160-166.00A.

Hansen Engine Corporation: *See—*
Hansen, Craig N., 4,449,490, Cl. 123-79.00C.

Hansen, Glen D.: *See—*
Buschbom, Floyd E.; and Hansen, Glen D., 4,449,606, Cl. 180-297.000.

Hapke, Donald W., to Boeing Company, The. Pressure balance nonaxisymmetric high aspect ratio afterburner convergent nozzle. 4,449,678, Cl. 244-12.500.

Haque, Sazzadul; and Schroeder, Terry A. Consumable self-regenerative ledge cutting insert. 4,449,864, Cl. 407-113.000.

Hara, Minoru, to Kabushiki Kaisha Kubota Seisakusho. Centrifuge protective circuits for preventing excessive speed of different rotor types. 4,450,391, Cl. 318-313.000.

Hara, Takeshi: *See—*
Masuho, Yasuhiko; and Hara, Takeshi, 4,450,154, Cl. 260-112.00R.

Hara, Tomihiro; Ogawa, Masahiro; and Yamashita, Masaaki, to Nippon Kokan Kabushiki Kaisha. Multi-layer surface-treated steel plate having zinc-containing layer. 4,450,209, Cl. 428-626.000.

Hara, Toshitami: *See—*
Miyachi, Takeshi; Tsuda, Hisanori; Hara, Toshitami; and Kasugayama, Yukio, 4,450,457, Cl. 346-140.00R.

Hara, Yoshihiro: *See—*
Saito, Hisatoshi; Fujii, Shuzo; Takase, Itaru; Nakamura, Akihiko; and Hara, Yoshihiro, 4,449,861, Cl. 406-39.000.

Harashima, Asao: *See—*
Ona, Isao; Harashima, Asao; Ozaki, Masaru; and Taki, Yoichiro, 4,450,152, Cl. 424-70.000.

Hardy, James A., to NCR Corporation. Low speed laser scanning apparatus. 4,450,350, Cl. 235-467.000.

Harman, John N., III, to Beckman Instruments, Inc. Electrochemical gas sensor and method for producing the same. 4,450,064, Cl. 204-412.000.

Harnish, Wayne N.: *See—*
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,450,269, Cl. 544-8.000.

Harrington, Colin J.: *See—*
Askew, Herbert F.; Harrington, Colin J.; and Bridgwater, Terry J. P., 4,450,087, Cl. 252-73.000.

Harris Corporation: *See—*
Patterson, Raymond B., III, 4,450,414, Cl. 330-288.000.

Harris Graphics Corporation: *See—*
Salvucci, Orfeo J.; Hobby, John M.; Hennessy, James J.; and Young, Ronald R., 4,450,039, Cl. 156-504.000.

Harris, Stephen J., to Loctite Corporation. Additives for cyanoacrylate adhesives. 4,450,265, Cl. 526-298.000.

Harris, William H., to Hampton Research & Engineering, Inc. Tooth crown remover. 4,449,935, Cl. 433-151.000.

Harry, Leuan L.: *See—*
Krishnakumar, Suppayan M.; Harry, Leuan L.; and Beck, Martin H., 4,449,913, Cl. 425-548.000.

Harshaw/Filtrol Partnership: *See—*
Swinehart, Carl F., 4,449,780, Cl. 350-1.100.

Harte, J. Richard. Teacher prepared formats for instructional apparatus. 4,449,943, Cl. 434-334.000.

Hartman, John E., to National Bulk Equipment, Inc. Tiltable platform. 4,449,880, Cl. 414-421.000.

Hartman, Louis P.: *See—*
Burbo, James H.; Hartman, Louis P.; Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 4,449,787, Cl. 350-538.000.

Hasegawa, Akira; and Sakaguchi, Katsuyoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for loading and unloading tires for a tire vulcanizing machine. 4,449,903, Cl. 425-38.000.

Hasegawa, Akira; and Miyamoto, Yoshinori, to Mitsubishi Jukogyo Kabushiki Kaisha. Hydraulic vulcanizing press. 4,449,917, Cl. 425-149.000.

Hasegawa, Hiroshi, to Nippon Kogaku K.K. Automatic light-quantity-control speed light. 4,450,506, Cl. 362-4.000.

Hasegawa, Mitsuhiro, to Kayaba Kogyo Kabushiki Kaisha. Full extension locking device for damper. 4,449,702, Cl. 267-64.120.

Hasegawa, Toru; Izawa, Motowo; and Tanida, Seiichi. Antibiotic C-15003 PHM and production thereof. 4,450,234, Cl. 435-253.000.

Hasegawa, Toshifumi; and Kanii, Norikazu, to Toyoda Koki Kabushiki Kaisha. Machine tool with a pallet change function. 4,449,277, Cl. 29-33.00P.

Hashikawa, Kenzo: *See—*
Yaegashi, Takehisa; Aoki, Keiji; and Hashikawa, Kenzo, 4,450,528, Cl. 364-431.050.

Hashimoto, Susumu: *See—*
Ishikawa, Kiyotsugu; Sone, Yoshiaki; Hashimoto, Susumu; Omae, Masanori; and Kunii, Takao, 4,450,475, Cl. 358-44.000.

Hashimoto, Yoshiki: *See—*
Yoshino, Masataka; Hashimoto, Yoshiki; and Ushikosi, Yasunori, 4,449,574, Cl. 165-11.00R.

Haskin, Roger L.: *See—*
Hollaar, Lee A.; and Haskin, Roger L., 4,450,520, Cl. 364-200.000.

Hastings, Otis H., to Transaction Security, Inc. Data processing equipment enclosures. 4,449,764, Cl. 312-236.000.

Hatanaka, Masayuki: *See—*
Akita, Shinji; Hatanaka, Masayuki; and Uemura, Akira, 4,449,386, Cl. 72-100.000.

Hattori, Yutaka: *See—*
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, 4,450,428, Cl. 338-34.000.

Hauni-Werke Korber & Co. KG.: *See—*
Grieben, Karl H.; and Menge, Gunter, 4,449,625, Cl. 198-472.000.
Redeker, Werner; and Uhlig, Uwe, 4,449,988, Cl. 51-165.800.

Hausen, Manfred Z.: *See—*
Fischer, Lothar; Hausen, Manfred Z.; and Wember, Kurt, 4,450,300, Cl. 568-462.000.

Hauser, Hans, to MTD Products Inc. Multi-speed transaxle. 4,449,424, Cl. 74-701.000.

Hawe-Neos Dental Dr. H. v. Weissenfluh SA: *See—*
von Weissenfluh, Beat, 4,449,928, Cl. 433-40.000.

Hawkins, Ronald J.: *See—*
Hamill, Anthony C.; and Hawkins, Ronald J., 4,449,387, Cl. 72-215.000.

Hayakawa Rubber Company Limited: *See—*
Ishido, Yoshinobu; and Tanaka, Hideo, 4,449,713, Cl. 277-1.000.

Hayasaki, Hidehiko; and Yasumura, Motoaki, to Kabushiki Kaisha Tanaka Seisakusho. Method of controlling an operation of a copy-cutting apparatus. 4,450,014, Cl. 148-9.00R.

Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, to Mizuno Corporation. Golf club head of carbon fiber reinforced plastic. 4,449,707, Cl. 273-171.000.

Hayashi, Kiyoshi: *See—*
Terasawa, Hidenori; and Hayashi, Kiyoshi, 4,449,791, Cl. 350-427.000.

Haybuster Manufacturing, Inc.: *See—*
Morlock, Ruben D.; Kopecky, Ivyl D.; Anderson, Robert R.; and Marcy, Dewey R., 4,449,672, Cl. 241-101.700.

Hayes, Roger: *See—*
Bays, David E.; and Hayes, Roger, 4,450,168, Cl. 424-267.000.

Haymore, Ralph B.: *See—*
Black, Brent C.; Bradley, Bruce D.; and Haymore, Ralph B., 4,450,077, Cl. 210-275.000.

Haynie, Timothy J., to Chicago Bridge & Iron Company. Apparatus and methods of cooling and condensing exhaust steam from a power plant. 4,449,368, Cl. 60-652.000.

Hays, Herbert G.; and Kuipers, Warren W., to Amana Refrigeration, Inc. Recuperative furnace. 4,449,511, Cl. 126-110.00R.

Head, Randall T. Non-skid device for wheelchairs and the like. 4,449,561, Cl. 152-213.00R.

Heal, Sam F.: *See—*
Sawka, Steven; Moretti, Vincent; and Heal, Sam F., 4,450,382, Cl. 315-082.000.

Heath, Boyd A.: *See—*
Herchenroeder, Robert B.; and Heath, Boyd A., 4,450,007, Cl. 75-10.00C.

Heaton, William C., to Howell, Rondal P., a part interest. Free piston internal combustion engine. 4,449,488, Cl. 123-46.00R.

Hebert, Alfred. Energy efficient damper for a furnace. 4,449,512, Cl. 126-292.000.

Hechenbleikner, Ingenuin; Enlow, William P.; and Lankin, David C., to Borg-Warner Chemicals, Inc. Zerovalent nickel phosphite complexes. 4,450,113, Cl. 260-439.00R.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Imidazoline conditioner for the flotation of oxidized coal. 4,450,070, Cl. 209-3.000.

Hegarty, William P.; and Schmidt, William P., to Air Products and Chemicals, Inc. Low energy process for separating carbon dioxide and acid gases from a carbonaceous off-gas. 4,449,994, Cl. 62-17.000.

Hegedus, Allan J., to Mobil Oil Corporation. Efflux viscosity cup. 4,449,394, Cl. 73-55.000.

Heidelberger Druckmaschinen: *See—*
Junghans, Rudi, 4,449,451, Cl. 101-350.000.
Staffer, Julius; Walther, Karl-Heinz; and Jahn, Hans-Georg, 4,449,453, Cl. 101-416.00A.

Heine, Heinrich: *See—*
Messer, Dieter; Wilhelm, Volker; Endres, Robert; and Heine, Heinrich, 4,450,012, Cl. 106-300.000.

Held, Daniel N.: *See—*
Zebker, Howard A.; Held, Daniel N.; Goldstein, Richard M.; and Bickler, Thomas C., 4,450,447, Cl. 343-17.700.

Held, Kurt. Machine for guiding numerically controlled supports for tools used in woodworking operation. 4,449,986, Cl. 29-26.00A.

Helfman, Robert: *See—*
Shacket, Sheldon; and Helfman, Robert, 4,449,334, Cl. 52-79.300.

Heling, Dennis H.: *See—*
Murphy, Randall T.; and Heling, Dennis H., 4,449,751, Cl. 297-284.000.

Helix Technology Corporation: *See—*
Peterson, John F.; and Bartlett, Allen J., 4,449,373, Cl. 62-55.500.

Helm, Percy R.; and Morrow, James G., Sr., to Manitowoc Company, Inc., The. Imaginary pivot lift crane. 4,449,635, Cl. 212-196.000.

Helmes Machinefabriek B.V.: *See—*
Luyten, Jacobus H., 4,449,555, Cl. 144-198.00R.

Hemphill, Charles W., to GH Hensley Industries, Inc. Flat bottom bucket and digging teeth. 4,449,309, Cl. 37-141.00R.

Henderson, Matthew P., to Pennwalt Corporation. Blister pack loading machine. 4,449,351, Cl. 53-569.000.

Hengesbach, Robert W. Valve with handle-mounting ring. 4,449,696, Cl. 251-231.000.

Henley, Virgil E., to General Tire & Rubber Company, The. Method and apparatus for wrapping a tire bead ring. 4,450,025, Cl. 156-132.000.

Hennessy, James J.: *See—*
Salvucci, Orfeo J.; Hobby, John M.; Hennessy, James J.; and Young, Ronald R., 4,450,039, Cl. 156-504.000.
Henningsen, Dennis N. Insulation suspension system. 4,449,343, Cl. 52-404.000.
Henry, Ivor C., to Thorn Emi plc. Lanterns for area lighting. 4,450,509, Cl. 362-216.000.
Her Majesty the Queen in Right of Canada as represented by the Minister of National Defense: *See—*
Lightstone, Alexander W.; Eastwood, H. Keith; and Szarka, Frank, 4,449,781, Cl. 350-96.150.
Herchenroeder, Robert B.; and Heath, Boyd A., to Cabot Corporation. Process for electroslag remelting of manganese-base alloys. 4,450,007, Cl. 75-10.00C.
Hercules Incorporated: *See—*
Bloothoofd, William, 4,450,226, Cl. 430-300.000.
Simmons, Ronald L.; and Young, Herbert L., 4,450,110, Cl. 260-349.000.
Willis, Chester R., 4,450,302, Cl. 502-150.000.
Herlofson, Nicolai: *See—*
Alfven, Hannes; Herlofson, Nicolai; Babic, Miroslav; and Brunberg, Ernst-Ake, 4,449,577, Cl. 165-104.120.
Hermann, Jean; and Bourgeois, Claude, to Centre Electronique Horloger S.A. ZT-Cut piezo-electric resonator. 4,450,378, Cl. 310-361.000.
Hermans, Robert J.: *See—*
Ebbing, Steven J.; and Hermans, Robert J., 4,449,442, Cl. 91-44.000.
Herold, Robert; and Dubrous, Francis, to Societe Francaise d'Electrometallurgie Sofrem. Process and apparatus for the recovery of combustible gases in an electrometallurgy furnace. 4,450,003, Cl. 75-10.00R.
Herriau, Jean-Pierre: *See—*
Huignard, Jean-Pierre; and Herriau, Jean-Pierre, 4,449,785, Cl. 350-3.610.
Herrick, R. Clyde: *See—*
Goldy, Robert I.; and Herrick, R. Clyde, 4,449,716, Cl. 272-109.000.
Herrmann, Walter: *See—*
Steinsberger, Karl; Maier, Albert; and Herrmann, Walter, 4,449,868, Cl. 408-138.000.
Hertel, Otto; Linhart, Friedrich; and Scharf, Emil, to BASF Aktiengesellschaft. Preparation of water-soluble, nitrogen-containing condensates and their use in papermaking. 4,450,045, Cl. 162-164.300.
Hertel, Richard J.; and MacIntosh, Edward D., to Varian Associates, Inc. Wafer transfer system. 4,449,885, Cl. 414-750.000.
Herz, Claus P.: *See—*
Gehlhaus, Jurgen; and Herz, Claus P., 4,450,276, Cl. 548-303.000.
Hess, Richard L.: *See—*
Fuehrer, Reece R.; and Hess, Richard L., 4,449,422, Cl. 74-606.00R.
Hesse, Joseph F.: *See—*
Person, Herman R.; Hesse, Joseph F.; and Hall, Steven R., 4,450,441, Cl. 340-773.000.
Hettinger, Lon J. Quick evacuation fireman's coat. 4,449,253, Cl. 2-93.000.
Hettinger, William P., Jr.; Kovach, Stephen M.; and Hoffman, James F., to Ashland Oil, Inc. Endothermic removal of coke deposited on catalytic materials during carbo-metallic oil conversion. 4,450,241, Cl. 502-34.000.
Hettwer, Paul F.: *See—*
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarence R., 4,450,424, Cl. 336-94.000.
Hewlett-Packard Company: *See—*
Reed, Ronald G.; Schmuckal, Robin R.; and McCullough, Robert K., 4,450,387, Cl. 315-375.000.
Hewlett-Packard GmbH: *See—*
Pross, Gerhard; and Rochlitzer, Frank, 4,449,537, Cl. 128-723.000.
Hi-Tec, Inc.: *See—*
Raether, Roger, 4,449,739, Cl. 285-14.000.
Hibi, Kunio: *See—*
Kikuchi, Hideo; Ikeda, Sunao; Kakitani, Yohtaro; Hibi, Kunio; and Okuzawa, Tugio, 4,449,813, Cl. 355-14.00R.
Hickernell, Fred S.: *See—*
Cho, Frederick Y.; and Hickernell, Fred S., 4,450,374, Cl. 310-313.00B.
Hicks, Raymond J., to Hicks Transmissions Limited. Multiple drum winches. 4,449,697, Cl. 254-297.000.
Hicks Transmissions Limited: *See—*
Hicks, Raymond J., 4,449,697, Cl. 254-297.000.
Hidaka, Yoshiaki: *See—*
Tsuchiyama, Tadashi; and Hidaka, Yoshiaki, 4,449,491, Cl. 123-90.340.
Higa, Walter H., to United States of America, National Aeronautics and Space Administration. Centrifugal-reciprocating compressor. 4,449,894, Cl. 417-328.000.
Hild, Herbert A.; and Scanlon, Walter, to Hild Sails, Inc. Variable weight cloth roller-furling sail. 4,449,467, Cl. 114-103.000.
Hild Sails, Inc.: *See—*
Hild, Herbert A.; and Scanlon, Walter, 4,449,467, Cl. 114-103.000.
Hilfman, Lee: *See—*
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,449,586, Cl. 166-303.000.
Hill, Jerry M.; and Lipe, Joel T., to FMC Corporation. Method and apparatus for determining encoder accuracy margin in a wheel balancer. 4,450,529, Cl. 364-508.000.
Hill, Ronald A., to United States of America, Energy. Variable aperture collimator for high energy radiation. 4,450,578, Cl. 378-152.000.
Hillestad, Tollief O. Portable tube milling tool. 4,449,871, Cl. 409-178.000.
Hilston, Michael D.: *See—*
Drake, Nancy J.; Hilston, Michael D.; and O'Malley, Mary A., 4,450,262, Cl. 526-234.000.
Hilti Aktiengesellschaft: *See—*
Kessler, Juergen, 4,449,877, Cl. 411-57.000.
Hinds, Charles M., to Spar Aerospace Limited. Satellite servicing. 4,449,684, Cl. 244-160.000.
Hinkle, John E.: *See—*
Demuth, Gordon L.; Hinkle, John E.; and Moran, J. Thomas, 4,450,525, Cl. 364-200.000.
Hinton, Deborah L. Endotracheal tube holder. 4,449,527, Cl. 128-207.170.
Hiramatsu, Akira: *See—*
Yamada, Masanori; and Hiramatsu, Akira, 4,449,803, Cl. 354-416.000.
Hirata, Isao, to Tokai Metals Company, Limited. Convenience container with cornered bottom. 4,450,581, Cl. 383-42.000.
Hirata, Kohzo: *See—*
Sato, Hideo; Goto, Yasuyuki; Saito, Hideo; Sawada, Shinichi; Matsunami, Keiichi; and Hirata, Kohzo, 4,450,094, Cl. 252-299.610.
Hirata, Makizo; and Ueda, Yoshiteru, to Kawasaki Jukogyo Kabushiki Kaisha. Exhaust device for 2-cycle engine. 4,449,608, Cl. 181-228.000.
Hirayama, Kazuhiro: *See—*
Kitamura, Takashi; Watanabe, Asao; Nakano, Takashi; Masaki, Katsumi; Hirayama, Kazuhiro; Sato, Yasushi; and Tokiwa, Taisuke, 4,450,453, Cl. 346-108.000.
Hirayama, Takashi; and Igarashi, Yuichi, to Iwasaki Tsushinki Kabushiki Kaisha. Two-way signal transmission and one-way DC power supply using a single line pair. 4,450,571, Cl. 375-7.000.
Hirose, Fumio: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,450,156, Cl. 424-180.000.
Hirozawa, Stanley T.: *See—*
Wilson, Joe C.; and Hirozawa, Stanley T., 4,450,088, Cl. 252-75.000.
Hirsch, Guenter; and Ley, Gregor, to BASF Aktiengesellschaft. Grinding or dispersing agents for pigments. 4,450,013, Cl. 106-308.00N.
Hishinuma, Osamu: *See—*
Furuhashi, Yasuhiro; Miyata, Yukinori; and Hishinuma, Osamu, 4,449,504, Cl. 123-447.000.
Hitachi Heating Appliances Co., Ltd.: *See—*
Hotta, Kouichi; Yazawa, Yukichi; and Tatsukawa, Osami, 4,450,345, Cl. 219-491.000.
Hitachi Koki Company, Limited: *See—*
Iitsuka, Takeshi, 4,450,323, Cl. 200-1.00V.
Hitachi Ltd.: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,450,494, Cl. 360-125.000.
Furuhashi, Toshio, 4,449,502, Cl. 123-440.000.
Itoh, Fumikazu; Fujita, Yasuhiro; Kobayashi, Takashi; and Mifune, Takao, 4,449,293, Cl. 29-736.000.
Koizumi, Hideaki; Yamada, Hideo; and Oishi, Kounosuke, 4,449,820, Cl. 356-307.000.
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; Takahashi, Ken; and Oowada, Siniti, 4,450,426, Cl. 338-21.000.
Nagano, Takahiro; Sanpei, Isamu; Sakurada, Shuroku; and Nakagawa, Masaru, 4,450,467, Cl. 357-38.000.
Nakamura, Shigeru; Maeda, Takeshi; Kaku, Toshimitsu; Tsunoda, Yoshito; Takasugi, Wasao; and Kaneda, Tokuya, 4,450,547, Cl. 369-45.000.
Saito, Chuichi; Teranishi, Katsuya; Baba, Katsuyoshi; and Osumi, Yoshihiro, 4,449,623, Cl. 198-335.000.
Hitachi Metals, Ltd.: *See—*
Yamaguchi, Kazuo; Kuni, Asahiro; Akiyama, Nobuyuki; and Endo, Juro, 4,449,818, Cl. 356-237.000.
Hitchcock, Robert F.: *See—*
Anderson, David L.; Hitchcock, Robert F.; and Tamburrino, Robert M., 4,450,081, Cl. 210-445.000.
Ho, Eugene Y., to Techne Electronics, Ltd. Motion alarm system. 4,450,437, Cl. 340-540.000.
Hobart, Ralph J.; Rupp, Robert D.; and Mastro, Paul F., to Nibco, Inc. Blocked ball valve. 4,449,694, Cl. 251-171.000.
Hobbs, Charles C., Jr.: *See—*
McMillan, William P.; Hobbs, Charles C., Jr.; Gerberich, H. Robert; and Junker, Michael L., 4,450,301, Cl. 568-473.000.
Hobby, John M.: *See—*
Salvucci, Orfeo J.; Hobby, John M.; Hennesay, James J.; and Young, Ronald R., 4,450,039, Cl. 156-504.000.
Hochstein, Peter A. Condition monitoring system (tire pressure). 4,450,431, Cl. 340-58.000.
Hoechst Aktiengesellschaft: *See—*
Diery, Helmut; Deubel, Reinhold; and Weide, Joachim, 4,450,304, Cl. 568-609.000.
Elsner, Georg; and Hack, Hermann, 4,450,147, Cl. 423-304.000.
Morawietz, Hans-Joachim; Hoffman, Erich; Hanauer, Johann; and Bauer, Kurt, 4,450,116, Cl. 260-502.50E.
Hoff, Marcian E., Jr.; Townsend, Marshall A.; and Dreyer, Stephen F., to Intel Corporation. Digital logic buffer for converting single polarity analog signals to dual polarity analog signals. 4,450,365, Cl. 307-262.000.

Hoffman, Erich: *See—*
Morawietz, Hans-Joachim; Hoffman, Erich; Hanauer, Johann; and Bauer, Kurt, 4,450,116, Cl. 260-502.50E.
Hoffman, James F.: *See—*
Hettinger, William P., Jr.; Kovach, Stephen M.; and Hoffman, James F., 4,450,241, Cl. 502-34.000.
Hoffman, William F.; Smith, Robert L.; and Willard, Alvin K., to Merck & Co., Inc. Antihypercholesterolemic compounds. 4,450,171, Cl. 424-279.000.
Hoffmann-La Roche Inc.: *See—*
Luthy, Christoph, 4,450,157, Cl. 424-200.000.
Holbert, Don R. Method and apparatus for drilling a curved bore. 4,449,595, Cl. 175-79.000.
Holbert, Kenneth W.; and Massey, Edwin M., to Elxsi. Backplane fabrication method. 4,450,029, Cl. 156-250.000.
Holcomb, Dysart E.: *See—*
Kidwell, Louis E., Jr.; and Holcomb, Dysart E., 4,450,069, Cl. 208-255.000.
Hollaar, Lee A.; and Haskin, Roger L., to University of Illinois Foundation. Method and system for matching encoded characters. 4,450,520, Cl. 364-200.000.
Holmes, Brian N.; Dalzell, Rex J.; and Aasen, Steven M., to Minnesota Mining and Manufacturing Company. Dispersed imaging systems with tetra (hydrocarbyl) borate salts. 4,450,227, Cl. 430-339.000.
Holmes, Robert W.: *See—*
Dey, Arabinda N.; and Holmes, Robert W., 4,450,213, Cl. 429-105.000.
Holster, Peter L.; and Wittkamper, Johannes M., to U.S. Philips Corporation. Multilayer information disc. 4,450,553, Cl. 369-275.000.
Holt, James F. Coupling of MHD generator to gas turbine. 4,450,361, Cl. 290-1.00R.
Holtman, Dennis C., to Johnson & Johnson Baby Products Company. Absorbent structure having gradient densities. 4,449,979, Cl. 604-379.000.
Homan, Clarke G.; Kendall, David P.; and MacCrone, Robert K., to United States of America, Army. Production of cadmium sulfide compositions having unusual magnetic and electrical properties. 4,450,086, Cl. 252-62.510.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Shiratsuchi, Kouji, 4,449,723, Cl. 280-5.00H.
Tsuchiyama, Tadashi; and Hidaka, Yoshiaki, 4,449,491, Cl. 123-90.340.
Honda, Takeo: *See—*
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.
Hones, Helmut; and Mohaupt, Hubert, to Robert Bosch GmbH. Method and apparatus for steering a vehicle with fixed-position wheels. 4,449,598, Cl. 180-6.500.
Honeywell Inc.: *See—*
Castleman, B. Wayne; Donehoo, Robert F.; Oswald, Rudolph G.; Reed, Kenneth L.; and Shipley, George H., 4,450,409, Cl. 324-460.000.
Jewitt, Harold S., 4,450,449, Cl. 343-700.0MS.
Reynolds, George O., 4,450,358, Cl. 250-492.100.
Severson, Asbjorn M., 4,450,504, Cl. 361-369.000.
Spurr, Robert N., 4,450,411, Cl. 330-2.000.
Hoover Company, The: *See—*
Specht, Glenn E., 4,449,737, Cl. 285-7.000.
Hopkins, Thomas R., to Phillips Petroleum Company. Alcohol removal from blood with alcohol oxidase. 4,450,153, Cl. 424-94.000.
Hoppe, Joachim: *See—*
Haghiri-Tehrani, Yahya; and Hoppe, Joachim, 4,450,024, Cl. 156-108.000.
Horbelt, Michael: *See—*
Glockler, Otto; Gunther, Dieter; Horbelt, Michael; and Steinbrenner, Ulrich, 4,449,508, Cl. 123-492.000.
Hori, Syunichi; and Kurihashi, Isao. Glass pane holder for window regulator. 4,449,326, Cl. 49-375.000.
Horie, Seiji; Nakano, Junji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Electrophotographic photoreceptor with thiobarbituric acid derivative. 4,450,219, Cl. 430-59.000.
Horii, Kenju: *See—*
Terakawa, Sumio; and Horii, Kenju, 4,450,484, Cl. 358-213.000.
Horiuchi, Tomofusa, to Nissan Motor Company, Limited. Idle-adjusting device for an internal combustion engine. 4,449,498, Cl. 123-339.000.
Horlebein, Eberhard: *See—*
Eiermann, Kurt; Horlebein, Eberhard; Lissmann, Kurt; and Schafer, Wolfgang, 4,449,402, Cl. 73-204.000.
Horn, Spencer C.; and Mogg, Alan A., to S & A Oil Field Services, Inc. Method of removing water from earthen pits. 4,449,849, Cl. 405-52.000.
Horne, David R., to U.S. Philips Corporation. Thermal imaging apparatus. 4,450,479, Cl. 358-113.000.
Horney, James R.: *See—*
Sauerwein, William D.; Sides, Daniel H.; Weber, Steven A.; and Horney, James R., 4,449,329, Cl. 51-168.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Metal hydrocarbyl phosphorodithioates and lubricants containing same. 4,450,096, Cl. 252-32.70E.
Hoshijima, Yosuke: *See—*
Nakao, Yasuyuki; Hoshijima, Yosuke; and Okohira, Kazuo, 4,450,005, Cl. 75-60.000.
Hoshino Gakki Company, Limited: *See—*
Hoshino, Yoshihiro, 4,449,440, Cl. 84-422.00R.
Hoshino, Yoshihiro, to Hoshino Gakki Company, Limited. Adjustable stand for high-hat cymbal. 4,449,440, Cl. 84-422.00R.
Hotger, Karl, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H. Rotary fluid coupling. 4,449,738, Cl. 285-11.000.
Hotta, Kouichi; Yazawa, Yukichi; and Tatsukawa, Osami, to Hitachi Heating Appliances Co., Ltd. Foodstuffs heating apparatus with selective heating functions. 4,450,345, Cl. 219-491.000.
Hounsel, Mack A.; and Byrd, Carlisle O., Jr., to Manville Service Corporation. Insulation module hardware. 4,449,345, Cl. 52-506.000.
House, Bruce F., to Shelley Manufacturing Company Division of Allo Food Service Equipment Company. Self-leveling plate dispenser. 4,449,760, Cl. 312-42.000.
Howard, Bruce S., to Boeing Company, The. Alloy testing apparatus using eddy current conductivity probe. 4,450,405, Cl. 324-234.000.
Howell, Rondal P.: *See—*
Heaton, William C., 4,449,488, Cl. 123-46.00R.
Hoy, James S. Swimming pool sweep. 4,449,265, Cl. 15-1.700.
Hsia, Chung H.: *See—*
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,450,311, Cl. 585-413.000.
Huang, I-Der: *See—*
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,450,299, Cl. 568-454.000.
Huang, Shu-Jen W., to Nalco Chemical Company. Reducing turbidity in turbid waters. 4,450,092, Cl. 252-181.000.
Hudson, Robert G.: *See—*
Ison, Billy G.; and Hudson, Robert G., 4,449,480, Cl. 119-4.000.
Huffman, Ronald E., to KV33 Corporation. Dental model articulator. 4,449,930, Cl. 433-64.000.
Hughes Aircraft Company: *See—*
Barry, James D.; and Denney, Joseph M., 4,450,489, Cl. 358-348.000.
Yum, Lawrence H.; and Chen, Fu-Chuan, 4,450,418, Cl. 333-128.000.
Hughes, Larry M., to RCA Corporation. Disc record player having stylus cleaner. 4,450,548, Cl. 369-71.000.
Huignard, Jean-Pierre; and Herriau, Jean-Pierre, to Thomson-CSF. Multiple hologram bulk optical storage device. 4,449,785, Cl. 350-3.610.
Huitema, Thomas W., to J. I. Case Company. Transmission control system. 4,449,416, Cl. 74-336.00R.
Humbert, Daniel: *See—*
Clemence, Francois; Hunt, Peter F.; Le Martret, Odile; and Humbert, Daniel, 4,450,166, Cl. 424-258.000.
Le Martret, Odile; Humbert, Daniel; and Hunt, Peter F., 4,450,167, Cl. 424-258.000.
Humphrey, Joseph R.: *See—*
Draper, Robert; Lackey, Robert S.; Fagan, Thomas J., Jr.; Veyo, Stephen E.; and Humphrey, Joseph R., 4,449,376, Cl. 62-259.100.
Humphrey, Michael N. R. Golf practice device. 4,449,708, Cl. 273-186.00A.
Humphries, Darral V.: *See—*
Austen, Alfred R.; and Humphries, Darral V., 4,449,904, Cl. 425-97.000.
Hunt, Joseph M., to Allegheny Ludlum Steel Corporation. Composite article for a semiconductor device. 4,450,208, Cl. 428-620.000.
Hunt, Peter F.: *See—*
Clemence, Francois; Hunt, Peter F.; Le Martret, Odile; and Humbert, Daniel, 4,450,166, Cl. 424-258.000.
Le Martret, Odile; Humbert, Daniel; and Hunt, Peter F., 4,450,167, Cl. 424-258.000.
Hupfer, Leopold: *See—*
Graf, Fritz; and Hupfer, Leopold, 4,450,277, Cl. 548-346.000.
Hurst, Jerry C.: *See—*
Abraham, Bruce C.; Fegley, Charles R.; and Hurst, Jerry C., 4,449,282, Cl. 29-467.000.
Huschke, Bruno. Device for testing filters, particularly sterile filters. 4,449,392, Cl. 73-40.000.
Huss, Otto: *See—*
Marker, Hannes; and Huss, Otto, 4,449,466, Cl. 114-91.000.
Hutchins, Walter J.: *See—*
Drechsler, Mark A.; and Hutchins, Walter J., 4,449,302, Cl. 33-138.000.
Huther, Werner, to MTU Motoren-und Turbinen Union Munchen GmbH. Thermocouple for measuring temperatures and method of making the thermocouple. 4,450,314, Cl. 136-230.000.
Hydra-Jack, Inc.: *See—*
Cory, William W., 4,449,734, Cl. 280-766.100.
Hydro Rene Leduc: *See—*
Porel, Louis C., 4,449,552, Cl. 138-30.000.
Hylsa, S.A.: *See—*
Martinez-Vera, Enrique R.; and Guerra-Garcia, Gilberto, 4,449,671, Cl. 241-36.000.
Hynds, John R., to J. R. Hynds Limited. Methods and/or apparatus for increasing the overturning resistance of retaining walls. 4,449,858, Cl. 405-286.000.
Iacoviello, John G., to Air Products and Chemicals, Inc. Nonwoven products having low residual free formaldehyde content. 4,449,978, Cl. 604-372.000.
Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Combination hot gas and air defrost refrigerated display case. 4,449,374, Cl. 62-81.000.
Ichinose, Toru: *See—*
Tezuka, Etsuhiro; Kaji, Koichiro; and Ichinose, Toru, 4,449,505, Cl. 123-447.000.

Idel, Karsten; Freitag, Dieter; and Merten, Josef, to Bayer Aktiengesellschaft. Use of siloxanes for the modification of high molecular weight p-polyphenylene sulphides. 4,450,266, Cl. 524-265.000.
IFM Akustikbyran AB- Warfvinges vag 26: *See*—
Hagbjer, Gunnar, 4,450,195, Cl. 428-178.000.
Igarashi, Yuichi: *See*—
Hirayama, Takashi; and Igarashi, Yuichi, 4,450,571, Cl. 375-7.000.
Iida, Akio; and Kurihara, Osamu, to Kabushiki Kaisha Komatsu Seisakusho. Elevationally adjustable fluid suspension system for a wheel tractor scraper or the like. 4,449,733, Cl. 280-707.000.
IIT Research Institute: *See*—
Bridges, Jack E.; and Taflove, Allen, 4,449,585, Cl. 166-248.000.
Iitsuka, Takeshi, to Hitachi Koki Company, Limited. Reversible switch. 4,450,323, Cl. 200-1.00V.
Ikeda, Masami: *See*—
Sugitani, Hiroshi; Ozawa, Masakazu; Matsuda, Hiroto; Ikeda, Masami; and Matsumoto, Haruyuki, 4,450,455, Cl. 346-140.0PQ.
Ikeda, Sunao: *See*—
Kikuchi, Hideo; Ikeda, Sunao; Kakitani, Yohtaro; Hibi, Kunio; and Okuzawa, Tugio, 4,449,813, Cl. 355-14.00R.
Ikedo, Yuji; Kenmotsu, Isami; and Isobe, Nobuyuki, to Pioneer Electronic Corporation. Compact bookshelf type record player. 4,450,549, Cl. 369-75.100.
Ikemoto, Yutaka; and Tanimoto, Akira, to Sharp Kabushiki Kaisha. Speech synthesizer timepiece. 4,449,829, Cl. 368-63.000.
Ikesue, Masumi; and Yanagawa, Nobuyuki, to Ricoh Company, Ltd. Electrophotographic copying machine with means for mixing and removing toner and an integral exposure plate. 4,449,810, Cl. 355-3.0DD.
Ikuta, Yasuhiro: *See*—
Moriguchi, Koichi; Iwamoto, Kenzi; Matushiro, Ryuichi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,449,367, Cl. 60-602.000.
Sone, Shigeru; Ikuta, Yasuhiro; Komiya, Kazuaki; Kihira, Kazuhide; and Mizuno, Nobutaka, 4,449,371, Cl. 60-611.000.
Ikuzawa, Masanori: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,450,156, Cl. 424-180.000.
Illinois Tool Works Inc.: *See*—
Barth, Gerald D., 4,449,873, Cl. 411-341.000.
IMED Corporation: *See*—
Farr, Andrew F., 4,450,079, Cl. 604-152.000.
Imperial Chemical Industries PLC: *See*—
Lake, Ivan J. S.; and Whittam, Thomas V., 4,450,312, Cl. 585-481.000.
Implant Technologies, Inc.: *See*—
Szachowicz, Edward H.; and Walsh, John, 4,449,523, Cl. 128-200.260.
Inagaki, Takefumi: *See*—
Nakashima, Masato; Koezuka, Tetsuo; and Inagaki, Takefumi, 4,450,579, Cl. 382-8.000.
Inatani, Reiko: *See*—
Nakatani, Nobuji; Inatani, Reiko; and Konishi, Tadashi, 4,450,097, Cl. 252-404.000.
Industri AB Thule: *See*—
Wouden, Adriaan v. d., 4,449,656, Cl. 224-320.000.
Industrial Technology Research Institute: *See*—
Su, Tsung-Tsan; and Cheng, Yu-Chen, 4,450,271, Cl. 544-354.000.
Ingemann, Ole: *See*—
Jorgensen, Knud E.; and Ingemann, Ole, 4,449,641, Cl. 220-306.000.
Inoue, Eiichi: *See*—
Shimizu, Isamu; Ogawa, Kyosuke; and Inoue, Eiichi, 4,450,185, Cl. 427-39.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,450,336, Cl. 219-69.00M.
Inoue, Kiyoshi, 4,450,337, Cl. 219-69.00M.
Inoue, Kazuyuki: *See*—
Shimizu, Toshiki; and Inoue, Kazuyuki, 4,450,335, Cl. 219-10.55C.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Super-fine finish EDM method and apparatus. 4,450,336, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM Method and apparatus with a continuous DC supply using stray gap capacitance to trigger discharge. 4,450,337, Cl. 219-69.00M.
Institut Francais du Petrole: *See*—
Cessou, Maurice; and Perez, Lucien, 4,449,850, Cl. 405-60.000.
Intel Corporation: *See*—
Hoff, Marcian E., Jr.; Townsend, Marshall A.; and Dreyer, Stephen F., 4,450,365, Cl. 307-262.000.
International Business Machines Corporation: *See*—
Bond, George L.; and Satya, Akella V. S., 4,450,559, Cl. 371-10.000.
Demuth, Gordon L.; Hinkle, John E.; and Moran, J. Thomas, 4,450,525, Cl. 364-200.000.
Goff, Willie, Jr.; Rakes, James M.; and Williams, Errol R., 4,450,342, Cl. 219-216.000.
Gotze, Volkmar; and Potz, Gunther, 4,450,561, Cl. 371-37.000.
Korth, Hans-Erdmann, 4,449,782, Cl. 350-96.160.
Reisman, Arnold; Berkenblit, Melvin; and Merz, Charles J., III, 4,449,580, Cl. 165-104.340.
Watrous, Robert B., 4,450,493, Cl. 360-106.000.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A.; and Hall, John B., 4,450,101, Cl. 252-522.00R.
Yoshida, Takao, 4,450,296, Cl. 568-316.000.
International Standard Electric Corporation: *See*—
Apitz, Siegfried; and Nonnenmann, Rolf, 4,450,349, Cl. 235-462.000.
Briese, Wolfgang, 4,450,377, Cl. 310-348.000.
Nill, Eberhard, 4,449,951, Cl. 445-34.000.
International Telephone and Telegraph Corporation: *See*—
Burbo, James H.; Hartman, Louis P.; Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 4,449,787, Cl. 350-538.000.
Steensma, Peter D.; Weinberg, Murray; Smid, Robert W.; and Finley, Thomas E., 4,450,554, Cl. 370-4.000.
Invacare Respiratory Corp.: *See*—
Tedford, Richard A., Jr., 4,449,990, Cl. 55-26.000.
Involvo AG: *See*—
Roth, Oskar, 4,449,349, Cl. 53-66.000.
Ipco Corporation: *See*—
Weissman, Bernard, 4,449,937, Cl. 433-225.000.
Irwin, George W.; and Mumford, Eustace H., to Owens-Illinois, Inc. Parallel motion blank mold operating mechanism. 4,449,996, Cl. 65-305.000.
Ishido, Yoshinobu; and Tanaka, Hideo, to Hayakawa Rubber Company Limited. Aqueously-swelling water stopper and a process of stopping water thereby. 4,449,713, Cl. 277-1.000.
Ishiguro, Tsuneo: *See*—
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Ishiguro, Tsuneo, 4,450,267, Cl. 528-99.000.
Ishihara, Shoichi: *See*—
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,449,516, Cl. 126-430.000.
Ishii, Masami; Sugimoto, Hitoshi; Takeda, Shinji; and Shibata, Susumu, to Aisin Seiki Kabushiki Kaisha. Hot air blast welding apparatus for thermoplastic parts. 4,450,038, Cl. 156-497.000.
Ishikawa, Kiyotsugu; Sone, Yoshiaki; Hashimoto, Susumu; Omae, Masanori; and Kunii, Takao, to Matsushita Electric Industrial Co., Ltd. Solid state color imaging apparatus. 4,450,475, Cl. 358-44.000.
Ishitobi, Chikato: *See*—
Arimoto, Satomi; Yamaji, Shigeru; and Ishitobi, Chikato, 4,450,329, Cl. 200-148.00A.
Ishiyama, Shozo: *See*—
Arai, Norikazu; Ishiyama, Shozo; and Kojima, Tadashi, 4,449,792, Cl. 350-432.000.
Isley, Ralph E.; Prem, Dorothy C.; and Duke, June T., to Standard Oil Company. Impact improvement of high nitrile resins. 4,450,254, Cl. 524-399.000.
Isobe, Nobuyuki: *See*—
Ikedo, Yuji; Kenmotsu, Isami; and Isobe, Nobuyuki, 4,450,549, Cl. 369-75.100.
Ison, Billy G.; and Hudson, Robert G., to Tennessee Valley Authority. Culture of freshwater mussel glochidia in an artificial habitat utilizing complex liquid growth media. 4,449,480, Cl. 119-4.000.
Istvan, Csakany: *See*—
Bela, Batyi; Geza, Gulyas; Zoltan, Bozso; Istvan, Csakany; and Janos, Bartucz, 4,449,460, Cl. 110-214.000.
Itaba, Takeshi; Matsumoto, Shotaro; and Abe, Takeshi, to Mitsubishi Kinzoku Kabushiki Kaisha. Surface-coated blade member of super hard alloy for cutting tools and process for producing same. 4,450,205, Cl. 428-552.000.
Itami, Masaru; and Tatusawa, Kunio, to Rhythm Watch Co., Ltd. Pendulum arrangement for clock movement. 4,449,831, Cl. 368-165.000.
Ito, Keisuke; Kashihara, Toshiaki; and Okino, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Device for manufacturing information recording mediums. 4,449,916, Cl. 425-174.400.
Ito, Kenji: *See*—
Shimba, Satoru; Ito, Kenji; Tsuda, Yasuo; and Sugita, Hiroshi, 4,450,228, Cl. 430-505.000.
Ito, Masao: *See*—
Takagi, Satoshi; Watanabe, Toshio; and Ito, Masao, 4,450,491, Cl. 360-96.500.
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Ishiguro, Tsuneo, to Ajinomoto Company Incorporated. Latent curing agents for epoxy resins. 4,450,267, Cl. 528-99.000.
Ito, Shoji, to Aisan Kogyo Kabushiki Kaisha. Fuel injection system. 4,449,499, Cl. 123-339.000.
Ito, Takaaki: *See*—
Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,450,117, Cl. 261-39.00A.
Ito, Takashi: *See*—
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,449,707, Cl. 273-171.000.
Ito, Yukio: *See*—
Meguro, Takeshi; and Ito, Yukio, 4,450,421, Cl. 333-202.000.
Itoh, Fumikazu; Fujita, Yasuhiro; Kobayashi, Takashi; and Mifune, Takao, to Hitachi, Ltd. Coil winding and inserting machine. 4,449,293, Cl. 29-736.000.
Itoh, Kazuo: *See*—
Kudo, Toshiyuki; Itoh, Kazuo; and Kitamura, Masafumi, 4,450,551, Cl. 369-173.000.
Itoh, Takashi: *See*—
Haneda, Satoshi; Itoh, Takashi; Nakamura, Ken; and Tomono, Makoto, 4,450,220, Cl. 430-102.000.
ITT Industries, Inc.: *See*—
Alexander, John H., 4,450,502, Cl. 361-309.000.
Andrei-Alexandru, Marcel; and Prohaska, Hans, 4,450,390, Cl. 318-282.000.

Drake, Cyril F.; and Brocklehurst, John R., 4,449,981, Cl. 604-890.000.
Klee, Heinz, 4,450,518, Cl. 364-183.000.
Schmidtpott, Friedrich; and Backes, Reiner, 4,450,432, Cl. 340-146.200.
Iwamoto, Kenzi: *See*—
Moriguchi, Koichi; Iwamoto, Kenzi; Matushiro, Ryuichi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,449,367, Cl. 60-602.000.
Iwamura, Junichi; and Komai, Koichiro, to Iwamura, Junichi; Gakko Hojin Kinki Daigaku (Educational Foundation Kinki Univ.); and Komai, Koichiro. Plant growth regulator. 4,449,997, Cl. 71-88.000.
Iwasaki Tsushinki Kabushiki Kaisha: *See*—
Hirayama, Takashi; and Igarashi, Yuichi, 4,450,571, Cl. 375-7.000.
Iwato, Susumu; Nakamura, Tatuo; and Kurauchi, Takeo, to Nippon Paint Co., Ltd. Coating composition and coated article. 4,450,200, Cl. 428-323.000.
Izawa, Motowo: *See*—
Hasegawa, Toru; Izawa, Motowo; and Tanida, Seiichi, 4,450,234, Cl. 435-253.000.
J. I. Case Company: *See*—
Huitema, Thomas W., 4,449,416, Cl. 74-336.00R.
J. R. Hynds Limited: *See*—
Hynds, John R., 4,449,858, Cl. 405-286.000.
Jablin, Morton: *See*—
Kohl, Karl, 4,449,381, Cl. 66-203.000.
Kohl, Karl, 4,449,382, Cl. 66-203.000.
Jachimowicz, Felek, to W. R. Grace & Co. Novel polyurethane catalysts in polyurethane foam process. 4,450,246, Cl. 521-129.000.
Jacobs, James R. Composite static structure. 4,449,348, Cl. 52-648.000.
Jacobsen, Christian C.: *See*—
Hampton, Dean A.; Jacobsen, Christian C.; and Profet, Gary A., 4,450,558, Cl. 370-106.000.
Jageler, Alfred H.; Bruce, Gary D.; and Mount, Houston B., II, to Standard Oil Company. Guide for sidewall coring bit assembly. 4,449,593, Cl. 175-58.000.
Jagenberg AG: *See*—
Zodrow, Rodolf; and Buchholz, Rainer, 4,450,040, Cl. 156-567.000.
Jahn, Hans-Georg: *See*—
Staffer, Julius; Walther, Karl-Heinz; and Jahn, Hans-Georg, 4,449,453, Cl. 101-416.00A.
Jahsman, Hendrick; and Menor, George, to Siemens Medical Laboratories, Inc. Medical couch incorporating a lifting mechanism. 4,449,262, Cl. 5-63.000.
James, Bobby D., to James, Bobby Dencil. Analog debris alarm. 4,450,435, Cl. 340-511.000.
James, Bobby Dencil: *See*—
James, Bobby D., 4,450,435, Cl. 340-511.000.
Janes, Timothy W.; and White, John C., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Method for producing a vertical channel transistor. 4,449,285, Cl. 29-571.000.
Janos, Bartucz: *See*—
Bela, Batyi; Geza, Gulyas; Zoltan, Bozso; Istvan, Csakany; and Janos, Bartucz, 4,449,460, Cl. 110-214.000.
Janssen, Johannes A.: *See*—
Weterings, Cornelis A.M.; and Janssen, Johannes A., 4,450,142, Cl. 423-8.000.
Janssen, Lutz J.; and Le Quement, Patrick, to Ford Motor Company. Streamlined adjustable exterior rearview mirror. 4,449,796, Cl. 350-582.000.
Jekel, Gerd; and Obenaus, Franz, to U.S. Philips Corporation. Cassette comprising a capping device and a cleaning device for an ink jet printer. 4,450,456, Cl. 346-140.00R.
Jentoft, Arthur P.; and Couture, Paul A., to Wasco Products, Inc. Ventilating skylight. 4,449,340, Cl. 52-200.000.
Jeol Ltd.: *See*—
Tsuno, Katsushige, 4,450,357, Cl. 250-356.0ML.
Jereb, Richard F.: *See*—
Wolf, Ronald J.; Jereb, Richard F.; and Farmer, Mark, 4,449,497, Cl. 123-335.000.
Jermansen, Torris G.: *See*—
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,450,299, Cl. 568-454.000.
Jeumont Schneider Corporation: *See*—
Salmon, Jean P.; and Theze, Claude P., 4,449,685, Cl. 246-8.000.
Jewitt, Harold S., to Honeywell Inc. Patch array antenna. 4,450,449, Cl. 343-700.0MS.
Johansen, David K.: *See*—
Lambert, Frederick J.; Bosack, Donald J.; and Johansen, David K., 4,450,401, Cl. 320-22.000.
John Crane Houdaille, Inc.: *See*—
Radosay, Jon J.; and Wilson, John R., 4,449,719, Cl. 277-192.000.
Johnsen & Jorgensen (Plastics) Ltd.: *See*—
Davis, Eugene E., 4,449,638, Cl. 215-211.000.
Davis, Eugene E., 4,449,639, Cl. 215-224.000.
Johnson, Harold D.; Sherman, Earle C.; and Cooper, Leonard M., to Manville Service Corporation. Ovenable paperboard carton. 4,449,633, Cl. 206-612.000.
Johnson, James R. Hole punching apparatus for thermoplastic film. 4,449,434, Cl. 83-98.000.
Johnson & Johnson: *See*—
Korpman, Ralf, 4,449,977, Cl. 604-366.000.
Johnson & Johnson Baby Products Company: *See*—
Holtman, Dennis C., 4,449,979, Cl. 604-379.000.
Pieniak, Heinz A.; and Repke, Virginia L., 4,450,026, Cl. 156-164.000.
Johnson, Russell W.: *See*—
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,449,586, Cl. 166-303.000.
Johnson, Thomas B., III, to Cooper Industries, Inc. Electrical connector for top and side mount battery terminals. 4,449,772, Cl. 339-29.00B.
Johnston, Thomas J.; Richards, Nolan E.; and Tabereaux, Alton T., to Reynolds Metals Company. Probe for alumina concentration meter. 4,450,063, Cl. 204-400.000.
Jones, William H., to Eaton Corporation. Washing appliance control circuitry. 4,449,384, Cl. 68-12.00R.
Jordan, Robert E., to Cutter Laboratories, Inc. Water insoluble gel matrix containing lectin bound to antithrombin. 4,450,104, Cl. 260-112.00B.
Jorgensen, Knud E.; and Ingemann, Ole, to D.M.E. Plastic A/S. Container of plastic material with a lid. 4,449,641, Cl. 220-306.000.
Joshi, Madhusudan: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,449,531, Cl. 128-325.000.
Juhola, Mauno O. Means for providing a vertical drain in soil. 4,449,848, Cl. 405-50.000.
Jujo Paper Co., Ltd.: *See*—
Egawa, Setsuya; and Sakamoto, Masahiro, 4,450,123, Cl. 264-4.700.
Junghans, Rudi, to Heidelberger Druckmaschinen. Inking unit for printing presses. 4,449,451, Cl. 101-350.000.
Junker, Michael L.: *See*—
McMillan, William P.; Hobbs, Charles C., Jr.; Gerberich, H. Robert; and Junker, Michael L., 4,450,301, Cl. 568-473.000.
k. k. Yamada Kogaku Seisakusho: *See*—
Yamada, Toshikatsu, 4,449,795, Cl. 350-516.000.
Kabalka, George W., to Research Corporation. Radiohalogenation method. 4,450,149, Cl. 424-1.100.
Kabel- und Metallwerke: *See*—
Baum, Walter; Still, Michael; and Becker, Erich, 4,449,576, Cl. 165-104.330.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Iida, Akio; and Kurihara, Osamu, 4,449,733, Cl. 280-707.000.
Sato, Hideyori; and Arai, Mitsuru, 4,449,366, Cl. 60-444.000.
Kabushiki Kaisha Kubota Seisakusho: *See*—
Hara, Minoru, 4,450,391, Cl. 318-313.000.
Kabushiki Kaisha Meidensha: *See*—
Yanagisawa, Hifumi; Warabi, Junichi; and Kashiwagi, Yoshiyuki, 4,450,327, Cl. 200-144.00B.
Kabushiki Kaisha Sato: *See*—
Miyamoto, Takehiko, 4,449,433, Cl. 83-76.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Arai, Kenichiro, 4,449,835, Cl. 400-161.000.
Koto, Haruhiko, 4,450,454, Cl. 346-140.00R.
Kabushiki Kaisha Tanaka Seisakusho: *See*—
Ashizawa, Takeshi; and Yasumura, Motoaki, 4,449,699, Cl. 266-58.000.
Hayasaki, Hidehiko; and Yasumura, Motoaki, 4,450,014, Cl. 148-9.00R.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Suzuki, Masaru, 4,449,788, Cl. 350-289.000.
Kaiser, Hermann; and Olson, Jerry A., to Eaton Corporation. Hot film/swirl fluid flowmeter. 4,449,401, Cl. 73-202.000.
Kaji, Koichiro: *See*—
Tezuka, Etsuhiro; Kaji, Koichiro; and Ichinose, Toru, 4,449,505, Cl. 123-447.000.
Kakitani, Yohtaro: *See*—
Kikuchi, Hideo; Ikeda, Sunao; Kakitani, Yohtaro; Hibi, Kunio; and Okuzawa, Tugio, 4,449,813, Cl. 355-14.00R.
Kaku, Toshimitsu: *See*—
Nakamura, Shigeru; Maeda, Takeshi; Kaku, Toshimitsu; Tsunoda, Yoshito; Takasugi, Wasao; and Kaneda, Tokuya, 4,450,547, Cl. 369-45.000.
Kalua, John. Apparatus for fining bottled wine. 4,449,886, Cl. 414-776.000.
Kamat, Dattatraya V., to Crown Textile Company. Composite fusible interlining fabric and method. 4,450,196, Cl. 428-197.000.
Kamata, Keiji: *See*—
Mithuhira, Kuniaki; Kamata, Keiji; and Suzuki, Hikoshiro, 4,449,664, Cl. 236-49.000.
Kamen, Dean L., to Baxter Travenol Laboratories, Inc. Device for preserving continuity of intravenous flow. 4,449,976, Cl. 604-254.000.
Kamhi, Victor M., to American Cyanamid Company. Poly(ethyleneoxy)-substituted-9,10-bis(phenylethynyl)anthracenes. 4,450,305, Cl. 568-611.000.
Kamijyo, Yoshimi: *See*—
Kano, Mitsuru; and Kamijyo, Yoshimi, 4,450,100, Cl. 252-518.000.
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, to Sankyo Company, Limited; and Ube Industries Limited. Pyrimidine derivatives and a pharmaceutical composition containing them. 4,450,162, Cl. 424-251.000.
Kammerer, Gerd, to Dieter Graesslin Feinwerktechnik. Program input and/or time setting device. 4,449,832, Cl. 368-187.000.
Kampfmann, Georg, to AMP Incorporated. Contact positioning apparatus. 4,449,883, Cl. 414-744.00A.
Kaneda, Tokuya: *See*—
Nakamura, Shigeru; Maeda, Takeshi; Kaku, Toshimitsu; Tsunoda, Yoshito; Takasugi, Wasao; and Kaneda, Tokuya, 4,450,547, Cl. 369-45.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,450,316, Cl. 136-256.000.
Matsumoto, Sigemi; and Nagoshi, Fumiya, 4,450,256, Cl. 525-316.000.

Kaneko, Thomas M.; Dutton, Daniel R.; and Kim, Bongsub, to BASF Wyandotte Corporation. Anionic biocide emulsions in aqueous solutions of strongly ionizable salts. 4,450,001, Cl. 71-118.000.

Kanii, Norikazu: *See—*
Hasegawa, Toshifumi; and Kanii, Norikazu, 4,449,277, Cl. 29-33.00P.

Kanny, Louis. Speech controlled start-stop of tape recorder in record and reproduce modes by separate microphone. 4,450,546, Cl. 369-24.000.

Kano, Mitsuru; and Kamijyo, Yoshimi, to Alps Electric Co., Ltd. Paste for forming transparent conductive coating film. 4,450,100, Cl. 252-518.000.

Kapaan, Hendrikus J., to SKF Industrial Trading & Development Company B.V. Automatically variable drive apparatus having at least one V-belt running over variable diameter pulleys. 4,449,957, Cl. 474-14.000.

Karaktin, Vincent M., to Emerson Electric Co. System and method of mounting a lamp holder on a support. 4,449,687, Cl. 248-225.200.

Karg, Rudy F.: *See—*
Von Bodungen, George A.; and Karg, Rudy F., 4,450,260, Cl. 526-213.000.

Karkiewicz, Kenneth G., to Ethyl Molded Products Company. Mixing device. 4,449,827, Cl. 366-131.000.

Karl Lautenschlager KG, Mobelbeschlagfabrik: *See—*
Lautenschlager, Karl; and Viniol, Gerd, 4,449,689, Cl. 248-544.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Wilkens, Christian, 4,449,380, Cl. 66-84.00A.

Karlsson, Kurt: *See—*
Pettersson, Birger; and Karlsson, Kurt, 4,449,573, Cl. 165-10.000.

Karubian, Ralph. Carcass saw. 4,449,271, Cl. 17-23.000.

Kashihara, Toshiaki: *See—*
Ito, Keisuke; Kashihara, Toshiaki; and Okino, Yoshihiro, 4,449,916, Cl. 425-174.400.

Kashima, Shoichi: *See—*
Tokoro, Takehiko; Kashima, Shoichi; and Murata, Mineo, 4,449,856, Cl. 405-269.000.

Kashiwagi, Yoshiyuki: *See—*
Yanagisawa, Hifumi; Warabi, Junichi; and Kashiwagi, Yoshiyuki, 4,450,327, Cl. 200-144.00B.

Kaspersma, Jelle H.: *See—*
Berger, Kerry R.; Kaspersma, Jelle H.; Luybli, Joseph R.; Millward, Barry; and Shay, Robert H., 4,450,017, Cl. 148-16.000.

Kasugayama, Yukio: *See—*
Miyachi, Takeshi; Tsuda, Hisanori; Hara, Toshitami; and Kasugayama, Yukio, 4,450,457, Cl. 346-140.00R.

Katou, Takashi: *See—*
Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,450,117, Cl. 261-39.00A.

Katsuhara, Yutaka: *See—*
Kondow, Takeshi; Okazaki, Koshi; Katsuhara, Yutaka; and Matsuoka, Kimiaki, 4,450,298, Cl. 568-437.000.

Katsura, Masaki: *See—*
Takikawa, Osamu; Katsura, Masaki; Tanuma, Chiaki; and Yokoyama, Katsunori, 4,449,919, Cl. 431-76.000.

Kauffman, William J.; and Wright, Ralph W., to Armstrong World Industries, Inc. Decorative laminate. 4,450,194, Cl. 428-172.000.

Kaufman, Lance R. Method of clamping a circuit package to enhance heat transfer. 4,449,292, Cl. 29-631.000.

Kawai, Hisasi: *See—*
Moriguchi, Koichi; Iwamoto, Kenzi; Matushiro, Ryuichi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,449,367, Cl. 60-602.000.

Kawakami, Tomio: *See—*
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, 4,450,428, Cl. 338-34.000.

Kawamura, Akira; and Ono, Tadahiro, to Toshiba Kikai Kabushiki Kaisha; and Toei Denki Kabushiki Kaisha. System for controlling synchronous motors. 4,450,395, Cl. 318-700.000.

Kawamura, Masaharu: *See—*
Sakurada, Nobuaki; Kawamura, Masaharu; Ohtaki, Shohei; Nakamoto, Soichi; and Shinoda, Nobuhiko, 4,449,805, Cl. 354-105.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Hirata, Makizo; and Ueda, Yoshiteru, 4,449,608, Cl. 181-228.000.
Yoshida, Toshio; Matsui, Shigetomo; and Atsuta, Toshio, 4,449,281, Cl. 29-421.00R.

Kawasaki Kasei Chemicals Ltd.: *See—*
Komatsu, Tatsuyoshi; Numata, Shigeaki; and Maruyama, Kazuhiro, 4,450,111, Cl. 260-369.000.

Kawase, Shoji: *See—*
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Kawase, Shoji; and Sano, Makoto, 4,449,992, Cl. 55-158.000.

Kawasumi, Shinroku. Process for the preparation of precious metal-coated particles. 4,450,188, Cl. 427-217.000.

Kawatei, Hisatsugu; Saito, Hidetoshi; and Nakamura, Hisashi, to Diesel Kiki Company, Ltd. Injection compensator for fuel injection pump. 4,449,500, Cl. 123-380.000.

Kayaba Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Mitsuhiro, 4,449,702, Cl. 267-64.120.

Kazumi, Jiro: *See—*
Watanabe, Yoshitaka; and Kazumi, Jiro, 4,449,804, Cl. 354-418.000.

Kearney & Trecker Corporation: *See—*
Lohneis, Earl R.; and Stobbe, Richard E., 4,449,866, Cl. 408-9.000.

Kell, Ralph W., to Goodyear Tire & Rubber Company, The. Anti-backbend belts. 4,449,627, Cl. 198-847.000.

Kelleher, Kevin C., to RCA Corporation. Stepper motor drive circuit. 4,450,394, Cl. 318-696.000.

Kelly, Pilar P., to OLIN Corporation. Process for removing aluminum and silica from alkali metal halide brine solutions. 4,450,057, Cl. 204-98.000.

Kelly, Thomas L. Fire barrier reservoir. 4,449,336, Cl. 52-105.000.

Kemmner, Ulrich, to Robert Bosch GmbH. Aggregate for supplying fuel from supply container to internal combustion engine. 4,449,891, Cl. 417-423.00R.

Kemp Furniture Industries, Inc.: *See—*
Shook, James G., 4,449,766, Cl. 312-348.000.

Kendall Company, The: *See—*
Schweizer, Russell J., 4,449,969, Cl. 604-322.000.

Kendall, David P.: *See—*
Homan, Clarke G.; Kendall, David P.; and MacCrone, Robert K., 4,450,086, Cl. 252-62.510.

Kendall, James M., Jr.: *See—*
Wang, Taylor G.; Elleman, Daniel D.; and Kendall, James M., Jr., 4,449,901, Cl. 425-6.000.

Kendrick, George B.; Duggan, George L.; and Ochoa, Carlos, to GTE Products Corporation. Tungsten-halogen lamp with preferential tungsten deposition site. 4,450,381, Cl. 313-579.000.

Kenmotsu, Isami: *See—*
Ikedo, Yuji; Kenmotsu, Isami; and Isobe, Nobuyuki, 4,450,549, Cl. 369-75.100.

Kenworthy, Samuel P., to Basic Machinery Co., Inc. Die-cut brick machine for special brick shapes. 4,449,909, Cl. 425-296.000.

Kenyon, Stephen C.; Simkins, Laura J.; Brown, Leroy L.; and Sebastian, Richard, to Ensco, Inc. Broadcast signal recognition system and method. 4,450,531, Cl. 364-604.000.

Kersey, Melvin L., to Darling Store Fixtures. Display fixture mounting bracket. 4,449,686, Cl. 248-215.000.

Kessler, Juergen, to Hilti Aktiengesellschaft. Peg for engagement in countersunk section of a bore. 4,449,877, Cl. 411-57.000.

Kesting, Robert E., to Puropore, Inc. High strength nylon blend membranes. 4,450,126, Cl. 264-41.000.

Kidwell, Louis E., Jr.; and Holcomb, Dysart E., to Pennzoil Company. Method for upgrading diene-containing hydrocarbon mixtures. 4,450,069, Cl. 208-255.000.

Kihira, Kazuhide: *See—*
Sone, Shigeru; Ikuta, Yasuhiro; Komiya, Kazuaki; Kihira, Kazuhide; and Mizuno, Nobutaka, 4,449,371, Cl. 60-611.000.

Kikuchi, Hideo; Ikeda, Sunao; Kakitani, Yohtaro; Hibi, Kunio; and Okuzawa, Tugio, to Ricoh Company, Ltd. Collating apparatus for copying machine. 4,449,813, Cl. 355-14.00R.

Kikuchi, Masahiro; Utena, Hisashi; and Takei, Shinzo, to Sony Corporation. Cathode ray tube. 4,450,379, Cl. 313-477.0HC.

Kikuchi, Mitsuru: *See—*
Fujii, Yasuhiko; Kikuchi, Mitsuru; and Saito, Hiroyuki, 4,450,490, Cl. 360-13.000.

Kim, Bongsub: *See—*
Kaneko, Thomas M.; Dutton, Daniel R.; and Kim, Bongsub, 4,450,001, Cl. 71-118.000.

Kim, Han J.; and Bevington, Richard C., to GTE Products Corporation. Silver material suitable for backing of silver-cadmium oxide contacts and contacts employing same. 4,450,204, Cl. 428-552.000.

Kimble, James B.: *See—*
Eastman, Alan D.; and Kimble, James B., 4,450,313, Cl. 585-624.000.

Kimura, Takeshi: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,450,494, Cl. 360-125.000.

Kimura, Tomohiko: *See—*
Araki, Kazuhiko; Ao, Hideki; Kimura, Tomohiko; and Aihara, Kenichi, 4,450,165, Cl. 424-258.000.

Kimura, Wayne D., to United States of America, Navy. Vacuum tight window through which a high power laser beam and a high energy particle beam can be transmitted within close proximity to each other. 4,449,789, Cl. 350-319.000.

Kimura, Yasuhiro: *See—*
Uyehara, Norioki; Abe, Susumu; and Kimura, Yasuhiro, 4,450,006, Cl. 75-125.000.

Kin, Chinei. Cooling system for water-cooled engines for vehicles. 4,449,486, Cl. 123-41.290.

Kinder, David B.: *See—*
Pilat, John F.; Czerniakiewicz, Anastasia J.; Kinder, David B.; and Davidian, Gary, 4,450,523, Cl. 364-200.000.

Kindig, Alan L., to General Electric Company. Automatic system and method for compressing coil turns and inserting insulators in slots of a slotted stator core. 4,449,289, Cl. 29-596.000.

King Coal Furnace Corporation: *See—*
Robb, Michael F., 4,449,462, Cl. 110-288.000.

King Jim Co., Ltd.: *See—*
Ohminato, Kiyoshi, 4,449,840, Cl. 402-34.000.

Kinney, James, to Clairol Incorporated. Thickened alpha-olefin sulfonate containing formulations. 4,450,090, Cl. 252-106.000.

Kirby, Dorothy Y. Universal stitching guide. 4,449,465, Cl. 112-153.000.

Kirchbrucher, Rudiger: *See—*
Becker, Kunibert; Elsner, Burckhard; and Kirchbrucher, Rudiger, 4,449,860, Cl. 405-293.000.

Kish, Lewis L.: *See—*
Ames, S. Leslie; Gray, Thomas H.; and Kish, Lewis L., 4,450,206, Cl. 428-606.000.

Kishi, Norimasa; Noso, Kazunori; and Takeuchi, Yasuhisa, to Nissan Motor Co., Ltd. Voice responsive door lock system for a motor vehicle. 4,450,545, Cl. 367-198.000.

Kitada, Toyofumi: *See—*
Suga, Katsuyuki; Kitada, Toyofumi; Naganawa, Yutaka; and Nakagawa, Hirotaka, 4,450,018, Cl. 148-26.000.

Kitamura, Masafumi: *See—*
Kudo, Toshiyuki; Itoh, Kazuo; and Kitamura, Masafumi, 4,450,551, Cl. 369-173.000.

Kitamura, Takashi; Watanabe, Asao; Nakano, Takashi; Masaki, Katsumi; Hirayama, Kazuhiro; Sato, Yasushi; and Tokiwa, Taisuke, to Canon Kabushiki Kaisha. Overlay recording device for recording a plurality of information in superimposition. 4,450,453, Cl. 346-108.000.

Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, to Matsushita Electric Industrial Co., Ltd. Sunlight-energy-storing method. 4,449,516, Cl. 126-430.000.

Kitawaki, Michio; and Annaka, Masao, to Mutsubishi Rubber Co., Ltd. Sealing mechanism for bearings. 4,449,717, Cl. 277-153.000.

Kitayama, Takeo: *See—*
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,449,496, Cl. 123-198.00F.

KIWI Coders Corporation: *See—*
Siegal, Burton L., 4,450,375, Cl. 310-331.000.

Klee, Heinz, to ITT Industries, Inc. Control system for adjusting a physical quantity. 4,450,518, Cl. 364-183.000.

Klein, Gerald W.; Snow, Robert A.; and Sutton, Richard C., to Eastman Kodak Company. Polymeric mordants. 4,450,224, Cl. 430-213.000.

Klein, Imrich: *See—*
Sienkiewicz, Boleslaw; Kramer, Franklin; Klein, Imrich; Oldershaw, C. G. Peter; and Chuang, Locus Y., 4,449,906, Cl. 425-131.100.

Kleinert, Dieter: *See—*
Fuhrer, Egon; Kleinert, Dieter; Pfrogner, Gerd; and Egg, Max, 4,449,691, Cl. 251-85.000.

Klepeis, John E., to Stauffer Chemical Company. Process for the removal of SO_2 from gas streams. 4,450,145, Cl. 423-242.000.

Klepeis, John E., to Stauffer Chemical Company. Heat recovery in P_2O_5 production process. 4,450,146, Cl. 423-304.000.

Klepper, Robert; and Bomar, Daryld W., to Energy 2000, Inc. Hydraulic operated surface pumping unit. 4,449,896, Cl. 417-399.000.

Kliger, Isaac E.; Brown, William C., Jr.; and Goldstein, David S., to Raytheon Company. Phase-lock loop control circuitry. 4,450,410, Cl. 328-155.000.

Kline, Michael S. Golf clip. 4,449,310, Cl. 40-11.00R.

Knabel, Walter; Wagner, Ludwig; and Richert, Manfred, to Marker-Patentverwertungsgesellschaft mbH. Heel holder for safety ski bindings. 4,449,731, Cl. 280-632.000.

Knaggs, Roy E. Driver for Allen head screws. 4,449,722, Cl. 279-62.000.

Knill, Edmund C.: *See—*
Chessin, Hyman; and Knill, Edmund C., 4,450,050, Cl. 204-41.000.

Knorr-Bremse GmbH: *See—*
Eder, Herbert, 4,449,759, Cl. 303-38.000.

Kobayashi, Hiroshi, to Nissan Motor Co., Ltd. Liquid quantity sensor of capacitor type. 4,450,501, Cl. 361-284.000.

Kobayashi, Katsumi, to Sony Corporation. Color video data display apparatus. 4,450,439, Cl. 340-703.000.

Kobayashi, Kimiyuki: *See—*
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,450,114, Cl. 260-458.00C.

Kobayashi, Mikio; and Kuritani, Kingo, to Alps Electric Co., Ltd. Substrate for mounting electric parts. 4,449,769, Cl. 339-17.00C.

Kobayashi, Takashi: *See—*
Itoh, Fumikazu; Fujita, Yasuhiro; Kobayashi, Takashi; and Mifune, Takao, 4,449,293, Cl. 29-736.000.
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.

Kobe, Inc.: *See—*
Peterson, Daniel G.; Erickson, John W.; and Robinson, Horace M., 4,449,582, Cl. 166-64.000.

Koberstein, Edgar: *See—*
Domesle, Rainer; Volker, Herbert; Koberstein, Edgar; and Pletka, Hans-Dieter, 4,450,244, Cl. 502-185.000.

Koch, Manfred: *See—*
Dreiseitl, Walter; Koch, Manfred; and Linden, Wilhelm, 4,450,403, Cl. 324-166.000.

Kocher, Jakob; and Foerster, Michael. Binocular ophthalmoscope. 4,449,797, Cl. 351-205.000.

Kochnev, Anatoly M.: *See—*
Nikomarov, Samuil S.; Kochnev, Anatoly M.; Goldobin, Vladimir B.; Sarapulov, Jury M.; and Valdman, Isaak Y., 4,449,953, Cl. 464-19.000.

Kockler, Barry C.: *See—*
Betron, Frank A.; Davis, James W.; Kockler, Barry C.; and Spears, Lonnie K., 4,449,811, Cl. 355-3.0SH.

Kodo, Keiun. Variable venturi carburetor. 4,450,119, Cl. 261-44.00D.

Koelbl, Harold M., to PPG Industries, Inc. Hinged window closure for float glass processing chamber. 4,449,995, Cl. 65-158.000.

Koeniger, Erich A., to Barnes-Hind/Hydrocurve, Inc. Intraocular lens and method of retaining in place. 4,449,257, Cl. 3-13.000.

Koeppen, Peter L.: *See—*
Solimeno, Duane; Brown, Sammy K.; Koeppen, Peter L.; and Rogers, Gerald, 4,450,534, Cl. 364-900.000.

Koezuka, Tetsuo: *See—*
Nakashima, Masato; Koezuka, Tetsuo; and Inagaki, Takefumi, 4,450,579, Cl. 382-8.000.

Kohl, Karl, to Jablin, Morton; and Winter, Johann, part interest to each. Warp knitting machine with Jacquard attachment. 4,449,381, Cl. 66-203.000.

Kohl, Karl, to Jablin, Morton; and Winter, Johann, part interest to each. Warp knitting machine equipped with latch-type needles. 4,449,382, Cl. 66-203.000.

Kohmoto, Teruo: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,450,109, Cl. 260-243.300.

Kohsaka, Yasuo; Nonaka, Yoshihiro; and Tachibana, Hideo, to Nitta Gelatin Kabushiki Kaisha. Method for measuring the number of hyperfine particles and a measuring system therefor. 4,449,816, Cl. 356-37.000.

Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Spindle orientation control apparatus. 4,450,393, Cl. 318-592.000.

Koide, Hajime, to Victor Company of Japan, Limited. Televison camera and remote-controllable video signal recording/reproducing apparatus. 4,450,487, Cl. 358-335.000.

Koizumi, Hideaki; Yamada, Hideo; and Oishi, Kounosuke, to Hitachi, Ltd. Zeeman atomic absorption spectrophotometer. 4,449,820, Cl. 356-307.000.

Kojima, Mikio: *See—*
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.

Kojima, Tadashi: *See—*
Arai, Norikazu; Ishiyama, Shozō; and Kojima, Tadashi, 4,449,792, Cl. 350-432.000.

Kollmorgen Technologies Corporation: *See—*
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,450,190, Cl. 427-304.000.

Komai, Koichiro: *See—*
Iwamura, Junichi; and Komai, Koichiro, 4,449,997, Cl. 71-88.000.

Komatsu, Hiroyuki: *See—*
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,449,496, Cl. 123-198.00F.

Komatsu, Tatsuyoshi; Numata, Shigeaki; and Maruyama, Kazuhiro, to Kawasaki Kasei Chemicals Ltd. Process for the purification of anthraquinone. 4,450,111, Cl. 260-369.000.

Komiya, Kazuaki: *See—*
Sone, Shigeru; Ikuta, Yasuhiro; Komiya, Kazuaki; Kihira, Kazuhide; and Mizuno, Nobutaka, 4,449,371, Cl. 60-611.000.

Koncelik, Kenneth J.; and Goetter, Erwin H., to Preformed Line Products Company. Shield connector. 4,449,768, Cl. 339-14.00R.

Kondow, Takeshi; Okazaki, Koshi; Katsuhara, Yutaka; and Matsuoka, Kimiaki, to Central Glass Company, Limited. Vapor phase catalytic hydrolysis of benzal chloride or its halogen- or trifluoromethyl-substitute to form benzaldehyde or substitute. 4,450,298, Cl. 568-437.000.

Koninger, Horst: *See—*
Geyken, Erwin; Koninger, Horst; and Schirk, Gunter, 4,449,278, Cl. 29-132.000.

Konishi, Tadashi: *See—*
Nakatani, Nobuji; Inatani, Reiko; and Konishi, Tadashi, 4,450,097, Cl. 252-404.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Arai, Norikazu; Ishiyama, Shozo; and Kojima, Tadashi, 4,449,792, Cl. 350-432.000.
Haneda, Satoshi; Itoh, Takashi; Nakamura, Ken; and Tomono, Makoto, 4,450,220, Cl. 430-102.000.
Shimba, Satoru; Ito, Kenji; Tsuda, Yasuo; and Sugita, Hiroshi, 4,450,228, Cl. 430-505.000.
Takei, Yoshiaki; Fujimaki, Yoshihide; and Nomori, Hiroyuki, 4,450,218, Cl. 430-59.000.
Tamura, Takashi, 4,449,809, Cl. 355-3.0DR.
Terada, Sadatugu; Haneda, Satoshi; Tomono, Makoto; and Matsuo, Syunji, 4,450,221, Cl. 430-106.600.

Konomura, Yutaka; and Omagari, Yasuhiko, to Olympus Optical Co., Ltd. Disinfection indicator for medical equipment. 4,449,518, Cl. 128-4.000.

Konrad, Michael W.; and Lin, Leo S., to Cetus Corporation. Process for recovering human IFN-β from a transformed microorganism. 4,450,103, Cl. 260-112.00R.

Kopec, Eduard; and Oberknapp, Wolfgang, to Filterwerk Mann & Hummel GmbH. Slosh baffle for oil pan of internal combustion engine. 4,449,493, Cl. 123-196.00A.

Kopecky, Ivyl D.: *See—*
Morlock, Ruben D.; Kopecky, Ivyl D.; Anderson, Robert R.; and Marcy, Dewey R., 4,449,672, Cl. 241-101.700.

Korean Advanced Institute of Science and Technology: *See—*
Park, Sang-Woo, 4,450,274, Cl. 546-262.000.

Korpman, Ralf, to Johnson & Johnson. Absorbent products, processes and compositions. 4,449,977, Cl. 604-366.000.

Korsgaard, Ebbe. Method and a system for treating large straw bales, particularly round bales, with ammonia or other lye agents. 4,450,178, Cl. 426-69.000.

Korsunsky, Iosif: *See—*
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,449,770, Cl. 339-17.0CF.

Korth, Hans-Erdmann, to International Business Machines Corporation. Modular, optical fiber communication system. 4,449,782, Cl. 350-96.160.

Korwin, Paul; and Korwin, Robert. Dental container and amalgam dispensing method. 4,449,645, Cl. 222-49.000.

Korwin, Robert: *See—*
Korwin, Paul; and Korwin, Robert, 4,449,645, Cl. 222-49.000.

Koto, Haruhiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Small size ink jet printer. 4,450,454, Cl. 346-140.00R.

Kouda, Tadayuki: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,450,109, Cl. 260-243.300.

Kovach, Stephen M.: *See—*
Hettinger, William P., Jr.; Kovach, Stephen M.; and Hoffman, James F., 4,450,241, Cl. 502-34.000.

Kovacs, Gabor: *See—*
Soos, Rudolf; Nemes, Jozsef; Vidra, Laszlo; Szelestei, Miklos; Kovacs, Gabor; and Szekeley, Istvan, 4,450,309, Cl. 570-217.000.

Krahn, Heinrich: *See—*
Northemann, Karl-Heinz; and Krahn, Heinrich, 4,449,266, Cl. 15-167.00A.

Krakovsky, Rafael. Long life gate valve. 4,449,547, Cl. 137-330.000.

Kramer, Franklin: *See—*
Sienkiewicz, Boleslaw; Kramer, Franklin; Klein, Imrich; Oldershaw, C. G. Peter; and Chuang, Locus Y., 4,449,906, Cl. 425-131.100.

Kramert, Arthur R. Heat recovery system. 4,449,571, Cl. 165-1.000.

Kraus, Thaddaus, to Balzers Aktiengesellschaft. Arrangement for coating substrates by vacuum deposition. 4,449,478, Cl. 118-720.000.

Krause, Gerhard, to Erwin Sick GmbH Optik-Elektronik. Arrangement for determining the concentration of a substance in a mixture of substances. 4,449,819, Cl. 356-300.000.

Krishnakumar, Suppayan M.; Harry, Leuan L.; and Beck, Martin H., to Continental Group, Inc., The. Rotary injection turret for the making of preforms. 4,449,913, Cl. 425-548.000.

Kristofek, Paul J., to McGraw-Edison Company. Arrangement for mounting a thermal protective device in a recess mounted lighting fixture. 4,450,512, Cl. 362-276.000.

Kritz, Jacob A., to Sperry Corporation. Multiple beam lens transducer for sonar systems. 4,450,542, Cl. 367-150.000.

Krob, Erwin; and Bauer, Helmut, to TMC Corporation. Ski brake. 4,449,729, Cl. 280-605.000.

Krokaugger, William G., to Mole-Richardson Company. DC Light dimmer control system. 4,450,384, Cl. 315-127.000.

Krow, Cecil J. Magnetic oil filter insert. 4,450,075, Cl. 210-223.000.

Krude, Werner, to Uni-Cardan Aktiengesellschaft. Overload clutch. 4,449,954, Cl. 464-36.000.

Kruger, Christian. Stomach flushing devices. 4,449,972, Cl. 604-96.000.

Kruger, Hermann; and Deutsch, Hermann, to Volkswagenwerk AG. Internal-combustion engine having lubricating and cooling oil circuits. 4,449,487, Cl. 123-41.340.

Kubicek, Donald H.: *See—*
Lindstrom, Merlin R.; Macdonell, Gary D.; Louthan, Rector P.; and Kubicek, Donald H., 4,450,102, Cl. 252-542.000.

Kubo, Kazuhiro: *See—*
Takizawa, Hiroshi; Oiji, Yoshimasa; and Kubo, Kazuhiro, 4,450,115, Cl. 260-465.00E.

Kudo, Mitsuhiro: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,450,494, Cl. 360-125.000.

Kudo, Toshiyuki; Itoh, Kazuo; and Kitamura, Masafumi, to Sanyo Electric Co., Ltd. Keel-tipped stylus, and method and device for making keel-tipped stylus. 4,450,551, Cl. 369-173.000.

Kuipers, Warren W.: *See—*
Hays, Herbert G.; and Kuipers, Warren W., 4,449,511, Cl. 126-110.00R.

Kukes, Semyon, to Phillips Petroleum Company. Demetallization of hydrocarbon containing feed streams. 4,450,068, Cl. 208-251.00H.

Kumagai, Atsuhiro: *See—*
Ohta, Shuichi; and Kumagai, Atsuhiro, 4,449,677, Cl. 242-199.000.

Kumasaka, Noriyuki: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,450,494, Cl. 360-125.000.

Kuni, Asahiro: *See—*
Yamaguchi, Kazuo; Kuni, Asahiro; Akiyama, Nobuyuki; and Endo, Juro, 4,449,818, Cl. 356-237.000.

Kunii, Takao: *See—*
Ishikawa, Kiyotsugu; Sone, Yoshiaki; Hashimoto, Susumu; Omae, Masanori; and Kunii, Takao, 4,450,475, Cl. 358-44.000.

Kunkel, Heinrich: *See—*
Olschewski, Armin; Laszlofalvi, Zoltan; and Kunkel, Heinrich, 4,449,421, Cl. 74-516.000.

Kunzle, Franz M.: *See—*
Fischer, Rudolf; Kunzle, Franz M.; and Schmutz, Jean, 4,450,108, Cl. 260-243.300.

Kurahashi, Kazuo: *See—*
Takamura, Masayuki; and Kurahashi, Kazuo, 4,450,210, Cl. 428-660.000.

Kurahayashi, Takahisa, to Matsushita Reiki Co., Ltd. Refrigerant compressor. 4,449,895, Cl. 417-368.000.

Kuraishi, Tadayuki: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,450,109, Cl. 260-243.300.

Kurauchi, Takeo: *See—*
Iwato, Susumu; Nakamura, Tatuo; and Kurauchi, Takeo, 4,450,200, Cl. 428-323.000.

Kurihara, Osamu: *See—*
Iida, Akio; and Kurihara, Osamu, 4,449,733, Cl. 280-707.000.

Kurihashi, Isao: *See—*
Hori, Syunichi; and Kurihashi, Isao, 4,449,326, Cl. 49-375.000.

Kurimoto Iron Works, Ltd.: *See—*
Takeuchi, Shigeru, 4,450,128, Cl. 264-70.000.

Kurisu, Shizuka: *See—*
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Kawase, Shoji; and Sano, Makoto, 4,449,992, Cl. 55-158.000.

Kuritani, Kingo: *See—*
Kobayashi, Mikio; and Kuritani, Kingo, 4,449,769, Cl. 339-17.00C.

Kuroda, Nobuyuki: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; Shikatani, Yutaka; and Miyoshi, Mituji, 4,450,243, Cl. 502-131.000.

Kuroiwa, Katsumasa: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; and Takabayashi, Katsuyuki, 4,450,105, Cl. 260-112.50R.

Kurtz, Stuart J.; De Rossett, Terry A.; and Shaw, Montgomery T., to Union Carbide Corporation. Pheological measurement method and apparatus. 4,449,395, Cl. 73-56.000.

KV33 Corporation: *See—*
Huffman, Ronald E., 4,449,930, Cl. 433-64.000.

Kwon, Tae M.; and Debley, William P., to Litton Systems, Inc. Magnetic resonance cell and method for its fabrication. 4,450,407, Cl. 324-304.000.

Kyhl, Henry: *See—*
De Longis, Vincent E.; and Kyhl, Henry, 4,449,800, Cl. 353-119.000.

Kyoto Ceramic Co., Ltd.: *See—*
Saito, Koji, 4,449,931, Cl. 433-74.000.

Kyoto University: *See—*
Morimoto, Takeshi, 4,450,460, Cl. 357-17.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Takizawa, Hiroshi; Oiji, Yoshimasa; and Kubo, Kazuhiro, 4,450,115, Cl. 260-465.00E.

Lackey, Robert S.: *See—*
Draper, Robert; Lackey, Robert S.; Fagan, Thomas J., Jr.; Veyo, Stephen E.; and Humphrey, Joseph R., 4,449,376, Cl. 62-259.100.

Ladek Corporation: *See—*
Lambert, Roland, 4,449,572, Cl. 165-1.000.

Laferty, John M.; Queneau, Paul B.; and Beckstead, Leo W., to Amax Inc. Ammonium hydroxide stripping of tungsten from organic solvents. 4,450,144, Cl. 423-54.000.

Lafferty, Edwin C.; and Gibson, James H., to General Electric Company. Discriminator circuit for frequency modulation receivers. 4,450,590, Cl. 455-214.000.

Laitem, Leopold: *See—*
Broze, Guy; and Laitem, Leopold, 4,450,089, Cl. 252-95.000.

Lake, Ivan J. S.; and Whittam, Thomas V., to Imperial Chemical Industries PLC. Hydrocarbon conversion. 4,450,312, Cl. 585-481.000.

Lambeck, Raymond P., to Vickers, Incorporated. Power transmission. 4,449,898, Cl. 418-61.00B.

Lambert, Frederick J.; Bosack, Donald J.; and Johansen, David K., to GNB Batteries Inc. Control circuit for automatic battery chargers. 4,450,401, Cl. 320-22.000.

Lambert, Mark A.: *See—*
Dudek, David M.; and Lambert, Mark A., 4,450,136, Cl. 420-590.000.

Lambert, Roland, to Ladek Corporation. Subterranean heating and cooling system. 4,449,572, Cl. 165-1.000.

Lampman, William T., to Whirlpool Corporation. Dishrack wheel assembly for a dishwasher. 4,449,765, Cl. 312-311.000.

Land O'Lakes, Inc.: *See—*
Stahel, Nancy G., 4,450,176, Cl. 426-2.000.

Landis, Dan R.: *See—*
Williams, Paul; and Landis, Dan R., 4,450,404, Cl. 324-226.000.

Lane, David, to AMP Incorporated. Shielded electrical connector. 4,449,778, Cl. 339-143.00R.

Lane, Garnett S. Fishing bobber. 4,449,318, Cl. 43-44.900.

Lane, Joseph E. Removable tire carrier. 4,449,881, Cl. 414-428.000.

Langwadt, Otmar, to Dyckerhoff & Widmann Aktiengesellschaft. Anchor head for a corrosion-protected injected anchor. 4,449,855, Cl. 405-260.000.

Langwieder, Rolf; Rebmann, Rolf; Stotz, Erich; Wierschem, Franz-Rudolf; and Trick, Fred, to Dr. Ing. h.c.F. Porsche AG. Suspension for a front, especially a transversely-mounted motor vehicle power plant. 4,449,603, Cl. 180-232.000.

Lankin, David C.: *See—*
Hechenbleikner, Ingenuin; Enlow, William P.; and Lankin, David C., 4,450,113, Cl. 260-439.00R.

Lapidot, Heine: *See—*
Ritzer, Alan; and Lapidot, Heine, 4,450,282, Cl. 556-472.000.

Laroche, Paul; and Pompon, Jean-Bernard, to Chloe Chimie. Method of treating a polymerizing reactor. 4,450,189, Cl. 427-236.000.

Larrat, Philippe: *See—*
Baron, Michel; and Larrat, Philippe, 4,449,305, Cl. 34-92.000.

Larrive, Christopher: *See—*
Baskwell, John A.; and Larrive, Christopher, 4,450,317, Cl. 174-27.000.

Larsen, Torbjorn J. Dowel for pavement joints. 4,449,844, Cl. 404-60.000.

Larson, Marlow W. Sighting screw unit for and with archery bows. 4,449,303, Cl. 33-265.000.

Larson, Robert W.; Lou, Wen C.; DeVito, Vivian C.; and Neidinger, Karen A., to General Foods Corporation. Method of producing frozen yeast-leavened dough. 4,450,177, Cl. 426-19.000.

Laszlofalvi, Zoltan: *See—*
Olschewski, Armin; Laszlofalvi, Zoltan; and Kunkel, Heinrich, 4,449,421, Cl. 74-516.000.

La Torre, Richard R.; and Phaneuf, Robert A., to Raytheon Company. Gimbal assembly for monopulse radar antenna. 4,450,451, Cl. 343-765.000.

Lauhoff, Theodor: *See—*
Barzantny, Joachim; Beske, Joschim; Hans, Rainer; and Lauhoff, Theodor, 4,449,890, Cl. 417-50.000.

Laurent, Henry: *See—*
Nickisch, Klaus; Laurent, Henry; Wiechert, Rudolf; and Casals-Stenzel, Jorge, 4,450,107, Cl. 424-238.000.

Lautenschlager, Karl; and Viniol, Gerd, to Karl Lautenschlager KG, Mobelbeschlagfabrik. Adjustable hanger for wall-hung cabinets and the like. 4,449,689, Cl. 248-544.000.

Lauterbach, Heinz, to Robert Bosch GmbH. Apparatus for measuring the mass of a pulsating medium flowing in a flow cross-section. 4,449,397, Cl. 73-118.000.

Lavanish, Jerome M.; and Van Gemert, Barry, to PPG Industries, Inc. Herbicidally active oxadiazole ureas. 4,449,998, Cl. 71-92.000.

Lawrence, Dale M.: *See—*
Auth, David C.; Lawrence, Dale M.; and Majoch, Tim R., 4,449,528, Cl. 128-303.100.

Lawrence Fell Limited: *See—*
Takeuchi, Seiji, 4,449,279, Cl. 29-401.100.

Laws, Gerald E.: *See—*
Guttag, Karl M.; and Laws, Gerald E., 4,450,519, Cl. 364-200.000.

Laws, William R.; and Reed, Geoffrey R. Fluidized bed heating apparatus. 4,449,575, Cl. 165-82.000.

Lawson, John E., to ARMCO Inc. Well devices with annulus check valve and hydraulic by-pass. 4,449,583, Cl. 166-72.000.

Lawson, John R.: *See—*
Fulmer, George G.; and Lawson, John R., 4,450,216, Cl. 430-31.000.

Layman, Jeremy: *See—*
Bevan, David R.; and Layman, Jeremy, 4,449,970, Cl. 604-333.000.

Lear Siegler, Inc.: *See—*
Gabriele, Leonard A., 4,449,872, Cl. 409-252.000.
Murphy, Randall T.; and Heling, Dennis H., 4,449,751, Cl. 297-284.000.

Lebret, Gerard: *See—*
Lemaire, Didier; and Lebret, Gerard, 4,449,624, Cl. 198-412.000.

Leco Engineering & Machine, Inc.: *See—*
Voegeli, Ronald C., 4,449,643, Cl. 221-226.000.

Ledger, Curtis G. Anti-theft vibration detector switch and system. 4,450,326, Cl. 200-61.45M.

Ledley, Robert S., to Georgetown University. Digital fluorographic method and system. 4,450,478, Cl. 358-111.000.

Lee, Jerald D., to Du Pont de Nemours, E. I., and Company. Process colorimeter. 4,449,821, Cl. 356-319.000.

Lee, Julia L.: *See—*
Crivello, James V.; and Lee, Julia L., 4,450,360, Cl. 260-440.000.

Lee, Lindell E., Jr.: *See—*
Brown, George L.; and Lee, Lindell E., Jr., 4,449,591, Cl. 172-195.000.

Lee Pharmaceuticals, Inc.: *See—*
Pollak, Richard B., 4,449,938, Cl. 523-116.000.

Leech, Edward J.: *See—*
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,450,190, Cl. 427-304.000.

Lehnert, Stanley E., to Zenith Radio Corporation. Electronic television picture framing circuit. 4,450,386, Cl. 315-371.000.

Leibinsohn Saul. Liquid-flow measuring devices, particularly useful for drip chambers. 4,449,534, Cl. 604-51.000.

Leistner, William E.; and Overberger, Charles G., to Phoenix Chemical Corporation. Hindered piperidyl light stabilizers. 4,450,248, Cl. 524-99.000.

Leivenzon, Simon; and Leivenzon, Steven, to Firmagroup Australia Pty. Ltd. Mullion section member. 4,449,562, Cl. 160-113.000.

Leivenzon, Steven: *See—*
Leivenzon, Simon; and Leivenzon, Steven, 4,449,562, Cl. 160-113.000.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Tuckerman, David B.; and Pease, Roger F. W., 4,450,472, Cl. 357-82.000.

Leloux, Arnoldus W. J., to Wavin B.V. Apparatus for making profiled plastic tube. 4,449,910, Cl. 425-325.000.

Lemaire, Didier; and Lebret, Gerard, to E. P. Remy et Cie. Device for conveying and redistributing objects. 4,449,624, Cl. 198-412.000.

Le Martret, Odile; Humbert, Daniel; and Hunt, Peter F., to Roussel Uclaf. 3-Quinoline carboxamides having anxiolytic activity. 4,450,167, Cl. 424-258.000.

Le Martret, Odile: *See—*
Clemence, Francois; Hunt, Peter F.; Le Martret, Odile; and Humbert, Daniel, 4,450,166, Cl. 424-258.000.

Lemmon, Gerald W.: *See—*
Blystone, Wayne G.; and Lemmon, Gerald W., 4,449,581, Cl. 165-151.000.

Lenard, Peter: *See—*
Beck, Ernst; Lenard, Peter; and Pokorny, Erich, 4,449,427, Cl. 76-77.000.

Lennon, J. Anthony: *See—*
Cook, James S.; and Lennon, J. Anthony, 4,450,461, Cl. 357-19.000.

Leon, Albert M.; and McCoy, Daniel E., to Dorr-Oliver Incorporated. Fluidized bed boilers. 4,449,482, Cl. 122-4.00D.

Leonard, John J.: *See—*
Sofranko, John A.; and Leonard, John J., 4,450,293, Cl. 562-579.000.

Leppert, Norbert: *See—*
Streit, Werner; Lorenz, Klaus; and Leppert, Norbert, 4,450,083, Cl. 252-8.600.

Le Quement, Patrick: *See—*
Janssen, Lutz J.; and Le Quement, Patrick, 4,449,796, Cl. 350-582.000.

Lerner, Bernard J. Prilling. 4,449,900, Cl. 425-6.000.

Lerouge, Andre; Andre, Jean-Louis; and Coutin, Pierre, to R. Alkan & Cie; and Elf France. Device for igniting a torch. 4,449,920, Cl. 431-91.000.

Lester, J. Harvey, Jr.: *See—*
Chi, Ching T.; and Lester, J. Harvey, Jr., 4,450,291, Cl. 562-530.000.

Lett, Roland, to Flonic S.A. Axial turbine flowmeters. 4,449,410, Cl. 73-861.910.

Levenberg, Alvin: *See—*
Levenberg, Nat; and Levenberg, Alvin, 4,449,631, Cl. 206-459.000.

Levenberg, Nat; and Levenberg, Alvin. Tamper proof packaging. 4,449,631, Cl. 206-459.000.

Levolor Lorentzen, Inc.: *See—*
Dodich, James, 4,449,344, Cl. 52-475.000.

Lewis, Robert M.; and Slaugh, Lynn H., to Shell Oil Company. Barium hydride modified aluminum/siliceous compositions. 4,450,099, Cl. 502-232.000.

Ley, Gregor: *See—*
Hirsch, Guenter; and Ley, Gregor, 4,450,013, Cl. 106-308.00N.

Leybold-Heraeus GmbH: *See—*
Weingartner, Ernst; and Samietz, Klaus, 4,450,570, Cl. 373-69.000.

Licentia Patent-Verwaltungs GmbH: *See—*
Dahlberg, Reinhard, 4,449,286, Cl. 29-572.000.
Ostermann, Bernd; and Lissner, Paul, 4,450,320, Cl. 179-5.00R.

Liebhardt, Josef; Fuhrer, Rudolf; and Dautel, Erich, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Safety mechanism for an explosive body. 4,449,454, Cl. 102-226.000.

Lightstone, Alexander W.; Eastwood, H. Keith; and Szarka, Frank, to Her Majesty the Queen in Right of Canada as represented by the Minister of National Defense. Multimode optical fiber coupler. 4,449,781, Cl. 350-96.150.

Lin, Leo S.: *See—*
Konrad, Michael W.; and Lin, Leo S., 4,450,103, Cl. 260-112.00R.

Lindauer, Jerome I., to Avon Products, Inc. Fragrant insect repellent composition and combustible candle composition containing same. 4,449,987, Cl. 44-7.500.

Linde Aktiengesellschaft: *See—*
Forster, Franz, 4,449,444, Cl. 91-506.000.

Linde, John W.: *See—*
Morgan, Martin B.; Morgan, Marvin C.; and Linde, John W., 4,449,747, Cl. 296-97.00E.

Linde, Ronald K., to Envirosonics, Inc. Centrifugal reaction chamber. 4,450,141, Cl. 422-225.000.

Linden, Wilhelm: *See—*
Dreiseitl, Walter; Koch, Manfred; and Linden, Wilhelm, 4,450,403, Cl. 324-166.000.

Lindner, Gerhard: *See—*
Christmann, Wolfgang; Lindner, Gerhard; and Lingens, Paul, 4,450,124, Cl. 264-3.00R.

Lindsay, Alexander, to Modern Arts Packaging, Inc. One-piece shopping bag handles. 4,450,580, Cl. 383-6.000.

Lindstrom, Merlin R.; Macdonell, Gary D.; Louthan, Rector P.; and Kubicek, Donald H., to Phillips Petroleum Company. Sulfur based metal cleaners and corrosion inhibitors. 4,450,102, Cl. 252-542.000.

Lineberger, William F.: *See—*
Marshall, Charles W.; Lineberger, William F.; and Parker, Samuel A., Jr., 4,449,540, Cl. 131-290.000.

Lingens, Paul: *See—*
Christmann, Wolfgang; Lindner, Gerhard; and Lingens, Paul, 4,450,124, Cl. 264-3.00R.

Linhart, Friedrich: *See—*
Hertel, Otto; Linhart, Friedrich; and Scharf, Emil, 4,450,045, Cl. 162-164.300.

Lion Corporation: *See—*
Nakatani, Nobuji; Inatani, Reiko; and Konishi, Tadashi, 4,450,097, Cl. 252-404.000.

Lioutas, Theodore S.: *See—*
Steinberg, Marvin P.; and Lioutas, Theodore S., 4,450,183, Cl. 426-646.000.

Lipe, Joel T.: *See—*
Hill, Jerry M.; and Lipe, Joel T., 4,450,529, Cl. 364-508.000.

Lisi, Edward L.; Melleby, Juul A.; and Andersson, Arne, to Exxon Research and Engineering Co. Method and apparatus for regulating fluid flows in parallel-connected conduits (e.g. in furnace installations having air preheaters and by-pass conduits). 4,449,569, Cl. 165-1.000.

Lissmann, Kurt: *See—*
Eiermann, Kurt; Horlebein, Eberhard; Lissmann, Kurt; and Schafer, Wolfgang, 4,449,402, Cl. 73-204.000.

Lissner, Paul: *See—*
Ostermann, Bernd; and Lissner, Paul, 4,450,320, Cl. 179-5.00R.

Little, Roger G., to Spire Corp. Front surface metallization and encapsulation of solar cells. 4,450,033, Cl. 156-380.800.

Litton Systems, Inc.: *See—*
Gray, Robert E., 4,449,524, Cl. 128-202.270.
Kwon, Tae M.; and Debley, William P., 4,450,407, Cl. 324-304.000.

Litvin, Robert L.; and Price, David W. Waste plumbing installation and fittings therefor. 4,449,741, Cl. 285-153.000.

Livia, Michael R.: *See—*
Brooks, Robert A.; Banach, Terrance R.; Barman, Erik; and Livia, Michael R., 4,449,408, Cl. 73-643.000.

Llinas, Rodolfo R.; and Pellionisz, Andras J., to New York University. Sensorimotor coordinator. 4,450,530, Cl. 364-513.000.

Locker, Howard W. Air circulation apparatus. 4,449,570, Cl. 165-65.000.

Lockwood, Larry R., to Tektronix, Inc. Electronic filter devices. 4,450,422, Cl. 333-202.000.

Loctite Corporation: *See—*
Harris, Stephen J., 4,450,265, Cl. 526-298.000.
Melody, David P.; Grant, Seamus M.; and Martin, Francis R., 4,450,030, Cl. 156-307.300.

Lodge, Glenn R.: *See—*
Semerjian, Joseph K.; and Lodge, Glenn R., 4,449,436, Cl. 83-571.000.

Lohneis, Earl R.; and Stobbe, Richard E., to Kearney & Trecker Corporation. Servo-controlled spindle drive system. 4,449,866, Cl. 408-9.000.

Longo, Frank N.; Bader, Nicholas F., III; and Dorfman, Mitchell R., to METCO Incorporated. Hollow sphere ceramic particles for abradable coatings. 4,450,184, Cl. 427-34.000.

Lor-Al Corporation: *See—*
Tyler, Loren E., 4,449,667, Cl. 239-167.000.

Loral Corporation: *See—*
Rothman, Irwin L., 4,449,291, Cl. 29-605.000.

Lorch, Werner, to Hans Grohe GmbH & Co. Mixing valve. 4,449,551, Cl. 137-625.410.

Lorenz, Klaus: *See—*
Streit, Werner; Lorenz, Klaus; and Leppert, Norbert, 4,450,083, Cl. 252-8.600.

Lou, Wen C.: *See—*
Larson, Robert W.; Lou, Wen C.; DeVito, Vivian C.; and Neidinger, Karen A., 4,450,177, Cl. 426-19.000.

Loughman, Barbara E.: *See—*
Anderson, David J.; and Loughman, Barbara E., 4,450,159, Cl. 424-246.000.

Louthan, Rector P.: *See—*
Lindstrom, Merlin R.; Macdonell, Gary D.; Louthan, Rector P.; and Kubicek, Donald H., 4,450,102, Cl. 252-542.000.

Lovejoy, Paul T., to Allegheny Ludlum Steel Corporation. Method for producing bright stainless steel. 4,450,058, Cl. 204-145.00R.

Lover, George. Solar heater. 4,449,513, Cl. 126-416.000.

Lovett, Bruce E. Television information system. 4,450,477, Cl. 358-86.000.

Lubecki, Andrzej; Wiese, Kurt; and Winkler, Karl, to Gesellschaft mit Kernforschungszentrum Karlsruhe beschrankter Haftung. Apparatus for continuously measuring the element content in slurries. 4,450,576, Cl. 378-47.000.

Lucas Industries Limited: *See—*
Greeves, Godfrey, 4,449,501, Cl. 123-425.000.
Rath, Heinrich B.; and Thomas, Alfred W., 4,449,757, Cl. 303-6.00C.
Wellhoefer, Felicitas; Stacey, David W., deceased; and Stacey, Lesley A., legal representative, 4,450,471, Cl. 357-80.000.

Lucey, Robert E., to Controlonics Corporation. Infrared telephone extension control system. 4,450,319, Cl. 179-2.0EA.

Ludlow Industries, Inc.: *See—*
Matson, Carl G., 4,449,644, Cl. 222-3.000.

Ludtke, Dieter: *See—*
Strifler, Paul; Geissler, Heinrich; Ludtke, Dieter; Maurath, Rudolf; and Steinecke, Rudolf, 4,449,726, Cl. 280-81.00A.

Luke, Roger D.; and Rhodes, John M., to Siemens-Allis, Inc. Method of forming electric distribution panel. 4,449,296, Cl. 29-883.000.

Lunn, William H. W., to Eli Lilly and Company. Dioximino cephalosporin antibiotics. 4,450,270, Cl. 544-24.000.

Lunquist, Richard E.: *See—*
Strobel, Russell A.; Rihani, Jawdat; and Lunquist, Richard E., 4,450,583, Cl. 455-86.000.

Luque, Tom R. Electro-mechanical hand controller. 4,450,325, Cl. 200-52.00R.

Luscomb, Douglas A., to Bendix Corporation, The. Fuel injection pump. 4,449,503, Cl. 123-447.000.

Lustig, Leopold P. Contra-angle head for dentistry. 4,449,932, Cl. 433-126.000.

Luther Medical Products, Inc.: *See—*
Luther, Ronald B., 4,449,973, Cl. 604-161.000.

Luther, Ronald B., to Luther Medical Products, Inc. Small gauge, pre-split cannula and process for manufacture. 4,449,973, Cl. 604-161.000.

Luthy, Christoph, to Hoffmann-La Roche Inc. Thiazoline derivatives. 4,450,157, Cl. 424-200.000.

Luttmer, David J.: *See—*
Painter, Walter C.; Luttmer, David J.; and Galloway, Alvin J., 4,450,397, Cl. 318-762.000.

Luybli, Joseph R.: *See—*
Berger, Kerry R.; Kaspersma, Jelle H.; Luybli, Joseph R.; Millward, Barry; and Shay, Robert H., 4,450,017, Cl. 148-16.000.

Luyten, Jacobus H., to Helmes Machinefabriek B.V. Device for transferring articles. 4,449,555, Cl. 144-198.00R.

M&T Chemicals Inc.: *See—*
Chessin, Hyman; and Knill, Edmund C., 4,450,050, Cl. 204-41.000.
McMullen, Warren H.; Chessin, Hyman; and Siracusa, Denise, 4,450,052, Cl. 204-51.000.

Maas, Henricus G. R.; and Appels, Johannes A., to U.S. Philips Corporation. Method of providing a narrow groove or slot in a substrate region, in particular a semiconductor substrate region. 4,449,287, Cl. 29-580.000.

Macaulay, Alexander, to Raytheon Company. Sputtering apparatus and methods. 4,450,062, Cl. 204-298.000.

MacCrone, Robert K.: *See—*
Homan, Clarke G.; Kendall, David P.; and MacCrone, Robert K., 4,450,086, Cl. 252-62.510.

Macdonell, Gary D.: *See—*
Lindstrom, Merlin R.; Macdonell, Gary D.; Louthan, Rector P.; and Kubicek, Donald H., 4,450,102, Cl. 252-542.000.

MacIntosh, Edward D.: *See—*
Hertel, Richard J.; and MacIntosh, Edward D., 4,449,885, Cl. 414-750.000.

MacMillan, William R., to Tiglhman Wheelabrator Limited. Shot blasting machinery. 4,449,331, Cl. 51-425.000.

Maeda, Kunihiro: *See—*
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; Takahashi, Ken; and Oowada, Siniti, 4,450,426, Cl. 338-21.000.

Maeda, Takeshi: *See—*
Nakamura, Shigeru; Maeda, Takeshi; Kaku, Toshimitsu; Tsunoda, Yoshito; Takasugi, Wasao; and Kaneda, Tokuya, 4,450,547, Cl. 369-45.000.

Magnetic Analysis Corporation: *See—*
Brooks, Robert A.; Banach, Terrance R.; Barman, Erik; and Livia, Michael R., 4,449,408, Cl. 73-643.000.
Suhr, Peter J.; Brooks, Robert A.; and Banach, Terrance R., 4,449,411, Cl. 73-643.000.

Magnusson, Robert A., to Simmons U.S.A. Corp. Bed mattress having an improved pillow top. 4,449,261, Cl. 5-465.000.

Maier, Albert: *See—*
Steinsberger, Karl; Maier, Albert; and Herrmann, Walter, 4,449,868, Cl. 408-138.000.

Maier, Josef. Concrete form and method of assembling and dismantling the same. 4,450,120, Cl. 264-31.000.

Maier, Kurt, to BHS-Dr. Ing. Hofler Maschinenbau GmbH. Device for the manufacture of gear wheels for low noise gearings. 4,449,869, Cl. 409-11.000.

Maitre, Xavier: *See—*
Petit, Jean-Pierre; and Maitre, Xavier, 4,450,533, Cl. 364-724.000.

Majoch, Tim R.: *See—*
Auth, David C.; Lawrence, Dale M.; and Majoch, Tim R., 4,449,528, Cl. 128-303.100.

Makela, Olavi; Suntio, Ossi; and Tuomaala, Jorma, to A. Ahlstrom Osakeyhtio. Method and apparatus for sawing a piece of timber. 4,449,557, Cl. 144-357.000.

Makley, James A.: *See—*
Hamisch, Paul H., Jr.; and Makley, James A., 4,450,035, Cl. 156-384.000.

Malecki, Edward S.: *See—*
Gilbride, Andrew J.; Malecki, Edward S.; Winslow, Edward H., III; and Coleman, Robert F., 4,449,463, Cl. 112-121.260.

Maledon, Susan D. Hair trimming shears. 4,449,300, Cl. 30-230.000.

Malhi, Satwinder D.; and Salama, Clement A. Improved current mirror biasing arrangement for integrated circuits. 4,450,366, Cl. 307-297.000.

Mallett, A. J., to Halliburton Company. Swept energy source acoustic logging system. 4,450,540, Cl. 367-41.000.

Malzahn, Dale E., to Penwalt Corporation. Process for recovering anhydrous alkanesulfonic acids by reduced pressure, falling film evaporation. 4,450,047, Cl. 203-15.000.

Manabe, Harukazu: *See—*
Okamura, Yasushi; Manabe, Harukazu; and Sato, Norihide, 4,449,838, Cl. 400-234.000.

Mani, Ramani, to General Electric Company. Method and apparatus for promoting a surge condition in a gas turbine. 4,449,358, Cl. 60-39.020.

Manitowoc Company, Inc., The: *See—*
Helm, Percy R.; and Morrow, James G., Sr., 4,449,635, Cl. 212-196.000.

Mannesmann Aktiengesellschaft: *See—*
Colditz, Werner, 4,449,435, Cl. 83-167.000.

Manning, Donald R. Apparatus for remote closing of fuse circuits. 4,450,425, Cl. 337-171.000.

Mansell, George B., to Rapid Packaging Services Pty. Ltd. Rapid plate mounter. 4,449,452, Cl. 101-382.0MV.

Mansour, Maher L., to Ashland Oil, Inc. Mixing apparatus. 4,449,828, Cl. 366-147.000.

Manville Service Corporation: *See—*
Hounsel, Mack A.; and Byrd, Carlisle O., Jr., 4,449,345, Cl. 52-506.000.
Johnson, Harold D.; Sherman, Earle C.; and Cooper, Leonard M., 4,449,633, Cl. 206-612.000.

Maquinas Npu Ltda.: *See—*
Copia, Carlos R. D. S., 4,449,962, Cl. 493-209.000.

Marcantonio, Angelo R., to RCA Corporation. Linear velocity control means. 4,450,552, Cl. 369-240.000.

Marchetti, Renato; Penco, Eugenio; and Perito, Ugo, to Selenia, Industrie Elettroniche Associate, S.p.A. Pre-ionizing trigger system for a gas laser. 4,450,566, Cl. 372-38.000.

Marcy, Dewey R.: *See—*
Morlock, Ruben D.; Kopecky, Ivyl D.; Anderson, Robert R.; and Marcy, Dewey R., 4,449,672, Cl. 241-101.700.

Marien, Hendricus C. J.; and Thompson, Michael N., to U.S. Philips Corporation. Electron microscope comprising an X-ray detector. 4,450,355, Cl. 250-310.000.

Mariol, James F., to Suzi Stone Enterprises, Inc. Personal security device. 4,449,474, Cl. 116-2.000.

Maritec Corporation: *See—*
Baker, Kenneth R.; and De Vault, Robert T., 4,449,944, Cl. 440-47.000.

Marker, Hannes; and Huss, Otto, to Marker, Hannes. Sailboard. 4,449,466, Cl. 114-91.000.

Marker-Patentverwertungsgesellschaft mbH: *See—*
Knabel, Walter; Wagner, Ludwig; and Richert, Manfred, 4,449,731, Cl. 280-632.000.

Markham, John D., to Associated Electrical Industries Limited. Dynamic braking of direct current motors. 4,450,388, Cl. 318-87.000.

Marmon, John C., Jr.: *See—*
Davies, Evan; and Marmon, John C., Jr., 4,449,259, Cl. 4-415.000.

Marshall, Charles W.; Lineberger, William F.; and Parker, Samuel A., Jr., to Parker Tobacco Company. Separation of lamina from stems in baled tobacco. 4,449,540, Cl. 131-290.000.

Martel, Jacques: *See—*
Nezot, Francois; Girault, Pierre; Tessier, Jean; and Martel, Jacques, 4,450,169, Cl. 424-270.000.

Martel, Thomas J.: *See—*
Bowen, Robert F.; and Martel, Thomas J., 4,450,334, Cl. 219-10.55E.

Martin, Francis R.: *See—*
Melody, David P.; Grant, Seamus M.; and Martin, Francis R., 4,450,030, Cl. 156-307.300.

Martin, Henry: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,450,000, Cl. 71-105.000.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,449,999, Cl. 71-73.000.

Martinek, Thomas W., to Teepak, Inc. Zero runout counter-rotating film extruder. 4,450,131, Cl. 264-209.200.

Martinez, Richard A.: *See—*
Fukukura, Kazutoyo; and Martinez, Richard A., 4,450,324, Cl. 200-5.00A.

Martinez-Vera, Enrique R.; and Guerra-Garcia, Gilberto, to Hylsa, S.A. Apparatus for separating agglomerated particulate matter. 4,449,671, Cl. 241-36.000.

Martinmaas, Werner W. Hand tool with handle storage of interchangeable elements. 4,449,559, Cl. 145-62.000.

Marusiak, Frank, Jr. Tamper-proof package and method. 4,449,632, Cl. 206-540.000.

Maruyama, Kazuhiro: *See—*
Komatsu, Tatsuyoshi; Numata, Shigeaki; and Maruyama, Kazuhiro, 4,450,111, Cl. 260-369.000.

Masaki, Katsumi: *See—*
Kitamura, Takashi; Watanabe, Asao; Nakano, Takashi; Masaki, Katsumi; Hirayama, Kazuhiro; Sato, Yasushi; and Tokiwa, Taisuke, 4,450,453, Cl. 346-108.000.

Masayuki, Mitsuhashi: *See—*
Takashi, Nogami; and Masayuki, Mitsuhashi, 4,449,774, Cl. 339-59.00M.

Massa, Donald P., to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees. Acoustic alarm repeater system. 4,450,436, Cl. 340-531.000.

Massachusetts Institute of Technology: *See—*
Thornton, Richard D., 4,450,396, Cl. 318-721.000.

Massey, Edwin M.: *See—*
Holbert, Kenneth W.; and Massey, Edwin M., 4,450,029, Cl. 156-250.000.

Massey, William A., to General Electric Company. Voltage to frequency converter. 4,450,532, Cl. 364-703.000.

Mastro, Paul F.: *See—*
Hobart, Ralph J.; Rupp, Robert D.; and Mastro, Paul F., 4,449,694, Cl. 251-171.000.

Masuho, Yasuhiko; and Hara, Takeshi, to Teijin Limited. Antitumor hybrid and process for the preparation thereof. 4,450,154, Cl. 260-112.00R.

Mathias, Joseph S.: *See—*
Mittal, Faquir C.; and Mathias, Joseph S., 4,450,505, Cl. 361-386.000.

Mathis, Paul; and Wachter, Anton, to Mathis Systemtechnik GmbH; and Wachter KG Baustoffwerk. Apparatus for preparing mortar or the like. 4,449,826, Cl. 366-13.000.

Mathis Systemtechnik GmbH: *See—*
Mathis, Paul; and Wachter, Anton, 4,449,826, Cl. 366-13.000.

Matson, Carl G., to Ludlow Industries, Inc. Blast aerator for fluidizing granular material. 4,449,644, Cl. 222-3.000.

Matsubayashi, Kazuyuki: *See—*
Sakoda, Yasuhiro; and Matsubayashi, Kazuyuki, 4,450,344, Cl. 219-400.000.

Matsuda, Hiroto: *See—*
Sugitani, Hiroshi; Ozawa, Masakazu; Matsuda, Hiroto; Ikeda, Masami; and Matsumoto, Haruyuki, 4,450,455, Cl. 346-140.0PQ.

Matsuda, Minoru, to Nissan Motor Company, Limited. Lift device. 4,449,614, Cl. 187-9.00R.

Matsui, Shigetomo: *See—*
Yoshida, Toshio; Matsui, Shigetomo; and Atsuta, Toshio, 4,449,281, Cl. 29-421.00R.

Matsumoto, Haruyuki: *See—*
Sugitani, Hiroshi; Ozawa, Masakazu; Matsuda, Hiroto; Ikeda, Masami; and Matsumoto, Haruyuki, 4,450,455, Cl. 346-140.0PQ.

Matsumoto, Seiji: *See—*
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Matsumoto, Seiji, 4,450,466, Cl. 357-30.000.

Matsumoto, Shotaro: *See—*
Itaba, Takeshi; Matsumoto, Shotaro; and Abe, Takeshi, 4,450,205, Cl. 428-552.000.

Matsumoto, Sigemi; and Nagoshi, Fumiya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for producing thermoplastic resin. 4,450,256, Cl. 525-316.000.

Matsumura, Kaname, to Mitsuboshi Belting Ltd. Cross grooved banded drive belt. 4,449,959, Cl. 474-238.000.

Matsunaga, Kenichi: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,450,156, Cl. 424-180.000.

Matsunami, Keiichi: *See—*
Sato, Hideo; Goto, Yasuyuki; Saito, Hideo; Sawada, Shinichi; Matsunami, Keiichi; and Hirata, Kohzo, 4,450,094, Cl. 252-299.610.

Matsuo, Seitaro: *See—*
Ono, Toshiro; and Matsuo, Seitaro, 4,450,031, Cl. 156-345.000.

Matsuo, Syunji: *See—*
Terada, Sadatugu; Haneda, Satoshi; Tomono, Makoto; and Matsuo, Syunji, 4,450,221, Cl. 430-106.600.

Matsuo, Tohru; and Aoki, Takeo, to Sumitomo Kinzoku Kogyo Kabushiki Kaisha. Dephosphorization and desulfurization method for molten iron alloy containing chromium. 4,450,004, Cl. 75-53.000.

Matsuoka, Kimiaki: *See—*
Kondow, Takeshi; Okazaki, Koshi; Katsuhara, Yutaka; and Matsuoka, Kimiaki, 4,450,298, Cl. 568-437.000.

Matsushita Electric Industrial Co.: *See—*
Okamura, Kouichi; Eriguchi, Yukio; Hagio, Katsushige; and Yamamoto, Setsuo, 4,449,662, Cl. 229-49.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Ishikawa, Kiyotsugu; Sone, Yoshiaki; Hashimoto, Susumu; Omae, Masanori; and Kunii, Takao, 4,450,475, Cl. 358-44.000.
Ito, Keisuke; Kashihara, Toshiaki; and Okino, Yoshihiro, 4,449,916, Cl. 425-174.400.
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,449,516, Cl. 126-430.000.
Nakata, Koreaki; Ueno, Jiro; and Ogawa, Yasuhiro, 4,450,049, Cl. 204-35.00N.
Okamura, Yasushi; Manabe, Harukazu; and Sato, Norihide, 4,449,838, Cl. 400-234.000.
Saka, Hiroshi; and Tanaka, Toshihide, 4,450,584, Cl. 455-325.000.
Shimizu, Toshiki; and Inoue, Kazuyuki, 4,450,335, Cl. 219-10.55C.
Shinohara, Koichi, 4,450,186, Cl. 427-42.000.
Tanaka, Kazuyuki, 4,450,442, Cl. 340-814.000.
Yamada, Takahiro, 4,450,464, Cl. 357-30.000.

Matsushita Electronics Corporation: *See—*
Terakawa, Sumio; and Horii, Kenju, 4,450,484, Cl. 358-213.000.

Matsushita Reiki Co., Ltd.: *See—*
Kurahayashi, Takahisa, 4,449,895, Cl. 417-368.000.

Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; Shikatani, Yutaka; and Miyoshi, Mituji, to Nippon Oil Company, Limited. Carrier for olefin polymerization catalyst. 4,450,243, Cl. 502-131.000.

Mattel, Inc.: *See—*
Dunn, Ralph; and Coleman, Leonard R., 4,450,129, Cl. 264-132.000.

Mattes, Kenneth C.; and Warren, Harold C., to Eastman Kodak Company. Use of carbon adsorption deactivating compounds in image transfer elements. 4,450,222, Cl. 430-220.000.

Matteson, William R., to United States of America, Navy. Safe-arm training simulator. 4,449,939, Cl. 434-12.000.

Matthews, James B., to Raytheon Company. Laser gyro output optics structure. 4,449,824, Cl. 356-350.000.

Matushiro, Ryuichi: *See—*
Moriguchi, Koichi; Iwamoto, Kenzi; Matushiro, Ryuichi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,449,367, Cl. 60-602.000.

Mauch, Fred E.: *See—*
Bubb, Charles E.; and Mauch, Fred E., 4,449,339, Cl. 52-195.000.

Maurath, Rudolf: *See—*
Strifler, Paul; Geissler, Heinrich; Ludtke, Dieter; Maurath, Rudolf; and Steinecke, Rudolf, 4,449,726, Cl. 280-81.00A.

Maxwell Laboratories, Inc.: *See—*
Asmus, John F., 4,450,568, Cl. 372-76.000.

May, Albert D., to University of Toronto Innovations Foundation, The. Optical measuring apparatus employing a laser. 4,449,825, Cl. 356-349.000.

Mayer, Endre A., to Bendix Corporation, The. Dual pressure metering for distributor pumps. 4,449,507, Cl. 123-467.000.

Mayer, James R., to Cooper Industries, Inc. Automatic drill string section changer. 4,449,592, Cl. 175-52.000.

Mayn, John W.: *See—*
McDonough, Kevin C.; Mayn, John W.; Swoboda, Gary L.; and Bellay, Jeffrey D., 4,450,521, Cl. 364-200.000.

Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., to R. J. Reynolds Tobacco Company. Tobacco treatment process. 4,449,541, Cl. 131-302.000.

McAdams, Henry A.: *See—*
Mercer, James E., 4,449,879, Cl. 414-11.000.

McAfee, Richard C.; Adkins, James; and Miskowski, Richard L., to SWS Silicones Corporation. Platinum-styrene complexes which promote hydrosilation reactions. 4,450,283, Cl. 556-479.000.

McAllister, Dan R., to Westinghouse Electric Corp. Electromagnetic projectile launcher with magnetic spin stabilization. 4,449,441, Cl. 89-8.000.

MCC Corporation: *See—*
Nakamura, Masahiko; and Yokoyama, Takashi, 4,449,430, Cl. 81-98.000.

McCarthy, Cornelius J.; and Aplin, George E. Resurfacing process and tool for installing catridge-type. 4,449,330, Cl. 51-241.00S.

McClure, Donald R.: *See—*
Buckley, Michael E.; Tschirn, Thomas N.; McClure, Donald R.; and Wieland, Michael S., 4,449,458, Cl. 102-430.000.

McComas, Jean, to Fairchild Industries, Inc. Multi role aircraft. 4,449,679, Cl. 244-118.200.

McConnell, Richard L.; Meyer, Max F., Jr.; and Petke, Frederick D., to Eastman Kodak Company. Polyester adhesives. 4,450,250, Cl. 524-141.000.

McCord, Robert C. Rearview mirror. 4,449,786, Cl. 350-293.000.

McCormack, Ray G.: *See—*
Nielsen, Paul H.; and McCormack, Ray G., 4,450,434, Cl. 340-506.000.

McCoy, Daniel E.: *See—*
Leon, Albert M.; and McCoy, Daniel E., 4,449,482, Cl. 122-4.00D.

McCoy, John T. Fire containment device and method. 4,449,589, Cl. 169-48.000.

McCracken, Elbert A.: *See—*
McSwain, Thad M.; and McCracken, Elbert A., 4,449,542, Cl. 135-98.000.

McCrory, William W.; Quigley, William B.; and Garnett, William A., to United States of America, Navy. Inflatable boat with demountable transom. 4,449,473, Cl. 114-354.000.

McCullough, Robert K.: *See—*
Reed, Ronald G.; Schmuckal, Robin R.; and McCullough, Robert K., 4,450,387, Cl. 315-375.000.

McDonald Elevator: *See—*
Beath, Robert W.; and McDonald, John R., 4,449,615, Cl. 188-67.000.

McDonald, John R.: *See—*
Beath, Robert W.; and McDonald, John R., 4,449,615, Cl. 188-67.000.

McDonough, Kevin C.; Mayn, John W.; Swoboda, Gary L.; and Bellay, Jeffrey D., to Texas Instruments Incorporated. Digital processor or microcomputer using peripheral control circuitry to provide multiple memory configurations and offset addressing capability. 4,450,521, Cl. 364-200.000.

McDougall, David A. Skiing apparatus. 4,449,735, Cl. 280-818.000.

McGlone, William R.: *See—*
Benedyk, Joseph C.; Amos, Homer C.; Scheie, Carl E.; and McGlone, William R., 4,449,712, Cl. 273-326.000.

McGraw-Edison Company: *See—*
Kristofek, Paul J., 4,450,512, Cl. 362-276.000.
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarence R., 4,450,424, Cl. 336-94.000.

McGuire, John; and Bories, David G. Educational device for learning geographical names and locations. 4,449,941, Cl. 434-153.000.

McKay, Robert. Board game having means for ejection of playing pieces. 4,449,709, Cl. 273-248.000.

McKinney, Blake. Self-threading bolt. 4,449,874, Cl. 411-418.000.

McMillan, William P.; Hobbs, Charles C., Jr.; Gerberich, H. Robert; and Junker, Michael L., to Celanese Corporation. Process for converting methanol to formaldehyde. 4,450,301, Cl. 568-473.000.

McMullen, Warren H.; Chessin, Hyman; and Siracusa, Denise, to M&T Chemicals Inc. Zinc and nickel tolerant trivalent chromium plating baths. 4,450,052, Cl. 204-51.000.

McPhee, Alexander H.: *See—*
Soot, Olaf; and McPhee, Alexander H., 4,450,134, Cl. 376-262.000.

McQueen, Malcolm M. Guide tube inserted liquid level sensor. 4,449,403, Cl. 73-295.000.

McSwain, Thad M.; and McCracken, Elbert A. Portable hunting blind. 4,449,542, Cl. 135-98.000.

Mead Corporation, The: *See—*
Betron, Frank A.; Davis, James W.; Kockler, Barry C.; and Spears, Lonnie K., 4,449,811, Cl. 355-3.0SH.

Mears, Gregory N., to General Electric Company. Voltage controlled oscillator. 4,450,416, Cl. 331-117.0FE.

Medicus, Gustav K.; and Medicus, Rudolf G. Small-sample dialyzer. 4,450,076, Cl. 210-242.100.

Medicus, Rudolf G.: *See—*
Medicus, Gustav K.; and Medicus, Rudolf G., 4,450,076, Cl. 210-242.100.

Meguro, Takeshi; and Ito, Yukio, to Fujitsu Limited. Dielectric filter. 4,450,421, Cl. 333-202.000.

Mehoudar, Raphael. Irrigation device. 4,449,669, Cl. 239-533.100.

Meier, John W., to Gulf & Western Industries, Inc. Turbine engine seal and method for repair thereof. 4,449,714, Cl. 277-9.000.

Meitzler, Allen H., to Ford Motor Company. Transmission medium for application in electrical and acoustical control systems. 4,450,376, Cl. 310-334.000.

Melcher, Roy L.: *See—*
Ruger, William B.; and Melcher, Roy L., 4,449,312, Cl. 42-66.000.

Melleby, Juul A.: *See—*
Lisi, Edward L.; Melleby, Juul A.; and Andersson, Arne, 4,449,569, Cl. 165-1.000.

Melody, David P.; Grant, Seamus M.; and Martin, Francis R., to Loctite Corporation. Adhesive bonding method employing two-part composition with activator enriched with dihydropyridine ingredients. 4,450,030, Cl. 156-307.300.

Menge, Gunter: *See—*
Grieben, Karl H.; and Menge, Gunter, 4,449,625, Cl. 198-472.000.

Menges, John R.: *See—*
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,449,531, Cl. 128-325.000.

Mennella, Robert J.; and Davidowitz, David. Flexible sleeve elbow for gas service lines. 4,449,853, Cl. 405-184.000.

Menor, George: *See—*
Jahsman, Hendrick; and Menor, George, 4,449,262, Cl. 5-63.000.

Mercer, James E., to McAdams, Henry A., a part interest. Dry wall lift. 4,449,879, Cl. 414-11.000.

Merck & Co., Inc.: *See—*
Hoffman, William F.; Smith, Robert L.; and Willard, Alvin K., 4,450,171, Cl. 424-279.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Gehlhaus, Jurgen; and Herz, Claus P., 4,450,276, Cl. 548-303.000.

Mericle, Robert W.: *See—*
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,449,531, Cl. 128-325.000.

Meritus Industries, Inc.: *See—*
Reiling, Walter S., 4,449,321, Cl. 46-113.000.

Merten, Josef: *See—*
Idel, Karsten; Freitag, Dieter; and Merten, Josef, 4,450,266, Cl. 524-265.000.

Merz, Charles J., III: *See—*
Reisman, Arnold; Berkenblit, Melvin; and Merz, Charles J., III, 4,449,580, Cl. 165-104.340.

Merz, Walter; and Friedli, Hans, to Swiss Aluminium Ltd. Device for feeding electrolytic cells and method of operating the said device. 4,450,053, Cl. 204-67.000.

Messer, Dieter; Wilhelm, Volker; Endres, Robert; and Heine, Heinrich, to Bayer Aktiengesellschaft. Flocculation-resistant, mixed phase pigments having a rutile structure, process for their preparation, and their use. 4,450,012, Cl. 106-300.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Liebhardt, Josef; Fuhrer, Rudolf; and Dautel, Erich, 4,449,454, Cl. 102-226.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Hahnel, Thomas, 4,449,361, Cl. 60-254.000.

Messingschlager, Walter. Body fluid drainage tube. 4,449,974, Cl. 604-175.000.

METCO Incorporated: *See—*
Longo, Frank N.; Bader, Nicholas F., III; and Dorfman, Mitchell R., 4,450,184, Cl. 427-34.000.

Meuleman, Lambertus J.; van de Grijp, Abram; and Roza, Engel, to U.S. Philips Corporation. Apparatus for modulating the output signal of a converter. 4,450,564, Cl. 372-26.000.

Meurer Non Food Product GmbH: *See—*
Vossen, Franz, 4,449,744, Cl. 294-87.200.

Meyer, John R., r., to United States of America, Navy. Detachable storage tank for hydrofoils. 4,449,472, Cl. 114-274.000.

Meyer, Max F., Jr.: *See—*
McConnell, Richard L.; Meyer, Max F., Jr.; and Petke, Frederick D., 4,450,250, Cl. 524-141.000.

Micha, Peter, to Pem Fountain Co. Submersible high intensity lamp. 4,450,511, Cl. 362-267.000.

Michaels, Alan S., to Alza Corporation. Microporous film with polymer in pores for regulating passage of fluid. 4,450,198, Cl. 428-315.500.

Michel, Thomas J.: *See—*
Corbitt, John; and Michel, Thomas J., 4,449,538, Cl. 128-760.000.

Microdot Inc.: *See—*
Berecz, Imre; Schultz, Dennis; and Daniel, Leroy O., 4,449,283, Cl. 29-566.100.

Middleman, Lee M.: *See—*
Doljack, Frank A.; and Middleman, Lee M., 4,450,496, Cl. 361-58.000.

Mifune, Takao: *See—*
Itoh, Fumikazu; Fujita, Yasuhiro; Kobayashi, Takashi; and Mifune, Takao, 4,449,293, Cl. 29-736.000.

Mignotte, Claude: *See—*
Disclaire, Jacques; and Mignotte, Claude, 4,449,288, Cl. 29-596.000.

Miki, Yukio; and Egawa, Takeshi, to Minolta Camera Kabushiki Kaisha. Automatic system and interchangeable optical instrument therefor. 4,449,807, Cl. 354-195.100.

Millar, Thomas D.; and Miller, David M., to AHI Operations Limited. Methods of making intra-vaginal devices and/or intra-vaginal devices. 4,449,980, Cl. 604-890.000.

Miller, David M.: *See—*
Millar, Thomas D.; and Miller, David M., 4,449,980, Cl. 604-890.000.

Miller Electric Manufacturing Company: *See—*
Corrigall, Don J.; and Schiedermayer, Marvin L., 4,450,340, Cl. 219-132.000.

Miller, Wendell E.: *See—*
Ellingson, Gary L.; and Miller, Wendell E., 4,450,450, Cl. 343-758.000.

Miller, William H.; and Frank, Joseph J., to General Electric Company. Apparatus for vibration reduction in dynamoelectric machines. 4,450,373, Cl. 310-51.000.

Millerburg, John W. Method and projecting typositor for composing typographical artwork on color sensitive photographic medium. 4,449,801, Cl. 354-12.000.

Milliken Research Corporation: *See—*
Engels, Walter, 4,449,276, Cl. 26-2.00R.
Moore, James R.; and Warner, Charles E., 4,449,354, Cl. 57-284.000.
Moore, James R.; Schroder, William J.; Warner, Charles E.; and Pittman, Edgar H., 4,449,355, Cl. 57-284.000.
Warner, Charles E., 4,449,356, Cl. 57-284.000.

Millmaster Onyx Group, Inc.: *See—*
Green, Harold A.; Petrocci, Alfonso N.; and Dudzinski, Zdzislaw W., 4,450,174, Cl. 424-329.000.

Millward, Barry: *See—*
Berger, Kerry R.; Kaspersma, Jelle H.; Luybli, Joseph R.; Millward, Barry; and Shay, Robert H., 4,450,017, Cl. 148-16.000.

Mimura, Akio; Yuasa, Katsumi; and Shibukawa, Mitsuru, to Asahi Kasei Kogyo Kabushiki Kaisha. Immobilization of microorganisms in a polymer gel. 4,450,233, Cl. 435-178.000.

Mink, Robert I., to Stauffer Chemical Company. Catalyst for polymerizing olefins. 4,450,242, Cl. 502-105.000.

Minnesota Mining and Manufacturing Company: *See—*
Baribeau, Gary A., 4,449,777, Cl. 339-103.00R.
Delfino, Gerolamo; and Franco, Simone, 4,450,230, Cl. 430-539.000.
Gould, Jay W., III, 4,449,982, Cl. 604-891.000.
Holmes, Brian N.; Dalzell, Rex J.; and Aasen, Steven M., 4,450,227, Cl. 430-339.000.
Reece, Jack E., 4,450,229, Cl. 430-523.000.
West, Arthur C., 4,450,263, Cl. 526-249.000.

Minnis, Ralph L.: *See—*
Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., 4,450,203, Cl. 428-514.000.

Minolta Camera Kabushiki Kaisha: *See—*
Miki, Yukio; and Egawa, Takeshi, 4,449,807, Cl. 354-195.100.
Nakamura, Akiyoshi; and Tokumaru, Hisashi, 4,449,793, Cl. 350-458.000.
Yuasa, Yoshio; and Naruse, Kazuhiko, 4,449,822, Cl. 356-227.000.

Miskowski, Richard L.: *See—*
McAfee, Richard C.; Adkins, James; and Miskowski, Richard L., 4,450,283, Cl. 556-479.000.

Mithuhira, Kuniaki; Kamata, Keiji; and Suzuki, Hikoshiro, to Topre Corporation. Air quantity regulating apparatus for air conditioning. 4,449,664, Cl. 236-49.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Arimoto, Satomi; Yamaji, Shigeru; and Ishitobi, Chikato, 4,450,329, Cl. 200-148.00A.
Morishita, Akira, 4,450,423, Cl. 335-131.000.
Naruki, Toshimasa, 4,450,495, Cl. 360-137.000.
Nishizako, Shizutaka; and Tazawa, Hiroaki, 4,450,328, Cl. 200-144.00R.
Yamamoto, Takeski, 4,450,469, Cl. 357-56.000.
Yoshino, Masataka; Hashimoto, Yoshiki; and Ushikosi, Yasunori, 4,449,574, Cl. 165-11.00R.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Hasegawa, Akira; and Sakaguchi, Katsuyoshi, 4,449,903, Cl. 425-38.000.
Hasegawa, Akira; and Miyamoto, Yoshinori, 4,449,917, Cl. 425-149.000.

Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Itaba, Takeshi; Matsumoto, Shotaro; and Abe, Takeshi, 4,450,205, Cl. 428-552.000.

Mitsuboshi Belting Ltd.: *See—*
Matsumura, Kaname, 4,449,959, Cl. 474-238.000.

Mittal, Faquir C.; and Mathias, Joseph S., to Sperry Corporation. Apparatus for cooling integrated circuit chips. 4,450,505, Cl. 361-386.000.

Miyachi, Takeshi; Tsuda, Hisanori; Hara, Toshitami; and Kasugayama, Yukio, to Canon Kabushiki Kaisha. Liquid-jet recording head. 4,450,457, Cl. 346-140.00R.

Miyamoto, Haruhiko; and Yonezawa, Masatomo, to Nippon Electric Co., Ltd. Ceramic compositions having high dielectric constant and high specific resistivity. 4,450,240, Cl. 501-136.000.

Miyamoto, Takehiko, to Kabushiki Kaisha Sato. Cutting device for tag web. 4,449,433, Cl. 83-76.000.

Miyamoto, Yoshinori: *See—*
Hasegawa, Akira; and Miyamoto, Yoshinori, 4,449,917, Cl. 425-149.000.

Miyata, Yukinori: *See—*
Furuhashi, Yasuhiro; Miyata, Yukinori; and Hishinuma, Osamu, 4,449,504, Cl. 123-447.000.

Miyazaki, Yoshiro; Yasunaga, Toshio; and Sasaki, Tomiya, to Tokyo Shibaura Denki Kabushiki Kaisha. Cooling apparatus for a closed housing. 4,449,579, Cl. 165-104.330.

Miyoshi, Mituji: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; Shikatani, Yutaka; and Miyoshi, Mituji, 4,450,243, Cl. 502-131.000.

Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; Takahashi, Ken; and Oowada, Siniti, to Hitachi, Ltd. Nonlinear resistor and process for producing the same. 4,450,426, Cl. 338-21.000.

Mizukami, Mineo, to Nippon Electric Co., Ltd. PAL System synchronizing signal generating apparatus. 4,450,474, Cl. 358-19.000.

Mizuno Corporation: *See—*
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,449,707, Cl. 273-171.000.

Mizuno, Nobutaka: *See—*
Moriguchi, Koichi; Iwamoto, Kenzi; Matushiro, Ryuichi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,449,367, Cl. 60-602.000.
Sone, Shigeru; Ikuta, Yasuhiro; Komiya, Kazuaki; Kihira, Kazuhide; and Mizuno, Nobutaka, 4,449,371, Cl. 60-611.000.

Mobil Oil Corporation: *See—*
Abdo, Milton K., 4,450,084, Cl. 252-8.55D.
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,450,067, Cl. 208-86.000.
Forbus, Nancy P.; and Wu, Margaret M., 4,449,961, Cl. 585-640.000.
Hegedus, Allan J., 4,449,394, Cl. 73-55.000.
Horodysky, Andrew G., 4,450,096, Cl. 252-32.70E.
Neeley, Walter P., 4,450,543, Cl. 367-154.000.
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,450,311, Cl. 585-413.000.

Modern Arts Packaging, Inc.: *See—*
Lindsay, Alexander, 4,450,580, Cl. 383-6.000.

Mogg, Alan A.: *See—*
Horn, Spencer C.; and Mogg, Alan A., 4,449,849, Cl. 405-52.000.

Mohaupt, Hubert: *See—*
Hones, Helmut; and Mohaupt, Hubert, 4,449,598, Cl. 180-6.500.

Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, to Suzuki Motor Company Limited. Cylinder-number-controlled engine. 4,449,496, Cl. 123-198.00F.

Mole-Richardson Company: *See—*
Krokaugger, William G., 4,450,384, Cl. 315-127.000.

Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr.; and Makley, James A., 4,450,035, Cl. 156-384.000.

Monsanto Company: *See—*
Chi, Ching T.; and Lester, J. Harvey, Jr., 4,450,291, Cl. 562-530.000.

Montgomery, John A.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,450,160, Cl. 424-250.000.

Montgomery, John R., IV; and Richardson, Donald R. Break away alarm clock. 4,449,833, Cl. 368-262.000.

Moore, James R.; and Warner, Charles E., to Milliken Research Corporation. Disc type yarn tension control. 4,449,354, Cl. 57-284.000.

Moore, James R.; Schroder, William J.; Warner, Charles E.; and Pittman, Edgar H., to Milliken Research Corporation. A.C.-D.C. Slotted type yarn tension control. 4,449,355, Cl. 57-284.000.

Moorhead, Albert B. Snake trap. 4,449,316, Cl. 43-10.000.

Moran, Frank. Auto luggage carrier. 4,449,657, Cl. 224-329.000.

Moran, J. Thomas: *See—*
Demuth, Gordon L.; Hinkle, John E.; and Moran, J. Thomas, 4,450,525, Cl. 364-200.000.

Morawietz, Hans-Joachim; Hoffman, Erich; Hanauer, Johann; and Bauer, Kurt, to Hoechst Aktiengesellschaft. 3-Oxypropyleneimino-bis-(methylene phosphonic acids) and their salts, process for their manufacture and their use. 4,450,116, Cl. 260-502.50E.

Moretti, Vincent: *See—*
Sawka, Steven; Moretti, Vincent; and Heal, Sam F., 4,450,382, Cl. 315-082.000.

Morgan, Barry A., to Sterling Drug Inc. Analgesic dipeptide amides and method of use and compositions thereof. 4,450,155, Cl. 424-177.000.

Morgan, Martin B.; Morgan, Marvin C.; and Linde, John W. Insulating dashboard cover having antiglare and heat resistant characteristics. 4,449,747, Cl. 296-97.00E.

Morgan, Marvin C.: *See—*
Morgan, Martin B.; Morgan, Marvin C.; and Linde, John W., 4,449,747, Cl. 296-97.00E.

Mori, Mamoru: *See—*
Yasumatsu, Jun; Mori, Mamoru; Nishiwaki, Toshihito; and Owada, Akira, 4,449,752, Cl. 297-341.000.

Moriguchi, Koichi; Iwamoto, Kenzi; Matushiro, Ryuichi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Knocking control device for turbocharged internal combustion engine. 4,449,367, Cl. 60-602.000.

Morimoto, Takeshi, to Kyoto University. Magnetic-infrared-emitting diode. 4,450,460, Cl. 357-17.000.

Morimoto, Yoshiro: *See—*
Suga, Masaaki; Morimoto, Yoshiro; and Hamada, Hideo, 4,449,618, Cl. 192-3.310.

Morino, Toshiharu: *See—*
Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,450,117, Cl. 261-39.00A.

Morishita, Akira, to Mitsubishi Denki Kabushiki Kaisha. Magnetic switch. 4,450,423, Cl. 335-131.000.

Morita, Masanobu: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.

Moriyama, Masaru, to Victor Company of Japan, Limited. D/A Converting circuit having two D/A converters for decoding and converting a digital signal into an analog signal. 4,450,433, Cl. 340-347.0DA.

Morlock, Ruben D.; Kopecky, Ivyl D.; Anderson, Robert R.; and Marcy, Dewey R., to Haybuster Manufacturing, Inc. Machine for loading and disintegrating large bales of forage material. 4,449,672, Cl. 241-101.700.

Morrow, James G., Sr.: *See—*
Helm, Percy R.; and Morrow, James G., Sr., 4,449,635, Cl. 212-196.000.

Moss, Philip H.; and Nieh, Edward C. Y., to Texaco Inc. Hydroxy-containing bicycloalkane ether compounds. 4,450,307, Cl. 568-665.000.

Motoda Denshi Kogyo Kabushiki Kaisha: *See—*
Motoda, Kenro, 4,449,884, Cl. 414-749.000.

Motoda, Kenro, to Motoda Denshi Kogyo Kabushiki Kaisha. Universal robot. 4,449,884, Cl. 414-749.000.

Motor Wheel Corporation: *See—*
Weeks, James B., 4,449,756, Cl. 301-37.00P.

Motorola Inc.: *See—*
Cho, Frederick Y.; and Hickernell, Fred S., 4,450,374, Cl. 310-313.00B.
Conner, Leo B., Jr.; and Nelson, Robert N., 4,450,445, Cl. 343-7.500.
Noble, Scott W., 4,450,573, Cl. 375-104.000.
Strobel, Russell A.; Rihani, Jawdat; and Lunquist, Richard E., 4,450,583, Cl. 455-86.000.
Whatley, Roger A., 4,450,367, Cl. 307-297.000.

Mount, Houston B., II: *See—*
Jageler, Alfred H.; Bruce, Gary D.; and Mount, Houston B., II, 4,449,593, Cl. 175-58.000.

MPL, Inc.: *See—*
Finkelstein, Sam D., 4,449,640, Cl. 220-270.000.

MTD Products Inc.: *See—*
Hauser, Hans, 4,449,424, Cl. 74-701.000.

MTU Motoren-und Turbinen Union Munchen GmbH: *See—*
Huther, Werner, 4,450,314, Cl. 136-230.000.

Mueller, Robert J., to General Electric Company. X-Ray tomography table having a virtual fulcrum arm pivot. 4,450,575, Cl. 378-26.000.

Mulhauser, Paul J.: *See—*
Burbo, James H.; Hartman, Louis P.; Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 4,449,787, Cl. 350-538.000.

Muller, Heinz K., to Busak & Luyken. Packing for hydraulic pistons or piston rods. 4,449,718, Cl. 277-170.000.

Mulrooney, James F. Combination scraping plane. 4,449,299, Cl. 30-169.000.

Mumford, Eustace H.: *See—*
Irwin, George W.; and Mumford, Eustace H., 4,449,996, Cl. 65-305.000.

Mundhenke, Ivan W. Horizontal axis windmill. 4,449,887, Cl. 415-4.000.

Munekawa, Masaaki, to Showa Aluminum Corporation. Device for releasing heat. 4,449,578, Cl. 165-104.330.

Municipal Industries, Inc.: *See—*
Dittmann, Fred M., Jr., 4,449,602, Cl. 180-215.000.

Munter, Ernst A., to Northern Telecom Limited. Switching network for use in a time division multiplex system. 4,450,557, Cl. 370-58.000.

Murakami, Shu: *See—*
Arimura, Katsuo; Murakami, Shu; and Oka, Taichi, 4,450,275, Cl. 548-201.000.

Murata Manufacturing Co., Ltd.: *See—*
Murata, Michihiro, 4,450,429, Cl. 338-35.000.

Murata, Michihiro, to Murata Manufacturing Co., Ltd. Humidity sensitive resistance device. 4,450,429, Cl. 338-35.000.

Murata, Mineo: *See—*
Tokoro, Takehiko; Kashima, Shoichi; and Murata, Mineo, 4,449,856, Cl. 405-269.000.

Murphy, Randall T.; and Heling, Dennis H., to Lear Siegler, Inc. Seat backrest having an adjustable lumbar support. 4,449,751, Cl. 297-284.000.

Murray, Daniel J.: *See—*
Woo, Edmund P.; and Murray, Daniel J., 4,450,285, Cl. 560-206.000.

Murray, Edward R.; van der Laan, Jan E.; Rosengreen, Arne; and Byer, Robert L., to SRI International. Frequency-mixed CO_2 laser radar for remote detection of gases in the atmosphere. 4,450,356, Cl. 250-339.000.

Musser, Lester W., Jr.; and Germain, Lee A., to Goodyear Aerospace Corporation. Non-reversible brake adjuster. 4,449,616, Cl. 188-71.800.

Muszynski, Larry C., to Shell Oil Company. Buckle arrestor. 4,449,852, Cl. 405-168.000.

Mutsubishi Rubber Co., Ltd.: *See—*
Kitawaki, Michio; and Annaka, Masao, 4,449,717, Cl. 277-153.000.

Mycro-Group Company: *See—*
Gordin, Myron K., 4,450,507, Cl. 362-61.000.

Myers Electric Products Inc.: *See—*
Warner, Michael J., 4,450,503, Cl. 361-356.000.

Myrens Verksted A/S: *See—*
Fritzvold, Bjorn H.; and Soteland, Nicolai, 4,450,044, Cl. 162-65.000.

Nabisco Brands, Inc.: *See—*
Vink, Walter V.; and Aldrich, Deborah G., 4,450,179, Cl. 426-103.000.

Naganawa, Yutaka: *See—*
Suga, Katsuyuki; Kitada, Toyofumi; Naganawa, Yutaka; and Nakagawa, Hirotaka, 4,450,018, Cl. 148-26.000.

Nagano, Takahiro; Sanpei, Isamu; Sakurada, Shuroku; and Nakagawa, Masaru, to Hitachi, Ltd. Gate turn-off thyristor with selective anode penetrating shorts. 4,450,467, Cl. 357-38.000.

Nagasawa, Takeshi; Kuroiwa, Katsumasa; and Takabayashi, Katsuyuki, to Nitto Boseki Co., Ltd. Substrates for measuring thrombin. 4,450,105, Cl. 260-112.50R.

Nagoshi, Fumiya: *See—*
Matsumoto, Sigemi; and Nagoshi, Fumiya, 4,450,256, Cl. 525-316.000.

Nakagawa, Hirotaka: *See—*
Suga, Katsuyuki; Kitada, Toyofumi; Naganawa, Yutaka; and Nakagawa, Hirotaka, 4,450,018, Cl. 148-26.000.

Nakagawa, Hiroyuki: *See—*
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,450,114, Cl. 260-458.00C.

Nakagawa, Masaru: *See—*
Nagano, Takahiro; Sanpei, Isamu; Sakurada, Shuroku; and Nakagawa, Masaru, 4,450,467, Cl. 357-38.000.

Nakagawa, Toshiharu: *See—*
Ando, Hideo; Nakagawa, Toshiharu; and Fujimori, Yoshinori, 4,450,452, Cl. 346-135.100.

Nakamoto, Soichi: *See—*
Sakurada, Nobuaki; Kawamura, Masaharu; Ohtaki, Shohei; Nakamoto, Soichi; and Shinoda, Nobuhiko, 4,449,805, Cl. 354-105.000.

Nakamoto, Yasunobu: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.

Nakamura, Akihiko: *See—*
Saito, Hisatoshi; Fujii, Shuzo; Takase, Itaru; Nakamura, Akihiko; and Hara, Yoshihiro, 4,449,861, Cl. 406-39.000.

Nakamura, Akiyoshi; and Tokumaru, Hisashi, to Minolta Camera Kabushiki Kaisha. Inverted telephoto type wide angle lens system. 4,449,793, Cl. 350-458.000.

Nakamura, Hisashi: *See—*
Kawatei, Hisatsugu; Saito, Hidetoshi; and Nakamura, Hisashi, 4,449,500, Cl. 123-380.000.

Nakamura, Ken: *See—*
Haneda, Satoshi; Itoh, Takashi; Nakamura, Ken; and Tomono, Makoto, 4,450,220, Cl. 430-102.000.

Nakamura, Masahiko; and Yokoyama, Takashi, to MCC Corporation. Pipe gripping tools. 4,449,430, Cl. 81-98.000.

Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi-type carburetor. 4,450,117, Cl. 261-39.00A.

Nakamura, Shigeru; Maeda, Takeshi; Kaku, Toshimitsu; Tsunoda, Yoshito; Takasugi, Wasao; and Kaneda, Tokuya, to Hitachi, Ltd. Focal position detecting optical apparatus. 4,450,547, Cl. 369-45.000.

Nakamura, Tatuo: *See—*
Iwato, Susumu; Nakamura, Tatuo; and Kurauchi, Takeo, 4,450,200, Cl. 428-323.000.

Nakamura, Zenzo, to Canon Kabushiki Kaisha. Adapter device. 4,449,802, Cl. 354-416.000.

Nakano, Junji: *See—*
Horie, Seiji; Nakano, Junji; and Sato, Hideo, 4,450,219, Cl. 430-59.000.

Nakano, Masao: *See—*
Takemae, Yoshihiro; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,450,515, Cl. 363-60.000.

Nakano, Takashi: *See—*
Kitamura, Takashi; Watanabe, Asao; Nakano, Takashi; Masaki, Katsumi; Hirayama, Kazuhiro; Sato, Yasushi; and Tokiwa, Taisuke, 4,450,453, Cl. 346-108.000.

Nakano, Tomio: *See—*
Takemae, Yoshihiro; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,450,515, Cl. 363-60.000.

Nakao, Yasuyuki; Hoshijima, Yosuke; and Okohira, Kazuo, to Nippon Steel Corporation. Metal refining method. 4,450,005, Cl. 75-60.000.

Nakashima, Masato; Koezuka, Tetsuo; and Inagaki, Takefumi, to Fujitsu Limited. Recognition method and apparatus. 4,450,579, Cl. 382-8.000.

Nakashima, Toshiaki: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,450,109, Cl. 260-243.300.

Nakata, Koreaki; Ueno, Jiro; and Ogawa, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Method of forming tantalum capacitor anodes and making the capacitors. 4,450,049, Cl. 204-35.00N.

Nakatani, Hiroshi; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Money preset in an electronic cash register. 4,450,526, Cl. 364-405.000.

Nakatani, Nobuji; Inatani, Reiko; and Konishi, Tadashi, to Lion Corporation. Antioxidative compound, method of extracting same from rosemary, and use of same. 4,450,097, Cl. 252-404.000.

Nakayama, Isao: *See—*
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.

Nakayama, Yutaka: *See—*
Yamada, Tetsuyo; and Nakayama, Yutaka, 4,450,065, Cl. 204-412.000.

Nalco Chemical Company: *See—*
Huang, Shu-Jen W., 4,450,092, Cl. 252-181.000.

Narasimham, Mandayam C., to Allied Corporation. Continuous casting controller. 4,449,568, Cl. 164-453.000.

Naruki, Toshimasa, to Mitsubishi Denki Kabushiki Kaisha. Portable acoustic device. 4,450,495, Cl. 360-137.000.

Naruse, Kazuhiko: *See—*
Yusa, Yoshio; and Naruse, Kazuhiko, 4,449,822, Cl. 356-[illegible].000.

National Bulk Equipment, Inc.: *See—*
Hartman, John E., 4,449,880, Cl. 414-421.000.

National Distillers and Chemical Corporation: *See—*
Feldman, Julian, 4,450,294, Cl. 562-608.000.

National Starch and Chemical Corporation: *See—*
Chiao, Wen B.; and Ray-Chaudhuri, Dilip K., 4,450,261, Cl. 526-214.000.

Nava, Pier L. Device to secure belts and similar parts to resin structures, helmets in particular. 4,449,275, Cl. 24-458.000.

Nave, Jerald L.: *See—*
White, Daniel S.; and Nave, Jerald L., 4,449,525, Cl. 128-203.110.

Nayler, Douglas W. J., to NL Industries, Inc. Motion compensator system. 4,449,854, Cl. 405-195.000.

NCR Corporation: *See—*
Hain, David A., 4,449,399, Cl. 73-159.000.
Hardy, James A., 4,450,350, Cl. 235-467.000.

Necchi Societa per Azioni: *See—*
Bar, Alfredo, 4,449,610, Cl. 181-243.000.

Neeley, Walter P., to Mobil Oil Corporation. Sectionalized marine seismic cable. 4,450,543, Cl. 367-154.000.

Neidinger, Karen A.: *See—*
Larson, Robert W.; Lou, Wen C.; DeVito, Vivian C.; and Neidinger, Karen A., 4,450,177, Cl. 426-19.000.

Nelson, Philip H.: *See—*
Quigley, William D.; and Nelson, Philip H., 4,450,321, Cl. 179-1.50M.

Nelson, Robert N.: *See—*
Conner, Leo B., Jr.; and Nelson, Robert N., 4,450,445, Cl. 343-7.500.

Nelson, Rodney L. Thin seam mining machine. 4,449,755, Cl. 299-31.000.

Nemes, Jozsef: *See—*
Soos, Rudolf; Nemes, Jozsef; Vidra, Laszlo; Szelestei, Miklos; Kovacs, Gabor; and Szekeley, Istvan, 4,450,309, Cl. 570-217.000.

New York University: *See—*
Llinas, Rodolfo R.; and Pellionisz, Andras J., 4,450,530, Cl. 364-513.000.

Newsome, Peter M.: *See—*
Beeley, Lee J.; and Newsome, Peter M., 4,450,170, Cl. 424-273.00R.

Nezot, Francois; Girault, Pierre; Tessier, Jean; and Martel, Jacques, to Roussel Uclaf. Insecticidal esters. 4,450,169, Cl. 424-270.000.

NGK Spark Plug Co., Ltd.: *See—*
Yamada, Tetsusyo; and Nakayama, Yutaka, 4,450,065, Cl. 204-412.000.

Nibco, Inc.: *See—*
Hobart, Ralph J.; Rupp, Robert D.; and Mastro, Paul F., 4,449,694, Cl. 251-171.000.

Nickisch, Klaus; Laurent, Henry; Wiechert, Rudolf; and Casals-Stenzel, Jorge, to Schering Aktiengesellschaft. 7α-Alkoxycarbonyl-15β,16β-methylene-4-androstenes, process for the preparation thereof, and use thereof as medicinal agents. 4,450,107, Cl. 424-238.000.

Nicolon Corporation: *See—*
Scales, John M.; and Wolcott, Bernard F., 4,449,847, Cl. 405-19.000.

Nieh, Edward C. Y.: *See—*
Moss, Philip H.; and Nieh, Edward C. Y., 4,450,307, Cl. 568-665.000.

Nielsen, Elgard, to V. Kann Rasmussen Holding A/S. Tilting window, especially for installation in an inclined roof. 4,449,327, Cl. 49-390.000.

Nielsen, Paul H.; and McCormack, Ray G., to United States of America, Army. Apparatus for determining break locations in fencing. 4,450,434, Cl. 340-506.000.

Nihon Sogo-Bosui Co., Ltd.: *See—*
Tokoro, Takehiko; Kashima, Shoichi; and Murata, Mineo, 4,449,856, Cl. 405-269.000.

Nihon Soil Engineering Co., Ltd.: *See—*
Tokoro, Takehiko; Kashima, Shoichi; and Murata, Mineo, 4,449,856, Cl. 405-269.000.

Nikomarov, Samuil S.; Kochnev, Anatoly M.; Goldobin, Vladimir B.; Sarapulov, Jury M.; and Valdman, Isaak Y., to Permsky Filial Vsesojuznogo Nauchno-Isaledovatelskogo Instituta Burovoi Tekhniki. Articulated coupling. 4,449,953, Cl. 464-19.000.

Nill, Eberhard, to International Standard Electric Corporation. Method of adjusting the electrode spacings in systems of electron-beam tubes. 4,449,951, Cl. 445-34.000.

Nilssen, Ole K. Incandescent-fluorescent compatible lighting products. 4,450,510, Cl. 362-221.000.

Nilsson, Jack E., Sr., to Seige Corporation. Apparatus for collecting, intensifying and storing solar energy. 4,449,515, Cl. 126-430.000.

Nippon Atsudenki Kabushiki Kaisha: *See—*
Fujino, Shoji, 4,450,586, Cl. 455-161.000.

Nippon Cable System Inc.: *See—*
Baba, Masanao, 4,449,420, Cl. 74-501.00R.

Nippon Electric Co., Ltd.: *See—*
Miyamoto, Haruhiko; and Yonezawa, Masatomo, 4,450,240, Cl. 501-136.000.
Mizukami, Mineo, 4,450,474, Cl. 358-19.000.
Shiba, Hiroshi, 4,450,470, Cl. 357-59.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Takamura, Masayuki; and Kurahashi, Kazuo, 4,450,210, Cl. 428-660.000.

Nippon, Kayaku, Kabushiki, Kaisha: *See—*
Shirosaki, Tsutomu; and Fukunaga, Seiki, 4,450,279, Cl. 549-27.000.

Nippon Kogaku K.K.: *See—*
Hasegawa, Hiroshi, 4,450,506, Cl. 362-4.000.
Nohda, Masao, 4,449,798, Cl. 351-207.000.
Terasawa, Hidenori; and Hayashi, Kiyoshi, 4,449,791, Cl. 350-427.000.
Yamada, Kenji, 4,449,794, Cl. 350-472.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Akita, Shinji; Hatanaka, Masayuki; and Uemura, Akira, 4,449,386, Cl. 72-100.000.
Hara, Tomihiro; Ogawa, Masahiro; and Yamashita, Masaaki, 4,450,209, Cl. 428-626.000.
Suga, Katsuyuki; Kitada, Toyofumi; Naganawa, Yutaka; and Nakagawa, Hirotaka, 4,450,018, Cl. 148-26.000.

Nippon Oil Company, Limited: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; Shikatani, Yutaka; and Miyoshi, Mituji, 4,450,243, Cl. 502-131.000.

Nippon Paint Co., Ltd.: *See—*
Iwato, Susumu; Nakamura, Tatuo; and Kurauchi, Takeo, 4,450,200, Cl. 428-323.000.

Nippon Soken, Inc.: *See—*
Moriguchi, Koichi; Iwamoto, Kenzi; Matushiro, Ryuichi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,449,367, Cl. 60-602.000.
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, 4,450,428, Cl. 338-34.000.

Nippon Steel Corporation: *See—*
Nakao, Yasuyuki; Hoshijima, Yosuke; and Okohira, Kazuo, 4,450,005, Cl. 75-60.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Ono, Toshiro; and Matsuo, Seitaro, 4,450,031, Cl. 156-345.000.

Nippondenso Co., Ltd.: *See—*
Furuhashi, Yasuhiro; Miyata, Yukinori; and Hishinuma, Osamu, 4,449,504, Cl. 123-447.000.
Okano, Reijiro; and Usami, Kiyoshi, 4,449,622, Cl. 192-84.00C.

Nishimuro, Atsushi: *See—*
Eto, Goro; Nishimuro, Atsushi; and Fukuda, Noriyoshi, 4,449,949, Cl. 445-24.000.

Nishiwaki, Toshihito: *See—*
Yasumatsu, Jun; Mori, Mamoru; Nishiwaki, Toshihito; and Owada, Akira, 4,449,752, Cl. 297-341.000.

Nishizako, Shizutaka; and Tazawa, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic contactor means with improved arc runner. 4,450,328, Cl. 200-144.00R.

Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Semiconductor image sensor. 4,450,466, Cl. 357-30.000.

Nishizawa, Junichi; and Ohmi, Tadahiro, to Handotai Kenkyu Shinkokai. Gallium arsenide ISL gate with punched-through bipolar driver transistor. 4,450,468, Cl. 357-51.000.

Nissan Motor Company, Limited: *See—*
Horiuchi, Tomofusa, 4,449,498, Cl. 123-339.000.
Kishi, Norimasa; Noso, Kazunori; and Takeuchi, Yasuhisa, 4,450,545, Cl. 367-198.000.
Kobayashi, Hiroshi, 4,450,501, Cl. 361-284.000.
Matsuda, Minoru, 4,449,614, Cl. 187-9.00R.
Seko, Yasutoshi; Yanagishima, Takayuki; and Fukasawa, Noburu, 4,450,438, Cl. 340-576.000.
Shori, Kaoru, 4,449,418, Cl. 74-475.000.
Suga, Masaaki; Morimoto, Yoshiro; and Hamada, Hideo, 4,449,618, Cl. 192-3.310.
Suzuki, Kunihiko, 4,449,604, Cl. 180-233.000.

Nitschko, Theodor: *See—*
Oberleitner, Gerhard; and Nitschko, Theodor, 4,449,730, Cl. 280-625.000.

Nitta Gelatin Kabushiki Kaisha: *See—*
Kohsaka, Yasuo; Nonaka, Yoshihiro; and Tachibana, Hideo, 4,449,816, Cl. 356-37.000.

Nitto Boseki Co., Ltd.: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; and Takabayashi, Katsuyuki, 4,450,105, Cl. 260-112.50R.

NL Industries, Inc.: *See—*
Finlayson, Claude M., 4,450,095, Cl. 252-315.200.
Nayler, Douglas W. J., 4,449,854, Cl. 405-195.000.

Noble, Scott W., to Motorola Inc. Bit data operated squelch. 4,450,573, Cl. 375-104.000.

Nohda, Masao, to Nippon Kogaku K.K. Eye fundus observation apparatus. 4,449,798, Cl. 351-207.000.

Nomori, Hiroyuki: *See—*
Takei, Yoshiaki; Fujimaki, Yoshihide; and Nomori, Hiroyuki, 4,450,218, Cl. 430-59.000.

Nonaka, Yoshihiro: *See—*
Kohsaka, Yasuo; Nonaka, Yoshihiro; and Tachibana, Hideo, 4,449,816, Cl. 356-37.000.

Nonnenmann, Rolf: *See—*
Apitz, Siegfried; and Nonnenmann, Rolf, 4,450,349, Cl. 235-462.000.
Nooijen, Godefridus A. H.: *See—*
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., 4,450,098, Cl. 502-107.000.
Nordica S.p.A.: *See—*
Baggio, Giorgio, 4,449,273, Cl. 24-68.0SK.
Balbinot, Renzo, 4,449,274, Cl. 24-70.0SK.
Northemann, Karl-Heinz; and Krahn, Heinrich. Toothbrush with two segments of bristles. 4,449,266, Cl. 15-167.00A.
Northern Telecom Limited: *See—*
Boleda, Alberto; and Thomas, Terence N., 4,450,556, Cl. 370-58.000.
Munter, Ernst A., 4,450,557, Cl. 370-58.000.
Northwestern University: *See—*
Chatterton, Robert T., 4,450,239, Cl. 436-510.000.
Noso, Kazunori: *See—*
Kishi, Norimasa; Noso, Kazunori; and Takeuchi, Yasuhisa, 4,450,545, Cl. 367-198.000.
Nugent, Edward L.: *See—*
Burns, James A.; and Nugent, Edward L., 4,449,529, Cl. 128-314.000.
Numata, Shigeaki: *See—*
Komatsu, Tatsuyoshi; Numata, Shigeaki; and Maruyama, Kazuhiro, 4,450,111, Cl. 260-369.000.
Nuyen, Trong L., to Thomson-CSF. GaAs Field effect transistor with a non-volatile memory. 4,450,462, Cl. 357-23.000.
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, to Kollmorgen Technologies Corporation. Process for sensitizing articles for metallization and resulting articles. 4,450,190, Cl. 427-304.000.
N.V. Raychem S.A.: *See—*
De Blauwe, Francis J. A. M. C., 4,450,023, Cl. 156-64.000.
O & K Orenstein & Koppel AG: *See—*
Trumper, Reinhard, 4,449,364, Cl. 60-403.000.
Obata, Tokio: *See—*
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.
Obenaus, Franz: *See—*
Jekel, Gerd; and Obenaus, Franz, 4,450,456, Cl. 346-140.00R.
Oberknapp, Wolfgang: *See—*
Kopec, Eduard; and Oberknapp, Wolfgang, 4,449,493, Cl. 123-196.00A.
Oberleitner, Gerhard; and Nitschko, Theodor, to TMC Corporation. Front jaw for a safety ski binding. 4,449,730, Cl. 280-625.000.
Oberman, Joel R., to RCA Corporation. Single chip microcomputer with external decoder and memory and internal logic for disabling the ROM and relocating the RAM. 4,450,524, Cl. 364-200.000.
Occidental Oil Shale, Inc.: *See—*
Ricketts, Thomas E.; and Sass, Allan, 4,449,753, Cl. 299-2.000.
Ochiai, Shinya, to Celanese Corporation. Control of anaerobic filter. 4,450,074, Cl. 210-96.100.
Ochoa, Carlos: *See—*
Kendrick, George B.; Duggan, George L.; and Ochoa, Carlos, 4,450,381, Cl. 313-579.000.
Ogata, Haruki; and Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Tape cassette having a reel displacement limiting mechanism. 4,449,676, Cl. 242-198.000.
Ogawa, Kyosuke: *See—*
Shimizu, Isamu; Ogawa, Kyosuke; and Inoue, Eiichi, 4,450,185, Cl. 427-39.000.
Ogawa, Masahiro: *See—*
Hara, Tomihiro; Ogawa, Masahiro; and Yamashita, Masaaki, 4,450,209, Cl. 428-626.000.
Ogawa, Yasuhiro: *See—*
Nakata, Koreaki; Ueno, Jiro; and Ogawa, Yasuhiro, 4,450,049, Cl. 204-35.00N.
Ogawa, Youichiro: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,450,109, Cl. 260-243.300.
Ogura, Mitsuharu. Apparatus for the automatic ejection of concrete pipes. 4,449,912, Cl. 425-444.000.
Ohhara, Minoru: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,450,156, Cl. 424-180.000.
Ohio Electronic Engravers, Inc.: *See—*
Buechler, Lester W., 4,450,486, Cl. 358-299.000.
Ohira, Tsuyoshi: *See—*
Takemae, Yoshihiro; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,450,515, Cl. 363-60.000.
Ohmi, Tadahiro: *See—*
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Matsumoto, Seiji, 4,450,466, Cl. 357-30.000.
Nishizawa, Junichi; and Ohmi, Tadahiro, 4,450,468, Cl. 357-51.000.
Ohminato, Kiyoshi, to King Jim Co., Ltd. Binder assembly of the ring type. 4,449,840, Cl. 402-34.000.
Ohmura, Yoshio: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,450,156, Cl. 424-180.000.
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, to Nippon Soken, Inc. Gas detecting sensor. 4,450,428, Cl. 338-34.000.
Ohta, Shuichi; and Kumagai, Atsuhiro, to Sony Corporation. Tape cassette. 4,449,677, Cl. 242-199.000.
Ohtaki, Shohei: *See—*
Sakurada, Nobuaki; Kawamura, Masaharu; Ohtaki, Shohei; Nakamoto, Soichi; and Shinoda, Nobuhiko, 4,449,805, Cl. 354-105.000.
Oiji, Yoshimasa: *See—*
Takizawa, Hiroshi; Oiji, Yoshimasa; and Kubo, Kazuhiro, 4,450,115, Cl. 260-465.00E.
Oishi, Kounosuke: *See—*
Koizumi, Hideaki; Yamada, Hideo; and Oishi, Kounosuke, 4,449,820, Cl. 356-307.000.
Oka, Taichi: *See—*
Arimura, Katsuo; Murakami, Shu; and Oka, Taichi, 4,450,275, Cl. 548-201.000.
Okada, Hitoshi; Takai, Kazuki; and Yamaguchi, Katsumi, to Clarion Co., Ltd. Interlocking gear control mechanism in magnetic tape recording/playing apparatus. 4,450,492, Cl. 360-105.000.
Okamoto, Katuhiko: *See—*
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,450,114, Cl. 260-458.00C.
Okamura, Kouichi; Eriguchi, Yukio; Hagio, Katsushige; and Yamamoto, Setsuo, to Matsushita Electric Industrial Co. Corner holder for use with boxes. 4,449,662, Cl. 229-49.000.
Okamura, Yasushi; Manabe, Harukazu; and Sato, Norihide, to Matsushita Electric Industrial Co., Ltd. Ink ribbon cassette for printer. 4,449,838, Cl. 400-234.000.
Okano, Reijiro; and Usami, Kiyoshi, to Nippondenso Co., Ltd. Cover member for a magnetically operated clutch. 4,449,622, Cl. 192-84.00C.
Okazaki, Koshi: *See—*
Kondow, Takeshi; Okazaki, Koshi; Katsuhara, Yutaka; and Matsuoka, Kimiaki, 4,450,298, Cl. 568-437.000.
Oki Electric Industry Co., Ltd.: *See—*
Sasaki, Masao, 4,449,417, Cl. 74-409.000.
Okino, Yoshihiro: *See—*
Ito, Keisuke; Kashihara, Toshiaki; and Okino, Yoshihiro, 4,449,916, Cl. 425-174.400.
Okohira, Kazuo: *See—*
Nakao, Yasuyuki; Hoshijima, Yosuke; and Okohira, Kazuo, 4,450,005, Cl. 75-60.000.
Okuzawa, Tugio: *See—*
Kikuchi, Hideo; Ikeda, Sunao; Kakitani, Yohtaro; Hibi, Kunio; and Okuzawa, Tugio, 4,449,813, Cl. 355-14.00R.
Oldershaw, C. G. Peter: *See—*
Sienkiewicz, Boleslaw; Kramer, Franklin; Klein, Imrich; Oldershaw, C. G. Peter; and Chuang, Locus Y., 4,449,906, Cl. 425-131.100.
Oldham, William G., to Siemens Aktiengesellschaft. Monolithically integrated read-only memory. 4,450,537, Cl. 365-217.000.
Olin Corporation: *See—*
Gray, Thomas J., 4,450,056, Cl. 204-98.000.
Kelly, Pilar P., 4,450,057, Cl. 204-98.000.
Olschewski, Armin; Laszlofalvi, Zoltan; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Lever mechanism with progressive transmission. 4,449,421, Cl. 74-516.000.
Olson, Jerry A.: *See—*
Kaiser, Hermann; and Olson, Jerry A., 4,449,401, Cl. 73-202.000.
Olsson, Christer H. K., to Dagens Nyheters AB. Method and device for counting sheet material. 4,450,352, Cl. 250-223.00R.
Olympus Optical Co., Ltd.: *See—*
Fujibayashi, Kenji, 4,450,413, Cl. 330-279.000.
Konomura, Yutaka; and Omagari, Yasuhiko, 4,449,518, Cl. 128-4.000.
Omae, Masanori: *See—*
Ishikawa, Kiyotsugu; Sone, Yoshiaki; Hashimoto, Susumu; Omae, Masanori; and Kunii, Takao, 4,450,475, Cl. 358-44.000.
Omagari, Yasuhiko: *See—*
Konomura, Yutaka; and Omagari, Yasuhiko, 4,449,518, Cl. 128-4.000.
O'Malley, Kevin C.: *See—*
Rodenberger, Charles M.; Sizer, Phillip S.; and O'Malley, Kevin C., 4,449,587, Cl. 166-323.000.
O'Malley, Mary A.: *See—*
Drake, Nancy J.; Hilston, Michael D.; and O'Malley, Mary A., 4,450,262, Cl. 526-234.000.
OMI International Corporation: *See—*
Arcilesi, Donald A., 4,450,191, Cl. 427-443.100.
Tremmel, Robert A., 4,450,051, Cl. 204-43.00T.
Ona, Isao; Harashima, Asao; Ozaki, Masaru; and Taki, Yoichiro, to Toray Silicone Company, Ltd. Composition used to groom hair. 4,450,152, Cl. 424-70.000.
Ono, Tadahiro: *See—*
Kawamura, Akira; and Ono, Tadahiro, 4,450,395, Cl. 318-700.000.
Ono, Toshiro; and Matsuo, Seitaro, to Nippon Telegraph & Telephone Public Corporation. Ion shower apparatus. 4,450,031, Cl. 156-345.000.
Onoda, Michitosi: *See—*
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitosi, 4,450,428, Cl. 338-34.000.
Oowada, Siniti: *See—*
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; Takahashi, Ken; and Oowada, Siniti, 4,450,426, Cl. 338-21.000.

Optikon Oftalmologia, S.p.A.: *See—*
Ranalli, Domenico, 4,449,550, Cl. 137-624.130.
Orlov, Naum Y.; and Dotsenko, Taras P., to Vsesojuzny Proektno-Izyskatelsky I Nauchno-Issledovatelsky Institut "Gidropoekt" Imeni S.Ya. Zhuka. Device for breaking monolithic structures by pulsewise liquid preasure. 4,449,754, Cl. 299-21.000.
Osaka, Susumu: *See—*
Toda, Minoru; and Osaka, Susumu, 4,449,563, Cl. 160-184.000.
Oshikoshi, Yuji; and Agano, Toshitaka, to Fuji Photo Film Co., Ltd. Image scanning and recording method. 4,450,485, Cl. 358-298.000.
Oshima, Shigeru: *See—*
Wong, Wan C.; and Oshima, Shigeru, 4,449,806, Cl. 354-121.000.
Ostarly, Adam R. Wind vane hanging plant container. 4,449,324, Cl. 47-67.000.
Ostermann, Bernd; and Lissner, Paul, to Licentia Patent-Verwaltungs GmbH. Dialing device with calling number and identification memory and method for using same. 4,450,320, Cl. 179-5.00R.
Ostertag, Klaus: *See—*
Ross, Dieter; and Ostertag, Klaus, 4,450,359, Cl. 250-572.000.
Osumi, Yoshihiro: *See—*
Saito, Chuichi; Teranishi, Katsuya; Baba, Katsuyoshi; and Osumi, Yoshihiro, 4,449,623, Cl. 198-335.000.
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, to Exxon Research and Engineering Co. Homogeneous hydroformylation catalysis with silyl substituted alkyl diaryl phosphine metal complexes. 4,450,299, Cl. 568-454.000.
Oswald, Rudolph G.: *See—*
Castleman, B. Wayne; Donehoo, Robert F.; Oswald, Rudolph G.; Reed, Kenneth L.; and Shipley, George H., 4,450,409, Cl. 324-460.000.
Ota, Naoto: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,450,393, Cl. 318-592.000.
Ota, Yozo: *See—*
Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,450,117, Cl. 261-39.00A.
Otis Engineering Corporation: *See—*
Rodenberger, Charles M.; Sizer, Phillip S.; and O'Malley, Kevin C., 4,449,587, Cl. 166-323.000.
Oude Alink, Bernardus A.: *See—*
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,450,137, Cl. 422-12.000.
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,450,138, Cl. 422-12.000.
Outboard Marine Corporation: *See—*
Ferguson, Arthur R., 4,449,945, Cl. 440-53.000.
Outlaw, Benjamin T.: *See—*
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,450,137, Cl. 422-12.000.
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,450,138, Cl. 422-12.000.
Overberger, Charles G.: *See—*
Leistner, William E.; and Overberger, Charles G., 4,450,248, Cl. 524-99.000.
Owada, Akira: *See—*
Yasumatsu, Jun; Mori, Mamoru; Nishiwaki, Toshihito; and Owada, Akira, 4,449,752, Cl. 297-341.000.
Owen, Hartley: *See—*
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,450,311, Cl. 585-413.000.
Owen, William H., III, to Xicor, Inc. Integrated circuit testing apparatus. 4,450,402, Cl. 324-73.00R.
Owens-Corning Fiberglas Corporation: *See—*
Hager, Thomas P.; and Ferguson, Larry W., 4,450,197, Cl. 428-232.000.
Owens-Illinois, Inc.: *See—*
Irwin, George W.; and Mumford, Eustace H., 4,449,996, Cl. 65-305.000.
Ozaki, Masaru: *See—*
Ona, Isao; Harashima, Asao; Ozaki, Masaru; and Taki, Yoichiro, 4,450,152, Cl. 424-70.000.
Ozawa, Masakazu: *See—*
Sugitani, Hiroshi; Ozawa, Masakazu; Matsuda, Hiroto; Ikeda, Masami; and Matsumoto, Haruyuki, 4,450,455, Cl. 346-140.0PQ.
Ozer, Theodore: *See—*
Yankovoy, Alexander; and Ozer, Theodore, 4,449,865, Cl. 408-1.00R.
Ozkan, Adil N., to Biostar Medical Products, Inc. Immunoassay for determination of immune complexes with polymer-coated plastic base. 4,450,231, Cl. 435-7.000.
Pacaud, Andre: *See—*
Thirion, Andre; Sorba, Antoine; Dany, Jean-Claude; Pacaud, Andre; and Attal, Gerard, 4,449,385, Cl. 70-277.000.
Pacific Electricord Company: *See—*
Carmo, Robert A.; and Dietz, Ernest W., 4,449,776, Cl. 339-91.00R.
Paek, Un C.: *See—*
Andrejco, Matthew J.; Paek, Un C.; and Schroeder, Charles M., Jr., 4,450,333, Cl. 219-10.49R.
Painter, Walter C.; Luttmer, David J.; and Galloway, Alvin J., to Rockwell International Corporation. Electronic AC induction motor brake. 4,450,397, Cl. 318-762.000.
Palomar, Juan M.; and Bird, Gary M. Penile prosthesis device. 4,449,520, Cl. 128-79.000.
Pankratz, Orlando K. Log handling tool. 4,449,743, Cl. 294-11.000.
Panzer, Jack S. Sexual aid. 4,449,521, Cl. 128-79.000.
Park, Sang-Woo, to Korean Advanced Institute of Science and Technology. Preparation of ethambutol-diisoniazide methane sulfonic acid salt. 4,450,274, Cl. 546-262.000.
Parker, John A.: *See—*
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,450,268, Cl. 528-327.000.
Parker, Samuel A., Jr.: *See—*
Marshall, Charles W.; Lineberger, William F.; and Parker, Samuel A., Jr., 4,449,540, Cl. 131-290.000.
Parker Tobacco Company: *See—*
Marshall, Charles W.; Lineberger, William F.; and Parker, Samuel A., Jr., 4,449,540, Cl. 131-290.000.
Parkersburg Tank, Division of Maloney Crawford Corporation: *See—*
Bubb, Charles E.; and Mauch, Fred E., 4,449,339, Cl. 52-195.000.
Parkin, Trevor D.: *See—*
Reed, Norman L.; and Parkin, Trevor D., 4,449,647, Cl. 222-153.000.
Parry, John C. Fabric rewind system. 4,449,675, Cl. 242-56.200.
Patterson, Raymond B., III, to Harris Corporation. High temperature current mirror amplifier. 4,450,414, Cl. 330-288.000.
Paul Hettich & Co.: *See—*
Sundermeier, Gunter, 4,449,269, Cl. 16-50.000.
Pauze, Denis R., to General Electric Company. Coating compositions. 4,450,258, Cl. 525-440.000.
Pawloski, Chester E.; and Ginter, Sally P., to Dow Chemical Company, The. Phosphorous-containing polyether polyols. 4,450,280, Cl. 549-221.000.
Paxson, Timm E., to Shell Oil Company. Butenyl acetate production. 4,450,286, Cl. 560-241.000.
Paxson, Timm E., to Shell Oil Company. Butenyl acetate production. 4,450,287, Cl. 560-241.000.
Paxson, Timm E., to Shell Oil Company. Butenyl acetate production. 4,450,288, Cl. 560-241.000.
Paxson, Timm E., to Shell Oil Company. Butenyl acetate production. 4,450,289, Cl. 560-241.000.
Payette, Lionel J.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,449,290, Cl. 29-596.000.
Pays, Gerard J. P. Device for minimizing far-end crosstalk between half-duplex digital transmission lines. 4,450,555, Cl. 370-31.000.
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., to FMC Corporation. Mono-5-substituted-3-chloro-4H-1,2,6-thiadiazin-4-one antifungal agents. 4,450,269, Cl. 544-8.000.
Pearce, Jai: *See—*
Pitzer, Ken; Cunningham, James F.; and Pearce, Jai, 4,449,701, Cl. 266-218.000.
Pearson, Bernard A.: *See—*
Snellman, Donald L.; and Pearson, Bernard A., 4,449,706, Cl. 271-290.000.
Pease, Roger F. W.: *See—*
Tuckerman, David B.; and Pease, Roger F. W., 4,450,472, Cl. 357-82.000.
Pechiney: *See—*
Floreancig, Antoine; Siffert, Bernard; and Trescol, Jean-Jacques, 4,450,143, Cl. 423-10.000.
Pellionisz, Andras J.: *See—*
Llinas, Rodolfo R.; and Pellionisz, Andras J., 4,450,530, Cl. 364-513.000.
Pem Fountain Co.: *See—*
Micha, Peter, 4,450,511, Cl. 362-267.000.
Penco, Eugenio: *See—*
Marchetti, Renato; Penco, Eugenio; and Perito, Ugo, 4,450,566, Cl. 372-38.000.
Pennsylvania Engineering Corporation: *See—*
Pitzer, Ken; Cunningham, James F.; and Pearce, Jai, 4,449,701, Cl. 266-218.000.
Pennwalt Corporation: *See—*
Caldwell, John W., 4,449,967, Cl. 494-54.000.
Henderson, Matthew P., 4,449,351, Cl. 53-569.000.
Pennzoil Company: *See—*
Kidwell, Louis E., Jr.; and Holcomb, Dysart E., 4,450,069, Cl. 208-255.000.
Pensa, Inc.: *See—*
Stubblefield, Jerry D., 4,449,307, Cl. 36-32.00R.
Penwalt Corporation: *See—*
Malzahn, Dale E., 4,450,047, Cl. 203-15.000.
Perez, Lucien: *See—*
Cessou, Maurice; and Perez, Lucien, 4,449,850, Cl. 405-60.000.
Perito, Ugo: *See—*
Marchetti, Renato; Penco, Eugenio; and Perito, Ugo, 4,450,566, Cl. 372-38.000.
Perkin-Elmer Corporation, The: *See—*
Schwartz, Arnold, 4,450,574, Cl. 377-2.000.
Perlstein, Jerome H.: *See—*
Detty, Michael R.; and Perlstein, Jerome H., 4,450,217, Cl. 430-58.000.
Permsky Filial Vsesojuznogo Nauchno-Issledovatelskogo Instituta Burovoi Tekhniki: *See—*
Nikomarov, Samuil S.; Kochnev, Anatoly M.; Goldobin, Vladimir B.; Sarapulov, Jury M.; and Valdman, Isaak Y., 4,449,953, Cl. 464-19.000.
Perrott, Lynn F., to Corbett, Scott S., Jr., a part interest. Apparatus for carrying empty cargo containers. 4,449,882, Cl. 414-665.000.
Perry, Michael K. Intravenous anchor and wound shield. 4,449,975, Cl. 604-179.000.

Person, Herman R.; Hesse, Joseph F.; and Hall, Steven R. Dot matrix plasma display and method for driving same. 4,450,441, Cl. 340-773.000.

Peruth, Gunther, to Siemens Aktiengesellschaft. Switched mode power supply. 4,450,514, Cl. 363-37.000.

Pesa, Frederick A.: *See—*
Fox, Joseph R.; Curatolo, Benedict S.; and Pesa, Frederick A., 4,450,310, Cl. 585-400.000.

Peters, Thomas E.; Gustafson, John C.; and Wong, Boon, to GTE Laboratories Incorporated. Method of making electrical contacts. 4,450,135, Cl. 419-12.000.

Peterson, Daniel G.; Erickson, John W.; and Robinson, Horace M., to Kobe, Inc. Sequenced production incorporating fluid rod pump. 4,449,582, Cl. 166-64.000.

Peterson, John F.; and Bartlett, Allen J., to Helix Technology Corporation. Reduced vacuum cryopump. 4,449,373, Cl. 62-55.500.

Peterson, Walter L., to Select Laboratories, Inc. Poultry vaccination system. 4,449,968, Cl. 604-24.000.

Petiot, Gerard L. R.: *See—*
de Pommery, Bertrand J. C. H.; Petiot, Gerard L. R.; Vergne, Jean-Claude E.; and Goupil, Jean-Paul C., 4,449,775, Cl. 339-75.0MP.

Petit, Jean-Pierre; and Maitre, Xavier. Distributed arithmetic digital processing circuit. 4,450,533, Cl. 364-724.000.

Petke, Frederick D.: *See—*
McConnell, Richard L.; Meyer, Max F., Jr.; and Petke, Frederick D., 4,450,250, Cl. 524-141.000.

Petrocci, Alfonso N.: *See—*
Green, Harold A.; Petrocci, Alfonso N.; and Dudzinski, Zdzislaw W., 4,450,174, Cl. 424-329.000.

Petrolite Corporation: *See—*
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,450,137, Cl. 422-12.000.
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,450,138, Cl. 422-12.000.

Pettersson, Birger; and Karlsson, Kurt, to Svenska Rotor Maskiner Aktiebolag. Regenerative heat exchangers. 4,449,573, Cl. 165-10.000.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,450,237, Cl. 435-253.000.
Dudek, David M.; and Lambert, Mark A., 4,450,136, Cl. 420-590.000.
Reese, Russell I., 4,449,929, Cl. 433-56.000.

Pfrogner, Gerd: *See—*
Fuhrer, Egon; Kleinert, Dieter; Pfrogner, Gerd; and Egg, Max, 4,449,691, Cl. 251-85.000.

Phaneuf, Robert A.: *See—*
La Torre, Richard R.; and Phaneuf, Robert A., 4,450,451, Cl. 343-765.000.

Philipp, Herbert R.: *See—*
Pimbley, Joseph M.; and Philipp, Herbert R., 4,450,465, Cl. 357-30.000.

Philippossian, Georges, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for the preparation of 1,3,7-trialkyl xanthines and di(3,7-dimethylxanthin-1-yl)methane as a medicament. 4,450,163, Cl. 424-253.000.

Phillips Petroleum Company: *See—*
Davis, Thomas T., 4,450,370, Cl. 307-475.000.
Drake, Charles A., 4,450,303, Cl. 568-574.000.
Eastman, Alan D.; and Kimble, James B., 4,450,313, Cl. 585-624.000.
Hopkins, Thomas R., 4,450,153, Cl. 424-94.000.
Kukes, Semyon, 4,450,068, Cl. 208-251.00H.
Lindstrom, Merlin R.; Macdonell, Gary D.; Louthan, Rector P.; and Kubicek, Donald H., 4,450,102, Cl. 252-542.000.

Phillips, Robert A.: *See—*
Clancy, Steven J.; and Phillips, Robert A., 4,450,446, Cl. 343-7.700.

Phoenix Chemical Corporation: *See—*
Leistner, William E.; and Overberger, Charles G., 4,450,248, Cl. 524-99.000.

Pieniak, Heinz A.; and Repke, Virginia L., to Johnson & Johnson Baby Products Company. Method of forming a conformable garment with "killed" elastic portions. 4,450,026, Cl. 156-164.000.

Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; and Schleimer, Stephen I., to Data General Corporation. Apparatus for deriving addresses of data using displacements from base addresses which change only on call and return. 4,450,522, Cl. 364-200.000.

Pilat, John F.; Czerniakiewicz, Anastasia J.; Kinder, David B.; and Davidian, Gary, to Data General Corporation. Apparatus for deriving the current length of varying-length data items in a digital data processing system. 4,450,523, Cl. 364-200.000.

Pilatzki, Bernd. Anti-crash apparatus for motorvehicles. 4,449,728, Cl. 280-731.000.

Pimbley, Joseph M.; and Philipp, Herbert R., to General Electric Company. Radiation transmissive electrode structure. 4,450,465, Cl. 357-30.000.

Pioneer Electronic Corporation: *See—*
Ikedo, Yuji; Kenmotsu, Isami; and Isobe, Nobuyuki, 4,450,549, Cl. 369-75.100.

Piramoon, Alireza, to Beckman Instruments, Inc. Centrifuge rotor balancing bosses. 4,449,966, Cl. 494-20.000.

Pirelli General Public Limited Company: *See—*
Baskwell, John A.; and Larrive, Christopher, 4,450,317, Cl. 174-27.000.

Pirolli, Robert J. Bicycle storage trunk. 4,449,653, Cl. 224-35.000.

Pissiotas, Georg: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,450,000, Cl. 71-105.000.

Pitney Bowes Inc.: *See—*
Gavronsky, German, 4,450,037, Cl. 156-441.500.

Pittman, Edgar H.: *See—*
Moore, James R.; Schroder, William J.; Warner, Charles E.; and Pittman, Edgar H., 4,449,355, Cl. 57-284.000.

Pitzer, Ken; Cunningham, James F.; and Pearce, Jai, to Pennsylvania Engineering Corporation. Tuyere for the injection of gases into a metallurgical vessel. 4,449,701, Cl. 266-218.000.

Piwonka, Thomas S.: *See—*
Blazek, William S.; and Piwonka, Thomas S., 4,449,567, Cl. 164-137.000.

Pleska, Jean-Pierre: *See—*
Voituron, Georges; and Pleska, Jean-Pierre, 4,450,125, Cl. 264-13.000.

Plester, Karl-Heinz: *See—*
Terhorst, Gunter; Plester, Karl-Heinz; Rosenberg, Harry; and Eggenstein, Friedrich, 4,449,859, Cl. 405-291.000.

Pletka, Hans-Dieter: *See—*
Domesle, Rainer; Volker, Herbert; Koberstein, Edgar; and Pletka, Hans-Dieter, 4,450,244, Cl. 502-185.000.

Pluquet, Alain A.: *See—*
Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., 4,449,607, Cl. 181-213.000.

Pokorny, Erich: *See—*
Beck, Ernst; Lenard, Peter; and Pokorny, Erich, 4,449,427, Cl. 76-77.000.

Polar Research, Inc.: *See—*
Ellingson, Gary L.; and Miller, Wendell E., 4,450,450, Cl. 343-758.000.

Polichette, Joseph: *See—*
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,450,190, Cl. 427-304.000.

Pollak, Richard B., to Lee Pharmaceuticals, Inc. Endodontic filling and sealing composition. 4,449,938, Cl. 523-116.000.

Polymatic Investment Corp., N.V.: *See—*
Cho, Edward, 4,450,264, Cl. 526-279.000.

Pompon, Jean-Bernard: *See—*
Laroche, Paul; and Pompon, Jean-Bernard, 4,450,189, Cl. 427-236.000.

Pontini, Giovanni, to Teksid, S.p.A. Automatic unit for hot molding and trimming of metal parts. 4,449,390, Cl. 72-405.000.

Porel, Louis C., to Hydro Rene Leduc. Prestressed assembled oleopneumatic accumulators. 4,449,552, Cl. 138-30.000.

Porter, Robert E. Walking foot feed for sewing machines. 4,449,464, Cl. 112-311.000.

Potz, Gunther: *See—*
Gotze, Volkmar; and Potz, Gunther, 4,450,561, Cl. 371-37.000.

PPG Industries, Inc.: *See—*
Koelbl, Harold M., 4,449,995, Cl. 65-158.000.
Lavanish, Jerome M.; and Van Gemert, Barry, 4,449,998, Cl. 71-92.000.
Sathe, Avinash T., 4,450,284, Cl. 560-163.000.
Taglianetti, Philip C.; and Burkard, Andrew M., 4,449,341, Cl. 52-235.000.

Prayner, Timothy F.: *See—*
Dietrick, Earl T.; and Prayner, Timothy F., 4,450,341, Cl. 219-137.520.

Preformed Line Products Company: *See—*
Koncelik, Kenneth J.; and Goetter, Erwin H., 4,449,768, Cl. 339-14.00R.

Preiss, Michael; Gau, Wolfgang; and Behre, Horst, to Bayer Aktiengesellschaft. Preparation of o-nitrobenzaldehyde. 4,450,297, Cl. 568-424.000.

Prem, Dorothy C.: *See—*
Isley, Ralph E.; Prem, Dorothy C.; and Duke, June T., 4,450,254, Cl. 524-399.000.

Price, David W.: *See—*
Litvin, Robert L.; and Price, David W., 4,449,741, Cl. 285-153.000.

Price, James W. Transverse saddle type boat cradle. 4,449,846, Cl. 405-7.000.

Price, Ralph J. Oil drain valve with remote control means. 4,449,613, Cl. 184-1.500.

Prickett, Michael J.: *See—*
Wehner, Donald R.; and Prickett, Michael J., 4,450,444, Cl. 343-5.0CM.

Priesnitz, Uwe: *See—*
Forster, Heinz; and Priesnitz, Uwe, 4,450,308, Cl. 568-637.000.

Procter, John H.: *See—*
Schulz, Walter A.; and Procter, John H., 4,449,468, Cl. 114-104.000.

Profet, Gary A.: *See—*
Hampton, Dean A.; Jacobsen, Christian C.; and Profet, Gary A., 4,450,558, Cl. 370-106.000.

Prohaska, Hans: *See—*
Andrei-Alexandru, Marcel; and Prohaska, Hans, 4,450,390, Cl. 318-282.000.

Promecam Sisson-Lehmann: *See—*
Cros, Pierre, 4,449,389, Cl. 72-389.000.

Pross, Gerhard; and Rochlitzer, Frank, to Hewlett-Packard GmbH. Respiration monitor. 4,449,537, Cl. 128-723.000.

Protecon B.V.: *See—*
van Haren, Lambertus F. W., 4,449,406, Cl. 73-433.000.

Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, to GTE Laboratories Incorporated. Multielectrode array for a beam mode fluorescent lamp. 4,450,380, Cl. 313-485.000.

Prueitt, Melvin L. Leg extension jumpers. 4,449,256, Cl. 3-4.000.

PTX Pentronix, Inc.: *See—*
DeSantis, Raymond P.; and Puffer, Herbert J., Jr., 4,450,127, Cl. 264-56.000.

Puchalski, Chester: *See—*
Bristol, James A.; and Puchalski, Chester, 4,450,164, Cl. 424-256.000.

Pudick, Sheldon: *See—*
Feigenbaum, Haim; Pudick, Sheldon; and Singh, Rajindar, 4,450,212, Cl. 429-35.000.

Puffer, Herbert J., Jr.: *See—*
DeSantis, Raymond P.; and Puffer, Herbert J., Jr., 4,450,127, Cl. 264-56.000.

Pugh, Harold, to United Kingdom Atomic Energy Authority. Extensometers. 4,449,413, Cl. 73-780.000.

Pultman, Martin D. Accessories for wheelchairs and the like. 4,449,750, Cl. 297-188.000.

PUMA-Sportschuhfabriken Rudolf Dassler KG: *See—*
Cavanagh, Peter R., 4,449,306, Cl. 36-30.00R.

Purdes, Andrew J., to Texas Instruments Incorporated. Plasma etch chemistry for anisotropic etching of silicon. 4,450,042, Cl. 156-643.000.

Puretic, Mario J. Purse ring control apparatus for fishing vessels. 4,449,315, Cl. 43-8.000.

Puropore, Inc.: *See—*
Kesting, Robert E., 4,450,126, Cl. 264-41.000.

Putz, Wilhelm, to Siemens Aktiengesellschaft. Hand-operated apparatus for peeling off the outer jacket layer of electric lines and cables. 4,449,298, Cl. 30-90.100.

Q.P. Corporation: *See—*
Saito, Hisatoshi; Fujii, Shuzo; Takase, Itaru; Nakamura, Akihiko; and Hara, Yoshihiro, 4,449,861, Cl. 406-39.000.

Quadrant Drive BV: *See—*
Carden, John C., 4,449,425, Cl. 74-804.000.

Queneau, Paul B.: *See—*
Laferty, John M.; Queneau, Paul B.; and Beckstead, Leo W., 4,450,144, Cl. 423-54.000.

Quigley, William B.: *See—*
McCrory, William W.; Quigley, William B.; and Garnett, William A., 4,449,473, Cl. 114-354.000.

Quigley, William D.; and Nelson, Philip H. Circuit for producing noise generation for sound masking. 4,450,321, Cl. 179-1.50M.

R. Alkan & Cie: *See—*
Lerouge, Andre; Andre, Jean-Louis; and Coutin, Pierre, 4,449,920, Cl. 431-91.000.

R. J. Reynolds Tobacco Company: *See—*
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,449,541, Cl. 131-302.000.

Radosay, Jon J.; and Wilson, John R., to John Crane Houdaille, Inc. Emergency seal. 4,449,719, Cl. 277-192.000.

Raether, Roger, to Hi-Tec, Inc. Rotary coupling. 4,449,739, Cl. 285-14.000.

Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., to DeSoto, Inc. Electrographic coatings containing acrylamide copolymers. 4,450,203, Cl. 428-514.000.

Railroad Concrete Crosstie Corporation: *See—*
Hales, Harvey E.; and Fredrick, Edmund R., 4,449,666, Cl. 238-84.000.

Rakes, James M.: *See—*
Goff, Willie, Jr.; Rakes, James M.; and Williams, Errol R., 4,450,342, Cl. 219-216.000.

Ramser, Robert A., to Aluminum Company of America. Apparatus for control of particle size in the production of atomized metal. 4,449,902, Cl. 425-7.000.

Ranalli, Domenico, to Optikon Oftalmologia, S.p.A., 5n 20 Paul Fields McAulay, Fields, Fisher et al. 405 Lexington Ave. New York, NY 10174 S. Control system for intraocular surgical device. 4,449,550, Cl. 137-624.130.

Rand, George: *See—*
Denaro, Alfred; and Rand, George, 4,450,544, Cl. 367-176.000.

Ranftl, Joseph C.: *See—*
Hansen, Don; and Ranftl, Joseph C., 4,449,564, Cl. 160-166.00A.

Rapid Packaging Services Pty. Ltd.: *See—*
Mansell, George B., 4,449,452, Cl. 101-382.0MV.

Rasmussen GmbH: *See—*
Sauer, Heinz; Stichel, Willi; and Wachter, Gerhard, 4,449,429, Cl. 81-9.300.

Rath, Heinrich B.; and Thomas, Alfred W., to Lucas Industries Limited. Hydraulic actuator for a vehicle internal shoe-drum brake. 4,449,757, Cl. 303-6.00C.

Rawlings, David E., to Consort Aluminium Limited. Adjustable window assembly. 4,449,325, Cl. 49-192.000.

Ray-Chaudhuri, Dilip K.: *See—*
Chiao, Wen B.; and Ray-Chaudhuri, Dilip K., 4,450,261, Cl. 526-214.000.

Raychem Corporation: *See—*
Doljack, Frank A.; and Middleman, Lee M., 4,450,496, Cl. 361-58.000.

Raytheon Company: *See—*
Bowen, Robert F.; and Martel, Thomas J., 4,450,334, Cl. 219-10.55E.

Kliger, Isaac E.; Brown, William C., Jr.; and Goldstein, David S., 4,450,410, Cl. 328-155.000.
La Torre, Richard R.; and Phaneuf, Robert A., 4,450,451, Cl. 343-765.000.
Macaulay, Alexander, 4,450,062, Cl. 204-298.000.
Matthews, James B., 4,449,824, Cl. 356-350.000.

RCA Corporation: *See—*
Beyers, Billy W., Jr., 4,450,587, Cl. 455-182.000.
Bismarck, Otto H., 4,450,371, Cl. 307-475.000.
Hughes, Larry M., 4,450,548, Cl. 369-71.000.
Kelleher, Kevin C., 4,450,394, Cl. 318-696.000.
Marcantonio, Angelo R., 4,450,552, Cl. 369-240.000.
Oberman, Joel R., 4,450,524, Cl. 364-200.000.
Schwarzmann, Alfred, 4,450,419, Cl. 333-164.000.
Sterzer, Fred, 4,450,550, Cl. 369-126.000.
Tallant, James C., II, 4,450,476, Cl. 358-74.000.
Toda, Minoru; and Osaka, Susumu, 4,449,563, Cl. 160-184.000.
Wacyk, Ihor T.; and Stewart, Roger G., 4,450,562, Cl. 371-51.000.

Read, William A. Device for preventing theft of motor vehicles. 4,449,605, Cl. 180-287.000.

Ream, Lloyd W., to United States of America, National Aeronautics and Space Administration. Diesel engine catalytic combustor system. 4,449,370, Cl. 60-606.000.

Rebmann, Rolf: *See—*
Langwieder, Rolf; Rebmann, Rolf; Stotz, Erich; Wierschem, Franz-Rudolf; and Trick, Fred, 4,449,603, Cl. 180-232.000.

Redeker, Werner; and Uhlig, Uwe, to Hauni-Werke Korber & Co. KG. Machine tool feed screw drive. 4,449,988, Cl. 51-165.800.

Redmore, Derek: *See—*
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,450,137, Cl. 422-12.000.
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,450,138, Cl. 422-12.000.

Reece, Jack E., to Minnesota Mining and Manufacturing Company. Stabilization of latent images in photothermographic elements. 4,450,229, Cl. 430-523.000.

Reed, Geoffrey R.: *See—*
Laws, William R.; and Reed, Geoffrey R., 4,449,575, Cl. 165-82.000.

Reed, Kenneth L.: *See—*
Castleman, B. Wayne; Donehoo, Robert F.; Oswald, Rudolph G.; Reed, Kenneth L.; and Shipley, George H., 4,450,409, Cl. 324-460.000.

Reed, Norman L.; and Parkin, Trevor D., to Bespak Industries Limited. Handle assembly for a pressurized dispensing container. 4,449,647, Cl. 222-153.000.

Reed, Ronald G.; Schmuckal, Robin R.; and McCullough, Robert K., to Hewlett-Packard Company. CRT With internal thermionic valve for high voltage control. 4,450,387, Cl. 315-375.000.

Reese, Eckart: *See—*
Schmidt, Manfred; Wank, Joachim; Reese, Eckart; Freitag, Dieter; Wangermann, Klaus; and Cohnen, Wolfgang, 4,450,249, Cl. 524-132.000.

Reese, Russell I., to Pfizer Inc. Denture alignment kit. 4,449,929, Cl. 433-56.000.

Reicherts, James E., to United States Gypsum Company. Temporary restraining clamp for wallboard. 4,449,338, Cl. 52-127.800.

Reichman, William, Jr., to Custom Wrought Products, Co. Sleeve bracket. 4,449,842, Cl. 403-25.000.

Reiling, Walter S., to Meritus Industries, Inc. Crib toy. 4,449,321, Cl. 46-113.000.

Reisman, Arnold; Berkenblit, Melvin; and Merz, Charles J., III, to International Business Machines Corporation. Vertical wall elevated pressure heat dissipation system. 4,449,580, Cl. 165-104.340.

Reithel, Raymond F.; and Weiss, Armin K., to Eastman Kodak Company. Color filter elements comprising hexaalkoxymethylmelamine barrier layers. 4,450,215, Cl. 430-7.000.

Renato, Rinaldi, to Uniox SRL Welding & Cutting. Autogenous portable welding apparatus. 4,449,698, Cl. 266-48.000.

Renault, Guy, to Compagnie Industrielle des Lasers Cilas Alcatel. Apparatus for measuring in situ the state of oxidation-reduction of a living organ. 4,449,535, Cl. 128-634.000.

Renault Vehicules Industries: *See—*
Reynaud, Jean-Paul, 4,449,492, Cl. 123-193.0CH.

REPA Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,449,443, Cl. 91-392.000.

Repke, Virginia L.: *See—*
Pieniak, Heinz A.; and Repke, Virginia L., 4,450,026, Cl. 156-164.000.

Research Corporation: *See—*
Kabalka, George W., 4,450,149, Cl. 424-1.100.

Respiratory Care, Inc.: *See—*
Cruz, Exequiel D., 4,449,984, Cl. 604-319.000.

Rettinger, Anton: *See—*
Toerner, Ludger; Garvens, Dieter; Hager, Gunter; and Rettinger, Anton, 4,449,742, Cl. 285-236.000.

Reynaud, Jean-Paul, to Renault Vehicules Industries. Attachment for a heat shield. 4,449,492, Cl. 123-193.0CH.

Reynolds, George O., to Honeywell Inc. Optical lithographic system. 4,450,358, Cl. 250-492.100.

Reynolds Metals Company: *See—*
Johnston, Thomas J.; Richards, Nolan E.; and Tabereaux, Alton T., 4,450,063, Cl. 204-400.000.
Tabereaux, Alton T., 4,450,054, Cl. 204-67.000.

Rhodes, Eugene E., to Ford Motor Company. Drain construction for a radiator. 4,449,692, Cl. 251-144.000.

Rhodes, John M.: *See—*
Luke, Roger D.; and Rhodes, John M., 4,449,296, Cl. 29-883.000.
Rhythm Watch Co., Ltd.: *See—*
Itami, Masaru; and Tatusawa, Kunio, 4,449,831, Cl. 368-165.000.
Ricciardi, Ronald J.; and Rudolph, Otto J., to Acrison, Incorporated. Flexure weighing system. 4,449,597, Cl. 177-256.000.
Rice, David A.; Greenbaum, Robert R.; and Conarty, Thomas J., Jr., to Bethlehem Steel Corp. Method for increasing the wet bulk density of coking coals. 4,450,046, Cl. 201-20.000.
Richards, Nolan E.: *See—*
Johnston, Thomas J.; Richards, Nolan E.; and Tabereaux, Alton T., 4,450,063, Cl. 204-400.000.
Richards, Ronald L.: *See—*
Zychowski, Edwin A.; and Richards, Ronald L., 4,450,251, Cl. 524-251.000.
Richardson, Donald R.: *See—*
Montgomery, John R., IV; and Richardson, Donald R., 4,449,833, Cl. 368-262.000.
Richert, Manfred: *See—*
Knabel, Walter; Wagner, Ludwig; and Richert, Manfred, 4,449,731, Cl. 280-632.000.
Richmond, Michael S.: *See—*
Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; and Schleimer, Stephen I., 4,450,522, Cl. 364-200.000.
Ricketts, Thomas E.; and Sass, Allan, to Occidental Oil Shale, Inc. Method for bulking full a retort. 4,449,753, Cl. 299-2.000.
Ricoh Company, Ltd.: *See—*
Ikesue, Masumi; and Yanagawa, Nobuyuki, 4,449,810, Cl. 355-3.0DD.
Kikuchi, Hideo; Ikeda, Sunao; Kakitani, Yohtaro; Hibi, Kunio; and Okuzawa, Tugio, 4,449,813, Cl. 355-14.00R.
Rihani, Jawdat: *See—*
Strobel, Russell A.; Rihani, Jawdat; and Lunquist, Richard E., 4,450,583, Cl. 455-86.000.
Rilett, John W. Gas powered motors. 4,449,372, Cl. 60-671.000.
Rimma, John: *See—*
Crockat., William B.; and Rimma, John, 4,450,247, Cl. 523-518.000.
Rinderle, Heinz: *See—*
Bohme, Rolf; Rinderle, Heinz; and Sieber, Jurgen, 4,449,404, Cl. 73-295.000.
Rine, James C.: *See—*
Tloczynski, James J.; Ahola, Clifford J.; Rosenstein, Nicholas D.; and Rine, James C., 4,449,670, Cl. 241-35.000.
Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., 4,449,674, Cl. 241-245.000.
Riseberg, Leslie A.: *See—*
Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, 4,450,380, Cl. 313-485.000.
Ritzema, Lloyd G.: *See—*
Gzym, Larry P.; Ritzema, Lloyd G.; and Haadsma, David K., Jr., 4,449,337, Cl. 52-126.400.
Ritzer, Alan; and Lapidot, Heine, to General Electric Company. Catalyst for a process for producing silicones. 4,450,282, Cl. 556-472.000.
Robb, Michael F., to King Coal Furnace Corporation. Coal burning apparatus. 4,449,462, Cl. 110-288.000.
Robbins, Carl A.: *See—*
Smith, Harry D., Jr.; and Robbins, Carl A., 4,450,354, Cl. 250-256.000.
Robert Bosch GmbH: *See—*
Brill, Klaus; and Grothe, Wolfgang, 4,450,201, Cl. 428-336.000.
Frister, Manfred; and Fakler, Bernhard, 4,450,389, Cl. 318-140.000.
Glockler, Otto; Gunther, Dieter; Horbelt, Michael; and Steinbrenner, Ulrich, 4,449,508, Cl. 123-492.000.
Hones, Helmut; and Mohaupt, Hubert, 4,449,598, Cl. 180-6.500.
Kemmner, Ulrich, 4,449,891, Cl. 417-423.00R.
Lauterbach, Heinz, 4,449,397, Cl. 73-118.000.
Robertshaw Controls Company: *See—*
Frankenberg, Alfred A.; and Scott, Douglas R., 4,449,362, Cl. 60-274.000.
Gunter, James C., 4,449,294, Cl. 29-792.000.
Robertson Factories, Inc.: *See—*
Alexander, Alfred, Jr., 4,449,295, Cl. 29-798.000.
Robins, Thomas S. Means for causing a suspensible picture frame. 4,449,688, Cl. 248-498.000.
Robinson, Frank D., to Robinson Helicopter Company. Apparatus for bonding main rotor blades. 4,449,703, Cl. 269-71.000.
Robinson Helicopter Company: *See—*
Robinson, Frank D., 4,449,703, Cl. 269-71.000.
Robinson, Horace M.: *See—*
Peterson, Daniel G.; Erickson, John W.; and Robinson, Horace M., 4,449,582, Cl. 166-64.000.
Robison, Luann, executrix: *See—*
Robison, William G., deceased; and Robison, Luann, executrix, 4,449,725, Cl. 280-78.000.
Robison, William G., deceased; and by Robison, Luann, executrix. Support for booms and other field equipment. 4,449,725, Cl. 280-78.000.
Rochlitzer, Frank: *See—*
Pross, Gerhard; and Rochlitzer, Frank, 4,449,537, Cl. 128-723.000.
Rockwell International Corporation: *See—*
Chin, Raymond, 4,450,463, Cl. 357-30.000.
Folkmann, Andrew F., 4,450,417, Cl. 333-24.00R.
Painter, Walter C.; Luttmer, David J.; and Galloway, Alvin J., 4,450,397, Cl. 318-762.000.
Spence, John R., 4,450,368, Cl. 307-362.000.
Rodenberger, Charles M.; Sizer, Phillip S.; and O'Malley, Kevin C., to Otis Engineering Corporation. Surface controlled subsurface safety valves. 4,449,587, Cl. 166-323.000.
Roder, Eberhard, deceased; by Borchers, Hans-Dieter, administrator; and Dusing, Wolfgang, to Gottfried Roder Kunststoffwerk. Tubular metering or dosing mechanism for dispensing liquid from a container in successive quantums of uniform volume. 4,449,651, Cl. 222-455.000.
Rogers, Gerald: *See—*
Solimeno, Duane; Brown, Sammy K.; Koeppen, Peter L.; and Rogers, Gerald, 4,450,534, Cl. 364-900.000.
Roggekamp, Aloysius G.: *See—*
Wolters, Tjako A.; and Roggekamp, Aloysius G., 4,449,720, Cl. 277-207.00A.
Roggero, Arnaldo; Bruzzone, Mario; and Gandini, Alberto, to Enoxy Chimica, S.p.A. Multifunctional anionic initiators and their use. 4,450,259, Cl. 526-173.000.
Rohrich, Manfred; and Brinkhaus, Stefan, to Becker Autoradiowerk GmbH. Tuning system for a high frequency receiver utilizing a controllable inductor. 4,450,588, Cl. 455-192.000.
Rolf, Richard L., to Aluminum Company of America. Metal stub and ceramic body electrode assembly. 4,450,061, Cl. 204-286.000.
Rooney, Floyd H. Solar collector building truss. 4,449,347, Cl. 52-639.000.
Rooney, John J.: *See—*
Adair, Noel J.; Carlisle, Robert W.; Stubbs, Michael E.; and Rooney, John J., 4,450,245, Cl. 502-211.000.
Roos, Bertil. Skid control car. 4,449,727, Cl. 280-91.000.
Rosa, Roger A.: *See—*
Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., 4,449,607, Cl. 181-213.000.
Rosenberg, Harry: *See—*
Terhorst, Gunter; Plester, Karl-Heinz; Rosenberg, Harry; and Eggenstein, Friedrich, 4,449,859, Cl. 405-291.000.
Rosengreen, Arne: *See—*
Murray, Edward R.; van der Laan, Jan E.; Rosengreen, Arne; and Byer, Robert L., 4,450,356, Cl. 250-339.000.
Rosenstein, Nicholas D.: *See—*
Tloczynski, James J.; Ahola, Clifford J.; Rosenstein, Nicholas D.; and Rine, James C., 4,449,670, Cl. 241-35.000.
Roskam, Klaas: *See—*
Ettema, Ernst; Benraad, Coenraad J. B. M.; and Roskam, Klaas, 4,450,132, Cl. 264-328.800.
Ross, Dieter; and Ostertag, Klaus, to Erwin Sick GmbH Optik-Elektronik. Fault detection apparatus for material webs. 4,450,359, Cl. 250-572.000.
Roth, Oskar, to Involvo AG. Packing machine with adjustable means for weakening selected portions of cardboard blanks or the like. 4,449,349, Cl. 53-66.000.
Rothman, Irwin L., to Loral Corporation. Method of making a multiple layer coil winding system. 4,449,291, Cl. 29-605.000.
Rothwarf, Frederick: *See—*
Tauber, Arthur; Finnegan, Robert D.; and Rothwarf, Frederick, 4,449,952, Cl. 445-55.000.
Roussel Uclaf: *See—*
Christidis, Yani; and Fournex, Robert, 4,450,292, Cl. 562-463.000.
Clemence, Francois; Hunt, Peter F.; Le Martret, Odile; and Humbert, Daniel, 4,450,166, Cl. 424-258.000.
Le Martret, Odile; Humbert, Daniel; and Hunt, Peter F., 4,450,167, Cl. 424-258.000.
Nezot, Francois; Girault, Pierre; Tessier, Jean; and Martel, Jacques, 4,450,169, Cl. 424-270.000.
Roy, Kleber: *See—*
Buzzichelli, Lilian; and Roy, Kleber, 4,449,634, Cl. 212-196.000.
Roza, Engel: *See—*
Meuleman, Lambertus J.; van de Grijp, Abram; and Roza, Engel, 4,450,564, Cl. 372-26.000.
Rudolph, Otto J.: *See—*
Ricciardi, Ronald J.; and Rudolph, Otto J., 4,449,597, Cl. 177-256.000.
Ruger, William B.; and Melcher, Roy L., to Sturm, Ruger & Company, Inc. Mechanism adaptable for single action revolvers. 4,449,312, Cl. 42-66.000.
Rump, Martin, to Teleflex Incorporated. Hydraulic control package for a marine steering system. 4,449,470, Cl. 114-150.000.
Rupp, Robert D.: *See—*
Hobart, Ralph J.; Rupp, Robert D.; and Mastro, Paul F., 4,449,694, Cl. 251-171.000.
Russell, Byron L.: *See—*
Arter, William L.; and Russell, Byron L., 4,450,015, Cl. 148-9.00R.
Russell, Steven P., to Vitalink Communications Corporation. Method and apparatus for improving the capacity of a satellite transponder by reuse of bandwidth. 4,450,582, Cl. 455-12.000.
Russell, Thomas D.; and Walker, Robert R., to Babcock & Wilcox Company, The. Coordinated control technique and arrangement for steam power generating system. 4,450,363, Cl. 290-40.00C.
S & A Oil Field Services, Inc.: *See—*
Horn, Spencer C.; and Mogg, Alan A., 4,449,849, Cl. 405-52.000.
S.N.E.C.M.A.: *See—*
Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., 4,449,607, Cl. 181-213.000.
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarence R., to McGraw-Edison Company. Electrical insulating system. 4,450,424, Cl. 336-94.000.
St. Regis Paper Company: *See—*
Flannigan, Jerry E., 4,449,649, Cl. 222-181.000.

Saito, Chuichi; Teranishi, Katsuya; Baba, Katsuyoshi; and Osumi, Yoshihiro, to Hitachi, Ltd. Passenger conveyor balustrade. 4,449,623, Cl. 198-335.000.
Saito, Hideo: *See—*
Sato, Hideo; Goto, Yasuyuki; Saito, Hideo; Sawada, Shinichi; Matsunami, Keiichi; and Hirata, Kohzo, 4,450,094, Cl. 252-299.610.
Saito, Hidetoshi: *See—*
Kawatei, Hisatsugu; Saito, Hidetoshi; and Nakamura, Hisashi, 4,449,500, Cl. 123-380.000.
Saito, Hiroyuki: *See—*
Fujii, Yasuhiko; Kikuchi, Mitsuru; and Saito, Hiroyuki, 4,450,490, Cl. 360-13.000.
Saito, Hisatoshi; Fujii, Shuzo; Takase, Itaru; Nakamura, Akihiko; and Hara, Yoshihiro, to Q.P. Corporation; and Denka Engineering Kabushiki Kaisha. System for transporting plastics articles. 4,449,861, Cl. 406-39.000.
Saito, Koji, to Kyoto Ceramic Co., Ltd. Tool for making separated tooth model. 4,449,931, Cl. 433-74.000.
Saito, Toshihiko: *See—*
Sakamoto, Moriyoshi; and Saito, Toshihiko, 4,449,484, Cl. 122-13.00R.
Saka, Hiroshi; and Tanaka, Toshihide, to Matsushita Electric Industrial Co., Ltd. Microwave integrated circuit mixer. 4,450,584, Cl. 455-325.000.
Sakaguchi, Katsuyoshi: *See—*
Hasegawa, Akira; and Sakaguchi, Katsuyoshi, 4,449,903, Cl. 425-38.000.
Sakakiyama, Ryuzo; and Takano, Toshio, to Fuji Jukogyo Kabushiki Kaisha. Electro-magnetic clutch control system for automobiles. 4,449,617, Cl. 192-0.033.
Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. System for controlling an electromagnetic clutch for automobiles. 4,449,619, Cl. 192-0.052.
Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. Electromagnetic clutch control system for vehicles. 4,449,620, Cl. 192-0.052.
Sakamoto, Masahiro: *See—*
Egawa, Setsuya; and Sakamoto, Masahiro, 4,450,123, Cl. 264-4.700.
Sakamoto, Moriyoshi; and Saito, Toshihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Hot water supply system. 4,449,484, Cl. 122-13.00R.
Sakoda, Yasuhiro; and Matsubayashi, Kazuyuki, to Sharp Kabushiki Kaisha. Damper drive system in a combined microwave and electric heater oven. 4,450,344, Cl. 219-400.000.
Sakurada, Nobuaki; Kawamura, Masaharu; Ohtaki, Shohei; Nakamoto, Soichi; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. Data registration device. 4,449,805, Cl. 354-105.000.
Sakurada, Shuroku: *See—*
Nagano, Takahiro; Sanpei, Isamu; Sakurada, Shuroku; and Nakagawa, Masaru, 4,450,467, Cl. 357-38.000.
Sakuta, Koichi: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.
Salam, Hassan P. A., to Unisplay, S.A. Plaque remover. 4,449,934, Cl. 433-143.000.
Salama, Clement A.: *See—*
Malhi, Satwinder D.; and Salama, Clement A., 4,450,366, Cl. 307-297.000.
Saleck, Wilhelm: *See—*
Weyde, Edith; von Rintelen, Harald; Saleck, Wilhelm; and Teitscheid, Heinz-Horst, 4,450,225, Cl. 430-567.000.
Salit, Yechiel. Kit for the assembly of electrical circuits. 4,449,942, Cl. 434-224.000.
Salmon, Jean P.; and Theze, Claude P., to Jeumont Schneider Corporation. Coupling for inducing a current in the rails of a railroad track. 4,449,685, Cl. 246-8.000.
Salvucci, Orfeo J.; Hobby, John M.; Hennessy, James J.; and Young, Ronald R., to Harris Graphics Corporation. Web splicing apparatus. 4,450,039, Cl. 156-504.300.
Samietz, Klaus: *See—*
Weingartner, Ernst; and Samietz, Klaus, 4,450,570, Cl. 373-69.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Brader, Walter H., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over transition metal borates in the presence of acetic acid. 4,450,290, Cl. 560-246.000.
Sandoz Ltd.: *See—*
Fischer, Rudolf; Kunzle, Franz M.; and Schmutz, Jean, 4,450,108, Cl. 260-243.300.
Sanford, Karl J.; Sutherland, John W.; and Eikenberry, Jon N., to Eastman Kodak Company. Incorporation of pyridoxal phosphate in dry analytical elements for the determination of enzymes. 4,450,232, Cl. 435-15.000.
Sanford, Redmond. Method and apparatus for making sealed packages for spreadable products. 4,449,350, Cl. 53-412.000.
Sankyo Company, Limited: *See—*
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.
Sano, Makoto: *See—*
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Kawase, Shoji; and Sano, Makoto, 4,449,992, Cl. 55-158.000.
Sanpei, Isamu: *See—*
Nagano, Takahiro; Sanpei, Isamu; Sakurada, Shuroku; and Nakagawa, Masaru, 4,450,467, Cl. 357-38.000.
Santrade Ltd.: *See—*
Stabler, Gerhard; and Schermutzki, Konrad, 4,449,448, Cl. 100-153.000.
Vesterlund, Gunnar; and Anderson, Erik T., 4,450,016, Cl. 148-11.50F.
Vesterlund, Gunnar, 4,450,020, Cl. 148-11.50F.
Sanyo Electric Co., Ltd.: *See—*
Kudo, Toshiyuki; Itoh, Kazuo; and Kitamura, Masafumi, 4,450,551, Cl. 369-173.000.
Tanaka, Masaru, 4,450,399, Cl. 318-814.000.
Sarapulov, Jury M.: *See—*
Nikomarov, Samuil S.; Kochnev, Anatoly M.; Goldobin, Vladimir B.; Sarapulov, Jury M.; and Valdman, Isaak Y., 4,449,953, Cl. 464-19.000.
Sardelis, Timothy: *See—*
Bendel, Lee P.; and Sardelis, Timothy, 4,449,530, Cl. 128-325.000.
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, to GTE Laboratories Incorporated. Coated silicon nitride cutting tools. 4,449,989, Cl. 51-295.000.
Sarrine, Robert J., to Transidyne General Corporation. Endoscope. 4,449,519, Cl. 128-4.000.
Sarstedt, Walter, to Walter Sarstedt Kunstoff-Spritzgusswerk. Blood extraction device. 4,449,539, Cl. 128-764.000.
Sasaki, Masao, to Oki Electric Industry Co., Ltd. Carrier moving mechanism. 4,449,417, Cl. 74-409.000.
Sasaki, Tomiya: *See—*
Miyazaki, Yoshiro; Yasunaga, Toshio; and Sasaki, Tomiya, 4,449,579, Cl. 165-104.330.
Sass, Allan: *See—*
Ricketts, Thomas E.; and Sass, Allan, 4,449,753, Cl. 299-2.000.
Satake Engineering Co., Ltd.: *See—*
Satake, Toshihiko, 4,450,181, Cl. 426-507.000.
Satake, Toshihiko, to Satake Engineering Co., Ltd. Method of humidifying polished rice. 4,450,181, Cl. 426-507.000.
Sathe, Avinash T., to PPG Industries, Inc. Method for purifying N-benzyloxycarbonyl aspartic acid. 4,450,284, Cl. 560-163.000.
Sato, Hideki; and Asahina, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. X-Ray apparatus. 4,450,577, Cl. 378-109.000.
Sato, Hideo; Goto, Yasuyuki; Saito, Hideo; Sawada, Shinichi; Matsunami, Keiichi; and Hirata, Kohzo, to Chisso Corporation. Nematic liquid crystal compositions for display apparatuses. 4,450,094, Cl. 252-299.610.
Sato, Hideo: *See—*
Horie, Seiji; Nakano, Junji; and Sato, Hideo, 4,450,219, Cl. 430-59.000.
Sato, Hideyori; and Arai, Mitsuru, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic control system for off-highway self-propelled work machines. 4,449,366, Cl. 60-444.000.
Sato, Norihide: *See—*
Okamura, Yasushi; Manabe, Harukazu; and Sato, Norihide, 4,449,838, Cl. 400-234.000.
Sato, Susumu: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,450,109, Cl. 260-243.300.
Sato, Yasushi: *See—*
Kitamura, Takashi; Watanabe, Asao; Nakano, Takashi; Masaki, Katsumi; Hirayama, Kazuhiro; Sato, Yasushi; and Tokiwa, Taisuke, 4,450,453, Cl. 346-108.000.
Satou, Kazuo; and Yoritaka, Masashi, to Toyo Kogyo Co., Ltd. Ductile cast iron. 4,450,019, Cl. 148-35.000.
Satya, Akella V. S.: *See—*
Bond, George L.; and Satya, Akella V. S., 4,450,559, Cl. 371-10.000.
Saucier, Howard J. Crayfish, harvesting, sheltering and spacing apparatus. 4,449,479, Cl. 119-2.000.
Sauer, Heinz; Stichel, Willi; and Wachter, Gerhard, to Rasmussen GmbH. Power tool for tensioning hose clamps and the like. 4,449,429, Cl. 81-9.300.
Sauerwein, William D.; Sides, Daniel H.; Weber, Steven A.; and Horney, James R., to Black & Decker Inc. Composite washer assembly. 4,449,329, Cl. 51-168.000.
Saumer, Wilhelm: *See—*
Schmidts, Kurt; Schuett, Walter; Zeysolff, Edmond; and Saumer, Wilhelm, 4,449,914, Cl. 425-556.000.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to Essex Group, Inc. Power insertable nylon coated magnet wire. 4,449,290, Cl. 29-596.000.
Sawada, Shinichi: *See—*
Sato, Hideo; Goto, Yasuyuki; Saito, Hideo; Sawada, Shinichi; Matsunami, Keiichi; and Hirata, Kohzo, 4,450,094, Cl. 252-299.610.
Sawata, Sinji: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.
Sawatzki, Harry, to Censor Patent- Und Versuchs-Anstalt. Metering pump especially for volatile materials. 4,449,650, Cl. 222-309.000.
Sawka, Steven; Moretti, Vincent; and Heal, Sam F., to United States of America, Army. D.C. Lamp burn-out protection. 4,450,382, Cl. 315-082.000.
Scales, John M.; and Wolcott, Bernard F., to Nicolon Corporation. Revetment panel. 4,449,847, Cl. 405-19.000.
Scanlon, Walter: *See—*
Hild, Herbert A.; and Scanlon, Walter, 4,449,467, Cl. 114-103.000.

Scardina, Annette, executrix: *See—*
Scardina, Virgil R., deceased; and Scardina, Annette, executrix, 4,450,318, Cl. 174-84.00R.
Scardina, Virgil R., deceased; and by Scardina, Annette, executrix, to Siemens-Allis, Inc. Means and method for providing insulation splice. 4,450,318, Cl. 174-84.00R.
Schael, Fritz: *See—*
Fiala, Ernst; Schael, Fritz; and Schoedder, Reiner, 4,449,748, Cl. 296-183.000.
Schafer, Wolfgang: *See—*
Eiermann, Kurt; Horlebein, Eberhard; Lissmann, Kurt; and Schafer, Wolfgang, 4,449,402, Cl. 73-204.000.
Schar, Hugo. Athletic footwear for bicyclists. 4,449,308, Cl. 36-131.000.
Scharf, Emil: *See—*
Hertel, Otto; Linhart, Friedrich; and Scharf, Emil, 4,450,045, Cl. 162-164.300.
Scheie, Carl E.: *See—*
Benedyk, Joseph C.; Amos, Homer C.; Scheie, Carl E.; and McGlone, William R., 4,449,712, Cl. 273;326.000.
Schempp, Heinrich: *See—*
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,449,999, Cl. 71-73.000.
Schering Aktiengesellschaft: *See—*
Nickisch, Klaus; Laurent, Henry; Wiechert, Rudolf; and Casals-Stenzel, Jorge, 4,450,107, Cl. 424-238.000.
Schering Corporation: *See—*
Bristol, James A.; and Puchalski, Chester, 4,450,164, Cl. 424-256.000.
Schermutzki, Konrad: *See—*
Stabler, Gerhard; and Schermutzki, Konrad, 4,449,448, Cl. 100-153.000.
Schiedermayer, Marvin L.: *See—*
Corrigall, Don J.; and Schiedermayer, Marvin L., 4,450,340, Cl. 219-132.000.
Schilling, Peter; and Schreuders, Hans G., to Westvaco Corporation. Cationic bituminous emulsions. 4,450,011, Cl. 106-269.000.
Schinke, Franz, to U.S. Philips Corporation. Cleaning device for the intermediate image carrier of an electrophoretic printer. 4,449,475, Cl. 118-645.000.
Schirk, Gunter: *See—*
Geyken, Erwin; Koninger, Horst; and Schirk, Gunter, 4,449,278, Cl. 29-132.000.
Schleimer, Stephen I.: *See—*
Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; and Schleimer, Stephen I., 4,450,522, Cl. 364-200.000.
Schleussner, Hans: *See—*
Walker, Wolfram H.; Ganshirt, Karl H.; and Schleussner, Hans, 4,450,078, Cl. 210-315.000.
Schluter, Harry C. Mailbox signal device. 4,449,663, Cl. 232-35.000.
Schmidt, Charles J.: *See—*
Albanese, Victor J.; and Schmidt, Charles J., 4,450,448, Cl. 343-379.000.
Schmidt, Manfred; Wank, Joachim; Reese, Eckart; Freitag, Dieter; Wangermann, Klaus; and Cohnen, Wolfgang, to Bayer Aktiengesellschaft. Internal antistatic agents for polycarbonates and for polycarbonate films. 4,450,249, Cl. 524-132.000.
Schmidt, William P.: *See—*
Hegarty, William P.; and Schmidt, William P., 4,449,994, Cl. 62-17.000.
Schmidtpott, Friedrich; and Backes, Reiner, to ITT Industries, Inc. Binary MOS parallel comparators. 4,450,432, Cl. 340-146.200.
Schmidts, Kurt; Schuett, Walter; Zeysolff, Edmond; and Saumer, Wilhelm, to BASF Aktiengesellschaft. Injection mold with demolding device. 4,449,914, Cl. 425-556.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. High foaming liquid shampoo composition. 4,450,091, Cl. 252-174.210.
Schmuckal, Robin R.: *See—*
Reed, Ronald G.; Schmuckal, Robin R.; and McCullough, Robert K., 4,450,387, Cl. 315-375.000.
Schmutz, Jean: *See—*
Fischer, Rudolf; Kunzle, Franz M.; and Schmutz, Jean, 4,450,108, Cl. 260-243.300.
Schnuell, Henry A., to E. R. Wagner Mfg. Co. Caster wheel brake having an overcenter latch. 4,449,268, Cl. 16-35.00R.
Schoedder, Reiner: *See—*
Fiala, Ernst; Schael, Fritz; and Schoedder, Reiner, 4,449,748, Cl. 296-183.000.
Schorfheide, James J.: *See—*
Brannon, Judeth H.; and Schorfheide, James J., 4,449,991, Cl. 55-73.000.
Schreuders, Hans G.: *See—*
Schilling, Peter; and Schreuders, Hans G., 4,450,011, Cl. 106-269.000.
Schroder, William J.: *See—*
Moore, James R.; Schroder, William J.; Warner, Charles E.; and Pittman, Edgar H., 4,449,355, Cl. 57-284.000.
Schroeder, Charles M., Jr.: *See—*
Andrejco, Matthew J.; Paek, Un C.; and Schroeder, Charles M., Jr., 4,450,333, Cl. 219-10.49R.
Schroeder, Jon M., to Schroeder, Jon M. Apparatus for encapsulation casting. 4,449,690, Cl. 249-85.000.
Schroeder, Joseph W., to Foster Wheeler Energy Corporation. Explosive tube expansion. 4,449,280, Cl. 29-421.00E.
Schroeder, Terry A.: *See—*
Haque, Sazzadul; and Schroeder, Terry A., 4,449,864, Cl. 407-113.000.
Schroeder, Warren E. Optical composing stage. 4,450,536, Cl. 355-75.000.
Schuermeyer, Fritz L. Dynamic MESFET logic with voltage level shift circuit. 4,450,369, Cl. 307-450.000.
Schuett, Walter: *See—*
Schmidts, Kurt; Schuett, Walter; Zeysolff, Edmond; and Saumer, Wilhelm, 4,449,914, Cl. 425-556.000.
Schultz, Dennis: *See—*
Berecz, Imre; Schultz, Dennis; and Daniel, Leroy O., 4,449,283, Cl. 29-566.100.
Schultz, Walter C.: *See—*
Sullivan, Edward F.; Sullivan, Patrick; and Schultz, Walter C., 4,449,553, Cl. 138-35.000.
Schulz Marine Systems, Inc.: *See—*
Schulz, Walter A.; and Procter, John H., 4,449,468, Cl. 114-104.000.
Schulz, Walter A.; and Procter, John H., to Schulz Marine Systems, Inc. Adjustable roller furling spar. 4,449,468, Cl. 114-104.000.
Schulz, William J., to Appleton Papers Inc. Method for recovering pulp from pressure-sensitive carbonless copying paper waste. 4,450,043, Cl. 162-5.000.
Schwartz, Arnold, to Perkin-Elmer Corporation, The. Control circuit for liquid chromatograph. 4,450,574, Cl. 377-2.000.
Schwartz, Vern R., to AMFIT, Inc. System for forming custom-made shoe inserts. 4,449,264, Cl. 12-1.00R.
Schwarzmann, Alfred, to RCA Corporation. Monolithic reflection phase shifter. 4,450,419, Cl. 333-164.000.
Schweizer, Russell J., to Kendall Company, The. Drainage receptacle with support frame. 4,449,969, Cl. 604-322.000.
Schwiesow, Ronald L., to United States of America, Commerce. Device for measurement of the spectral width of nearly monochromatic sources of radiant energy. 4,449,823, Cl. 356-346.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., to Xerox Corporation. Optical repeater integrated lasers. 4,450,567, Cl. 372-50.000.
Scitech Corporation: *See—*
De La Cierva, Juan, 4,450,480, Cl. 358-149.000.
Scott, Douglas R.: *See—*
Frankenberg, Alfred A.; and Scott, Douglas R., 4,449,362, Cl. 60-274.000.
Seagram Distillers Limited: *See—*
Snedker, Robert, 4,449,637, Cl. 215-21.000.
Sealed Power Corporation: *See—*
Anderson, David L.; Hitchcock, Robert F.; and Tamburrino, Robert M., 4,450,081, Cl. 210-445.000.
Sebastian, Richard: *See—*
Kenyon, Stephen C.; Simkins, Laura J.; Brown, Leroy L.; and Sebastian, Richard, 4,450,531, Cl. 364-604.000.
Seige Corporation: *See—*
Nilsson, Jack E., Sr., 4,449,515, Cl. 126-430.000.
Seiko Instruments & Electronics Ltd.: *See—*
Shimbo, Masafumi, 4,449,284, Cl. 29-571.000.
Sekiya, Hideshi: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.
Seko, Yasutoshi; Yanagishima, Takayuki; and Fukasawa, Noburu, to Nissan Motor Company, Limited. Drowsiness alarm system for a vehicle. 4,450,438, Cl. 340-576.000.
Selas Corporation of America: *See—*
Spahr, Richard F., 4,449,918, Cl. 431-76.000.
Selcuk, M. Kudret, to United States of America, National Aeronautics and Space Administration. Solar concentrator protective system. 4,449,514, Cl. 126-418.000.
Select Laboratories, Inc.: *See—*
Peterson, Walter L., 4,449,968, Cl. 604-24.000.
Selenia, Industrie Elettroniche Associate, S.p.A.: *See—*
Marchetti, Renato; Penco, Eugenio; and Perito, Ugo, 4,450,566, Cl. 372-38.000.
Semerjian, Joseph K.; and Lodge, Glenn R., to Wilson Jones Company. Sheet punch device. 4,449,436, Cl. 83-571.000.
Separex Teknik AB: *See—*
Westberg, J. Eric H.; and Unger, H. Peter O., 4,449,964, Cl. 494-16.000.
Setsune, Jun-ichiro: *See—*
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,449,516, Cl. 126-430.000.
Severson, Asbjorn M., to Honeywell Inc. Meter tampering indicator. 4,450,504, Cl. 361-369.000.
Shacket, Sheldon; and Helfman, Robert, to Trus-Us, Inc. Dormer structure and method. 4,449,334, Cl. 52-79.300.
Sharp Kabushiki Kaisha: *See—*
Ikemoto, Yutaka; and Tanimoto, Akira, 4,449,829, Cl. 368-63.000.
Nakatani, Hiroshi; and Yamamoto, Hachizou, 4,450,526, Cl. 364-405.000.
Sakoda, Yasuhiro; and Matsubayashi, Kazuyuki, 4,450,344, Cl. 219-400.000.
Shaw, Montgomery T.: *See—*
Kurtz, Stuart J.; De Rossett, Terry A.; and Shaw, Montgomery T., 4,449,395, Cl. 73-56.000.
Shay, Robert H.: *See—*
Berger, Kerry R.; Kaspersma, Jelle H.; Luybli, Joseph R.; Millward, Barry; and Shay, Robert H., 4,450,017, Cl. 148-16.000.
Shell Oil Company: *See—*
Lewis, Robert M.; and Slaugh, Lynn H., 4,450,099, Cl. 502-232.000.
Muszynski, Larry C., 4,449,852, Cl. 405-168.000.

Paxson, Timm E., 4,450,286, Cl. 560-241.000.
Paxson, Timm E., 4,450,287, Cl. 560-241.000.
Paxson, Timm E., 4,450,288, Cl. 560-241.000.
Paxson, Timm E., 4,450,289, Cl. 560-241.000.
Versluis, Jan; deGroot, Johan; and van Baalen, Anton, 4,449,946, Cl. 441-4.000.
Shelley Manufacturing Company Division of Allo Food Service Equipment Company: *See—*
House, Bruce F., 4,449,760, Cl. 312-42.000.
Shelton, Kent: *See—*
Gillette, Robert H.; Brammall, Terrence N.; Shelton, Kent; and Cramer, Chris, 4,449,328, Cl. 51-73.00R.
Shenkman, Mitchell B.: *See—*
Thorpe, Kenneth J., 4,449,378, Cl. 62-371.000.
Shepherd, Robert G.: *See—*
Du, Mila T.; and Shepherd, Robert G., 4,450,272, Cl. 544-357.000.
Sherman, Earle C.: *See—*
Johnson, Harold D.; Sherman, Earle C.; and Cooper, Leonard M., 4,449,633, Cl. 206-612.000.
Shiba, Hiroshi, to Nippon Electric Co., Ltd. Semiconductor integrated circuit device. 4,450,470, Cl. 357-59.000.
Shibakawa, Riichiro: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,450,237, Cl. 435-253.000.
Shibata, Susumu: *See—*
Ishii, Masami; Sugimoto, Hitoshi; Takeda, Shinji; and Shibata, Susumu, 4,450,038, Cl. 156-497.000.
Shibukawa, Mitsuru: *See—*
Mimura, Akio; Yuasa, Katsumi; and Shibukawa, Mitsuru, 4,450,233, Cl. 435-178.000.
Shibuya, Kunihiro; and Uchida, Kohachi, to Tokyo Shibaura Denki Kabushiki Kaisha. Paper feed device. 4,449,705, Cl. 271-9.000.
Shih, Stuart S.: *See—*
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,450,067, Cl. 208-86.000.
Shikatani, Yutaka: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; Shikatani, Yutaka; and Miyoshi, Mituji, 4,450,243, Cl. 502-131.000.
Shimba, Satoru; Ito, Kenji; Tsuda, Yasuo; and Sugita, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material. 4,450,228, Cl. 430-505.000.
Shimbo, Masafumi, to Seiko Instruments & Electronics Ltd. Method of manufacturing an integrated circuit device having vertical field effect transistors. 4,449,284, Cl. 29-571.000.
Shimizu, Isamu; Ogawa, Kyosuke; and Inoue, Eiichi, to Canon Kabushiki Kaisha. Process for forming amorphous silicon film. 4,450,185, Cl. 427-39.000.
Shimizu, Toshiki; and Inoue, Kazuyuki, to Matsushita Electric Industrial Co., Ltd. Door opening apparatus for heating appliance. 4,450,335, Cl. 219-10.55C.
Shimosato, Yoshikazu, to Chugai Ro Kogyo Co., Ltd. Continuous heat-treating furnace. 4,449,923, Cl. 432-82.000.
Shin-Etsu Polymer Co., Ltd.: *See—*
Takashi, Nogami; and Masayuki, Mitsuhashi, 4,449,774, Cl. 339-59.00M.
Shinagawa, Kiminari: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,450,494, Cl. 360-125.000.
Shinoda, Nobuhiko: *See—*
Sakurada, Nobuaki; Kawamura, Masaharu; Ohtaki, Shohei; Nakamoto, Soichi; and Shinoda, Nobuhiko, 4,449,805, Cl. 354-105.000.
Shinohara, Koichi, to Matsushita Electric Industrial Co., Ltd. Method and device for manufacturing magnetic recording medium. 4,450,186, Cl. 427-42.000.
Shinozawa, Takahiro, to Toyo Aerosol Industry Co., Ltd. Powder aerosol composition. 4,450,151, Cl. 424-46.000.
Shipley, George H.: *See—*
Castleman, B. Wayne; Donehoo, Robert F.; Oswald, Rudolph G.; Reed, Kenneth L.; and Shipley, George H., 4,450,409, Cl. 324-460.000.
Shiraishi, Takeichi: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; Shikatani, Yutaka; and Miyoshi, Mituji, 4,450,243, Cl. 502-131.000.
Shirasaka, Hisatoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Address accessed memory device having parallel to serial conversion. 4,450,538, Cl. 365-219.000.
Shiratsuchi, Kouji, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle fuel tank. 4,449,723, Cl. 280-5.00H.
Shiroishi, Yoshihiro: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,450,494, Cl. 360-125.000.
Shirosaki, Tsutomu; and Fukunaga, Seiki, to Nippon, Kayaku, Kabushiki, Kaisha. Dialkylthioxanthones. 4,450,279, Cl. 549-27.000.
Shook, James G., to Kemp Furniture Industries, Inc. Drawer guide. 4,449,766, Cl. 312-348.000.
Shori, Kaoru, to Nissan Motor Company, Limited. Gearshift device. 4,449,418, Cl. 74-475.000.
Showa Aluminum Corporation: *See—*
Munekawa, Masaaki, 4,449,578, Cl. 165-104.330.
Sico Incorporated: *See—*
Wilson, Kermit H.; and Bue, Richard C., 4,449,263, Cl. 5-133.000.
Sides, Daniel H.: *See—*
Sauerwein, William D.; Sides, Daniel H.; Weber, Steven A.; and Horney, James R., 4,449,329, Cl. 51-168.000.
Sidman, Kenneth R., to Arthur D. Little, Inc. Biodegradable, implantable drug delivery depots, and method for preparing and using the same. 4,450,150, Cl. 424-1.100.
Sieber, Jurgen: *See—*
Bohme, Rolf; Rinderle, Heinz; and Sieber, Jurgen, 4,449,404, Cl. 73-295.000.
Siegal, Burton L., to KIWI Coders Corporation. Piezoelectric fluid control device. 4,450,375, Cl. 310-331.000.
Siegal, Burton L., to Coral Industrial Sales Co. Electrically grounded, static absorbing drapery installation. 4,450,498, Cl. 361-212.000.
Siemens AG: *See—*
Dreiseitl, Walter; Koch, Manfred; and Linden, Wilhelm, 4,450,403, Cl. 324-166.000.
Siemens Aktiengesellschaft: *See—*
Ackermann, Rudolf, 4,450,482, Cl. 358-160.000.
Oldham, William G., 4,450,537, Cl. 365-217.000.
Peruth, Gunther, 4,450,514, Cl. 363-37.000.
Putz, Wilhelm, 4,449,298, Cl. 30-90.100.
Witte, Hans H., 4,449,783, Cl. 350-96.160.
Zuckler, Karl, 4,450,330, Cl. 200-148.00A.
Siemens-Allis, Inc.: *See—*
Luke, Roger D.; and Rhodes, John M., 4,449,296, Cl. 29-883.000.
Scardina, Virgil R., deceased; and Scardina, Annette, executrix, 4,450,318, Cl. 174-84.00R.
Siemens Interatom, Intl. Atomreaktorbau GmbH: *See—*
Barzantny, Joachim; Beske, Joachim; Hans, Rainer; and Lauhoff, Theodor, 4,449,890, Cl. 417-50.000.
Siemens Medical Laboratories, Inc.: *See—*
Jahsman, Hendrick; and Menor, George, 4,449,262, Cl. 5-63.000.
Siemion, Edward D. Floor seal strip. 4,449,267, Cl. 15-257.00R.
Sienkiewicz, Boleslaw; Kramer, Franklin; Klein, Imrich; Oldershaw, C. G. Peter; and Chuang, Locus Y., to General Foods Corporation. Extrusion nozzle arrangement. 4,449,906, Cl. 425-131.100.
Siffert, Bernard: *See—*
Floreancig, Antoine; Siffert, Bernard; and Trescol, Jean-Jacques, 4,450,143, Cl. 423-10.000.
Simkins, Laura J.: *See—*
Kenyon, Stephen C.; Simkins, Laura J.; Brown, Leroy L.; and Sebastian, Richard, 4,450,531, Cl. 364-604.000.
Simmons, Ronald L.; and Young, Herbert L., to Hercules Incorporated. Azido nitramine. 4,450,110, Cl. 260-349.000.
Simmons U.S.A. Corp.: *See—*
Magnusson, Robert A., 4,449,261, Cl. 5-465.000.
Singh, Jag J., to United States of America, National Aeronautics and Space Administration. Radionuculide counting technique for measuring wind velocity and direction. 4,449,400, Cl. 73-189.000.
Singh, Rajindar: *See—*
Feigenbaum, Haim; Pudick, Sheldon; and Singh, Rajindar, 4,450,212, Cl. 429-35.000.
Siracusa, Denise: *See—*
McMullen, Warren H.; Chessin, Hyman; and Siracusa, Denise, 4,450,052, Cl. 204-51.000.
Sizer, Phillip S.: *See—*
Rodenberger, Charles M.; Sizer, Phillip S.; and O'Malley, Kevin C., 4,449,587, Cl. 166-323.000.
Sjolund, John R., to Sundstrand Corporation. Tilt detector with pyramidal surface. 4,450,353, Cl. 250-231.00R.
SKF Industrial Trading & Development Company B.V.: *See—*
Kapaan, Hendrikus J., 4,449,957, Cl. 474-14.000.
SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; and Hans, Rudiger, 4,449,841, Cl. 403-24.000.
Olschewski, Armin; Laszlofalvi, Zoltan; and Kunkel, Heinrich, 4,449,421, Cl. 74-516.000.
Slaugh, Lynn H.: *See—*
Lewis, Robert M.; and Slaugh, Lynn H., 4,450,099, Cl. 502-232.000.
Smid, Robert W.: *See—*
Steenama, Peter D.; Weinberg, Murray; Smid, Robert W.; and Finley, Thomas E., 4,450,554, Cl. 370-4.000.
Smith, Harry D., Jr.; and Robbins, Carl A., to Halliburton Company. Gain stabilized natural gamma ray detection of casing thickness in a borehole. 4,450,354, Cl. 250-256.000.
Smith, James R., to Curtis Screw Company, Inc. Cutoff device for automatic screw machine. 4,449,432, Cl. 82-3.000.
Smith Kline & French Laboratories Limited: *See—*
White, George R., 4,450,161, Cl. 424-251.000.
Smith, Robert J.: *See—*
Bussiere, Ronald L.; and Smith, Robert J., 4,450,139, Cl. 422-186.300.
Smith, Robert L.: *See—*
Hoffman, William F.; Smith, Robert L.; and Willard, Alvin K., 4,450,171, Cl. 424-279.000.
Smith, Somers H., III, to Black & Decker Inc. Fastener tool. 4,449,660, Cl. 227-8.000.
Smiths Industries Public Limited Company: *See—*
Coates, Terence J., 4,449,414, Cl. 73-861.370.
Smolinski, Ronald E., to Ecton Corp. Rotary vane machine. 4,449,899, Cl. 418-255.000.
Snedker, Robert, to Seagram Distillers Limited. Anti-tampering devices for bottles. 4,449,637, Cl. 215-21.000.
Snellman, Donald L.; and Pearson, Bernard A., to Snellman, Donald L. Drive system for a collator. 4,449,706, Cl. 271-290.000.

Snow, Robert A.: *See—*
Klein, Gerald W.; Snow, Robert A.; and Sutton, Richard C., 4,450,224, Cl. 430-213.000.
S.A. Martin: *See—*
Barny, Jean-Jacques; and Capdeboscq, Bernard, 4,449,450, Cl. 101-232.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Philippossian, Georges, 4,450,163, Cl. 424-253.000.
Societe de Pariset du Rhone S.A.: *See—*
Disclaire, Jacques; and Mignotte, Claude, 4,449,288, Cl. 29-596.000.
Societe d'Utilisation Scientifique et Industrielle du Froid Usifroid: *See—*
Baron, Michel; and Larrat, Philippe, 4,449,305, Cl. 34-92.000.
Societe Francaise d'Electrometallurgie Sofrem: *See—*
Herold, Robert; and Dubrous, Francis, 4,450,003, Cl. 75-10.00R.
Societe les Piles Wonder: *See—*
Vignaud, Rene, 4,450,211, Cl. 429-27.000.
Soderberg, Roy E., to Crosby Valve & Gage Company. Blowdown valve. 4,449,544, Cl. 137-15.000.
Sofranko, John A.; and Leonard, John J., to Atlantic Richfield Company. Preparation of α-hydroxyisobutyric acid using a thallic halide catalyst. 4,450,293, Cl. 562-579.000.
Soler Bruguera, Raimon, to Bendiberica S.A. System for adjusting the position of a steering wheel on a vehicle. 4,449,419, Cl. 74-493.000.
Solid State Systems, Corporation: *See—*
Bussiere, Ronald L.; and Smith, Robert J., 4,450,139, Cl. 422-186.300.
Solimeno, Duane; Brown, Sammy K.; Koeppen, Peter L.; and Rogers, Gerald, to Texas Instruments Incorporated. Multiprocessor with dedicated display. 4,450,534, Cl. 364-900.000.
Solvay & Cie: *See—*
Voituron, Georges; and Pleska, Jean-Pierre, 4,450,125, Cl. 264-13.000.
Sone, Shigeru; Ikuta, Yasuhiro; Komiya, Kazuaki; Kihira, Kazuhide; and Mizuno, Nobutaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air by-pass system in an internal combustion engine with a supercharger. 4,449,371, Cl. 60-611.000.
Sone, Yoshiaki: *See—*
Ishikawa, Kiyotsugu; Sone, Yoshiaki; Hashimoto, Susumu; Omae, Masanori; and Kunii, Takao, 4,450,475, Cl. 358-44.000.
Sony Corporation: *See—*
Kikuchi, Masahiro; Utena, Hisashi; and Takei, Shinzo, 4,450,379, Cl. 313-477.0HC.
Kobayashi, Katsumi, 4,450,439, Cl. 340-703.000.
Ohta, Shuichi; and Kumagai, Atsuhiro, 4,449,677, Cl. 242-199.000.
Soos, Rudolf; Nemes, Jozsef; Vidra, Laszlo; Szelestei, Miklos; Kovacs, Gabor; and Szekeley, Istvan, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyar Rt. Process for the preparation of unsaturated geminal dihalogen compounds. 4,450,309, Cl. 570-217.000.
Soot, Olaf; and McPhee, Alexander H. Method and apparatus for handling nuclear fuel elements. 4,450,134, Cl. 376-262.000.
Sorba, Antoine: *See—*
Thirion, Andre; Sorba, Antoine; Dany, Jean-Claude; Pacaud, Andre; and Attal, Gerard, 4,449,385, Cl. 70-277.000.
Sorelle, Roland R. Flare ignition system. 4,450,499, Cl. 361-253.000.
Sorensen, Richard L. Firearm support. 4,449,314, Cl. 42-94.000.
Soteland, Nicolai: *See—*
Fritzvold, Bjorn H.; and Soteland, Nicolai, 4,450,044, Cl. 162-65.000.
Southard, Benny S. Tree step. 4,449,612, Cl. 182-92.000.
Southern Research Institute: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,450,160, Cl. 424-250.000.
Space Structures International Corp.: *See—*
Wendel, Wendel R., 4,449,843, Cl. 403-173.000.
Spahr, Richard F., to Selas Corporation of America. Apparatus for regulating furnace combustion. 4,449,918, Cl. 431-76.000.
Spar Aerospace Limited: *See—*
Hinds, Charles M., 4,449,684, Cl. 244-160.000.
Sparks, Ronald L., to Allied Corporation. Method for obtaining pressurized core samples from underpressurized reservoirs. 4,449,594, Cl. 175-59.000.
Spears, Lonnie K.: *See—*
Betron, Frank A.; Davis, James W.; Kockler, Barry C.; and Spears, Lonnie K., 4,449,811, Cl. 355-3.0SH.
Specht, Glenn E., to Hoover Company, The. Hose coupler locking arrangement. 4,449,737, Cl. 285-7.000.
Spehrley, C. W., Jr., to Xerox Corporation. Stapling apparatus. 4,449,661, Cl. 227-155.000.
Spence, John R., to Rockwell International Corporation. AC Coupled chopper stabilized differential comparator. 4,450,368, Cl. 307-362.000.
Spencer, Tim: *See—*
Dear, Buck; and Spencer, Tim, 4,449,481, Cl. 119-96.000.
Sperry Corporation: *See—*
Denaro, Alfred; and Rand, George, 4,450,544, Cl. 367-176.000.
Kritz, Jacob A., 4,450,542, Cl. 367-150.000.
Mittal, Faquir C.; and Mathias, Joseph S., 4,450,505, Cl. 361-386.000.
Spire Corp.: *See—*
Little, Roger G., 4,450,033, Cl. 156-380.800.
Sprague Electric Company: *See—*
Gontowski, Walter S., Jr., 4,450,415, Cl. 331-111.000.
Sprague, Robert A.: *See—*
Turner, William D.; and Sprague, Robert A., 4,450,459, Cl. 346-160.000.
Spranger, Douglas M.: *See—*
Burbo, James H.; Hartman, Louis P.; Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 4,449,787, Cl. 350-538.000.
Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Organoleptic compositions with substituted tricyclodecane compounds. 4,450,101, Cl. 252-522.00R.
Spurr, Robert N., to Honeywell Inc. Automatic calibration system for signal amplifier circuits. 4,450,411, Cl. 330-2.000.
Sramek, Bohumir, to BoMed Medical Mfg. Ltd. Noninvasive continuous cardiac output monitor. 4,450,527, Cl. 364-415.000.
SRI International: *See—*
Murray, Edward R.; van der Laan, Jan E.; Rosengreen, Arne; and Byer, Robert L., 4,450,356, Cl. 250-339.000.
Weaver, Charles S., 4,449,536, Cl. 128-696.000.
SS Pharmaceutical Co., Ltd.: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,450,109, Cl. 260-243.300.
Stabler, Gerhard; and Schermutzki, Konrad, to Santrade Ltd. Double band press. 4,449,448, Cl. 100-153.000.
Stacey, David W., deceased: *See—*
Wellhoefer, Felicitas; Stacey, David W., deceased; and Stacey, Lesley A., legal representative, 4,450,471, Cl. 357-80.000.
Stacey, Lesley A., legal representative: *See—*
Wellhoefer, Felicitas; Stacey, David W., deceased; and Stacey, Lesley A., legal representative, 4,450,471, Cl. 357-80.000.
Staebler, Raymond. Mat assembly. 4,450,193, Cl. 428-71.000.
Staffan, Hugh J. Diazo copier. 4,449,815, Cl. 355-106.000.
Staffer, Julius; Walther, Karl-Heinz; and Jahn, Hans-Georg, to Heidelberger Druckmaschinen. Device for drying printed sheets on offset printing presses. 4,449,453, Cl. 101-416.00A.
Stafford, Gery R., to Celanese Corporation. Electrogenerative partial oxidation of organic compounds. 4,450,055, Cl. 204-78.000.
Stahel, Nancy G., to Land O'Lakes, Inc. Method of treating soybean material. 4,450,176, Cl. 426-2.000.
Stahl, Howard D.; and Yuan, Raymond C., to General Foods Corporation. Process for modifying a dairy media for use as a foaming agent. 4,450,182, Cl. 426-565.000.
Stamicarbon B.V.: *See—*
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., 4,450,098, Cl. 502-107.000.
Weterings, Cornelis A.M.; and Janssen, Johannes A., 4,450,142, Cl. 423-8.000.
Stamm, Russell D.; and Wullschleger, Manfred J., to General Instrument Corporation. Keyswitch design. 4,450,332, Cl. 200-340.000.
Standard Oil Company, The: *See—*
Eskamani, Abolghassem; Dernar, Helen D.; and Bartoszek-Loza, Rosemary, 4,450,059, Cl. 204-158.00R.
Fox, Joseph R.; Curatolo, Benedict S.; and Pesa, Frederick A., 4,450,310, Cl. 585-400.000.
Isley, Ralph E.; Prem, Dorothy C.; and Duke, June T., 4,450,254, Cl. 524-399.000.
Jageler, Alfred H.; Bruce, Gary D.; and Mount, Houston B., II, 4,449,593, Cl. 175-58.000.
Standard Oil Company (Indiana): *See—*
Bright, Gary R., 4,450,539, Cl. 367-35.000.
Stanley Works, The: *See—*
Barrieau, Paul B., 4,449,629, Cl. 206-45.190.
Drechsler, Mark A.; and Hutchins, Walter J., 4,449,302, Cl. 33-138.000.
Stauffer Chemical Company: *See—*
Klepeis, John E., 4,450,145, Cl. 423-242.000.
Klepeis, John E., 4,450,146, Cl. 423-304.000.
Mink, Robert I., 4,450,242, Cl. 502-105.000.
Steensma, Peter D.; Weinberg, Murray; Smid, Robert W.; and Finley, Thomas E., to International Telephone and Telegraph Corporation. Asynchronous integrated voice and data communication system. 4,450,554, Cl. 370-4.000.
Steinberg, Marvin P.; and Lioutas, Theodore S., to Steinberg, Marvin P. Process for manufacturing dried meat emulsions. 4,450,183, Cl. 426-646.000.
Steinbrenner, Ulrich: *See—*
Glockler, Otto; Gunther, Dieter; Horbelt, Michael; and Steinbrenner, Ulrich, 4,449,508, Cl. 123-492.000.
Steinecke, Rudolf: *See—*
Strifler, Paul; Geissler, Heinrich; Ludtke, Dieter; Maurath, Rudolf; and Steinecke, Rudolf, 4,449,726, Cl. 280-81.00A.
Steinsberger, Karl; Maier, Albert; and Herrmann, Walter, to AGFA-Gevaert Aktiengesellschaft. Apparatus for threading holes. 4,449,868, Cl. 408-138.000.
Sterling Drug Inc.: *See—*
Morgan, Barry A., 4,450,155, Cl. 424-177.000.
Stern, Michael J., to Atlantic Richfield Company. Laminator for large workpieces. 4,450,034, Cl. 156-382.000.
Sterner Lighting Systems Incorporated: *See—*
Guggemos, Arthur R., 4,450,513, Cl. 362-299.000.
Sterzer, Fred, to RCA Corporation. Pickup circuit for video disc including dual-gate FET with injected RF. 4,450,550, Cl. 369-126.000.
Stewart, Robert E.; Buzynski, John E.; and Giggi, Robert, to Digital Equipment Corporation. Interface for serial data communications link. 4,450,572, Cl. 375-87.000.
Stewart, Roger G.: *See—*
Wacyk, Ihor T.; and Stewart, Roger G., 4,450,562, Cl. 371-51.000.

Stichel, Willi: *See—*
Sauer, Heinz; Stichel, Willi; and Wachter, Gerhard, 4,449,429, Cl. 81-9.300.
Still, Michael: *See—*
Baum, Walter; Still, Michael; and Becker, Erich, 4,449,576, Cl. 165-104.330.
Stobbe, Richard E.: *See—*
Lohneis, Earl R.; and Stobbe, Richard E., 4,449,866, Cl. 408-9.000.
Stockburger, Hermann; and Winderlich, Hans-Georg. Method and device for characterizing and identifying falsification proof data boards. 4,450,348, Cl. 235-380.000.
Stoll, Kurt. Muffler for pneumatic apparatus. 4,449,609, Cl. 181-230.000.
Stone, John B.; and Floyd, Frank M., to Exxon Research and Engineering Co. Hydrothermal pretreatment to prevent scale during liquefaction of certain solid carbonaceous materials. 4,450,066, Cl. 208-8.0LE.
Stoneleigh Trust, The: *See—*
Massa, Donald P., 4,450,436, Cl. 340-531.000.
Storz, Karl. Dilator to facilitate endoscope insertion into the body. 4,449,532, Cl. 128-341.000.
Stotz, Erich: *See—*
Langwieder, Rolf; Rebmann, Rolf; Stotz, Erich; Wierschem, Franz-Rudolf; and Trick, Fred, 4,449,603, Cl. 180-232.000.
Stow Davis Furniture Company: *See—*
Gzym, Larry P.; Ritzema, Lloyd G.; and Haadsma, David K., Jr., 4,449,337, Cl. 52-126.400.
Strain, David H., to Beckman Instruments, Inc. Shell type centrifuge rotor having controlled windage. 4,449,965, Cl. 494-16.000.
Strandli, Kaare R.: *See—*
Foss, Morten; and Strandli, Kaare R., 4,449,456, Cl. 102-240.000.
Stratton, David G. Valley strip for roof structure. 4,449,333, Cl. 52-13.000.
Streifer, William: *See—*
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,450,567, Cl. 372-50.000.
Streit, Werner; Lorenz, Klaus; and Leppert, Norbert, to BASF Aktiengesellschaft. Agent for dissolving insoluble iron(III) compounds in highly alkaline textile treatment liquors. 4,450,083, Cl. 252-8.600.
Strifler, Paul; Geissler, Heinrich; Ludtke, Dieter; Maurath, Rudolf; and Steinecke, Rudolf, to Daimler-Benz Aktiengesellschaft. Control for follow-up steering axles. 4,449,726, Cl. 280-81.00A.
Strobel, Russell A.; Rihani, Jawdat; and Lunquist, Richard E., to Motorola, Inc. Multi-channel transceiver using a single high-stability element. 4,450,583, Cl. 455-86.000.
Strohmeyer, Charles, Jr., to Electrodyne Research Corporation. Unfired drying and sorting apparatus for preparation of solid fuel as a feedstock for a combustor. 4,449,483, Cl. 122-4.00D.
Stubblefield, Jerry D., to Pensa, Inc. Basketball shoe sole. 4,449,307, Cl. 36-32.00R.
Stubbs, Michael E.: *See—*
Adair, Noel J.; Carlisle, Robert W.; Stubbs, Michael E.; and Rooney, John J., 4,450,245, Cl. 502-211.000.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, to Ciba-Geigy Corporation. Sulfur-containing oxime compounds, processes for producing them, and their use for protecting cultivated plants. 4,449,999, Cl. 71-73.000.
Sturm, Ruger & Company, Inc.: *See—*
Ruger, William B.; and Melcher, Roy L., 4,449,312, Cl. 42-66.000.
Su, Tsung-Tsan; and Cheng, Yu-Chen, to Industrial Technology Research Institute. Preparation of 2-hydroxyquinoxaline. 4,450,271, Cl. 544-354.000.
Suga, Katsuyuki; Kitada, Toyofumi; Naganawa, Yutaka; and Nakagawa, Hirotaka, to Nippon Kokan Kabushiki Kaisha. Fused flux for inclined submerged arc welding. 4,450,018, Cl. 148-26.000.
Suga, Masaaki; Morimoto, Yoshiro; and Hamada, Hideo, to Nissan Motor Co., Ltd. Lock-up control system for lock-up type automatic transmission. 4,449,618, Cl. 192-3.310.
Sugihara, Mikio: *See—*
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,450,114, Cl. 260-458.00C.
Sugimoto, Hitoshi: *See—*
Ishii, Masami; Sugimoto, Hitoshi; Takeda, Shinji; and Shibata, Susumu, 4,450,038, Cl. 156-497.000.
Sugishita, Nobuyuki: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,450,494, Cl. 360-125.000.
Sugita, Hiroshi: *See—*
Shimba, Satoru; Ito, Kenji; Tsuda, Yasuo; and Sugita, Hiroshi, 4,450,228, Cl. 430-505.000.
Sugitani, Hiroshi; Ozawa, Masakazu; Matsuda, Hiroto; Ikeda, Masami; and Matsumoto, Haruyuki, to Canon Kabushiki Kaisha. Ink jet head. 4,450,455, Cl. 346-140.0PQ.
Suhr, Peter J.; Brooks, Robert A.; and Banach, Terrance R., to Magnetic Analysis Corporation. Magnetic and ultrasonic objects testing apparatus. 4,449,411, Cl. 73-643.000.
Suk, Albert, to CCL Industries Inc. Propellant-active carrier system for water-based paints. 4,450,253, Cl. 524-378.000.
Sukup, Eugene G. Biomass heat exchanger furnace. 4,449,510, Cl. 126-99.00A.
Sullinger, JoAnn J. Protective garment for a bowler. 4,449,252, Cl. 2-46.000.
Sullivan, Edward F.; Sullivan, Patrick; and Schultz, Walter C. Electrically heated pipe thawing apparatus. 4,449,553, Cl. 138-35.000.
Sullivan, Patrick: *See—*
Egly, Robert A.; and Sullivan, Patrick, 4,449,628, Cl. 206-45.180.
Sullivan, Edward F.; Sullivan, Patrick; and Schultz, Walter C., 4,449,553, Cl. 138-35.000.
Sumitomo Chemical Company, Limited: *See—*
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,450,114, Cl. 260-458.00C.
Sumitomo Kinzoku Kogyo Kabushiki Kaisha: *See—*
Matsuo, Tohru; and Aoki, Takeo, 4,450,004, Cl. 75-53.000.
Sundermeier, Gunter, to Paul Hettich & Co. Spring biased furniture hinge having a brake mechanism. 4,449,269, Cl. 16-50.000.
Sundstrand Corporation: *See—*
Ebbing, Steven J.; and Hermans, Robert J., 4,449,442, Cl. 91-44.000.
Sjolund, John R., 4,450,353, Cl. 250-231.00R.
Sundstrom, Karl E. Current control circuit with particular application in bipolar constant current control of step motors. 4,450,517, Cl. 363-124.000.
Suntio, Ossi: *See—*
Makela, Olavi; Suntio, Ossi; and Tuomaala, Jorma, 4,449,557, Cl. 144-357.000.
Suplicki, John C. Air flotation cell. 4,450,072, Cl. 209-170.000.
Surgikos, Inc.: *See—*
Brasfiel, Bernard M., 4,449,911, Cl. 425-374.000.
Surot, Patrick, to Ampafrance S.A. Reversible foldable push-chair for children. 4,449,732, Cl. 280-644.000.
Sutherland, John W.: *See—*
Sanford, Karl J.; Sutherland, John W.; and Eikenberry, Jon N., 4,450,232, Cl. 435-15.000.
Sutton, David L.: *See—*
Burkhalter, John F.; Childs, Jerry D.; and Sutton, David L., 4,450,010, Cl. 106-87.000.
Sutton, Richard C.: *See—*
Klein, Gerald W.; Snow, Robert A.; and Sutton, Richard C., 4,450,224, Cl. 430-213.000.
Suzi Stone Enterprises, Inc.: *See—*
Mariol, James F., 4,449,474, Cl. 116-2.000.
Suzuki, Hikoshiro: *See—*
Mithuhira, Kuniaki; Kamata, Keiji; and Suzuki, Hikoshiro, 4,449,664, Cl. 236-49.000.
Suzuki Iron Works Co., Ltd.: *See—*
Suzuki, Masakazu, 4,449,870, Cl. 409-134.000.
Suzuki, Katsuhisa: *See—*
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,449,496, Cl. 123-198.00F.
Suzuki, Kunihiko, to Nissan Motor Company, Limited. Four-wheel drive system for automotive vehicle. 4,449,604, Cl. 180-233.000.
Suzuki, Masakazu, to Suzuki Iron Works Co., Ltd. T-Slot cover. 4,449,870, Cl. 409-134.000.
Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Magnetic angle adjusting arrangement for mirror of motor vehicle. 4,449,788, Cl. 350-289.000.
Suzuki Motor Company Limited: *See—*
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,449,496, Cl. 123-198.00F.
Svenska Rotor Maskiner Aktiebolag: *See—*
Pettersson, Birger; and Karlsson, Kurt, 4,449,573, Cl. 165-10.000.
Swinehart, Carl F., to Harshaw/Filtrol Partnership. Light pipe, laser window and charge stock therefor. 4,449,780, Cl. 350-1.100.
Swiss Aluminium Ltd.: *See—*
Merz, Walter; and Friedli, Hans, 4,450,053, Cl. 204-67.000.
Swoboda, Gary L.: *See—*
McDonough, Kevin C.; Mayn, John W.; Swoboda, Gary L.; and Bellay, Jeffrey D., 4,450,521, Cl. 364-200.000.
SWS Silicones Corporation: *See—*
McAfee, Richard C.; Adkins, James; and Miskowski, Richard L., 4,450,283, Cl. 556-479.000.
Synergetics, Inc.: *See—*
Clark, Ronald G., 4,449,746, Cl. 296-1.00R.
Szachowicz, Edward H.; and Walsh, John, to Implant Technologies, Inc. Talking tracheostomy tube. 4,449,523, Cl. 128-200.26O.
Szarka, Frank: *See—*
Lightstone, Alexander W.; Eastwood, H. Keith; and Szarka, Frank, 4,449,781, Cl. 350-96.150.
Szekeley, Istvan: *See—*
Soos, Rudolf; Nemes, Jozsef; Vidra, Laszlo; Szelestei, Miklos; Kovacs, Gabor; and Szekeley, Istvan, 4,450,309, Cl. 570-217.000.
Szelestei, Miklos: *See—*
Soos, Rudolf; Nemes, Jozsef; Vidra, Laszlo; Szelestei, Miklos; Kovacs, Gabor; and Szekeley, Istvan, 4,450,309, Cl. 570-217.000.
Tabak, Samuel A.: *See—*
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,450,067, Cl. 208-86.000.
Tabereaux, Alton T., to Reynolds Metals Company. Alumina reduction cell. 4,450,054, Cl. 204-67.000.
Tabereaux, Alton T.: *See—*
Johnston, Thomas J.; Richards, Nolan E.; and Tabereaux, Alton T., 4,450,063, Cl. 204-400.000.
Tabet, Mansour: *See—*
Forestier, Alexandre; Pluquet, Alain A.; Rose, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., 4,449,607, Cl. 181-213.000.
Tachibana, Hideo: *See—*
Kohsaka, Yasuo; Nonaka, Yoshihiro; and Tachibana, Hideo, 4,449,816, Cl. 356-37.000.
Tadokoro, Eiichi; Fujiyama, Masaaki; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,450,199, Cl. 428-317.900.
Taflove, Allen: *See—*
Bridges, Jack E.; and Taflove, Allen, 4,449,585, Cl. 166-248.000.

Taglianetti, Philip C.; and Burkard, Andrew M., to PPG Industries, Inc. Fire containment arrangement for curtain wall construction. 4,449,341, Cl. 52-235.000.

Takabayashi, Katsuyuki: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; and Takabayashi, Katsuyuki, 4,450,105, Cl. 260-112.50R.

Takagi, Satoshi; Watanabe, Toshio; and Ito, Masao, to Clarion Co., Ltd. Operation lever mechanism for magnetic tape recording/reproducing apparatus. 4,450,491, Cl. 360-96.500.

Takahashi, Ken: *See—*
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; Takahashi, Ken; and Oowada, Siniti, 4,450,426, Cl. 338-21.000.

Takahata, Naomi: *See—*
Furuichi, Katsushi; and Takahata, Naomi, 4,449,812, Cl. 355-14.0SH.

Takai, Kazuki: *See—*
Okada, Hitoshi; Takai, Kazuki; and Yamaguchi, Katsumi, 4,450,492, Cl. 360-105.000.

Takamura, Masayuki; and Kurahashi, Kazuo, to Nippon Gakki Seizo Kabushiki Kaisha. Clad material. 4,450,210, Cl. 428-660.000.

Takano, Toshio: *See—*
Sakakiyama, Ryuzo; and Takano, Toshio, 4,449,617, Cl. 192-0.033.

Takase, Itaru: *See—*
Saito, Hisatoshi; Fujii, Shuzo; Takase, Itaru; Nakamura, Akihiko; and Hara, Yoshihiro, 4,449,861, Cl. 406-39.000.

Takashi, Nogami; and Masayuki, Mitsuhashi, to Shin-Etsu Polymer Co., Ltd. Electroconductive rubbery member and elastic connector therewith. 4,449,774, Cl. 339-59.00M.

Takasugi, Wasao: *See—*
Nakamura, Shigeru; Maeda, Takeshi; Kaku, Toshimitsu; Tsunoda, Yoshito; Takasugi, Wasao; and Kaneda, Tokuya, 4,450,547, Cl. 369-45.000.

Takeda, Shinji: *See—*
Ishii, Masami; Sugimoto, Hitoshi; Takeda, Shinji; and Shibata, Susumu, 4,450,038, Cl. 156-497.000.

Takei, Shinzo: *See—*
Kikuchi, Masahiro; Utena, Hisashi; and Takei, Shinzo, 4,450,379, Cl. 313-477.0HC.

Takei, Yoshiaki; Fujimaki, Yoshihide; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Photoconductive receptor for an electrophotography. 4,450,218, Cl. 430-59.000.

Takemae, Yoshihiro; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Ohira, Tsuyoshi, to Fujitsu Limited. Bias-voltage generator. 4,450,515, Cl. 363-60.000.

Takeuchi, Koji: *See—*
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Ishiguro, Tsuneo, 4,450,267, Cl. 528-99.000.

Takeuchi, Seiji, to Don Fell Limited; and Lawrence Fell Limited. Bag system for transportation of bulk liquids. 4,449,279, Cl. 29-401.100.

Takeuchi, Shigeru, to Kurimoto Iron Works, Ltd. Glass fiber-reinforced cement plates. 4,450,128, Cl. 264-70.000.

Takeuchi, Yasuhisa: *See—*
Kishi, Norimasa; Noso, Kazunori; and Takeuchi, Yasuhisa, 4,450,545, Cl. 367-198.000.

Taki, Yoichiro: *See—*
Ona, Isao; Harashima, Asao; Ozaki, Masaru; and Taki, Yoichiro, 4,450,152, Cl. 424-70.000.

Takigawa, Hiroyoshi: *See—*
Tansei, Hikaru; and Takigawa, Hiroyoshi, 4,449,560, Cl. 152-209.00R.

Takikawa, Osamu; Katsura, Masaki; Tanuma, Chiaki; and Yokoyama, Katsunori, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas combustion apparatus capable of detecting environmental oxygen deficiency. 4,449,919, Cl. 431-76.000.

Takizawa, Hiroshi; Oiji, Yoshimasa; and Kubo, Kazuhiro, to Kyowa Hakko Kogyo Co., Ltd. Amino-alcohol derivatives. 4,450,115, Cl. 260-465.00E.

Tallant, James C., II, to RCA Corporation. Delayed reaction automatic kinescope biasing system. 4,450,476, Cl. 358-74.000.

Tamburrino, Robert M.: *See—*
Anderson, David L.; Hitchcock, Robert F.; and Tamburrino, Robert M., 4,450,081, Cl. 210-445.000.

Tamura, Takashi, to Konishiroku Photo Industry Co., Ltd. Drive unit mounting mechanism for reproducing apparatus. 4,449,809, Cl. 355-3.0DR.

Tamura, Teizo: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizo; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,450,494, Cl. 360-125.000.

Tan, P. Lu-John. Separable combination boiler. 4,449,485, Cl. 122-209.00R.

Tanaka, Atsuo: *See—*
Donomoto, Tadashi; Tanaka, Atsuo; Tatematsu, Yoshiaki; and Akai, Tsugio, 4,450,207, Cl. 428-614.000.

Tanaka, Hideo: *See—*
Ishido, Yoshinobu; and Tanaka, Hideo, 4,449,713, Cl. 277-1.000.

Tanaka, Kazuyuki, to Matsushita Electric Industrial Co., Ltd. Display processor for superimposed-picture display system. 4,450,442, Cl. 340-814.000.

Tanaka, Masaru, to Sanyo Electric Co., Ltd. Induction motor. 4,450,399, Cl. 318-814.000.

Tanaka, Tadayoshi: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.

Tanaka, Toshihide: *See—*
Saka, Hiroshi; and Tanaka, Toshihide, 4,450,584, Cl. 455-325.000.

Tanaka, Yoshio: *See—*
Watanabe, Tadaaki; and Tanaka, Yoshio, 4,449,955, Cl. 464-78.000.

Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, to Agency of Industrial Science and Technology; and Tokyo Shibaura Denki Kabushiki Kaisha. Solar heat plant. 4,449,517, Cl. 126-435.000.

Tanida, Seiichi: *See—*
Hasegawa, Toru; Izawa, Motowo; and Tanida, Seiichi, 4,450,234, Cl. 435-253.000.

Tanimoto, Akira: *See—*
Ikemoto, Yutaka; and Tanimoto, Akira, 4,449,829, Cl. 368-63.000.

Tanouchi, Masatoshi; and Asahina, Yoshiyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for obtaining uniform stream in adsorption column. 4,450,082, Cl. 210-660.000.

Tansei, Hikaru; and Takigawa, Hiroyoshi, to Bridgestone Tire Company Limited. Heavy duty pneumatic tire. 4,449,560, Cl. 152-209.00R.

Tanuma, Chiaki: *See—*
Takikawa, Osamu; Katsura, Masaki; Tanuma, Chiaki; and Yokoyama, Katsunori, 4,449,919, Cl. 431-76.000.

Tatematsu, Yoshiaki: *See—*
Donomoto, Tadashi; Tanaka, Atsuo; Tatematsu, Yoshiaki; and Akai, Tsugio, 4,450,207, Cl. 428-614.000.

Tatsukawa, Osami: *See—*
Hotta, Kouichi; Yazawa, Yukichi; and Tatsukawa, Osami, 4,450,345, Cl. 219-491.000.

Tatusawa, Kunio: *See—*
Itami, Masaru; and Tatusawa, Kunio, 4,449,831, Cl. 368-165.000.

Tauber, Arthur; Finnegan, Robert D.; and Rothwarf, Frederick, to United States of America, Army. Method of operating a cold cathode-cold reservoir thyratron. 4,449,952, Cl. 445-55.000.

Tawada, Yoshihisa: *See—*
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,450,316, Cl. 136-256.000.

Tayebi, Amad, to United States Tennis Gut Association, Inc. Gut string for sports rackets. 4,449,353, Cl. 57-242.000.

Taylor, James C.; and Barber, Leonard B., Jr. Dental bite relator. 4,449,927, Cl. 433-38.000.

Taylor, Mary J.: *See—*
Childs, Jerry D.; Brothers, Lance E.; and Taylor, Mary J., 4,450,009, Cl. 106-76.000.

Tazawa, Hiroaki: *See—*
Nishizako, Shizutaka; and Tazawa, Hiroaki, 4,450,328, Cl. 200-144.00R.

Techne Electronics, Ltd.: *See—*
Ho, Eugene Y., 4,450,437, Cl. 340-540.000.

Tedford, Richard A., Jr., to Invacare Respiratory Corp. Method and apparatus for fractioning oxygen. 4,449,990, Cl. 55-26.000.

Teepak, Inc.: *See—*
Martinek, Thomas W., 4,450,131, Cl. 264-209.200.

Teijin Limited: *See—*
Masuho, Yasuhiko; and Hara, Takeshi, 4,450,154, Cl. 260-112.00R.
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Kawase, Shoji; and Sano, Makoto, 4,449,992, Cl. 55-158.000.

Teitscheid, Heinz-Horst: *See—*
Weyde, Edith; von Rintelen, Harald; Saleck, Wilhelm; and Teitscheid, Heinz-Horst, 4,450,225, Cl. 430-567.000.

Teksid, S.p.A.: *See—*
Pontini, Giovanni, 4,449,390, Cl. 72-405.000.

Tektronix, Inc.: *See—*
Lockwood, Larry R., 4,450,422, Cl. 333-202.000.

Teleflex Incorporated: *See—*
Rump, Martin, 4,449,470, Cl. 114-150.000.

Telefonaktiebolaget L M Ericsson: *See—*
Berg, Bengt O., 4,450,412, Cl. 330-255.000.

Telefunken Electronic GmbH: *See—*
Bohme, Rolf; Rinderle, Heinz; and Sieber, Jurgen, 4,449,404, Cl. 73-295.000.

Telfer, James D., to Coles Cranes Limited. Mobile cranes or aerial lift platforms. 4,449,600, Cl. 180-132.000.

Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., to Southern Research Institute. 1,2-Dihydropyrido[3,4-b]-pyrazines and method and intermediates for preparing same. 4,450,160, Cl. 424-250.000.

Tennessee Valley Authority: *See—*
Ison, Billy G.; and Hudson, Robert G., 4,449,480, Cl. 119-4.000.

Terada, Sadatugu; Haneda, Satoshi; Tomono, Makoto; and Matsuo, Syunji, to Konishiroku Photo Industry Co., Ltd. Encapsulated lyophilic magnetic particle and resin toner. 4,450,221, Cl. 430-106.600.

Teradyne, Inc.: *See—*
Conner, George W., 4,450,560, Cl. 371-25.000.

Terakawa, Sumio; and Horii, Kenju, to Matsushita Electronics Corporation. Solid states image sensor array having circuit for suppressing image blooming and smear. 4,450,484, Cl. 358-213.000.

Teranishi, Katsuya: *See—*
Saito, Chuichi; Teranishi, Katsuya; Baba, Katsuyoshi; and Osumi, Yoshihiro, 4,449,623, Cl. 198-335.000.

Terasawa, Hidenori; and Hayashi, Kiyoshi, to Nippon Kogaku K.K. Three-group zoom lens. 4,449,791, Cl. 350-427.000.

Terhorst, Gunter; Plester, Karl-Heinz; Rosenberg, Harry; and Eggenstein, Friedrich, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installation. 4,449,859, Cl. 405-291.000.

Tessier, Jean: *See—*
Nezot, Francois; Girault, Pierre; Tessier, Jean; and Martel, Jacques, 4,450,169, Cl. 424-270.000.

Texaco Inc.: *See—*
Moss, Philip H.; and Nieh, Edward C. Y., 4,450,307, Cl. 568-665.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Brader, Walter H., Jr., 4,450,290, Cl. 560-246.000.

Texas Instruments Incorporated: *See—*
Guttag, Karl M.; and Laws, Gerald E., 4,450,519, Cl. 364-200.000.
McDonough, Kevin C.; Mayn, John W.; Swoboda, Gary L.; and Bellay, Jeffrey D., 4,450,521, Cl. 364-200.000.
Purdes, Andrew J., 4,450,042, Cl. 156-643.000.
Solimeno, Duane; Brown, Sammy K.; Koeppen, Peter L.; and Rogers, Gerald, 4,450,534, Cl. 364-900.000.

Teyssеyre, Pierre M.: *See—*
Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teyssеyre, Pierre M., 4,449,607, Cl. 181-213.000.

Tezuka, Etsuhiro; Kaji, Koichiro; and Ichinose, Toru, to Yamaha Hatsudoki Kabushiki Kaisha. Internal combustion engine. 4,449,505, Cl. 123-447.000.

Theeuwes, Felix: *See—*
Cortese, Richard; Barclay, Brian; and Theeuwes, Felix, 4,449,983, Cl. 604-892.000.

Theimer, Siegfried. Exposure device. 4,449,814, Cl. 355-85.000.

Theze, Claude P.: *See—*
Salmon, Jean P.; and Theze, Claude P., 4,449,685, Cl. 246-8.000.

Thirion, Andre; Sorba, Antoine; Dany, Jean-Claude; Pacaud, Andre; and Attal, Gerard, to Antivols Simplex. Electro-mechanical anti-theft device for automobile vehicles. 4,449,385, Cl. 70-277.000.

Thomas, Alfred W.: *See—*
Rath, Heinrich B.; and Thomas, Alfred W., 4,449,757, Cl. 303-6.00C.

Thomas, Terence N.: *See—*
Boleda, Alberto; and Thomas, Terence N., 4,450,556, Cl. 370-58.000.

Thompson, Michael N.: *See—*
Marien, Hendricus C. J.; and Thompson, Michael N., 4,450,355, Cl. 250-310.000.

Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Processes for inhibiting corrosion using compounds containing sulfur and amino groups. 4,450,137, Cl. 422-12.000.

Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Processes for inhibiting corrosion using compounds containing sulfur and amino groups. 4,450,138, Cl. 422-12.000.

Thomson-CSF: *See—*
Diamand, Felix, 4,450,372, Cl. 307-511.000.
Huignard, Jean-Pierre; and Herriau, Jean-Pierre, 4,449,785, Cl. 350-3.610.
Nuyen, Trong L., 4,450,462, Cl. 357-23.000.

Thoni, Werner, to Balzers Aktiengesellschaft. Electrochromic layer system. 4,449,790, Cl. 350-357.000.

Thorn Emi plc: *See—*
Henry, Ivor C., 4,450,509, Cl. 362-216.000.

Thornton, Richard D., to Massachusetts Institute of Technology. Electrically controlled synchronous machine. 4,450,396, Cl. 318-721.000.

Thorpe, Kenneth J., to Shenkman, Mitchell B. Insulated chest. 4,449,378, Cl. 62-371.000.

Tiemann, Jerome J., to General Electric Company. Low loss wide band front end for NMR receiver. 4,450,408, Cl. 324-318.000.

Tietjen, Byron W., to General Electric Company. Bias compensated optical grating hydrophone. 4,450,541, Cl. 367-149.000.

Tiglhman Wheelabrator Limited: *See—*
MacMillan, William R., 4,449,331, Cl. 51-425.000.

Tloczynski, James J.; Ahola, Clifford J.; Rosenstein, Nicholas D.; and Rine, James C., to Goodyear Tire & Rubber Company, The. Comminuting apparatus with improved feed system. 4,449,670, Cl. 241-35.000.

Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., to Goodyear Tire & Rubber Company, The. Comminuting apparatus with improved impeller construction. 4,449,674, Cl. 241-245.000.

TMC Corporation: *See—*
Krob, Erwin; and Bauer, Helmut, 4,449,729, Cl. 280-605.000.
Oberleitner, Gerhard; and Nitschko, Theodor, 4,449,730, Cl. 280-625.000.

Toda, Minoru; and Osaka, Susumu, to RCA Corporation. Counterbalance system for sagging rotating element. 4,449,563, Cl. 160-184.000.

Toei Denki Kabushiki Kaisha: *See—*
Kawamura, Akira; and Ono, Tadahiro, 4,450,395, Cl. 318-700.000.

Toerner, Ludger; Garvens, Dieter; Hager, Gunter; and Rettinger, Anton, to Carl Schenck AG. Flexible sleeve type connecting structure. 4,449,742, Cl. 285-236.000.

Tokai Metals Company, Limited: *See—*
Hirata, Isao, 4,450,581, Cl. 383-42.000.

Tokico Ltd.: *See—*
Tsuge, Kazuo, 4,449,721, Cl. 277-221.000.

Tokiwa, Taisuke: *See—*
Kitamura, Takashi; Watanabe, Asao; Nakano, Takashi; Masaki, Katsumi; Hirayama, Kazuhiro; Sato, Yasushi; and Tokiwa, Taisuke, 4,450,453, Cl. 346-108.000.

Tokoro, Takehiko; Kashima, Shoichi; and Murata, Mineo, to Nihon Soil Engineering Co., Ltd.; Nihon Sogo-Bosui Co., Ltd.; and Yamaguchi Kikai Kogyo Co., Ltd. Grout injection method and apparatus. 4,449,856, Cl. 405-269.000.

Tokumaru, Hisashi: *See—*
Nakamura, Akiyoshi; and Tokumaru, Hisashi, 4,449,793, Cl. 350-458.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ando, Hideo; Nakagawa, Toshiharu; and Fujimori, Yoshinori, 4,450,452, Cl. 346-135.100.
Miyazaki, Yoshiro; Yasunaga, Toshio; and Sasaki, Tomiya, 4,449,579, Cl. 165-104.330.
Sakamoto, Moriyoshi; and Saito, Toshihiko, 4,449,484, Cl. 122-13.00R.
Sato, Hideki; and Asahina, Hiroshi, 4,450,577, Cl. 378-109.000.
Shibuya, Kunihiro; and Uchida, Kohachi, 4,449,705, Cl. 271-9.000.
Shirasaka, Hisatoshi, 4,450,538, Cl. 365-219.000.
Takikawa, Osamu; Katsura, Masaki; Tanuma, Chiaki; and Yokoyama, Katsunori, 4,449,919, Cl. 431-76.000.
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.
Yamada, Noboru, 4,449,836, Cl. 400-124.000.

Tolf, Carl O., Jr.: *See—*
Benlolo, Leon; and Tolf, Carl O., Jr., 4,449,588, Cl. 169-48.000.

Tomono, Makoto: *See—*
Haneda, Satoshi; Itoh, Takashi; Nakamura, Ken; and Tomono, Makoto, 4,450,220, Cl. 430-102.000.
Terada, Sadatugu; Haneda, Satoshi; Tomono, Makoto; and Matsuo, Syunji, 4,450,221, Cl. 430-106.600.

Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,450,237, Cl. 435-253.000.

Topre Corporation: *See—*
Mithuhira, Kuniaki; Kamata, Keiji; and Suzuki, Hikoshiro, 4,449,664, Cl. 236-49.000.

Toray Silicone Company, Ltd.: *See—*
Ona, Isao; Harashima, Asao; Ozaki, Masaru; and Taki, Yoichiro, 4,450,152, Cl. 424-70.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Kawamura, Akira; and Ono, Tadahiro, 4,450,395, Cl. 318-700.000.

Townmotor Corporation: *See—*
Dietrick, Earl T.; and Prayner, Timothy F., 4,450,341, Cl. 219-137.520.

Townsend, Marshall A.: *See—*
Hoff, Marcian E., Jr.; Townsend, Marshall A.; and Dreyer, Stephen F., 4,450,365, Cl. 307-262.000.

Toyo Aerosol Industry Co., Ltd.: *See—*
Shinozawa, Takahiro, 4,450,151, Cl. 424-46.000.

Toyo Kogyo Co., Ltd.: *See—*
Satou, Kazuo; and Yoritaka, Masashi, 4,450,019, Cl. 148-35.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Hasegawa, Toshifumi; and Kanii, Norikazu, 4,449,277, Cl. 29-33.00P.

Toyota Jidosha Kabushiki Kaisha: *See—*
Donomoto, Tadashi; Tanaka, Atsuo; Tatematsu, Yoshiaki; and Akai, Tsugio, 4,450,207, Cl. 428-614.000.
Moriguchi, Koichi; Iwamoto, Kenzi; Matushiro, Ryuichi; Kawai, Hisasi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,449,367, Cl. 60-602.000.
Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Ota, Yozo; and Morino, Toshiharu, 4,450,117, Cl. 261-39.00A.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Sone, Shigeru; Ikuta, Yasuhiro; Komiya, Kazuaki; Kihira, Kazuhide; and Mizuno, Nobutaka, 4,449,371, Cl. 60-611.000.
Yaegashi, Takehisa; Aoki, Keiji; and Hashikawa, Kenzo, 4,450,528, Cl. 364-431.050.
Yasumatsu, Jun; Mori, Mamoru; Nishiwaki, Toshihito; and Owada, Akira, 4,449,752, Cl. 297-341.000.

Transaction Security, Inc.: *See—*
Hastings, Otis H., 4,449,764, Cl. 312-236.000.

Transidyne General Corporation: *See—*
Sarrine, Robert J., 4,449,519, Cl. 128-4.000.

Trauter, Joachim: *See—*
Voswinckel, Gerhard; and Trauter, Joachim, 4,449,476, Cl. 118-674.000.

TRE Corporation: *See—*
Conn, Charles E., Jr., 4,450,338, Cl. 219-78.120.

Tremblay, J. Gerard. Panel assembly. 4,449,346, Cl. 52-509.000.

Tremmel, Robert A., to OMI International Corporation. Bright nickel-iron alloy electroplating bath and process. 4,450,051, Cl. 204-43.00T.

Trescol, Jean-Jacques: *See—*
Floreancig, Antoine; Siffert, Bernard; and Trescol, Jean-Jacques, 4,450,143, Cl. 423-10.000.

Trick, Fred: *See—*
Langwieder, Rolf; Rebmann, Rolf; Stotz, Erich; Wierschem, Franz-Rudolf; and Trick, Fred, 4,449,603, Cl. 180-232.000.

Trozzi, Norman K., to Foster Wheeler Energy Corporation. Adjustable particle classifier. 4,450,071, Cl. 209-144.000.

Trumper, Reinhard, to O & K Orenstein & Koppel AG. Sluing drive for excavator. 4,449,364, Cl. 60-403.000.

Trus-Us, Inc.: *See—*
Shacket, Sheldon; and Helfman, Robert, 4,449,334, Cl. 52-79.300.

TRW Inc.: *See—*
Basov, Emma; and Grois, Igor, 4,449,784, Cl. 350-96.210.
Blazek, William S.; and Piwonka, Thomas S., 4,449,567, Cl. 164-137.000.
Drutchas, Gilbert H., 4,449,506, Cl. 123-458.000.

Tschirn, Thomas N.: *See—*
Buckley, Michael E.; Tschirn, Thomas N.; McClure, Donald R.; and Wieland, Michael S., 4,449,458, Cl. 102-430.000.
Tsuchiyama, Tadashi; and Hidaka, Yoshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Lubricating device for internal combustion engine. 4,449,491, Cl. 123-90.340.
Tsuda, Hisanori: *See—*
Miyachi, Takeshi; Tsuda, Hisanori; Hara, Toshitami; and Kasugayama, Yukio, 4,450,457, Cl. 346-140.00R.
Tsuda, Yasuo: *See—*
Shimba, Satoru; Ito, Kenji; Tsuda, Yasuo; and Sugita, Hiroshi, 4,450,228, Cl. 430-505.000.
Tsuge, Kazuo, to Tokico Ltd. Split piston ring having stepped ends. 4,449,721, Cl. 277-221.000.
Tsuge, Norihisa: *See—*
Takemae, Yoshihiro; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Ohira, Tsuyoshi, 4,450,515, Cl. 363-60.000.
Tsuno, Katsushige, to Jeol Ltd. Electron lens equipped with three magnetic pole pieces. 4,450,357, Cl. 250-356.0ML.
Tsunoda, Yoshito: *See—*
Nakamura, Shigeru; Maeda, Takeshi; Kaku, Toshimitsu; Tsunoda, Yoshito; Takasugi, Wasao; and Kaneda, Tokuya, 4,450,547, Cl. 369-45.000.
Tuchida, Isamu. Roller for adjusting the width of a travelling web. 4,449,659, Cl. 226-190.000.
Tucker, Jeffrey C.; Edmundson, H. Dale; Wigley, David L.; and Vallo, Mark F. Energy (test) door. 4,449,393, Cl. 73-40.000.
Tuckerman, David B.; and Pease, Roger F. W., to Leland Stanford Junior University, The Board of Trustees of the. Method and means for improved heat removal in compact semiconductor integrated circuits and similar devices utilizing coolant chambers and microscopic channels. 4,450,472, Cl. 357-82.000.
Tuin, Hermanus N., to U.S. Philips Corporation. Apparatus for saturating a gas with the vapor of a liquid. 4,450,118, Cl. 261-147.000.
Tuomaala, Jorma: *See—*
Makela, Olavi; Suntio, Ossi; and Tuomaala, Jorma, 4,449,557, Cl. 144-357.000.
Turner, Jeffrey A. Computer desk. 4,449,762, Cl. 312-196.000.
Turner, Roger S. Optical projection viewing system. 4,449,799, Cl. 353-39.000.
Turner, William D.; and Sprague, Robert A., to Xerox Corporation. Differential encoding for fringe field responsive electro-optic line printers. 4,450,459, Cl. 346-160.000.
Tutherly, Herbert W., to United Technologies Corporation. Flow control device. 4,449,548, Cl. 137-468.000.
Tyler, Loren E., to Lor-Al Corporation. Apparatus for folding an outboard boom on a liquid spraying implement. 4,449,667, Cl. 239-167.000.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,449,374, Cl. 62-81.000.
U.S.D. Corp.: *See—*
Germe, Patrick P., 4,449,655, Cl. 224-153.000.
Ube Industries Limited: *See—*
Kamioka, Toshiharu; Nakayama, Isao; Honda, Takeo; Kobayashi, Takashi; Obata, Tokio; Fujii, Katsutoshi; Kojima, Mikio; and Akiyoshi, Yuji, 4,450,162, Cl. 424-251.000.
Uchida, Kohachi: *See—*
Shibuya, Kunihiro; and Uchida, Kohachi, 4,449,705, Cl. 271-9.000.
Ueda, Yoshiteru: *See—*
Hirata, Makizo; and Ueda, Yoshiteru, 4,449,608, Cl. 181-228.000.
Uemura, Akira: *See—*
Akita, Shinji; Hatanaka, Masayuki; and Uemura, Akira, 4,449,386, Cl. 72-100.000.
Ueno, Jiro: *See—*
Nakata, Koreaki; Ueno, Jiro; and Ogawa, Yasuhiro, 4,450,049, Cl. 204-35.00N.
Ueno, Yasuo. Constant-velocity universal joint. 4,449,956, Cl. 464-149.000.
Uetrecht, Dale M.: *See—*
Cotton, Robert B., Jr.; and Uetrecht, Dale M., 4,449,437, Cl. 84-1.010.
Ugon, Michel: *See—*
de Pommery, Bertrand J. C. H.; and Ugon, Michel, 4,450,535, Cl. 364-900.000.
Uhlig, Uwe: *See—*
Redeker, Werner; and Uhlig, Uwe, 4,449,988, Cl. 51-165.800.
Ullner, Klaus, to Buhler-Miag GmbH. Pipe switch for pneumatic conveying devices. 4,449,863, Cl. 406-182.000.
Umeda, Hiroyuki: *See—*
Ogata, Haruki; and Umeda, Hiroyuki, 4,449,676, Cl. 242-198.000.
Underwood, Ronald E., to Binney & Smith Inc. Drawing instrument and locking apparatus therefor. 4,449,304, Cl. 33-437.000.
Unger, H. Peter O.: *See—*
Westberg, J. Eric H.; and Unger, H. Peter O., 4,449,964, Cl. 494-16.000.
Uni-Cardan Aktiengesellschaft: *See—*
Krude, Werner, 4,449,954, Cl. 464-36.000.
Union Carbide Corporation: *See—*
Davis, Stephen G., 4,450,214, Cl. 429-194.000.
Kurtz, Stuart J.; De Rossett, Terry A.; and Shaw, Montgomery T., 4,449,395, Cl. 73-56.000.
Uniox SRL Welding & Cutting: *See—*
Renato, Rinaldi, 4,449,698, Cl. 266-48.000.
Unisplay, S.A.: *See—*
Salam, Hassan P. A., 4,449,934, Cl. 433-143.000.
United Kingdom Atomic Energy Authority: *See—*
Pugh, Harold, 4,449,413, Cl. 73-780.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Dodd, Frederick H., 4,449,255, Cl. 2-428.000.
Janes, Timothy W.; and White, John C., 4,449,285, Cl. 29-571.000.
United States Gypsum Company: *See—*
Galer, Richard E., 4,450,022, Cl. 156-42.000.
Reicherts, James E., 4,449,338, Cl. 52-127.800.
United States of America
Agriculture: *See—*
Anthony, William S., 4,449,391, Cl. 73-32.00R.
Army: *See—*
F'Geppert, Erwin, 4,449,621, Cl. 192-70.130.
Homan, Clarke G.; Kendall, David P.; and MacCrone, Robert K., 4,450,086, Cl. 252-62.510.
Nielsen, Paul H.; and McCormack, Ray G., 4,450,434, Cl. 340-506.000.
Sawka, Steven; Moretti, Vincent; and Heal, Sam F., 4,450,382, Cl. 315-082.000.
Tauber, Arthur; Finnegan, Robert D.; and Rothwarf, Frederick, 4,449,952, Cl. 445-55.000.
Commerce: *See—*
Schwiesow, Ronald L., 4,449,823, Cl. 356-346.000.
Energy: *See—*
Hill, Ronald A., 4,450,578, Cl. 378-152.000.
National Aeronautics and Space Administration: *See—*
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,450,268, Cl. 528-327.000.
Higa, Walter H., 4,449,894, Cl. 417-328.000.
Ream, Lloyd W., 4,449,370, Cl. 60-606.000.
Selcuk, M. Kudret, 4,449,514, Cl. 126-418.000.
Singh, Jag J., 4,449,400, Cl. 73-189.000.
Zebker, Howard A.; Held, Daniel N.; Goldstein, Richard M.; and Bickler, Thomas C., 4,450,447, Cl. 343-17.700.
Navy: *See—*
Aklufi, Monti E., 4,450,041, Cl. 156-628.000.
Bobb, Lloyd C., 4,450,406, Cl. 324-247.000.
Buckley, Michael E.; Tschirn, Thomas N.; McClure, Donald R.; and Wieland, Michael S., 4,449,458, Cl. 102-430.000.
Kimura, Wayne D., 4,449,789, Cl. 350-319.000.
Matteson, William R., 4,449,939, Cl. 434-12.000.
McCrory, William W.; Quigley, William B.; and Garnett, William A., 4,449,473, Cl. 114-354.000.
Meyer, John R., I., 4,449,472, Cl. 114-274.000.
Wehner, Donald R.; and Prickett, Michael J., 4,450,444, Cl. 343-5.0CM.
Woolaver, Dennis A.; and Baitis, A. Erich, 4,449,469, Cl. 114-150.000.
U.S. Philips Corporation: *See—*
Franken, Adrianus; J. J.; and Hagen, Johannes L. M., 4,449,834, Cl. 384-99.000.
Gaslonde, Jean-Pierre, 4,450,392, Cl. 318-317.000.
Gaulier, Yves, 4,450,048, Cl. 204-15.000.
Holster, Peter L.; and Wittkamper, Johannes M., 4,450,553, Cl. 369-275.000.
Horne, David R., 4,450,479, Cl. 358-113.000.
Jekel, Gerd; and Obenaus, Franz, 4,450,456, Cl. 346-140.00R.
Maas, Henricus G. R.; and Appels, Johannes A., 4,449,287, Cl. 29-580.000.
Marien, Hendricus C. J.; and Thompson, Michael N., 4,450,355, Cl. 250-310.000.
Meuleman, Lambertus J.; van de Grijp, Abram; and Roza, Engel, 4,450,564, Cl. 372-26.000.
Schinke, Franz, 4,449,475, Cl. 118-645.000.
Tuin, Hermanus N., 4,450,118, Cl. 261-147.000.
Van Der Valk, Nicolaas J. L., 4,450,473, Cl. 358-10.000.
van Vliet, Johannes A. J. M.; and van der Kooi, Auke G., 4,450,383, Cl. 315-106.000.
White, Roger P., 4,450,440, Cl. 340-753.000.
United States Tennis Gut Association, Inc.: *See—*
Tayebi, Amad, 4,449,353, Cl. 57-242.000.
United Technologies Corporation: *See—*
Cole, Edward F.; and Crombie, Dean H., 4,449,359, Cl. 60-39.094.
Degnan, William G.; and Fansler, John D., 4,449,446, Cl. 92-146.000.
Tutherly, Herbert W., 4,449,548, Cl. 137-468.000.
University of Illinois Foundation: *See—*
Hollaar, Lee A.; and Haskin, Roger L., 4,450,520, Cl. 364-200.000.
University of Toronto Innovations Foundation, The: *See—*
May, Albert D., 4,449,825, Cl. 356-349.000.
University of Washington: *See—*
Auth, David C.; Lawrence, Dale M.; and Majoch, Tim R., 4,449,528, Cl. 128-303.100.
UOP Inc.: *See—*
Brunelle, Rene J., 4,449,875, Cl. 410-80.000.
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,449,586, Cl. 166-303.000.
Upjohn Company, The: *See—*
Anderson, David J.; and Loughman, Barbara E., 4,450,159, Cl. 424-246.000.
Uram, John R., Jr., to Goodyear Aerospace Corporation. Transparencies produced from epoxy resins cured with adducts of boroxines and interlayers of mercaptan resins. 4,450,202, Cl. 428-412.000.

Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, to UOP Inc. Process for the recovery of hydrocarbons from oil shale. 4,449,586, Cl. 166-303.000.
Usami, Kiyoshi: *See—*
Okano, Reijiro; and Usami, Kiyoshi, 4,449,622, Cl. 192-84.00C.
Ushikosi, Yasunori: *See—*
Yoshino, Masataka; Hashimoto, Yoshiki; and Ushikosi, Yasunori, 4,449,574, Cl. 165-11.00R.
USM Corporation: *See—*
Gilbride, Andrew J.; Malecki, Edward S.; Winslow, Edward H., III; and Coleman, Robert F., 4,449,463, Cl. 112-121.260.
Utena, Hisashi: *See—*
Kikuchi, Masahiro; Utena, Hisashi; and Takei, Shinzo, 4,450,379, Cl. 313-477.0HC.
Utsumi, Tadao: *See—*
Yonezawa, Keitaro; and Utsumi, Tadao, 4,449,907, Cl. 425-183.000.
Uyehara, Norioki; Abe, Susumu; and Kimura, Yasuhiro. Martensitic stainless steel. 4,450,006, Cl. 75-125.000.
V. Kann Rasmussen Holding A/S: *See—*
Nielsen, Elgard, 4,449,327, Cl. 49-390.000.
Valdman, Isaak Y.: *See—*
Nikomarov, Samuil S.; Kochnev, Anatoly M.; Goldobin, Vladimir B.; Sarapulov, Jury M.; and Valdman, Isaak Y., 4,449,953, Cl. 464-19.000.
Valeo Societe Anonyme: *See—*
Dauvergne, Jean L. R., 4,449,369, Cl. 60-556.000.
Vallo, Mark F.: *See—*
Tucker, Jeffrey C.; Edmundson, H. Dale; Wigley, David L.; and Vallo, Mark F., 4,449,393, Cl. 73-40.000.
Vamco Machine & Tool, Inc.: *See—*
Gentile, Joseph P., 4,449,658, Cl. 226-138.000.
van Baalen, Anton: *See—*
Versluis, Jan; deGroot, Johan; and van Baalen, Anton, 4,449,946, Cl. 441-4.000.
van de Grijp, Abram: *See—*
Meuleman, Lambertus J.; van de Grijp, Abram; and Roza, Engel, 4,450,564, Cl. 372-26.000.
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., to Stamicarbon B.V. Process for preparing a polymerization catalyst and preparation of ethylene polymers with this catalyst. 4,450,098, Cl. 502-107.000.
van den Brink, Anthonie, to Eurotool B.V. Closure system for liquid injection apparatuses. 4,449,915, Cl. 425-564.000.
van den Nosterum, Adrianus: *See—*
Esser, Wilhelm C. J.; and van den Nosterum, Adrianus, 4,449,773, Cl. 339-59.00M.
van der Kooi, Auke G.: *See—*
van Vliet, Johannes A. J. M.; and van der Kooi, Auke G., 4,450,383, Cl. 315-106.000.
van der Laan, Jan E.: *See—*
Murray, Edward R.; van der Laan, Jan E.; Rosengreen, Arne; and Byer, Robert L., 4,450,356, Cl. 250-339.000.
van der Lely, Cornelis. Torque converter. 4,449,960, Cl. 474-242.000.
van der Mass, Hendrikus J. H., to Chemische Fabriek Zaltbommel, B.V. Method of manufacturing anhydrous 2-hydroxy-3-chloropropane trimethylammonium chloride. 4,450,295, Cl. 564-294.000.
Van Der Valk, Nicolaas J. L., to U.S. Philips Corp. Camera system for color television. 4,450,473, Cl. 358-10.000.
Van de Sande, Christian C.: *See—*
Van Poucke, Raphael K.; Van de Sande, Christian C.; and Verhecken, Andree , 4,450,223, Cl. 430-223.000.
Van Gemert, Barry: *See—*
Lavanish, Jerome M.; and Van Gemert, Barry, 4,449,998, Cl. 71-92.000.
van Haren, Lambertus F. W., to Protecon B.V. Method and device for measuring the fat content of meat. 4,449,406, Cl. 73-433.000.
Van Poucke, Raphael K.; Van de Sande, Christian C.; and Verhecken, Andree , to AGFA-Gevaert, N.V. Diffusion transfer material and process. 4,450,223, Cl. 430-223.000.
van Roon, Johannes. Steering combination of pusher tug and barges. 4,449,471, Cl. 114-249.000.
van Vliet, Johannes A. J. M.; and van der Kooi, Auke G., to U.S. Philips Corporation. Electric arrangement for starting and supplying a low-pressure discharge lamp. 4,450,383, Cl. 315-106.000.
Vapor Corporaion: *See—*
Alexander, William H.; and Dare, Roy R., 4,449,695, Cl. 251-214.000.
Varco International, Inc.: *See—*
Boyadjieff, George I., 4,449,596, Cl. 175-85.000.
Varian Associates, Inc.: *See—*
Hertel, Richard J.; and MacIntosh, Edward D., 4,449,885, Cl. 414-750.000.
Veda, Inc.: *See—*
Buschbom, Floyd E.; and Hansen, Glen D., 4,449,606, Cl. 180-297.000.
Vergne, Jean-Claude E.: *See—*
de Pommery, Bertrand J. C. H.; Petiot, Gerard L. R.; Vergne, Jean-Claude E.; and Goupil, Jean-Paul C., 4,449,775, Cl. 339-75.0MP.
Verhecken, Andree : *See—*
Van Poucke, Raphael K.; Van de Sande, Christian C.; and Verhecken, Andree , 4,450,223, Cl. 430-223.000.
Vernor, Oliver W.; and Brockman, Arthur M. Breakaway safety valve. 4,449,545, Cl. 137-68.00R.
Versluis, Jan; deGroot, Johan; and van Baalen, Anton, to Shell Oil Company. Single-point mooring system for transferring fluids. 4,449,946, Cl. 441-4.000.
Vesterlund, Gunnar; and Anderson, Erik T., to Santrade Ltd. Method of manufacturing cladding tubes of a zirconium-based alloy for fuel rods for nuclear reactors. 4,450,016, Cl. 148-11.50F.
Vesterlund, Gunnar, to Santrade Ltd. Method of manufacturing cladding tubes of a zirconium-based alloy for fuel rods for nuclear reactors. 4,450,020, Cl. 148-11.50F.
Veyo, Stephen E.: *See—*
Draper, Robert; Lackey, Robert S.; Fagan, Thomas J., Jr.; Veyo, Stephen E.; and Humphrey, Joseph R., 4,449,376, Cl. 62-259.100.
Vianova Kunstharz, A.G.: *See—*
Behmel, Lukas K.; and Zuckert, Bertram, 4,450,257, Cl. 525-437.000.
Vickers, Incorporated: *See—*
Lambeck, Raymond P., 4,449,898, Cl. 418-61.00B.
Victor Company of Japan, Ltd.: *See—*
Fujii, Yasuhiko; Kikuchi, Mitsuru; and Saito, Hiroyuki, 4,450,490, Cl. 360-13.000.
Koide, Hajime, 4,450,487, Cl. 358-335.000.
Moriyama, Masaru, 4,450,433, Cl. 340-347.0DA.
Ogata, Haruki; and Umeda, Hiroyuki, 4,449,676, Cl. 242-198.000.
Vidra, Laszlo: *See—*
Soos, Rudolf; Nemes, Jozsef; Vidra, Laszlo; Szelestei, Miklos; Kovacs, Gabor; and Szekeley, Istvan, 4,450,309, Cl. 570-217.000.
Viet, Vu H.: *See—*
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarence R., 4,450,424, Cl. 336-94.000.
Vignaud, Rene, to Societe les Piles Wonder. Electrochemical generator comprising a thin gas electrode. 4,450,211, Cl. 429-27.000.
Viles, Alan H., to Abex Corporation. Recirculating roller bearing rocker cam support. 4,449,445, Cl. 92-12.200.
Vilutis and Co., Inc.: *See—*
Vilutis, Leonard J., 4,450,028, Cl. 156-198.000.
Vilutis, Leonard J., to Vilutis and Co., Inc. Method of making laminated multi-layered film enclosures. 4,450,028, Cl. 156-198.000.
Viniol, Gerd: *See—*
Lautenschlager, Karl; and Viniol, Gerd, 4,449,689, Cl. 248-544.000.
Vink, Walter V.; and Aldrich, Deborah G., to Nabisco Brands, Inc. Two component soft candy. 4,450,179, Cl. 426-103.000.
Vitalink Communications Corporation: *See—*
Russell, Steven P., 4,450,582, Cl. 455-12.000.
Vitobello, Vincenza; Branduzzi, Paolo; and Cimini, Nadia, to E. N. I. Ente Nazionale Idrocarburi. Biologically pure culture of *Saccharomyces cerevisiae*. 4,450,238, Cl. 435-256.000.
Voegeli, Ronald C., to Leco Engineering & Machine, Inc. Knock-down vending rack. 4,449,643, Cl. 221-226.000.
Voituron, Georges; and Pleska, Jean-Pierre, to Solvay & Cie. Process for the production of polypropylene fibrids. 4,450,125, Cl. 264-13.000.
Volk, Heinrich, to Esselte Pendaflex Corporation. Portable labeling machine. 4,450,036, Cl. 156-384.000.
Volker, Herbert: *See—*
Domesle, Rainer; Volker, Herbert; Koberstein, Edgar; and Pletka, Hans-Dieter, 4,450,244, Cl. 502-185.000.
Volkswagenwerk AG: *See—*
Kruger, Hermann; and Deutsch, Hermann, 4,449,487, Cl. 123-41.340.
Volkswagenwerk Aktiengesellschaft: *See—*
Fiala, Ernst, 4,449,495, Cl. 123-198.0DB.
Fiala, Ernst; Schael, Fritz; and Schoedder, Reiner, 4,449,748, Cl. 296-183.000.
Vollmer Werke Maschinenfabrik GmbH: *See—*
Beck, Ernst; Lenard, Peter; and Pokorny, Erich, 4,449,427, Cl. 76-77.000.
Von Bodungen, George A.; and Karg, Rudy F., to Copolymer Rubber & Chemical Corp. Emulsion polymerization. 4,450,260, Cl. 526-213.000.
von Rintelen, Harald: *See—*
Weyde, Edith; von Rintelen, Harald; Saleck, Wilhelm; and Teitscheid, Heinz-Horst, 4,450,225, Cl. 430-567.000.
von Weissenfluh, Beat, to Hawe-Neos Dental Dr. H. v. Weissenfluh SA. Universal cervical matrix for dental use. 4,449,928, Cl. 433-40.000.
Vossen, Franz, to Meurer Non Food Product GmbH. Carrying or holding device for at least one cup or the like vessel as well as a blank therefore. 4,449,744, Cl. 294-87.200.
Voswinckel, Gerhard; and Trauter, Joachim, to Gebrueder Sucker. Apparatus for coating or impregnating a guided substrate in the form of a web. 4,449,476, Cl. 118-674.000.
Vsesojuzny Proektno-Izyskatelsky I Nauchno-Issledovatelsky Institut "Gidropoekt" Imeni S.Ya. Zhuka: *See—*
Orlov, Naum Y.; and Dotsenko, Taras P., 4,449,754, Cl. 299-21.000.
VSL Corporation: *See—*
Davis, Edgar A., 4,449,857, Cl. 405-286.000.
W. Haking Enterprises Limited: *See—*
Wong, Wan C.; and Oshima, Shigeru, 4,449,806, Cl. 354-121.000.
W. R. Grace & Co.: *See—*
Cogliano, Joseph A., 4,450,192, Cl. 428-40.000.
Jachimowicz, Felek, 4,450,246, Cl. 521-129.000.
Wabash, Inc.: *See—*
Wolf, Ronald J.; Jereb, Richard F.; and Farmer, Mark, 4,449,497, Cl. 123-335.000.
Wachter, Anton: *See—*
Mathis, Paul; and Wachter, Anton, 4,449,826, Cl. 366-13.000.

Wachter, Gerhard: *See—*
Sauer, Heinz; Stichel, Willi; and Wachter, Gerhard, 4,449,429, Cl. 81-9.300.
Wachter KG Baustoffwerk: *See—*
Mathis, Paul; and Wachter, Anton, 4,449,826, Cl. 366-13.000.
Waco Beton B.V.: *See—*
Wolters, Tjako A.; and Roggekamp, Aloysius G., 4,449,720, Cl. 277-207.00A.
Wacyk, Ihor T.; and Stewart, Roger G., to RCA Corporation. Two level parity error correction system. 4,450,562, Cl. 371-51.000.
Wadkin plc: *See—*
Colton, Peter M., 4,449,556, Cl. 144-230.000.
Wadsworth, Donald H.: *See—*
Fletcher, George L.; and Wadsworth, Donald H., 4,450,093, Cl. 252-182.000.
Wagner, Ludwig: *See—*
Knabel, Walter; Wagner, Ludwig; and Richert, Manfred, 4,449,731, Cl. 280-632.000.
Wagoner, Max A.: *See—*
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,449,541, Cl. 131-302.000.
Walker, Robert R.: *See—*
Russell, Thomas D.; and Walker, Robert R., 4,450,363, Cl. 290-40.00C.
Walker, Wolfram H.; Ganshirt, Karl H.; and Schleussner, Hans, to Biotest-Serum-Institut GmbH. Microfiltration device for the filtration of coagula and microaggregates from blood. 4,450,078, Cl. 210-315.000.
Wallach, Walter A., Jr.: *See—*
Pilat, John F.; Richmond, Michael S.; Wallach, Walter A., Jr.; and Schleimer, Stephen I., 4,450,522, Cl. 364-200.000.
Walsh, John: *See—*
Szachowicz, Edward H.; and Walsh, John, 4,449,523, Cl. 128-200.260.
Walter Sarstedt Kunstoff-Spritzgusswerk: *See—*
Sarstedt, Walter, 4,449,539, Cl. 128-764.000.
Walther, Karl-Heinz: *See—*
Staffer, Julius; Walther, Karl-Heinz; and Jahn, Hans-Georg, 4,449,453, Cl. 101-416.00A.
Wang, Taylor G.; Elleman, Daniel D.; and Kendall, James M., Jr., to California Institute of Technology. Apparatus for forming a continuous lightweight multicell material. 4,449,901, Cl. 425-6.000.
Wangermann, Klaus: *See—*
Schmidt, Manfred; Wank, Joachim; Reese, Eckart; Freitag, Dieter; Wangermann, Klaus; and Cohnen, Wolfgang, 4,450,249, Cl. 524-132.000.
Wank, Joachim: *See—*
Schmidt, Manfred; Wank, Joachim; Reese, Eckart; Freitag, Dieter; Wangermann, Klaus; and Cohnen, Wolfgang, 4,450,249, Cl. 524-132.000.
Warabi, Junichi: *See—*
Yanagisawa, Hifumi; Warabi, Junichi; and Kashiwagi, Yoshiyuki, 4,450,327, Cl. 200-144.00B.
Warner, Charles E., to Milliken Research Corporation. Continuous A.C. tension control. 4,449,356, Cl. 57-284.000.
Warner, Charles E.: *See—*
Moore, James R.; and Warner, Charles E., 4,449,354, Cl. 57-284.000.
Moore, James R.; Schroder, William J.; Warner, Charles E.; and Pittman, Edgar H., 4,449,355, Cl. 57-284.000.
Warner, Michael J., to Myers Electric Products Inc. Power outlet facility. 4,450,503, Cl. 361-356.000.
Warren, Harold C.: *See—*
Mattes, Kenneth C.; and Warren, Harold C., 4,450,222, Cl. 430-220.000.
Warshaw, Thelma G. Method and compositions for treating acne. 4,450,175, Cl. 424-349.000.
Wasco Products, Inc.: *See—*
Jentoft, Arthur P.; and Couture, Paul A., 4,449,340, Cl. 52-200.000.
Watanabe, Asao: *See—*
Kitamura, Takashi; Watanabe, Asao; Nakano, Takashi; Masaki, Katsumi; Hirayama, Kazuhiro; Sato, Yasushi; and Tokiwa, Taisuke, 4,450,453, Cl. 346-108.000.
Watanabe, Tadaaki; and Tanaka, Yoshio, to Clarion Co., Ltd. Operating shaft mechanism in a pushbutton tuner. 4,449,955, Cl. 464-78.000.
Watanabe, Toshio: *See—*
Takagi, Satoshi; Watanabe, Toshio; and Ito, Masao, 4,450,491, Cl. 360-96.500.
Watanabe, Yoshitaka; and Kazumi, Jiro, to Canon Kabushiki Kaisha. Interval timer device. 4,449,804, Cl. 354-418.000.
Watanabe, Yutaka, to Fuji Xerox Co., Ltd. Data stamp device for automatic printing apparatus of copier. 4,449,449, Cl. 101-111.000.
Waterman, Roger S. Thermocouple assembly. 4,450,315, Cl. 136-230.000.
Watkins, James D., to Golden Valley Foods Inc. Package for increasing the volumetric yield of microwave cooked popcorn. 4,450,180, Cl. 426-107.000.
Watrous, Robert B., to International Business Machines Corporation. Magnetic head slider and actuator assembly. 4,450,493, Cl. 360-106.000.
Watts, Lewis W., Jr.: *See—*
Sanderson, John R.; Watts, Lewis W., Jr.; and Brader, Walter H., Jr., 4,450,290, Cl. 560-246.000.
Wavin B.V.: *See—*
Ettema, Ernst; Benraad, Coenraad J. B. M.; and Roskam, Klaas, 4,450,132, Cl. 264-328.800.
Leloux, Arnoldus W. J., 4,449,910, Cl. 425-325.000.
Weaver, Charles S., to SRI International. Method and apparatus for digital data compression. 4,449,536, Cl. 128-696.000.
Weber, Steven A.: *See—*
Sauerwein, William D.; Sides, Daniel H.; Weber, Steven A.; and Horney, James R., 4,449,329, Cl. 51-168.000.
Weck, Franz, to H. Krantz GmbH & Co. Shutter device for air conduit or the like. 4,449,549, Cl. 137-512.100.
Weeks, James B., to Motor Wheel Corporation. Tracked vehicle road wheel. 4,449,756, Cl. 301-37.00P.
Wehner, Donald R.; and Prickett, Michael J., to United States of America, Navy. Stepped frequency radar target imaging. 4,450,444, Cl. 343-5.0CM.
Wehr, Hubert, to Cyklop International Emil Hoffmann KG, DEX. Apparatus for banding parcels and the like. 4,450,032, Cl. 156-353.000.
Weide, Joachim: *See—*
Diery, Helmut; Deubel, Reinhold; and Weide, Joachim, 4,450,304, Cl. 568-609.000.
Weidler, Charles H., to AMP Incorporated. Connector assembly having improved keying and latching system. 4,449,767, Cl. 339-17.0LC.
Weinberg, Murray: *See—*
Steensma, Peter D.; Weinberg, Murray; Smid, Robert W.; and Finley, Thomas E., 4,450,554, Cl. 370-4.000.
Weingartner, Ernst; and Samietz, Klaus, to Leybold-Heraeus GmbH. Vacuum arc melting and casting furnace with a vacuum chamber and a tilting crucible. 4,450,570, Cl. 373-69.000.
Weiss, Armin K.: *See—*
Reithel, Raymond F.; and Weiss, Armin K., 4,450,215, Cl. 430-7.000.
Weiss, Peter A. Dental electrosurgery electrodes and method of use. 4,449,926, Cl. 433-32.000.
Weissman, Bernard, to Ipco Corporation. Dental anchor. 4,449,937, Cl. 433-225.000.
Wellhoefer, Felicitas; Stacey, David W., deceased; and by Stacey, Lesley A., legal representative, to Lucas Industries Limited. Semiconductor power device assembly and method of manufacture thereof. 4,450,471, Cl. 357-80.000.
Wells, Frank E. Mouthpiece for woodwind instruments. 4,449,439, Cl. 84-383.00R.
Welsh, Jay Y., to Chemetals Incorporated. Preparation of manganite, MnOOH. 4,450,148, Cl. 423-605.000.
Wember, Kurt: *See—*
Fischer, Lothar; Hausen, Manfred Z.; and Wember, Kurt, 4,450,300, Cl. 568-462.000.
Wendel, Wendel R., to Space Structures International Corp. Octa hub. 4,449,843, Cl. 403-173.000.
West, Arthur C., to Minnesota Mining and Manufacturing Company. Fluoropolymer gum of vinylidene fluoride, hexafluoropropene, and bromodifluoroethylene. 4,450,263, Cl. 526-249.000.
Westberg, J. Eric H.; and Unger, H. Peter O., to Separex Teknik AB. Decanting centrifuge. 4,449,964, Cl. 494-16.000.
Westinghouse Canada: *See—*
Bignell, Allan M., 4,450,497, Cl. 361-82.000.
Westinghouse Electric Corp.: *See—*
Bepko, Stephen J., 4,450,563, Cl. 372-23.000.
Clancy, Steven J.; and Phillips, Robert A., 4,450,446, Cl. 343-7.700.
Coviello, John W., 4,450,483, Cl. 358-166.000.
Draper, Robert; Lackey, Robert S.; Fagan, Thomas J., Jr.; Veyo, Stephen E.; and Humphrey, Joseph R., 4,449,376, Cl. 62-259.100.
Draper, Robert, 4,449,377, Cl. 62-324.100.
McAllister, Dan R., 4,449,441, Cl. 89-8.000.
Westner, Andrew A.: *See—*
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,450,299, Cl. 568-454.000.
Westvaco Corporation: *See—*
Schilling, Peter; and Schreuders, Hans G., 4,450,011, Cl. 106-269.000.
Weterings, Cornelis A.M.; and Janssen, Johannes A., to Stamicarbon B.V. Process for recovering a uranium-containing concentrate and purified phosphoric acid. 4,450,142, Cl. 423-8.000.
Weyde, Edith; von Rintelen, Harald; Saleck, Wilhelm; and Teitscheid, Heinz-Horst, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsion prepared by converting silver phosphate. 4,450,225, Cl. 430-567.000.
Weyerhaeuser Company: *See—*
Dooley, James H., 4,449,642, Cl. 221-211.000.
Whatley, Roger A., to Motorola, Inc. Delta V_{BE} bias current reference circuit. 4,450,367, Cl. 307-297.000.
Wheeler, Glynn P.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,450,160, Cl. 424-250.000.
Whirlpool Corporation: *See—*
Cartier, Roger J., 4,449,383, Cl. 68-12.00R.
Lampman, William T., 4,449,765, Cl. 312-311.000.
Whitaker, Brackston T. Swimming pool cleaning method and apparatus. 4,449,260, Cl. 4-490.000.
White, Daniel S.; and Nave, Jerald L. Pulmonary resuscitator. 4,449,525, Cl. 128-203.110.
White, George R., to Smith Kline & French Laboratories Limited. Pyrimidone salt and its preparation. 4,450,161, Cl. 424-251.000.
White, John C.: *See—*
Janes, Timothy W.; and White, John C., 4,449,285, Cl. 29-571.000.
White, Roger P., to U.S. Philips Corporation. Construction of an epid bar graph. 4,450,440, Cl. 340-753.000.

Whittam, Thomas V.: *See—*
Lake, Ivan J. S.; and Whittam, Thomas V., 4,450,312, Cl. 585-481.000.
Wiechert, Rudolf: *See—*
Nickisch, Klaus; Laurent, Henry; Wiechert, Rudolf; and Casals-Stenzel, Jorge, 4,450,107, Cl. 424-238.000.
Wiegand, Karl-Wolfram, to Dimter GmbH Maschinenfabrik. Method and apparatus for trimming wooden boards. 4,449,558, Cl. 144-367.000.
Wieland, Michael S.: *See—*
Buckley, Michael E.; Tschirn, Thomas N.; McClure, Donald R.; and Wieland, Michael S., 4,449,458, Cl. 102-430.000.
Wierschem, Franz-Rudolf: *See—*
Langwieder, Rolf; Rebmann, Rolf; Stotz, Erich; Wierschem, Franz-Rudolf; and Trick, Fred, 4,449,603, Cl. 180-232.000.
Wiese, Kurt: *See—*
Lubecki, Andrzej; Wiese, Kurt; and Winkler, Karl, 4,450,576, Cl. 378-47.000.
Wigley, David L.: *See—*
Tucker, Jeffrey C.; Edmundson, H. Dale; Wigley, David L.; and Vallo, Mark F., 4,449,393, Cl. 73-40.000.
Wilhelm, Volker: *See—*
Messer, Dieter; Wilhelm, Volker; Endres, Robert; and Heine, Heinrich, 4,450,012, Cl. 106-300.000.
Wilkens, Christian, to Karl Mayer Textilmaschinenfabrik GmbH. Warp knitted fabric and process for its production. 4,449,380, Cl. 66-84.00A.
Willard, Alvin K.: *See—*
Hoffman, William F.; Smith, Robert L.; and Willard, Alvin K., 4,450,171, Cl. 424-279.000.
Williams, Alan E.; and Gibbs, Andrew R. Heating device and method of heating articles. 4,449,925, Cl. 432-225.000.
Williams, Errol R.: *See—*
Goff, Willie, Jr.; Rakes, James M.; and Williams, Errol R., 4,450,342, Cl. 219-216.000.
Williams, Gerald J. Varying geometric compression ratio engine. 4,449,489, Cl. 123-48.00R.
Williams, Paul, to Accuray Corporation. Sheet property sensor with sheet wrinkle remover. 4,449,398, Cl. 73-159.000.
Williams, Paul; and Landis, Dan R., to Accuray Corporation. Pneumatic surface follower with negative feedback of a variable force counteracting the levitating force. 4,450,404, Cl. 324-226.000.
Williamson, Gerald E., to Yetter Manufacturing Co. Row marker arm assembly. 4,449,590, Cl. 172-126.000.
Williard, Daniel G.: *See—*
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,449,541, Cl. 131-302.000.
Willis, Chester R., to Hercules Incorporated. Peroxide blends. 4,450,302, Cl. 502-150.000.
Wilson, David A. Adjustable speaker system and method of adjustment. 4,450,322, Cl. 179-146.00E.
Wilson, Joe C.; and Hirozawa, Stanley T., to BASF Wyandotte Corporation. Corrosion inhibited alcohol compositions. 4,450,088, Cl. 252-75.000.
Wilson, John R.: *See—*
Radosay, Jon J.; and Wilson, John R., 4,449,719, Cl. 277-192.000.
Wilson Jones Company: *See—*
Semerjian, Joseph K.; and Lodge, Glenn R., 4,449,436, Cl. 83-571.000.
Wilson, Kermit H.; and Bue, Richard C., to Sico Incorporated. Powered folding support structure. 4,449,263, Cl. 5-133.000.
Winderlich, Hans-Georg: *See—*
Stockburger, Hermann; and Winderlich, Hans-Georg, 4,450,348, Cl. 235-380.000.
Winkler, Karl: *See—*
Lubecki, Andrzej; Wiese, Kurt; and Winkler, Karl, 4,450,576, Cl. 378-47.000.
Winslow, Edward H., III: *See—*
Gilbride, Andrew J.; Malecki, Edward S.; Winslow, Edward H., III; and Coleman, Robert F., 4,449,463, Cl. 112-121.260.
Winter, Johann: *See—*
Kohl, Karl, 4,449,381, Cl. 66-203.000.
Kohl, Karl, 4,449,382, Cl. 66-203.000.
Witte, Hans H., to Siemens Aktiengesellschaft. Optical star coupler with a planar mixer element. 4,449,783, Cl. 350-96.160.
Wittkamper, Johannes M.: *See—*
Holster, Peter L.; and Wittkamper, Johannes M., 4,450,553, Cl. 369-275.000.
Wixon, Harold E., to Colgate Palmolive Company. Detergent softener compositions. 4,450,085, Cl. 252-8.750.
Wohlford, William P.; and Beitel, Howard V., to Deere & Company. Sprocket receptacle cleaner embodied in a track section. 4,449,758, Cl. 305-12.000.
Wolcott, Bernard F.: *See—*
Scales, John M.; and Wolcott, Bernard F., 4,449,847, Cl. 405-19.000.
Wolf, Ronald J.; Jereb, Richard F.; and Farmer, Mark, to Wabash, Inc. Capacitor discharge ignition system. 4,449,497, Cl. 123-335.000.
Wollenberg, Robert H., to Chevron Research Company. Process for the preparation of a polyalkenyl succinic anhydride. 4,450,281, Cl. 549-255.000.
Wollenschlager, Werner, to Draloric Electronic GmbH. Electric capacitor of variable capacitance. 4,450,500, Cl. 361-277.000.
Wolters, Tjako A.; and Roggekamp, Aloysius G., to Ballast-Nedam Groep N.V.; and Waco Beton B.V. Watertight seal between two concrete elements. 4,449,720, Cl. 277-207.00A.
Wong, Boon: *See—*
Peters, Thomas E.; Gustafson, John C.; and Wong, Boon, 4,450,135, Cl. 419-12.000.
Wong, Wan C.; and Oshima, Shigeru, to W. Haking Enterprises Limited. Film advance mechanism for disc camera. 4,449,806, Cl. 354-121.000.
Woo, Edmund P.; and Murray, Daniel J., to Dow Chemical Company, The. Preparation of esters. 4,450,285, Cl. 560-206.000.
Woolaver, Dennis A.; and Baitis, A. Erich, to United States of America, Navy. Mechanical clutch/decoupler for hydraulic pumps. 4,449,469, Cl. 114-150.000.
Wouden, Adriaan v. d., to Industri AB Thule. Load carrier for vehicles. 4,449,656, Cl. 224-320.000.
Wreford, Stanley S., to Du Pont de Nemours, E. I., and Company. Process for converting nitriles to carboxylic esters. 4,450,112, Cl. 260-410.90R.
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., to Mobil Oil Corporation. Heat exchange technique for olefin fractionation and catalytic conversion system. 4,450,311, Cl. 585-413.000.
Wright, Ralph W.: *See—*
Kauffman, William J.; and Wright, Ralph W., 4,450,194, Cl. 428-172.000.
Wu, Margaret M.: *See—*
Forbus, Nancy P.; and Wu, Margaret M., 4,449,961, Cl. 585-640.000.
Wu, Wen-Yu. Nursing bottle with disposable insert. 4,449,636, Cl. 215-11.00E.
Wullschleger, Manfred J.: *See—*
Stamm, Russell D.; and Wullschleger, Manfred J., 4,450,332, Cl. 200-340.000.
Xerox Corporation: *See—*
Abreu, Cristian O., 4,449,808, Cl. 355-3.0TR.
Araghi, Mehdi N.; and Daniele, Joseph J., 4,450,458, Cl. 346-155.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,450,567, Cl. 372-50.000.
Spehrley, C. W., Jr., 4,449,661, Cl. 227-155.000.
Turner, William D.; and Sprague, Robert A., 4,450,459, Cl. 346-160.000.
Xicor, Inc.: *See—*
Owen, William H., III, 4,450,402, Cl. 324-73.00R.
Yaegashi, Takehisa; Aoki, Keiji; and Hashikawa, Kenzo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the operation of an internal combustion engine. 4,450,528, Cl. 364-431.050.
Yaguchi, Svetlana: *See—*
Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, 4,450,008, Cl. 75-128.00A.
Yamada, Hideo: *See—*
Koizumi, Hideaki; Yamada, Hideo; and Oishi, Kounosuke, 4,449,820, Cl. 356-307.000.
Yamada, Kenji, to Nippon Kogaku K.K. Imaging optical system. 4,449,794, Cl. 350-472.000.
Yamada, Masanori; and Hiramatsu, Akira, to Canon Kabushiki Kaisha. Indicating apparatus for electronic flash system of TTL light measurement type. 4,449,803, Cl. 354-416.000.
Yamada, Noboru, to Tokyo Shibaura Denki Kabushiki Kaisha. Printing head for wire dot printer. 4,449,836, Cl. 400-124.000.
Yamada, Takahiro, to Matsushita Electric Industrial Co., Ltd. Solid state area imaging apparatus having a charge transfer arrangement. 4,450,464, Cl. 357-30.000.
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Kawase, Shoji; and Sano, Makoto, to Teijin Limited. Heat-and-moisture exchanger. 4,449,992, Cl. 55-158.000.
Yamada, Tetsuyo; and Nakayama, Yutaka, to NGK Spark Plug Co., Ltd. Oxygen sensor. 4,450,065, Cl. 204-412.000.
Yamada, Toshikatsu, to k. k. Yamada Kogaku Seisakusho. Stereoscope with tongue and grooves. 4,449,795, Cl. 350-516.000.
Yamagata, Norio: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nakamoto, Yasunobu; Sekiya, Hideshi; Morita, Masanobu; and Yamagata, Norio, 4,449,517, Cl. 126-435.000.
Yamaguchi, Katsumi: *See—*
Okada, Hitoshi; Takai, Kazuki; and Yamaguchi, Katsumi, 4,450,492, Cl. 360-105.000.
Yamaguchi, Kazuo; Kuni, Asahiro; Akiyama, Nobuyuki; and Endo, Juro, to Hitachi Metals, Ltd. Method of inspecting microscopic surface defects. 4,449,818, Cl. 356-237.000.
Yamaguchi Kikai Kogyo Co., Ltd.: *See—*
Tokoro, Takehiko; Kashima, Shoichi; and Murata, Mineo, 4,449,856, Cl. 405-269.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Tezuka, Etsuhiro; Kaji, Koichiro; and Ichinose, Toru, 4,449,505, Cl. 123-447.000.
Yamaji, Shigeru: *See—*
Arimoto, Satomi; Yamaji, Shigeru; and Ishitobi, Chikato, 4,450,329, Cl. 200-148.00A.
Yamamoto, Hachizou: *See—*
Nakatani, Hiroshi; and Yamamoto, Hachizou, 4,450,526, Cl. 364-405.000.
Yamamoto, Ryoichi: *See—*
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,449,516, Cl. 126-430.000.
Yamamoto, Setsuo: *See—*
Okamura, Kouichi; Eriguchi, Yukio; Hagio, Katsushige; and Yamamoto, Setsuo, 4,449,662, Cl. 229-49.000.

Yamamoto, Takeski, to Mitsubishi Denki Kabushiki Kaisha. Mesa type semiconductor device with guard ring. 4,450,469, Cl. 357-56.000.
Yamashita, Masaaki: *See—*
Hara, Tomihiro; Ogawa, Masahiro; and Yamashita, Masaaki, 4,450,209, Cl. 428-626.000.
Yamazaki, Takeo: *See—*
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; Takahashi, Ken; and Oowada, Siniti, 4,450,426, Cl. 338-21.000.
Yanagawa, Nobuyuki: *See—*
Ikesue, Masumi; and Yanagawa, Nobuyuki, 4,449,810, Cl. 355-3.0DD.
Yanagi, Kouichiro, to Akebono Brake Industry Company, Ltd. Brake piston of disk type. 4,449,447, Cl. 92-248.000.
Yanagisawa, Hifumi; Warabi, Junichi; and Kashiwagi, Yoshiyuki, to Kabushiki Kaisha Meidensha. Vacuum interrupter. 4,450,327, Cl. 200-144.00B.
Yanagishima, Takayuki: *See—*
Seko, Yasutoshi; Yanagishima, Takayuki; and Fukasawa, Noburu, 4,450,438, Cl. 340-576.000.
Yankovoy, Alexander; and Ozer, Theodore, to Boeing Company, The. Method and tool for generating countersunk holes in composite materials. 4,449,865, Cl. 408-1.00R.
Yasumatsu, Jun; Mori, Mamoru; Nishiwaki, Toshihito; and Owada, Akira, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle seat position control mechanism with neutral memory. 4,449,752, Cl. 297-341.000.
Yasumura, Motoaki: *See—*
Ashizawa, Takeshi; and Yasumura, Motoaki, 4,449,699, Cl. 266-58.000.
Hayasaki, Hidehiko; and Yasumura, Motoaki, 4,450,014, Cl. 148-9.00R.
Yasunaga, Toshio: *See—*
Miyazaki, Yoshiro; Yasunaga, Toshio; and Sasaki, Tomiya, 4,449,579, Cl. 165-104.330.
Yazawa, Kouzou: *See—*
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,449,707, Cl. 273-171.000.
Yazawa, Yukichi: *See—*
Hotta, Kouichi; Yazawa, Yukichi; and Tatsukawa, Osami, 4,450,345, Cl. 219-491.000.
Yetter Manufacturing Co.: *See—*
Williamson, Gerald E., 4,449,590, Cl. 172-126.000.
Yokko, Masao: *See—*
Mokuya, Hiroichi; Yokko, Masao; Komatsu, Hiroyuki; Suzuki, Katsuhisa; and Kitayama, Takeo, 4,449,496, Cl. 123-198.00F.
Yokoyama, Katsunori: *See—*
Takikawa, Osamu; Katsura, Masaki; Tanuma, Chiaki; and Yokoyama, Katsunori, 4,449,919, Cl. 431-76.000.
Yokoyama, Takashi: *See—*
Nakamura, Masahiko; and Yokoyama, Takashi, 4,449,430, Cl. 81-98.000.
Yonezawa, Keitaro; and Utsumi, Tadao, to Aioi Seiki Kabushiki Kaisha. Dies exchanging device for a machine using dies. 4,449,907, Cl. 425-183.000.
Yonezawa, Masatomo: *See—*
Miyamoto, Haruhiko; and Yonezawa, Masatomo, 4,450,240, Cl. 501-136.000.
Yoo, Sung-eun, to Du Pont de Nemours, E. I., and Company. Antihypertensive polyhalohydroxyisopropyl phenylalka(e)noic acid esters of alkylaminohydroxypropyloxyphenylalkyl alcohols. 4,450,172, Cl. 424-309.000.
Yoritaka, Masashi: *See—*
Satou, Kazuo; and Yoritaka, Masashi, 4,450,019, Cl. 148-35.000.
Yoshida, Takao, to International Flavors & Fragrances Inc. Process for the production of arylalkanone and intermediate. 4,450,296, Cl. 568-316.000.
Yoshida, Toshio; Matsui, Shigetomo; and Atsuta, Toshio, to Kawasaki Jukogyo Kabushiki Kaisha. Method of producing multiple-wall, composite tubular structures. 4,449,281, Cl. 29-421.00R.
Yoshikawa, Masayuki: *See—*
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,449,707, Cl. 273-171.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao. Pharmaceutical composition containing a derivative of ortho-aminobenzoic acid as an active ingredient. 4,450,156, Cl. 424-180.000.
Yoshino, Masataka; Hashimoto, Yoshiki; and Ushikosi, Yasunori, to Mitsubishi Denki Kabushiki Kaisha. Ventilation device. 4,449,574, Cl. 165-11.00R.
Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Araki, Kazuhiko; Ao, Hideki; Kimura, Tomohiko; and Aihara, Kenichi, 4,450,165, Cl. 424-258.000.
Arimura, Katsuo; Murakami, Shu; and Oka, Taichi, 4,450,275, Cl. 548-201.000.
Young, Colin G., to Emco Wheaton (International) Limited. Gaseous fuel carburetion. 4,449,509, Cl. 123-527.000.
Young, Herbert L.: *See—*
Simmons, Ronald L.; and Young, Herbert L., 4,450,110, Cl. 260-349.000.
Young, Ronald R.: *See—*
Salvucci, Orfeo J.; Hobby, John M.; Hennessy, James J.; and Young, Ronald R., 4,450,039, Cl. 156-504.000.
Younger, Gilbert W. Laminated separator plate means for recalibrating automatic transmissions. 4,449,426, Cl. 74-867.000.
Yuan, Raymond C.: *See—*
Stahl, Howard D.; and Yuan, Raymond C., 4,450,182, Cl. 426-565.000.
Yuasa, Katsumi: *See—*
Mimura, Akio; Yuasa, Katsumi; and Shibukawa, Mitsuru, 4,450,233, Cl. 435-178.000.
Yuasa, Yoshio; and Naruse, Kazuhiko, to Minolta Camera Kabushiki Kaisha. Exposure indicator. 4,449,822, Cl. 356-227.000.
Yum, Lawrence H.; and Chen, Fu-Chuan, to Hughes Aircraft Company. Stripline-type power divider/combiner with integral resistor and method of making the same. 4,450,418, Cl. 333-128.000.
Zebker, Howard A.; Held, Daniel N.; Goldstein, Richard M.; and Bickler, Thomas C., to United States of America, National Aeronautics and Space Administration. Synthetic aperture radar target simulator. 4,450,447, Cl. 343-17.700.
Zee Toys, Inc.: *See—*
Fisher, David R., 4,449,323, Cl. 46-211.000.
Zenith Radio Corporation: *See—*
Lehnert, Stanley E., 4,450,386, Cl. 315-371.000.
Zeysolff, Edmond: *See—*
Schmidts, Kurt; Schuett, Walter; Zeysolff, Edmond; and Saumer, Wilhelm, 4,449,914, Cl. 425-556.000.
Zodrow, Rodolf; and Buchholz, Rainer, to Jagenberg AG. Noise-proofed labeling machine. 4,450,040, Cl. 156-567.000.
Zoltan, Bozso: *See—*
Bela, Batyi; Geza, Gulyas; Zoltan, Bozso; Istvan, Csakany; and Janos, Bartucz, 4,449,460, Cl. 110-214.000.
Zuckert, Bertram: *See—*
Behmel, Lukas K.; and Zuckert, Bertram, 4,450,257, Cl. 525-437.000.
Zuckler, Karl, to Siemens Aktiengesellschaft. Electric switch with two quenching nozzles having an improved quenching medium flow. 4,450,330, Cl. 200-148.00A.
Zullig, Heinz, to Bucher-Guyer AG. Method of and arrangement for manufacturing enclosed blocks. 4,449,905, Cl. 425-117.000.
Zwaskis, William J.: *See—*
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,449,531, Cl. 128-325.000.
Zychowski, Edwin A.; and Richards, Ronald L., to DeSoto, Inc. Thermosetting aqueous varnish compositions. 4,450,251, Cl. 524-251.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF MAY, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

ARCHIFAR Laboratori Chimico Farmacologici S.p.A.: *See—*
Marsili, Leonardo; and Pasqualucci, Carmine, Re. 31,587, Cl. 260-239.30P.
Bristol-Myers Company: *See—*
Crenshaw, Ronnie R.; and Luke, George M., Re. 31,588, Cl. 548-342.000.
Crenshaw, Ronnie R.; and Luke, George M., to Bristol-Myers Company. Imidazolylmethylthioethyl alkynyl guanidines. Re. 31,588, Cl. 548-342.000.
Foseco Trading A.G.: *See—*
Phoenix, Richard C.; and Jago, Edward J., Re. 31,589, Cl. 75-27.000.
Jago, Edward J.: *See—*
Phoenix, Richard C.; and Jago, Edward J., Re. 31,589, Cl. 75-27.000.
Luke, George M.: *See—*
Crenshaw, Ronnie R.; and Luke, George M., Re. 31,588, Cl. 548-342.000.
Marsili, Leonardo; and Pasqualucci, Carmine, to ARCHIFAR Laboratori Chimico Farmacologici S.p.A. Process for the preparation of 3-iminomethyl derivatives of rifamycin SV. Re. 31,587, Cl. 260-239.30P.
Pasqualucci, Carmine: *See—*
Marsili, Leonardo; and Pasqualucci, Carmine, Re. 31,587, Cl. 260-239.30P.
Phoenix, Richard C.; and Jago, Edward J., to Foseco Trading A.G. Thermal insulation molten metal. Re. 31,589, Cl. 75-27.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Aoki, Shingi: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, B1 3,869,362, Cl. 204-157.10R.
Asahi Glass Co., Ltd.: *See—*
Oda, Yoshio; Suhara, Manabu; and Endo, Eiji, B1 4,065,366, Cl. 204-98.000.
Baker Perkins Inc.: *See—*
Loomans, Bernard A.; and Brennan, Ambrose K., Jr., B1 3,195,868, Cl. 366-85.000.
Brennan, Ambrose K., Jr.: *See—*
Loomans, Bernard A.; and Brennan, Ambrose K., Jr., B1 3,195,868, Cl. 366-85.000.
Campbell, George L., to Syracuse Tank & Manufacturing. Method for producing a helically wound pipe having a predetermined diameter. B1 4,287,739, 5-22-84, Cl. 72-34.000.
Ebara Manufacturing Co., Ltd.: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, B1 3,869,362, Cl. 204-157.10R.
Endo, Eiji: *See—*
Oda, Yoshio; Suhara, Manabu; and Endo, Eiji, B1 4,065,366, Cl. 204-98.000.
Gasse, Robert W. Apparatus for the production of duplicate, and other films from original films. B1 4,265,533, 5-22-84, Cl. 355-110.000.
Green, Philip S., to Stanford Research Institute. Ultrasonic imaging method and apparatus. B1 4,016,750, 5-22-84, Cl. 73-629.000.
Hashimoto, Shoji: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, B1 3,869,362, Cl. 204-157.10R.
Japan Atomic Energy Research Institute: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, B1 3,869,362, Cl. 204-157.10R.
Kawakami, Waichiro: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, B1 3,869,362, Cl. 204-157.10R.
Kawamura, Keita: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, B1 3,869,362, Cl. 204-157.10R.
Keiichi, Yotumoto: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, B1 3,869,362, Cl. 204-157.10R.
Littleton, F. John, to World Color Press, Inc. Sheeter for use with printing press and adding provision for arresting, squaring and diverting of sheet. B1 3,994,221, 5-22-84, Cl. 101-227.000.
Loomans, Bernard A.; and Brennan, Ambrose K., Jr., to Baker Perkins Inc. Continuous mixer. B1 3,195,868, 5-22-84, Cl. 366-85.000.
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, to Ebara Manufacturing Co., Ltd.; and Japan Atomic Energy Research Institute. Process for removing noxious gas pollutants from effluent gases by irradiation. B1 3,869,362, 5-22-84, Cl. 204-157.10R.
Oda, Yoshio; Suhara, Manabu; and Endo, Eiji, to Asahi Glass Co., Ltd. Process for producing alkali metal hydroxide. B1 4,065,366, 5-22-84, Cl. 204-98.000.
Stanford Research Institute: *See—*
Green, Philip S., B1 4,016,750, Cl. 73-629.000.
Suhara, Manabu: *See—*
Oda, Yoshio; Suhara, Manabu; and Endo, Eiji, B1 4,065,366, Cl. 204-98.000.
Sunaga, Hiromi: *See—*
Machi, Sueo; Kawamura, Keita; Kawakami, Waichiro; Aoki, Shingi; Hashimoto, Shoji; Keiichi, Yotumoto; and Sunaga, Hiromi, B1 3,869,362, Cl. 204-157.10R.
Syracuse Tank & Manufacturing: *See—*
Campbell, George L., B1 4,287,739, Cl. 72-34.000.
World Color Press, Inc.: *See—*
Littleton, F. John, B1 3,994,221, Cl. 101-227.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
Brueck, Daniel A.; and Hershey, Charles J., 273,942, Cl. D9-434.000.
Holen, James T.; Becker, Julius S.; and Case, Robert, 273,987, Cl. D24-17.000.
Adams, Harold P.: *See—*
Koeneman, David F.; Adams, Harold P.; and Blee, Robert W., 273,944, Cl. D10-50.000.
Airway Industries, Inc.: *See—*
Davis, Michael, 273,912, Cl. D3-71.000.
Amana Refrigeration, Inc.: *See—*
Stevens, James P.; and Wojtowicz, Chester J., 273,931, Cl. D7-351.000.
American Standard, Inc.: *See—*
Enthoven, Axel, 273,978, Cl. D23-58.000.
Kaiser, Jack N., 273,980, Cl. D23-61.000.
Ruff, Robert O., 273,937, Cl. D8-344.000.
Stair, Henry M., Jr., 273,979, Cl. D23-58.000.
Antonis, Basil: *See—*
Chapman, John M.; and Antonis, Basil, 273,999, Cl. D26-3.000.
Applied Devices Corporation: *See—*
Kummer, Carl P., 273,960, Cl. D16-132.000.
Bailly, Francois, to Equipements Automobiles Marchal S.A. Headlight. 274,000, 5-22-84, Cl. D26-29.000.
Ballantine, Robert K., to BCM Manufacturing Ltd. Flooring unit. 273,998, 5-22-84, Cl. D25-91.000.
Bassey, Karolin M. Multiple greeting card holder. 273,961, 5-22-84, Cl. D19-90.000.
BCM Manufacturing Ltd.: *See—*
Ballantine, Robert K., 273,998, Cl. D25-91.000.
Becker, Julius S.: *See—*
Holen, James T.; Becker, Julius S.; and Case, Robert, 273,987, Cl. D24-17.000.
Bee, James W. M., to Northern Telecom Limited. Attendant console. 273,954, 5-22-84, Cl. D14-58.000.
Bell Telephone Laboratories, Incorporated: *See—*
Brown, Kenneth B., Jr.; Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., 273,955, Cl. D14-60.000.
Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., 273,909, Cl. D14-60.000.
Bennett, Robert. Combined bellows pump and fluid dispensing container. 273,939, 5-22-84, Cl. D9-301.000.
Blee, Robert W.: *See—*
Koeneman, David F.; Adams, Harold P.; and Blee, Robert W., 273,944, Cl. D10-50.000.
Bolster, Gary; and Shepley, Chris, to Neotech International Corporation. Bicycle handgrip. 273,935, 5-22-84, Cl. D8-303.000.
Boswell, Gordon H., to Mason & Porter Limited. Air pump. 273,957, 5-22-84, Cl. D15-9.000.
Brown, Kenneth B., Jr.; Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., to Bell Telephone Laboratories, Incorporated. Telephone stand. 273,955, 5-22-84, Cl. D14-60.000.
Brueck, Daniel A.; and Hershey, Charles J., to Abbott Laboratories. Bottle ferrule. 273,942, 5-22-84, Cl. D9-434.000.
Brunswick Corporation: *See—*
Fee, Robert W., 273,972, Cl. D22-26.000.
Mack, John J., 273,973, Cl. D22-25.000.
Budde, Donald F., to Urethane Roller Specialists, Inc. Swing seat. 273,967, 5-22-84, Cl. D21-246.000.
Burby, Leo J.; and Evans, Henry P. Anti-seasickness belt device. 273,992, 5-22-84, Cl. D24-99.000.
Burrows, Bruce D. Water reservoir for a reverse osmosis system. 273,976, 5-22-84, Cl. D23-2.000.
Burrows, Bruce D. Water reservoir for a reverse osmosis system. 273,977, 5-22-84, Cl. D23-2.000.
Byrns, James E.; and Williams, Samuel W. Combined stadium seat and tray. 273,926, 5-22-84, Cl. D6-201.000.
Caruso, Jerome, to Litton Business Systems, Inc. Base for a business chair. 273,925, 5-22-84, Cl. D6-196.000.
Casa Bella Imports, Inc.: *See—*
Matthias, Jan H., 273,923, Cl. D6-166.000.
Case, Robert: *See—*
Holen, James T.; Becker, Julius S.; and Case, Robert, 273,987, Cl. D24-17.000.
Chapman, John M.; and Antonis, Basil, to Thorn EMI Limited. Fluorescent lamp. 273,999, 5-22-84, Cl. D26-3.000.
Cloche Houses Limited: *See—*
Pike, Douglas C. M., 273,915, Cl. D6-3.000.
Cole, Wayne C. T., to Ener-Corp. Management Limited. Infiltrometer. 273,946, 5-22-84, Cl. D10-96.000.
Colemore-Williams, Robin V., to Merryware Industries, Ltd. Brush. 273,914, 5-22-84, Cl. D4-12.000.
Commercial Plastics & Supply Co., Inc.: *See—*
Hitchens, Walter L., 273,969, Cl. D22-13.000.
Hitchens, Walter L., 273,970, Cl. D22-13.000.
CPG Products Corp.: *See—*
Pelavin, Joseph Y., 273,911, Cl. D3-71.000.
Curran, Steven H.; and Kumalae, Alfred G. Sailboat platform. 273,949, 5-22-84, Cl. D12-317.000.
Cyclops Corporation: *See—*
Ryan, Thomas G., 273,997, Cl. D25-75.000.
Daiwa Seiko, Inc.: *See—*
Sakumoto, Akinori; and Iinuma, Kanji, 273,975, Cl. D22-25.000.
Davis, Michael, to Airway Industries, Inc. Luggage case. 273,912, 5-22-84, Cl. D3-71.000.
Decra Stone, Inc.: *See—*
Knutson, Lawrence M., 273,927, Cl. D7-1.000.
Denhoff, Myron L., to Myden Industries, Inc. Display rack for record album, video disc or similar article. 273,924, 5-22-84, Cl. D6-188.000.
Dillon, John C., to SportsClocks, Inc. Clock. 273,943, 5-22-84, Cl. D10-6.000.
Ener-Corp. Management Limited: *See—*
Cole, Wayne C. T., 273,946, Cl. D10-96.000.
Enthoven, Axel, to American Standard, Inc. Lavatory. 273,978, 5-22-84, Cl. D23-58.000.
Equipements Automobiles Marchal S.A.: *See—*
Bailly, Francois, 274,000, Cl. D26-29.000.
Evans, Henry P.: *See—*
Burby, Leo J.; and Evans, Henry P., 273,992, Cl. D24-99.000.
Farber Brothers, Inc.: *See—*
Farber, Maurice, 273,941, Cl. D9-420.000.
Farber, Maurice, to Farber Brothers, Inc. Product packaging container. 273,941, 5-22-84, Cl. D9-420.000.
Fee, Robert W., to Brunswick Corporation. Combined fishing rod handle and reel. 273,972, 5-22-84, Cl. D22-26.000.
Fromm, Stephen J. Dispenser for playing cards or the like. 273,962, 5-22-84, Cl. D21-57.000.
Gates, H. Gordon, to Gates & Sons, Inc. Combined water bracket and cam-type latch. 273,932, 5-22-84, Cl. D8-330.000.
Gates & Sons, Inc.: *See—*
Gates, H. Gordon, 273,932, Cl. D8-330.000.
Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., to Bell Telephone Laboratories, Incorporated. Telephone stand. 273,909, 5-22-84, Cl. D14-60.000.
Genaro, Donald M.: *See—*
Brown, Kenneth B., Jr.; Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., 273,955, Cl. D14-60.000.
Geneve, Francois M.; Heiligenstein, Luc M. D.; and Melamed, Stephen B., to Tres Design Co., Inc. Disposable chair. 273,922, 5-22-84, Cl. D6-66.000.
Gorton, Lanny A.: *See—*
Stansbury, Benjamin H., Jr.; and Gorton, Lanny A., 273,952, Cl. D14-66.000.
Harley-Davidson Motor Co., Inc.: *See—*
Johnson, Stanley A., 273,947, Cl. D12-127.000.
Hasegawa, Sigeru: *See—*
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, 273,950, Cl. D14-1.000.
Heiligenstein, Luc M. D.: *See—*
Geneve, Francois M.; Heiligenstein, Luc M. D.; and Melamed, Stephen B., 273,922, Cl. D6-66.000.
Heindl, Alfons: *See—*
Schulte, Rudolf R.; and Heindl, Alfons, 273,993, Cl. D24-99.000.
Hershey, Charles J.: *See—*
Brueck, Daniel A.; and Hershey, Charles J., 273,942, Cl. D9-434.000.
Hitchens, Walter L., to Commercial Plastics & Supply Co., Inc. Triangular-shaped fishing reel holder. 273,969, 5-22-84, Cl. D22-13.000.
Hitchens, Walter L., to Commercial Plastics & Supply Co., Inc. T-Shaped fishing reel holder. 273,970, 5-22-84, Cl. D22-13.000.
Holen, James T.; Becker, Julius S.; and Case, Robert, to Abbott Laboratories. Reagent cassette (or the like). 273,987, 5-22-84, Cl. D24-17.000.
Homer, Clifford J.; and Kaszyk, Raymond, to Newman-Crosby Steel, Inc. Camber measuring device. 273,945, 5-22-84, Cl. D10-65.000.
Hood, Robert: *See—*
Rolli, Ernest P., Jr., 273,929, Cl. D7-76.000.
Iinuma, Kanji: *See—*
Sakumoto, Akinori; and Iinuma, Kanji, 273,975, Cl. D22-25.000.
International Business Machines Corporation: *See—*
Lahey, Donald F., 273,953, Cl. D14-111.000.
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, to Teac Corporation. Audio mixer. 273,950, 5-22-84, Cl. D14-1.000.
Johnson, Dennis E., to McGraw-Edison. Indirect lighting fixture. 274,003, 5-22-84, Cl. D26-85.000.
Johnson, Edward J., to Warner Lambert Technologies, Inc. Design for a blood clot detection instrument. 273,986, 5-22-84, Cl. D24-17.000.
Johnson, Stanley A., to Harley-Davidson Motor Co., Inc. Open motorcycle primary cover. 273,947, 5-22-84, Cl. D12-127.000.
Kabushiki Kaisha Naka Gijutsu Kenkyusho: *See—*
Naka, Hiromitsu, 273,994, Cl. D25-48.000.
Kaiser, Jack N., to American Standard, Inc. Pedestal lavatory or the like. 273,980, 5-22-84, Cl. D23-61.000.
Kaszyk, Raymond: *See—*
Homer, Clifford J.; and Kaszyk, Raymond, 273,945, Cl. D10-65.000.
Keeler, Robert A., to Steelcase, Inc. Pedestal based arm chair. 273,918, 5-22-84, Cl. D6-31.000.
King-Seeley Thermos Co.: *See—*
Tarozzi, Richard A., 273,928, Cl. D7-38.000.
Kiraly, Ernest F., to Warner-Lambert Company. Compartmented medical test tray. 273,988, 5-22-84, Cl. D24-31.000.
Knutson, Lawrence M., to Decra Stone, Inc. Food bowl. 273,927, 5-22-84, Cl. D7-1.000.

Koeneman, David F.; Adams, Harold P.; and Blee, Robert W., to Mark Controls Corporation. Thermostat. 273,944, 5-22-84, Cl. D10-50.000.
Krieger, John: *See—*
Pelly, Charles W.; and Krieger, John, 273,917, Cl. D6-30.000.
Kroll, Edward A.; and Perusek, Allan J., to Technicare Corporation. Rectangular gamma camera head with collimator. 273,981, 5-22-84, Cl. D24-02.000.
Kroll, Edward A., to Technicare Corporation. Square gamma camera head with collimator. 273,982, 5-22-84, Cl. D24-02.000.
Kumalae, Alfred G.: *See—*
Curran, Steven H.; and Kumalae, Alfred G., 273,949, Cl. D12-317.000.
Kummer, Carl P., to Applied Devices Corporation. Battery housing of rifle scope or similar article. 273,960, 5-22-84, Cl. D16-132.000.
Lahey, Donald F., to International Business Machines Corporation. Interactive terminal printer. 273,953, 5-22-84, Cl. D14-111.000.
Lamsam, Jeanne W. Manipulative pacifier toy. 273,990, 5-22-84, Cl. D24-45.000.
Lapeyre, Didier. Human artificial heart. 273,989, 5-22-84, Cl. D24-33.000.
Lewis Woolf Griptight Limited: *See—*
Moore, Ronald K., 273,991, Cl. D24-46.000.
Lin, Kent. Shuttlecock. 273,965, 5-22-84, Cl. D21-207.000.
Litton Business Systems, Inc.: *See—*
Caruso, Jerome, 273,925, Cl. D6-196.000.
Mack, John J., to Brunswick Corporation. Fishing reel. 273,973, 5-22-84, Cl. D22-25.000.
Mariol, James F. Portable air compressor. 273,958, 5-22-84, Cl. D15-9.000.
Mark Controls Corporation: *See—*
Koeneman, David F.; Adams, Harold P.; and Blee, Robert W., 273,944, Cl. D10-50.000.
Masai, Betty K.; and Watanabe, Chikako, to Masai and Watanabe. Golf club cover. 273,968, 5-22-84, Cl. D21-221.000.
Masai and Watanabe: *See—*
Masai, Betty K.; and Watanabe, Chikako, 273,968, Cl. D21-221.000.
Mason & Porter Limited: *See—*
Boswell, Gordon H., 273,957, Cl. D15-9.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Nishimoto, Teruyuki, 273,951, Cl. D14-5.000.
Mattel, Inc.: *See—*
Stansbury, Benjamin H., Jr.; and Gorton, Lanny A., 273,952, Cl. D14-66.000.
Matthias, Jan H., to Casa Bella Imports, Inc. Credenza. 273,923, 5-22-84, Cl. D6-166.000.
Mayers, Beltram F. O. Scooter. 273,963, 5-22-84, Cl. D21-81.000.
McGarvey, John N.: *See—*
Brown, Kenneth B., Jr.; Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., 273,955, Cl. D14-60.000.
Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., 273,909, Cl. D14-60.000.
McGowen, Wayne H. Therapeutic inversion device. 273,983, 5-22-84, Cl. D24-3.000.
McGraw-Edison: *See—*
Johnson, Dennis E., 274,003, Cl. D26-85.000.
Melamed, Stephen B.: *See—*
Geneve, Francois M.; Heiligenstein, Luc M. D.; and Melamed, Stephen B., 273,922, Cl. D6-66.000.
Merryware Industries, Ltd.: *See—*
Colemore-Williams, Robin V., 273,914, Cl. D4-12.000.
Moore, Ronald K., to Lewis Woolf Griptight Limited. Baby soother. 273,991, 5-22-84, Cl. D24-46.000.
Murry, Edsel E., to Samsonite Corporation. Chair. 273,916, 5-22-84, Cl. D6-26.000.
Myden Industries, Inc.: *See—*
Denhoff, Myron L., 273,924, Cl. D6-188.000.
Myojo, Seiji, to Shimano Industrial Company Limited. Fishing reel. 273,974, 5-22-84, Cl. D22-25.000.
Naka, Hiromitsu, to Kabushiki Kaisha Naka Gijutsu Kenkyusho. Access door. 273,994, 5-22-84, Cl. D25-48.000.
Naka, Hiromitsu. Access door. 273,995, 5-22-84, Cl. D25-48.000.
Nelson, Lester G.; and Windmueller, M. A. Collapeible fishing rod holder. 273,971, 5-22-84, Cl. D22-13.000.
Neotech International Corporation: *See—*
Bolster, Gary; and Shepley, Chris, 273,935, Cl. D8-303.000.
Newman-Crosby Steel, Inc.: *See—*
Homer, Clifford J.; and Kaszyk, Raymond, 273,945, Cl. D10-65.000.
Nishimoto, Teruyuki, to Matsushita Electric Industrial Co., Ltd. Combined radio and cassette tape recorder. 273,951, 5-22-84, Cl. D14-5.000.
Nordstrom, Mark B.; and Workman, David E., to Samsonite Corporation. Portfolio for an attache case or the like. 273,913, 5-22-84, Cl. D3-76.000.
Northern Telecom Limited: *See—*
Bee, James W. M., 273,954, Cl. D14-58.000.
Oneida Ltd.: *See—*
Richmond, Colin B., II, 273,930, Cl. D7-137.000.
Orthopedic Design, Inc.: *See—*
Schmid, Rainer, 273,936, Cl. D8-303.000.
Pasinski, Ralph R. Step stool, or similar article. 273,919, 5-22-84, Cl. D6-32.000.
Pelavin, Joseph Y., to CPG Products Corp. Garment bag. 273,911, 5-22-84, Cl. D3-71.000.
Pelly, Charles W.; and Krieger, John, to Unitex Corporation. Chair. 273,917, 5-22-84, Cl. D6-30.000.
Perusek, Allan J.: *See—*
Kroll, Edward A.; and Perusek, Allan J., 273,981, Cl. D24-02.000.
Petersen, Ross K. Air precleaner for an internal combustion engine. 273,956, 5-22-84, Cl. D15-5.000.
Piel, Ralph H. Floating mattress. 273,966, 5-22-84, Cl. D21-237.000.
Pike, Douglas C. M., to Cloche Houses Limited. Invertible leg rest. 273,915, 5-22-84, Cl. D6-3.000.
Piper, Michael H. Muffler clamp. 273,938, 5-22-84, Cl. D8-396.000.
Poon, Tit-Wing. Combined lamp and torch. 274,002, 5-22-84, Cl. D26-42.000.
Pudenz-Schulte Med, Research Corp.: *See—*
Schulte, Rudolf R.; and Heindl, Alfons, 273,993, Cl. D24-99.000.
Rasler, Raymond E. Ladder-mounted utility shelf. 273,996, 5-22-84, Cl. D25-68.000.
Regie Nationale des Usines Renault: *See—*
Tixier, Michel, 273,920, Cl. D6-48.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 273,930, 5-22-84, Cl. D7-137.000.
Rolli, Ernest P., Jr., to Rolli, Ernest P., Jr.; and Hood, Robert, a part interest. Combined taco holder and server. 273,929, 5-22-84, Cl. D7-76.000.
Roth, Daniel L. Simulative toy jigsaw puzzle or similar articles. 273,964, 5-22-84, Cl. D21-104.000.
Royel International Pty. Ltd.: *See—*
Royston, Alan L., 273,933, Cl. D8-30.000.
Royston, Alan L., to Royel International Pty. Ltd. Soldering/desoldering tool. 273,933, 5-22-84, Cl. D8-30.000.
Ruff, Robert O., to American Standard, Inc. Strike plate or similar article. 273,937, 5-22-84, Cl. D8-344.000.
Ryan, Thomas G., to Cyclops Corporation. Floor deck. 273,997, 5-22-84, Cl. D25-75.000.
S. C. Johnson & Son, Inc.: *See—*
Soos, Vili; and Weaver, Edmund A., 273,940, Cl. D9-337.000.
Sailers, Thomas L. Vehicle emergency light. 274,001, 5-22-84, Cl. D26-35.000.
Sakumoto, Akinori; and Iinuma, Kanji, to Daiwa Seiko, Inc. Fishing reel bail arm. 273,975, 5-22-84, Cl. D22-25.000.
Samsonite Corporation: *See—*
Murry, Edsel E., 273,916, Cl. D6-26.000.
Nordstrom, Mark B.; and Workman, David E., 273,913, Cl. D3-76.000.
Schmid, Rainer, to Orthopedic Design, Inc. Set of grips for bicycle handlebars. 273,936, 5-22-84, Cl. D8-303.000.
Schulstad, Thomas J. Dental burr tool holder. 273,985, 5-22-84, Cl. D24-16.000.
Schulte, Rudolf R.; and Heindl, Alfons, to Pudenz-Schulte Med, Research Corp. Catheter clip. 273,993, 5-22-84, Cl. D24-99.000.
Servicky, Henry J. Chain saw guard. 273,934, 5-22-84, Cl. D8-70.000.
Shepley, Chris: *See—*
Bolster, Gary; and Shepley, Chris, 273,935, Cl. D8-303.000.
Shimano Industrial Company Limited: *See—*
Myojo, Seiji, 273,974, Cl. D22-25.000.
Soos, Vili; and Weaver, Edmund A., to S. C. Johnson & Son, Inc. Container for liquids. 273,940, 5-22-84, Cl. D9-337.000.
SportsClocks, Inc.: *See—*
Dillon, John C., 273,943, Cl. D10-6.000.
Stair, Henry M., Jr., to American Standard, Inc. Lavatory or similar article. 273,979, 5-22-84, Cl. D23-58.000.
Stansbury, Benjamin H., Jr.; and Gorton, Lanny A., to Mattel, Inc. Emergency telephone dialing pad. 273,952, 5-22-84, Cl. D14-66.000.
Steelcase, Inc.: *See—*
Keeler, Robert A., 273,918, Cl. D6-31.000.
Stevens, James P.; and Wojtowicz, Chester J., to Amana Refrigeration, Inc. Combination microwave oven and exhaust vent hood. 273,931, 5-22-84, Cl. D7-351.000.
Suzuki, Kouzi: *See—*
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, 273,950, Cl. D14-1.000.
Takita, Haruki: *See—*
Itoh, Masafumi; Hasegaw.., Sigeru; Takita, Haruki; and Suzuki, Kouzi, 273,950, Cl. D14-1.000.
Tarozzi, Richard A., to King-Seeley Thermos Co. Insulated food service tray. 273,928, 5-22-84, Cl. D7-38.000.
Teac Corporation: *See—*
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; and Suzuki, Kouzi, 273,950, Cl. D14-1.000.
Technicare Corporation: *See—*
Kroll, Edward A.; and Perusek, Allan J., 273,981, Cl. D24-02.000.
Kroll, Edward A., 273,982, Cl. D24-02.000.
Teeny, Jim A. Fishing vest with integral hood. 273,910, 5-22-84, Cl. D2-186.000.
Thorn EMI Limited: *See—*
Chapman, John M.; and Antonis, Basil, 273,999, Cl. D26-3.000.
Tilley, Alvin R.: *See—*
Brown, Kenneth B., Jr.; Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., 273,955, Cl. D14-60.000.
Genaro, Donald M.; McGarvey, John N.; and Tilley, Alvin R., 273,909, Cl. D14-60.000.
Tixier, Michel, to Regie Nationale des Usines Renault. Seat for motor car or the like. 273,920, 5-22-84, Cl. D6-48.000.
Tres Design Co., Inc.: *See—*
Geneve, Francois M.; Heiligenstein, Luc M. D.; and Melamed, Stephen B., 273,922, Cl. D6-66.000.
Unitex Corporation: *See—*
Pelly, Charles W.; and Krieger, John, 273,917, Cl. D6-30.000.

Urethane Roller Specialists, Inc.: *See—*
Budde, Donald F., 273,967, Cl. D21-246.000.
VanDyken, Peter, Jr. Transparency frame for overhead projector. 273,959, 5-22-84, Cl. D16-26.000.
Vlock, David G. Dental post. 273,984, 5-22-84, Cl. D24-10.000.
Walker, Erven R. Wind deflector for vehicles. 273,948, 5-22-84, Cl. D12-181.000.
Warner-Lambert Company: *See—*
Kiraly, Ernest F., 273,988, Cl. D24-31.000.
Warner Lambert Technologies, Inc.: *See—*
Johnson, Edward J., 273,986, Cl. D24-17.000.
Watanabe, Chikako: *See—*
Masai, Betty K.; and Watanabe, Chikako, 273,968, Cl. D21-221.000.
Weaver, Edmund A.: *See—*
Soos, Vili; and Weaver, Edmund A., 273,940, Cl. D9-337.000.
Williams, Samuel W.: *See—*
Byrns, James E.; and Williams, Samuel W., 273,926, Cl. D6-201.000.
Windmueller, M. A.: *See—*
Nelson, Lester G.; and Windmueller, M. A., 273,971, Cl. D22-13.000.
Wojtowicz, Chester J.: *See—*
Stevens, James P.; and Wojtowicz, Chester J., 273,931, Cl. D7-351.000.
Woolaway, Gail S. Table. 273,921, 5-22-84, Cl. D6-57.000.
Workman, David E.: *See—*
Nordstrom, Mark B.; and Workman, David E., 273,913, Cl. D3-76.000.

LIST OF PLANT PATENTEES

California-Florida Plant Corporation: *See—*
Jessel, Walter H., Jr., 5,234, Cl. 74.000.
Jessel, Walter H., Jr., to California-Florida Plant Corporation. Chrysanthemum plant. 5,234, 5-22-84, Cl. 74.000.
Keller, Emil, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Susi. 5,235, 5-22-84, Cl. 68.000.
Keller, Emil, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Vreni. 5,236, 5-22-84, Cl. 68.000.
Oglevee Associates, Inc.: *See—*
Keller, Emil, 5,235, Cl. 68.000.
Keller, Emil, 5,236, Cl. 68.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 22, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 4,449,251
46 4,449,252
93 4,449,253
407 4,449,254
428 4,449,255

CLASS 3
4 4,449,256
13 4,449,257

CLASS 4
300 4,449,258
415 4,449,259
490 4,449,260

CLASS 5
63 4,449,262
133 4,449,263
465 4,449,261

CLASS 8
528 4,449,985

CLASS 12
1 R 4,449,264

CLASS 15
1.7 4,449,265
167 A 4,449,266
257 R 4,449,267

CLASS 16
35 R 4,449,268
50 4,449,269
87.4 R 4,449,270

CLASS 17
23 4,449,271

CLASS 19
105 4,449,272

CLASS 24
68 SK 4,449,273
70 SK 4,449,274
458 4,449,275

CLASS 26
2 R 4,449,276

CLASS 29
26 A 4,449,986
33 P 4,449,277
132 4,449,278
401.1 4,449,279
421 E 4,449,280
421 R 4,449,281
467 4,449,282
566.1 4,449,283
571 4,449,284
4,449,285
4,450,021
572 4,449,286
580 4,449,287
596 4,449,288
4,449,289
4,449,290
605 4,449,291
631 4,449,292
736 4,449,293
792 4,449,294
798 4,449,295
883 4,449,296

CLASS 30
29 4,449,297
90.1 4,449,298
169 4,449,299
230 4,449,300

CLASS 33
32 E 4,449,301
138 4,449,302
265 4,449,303
437 4,449,304

CLASS 34
92 4,449,305

CLASS 36
30 R 4,449,306
32 R 4,449,307
131 4,449,308

CLASS 37
141 R 4,449,309

CLASS 40
11 R 4,449,310

CLASS 42
7 4,449,311
66 4,449,312
69 R 4,449,313
94 4,449,314

CLASS 43
8 4,449,315
10 4,449,316
15 4,449,317
44.9 4,449,318
139 4,449,319

CLASS 44
7.5 4,449,987

CLASS 46
113 4,449,321
202 4,449,322
211 4,449,323

CLASS 47
67 4,449,324

CLASS 49
192 4,449,325
375 4,449,326
390 4,449,327

CLASS 51
73 R 4,449,328
165.8 4,449,988
168 4,449,329
241 S 4,449,330
295 4,449,989
425 4,449,331
439 4,449,332

CLASS 52
13 4,449,333
79.3 4,449,334
90 4,449,335
105 4,449,336
126.4 4,449,337
127.8 4,449,338
195 4,449,339
200 4,449,340
235 4,449,341
393 4,449,342
404 4,449,343
475 4,449,344
506 4,449,345
509 4,449,346
639 4,449,347
648 4,449,348

CLASS 53
66 4,449,349
412 4,449,350
569 4,449,351

CLASS 55
26 4,449,990
73 4,449,991
158 4,449,992
379 4,449,993

CLASS 56
13.1 4,449,352

CLASS 57
242 4,449,353
284 4,449,354
4,449,355
4,449,356

CLASS 59
30 4,449,357

CLASS 60
39.02 4,449,358
39.094 4,449,359
39.281 4,449,360
254 4,449,361
274 4,449,362
370 4,449,363
403 4,449,364
422 4,449,365
444 4,449,366
556 4,449,369
602 4,449,367
606 4,449,370
611 4,449,371
652 4,449,368
671 4,449,372

CLASS 62
17 4,449,994
55.5 4,449,373
81 4,449,374
89 4,449,375
259.1 4,449,376
324.1 4,449,377
371 4,449,378
401 4,449,379

CLASS 65
158 4,449,995
305 4,449,996

CLASS 66
84 A 4,449,380
203 4,449,381
4,449,382

CLASS 68
12 R 4,449,383
4,449,384

CLASS 70
277 4,449,385

CLASS 71
73 4,449,999
88 4,449,997
92 4,449,998
105 4,450,000
118 4,450,001

CLASS 72
34 B1 4,287,739
100 4,449,386
215 4,449,387
381 4,449,388
389 4,449,389
405 4,449,390

CLASS 73
32 R 4,449,391
40 4,449,392
4,449,393
55 4,449,394
56 4,449,395
61.1 R 4,449,396
118 4,449,397
159 4,449,398
4,449,399
189 4,449,400
202 4,449,401
204 4,449,402
295 4,449,403
4,449,404
304 C 4,449,405
433 4,449,406
462 4,449,407
629 B1 4,016,750
643 4,449,408
4,449,411
724 4,449,409
738 4,449,412
780 4,449,413
861.37 4,449,414
861.91 4,449,410

CLASS 74
214 4,449,415
336 R 4,449,416
409 4,449,417
475 4,449,418
493 4,449,419
501 R 4,449,420
516 4,449,421
606 R 4,449,422
688 4,449,423
701 4,449,424
804 4,449,425
867 4,449,426

CLASS 75
0.5 A 4,450,002
10 C 4,450,007
10 R 4,450,003
27 Re.31,589
53 4,450,004
60 4,450,005
125 4,450,006
128 A 4,450,008

CLASS 76
77 4,449,427
104 R 4,449,428

CLASS 81
9.3 4,449,429
98 4,449,430
165 4,449,431

CLASS 82
3 4,449,432

CLASS 83
76 4,449,433
98 4,449,434
167 4,449,435
571 4,449,436

CLASS 84
1.01 4,449,437
310 4,449,438
383 R 4,449,439
422 R 4,449,440

CLASS 89
8 4,449,441

CLASS 91
44 4,449,442
392 4,449,443
506 4,449,444

CLASS 92
12.2 4,449,445
146 4,449,446
248 4,449,447

CLASS 100
153 4,449,448

CLASS 101
111 4,449,449
227 B1 3,994,221
232 4,449,450
350 4,449,451
382 MV 4,449,452
416 A 4,449,453

CLASS 102
226 4,449,454
234 4,449,455
240 4,449,456
251 4,449,457
430 4,449,458

CLASS 104
12 4,449,459

CLASS 106
76 4,450,009
87 4,450,010
269 4,450,011
300 4,450,012
308 N 4,450,013

CLASS 110
214 4,449,460
229 4,449,461
288 4,449,462

CLASS 112
121.26 4,449,463
153 4,449,465
311 4,449,464

CLASS 114
91 4,449,466
103 4,449,467
104 4,449,468
150 4,449,469
4,449,470
249 4,449,471
274 4,449,472
354 4,449,473

CLASS 116
2 4,449,474

CLASS 118
645 4,449,475
674 4,449,476
694 4,449,477
720 4,449,478

CLASS 119
2 4,449,479
4 4,449,480
96 4,449,481

CLASS 122
4 D 4,449,482
4,449,483
13 R 4,449,484
209 R 4,449,485

CLASS 123
41.29 4,449,486
41.34 4,449,487
46 R 4,449,488
48 R 4,449,489
52 A 4,449,494
79 C 4,449,490
90.34 4,449,491
193 CH 4,449,492
196 A 4,449,493
198 DB 4,449,495
198 F 4,449,496
335 4,449,497
339 4,449,498
4,449,499
380 4,449,500
425 4,449,501
440 4,449,502
447 4,449,503
4,449,504
4,449,505
458 4,449,506
467 4,449,507
492 4,449,508
527 4,449,509

CLASS 126
99 A 4,449,510
110 R 4,449,511
292 4,449,512
416 4,449,513
418 4,449,514
430 4,449,515
4,449,516
435 4,449,517

CLASS 128
4 4,449,518
4,449,519
79 4,449,520
4,449,521
200.26 4,449,522
4,449,523
202.27 4,449,524
203.11 4,449,525
206.21 4,449,526
207.17 4,449,527
303.1 4,449,528
314 4,449,529
325 4,449,530
4,449,531
341 4,449,532
494 4,449,533
634 4,449,535
696 4,449,536
723 4,449,537
760 4,449,538
764 4,449,539

CLASS 131
290 4,449,540
302 4,449,561

CLASS 135
98 4,449,542

CLASS 136
230 4,450,314
4,450,315
256 4,450,316

CLASS 137
3 4,449,543
15 4,449,544
68 R 4,449,545
86 4,449,546
330 4,449,547
468 4,449,548
512.1 4,449,549
624.13 4,449,550
625.41 4,449,551

CLASS 138
30 4,449,552
35 4,449,553
149 4,449,554

CLASS 144
198 R 4,449,555
230 4,449,556
357 4,449,557
367 4,449,558

CLASS 145
62 4,449,559

CLASS 148
9 R 4,450,014
4,450,015
11.5 F 4,450,016
4,450,020
16 4,450,017
26 4,450,018
35 4,450,019

CLASS 152
209 R 4,449,560
213 R 4,449,561

CLASS 156
42 4,450,022
64 4,450,023
108 4,450,024
132 4,450,025
164 4,450,026
193 4,450,027
198 4,450,028
250 4,450,029
307.3 4,450,030
345 4,450,031
353 4,450,032
380.8 4,450,033
382 4,450,034
384 4,450,035
4,450,036
441.5 4,450,037
497 4,450,038
504 4,450,039
567 4,450,040
628 4,450,041
643 4,450,042

CLASS 160
113 4,449,562
166 A 4,449,564
184 4,449,563

CLASS 162
5 4,450,043
65 4,450,044
164.3 4,450,045
352 4,449,565

CLASS 164
5 4,449,566
137 4,449,567
453 4,449,568

CLASS 165
1 4,449,569
4,449,571
4,449,572
10 4,449,573
11 R 4,449,574
65 4,449,570
82 4,449,575
104.12 4,449,577
104.33 4,449,576
4,449,578
4,449,579
104.34 4,449,580
151 4,449,581

CLASS 166
64 4,449,582
72 4,449,583
187 4,449,584
248 4,449,585
303 4,449,586
323 4,449,587

CLASS 169
48 4,449,588
4,449,589

CLASS 172

126 4,449,590
195 4,449,591

CLASS 174

27 4,450,317
84 R 4,450,318

CLASS 175

52 4,449,592
58 4,449,593
59 4,449,594
79 4,449,595
85 4,449,596

CLASS 177

256 4,449,597

CLASS 179

1.5 M 4,450,321
2 EA 4,450,319
5 R 4,450,320
146 E 4,450,322

CLASS 180

6.5 4,449,598
8.1 4,449,599
132 4,449,600
148 4,449,601
215 4,449,602
232 4,449,603
233 4,449,604
287 4,449,605
297 4,449,606

CLASS 181

213 4,449,607
228 4,449,608
230 4,449,609
243 4,449,610

CLASS 182

63 4,449,611
92 4,449,612

CLASS 184

1.5 4,449,613

CLASS 187

9 R 4,449,614

CLASS 188

67 4,449,615
71.8 4,449,616

CLASS 192

0.033 4,449,617
0.052 4,449,619
4,449,620
3.31 4,449,618
70.13 4,449,621
84 C 4,449,622

CLASS 198

335 4,449,623
412 4,449,624
472 4,449,625
765 4,449,626
847 4,449,627

CLASS 200

1 V 4,450,323
5 A 4,450,324
52 R 4,450,325
61.45 M 4,450,326
144 B 4,450,327
144 R 4,450,328
148 A 4,450,329
4,450,330
160 4,450,331
340 4,450,332

CLASS 201

20 4,450,046

CLASS 203

15 4,450,047

CLASS 204

4,450,048
35 N 4,450,049
41 4,450,050
43 T 4,450,051
51 4,450,052
67 4,450,053
4,450,054
78 4,450,055
98 4,450,056
4,450,057
B1 34,065,366
145 R 4,450,058
157.1 R B1 3,869,362
158 R 4,450,059
268 4,450,060
286 4,450,061
298 4,450,062
400 4,450,063
412 4,450,064
4,450,065

CLASS 206

45.18 4,449,628
45.19 4,449,629
369 4,449,630
459 4,449,631
540 4,449,632
612 4,449,633

CLASS 208

8 LE 4,450,066
86 4,450,067
251 H 4,450,068
255 4,450,069

CLASS 209

3 4,450,070
144 4,450,071
170 4,450,072
564 4,450,073

CLASS 210

96.1 4,450,074
221 4,450,075
242.1 4,450,076
275 4,450,077
315 4,450,078
391 4,450,080
445 4,450,081
660 4,450,082

CLASS 212

196 4,449,634
4,449,635

CLASS 215

11 E 4,449,636
21 4,449,637
211 4,449,638
224 4,449,639

CLASS 219

10.49 R 4,450,333
10.55 C 4,450,335
10.55 E 4,450,334
69 M 4,450,336
4,450,337
78.12 4,450,338
124.34 4,450,339
132 4,450,340
137.52 4,450,341
216 4,450,342
357 4,450,343
600 4,450,344
491 4,450,345
522 4,450,346
549 4,450,347

CLASS 220

270 4,449,640
306 4,449,641

CLASS 221

211 4,449,642
226 4,449,643

CLASS 222

3 4,449,644
49 4,449,645
95 4,449,646
153 4,449,647
164 4,449,648
181 4,449,649
309 4,449,650
455 4,449,651

CLASS 223

46 4,449,652

CLASS 224

35 4,449,653
148 4,449,654
153 4,449,655
320 4,449,656
329 4,449,657

CLASS 226

138 4,449,658
190 4,449,659

CLASS 227

8 4,449,660
155 4,449,661

CLASS 229

49 4,449,662

CLASS 232

35 4,449,663

CLASS 235

380 4,450,348
462 4,450,349
467 4,450,350

CLASS 236

49 4,449,664

CLASS 238

10 R 4,449,665
84 4,449,666

CLASS 239

167 4,449,667
230 4,449,668
533.1 4,449,669

CLASS 241

35 4,449,670
36 4,449,671
101.7 4,449,672
186 R 4,449,673
245 4,449,674

CLASS 242

56.2 4,449,675
198 4,449,676
199 4,449,677

CLASS 244

12.5 4,449,678
118.2 4,449,679
130 4,449,680
4,449,681
4,449,682
160 4,449,683
4,449,684

CLASS 246

8 4,449,685

CLASS 248

215 4,449,686
225.2 4,449,687
498 4,449,688
544 4,449,689

CLASS 249

85 4,449,690

CLASS 250

221 4,450,351
223 R 4,450,352
231 R 4,450,353
256 4,450,354
310 4,450,355
339 4,450,356
356 ML 4,450,357
492.1 4,450,358
572 4,450,359

CLASS 251

85 4,449,691
144 4,449,692
149.8 4,449,693
171 4,449,694
214 4,449,695
231 4,449,696

CLASS 252

8.55 D 4,450,084
8.6 4,450,083
8.75 4,450,085
32.7 E 4,450,096
62.51 4,450,086
73 4,450,087
75 4,450,088
95 4,450,089
106 4,450,090
174.21 4,450,091
181 4,450,092
182 4,450,093
299.61 4,450,094
315.2 4,450,095
404 4,450,097
518 4,450,100
522 R 4,450,101
542 4,450,102

CLASS 254

297 4,449,697

CLASS 260

112 B 4,450,104
112 R 4,450,103
4,450,154
112.5 R 4,450,105
124 R 4,450,106
239.3 P Re.31,587
243.3 4,450,108
4,450,109
349 4,450,110
369 4,450,111
410.9 R 4,450,112
439 R 4,450,113
440 4,450,360
458 C 4,450,114
465 E 4,450,115
502.5 E 4,450,116

CLASS 261

39 A 4,450,117
44 D 4,450,119
147 4,450,118

CLASS 264

3 R 4,450,124
4.7 4,450,123
13 4,450,125
31 4,450,120
4,450,121
41 4,450,126
46.4 4,450,122
56 4,450,127
70 4,450,128
132 4,450,129
154 4,450,130
209.2 4,450,131
328.8 4,450,132
336 4,450,133

CLASS 266

48 4,449,698
58 4,449,699
79 4,449,700
218 4,449,701

CLASS 267

64.12 4,449,702

CLASS 269

71 4,449,703
88 4,449,704

CLASS 271

9 4,449,705
290 4,449,706

CLASS 272

109 4,449,716

CLASS 273

171 4,449,707
186 A 4,449,708
248 4,449,709
249 4,449,710
256 4,449,711
326 4,449,712

CLASS 277

1 4,449,713
9 4,449,714
12 4,449,715
153 4,449,717
170 4,449,718
192 4,449,719
207 A 4,449,720
221 4,449,721

CLASS 279

62 4,449,722

CLASS 280

5 C 4,449,724
5 H 4,449,723
78 4,449,725
81 A 4,449,726
91 4,449,727
605 4,449,729
625 4,449,730
632 4,449,731
644 4,449,732
707 4,449,733
731 4,449,728
766.1 4,449,734
818 4,449,735

CLASS 285

3 4,449,736
7 4,449,737
11 4,449,738
14 4,449,739
149 4,449,740
153 4,449,741
236 4,449,742

CLASS 290

1 R 4,450,361
40 C 4,450,363
55 4,450,362
4,450,364

CLASS 294

11 4,449,743
87.2 4,449,744
88 4,449,745

CLASS 296

1 R 4,449,746
97 E 4,449,747
4,449,748
194 4,449,749

CLASS 297

188 4,449,750
284 4,449,751
341 4,449,752

CLASS 299

2 4,449,753
21 4,449,754
31 4,449,755

CLASS 301

37 P 4,449,756

CLASS 303

6 C 4,449,757
38 4,449,759

CLASS 305

12 4,449,758

CLASS 307

262 4,450,365
297 4,450,366
4,450,367
362 4,450,368
450 4,450,369
475 4,450,370
4,450,371
511 4,450,372

CLASS 310

51 4,450,373
313 B 4,450,374
331 4,450,375
364 4,450,376
368 4,450,377
361 4,450,378

CLASS 312

42 4,449,760
116 4,449,761
196 4,449,762
208 4,449,763
236 4,449,764
311 4,449,765
368 4,449,766

CLASS 313

477 HC 4,450,379
485 4,450,380
579 4,450,381

CLASS 315

082 4,450,382
106 4,450,383
127 4,450,384
205 4,450,385
371 4,450,386
375 4,450,387

CLASS 318

87 4,450,388
140 4,450,389
282 4,450,390
313 4,450,391
317 4,450,392
592 4,450,393
696 4,450,394
700 4,450,395
721 4,450,396
762 4,450,397
803 4,450,398
814 4,450,399

CLASS 320

2 4,450,400
22 4,450,401

CLASS 324

73 R 4,450,402
166 4,450,403
226 4,450,404
234 4,450,405
247 4,450,406
304 4,450,407
318 4,450,408
460 4,450,409

CLASS 328

155 4,450,410

CLASS 330

2 4,450,411
255 4,450,412
279 4,450,413
288 4,450,414

CLASS 331

111 4,450,415
117 FE 4,450,416

CLASS 333

24 R 4,450,417
128 4,450,418
164 4,450,419
194 4,450,420
202 4,450,421
4,450,422

CLASS 335

131 4,450,423

CLASS 336

94 4,450,424

CLASS 337

171 4,450,425

CLASS 338

21 4,450,426
32 H 4,450,427
34 4,450,428
35 4,450,429

CLASS 339

14 R 4,449,768
17 C 4,449,769
17 CF 4,449,770
17 LC 4,449,767
19 4,449,771
29 B 4,449,772
59 M 4,449,773
4,449,774
75 MP 4,449,775
91 R 4,449,776
103 R 4,449,777
143 R 4,449,778
177 R 4,449,779

CLASS 340

58 4,450,431
146.2 4,450,432
347 DA 4,450,433
506 4,450,434
511 4,450,435
531 4,450,436
540 4,450,437
576 4,450,438
703 4,450,439
753 4,450,440
773 4,450,441
814 4,450,442
870.36 4,450,443
904 4,450,430

CLASS 343

5 CM 4,450,444
7.5 4,450,445
7.7 4,450,446
17.7 4,450,447
379 4,450,448
700 MS 4,450,449
758 4,450,450
765 4,450,451

CLASS 346

108 4,450,453
135.1 4,450,452
140 PQ 4,450,455
140 R 4,450,454
4,450,456
4,450,457
155 4,450,458
160 4,450,459

CLASS 350

1.1 4,449,780
3.61 4,449,785
96.15 4,449,781
96.16 4,449,782
4,449,783
96.21 4,449,784
289 4,449,788
293 4,449,786
319 4,449,789
357 4,449,790
427 4,449,791
432 4,449,792
458 4,449,793
472 4,449,794
516 4,449,795
538 4,449,787
582 4,449,796

CLASS 351

205 4,449,797
207 4,449,798

CLASS 353

39 4,449,799
119 4,449,800

CLASS 354

12 4,449,801
105 4,449,805
121 4,449,806
195.1 4,449,807
416 4,449,802
4,449,803
418 4,449,804

CLASS 355

3 DD 4,449,810
3 DR 4,449,809
3 SH 4,449,811
3 TR 4,449,808
14 R 4,449,813
14 SH 4,449,812
75 4,450,536
85 4,449,814
106 4,449,815
110 B1 4,265,533

CLASS 356

37 4,449,816
145 4,449,817
227 4,449,822
237 4,449,818
300 4,449,819
307 4,449,820
319 4,449,821
346 4,449,823
349 4,449,825
350 4,449,824

CLASS 357

17 4,450,460
19 4,450,461
23 4,450,462
30 4,450,463
4,450,464
4,450,465
4,450,466
38 4,450,467
51 4,450,468
56 4,450,469
59 4,450,470
80 4,450,471
82 4,450,472

CLASS 358

10 4,450,473
19 4,450,474
44 4,450,475
74 4,450,476
86 4,450,477
111 4,450,478
113 4,450,479
114 4,450,481
149 4,450,480
160 4,450,482
166 4,450,483
213 4,450,484
298 4,450,485
299 4,450,486
335 4,450,487
342 4,450,488
348 4,450,489

CLASS 360

13 4,450,490
96.5 4,450,491
105 4,450,492
106 4,450,493
125 4,450,494
137 4,450,495

CLASS 361

58 4,450,496
82 4,450,497
212 4,450,498
253 4,450,499
277 4,450,500
284 4,450,501
309 4,450,502
356 4,450,503
369 4,450,504
386 4,450,505

CLASS 362

4 4,450,506
61 4,450,507
105 4,450,508
216 4,450,509
221 4,450,510
267 4,450,511
276 4,450,512
299 4,450,513

CLASS 363

37 4,450,514
60 4,450,515
84 4,450,516
124 4,450,517

CLASS 364

183 4,450,518
200 4,450,519
4,450,520
4,450,521
4,450,522
4,450,523
4,450,524
4,450,525
405 4,450,526
415 4,450,527
431.05 4,450,528
508 4,450,529
513 4,450,530
604 4,450,531
703 4,450,532
724 4,450,533
900 4,450,534
4,450,535

CLASS 365

217 4,450,537
219 4,450,538

CLASS 366

13 4,449,826
85 B1 3,195,868
131 4,449,827
147 4,449,828

CLASS 367

35 4,450,539
41 4,450,540
149 4,450,541
150 4,450,542
154 4,450,543
176 4,450,544
198 4,450,545

CLASS 368

63 4,449,829
119 4,449,830
165 4,449,831
187 4,449,832
262 4,449,833

CLASS 369

24 4,450,546
45 4,450,547
71 4,450,548
75.1 4,450,549
126 4,450,550
173 4,450,551
240 4,450,552
275 4,450,553

CLASS 370

4 4,450,554
31 4,450,555
58 4,450,556
4,450,557
106 4,450,558

CLASS 371

10 4,450,559
25 4,450,560
37 4,450,561
51 4,450,562

CLASS 372

23 4,450,563
26 4,450,564
32 4,450,565
38 4,450,566
50 4,450,567
76 4,450,568

CLASS 373

9 4,450,569
69 4,450,570

CLASS 375

7 4,450,571
87 4,450,572
104 4,450,573

CLASS 376

262 4,450,134

CLASS 377

2 4,450,574

CLASS 378

26 4,450,575
47 4,450,576
109 4,450,577
152 4,450,578

CLASS 382

8 4,450,579

CLASS 383

6 4,450,580
42 4,450,581

CLASS 384

99 4,449,834

CLASS 400

124 4,449,836
161 4,449,835
208 4,449,837
234 4,449,838
485 4,449,839

CLASS 402

34 4,449,840

CLASS 403

24 4,449,841
25 4,449,842
173 4,449,843

CLASS 404

60 4,449,844
118 4,449,845

CLASS 405

7 4,449,846
19 4,449,847
50 4,449,848
52 4,449,849
60 4,449,850
93 4,449,851
168 4,449,852
184 4,449,853
195 4,449,854
260 4,449,855
269 4,449,856
286 4,449,857
4,449,858
291 4,449,859
293 4,449,860

CLASS 406

39 4,449,861
93 4,449,862
182 4,449,863

CLASS 407

113 4,449,864

CLASS 408

1 R 4,449,865
9 4,449,866
103 4,449,867
138 4,449,868

CLASS 409

11 4,449,869
134 4,449,870
178 4,449,871
252 4,449,872

CLASS 410

80 4,449,875
151 4,449,876

CLASS 411

57 4,449,877
341 4,449,873
418 4,449,874
495 4,449,878

CLASS 414

11 4,449,879
421 4,449,880
428 4,449,881
665 4,449,882
744 A 4,449,883
749 4,449,884
750 4,449,885
776 4,449,886

CLASS 415

4 4,449,887
143 4,449,888

CLASS 416

16 4,449,889

CLASS 417

50 4,449,890
240 4,449,892
322 4,449,893
328 4,449,894
368 4,449,895
399 4,449,896
423 R 4,449,891
437 4,449,897

CLASS 418

61 B 4,449,898
255 4,449,899

CLASS 419

12 4,450,135

CLASS 420

590 4,450,136

CLASS 422

12 4,450,137
4,450,138
186.3 4,450,139
225 4,450,141

CLASS 423

8 4,450,142
10 4,450,143
54 4,450,144
242 4,450,145
304 4,450,146
4,450,147
605 4,450,148

CLASS 424

1.1 4,450,149
4,450,150
46 4,450,151
70 4,450,152
94 4,450,153
177 4,450,155
180 4,450,156
200 4,450,157
220 4,450,158
238 4,450,107
246 4,450,159
250 4,450,160
251 4,450,161
4,450,162
253 4,450,163
256 4,450,164
258 4,450,165
4,450,166
4,450,167
267 4,450,168
270 4,450,169
273 R 4,450,170
279 4,450,171
309 4,450,172
4,450,173
4,450,174
349 4,450,175

CLASS 425

6 4,449,900
4,449,901
7 4,449,902
38 4,449,903
97 4,449,904
117 4,449,905
131.1 4,449,906
149 4,449,917
174.4 4,449,916
183 4,449,907
204 4,449,908
296 4,449,909
325 4,449,910
374 4,449,911
444 4,449,912
548 4,449,913
556 4,449,914
564 4,449,915

CLASS 426

2 4,450,176
19 4,450,177
69 4,450,178
103 4,450,179
107 4,450,180
507 4,450,181
565 4,450,182
646 4,450,183

CLASS 427

34 4,450,184
39 4,450,185
42 4,450,186
125 4,450,187
217 4,450,188
236 4,450,189
304 4,450,190
443.1 4,450,191

CLASS 428

40 4,450,192
71 4,450,193
172 4,450,194
178 4,450,195
197 4,450,196
232 4,450,197
315.5 4,450,198
317.9 4,450,199
323 4,450,200
336 4,450,201
412 4,450,202
514 4,450,203
552 4,450,204
4,450,205
606 4,450,206
614 4,450,207
620 4,450,208
626 4,450,209
660 4,450,210

CLASS 429

27 4,450,211
35 4,450,212
105 4,450,213
194 4,450,214

CLASS 430

7 4,450,215
31 4,450,216
58 4,450,217
59 4,450,218
4,450,219
102 4,450,220
106.6 4,450,221
213 4,450,224
220 4,450,222
223 4,450,223
300 4,450,226
339 4,450,227
505 4,450,228
523 4,450,229
539 4,450,230
567 4,450,225

CLASS 431

76 4,449,918
4,449,919
91 4,449,920

CLASS 432

8 4,449,921
64 4,449,922
82 4,449,923
138 4,449,924
225 4,449,925
32 4,449,926
38 4,449,927
40 4,449,928
56 4,449,929
64 4,449,930
74 4,449,931
126 4,449,932
141 4,449,933
143 4,449,934
151 4,449,935
214 4,449,936
225 4,449,937

CLASS 434

12 4,449,939
66 4,449,940
153 4,449,941
224 4,449,942
334 4,449,943

CLASS 435

7 4,450,231
15 4,450,232
178 4,450,233
253 4,450,234
4,450,235
4,450,236
4,450,237
256 4,450,238

CLASS 436

510 4,450,239

CLASS 440

47 4,449,944
53 4,449,945

CLASS 441

4 4,449,946
81 4,449,947

CLASS 445

18 4,449,948
24 4,449,949
28 4,449,950
34 4,449,951
55 4,449,952

CLASS 485

12 4,450,582
86 4,450,583
135 4,450,585
161 4,450,586
182 4,450,587
192 4,450,588
205 4,450,589
214 4,450,590
325 4,450,584

CLASS 464

19 4,449,953
36 4,449,954
78 4,449,955
149 4,449,956

CLASS 474

14 4,449,957
205 4,449,958
238 4,449,959
242 4,449,960

CLASS 493

209 4,449,962
414 4,449,963

CLASS 494

16 4,449,964
4,449,965
20 4,449,966
54 4,449,967

CLASS 501

136 4,450,240

CLASS 502

34 4,450,241
105 4,450,242
107 4,450,098
131 4,450,243
150 4,450,302
185 4,450,244
211 4,450,245
232 4,450,099

CLASS 521

129 4,450,246

CLASS 523

116 4,449,938
518 4,450,247

CLASS 524

99 4,450,248
132 4,450,249
141 4,450,250
251 4,450,251
265 4,450,266
353 4,450,252
378 4,450,253
399 4,450,254
430 4,450,255

CLASS 525

316 4,450,256
437 4,450,257
440 4,450,258

CLASS 526

173 4,450,259
213 4,450,260
214 4,450,261
234 4,450,262
249 4,450,263
279 4,450,264
298 4,450,265

CLASS 528

99 4,450,267
327 4,450,268

CLASS 544

8 4,450,269
24 4,450,270
354 4,450,271
357 4,450,272

CLASS 546

37 4,450,273
262 4,450,274

CLASS 548

201 4,450,275
303 4,450,276
342 Re.31,588
346 4,450,277
376 4,450,278

CLASS 549

27 4,450,279
221 4,450,280
255 4,450,281

CLASS 556

472 4,450,282
479 4,450,283

CLASS 560

163 4,450,284
206 4,450,285
241 4,450,286
4,450,287
4,450,288
4,450,289
246 4,450,290

CLASS 562

463 4,450,292
530 4,450,291
579 4,450,293
608 4,450,294

CLASS 564

294 4,450,295

CLASS 568

316 4,450,296
424 4,450,297
437 4,450,298
454 4,450,299
462 4,450,300
473 4,450,301
574 4,450,303
609 4,450,304
611 4,450,305
630 4,450,306
637 4,450,308
665 4,450,307

CLASS 570

217 4,450,309

CLASS 585

400 4,450,310
413 4,450,311
481 4,450,312
624 4,450,313
640 4,449,961

CLASS 604

24 4,449,968
51 4,449,534
54 4,449,971
96 4,449,972
152 4,450,079
161 4,449,973
175 4,449,974
179 4,449,975
254 4,449,976
319 4,449,984
322 4,449,969
333 4,449,970
366 4,449,977
372 4,449,978
379 4,449,979
890 4,449,980
4,449,981
891 4,449,982
892 4,449,983

CLASSIFICATION OF DESIGNS

D2—	186	273,910		201	273,926		434	273,942		9	273,957			273,974		33	273,989
D3—	71	273,911	D7—	1	273,927	D10—	6	273,943			273,958			273,975		45	273,990
		273,912		38	273,928		50	273,944	D16—	26	273,959		26	273,972		46	273,991
	76	273,913		76	273,929		65	273,945		132	273,960	D23—	2	273,976		99	273,992
D4—	12	273,914		137	273,930		96	273,946	D19—	90	273,961			273,977			273,993
D6—	3	273,915		351	273,931	D12—	127	273,947	D21—	57	273,962		58	273,978	D25—	48	273,994
	26	273,916	D8—	30	273,933		181	273,948		81	273,963			273,979			273,995
	30	273,917		70	273,934		317	273,949		104	273,964		61	273,980		68	273,996
	31	273,918		303	273,935	D14—	1	273,950		207	273,965	D24—	3	273,983		75	273,997
	32	273,919			273,936		5	273,951		221	273,968		02	273,981		91	273,998
	48	273,920		330	273,932		58	273,954		237	273,966			273,982	D26—	3	273,999
	57	273,921		344	273,937		60	273,909		246	273,967		10	273,984		29	274,000
	66	273,922		396	273,938			273,955	D22—	13	273,969		16	273,985		35	274,001
	166	273,923	D9—	301	273,939		66	273,952			273,970		17	273,986		42	274,002
	188	273,924		337	273,940		111	273,953			273,971			273,987		85	274,003
	196	273,925		420	273,941	D15—	5	273,956		25	273,973		31	273,988			

CLASSIFICATION OF PLANTS

P.—	68	5,235		5,236		74	5,234				

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,450,160		4,449,886		4,450,503		4,449,473		4,449,741		4,449,837
4 :	4,449,260		4,449,888		4,450,508		4,449,524		4,449,772		4,450,241
6 :	4,449,412		4,449,901		4,450,527		4,449,538		4,449,784		4,450,381
	4,449,561		4,449,929		4,450,556		4,449,570		4,449,817		4,450,569
	4,449,690		4,449,933		4,450,560		4,449,572		4,449,833	22 :	4,449,257
	4,450,066		4,449,938		4,450,567		4,449,588		4,449,873		4,449,324
	4,450,537		4,449,939		4,450,568		4,449,643		4,449,945		4,449,479
01 :	4,449,480		4,449,941		4,450,582		4,449,649		4,449,948		4,449,991
	4,449,527		4,449,944		4,016,750		4,449,666		4,449,969		4,450,069
	4,450,054		4,449,958	08 :	4,449,592		4,449,746		4,449,979		4,450,260
	4,450,063		4,449,965		4,449,595		4,449,760		4,449,984	23 :	4,449,340
04 :	4,449,747		4,449,966		4,449,753		4,449,844		4,450,022		4,449,770
	4,449,762		4,449,973		4,449,823		4,449,878		4,450,026	24 :	4,449,329
	4,449,845		4,449,983		4,449,896		4,450,060		4,450,028		4,449,363
	4,449,930		4,450,002		4,450,027		4,450,072		4,450,092		4,449,469
	4,450,202		4,450,015		4,450,144		4,450,110		4,450,141		4,449,472
	4,450,374		4,450,021		4,450,231		4,450,291		4,450,173		4,449,547
	4,450,445		4,450,029		4,450,387		4,450,409		4,450,183		4,449,660
	4,287,739		4,450,034		4,450,411		4,450,414		4,450,203		4,449,675
05 :	4,449,542		4,450,041	09 :	4,449,302		4,450,435		4,450,239		4,449,881
	4,449,644		4,450,062		4,449,312		4,450,480		4,450,251		4,450,148
	4,449,686		4,450,079		4,449,336		4,450,583		4,450,284		4,450,192
	4,450,529		4,450,080		4,449,359	13 :	4,449,261		4,450,362		4,450,246
06 :	4,449,253		4,450,082		4,449,446		4,449,296		4,450,375		4,450,446
	4,449,262		4,450,103		4,449,548		4,449,434		4,450,386		4,450,478
	4,449,264		4,450,104		4,449,629		4,449,488		4,450,434		4,450,483
	4,449,271		4,450,126		4,449,693		4,449,626		4,450,498		4,450,563
	4,449,283		4,450,129		4,449,714		4,449,761		4,450,510	25 :	4,449,254
	4,449,323		4,450,198		4,449,830		4,449,847		4,450,512		4,449,295
	4,449,403		4,450,278		4,449,875		4,449,876		3,994,221		4,449,311
	4,449,407		4,450,281		4,449,990		4,449,893	18 :	4,449,290		4,449,353
	4,449,426		4,450,315		4,450,037		4,449,908		4,449,318		4,449,373
	4,449,441		4,450,322		4,450,056		4,449,968		4,449,328		4,449,463
	4,449,514		4,450,325		4,450,113		4,450,073		4,449,409		4,449,464
	4,449,536		4,450,338		4,450,134	15 :	4,449,894		4,449,422		4,449,477
	4,449,564		4,450,356		4,450,136	17 :	4,449,300		4,449,497		4,449,824
	4,449,582		4,450,365		4,450,145		4,449,338		4,450,007		4,449,883
	4,449,596		4,450,368		4,450,146		4,449,352		4,450,131		4,449,926
	4,449,605		4,450,384		4,450,237		4,449,368		4,450,270		4,449,932
	4,449,615		4,450,402		4,450,351		4,449,384		4,450,394		4,449,950
	4,449,628		4,450,407		4,450,415		4,449,394		4,450,476		4,449,989
	4,449,636		4,450,418		4,450,430		4,449,436		4,450,548		4,450,033
	4,449,652		4,450,437		4,450,534		4,449,439		4,450,587		4,450,039
	4,449,655		4,450,443		4,450,558		4,449,442	19 :	4,449,343		4,450,133
	4,449,665		4,450,444		4,450,574		4,449,581		4,449,510		4,450,135
	4,449,673		4,450,447	10 :	4,450,112		4,449,585		4,449,511		4,450,150
	4,449,703		4,450,459		4,450,172		4,449,586		4,449,734		4,450,213
	4,449,704		4,450,463		4,450,226		4,449,590		4,449,758		4,450,319
	4,449,771		4,450,472	12 :	4,449,259		4,449,602		4,450,417		4,450,324
	4,449,776		4,450,488		4,449,265		4,449,633		4,450,507		4,450,331
	4,449,801		4,450,489		4,449,297		4,449,709	20 :	4,449,589		4,450,334
	4,449,857		4,450,493		4,449,315		4,449,712	21 :	4,449,437		4,450,358
	4,449,867		4,450,496		4,449,465		4,449,719		4,449,540		4,450,360

4,450,385
4,450,396
4,450,410
4,450,436
28 : 4,449,391
4,450,451
29 : 4,449,313
4,450,572
26 : 4,449,267
4,449,289
4,449,319
4,449,334
4,449,337
4,449,342
4,449,374
4,449,383
4,449,401
4,449,415
4,449,423
30 : 4,449,481
4,449,506
4,449,507
31 : 4,449,252
4,449,519
4,449,521
4,449,566
32 : 4,449,559
4,449,621
33 : 4,449,299
4,449,692
4,449,722
4,449,745
4,449,751
34 : 4,449,280
4,449,756
4,449,765
4,449,786
4,449,815
4,449,864
4,449,872
4,449,880
4,449,898
4,450,001
4,450,047
4,450,051
4,450,081
4,450,088
4,450,091
4,450,127
4,450,159
4,450,164
4,450,191
4,450,255
4,450,280
4,450,283
4,450,285
4,450,346
4,450,376
4,450,382
4,450,400
4,450,431
27 : 4,449,263
4,449,335
4,449,347
4,449,490
4,449,523
4,449,553
4,449,554
4,449,606
4,449,667
4,449,710
4,449,725
4,449,739
4,449,839
4,449,982
4,450,043
4,450,176
4,450,180
4,450,227
4,450,229
4,450,263
4,450,353
4,450,449
4,450,450
4,450,504
4,450,513
4,449,330
4,449,525
4,449,545
4,449,750
4,449,763
4,449,943
4,449,975
4,450,121
4,450,130
4,450,137
4,450,138
4,450,193
4,450,481
4,449,627
4,450,441
4,449,529
4,449,531
4,449,568
4,449,569
4,449,597
4,449,632
4,449,764
4,449,952
4,449,977
4,449,987
4,450,050
4,450,052
4,450,055
4,450,067
4,450,071
4,450,085
4,450,090
4,450,096
4,450,101
4,450,158
4,450,175
4,450,212
4,450,261
4,450,264
4,450,296
4,450,299
4,450,305
4,450,311
4,450,321
4,450,326
4,450,333
4,450,343
4,450,371
4,450,419
4,450,481
4,450,524
4,450,532
4,450,536
4,450,550
4,450,552
4,450,554
4,450,562
35 : 4,450,565
4,449,256
4,449,654
4,449,892
4,450,578
36 : Re.31,588
4,449,291
4,449,341
4,449,350
4,449,351
4,449,358
4,449,375
4,449,378
4,449,396
4,449,408
4,449,411
4,449,432
4,449,461
4,449,467
4,449,482
4,449,503
4,449,512
4,449,513
4,449,533
4,449,580
4,449,631
4,449,645
4,449,646
4,449,679
4,449,687
4,449,716
4,449,800
4,449,808
4,449,843
4,449,853
4,449,906
4,449,921
4,449,937
4,450,086
4,450,093
4,450,155
4,450,177
4,450,179
4,450,182
4,450,184
4,450,190
4,450,215
4,450,216
4,450,217
4,450,222
4,450,224
4,450,232
4,450,242
4,450,248
4,450,258
4,450,269
4,450,272
4,450,276
4,450,282
4,450,299
4,450,339
4,450,360
4,450,373
4,450,398
4,450,408
4,450,440
4,450,448
4,450,458
4,450,461
4,450,465
4,450,530
4,450,541
4,450,542
4,450,544
4,450,559
4,450,580
37 : 4,449,272
4,449,276
4,449,541
4,449,612
4,449,663
4,449,766
4,449,778
4,449,846
4,449,909
4,449,927
4,450,522
4,450,523
38 : 4,449,462
4,449,672
39 : Re.31,589
4,449,348
4,449,370
4,449,398
4,449,424
4,449,445
4,449,474
4,449,520
4,449,567
4,449,613
4,449,616
4,449,640
4,449,657
4,449,670
4,449,674
4,449,694
4,449,696
4,449,737
4,449,768
4,449,780
4,449,828
4,449,871
4,449,874
4,449,899
4,449,996
4,449,998
4,450,025
4,450,035
4,450,059
4,450,076
4,450,187
4,450,197
4,450,214
4,450,235
4,450,236
4,450,252
4,450,254
4,450,262
4,450,294
4,450,306
4,450,310
4,450,318
4,450,341
4,450,350
4,450,361
4,450,363
4,450,369
4,450,404
4,450,486
40 : 4,449,339
4,449,593
4,449,743
4,449,849
4,449,862
4,449,935
4,450,009
4,450,010
4,450,068
4,450,075
4,450,102
4,450,153
4,450,303
4,450,313
4,450,370
4,450,499
4,450,539
41 : 4,449,307
4,449,571
4,449,882
4,449,887
4,450,422
42 : 4,449,282
4,449,294
4,449,306
4,449,376
4,449,377
4,449,483
4,449,653
4,449,658
4,449,688
4,449,701
4,449,727
4,449,755
4,449,767
4,449,799
4,449,821
4,449,842
4,449,865
4,449,900
4,449,902
4,449,904
4,449,918
4,449,922
4,449,961
4,449,967
4,449,978
4,449,994
4,450,017
4,450,046
4,450,058
4,450,061
4,450,171
4,450,174
4,450,194
4,450,196
4,450,204
4,450,206
4,450,208
4,450,293
4,450,302
4,450,397
4,450,401
4,450,406
4,450,424
4,450,425
4,450,505
3,195,868
44 : 4,449,468
4,449,544
43 : 4,449,354
4,449,355
4,449,356
4,449,515
4,450,011
47 : 4,449,362
4,449,599
4,449,985
4,450,057
4,450,149
4,450,250
48 : 4,449,309
4,449,314
4,449,316
4,449,333
4,449,345
4,449,379
4,449,393
4,449,526
49 : 4,449,303
4,450,077
4,450,520
50 : 4,449,661
51 : 4,449,400
4,449,458
4,449,711
4,449,787
4,449,827
4,450,416
4,450,427
4,450,477
4,450,525
4,450,531
4,450,590
53 : 4,449,438
4,449,528
4,449,642
4,449,678
4,449,680
4,449,681
4,449,682
4,449,683
4,449,706
4,449,789
4,450,008
4,450,139
4,450,405
55 : 4,449,268
4,449,292
4,449,365
4,449,416
4,449,635
4,449,715
4,449,777
4,449,866
4,450,340
4,450,575

DESIGN PATENTS

06 : 273,917
273,919
273,921
273,923
273,948
273,949
273,952
273,953
273,954
273,959
273,966
273,968
273,976
273,977
273,993
274,001
08 : 273,913
273,932
09 : 273,928
273,939
273,988
12 : 273,960
17 : 273,922
273,925
273,931
273,942
273,944
273,987
273,996
18 : 273,955
19 : 273,926
273,938
20 : 273,972
21 : 273,980
25 : 273,945
26 : 273,918
27 : 273,927
273,956
29 : 273,967
34 : 273,909
273,911
273,943
273,962
273,979
36 : 273,924
273,930
273,961
273,984
39 : 273,929
273,934
273,937
273,958
273,981
273,982
273,992
40 : 273,973
41 : 273,910
273,936
42 : 273,912
273,986
273,997
46 : 273,971
47 : 273,916
273,941
273,969
273,970
48 : 273,964
273,983
53 : 273,935
273,985
55 : 273,947
273,990
274,003

PLANT PATENTS

06 : 5,234

U.S. GOVERNMENT PRINTING OFFICE : O—1984

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

Vol. 1042 Number 5

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

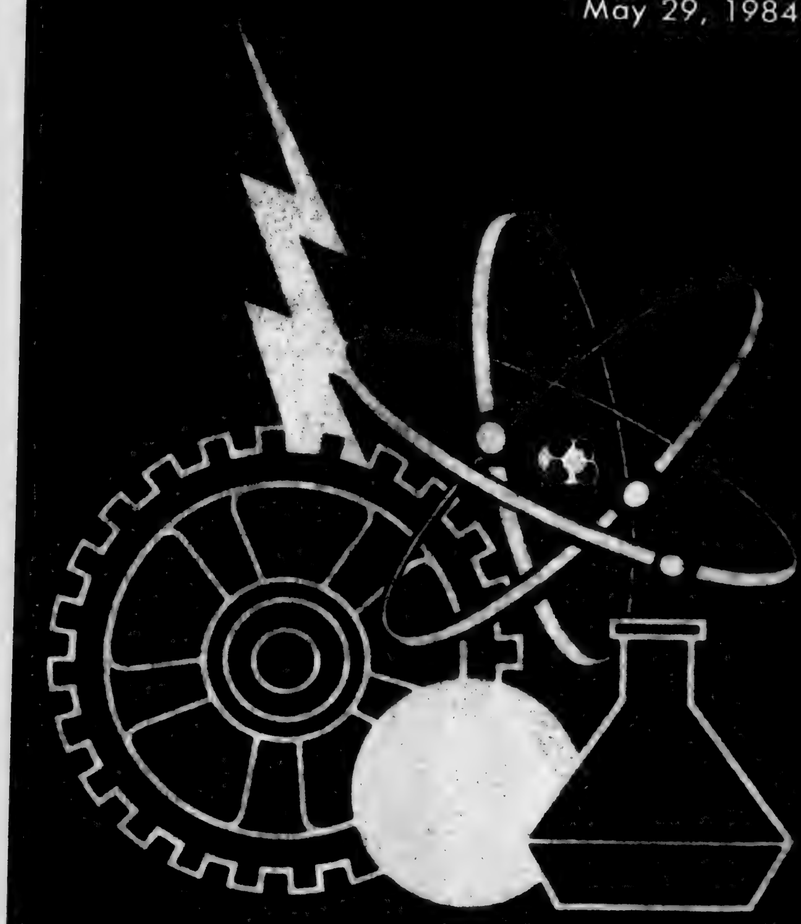
Route to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PATENTS

May 29, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

May 29, 1984 Volume 1042 Number 5

CONTENTS

		Page
Patent and Trademark Office Notices		
Patent Cooperation Treaty (PCT) Information	1042 OG	58
Reissue Applications Filed	1042 OG	58
Requests for Reexaminations Filed	1042 OG	58
Service by Publication	1042 OG	58
Subscription Pricing Information	1042 OG	58
Revision of Foreign Filing License Procedure	1042 OG	58
USTA Publication of Looseleaf Rules of Practice	1042 OG	59
Notice of Availability for Licensing	1042 OG	59
PTO Status	1042 OG	62
Patent Certificates of Correction	1042 OG	64
Dedications	1042 OG	64
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1042 OG	65
Condition of Patent Applications	1042 OG	66
Reissue Patents Granted (31,590)		1843
Plant Patents Granted (5,237)		1845
Patents Granted		
General and Mechanical (4,450,591)		1847
Chemical (4,451,261)		2077
Electrical (4,451,690)		2197
Design Patents Granted (274,004)		2281
Index of Patentees		PI 1
Indices of Reissue, Design and Plant Patentees		PI 52
Classification of		
Patents (Including Reissues)		PI 55
Designs and Plants		PI 58
Geographical Index of Residence of Inventors		
Patents (Including Reissues)		PI 59
Designs and Plants		PI 60
Change of Address Form and Subscription Order Form		Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 13, 1984.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,275,662, Re. S.N. 587,507, Filed Mar. 8, 1984, Cl. 105/377, RAILWAY HOPPER CAR ROOF SUPPORT STRUCTURE, Franklin P. Adler, et al., Owner of Record: *Richmond Tank Car Co., Houston Tex.*, Attorney or Agent: Lester L Hewitt, Ex. Gp.: 312

4,412,621, Re. S.N. 589,483, Filed Mar. 14, 1984, Cl. 211/58, MAGAZINE ASSEMBLY FOR HOLDING INFORMATION BEARING CARDS AND THE LIKE, Falk-Jurgen Eichner, Owner of Record: *Fellow Manufacturing Co., Itasca, Ill.*, Attorney or Agent: Talivaldis Cepuritis, Ex. Gp.: 355

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue

Service by Publication

A petition to cancel the registration listed below having been filed, and the notice of such proceeding sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assignee or legal representative, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Basila Mfg. Co., Inc., Leakesville, Miss., Reg. No. 583,188, for the mark "BASILA" and design, Canc. No. 14,000.

ERMA S. BROWN,
Deputy Clerk, Trademark Trial and Appeal Board.

For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Subscription Pricing Information

The annual subscription prices on the following publication have been changed as indicated below:

Title:	Patent and Trademark Office Notices	
	First-class domestic mailing	$ 71.00
	First-class foreign mailing	not available
	Third-class domestic mailing	57.00
	Third-class foreign mailing	71.25

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer 1984.

Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

May 7, 1984.

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 40227-18]
Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce

Action: Final rule: Change of effective date

Summary: The Patent and Trademark Office amended the rules of practice in patent cases, Parts 1 and 5 of 37 CFR, to establish a streamlined procedure for granting licenses for foreign filing by publishing a notice in the Federal Register on Apr. 4, 1984, at 49 Fed. Reg. 13456–13463. The notice set an effective date of June 1, 1984. However, title 35, United States Code, section 41(g) provides that "No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register." Since these rules establish fees and the effective date of the rules was slightly less than 60 days after the publication of the final rule change in the Federal Register, it is necessary to set a later effective date.

Date: The effective date of the rule change published at 49 Fed. Reg. 13456–13463 is changed to June 4, 1984.

For further information contact: Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 30, 1984.

USTA Publication of Looseleaf Rules of Practice

The United States Trademark Association has published *US Trademark Law: Rules of Practice, Forms and Federal Statutes.* The book, in looseleaf format to allow for supplements, includes the trademark Rules of Practice, sample forms, the Lanham Act and applicable provisions and cites of other statutes that deal with trademarks and the Patent and Trademark Office. In content and format, the USTA publication generally replaces the Government Printing Office looseleaf edition of the Rules of Practice which has been discontinued.

Information on ordering copies of *US Trademark Law: Rules of Practice, Forms and Federal Statutes* may be obtained from:

The United States Trademark Association
6 East 45th Street
New York, N.Y. 10017
(212) 986-5880

The Government Printing Office continues to publish the Rules of Practice as Title 37, Code of Federal Regulations, every July. Effective July 1, 1983, however, the CFR edition no longer includes forms.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademark.

Apr. 30, 1984.

U.S. Government-Owned Inventions
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Patent Licensing.
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

Department of Agriculture

SN 6-276,764 (4,432,147). ENERGY EFFICIENT LUMBER DRY KILN USING SOLAR COLLECTORS AND REFRIGERATION SYSTEM.

SN 6-352,662 (4,439,488). ENCAPSULATION BY ENTRAPMENT WITHIN POLYHYDROXY POLYMER BORATES.

SN 6-500,043. SDL-POP-S-1, A NEW BIOTYPE OF PSEUDOMONAS CEPACIA.

SN 6-570,155. MONOCLONAL ANTIBODIES TO BLUETONGUE VIRUS ANTIGEN.

SN 6-579,919. CONTINUOUS TREE HARVESTER.

SN 6-586,617. PROCESS TO IMPART SMOOTH-DRY AND FLAME RETARDANT PROPERTIES TO CELLULOSIC FABRIC.

SN 6-591,367. METHOD FOR CONTROLLING YELLOW NUTSEDGE USING PUCCINIA CANALICULATA.

Department of Commerce

SN 6-346,314 (4,433,336). THREE-ELEMENT ANTENNA FORMED OF ORTHOGONAL LOOPS MOUNTED ON A MONOPOLE.

SN 6-581,831. FLEXURE HINGE.

Department of Health & Human Services

SN 6-602,946. METHOD OF CONTINUOUS PRODUCTION OF RETROVIRUSES (HTLV-III) FROM PATIENTS WITH AIDS AND PRE-AIDS.

SN 6-602,945. SEROLOGICAL DETECTION OF ANTIBODIES TO HTLV-III IN SERA OF PATIENTS WITH AIDS AND PRE-AIDS CONDITIONS.

SN 6-181,954 (4,430,437). TEST METHODS EMPLOYING MONOCLONAL ANTIBODIES AGAINST HERPES SIMPLEX VIRUS TYPES 1 AND 2 NUCLEOCAPSIDS PROTEINS.

SN 6-210,044 (4,433,400). ACOUSTICALLY TRANSPARENT HYDROPHONE PROBE.

SN 6-22,219 (4,437,857). METHOD AND APPARATUS FOR TRAVERSING BLOOD VESSELS.

SN 6-243,775 (4,435,572). SYNTHESIS OF ETHYL-4(3'-METHOXYPHENYL)-1-METHYL PIPERIDINE-3-CARBOXYLATE.

SN 6-307,536 (4,430,318). IMMUNOASSAY UTILIZING 125I PROTEIN A.

SN 6-343,026 (4,438,098). HEAT TREATMENT OF A NON-A, NON-B HEPATITIS AGENT TO PREPARE A VACCINE.

SN 6-416,107 (4,430,216). HIGH SPEED PREPARATIVE COUNTERCURRENT CHROMATOGRAPHY WITH A MULTIPLE LAYER COILED COLUMN.

SN 6-426,141 (4,435,505). LYSIS FILTRATION CULTURE CHAMBER.

SN 6-555,811. RECOMBINANT VACCINES FOR INFLUENZA VIRUS AND HEPATITIS B VIRUS.

SN 6-564,411. INDIUM-BLEOMYCIN COMPLEX (111 IN-BLMC).

SN 6-577,817. ANTITUSSIVE 6-KETO MORPHINANS OF THE (+)-SERIES.

Department of the Air Force

SN 6-227,319 (4,426,193). IMPACT COMPOSITE BLADE.

SN 6-227,557 (4,425,553). LOW FREQUENCY PULSE GENERATOR APPARATUS.

SN 6-242,505 (4,434,492). METHOD AND APPARATUS FOR IODINE VAPORIZATION.

SN 6-247,495 (4,425,518). HIGH VOLTAGE FIELD EFFECT TRANSISTOR PULSE APPARTUS.

SN 6-260,879 (4,431,994). COMBINED RADAR/BAROMETRIC ALTIMETER.

SN 6-271,753 (4,426,648). SIMULTANEOUS SIGNAL DETECTION FOR IFM RECEIVERS BY DETECTING INTERMODULATION PRODUCTS.

SN 6-300,766 (4,424,679). CONSTANT THRUST HYBRID ROCKET MOTOR.

SN 6-300,767 (4,426,032). TOOL SEALING ARRANGEMENT AND METHOD.

SN 6-304,122 (4,432,485). CORRUTHERM EXPAN-

SION FIXTURE.
SN 6-308,975 (4,426,705). DOUBLE ELECTRIC DISCHARGE COAXIAL LASER.
SN 6-311,471 (4,431,864). COMMUNICATIONS SYSTEM INPUT-OUTPUT CONVERTER.
SN 6-318,655 (4,430,942). MISSILE/CANISTER LATERAL SUPPPORT PAD FLYOUT CONTROL SYSTEM.
SN 6-322,042 (4,424,585). CHEMICAL LASER NOZZLE BLADE SUPPORT SYSTEM.
SN 6-324,914 (4,433,438). SOBEL EDGE EXTRACTION CIRCUIT FOR IMAGE PROCESSING.
SN 6-326,975 (4,431,996). MISSILE MULTI-FREQUENCY ANTENNA.
SN 6-337,347 (4,432,609). RADIATION PROTECTION LOUVER.
SN 6-337,348 (4,426,663). REAL-TIME OPTICAL FILTERING METHOD WITH IMPROVED FILTERED IMAGE DETECTION AND BANDWIDTH ADJUSTMENT.
SN 6-339,206 (4,426,131). REPLACEABLE DIFFRACTION GRATINGS FOR COOLED LASER OPTICS.
SN 6-342,996 (4,433,045). LASER MIRROR AND METHOD OF FABRICATION.
SN 6-343,059 (4,430,894). ADJUSTABLE FLUID RESISTORS FOR USE IN AN INTEGRATING ACCELEROMETER.
SN 6-347,807 (4,431,149). GEARED TAB.
SN 6-361,643 (4,432,817). PROPELLANT CONTAINING AN AZIDONITROCARBAMATE PLASTICIZER.
SN 6-366,742 (4,433,198). DEVICE TO MEASURE TEMPERATURE OF AN ANNULAR ELASTOMERIC SEAL.
SN 6-370,312 (4,431,946). POSITIVE SPACE-CHARGE CLOSING SWITCH APPARATUS.
SN 6-393,268 (4,427,841). BACK BARRIER HETEROFACE ALGAAS SOLAR CELL.
SN 6-407,220 (4,427,388). YOKE MOVER.
SN 6-418,106 (4,431,555). OXIDATION STABLE POLYFLUOROALKYLETHER GREASE COMPOSITIONS.
SN 6-418,114 (4,431,556). OXIDATION STABLE POLYFLUOROALKYLETHER GREASE COMPOSITIONS.
SN 6-484,328 (4,432,815). AZIDO FLUORODINITRO AMINES.
SN 6-484,735 (4,432,814). AZIDO ESTERS.
SN 6-508,938 (4,424,398). PROCESS FOR PREPARATION OF ENERGETIC PLASTICIZFRS.
SN 6-547,611. A METHOD FOR VACUUM BAKING INDIUM IN-SITU.
SN 6-552,554. OPTICALLY PUMPED CW SEMICONDUCTOR RING LASER.
SN 6-552,555. TRANSMISSIVE DEWAR COOLING CHAMBER FOR OPTICALLY PUMPED SEMICONDUCTOR RING LASERS.
SN 6-569,639. THREE DIMENSIONAL OPTICAL RECEIVER HAVING PROGRAMMABLE GAIN SENSOR STAGES.
SN 6-569,640. COAXIAL FEED THRU.
SN 6-569,642. DIPOLE RING ARAY ANTENNA FOR CIRCULARY POLARIZED PATTERN.
SN 6-574,433. METHOD FOR REFINING MICROSTRUCTURES OF CAST TITANIUM ARTICLES.
SN 6-576,081. INTERSTITIALLY PROTECTED OXIDATION RESISTANT CARBON-CARBON COMPOSITE.
SN 6-576,498. RETRO DIRECTIVE RADAR AND TARGET SIMULATOR BEACON APPARATUS AND METHOD.
SN 6-577,391. SMALL CARTRIDGE HEATER.
SN 6-577,392. BI-DIRECTIONAL CURRENT DIFFERENCER FOR COMPLEMENTARY CHARGE COUPLED DEVICE (CCD) OUTPUTS.
SN 6-577,412. ASSYMETRIC THRUST WARNING SYSTEM FOR DUAL ENGINE AIRCRAFT.
SN 6-578,335. CIRCUMFERENTIALLY WRAPPED CARBON-CARBON STRUCTURE.
SN 6-578,397. WIDE BANDWIDTH RADAR HAVING IMPROVED SIGNAL TO CLUTTER REPONSE CHARACTERISTICS.
SN 6-579,625. METHOD FOR PREPARING AN IMPROVED PITCH IMPREGNANT FOR A CARBON-CARBON COMPOSITE.
SN 6-694,261 (4,426,540). SYNTHESIS OF VINYL ETHERS.

DEPARTMENT OF THE ARMY

SN 6-154,661. TOPOGRAPHIC FEATURE EXTRACTION METHOD AND APPARATUS.
SN 6-252,443 (4,426,378). THYROTROPIN RELEASING HORMONE IN THERAPY OF SHOCK AND AS A CENTRAL NERVOUS SYSTEM STIMULANT.
SN 6-315,066. THERMAL CONDUCTIVITY MEASUREMENT METHOD.
SN 6-316,205 (4,375,721). COLLAPSIBLE RESTRAINT FOR MEASURING TAPES.
SN 6-418,318. INCOHERENT OPTICAL HETERODYNE FOURIER TRANSFORMER.
SN 6-435,833. METHOD OF CALIBRATING AN OPTICAL MEASURING SYSTEM.
SN 6-437,659. ELECTRICAL CONDUIT DEFECT LOCATION.
SN 6-440,191. DIFFUSION CURRENT-APPLIED CURRENT PHASE COMPARISON.
SN 6-442,700 (4,426,440). INTEGRATED OPTICAL GRATING DEVICE BY THERMAL SI_2 GROWTH ON SI.
SN 6-446,143. OPTICAL FIRE DETECTION SYSTEM.
SN 6-451,992. ENVIROMENTALLY ADAPTABLE ROOF STRUCTURE.
SN 6-456,159. DIGITAL TECHNIQUE FOR CONSTRUCTING VARIABLE WIDTH LINES.
SN 6-512,794. ICE LIFTER MARINE STRUCTURE.
SN 6-552,883. METHOD AND APPARATUS FOR MEASURING THE HYDRAULIC CONDUCTIVITY OF POROUS MATERIALS.
SN 6-565,788. WIDE FIELD OF VIEW TWO-AXIS LASER LOCATOR.
SN 6-565,807. LASER PHOTOCHEMICAL SYNTHESIS OF BENZENE AND ITS DERIVATIVES.
SN 6-566,017. SINGLE AXIS FOLDING LEVER FIN.
SN 6-573,902. ADJUSTABLE EARCUP RETENTION HARNESS.
SN 6-573,908. NOTCH ANTENNA FOR A RADIO COMMUNICATIONS SYSTEM.
SN 6-576,992. SOLID STATE NUCLEAR RADIATION DETECTOR CIRCUIT WITH CONSTANT SENSITIVITY.
SN 6-577,929. METHOD FOR PRODUCING 3-D PHOTOGRAPHS FROM FIXED POSITION X-RAY SOURCE.
SN 6-581,451. IMPROVED SEALING TUBULATION AND METHOD.
SN 6-581,496. PHASED ARRAY ANTENNAS WITH BINARY PHASE SHIFTERS.
SN 6-581,833. MILLIMETER WAVE SIGNAL LIMITER.
SN 6-582,193. MILLIMETER WAVE IMAGE GUIDE BAND REJECT FILTER.
SN 6-583,920. BROADBAND MULTIPACTOR DEVICE.
SN 6-585,718. MBE GROWTH TECHNIQUE FOR MATCHING SUPERLATTICES GROWN ON GaAs SUBSTRATES.
SN 6-590,614. METHOD OF SYNTHESIZING SMCO SYSTEM FILMS.

DEPARTMENT OF THE INTERIOR

SN 6-177,976 (4,437,994). EXTRACTION OF METAL IONS FROM AQUEOUS SOLUTION.
SN 6-285,247 (4,438,473). POWER SUPPLY FOR AN INTRINSICALLY SAFE CIRCUIT.
SN 6-383,060 (4,435,302). CONCENTRATING AND RECLAIMING MAGNETIC FLUIDS.

ENVIRONMENTAL PROTECTION AGENCY

SN 6-149,458 (4,439,136). THERMAL SHOCK RESISTANT SPHERICAL PLATE STRUCTURES.

NATIONAL SECURITY AGENCY

SN 6-251,664 (4,435,783). MAGNETIC BUBBLE LOGIC APPARATUS.

TENNESSEE VALLEY AUTHORITY

SN 6-407,526 (4,427,432). CLARIFICATION OF BLACK AMMONIUM POLYPHOSPHATE LIQUIDS-RECYCLING OF BYPRODUCT "TOPS".
SN 6-414,689 (4,427,433). PRODUCTION OF GRANULAR AMMONIUM-POLYPHOSPHATE WITH AN INLINE REACTOR AND DRUM GRANULATOR.
SN 6-427,723 (4,424,176). PROCESS FOR GRANULATION OF MOLTEN MATERIALS.
SN 6-458,403 (4,435,372). PRODUCTION OF PURIFIED STRONG WET-PROCESS PHOSPHORIC ACID.

Status of PTO Services

The following is an update of the status of PTO services for April 1984:

Service Item	FY 1984 Performance Goal (Calendar Days)	Actual	Comment
Filing Receipts:			
Patents	22	26	Problems due to conversion to new computer system.
Trademarks	30	75	
Patent/Trademark Copies:			
Window Coupons	5	96% within 5 days	
Mail Coupons	29	99% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		Apr. 6, 1984	
Certified Copies:			
Trademark Registrations	30	13	
Applications-As-Filed	20	99% within 15 days	
File-Wrapper/Contents	N/A	99% within 7 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	26	Delay is temporary due to a special work project.
Filing Reg. Certificates	3	8	Delay due to registrations received late.
Assignments:			
Patents	25	18	
Trademarks	25	15	
Avg. Days from Issue Fee Payment to Issue Date	90-100	91	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Patent Copies Available	Issue Date	Avg. 2 days late	Problems should be resolved by end of May.
Trademark Copies Available	Issue Date	Avg. 4 days late	Due to GPO printing contractor.
Trademark Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Trademark Regs. Mailed	Issue Date	Avg. 6 days late	Due to GPO printing contractor.

*Figures include mail processing and delivery time.

IMPROVEMENTS TO SERVICES

- *Microfilming of Patented File Histories* —We have awarded a contract for the microfilming of patented file histories. By June, new issues should be available in microfiche format for viewing and copy production on issue day. Specific notice of availability will be placed in the Patent Public Search Room. During the summer, we will begin microfilming the backfile of patented files starting with the most recently issued files. By the end of this calendar year, we plan to have all 1984 issues on microfiche.

This is a major step in improving the file integrity of the individual file wrapper contents, as well as the completeness of the entire collection. Also, orders for files which are on microfiche can be filled more promptly. As we continue to have more files on microfilm, we will have more room for the paper file histories which are now at the Federal Records Center in Suitland, Maryland.

- *Public Newsline* —As an added service to the public, we have place an electronic bulletin board in the Patent Public Search Room. Through the use of video terminals, members of the public can obtain current information under the following headings.

1. Public Information Contacts and Services
2. Locations of Patents by Classification
3. Automated Search Room Tools
4. Status of PTO Services
5. News Items

Additional suggestions of items to be added may be submitted to the manager of the Search Room, Bernard Thomas.

- *Patent and Trademark Copy Sales* —In June, a new service contractor for patent and trademark copy sales will replace the current contractor, MACRO. While we will try to minimize disruptions in services during the transition period, your understanding of temporary disruptions to service would be appreciated.

One of the new services to be provided by the new contractor will be SPECIAL ORDERS that will be filled in 1 day. This special service will cost $2.00 per copy. A specific notice will be published when this service is available.

May 8, 1984.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of May 29, 1984

PP. 4,747	4,375,763	4,415,481	4,428,288
Re. 31,311	4,377,348	4,415,756	4,428,517
D. 260,039	4,382,033	4,417,525	4,429,106
D. 267,746	4,383,939	4,418,287	4,429,298
4,221,220	4,390,587	4,419,310	4,429,367
4,231,037	4,391,681	4,419,584	4,430,155
4,239,111	4,392,149	4,419,851	4,430,417
4,242,471	4,394,774	4,420,204	4,430,548
4,248,732	4,395,368	4,420,337	4,430,598
4,251,886	4,395,404	4,420,376	4,430,653
4,271,072	4,396,262	4,420,720	4,430,915
4,280,005	4,396,388	4,420,957	4,431,001
4,285,770	4,397,014	4,422,698	4,431,024
4,293,254	4,400,442	4,422,777	4,432,407
4,313,905	4,402,242	4,423,319	4,433,103
4,323,732	4,402,460	4,423,499	4,433,900
4,327,115	4,402,572	4,423,805	4,434,127
4,329,471	4,404,676	4,424,340	4,434,130
4,337,240	4,404,735	4,424,376	4,434,725
4,339,757	4,405,021	4,425,331	4,435,321
4,341,260	4,407,584	4,425,471	4,435,334
4,349,359	4,409,629	4,425,592	4,435,347
4,353,729	4,409,886	4,426,220	4,435,427
4,355,236	4,410,023	4,426,375	4,435,581
4,356,840	4,410,126	4,426,686	4,435,961
4,361,438	4,411,181	4,426,697	4,436,166
4,361,636	4,411,505	4,427,069	4,436,331
4,370,632	4,412,607	4,427,903	4,436,682
4,372,946	4,413,346	4,428,032	4,436,993
4,373,341	4,413,520	4,428,043	
4,375,481	4,414,319	4,428,048	

Dedications

3,364,790.—*Jean-Jacques Asper* and *Aymar Lefrancois,* Geneva, Switzerland. POWER TRANSMISSION MEANS. Patent dated Jan. 23, 1968. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,705,144.—*Pierre Genequand,* Geneva, Switzerland. VACUUM INTERRUPTER OR SWITCH FOR ELECTRIC POWER NETWORKS. Patent dated Dec. 5, 1972. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,730,771.—*Helmut Tannenberger,* Geneva, and *Jean-Claude Charbonnier,* Chene-Bougeries, Switzerland. ELECTRIC ACCUMULATOR. Patent dated May 1, 1973. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,773,558.—*Jean-Claude Charbonnier,* Saint Germain-en Laye, France and *Helmut Tannenberger,* Geneva, Switzerland. ELECTRIC ACCUMULATOR WITH BETA ALUMINA SEPARATOR AND ELECTROLYTE CONSISTING OF A SALT IN AN ORGANIC SOLVENT. Patent dated Nov. 20, 1973. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,788,232.—*Karl Schneider,* Plan-les-Ouates/Geneve; *Gerard Cuenoud,* Grand-Lancy/Geneve; *Gabriel Bouladon,* Versoix/Geneve and *Paul Zuppiger,* Athenaz/Geneve, Switzerland. TRANSPORT SYSTEM. Patent dated Jan. 29, 1974. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,806,353.—*Paul Heinzer,* Geneva, Switzerland. COPYING PROCESS UTILIZING A RECORDING MATERIAL COMPRISING ELECTRICALLY CONDUCTIVE PARTICLES HOMOGENEOUSLY DISPERSED IN A DEFORMABLE INSULATING POLYMERIC SUBSTANCE. Patent dated Apr. 23, 1974. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,827,961.—*Denis Doniat,* Moillesulaz, *Augusto Porta,* Troinex, Geneva, and *Jacques Mosetti,* Grand-Lancy, Geneva, Switzerland. METHOD FOR PURIFYING IONICALLY CONDUCTING SOLUTIONS. Patent dated Aug. 6, 1974. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,847,265.—*Jacques Ehretsmann,* Conches/Geneve; *Emile Barbey,* Geneve and *Paul Heinzer,* Zurich, Switzerland. INK RIBBON HAVING AN ANISOTROPIC ELECTRIC CONDUCTIVITY. Patent dated Nov. 12, 1974. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,870,561.—*Jean-Claude Charbonnier,* St.-Germain-en-Laye, France and *Helmut Tannenberger,* Geneve, Switzerland. ELECTRIC ACCUMULATOR. Patent dated Mar. 11, 1975. Dedication filed Mar. 26, 1984 by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,090,927.—*Jean-Marie Fresnel,* Haut-Thoiry, France; *Antonin Kulhanek,* Le Lignon and *Augusto Porta,* Geneva, Switzerland. PROCESS FOR ELECTRO-DEPOSITING A METAL ON CONDUCTING GRANULES. Patent dated May 23, 1978. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,277,513.—*Willy Rufer,* Onex and *Robert Menzi,* Geneva, Switzerland. PROCESS FOR THE MANUFACTURE OF A FOODSTUFF HAVING A FIBROUS STRUCTURE SIMILAR TO THAT OF MEAT. Patent dated July 7, 1981. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remainig term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 14, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-08-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-18-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	1-26-81
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	1-18-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	11-03-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	1-10-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-15-81

Expiration of patents: The patents within the range of numbers indicated below expire during April 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,311,921 to 3,316,555, inclusive
Plant Patents . . . . . Numbers 2,730 to 2,733 inclusive

REISSUES

MAY 29, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,590

ATOMIZATION IN ELECTROSTATIC COATING

Michio Mitsui, Yokohama, Japan, assignor to Ransburg Japan, Ltd., Tokyo, Japan

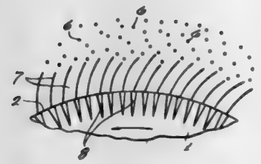
Original No. 4,148,932, dated Apr. 10, 1979, Ser. No. 872,066, Jan. 25, 1978. Application for reissue Apr. 1, 1981, Ser. No. 250,095

Claims priority, application Japan, Feb. 7, 1977, 52/12286; May 31, 1977, 52/63872

Int. Cl.[3] **B05D** *1/04;* **B05B** *5/04*

U.S. Cl. 427—31

13 Claims



1. A method of atomizing a liquid paint using a rotating atomizing device and electrostatically coating an article with a smooth homogeneous film of liquid paint, wherein an electrostatic field is established between the peripheral edge of the rotating atomizing device and the article to be coated and the liquid paint flows toward the edge of the atomizing device as a continuous thin film, characterized in substantially reducing the thickness of the paint film as it reaches the peripheral edge by flowing the film over a series of circumferentially spaced recessed grooves which run substantially in the direction of paint flow and terminate at the discharge edge, where said grooves extend into the peripheral edge of the device, and atomizing the liquid paint film as it is projected beyond the peripheral edge.

11. A method of atomizing a liquid and electrostatically spray coating the surface of an article with the atomized liquid comprising:

feeding liquid at a controlled rate from a source to an atomizing means having a surface effective during rotation of said atomizing means for supporting a film of liquid to be atomized, and a circular discharge end adjacent the liquid film support surface having a surface inclined with respect to said liquid film support surface;

rotating said atomizing means such that the liquid fed to said atomizing means is formed into a film of liquid on the liquid film support surface;

flowing the film of liquid through a series of grooves in the liquid film support surface extending into the discharge end surface, such that a series of independent streams of the liquid are formed by said grooves, said streams being spaced along the discharge end surface at positions corresponding to the positions of said grooves and producing a spray of finely divided discrete particles; and

establishing between said discharge end and the article an electric field of sufficient strength to draw the particles away from the atomizing means toward the article.

Re. 31,591

FUSELAGE TAIL JET ENGINE THRUST REVERSER AND METHOD

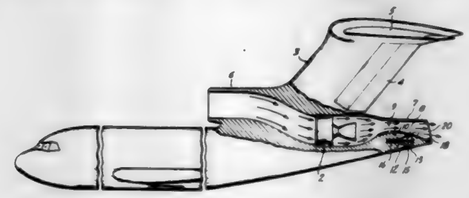
George T. Drakeley, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Original No. 3,997,134, dated Dec. 14, 1976, Ser. No. 562,587, Mar. 27, 1975. Continuation of Ser. No. 133,339, Mar. 24, 1980, abandoned, which is a continuation of Ser. No. 967,212, Dec. 7, 1978, abandoned. Application for reissue Nov. 30, 1981, Ser. No. 325,706

Int. Cl.[3] **B64D** *33/04*

U.S. Cl. 244—110 B

5 Claims



5. In an airplane designed for conventional landing at substantial forward speed and having a steerable nose wheel and main landing gear located rearward of the nose wheel, a power plant installation comprising a jet engine mounted in thrust relationship to the aft portion of the airplane and having rearward-discharge duct means for normally directing the exhaust of the jet engine rearward, one and only one reverse-thrust duct means constituting the sole reverse-thrust duct means of such jet engine and having an exhaust intake that opens in the rearward-discharge duct means and an exhaust outlet that opens downward at the aft portion of the airplane, said reverse-thrust duct means being directed only forward and downward from said rearward-discharge duct means for discharge of jet exhaust at the aft portion of the airplane, and control door means selectively movable during landing of the airplane from a normal position closing said exhaust intake of said reverse-thrust duct means for discharge of jet exhaust rearward through the rearward-discharge duct means to a reverse-thrust position opening said exhaust intake and obstructing the rearward-discharge duct means for discharge of at least the major portion of the jet exhaust downward and forward through said reverse-thrust duct means to produce thrust on the aft portion of the airplane having a rearward component tending to retard forward movement of the airplane during the landing ground run and an upward component tending to pitch the nose portion of the airplane downward about a fulcrum located in the vicinity of the main landing gear for increasing the pressure of the nose wheel on the ground and consequently increasing the steering effectiveness of the nose wheel during landing.

Re. 31,592

METHOD AND APPARATUS FOR OPERATING A WATER-JET PUMP

Siegfried Heilenz, D-6300 Giessen-Kleinlinden 1, Fed. Rep. of Germany

Original No. 4,310,287, dated Jan. 12, 1982, Ser. No. 95,132, Nov. 16, 1979. Application for reissue Aug. 19, 1982, Ser. No. 409,482

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850142

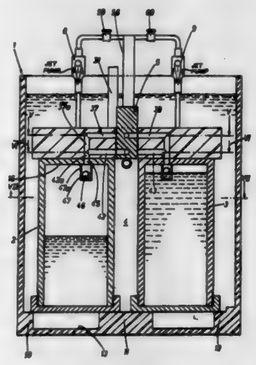
Int. Cl.[3] **F04F** *5/44*

U.S. Cl. 417—54

24 Claims

6. An apparatus for operating a water-jet pump, comprising at least two ejecting receptacles, connection water channels

which connect the ejecting receptacles to the water-jet pump, at least one let-down vessel, first connection air channels which connect the ejecting receptacles to the let-down vessel, a compressed air connection for supplying compressed air, further connection air channels which connect the compressed air connection to the ejecting receptacles, first water valve means for effecting alternate fluid connection of the ejecting receptacles to the water-jet pump through the connection water channels, second water valve means for effecting fluid connection of the ejecting receptacles to the water which is discharged from the water-jet pump, first compressed air valve means for effecting alternate fluid connection of the ejecting receptacles to the compressed air connection through the further connection air channels and second compressed air valve means for effecting alternate fluid connection of the



ejecting receptacles to the let-down vessel through the first connection air channels.

PLANT PATENTS

GRANTED MAY 29, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,237

PHOTINIA×FRASERI CV. MONSTOCK

Gavin Espinosa, Azusa, Calif., assignor to Monrovia Nursery Co., Azusa, Calif.

Filed Jul. 26, 1982, Ser. No. 402,059

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—54 1 Claim

1. A new and distinct *Photinia×fraseri* referred to as *Photinia×fraseri* cv. Monstock as substantially shown and described; a superior selection characterized by a densely compact habit; smaller foliage; persistent stipules on current growth; and its distinctive reddish coppery new foliage.

5,238

DISTINCT VARIETY OF STREPTOCARPUS NAMED ORCHIS

Emil Keller, Hedingen, Switzerland, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Dec. 28, 1982, Ser. No. 452,819

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

5,239

DISTINCT VARIETY OF STREPTOCARPUS NAMED KATHI

Emil Keller, Hedingen, Switzerland, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Dec. 28, 1982, Ser. No. 452,859

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

PATENTS

GRANTED MAY 29, 1984

ERRATA

For CLASS	See PATENT NO.
188–067	4,450,605
072–062	4,450,612
070–168	4,450,695
123–458	4,450,783
285–003	4,451,056
308–184	4,451,110
312–221	4,451,111
318–778	4,451,112
354–173	4,451,150
548–461	4,451,402
435–183	4,451,487
420–464	4,451,639
329–145	4,451,792
358–022	4,451,840

PATENTS

GRANTED MAY 29, 1984

GENERAL AND MECHANICAL

4,450,591

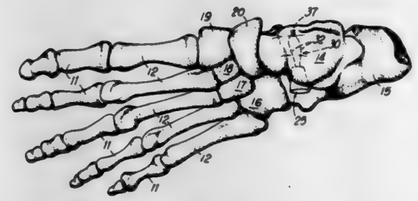
INTERNAL ANTI-PRORATORY PLUG ASSEMBLY AND PROCESS OF INSTALLING THE SAME

Mark J. Rappaport, 555 Wyncourtney Dr., Atlanta, Ga. 30328

Filed Dec. 10, 1981, Ser. No. 329,186

Int. Cl.³ A61F *1/00*

U.S. Cl. 3—1.9 **3 Claims**



1. A process of correcting pes plano valgus comprising the steps of preparing a prosthesis by producing a unitary biocompatible plastic plug having a major base, a minor base and a tapered conical sidewall, tapering from said major base to said minor base and securing flexible lines to said plug so that the lines extend from said minor base, exposing the sinus tarsus of a persons's foot, inserting the lines and said plug, minor base first into the subtalar opening between the talus and calcaneous bones of said foot so that said plug is disposed within the sinus tarsus of said foot, continuing the insertion of said lines through said subtalar so that said lines pass above the posterior tendon and thence around opposite portions of the deltoid ligament, adjacent to said sinus tarsus and thereafter tying the end portions of said lines together, sufficiently close to said deltoid ligament that the lines restrain said plug within said sinus tarsus and prevent said plug from being forced outwardly therefrom, said plug being sufficiently large that it does not pass through the sinus tarsus but is wedged therein.

4,450,592

JOINT SOCKET FOR A HIP JOINT PROSTHESIS

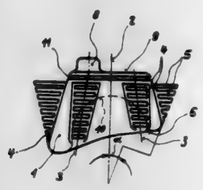
Peter G. Niederer, Zollikofen, and Otto Frey, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 8, 1982, Ser. No. 338,195

Claims priority, application Switzerland, Feb. 20, 1981, 1133/81

Int. Cl.³ A61F *1/04*

U.S. Cl. 3—1.912 **7 Claims**



1. A joint socket for a hip joint prosthesis comprising

a body having an internal socket disposed about an axis of rotation and an exterior surface tapering inwardly towards one end symmetrically of said axis;

a plurality of anchoring beads projecting from said exterior surface, each bead being of an outwardly increasing width in a direction towards said one end to widen conically relative to said axis of rotation; and

a plurality of ribs in each said bead disposed transversely to said axis, at least some of said ribs being elastic.

4,450,593

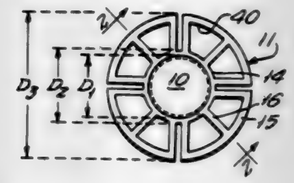
INTRAOCULAR AND CONTACT LENS CONSTRUCTION

Stanley Poler, New York, N.Y., assignor to Lynell Medical Technology Inc., New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,622

Int. Cl.³ A61F *1/16, 1/24*; G02C *7/04*

U.S. Cl. 3—13 **13 Claims**



12. A unitary lens and haptic construction integrally formed from the same single composite continuously laminated sheet of two different uniformly thick ply materials at least one of which materials is transparent and of optical quality and constitutes a relatively thick rigid first ply of said single sheet, the other ply material of said single sheet being relatively thin compared to the thickness of said first ply, said construction comprising a relatively thick rigid central lens component peripherally eroded exclusively from said first ply material to a generally circular periphery of lens-component diameter (D_1), and a relatively thin pliant generally annular and radially outwardly extending haptic component formed exclusively of said other ply material, said haptic component having a central opening concentric with said lens-component and peripherally eroded from said other ply material to a diameter (D_5) which is less than the diameter (D_1) of said lens component, whereby said haptic component is in concentric peripherally continuous retained laminated overlap with one side of the rim region of said lens component.

4,450,594

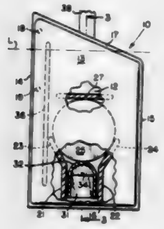
TANK DISPENSER WITH END-OF-LIFE INDICATOR

Peter Hotchkin, Rochester, N.Y., assignor to The R. T. French Co., Rochester, N.Y.

Filed May 2, 1983, Ser. No. 490,777

Int. Cl.³ E03D *9/02*

U.S. Cl. 4—228 **15 Claims**



1. A toilet tank dispenser, comprising

a housing disposed to be suspended in a toilet tank, and having in its wall at least one port for admitting water into the interior of the housing when the toilet tank fills, and for permitting part of the water in the housing to be dis-

charged therefrom each time the associated toilet is flushed,

a generally cup-shaped member in said housing having therein a water soluble dye, and

means in said housing including a water soluble, water-treating tablet releasably holding said member beneath the level of the water in said housing, and in an inverted, inoperative position in which the water in said housing is prevented from coming into contact with said dye,

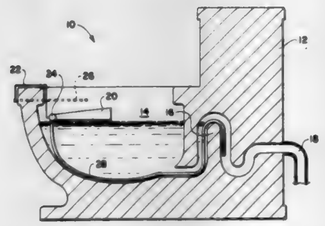
said tablet being disposed eventually to dissolve away after repeated flushing of the associated toilet thereby to release said member, which then floats to an upright position in said housing to allow water therein to contact said dye.

4,450,595

WATER SAVING LIQUID WASTE DISPOSAL SYSTEM FOR USE WITH A WATER CLOSET OR THE LIKE

Geno Saccomanno, 778 26½ Rd., Grand Junction, Colo. 81501

Filed Sep. 29, 1982, Ser. No. 426,718
Int. Cl.³ E03D *13/00*
U.S. Cl. 4—301 **13 Claims**



1. A liquid waste disposal system for use with a water closet communicating with a source of water for flushing the same and communicating through a trap to a sewer line comprising:

a plate positioned within the water closet bowl for receiving and collecting a liquid, said plate being shaped and positioned such that a liquid impinging upon the plate is received and collected by the plate and caused to flow toward a relatively small area of the plate;

means for positioning said liquid receiving and collecting means in the vicinity of the water closet; and

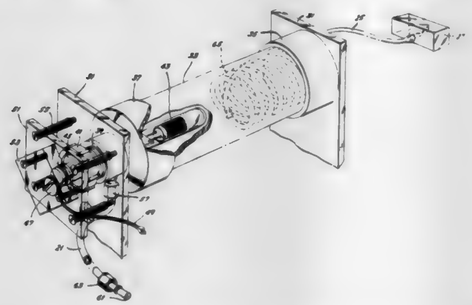
means for transporting liquid received and collected by the plate directly to the sewer line substantially without the liquid contacting water from the water source.

4,450,596

RECTAL HYGIENE SYSTEM

Marvin C. Cohen, 829 Timber La., Dresher, Pa. 19025

Filed Feb. 19, 1982, Ser. No. 350,512
Int. Cl.³ E03D *9/08*
U.S. Cl. 4—447 **4 Claims**



1. A rectal hygiene system suitable for use in connection with a standard type toilet seat of a standard type toilet, the toilet seat having a toilet seat opening and the toilet including a bowl, without change of said toilet seat and toilet position or relation, comprising:

a spraying projector block suitable for providing a fountain of water, said projector block having a first larger size bore thereinto through a first face of said block, and a second smaller bore meeting said first bore and extending through said projector block to a second face thereof, said first and second bores meeting at approximately a 30° angle, said second bore terminating in a water expressing aperture, said projector block suitable for attachment to the bottom of said toilet seat, and spaced behind the toilet seat opening, said projector block being positioned entirely within said bowl space when said toilet seat is down on said bowl, said water expressing aperture being shielded from contamination in both a raised and lowered seat position;

a horizontally positionable cylindrical tank positionable away from said toilet;

a pair of rectangular plates positioned one each on either end of said cylindrical tank, supporting said tank above a surface;

an electrical resistance heater for heating water in said tank extending partially into said tank from a first end thereof, said heater having an electrical insulation tube separating it from said tank interior;

a temperature-evening coiled tube within said tank immersed in said heated water in said tank having a first open coiled tube end for receiving heated water proximate an end of said tank, said coiled tube extending toward an opposite end of said tank partially into the length of said tank and terminating in a second coiled tube end;

a first fitting through said second end of said tank;

a pick off tube connected to said coiled tube at said second end thereof and terminating proximate to said second end of said tank; and

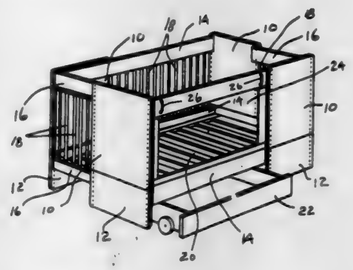
first fluid duct means for connecting said first end of said tank to a household water supply, and second fluid duct means for connecting said fitting to said projector block larger size bore, water in said tank passing through said temperature-evening coil prior to discharge for use through said fitting, having acquired an even, constant desired temperature during passing through said coil.

4,450,597

CONVERTIBLE BED

James R. Hull, 148 S. Westgate Ave., Los Angeles, Calif. 90049

Filed May 24, 1982, Ser. No. 381,186
Int. Cl.³ A47B *83/00*
U.S. Cl. 5—2 R **6 Claims**



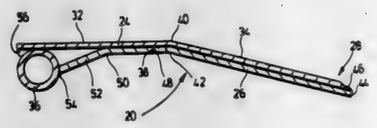
1. A rectangular convertible bed comprising: at least four rigid rectangular panels; a plurality of elongated rectangular side and end rails secured to the panels and extending therebetween to support the panels in an upright position at each corner of the bed, with two of the panels constituting side panels at first and second diagonally opposite corners of the bed, and with two of the panels constituting end panels for the bed at third and fourth diagonally opposite corners of the bed, said bed having a first configuration in which the side rails extend across the inner faces of the respective side panels to provide a crib of fore-shortened length, and said bed having a second configuration in which the side rails extend only to the inner side edges of the respective side panels, so that the width of the side panels contribute to the length of the bed; and mattress support means supported by said rails adjacent to the lower edges of said panels.

4,450,598

LIP CONSTRUCTION FOR DOCK LEVELLER

Kurt K. Larsen, Pell City, Ala., assignor to Blue Giant Equipment of Canada Ltd., Brampton, Canada

Filed Aug. 30, 1982, Ser. No. 412,503
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.1 **4 Claims**



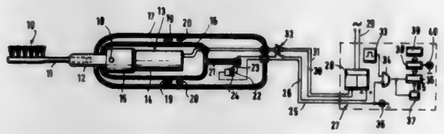
1. A lip for pivotal connection to the ramp of a dock leveller, said lip comprising upper and lower rectangular steel plates secured together and in overlapping relationship along the substantial length thereof to provide front and rear lip edge portion, said plates being separated at the rear lip edge portion by means for pivotally connecting said lip to a dock leveller ramp, said upper plate being slightly bent in the length thereof to define an upper plate first planar portion secured adjacent one end thereof to said connecting means and a second planar portion, said first planar portion and said second planar portion forming a slight angle therebetween on the underside of said upper plate, said lower plate being bent in the length thereof to define a first lower plate portion connected to said connecting means and contacting said upper plate first portion intermediate the length thereof, a second lower plate portion underlying the remaining upper plate first portion and a third portion underlying the upper plate second portion and extending slightly therebeyond adjacent the front lip edge portion, said lower plate second portion and the overlapping upper plate first portion being welded and said upper plate second portion and said lower plate third portion being welded, the welded plates cooperating to place said upper plate in compression and said lower plate in tension when a load is applied to the upper plate of said lip during use.

4,450,599

ELECTRIC TOOTHBRUSH

Hans U. Scheller, and Karl A. Scheller, both of Eislingen, Fed. Rep. of Germany, assignors to Württembergische Parfümerie-Fabrik GmbH, Eislingen, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,194
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117160
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—22 R **12 Claims**



1. An electric toothbrush apparatus comprising:

a toothbrush having a stem and a plurality of bristles at one end of the stem;

oscillator means for imparting an oscillating motion to the toothbrush while the apparatus is operated;

timing means for timing the duration of periods of operation of the apparatus and providing an indication of the total duration of accumulated periods of timed operation;

means responsive to pressure applied to the bristles of the toothbrush, for activating the timing means for the periods of operation in which the pressure applied to the toothbrush stem exceeds a predetermined minimum pressure;

comparator means responsive to the timing means, for comparing the accumulated total duration of timed operating periods with a predetermined minimum period; and

signaling means responsive to the comparator means, for signaling an operator when the accumulated total duration of timed operating periods exceeds the predetermined period;

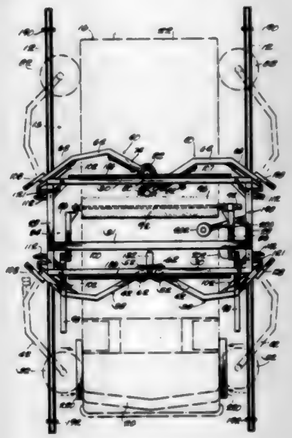
wherein the periods of operation in which the pressure applied to the toothbrush stem exceeds the predetermined minimum pressure may be timed to ensure effective utilization of the apparatus.

4,450,600

GANTRY WASHING DEVICE FOR TRACTOR-TRAILER TRUCKS

Richard J. Shelstad, 933 Heritage Ct., Mequon, Wis. 53092

Filed Jul. 23, 1982, Ser. No. 401,100
Int. Cl.³ B60S *3/06*
U.S. Cl. 15—53 A **12 Claims**



1. A device for washing tractor-trailer truck units including

a pair of laterally-spaced, elongated track means defining a wash bay into which a tractor-trailer unit can be moved;

a gantry adapted to move over the tractor-trailer unit and including laterally-spaced, front and rear upright stanchions supported on wheel means which ride on said track means;

a pair of rotary vertical tractor brushes pivotally mounted on a front portion of said gantry and on the opposite sides of the wash bay for pivotal movement about a generally vertical axis between a neutral position disposed substantially centrally in the wash bay and a retracted position disposed laterally outwardly from the tractor-trailer unit, said tractor brushes being adapted to scrub the front and sides of the tractor below the elevation of side view mirrors;

a pair of rotary vertical trailer brushes mounted on a rear portion of said gantry and on the opposite sides of the wash bay for pivotal movement about a generally vertical axis between said neutral position and said retracted posi-

tion, said trailer brushes being adapted to scrub the entire height of the sides and rear of the trailer;

means for driving said wheel means to move said gantry rearwardly through a wash cycle from a starting position wherein said tractor brushes are located adjacent the front of the tractor and a stopping position wherein said trailer brushes are located adjacent the rear of the trailer and to subsequently move said gantry forwardly through a rinse cycle from the stopping position to the starting position;

biasing means for biasing said tractor and trailer brushes toward the neutral position;

acutation means for selectively pivoting said tractor and trailer brushes to the retracted position;

latch means for releasably latching said tractor and trailer brushes in the retracted position in response to movement of said tractor and trailer brushes to the retracted position;

release means for selectively releasing said latch means to permit said tractor and trailer brushes to return toward the neutral position;

means for operating said release means in response to movement of said gantry past a predetermined location on the tractor-trailer unit; and

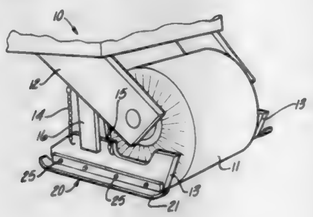
means for counterrotating said tractor brushes and said trailer brushes in one direction during the wash cycle and in the opposite direction during the rinse cycle so that, during rearward movement of said gantry though the wash cycle, said tractor brushes sequentially scrub the front and the sides of the tractor and the lower portion of the trailer and said trailer brushes sequentially scrub the sides and rear of the trailer and so that, during forward movement of the gantry through the rinse cycle, said trailer brushes sequentially scrub the rear and sides of the trailer and said tractor brushes sequentially scrub the lower part of the trailer and the sides and front of the tractor, said latch means retaining said tractor brushes in the retracted position during movement between the tractor and trailer and thereby preventing said tractor brushes from penetrating into the space between the tractor and the trailer.

4,450,601

SWEEPER DRAG SHOE

Warren M. Shwayder, 2335 E. Lincoln, Birmingham, Mich. 48008

Filed Sep. 30, 1982, Ser. No. 430,930
Int. Cl.³ E01H *1/04*
U.S. Cl. 15—246 **7 Claims**



1. In a street sweeper type drag shoe including a horizontally elongated bar having forward and rear ends and a lower, ground engaging face surface and having means for attaching the bar upon a generally vertically arranged plate, the improvement comprising:

said bar having an inverted, channel-like shape with a relatively wide, horizontally elongated, thin channel forming base strip and having channel forming side legs joined with and extending downwardly from elongated edges of the base strip, to thus provide a long, relatively wide but thin channel cavity of substantially uniform depth with said channel cavity having a lower exposed face;

said channel cavity being filled with a matrix formed of relatively small size, hard tungsten carbide particles of irregular shapes and sizes, closely packed together, and with a soft, ductile, somewhat resilient brazing material such as bronze brazing material filling the spaces between and substantially surrounding the carbide particles and brazing the particles together and to the channel base strip and legs;

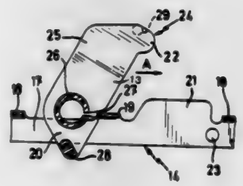
said matrix being resistant to wear caused by abrasion against the ground, and being shock absorbant to resist breakage of the brittle carbide particles and the matrix itself by means of the brazing material yieldably and resiliently absorbing impact forces and permitting limited relative movement of the hard carbide particles under shock loads.

4,450,602

WIPER BRIDGE AND CONNECTOR

Guiseppe A. Maiocco, Rivoli, Italy, assignor to Champion Spark Plug Italiana, S.p.A., Druento, Italy

Filed May 17, 1982, Ser. No. 378,778
Claims priority, application Italy, May 29, 1981, 67726 A/81
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **11 Claims**



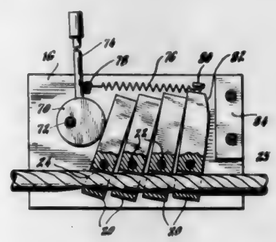
1. A wiper blade bridge (**14**) having a transverse section substantially the form of an inverted U with a web (**18**) and spaced side walls (**17,21**) and a connector (**24, 34, 44, 54**) for attaching thereto aa wiper arm (**1,2**), characterized in that the web (**18**) of the inverted U comprises two openings (**15,16**) separated by a flat portion (**19**) of said web (**18**) which spans the side walls (**17,21**) and that the connector (**24, 34, 44, 54**) is rigidly, but releasably mounted on the bridge (**14**) and on said flat portion (**19**) of the web (**18**).

4,450,603

SAIL LINE STOPPER

Jacob Hirsch, Harrison, N.Y., assignor to M. David Hirsch, Harrison, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,499
Int. Cl.³ F16G *11/00*; B65H *17/42*
U.S. Cl. 24—132 R **7 Claims**



1. A sail line stopper for controlling the rate of movement of a line prior to or subsequent to a locking of the line in a fixed position comprising:

a base having a channel formed therein through which a line to be controlled is positioned,

a plurality of closely spaced links mounted for pivotal movement in said base,

an opening for accommodating a line to be controlled in each of said plurality of links forming said channel through said base,

a handle coupled to said links for controlling the pivoting of said links in said base, which control the size of said channel through said base,

said handle in a first position aligning said openings in said links thereby allowing said line to move freely through said channel, said handle in a second position pivoting said links into locking engagement in which said openings are out of alignment thereby restricting the size of the channel through which said line moves to lock said line in said channel, and

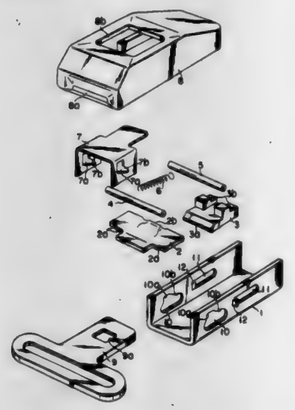
intermediate handle positions between first and second positions which control the amount of pivot of said links to control the size of said channel permitting movement of said line through said channel in accordance of the size of said channel.

4,450,604

BUCKLE FOR SEAT BELT

Tetsuya Oowada, Ichikawa, Japan, assignor to Nippon Kinzoku Co., Ltd. and NSK Warner Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,374
Claims priority, application Japan, Nov. 4, 1981, 56-176889
Int. Cl.³ A44B *11/00, 11/08, 11/20*
U.S. Cl. 24—652 **3 Claims**



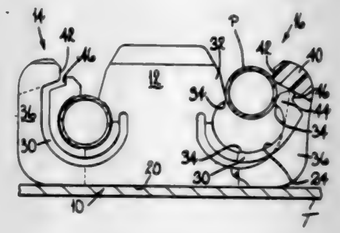
1. A seat belt buckle, in which a locking member is mounted in a channel-shaped base member and a tongue can be inserted between the base member and locking member and locked in engagement with a tongue engaging surface of the locking member, comprising first symmetrical guide holes each formed in each of opposite side portions of said base member and having a first guide member urging section and a first guide member releasing section; elongated symmetrical second guide holes each also formed in each of said opposite side portions of said base member; a slider movably disposed in the base member and having a tongue urging face; a first guide member penetrating and movable in said first guide holes and urging said locking member when in said first guide member urging sections; a second guide member penetrating said second guide holes and movable together with said slider through said second guide holes from one end to the other thereof and vice versa; a tensile coil spring coupled to said first and second guide members; and a button member having a releasing surface for urging said first guide member toward said first guide member releasing sections; said slider being movable, with the insertion of said tongue between said base member and locking member, to move said first guide member into said first guide member urging sections so as to urge said locking member to bring said tongue into engagement with said tongue engaging surface of said locking member, said first guide member being movable into said first guide member releasing sections, with the depression of said button member, to push said slider in the direction of releasing the engagement between said tongue and tongue engaging surface.

4,450,605

PIPE CLIP

Harald Schilty, Wetzlar, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed May 3, 1982, Ser. No. 374,095
Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117913
Int. Cl.³ F16L *3/08*; A44B *21/00*
U.S. Cl. 24—457 **7 Claims**



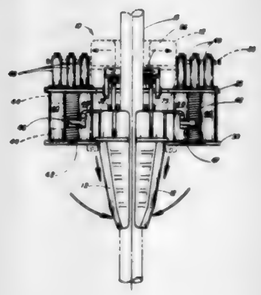
1. A plastic pipe clip comprising a body portion having means to enable the clip to be fixed to a support and an arcuate flexible and resilient pipe-receiving arm extending from the body portion and arranged together with the body portion to provide a seat which embraces the pipe round more than 180° of its circumference, there being a gap between the body portion and the free end of the arm through which, upon yielding of the arm, the pipe can be introduced to the seat, and a second more rigid arm projecting from the body portion and round the outside of the flexible arm terminating at an abutment surface disposed thereon close to the free end of the flexible arm, the more rigid arm being so shaped as to allow the flexible arm to open without interference from the more rigid arm when a pipe is pushed into the clip and the flexible arm pressed towards the support, and to prevent opening of the flexibly arm by engagement of a shoulder at the free end of the flexible arm with the abutment surface, when a pipe held by the clip is pulled in a direction away from the support.

4,450,606

SLIP ELEVATOR

Baron T. Broussard, 1030 Granger St., Jennings, La. 70546

Filed Apr. 15, 1982, Ser. No. 368,757
Int. Cl.³ E44B *21/00*; E21B *3/04*
U.S. Cl. 188—67 **9 Claims**



1. A slip elevator apparatus for use on drilling rigs having an

existing rotary table with pin openings, spaced radially from the table control axis, comprising:

a. a frame;

b. anchoring means associated with the frame for removably affixing the frame to a drilling rig rotary table at the rotary table pin openings, while allowing the frame to rotate therewith, the frame occupying during operation a peripheral position on the rotary table, leaving an open center which allows drill pipe to freely penetrate the rotary table center;

c. linkage means forming a connection between the frame and a set of slips to be lifted, the linkage means being movably disposed with respect to the frame between upper and lower position; and

d. biasing means for urging the linkage into the upper position.

4,450,607

METHOD FOR TEXTURIZING CONTINUOUS FILAMENTS

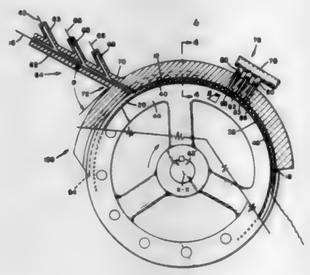
Hsin L. Li, Parsippany; Hendrikus J. Oswald, Morristown, and Alfred L. Liland, Lake Shawnee, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 250,343, Apr. 2, 1981, abandoned, which is a division of Ser. No. 1,618, Jan. 8, 1979, Pat. No. 4,296,535, which is a continuation-in-part of Ser. No. 799,066, May 20, 1977, Pat. No. 4,133,087, which is a continuation-in-part of Ser. No. 619,085, Oct. 2, 1975, Pat. No. 4,024,611. This application Dec. 10, 1982, Ser. No. 448,470

The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.

Int. Cl.³ D02G *1/12, 1/16*

U.S. Cl. 28—257 **9 Claims**



1. A method of crimping continuous filaments, comprising the steps of:

(a) heating said filaments in a heating zone;

(b) feeding said filaments into a heating means having an inlet tube in close communication with a chamber having a stationary cover;

(c) contacting said filaments with at least one stream of heated fluid within said heating means to increase the temperature of the filaments;

(d) directing said stream containing said filaments into contact with barrier means disposed within the chamber, the contact occurring at an angle from 15° to 75° and having sufficient force to initiate crimping of said filaments;

(e) separating a major portion of said stream of heated fluid from said filaments and expelling it from said chamber;

(f) transporting said filaments through said chamber by continuous movement of a surface therein at sufficient velocity to cause overfeeding of said filaments into said chamber, said filaments being forced against a mass thereof within said chamber to produce crimps therein;

(g) contacting said mass with at least one stream of heated fluid to set the crimps;

(h) removing said filaments in crimped form from said chamber; and

(i) preventing broken filaments or plugs thereof from reentering said chamber, after moving to and emerging from the outlet opening thereof, with a rear extension affixed to said cover to the rear of said inlet tube.

4,450,608

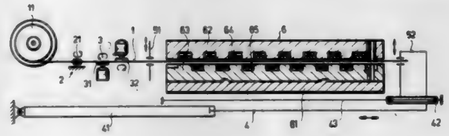
APPARATUS FOR PRODUCING TEMPERED PLATE PARTS

János Balázs; Tibor Báno; Árpád Kollár; Tibor Kovács; Dénes Lengyel, and Ferenc Mózer, all of Budapest, Hungary, assignors to Richter Gedeon Vegyészeti Gyár Rt., Budapest, Hungary

Filed Jun. 18, 1982, Ser. No. 389,539

Int. Cl.³ B23P *13/00*

U.S. Cl. 29—33 R **6 Claims**



1. In an apparatus for producing planar shaped products from band material having at least one unit including a band hobbing and feeding unit, a heating and cooling unit and a cutting mechanism, the improvement comprising a cutting-cooling mechanism arranged on a cross slide and alternately displaceable crosswise to the transfer trace of the band material and wherein the cutting-cooling mechanism comprises pairs of cutting tools arranged in two at least approximately parallel clamp plates, means for pressing the clamp plates together and means for cooling the clamp plates.

4,450,609

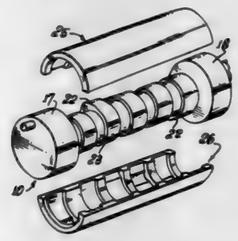
METHOD OF INSTALLING A CAMSHAFT

Steven P. Hamilton, 1506 Lakeside La., Huntington Beach, Calif. 92648

Continuation-in-part of Ser. No. 304,015, Sep. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 108,485, Dec. 31, 1979, abandoned. This application Feb. 18, 1983, Ser. No. 467,960

Int. Cl.³ B23P *15/00*

U.S. Cl. 29—156.4 R **3 Claims**



1. A method of inserting a camshaft through a plurality of axially aligned camshaft bearings in an engine;

said method including the steps of:

affixing a removable sleeve over a portion of said camshaft from the side of said camshaft between at least one set of journals on said camshaft, said sleeve having an outer surface which does not extend past an imaginary cylinder formed by joining the outer surfaces of two adjacent journals, said sleeve being supported by said portion of said camshaft between said adjacent journals and having at least a portion of its outer surface lying along the line parallel to the axis of the camshaft position near said imaginary cylinder;

horizontally orienting said camshaft with said sleeve positioned thereon in axial alignment with said plurality of camshaft bearings;

inserting a leading edge of said camshaft with said sleeve thereon through said camshaft bearings

whereby vertical support is provided to said camshaft by using said portion of the outer surface of said sleeve which lies along said parallel line near said imaginary cylinder to support said camshaft as said camshaft is being inserted through said camshaft bearings so that lobes on said camshaft do not impact and damage said camshaft bearings;

laterally removing said sleeve from said camshaft once said camshaft has been inserted into said engine.

4,450,610

METHOD OF MAKING A PISTON

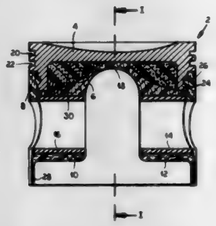
Siefgried Schüper, Wettstetten, Fed. Rep. of Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Oct. 22, 1981, Ser. No. 313,962

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040125

Int. Cl.³ B23P *15/10*; B29C *27/26*; B29D *3/02*; B65H *81/00*

U.S. Cl. 29—156.5 R **8 Claims**



1. A method of making a piston having a piston bottom forming a working end of a piston;

a piston sleeve formed separately from and form-fittingly connected to said piston bottom and forming a shaft of the piston; and

a piston body within said sleeve connected to said piston bottom at one end of said body and to said sleeve at an opposite end of said body, said body and said sleeve defining eyes enabling the piston to be connected to a member of a piston machine, both said body and said sleeve being composed of fiber-reinforced synthetic resin, said method comprising the steps of:

(a) forming a core having an external configuration corresponding to the internal configuration of said body and traversed by a pin around which said eyes can be formed;

(b) winding said core with a fiber roving impregnated with hardenable synthetic resin to form said body;

(c) applying said bottom to said body;

(d) winding a fiber roving impregnated with synthetic resin onto said bottom and around said body to form said sleeve; and

(e) withdrawing said core from the piston thus formed.

4,450,611

METHOD OF MANUFACTURING A BLADE WHEEL

Hiroshi Ito, Kawagoe; Toshihiko Yoshio, Hidaka, and Masao Nagashima, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 325,015

Claims priority, application Japan, Aug. 21, 1980, 55-113969

Int. Cl.³ B23P *15/04*; B23K *31/02*

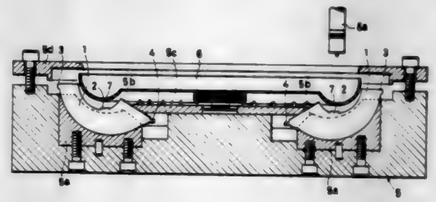
U.S. Cl. 29—156.8 FC **5 Claims**

1. Method of manufacturing a blade wheel comprising the steps of:

placing and holding a plurality of blades in first jig means for holding the blades in predetermined circumferentially spaced apart positions at predetermined angles, each of said blades having a projection on a concave-curved side edge thereof and claw members extending from opposite end portions of a convex-curved side edge thereof, said projections extending upwardly relative to said first jig means;

positioning an annular core member having a convex outer surface matching said concave-curved sides edges of said blades and a plurality of slits corresponding in number and position with said projections onto said blades in said first jig means with said projections engaging said slits;

securing said core member to each of said blades by welding



at each of the positions where said projections extend into said slits, thereby forming a sub-assembly;

placing and holding a shell member in second jig means for holding the shell member in a predetermined position, said shell member having a concave inner surface matching said convex-curved side edges of said blades and a plurality of slots corresponding in number and position with the radially outermost claw members of said blades;

removing said subassembly from said first jig means and positioning said sub-assembly into said shell member in said second jig means with said radially outermost claw members sliding into and resting in said slots;

securing said sub-assembly to said shell member, thereby producing an entire assembly.

4,450,612

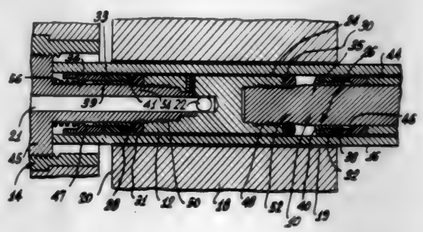
SWAGING APPARATUS FOR RADIALLY EXPANDING TUBES TO FORM JOINTS

John W. Kelly, Burbank, Calif., assignor to Haskel, Inc., Burbank, Calif.

Continuation-in-part of Ser. No. 133,010, Mar. 24, 1980, Pat. No. 4,359,889, and a continuation of Ser. No. 218,431, Dec. 19, 1980. This application Oct. 23, 1981, Ser. No. 314,213

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—62 **32 Claims**



1. A swaging apparatus for expanding a tube radially by the internal hydraulic pressure of a working fluid, said apparatus comprising:

a mandrel to be positioned axially within said tube;

seal means for confining said working fluid between said mandrel and said tube, said seal means including at least one seal member encircling said mandrel to be compressed

axially and expanded radially upon the application of pressure thereto by said working fluid;

a ramp defined by said mandrel and tapered radially inwardly from a large end to a small end, said ramp being positioned so that said seal member can move between an insertion position at said small end of said ramp and a sealing position at said large end of said ramp; and

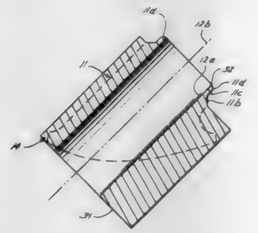
positioning means for preventing angular movement of said seal means relative to the longitudinal axis of said mandrel when said hydraulic pressure is applied and for urging said seal member toward said small end of said ramp when said apparatus is being inserted.

4,450,613

METHOD OF MANUFACTURING ACUTE ANGLED VESSEL CONNECTOR

Bobby W. Ryan; Rufus A. Rye, and James L. Snyder, all of Houston, Tex., assignors to WFI International, Inc., Houston, Tex.

Filed Jan. 21, 1982, Ser. No. 341,554
Int. Cl.³ B21K *21/00*
U.S. Cl. 29—157 T **6 Claims**



1. Method of manufacturing an acute angled vessel connector adapted to be mounted in a vessel or pipeline and to provide an angled connection from such vessel or pipeline to a branch pipe wherein the vessel connector includes a generally cylindrical main body having integrally formed therewith a contoured mounting rim, said main body having a bore therethrough which is directed at a predesignated acute angle with respect to said annular mounting rim, comprising the steps of:

providing an offset forging which is a generally rectangular block having an offset at one end thereof with an approximately diametrical distance from one lower edge at the other end of said forging to an upper edge formed by said offset which is greater than the length of the contoured mounting rim to be machined therein;

machining an interior body bore having a cylindrical inside wall with a central axis in said offset forging generally parallel to the longitudinal axis of the forging and approximately at a predesignated acute angle with respect to an imaginary line extending diametrically across said forging;

facing said one end of said forging so that said one end is precisely perpendicular to said interior body bore;

milling said other end of said forging to provide a curved undersurface which has the same radius of curvature as the vessel or pipeline inside wall in which said contoured mounting rim is to be welded, said curved undersurface intersecting said interior body bore wall in an inner, generally elliptical edge;

machining said forging outside surface into a main body which is partially cylindrical in shape and having certain outside wall portions parallel to said cylindrical inside wall forming said interior body bore and an edge portion of said contoured mounting rim in a generally elliptical shape;

machining said other end of said forging having said curved undersurface into a contoured mounting rim having an exterior ledge portion of gradual curvature, said ledge portion being of sufficient width to allow for x-ray inspection of adjacent weld material, said ledge portion of gradual curvature meeting said outside cylindrical surface of said main body; and

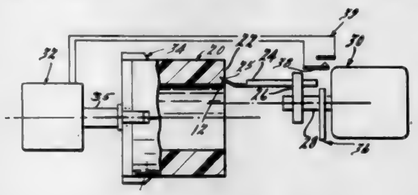
machining said inner edge of said curved undersurface such that said portion of said edge directly receiving fluid flow has a substantially larger radius of curvature than the remainder of said inner edge of said undersurface.

4,450,614

METHOD OF MAKING A POLYTETRAFLUOROETHYLENE HYDRODYNAMIC SEAL

James A. Repella, Southfield, Mich., assignor to Microdot Inc., Darien, Conn.

Filed Feb. 19, 1982, Ser. No. 350,359
Int. Cl.³ B23D *17/00*; B21D *39/00, 53/12*
U.S. Cl. 29—417 **6 Claims**



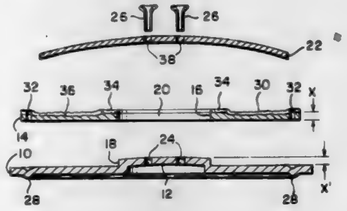
1. A method of making a hydrodynamic seal element from a billet of material having coaxial radially inner and outer cylindrical surfaces comprising the steps of facing off one end of said cylindrical billet to define and end face lying in a plane perpendicular to the central axis of the billet, indexing said billet about the central axis thereof to a first position, advancing a rotatable slitting tool having a cutting edge extending at an angle relative to the central axis of said billet and to the axis of rotation of said tool axially relative to said billet, rotating said slitting tool about an axis spaced from the central axis of said billet to cut a first arcuate slit in the end face thereof, indexing said billet about the central axis thereof to a second position, rotating said cutting tool about the axis of rotation thereof to cut a second arcuate slit in said end face, and advancing a slicing tool radially against said billet to slice off a relatively thin layer thereof.

4,450,615

METHOD OF FABRICATING A HAND CALCULATOR

Anthony G. Pickios, 16 Penn Dr., Dix Hills, N.Y. 11746

Filed Jun. 7, 1982, Ser. No. 385,555
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—437 **4 Claims**



1. A method of fabricating a hand calculator, which comprises the steps of:

(a) punching out on a press die a circular stationary base plate containing a central, circular, raised, portion having both an upper arcuately beveled surface and a stepped circular peripheral bearing edge;

(b) punching out on a press die a circular moveable scale plate having a thickness within −4.0% tolerance of the height of the central, circular, raised, portion of said circular stationary baseplate and containing a central circular hole permitting its placing on top of said stationary base plate about said bearing edge while affording complete revolving about the same;

(c) punching out on a press die a flat stationary top plate;

(d) forming holes into a central portion of said circular stationary top plate and said circular stationary base plate allowing for proper alignment thereof; and

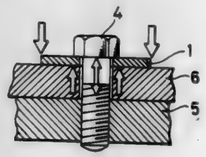
(e) placing said moveable scale plate on top of said stationary base plate by allowing the raised, portion of said stationary base plate to enter the central circular hole of said moveable scale plate, then placing said flat circular stationary top plate on top of said arcuately beveled surface of said stationary base plate so that formed mating holes align, then conforming said top plate to said arcuately beveled surface of said base plate, and securing the conformed top plate to said arcuately beveled surface of said base plate by means of separate fasteners inserted through said aligned holes in said top plate and said base plate, such that the peripheral edge of said top plate is adjacent to said moveable scale plate while not inhibiting its revolving movement.

4,450,616

METHOD OF ENSURING THE TIGHTNESS OF A BOLT AND A NUT

Kiyoshi Morita, Kyoto, Japan, assignor to Yamashina Seiko-Sho, Ltd., Japan

Filed Jun. 29, 1982, Ser. No. 393,336
Claims priority, application Japan, Jul. 3, 1981, 56-104893
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—446 **2 Claims**



1. A method of ensuring the tightness of a fastener comprising:

forming a three-dimensional shape memory annular member in an austenite phase using press means;

cooling the annular member to a temperature lower than the temperature for starting an austenite transformation for easy deformation;

fastening the fastener with the annular member using a lower-than-conventional torque to a degree which flattens the annular member; and

returning the temperature of the annular member to higher than an austenite transformation temperature, so that the recovery power of the annular member for returning the annular member to the three-dimensional shape in the austenite phase generates a fastening force for the fastener.

4,450,617

SYSTEM FOR AND ASSEMBLY OF A PREFABRICATED HOME MODULE

Thomas J. Dillon, Akron, Ohio, assignor to The Dillon Company, Akron, Ohio

Filed May 14, 1981, Ser. No. 263,577
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—430 **5 Claims**

1. A non-installation site in situ process for making a prefabricated building module, comprising the steps of:

(a) providing a plurality of tracks and a support carrier movably mounted upon said tracks;

(b) providing a movably mounted jig extending transversely across and spaced above the tracks and support carrier;

(c) selectively spacing a plurality of trusses from each other with the jig;

(d) providing a plurality of tie beams and connecting said tie beams between the spaced trusses to form a modular base;



(e) placing the modular base on the carrier by lowering the jig;

(f) moving the modular base along the tracks on the support carrier to various construction stations; and

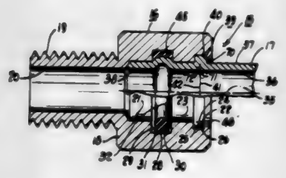
(g) adding additional components to the modular base at the various construction stations along the tracks to form a prefabricated home module.

4,450,618

TUBE FITTING ASSEMBLY METHOD WITH DEFORMABLE SEAL

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Division of Ser. No. 916,738, Jun. 19, 1978, Pat. No. 4,330,144, which is a continuation-in-part of Ser. No. 527,683, Nov. 27, 1974, abandoned, which is a division of Ser. No. 425,561, Nov. 17, 1973, abandoned. This application Apr. 26, 1982, Ser. No. 371,545
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 **17 Claims**



1. A method of forming an assembly of a tube and a fitting wherein the tube has inner and outer walls and the fitting has first and second walls defining first and second orifices, respectively, with the second orifice extending along a portion of the first orifice and being of larger cross-sectional area, comprising the steps of:

forming an annular shoulder on the fitting;

holding the fitting;

holding the tube;

inserting an end of the tube substantially only axially into the first orifice of the fitting until it hits a stop which is fixed relative to the fitting;

substantially only axially contracting the length of the tube between the tube end and the tube holder by relative axial movement between the tube holder and the fitting holder;

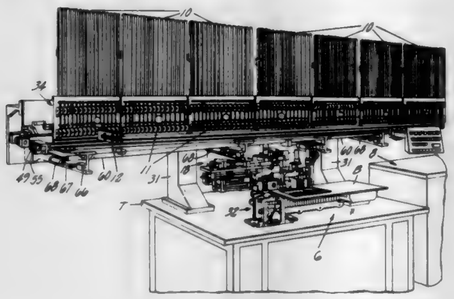
forming an annular shoulder on the tube at least as early in the process as the axially contracting step;

the axial contraction of the length of the tube establishing a deformed annular first seal between the tube and fitting at said annular shoulders;

continuing the axial contraction of the tube length until two annular parts of the inner tube wall are compressed into mutual engagement to establish a radially expanded bead

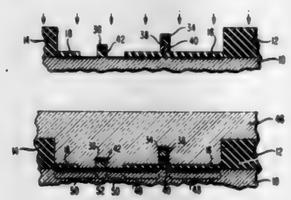
on the outer tube wall acting against and being radially restrained by said second wall of said fitting;
and establishing an annular deformed second seal between an outer surface of said tube and an inner surface of said fitting at said radially expanded bead.

4,450,619
COMPONENT INSERTING MACHINE
Henry L. Wright, Ipswich; Vitaly Bandura, Danvers, and Daniel W. Woodman, Jr., Beverly, all of Mass., assignors to USM Corporation, Farmington, Conn.
Filed Jun. 9, 1981, Ser. No. 271,835
Int. Cl.³ B21F *1/02*
U.S. Cl. 29—564.1 **16 Claims**



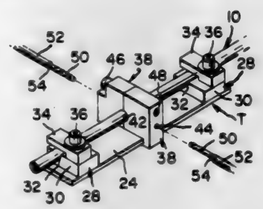
1. In a machine for applying to circuit boards a succession of components selected individually from magazines and having picker means movable in a predetermined sequence between selected magazines and a component conditioning means, the improvement in which each of the magazines is adapted to contain similarly configured components of a center line spacing different from the center line spacing of the components in each of the other magazines and each magazine is provided with control means indicating the configuration of the components in the magazine, said conditioning means being settable to operate on each component delivered by the picker means according to the control means on the magazine from which the component is selected.

4,450,620
FABRICATION OF MOS INTEGRATED CIRCUIT DEVICES
Ellis N. Fuls, Bernardsville; Nadia Lifshitz, New Providence, and Sheila Vaidya, Bridgewater, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 18, 1983, Ser. No. 468,032
Int. Cl.³ H01L *21/74, 21/265*
U.S. Cl. 29—571 **19 Claims**



12. A method of making an MOS integrated circuit device, comprising the steps of
forming a structure comprising a metallic silicide-on-polysilicon pattern on a silicon body, said pattern comprising polysilicon portions in direct contact with the surface of said body and other polysilicon portions spaced apart from the surface of said body by a relatively thin insulating layer,
implanting a dopant into the silicide portions of said pattern and into selected regions of said body that are uncovered or covered only with said relatively thin insulating layer,
forming a relatively thick insulating layer on the entire top surface of said structure,
and heating said structure to cause dopants in said silicide portions to diffuse into the polysilicon portions thereunder and into those portions of the body that have polysilicon directly thereover to render those polysilicon portions and body portions conductive and to cause the dopants in the selected regions of said body to diffuse therein to define source, drain and ohmic contact regions, said ohmic contact regions being electrically bridged by said conductive body portions and electrically contacting source or drain regions in said body.

4,450,621
METHOD AND TOOL FOR PREPARING COAXIAL CABLE AND FOR POSITIONING COAXIAL CONNECTOR THEREWITH
Edward A. Bianchi, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 14, 1981, Ser. No. 330,626
Int. Cl.³ H01B *13/20*; B23Q *9/00*
U.S. Cl. 29—828 **9 Claims**

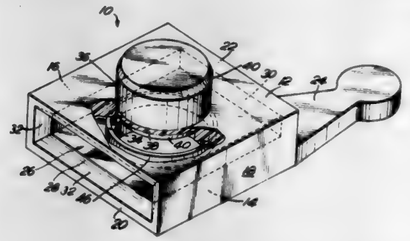


1. A method for preparing a coaxial cable and for positioning and connection of a coaxial connector therewith characterized by the steps of:
clamping the coaxial cable into spaced clamping members of a tool;
securing a drill block member onto said tool between the clamping members, the drill block member having a drill hole therethrough;
drilling a hole into the coaxial cable through the drill hole of the drill block member in alignment with a center conductor thereof;
removing the drill block member from the tool;
positioning a coaxial connector onto the tool between the clamping members so that a center connection member of the coaxial connector is aligned with the drilled hole; and
moving the center connection member into the drilled hole in electrical connection with the center conductor.

6. A tool for preparing a coaxial cable and for positioning and connection of a coaxial connector therewith characterized in that:
a plate includes clamping members at spaced positions thereon in which the coaxial cable is clamped and including locating section means on said plate disposed between the clamping members;
drill block means securable onto said plate at said locating section means and in clamping engagement with the coaxial cable, at least one of said drill block means having a hole in aligment with a center conductor of the coaxial cable to enable a drill to drill at least one hole through the outer jacket and outer conductor and into the dielectric sheathing of the coaxial cable whereafter the drill block means are removed from said plate;

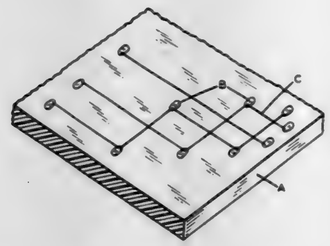
said clamping members serving to position the coaxial connector so that a signal probe thereof is in alignment with the drilled hole and is moved into the drilled hole in electrical connection with the center conductor whereafter said tool is unclamped and removed from the coaxial cable.

4,450,622
MOLDED SHORTING JACK
James Iantorno, Mamaroneck, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.
Filed Apr. 23, 1982, Ser. No. 371,431
Int. Cl.³ H01R *31/08*
U.S. Cl. 29—842 **12 Claims**



1. A process for forming an electrical connector comprising the steps of:
providing a generally annular electrical contact;
providing an outer shell having opposed upper and lower surfaces and a cavity therebetween, with a hub integrally formed in the upper surface and extending outwardly therefrom and an aperture in the lower surface;
disposing the contact in the cavity of the outer shell;
driving said hub inwardly into said cavity such that said hub shears from said upper surface of said outer shell;
driving said hub further into said cavity such that said contact surrounds said hub; and
driving a portion of said hub into said aperture in the lower surface of said outer shell, whereby said portion of said hub snugly fits within said aperture.

4,450,623
PROCESS FOR THE MANUFACTURE OF CIRCUIT BOARDS
Robert P. Burr, Matinicus, Me., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.
Filed Dec. 18, 1981, Ser. No. 332,346
Int. Cl.³ H01K *3/10*
U.S. Cl. 29—850 **17 Claims**

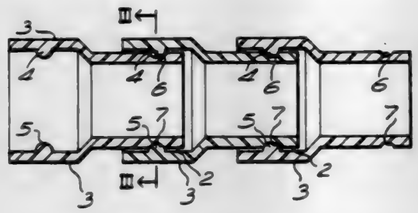


1. A process for extending and fixing continuous conductors between pre-established pairs of contact points on a board base surface along straight paths between selected of said pairs and along inflected paths between selected other of said pairs, the steps comprising:
(a) providing a board base having pads affixed to the board surface at pre-established contact points and points where conductor inflections are to be formed and mounting said board base on a table movable relative to a conductor feed guide, with the surface of said board base having said pads facing said guide;
(b) engaging the end of the conductor to be extended and fixed to said board surface with the pad at the first of a pair of pre-established contact points on said board surface and affixing said end to said first pad;
(c) with said end affixed to said first pad and where said conductor is to be extended and fixed to said board surface between a pair of contact points in a straight path, while feeding said conductor with said guide, moving said board base and said guide in a straight path relative to each other and extending said conductor from said pad at the first of said pair of contact points to the pad at the second of said pair of contact points, severing said conductor and engaging and affixing the severed end of said conductor to said pad at said second contact point;
(d) with said end affixed to said pad at said first of a pair of contact points and where said conductor is to be extended and fixed to said board surface between the pair of contact points in an inflected path, while feeding said conductor with said guide, moving said board base and said guide in a straight path relative to each other in a first direction and extending said conductor from said first of said pair of contact points to the pad at the point in such path where said conductor is to be inflected and affixing said conductor at said inflection point to said pad at said inflection point on said board surface, inflecting said board base and said guide relative to each other and moving said board base and said guide in a straight path relative to each other in a second direction and extending said conductor to the pad at the next following inflection point where there is to be more that one inflection in the path, affixing the conductor at the pad at each such inflection point, inflecting said board base and said guide relative to each other and moving said board base and said guide in a straight path relative to each other in a third direction and extending said conductor through inflection points, as aforesaid, until the pad at the second of said pair of pre-established contact points is reached, severing said conductor at said pad at said second contact point and engaging and affixing the severed end of said conductor to said pad at said second contact point;
(e) each time said conductor is severed and the severed end has been affixed to the pad at the second of the pair of contact points, moving said board and said guide relative to each other to engage the end of said conductor with the pad at the first of the next pair of pre-established contact points and repeating said steps until conductors have been scribed between the pads of all of the pre-established pairs of contact points; and
(f) after all of said conductors have been extended and affixed to said pairs of contact points on said board base to be connected, removing said board base from said table and affixing said conductors along their lengths intermediate said pads to said board base surface.

4,450,624
METHOD OF FORMING ELECTRICAL CONNECTORS
John C. Collier, York, Pa., assignor to Burndy Corporation, Norwalk, Conn.
Division of Ser. No. 73,861, Sep. 10, 1979, Pat. No. 4,360,969. This application Apr. 29, 1982, Ser. No. 373,040
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—881 **7 Claims**

1. A method of fitting an electrical connector housing to an electrical contact comprising forming a chain of connector housings linked end to end, one end of one of each pair of adjacent housings of the chain fitting in and being releasably linked to an end of the other housing of said pair of adjacent housings, feeding said chain in the direction of its length

towards a fitting station and, at said fitting station, effecting relative lengthwise movement between the housing nearest the fitting station and at the leading end of the chain and an electrical contact in such a direction as to cause said leading housing



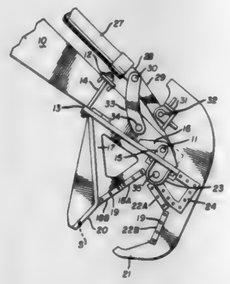
to be fitted onto the contact, and effecting release of said leading housing from said chain by moving said leading housing in the direction of the longitudinal axis of said chain, said chain remaining stationary relative to said leading housing.

4,450,625

MATERIAL HANDLING AND SHEARING ATTACHMENT FOR A BACKHOE

Michael Ramun, and John Ramun, both of Youngstown, Ohio, assignors to Allied Gator, Inc., Youngstown, Ohio

Continuation-in-part of Ser. No. 261,679, May 7, 1981, Pat. No. 4,376,340. This application May 12, 1982, Ser. No. 377,390
The portion of the term of this patent subsequent to Mar. 15, 2000, has been disclaimed.
Int. Cl.³ E02F *3/28*
U.S. Cl. 30—134 **5 Claims**



1. A cutting and manipulating attachment for a backhoe, the bucket of which has been removed, and having a boom with a controlled piston and cylinder assembly connected thereto, comprising:

a mounting body and means for attaching the same to the boom of the backhoe;

means positioning a fixed cutting blade on said mounting body and means located at a first end of said fixed cutting blade pivotally mounting a movable cutting blade on said mounting body in pivotal relation to said fixed cutting blade from an open position to a closed, workpiece shearing, position;

means for keeping a cutting portion of said movable cutting blade in shearing relation to said fixed cutting blade through the entire extent of the shearing movement of the blades with respect to each other;

said movable blade having an elongated substantially hook-shaped end portion hooked generally toward said fixed blade;

said means for keeping the cutting portion of said movable cutting blade in shearing relation to said fixed cutting blade comprising: a pair of spaced parallel guides located adjacent and fixed to a second end of said fixed cutting blade and extending from said fixed cutting blade second end and defining an elongated guide path, said guide path being positioned and sized to receive said hook-shaped end portion of said movable hook-shaped cutting blade before said cutting portion of said movable blade comes into shearing action with respect to a workpiece disposed between said blades, so that said hook-shaped end portion and said pair of guides hold the workpiece for cutting as said movable cutting blade cutting portion moves in shearing relation with said fixed blade; and said movable cutting blade having a pair of cutting blade portions arranged in a sharp V-shape on a plane offset with respect to said fixed blade, said cutting blade portions positioned so that said blade portions and said fixed blade form a generally V-shape when in said open position, and cage a workpiece therein and urge the workpiece generally toward said pivotal mounting means during movement to the closed position; and

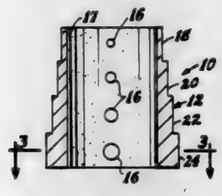
means for operatively connecting said movable cutting blade to said piston and cylinder assembly so that the same can be moved relative to said fixed blade thereby from said open to said closed positions, and vice-versa.

4,450,626

BOLT-CUTTER DEVICE

Charles E. Worthington, R.R. 6, Box 280, Logansport, Ind. 46947

Filed Sep. 24, 1982, Ser. No. 423,429
Int. Cl.³ B26B *13/00*
U.S. Cl. 30—226 **4 Claims**



1. A bolt cutter device, comprising:

a body member and a relatively movable shear body,

the body member being provided with receiver openings adapted to receive the shank of a bolt to be cut,

and retainer means holding the body member and the shear body in a slidable relationship such that movement of the shear body relative to the body member will cause the shear body to operatively engage a bolt whose shank is in one of the receiver openings and thereby shear the bolt;

in a combination in which the body member is provided in the form of a generally cylindrical sleeve, the portions thereof which are circumferentially spaced from the said receiver openings thereof providing the retainer means which retain the body member and the shear body in the slidable arrangement operative as aforesaid;

in a combination in which the portions of the body member which are circumferentially spaced from the said receiver openings also provide an auxiliary support for the bolt positioned in one of the respective receiver openings, by the provision of opening means provided in said circumferentially spaced body member portions diametrically opposite the respective receiver openings;

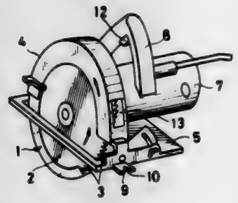
the said opening means and the said receiver openings providing diametrically-spaced support openings carrying the associated bolt, which is desired to be cut, perpendicularly to the axis of the cylindrical sleeve body member, the bolt-shear operability being accomplished with the bolt thusly held and by the relative sliding of the shear body axially of the cylindrical sleeve body member.

4,450,627

DEVICE FOR DETERMINING A CORRECT SAWING POSITION FOR A PORTABLE ROTARY SAWING MACHINE

Hiroyuki Morimoto, Hiroshima, Japan, assignor to Shindaiwa Kogyo Co., Ltd., Hiroshima, Japan

Filed Nov. 13, 1981, Ser. No. 321,056
Claims priority, application Japan, Jul. 6, 1981, 56-101111[U]; Jul. 7, 1981, 56-101251[U]; Jul. 22, 1981, 56-109695[U]; Aug. 10, 1981, 56-118942[U]; Aug. 10, 1981, 56-118943[U]
Int. Cl.³ B23D *47/00*
U.S. Cl. 30—391 **25 Claims**



1. A device for determining a correct sawing position for a portable rotary sawing machine of the type having a peripherally curved stationary protective covering over a rotatable saw blade and a base adapted to be slideably placed on a workpiece to be sawn, said device comprising:

an indicator gauge having a V-shaped notch fixedly attached to said base;

window means defining a rectangular opening on the front portion of the periphery of said stationary protective covering in an optimum position to permit an operator to clearly watch said saw blade therethrough;

means associated with said window means defining guide grooves; and

a cover plate removably covering said rectangular opening and including means defining stepped portions at the upper and lower ends thereof and means establishing a finger knob to permit an operator to remove said cover plate from said rectangular opening, said stepped portions being slideably received in said guide grooves to permit sliding removal of said cover plate from said rectangular opening in a lateral direction relative said stationary protective covering; whereby

alignment is ensured for the intended correct sawing operation by simultaneously watching the rotating saw blades, the V-shaped notch of the indicator gauge and the scribing line on the workpiece.

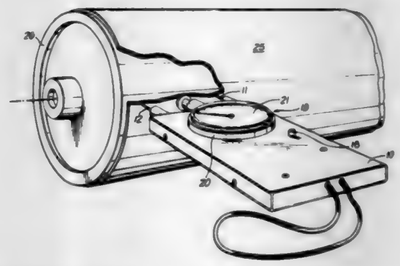
4,450,628

PRINTING PRESS BLANKET GAUGE

Joseph C. Rocks, 98 Adelaide St., West Ryde, N.S.W., Australia

Filed Jun. 4, 1982, Ser. No. 384,996
Int. Cl.³ G01B *5/06*
U.S. Cl. 33—172 E **4 Claims**

1. A printing press blanket gauge comprising a casing, a pair of pointed probe members projecting an equal distance from the casing and being shaped to penetrate a printing blanket without damage thereto and make electrical contact with a metal surface underneath the blanket, a probing means projecting from said casing at a position between said pointed probe members and being constructed to bear on the outer surface of said printing blanket without penetration and being movable into and out of the casing, measuring and indicating means within the casing operatively connected to said probing means to be actuated thereby, means to set said measuring and indicating means to zero when the projection from the casing of said probing means is equal to the projection of said pointed probe members, and a source of electricity in said casing operatively connected to said probe members through visible or audible signalling means, the arrangement being such that when both said probing means and pointed probe members are pressed against the surface of a printing blanket said pointed probe members pass through the blanket and are electrically



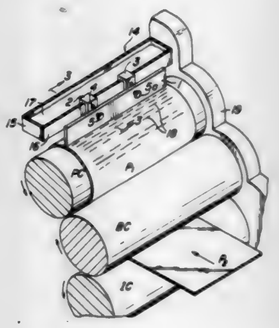
connected externally of the casing through said metal surface, said probing means is displaced with respect to said casing to actuate said signalling means and said measuring and indicating means gives a direct indication of the thickness of the blanket.

4,450,629

OFFSET PRESS ATTACHMENT

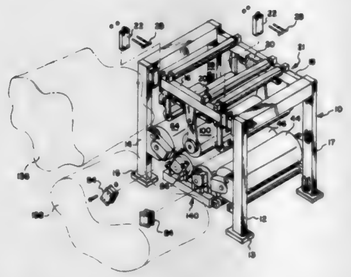
Shirley M. Force, 1801 Yost Rd., Norristown, Pa. 19401

Filed Dec. 6, 1982, Ser. No. 447,285
Int. Cl.³ B41B *1/00*
U.S. Cl. 33—184.5 **9 Claims**



1. A method of accurately, horizontally aligning flexible printing plates on a rotary press having a rotatable cylindrical plate member and a first printing plate or master with images thereon, said printing plate being wrapped around the plate cylinder, the first printing plate or master being correctly, horizontally aligned, which comprises attaching a removable plate guide to means on the press located above the plate cylinder, said plate guide having a movable rectangular prismatic element with its longest dimension running transverse to the plate cylinder and thereabove, adjusting one or more spring tensioned means and thereby allowing the prismatic element to move and twist essentially about its center point until the primary edge formed by the front face and bottom surface of said prismatic element is aligned with a line of images on the plate or master when it is held outwardly, under tension, and at least a portion of said plate or master is flush with the bottom surface of the prismatic element, then replacing the first printing plate or master with a second printing plate or master not in correct horizontal alignment, and then moving the second plate clockwise or counterclockwise on the plate cylinder until a line of images on the second plate or master is even with the primary edge of said prismatic element.

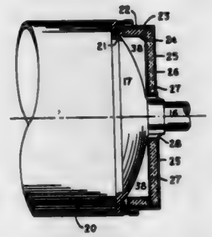
4,450,630
PAPER MACHINE DRYING SECTION
Richard W. Phelps, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio
Filed Mar. 26, 1982, Ser. No. 362,190
Int. Cl.³ F26B *13/00*
U.S. Cl. 34—116 14 Claims



1. A paper machine dryer section for use in combination with a pair of endless wires including an upper wire and a lower wire supporting a paper web therebetween, comprising:
a frame, including substantially vertical frame members spaced laterally to receive the wires and web therebetween, and a pair of substantially parallel, horizontal upper side frame members, each extending longitudinally between the tops of two of said vertical frame members, a first of said upper members having cantilever support means therefor attached to the second of said upper frame members, said first member further having removable portions near each end thereof,
said dryer section having a plurality of heated drums for drying the web and a plurality of rolls for supporting and directing the wires, including a plurality of drum assemblies, each of said drum assemblies including a pair of drums mounted on an arm in spaced relation to each other, means pivotally supporting one end of said drum assembly support arms to one of said vertical frame members providing for movement of said drum assemblies between a normally raised, operative position and a lowered wire changing position,
support means normally supporting said arms and said pairs of drums in said normally raised position,
a lower cantilever sub-structure positioned adjacent the bottom of said dryer section and positioned to engage said drum assemblies when said assemblies are moved to said lowered position,
and removable portions between each of the pairs of drums on said drum assembly arms providing for the threading of the lower said wire therethrough when said drum assemblies are supported on said cantilever sub-structure in said lowered position.

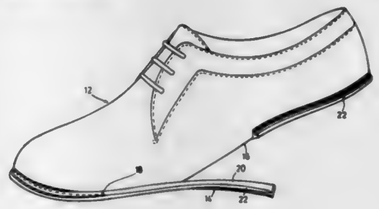
4,450,631
HEATED CAN ROLLS OF HIGH THERMAL EFFICIENCY
James E. Gamble, Newark, Del., assignor to Bunnell Plastics, Inc., Mickelton, N.J.
Continuation of Ser. No. 942,942, Sep. 18, 1978, Pat. No. 4,348,819. This application Sep. 14, 1982, Ser. No. 417,842
The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—110 10 Claims

1. In combination, a cylindrical can roll for drying a continuous fibrous sheet, said can roll being mounted for rotation about its longitudinal axis and having head members attached to the cylindrical body portion thereof by means of a plurality of circumferentially spaced bolts, the heads of which bolts project axially from said head members, thermal insulation means for at least one of said head members, said thermal insulation means comprising a substantially circular panel of thermal insulating material mounted axially of said head mem-



ber, stud means mechanically affixed to at least some of the heads of said bolts and extending axially of said can roll and engaging in fixed relation said thermal insulating material at circumferential points corresponding to said bolt heads.

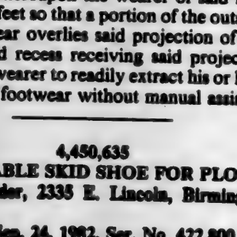
4,450,632
FOOTWEAR
Douglas W. Bensley, 1385 Commissioners Road West, London, Canada
Division of Ser. No. 148,611, May 12, 1980, Pat. No. 4,343,057, which is a continuation-in-part of Ser. No. 100,586, Dec. 5, 1979, Pat. No. 4,326,313. This application May 17, 1982, Ser. No. 379,246
Int. Cl.³ A43B *13/18;* A43D *9/00*
U.S. Cl. 36—17 PW 3 Claims



1. An article of footwear comprising a preformed forward upper part and a preformed rear part, each upper part having laterally spaced lower edge portions, a first connecting strip attached to the edge portions of the forward and rear upper parts on one side thereof, a second connecting strip attached to the edge portions of the forward and rear upper parts on the opposite side thereof, each connecting strip having a profiled section providing a projecting extension, and a preformed sole unit having a peripheral wall with an internal surface in snapping engagement with the projecting extensions of the first and second connecting strips, the first and second connecting strips being on opposite sides of the sole unit to position the forward and rear upper parts thereon.

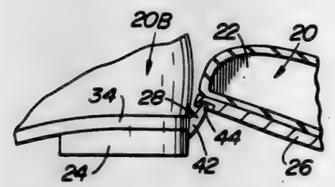
4,450,633
CONVERTIBLE SHOE
Kathleen G. Connelly, Santurce, assignor to The Commonwealth of Puerto Rico, San Juan
Filed May 27, 1982, Ser. No. 382,637
Int. Cl.³ A43B *3/24, 11/00*
U.S. Cl. 36—101 1 Claim

1. A shoe forming assembly comprising:
(a) a sole constructed and adapted to underlie the foot of a wearer,
(b) means for releaseably connecting the sole to the foot of the wearer, comprising at least one anchoring means attached to a side edge of the sole adjacent the toe end and at least one strap having means on its end for releaseable connection to the sole-carried fastening means,
(c) each anchoring means comprising a strip of rigid material which is elongated longitudinally of the sole having a first part connected to the edge wall of the sole, and a second



part extending upwardly from the first part and curved outwardly of the sole from the first part, and
(d) each strap having at its end a ring which is elongated in the direction of the sole and is sufficiently long to pass over the second part of the anchoring means and is formed of material of such diameter that it will be received below the outwardly curved part of the anchoring means.

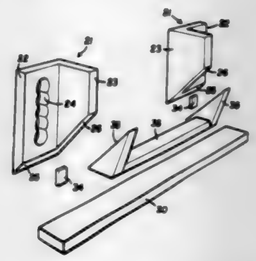
4,450,634
BOOTS WITH QUICK RELEASE MEANS
Michael Bell, 1705 Triumphe Way, Warrington, Pa. 18976
Filed Oct. 12, 1982, Ser. No. 433,572
Int. Cl.³ A43B *11/00*
U.S. Cl. 36—138 15 Claims



1. In a pair of footwear, wherein each of the footwear of said pair includes an outsole and a heel portion, quick release means which comprises first and second cooperating members, each of said members forming a portion of a respective one of said pair of footwear, said first member comprising a recess in said outsole of one of said pair and said second member comprising a projection from the heel portion of the other of said pair, said recess being configured to receive said projection of the cooperating member, whereupon the wearer of said footwear can position his or her feet so that a portion of the outsole of one of said pair of footwear overlies said projection of the other of said pair, with said recess receiving said projection therein, thus enabling said wearer to readily extract his or her foot from one of said pair of footwear without manual assistance.

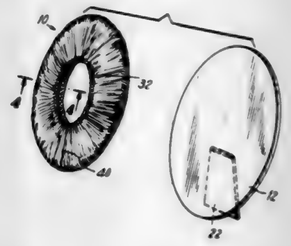
4,450,635
LEVEL ADJUSTABLE SKID SHOE FOR PLOW BLADES
Warren M. Shwayder, 2335 E. Lincoln, Birmingham, Mich. 48008
Filed Sep. 24, 1982, Ser. No. 422,800
Int. Cl.³ E01H *5/06*
U.S. Cl. 37—271 10 Claims

1. A level adjustable skid shoe initially attached upon a plow moldboard while being capable of adjustment into a working position, and said moldboard having a forward face and a rear face, with an elongated, plate-like blade fastened upon one of said faces and extending beneath the moldboard, and with the blade lower edge forming an elongated, narrow ground engaging bottom surface, said skid shoe comprising:
a bracket having a first leg adapted for fastening upon one face of the moldboard, and a second leg extending angularly away from the first leg, said first leg having a lower edge portion;
a generally horizontally arranged, plate-like wear pad means having a generally flat, lower, ground engaging, wear resistant face;
means for initially holding the wear pad means roughly normal to the first leg and the blade, with said wear pad means having an edge roughly parallel to the first leg lower edge portion, said holding means including bend-



able connector means for fastening one edge of the wear pad means to the lower edge portion of the bracket first leg;
said wear pad means being pivotable into a level working position by bending of said bendable connecting means wherein its face is both longitudinally and transversely substantially parallel with the blade bottom surface, with the connector means holding the pad in such position;
means for maintaining said wear pad means in a level working position, said maintaining means including an arm having a lower end portion fastened to the pad and upper end portion arranged closely adjacent the bracket second leg and being welded thereto after the pad has been arranged in its level working position.

4,450,636
PICTURE FRAME
Mary H. Lasurdo, Huntington Station, N.Y., assignor to Susan Ann Trovato, Valley Stream, N.Y., a part interest
Filed May 3, 1982, Ser. No. 373,836
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152 6 Claims



1. Apparatus for displaying a picture, comprising:
a rigid planar backing board;
a flexible annular element having a central through aperture and being of a selected circumferential length for placement around the periphery of said backing board with said

aperture being substantially centrally disposed on said backing board;

wherein said flexible annular element comprises first and second disc-shaped fabric portions, mutually attached substantially completely around the perimeters thereof, said first and second disc-shaped portions having first and second apertures formed therein, respectively, and said first and second apertures forming said central through aperture, and wherein said first disc-shaped fabric portion has a selected color and said second disc-shaped fabric portion has a second selected color, different from said first selected color;

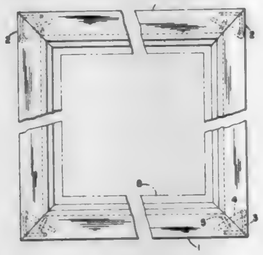
means affixed to said flexible annular element for biasing the edges of said central through aperture radially inwardly, and for retaining said flexible annular element on said backing board, whereby a picture can be placed against said backing board and displayed through said central aperture.

4,450,637

EASY-FRAME

Norman Russ, P.O. Box 508, Norwich, Conn. 06360

Filed Jan. 28, 1983, Ser. No. 437,352
Int. Cl.³ A47G *1/06*; G09F *1/12*
U.S. Cl. 40—152 **1 Claim**



1. A rectangular frame comprising opposed pairs of frame pieces normally arranged in a common plane, said frame pieces having ends adapted to abut one another at the frame corners pivot pins for said frame ends, each pin having an L-shape and each leg of each L-shaped pin being located adjacent to the outer peripheral edge of its associated frame piece and also adjacent to the rear face of its associated frame piece, whereby each frame piece can be pivoted out of said plane to permit placement of flat items in the frame for display, a flat spring extending across the abutting ends of said frame pieces and secured to one of said L-shaped pin legs, said spring having a free end projecting into a cavity defined by that frame piece associated with the other L-shape pin leg, and a staple coupled to the free end of said spring and secured to said other frame piece for achieving movement of one pair of frame pieces in response to movement of the other pair.

4,450,638

PHOTOGRAPH DISPLAY DEVICE

Robert Bader, Toronto, Canada, assignor to Bader Brothers Limited, Toronto, Canada

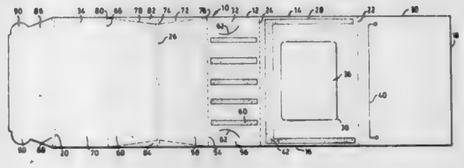
Filed Aug. 27, 1982, Ser. No. 412,414
Claims priority, application Canada, Sep. 2, 1981, 385055
Int. Cl.³ G09F *1/10*
U.S. Cl. 40—158 R **11 Claims**

1. A photograph display device, comprising:

a photograph retaining member of generally flat rectangular shape for displaying a photograph, the photograph retaining member having a front where the photograph is displayed, a back, first pair of oppositely-disposed generally parallel side edges and a second pair of oppositely-disposed generally parallel side edges;

an elongated base member secured to the back of the photograph retaining member, the base member having an elongate side surface and a pair of oppositely-disposed base end portions;

the elongate side surface of the base member being located adjacent to one of the first pair of oppositely-disposed side edges and so contoured that the photograph retaining member is maintained in a first position with the second pair of side edges generally vertically disposed and inclined over the base member when the side surface of the base member is rested on a horizontal surface;



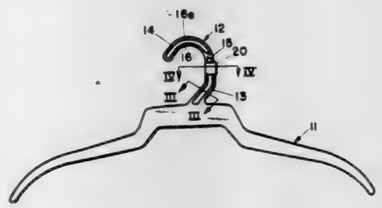
one base end portion being located adjacent to one of the second pair of oppositely-disposed side edges, the one base end portion being so bevelled or formed with lines of weakness to permit the one base end portion to be so bevelled relative to the back of the photograph retaining member, that the photograph retaining member is maintained in a second position in which the first pair of oppositely-disposed side edges are generally vertically disposed and inclined from the vertical towards the base member when the one of the second pair of side edges and the one bevelled base end are located on a horizontal surface.

4,450,639

HANGER WITH SIZE INDICATOR PANEL

Everett L. Duester, Zeeland, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.

Filed Apr. 2, 1982, Ser. No. 364,770
Int. Cl.³ A47J *51/098*; G09F *3/10, 3/16*
U.S. Cl. 40—322 **7 Claims**



1. Means for supporting an information bearing tally on a garment hanger, said hanger having a body portion and a supporting hook molded as a single unitary member; said body portion having front and back faces; said hook having a base portion, a convexly curved anchor portion and an intermediate portion, said intermediate portion being straight and substantially vertical and spaced substantially above said body portion by said base portion of said hook and inclined at a minor angle to the lengthwise axis of said body portion, the front face of said panel element being flat for receiving an indicia bearing tally visible from the front and one end of said hanger even when said hanger is supporting a garment.

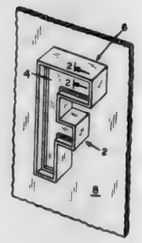
2. Means for supporting an information bearing tally on a garment hanger, said hanger having a body portion and a supporting hook molded as a single unitary member; said body portion having front and back faces; said hook having a base portion, a convexly curved anchor portion providing a support receiving opening and an intermediate portion, said intermediate portion being straight and substantially vertical and spaced substantially above said body portion by said base portion of said hook and having a panel element integral with the hook, said panel element having generally parallel front and back faces, the front face of said panel element adjacent said opening being flush with the plane of the front face of said body portion and being inclined rearwardly therefrom at an angle of 27° to 30° to the lengthwise axis of said body portion, the front face of said panel element being flat for receiving an indicia bearing tally visible from the front and one end of said hanger even when said hanger is supporting a garment.

4,450,640

SIGN LETTER STRUCTURE

Jay B. Shapiro, 17 South Dr., Roslyn, N.Y. 11576, and William Bank, 3025 Ocean Ave., Brooklyn, N.Y. 11235

Filed Sep. 30, 1982, Ser. No. 430,483
Int. Cl.³ G09F *7/00*
U.S. Cl. 40—596 **8 Claims**



1. In an illuminated sign letter structure for use in a sign illuminated from a light source positioned rearward of the letter structure, a generally flat letter-form through which light can pass, a strip material bent to conform to the perimeter of said letter-form and forming a side frame therearound, said strip material comprising inner and outer plies of plastic material extruded about the opposite surfaces of a metal foil, at least the inner of said plies being of a transparent material, and an enlarged side frame end for receiving a letter-form, said metal foil in said enlarged frame end being flat between said plies and forming on the letter-form side of said frame a transparent ply area extending forwardly from the front and around the periphery of said flat letter-form and being illuminated by the illuminating source at the rear of said letter-form, said illuminated transparent ply area around the periphery of said letter-form forming an illuminated edge area in the transparent inner ply around the inner peripheral edge of the letter-form when said letter-form is illuminated from the rear and viewed from the front.

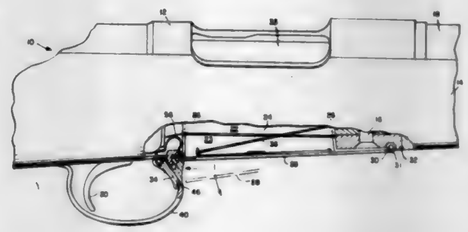
4,450,641

MAGAZINE FLOOR PLATE LATCH FOR BOLT ACTION RIFLES

Douglas E. Bullis, Ilion, N.Y., and Kurt Blumer, Salt Lake City, Utah, assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Nov. 12, 1982, Ser. No. 440,877
Int. Cl.³ F41C *25/00*
U.S. Cl. 42—6 **16 Claims**

1. In a firearm having a receiver and a barrel secured to a stock, a cartridge magazine located in the stock below said receiver, and a trigger surrounded by a trigger guard mounted below the stock adjacent to the bottom of the magazine, said cartridge magazine being open at the top to permit cartridge loading through an opening in the receiver and cartridge feeding from the magazine, the bottom of said magazine being normally closed by a removable floor plate adapted to pivot about its forward end, said plate supporting a magazine spring which urges loaded cartridges upward toward the receiver, said firearm further including means for releasing the floor plate to unload the magazine comprising a latch positioned in a central aperture in the front face of said trigger guard, said latch being adapted to pivot about a trigger guard pivot point at a line of contact between the trigger guard and a bottom portion of the latch, and a latch spring bearing upon said latch



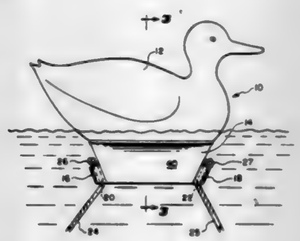
so that the latch normally blocks the floor plate to maintain the plate against the bottom of the magazine, said floor plate being released by application of pressure on the latch against the spring force so that the latch will pivot until it no longer blocks the rear end of the floor plate, thus permitting the plate to swing downward about its forward end.

4,450,642

BUOYANT WATER FOWL DECOY

James A. DeKezel, 2300 79th Ave. West, Lot 97, Rock Island, Ill. 61201, and James R. Lerschen, 218 Elm St., Colona, Ill. 61241

Filed Jul. 12, 1982, Ser. No. 397,551
Int. Cl.³ A01M *31/06*
U.S. Cl. 43—3 **8 Claims**



1. A water fowl decoy comprising: a hollow shell body portion which has the shape of a water fowl and which is made of a hard rigid plastic material, a keel shell portion which is made of a hard plastic material, which depends from said shell body portion and which defines with said shell body portion communicating interior chambers, a buoyant foam plastic material within said interior chamber of said shell body portion, and concrete material within said interior chamber of said keel shell portion.

4,450,643

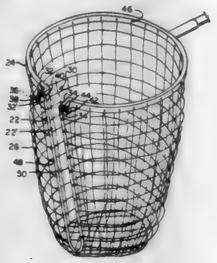
FISHING NET

Theodore W. Cox, 1648 Mussula Rd., Towson, Md. 21204

Filed Dec. 10, 1982, Ser. No. 448,702
Int. Cl.³ A01K *77/00*
U.S. Cl. 43—12 **6 Claims**

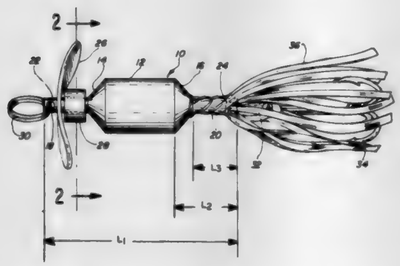
1. In a system of landing net including a handle supporting a frame which holds an open-top netting and has an opening at the end of the frame away from the handle, and a "U"-shaped member with ends pivotally connected respectively to the frame at respective sides of the opening for supporting the net so that the net has a deployed position with a slot therein communicating with the open top, and has a folded position,

the improvement comprising: means for adapting the system for use in a current in netting a fish head-first, including means



for locking said U-shaped member to said frame in deployed position; and means for unlocking said U-shaped member from said frame for folding and storage.

4,450,644
FISHING LURE
Vitervo Leal, 4744 N. Whipple, Chicago, Ill. 60625
Filed Sep. 28, 1982, Ser. No. 426,150
Int. Cl.[3] A01K *85/00*
U.S. Cl. 43—42.2 9 Claims



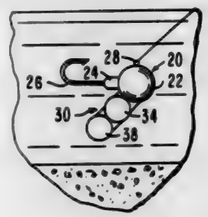
1. A fishing lure comprising a solid one-piece body having a continuous elongated central body portion of axially uniform transverse dimension and, first and second opposed end portions, each of said end portions including an elongated rod-like portion of a transverse dimension substantially less than that of said axially uniform transverse dimension and having a free end, and a tapering portion integrally connecting said rod-like portion and said central body portion, means mounted along the rod-like portion of the first of said end portions to freely spin relative thereto in response to travel of said lure through water, a hook, and means for securing said hook near the free end of the rod-like portion of the second of said end portions.

4,450,645
BOTTOM FISHING LURE
Frank A. Ancona, 5424 N. Tracy, Kansas City, Mo. 64118
Filed Apr. 26, 1982, Ser. No. 371,524
Int. Cl.[3] A01K *85/00*
U.S. Cl. 43—42.25 11 Claims



1. A fishing lure comprising:
a. a fishhook having a shank portion with an eye for the attachment of a fishing line at one end thereof, and a rebent bight terminating in a point at its opposite end,
b. a weighted head secured to said hook shank adjacent said eye and rendering said lure positively non-buoyant, to the extent that it will sink to the bottom of a body of water, and remain in engagement with said bottom as the lure is pulled forwardly at normal speeds by said fishing line, and
c. a first pair of resilient legs secured in and extending outwardly from said head laterally of said shank, said lure having an upright position resting on the bottom of a body of water, when deposited in water and allowed to sink to said bottom, in which position said hook rests on said bottom and is disposed in a generally vertical plane, with the point thereof uppermost, and with said shank angled upwardly from said bottom to said head, said legs extending transversely in opposite directions from said vertical plane in outwardly and downwardly inclined relation relative to said upright position, whereby to engage said bottom at their outer lower ends to support said head in spaced relation above said bottom, said fishhook being operable to be drawn forwardly, or head end first, over said bottom by tension on said fishing line.

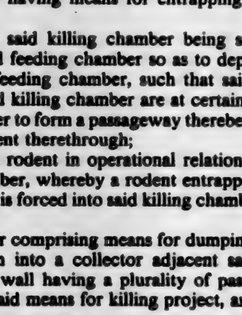
4,450,646
ADJUSTABLE WEIGHT FISHING DEVICE
Peter C. Maltese, 156 Paree Dr., Pittsburgh, Pa. 15239
Filed Apr. 2, 1982, Ser. No. 365,041
Int. Cl.[3] A01K *83/00*
U.S. Cl. 43—43.14 10 Claims



1. A fishing device comprising:
a substantially spherical body having a substantially cylindrical neck portion attached thereto;
a hook attached to said neck portion; and
a single tail portion having a plurality of removable members arranged between approximately a 30° to 60° angle with respect to the shank of said hook, with said removable members substantially rigidly connected in series through thin ligaments capable of being selectively and easily removed for decreasing the weight of said fishing device and increasing the buoyancy of said fishing device.

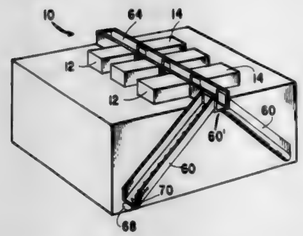
4,450,647
BAIT HOLDER FOR LEECHES
Earl A. Schmidt, 14506 County Rd. 6, Plymouth, Minn. 55441
Filed Jul. 8, 1982, Ser. No. 396,410
Int. Cl.[3] A01K *97/04*
U.S. Cl. 43—55 4 Claims

1. In combination, a leech keeper including:
a. a container including an inner wall closed cylinder, an outer wall closed cylinder, the inner wall closed cylinder being of smaller diameter and height than the outer wall closed cylinder, the top of the inner wall closed cylinder and the outer wall closed cylinder secured at a lip slightly above an angulared portion slightly below a top portion of said outer wall closed cylinder, and a plurality of outer threads over an upper distance of said lip common to said top of said inner wall and outer wall of said closed cylinder;
b. a strainer including a round cylindrical member and a bottom attached thereto, a plurality of holes punched in said cylindrical member and bottom, a string tab secured to an underside of said bottom, a lip secured about a top edge of said cylindrical member, and interior threads adjacent a top edge of said cylindrical member, and;
c. a top including a hollow portion for flotation, a string tab secured to an inner portion of said top, a plurality of inner threads for engaging said outer threads of said container, and a plurality of outer threads for engaging interior



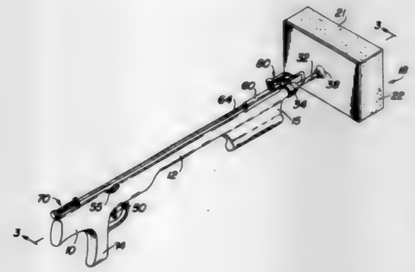
threads of said strainer said top including stepped portions of larger and smaller cylindrical members for supporting said string tab, said inner threads, said outer threads, and said flotation portion respectively whereby said strainer meets between said top and said container providing a watertight closed container for leeches, and whereby said top engages into said strainer and can be secured by said string tab for floating said leeches in water thereby keeping the leeches alive.

4,450,648
INDUSTRIAL RODENT KILLING DEVICE
Andrew J. Pratscher, 267 Cornell, Calumet City, Ill. 60409
Filed Sep. 29, 1982, Ser. No. 427,718
Int. Cl.[3] A01M *23/04*
U.S. Cl. 43—64 13 Claims



3. An industrial rodent killing device, comprising:
a feeding chamber having means for entrapping a rodent therein;
a killing chamber, said killing chamber being selectively accessible to said feeding chamber so as to deposit a rodent from said feeding chamber, such that said feeding chamber and said killing chamber are at certain intervals open to each other to form a passageway therebetween for passage of a rodent therethrough;
means for killing a rodent in operational relationship with said killing chamber, whereby a rodent entrapped in said feeding chamber is forced into said killing chamber where it is destroyed;
said killing chamber comprising means for dumping a killed rodent therefrom into a collector adjacent said killing chamber, a side wall having a plurality of passageways through which said means for killing project, and a floor connected to said side wall along an edge surface of each of said side wall and said floor;
means for pivotally mounting said side wall and said floor at the connection of said side wall and said floor so that said side wall and said floor are rotatable together as a unit; and
said means for dumping comprising means for rotating said side wall and said floor such that a portion of said side wall rotates within the interior of said killing chamber to force a killed rodent downwardly toward said floor while said floor rotates away from the interior of said killing chamber to thereby provide an open passageway through which the killed rodent will exit and fall into said collector.

4,450,649
FLY TRAP GUN
John A. Dunwoody, Box 42, R.D. #2, Pennsburg, Pa. 18073
Filed Sep. 24, 1982, Ser. No. 422,686
Int. Cl.[3] A01M *3/04*
U.S. Cl. 43—135 3 Claims



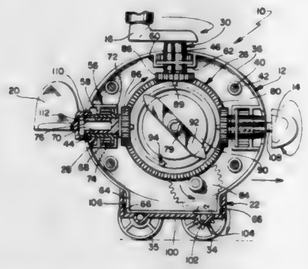
1. A fly trap gun comprising
an elongated barrel,
a handle projecting from said barrel,
a trigger means mounted adjacent to said handle and movable between a loaded position and a fired position,
a fly trap including base and side wall portions the internal surfaces of which define a trap chamber,
means providing a sticky area throughout a substantial portion of the surface of said trap chamber for catching flying insects trapped in said trap chamber,
a firing rod mounted for longitudinal movement within said barrel and having an extended end located outside of the front end of said barrel,
said firing rod being mounted for movement between a loaded position and a fired position, including means for guiding said firing rod as it moves between said loaded and fired positions inclusive of a guide support and a guide rod mounted for slidable movement in said guide support longitudinally along said gun barrel, said guide rod being secured to said firing rod for conjoint movement therewith, including means for restricting movement of said firing rod and said guide rod in the direction toward the front end of said barrel, said restricting means comprising a ratchet means inclusive of a lever means movable into and out of engagement with notches formed along the length of said guide rod,
actuating means for causing said firing rod to move rapidly from said loaded position to said fired position,
said actuating means being cooperable with said trigger means and responsive to the movement of said trigger means between said loaded and fired positions,
and means for mounting said fly trap on the extended end of said firing rod for movement therewith as said firing rod moves between said loaded and fired positions.

4,450,650

ACTION PLAY TOY

John E. Holden, R.D.#1, Lime Ridge Farm, Mount Joy, Pa. 17552; Fred D. Eddins, P.O. Box 498, Tarklin Rd., Pole 90, Mapleville, R.I. 02839, and Richard W. Kimbrough, 35 Tinker St., Woodstock, N.Y. 12498

Filed Sep. 20, 1982, Ser. No. 420,880
Int. Cl.³ A63H 7/00, 33/00
U.S. Cl. 46—17 3 Claims



1. An action toy comprising:
a. a housing having a plurality of apertures therein;
b. a base secured to said housing for supporting same on a supporting surface;
c. a plurality of individual rotatable socket elements separate from each other and mounted in said housing and communicating with the exterior thereof through said apertures;
d. housing gear means mounted in said housing mechanically interconnecting said socket elements so that rotation of one of said socket elements causes rotation of the others thereof;
e. a plurality of non-rotatable hub members mounted in said housing, each of said hub members communicating with the exterior of said housing through one of said apertures, one of said socket elements being rotatably received in substantially coaxial relation in each of said hub members;
f. a three-dimensioned element on the exterior of said housing detachably received in engagement on the exterior surface of a hub member in one of said apertures; and
g. a plurality of action elements on the exterior of said housing detachably received in said socket elements for rotation therewith.

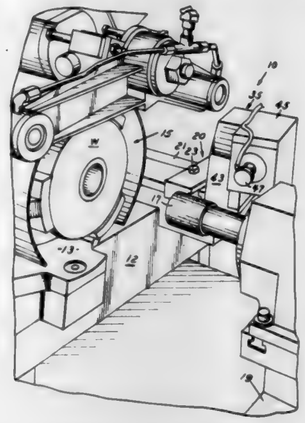
4,450,651

STATIONARY GRINDING WHEEL DRESSING UNIT

Kazimierz J. Reda; Victor F. Dzewaltowski; Lawrence I. Millay, and Robert N. Hobbs, all of Springfield, Vt., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed May 11, 1981, Ser. No. 262,233
Int. Cl.³ B24B 5/00
U.S. Cl. 51—5 D 4 Claims

1. A grinding machine having a machine bed, a workhead, a longitudinal slide, a cross-slide and a grinding wheel head operatively provided with a grinding wheel for operative engagement with a workpiece carried by said workhead, characterized as further having:
(a) a base extension member mounted on the workhead in cantilever fashion to extend over the machine grinding area and having a first pair of spaced apart undercut slots therein extending in a longitudinal direction relative to the grinding wheel, including means mounting the base extension member in stationary position on the workhead,
(b) a first dressing unit base member positionable longitudinally on the base extension member and having a second pair of spaced apart undercut slots therein extending in a transverse direction toward the grinding wheel, including bolt and nut means in said first pair of slots mounting the first dressing unit base member in an adjusted stationary position on the base extension member,
(c) a second dressing unit base member positionable transversely on the first dressing unit base member including a stiff base portion and interconnected stiff transverse portion and including bolt and nut means in said second pair of slots mounting the base portion in an adjusted stationary position on the first dressing unit base member,



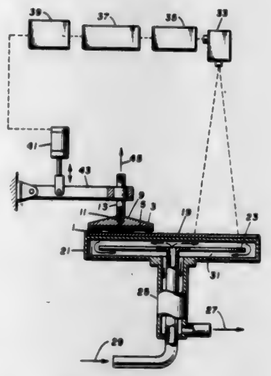
(d) said base extension member, first dressing unit base member and second dressing unit base member providing a stable stationary platform, and
(e) a dressing cutter unit mounted on the second dressing unit base member of the stable stationary platform cantilevered over the machine grinding area and to which the grinding wheel is moved for dressing.

4,450,652

TEMPERATURE CONTROL FOR WAFER POLISHING

Robert J. Walsh, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 4, 1981, Ser. No. 299,378
Int. Cl.³ B24B 7/04
U.S. Cl. 51—131.4 9 Claims



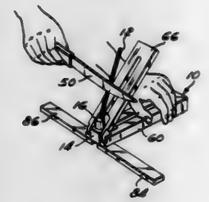
1. The method of controlling the thermal bow distortion of a hollow internally cooled turntable having a polishing pad mounted on the top surface during polishing of semiconductor wafers held in pressurized rotatable contact with the polishing pad comprising:
circulating a heat transfer fluid through the turntable to maintain the bottom surface of the turntable at a constant temperature, sensing the temperature of said polishing pad, and
regulating the pressure of the wafer against the polishing pad in response to said sensed temperature to maintain the polishing pad and top surface of the turntable at a constant temperature,
whereby the temperature differential between the top and bottom surfaces of the turntable is maintained constant thereby maintaining the thermal bow distortion of the turntable constant.

4,450,653

KNIFE SHARPENER

J. Lawrence Fletcher, Santa Ana, Calif., assignor to Fletcher Engineering, Inc., Westminster, Calif.

Filed Jul. 21, 1981, Ser. No. 285,491
Int. Cl.³ B24D 15/08
U.S. Cl. 51—211 R 27 Claims



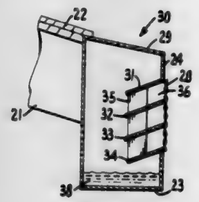
1. A knife sharpener, comprising:
a sharpening rod for sharpening the cutting edge of a knife blade;
means for mounting said rod for pivotal movement,
means for limiting said pivotal movement to a selected range of pivotal movement, a different portion of the surface of said rod being in an operable position for use as a knife sharpener at each of the limits of said range of pivotal movement, whereby a user may first sharpen one side of a knife on one portion of the surface of said rod at a first limit of said range and then sharpen the other side of said knife on a different portion of the surface of said rod at a second limit of said range; and
said mounting means including resilient means for urging said rod toward the center of said range of pivotal movement.

4,450,654

PASSIVE DIVERSIONARY FLUID COLLECTING AND DEBRIS SEPARATING APPARATUS

Joseph G. Clendenin, 3475 Ridgeview Dr., Santa Rosa, Calif. 95404

Filed Jan. 18, 1982, Ser. No. 340,475
Int. Cl.² E04D 13/06, 13/08
U.S. Cl. 52—12 6 Claims



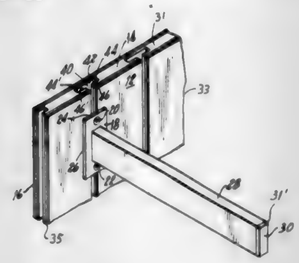
1. A passive diversionary fluid and debris separating apparatus for a roof system comprising:
a first planar member extending substantially vertically downward with respect to the roof system, said planar member having inner and outer surfaces, with the outer surface defining the initial downward path of travel of fluid and debris from said roof system along said planar member, said planar member including at least one opening formed therein;
a fluid permeable planar membrane, said membrane being vertically disposed and covering said opening in said planar member;
at least one fin extending inwardly and downwardly from said permeable member, such that a portion of the fluid travelling down said membrane is drawn off by said fin, thereby diverting fluids from the outer surface of said member to the inner surface thereof for collection.

4,450,655

VERTICALLY SLOTTED PANEL

Michael R. Rosenthal, 6001 SW. 118 St., Miami, Fla. 33156, and Ivan Parron, 8013 W. 15th Ave., Hialeah, Fla. 33014

Filed Aug. 25, 1982, Ser. No. 411,439
Int. Cl.³ A47B 5/00
U.S. Cl. 52—36 7 Claims



1. In combination, (a) a panel and (b) a shelf support and clamp assembly, comprising:
a panel having a top, bottom and side surfaces and a front main face and a rear main face, anc comprising,
an outer front skin,
a first sheet of plywood adhered to the front skin, and
a core of particle board adhered to the first sheet of plywood, and
a second rear sheet of plywood adhered to the particle board, and said particle board being sandwiched between the plywood sheets,
a plurality of spaced vertical slits of common size opening in the front face and extending from the top surface to the bottom surface,
each of said slits defining a throat extending perpendicularly from the front face into the particle board and through the outer front skin and first sheet of plywood,
said throat being of predetermined lateral dimension,
said slit defining an enlarged pocket within the particle board extending laterally, perpendicularly to the throat and said pocket being bounded by a rear wall, side walls in opposing relation and a pair of coplanar front wall sections, each section extending from the throat and defining a lip on opposite sides of the throat, each lip being composed of a portion of the particle board, an outer plywood sheet and the outer skin, and
said walls being parallel to one another,
said side walls being spaced from one another a first predetermined distance and said front wall sections and rear walls being spaced from one another a second predetermined distance,
a shelf support and clamp assembly,
said clamp assembly including,
an arm having an inner end and an outer end, said arm being of a predetermined length and height,
said inner end being enlarged and defining a force distributing plate of predetermined height, width and thickness.
said plate width being greater than the lateral dimension

of said throat and overlaying the skin on said lips, and said plate being of a height greater than the height of the arm and said plate defining a zone above and below the arm overlaying the throat and lips,

a countersunk hole in each plate zone, and

a pair of screws, each comprising a threaded shank and head, each of said heads being tapered conically toward the shank and each head being sized to nest in one of said holes in nested relation, with the shank of each screw extending through one of the holes and through the throat and into the pocket when the head of each screw is in the countersunk hole,

a pair of keeper bars in the pocket, each of said keeper bars being of a predetermined width less than the second predetermined distance between said rear wall and front wall sections and of a length greater than the distance between the side walls, and each of said keeper bars having a central internally threaded hole sized for and in threaded engagement with the threaded shank of each screw,

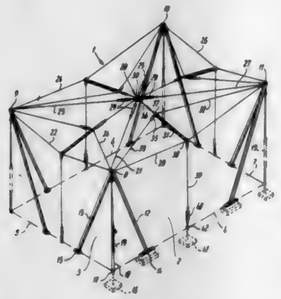
whereby, when the screw is tightened, the width and thickness of the keeper bar will be turned into locking engagement with the side walls of the pocket and be captivated within the enlarged portion clamping the plate and self support in a preselected position with the shelf support extending generally perpendicular of the front main face of the panel.

4,450,656

SUSPENDED ROOF

Johannes Lagendijk, Oetant 197, Sterrenburg, 3328 SL Dordrecht, Netherlands

Filed Dec. 14, 1981, Ser. No. 330,515
Int. Cl.³ E04B *1/12*
U.S. Cl. 52—63 **10 Claims**



1. Suspended roof, supported by at least three fixed mountings, of which the supporting roof structure mainly consists of a cable rope construction to which a weather-proof roof covering is applicable, adapted for rainwater drainage to the sides, with diagonal main tension cables led from the fixed mountings which meet in the centre of the roof and which form the roof ridges, and with side top cables,

the roof valleys running into the side top cables between each pair of fixed mountings, characterized in that each side top cable (**20, 22, 24, 26**) has been fixed with its one end to one of the fixed mountings (**11, 8, 9, 10**) and after having been led round the adjacent fixed mounting (**8, 9, 10, 11**), continues as a diagonal main tension cable (**21, 23, 25, 27**) to the centre (**28**) of the roof,

in that the other end of this cable has been connected in the centre (**28**) to the ends of the other diagonal main tension cables and in that each side top cable is mainly tensioned vertically downwards between each pair of fixed mountings by means of a post-tensioning cable,

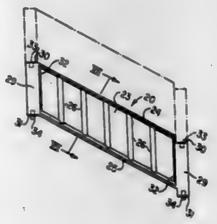
all this in such a way that the centre of the roof is lifted to form the roof apex (**28**), this apex being raised to a higher level than the side top cables on the point where they meet the roof valleys (**38**).

4,450,657

PRE-FABRICATED GRAIN ELEVATOR

Klaus U. Driedger, Edmonton, Canada, assignor to ABL Engineering Ltd., Calgary, Canada

Division of Ser. No. 109,503, Jan. 4, 1980, Pat. No. 4,362,453.
This application Aug. 25, 1982, Ser. No. 411,569
Claims priority, application Canada, Sep. 26, 1979, 336363
Int. Cl.³ E04H *7/00*
U.S. Cl. 52—79.9 **3 Claims**



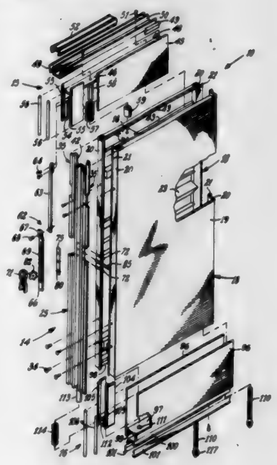
1. A module for constructing an inclined bin comprising a rectangular body constructed as a parallelogram devoid of right angel corners, said body being defined by a bottom wall and side walls integral with said bottom wall; a bearing block at each end of and integral with each side wall; each bearing block having sides parallel to the ends of the rectangular parallelogram body, and top and bottom ends inclined with respect to said bottom of said body and perpendicular to ends of said side walls of the body, whereby, when like modules are stacked vertically the bearing blocks are vertically oriented and the bins defined thereby are inclined.

4,450,658

UNITIZED PARTITION WALL SYSTEM

Gilbert E. Legeai, Strasbourg, France, assignor to Hauserman, Inc., Cleveland, Ohio

Filed Jan. 11, 1982, Ser. No. 337,711
Int. Cl.³ E04D *15/00*
U.S. Cl. 52—126.3 **62 Claims**



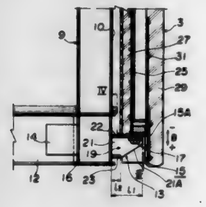
1. In a partition system, a panel, a vertical on each end of said panel, each vertical including an outwardly directed relatively shallow channel, a strut positioned in each said channel and supporting a corresponding end of an adjustable panel head, and drive means in each said channel operative vertically to move the corresponding strut and thus said head.

4,450,659

HORIZONTAL FORCE RESISTING BUILDING STRUCTURE AND ATTACHMENT FOR ATTACHING WALLS TO SAME

Tadashi Hansoka, Kawasaki; Hiroaki Umezu, Tokyo, and Ginichi Shigaraki, Fujisawa, all of Japan, assignors to Misawa Homes K.K., Japan

Filed Jun. 19, 1981, Ser. No. 275,158
Int. Cl.³ E04B *1/98;* E04H *9/02*
U.S. Cl. 52—167 **7 Claims**



1. In a horizontal force resisting building structure wherein a bearing wall member having a structural core embedded therein is attached through attachments to a steel building framework so as to face a structure plane of the framework, the improvement wherein the attachments comprise:

(a) fastening means;

(b) a pair of upper plate brackets each firmly attached at its proximal end to the framework at a position such that distal ends of the upper plate brackets are fastened through the fastening means to the upper ends of the core; and

(c) a pair of lower brackets each having a horizontal member, and a pair of vertical side plate members for supporting at their upper edges the lower face of the horizontal member, the side plate members each being firmly attached in a parallel manner at its proximal end to the framework at a position such that the horizontal member is fastened through the fastening means to the lower ends of the core;

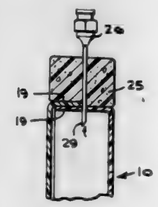
the upper and lower brackets having less resistance to plastic deformation than the core; whereby the wall member is attached through only the four upper and lower brackets to the building framework.

4,450,660

THERMAL BARRIER

E. Keith Dean, 1510 Washington Blvd., and Phillips C. Emmons, 1314-12th St., both of Huntington, W. Va. 25701

Filed Sep. 29, 1982, Ser. No. 426,937
Int. Cl.³ E06B *3/26, 7/12;* E04B *2/00;* B21D *39/00*
U.S. Cl. 52—202 **10 Claims**



1. A thermal barrier comprising a dual plastic pane sealed air unit which does not require a separate frame, said barrier adapted to be installed on the inside of an existing window opening and mounting within the existing jamb, head, and sill on the inside of the existing window which remains in place, said barrier comprising a pair of rectangular sheets each having cut away corners, edge portions of said sheets being folded at 90 degrees relative to the main portion of the sheets to provide a pair of pan like members, said pan like members being interfitted together to form a hollow box-like member, foam pieces mounted around the periphery of the box-like member, means for withdrawing ambient air from the interior of the box-like member, and means for introducing dry air, inert gas, and the like into the interior of the member, retaining means mounted adjacent to said thermal barrier.

4,450,661

COMPOSITE STRUCTURES WINDOW BELT AND METHOD OF MAKING

Philip C. Whitener, Seattle, Wash., assigaor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US81/01321, 371 Date Sep. 30, 1981, 102(e) Date Sep. 30, 1981, PCT Pub. No. WO83/01237, PCT Pub. Date Apr. 14, 1983
PCT Filed Sep. 30, 1981, Ser. No. 318,642
Int. Cl.³ B64C *1/14;* E06B *3/20, 3/26;* B31D *3/02*
U.S. Cl. 52—206 **7 Claims**



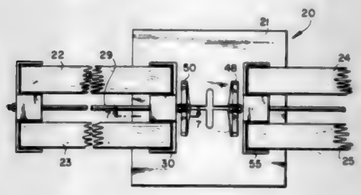
1. A window containing section of a composite structure for fuselage comprising: a row of spaced-apart reinforced plastic window frames, means on the window frames for securing windows within the frames, a layer of reinforcing filaments coated with a resin wound around a periphery of each window frame, a core of honeycomb extending between window frames, a reinforcing filament wound resin impregnated inner shell, and a reinforcing filament wound resin impregnated outer shell to make up a shaped composite structural section.

4,450,662

TENSIONED STRUCTURE WITH ADJUSTABLY MOVABLE COLUMNS AND BEAMS

Remo Melchiori, Jr., 2350 S. 875 East, Zionsville, Ind. 46077

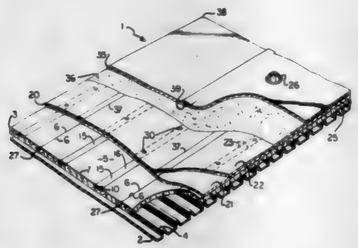
Filed Jun. 1, 1982, Ser. No. 383,521
Int. Cl.³ F04C *3/10, 3/26*
U.S. Cl. 52—223 R **5 Claims**



1. A construction assembly comprising:

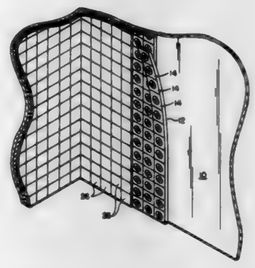
a base plate having brackets;
a first pair of parallel horizontal wood beams mounted to said base plate;
a second pair of parallel horizontal wood beams mounted to said base plate;
a first pair of boots mounted to opposite ends of said first pair of beams;
a first member having opposite ends mounted to said boots placing said member in tension and said first pair of beams in compression;
a second pair of boots mounted to opposite ends of said second pair of beams;
a second member having opposite ends mounted to said second pair of boots placing said second member in tension and said second pair of beams in compression;
first adjustment means connecting one of said first pair of boots with one of said brackets and being operable to horizontally position said first pair of beams relative to said base plate; and,
second adjustment means connecting one of said second pair of boots with another of said brackets and being operable to horizontally position said second pair of beams relative to said base plate.

4,450,663
INSULATIVE ROOF STRUCTURE
Norman C. Watkins, P.O. Box 474, State Rte. EE, Camdenton, Mo. 65020
Filed Jun. 15, 1981, Ser. No. 273,666
Int. Cl.[3] E04C *1/24*; E04D *1/08*
U.S. Cl. 52—309.4 10 Claims



1. An insulative roof structure for application to a roof deck comprising:
(a) a single-layer synthetic organic polymer closed cell foam panel including an upper surface, a pair of opposite edges and a longitudinal groove opening onto said panel upper surface; said groove extending generally parallel to and in spaced relation from said edges;
(b) an elongated strip of rigid reinforcing material positioned in said groove and having a strip upper surface generally flush with said panel upper surface;
(c) a lamina comprising a lower layer of kraft board and an upper layer of metal foil bonded directly to said kraft board, said kraft board layer being bonded to said panel upper surface;
(d) a plurality of mechanical fasteners for retaining said panel against a roof deck, each of said fasteners including:
(1) a head portion engaging said lamina metal foil upper layer; and
(2) a shank portion extending through said lamina, said strip and said panel; said fastener shank portion being embedded in said roof deck whereby said insulative roof structure is retained on top of said roof deck; and
(e) a single-ply elasto-polymeric weather-resistant membrane including a plasticizer, said membrane overlying and being bonded to said metal foil layer by an adhesive; said metal foil layer providing a barrier between said foam panel and said plasticizer in said membrane and said metal foil layer providing a base for said adhesive whereby said membrane is bonded to said lamina; said membrane being exposed and substantially uncovered.

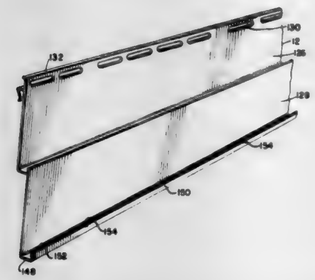
4,450,664
TILE MOUNTING PROCESS AND PRODUCT
Patrick M. McNamee, 330 Guernsey Ave., Columbus, Ohio 43204
Filed Jul. 2, 1982, Ser. No. 394,522
Int. Cl.[3] E04F *13/18*
U.S. Cl. 52—385 4 Claims



1. In the combination of a tile and a backing member for mounting the tile on a substrate,
the backing member including a front side and a planar back side, means for attaching the backing member to a substrate,
means for forming an opening through the backing member,
the means forming the opening being of thin resilient plastic having slits extending outwardly from said opening to thereby form not less than three flaps around said opening, said flaps being attached to said backing member and projecting therefrom to form said opening at a location spaced from said planar back side toward said front side,
a single prong projecting along a straight line from the back face of the tile and having an enlarged portion which projects laterally from said line to form an outline measured perpendicular to said line which is larger in size than the opening in said backing member and said enlarged portion is of a thickness measured along said line which is less than the thickness between the flaps and the back side of the backing member,
the prong being of a length and the enlarged portion being located thereon such that the enlarged portion will pass through said opening and the flaps will spring into place behind the enlarged position as the back face of the tile engages the front face of the backing member to releasably lock the tile and backing member together, and
means forming a pattern of relief on the front side of the backing member,
the back face of the tile member being configured to nest with the pattern in relief on the front side of the backing member whereby the patterns in relief will nest together when in register and prevent relative rotational movement.

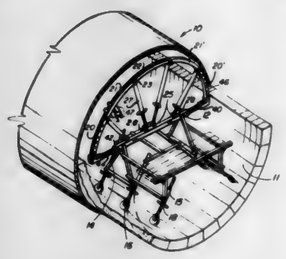
4,450,665
INTERLOCKING BUILDING SIDING
Harry Katz, Westerville, Ohio, assignor to Vinyl Improvement Products Company, Columbus, Ohio
Filed Jul. 10, 1981, Ser. No. 282,140
Int. Cl.[3] E04D *1/00*
U.S. Cl. 52—522 3 Claims

1. In a building siding panel extruded from a synthetic resin material and being adapted for mounting in generally horizontal overlaping relation with similar panels on a building wall to simulate weatherboard siding, the siding panel including a nailing strip having a plurality of elongated slot-like openings extending along its edge, a locking flange integrally formed on and projecting outwardly from and downwardly along the outer surface of the panel adjacent the nailing strip and an upwardly directing locking lip integrally formed on and extending along its bottom edge, the locking flange cooperating with the outer surface of the panel to define a downwardly open locking channel having a relatively narrow opening adjacent its open bottom and being substantially wider adjacent its upper portion, and the upwardly directed locking strip being dimensioned to fit within the narrow open bottom of the locking channel, the improvement comprising,



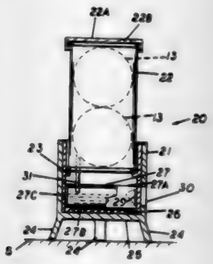
an elongated bead integrally formed on and extending longitudinally of said upwardly directed locking lip adjacent its uppermost edge, and
a plurality of dimples formed in said bead at spaced intervals along its length, said dimples having a dimension measured in a direction generally perpendicular to the plane of the lip which is substantially greater than the width of the narrow opening of said locking channel but less than the corresponding dimension of the locking channel adjacent its upper end.

4,450,666
ECONO BRICKING RING
James L. Trumbull, Seattle, and William A. Gillam, Alderwood Manor, both of Wash., assignors to Clayburn Refractories, Inc., Abbotsford, Canada
Filed Aug. 26, 1982, Ser. No. 411,782
Int. Cl.[3] E04G *11/20*
U.S. Cl. 52—749 17 Claims



1. A bricking ring for use in positioning bricks in an overhead arcuate configuration, comprising:
a rigid, laterally disposed, adjustable support member;
vertically adjustable leg means secured to said support member for positioning said support member;
a plurality of rigid arcuate rail segments pivotally interconnected end-to-end to form a generally semicircular configuration;
a plurality of segment adjustment arms, each arm extending between and connected at its opposite ends to said support member and to a corresponding pivotal interconnection between adjacent rail segments, one adjustment arm being connected to each said interconnection; and
adjustment means for selectively lengthening or shortening each of said adjustment arms.

4,450,667
METHOD AND APPARATUS FOR REJUVENATING RUBBER BALLS AND THE LIKE
John Fitzpatrick, 689 Fairchild Ave., Trumbull, Conn.
Filed Aug. 27, 1981, Ser. No. 296,991
Int. Cl.[3] B65B *63/08*; A63B *47/00*; H05B *3/06*
U.S. Cl. 53—127 1 Claim

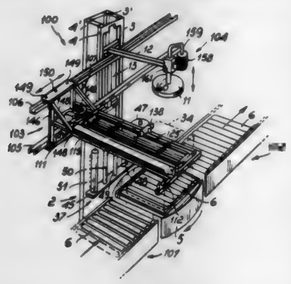


1. An apparatus for rejuvenating balls of the type used in the sport of racket ball or the like comprising a stand, having extending tubular wall portions, said stand having a full open top, leg means for supporting said stand in spaced relationship to a supporting surface, a heating means in the form of an electric resistance coil disposed adjacent the bottom of said stand, said stand having an opening formed in a wall portion thereof adjacent the bottom thereof, an inturned annular support disposed intermediate the height of said stand, a reservior container sized to be received in said stand, said reservoir container having an access opening disposed opposite to said stand opening, a spout hingedly connected to said reservoir opening to pivot between a close and open position relative to said access opening, whereby in the open position said spout extends beyond the opening in said stand, a steam conduit extending upwardly from said reservoir container and means defining a ball container for housing the balls to be rejuvenated, said ball container being sized to be received in said stand annular support above said reservoir container, said ball container having a bottom wall formed with a hole therein, said steam conduit extending into said hole formed in the bottom of said ball container, a cover for sealing the upper end of said ball container, and a vent means formed in said cover.

4,450,668
AUTOMATIC PACKAGING MACHINE
Renzo Grossi, Milan, Italy, assignor to Dario Manuli S.p.A., S. Pietro Mosezzo and F.I.S., s.r.l. Macchinari Per Imballaggi, Milan, both of, Italy, a part interest
Filed Jun. 4, 1981, Ser. No. 270,691
Int. Cl.[3] B65B *11/04*
U.S. Cl. 53—176 9 Claims

1. An automatic packaging machine including a first packaging mechanism for helically wrapping the upright sides of the objects to be packaged by means of at least a first sheet and a second packaging mechanism for the installation of at least one separate overcapping sheet on a least one top or bottom end of the object to be packaged, said first packaging mechanism comprising a vertically movable frame, supply means for said first sheet mounted on said frame, means for vertically moving said frame, a power driven turntable for receiving the object to be packaged, a vertically movable lid member for pressing said object to be packaged on the turntable, a load-bearing columnar frame and a slide vertically sliding along the columnar frame, means for vertically moving said slide wherein said lid

member is supported on said slide and intermediate power driven supporting means are provided between said slide and said lid member for controlled lowering and raising of said lid member independently from the lowering and raising of said slide, said second packaging mechanism comprising a carriage movable along rails horizontally positioned on said slide and extending parallel to said turntable, means for horizontally driving said carriage, a cantilevered frame carried on said carriage, at least a bobbin of packaging sheet for said overcapping sheet installation which is supported by said cantilevered frame and movable by said driven carriage together with said



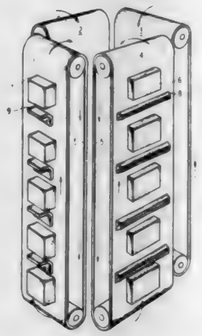
cantilevered frame from a first end position offset from said lid member to a second end position oppositely offset from said lid member, and means for feeding said overcapping sheet onto the top of the object to be packaged so that overlapping edges of said sheet are formed extending over the upright sides of the object thereby allowing said lid member to be lowered onto the top of the object wrapped in a first lateral wrapping and the top of the overcapping sheet so that the overlapping edges of said overcapping sheet may be sandwiched between said first and a subsequent second lateral wrapping by said first packaging mechanism.

4,450,669

LINE OF CONTINUOUS WORKING PACKAGING MACHINES FOR RECTANGULAR PRISMATIC PACKAGES

Gino Rapparini, Viale Roma 17, Bologna, Italy

Filed Jun. 1, 1981, Ser. No. 268,958
Claims priority, application Italy, Jun. 11, 1980, 3445 A/80
Int. Cl.³ B65B *9/12, 51/30*
U.S. Cl. 53—551 2 Claims



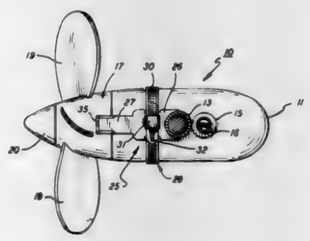
1. A continuous packaging machine comprising four endless conveyor means moveable in synchronization in the same direction with each having a straight run portion, said conveyor means being disposed in a rectilinear configuration with said straight run portions of said conveyor means extending parallel to each other to define an elongated passage having a rectangular cross section for the passage of an elongated hollow tube, complementary package forming means secured to opposing pairs of conveyor means to provide support fo: the side of said tube during the introduction of a filling into said tube and complementary sealing and crimping means secured to two opposing conveyor means on opposite sides of said forming means in the direction of movement of said conveyor means for closing the tube to define a closed package.

4,450,670

WEED CUTTER FOR BOAT MOTOR

Richard L. Robinson, 8198 Speach Dr., Baldwinsville, N.Y. 13027

Filed Feb. 15, 1980, Ser. No. 121,706
Int. Cl.³ A01D *44/00*
U.S. Cl. 56—8 4 Claims



1. In a boat motor having a housing and a propeller that includes a hub rotatably mounted in the housing and a plurality of propeller wings radially extending from the hub, apparatus for slicing through underwater foliage as it approaches the propeller wings that includes

an elongated cutting tool having a shank and a dependent cutting blade axially aligned along the length of the tool, said blade being a flat, thin element having at least a pair of cutting surfaces formed along the opposed side edges thereof, and

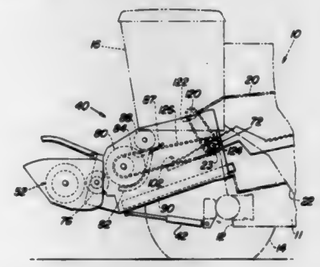
mounting means affixed to the shank of the tool for attaching the tool to the motor housing adjacent to the propeller assembly to position the blade over the propeller hub in close proximity therewith with the axis of the blade lying in the same plane as the rotational axis of the propeller and the plane of the flat, thin blade being substantially tangent to the direction of rotation of said propeller.

4,450,671

COMBINE HARVESTER WITH MODIFIED FEEDER HOUSE

Mahlon L. Love, Osco, Ill., assignor to Deere & Company, Moline, Ill.

Filed Jun. 1, 1982, Ser. No. 383,851
Int. Cl.³ A01D *41/02;* A01F *12/30*
U.S. Cl. 56—14.6 5 Claims



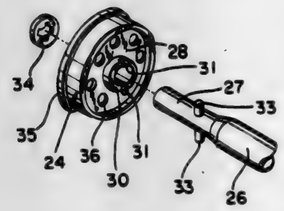
4. A combine harvester having a separator housing including means for processing crop material delivered to the housing and forward means for gathering crop material from a field and delivering it to the housing and including a mobile frame supported above the ground by at least one pair of transversely spaced wheels characterized in that the separator housing includes a body portion rigidly connected to the mobile frame and a forward extension portion pivotally supported by the body portion for pivoting movement about a transverse axis and in that the means for processing crop material includes at least one elongated unitary separating member extending fore-and-aft and spanning at least a portion of both portions of the separator housing upstream and downstream of the transverse axis, the separator housing body portion including support means for the separator element and the forward portion of the separator element extending cantilever fashion into the separator housing forward extension portion.

4,450,672

PULLEY MOUNTING MEANS FOR POWER LAWN RAKE

Ernest R. Dynie, Brockville, Canada, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 9, 1982, Ser. No. 416,148
Int. Cl.³ A01D *7/00, 69/00*
U.S. Cl. 56—16.7 9 Claims



1. In a power lawn rake having a housing provided with a motor-driven shaft journaled therein, a driving pulley on the shaft, a rotor having a rotor shaft journaled in the housing, a driven pulley on the rotor shaft and having inner and outer faces, and a belt connecting the driving and driven pulleys, the improvement in means for mounting the driven pulley on the rotor shaft, which comprises: the driven pulley having a through axial bore formed therein, the rotor shaft being received in the bore and having a portion extending therethrough, keying means between the rotor shaft and the inner face of the driven pulley, and a self-locking retaining ring carried by the extending portion of the rotor shaft and bearing against the outer face of the driven pulley for exerting a resilient bias thereagainst to cooperate with said keying means in retaining said driven pulley on said rotor shaft.

4,450,673

MULCHING MOWER

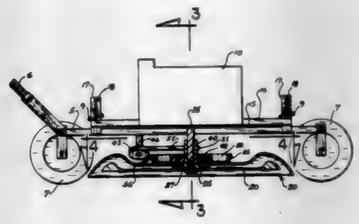
Marion E. Hutchison, 2148 Touchae St., Waterloo, Iowa 50703

Continuation of Ser. No. 177,276, Aug. 11, 1980, abandoned.
This application Oct. 13, 1981, Ser. No. 310,702
Int. Cl.³ A01D *35/00, 53/08*
U.S. Cl. 56—17.5 21 Claims

1. In a rotary mower having an engine and a cutting blade for cutting blades of grass, said engine having an output drive shaft and said blade being rigidly secured to said output shaft so that said blade rotates with said drive shaft in a first direction, the improvement comprising:

a housing rotationally secured coaxially on said output drive shaft above said cutting blade, said housing having a central portion, and a continuous peripheral edge disposed downwardly to a point lower than said cutting blade; and

a means for rotating said housing relative to said output drive shaft so as to impart sufficient centrifugal force to the cut blades of grass to impel the blades of grass outwardly and downwardly with respect to said housing; wherein said means for rotating said housing comprises



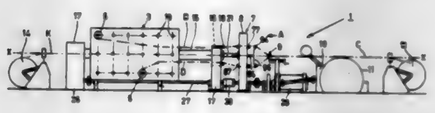
means for transmitting rotational motion from said output drive shaft to said housing.

4,450,674

BACK ROTATION DEVICE FOR A CABLE STRANDING MACHINE

Johannes G. G. Bos; Hendricus J. P. M. Pollaert, and Johannes L. H. Sijben, all of Edisonstraat 9, Venlo, Netherlands

Filed Dec. 14, 1979, Ser. No. 103,670
Claims priority, application Netherlands, Dec. 28, 1978, 7812593
Int. Cl.³ H01B *13/04;* D07B *3/00*
U.S. Cl. 57—6 6 Claims



1. A stranding machine for manufacturing cables, particularly communication cables, comprising a feed cage having feed reels, a stranding device, a take-up reel, a back-rotation device, a central shaft, and means for rotating the feed cage and the stranding device with respect to each other about the central shaft axis, characterized in that the back-rotation device comprises a guide ring rotatable about said central shaft axis, having first and second annular guide paths which are eccentric with respect to each other with a given eccentricity,

first and second discs rotatably journalled in said first and second guide paths respectively, said discs having a plurality of respectively corresponding bores arranged in identical patterns about the center lines of the respective discs,

a plurality of eccentric shafts, each shaft having a journal part journalled in a bore of said first disc and an eccentric part journalled in the corresponding bore of the second disc, said journal part and eccentric part having a relative eccentricity equal to said given eccentricity whereby said discs are restrained from rotation relative to each other and upon relative eccentric motion of said disc said eccentric shafts are rotated, each eccentric shaft having a bore for passing a wire strand there through,

a respective plurality of clamping members each associated with and connected to a respective eccentric shaft for rotation with said respective shaft, said clamping members being arranged to impart a torque to a wire strand passing through the respective eccentric shaft bore responsive to rotation of the eccentric shaft, said torque being applied about the longitudinal axis of the wire strand, and

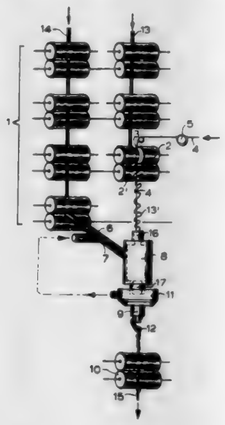
means for rotating said guide ring.

4,450,675

METHOD OF AND APPARATUS FOR THE PRODUCTION OF FANCY YARNS

Georgi M. Petrov; Kiril K. Boev; Igor A. Fidelski, and Yordan T. Pirgov, all of Sofia, Bulgaria, assignors to Institute PO Obieklo I Textil, Sofia, Bulgaria

Filed Jan. 26, 1982, Ser. No. 342,771
Claims priority, application Bulgaria, Jan. 26, 1981, 50541
Int. Cl.³ D02G 3/34, 3/38
U.S. Cl. 57—6 6 Claims



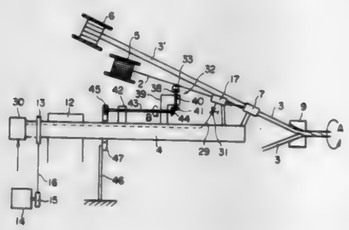
1. Method for the production of fancy yarns from falsely twisted core and fancy threads, comprising drafting staple fibers by a cylindrical drafter and falsely twisting the core and fancy threads by a false twister carried by a hollow spindle, the staple fibers being produced from a cylindrical drafter which allows the simultaneous production of two different draftings for one working unit, feeding at least one of such draftings upon the falsely twisted core and fancy threads by means of a pneumatic transporting channel, the speed of the fibers constituting the fancy threads being greater than the peripheral speed of the rollers delivering the core thread.

4,450,676

APPARATUS FOR STRANDING OPTICAL FIBER CORES WHILE SLACKENING THEM

Katsuji Sakamoto, and Yasunori Saito, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 3, 1982, Ser. No. 404,742
Claims priority, application Japan, Aug. 3, 1981, 56-121698
Int. Cl.³ D02G 3/44; D01H 13/04
U.S. Cl. 57—6 12 Claims



1. An apparatus for stranding optical fiber cores in a slackened state into a core storage tube, comprising:

means to form a tube;

core delivering means having a passage for passing an optical fiber core therethrough, a source of gas and flow passages for directing said gas through said passage in a direction of movement of said core, said gas urging said core through said delivery means under a constant force into said core storage tube; and

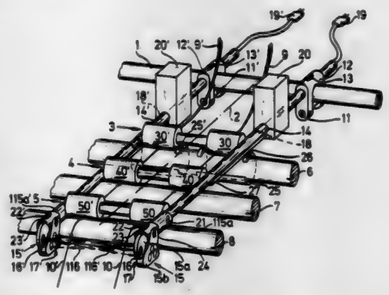
means for reducing the tensile force on said optical fiber core at the inlet side of said core delivering means.

4,450,677

THREAD MONITOR AND A SLUBBING CLAMPING DEVICE FOR DRAW FRAMES OF SPINNING MACHINES EQUIPPED WITH DOUBLE UPPER ROLLERS

Michael von Ronai-Horvath, Ludwigsburg; Bernhard Schoenung, Filderstadt, and Kurt Seebo, Esslingen, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 6, 1982, Ser. No. 433,107
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139667
Int. Cl.³ D01H 13/16, 13/18
U.S. Cl. 57—81 7 Claims



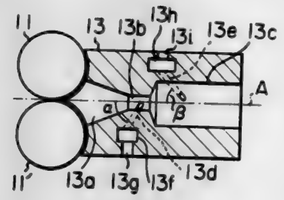
1. In a thread or yarn spinning machine having a drawing frame having at least a set of inlet rollers for receiving material from a source, and a set of exit rollers spaced from the inlet rollers and between which said material is drawn and from which said drawn material is fed to a spindle or the like, each of said inlet and exit roller sets comprising a lower driven roller and a pair of axial spaced upper rollers permitting the drawing of two materials side by side, said upper rollers being journalled in ranked pairs on a common supporting arm extending in the direction of drawing, apparatus for sensing the continuity of the exiting thread and controlling the supply of material to the frame comprising a bearing rail extending along each side of the frame and spaced laterally from the outer edge of the respective double rollers, each rail having in opposition to each other, at its end adjacent the area where the thread leaves the exit rollers, a light source and a light receiving cell, the respective light sources being arranged in association with the opposite receiving cells so that the shadow of the thread remote from the light source and adjacent the associated receiving cell is cast on said associated receiving cell, means for selectively arresting the delivery of said material to each of said inlet roller sets and means responsive to the sensing of the breakage of the thread by said receiving cell for actuating said means for arresting said slubbing.

4,450,678

AIR NOZZLE UTILIZED FOR FASCIATED YARN SPINNING

Susumu Kawabata, Aichi; Hiroshi Niimi, Nagoya; Meiji Anahara, Kariya; Yoshihisa Suzuki, Chiryu, and Hiroshi Omori, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi, Japan

Filed Dec. 21, 1982, Ser. No. 451,754
Claims priority, application Japan, Dec. 29, 1981, 56-211388
Int. Cl.³ D02G 1/16
U.S. Cl. 57—333 7 Claims



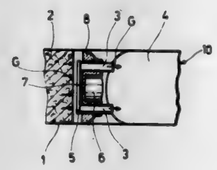
1. An air nozzle utilized for fasciated yarn spinning comprising a narrow passage and a wide passage for a fiber bundle arranged in series along a traveling direction of said fiber bundle, characterized in that each of said two passages is provided with at least a jet for ejecting an air flow toward the traveling direction of said fiber bundle and in that said each jet inclines to intersect an axis of each said passage at an acute angle, the direction of each said jet being tangential to said each passage but reverse to that of another jet about said axis of said passage.

4,450,679

RAM JET ENGINES AND ROTARY GAS FLOW VALVE THEREFOR

Thomas Hähnel, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm G.m.b.H., Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,608
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005864
Int. Cl.³ F02K 7/10
U.S. Cl. 60—251 3 Claims



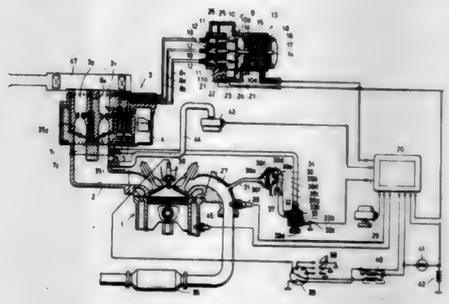
1. A ram jet engine comprising a housing having a precombustion chamber for the burning of solid fuel to generate fuel-rich gases, an after combustion chamber in said housing, a plurality of gas flow conduits connecting said precombustion chamber with said after combustion chamber and a polygonal rotary valve rotatably mounted in said housing adjacent said passage and having corner portions which move through paths which cyclically cover an open said passages, drive means connected to said rotary valve to rotate said valve, and a heat insulation body in said housing between said precombustion chamber and said after combustion chamber, said drive means comprising a drive motor having a rotatable shaft connected to said rotary valve and being mounted in said heat insulation body.

4,450,680

AIR/FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING SECONDARY AIR SUPPLY CONTROL

Kazuo Otsuka, Higashikurume; Shin Narasaka, Yono, and Hasegawa Shumpei, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,800
Claims priority, application Japan, Aug. 12, 1980, 55-111478
Int. Cl.³ F02B 75/10; F01N 3/22
U.S. Cl. 60—274 8 Claims



1. In an air/fuel ratio control system for performing feedback control of the air/fuel ratio of an air/fuel mixture being supplied to an internal combustion engine having an intake system and an exhaust system, which includes a three-way catalyst provided in said exhaust system of said engine, an O_2 sensor arranged in said exhaust system at a location upstream of said three-way catalyst for detecting the concentration of oxygen in exhaust gases emitted from said engine, and an electrical circuit operatively connecting said O_2 sensor in a manner effecting feedback control operation to control the air/fuel ratio in response to said O_2 sensor, the combination comprising: means for supplying atmospheric air as secondary air into said exhaust system at a zone between said engine and said O_2 sensor; an engine speed sensor for detecting the rotational speed of said engine; a pressure sensor for detecting absolute pressure in said intake system; means for determining activation of said O_2 sensor; electrical means connected to said engine speed sensor, said pressure sensor and said O_2 sensor activation determining means for producing a feedback control interrupting signal when there occurs at least one of the conditions of engine idle, engine deceleration and deactivation of said O_2 sensor, and electrical means responsive to said feedback control interrupting signal to actuate, after the generation of said interrupting signal, said secondary air supply means.

4,450,681

CARBON PARTICULATES CLEANING DEVICE FOR DIESEL ENGINE

Susumu Sato, Okazaki; Yukihisa Takeuchi, Aichi; Masahiro Tomita, Anjo; Shigeru Kamiya, Chiryu, and Shigeru Takagi, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 480,381, Apr. 5, 1983, abandoned, which is a continuation of Ser. No. 238,623, Feb. 26, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,210
Claims priority, application Japan, Mar. 4, 1980, 55-27164
Int. Cl.³ F01N 3/02
U.S. Cl. 60—286 13 Claims

1. A carbon particulates cleaning device for catching and cleaning carbon particulates contained within an exhaust gas discharged from a diesel engine of an automobile or the like through an exhaust gas passage, comprising:

a carbon particulates catching means which is disposed within said exhaust gas passage for catching said carbon particulates contained within said exhaust gas;

a carbon particulates volume detecting means for detecting

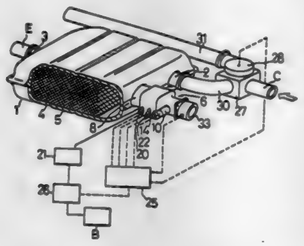
the volume of carbon particulates caught by said carbon particulates catching means and generating an electrical signal when the volume of carbon particulates reaches a predetermined volume;

a fuel injecting means for injecting fuel near said carbon particulates catching means for a predetermined period of time;

a fuel retaining means which is provided near said carbon particulates catching means for retaining the fuel injected by said fuel injecting means;

a fuel igniting means which is provided near said fuel retaining means for igniting the fuel retained by said fuel retaining means;

a fuel ignition detecting means which is provided near said fuel retaining means for detecting that the fuel retained by said fuel retaining means is ignited by said fuel igniting means and generating an electrical signal while the fuel retained by said fuel retaining means burns;



a gas blowing means which is provided near said fuel retaining means for blowing gas containing oxygen into the fuel ignited by said fuel igniting means in order to maintain the burning of said fuel after the operation of said fuel igniting means is finished and applying burning heat of the ignited fuel to said carbon particulates caught by said carbon particulates catching means; and

a control means which is electrically connected to said carbon particulates volume detecting means, said fuel ignition detecting means, said fuel injecting means, said fuel igniting means and said gas blowing means;

said control means being constructed so as to start the operation of said fuel injecting means and said fuel igniting means upon receiving said electrical signal from said carbon particulates volume detecting means, and stop the operation of said fuel igniting means while starting the operation of said gas blowing means upon receiving said electrical signal from said fuel ignition detecting means.

4,450,682

CARBON PARTICULATES CLEANING DEVICE FOR DIESEL ENGINE

Susumu Sato, Okazaki; Yukihisa Takeuchi, Aichi; Masahiro Tomita, Anjo; Shigeru Kamiya, Chiryu, and Shigeru Takagi, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 480,379, Apr. 5, 1983, abandoned, which is a continuation of Ser. No. 235,722, Apr. 18, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,527

Claims priority, application Japan, Feb. 18, 1980, 55-18891; Feb. 25, 1980, 55-22363

Int. Cl.³ F01N *3/02*

U.S. Cl. 60—286 **11 Claims**

1. A carbon particulates cleaning device for cleaning the carbon particulates contained in the exhaust gas discharged from a diesel engine of an automobile or the like, comprising:

an exhaust gas passage adpated to be communicated with an exhaust manifold of a diesel engine;

said exhaust gas passage being formed by an exhaust gas main pipe and an exhaust gas branch pipe which is diverged from said exhaust gas main pipe;

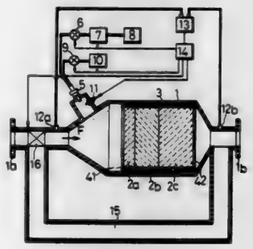
a carbon particulates catching member which is provided within at least one of said exhaust gas main pipe and said exhaust gas branch pipe;

said carbon particulates catching member being composed of a plurality of ceramic foamed bodies which are arranged in the exhaust gas flowing direction so that opposed end surfaces of each ceramic foamed body are closely contacted with each other, the length of the upstream ceramic foamed body being shorter than that of the downstream ceramic foamed body;

a valve means which is provided in the portion where said exhaust gas branch pipe is diverged from said exhaust gas main pipe for selectively supplying said exhaust gas into said exhaust gas main pipe or said exhaust gas branch pipe;

a heating means which is provided adjacent to the upstream end of said carbon particulates catching member on the upstream side thereof for applying heat to said carbon particulates catching member so as to burn the carbon particulates caught by said carbon particulates catching member;

a gas supplying means which is provided in at least one of said exhaust gas main pipe and said exhaust gas branch pipe, adjacent to said heating means on the upstream side thereof for supplying gas into said carbon particulates catching member;



a carbon particulates volume detecting means which is provided in at least one of said exhaust gas main pipe and said exhaust gas branch pipe for detecting the volume of the carbon particulates caught by said carbon particulates catching member and which generates electrical signals when the volume of caught carbon particulates reaches a predetermined volume; and

a control means which is electrically connected to said carbon particulates volume detecting means, said valve means, said heating means and said gas supplying means for supplying electrical signals to said valve means, said heating means and said gas supplying means upon receiving said electrical signals from said carbon particulates volume detecting means so as to start the operation of said valve means, said heating means and said gas supplying means;

whereby when the volume of the carbon particulates caught by said carbon particulates catching member reaches a predetermined volume, said valve means closes said exhaust gas passage leading to said carbon particulates catching member and opens another exhaust gas passage, said heating means applies heat to the upstream end of said carbon particulates catching means for a predetermined time and said gas supplying means supplies gas into said heating means until the carbon particulates caught by said carbon particulates catching member are burnt off.

4,450,683

EXHAUST GAS CLEANING SYSTEM FOR INTERNAL COMBUSTION ENGINES

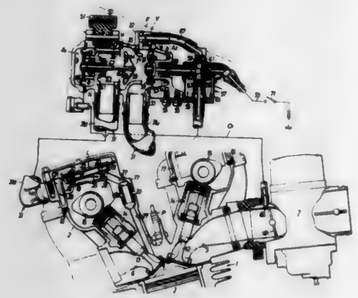
Yasuo Ikenoya, Kawagoe, and Yoichi Ishida, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1982, Ser. No. 409,548

Claims priority, application Japan, Aug. 24, 1981, 56-132410

Int. Cl.³ F02B *75/10*; F01N *3/22*

U.S. Cl. 60—290 **5 Claims**



1. An exhaust gas cleaning system for an internal combustion engine having an exhaust system including a TWC catalyst, said exhaust gas cleaning system comprising:

(a) a secondary air supply passage means coupled to said exhaust system on the upstream side of said TWC catalyst for supplying secondary air to said exhaust system;

(b) a secondary air control valve means positioned in said secondary air supply passage means for regulating the flow of secondary air therethrough, said secondary air control valve means comprising:

(i) a unitary valve casing;

(ii) a valve passage means in said valve casing coupled to said secondary air supply passage means;

(iii) first and second control valve means for separately opening and closing said valve passage means, said first control valve means being closed when said engine is decelerating and said second control valve means being closed when said engine is accelerating or operating at a high speed, thereby maintaining said TWC catalyst as a reducing atmosphere.

4,450,684

EXHAUST GAS CLEANING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Junji Otani, Oomiya; Yasuo Ikenoya, Kawagoe, and Hiroshi Kato, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 411,024

Claims priority, application Japan, Aug. 24, 1981, 56-132413

Int. Cl.³ F02B *75/15*; F01N *3/22*

U.S. Cl. 60—290 **3 Claims**

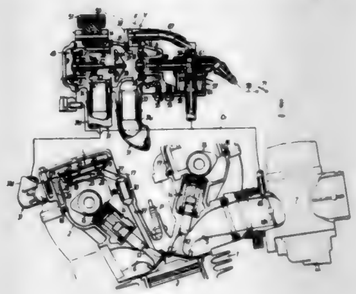
1. An exhaust gas cleaning system for an internal combustion engine having an exhaust system leading to an exhaust port of an engine body, said exhaust gas cleaning system comprising:

a TWC catalyst disposed in the exhaust system for simultaneously cleaning HC, CO and NO_x exhaust gas flowing through the exhaust system;

a secondary-air supply passage means connected to the exhaust system on the upstream side of the TWC catalyst and coupled to the atmosphere;

a check valve means disposed in the secondary-air supply passage, wherein said check valve means is opened by the exhaust gas pulsation generated in the exhaust system; and

a secondary-air control valve means positioned in the secondary-air supply passage means on the upstream side of said check valve means, wherein said secondary-air control valve means increases the flow rate of the secondary air supplied to said exhaust system in the low-speed revolution range of the engine and decreases the flow rate of the secondary air supplied to said exhaust system in the accelerating and high-speed revolution ranges of the engine such that the atmosphere of said TWC catalyst becomes oxidative in the low-speed revolution range of the engine while the catalyst atmosphere becomes close to that of a stoichiometric ratio in the accelerating and high-speed revolution ranges.



4,450,685

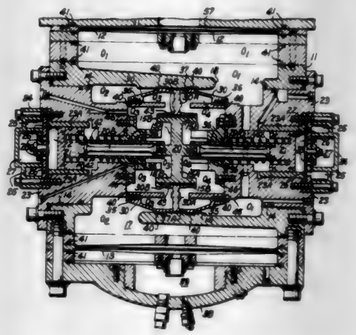
DYNAMICALLY BALANCED, HYDRAULICALLY DRIVEN COMPRESSOR/PUMP APPARATUS FOR RESONANT FREE PISTON STIRLING ENGINES

John A. Corey, North Troy, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jun. 2, 1982, Ser. No. 384,304

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—520 **27 Claims**



1. Apparatus for use in conjunction with a periodically pressurized fluid drive source; said apparatus comprising a housing having a first side closed by a first flexible diaphragm designed to be exposed to the periodically pressurized fluid drive source and a second side opposite the first side closed by a second flexible diaphragm that comprises part of a gas spring, said housing having a bore extending therein which is transverse to the axial direction of movement of the first and second flexible diaphragms and forming a cylinder within the housing, a reciprocally movable piston disposed in said cylinder which reciprocally moves along an axis that is substantially at right angles relative to the direction of axial movement of the first and second flexible diaphragms, said cylinder having a first port formed therein comprising means for providing fluid drive coupling between a first side of the reciprocally movable piston and a first fixed volume space within the housing ex-

posed to the first flexible diaphragm, a second port formed in said cylinder comprising means for providing fluid drive coupling between the second side of the reciprocally movable piston and a second fixed volume space formed within the housing exposed to the second flexible diaphragm, at least one working member of a compressor, pump or other like apparatus connected to and reciprocally driven by said reciprocally movable piston,

an incompressible fluid filling the first and second spaces within the housing, and

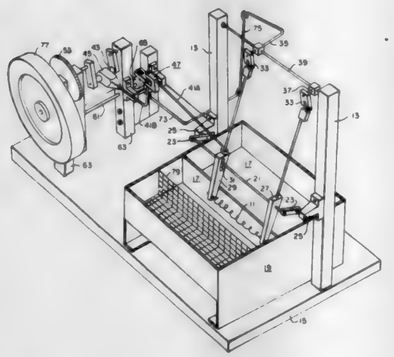
a counterweight disposed within said housing along with said reciprocally movable piston and which reciprocates within the housing in a direction opposite to the movement of the reciprocally movable piston for cancelling out vibrations otherwise induced by reciprocation of the piston.

4,450,686

SINGLE WIRE NITINOL ENGINE

Ridgway M. Banks, 7411 Park Vista, El Cerrito, Calif. 94530

Filed Mar. 21, 1983, Ser. No. 477,258
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—527 **6 Claims**



1. A single wire nitinol engine comprising

a pair of levers, one being fixed against movement with respect to the other, the other being formed to have one end thereof reciprocate in straight line motion toward and away from said fixed lever,

a nitinol wire formed in the configuration of a spring secured between the end of the reciprocatable lever and the end of the fixed lever,

means engaged with said levers to also reciprocate the ends thereof to which the nitinol wire is attached between hot and cold temperature baths,

a connecting rod interconnected between said reciprocatable lever and a crank shaft whereby the reciprocating motion of said lever rotates said crank shaft.

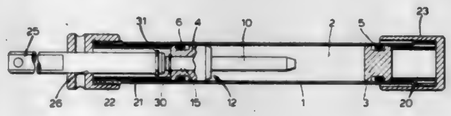
4,450,687

TEMPERATURE RESPONSIVE ACTUATING DEVICE

Albert Cole, Keswick, England, assignor to Thermoforce Limited, Cockermouth, England

Continuation of Ser. No. 130,730, Mar. 17, 1980, abandoned.
This application May 25, 1982, Ser. No. 381,689
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—530 **5 Claims**

1. A temperature responsive control device which utilizes a wax based substance which has liquid properties and a high coefficient of expansion, which substance is located, without provision for replenishment in service within a cylinder between two end plugs, both end plugs being equipped with peripheral sliding seals engaging with the wall of the cylinder and both end plugs being adjustable axially of the cylinder, a piston passing through one of the end plugs and having one end immersed in said substance and its other end operatively connected by way of a high leverage operating linkage with a first load element, the cylinder being connected to a second load element, the device effecting relative movement between said load elements with changes of temperature, with the piston being slidable in a shaft seal in the end plug through which it passes, and wherein, in order to prevent reduction of the sealing efficiency of the peripheral seal and of the shaft seal of that end plug through which it passes means are provided



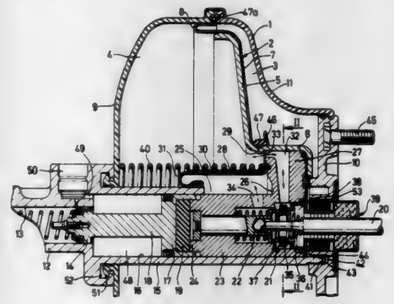
for shielding the outboard end of the piston from direct exposure to the environment, and the piston bears with its outboard end upon the inboard end of a push rod which can be moved separately and independently from the piston and which can transmit forces to the piston and to the end plug only axially, and wherein, in order to obtain improved response upon the occurrence of change of temperature causing change of volume of said substance contained in said cylinder, the bore of said cylinder is at least three times greater in diameter than said piston rod.

4,450,688

BRAKE BOOSTER FOR AUTOMOTIVE VEHICLES

Peter Boehm, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 3, 1981, Ser. No. 270,077
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025314
Int. Cl.³ B60T *13/20*; F01B *19/04*; F15B *9/10*
U.S. Cl. 60—554 **16 Claims**



1. A brake booster for automotive vehicles comprising:

a low-pressure casing having a longitudinal axis and two spaced end walls in a transverse relationship with said axis, said casing being sealingly subdivided into a low-pressure chamber and a working chamber by an axially movable wall disposed coaxial of said axis;

a reinforcement tube coaxial of said axis extending axially through said casing to interconnect said two end walls and in a slideable sealed relationship with said movable wall, said tube being integrally formed with a housing of a master cylinder having an actuating piston disposed coaxial of said axis and guided in said housing, said housing being secured to that one of said two end walls adjacent said low-pressure chamber;

a control valve casing disposed in said tube coaxial of said axis, said control valve casing being axially movable in said tube and including therein a mechanically actuatable

control valve to connect said working chamber to a selected one of said low-pressure chamber and atmosphere;

a guide piston disposed in said tube coaxial of said axis connected to said actuating piston, said guide piston being axially movable in said tube;

an elastic reaction disc disposed in said tube coaxial of said axis between said control valve casing and said guide piston; and

at least two spaced radial ribs each fastened to said control valve casing extending radially through a different one of at least two longitudinal slots of said tube to connect said control valve casing to said movable wall wherein,

said guide piston adjacent said control valve casing has a cup-like construction to accommodate said reaction disc, wherein

each of said two longitudinal slots are open at the end of said tube adjacent said working chamber, and

each of said two radial ribs are connected to a ring encompassing said tube and sealingly secured to said movable wall, and wherein

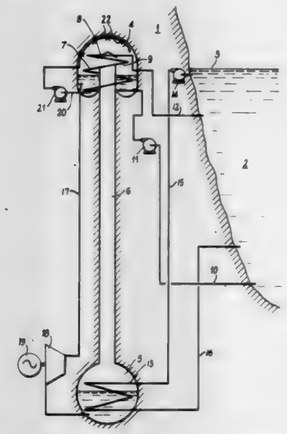
the end of said tube adjacent said working chamber is threaded and is in engagement with a thread in that one of said two end walls adjacent said working chamber.

4,450,689

ARRANGEMENT IN OR RELATING TO A POWER PLANT

Per H. Moe, Amtm. Bangsgt. 7, N-3000, Drammen, Norway

PCT No. PCT/NO80/00016, 371 Date Jan. 5, 1982, 102(e) Date Jan. 5, 1982, PCT Pub. No. WO81/03360, PCT Pub. Date Nov. 26, 1981
PCT Filed May 14, 1980, Ser. No. 339,432
Int. Cl.³ F03G *7/04*
U.S. Cl. 60—641.7 **7 Claims**



1. A power plant arrangement for exploiting the temperature difference between different water layers in a pelagic area, comprising:

a closed system which is at least partially filled with a fluid which at least partially exists in the liquid phase,

said system comprising at least two heat exchanging apparatuses in fluid communication with each other,

one of said heat exchangers being in communication with a relatively warmer water layer of the pelagic area for supplying heat to the said fluid, and the other heat exchanger being in communication with a relatively colder water layer of the pelagic area for removing heat from the said fluid, whereby a pressure difference is created in the system which is utilized to take energy out of the system,

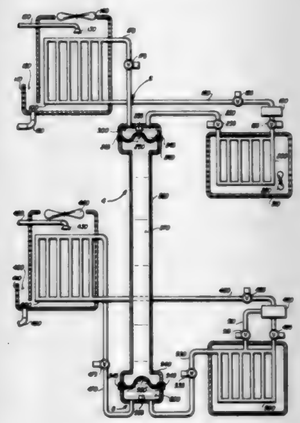
each of said first and second heat exchanging apparatuses being arranged in respective chambers which are comprised of cavities in solid or consolidated rock.

4,450,690

THERMALLY POWERED, GRAVITATIONALLY ASSISTED HEAT TRANSFER SYSTEMS

Robert W. Clark, Jr., 2232 W. Joan de Arc Ave., Phoenix, Ariz. 85029

Filed Jan. 10, 1983, Ser. No. 456,592
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—116 **15 Claims**



1. A thermally powered heat transfer system having a first and a second cycle of operation, comprising:

first and second closed loop heat transfer means including respectively a first and a second refrigerant, a first and a second condenser means for transferring heat from the first and second refrigrant to a first and a second heat sink, and a first and a second heat exchanger means for transferring heat from a first and a second heat source to the first and second refrigerants;

compressor means for said first and second closed loop heat transfer means including a first chamber, a second chamber and a free piston common to both chambers, said first chamber being at a higher elevation than the second, said compressor means being powered by energy derived from the first heat source and gravity acting on said free piston for compressing the second refrigerant in the second chamber and for causing the second condenser means to transfer heat from the second refrigerant to the second heat sink during each first cycle of operation and being powered by energy derived from the second heat source acting on said free piston for compressing the first refrigerant in the first chamber and causing the first condenser means to transfer heat from the first refrigerant to the first heat sink during each second cycle of operation; and

control means for causing the system to change its cycle of operation substantially at the completion of each cycle.

4,450,691

FROST DETECTING DEVICE

John H. Taylor, Lachine, Canada, assignor to Dectron Inc., Montreal, Canada

Filed Oct. 19, 1982, Ser. No. 435,286
Int. Cl.³ F25D *21/02*; H01J *5/02*
U.S. Cl. 62—140 **7 Claims**

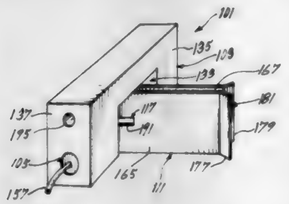
1. A frost detecting device having:

a mounting block, the mounting block having one side face which is meant to be mounted against the edges of a plurality of refrigeration fins;

a recess in the mounting block between its ends, the recess

extending inwardly into the mounting block from the one side face and located below the top face of the mounting block;

frost accumulating means fixed to the mounting block within the recess and projecting transversely outwardly from the recess past the one side face of the mounting block for surface contact with one of the refrigerator fins;



a radiation emitting means mounted in the mounting block on one side of the recess; radiation detecting means mounted in the mounting block on the other side of the recess opposite the radiation emitting means;

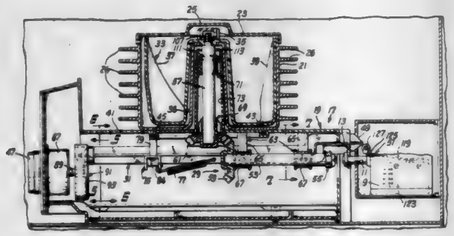
and passage means in that portion of the frost accumulating means within the recess for normally passing radiation between the radiation emitting and detecting means.

4,450,692

APPARATUS FOR MAKING FROZEN FOOD PRODUCTS

Verlos G. Sharpe, and David G. Beers, both of Galesburg, Ill., assignors to Magic Chef, Inc., Cleveland, Tenn.

Filed Sep. 30, 1982, Ser. No. 430,846
Int. Cl.³ A23G *9/00*
U.S. Cl. 62—233 **18 Claims**



15. An apparatus for making a frozen food product in the freezer compartment of a refrigerator having an existing ice dispenser unit that is detachable from the drive shaft of a motor for driving same, which apparatus comprises:

(a) a housing for containing a frozen food product mix;

(b) means disposed within the housing for stirring the mix;

(c) a drive assembly for detachably connecting the apparatus to the ice dispenser unit drive motor for stirring the mix by the drive motor; and

(d) a timer assembly for actuating the drive motor to operate same for a predetermined period of time and including:

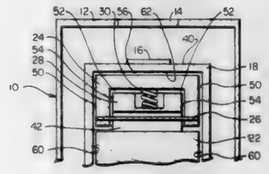
1. a timer mechanism for establishing a preset period of time,
2. a cam carried by the timing mechanism and rotated by same during the preset period of time,
3. a plunger engageable by the cam, and
4. a switch assembly actuated by the plunger for connecting and disconnecting the ice dispenser unit drive motor to and from a power source.

4,450,693

CRYOGENIC COOLER THERMAL COUPLER

Kenneth E. Green, Westford, and John A. Talbourdet, Danvers, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 24, 1983, Ser. No. 497,779
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **8 Claims**



1. An infrared energy receiver for measuring infrared energy from a scene of interest, said receiver comprising:

A. coldfinger cooling means having a first end;

B. a coldwell having an inner diameter greater than the outer diameter of said coldfinger cooling means, the difference in diameters of said coldfinger cooling means and said coldwell sufficient to enable said coldfinger cooling means to fit within said coldwell, said coldwell having a second end in a spaced relationship with said first end of said coldfinger cooling means, said second end having an inner surface facing said coldfinger and an outer surface directed toward said scene of interest, said coldwell also having an interior cylindrical surface to which said inner surface is contiguous at said second end;

C. infrared energy detector means coupled to said outer surface of said second end of said coldwell;

D. thermal coupler subassembly means for transmitting heat from said infrared energy detector means to said coldfinger cooling means, said thermal coupler subassembly means having an overall diameter selected to maximize heat transfer from said detector means to said coldfinger cooling means while maintaining a spaced relationship to minimize physical contact with said interior cylindrical surface of said coldwell, said subassembly means comprising:

(i) cylindrical means coupled to said first end of said coldfinger, said cylindrical means having a depression substantially in the shape of a well, said depression facing in the direction of said inner surface of said second end of said coldwell;

(ii) a "U"-shaped cap having an outer diameter the same as the diameter of said coupler subassembly means, and an inner diameter substantially the same as the diameter of said cylindrical means such that said cap and said cylindrical means are in a spaced relationship providing thermal transfer and ease of relative motion while minimizing physical contact; and

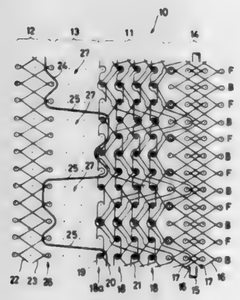
(iii) spring means placed in said depression of said cylindrical means, said spring means positioned between said cylindrical means and said cap in order to maintain thermal transfer between said cap and said inner wall of said coldwell, the tension of said spring means selected to minimize transmission of vibration from said coldfinger cooling means to said detector means while providing said thermal transfer.

4,450,694

WARP-KNIT STRINGER TAPE FOR SLIDE FASTENER

Yoshio Matsuda, Uwano Nyuzen; Masahiko Hata, Tokyo, and Toru Ogihara, Funabashi, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,362
Claims priority, application Japan, Dec. 9, 1980, 55-176403
Int. Cl.³ D04B *23/08, 23/10*
U.S. Cl. 66—193 **4 Claims**



1. A double warp-knit stringer tape for a slide fastener suitable for a knit fabric and having a pair of rows of coupling elements, comprising:

(a) an elongate first web for supporting along one longitudinal edge thereof one coupling element row of the slide fastener;

(b) an elongate second web for being joined to the knit fabric, said web being spaced transversely from said first web with a wale-free coarse region therebetween which second web and coarse region are both remote from said coupling element supporting edge of said first web; and

(c) a connector thread interconnecting said first and second webs across said wale-free coarse region;

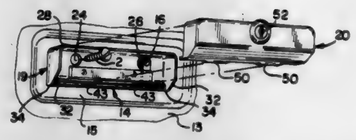
(d) said second web being double knit as a compact round braid-like structure for being attached to and stabilizing the knit fabric.

4,450,695

ANTI-THEFT DEVICE FOR AUTOMOBILE TOPS

Nick Graziano, 1800 N. Sayre, Chicago, Ill. 60635

Filed Nov. 20, 1981, Ser. No. 323,231
Int. Cl.³ B65D *55/14*
U.S. Cl. 70—168 **5 Claims**



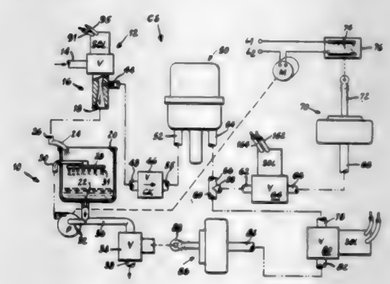
1. An anti-theft device for preventing the unauthorized removal of a T-top roof section having a handle actuated latching means for fastening the T-top to an automobile, said device comprising a base plate having a base panel outwardly projecting top and side flanges, said base plate being fastened to said T-top and encompassing said handle, a groove along the lower edge of said base plate extending between said side flanges, a cover including a cover panel and a top flange and side flanges complementary to said base top and side flanges to form an enclosure therewith and including a bottom flange having an edge portion seatable within said groove, a key operated lock means mounted on said cover and including a locking plate movable between a release position above said T-top handle and a latch position disposed between said T-top handle and base panel whereby said handle is enclosed by said cover and inaccessible until said key operated lock means is actuated to a release position.

4,450,696

VENTURI POWER SUPPLY AND ACTUATOR SYSTEM

Keith E. Zukausky, Hanover, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 22, 1982, Ser. No. 400,780
Int. Cl.³ D06F *33/08*
U.S. Cl. 68—18 FA **12 Claims**



1. A control system for a washing appliance comprising:

(a) a valve adapted for connection at its inlet to a source of pressurized liquid and including electrically operated actuator means operative upon electrical energization and de-energization to effect opening and closing of said valve;

(b) means defining a venturi having a converging inlet, a throat and an outlet diffuser with the inlet thereof connected to the outlet of said valve for receiving fluid flow therefrom;

(c) pressure tap means defining a fluid port in the throat of said venturi;

(d) receptacle means for receiving the articles to be washed;

(e) conduit means operatively connected for directing fluid from the venturi outlet diffuser to said receptacle means;

(f) one-way valve means having the inlet thereof connected to said venturi throat port;

(g) means defining a fluid pressure reservoir having an inlet including means connecting said reservoir to the outlet of said one-way valve means;

(h) fluid pressure servo-actuator means having a pressure signal inlet connected to receive the fluid pressure in said reservoir, said servo-actuator having an output member and operative to provide an output force and movement of said member in response to a fluid pressure signal from said reservoir; and,

(i) electrically operated valve means for controlling flow between said reservoir and said servo-actuator means.

4,450,697

SECURITY DEVICES FOR ROTATABLE MEMBERS AND FLUID FLOW CONTROL VALVES INCORPORATING SUCH DEVICES

Alan E. H. Ellis, 14 Scott Dr., Lexden, Colchester, England

Filed Sep. 10, 1981, Ser. No. 300,907
Int. Cl.³ G05G *5/00*
U.S. Cl. 70—178 **17 Claims**

1. A security arrangement for a rotatable member of a machine element which projects from the machine element, which security arrangement is adapted to be fitted to the machine element and comprises:

a rotatable stub for attachment to the rotatable member to impart rotational drive thereto,

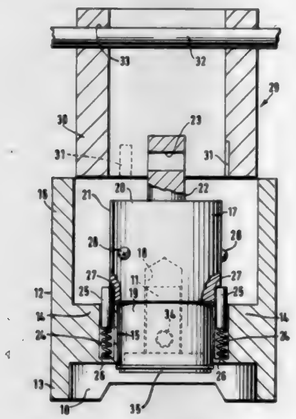
means for attaching the stub to the rotatable member and for securing the so-attached stub against axial movement with

respect to the machine element, the stub defining an external cylindrical surface and there being at least two arcuately spaced projections upstanding radially from said cylindrical surface,

a shroud adapted to surround with clearance said cylindrical surface of the stub and said projections upstanding therefrom, and

means for releasably attaching the shroud to the rotatable stub for permitting relative rotational movements therebetween while securing the shroud against axial movement with respect to the stub,

the shroud being provided with means to secure said shroud against rotation with respect to said machine element when said security arrangement is fitted thereto,



and said means for attaching the stub to the rotatable member and for securing the so-attached stub against such axial movement as well as said means for releasably attaching the shroud to the stub being located internally of the shroud,

whereby said stub may be engaged by an operating key having a cylindrical portion defining a bore which may fit over said cylindrical surface, said key also having wall portions defining recesses angularly spaced for receiving said projections and the outer diameter of said cylindrical portion of the key being sufficiently small to fit within said shroud, so that rotation of the stub may be effected by the key driving the stub by the interengagement of at least one of the projections with at least one corresponding wall portion of said key defining at least one corresponding recess receiving said projection.

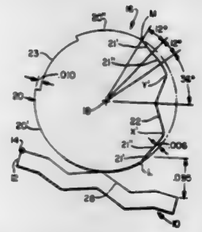
4,450,698

COMBINATION LOCKS

Stephen S. Scelba, Clifton, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Feb. 16, 1982, Ser. No. 348,715
Int. Cl.³ E05B *37/02, 63/00*
U.S. Cl. 70—312 **9 Claims**

1. A combination lock having a locking member movable between locking and unlocking positions, a plurality of rotary elements for controlling the position of the locking member by peripheral cooperation of the respective elements with the locking member, each rotary element having a periphery including a major portion and a minor portion, the major portion holding the locking member in locking position when the element is suitably rotated with any point on the major portion engaging the locking member, the major portion comprising a central section disposed on an arc defining a part of a circle and end sections connecting the major portion to opposite ends respectively of the minor portion, the minor portion being disposed within said circle and when suitably mutually aligned with the minor portions of the other rotary elements, allowing the locking member to assume an unlocking position, the ends of the minor portion being spaced inwardly of said circle and the end sections of the major portion each extending inwardly



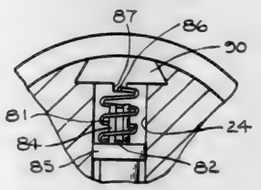
from a point on the circle to a respective end of the minor portions.

4,450,699

PIN TUMBLER LOCK

Joseph M. Genakis, 948 W. Boylston St., Worcester, Mass. 01606

Filed Mar. 2, 1981, Ser. No. 239,400
Int. Cl.³ E05B *27/02*
U.S. Cl. 70—364 A **9 Claims**



1. A lock comprising:

housing means defining a keyway and a plurality of tumblerways communicating therewith;

a tumbler disposed in each of said tumblerways and adapted for both reciprocating and rotational movement therein, each of said tumblers movable between locked positions into at least one shear position comprising both a predetermined longitudinal position and a predetermined angular position within its said tumblerway, each of said tumblers comprising one end surface defining an alignment surface extending into said keyway;

rotational bias means biasing each of said tumblers into biased angular positions other than said predetermined angular positions;

release means movable between open and closed positions and adapted for operative coupling with a latch mechanism, said release means being movable from said closed position to said open position with all of said tumblers in said shear positions and being restrained in said closed position with any of said tumblers in one of said locked positions; and

a key insertable into said keyway and having a plurality of alignment portions, each of which is adapted to engage a different one of said alignment surfaces, the elevation and orientation of said alignment portions and surfaces being such as to move said tumblers into their shear positions.

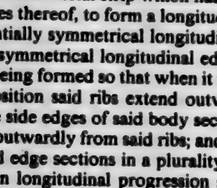
4,450,700

METHOD AND APPARATUS FOR NECKING AND FLANGING CONTAINER BODIES

Field I. Robertson, Jr., Midlothian, and George D. Bryan, Jr., Mechanicsville, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Nov. 15, 1982, Ser. No. 441,688
Int. Cl.³ B21D *19/04*
U.S. Cl. 72—115 **10 Claims**

1. Apparatus for necking and flanging a metallic can body comprising a stationary outer die member and a rotatable inner die member, said outer die member having a working surface corresponding to the desired necked configuration for said can body, said inner die member having a working surface corresponding to the desired necked configuration for said can body and a flanging surface on a nose portion thereof, said inner die



member being mounted for driven rotation about the axis of said outer die member, said inner die member being mounted for free-wheeling rotation about its axis and said inner die member being mounted for radial movement within said outer die member.

4,450,701

METHOD OF FORMING SLATS FOR VENETIAN BLINDS

Josef Treiber, Graz, and Walter Reichmann, Stainz, both of Austria, assignors to Metallbau Treiber KG, Graz, Austria

Filed Mar. 1, 1982, Ser. No. 352,868
Claims priority, application Austria, Oct. 20, 1981, 4474/81
Int. Cl.³ B21D *5/08*
U.S. Cl. 72—181 **14 Claims**

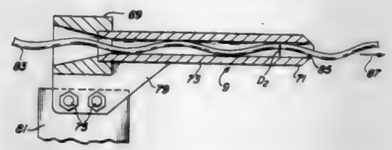
1. A method of forming baked enameled sheet metal slats for venetian blinds and the like comprising the steps of first bending an elongated sheet metal strip which has been baked enameled on both sides thereof, to form a longitudinal body section, a pair of substantially symmetrical longitudinal ribs and a pair of substantially symmetrical longitudinal edge sections in said strip, said strip being formed so that when it is in a substantially horizontal disposition said ribs extend outwardly and downwardly from the side edges of said body section and said edge sections extend outwardly from said ribs; and thereafter gradually bending said edge sections in a plurality of gradual bending increments in longitudinal progression so that when said strip is in a substantially horizontal disposition said edge sections are gradually bent downwardly and inwardly upon themselves to form marginal edges of substantially U-shaped cross section, the dispositions of said ribs relative to said body section being maintained substantially unchanged after the initial formation of said ribs, said entire method being carried out without bending an area of said strip first in one direction and thereafter in an opposite direction to avoid the formation of stress cracks in said enamel.

4,450,702

COBBLE SUPPRESSING MEANS

Duane B. Larson, Williamsville, and Richard J. Westermeier, Hamburg, both of N.Y., assignors to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Nov. 23, 1982, Ser. No. 444,257
Int. Cl.³ B21B *39/14*
U.S. Cl. 72—250 **5 Claims**



1. In a rolling mill having a final roll stand, a pouring reel downstream from said final roll stand for receiving rod product of a diameter (D) issuing from said final roll stand, said pouring reel having an entry guide pipe assembly, having an internal diameter (D_1), for guiding said product into said pouring reel, and a water cooling means intermediate said final roll stand and said pouring reel for cooling said product, the improvement comprising:

(a) cobble suppressing means intermediate said water cooling means and said entry guide pipe assembly for suppressing cobbles;

(b) said cobble suppressing means having an outwardly flaring entry end, a downstream exit end and a longitudinal tubular body having an internal diameter (D_2) intermediate said entry end and said exit end;

(c) the internal diameters of said entry guide pipe assembly and said tubular body characterized by the relationship $D_1 \geqq 2.5\ D_2$; and

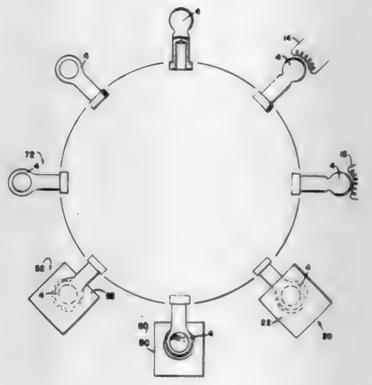
(d) the internal diameter of said tubular body and the diameter of said product characterized by the relationship $D_2 > D$ but $\leqq 3\ D$.

4,450,703

ROD ENDS AND BLANKS AND METHOD AND APPARATUS FOR MAKING SAME

John A. McCloskey, Fairfield, Conn., assignor to Incom International Inc., Pittsburgh, Pa.

Filed Jan. 14, 1981, Ser. No. 224,876
Int. Cl.³ B21D *37/16*
U.S. Cl. 72—342 **26 Claims**



1. A method of making rod ends having at one end thereof tapped rod portions and at the opposite end bearing supporting surfaces comprising

providing rod stock,

forming a rod end blank from said rod stock, said blank having a tapped rod portion at one end of desired size and shape terminating at the opposite end in a radially undersized spherical head portion, said rod portion being necked adjacent the head portion and being provided with an axial threaded bore,

plugging the threaded bore prior to heating the head portion to prevent distortion of said threaded bore by said heating and pressing,

heating the head portion by induction heating,

pressing the heated head portion in a die press to flatten and thereby radially enlarge said head portion to desired size and shape, thereby transforming the spherical head portion into a flat bearing supporting surface,

quenching the pressed head portion in an oil bath, and

piercing the quenched head portion in a die punch.

4,450,704

METAL SLEEVE PRODUCTION

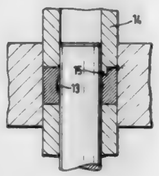
Georg Schaeffler; Karl Spiess, both of Herzogenaurach; Jürgen E. Heyne, Saarbrücken, and Manfred Krost, Kaiserslautern, all of Fed. Rep. of Germany, assignors to Motomak Motorenbau, Maschinen- Und Werkzeugfabrik, Konstruktionen GmbH, Fed. Rep. of Germany

Filed Jan. 27, 1983, Ser. No. 461,636

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1982, 3203438

Int. Cl.³ B21B *22/00*

U.S. Cl. 72—356 **1 Claim**



1. A method of producing a metal sleeve having at least one recess open at the end face extending over a portion of the axial length of the sleeve from a cylindrical pipe section comprising (a) inserting a cylindrical pipe section into the annular cavity of a die which cavity is radially greater than the wall thickness of the pipe section, (b) subjecting the pipe section to axial ram pressure whereby a bulge in the central portion of the pipe section occurs with the central portion bearing against the outer limiting wall of the die cavity and the end portions bearing against the inner limiting wall of the die cavity, (c) applying further pressure on the pipe section whereby it fills the die cavity except for a circular depression in the center of the pipe section bore and (d) acting on the resulting pipe section with a second ram with an end face contours corresponding to the recesses whereby the displaced material from the contours enter into the circular depression of the pipe section to partially fill the same.

4,450,705

HEAT EXCHANGER PLATE HAVING DISTORTION RESISTANT UNIFORM PLEATS

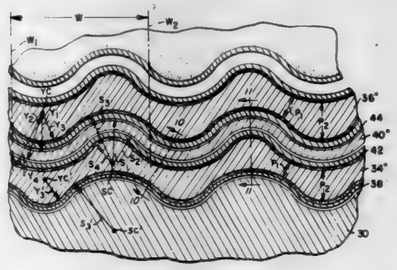
Gonzalo D. Vidal-Meza, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 277,742, Feb. 18, 1981, Pat. No. 4,346,760. This application Jun. 9, 1982, Ser. No. 386,658

Int. Cl.³ B21D *13/02, 53/04;* B21P *15/26*

U.S. Cl. 72—379 **7 Claims**

1. A method for forming a heat exchanger plate (2, 4, 6, 8) for use as a barrier between donative and recipient fluids flowing through the heat exchanger and for forming fluid flow passages (18, 20) within the plate (2, 4, 6, 8) arranged to cause heat transfer through the plate (2, 4, 6, 8) from the donative fluid to the recipient fluid, and said method includes the steps of (1) bending a sheet (37) of ductile heat conductive material to form an undulatory pleat (12) containing a donative fluid flow passage (20) bounded on opposed sides in plan view by a pair of side walls (38, 42, 44) formed from the sheet (37) of ductile heat conductive material and having a central axis in plan view extending along a continuous curvilinear path between separate points on the sheet perimeter, (2) bending a portion of the sheet (37) adjacent the donative fluid flow passage (20) to form a recipient fluid flow passage (18) on an opposite side of the sheet (37) from the donative fluid flow passage (20) with the recipient fluid flow passage (18) being bounded by a pair of side walls (38, 42, 44) one of which is



shared with said donative fluid flow passage and having a central axis in plan view extending along a continuous curvilinear path between separate points on the sheet perimeter, and (3) repeating steps (1) and (2) to form a set of donative fluid flow passages (20) on one side of the sheet (37) and a set of recipient fluid flow passages (18) on the opposite side of the sheet (37), each flow passage (18, 20) sharing a common side wall (38, 42, 44) with the adjacent fluid flow passages (18, 20), wherein the improvement comprises controlling bending steps (1) and (2) in a way to cause the slope of each side wall (38, 42, 44) of each flow passage (18, 20) to be constant along the entire length of the flow passage (18, 20), wherein the slope is measured in a plane perpendicular to the central axis of the corresponding flow passage (18, 20) at any point along said axis.

4,450,706

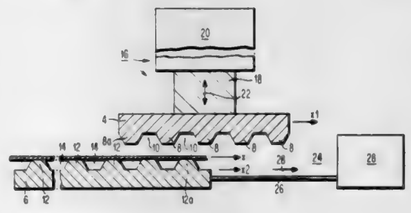
METHOD AND APPARATUS FOR FORMING COLLIMATOR STRIPS

Gustav O. Engelmohr, Glenview, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Feb. 8, 1982, Ser. No. 346,917

Int. Cl.³ B21D *13/02*

U.S. Cl. 72—385 **12 Claims**



1. An apparatus for forming a profiled collimator strip out of a band of a deformable material, comprising

(a) a first forming tool having a first end face containing a first plurality of teeth along a first plane;

(b) a second forming tool having a second end face containing a second plurality of teeth along a second plane, whereby said second end face is arranged opposite and parallel to said first end face, and whereby said second plurality of teeth has the same pitch as and is staggered with respect to said first plurality of teeth;

(c) means for performing relative movements between said first and second tools parallel to said first and second planes when said first tool is in said retracted position, said relative movements being indexing step by step movements in the same direction; and

(d) means for performing relative movements between said first and second tools, said relative movements comprising a closing movement whereby one of said tools moves from a retracted position linearly towards the other one of said tools until a forming position is reached, and said movements comprising an opening movement which is in opposite direction with respect to said closing movement.

4,450,707

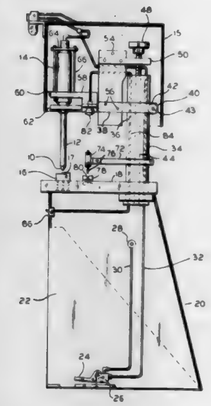
HARDENED METAL WORKPIECE STRAIGHTENING MACHINE

Paul R. Ricard, and Charles Goclowski, both of Monroe, Conn., assignors to Arrow Machine, Inc., Monroe, Conn.

Filed Jun. 14, 1982, Ser. No. 387,821

Int. Cl.³ B21D *3/10*

U.S. Cl. 72—389 **5 Claims**



1. An apparatus for straightening the curvature in a hardened metal workpiece comprising:

a rigid support surface for supporting said workpiece;

a source of air under pressure;

pneumatically operated peen chisel means disposed above said support surface including an air hammer having a peen chisel mounted therein for repeated reciprocal movement by said air hammer for repeatedly striking said workpiece as said workpiece is supported in the path of said peen chisel, said peen chisel located above said support surface and said workpiece, and said source of air pressure being operably connected to said air hammer;

control means operably connected between said source of air pressure and said air hammer to selectively and infinitely vary the amount of air under pressure delivered to said air hammer;

a vertical column mounted on said support surface;

mounting bracket means disposed for vertical movement along the length of said vertical column;

said air hammer supported by said mounting bracket means;

adjusting means operably connected between said vertical column and said mounting bracket means to vary the position of said mounting bracket means and said air hammer relative to said vertical column;

said adjusting means comprising a shaft having external threads extending along the length of said column and mounted for rotation relative to said support surface;

means to rotate said externally threaded shaft;

additional bracket means having an internally threaded aperture therein whereby said externally threaded shaft extends through said aperture and said threads to form a driving relationship;

said additional bracket means fixed to adjusting rail means extending partially along the length of said column;

said adjusting rail means fixed to said mounting bracket means whereby rotation of said externally threaded shaft moves said air hammer in a vertical direction.

4,450,708

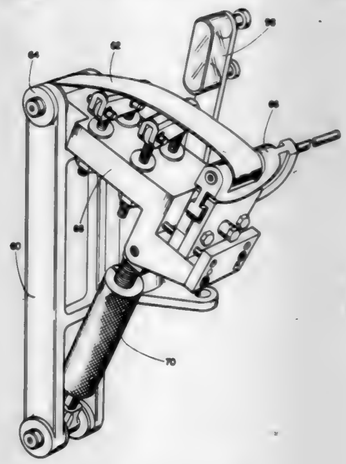
UNIVERSAL, ADJUSTABLE BENDING FORM FOR SHAPING ELECTRICAL WINDINGS

Joseph S. King, Marysville, Ohio, assignor to King Industrial Products Co., Inc., Columbus, Ohio

Filed Jun. 21, 1982, Ser. No. 390,217

Int. Cl.³ B21D *11/02, 11/10*

U.S. Cl. 72—481 **9 Claims**



1. An adjustable bending form comprising:

(a) an elongated flexible sheet having one surface defining the form surface;

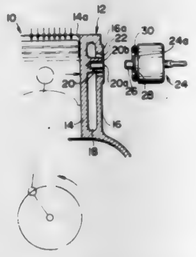
(b) spaced end supports mounted on a frame and attached near the ends of said sheet, said end supports being adjustably spaced for imparting a selected arch in said one surface, at least one of said end supports also being angularly adjustable relative to the other end support about a pivot axis disposed generally in the direction of a line extending between said spaced end supports for imparting a twist in said sheet and for supporting said sheet with the selected twist; and

(c) intermediate supports mounted on said frame for supporting said sheet intermediate its ends, said intermediate supports being angularly adjustable about a pivot axis disposed generally in the direction of a line extending between said end supports for supporting said sheet at said selected arch and said selected twist.

4,450,709
INTERNAL COMBUSTION ENGINE WITH ENGINE KNOCK SENSOR

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co. Ltd., Yokohama, Japan

Filed Oct. 28, 1982, Ser. No. 437,464
Claims priority, application Japan, Nov. 5, 1981, 56-165112[U]
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 9 Claims

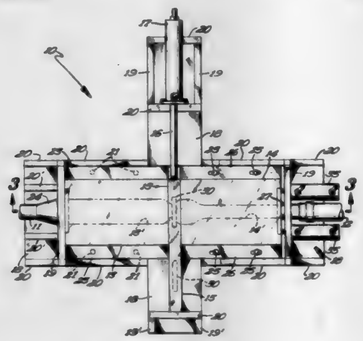


1. An internal combustion engine comprising:
a cylinder block having a cylinder wall section defining thereinside a cylinder bore, and an outer wall section located outside of said cylinder wall section, an engine coolant passage being formed between said cylinder wall and outer wall sections;
a boss section formed at and projecting from said cylinder wall section, said boss section being formed with a threaded portion;
means defining an opening at said cylinder block outer wall section, said opening being located at a position generally corresponding to said boss section to prevent said boss section from contacting said cylinder block outer wall section;
an engine knock sensor having a threaded portion which engages with the threaded portion of said boss section; and
a resilient seal member disposed between said engine knock sensor and said cylinder block outer wall section to prevent engine coolant from leaking through said cylinder block outer wall section opening.

4,450,710
DEVICE FOR TESTING HEART VALVE PROSTHESES

William S. Nettekoven, White Bear Lake, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 13, 1981, Ser. No. 310,467
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—37 18 Claims

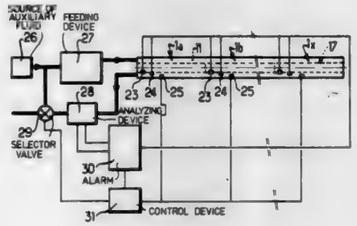


1. In a system for hydrodynamic, in vitro testing of heart valve prostheses of the type having a flow channel and means for including a flow of desired characteristics within said flow channel, said flow channel including test fixture means for supporting a prosthesis to be tested in a desired orientation within said flow, the improvement wherein said test fixture means comprises first and second chamber means spaced from each other along said flow channel and shuttle means intermediate said chamber means and movable between at least first and second positions, said shuttle means comprising means for supporting at least one heart valve prosthesis and selectively positioning said prosthesis in a desired orientation within said flow and without said flow by movement of said shuttle means between said first and second positions.

4,450,711
METHOD OF AND DEVICE FOR REMOTELY DETECTING LEAKS IN A FLUID-CONVEYING PIPE-LINE SUBMERGED WITHIN AN AMBIENT FLUID AND PIPE-LINE PROVIDED WITH SUCH A DETECTION DEVICE

Jean Claude, Rambouillet, France, assignor to Technigaz, France

Filed Nov. 18, 1981, Ser. No. 322,588
Claims priority, application France, Nov. 24, 1980, 80 24892
Int. Cl.³ G01M *3/28*
U.S. Cl. 73—40.5 R 9 Claims

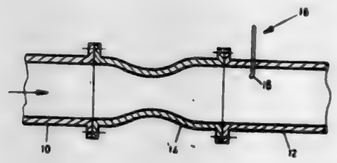


1. A method for detection and location of fluid leaks in a pipe-line in an ambient fluid and having a tube conveying a fluid, said tube having a wall, said method comprising the steps of
surrounding the tube with a confined layer of sweeping auxiliary fluid interposed between the tube and the ambient fluid, said auxiliary fluid being a mixture of gases at least the main component of which is an inert gas at a pressure lower than the respective pressures of the conveyed fluid and the ambient fluid and being constantly kept flowing throughout the length of the pipe-line;
guiding any leak of conveyed fluid generally in a circumferential direction along the wall of said tube to accumulate said fluid into an accumulation volume divided into adjacent drain sections extending along said tube and isolated in sealing relationship from each other;
transferring the accumulated fluid to the auxiliary fluid when the pressure of the accumulated fluid within a drain section reaches a predetermined value;
sensing the presence of said conveyed fluid within said auxiliary fluid by continuous monitoring of the composition of said auxiliary fluid at one accessible end of said pipe-line and at spaced locations along said pipe-line; and
emitting a signal indicative of the presence of said conveyed pipe in said auxiliary fluid as a result of said sensing.

4,450,712
PULP CONSISTANCY MEASUREMENT

Kevin O'Shaughnessy, Widenham, South Africa, assignor to Brenda O'Shaughnessy, Widenham, South Africa

Filed Oct. 19, 1981, Ser. No. 313,068
Claims priority, application South Africa, Dec. 11, 1980, 80/7753
Int. Cl.³ G01N *15/04*
U.S. Cl. 73—61 R 6 Claims

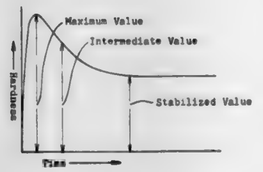


1. A method of determining the concentration of particulate or fibrous material in a fluid comprising:
(a) a flowing of the fluid at a velocity to cause turbulence to the particulate or fibrous material in the fluid through a pressure reducing unit with high level of recovery of pressure drop downstream thereof;
(b) measuring the pressure upstream of the unit;
(c) measuring the recovery pressure downstream of the unit;
(d) comparing the above measurements with a constant to determine the concentration of the particulate or fibrous material.

4,450,713
METHOD FOR MEASURING HARDNESS OF RUBBER AND PLASTICS AND A HARDNESS TESTER FOR USE THEREIN

Toshio Arimatsu, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jun. 16, 1982, Ser. No. 389,156
Claims priority, application Japan, Jun. 24, 1981, 56-99436
Int. Cl.³ G01N *3/42*
U.S. Cl. 73—81 3 Claims

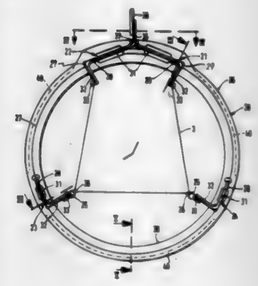


1. A method for measuring the hardness of a test material, such as rubber, plastics, etc. comprising the steps of:
detecting the amount of displacement of a feeler of a hardness tester,
converting the amount of displacement into electric digital signals,
evaluating the electric digital signals in terms of the hardness of the test material,
detecting the maximum value, the intermediate value, and the stabilized value of the hardness of the test material from the evaluated electric digital signals,
measuring the variation of hardness from the maximum value to the stabilized value after the lapse of a preset space of time, and
displaying the hardness data of the test material on a display unit.

4,450,714
APPARATUS FOR MEASURING THE MASS OF A FLOWING MEDIUM

Werner Prohaska, Bietigheim-Bissingen, and Peter Romann, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 356,987
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109608
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—118.1 6 Claims



1. An apparatus for measuring the mass of a flowing medium in a flow path, such as the aspirated air mass of an internal combustion engine, including a sensor ring encompassing a flow cross-section and at least one temperature-dependent resistor disposed in the flow path of the medium and embodied as a hot wire, the temperature and/or resistance of which is regulated in accordance with the flowing mass and an adjustment variable is a standard for the mass of the flowing medium, said hot wire being supported on said sensor ring in the form of a loop from one end to the other by at least three support points, said sensor ring is formed of plastic and has fastening slits formed therein extending in an axial direction with respect to the sensor ring with said fastening slits open toward at least one end face of the sensor ring, a radial slit leading from said axially directed slit to an inside diameter of the sensor ring, each said support point including a guide section which protrudes into the flow cross section through said radial slit and a fastening section secured in the fastening slit such that the fastening section of said support point is bent at an angle relative to the guide section of said support point.

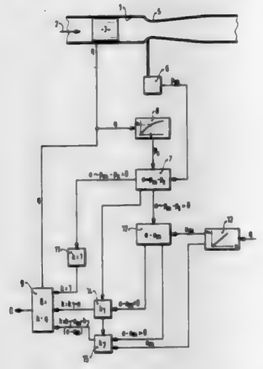
4,450,715
METHOD FOR MEASURING THE FLOW OF A MEDIUM

Jaihind S. Sumal, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 3, 1982, Ser. No. 415,611
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203986
Int. Cl.³ G01F *1/00*; G01M *15/00*
U.S. Cl. 73—118.1 3 Claims

1. A method for measuring the flow of a medium, in particular of air aspirated by an internal combustion engine, in a flow cross section by means of a flow rate meter and for correcting the flow rate value furnished by the flow rate meter in the event of pulsating flow, comprising the steps of, measuring at a restriction of the flow cross section the pressure of the medium (p_m); forming the difference ($p_m - p_z$) between the pressure of the medium (p_m) and a pressure value (p_z) associated with the flow rate value (q) for steady flow in order to ascertain the pulsation amplitude ($a \sim p_m - p_z$); forming the amplitude difference ($a - a_m$) between the pulsation amplitude (a) and a pulsation amplitude value for reversed flow (a_m) associ-

ated with the flow rate value (q); and forming a corrected flow rate value (Q) by multiplying the flow rate value (q) with a



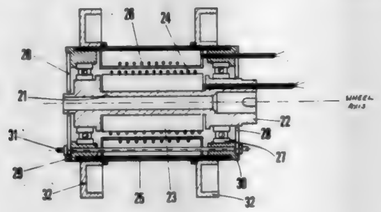
correction value (k) proportional to the value of the amplitude difference $(a-a_m)$.

4,450,716

PROCESS AND DEVICE FOR MEASURING THE PRESSURE OF TIRES, PARTICULARLY FOR AIRCRAFT

Jean-Louis J. R. Lefaucheux, Paris; Claude Martin, Plaisir, and Edmond E. A. Mokrani, Sceaux, all of France, assignors to Societe Anonyme de Telecommunications, France

Filed Jun. 17, 1981, Ser. No. 274,636
Claims priority, application France, Jun. 19, 1980, 80 13579
Int. Cl.[3] B60C *23/00*; G08G *1/12*
U.S. Cl. 73—146.5 3 Claims



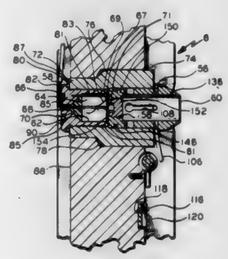
1. A device for measuring the pressure of a tyre of a wheel of an aircraft landing gear, comprising a high frequency transformer having a primary winding concentric with respect to and mechanically fast with the wheel and a secondary winding concentric with respect to said primary winding and mechanically fast with said landing gear; a passive sensor means operatively connected to said primary winding for linearly converting a variation in pressure in the tyre into an electrical information variation, in situ; means, including said transformer, for conveying the electrical information from said sensor to the cockpit of said aircraft, a self-oscillator having an input operatively connected to said secondary winding, the oscillation frequency of said self-oscillator being controlled by the value of said electrical information from said sensor; and means for converting the signal issuing from said self-oscillator into a D.C. voltage proportional to a frequency variation being proportional to said variation in pressure; the electrical information from said sensor, before transmission to said cockpit, being applied to said primary winding; the electrical information from said sensor being modified according to the square of the ratio n of transformation between the primary winding and the secondary windings.

4,450,717

DOWNHOLE SAMPLING APPARATUS

Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 177,958, Aug. 14, 1980, Pat. No. 4,339,947.
This application May 12, 1982, Ser. No. 377,499
Int. Cl.[3] E21B *49/04*
U.S. Cl. 73—151 6 Claims



1. Apparatus comprising:

(a) a plus having a first end and a second end and a longitudinal axis extending from the first end to the second end, said plug having a passage extending along its longitudinal axis from its first end to its second end defined by a first generally cylindrical inside surface extending from the first end of the plug, a second generally cylindrical inside surface defining a larger diameter than the first generally cylindrical inside surface extending from the second end of the plus toward the first end of the plug, a third generally cylindrical inside surface defining a diameter intermediate the diameter of the first generally cylindrical inside surface and the diameter of the second generally cylindrical inside surface between the first generally cylindrical inside surface and the second generally cylindrical inside surface, a generally frustoconical inside surface diverging from the first generally cylindrical inside surface to the third generally cylindrical inside surface, and an annular shoulder between the third generally cylindrical inside surface and the second generally cylindrical inside surface, and an exterior surface defined by a first generally cylindrical exterior surface extending from the second end of the plug toward the first end of the plug, said first generally cylindrical exterior surface being provided with a threaded portion, a second generally cylindrical exterior surface having a larger diameter than the first generally cylindrical exterior surface extending from the first end of the plug toward the second end of the plug, a third generally cylindrical exterior surface having a diameter intermediate the diameter of the first generally cylindrical surface and the second generally cylindrical surface between the first generally cylindrical surface and the second generally cylindrical surface, a first exterior annular shoulder intermediate the first generally cylindrical surface and the third generally cylindrical surface, and a second exterior annular shoulder intermediate the third generally cylindrical surface and the second generally cylindrical surface;

(b) a first electrode positioned along the longitudinal axis of the passage from the first end partially to the second end;

(c) a second electrode parallel to the first electrode extending from the frustoconical inside surface partially to the second end; and

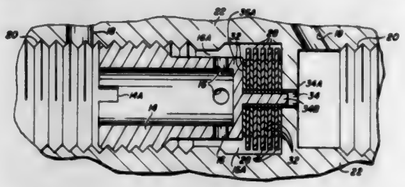
(d) a third electrode extending between the first electrode and the second electrode.

4,450,718

FLOW METER INCLUDING IMPROVED LAMINAR FLOW RESTRICTOR DEVICE THEREFOR

Gerrit A. Hartemink, Harderwijk, Netherlands, assignor to Advanced Semiconductor Materials N.V., Bilthoven, Netherlands

Filed Apr. 19, 1982, Ser. No. 369,660
Int. Cl.[3] G01F *5/00*
U.S. Cl. 73—202 10 Claims



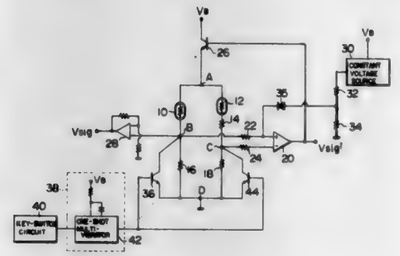
1. In a flow meter, a flow restrictor assembly comprising, in combination, inlet means for introducing a fluid located within said flow meter with an input portion of said flow restrictor; flow restrictor means coupled to said inlet means for creating laminar fluid flow, said flow restrictor means comprising a first plurality of washers each having a center aperture, and a second plurality of discs each having a center aperture and a plurality of radially extending slots passing through the front and rear surfaces of each disc and in communication with said center aperture, each one of said second plurality of discs being located between a pair of said first plurality of washers, the center apertures of said first plurality of washers being lined up with the center apertures of said second plurality of discs; and outlet means for permitting the laminar fluid to flow out an output portion of said flow restrictor, said outlet means comprising all the center apertures of said first plurality of washers and said second plurality of discs and said plurality of radially extending slots in communication with said center apertures of said second plurality of discs.

4,450,719

AIR FLOW METER

Yutaka Nishimura; Yoshishige Ohyama, and Noboru Sugiura, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1982, Ser. No. 434,059
Int. Cl.[3] G01F *1/68*
U.S. Cl. 73—204 10 Claims



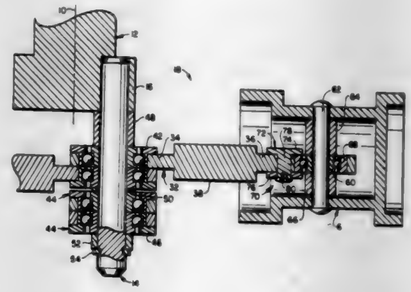
1. An air flow meter including a first resistor whose resistance varies with temperature, a second resistor connected in series with said first resistor, and control means for controlling a current flowing through said first resistor so that said first resistor has a predetermined temperature, to measure the flow rate of air by said current flowing through said first resistor, said air flow meter comprising means for forming a short circuit between both ends of said second resistor for a predetermined time, when said air flow meter is energized.

4,450,720

FLOWMETER CONNECTING ROD ASSEMBLY

John K. Max, 1420 Healdsburg Ave., Healdsburg, Calif. 95448

Filed Aug. 23, 1982, Ser. No. 410,204
Int. Cl.[3] G01F *3/18*
U.S. Cl. 73—247 9 Claims



1. A flowmeter connecting rod assembly for use with a radial piston flowmeter of the type including a plurality of cylinders and pistons arranged radially about a crank axis and an eccentric axial crank pin, a wrist pin mounted within the piston along an axis generally parallel to the crank axis, the pistons each having the connecting rod assembly comprising:

a connecting rod having a crank end and a piston end;

a wrist pin ball bearing having inner and outer races and mounted about the wrist pin;

a crank pin bearing mounted about the crank pin ;

said crank and piston ends of said rod having means for mounting said crank pin and wrist pin ball bearings thereto;

means for axially spacing said wrist pin ball bearing along said wrist pin; and

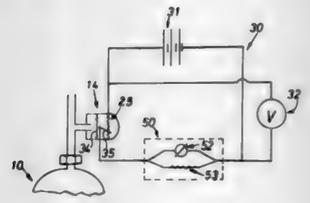
means for securing said wrist pin ball bearing to said rod.

4,450,721

APPARATUS FOR INDICATING QUANTITY OF LIQUIFIED GAS CONTAINED IN A STORAGE CONTAINER

John Gaunt, and Kenneth E. Gregory, both of Nottingham, England, assignors to Energy Innovation Enterprises, Ltd., Channel Islands

PCT No. PCT/GB81/00072, 371 Date Dec. 17, 1981, 102(e) Date Dec. 17, 1981, PCT Pub. No. WO81/03067, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 16, 1981, Ser. No. 333,874
Claims priority, application United Kingdom, Apr. 17, 1980, 8012608
Int. Cl.[3] G01F *23/18, 23/14*
U.S. Cl. 73—290 B 10 Claims



1. Apparatus for indicating quantity of liquified gas contained in a storage container for supplying gas to a consuming appliance during the supplying of gas to said appliance, the apparatus including a pressure sensing means for sensing gas

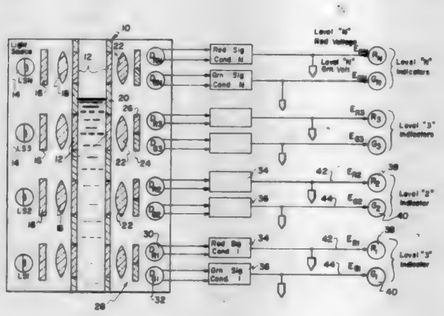
pressure within the container and being arranged to operate an indicator means which give a desired indication, the indicator means being calibrated to indicate the quantity of liquified gas contained in said container, the indicator means being calibrated to indicate readings up to at least the plateau zone of an earlier determined pressure versus weight curve of the dynamic liquified gas/gas system within the container during use.

4,450,722

WATER LEVEL GAUGE WITH FAULT DETECTOR

Marion A. Keyes, IV, Chagrin Falls, Ohio, and Richard A. Salmen, deceased, late of Canfield, Ohio (by Marie P. Salmen, executrix), assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 26, 1982, Ser. No. 402,188
Int. Cl.³ G01F *23/28*
U.S. Cl. 73—293 **10 Claims**



1. A liquid level gauge comprising:
a liquid column for containing a level of liquid;
light means on one side of said column for obliquely shining light having at least a first and a second color through the column, the light of the first color passing through the column relatively readily above a level of liquid therein and light of the second color passing through the column relatively readily below the level of the liquid therein;
at least one detector assembly on an opposite side of said column for receiving light from said light means, said detector assembly comprising a first detector for generating a first signal when light of said first color shines on said detector assembly and a second detector for generating a second signal when light of said second color shines on said detector assembly; and
a detector circuit connected to said at least one detector assembly for indicating which of said first and second detectors is producing a signal including a fault detector assembly connected to said first and second detectors for indicating a fault when any condition arises other than a condition where a single signal is received from a single one of said first and second detectors.

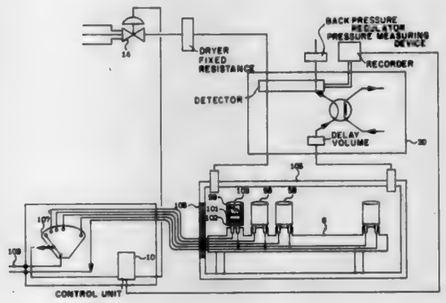
4,450,723

MULTI-SAMPLE SURFACE AREA MEASUREMENT

Richard L. Scott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 128,981, Mar. 10, 1980, Pat. No. 4,335,610. This application Mar. 16, 1982, Ser. No. 358,743
Int. Cl.³ G01N *15/02*
U.S. Cl. 73—432 PS **7 Claims**

1. An apparatus for measuring the amount of a fluid adsorbed by each of a plurality of samples comprising
(a) an adsorption and desorption zone provided with means for exposing the plurality of samples to said fluid,
(b) a detector operatively connected to said adsorption and desorption zone and capable of detecting the fluid released from said sample and generating a signal representative of the quantity of said released fluid,
(c) a plurality of sample holding means within said adsorption and desorption zone,
(d) a plurality of individually controllable heating elements, each one sample holding means being associated with one of said heating elements such as to permit individual heating of each sample arranged in the respective sample



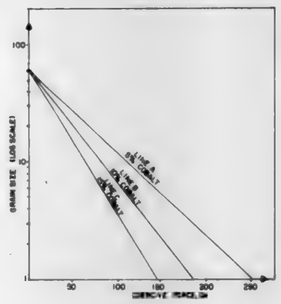
holding means independently of the heating of all the other samples,
(e) housing means enclosing said adsorption and desorption zone and separating said adsorption and desorption zone from uncontrolled contact with the surrounding atmosphere,
(f) control means for activating each individual heating element in order to heat the sample associated with this heating element and to desorb said fluid from said sample.

4,450,724

METHOD FOR DETERMINING THE SIZE OF METAL CARBIDE GRAINS IN CEMENTED CARBIDES

Richard F. Cheney, 50 Hemlock Rd.; Anil Bansal, 26 Larch Rd., and Edward R. Kimmel, 153 Center St., all of Sayre, Pa. 18840

Filed Oct. 14, 1982, Ser. No. 434,437
Int. Cl.³ G01N *15/00, 27/72*
U.S. Cl. 73—432 R **6 Claims**



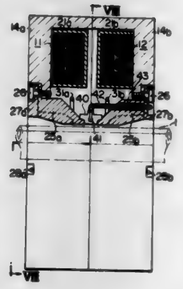
1. A method of determining the size of grains of refractory metal carbide in a cemented metal carbide comprising determining the composition and quantity of the metal binder material, determining the coercive force of the cemented metal carbide, obtaining a determination of metal carbide grain size based on coercive force being a function of grain size for said determined composition of metal binder and said determined quantity of metal binder.

4,450,725

ELECTROMAGNETIC-ACOUSTIC MEASURING APPARATUS

Hisao Yamaguchi; Kazuo Fujisawa, both of Amagasaki; Takashi Kadowaki, Hitachi; Susumu Itoh, Hitachi; Soji Sasaki, Hitachi, and Ichiya Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Sumitomo Metal Industries, Ltd., both of Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,445
Claims priority, application Japan, Jun. 10, 1981, 56-88188; Jun. 10, 1981, 56-88189; Apr. 14, 1982, 57-61126
Int. Cl.³ G01N *29/00, 29/04*
U.S. Cl. 73—643 **15 Claims**



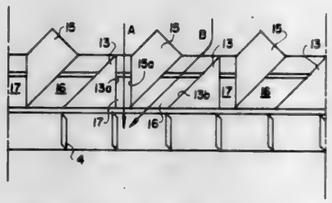
1. An electromagnetic-acoustic measuring apparatus comprising:
an exciting coil having an opening hole into which a body to be inspected is to be inserted, said exciting coil being applied with a d.c. voltage to generate a magnetic field in a direction substantially parallel to a surface of said body;
a transmitting coil for generating mechanical strain in a surface portion of said body, said surface portion being subjected to the action of the magnetic field produced by said exciting coil;
a receiving coil for detecting said mechanical strain at a surface of said body after said mechanical strain has been propagated in said body;
a core enclosing surfaces of said exciting coil except a surface facing said body;
pole pieces supported by said core for supporting at least one of said transmitting and receiving coils; and
each of inner and outer surfaces of said pole pieces being tapered so as to concentrate said magnetic field at the portion of said body.

4,450,726

FLOW-OPERATED MEASURING APPARATUS

Seppanen Seppo, Itarantа 13 E, 02100 Espoo 10, Finland

PCT No. PCT/FI81/00034, 371 Date Jan. 6, 1982, 102(e) Date Jan. 6, 1982, PCT Pub. No. WO81/03378, PCT Pub. Date Nov. 26, 1981
PCT Filed May 18, 1981, Ser. No. 342,000
Claims priority, application Finland, May 16, 1980, 801589
Int. Cl.³ G01F *1/82;* G01N *17/06*
U.S. Cl. 73—861.35 **10 Claims**



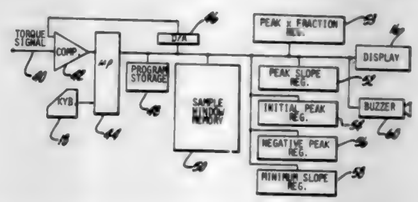
1. A measuring apparatus for measuring a parameter of a flowing liquid, gas or other such medium, said apparatus comprising:
a flow pipe (1); a rotor (2) fitted coaxially in said pipe for rotation; a remeter (10,11) connected to said rotor for measuring rotation thereof; a flow guide member (5) located upstream of said rotor in the principle flowing direction for varying a flow amount directed at an angle to said rotor to vary a rotational speed of said rotor; an actuator located upstream of said flow guide member which actuator is connected to said flow guide member; and a sensing element (7) for sensing the parameter, disposed in said actuator; characterized in that said guide member (5) consists of a director (8) and a controller (9) which are installed in succession within the flow pipe (1) in the flowing direction and which are interrotatable in a plane perpendicular to the principle flowing direction and which director (8) and controller (9) comprises support members (12,14;18,20;25,27) and at least two bladelike members (13,15;19,21;24,26) which are engaged in one of succession and an interlocking fashion and which members (13,15;19,21;24,26) form between them at least two divergent flow channels, the mutual proportion of the crossection thereof being dependent on the mutual rotation of the director (8) and the controller (9) which rotation takes place according to a measurement from said sensing element (7) which acts upon said actuator to cause rotation of one of said director and controller and which varies said flow amount.

4,450,727

DIGITAL RETORQUE MEASURING APPARATUS

James H. Reinholm, Livonia, and Eugene J. Marcinkiewicz, Plymouth, both of Mich., assignors to GSE, Inc., Farmington Hills, Mich.

Filed Apr. 29, 1982, Ser. No. 372,878
Int. Cl.³ B25B *23/142*
U.S. Cl. 73—862.23 **10 Claims**



1. In a method of detecting breakaway or valley torque levels associated with the amount of previously applied torque to a fastener wherein torque is subsequently applied to the fastener in the tightening direction until further motion of the fastener is obtained, and wherein an analog signal is generated as a function of the subsequently applied torque, the improvement comprising:
(a) defining a window of digital sample values in a memory by using a microprocessor to sample the analog signal and generate digital sample values therefrom until an analysis of said samples indicate that samples corresponding to the breakaway and/or valley torque levels have been stored in memory; and
(b) thereafter, using said microprocessor to examine the characteristics of the samples within the window to search for those samples corresponding to the breakaway and/or valley torque levels.

10. In an apparatus for detecting breakaway or valley torque levels associated with the amount of previously applied torque to a fastener wherein torque is subsequently applied to the fastener in the tightening direction until further motion of the fastener is obtained, and wherein an analog signal is generated as a function of the subsequently applied torque, wherein the improvement comprises:
means for sampling the analog signal and generating digital sample values;

means for storing said samples in a digital memory until an analysis of said samples indicates that samples corresponding to the breakaway and/or valley torque levels have been generated and stored in memory; and

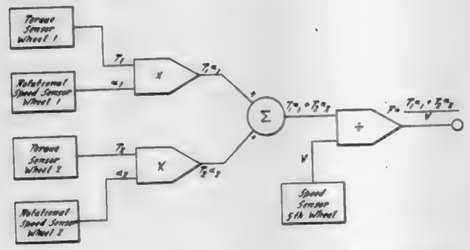
means for examining the characteristics of the samples in the memory to search for samples corresponding to the breakaway and/or valley torque levels.

4,450,728

VEHICLE FORCE MEASUREMENT SYSTEM

Severino D'Angelo, Laguna Beach, and Max J. Moore, Walnut, both of Calif., assignors to Horiba Instruments Incorporated, Irvine, Calif.

Filed Oct. 6, 1981, Ser. No. 309,108
Int. Cl.³ G01L *5/13*
U.S. Cl. 73—862.28 **4 Claims**



1. A vehicle force measurement system for measuring the force output of a vehicle while the vehicle is operating on a roadway, including:

torque sensor means connected to each of the driving wheels of the vehicle for producing a torque signal related to the rotational torque applied to the wheels;

speed sensor means connected to each of the driving wheels of the vehicle for producing an angular velocity signal related to the rotational speed of the wheels;

a fifth wheel connected to the vehicle so that said fifth wheel rotates at the speed of the vehicle;

tachometer means associated with said fifth wheel for producing a speed signal related to the velocity of the vehicle; and

circuit means for determining the force output of the vehicle by summing the products of said torque and angular velocity signals from each driving wheel and dividing the result by said speed signal.

4,450,729

DEVICE FOR MEASURING AND MONITORING THE DRIVE OF AN AGRICULTURAL IMPLEMENT

Christoph Troeder; Manfred Faber, both of Aachen, and Peter Seigert, Lohmar, all of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,834
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112714
Int. Cl.³ G01L *3/10*
U.S. Cl. 73—862.34 **6 Claims**

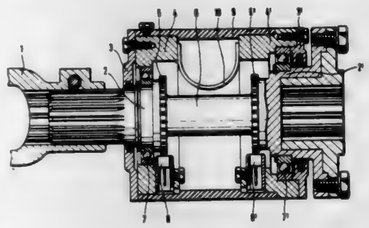
1. A device for measuring torque in a drive shaft particularly in the drive line between the power take off shaft of a tractor and an agricultural implement comprising:

a torsion-loaded measuring shaft;

a pair of toothed wheels rotatively fixed, respectively, at opposite ends of said shaft;

connecting journals adjacent each of said toothed wheels axially outwardly thereof, said connecting journals being dimensioned with a diameter which is approximately twice the diameter of said measuring shaft;

a housing including a pair of bearing support means each having bearings for rotatably supporting said connecting journals, a resilient tubular member extending between said bearing support means and bendable bracket means connecting said bearing support means together in rotatively fixed engagement; and



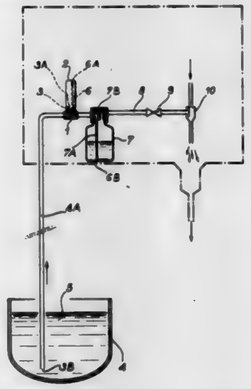
sensor means supported on said bearing support means in contact-free operative association with said toothed wheels to sense phase displacement therebetween proportional to torque in said measuring shaft.

4,450,730

LIQUID SAMPLER WHEREIN SOLUTION TO BE SAMPLED IS USED AS RETRIEVABLE SAMPLER WASH

Christian Levos, Martinvast; Daniel Perie, Cherbourg, and Jean-Francois Gex, Haineville, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 2, 1982, Ser. No. 365,004
Claims priority, application France, Apr. 8, 1981, 81 07064
Int. Cl.³ G01N *1/12, 1/14*
U.S. Cl. 73—864.61 **3 Claims**



1. Apparatus whereby a sample can be drawn from a body of liquid that is maintained substantially at a predetermined level into a sample bottle that has at one end thereof a resilient pierceable sealing closure, said apparatus comprising:

A. supporting means for receiving and holding the sample bottle with its said end lowermost and at an elevation substantially above said level;

B. a pair of upwardly projecting hollow needles on said supporting means, each of which has a pointed upper end that pierces the closure of the sample bottle received on said supporting means to enter the interior of that sample bottle, the upper end of one of said hollow needles being a substantial distance below the upper end of the other;

C. a first duct having one end immersible in said body of liquid to be below said level and having its other end communicated with said one hollow needle;

D. a sealed wash bottle having a bottom end below said elevation but substantially above said level;

E. a second duct having one end opening to the interior of said wash bottle near an upper end thereof and having its other end connectable with a suction source; and

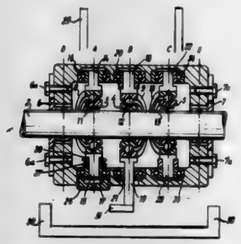
F. a third duct having one end communicated with said other hollow needle and having its other end opening to the interior of the wash bottle near the bottom end thereof, so that upon connection of said second duct with said suction source a substantial quantity of liquid from said body is drawn into the wash bottle through the first duct and the sample bottle on said supporting means, to ensure that liquid retained in the sample bottle is representative of liquid in said body.

4,450,731

TRAVERSING UNIT WITH BALANCED LOAD APPLYING MEANS

George Wardley, Stockport, England, assignor to Maridon (Engineering Specialties) Limited, Denton, England

Filed May 11, 1981, Ser. No. 262,432
Claims priority, application United Kingdom, May 9, 1980, 8015518
Int. Cl.³ F16H *21/16*
U.S. Cl. 74—25 **11 Claims**



1. A traversing unit comprising:

a housing,

a shaft rotatably mounted in the housing,

a plurality of rings within said housing and surrounding and in contact with the shaft,

means for applying a balanced load to the shaft through the rings in planes at right angles to the axis of the shaft, said balanced load applying means including unitary loading means for urging at least one of the rings directly against the shaft and for urging another ring against the shaft in the opposite direction from said one ring, and

means for mounting the rings in the housing so as to prevent relative movement between the rings and housing in the axial direction of the shaft, but allow relative movement of the rings and housing in a direction at right angles to the axis of the shaft, said means including mounting means slidably disposed in said unitary loading means and which connect said unitary loading to the housing.

4,450,732

DEVICE FOR IMPOSING THE LINEAR AND ANGULAR MOVEMENT TO THE VALVE STEM

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Aug. 31, 1982, Ser. No. 417,484
Int. Cl.³ G05G *7/00*
U.S. Cl. 74—107 **1 Claim**

1. The device for imposing the linear and angular movement to the rotatable elongated member comprising in combination:

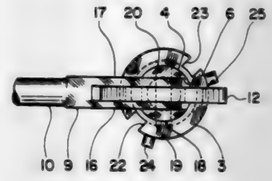
(a) a stationary housing rotatably supporting said rotatable elongated member;

(b) a slitted-opening disposed at one extremity of said rotatable elongated member wherein the center plane of said slitted-opening is substantially parallel to the axis of the rotation of said rotatable elongated member which axis of rotation coincides with the central axis of said rotatable elongated member;

(c) a yoke having a window slidably engaging said slitted-opening, said yoke rotatably secured to said stationary housing;

(d) a cam roller rotatably disposed in said slitted-opening and rotatably confined in said window included in said yoke, said cam roller eccentrically engaged by a pin disposed across said slitted-opening and anchored by said rotatable elongated member at said one extremity; and

(e) a handle rigidly connected to said cam roller, said handle pivotable about the axis of said pin and further pivotable about the axis of rotation of said rotatable elongated member; whereby, a pivoting movement of said handle about



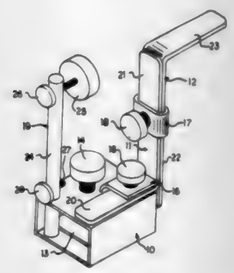
the axis of said pin in one direction imposes a linear movement to said rotatable elongated member in the first direction parallel to the axis of rotation of said rotatable elongated member and another pivoting movement of said handle about the axis of said pin in the other direction imposes another linear movement to said rotatable elongated member in the second direction opposite to said first direction; and the pivoting movements of said handle about the axis of rotation of said elongated member imposes the rotating movements on said rotatable elongated member about the axis of rotation of said rotatable elongated member.

4,450,733

PEDAL EXTENSION DEVICE

Larry A. Rantapaa, 1398 Grantham St., St. Paul, Minn. 55108

Filed Oct. 5, 1981, Ser. No. 308,264
Int. Cl.³ G05G *1/16*
U.S. Cl. 74—562 **15 Claims**



1. An adjustable pedal extension device for the demountable attachment to a foot pedal of a machine, said device comprising:

a. a body frame having an open end for receiving a pedal thereinto, said body frame further having an adjustable clamping member for securing said body frame to a pedal, said body frame additionally having pedal adjustment means extending generally upwardly therefrom for contact with a portion of the machine, said pedal adjustment means comprising a generally vertical member extending upward and attached to said body frame, and having at least one horizontally adjustable abutment member extending from said vertical member, said adjustable abutment member being a threaded shaft portion having a

knob for turning at one end and having a padded member at the opposite end for abutment against a portion of the machine, said vertical member further having a threaded aperture therethrough for adjustably receiving said threaded shaft of said adjustable abutment member,

b. horizontal extension means for extending at least a generally horizontal distance from said body frame,

c. first securement means for adjustably holding said horizontal extension means to said body frame,

d. vertical extension means for extending generally in the vertical direction relative to said body frame, said vertical extension means having a foot receiving portion extending therefrom,

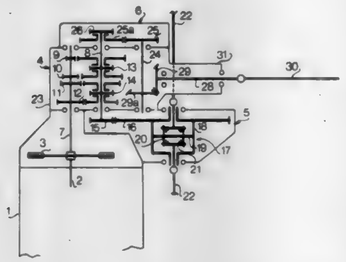
e. second securement means for adjustably holding said vertical extension means to said horizontal extension means, whereby, subsequent to securing said body frame to a pedal of a machine, said horizontal and vertical extension means are adjusted and secured by said first and second securement means to the reach of a user's foot to effectuate the manipulation of a pedal by the manipulation at said foot receiving portion of said vertical extension means by the foot of a user of said device, and, whereby, said pedal adjustment means is adjustably abutted against a portion of a machine to depress a pedal until the pedal becomes functionable, and to thereby remove any inoperative distance from the pedal.

4,450,734

TRANSMISSION APPARATUS FOR A FOUR-WHEEL DRIVE MOTOR VEHICLE

Sadao Makishima, Akigawa, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,707
Claims priority, application Japan, Oct. 9, 1980, 55-142259
Int. Cl.³ F16H *37/06, 37/08*
U.S. Cl. 74—665 F **14 Claims**



1. A transmission apparatus, for a motor vehicle defining a longitudinal direction and having an internal combustion engine with a crankshaft transversely disposed in said vehicle adjacent an end portion of the latter, comprising

a transmission transversely disposed in said vehicle and operatively connected to the crankshaft of said engine at one end portion of said transmission,

said transmission having an output shaft and an output gear mounted on said output shaft at a position thereof adjacent to an end of said engine,

a final reduction gear engages with said output gear of said transmission,

a differential is secured to a side of said final reduction gear,

axles, adapted for a pair of wheels of the vehicle, are connected to the differential,

a transfer device provided at another end portion of said transmission, said transfer device comprising, a gear train provided at said another end portion of said transmission, and a clutch means for operatively engaging said gear train with said output shaft of said transmission, and

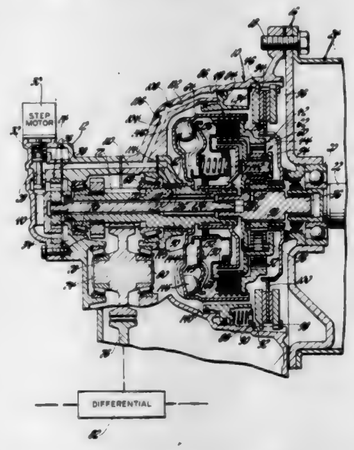
a propeller shaft means operatively connected to said gear train of said transfer device for driving other axles adapted for another pair of wheels of the vehicle and four-wheel drive.

4,450,735

PLANETARY TRANSMISSION WITH A SPRING APPLIED CENTRIFUGALLY SENSITIVE CLUTCH

Erkki A. Koivunen, Livonia, and James F. Sherman, Brighton both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1982, Ser. No. 352,953
Int. Cl.³ F16H *3/74, 57/10*
U.S. Cl. 74—781 R **3 Claims**



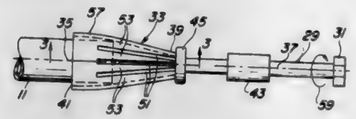
1. A transmission comprising; an input shaft; an output shaft coaxially aligned with the input shaft; housing means for rotatably supporting said input and output shafts; planetary gears means including a first member drivingly connected with said input shaft; a second member drivingly connected with said output shaft and a third member; fluid operated brake means disposed in said housing and being operatively connected with said third member of said planetary gear means and including a fluid pressure operated piston which is operable when pressurized to engage said brake means for establishing a reduction drive ratio in said planetary gear means; clutch means selectively operable for drivingly connecting said input shaft to said output shaft and including a fluid pressure operated means operable when pressurized to disengage said clutch means, spring engagement means for urging said pressure operated means toward engagement of said clutch means and centrifugal control means operatively connected for rotation with said output shaft for generating a force in said spring engagement means when the rotary speed of the output shaft is greater than a predetermined value; and fluidpressure source means drivingly connected with said input shaft for selectively pressurizing said brake means into engagement and said clutch means out of engagement including selectively operable control means for controlling the pressure level of said fluid pressure source means whereby said brake means can be disengaged and said clutch means will be spring loaded into engagement if the rotary speed of said output shaft is above said predetermined speed.

4,450,736

IMPACT-ACTUATED GRIPPING TOOL

Robert J. Kopnicky, Valparaiso, Ind., assignor to Bethlehem Steel Corp., Bethlehem, Pa.

Filed May 10, 1982, Ser. No. 376,874
Int. Cl.³ B25B *19/00*
U.S. Cl. 81—463 **2 Claims**



1. An impact-actuated gripping tool comprising:

(a) an elongated bar member having a bolt means at one end;

(b) a hollow, frustoconical gripping head having a proximal end fastened to the other end of said bar member and a distal end forming an opening for receiving a work piece to be unscrewed;

(c) hammer means slidably mounted on said bar member for movement between said bolt means and said gripping head;

(d) said gripping head further comprising:

(i) a first sidewall portion adjacent said proximal end, said first sidewall portion having an inner surface converging inwardly in the direction of said elongated bar member, said first sidewall portion including a plurality of longitudinally extending slots through the thickness of said first sidewall portion, dividing said first sidewall portion into a plurality of separate, individual segments, each of said segments being radially expandable and torsionally deformable, and

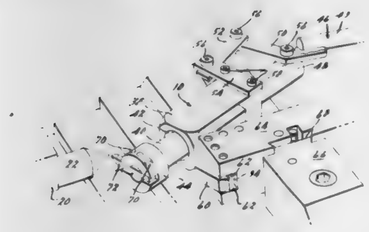
(ii) a second sidewall portion adjacent said distal end, said second sidewall portion being rigid.

4,450,737

LATHE TOOL

Dale Hitt, 20850 Westhaven, Southfield, Mich. 48075

Filed Jan. 30, 1981, Ser. No. 230,262
Int. Cl.³ B23B *5/38, 21/00*
U.S. Cl. 82—24 R **9 Claims**



1. A lathe tool for use on a lathe having a generally horizontal bed, clamping means mounted on said horizontal bed and having a pair of spaced-apart clamping surfaces, and means for supporting a workpiece above the bed for rotation about an axis generally parallel to the bed, said lathe tool comprising:

mounting means including a longitudinally-extending body portion and an L-shaped mounting member having a longitudinal portion secured to said body portion of said lathe tool and a transverse portion extending away from both said body portion and said longitudinal portion and extending generally toward said clamping means, said longitudinal portion and said transverse portion each having two spaced-apart generally parallel surfaces adapted for engagement between said clamping means, said parallel surfaces on each of said longitudinal and transverse portions further being adapted to be engaged by said clamping means at varying locations on said parallel surfaces in order to allow adjustment of the angular orientation of the mounting member relative to said clamping means and relative to said workpieces; and

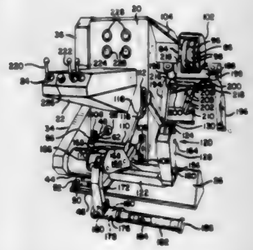
tool holding means connected to said body portion for reciprocable movement relative thereto, and means for reciprocably moving said tool holding means relative to said body portion toward and away from the workpiece.

4,450,738

TIRE SPLITTING APPARATUS

Myron D. Tupper, 37900 Sandy Heights, Sandy, Oreg. 97055, and Richard Bauer, Jr., 34689 SE. Fall Creek, Estacada, Oreg. 97023

Filed Sep. 8, 1981, Ser. No. 300,031
Int. Cl.³ B23B *5/14;* B29H *21/08*
U.S. Cl. 82—82 **6 Claims**



1. A tire splitting apparatus for splitting tire casings circumferentially into segments, comprising:

(a) a frame

(b) a powered drive roll mounted rotatably on the frame and engageable with the outer crown of a tire to rotate the tire;

(c) a tire lift arm pivoted on the frame and means for pivoting the arm;

(d) a pressure roll head mounted on the tire lift arm and including a pressure roll insertable into the tire casing and bearing on the inner crown of the casing adjacent the drive roll for pressing the casing against the drive roll;

(e) a knife mounted on the pressure roll head for reciprocation relative thereto for retractably extending through the crown of the tire;

(f) power means interengaging the knife and pressure roll head for reciprocating the knife;

(g) a pair of laterally spaced guide means mounted on the frame for lateral movement of each toward and away from the other for releasable contact with both side wall of a tire for centering various size tires relative to the knife; and

(h) power means engaging the guide means for moving the latter.

4,450,739

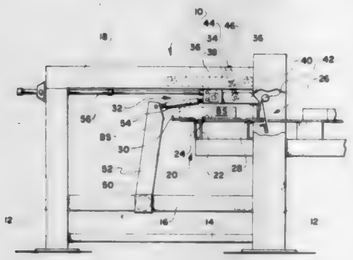
METHOD AND APPARATUS FOR TRANSFERRING SLUGS FROM A CONVEYOR TO A SLUG CUTTING DEVICE

John G. Buckner, Ramseur; Cletus E. Lineberry, Staley, and Jimmy W. Harris, Siler City, all of N.C., assignors to Auto-Systems & Service, Inc., Staley, N.C.

Filed Aug. 13, 1981, Ser. No. 292,686
Int. Cl.³ B28B *11/14;* B26D *7/06*
U.S. Cl. 83—23 **5 Claims**

1. A brick handling system for simultaneously transferring at least two brick slugs at a time from a conveying system towards a slug cutting device where the slugs are cut into

individual bricks as they are conveyed therethrough; said brick handling system comprising: conveying means for receiving slugs and transferring them in sequence to a discharge point thereon; a brick slug cutting device disposed adjacent one side of said conveying means in the vicinity of said discharge point and appropriately aligned with said conveying means and discharge point for receiving slugs moved from said discharge point and cutting the same into individual bricks; slug support means disposed adjacent said conveying means on a side opposite said slug cutting device and normally assuming a transfer position where said slug support means is generally horizontally aligned with said conveying means such that slugs can be conveniently horizontally moved between said conveying means and said support means; and slug transfer means disposed adjacent said conveying means in the vicinity of said discharge point for simultaneously conveying two consecutively arriving and horizontally aligned slugs towards said



brick cutting device, said slug transfer means including first engaging means for engaging a first slug on said conveying means at said discharge point and conveying said slug onto said support means after which said conveying means conveys a second consecutive slug to said discharge point; said transfer means including second engaging means for simultaneously conveying said first and second consecutive slugs, one after another in single tier fashion, directly across and over said conveying means towards said slug cutting device; said second engaging means including means for engaging said first slug on said support means while said support means is disposed in said transfer position and generally horizontally aligned with said conveying means for conveying said first slug from said support means towards said conveying means and said second consecutive slug and into engagement with said second consecutive slug for conveying said first and second consecutive slugs simultaneously directly over said conveying means towards said slug cutting device.

4,450,740

ROTARY ENVELOPE CUTTING APPARATUS

William A. Chapman, Jr., Hubbardston, and John J. Crowley, Ware, both of Mass., assignors to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 198,464, Oct. 20, 1980, abandoned. This application Feb. 18, 1983, Ser. No. 468,033

Int. Cl.³ B26D *1/56*

U.S. Cl. 83—303 **9 Claims**

1. A sheet material converting machine having rotary cutting means for shaping product blanks of such material comprising:

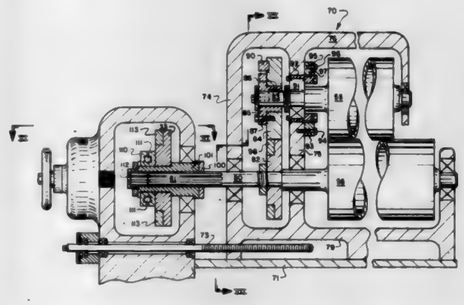
A. A series plurality of rotary cutting roll sets, each set mounted in respectively independent frame means collectively supported by primary machine frame means;

B. Transverse displacement means between each said independent frame means and said primary machine frame means for transversely adjusting the cutting position of each roll set relative to a longitudinal movement direction of product blanks through said converting machine;

C. Primary drive line means to synchronously drive two adjustable cutting roll sets as a cooperative pair for sequentially making transversely opposite and longitudinally aligned side cuts in a particular product blank progressing through said converting machine;

D. One roll of each cutting roll set having female cutting die means secured thereto and corresponding male cutting die means secured to the other roll of a respective set, said male and female dies meshing together rotatively with a lapped fit of respective shear cutting edges for cutting a section of product blank therefrom when positioned between said meshing dies;

E. A first stub shaft respective to one roll of each set being driven from a second stub shaft respective to the other roll of said set by meshing drive gears secured respectively to said first and second stub shafts, the drive gear respective to said first shaft being carried concentrically thereon by a flanged hub that is nonrotatively secured to said first



stub shaft, the flange of said hub including means to adjust and secure the angular position of said first shaft drive gear relative to said first shaft for angular adjustment of the meshing lap fit of cutting dies secured to said set rolls; and

F. Bearing means for anti-frictionally supporting one axial end of said one roll of said set, said bearing means being radially and axially secured about said first stub shaft and radially and axially secured within an adjustment sleeve means, said adjustment sleeve means being threadably received by respective independent frame means whereby thread advancement of said sleeve means axially translates said one roll of said set relative to said other roll for axial adjustment of the meashing lap fit of cutting dies secured to said set rolls.

4,450,741

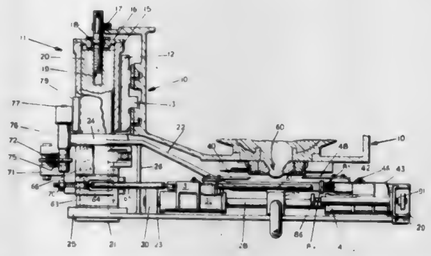
MULTIPLE GOB SHEARING MECHANISM OPERATING IN A STRAIGHT LINE

Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 14, 1982, Ser. No. 398,122

Int. Cl.³ C03B *5/38*

U.S. Cl. 83—623 **8 Claims**



1. Apparatus for shearing multiple streams of molten glass into gobs comprising a feeder bowl having a plurality of in-line openings extending through the bottom thereof through which molten glass issues, a vertical post, means mounting said post to the side of the feeder bowl, a carriage cantilevered from the lower portion of said post, said carriage extending normal to the line of said openings, at one side thereof, a first pair of horizontally spaced axially aligned shafts carried by said carriage, a second, horizontally spaced, shaft extending parallel to said first pair of shafts, a pair of opposed slides mounted to move on said first and second shafts, drive sleeve means mounted for rotation about the axis of said post, a first drive link connected between one side of said drive sleeve and one slide, a second drive link connected between the opposite end of said drive sleeve and the other slide, means connected to said drive sleeve for biasing said sleeve in a clockwise direction, means connected to drive sleeve for oscillating said sleeve about the axis of the post, and means for mounting shear blades on said slides for relative movement to shear the streams of molten glass.

4,450,742

ELECTRONIC MUSICAL INSTRUMENTS HAVING AUTOMATIC ENSEMBLE FUNCTION BASED ON SCALE MODE

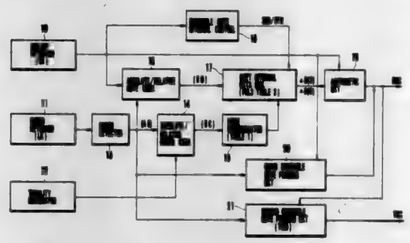
Toshio Sugiura, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1981, Ser. No. 332,306

Claims priority, application Japan, Dec. 22, 1980, 55-180474; Dec. 26, 1980, 55-183689; Dec. 26, 1980, 55-183690; Dec. 26, 1980, 55-183691

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **21 Claims**



1. An electronic musical instrument having an automatic ensemble note function based on a scale mode, comprising

(a) a keyboard for performing a melody;

(b) chord performing means for performing accompaniment chords;

(c) tonality designating means for designating a tonality of a music to be performed;

(d) scale mode judging means for judging the scale mode of the music being played based on the designated tonality and the accompaniment chord;

(e) ensemble note data forming means for forming ensemble note data determined in accordance with the judged scale mode and depressed melody keys of said keyboard; and

(f) musical tone forming means for forming musical tones corresponding to said ensemble note data and musical tones corresponding to said melody keys.

4,450,743

ELECTRONIC MUSICAL INSTRUMENT WITH MUSICAL INFORMATION INPUT MEANS

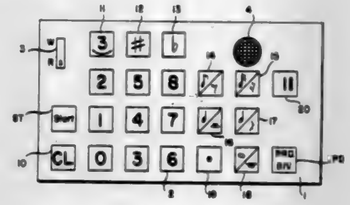
Akira Tanimoto, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 154,371, May 29, 1980, which is a continuation of Ser. No. 881,437, Feb. 27, 1978, abandoned. This application Apr. 9, 1982, Ser. No. 367,053

Claims priority, application Japan, Feb. 28, 1977, 52-22087; Dec. 26, 1977, 52-157815

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—1.03 **5 Claims**



1. An electronic musical instrument and calculator comprising:

calculator means for performing calculations when said instrument is in a calculation mode;

means for selecting between a musical instrument mode and the calculator mode;

input key switch means for introducing numerical information when in the calculator mode and pitch information and duration information when in a musical instrument mode, said pitch information being introduced by digit keys also used to introduce the numerical information when in said calculator mode, the numbers produced by said digit keys corresponding to the pitch of individual notes;

first memory means responsive to said input key switch means for storing duration information in duration words;

second memory means make separate words responsive to said digit keys for storing said numbers corresponding to said pitch information in pitch words separate and spaced apart from said duration words; and

means responsive to the information stored within said first and second memory means for generating audible sounds in response thereto.

4,450,744

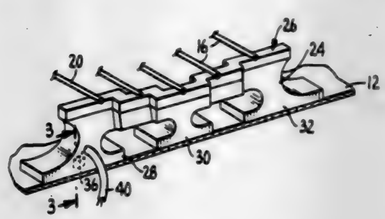
ELECTRIC PICKUP DEVICE FOR A MUSICAL INSTRUMENT SUCH AS A BANJO

Richard Shubb, P.O. Box 5311, Berkeley, Calif. 94705

Filed May 28, 1982, Ser. No. 382,957

Int. Cl.³ G10H *3/00*

U.S. Cl. 84—1.16 **13 Claims**



1. A bridge element and electric pickup for use in a banjo, comprising:

a support element having a support surface for engaging and supporting the strings of a banjo, and a plurality of feet on

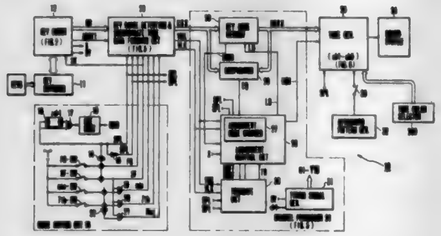
the side of said element oposite said support surface for resting against the head of a banjo;
a recess within one of said feet open only to the bottom of said one of said feet;
a piezoelectric pickup element disposed in said recess substantially near the bottom of said foot to be proximate to the head; and
means for connecting said pickup element with a circuit for receiving output signals from said element and converting them into audible sounds.

4,450,745

ELECTRONIC MUSICAL INSTRUMENT WITH PLURAL TONE PRODUCTION CHANNELS

Akira Nakada, and Takeshi Adachi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 182,464, Aug. 28, 1980, Pat. No. 4,365,532. This application May 14, 1982, Ser. No. 378,057
Claims priority, application Japan, Sep. 3, 1979, 54-112580
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.³ G10H *1/06, 1/38*
U.S. Cl. 84—1.19 **2 Claims**



1. In a keyboard electronic musical instrument having considerably fewer tone production channels than the number of keys, the improvement comprising:
mode selection means for selecting either a first or a second playing mode;
assignment means, cooperating with said mode selection means, (a) for assigning any depressed key to any tone production channel when said first playing mode is selected, and (b) for assigning depressed keys for a certain group only to tone production channels in a certain subset for said channels and for assigning keys not in said certain group only to the remaining tone production channels when said second playing mode is selected; and
different tone quality imparting means, operative only when said second playing mode is selected, for imparting one tonal quality to tones generated in tone production channels of said certain subset and for imparting a different tonal quality to tones generated in said remaining tone production channels.

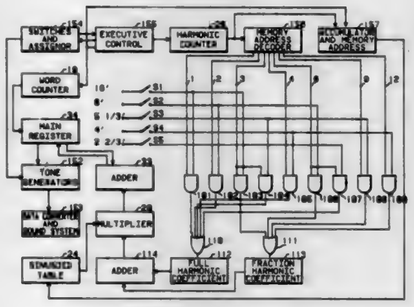
4,450,746

FLUTE CHORUS GENERATOR FOR A POLYPHONIC TONE SYNTHESIZER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Aug. 24, 1982, Ser. No. 411,159
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **10 Claims**

1. In a keyboard musical instrument having a number of tone generators, in which a plurality of data words corresponding to the amplitudes of points defining the waveform of a musical tone are computed and transferred sequentially to a digital-to-analog converter to be converted into musical waveshapes, apparatus for simultaneously generating a chorus of similar tones each at a preselected tone footage comprising:
a plurality of tone switches each corresponding to a tone footage,
a coefficient memory for storing a set of harmonic coefficient values,
a harmonic number generating means whereby a sequence of harmonic numbers is generated and wherein said sequence is equal to the number of harmonic coefficient values comprising said set of harmonic coefficient values,
a first address decoder means responsive to said sequence of harmonic numbers whereby a subsequence of harmonic numbers is generated by selecting prespecified ones of said sequence of harmonic numbers and wherein said subsequence of harmonic numbers is less in number than said set of harmonic coefficient values,



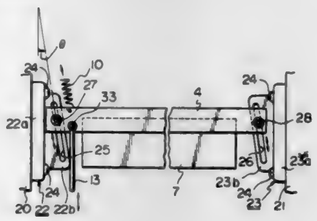
a means for computing, responsive to said set of harmonic coefficient values, whereby said plurality of data words corresponding to the amplitudes of points defining the waveform of a musical tone are computed,
a coefficient select means responsive to the actuation of said plurality of tone switches and responsive to said subsequence of harmonic numbers whereby selected harmonic coefficient values from said set of harmonic coefficient values are read out from said coefficient memory and provided to said means for computing, and
a means for producing musical waveshapes from said plurality of data words thereby generating said chorus of similar tones each one at a tone footage corresponding to the actuation of one of said plurality of tone switches.

4,450,747

MUFFLER ASSEMBLY FOR A PIANO

Kikuro Aoyama, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Mar. 16, 1982, Ser. No. 358,681
Claims priority, application Japan, Mar. 19, 1981, 56-038416[U]
Int. Cl.³ G10C *3/26*
U.S. Cl. 84—220 **4 Claims**



1. A muffler assembly for a piano having a plurality of hammers arranged side by side in a row, said muffler assembly comprising

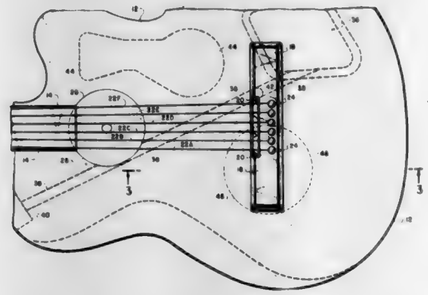
a muffler rail horizontally extending along said row of said hammers and having a projection formed at each end of said muffler rail,
a muffler felt coupled to and hanging downward from said muffler rail,
a pair of guide blocks mounted to said piano, each of said guide blocks facing one end of said muffler rail and provided with a guide slot which is located in a vertical plane parallel to said muffler rail, each of said guide slots extending with a slight inclination with respect to the vertical direction and adapted for slidable engagement with one of said projections formed on said ends of said muffler rail,
urging means for resiliently urging said muffler rail to move upwards, and
intermediate links coupling said muffler rail to a soft pedal of said piano so that, when said soft pedal is stepped on, said muffler rail is pulled downwards against the operation of said urging means in order to place said muffler felt in front of said hammers.

4,450,748

SOLID BODY GUITAR WITH SEALED CAVITY

Timothy P. Shaw, and Abraham J. Wechter, both of Kalamazoo, Mich., assignors to Norlin Industries, Inc., White Plains, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,644
Int. Cl.³ G10D *1/08*
U.S. Cl. 84—291 **10 Claims**



1. A solid body for a musical instrument, said instrument having a bridge mounted on said body, a plurality of bass strings and a plurality of treble strings, each string being anchored at both ends to said instrument and extending over said bridge, said body having an upper surface on which said bridge is mounted and a lower surface and being characterized by a sealed cavity formed between, but not extending through said upper and lower surfaces in the area thereof substantially underlying the portion of said bridge extended over by said bass strings.

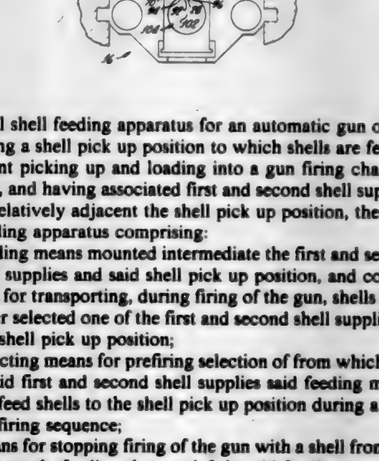
4,450,749

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING PEDALLING EFFECTS IN A PIANO PERFORMANCE

Wayne L. Stahnke, 11434 McCune Ave., Los Angeles, Calif. 90066

Filed Apr. 23, 1982, Ser. No. 371,306
Int. Cl.³ G10G *3/04*
U.S. Cl. 84—462 **19 Claims**

6. An apparatus for recording pedalling effects in a piano performance wherein the pedal of a piano is connected through trapwork to move a member through a given distance to affect the vibrating characteristics of the piano strings, said apparatus including, in combination:
(a) a transducing means coupled to said member for generating an electrical signal whose value varies as a function of the positions of said member as it moves through said given distance; and



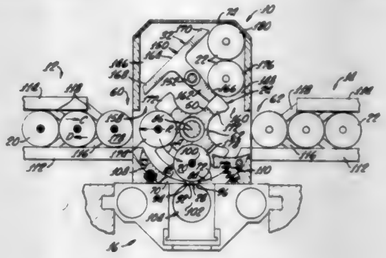
(b) a recording means including a recording medium connected to receive and record said electrical signal on said recording medium.

4,450,750

DUAL SHELL FEEDING APPARATUS, WITH SHELL ACCUMULATORS, FOR AUTOMATIC GUNS

Richard R. Gillum, Marblehead, Ohio, assignor to Ares, Inc., Port Clinton, Ohio

Filed Oct. 20, 1981, Ser. No. 313,221
Int. Cl.³ F41D *10/32*
U.S. Cl. 89—33 SF **19 Claims**



1. Dual shell feeding apparatus for an automatic gun or the like having a shell pick up position to which shells are fed for subsequent picking up and loading into a gun firing chamber for firing, and having associated first and second shell supplies located relatively adjacent the shell pick up position, the dual shell feeding apparatus comprising:
(a) feeding means mounted intermediate the first and second shell supplies and said shell pick up position, and configured for transporting, during firing of the gun, shells from either selected one of the first and second shell supplies to said shell pick up position;
(b) selecting means for prefiring selection of from which one of said first and second shell supplies said feeding means will feed shells to the shell pick up position during a next gun firing sequence;
(c) means for stopping firing of the gun with a shell from the shell supply feeding the gun left in said feeding means at said pick up position; and,
(d) shell accumulator means separate from said first and second shell supplies for removing, whenever feeding of

the gun is selectively changed by the selecting means from one shell supply to the other, from the feeding means said shell left therein and for storing said shell until the next time the selecting means reselects the shell supply corresponding to said stored shell and for thereupon transferring said stored shell back into said feeding means at said pick up position for feeding thereby to the gun.

4,450,751

FIRE LIMITER FOR AUTOMATIC FIREARMS WITH HAMMER BLOW DETONATION

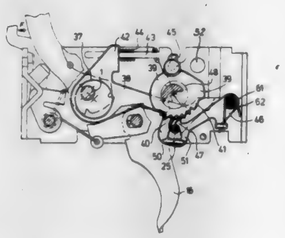
Paul Thevis, Oberndorf, Fed. Rep. of Germany, assignor to Heckler & Koch GmbH, Oberndorf, Fed. Rep. of Germany

Filed Apr. 30, 1982, Ser. No. 373,722

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120128

Int. Cl.³ F41D *11/10*

U.S. Cl. 89—129 B **15 Claims**



1. A fire limiting mechanism for an automatic firearm,
comprising a detonating hammer movable in opposite directions between cocked and fire positions,
a spring biasing said hammer toward said fire position,
a movable trigger for releasing said hammer from said cocked position for movement to said fire position,
a rotatable wheel ratchet having a plurality of ratchet teeth spaced apart by a predetermined interval,
an actuating pawl having a pivotal connection to said hammer and movable in opposite directions with said hammer,
said actuating pawl having a pawl tooth for engaging said teeth of said wheel ratchet to index said wheel ratchet through the interval of one tooth for each complete movement of said hammer in one direction,
a movable stop pawl having a spring for biasing said stop pawl against said wheel ratchet to maintain said wheel ratchet in its indexed position after being indexed by said actuating pawl,
fire disconnecting means operable to arrest said hammer in its cocked position, and
an element operable by said wheel ratchet after said wheel ratchet is indexed through a predetermined number of steps for actuating said fire disconnecting means to arrest said hammer in its cocked position,
said pivotal connection between said hammer and said actuating pawl being connected to said hammer at a location having a range of movement corresponding substantially with the interval between the teeth of said wheel ratchet whereby said actuating pawl transfers substantially the entire movement of said hammer at said location to said wheel ratchet during each complete movement of said hammer in one direction.

4,450,752

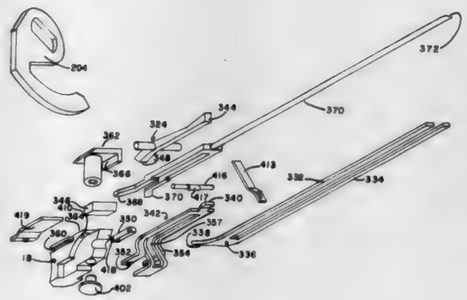
GAS OPERATED AUTOMATIC WEAPON

John S. Donovan, 16503 Santa Rosa, Detroit, Mich. 48221

Continuation of Ser. No. 47,464, Jun. 11, 1979, abandoned, which is a division of Ser. No. 874,114, Feb. 1, 1978, Pat. No. 4,210,060, which is a continuation-in-part of Ser. No. 829,716, Sep. 1, 1977, abandoned. This application Dec. 29, 1980, Ser. No. 220,539

Int. Cl.³ F41D *11/02*

U.S. Cl. 89—142 **2 Claims**



1. In an automatic weapon of the type having an automatically reciprocable bolt adapted to extract ammunition rounds from the chamber and force a new round into the weapon chamber and secure the round against rearward pressures created by firing of said round, said weapon having a mode selector lever movable to positions corresponding to automatic and semi-automatic fire,
means for latching said bolt in the rearward position of said bolt after extraction of said ammunition, the improvement comprising:
means responsive to said mode selector lever being in said position corresponding to automatic fire to cause said bolt to be latched in the rearward position upon cessation of fire; and to release said bolt after firing of a round with said mode selector lever in said semi-automatic fire;
selectively operable means including means responsive to said mode selector lever being moved to a release position other than said automatic or semi-automatic fire positions to cause release of said bolt from said latched rearward position to thereby enable manual release of said bolt after cessation of automatic fire.

4,450,753

ELECTRO-HYDRAULIC PROPORTIONAL ACTUATOR

Habil S. Basrai, Port Huron, Mich., and Ganesh Rajagopal, Richardson, Tex., assignors to Ford Motor Company, Dearborn, Mich.

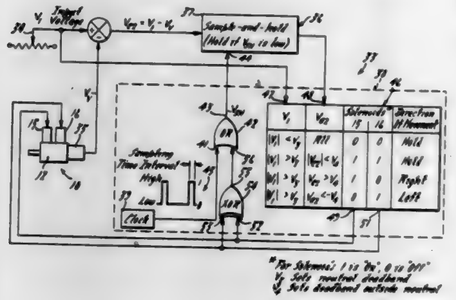
Filed May 12, 1980, Ser. No. 149,065

Int. Cl.³ F15B *21/02, 9/03, 9/09*

U.S. Cl. 91—35 **8 Claims**

1. An electro-hydraulic proportional actuator, comprising:
an actuator assembly having a double-acting, linearly-movable piston contained in a cylinder having a chamber at each end;
a pair of three-way solenoid valves each of which has an actuator port, an inlet port and an outlet port;
each end chamber of the actuator assembly cylinder being coupled to the actuator port of one of the valves,
and each valve inlet port being coupled through a check valve to a fluid pressure source and the return ports being coupled to each other with the fluid flow therefrom being routed to a flow control valve;
and an electronic control system for operating the solenoid valves to direct fluid flow into and out of the cylinder chambers, comprising:

an operator control means providing an input voltage representing a desired actuator assembly piston position,
a transducer means coupled to the actuator assembly to generate an output voltage representing the actual position of the piston,
the difference between the input and output voltages generating a difference signal representing the difference between the actual and desired positions of the piston,



a feedback system including a sample-and-hold circuit in a feedback path having an input to receive the difference signal,
and a clock logic means for transmitting the difference signal from the feedback system to the solenoid valves at predetermined intervals to activate either valve to move the actuator piston in either direction or to activate both valves to hold the piston at a desired position.

4,450,754

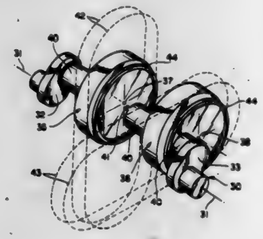
MECHANICAL ARRANGEMENTS FOR PISTON-CRANKSHAFT DEVICES

Jon L. Liljequist, 801 S. Elmhurst Ave., Mount Prospect, Ill. 60056

Continuation-in-part of Ser. No. 322,361, Nov. 16, 1981, Pat. No. 4,428,197, which is a continuation-in-part of Ser. No. 178,711, Aug. 18, 1980, abandoned. This application Feb. 7, 1983, Ser. No. 464,639

Int. Cl.³ F01B *9/00*

U.S. Cl. 92—138 **17 Claims**



1. In a device defining internally therein a piston chamber having an internal sidewall, said device also including a crankshaft having both an axis of rotation and an eccentric portion having another axis offset therefrom, the improvement comprising:
eccentric disc means moveably contained within said piston chamber and having a generally circular periphery that is in essentially continuous tangential contact with the piston chamber sidewall for receiving at least the major portion of the side force exerted by the sidewall;
said eccentric disc means being eccentrically mounted on said crankshaft for rotation relative thereto around its offset axis at the same angular speed as said crankshaft but in the opposite direction, said eccentric disc means also having a centroidal axis parallel to the crankshaft's offset axis so that the direction of movement of the eccentric disc within the piston chamber is at a 90° angle relative to the eccentric disc means' centroidal axis.

4,450,755

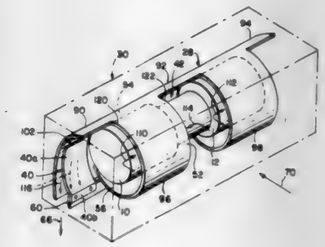
AIR BLOWER ARRANGEMENT FOR PRODUCING AIR SCREEN AND RELATED METHOD

Robert S. Catan, Smithtown, N.Y., assignor to Dynaforce Corporation, Old Bethpage, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,576

Int. Cl.³ F24F *9/00*

U.S. Cl. 98—36 **23 Claims**



17. A method comprising rotationally impelling air by a blower along a determinable, generally circular path while taking said air into said path from at least one axial direction and discharging the air tangentially of said path with an axial spread to form at least part of an air curtain having a width exceeding the breadth of said circular path, and blocking the air, which is being tangentially discharged and which is in the axial spread, from returning into said circular path while guiding the air along a tangential path, thereby to optimize the pressure of air in the curtain, the rotation of the air along said path by the blower being controlled by an open ended scroll having a first portion forming a cutoff zone with the blower, a second portion encircling the blower and a third portion extending from said second portion in a direction substantially parallel to a tangent to the blower, and also extending axially beyond the blower, to form a discharge outlet for the rotary flow of air, including said axial spread, conveyed through the scroll by the blower, the blocking of the air in the axial spread being effected by an interception plate which is radially spaced from the periphery of the blower and from the scroll so as to be radially positioned in entirety therebetween, in spaced relation from both, said interception plate formin and guiding the axial spread of air in a passage between the plate and the part of the scroll extending axially beyond the blower, whereat the plate is substantially parallel to and in juxtaposition with said third portion of the scroll at a relatively small spacing for peeling off the rotary air flow and conveying the same in said curtain for tangential discharge.

4,450,756

FUME EXHAUSTER DEVICE

Miguel Kling, Seestrasse 38, D-8131 Berg, Fed. Rep. of Germany

Continuation of Ser. No. 070,055, Aug. 27, 1979, abandoned. This application Jan. 4, 1982, Ser. No. 336,934

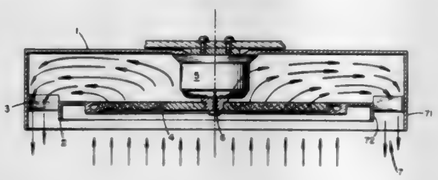
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837543

Int. Cl.³ F24F *9/00*

U.S. Cl. 98—115 R **17 Claims**

1. A fume exhauster device comprising means for generating an air current directed substantially axially, and for directing said air current concentrically surrounding said air current directed axially and having one axial flow-component directed

substantially opposite to the flowing direction of said air current directed axially and a second circulating flow-component surrounding said air current directed axially, characterized in that said means comprises a substantially annular exit opening defined at least along its outer periphery boundary by a peripheral surface extending in axial direction for forming said air current concentrically surrounding said air current directed axially into a cylindrical integral shroud, the outer diameter of which is substantially equal to the outer diameter of said exit opening.

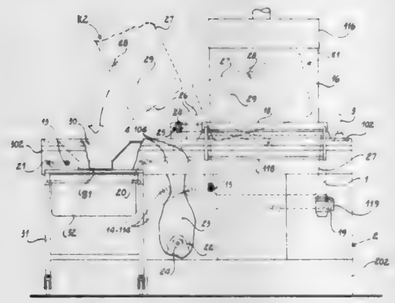


4,450,757

AUTOMATIC MACHINE FOR COOKING SOUP-PASTE, RICE, POT HERBS OR OTHER FOOD-STUFFS IN WATER

Po Alfio, Mantegna-Carpi, Italy, assignor to Angelo Po Grandi Impianti S.p.A., Carpi, Italy

Filed Sep. 20, 1982, Ser. No. 419,838
Int. Cl.³ A47J *27/18*
U.S. Cl. 99—327 **10 Claims**



1. An automatic machine for cooking food including soup-paste, rice or pot herbs, comprising:

a support structure having a base and an upper working plane;

an open cooking tank contained within said support structure above said base and below said working plane having an overflow duct;

a movable basket pivotally supported on said working plane;

water supply means for supplying water to said tank at a predetermined temperature;

at least one burner for heating water in said tank;

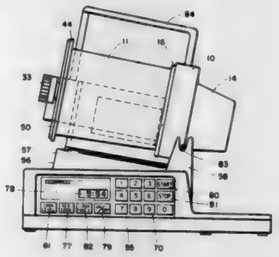
water circulation means associated with said tank and housed within said support structure for circulating cooking water at a predetermined temperature through said tank for intermixing with the water supplied by said water supply means and maintaining the temperature of the water in said tank at a predetermined temperature while maintaining the level of the cooking water at a predetermined level and forcing the water to exit through said overflow duct, for the removal of the cooking water in said tank, of particles suspended in the water including starch and scums through said overflow duct.

4,450,758

ROTARY COOKING DEVICE

Irving R. Belinkoff, 80-65 231st St., Bellerose Manor, N.Y. 11427, and Bruno Satkunas, 7 Oak Ridge Ave., Summit, N.J. 07901

Filed Jan. 4, 1982, Ser. No. 336,998
Int. Cl.³ A47J *27/62*
U.S. Cl. 99—332 **7 Claims**



1. In an automatic food cooker including a rotatable cooking vessel having an open end and a closed end, driving means for rotating the vessel, a lid for closing the open end of the vessel, a housing for containing the driving means and supporting the vessel, means carried by the housing for heating the vessel, and means for controlling the temperature of the heat applied to the vessel, the improvement comprising:

(a) a pivot assembly carried by the housing for engaging the lid of the vessel and securing the vessel in position on the housing for rotation by the driving means; and

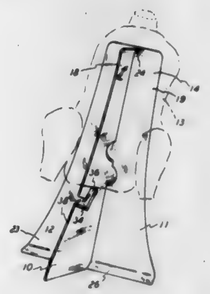
(b) means carried by the lid for engagement with the pivot assembly to permit rotation of both the lid and the vessel with respect to the pivot assembly.

4,450,759

STAND FOR FOWL ROASTING

James P. Steibel, 4822 - 57th Dr., Sturtevant, Wis. 53177

Filed Apr. 29, 1983, Ser. No. 489,724
Int. Cl.³ A47J *43/18*
U.S. Cl. 99—419 **5 Claims**



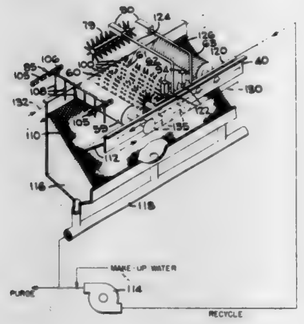
5. A stand for fowl roasting, comprising two plates of flat material having uniform thickness and being planar and uprightly disposed, said plates being positioned in respective vertical planes at an angle to each other and having upright slots therein and being slid into said slots of each other with said plates being in a crossed position and thereby present an uprightly self-standing combination of said two plates, said plates being slidable away from each other for disassembly, the upper ends of each said plates being narrower than the lower respective ends thereof for inserting into a cavity in a fowl, and at least one of said two plates including a portion offset from the plane of the remainder of said one plate, and with said portion being within the extent of the height of the other of said two plates and in abutment with said other of said two plates to thereby retain said two plates in their said crossed position and avoid collapsing of said two plates toward each other.

4,450,760

APPARATUS FOR REMOVING ROT FROM POTATOES

Donald C. Wilson, San Jose, Calif., assignor to PMC Corporation, Chicago, Ill.

Division of Ser. No. 331,092, Dec. 14, 1981, Pat. No. 4,394,398. This application Apr. 18, 1983, Ser. No. 486,165
Int. Cl.³ A23L *1/216*
U.S. Cl. 99—536 **13 Claims**



1. An apparatus for removing decayed portions from the exterior of potatoes, comprising:

a plurality of rollers forming a path for supporting and guiding said potatoes,

means for impelling said potatoes along said path formed by said rollers,

means defining a plurality of rubber fingers on a portion of said rollers for contacting substantially all surfaces of the potatoes with said rubber fingers with sufficient force to penetrate the decayed areas of the potato surface without damaging the flesh of sound portions of the potato,

nozzles for directing streams of water at said potatoes, said potatoes being positioned by said rollers to receive said streams over the entire surface of the potatoes; and

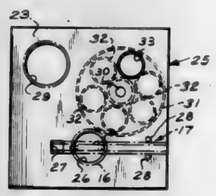
means for providing water to said nozzle means with sufficient pressure so that the resulting streams will disrupt and remove decayed portions opening to the surface of the potatoes while leaving the remaining surface area of the potatoes intact.

4,450,761

NUTCRACKER TABLE

Hillard W. Bailey, 754 Cravens Ave., San Antonio, Tex. 78223

Filed Mar. 21, 1983, Ser. No. 456,867
Int. Cl.³ A23N *5/00*
U.S. Cl. 99—580 **1 Claim**



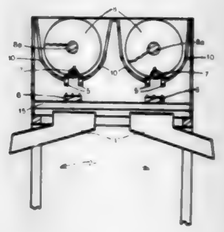
1. A nutcracker table, comprising, in combination, a table-top mounted upon a pair of legs having a stretcher cross-bar therebetween, and a wide foot at a lower end of each said leg; a first and second, spaced-apart, circular openings through said table-top for removably fitting flanged receptacles therein respectively to contain unshelled nuts and receive broken nut shell particles, a square opening and a pair of pegs on said table-top being located at opposite sides of said second opening for stationarily supporting a Texas Native Nutcracker therebetween and bridging across said second opening; and a rotatable, circular tray under said table-top supporting a plurality of receptacles and a third circular opening through said table-top for selective alignment with said tray-supported receptacles for receiving unshelled nuts.

4,450,762

ONION PEELING MEANS

Thomas P. Lustig, Wellington, New Zealand, assignor to Development Finance Corp. of New Zealand, Wellington, New Zealand

Filed Jun. 4, 1982, Ser. No. 385,011
Int. Cl.³ A23N *7/00*
U.S. Cl. 99—584 **10 Claims**



1. Apparatus for peeling an onion (as herein defined) by scorching the skin thereof, said apparatus including a bed to support the onion during said scorching, said bed comprising a plurality of spaced apart, substantially parallel rails;

a worm conveyor having a longitudinal axis and a helical periphery, means for rotatably mounting said worm conveyor with said longitudinal axis extending substantially parallel to said rails and with said periphery positioned relative to said rails whereby rotation of said worm conveyor will cause an onion supported by said rails to be conveyed along said rails; and

heating means for directing heat towards the onion being conveyed along said rails, said heating means being adjustable to provide heat of sufficient intensity for scorching the skin of the onion while being conveyed substantially the length of said rails.

4,450,763

APPARATUS FOR FORMING WIRE CONNECTION

Millard P. Saylor, 1125 W. Greenbrier, Arlington Heights, Ill. 60004

Continuation-in-part of Ser. No. 273,252, Jun. 12, 1981, abandoned. This application Jan. 21, 1983, Ser. No. 459,945
Int. Cl.³ B65B *13/28*
U.S. Cl. 100—31 **20 Claims**

1. An apparatus for automatically applying and connecting a continuous loop of wire to a bale of material comprising:

gripper means for gripping two end portions of overlapping sections of wire looped around the bale of material;

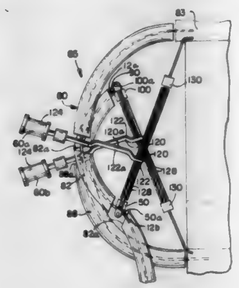
twister means operatively mounted to contact said wire at a pair of points spaced from the end portions;

looper means adapted to contact the wire at points intermediate of said gripper means and said twister means;

said looper means acting to swing the portions of said wire disposed between said looper means and said gripper means into adjacent relationship with the remaining portion of the wire between said gripper means and said

twister means to form a pair of loops upon release of the wire by said gripper means;

said looper means being arranged to cause said formed loops of wire to interconnect; and



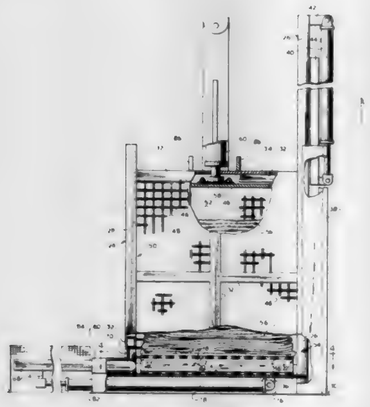
said twister means acting to contact an area of said adjacent wire portions forming said loops and twisting some of said adjacent portions together to form a connection.

4,450,764

HIDE PRESS AND METHOD FOR SHIPPING HIDES

Preston D. Montgomery, c/o Multiple Systems, Inc., P.O. Box 15025, Amarillo, Tex. 79105

Filed Aug. 27, 1982, Ser. No. 412,265
Int. Cl.³ B30B *9/02*
U.S. Cl. 100—37 **15 Claims**



13. The process involving pallets having:

a. a top adapted to hold animal hides,

b. a flat bottom,

c. at least one void between the top and bottom that is accessible through at least one side opening therebetween,

wherein the improved method of shipping animal hides comprising the steps of:

d. stacking wet hides on one of the pallets,

e. placing the pallet with the wet hides within a container having vertical sides, a flat bottom plate, and flat top plate,

f. compressing the hides on the pallet by

g. pressing the pallet and hides between the bottom and top plates within the vertical sides until a selected pressure on the hides is obtained,

h. maintaining the selected pressure for a desired period, thereby

i. squeezing liquids from the wet hides,

ii. compacting the hides into cohesive bundles, thus

j. forming bundles of hides on the pallets with flat vertical sides and flat tops,

k. removing the pallets with the dryed, compacted, formed hide bundles thereon from the container,

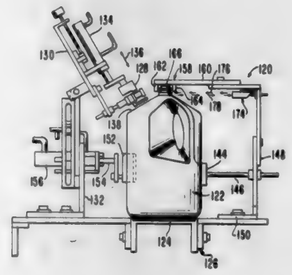
l. stacking the pallets and hide bundles on top and close beside one another for shipment.

4,450,765

APPARATUS FOR BRANDING MILK CARTONS

Roger C. Van Steenkiste, 5012 Forni Dr., Concord, Calif. 94520

Continuation of Ser. No. 282,831, Jul. 13, 1981, abandoned. This application Oct. 25, 1983, Ser. No. 546,061
Int. Cl.³ B41F *17/24*
U.S. Cl. 101—11 **1 Claim**



1. Apparatus for marking a plurality of plastic containers one-by-one with each container having a neck and a flat side wall comprising: a conveyor for supporting and moving the containers in upright positions along a predetermined path; means for applying indicia to each container, respectively, when the container is at a predetermined location along the path, said applying means including a heated die having indicia thereon, means including a tiltable support plate on one side of the conveyor for mounting the die for movement transversely of said path and toward and into heat exchange relationship with the side wall of a container to be branded with the indicia on the die, and a flexible inked web between the die and a container at said predetermined location for transferring ink from the web to the branded portion of a container at said predetermined location, said die being engageable with one side of a segment of the web and operable to shift said web segment into engagement with a container at said predetermined location, there being means coupled with the web for incrementally advancing the web past the die; means including a reciprocal rod on the opposite side of the conveyor from the applying means for releasably holding the neck of a container at said predetermined location against movement relative to the applying means as the conveyor supports the container and as the container is branded by the die; and second holding means including a pair of holding members on opposite sides of the conveyor for engaging the side wall of a container at said predetermined location, one of the members being shiftable, the other member being fixed.

4,450,766

UNIT-TO-UNIT REGISTER ADJUSTING APPARATUS OF MULTICOLOR PRINTING MACHINE

Takehiro Inomata, Ibaragi, and Nobuya Oyabu, Chiba, both of Japan, assignors to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,597
Claims priority, application Japan, Jul. 21, 1981, 56-114273
Int. Cl.³ B41F *5/02, 7/06*
U.S. Cl. 101—183 **13 Claims**

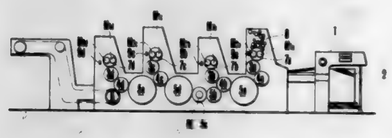
1. A unit-to-unit register adjusting apparatus of a multicolor printing machine including a plurality of plate cylinders, said apparatus comprising:

a single substantially triangularly shaped register mark applied to respective plate cylinders, each register mark having a first side extending laterally of axial direction of a plate cylinder and a second inclined side extending downwardly to an end of said first side;

a register mark detector including a projector for projecting light on said register mark and a light receiver for receiving light reflected by said register mark such that said register mark detector generates an output signal including an output pulse corresponding to the alignment of said register mark detector with said register mark as said plate cylinder rotates;

a rotary encoder rotating in synchronism with respective plate cylinders for generating a reference signal having a reference pulse and a rotation signal having a rotation pulse, said rotation pulse having a period shorter than that of said reference pulse;

an input unit comprising gain control means for controlling said output pulse of said register mark detector to have a predetermined peak value, and signal processing means



for differentiating an output of said gain control means for producing a differentiated signal having a leading edge pulse and a trailing edge pulse corresponding to leading and trailing edges of the output of said gain control means, respectively;

time difference detecting means responsive to time differences between said leading edge pulse and said rotation pulse and between said trailing edge pulse and said rotation pulse for generating a leading edge time difference signal and a trailing edge time difference signal;

integrating means provided for said time difference detecting means for independently integrating said leading edge time difference signal to generate a leading edge integrated signal and said trailing edge time difference signal to generate edge integrated signal;

first adjusting means responsive to said leading edge integrated signal for adjusting the relative phase angles of respective plate cylinders in the peripheral direction; and

second adjusting means responsive to said trailing edge integrated signal for adjusting lateral positions of respective plate cylinders.

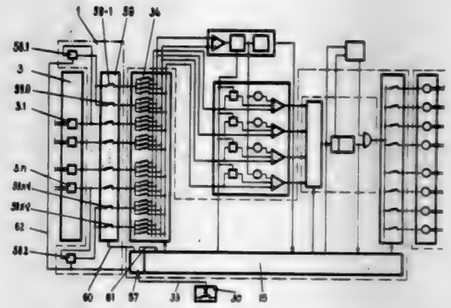
4,450,767

REMOTE CONTROL SYSTEM FOR INK ZONES IN PRINTING MACHINES

Karl-Heinz Förster, Dresden; Hans Johne, Radebeul; Helmut Schuck, Coswig, and Ludwig Friedrich, Dresden, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 451,546, Dec. 21, 1982. This application Jan. 20, 1983, Ser. No. 459,620
Int. Cl.³ B41F *31/04*
U.S. Cl. 101—365 **2 Claims**

1. In a control system for adjusting an ink zone in a printing machine, including a continuous ink blade, a series of setting keys engaging the blade, a key setting unit including a plurality of setting drives and a plurality of key position sensors assigned respectively to the keys, a first multiplexer for sequentially switching over the position values measured by the position sensors, a second multiplexer for selectively activating said setting drives, a single drive control unit connected to said second multiplexer, a comparing differential transducer for comparing during an adjusting cycle, consecutive pairs of values measured by the position sensors, a calculating unit for calculating correction values when the output from the differential transducer exhibits a predetermined limit value, a main ink flow control unit connected to said first and second multiplexers, to said calculating unit, and to said drive control unit, and an additional adjusting device comprising a switching unit arranged between said first multiplexer and said key position sensors to apply actual measured value from said sensors via said first multiplexer to the comparing differential transducer



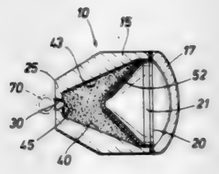
and to the calculating unit, said switching unit including additional contacts assigned to imaginary position sensors adjoining the position sensors, a 23 pair of sample-and-hold members each having an input connected to said position sensors, and an output connected to said additional contacts of the switching unit, and an auxiliary ink flow control unit triggered by a release circuit for activating at the beginning of an adjusting cycle said sample-and-hold members and said switching unit.

4,450,768

SHAPED CHARGE AND METHOD OF MAKING IT

William T. Bell, Sugarland, Tex., assignor to Schlumberger Technical Corporation, Houston, Tex.

Continuation of Ser. No. 224,588, Jan. 12, 1981, abandoned. This application Mar. 25, 1983, Ser. No. 479,063
Int. Cl.³ F42B *3/08*
U.S. Cl. 102—307 **8 Claims**



1. A method for fabricating a shaped charge, comprising:

(a) forming a hollow case having a rear wall and an open end opposite the rear wall,

(b) forming a detonating bore in the rear wall of the hollow case,

(c) forming an outwardly convex end in the detonating bore,

(d) loading explosive powder material into the case substantially only through the open end thereof, and

(e) compacting the explosive material within the case into a shaped charge, through the open end thereof and toward and against the rear wall thereof, to cause a portion of the explosive to enter the detonating bore and the convex end thereof and be less compacted and less dense in the convex end than in substantially the remainder of the explosive within the hollow case, for increased sensitivity and better and more reliable detonation of the shaped charge.

7. A shaped charge, comprising:

a charge casing having side wall portions and a rear wall

portion defining an inner cavity with a frontal opening therein,

wall portions defining a detonating bore through said rear wall portion wherein said bore has a decreasing cross-sectional area proximate to said inner cavity,

whereby the loading of explosive material into said inner cavity through said frontal opening and the compacting of the explosive material through said frontal opening and toward said rear wall portion will define a compacted portion of explosive material adjacent said rear wall portion while simultaneously introducing a portion of the explosive material into said detonating bore and beyond said portion of said detonating bore having the decreased cross-sectional area, and whereby the increased area for the explosive material will result in at least a partial dispersion of the explosive material so as to lessen the density of the explosive material therein and thereby increase the sensitivity of the shaped charge.

4,450,769

DUMMY AMMUNITION

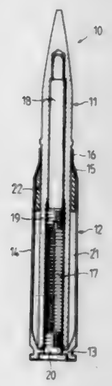
Franz Moser, Fehraltdorf, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon Bührle AG, Zurich, Switzerland

Filed Jun. 1, 1982, Ser. No. 383,817

Claims priority, application Switzerland, Jun. 24, 1982, 4173/81

Int. Cl.³ F42B *5/22*

U.S. Cl. 102—444 **5 Claims**



1. A dummy cartride comprising:

a cartridge case containing a case floor portion, a substantially cylindrical case wall, a substantially conical shoulder portion and a mouth portion;

a dummy body member inserted into the cartridge case and bearing against the case floor portion;

said dummy body member having opposed ends;

means for securing one end of said dummy body member to said floor portion of said cartridge case;

a further portion of said dummy body member being attached to said mouth portion of said cartridge case;

said dummy body member possessing a substantially cylindrical axially directed hollow compartment which is open towards said case floor portion; and

an axially displaceable trim body inserted into said hollow compartment, in order to axially displace the position of the center of gravity of the dummy cartridge while maintaining its weight.

4,450,770

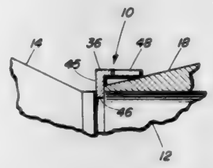
PIVOT RING FOR A DISCARDING SABOT

Richard D. Kirkendall, Havre de Grace; William H. Drysdale, Aberdeen, and Louis D. Kokinakis, Fallston, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 184,715, Sep. 8, 1980, abandoned. This application Jan. 31, 1983, Ser. No. 462,288

Int. Cl.³ F42B *13/16*

U.S. Cl. 102—523 **8 Claims**



1. A mechanism for controlling the discard of a sabot from a subprojectile, said sabot having a forward end including a pocket and a rearward end and having at least two components, said sabot having a maximum outside diameter which comprises:

a separate ring-like holding means fixing the location of said sabot in peripheral pivotal contact at its rearward end with said subprojectile, and

a groove-like means in and around the periphery of said subprojectile, for affixing said ring-like holding means thereto; wherein said ring-like holding means has a smaller diameter than said maximum outside diameter of said sabot and has an interior leg and an exterior leg, said exterior leg holding the rearward end of said sabot in contact with said subprojectile and said interior leg being disposed in said groove-like means, thereby sealing the interface of the rearward end of said sabot with said subprojectile to prevent leakage of propellant gases through said interface, whereby when the subprojectile and sabot leave the gun muzzle, aerodynamic forces act on the sabot pocket to lift the forward ends of the sabot components from the subprojectile, while the rearward ends of the sabot components are restrained against radial and axial movement by said ring-like holding means and pivot about said holding means.

4,450,771

MOBILE BALLAST CLEANING MACHINE

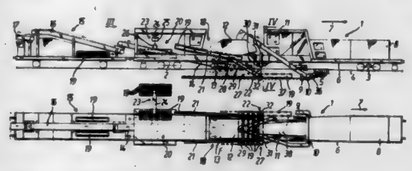
Josef Theurer, Vienna, and Karl Fölser, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 29, 1982, Ser. No. 343,527

Claims priority, application Austria, Mar. 4, 1981, 1006/81

Int. Cl.³ E01B *27/10*

U.S. Cl. 104—1 R **9 Claims**



1. A mobile ballast cleaning machine comprising

(a) a frame mounted on two undercarriages for mobility along a track supported on the ballast resting on a subgrade,

(b) a ballast excavating means mounted on the frame between the two undercarriages for removing ballast from under the track to expose the subgrade,

(c) a ballast screening means arranged on the frame to receive the removed ballast from the ballast excavating means and to discharge cleaned ballast and waste,

(d) conveyor band means for carrying away the waste and for redistributing the cleaned ballast, the ballast redistributing conveyor band means having a discharge end and an exposed subgrade zone being defined between the ballast excavating means and the discharge end for laying a succession of rigid foam plates on the exposed subgrade, and

(e) apparatus for handling the rigid foam plates, the apparatus including

(1) a plate receiving and transfer station,

(2) an elongated plate conveying path extending from the station to the zone for conveying successive ones of the plates in a direction substantially parallel to the track, and

(3) a plate turning and laying mechanism in said zone receiving the successive rigid foam plates from the conveying path, for turning the plates and for laying the turned plates successively in said zone under the track in a position extending transversely to the track.

4,450,772

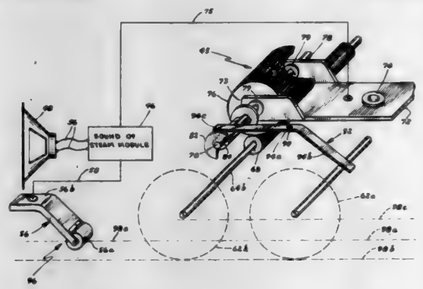
TENDER-MOUNTED SOUND SYSTEM FOR TOY STEAM LOCOMOTIVE

James R. Van Sickle, New Baltimore, Mich., assignor to CPG Products Corp., Minneapolis, Minn.

Filed Jan. 27, 1982, Ser. No. 343,126

Int. Cl.³ A63H *17/34*; B60L *1/00*

U.S. Cl. 104—295 **12 Claims**



1. In combination, a toy steam locomotive comprising first wheel means including at least one pair of laterally spaced wheels of one diameter, a tender for said locomotive including second wheel means including at least one pair of laterally spaced wheels of another diameter, sound generating means carried on said tender, switch means in circuit with said sound generating means, and means mechanically connected to said second wheel means for opening and closing said switch means to energize and de-energize said sound generating means in a synchronized relation with the rotation of said first wheel means, said means for opening and closing said switch means including a first rotatable member of one diameter and a second rotatable member of another diameter, the ratio of said last-mentioned diameters being inversely proportional to the ratio of the diameters of said first and second wheel means.

4,450,773

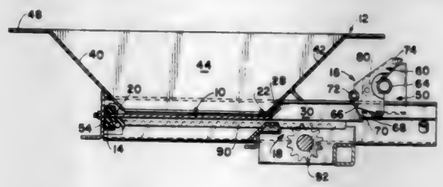
SLIDING GATE FOR A RAILROAD HOPPER CAR

William E. Fritz, Naperville, Ill., and Ronald J. McComb, Youngstown, Ohio, assignors to The Youngstown Steel Door Co., Cleveland, Ohio

Filed Jan. 23, 1981, Ser. No. 227,861

Int. Cl.³ B61D *7/20, 7/22, 7/26*

U.S. Cl. 105—282 A **6 Claims**



1. A slide gate assembly for a railroad hopper car comprising:

a closure door adapted for selectively closing a bottom discharge opening in an associated hopper car, the closure door having a front portion, a rear portion, and opposed side portions;

a support assembly in which the closure door is mounted adjacent its side portions for horizontal movement between open and closed positions, the support assembly being adapted for mounting to the underside of an associated hopper car;

an automatic locking means for automatically locking the closure door in the closed position, the locking means including first and second dog means connected by an axle pivotally mounted on the support assembly, the dogs and the closure door rear portion having complimentary engaging surfaces to lock the closure door in the closed position, the dogs being biased by gravity toward orientations in which the complimentary engaging surfaces are in engagement; and,

a connecting rod extending between the first and second dog means displaced from and generally parallel to the axle.

4,450,774

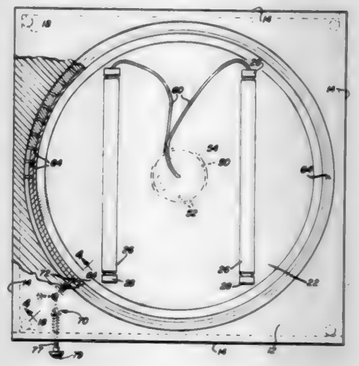
DRAFTING AND DRAWING TABLE

Johnny L. Weaver, 13555 McCall Ct., NE., Albuquerque, N. Mex. 87123

Filed May 20, 1982, Ser. No. 380,465

Int. Cl.³ A47B *11/00*

U.S. Cl. 108—23 **8 Claims**



1. A drafting table assembly comprising a tabletop having a generally planar work surface and having an enlarged circular opening therein, a flat circular disc disposed in said opening in coplanar relation to the tabletop, the circular disc and the

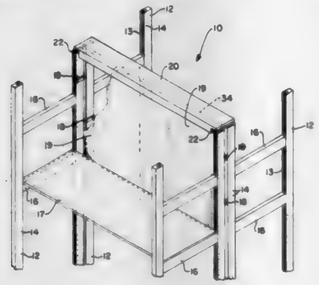
tabletop having convex-concave interfacing elements therebetween, a retractable pin within the tabletop for engaging with one of a series of equally spaced pin receiving holes disposed along the interfacing element of the circular disc, an actuating rod extending from one edge of the tabletop for controlling engagement of the pin with said holes, the actuating rod being disposed at an angle to the pin on one side of a plane containing the longitudinal axis of the pin, first linkage means connected between an inner end of the rod and an outer end of the pin, an anchoring means disposed in the tabletop on the opposite side of said plane, and second linkage means connected between the anchoring means and the outer end of the pin, the first and second linkage means effecting withdrawal of the pin from one of said holes responsive to outward movement of the actuating rod in relation to said edge of the tabletop.

4,450,775

MERCHANDISE DISPLAY DEVICE

David A. Brendle, 525 E. Bluebonnet La., Hoffman Estates, Ill. 60195

Filed Jan. 17, 1983, Ser. No. 458,661
Int. Cl.³ A47B *47/00*
U.S. Cl. 108—64 **3 Claims**



1. A display device, comprising:
at least four pairs of upright members, each pair having two uprights adjoined by braces extending between facing edges thereon, each upright of said pair having a groove along said facing edge;
a plurality of retainer clips securing said upright pairs in series fashion, forming thereby two units of two pair each;
a gondola cap joining said units in parallel array, having a tang at each end friction fitted into the said grooves of said uprights joined by said retainer clips; and
at least a shelf secured in horizontal fashion to one of said braces in each of said units.

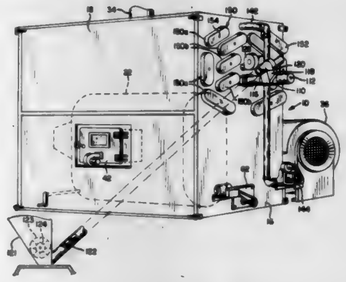
4,450,776

INDUSTRIAL FURNACE

Robert L. Stevenson, 9003 West Evans, Rogue River, Oreg. 97537

Filed Jun. 10, 1983, Ser. No. 503,342
Int. Cl.³ F23B *7/00*
U.S. Cl. 110—233 **10 Claims**

1. An industrial furnace comprising
a firebox defined by side and end walls, a top wall, and a floor having a solid fuel supporting grate assembly,
an opening in said top wall vertically aligned over said grate,
a tubular member having an inlet disposed exteriorly of said furnace and an outlet in communication with said top wall opening,
means at the inlet of said tubular member for admitting a solid fuel in particle form,
a power driven auger in said tubular member arranged to move solid fuel particles from said inlet to said outlet for deposit by gravity on said grate,
a heating chamber above said firebox having a top wall and end and side walls,
forced air means forcing air from an exterior inlet through said heating chamber to an outlet for heating use,
an outlet stack supported on said heating chamber,
heat exchange means communicating with said firebox and circulating through said heating chamber to said stack for discharging heat exchanged exhaust gases for heating the moving air in said heating chamber,



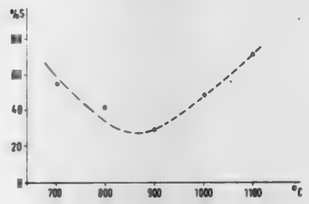
controllable volume forced air draft means leading inwardly from the exterior of said furnace and directed upwardly through said grate for forcing combustion,
and controllable volume forced air inlet means leading from the exterior of said furnace to said stack to provide an induced draft up said stack to aid combustion and circulation of products of combustion through said heat exchange means.

4,450,777

PROCESS FOR REMOVING NOXIOUS SUBSTANCES CONTAINING FLUORINE AND/OR SULFUR FROM GASEOUS OR LIQUID MEDIA

Erhard Wolfrum, Düren; Manfred Erken, Bergheim-Niederaussem, and Dietrich Böcker, Brühl, all of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke AG, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 305,246, Sep. 24, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 487,236
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1980, 3036504
Int. Cl.³ F23G *7/06*; F23B *7/00*
U.S. Cl. 110—342 **6 Claims**



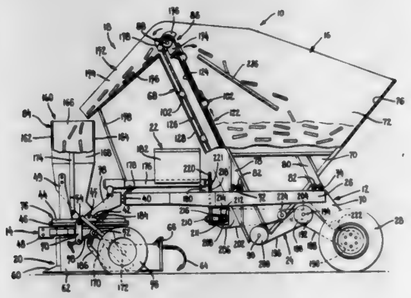
1. A process for removing pollutants containing fluorine and/or sulfur from gaseous or liquid media by adsorping the pollutants on coke and subsequently incinerating the coke, characterized in that the coke to be charged with pollutants is produced from lignite (brown coal) inherently containing alkaline ash compounds finely distributed therein, and the degree to which the coke is charged is determined such that the subsequent combustion of the coke at temperatures between 700 degrees and 1050 degrees Centigrade causes the pollutants to be bound by chemical combination with the alkaline ash components in the ash.

4,450,778

SUGAR CANE BILLET PLANTER

Donald J. Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/AU80/00037, 371 Date Mar. 22, 1982, 102(e) Date Mar. 22, 1982, PCT Pub. No. WO82/00399, PCT Pub. Date Feb. 18, 1982
PCT Filed Jul. 25, 1980, Ser. No. 364,939
Int. Cl.³ A01C *11/00*
U.S. Cl. 111—3 **7 Claims**



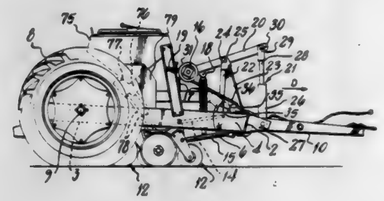
1. A sugar cane billet planter including a frame, a hitch assembly on the frame for attaching the frame to a draft vehicle, a sugar cane billet hopper mounted on the frame and a billet metering mechanism characterized by a billet delivery assembly mounted on the frame capable of delivering billets to a furrow in the soil and an endless chain and slat conveyor mounted on the frame capable of conveying billets out of the hopper and delivering them to the cane billet delivery assembly, and including an upper roller with projection means that extend outwardly from the axis of rotation of the upper roller past the endless chain and between the slats and capable of doffing excess billets from the slats.

4,450,779

SEED DRILLS

Alfred J. Bailey, Coventry, United Kingdom, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/GB82/00009, 371 Date Sep. 20, 1982, 102(e) Date Sep. 20, 1982, PCT Pub. No. WO82/02471, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 15, 1982, Ser. No. 420,181
Claims priority, application United Kingdom, Jan. 21, 1981, 8101726
Int. Cl.³ A01C *5/06*
U.S. Cl. 111—52 **6 Claims**



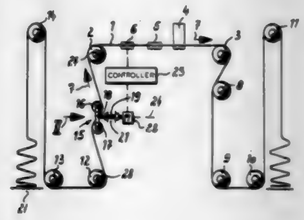
1. A seed drill comprising a frame, a series of coulters mounted on the frame at positions which are spaced apart in a transverse direction relative to the direction of operative forward motion of the drill, and actuating means comprising a beam that extends in a transverse direction, thrust transmitting means connected between the beam and the coulters, and thrust applying means connected between the frame and the beam to move the beam downwards; said thrust applying means comprising at least two levers pivotally mounted on the frame with a common pivot axis extending in a transverse direction spaced from said beam and with at least one lever connected to an intermediate region in the depth of the beam, bearing means at the end of each lever that rotatably supports the beam so as to allow rotation of the beam about its longitudinal axis and tilting of the beam end-to-end relative to the levers, and actuator means connected between the frame and each lever.

4,450,780

FEEDER FOR AUTOMATIC SELVEDGING APPARATUS

Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale KG, Ochtrup, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,869
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227197
Int. Cl.³ D05B *35/00*
U.S. Cl. 112—147 **8 Claims**



1. In combination with an apparatus which folds over and stitches the longitudinally extending and transversely spaced edges of an elongated textile web, and which comprises:
a pair of longitudinally spaced and transversely throughgoing main rolls rotatable about respective parallel axes;
guide and drive means for passing the web longitudinally and continuously from one of the main rolls to the other main roll in a travel direction perpendicular to the roll axes and with the web spanned tightly longitudinally between the main rolls and lying generally in a plane with its edges generally parallel;
means between the upstream and the downstream main roll for folding over the edges of the web; and
sewing means between the folding means and the downstream main roll for stitching together the folded-over web edges;
a feeding apparatus comprising:
at least one straight guide spaced upstream from and substantially parallel to the upstream main roll, the web passing over the guide and thence to the upstream main roll;
a support between the guide and the upstream roll and pivotal about an axis transverse to a plane defined by the straight guide and upstream main roll axis;
an upstream and a downstream deflecting roll carried on the support and rotatable about respective at least generally parallel axes flanking the support axis, the web being spanned over and passing between the deflecting rolls; and
means for pivoting the support and deflecting rolls about the support axis for laterally deflecting the web thereat.

4,450,781

THREAD WIPING MECHANISM

Francis A. Wickers, and Adolph S. Dorosz, both of Beverly, Mass., assignors to USM Corporation, Farmington, Conn.

Filed Apr. 1, 1982, Ser. No. 364,495
Int. Cl.³ D05B *65/06*, *49/00*
U.S. Cl. 112—262.1 **14 Claims**

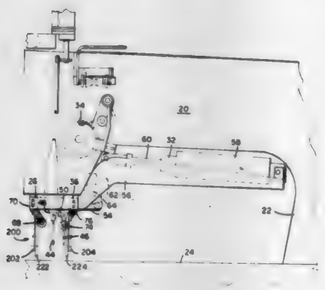
1. A thread wiping mechanism for a sewing machine having

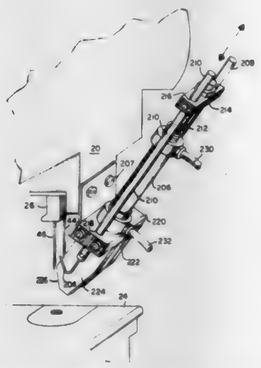
a plurality of shuttleable needles thereon, which wiping mechanism is employed to retract the threads of any needle which is inactive in said machine comprising:

a needle holder assembly slidably arranged on a sewing machine head;

a thread wiper arranged to remove any thread from any inactive needle out of the sewing path of any active needle.

10. A method of removing thread of an inactive needle from the sewing path of an active needle in a shuttleable multiple needle sewing machine comprising:





providing an actuatable reciprocable thread wiping mechanism adjacent the shuttleable needle mechanism on the sewing machine;

actuating said thread wiping mechanism so as to extend a wiping finger beneath its needle;

shuttling said shuttleable multiple needle mechanism in a support wherein a needle is shifted from an active position to an inactive position and a needle is shifted from an inactive position to an active position.

4,450,782

NEEDLEWORK FLOWER STITCH

Liliana Tortell, 3524 E. Avenue R, #113, Palmdale, Calif. 93550

Filed Jun. 24, 1983, Ser. No. 507,521

Int. Cl.³ D05B *97/00*

U.S. Cl. 112—266.1 **3 Claims**

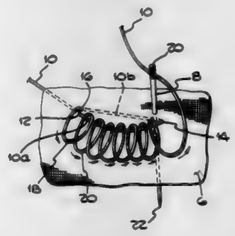
1. A method for forming a third dimensional scallop stitch which comprises:

forming one end of a bar of thread on a piece of cloth by passing a threaded needle through the cloth from the back of the cloth,

forming the other end of the bar by passing the threaded needle through the cloth from the front of the cloth a predetermined distance from said one end of said bar of thread,

providing a petal-like unit by forming loops about the bar of thread by passing the threaded needle repeadedly under and around the bar of thread and above said cloth whereby said loops are secured only to said bar of thread.

and continuing the formation of loops on the bar of thread until the portions of the loops immediately adjacent the bar of thread are confined between the end of said bar of thread in close relationship to each other,



free portions of said loops remote from said bar of thread being relatively unconfined and disposed generally along a line longer than that of said bar of thread,

whereby the confined portions of the loop will cause the free loop portions of the petal-like unit to tend to stand away from the cloth carrying the bar of thread.

4,450,783

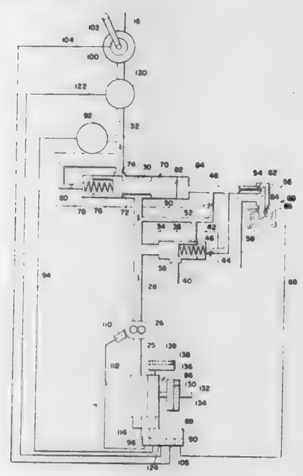
ELECTRONICALLY CONTROLLED FUEL PUMP

Corydon E. Morris, and Salim A. Jaliwala, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 30, 1982, Ser. No. 430,899

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—458 **7 Claims**



1. In a fuel system for an internal combustion engine having injectors which meter fuel to said engine as a direct function of fuel pressure, a fuel pump comprising,

pump means for pressurizing a source of fuel,

electronic control means for generating an electrical signal as a function of selected control inputs, and

means for regulating the output pressure of said pump means comprising,

means responsive to said electrical signal for establishing a control pressure,

means responsive to the control pressure for regulating the supply pressure of said pump means to a predetermined level above the control pressure; and

means responsive to the control pressure for further regulating the regulated supply pressure to a predetermined output level below the control pressure, said fuel pump outlet pressure level being the level necessary for operation of the injectors,

whereby excessive pressurization of the pump output is minimized.

4,450,784

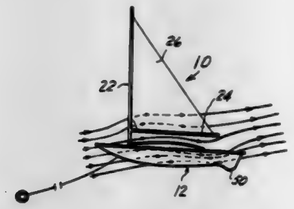
HAND-CARRYABLE FLYING SAILBOAT

Ellis Mellinger, Hermosa Beach, Calif., assignor to Llumar Star Kites, Pacoima, Calif.

Filed Feb. 16, 1982, Ser. No. 348,848

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—39 **31 Claims**



1. Hand-carryable flying sailboat for kite and water sports, comprising a rigid, lightweight frame, kite string and bridle attachment means carried by said frame, and including port and starboard hull members and fore and aft crossbars extending therebetween, sheet material supported by said frame in lifting surface-defining relation, and an upright sail assembly cooperating with said frame means to maintain a lifting surface shape in said sheet material; said frame, sail and sheet material being relatively proportioned in weight, shape and area such that the sailboat sails on water and flys in the air for use as a kite.

30. The combination of a hand-carryable flying sailboat bracket and kite dowels, said bracket retaining said dowels securably for flight, said bracket comprising a generally planar, triangular perimeter, molded plastic web formed by plural, apex-intersected, dissimilar size triangles, tubular sleeves defined by said triangles to be open-walled in the plane of the web, said dowels being received in passing relation by said sleeves beyond the plane of said web and a side edge margin-stiffening rib between said sleeve open wall and said web perimeter.

4,450,785

APPARATUS FOR COATING OBJECTS ELECTROSTATICALLY

Roland A. Meisner, Schorndorf, Fed. Rep. of Germany, assignor to BASF Farben +Fasern AG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 234,193, Feb. 13, 1981, abandoned.

This application Mar. 17, 1983, Ser. No. 474,275

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005678

Int. Cl.³ B05B *5/02*; B05C *5/02*

U.S. Cl. 118—626 **8 Claims**

1. In an apparatus for electrostatically coating an object using electrostatically charged powder grains, comprising:

(a) means for feeding an air-powder mixture to a spray bell having a spray head;

(b) means on said spray bell for fanning out the flow of said air-powder mixture;

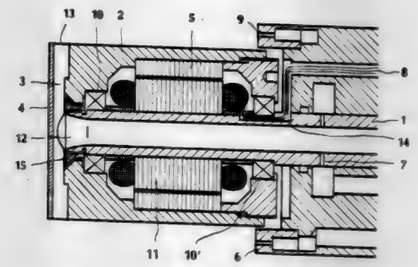
(c) means for centrifuging said powder grains off said spray head;

(d) means for applying an electric field between said spray bell and said object and

(e) means for conveying said powder grains onto said object to be treated;

the improvement comprising:

(f) a fixed hollow shaft (1) defining a central supply line for fluidized flow of said air-powder mixture and said means for feeding:



(g) said spray bell (2) adapted for rotation about said hollow shaft and sucking said fluidized flow;

(h) a plurality of first compressed air nozzles (7) passing radially into said hollow shaft for control of said fluidized flow; and

(i) further comprising a nozzle ring (6) having a plurality of second compressed air nozzles (9) positioned parallel to said hollow shaft and defining said means on said spray bell for fanning out.

4,450,786

GROOVED GAS GATE

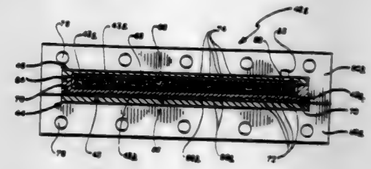
Joachim Doehler, Union Lake; David A. Gattuso, Pontiac, and Kevin R. Hoffman, Sterling Heights, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 407,983, Aug. 13, 1982, Pat. No. 4,438,724. This application Feb. 16, 1983, Ser. No. 466,995

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—719 **16 Claims**



1. In a gas gate which includes a relatively narrow passageway adapted to (1) operatively interconnect a pair of adjacent deposition chambers and (2) substantially reduce diffusion from the first of the pair of chambers to the second of the pair of chambers; means providing for the passage of substrate material from one of the pair of chambers wherein a first semiconductor layer is adapted to be deposited onto a surface thereof, and into the other of the pair of chambers wherein a second semiconductor layer is adapted to be deposited atop the first layer; means associated with at least the first and second chambers for maintaining preselected pressures therein; and means urging the unlayered surface of substrate material toward a passageway wall; the improvement comprising, in combination:

groove means formed in the passageway wall toward which the unlayered surface of substrate material is urged, said groove means being substantially coextensive with the length of the passageway so as to operatively interconnect

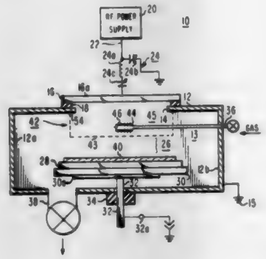
the adjacent chambers, whereby gas flow is established through the passageway slit defined by the space between the gas gate passageway wall having groove means formed therein and the unlayered surface of substrate material for substantially reducing diffusion from the first to the second of the chambers.

4,450,787

GLOW DISCHARGE PLASMA DEPOSITION OF THIN FILMS

Herbert A. Weakliem, Pennington, and John L. Vossen, Jr., Bridgewater, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 29, 1984, Ser. No. 386,686
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—723 **6 Claims**



1. In a plasma deposition reactor apparatus having a reaction chamber for depositing a thin film of material on a substrate surface from a reactive radio frequency (RF) glow discharge, comprising a cathode connected to an RF power supply, and an anode for establishing a glow discharge region, characterized by:

means for confining the RF field from said RF power supply to a region within said chamber comprising said cathode and said anode to confine thereby a glow discharge of a reactive gas in said region;

said confining means including a perforated screen electrically connected to said anode and positioned between said anode and said cathode to confine the glow discharge in the region between the cathode and the screen said screen having openings which will permit diffusion of reactive gas species to said substrate;

means for positioning a substrate near said screen but not in said glow discharge region; and

means for conducting reactive gas into the glow discharge region;

said gas means including a distribution head coupled to a source of reaction gas and positioned centrally within the glow discharge region.

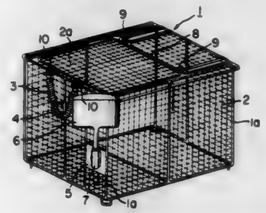
4,450,788

CAGE FOR REARING SMALL ANIMALS FOR EXPERIMENTS

Motohiro Niki, Tokyo-To, Japan

Filed May 20, 1982, Ser. No. 380,308
Claims priority, application Japan, May 30, 1981, 56-80092
Int. Cl.³ A01K *7/00*
U.S. Cl. 119—18 **4 Claims**

1. In a cage for rearing small animals which has an access door and walls, the combination therewith of a water dispensing device comprising a mounting plate fixed to a wall to cover an opening in the wall and having a vertical elongated hole, a straight holding tube of uniform cross section inserted through the elongated hole and fixed to the mounting plate at the two longitudinal edges of the hole with an inclined orientation such that the holding tube extends obliquely upward outside the cage and obliquely downward inside the cage, and a water dispenser made up of a water container and a spout projecting from the container and terminating at a dispensing end, said spout being removable and slidably inserted from outside the



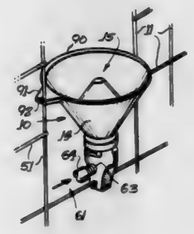
cage through the holding tube and held in mounted state with the dispensing end thereof projecting slightly beyond the lower end of the holding tube.

4,450,789

CUP WATERER AND CAGE MOUNT

Norman P. Nilsen, Apple Valley, and Richard T. Novey, Glendale, both of Calif., assignors to CTB, Inc., Milford, Ind.

Filed Feb. 14, 1983, Ser. No. 466,054
Int. Cl.³ A01K *39/02*
U.S. Cl. 119—18 **13 Claims**



1. A watering device for confined poultry, comprising, in combination, upwardly opening cup means, a hollow valve body extending at least partly into the cup means, the valve body having a lower end adapted for fluid communication with a supply of water, and an upper end defining a valve seat, a valve pin having a shank extending through the valve body upper end, and an enlarged pin head disposed inside the valve body and adapted for water-flow-inhibiting cooperation with the valve seat, but permitting water flow through the upper body end when the pin is moved so as to displace the pin head from the valve seat, mounting base means engaging the cup means and adapted to substantially surround a portion of at least one bar of a poultry confinement area, whereby to support the cup means, valve body means and mounting base means on the confinement bar, and the upwardly opening cup means including an upper lip, said upper lip defining at least one recess adapted to engage at least one bar defining said poultry confinement area, so as to mount said cup means and watering device in a position accessible to the confined poultry.

4,450,790

ANIMAL FEEDING APPARATUS

Benjamin H. Stansbury, Jr., Beverly Hills, Calif., assignor to Adon Sanchez, Pomona, Calif.

Filed Sep. 30, 1982, Ser. No. 429,526
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51.12 **10 Claims**

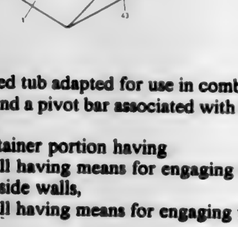
1. An automatic animal food dispenser comprising:

tray means having a plurality of food receptacles therein with upper openings of generally similar configurations;

a cover positioned over said tray and defining an aperture

sized and configured generally like said configuration of said receptacle openings, said cover being movable among a plurality of successive positions, in each of which positions said cover aperture is generally registered with one of said receptacle openings;

means for indexing said cover among said plurality of positions; and



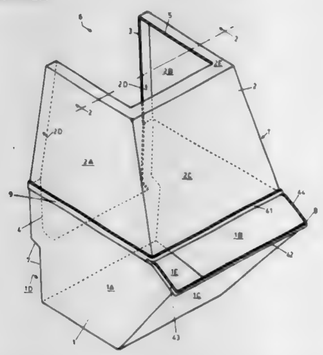
means for selective delivery of a quantity of liquid to said receptacles including a reservoir having valve means, a support for holding said reservoir above said cover, and mechanical actuation means for releasing said quantity of liquid responsive to movement of said cover, said mechanical actuation means including valve actuating means attached to said cover for actuating said valve means.

4,450,791

FEED TUB

Douglas V. Briggs, Jenness Pond Rd. East, Northwood, N.H. 03261

Continuation-in-part of Ser. No. 331,170, Dec. 16, 1981, abandoned. This application Jun. 17, 1983, Ser. No. 505,194
Int. Cl.³ A01K *5/01*
U.S. Cl. 119—61 **7 Claims**



1. An animal feed tub adapted for use in combination with a tombstone fence and a pivot bar associated with the fence, said feed comprising:

A. a lower container portion having
(i) a front wall having means for engaging the pivot bar,
(ii) opposing side walls,
(iii) a rear wall having means for engaging the tombstone fence,
(iv) and a bottom;

B. an upper container portion having
(i) a front wall,
(ii) opposing side walls,
(iii) a rear wall,
(iv) and a top;

C. the front and side walls of the top portion forming a bottom edge which interlocks with a top edge of the front and side walls of the bottom portion;

D. the upper portion being sized to fit within the bottom portion when disassembled from the bottom portion and inverted;

E. the front wall of the lower container portion being tappered outwardly such that the upper edge of the front wall of the lower container portion, the portions of the upper edge of the side walls of the lower container portion adjacent to the front wall and the lower edge of the front wall of the upper container portion for an access opening; and

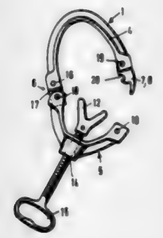
F. the upper part of the rear wall of the lower container portion having an opening which is contiguous to an opening in the rear wall of the upper container portion which is contiguous to an opening in the top of the upper container portion, said openings forming a single feed opening whereby an animal may feed through the feed opening, spillage of feed in the tub by a feeding animal is minimized, the tube may be filled with feed through the access opening and the tub may be rotated about the pivot bar away from the tombstone fence to dispense feed in the tub through the access opening.

4,450,792

DEVICE FOR ARRESTING THE HIND LEG OF AN ANIMAL

Werner Weiland, Bendorf, Fed. Rep. of Germany, assignor to Rheintechnik, Weiland & Kasper KG, Neunkirchen, Fed. Rep. of Germany

Filed Dec. 28, 1981, Ser. No. 334,726
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 8101476
Int. Cl.³ A01K *15/00*; B68B *1/14*
U.S. Cl. 119—126 **3 Claims**



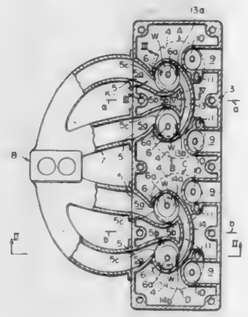
1. Device for arresting a hind leg of an animal, especially cattle, comprising: a ring-shaped part to be placed about the animal hind leg shortly above the leg-joint; a pressure-exerting part movable relative to the ring-shaped part and adapted to bear upon the leg's Achilles tendon; said ring-shaped part having an oval shape; said ring-shaped part comprising two articulately connected sections; a hinge connecting said sections at one side of said ring-shaped part; a snap-lock for uniting said sections at an opposite side of said ring-shaped part; said ring-shaped part being separated into said sections laterally of the hind leg to be arrested; one of said sections having a projecting spring-biased hook, and the other section having a slot provided with a bolt embraceable by said hook, said hook and slot comprising said snap-lock, the leg of the animal being captured against kicking from the instant that said snap-lock locks, so that danger to a user of the device is prevented.

4,450,793

INTAKE SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Masaharu Sumiyoshi, and Katsuhiko Motosugi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 10, 1980, Ser. No. 195,851
Claims priority, application Japan, Jan. 29, 1980, 55-8353
Int. Cl.[3] F02B *75/18*
U.S. Cl. 123—52 MB 6 Claims



1. An internal combustion engine having a cylinder head, at least two cylinders, each having a combustion chamber and an intake valve,

at least two intake port passages formed in the cylinder head and connected to the corresponding combustion chambers via the corresponding intake valves, each of said intake port passages comprising a port terminating portion having a circumferential wall formed around a valve stem of the corresponding intake valve and an inlet port portion having an opening which is open to said port terminating portion, and

a common connecting passage formed in the cylinder head and interconnecting said port terminating portions to each other, said common connecting passage having openings formed at opposite ends thereof, each opening being open to said corresponding port terminating portion at a position opposite to the opening of said corresponding inlet port portion with respect to the valve stem of the corresponding intake valve, wherein the improvement comprises:

the opening of said inlet port portion and the opening of said common connecting passage which are open to the same port terminating portion are oppositely tangentially connected to the circumferential wall of said same port terminating portion towards a same circumferential direction;

each of said inlet port portions has a minimum cross-sectional portion; and

said common connecting passage has a uniform rectangular cross-section over the entire length thereof, the cross-sectional area of which is 0.5 to 1.0 times the cross-sectional area of said minimum cross-sectional portion of the inlet port portion.

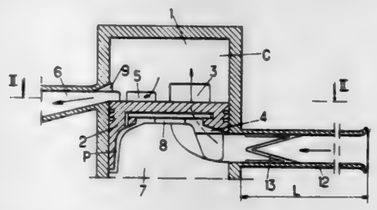
4,450,794

TWO STROKE ENGINE

Yves Pailler, Cieux, 87520 Oradour-sur-Glane, France

Filed Feb. 3, 1983, Ser. No. 463,506
Claims priority, application France, Feb. 3, 1982, 82 01685
Int. Cl.[3] F02B *33/12*
U.S. Cl. 123—74 R 8 Claims

1. A two-stroke engine comprising at least one cylinder (1) in which is slidingly mounted a piston (2) which defines in this cylinder a combustion chamber (C) and a precompression chamber (P), the cylindrical lateral wall of the cylinder being formed with at least two ports closable by the piston (2), namely at least one transfer port (3) through which opens a transfer channel (4) connecting the two chambers together and at least one exhaust port (5) communicating with an exhaust pipe (6), characterized in that these two ports (3,5) are arranged and disposed so that the opening of the transfer port (3)



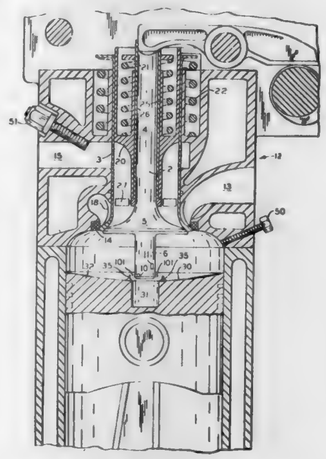
begins before that of the exhaust port (5) and in that special means are provided for making the pressure of the fresh gases admitted into the combustion chamber (C) through the transfer port (3), during opening of this transfer port, sufficiently high with respect to that of the burnt gases then present in the combustion chamber.

4,450,795

FOUR-STROKE PISTON ENGINE

Josef Schaich, 118 Oschle 7906, Markbronn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 957,661, Nov. 3, 1978, abandoned, Continuation-in-part of Ser. No. 854,904, Nov. 25, 1977, abandoned, which is a continuation of Ser. No. 643,165, Dec. 22, 1975, abandoned. This application Sep. 17, 1981, Ser. No. 302,993
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1974, 2461444
Int. Cl.[3] F01L *1/28;* F02B *3/00*
U.S. Cl. 123—79 C 17 Claims



1. A piston engine comprising: a cylinder having an internal wall, a cylinder head, a piston reciprocatingly received in said cylinder and defining a compression space in said cylinder, at least one ignition device disposed in said compression space, an outlet channel and an outlet valve, an inlet channel in said cylinder head communicating with the cylinder through an inlet port, an end portion of said inlet channel and said inlet port being substantially coaxial with said cylinder, an inlet valve disposed substantially coaxially with the longitudinal axis of said cylinder being received in said cylinder head and

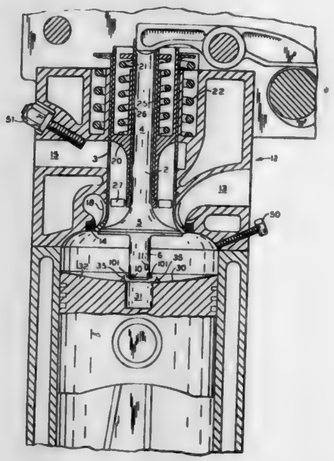
closing said inlet port, means for imparting a helical rotating movement to the air unmixed with fuel around the longitudinal axis of the cylinder within said inlet channel during the intake of the air into the cylinder, the already helically flowing air flowing into the cylinder substantially turbulence free to form a cylinder of helically flowing air in the piston-swept and compression space, a nozzle carrier carried by said inlet valve being an end projecting beyond said inlet valve into the compression space, at least one nozzle means being provided on said nozzle carrier spaced inwardly of said inlet valve in said compression space and having an outlet aperture directed in a substantially outward direction relative to the longitudinal axis of the cylinder for injecting or blowing a jet of fuel into the cylinder of helically flowing air, the rotating air distintegrating the fuel jet to form a combustible air-fuel mixture surrounded by a rotating ring or cylinder of pure air and partially or completely flowing between said nozzle means and said inlet valve.

4,450,796

FOUR-STROKE PISTON ENGINE

Josef Schaich, 118 Oschle 7906, Markbronn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 957,661, Nov. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 854,904, Nov. 25, 1977, abandoned, which is a continuation of Ser. No. 643,165, Dec. 22, 1975, abandoned. This application Nov. 6, 1981, Ser. No. 318,738
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1974, 2461444
Int. Cl.[3] F01L *1/28;* F02B *3/00*
U.S. Cl. 123—79 C 16 Claims



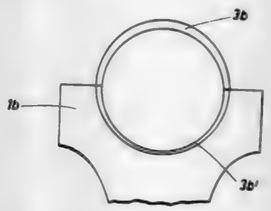
1. A piston engine comprising: a cylinder having an internal wall, a cylinder head, a piston reciprocatingly received in said cylinder and defining a compression space in said cylinder, an outlet channel and an outlet valve, an inlet channel in said cylinder head communicating with the cylinder through an inlet port, and end portion of said inlet channel and said inlet port being substantially coaxial with said cylinder, an inlet valve disposed substantially coaxially with the longitudinal axis of said cylinder being received in said cylinder head and closing said inlet port, a nozzle carrier carried by said inlet valve having an end projecting beyond said inlet valve and into the compression space and being temporarily received in a recess in the piston crown on part of its length, at least one nozzle means and one ignition device being provided on said nozzle carrier to form an ignitable mixture in the region of the longitudinal axis of said cylinder, and two spoons provided on the piston crown, said spoons being located opposite respective nozzles for forming the ignitable mixture at predetermined times.

4,450,797

CRANK DRIVE FOR DIESEL ENGINE

Franz Moser, and Tomas Visek, both of Steyr, Austria, assignors to Steyr-Daimler Puch Aktiengesellschaft, Vienna, Austria

Continuation of Ser. No. 228,926, Jan. 27, 1981, abandoned. This application May 11, 1983, Ser. No. 492,548
Claims priority, application Austria, Jan. 30, 1980, 477/80
Int. Cl.[3] F02B *75/04*
U.S. Cl. 123—78 F 2 Claims



1. A crank drive for a reciprocating piston of a plurality of pistons of a diesel engine, comprising a crankshaft having a crank pin, a connecting rod having two opposite ends, the connecting rod ends having annular bearing surfaces defining bores respectively receiving the crank pin and a piston pin carried by the reciprocating piston, at least one of the annular bearing surfaces being comprised of two parts having end faces in contact with each other along a plane passing through the axis of the one annular bearing surface, and an annular eccentric bushing exchangeably positioned in the bore of the said annular bearing surface between one of the pins and the one bearing surface, the annular eccentric bushing being comprised of two parts having end faces in contact with each other in said plane, the two eccentric bushing parts being symmetrical with respect to a median plane perpendicular to said plane passing through the axis and being selectively rotatable together by 180° increments in a circumferential direction, the eccentric bushing parts being fixed in position in the bore after rotation whereby the bushing provides a fixed eccentric bearing for the one connecting rod end, and being exchangeable in the bore with an annular bushing of uniform wall thickness.

4,450,798

ENGINE INTAKE VALVE WITH HEAT PIPE

Alfred J. Jessel, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 221,488, Dec. 30, 1980, abandoned. This application Oct. 1, 1982, Ser. No. 432,193
Int. Cl.[3] F01P *3/14*
U.S. Cl. 123—41.41 3 Claims

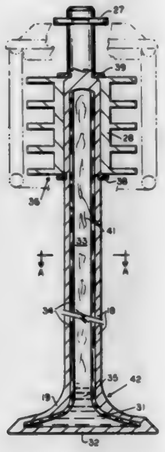
1. A method for reducing the tendency toward autoignition in an internal combustion engine without changing engine design, engine operating conditions or fuel composition comprising the steps of:

(a) passing the input fuel charge to the combustion chamber of said engine over a cooled intake valve;

(b) said intake valve being cooled by evaporating and condensing a coolant material contained within said valve;

(c) said coolant material having a liquid phase at ambient temperatures, said liquid phase being partially evaporated to a vapor at the temperature of the portion of said valve which is heated by said internal combustion process, and said vapor phase is condensed to liquid phase at the tem-

perature of lubricating materials in said internal combustion engine;



whereby the temperature of said input fuel charge is maintained.

4,450,799

VALVE CLEARANCE COMPENSATOR FOR INTERNAL COMBUSTION ENGINES

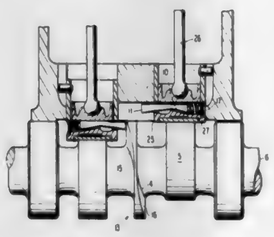
Karl Zellinger, Berglen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,073

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932504

Int. Cl.³ F01L *1/22*

U.S. Cl. 123—90.53 **12 Claims**



1. A clearance compensator for respective valves of an internal combustion engine which includes a camshaft having a plurality of operating control cam means for operating the valves of the engine, each compensator including a sliding member provided with a wedge-shaped surface, said sliding member being arranged so as to be axially displaceable between each control cam means and an associated valve, a compression spring means for constantly urging the sliding member in a first direction, and an adjusting means intermittently acting upon the sliding member so as to urge the sliding member in a direction opposite said first direction, characterized in that the adjusting means is connected with the camshaft and is adapted to displace the sliding member against a force of the compression spring means when the associated valve is in a closed position and over a partial range of a closed period of the valve,

the adjusting means includes a disk adapted to be fixedly connected to the camshaft, said disk is provided with at least one cam means for axially displacing the sliding member, and a cup tappet is provided for each of the valves, and in that the sliding member is latitudinally movably guided in the respective cup tappets.

4,450,800

LIGHT METAL CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINE

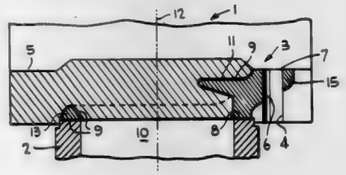
Walter Kotauschek, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 329,957

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047037

Int. Cl.³ F02F *3/04, 1/24*

U.S. Cl. 123—193 CH **7 Claims**



1. A cylinder head of light metal for connection by threaded fasteners with a cylinder of heavy metal of an internal combustion engine, the head having a predetermined temperature and pressure resistance to creep and having a plurality of bores evenly distributed over a circumference thereof and extending from an outer bearing surface, the head also having a sealing surface arranged for engagement with a corresponding surface of the cylinder, the fasteners extending through the bores in engagement with the bearing surface and generating high forces thereat and at said sealing and corresponding surfaces, at least one portion of the head in a vicinity of an exhaust passage of the cylinder head having an elevated temperature relative to a remainder of the head, the improvement wherein one fastener extends through one bore located in said one portion, and an insert is provided at said one portion of the head,

wherein said insert at said one portion is substantially T-shaped in cross-section with said bearing surface thereof lying parallel to said sealing surface thereof, said bearing surface lying in one leg of the T-shape and another leg thereof being defined by a projection extending toward a central cylinder axis, said insert having an opening coaxial with said one bore and having an outer face defining said bearing surface for the head of said one fastener, and said insert being of a material having a higher temperature and a higher pressure resistance to creep than said predetermined temperature and pressure resistance to creep of the head, whereby any plastic deformation of the cylinder head at said one portion, as caused by high forces, is substantially avoided.

4,450,801

WATER PRESSURE ACTIVATED OVERRIDE FOR CYLINDER DEACTIVATOR

Kevin J. Thedens, and Leslie A. Roettgen, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Nov. 16, 1981, Ser. No. 321,648

Int. Cl.³ F02B *77/08;* F02D *17/00*

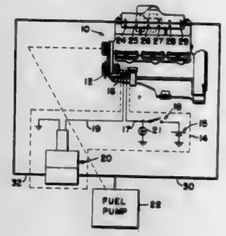
U.S. Cl. 123—198 F **10 Claims**

1. In a multicylinder, compression ignition engine having a pressurized liquid cooling system in which an engine driven coolant pump varies system pressure generally as a direct function of engine rpm, the improvement comprising:

a means for selectively deactivating at least a portion of the cylinders,

a solenoid responsive to the presence of an electrical signal for actuating said deactivating system,

an operator controlled switch for selectively supplying the electrical signal to said solenoid; and,



a control means maintainable in either of two states in response to engine coolant pressure, one of which state terminates the electrical signal to said deactivating means when coolant system pressure and therefore engine rpm is above a predetermined level, thereby overriding the function of the operator controlled switch.

4,450,802

INTERNAL COMBUSTION ENGINES AND ROTARY VOLUMETRIC COMPRESSORS

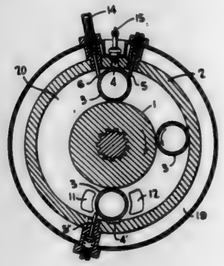
Agustin M. Parma, Luis Alberto De Herrana 2641, Montevideo, Uruguay

Division of Ser. No. 177,101, Aug. 11, 1980, Pat. No. 4,398,512. This application Mar. 10, 1983, Ser. No. 474,170

Claims priority, application Uruguay, Aug. 23, 1979, 20937

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—245 **1 Claim**



1. A rotary engine comprising a hollow cylindrical casing, end caps sealingly engaging the ends of the casing, a cylindrical rotor concentrically mounted within said casing in spaced relation thereto to provide an annulus, a drive shaft concentrically located on the rotor with its ends extending through the end caps, bearing means in the end caps for supporting the shaft for rotation, seal means between said end caps and shaft, three cylindrical rollers disposed within said annulus in rolling contact with the outer surface of the rotor and inner surface of the casing, two diametrically opposed slots in the inner surface of the casing, each slot having a width and depth sufficient to retain one of said rollers engaged therein from revolving in a circular path through said annulus until dislodged from said slot by a predetermined force, an intake and exhaust port communicating with said annulus on opposite sides of one of said slots, a spring urged pawl on the intake port side of said one slot for releasably retaining a roller in said one slot, a spark plug in the other slot, a second spring urged pawl on the side of said other slot nearest the exhaust port for releasably retaining a roller in said other slot, a third spring urged pawl on the side of said other slot nearest the intake port for releasably retaining a roller in said other slot, a flywheel mounted on said shaft, a fuel mixture supply means communicating with said intake port, an electric power circuit means for said spark plug, a distributor means responsive to the position of said third pawl for firing said spark plug in timed sequence to propel one of the three rollers in a circumferential path through the annulus thereby rotating said rotor as the other two rollers are each retained in said slots.

4,450,803

INTERNAL COMBUSTION ENGINE

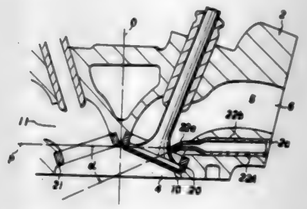
Yuzuru Namba; Kenichi Aoyagi, and Hiroshi Yokoyama, all of Hamamatsu, Japan, assignors to Suzuki Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 3, 1981, Ser. No. 289,700

Claims priority, application Japan, Aug. 13, 1980, 55-111351; Sep. 29, 1980, 55-135606; Sep. 29, 1980, 55-135607

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—308 **1 Claim**



1. In an internal combustion engine:

a combustion chamber defined by a cylinder, a cylinder head and a piston fitting in said cylinder;

a main suction path having a suction port formed in said cylinder head and adapted to be opened and closed by a suction valve at the open end portion of said suction port which is opened into said combustion chamber;

a sub-suction path, at least partially formed by a straight bore through the cylinder head, provided separately of said main suction path and having its outlet end opened immediately upstream of said suction path;

an exhaust port disposed opposite the suction port, and

an ignition plug disposed between the suction and exhaust ports, wherein a swirling direction of gas injection from said sub-suction path into said combustion chamber is directed such that a flow is toward the exhaust port after it has swept past the ignition plug;

wherein the improvement resides in that a direction in which the outlet end of said sub-suction path opens is within a range of about 30 degrees with respect to a plane extending normal to the axis of the cylinder, the plane including a line joining a point nearest on the wall of said cylinder from the ignition plug and the center of said sub-suction port; wherein the direction is also at angle of 15 to 30 degrees from a plane normal to the axis of the cylinder; and wherein an outlet end portion is a pipe, press-fitted into the bore in the cylinder head and having its leading end protruding into the suction port, the leading end being bent with respect to the bore in the cylinder head and the internal diameter of the leading end portion being of a reduced diameter with respect to the remainder of the pipe

wherein the outlet end portion is slightly laterally bent.

4,450,804

APPARATUS FOR INCREASING IDLING SPEED

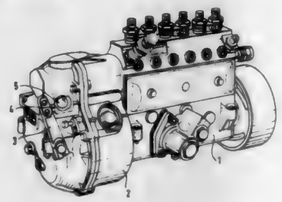
Wolfgang Sauerschell, Oberursel; Stephan Wietschorke, Schmitten, and Gerhard Ruschek, Hattersheim, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

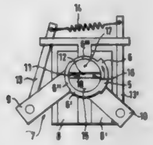
Filed Apr. 1, 1983, Ser. No. 481,306

Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217351

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—366 20 Claims





travel and means associated therewith for varying said travel operable as an adjusting device, said adjusting device comprising an adjusting piston disposed in a cylinder, said piston being adjustable counter to a restoring spring, the travel of said quantity adjusting member being varied in accordance with movement of said adjusting piston via a transmission means, said adjusting piston being provided with two opposite extremities, a first of which defines with said cylinder a work chamber, said work chamber being filled with a fluid source of pressure, said pressure being varied in accordance with rpm of said fuel injection pump, characterized in that the second extremity of said adjusting piston defines with said cylinder a pressure chamber in which said restoring spring is disposed, said pressure chamber being filled with a fluid source of pressure and communicating with means for varying said pressure therein in accordance with at least one operating parameter of the engine and said pressure in said pressure chamber serves to supplement a force supplied by said restoring spring, whereby an adjusting force is applied to said adjusting piston.

1. In an arrangement for increasing the idling speed of an internal combustion engine having a setting member for controlling the feed of fuel thereto and wherein the path of displacement of the setting member can be limited in the idling direction by means of an idle stop and after a starting operation by a start-quantity stop, respectively, the improvement wherein

the means for limiting the displacement path includes a plurality of start-quantity stops arranged one behind the other in the idling direction, and

means for moving the start-quantity stop furthest from the idle stop out of the path displacement of the setting member beginning with the starting operation at predetermined time intervals one after the other respectively.

4,450,805

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

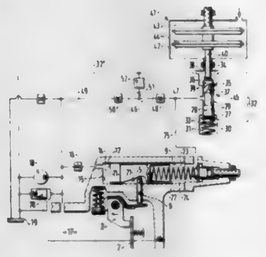
Franz Eheim, Stuttgart, and Gerald Höfer, Weissach-Flacht, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,947

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146499

Int. Cl.³ F02D *23/02, 1/06*

U.S. Cl. 123—387 7 Claims



1. A fuel-injection pump for internal combustion engines having a fuel quantity adjusting member arranged to traverse a

---

4,450,806

INTAKE AIR THROTTLE DEVICE OF A DIESEL ENGINE

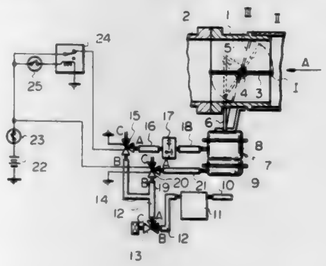
Nobuhiro Miura, and Kazushi Takahashi, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 5, 1983, Ser. No. 455,736

Claims priority, application Japan, Jan. 18, 1982, 57-4837

Int. Cl.³ F02D *9/00*

U.S. Cl. 123—401 5 Claims



1. An intake air throttle device of a diesel engine, comprising:

a throttle valve disposed in an intake air passage;

a vacuum-operated actuator for said throttle valve, said actuator being communicate with a vacuum source via a conduit means;

a means for controlling said actuator so that said throttle valve is brought into a full-open position when the engine runs at a load, into a full-closed position when the engine stops, and into an intermediate position between said full-open and closed positions when the engine runs at no load;

wherein the improvement is that a temperature sensitive valve is disposed in said conduit means so that said throttle valve is brought into said full-open position when the temperature of the engine coolant is below a predetermined value.

4,450,807

SUCTION AIR THROTTLING DEVICE OF DIESEL ENGINE

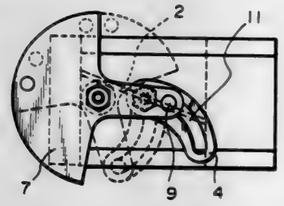
Takahiko Kinoshita, Aichi; Nobuhiko Kakeno, and Nobuhiro Miura, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1982, Ser. No. 452,134

Claims priority, application Japan, Feb. 3, 1982, 57-14750

Int. Cl.³ F02D *9/08*

U.S. Cl. 123—403 2 Claims



1. A suction air throttling device of a diesel engine comprising a housing having a suction passage and comprising a throttle valve located in said suction passage and mounted on a rotary shaft supported in said housing, said throttle valve being connected with an accelerator pedal and opening said suction passage when an accelerator operates and shuts said suction passage when the accelerator does not operate, characterized in that there are arranged a first link, being fixed on the end of said rotary shaft on which said throttle valve is mounted and having an arc-shaped hole, and a second link, connected with the accelerator pedal via a wire and rotating around a shaft mounted on said housing eccentrically from said shaft on which said throttle valve is mounted and having a roller on the end thereof which slidably fits into said arc-shaped hole of the first link, said arc-shaped hole of the first link being shaped so that the opening degree of said throttle valve is larger in the small opening degree zone of the second link and the opening degree of said throttle valve is smaller in the large opening degree zone of the second link, whereby the characteristic curve between the opening degrees of said throttle valve and the accelerator is a convex line.

4,450,808

IGNITION TIMING CONTROL DEVICE

Eiichi Moriyama, and Nobuyuki Kobayashi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 23, 1982, Ser. No. 371,422

Claims priority, application Japan, Apr. 27, 1981, 56-63558

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—417 3 Claims

1. An ignition timing control device comprising:

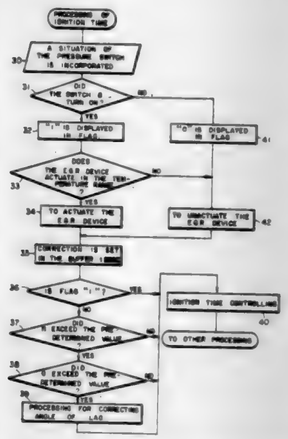
crank angle detecting means for detecting a rotational speed of an engine to emit an engine rotational speed detection signal;

air flow metering means for detecting an intake air flow rate of said engine to emit an intake air flow rate detection signal;

pressure switch means for detecting the presence of an intake pressure above a preset value when an exhaust gas recirculation device operates;

igniter means for generating an ignition voltage and supplying said ignition voltage to said engine; and

electronic control means for taking in said engine rotational speed detection signal from said crank angle detecting means and said intake air flow rate detection signal from said air flow metering means, generating a control signal for controlling ignition timing based on said detection signals and data on ignition timing previously stored in an ignition timing calibration table, correcting said control signal related to said ignition timing to a predetermined value of lag angle on the basis of said engine rotational speed detection signal and said intake air flow rate detection signal when both said pressure switch means indicates said preset pressure is not exceeded and the value of igni-



tion timing obtained from said ignition timing calibration table is within a predetermined region where said exhaust gas recirculation device would be actuated at low altitude, and controlling said igniter means in response to said corrected control signal.

4,450,809

IGNITION TIMING CONTROL SYSTEM FOR AN INTERNAL-COMBUSTION ENGINE

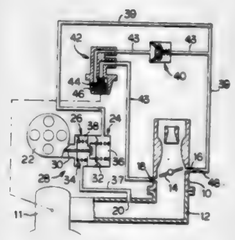
Hidemi Onaka, and Nobuki Uchitani, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 4, 1982, Ser. No. 405,036

Claims priority, application Japan, Apr. 28, 1982, 57-72169

Int. Cl.³ F02P *5/04;* F02M *25/06*

U.S. Cl. 123—421 10 Claims



1. An ignition timing control system for an internal-combustion engine wherein vacuum developed in an intake passage to the engine is applied to a vacuum advance unit connected to a distributor, said ignition timing control system comprising:

a throttle valve plate pivotally received within said intake passage;

a first port formed in the wall of said intake passage such that said first port is located upstream of said valve plate and exposed to the substantially atmospheric pressure while said valve plate remains in its idle position, said first port being exposed to said vacuum when said valve plate is opened from said idle position;

a second port formed in the wall of said intake psssage such that said second port is kept located downstream of said valve plate and exposed to said vacuum even when said valve plate is set to its fast-idle position, said second port

being exposed to the substantially atmospheric pressure when said valve plate is further opened from said fast-idle position;

connecting means for connecting said first and second ports with said vacuum advance unit; and

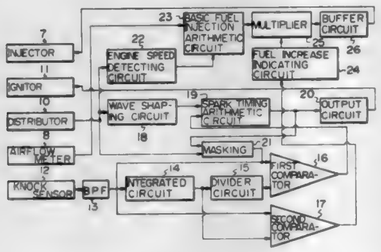
heat-sensitive valve means disposed in said connecting means between said second port and said vacuum advance unit, said valve means sensing the temperature of said engine and being closed when the engine is warmed up above a lower temperature limit, whereby the ignition timing is advanced by said vacuum advance unit when said throttle valve plate is in the fast-idle position even while the engine is cold.

4,450,810

DEVICE FOR CONTROLLING SPARK TIMING AND FUEL INJECTION OF AN INTERNAL COMBUSTION ENGINE

Hiroki Wada, Toyota, and Yasuhiro Ikuta, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 8, 1982, Ser. No. 415,993
Claims priority, application Japan, Jan. 21, 1982, 57-6856
Int. Cl.³ F02D 37/02
U.S. Cl. 123—425 **5 Claims**



1. A device for controlling spark timing and fuel injection of an internal combustion engine, said device comprising:

an electronic control unit for controlling spark timing and the amount of fuel to be injected at a predetermined pattern in connection with the driving conditions;

a knock sensor mounted adjacent to a cylinder block of the engine, the knock sensor detecting whether an engine is knocking and producing an output;

a first circuit means responsive to the output of the knock sensor, the first circuit means producing a first control signal retarding the spark timing from said predetermined pattern when the output of the knock sensor is above a first predetermined level; and

a second circuit means responsive to the output of the knock sensor, the second circuit means producing a second control signal increasing the amount of fuel to be injected beyond said predetermined pattern when the output of the knock sensor is above a second predetermined level above said first predetermined level.

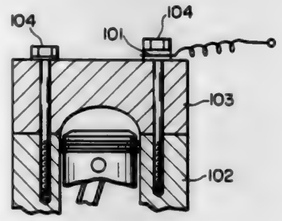
4,450,811

CONTROLLER FOR INTERNAL COMBUSTION ENGINE

Sadao Ichikawa, Aichi, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Sep. 30, 1982, Ser. No. 430,225
Claims priority, application Japan, Oct. 8, 1981, 56-160822
Int. Cl.³ F02P 5/04
U.S. Cl. 123—425 **3 Claims**

1. A method for controlling the combustion in an internal combustion engine, comprising the steps of: sensing a crank angle of said engine corresponding to a time of maximum pressure in a combustion chamber of said engine; sensing a reference crank angle; providing a first ignition timing correcting signal when the sensed crank angle is delayed beyond said reference crank angle; sensing a knocking intensity; producing a second signal for correcting said ignition timing when said sensed knocking intensity exceeds a predetermined reference level; and effecting correction of said ignition timing in response to one of said first and second ignition timing correcting



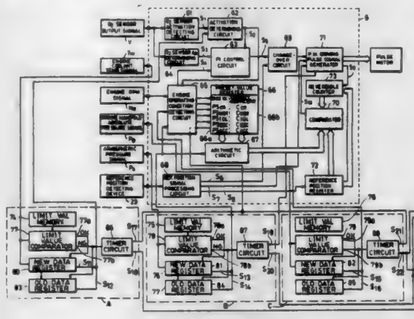
signal with said second ignition timing correcting signal having priority over said first ignition timing correcting signal, and wherein said step of correcting said ignition timing in accordance with one of said first and second ignition timing correcting signals comprises inhibiting said first ignition timing correcting signal for a predetermined time period in response to said second ignition timing correcting signal.

4,450,812

ELECTRIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING FAIL SAFE FUNCTION FOR ENGINE CONDITION DETECTING SENSORS

Kazuo Otsuka, Higashikurume; Shin Narasaka, Yono, and Shumpei Hasegawa, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1981, Ser. No. 296,913
Claims priority, application Japan, Sep. 2, 1980, 55-122097
Int. Cl.³ F02M 7/12
U.S. Cl. 123—438 **12 Claims**



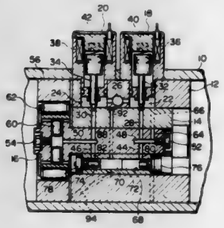
1. An electric control system for controlling an internal combustion engine, which comprises: sensor means for detecting at least one of the operating conditions of said engine and an ambient condition in the vicinity of said engine to generate an output continuously variable with a change in said at least one condition; means operable in response to said output of said sensor means for controlling the operation of said engine; comparator means for comparing said output of said sensor means with an upper limit and a lower limit which are set at values lying slightly beyond a normal range of values indicative of said at least one condition which can exist during normal operation of said engine, said comparator means being adapted to generate a first signal when said output of said sensor means lies beyond said upper limit or said lower limit; and a timer arranged to generate a second signal when said first signal is continuously generated for a predetermined period of time, and means for causing an output of said sensor means which is generated substantially immediately before the generation of said first signal, to be used for control of the engine until said second signal is generated after the generation of said first signal.

4,450,813

DISTRIBUTION TYPE FUEL INJECTION PUMP

Yoshiya Takano, Katsuta, and Yoshikazu Hoshi, Tohkai, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1982, Ser. No. 409,558
Claims priority, application Japan, Aug. 28, 1981, 56-134117
Int. Cl.³ F02M 59/20
U.S. Cl. 123—450 **4 Claims**



1. A distribution type fuel injection pump for distributing and pumping a fuel into a plurality of cylinders of an internal combustion engine through discharge ports, comprising:

hydraulic head means formed therein with a cylindrical space and with first and second fuel feed ports;

rotor means having one portion thereof rotatably fitted in the cylindrical space of said hydraulic head means and formed with first and second inlet ports which are arranged radially to correspond to said first and second fuel feed ports and which are provided in an equal number to that of the engine cylinders;

cam ring means formed therein with a space, in which another portion of said rotor means is rotatably fitted through at least one pair of plungers disposed therein in an end-to-end facing relationship, said plungers being operative to effect the pumping action in accordance with a rotation of said rotor means;

first and second electromagnetic valve means for electrically controlling the opening and closing operations of said first and second fuel feed ports; and

pressure space means made separate from said rotor means and having an internal chamber which is partitioned into first and second pressure chambers by a shuttle slidable therein,

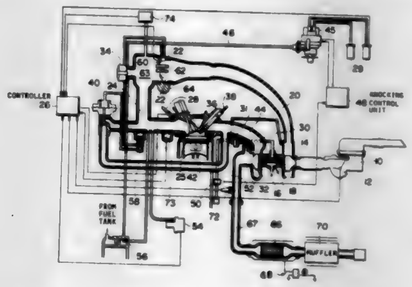
wherein the fuel, which has been introduced through said first fuel feed port and compressed by said plungers, is guided into the first pressure chamber of said pressure space means in accordance with the rotation of said rotor means, and wherein the fuel which has been introduced into said second pressure chamber is consecutively distributed and pumped into the respective cylinders of said engine through said discharge ports by the movement of said shuttle.

4,450,814

AIR-FUEL RATIO CONTROL APPARATUS AND METHOD FOR AN INTERNAL COMBUSTION ENGINE WITH A TURBOCHARGER

Kunifumi Sawamoto; Tatsuo Morita; Kenji Ikeura, and Hiroshi Yamaguchi, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 12, 1982, Ser. No. 357,646
Claims priority, application Japan, Mar. 13, 1981, 56-36062
Int. Cl.³ F02D 5/02; F02B 3/00
U.S. Cl. 123—478 **3 Claims**



1. An air-fuel ratio control apparatus for an internal combustion engine having a turbocharger disposed in an air intake passageway to the engine for urging compressed air to an intake passageway to said engine, an intake relief valve for venting part of the compressed air to the atmosphere in response to the compressed air pressure exceeding a predetermined value, and a fuel injector for injecting fuel into said engine, said air-fuel ratio control apparatus comprising:

(a) an air flowmeter for sensing the intake air flow to said engine and outputting a signal indicative thereof;

(b) means for sensing engine speed and outputting a signal indicative thereof;

(c) means for detecting whether said intake relief valve is open; and

(d) means for controlling the duration for which said fuel injector is opened to cause fuel to be injected therethrough into said engine in accordance with both the outputs of said air flowmeter and said engine speed sensing means when said detecting means does not detect that said intake relief valve is open, and solely in accordance with the output of said sensing means when said detecting means detects that said intake relief valve is open.

4,450,815

INTERNAL COMBUSTION ENGINE CONTROL APPARATUS

Yasunori Mouri, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,872
Claims priority, application Japan, May 6, 1981, 56-66952
Int. Cl.³ F02D 37/02
U.S. Cl. 123—479 **13 Claims**

1. An internal combustion engine control apparatus comprising:

sensors including first sensor means for sensing analog operation parameters of an internal combustion engine and second sensor means for sensing digital operation parameters of said internal combustion engine;

a control unit for generating at least one control signal to control the operation of said internal combustion engine based on said operation parameters sensed by said sensors;

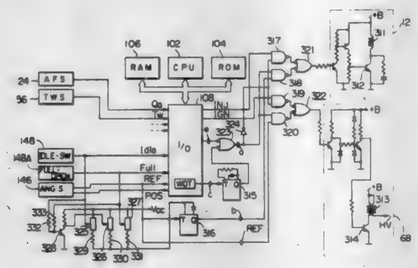
a control circuit for controlling the operation of said internal combustion engine by said control signal;

means for detecting failure of at least one of said first sensor means and said control unit; and

signal generating means responsive to the detection of the

failure by said failure detection means for generating one of a plurality of predetermined signals indicating a predetermined operation condition in accordance with the signals sensed by said second sensor means and supplying said one predetermined signal to said control circuit,

wherein said second sensor means includes an idle switch and a full-open switch,



wherein said control unit includes a fuel injection controller and said control circuit includes a fuel injection control circuit, and

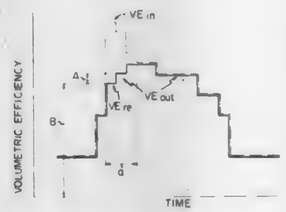
wherein said signal generating means generates one of three predetermined signals corresponding to three states derived from combinations of the output of said idle switch and the output of said full-open switch in accordance with the combination of the outputs of said idle switch and said full-open switch.

4,450,816

METHOD AND APPARATUS FOR CONTROLLING THE FUEL INJECTION AMOUNT OF AN INTERNAL COMBUSTION ENGINE

Toshiyuki Takimoto, Susono, and Takehisa Yaegashi, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 23, 1981, Ser. No. 333,775
Claims priority, application Japan, Dec. 23, 1980, 55/181212
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—492 **5 Claims**



1. An apparatus for controlling the amount of fuel injected into an internal combustion engine, comprising:

means for detecting the flow rate of intake air sucked into the engine to produce a first electrical signal which indicates the detected flow rate;

means for detecting the rotational speed of the engine to produce a second electrical signal which indicates the detected rotational speed;

processing means for (1) calculating, in response to said first and second electrical signals, the volumetric efficiency of the engine, (2) discriminating whether or not said calculated volumetric efficiency is equal to or greater than an upper setting value, and (3) restricting the changing rate of said calculated volumetric efficiency with respect to time within a limit rate, said restriction being executed only when it is discriminated that said calculated volumetric efficiency is equal to or greater than an upper setting value; and

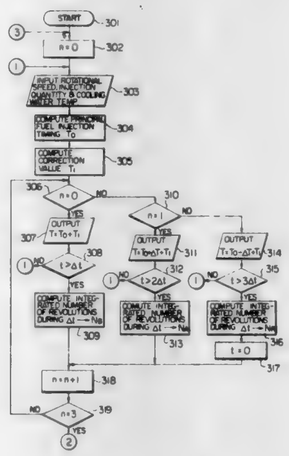
means for adjusting, in response to said calculated or restricted volumetric efficiency, the amount of fuel to be injected into the engine.

4,450,817

METHOD AND APPARATUS FOR CONTROLLING FUEL INJECTION TIMING FOR COMPRESSION IGNITION ENGINES

Noritaka Ibuki, Ogaki, and Shizuo Kawai, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 12, 1982, Ser. No. 357,618
Claims priority, application Japan, Mar. 19, 1981, 56-40597
Int. Cl.³ F02M *59/20*
U.S. Cl. 123—501 **6 Claims**



1. A method for controlling the fuel injection timing of a compression ignition engine comprising the steps of:

selecting three fuel injection timings comprising a calculated fuel injection timing determined in accordance with operating conditions of said engine and an advanced fuel injection timing and a retarded fuel injection timing which are respectively advanced and retarded from the calculated fuel injection timing by a predetermined dithering amount of fuel injection timing;

operating said engine alternately at the three selected fuel injection timings each thereof during a predetermined dithering period;

comparing with one another values of an engine operating parameter related to engine rotational speeds detected when said engine is operated at the three selected fuel injection timings and deciding from the results of the comparison whether the calculated fuel injection timing is advanced or retarded from an optimum fuel injection timing, and, when the decision from the results of the comparison is impossible, deciding whether said engine is accelerating or decelerating; and

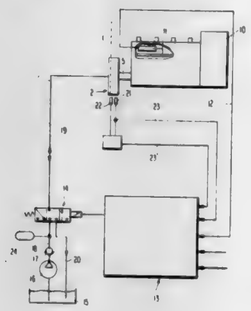
correcting the calculated fuel injection timing in accordance with said decision from the results of the comparison, but inhibiting the correction when it is decided that said engine is accelerating or decelerating.

4,450,818

HYDRAULIC INJECTION-ADJUSTING DEVICE FOR HIGH PRESSURE INJECTION INSTALLATIONS IN AUTO-IGNITING INTERNAL COMBUSTION ENGINES

Frank Thoma; Karl-Heinz Hoffmann, both of Stuttgart, and Christoph Burckhardt, Kernen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,074
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932672
Int. Cl.³ F16D *5/00*; F02M *59/20*
U.S. Cl. 123—502 **3 Claims**



1. A hydraulic injection-adjusting device for high-pressure injection installations in autoigniting internal combustion engines, the injection-adjusting device including a plurality of operating chambers adapted to be supplied with a pressure medium, an electrically actuatable regulating valve means for controlling a supply of pressure medium from a pressure supply pump means to the operating chambers, means for sensing a plurality of current operating parameters of the engine and for providing an output signal of the sensed operating parameters, means for measuring an actual value of an adjustment angle of the injection-adjusting device and for providing an output signal of the actual value, and electronic control means for receiving signals from said sensing means and for providing an output signal of a desired adjustment angle of the injection adjusting device to the regulating valve means to control a positioning thereof, characterized in that the control means is operable to yield a first signal of a defined magnitude when the desired adjustment angle is larger than the actual adjustment angle and a second signal when the actual adjustment angle is larger than the desired adjustment angle, said regulating valve means is an electromagnetically operated three-position valve means, said valve means is responsive to the first signal of the control means and is displaced to a first position so as to supply pressure medium to the operating chambers and responsive to the second signal so as to be displaced to a second position so as to relieve the operating chambers of the pressure medium and in that a pressure medium reservoir means is interposed between the regulating valve means and the pressure supply pump means are facilitating a cold-starting of the engine,

means for providing for maintaining the regulating valve in a third closed position when the actual value and desired value coincide,

the injection-adjusting device further includes a housing directly driven by the crankshaft of the engine, an injection timer shaft adapted to be driven through said injection-adjusting device by the crankshaft of the engine, and a rotary disk means fixedly joined to the injection timer shaft and two operating chambers are disposed oppositely one another between the rotary disk means and the housing,

the injection-adjusting device further includes two oppositely disposed spring chamber means within the housing for accommodating injection timer springs,

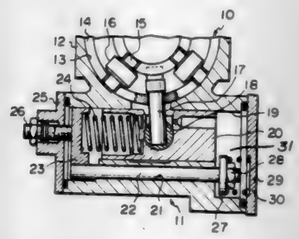
the regulating valve means is disposed in the injection timer shaft.

4,450,819

DEVICE FOR ADJUSTING INJECTION TIMING OF A DISTRIBUTION-TYPE FUEL INJECTION PUMP

Yasuhiro Furuhashi; Naozi Ishikawa, and Shizuo Kawai, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 11, 1982, Ser. No. 377,175
Claims priority, application Japan, May 15, 1981, 56-69195[U]
Int. Cl.³ F02M *59/20*
U.S. Cl. 123—502 **3 Claims**



1. A device adjusting the injection timing of a distribution-type fuel injection pump having a housing comprising:

a roller ring rotatably supported in a circular cavity that is formed in the housing of said fuel injection pump;

rollers which are rotatably supported by said roller ring via pins;

a shaft which is supported by said roller ring and which protrudes outwardly radially of said roller ring;

an adjusting piston which is coupled to said shaft and which slides in a first cylinder being urged by the fuel pressure; and

a timer spring which urges said adjusting piston so that said adjusting piston is moved responsive to the fuel pressure and the resilient force of said timer spring, and said roller ring is turned following movement of said adjusting piston, the improvement comprising:

a second cylinder parallel to and offset axially from said first cylinder,

a rod slidable in said second cylinder,

end members on both ends of said rod, said timer spring being inserted between one of said end members and an end of said adjusting piston such that the other end of said adjusting piston comes into contact with the other of said end members, and

an adjusting screw, which is screwed from the outer side of said housing, engaged with said one end member.

4,450,820

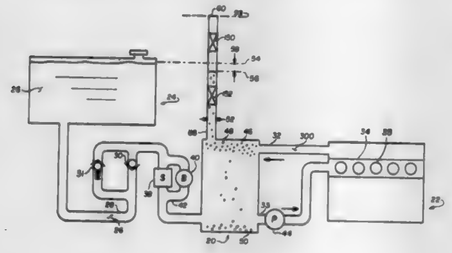
ENGINE FUEL CONDITIONER AND MONITOR

Hendrick W. Haynes, P.O. Box 66152 (250 SW. 176th St.), Seattle, Wash. 98166

Continuation-in-part of Ser. No. 266,942, May 26, 1981, abandoned, which is a continuation of Ser. No. 50,198, Jun. 20, 1979, abandoned. This application Apr. 12, 1982, Ser. No. 367,378
Int. Cl.³ F02M *37/20*
U.S. Cl. 123—514 **16 Claims**

1. A system for degassing and temperature balancing of cool intake fuel and heated, non-combusted fuel returning from fuel injector means of a diesel engine, the heated fuel being aerated by combustion gases from the engine, said system comprising a fuel line through which fuel passes to said fuel injector means, a fuel return line through which fuel passes from said fuel injector means, a fuel supply, fuel conditioning means having a

fuel reservoir and fuel intake and output ports, respectively communicating with the fuel supply and the fuel line for passing all fuel from the supply to the engine through the reservoir, fuel return port means connected to the fuel return line for returning the heated and aerated fuel from the engine to the fuel conditioning means, degassing column means having a



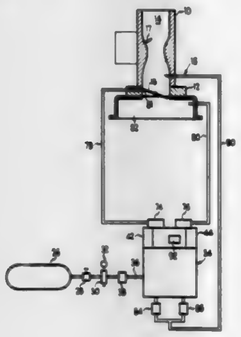
lower end communicating with the fuel reservoir and an upper open end spaced above the fuel conditioning means for venting gases in the cool intake fuel and the heated and aerated fuel to atmosphere, means for sensing flow rate of the intake fuel passing from the fuel supply to the fuel conditioning means and means for bypassing the intake fuel from said fuel supply around said sensing means to said conditioning means.

4,450,821

GASEOUS FUEL DELIVERY SYSTEM

Scott Venning, Mt. Prospect, Ill., and Dennis Discount, Jericho, N.Y., assignors to VCD Fuel Systems, Mt. Prospect, Ill.

Filed Sep. 13, 1982, Ser. No. 417,629
Int. Cl.³ F02M *13/08*
U.S. Cl. 123—525 **20 Claims**



1. A gaseous fuel delivery system as for an internal combustion engine normally operable on liquid fuel, the combination comprising:

a. idle delivery means responsive to engine operating conditions to supply gaseous fuel to said engine when said engine is operating at idle;

b. acceleration delivery means responsive to engine operating conditions to supply gaseous fuel to said engine when said engine is accelerating;

c. conduit means communicating said idle and acceleration delivery means to a source of gaseous fuel and to said engine

wherein said system includes:

a. means responsive to ported vacuum created by flow of air into said engine to open and close said idle delivery means; said means opening said idle delivery means when said engine is at idle and closing said idle delivery means when said engine is operating at other than idle;

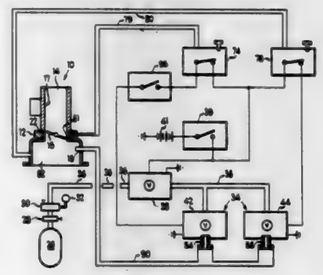
b. means responsive to the vacuum in the intake manifold of said engine to open and close said acceleration delivery means.

4,450,822

GASEOUS FUEL DELIVERY SYSTEM

Scott J. Venning, 617 S. Busse Rd., Mt. Prospect, Ill. 60056

Filed Sep. 13, 1982, Ser. No. 417,630
Int. Cl.³ F02M *13/08*
U.S. Cl. 123—525 **32 Claims**



1. A gaseous fuel delivery system for an internal combustion engine operable on gasoline and having a carburetor to supply gasoline thereto, said carburetor being arranged to supply gasoline only at other than idle conditions, the combination comprising:

(a) idle delivery means responsive to engine operating conditions to supply gaseous fuel to said engine when said engine is operating at idle;

(b) conduit means communicating said idle delivery means to a source of gaseous fuel and to said engine;

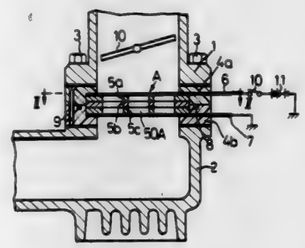
wherein said system includes means responsive to ported vacuum of a port in the carburetor throat to open and close said idle delivery means, said system including means communicating said port and said idle delivery means, said means responsive to ported vacuum opening said idle delivery means when said engine is operating at idle and closing said idle delivery means when said engine is operating at other than idle.

4,450,823

FUEL EVAPORATOR FOR INTERNAL COMBUSTION ENGINE

Seiko Abe, Okazaki; Toshihiko Igashira, and Kazuhide Watanabe, both of Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 4, 1983, Ser. No. 491,644
Claims priority, application Japan, May 4, 1982, 57-65449
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **7 Claims**



1. A fuel evaporator for heating fuel in an air-fuel mixture to

be supplied to an engine so as to promote the evaporation of fuel, comprising:

a heater means which is disposed in an air-fuel mixture passage of said engine so as to cross said passage; said heater means being composed of a plurality and an odd number of stacked ceramic plates, each of which has a plurality of open holes directing in the axial direction of said passage and communicating with open holes of adjacent ceramic plates, and electrodes which are provided on the upstream end surface and the downstream end surface of said stacked ceramic plates and between the opposed surfaces of adjacent ceramic plates; every other electrodes being connected to form two groups of electrodes;

a first group of electrodes being connected to a positive pole of an electric source while a second group of electrodes being connected to a negative pole of said electric source; and

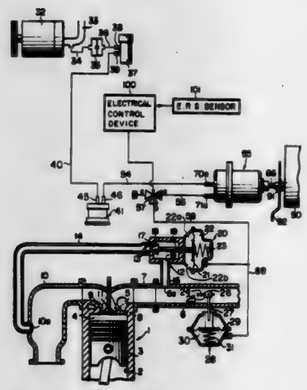
a supporting member for supporting said heater means; said supporting member being formed of thermally and electrically insulating material into an annular body, of which the outer peripheral portion is fixed to the wall defining said air-fuel passage of said engine, and the inner peripheral portion retains the outer peripheral portion of said heater means.

4,450,824

EXHAUST GAS RECIRCULATION CONTROL SYSTEM WITH ATMOSPHERIC PRESSURE COMPENSATION VALVE

Ken Ando; Masaaki Tanaka, and Michio Kawagoe, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 30, 1982, Ser. No. 429,238
Claims priority, application Japan, Jun. 15, 1982, 57-103169
Int. Cl.³ F02M *25/06, 23/00*
U.S. Cl. 123—569 **10 Claims**



1. For a diesel internal combustion engine for a vehicle, comprising an air intake passage, an exhaust passage, and an exhaust gas recirculation passage whose upstream end is communicated to an intermediate point of said exhaust passage and whose downstream end is communicated to an intermediate point of said air intake passage:

an exhaust gas recirculation control system, comprising:

(a) a source of operating air pressure;

(b) an atmospheric pressure compensation valve, comprising an operating air pressure intake port and an operating air pressure output port, which receives a supply of said operating air pressure at its said operating air pressure intake port, and selectively bleeds atmospheric air into said supply of intake operating air pressure so as to produce a supply of atmospheric pressure compensated operating air pressure at its said operating air pressure output port, the amount by which the pressure value of said atmospheric pressure compensated output operating air pressure is deviated from the current value of atmospheric pressure diminishing as the absolute value of atmospheric pressure diminishes;

(c) an operating air pressure control valve, comprising an operating air pressure intake port and an operating air pressure output port, which receives a supply of said atmospheric pressure compensated operating air pressure from said operating air pressure output port of said atmospheric pressure compensation valve at its said operating air pressure intake port, and which selectively bleeds atmospheric air into said supply of atmospheric pressure compensated operating air pressure according to the value of the load on said diesel internal combustion engine so as to produce a supply of control operating air pressure at its said operating air pressure output port; the deviation from the current value of atmospheric pressure of said control operating air pressure either being equal to a target depression value which is determined according to said load on said diesel internal combustion engine, or being equal to the deviation value of said supply of atmospheric pressure compensated operating air pressure from said operating air pressure output port of said atmospheric pressure compensation valve, whichever is the less;

and

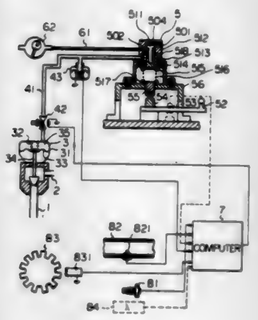
(d) an operating air pressure operated exhaust gas recirculation control valve comprising an operating air pressure intake port, which receives a supply of said control operating air pressure from said operating air pressure output port of said operating air pressure control valve at its said operating air pressure intake port, and which controls the flow resistance of said exhaust gas recirculation passage according to the difference between the current value of atmospheric pressure and the current pressure value of said control operating air pressure supplied to its said operating air pressure intake port, so as to decrease said flow resistance from a maximum substantially infinite value such as to allow exhaust gas recirculation when the deviation from the current value of atmospheric pressure of said control operating air pressure increases beyond a certain predetermined value.

4,450,825

EGR CONTROL SYSTEM FOR DIESEL ENGINE

Kiyonori Sekiguchi, Aichi; Toshihiko Igashira, Toyokawa; Takeshi Tanaka, and Hisasi Kawai, both of Toyohashi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

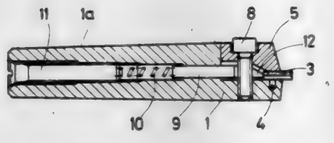
Filed Dec. 28, 1982, Ser. No. 454,099
Claims priority, application Japan, Dec. 28, 1981, 56-209793; Feb. 10, 1982, 57-18896
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **10 Claims**



1. An EGR control system for a diesel engine, comprising: an EGR valve having a diaphragm chamber;

a pressure supply means for supplying negative pressure;
a regulating valve means, having an input path connected to said pressure supply means, an input path connected to the atmosphere and an output path connected to said diaphragm chamber of said EGR valve, for changing the areas of said input paths to regulate the negative pressure in said diaphragm chamber in response to an EGR rate signal;
sensors for sensing a plurality of engine running conditions of said engine;
means, responsive to one of the oxygen concentration in the exhaust gases and both the absolute pressure in an air intake pipe and the fuel amount, for generating an excessive air rate λ signal related to the ratio of the intake air amount to the fuel amount multiplied by the stoichiometric air-fuel ratio; and
computing means, responsive to signals from said sensors and said detecting means, for controlling said regulating valve means to adjust the pressure of said diaphragm chamber of said EGR valve by generating said EGR rate signal in accordance with said engine running conditions and feedback corrected by said excessive air rate λ signal from said generating means.

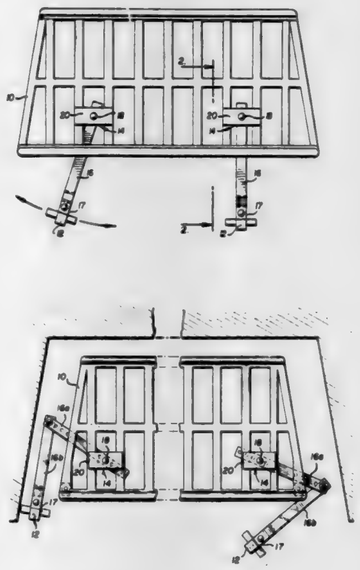
4,450,826
TOOL FOR TRUING UP GRINDING WHEELS
Jean-Claude Remy, Le Locle, Switzerland, assignor to Dixi S.A. Usine 4, Le Locle, Switzerland
Filed Nov. 18, 1981, Ser. No. 322,470
Claims priority, application Switzerland, Jun. 2, 1981, 3595/81
Int. Cl.³ B24B *53/12*
U.S. Cl. 125—11 N **8 Claims**



1. A tool for truing-up grinding wheels comprising an elongate body having at one end a bearing surface for supporting an insert, an insert of regular polygonal configuration made at least partially of very hard material and having a plurality of cutting edges supported on said bearing surface, pivot means perpendicular to said bearing surface and coincident with the center of said insert about which said insert is rotatable to bring one or another of said cutting edges into an operative position, means for clamping said insert against said bearing surface and means for automatically positioning said insert angularly, said positioning means comprising an element slidable axially of said body and spring means for urging said slidable element axially into engagement with said insert, said slidable element having edge surfaces engageable with said insert to position said insert angularly with one cutting edge in operative postion, and being retractable against the force of the spring to permit turning said insert to a new position.

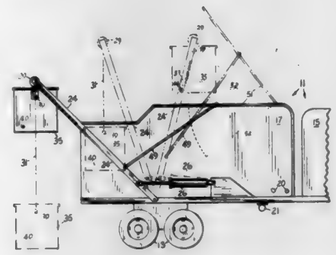
4,450,827
ANDIRON MOUNTING SYSTEM
Samuel D. Love, 13520 Old Indian Head Rd., Brandywine, Md. 20613
Continuation-in-part of Ser. No. 274,268, Jun. 16, 1981, abandoned. This application Feb. 23, 1982, Ser. No. 351,368
Int. Cl.³ F24B *13/00*
U.S. Cl. 126—298 **16 Claims**

1. An andiron mounting system, comprising:
an elongate connecting member having one end attachable to an andiron;
an attachment member for securing the other end of said connecting member to a fireplace grate at any one of a plurality of positions on said grate; and



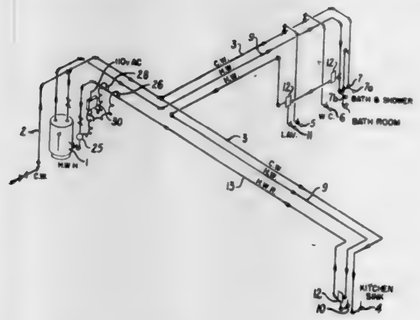
means for allowing said connecting member to swivel in relation to the fireplace grate.

4,450,828
TRUCK HAVING EQUIPMENT FOR ON-SITE HEATING AND COLLECTING USED GREASE FROM CONTAINERS
Donald R. Onken, Box 72, Easton, Ill. 62633, and Robert L. Griffin, 509 Laurel Dr., Mason City, Ill. 62664
Filed Jul. 20, 1982, Ser. No. 400,123
Int. Cl.³ B60H *1/02, 1/22*
U.S. Cl. 126—343.5 A **5 Claims**



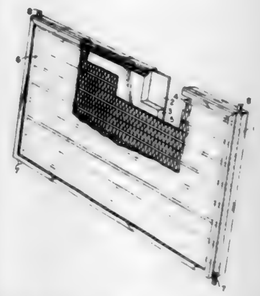
1. A waste grease truck for on-site dump-collecting used, deep-fry grease dumped into a large vat-like grease container which comprises:
a chassis;
a large tank secured on said chassis,
said tank including a large chamber having an openable top thereon for receiving grease dumped into said vat-like grease container and a small open-top chamber separated from said large chamber by a transverse partition,
said small open-top chamber being larger than said vat-like grease container and adapted to receive water therein and for receiving and heating said vat-like grease container to loosen grease therein to enable pouring the grease therefrom into said large container chamber,
means in said small chamber for heating water received therein to form a hot water bath,
said large chamber including heating means therein for heating contents therein to facilitate drainage,
a parallel pair of arms each pivotally secured at one end to said chassis on opposite sides of said large tank with each arm of said pair having a free end,
a winch bar rigidly interconnecting, and journaled in, said free ends of said arms,
said winch bar having winch spools affixed to its ends adjacent said arms,
a reversible hydraulic motor for rotating said winch bar in opposite directions,
cable-like elements coordinately windable on each of said winch spools for lifting and lowering said large vat-like grease container relative to said arms,
coordinated hydraulic cylinders secured at one end to said chassis and at their opposite ends to said arms so as to swing a vat-like grease container supported by said arms to a desired position relative to said large tank,
said openable top of said large chamber being operatively connected to said arms for automatic opening and closing in response to movement of said arms by said hydraulic cylinders, and
means on said vat-like grease container and on said parallel arms which cooperate to dump the contents of said vat-like grease container into said large chamber,
whereby said cable-like element ends are connected to opposite sides of said vat-like grease container for lifting said vat-like grease container, said arms are moved so that said vat-like grease container can be lowered into said small open top chamber in which the grease in said vat-like container is partially melted, then the vat-like grease container is lifted and the arms moved to a position so that the grease can be dumped into said large chamber by movement of the arms and tilting of the vat-like grease container by said means on said container and said arms that cooperate to dump the contents of said vat-like grease container.

4,450,829
WATER SAVING SYSTEM
Deen I. Morita, and Mark K. Morita, both of 1658 Auiki St., Honolulu, Hi. 96819
Filed Sep. 29, 1982, Ser. No. 426,272
Int. Cl.³ F24H *1/00*
U.S. Cl. 126—362 **10 Claims**



1. A water saving system comprising a water heater having a supply inlet connected with a water supply, a hot water supply outlet and a return inlet, an outlet valve at a location where hot water is to be used, a control unit adjacent said outlet valve and having an inlet, a supply outlet connected with said outlet, a return outlet and a normally closed control valve between said inlet and said supply outlet, a first line connecting the supply outlet of said heater with the inlet of said control unit, a second line connecting the return outlet of said control unit with the return inlet of said heater, said first and second lines together with said heaters and control unit forming a closed circuit, energizable means for circulating water in said circuit to return water from said control unit to said heater, means for energizing said circulating means when said outlet valve is opened and the temperature of water in said control unit is below a predetermined value, to circulate water in said circuit and thereby bring hot water from said heater to said control unit, means for opening said control valve when the temperature of water in said control unit reaches a predetermined value to supply hot water to said outlet valve and means for deenergizing said circulating means when the temperature of water in said circuit reaches a predetermined value.

4,450,830
SOLAR HEAT DEVICE
Rolf E. Hedman, and Gunnar Hedman, both of Lofsbergsvagen 36, S-582 69 Linkoping, Sweden
Filed Apr. 20, 1981, Ser. No. 255,969
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **6 Claims**



1. A solar heat device to transfer heat energy from the sun to a fluid, preferably water, said solar heat device comprising a frame having an isolated bottom attached thereto, plural heat absorbing wafers having tubes for the fluid, and a sheet of glass disposed on top of the solar heat device, the frame comprising two portions, one said portion having a groove and the other portion having a substantially L-shaped profile, the one said portion and the other portion being arranged to be mounted to each other by means of a snapping mechanism, comprising a protruding edge and a flange of the one said portion as well as a corresponding recess and a furrows of the other L-shaped portion.

4,450,831
SELF SUPPORTING MOUTH SPECULUM FOR HORSES, MULES, AND OTHER ANIMALS
Louis D. Jeffrey, 14805 Branched Oak Rd., Waverly, Nebr. 68462
Filed Feb. 2, 1982, Ser. No. 345,138
Int. Cl.³ A61D *15/00*
U.S. Cl. 128—14 **1 Claim**

1. A self-supporting mouth speculum for horses and the like, comprising,
a first U-shaped cheek hook portion for insertion into one corner of the horse's mouth,
a second U-shaped hook portion for insertion into the other corner of the horse's mouth, said second U-shaped hook portion having a spreader portion thereon which is adapted to be positioned between the upper and lower rear molars of the horse's teeth when said second U-shaped hook portion is inserted into the horse's mouth,

and an adjustable strap means secured to and extending between said first and second cheek hook portions for



extension around the horse's head to maintain said cheek hook portion in position.

4,450,832

BODY WEIGHT SUPPORT SYSTEM

Thomas P. Waddell, 1306 Broadview W., Downingtown, Pa. 19335

Filed Aug. 25, 1982, Ser. No. 411,404
Int. Cl.³ A61F 3/00
U.S. Cl. 128—80 G **27 Claims**



1. A body weight support system for releasable securement to at least one leg of a person, comprising first support means, second support means and non-resilient, flexure means, said first support means including a first portion extending along the thigh, said first support means terminating at its upper and immediately adjacent the buttocks-thigh interface to form a seat and terminating at its lower end adjacent the knee, said second support means including a second portion extending along the calf, said second support means terminating at its upper end adjacent the knee and at its lower end adjacent the foot, said flexure means being located adjacent said knee and connected between said first and second support means for permitting the person to repeatedly freely bend and unbend said knee through any angular range up to a predetermined angle of bend and for providing substantial resistance to flexure therebeyond, said first and second support means including securement means for releasably securing said system to said leg.

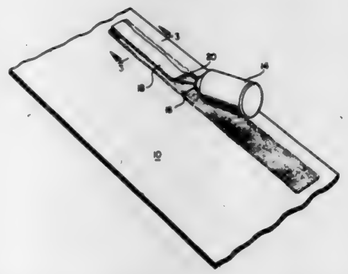
4,450,833

METHOD OF DIMENSIONING A POLYURETHANE FOAM BANDAGE

William R. Brooks, 260 Arlington, Elmhurst, Ill. 60126, and Irving C. Heinzel, 45 Brookdale La., Palatine, Ill. 60067

Filed Dec. 2, 1981, Ser. No. 326,933
Int. Cl.³ A61F 5/04
U.S. Cl. 128—90 **9 Claims**

1. The method of making a cellular synthetic bandage member which comprises the steps of: providing a dispenser package which includes a water-activatable prepolymer composition under superatmospheric pressure and a blowing agent for said composition; storing said package; thereafter infusing a trimerizing catalyst throughout said packaged composition in continuation of said superatmospheric pressure and at substantially the time of use; dispensing an elongate quantity of said composition into contact with a fabric element at ambient pressure whereby to activate said blowing agent in causing said composition to form flexible froth foam adhering to said fabric element; applying mechanical compressive force to said froth foam to squeeze said foam into intimate contact with said fabric element, reduce the thickness dimension of said foam, and embed said fabric element in said foam; and contacting the



surfaces of the resultant foam bandage member with moisture while making a medical dressing, whereby to cause said moisture to react said prepolymer composition in the presence of said trimerizing catalyst, partially restoring the pre-compressed thickness of said foam and its cellular structure and curing the foam to a level of optimum properties.

4,450,834

EXTERNAL FIXATION DEVICE

David A. Fischer, Minneapolis, Minn., assignor to Ace Orthopedic Manufacturing, Inc., Los Angeles, Calif.

Division of Ser. No. 85,996, Oct. 18, 1979, Pat. No. 4,308,863.
This application Aug. 7, 1981, Ser. No. 290,740
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 EB **5 Claims**



1. A method of installing a pin extending from the soft tissue and bone of a user substantially parallel with a previously installed pin in an external fixation device comprising the steps of:

clamping an exposed free end of said previously installed pin into one aperture of a multi-aperture pin holder;

inserting a tubular sheath through an adjacent one of said apertures in said pin holder;

extending said sheath through said soft tissue to contact said bone;

inserting a drill through said sheath to drill a hole through said bone along an axis parallel to the axis of said sheath;

removing said drill from said sheath;

measuring the diameter of said bone at the location of said hole;

inserting a pin through said sheath and into said hole drilled in said bone;

withdrawing said sheath from said pin holder while maintaining said pin within said bone; and

clamping the exposed free end of the newly installed pin into said adjacent aperture in said pin holder.

4,450,835

METHOD AND SYSTEM FOR INSERTING A SURGICAL WIRE

Stanley E. Asnis, Port Washington, N.Y., and Rocco R. Borzone, Emerson, N.J., assignors to Howmedica, Inc., New York, N.Y.

Division of Ser. No. 236,089, Feb. 20, 1981, Pat. No. 4,383,527.
This application Feb. 22, 1983, Ser. No. 468,245
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 EB **5 Claims**



1. In combination

a surgical guide pin having a distal end, a proximal end and a uniform circular cross-section along the major portion of its length between said two ends, and

a substantially cylindrical external sleeve having a distal end and a proximal end and receiving the guide pin for sliding fit in a centrally disposed longitudinal bore therein,

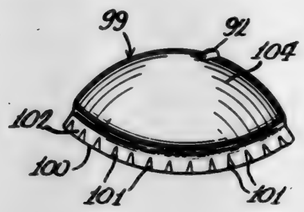
with the guide pin being longer than the external sleeve, the guide pin and the external sleeve being provided at their proximal ends with cooperating cutting surfaces, and the guide pin and the external sleeve being provided at their distal ends with means interacting to (1) prevent relative rotational movement between the guide pin and the external sleeve when they are in a first relative position in which the distal tip of the guide pin extends beyond the distal tip of the external sleeve and the proximal tip of the guide pin extends beyond the proximal tip of the external sleeve, and (2) permit relative rotational movement between the guide pin and the external sleeve when they are in a second relative position in which the guide pin is displaced proximally relative to said first relative position.

4,450,836

CUSTOM VALVED CERVICAL CAP WITH DEFORMABLE MARGIN

Robert A. Goepp, Chicago; Uwe E. Freese, Oak Park, and Marvin P. Loeb, Chicago, all of Ill., assignors to University Patents, Inc., Norwalk, Conn. and Contracap, Inc., Schaumburg, Ill.

Division of Ser. No. 163,328, Jun. 26, 1980, Pat. No. 4,369,219.
This application Sep. 27, 1982, Ser. No. 424,227
Int. Cl.³ A61F 5/46
U.S. Cl. 128—127 **45 Claims**



1. A non-invasive birth control device which comprises

a cup-shaped elastomeric shell having a convex outer surface and a concave inner surface that is substantially complementary with contiguous surface of portio vaginalis cervicis in its actual configuration when in contact therewith, said shell defining an aperture at the apex thereof and having a depth sufficient to receive a major portion of said portio, but the periphery of said shell terminating short of fornices vaginae;

a skirt portion integral with said shell, depending from said shell at the periphery of said shell, and having a thickness that is less than the thickness of said shell; said skirt portion having a plurality of spaced slits extending from the peripheral edge of the skirt portion; and

an elastomeric web over said aperture and secured to said outer surface about said aperture defining a passageway communicating with said aperture and providing a discharge port along said convex outer surface and offset from said aperture;

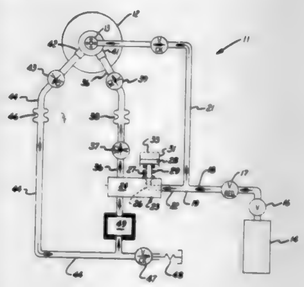
said web conforming to and coacting with a contiguous portion of said convex outer surface to provide a one-way valve means for uterine discharge entering said aperture from within said shell.

4,450,837

UNDERWATER BREATHING APPARATUS

Norman E. Ream, Woodland, Calif., assignor to Kelsey W. Hatcher, Woodland, Calif.

Filed Jun. 7, 1982, Ser. No. 385,338
Int. Cl.³ A62B 7/00
U.S. Cl. 128—201.27 **3 Claims**



1. A self-contained underwater breathing apparatus comprising:

a. a fresh air container;

b. a primary fresh air breathing supply circuit including a face mask, a first conduit extending from said fresh air container to said face mask, and a demand regulator on said face mask having a metering orifice releasing approximately two liters of fresh air to the breathing organs of the user during each inhalation cycle of the user's breathing organs;

c. a secondary recirculating gas breathing supply circuit including a chamber, an exhaust hose connecting said face mask to said chamber to conduct thereto air exhaled from the breathing organs of the user during each exhalation cycle, a CO_2 and moisture absorbing canister interposed in said exhaust hose, and an intake hose connecting said chamber to said face mask;

d. a fresh air makeup supply circuit including a second conduit in communication with said fresh air container and extending to said chamber for the transfer of fresh air thereto;

e. a valve located within said chamber and connected to said second conduit; and,

f. piston means associated with said valve for sensing the water pressure of the ambient environment and controlling said valve to effect the release of fresh air into said chamber in an amount dependent upon the water pressure, the dimensions of said valve and said piston means being selected to afford to the user's breathing organs the quan-

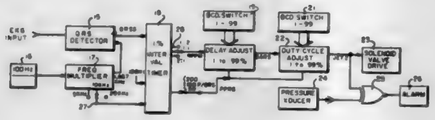
tity of fresh air plus recycled exhaled air needed, in conjunction with the two liters of fresh air released from said demand regulator, to meet both the oxygen requirements and the pressure requirements of the user's breathing organs exacted by the ambient environment at each inhalation.

4,450,838

JET VENTILATOR CONTROL SYSTEM

Saul Miodownik, New York, N.Y., assignor to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.

Filed Feb. 10, 1981, Ser. No. 233,244
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.23 **10 Claims**



1. A control system for a jet ventilator having means for controllably providing jet ventilation gas pulses to a patient, the control system comprising:

means for producing periodic pulses;

pulse-duration means for adjusting duration of the periodic pulses within the period thereof;

pulse-delay means for adjusting delay of the periodic pulses within and proportionally to the period thereof; and

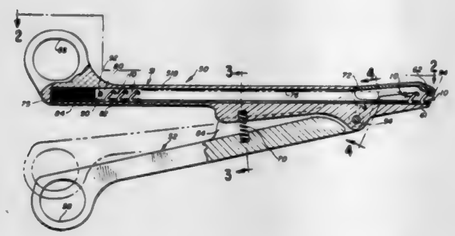
control means responsive to the duration and delay adjusted pulses for correspondingly controlling the means for controllably providing the jet ventilation gas pulses to the patient.

4,450,839

SURGICAL CLIP APPLIER WITH SERPENTINE SPRING CLIP FEEDER

James A. Transue, Union, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Feb. 26, 1982, Ser. No. 352,833
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—325 **11 Claims**



11. A scissors-type medical instrument for repeatedly applying a plurality of ligating clips seriatim about tissue wherein each said clip is initially provided in an open state and wherein each said clip comprises first and second legs which are joined at a leg connection end of the clip and which are spaced apart at their distal ends; each said clip including a base extending along at least a portion of said first leg and including means for being guided and retained by, and for supporting said clip in, said instrument; said instrument comprising:

first and second handles mounted together for pivotal movement about a pivot axis, each said handle extending forwardly beyond the pivot axis to form a clip closing jaw, said jaws having opposing clip engaging faces;

means associated with said first and second handles for limiting the pivoting movement of said handles to a maximum opening of said jaws;

said first handle including a guideway for receiving a plurality of said open clips in a single row with the clips arranged in end-to-end relationship with the distal end of said first leg of one clip abutting the leg connection end of the next forwardly adjacent clip, said first handle including clip retaining means along said guideway for engaging said clip base to retain said clip in sliding engagement within said first handle in said guideway;

means on said second handle jaw for engaging said second leg of the front clip in said row of clips when said jaws are at said maximum opening and when the front clip is open and positioned between the open jaws whereby discharge of the open front clip from the open jaws is prevented;

a last clip engaging member disposed within said guideway and adapted to bear against the last clip in said row of clips; and

a serpentine spring disposed within said guideway and adapted to be compressed behind said last clip engaging member for moving said row of clips forwardly along said guideway to said jaws.

4,450,840

LIGATING CLIP WITH FLANGED BASE HAVING A RECESSED ENGAGING FACE

Robert W. Mericle, Lebanon, and James A. Transue, Union, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Feb. 26, 1982, Ser. No. 352,834
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—325 **12 Claims**



1. A ligating clip adapted to be applied to tissue, each said clip comprising:

first and second legs joined at their proximal ends by a resilient hinge to define the rear end of the clip and terminating at their distal ends at the front of the clip in latch means for holding the clip latched closed when the clip legs are squeezed together, each leg having a vessel clamping inner face in opposition to a vessel clamping inner face of the other leg;

a base extending along a portion of said first leg, said base terminating short of the distal end of said first leg in a front face whereby an open recess is defined adjacent said base front face below said first leg; and

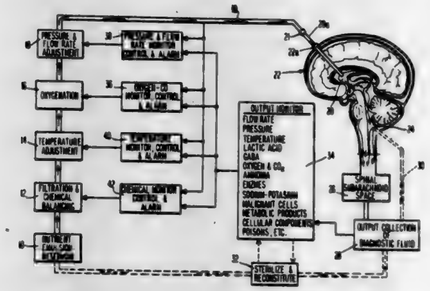
flanges extending rearwardly along a portion of the length of said base from said base front face and terminating short of said first leg proximal end, said flanges extending laterally outwardly beyond the sides of the first leg, the portion of said base that extends along said first leg between said first leg proximal end and said flanges having a width not greater than the width of said first leg.

4,450,841

STROKE TREATMENT UTILIZING EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

Jewell L. Osterholm, Radnor Township, Delaware County, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 354,346, Mar. 3, 1982, which is a continuation-in-part of Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, and Ser. No. 275,116, Jun. 18, 1981, Pat. No. 4,393,863, and Ser. No. 275,117, Jun. 18, 1981, each is a division of Ser. No. 139,886, Apr. 14, 1980. This application Sep. 30, 1982, Ser. No. 428,687
The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.
Int. Cl.³ A61K *31/00*; A61M *5/14*
U.S. Cl. 128—632 **26 Claims**



1. A method of diagnosing the condition of suspected hypoxic-ischemic central nervous system tissue of a mammal, comprising:

(a) providing a synthetic spinal fluid comprising at least one oxygenated oxygen-carrying component and essential electrolytes to compatibilize the oxygen-carrying component for use with central nervous system tissue;

(b) injecting said synthetic spinal fluid into at least a first portion of the cerebrospinal pathway of said mammal to contact said tissue to become a diagnostic fluid;

(c) withdrawing said diagnostic fluid from a second portion of said pathway to create a circulation of said fluid through at least a portion of said pathway;

(d) monitoring the composition of said diagnostic fluid; and

(e) comparing constituents of said fluid for at least a selected difference in the compositions of said synthetic spinal and diagnostic fluids;

whereby said selected differences in said compositions are at least diagnostic of the condition of said suspected hypoxic-ischemic tissue disposed along said portion of said cerebrospinal pathway.

4,450,842

SOLID STATE REFERENCE ELECTRODE

Gregory L. Zick, Seattle, Wash., and Stanley H. Saulson, Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

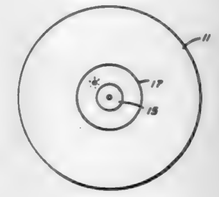
Continuation of Ser. No. 143,927, Apr. 25, 1980, abandoned. This application Nov. 6, 1981, Ser. No. 318,693
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—635 **7 Claims**

1. A solid state sensor for measuring the oxygen of blood by contact with a patient's skin, said sensor comprising:

a thin ceramic substrate disc having front and back surfaces;

a noble metal cathode, extending through said substrate from the back surface to the front surface where, at a first limited area of said front surface, said cathode is exposed for reducing oxygen; and

a reference electrode comprising a mixture of silver, silver chloride and a fused glass frit forming a conductive film



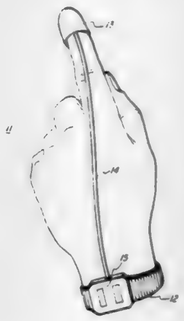
coating over a second limited area of said disc front surface.

4,450,843

MINIATURE BIOFEEDBACK INSTRUMENT

George M. Barney, Dallas, and Paul R. Michaelis, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 24, 1980, Ser. No. 209,564
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—690 **5 Claims**



1. A body-mountable instrument for providing biofeedback information pertaining to the human body of a user thereof, said instrument comprising:

temperature sensing means adapted to be disposed in contact with the body of a living human for detecting the external skin temperature of the human body and providing a temperature signal output indicative of the magnitude thereof;

heart beat sensing means adapted to be disposed in contact with the body at an appropriate location thereon for detecting the heart beats of the human body and providing a heart beat signal indicative thereof;

processing means including:

time-keeping means for keeping track of the elapsed time,

means operably coupled to said temperature sensing means and periodically at predetermined time intervals of a constant multiple within the elapsed time as established by said time-keeping means operating upon said temperature signal output of said temperature sensing means for determining a time rate of change in the external skin temperature of the human body over a predetermined time interval and producing an informational biofeedback output signal indicative thereof,

means operably coupled to said heart beat sensing means and responsive to said heart beat signal and elapsed time for determining the current pulse rate and the time rate of change in the pulse rate of the human body over a predetermined time interval and producing additional

informational biofeedback output signals respectively indicative thereof,

said processing means being operable during a selected monitoring period to periodically determine the current time rates of change in the external skin temperature and the pulse rate of the human body, and

means for determining average values for the time rates of change in the external skin temperature and the pulse rate of the human body for said monitoring period at the end thereof and producing another informational biofeedback output signal indicative thereof; and

presentation means operably coupled to said processing means, said presentation means being responsive to said informational biofeedback output signals for providing a real-time indication of the external skin temperature of the human body at any given time instant and the time rate of change in the external skin temperature of the human body, a real-time indication of the pulse rate of the human body at any given time instant and the time rate of change in the pulse rate of the human body, and an indication of said average values for the time rates of change in the external skin temperature and the pulse rate of the human body during said monitoring period.

4,450,844

PATCH SYSTEM FOR USE ON THE SKIN

Robert A. Quisno, Monroe, Ohio, assignor to Hill Top Research, Inc., Cincinnati, Ohio

Filed Nov. 23, 1981, Ser. No. 324,048
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—743 **11 Claims**



1. A patch system for use on skin for predictive testing, diagnostic testing and dermal drug delivery, said patch system comprising an open-faced, integral, one-piece housing of non-toxic, inert, soft and flexible material, said housing having a substantially planar central body portion terminating in a peripheral body portion of substantially arcuate cross section curving outwardly and downwardly below said central body portion, said peripheral body portion terminating in an outer skin-contacting edge, an inner skin-contacting edge depending downwardly from said peripheral body portion, said skin-contacting inner and outer edges being parallel and spaced from each other and each being continuous, said skin-contacting inner and outer edges being coplanar, being the only skin-contacting portions of said housing, and having an air space therebetween.

4,450,845

DEVICE FOR SHIELDING HUMAN SKIN FROM AMBIENT LIGHT TO FACILITATE TESTS PERFORMED THEREON

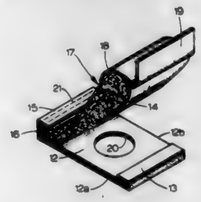
Rolf R. Engel, St. Paul, Minn., assignor to Minneapolis Medical Research Foundation, Inc., Minneapolis, Minn.

Filed Feb. 22, 1982, Ser. No. 350,563
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—743 **7 Claims**

1. A device for shielding a portion of the skin of a human patient to facilitate the performance of tests on the skin via a testing instrument, said device comprising:

a first layer having a bottom surface and a top surface, said bottom surface having an adhesive layer thereon for adhesion to the skin of the human on which the test is to be performed, said first layer having an opening therethrough to permit selective access by said testing instrument to the portion of the skin exposed by said opening;

a second, opaque layer positioned above said top surface of said first layer covering said opening and being secured thereto by a hinge means for permitting selective and repeated removal of at least a portion of said second layer from the area of said opening to permit periodic access by said testing instrument; and



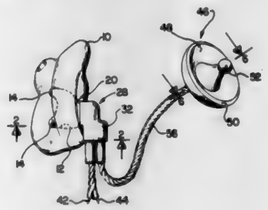
an adhesive coating between said first and second layers, said adhesive coating being effective to adhere said second layer to said first layer despite repeated removals for purposes of testing, said adhesive coating further having adhesive qualities which permit said second layer to be selectively removed from said first layer without removing said first layer from the skin of said patient.

4,450,846

ELECTRICAL PULSE ACUPRESSURE APPARATUS AND METHOD OF MAKING SAME

Francis J. McCall, 19231 Victory Blvd., Reseda, Calif. 91335

Filed Dec. 24, 1981, Ser. No. 334,317
Int. Cl.³ A61N *1/02*
U.S. Cl. 128—789 **3 Claims**



1. An electrical pulse acupressure apparatus adapted to be worn by a human being in contact with the ear, said apparatus comprising:

an electrical pulse applicator, said applicator to closely conform in a tight fitting manner with the interior of the ear, said applicator to be carried by the human being, metallic nodule means mounted within an exterior surface of said applicator, said applicator being adapted to receive electrical pulses from an electrical pulse generating means and conduct such through said metallic nodule means into the body of the human being, said nodule means to be located against at least one acupuncture point of the body of the human being to thereby treat a corresponding body function;

electrical connection means formed within said applicator, said applicator having an interior chamber, said electrical connection means including a hardened paste substantially completely filling said internal chamber, said metallic nodule means connecting with said hardened paste, said hardened paste being electrically conductive;

a female plug having at least one electrical connector, said female plug being embedded within said hardened paste; and

a male plug assembly being electrically connected with said electrical connector of said female plug, whereby the electrical pulses from said electrical pulse generating means are conducted through said male plug and said female plug and through said hardened paste to said nodule means.

4,450,847

WRAPPER FOR SMOKING ARTICLES AND METHOD

William F. Owens, Pisgah Forest, N.C., assignor to Olin Corporation, Pisgah Forest, N.C.

Filed Apr. 7, 1982, Ser. No. 366,315
Int. Cl.³ A24D *1/02*
U.S. Cl. 131—365 **16 Claims**

1. A wrapper for smoking articles such as cigarettes, cigars and the like comprising a cellulosic sheet containing, as filler, a small fraction of freshly precipitated amorphous magnesium hydroxide gel coated on or applied to the fibers of the sheet wherein the small fraction of amorphous magnesium hydroxide gel comprises 5% to 50% by weight of the total filler.

4,450,848

ARTIFICIAL FINGERNAIL FORMING METHOD, COMPOSITION AND KIT

Elisa L. Ferrigno, 107 Glen Rd. - Apt. 4C, Yonkers, N.Y. 10470

Filed Sep. 29, 1982, Ser. No. 427,105
Int. Cl.³ A45D *29/00*
U.S. Cl. 132—73 **5 Claims**

1. A method of forming an artificial fingernail on a natural fingernail, comprising the steps of:

a. adhering a plastic fingernail tip to the top surface of the free end of a natural fingernail;

b. applying a thin coating of a liquid cyanoacrylate adhesive to the top surface of the natural fingernail rearward of the tip;

c. applying a thin layer of an acrylic ester polymer in powder form on the adhesive coating while still wet;

d. applying a second thin coating of said liquid cyanoacrylate to the surface of the layer after drying; and

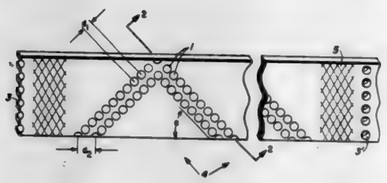
e. buffing the surface until smooth after the liquid dries.

4,450,849

DENTAL PHYSIO-TAPE

Chris A. Cerceo; Jeanie F. Kaufman, both of Box AP, 3443 Lake Tahoe Blvd., Suite F, South Lake Tahoe, Calif. 95705, and Martin H. Kaufman, Box 243, Ridgecrest, Calif. 93555

Filed Sep. 27, 1982, Ser. No. 423,860
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—89 **19 Claims**



1. A dental tape having length, width, edges and two sides for removing plaque from the teeth comprising a strong, flexible, tear-resistant tape having a multitude of rows of protuberances fixed in place which are aligned obliquely to the length of the tape, having preselected spacing between said rows and between said protuberances, and which lift debris in a preferred direction away from the base of the teeth towards the ends of the teeth, the debris riding along the rows aligned obliquely.

4,450,850

CRUTCH FOR USE ON AN ICY SURFACE

William A. McKenna, 2925 Sunset Dr., Bellingham, Wash. 98225

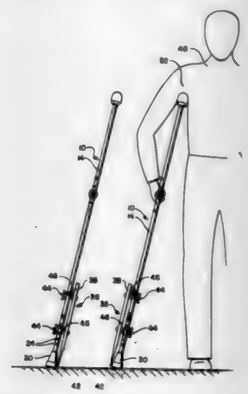
Filed Apr. 30, 1982, Ser. No. 373,607
Int. Cl.³ A61H *3/02*
U.S. Cl. 135—78 **4 Claims**

1. A crutch assembly particularly adapted for use on an icy surface, as well as on a finished ground surface, said assembly comprising:

a. a crutch member having a longitudinal axis and also having an upper gripping portion adapted to be held by a person in a first position and in a second position where the crutch member is rotated approximately 180° about the longitudinal axis relative to the first position, said crutch member in said first and second positions extending downwardly at a slant away from the person with the longitudinal axis being at a slanted angle to the ground surface within a predetermined angular range, said crutch member having a first side which faces toward the person with the crutch member in the first position and a second side which faces toward the person with the crutch member in the second position;

b. a first ground engaging member mounted to the lower end of the crutch member and having a blunted ground engaging surface adapted to frictionally engage a finished ground surface;

c. a second ground engaging member having a ground engaging tip adapted to engage an icy surface, said second ground engaging member being firmly attached to said crutch member so as to have a substantially fixed position relative to said crutch member;



d. said second ground engaging member being positioned with its tip on the second side of the crutch member relative to the ground engaging surface of the first ground engaging member, said tip being at a level relative to the ground engaging surface of the first ground engaging member so that with the crutch member in its first position, the tip is out of contact with the ground surface and with the crutch member in the second position, the tip comes into contact with the ground engaging surface;

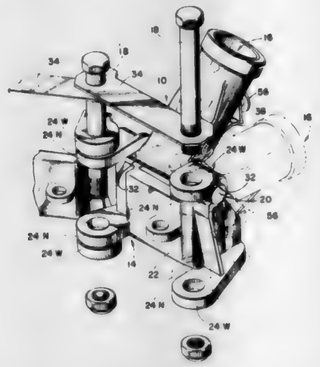
e. said first ground engaging member having a first surface portion that comes into initial ground engagement with the ground surface when the crutch member is in the first position, said first surface portion being positioned at a first plane perpendicular to said longitudinal axis and being compressible through a first distance to a second plane also perpendicular to the longitudinal axis, the tip of the second ground engaging member being positioned above a third plane perpendicular to the longitudinal axis, the third plane being below the secnd plane by a distance equal to the cotangent of the slanted angle times a lateral distance from the first surface portion to the tip of the second ground engaging member; whereby the crutch assembly can be used in the first position without the tip digging into the ground surface, and on any icy surface the crutch assembly can be used in the second position so that the tip firmly engages the icy surface to prevent slippage.

4,450,851

FREE-STANDING COLLAPSIBLE TENT FRAME STRUCTURE AND HUB ASSEMBLY THEREFOR

Allan E. Beavers, Littleton, Colo., assignor to T. A. Pelsue Company, Englewood, Colo.

Filed Dec. 15, 1981, Ser. No. 330,885
Int. Cl.³ A45F 1/16
U.S. Cl. 135—109 **4 Claims**



1. For use with four or more radially-extending struts and a tension member interconnecting the ends thereof to produce a collapsible subframe for a tent structure or the like, the improved hub assembly which comprises: a chain of at least four double-ended hinge members pivotally interconnected at their adjacent ends to form a closed polygonal loop thereof, the axes of pivotal movement between said hinge members paralleling one another in perpendicular relation to the plane of the loop; and, a strut-receiving socket attachable to each of the hinge members for pivotal movement relative thereto about an axis paralleling the plane of the loop on the outside thereof, said strut-receiving sockets being movable between a fully-folded position in substantially parallel relation to one another and a fully-unfolded position abutting their respective hinge members so as to define an included angle with respect to their fully-folded positions of slightly in excess of 90°, and the pivotal connections between adjacent hinge members cooperating with their respective strut-receiving sockets when so connected to permit adjustment of the included angle between the latter through an angle of approximately 0° and between 90° and 180° in fully-unfolded position.

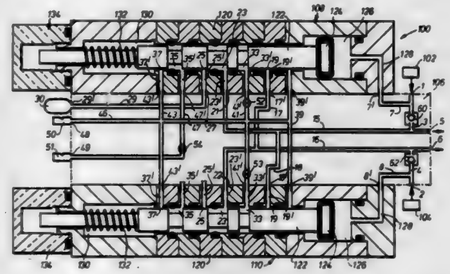
4,450,852

GAS SWITCHING DEVICE

Raymond S. Gregory, Bingley, England, assignor to The Medishield Corporation Limited, London, England

Filed Dec. 28, 1981, Ser. No. 334,780
Claims priority, application United Kingdom, Jan. 6, 1981, 8100216
Int. Cl.³ G01L 19/12
U.S. Cl. 137—114 **9 Claims**

1. A gas switching device for use with a gas supply system in which first and second gases are each supplied from a source to a unit at a predetermined pressure, the sevice being positioned upstream of the unit and comprising a manifold having a first inlet and outlet for the passage therethrough of the first gas and a second inlet and outlet for the passage therethrough of the second gas, a first valve assembly associated with the first gas and a second valve assembly associated with the second gas, each valve assembly being operable independently of the other valve assembly and including a member movable from a first to a second position under the influence of the pressure of its associated gas at its inlet to the manifold, each valve assembly having an inlet communicating with a passageway in the manifold which, in turn, communicates with the inlet of the manifold for the other gas, and an outlet spaced from said inlet, said outlet communicating with a second passageway in the manifold which, in turn, communicates with the outlet in the manifold for the associated gas, the arrangement being such that whilst the predetermined pressures of the first and the second gases at each respective inlet to the manifold are maintained, the members each occupy the first position thereby isolating each valve assembly inlet from its outlet, but if the pressure of



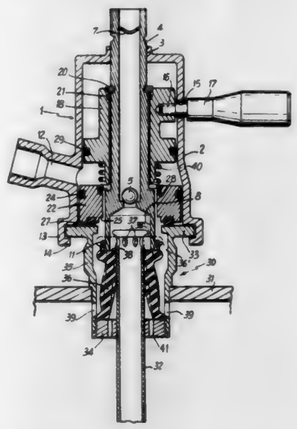
one gas from its source should drop below its predetermined value then the member of the valve assembly associated with that gas will move to its second position thereby permitting the passage of the other gas from the inlet to the outlet of that valve assembly so that said other gas exits from the first and the second outlets of the manifold to maintain the total flow of gas from the switching device substantially constant.

4,450,853

ASSEMBLY FOR DRAWING OFF A LIQUID BY MEANS OF A GAS UNDER PRESSURE

Robert Dessenoix, 11, Chennevières St., and Pierre Dessenoix, 2, Veluché Rd., both of 79600 Airvault, France

Filed Jul. 21, 1981, Ser. No. 285,525
Int. Cl.³ F16L 39/00
U.S. Cl. 137—212 **3 Claims**



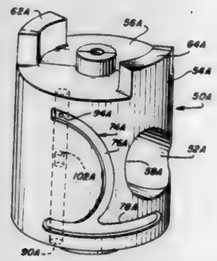
1. In a draw-off assembly comprising a head for drawing off a liquid by means of a gas under pressure, adapted to be connected to a plunger tube assembly sealably traversing the wall of a container for storing safe liquid, comprising a body, in which is slidable a mobile member including a mobile central tube and a piston, said mobile central tube having a lower end which is adapted to be sealably connected to the plunger tube by controlled descent with respect to the body, said body comprising a gas inlet pipe leading to an annular space made between the mobile central tube, the body itself and a lower annular valve wherein said lower annular valve is mounted between the body and the mobile central tube for sliding freely inside said body and outside said mobile central tube, said annular valve having a front sealing ring and being urged toward a lower end of said body, said body having a coupling means for connection with a flange of said plunger tube assembly whereby said front sealing ring is in sealing contact with said flange when said coupling means is connected with said flange independently of the said mobile central tube in said body, said lower annular valve being urged by a spring abutting on said mobile member constituted by said mobile central tube and said piston.

4,450,854

LUBRICATED SPLIT PLUG VALVE

William H. Alexander, and Joe R. Burger, both of Houston, Tex., assignors to Vapor Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 215,728, Dec. 12, 1980, Pat. No. 4,393,893. This application Feb. 25, 1983, Ser. No. 469,791
Int. Cl.³ F16K 5/22
U.S. Cl. 137—246.12 **4 Claims**



1. In a fluid control valve of the type having a plug closure member rotatable between open and closed positions for controlling pressurized product flow therethrough by alignment of apertures in the valve body and ports on the closure member and a passage therethrough, a lubrication system comprising;

first and second plug halves defined along a plane intersecting said plug at an angle oblique to the longitudinal axis of said plug passage, each said half containing a major portion of one plug inlet, and a minor portion of the other plug inlet, respectively;

a semi-circular groove on each plug half outer surface, having a first leg peripherally displaced from the bottom portion of the semi-circular groove and a second leg extending under said major inlet portion which is connected to the first leg;

a continuous groove in said body adjacent to and essentially surrounding a portion of each body aperture, and including a portion in fluid communication with said semi-circular groove first and second leg;

ports in said body and said semi-circular groove for communicating said body and said semi-circular groove for admitting sealant/lubricant therethrough;

wherein pressurized sealant introduced via said sealant ports enters said body and said semi-circular groove in both the open and closed valve positions.

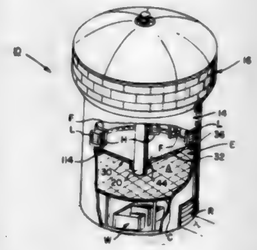
4,450,855

REMOVABLE CONDENSATE COLLECTOR FOR ELEVATED WATER STORAGE FACILITIES

Richard E. Hills, Coraopolis, Pa., assignor to Pittsburgh-Des Moines Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1982, Ser. No. 361,136
Int. Cl.³ E03B 11/00, 9/00
U.S. Cl. 137—312 **14 Claims**

1. An improvement in an elevated water storage facility comprising: a water storage tank supported on top of an enclosed column and a partition extending across the column dividing the enclosed column into an air space above the partition and a work area for offices, warehouses, and the like located beneath the partition with elements located in the work area which can be damaged by condensate falling thereonto from the tank; collecting means for collecting condensed water vapor which drips from the underside of said tank, the collecting means including attaching means mounted on a wall of the enclosed column above the partition, a membrane attached to said attaching means and mounted inside the column at a location between the tank and the partition for collecting any



condensate falling from the tank prior to that condensate falling onto the partition; and

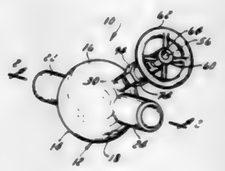
membrane strengthening means for internally reinforcing and strengthening the membrane to permit water collected on the membrane to be retained on the membrane for a period of time until evaporation and ventilation can remove that collected water from the elevated water storage facility; and ventilation means being disposed with the column and open to the outside atmosphere for facilitating ventilation through the facility to remove said collected water.

4,450,856

MEANS FOR RELEASABLY SECURING HAND-WHEEL TO VALVE SPINDLE

Erich J. Kocher, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Jul. 25, 1983, Ser. No. 516,898
Int. Cl.³ F16K 43/00, 31/50
U.S. Cl. 137—315 **7 Claims**



1. A valve comprising:

a sleeve;

a rotatable spindle extending from said sleeve;

a hollow bonnet surrounding said spindle and sleeve and threadably secured to the latter;

an operating member having a hub with a hole therein for attachment to the outer end of said spindle;

and means for releasably connecting said operating member to said spindle comprising: a pin-hole parallel to said hole in said hub and defined by registering adjacent depressions formed in said hub at the side of said hole therein and in a side of said outer end of said spindle, and a flanged pin inserted in said pin-hole, said pin being removed from said pin-hole in response to unscrewing of said bonnet which engages and moves said operating member axially off of

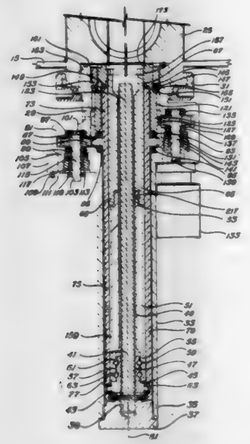
said spindle, which movement of said operating member forces said pin from said pin-hole.

4,450,857

DEVICE FOR TAPPING AND PLUGGING A FLUID CONDUCTOR

John L. Baugh, Huntsville, and James W. Montgomery, Houston, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Aug. 10, 1981, Ser. No. 291,661
Int. Cl.³ B23B *39/00*
U.S. Cl. 137—318 **8 Claims**



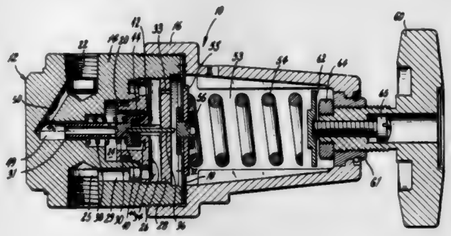
1. A device for tapping a fluid conductor, comprising;
a cutter housing;
mounting means for mounting said cutter housing on the exterior of said fluid conductor to be tapped;
an externally threaded lead screw mounted in a fixed position within said cutter housing;
an internally threaded feed nut threaded onto said lead screw, said feed nut threads mating with said lead screw threads so that said feed nut is rotatably movable along said lead screw exterior;
a cutting cylinder surrounding said lead screw, said cutting cylinder having a leading cutting end and a trailing end, said trailing end being contacted by said feed nut as said feed nut moves along said lead screw exterior, thereby driving said cutting cylinder along a drive axis transverse to the longitudinal axis of said fluid conductor;
a feed sleeve surrounding said cutting cylinder within said housing;
slot means on said feed sleeve for engaging said feed nut whereby rotation of said feed sleeve causes rotation of said feed nut;
a feed motor operably associated with said feed sleeve for rotating said feed sleeve;
a drive sleeve positioned about said cutting cylinder in said housing;
engaging means on said drive sleeve for rotating said cutting cylinder;
a drive motor independent of said feed motor and operably associated with said drive sleeve for rotating said drive sleeve.

4,450,858

GAS PRESSURE REDUCING REGULATOR

Byron H. Acomb, Florence, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 147,860, May 8, 1980, abandoned. This application Jun. 10, 1982, Ser. No. 386,999
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—505.37 **2 Claims**



1. A single stage pressure regulator resistant to oxygen burnout for regulating the flow of oxygen supplied to the regulator from a source of oxygen at a high inlet gas pressure comprising: a hollow regulator body having an inlet opening adapted to be connected to said source of oxygen; an outlet opening for discharging said oxygen at a controlled reduced pressure; a valve chamber having an upstream and downstream end relative to the flow of said oxygen; a control chamber; a valve disposed within said valve chamber and including a slidable valve member containing a valve seat of elastomer material with a high resistance to combustion disposed at the downstream end of said valve chamber and a valve stem; spring means surrounding said slidable valve member at a location separated from the inlet gas flow path for urging said valve into a closed position; a nozzle assembly having a nozzle head for separating said valve chamber from said control chamber, said nozzle head having a frustoconical tapered extension juxtaposed relative to the valve seat for sealing off the valve upon loss of valve seat material; a bonnet having a bonnet chamber; diaphragm means for separating said bonnet chamber from said valve chamber and for forming a diaphragm chamber, with said diaphragm means including a flexible diaphragm and with said valve stem extending through said nozzle head into said diaphragm chamber in biased engagement with said diaphragm, a bleeder hole located in said nozzle head for controllably restricting the flow of gas from said control chamber to said diaphragm chamber so as to isolate the diaphragm from direct contact with inrushing gas through said valve; and first and second conduit means communicating with the valve chamber at the upstream end thereof, said first and second conduit means having axes which intersect to form an included angle of less than ninety degrees with one of said conduit means being concentric with the longitudinal axis of said valve assembly.

4,450,859

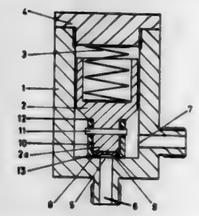
SAFETY VALVE

Ulf C. Bergman, Malmoe, Sweden, assignor to Mechanical Technology Inc., Latham, N.Y.

Continuation of Ser. No. 308,250, Oct. 5, 1981. This application Mar. 29, 1983, Ser. No. 480,111
Int. Cl.³ F16K *17/04, 25/00*
U.S. Cl. 137—516.29 **4 Claims**

1. An improved safety valve of the kind including a housing, a valve member axially movable therein from a closed valve position to an open valve position, a prestressed compression spring mounted between said member and said housing, a first opening located centrally in said housing and surrounded by an annular valve seal lying in a plane perpendicular to the direction of movement of said valve member, a second opening in said housing arranged remote from said seat, and a resilient

gland operatively associated with said valve member and adapted to abut said valve seat in the closed position, wherein the improvement comprises:
a shoulder on said valve member;
a sleeve surrounding said valve member, said sleeve having a top and bottom end and having an inner diameter greater than the outer diameter of said valve member to allow relative axial movement of said sleeve in an upward direction;
the top end of said sleeve limiting the distance of said relative upward axial movement by engagement with said valve member shoulder;
the bottom end of said sleeve forming an axial extension beyond said valve member so as to surround said resilient gland and to contact a part of said valve seat in the closed valve position such that said sleeve acts as a support for said gland in the closed valve position;



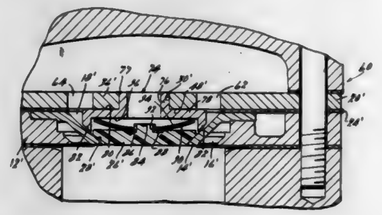
means for connecting said valve member and said sleeve to provide limited relative axial movement of said sleeve in a downward direction in the open valve position such that said sleeve shields said gland from high velocity fluid in the open valve position; and
an inwardly directed flange on said bottom end of said sleeve for engaging said resilient gland such that the relative axial movement of said flange in said upward direction compresses said gland in the closed valve position and the expansion of said resilient gland against said flange causes axial movement of said sleeve in the downward direction in the open valve position,
said connecting means also allowing said limited movement of said sleeve relative to said valve member in the upward direction in the closed valve position, said limited upward movement also limiting the compression of said resilient gland by said valve member.

4,450,860

DISCHARGE VALVE GUIDE

Woodie R. Francis, and James F. Fogt, both of Sidney, Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Feb. 13, 1981, Ser. No. 234,169
Int. Cl.³ F16K *15/02*
U.S. Cl. 137—543.19 **18 Claims**



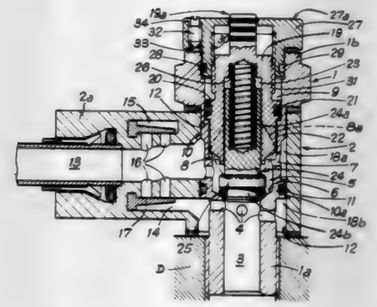
14. An improved valve plate assembly for use in a compressor comprising:
a valve plate means having a discharge opening extending therethrough and means defining a valve seat in said discharge opening;
leaf spring biasing means having a convex surface and a concave surface;
a valve member engageable with said valve seat to close said discharge opening and including a spring seat, said spring seat engaging a porition of said convex surface of said leaf spring; and
retainer means secured to said valve plate means and including means engaging said valve plate means to prevent movement of said retainer means in a direction away from said valve member, said retainer means engaging a portion of said concave surface of said leaf spring so as to bias said valve member into said closed position.

4,450,861

COMPRESSED GAS SAVING DEVICE

Daniel Bouteille, 2 Allée des Chataigniers "Le Monastère", Ville d'Avray, France (92410)

Filed Apr. 16, 1981, Ser. No. 254,618
Claims priority, application France, Apr. 23, 1980, 80 09141; Dec. 18, 1980, 80 26943
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—553 **10 Claims**



1. A compressed gas saving device for use in a pipe system connecting a control valve outlet to the inlet of a pressure user apparatus, said device comprising a body formed with a first passage extending from a first end to a second end of said body, means adjacent said second end connecting said first passage to said control valve outlet, means connecting said first passage to said pipe system, a seat in said first passage, a valve adapted to engage said seat to close said first passage, a return spring member for urging said valve into engagement with said seat, means including a manually operable member for adjusting the force exerted by said spring member on said valve, said spring member opposing the rising force of the valve generated by the gas flowing from the control valve, a second passage provided in the body, said second passage constituting a shunt in parallel with the first passage for bypassing said valve, said second passage provided with a one-way valve, the flow direction of which is that of gas issued from the pressure-user apparatus, a visual indicator positionable with relation to an external surface of said body, and means responsive to said adjusting means for positioning said visual indicator.

4,450,862

PINCH VALVE ASSEMBLY

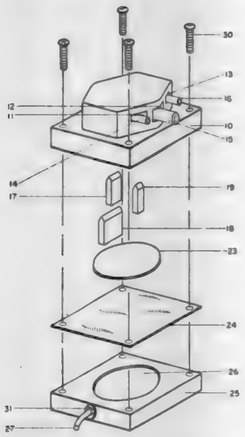
Thomas H. Hogan, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 13, 1981, Ser. No. 234,133
Int. Cl.³ F16K *31/126*
U.S. Cl. 137—595 **15 Claims**

1. A valve assembly for controlling fluid flow through a plurality of resilient tubes comprising:
a base;
a housing attached to said base, said housing having a plurality of passageways extending therethrough for receiving a

resilient tube in each of said passageways, said housing further having a slot associated with each of said passageways extending transversely from said passageways toward the bottom of said housing:

a plurality of slide elements, a said slide element located in each of said slots for reciprocal movement therein independent of said other slide elements; and



a single actuation means for reciprocally moving said slide elements, simultaneously within said slots from a first position, at which fluid flow through the resilients tubes can occur, to a second position, at which fluid flow through the resilient tubes is precluded.

4,450,863

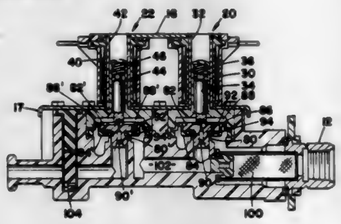
SERIES CONNECTED SOLENOID APPLIANCE CONTROL VALVE ASSEMBLY

Wade R. Brown, Saint Charles, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 13, 1981, Ser. No. 263,199

Int. Cl.³ F16K *31/02*

U.S. Cl. 137—613 **9 Claims**



1. An automatic dishwasher comprising:

(a) a water inlet line;

(b) a flow control valve assembly operatively connected with the water inlet line for controlling the water therethrough;

(c) wash water introducing means for introducing wash water into a container which is adapted to receive dishes, the wash water introducing means being operatively connected with the water inlet line downstream from the flow control valve assembly;

(d) electrical control means for selectively producing an electrical actuating potential on a control means output for controlling the flow control valve assembly such that water is selectively enabled to flow from the water inlet line to the water introducing means;

(e) the flow control valve assembly including first and second independently actuated pilot operated fluid valves connected fluidically in series such that the first and second fluid valves are each actuatable alone and independently to block the flow of fluid therethrough, the flow control valve assembly including:

(i) the first pilot operated fluid valve having a first valve seat and a first valve closure for selectively controlling fluid flow therethrough, the first valve closure defining a first pilot reservoir toward a side thereof opposite to the first valve seat, a first pilot inlet aperture for connecting the first pilot reservoir upstream of the first valve seat, a first pilot outlet aperture for connecting the first pilot reservoir downstream of the first valve seat, a first solenoid coil, and a first armature, the first armature being axially movable in the first solenoid coil and being operatively connected with the first pilot outlet aperture for selectively controlling fluid flow therethrough to control the relative position of the first valve closure and the first valve seat;

(ii) the second pilot operated fluid valve fluidically in series with the first pilot operated pilot valve, the second fluid valve including a second valve seat, a second valve closure for selectively controlling fluid flow through the second valve seat, the second valve closure defining a second pilot reservoir toward a side opposite the second valve seat, a second pilot inlet aperture for connecting the second pilot reservoir upstream of the second valve seat, a second pilot outlet aperture for connecting the second pilot reservoir downstream of the second valve seat, a second solenoid coil, and a second armature, the second armature being axially movable in the second solenoid coil and operatively interacting with the second pilot outlet aperture for selectively controlling fluid flow therethrough to control the relative position of the second valve closure and the second valve seat;

(iii) connecting means for connecting the first and second solenoid coils electrically in series across the electrical actuating potential at the control means output;

(iv) the series connected first and second solenoid coils having substantially the same electrical impedance as a pair of parallel connected solenoid coils, the first and second series connected solenoid coils each having substantially the same plural number of turns which plural number of turns is generally half the number of turns as a pair of parallel connected solenoid coils, and the first and second series connected solenoid coils each having an electrical resistance per unit length which is generally half the resistance per unit length of the parallel connected coils, whereby the serially connected first and second coils have generally half the number of turns and half the electrical resistance per unit length as the parallel connected coils, such that each series connected coil has generally a quarter of the resistance of a single parallel connected coil.

4,450,864

ELECTROPNEUMATIC VALVE CONTROL

Wilhelm Huckebrink, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Feb. 5, 1982, Ser. No. 346,477

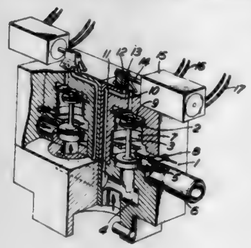
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108976

Int. Cl.³ F16K *31/126, 31/42*

U.S. Cl. 137—624.13 **2 Claims**

1. In an electropneumatic valve control device for use in milking installations, having first valve means including a valve body connected to one side of a diaphragm and movable between a first position and a second position in response to pressure changes on the other side of the diaphragm and electrically actuatable auxiliary valve means for changing the pressure on said other side of the diaphragm to shift the diphragm and valve body from one of its positions to the other, the improvement wherein: the first valve means comprises a

diaphragm chamber at said other side of the diaphragm and a vacuum chamber connectable to a vacuum source during use to maintain a vacuum continuously therein and the auxiliary valve means comprises means forming a first connecting passage in communication with the vacuum chamber and thereby the vacuum therein and a second connecting passage in communication with the diaphragm chamber, a control slide valve body having a recess and movable between a rest position wherein the second connecting passage is connected to the atmosphere and the first connecting passage is sealed by the slide valve body with the vacuum in the first connecting passage acting on the slide valve body to retain same in place, and a working position wherein the recess in the slide valve body



connects the first connecting passage and the second passage and thereby the vacuum chamber to the diaphragm chamber with the vacuum acting on the slide valve body to retain same in place, and electromagnetic solenoid means responsive to an electrical pulse for briefly applying a force to the slide valve body to overcome the action of the vacuum thereon and move the slide valve body from the rest position to the working position wherein it is acted on by the vacuum to retain same in place and responsive to the next electrical pulse for briefly applying a force to the slide valve body to overcome the action of the vacuum thereon and move the slide valve body from the working position to the rest position wherein it is acted on by the vacuum to retain same in place until the next pulse.

4,450,865

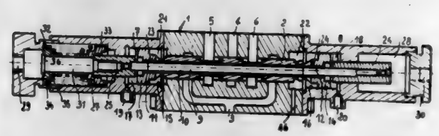
HYDRAULIC POWER SLIDE VALVE, ESPECIALLY DESIGNED FOR PUBLIC WORK EQUIPMENT

Maurice Tardy, St. Etienne, France, assignor to Bennes Marrel, Loire, France

Filed Jul. 28, 1980, Ser. No. 172,546

Int. Cl.³ F15B *13/042*

U.S. Cl. 137—625.6 **18 Claims**



9. In a hydraulic fluid valve utilizing a source of hydraulic fluid in a hydraulic system and having a valve body with one end and an opposite end, a valve bore through said valve body extending from said one end to said opposite end, at least one feed line passage and at least one discharge line passage extending from said valve bore, a connecting rod mounted within said valve bore of said valve body and including a first end extending beyond one end of said valve body and a second end extending beyond said opposite end of said valve body, slide valve means mounted to said connecting rod for controlling the flow of hydraulic fluid from said at least one feed line passage to said at least one discharge line passsage and movable independently of said connecting rod, and means for moving said connecting rod, the improvement wherein said means for moving said connecting rod comprises:

a first end cap member mounted to said one end of said valve body, said first end cap member having a first sealed cavity therein adjacent to said valve body, a second sealed cavity therein spaced a predetermined distance therefrom, and a reduced diameter passage interposed said first and second sealed cavities;

a first control piston member rigidly mounted to said first end of said connecting rod for movement therewith, said first control piston further being sealingly mounted in said reduced diameter passage of said first end cap member, said first control piston further forming a seal between said first and second sealed cavities and having one end portion extending into said first sealed cavity and an opposite end portion extending into said second sealed cavity of said first end cap member;

first biasing means for biasing said first control piston, said first biasing means being mounted in said second sealed cavity of said first end cap member;

a second end cap member mounted to said opposite end of said valve body, said second end cap member having a third sealed cavity therein adjacent to said valve body, a fourth sealed cavity therein spaced a predetermined distance therefrom, and a reduced diameter passage interposed said third and fourth sealed cavities;

a second control piston member rigidly mounted to said second end of said connecting rod for movement therewith, said second control piston being sealingly mounted in said reduced diameter passage of said second end cap member, said second control piston further forming a seal between said third and fourth sealed cavities and having one end portion extending into said third sealed cavity and an opposite end portion extending into said fourth sealed cavity of said second end cap member;

inlet passage means for said first and third sealed cavities interconnected with a source of pressurized fluid;

outlet passage means for said third sealed cavity of said second end cap member;

intermediate passage means interposed said connecting rod and said slide valve means for establishing fluid communication between said first sealed cavity of said first end cap member and said third sealed cavity of said second end cap member; and

valving means for terminating said fluid communication between said first sealed cavity of said first end cap member and said third sealed cavity of said second end cap member such that said connecting rod moves a predetermined distance to actuate said valving means to terminate communication between said first and third sealed cavities independently of said movement of said slide valve means.

4,450,866

DEVICE FOR CONTROLLING A FLOWTHROUGH CROSS SECTION IN A CONTROL LINE

Gerold Grimm, Leonberg; Ulrich Kemmner, Stuttgart; Heinrich Knapp, Leonberg, and Klaus Rose, Mundelsheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 8, 1982, Ser. No. 338,410

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1981, 3100514

Int. Cl.³ F16K *31/06*

U.S. Cl. 137—625.34 **7 Claims**

1. A housed device for controlling a flowthrough cross section in a control line carrying operating medium in an internal combustion engine, said device further having an electromagnetic actuation member and a valve device arranged to open said flowthrough cross section to a greater or lesser extent and axially adjustable by said actuation member counter to a restoring force, characterized in that said valve device is supported coaxially within said valve housing by means of two guide diaphragms having a circumference and held in place relative to one another by attachment to said housing at said circumference, and further including

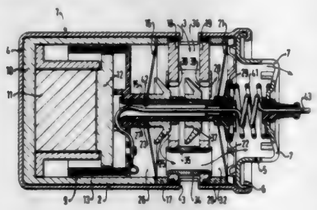
two similar, coupled valve members each of said valve

members arranged to cooperate with a valve seat, each valve member further including front and rear faces, wherein the front face of one valve member and the rear face of another valve member are subjected to a pressure which contacts one flow side of said valve members and the rear face of said one valve member and said front face of said other valve member is subjected to a pressure which contacts the other flow side of said valve members,

said valve members being connected with an actuation shaft of an electromagnetic system which is under control of said guide diaphragms and engaged by said actuation member,

said valve housing comprising a cuplike element having a bottom and said electromagnet system is disposed on said bottom of said valve housing,

each of said valve seats being supported on spaced apertured plate members in said valve housing,



said valve housing including a tubular wall section, said spaced apertured plate members supported in said tubular wall section and arranged to define an inner chamber, said chamber being in direct communication with said one flow side via inlet apertures in said tubular wall and said other valve member disposed in said chamber, and

said valve housing further including an end cap flanged thereto, said end cap arranged to compress a tensioning means against a portion of one of said guide diaphragms and a ring member which abuts one of said spaced apertured members, means connecting said spaced apertured plate members, and another of apertured plate members arranged to abut a second ring member to which urges a portion of the other of said guide diaphragms against a magnet housing of said electromagnet system.

4,450,867

DIVERTER VALVE AND ACTUATOR ASSEMBLY

James C. Moore, Rockwall, Tex., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 8, 1982, Ser. No. 415,857

Int. Cl.³ F16K *11/00, 3/04*

U.S. Cl. 137—625.44 **10 Claims**

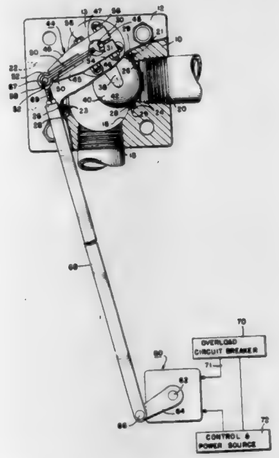
1. A diverter valve and actuator assembly for diverting the flow of a fluid from one path to another under the control of a power driven actuator, comprising:

(a) a valve body having a chamber therein closed by opposed side walls, and the valve body having an inlet port communicating with the chamber and haying two outlet ports extending from the chamber through the body and each outlet port having a valve seat therearound where the port enters the chamber, and the body having shaft receiving bearings in its side walls;

(b) a valve shaft supported in the bearings and extending from outside the body into the chamber, and a valve member carried by the valve shaft and disposed to be mated selectively with either of said valve seats to close the adjacent outlet port by appropriate rotation of the valve shaft;

(c) an actuator having a power driven shaft carrying a pivot which reciprocates with respect to the valve shaft when the actuator is driven, and having a link member supported at one end by the pivot and having a second end; and

(d) a control arm assembly carried by the valve shaft and comprising two rigid arms extending from the valve shaft toward the second end of the link, resilient leaf spring means fixed with respect to the valve shaft and extending therefrom between the rigid arms and spaced therefrom



and terminating in an outer end, and means coupling the second end of the link with the outer end of the resilient leaf spring means, whereby as the actuator is driven the arm assembly rocks the valve shaft to selectively seat the valve member on one of the valve seats.

4,450,868

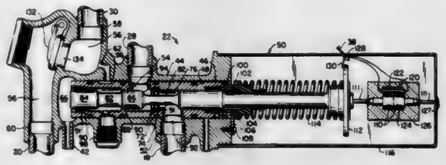
FREEZE PROTECTION APPARATUS FOR SOLAR COLLECTORS

Eugene F. Duval, 432B W. Meadow Dr., Palo Alto, Calif. 94306; David P. Bagshaw, 922 Lathrop Pl., Stanford, Calif. 94305; Michael A. Kast, 15 Bishop La., Menlo Park, Calif. 94025; Gilbert M. Masters, 1450 Mills Ct., Menlo Park, Calif. 94025, and Harry T. Whitehouse, 15 Bishop La., Menlo Park, Calif. 94025

Division of Ser. No. 960,399, Nov. 13, 1978, Pat. No. 4,280,478. This application Apr. 30, 1981, Ser. No. 258,966

Int. Cl.³ F16K *11/06*

U.S. Cl. 137—625.29 **4 Claims**



1. Valve apparatus comprising:

a housing having a bore extending into the housing, a drain tube extending from said bore to the outside of said housing, a fluid duct extending from the exterior of the housing into the bore, and at least a first port and a second port formed to extend into the bore;

a body member exteriorly dimensioned to fit in the bore of the housing and removably inserted therein, the body member having a generally cylindrical elongate passage therethrough and at least a first orifice, a second orifice and a third orifice formed to extend into the passage, the first orifice and the second orifice being disposed so as to be aligned generally concentric with the first and second ports, respectively, and the third orifice being positioned so as to communicate with said duct;

an elongate valve member formed and configured to slidably fit in the passage, the valve member being axially translatable within the passage from a first position for communicating the first port and the first orifice to the second port and the second orifice to an intermediate position for communicating the first port and first orifice to the second port and the second orifice and the fluid duct simultaneously to pressurize the second port and the fluid duct using only fluid passages internal to the housing and from said intermediate position to a second position for interrupting communication between the first orifice and the second orifice and communicating the second port and the second orifice and the fluid duct to the drain tube via at least a portion of the passage; and

means for effecting axial translation of the valve member between the first and second positions.

4,450,869

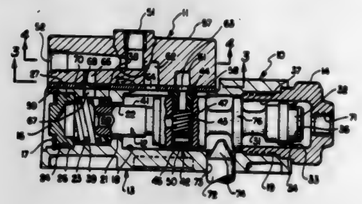
PILOT-OPERATED VALVE

Richard C. Acker, Cleveland, Ohio, assignor to Teledyne Republic Manufacturing, Cleveland, Ohio

Filed Jul. 24, 1981, Ser. No. 286,600

Int. Cl.³ F15B *13/042*

U.S. Cl. 137—625.48 **7 Claims**



1. A valve comprising an elongated housing assembly including a body formed of a material having poor wear resistance qualities and providing an elongated central passage therein, said passage providing a lateral opening therein intermediate its ends, a valve plate providing valve ports therein open to said passage mounted on said body and closing said lateral opening, said valve plate providing a valving surface exposed to said passage around said ports having good wear resistance properties, a slide reciprocable in said passage providing a central opening therein, balanced valve means carried by said slide engageable with said valving surface and operable to selectively connect said ports to said central opening in said slide, said slide being provided with surfaces providing good wear resistance properties, a plurality of resilient seals providing a fluidtight joint between said slide and said housing assembly, at least one of said seals being mounted on said body and fixed against movement relative thereto to prevent wear between said seal and said body, said one seal providing a dynamic seal with said slide, said slide being formed with substantial lateral clearance with respect to said central passage, said valve means operating without producing material lateral forces on said slide, said seals operating to center said slide in said passage and prevent contact between said slide and the walls of said passage to prevent wear in the walls of said passage and to permit continued operation of said valve when substantial amounts of contamination are present within said valve, a manifold block including a plurality of control ports and grooves open to one face of said block connecting at least some of said control ports, said manifold block being mounted along said one face against the side of said valve plate opposite said body so that said grooves connect said control ports to said valve ports, said manifold block including a inlet port connected to said central opening in said slide through passages formed in said manifold block, said valve plate and said body, and a single seal positioned within said valve plate providing a seal between said passages in said manifold block and said valve plate and said body, said manifold block being formed of material having poor wear resistance qualities and being free of contact with moving parts during the operation of said valve.

4,450,870

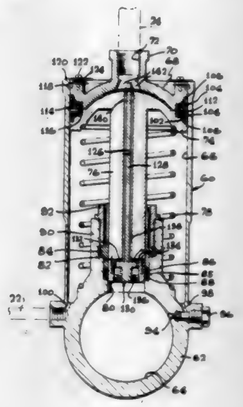
LIQUID SPRING ACCUMULATOR WITH SELF-CHARGING MEANS

Ralph L. Vick, Granada Hills, Calif., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 15, 1982, Ser. No. 357,968

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—31 **5 Claims**



1. A liquid spring accumulator with self-charging means including a high strength housing having inlet and return ports communicating with a source of operating liquid under high pressure, a high pressure chamber communicating with said source, a cylindrical chamber in said housing, a piston movable in said cylindrical chamber having one side communicating with said inlet port, resilient means urging said piston toward said inlet port and a rod in said cylindrical chamber of substantially smaller area than said piston attached to said piston and axially movable therewith into said pressure chamber;

characterized in that said accumulator includes an axial passage through said piston and rod connecting said inlet port with said high pressure chamber, a check valve in said passage, means holding said check valve open when said piston is nearest said inlet port, and a spring urging said check valve toward a closing direction, such that when said operating liquid is first supplied to said housing, said check valve permits said high pressure chamber to be filled, and when said operating liquid pressure reaches a predetermined level above the pressure at said return port, said piston initially moves to cause said check valve to be closed and further increases in said operating liquid pressure acting against said piston force said piston to carry said rod into said high pressure chamber.

4,450,871

HEAT-SHRINKABLE TUBES

Yasutoshi Sato, and Keiji Ueno, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 21, 1982, Ser. No. 370,635

Claims priority, application Japan, Apr. 21, 1981, 56-57488[U]

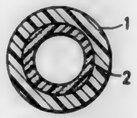
Int. Cl.³ F16L *9/14, 11/00*

U.S. Cl. 138—140 **6 Claims**

1. A heat-shrinkable tube comprising

a base layer of heat-shrinkable polymeric material in the form of a tube having an inner surface and an outer surface and

a layer of a composition on the inner surface of the tube, the composition comprising (1) a peroxide-curable acryl- or methacryl-modified epoxy resin, which is solid or semi-



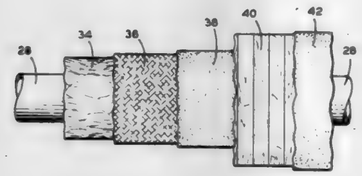
solid at temperatures of about 0 to 30° C. but soften or liquefy at temperatures at which the tube is subject to heat-shrinkage, and (2) a peroxide sufficient to cure said resin at the heat-shrinkage temperature of the tube.

4,450,872

FIBER PIPE PROTECTION FOR WATER COOLED PIPES IN REHEAT FURNACES

Donald R. Orcutt, Hanover Park, Ill., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 18, 1982, Ser. No. 389,722
Int. Cl.³ F27D *9/00, 3/02*
U.S. Cl. 138—149 **12 Claims**



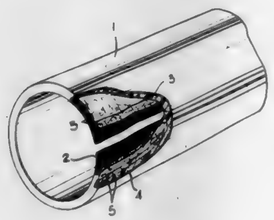
1. A refractory covering for application to a fluid conveying member comprising a thermal insulating ceramic fiber blanket layer disposed about and contacting the member; a cloth wrapped about the blanket, said cloth of an open weave type which permits penetration of a veneering mortar therethrough; and a layer of said veneering mortar applied to the cloth, said veneering mortar being dimensionally and chemically compatible with said cloth.

4,450,873

REINFORCED PLASTIC COMPOSITE STRUCTURE

Thomas H. Sadler, Morrison, and John J. Dalton, Littleton, both of Colo., assignors to Manville Service Corporation, Denver, Colo.

Division of Ser. No. 753,973, Dec. 23, 1976, Pat. No. 4,171,238. This application May 29, 1979, Ser. No. 43,272
Int. Cl.³ F16L *9/04*
U.S. Cl. 138—174 **6 Claims**



1. In a reinforced plastic composite structure having a cured polymeric resin matrix which includes at least one layer of fibers, the improvement comprising:

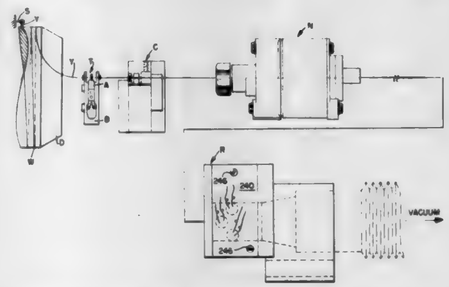
a particulate substance selected from the group consisting of portland cement, marble dust or mixtures thereof incorporated and dispersed throughout said resin matrix at least about 80% of said particulate substance having an equivalent spherical diameter in the range of about 10 to 70 microns.

4,450,874

YARN CLAMP

Charles W. Brouwer, Greenwich, R.I., and Larry C. Cowan, York, S.C., assignors to Leesona Corporation, Warwick, R.I.

Division of Ser. No. 223,203, Jan. 7, 1981, Pat. No. 4,362,189. This application Oct. 25, 1982, Ser. No. 436,463
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—429 **8 Claims**



1. In combination with weft insertion means which is operative to propel weft yarn from one side of the shed of a loom to the opposite side thereof on signal while simultaneously being withdrawn from a supply of said weft yarn, the improvement comprising, anvil means over which the weft yarn is directed as said weft yarn is withdrawn from said supply, clamping means, first solenoid means for moving said clamping means in a first direction toward said anvil to pinch said weft yarn between clamping means and said anvil and thereby restrain said weft yarn from advance, second solenoid means spaced from said first solenoid means for moving said clamping means in a second direction to release said weft yarn from said clamping means, and armature means positioned between said first and second solenoid means, said armature means including a swingable portion initially engageable with one of said first and second solenoids upon energization of said solenoid, and a body portion engageable with said one of said solenoids after said swingable portion has been engaged thereby.

4,450,875

CONTROL DEVICE FOR THE NOZZLES OF A JET INSERTION POWER LOOM

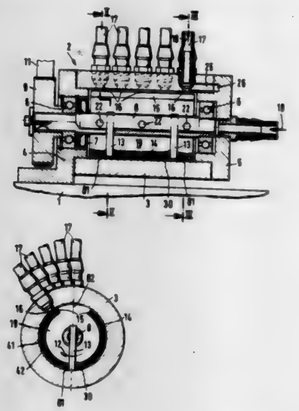
Dionizy Simson, Winterthur, and Hansjörg Walch, Seuzach, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Oct. 1, 1981, Ser. No. 307,618
Claims priority, application European Pat. Off., Oct. 2, 1980, 80 105967.6
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **13 Claims**

1. A control device for a plurality of weft-insertion nozzles in a jet power loom comprising

a stationary drum shaped reservoir having a plurality of circumferentially disposed outlets arranged in a helical manner for connection to the nozzles of a jet power loom; and

a cylindrical slide valve rotatably mounted in said reservoir, said valve having a slit extending over the entire length of



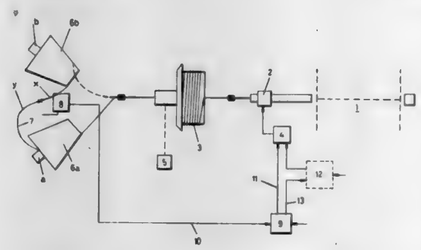
said valve and of a width greater than the circumferential distance between the axes of two adjacent outlets.

4,450,876

METHOD FOR WEAVING ON A WEAVING MACHINE OPERATING WITH A BLOWING NOZZLE FOR A FLOWING TRANSPORT FLUID

Hubert P. van Mullekom, Deurne, Netherlands, assignor to Ruti-te Strake B.V., Netherlands

Filed Jun. 22, 1982, Ser. No. 390,850
Claims priority, application Netherlands, Jul. 2, 1981, 8103184
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **3 Claims**



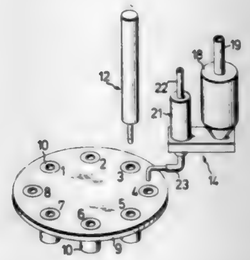
1. A method for weaving on a weaving machine operating with a blowing nozzle for a flowing transport fluid, in which weft threads are measured and withdrawn from successive yarn packets, characterized in that the switching to a next yarn packet is combined with a temporary change in the feed pressure of the blowing nozzle.

4,450,877

PHARMACEUTICAL PREPARATIONS IN SOLID UNIT DOSAGE FORM

Stephen E. Walker, Buckingham; Keith Bedford, Newport Pagnell, and Terence Eaves, Woburn Sands, all of England, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 210,219, Nov. 25, 1980, which is a continuation of Ser. No. 956,448, Nov. 1, 1978, abandoned. This application Sep. 8, 1982, Ser. No. 416,046
Claims priority, application United Kingdom, Nov. 3, 1977, 45755/77
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1 **12 Claims**



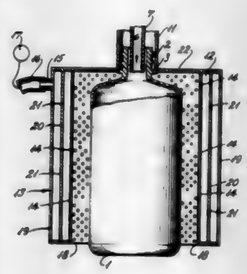
1. A process for the manufacture of a pharmaceutical preparation in unit dosage form, which comprises the steps of preparing a liquid carrier containing an active ingredient and a liquid which solidifies or gels sufficiently to lose its liquid flow properties said liquid carrier being a thixotropic gelling agent, and dosing said liquid carrier containing the active ingredient in its liquid form into a rigid shell suitable for administration as a dosage unit.

4,450,878

APPARATUS FOR FILLING A HIGH TEMPERATURE LIQUID INTO A BIAXIALLY ORIENTED, SATURATED POLYESTER BOTTLE, A DEVICE FOR COOLING SAID BOTTLE

Takuzo Takada; Hiroaki Sugiura, and Takao Ilzuka, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1979, Ser. No. 65,505
Claims priority, application Japan, Aug. 12, 1978, 53-98321; Sep. 6, 1978, 53-122323[U]; Sep. 6, 1978, 53-122324[U]; Sep. 14, 1978, 53-113077; Sep. 27, 1978, 53-132533[U]
Int. Cl.³ B65B *31/00*
U.S. Cl. 141—48 **2 Claims**



1. An apparatus for filling a high temperature liquid 6 into a series of polyethylene terephthalate bottles 1 progressively fed into predetermined positions, said apparatus comprising an injection tube 7 adapted for relative downward movement into the neck 2 of a bottle 1 positioned stationarily at a predeter-

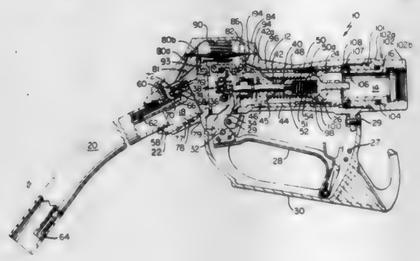
mined position to pour a high temperature liquid **6** into said bottle **1**; a vertically movable cylindrical seal cover **11** provided coaxially about said injection tube **7** and having a somewhat greater inside diameter than the outside diameter of said neck **2**; and a housing **13** secured to the outside of said cylindrical seal cover **11** at the lower end thereof to define with said cylindrical seal cover **11** is cooling fluid chamber **12** having a closed upper end and an open lower end forming an outlet opening **14**, said housing **13** having at its upper end an inlet opening **15** through which to communicate said chamber **12** with one end of a cooling fluid supply pipe **16**.

4,450,879

MODULAR FLUID DISPENSING NOZZLE

Chester W. Wood, Milford, Ohio, assignor to Dover Corporation, New York, N.Y.

Continuation of Ser. No. 218,634, Dec. 22, 1980, abandoned.
This application Jul. 19, 1982, Ser. No. 399,691
Int. Cl.³ B67D *5/04*
U.S. Cl. 141—209 **38 Claims**



1. A dispensing nozzle with an automatic shut-off mechanism, comprising:
(a) a nozzle body having an internal flow passage;
(b) a valve disposed in said internal flow passage for selectively blocking flow therethrough, said valve being movable between an open position in which fluid flow through the internal flow passage is permitted and a closed position in which fluid flow through the internal flow passage is substantially blocked;
(c) an actuator for moving the valve between open and closed positions under predetermined conditions;
(d) means for moving the valve to the closed position irrespective of the position of the actuator under other predetermined conditions, said moving means including:
(i) a plurality of independently rotatable members;
(ii) means for coupling said independently rotatable members for common rotational movement in response to movement of said actuator;
(iii) means for uncoupling said rotatable members in response to a predetermined condition; and
(iiii) means for rotating one of said rotatable members relative to the other when said members are uncoupled to move the valve to the closed position irrespective of the position of the actuator.

20. A dispensing nozzle, comprising:
(a) a body having an internal flow passage therethrough;
(b) an actuator relatively movable with respect to said body between open and closed positions;
(c) valve means movably disposed within the internal flow passage for selectively blocking fluid flow therethrough, said valve means having open and closed positions corresponding to said open and closed positions of said actuator and being responsive to and under control of said actuator under predetermined conditions; and
(d) means for releasing said valve means from said control of said actuator in response to predetermined conditions; said releasing means being at least contained within a cartridge for common removal with the cartridge from the body.

27. A fluid dispensing nozzle, comprising:
(a) a nozzle body having an internal flow passage;
(b) a swivel connector for providing a sealed and rotatable connection between the internal flow passage in the nozzle body and an external flow conduit, said swivel connector including:
(i) a base portion received by said nozzle body and communicating with said internal flow passage; and
(ii) a tail portion rotatably secured to said base portion and extending into said internal flow passage to form a valve seat, said tail portion being rotatably movable with respect to both said nozzle body and said base portion and being adapted to provide selective fluid communication between the internal flow passage and the external flow conduit; and
(c) a valve movably disposed within said internal flow passage and movable between a first open position in which fluid flow through the internal flow passage is substantially unblocked and a second seated position in which said valve is seated against said tail portion.

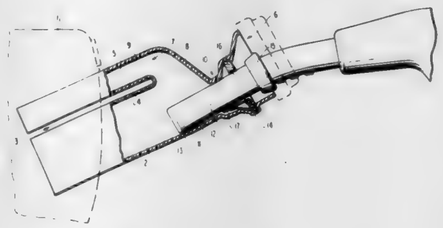
34. A method of making an easily serviced dispensing nozzle of modular construction which has an automatic shut-off mechanism, said method comprising the steps of:
(a) providing a nozzle body;
(b) forming an internal flow passage through said body;
(c) supporting an actuator on said body which is relatively movable with respect to said body between open and closed positions;
disposing movable valve means within said internal flow passage for selectively blocking fluid flow therethrough, said valve means having open and closed positions corresponding to said open and closed positions of said actuator and being responsive to and under control of said actuator under predetermined conditions;
(e) providing means for releasing said valve means from said control of said actuator in response to predetermined conditions;
(f) providing a cartridge which is readily installed in and removed from said body;
(g) disposing said releasing means within said cartridge; and
(h) disposing said cartridge with said releasing means therein within said body;
said cartridge being adapted to be easily replaced by a relatively unskilled service station attendant using simple tools to thereby provide said nozle having easily serviced releasing means.

4,450,880

FILLER PIPE FOR A FUEL TANK

Dieter Scheurenbrand, Ostfildern, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 218,680, Dec. 22, 1980, abandoned.
This application Jan. 17, 1983, Ser. No. 458,532
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952175
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—285 **8 Claims**



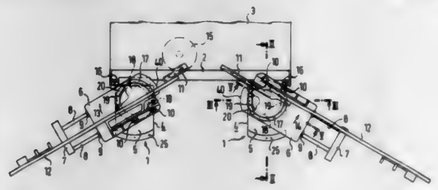
1. A one-piece filler arrangement for motor vehicle fue tanks comprising a filler pipe having an upper wall and an inlet opening, vent pipe means formed as apart of the upper wall for venting air from the fuel tank with one end of the vent pipe means terminating at a distance from the inlet opening, sloping baffle means formed from a drawn-in wall part of the upper wall of the filler pipe between the inlet opening of the filler pipe and the one end of the vent pipe, shaped means projecting generally inwardly between the inlet opening and the one end of the vent pipe for supporting a fuel nozzle, said shaped means being formed in part with said drawn-in wall part, wherein the direction of insertion of the fuel nozzle is controlled by the shaped means and direct flow of fuel from the fuel nozzle into the vent pipe is precluded.

4,450,881

ROLLER TABLE FOR WOODWORKING MACHINES

Kurt Buttner, Oberkochen, Fed. Rep. of Germany, assignor to Okoma Maschinenfabrik GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 217,924, Dec. 18, 1980, abandoned.
This application Jul. 8, 1983, Ser. No. 511,721
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951355
Int. Cl.³ B27F *5/00*
U.S. Cl. 144—84 **15 Claims**



1. In a roller table for a woodworking machine having:
(i) a rolling unit for rolling along a straight guideway of the machine,
(ii) a pivot member on said rolling unit having an axis,
(iii) a table plate engaged on said pivot member and rotatable with respect to said rolling unit about said axis,
(iv) a supporting bar, for supporting an overhanging end of a workpiece, engaged slidably with said table plate for longitudinal movement radially with respect to said axis,
the improvement which comprises:
(a) said rolling unit having a support plate carrying said pivot member, said support plate having an upper first support surface about said axis,
(b) said table plate extending radially beyond said first support surface and including means defining a recess,
(c) said pivot member being rotatably engaged in said recess,
(d) said table plate extending over said first support surface,
(e) said support plate having an upper second support surface spaced radially from said first support surface and abutted by said table plate, and
(f) securing means for acting between said support plate and said table plate for securing said table plate in a selected position of rotation about said pivot axis with respect to said support plate.

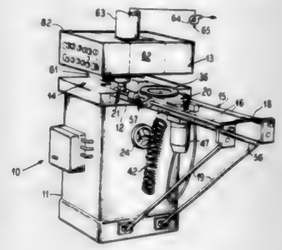
4,450,882

AUTOMATIC SHAPER

Lonnie G. Hitchcock, Rte. 2, Box 60C, Rock Island, Tenn. 38581, and Richard J. Flanigan, Rte. 12, McMinnville, Tenn. 37110

Filed Oct. 14, 1981, Ser. No. 311,428
Int. Cl.³ B27C *5/00*; B23C *3/04*; B23Q *35/00*
U.S. Cl. 144—145 A **4 Claims**

3. An automated machine tool having a cutter head, a pattern stop adjacent said head, a work support chuck detachably mounting a pattern and a workpiece, a pneumatic jack with a piston rod selectively clamped to the chuck for biasing the chuck to hold the pattern against the stop, means for rotating the chuck to feed the workpiece to the cutter, and control means for automatically actuating the jack and the means for rotating the chuck through a cycle feeding the workpiece to



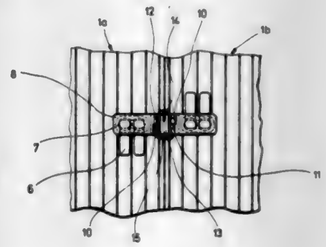
the cutter head under a controlled load at a selected feed rate and retracting the workpiece from the cutter upon completion of the cutting cycle.

4,450,883

HINGE JOINT FOR HOLLOW PANELS FOR COVERING SWIMMING POOLS OR THE LIKE

Artur Fischer, Weinhalde 34, D-7244 Tumlingen, Waldachtal 3, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,723
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3103925
Int. Cl.³ E05D *5/06*
U.S. Cl. 160—229 R **9 Claims**



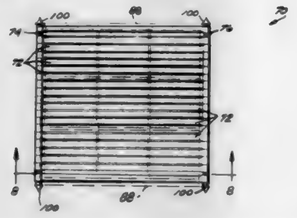
1. A hinge joint for joining hollow panels for use particularly for covering swimming pools, each hollow panel including a top cover wall and a bottom cover wall parallel to the top wall, and a plurality of longitudinal parallel ribs extending between the bottom and the top cover walls to form therebetween a plurality of closed cavities, each said cover wall having an outer side and an inner side facing said cavities, respective said cover walls of the hollow panels to be joined being each formed with at least one bore, the hinge joint comprising two connecting parts receiving a hinge pin to join them together, each connecting part including at least one supporting bar inserted through said bore into a respective one of said cavities and hooked therein, and a flange intergral with said supporting bar and resting against the outer side of the respective cover wall so as to completely cover said bore and seal it off, wherein said supporting bar is angularly shaped and has an elongated portion which extends normal to said flange when the supporting bar is hooked into said one of said cavities.

4,450,884

SURFACE DEFINING SLATS AND ARTICLES UTILIZING SAME

Clayton J. Hemmerle, 116 NE. 16th Ct., Ft. Lauderdale, Fla. 33305, and Richard A. Basinger, 6318 SW. 26th St., Miramar, Fla. 33023

Continuation-in-part of Ser. No. 352,102, Feb. 25, 1982. This application Jun. 21, 1982, Ser. No. 390,661
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.³ E06B 3/30
U.S. Cl. 160—371 10 Claims



1. A slat adapted to being securely positioned between opposing support members capable of defining at least one surface when a plurality of slats are positioned therebetween, said slat comprising:

surface defining means including top and bottom surfaces for defining a portion of said at least one surface and having a predetermined interior transverse dimension, said surface defining means having two generally opposing ends, each of said ends including attachment means defining a substantially closed cavity for receiving a portion of one of said support members;

biasing means for providing a bias force and thereby biasing said attachment means to a normal substantially closed position and for allowing access to said cavity upon application of a force in a direction generally opposing said bias force; and

locking means for securely yet removably locking said attachment means in said substantially closed position, said locking means including structural means for reducing the interior transverse dimension of said surface defining means.

4,450,885

PROCESS FOR PREPARATION OF GRANULES OF LOW-MELTING-POINT METALS

Yujiro Sugahara, Tokyo; Hiroyuki Naito, Tsuruoka; Akira Takahashi, Tsuruoka; Manshiro Hasegawa, Tsuruoka, and Hisashi Tsuchida, Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 7, 1978, Ser. No. 958,486
Claims priority, application Japan, Nov. 12, 1977, 52-135907
Int. Cl.³ B22D 23/08
U.S. Cl. 164—47 4 Claims

1. A process for the preparation of granules of low-melting-point metals which comprises

(I) spouting a melt of a low-melting-point metal at a temperature 50° to 100° C. higher than the melting point of said metal in the form of fine streams through extrusion nozzle openings into a gas atmosphere,

(II) vibrating the extrusion nozzle openings in a direction parallel to the spouting direction under melt fracture-causing conditions such that the molten metal is spouted in continuous streams comprising large-diameter and small-diameter portions appearing alternatively, and

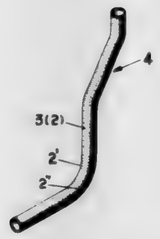
(III) allowing the fine streams of the molten metal to fall into a collecting cooling liquid at a speed of 50 to 300 cm/sec at the position just above the surface of said collecting liquid thereby to rectify the shape of the drops to a substantially spherical shape and to cool the drops.

4,450,886

METHOD OF PRODUCING SUCTION MANIFOLDS FOR AUTOMOBILE ENGINES

Michitoshi Enomoto, and Yasuo Shimizu, both of Osaka, Japan, assignors to Nakamura Kinzoku Kogyosho, Inc., Osaka, Japan

Continuation of Ser. No. 168,603, Jul. 14, 1980, abandoned. This application Dec. 13, 1982, Ser. No. 449,120
Int. Cl.³ B22D 19/00
U.S. Cl. 164—75 6 Claims



1. A method for producing suction manifolds for automobile engines comprising the steps of:

(a) applying to an outer surface of a curved aluminum pipe, a two layer film, by first applying directly on said surface of the pipe, as a first layer, a high-temperature resistant chemical film comprising materials selected from the group consisting of a phosphate, a halide, a chromate, an inorganic base, a metal oxide fine powder or an easily oxidizable metal fine powder, in the presence of a reaction accelerator selected from the group consisting of hydrofluoric acid or phosphoric acid, and then applying on the surface of the first layer, as a second layer, a lubricating film comprising materials selected from the group consisting of fatty acids and salts thereof, oils, fats, condensation polymerization compounds, graphite, carbon black, molybdenum bisulfide or boron nitride; and

(b) placing said coated pipe onto a mold having a cavity shaped to define a manifold and then pouring molten aluminum into the mold to form a manifold wherein, after casting is completed, said curved aluminum pipe functions as an exhaust gas recirculating passage.

4,450,887

DIRECT CHILL CASTING APPARATUS

Rennie F. T. Wilkins, Chigwell, England, assignor to The British Aluminium Company Limited, England

Division of Ser. No. 12,765, Feb. 16, 1979, Pat. No. 4,355,679. This application Dec. 1, 1981, Ser. No. 326,307
Claims priority, application United Kingdom, Feb. 18, 1978, 6527/78
Int. Cl.³ B22D 11/04, 11/16
U.S. Cl. 164—154 14 Claims

1. Apparatus for the direct chill casting of non-ferrous metals comprising

a water cooled open mould having its axis vertical,

an inner surface of the mould,

a rigid sleeve of thermally insulating material of a size and shape to be a clearance fit within the inner surface of the mould,

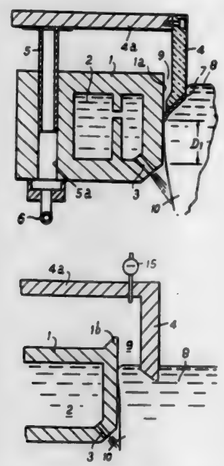
support means for locating the sleeve in register with the upstream end of the inner surface,

drive means operable during a casting operation for relatively axially moving the mould and the sleeve to vary the axial length of the inner surface overlapped by the sleeve,

a gap between the sleeve and the inner surface,

means for maintaining a pool of liquid metal within the mould during a casting operation with a peripheral zone of the pool in contact with the inner surface, and

pressure means associated with the sleeve and operable during a casting operation to vary the downward pressure



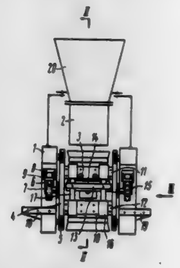
applied to the zone in order to vary the axial length of the inner surface contacted by liquid metal.

4,450,888

MOULDING PLANT

Dmitry A. Shibanov; Inokenty A. Onufriev; Vladimir A. Khristov, and Evgeny A. Sergeev, all of Moscow, U.S.S.R., assignors to NPO "Vilitmash", Moscow, U.S.S.R.

PCT No. PCT/SU80/00018, 371 Date Sep. 28, 1981, 102(e) Date Sep. 28, 1981, PCT Pub. No. WO81/02122, PCT Pub. Date Aug. 6, 1981
PCT Filed Feb. 1, 1980, Ser. No. 308,539
Int. Cl.³ B22C 15/06, 15/20
U.S. Cl. 164—183 12 Claims



1. A moulding plant comprising:

a sandslinger;

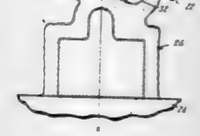
a turnover and withdrawal apparatus having a turnover mechanism and a pattern withdrawal mechanism, said turnover mechanism being made in the form of two disks spaced apart and coaxially mounted on rollers, which disks are connected with a drive designed to turn the turnover and withdrawal apparatus in a vertical plane about the horizontal axis of the disks, two roller conveyors mounted on crossmembers installed between the disks being located between said disks in symmetry with their horizontal axis and parallel thereto, said pattern withdrawal mechanism incorporated power cylinders disposed on the crossmembers between the turnover mechanism disks for the purpose of withdrawing patterns together with a pattern plate, wherein the sandslinger is located over the turnover and withdrawal apparatus with the possibility for horizontal reciprocating movement, the turnover and withdrawal apparatus being provided with a double-sided pattern plate both sides of which are designed for attachment of patterns for cope and drag moulding boxes carried by top and bottom roller conveyers respectively, said double-sided pattern plate being mounted for rotation together with the turnover and withdrawal apparatus and for vertical movement between the cope and drag moulding boxes in order to withdraw the pattern from the completed half-mould in one of the moulding boxes simultaneously with assembling the other moulding box with the respective pattern.

4,450,889

MOLD HAVING A HELIX FOR CASTING SINGLE CRYSTAL ARTICLES

Arnold S. Grot, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 20, 1982, Ser. No. 409,785
Int. Cl.³ B22C 9/04
U.S. Cl. 164—361 5 Claims



1. A mold made of layered ceramic shell material, for containing molten metal during directional solidification of a single crystal article casting, wherein a solidification interface is caused to move progressively through the molten metal, comprised of

(a) a starter section, for containing a portion of the molten metal in which a solidification interface is first initiated;

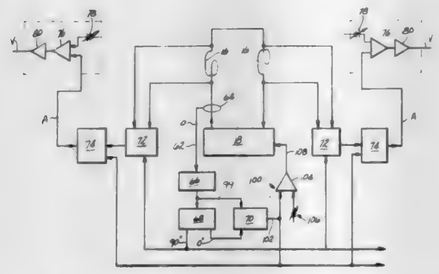
(b) an article section, shaped to define the desired single crystal article; and

(c) a selector section, connecting the starter section with the article section, for causing the solidification interface progressing from the starter section toward the article section to have the desired single crystal characteristic, the selector section containing a passage shaped as a helix having more than one turn, the helix lying along an axis and having a lead which provides a separation between adjacent turns of the passage that is more than one half but less than two times the thickness of the ceramic shell material defining the helix, as thickness is measured along the radius normal to the said axis at an outermost diameter of a turn of the passage, the layered ceramic shell material joining adjacent turns of the passageway at the outside diameter of the passageway.

4,450,890
PROCESS AND APPARATUS FOR ELECTROMAGNETIC CASTING OF MULTIPLE STRANDS HAVING INDIVIDUAL HEAD CONTROL

John C. Yarwood, Madison; Gary L. Ungarean, Woodbridge; Peter J. Kindlmann, Guilford, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 236,386, Feb. 20, 1981, abandoned. This application Aug. 19, 1981, Ser. No. 294,262
Int. Cl.³ B22D *27/02, 11/01*
U.S. Cl. 164—452 16 Claims



1. An electromagnetic multi-strand casting apparatus for casting molten materials into at least two ingots of desired shape comprising:

at least two inductors connected in series, each forming a containment zone for receiving and forming a separate molten material head extending above a corresponding solidifying ingot, each of said inductors applying a magnetic containment force field to contain its respective molten material head, each of said inductors in operation being spaced from their respective molten material head by a gap extending from the surface of the molten material head to the opposing surface of its corresponding inductor, the improvement comprising:

power supply means for supplying a common alternating current to each of said inductors to generate said magnetic force fields;

means associated with each of said inductors for minimizing variations in their respective gap during operation of the casting apparatus, comprising:

means for sensing a value of an electrical parameter of said inductors which varies with the magnitude of their respective gap;

means responsive to the sensing means for generating an error corresponding to each of said inductors which is a function of the difference between the sensed value of said electrical parameter and a predetermined value thereof and which corresponds to the magnitude of a desired gap associated with each inductor;

means associated with each of said inductors for independently changing the magnetic containment force field applied to said molten material head in response to its corresponding error signal so as to drive this error signal to approximately zero; and

feedback control means operatively associated with said minimizing variation means for regulating said power supply means to maintain said common alternating current at a substantially constant value so that changes in the containment force field generated by one of said inductors does not substantially effect the containment force field generated by another of said inductors.

11. In a process for casting molten materials into at least two ingots of desired shape, comprising the steps of:

providing at least two inductors connected in series, each of said at least two inductors forming a containment zone for receiving and forming a separate molten material head extending above a corresponding solidifying ingot, each of said inductors applying a magnetic containment force field to contain its respective molten material head, each of said inductors in operation being spaced from their respective molten material head by a gap extending from the surface of the material head to the opposing surface of its corresponding inductor, the improvement comprising the steps of:

supplying a common alternating current to each of said inductors to generate the magnetic force fields;

minimizing variations in each of the gaps during operation of the casting apparatus, comprising the steps of:

sensing a value of an electrical parameter of said inductors which varies with the magnitude of their respective gaps;

in response to the sensed value, generating an error signal for each of the inductors which is a function of the difference between the sensed value of the electrical parameter and a predetermined value thereof and which further corresponds to the magnitude of a desired gap associated with each inductor;

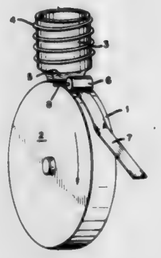
independently changing the magnetic containment force field applied by each of the inductors to its corresponding molten material head in response to the error signal associated with one of the inductors so as to drive that error signal to approximately zero;

maintaining the common alternating current at a substantially constant value so that changes in the containment force field generated by one of the inductors does not substantially effect the containment force field generated by another of the at least two inductors.

4,450,891
METHOD OF AND APPARATUS FOR CONTINUOUS CASTING USING AN AUXILIARY GRAPHITE CHILL ROLL

Reed H. Belden, Bernardsville; Hsin L. Li, Parsippany, and Dulari L. Sawheny, Denville, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 183,520, Sep. 2, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,176
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 7 Claims



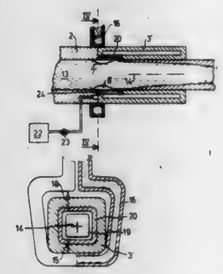
1. In an apparatus for the production of solid metal strip from a molten source including a rapidly moving quench surface and means for impinging the molten metal onto the quench surface to form the solid metal strip, the improvement which comprises an auxiliary, liquid-cooled chill roll consisting essentially of graphite for contacting the solid strip and urging it against the quench surface.

6. In a method for the production of solid metal strip by impinging molten metal onto a rapidly moving quench surface, the improvement which comprises cooling the strip just after it solidifies by pressing it against the quench surface with a liquid-cooled chill roll consisting essentially of graphite.

4,450,892
METHOD AND APPARATUS FOR CONTINUOUS CASTING OF METALLIC STRANDS IN A CLOSED POURING SYSTEM

Wilfried Heinemann, Richterswil, Switzerland, and Theodor Rummel, Grünwald/München, Fed. Rep. of Germany, assignors to Concast, A.G., Zurich, Switzerland

Filed Jun. 29, 1981, Ser. No. 278,414
Claims priority, application Switzerland, Jul. 11, 1980, 5347/80
Int. Cl.³ B22D *11/00, 11/10*
U.S. Cl. 164—467 13 Claims



1. A method of continuous casting of metals into a cast strand in a closed pouring system, comprising the steps of:

providing a refractory distributor vessel-pouring structure having an outlet opening;

providing a continuous casting mold having a mold inlet opening bounded by a wall and operatively connected with the distributor-vessel pouring structure, a lengthwise axis which is approximately horizontally disposed and a hollow mold compartment contained in said continuous casting mold;

casting metal through the distributor vessel-pouring structure into the continuous casting mold;

providing an electromagnetic means comprising an electromagnetic coil and arranging said electromagnetic coil such that the spacing between said electromagnetic coil and the hollow mold compartment below the approximately horizontally disposed lengthwise axis of the mold is smaller than the spacing between said electromagnetic coil and the hollow mold compartment above said mold lengthwise axis;

generating by means of said electromagnetic coil a metal-constricting electromagnetic field at the region of a connection plane of the distributor vessel-pouring structure and the continuous casting mold; and

said constricting electromagnetic field being effective upon the molten metal in order to maintain the molten metal away from the wall of the mold inlet opening.

7. An apparatus for continuous casting of metals with a closed pouring system, comprising:

a refractory vessel-pouring structure;

a cooled continuous casting mold having a lengthwise axis which is approximately horizontally disposed operatively connected with said refractory vessel-pouring structure at a connection plane;

electromagnetic means comprising an electromagnetic coil arranged at the region of said connection plane between said vessel-pouring structure and said continuous casting mold for constricting the molten metal which is being cast;

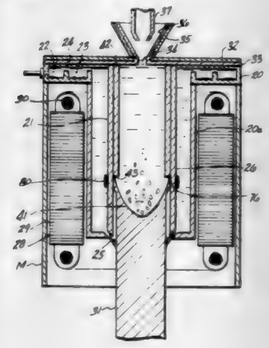
said continuous casting mold containing a hollow mold compartment; and

said electromagnetic coil being arranged such that the spacing between said electromagnetic coil and the hollow mold compartment below the approximately horizontally disposed lengthwise axis of the mold is smaller than the spacing between said electromagnetic coil and the hollow mold compartment above said mold lengthwise axis.

4,450,893
METHOD AND APPARATUS FOR CASTING METALS AND ALLOYS

Joseph Winter, New Haven; Derek E. Tyler, Cheshire, and Jonathan A. Dantzig, Hamden, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,232
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—468 11 Claims



1. In an apparatus for continuously or semi-continuously forming a semi-solid thixotropic alloy slurry, said slurry comprising throughout its cross section degenerate dendrite primary solid particles in a surrounding matrix of molten metal, said apparatus comprising:

means for containing molten metal including a mold wall for containing and extracting heat from said thixotropic slurry, said containing means having a desired cross section;

means for controllably cooling said molten metal in said containing means; and

means for mixing said molten metal for shearing dendrites formed in a solidification zone as said molten metal is cooled for forming said slurry;

said mixing means comprising a single two pole stator for generating a non-zero rotating magnetic field which moves transversely of a longitudinal axis of said containing means across the entirety of said cross section of said containing means and over said entire solidification zone, said moving magnetic field providing a magnetomotive stirring force directed tangentially of said containing means for causing said molten metal and slurry to rotate in said containing means, said magnetic force being of sufficient magnitude to provide said shearing of said dendrites, said magnetomotive force providing a shear rate of al least 500 sec. $^{-1}$;

the improvement wherein said apparatus comprises

a first insulating layer extending over at least a portion of the inside surface of said mold wall and terminating at a lower edge projection within said mold wall,

means for cooling said mold wall arranged about on outside surface of said mold wall; and

a second insulating layer located along a specific length of the outside surface of said mold wall, said specific length beginning approximately at said lower edge projection of said first insulating layer and extending a predetermined distance below said projection, said second layer comprising a coating serving to alter the thermal characteristics of said mold wall along said length as compared to the remainder of said liner.

7. In a process for continuously or semi-continuously form-

ing a semi-solid thixotropic alloy slurry, said slurry comprising throughout its cross section degenerate dendrite primary solid particles in a surrounding matrix of molten metal, said process comprising:

providing a means for containing molten metal having a desired cross section, said means including a mold wall for containing and extracting heat from said thixotropic slurry;

controllably cooling said molten metal in said containing means; and,

mixing said contained molten metal for shearing dendrites formed in a solidification zone as said molten metal is cooled for forming said slurry;

generating solely with a two pole stator a non-zero rotating magnetic field which moves transversely of a longitudinal axis of said containing means across the entirety of said cross section of said containing means and over said entire solidification zone, said moving magnetic field providing a magnetomotive stirring force directed tangentially of said containing means for causing said molten metal and slurry to rotate in said containing means, said magnetomotive force being of sufficient magnitude to provide said shearing of said dendrites, said magnetomotive force providing a shear rate of at least 500 sec. $^{-1}$;

the improvement wherein said forming process comprises

placing a first thermal insulating layer on said mold wall, said first insulating layer extending over at least a portion of the inside surface of said mold wall and terminating at a lower edge projection within said mold wall;

cooling said mold wall from an outside surface of said mold wall; and

coating a second thermal insulating layer along a specific length of the outside surface of said mold wall, said specific length beginning approximately at said lower edge projection of said first insulating layer and extending a predetermined distance below said projection, said second coated layer serving to alter the thermal characteristics of said mold wall along said length as compared to the remainder of said mold wall.

4,450,894

METHOD FOR HORIZONTAL TYPE CONTINUOUS CASTING

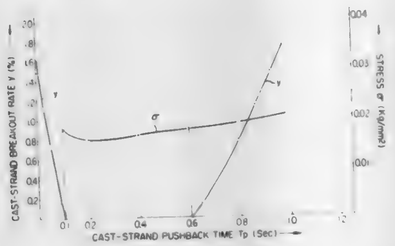
Kiyomi Taguchi; Masayuki Hanmyo, and Masaru Ishikawa, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 328,409, Dec. 7, 1981, abandoned, which is a continuation-in-part of Ser. No. 160,079, Jun. 16, 1980, abandoned. This application Jun. 13, 1983, Ser. No. 503,074

Claims priority, application Japan, Jul. 10, 1979, 54-86495

Int. Cl.³ B22D *11/00*

U.S. Cl. 164—484 **1 Claim**



1. A method for horizontal type continuous steel casting, which comprises:

withdrawing a cast steel strand from a copper mold provided horizontally at the lower part of a tundish at a prescribed withdrawing speed for a prescribed period of withdrawing time; then, pushing back said cast steel strand for a prescribed period of pushback time in the direction opposite to the direction of withdrawal; and, withdrawing said cast steel strand again from said mold at said prescribed withdrawing speed for said prescribed period of withdrawing time; repeating said withdrawal and said pushing back, the distance of said withdrawal being longer than that of said pushing back; thereby intermittently withdrawing said cast steel strand from said mold;

said method being characterized by comprising:

said prescribed withdrawing speed being within the range of from 1.0 to 10.0 m/minute;

said prescribed period of withdrawing time being within the range of from 0.5 to 1.5 second; and,

said prescribed period of pushback time being within the range of from 0.1 to 0.6 second;

thereby preventing a breakout and a crack from occurring in the trailing end portion of the solidified shell of the cast steel strand in said mold.

4,450,895

PROCESS AND APPARATUS FOR HEATING OR COOLING LIGHT SOLID PARTICLES

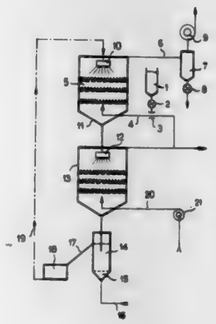
Georges Meunier, Boulogne, France, and Maurice A. Bergougnou, London, Canada, assignors to Tunzini-Nessi Enterprises D'Equipements, Argenteuil, France

Filed Nov. 2, 1981, Ser. No. 317,326

Claims priority, application France, Nov. 5, 1980, 80 23570

Int. Cl.³ F28D *19/02*

U.S. Cl. 165—1 **18 Claims**



1. A process for the heat transfer treatment of light solid particles having a low free-fall speed which comprises:

(a) dispersing the light particles in a first gas current;

(b) contacting the first gas current, containing the light particles and moving upward along a first baffled path in a reaction zone, with heavy solid particles having a greater free-fall speed and circulating countercurrently in the reaction zone in a loose gravity flow, to effect a first heat transfer between the light particles in the first gas current and the heavy particles;

(c) contacting the heavy particles, having undergone the first heat transfer and circulating countercurrently along a second baffled path in a loose gravity flow, with an upward-moving second gas current, to effect a second heat transfer between the heavy particles and the second gas current;

(d) recycling the heavy particles and

(e) reusing the heavy particles in step (b).

4,450,896

METHOD AND APPARATUS FOR HEAT EXCHANGE AT SOLID SURFACES

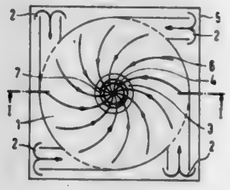
Heinrich Opitz, Erlangen; Bernhard Montag, Forchheim; Gerd Urban, Erlangen, and Wilfried Türk, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,437

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3137034

Int. Cl.³ F28F *13/02*

U.S. Cl. 165—1 **23 Claims**



1. A method for conducting heat from a solid surface, comprising the steps of:

feeding a fluid coolant into a flow chamber through at least one flow inlet, said flow chamber being in thermal contact with said solid surface;

moving said coolant along a substantially spiral path in said flow chamber from said inlet to at least one flow outlet; and

controlling the velocity of said coolant along said spiral path to produce a predetermined boundary layer thickness distribution along said path, thereby controlling the rate at which heat is transferred at various points on the portion of said solid surface in thermal contact with said flow chamber.

4,450,897

AIR-CONDITIONING METHOD AND SYSTEM FOR AN AUTOMOTIVE VEHICLE

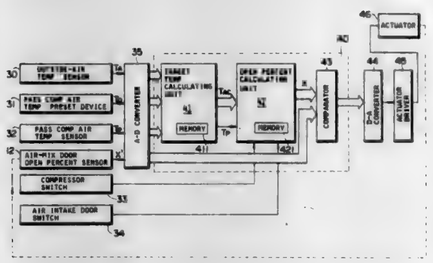
Tetsuya Iijima, Yamato, and Seiichi Takahashi, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Nov. 3, 1981, Ser. No. 317,861

Claims priority, application Japan, Nov. 4, 1980, 55-153717

Int. Cl.³ G05D *23/00*; B60H *3/00*; F25B *29/00*

U.S. Cl. 165—2 **12 Claims**



1. An air conditioning method for an automotive vehicle air conditioning system in which the temperature of air outputted into a passenger compartment is controlled by the opening percentage of an air mix door, which comprises the following steps of:

(a) detecting air temperature at a plurality of locations, including at least outside air temperature T_A and passenger compartment air temperature T_P;

(b) determining a desired passenger compartment air temperature T_O preset by a passenger compartment air temperature preset device;

(c) calculating a required target outlet duct air temperature T_{AC} as a function of outside air temperature T_A, passenger compartment air temperature T_P and desired passenger compartment air temperature T_O using a predetermined equation;

(d) determining an air introduction condition selected by the passenger;

(e) calculating an air mix door opening percentage required to produce outlet duct air at temperature T_{AC} from one of a plurality of stored characteristic curves involving a predetermined relationship: of outlet duct air temperature T_{AC}, passenger compartment air temperature T_P and air introduction condition, to air mix door opening percentage X; said characteristic curves being stored as a pair of endpoint values T_L and T_H representing extreme values of outlet duct air temperature T_{AC} for the corresponding passenger compartment T_P and air introduction condition, the calculating step being performed by linearly interpolating the target outlet duct air temperature T_{AC} with respect to the endpoint values T_L and T_H; and

(f) positioning the air mix door in accordance with the calculated value of X.

4,450,898

AIR CONDITIONER FOR AUTOMOTIVE VEHICLE

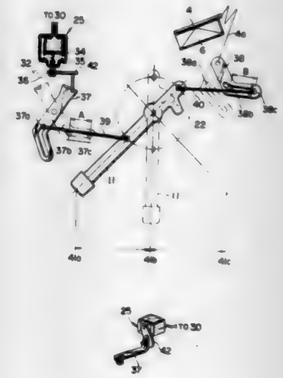
Mikio Tanino, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 28, 1981, Ser. No. 268,065

Claims priority, application Japan, Jun. 2, 1980, 55-72824

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—25 **19 Claims**



19. An air conditioner for an automotive vehicle's compartment which comprises: (a) an air conditioner compressor and an air conditioner compressor driving circuit for driving said compressor; (b) an evaporator operatively connected to said compressor for cooling an intake air inspired by an air blower; (c) a heater core arranged at a location downstream of said evaporator; (d) a passage bypassing said heater core; (e) a pivotable air-mixing door disposed to guide an air flow from said evaporator, respectively, through only said bypass passage at a first angular position, through only said heater core at a second angular position, and through said bypass passage and through the heater core between the first and second angular positions; (f) a lever which is pivoted between a first angular range and a second angular range with a fulcrum thereto as a center; (g) a first linkage member connected between said lever and air-mixing door which controls the angular position of said air-mixing door continuously between the first and second angular positions when said lever is angularly displaced within the first angular range and holds the angular position of said

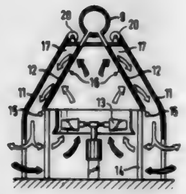
air-mixing door at the first angular position when said lever is angularly displaced within the second angular range; (h) a temperature sensor located downstream of said evaporator for detecting the temperature of the intake air passed through said evaporator; (i) a first switch member included in said compressor driving circuit operable to close said compressor driving circuit so as to actuate said compressor when said lever is angularly displaced within the second angular range; (j) a second switch member, included in said compressor driving circuit in series with said first switch member and linked with said temperature sensor, which is operable to close said compressor driving circuit so as to actuate said compressor with said first switching member when said temperature sensor produces an output signal indicating that the temperature of intake air passed through said evaporator exceeds a predetermined temperature value and to open said compressor driving circuit to render said compressor inoperative when said temperature sensor produces no output signal to indicate that the temperature of the intake air passed through said evaporator is below the predetermined temperature value; (k) a second linkage member connected between said lever and second switch member which controls an interval of time between the closures of said second switch member so as to adjust the range of operation of said compressor continuously when said lever is angularly displaced within the second angular range and holds the interval of time at maximum when said lever is angularly displaced within the first angular range; and (l) a third switching member, included in said compressor driving circuit in parallel with said first switch member, operable to close said compressor driving circuit so as to actuate said compressor when said lever is angularly displaced within said first and second angular ranges regardless of the open and closure of said first switch member.

4,450,899

METHOD OF REGULATING AN OUTDOOR STEAM CONDENSOR AND APPARATUS FOR PERFORMING SAID METHOD

Per-Olof Jakobsson, Söderköping, and Sven Beverskog, Bromma, both of Sweden, assignors to Flakt Aktiebolag, Nacka, Sweden

Filed Oct. 23, 1981, Ser. No. 314,108
Claims priority, application Sweden, Oct. 27, 1980, 8007516
Int. Cl.³ F28B *11/00*; F28F *13/06*
U.S. Cl. 165—39 **11 Claims**



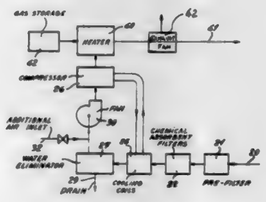
1. A method of regulating cooling of an outdoors-air-cooled steam condensor having heat exchangers with an air flow area and fan means to blow air outwardly through the entire air flow area of the heat exchangers, said condensor being fed by steam-line and being connected to discharge into condensate conduits, the improvement comprising the steps of providing screening and diversion shutter elements forming a curtain transverse to the direction of air flow through the air flow area of and spaced from the heat exchangers at a distance on the outside for diverting the outward flow and providing an air recirculation channel starting from the vicinity of said steam-line and extending along the outside of said heat exchangers towards said condensate conduits, and using said curtain to divert the outward flow to follow said channel and flow toward said conduits without substantially diminishing the flow through the heat exchanger, sensing the condensation pressure of the steam, the condensate temperature, and the outdoor air temperature, positioning the inlet of the fan means downstream of said conduits in the direction of the recirculation flow so that the flow from said channel passes said conduits and is recirculated into said fan, and regulating both the length of the curtain and the blowing of said fan means to keep the condensation pressure at a substantially constant value and the condensate temperature above freezing, the length of the curtain controlling the amount of the recirculated air, and the fan controlling the total quantity of air passing through the heat exchangers.

4,450,900

MOBILE AIR CONDITIONING UNIT

Norman Nathan, 3115 Montmorency, Longueuil, Quebec J4L 4C6, Canada

Filed Feb. 19, 1981, Ser. No. 235,975
Int. Cl.³ B60H *3/00*
U.S. Cl. 165—42 **8 Claims**



1. A mobile unit for use in conditioning air in a remote enclosed space having at least one opening therein, the unit being in the form of an open trailer comprising, an air entry having a purifying means to remove toxic gases, cooling means, dehumidifying means and heating means, ducting system from the air entry connecting in series the purifying means, cooling means, dehumidifying means, and heating means to an exit, fan means in the unit to circulate air in the ducting system from the air entry to the air outlet, a compressor in the ducting system connected with the cooling means and a duct from said dehumidifier through the hot section of said compressor and connected to said heater to provide a heat pump to preheat the air after cooling, an additional air inlet in the ducting system for selectively adding fresh makeup air, an exhaust fan located at the air entry, or the air exit, to remove excessive fumes from the enclosed space, and two removable flexible conduits for connecting the air entry and the air exit to the enclosed space.

4,450,901

HEAT RECOVERY ATTACHMENT FOR A HEATING APPARATUS

Norbert G. L. M. Janssen, Ulestraten, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

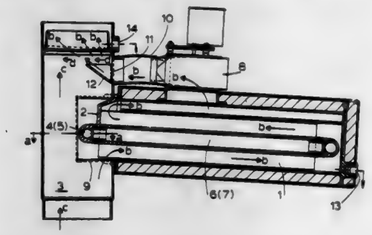
Filed Jan. 18, 1982, Ser. No. 340,048
Claims priority, application Netherlands, Jan. 16, 1981, 8100182
Int. Cl.³ F24H *3/00*
U.S. Cl. 165—47 **17 Claims**

1. A heat recovery attachment for a heating apparatus adapted to being operatively associated with a combustion gas discharge duct through which combustion gases flow in a predetermined direction, said device comprising in combination:

heat exchanger means for transferring a portion of the heat energy associated with said combustion gases to a working fluid including inlet means defining an inlet passageway for allowing at least a portion of said combustion gases to enter said heat exchanger means, outlet means defining an outlet passageway for allowing said combustion gases to exit said heat exchanger means, and fan means for encouraging said combustion gases to flow between said inlet and outlet means;

means for mounting said heat exchanger means to said discharge duct so that said inlet and outlet passageway means are in fluid communication with the interior of said discharge duct and so that a space is defined between said heat exchanger means and the opposite wall of said discharge duct thereby permitting a predetermined portion of said combustion gases to bypass said heat exchanger means; and

barrier means operatively associated with said outlet passageway means, said barrier means for establishing a barrier comprising flowing combustion gases which exit said heat exchanger means through said outlet passageway



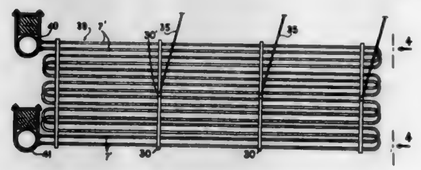
means and for preventing loss of heat energy in that portion of said combustion gases which may initially bypass said heat exchanger means thereby causing substantially all of said bypass combustion gases to eventually flow through said heat exchanger means, said barrier means including baffle means having one end fixed near said outlet passageway means and another end inclined relative to said one end in the direction of said gas flow through said discharge duct for directing a predetermined portion of said combustion gases which exit through said outlet passageway means at an angle relative to the general direction of combustion gas flow in said discharge duct.

4,450,902

HEAT EXCHANGER IN PARTICULAR FOR AN ATMOSPHERIC COOLING TOWER

Jacques G. P. E. Boone, Viroflay, France, assignor to Hamon-Sobelco, S.A., Brussels, Belgium

Continuation of Ser. No. 150,287, May 16, 1980, which is a division of Ser. No. 893,788, Apr. 5, 1978. This application Mar. 26, 1982, Ser. No. 362,058
Claims priority, application France, Oct. 7, 1977, 77 30221
Int. Cl.³ F28F *9/00*
U.S. Cl. 165—82 **9 Claims**



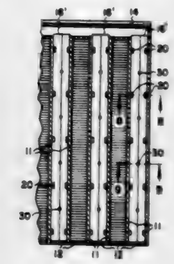
1. A heat exchanger for exchanging heat between a first fluid and at least a second fluid, of the type comprising a horizontal battery of tubes of substantial length supported at intervals by spacer devices, said first fluid circulating through said tubes and said second fluid passing through said battery transversely with respect to the tubes, wherein said battery is suspended in at least a part of its length from suspension members to which said spacer devices are suspended and including inlet and outlet means for the first fluid comprising an inlet collector and an outlet collector to which the respective ends of each of said tubes are connected, said tubes being coiled to-and-fro in vertical planes extending in the longitudinal direction of the battery, a rigid support structure, means connecting the inlet collector and the outlet collector to the rigid support structure, said suspension members including first hooking points on each of said spacer devices, means connecting the lower ends of the suspension members to the first hooking points, second hooking points for each of the suspension members, said second hooking points positioned above the first hooking points of the spacer devices and horizontally offset in a direction to continuously urge its connected spacer device and the tubes supported therein away from the rigid support structure to thereby maintain the horizontal path of said battery of tubes during expansion and contraction of the tubes thereof, and wherein at least some of said spacer devices are intermediate the ends of said battery and urged away from said rigid support structure by said suspension members and wherein each of said spacer devices comprises a rigid frame having openings for support and passage of said tubes.

4,450,903

PLATE TYPE HEAT EXCHANGER WITH TRANSVERSE HOLLOW SLOTTED BAR

Alan G. Butt, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Sep. 20, 1982, Ser. No. 419,680
Int. Cl.³ F28F *3/00*
U.S. Cl. 165—110 **16 Claims**



1. A plate type heat exchanger comprising

a. a plurality of generally planar metallic sheets arranged in spaced apart, parallel relationship;

b. bar means for sealingly connecting the metallic sheets and in conjunction therewith defining a first passage between adjacent facing surfaces of two of the sheets;

c. means for admitting and distributing a first fluid into the first passage;

d. a hollow metallic bar disposed within and across the first passage, downstream of the means for admitting and distributing the first fluid, said hollow bar being of a size to extend between the facing surfaces of the metallic sheets defining the second passage in support thereof, and including a plurality of channels formed in at least one of the surfaces of the hollow metallic bar abutting one of the metallic sheets; said hollow bar further including a plurality of orifices spaced apart along is length, for providing fluid communication between its hollow interior and the first passage;

e. inlet means for admitting a second fluid into the interior of the hollow bar, said second fluid flowing through the orifices to mix with the first fluid within the first passage;

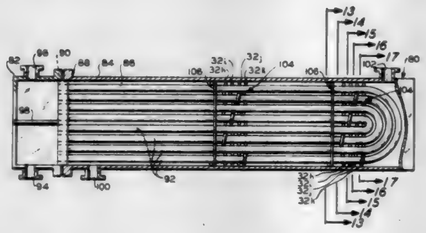
f. means for collecting and conveying the mixed first and second fluids out of the first passage after they have traversed at least a part of the heat exchanger.

4,450,904

HEAT EXCHANGER HAVING MEANS FOR SUPPORTING THE TUBES IN SPACED MUTUALLY PARALLEL RELATION AND SUPPRESSING VIBRATION

Herbert A. Volz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 31, 1978, Ser. No. 891,981
Int. Cl.³ F28F 9/00
U.S. Cl. 165—162 **18 Claims**



1. An improved tube bundle assembly comprising:

a bundle of tubes having opposite ends, at least a portion of said tubes being longitudinally oriented and positioned in transversely spaced mutually parallel relation;

means for supporting the tubes in spaced mutually parallel relation and suppressing vibration of the tubes, said means characterized to include:

an annular enlargement disposed around and frictionally secured to the outer surface of at least one of the tubes intermediate the opposite end of the bundle of tubes, said annular enlargement peripherally contacting the outer surface of each of the tubes next adjacent to the tube carrying said annular enlargement;

said annular enlargement being in the form of a spirally shaped resilient annular spring clip, said spring clip having, in its relaxed condition, an inside diameter less than the outside diameter of the tube about which it is disposed, whereby said spring clip is stressed and is thereby self-biased into frictional engagement with the outer surface of the tube; and

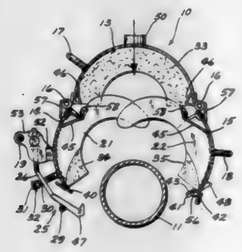
retaining means extending around said bundle of tubes proximate said annular enlargement for engaging and maintaining said tubes in spaced mutually parallel relation with said annular enlargement contacting the respective next adjacent tubes whereby relative tube position is maintained and tube vibration is suppressed.

4,450,905

MUD BUCKET

Scott L. Crain, R.R. 1, Morrowville, Kans. 66958

Filed Aug. 9, 1982, Ser. No. 406,165
Int. Cl.³ E21B 19/00
U.S. Cl. 166—85 **9 Claims**



1. Apparatus for use in conjunction with a drilling rig for catching and saving mud or the like from inside of a drilling rig pipe of the type having a drill bit at the bottom thereof and a plurality of stands of pipe connected together by connection junctures, for use when the pipe is in the process of being pulled up out of a hole in the ground and when each topmost stand of pipe is disconnected from the adjacent lower stand of pipe at a connection juncture, one stand at a time during the pulling process, said apparatus comprising:

container means for forming a container around the topmost connection juncture for catching mud or the like when the topmost stand of pipe is disconnected from the adjacent lower stand of pipe at said topmost connection juncture;

a pair of hinge means connected to a first portion of said container means and to one side of second and third portions of said container means and being disposed along parallel axes which are also parallel to the longitudinal axis of said pipe for selectively permitting pivoting of said second and third portions of the container means outwardly away from each other;

closing means attached to said container means for automatically closing said container means when said container means is positioned at said one side thereof against said pipe whereby the force of said closing means against said pipe will cause said container means to close, said closing means including a first arm means attached to said second portion of said container means and extending inwardly of said container for contact with said pipe, and whereby movement of said first arm means against said pipe when said second portion of said container means is in the open position thereof causes said second portion of said container means to move toward the closed position thereof and a second arm means attached to said third portion of said container means for contact with said pipe and whereby movement of said second arm means against said pipe when said third portion of said container means is in the open position thereof causes said third portion of said container means to move toward said closed position thereof;

latch means attached to the other side of said second and third portions of said container means for locking said container means in a closed position in sealing engagement with said pipe around said topmost connection juncture, said latch means including means for automatically latching said container means in a closed position when said container means moves to said closed position, and including means for selectively unlocking said latch means, whereby said container means can be opened after it has been drained for use on the next connection juncture to be disconnected; and

drain means for emptying mud from said container means after said topmost pipe has been disconnected.

4,450,906

APPARATUS FOR MEASURING THE WEIGHT OF THE DRILL STRING

Daniel Firmin, 215 Camelia Blvd., Lafayette, La. 70503

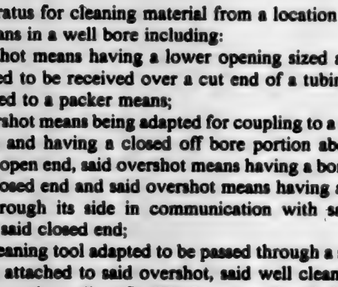
Filed Jan. 20, 1982, Ser. No. 340,987
Int. Cl.³ E21B 49/00
U.S. Cl. 166—113 **6 Claims**

1. An apparatus for measuring the weight of tubular string lowered into a well, comprising:

a. annular expandable hydraulic cylinder means having a central bore through which the tubular string can freely pass for temporarily supporting the tubular string at least when its weight is to be determined;

b. removable slip means placeable between the tubular string and the annular expandable hydraulic cylinder means for forming a load transfer interface between the tubular string and the expandable hydraulic cylinder means when the tubular string weight is to be measured; and

c. guage means hydraulically connected to the annular expandable hydraulic cylinder means for indicating weight of the tubular string response to a transfer of the tubular string weight to the annular expandable hydraulic cylinder means by insertion of the removable slips between the tubular string and cylinder means.

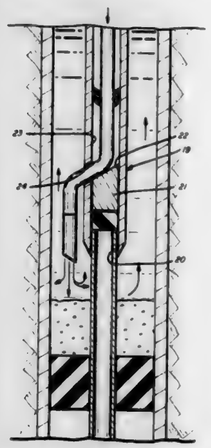


4,450,907

CLEANING SYSTEM FOR PACKER REMOVAL

James M. Clark, Lafayette, La., and Tony M. Small, Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 19, 1982, Ser. No. 399,544
Int. Cl.³ E21B 21/00
U.S. Cl. 166—223 **3 Claims**



1. Apparatus for cleaning material from a location above a packer means in a well bore including:

an overshot means having a lower opening sized and constructed to be received over a cut end of a tubing string attached to a packer means;

said overshot means being adapted for coupling to a string of tubing and having a closed off bore portion above said lower open end, said overshot means having a bore above said closed end and said overshot means having an opening through its side in communication with said bore above said closed end;

a well cleaning tool adapted to be passed through a string of tubing attached to said overshot, said well cleaning tool having a depending flexible hose member below said packing means, said hose member being sized and constructed to pass through said opening in said overshot means;

means placing said hose member in fluid communication with the tubing above said packing means whereby fluid may be discharged through said hose to agitate materials into the fluid in the well bore annulus between the tubing string and well casing.

4,450,908

ENHANCED OIL RECOVERY PROCESS USING MICROORGANISMS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 30, 1982, Ser. No. 374,540
Int. Cl.³ E21B 43/22
U.S. Cl. 166—246 **7 Claims**

1. A process for the recovery of oil from an underground oil-bearing reservoir containing polymer-adsorbing rock comprising the steps of:

(a) injecting a polymeric viscosifier-thickened aqueous slug into the reservoir via an injection well;

(b) subsequently injecting an aqueous slug into the reservoir via the injection well and forcing the aqueous slug through the reservoir so as to push the polymeric viscosifier toward the production well;

(c) subsequently injecting an aqueous solution of a microorganism capable of metabolizing the polymeric viscosifier into the reservoir via the injection well and forcing the microorganism through the reservoir toward the production well;

(d) subsequently injecting a drive fluid into the reservoir via the injection well and driving oil toward the production well; and

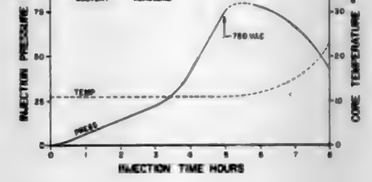
(e) producing oil via the production well.

4,450,909

COMBINATION SOLVENT INJECTION ELECTRIC CURRENT APPLICATION METHOD FOR ESTABLISHING FLUID COMMUNICATION THROUGH HEAVY OIL FORMATION

Aleksy Sacuta, Edmonton, Canada, assignor to Alberta Research Council, Edmonton, Canada

Filed Oct. 22, 1981, Ser. No. 313,748
Int. Cl.³ E21B 43/24, 43/25
U.S. Cl. 166—248 **1 Claim**



1. A method for opening a fluid communication channel between injection and production wells in a previously unheated heavy oil reservoir wherein the oil is not amenable to being produced by a drive fluid, which consists essentially of:

injecting a cold solvent for the heavy oil into the unheated reservoir; and

while such solvent is moving through the unheated reservoir, simultaneously passing electric current between a positive electrode positioned in the injection well and a negative electrode positioned in the production well to reduce the injection pressure required.

4,450,910

THERMAL RECOVERY OF VISCOUS OIL FROM A DIPPING RESERVOIR

William C. Hunt, III, Farmers Branch, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,825
Int. Cl.³ E21B 43/24
U.S. Cl. 166—261 **10 Claims**

1. A method for recovering oil from a subterranean, viscous

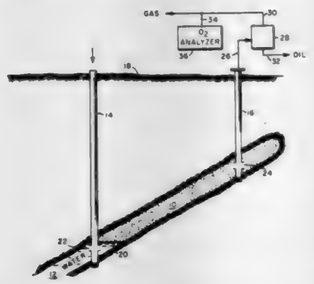
oil-containing reservoir having a dip and having a water zone in fluid communication with and directly below the oil-containing reservoir to form an oil/water interface, said method comprising the steps of:

(a) providing an injection well from the earth's surface in fluid communication with the oil-containing reservoir near the oil/water interface;

(b) providing a production well from the surface in fluid communication with the oil-containing reservoir at a shallower depth;

(c) initiating an in situ combustion operation in the oil-containing reservoir near the oil/water interface by injecting an oxidizing gas into the injection well;

(d) recovering fluids including oil and an effluent gas from the reservoir through the production well;



(e) continuing injection of the oxidizing gas into the reservoir through the injection well for a predetermined amount of time;

(f) terminating injection of the oxidizing gas and continuing to recover fluids including oil and effluent gas from the reservoir through the production well until the fluids recovered contain essentially no effluent gas;

(g) shutting-in the injection well and the production well to permit the reservoir to undergo a soak period for a predetermined amount of time; and

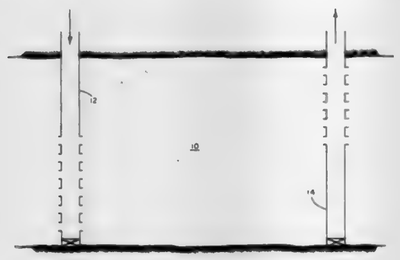
(h) injecting water into the reservoir through the injection well and recovering fluids including oil from the reservoir through the production well.

4,450,911

VISCOUS OIL RECOVERY METHOD

Winston R. Shu, Dallas, and Kathy J. Hartman, Arlington, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 20, 1982, Ser. No. 400,178
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—263 **10 Claims**



1. A method for the recovery of oil from a subterranean, viscous oil-containing formation penetrated by at least one injection well in fluid communication with the lower 50% or less of the formation, at least one spaced-apart production well in fluid communication with the upper 50% or less of the formation, said injection well and said production well having a communication relationship in the bottom zone of the formation and the wells spaced-apart a predetermined distance, comprising:

(a) injecting about 0.37 pore volume of steam at an injection rate of about 5.0 barrels of steam per day per acre-foot into the formation;

(b) injecting a predetermined amount of steam at a predetermined injection rate into the formation via said injection well and recovering fluids including oil from the formation via said production well;

(c) shutting-in said injection well and continuing to recover fluids including oil from the formation via said production well for a predetermined period of time;

(d) injecting a predetermined amount of a fluid comprising hot water into the formation via said injection well at a predetermined rate, said fluid injected in an amount and at an injection rate less than that of the steam injected during step (b); and

(e) continuing to recover fluids including oil from the formation via said production well until the recovered fluids contain an unfavorable amount of steam or water.

5. A method for the recovery of oil from a subterranean, viscous oil-containing formation penetrated by at least one injection well in fluid communication with the lower 50% or less of the formation, and at least one spaced-apart production well in fluid communication with the upper 50% or less of the formation, said injection well and said production well having a communication relationship in the bottom zone of the formation, comprising:

(a) spacing apart said injection and production well a distance within the range of 400 to 750 feet;

(b) injecting a predetermined amount of steam at a predetermined injection rate into the formation via said injection well and recovering fluids including oil from the formation via said production well;

(c) shutting-in said injection well and continuing to recover fluids including oil from the formation via said production well for a predetermined period of time;

(d) injecting a predetermined amount of a fluid comprising hot water into the formation via said injection well at a predetermined rate, said fluid injected in an amount and at an injection rate less than that of the steam injected during step (b); and

(e) continuing to recover fluids including oil from the formation via said production well until the recovered fluids contain an unfavorable amount of steam or water.

4,450,912

METHOD AND APPARATUS FOR WELL CEMENTING THROUGH A TUBULAR MEMBER

Rudy B. Callihan, and Lyndon R. Stone, both of San Antonio, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 7, 1982, Ser. No. 385,616
Int. Cl.³ E21B *33/14*
U.S. Cl. 166—289 **11 Claims**

9. The method of cementing a well conduit by cement applied from the surface through a second conduit and a tubular member disposed within the well conduit, comprising the steps of:

(1) providing an axial passage for cement flow through the bottom end of the well conduit;

(2) providing ports for cement flow through the wall of the well conduit at a location spaced above the axial flow passage and a sleeve valve normally closing the ports;

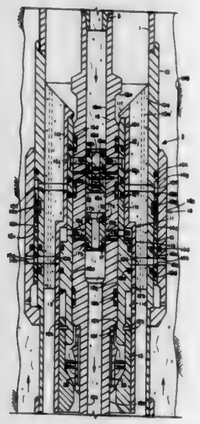
(3) sealingly securing the bottom end of the tubular member with the well conduit;

(4) completing a first stage of cementing by applying cement from the surface through the second conduit, axially through the tubular member and through the axial passage in the bottom of the conduit to fill cement around the well conduit to a level below the cement passage;

(5) sealing the flow path to the axial cement passage;

(6) moving a sleeve valve to open the radial cementing ports;

(7) completing a second stage of cementing by supplying cement from the surface through the second conduit, radially through the tubular member and outwardly through the cementing ports; and



(8) sealing the cementing ports by moving a second sleeve valve on the exterior of the conduit into sealing relationship with the cementing ports.

4,450,913

SUPERHEATED SOLVENT METHOD FOR RECOVERING VISCOUS PETROLEUM

Joseph C. Allen; Robert E. Gillespie, both of Bellaire, and David B. Burnett, Carrollton, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,389
Int. Cl.³ E21B *43/24, 43/40*
U.S. Cl. 166—303 **4 Claims**

1. A method for recovering hydrocarbons from a subterranean hydrocarbon formation penetrated by at least one well, consisting essentially of:

(a) injecting into the hydrocarbon formation through a well a fluid consisting essentially of superheated solvent selected from the group consisting of butane, pentane, hexane, heptane, and octane, while simultaneously restricting production to increase formation pressure,

(b) said solvent being injected at an elevated pressure sufficient to dissolve the solvent into the subterranean hydrocarbons, rendering the hydrocarbons mobile;

(c) ceasing the injection of the solvent;

(d) depleting formation pressure to substantially below the pressure which existed prior to injection by producing hydrocarbons without restriction until hydrocarbon production becomes relatively insignificant;

(e) recovering the injected solvent along with the produced hydrocarbons; and

(f) repeating the above injection and pressure depletion sequence.

4,450,914

WELL TREATMENT VALVE

James Elphick, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 25, 1982, Ser. No. 342,550
Int. Cl.³ E21B *34/00*
U.S. Cl. 166—325 **10 Claims**

1. A well treatment valve for use in acidizing a well including:

a valve housing with inlet and outlet chambers,

a valve seat disposed within said housing between said inlet and outlet chambers,

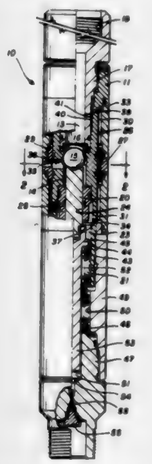
a valve body within said housing and movable relative to said seat between open and closed positions,

a spring chamber associated with said housing but sealed against fluid communication with said outlet chamber,

a pressure passage communicating between said inlet chamber and said spring chamber,

a bore extending between said outlet chamber and said spring chamber,

an actuating rod with a lower end portion disposed within said spring chamber and an upper end portion extending through and pressure sealed within said bore for engagement with said valve body,



a high pressure chamber sealed within said spring chamber and charged to a preselected high pressure,

said lower end portion of said actuating rod effectively extending into said high pressure chamber and being urged by the pressure therein toward said engagement with said valve body to close said valve, and

means for effectively sealing between said lower end portion of said actuating rod and said high pressure chamber so that movement of said actuating rod may be controlled virtually exclusively by varying the pressure in said inlet chamber relative to the charged pressure in said high pressure chamber.

4,450,915

SELF-PROPELLED DISK HARROW

Kermit M. DeHaai, R.R. 1, Monroe, Iowa 50170

Continuation of Ser. No. 189,341, Sep. 22, 1980, abandoned. This application Aug. 15, 1982, Ser. No. 405,393
Int. Cl.³ A01B *33/02*
U.S. Cl. 172—55 **10 Claims**

3. In a self-propelled disk harrow apparatus having:

a frame with a longitudinal axis defined thereby;

a plurality of wheels rotatably attached to said frame, the forwardmost of said wheels being spaced longitudinally from the rearwardmost of said wheels by at least one-half the operable length of the frame;

means rotatably mounting a plurality of ground engaging disc members to said frame for causing said disc members to carry substantially all of the weight of said disk harrow during normal tilling operations, said disc members extending a substantial distance below said wheels when said disk harrow is in a ground tilling position, said disc members being disposed on first, second, third and fourth axles, said axles being disposed on different axes with respect to each other, said second axle being disposed behind said first axle, said third axle being disposed behind said second

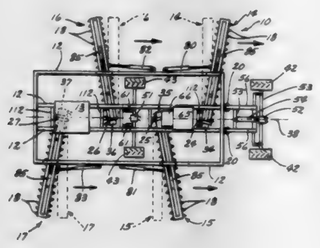
axle, and said fourth axle being disposed behind said third axle;

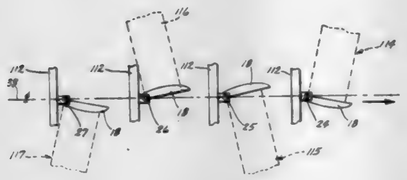
said first and third axles being disposed on one side of said longitudinal axis, said second and fourth axles being disposed on the other side of said longitudinal axis;

means operatively attached to said frame for rotating said disc members to thereby propel said disk harrow and till the ground;

means operatively attached to said frame for rotating at least some of said wheels at substantially the same speed as to rotational speed of said disc members whereby if said disc members extend into the ground more than said substantial distance, a substantial amount of the weight of the disk harrow will transfer to said wheels to help propel the disk harrow and prevent it from becoming stuck;

the improvement comprising pitch adjustment means for varying the angle of the rotational axis of the axles of the first, second, third and fourth axles with respect to the longitudinal axis of the frame, said pitch adjustment means including a first overlap preventing means for preventing the disc members on the second axle from overlapping the





ground covered by the disc members on the first axle in any angle of pitch of said first and second axles, said first overlap preventing means comprising first means for pivotally connecting one end of said first axle to said frame along a first vertical axis and second means for pivotally connecting one end of said second axle to the frame along a second vertical axis, said first and second vertical axes being substantially offset with respect to, and thereby not intersecting with, the respective rotational axis of said first and second axles; said pitch adjustment means further including a second overlap preventing means for preventing the disc members on the fourth axle from overlapping the ground covered by the disc members on the third axle in any angle of pitch of said third and fourth axles, said second overlap preventing means comprising third means for pivotally connecting one end of said third axle to said frame along a first vertical axis and fourth means for pivotally connecting one end of said fourth axle to the frame along a fourth vertical axis, said third and fourth vertical axes being substantially offset with respect to, and thereby not intersecting with, the respective rotational axis of said third and fourth axles.

4,450,916

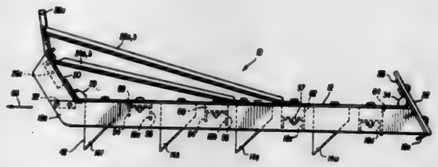
EARTH CLOD PULVERIZER

Thomas E. Francis, 1814 Lakeside Dr., Quinton, Va. 23141

Filed Jul. 19, 1982, Ser. No. 399,939

Int. Cl.³ A01B *27/00, 35/08*

U.S. Cl. 172—147 **12 Claims**



1. An earth clod pulverizing and earth smoothing implement of a type to be moved across the surface of the earth in a forwardly direction of travel while engaging the earth to break apart relatively large clods near the earth's surface and otherwise prepare the earth's surface for further use, said implement comprising a frame for defining a supporting surface to be approximately parallel to the earth's surface while said implement is in use and for supporting earth-engaging members extending from said supporting surface downwardly, said earth-engaging members including teeth;

the improvement wherein said teeth are wedge-shaped in cross section taken on a plane parallel to the earth's surface, with the cutting edge of each wedge defining a substantially vertical line facing the forwardly direction with relatively flat sides of the wedge flaring rearwardly and laterally of the forwardly direction, and said teeth having pointed tips directed downwardly into the earth's surface with trailing sides of said teeth sloping upwardly from said pointed tips a vertical distance of substantially greater than half the lengths of the teeth, said teeth being constructed of a cast metal and each tooth weighing at least 25 pounds.

4,450,917

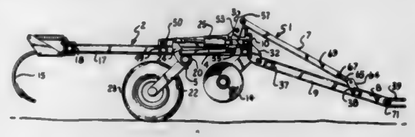
SELF-LEVELING ARRANGEMENT FOR AGRICULTURAL IMPLEMENT FRAME

Kenneth A. Hake, Tipton, Kans., assignor to Kent Manufacturing Company, Inc., Tipton, Kans.

Filed Aug. 13, 1982, Ser. No. 408,014

Int. Cl.³ A01B *59/00*

U.S. Cl. 172—328 **3 Claims**



1. A self-leveling arrangement for use on an agricultural implement supporting frame including ground engaging means, frame lift means operatively connected between said frame and said ground engaging means and operable to raise said frame to a transport position and to lower said frame to a soil working position, and a draft tongue pivotally connected to a frame front end of said frame and having a hitch member on a tongue front end of said tongue for connecting said frame to a draft vehicle, said self-leveling arrangement comprising:

(a) a rocker arm pivotally mounted on said frame and having a first end and an opposite second end;

(b) a transfer link pivotally connected between said first end of said rocker arm and said frame lift means;

(c) a leveling link pivotally connected between said second end of said rocker arm and said tongue front end whereby upon raising said frame toward said transport position said frame front end is raised and upon lowering said frame toward said soil working position said frame front end is lowered to thereby maintain a substantially constant pitch of said frame;

(d) said rocker arm, said transfer link, and said leveling link respectively being a first rocker arm, a first transfer link, and a first leveling link;

(e) a second rocker arm substantially similar to said first rocker arm being pivotally mounted on said frame in laterally spaced relation to said first rocker arm, said second rocker arm having a first end and a second end;

(f) a second transfer link being pivotally connected between said first end of said second rocker arm and said frame lift means;

(g) a second leveling link being pivotally connected between said second end of said second rocker arm and said tongue front end; and

(h) said first and second leveling links extending toward said tongue front end in forwardly converging relation.

4,450,918

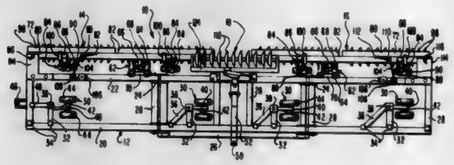
DISCING TOOL POSITIONABLE TO BE TRANSPORTED

Jack D. Danford, Box 98, Watkins, Colo. 80137

Filed May 4, 1982, Ser. No. 374,765

Int. Cl.³ A01B *21/08, 73/00*

U.S. Cl. 172—583 **7 Claims**



1. A discing tool for working wide portions of soil and also positionable to be transported on a highway, comprising:

an elongated frame having a longitudinal axis for attachment to a towing vehicle, said frame including an elongated hitch bar, an elongated chassis member parallel to said hitch bar but spaced therefrom, a draft bar joining said hitch bar and said chassis member together, and at least one vertical brace connected to said draft bar and extending upwardly therefrom;

a first outer disc gang having a length corresponding to substantially one-half the length of said frame and including a plurality of discs, said first outer disc gang having a first end pivotally connected to said frame adjacent the mid portion thereof and a second end extending in a first direction away from the mid portion of said frame;

a second outer disc gang having a length corresponding to substantially one-half the length of said frame and including a plurality of discs, said second outer disc gang having a first end pivotally connected to said frame adjacent the mid portion thereof and a second end extending in a second direction, substantially opposite the first direction of said first outer disc gang, away from the mid portion of said frame, the lengths of said first and second outer disc gangs together substantially corresponding to the length of said frame;

pivoting means connecting each of said first and second outer disc gangs to said frame adjacent said second ends of each of said first and second outer disc gangs to said frame adjacent said second ends of each of said first and second outer disc gangs so that said second ends are pivotal about each of said first ends so that when said discs are working the soil said outer disc gangs are positioned at an angle relative to said frame and when said discs are transported said outer disc gangs are generally parallel to said frame;

means for supporting said frame and said first and second outer disc gangs; and

center disc gang means having a plurality of center discs, said center disc gang means being connected to said frame adjacent the mid portion thereof, said center discs being used to work the soil between the first ends of said first and second outer disc gangs, said center disc gang means further including a center disc rod on which said center discs are mounted, the length of said center disc rod being substantially less than the length of said first outer disc gang, a trunnion fastened to said frame to permit the rotating of said center disc gang means above said frame, a center plate interconnecting said center disc rod and said trunnion, and means interconnecting said vertical brace and said center plate for rotating said center plate along a vertical arcuate path.

4,450,919

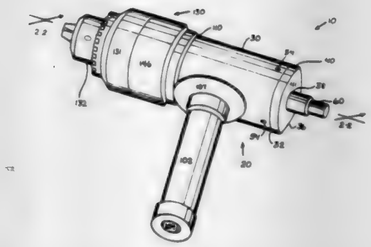
DRILL ATTACHMENT

Bernard L. Cousineau, 345 N. Schiller, Palatine, Ill. 60067

Filed Jan. 3, 1983, Ser. No. 455,226

Int. Cl.³ B21J *00/00*; E02D *7/02*

U.S. Cl. 173—29 **17 Claims**



1. A hammer assembly for a drill including a case, a hammer mechanism operatively mounted within said case and a handle secured to the exterior of said case, wherein:

a. said case is an elongated member having a closeable end at one end thereof and a bit end oppositely disposed from said closeable end;

b. said hammer mechanism includes a rotating member adjacent said closeable end partially within said case and partially outside of said case; wherein

(1) said rotating member is a rotating spindle;

(2) said rotating spindle has a drill end through said drive aperture on an exterior of said case, and a receiving end oppositely disposed from said drill end in an interior of said case;

(3) said receiving end includes a hollow cylindrical portion open at a first end and closed at a second end, said second end being adjacent said drill end; and

(4) a key slot in a side of said hollow cylindrical portion;

c. said hammer mechanism further includes a reciprocating member within said case having a connecting means at one end thereof for connecting said reciprocating member to said rotating member and a chuck securing means oppositely disposed from said connecting means, said chuck securing means serving to operatively connect a chuck assembly for holding a drill bit to said hammer assembly; wherein

(1) said reciprocating member is a reciprocating spindle,

(2) said reciprocating spindle has a slotted end and a threaded end oppositely disposed from said slotted end, and

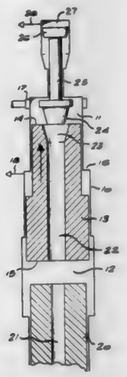
(3) said slotted end fits into said hollow cylindrical portion; and

d. a handle securing means for securing a handle to said case.

4,450,920
HYDRAULIC RECIPROCATING MACHINES

Eugene L. Krasnoff, Princeton, and Herman Lindeboom, Ringoes, both of N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 3, 1981, Ser. No. 327,246
Claims priority, application South Africa, Jul. 13, 1981, 81/4749
Int. Cl.³ E21C 7/08; B25D 17/16
U.S. Cl. 173—80 6 Claims

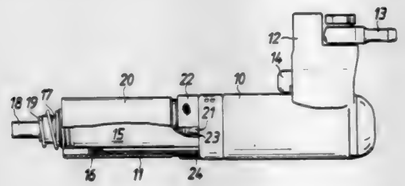


1. A hydraulic reciprocating machine comprising:
a cylinder with a drive chamber and a return chamber;
a piston arranged to move to and fro in the cylinder with a first piston area exposed to the drive chamber and being smaller than a second piston area exposed to the return chamber;
a permanently open inlet for fluid to the drive chamber;
a restricted outlet for fluid from the return chamber;
a bore extending through the piston from a port in its first area to its second area;
a first valve with a head adapted to seat on the port and a stem guided in the end wall of the drive chamber;
means for limiting the extent of travel of the first valve with the piston so that the first valve travels with the piston a determined portion of the way from the drive chamber towards the return chamber; and
a shoulder between the drive and return chambers and a vent in the return chamber adjacent the shoulder.

4,450,921
POWER OPERATED PERCUSSION TOOL HAVING GRIPPING MEANS

Ulf K. Arvidsson, Stockholm, and Per A. L. Gidlund, Täby, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Dec. 11, 1981, Ser. No. 330,086
Claims priority, application Sweden, Dec. 18, 1980, 8008915
Int. Cl.³ B25D 9/00
U.S. Cl. 173—162 H 9 Claims

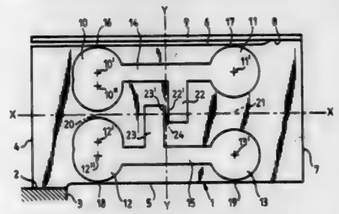


1. A vibration damped power operated percussion tool, comprising in combination:
an impact mechanism;
means on said impact mechanism for operative connection of a working implement thereto;
a housing supporting said impact mechanism and being vibration insulated relative to said impact mechanism, said vibration insulated housing having a portion extending in given axial direction, and a forward end beyond which said working implement extends;
a handle at the rear end of said housing for manual support of the tool by an operator;
a sleeve element extending in said axial direction and being adjustably mounted around at least a portion of said axially extending portion of said vibration insulated housing so as to be adjustable in position relative to said housing in said axial direction;
said sleeve element, in use of said tool, extending beyond the forward end of said housing, thereby forming an advanced vibration insulated grip means which is grippable by the tool operator during use of the tool; and
arresting means coupled to said sleeve element for arresting movement of said sleeve element relative to said housing for preventing unintentional axial displacement of said sleeve element relative to said housing, said arresting means comprising a friction coupling for frictionally engaging said sleeve element to said housing, and a clamping device operatively coupled to said sleeve element for continuously varying the engagement force of said friction coupling.

4,450,922
FORCE SENSING DEVICE FOR MEASUREMENT APPARATUS

Claude Alexandre, Paris, France, assignor to R.M.S. Ingenierie et Financiere, Saint Maur, France

Filed Mar. 9, 1982, Ser. No. 356,535
Claims priority, application France, Mar. 17, 1981, 81 05281
Int. Cl.³ G01G 3/14, 3/08; G01L 1/22
U.S. Cl. 177—211 6 Claims



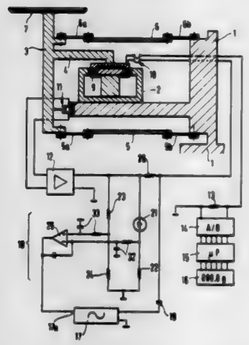
1. In a force sensing device for measuring a vertical force comprising a homogeneous parallelepipedic block of constant thickness having front and back faces, lower and upper sides and first and second vertical sides, said block being provided with:
first upper and lower transverse openings near said first vertical side determining first upper, middle and lower thinner zones of lesser dimension as measured along a vertical axis,
second upper and lower transverse openings near said second vertical side determining second upper, middle and lower thinner zones of lesser dimension as measured along a vertical axis, said first and second middle thinner zones being symmetrical in relation to a plane parallel with said upper and lower sides,
upper and lower horizontal slots connecting said first and second upper transverse openings and said first and second lower transverse openings, respectively,
a first vertical slot near said first lower transverse opening connected with said lower horizontal slot,
a second vertical slot near said second upper opening connected with said upper horizontal slot, and
a central portion determined by said vertical slots,

said force sensing device further comprising first means for securing thereof to a support near said first vertical and lower sides, second means for securing of said device to a reception plate on which forces to be measured are to be exerted, and stress gauges located on said first middle thinner zone, the improvement being
said central portion determined by said horizontally offset vertical slots comprises a single vertical thinner zone of lesser dimension as measured along an axis at right angles with said vertical sides, said vertical thinner zone having a minimum thickness in said plane of symmetry of said first and second middle thinner zones.

4,450,923
ELECTRONIC WEIGHING SCALE

Lothar Behrend, Diemarden; Erich Knothe, Bovenden; Franz-Josef Melcher, and Jürgen Ober, both of Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,676
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149990
Int. Cl.³ G01G 1/38, 3/14; G01R 17/06
U.S. Cl. 177—212 4 Claims

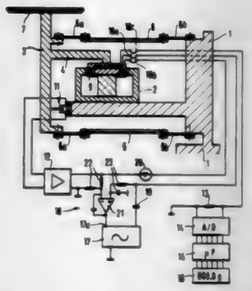


1. In an electronic weighing scale based on the principle of electromagnetic force compensation having
(a) at least one coil which is located in an air gap of a stationary permanent magnet system and is loaded over a position sensor (11) and a gain control amplifier (12) by a direct compensating current dependent on the load on the scale,
(b) a precision resistor (13) through which the same direct compensating current flows and at both ends of which a signal dependent on the load of the scale can be tapped off and fed to an analog to digital converter,
(c) and an alternating voltage generator (17) which is regulated in its amplitude by a control circuit and which allows an alternating current to flow at least through the coil in addition to the direct compensating current, wherein the improvement comprises including a voltage divider circuit (21, 22) in parallel with the coil (9) and the precision resistor (13) is provided which has at least one highly temperature-dependent resistor (21), whereby the direct and alternating current through this highly temperature-dependent resistor (21) is proportional to the direct and alternating current through the coil (9); a control circuit (18) regulates the amplitude of the alternating voltage generator (17) in such a manner that the resistance value of the highly temperature-dependent resistor (21) remains as constant as possible.

4,450,924
ELECTRONIC WEIGHING SCALE

Lothar Behrend, Gleichen/Diemarden; Eric Knothe, Bovenden; Franz-Josef Melcher, and Jürgen Ober, both of Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,784
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149989
Int. Cl.³ G01G 1/38, 3/14; G01R 17/06
U.S. Cl. 177—212 6 Claims



1. In an electronic weighing scale based on the principle of electromagnetic force compensation with:
(a) at least one coil which is located in the air gap of a stationary permanent magnet system and is loaded over a position sensor and a gain control amplifier by a direct compensating current dependent on the load of the weighing scale,
(b) a precision resistor through which the same direct compensating current flows and at both ends of which a signal dependent on the load of the weighing scale can be tapped off and fed to an analog to digital converter,
(c) a heating resistor connected in series to the coil and the precision resistor,
(d) and an alternating voltage generator which is regulated in its amplitude by a control circuit and which allows an alternating current to flow through the coil, the precision resistor and the heating resistor in addition to the direct compensating current, the improvement comprising:
the heating resistor having a highly temperature-dependent resistance value, and
a control circuit (18) regulates the amplitude of the additional alternating current in such a manner that the resistance value of the heating resistor (20) retains a value which is relatively constant.

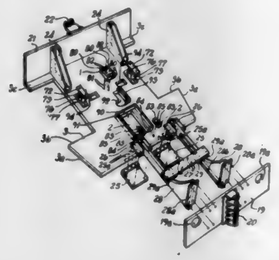
4,450,925
WHEELED INDUSTRIAL/AGRICULTURAL TRACTORS

Peter C. Gardner, Stroud, England, assignor to H. Cameron Gardner Ltd. and Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/GB81/00081, 371 Date Dec. 21, 1981, 102(e) Date Dec. 21, 1981, PCT Pub. No. WO81/03154, PCT Pub. Date Nov. 12, 1981
PCT Filed May 1, 1981, Ser. No. 444,395
Claims priority, application United Kingdom, May 1, 1980, 8014471
Int. Cl.³ B62D 21/18; B64F 1/22
U.S. Cl. 180—89.1 16 Claims

1. A wheeled industrial/agricultural tractor having a chassis provided by a series arrangement of front axle support, engine block, transmission housing, and back axle unit, the tractor being characterised by the provision of an equipment support frame (3, 28) in the form of a base plate (3) carried beneath an operator's station portion of the chassis (50, 10, 51, 52, 53), and a pair of transversely spaced struts (28) secured (25) to the front portion of the base plate (3) and arranged to extend

forwardly thereof, the front ends of the struts having attachment means (19, 28*a*) for the support of equipment (20) at the



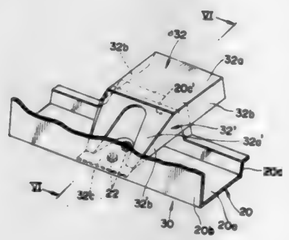
front of the tractor, and in that first (1, 2, 70) and second (27, 29:28*c*, 28*d*) attachment means are provided for respectively securing the base plate and struts to the chassis.

4,450,926

VEHICLE BODY

Isao Suzuki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Mar. 25, 1982, Ser. No. 361,753
Claims priority, application Japan, Mar. 26, 1981, 56-42583[U]
Int. Cl.³ B62D *25/20*
U.S. Cl. 180—312 8 Claims



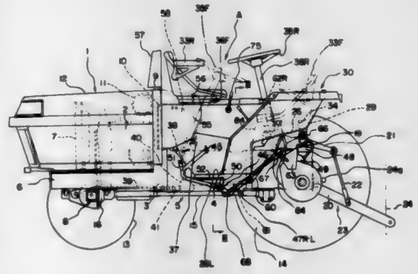
1. A vehicle body comprising a dash lower panel; a dash lower cross member attached to said dash lower panel and extending transversely of the vehicle body, said dash lower cross member having a channel-like section and cooperating with said dash lower panel to form a closed-section structure; a front floor panel secured to a rear margin of said dash lower panel, said dash lower panel and said front floor panel being formed with a common floor tunnel which extends longitudinally of the vehicle body and is located substantially at a middle portion of the dash lower panel and the front floor panel; a stiffener made of sheet material and shaped to conform to the cross section of said floor tunnel, said stiffener being arranged in said floor tunnel and secured to tunnel-defining walls of said dash lower panel and said front floor panel, said stiffener having a front end portion received in said closed section structure, said front end portion having a bottom wall secured to a bottom wall of the dash lower cross member, said stiffener also including a portion extending rearwardly from the front end portion and having side wall means connected to tunnel defining side walls of the dash lower panel; and a rear mounting bracket secured to said dash lower cross member together with the front end portion of said stiffener, said rear mounting bracket extending forwardly from said dash lower cross member to engage an engine to limit the extent of engine roll.

4,450,927

APPARATUS FOR CONTROLLING AGRICULTURAL TRACTOR

Kazuo Hirata, Sakai, and Masao Takagi, Hashimoto, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 10, 1982, Ser. No. 376,500
Claims priority, application Japan, Jun. 9, 1981, 56-85290[U]
Int. Cl.³ B62D *1/18*
U.S. Cl. 180—330 5 Claims



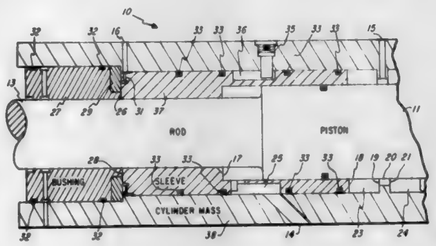
1. An agricultural tractor comprising:
a tractor body;
a plurality of speed change levers mounted on the tractor body;
a plurality of pedals provided forwardly and rearwardly on the tractor body, respectively, the rearward pedals being at a higher position than the forward pedals;
a seat selectively fixable to a rearward position opposed to the forward pedals and a forward position opposed to the rearward pedals, the forward position being higher than the rearward position; and
a post having a steering wheel, the post being selectively fixable to a forward position corresponding to the forward position of the pedals and a rearward position corresponding to the rearward position of the pedals, the steering wheel facing the seat to whichever position the post is fixed.

4,450,928

DUAL MODE SEISMIC SOURCE VIBRATOR

Richard M. Weber, Prosper, and John W. Bedenbender, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1981, Ser. No. 289,444
Int. Cl.³ G01V *1/133*
U.S. Cl. 181—121 10 Claims



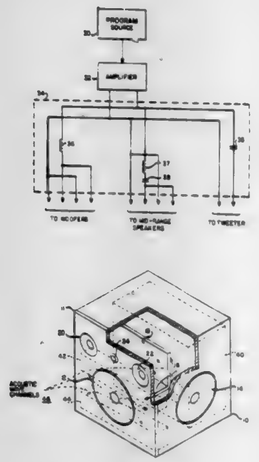
1. A dual mode seismic source vibrator actuated by a hydraulic supply source providing working and high pressures, operated at varying frequencies supplied by a variable frequency generator and having a piston and piston rods attached to and extending therefrom within a reciprocally disposed reaction mass forming an hydraulic drive cylinder, comprising:
(a) working pressure port means, for introducing hydraulic fluid from the working pressure source at a frequency determined by the variable frequency generator, alternately against each face of the piston to cause the piston to reciprocate;
(b) stroke adjusting means, positioned within the cylinder, surrounding the piston and piston rods, adapted to slideably engage the piston rods within the outer portions of its length and to slideably engage the piston within the central portion of its length, the stroke adjusting means being adapted to slide within the cylinder to effectively shorten or lengthen the central portion thereby shortening or lengthening the piston stroke;
(c) low frequency port means, positioned to move the stroke adjusting means to lengthen the stroke when the high pressure is present;
(d) high frequency port means positioned to move the stroke adjusting means to shorten the stroke when the high pressure is present; and
(e) valve control means electrically connected to the variable frequency generator and hydraulically selectively connected to the low or high frequency port means, and to the hydraulic supply source of high pressure, reactive to the variable frequency generator to apply the high pressure through the low frequency port means when the variable frequency generator frequency is below a predetermined frequency, and vice versa when the variable frequency generator frequency is above the predetermined frequency, thereby moving the stroke adjusting means to lengthen and to shorten the piston stroke, respectively.

4,450,929

ACOUSTIC ENERGY SYSTEMS

Ralph E. Marrs, 6809 Chateau Ct., San Jose, Calif. 95120

Division of Ser. No. 148,482, May 9, 1980, which is a continuation-in-part of Ser. No. 903,489, May 8, 1978, abandoned. This application Sep. 7, 1982, Ser. No. 415,190
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—146 45 Claims



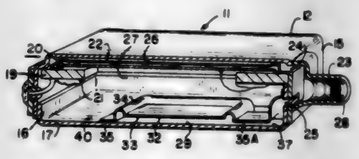
1. A system for exhibiting enhanced volumetric compliance in response to acoustic waves within an enclosure, comprising:
at least two spaced apart volumetric containers within the enclosure each being substantially transparent to force, pressure or volumetric displacements acting on the container and each containing a matrix of thin spaced apart layers of microfibers spatially distributed within the container;
each of the containers further including a two phase fluid system comprising a liquid and a gas, the liquid of which were the microfibers throughout the matrix and the liquid and gas being in thermodynamic equilibrium, such that vapor molecules exist in the spaces between the fibers and the fibers and liquid provide a high surface area, volumetrically dispersed, heat sink, the spaces within the containers and between the containers being configured to define communicating channels to equalize effects of an impressed displacement within the enclosure.

4,450,930

MICROPHONE WITH STEPPED RESPONSE

Mead C. Killion, Elk Grove Village, Ill., assignor to Industrial Research Products, Inc., Elk Grove, Ill.

Filed Sep. 3, 1982, Ser. No. 414,659
Int. Cl.³ G10K *13/00*; H04R *25/00*
U.S. Cl. 181—158 11 Claims



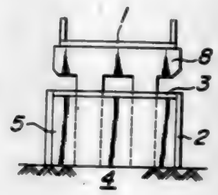
1. A microphone providing a stepped frequency response characteristic comprising: a case; a diaphragm mounted in said case to form first and second separate sound cavities therein; port means in said case for coupling external sound to said first cavity; a sound pressure responsive member positioned to define an acoustic chamber within said second sound cavity and for providing a compliance to sound couple thereto; and a sound passage coupling to said port means for coupling external sound to said acoustic chamber, said sound passage having selected dimensions for providing a resistance and inertance to the passage of sound, and said sound pressure responsive member providing a compliance and inertance whereby a selected pressure equalization is obtained in said second cavity to limit the attentuation of sounds at the lower frequencies while enabling the microphone to provide emphasis for sound at the higher frequencies.

4,450,931

STRUCTURE FOR DECREASING LOW FREQUENCY AIR VIBRATION

Mitsuyasu Yamashita, Tokyo; Hiroshi Igarashi, Nagoya, and Shosuke Koga, Owariasahi, all of Japan, assignors to NGK Insulators, Ltd. and Kobayashi Institute of Physical Research, both of, Japan

Filed Feb. 26, 1982, Ser. No. 352,527
Claims priority, application Japan, Mar. 9, 1981, 56-32409
Int. Cl.³ A47B *81/06*; G10K *11/00*
U.S. Cl. 181—198 8 Claims



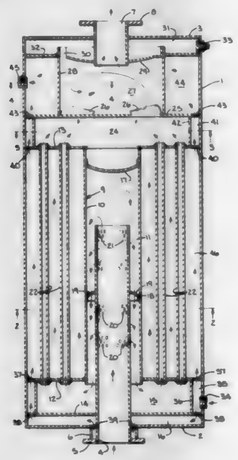
1. A structure for decreasing low frequency air vibrations emanating from the underside of an elevated bridge and from vertical structural supports for the elevated bridge, comprising a sound insulating floor, sound insulating sidewalls and a sound absorbing ceiling arranged so as to form an air chamber below

and separate from the underside of an elevated bridge's traversed surface.

4,450,932
HEAT RECOVERY MUFFLER

Mostafa M. Khosropour, Madison, and Thomas C. Learn, Stoughton, both of Wis., assignors to Nelson Industries, Inc., Stoughton, Wis.

Filed Jun. 14, 1982, Ser. No. 388,430
Int. Cl.³ F16D *65/14*; F16F *9/30, 9/50*
U.S. Cl. 181—211 **8 Claims**



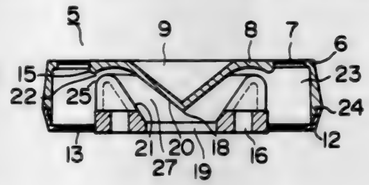
1. A heat recovery muffler, comprising a tubular body, a first head to enclose one end of the body, a second head to enclose the other end of said body, an exhaust gas inlet conduit for introducing exhaust gas into said body and having a downstream end disposed in said body, an annular heat exchanger disposed within said body and including an inner annular tubular member disposed concentrically outward of said inlet conduit to provide an annular passage therebetween, said heat exchanger also including a first end plate extending laterally of said tubular member and spaced from said first head to define a first chamber therebetween, said heat exchanger also including a second end plate extending laterally of said tubular member and spaced from said second head to define a second chamber therebetween, the space between said plates defining a compartment, said heat exchanger also comprising a plurality of tubes extending through said compartment between said end plates and providing communication between said chambers, a closure disposed across said tubular member and spaced from the downstream end of said inlet conduit, an outlet conduit communicating with said second chamber for discharging exhaust gas from said body, and means for flowing a heat exchange medium through said compartment to cool said exhaust gas, said exhaust gas being discharged from the downstream end of said inlet conduit and then flowing in a reverse direction through said passage to said first chamber and then flowing through said tubes to the second chamber for discharge from said outlet conduit.

4,450,933
SUCTION SILENCER

Takashi Fukuoka, Fuchu; Yoshiaki Nagao, and Hiroyuki Tanaka, both of Tokyo, all of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,365
Int. Cl.³ F02M *35/12*
U.S. Cl. 181—229 **3 Claims**

1. A suction silencer comprising a mounting seat at which said suction silencer is mounted on the suction side of a machine adapted to suck gas or air, said mounting seat having therein an opening communicating with the suction port of said machine; a member defining an inversed conical surface continuous with the peripheral edge of said opening; and a lid

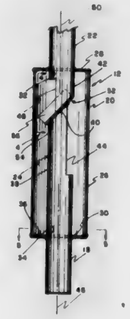


member covering the large-diameter end of said inversed conical surface with a predetermined gap left therebetween, said lid member having an inversed conical member projecting into the space defined by said inversed conical surface.

4,450,934
TRACTOR MUFFLER STRUCTURE

Max L. Davis, R.R. 3, Minneapolis, Kans. 67467

Filed Feb. 22, 1982, Ser. No. 350,889
Int. Cl.³ F01N *1/00*
U.S. Cl. 181—228 **7 Claims**



1. A muffler structure adapted to be connected about an outlet opening on an exhaust pipe; comprising:

(a) an inlet pipe member connected to the exhaust pipe;

(b) a basic housing assembly secured to said inlet pipe member;

(c) a fluid control assembly mounted within said basic housing assembly and connected to said inlet pipe adapted to receive exhaust fluids therefrom;

(d) said fluid control assembly having a deflector plate assembly extended across a longitudinal axis and upper end of said inlet pipe member to keep fluids and foreign particles under gravity from flowing therein;

(e) said fluid control assembly having an inlet control member mounted between and to said inlet pipe member and said deflector plate assembly and an outlet control member mounted between and to said deflector plate assembly and said basic housing assembly;

(f) said deflector plate assembly extended across aligned longitudinal axis of said inlet control member and said outlet control member to control movement of gases within said basic housing assembly;

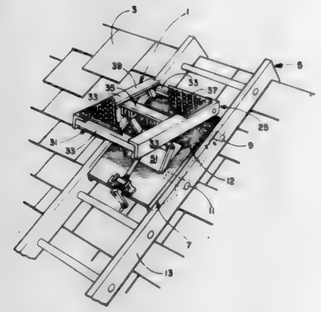
(g) said inlet control member and said outlet control member each having an exhaust opening adjacent said deflector plate assembly to direct fluids around said deflector plate assembly for subsequent movement; and

(h) said exhaust openings in said inlet control member and said outlet control member open in opposed directions for maximum efficiency.

4,450,935
PORTABLE ADJUSTABLE ROOF PLATFORM

David C. Gustavus, 1609 Dondor Dr., Fond du Lac, Wis. 54935

Filed Dec. 27, 1982, Ser. No. 453,533
Int. Cl.³ E04G *3/12*; E06C *7/16*
U.S. Cl. 182—45 **4 Claims**



1. A portable adjustable roof platform for use with a roof ladder comprising:

a generally U-shaped base having a flat frame portion and at least two supporting walls depending therefrom, each supporting wall terminating in a lower surface and being formed with an L-shaped notch opening onto the lower surface, the notch being sized slightly larger than a ladder rung, each supporting wall being formed with a generally rectangular notch opening onto the lower surface, the notch being sized substantially greater than a ladder rung and extending toward the flat frame portion and having a lower portion spaced from the L-shaped notch opening such that the openings of the L-shaped and rectangular notches receive corresponding ladder rungs simultaneously;

b. step means pivotally supported close to one end of the base;

c. a toggle mechanism linking the step means to the base and including a threaded support bar; and

d. toggle actuating means connected to the base at the end opposite the step means pivotal support,

so that actuating the toggle actuating means causes the step means to pivot relative to the base.

4,450,936
REMOVABLE STEP FOR PALLET RACK

Hubert Strom, Ft. Worth, Tex., assignor to Interlake, Inc., Oak Brook, Ill.

Filed May 18, 1983, Ser. No. 495,764
Int. Cl.³ E06C *7/08, 9/04*
U.S. Cl. 182—92 **11 Claims**

1. In combination, a rigid, hollow, upright frame member and a removable step mounted on said frame member,

said frame member having a box-like cross-section,

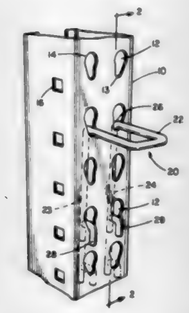
pairs of horizontally spaced openings vertically disposed in a wall of said frame member, each said pair being regularly spaced an equal distance from the pair above and the pair below,

said removable step comprising a U-shaped rod, the closed end of which is bent at right angles to the plane of the U to form a support portion,

the distance between the legs of the U being equal to the distance between said horizontally spaced openings,

the legs of the U terminating in hooks, the length of said legs between said right angle bend and said hooks being equal to a multiple of the distance between adjacent pairs of openings,

said step being mounted with the legs inside the frame member, with said support portion projecting outwardly from

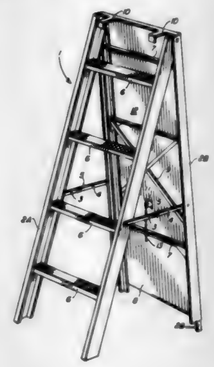


one pair of openings and said hooks being hooked over a second pair of openings below said one pair.

4,450,937
THEFT PREVENTION STEP LADDER

Ralph W. Broughton, 233 Val Vista Rd., Space 369, Mesa, Ariz. 85203

Continuation-in-part of Ser. No. 351,347, Jun. 14, 1982, abandoned. This application Jan. 24, 1983, Ser. No. 460,256
Int. Cl.³ E06C *7/00, 1/36*
U.S. Cl. 182—206 **4 Claims**



1. A step ladder for detachably mounting along the length of a permanent ladder mounted on the outside of a recreational vehicle for preventing use of the permanent ladder to gain access to the roof of the vehicle comprising:

a pair of elongated frame members hingedly connected at common ends thereof forming the top of the step ladder and when pivotally moved to an angular position, forming a free standing structure,

one of said frame members having a plurality of spacedly positioned steps arranged laterally thereof along its length,

at least one hook member mounted on the common pivotally connected ends of said frame members to extend laterally outwardly thereof,

a flat sheet mounted on said other of said frame members for covering substantially its length,

said flat sheet providing a smooth outer exposed surface, and

locking means mounted on the inside surface of said sheet for detachable engagement with the permanent ladder of a recreational vehicle,

whereby when said hook of said step ladder is mounted on the top rung of the ladder on an outside surface of a recre-

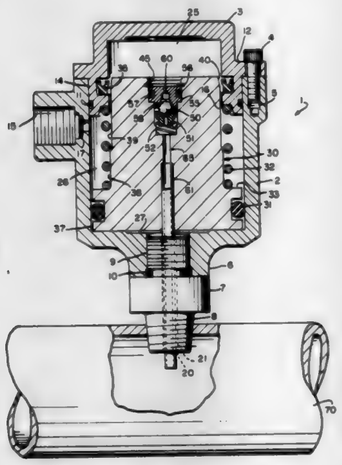
ational vehicle with said steps of the step ladder juxtapositioned to the steps of the permanent ladder, said sheet prohibits use of the rungs of the permanent ladder to gain access to the roof of the vehicle.

4,450,938

AIR LINE LUBRICATOR

Henry A. Davenport, Roanoke, and Robert E. Barrows, Fincastle, both of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 20, 1982, Ser. No. 451,027
Int. Cl.³ F16N *11/10, 13/16*
U.S. Cl. 184—42 **9 Claims**



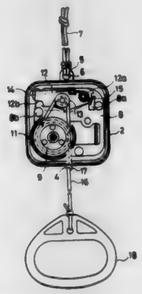
1. An air line lubricator comprising:
a hollow body having two different cross sectioned areas;
a stepped sealed piston movable in said body to form three variable chambers therein in conjunction with said body;
a first of said variable chambers towards one end of said body having the greater cross section being in communication with the air line;
a second of said variable chambers intermediate said first chamber and the third chamber formed by the smaller cross section of said piston in said greater cross section of said body;
said third chamber being formed between the smaller cross section of said body toward its other end and said smaller cross section of said piston, said third chamber being in communication with a lubricant supply;
a directional seal coacting with said smaller cross section of said body and said smaller cross section of said piston to allow lubricant to pass from said second chamber to said third chamber when said piston moves toward said one end;
a bore in said piston therethrough from said one end of said piston to the other end of the piston communicating between said first and said third chambers;
a check valve in said bore to permit lubricant flow only from said third chamber to said first when said piston moves towards said other end of said body; and
a metering means in said bore to control the rate of lubricant flow.

4,450,939

MUSIC BOX OPERATION STOPPING MECHANISM

Yoshio Kitamura, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiko Seisakusho, Nagano, Japan

Filed Aug. 3, 1981, Ser. No. 289,649
Claims priority, application Japan, Aug. 4, 1980, 55-110367[U]; Apr. 7, 1981, 56-50260[U]
Int. Cl.³ F03G *1/08*; G10F *1/06*
U.S. Cl. 185—39 **17 Claims**



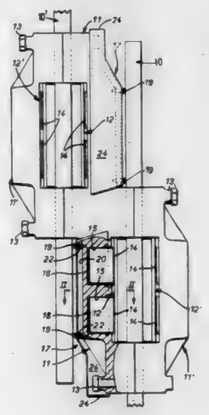
1. A coil spring winding mechanism comprising:
a coil spring;
coil spring winding means for winding said coil spring; a driven member driven by the unwinding force of said coil spring;
a locking member movable in and out of a drive region of said driven member;
an elastic member urging said locking member to move out of said drive region of said driven member; and
means for moving said locking member into said drive region of said driven member against an elastic force of said elastic member during winding of said coil spring and preventing winding of said coil spring when said locking member out of said drive region of said driven member.

4,450,940

BRAKE WITH HEAT SHIELD

Jean Herbulot, Franconville, France, assignor to Valeo, Paris, France

Filed Apr. 13, 1981, Ser. No. 253,380
Claims priority, application France, Apr. 18, 1980, 80 08699
Int. Cl.³ F16D *55/36, 65/847*
U.S. Cl. 188—71.3 **4 Claims**



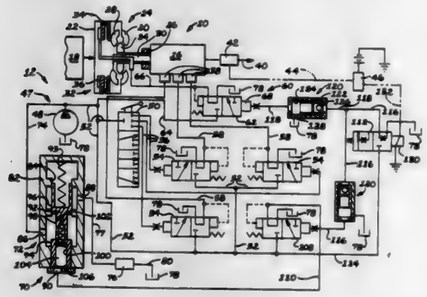
1. A brake comprising a rotary brake member to be braked, at least one brake shoe cooperable with said rotary member, a control member including a piston and cylinder control block for applying said brake shoe against said rotary member, and a stationary heat shield defining means for shielding said control block from heat radiated by said rotary member, said heat shield being carried by said control member and being disposed in direct facing spaced relation between a lateral face of said rotary member and said control block, said rotary member including a pair of axially spaced brake discs arranged parallel to each other, said control block being disposed between said brake discs for applying said brake shoe against a first of said brake discs, and said heat shield being mounted on said control block and disposed in direct facing spaced relation between the second of said brake discs and said control block, said heat shield having a flange extending axially away from said second brake disc and laterally at least partially around said control block.

4,450,941

CONTROL SYSTEM FOR CONVERTER LOCK-UP AND SIMULTANEOUS PRESSURE REDUCTION

Hugh C. Morris, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 15, 1983, Ser. No. 523,318
Int. Cl.³ F16H *45/02*
U.S. Cl. 192—3.31 **21 Claims**



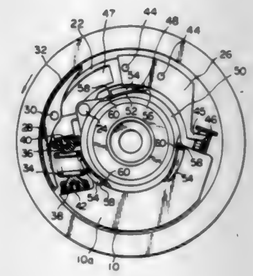
1. A transmission control system (12) adapted for use with a transmission assembly (10) having a torque converter (14) for coupling a power input member (22) with a transmission speed ratio section (16), a hydraulically actuated lock-up clutch (32) arranged to selectively bypass the torque converter (14) and effectively couple the input member (22) directly with the transmission speed ratio section (16), and a source (47) of pressurized control fluid for supplying fluid to the torque converter (14) and the transmission speed ratio section (16), the system comprising:
first valve means (60) for selectively directing pressurized fluid from the source (47) to actuate the lock-up clutch (32);
second valve means (70) for controlling the pressure level between the source (47) and the transmission speed ratio section (16) to two distinct pressure levels; and
single valve means (112) adapted to simultaneously actuate the first and second valve means (60,70) to respectively actuate the lock-up clutch (32) and reduce the pressure level of the source (47) to the lower of the two distinct pressures in response to the output speed of the transmission (10) exceeding a predetermined speed.

4,450,942

VARIABLE SPEED ROTARY TORQUE TRANSMISSION DEVICE

Hideyasu Takefuta, and Akira Shinoda, both of Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,407
Claims priority, application Japan, Jul. 25, 1980, 55-104674
Int. Cl.³ F16D *21/04*
U.S. Cl. 192—48.9 **9 Claims**



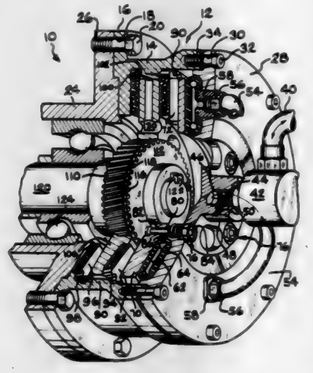
1. In a variable speed rotary torque transmission device which has a driven connection with a rotary drive source and a driving connection with a load, a combination comprising:
a drive element rigidly mounted on a shaft which is operatively connected with the rotary drive source;
a first driven element freely rotatably mounted on the drive element through a bearing;
a second driven element journalled on the drive element by a bearing and having a diameter smaller than that of the first driven element;
a first clutch for locking the first drive element to the drive element for torque transmission to the load at a first speed range when the rotation of the drive element is maintained below a predetermined reference speed;
a second clutch for locking the second driven element to the drive element for torque transmission to the load at a second speed range when the rotation of the drive element is accelerated beyond the reference speed;
suppression means for suppressing frictional oscillation of the first clutch into and out of locking contact with an inner surface of the first driven element during a transition range between completely coupled and completely uncoupled conditions of the first clutch by exerting frictional resistance to the first clutch;
said first clutch comprising a centrifugal clutch which includes a centrifugal element formed as a double-arm coupling lever pivoted at a fulcrum thereof to the drive element and having an engagement surface at one end thereof, a clutch pad or shoe pivoted at a fulcrum thereof to said one end of the coupling lever and forming the engagement surface, and a pair of centrifugal weight members carried on the other end of the coupling lever, the coupling lever rocking in one direction to move the clutch shoe out of locking contact with the inner surface of the first driven element when subjected to a centrifugal force of a given magnitude corresponding to the reference speed of the drive element; and
a stop member provided to the driven element and adapted to coact with the free ends of the centrifugal weights to limit an angular movement of the coupling lever in said one direction;
the suppression means comprising a flat spring.

4,450,943

HELICAL SPLINE CLUTCH PLATE SEPARATOR

Thomas F. Long, Jr., Maidenhead, England, assignor to Dana Corporation, Toledo, Ohio

Filed Jan. 21, 1982, Ser. No. 341,436
Int. Cl.³ F16D *13/52, 25/063*
U.S. Cl. 192—70.2 **14 Claims**



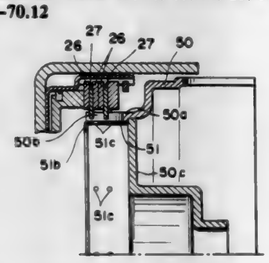
1. A clutch for selectively transferring rotary energy comprising, in combination, a first rotatable member having an array of helical splines, a clutch plate having opposed friction surfaces disposed about said first rotatable member and having an array of helical splines complementary to and engaged by said array of helical splines on said first rotatable member, a second rotatable member having an array of helical splines, first friction means secured to said second rotatable member for engaging one of said two opposed friction surfaces, second friction means for engaging the outer of said two opposed friction surfaces having an array of helical splines complementary to and engaged by said array of helical splines on said second rotatable member, and means for selectively advancing said second friction means into frictional engagement with said clutch plate and said clutch plate into frictional engagement with said first friction means, wherey engaging said arrays of helical splines urge said second fricition means, said clutch plate and said first friction means into spaced apart relationship when said selective advancing means is deactivated.

4,450,944

WET TYPE MULTIPLE DISC CLUTCH

Kazuyoshi Fujioka, Tokyo, and Shinsuke Eguchi, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 11, 1981, Ser. No. 329,810
Claims priority, application Japan, Dec. 19, 1980, 55-181788[U]
Int. Cl.³ F16D *13/72, 13/74, 25/063*
U.S. Cl. 192—70.12 **3 Claims**



1. A wet type multiple disc clutch comprising:
a clutch drum,
a clutch hub which is a press-formed hollow cylinder and has an inward end extending into said clutch drum and a plurality of cut portions passing through the cylindrical wall of said clutch hub,
a series of first plates and second plates which are disposed around said clutch hub in said clutch drum, said first plates being, on their external circumference, engaged with said clutch drum to rotate together with said clutch drum, and each of said second plates having at least one inward projection engaged with a cut portion of said clutch hub so that said second plates and said clutch hub rotate together, and
actuating means comprising a piston disposed in said clutch drum for engaging and disengaging said first plates and said second plates thereby to connect and disconnect the transmission of rotations between said clutch drum and said clutch hub,
said clutch hub being provided with a cylindrical oil catching member which is fit in said clutch hub and has an inward flange positioned near the inward end of the clutch hub and a plurality of through holes opening into said cut portions.

4,450,945

DIAPHRAGM CLUTCH COVER ASSEMBLY

André Caray, Paris, France, assignor to VALEO, Paris, France

Filed Oct. 21, 1981, Ser. No. 313,266
Claims priority, application France, Oct. 22, 1980, 80 22545
Int. Cl.³ F16D *13/44*
U.S. Cl. 192—89 B **19 Claims**



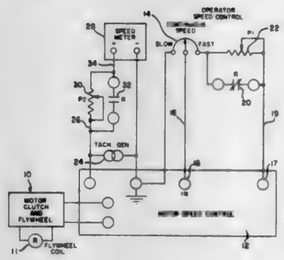
1. A diaphragm clutch cover assembly of the type including an annular cover for mounting on a reaction plate or flywheel, a diaphragm spring having a Belleville washer peripheral portion and divided by slots into radial fingers, means for rockably mounting said diaphragm spring on said cover, a pressure plate fixed for rotation with and axially movable relative to said cover, said Belleville washer peripheral portion bearing axially against said pressure plate, said means comprising a falcrum ring disposed on one side of said diaphragm spring axially remote from said cover, and a plurality of connecting members interconnecting said fulcrum ring and said cover, the improvement wherein said connecting members comprise bosses on at least a selected one of said cover and said fulcrum ring, said bosses projecting axially toward the nonselected one of said cover and said fulcrum ring, said nonselected one of said cover and said fulcrum ring having transverse surface portions facing axially toward said diaphragm spring, said bosses having transverse free end wall portions bearing axially against and fixed to said transverse surface portions.

4,450,946

PRESS SPEED CONTROL AND INDICATION SYSTEM

Michael J. Olding, and Daniel A. Schoch, both of Minster, Ohio, assignors to Minster Machine Company, Minster, Ohio

Continuation-in-part of Ser. No. 299,735, Sep. 8, 1981, abandoned. This application Jul. 14, 1982, Ser. No. 398,362
Int. Cl.³ B30B *15/26;* **B60K** *41/02*
U.S. Cl. 192—0.084 **4 Claims**



1. In a mechanical press having a slide, a mechanical drive means for reciprocating the slide, a motor and drive connection means drivingly connected to a flywheel for continuously rotating the flywheel when the motor is energized, and drive means including a clutch for coupling the rotation of the flywheel to the mechanical drive means, a motor speed control and press speed indicating system comprising:
a tachometer generator means mechanically coupled to the flywheel for producing a meter energizing voltage related to the speed of the flywheel,
an operator adjustable speed adjustment means for producing on its output a variable flywheel speed control voltage corresponding to a press speed higher than its normal running speed,
a motor and drive connection control means connected between the output of the speed adjustment means and the motor and drive connection means for varying the speed at which the flywheel is driven by the motor and drive connection means in response to the flywheel speed control voltage,
a press speed meter means activated by a control voltage on its inputs for providing an indication of press flywheel speed dependent on the control voltage on its inputs,
first modifying means interposed between the speed adjustment means output and the motor control means for modifying the flywheel speed control voltage when the clutch is energized to cause the motor and drive connection control means to drive the flywheel at its normal running speed, and
second modifying means interposed between the tachometer generator means and the speed meter means activated only when the clutch is not energized for modifying the meter energizing voltage to cause the meter to indicate a speed lower than the speed corresponding to the meter energizing voltage,
said first and second modifying means being alternately activated relative to each other.

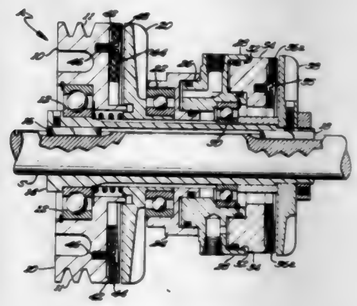
4,450,947

COMBINATION FRICTION RING AND MOUNT THEREFOR FOR CLUTCHES, BRAKES AND THE LIKE

James V. Hanks, Minneapolis, Minn., assignor to Horton Manufacturing, Co., Minneapolis, Minn.

Filed Nov. 27, 1981, Ser. No. 325,597
Int. Cl.³ F16D *13/38*
U.S. Cl. 192—107 R **3 Claims**

1. A device having opposed circular members with parallel and facing surfaces for friction engagement of the members one with the other, the facing of one of said circular members having substantially rigid shoulder means formed on the outer portion of the surface thereof, a friction ring secured to the facing surface of said one circular member with the outer peripheral edge portion of the inner surface in contact with said shoulder means and the inner edge portion of the inner



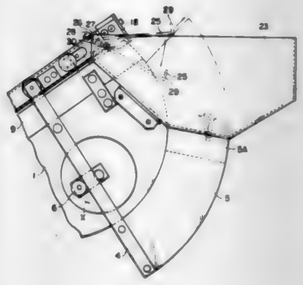
surface in contact substantially with said facing surface to thereby cant slightly said lining relative to said facing surface of said one circular member.

4,450,948

APPARATUS FOR SUPPLYING HEADED PARTS

Takao Naito, Katano; Yutaka Matsuda, Moriguchi, and Yuzo Nishimori, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jan. 27, 1982, Ser. No. 343,159
Claims priority, application Japan, Jan. 28, 1981, 56-11202[U]
Int. Cl.³ B65G *47/14*
U.S. Cl. 198—389 **5 Claims**



1. An apparatus for supplying headed parts each including a shank and a head connected thereto, comprising:
a chute having a first groove receptive therein of the shanks of the headed parts while preventing entry of the heads thereof;
a pickup blade having a second groove receptive therein of the shanks of the headed parts while preventing entry of the heads thereof;
an actuator mechanism for moving the pickup blade with respect to said chute between a first position in which said second groove is out of alignment with said first groove and a second position in which said second groove is aligned with said first groove;
a hopper mounted with respect to said chute and disposed between said first and second positions for supplying headed parts into said second groove while said pickup blade moves from said first position to said second position; and
a rejector having a recess dimensioned to allow passage therethrough of the heads of said headed parts having their shanks received neatly in said second groove and slidable along said second groove when said pickup blade

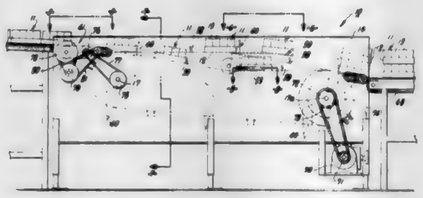
approaches said second position, whereby headed parts displaced out of position on said pickup blade can be removed therefrom by said rejector.

4,450,949

MACHINE FOR TRANSPORTING AND STACKING LOADED CARTONS

Josef J. Buschor, Los Gatos; James C. Long, San Jose, and Dieter K. Schmidt, Los Gatos, all of Calif., assignors to Five X Corporation, Santa Clara, Calif.

Filed Dec. 6, 1982, Ser. No. 335,060
Int. Cl.³ B65G *57/00*
U.S. Cl. 198—422 **4 Claims**



1. A machine for transporting and stacking packages two-high, each such package comprising a shallow tray loaded with upright containers, said machine having an entry end and an exit end and comprising:

(a) a first horizontal shaft and a second horizontal shaft at the entry and exit ends, respectively, of the machine,

(b) a pair of outer sprockets and a pair of inner sprockets on the first shaft and a pair of outer sprockets and a pair of inner sprockets on the second shaft,

(c) an outer pair of endless chains driven by the outer sprockets and an inner pair of endless chains driven by the inner sprockets,

(d) said shafts, sprockets and chains being so arranged that the course of the chains is downward from the first shaft to the second shaft,

(e) means whereby the upper chains move horizontally and then downwardly from the first shaft to the second shaft and the lower chains move downwardly and then horizontally from the first shaft to the second shaft,

(f) a plurality of first support means mounted on the outer chains and a plurality of second support means mounted on the inner chains, the first and second support means alternating with one another,

(g) means for delivering such packages to the entry end of the machine whereby the packages are deposited alternately on a first support and on a second support,

(h) means acting to restrain the forward motion of the packages moved by at least one pair of chains, and

(i) pusher means for releasing the restrained packages or packages from restraint and moving an upper package and a lower package in unison and in vertical alignment to the exit end of the machine and causing the upper package to be deposited on top of the lower package.

4,450,950

WORK PIECE TRANSFER MECHANISM

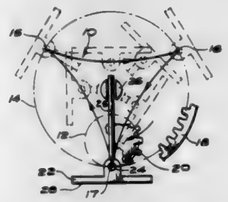
James C. Foote, Jr., York, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 12, 1981, Ser. No. 262,734
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—478 **7 Claims**

1. A transfer mechanism for moving work pieces between predetermined stations about a central axis wherein at least one of the stations includes a moving conveyance, said transfer mechanism comprising:

at least one work piece holder mounted for rotational and translational movement;

means for moving said holder along a generally hypocycloidal path about the central axis such that each point of said holder remains in a respective plane normal to the central axis, said path having a cusp adjacent to at least some of said stations; and



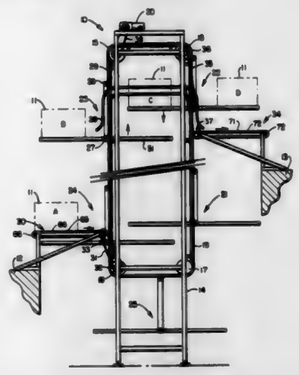
means for moving said holder when at each of said stations which includes a moving conveyance, in a direction substantially parallel to the moving conveyance to match the velocity of the conveyance.

4,450,951

CONVEYOR LIFT

Jules J. Szanati, 6857 Duffy Rd., Delaware, Ohio 43015

Filed Sep. 1, 1982, Ser. No. 413,757
Int. Cl.³ B65G *47/84*
U.S. Cl. 198—482 **10 Claims**



1. A conveyor system for transferring loads between different levels comprising:

a. a flexible endless conveyor means arranged to pass and travel over a plurality of wheels at least one of which is at a lower level and at least one of which is at a higher level;

b. drive means operable to move the endless conveyor means between and around the at least one lower and higher level wheels;

c. a plurality of carriages rotatively suspended from the endless conveyor means, each carriage having a plurality of support means projecting on opposite sides, the support means comprising in composite a platform of alternate spaces between supporting elements for the loads being conveyed by the conveyor system, the elements on each side being alternately spaced from the opposite side; and

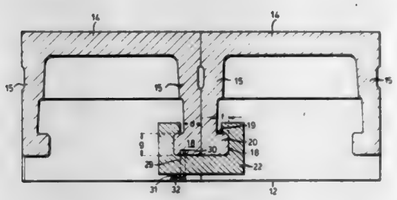
d. the flexible endless conveyor means being constructed to travel through positions which pass a portion in proximity to another portion with the elements of the support members on one side of each carriage passing through the alternate spaces between the elements of the other side of another carriage, the proximity of passing positions being such that loads on preceding carriages are transferred to succeeding carriages.

4,450,952

FIRE GRATE FOR A COMBUSTION FURNACE

Hansruedi Steiner, Wettingen, Switzerland, assignor to Widmer & Ernst AG, Wettingen, Switzerland

Filed Dec. 21, 1981, Ser. No. 332,970
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049086
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—773 **10 Claims**



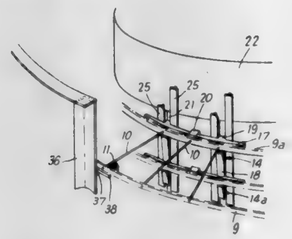
1. A fire grate for conveying a material to be burned in a combustion furnace comprising a pair of parallel spaced apart frame walls, a plurality of alternately arranged series of stationary and movable grate bars extending between and secured to said frame walls, said grate bars being formed of a plurality of grate members each having a top portion, a pair of side walls and a rib extending from each of said side walls wherein the ribs extending from the side walls of each of said plurality of grate members are being provided with inwardly extending opposed projections wherein at least two neighboring abutting grate members of said plurality of grate members are connected together by means of a clamping element removably secured to the inwardly extending projections on the ribs of the abutting side walls of said neighboring grate members.

4,450,953

HELICALLY GUIDED ENDLESS BELT CONVEYOR

Robert Le Cann, and Jean-Paul Fache, both of Reze-les-Nantes, France, assignors to Frigofrance S.A., Bouguenais, France

Filed Mar. 29, 1982, Ser. No. 362,626
Claims priority, application France, Apr. 3, 1981, 81 06789
Int. Cl.³ B65G *15/00*
U.S. Cl. 198—778 **10 Claims**



1. A helically guided endless belt conveyor including in combination, a conveyor belt having a helical portion made up of a number of spires, a plurality of T-shaped struts adjacent to the inner edge of said belt portion, each of said struts comprising a vertical bar, the lower end of which engages the upper end of a strut of the next spire below to determine the spire pitch, a helical guide means, members adjacent to the outer edge of said belt resting on said helical guide means, a central driving drum disposed within said helical portion, and a plurality of vertical grooves in said drum, each of said struts comprising a crossbar having an inwardly extending finger to provide a plurality of fingers for selectively engaging in said grooves.

4,450,954

ELECTROSTATIC SPRAY SUPPORT

William F. O'Connell, St. Charles, Ill., assignor to Graco Inc., Minneapolis, Minn.

Filed Jan. 25, 1982, Ser. No. 342,061
Int. Cl.³ B05B *5/00*
U.S. Cl. 198—793 **7 Claims**



1. A support fixture for holding irregular shaped nonconductive articles for electrostatic paint spraying on an electrically grounded conveyor line, comprising:

(a) a nonconductive surface area conforming to said irregular shaped articles and having one side adapted for at least partially nesting against said irregular shaped articles;

(b) a conductive frame affixed to said nonconductive surface area on the side away from said one side adapted for nesting;

(c) a conductive bracket attached to said frame and adapted for mechanical and electrical coupling to said conveyor line; and

(d) a conductive surface area affixed against an irregular portion of said nonconductive surface area, and electrically connected to said conductive frame.

4,450,955

CARD HOLDER

Elmer F. Featherston, P.O. Box 4, 4981 Mt. Hope Rd., Grass Lake, Mich. 49240

Filed Dec. 4, 1981, Ser. No. 327,407
Int. Cl.³ A45C *11/18*
U.S. Cl. 206—39.6 **8 Claims**



1. A holder for information bearing cards having front and rear faces, first and second lateral edges and a magnetic strip attached to the rear face adjacent and spaced from the card first lateral edge and substantially parallel thereto comprising, in combination, a substantially rigid body having a substantially flat wall portion defined by inner and outer surfaces, end edges and substantially parallel first and second lateral edges, said first body lateral edge including a lip folded over and spaced from the adjacent wall portion inner surface defining an open end elongated first pocket, said second body lateral edge including a lip folded over and spaced from the adjacent wall portion inner surface defining an open end elongated second pocket, a card support projection defined on said wall portion inner surface adjacent said first body lateral edge and in opposed relation to said first body lateral edge lip extending from

said inner surface toward said first body lateral edge lip a distance at least as great as the distance the magnetic strip protrudes from the card rear face, said first and second pockets receiving the card first and second lateral edges, respectively, to retain the card within said holder body wherein the card rear face is disposed in opposed relation to said wall portion inner surface, the card front face is visible substantially in its entirety, and said projection engages the card rear face adjacent the card first lateral edge to hold the card rear face from engagement with said body inner surface adjacent the card first lateral edge to protect the card magnetic strip.

4,450,956

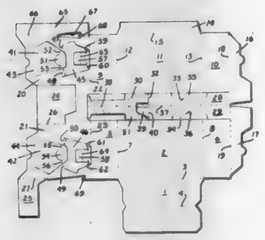
ARTICLE CARRIER

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 297,092, Aug. 28, 1981, abandoned. This application Jul. 29, 1983, Ser. No. 517,738

Int. Cl.³ B65D *85/40*

U.S. Cl. 206—188 **10 Claims**



1. An article carrier comprising a bottom wall, a pair of side walls foldably joined respectively to the side edges of said bottom wall, end wall panels foldably joined respectively to the end edges of said side walls and extending inwardly therefrom, medial panels foldably joined respectively to the medial edges of said end wall panels at one end of the carrier and extending inwardly therefrom, handle structure joined at one end to the upper portions of said medial panels and extending upwardly therefrom, a full cell width single ply transverse partition panel struck entirely from and foldably joined to one of said medial panels and being initially disposed in a coplanar relationship therewith and being adapted to move through an angle of approximately 90° during formation of the carrier to a position extending substantially outwardly to the associated side wall, a web panel foldably joining an upper part of said transverse partition panel to said one medial panel, and an anchoring tab struck entirely from said transverse partition panel and joined thereto remote from said medial panel and being adhered to said associated side wall.

4,450,957

DENTAL CAPSULE

Gordon S. Cohen, Orange, Conn., assignor to Jeneric Industries, Inc., Wallingford, Conn.

Filed Jan. 18, 1983, Ser. No. 458,888

Int. Cl.³ B01F *3/12*; **B65D** *25/08, 81/32*

U.S. Cl. 206—220 **3 Claims**

1. A capsule holding a dental amalgam including a powdered component and a liquid component, said capsule comprising:

a chamber having a wall housing the powdered component and for mixing the powdered and liquid components together to form the amalgam;

a rupturable container holding the liquid component of the amalgam disposed within said chamber;

said rupturable container including a central portion which holds the liquid component and a skirt surrounding said central portion;

means for opening the chamber to remove the amalgam after the powdered and liquid components have been mixed together;

a pestle for rupturing the container and mixing together the powdered and liquid components of the amalgam when the capsule is vibrated in a dental amalgamator; and

means disposed within the chamber for holding said skirt portion of said container within said chamber and retaining the container for the liquid component within the chamber as the amalgam is removed from the chamber, said holding means including



a cylindrically-shaped sleeve having a centrally located opening larger in diameter than the central portion of said rupturable container and a wall portion provided with a lower edge in contact with the skirt portion of said container to hold the same against the wall of said chamber, whereby upon assembly of said capsule, the sleeve will not engage the central portion of said container to rupture the same, while holding the container so it can be ruptured by passage of said pestle therethrough into contact with the central portion of said container.

4,450,958

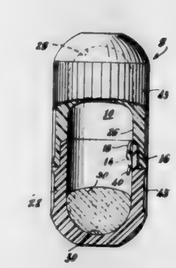
SELF-ACTUATED DENTAL CAPSULE

Arun Prasad, Cheshire, Conn., assignor to Jeneric Industries, Inc., Wallingford, Conn.

Filed Jan. 18, 1983, Ser. No. 458,991

Int. Cl.³ B01F *3/12*; **B65D** *25/08, 81/32*

U.S. Cl. 206—222 **6 Claims**



1. A self-actuated capsule for a dental amalgam, said capsule including a powdered component and a liquid component and comprising:

a chamber holding the powdered component and for mixing the powdered and liquid component together to form the amalgam, the chamber including a side wall and end walls;

a rupturable container for holding the liquid component of the amalgam, said container including a first portion holding the liquid component, a second portion securing the container along the side wall of the chamber, and a third hollow portion in communication with said first portion for allowing the liquid component to acquire sufficient momentum to rupture the container when the capsule is vibrated in a dental amalgamator; and

means for opening the chamber to remove the amalgam after the powdered and liquid components have been mixed together.

4,450,959

PACKAGING FOR ELECTRICAL COMPONENTS

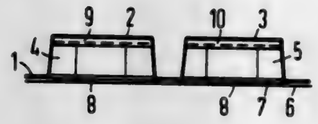
Alfons Sommer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,363

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040959

Int. Cl.³ B65D *73/02, 85/42*

U.S. Cl. 206—332 **7 Claims**



1. Packaging for single electrical components, comprising a pre-formed, one piece plastic foil having receptacles for individual components formed therein, in a single row and having edge strips beyond said receptacles a one-piece adhesive foil closing said receptacles with the components disposed therein, said adhesive foil having areas opposite said edge strips of said plastic foil, and a masking foil disposed in the vicinity of said receptacles covering the adhesive of said adhesive foil except in said areas opposite said edge strips, and said masking foil-free areas of said adhesive foil being bonded to said edge strips of said plastic foil.

4,450,960

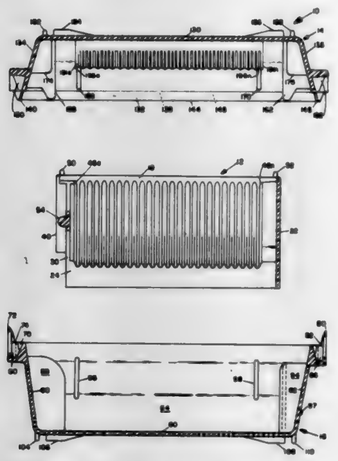
PACKAGE

Douglas M. Johnson, Chanhassen, Minn., assignor to Empak Inc., Chanhassen, Minn.

Filed Aug. 30, 1982, Ser. No. 412,980

Int. Cl.³ B65D *85/48*

U.S. Cl. 206—334 **21 Claims**



1. Package for silicon wafers comprising:

a. wafer cassette including opposing mirror-image curved sides, a plurality of vertically opposing outward extending dividers partitioning said cassette, a closed end, a substantially open H-bar configured end including a ramped top portion and a rounded bottom portion, and a partially segmented cylindrical support rod secured and positioned outward across said H-bar and including two mating buttons spaced thereon;

b. package bottom including a bottom member, four slightly geometrically configured sides, female trough surrounding a top edge of said sides, opposing end hook latches with a finger hole including a hook on each side of each of said finger holes, internal geometrically configured vertical side and end positioning members extending outwardly and upwardly from interior sides and ends for positioning of said cassette, and four pairs of orthogonal feet at each edge of said bottom member thereof; and,

c. package top including a top member, four angled sides surrounding said top, a male lip extending downwardly from said bottom of said sides for mating with each female trough, a plurality of opposing flexible independent fingers including a side groove and a top groove in each of said opposing fingers for perimeter contact mating with each wafer, internal geometrically configured vertical positioning members extending outwardly and downwardly from interior sides and ends for positioning of said cassette, hole indentations including outward extending latch on each side positioned on outer lower ends for receiving and latching said hooks of said package bottom, and a plurality of orthogonal pairs of feet on each outer top corner of said package top member whereby silicon wafers engage between said dividers of said cassette, between said cassette and said fingers of said package top, said cassette engages and interlocks between said vertical side and end members between said package top and package bottom, said package top lip engages into said package trough bottom, and said latches engage over said hook ends between said bottom and top package respectively, and said interlocking orthogonal feet providing for stacking of like packages, thereby providing secure and contamination-free environment for transportation and storage of silicon wafers and a smooth perimeter about said mated package top and bottom.

4,450,961

DISPLAY BRACKET FOR SOCKET DRIVE UNITS AND PACKAGE EMPLOYING SAME

Sylvester W. Bies, Bloomfield; Martin V. Fazio, Cheshire, and George Matyczyk, Southington, all of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Jul. 22, 1982, Ser. No. 400,891

Int. Cl.³ B65D *75/56, 85/20*

U.S. Cl. 206—349 **25 Claims**



1. A display bracket assembly for holding an elongated tool, comprising: a generally L-shaped bracket member including a rear wall and a laterally extending, generally planar support wall adjacent one end thereof, said rear wall having means spaced above said support wall for engaging a first portion of the tool, and said support wall having a channel extending longitudinally therethrough and inwardly from one edge

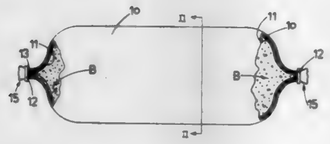
thereof for receiving a second portion of the tool; a displaceable slide member slidably engaged on said support wall of said bracket member and including a portion extending transversely of said channel along said one edge of said support wall, said element blocking said channel to thereby trap the second portion of the tool within said support wall and to thereby prevent removal of the tool when said slide member is in place; and interengaging means on said bracket member and slide member for disengageably locking them in assembly.

4,450,962

PACKAGING OR CONTAINING OF BITUMINOUS PRODUCTS

John B. Matthews, and Roger H. Keller, both of New Plymouth, New Zealand, assignors to Russell Matthews Industries Limited, New Plymouth, New Zealand

Continuation of Ser. No. 125,544, Feb. 28, 1980, abandoned. This application Apr. 7, 1982, Ser. No. 366,161
Claims priority, application New Zealand, Mar. 29, 1979, 189981; Jun. 6, 1979, 190646
Int. Cl.³ B65D *75/48, 85/00*
U.S. Cl. 206—447 **21 Claims**



1. A container for packaging roading grade bitumen comprising an inner flexible casing located in intimate contact with a separate outer flexible casing, said inner casing being of a material which has a softening temperature greater than the temperature of the bitumen when the bitumen is loaded into said container but lower than the temperature at which the bitumen is applied in use, the inner casing material having a viscosity at the bitumen application temperature which enables the inner casing when melted with the bitumen to be applied therewith, the outer casing being of a plastic material which does not adhere to the inner casing, has a softening temperature which is such that melting does not occur at the bitumen application temperature, and has a strength characteristic which enables the outer casing to support and contain the inner casing during container filling with bitumen, transportation and storage, but which can be readily stripped from the inner casing to leave the bitumen contained solely within the inner casing.

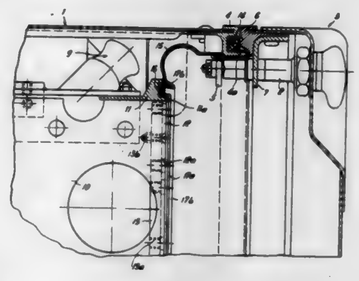
4,450,963

PORTABLE PROTECTIVE HOUSING FOR SENSITIVE APPARATUS SUCH AS ELECTRICAL AND ELECTRONIC EQUIPMENT

Willi Sieber, Feuerthalen, Switzerland, assignor to Edak AG, Switzerland

Filed Jun. 8, 1982, Ser. No. 386,306
Int. Cl.³ B65D *81/10, 85/38, 25/02*
U.S. Cl. 206—521 **9 Claims**

1. A housing for sensitive apparatus comprising an outer housing having an opening on at least one side, said housing having a housing frame surrounding the opening which has a housing sealing ring groove therein facing outwardly of said opening, an interior apparatus carrying frame member disposed within said housing and spaced from the interior of said housing and having an open side facing the opening of said housing, said interior apparatus carrying frame member including a frame surrounding the opening with a member sealing ring groove defined in said frame and facing outwardly of said opening, a sealing member extending between said housing frame and said member frame and including ring portions disposed in and fixed to said respective ring grooves of said frames and an intermediate bellows portion extending between said ring portions, each of said ring portions having a sealing surface facing outwardly of said opening, means for suspending said interior apparatus carrying frame member in the interior of said housing comprising resilient vibration absorbing elements, said sealing member bellows portion being substantially flat and stretched when formed and being wide enough



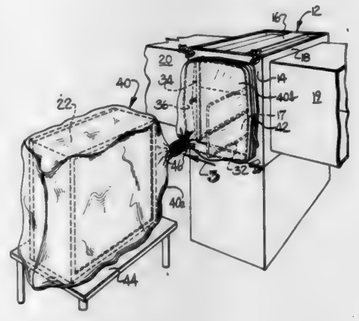
to permit movement of said interior apparatus carrying frame member relative to said housing to allow for vibration and to have an outwardly gently curved cross sectional shape with respect to said opening when said ring portions are fixed to said ring grooves, and a cover having a cover frame with an edge for engaging on and all the way around said sealing surface of said ring portion in said ring groove of said housing frame.

4,450,964

PROTECTIVE PLASTIC BAG AND METHOD OF UTILIZING THE SAME TO REMOVE ARTICLES FROM A HEPA FILTER HOUSING

Joseph A. Wood, Greenville, N.C., assignor to Flanders Filters, Inc., Washington, N.C.

Filed Feb. 22, 1983, Ser. No. 468,123
Int. Cl.³ B65D *85/00*; G21C *9/00*
U.S. Cl. 206—527 **13 Claims**



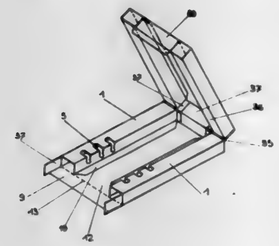
11. A package comprising
a potentially contaminated article, and
an essentially air tight plastic bag enclosing the article and comprising a sheet of relatively thin, flexible plastic sheet material formed into a bag, with the open end portion of the bag being gathered into a generally cylindrical configuration, and
a circumferential band disposed in radial compression about said gathered end portion and maintaining the gathered portion in the form of an essentially solid, air impermeable plug having the appearance and physical characteristics of a rigid, solid rod segment of the plastic material.

4,450,965

CONTAINER FOR PHARMACEUTICAL AMPULES OR THE LIKE

Bernard Paillet, Saint-Marcel-Bel-Accueil, France, assignor to Compagnie Francaise d'Emballages et de Conditionnement - COFREC, Montelimar, France

Filed Nov. 5, 1980, Ser. No. 204,348
Claims priority, application France, Nov. 8, 1979, 79 28017
Int. Cl.³ B65D *81/02, 73/00*
U.S. Cl. 206—528 **4 Claims**



1. An improved container for pharmaceutical ampules or the like, cut from a single blank of cardboard or the like, forming a first and a second foldable unit portion, each of said first and second foldable unit portions comprising:
(a) a first and a second hollow parallel lateral support, each of said supports having a first and second end, four rectangular faces, and a rectangular cross-section; said lateral supports also having a plurality of openings adapted to receive end parts of said ampules;
(b) a flat bottom connecting together said first and second supports and forming a first of said four rectangular faces which form each said support;
(c) a plurality of articulated flaps, one of said flaps being adjoined to each respective end of said first and second lateral supports at one of said second, third, and fourth rectangular faces, said articulated flaps adapted to be folded against the ends of said lateral supports;
(d) a rectangular hinge face at the first end of said first and second supports, said hinge face being adjacent to and connected with a similar hinge face on the other of said first and second foldable unit portions and having a height substantially equal to the height of the lateral supports;
(e) a closure tab at an end of said flat bottom corresponding to the second end of said first and second supports;
(f) first, second, third, and fourth securing means;
said first and second securing means securing said rectangular hinge face to the articulated flaps located at the first end of said supports;
said third and fourth securing means securing said closure tab to the articulate flaps located at the second end of said supports.

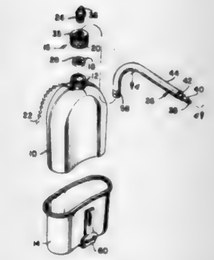
4,450,966

SURVIVAL KIT

Enrique Villavicencio, Jr., and Enrique Villavicencio, Sr., both of Chimalpopoca 48, Iztacalco, Mexico 08620

Filed Mar. 19, 1982, Ser. No. 359,868
Int. Cl.³ C02F *1/18*
U.S. Cl. 206—547 **1 Claim**

1. A survival kit for use in combination with a canteen,
(a) said canteen including a hollow body, a base, and a neck, said body being made of flame resistant material and said neck having external threads,
(b) a receptacle for collecting moisture,
(c) said survival kit comprising:
(1) a cap including a crown and a depending skirt, said crown having a passageway defined therethrough and said skirt having internal threads,
(2) a removable plug that fits within said passageway in said cap,
(3) an elongated metal tube comprised of an L-shaped outer section and plurality of smaller telescoping sections of different dimensions,
(4) said metal tube being sized at one end to fit within said passageway in said cap when said plug has been removed therefrom,
(5) the telescoping sections of said metal tube being extensible to a length several times greater than its normal, collapsed length,



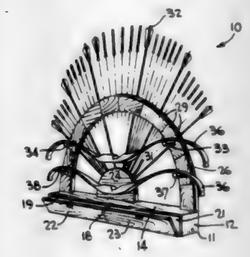
(6) said metal tube, when extended, functioning to condense moisture from any steam generated within the canteen and to lead same to the receptacle for collection therein,
(7) said metal tube, in its normal, collapsed condition, being stored completely within the body of said canteen with the L-shaped outer section resting on the base of the canteen and the telescoping sections projecting upwardly into the neck of the canteen, whereby said metal tube can be readily extracted from the canteen for use in emergency conditions.

4,450,967

ARCHERY RACK

Robert J. Castro, 109 Dale Dr., Rockville, Md. 20850

Filed Mar. 24, 1981, Ser. No. 248,350
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—13 **12 Claims**



1. A storage rack for archery equipment including at least one pair of spaced, horizontally aligned projecting members for supporting at least one bow in a horizontal position, said projecting members being secured to and extending forwardly from means for supporting a plurality of arrows in at least two non-parallel axes, said rack being further characterized in that said means for supporting arrows comprises:
a first plurality of retaining means for the tips of said arrows disposed sequentially along a first predetermined path;
a second plurality of retaining means for the shafts of said arrows disposed sequentially along a second predetermined path;
wherein said first and second predetermined paths define

non-rectangular polygonal or circular segments up to a 180° arc of the corresponding enclosed polygon or circle members which are geometrically similar but of different sizes; and

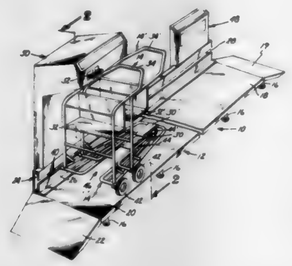
means for supporting said first and second pluralities of retaining means with said enclosed members disposed concentrically and with each arrow tip retaining means of said first plurality being radially aligned with an arrow shaft retaining means in said second plurality.

4,450,968

NESTABLE CART ANTI-REVERSING APPARATUS

James M. Muellner, White Bear Lake, Minn., assignor to Smarte Carte, Inc., White Bear Lake, Minn.

Filed Aug. 13, 1981, Ser. No. 292,357
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—17 **4 Claims**



1. Apparatus for preventing reverse insertion of a nestable cart, having a pair of wheels, each mounted to a support axle spaced along an axis, onto a nesting island which includes a track having an outwardly facing wall with a slot extending longitudinally in a desired direction of nesting formed therein, wherein, during cooperative nesting, a first of the wheels travels in the track while its axle rides along the slot; said apparatus comprising a tab extending laterally from the cart proximate a second of the wheels and being positioned relative to the second wheel such that, if nesting of the cart with the second wheel traveling in the track is attempted, said tab will engage the track at an entry end thereof at a location spaced from the entrance to the slot.

4,450,969

TOP-GATE ASSEMBLY

William E. Marsh, Jr., deceased, late of New Braunfels, Tex., and by Elizabeth A. Marsh, executrix, 174 Green Valley, East, New Braunfels, Tex. 78130

Filed Nov. 9, 1981, Ser. No. 319,597
Int. Cl.³ B01D *23/24*
U.S. Cl. 211—189 **9 Claims**



1. In combination with a bulk storage cart comprising a cargo bed, opposing left and right walls, back wall and top, said top including a front rail, the invention comprising:

a top-gate assembly essentially conforming to the shape and size of said top and adapted to at least partially overlie components thereof,

said top-gate assembly including a plurality of transversely extending and longitudinally spaced tubular members,

a compression spring carried in each tubular member,

forward limit stop means for said spring in each tubular member,

spring compressing means associated with each spring,

a cable connected at one end to each spring compressing means,

a foot plate connected remotely to each of said cables,

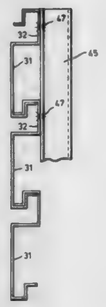
said foot plate adapted to be detachably secured to said cargo bed thereby forming a gate for said cart.

4,450,970

DISPLAY PANELS

Charles G. Shepherd, Oakville, Canada, assignor to J. A. Wilson Display Ltd., Mississauga, Canada

Filed Dec. 17, 1981, Ser. No. 332,092
Claims priority, application Canada, Sep. 11, 1981, 385666
Int. Cl.³ A47B *47/00*
U.S. Cl. 211—189 **13 Claims**



1. A display panel, comprising:

a plurality of elongate horizontal panel sections and means for securing said panel sections together in vertically superimposed positions;

said panel sections being made of sheet metal and each comprising:

a front wall portion;

a rear wall portion spaced rearwardly from said front wall portion;

an intermediate portion extending from the top of said front wall portion to the bottom of said rear wall portion;

a first channel formation at the top of said rear wall portion; and

a second channel formation at the bottom of said front wall portion;

each of said panel sections except the uppermost one having said first channel formation thereof interengaged with said second channel formation of an adjacent overlying one of said panel sections defining therewith a recess extending rearwardly from the top of said front wall portion of the respective one of said panel sections and upwardly behind said second channel formation of said adjacent overlying one of said panel sections; and

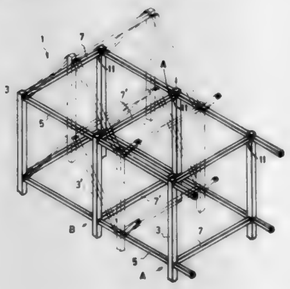
said interengaged first and second channel formations having surfaces connected in surface-to-surface contact with one another to reinforce said display panel.

4,450,971

FOLDING RACK

Mikio Kashiwabara, Tokyo, Japan, assignor to Messrs. Muse Mannequin Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 192,773
Int. Cl.³ A47F *5/13*
U.S. Cl. 211—201 **10 Claims**



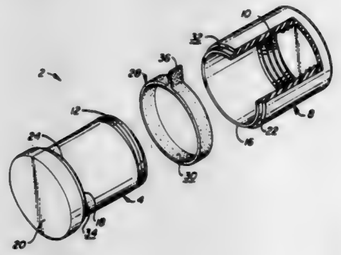
1. A folding rack comprising vertical, longitudinally spaceable, support members; longitudinally extending beam members interconnecting adjacent ones of the vertical support members; pivot connection means swingably attaching ends of the beam members to adjacent ones of the vertical support members so that said vertical support members can be moved into close together or longitudinally spaced apart relation; horizontally extending cross beam members interconnecting laterally opposite ones of the vertical support members; bracket means connecting the ends of the cross beam members to the vertical support members; said pivot connection means including a first plate fixed to an end of one beam member adjacent a vertical support member; a second plate fixed to an adjoining end of an adjacent beam member; said plates having axially projecting arms which terminate in vertical longitudinally overlapping free end portions that have transversely aligned apertures; and projections on the vertical support members positioned within the aligned apertures so that the end portions can commonly rotate on the projections whereby the adjoining beam members can swing vertically up and down about the projections to move the vertical support members into collapsed and spaced apart placement for the closed and open positions of the rack.

4,450,972

CHILD-RESISTANT CONTAINER

Clarence W. Wieland, 1531 Hyde St. #8, San Francisco, Calif. 94109

Filed May 31, 1983, Ser. No. 499,120
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—221 **12 Claims**



1. A child-resistant container comprising:

a receptacle having an open top;

a cap configured for covering said open top;

rotational engagement means for securing said cap to said receptacle;

said receptacle and cap having juxtaposed external grooves formed about their respective outer surfaces, said grooves bounded by juxtaposed groove surface portions of said outer surfaces; and

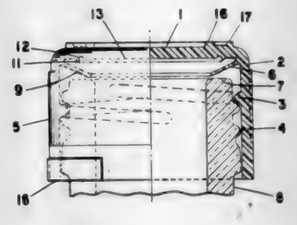
means, removably mounted within said grooves, for inhibiting relative rotary motion between said cap and said receptacle.

4,450,973

CLOSURE FOR PRESSURIZED CONTAINERS

Thurston Toeppen, Lois La., R.D. 3, Poughkeepsie, N.Y. 12603

Filed Sep. 28, 1982, Ser. No. 425,758
Int. Cl.³ B65D *53/00*
U.S. Cl. 215—329 **4 Claims**



1. A closure device molded of resilient material, for use with a container having an external screw thread about a cylindrical outlet and a rim perpendicular to said thread, comprising: a circular crown member, a cylindrical sidewall depending from said crown member and perpendicular to it, an internal screw thread within said sidewall to mate with said external thread, and multiple sealing means integral with the lower surface of said crown member for cooperation with said rim, said multiple sealing means comprising:

a first sealing means in the form of a ridge concentric with said sidewall and having a generally triangular cross-section, dependent from said crown member and having a crest diameter substantially equal to the mean diameter of said container rim:

a second sealing means in the form of a frusto-conical flexible flange dependent from the juncture of said crown member and said sidewall, and having an inner rim diameter substantially smaller than the diameter of said first sealing means:

said first sealing means comprising in addition to said ridge a circular groove directly inside of it, said ridge being asymmetrical and having its crest closely adjacent to said groove, the volume of said groove above the adjacent lower surface of said crown member being substantially equal to the volume of said sealing ridge below the same lower surface, said ridge volume being so related to the resilience of said molded material that when subjected to a normal axial working load said ridge will be substantially displaced into said groove.

4,450,974

LITTER CONTAINER

Joseph Winden, Grand Rapids, Mich., assignor to Urban Systems Streetscape, Inc., Grand Rapids, Mich.

Filed Sep. 17, 1982, Ser. No. 419,148
Int. Cl.³ B65D *43/18, 23/00*
U.S. Cl. 220—1 T **19 Claims**

1. A litter container for use in an urban environment comprising:

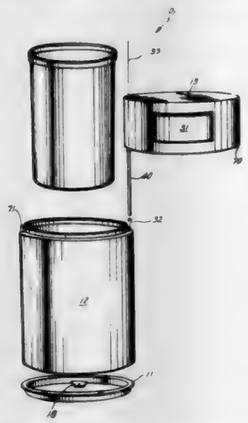
a base having inner and outer diameters;

means for securing said base to a support surface disposed on said inner diameter;

a body disposed atop said base for receiving a litter recepta-

cle, and shielding said means for securing said base from the view of the ordinary observer;

means for securing said body to said base disposed on said outer diameter and engaging the underside of said body



for shielding said means for securing said body from the view of the ordinary observer;

a top; and

means for pivotally mounting said top on said body.

4,450,975

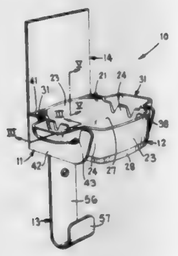
WALL-MOUNTED ASH TRAY

William T. Glass, and Michael T. Glass, both of Kalamazoo, Mich., assignors to Mark Designs International, Inc., Kalamazoo, Mich.

Filed Mar. 2, 1982, Ser. No. 354,002

Int. Cl.³ B65D *25/22*; A24F *19/00*

U.S. Cl. 220—18 **4 Claims**



1. In a wall-mountable ash tray assembly having a bracket mountable on a vertical support surface and an ash tray removably supported on the bracket, comprising the improvement wherein:

said bracket comprises a one-piece U-shaped member having a substantially planar bight which overlies the support surface and a pair of substantially parallel planar arms which are fixed to opposite ends of the bight and project horizontally forwardly therefrom in substantially perpendicular relationship thereto, said bracket being integrally formed in one piece from a thin sheetlike material so that the bight and arms are of substantial height, each said arm having a shallow horizontally elongated recess formed therein and extending longitudinally thereof, said recess being located intermediate the ends of the respective arm and opening upwardly through the top edge thereof so that each arm has an upwardly opening U-shaped configuration, said shallow recess being elongated in the longitudinal direction of the respective arm and being defined by a substantially straight bottom edge, said arms terminating in free ends which are rounded, said free ends being positioned so as to not project forwardly beyond the front wall of the ash tray; and

said ash tray including a main receptacle portion having an upwardly-opening boxlike configuration, said main body portion being positioned between said arms so as to substantially wholly occupy the region defined within said U-shaped bracket whereby said body portion has side walls which are positioned closely adjacent said arms and closely adjacent said bight, said ash tray also having a pair of upwardly-opening cup-shaped portions fixed to the opposite side walls of the main body portion and projecting outwardly therefrom in opposite directions, said cup-shaped portions extending outwardly through said recesses for supporting said ash tray on said arms, said cup-shaped portion having a cross section which closely conforms to the shape of said recess so that the cup-shaped portion is snugly confined by the recess so that the ash tray can be removed from the bracket solely by upward displacement of the ash tray relative to the bracket.

4,450,976

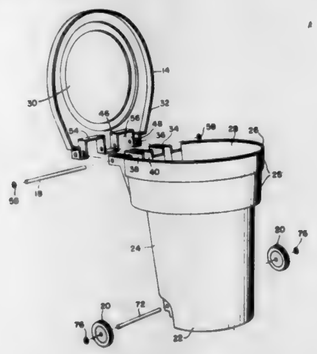
WHEELED MOLDED CONTAINER WITH HINGED LID

Larry L. Snyder, and Richard Florer, both of Lincoln, Nebr., assignors to Snyder Industries, Inc., Lincoln, Nebr.

Filed Feb. 22, 1982, Ser. No. 350,874

Int. Cl.³ B65D *43/14*, *51/04*

U.S. Cl. 220—343 **15 Claims**



1. A portable molded container with a hinged lid comprising:

a container body having a bottom and an upstanding sidewall joined to said bottom, said bottom and said sidewall defining a container interior, and said sidewall having an upper edge defining an opening into said interior;

a lid having a cover portion adapted to overlie said opening;

at least two transversely spaced hinge means for pivotally interconnecting said lid and said body, each of said hinge means comprising a body hinge portion extending laterally from said body near the upper edge of said sidewall, and a lid hinge portion extending laterally from said lid adjacent said body hinge portion; and

a hinge rod extending between said hinge means and pivotally coupling the body hinge portion and the lid hinge portion of each of said hinge means, said hinge rod being rotatable with respect to each of said hinge portions and exposed in the region between said hinge means so that it can be grasped and function as a handle for manipulating the container.

4,450,977

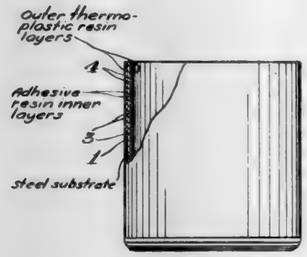
MANUFACTURE OF DRAW-REDRAW CANS USING FILM LAMINATED OR EXTRUSION COATED STEEL SHEET MATERIAL

Lyle W. Colburn, Newark; Craig W. Potter, Findlay, and Floyd E. Romesberg, Granville, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1981, Ser. No. 250,355

Int. Cl.³ B65D *90/04*

U.S. Cl. 220—458 **10 Claims**



8. A drawn food or beverage container (A) which is made of a laminated or extrusion coated steel sheet comprising a steel sheet having adhered to both major surfaces thereof a multilayered synthetic thermoplastic resin coating comprising an adhesive synthetic thermoplastic resin inner layer which is composed of at least a major proportion of a normally solid random copolymer of ethylene with from about 1 to about 30 weight percent, based upon said copolymer, of an ethylenically unsaturated carboxylic acid monomer and which copolymer is bonded on one side directly to the surface of said steel sheet and is adhered on its other side to an outer layer of a synthetic thermoplastic polymer resin having a crystalline melting point of at least about 250° F. and (B) which has been post-baked after its formation but prior to its use in food or beverage canning operations at a temperature above the crystalline melting point of the highest melting point resin employed in said thermoplastic resin coating for a period of time sufficient to relieve the stress created in such coating during the formation of said container; said container having been formed by a draw-redraw can forming process.

4,450,978

APPARATUS FOR RETRIEVING PAPER MONEY BILLS PRESENTED BUT NOT PICKED UP AT AUTOMATIC TELLER MACHINE BILL DELIVERY STATION

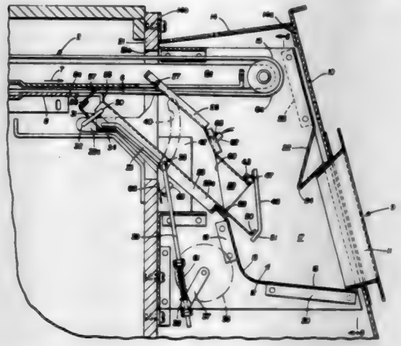
Harry T. Graef, Massillon; Scott A. Mercer, Hanoverton; Jeffrey A. Hill, Canton; Kevin H. Newton, North Canton, and John C. Bozzelli, Tallmadge, all of Ohio, assignors to Diebold Incorporated, Canton, Ohio

Filed Aug. 4, 1982, Ser. No. 405,057

Int. Cl.³ G07F *11/00*

U.S. Cl. 221—13 **24 Claims**

1. In an ATM dispenser having a reversible belt conveyor a retrival mechanism for unpicked paper money bills dispensed by the ATM dispenser mechanism and discharged from the delivery end of said dispenser mechanism's reversible belt conveyor to a bill delivery station including, a bill receiving and presentation tray mounted for movement at said delivery station between a normal position receiving bills discharged by said conveyor for customer removal, and a retrieval position for withdrawal from the tray of unpicked bills thereon by said conveyor belt delivery end when the conveyor is reversed; drive means for moving the tray between normal and retrieval positions; sensor means operative, when sensing unpicked bills on the tray when in normal position, to energize the drive means to move the tray to retrieval position; and means for



reversing belt conveyor movement upon energizing said drive means.

4,450,979

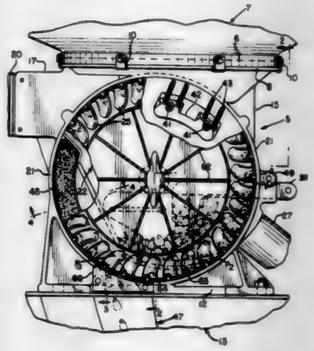
SEED METERING MEANS

Harry C. Deckler, South Bend, Ind., assignor to White Farm Equipment Company, Farmington Hills, Mich.

Continuation of Ser. No. 178,532, Aug. 15, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,835

Int. Cl.³ A01C *7/04*

U.S. Cl. 221—263 **4 Claims**



1. In a seed planter for withdrawing seeds from a hopper and depositing the seeds into an underlying furrow at regular intervals, a seed metering apparatus including:

a housing having a side opening framed by an upright circumferential rim with the lower portion of said opening defining a seed chamber;

means comprising a drop chute depending from said housing for discharging seeds into said furrow;

gravity feed means for conveying seeds from said hopper to said seed chamber;

a disc-shaped seed metering member having an inwardly-facing surface with a circumferential margin and a periphery rotatably fitting within said rim and having a plurality of seed pockets in the margin of said disc each dimensioned to receive a predetermined one or more number of said seeds, said metering member being rotatably mounted so as to bring each of said pockets sequentially in communication with said chamber and said drop chute, and each of said pockets being porvided with at least one pressure-relief passageway communicating to the outside of said housing;

means for supplying pressurized air to said seed chamber to urge said seeds into said pockets;

means for at least substantially isolating said pockets from said pressurized air while said pockets are in communication with said drop chute to allow the seeds in said pockets to discharge into said drop chute; and,

means for rotating said metering member as said seed planter moves along said furrow;

the improvement, comprising, an elongated pocket-exposing formation in said housing defining a major portion of the bottom wall of said seed chamber with one end thereof being adjacent to where said pockets sequentially enter into communication with said seed chamber, the relative shapes and dimensions of said formation and pockets being such as to progressively expose in a primarily radial direction each of said pockets to the interior of said seed chamber as each pocket passes over said formation while traveling in an arcuate path of substantial length several times longer than the radial length of said pockets.

4. In a seed planter for withdrawing seeds from a hopper and depositing the seeds into an underlying furrow at regular intervals, a seed metering apparatus including:

a housing having a side opening framed by an upright circumferential rim having an inner generally cylindrical surface with the lower portion of said opening defining a seed chamber;

means comprising a drop chute depending from said housing for discharging seeds into said furrow;

gravity feed means for conveying seeds from said hopper to said seed chamber;

a disc-shaped seed metering member having an inwardly-facing side surface with a circumferential margin and a periphery with a generally cylindrical outer surface rotatably fitting within and operating in close proximity to said inner generally cylindrical surface in said rim so as to form a pneumatic non-wearing seal therewith and having a plurality of seed pockets in the margin of said disc each pocket being open to said seed chamber and dimensioned to receive one or more of said seeds from within said seed chamber, said metering member being rotatably mounted so as to bring each of said pockets sequentially in communication with said chamber and said drop chute, and each of said pockets being provided with at least one pressure-relief passageway communicating to the outside of said housing;

means for supplying pressurized air to said chamber to urge said seeds into said pockets;

means for at least substantially isolating said pockets from said pressurized air while said pockets are in communication with said drop chute to allow the seeds in said pockets to fall into said drop chute; and

means for rotating said metering member as said seed planter moves along said furrow;

said upright circumferential rim and said pneumatic non-wearing seal being co-incidally discontinuous over the upper end of said drop chute so as to allow seeds to discharge from said pockets into said chute;

and, said seed pockets being open at the periphery of said seed disc so that seeds discharge radially therefrom into said upper end of said drop chute.

4,450,980

DISPOSABLE RAZOR DISPENSER

Merlyn L. Clabby, deceased, late of Upland, Calif., and Patrick J. Sheppard, executor, 920 8th St., Zephyrhills, Fla. 34248

Continuation of Ser. No. 172,454, Jul. 25, 1980, abandoned. This application May 3, 1982, Ser. No. 374,491

Int. Cl.³ A47F *1/08*; B65D *83/00, 65/32, 71/00*

U.S. Cl. 221—281 **5 Claims**

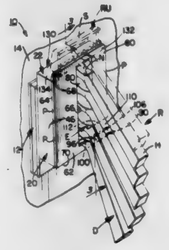
1. An improvement in a device for dispensing disposable razors, the device comprising:

a housing having a back, sides and a front, said front having an elongate slot defined therein for slidably accommodating disposable razors in a stacked configuration;

a retainer shelf mounted on said back to be located adjacent said slot, said shelf being positioned to support a disposable razor thereon while such razor is accommodated in said slot;

dispensing slot defining means on said retainer shelf for guiding disposable razors out of said elongate slot and out of said housing;

said housing front, sides and back defining a chamber in which the heads of disposable razors are positioned so that the handles of such disposable razors extend outwardly of said chamber through said elongate slot into an orientation wherein said handles can be grasped for moving a disposable razor through said elongate and dispensing slots;



the improvement comprising:

a mounting means which is securely affixed to a wall and which includes a hollow backing member;

a mounting means engaging means securely affixed to said housing and which is releasably received in said hollow backing member to releasably mount said housing onto a wall; and

ledge means on said housing for mounting a razor between uses of such razor;

said improvement further including side members attached to said housing front and which have holes defined therein, said improvement further including tabs on said housing sides which are accommodated in said side member holes to attach said housing front to said housing sides.

4,450,981

PRECISION MATERIAL FILLING SYSTEMS

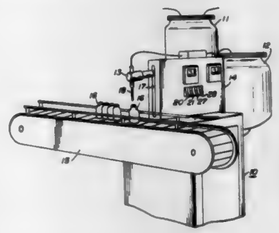
David E. Haig, Erdenheim, Pa., assignor to Abe Jacobs, Philadelphia, Pa.

PCT No. PCT/US79/00098, 371 Date Feb. 26, 1979, 102(e) Date Feb. 26, 1979, PCT Pub. No. WO80/01797, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 22, 1979, Ser. No. 293,891

Int. Cl.³ B67D *5/08*

U.S. Cl. 222—61 **28 Claims**



1. A precision material filling system characterized by,

(a) a dispensing tank containing a flowable dispensable product,

(b) dispensing means associated with the dispensing tank for dispensing product from said tank, said dispensing means comprising,

(1) an actuatable product dispenser actuatable in a first way to permit flow of product therethrough for dispensing, and actuatable in a second way to terminate flow of product therethrough,

(2) actuatable timer means operatively coupled to said actuatable product dispenser and effective each time actuated to actuate said product dispenser in said first way and after a predetermined time interval to automatically actuate said product dispenser in said second way, said timer means including means for selectively setting said predetermined time interval,

(3) control means for actuating said timer means, and

(c) pressurizing means operatively coupled to said dispensing tank effective for pneumatically pressurizing the product in said tank, said pressurizing means being effective to maintain the product pressure at said dispensing means substantially constant irrespective of the product quantity in said dispensing tank.

4,450,982

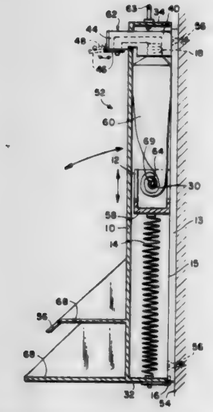
TOOTHPASTE DISPENSER

Americo S. Ferreira, 40 Canoe Place Rd., Apt. #1, Hampton Bays, N.Y. 11946

Filed Jul. 22, 1982, Ser. No. 400,626

Int. Cl.³ B65D *35/24*

U.S. Cl. 222—93 **8 Claims**



1. A toothpaste dispenser comprising:

a housing adapted to be vertically mounted to a wall;

a vertically sliding track located inside of and fixed to the rear surface of said housing;

an open topped conveyor traversing said vertically sliding track;

a biasing means connecting the bottom surface of said open topped conveyor to the base of said housing whereby resistance is provided as said open topped conveyor moves upwardly along and traverses vertically said sliding track;

means for receiving a dispensable tube placed vertically inside said housing, comprising having its threaded end engaged in the first end of a "U" shaped sleeve located in the upper section of said housing while having its lower end engaged around a ratchet means located in said open topped conveyor; and

a knob rotatably fixed to said ratchet means whereby its rotation causes said open topped conveyor to traverse upward on said vertically sliding track whereby said lower end of said dispensable tube wraps around said ratchet means, thereby discharging contents of said dispensable tube into said sleeve through an outlet located at second end of said sleeve and into the ambient.

4,450,983

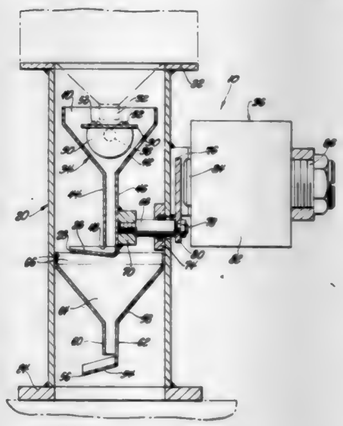
POWDER DISPENSING ASSEMBLY

Michael J. Goodrich, Traverse City, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Jul. 26, 1982, Ser. No. 401,790

Int. Cl.³ B65G *69/00*

U.S. Cl. 222—196 **20 Claims**



1. A powder dispensing assembly (**10**) comprising; support structure (**20**), a dispensing platform (**26**) supported by said support structure (**20**) for receiving powder and having a distal lip (**28**) over which particles of powder move to define a falling curtain of powder particles, a supply platform (**30**) supported by said support structure (**20**) for receiving powder and supplying the powder to said dispensing platform (**26**), flow control means (**34**) for establishing a flow path of the powder from said supply platform (**30**) to said dispensing platform (**26**), drive means (**36**) for vibrating said dispensing platform (**26**) to move particles thereover and over said lip (**28**) and for moving said supply platform (**30**) in unison with said dispensing platform (**26**) to move powder from said supply platform (**30**) and through said flow control means (**34**) to said dispensing platform (**26**), a shelf (**54**) disposed below said lip (**28**) for receiving the powder from said lip (**28**), said shelf (**54**) being stationary and extending downwardly to a distal edge (**56**) at an inclined angle sufficient for the powder to flow thereover under the force of gravity and over said edge (**56**), the shelf (**54**) provides a vibration-free surface by which pulsed groups of powder particles flowing towards the shelf (**54**) are smoothed out forming a uniform curtain of powder particles thereafter when the powder particles flow from the shelf (**54**).

4,450,984

VISCOUS FLOW TILT VALVE FOR PRESSURIZED CONTAINER

Walter C. Beard, South St., Middlebury, Conn. 06762

Filed Aug. 5, 1982, Ser. No. 405,696

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—402.22 **24 Claims**

1. A fluid dispensing valve structure for dispensing the viscous contents of a pressurized container comprising:

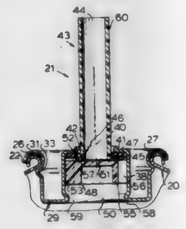
a valve mounting cup member peripherally sealingly securable to said pressurized container and having generally continuous walls with a central aperture defined therein, said continuous walls defining an interior valve receiving chamber adjacent to said central aperture,

a resilient seal member carried within said mounting cup member radially adjacent said central aperture,

an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second opposed and outwardly flanged end extending through said central aperture and supported in said mounting cup member by said resilient seal member in a normally generally straight upright extended position,

a moveable valve cup member longitudinally reciprocally slidably carried within said valve receiving chamber adjacent side portions thereof and normally biasable against said resilient seal member to form a seal means for normally sealing the contents of said container, said moveable valve cup member being engageable with said second end, said contents of said pressurized container being dispensable when said one end is tiltably displaced relative to said generally straight upright extended position by an external deflecting operating force applied thereagainst, thereby opening said seal means, said moveable valve cup member including:

(A) a base portion extending across said second end of said tubular nozzle means,



(B) annular rib means upstanding from said base portion for engaging said resilient seal member peripherally of said tubular nozzle means,

(C) guidance means for orienting said moveable valve cup member relative to said valve receiving chamber for stable reciprocal sliding movements of said moveable valve cup member longitudinally along said continuous walls,

(D) channel means defined by said moveable valve cup member and longitudinally extending therethrough and terminating peripherally of said annular rib means and adapted for the laminar flow of a viscous fluid therethrough, said channel means having an effective cross-sectional area therealong which is at least equal to the effective cross-sectional area of said tubular nozzle means,

the interrelationship between said moveable valve cup member, said tubular nozzle means, said resilient seal member, and said valve mounting cup member being such that a substantially unobstructive and non-turbulent flow of said contents through said valve structure can occur when said one end is so tiltably displaced.

4,450,985

RECLOSABLE VALVE WITH SEPARATE INTERNAL SEAL MEANS AND SEAL REMOVING MEANS THEREFOR

Walter C. Beard, South St., Middlebury, Conn. 06762

Filed Nov. 18, 1982, Ser. No. 442,636
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—402.22 **30 Claims**

1. In a fluid preassemblable valve structure of the type suitable for dispensing the contents of a pressurized container associatable therewith, said valve structure comprising:

a valve mounting cup peripherally sealingly securable to said pressurized container and having generally continuous wall projections extending generally internally into said container and defining an interior valve receiving chamber with a medial upper portion having a central aperture defined therein;

an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second end extending through said central aperture;

a resilient valve seat means positioned in said valve receiving chamber;

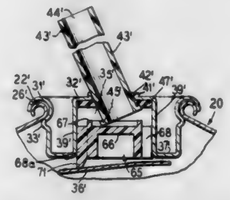
a moveable valve means positioned in said valve receiving chamber and biasable against said valve seat means to close and seat said valve structure;

said tubular nozzle means being moveable responsively to force applied to said one end so that said second end unseats said moveable valve means to open said valve structure;

the improvement which comprises in combination:

a sealing plate means positioned across said wall projections and closing said valve receiving chamber;

a releasable bonding means adhering said sealing plate means to adjacent portions of said wall projections in gas tight



relationship, and adapted to release said sealing plate means from said wall projections responsively to pressure applied against said sealing plate means from a location in said valve receiving chamber;

said sealing plate means and said bonding means in combination with said wall projections being effective to isolate said contents from said tubular nozzle means, said valve seat means, and said moveable valve means,

engaging means associated with said moveable valve means for abutting against said sealing plate means; and

the interrelationship between said sealing plate means, said tubular nozzle means, said moveable valve means, and said releasable bonding means being such that an initial movement of said tubular nozzle means moves said moveable valve means with said associated engaging means against said sealing plate means to permit a release of said bonding means and a separation of said sealing plate means from said wall projections, thereby to permit operable association between said contents and said valve structure for dispensing said contents.

4,450,986

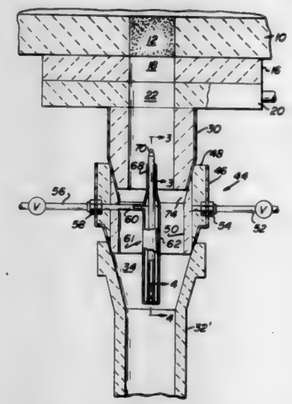
APPARATUS FOR UNPLUGGING A VESSEL DISCHARGE PORT

Michael F. Haraszym, 125 E. Hathaway La., and Benjamin A. Lanza, 2407 Merwood La., both of Havertown, Pa. 19083

Filed Jul. 9, 1982, Ser. No. 396,947
Int. Cl.³ B22D *41/10*
U.S. Cl. 222—591 **7 Claims**

1. Apparatus for unplugging a discharge port comprising an annular member having a refractory inner surface, a housing supported within said member and generally coaxial therewith, a conduit extending from the exterior of said member to the interior of said housing, a tube guided for upward movement by said housing, an opening at the upper end of said tube, said tube having a reaction surface within said housing and adapted

to be projected upwardly by gas introduced into the housing from said conduit, said tube having passage means so that gas



from said housing may enter the tube and discharge through said opening.

4,450,987

PORTION CONTROL LIQUID DISPENSER

William C. Boettcher, Foley; Richard B. Volkmer, Wentzville, and Wayne R. Wehde, Winfield, all of Mo., assignors to D.O.V.E. Equipment Corporation, Winfield, Mo.

Continuation-in-part of Ser. No. 87,986, Oct. 25, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 255,278
Int. Cl.³ B67D *3/00*; G04C *23/38*
U.S. Cl. 222—641 **12 Claims**

1. A portion control liquid dispenser comprising:

a tank having a central cavity and an aperture in the base thereof,

a housing mounted within the tank cavity and having a removable collapsible container for liquid mounted thereto and extending to the base of the housing having at the bottom thereof a female fitment including an aperture extending therethrough,

a male fitment having a central aperture and an upwardly protruding portion design to frictionally engage the aperture in the female fitment, and a downwardly extending orifice stem,

a dispensing tube in fluid-flow communication with said stem at its upper end and extending through the tank cavity at its lower end,

a resilient nipple having a central aperture mounted to the end of the dispensing tube,

a movable metal plunger mounted within the tube and having a lower end to engage the aperture in the nipple in an inactivated condition and prevent the flow of liquid therethrough,

a solenoid coil mounted about the dispensing tube, and,

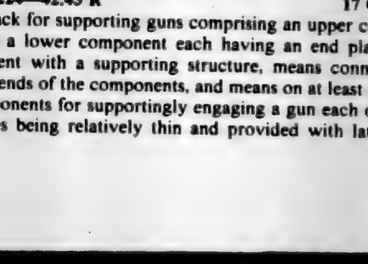
a switch and a power supply coupled through said switch to the solenoid coil to activate said coil for a predetermined interval causing said plunger to move upwardly within the dispensing tube to dispense fluid through the nipple orifice; whereby the dispenser is rendered nondripping and sanitary by allowing said male fitment, dispensing tube, resilient nipple and movable metal plunger to be readily removed and cleaned of food products and/or other contaminants.

4,450,988

BICYCLE BAG SYSTEM

Mark Meisel, 948A Banta Pl., Ridgefield, N.J. 07657

Filed Mar. 29, 1982, Ser. No. 362,901
Int. Cl.³ B62J *9/00*
U.S. Cl. 224—32 A **11 Claims**



1. Apparatus for a bicycle or the like for supporting a pair of bags, one on either side of a wheel of said bicycle, said apparatus comprising:

a frame assembly, said frame assembly including first and second support means for supporting said bags, each support means having an upper edge, and means for hingedly securing said support means together along said upper edges thereof, whereby said support means are relatively pivotable about said hinge means for yarying the spacing therebetween;

means for securing said pair of bags to said frame assembly with one bag extending from each of said support means; and

means for removably securing said frame assembly to said bicycle in the vicinity of the axle of said wheel with said first and second support means on either side of said wheel and said hinge means disposed outside the circumference thereof, the variable spacing between said support means accommodating use on bikes or the like having different axle lengths, whereby said frame assembly is securable to said bicycle for transporting said bags thereon and removable from said bicycle whereupon said support means are pivotable about said hinge means into close confronting relation for optionally carrying said bags as a unit.

4,450,989

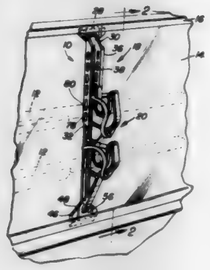
GUN RACK FOR MOTOR VEHICLES

Earl M. Bogar, Jr., P.O. Box 4152, Houston, Tex. 77210

Filed Jul. 8, 1981, Ser. No. 281,484
Int. Cl.³ A47F *5/08, 7/00*
U.S. Cl. 224—42.45 R **17 Claims**

1. A rack for supporting guns comprising an upper component and a lower component each having an end plate for engagement with a supporting structure, means connecting adjacent ends of the components, and means on at least one of the components for supportingly engaging a gun each of said end plates being relatively thin and provided with laterally

extending side edges, hinge means connecting the laterally extending side edges to the remainder of the end plate to enable



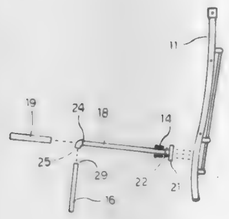
the side edges of the end plates to fold into parallel relationship to provide compact packaging of the rack.

4,450,990

BACKPACK FRAME CONVERTIBLE TO A CHAIR AND CONVERSION ASSEMBLY THEREFOR

James J. Bolstad, 3526 N. Cramer St., Shorewood, Wis. 53211

Filed Sep. 30, 1982, Ser. No. 430,038
Int. Cl.³ A45F 4/02
U.S. Cl. 224—155 8 Claims



1. In a backpack frame comprising a pair of generally vertically disposed, contoured tubular side frame members, two bowed cross members interconnecting the side frame members to form a generally rectangular frame having a front face adapted to conform to the back of the wearer, and a tubular U-shaped frame extension demountably attached by its free ends to the upper ends of the side frame members, an assembly for converting the backpack frame to a chair comprising:

(a) a pair of seat tubes each including first connector means attached to one end;

(b) each first connector means adapted to be attached to the lower portion of the front face of one side frame member to separate the same into the chair back and rear leg portions, and to hold the seat tubes in spaced parallel relation extending generally perpendicularly from the side frame members:

(c) a flexible seat member attached to and extending between the seat tubes; and,

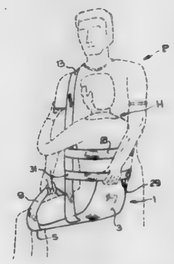
(d) second connector means for demountably attaching the free ends of the frame extension to the other ends of the seat tubes to extend downwardly therefrom and form the chair front legs.

4,450,991

FABRIC MADE CHAIR FOR FACILITATING TRANSPORTATION OF A DISABLED PERSON

Jacques Gougeon, 4533 Delorimier Ave., Montreal, Quebec, Canada H2H 2P4

Filed Jan. 27, 1982, Ser. No. 343,316
Claims priority, application Canada, Jul. 6, 1981, 381201
Int. Cl.³ A47D 13/02
U.S. Cl. 224—159 8 Claims



1. A carrying device comprising:

(a) a piece of flexible material forming seat means, said seat means having two ends;

(b) a first strap means joined to said seat means at one end thereof, said first strap means having two ends, said two ends provided with loop pile and hook fasteners;

(c) a second strap means joined to said seat means, said second strap means having two ends provided with loop pile and hook fasteners; and

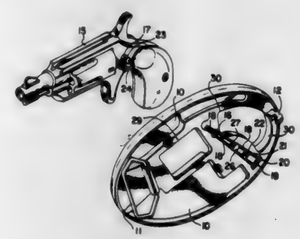
(d) handle means joined to said seat means at the other end thereof, said handle means having two extended ends, each of said ends being joined to said second strap means at a point substantially intermediate each of said ends of said second strap means and said seat means.

4,450,992

BELT BUCKLE-MINI-REVOLVER COMBINATION

Richard J. Casull, P.O. Box 276, Freedom, Wyo. 83120

Filed Aug. 19, 1982, Ser. No. 409,546
Int. Cl.³ A44B 11/00; A45C 11/00
U.S. Cl. 224—163 6 Claims



1. A belt buckle adapted to have a small handgun releasably mounted to the front face thereof, said belt buckle comprising:

a buckle plate having an indented area on the front face thereof, said indented area being shaped for reception of a small handgun flatwise therein;

an opening in the indented portion of the buckle plate, said opening being adapted to receive a stud which is attached to and extends from the side frame of the handgun;

spring clasp means attached to the back face of said buckle plate and positioned adjacent to said opening, said spring clasp means being adapted to releasably engage the free end of said stud when said stud is received in said opening; and

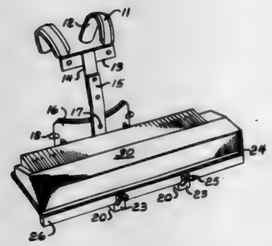
release means adapted to release said spring clasp means when it is desired to remove the gun from the buckle.

4,450,993

KEYBOARD CARRIER

Bernard Ephraim, 1014 E. Olive St., Decatur, Ill. 62526

Filed Sep. 28, 1982, Ser. No. 425,439
Int. Cl.³ G10G 5/00
U.S. Cl. 224—265 9 Claims



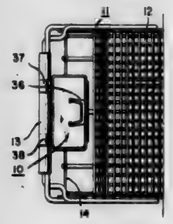
1. In a keyboard carrier having a brace and plate assembly attachable over the shoulders and along the belt line of a wearer, said keyboard carrier in combination comprising: bracket means extending from and connected to said brace and plate assembly, spaced apart horizontally extending arms each secured at one end thereof to said bracket means, an upturned finger at an end of each of said arms remote from said bracket means, and a platform removably supported by said arms and secured to said fingers, said platform being adapted for removably mounting a keyboard thereon, each of said arms and said platform having pivotably connecting means located intermediate said bracket means and said finger.

4,450,994

COUPON ORGANIZER

Chester R. Holland, 375 Fairfax Rd., Drexel Hill, Pa. 19026

Filed Jul. 24, 1981, Ser. No. 286,607
Int. Cl.³ B60R 11/00
U.S. Cl. 224—277 1 Claim



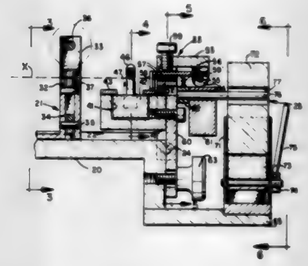
1. For use in combination with a shopping cart having a handle extending alongside a transverse basket member at the upper rear end of the cart basket, a coupon organizer, comprising: a portable molded plastic receptacle having an elongated bottom wall and side walls cooperating therewith to define a horizontally-elongated upwardly-open cavity adapted to contain a series of dividers for segregating shopping coupons therewithin, said receptacle being mounted to said cart with one of its elongated side walls confronting said handle and with its bottom wall engaging on and supported by said transverse basket member, C-type clamping means mounted to said one elongated side wall, said clamping means having a pair of resilient arcuate jaws embracing said handle when mounted thereto, said jaws opening and closing resiliently onto said handle for affording releasable engagement and disengagement of said receptacle with said handle when said receptacle is displaced laterally with respect to said handle, a lid hinged to one of said side walls to provide a closure for said receptacle, and means on said receptacle providing a handle for carrying the same.

4,450,995

SCRIBING MACHINE FOR OPTICAL FIBERS AND METHOD

John J. Leiby, Mt. Penn; Malcolm H. Hodge, Wyncote, and Joseph F. Larkin, Holland, all of Pa., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 28, 1981, Ser. No. 315,634
Int. Cl.³ C03B 37/16; B26F 3/00
U.S. Cl. 225—2 21 Claims



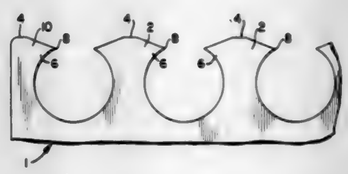
1. A method for severing an optical fiber projecting from a fiber holder, comprising the step of retaining said fiber holder, clamping the projecting end of the fiber, applying a predetermined first level of tension to said fiber and imparting a flaw to the surface of said tensioned fiber by a scribing device, said predetermined tension being below the level required to propagate a crack through the body of said fiber relieving any torsional stress produce in the fiber by said flaw imparting step, and thereafter, after said scribing device is separated from the fiber, imparting a predetermined second level of tension to said fiber, said second level of tension being above the level needed to propagate a crack through the body of the fiber to provide a mirror surface on the cleaved fiber end and below the level which causes surface imperfections of the cleaved end.

4,450,996

SAFETY BLADE FOR SEVERING STRETCHABLE FILM

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 15, 1982, Ser. No. 358,041
Int. Cl.³ B65D 85/671
U.S. Cl. 225—43 21 Claims



9. A dispenser box adapted for receiving a rolled-sheet of material, said box comprising a container compartment having side, end and bottom walls and a cover for the walls, a blade disposed on the dispenser box so that portions of the sheet material can be dispensed from the box and transversely severed across the blade, the improvement comprising said blade having a severing edge comprising a plurality of spaced-apart members, each member extended from the upper edge of the blade and disposed in the plane of the blade, and each member

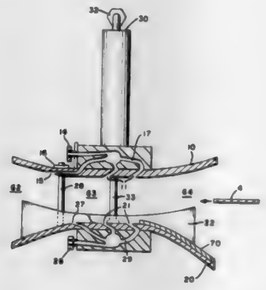
having a blunt upper edge extremity and at least one side-extended tooth with a piercing tip disposed below the blunt upper edge extremity and in the plane of the blade so that the severing edge of the blade can snag sheet material on the side teeth, thereby causing a segment on the material to be severed.

4,450,997

WINDER STRING-UP ASPIRATOR

Hsin L. Li, Parsippany, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 9, 1982, Ser. No. 406,663
Int. Cl.³ B65H 17/32, 51/16
U.S. Cl. 226—97 9 Claims



1. An apparatus for the inline string-up of a rapidly advancing filament from a continuous forming operation onto an inlet winder, comprising:

a. a bottom aspirator plate;

b. a top aspirator plate disposed opposite and in facing relation to said bottom plate and moveable relative thereto;

c. an actuator means for selectively moving said top plate in a direction normal to said bottom plate to adjust the separation therebetween and selectively delimit an aspiration zone between said top and bottom plates, said zone comprising at least one filament inlet portion for receiving said filament, a filament outlet portion for exiting said filament and an aspiration jet portion for capturing, tensioning and directing said filament;

d. a fluid jet means located on inside facing surfaces of said top and bottom aspirator plates and in communication with said aspiration jet portion for providing an aspirating jet of pressurized fluid therein; and

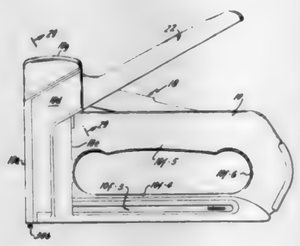
e. a transport means for moving said apparatus to effect filament string-up.

4,450,998

STAPLE-DRIVING TOOLS

Henry Ruskin, 21 Nomahegan Ct., Cranford, N.J. 07016

Filed Dec. 22, 1981, Ser. No. 333,312
Int. Cl.³ B21J 15/38
U.S. Cl. 227—8 20 Claims



1. A tacker including a fixed latch, a staple driver, means for guiding said staple driver along a reciprocating path adjacent said latch between driven and retracted positions, said guiding means accommodating shift of said staple driver out of said reciprocating path when the staple driver is retracted to be restrained by said latch, said tacker including spring means for impelling said staple driver toward said driven position and means providing bias tending to shift said staple driver out of said reciprocating path and into position restrained by said latch, and actuating means for progressively increasing the stored energy in said spring means while said staple driver is restrained by said latch and operative thereafter for shifting said staple driver out of position restrained by said latch and thereby releasing the staple driver for a spring-impelled operation.

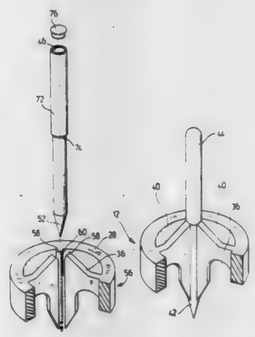
13. A staple-driving tool having a frame, a reciprocable staple driver and actuating means for said staple driver, said actuating means including a manual operating lever, said frame including an elongated unitary first part of sheet metal which comprises first, second and third portions arranged as a U-shape providing a hand hole, said portions being largely of U-shaped cross-section having webs along the perimeter of the hand hole, said manual operating lever being assembled to said frame opposite to said first portion for enabling said lever and said first portion to be manually squeezed toward each other, said frame including a second part of sheet metal joined to extremities of said first and third portions of the first part and forming a fourth portion of the hand hole completing the perimeter thereof, said second part forming a guide for said staple driver.

4,450,999

INJECTION MOLDING HOT TIP SEAL

Jobst U. Gellert, 7A Prince St., Glen Williams, Ontario, Canada

Filed Jul. 19, 1982, Ser. No. 399,787
Claims priority, application Canada, Jul. 12, 1982, 407096
Int. Cl.³ B29F 1/04
U.S. Cl. 228—176 1 Claim



1. A method of manufacturing an integral injection molding nozzle seal having a body portion and a central pin portion, the body portion having a generally cylindrical outer portion and a plurality of spaced ribs which extend radially inward from the outer portion to join the pin portion which extends centrally through the outer portion in alignment therewith, the central pin portion having a tip portion extending in one direction and a head portion extending in the opposite direction, the central pin portion being formed of a highly conductive inner portion and an abrasion and corrosion resistant outer portion, comprising the steps of:

(a) forming the body portion having the outer portion with the plurality of ribs extending radially inward therefrom, the ribs having inward ends which define a central channel therebetween,

(b) forming a hollow elongated pin casing out of an abrasion and corrosion resistant material, the pin casing having a closed lower tip and an open upper mouth,

(c) inserting a predetermined quantity of highly conductive material into the hollow pin casing through the open mouth,

(d) heating the pin casing in an upright position in a vacuum furnace until the highly conductive material melts and runs downward to integrally fill a lower portion of the casing leaving an empty upper portion of the casing,

(e) cutting off an upper portion of the casing to form an integral filled casing portion of a predetermined length,

(f) locating the filled casing portion in a predetermined position in the central channel between the ribs, and locating a cap formed of an abrasion and corrosion resistant material on the filled casing portion, and

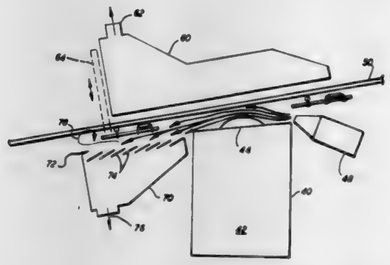
(g) joining the cap to the filled casing portion to form the central pin portion, and the central pin portion to the outer portion to form the integral nozzle seal by applying a brazing material to the joints between them and brazing in a vacuum furnace.

4,451,000

SOLDERING APPARATUS EXHAUST SYSTEM

David E. Stephens, Concord, Mass., assignor to Hollis Engineering, Inc., Nashua, N.H.

Filed Jun. 11, 1982, Ser. No. 387,462
Int. Cl.³ H05K 3/34
U.S. Cl. 228—20 10 Claims



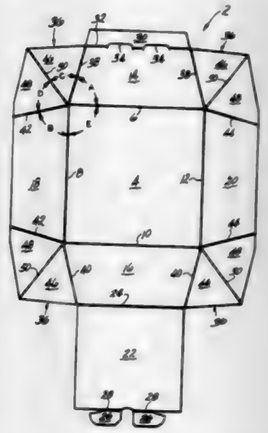
1. In apparatus for mass joining with solder electrical and electronic components assembled in a circuit board and comprising in combination: a mass soldering station adapted to deposit a quantity of molten solder onto said board underside whereby to join said board and said components; an excess solder removal station adjacent and downstream of said soldering station, said excess solder removal station comprising at least one gas jet disposed below the travel path of said board and adapted to direct a fluid gas stream onto the freshly deposited solder on said board underside, a source of pressurized fluid, and means connecting said source and said at least one fluid jet; said excess solder removal station being adapted to relocate or remove a portion of the molten solder deposited on said board before said molten solder solidifies; and means for transporting said circuit board in line-through said mass soldering station, and said excess solder removal station; the improvement which comprises a louvered exhaust system adjacent and upstream of said soldering station, said louvered exhaust system having a generally horizontal louvered surface located below the path of said circuit board, the louvers of which extend and open into the path of said gas stream, and including exhaust means for removing gases from the underside of said louvered surface.

4,451,001

WRAP AROUND SLEEVE FOR TAPERED TUB

George P. Webinger, Robbinsdale, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 28, 1982, Ser. No. 402,775
Int. Cl.³ B65D 5/06
U.S. Cl. 229—40 2 Claims



1. A sleeve for encasing an article having a tapered side wall, said sleeve being formed from sheetstock material and comprising:

(a) a top wall having side edges;

(b) a pair of first side walls, one of each being foldably connected to opposite first side edges of said top wall, said first side walls tapering downwardly and inwardly from said first side edges of said top wall;

(c) a pair of second side walls, one of each being foldably connected to opposite second side edges of said top wall, said second side walls being substantially perpendicular to said top wall;

(d) a plurality of corner panels, one of each foldably interconnecting adjacent side edges of said first and second side walls, each of said corner panels being divided into a pair of associated tuck panels by a fold line, wherein C is an included angle between said fold line and a first fold connection between each of said corner panels and said first side walls; D is an included angle between said fold line and a second fold connection between each of said corner panels and said second side walls; A is an included angle between said first fold connection and a third fold connection between said first side walls and said top wall; B is an included angle between said second fold connection and a fourth fold connection between said second side walls and said top wall; and E is an included angle between said third and fourth fold connections; wherein A+B+C+D+E=360°; and wherein A and B are equal and are equal to the acute angle of taper of the side wall of the article to be encased in the sleeve; and wherein E equals 90°; and wherein C and D are determined by the following formuli:

$$C + D = 360° - (A + B + E)$$

$$\frac{90° - (A \text{ or } B)}{2} + \frac{C + D}{2} = D$$

$$(C + D) - D = C$$

said corner panels being folded along said fold line to position one of the tuck panels in each pair thereof in face-to-face contact with one of said first side walls

whereby the perpendicularity of said second side walls is maintained; and

(e) a bottom wall interconnecting bottom edges of said first side walls.

4,451,002

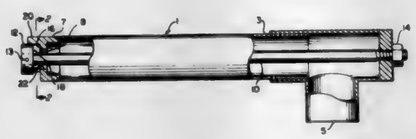
TEMPERATURE ACTUATED VALVE AND PHASE SEPARATION METHOD

David J. Klee, Emmaus, and Peter C. Nelson, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 328,052, Dec. 7, 1981. This application Jul. 19, 1983, Ser. No. 515,315

Int. Cl.³ G05D 23/02

U.S. Cl. 236—101 R 11 Claims



1. A temperature actuated valve which comprises a housing having at one end thereof an inlet and at the other end an outlet orifice, a valve stem axially extending through the length of said housing, said stem comprising a material having a greater linear coefficient of expansion than that of said housing and at least a portion having a cross-sectional area less than that of said outlet orifice, and a valve seat mounted on said portion of said valve stem outside of and adjacent to said outlet orifice and seated in sealing engagement with said orifice when said valve is at its substantially lowest operable temperature.

4,451,003

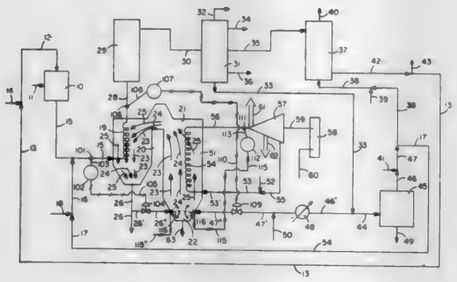
CONTROL SCHEME AND APPARATUS FOR A COGENERATION BOILER

Henry F. de Mena, Florham Park, and Michael A. Tanoff, Highland Park, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 9, 1983, Ser. No. 502,816

Int. Cl.³ F23H 1/08

U.S. Cl. 236—14 6 Claims



1. An improved control system for maintaining the outlet temperature of a process fluid exiting from a heat exchange coil within a desired temperature range in a boiler having a radiant section and a convection section comprising means for measuring the inlet temperature and the flow rate of the process fluid adjacent the inlet to said heat exchange coil, first means responsive to changes in said inlet temperature and flow rate to vary the amount of flue gas recirculated from said convection section to said radiant section, means for measuring the temperature of the process fluid adjacent the outlet of said heat exchange coil, a second means responsive to changes in outlet temperature of said process fluid to vary the amount of fuel fed to said radiant section for combustion therein, whereby said first means and said second means, respectively, provide simultaneous feedforward and feedback control in said boiler to maintain the desired process fluid outlet temperature within close tolerances during large upset changes in process fluid inlet temperature or flow rate.

4,451,004

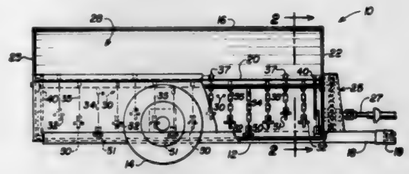
FLAIL HEAD

William F. Ostergren, Terre Hill, and Albert J. Ipnar, East Earl, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 23, 1979, Ser. No. 32,203

Int. Cl.³ A01C 3/06

U.S. Cl. 239—658 13 Claims



1. A flail head to be affixed to the flexible link of a flail spreader, said flail spreader having a generally cylindrical holding tank with a discharge opening therein and an at least partially circular cross sectional configuration normal to said discharge opening, said flail head being operable to discharge material from within said holding tank through said discharge opening, said flail head comprising:

a rigid body having a first end and an opposing second end, said first end including means for connecting said body to the flexible link, said second end being spaced from the interior surface of said holding tank; and

a resilient member affixed to said body adjacent said second end and extending away therefrom opposite said first end, said resilient member including tip means for sweepingly engaging the entire circularly cross sectional portion of said holding tank adjacent said tip means during operation of said flail head to discharge material, said tip means being operable to propel material situated between said second end of said body and the interior surface of said holding tank through said discharge opening such that said holding tank is substantially completely emptied of material.

4,451,005

GAS FLOW TYPE CRUSHING AND CLASSIFYING APPARATUS

Kiyoshi Urayama, Yahata, Japan, assignor to Kabushiki Kaisha Hosakawa Funtai Kogaku Kenkyosho, Osaka, Japan

Continuation of Ser. No. 320,375, Nov. 12, 1981, abandoned. This application Oct. 21, 1983, Ser. No. 545,101

Claims priority, application Japan, Nov. 13, 1980, 55-160497; Feb. 14, 1981, 56-20457; May 20, 1981, 56-77238

Int. Cl.³ B02C 19/06

U.S. Cl. 241—40 7 Claims

1. A gas flow type crushing and classifying apparatus comprising

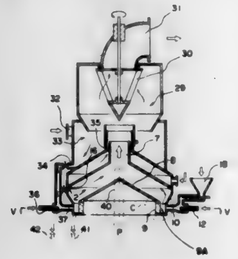
a first circulation classifying chamber including a first coarse particle discharge duct connected to a peripheral portion thereof and a first fine particle discharge duct connected to the chamber about an axis of circulation,

baffle means disposed in said first circulation classifying chamber to be peripherally impinged upon by materials under treatment which are jetted out on high velocity gas flows from at least one nozzle such that said materials rebounding from said baffle means have components of velocity in a circulating direction within said first circulation classifying chamber,

a second circulation classifying chamber connected directly to the top of said first circulation classifying chamber to be substantially coaxial therewith and substantially concentric with said first fine particle discharge duct,

said circulation chamber including a second fine particle discharge duct substantially coaxial with said first fine particle discharge duct,

a vane wheel mounted in said second circulation classifying



chamber, spaces between adjacent pairs of vanes being in communication with said second fine particle discharge duct, and

a gas classifying chamber interposed between said first and second circulation classifying chambers for blowing upwardly fine particles of the materials descending from said second circulation classifying chamber, said gas classifying chamber including a second coarse particle discharge duct connected to a peripheral portion thereof.

4,451,006

PACKAGE-LIFTING SYSTEM IN AN UNWINDING OR TWISTING MACHINE

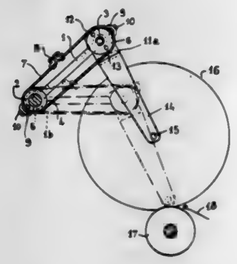
Guy Decuq, and Anne Mouterde, both of Lyons, France, assignors to Verdol S.A., Caluire, France

Filed Apr. 6, 1983, Ser. No. 482,697

Claims priority, application France, Apr. 7, 1982, 82 06538

Int. Cl.³ B65H 54/42

U.S. Cl. 242—18 DD 7 Claims



1. In a yarn package winding machine of the type including package-lifting means supporting a package core being wound against a drive drum adjacent to a yarn traverse, an improved package-lifting means comprising:

(a) a spindle disposed parallel to the axis of the drive drum for supporting a package core;

(b) a first shaft fixed to the machine and disposed parallel to the spindle;

(c) a first wheel non-rotatably mounted on the first shaft;

(d) an arm member pivotally supported on the first shaft and having bearing means located on the arm member spaced from the first shaft;

(e) a second shaft supported in said bearing means parallel to the spindle;

(f) a second wheel supported on the second shaft and rotatable with respect to the arm member;

(g) a funicular member extending around both wheels and tensioned therebetween, the funicular member being fixed to a point on the periphery of each wheel; and

(h) a stirrup having arms extending toward and supporting said spindle, and the stirrup being mounted to rotate with said second wheel, whereby as the package grows in diameter during winding of yarn thereon the stirrup and arm member will pivot away from the drive drum about the first shaft and the funicular member will wind on one side of the first wheel and unwind from one side of the second wheel thereby to decrease the angle between the arm member and the arms of the stirrup.

4,451,007

YARN WINDING APPARATUS

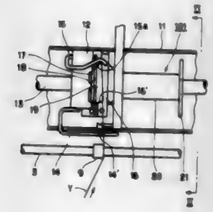
Tadahiko Ohkubo; Tetsuhiko Endo, and Akiwo Andoh, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 339,003, Jan. 12, 1982, abandoned. This application Sep. 23, 1983, Ser. No. 534,404

Claims priority, application Japan, Jan. 16, 1981, 56-3730

Int. Cl.³ B65H 54/02, 67/04

U.S. Cl. 242—18 R 23 Claims



1. An apparatus for winding continuously supplied yarn at a substantially constant speed, comprising:

(a) a rotating drum having a winding part rotatable at a predetermined peripheral speed for winding the yarn around a peripheral surface thereof, a transferring part for successively transferring the yarn wound around said winding part, and a storage part for storing the yarn fed by said transferring part, said winding, transferring and storage parts being disposed adjacent to one another in the order named;

(b) a toothed wheel to catch the continuously supplied yarn around said rotating drum;

(c) a yarn guide for guiding the continuously supplied yarn onto said winding part of said rotating drum,

(i) said toothed wheel being mounted coaxially with said rotating drum on an end of the latter which is remote from said storage part of said rotating drum; and

(ii) said yarn guide being positioned upstream of said rotating drum with respect to the direction of supply of the yarn; and

(d) a yarn take-up assembly disposed with respect to said toothed wheel and including:

(i) a bobbin supporting mechanism for rotatably supporting a bobbin;

(ii) a bobbin driving mechanism for driving the bobbin; and

(iii) a yarn traversing mechanism for traversing the yarn axially of the bobbin to wind the yarn around the bobbin and form yarn layers thereon,

said bobbin driving mechanism having an axis of rotation of the bobbin which extends substantially parallel to the axis of rotation of said rotating drum; and

said yarn guide being movable across a zone in which the yarn is being traversed by said yarn traversing mechanism.

4,451,008

DOUBLE WIRE-WINDING MACHINE WITH AUTOMATIC TRANSFER

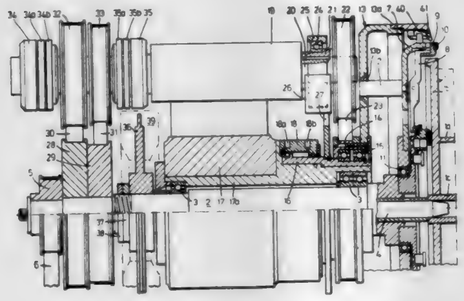
Louis Veyrassat, Rolle, and Marc Meisser, Meyrin, both of Switzerland, assignors to Maillefer S.A., Ecublens, Switzerland

Filed May 17, 1982, Ser. No. 378,602

Claims priority, application Switzerland, Jun. 3, 1981, 3637/81

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—25 A **6 Claims**



1. A machine for use in double-winding having an automatic transfer device and including at least one reel driving shaft, means for driving a reel coupled to a forward end of said driving shaft, a bearing device for supporting said shaft near said forward end, a wire snagging disk disposed coaxially with said driving shaft and means for driving said disk with said driving shaft and for causing said disk to effect a lagging movement with respect to said driving shaft during a predetermined period of time during a winding operation, said means for driving said disk comprising an auxilliary shaft parallel to said driving shaft, first transmission means between said driving shaft and said auxilliary shaft, and second transmission means between said auxilliary shaft and said snagging disk, wherein the improvement in said means for driving said disk comprises:

said means for driving said disk exclusively comprising said first and second transmission means wherein said first transmission means includes two separate transmission gears with slightly different transmission ratios, each of said transmission gears being coupled between said driving shaft and said auxilliary shaft and each having a gear part secured to said driving shaft, said first transmission means further including two disengageable coupling devices each coupled between said auxilliary shaft and a different one of said transmission gears to selectively couple one of said transmission gears to drive said auxilliary shaft, said gear parts of both said transmission gears which are secured to said driving shaft being located behind said bearing device with respect to said forward end.

4,451,009

WINDING MECHANISM

John B. Mann, 41 Main St., Calverton, Nottingham, England

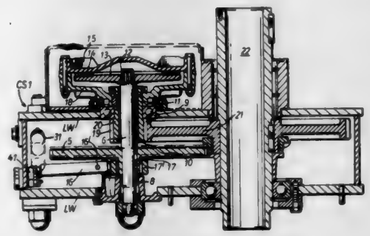
Filed Dec. 31, 1981, Ser. No. 336,480

Claims priority, application United Kingdom, Jan. 3, 1981, 8100048

Int. Cl.³ B65H *77/00, 79/00*

U.S. Cl. 242—54 R **36 Claims**

1. A winding mechanism for winding up a cable comprising means for taking on and paying off the cable, said means having a winding member on which the cable is wound up and from which the cable can be wound off, and one-way drive means for applying torque to the winding member to rotate the latter to wind up the cable; said drive means comprising (A) a slippable friction clutch having an input member and an output member one of which members is axially displaceable relative to the other member (B) a gear wheel arrangement comprising a driving gear wheel and, meshing therewith, a driven gear wheel; one of said gear wheels being axially displaceable in relation to the other of the gear wheels while still permitting torque to be transmitted by the gear wheels, and the displaceable gear wheel being connected to the displaceable clutch member to rotate and to undergo axial displacement therewith; and (G) means for effecting axial displacement of the displaceable clutch member relative to the other clutch member in order to maintain a driving connection between the clutch input and output members.



4,451,010

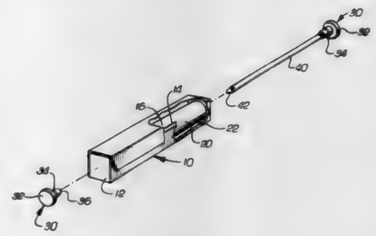
REUSABLE ROD ASSEMBLY FOR MOUNTING BOXED ROLLS OF MATERIAL

Marcus F. Meyer, 954 "I" St., Washougal, Wash. 98671

Filed Nov. 2, 1981, Ser. No. 317,203

Int. Cl.³ B65F *3/02*; B65H *35/06*

U.S. Cl. 242—55.53 **7 Claims**



1. A portable rod assembly for providing supplemental mounting of a roll of sheet material which is already housed in a storage box, in order to facilitate dispensing the sheet material without the need of or the risk of the roll being removed from the box, comprising:

small diameter rod means for inserting through the roll of sheet material including tapered tip means on at least one end for initially perforating opposite panels at the ends of the box containing the roll of material;

a pair of bearing members each having central bearing means of substantially constant diameter which is more than the diameter of said rod means and less than the diameter of the roll of material and further including tapered bevel means on the forward end which are manually insertable through opposite panels at the end of the box, respectively, into the roll for making enlarged perforations to receive said bearing members, with adjacent portions of said central bearing means capable of loosely journaling the roll of material during its rotation to retain the roll inside the box while also holding the roll in a suspended position off the bottom of the box and snugly engaging the edges of the box perforations formed by said tapered bevel means;

cap members having a diameter greater than the diameter of said central bearing means and carried on the outer ends of said bearing members, respectively;

said rod means extending between said pair of bearing members for holding said bearing members together in mounted position in the aforesaid box panels with said cap members a predetermined distance apart outside the aforesaid box panels; and

attachment means removably connecting at least one of said bearing members to said rod means for coupling the rod assembly together into an integral unit with the box during use and to enable the rod assembly to be disengaged after use from a box having an empty roll of material and reinserted into another box having a full roll of material.

4,451,011

FILM WINDING SPOOL FOR PHOTOGRAPHIC CAMERA

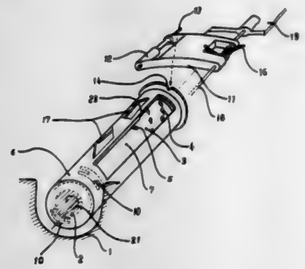
Dieter Engelsmann, Unterhaching; Leo Lippl, Munich; Reinhard Nicko; Peter Stiefel, both of Munich, and Peter Lermann, Naring, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,825

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120268

Int. Cl.³ G03B *1/04*; B65H *75/28*

U.S. Cl. 242—71 **8 Claims**



1. A film winding spool for a photographic camera, comprising an inner substantially cylindrical member which is driven in rotation; means on said inner member engaging an initial portion of a film; and an outer substantially cylindrical member substantially completely surrounding said inner member so as to form a space therebetween and having an outer surface for winding successive coils of the film; means for allowing introduction of the initial portion of a film into said space and including a slot provided at a predetermined location of said outer surface of said outer member and having a predetermined dimension; and means for allowing withdrawal of pieces of the film, separated from a remaining part of the film from said space between said inner and outer members, said withdrawal means including a plurality of openings unsuitable for initial-film-portion introduction, each arranged at a location spaced from the location of said slot and having a dimension smaller than the dimension of the latter, each of said openings extending in a longitudinal direction and in a circumferential direction of said outer member, and said openings being distributed over said outer surface of said outer member.

4,451,012

FISHING LINE CONTROL DEVICE

John W. Puryear, and Arthur D. Callan, both of Tulsa, Okla., assignors to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 112,917, Jan. 17, 1980, Pat. No. 4,362,763. This application Feb. 4, 1982, Ser. No. 345,876

Int. Cl.³ A01K *89/01*

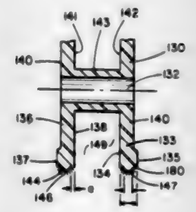
U.S. Cl. 242—84.2 A **10 Claims**

1. A fishing reel spool comprising:

(1) a center section having first and second end faces and a middle portion, a passageway through the middle portion and being concentric therewith, the passageway opening at the first and second faces;

(2) a first cylindrical flange at the first face and extending radially outwardly from the middle portion, the flange having inner and outer surfaces, the flange having a preselected thickness in a direction parallel to the passageway through the spool;

(3) a first rim at the periphery of the first flange projecting



radially outwardly and having a thickness less than the thickness of the flange;

(4) an adhesive coating covering the rim; and

(5) a plurality of substantially short resilient fibers projecting substantially perpendicularly outwardly from the rim and secured thereto by the adhesive, said rim thickness being less than the thickness of the flange so that fibers lying substantially parallel to the passageway will not extend beyond the inner surface of the first flange.

4,451,013

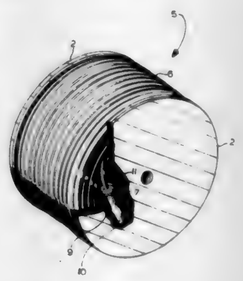
TELEPHONE CABLE REEL

Elliot P. Bedrosian, Sterling, Va., assignor to Siecor Corporation, Hickory, N.C.

Filed Oct. 18, 1982, Ser. No. 434,836

Int. Cl.³ B65H *75/14*

U.S. Cl. 242—118.4 **5 Claims**



1. A cable reel comprising:

(a) first and second spaced apart upstanding flanges;

(b) a cylindrical shaped cross member, a terminal portion of one end of said cross member attached to said first flange and the terminal portion of the other end attached to the second flange;

(c) a disc shaped support means disposed inside of said cross member and spaced apart from said first flange;

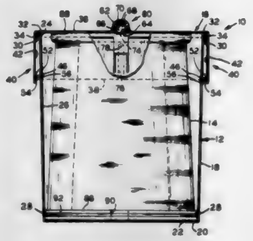
(d) a cable terminal receiving means comprising a container adapted to receive a pre-connectorized terminal portion of a cable, said container having at least one opening therein, said opening facing the cylindrical shaped cross member; and,

(e) an aperture in said cylindrically shaped cross member aligned with the opening in said container, the size of said aperture being at least as large as the opening of said container.

4,451,014
WIRE STORING AND DEREELING APPARATUS

Robert A. Kitt, Albion, and Harold L. Wirts, Garrett, both of Ind., assignors to Mossberg Industries, Inc., Garrett, Ind.

Filed Aug. 11, 1982, Ser. No. 407,146
Int. Cl.³ B65H 49/00
U.S. Cl. 242—128 11 Claims



4. Apparatus for storing and dereeling wire on a spool disposed with the axis thereof upright, comprising:

a container having an open top and a bottom having an arbor receiving recess therein, the container adapted to receive said spool therein,

a cover being receivable over said open top of said container, said cover being movable on said container between a closed position and a dereeling position wherein a midportion of said cover is spaced above said spool a predetermined distance,

locking means on one of said container and said cover,

means on the other of said container and said cover for engaging said locking means to removably secure said cover in said dereeling position,

means centrally disposed of said container axially above said spool for receiving a strand of wire being unreeled from said spool, and

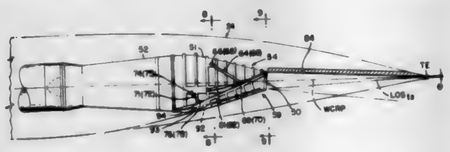
a boss member disposed on the outer surface of said cover midportion in axial alignment with said recess in said bottom and extending axially outwardly from the outer surface,

said boss member being adapted to be received in the arbor-receiving recess of a spool in a like apparatus stacked thereon.

4,451,015
JET ENGINE TWO DIMENSIONAL, ASYMMETRIC AFTERBURNER NOZZLE

Donald W. Hapke, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1981, Ser. No. 306,746
Int. Cl.³ B64D 33/04, 27/18; F02K 1/00
U.S. Cl. 244—15 20 Claims



1. In a jet propulsion engine of the type adapted to be mounted on an airfoil's wing spar structure and having either a convergent or a CD jet nozzle defining a minimal included angle θ between the wing chord reference plane and the trailing edge line-of-sight into the nozzle, a nozzle assembly comprising, in combination:

(a) a fixed stationary upper nozzle duct fixedly mounted on the engine mounted on the airfoil's wing spar structure and defining a stationary upper nozzle wall and a first pair of stationary spaced depending nozzle sidewalls;

(b) a translatable lower swing tray defining a bottom nozzle floor and a second pair of spaced upstanding nozzle sidewalls, said first and second pairs of nozzle sidewalls being mounted in overlapping relation with respect to one another with freedom for relative movement therebetween;

(c) mounting means for pivotally coupling said translatable lower swing tray to said fixed stationary upper duct with freedom for controlled fore and aft pendular rocking movement with respect thereto;

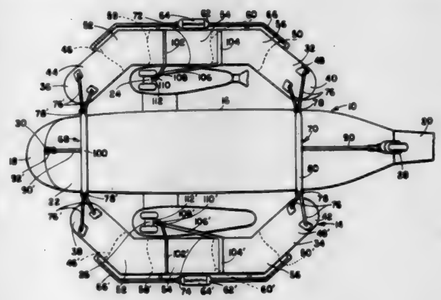
(d) sealing means mounted on the foreward end of said swing tray and interposed between said swing tray and the lower aft end of the engine and defining a wiping seal therebetween at all fore and aft positions of said swing tray; and,

(e) actuating means for rocking said swing tray in a fore and aft direction relative to the engine between a first convergent cruise nozzle position defining a minimal nozzle opening and a second convergent afterburner nozzle position defining a maximum nozzle opening.

4,451,016
AUXILIARY FLOTATION SYSTEM

David E. Genovese, Peninsula, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,504
Int. Cl.³ B64C 25/56
U.S. Cl. 244—107 5 Claims



1. An auxiliary flotation system for aircraft downed at sea comprising a first inflatable collar for positioning on the left side of the aircraft, a second inflatable collar for positioning on the right side of the aircraft, supporting means for connecting said first inflatable collar and said second inflatable collar to the aircraft, said supporting means including strap means extending directly between one end of said first inflatable collar and a corresponding end of said second inflatable collar, positioning means fastened to said strap means and having means for connection to, and beneath, a first end portion of the aircraft for holding said strap means in a position for supporting a predetermined part of the aircraft upon inflation of said first inflatable collar and said second inflatable collar, and means for inflating said first inflatable collar and said second inflatable collar after said positioning means is attached to the aircraft, said supporting means further including a second strap means extending between the other end of said first inflatable collar and a corresponding end of said second inflatable collar, a second positioning means fastened to said second strap means and having means for connecting said positioning means to, and beneath, a second end portion of the aircraft for locating said second strap means in a position for supporting a second predetermined part of the aircraft upon inflation of said first inflatable collar and said second inflatable collar, said supporting means also including a third and fourth strap means connected to said first inflatable collar and said second inflatable collar, respectively, at positions intermediate the ends of said first inflatable collar and said second inflatable collar for supporting an intermediate part of the aircraft, said third and four strap means being attached to, and beneath, the aircraft at a position intermediate said position for supporting a first predetermined part of the aircraft and said position for supporting a second predetermined part of the aircraft.

4,451,017
THREE STAGE ROCKET VEHICLE WITH PARALLEL STAGING

William R. Marshall, Madison, Ala., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 431,886
Int. Cl.³ B64G 1/40
U.S. Cl. 244—172 5 Claims



1. A three-stage rocket launch vehicle having a propellant feed system from a forward tank stage to an aft tank stage, comprising:

axially aligned forward and aft tanks for carrying propellants for rocket engines;

an intertank structure fixedly joined to the front portion of said aft tank and severably joined to the rear portion of said forward tank;

an engine mount structure secured to the rear portion of said aft propellant tank;

at least one rocket engine supported by said engine mount structure;

a pair of solid rocket boosters secured to opposed sides of said forward and aft propellant tanks;

said forward propellant tank having a front pressure vessel for carrying hydrogen and a rear pressure vessel for carrying oxygen;

said aft tank having a front pressure vessel for carrying hydrogen and a rear pressure vessel for carrying oxygen;

a first pipe line communicating said front pressure vessels, and a second pipe line communicating said rear pressure vessels for feeding propellants from the front pressure vessels to said rear pressure vessels as propellant is provided from said rear pressure vessels to said at least one rocket engine;

each said first and second pipe lines having on-command shut-off valves and joint means for severing the pipe line on-command;

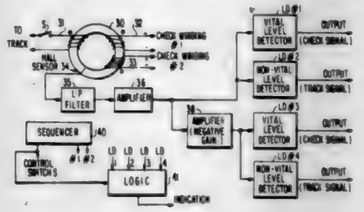
third and fourth pipe lines communicating, respectively, said forward vessel and said rear vessel of said aft propellant tank with said at least one rocket engine supported by said engine support structure; and

an elongated payload structure severably fixed to the third side of said forward propellant tank and fixed to the third side of said aft propellant tank, said payload structure extending parallel to said forward and said aft propellant tanks.

4,451,018
NON CONTACT ISOLATED CURRENT DETECTOR

Barry L. Smith, and William A. Petit, both of Rochester, N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Mar. 10, 1982, Ser. No. 356,080
Int. Cl.³ B61L 25/00, 21/00
U.S. Cl. 246—122 R 7 Claims



1. A DC track circuit sensitive to current variations comprising:

a quasi-DC pulse source of current coupled to a pair of track rails,

a current sensitive receiver coupled to said pair of track rails, said current sensitive receiver comprising:

a toroidal core with an air gap, said core coupled to said track rails via a single conductor,

a Hall sensor located in said air gap to sense a magnetic field induced in said core by current coupled from said track rails,

operational amplifier means for amplifying a signal emitted by said Hall sensor, and

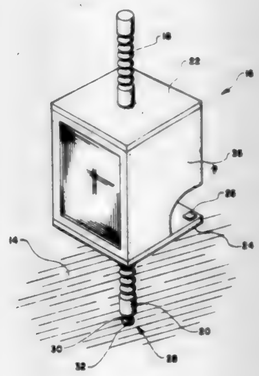
level detector means coupled to said operational amplifier means to emit a distinctive signal in the event that an input to said level detector means exceeds a threshold established at said level detector means,

whereby changes in current level in said track rail produce distinctive outputs from said level detector means as said signal emitted by said Hall sensor varies above and below the threshold established by said level detector means.

4,451,019
POLE TYPE SPEAKER SUPPORT STRUCTURE

James B. Bensel, 2005 Brucemount Pl., Fayetteville, N.C. 28304

Filed Dec. 21, 1981, Ser. No. 332,537
Int. Cl.³ A47G 29/00
U.S. Cl. 248—1 6 Claims



1. A compressive pole type audio speaker support structure for adjustably supporting various size audio speakers interme-

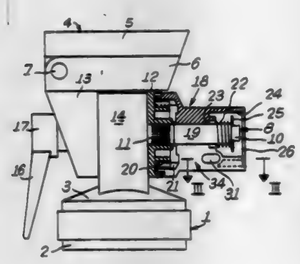
diately between a floor and ceiling structure, comprising: speaker support means including an elongated lower pole support structure normally extending upright between the floor and the speaker to be supported and including upper and lower ends, and an elongated upper pole support structure normally extending between said ceiling and a top portion of said speaker and including upper and lower ends, and wherein said upper and lower pole support structures are aligned; a lower speaker support plate means fixed to the upper end of said lower pole support structure of said speaker support means for receiving and supporting a bottom portion of said audio speaker; an upper speaker support plate means fixed to the lower end of said upper pole support structure for engaging a top portion of said speaker and acting downwardly thereon, and wherein said upper and lower speaker support plate means are aligned and define an audio speaker receiving spaced therebetween for receiving a speaker; adjustment means operatively associated with said pole speaker support means for effectively adjusting the length of the same between said ceiling and floor such that said speaker is supported in compression between said upper and lower pole support structure forming a part of said speaker support means and wherein said lower and upper speaker support plate means including a pair of opposed flat speaker engaging surfaces of a substantial area for engaging said speaker and bearing thereagainst so as to hold and retain said speaker by compression thereby obviating the need for a screw or bolt type interconnection between the plate means and the speaker.

4,451,020

PLATFORM FOR A CAMERA OR CINE CAMERA STAND

Patrick Posso, Lausanne, Switzerland, assignor to Gefitec S.A., Lausanne, Switzerland

Filed Aug. 5, 1981, Ser. No. 290,395
Claims priority, application France, Aug. 19, 1980, 8018140
Int. Cl.³ F16M *11/12*
U.S. Cl. 248—183 **2 Claims**



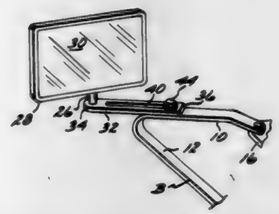
1. An improved platform for a camera comprising a turret having a table mounted for rotation around a vertical axis, a deck element, a first projection on said table, a shaft supported on said first projection for rotation around a horizontal axis, a second projection on said deck element secured to said shaft for rotation therewith, whereby said deck element is supported on said table, a split sleeve carried by said shaft for rotary and axial movement, respective interengageable toothed elements carried respectively by said second projection and by said split sleeve for rotation therewith, said split sleeve being axially movable between a first position at which said toothed elements are engaged to cause said sleeve and said shaft to rotate as a unit and a second position at which said toothed elements are out of engagement to permit said sleeve to rotate on said shaft, resilient means urging said sleeve to said first position, a control handle and means for screwing said handle onto said sleeve to clamp said sleeve to said shaft.

4,451,021

REAR VIEW MIRROR EXTENSION ASSEMBLY

Charles E. Merrias, 10838 S. Cullman Ave., Whittier, Calif. 90603

Filed Mar. 8, 1982, Ser. No. 356,025
Int. Cl.³ B60R *1/06*
U.S. Cl. 248—480 **3 Claims**



1. In an automotive vehicle having a bracket extending outwardly therefrom that includes an upper horizontal portion in which a transverse opening is formed through which a screw extends upwardly to engage a tapped bore extending downwardly in a post of a rear view mirror to support said mirror from said bracket, the combination with said bracket after said mirror and screw have been removed therefrom of an assembly for adjustably supporting said mirror outwardly from said vehicle a greater distance than when mounted on said bracket, said assembly including:

a. an elongate rigid adaptor member that has first and second ends, and resting on said upper horizontal portion, a transverse bore adjacent said first end through which said screw extends upwardly to engage said tapped bore in said post to support said mirror from said member, and an elongate slot in said member intermediately disposed between said transverse bore and said second end;

b. a bolt that includes a head, and a shank that extends downwardly therefrom through said slot to have a portion of said shank situated there-below, said portion having external threads thereon;

c. a nut that engages said threads; and

d. a plurality of washers that have said shank extending therethrough and that are in contact with said elongate rigid member and said bracket, with said slot permitting said rigid member and mirror to be moved longitudinally relative to said bracket to improve the field of vision visible in the mirror relative to that obtainable when the mirror is mounted on said bracket, and said elongate member and mirror being maintained in the position to which they are adjusted by tightening said nut to compress said washers and force them into frictional engagement with said head and nut and said bracket and elongate member.

4,451,022

READY PAD FOR CONCRETE

Lawrence M. Sauger, 2146 Parliament, Sterling Heights, Mich. 48077

Filed Apr. 7, 1982, Ser. No. 366,365
Int. Cl.³ B28B *7/04*
U.S. Cl. 249—2 **2 Claims**

1. A reusable form for a formed in place concrete pad comprising:

two spaced side beams of a predetermined length having first and second ends, each of said side beams comprising a flat first side portion, and flat top and bottom portions extending perpendicularly from said first side portion;

a front beam engaging said side beams at said second ends including a flat second side portion and flat top and bottom portions extending perpendicularly from said second side portion;

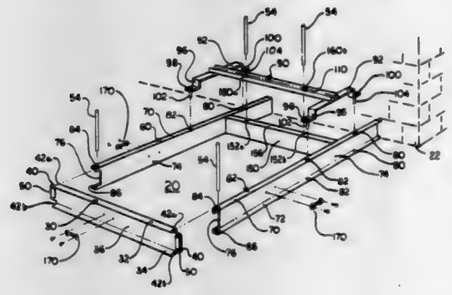
connecting means for connecting said front beam to said side beams proximate said second ends and for aligning the respective top portions of said side beams and said front beam in co-planar relation;

transverse stabilizer means mounted to and suspended above said side beams for establishing a parallel spacing between said side beams and for squaring and establishing a perpendicular relation between said side beams and said front beam including a transverse beam having at least two apertures therethrough;

mounting means for securing said transverse beam to each of said side beams in a spaced apart relation from the respective said tops of each of said side beams, wherein said mounting means comprises: an upraised central portion, adapted to engage said transverse beam, a pair of lower flange members extending down and outwardly from said central portion, a pair of mounting pins, one each extending downward for a respective one of said lower flange members; and wherein each of said side beams includes second and third alignment holes adapted to receive said respective pair of said mounting pins;

an end beam mounted below said transverse stabilizer means having first and second ends for engaging one of each of said side beams in abutting, level relation and apertures, equal in number to the apertures in said transverse beam and aligned therewith, said apertures in said end beam extending therethrough; and

a pin received through each of said apertures of said transverse beam and extending through the corresponding apertures of said end beam for securing said end beam to said transverse beam.

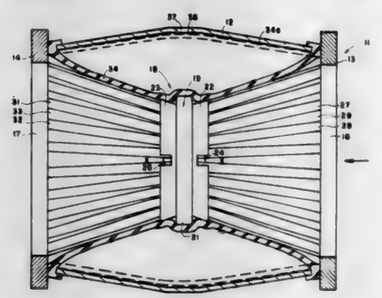


4,451,023

TUBE-DIAPHRAGM VALVE

Avi Zakai, Rishon Le-Zion, Israel, assignor to Mil Mutzarim (1971) Techniim B.M., Holon, Israel

Filed Sep. 8, 1981, Ser. No. 300,125
Int. Cl.³ F16K *7/07*
U.S. Cl. 251—5 **10 Claims**



1. A tube valve for controlling hydraulic flow therethrough, said valve comprising:

valve casing means,

first and second port means spaced apart in said casing means along a longitudinal axis, definable as a first axis,

a hollow support structure having pervious walls extending between said port means,

an impervious stationary barrier transversing said structure along said first axis and positioned to cause hydraulic fluid to flow through said pervious walls and around said barrier,

resilient tube means surrounding said structure and extending substantially from port to port,

said tube means having a valve closed position when abutting said barrier thereby preventing flow around said barrier and a valve opened position remote from said barrier thereby enabling flow around said barrier,

said casing and said tube means defining a control chamber,

aperture means in said casing to enable varying the pressure in said control chamber to move said tube means between said valve closed position and said valve opened position, and

said barrier comprising a central member against which said tube means abuts when said valve is in said closed position, and at least a first side member in contact with said central member and being disposed on the side of the port, serving as the outlet port, the dimension of said central member being greater than the dimension of said first side member in a direction transverse to said first axis, whereby as said tube means moves toward said valve closed position the differences between the dimensions of said central member and side member of said barrier transverse to said first axis results in the production of a pressure adjacent the central member on the side of the outlet port which dampens the hammer effect by reducing the rate at which said tube means comes in contact with said central member,

said first side member being shaped as a truncated cone with the truncated top in contact with said central member with the dimension of the base of said truncated cone in a direction transverse to said first axis being less than the dimension of said central member, whereby the pressure and the space between the exposed side of said central member and the exposed side of said truncated cone and the tube means when the latter moves toward said central member to be in the valve closed position is greater than the pressure in the portion of said hollow support structure between said barrier and the port serving as the outlet port and is less than the pressure in the structure portion between said barrier and the port serving as the inlet port.

4,451,024

FELLING WEDGE

Larry M. Shepherd, P.O. Box 332, Grants Pass, Oreg. 97526

Filed Jan. 13, 1983, Ser. No. 436,184
Int. Cl.³ B26F *3/18*
U.S. Cl. 254—104 **7 Claims**

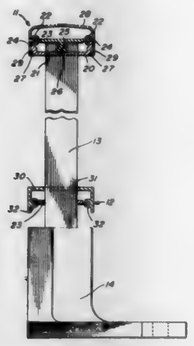


1. A felling wedge for use in conjunction with a cutting saw in felling and bucking trees comprising: a main body portion having a narrow end and a butt end defining a planar surface of a determined dimension and sides that diverge from the narrow end to the butt end, and a cap having a planar surface of said determined dimension and a lug depending therefrom, said planar surfaces of the butt end and cap being in superimposed abuttment with said lug being embedded in the main body portion at the butt end thereof to permanently secure the cap to the butt end of the main body portion, said main body portion constructed of a material softer than the material of the cap whereby the main body portion is relatively more compatible to being cut by the chain saw and the cap is relatively more compatible to being struck by a driving mall.

4,451,025
HAND RAILING ASSEMBLY

Vittorio Spera, Quebec, Canada, assignor to Speral Aluminium Inc., Quebec, Canada

Filed Feb. 25, 1983, Ser. No. 469,762
Claims priority, application Canada, Sep. 16, 1982, 411579
Int. Cl.³ E04H 17/14
U.S. Cl. 256—65 6 Claims



1. In a hand railing assembly having a hand rail, a bottom rail, a plurality of spaced apart vertical posts, each post having a top end connected to the hand rail and a lower end for mounting in a support means, a plurality of vertical pickets spaced between the posts, each picket having a top end connected to the hand rail and a lower end connected to the bottom rail, the improvement comprising,

a hand rail support strip extending along the length of the hand rail having holes spaced apart along the length to hold the top ends of the posts and pickets;

a member having a T-shaped cross section, the member having a stem with sides sloped downwards and outwards, to slide into locating slots in the top ends of the pickets and posts, the member having a top flange whose ends slide in side slots in the hand rail support strip to lock the hand rail support strip to the top ends of the posts and pickets;

a hand rail cap slidingly engaging and locking the hand rail support strip to cover the hand rail support strip, the member and the top ends of the posts and pickets;

a bottom rail support strip extending along the length of the bottom rail having holes spaced apart along the length to hold the posts and the lower ends of the pickets; and

a member having the same T-shaped cross section as that used with the hand rail support strip, inverted to slide into locating slots in the lower ends of the pickets between the posts, the member having an inverted top flange whose ends slide in side slots in the bottom rail support strip to lock the bottom rail support strip to the lower ends of the pickets.

4,451,026
CLAMPING DEVICE

Robert L. Coope, Phoenix, Ariz., assignor to Stevens Engineering, Inc., Phoenix, Ariz.

Filed Jun. 30, 1982, Ser. No. 393,744
Int. Cl.³ B23Q 3/08
U.S. Cl. 269—24 7 Claims

1. A clamping device for engaging a workpiece and for releasably anchoring said workpiece to a supporting surface, said clamping device comprising:

a. a housing securable to said supporting surface;

b. a clamping member movably carried by said housing;

c. guide means including,

i. a cavity formed in said housing and having spaced apart upper and lower surfaces,

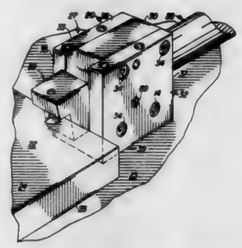
ii. a lower surface formed on said clamping member and slidably disposed upon the lower surface of said cavity, said guide means directing said clamping member in a first direction substantially parallel to said supporting surface;

d. stop means for terminating movement of said clamping member in said first direction; and

e. translation means including,

i. a fulcrum carried by said clamping member and movable along the upper surface of said cavity,

ii. a drive member for receiving a linear force,



iii. an inclined link having a lower end pivotally connected to said clamping member, and an upper end with a bearing surface,

iv. attachment means intermediate the ends of said link movably affixing said link to said drive member,

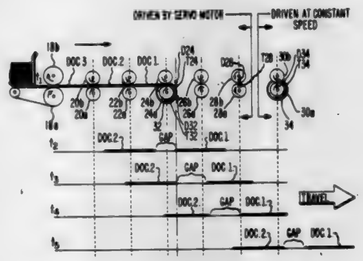
v. means for urging the bearing surface of said link toward the upper surface of said cavity,

said translation means causing said clamping member to move in a second direction toward said supporting surface subsequent to termination of movement in said first direction.

4,451,027
CONSTANT SPACING DOCUMENT FEEDER

Daniel D. Alper, Ypsilanti, Mich., assignor to Burroughs Corp., Detroit, Mich.

Continuation of Ser. No. 110,593, Jan. 9, 1980, abandoned. This application Mar. 15, 1982, Ser. No. 358,156
Int. Cl.³ B65H 3/52, 5/34
U.S. Cl. 271—10 7 Claims



6. In a document feeder for delivering intermixed documents of different lengths at a preselected speed and with preselected gaps between documents, an arrangement comprising:

first means for receiving and transporting a first and a second document at variable speeds;

second means coupled to receive said succession of documents and transport them at a higher range of variable speeds;

means coupled between the first and second means to provide a fixed ratio of speed between the first and second means and thus to develop a gap between said first and second documents controlled respectively by said first and second means;

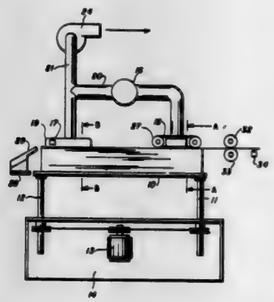
third means operable at a fixed speed to receive each of the documents of said succession of documents and transport it at a preselected speed; and

means, responsive to the passage of the documents, to provide signals of use in varying in speed of said first and second means in a manner to enable adjustment of the gap between a first document having a fixed speed under control of the third means and a second document under control of the second means and adjustment of the speed of travel of said second document to a fixed value as said second document is delivered to control by said third means.

4,451,028
SHEET FEEDING APPARATUS

Maurice F. Holmes, Rochester, and Gerald M. Garavuso, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,159
Int. Cl.³ B65H 3/14
U.S. Cl. 271—11 27 Claims



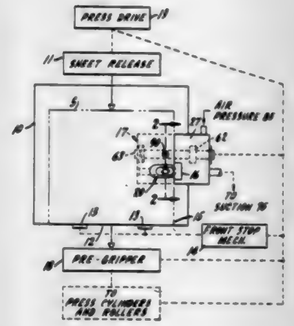
1. A sheet feeding apparatus comprising a sheet stack support tray, a rear vacuum plenum chamber positioned over the rear portion of said sheet stack support tray and adapted to acquire the rear portion of a sheet when sheets are in said tray, a front vacuum plenum chamber positioned over the front of said sheet stack support tray and adapted to acquire the front portion of a sheet when sheets are in said tray, said rear and front vacuum plenum chambers each having a portion positioned in its bottom center to provide a center corrugation member parallel to the sheet feeding direction, sheet transport means associated with said front vacuum plenum to transport the sheet acquired by said front vacuum plenum in a forward direction out of said sheet stack support tray, and air knife means positioned at the rear of said sheet stack support tray and adapted to inject air between the trailing edge of the top sheet in a stack of sheets and the remainder of the stack when a stack of sheets is in said tray.

4,451,029
ARRANGEMENT FOR LATERAL ALIGNMENT OF SHEETS

Wolfgang Wildmann, Offenbach am Main, and Rudolf Meixer, Hainburg, both of Fed. Rep. of Germany, assignors to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,000
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131279
Int. Cl.³ B65H 9/04
U.S. Cl. 271—236 6 Claims

1. In a device for registering a sheet against front and side stops on the feed table of a printing press having a press drive and having means for cyclically feeding sheets across the table toward the front stop, the combination comprising a suction head recessed in the table adjacent the side stop and having a top surface including a set of openings, means mounting the suction head for movement parallel to the surface of the table with the top surface of the head being maintained flush with the surface of the table, reciprocating means coupled to the press drive and timed with the arrival of the sheet at the front stop for shifting the head laterally in the direction of the side stop and for returning it, a source of suction, first valve means coupled to the source of suction for applying a draft of suction to the head timed with the lateral shifting movement so that the sheet is affirmatively shifted into contact with the side stop, a source of substantially constant air pressure, second valve

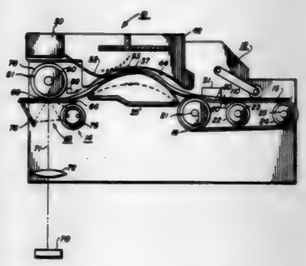


means coupling the head to the source of air pressure for applying a short puff of air to the openings timed with completion of the shifting movement to free the sheet from the head in readiness for removal of the sheet from the table, and an auxiliary nozzle recessed in the table in a position ad3acent the head, said nozzle being permanently connected to the source of air pressure and directed toward the side stop and approximately parallel to the surface of the table for producing a moving film of air under the sheet in the direction of the side stop to insure that the sheet remains against the side stop when the suction is no longer effective and until the sheet is removed from the table.

4,451,030
DOCUMENT STORAGE CHAMBER FOR COUPLING ASYNCHRONOUSLY OPERATED DOCUMENT FEEDING DEVICES

Dennis P. Teeter, Penfield, and Brian R. Ford, Walworth, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,663
Int. Cl.³ B65H 3/04, 29/20
U.S. Cl. 271—265 6 Claims



1. A chamber for temporarily storing portions of a document in accommodation of divergent speeds and drive strength mismatch between document feeders at the chamber inlet and outlets comprising:

means forming a flexible support for the portion of the docu-

ment in said chamber, said flexible support permitting said document portion in said chamber to rise and fall in accordance with the amount of said document portion present in said chamber;

a sensor cooperable with said support and engageable with any document portion supported by said support for sensing the level of said document portion in said chamber; and

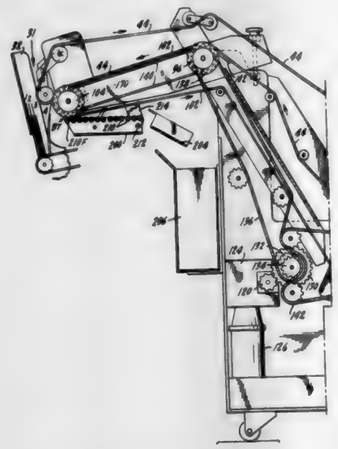
control means for starting and stopping the inlet document feeder in response to preset minimum and maximum levels of said document portion in said chamber.

4,451,031

SIGNATURE MACHINES

William B. McCain, Hinsdale, and Thomas A. Nelson, Oak Lawn, both of Ill., assignors to McCain Manufacturing Corporation, Chicago, Ill.

Filed Jan. 18, 1982, Ser. No. 340,361
Int. Cl.³ B65H *29/66*
U.S. Cl. 271—303 **5 Claims**



1. In a signature feeding machine which includes conveyor means and a selectively variable speed conveyor drive and feed means for maintaining a continuous stream of overlapped signatures at a substantially constant feed rate from a supply hopper up to and including a discharge position where the signatures are dropped one by one into a feed hopper which supplies a signature gatherer, and wherein an operator by intervention may interrupt the flow of signatures of the prevailing order into the feed hopper while substituting in the supply hopper a new order of signatures:

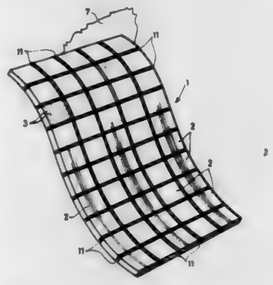
means to purge the upstream signatures located between the discharge position and the supply and comprising a receiver spaced from said discharge position and to which the purged signatures are to be diverted, guide means spaced from the conveyor means and located adjacent the receiver for guiding the purged signatures to the receiver, and means selectively to increase the speed of the drive and feed means and consequently the speed of the conveyor means during diversion.

4,451,032

PLASTIC SKI SLIDE

Gijsbrecht H. J. van Olst, Va Amersfoort, Netherlands, assignor to Nederlandse Kunststofindustrie Soesterberg, Soesterberg, Netherlands

Filed Nov. 9, 1981, Ser. No. 319,648
Claims priority, application Netherlands, Nov. 10, 1980, 8006130
Int. Cl.³ A63B *69/18*
U.S. Cl. 272—56.5 SS **1 Claim**



1. A ski slide, comprising:

a plurality of rods interconnected so as to form a support foundation gridwork having predetermined spacing defined between said rods;

means for anchoring said gridwork to a ground support surface; and

a plurality of modular plastic elements having means projecting from a first surface portion of each of said elements for coaction with a ski, and further comprising connecting means formed upon a second surface portion, said connecting means adapted for removably securing each of said elements to said gridwork and adapted for lateral and longitudinal registration and connection with said gridwork, such that connection of said elements with said gridwork defines a mutual spacing between each of said elements for permitting expansion of said elements without contact therebetween.

4,451,033

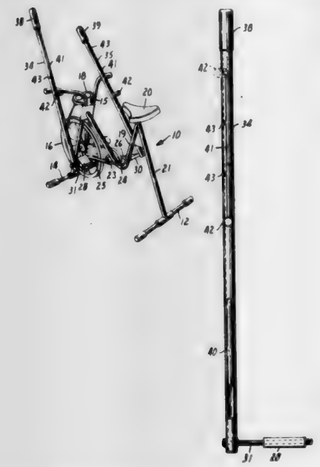
UPPER BODY EXERCISER FOR A STATIONARY BICYCLE AND A BICYCLE INCLUDING THE SAME

Sander C. Nestegard, 3458 Glen Oakes, White Bear Lake, Minn. 55110

Filed Oct. 5, 1981, Ser. No. 308,572
Int. Cl.³ A63B *23/02, 23/04*
U.S. Cl. 272—73 **2 Claims**

2. In a stationary bicycle exerciser having a frame, a seat supported on the frame, a sprocket from which radial arms extend, means for resisting rotation of said sprocket, the improvement comprising shafts extending perpendicular from the radial arms, pedals rotatably mounted on said shafts adjacent said radial arms, weighted arms pivotally connected at one end on said shafts and having a handle adjaceht the opposite end, said weighted arms each comprising an elongate hollow tube having a longitudinal slot herein and at least one angularly positioned slot communicating with said longitudinal slot, a cylindrical rod supported in each said hollow tube, and a handle connected to said cylindrical rod and extending

through said longitudinal slot for movement of said cylindrical rod closer to or farther from said one end and engageable with said at least one positioned slot to retain said rod in an alternate position.



4,451,034

DEVICE FOR YOGA EXERCISING

Abram Gin, 99-40 63rd, Forest Hills, N.Y. 11375

Division of Ser. No. 851,624, Nov. 15, 1977, Pat. No. 4,307,880. This application Dec. 15, 1981, Ser. No. 331,030
Int. Cl.³ A63B *23/00*
U.S. Cl. 272—93 **12 Claims**



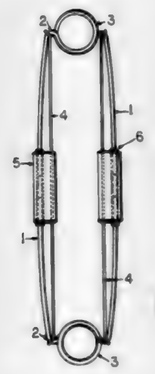
1. A Yoga exercising device, comprising an elongated resiliently deformable element movable to a position in which it is convex and fixedly retained in said position so that a practitioner resting on said element from outside assumes a candle-like posture, said resiliently deformable element having two ends spaced from one another in the direction of elongation thereof, a central plane spaced an equal distance from said ends, and two portions each located between said central plane and a respective one of said ends; means for retaining said resiliently deformable element in said convex position and including an elongated connecting element detachably bracing said resiliently deformable element from inside in said position, said connecting element having two end sections spaced from one another in the direction of elongation thereof, one of said sections of said connecting element being connected to said resiliently deformable element in the region of one of said ends of the latter, and the other section of said connecting element being connected to said resiliently deformable element in the region located between said central plane and the other end of the latter; and means for connecting said other section of said connecting element to said resiliently deformable element in a plurality of locations between said central plane and the other end of said resiliently deformable element.

4,451,035

PULL AND RELEASE EXERCISE DEVICE

Joseph Manzi, New York, N.Y., assignor to Gossling Development Corporation, New York, N.Y.

Filed Aug. 19, 1982, Ser. No. 409,623
Int. Cl.³ A63B *21/02, 21/32*
U.S. Cl. 272—137 **1 Claim**



1. A hand held grymnastic devices for pull and pull-relaxation exercise comprising:

two elongated members, a pair of handgrips and two reinforcing members;

each of said two elongated members forming major and secondary coils,

said major coils being formed intermediate to the ends of each of said elongated members,

said secondary coils formed adjacent to and on opposite sides of said major coils,

said ends of said elongated members being joined to each other to form a continuous member,

each of said reinforcing members having means at their ends to engage said secondary coils,

said pair of handgrips adapted to receive the respective joined ends of said elongated members,

means located on said handgrips for receiving and securing said reinforcing member thereto,

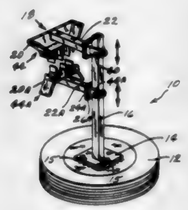
means located on said handgrips for adding stability to the elongated members.

4,451,036

BATTING PRACTICE DEVICE

Bernard J. Sinclair, 7211 SW. 11th St., Des Moines, Iowa 50315, and Dominic R. Mauro, 1629 E. Virginia St., Des Moines, Iowa 50320

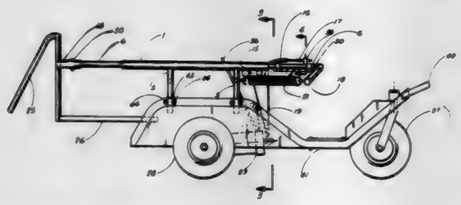
Filed Jul. 2, 1981, Ser. No. 279,720
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 R **2 Claims**



1. A batting practice device, comprising,

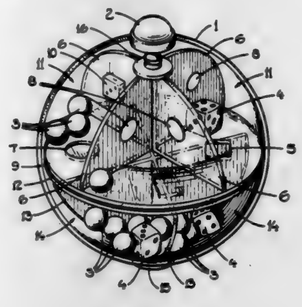
a vertically disposed support post,
a first clamp means selectively vertically movably mounted on said post,
a first arm resiliently secured to said first clamp means and extending horizontally outwardly therefrom,
a first frame means at the outer end of said first arm and having a bottom portion with side portions extending upwardly and outwardly therefrom,
a plurality of vertically disposed resilient members secured to said first frame means extending downwardly from the bottom portion thereof,
a second clamp means selectively vertically movably mounted on said post below said first clamp means,
a second arm resiliently secured to said second clamp means and extending horizontally outwardly therefrom,
a second frame means at the outer end of said second arm and having a top portion with side portions extending downwardly and outwardly therefrom,
a plurality of vertically disposed resilient members secured to said second frame means and extending upwardly from the top portion thereof,
the resilient members on each of said first and second frame means comprising a plurality of groups of flexible members, each of said groups of flexible members including a middle flexible member having outer flexible members positioned on opposite sides thereof with the middle flexible member having a length greater than the outer flexible members,
said groups of said flexible members on said first and second frame means defining a strike zone therebetween,
said first and second frame means being vertically adjustable movably mounted with respect to said support post to permit the height of the strike zone to be varied,
said first and second frame means being movable towards and away from each other to permit the flexible members on said first and second frame means to be moved towards one another or away fron one another.

4,451,037
MOBILE PUSHING EXERCISER
Thomas J. O'Hare, 81 Thornton Dr., Chalmette, La. 70043
Filed Mar. 2, 1981, Ser. No. 239,651
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—55 R **4 Claims**



1. A mobile pushing exerciser, which comprises:
a. a pushing carriage, said carriage being mounted on a wheel assembly; moveable along the ground;
b. means for providing a variable resistance to the movement of said pushing exerciser;
c. means for measuring pushing force when said pushing exerciser is manually moved along the ground, said means comprising:
i. at least one hand bar mounted on said pushing carriage for manually propelling said pushing exerciser along the ground when force is applied to said hand bar;
ii. means providing slidable engagement of said carriage on said exerciser allowing forward and backward slidable movement of said carriage relative to said exerciser when pushing force is applied to said carriage;
iii. means for restraining forward sliding movement of said carriage when said pushing force is applied thereto;
iv. a surface area rigidly connected to said carriage for receiving a chart thereonto, said surface being substantially parallel with the ground;
v. follow arm means moveable in a transverse direction for recording on said chart pushing force causing movement of said carriage when said exerciser is propelled forward;
d. means for measuring distance travelled by said pushing exerciser, wherein said means comprises;
i. a stylus drive screw rotatably mounted transverse to said carriage, said stylus drive screw allowing transverse movement of said follower arm means when said exerciser is moved longitudinally; and
ii. means associated with said stylus drive screw for rotating said stylus drive screw when said carriage is moved longitudinally;
e. means for recording said distance; and
f. means for measuring the duration of time that said pushing exerciser is manually pushed along the ground.

4,451,038
TRANSPARENT SPHERE WITH MOVEABLE DIVIDERS AND PIECES
Bela A. Nagy, 854 Ranchero Drive, San Marcos, Calif. 92069
Filed May 13, 1982, Ser. No. 377,692
Int. Cl.³ A63F *7/04*
U.S. Cl. 273—110 **4 Claims**

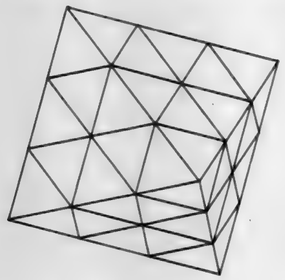


1. An amusement device comprising in combination:
a transparent sphere;
two freely rotating transparent flat discs within the housing dividing the sphere into an upper hemisphere and a lower hemisphere with openings for marbles or dice;
two arcuate segments dividing each hemisphere into four compartments each identified by a printed or scribed colored ball or die;
seven groups of glass or plastic marbles each of a different color;
a group of dice only one surface of each which has sharp edges to assist in moving the dice through the square opening;
and, an upper and lower handle located outside the disc fastened to the segments so that they will rotate with the handles.

4,451,039
MAGIC OCTAHEDRON
Clarence W. Hewlett, Jr., 920 Northgate Ave., Waynesboro, Va. 22980
Filed Feb. 9, 1982, Ser. No. 347,183
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **10 Claims**

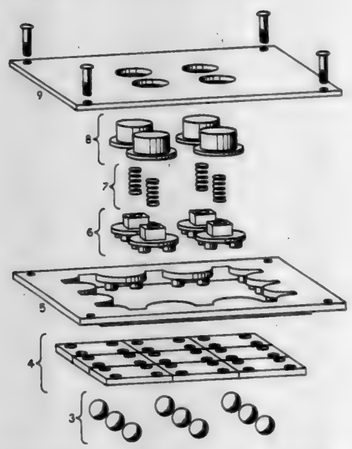
6. A mechanical puzzle comprising a plurality of component first units of a first shape and a plurality of component edge and corner second units of different shape wherein each of said second units have a larger number of faces than said first units,

a central member, means for retaining such component first and second units into a main unit about said central member having a given shape, comprising means for retaining each face of each component first unit adjacent to the face of a component second unit, to the face of said central member, or ex-



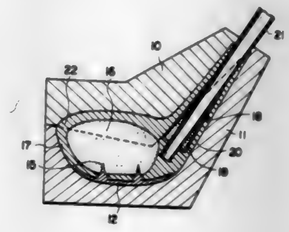
posed to the outside world, and for retaining each face of each component second unit adjacent to the face of a component first unit or exposed to the outside world but not adjacent to the face of said central member, and means for rotationally attaching interior faces of eight selected ones of said component first units at given angles to said central member.

4,451,040
TABULAR PUZZLE
Jonathan J. Ashley, 3367 N. McCall, Sanger, Calif. 93657
Filed Jun. 22, 1982, Ser. No. 391,165
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **1 Claim**



1. A puzzle comprising a rectangular array of square tablets inclosed in a frame and a tray, each of said tablets being marked with an index which establishes its identity and orientation; a number of knobs, one being at each point of said array where four tablets meet at a common corner, each of said knobs engaging its surrounding four tablets and, upon being depressed and rotated, depressing and rotating said four surrounding tablets, and, upon being released after a rotation by some multiple of 90°, popping up along with said four surrounding tablets to its original level above said tray.

4,451,041
GOLF CLUB HEAD AND A METHOD FOR MANUFACTURING THE SAME
Keijiro Hayashi, Takatsuki; Toshimi Awano, Ohogaki; Masayuki Yoshikawa; Kouzou Yazawa, both of Gifu, and Takashi Ito, Ohogaki, all of Japan, assignors to Mizuno Corporation, Osaka, Japan
Filed Feb. 4, 1983, Ser. No. 463,891
Claims priority, application Japan, Feb. 5, 1982, 57-18002; Feb. 18, 1982, 57-25629; Apr. 8, 1982, 57-59286
Int. Cl.³ A63B *53/06*
U.S. Cl. 273—167 H **9 Claims**

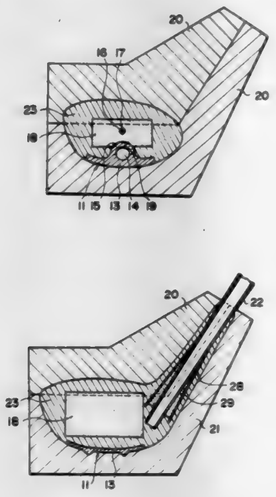


1. A golf club head comprising a shell of carbon fiber reinforced plastic comprising carbon short fibers impregnated with synthetic resin, a core embedded in said shell to reduce the head weight, a metal sole member positioned on the bottom of said shell and having a plurality of pins extending from the inner surface thereof through said shell into said core to position and retain said core in said shell and an upwardly converging neck reinforcement embedded in the neck portion of said shell.

4,451,042
GOLF CLUB HEAD OF CARBON FIBER REINFORCED PLASTIC
Keijiro Hayashi, Takatsuki; Toshimi Awano, Ohogaki; Masayuki Yoshikawa; Kouzou Yazawa, both of Gifu, and Takashi Ito, Ohogaki, all of Japan, assignors to Mizuno Corporation, Osaka, Japan
Filed Apr. 7, 1983, Ser. No. 482,726
Claims priority, application Japan, Apr. 7, 1982, 57-58630; Apr. 7, 1982, 57-58629
Int. Cl.³ A63B *53/06*
U.S. Cl. 273—171 **8 Claims**

1. A golf club head comprising a shell of carbon fiber reinforced plastic, a core embedded in the center portion of said shell to reduce the head weight, a metal sole member including integral side and sole portions so arranged as to cover the side and the bottom of said shell, respectively, projections on said

metal sole member inserted into said core to position and retain it in said shell, and pocket means in said metal sole member for



containing weights to be used for adjustment of the head or balance adjustment.

4,451,043

GOLF TRAINER

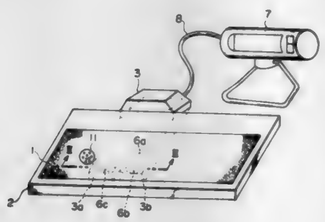
Koji Ogawa; Hiroaki Taguchi; Takao Tsutsumi; Yoshinori Yasuda, and Akio Takase, all of Gunma, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 419,093

Claims priority, application Japan, Sep. 16, 1981, 56-137219[U]; Jan. 21, 1982, 57-6199[U]; Jan. 21, 1982, 57-6201[U]

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—186 R **13 Claims**



1. A golf trainer, comprising:

a base on which a golf ball is placed,

one or more sensors installed in said base for detecting the moving state of a swinging club head to produce output signals,

means for receiving said detected output signals and processing these signals to display the same as various information relative to the club swing,

a sensor case distinct from said base for holding said sensors in position therewithin, and

one or more recesses formed in said base for removably installing said sensor case therein.

4,451,044

GOLF TRAINING AID

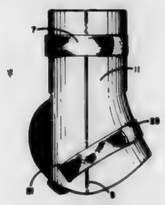
Denvier D. Elliott, Jr., 4512 Galaxy Ave., Las Vegas, Nev. 89102

Filed Oct. 5, 1981, Ser. No. 308,415

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—189 A **6 Claims**



1. In a golf training device for attachment to a golfer's forearm and wrist comprising a sleeve portion adapted to fit around the lower forearm and wrist, attachment means for retaining said sleeve portion in place and a hand restricting portion extending from the sleeve portion and fully overlying the back of the golfer's hand, said two portions generally comprising a rigid wall having its length extending from the golfer's lower forearm over first set of knuckles on the hand, the improvement therein which comprises a substantially straight hinge extending the entire length of the device approximately centrally located in said rigid wall and dividing said wall into first and second sections, means for connecting said first and second sections to said hinge, and fastening means for firmly holding the hand-restricting portion of the device immediately proximate to the back of the golfer's hand.

4,451,045

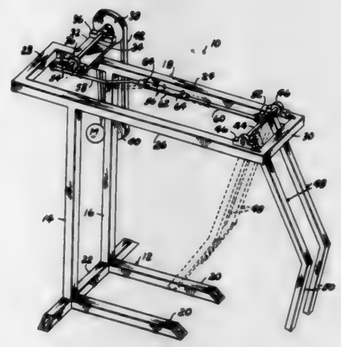
STEER OR CALF LEGS PRACTICE ROPING DEVICE

Charles E. Fesmire, P.O. Box 619, Helena, Okla. 73741

Filed May 16, 1983, Ser. No. 495,309

Int. Cl.¹ F41J *9/00*

U.S. Cl. 273—338 **5 Claims**



1. An animal rear leg practice roping device for a mounted roper, comprising:

upright open frame means including an elongated elevated top frame portion having forward and rearward ends horizontally supported in cantilever fashion;

pulley drive shaft means transversely overlying the forward end portion of said top frame;

motor means drivably connected with said pulley drive shaft means;

rock shaft means transversely overlying the other end portion of said top frame;

a pair of laterally spaced steer rear leg simulating arms connected with and depending from said rock shaft means; and,

rod means connecting said pulley drive shaft means with said rock shaft means for pivoting said leg simulating arms forwardly and rearwardly through an arc of predetermined magnitude.

4,451,046

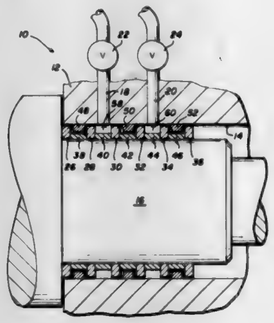
APPARATUS FOR SEALING BETWEEN A SHAFT AND HOUSING WITH MULTIPLE LAND MEMBERS AND SEAL MEMBERS

David L. Bliven, Connersville, Ind., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 20, 1982, Ser. No. 435,537

Int. Cl.³ F16J *15/44, 15/46*

U.S. Cl. 277—3 **4 Claims**



1. A shaft sealing system for use in apparatus including a shaft and a housing, through which the shaft extends, and wherein relative rotation occurs between the shaft and housing, said system comprising:

first, second, third, fourth, fifth and sixth annular land members located on the shaft and projecting toward the housing;

an annular spacer member positioned on the shaft between each of said first and second, third and fourth, and fifth and sixth land members;

an annular spacing member located on the shaft between said second and third land members and between said fourth and fifth land members;

first, second, and third generally annular seal members frictionally engaging the housing and respectively located between and in close proximity to said first and second, third and fourth, and fifth and sixth land members, respectively; and,

means for providing fluid at one pre-selected pressure between said second and third land members and at a different pre-selected pressure between said fourth and fifth land members whereby the pressure differential across each seal member can be controlled.

4,451,047

SEAL

David P. Herd, and Duane E. Gibson, both of Houston, Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Continuation of Ser. No. 288,742, Jul. 31, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,533

Int. Cl.³ F16J *15/18*

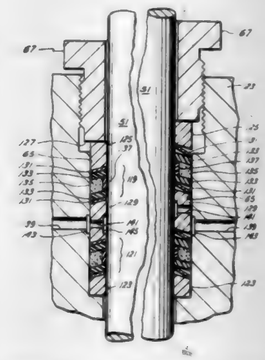
U.S. Cl. 277—26 **20 Claims**

1. Apparatus for sealing in high pressure, temperature cycled applications between the walls of an axially movable valve stem and a stuffing box around the valve stem, the stuffing box having a port in its bottom and the valve stem extending through the port and out of the stuffing box, such sealing apparatus being preloaded to a stress higher than the stress expected to be encountered in service, comprising:

first and second elastic metal ring gaskets disposed in such stuffing box around such valve stem, each gasket being compressed into metal-to-metal sealing engagement with both of such walls, and

annular compliant seal means disposed in such stuffing box around such valve stem and sandwiched between said gaskets,

said seal means including first and second annular portions of tough, compliant material adjacent said first and second



gaskets, respectively, each annular portion being compressed into sealing engagement with both of such walls, and a core portion disposed between said first and second portions and composed of a material having a lower coefficient of thermal expansion than said material of said first and second annular portions, the relative volume of said core portion with respect to said first and second annular portions being such that upon such temperature cycling, the thermal expansion of said annular compliant seal means is less than that which would cause loss of such preload stress.

4,451,048

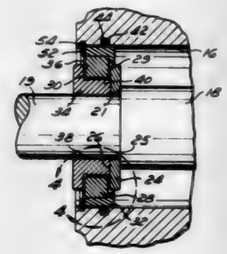
HIGH SPEED SHAFT SEAL

Steve J. Pick, 10551 Park Villa La., Villa Park, Calif. 92667

Filed Sep. 28, 1982, Ser. No. 425,562

Int. Cl.³ F16J *15/34, 15/48*

U.S. Cl. 277—27 **11 Claims**



1. A dynamic shaft seal for bidirectional restriction of fluid flow along a rotating shaft, comprising:

a first ring having a central opening for fluid-tight mounting of said ring on said shaft for rotation, said first ring having a flat radial face providing an axially directed sealing surface;

a second ring having a central opening for fluid-tight mounting of said ring on said shaft for rotation, said second ring having a flat radial face to provide an axially directed

sealing surface, said second ring face opposing said first ring face;

means for spacing said second ring face a measured distance from said first ring face;

a disc having substantially flat radial sides providing axially directed sealing surfaces adapted to engage said flat face of said first and second ring, said disc sized narrower in width than said measured distance to allow said disc a range of axial movement such that a side of said disc may contact a face of one or the other of said first or second rings, said disc having a central opening through which said shaft extends which is sized to provide a clearance for restriction of fluid flow therethrough without frictional contact;

means for sealing fluid flow past the outer circumferential surface of said disc, said sealing means permitting axial movement of said disc for contact with one or the other of said first or second rings; and

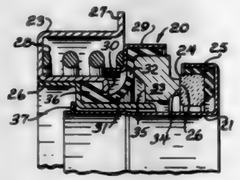
positive stop means for prohibiting rotation of said disc with said first and second rings, whereby said disc is axially moved by force of a pressure differential across said disc to make bearing contact between a sealing surface of said disc and a sealing surface of one or the other of said first or second rings to form a contact seal prohibiting fluid flow along said shaft.

4,451,049

FACE SEAL

Frank J. Charhut, Northfield, Ill., assignor to Chicago-Allis Mfg. Corp., Chicago, Ill.

Division of Ser. No. 159,808, Jun. 16, 1980, abandoned. This application May 6, 1982, Ser. No. 375,397
Int. Cl.³ F16J 15/34
U.S. Cl. 277—42 7 Claims



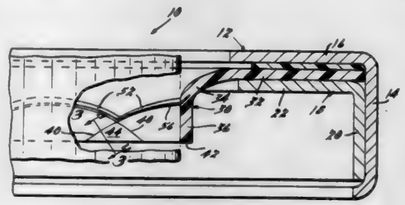
1. In a face seal cartridge assembly for sealing a rotatable shaft in a fluid filled housing, said assembly consisting of a rotor portion for securement on said shaft and a stator portion for securement in said housing, said portions being connected together in a unitized arrangement, said assembly adapted for compressible positioning in said housing on said shaft within a designed working heighth tolerance dimension, each portion having a sealing face, the sealing face of one portion being in face to face abutment with the sealing face of said other portion, the sealing face of said one portion being carried by an annular sealing ring having an annular recess therein, a resilient membrane contained within said one portion adapted for flexing within said dimension, spaced apart holding means maintaining said membrane within said dimension, one end of said holding means having first collar means securing one end of said membrane, the other end of said holding means having second collar means engaging the other end of said membrane over said sealing ring, a spring arranged between and having an end bearing on each of said collar means, each end of said holding means being free to move axially responsive to an axial deflection of the shaft relative to the housing, and a deformable bellows on said membrane between the ends of said holding means retained folded and adapted for flexing into said recess within said dimension for taking up and dampening torque transmitted from said sealing faces during rotation of said rotor portion relative to said stator portion.

4,451,050

BI-DIRECTIONAL HYDRODYNAMIC SLITTED SEAL

James A. Repella, Berkley, Mich., assignor to Microdot Inc., Darien, Conn.

Continuation-in-part of Ser. No. 322,640, Nov. 18, 1981, abandoned. This application May 16, 1983, Ser. No. 494,817
Int. Cl.³ F16J 15/32, 15/54
U.S. Cl. 277—134 8 Claims



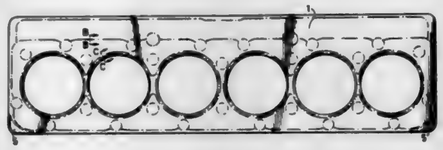
1. A bi-directional hydrodynamic oil seal comprising an annular case, and a thin washer-like seal element having a radially outer portion supported by said case and a generally cylindrical radially inner portion adapted to engage a shaft, the radially inner portion of said seal element having a plurality of generally arcuate slits in the surface thereof that extend at an acute angle relative to the central axis of the shaft and divergent from the oil side of said seal and intersect the radially inner edge of said seal element to effect hydrodynamic pumping in conjunction with a rotating shaft.

4,451,051

CYLINDER HEAD GASKETS

Terence P. Nicholson, Calf Hall, Muggleswick, Derwentside, County Durham, England

Filed May 18, 1982, Ser. No. 379,443
Int. Cl.³ F16J 15/08
U.S. Cl. 277—235 B 2 Claims



1. A gasket for sealing the joint between the cylinder block and the cylinder head of a dry liner internal combustion engine and comprising a first outer metal plate intended to be placed next to said cylinder block, a second outer metal plate and a central composite metal plate disposed between the first and second outer plates, said central plate comprising a central soft metal layer and hard metal surface layers integral therewith, the outer plates having at least one wave form corrugation therein, characterised in that between each of the cylinder bore openings in the gasket at least one shim is welded to the surface layer of the side of the central composite metal plate adjacent said first outer metal plate.

4,451,052

INTEGRAL CYLINDER LIFT MECHANISM

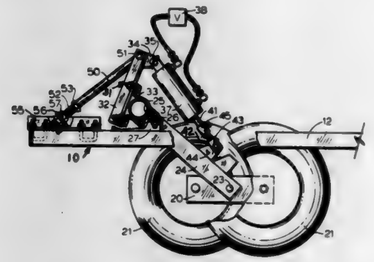
Martin J. Gagelin, Wahpeton, N. Dak., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Nov. 5, 1981, Ser. No. 318,385
Int. Cl.³ A01B 63/22
U.S. Cl. 280—43.23 9 Claims

1. In an implement lift mechanism comprising a vehicle frame, support wheel means for said frame, an axle leg mounting said support wheel means at a first end thereof, said axle leg having a second end thereof rotatably mounted relative to the frame, the improvement comprising:

a mast assembly rotatably mounted on the frame about the same axis as the axle leg and extending upwardly therefrom;

first link means connected between said mast assembly and said frame, said first link means being adjustable to permit adjusting the position of the mast assembly; and



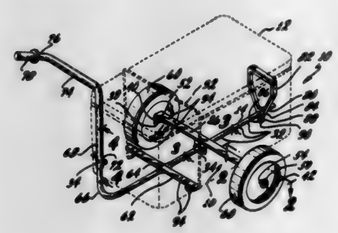
second link means extending between said mast assembly and said axle leg, said second said link means comprising an extendable and retractable hydraulic cylinder to cause the axle leg to rotate about its axis of mounting, the second link means carrying the load from the axle leg to the mast and the first link means reacting the load from the rotatably mounted mast assembly to the frame.

4,451,053

HAND CART

Daniel Alioa, 13735 McKenzie Ave., and Richard E. Stevens, 13727 McKenzie Ave., both of Poway, Calif. 92064

Filed Oct. 13, 1981, Ser. No. 310,490
Int. Cl.³ B62B 1/12
U.S. Cl. 280—47.26 6 Claims



1. An improved load bearing hand truck comprising:

a single longitudinal support member having an upwardly curved end;

a first and second load support member, said members positioned substantially transverse to and carried by said single longitudinal support member, said first load support member to rotatably secured to said single longitudinal support for rotation thereabout and rotatably supporting a wheel on each outer end thereof, said second load support member being spaced from said first load support member toward said upwardly curved end;

a handle member removably attached to the upwardly curved end of said single longitudinal support member and extending therefrom in a first direction, angled upwardly in a second direction and downwardly in a third direction forming a handle on the distal end thereof; and

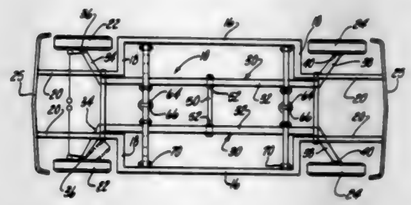
a single load steadying member carried by and sectionally positionable along said single longitudinal support member for adjustment to load size, said load steadying member is positionable between said first load support member and the distal end of said single longitudinal support member.

4,451,054

VEHICLE SUSPENSION SYSTEM

William D. Allison, 39 Randor Clr., Grosse Pointe Farms, Mich. 48236

Filed May 11, 1982, Ser. No. 377,084
Int. Cl.³ B60G 11/08
U.S. Cl. 280—104 11 Claims



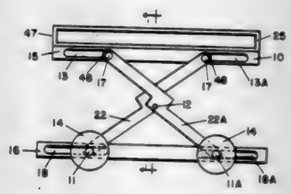
1. A suspension system for the body of a wheeled vehicle comprising: a pair of elongated longitudinally extending and spaced apart rails, said pair of rails each supporting ground engaging wheels at opposite ends, a transverse beam having opposite ends supported relative to said rails for oscillation of said rails about the axis of said transverse beam separately of each other, leaf spring means extending transversely of and having end parts extending outwardly of said rails, means connecting spaced portions intermediate of the ends of said leaf spring means to said rails, additional means connecting opposite ends of said spring means to opposite sides of said body whereby ground engaging loads and movement imposed on said wheels at one end of one of said rails is transmitted to wheels at the other end of said one of said rails and through said leaf spring means and said transverse beam to the wheels associated with said other rail, said wheels being simultaneously moveable in substantially parallel planes in response to displacement of any one of said wheels and said body being resiliently supported relative to said rails by said end parts of said leaf spring means.

4,451,055

PROPULSION MEANS ACTUATED BY WEIGHT

Robert E. Lee, 479 Dean St., Brooklyn, N.Y. 11217

Filed Apr. 11, 1978, Ser. No. 895,511
Int. Cl.³ B62M 1/00; A63C 17/12
U.S. Cl. 280—221 2 Claims



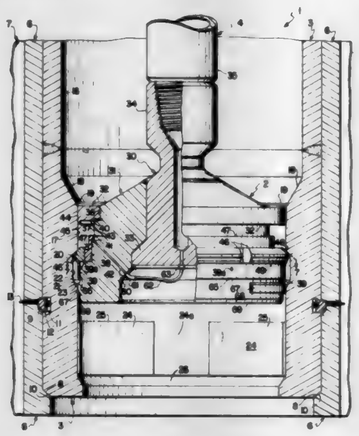
1. In a weight carrier propelled by the oscillation of weight consisting of a lower frame member and an upper frame member; and slots in the upper frame member for guides and slots in the lower frame member for axles; two pair of pivotable arms extending from the guides in the upper frame member to the axles in the lower frame member; clutched pinions mounted on the lower axles; and racks fixedly mounted on the said lower frame member; wherein said clutched pinions engage the said racks when weight forces the upper load frame member downward and forces the axles to turn.

4,451,056

REMOTELY OPERATED UNDERWATER TENSION CONNECTOR

Edward M. Galle, Jr., Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed July 18, 1980, Ser. No. 170,970
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—3 21 Claims



1. In a remotely connectable and remotely releasable connector for securing an elongated generally upright upper member to a lower member in such fashion that large tension loads can be applied from one member to the other via the connector, the combination of

a female connector member to be secured to one of the upper member and the lower member and having

a bore having a generally cylindrical wall, said bore being open at one end,

a generally frustoconical entry guide surface located at said one end, the entry guide surface being concentric with the bore and tapering inwardly and toward the opposite end of the bore,

the wall of the bore including a transverse first load-bearing shoulder spaced from the entry guide surface and facing generally toward said opposite end of the bore;

a male connector member to be secured to the other of the upper member and the lower member and having

a generally cylindrical outer surface dimensioned to be telescopically disposed in the bore of the female member, and

a transverse annular outwardly opening recess defined by a first side wall, a second side wall constituting a second transverse annular load-bearing shoulder, and an inner surface which is generally concentric with the longitudinal axis of the male member and extends between said side walls, said first and second side walls being spaced apart axially of the male connector member with the first side wall being nearer the entry guide surface and the second side wall being farther from the entry guide surface when the male member is so telescopically disposed in the female member that both side walls are with said bore, said second load-bearing shoulder then being so disposed as to face toward said first load-bearing shoulder

annular stop means disposed in said outwardly opening recess and having a third load-bearing shoulder and a fourth load-bearing shoulder,

said third and fourth load-bearing shoulders facing generally away from each other with said fourth shoulder facing toward said second shoulder,

the annular stop means being radially distortable between an outer position, in which the stop means has a larger diameter and the outer diameter of said third load-bearing shoulder is substantially greater than the inner diameter of said first load-bearing shoulder, and an inner position, in which the stop means has a smaller diameter and the outer diameter of said third load-bearing shoulder is less than the inner diameter of said first load-bearing shoulder,

said third load-bearing shoulder being of such shape and dimensions as to be capable of flush engagement with said first load-bearing shoulder when the lock means is in its outer position,

the annular stop means being resiliently biased toward said outer position whereby the stop means will expand to its outer position when not restrained by the bore wall of the female connector member,

relative axial movement of the male and female connector members in a direction to bring said members into telescopic engagement causing the annular stop means to engage the entry guide surface of the female connector member, the female connector member, annular stop means and male connector member having coacting means, operative on continuation of the relative movement of the connector members, to contract the annular stop means toward said inner position and thereby allow the stop means to traverse the bore of the female connector member until the stop means reaches said first load-bearing shoulder and can expand under the influence of the resilient bias toward said outer position, whereupon said first and third load-bearing shoulders will then be mutually engaged when a tension load is applied in a direction tending to withdraw the male connector member from the female connector member, at least one of the female connector member, annular stop means and male connector member being constructed and arranged for prevention of movement of the annular stop means toward its inner position when the first and third load-bearing shoulders are mutually engaged and such tension load is applied, whereby such mutual engagement of said first and third load-bearing shoulders prevents relative axial movement of the male and female connector members under such tension load,

the transverse dimensions of the male connector member and the bore of the female connector member being such as to allow additional relative axial movement of the connector members in said direction to bring the annular stop means to a position substantially beyond the first load-bearing shoulder; and

means carried by one of the connector members and responsive to said additional relative axial movement for at least conditioning the annular stop means for movement to its inner position.

4,451,057

FOOT-REST DEVICE FOR MOTORCYCLES

Louis L. Lawson, 5826 Riva Ridge Dr., Indianapolis, Ind. 46227

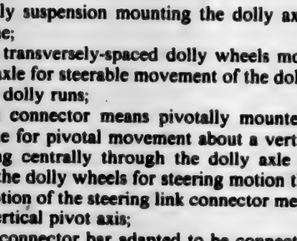
Filed Jan. 25, 1982, Ser. No. 342,067
Int. Cl.³ B62J *25/00*
U.S. Cl. 280—291 5 Claims

1. A foot-rest device for a motorcycle or the like device in which two riders may sit one behind the other, one rider being the driver and the other rider being the passenger, the motorcycle or like device being provided with forward and rearward support means, and having a forward seat for support of the driver, and having a rearward seat for support of a passenger, and the passenger seat being higher than that of the driver's seat, the foot-rest device comprising:

a pair of foot-rest body members, one being a forward one and the other being a rearward one,

interconnection means by which the two foot-rest body members are rigidly interconnected but at different heights, the rearward one of the body members being higher than the forward one of the body members, corresponding to the relative heights of the driver's seat and of the passenger's seat; and

support means for supporting the rigid assembly of the pair of foot-rest body members and the interconnection means from the motorcycle device's support means, with the



support of the forward one of the foot-rest body members by the motorcycle device's forward support means thus contributing to the support of the rearward one of the foot-rest body members, and the support of the rearward one of the foot-rest body members by the motorcycle device's rearward support means also contributing to the support of the forward one of the foot-rest body members.

4,451,058

TRANSPORT CONVERTER DOLLY WITH FORCED STEERING

Norman R. Curry, 3493 Rubens Ct., Burlington, Ontario, Canada L7N 3K3

Filed Feb. 3, 1982, Ser. No. 345,432
Int. Cl.³ B62D *13/04*
U.S. Cl. 280—423 A 8 Claims

1. A transport dolly for the tandem connection of a rearward vehicle to a forward vehicle comprising:

a dolly frame receiving the forward end of the rearward vehicle;

a dolly axle;

a spring dolly suspension mounting the dolly axle on the dolly frame;

at least two transversely-spaced dolly wheels mounted by the dolly axle for steerable movement of the dolly and on which the dolly runs;

steering link connector means pivotally mounted on the dolly frame for pivotal movement about a vertical pivot axis passing centrally through the dolly axle and connected to the dolly wheels for steering motion thereof by pivotal motion of the steering link connector means about the said vertical pivot axis;

a transverse connector bar adapted to be connected to the rear of the forward vehicle so as to be in fixed orientation in the horizontal plane relative to the forward vehicle, and to change its orientation in the horizontal plane relative to the dolly frame as the forward vehicle traverses a turn;

longitudinal towing connector means having one end connected to the dolly frame and the other end pivotally connected at a respective towing pivot point to the transverse connector bar for towing connection of the two vehicles; and

steering connection means comprising at least one logitudinal steering connector, each pivotally connected at one end to the transverse connector bat at a respective steering pivot point transversely spaced from the towing pivot point and connected at the other end to the steering link connector means at a corresponding steering pivot point transversely spaced from the vertical pivot axis for steering motion of the steering link connector means about the vertical pivot axis and corresponding steering motion of the dolly wheels upon displacement between the two vehicles in the horizontal plane as they traverse a turn.

4,451,059

HEELHOLDER FOR SAFETY SKI BINDINGS

Walter Knabel, Murnau; Ludwig Wagner, Farchant, and Roland Jungkind, Garmisch-Partenkirchen, all of Fed. Rep. of Germany, assignors to MARKER-Patentverwertungsgesellschaft mbH, Baar, Switzerland

Filed Feb. 9, 1982, Ser. No. 347,193
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105294
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—632 6 Claims

1. A heelholder for a safety ski binding, said heelholder comprising:

wall means;

a soleholder pivotally mounted on said wall means for movement between open and closed positions, said soleholder being biassed towards the open position and movable to the closed position upon insertion of the heel of a boot into the binding;

lever means mounted on said soleholder and movable between an obstructed position for releasably holding said soleholder in the closed position and an unobstructed position for enabling voluntary movement of said soleholder to the open position;

first locking means mounted on said wall means in the path of said lever means and movable between a locking position for releasably blocking said soleholder in the closed position and a releasing position for releasing said soleholder to the open position in response to predetermined forces applied to said soleholder and transmitted by said lever means to said first locking means;

release controlling spring means for biassing said first locking means towards said locking position;

second locking means pivotally mounted on said wall means and movable between a blocking position for blocking said lever means against movement from said obstructed position and an unblocking position for enabling movement of said lever means to the unobstructed position, said second locking means being biassed towards said blocking position; and

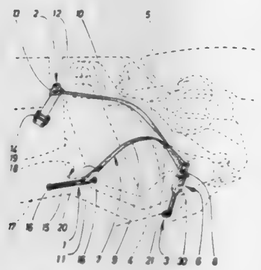
voluntary release means for moving said second locking means from said blocking position to said unblocking position, said voluntary release means including a first toggle member pivotally mounted on said soleholder between inactive and active positions and a second toggle member pivotally mounted on said first toggle member for actuating said second locking means, said second toggle member moving said second locking means to the unblocking position in response to movement of said first toggle member to said active position, to enable the movement of said soleholder to the open position without overcoming the force of said release controlling spring.

4,451,060

DEVICE FOR VEHICLE SAFETY BELTS

Hans Sylvén, Vårgårda, Sweden, assignor to AB Stil-Industri, Vargarda, Sweden

PCT No. PCT/SE81/00181, 371 Date Feb. 12, 1982, 102(e) Date Feb. 12, 1982, PCT Pub. No. WO81/03619, PCT Pub. Date Dec. 24, 1981
PCT Filed Jun. 17, 1981, Ser. No. 348,487
Claims priority, application Sweden, Jun. 18, 1980, 8004512
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—801 **5 Claims**



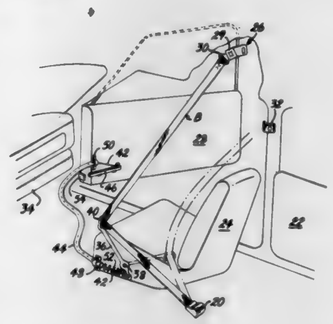
1. A vehicle comprising, in combination:
(1) a body;
(2) a seat in the body to carry a person; and
(3) a safety belt for the person occupying the seat, comprising
(a) a belt strap;
(b) an upper belt strap mounting in the body adjacent an upper part of the seat at one side thereof and forming a guide bracket through which the belt strap slides;
(c) a reeling device mounted to said body and connected to one end of the belt strap for pulling the belt strap through the guide bracket into the reeling device;
(d) a lower belt strap mounting in the body adjacent a lower part of the seat at said one side thereof and forming an elongated bracket extending lengthwise in the travel direction of the vehicle;
(e) an eye formed by the other end of the belt strap slidably embracing and anchored to the elongated bracket;
(f) a connecting device located at the other side of the seat for releasably anchoring a part of the belt strap extending between the lower and upper mountings; and
(g) a stop on the belt strap for engagement with the upper mounting and thus limiting wind up of the belt strap on the reel when the belt strap is pulled into the reeling device and located at a spacing from said other end of the belt strap in excess of the spacing between the upper mounting and the elongated bracket;
the eye of the belt strap being slidable along the elongated bracket between a first position when the belt strap is anchored to the connecting device; and a second position when the belt strap is released from the connecting device and pulled into the reeling device; the spacing of the first and second positions along the elongated bracket being sufficient to enable the belt strap to be moved aside by sliding the eye along the bracket and thereby facilitate movement of a person into and out from the seat.

4,451,061

BELT TRANSFER ARRANGEMENT FOR A PASSIVE VEHICLE RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi, Setagayakuku, Tokyo, Japan

Division of Ser. No. 118,841, Feb. 5, 1980, abandoned. This application Dec. 28, 1981, Ser. No. 334,984
Claims priority, application Japan, Mar. 6, 1979, 54-27531; Mar. 24, 1979, 54-37409
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **3 Claims**



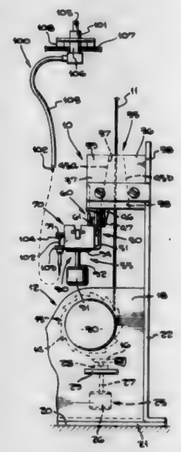
1. A belt transfer arrangement for use in a passive vehicle restraint belt system comprising an arm mounted adjacent the inboard side of the vehicle seat for rotation about a pivot axis for movement of its upper end between a rearward restraining position adjacent the back of the seat and a forward releasing position, and having a guide ring adjacent its upper end through which a restraint belt freely passes, and transfer means coupled between the arm and the vehicle door for moving the upper end of the arm between the rearward position and the forward position in response to movement of the door between the closed position and a partway open position, and including a drive wire coupled between the vehicle door and the arm for transmitting door motion to the arm, a wire sheath slidably receiving the wire and fastened at both of its ends to constrain the wire for motion transfer, a spring means compressed, when the arm is in the rearward restraining position, between a lower end of the arm beneath its pivot axis and a fixed location on the seat forward of the arm, and a lost motion coupling for enabling the door to be moved between the partway open position and a fully open position without imparting further movement to the arm, the lost motion coupling comprising a rod connected to the end of the drive wire and adapted to move the drive wire relative to the wire sheath while the door moves between the closed position and the partway open position, the rod being slidably mounted on the door and the end of the wire sheath near the rod being fastened to the door, wherein when the door is moved from the closed position to the partway open position the spring means moves the arm into the forward releasing position, and wherein when the door is moved from the partway open position to the closed position the rod pulls the wire against the operation of the spring means to move the arm into the rearward restraining position.

4,451,062

AUTOMATIC LOCKING SAFETY BELT RETRACTION APPARATUS WITH RESETTING MEANS

Avraham Ziv, Sepulveda, Calif., assignor to American Safety Equipment Corporation, Troy, Mich.

Filed Aug. 20, 1981, Ser. No. 294,820
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—806 **3 Claims**



1. In a safety belt webbing emergency locking apparatus, for restraining a vehicle passenger in his seat, of the type having clamping means including one or more wedge shaped clamp members for clamping directly upon the webbing, biasing means for biasing said clamping means to a webbing clamping position preventing safety belt movement, releasable retaining means for normally holding said clamping means in a webbing release position against the bias of said biasing means and vehicle inertia sensor means for operating said releasable retaining means to release said clamping means to clamp said webbing preventing further movement thereof due to the bias of said biasing means, the improvement comprising the provision of:
reset means for resetting said retaining means to move said clamping means to said webbing release position and and hold it in said position against the bias of said biasing means in response to operation of another part of the vehicle, such as the vehicle door, by said vehicle passenger in predetermined manner.

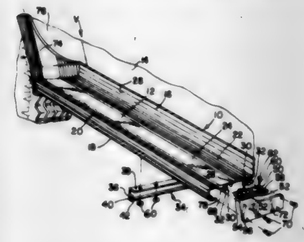
4,451,063

RUNNING BOARD CONSTRUCTION

Steven A. Snyder, Constantine, Mich., assignor to Coachmen Industries, Inc., Middlebury, Ind.

Continuation-in-part of Ser. No. 348,507, Feb. 12, 1982. This application Jun. 9, 1982, Ser. No. 386,755
Int. Cl.³ B60R *3/00*
U.S. Cl. 280—163 **19 Claims**

1. In a running board construction for mounting on a vehicle including an elongate deck, mounting means for substantially horizontally mounting said deck to the vehicle, said mounting means including at least one elongate bracket means for extending beneath and substantially transverse to the deck, said bracket means also being attachable to the frame of the vehicle, and fastener means for fastening said elongate bracket means to the underside of the deck, wherein the improvement in said fastener means comprises:
a channel mounted on the underside of said deck, said channel including a pair of walls substantially spaced transversely from and parallel to each other on said deck and extending downwardly from the underside of said deck, and a pair of inward turned lips on said walls extending toward each other;
a plate of substantial length in a direction transverse of said deck and extending between said walls transversely of said deck and slidably supported upon said lips, and



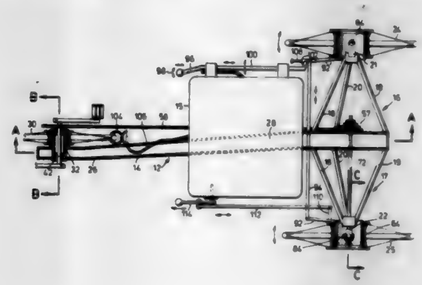
stud means extending downwardly from said slidable plate for attaching said plate to said bracket means and drawing said plate downwardly against said lips, the length of said plate being substantially greater than the transverse dimension of said stud means.

4,451,064

TRICYCLE

Robert D. Perkins, 41 Roxborough St. East, Toronto, Ontario, Canada M4W 1V5

Filed Jul. 12, 1982, Ser. No. 397,366
Int. Cl.³ B60K *5/04*; B60M *3/00*
U.S. Cl. 280—259 **9 Claims**



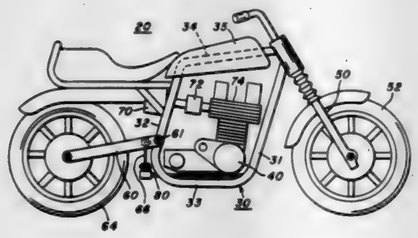
1. A tricycle comprising:
a frame having front and rear end portions and a rider support seat, a pair of laterally spaced rear wheels journalled for rotation in the rear end portion of the frame, rider operable steering mechanism for pivoting the rear wheels for steering the tricycle,
a single front wheel which has a central hub and which is mounted for free rotation on the front end portion of the frame, and
rider operable means for driving at least one of said rear wheels and comprising drive means journalled for rotation independently of the front wheel about a horizontal axis which is disposed through the hub of said front wheel, driven means, and connection means so operatively connecting the driven means to said at least one rear wheel that said at least one rear wheel may be rotated by said driven means while being pivoted for steering of the tricycle,
said drive means being provided with foot pedal cranks, and said drive and driven means being adapted to be engaged by a drive coupling for driving said driven means.

4,451,065

TORSION SUSPENSION SYSTEM FOR MOTORCYCLES

John E. Williams, Jr., Duquesne, Pa., assignor to AAKAC Industries, Inc., Apollo, Pa.

Filed Jun. 18, 1982, Ser. No. 389,664
Int. Cl.³ B62K *25/28*
U.S. Cl. 280—284 21 Claims



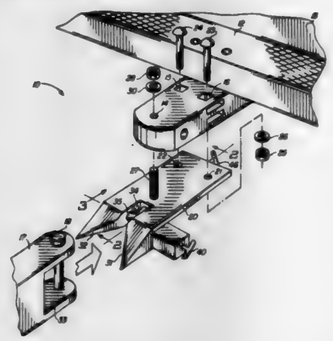
1. A suspension system suitable for motorcycles comprising:
(a) a frame and a motor;
(b) a swing arm, having a pivot point on one of the frame and the motor, comprises at least one arm supporting a wheel, the swing arm permitting the wheel to rotate about a generally horizontal axis and to move in a generally vertical direction with respect to the pivot point axis of said swing arm;
(c) a torsion bar suspension member having a first end portion and a second end portion and mounted at an angle with respect to the pivot point axis, the first end portion secured to one of said frame and said motor, and said second end portion being rotatably carried by one of said frame and said motor;
(d) a lever arm having a first end and a second end, the first end rigidly attached to said torsion bar; and
(e) a linkage means pivotally connected to said swing arm and to said second end of said lever arm, said swing arm, linkage means, lever arm and torsion bar connected such that movement of the swing arm displaces said linkage means thereby forcing said lever arm to twist said torsion bar, the linkage means and the lever arm connected so as to provide an apparent increase in spring rate of the torsion bar as the wheel displaces the swing arm.

4,451,066

HITCH ASSEMBLY

Edmond R. Collins, Rte. #1, Box 103-A, Pitts, Ga. 31072

Filed Aug. 16, 1982, Ser. No. 408,138
Int. Cl.³ B60D *1/02*
U.S. Cl. 280—508 6 Claims



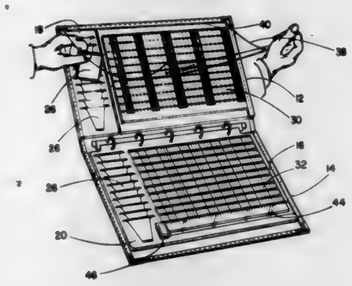
1. A hitch adaptor assembly to convert a manual hitch to an automatic hitch comprising in combination:
a frame having angled guides formed thereon to guide a trailer hitch pin on a trailer tongue into the hitch frame;
a frame attaching means including threaded members adapted to connect said frame to an existing hitch with a portion of said frame protruding in front of said existing hitch;
a spring loaded hitch locking bolt mounted to said frame spring biased to close behind a trailer hitch pin positioned in said frame;
a spring loaded catch bolt for holding said spring loaded hitch locking bolt in a cocked position, said spring loaded catch bolt being biased into the path of said locking bolt and in the path of a trailer pin being guided into said frame by said angled guides, whereby a manual trailer hitch can be easily converted to an automatic hitch.

4,451,067

COMPREHENSIVE, CENTRAL SCHEDULING FOLDER FOR PROJECT MANAGEMENT

Marvin E. Williams, 1318 Brairmeadow Dr., Worthington, Ohio 43085

Filed Jun. 1, 1982, Ser. No. 383,501
Int. Cl.³ B42D *3/18, 17/00*
U.S. Cl. 281—31 6 Claims



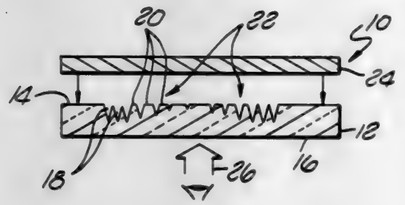
1. An improved management scheduling folder of the type having a front panel hingedly connected to a rear panel and having at least one intermediate panel hingedly connected intermediate the front and rear panels, wherein the improvement comprises the combination of:
(a) a plurality of project cards having selected, identical dimensions;
(b) a plurality of panel surfaces formed on said panels, each panel surface having a plurality of card-receiving pockets arranged in a column and spaced and aligned to position cards received in said pockets in overlapping arrangement to expose a portion of each received card, said exposed portion having a height equal to the spacing of said pockets; and
(c) a scheduling calendar mounted to each panel surface beside each column of pockets, each calendar having a chart portion having a plurality of parallel lines each extending laterally of said column of pockets and substantially aligned with an exposed edge of a different card positioned in said pockets such that information transcribed in each of said laterally extended lines of said calendar relates to the data of a single exposed project card which has said exposed edge aligned with that laterally extended line, each calendar also having a plurality of spaced lines substantially parallel to the longitudinal axis of said column of pockets to form columns of spaces intersected by said lateral lines, said columns of spaces being labelled with sequential time/calendar intervals.

4,451,068

ENGRAVED IMAGE IDENTIFICATION CARD WITH OPAQUE COVER LAYER

John S. Hall, and Barry C. Phelps, both of Sacramento, Calif., assignors to California Interface and Software Limited Partnership, Sacramento, Calif.

Filed Dec. 14, 1981, Ser. No. 330,348
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—75 7 Claims



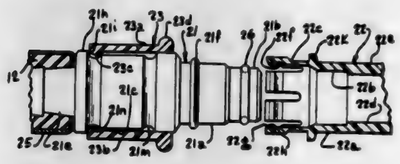
1. A two-layer engraved identification card comprising:
a translucent, single layer, planar member having a first major surface and a second major surface opposite the first major surface, the first major surface having an image engraved therein to define engraved regions and non engraved regions for generating an observed image on the translucent planar member the engraved regions being entirely contained in the translucent single layer planar member; and
a non-engraved opaque planar member abutting directly against and covering one of the first and second major surfaces for enhancing the contrast between the non-engraved and the engraved regions whereby the observed image is more readily seen, the other of the first and second major surfaces being completely uncovered.

4,451,069

QUICK CONNECT FLUID COUPLING

Robert R. Melone, Rockford, Ill., assignor to Smith Investment Company, Belvidere, Ill.

Filed Aug. 9, 1982, Ser. No. 406,721
Int. Cl.³ F16J *15/00*; F16L *37/18*
U.S. Cl. 285—86 7 Claims



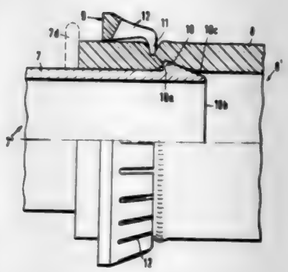
1. A quick connect fluid coupling for detachably connecting two parts on a common axis comprising, a male member adapted to form the termination of a first part and a female member adapted to form the termination of a second part, the female member having an intermediate portion defining an annular internal seal wall and a plurality of circumferentially spaced radially resilient fingers extending in cantilever fashion from the intermediate portion to the distal end of the female member, the male member having an annular intermediate portion dimensioned to be received inside the resilient fingers on the female member and an annular nose portion at the free end of the male member dimensioned for reception in the internal seal wall on the female member, annular seal means between the annular nose portion and the annular seal wall for sealing the interface therebetween, a first shoulder means on the outer side of the intermediate portion of the male member and a second shoulder means on the inner side of the fingers on the female member adjacent the free end thereof for engagement with the first shoulder means on the male member when the nose portion on the male member is positioned in the internal seal wall on the female member, a locking sleeve having a circumferentially continuous ring portion and a plurality of circumferentially spaced radially resilient fingers extending in cantilever fashion from the ring portion, the ring portion of the locking sleeve being dimensioned to surround the fingers on the female member when the locking sleeve is in a first locking position and radially confine the fingers at a position in which the second shoulder means is in locking engagement with the first shoulder means to lock the male member against axial withdrawal from the female member, the locking sleeve being slidably mounted on one of said members for movement from said first locking position to a second release position in which the ring portion is spaced axially from the free ends of the fingers on the female member, the fingers on the sleeve having third shoulder means on the inner side thereof adjacent their free ends, said one of said members having fourth shoulder means at a location thereon to engage the third shoulder means on the locking sleeve when the sleeve is in said first locking position thereof, said one of said members having a fifth shoulder means thereon at a location to engage said third shoulder means on the locking sleeve when the sleeve is in its said second release position thereof, said resilient fingers on the locking sleeve resiliently biasing the third shoulder means thereon radially inwardly into engagement with said fourth and fifth shoulder means when the locking sleeve is in said first locking position and said second release position respectively, the third shoulder means and the fourth shoulder means having cam surfaces shaped to cam the fingers in the sleeve outwardly when axial force is applied to the sleeve in a direction to move the sleeve from the first locking position to the second release position and the third shoulder means and the fifth shoulder means having cam surfaces shaped to cam the fingers on the sleeve outwardly when axial force is applied to the sleeve in a direction to move the sleeve from the second release position to the first locking position.

4,451,070

HOSE COUPLING

Heinz Sauer, Ronneburg, Fed. Rep. of Germany, assignor to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,186
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010425
Int. Cl.³ F16L *33/22*
U.S. Cl. 285—242 32 Claims

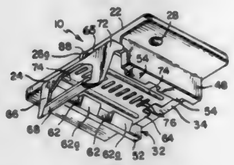


1. A hose coupling comprising:
(a) a pipe having a first end portion provided with an end face and an external, circumferentially extending, ring-shaped collar;
(b) a hose fabricated from a material which can be permanently deformed upon the application of heat and pressure, said hose having a second end portion which surrounds said first end portion, the outer diameter of said second end portion in undeformed condition thereof exceeding the outer diameter of said collar and the inner diameter of said second end portion in undeformed condi-

tion thereof being less than the outer diameter of said collar and less than the outer diameter of said first end portion; and

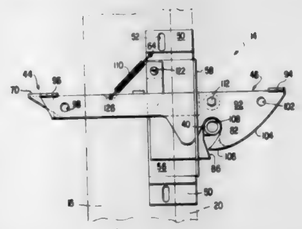
(c) a one-piece, ring-shaped clamping device having one internal, ring-shaped bead, the length of said one bead being substantially less than the length of said clamping device, and the inner diameter of said clamping device at said one bead exceeding the outer diameter of said collar and being less than the outer diameter of said second end portion in undeformed condition of the latter, the wall thickness of said second end portion in undeformed condition thereof exceeding half the difference between the inner diameter of the clamping device at said one bead and the outer diameter of said collar, and said clamping device being designed to be mounted on said second end portion before the latter surrounds said first end portion and to be passed over said collar together with said second end portion by relative axial movement of said end portions to thereby generate a compressive force for urging said second end portion against said first end portion, said one bead surrounding and bearing against said second end portion on the side of said collar remote from said end face, and said clamping device independently holding said second end portion in engagement with said first end portion.

4,451,071
ADJUSTABLE STRIKE
Jim G. Striese, Brockton, Mass.; John E. Iafret, and William D. Batterson, both of Grand Blanc, Mich., assignors to TRW Inc., Cleveland, Ohio and General Motors Corporation, Detroit, Mich.
Filed Dec. 28, 1981, Ser. No. 334,786
Int. Cl.³ E05B *15/02*
U.S. Cl. 292—341.18 **23 Claims**



1. An adjustable strike comprising
A. a bracket,
B. means on the bracket defining a slide having a floor,
(1) a recess in the floor,
C. A striker plate, said plate including
(1) a latch-engaging section having an opening adaped to receive a latch bolt,
(2) a slider defined by a flat elongated tongue extending generally perpendicular to the plane of the latch-engaging section of the striker plate, said slider being slidably positioned in the slide so that the latch-engaging section projects from the slide, and
(3) a longitudinal series of spaced parallel slots in the tongue, said slots
(a) being oriented at an acute angle to the longitudinal axis of the tongue for receiving screw convolutions extending out of said bracket recess,
D. an adjusting screw rotatively mounted in the recess, said screw having
(1) an elongated rod-like member
(2) a screw thread disposed along the rod-like member threadedly engaging the slider, said screw thread being composed of helical convolutions which project out appreciably from the surface of the member and extend out of said recess into threaded engagement with the slots in said tongue, and
(3) a head accessible at an edge of the bracket adjacent the latch-engaging section for turning the screw in one direction or the other to move the striker plate in one direction or the other along the slide, and
E. means at opposite sides of the slide for retaining the slider in the slide.

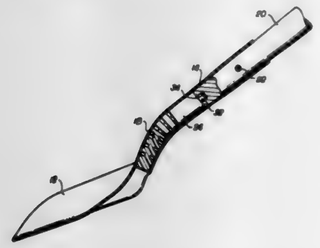
4,451,072
GATE LATCH
William E. Petty, Sr., P.O. Box 6464, Tyler, Tex. 75711
Filed Mar. 22, 1982, Ser. No. 360,578
Int. Cl.³ E05C *3/04*
U.S. Cl. 292—128 **9 Claims**



1. A latch for a fence gate of the type pivoted between a pair of spaced posts for movement about a vertical axis and having a latch post carried thereon, comprising
a bracket for attachment to one of the fence posts;
a first lever pivoted to the bracket and having a reentrant slot for receiving the latch post in a latched position of the latch;
means carried by the bracket for closing the reentrant slot of the lever in the latched position of the latch for locking the latch post in the reentrant slot, the closing means comprising a second lever pivoted for movement relative to the first lever and including means for closing the reentrant slot of the first lever in the latched position of the latch for locking the latch post in the reentrant slot;
means in opposite ends of the second lever for manipulating and disabling the closing means for releasing the latch post for movement from the reentrant slot; and
means on the first and second levers for selectively preventing the first and second levers from moving independently of each other including aligned first apertures in the first and second levers on a first side of the bracket for receiving the hasp of a padlock and a third lever pivoted to the bracket and providing an aperture aligned with the first apertures.

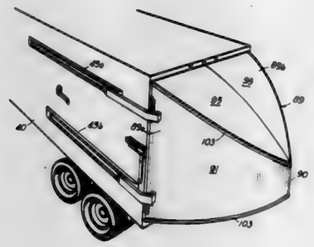
4,451,073
FLEXIBLE CORE FOR TOOL HANDLES
Joseph A. Carmien, 525 Maple Ave., Beverly Hills, Calif.
Filed Aug. 13, 1982, Ser. No. 407,819
Int. Cl.³ A01B *1/22*; B25G *3/24*
U.S. Cl. 294—57 **5 Claims**

1. A flexible core for insertion into a handle receiving socket of a hand tool, said core comprising:
an elongated, generally cylindrical body;
a plurality of grooves formed in said body and spaced from one another along said body, forming at least one socket filler for bearing compressive load in said handle receiving socket; and



a flexible shaft capable of bending to permit said core to conform to the shape of said handle receiving socket.

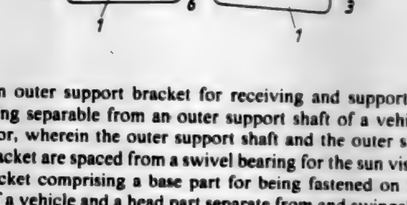
4,451,074
VEHICULAR AIRFOILS
Barry Scanlon, 939 Cumberland Rd., NE., Atlanta, Ga. 30306
Filed Nov. 9, 1981, Ser. No. 319,628
Int. Cl.³ B62D *35/00*
U.S. Cl. 296—1 S **7 Claims**



1. An airfoil to lessen wind resistance in truck bodies and the like comprising a collapsible and erectable airfoil consisting of two companion airfoil sections each having folding panels and an attached internal folding support frame, supporting guide rail means for each airfoil section on the two side walls of a truck body equipped with the airfoil including a pivoted strut, at least one panel of each airfoil section having a locking element thereon, a coacting locking element receiver on the adjacent end wall of the truck body, said supporting guide rail means comprising at least a fixed horizontal guide rail on each side of the truck body, a carriage movably engaging the guide rail and connected with the pivoted strut, a spring buffering means for the carriage on the fixed guide rail and serving to apply continuous pressure to said locking element when the latter is engaged in said receiver to prevent the escape of the locking element therefrom.

4,451,075
REMOVABLE STORAGE COVER FOR TRUCK BEDS
Henry A. Canfield, 12000 Saw Mill Rd., #307, The Woodlands, Tex. 77308
Filed Jul. 30, 1982, Ser. No. 403,852
Int. Cl.³ B60R *11/00*
U.S. Cl. 296—37.6 **14 Claims**

1. In combination with a pickup truck, a removable storage cover for the bed of said truck comprising;
a first rigid panel member positioned horizontally from side to side across the rear end portion of said truck bed, adjacent to the tailgate and supported on the side walls of said bed,
a second rigid panel member positioned from side to side across the rear end portion of said truck bed, adjacent to said first rigid panel member and releasably attached in a fixed position to the side walls of said bed, extending angularly downward from the edge of said first panel member to the bed of said truck to provide a surface of low aerodynamic resistance,
a hinge securing together the rear edge of said first panel member and the upper edge of said second panel member,



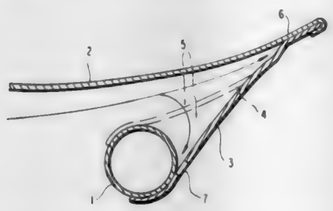
said first and second panel members and the tailgate of said truck forming a secure enclosure, and
said enclosure being accessible either by opening said tailgate or said second panel member.

4,451,076
OUTER SUPPORT BRACKET FOR AUTOMOBILE SUN VISORS
Lothar Viertel, Saarlouis, and Peter Kaiser, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany
Filed Mar. 22, 1982, Ser. No. 360,552
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113625
Int. Cl.³ B60J *3/00*
U.S. Cl. 296—97 K **22 Claims**



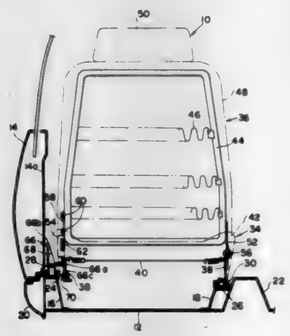
1. An outer support bracket for receiving and supporting and being separable from an outer support shaft of a vehicle sun visor, wherein the outer support shaft and the outer support bracket are spaced from a swivel bearing for the sun visor; the bracket comprising a base part for being fastened on the body of a vehicle and a head part separate from and swingably mounted on the base part;
the head part having a support opening in it shaped and oriented for receiving in it the outer support shaft of a sun visor and for the outer support shaft in the support opening to extend across the head part, and a slot in the head part for providing access into the support opening for the outer support shaft of a sun visor as the sun visor is swiveled around its swivel bearing for selectively swinging the outer support shaft into and out of the support opening; and
the head part being swingable with respect to the base part for orienting the support opening for separably receiving and supporting the outer support shaft of a sun visor.

4,451,077
STRUCTURALLY REINFORCED MOTOR VEHICLE BODIES
Ulrich Bruhnke, Ehningen; Bernd Christoph, Sindelfingen; Bernd Harloff, Böblingen, and Hans Krakat, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 7, 1981, Ser. No. 328,265
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046056
Int. Cl.³ B60R *21/04*
U.S. Cl. 296—185 15 Claims



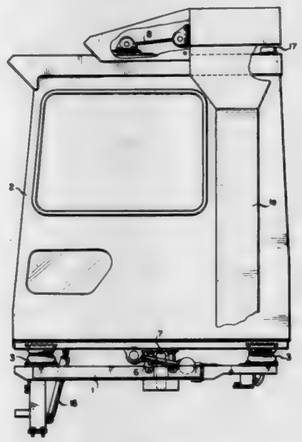
1. An automotive vehicle structural part having an outer covering, pipe means for reinforcing at least a portion of the structural part, a plurality of retaining clip means connected with an edge area of the outer covering for mounting the pipe means along at least a portion of at least one edge of the outer covering at a distance from the outer covering and the at least one edge, said retaining clip means and outer covering define a wedge-shaped space tapered in a direction of the at least one edge, wherein a space defined between the pipe means and the outer covering has a size sufficient to permit a free passage of a spary jet aimed thereat.

4,451,078
VEHICLE SEAT ASSEMBLY HAVING A DOOR STOPPER
Kouzo Maeda, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Aug. 4, 1981, Ser. No. 290,073
Claims priority, application Japan, Aug. 14, 1980, 55-115601[U]
Int. Cl.³ B60J *5/04*; B60R *21/02*
U.S. Cl. 296—188 16 Claims



1. A vehicle comprising:
a chassis having a passenger compartment with a floor and a door which can be moved between an open position and a closed position;
a seat assembly located near said door in said passenger compartment;
a sliding mechanism mounted on said floor of said vehicle and supporting said seat assembly for permitting sliding movement of said seat assembly in a fore-and-aft direction relative to said floor; and
a rigid member secured to said seat assembly to move therewith, said rigid member extending toward the door in said closed position, said rigid member having a leading end portion with a flat section which is substantially parallel with a portion of a surface of said closed door and which is positioned adjacent to said portion and spaced from said portion by a predetermined distance such that upon movement of said door inward of said passenger compartment beyond said closed position, said door contacts said flat section, said rigid member being attached between said seat assembly and said sliding mechanism for mounting said seat assembly on said sliding mechanism,
whereby during a collision, when said door is pushed into said passenger compartment by an external force applied thereto, said door is brought into engagement with said flat section of said rigid member thereby either preventing further inward motion of said door or moving said seat assembly in response to movement of said door.

4,451,079
OPERATOR'S CAB IN A CONSTRUCTION VEHICLE
Tomoyuki Takahashi, Yawata, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jun. 3, 1981, Ser. No. 269,958
Int. Cl.³ B62D *27/04*
U.S. Cl. 296—190 4 Claims



1. An operator's cab in a construction vehicle having a chassis frame comprising:
a body of the operator's cab having a bottom, a center of gravity, a location on the bottom horizontally corresponding to the center of gravity, and four diagonally opposed corners on the bottom;
air spring means provided between the bottom of the body and the chassis frame at each of the four corners for supporting the body on the frame in a cushioning manner;
two first coupler levers longitudinally connected between the bottom of the body and the frame restricting oscillation of the body in the longitudinal direction thereof;
a single second coupler lever transversely directly connected between a position near the location on the bottom of the body corresponding to the center of gravity and the frame restricting oscillation of the body in the transverse direction thereof; and
damper means substantially vertically connected between the bottom of the body at two of the corners and the frame for damping and restricting vertical oscillation of the body;

both ends of each of the first coupler levers and the second coupler lever being respectively connected through annular resilient members with connecting shafts which are disposed perpendicularly to the coupler lever and one of which is fixedly secured through a bracket to the frame and the other of which is fixedly secured through a bracket to the body, thereby absorbing oscillations of the body into the annular resilient members.

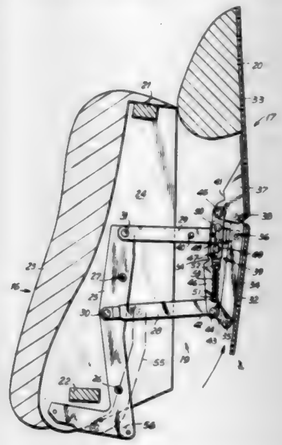
4,451,080
MOBILITY AID
Ceoma Nix, 9602 Empire Ave., Cleveland, Ohio 44108
Filed Feb. 27, 1981, Ser. No. 238,993
Int. Cl.³ A47C *1/00*; A45B *1/00*
U.S. Cl. 297—4 12 Claims



1. A mobility aid for use, in conjunction with crutches or other movable supports, for step-like movement by legless persons and persons lacking supporting use of their leg or legs, comprising:
a seat;
retaining means for securing a person in said seat;
leg means attached at one end to said seat for supporting said seat above the ground; and
foot means for rocking said aid at the commencement and conclusion of each step, said foot means being secured to an end of said leg means opposite the end attached to said seat, said foot means having a ground-engaging convex surface opposing said leg means, the convexity of said surface extending along the dimension of said foot lying in the direction of movement.

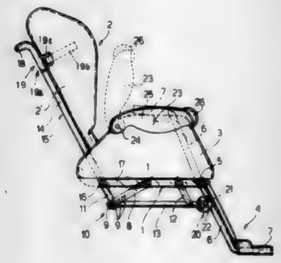
4,451,081
HEADREST FOR A RECLINING CHAIR
Jerome R. Kowalski, Tupelo, Miss., assignor to Mohasco Corporation, Amsterdam, N.Y.
Filed Jan. 6, 1982, Ser. No. 337,465
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—61 20 Claims

1. A headrest arrangement for use on a backrest of a chair, particularly of a reclining chair, comprising
a support including a first and a second support member articulately connected to one another for angular displacement relative to each other about an axis disposed therebetween;
a cushion member secured at least to said first support member and projecting in a predetermined direction therefrom;
means for so mounting said support on the backrest that said first support member is situated upwardly of said second support member and said axis extends substantially horizontally for movement between a retracted position in which said support and cushion members are situated in the back of the backrest and an extended position in which at least said first support member extends upwardly of the backrest and said cushion member projects frontwardly above the backrest and beyond the same, said mounting means including at least one kinematic linkage mounting said second support member on the backrest;
means for angularly displacing said first support member relative to said second support member during the movement of said support relative to the backrest between said retracted and extended positions thereof, said angularly displacing means including at least one connecting link



articulated to said kinematic linkage and to said first support member; and
means for changing the effective length of said connecting link.

4,451,082
SEAT FOR A BABY'S PUSH CHAIR
Pietro Giordani, Via Cavallina, 4, 40100 Bologna, Italy
Filed Jul. 17, 1981, Ser. No. 284,493
Claims priority, application Italy, Aug. 1, 1980, 53452/80[U]
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—90 8 Claims



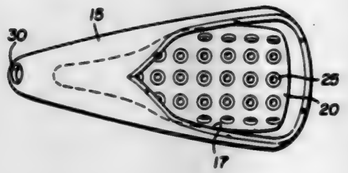
1. In a push chair, a seat comprising a support, a seat back, and a foot rest, said seat back and said foot rest being adjustable in inclination with respect to said support, and an articulated quadrilateral mechanism operatively connected between said foot rest and said seat back, said mechanism including a shaft and a link rod, said link rod rigid with said seat back and extending between said shaft and said support, said shaft having one end disposed towards said foot rest, said foot rest including at least one strut pivotally connected to said support, and guide means mounted to said shaft one end and including means to partially embrace opposite sides of said strut and to cooperate therewith in a slidable manner so that inclination of said seat back enables suitable inclination of said foot rest with respect to said support.

4,451,083

BICYCLE SADDLE COVER PAD

John L. Marchello, Traverse City, Mich., assignor to Danmar Products, Inc., Ann Arbor, Mich.

Filed Apr. 23, 1982, Ser. No. 371,061
Int. Cl.³ B62J *1/00*
U.S. Cl. 297—195 **1 Claim**



1. In a cover pad shaped for fitting uponand substantially enveloping a conventional bicycl saddle for padding the upper surface and sides of he saddle, the improvement comprising:

said pa being shaped as an elongated sleeve with an upper surface and a bottom having an opening to receive sad saddle, and a forward end of the pad including a enlarged opening for ventilation;

said pad bein formed of a relatively thick, substantially resilient, closed cell, cellular type plastic material which rapidly compresses and less rapidly recovers its shape for thereby absorbing substantial portions of shock forces resulting from road jolts and impacts, which otherwise would be transmitted from the saddle directly to the rider, and with the pad normally providing a comfortable relatively resilient support surface upon the saddle;

numerous openings extend through the pad for normally providing air passages between the saddle and the rider for ventilation, but with such openings having their opposite open ends sealable respectively by tight surface contact with the rider's body and the adjacent saddle surfaces when the pad is momentarily compressed to trap air within the compressing openings to provide an air spring effect for absorbing shock forces;

said pad being cross-sectionally considerably thicker in its portions which overlay the major portions of the upper surfaces of the bicycle saddle, and with the openings that extend through the thicker portion of the pad being formed of two coaxial cylindrical shapes, with the shape adjacent the saddle being of larger diameter than the shape adjacent the rider's body, to form an internal annular shoulder within the wall defining the opening, for forming an air column of trapped air upon rapid compression of the pad, and including substantially uniform diameter openings extending through the pad in the thinner regions of the pad, which overlie minor portions of the saddle sides and upper surface.

4,451,084

BACKREST HEIGHT ADJUSTMENT FOR OFFICE CHAIR

Wayne C. Seeley, York, Pa., assignor to Simmons Universal Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,280
Int. Cl.³ A47C *7/46*
U.S. Cl. 297—353 **11 Claims**

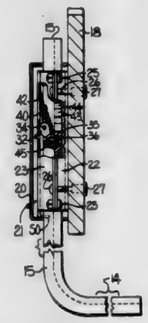
1. In an office chair including a seat, a vertically extending support member having its lower end secured to said seat, and a backrest supported for vertical adjustment on the upper end portion of said support member, the combination therewith of improved means for adjusting the vertical position of said backrest on said support member, said backrest adjusting means comprising

a. a housing fixed on said backrest and supporting said backrest for vertical sliding movement on the upper portion of said support member,

b. notch means extending vertically along the upper portion of said support member and including upper and lower ends,

c. a pawl pivotally supported on said housing and including ratchet finger means positioned below the pivot point of said pawl, said pawl being movable between an operative position with said ratchet finger means in engagement with said notch means, and an inoperative position with said ratchet finger means out of engagement with said notch means,

d. an elongate tension spring with a longitudinal axis and including upper and lower ends, said lower end of said tension spring being connected to said pawl below the pivot point thereof and adjacent said ratchet finger means, said upper end of said tension spring being connected to said housing and above the pivot point of said pawl, and said longitudinal axis of said tension spring being positioned on one side of the pivot point of said pawl when in said operative position and being positioned on the other side of the pivot point of said pawl when in said inoperative position, and



e. operator means associated with said upper and lower ends of said notch means for engagement with said pawl, said operator means at the lower end of said notch means being operable to move said pawl into said operative position and maintained in said operative position by said spring axis being positioned on one side of the pawl pivot point when said backrest and said pawl are moved to the lower end of said notch means so that said backrest may be moved to the desired level and maintained in such adjusted position by engagement of said ratchet finger means with said notch means, said operator means at the upper end of said notch means being operable to move said pawl into said inoperative position and maintained in said inoperative position by said spring axis being positioned on the other side of the pawl pivot point when said backrest and said pawl have been moved to the upper end of said notch means so that said backrest may be freely moved to said lower end of said notch means in preparation for making a subsequent vertical adjustment of said backrest.

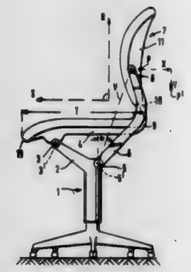
4,451,085

CHAIR

Klaus Franck, Hanover, and Werner Sauer, Wennigsen, both of Fed. Rep. of Germany, assignors to Wilkhahn & Hahne GmbH & Company, Fed. Rep. of Germany

Filed Mar. 17, 1981, Ser. No. 244,679
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3036993
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—285 **32 Claims**

1. A reclinable article of sitting furniture comprising a support means for supporting the article, a seat portion, a back portion, means for mounting a forward area of the seat portion on the support means, and lever means for mounting the back portion on the support means, the lever means has a first end articulated to the back portion and a second end articulated to the support means, characterized in that an arcuate flexible intermediate means is interposed between the seat portion and the back portion connecting the seat and back portions together, the flexible intermediate means is adapted to be flexed such that the arc becomes wider when the intermediate means is flexed, the first end of the lever means is articulated to the



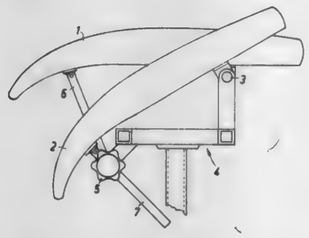
back portion at approximately hip level of a user of the article, the second end of the lever means is articulated to the support means at a point below and approximately at a center of the seat portion, and in that a line connecting the points of articulation of the lever means to the back portion and support means subtends, with respect to a vertical plane, a predetermined angle in the range of between 0° and 25° when the article is in a basic upright position.

4,451,086

SEAT FOR A CHAIR FOR PERSONS HAVING HIP AND/OR LEG STIFFNESS

Regnell Seven, Vastervik, Sweden, assignor to Mercado Rehabilitering AB, Stockholm, Sweden

PCT No. PCT/SE80/00195, 371 Date Mar. 25, 1981, 102(e) Date Mar. 25, 1981, PCT Pub. No. WO81/00350, PCT Pub. Date Feb. 19, 1981
PCT Filed Jul. 29, 1980, Ser. No. 247,305
Claims priority, application Sweden, Aug. 1, 1979, 7906532
Int. Cl.³ A47C *1/00, 7/02*
U.S. Cl. 297—312 **1 Claim**



1. Seat for a chair for persons having hip and/or leg stiffness, said seat including at least two pivotable portions pivoting around a pivot axis extending in the lateral direction of the seat, the forward edge of each pivotable portion forming part of the front edge of the seat, whereby each pivotable portion is arranged for pivoting movement between a substantially horizontal position and a position where it is directed forwardly and downwardly, a locking device being arranged for locking each pivotable portion in the desired position, characterized in that:

each pivotable portion extends over substantially the full sitting depth of the seat,

the pivot axis is positioned at a distance from the front edge of the seat corresponding to approximately three-fourths of the sitting depth,

each pivotable portion in its front portion is supported by a support means, which is pivotally connected to the pivotable portion at one end and is arranged to slidingly cooperate with the locking device at its other end, and

each locking device is mounted on a frame, which also carries the pivot axis and which is provided with mounting means enabling mounting of the frame on the base of any standard type chair,

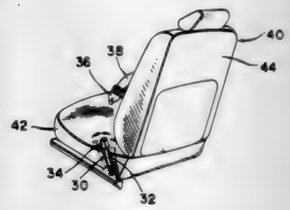
wherein each pivotable portion may be locked or unlocked independently of other pivotable portions.

4,451,087

ANCHORING STRUCTURE FOR A SELF-STANDING SEAT BELT UNIT

Masahiro Tamamushi, Machida, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 15, 1981, Ser. No. 283,687
Claims priority, application Japan, Aug. 15, 1980, 55-116292[U]
Int. Cl.³ A47D *15/00*; B60R *21/00*
U.S. Cl. 297—468 **6 Claims**



1. An anchoring structure for a self-standing seat belt unit adapted to be anchored to a side portion of a vehicle seat, said seat belt unit including a self-supporting, elongated upstanding member formed at the lower end portion thereof with a bolt accomodation hole and a belt connector mounted to the upper end of said upstanding member, said anchoring structure comprising:

a support member mounted to the side portion of said vehicle seat and having a bolt accommodation hole with which said bolt accomodation hole of said upstanding member is aligned;

a bushing member having a sleeve portion and a flange portion, said sleeve portion being received within said bolt accomodation hole of said upstanding member, said flange portion being interposed between said upstanding member and said support member;

a bolt passing through said bolt accomodation holes and said bushing sleeve portion and attaching the lower end of said upstanding member to said support member in such a manner that the upstanding member is swingingly movable about the axis of said bolt, said bolt having a head portion, a threaded stem portion and a nut at the end of said stem;

biasing means constituted by a relatively thin elastic member mounted on said bolt for urging the lower end portion of said upstanding member against said support member for thereby retaining, by the effect of frictional resistance, said upstanding member at a convenient position for use, said biasing means cooperating with said head portion of said bolt and said nut to elastically clamp the lower end portion of said upstanding member toward said support member; and

a guide member of a thin-walled structure, mounted on the lower end portion of said upstanding member to rotate together therewith about the axis of said bolt and having a channel-like portion including a base wall and a pair of side walls, said base wall interposed between the lower

end portion of said upstanding member and said flange portion of said bushing member and being formed with a hole which is substantially aligned with said bolt accomodation hole of said upstanding member and through which said sleeve portion of said bushing member passes, said side walls being adapted to fittingly receive between them the lower end portion of said upstanding member, said guide member further comprising an integral finger portion provided at the lower end of said base wall and projecting toward said support member;

said support member having an elongated opening to receive therewithin said finger portion in such a manner that the finger portion is movable within said opening and abuttingly engageable with the end walls of said opening to limit the extent of swinging movement of said upstanding member.

4,451,088

GAINING ACCESS TO VERY DEEP COAL SEAMS BY CARRYING EXPLOSIVE IN DENSITY CONTROLLED FLUID

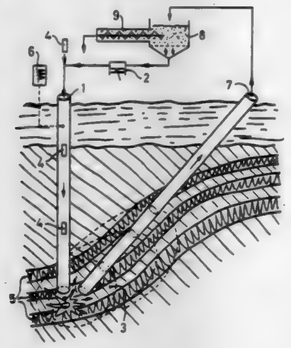
Karl Wisseroth, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,200

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 3108425

Int. Cl.³ E21C *37/12*

U.S. Cl. 299—11 **10 Claims**



1. In an improved process for gaining access to the coal of very deep seams, and for extracting same by causing liquid to flow through a cavern in the seams, via at least one borehole, and conveying to the surface a mixture of mechanically detached coal and liquid produced in the seams during this process, wherein the improvement comprises: filling the borehole and cavern with a liquid having a density no lower than that of the coal, but lower than that of the accompanying rock, carrying an explosive and means for its detonation in the liquid toward a coal face in the seams through which liquid is flowing, detonating said explosives at the coal face to break up and detach coal and rock whereby the pieces of coal detached from the seams during blasting are conveyed to the surface by said liquid and pieces of rock which have been detached at the same time remain in the cavern.

4,451,089

COAL-MINING MACHINE

Friedrich W. Paurat, Kasselweg 29, and Roland Paurat, Blumenstr. 11, both of 4230 Wesel, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 334,068

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3048939

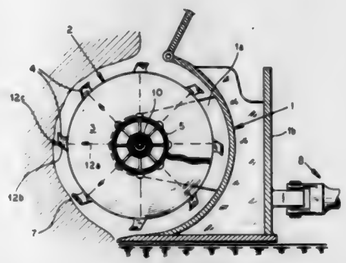
Int. Cl.³ E21C *35/22*

U.S. Cl. 299—43 **5 Claims**

1. In a broad-face coal-mining machine comprising a multiplicity of auger sections articulated to one another in an end-to-end relationship and provided with respective guide aprons whereby said auger sections are successively inclined relative to an adjoining auger section for excavation of coal from a tunnel front and rotation of said auger sections carries excavated coal along said aprons to remove the same, the improvement which comprises in combination:

nozzles on said auger sections for dispensing a liquid capable of wetting dust and preventing sparking;

a pipe for supplying said liquid to said auger sections;



valve means between said pipe and the nozzles of the auger sections responsive to the inclination thereof for feeding said liquid to the nozzles of an inclined auger section and limiting flow to a non-inclined auger section; and

actuating means operatively connected to said valve means and responsive to the degree of inclination of an auger section relative to an adjoining auger section whereby said valve means is opened upon sufficient inclination and is closed with insufficient inclination.

4,451,090

ADVANCING APPARATUS FOR COAL-MINING MACHINE IN UNDERGROUND MINE

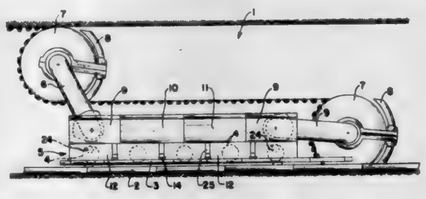
Herbert Schupphaus, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,151

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1981, 3116457

Int. Cl.³ E21C *29/22*

U.S. Cl. 299—43 **8 Claims**



1. An apparatus for advancing a coal-mining machine along a machine track in an underground mine, said apparatus including the combination of rack means having rack teeth to engage with a drive wheel of each of a plurality of advancing means which are separate parts of said coal-mining machine, each of said advancing means including a hydraulic motor with fluid lines extending to a fluid pump means for rotating the drive wheel thereof, each of said advancing means further including a separate carriage bearing and moving on said rack means by a runner to partly engage around the profile of said rack means to insure engagement with the teeth of the drive wheel, at least one of said advancing means being disposed between runners situated on the same side of the coal-mining machine, means for connecting said runners to the body of said coal-mining machine, means for connecting said at least one advancing means to bear only on the runners situated in front thereof in the direction of travel by said coal-mining machine along said machine track, and plate means for interconnecting the runners of each advancing unit, said plate means pointing in the direction of machine travel for enclosing and holding a drive wheel between them, said plate means also enclosing and holding between them the hydraulic motor for said advancing means.

4,451,091

TRACK FOR A LONGWALL MINING MACHINE

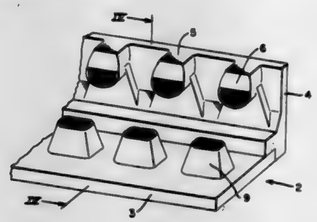
Herbert Schupphaus, Bochum, and Volker Knorr, Sprockhovel, both of Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Oct. 14, 1982, Ser. No. 434,376

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141162

Int. Cl.³ E21C *29/02*

U.S. Cl. 299—43 **9 Claims**



1. A track and gear rack disposed on one side of a face conveyor for a longwall mining machine and adapted to be engaged by a driving gear and guide means on the mining machine, said track and gear rack being of generally L-shaped cross-sectional configuration and having a vertical arm secured to the face wall of the conveyor, driving pin extensions extending outwardly from said vertical arm in cantilever beam relationship near the upper edge of said vertical arm and having vertical widths less than the height of the vertical arm, said L-shaped track and gear rack having a horizontal arm extending beneath said driving pin extensions, one of said arms being provided with spaced studs which engage guide block means on the mining machine for guiding it along said track, said studs lying in common planes of symmetry with at least some of said driving pin extensions, and said common planes extending transverse to the longitudinal length of said track and gear rack.

4,451,092

CUTTING ROLLER

Gerd Best, Sprockhövel, and Norbert B. Weikert, Dortmund, both of Fed. Rep. of Germany, assignors to Krampe & Co Fertigung in Bergbaubedarf GmbH, Hamm, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,725

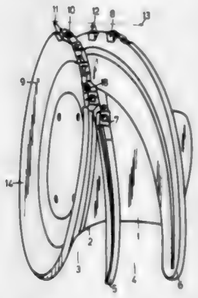
Claims priority, application United Kingdom, May 26, 1981, 8116046

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.³ E21C *25/10*

U.S. Cl. 299—81 **11 Claims**

1. A cutting roller for a mining machine, comprising a substantially conical member arranged to face the workings; a tubular body member having a central longitudinal axis and an end nearer the workings and a discharge end; at least one cutting blade on said working member; at least one cutting blade on said tubular member, each of said blades being provided with a plurality of bit holders carrying cutter bits, said body member having an outer surface extending over the entire length of the body member towards said closure member in such a smooth and even curve that the outer diameter of the body member in the region of the end nearer the workings is substantially greater than in the region of the discharge end; and means on the cutting roller for distribution liquid for damping dust produced during the mining, said means being connected to a suitable source of spraying liquid, said liquid



distribution means including a single liquid distribution ring channel arranged in the region of said closure member and a number of liquid distribution channels on said cutting blades connected thereto, said liquid distribution ring channel being formed by a groove which opens towards and extends coaxially with said longitudinal axis.

4,451,093

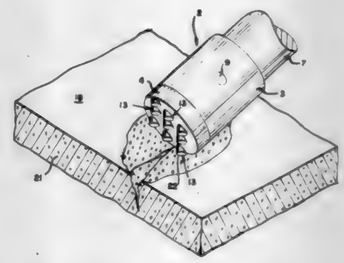
TOOL FOR SCARIFYING CONCRETE

Robert Perez, 447 Greenwood Dr., Santa Clara, Calif. 95050

Continuation of Ser. No. 215,055, Dec. 10, 1980, abandoned. This application Mar. 7, 1983, Ser. No. 472,630

Int. Cl.³ E21C *35/18*; E21B *10/58*

U.S. Cl. 299—88 **8 Claims**



1. A tool for scarifying concrete comprising:

(a) a main body having a working face thereof defined by an outer periphery and adapted to face in the direction of a concrete surface requiring scarifying; and

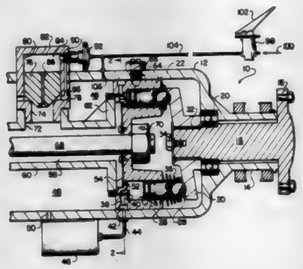
(b) a plurality of elongated carbide tips symmetrical about a longitudinal axis and embedded and brazed in said main body and having free end portions projecting from the working face thereof, said free end portions terminating in flat end faces angularly disposed to said longitudinal axis, each of said carbide tips embedded in said body at an angle to said working face whereby said free end portions lie within the outer periphery of said working face.

4,451,094

HYDRAULIC TRAILER BRAKE

Jose L. Martin, Farallon No. 60, Playas de Tijuana, Seccion Costa de Oro, Tijuana, B.C., Mexico

Filed Nov. 5, 1981, Ser. No. 318,317
Int. Cl.³ B60T *13/16*
U.S. Cl. 303—10 7 Claims



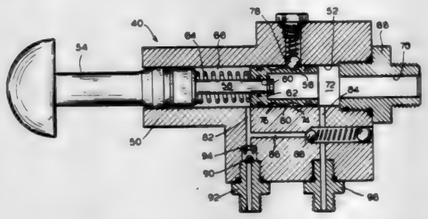
1. A fluid brake system for braking the wheels of a vehicle, said brakes comprising:
- a housing,
- a rotary shaft mounted in said housing and having an end thereof extending from said housing for mounting and supporting a wheel,
- an axial piston wobble plate incompressible fluid pump mounted in said housing and driven by said rotary shaft, said pump having a fluid inlet and a fluid outlet,
- circuit means including said inlet and outlet, and reservoir means defining a closed loop circuit, and
- selectively controllable restricting means;
- an air pressure responsive check valve,
- a source of air pressure, and
- control means for selectively controlling air pressure on said check valve for selectively controlling the resistance of said fluid in said circuit.

4,451,095

AUXILIARY RELEASE DEVICE FOR A HYDRAULIC PRESSURE RELEASABLE BRAKE

Willard L. Chichester, and Dean E. Davis, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jun. 10, 1982, Ser. No. 386,855
Int. Cl.³ B60T *15/16*
U.S. Cl. 303—71 9 Claims



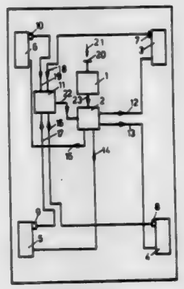
1. A normally activated hydraulic pressure releasable brake having a primary hydraulic pressure source, an auxiliary hydraulic pressure souce, and a valve means responsive to said primary source and to said auxiliary source operatively connected to said brake for allowing said auxiliary source to release the brake and simultaneously disconnect said primary source from the brake when the primary source is not delivering pressure to the valve means and for disconnecting the auxiliary source from the brake and allowing the primary source to release the brake when the primary source is delivering pressure to the valve means and the auxiliary source is not delivering pressure thereto, said valve means comprising a two-position spool valve responsive to said primary source on one side thereof and to said auxiliary source on the opposite side thereof, a manually acuatable pumping element operatively connected to the spool valve on one side thereof to generate said auxiliary source pressure when the primary source is not delivering pressure to the opposite side of said spool valve, and detent means for locating said spool valve in the first position in which primary source pressure is delivered to said brake and in a second position wherein auxiliary source pressure is delivered to said brake.

4,451,096

BRAKE SYSTEM ANTILOCKING MECHANISM

Johannes Gygax, Benken, Switzerland, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 10, 1981, Ser. No. 320,137
Claims priority, application Switzerland, Nov. 11, 1980, 8348/80
Int. Cl.³ B60T *8/10*
U.S. Cl. 303—109 5 Claims



1. A vehicle brake system antilocking mechanism of the type having at least one modulator regulating the braking pressure in dependence on wheel retardation and having wheel sensors, wherein there are fewer modulators than wheels or sensors, and wherein the braking pressure to at least one group of wheels is regulated according to the "select-low" principle, comprising in combination:
- means for identifying the wheel which has been retarded most strongly;
- control means responsive to the identifying means for selecting the wheel or wheels in said one group of wheels in accordance with said "select-low" principle and as a function of the position and to the exclusion of the wheel retarded most strongly; and,
- means responsive to said control means for regulating braking pressure in accordance with the selection made by said control means.

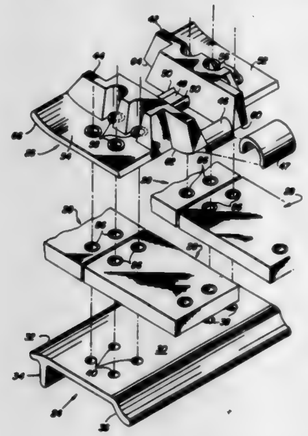
4,451,097

TRACK SECTION INCLUDING FLEXORS

William P. Wohlford, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 1, 1982, Ser. No. 344,672
Int. Cl.³ B62D *55/24, 55/28*
U.S. Cl. 305—40 19 Claims

1. A track section adapted for interconnection with a plurality of like sections to form an endless drive track for a track-laying vehicle, comprising: at least one flexor; said flexor including at least two superposed, generally rectangular, resilient plates, which constitute a radially inner plate and a radially outer plate relative to the flexor being flexed for travelling about a drive sprocket; a track link; a grouser; said link and grouser having first and second flat surfaces, respectively, opposed to each other and having an end portion of said flexor located therebetween, a first pair of side-by-side mounting holes extending through said link, flexor and grouser; a first pair of fastener means respectively received in said pair of mounting holes and respectively including a pair of bolts; said inner plate having a tight connection with said pair of bolts; and said outer plate having a clearance connection with said



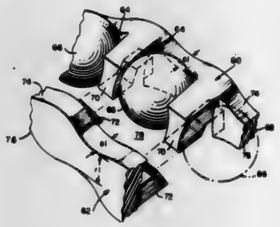
pair of bolts with the clearance being such that both plates carry a desired tensile load without either plate being overstressed when the flexor is bent as when travelling about a drive sprocket.

4,451,098

BALL SEPARATOR ASSEMBLY

Wilbur H. Farley, Beverly; Alfred J. Kotek, Ipswich, and John H. Carlson, Danvers, all of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Aug. 26, 1982, Ser. No. 411,826
Int. Cl.³ F10C *33/38*
U.S. Cl. 308—201 2 Claims



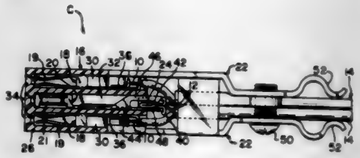
1. A ball bearing separator assembly which can accommodate a non-circular configuration imposed by a wave-generator, comprising:
- a flexible annular ball bearing separator having a plurality of axially arranged partitions circumferentially spaced on one side thereof;
- a flexible annular retention ring matable with said partitions, thereby defining a plurality of spaced ball pockets thereabout, both said separator and said retention ring having their radially inner and their outer surfaces curved to produce an assembly having reduced radial dimensions between adjacent partitions to facilitate manufacture and flexing thereof; and integral heat distortable interlocking means for securing said axially arranged partitions and said retention ring, to permit said separator and said retention ring to bend together.

4,451,099

ELECTRICAL CONNECTOR HAVING COMMONING MEMBER

Harry C. Bricker, Jr., Elizabethtown; David H. Gutter, Harrisburg, and Robert S. Stull, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 7, 1982, Ser. No. 376,077
Int. Cl.³ H01R *4/66*
U.S. Cl. 339—14 R 10 Claims



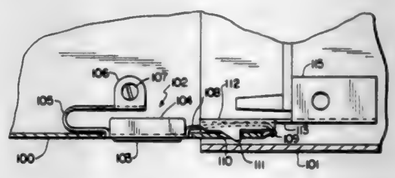
1. An electrical connector comprises a dielectric housing having rows of electrical terminals secured in passageways, conductor-terminating sections of one row of electrical terminals are to be terminated to respective signal conductors of a cable and connecting sections of the other row of electrical terminals are to be connected to ground conductors of the cable, characterized in that:
- said connecting sections comprise receptacle sections in the form of substantially rigid members and opposing spring members;
- a commoning member is terminatable onto the ground conductors thereby forming an elongated tab member electrically connectable between said rigid members and opposing spring members.

4,451,100

GROUNDING LATCH APPARATUS FOR ELECTRICAL CONNECTORS

Frank C. Jaconette, Trumbull, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Nov. 5, 1981, Ser. No. 318,378
Int. Cl.³ H01R *4/66*
U.S. Cl. 339—14 R 4 Claims



1. A latching apparatus for an electrical connector assembly of the type including first and second telescopically joinable housings, each housing having an open end and containing electrically conductive members exposed to the open end thereof for making contact when the housings are joined in a predetermined relative orientation, and each housing carrying a portion of the latching apparatus which comprises
- a latch member having
  - a tooth,
  - means defining a lateral surface attached to and extending perpendicular to said tooth near the inner limit thereof, and
  - a spring arm connected at one end to said means defining said surface and at the other end to a first one of said housings;
- means on said second one of said housings for receiving said tooth when said housings are joined, said tooth being urged therein by said spring arm;

a manually operable release mechanism on said second one of said housings comprising

a leaf spring within said second one of said housings and adjacent said means for receiving, at least one end of said leaf spring being fixedly attached to said second housing,

said leaf spring being positioned to extend in generally parallel relationship with said surface when said housings are joined; and

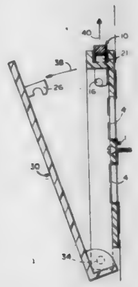
means for providing access to said leaf spring to permit manual movement of said spring against said surface for disengaging said tooth from said means for receiving to permit separation of said housings.

4,451,101

COVER PLATE FOR AN ELECTRICAL RECEPTACLE

Thomas A. Davis, 21 California Ave., #331, Irvine, Calif. 92715

Filed Jun. 21, 1982, Ser. No. 390,619
Int. Cl.³ H01R *13/447*; H05K *5/03*
U.S. Cl. 339—44 M **6 Claims**



1. A combination including a cover plate having an aperture for receiving therethrough electrical receptacle means and a safety guard plate for preventing unauthorized access to said receptacle means, said combination comprising:

means for pivotably connecting together respective first ends of said cover plate and safety guard plate, so that said guard plate may be rotated to a position over said cover plate by which to prevent access thereto,

push bar means positioned adjacent said cover plate and adapted for reciprocal movement therealong,

retaining bar means extending from said cover plate for supporting said push bar means and maintaining the position thereof adjacent said cover plate,

spring means disposed between said push bar means and said retaining bar means so as to bias said push bar means for reciprocal movement,

first and second interlocking means,

said first interlocking means connected to said safety guard plate for receipt of said second interlocking means when said guard plate is rotated over said cover plate, and

said second interlocking means connected to said push bar means so as to be received by said first interlocking means and thereby releasably secure said safety guard plate over said cover plate.

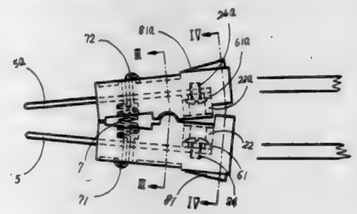
4,451,102

ELECTRICAL PLUG

Chuan Reh, No. 4-1, La. 460, Shing Min Rd., Nei Hu District, Taipei, Taiwan

Filed Mar. 25, 1982, Ser. No. 361,969
Int. Cl.³ H01R *4/48*
U.S. Cl. 339—74 R **7 Claims**

1. An electrical plug comprising two substantially identical members longitudinally connected face-to-face with each other, each member at an inner side comprising four sections including, in sequential order from a rear end to a front end thereof, a support section defining a groove for accommodating a connecting wire, a terminal receiving section having a recessed platform and a central polygonal hole to receive a terminal screw, a fulcrum section forming a pair of semi-circular protrusions spaced apart from each other and a pair of semi-circular recesses at the remainder spaces, and a spring retention section having a platform at a level lower than that of the platform at said terminal receiving section and a central through hole retaining a coil spring which has a hook at both ends extending and fastening at an outer side of both members



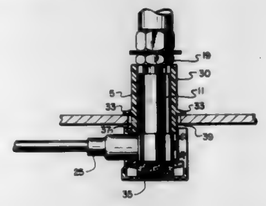
respectively to connect said members together, and at the front end a conductor integrally formed therein, said members being movable to a position wherein they are disposed substantially 90° with respect to each other, in which position the platforms in the spring retention sections of said members can be placed in contact with each other to facilitate fastening of said hooks of said spring at the outer sides of said members when assembling said members, said members being then movable to a position in which they are longitudinally connected face-to-face to tension said spring.

4,451,103

CONNECTOR ASSEMBLY

Lloyd V. Buresh, Cedar Rapids; Garth D. Hammond, Marion; Emil J. Koval, Marion, and Vernon R. McCormick, Marion, all of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 14, 1981, Ser. No. 330,370
Int. Cl.³ H01R *17/04*
U.S. Cl. 339—93 R **8 Claims**



1. A connector assembly for coupling a connector to a plate-like member having opposed sides and an opening through said plate-like member for receiving the connector assembly, the connector assembly comprising:

a first connector member having first and second end portions and an intermediate portion coupled between said end portions along an axis, said intermediate portion being configured to extend through said opening and spaced therefrom to allow movement of said intermediate portion in a radial direction relative to said axis, said first connector member having a tubular configuration and said first end portion being constructed and arranged to receive a tubular first connector element and said second end portion being constructed and arranged to receive a tubular second connector element, said tubular first and second connector elements being coupled through said intermediate portion to provide an electrically conductive path;

means coupled to said first end portion for forming a projection in the form of a ring circumferentially extending around said first end portion and extending generally radially from said axis;

means coupled to said second end portion for forming a retaining member in the form of a ledge circumferentially projecting from said second end portion; and

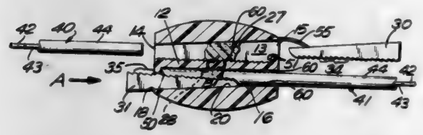
a second connector member coupled to receive said second end portion and including means for engaging said retaining member to form a cap over said second end portion and the second connector element received by said second end portion, said cap being constructed in the form of a tubular member having a first closed end and a second open end receiving said second end portion, and having a retaining groove which engages said retaining ledge of said second end portion to retain said cap on said second end portion, said projection and said second connector member being spaced from one another on opposite sides of said plate-like member to retain said intermediate portion within said opening, yet allow a predetermined movement of said first connector member in a direction parallel to said axis.

4,451,104

APPARATUS FOR SPLICING ELECTRIC WIRES

Sten E. Hodgson, Scotch Plains, and Richard J. Gemra, Union Township, Union County, both of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 27, 1982, Ser. No. 382,748
Int. Cl.³ H01R *9/08*
U.S. Cl. 339—99 R **7 Claims**



1. Apparatus for splicing electric conductors comprising:

a housing having a passage extending therethrough;

a partition extending through the housing dividing the passage into two through channels;

a ramped-shaped wall positioned in each channel opposite the partition for defining each channel with a wide opening at one end and a narrow opening at the other end;

an electrically conductive terminal embedded in the partition and protruding into each channel at an acute angle toward the one end of each channel; and

a pair of wedge shaped members each of which being adapted to be force fitted into the one end of each channel after an electric conductor has been inserted into the other end of each channel to fit between the ramped-shaped wall and the inserted conductor to force the conductor down onto the terminal to make electrical contact with the terminal and to lock the electric conductor between the partition and the force fitted wedge shaped member in each channel to effect a splice between the inserted electric conductors.

4,451,105

ELECTRICAL CONNECTOR DEVICE

Yoshimi Sakurai, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 347,799
Claims priority, application Japan, Feb. 13, 1981, 56-20338
Int. Cl.³ H01R *39/02*
U.S. Cl. 339—113 R **7 Claims**

1. An electrical connector device comprising:

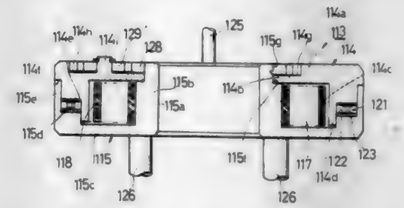
a first insulator having at least one first terminal affixed thereto;

a first shaft member projecting from said first insulator;

a second insulator rotatably fitted over said first shaft member and having at least one second terminal affixed thereto;

a second shaft member secured to said second insulator;

a flexible conductor in the form of a wire having one end thereof connected to said first terminal and the other end thereof connected to said second terminal, said conductor being wound around said first shaft member; and



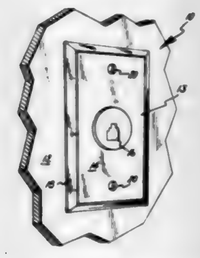
restriction means for limiting relative rotation between said first and second insulators within a predetermined angle, said restriction means including a first gear of a relatively large diameter fitted over said first shaft member for angular movement therewith and a second gear of a relatively small diameter held in meshing engagement with said first gear for angular movement about said second shaft member, one of said first and second gears including an enlarged gear tooth.

4,451,106

SNAP IN COMMUNICATIONS JACK AND COVER PLATE ASSEMBLY

Ronald W. Wiseheart, Hector, and Daniel Meyer, Rochester, both of Minn., assignors to Communication Systems, Inc., Hector, Minn.

Filed Oct. 7, 1981, Ser. No. 309,234
Int. Cl.³ H02B *1/02*
U.S. Cl. 339—123 **2 Claims**



2. A communication jack and cover plate assembly comprising:

a cover plate having a face, a back surface, and the cover plate being provided with a cover plate jack opening therethrough;

a cover plate wall circumscribing the jack opening having two longitudinally configured resilient straight parallel spaced-apart cover plate wall portions, integral with and extending away from the back surface of the cover plate and oriented longitudinally along the back surface of the cover plate;

a jack body, formed of nonconductive material, provided with a communications jack opening;

the jack body being partially defined by a peripheral surface of a shape to mate with the cover plate wall to position the

communications jack opening in precise alignment with the cover plate jack opening;

the jack body having first and second longitudinally configured jack body wall portions positioned for snug adjacent alignment with the spaced-apart cover plate wall portions and when said jack openings are aligned with each other; and

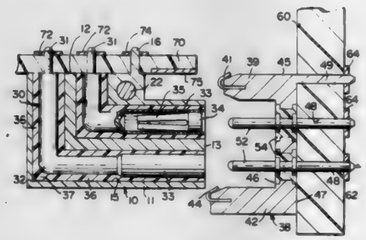
said cover plate wall portions each being provided with a lug and the jack body wall portions being each provided with a ridge, so that the lugs and the ridges lie in an interfering relationship with each other, the configuration of said cover plate wall portions, jack body wall portions, lugs, and ridges being such that when the jack body is forced toward the back surface of the cover plate, the lugs and the ridges force the resilient wall portions away from each other to allow the lugs and ridges to pass each other, thereby locking the jack body with respect to the cover plate when the cover plate resilient wall portions return and the longitudinal orientation of the cover plate wall portions providing a holding force along the length of the cover plate and jack body wall portions.

4,451,107

HIGH SPEED MODULAR CONNECTOR FOR PRINTED CIRCUIT BOARDS

Frank P. Dola, Port Richey, and John H. Lauterbach, Clearwater, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 23, 1982, Ser. No. 410,197
Int. Cl.³ H01R *4/66, 13/648*
U.S. Cl. 339—143 R **7 Claims**



1. Electrical connector of the type comprising an electrically conductive housing having at least one row of passages therein, each passage extending between a first face and a second face of said housing, each connector further comprising a plurality of electrical terminals lying in respective passages, each terminal having a first end at said first face and a second end at said second face, each terminal being surrounded by a dielectric sleeve lying in the respective passage, said sleeves insulating said terminals from said housing, said connector being characterized in that said first face and said second face are substantially planar and lie in substantially perpendicular planes, said passages having substantially right angle bends therein, said sleeves and said terminals likewise having substantially right angle bends therein.

4,451,108

DATA-TERMINAL SERVICE OUTLET

Donald D. Skidmore, 12 Bloomer Rd., Brewster, N.Y. 10509

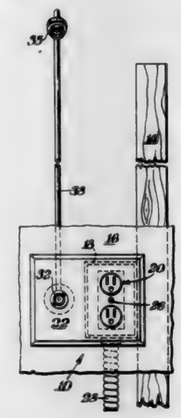
Filed Aug. 30, 1982, Ser. No. 412,924
Int. Cl.³ H01R *13/74*
U.S. Cl. 339—177 R **7 Claims**

1. A data-terminal-service outlet for providing a unitary service at which a digital-data-terminal may be connected to a computer and a source of electrical power, comprising:

an electrical-power outlet box with an open face;

an electrical-power-plug receptacle mounted in said outlet box;

a cover plate being mounted over said open face of said outlet box and having an aperture exposing said receptacle, said cover plate lying substantially all in one plane and having an extended portion projecting beyond and away from said box; and



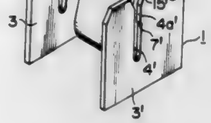
a digital data coupling means in said extended portion of said cover plate for coupling digital signals via two cables, respectively, from one side to the other side of said plate, respectively, between said data terminal and said computer.

4,451,109

CONNECTOR TERMINAL

Nori Inoue, Suzuka, Japan, assignor to Tokai Electric Wire Company Limited, Yokkaichi, Japan

Filed May 17, 1982, Ser. No. 378,720
Claims priority, application Japan, Feb. 10, 1981, 56-17431
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—258 S **3 Claims**



1. A connector terminal for use with a junction block incorporating therein a number of web-like conductor strips, comprising:

a base plate;

a pair of opposing side walls extending from both side edges of said base plate substantially at a right angle to the plane of said base plate;

slots formed in the respective side walls for receiving one of the conductor strips, each of said slots extending substantially in parallel with said base plate over a predetermined length from one end of each of said side walls, said slots being substantially in alignment with each other; and

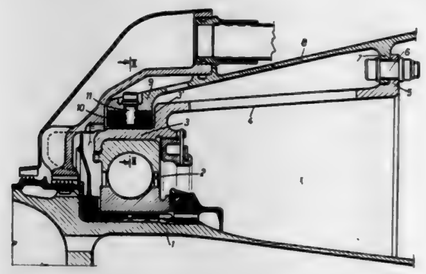
a resilient tongue extending from the upper end of said base plate into the space inside of said side walls, said resilient tongue including a curved portion extending from the upper end of said base plate into said space at such a curvature as to convex to the upper side and terminating at a terminal end located at a position slightly offset from the inner surfaces of said slots adjacent to said resilient tongue, and a linear portion extending obliquely downwardly toward said slots.

4,451,110

TURBINE BEARING

Alexandre Forestier, Vaux le Penil, and Alain M. J. Lardellier, Melun, both of France, assignors to S.N.E.C.M.A., Paris, France

Filed Apr. 26, 1982, Ser. No. 371,937
Claims priority, application France, Apr. 29, 1981, 81 08516
Int. Cl.³ F16C *27/00*
U.S. Cl. 308—184 R **3 Claims**



1. A bearing assembly comprising:

a stationary support;

an outside bearing retainer;

a squirrel cage assembly elastically connecting said outside retainer to said support; and

an annular stop unitarily formed with said support, said annular stop including a portion surrounding a portion of said outside retainer, with a predetermined radial clearance therebetween,

wherein said portion of said outside retainer comprises first radial teeth on said outside retainer, wherein said portion of said stop comprises second radial teeth on said stop and circumferentially interlocking with said first radial teeth with a predetermined circumferential clearance therebetween, and wherein said portion of said stop further comprises two sets of third radial teeth, said sets being axially spaced by the axial thickness of said first radial teeth plus twice a predetermined axial clearance between said first and third radial teeth, and with said first radial teeth positioned between said sets, whereby circumferential and axial movements of said race are limited.

4,451,111

LIGHTWEIGHT DRAWER SUPPORT ASSEMBLY HAVING COMBINATION LOCKING MECHANISM AND COMMON VERTICAL DRAWER SUPPORT

Warren T. Munroe, 8 Birchwood Rd., Windham, N.H. 03087

Filed Apr. 7, 1983, Ser. No. 482,771
Int. Cl.³ E05B *65/46*
U.S. Cl. 312—221 **14 Claims**

1. A lightweight drawer assembly, comprising:

a hollow, substantially rectangular, frame having open walls;

a plurality of open, substantially rectangular, drawer support frames having depending flexible compartments;

first means coupled to said frame for supporting said plurality of drawers one on top of the other in vertically stacked alignment within said hollow interior of said frame in a closed condition;

second means slidably mounted to the open side walls of said frame, coupled to said plurality of drawers, and cooperative with said first means, for supporting any one of said drawers in an open condition out of said hollow interior of said frame; and

third means mounted to said frame, and cooperative with said second means, for latching said drawers in a closed condition in response to any drawer being in an open condition.

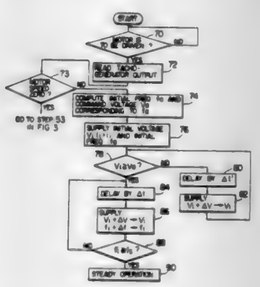


4,451,112

METHOD AND APPARATUS FOR CONTROLLING AC MOTOR

Motonobu Hattori; Yasuharu Tamuro, both of Narashino; Akira Ishibashi, and Kenji Nandoh, both of Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,649
Claims priority, application Japan, Jan. 30, 1981, 56-11681
Int. Cl.³ H02P *1/26, 1/28, 1/30*
U.S. Cl. 318—778 **12 Claims**



1. In a control apparatus for an induction motor wherein an alternating current power source is connected to the motor through a switch and a frequency converting means and the motor speed is controlled by controlling the output frequency and the output voltage of said frequency converting means, a method for controlling said induction motor which is running by the inertia in case of reenergizing said motor comprising:

a first step of causing said frequency converting means to produce at a time of starting of said motor an initial frequency which is expected to cause the absolute value of the current flowing in said free-running induction motor to become substantially minimum and an initial voltage which is insufficient to drive said motor;

a second step of increasing said output voltage gradually from said initial voltage with said initial frequency maintained; and

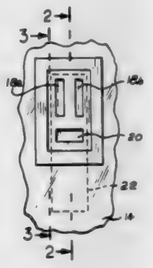
a third step of increasing said output frequency and output voltage, with the ratio therebetween being maintained almost at a predetermined value, after said output voltage has reached a predetermined value,

wherein said first step includes:

a fourth step of causing said output voltage to be used as a search voltage which is insufficient to drive said motor, and varying said output frequency and said search voltage

with the ratio therebetween being maintained at a predetermined value;
a fifth step of detecting the motor current while said output frequency is varied for a variation of said output frequency by a pregiven value; and
a sixth step of determining, as said initial frequency, an output frequency which corresponds to the minimum value of the motor current detected in said fifth step.

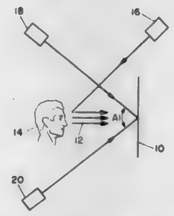
4,451,113
MAGNETIC SAFETY RECEPTACLE AND PLUG
Michael A. Zuniga, Carmel, Calif., assignor to Mid Coast Electronics, Monterey, Calif.
Filed Aug. 2, 1982, Ser. No. 404,643
Int. Cl.³ H01R *11/30*
U.S. Cl. 339—12 R **6 Claims**



1. A safety receptacle and plug comprising:
a receptacle assembly including
support means having an exterior surface and an interior surface,
a first electrical contact pair extending through said support means and having exterior surfaces and interior surfaces,
an over-center drop-out member coupled to said support means proximate said interior surface, said drop-out member including a second electrical contact pair adapted to abut the interior surfaces of said first electrical contact pair, and a first ferromagnetic member, where said drop-out member is movable between an open position and a closed position in contact with said first electrical contact pair; and
a plug assembly including
a plug body,
a third electrical contact pair supported by said plug body and adapted to abut the exterior surfaces of said first electrical contact pair,
and a second ferromagnetic member carried by said plug body;
whereby when said third electrical contact pair abuts said first electrical contact pair magnetic attraction between said first ferromagnetic member and said second ferromagnetic member causes said drop-out member to move to said closed position.

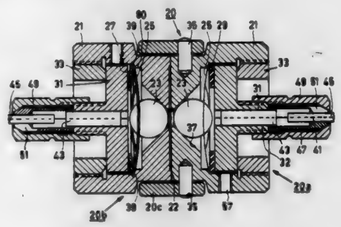
4,451,114
METHOD FOR RECORDING AND RECONSTRUCTING PULSE LASER HOLOGRAMS IN COLOR
Peter Nicholson, and Kalina Nicholson, both of Flushing, N.Y.
Filed Dec. 30, 1981, Ser. No. 335,709
Int. Cl.³ G03H *1/26*
U.S. Cl. 350—3.75 **13 Claims**

1. A method for reconstructing a hologram which was recorded with at least two pulse laser beams having different wavelengths, said method serving to increase the illuminance of the image recorded in at least one of the recorded channels and comprising the steps of:
generating a first reconstruction beam at a wavelength which is shifted from the wavelength of the one recording beam which would have the lesser illuminance if the two recording beams had equal irradiance, wherein the wavelength shift is in the direction of the wavelength of the other recording beam;
generating a second reconstruction beam at a wavelength shifted, from the wavelength of the other recording beam, in the same spectral direction and by substantially the



same number of wavelengths as the shift of the first reconstruction beam from the wavelength of said one recording beam; and
directing said reconstructing beams at said hologram to obtain a reconstructed image, whereby the reconstructed images from the two reconstruction beams are generally equal in size and are in co-registration.

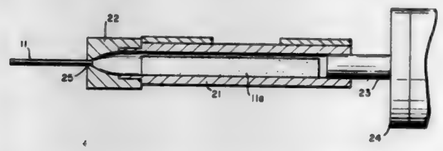
4,451,115
DETACHABLE COUPLING FOR OPTICAL FIBRES
Antonius J. A. Nicia; Cornelis J. T. Potters, and Antonius H. L. Tholen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 3, 1980, Ser. No. 165,886
Claims priority, application Netherlands, Jul. 19, 1979, 7905610
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.18 **3 Claims**



1. A detachable connector for coupling a pair of optical fibers comprising:
two connector elements, each connector element comprising:
a cylindrical housing having a reference end face and having a circularly cylindrical bore extending from the reference end face and transverse thereto, said bore having an axis and beginning with a narrow portion at the reference end face and widening with increased axial distance from the reference end face to form a conical seat and to form a rim which is parallel to the reference end face;
a spherical lens accomodated in the widening portion of the bore in the housing;
a disc-shaped fiber holder having a flat side and a bore for accomodating an end of an optical fiber, the bore being perpendicular to the flat side, said fiber holder being arranged in the bore of the housing to slide along the axis;
means for adjusting the axial displacement of the fiber holder;
means for adjusting the displacement of the fiber holder parallel to the reference end face; and

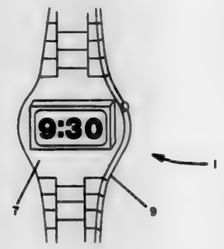
a lens clamp, secured in a groove in the housing, for securing the lens in the conical seat;
said detachable connector further comprising:
a connector holder; and
means for detachably connecting each connector element to the connector holder such that the reference end faces of the connector elements contact each other.

4,451,116
INFRARED TRANSMITTING FIBER OPTICAL WAVEGUIDE EXTRUDED FROM HALIDES OF THE METAL THALLIUM AND THE METHOD OF PREPARATION
Douglas A. Pinnow, Wallingford, Conn.; Anthony L. Gentile, Thousand Oaks, Calif.; Arlie G. Standlee, Thousand Oaks, Calif., and Arthur J. Timper, Torrance, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.
Continuation of Ser. No. 37,581, May 9, 1979, abandoned, which is a continuation of Ser. No. 800,149, May 24, 1977, abandoned. This application Feb. 2, 1981, Ser. No. 230,923
Int. Cl.³ G02B *5/14*; C03B *37/025, 37/075*
U.S. Cl. 350—96.34 **4 Claims**



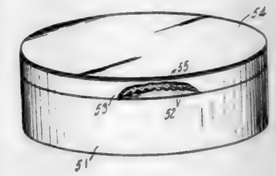
3. As a new article of manufacture, an optical fiber of thallium bromoiodide which is extruded in the presence of heat in the range of 200° C. to 350° C.

4,451,117
DIGITAL WATCH MAGNIFYING ELEMENT
Robert C. Goode, R.D. #1, Box 42, West Sand Lake, N.Y. 12196
Filed Nov. 4, 1983, Ser. No. 548,635
Int. Cl.³ G02B *27/02*; G04B *47/00*
U.S. Cl. 350—114 **1 Claim**



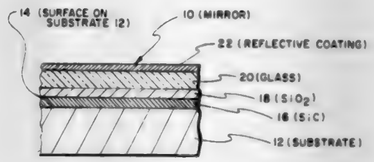
1. A magnifying element for use with a digital watch having a face to magnify the numerals of such watch to facilitate reading the time thereby, said magnifying element having a face side and an adhesive coated side, said adhesive coated side having a tear strip removable to expose said adhesive coated side, said adhesive coated side of said magnifying element being affixed to said digital watch face by appropriate manipulative pressure applied to said face side of said magnifying element.

4,451,118
COMPOSITE LASER MIRROR
Robert K. Stalcup, Lake Park; Warren R. Sigman, North Palm Beach, both of Fla., and Karl M. Prewo, Vernon, Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 23, 1980, Ser. No. 219,770
Int. Cl.³ G02B *5/08*
U.S. Cl. 350—310 **9 Claims**



1. A laser mirror comprising a base section attached to a backing section having a laser radiation reflecting surface, the base section comprising a glass matrix reinforced with a plurality of graphite fibers oriented in at least one plane parallel to the mirror surface, the backing section disposed between the base section and the reflecting surface and comprising a glass matrix reinforced with a plurality of graphite fibers oriented perpendicular to the reflecting surface.

4,451,119
COMPOSITE MIRROR AND METHOD OF CONSTRUCTION
John J. Meyers, Penfield, and John C. Pulver, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 2, 1981, Ser. No. 250,475
Int. Cl.³ G02B *5/08*
U.S. Cl. 350—310 **13 Claims**

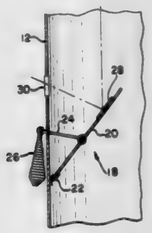


1. A mirror comprising a carbon-carbon substrate supporting an adherent optical coating of high reflectivity.

4,451,120
CHIMNEY OBSTRUCTION DETECTION APPARATUS
Frank R. Stape, P.O. Box 379, Bartlett, Ill. 60103
Filed Jun. 15, 1982, Ser. No. 388,518
Int. Cl.³ G02B *7/18*
U.S. Cl. 350—319 **16 Claims**

1. An inspection apparatus for the detection of obstructions of furnace flue pipes having a hollow portion therein for venting of flue gases, the improvement comprising:
plate means sealed within said hollow flue pipe portion operatively coupled at it's lower end portion with the interior of said flue pipe for reflecting light entering said hollow flue pipe portion through said flue pipe's upper end portion while said plate means is in a use position and said plate means being movable from a non-use position adjacent an interior wall of said flue pipe out of the way of venting flue gases to a use position within said hollow flue pipe portion forming an acute angle with said flue pipe;

moving means, pivotally coupled to said plate means, through said flue pipe, for moving said plate means from said non-use position out of the way of venting flue gases to said use position allowing said moving means to be in a plane adjacent the exterior of said flue pipe when said plate means is in said non-use position; and



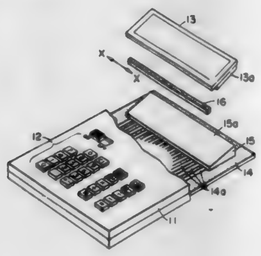
sight means in said flue pipe, sealing said flue pipe, for viewing light entering said hollow portion through said upper end portion and reflected by said plate means when in said use position thereby enabling detection of an obstruction of said flue pipe.

4,451,121

ELECTRONIC APPLIANCE

Hideo Fushimoto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 102,789, Dec. 12, 1979, abandoned. This application Jun. 22, 1982, Ser. No. 390,940
Claims priority, application Japan, Dec. 15, 1978, 53-155236
Int. Cl.³ G02F *1/13*; H01L *39/02*
U.S. Cl. 350—331 R **6 Claims**



1. An electronic appliance, comprising:

display means, having signal introducing terminals, for performing a display based on signals input thereto through said signal introducing terminals;

a printed base board provided with printed wirings thereon connectable to said signal introducing terminals of said display means;

a wedge-shaped table having an inclined surface for directly mounting said display means and being inclined with respect to said printed wirings provided on said printed base board, said table further being mounted on said printed base board and being formed of an insulating material that does not provide electrical contact between said display means and said printed base board; and

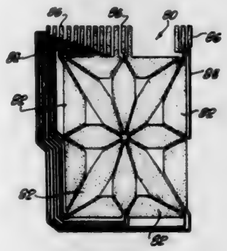
an electrically conductive member for electrically connecting said printed wirings of said printed base board and said signal introducing terminals of said display means and interposed between said printed base board and said display means.

4,451,122

MULTICOMPARTMENT ELECTRO-OPTIC DISPLAY DEVICE

Chan S. Oh, Diamond Bar, and Gordon Kramer, Huntington Beach, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 220,653, Dec. 29, 1980, abandoned. This application Apr. 22, 1981, Ser. No. 256,337
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—334 **14 Claims**



13. An electro-optic analog display device comprising:

at least two plates joined together in parallel relation to each other to form an interior envelope;

a plurality of separate compartments formed within said envelope;

partitioning means on one of said plates for establishing a first compartment and a second compartment within said envelope;

one electrode means located in a first one of said compartments;

another electrode means located in a second one of said compartments, said first and second ones of said compartments forming separate analog display areas;

a first liquid crystal material in said first and second one of said compartments; and

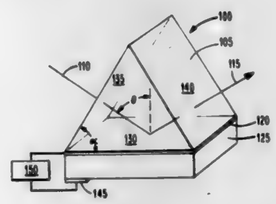
a second liquid crystal material in a third one of said compartments, said third one of said compartments being a background area of said display adjacent at least one of said first and second one of said compartments, activation of one of said one and another electrode means causing said first liquid crystal material to be the optical equivalent of said second liquid crystal material in said third compartment.

4,451,123

HIGH FREQUENCY LIGHT MODULATION DEVICE

William H. McNeill, Carlisle, and Yung J. Chen, Weston, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 20, 1982, Ser. No. 451,647
Int. Cl.³ G05D *25/02*
U.S. Cl. 350—386 **22 Claims**



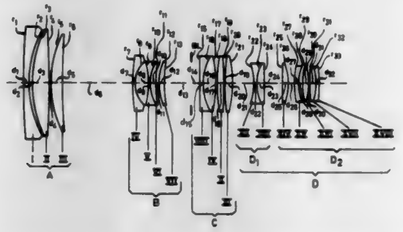
1. An electrooptic device for varying the intensity of a collimated monochromatic light beam, said device comprising a first element transparent to said monochromatic light beam and having a planar surface; a second element of a material of negative dielectric constant in contact with said planar surface to form an interface therewith; a third element of a semiconductor material adjacent to said second element; and means for varying the charge density of semiconductor material in said third element to affect the degree of coupling between said monochromatic light beam incident upon said interface and surface plasmon waves generated in said second and third elements whereby the intensity of said collimated monochromatic light beam varies with the charge density.

4,451,124

PHOTOGRAPHIC LENS OF CONTINUOUSLY VARIABLE FOCAL LENGTH

Heinrich Basista, Königsbronn, and Erhard Glatzel, Heidenheim, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,341
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1981, 3140378
Int. Cl.³ G02B *7/04, 15/00*
U.S. Cl. 350—427 **2 Claims**



1. A photographic lens of continuously variable focal length consisting of four lens groups comprising, in sequence from front to rear along an optical axis:

(a) a first group (A) of converging refractive power;

(b) a second group (B) of diverging refractive power;

(c) a third group (C) of converging refractive power; and

(d) a fourth group (D) of converging refractive power;

(e) said lens groups being so dimensioned and arranged that a change in the focal length is effected by displacing diverging lens group B and converging lens group C along the optical axis relative to each other and relative to groups A and D while maintaining a constant back focus;

said lens being characterized by the features that:

(f) an iris diaphragm (BL) is located between group B and group C;

(g) the third lens group C has a focal length which is numerically greater than the focal length of lens group B by a factor not less than 1.42 and not more than 1.73;

(h) the fourth less group D is formed of two parts (D_1 and D_2) separated from each other by a clear air space;

(i) the first part D_1 of the fourth lens group is of negative power;

(j) the second part D_2 of the fourth group is of positive power;

(k) said first part D_1 comprises a compound member formed of at least two elements; and

(l) the focal length of said first part D_1 is numerically greater than the focal length of the third lens group C by a factor not less than 1.16 and not more than 1.42;

the respective elements of the lens being dimensioned substantially in accordance with the data in the following table, the respective symbols in the table having the meanings explained in the accompanying specification:

Lens element	Radii		Thicknesses and Spacings	n_d	V_d
	r_1 + 421.790				
I		d_1	3.0	1.75520	27.58
	r_2 + 64.470				
		d_2	1.8		
	r_3 + 69.282				
II		d_3	10.5	1.69100	54.71
	r_4 − 453.140				
		d_4	0.1		
	r_5 + 64.470				
III		d_5	7.0	1.69100	54.71
	r_6 + 339.850				
		d_6	0.5 / 40.523 / 53.897		
	r_7 + 113.824				
IV		d_7	1.2	1.71300	53.83
	r_8 + 17.278				
V		d_8	8.0	1.71300	53.83
	r_9 − 48.000				
		d_9	1.0		
	r_{10} + 25.664				
VI		d_{10}	3.2	1.75520	27.58
	r_{11} + 69.282				
		d_{11}	2.0		
	r_{12} + 37.585				
VII		d_{12}	3.0	1.75520	27.58
	r_{13} + 79.431				
		d_{13}	55.797 / 15.774 / 2.400		
BL	r_{14} ∞		iris diaphragm		
		d_{14}	15.245 / 4.749 / 4.829		
	r_{15} + 1122.000				
VIII		d_{15}	2.0	1.805518	25.43
	r_{16} + 32.545				
IX		d_{16}	8.0	1.61272	58.63
	r_{17} − 57.460				
		d_{17}	0.1		
	r_{18} + 99.283				
X		d_{18}	4.2	1.71300	53.83
	r_{19} − 172.776				
		d_{19}	0.1		
	r_{20} + 127.721				
XI		d_{20}	4.4	1.71300	53.83
	r_{21} − 68.293				
		d_{21}	2.528 / 13.024 / 12.944		
	r_{22} − 29.853				
XII		d_{22}	1.0	1.71300	53.83
	r_{23} + 20.834				
XIII		d_{23}	4.5	1.76180	26.95
	r_{24} + 227.110				
		d_{24}	10.7		
	r_{25} − 1729.000				
XIV		d_{25}	3.2	1.69100	54.71
	r_{26} − 35.737				
		d_{26}	4.1		
	r_{27} + 112.204				
XV		d_{27}	2.2	1.80518	25.43
	r_{28} + 32.315				
		d_{28}	2.7		
	r_{29} + 82.939				
XVI		d_{29}	3.3	1.46450	65.77
	r_{30} − 35.228				
		d_{30}	0.1		
	r_{31} + 97.166				
XVII		d_{31}	4.1	1.60311	60.60
	r_{32} − 22.386				
XVIII		d_{32}	1.5	1.80518	25.43
	r_{33} − 92.387				

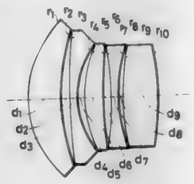
Back focus s' = 28.53

4,451,125

BEHIND APERTURE LENS SYSTEM

Shigetada Sato, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,235
Claims priority, application Japan, Mar. 26, 1982, 57-48525
Int. Cl.³ G02B 9/60
U.S. Cl. 350—465 **6 Claims**



1. A compact, five-element, high-performance behind aperture lens comprising a positive meniscus first lens, a negative second lens, a positive third lens, a biconcave negative fourth lens, and a biconvex positive fifth lens, said lenses being arranged in the order from the object side, said behind aperture lens system satisfying the following conditions:

(1) $1.15 < f/f_{1,2} - 1.55$
(2) $1.600 < (\nu_1 - \nu_2)/(\nu_1/n_1 - \nu_2/n_2)$
(3) $1.200 < f/n_4|f_{7,8}| < 1.450, f_{7,8} < 0$
(4) $2.10 < f/f_1 < 3.00$
(5) $0.90 < f_5/|f_4| < 1.50, f_4 < 0$
(6) $0.60 < f_{10}/f_7| < 0.80, f_7 < 0$
(7) $1.00 < f_9/|f_8| < 1.30, f_8 < 0$

where

f: combined focal length of the overall lens system,
$f_{1,2}$: focal length of the first lens,
ν_i: Abbe number of the ith lens,
n_i: refractive index of the ith lens with respect to d-line,
$f_{7,8}$: focal length of the fourth lens,
f_1: focal length of the first lens on its surface on the object side,
f_4: focal length of the second lens on its surface on the image side,
f_5: focal length of the third lens on its surface on the object side,
f_7: focal length of the fourth lens on its surface on the object side,
f_8: focal length of the fourth lens on its surface on the image side,
f_9: focal length of the fifth lens on its surface on the object side, and
f_{10}: focal length of the fifth lens on its surface on the image side.

4,451,126

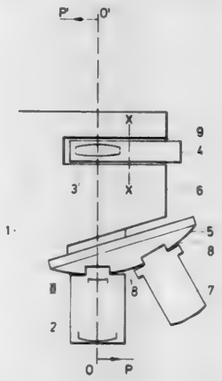
SURVEY OBJECTIVE

Horst Riesenberg, 3, Zenkerweg, and Margot Krahn, 4, Am Hang, both of, 69 Jena District of Gera, German Democratic Rep.

Filed Mar. 24, 1982, Ser. No. 356,558
Claims priority, application German Democratic Rep., May 27, 1981, 230323
Int. Cl.³ G02B 21/02, 15/00
U.S. Cl. 350—520 **1 Claim**

1. A survey objective of microscopes particularly for surveying microscopic objects, comprising

a bipartite survey objective constituted of a first lens member and a second lens member,
a lens turret,
a plurality of microscope objectives,
a microscope stage,
a revolving piece in a recess of said microscope stage,
an object plane,
an intermediate image plane,
an imaging beam,
said first lens member and said plurality of microscope objectives being mounted on said lens turret in symmetrical spaced relation in opposition to said object plane,
said lens turret being seated for rotation in said microscope stage,
said second lens member being seated on said revolving piece, between said lens turret and said intermediate image plane,
said second lens member being insertable into said imaging beam,



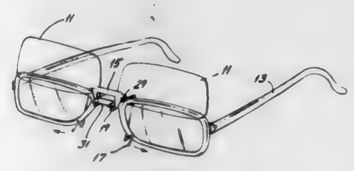
said object plane, said first lens member and said plurality of microscope objectives, when inserted into said imaging beam, said second lens member, when inserted into the imaging beam, and said intermediate image plane being in optical alignment about said imaging beam,
said first lens member having a contact face in opposition to said lens turret,
said plurality of microscope objectives having each a contact face in opposition to said lens turret,
said object plane and said contact face of said first lens member and of said plurality of microscope objectives, respectively, when inserted into said imaging beam have an equal separation distance.

4,451,127

HALF-READER SUNGLASSES

Merritt L. Moffitt, Jr., 9 Weirwood Rd., Radnor, Pa. 19087

Filed Mar. 19, 1981, Ser. No. 245,308
Int. Cl.³ G02C 9/00, 7/02
U.S. Cl. 351—47 **2 Claims**



1. Clip-on sunglasses for half-reader eye glass frames, comprising:

a pair of juxtaposed sun lenses;
a rectangular plate having a pair of tabs, one each extending longitudinally outwardly from said opposite shorter ends of said plate, each tab engaging one of said lenses at the nose bridge adjacent portion thereof;
a rectangular cut-out section in said plate extending inwardly from a longer side of said plate;

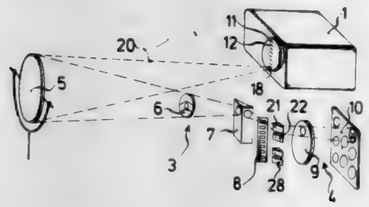
a pivot shaft extending across the opening provided by said cut-out section and attached to either end of said plate and extending parallel thereto;
a bracket for holding said rectangular plate allowing for the pivoting of said rectangular plate and said a full 180° rotation thereby pivoting said sun lenses from one position to another lying in the same plate, said bracket being a box-like, body with trapezoidally-shaped configuration;
a first and second protrusions, extending outwardly, in parallel, from a respective either end of said bracket, each said protrusion being bifurcated to form in each a receiving socket which operates as a journal to receive, hold and allow rotation of said pivot shaft;
a wire clamp for attaching said to said half-reader eye glass frames, said wire clamp wrapping around said eye glass frames, and being attached to said bracket by passing completely therethrough, parallel to said pivot shaft.

4,451,128

METHOD OF AND A DEVICE FOR ADJUSTING A HIGH-SPEED PHOTOGRAPHIC ARRANGEMENT

Frank Fruengel, Im Glockenacker 2, 8053 Zurich, Switzerland

Filed Jun. 29, 1982, Ser. No. 393,354
Claims priority, application Switzerland, Jul. 7, 1981, 4454/81
Int. Cl.³ G03B 41/00
U.S. Cl. 352—84 **10 Claims**



1. A method of adjusting a high-speed photographic device of the type having a spark-discharge flash light unit provided with a plurality of discrete spark gaps, means for sequentially activating respective spark gaps with a time delay of one spark discharge, a projecting optical system and a deflecting optical system cooperating with the flash light unit to take a succession of separate images of the movement of an object and reproduce the images side-by-side on an image plane, comprising the steps of activating the spark gaps at an increased repetition rate to reproduce on the image plane a flicker-free test image of all spark discharges, and adjusting the projecting and deflecting optical systems to produce a test image of a desired quality.

4,451,129

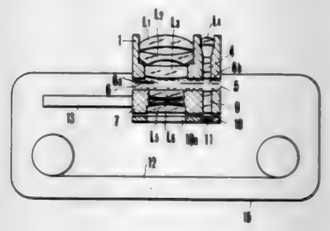
CAMERA HAVING A PLURALITY OF BUILT-IN LENSES

Hideo Ikari, and Michio Hirohata, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1982, Ser. No. 352,855
Claims priority, application Japan, Mar. 5, 1981, 56-31886; Mar. 5, 1981, 56-31887
Int. Cl.³ G03B 7/00
U.S. Cl. 354—477 **17 Claims**

1. A camera having a plurality of built-in lenses and capable of selective operation at different focal lengths, comprising:

(a) at least first and second photo-taking lenses for enabling selection of different focal lengths,
(b) photosensitive means for converting light from an object to be photographed to an electrical signal;
(c) first light guide means for conducting the light from the object to said photosensitive means; and
(d) second light guide means for conducting light emerging from said first light guide means to said photosensitive means when the focal length due to the combination of



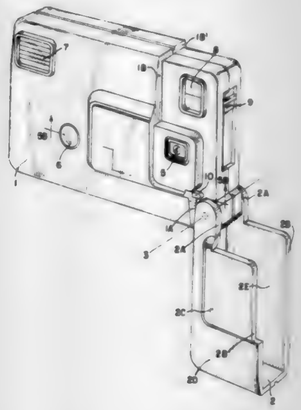
said first and said second photo-taking lens means is selected.

4,451,130

DISC CAMERA WITH HANDLE GRIP COVER

Chan K. Yan, North Point, Hong Kong, assignor to W. Haking Enterprises Limited, Hong Kong, Hong Kong

Filed Jun. 4, 1982, Ser. No. 385,328
Int. Cl.³ G03B 17/00
U.S. Cl. 354—82 **9 Claims**



1. In a camera configured to receive a disc-shaped magazine and including a housing with front and rear walls having a lens window exposed on said front wall near one side margin of the housing and front and rear viewfinder windows exposed on the front and rear walls on the same side of said housing as the lens window, the improvement comprising a hollow handle for said housing and having spaced front and rear walls defining therebetween an open housing side-receiving recess, said handle being much narrower than the width of said housing so as to fit over only the side of said housing containing said lens and viewfinder windows, and attachment means mounting said handle to said housing for supporting the same for movement between a stable, releasable retracted position where said handle recess receives the latter side of said housing therein and where said front and rear handle walls cover said lens and front and rear viewfinder windows, and at least one stable, releasable extended position where said handle can be readily grasped by the hand corresponding to the side of the camera where said lens window is located, so that the user need not grasp the adjacent side of the housing inadvertently to cover the lens window near the margin thereof.

4,451,131

INTERCHANGEABLE CAMERA LENS ASSEMBLY

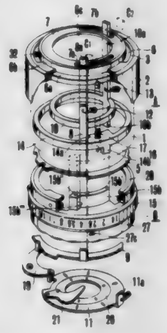
Seiichi Shimizu, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 122,177, Feb. 19, 1980, Pat. No. 4,299,470. This application Oct. 13, 1981, Ser. No. 310,874

Claims priority, application Japan, Feb. 23, 1979, 54-20257; Jul. 2, 1979, 54-91829; Jan. 18, 1980, 55-5102

Int. Cl.³ G03B *17/56, 17/14*

U.S. Cl. 354—286 **2 Claims**



1. An interchangeable lens assembly for a single lens reflex camera having complementary coupling means and complementary retainer means thereon comprising:

a first lens assembly including

first lens barrel means,

first coupling means adapted to be engaged with said complementary coupling means on said camera by rotative operation of said first lens barrel means when said interchangeable lens assembly is mounted on said camera so as to couple said interchangeable lens assembly with said camera,

adapter means mounted inside said first lens barrel means and arranged to be rotative relative to said first lens barrel means,

retainer means operating in cooperation with said complementary retainer means on said camera so as to fix said adapter means on said camera,

light control means for controlling the light entering said camera through said interchangeable lens assembly either by manual operation thereof or in response to exposure information from said camera,

signal transmission means including a signal transmission member held by said adapter means for transmission of exposure control signals between said interchangeable lens assembly and said camera, and

second coupling means arranged at one end of said first lens barrel means;

a second lens assembly including

second lens barrel means, and

third coupling means for coupling said second lens barrel means with said first lens barrel means,

said second lens barrel means having a focus adjustable phototaking lens.

4,451,132

COLOR PHOTOGRAPHIC PROCESSING APPARATUS INCLUDING A REVERSE OSMOSIS APPARATUS

Shinzo Kishimoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

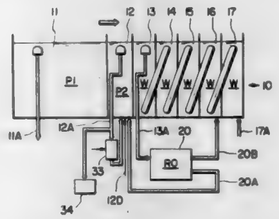
Filed Dec. 16, 1982, Ser. No. 450,278

Claims priority, application Japan, Dec. 17, 1981, 56-204726

Int. Cl.³ G03D *3/06*

U.S. Cl. 354—324 **12 Claims**

1. A color photographic processing apparatus including color developing tank or tanks, blixing tank or tanks and wash water tank or tanks through which photographic materials are sequentially processed on passing the tanks, wherein the improvement comprises a reverse osmosis apparatus having a



wash water inlet connected with the wash water tank(s), a condensed fluid outlet connected to said blixing tank(s) and a diluted water outlet connected with said wash water tank(s).

4,451,133

DEVICE FOR REMOVING THE DEVELOPER MIX FROM A DEVELOPING STATION

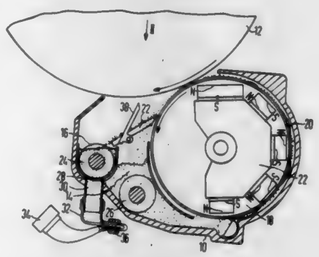
Walter Kopp, Taufkirchen, and Karl-Heinz Saalmueller, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,897

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117229

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—3 DD **5 Claims**



1. In a developer station having a housing divided into a principal chamber, containing a supply of particle developer mix, at least one rotatable developer drum for conducting developer mix into contact with a charge image carrier surface, and a first rotary screw conveying means for moving developer mix passed into said principal chamber into engagement with said at least one developer drum, and a mixing chamber, containing a second rotary screw conveying means for transporting developer mix therealong to a discharge end passage leading from said mixing chamber to said principal chamber, apparatus for removing developer mix from said station comprising:

a drain opening formed in the floor of said housing adjacent said discharge end passage,

a discharge passage means communicating with said drain opening controllable to block or unblock flow therethrough, and

a transfer means comprising a plate member pivotably mounted in said housing adjacent said principal chamber movable between a first upraised position allowing developer mix to spill off said developer drum directly back into said principal chamber and a second lowered position for passing developer mix spilled off said developer drum directly into said mixing chamber for transport by said second screw conveying means to said drain opening, said plate member having a lead edge for facing said developer drum, but which is spaced from the circumference of said developer drum in said second lowered position of said plate member, whereby said discharge passage means is unblocked and said developer drum and second screw conveying means are rotated to remove developer mix from said station.

4,451,134

MAGNETIC-BRUSH DEVELOPING DEVICE

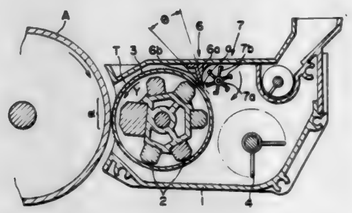
Masakazu Fukuchi, Hachioji; Keiji Oishi, Hino, and Yoshio Yamazaki, Mizuho, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,883

Claims priority, application Japan, Dec. 18, 1981, 56-203622; Dec. 18, 1981, 56-203623

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—3 DD **6 Claims**



1. In a magnetic-brush developing device wherein a rotary sleeve with permanent magnet incorporated therein is positioned inside a housing containing a developer, and wherein the thickness of ears of developer formed on the peripheral surface of the rotary sleeve is regulated by a doctor blade, the improvement characterized in that a rotor which forcibly removes surplus developer scraped off by the doctor blade is provided just in front of said doctor blade.

4,451,135

TONER CONCENTRATION DETECTING DEVICE

Masanobu Okumura, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 486,019

Claims priority, application Japan, Apr. 20, 1982, 57-57266[U]

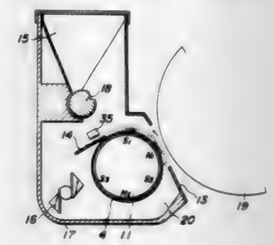
Int. Cl.³ G03G *15/06*

U.S. Cl. 355—3 DD **8 Claims**

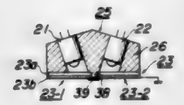
1. In a toner concentration detecting device for detecting the toner concentration of a dry-type, two-component developer, said device comprising:

a housing, transparent plate-like means provided on said housing, means provided in said housing for projecting light toward the developer through the transparent plate-like means, means provided in said housing for receiving light scattered by the developer through the transparent plate-like means to produce a photoelectrically converted signal representing the toner concentration of the developer, and

means for separating optically the portion of said transparent plate-like means located opposite said light projecting means from the remaining portion of said transparent plate-like means located opposite said light receiving







means to eliminate multiple reflection inside said transparent plate-like means.

4,451,136

FEED CONTROL FOR COPYING APPARATUS

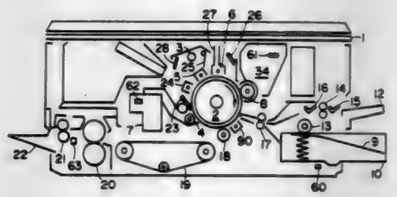
Hiroshi Tanioka, Tokyo; Masato Ishida, Kawasaki, and Tsuneki Inuzuka, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 213,593, Dec. 5, 1980, abandoned. This application May 29, 1984, Ser. No. 401,246

Claims priority, application Japan, Dec. 13, 1979, 54-161870

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **14 Claims**



1. Copying apparatus comprising:

means for forming a reproduced image of an original on a copy material

means for entering data necessary for image formation, said data entering means comprising instruction means for selecting the position of the reproduced image on said copy material;

means for performing timing control of said image forming means for image formation in response to the data entered by said data entering means, said timing control means comprising copy material feed control means provided with switching means to be actuated by said image forming means and timer means associated with said switch means, and timer control means for controlling operation of said timer means for shifting feed timing of said feed

control means in response to the instruction data supplied from said instruction means; and

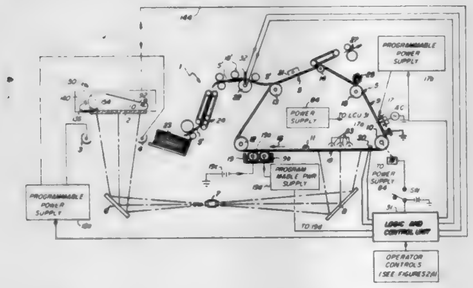
means for displaying feed timing of said feed means.

4,451,137

ADJUSTING COPIER COPY CONTRAST AND DENSITY DURING PRODUCTION RUNS

Ronald W. Farley, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1982, Ser. No. 382,532
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 C **8 Claims**



1. Apparatus including a copier having an exposure station and a feeder for feeding a multi-sheet document one sheet at a time from a stack in the feeder to the exposure station said copier to produce copies of the document; said apparatus comprising:

control means for establishing a set of copy process parameters which condition said copier to produce a copy having acceptable contrast and density for any document sheet which exhibits contrast and density encompassed within a predetermined range of contrast and density, and these document sheets hereinafter being referred to as document sheets of the first kind;

means for adjusting said control means to establish a different set of parameters for each document sheet exhibiting contrast and density outside of such range, and these document sheets hereinafter being referred to as document sheets of the second kind, to condition said copier to produce a proof copy thereof which has acceptable contrast and density;

transport means for feeding seriatim to said stack document sheets of the first and second kinds, which document sheets are intermixed in said document, said transport means including means for presenting for exposure at said exposure station prior to movement to said stack, each document sheet of the second kind for the purpose of producing said proof copy thereof and means for feeding document sheets of the first kind to the stack without presenting for exposure at said exposure station document sheets of the first kind;

memory means coupled to said adjusting means and to said transport means for storing information which identifies the sequential positions of and the established sets of parameters for the document sheets of a document for which said copier was conditioned to make proof copies; and

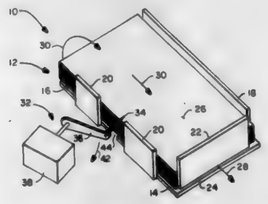
logic and control means operatively associated with said memory means for operating said feeder and said copier and for controlling said adjusting means so that said copier produces copies of the multi-sheet document having acceptable contrast and density.

4,451,138

ELECTROPHOTOGRAPHIC COPYING APPARATUS HAVING AN AUTOMATIC FEED ARRANGEMENT AND AN END-OF-FEED SENSING ASSEMBLY

Carl P. Anderson, Menlo Park, Calif., assignor to Ricoh Systems, Inc., San Jose, Calif.

Filed Dec. 3, 1982, Ser. No. 446,555
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH **8 Claims**



1. In an electrophotographic apparatus designed to make successive copies from a stack of original documents, automatically, by using a feeding arrangement configured to act on the stack in a way which successively moves each document onto a copying platen from the bottom of the stack when the latter is placed in a feed tray forming part of the arrangement and thereafter back onto the top of the stack within the tray along a looped path of movement from the tray to the platen and back to the tray, an assembly for detecting when the last document in that stack has moved from the tray to the copying platen, said assembly comprising:

(a) a through slot extending into said feed tray from one side of the latter;

(b) means located to one side of the feed tray adjacent said slot and therefore to one side of the looped path of movement of said original documents for movably supporting a sensing element on the top of said stack when the latter is within said feed tray such that the sensing element initially moves downward with the stack as it becomes smaller, thereafter through said slot as the last document in the stack is fed from the tray and then along a path of movement first along said one side of the tray, and ultimately onto the same stack which has been returned to the feed tray or onto a newly provided stack, whereby the feeding procedure can be repeated; and

(c) means responsive to the position of said sensing element for indicating when the last documents within the stack have left the tray.

4,451,139

CLEANING APPARATUS FOR PHOTOCONDUCTIVE ELEMENT

Nobuyuki Yanagawa, and Shinichi Kamiyama, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,733
Claims priority, application Japan, Sep. 4, 1981, 56-139425
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—15 **7 Claims**

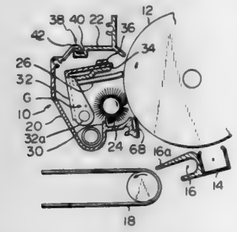
1. A cleaning apparatus for a photoconductive element, comprising:

cleaning means for removing toner particles remaining on the photoconductive element in contact therewith;

toner collecting means for collecting the toner particles removed by the cleaning means;

a casing accommodating the cleaning means and toner collecting means thereinside and movable in a direction perpendicular to an intended direction of movement of the photoconductive element; and

guide means formed in the casing at a location which is above the center of gravity position of the casing and



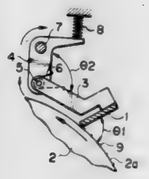
farther from the photoconductive element than the center of gravity position.

4,451,140

CLEANING BLADE UNIT

Kinzi Saito, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 8, 1982, Ser. No. 448,044
Claims priority, application Japan, Dec. 14, 1981, 56-201206
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **7 Claims**



1. A cleaning blade unit for removing any residual toner from the surface of a latent image carrier after a transfer step, comprising

a cleaning blade disposed in contact with a surface of the latent image carrier at an angle which is equal to or less than 90°;

a first holding member for holding the blade;

a second holding member for carrying the first holding member in an angularly movable manner which is pivotally mounted on the unit:

a spring member engaging both the first and the second holding member and urging the first holding member to move angularly in a direction to bring the forward edge of the blade into abutment against the surface of the latent image carrier; and

a bias member for urging the second holding member to move angularly in the same direction as the first holding member.

4,451,141

AUTOMATIC DEVICE FOR THE SIMULTANEOUS PRINTING AND DEVELOPMENT OF PHOTOGRAPHS

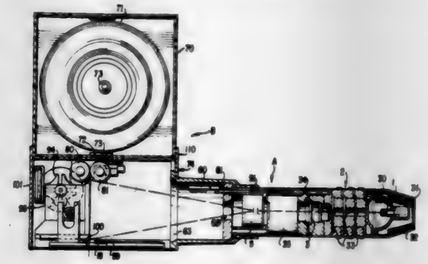
Claude Thebault, Meylan, France, assignor to Kis France, Grenoble, France

Filed Apr. 6, 1982, Ser. No. 366,074
Claims priority, application France, Apr. 15, 1981, 81 07737
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—28 **5 Claims**

1. An automatic device for simultaneous printing and development of photographs, in particular color photographs, comprising:

an exposure unit comprising first and second sub-units adapted to be plugged into one another, said first sub-unit comprising an exposure lamp, a subtractive filter system and a diffuser extended at one end by conductive pins, said second sub-unit comprising a view-carrier frame for receiving film, an enlargement lens and a first shutter, said second sub-unit being traversed longitudinally by a conductive member, said conductive member comprising a jack adapted to receive said conductive pins of said first sub-unit, and an extension pin adapted to engage said dark-room unit;

a dark-room unit comprising a light impervious housing, a feed member for feeding paper, a primary member for advancing the paper, a planar surface on which the image to be reproduced transmitted from the lens is projected onto the paper, a cutter, a first light impervious slit in said light impervious housing through which said paper emerges, and a supporting frame located below said light impervious housing and comprising top, bottom and side portions, said top portion comprising rims adapted to



wedge the light impervious housing therebetween, and a primary second slit coinciding with said first light impervious slit for the passage of paper, said bottom portion comprising an orifice, said side portion comprising a second shutter and a nose-shaped protuberance projecting towards said exposure unit in which the exposure unit is adapted to be inserted and within which said second shutter is pivotable;

a development unit comprising a housing member, a pivotable cover, means for feeding the cut exposed sheet of paper, a series of development bath treatment sections, a drying section, and means intended to advance the cut exposed sheet within said treatment sections and within said drying section, and a funnel which coincides with said orifice for the passage of the cut exposed sheet of paper, said vertical dark-room unit being rigidly connected to said top cover of said development unit, said cover being pivoted to one end of said housing member.

4,451,142

METHOD OF AND APPARATUS FOR DETECTING INITIAL POSITION OF EASEL AND LENS IN PHOTOGRAPHIC APPARATUS

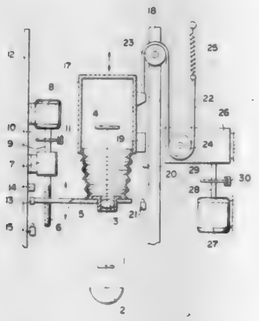
Yuji Takenaka, and Sumio Yoshikawa, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 18, 1981, Ser. No. 293,841
Claims priority, application Japan, Aug. 27, 1980, 55-118116
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—55 **3 Claims**

1. In a photographic system for printing an image of an original on a photosensitive material,

a method of detecting the initial positions of an easel and a lens comprising carrying out the first focusing by moving an easel and a lens the focal length of which is known in advance, to find out a position where the image seems to be focused by looking in the easel, and placing a photosensitive material in the easel, printing while moving the lens in the vicinity of the position, and finding out the sharpest photograph among the photographs obtained, and carry-

ing out the second focusing by moving the easel and the lens in the same manner at a different position, and determining the positions of the easel and the lens with respect



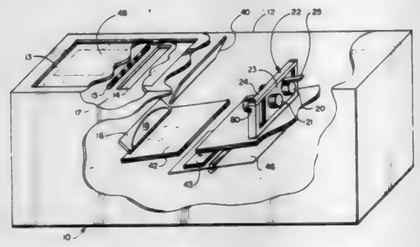
to the original at the second focusing according to the lens formula by use of the travel amounts of the easel and the lens from the first focusing position to the second focusing position.

4,451,143

COMBINATION DIRECT/REVERSE IMAGE COPY MACHINE

Joseph E. Goodman, Lawrenceville, Ga., assignor to Jofax Industries, Inc., Norcross, Ga.

Filed Apr. 12, 1982, Ser. No. 367,154
Int. Cl.³ G03B *27/70*
U.S. Cl. 355—66 **9 Claims**



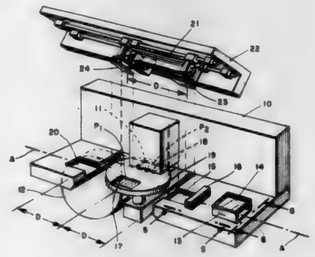
1. A reprographic apparatus for making a photo copy of an original object, said apparatus comprising:
- an image path defined between the original object and the copy;
- a light source for illuminating said original object;
- a right reading optical element assembly movable into and out of said image path;
- a reverse image optical element assembly movable into and out of said image path and interchangable with said right reading optical element assembly;
- baffle means positioned within said image path in the upper focal length of the optical element assemblies, said baffle means cooperating with said light source and each of said right reading optical element assembly and said reverse image optical element assembly to deliver uniform irradiance at the copy; and
- light blocking means positioned in fixed relationship relative to and movable with said right reading optical element assembly for reducing the amount of light entering said right reading optical element assembly.

4,451,144

AUTOMATIC LOADER FOR MICROFICHE DUPLICATORS

Karl H. Gensike, Northridge, Calif., assignor to Photomatrix Corporation, Santa Monica, Calif.

Filed Sep. 27, 1982, Ser. No. 423,525
Int. Cl.³ G03B *29/00, 27/04*
U.S. Cl. 355—99 **7 Claims**



1. An automatic loader for successively transferring microfiche from a loading station to a function station and from said function station to a collecting bin, including, in combination;
- (a) first and second receiving platens at first and second spaced positions, said first position being aligned with and centrally located between said loading station and bin and said second position being at said function station;
- (b) means for successively interchanging the positions of said first and second platens between said first and second positions; and
- (c) shuttle means movable back and forth over said first position and including first and second microfiche pick-up means spaced apart in the direction of travel of said shuttle means such that when the shuttle means is at one end of its travel, the first and second pick-up means are positioned respectively over said loading station and said first position of a receiving platen, and when the shuttle is at its other end of travel, the first and second pick-up means are positioned respectively over said first position and said bin whereby when said shuttle means is at said one end of travel microfiche can be picked up from the loading and receiving platen at the first station simultaneously and when the shuttle means is at said other end of travel microfiche can be deposited on the receiving platen at the first station and in the receiving bin simultaneously, said means for interchanging the positions of said first and second platens effecting an exchange after each time a microfiche has been deposited on a receiving platen in said first position.

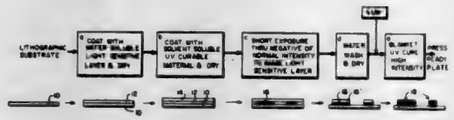
4,451,145

APPARATUS AND PROCESS FOR MAKING LITHOGRAPHIC PRINTING PLATE WITH REINFORCED IMAGE

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06880, and Robert F. Gracia, Scituate, Conn., assignors to Howard A. Fromson, Weston, Conn.

Division of Ser. No. 142,507, Apr. 21, 1980, Pat. No. 4,334,769, which is a continuation of Ser. No. 972,561, Dec. 22, 1978, abandoned. This application Apr. 20, 1982, Ser. No. 370,219
Int. Cl.³ G03B *27/30;* B41C *1/10*
U.S. Cl. 355—100 **12 Claims**

1. Process for making a lithographic printing plate which comprises:
- (a) exposing to actinic light a lithographic plate having a water soluble light sensitive layer thereon and an overcoating of a solvent soluble, UV curable material, the intensity of said light being sufficient to form at least a latent image in the light sensitive layer and to adhere the image to the overlying portions of the UV curable material without curing the UV curvable material;
- (b) developing the plate with water to remove the light sensitive layer and overlying UV curable material in the non-image areas; and



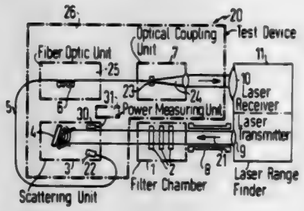
- (c) exposing the plate to a UV source having an intensity greater than the imaging light used in step (a) which is sufficient to cure the UV material adhered to the image to form a press-ready plate having a durable, reinforced cured image thereon.

4,451,146

TEST DEVICE FOR DETERMINING THE EXTINCTION VALUE OF A LASER RANGE FINDER

Ludger Grage, Eichenau, and Werner Ryseck, Oberschleissheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,400
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034942
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—5 **14 Claims**



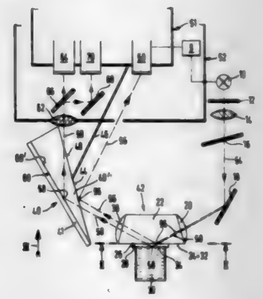
1. A test device for determining the extinction value of a laser range finder having a laser transmitter and a laser receiver, said device comprising an optical shield for shielding an unattenuated laser beam from the laser transmitter, a filter chamber containing attenuation filters being disposed in an optical beam path of the laser transmitter, a scatter unit having means for reflectively diffusely scattering the beam of laser light from the laser transmitter and including a reflective dispersion disk having a scatter range, an optical coupling unit for coupling light in a beam path into the laser receiver and at least one light waveguide line of a specific length having one end being disposed in the scatter range of the dispersion disk of the scatter unit to receive scatter light therefrom and the other end being positioned for releasing the light traveling in said waveguide into the optical beam path of the receiver so that the unattenuated beam of laser light from the transmitter is both attenuated and scattered prior to being coupled into the receiver.

4,451,147

REFRACTOMETER

Karel Dobes, Fafnerstr. 8, D-8000 München; Peter Fuchs, Vimystr. 4, D-8050 Freising, and Otmar Rudolf, Kantstr. 24, D-8000 München, all of Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 276,515
Int. Cl.³ G01N *21/41*
U.S. Cl. 356—135 **26 Claims**



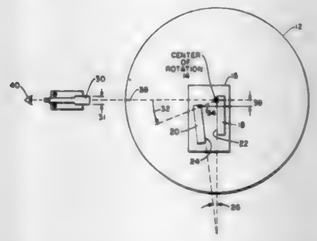
1. A refractometer for measuring refractive index of a media during a continuous process comprising:
- light source means for producing a light beam,
- a light prismatic body having a media surface contacting the boundary surface of said media and a mirror surface, said light beam being directed onto said mirror surface and said media surface to provide a reference light beam reflected from said mirror surface and a measurement light beam reflected from said boundary surface,
- first means for receiving said reference beam and producing an electrical signal varying as a function thereof,
- second means for receiving said measurement beam and producing an electrical signal varying as a function thereof, and
- means for directing said reference and measuring beams respectively to said first and second means.

4,451,148

OPTICAL ANGULAR INTERVAL MARKER

Robert J. Magee, Concord, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Feb. 16, 1982, Ser. No. 348,879
Int. Cl.³ G01B *11/26*
U.S. Cl. 356—138 **13 Claims**



1. An optical angular interval indicator comprising:
- first and second optically reflecting surfaces generally facing each other and positioned with their reflecting surfaces slightly non-parallel forming a basic angle therebetween;
- means for rotating said first and second reflecting surfaces in a plane generally orthogonal to said first and second reflecting surfaces;
- means for projecting a collimated beam of light toward said first and second reflecting surfaces;

said rotating means orienting said first and second surfaces relative to said beam of light to permit varying numbers of multiple reflections therebetween and to return the multiply reflected beam of light toward said projecting means at integral multiples of said base angle in the rotation of said first and second reflecting surfaces; and

means associated with said projecting means for indicating the degree to which said returned beam of light departs from the path of its projection toward said first and second reflecting surfaces.

4,451,149

POLARIZATION FLUOROIMMUNOASSAY APPARATUS

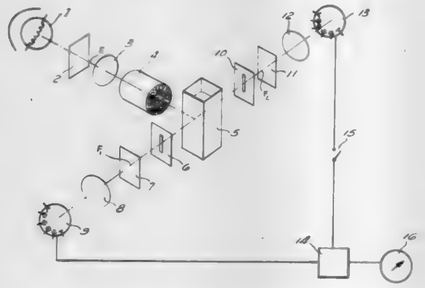
Hans G. Noeller, 1942 Deerpark Dr., Apt. 92, Fullerton, Calif. 92631

Filed Jul. 27, 1981, Ser. No. 286,862

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1980, 3028591

Int. Cl.³ G01N *21/64, 21/21, 21/00*

U.S. Cl. 356—317 **4 Claims**



1. Apparatus for determining the extent of an immunoreaction by means of fluorescent tagged species comprising the combination of:

(a) an excitation light beam source for producing high intensity light for exciting fluorescent radiation in such tagged species;

(b) means for positioning a sample in the path of said excitation light beams;

(c) means for guiding the light beam to the sample while shielding the sample from the heat of the beam;

(d) means in the excitation light beam path for polarizing the excitation light beam directed toward the sample position; and

(e) means for measuring fluorescent light emitted from the sample.

4,451,150

FILM TAKE-UP APPARATUS IN CAMERA USABLE TOGETHER WITH A FILM MAGAZINE DEVICE

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,683

Claims priority, application Japan, Mar. 27, 1981, 56-44120

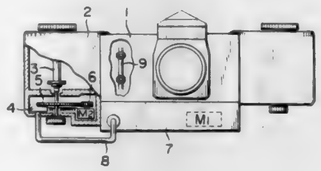
Int. Cl.³ G03B *1/18*

U.S. Cl. 354—173.11 **7 Claims**

1. In a photographing camera system comprising film feed means, a first driving source for driving said feed means, means for taking up film from said feed means, second driving means for driving said take-up means, power supply means for said first and second driving sources, means for connecting said first and second driving means to said power supply means at substantially the same time, and first control means for disconnecting said first driving source from said power supply means when a definite amount of said film has been fed by said feed means, the improvement comprising:

second control means for disconnecting said second driving source from said power supply means before said first driving source is disconnected from said power supply means;

said second control means including timer circuit means which generates an output upon elapse of a delay time



changing in approximation to a function as represented by a rectangular hyperbola, relative to change in an output voltage of said power supply means, after said second driving source has been connected to said power supply means.

4,451,151

OPTICAL DEVICE FOR SUSTAINING A RADIANT ENERGY PULSE WHICH CIRCULATES WITHIN A MONOMODE WAVE GUIDE A GYROMETER AND A HYDROPHONE EQUIPPED WITH SAID OPTICAL DEVICE

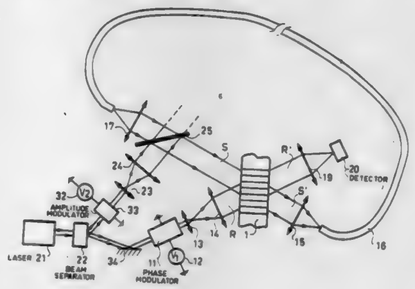
Jean-Pierre Huignard, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 23, 1982, Ser. No. 351,403

Claims priority, application France, Feb. 27, 1981, 81 03989

Int. Cl.³ G01B *9/02;* **G02B** *5/14;* **G01C** *19/58*

U.S. Cl. 356—345 **12 Claims**



1. An optical device for sustaining a radiant energy pulse which circulates within a monomode waveguide, said device being constituted by a monomode optical waveguide in which is circulated a first wave consisting of a radiant energy pulse produced by a coherent source, optical connecting means being optically coupled to the end faces of said waveguide in order to form a circulation loop, wherein said optical connecting means consist of an interaction medium in which a phase grating has been photoinduced by the interference of two beams produced by said coherent source, said medium being coupled to the two end faces of said waveguide through the intermediary of optical focusing means, the energy of a pumping wave being transferred to said first wave via said medium and said pumping wave being derived from said coherent source, said energy being sufficient to sustain the radiant energy pulse which circulates within said loop.

4,451,152

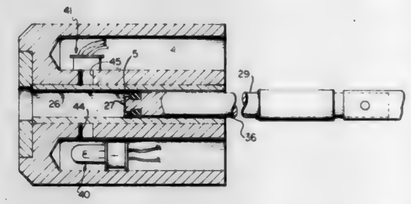
METHOD FOR MEASURING THE RADIATION TRANSMITTING PROPERTIES OF A FLUID

George J. Topol, Gaithersburg, and Chadwick L. Trent, College Park, both of Md., assignors to Monitek, Inc., Hayward, Calif.

Continuation of Ser. No. 254,891, Apr. 16, 1981, abandoned, which is a continuation of Ser. No. 709,923, Aug. 18, 1976, abandoned. This application Mar. 7, 1983, Ser. No. 457,141

Int. Cl.³ G01N *21/03, 21/15*

U.S. Cl. 356—440 **1 Claim**



1. The method of sampling and examining the optical radiation transmitting properties of a fluid contained in a large volume of fluid comprising the steps of:

communicating the large volume of fluid with a sample chamber which has at least a pair of aligned optically transparent wall portions forming windows through which the optical radiation can pass through the fluid;

selecting a piston for the sample chamber, for drawing a fluid sample from the large volume of fluid into the sample chamber, which has an external diameter smaller than the internal diameter of the sample chamber to form a separation between the piston wall and the sample chamber wall sufficiently larger to insure lack of contact between the piston and the sample chamber to prevent scratching;

passing optical radiation from a source through the fluid sample to a detector for determining the optical radiation transmitting properties; and

fluid tightly sealing one end of the movable piston to the internal wall of the sample chamber with a seal which is shaped and dimensioned to also wipe the windows of the sample chamber without scratching by forming the seal with a main body portion which circumscribes the piston in sealing contact therewith but which is spaced apart from the sample chamber wall to avoid scratching that wall with debris in the fluid sample and with a structural frustoconical skirt integral with and extending outwardly from the main body portion and terminating the skirt in a flat forward end portion which is substantially at right angles to the center line of the piston and which has an external diameter at the outermost edge of the end portion slightly greater than the internal diameter of the sample chamber so that the outermost edge of the end portion seals against the sample chamber wall and the flat forward end portion is partially deformed by the sample chamber to inwardly and rearwardly taper the flat forward end portion to wipe the debris from the wall and to cause the debris to fall away from the wall inwardly when expelling the fluid sample from the sample chamber.

4,451,153

APPARATUS FOR BLENDING AND DISPENSING A MIXTURE OF ASPHALT EMULSION AND SAND

Denny F. Warnock, 6100 W. Stonehedge, Greenfield, Wis. 53220

Filed Jul. 6, 1981, Ser. No. 280,319

Int. Cl.³ B28C *5/38*

U.S. Cl. 366—13 **1 Claim**

1. Apparatus for blending and dispensing a mixture of liquid asphalt emulsion and sand comprising:

a mobile support including a first framework, a frame portion pivotably connected to said first framework for engagement with a pivotable dump body of a truck whereby said apparatus can be automatically mounted on said truck in raised position for road transport when said dump body is swung from tilted to horizontal position;

ground engaging wheels mounted on said first framework;

a second framework movably mounted on said first framework to enable manual adjustment;

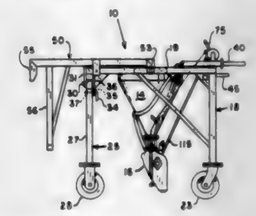
a sand hopper mounted on said second framework and comprising a sand outlet port;

a blending and dispensing device mounted on said second framework below said sand hopper and comprising a housing including a chamber having a rotatable impeller therein and a sand inlet port, an emulsion inlet port, a gas inlet port and a mixture outlet port, each port communicating with said chamber;

valve means for controlling sand flow to said sand inlet port;

valve means for controlling emulsion flow to said emulsion port;

and a motor mounted on said device for driving said impeller.



4,451,154

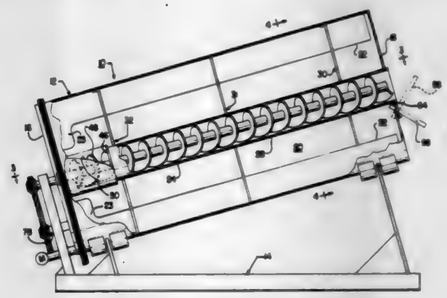
MIXING DEVICE

James Zimmerman, P. O. Box 444A, New Holland, Pa. 17557

Filed Sep. 10, 1981, Ser. No. 300,905

Int. Cl.³ B01F *15/02*

U.S. Cl. 366—186 **11 Claims**

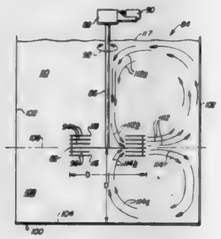


1. A mixing device for forage or similar product, said device including:

a rotatably mounted, inclined mixing chamber having a closed rear axial end lower than an open forward axial end, said chamber including an axially extending peripheral mixing zone between said rear and forward ends;

substantially linear mixing vanes extending forwardly from adjacent the rear end of the mixing zone for tumbling product when the chamber is rotated; an axially extending tubular housing within the mixing chamber for separating the peripheral mixing zone from a rotatably mounted axially extending auger within said housing, said auger communicating with the rear axial end of the mixing zone through a rear opening in said housing for receiving product from said mixing zone and feeding it toward and out of a forward axial end of said housing.

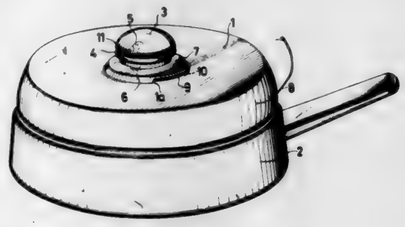
4,451,155
MIXING DEVICE
Richard B. Weber; George M. Wilfley, both of Denver, and George M. Wilfley, Castle Rock, all of Colo., assignors to A. R. Wilfley and Sons, Inc., Denver, Colo.
Filed Jan. 20, 1983, Ser. No. 459,344
Int. Cl.³ B01F 7/26
U.S. Cl. 366—265 **14 Claims**



1. A mixer for mixing a body of receiving liquid with solids, liquids or gases introduced therein, which comprises:
(a) a rotatable shaft;
(b) a thin disk-like member mounted for rotation of said rotatable shaft perpendicular to the axis of rotation thereof, the ratio of the overall diameter of said member to the maximum thickness thereof being at least about 32:1, each of the upper and lower surfaces of said disk-like member being substantially planar and smooth from one edge portion of the opposite edge portion and being free of any impeller blades mounted thereon;
(c) at least one thin annular ring mounted on said disk-like member spaced from, parallel to, and concentric with the disk-like member, the ratio of the overall diameter of said annular ring to the maximum thickness thereof being at least about 32:1, said annular ring having a substantially circular inner opening,
each of the upper and lower surfaces of said at least one annular ring being substantially planar and smooth from one outer edge portion to the opposite outer edge portion and being free of any impeller blades mounted thereon,
the flow of liquid perpendicular to said annular ring through the inner opening thereof, when said mixer is immersed and rotating in said body of liquid, being unimpeded by any structural member, and
said annular ring extending outward approximately to the outer circumference of said disk-like member from a point located generally in the mid-portion thereof,
whereby improved boundary layer flow is provided at the perimeter of the rotating disk-like member, and the outwardly directed pumping action of the rotatable disk-like member is rendered more uniform.

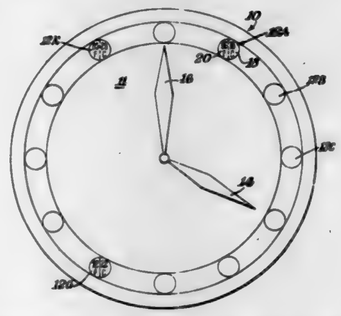
4,451,156
FRYING PAN LID
Gerd Kloppsteck, Arnsberg, Fed. Rep. of Germany, assignor to Heinrich Berndes GmbH, Arnsberg, Fed. Rep. of Germany
Filed Oct. 8, 1981, Ser. No. 309,856
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1980, 8027696
Int. Cl.³ G04B 47/00; G04F 3/00
U.S. Cl. 368—10 **7 Claims**

1. A frying pan lid comprising:
(a) a cover plate having a depending peripheral rim portion shaped to fit the top of a frying pan;
(b) a retaining knob secured centrically on top of said cover plate and formed as a housing; and
(c) a short-time bell accommodated in said housing;
(d) said housing comprising an upper cup and a lower cup, said lower cup including an indicating element and said



upper cup including an indicating window and being rotatably connected to said lower cup.

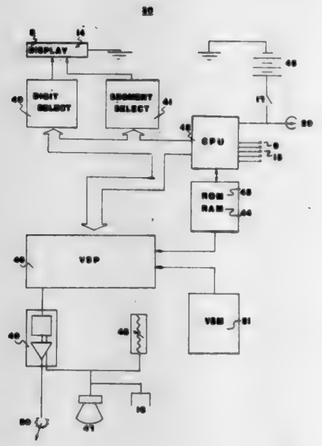
4,451,157
COMBINED TIME AND TEMPERATURE INDICATING DEVICE
James D. Reap, 810 Fowler Ave., Berwick, Pa. 18603
Filed May 13, 1982, Ser. No. 377,818
Int. Cl.³ G04B 47/06
U.S. Cl. 368—11 **3 Claims**

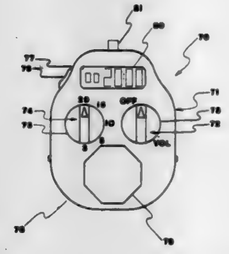


1. Combined time and ambient temperature indicating device whereby the temperature, in centrigrade and fahrenheit degrees, for each hour is displayed in visual association with the indication of the hour or part thereof comprising a casing having enclosed therein a clock mechanism and having a watch display face on which hourly time indicator factors are located in a circular visual pattern and in relation to means driven by the clock mechanism and independent liquid crystal temperature indicators placed on said display face at each time indicator factor so that for each hour position the surrounding ambient temperature will be displayed whereby a visual glance at the face to determine the time will enable a person to determine the temperature at such time.

4,451,158
COUNTDOWN TIMER
Stephen Selwyn, Queens, N.Y., and William P. Ketcham, 47 Sinawoy Rd., Cos Cob, Conn. 06807, assignors to William P. Ketcham, Cos Cob, Conn.
Filed Jan. 20, 1983, Ser. No. 459,371
Int. Cl.³ G04B 21/08; G04C 21/14
U.S. Cl. 368—63 **9 Claims**

1. A minaturized countdown timer comprising
(a) central processor unit means for counting down a selectible length of time to a zero time datum;
(b) LCD means for continuously displaying a digital readout of time remaining until said predetermined zero time datum;
(c) voice synthesizer processor means for generating electronic signals corresponding to the digital readout at pre-programmed specific intervals;
(d) loudspeaker means for transducing said electronic signals into audible sounds corresponding to said displayed digital readouts of time remaining at said pre-programmed specific intervals;
(e) recall means for continually, without pause, recycling a predetermined recall time for countdown to said zero time datum upon the expiration of counted down time;

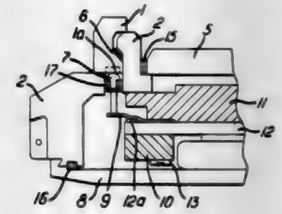




(f) processing means for monitoring the number of cycles said recall means and for continuously displaying the current number of said recall cycle on said LCD means;
(g) intermittent actuating means for activating said voice synthesizing processor means for synthesizing spoken time announcements on the whole minute throughout the countdown; at 15 second intervals of a pre-determined penultimate portion of the countdown; and at each second of the final portion of the countdown.

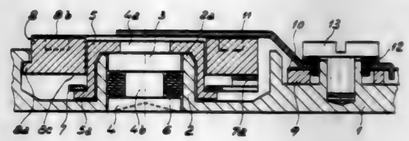
4,451,159
ELECTRONIC WATCH
Mitsunori Tanaka, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Filed Feb. 16, 1982, Ser. No. 349,382
Claims priority, application Japan, Mar. 6, 1981, 56-32071
Int. Cl.³ G04C 17/00
U.S. Cl. 368—69 **18 Claims**

1. In an electronic watch operable in a plurality of modes: a watchcase body; a dial rotatably mounted on said case body; a plurality of camming portions provided on said dial and disposed in a circular pattern concentric with said dial; a circuit board within said case body; a plurality of switch terminal patterns deposited on an outer peripheral portion of said circuit board and being disposed in a circular pattern concentric with said dial; means including a plurality of reciprocable rods selectively engageable with the camming portions on the dial and positioned at respective ones of said switch terminal patterns to undergo reciprocal movement for selectively actuating said switch terminal patterns under the control of respective



ones of the camming portions on the dial in accordance with the stepwise rotation of the dial; and circuitry connected to said switch terminal patterns for producing a different mode recalling signal in response to a different combination of said actuated switch terminal patterns.

4,451,160
WATCH WITH A PUSH BUTTON
Josef Fluck, Granges, Switzerland, assignor to ETA S.A. Fabriques d'Ebauches, Switzerland
Filed Sep. 24, 1981, Ser. No. 305,090
Claims priority, application Switzerland, Oct. 10, 1980, 7567/80
Int. Cl.³ G04B 37/00
U.S. Cl. 368—290 **9 Claims**



1. In a watch of the type having a relatively wide dimension defining the plane of the watch and a relatively thin dimension substantially perpendicular to the plane of the watch, the improvement of
a casing having a wall substantially parallel to the plane of the watch,
a re-entrant tube fixed to said wall of the casing and extending into the casing substantially perpendicular to said wall and plane of the watch, and terminating within said casing at an inside end,
a push-button comprising a stem member and a cylindrical cap member said stem member being slidably mounted in the tube and having an outer end adapted to receive contact pressure from the user of the watch, and an inner end, the distance between the outer and inner ends of the stem member defining the thickness of the stem member, said cylindrical cap member being fixed at one end to the inner end of the stem member and telescoping over said inside end of said tube, and
a return spring acting against the other end of the cylindrical cap member to bias the push-button outwardly, said return spring being coaxial with and contained entirely between the outer and ends of the stem member.

4,451,161

MOVEMENT FOR AN ELECTRONIC WATCH WITH ANALOGUE DISPLAY

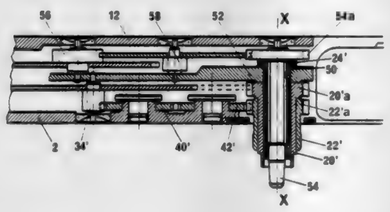
Jacques Müller, Reconvilier, Switzerland, assignor to ETA S.A. Fabriques d'Ebauches, Switzerland

Filed Apr. 24, 1981, Ser. No. 257,278

Claims priority, application Switzerland, Apr. 25, 1980, 3193/80

Int. Cl.³ G04B *19/02, 29/00*

U.S. Cl. 368—220 **2 Claims**



1. A movement for an electronic watch provided with at least two hands comprising:

a motor;

a cell for supplying said motor;

a first arbor for carrying a minute hand and comprising a single toothed pinion, integral with said first arbor;

a second arbor, coaxial to said first arbor, for carrying an hour hand and comprising a single toothed pinion, integral with said second arbor, said two arbors being adjacent and without overlapping with said cell;

a gear train for connecting said motor to said pinions, comprising a minute wheel and an hour pinion, rigidly joined one to the other, to form a single piece, and two idler wheels, at least one idler wheel gearing with one of said pinions and the other wheel gearing with said single piece.

4,451,162

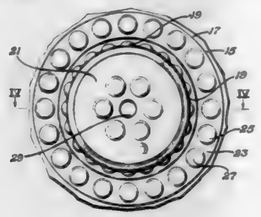
SPACED BUTTON THRUST SURFACE FOR EARTH BORING BIT

William L. Shepherd, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jun. 18, 1982, Ser. No. 389,782

Int. Cl.³ F16C *17/04*

U.S. Cl. 384—95 **4 Claims**



1. In an earth boring bit having a body with a depending bearing pin, a cutter having an axial cavity rotatably receiving the bearing pin, the bit having passage means for circulating air through spaces provided between the cutter and bearing pin, the bearing pin having at least one thrust surface perpendicular to the axis of the bearing pin that slidingly engages a thrust surface formed inside the cavity, at least one of the thrust surfaces comprising:

a plurality of wear resistant tungsten carbide buttons interferingly pressed into mating holes formed in supporting metal, protruding therefrom, and engaging the opposite thrust surface in sliding contact.

4,451,163

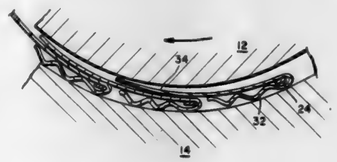
FOIL BEARING MOUNTING CARRIER

Glaser, Jerry, Playa del Rey, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 1, 1982, Ser. No. 394,077

Int. Cl.³ F16C *32/06*

U.S. Cl. 384—106 **18 Claims**



1. A fluid bearing comprising:

a tubular bushing;

a rotatable shaft supportively positioned within said bushing;

a tubular bearing carrier mounted within said bushing around said rotatable shaft, said tubular bearing carrier having at least one circumferential row of a plurality of compliant spring-like stiffener elements and an opening through the entire thickness of the bearing carrier between each of said plurality of compliant spring-like stiffener elements; and

a plurality of compliant hairpin foils removably disposed on said bearing carrier with an individual foil mounted on each spring-like stiffener element.

4,451,164

DISPENSING CONTAINER

James E. Roberts, Jr., 1825 Washington Blvd., NW., Canton, Ohio 44709

Continuation of Ser. No. 168,508, Jul. 14, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,303

Int. Cl.³ B43M *11/06*; A46B *11/04*

U.S. Cl. 400—196 **4 Claims**



1. A dish scrubber comprising:

a hollow handle having one closed end, one opened end, and closure for such opened end, said handle having a plurality of small area apertures in its wall adjacent said closed end;

said handle closed end portion being formed by a pair of opposed, tapered flat side portions defining a blunt point at such closed end;

a porous sponge body surrounding said closed end of said handle and extending up along said handle beyond said apertures some distance from said closed end; and

an abrasive fibrous surface layer on said porous sponge body and extending over at least said pair of opposed tapered side portions of said handle closed end and said said sponge body to form a wear-resistant layer on the dish scrubber which is adapted to receive and retain a liquid detergent in said handle but to release a detergent through said apertures on motion of the scrubber, characterized in that said liquid is retained in said handle closed end portion and in said handle opened end portion, said plurality of apertures being formed in said flat side portions and are horizontally aligned perpendicular to the direction of gravity in the normal position of use of the dish scrubber, and a circular external raised flange is formed on said wall around said apertures but spaced in the plane of the wall from said apertures to prevent said sponge body from contacting said apertures.

4,451,165

INK RIBBON FOLDING MECHANISM FOR A PRINTING APPARATUS

Toshiharu Fudatsuji; Tsutomu Imagi, and Hiroshi Miura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

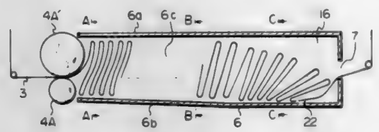
PCT No. PCT/JP80/00304, 371 Date Jul. 31, 1981, 102(e) Date Jul. 31, 1981, PCT Pub. No. WO81/01685, PCT Pub. Date Jun. 25, 1981

Continuation of Ser. No. 287,751, Jul. 31, 1981, abandoned. This PCT application Dec. 11, 1980, Ser. No. 504,090

Claims priority, application Japan, Dec. 12, 1979, 54-161033

Int. Cl.³ B41J *32/02*

U.S. Cl. 400—196.1 **3 Claims**



1. An improved ink ribbon folding mechanism for a printing apparatus of the type wherein a ribbon case provided with side walls and a ribbon supporting surface at the bottom thereof, which define a ribbon supporting portion, and with an inlet and an outlet at opposite ends of said ribbon supporting portion, said ribbon supporting portion being adapted for temporarily storing a portion of an endless loop of ink ribbon that is withdrawn from the outlet of the ribbon case and circulated through a printing station where one side of the ink ribbon is subjected to collision with type before the ink ribbon is returned to the ribbon case through the inlet thereof, and a pair of feed rollers having parallel axes of rotation are disposed adjacent each other at said inlet of said ribbon case so that the ink ribbon returning to the ribbon case is pinched between said feed rollers and fed into said ribbon storing portion alternately along the peripheries of the feed rollers so as to be folded regularly by lengths reaching the opposite side walls of the ribbon case and to be forwarded in the ribbon storing portion to the outlet of the ribbon case, wherein the improvement comprises:

(a) that the point at which said feed rollers pinch the ink ribbon is located in a biased position with respect to a line running along the center between the opposite side walls of the ribbon case, on the side of the ribbon case that is the closest to the surface of the ink ribbon which is not subjected to collision with the type;

(b) that the feed roller which is in contact with the surface of the ink ribbon subjected to collision with the type has a larger diameter than that of the other feed roller;

(c) that the outermost portion of said other feed roller, said outermost portion being opposite to said point of pinching of the ink ribbon with respect to the axis of said other feed roller, is positioned further from said center line than the distance from said center line to the inner surface of the side wall of the ribbon case that is closest to the surface of the ink ribbon which is not subjected to collision with the type;

(d) that said feed roller which is in contact with the surface of the ink ribbon subjected to collision with the type protrudes on both sides of said other roller, so that lines drawn perpendicular to the center line and tangent to said feed roller which is in contact with the surface of the ink ribbon subjected to collision with the type do not pass through said other roller; and

(e) that said ribbon supporting surface of the ink ribbon case has an end region adjacent the inlet of the ribbon case which is substantially horizontal and has an end region adjacent the outlet of the ribbon case which is inclined with respect to the horizontal, with the intermediate region between said end regions being twisted about said center line and with the angle of inclination between the horizontal and the ribbon supporting surface increasing from one end region to the other so as to connect said end regions.

4,451,166

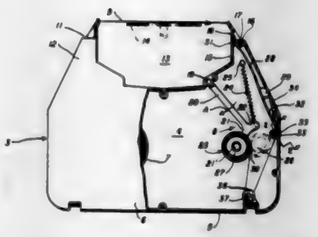
INKED RIBBON CARTRIDGE WITH RIBBON DRAG DEVICE

Thomas E. Frechette, Windsor Locks, Conn., and Helge H. Reuter, Nuremberg, Fed. Rep. of Germany, assignors to Triumph-Adler A.G. fur Buround Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Mar. 3, 1982, Ser. No. 354,343

Int. Cl.³ B41J *33/28*

U.S. Cl. 400—208 **6 Claims**



1. In a ribbon cartridge for a typewriter or like machine having a housing for ribbon supply and take-up spools and having spaced outwardly extending arms for guiding ribbon drawn by take-up means from a supply spool out of an exit aperture across a gap defined by said spaced outwardly extending arms and into an entry aperture,

said take-up means including a drive wheel and a take-up spool rotatably mounted in said housing and biased toward one another to maintain a nip with the periphery of said spool and said drive wheel in frictional engagement,

means for guiding ribbon between said entry aperture and the nip of said take-up spool and wheel including spaced abutments and a flexible member anchored in said cartridge and extending along a side wall of said cartridge, said flexible member having a length greater than the distance between said abutments and anchored to at least one of said abutments whereby it can be flexed toward said side wall, and

a resilient pad secured to and biased by said flexible member against said cartridge side wall to apply drag to ribbon passing between said pad and cartridge side wall to tension said ribbon subsequent to its passage through said entry aperture and in advance of its entry into the nip of said take-up spool and drive wheel.

4,451,167

PRINTING DEVICE WITH SWING-AWAY CUTTER ARRANGEMENT

Takao Honma; Nobuaki Matsukura; Keisuke Murakami, and Susumu Matsuda, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,156

Claims priority, application Japan, Jun. 30, 1981, 56-100468

Int. Cl.³ B41J *11/70*

U.S. Cl. 400—621 **8 Claims**

1. A printing device with a cutter arrangement comprising:

a printing body including a platen over which a printing medium is movable during a printing operation;

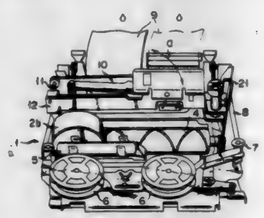
an ink ribbon located along said platen;

a printing head facing said ink ribbon and said platen;

means for moving the printing head along said platen during a printing operation;

a cutter unit having one end rotatably mounted on said printing body and which is rotatable between an open position whereat said printing head is exposed and a closed position whereat said cutter unit covers at least a part of said printing head;

said cutter unit including a driven system located within said cutter unit, said driven system including a cutter means and an actuation transmitting means, both mounted within said cutter unit;



a drive system mounted within said printing body; and

an engaging lever mounted on said drive system and which is engageable with said actuation transmitting means, when said cutter unit is in its said closed position, to couple said drive system to said driven system to thereby operate said cutter means of said driven system via said drive system, said driven system being disengaged from said drive system when said cutter unit is in its open position.

4,451,168

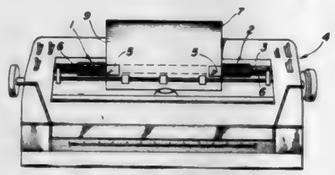
BOTTOM LINE WORK PIECE HOLDERS

Cleo Greenhaw, 1201 Princeton, and Marvin Smotone, 1213 Brentwood Dr., both of Ponca City, Okla. 74601

Filed Jul. 7, 1982, Ser. No. 395,915

Int. Cl.³ B41J *13/10*

U.S. Cl. 400—623 **2 Claims**



1. Workpiece holders for holding a workpiece in proper position in a typewriter having a paper scale, the paper scale having a flat outer surface and a flat upper surface which is generally perpendicular to the flat outer surface, the flat outer surface and the flat upper surface having a cross section corresponding to the outer surfaces of an inverted L, the workpiece being held in proper position for typing to the bottom line of the workpiece without side slippage near the bottom of the workpiece, the workpiece holders comprising:

a left workpiece holder and a right workpiece holder, each workpiece holder having;

a body adapted for fixable, detachable, and slidable mounting flush with the outer surface of the paper scale of the typewriter, the body of the workpiece holder having an inner surface corresponding to the general cross sectional shape of an inverted J adapted for fitting over the flat outer surface and the flat upper surface of the paper scale, the inner surface of the body being comprised of a magnetic material for easily fixable, slidable, and detachable mounting on the outer surface of the paper scale, and each workpiece holder also having an inner member, upon mounting, positioned parallel to the outer surface of the paper and at a distance out from the outer surface of the paper scale sufficient that free movement of the workpiece between the member and the outer surface of the paper scale is possible, characterized further in that:

the outer portion of the body member is molded of a plastic, the inner member of each workpiece is comprised of a transparent meaterial, the inner member is adhered to an inner elongated portion of the inverted J cross section over the horizontal length of the body and extending integrally to form the inner member, and cross sectionally inner of the J cross-section a magnetic material is adhered for mounting the workpiece holder fixably, detachably, and slidably flush with the outer surface of the paper scale of the typewriter, the magnetic material being of sufficient thickness to maintain the inner member in a position parallel to the outer surface of the scale and at a suitable distance out from the outer surface of the paper scale for free movement of the workpiece between the inner member and the outer surface of the paper scale.

4,451,169

PAPER LOADING APPARATUS

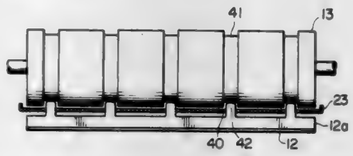
Michio Umezawa, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 9, 1981, Ser. No. 310,288

Claims priority, application Japan, Oct. 14, 1980, 55-144140; Oct. 15, 1980, 55-144119

Int. Cl.³ B41J *13/28*

U.S. Cl. 400—631 **1 Claim**



1. A paper loading apparatus including a platen, a paper retaining roller and a stop claw having protuberances formed on its free end, the roller and stop claw being movable relative to the surface of the platen in mutually opposite directions, the platen being formed with a plurality of axially spaced annular grooves in its periphery aligned with said protuberances, paper to be loaded being inserted into the apparatus when the paper retaining roller is removed from the surface of the platen and the stop claw protuberances abut with the aligned grooves of the platen until the leading edge of the paper inserted bears against the stop claw protuberances to achieve parallelism of the paper with respect to the platen as the paper is positioned axially of the platen,

means moving the stop claw away from the platen when the paper retaining roller is brought into abutment against the surface of the platen; detection means for detecting the insertion of the paper into the apparatus, and motor means connected to said paper retaining roller and responsive to a signal from the detection means for automatically initiating the movement of the paper retaining roller and of the stop claw relative to the surface of the plate; the stop claw and the paper retaining roller being mechanically connected, the movement of the stop claw relative to the platen being responsive to the movement of the paper retaining roller relative to the platen, said motor means being one solenoid, the signal from the detection means energizing said solenoid to thereby move the paper retaining roller away from the platen and, through said connecting means, simultaneously cause the stop claw to move toward the platen.

4,451,170

APPARATUS FOR CONNECTING A TENSION MEMBER TO AN UNDER-WATER ANCHORING BASE

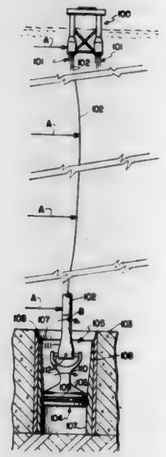
William S. Cowan, West University Place, Tex., assignor to Armco Inc., Middletown, Ohio

Continuation of Ser. No. 192,709, Oct. 1, 1980, abandoned. This application Aug. 3, 1982, Ser. No. 404,812

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ F16D *3/00*

U.S. Cl. 403—57 **14 Claims**



1. In apparatus for connecting an elongated tension element to a fixed underwater structure with the tension element extending generally downwardly to the underwater structure, the combination of

a male connector unit,

a female connector unit, and

connector means comprising

a transverse annular shoulder carried by one of the male and female connector units, and

generally annular stop means carried by the other of the male and female connector units,

the shoulder and stop means being in mutual engagement and preventing upward movement of the elongated tension element relative to the connector units,

one of the male and female connector units being connected to the elongated tension element,

the other of the male and female connector units being secured to the fixed underwater structure;

rigid generally tubular means having a bore wall portion and being secured to the fixed underwater structure in a position in which the bore wall portion is concentric with the connector and spaced above the connector means; and

flex joint means connected between the elongated tension element and the one of the male and female connector units which is connected thereto, the flex joint means comprising

a first flex joint member rigidly connected to said one of the male and female connector units,

a second flex joint member rigidly connected to the elongated tension element,

universal joint means interconnecting the first and second flex joint members and transmitting tension loads from one flex joint member to the other; and

rigid stop means including a generally annular outwardly directed stop surface surrounding and carried by the flex joint means in a location spaced substantially above the connector means,

the rigid stop means being rigidly carried by the flex joint means and preventing significant lateral movement of the rigid stop means relative to the flex joint means, and the annular stop surface being so closely embraced by the bore wall portion that lateral forces applied to the flex joint means by the tension element are transferred to the fixed underwater structure via direct engagement between the rigid stop means and the bore wall portion without occurrence of substantial relative movement between the shoulder and stop means of the connector means.

4,451,171

POLYAMIDE AS A PRIMER FOR USE WITH ASPHALTIC MEMBRANES

William E. Uffner, Newark, and Robert N. White, Etna, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 205,032, Nov. 7, 1980, Pat. No. 4,362,586. This application May 10, 1982, Ser. No. 376,370

Int. Cl.³ E01C *5/22*

U.S. Cl. 404—31 **1 Claim**

1. In a repaired cementitious road comprising a road substrate having a crack therein containing a crack filling material, a primer disposed on opposite surfaces of said road substrate adjacent said crack and an asphaltic membrane spanning said crack and being in contact with said primer on said opposite surfaces, the improvement wherein said primer is a polyamide having a softening point between about 99° C. to about 125° C. and a viscosity at 160° C. of about 6 to about 34 poise.

4,451,172

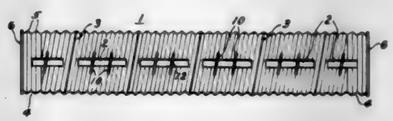
OPEN TOP DRAIN

Larry N. Lamphier, Hubbard, Ohio, and Walter A. Meyers, Bel Air, Md., assignors to Bethlehem Steel Corp., Bethlehem, Pa.

Continuation of Ser. No. 200,167, Oct. 10, 1980, abandoned, and Ser. No. 968,949, Dec. 13, 1978, abandoned. This application Mar. 10, 1982, Ser. No. 356,707

Int. Cl.³ E01F *5/00*; E02B *11/00*

U.S. Cl. 405—49 **1 Claim**

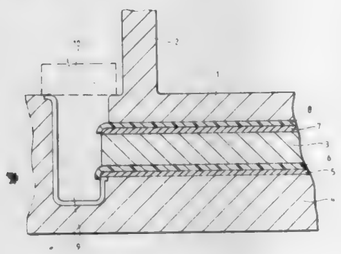


1. A culvert having a corrugated metal cylindrical wall, said wall having seams parallel to the corrugations and having a plurality of longitudinally spaced apart longitudinally elongated rectangular openings disposed at regular repeating intervals in a line along the top of said culvert for the entry of water, said openings being separated longitudinally from each other by curved portions of said corrugated metal cylindrical wall, each separating curved wall portion including at least one corrugation and a seam, the bottom and sides of said culvert wall being essentially free of openings, and a plurality of metal bar anchor members, each anchor member having a curved portion extending obliquely across one of said openings and secured to the bottom of a corrugation valley on either side of said opening and having two end portions projecting upwardly and outwardly away from the outer surface of the wall of said culvert.

4,451,173
STORAGE POND

Eric Watson, Culcheth, and Eric Hunter, Leyland, both of England, assignors to British Nuclear Fuels Limited, Warrington, England

Filed Jul. 9, 1982, Ser. No. 396,807
Claims priority, application United Kingdom, Aug. 13, 1981, 8124805
Int. Cl.³ B65D *25/24*
U.S. Cl. 405—53 4 Claims

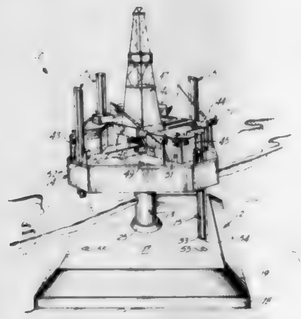


1. An above ground storage pond for hazardous liquids comprising a support base, a floor on the base, upstanding side walls, a trench surrounding the floor and side walls, and upper and lower impervious members in the base extending uninterrupted beneath the floor and side walls to emerge into the trench whereby any leakage through the floor and side walls is directed into the trench.

4,451,174
MONOPOD JACKUP DRILLING SYSTEM

Sherman B. Wetmore, Westminster, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Feb. 7, 1983, Ser. No. 464,481
Int. Cl.³ E21B *15/02*; E02B *17/02*
U.S. Cl. 405—196 21 Claims

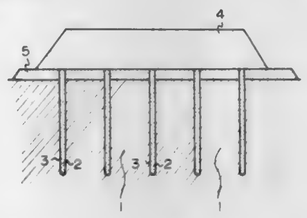


1. An offshore platform structure comprising a mat base adapted to engage the surface of and be supported by a subsea soil layer, a closed-surface pylon affixed at a lower end thereof to the base centrally thereof and extending to an upper end spaced from the base, a jackable deck unit having therethrough a central opening for passage of the pylon therethrough, securing means releasably engageable between the deck unit and the pylon adjacent the upper end of the pylon for securing the deck unit to the pylon in spaced relation to the base, a plurality of jacking legs carried by the deck unit in spaced relation to the central opening, and jacking means cooperable between the legs and the deck unit and operable for jacking the deck unit relative to the base along the pylon in response to engagement of the leg lower ends with the base and for jacking the legs to an elevated position at the deck unit.

4,451,175
METHOD FOR IMPROVING SOFT GROUND BY SAND DRAIN METHOD AND CYLINDRICAL BAG FOR USE IN SAME

Hiromichi Yamashita, Tokyo; Yoshiharu Watari, Yokohama; Hideaki Mutsuro, Fukuoka, and Kenji Takagi, Funabashi, all of Japan, assignors to Teijin Limited and Penta-Ocean Construction Co., Ltd., both of Osaka, Japan

Filed Aug. 25, 1982, Ser. No. 411,351
Claims priority, application Japan, Feb. 5, 1982, 57-14068[U]; Feb. 5, 1982, 57-14069[U]; Feb. 5, 1982, 57-14070[U]; Feb. 5, 1982, 57-14071[U]
Int. Cl.³ E02B *11/00*
U.S. Cl. 405—50 26 Claims



1. A sand drain method for improving soft ground having an undesirably high water content by imposing a load on the surface of said ground to cause removal of water via at least one sand drain, which comprises the steps of:

inserting a casing pipe into the soft ground followed by insertion of a cylindrical bag composed of a water-permeable material into the casing pipe, at least a part of said bag including means responsive to imposition of said load for increasing the diameter of said bag part;

constructing a sand drain by filling sand in the inserted cylindrical bag followed by drawing out the casing pipe, leaving the sand-filled cylindrical bag in the soft ground; and

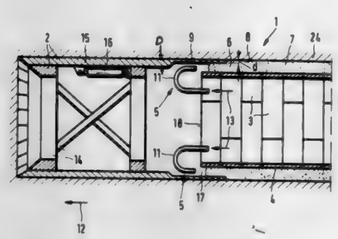
imposing a load on the surface of the soft ground adjacent said sand drain to remove water through the sand drain and consolidate the soft ground, whereby the diameter of said bag part increases so that the sand drain does not act as a rigid pile and does not support a substantial part of the consolidation load, thus allowing free settlement of the soft ground.

4,451,176
APPARATUS FOR AND METHOD OF DRIVING TUNNELS

Günter Flocke, Lünen; Hans Jütte, Dortmund-Brechten; Klaus Linde; Winfried Klamke, both of Lünen, and Werner Hampel, Selm, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lünen, Fed. Rep. of Germany

Continuation of Ser. No. 149,979, May 15, 1980, abandoned. This application Jul. 15, 1982, Ser. No. 398,681
Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2921907
Int. Cl.³ E21D *9/06, 11/10*
U.S. Cl. 405—146 11 Claims

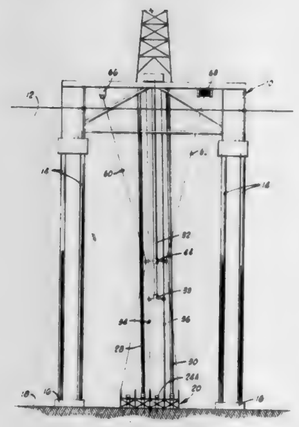
1. An apparatus for use in tunnel driving, comprising: an advanceable drive shield for supporting the forward region of a tunnel wall during excavation, formwork located rearwardly of the drive shield relative to the direction of the tunnel driving, the formwork being of multi-part construction and advanceable to follow up the drive shield by removal of a rear part and re-siting of the rear part at the front end of the formwork, the formwork cooperating with the tunnel wall to define an annular space with an open front region facing said drive shield for receiving concrete used to create a lining for the tunnel wall, and movable spray means for rearwardly spraying concrete through and around said open front region into said space to fill said space and to create said lining, said front region remaining open while concrete is sprayed into said space to accommodate movement of said spray means, thereby achieving an even distribution of the sprayed concrete.



4,451,177
GUIDELINE SYSTEM FOR POSITIONING SUBSEA EQUIPMENT

Riley G. Goldsmith, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Feb. 8, 1982, Ser. No. 346,854
Int. Cl.³ E02B *17/00*; B63B *35/44*
U.S. Cl. 405—195 26 Claims



1. A method of laterally positioning a second item of subsea equipment adjacent an existing first item of subsea equipment while lowering said second item from a surface structure toward a floor of a body of water, said method comprising:

providing at least two guidelines between said surface structure and a fixed structure located within said body of water below said surface structure;

slidably connecting said second item to said guidelines so that said guidlines are outwardly splayed in at least one direction above or below a point of sliding engagement of said guidelines with said second item;

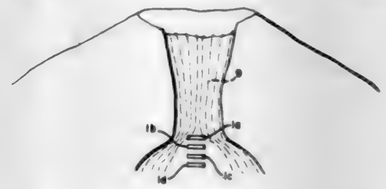
lowering said second item from said surface structure so that said second item slides downward along said splayed guidelines; and

tensioning said splayed guidelines against the surface structure and the fixed structure to exert a lateral force on said second item.

4,451,178
METHOD FOR DISPERSING OR ARRESTING LAVA FLOW

Joseph Sperrazza, Aberdeen; James C. C. Liu, Bel Air, both of Md., and Wilfred E. Baker, San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 21, 1981, Ser. No. 285,889
Int. Cl.³ E02D *3/00*; A62C *37/00*
U.S. Cl. 405—258 16 Claims



1. The method of diverting lava flow including the steps of:

(a) positioning for filling, a high pressure vessel explosive under extremely high pressure,

(b) at least partially filling said vessel with a nonflammable composition, liquid at normal temperatures and convertible to gas under high temperature, allowing room within said vessel for expansion of said composition if frozen,

(c) tightly sealing said vessel to prevent loss of said composition,

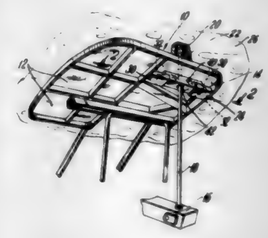
(d) positioning said vessel in a volcanic region, in a specific predetermined locale in the normal expected channel of a lava flow,

(e) whereby when a lava flow occurs in said volcanic region and flows over said vessel, said vessel will heat up to temperatures of at least 1000° F. or more causing said composition to be heated and converted into gas thereby presurrizing said vessel to a desired exploding pressure, causing said vessel to explode with sufficient force so as to divert said lava flow from its normal channel into a new channel and away from a predetermined geographical area.

4,451,179
METHOD AND APPARATUS FOR AFFIXING A ROOF BOLTING PLATE TO A MINE ROOF

Arnold B. Bower, Jr., Bristol, Va., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 10, 1979, Ser. No. 102,279
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—260 5 Claims



5. A method of affixing a roof bolting plate having a central bolt hole to a roof using a roof bolting drill having a driver element, with the roof bolting drill further including a support frame having a plurality of supporting members having a generally trough-like configuration including a flange member extending transversely therein and disposed intermediate the length of said members such that said roof bolting plate is prevented from shifting longitudinally during a drilling opera-

tion, said support members being positioned such that when a roof bolting plate is slidably received within said supporting members, the central bolt hole of the roof bolting plate is aligned with the driver element of the roof bolting drill, said method comprising the steps of:

mounting a roof bolting plate between said supporting members on said support frame;

raising said support frame until the upper surface of the roof bolting plate abuts the roof;

raising the driver element such that it passes through and is guided by the central bolt hole of said roof bolting plate;

drilling a hole in the roof to the desired depth;

lowering the driver element until the upper end thereof is below the bottom surface of said roof bolting plate;

placing a bolt through the central bolt hole of the roof bolting plate and into the drilled hole;

securing the bolt and the roof bolting plate to the roof; and

lowering the support frame thereby leaving the bolt and the roof bolting plate affixed to the roof.

4,451,180

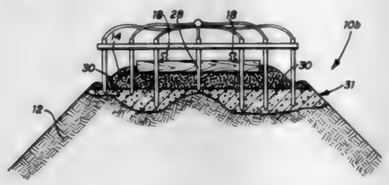
METHOD FOR RESTRUCTURING RAILWAY ROADBEDS

Henry H. Duval, 3944 Boca Bay Dr., Dallas, Tex. 75234

Continuation of Ser. No. 904,337, May 9, 1978, abandoned. This application Dec. 17, 1981, Ser. No. 331,836

Int. Cl.³ E02D *3/14*

U.S. Cl. 405—269 **1 Claim**



1. A method for restructuring a railway roadbed comprising the steps of:

(a) removing ballast from beneath the rails and crossties of said roadbed;

(b) admixing said ballast with a structural slurry;

(c) depositing said admixture beneath the rails and crossties of said roadbed to form a structured layer; and thereafter

(d) providing at least about 4 inches of ballast between said structured layer and said crossties.

4,451,181

CONTROL SYSTEMS FOR MINERAL MINING INSTALLATIONS

Thomas Trumper, Werne; Harry Rosenberg, Ludinghausen, and Walter Weirich, Dortmund, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,182

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111875

Int. Cl.³ E21D *23/12*; F15B *11/20*

U.S. Cl. 405—302 **5 Claims**

1. In an electro-hydraulic control system for a mineral mining installation which employs a series of shiftable support units with associated hydraulic consumer appliances arranged side-by-side along a mine working: said system comprising pressure fluid feed and return lines, control means on each unit, each said control means including hydraulic valves and solenoid valves which serve to connect the appliances associated with the unit selectively to the feed and return lines and electronic control devices programmed to cause a predetermined sequence of operations to be performed affecting one or a group of units, and a remote control station linked to all the control means via a line for conveying electrical control signals; the improvement comprising selector switches are provided for the control means of the units, the selector switches being accessible for direct local actuation by an operator and arranged to permit said operator to initiate a sequence of automatic operations on any selected group composed of a number of units by actuating one of the selector switches which is associated with the control means of a support unit that is outside of and separated from the selected group by at least one intermediate unit.



4,451,182

AIR TRANSPORT SYSTEM

Ronald A. Lenhart, Lakewood, Colo., assignor to Precision Metal Fabricators, Inc., Arvada, Colo.

Filed Oct. 2, 1978, Ser. No. 947,441

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—86 **12 Claims**



1. An articles transportation system for transporting a series of articles to provide a predetermined spacing therebetween comprising in combination:

an elongated article conveyor duct with an inlet and an outlet having side walls and end walls spaced apart a distance just sufficient to accommodate an article within the duct with a predetermined clearance between the article and the side and end walls;

a pair of guide rails positioned along the interior of the side walls to support the articles in predetermined spaced relation to the side walls;

a series of spaced downstream slanted jet openings along the length of the end wall;

a plenum chamber forming an air supply duct extending along the end walls in communication with said jet openings;

means for supplying air under pressure to the plenum chamber for supplying jets of air via said jet openings to the article duct in a downstream direction;

exhaust opening means serially positioned along at least one of said side walls being of a size in relation to the jet openings and the amount of air introduced into the article duct via the jet openings to provide and maintain a positive static pressure with respect to the ambient atmosphere between articles in the article conveyor duct; and

feeder means, for the articles to be transported, connected to the inlet of the article conveyor duct for feeding articles thereto at a selected uniform rate at spaced intervals, said feeder means comprising a length of duct connected to the inlet of the article conveyor duct having side walls and end walls with a series of spaced downstream slanted jet openings along the length of the end walls and a single exhaust opening in a side wall located adjacent the inlet end of the article conveyor duct.

4,451,183

METHOD AND ARRANGEMENT OF TRANSPORTING AGGREGATE, FRAGMENTED MATERIAL AND THE LIKE

Howard I. Lorenz, Houston, Tex., assignor to Pool Company, Houston, Tex.

Filed Apr. 2, 1981, Ser. No. 250,409

Int. Cl.³ B65G *53/00, 53/30*

U.S. Cl. 406—94 **2 Claims**



1. A method of transporting aggregate, fragmented material and the like in a pipeline comprising the steps of:

a. introducing foam under pressure into the pipeline along with aggregate, fragmented material and the like;

b. maintaining the foam at a pressure to move the aggregate, fragmented material and the like through the pipeline;

c. providing an upwardly extending section of pipeline at spaced intervals therealong, which upwardly extending section communicates at its lower end with the upstream portion of the pipeline, the upper end of such upwardly extending section being elevated relative to the lower end and communicating with the downstream portion of the pipeline; and

d. introducing gas under pressure into the pipeline adjacent the lower end of the upwardly extending section to regenerate the foam and assist in moving the foam and aggregate, fragmented material and the like through the pipeline.

4,451,184

APPARATUS AND METHOD FOR FEEDING PULVERIZED HYDROCARBONACEOUS SOLIDS INTO A HIGH PRESSURE REACTOR

David S. Mitchell, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 12, 1981, Ser. No. 272,951

Int. Cl.³ B65G *53/58*

U.S. Cl. 406—105 **5 Claims**

1. An apparatus for primary feeding of entrained particulate materials into a high pressure section of a fluidized bed reactor, comprising:

a first pressurization stage including:

a first venturi tube;

means for supplying the particulate material through an entry port of the first venturi tube;

a first motive gas nozzle in the entry port of the first venturi tube;

means for supplying pressurized motive gas to the first nozzle, the motive gas being mixed with the particulate material in the first venturi tube to form a first pressurized particulate material/motive gas mixture; and

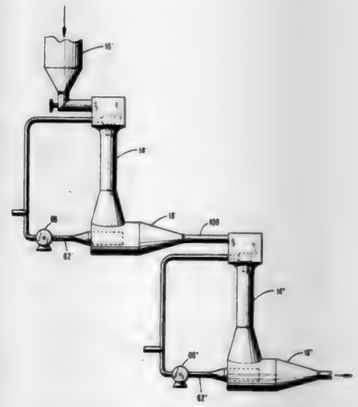
a first centrifugal means for separating a predetermined amount of the motive gas from the particulate material/motive gas mixture; and

a second pressurization stage, for receiving and further pressurizing the separated particulate material/motive gas mixture from the first centrifugal means, including:

a second venturi tube;

means for supplying the particulate material/motive gas mixture through an entry port of the second venturi tube;

a second motive gas nozzle in the entry port of the second venturi tube;



means for supplying pressurized motive gas to the second nozzle, the motive gas being mixed with the particulate material in the second venturi tube to form a second pressurized particulate material/motive gas mixture; and

second centrifugal means for separating a predetermined amount of the motive gas from the second particulate material/motive gas mixture to be introduced into the high pressure section of the reactor; and

means for recirculating the motive gas from the first and second centrifugal means to the first and second motive gas nozzles;

whereby the pressure of the particulate material introduced into the reactor is raised 50–150 psi by the feeding apparatus to a pressure greater than the pressure within the high pressure reactor.

4,451,185

BORING TOOL HOLDER WITH PROBES FOR MEASURING BORE

Tetsuro Yamakage, Anjo, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 21, 1981, Ser. No. 333,057

Claims priority, application Japan, Dec. 27, 1980, 55-185048

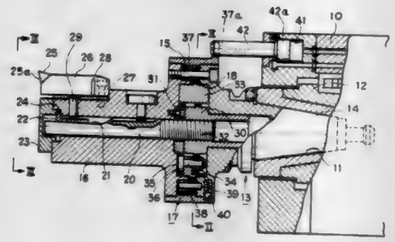
Int. Cl.³ B27C *9/02*

U.S. Cl. 408—2 **9 Claims**

1. A tool holder for use in a machine tool system including contact detection circuit means for detecting contact between said tool holder received in a tool spindle and a bore of a workpiece mounted on a work table when relative movement between said tool spindle and said work table is effected in a direction perpendicular to the axis of said tool spindle so as to measure the diameter of said bore after the machining of said bore, said tool holder comprising:

a shank receivable in said tool spindle;

a tool mounting shell fixed to said shank and including means for carrying a cutting tool thereon;
a pair of contact detection members respectively protruding from the outer surface of said tool mounting shell in opposite directional senses;
a first plane encompassing the axis of said tool mounting shell and a cutting edge of said cutting tool;
a second plane encompassing the axis of said tool mounting shell at right angles to said first plane; and



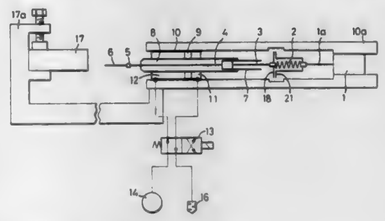
contact points formed at opposite ends of said contact detection members, each of said contact points being defined on a line extending perpendicular to said first plane and parallel to said second plane, said line being spaced from said second plane by a first predetermined distance in the directional sense toward said cutting tool, said contact points being spaced from one another by a second predetermined distance which is greater than the width of said tool mounting shell in the direction of said second plane.

4,451,186
TOOL FOR USE IN LINE BORING OF DIESEL ENGINE BLOCKS
Charles L. Payne, 5404 NE. 56th Pl., Kansas City, Mo. 64119
Filed Apr. 6, 1981, Ser. No. 251,171
Int. Cl.³ B23B *41/12*
U.S. Cl. 408—54 **5 Claims**



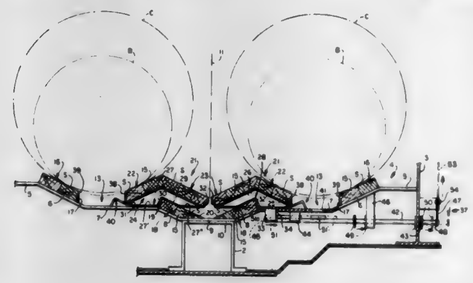
1. In a tool for line boring a diesel engine block having a pair of locating holes adjacent an end thereof in a predetermined spatial relationship with substantially aligned bores which receive bearings for the crankshaft of the engine, said tool including a shaft and a cutting device carried on the shaft, the improvement comprising:
an adapter plate having a pair of pin elements projecting therefrom at locations to be fitted in said locating holes of the engine block, said adapter plate having a pair of spaced apart dowel members thereon;
a mounting pad having a pair of spaced apart holes therein at locations to be fitted on the respective dowel members in a manner to position said pad at a predetermined location on said end of the engine block;
means for securing said adapter plate and mounting pad to the engine block with said pin elements in said locating holes of the block and said holes fitted on said dowel members to position said pad at said predetermined location; and
an opening in said mounting pad having a center substantially aligned with the centers of the bores of the engine block when said mounting pad is at said predetermined location; and
a bearing received in said opening at a location aligned with the center of each bore, said bearing being adapted to rotatively support said shaft in extension through the center of each bore to permit rotation of said shaft for operation of the cutting device to cut damaged bores about aligned centers thereof.

4,451,187
MACHINE TOOL
Michio Ishikawa, and Kiyoshi Sasaki, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Feb. 10, 1982, Ser. No. 347,539
Claims priority, application Japan, Feb. 18, 1981, 56-23416
Int. Cl.³ B23C *9/00*; B23B *39/00*
U.S. Cl. 409—187 **18 Claims**



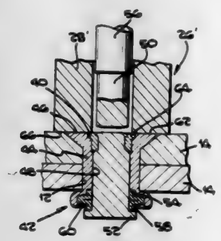
1. A machine tool comprising:
a frame;
a tool support mounted on the frame;
a tool carried by the tool support;
first drive means for effecting a relative linear movement between the tool support and a workpiece supported on the frame;
second drive means for rotating one of the tool and the workpiece relative to the other;
detecting means, disposed between the second drive means and said one rotated thereby, for detecting a load torque applied to the rotated one and producing a load signal responsive to a magnitude of the detected load torque;
a start switch for producing a start signal to actuate the second drive means; and
control means, connected to said first and second drive means, said torque detecting means and said start switch, for controlling said first and second drive means, said control means actuating said second drive means upon receipt of said start signal, calculating a variation in the detected load torque during the actuation of said second drive means, actuating said first drive means to effect said relative linear movement in a direction to cause contact of the tool with the workpiece when the calculated value of said variation has decreased down to a first value after the actuation of the second drive means, obtaining a cutting resistance being exerted on the tool by calculating a difference between a currently detected load torque and a load torque detected after the actuation of said first drive means and before said contact of the tool, and reversing the actuating direction of said first drive means to effect said relative linear movement in a direction to cause separation of the tool and the workpiece away from each other in the event said difference has exceeded a second value, whereby the reversal of said actuating direction is determined by the actual cutting resistance which is exactly calculated based on the total load torque minus the non-cutting load torque which has been substantially stabilized after its initial period of decrease.

4,451,188
COIL CAR WITH SHIFTABLE TROUGH ASSEMBLIES
Ryan M. Smith, Woodstock, and David A. Stoller, Sr., Dunwoody, both of Ga., assignors to Portec, Inc., Oak Brook, Ill.
Filed Dec. 9, 1981, Ser. No. 329,207
Int. Cl.³ B60P *7/12, 7/14*; B61D *3/16*
U.S. Cl. 410—42 **15 Claims**



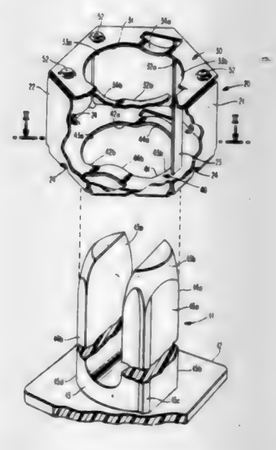
1. A vehicle for carrying cylindrical objects including, spaced apart longitudinal side sills defining a lading area therebetween, support means intermediate said side sills, a plurality of laterally spaced apart fixed trough members attached to said support means, at least a pair of removable shiftable trough assemblies selectively positionable above said support means at various lateral distances from the centerline of the vehicle, each said shiftable trough assembly defining an inverted "V" configuration, each said shiftable trough assembly when disposed at a first lateral position from the vehicle centerline forming with one of said fixed trough members a trough having its apex spaced from the vehicle centerline at a first distance, and each said shiftable trough assembly displaceable to a second lateral position relative the vehicle centerline to form with the respective same one of said fixed through members a trough having its apex spaced from the vehicle centerline at a second distance.

4,451,189
BULB RIVET
John D. Pratt, Rancho Cucamonga, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.
Filed Mar. 12, 1981, Ser. No. 242,892
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—34 **15 Claims**



1. In a blind rivet having a body with a head on one end and a longitudinal bore therethrough and a pull stem disposed in the bore with a head adapted for abutting the inner end of the body and upsetting it to form a bulb end as the pull stem is pulled toward the head of the body, the pull stem having a break groove to sever when the rivet is set, the improvement comprising:
a collapsible barrel concentrically disposed about the pull stem between the inner end of the body and the head of the pull stem, said collapsible barrel being structured to withstand a longitudinal compressive force sufficient to upset the body and form the desired bulb end thereon but being further structured to collapse upon further compression under force after the desired bulb end has been formed, said collapsible barrel not having progressive longitudinal strain hardening, and wherein
said collapsible barrel is cylindrical and has thickened sidewalls adjacent each end whereby said collapsing thereof occurs in the center portion thereof.

4,451,190
FASTENING ELEMENT AND A FASTENER ASSEMBLY USING THE SAME
Robert L. Bellamy, Jr., Richmond; James D. Bersot, Georgetown; Leonard Thomas K., Lexington, and Richard R. Muse, Georgetown, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
PCT No. PCT/US81/00877, § 371 Date Aug. 13, 1981, § 102(e) Date Aug. 13, 1981, PCT Pub. No. WO 83/00197, PCT Pub. Date Jan. 20, 1983
This PCT application filed Aug. 13, 1981, Ser. No. 301,992
Int. Cl.³ F16B *21/00*
U.S. Cl. 411—337 **6 Claims**



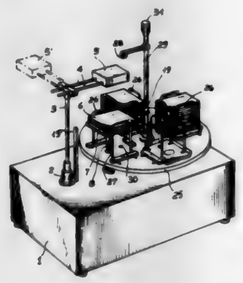
1. A fastener assembly (10) for clamping at least one element, said fastener assembly being of a type having an aperture and post gouging portion, said fastener assembly characterized by:
a longitudinally extending post (11,70) including at least a pair of longitudinally extending recesses (14*a*,14*b*,72) therein;
said post (11,70) material having a first hardness;
a fastener element (20,60) for mating engagement with said post (11,70) to form said assembly (10), said fastener element (20,60) comprising a body portion (21,63) having means defining an aperture (31,41,66) therein dimensioned for sliding engagement with said post (11,70) when in a first orientation and for biting engagement with said post (11,70) when the orientation is changed by relative rotation between said fastener element (20,60) and said post (11,70);
said fastener element (20,60) including projections (32*a*,32*b*,42*a*,42*b*,62) extending inwardly and positioned for coactive engagement in said recesses (14*a*,14*b*,72) of said post (11,70) to permit sliding relative movement between said post (11,70) and said fastener element (20,60);
at least said projections (32*a*,32*b*,42*a*,42*b*,62) being of a second hardness greater than said first hardness whereby said projections (32*a*,32*b*,42*a*,42*b*,62) bite into said post (11,70) to inhibit separation of said fastener element (20,60) from said post (11,70) upon relative rotation from said first orientation, said projections (32*a*,32*b*,42*a*,42*b*,62) including a ramp (34*a*,34*b*,44*a*,44*b*,65) for effecting a wedging action between said fastener element (20,60) and said post (11,70).

4,451,191

STACKED FABRIC REMOVAL AND RE-LOCATING DEVICE

Giancarlo D. Torre, Biassono, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Apr. 30, 1982, Ser. No. 373,547
Claims priority, application Italy, Jun. 23, 1981, 22517 A/81
Int. Cl.³ B65H *1/14*
U.S. Cl. 414—118 **1 Claim**



1. A device for removing and relocating pieces of flexible material from a stack comprising:
(a) a supporting frame (1);
(b) a plate member (25) mounted for rotatable indexing movement on said supporting frame;
(c) a plurality of support plates (7) having seats (10) on the underside thereof mounted for rotation in said plate member (25) to support stacks of flexible material;
(d) a vertically linearly movable rod (8) having the upper end thereof configured to mate with said seats (10) to move plate (7) from a lower position adjacent said plate member (25) to an upper position where removal of flexible material can be effected;
(e) upper and lower limit switches (21, 22) mounted on said frame (1) to control the maximum extent of vertical movement of said rod (8);
(f) horizontally directed photo-electric sensing means (19) mounted on said frame (1) to provide for vertical adjustment of said rod (8) as flexible pieces are removed from said plate (7);
(g) vertically directed photo-electric sensing means (28) mounted on said frame (1) for determining when all flexible pieces have been removed from said plate (7) so that said rod (8) will move to its lowermost position and said plate member (25) will rotate to bring a new plate (7) with flexible pieces into unloading position;
(h) a pick-up member (5) mounted on said supporting frame (1) and movable to a position overlying said plate (7);
(i) means for displacing said pick-up member (5) toward a stack of flexible pieces on said plate (7), a distance which is slightly greater than the distance which separates it from the upper surface of the stack; and
(j) means for displacing said pick-up member (5) in its raised position for releasing and relocating the flexible piece of material removed from the stack.

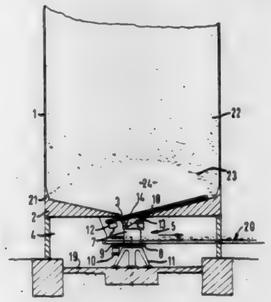
4,451,192

SILO UNLOADER

Jonathan G. Wood, Northbridge House, Chiddingfold, England

PCT No. PCT/GB80/00086, 371 Date Jan. 8, 1981, 102(e) Date Jan. 8, 1981, PCT Pub. No. WO80/02416, PCT Pub. Date Nov. 13, 1980
PCT Filed May 9, 1980, Ser. No. 229,600
Claims priority, application United Kingdom, May 9, 1979, 7916082
Int. Cl.³ B65G *65/42*
U.S. Cl. 414—306 **11 Claims**

1. The combination of storage silo and a bottom unloader therefor, said silo having a base formed as a hopper provided with a substantially central discharge outlet, a chamber located below said base, said unloader being mounted in said chamber and arranged to project into the silo through the discharge outlet and comprising a sweep arm mounted for rotation in the hopper about a vertical axis centrally of the discharge outlet



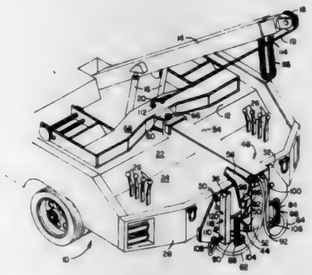
and for vertical movement away from the surface of the hopper, means in said chamber for rotating the sweep arm about the vertical axis and means in said chamber disposed adjacent to the vertical axis for moving the sweep arm vertically and for maintaining said sweep arm spaced away from the surface of the hopper during operation thereof.

4,451,193

WHEEL LIFT APPARATUS

Fleming V. Cannon, Jr., Flintstone, Ga., and Frankie E. Casteel, Soddy Daisy, Tenn., assignors to Dover Corporation, Chattanooga, Tenn.

Filed Aug. 26, 1982, Ser. No. 411,604
Int. Cl.³ B60P *3/12*
U.S. Cl. 414—563 **9 Claims**



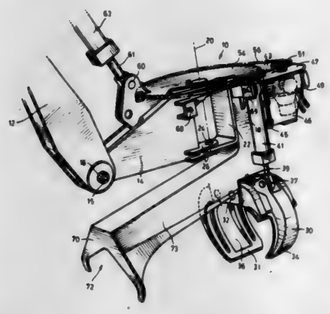
1. A towing device adapted to be mounted at the rear of a towing vehicle for lifting and towing a disabled vehicle, said device comprising: a support means for rigidly securing said device on the towing vehicle; means defining a slideway carried by said support means; a gate journalled in said slideway for slidable movement relatively to said support means; a beam including extendible lifting means adapted to be placed beneath the disabled vehicle; means for pivotably mounting said beam on said gate for pivotable movement about a substantially horizontal axis remote from said lifting means from a stored position in the rear of the towing vehicle to operative positions extending rearwardly from said towing vehicle; means for raising and lowering said gate between positions corresponding to the stored position of said beam, a loading position whereby said lifting means may be placed beneath the disabled vehicle, and a towing position for transporting the disabled vehicle; and stop means for rigidly supporting said beam in the operative positions to preclude pivotable movement of the beam by the lifting force exerted thereon by the load of the disabled vehicle.

4,451,194

INTEGRAL HEEL TREE LENGTH GRAPPLE

Kevin Keats, and John Kurelek, both of Brantford, Canada, assignors to Koehring Canada Limited, Brantford, Canada

Filed Apr. 26, 1982, Ser. No. 371,673
Int. Cl.³ B66C *1/32*
U.S. Cl. 414—731 **5 Claims**



1. A grapple for lifting and manoeuvring elongated items, comprising:
a main frame mounted for pivoting about a substantially horizontal first pivot axis,
a sub-frame pivotally and hingeably mounted to the main frame about a second axis which is substantially vertical when the grapple is in operative position, at least a portion of the sub-frame being horizontally adjacent the main frame when the second axis is vertical, the pivoting of the sub-frame with respect to the main frame being limited to an angle less than 360°, due to mechanical interference between the main frame and the sub-frame, whereby the vertical dimension of the grapple is minimized,
tree-grappling means on the sub-frame, with first power means for operating the tree-grappling means,
a sprocket fixed to the main frame in a plane perpendicular to said second axis, the sprocket being concentric with said axis,
a pinion mounted rotatably on the sub-frame and located in the same plane as the said sprocket,
second power means for rotating the pinion with respect to the sub-frame in either direction selectively,
an endless chain entrained around the sprocket and pinion, whereby rotation of the pinion causes the sub-frame to swivel with respect to the main frame, and
non-articulating heel means rigid with the sub-frame spaced from said tree-grappling means and including an inverted fork structure in which the elongated items can lodge.

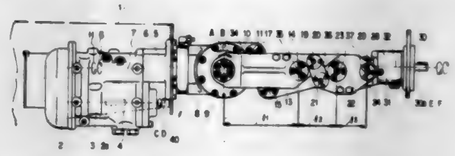
4,451,195

ARM FOR A PROGRAM CONTROLLED MANIPULATOR

Akira Kikuchi, Kawasaki; Susumu Sawano, Koganei, and Yoshimasa Ito, Yokohama, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Jun. 11, 1982, Ser. No. 387,747
Claims priority, application Japan, Jun. 15, 1981, 56-91936
Int. Cl.³ B25J *9/00*
U.S. Cl. 414—732 **7 Claims**

1. An arm for a manipulator comprising a first arm member supported on support means, a second arm member rotatably connected at one end thereof to the first arm member, a third arm member rotatably connected to the second arm member, a fourth arm member rotatably connected to the third arm member, a first link member connected at one end thereof to the first arm member and at the other end thereof to one end of the third arm member respectively, and a second link member connected at one end thereof to the other end of the second arm member and at the other end thereof to one end of the fourth arm member respectively, the distance between the rotational center for the second arm member relative to the first arm member and the rotational center for the third arm



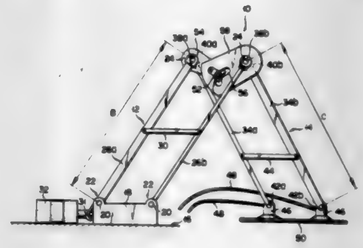
member relative to the second arm member being greater than the distance between the rotational center for the third arm member relative to the second arm member and the rotational center for the fourth arm member relative to the third arm member.

4,451,196

TRANSFER APPARATUS

Yutaka Harada, and Kouji Takai, both of Fuji, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 6, 1982, Ser. No. 395,310
Claims priority, application Japan, Jul. 8, 1981, 56-106516
Int. Cl.³ B66C *1/00*
U.S. Cl. 414—733 **15 Claims**



1. A transfer apparatus comprising:
a driving-side parallel link including a support member and first and second driving arms parallel to each other, each driving arm having a pivotal portion pivotally supported on the support member and a coupling portion separated from the support member and swingable around the pivotal portion;
drive means for swinging the first and second driving arms;
a driven-side parallel link including a first driven arm having a pivotal portion coupled with the coupling portion of the first driving arm and a support portion separated from the pivotal portion of the first driven arm toward the support member and swingable around the pivotal portion of the first driven arm, a second driven arm having a pivotal portion coupled with the coupling portion of the second driving arm and a support portion separated from the pivotal portion of the second driven arm toward the support member and swingable around the pivotal portion of the second driven arm, and a coupling arm coupling the first and second driven arms parallel to each other;
holding means attached to the support portions of the first and second driven arms to hold an object of transfer; and
transmission means for transmitting swing displacements of the first and second driving arms to the first and second driven arms to displace the driven arms swingingly in accordance with the swing displacements of the driving arms, the transmission means including a first transmission member attached to the first driving arm in the vicinity of the coupling portion of the first driving arm, the first

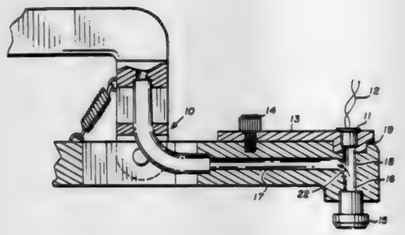
transmission member having a cam follower for transmitting the swing displacements of the driving arms to the driven arms, and a second transmission member attached to the second driven arm in the vicinity of the pivotal portion of the second driven arm, the second transmission member having a cam opening to engage the cam follower to receive the swing displacements of the driving arms through the cam follower, whereby the driven arms are swung in the opposite direction to the swing direction of the driving arms to move the holding means onto a straight transfer line along the swing direction of the driving arms in the middle stage of the swing motion of the driving arms, and whereby the driven arms are swung in the same direction as the swing direction of the driving arms to move the holding means toward and away from the transfer line in the initial and final stages, respectively, of the swing motion of the driving arms.

4,451,197

OBJECT DETECTION APPARATUS AND METHOD

Bradley N. Lange, Chandler, Ariz., assignor to Advanced Semiconductor Materials Die Bonding, Inc., Chandler, Ariz.

Filed Jul. 26, 1982, Ser. No. 401,936
Int. Cl.³ B66C *1/00*
U.S. Cl. 414—737 **4 Claims**



1. An object detector for detecting the successful engagement, retention and transport of an object by a vacuum orifice comprising:

a vacuum orifice whereby an object is engaged, retained and transported;

a vacuum flow path communicating with said vacuum orifice;

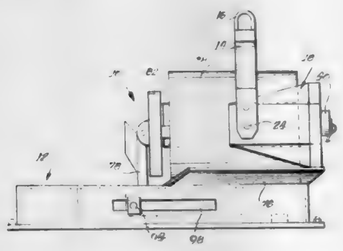
a photoelectric ligh sensor disposed in the vacuum flow path so as to detect light entering the vacuum orifice, and to detect the absence of light when the orifice is blocked by a successfully engaged, retained and transported object.

4,451,198

MATERIAL HANDLING DEVICE

Edward T. Sanderson, 22552 Arquilla, Richton Park, Ill. 60471

Filed Jul. 17, 1978, Ser. No. 924,972
Int. Cl.³ B65G *7/08*
U.S. Cl. 414—779 **2 Claims**



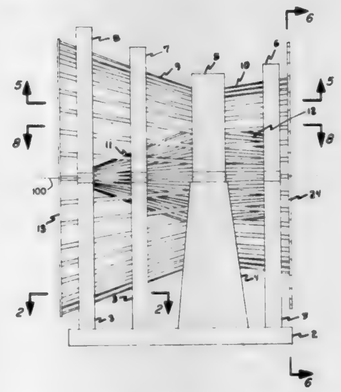
1. A material handling device for a crane mechanism comprising a generally "U" shaped support, connectable to said crane mechanism, a frame also generally "U" shaped and pivot means connected to said frame and support whereby said frame is freely pivoted within said support, securing means on said frame adapted to be inserted through the center of a coil of material, a pair of securing arms within said securing means, actuating mechanism operative to extend said arms whereby said arms can engage an end of the coil for transport of said coil material when said device is connected to said crane mechanism, said pivot means being so designed that said coil can be changed from a vertical to a horizontal position and vice-versa using the weight of the coil, said device including a floor mounted pivoting mechanism including a pair of horizontal and stationary rails pivotally and slidingly supporting a coil cradle, said cradle engaging the surface of the coil and said securing means whereby said pivoting mechanism is usable to change the orientation of said coil from horizontal to vertical and vice-versa without damage to the coil solely by use of gravity and the crane mechanism by cooperation of the free pivot of said frame and the sliding and pivoting mounting of the cradle in said rails.

4,451,199

WIND DRIVEN POWER PLANT-STRUCTURAL SUPPORT

Walter E. Currah, Jr., 44 S. 64th St., Tacoma, Wash. 98409

Continuation of Ser. No. 28,685, Apr. 10, 1979, abandoned. This application Nov. 7, 1980, Ser. No. 204,810
Int. Cl.³ F03D *1/04*
U.S. Cl. 415—2 A **7 Claims**



1. A structural support system for a wind driven apparatus, said structural support system comprising:

a plurality of support frames, each frame of which includes an outer support ring and an inner support ring with connecting means connected to and extending between said outer and inner support rings to support said outer and inner support rings coaxial relative to one another, said plural support frames including a forward support frame, a rearward support frame, and an intermediate support frame located between said forward and said rearward support frames;

support column means connected to said support frames to support said support frames relative to a foundation with said support frames coaxial with and spaced along a longitudinal axis of said structural support system;

the outer support ring of said intermediate support frame having a smaller diameter than the outer support rings of said forward and rearward support frames and the inner support ring of said intermediate support frame having a larger diameter than the inner support rings of said forward and rearward support frames;

a plurality of first elongated longitudinally directed stringers connected to and extending between said outer rings and a plurality of second elongated longitudinally directed stringers connected to and extending between said inner support rings of said forward, intermediate, and rearward support rings;

said first-mentioned stringers each subdivided into two portions, a first portion of said first-mentioned support stringers extending between said outer support rings of said forward and intermediate support frames and a second portion extending between the outer support rings of said intermediate and rear support frames, said first portion of said first-mentioned stringers secured to the inside surface of the outer support ring of said forward support frame and also secured to a sidewall face of the outer support ring of said intermediate support frame, and said second portion of said first-mentioned stringers secured to the outer support frame of said rearward support frame at the inside diameter surface thereof and to a sidewall face of the outer support ring of said intermediate support frame; and

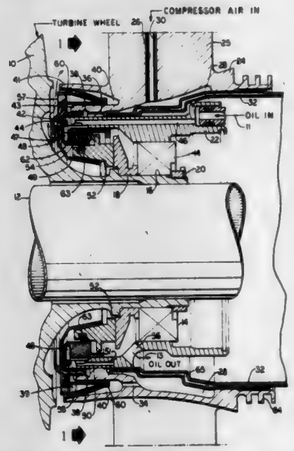
a plurality of circular stiffeners secured to said first-mentioned stringers and axially spaced relative to one another along said longitudinal axis.

4,451,200

AIR AND OIL COOLED BEARING PACKAGE

Zoltan L. Libertini, Stamford, and Edward O. Hartel, Orange, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Oct. 8, 1980, Ser. No. 195,050
Int. Cl.³ F01D *25/16*
U.S. Cl. 415—110 **1 Claim**



1. In the turbine section of a gas turbine engine, said engine having means to supply pressurized cooling air and coooled oil to said turbine section, said turbine section including a structural shroud which defines a flow path for the hot gases of the engine; a structural assembly for supporting a bearing package which includes bearing and seal assemblies which, in turn, support the engine shaft in said turbine section comprising:

struts radially extending inward from the shroud;

an inner structural member fixed to the struts and adapted to receive and support the bearing package, said member providing a cooling air supply plenum surrounding said bearing package;

a conduit constructed in a strut and connected to the pressurized supply of cooling air to deliver cooling air to the air supply plenum;

a cylindrical shield defining the inner wall of the air supply plenum of the inner structural member, said shield being constructed with a sealed insulating air cavity; said shield and cavity surrounding the bearing package;

a bearing housing constructed to receive the bearing assembly of the bearing package, and fixed within the inner support structure, radially inward from the cylindrical shield, said housing having a duct communicating with the cooled oil supply of the engine;

a seal housing constructed to receive the seal assembly of the bearing package and to secure said assembly in operative association with the bearing assembly, said housing being fixed to the inner support structure and being constructed with an annular passage communicating with the oil supply duct and circulating oil within the seal housing to cool said housing, said passage having a plurality of jets to inject oil into the seal assembly and the bearing assembly;

means communicating with the air supply plenum to distribute cooling air to and around the seal housing;

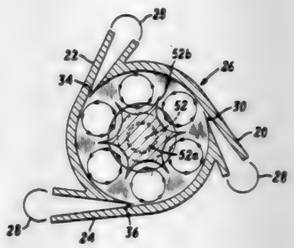
said air supply means, said oil duct and passage and said sealed insulating air cavity being relatively positioned to cooperatively insulate the oil contacting surfaces in the seal and bearing assemblies from the hot turbine flow path.

4,451,201

GAS TURBINE

Stirling A. Colgate, Los Alamos, N. Mex., assignor to Colgate Research & Development Co., Princeton, N.J.

Filed Sep. 14, 1981, Ser. No. 302,255
Int. Cl.³ F01D *1/02*
U.S. Cl. 415—181 **4 Claims**



1. A gas turbine comprising a chamber defined by a substantially circular cylindrical peripheral surface and spaced-apart end surfaces, said chamber having an axis coincident with the geometric central axis of said circular cylindrical peripheral surface, at least one nozzle opening tangentially to the chamber at the cylindrical surface, a rotor mounted for rotation about the axis of the chamber, the rotor having a multiplicity of equally circumferentially spaced-apart flutes that extend parallel to the axis of the chamber, have interconnected arcuate side surfaces defining a multiplicity of outwardly facing concave substantially semi-cylindrical surfaces on the rotor and have tips spaced-apart radially inwardly from the cylindrical surfaces by a distance substantially equal to the circumferential spacing between the tips of adjacent flutes, and ports in the end surfaces located proximate to the radially innermost portions of the semi-cylindrical surfaces of the rotor, whereby a symmetrical set of multiple axial vortices, each nested between flutes of the rotor, co-rotate with the rotor and drive or are driven by the rotor to supply to or receive from the rotor kinetic energy.

4,451,202

AXIAL COOLING FAN FOR INTERNAL COMBUSTION ENGINES

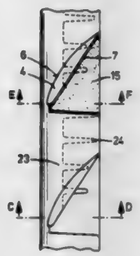
Kurt Hauser, Stuttgart, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik, Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,986

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855909

Int. Cl.³ F01D *5/12, 5/34;* B23P *15/02*

U.S. Cl. 416—214 R 13 Claims



1. A fan wheel or the like, for producing an at least partially axial air flow comprising a hub portion and a blade portion, said hub portion and said blade portion being fabricated integrally in one piece, said blade portion comprising a plurality of at least stub fan blades, said at least stub fan blades being exposed to the air flow through said fan wheel or the like, said hub portion being formed so as to increase in diameter in the portions of said hub portion exposed to the air stream upstream of said at least stub fan blades and to increase in diameter in the regions of said hub portion lying between said at least stub fan blades of said blade portion, said portions of said hub portion between said at least stub blades forming part of the air foil of said hub portion extending between said at least stub blades, the portions of said hub portion downstream of said at least stub blades which are not exposed to the direct air stream through said fan wheel or the like and which are not part of the air foil formed by said hub portion having a contour which is substantially cylindrical, and said substantially cylindrical contour portion of said hub portion and said portion of said hub portion between said at least stub blades joining together upstream of said at least stub blades.

4,451,203

TURBOMACHINE ROTOR BLADE FIXINGS

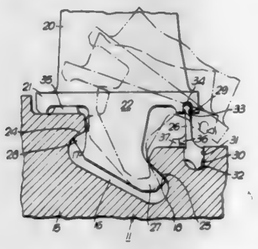
Kenneth R. Langley, Wotton-under-Edge, England, assignor to Rolls Royce Limited, London, England

Filed Mar. 11, 1982, Ser. No. 357,220

Claims priority, application United Kingdom, Apr. 29, 1981, 8113277

Int. Cl.³ F04D *12/01;* F01D *5/32*

U.S. Cl. 416—215 22 Claims



1. A bladed rotor assembly for a turbomachine comprising a hub having a dovetail shaped, circumferentially extending blade retaining slot, and a plurality of aerofoil shaped blades having dovetail shaped roots, each root having a toe portion and a heel portion, said roots being mounted in the blade retaining slot, the blade retaining slot having a radial cross-sectional shape dimensioned, constructed and arranged to permit the toe portion of the dovetail shaped roots to be first inserted into a corresponding toe portion of the blade retaining slot, and a heel portion of the dovetail shaped roots to be subsequently inserted into a corresponding heel portion of the blade retaining slot, thereby radially aligning the blade root portion in the dovetail shaped slot; and a blade root platform located between the dovetail shaped roots and the aerofoil shaped blades and provided with support means for radially outwardly torquing the blade root platform.

4,451,204

AEROFOIL BLADE MOUNTING

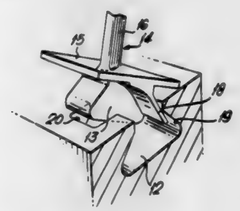
George Pask, Stanton-by-Bridge, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 15, 1982, Ser. No. 359,798

Claims priority, application United Kingdom, Mar. 25, 1981, 8109416

Int. Cl.³ F01D *5/30*

U.S. Cl. 416—215 4 Claims



1. A blade assembly for use in an axial flow compressor or turbine comprising:

a disc having a circumferential aerofoil blade root retaining channel extending about the periphery thereof, said root retaining channel including a bottom wall, an upstream wall defining an annular internal surface and a downstream wall defining an annular internal surface, said annular internal surface of said upstream wall and said annular internal surface of said downstream wall being spaced from and converging toward each other;

an annular array of aerofoil blades, each of said aerofoil blades including an aerofoil portion, a platform, and a root, said root of each of said annular array of aerofoil blades having an axial cross-section substantially identical to and being positioned in said root retaining channel, the root of each of said aerofoil blades being circumferentially spaced apart from the root of an adjacent one of said aerofoil blades to provide circumferential gaps therebetween in said root retaining channel, and

sealing means integral with each root of each of said blades, said sealing means being located in said root retaining channel and only partially occupying each of said circumferential gaps, said sealing means and said blade roots cooperating to define a substantially annular sealing surface in abutting sealing engagement with at least the annular internal surface of said upstream wall of said root retaining channel.

4,451,205

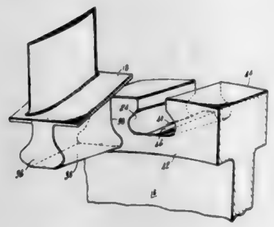
ROTOR BLADE ASSEMBLY

Keith T. Honda, Manchester; Stephen L. Smith, South Windsor, and Peter E. Voyer, Tolland, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 22, 1982, Ser. No. 351,061

Int. Cl.³ F01D *5/30, 5/22, 5/32*

U.S. Cl. 416—219 R 2 Claims



1. For an axial flow gas turbine engine having a rotor assembly of a type including an array of rotor blades extending outwardly from the periphery of a rotor disk and wherein the airfoil section of each of said rotor blades has shroud segments extending laterally from the suction and pressure sides thereof into opposing relationship with corresponding shroud segments of the adjacent rotor blades, the improvement comprising:

means for attaching each rotor blade to a corresponding attachment slot at the periphery of the rotor disk wherein the root section of the blade and the attachment slot of the disk are contoured to provide increasing clearance between the bottom of the blade root section and the attachment slot as the blade is withdrawn axially from the slot.

4,451,206

BLADE END FOR ROTARY WING OF AN AIRCRAFT AND ROTARY WING PROVIDED WITH SUCH BLADE ENDS

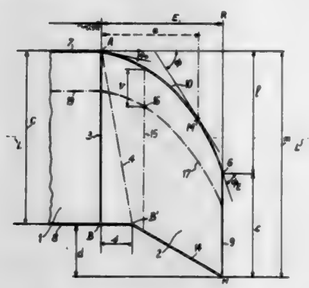
Jean-Jacques Philippe, Versailles, and Robert M. Lyothier, Miramas, both of France, assignors to Office Nationale d'Etudes et de Recherches Aerospatiales and Societe Nationale Industrielle Aerospatiale, both of Paris, France

Filed May 26, 1982, Ser. No. 381,934

Claims priority, application France, Jun. 5, 1981, 81 11232

Int. Cl.³ B64C *27/46*

U.S. Cl. 416—228 10 Claims



1. A helicopter rotor blade of selected span having a leading edge, a trailing edge, a chord dimension extending between said edges, as inboard blade section having an inner end adapted to be attached to a hub for rotation therewith about an axis, and an outboard tip section at the outer end of said inboard blade section,

said tip section having a span which is 5–15% of the span of said blade, and a leading edge and a trailing edge which form extensions of the leading edge and trailing edge respectively of said inboard section,

said tip section having a maximum chord which is not larger than the chord of the outer end of said inboard blade section adjacent said tip section, said tip section being tapered so that its chord diminishes towards its outboard end,

the leading edge of said tip section being swept rearwardly from a first point of juncture with the leading edge of said inboard blade section to a terminal point which is disposed rearwardly of a line of span midway between the leading and trailing edges of said inboard blade section,

the leading edge of said tip section being curvilinear and having a sweep angle ϕ which varies progressively and continuously from a value of 0°–30° at said first point of juncture to a value of 60°–90° at said terminal point,

the trailing edge of said tip section including a first inboard portion which forms a colinear extension of the trailing edge of said inboard blade section and a second outboard portion which is swept rearwardly relative to the trailing edge of said inboard section, said first and second portions meeting at a second point of juncture which is more remote from said axis of rotation than is said first point of juncture, the distance between said first and said second points of juncture, measured along a line parallel to the span of said blade, being 5–15% of the chord of the outboard end of said inboard blade section.

4,451,207

TURBINE ROTOR FOR A FLOW METER

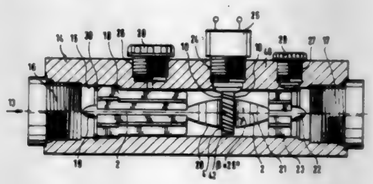
Helmuth Hoffmann, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Hydrotechnik GmbH, Limburg, Fed. Rep. of Germany

Filed Apr. 1, 1982, Ser. No. 364,530

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3112959

Int. Cl.³ F03B *13/00*

U.S. Cl. 416—237 R 7 Claims



1. A turbine rotor for flow meter comprising a cylindrical rotor disk having a rotor axis, a plurality of rotor vanes extending radially from said cylindrical rotor disk, at an angle of inclination β with said rotor axis, a flat surface between each of said rotor vanes wherein each flat surface abuts a vane on each side forming lines of abutment, said lines of abutment being parallel.

4,451,208

PROPELLER

Jerzy Kolecki, Osbyringen 48, S-163 05 Stockholm, Sweden

Continuation of Ser. No. 275,266, Jun. 19, 1981, abandoned. This application May 23, 1983, Ser. No. 496,527

Int. Cl.³ B64C *11/16, 27/46*

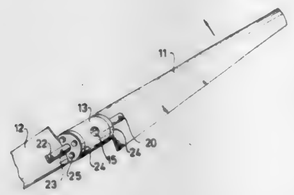
U.S. Cl. 416—237 4 Claims

1. A propeller blade having:

an elongated, straight, leading edge portion which is streamlined in cross-section and is of constant cross sectional area and shape from its hub end to its tip,

a straight planar trailing edge portion formed integrally with the leading edge portion, the trailing edge portion merging with one longitudinal edge of the leading edge portion and extending along the entire length of this edge,

the trailing edge portion having substantially constant thickness which is less than that of the leading edge portion,

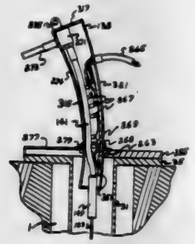


the trailing edge portion having its maximum width at its hub end and its minimum width at its tip.

4,451,209
METHOD AND APPARATUS FOR PUMPING SUBTERRANEAN FLUIDS

Edward H. Phillips, Middletown, Calif., assignor to Hidden Valley Associates, Inc., Middletown, Calif.

Filed Mar. 19, 1981, Ser. No. 245,614
Int. Cl.³ F04B *47/00*
U.S. Cl. 417—38 **19 Claims**



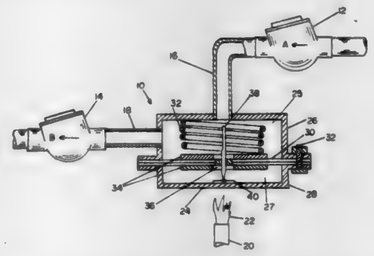
1. A method of extracting fluid from the earth through a hole formed in the earth comprising the steps of:
lowering submersible pump means into the hole with a flexible support member;
measuring the pressure of the fluid in the hole at the pump means;
applying power to the pump means through flexible power conducting means, encased in a common protective sheath with the flexible support member, in response to the pressure of the fluid; and
transporting fluid pumped by the pump means to the surface of the earth through flexible fluid transport means encased in a common protective sheath with the flexible support member and the flexible power conducting means.

4,451,210
DIAPHRAGM VAPOR PUMP

Robert M. Shaubach, Lititz; George Y. Eastman, Lancaster, and Vincent P. Roehm, Landisville, all of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed May 14, 1982, Ser. No. 378,402
Int. Cl.³ F04B *19/24*
U.S. Cl. 417—52 **12 Claims**

1. A liquid pump comprising:
a first chamber including liquid entry and liquid exit means;
a second chamber;
a flexible diaphragm separating the first and second chambers;
at least one unidirectional flow means connected in series with the first chamber in a liquid flow path;
a heat source acting upon the second chamber; and
leak means constructed integral with the flexible diaphragm interconnecting the first and second chambers, including vent means for vapor pressure from the second chamber to flow into the first chamber and liquid supply means for

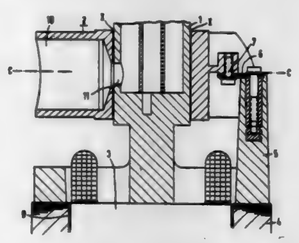


liquid from the first chamber to flow into the second chamber.

4,451,211
RADIAL PISTON COMPRESSOR AND DRIVE MOTOR COUPLING ARRANGEMENT

Siegfried Schönwald, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 18, 1982, Ser. No. 379,554
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121874
Int. Cl.³ F04B *35/04, 17/00*
U.S. Cl. 417—271 **2 Claims**

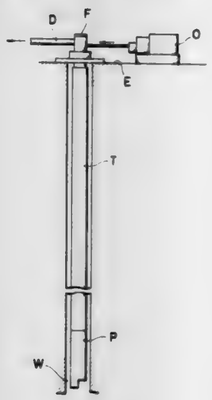


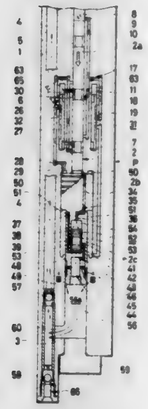
1. In a compressor apparatus of the type having a radial piston compressor including a rotative cylinder block and a drive motor including a rotor coupled to the cylinder block, the rotor being supported in the radial direction by the cylinder block adjacent the cylinder block, the improvement comprising:
a plurality of projecting arms extending axially towards said cylinder block from said rotor; and
leaf spring means coupling each of said projecting arms to said cylinder block, said leaf spring means being disposed in approximately the center plane of the cylinder block, said leaf spring means having two ends, one of said ends being fastened to said cylinder block and the other end being fastened to one of said projecting arms, one of said ends of said leaf spring means having two fastening points spaced apart from each other so that said leaf spring means are flexible in the axial direction of said rotor but are substantially rigid in the radial and tangential directions.

4,451,212
PUMPING SYSTEM FOR OIL PRODUCTION

Isao Yamato, and Tominori Yamada, both of Tamano, Japan, assignors to Mitsui Engineering & Shipbuilding Co. Ltd., Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,981
Claims priority, application Japan, Nov. 17, 1980, 55-160752; Dec. 30, 1980, 55-187412
Int. Cl.³ F04B *47/08*
U.S. Cl. 417—313 **2 Claims**



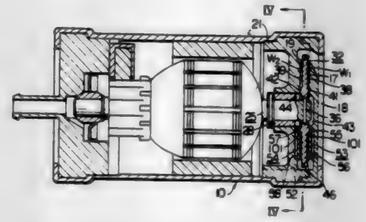


1. A pumping system for oil production, comprising:
a hydraulic unit set on the ground and adapted to send out a high-pressure oil having a viscosity lower than that of crude oil to be drawn up; and
a pump unit set in an oil well and adapted to draw up crude oil, said pump unit including,
a pump cylinder, and
a plunger adapted for reciprocating movement in said pump cylinder, said plunger being provided with an oil reservoir adapted to receive the high-pressure oil sent from said hydraulic unit thereto, the high-pressure oil causing said plunger to be reciprocatingly moved,
a clearance formed between that portion of the outer circumferential surface of said plunger which is on the side of a cylinder chamber and the inner circumferential surface of said pump cylinder, said clearance communicating with said oil reservoir, the high-pressure oil being ejected from said clearance along the inner surface of said pump cylinder into said cylinder chamber while said plunger is reciprocatingly moved in said pump cylinder, wherein said oil reservoir is provided in the central portion of said plunger and communicated via a plurality of capillaries extending radially therefrom with said clearance provided outside the outer circumferential surface of said plunger,
a hydraulic piston fixed to said plunger and adapted for reciprocating movement between a pair of opposing oil chambers, such that said high-pressure oil is received in each of said opposing oil chambers, and
a pair of communicating lower chambers formed within said plunger, said lower chambers containing a slider adapted for reciprocating movement therebetween in response to said high-pressure oil from said oil chambers, the reciprocating movement of said slider causing the high-pressure oil to be pumped into said oil reservoir.

4,451,213
ELECTRICALLY OPERATED FUEL PUMP DEVICE HAVING A REGENERATIVE COMPONENT

Toshihiro Takei, Kariya; Kazuma Matsui, Toyohashi; Yoshiyuki Hattori, Toyoake; Kiyohiko Watanabe, Chiryu; Toshiaki Nakamura, Anjo, and Shunsaku Ohnishi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 29, 1982, Ser. No. 362,855
Claims priority, application Japan, Mar. 30, 1981, 56-46954
Int. Cl.³ F04B *35/04*; F04D *5/00*; F01D *3/00*
U.S. Cl. 417—366 **8 Claims**



1. An electrically operated fuel pump device comprising a regenerative pump component and an electric motor component operatively connected to said regenerative pump component to actuate the same, said regenerative pump component comprising:
a pump casing having inner surfaces thereof in axially opposed, but spaced relation to each other, said inner surfaces of said pump casing cooperating with each other to define therebetween a pump chamber, said pump casing further having defined therein suction and discharge ports communicated with said pump chamber;
an impeller operatively connected to said electric motor component and disposed within said pump chamber rotatably around a rotational axis and axially movably therein, liquid fuel being sucked into said pump chamber through said suction port, increased in pressure to a discharge pressure and discharged from said pump chamber through said discharge port when said impeller is rotated in said pump chamber, said impeller having axial end faces thereof cooperating with said inner surfaces of said pump casing to define first and second clearances therebetween, respectively;
pressure introducing means for introducing the liquid fuel at the discharge pressure into said first and second clearance to cause the liquid fuel to act on said axial end faces of said impeller to minimize the direct contact of said axial end faces of said impeller with said respective inner surfaces of said pump casing,
a common housing having disposed therein said regenerative pump component and said electric motor component, said discharge port being communicated with a space within said housing,
wherein said pressure introducing means introduces the liquid fuel at the discharge pressure into the narrowest

portion of said first clearance and into the narrowest portion of said second clearance,

an annular projection formed on one of each of said inner surfaces of said pump casing and each of said axial end faces of said impeller in concentric relation to the rotational axis of said impeller, said annular projections on one of said inner surfaces of said pump casing and said axial end faces of said impeller projecting toward and cooperating with the other of said inner surfaces of said pump casing and axial end faces of said impeller to define said narrowest portions of said first and second clearances, respectively,

wherein said annular projections are integrally formed on said axial end faces of said impeller, respectively.

4,451,214

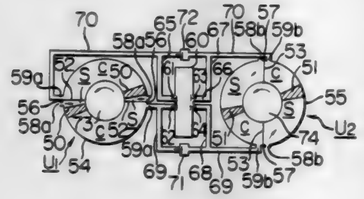
ROTARY PISTON TYPE FLUID MACHINE

Rokuro Kagamiyama, 1069-181, Tsu, City of Kamakura, Kanagawa Prefecture, Japan

Division of Ser. No. 157,394, Jun. 9, 1980, abandoned. This application Sep. 16, 1982, Ser. No. 418,743

Int. Cl.³ F04C *23/00, 27/00*

U.S. Cl. 418—11 **7 Claims**



1. A rotary piston type fluid machine comprising a plurality of rotary piston type fluid machine units singly or in combination, each of said fluid machine units comprising a doughnut type ring-shaped annular cylinder with an annular slit being formed in the wall around the inner periphery so as to lie in a plane containing the annular center line of said cylinder, a rotor rotatively mounted to said cylinder centrally with its peripheral portion being sealingly and shiftably received in said slit, a rotor shaft means connected to said rotor centrally to transmit or take out power thereto or therefrom, one or more rotary pistons secured to the peripheral surface of said rotor and adapted to be shifted within said cylinder, and one or more gate valves provided in said cylinder so as to retractably protrude into said cylinder across it and adapted to partition chambers within said cylinder between them and said rotary pistons when protruding into said cylinder, said gate valve and said rotary pistons being operated in synchronization with each other and being shifted in relation to each other, said fluid machine units being arranged in a side-by-side relationship with said rotors being connected together by a common rotor shaft, and with said fluid machine units each being respectively operated as a compressor with the relative process phases of said rotary pistons of said fluid machine units being shifted in relation to each other by a predetermined process phase angle between said units, a compressed gas accumulating reservoir, said fluid machine units being adapted to supply in alternation gases compressed by them to said compressed gas accumulating reservoir, compressed gas transfer valves cooperating with said rotary pistons and said gas accumulating reservoir to convey the remaining compressed gas of one of said compressors just before the final compression process into another of said compressors which is under an intermediate compression process, whereby the total compression efficiency of said compressors is considerably improved.

4,451,215

ROTARY PISTON APPARATUS

Ottmar Winkler, Schweinfurt, and Egon Pfaller, Dittelbrunn, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 14, 1981, Ser. No. 254,058

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014520

Int. Cl.³ F04C *2/00*

U.S. Cl. 418—23 **9 Claims**



1. Rotary piston assembly comprising a housing having a bore, a piston rotatably mounted in the housing, a plurality of slide vanes pivotally supported and distributed about the circumference of said piston, means for controlling pivotal movement of said slide vanes comprising an axially movable member having a conical peripheral surface mounted in a bore of the rotary piston shaft and a plurality of elongated pins engaging in radially disposed slots in the piston disposed at an angle to a radial plane through the axis of the conical member and pivot axis of the slide vane, one terminal end of said pins engaging an arcuate recess in an end section of the slide vane and the opposite end engaging the outer peripheral surface of said conical member.

4,451,216

PLANETARY HYDRAULIC MOTOR WITH STATOR GEAR HINGED TO A HOUSING

Fedor N. Erasov, Odessa; Boris A. Chumachenko, and Vladimir M. Potaichuk, both of Zaporozhie, all of U.S.S.R., assignors to Zaporozhsky Konstruktorsko-Tekhnologichesky Institut Selskokhozyaistvennogo Mashinostroenia, Zaporozhie, U.S.S.R.

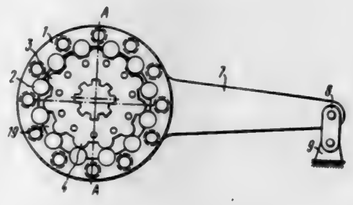
PCT No. PCT/SU81/00047, 371 Date Feb. 23, 1982, 102(e) Date Feb. 23, 1982, PCT Pub. No. WO82/00173, PCT Pub. Date Jan. 21, 1982

PCT Filed May 29, 1981, Ser. No. 355,544

Claims priority, application U.S.S.R., Jul. 8, 1980, 2952646

Int. Cl.³ F03C *2/00*

U.S. Cl. 418—61 B **1 Claim**



1. A planetary hydraulic motor comprising a stator gear having interior teeth, a rotor mounted eccentrically inside said stator gear and having exterior teeth, said rotor being mounted directly on a drive shaft of an actuating mechanism and having passages communicating with spaces between said interior and said exterior teeth, said spaces defining working chambers of variable volume, cover plates adjacent to end faces of said rotor and said stator gears and provided with passageways for feeding and discharging a working fluid through said rotor passages, and an arm fixedly secured at one end to said stator gear and at an other end to a housing of said actuating mechanism.

4,451,217

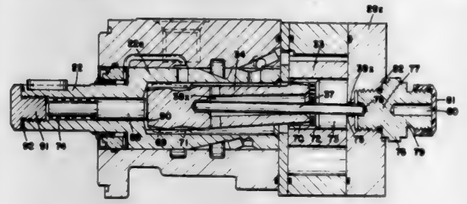
ROTARY FLUID PRESSURE DEVICE

Harvey C. White, 3733 Capilano, West Lafayette, Ind. 47906

Continuation-in-part of Ser. No. 29,019, Apr. 12, 1979, Pat. No. 4,285,643, which is a continuation-in-part of Ser. No. 903,589, May 8, 1978, abandoned. This application Jul. 16, 1981, Ser. No. 284,128

Int. Cl.³ F04C *15/00*

U.S. Cl. 418—69 **12 Claims**



1. In a rotary fluid pressure device having a housing, a presure generating member, a drive shaft, a wobble stick drivingly connecting the pressure generating member with the drive shaft, the wobble stick connected to one of the pressure generating member or drive shaft by a teeth-teeth drive, the improvement of the one of the pressure generating member or drive shaft having teeth also having an area free of teeth, the teeth of the wobble stick being selectably movable into said area free of teeth and a position of not drivingly connecting the pressure member with the drive shaft, the wobble stick being located by a rigid separate wobble stick locating pin having opposite ends engaging between the pressure generating member end of the wobble stick and the housing, and in that the rigid separate pin has two selectable effective lengths, one length locating the teeth of the wobble stick in contact with the teeth of one of the pressure generating member or drive shaft, a position of engagement, and the other length locating the teeth of the wobble stick in the area of one of the pressure generating member or drive shaft free of teeth, a position of non-engagement.

4,451,218

VANE-PISTON PUMP

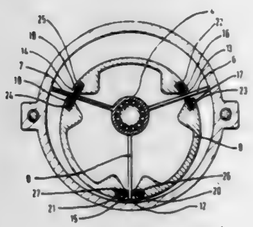
Helmut Rembold, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 13, 1982, Ser. No. 397,743

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3135978

Int. Cl.³ F04C *2/00, 15/00, 27/00*

U.S. Cl. 418—137 **5 Claims**



1. A vane-piston pump comprising a plurality of vanes within a pump housing, a rotor supported eccentrically within said pump housing and said vanes, said rotor having oppositely disposed slitted zones for the passage therethrough of said vanes, sealing strips in said slitted zones along which said vanes slide each said slitted zone is provided with an elastic cushion and a spring means which produces a spring force against said elastic cushion within said slitted zones which augments said spring means to produce a force on each of said sealing strips.

4,451,219

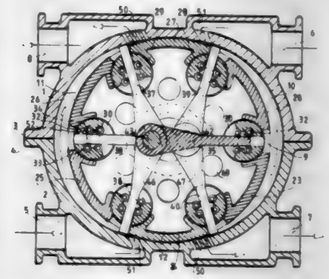
VALVELESS BI-CHAMBER ROTARY STEAM ENGINE WITH TURBINE EFFECT

Waldemar H. Kurherr, Duesseldorf, Fed. Rep. of Germany, assignor to Kurherr Motoren A.G., Baar, Switzerland

Continuation of Ser. No. 216,820, Dec. 15, 1980, abandoned. This application Sep. 28, 1983, Ser. No. 536,569

Int. Cl.³ F01C *1/00, 21/00*

U.S. Cl. 418—138 **21 Claims**



1. A displacement type rotary system turbine engine comprising:

a housing having means defining a hollow, interior chamber formed from at least three aligned and intersecting partial cylindrical members;

a stationary crankshaft mounted so as to extend across said hollow interior chamber, said crankshaft having a central axis positioned at the center of said interior chamber and two separate outboard, eccentrically positioned axes each spaced an equal predetermined distance from said central axis;

drum means rotatably and concentrically mounted within said hollow interior chamber and about said stationary crankshaft for forming said hollow interior chamber into at least two diametrically opposed radial chambers,

at least two sets of a plurality of sealing blades, each set being separately eccentrically and slidably mounted interiorly of said drum means about one of said outboard axes on said stationary crankshaft, each of said sets of blades rotating together with said drum means so that each of said at least two sets respectively rotate through a circular path and effect frictionless labyrinth sealing through only one of said at least two diametrically opposed radial chambers as said drum means rotates with each blade being radially movable therein,

said housing further including inlet and outlet means for allowing entry and exit of a working medium to each of said at least two radial chambers,

and power take-off means operatively associated with said drum means for connecting said engine to a utility device so that as the working medium enters the inlet means for each chamber, the drum means will be rotated by the effect the working medium has on said sealing blades as said sealing blades pass through their respective radial chambers.

4,451,220

ROTARY COMPRESSOR WITH CLEARANCE BETWEEN MOVABLE VANES AND SLITS OF THE ROTOR

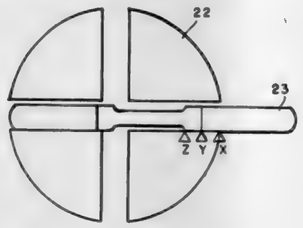
Seitoku Ito, Okazaki; Kenji Takeda, Aichi; Mitsuo Inagaki, Okazaki, and Nobuo Motoda, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 14, 1981, Ser. No. 311,402

Claims priority, application Japan, Oct. 16, 1980, 55-148118[U]; Oct. 16, 1980, 55-148119[U]

Int. Cl.³ F03C *2/00*

U.S. Cl. 418—255 **1 Claim**



1. A rotary compressor comprising a cylindrical-shaped housing, a rotor rotatably mounted in said housing and formed with two diametrically extending slits, and two movable substantially flat vanes each slidably disposed in a corresponding slit with the opposite ends thereof extending beyond said slit in abutting relation to the inner surface of said housing, said vanes having interlocking central portions of narrower width than that of the remaining portions of said vanes, the thickness of each of said vanes in a portion of said central portion of less length than the latter being less than that of said remaining portions, and a first distance from a point X on a side surface of each vane which is contacted by the outer edge of the corresponding slit when the vane is projected to its maximum extent to a point Y on the side surface of said vane corresponding to an end of said narrower width portion of said vane and a second distance from said point Y to a point Z on the adjacent edge of said reduced thickness portion are substantially equal.

4,451,221

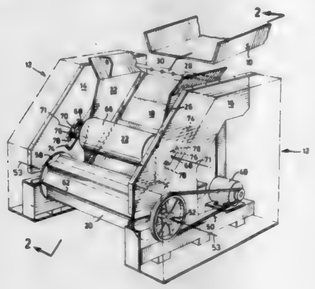
APPARATUS FOR THE PELLETIZATION OF HEAT-LIQUIFIABLE SOLID MATERIALS

Michael Orlander, Dundas; Robert P. Cotsworth, and Peter A. MacKenzie, both of Hamilton, all of Canada, assignors to National Slag Limited, Hamilton, Canada

Filed May 13, 1982, Ser. No. 377,755

Int. Cl.³ B22F *9/00*

U.S. Cl. 425—8 **8 Claims**



1. Apparatus for the pelletization of molten heat-liquifiable solid material comprising:

an apparatus frame,

feed plate means mounted on the frame and providing a feed surface over which the molten material flows under gravity upon being fed thereto by feeding means,

a radially-vaned first projection rotor mounted on the frame for rotation about a respective horizontal axis and on to the periphery of which the molten material is fed from the feed surface for impingement by the moving vanes and consequent projection in the form of droplets into the air for cooling and pelletization as the result of its passage through the air,

a second rotor mounted on the frame for rotation about a second axis with the periphery of the second rotor spaced above the feed surface so that material flowing under gravity on the feed surface passes through a control gap formed between the feed surface and the moving periphery of the second rotor, and

motor means for rotating the first rotor about its axis in the direction and at the speed for the required projection into the air for said cooling and pelletization, and for rotating the second rotor about its axis.

4,451,222

APPARATUS FOR PRODUCING CONCRETE PIPES

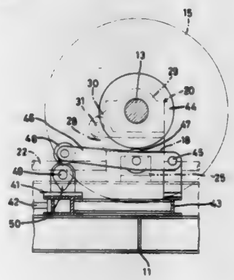
Kunizo Hiraoka, 202-5, 2-chome, Higashi, Onari-cho, Omiyashi, Saitama, Japan

Filed Jun. 23, 1982, Ser. No. 391,448

Claims priority, application Japan, Jun. 23, 1981, 56-98084

Int. Cl.³ B28B *21/22*

U.S. Cl. 425—432 **2 Claims**



1. An apparatus for producing concrete pipes, said apparatus comprising:

a molding box for molding concrete into a pipe, said molding box having a smooth outer surface,

a single pair of runner wheels, arranged at each side of said molding box for supporting said molding box horizontally, each of said single pair of runner wheels having a smooth outer surface, at least one of said single pair of runner wheels being vertically movable,

drive means for driving the one of said single pair of runner wheels to impart smooth relation to said molding box,

vibration generating means for moving at least one of said single pair of runner wheels having a smooth outer surface vertically to impart vibrations to the smooth outer surface of said molding box, and

said single pair of runner wheels being adapted so that the distance therebetween can be adjusted according to the diameter of said molding box.

4,451,223

CORNER FINISHING TOOL

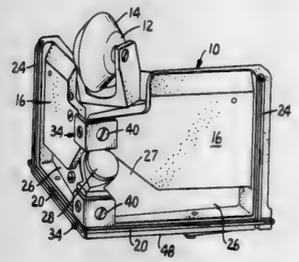
Morris F. Mower, Santa Clara, and Eugene R. Johnson, Burlingame, both of Calif., assignors to Bliss & Laughlin Industries, Inc., Oak Brook, Ill.

Filed Jul. 28, 1982, Ser. No. 402,618

Int. Cl.³ B29C *23/00*

U.S. Cl. 425—458 **3 Claims**

1. An improved corner finishing tool for applying mastic material along a wall joint, said tool comprising container means defining a cavity that is open in two convergent and substantially perpendicular planes and having surfaces in each of said planes that converge peripherally of said cavity; said container means comprising a pair of retainer plates resiliently joined at one edge, a pair of doctor blades mounted along intersecting edges of said retainer plates for doctoring mastic material that flows thereunder; and improved means for adjusting the resilient flex between said pair of retainer plates comprising a pair of lever arms pivotally secured to an edge portion of the retainer plates and pivotally joined together at one end, and spring means for engaging the lever arms at selected positions relative to the pivotal connection between the retainer plates and the lever arms.



4,451,224

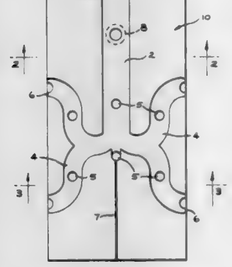
MOLD DEVICE FOR MAKING PLASTIC ARTICLES FROM RESIN

James H. Harding, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 25, 1982, Ser. No. 361,996

Int. Cl.³ B29F *1/08*

U.S. Cl. 425—548 **24 Claims**



1. A device for making plastic parts from resin comprising:

(a) a plurality of cavities in a mold assembly in which the plastic parts are formed;

(b) a means for supplying resin;

(c) means for heating the mold assembly;

(d) a runner block in the mold assembly separated from the other elements of the mold assembly by a thermal barrier to insulate the runner block from the other elements of the mold assembly;

(e) at least one channel in the runner block connected to the means for supplying resin, the channel extending from the resin supply means toward the cavities for providing resin from the resin supply means to the cavities, the channel having thin, flat dimensions with two opposite sides thereof having a length substantially less than the length of the other two sides so that the channel has a cross-section sufficient to provide shear resistance resulting from forcing the resin under pressure through the thin, flat channel;

(f) means for forcing the resin from the resin supply means to the cavities; and

(g) means for elevating the temperature of the runner block independent of the means for heating the mold assembly.

4,451,225

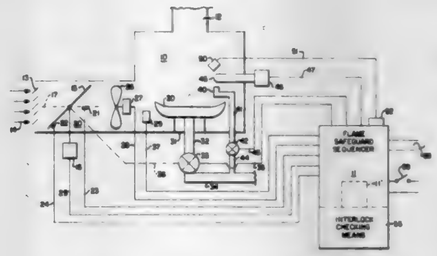
FLAME SAFEGUARD SEQUENCER HAVING INTERLOCK CHECKING MEANS

William R. Landis, Bloomington, and Paul B. Patton, Columbia Heights, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 31, 1983, Ser. No. 462,172

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—14 **7 Claims**



1. A flame safeguard sequencer for the control of a fuel burner system upon the operation of controller means for said fuel burner system with said system having start or preignition interlock means, run interlock means, damper means, ignition means, fuel supply means, and flame sensor means, including: a flame safeguard sequencer adapted to be connected to said interlock means, said damper means, said ignition means, said fuel supply means, and said flame sensor means to operate said means to properly purge, ignite and operate said fuel burner system in a predetermined timed sequence upon operation of said controller means; said flame safeguard sequencer including interlock checking means; said interlock checking means including time delay means to limit the operation of said flame safeguard sequencer for up to a fixed interval of time in the event that any of said interlock means is determined by said interlock checking means to be in an incorrect state; said interlock checking means releasing the hold of said operation of said sequencer upon said incorrect state of said interlock means clearing before said fixed time interval expires; said time delay means limiting the operation of said sequencer up to said fixed time interval; said interlock checking means providing a shut down of said burner in the event said interlock means remains in an incorrect state longer than said fixed time.

4,451,226

FLAME SAFEGUARD SEQUENCER HAVING SAFE START CHECK

William R. Landis, Bloomington, and Paul B. Patton, Columbia Heights, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

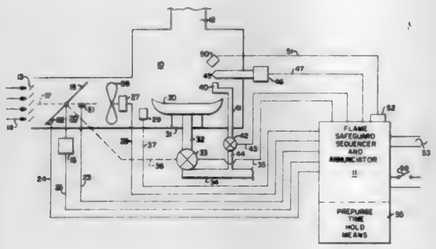
Filed Jan. 10, 1983, Ser. No. 456,952

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—15 **4 Claims**

1. A flame safeguard sequencer for the control of a fuel burner upon the operation of controller means with said fuel burner having damper means, ignition means, fuel supply means, and flame sensor means, including: a flame safeguard sequencer connected to said damper means, said ignition means, said fuel supply means, and said flame sensor means to sequentially operate said means to properly purge, ignite and operate said fuel burner in a predetermined timed sequence

upon operation of said controller means; said flame sensor means energized by said sequencer to monitor said burner for the presence or absence of flame upon said controller means operating to initiate the operation of said fuel burner; and said sequencer including prepurge time hold means to reset and hold said predetermined timed sequence for said fuel burner



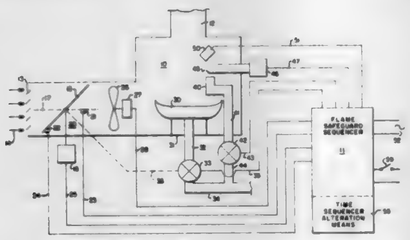
operation in the event that said flame sensor means senses the presence of a flame during a standby period and said purge portion of said sequence of operation when no flame should be present; said prepurge time hold means further shutting said burner off in the event an unwanted flame signal exists for a predetermined time established by said prepurge time hold means.

4,451,227

FLAME SAFEGUARD SEQUENCER HAVING SWITCH TEST FUNCTIONS

William R. Landis, Bloomington, and Paul B. Patton, Columbia Heights, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 3, 1983, Ser. No. 455,148
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—18 **5 Claims**



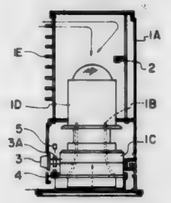
1. A flame safeguard sequencer for the control of a damper used to supply a fuel burner with air for purge and combustion with said fuel burner having damper drive motor means, ignition means, fuel supply means and flame sensor means, including: flame safeguard sequencer connected to said damper drive motor means, said ignition means, said fuel supply means and said flame sensor means to sequentially operate said means to properly purge, ignite, and operate said fuel burner in a predetermined timed sequence; high fire and low fire switch means mounted in proximity to said damper and normally actuated by said damper when said drive motor means moves said damper between a low fire position and a high fire position in the sequencing of said burner into normal operation; said switch means normally being open circuited when not actuated by said damper and closed circuited when actuated by said damper to thereby provide said sequencer with a change in electrical state of said switch means upon proper operation of said damper under the control of said sequencer; and said sequencer including time sequencer alteration means to extend said predetermined timed sequence for said damper operation in the event that said switch means is closed circuited when said switch means should be open circuited.

4,451,228

BURNER

Chuzoh Wada, Nara; Yoshikazu Matsuda, Sakurai, and Yoshio Asano, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 19, 1982, Ser. No. 379,879
Claims priority, application Japan, May 20, 1981, 56-77177; Jun. 3, 1981, 56-86076
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—76 **3 Claims**



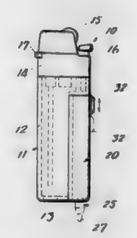
1. A burner comprising:
a wick;
means for raising said wick to a combustion position and for lowering said wick to an extinguishing position;
holding means for holding said wick raised to said combustion position, said wick being ignitable at said combustion position;
protection means for protecting against continuing combustion in the presence of oxygen depletion, said protection means detecting a change in combustion state which occurs upon oxygen depletion and releasing the holding of said wick by said holding means upon detecting said change in state; and
switch actuatable wick cleaning means for permitting the holding of said wick in said combustion position by said holding means by preventing said protection means from releasing the holding of said wick, said switch actuatable wick cleaning means being actuated when a fuel tank of said burner is empty and allowing the combustion of said wick to be maintained until the fuel contained in said wick is consumed.

4,451,229

LIQUEFIED GAS LIGHTER WITH BALL-POINTED PEN

Masao Nitta, 322 Nagasaki, Shimizu-shi, Shizuoka-ken, Japan

Filed Apr. 7, 1983, Ser. No. 482,977
Claims priority, application Japan, Sep. 20, 1982, 57-142485[U]
Int. Cl.³ F23D *21/00*
U.S. Cl. 431—253 **6 Claims**



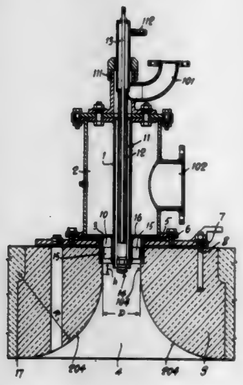
1. In a liquified gas lighter with a ball-pointed pen having a housing defining a fuel reservoir therein, a cap secured to one end of said housing, an injection wheel rotatably supported in said cap, a spring-loaded thumb plate and a flame height adjusting member for movement within a slot in said cap, characterized by an engaging projection extending along one side wall of said fuel reservoir, a self-contained ball-pointed pen having a casing detachably connected to said fuel reservoir and having a recess extending along one side wall of the casing for receiving said engaging projection on the fuel reservoir and having a pen pusher member thereon, and said casing having a guide slot for said pen pusher member extending by a distance from one end of a second side wall of the casing, a ball-pointed pen slidable in said casing for movement between two positions, and said pen pusher member being connected to said pen and slidably fitted on said ball-pointed pen casing for moving said pen between said two positions.

4,451,230

RADIANT FLAT FLAME BURNER

Giorgio Bocci; Alberto Dardano, both of Genoa; Vittorio Levaggi, Chiavari, and Ambrogio Milani, Ortia, all of Italy, assignors to Italimpianti Societa Impianti p.A., Genoa, Italy

Filed May 29, 1981, Ser. No. 268,649
Claims priority, application Italy, Jun. 6, 1980, 12561 A/80
Int. Cl.³ F23Q *9/00*
U.S. Cl. 431—284 **10 Claims**



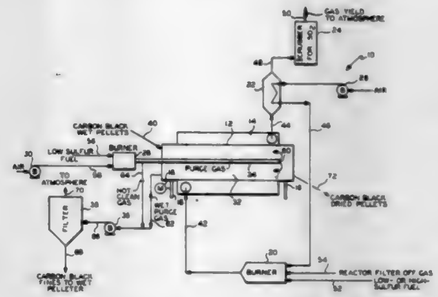
1. A radiant flat flame burner for liquid and/or gas fuels, comprising:
(a) at least two centrally-arranged nozzles, one for liquid fuel outflow and another for gas fuel, an atomizing nozzle for receiving the liquid fuel nozzle and forming a part of a lance, the lance comprising one duct for delivery of the liquid fuel to the liquid fuel nozzle, and a second duct for delivery of an atomizing fluid,
each duct being connected to the atomizing nozzle which is at the extremity of the lance to atomize liquid fuel, characterized by the fact that the liquid fuel outflow nozzle, opens into a convergent-divergent conduit within said atomizing nozzle, which is connected to the duct for delivery of the atomizing fluid,
the atomizing nozzle having incorporated therein a swirling device adapted to impart a whirling motion to the atomized liquid fuel, and
(b) a coaxial combustion air annular conduit provided around the said centrally arranged nozzles and connected to a burner fire port delimited by refractory surfaces, characterized by the fact that the burner fire port has a rear cylindrical portion, with its rear end connected and coaxial with the combustion air conduit and with its front end having a flaring fore portion, widening out continuously towards its outlet end.

4,451,231

DRYING OF PARTICULATE MATERIAL

Lawrence K. Murray, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1983, Ser. No. 458,504
Int. Cl.³ F27B *14/00, 15/12, 7/08*; F26B *7/00*
U.S. Cl. 432—13 **15 Claims**



1. A process for removing volatile liquid from liquid-laden particulate material, comprising:
introducing said liquid-laden particulate material into a drying zone defined by a closed vessel having an exterior and an interior;
burning a first mixture comprising air and a first fuel to produce first hot combustion gases;
contacting the exterior of said vessel with said first hot combustion gases to heat the interior of said vessel and thereby vaporize volatile liquid therein;
burning a second mixture comprising air and a second fuel to produce second hot combustion gases, said second fuel containing substantially less sulfur and sulfur compounds than said first fuel;
passing a first quantity of said thus produced second hot combustion gases through the interior of said vessel to purge the vaporized volatile liquid from said drying zone; and
thereafter filtering said second hot combustion gases and said thus purged vaporized volatile liquid to separate therefrom particulate material entrained therein.

4,451,232

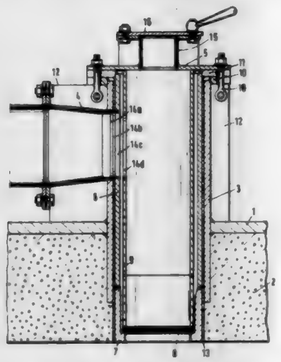
NOZZLE BLOCK FOR ROTARY KILNS

Helmut Ernst; Karl-Heinz Gehrhardt, both of Dietzenbach; Leopold Uhl, Camberg, and Hartmut Wolert, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,670
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137122
Int. Cl.³ F27B *7/00*; B05B *15/00*
U.S. Cl. 432—103 **6 Claims**

1. In a nozzle block for a rotary kiln having a shell, a lining, a mounting tube which extends through and is connected to the shell, a gas feed duct secured to the side of the mounting tube, a cover detachably secured to the outer end of the mounting tube, a nozzle tube which extends in the mounting tube and through the kiln lining and an orifice plate in the lower portion of the the nozzle tube, the improvement wherein: the nozzle tube forms a clearance with the mounting tube throughout the length of the body of the latter and a clearance with the furnace lining, means detachably connecting the nozzle tube at its outer end to the mounting tube, the nozzle tube comprises an abutment surface at its inner end which is engaged by the orifice plate which forms a clearance with the body of the nozzle tube and a retaining tube in the

nozzle tube which forms a clearance with the nozzle tube and with the orifice plate lying on the abutment surface, and the



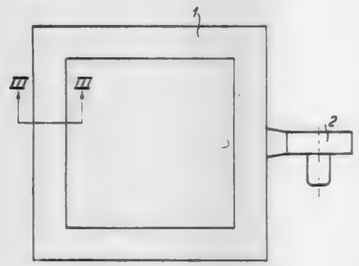
mounting tube, the nozzle tube and the retaining tube have openings therein at the gas feed duct to permit gas to flow into the retaining tube and through the orifice plate.

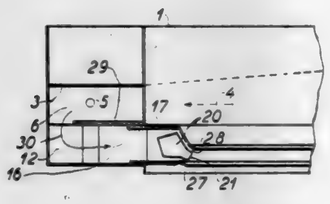
4,451,233

APPARATUS FOR THE SHRINKING OF WRAPPING FOILS

Kurt Lachenmeier, Sonderborg, and Peter Simonson, Graasten, both of Denmark, assignors to Kurt Lachenmeier ApS, Sonderborg, Denmark

Continuation of Ser. No. 131,838, Mar. 19, 1980, Pat. No. 4,330,265. This application Mar. 18, 1982, Ser. No. 359,248
Claims priority, application Denmark, Mar. 27, 1979, 1233/79
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ F23D *13/12*; F24J *3/00*
U.S. Cl. 432—224 **2 Claims**





1. Apparatus for shrinking heat-shrinkable foil around an article wrapped with said foil, said apparatus comprising:

a frame arranged to pass around an article wrapped with heat-shrinkable foil, said frame having hollow sides, each side having an elongated annular inwardly facing opening communicating with the interior of said side, each said opening having parallel elongated edges;

a gas burner tube suspended in the opening of each of said sides between the elongated parallel edges thereof, said tube extending along the corresponding side and having an elongated combustion gas exhaust port extending inwardly of said frame beyond said opening;

each said gas burner tube cooperating with the edges of the corresponding opening to define a pair of air outlet slots on opposite sides of said gas burner tube; and

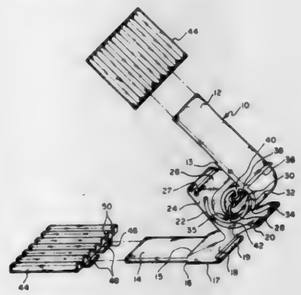
an air blower for (i) forcing air out of each of the air outlet slots in streams on opposite sides of each of the gas burner tubes, so that said air cools the corresponding gas burner tube, reduces the transmission of heat from said gas burner tube to said frame, envelops, intermixes with and is heated by the combustion gases excaping from the combustion gas exhaust port of said gas burner tube between and in communication with the air streams emanating from the slots on opposite sides of said gas burner tube, and for (ii) directing the heated air inwardly of said frame to impinge upon said heat-shrinkable foil.

4,451,234

DENTAL ARTICULATOR DEVICE

Toshimi Oye, Pitman Jefferson Rd., Mullica Hill, N.J. 08062

Filed Nov. 12, 1982, Ser. No. 441,084
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—54 **11 Claims**



1. A dental articulator device comprising:

(a) a lower tongue member means to receive and hold a model of the mandibular portion of the jaw,

(b) an upper tongue member means to receive and hold a model of the maxillary portion of the jaw,

(c) a lower body means providing support for holding the device and structurally connecting it to the lower tongue member,

(d) an articulator member means structurally attached and extending from the lower body means in a generally vertical direction, wherein the articulator member means comprises a member of cross sectional shape and material to allow twisting movement of the upper tongue member to simulate excursive movement of the jaw along a path of least resistance, and

(e) an attachment means hingably attaching the upper end of the articulator member means to a near end of the upper tongue member means to allow vertical movement of the outer end of the upper tongue member in relation to the balance of the dental model articulator device wherein the attachment means comprises

(i) a horizontal partial cylindrical socket member, attached to the upper end of the articulator member, and

(ii) a horizontal partial cylindrical hollow drum member structurally attached to the rear of the upper tongue member,

wherein the drum member fits into and is of the same size or slightly larger diameter than the socket member, such that when the drum member is snapped in, the snug fit allows turning movement of the drum in the socket but holds the position at any chosen radial angle.

4,451,235

PROCESS FOR PREPARING AN ARTIFICIAL DENTAL ROOT

Kensuke Okuda, Tokorozawa; Hirosi Nagai, Chofu; Hiroto Fujimaki, Kokubunji; Atsushi Tomonaga, Tachikawa, and Hideki Aoki, Funabashi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 240,100, Mar. 3, 1981, abandoned, which is a continuation of Ser. No. 78,202, Sep. 24, 1979, abandoned. This application Apr. 4, 1983, Ser. No. 481,886
Claims priority, application Japan, Oct. 8, 1978, 53-123571
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—201 **4 Claims**

1. A process for preparing an artificial dental root comprising uniformly blending a particulate or powdered form of synthetic hydroxyapatite or calcined or sintered synthetic hydroxyapatite or a mixture thereof with an organic matrix, molding the blend, cutting the surface of the molded product, and causing the cut surface area of the molded product to be brought into contact with a bone wherein said cut surface area is composed of both a phase of said hydroxyapatite and a phase of said organic matrix in a surface area ratio of hydroxyapatite phase to organic matrix phase of from 5:95 to 70:30.

4,451,236

DENTAL PROSTHESIS AND METHOD FOR MAKING SAME

Jury A. Tarasov, ulitsa Levanevskogo, 56/10; Ljudmila V. Zhivkova, ulitsa Aviatsionnaya, 19, kv. 32, both of Dnepropetrovsk; Anatoly M. Kotlyar, ulitsa Akademika Pavlova, 140G, kv. 65, Kharkov; Vasily P. Panchokha, ulitsa Furmanova, 14, kv. 26; Natalia V. Alexeenko, ulitsa Furmanova, 14, kv. 26, both of Dnepropetrovsk; Anatoly I. Grabchenko, ulitsa Pushkinskaya, 74, kv. 67, Kharkov; Viktor G. Lappo, ulitsa, 7 Korpus 4, kv. 55, Moscow; Albert M. Boyarunas, ulitsa Sverdlova, 154, KV. 73, Kharkov; Vitaly F. Drozhin, ulitsa Barrikadnaya, 26, kv. 85, Kharkov; Anatoly A. Andreev, ulitsa Danilevskogo, 31, kv. 47, Kharkov; Igor V. Gavrilko, prospekt Traktorostroitelei, Kharkov; Mikhail A. Napadov, ulitsa Rollana, 9, kv. 7, Kharkov; Valentin G. Padalka, ulitsa Danilevskogo, 10, kv. 122, Kharkov, and Abram L. Sapozhnikov, ulitsa Vasilevskoi, 15, kv. 52, Kiev, all of U.S.S.R.

Filed Aug. 11, 1983, Ser. No. 522,264
Int. Cl.³ A61C *5/08*
U.S. Cl. 433—207 **10 Claims**

1. A dental prosthesis comprising a base of a durable corrosion-resistant metallic alloy and at least one external decorative layer of a harder material than the base comprising compounds of metals of the subordinate subgroup of Group IV of the periodic system selected from the group consisting of nitrides, oxynitrides, carboxynitrides, cyanonitrides and monoxides of these metals and mixtures of said compounds, the thickness ratio of said external decorative layer to the base being equal to 1:10-200 respectively.

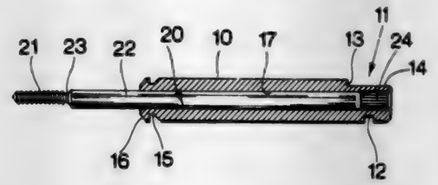
4,451,237

DENTAL ANCHORING MEANS

Stuart J. Filhol, Castlefreke, County Cork, Ireland

Filed Jan. 6, 1982, Ser. No. 337,403
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—225 **6 Claims**

1. Dental anchoring means comprising a threaded pin for insertion into a preformed hole in a tooth, a shank integral with the pin, a neck intermediate the pin and the shank whereby the pin is detached from the shank after insertion in said hole, and a connecting member including latching means at one end thereof for locating the member in a handpiece by which the pin is rotated in said hole, the connecting member having an open-ended bore extending longitudinally thereof and a portion of the shank being located in the bore, said portion being, along at least part of its length, of enlarged section to define fixing means which provide a force fit between the enlarged section and the bore when the shank and pin are inserted along



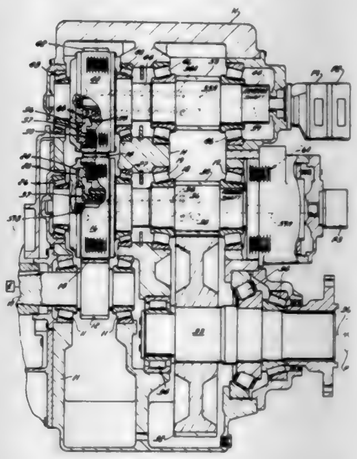
the bore from the end of the bore adjacent the latching means with the pin projecting from the opposite end of the bore, and in use the fixing means preventing the shank from passing along the bore towards the end of the bore from which the pin projects and preventing relative rotation between the shank and connecting member.

4,451,238

SHAFT BRAKE FOR MARINE PROPULSION SYSTEM

Bruce C. Arnold, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Sep. 7, 1982, Ser. No. 415,332
Int. Cl.³ B63H *23/08*
U.S. Cl. 440—75 **7 Claims**



1. A marine power transmission of the type having a change speed gear system mounted in a housing and including a forward shaft, a reverse shaft and an output shaft journalled in said housing, said shafts having gears fixed thereto for rotation therewith whereby power can be transmitted through the gears of said shafts to obtain different speed ratios and directions of output shaft rotation, said forward shaft and said rearward shaft each having a friction plate type, hydraulically actuated clutch connected therewith, said forward shaft also having a friction plate type, hydraulically actuated brake concentrically mounted therearound and operatively connectible between said forward shaft and said housing whereby said forward shaft can be braked against rotation by being anchored to said housing, said forward shaft and said output shaft having a transmission gear set therebetween whereby braking of said forward shaft acts to brake said output shaft through said transmission gear set, said output shaft connected to a propeller for rotatably driving the latter in either direction of rota-

tion, said transmission also having a hydraulic control circuit connected with said clutches and said brake for actuation thereof, said circuit also including an operator controlled, forward-neutral-reverse selector valve, a shuttle valve, a brake release valve, a brake cooling valve and a clutch cooling valve for each of said clutches on said forward and reverse shafts, said selector valve being operable to actuate said clutches so that said transmission can be selectively in forward, neutral or reverse conditions of operation, said shuttle valve being actuated upon commencement of engagement of said forward shaft clutch or reverse shaft clutch to thereby direct pressure fluid flow to actuate said brake release valve and thereby causing said brake to be released, valve means for providing a priority flow of lubricant to said brake cooling valve and to said clutch cooling valves when either of the respective clutches of said cooling valves are engaged, and cuts off priority flow of lubricant to said brake.

4,451,239

HYDROPLANE APPARATUS

James M. Hoenstine, 3201 Alamo Dr., Orlando, Fla. 32805, and Thomas E. Ray, 2512 Trentwood Blvd., Orlando, Fla. 32812

Filed Sep. 27, 1982, Ser. No. 424,105
Int. Cl.³ B63B *7/08*
U.S. Cl. 441—66 **4 Claims**



1. A hydroplane apparatus comprising in combination:
a pneumatic innertube;
a flexible fabric innertube cover, including an annular flexible fabric material partially covering said innertube and forming a smooth bottom thereto;
a handle attached to said cover for a rider to hold onto; and
a tow rope attaching means attached to said cover smooth bottom for attaching a tow rope for pulling said hydroplane, and including a fabric strap having each end portion thereof stitched to said fabric cover along the bottom thereof and said fabric strap being stitched to a reinforcing strap of flexible material on said cover bottom between said fabric strap end portions, whereby an inflatable hydroplane is provided using a pneumatic innertube.

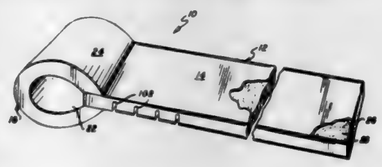
4,451,240

AQUATIC MAT

Robert L. Wood, Wichita Falls, Tex., assignor to Advanced Sports Corp., Wichita Falls, Tex.

Continuation-in-part of Ser. No. 10,201, Feb. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 743,340, Nov. 19, 1976, Pat. No. 4,138,753, which is a division of Ser. No. 609,049, Aug. 29, 1975, Pat. No. 4,006,503, which is a continuation-in-part of Ser. No. 594,018, Jul. 8, 1975, abandoned. This application May 27, 1981, Ser. No. 267,285
The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.
Int. Cl.³ B63B *35/72*
U.S. Cl. 441—129 **31 Claims**

1. An aquatic floatation mat capable of floating in water and supporting one or more persons, comprising an elongated planar member having top and bottom planar surfaces and a headrest secured to and extending from an end portion of said planar member; said planar member and said headrest formed from closed cell plastic foam slab members, which are flexible, resilient and non-water absorbent; said headrest slab member having ends thereof secured to an end portion of said planar member, said elongated planar member having transverse grooves formed in the elongated planar member; said grooves



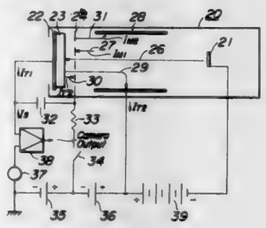
being spaced so as to enable the aquatic mat to be easily rolled up.

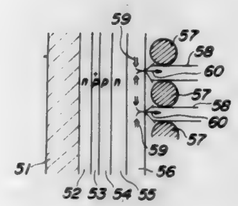
4,451,241

METHOD OF MANUFACTURING A TV CAMERA TUBE

Kazuhisa Taketoshi, and Chihaya Ogusu, both of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Jan. 11, 1982, Ser. No. 338,240
Claims priority, application Japan, Jan. 29, 1981, 56/10849
Int. Cl.³ H01J *9/18*
U.S. Cl. 445—33 **10 Claims**





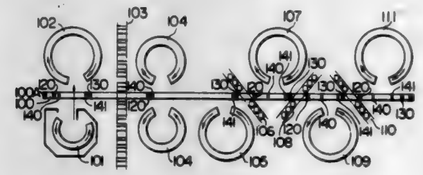
1. In a method of manufacturing a camera tube, said camera tube comprising an envelope containing a glass faceplate and an electron gun including a cathode; an n-type transparent electrode layer; a photoconductive target formed on said n-type transparent electrode, said target being composed at least of a photoconductive layer formed by depositing a thin p^+-type layer, a p-type layer and an n-type layer in succession on said n-type transparent electrode layer; and a block layer formed on said photoconductive layer for blocking an electron beam emitted from said cathode from passing through said photoconductive layer; a metal mesh disposed in the vicinity of a side of said photoconductive target, said side being scanned by said electron beam; and a collector electrode disposed between said metal mesh and said cathode for collecting secondary electrons emitted from said photoconductive target, whereby said photoconductive target is scanned by said electron beam emitted from said cathode, the steps of:
heating said metal mesh at a temperature in a range from 80° C. to 400° C.;
rotating the heated metal mesh around a rotation axis which is perpendicular to the surface of said metal mesh at a rate in the range of one revolution per second to ten revolutions per second;
depositing an insulation material on a surface of said metal mesh from an evaporating source disposed above said metal mesh at an angle in a range from 20 degrees to 70 degrees to form an insulated metal mesh; and
disposing the surface of said insulated metal mesh which is completely covered by the insulation material opposite to said photoconductive target.

4,451,242

METHOD OF CONVEYING PANEL AND SHADOW MASK AND PALLET FOR HOLDING PANEL AND SHADOW MASK AND APPARATUS FOR REMOVING SHADOW MASK FROM PANEL

Hideo Miyazawa, and Junzo Kitamura, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,518
Claims priority, application Japan, Jun. 5, 1981, 56-85735
Int. Cl.³ H01J *9/00*; G03B *41/00*
U.S. Cl. 445—65 **11 Claims**



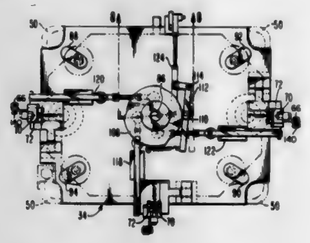
1. A method of conveying a panel and a shadow mask comprising the steps of:
placing on a pallet the panel holding the shadow mask therein;
conveying the pallet to a mask removing station in the vicinity of a treating device;
removing the shadow mask from the panel on the pallet and supporting the removed shadow mask in the pallet at the shadow mask removing station;
conveying the panel to the treating device to be subjected to a predetermined treatment; and
placing the panel on the pallet after being treated in the preceding step.

4,451,243

AUTOMATIC MASK-FRAME INSERTER

Frank T. D'Augustine, Lancaster, Pa.; Malcolm E. Terry, Marion, Ind.; Hugh F. Welsh, Marion, Ind., and Frank A. Payne, Marion, Ind., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 167,475, Jul. 11, 1980, abandoned. This application Jul. 20, 1982, Ser. No. 400,062
Int. Cl.³ H01J *9/20*
U.S. Cl. 445—68 **1 Claim**



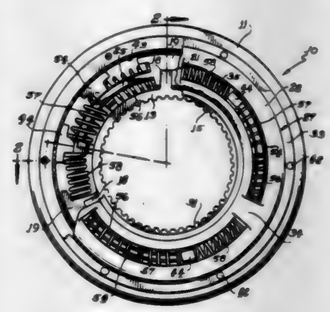
1. An automatic apparatus for inserting a mask assembly into a cathode ray tube faceplace panel, said mask assembly including an apertured shadow mask having at least three springs attached thereto, each spring including an aperture, said faceplate panel including a viewing faceplate portion and a peripheral sidewall, said sidewall including at least three studs embedded therein for engagement with said spring apertures, said apparatus comprising:
means for holding said faceplate panel with the internal side down,
a vertically movable assembly located below said means for holding said faceplate panel, said vertically movable assembly including a subassembly at each mask spring location, at least three of said subassemblies each including a stop for contacting the lower edge of a mask spring, each subassembly also including a locator pin for locating said spring aperture, said locator pin being movable between an engaged position and a disengaged position, said subassemblies being horizontally movable peripherally with respect to said mask assembly to align said locator pin with said spring apertures, said locator pin when in said engaged position being spaced from said stop a predetermined spacing equal to a standard spacing between a lower edge of a spring and the centerline of the spring aperture plus a predetermined lifting distance whereby said locator pin raises said mask assembly from said stop when in said engaged position, each subassembly further including a fork-shaped stud finder centered with respect to said locator pin, and said vertically movable assembly further including means for locking the position of a mask assembly and means for depressing said mask springs, whereby when a mask assembly is mounted on said vertically movable assembly, said springs rest on said stops when said locator pin is in said disengaged position, and said horizontally movable subassembly can move horizontally to align said locator pin and said spring apertures when said locator pin moves from said disengaged position to said engaged position, and said fork-shaped stud finder engages said stud on said faceplate panel to align said stud and said spring aperture.

4,451,244

SERIES VIBRATION DAMPER WITH NON-SYMMETRICAL CURVE

Paul E. Lamarche, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,610
Int. Cl.³ F16D *3/14, 47/02*
U.S. Cl. 464—68 **12 Claims**



1. A vibration damper assembly transmitting torque between driving and driven members and allowing different damping reactions in the opposite directions of rotation, comprising an input member operatively connected to torque input means, a hub operatively connected to torque output means and having at least two radial hub arms, a pair of floating spring separators between adjacent hub arms, compression spring sets interposed between said hub arms and separators forming groups of three spring sets acting in parallel with each group of spring sets

acting in series, and a pair of cover plates substantially enclosing said hub, spring separators and spring sets and operatively connected to said input member, each cover plate having circumferentially equally spaced inwardly offset drive straps interposed in the path of the spring sets and corresponding in number to and normally axially aligned with said hub arms, the improvement comprising a curved bypass thrust member operatively connected to each hub arm and extending in one direction through a pair of adjacent spring sets and the spring separator therebetween.

4,451,245

COUPLING CONNECTION FOR A FIBER REINFORCED SYNTHETIC RESIN PIPE

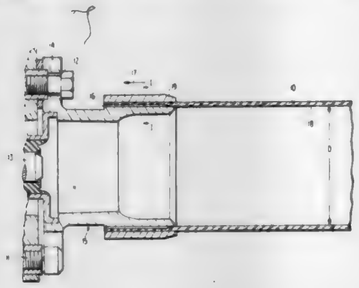
Rudolf Hörnig, Esslingen, and Günter Wörner, Kernen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 237,974

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007896

Int. Cl.³ B32B *5/12*; F16C *1/02*

U.S. Cl. 464—181 **21 Claims**



1. A coupling connection for fiber reinforced synthetic resin shaft, comprising a shaft having a connecting area at a distal end of the shaft, support means and coupling means for cutting the internal diameter of the fiber reinforced synthetic resin shaft, the coupling means being disposed concentrically to the shaft, the coupling means having a plurality of peripherally disposed teeth members on a circumference of the coupling means, the teeth members extending axially of the coupling means and having a circular crown diameter larger than the internal diameter of the fiber reinforced synthetic resin shaft so that the interior circumference of the connecting area of the fiber reinforced synthetic resin shaft assumes the form of a cutting circumference of the coupling means and form-lockingly engages the coupling means upon axial emplacement and simultaneous cutting of the cutting teeth members of the coupling means into the connecting area of the shaft,

wherein the fiber reinforced synthetic resin shaft is cut by the teeth members into the shaft along its circumference conforming the internal circumference of the shaft to the shape of the teeth members, thereby non-rotatably joining the shaft to the coupling means so that the shaft rotates with the coupling means.

4,451,246

MEANS AND METHODS OF MAKING BAGS WITH SPOUTS

Jesus Herrera-Gutierrez, Dallas, Tex., assignor to American Interpac Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 226,536, Jan. 19, 1981. This application Nov. 18, 1981, Ser. No. 322,512

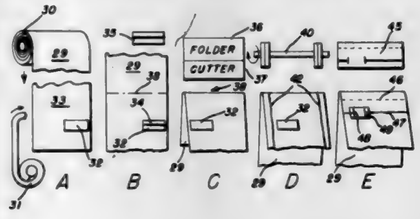
Int. Cl.³ B31B *1/90*

U.S. Cl. 493—215 **11 Claims**

1. The method of making bags formed of two adjacent flat layers sealed about the edges with an access opening thereinto in the form of a self-contained spout structure that may be selectively opened and closed manually, comprising the steps of:

positioning on one layer of a flexible bag forming material a longitudinal memory strip of a material stiffer than the flexible bag material that is manually deformable back and forth over a plurality of deforming cycles to assume resident configurations respectively for producing open and closed spout structure,

attaching the memory strip immovably along its length to



the bag layer to thereby form two adjacent unitary layers that move together in unison,

disposing a second layer of bag forming material adjacent said one layer for defining a bag with the two layers, and

attaching the two layers and the strip together at two separated positions along the length of the strip with the two layers unattached to each other between the two separated positions along the length of the strip to define thereby in a predetermined resident position related to a finished bag said access opening.

4,451,247

CONTINUOUS, COMPLETELY JACKETED, COUNTERCURRENT CENTRIFUGAL EXTRACTOR

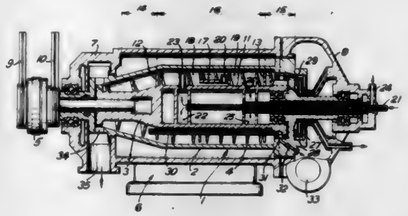
Willi Ostkamp; Karlheinz Brunner, and Friedrich Wibbelt, all of Oelde, Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 459,014

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1982, 3202294

Int. Cl.³ B04B *1/20*

U.S. Cl. 494—52 **6 Claims**



1. In a continuous, completely jacketed countercurrent centrifugal extractor for mixing and separating two liquids of different specific gravities received through separate inlets, the extractor having a partially conical drum rotatable about a horizontal axis and including clarified-liquid zones and a mixing zone, with liquids flowing into the mixing zone from compartments inside the drum, a conveyer worm inside the drum rotatable at a speed different from that of the drum jacket and including threads that conform to the inner surface of the jacket and convey solids that settle under centrifugal force in a separation space between the hub of the worm and the drum into a conically contracting end of the drum, a skimmer inside a skimming compartment for carrying off an initial liquid phase and, a discharge space for another liquid phase that is separated from the separation space by an overflow weir and sealed off from the skimming compartment, the improvement comprising: at least one overflow weir in the mixing zone between the inlet for the lighter liquid phase and the inlet for the heavier liquid phase, means dividing the mixing zone into a series of mixing-and-separation compartments, means forming access channels emptying into the vicinity of the inner surface of the drum jacket and into that of the heavier phase to conduct the lighter phase out of the compartment inside the hub of the conveyor worm into the initial mixing-and-separation compartment, and means forming at least one overflow channel emptying into the vicinity of the heavier phase in the overflow weir to divert the lighter phase separated in the initial mixing-and-separation compartment into a subsequent mixing-and-separating compartment.

4,451,248

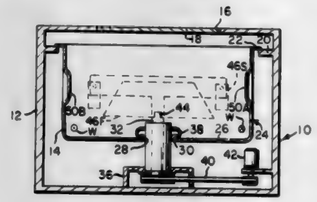
CENTRIFUGE BOWL HAVING ROTOR WINDAGE LIMITED DISPOSED THEREON

John F. Williams, New Canaan, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 20, 1981, Ser. No. 285,024

Int. Cl.³ B04B *9/10*

U.S. Cl. 494—84 **8 Claims**



1. A container for a centrifuge comprising a sidewall and a floor, the sidewall having a first and a second inwardly directed turbulence promoter mounted thereto, each turbulence promoter having a predetermined height dimension H, a radial inward dimension R and a circumferential dimension C, the lower end of each of the promoters being disposed at a predetermined operative height above the floor so that a substantial portion of each turbulence promoter is radially adjacent to a centrifuge rotating element receivable within the container, the dimensions H, R and C and the operative height of each turbulence promoter being selected such that each turbulence promoter is sized so as to disrupt air flow generated within the container by the rotation of the rotating element to cause fluid friction effects whereby the speed at which the rotating element may rotate is windage limited.

4,451,249

MANUFACTURE OF THERMOPLASTIC BAGS

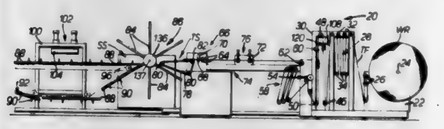
René F. deBin, Denderstraat 54, B-9300 Aalst, Belgium

Filed Sep. 21, 1981, Ser. No. 304,405

Claims priority, application Belgium, Sep. 26, 1980, 2/58774; United Kingdom, Mar. 18, 1981, 810423

Int. Cl.³ B31B *23/14, 1/98*

U.S. Cl. 493—204 **17 Claims**



1. A method of making thermoplastic bags from a web roll of thermoplastic material which is continually unwound and divided by a sealing and severing device along equally longitudinally spaced lines transverse to its direction of movement to thereby produce web segments of equal dimensions, the improvement comprising punching at least one hole closely adjacent to and on either side of the longitudinal median of the web before division occurs at intervals such that each resulting web segment contains at least two holes, transferring and accumulating each segment as it is produced on a support including posts projecting through said holes and supporting a central portion of the segments such that the remaining portions of the accumulated segments drape downwardly, and cutting an accumulated group of segments along a line substantially central of each segment and between the holes while on the support and thereby produce two bag stacks from the accumulated web segments.

4,451,250

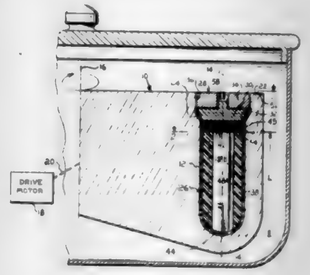
INSIDE ADAPTER FOR A SAMPLE CONTAINER

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 27, 1982, Ser. No. 424,474

Int. Cl.³ B04B *7/00*

U.S. Cl. 494—85 **17 Claims**



1. An adapter for a container used for centrifugation of a sample, the container having a predetermined configuration on the interior surface thereof, the adapter having an external surface sized for receipt within the container, the lower end of the adapter being configured to conform to the configuration of the bottom of the container, the adapter further having a bore extending through a portion thereof, the bore having a first radially inner and a second radially outer surface connected by generally confronting first and second planar surfaces, the bore defining a volume adapted to receive a sample therein, the adapter being arranged to support the container from the interior surface thereof as the container is subjected to a centrifugal force field.

4,451,251

STROKE TREATMENT UTILIZING EXTRAVASCULAR CIRCULATION OF OXYGENATED SYNTHETIC NUTRIENTS TO TREAT TISSUE HYPOXIC AND ISCHEMIC DISORDERS

Jewell L. Osterholm, Radnor Township, Delaware County, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Division of Ser. No. 354,346, Mar. 3, 1982, Ser. No. 275,116, Jun. 18, 1981, Pat. No. 4,393,863, and Ser. No. 275,117, Jun. 18, 1981, said Ser. No. 275,116, and Ser. No. 275,117, each is a division of Ser. No. 139,886, Apr. 14, 1980, said Ser. No. 354,346, is a continuation-in-part of Ser. No. 139,886,. This application Sep. 30, 1982, Ser. No. 428,899

The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.

Int. Cl.³ A61K *31/00*; A61M *5/14*

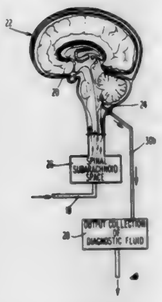
U.S. Cl. 604—24 **21 Claims**

1. An apparatus for treating patients suspected of having hypoxic-ischemic central nervous system tissue, comprising:

(a) a reservoir containing an oxygenatable fluorocarbon emulsion for treating hypoxic-ischemic neurologic tissue;

(b) oxygenator means disposed in fluid communication with said reservoir for oxygenating said emulsion, to produce an oxygenated liquid;

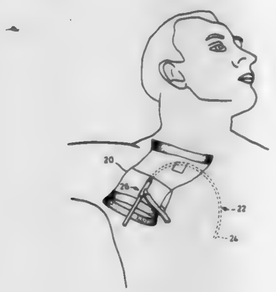
(c) cerebrospinal injection means disposed in fluid communication with said oxygenator means for injecting said oxygenated liquid into an extravascular cerebrospinal body pathway;

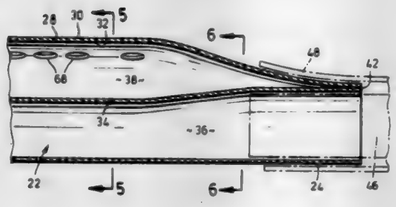


(d) cerebrospinal withdrawal means for withdrawing liquid from said extravascular cerebrospinal pathway to create, in combination with said injection means, a circulation of said oxygenated liquid within said pathway; and

(e) monitoring means in communication with said pathway for monitoring a physical/chemical characteristic of said withdrawn liquid.

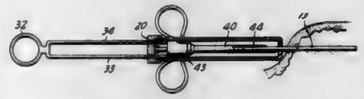
4,451,252
CANNULA
Geoffrey S. Martin, Mississauga, Canada, assignor to Vas-Cath of Canada Limited, Mississauga, Canada
Filed Jul. 24, 1981, Ser. No. 286,589
Int. Cl.³ A61M 5/00, 25/00
U.S. Cl. 604—43 **2 Claims**





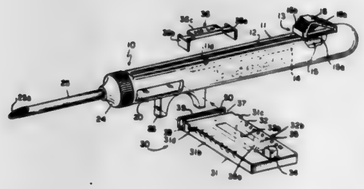
1. A flexible cannula for providing two discrete flows of blood when in position, the cannula comprising: an elongate portion having an outer wall and an integral septum extending between two locations on the outer wall to divide the portion into first and second lumens of similar cross-section; means coupled to the lumens at a first end of the elongate portion to provide flow into the first lumen and to receive flow from the second lumen; a first portion adjacent the other end of the elongate portion providing flow out of the free end of the first lumen at an end portion thereof and a second portion adjacent the other end of the elongate portion to enable flow into the free end of said second lumen displaced along the longitudinal axis of the cannula toward the first end, the first portion being rounded and formed by deforming the septum into a generally semi-cylindrical shape and deforming a part of the outer wall into a complementary semi-cylindrical shape into sealing engagement with the septum to complete the rounded shape of the end portion of the first lumen, said rounded shape having a circumference less than the circumference of the cannula in the elongate portion and having at least part of its peripheral wall increased in thickness around the circumference to rigidify the end portion so that deformation of the first lumen is minimized during insertion of the end portion into a blood vessel.

4,451,253
MEANS AND METHOD FOR ADMINISTERING MEDICINALS
Sherman M. Harman, 9302 Michaels Way, Ellicott City, Md. 21043
Continuation-in-part of Ser. No. 217,780, Dec. 18, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 427,136
Int. Cl.³ A61M 5/18
U.S. Cl. 604—60 **3 Claims**



1. A device for effecting the subcutaneous implacement of a solid pellet medicament comprising: an elongated rigid guide element including a first relatively fixed member and a second member slidably associated with said first member, said first member having manually engageable means and an abutment means thereon; said second member having first and second ends, manually engageable means located substantially at said first end, and cartridge engaging means on said second end; an elongated single use disposable cartridge including a hollow needle member having a first free end and a second end having a hub, said hub having an engaging means thereon corresponding to said cartridge engaging means on said second member, and selectively engaged therewith; an elongated medicament-containing pellet slidably positioned within said needle member, and an elongated obturator of a length greater than the length of said needle member, said obturator having a first end initially slidably positioned within said second end of said needle member, and a second end free of interconnection and abutting said abutment on said first member; whereby upon the subcutaneous insertion of said free end of said needle member, said pellet is positioned within the body of a patient; by movement of said second member in a given direction relative to said first member to withdraw said needle member, said obturator preventing movement of said pellet; said cartridge including said obturator being disposable after a single use.

4,451,254
IMPLANT SYSTEM
Harold B. Dinius, and John R. Huizenga, both of Mooresville, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Mar. 15, 1982, Ser. No. 358,459
Int. Cl.³ A61M 5/18
U.S. Cl. 604—62 **12 Claims**



1. Apparatus for inserting elongated cylindrical implants in animals, comprising

an elongated implanter body having forward and rearward portions and defining a central bore, an elongated slot between such bore and an outer surface of the body and a transverse cartridge-receiving opening in the forward portion of the body and intersecting such bore,

an implant tube having a sharpened forward end and means to mount such tube to the forward end of the body in alignment with said central bore,

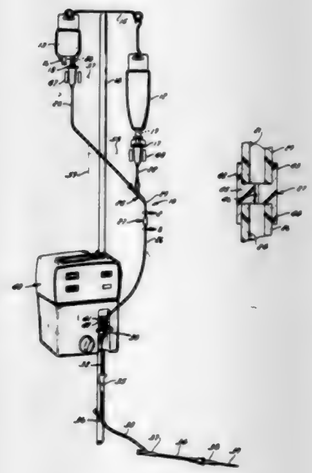
a plunger including an elongated rod slidable in the central bore between a rearward position in which its forward end is behind the cartridge-receiving opening and a forward position in which it extends into the implant tube to expel an implant therefrom, said plunger having a web extending through said slot and supporting a thumb-engageable surface outside said body for engagement by the thumb of an operator for moving the plunger between its two positions,

a cartridge removably mounted in said cartridge-receiving opening and containing a plurality of implants in side-by-side relationship and parallel to said central bore, and means for moving said implants successively into alignment with said central bore of the body for movement by the plunger forwardly through the implant tube,

means adjacent the rear of the slot for engaging said web to retain the plunger in a retracted position behind an implant moved from said cartridge into alignment with said bore,

one of said implanter body and said plunger web having a laterally extending tooth surface thereon and the other having a tooth-engaging surface thereon to interengage such tooth surface intermediate the travel of the plunger to impede the movement of the plunger at an intermediate position in which its forward end lies within the implant tube and spaced rearward of its sharpened forward end a distance approximately equal to the length of an implant so as to position an implant substantially at such forward end of the tube for delivery therefrom, said interengaging tooth and tooth-engaging surfaces being disengageable and said plunger being movable beyond said intermediate point by thumb pressure on said thumb-engageable surface to expel such implant from the tube into an animal when the tube has been inserted through the skin of the animal.

4,451,255
DUAL FLOW RATE INTRAVENOUS ADMINISTRATION SET WITH SINGLE PUMP CHAMBER
Albert F. Bujan, Waukegan, and Jack L. Harms, Mundelein, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed May 20, 1982, Ser. No. 379,823
Int. Cl.³ A61M 5/00
U.S. Cl. 604—157 **11 Claims**



1. An intravenous administration set for pumping liquid from at least two separate source by means of a single pumping device comprising:

a pump chamber having inlet and outlet ports in communication with a cavity portion with means to vary the volume of said cavity to effect a flow of liquid from said inlet port and out said outlet port;

first and second lengths of flexible I.V. tubing in fluid-tight communication with said inlet and outlet ports, respectively;

means to attach an intravenous needle connected to said second length of tubing opposite said chamber;

third and fourth lengths of flexible I.V. tubing;

container connection means operatively associated with said third and fourth lengths of flexible tubing;

backcheck valve means including a valve body with interconnected fluid passage means for fluid-tight communication with said first, third and fourth lengths of flexible tubing, said valve body including liquid flow control means to selectively control the flow of liquid in said one of said third and fourth lengths of tubing in response to liquid flow in the other; and

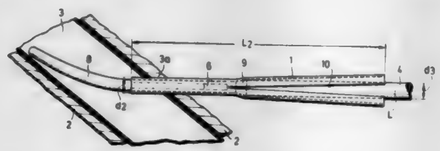
flow restriction or interruption means defined by a body section with a flow passage operatively connected to said first length of tubing and positioned between said backcheck valve means and pump chamber to restrict or interrupt fluid flow therein,

so that when the volume of said pump chamber cavity is reduced by a pumping device, any reduction in pressure will not be transmitted through said first length of tubing to said backcheck valve means.

4,451,256
CATHETER SET

Andreas Weikl, and Max Hubmann, both of Erlangen, Fed. Rep. of Germany, assignors to Intermedicat GmbH, Switzerland

Filed Apr. 28, 1982, Ser. No. 372,739
Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117802
Int. Cl.³ A61M 5/00
U.S. Cl. 604—164 15 Claims



1. In a catheter set including a catheter and a catheter insertion tube into which the catheter to be inserted into a blood vessel is insertable, the improvement comprising:

a catheter having an elongated soft and flexible front end portion with an external diameter smaller than the external diameter of the main body of the catheter;

a catheter insertion tube having a front end portion with an internal diameter smaller than the external diameter of the main body of the catheter;

the elongated smaller front end portion of the catheter being axially slidable in the catheter insertion tube front end portion so as to project partially out thereof without expanding the same; and

the front end portion of the catheter insertion tube being expandable by movement of the catheter main body axially therein.

4,451,257
SURGICAL ASPIRATOR WITH POPPET CONTROL VALVE

Frank W. Atchley, P.O. Box 2730, Napa, Calif. 94558

Filed Oct. 29, 1981, Ser. No. 316,297
Int. Cl.³ A61M 1/00
U.S. Cl. 604—119 3 Claims

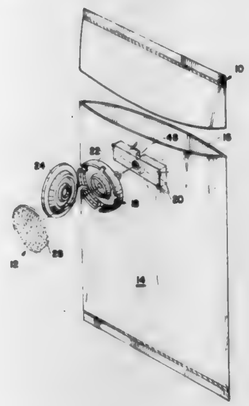


1. A vacuum aspirator, comprising handle means connected to a vacuum source, aspirator tip means extending from said handle means, and poppet valve means disposed between said aspirator tip means and said vacuum source to selectively establish or break flow communications therebetween, said handle means including a handle member extending longitudinally, a vacuum passageway extending longitudinally through said handle member along a first axis, said poppet valve means including a valve bore extending through said handle member along a second axis and intersecting said vacuum passageway, said first and second axes being generally orthogonal, said poppet valve means further including a generally cylindrical poppet slidably retained in said valve bore and received therein at any rotational angle about said second axis of said bore, said poppet being formed in integral, one-piece construction, said poppet further including a valve port extending therethrough, said poppet being slidably translatable in said valve bore to selectively dispose said valve port in flow communication with said vacuum passageway and said aspirator tip means, said poppet including seal means for securing said poppet in said valve bore in slidable, sealing fashion, said poppet including a first resilient cylindrical portion and a second resilient cylindrical portion, said first and second portions being axially spaced apart to define a fixed spacing therebetween, said valve port extending through said fixed spacing, a valve pin extending generally parallel to said second axis between said first and second portions to maintain said fixed spacing, said valve pin being radio-opaque, said seal means including a plurality of annular ribs formed integrally with and protruding radially outwardly from said poppet and spaced axially therealong, a pair of said annular ribs being disposed at opposed ends of each of said first and second portions and adapted to compressively engage the inner surface of said valve bore in pressure-sealing fashion, said seal means further including a plurality of longitudinal ribs extending integrally and radially outwardly from each of said first and second cylindrical portions and extending the entire length of each, said longitudinal ribs disposed parallel to said second axis and adapted to impinge compressively on the inner surface of said valve bore to form a pressure seal therewith, said poppet including a pair of stop flanges extending radially outwardly from opposed ends thereof and having outer diameters greater than the diameter of said valve bore.

4,451,258
OSTOMY BAG WITH AN ADJUSTABLE VENT

Ole R. Jensen, Rivervale, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 4, 1982, Ser. No. 354,772
Int. Cl.³ A61F 5/44
U.S. Cl. 604—333 15 Claims



1. In combination, an ostomy bag, having an interior portion, and a vent therefor, said vent comprising a housing; an interior chamber within said housing; a plug extending outwardly from said housing; filtering means in said interior chamber of said housing for filtering gas flowing through said housing; permitting means for permitting gas in said ostomy bag to flow through said housing to the atmosphere, said permitting means including said interior chamber of said housing, at least one opening provided in an outer edge of said housing and communicating with said interior chamber of said housing and a passageway provided in said plug and communicating with said interior chamber of said housing; coupling means fixed to said ostomy bag for releasably coupling said housing to said ostomy bag, said coupling means including a channel which is in constant communication with said interior portion of said ostomy bag and receiving means for releasably receiving said plug of said housing such that in a first position said passageway in said plug communicates with said channel in said coupling means, whereby gas in said interior of said ostomy bag may flow through said housing to the atmosphere, and in a second position said passageway in said plug does not communicate with said channel in said coupling means, whereby gas in said interior of said ostomy bag may not flow through said housing to the atmosphere; and adjusting means for adjusting the rate of gas flow through said housing.

4,451,259
BLOOD STORAGE METHOD

Ulrich C. Geissler, Cary; Gerald A. Grode, Grayslake; William J. Stith, and Ronald A. Williams, both of Mundelein, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 955,060, Oct. 26, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,469
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.
Int. Cl.³ C08K 5/11
U.S. Cl. 604—408 18 Claims

1. The method which comprises storing blood for a period of days in a container made from a blood-compatible polymer, said polymer comprising a sterilizable, flexible, chlorine-free plastic material which contains sufficient antihemolytic agent dispersed therethrough to cause a reduced plasma hemoglobin content of the blood stored in contact therewith for 21 days, when compared with blood stored for a similar period of time in contact with the same blood-compatible material free of said antihemolytic agent, said antihemolytic agent comprising a fatty ester containing 2 ester linkages comprising fatty aliphatic hydrocarbon groups of 4 to 12 carbon atoms each, attached to a hydrocarbon chain and separated by no more than 7 carbon atoms.

4,451,260
SUSTAINED RELEASE ORAL MEDICINAL DELIVERY DEVICE

Sumita B. Mitra, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 26, 1982, Ser. No. 362,116
Int. Cl.³ A61K 9/22
U.S. Cl. 604—890 20 Claims



1. A flexible, sheet-like, sustained release medicament device for orally administering a predetermined selective dose of a medicament, which device is of a multi-layer composite construction comprising

(a) at least one dry, self-supporting carrier film comprising at least one water-insoluble polymer matrix and containing medicament dispersed or dissolved therein, and

(b) at least one barrier film overlaying said carrier film on at least one surface thereof and sealed to said carrier film along its periphery and in such a way as to entrap a plurality of small pockets of air between said carrier and barrier films, said barrier film comprising at least one water-insoluble and water- and medicament-permeable polymer or copolymer, said multilayer composite construction having a bulk density of less than 1.0 g/cc and being facilely divisible into any desired length.

4,451,261

PREPARATION OF LUBRICATING AGENTS FOR LEATHERS AND FURS

Wolf-Dieter Willmund, Düsseldorf; Manfred Biermann, Mühlheim; Horst Baumann, Leichlingen; Hans-Herbert Friese, Monheim, and Friedrich Pieper, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,636

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238741

Int. Cl.³ C14C *9/02*

U.S. Cl. 8—94.22 14 Claims

1. A process for the preparation of sulfonated lubricating agents for leather and tanned furs consisting of the steps of:

(a) chlorinating natural or synthetic higher fatty acids or esters of higher fatty acids having chain lengths of from 8 to 24 carbon atoms containing olefinically unsaturated fractions, up to saturation of the double bonds;

(b) sulfochlorinating the chlorinated product from step (a) with chlorine and SO_2 at a temperature of from about 20° to 90° C., optionally under UV-radiation, for a time sufficient to obtain a compound having a chlorine content of from about 5 to 30 percent by weight and a content of SO_2Cl groups of from about 1 to 20 percent by weight, the ratio of chlorine atoms to SO_2Cl groups being from about 0.7:1 to 70:1; and

(c) saponifying the product from step (b) to form a water-emulsifiable alkali metal, ammonium, or lower alkylammonium salt of the product of step (b).

4,451,262

AFTER-TREATMENT OF FINISHED, CELLULOSE-CONTAINING FIBROUS MATERIALS WITH LIQUID AMMONIA

Fritz Mayer, Weil am Rhein, Fed. Rep. of Germany, and Svein Holtermann, Oslo, Norway, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 138,067, Apr. 7, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,724

Claims priority, application Switzerland, Jul. 16, 1979, 6607/79

Int. Cl.³ D06M *13/28, 13/32, 13/44, 11/14*

U.S. Cl. 8—125 19 Claims

1. A process for flame-proofing cellulose-containing fibrous material which comprises the steps of

(a) applying an aqueous composition which contains 200 to 400 g/l of at least one flameproofing agent selected from the group consisting of methylolated phosphonium salts phosphonium hydroxides, their water-soluble condensation products with a compound which forms an aminoplast, methylolated alkylphosphonocarboxamides and their water-soluble polymers with a compound which forms an aminoplast, and 20 to 100 g/l of a compound which forms an aminoplast or of an aminoplast precondensate to the fiber and fixing,

(b) washing and drying the material and

(c) subjecting the material thus obtained to an aftertreatment with liquid ammonia.

4,451,263

PROCESS FOR DYEING AND FINISHING TUBULAR TEXTILE MATERIAL: ALIGNMENT OF FLATTENED EDGES DISPLACED TO AVOID EDGE MARKINGS

Peter Oppitz, Kelkheim; Manfred Schulze-Braucks, Hofheim am Taunus, and Rolf Tesche, Glashütten, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 22, 1982, Ser. No. 443,675

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146431

Int. Cl.³ D06B *1/10, 3/18, 15/02*

U.S. Cl. 8—500 10 Claims

1. A process for uniformly applying a liquor containing a treatment agent when dyeing and/or finishing textile material in the form of a fabric tube by padding and squeezing off excess liquor on a pad mangle, comprising impregnating the fabric tube with the treatment liquor, spreading out the treated fabric tube in the moist state, squeezing the spread out moist fabric tube on the pad mangle to achieve a liquor pick-up of at least 60% relative to the dry weight of the fabric tube, resulting in forming squeeze edges on opposite side edges of the spread out, squeezed fabric tube, immediately thereafter moving the fabric tube so that the positions of the squeeze edges are displaced from their initial positions so that they lie in that part of the fabric tube which runs flat, and batching the textile material thus treated for sufficient time in its displaced position to level out the liquor over the entire fabric tube by capillary action.

4,451,264

SURFACE COLORING OF POLYVINYL RESINS

Donald C. Ulry; Charles G. Cosner, and Thomas D. Ryan, all of Escondido, Calif., assignors to Formulabs Industrial Inks, Inc., Escondido, Calif.

Filed Sep. 27, 1982, Ser. No. 424,058

Int. Cl.³ D06P *5/00*

U.S. Cl. 8—508 8 Claims

1. A process for the coloring of water insoluble, organic solvent resistant, electrical insulator polyvinyl resins which process comprises:

(A) contacting a surface area of said polyvinyl resin with a liquid, nonflammable, halogenated hydrocarbon solvent having 1-2 carbon atoms where halogen is chlorine, fluorine or both, and

a solvent dye dissolved in said solvent;

(B) at about room temperature for a time sufficient to color said surface area; and

(C) removing residual solvent from said surface area.

4,451,265

DIESEL FUEL-AQUEOUS ALCOHOL MICROEMULSIONS

Arthur W. Schwab, Peoria, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 21, 1981, Ser. No. 256,206

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 10 Claims

1. A hybrid fuel composition comprising:

(a) a diesel fuel;

(b) a lower (C_1–C_3) alcohol;

(c) water; and

(d) a surfactant system comprising the reaction product of N,N-dimethylethanol amine and a long-chain fatty acid substance selected from the group of monocarboxylic acids having a chain length of C_9–C_{22} and mixtures thereof in an amine:fatty acid substance molar ratio of about 2:1 to 1:2,

wherein said surfactant system is present in the fuel composition in an amount effective for said composition to exist as a thermodynamically stable microemulsion.

4,451,266

ADDITIVE FOR IMPROVING PERFORMANCE OF LIQUID HYDROCARBON FUELS

John D. Barclay, 98 Birchcliffe Ave., Kitchener, Ontario, Canada (N2M4V6), and Rawson B. Harmon, Jr., 4801 Long Valley Rd., Santa Ynez, Calif. 93460, assignors to John D. Barclay; Rawson B. Harmon, Jr. and John N. McIntosh, all of Los Angeles, Calif.

Filed Jan. 22, 1982, Ser. No. 341,705

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—53 10 Claims

1. An additive composition to be added to liquid hydrocar-

bon fuels in a range from about 1/2000 to about 1/500 parts additive to fuel, consisting essentially of, on a volume/volume basis:

(a) 3–10% of an alcohol of not more than 4 carbon atoms;
(b) 5–15% of an aliphatic ester not more than 6 carbon atoms;
(c) 3–13% of an aromatic hydrocarbon;
(d) 3–13% of a halogenated alkene;
(e) 35–70% of a hydrocarbon with a 50% boiling point between 115° C. and 182° C.; and
(f) 20–30% of a hydroxy substituted, unsaturated acid.

4,451,267

MICROEMULSIONS FROM VEGETABLE OIL AND AQUEOUS ALCOHOL WITH TRIALKYLAMINE SURFACTANT AS ALTERNATIVE FUEL FOR DIESEL ENGINES

Arthur W. Schwab, and Everett H. Pryde, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 427,229
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—53 **8 Claims**

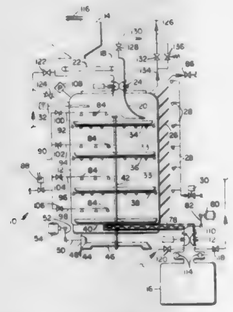
1. A hybrid fuel composition comprising:
(a) a vegetable oil;
(b) a lower (C_1–C_3) alcohol;
(c) water; and
(d) a surfactant system comprising a trialkylamine or a reaction product of a trialkylamine and a long-chain fatty acid substance;
wherein said trialkylamine is selected from the group consisting of trimethylamine, triethylamine, tripropylamine, and tributylamine; and
wherein said surfactant system is present in the fuel composition in an amount effective for said composition to exist as a thermodynamically stable microemulsion and the combined amounts of lower alcohol, water, and surfactant system relative to said vegetable oil are sufficient to impart to said composition a kinematic viscosity in the range of 2–9 centistokes at 37.8° C.

4,451,268

DRY ACETYLENE GENERATOR

John A. Lerch, 139 Norvell Dr., Signal Mtn., Tenn. 37377

Filed Sep. 29, 1982, Ser. No. 428,486
Int. Cl.³ C10H *3/00, 21/00, 21/08, 21/16*
U.S. Cl. 48—3 A **15 Claims**



1. An acetylene generator for converting calcium carbide into acetylene gas and dry hydrated lime comprising a vertically extending substantially cylindrical housing, a plurality of shelves mounted in the housing in axially spaced apart disposition, stirring means associated with each shelf, each said stirring means comprising a plurality of radial arms, means for rotating the arms of each stirring means in a first direction, each shelf including a radial exit slot extending vertically therethrough, the slot in each shelf being angularly offset relatively to the slot in each adjacent shelf, water spray means disposed above each shelf for spraying a controlled amount of water onto the respective shelf at a spray zone displaced angularly in the first direction from the corresponding slot, means for depositing calcium carbide on the top shelf in a deposit zone intermediate the top shelf slot and spray zone, whereby calcium carbide deposited on the top shelf is swept by the stirring means associated therewith through and wetted by the water being sprayed thereon and the resultant mixture is subsequently swept into the top shelf slot and discharged onto the next adjacent shelf in a deposit zone intermediate the slot and the water spraying zone of said next adjacent shelf, the mixture thereafter being discharged into a deposit zone on each successive shelf in seriatim and swept by the corresponding stirring means into the respective slot, the deposit zone of each shelf being intermediate the slot and spray zone in the respective shelf, means for conveying the residue from the lowermost shelf to a lime storage bin, and means for drawing the gas to an acetylene storage means.

11. A method of generating acetylene from calcium carbide in a plurality of stages while leaving a substantially dry lime residue, said method comprising providing a vertically extending generator having a plurality of vertically spaced shelves, depositing the calcium carbide in a deposit zone on a first shelf at the upper portion of the generator, sweeping the calcium carbide in a circular path from said deposit zone to a wetting zone, spraying water on the surface of said calcium carbide in the wetting zone, continuing to sweep the mixture of calcium carbide and water in said path to mix and permit chemical reaction of the compounds, dropping the mixture onto a shelf in the next stage prior to the mixture reaching the first shelf deposit zone, continuing the process in the subsequent stages, wherein the mixture is wetted in each stage, until a substantially dry lime residue remains, removing the residue, and removing the acetylene.

4,451,269

POLISHING COMPOSITION FOR CENTRIFUGAL MAGNETIC-ABRASIVE MACHINES

Boris G. Makedonski, and Haralampi A. Atanassov, both of Sofia, Bulgaria, assignors to Centralen Mashinostroitelen Institute, Sofia, Bulgaria

Filed Jan. 18, 1983, Ser. No. 458,897
Claims priority, application Bulgaria, Jan. 18, 1982, 55024
Int. Cl.³ C09K *3/14*
U.S. Cl. 51—303 **6 Claims**

1. A polishing composition for centrifugal magnetic-abrasive machines intended for machining complexed profiled workpieces, comprising: a mixture of abrasive grains and iron powder; a mixture of chromium sesquioxide, stearine, and oleic acid; ground fruit pits or sawdust; and a 3% aqueous solution of triethanolamine soap.

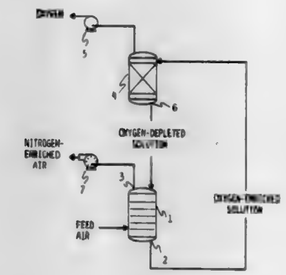
4,451,270

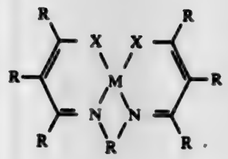
ABSORPTION PROCESS FOR PRODUCING OXYGEN AND NITROGEN AND SOLUTION THEREFOR

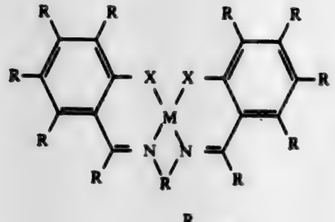
Ian C. Roman, Bend, Oreg., assignor to Bend Research, Inc., Bend, Oreg.

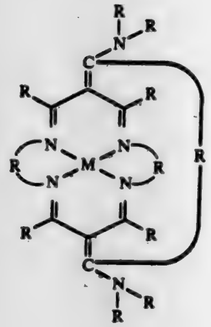
Filed Jun. 30, 1982, Ser. No. 393,711
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—38 **35 Claims**

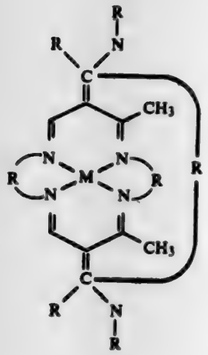
1. A process for the separation and purification of oxygen and nitrogen comprising:
(a) bringing an atmospheric air feed stream into contact with a solution containing a solvent or solvent mixture, an axial base and an oxygen carrier, said solvent or solvent mixture being capable of dissolving the axial base and the oxygen carrier when they are present together, said axial base being capable of providing a coordinating atom to the oxygen carrier, and said oxygen carrier being a metal-containing complex having any of the structures



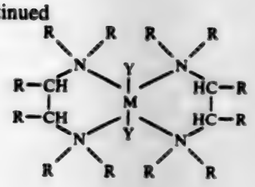




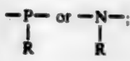




-continued



wherein
M is a metal selected from cobalt, iron, copper, nickel, manganese, ruthenium or rhodium;
X is —O—, —S—,



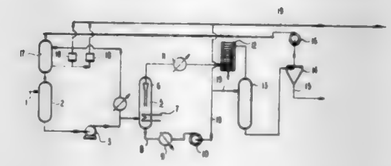
R is hydrogen, alkyl, aryl, halogen, alkoxy or a nitrogen-containing moiety; and
Y is halide, nitrate, thiocyanate or cyanide;
said solution absorbing oxygen from said atmospheric air feed stream;
(b) collecting nitrogen from the atmospheric air feed stream after the oxygen has been absorbed;
(c) desorbing oxygen from said solution to a gaseous product stream; and
(d) collecting oxygen from the product stream after the oxygen has been desorbed.

4,451,271

METHOD OF SEPARATING LIQUID DROPS FROM OFF GAS

Satoshi Yamamoto; Osamu Hase, and Tamotsu Kawata, all of Ibaragi, Japan, assignors to Yukamelamin Company, Limited, Ibaragi, Japan

Filed Apr. 1, 1982, Ser. No. 364,272
Claims priority, application Japan, Apr. 2, 1981, 56-49693
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—84 **8 Claims**



1. A method for separating liquid drops of molten urea, the thermal decomposition product of urea or a mixture of molten urea and its thermal decomposition product from a melamine synthesis off gas using at least two gas-liquid separators by alternately passing off gas to a separator to separate liquid drops of urea or the thermal decomposition product of urea or a mixture of urea and its decomposition product wherein each of said separators has a collecting element, a means for ingress and egress for said molten urea, said thermal decomposition product, or said mixture, and said off gas, wherein at least one gas-liquid separator is on-stream, and at least one gas-liquid separator is off-stream where the off gas has been freed of melamine, which comprises supplying the off-stream gas-liquid separator with molten urea or a molten mixture of urea and its thermal decomposition product, hereinafter collectively referred to as molten mass, and allowing said molten mass to remain in the separator and at the same time providing a turbulent means for said molten mass to flow within said off-stream gas-liquid separator and then discharging said molten mass from said separator thereby removing said liquid drops from

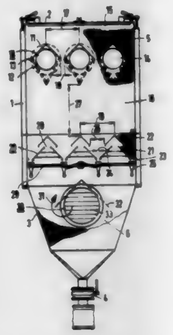
said separator by said drops having been contacted by said molten mass.

4,451,272

MOVING BED FILTER, ESPECIALLY AN ADSORPTION FILTER

Wolfgang Mathewes, Giessen, and Peter W. Hayn, Berlin, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,012
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202845; Aug. 3, 1982, 3228984
Int. Cl.³ B01D 53/08
U.S. Cl. 55—390 20 Claims



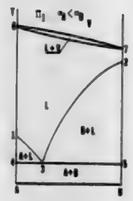
1. Moving bed filter for purifying a fluid medium formed of gas and/or vapor, the filter having a flow of loose particulate material downwardly from above, and a continuous flow upwardly from below of a fluid medium to be filtered, and including a container filled with the loose particulate material and having at least one closeable inlet opening at the top thereof for introducing the loose particulate material, and a downwardly tapering bottom having a closeable outlet port for discharging the loose particulate material, fluid-medium inlet ports disposed in a bottom region and fluid medium exhaust tubes arranged in an upper region of the container and extending parallel to one another from one container wall to the opposite container wall, and being provided at inflow and at outflow sides thereof with an upper roof cover and a lower V-profile cover, respectively, serving as a flow-equalizing symmetrical flow guide element for the loose particulate material, and additional components disposed in the lower region of the container in the form of a support grate for equalizing flow behavior of the loose particulate material over the whole cross section of the container, comprising a downwardly directed V-shaped cover of sieve-like construction connected at each fluid-medium exhaust tube to the upper cover thereof forming a roof-shaped symmetrical flow-guide element, the upper covers being spaced a distance of four to ten times the width of the roof gap between each two adjacent flow guide elements and between a flow-guide element and the container wall, respectively, roof edges of each upper cover projecting beyond the respective downwardly directed V-shaped cover, the support grate being formed of bipartite louver-like symmetrical roofs disposed vertically below each fluid-medium exhaust tube and parallel thereto in a manner that the mutual spacing of the axes thereof is four to ten times the width of the lower roof gaps between each two adjacent louver-like roofs and between a louver-like roof and the container wall, respectively, and sliders disposed at the underside of the support grate for closing the lower roof gaps between the louver-like roofs, said sliders being coupled with one another.

4,451,273

DISTILLATIVE FREEZING PROCESS FOR SEPARATING VOLATILE MIXTURES AND APPARATUSES FOR USE THEREIN

Chen-Yen Cheng, and Sing-Wang Cheng, both of 9605 La Playa St., NE., Albuquerque, N. Mex. 87111

Continuation of Ser. No. 296,130, Aug. 25, 1981, Pat. No. 4,378,984, which is a continuation-in-part of Ser. No. 181,602, Aug. 22, 1980, abandoned, Ser. No. 930,312, Aug. 2, 1978, Pat. No. 4,218,893, Ser. No. 816,852, Jul. 18, 1977, abandoned, and Ser. No. 676,640, Apr. 13, 1976, abandoned. This application Mar. 31, 1983, Ser. No. 480,932
The portion of the term of this patent subsequent to Aug. 26, 1997, has been disclaimed.
Int. Cl.³ F25J 3/00
U.S. Cl. 62—12 36 Claims



1. A crystallization separation process for separating a multicomponent mixture that is at least partly in a liquid state and has two key volatile components, denoted as A-component, that volatile noncrystallizing component present in the greatest amount, and B-component, the volatile crystallizing component, into a B-enriched portion and a B-lean portion through formation of a B-enriched solid mass, comprising a determination that the two key volatile components form a binary system

(a) whose characteristic vapor pressure ratio defined as the ratio of the vapor pressure of A-component to that of B-component both evaluated at the triple point temperature of B-component is in the range of 0.1 to 10 and is less than the ratio of the heat of sublimation to the heat of melting of B-component evaluated at the triple point temperature of B-component, and

(b) whose constant pressure phase diagram that includes a three phase (B-enriched solid, liquid and vapor) state has a two phase (B-enriched solid and vapor) region covering a substantial concentration range above the temperature of the three phase state and a two phase (B-enriched solid and liquid) region below the temperature of the three phase state,

and a first step of forming a first vapor mixture and a first condensed mass that comprises a mother liquor and a solid phase mass enriched in B-component by concurrently vaporizing the volatile components from the mixture in a first zone under a first temperature and a first pressure that are respectively lower than the triple point temperature and the triple point pressure of the pure B-component, and a second step of separating at least a major fraction of the A-component from the first condensed mass to thereby produce a B-enriched first condensed mass.

4,451,274

DISTILLATIVE SEPARATION OF METHANE AND CARBON DIOXIDE

John V. O'Brien, Shrewsbury, Mass., assignor to Koch Process Systems, Inc., Westboro, Mass.

Continuation-in-part of Ser. No. 307,672, Oct. 1, 1981, Pat. No. 4,383,842. This application May 12, 1983, Ser. No. 493,791
The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.
Int. Cl.³ B25J 3/02
U.S. Cl. 62—17 21 Claims

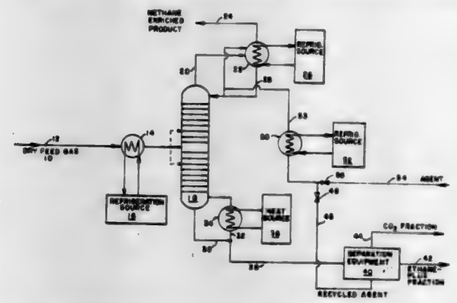
1. A method of distillatively separating a feed stream containing methane and carbon dioxide into an overhead product enriched in methane and a bottoms product enriched in carbon dioxide, comprising:

a. introducing said feed stream into a distillation column;

b. providing sufficient heat to the bottom of said distillation column to provide a bottoms product enriched in carbon dioxide;

c. withdrawing an overhead stream from the top of said column;

d. condensing at least a portion of said overhead stream for reflux in an overhead condenser at a temperature above the triple point of carbon dioxide and directing said condensed portion of overhead back to said column as reflux,



said condensed portion being sufficient to provide a column overhead enriched in methane;

e. introducing a non-polar agent miscible with methane directly into the said overhead condenser of said distillation column in a quantity sufficient to maintain the temperature in the said condenser and at all locations within the distillation column above the triple point of carbon dioxide;

f. withdrawing that portion of the overhead stream not employed as reflux as overhead product enriched in methane; and,

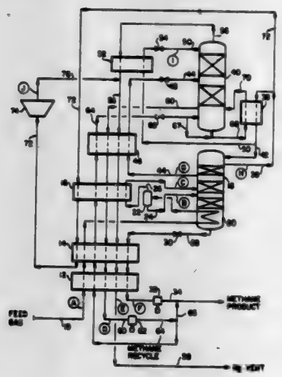
g. withdrawing a bottoms product enriched in carbon dioxide.

4,451,275

NITROGEN REJECTION FROM NATURAL GAS WITH CO_2 AND VARIABLE N_2 CONTENT

Harvey L. Vines, Emmaus, Pa. and Vincent Marano, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 27, 1982, Ser. No. 382,738
Int. Cl.³ F25J 34/02
U.S. Cl. 62—28 17 Claims



1. In a cryogenic nitrogen rejection process for a natural gas feed stream comprising a double distillation cycle having a high pressure distillation stage and a low pressure distillation stage, the feed stream being introduced into the high pressure distillation stage wherein a nitrogen containing overhead and a hydrocarbon-containing bottoms are maintained while yielding a waste nitrogen overhead stream and a methane product bottoms stream from the low pressure distillation stage, the method for treating a natural gas feed stream containing variable amounts of methane, nitrogen, carbon dioxide and ethane-plus hydrocarbons which comprises

(a) removing a vapor methane stream from the bottoms of the low pressure distillation stage and warming it to ambient temperature,

(b) compressing the vapor methane stream and condensing at least a portion of the compressed methane stream against the waste nitrogen overhead stream from the low pressure distillation stage,

(c) expanding the condensed methane stream through a valve and combining it with the methane bottoms of the low pressure distillation stage to provide additional refrigeration to the methane bottoms,

(d) withdrawing a liquid methane stream possessing the additional refrigeration from the bottoms of the low pressure distillation stage, and

(e) vaporizing the liquid methane stream against nitrogen overhead of the high pressure distillation stage to condense at least a portion of the nitrogen overhead to provide sufficient nitrogen reflux to the high pressure distillation stage for scrubbing substantially all of the carbon dioxide out of the feed stream in the high pressure distillation stage and keeping it soluble in the hydrocarbon bottoms, and methane reboil to the low pressure distillation stage.

5. A method for rejecting nitrogen from a natural gas stream containing variable amounts of methane, nitrogen, carbon dioxide and ethane-plus hydrocarbons which comprises

(a) passing the natural gas stream through a cooling zone,

(b) introducing the cooled natural gas stream into the high pressure distillation stage of a double distillation cycle comprising a high pressure distillation stage and a low pressure distillation stage,

(c) fractionally distilling the natural gas stream in the high pressure distillation stage at a pressure sufficient to provide an overhead consisting essentially of nitrogen substantially free of methane and carbon dioxide and a bottoms comprising substantially all of the carbon dioxide dissolved in the ethane-plus hydrocarbons,

(d) withdrawing a liquid side stream consisting essentially of nitrogen and methane substantially free of carbon dioxide from an intermediate level of the high pressure distillation stage, expanding the side stream through a valve and introducing it into an intermediate level of the low pressure distillation stage,

(e) condensing the nitrogen overhead from the high pressure distillation stage by heat exchange with a methane cycle to provide nitrogen reflux for the high pressure distillation stage and a nitrogen liquid stream, which methane cycle comprises

(i) removing a vapor methane stream from the bottoms of the low pressure distillation stage and warming it,

(ii) compressing the vapor methane stream and condensing at least a portion of the compressed methane stream against a waste nitrogen overhead stream from the low pressure distillation stage,

(iii) expanding the condensed methane stream through a valve and combining it with the methane bottoms of the low pressure distillation stage to provide additional refrigeration to the methane bottoms,

(iv) withdrawing a liquid methane stream possessing the additional refrigeration from the bottoms of the low pressure distillation stage, and

(v) vaporizing the liquid methane stream against the nitrogen overhead of the high pressure distillation stage to condense at least a portion of the overhead to provide sufficient nitrogen reflux to the high pressure distillation

stage for scrubbing the carbon dioxide out of the feed stream and methane reboil to the low pressure distillation stage,

(f) expanding the nitrogen liquid stream through a valve into the top of the low pressure distillation stage, and

(g) fractionally distilling the nitrogen and methane in the low pressure distillation stage to recover a waste nitrogen vapor overhead stream and a methane product bottoms stream.

4,451,276

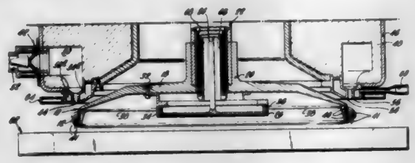
METHOD AND APPARATUS FOR GLASS FIBERIZATION

Marie-Pierre Barthe, 5 bis, rue Marcel Duchemin, Clermont 60600; Jean A. Battigelli, 17, rue Edouard Vaillant, and Francois Bouquet, 30, rue Edouard Vaillant, both of, Rantigny 60290, all of France

Filed Aug. 18, 1982, Ser. No. 409,336

Int. Cl.³ C03B *37/04*

U.S. Cl. 65—6 **6 Claims**



1. A method for centrifugally producing glass fibers from a glass composition as follows:

SiO_2	61 to 72%
Al_2O_3	2 to 8%
Fe_2O_3	0.2 to 1%
CaO	4.7 to 7.5%
MgO	0 to 5%
$Na_2O + K_2O$	14 to 18%
B_2O_3	0 to 6%
F	0 to 1.5%
BaO	0 to 2.5%
ZrO_2	0 to 2.5%
Misc	≦1%

said method comprising the steps of introducing the glass in molten attenuable condition into a spinner for delivery to the interior surface of the peripheral wall thereof, said peripheral wall having a multiplicity of orifices therein, rotating said spinner to effect the centrifugal delivery of the glass through the spinner orifices in a multiplicity of streams, and attenuating said glass streams into fibers by means of an internal combustion burner providing a generally downwardly directed annular gaseous blast adjacent the exterior of said peripheral wall, said gaseous blast having an elevated temperature contributing to the maintenance of the glass streams in attenuable condition for a time sufficient to effect attenuation thereof, and wherein centrifugal acceleration at the spinner wall, the peripheral velocity of the spinner and the burner pressure fall within the following ranges:

centrifugal acceleration	4000 to 20000 m/sec²
peripheral velocity	50 m/s to 130 m/s
burner pressure	100 mm to 900 mm (water column).

4,451,277

PRODUCTION OF FLUID FERTILIZER FROM PHOSPHORUS FURNACE WASTE STREAM

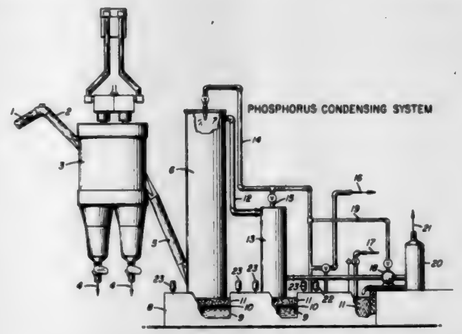
James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Continuation-in-part of Ser. No. 301,378, Sep. 11, 1981, Pat. No. 4,383,847, which is a division of Ser. No. 223,122, Jan. 7, 1981, Pat. No. 4,372,929. This application Sep. 30, 1982, Ser. No. 428,840

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ C05B *11/10, 7/00*

U.S. Cl. 71—36 **10 Claims**



1. A process for the production of fluid fertilizer comprising the steps of:

(a) smelting a mixture of phosphate ore, reducing carbon, and silica rock in a submerged arc electric furnace wherein a phosphorus-containing gas is evolved;

(b) treating phosphorus-containing gas in an electrostatic precipitator to remove suspended dust;

(c) cooling the phosphorus-containing gas in an adiabatic condenser wherein water is (i) sprayed into the condenser to contact the phosphorus containing gas to condense phosphorous from the gas, (ii) collected in a sump, and (iii) recirculated to the condenser;

(d) adding an alkaline material to the recirculating stream of water of step (c) to maintain the pH in the range of 5.5 to 6.0;

(e) adding fresh water to the recirculating stream;

(f) bleeding off a stream of water from the recirculating stream;

(g) clarifying the bleedoff water from step (f);

(h) adding the clarified bleedoff water from step (g) to an orthophosphate suspension fertilizer process comprised of two or three stages of ammoniation wherein clarified bleedoff water is added to the first-stage ammoniator to replace employment of fresh water.

4,451,278

1-HYDROXYANTHRAQUINONE AQUATIC HERBICIDE

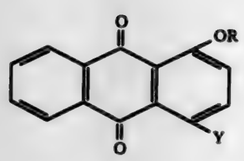
David I. Randall, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Division of Ser. No. 121,520, Mar. 5, 1971, abandoned. This application Jul. 28, 1972, Ser. No. 276,151

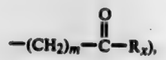
Int. Cl.³ A01N *35/04*

U.S. Cl. 71—66 **9 Claims**

1. A method of inhibiting the growth of the weeds which comprises: applying to the situs to be treated an effective, herbicidal amount of an anthraquinone having the formula



wherein Y is hydrogen or methyl, R is selected from the group consisting of hydrogen,



phenyl, and phenyl substituted with a radical of the group consisting of methyl, chloro, sulfamyl containing not more than 6 carbon atoms, sulfonyl chloride and methyl pyridinium chloride; and wherein m is 0 or 1 and R_x is $-N(R_y)_2$ or a radical containing not more than 3 carbon atoms selected from the group consisting of alkyl, dichloroacrylate, chloroalkyl, chloroalkoxy, and alkoxy and wherein R_y is selected from the group consisting of hydrogen, methyl, ethyl, phenyl and, when taken together with the nitrogen, forms a pyridinyl ring.

2. A method of inhibiting the growth of aquatic weeds, according to claim 1 by applying thereto an effective amount of 1-hydroxyanthraquinone.

4,451,279

SULFUR-CONTAINING OXIME COMPOUNDS, PROCESSES FOR PRODUCING THEM, AND THEIR USE FOR PROTECTING CULTIVATED PLANTS

Elmar Sturm, Aesch; Heinrich Schempp, Arlesheim, and Henry Martin, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

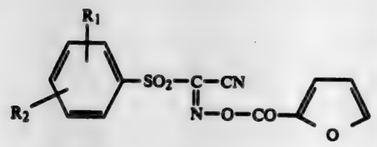
Division of Ser. No. 068,123, Aug. 20, 1979, Pat. No. 4,278,613. This application May 4, 1981, Ser. No. 260,536

Claims priority, application Switzerland, Aug. 28, 1978, 9081/78

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—93 **53 Claims**

1. A herbicidal composition for controlling weeds in cereal crops comprising a herbicidally effective amount of a herbicide selected from the group consisting of herbicidal 1,3,5-triazines, halogenoacetanilides, substituted phenoxyphenoxyacetic acid esters and -propionic acid esters, and substituted pyridineoxy-phenoxy-acetic acid esters and -propionic acid esters derivatives, and a quantity of a compound of the formula:



wherein each of R_1 and R_2, independently of the other, is hydrogen, halo or alkyl of 1 to 4 carbon atoms, sufficient to afford protection to treated crops against the effects of said herbicide.

4,451,280

DITHIANE AND DITHIOLANE HERBICIDE ANTIDOTES

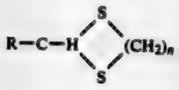
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 5, 1982, Ser. No. 365,932

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—90 **12 Claims**

1. The method of protecting a cereal grain crop from injury due to S-propyl N,N-dipropyl thiolcarbamate herbicide, comprising preplant incorporation in the soil in which said crop is to be planted, a non-phytotoxic antidotally effective amount of a compound corresponding to the formula



wherein R is dichloromethyl and n is 2 or 3.

4,451,281

FUNGICIDAL AND PLANT GROWTH-REGULATING 1-AZOLYL-2-OXIMINOBUTANE AND USE

Hans-Ludwig Elbe; Wolfgang Krämer, both of Wuppertal; Karl H. Büchel, Burscheid; Klaus Lürssen, Bergisch-Gladbach; Paul Reinecke, and Hans Scheinpflug, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

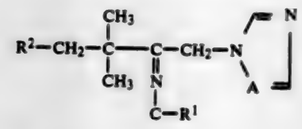
Filed May 2, 1983, Ser. No. 490,688

Claims priority, application Fed. Rep. of Germany, May 19, 1982, 3219041

Int. Cl.³ A01N *43/50, 43/64;* C07D *233/61, 249/08*

U.S. Cl. 71—92 **10 Claims**

1. A 1-azolyl-2-oximinobutane derivative of the formula



in which

A is nitrogen or CH,

R^1 is hydrogen, alkyl, halogenoalkyl, alkenyl, alkinyl, or optionally substituted benzyl, phenyl, cycloalkyl, cycloalkylalkyl or cycloalkenyl, and

R^2 is optionally substituted phenyl, phenoxy, phenylthio, phenylsulphinyl or phenylsulphonyl,

or a physiologically acceptable addition product thereof with an acid or metal salt.

8. A fungicidal or plant growth regulating composition comprising an effective amount of a compound or addition product according to claim 1 in admixture with a diluent.

4,451,282

HERBICIDALLY ACTIVE NOVEL HETERO-SUBSTITUTED PYRID-4-ONE DERIVATIVES

Hans-Joachim Knops; Peter Babczinski, both of Wuppertal; Ludwig Eue, Leverkusen, and Robert Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

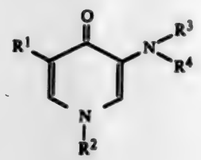
Filed Aug. 26, 1982, Ser. No. 411,749

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135186

Int. Cl.³ A01N *43/40;* C07D *401/02*

U.S. Cl. 71—92 **9 Claims**

1. A hetero-substituted pyrid-4-one derivative of the formula



in which

R^1 represents a phenyl radical which is optionally monosubstituted or polysubstituted by identical or different substituents selected from halogen, alkyl, alkoxy or alkylthio, each having 1 to 4 carbon atoms, and halogenoalkyl having 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms,

R^2 represents an alkyl having 1 to 4 carbon atoms, an alkenyl or alkinyl radical, each having 3 to 4 carbon atoms, an alkoxy or alkoxyalkyl radical, each having 1 to 4 carbon atoms in each alkyl part, or a dialkylamino radical having 1 to 4 carbon atoms in each alkyl part, and

R^3 and R^4, together with the nitrogen atom to which they are bonded, represent a heterocyclic radical which is optionally substituted by methyl, methoxy or chlorine and is selected from 1,2,4-triazolyl, imidazolyl and pyrazolyl.

4,451,283

5-OXO-2,5-DIHYDRO-1,2,4-TRIAZINES

Yuzuru Sanemitsu, Ashiya; Masao Shiroshita, Takarazuka; Shunichi Hashimoto, Toyonaka; Haruhiko Katoh, Nishinomiya, and Hiroshi Matsumoto, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 9, 1981, Ser. No. 281,776

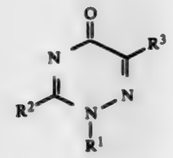
Claims priority, application Japan, Jul. 16, 1980, 55-98088; Jul. 18, 1980, 55-98957; Jul. 21, 1980, 55-100334

Int. Cl.³ C07D *253/06;* A01N *43/64*

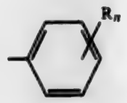
U.S. Cl. 71—93 **15 Claims**

1. A herbicidal composition suitable for agricultural use which comprises at least one triazine compound of the formula:

(I)



wherein R^1 is a C_1–C_6 alkyl group or an amino group, R^2 is a C_1–C_4 alkoxy group, a C_1–C_4 alkylthio group or a di(C_1–C_4) alkylamino group and R^3 is a cyclo(C_3–C_7)alkyl group, a tertiary C_4–C_5 alkyl group, an adamantyl group or a group of the formula:



in which R is a halogen atom, a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a nitro group or a trihalomethyl group and n is an integer of 0 to 2 in a herbicidally effective amount and an inert carrier or diluent.

4. The composition according to claim 1, in the form of an emulsifiable concentrate wherein said inert carrier or diluent is a liquid carrier.

4,451,284

DERIVATIVES OF 2-NITRO-4- OR -5-PYRIDYLOXYPHENYLPHOSPHONIC ACID, THE PREPARATION THEREOF, THE USE THEREOF AS HERBICIDES AND/OR PLANT GROWTH REGULATORS

Ludwig Maier, Arlesheim; Hermann Rempfler, Ettingen, and Dieter Dürr, Bottmingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,504

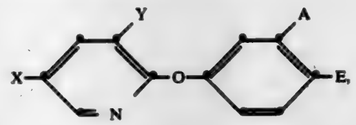
Claims priority, application Switzerland, Jul. 28, 1981, 4891/81

Int. Cl.³ C07F *9/58;* A01N *43/40;* A61K *31/44*

U.S. Cl. 71—94 **52 Claims**

1. A compound of the formula I

(I)



wherein X is halogen or trifluoromethyl, Y is hydrogen or halogen, one of the two substituents A and E is a phosphonate group



wherein R is C_1–C_4alkyl or hydrogen and the other is a nitro group, or a metal salt "selected from amongst alkali, alkaline earth and transition metals" thereof or a salt thereof with ammonium or an organic nitrogen base.

4,451,285

HERBICIDAL 2-HALOACETANILIDES

Gerhard H. Alt, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

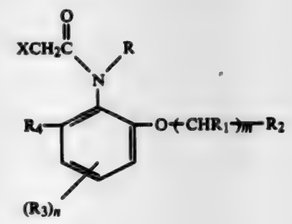
Continuation-in-part of Ser. No. 133,765, Mar. 25, 1980, Pat. No. 4,332,614. This application May 28, 1982, Ser. No. 383,039

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.³ A01N *37/34, 37/24;* C07C *103/34, 121/78*

U.S. Cl. 71—105 **33 Claims**

1. A compound of the formula



wherein

X is chloro, bromo or iodo;

R is H, C_{1-5} alkyl or alkoxymethyl, cyanomethyl, azolylmethyl, C_{3-5} alkenyl, alkynyl or alkenyloxymethyl;

R_1 and R_3 are H or C_{1-4} alkyl;

R_2 is C_{1-4} alkoxy, polyalkoxy, alkoxyalkyl or dialkoxymethyl, 2-furyl, 2-tetrahydrofuryl or 2-thienyl;

R_4 is H, C_{1-4} alkyl or halogen;

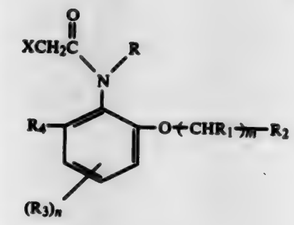
m is 1 or 2; and

n is 1–3;

provided that when R is alkoxymethyl, R_4 is hydrogen or halogen.

23. A method of controlling undesired plants which com-

prises contacting said plants or the plant growth medium with a herbicidal amount of a compound of the formula



wherein

X is chloro, bromo or iodo;

R is H, C_{1-5} alkyl or alkoxymethyl, cyanomethyl, azolylmethyl, C_{3-5} alkenyl, alkynyl or alkenyloxymethyl;

R_1 and R_3 are H or C_{1-4} alkyl;

R_2 is C_{1-4} alkoxy, polyalkoxy, alkoxyalkyl or dialkoxymethyl, 2-furyl, 2-tetrahydrofuryl or 2-thienyl;

R_4 is H, C_{1-4} alkyl or halogen;

m is 1 or 2 and

n is 1–3;

provided that when R is alkoxymethyl, R_4 is hydrogen or halogen.

4,451,286

COMPOSITIONS, WHICH INFLUENCE PLANT GROWTH AND PROTECT PLANTS BASED ON OXIME ETHERS AND OXIME ESTERS

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

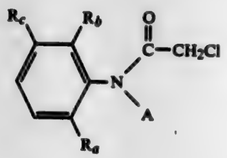
Continuation of Ser. No. 144,160, Apr. 28, 1980, abandoned, which is a division of Ser. No. 939,096, Sep. 1, 1978, abandoned, said Ser. No. 939,096, Continuation-in-part of Ser. No. 881,953. This application Oct. 5, 1981, Ser. No. 308,690

Claims priority, application Switzerland, Mar. 2, 1977, 02606/77; Feb. 7, 1978, 01348/78

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—107 **4 Claims**

1. A process for protecting cultivated plants selected from the group consisting of millet, rice, maize, wheat, rye, barley and oats against the action of a chloroacetanilide herbicide of the formula



in which

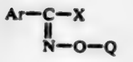
R_c is hydrogen and methyl,

one of R_a and R_b being hydrogen, methyl or ethyl, and the other of R_a and R_b being hydrogen, methyl, tert.butyl, methoxy or chlorine, when R_c is hydrogen,

one of R_a and R_b being methyl, and the other of R_a and R_b being hydrogen or methyl, when R_c is methyl; and

A is C_1–C_4-alkoxy-C_1–C_4-alkyl,

by applying to the plants, to parts or to generative parts of the plants or to the habitat thereof, in any desired sequence, namely before, simultaneously with, or after, the application of said herbicide, an antidotally effective amount of a compound of the formula



in which

Ar is phenyl, para-phenoxyphenyl or -naphthyl,

X is methoxycarbonyl or ethoxycarbonyl and

Q is methyl, ethyl or n-amyl.

4,451,287

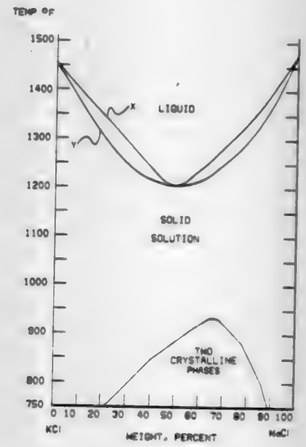
FLUX IN RECOVERY OF ALUMINUM IN REVERBERATORY FURNACE

Carl F. Bauer, Chicago; James H. Hussey, Hammond, and Benny Langston, Barrington, all of Ill., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 328,605, is a division of Ser. No. 192,946, Oct. 2, 1980, abandoned. This application Sep. 7, 1983, Ser. No. 529,672

Int. Cl.³ C22B *21/00*

U.S. Cl. 75—24 **6 Claims**



1. A process for the recovery of metal from dross in a charge well of a reverberatory furnace wherein said dross includes at least one inert material and wherein the improvement comprises supplying thermally formed flux in solid particle form to the charge well in a ratio of thermally formed flux to said inert material of less than about 0.4, said flux being an alloyed mixture consisting essentially of a double salt which is 40% to 60% sodium chloride and 60% to 40% potassium chloride, said alloyed mixture having been produced by mechanically mixing said sodium chloride and said potassium chloride, heating the mixture to produce a liquid to effect complete alloying and chemical mixing thereof, and cooling the mixture to solidify it.

4,451,288

METHOD FOR PRODUCING LOW HYDROGEN CONTENT IN STEELS PRODUCED BY SUBSURFACE PNEUMATIC REFINING

Rockne J. Andreini, Redmond, Wash., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1982, Ser. No. 393,467

Int. Cl.³ C21C *7/00*

U.S. Cl. 75—60 **11 Claims**

7. A method for production of low hydrogen steel by subsurface pneumatic refining, comprising the steps of:

(a) drying a refining vessel to remove substantially all water;

(b) charging the refining vessel with a steel melt;

(c) adding all additions to the melt as early as possible to

allow the maximum time for sparging of hydrogen from the melt;

(d) decarburizing the melt of at least about 0.35% carbon by blowing oxygen on the melt to assist the hydrogen sparging by creating a suitable volume of off-gas, wherein the minimum oxygen blowrate is about 1200 SCF/hr-ton of steel;

(e) substantially preventing entry of moisture into contact with the melt during processing steps following decarburization by blowing the melt with a sparging gas to maintain the flow conditions at the vessel mouth to minimize air infiltration into the vessel; and

(f) minimizing the time spent for the processing steps following decarburization to reduce the time for hydrogen absorption into the melt.

4,451,289

PROCESS FOR EXTRACTING NON-FERROUS METALS FROM IRON-BEARING SCRAPS

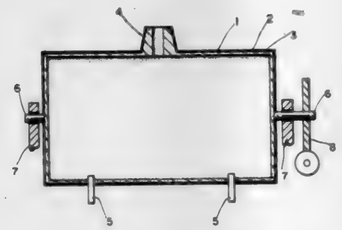
Michel C. Van Hecke, Aartselaar, and Luc M. Fontainas, Antwerp, both of Belgium, assignors to Metallurgie Hoboken-Overpelt, Belgium

Filed Nov. 20, 1981, Ser. No. 323,363

Claims priority, application Luxembourg, Nov. 28, 1981, 82970

Int. Cl.³ C22B *11/00, 15/00*

U.S. Cl. 75—63 **8 Claims**



1. A process for extracting copper and/or precious metals from iron-bearing scraps containing such metals which comprises

(a) adding the scraps and a slagging agent for iron to a molten copper bath,

(b) injecting an oxygen-containing gas into said bath, and

(c) maintaining the temperature of said bath below about 1400° C., whereby copper and/or precious metals are extracted from the scraps in the said bath, while slagging the iron of the scraps.

4,451,290

RECOVERY OF PLATINUM GROUP METALS FROM SCRAP AND RESIDUES

John Hill, Sandton, South Africa, and Joseph G. Day, Holmer Green, England, assignors to Matthey Rustenburg Refiners (Proprietary) Limited, Johannesburg, South Africa

Filed Sep. 15, 1982, Ser. No. 418,541

Claims priority, application United Kingdom, Sep. 16, 1981, 8127976

Int. Cl.³ C22B *11/00*

U.S. Cl. 75—63 **11 Claims**

1. A process for the recovery of platinum group metals, Ag and Au from a precious metal containing residue which includes the platinum group metals, Ag and Au together with Fe, Cu, Ni, Se and Te, said process comprising the following steps:

(a) smelting the said precious metal containing residue with leach residue including S and a flux to produce

(i) a slag and

(ii) a copper matte phase containing S, the platinum group metals, Au, Ag, Se and Te, and an excess of Ni and/or Fe as defined in step (b) below,

(b) removing excess of the elements Fe or Ni or compounds thereof from the matte phase produced by step (a) by oxidation thus converting the said elements or compounds thereof to their respective oxides which then report to the slag phase, said excess being defined as more than about 10% by weight of iron, more than about 15% by weight of nickel or more than about 20% by weight of the total of iron and nickel, based on the weight of the matte phase,

(c) contacting the matte phase produced after oxidation step (b) in liquid form with one or more molten metals selected from the group consisting of Cu, Ni and Fe so as to produce a separate immiscible metallic phase containing platinum group metals, silver and gold, and

(d) recovering silver from the matte phase and the platinum group metals, gold and the proportion of silver which remains from the metallic phase.

4,451,291

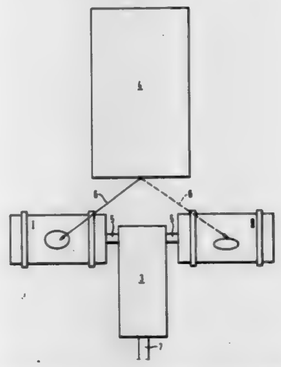
METHOD AND APPARATUS FOR CONVERTING MATTE, PARTICULARLY HIGH-GRADE MATTE

Matti O. Leiponen, Espoo, Finland, assignor to Outokumpu Oy, Helsinki, Finland

Filed Nov. 30, 1982, Ser. No. 445,480

Int. Cl.³ C22B *15/06*

U.S. Cl. 75—73 **19 Claims**



1. In combination, an apparatus for converting matte, into metal, slag and gas containing sulphur dioxide, and a gas processing equipment for processing gas containing sulphur dioxide generated during conversion of the matte, said apparatus comprising a pair of essentially equal sized converters disposed in spaced relationship with the gas processing equipment located therebetween, means for feeding oxygen-containing gas to the converters so that such gas can be blown through matte in each converter so as to produce a flow of gas containing sulphur dioxide from the converter, and means connecting the converters in common to the gas processing equipment so that the flows of gas containing sulphur dioxide from the two converters are fed to the gas processing equipment.

4,451,292

SINTERED HARDMETALS

Fred W. Hall, Metallurg Group Industrial Development Office, 64 Fargate, Sheffield, South Yorkshire, S1 2HE, England, and Hans-Joachim Retelsdorf, Gesellschaft für Elektrometallurgie m.b.H., Zentrale Forschung, Postfach 2844, 8500 Nürnberg 1, Fed. Rep. of Germany

PCT No. PCT GB81/00036, § 371

Date Sep. 17, 1981, §102(e) Date Sep. 17, 1981, PCT Pub. No. WO81/02588, PCT Pub. Date Sep. 17, 1984

This PCT application filed Sep. 17, 1981, Ser. No. 305,625

Claims priority, application United Kingdom, Mar. 4, 1980, 8007382

The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.

Int. Cl.³ B22F *3/12*; C22C *14/00, 1/04*

U.S. Cl. 75—238 **15 Claims**

1. A sintered hardmetal which comprises tungsten carbide, a binder comprising one or more metals or alloys of the iron group and a mixed crystal material prepared by subjecting a mixture comprising zirconium and titanium carbides to heating at a temperature and for a time sufficient for the mixed crystal product to undergo spinodal decomposition upon cooling into a TiC-ZrC phase rich in TiC and a TiC-ZrC phase rich in ZrC, the amount of mixed crystal material present in the hardmetal being in the range from 2% to 40% by weight of the hardmetal.

4,451,293

SLAG-FORMING AGENT AND PROCESS FOR PRODUCING THE AGENT

Minoru Kitamura, Nishinomiya; Toshiyuki Soejima, Kobe; Tsutomu Hayashi; Hideo Matsui, both of Kakogawa, and Shigenori Fujisawa, Narashino, all of Japan, assignors to Quigley Company, Inc., New York, N.Y.

Filed Apr. 23, 1982, Ser. No. 392,510

Claims priority, application Japan, May 31, 1979, 54-67665

Int. Cl.³ C22B *9/10*

U.S. Cl. 75—257 **12 Claims**

1. An agent comprising an aggregate of particulate slag-forming material, said material having a maximum particle diameter of 3.0 millimeters and containing at least 15 weight percent magnesium oxide, said aggregate being coated with cement in the amount of from 5 to 20 percent by weight.

4,451,294

WATER RESISTANT AND HEAT INSULATING MATERIAL AND METHOD OF MAKING SAME

Marin A. Popov, and Todor G. Georgiev, both of Sofia, Bulgaria, assignors to Knipsm "Zavodproekt", Sofia, Bulgaria

Filed Aug. 30, 1982, Ser. No. 412,961

Int. Cl.³ C04B *21/00*

U.S. Cl. 106—75 **5 Claims**

1. A composition for the production of waterproof and heat insulating silicate material, consisting essentially of SiO_2 of from 62 to 68%; Al_2O_3 of from 1.5 to 5%; B_2O_3 of from 5 to 10%; CaO+MgO of from 0.1 to 0.5% and Na_2O of from 21 to 26%, all percentages being by weight.

4,451,295

CEMENTS, MORTARS AND CONCRETES

James H. Sprouse, El Toro, Calif., assignor to Standard Concrete Materials, Inc., Santa Ana, Calif.

Filed Sep. 29, 1982, Ser. No. 426,679

Int. Cl.³ C04B *7/14*

U.S. Cl. 106—89 **10 Claims**

1. A product comprising a blend of granulated blast furnace slag and at least one of ground calcium carbonate and cement kiln dust in which the proportion of slag to ground calcium carbonate and cement kiln dust is between nine to one and one to one by volume.

4,451,296

RUST REMOVAL PROCESS

Eugene S. Barabas, Watchung, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 364,000, Mar. 31, 1982, Pat. No. 4,424,079. This application Dec. 29, 1982, Ser. No. 454,127

Int. Cl.³ B08B *7/00*

U.S. Cl. 134—4 **10 Claims**

1. Process for removing rust from a rusty metal surface which comprises:

(a) applying to said rusty surface a layer of rust removal coating composition consisting essentially of an aqueous solution of a copolymer of maleic acid and monomer of the formula CH_2=CHR wherein R represents H, CH_3, $OCOR^1$ and R^1 represents CH_3 or CH_2CH_3; and

(b) allowing said layer of coating composition to dry whereby rust becomes incorporated into said layer and the layer containing the rust detaches itself from the surface.

4,451,297

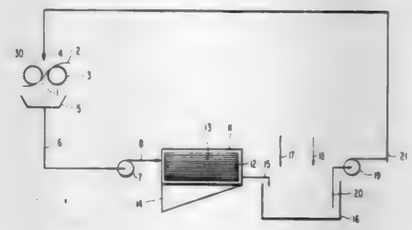
METHOD FOR REMOVING INORGANIC PARTICULATE SOLIDS FROM BATTERY STRIP

K. D. Kaswinkel, Gainesville, Fla., and M. J. Wynn, Latham, N.Y., assignors to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 192,290, Sep. 30, 1980, abandoned. This application Jul. 19, 1982, Ser. No. 399,570

Int. Cl.³ B08B *1/00, 7/04*

U.S. Cl. 134—9 **5 Claims**



1. A process for removing essentially inorganic, particulate solids from at least one surface of battery strip carrying loosely adherent particles selected from the group consisting of nickel, nickel hydroxide, and cadmium hydroxide comprising:

brushing said surface in a cleaning zone under conditions whereby said loosely adherent particles are released from said surface, and simultaneously passing an aqueous solution consisting essentially of water and sodium hydroxide over said surface at said brushing zone, said sodium hydroxide being present in a concentration of at least about five percent, thereby lubricating said surface and carrying released particles from said surface as a suspension in said aqueous solution;

collecting the resulting suspension;

separating particles suspended in the aqueous solution of sodium hydroxide from the aqueous solution thereby producing a clarified sodium hydroxide solution; and

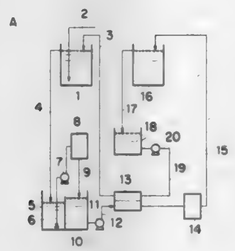
recycling at least a portion of the resulting clarified sodium hydroxide solution to said brushing zone.

4,451,298

METHOD AND SYSTEM FOR RECYCLING WASHING LIQUIDS AND THE HEAT CONTAINED THEREIN

Aisaburo Yagishita, Nagoya; Noboru Mori, Inuyama; Kinshiro Kusumi, Konan, and Yoshio Tsugi, Nagoya, all of Japan, assignors to Kabushiki Kaisha Sanshin Seisakusho, Nagoya, Japan

Filed Dec. 8, 1981, Ser. No. 328,498
Int. Cl.³ B08B 7/04
U.S. Cl. 134—10 7 Claims



1. A method for recovering and recycling washing liquids and the heat contained therein, said liquids being used in chemical surface treatments requiring serial hot and cold water washes, in either order, said wash waters respectively overflowing from hot and cold water washing tanks as effluents which comprises the steps of

(a) collecting and segregating said effluents;

(b) filtering contaminents from the first of said serial effluent wash waters;

(c) permitting the cold effluent wash water to exchange heat with the hot effluent wash water;

(d) introducing the filtrate at a temperature below about 40° C. into an ion exchanger to yield purified filtrate;

(e) feeding the exchange-heated water to the hot water washing tank;

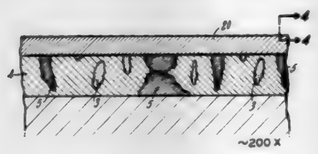
(f) feeding the exchange-cooled water to the cold water washing tank.

4,451,299

HIGH TEMPERATURE COATINGS BY SURFACE MELTING

John G. Smeggil, Simsbury; Norman S. Bornstein, West Hartford, and Clyde O. Brown, Newington, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 22, 1982, Ser. No. 421,553
Int. Cl.³ C21D 7/00
U.S. Cl. 148—1 4 Claims



1. A method for improving the oxidation resistance of a coated superalloy article which comprises: preheating the article to a temperature above its brittle to ductile transformation temperature, using a concentrated source of heat energy to rapidly melt a portion of the coating so that upon the resultant rapid solidification, a refined super-saturated material, capable of forming a continuous protective oxide scale, results.

4,451,300

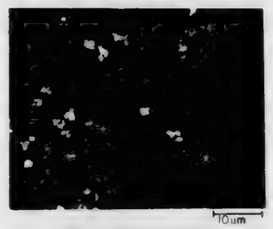
Patent Not Issued For This Number

4,451,301

ORGANIC PHOSPHATING SOLUTION FOR THE PHOSPHATING OF METALLIC SURFACES

Dieter J. Mueller, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,799
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209829
Int. Cl.³ C23F 7/10
U.S. Cl. 148—6.15 R 15 Claims



1. A homogeneous phosphating solution comprising effective amounts of a low-boiling halogenated hydrocarbon; aqueous phosphoric acid; methanol or a C_{1-6} alkanol mixture predominantly comprising methanol; an optional stabilizer; an optional inhibitor; an optional accelerator; and 0.01–2.0% by weight of a formic acid ester of a C_{1-12}-alkanol as an activating crystal nucleator.

4,451,302

ALUMINUM NITRIDING BY LASER

Ernest Prescott, Arnold, and William C. Cochran, Fox Chapel Borough, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 27, 1982, Ser. No. 412,113
Int. Cl.³ C22F 1/04
U.S. Cl. 148—13.1 11 Claims

1. A method for nitriding a metal workpiece, comprising:

(a) providing a workpiece comprising compact aluminum or aluminum alloy containing less than about 2.1 weight percent magnesium;

(b) maintaining an atmosphere rich in nitrogen in contact with said workpiece; and

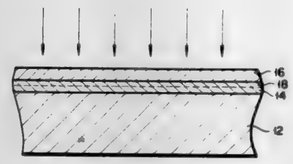
(c) exposing a portion of the surface layer of said workpiece to a laser beam at a power density of at least 0.1×10^6 W/cm² for less than one second to form on said workpiece a hardened surface layer comprising aluminum nitride.

4,451,303

DIFFUSION OF ALUMINUM

Shunichi Hiraki, Hiratsuka; Kiyoshi Kikuchi, Yokohama; Shigeo Yawata, Kawasaki, and Masafumi Miyagawa, Kitakyushu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 5, 1983, Ser. No. 455,795
Claims priority, application Japan, Jan. 18, 1982, 57-5026
Int. Cl.³ H01L 21/225, 21/265
U.S. Cl. 148—187 6 Claims



1. A method for producing a semiconductor element comprising the steps of:

forming a porous alumina layer on a semiconductor substrate;

forming a diffusion-protective layer formed of a material having a large oxygen-diffusion-inhibiting ability on said porous alumina layer;

implanting aluminum ions into said porous alumina layer through said diffusion-protective layer to form an aluminum ion-implanted region in said porous alumina layer; and

heating the structure thus formed to diffuse the aluminum in said aluminum ion-implanted region into said semiconductor substrate, thereby forming a P-type impurity region in said semiconductor substrate.

4,451,304

METHOD OF IMPROVING THE CORROSION RESISTANCE OF CHEMICAL CONVERSION COATED ALUMINUM

Walter Batiuk, 8247 Ashworth N., Seattle, Wash. 98105

Continuation of Ser. No. 260,370, May 4, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,420
Int. Cl.³ C23C 1/08; C23F 7/00
U.S. Cl. 148—6.27 11 Claims

1. A method for treating aluminum to enhance corrosion resistance of its surface, which comprises:

a. deoxidizing the aluminum surface with a non-chromated deoxidizer;

b. exposing the aluminum surface to a solution containing the nitrite ion and having a pH below 5;

c. coating the aluminum surface with a chemical conversion solution; and

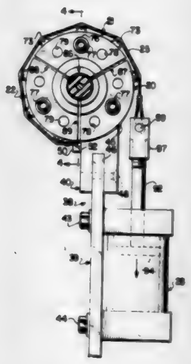
d. drying the chemical conversion coated aluminum surface with drying means.

4,451,305

APPARATUS AND METHOD FOR PRODUCING AN INSULATED CONNECTION BETWEEN ELECTRICAL CABLES

David H. Neuroth, Bethany, and Robert F. Smith, Jr., Oxford, both of Conn., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Aug. 2, 1982, Ser. No. 404,512
Int. Cl.³ H02G 1/14
U.S. Cl. 156—49 15 Claims



13. A method of splicing a pair of electrical cables, each comprising a conductor surrounded by a cylindrical layer of insulation, comprising the steps of

removing the insulation adjacent the end of each electrical cable,

joining the ends of the conductors on the pair of electrical cables,

interposing uncured insulation material between the areas of removed insulation and around the joined conductors,

wrapping the uncured insulation material in a thin sheath of material,

enclosing the uncured insulation material and sheath in a generally cylindrical mold cavity formed by a multiple part mold,

heating the multiple parts of the mold to cure the uncured insulation material while allowing the uncured insulation material and the parts of the mold to expand radially outwardly due to thermal expansion of the insulation material,

cooling the multiple parts of the mold while allowing the insulation material and the parts of the mold to contract radially inwardly, and

simultaneously with the heating and cooling steps, applying a radially inwardly directed, equal and substantially constant force to each of the parts of the mold.

4,451,306

MANUFACTURE OF COEXTRUDED ORIENTED PRODUCTS

Stefan Verne, London, England, assignor to BICC Public Limited Company, London, England

Continuation-in-part of Ser. No. 58,304, Jul. 17, 1979, abandoned. This application Mar. 25, 1982, Ser. No. 361,778
Claims priority, application United Kingdom, Aug. 2, 1978, 32053/78
Int. Cl.³ H01B 13/14
U.S. Cl. 156—51 4 Claims

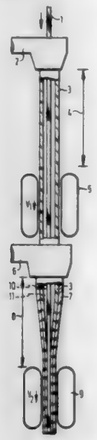
1. A method of making a product comprising a core enclosed by two radially successive concentric extruded layers, at least one of which is of crystallisable polymeric material in which

(a) a core is enclosed by two concentric extruded layers, at least one of which is of crystallisable polymeric material.

by extruding the said layers in succession around but spaced from the core;

(b) the first and second layers are brought into thermal and mechanical engagement with each other before the first contacts the core;

(c) the relative thermal capacities of the parts and the temperatures of the layers as they are brought into enagagement are such that as the second layer cools and increases in strength and the first layer is heated by thermal transfer from the second layer and decreases in strength, a region of least overall yield strength is formed at a position where the temperature of at least one of said parts (being made of



a crystallisable polymeric material) is at a temperature between its glass transition temperature and its crystalline melting point; and

(d) a braking force is applied to the first layer by a gripping device engaging it after it has cooled below its glass transition temperature and before the second layer is extruded around it and an advancing force is applied to the inner and outer layers at a place beyond the region of least overall yield strength to stretch both layers longitudinally by at least 50% in the said region of least overall yield strength and so orient at least one of them and at the same time contract them until the inner layer engages the core.

2. A method as claimed in claim 1 in which the core is a wire.

4,451,307

METHOD OF APPLYING COLOR RELIEF DECORATIONS TO CERAMIC AND LIKE PRODUCTS

Kurt Zimmer, Losheim-Britten, Fed. Rep. of Germany, assignor to Villeroy & Boch Keramische Werke KG, Mettlach, Fed. Rep. of Germany

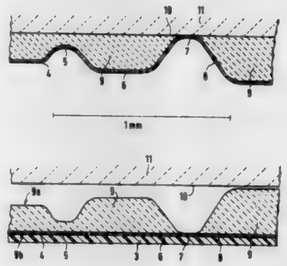
Continuation of Ser. No. 279,582, Jul. 1, 1981, abandoned. This application Sep. 6, 1983, Ser. No. 529,658

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025364

Int. Cl.³ C03B *29/00;* **B29C** *17/00;* **C04B** *33/34, 35/64*

U.S. Cl. 156—63 **9 Claims**

1. A method of laminating onto a surface of a china, earthenware, stoneware or like ceramic object a composite image which is carried by an elastic lacquer layer on a decalcomania having a sheet-like carrier and a film of soluble material between the carrier and the elastic lacquer layer, said composite image including a relief image which consists of a material adapted to be bonded to the object by sintering and having a flat side, an uneven side and a color image which consists of at least one color field on the relief image, said color image being located between the elastic layer and the flat side of the relief image, said method comprising the steps of separating the elastic layer carrying the color and relief images from the carrier by dissolving the film; applying the uneven side of the relief image to the surface of the object; partially reversing the relief image by the application of pressure against the surface; and thereupon fully reversing the relief image by applying heat to sinter the material of the relief image and cause the previ-



ously uneven side of the relief image to become flat and contact the surface of the object and thereby cause the previously flat side of the relief image which is coated with the color field to present the relief image.

4,451,308

METHOD AND DEVICE FOR MAKING SEALS IN TUBULAR WEB PROVIDED WITH SIDE GUSSETS

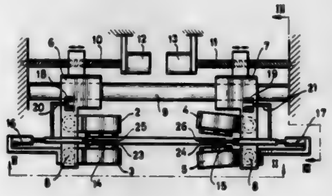
Arnoldus W. J. LeLoux, Dedemsvaart, Netherlands, assignor to Wavin B.V., Em Zwolle, Netherlands

Filed Apr. 13, 1983, Ser. No. 484,507

Claims priority, application Netherlands, Apr. 20, 1982, 8201641

Int. Cl.³ B30B *5/02*

U.S. Cl. 156—64 **4 Claims**



1. A method of making seals in tubular web provided with side gussets, the location of the inner gusser edges being observed laterally in order to thereby determine the position of the sealing devices for making the gusset seals, wherein, after making the seals, the sensors for the inner gusset edges are withdrawn outwardly over a certain distance, the position of the sealing devices remaining unchanged, wherein, after transport of the tubular web, the sensors are moved inwardly again and the new position of the inner gusset edges is observed, and subsequently, when a difference is observed as compared with the previous time, the position of the sealing devices is brought into correspondence with this observation before making the next seal.

4,451,309

APPARATUS AND PROCESS FOR ALIGNING A PLATE AND MOUNTING IT ON A PRINT CYLINDER

Jack D. Cauldwell, Carroll, Ohio, assignor to Purity Packaging Corporation, Columbus, Ohio

Filed Feb. 28, 1983, Ser. No. 470,588

Int. Cl.³ B41F *5/00*

U.S. Cl. 156—64 **11 Claims**

8. A process for mounting a flexible printing plate on a print cylinder comprising,

providing a porous transparent panel having aligning indicia thereon,

supporting the panel on a pair of coaxially aligned pins, and with the axis being substantially horizontal,

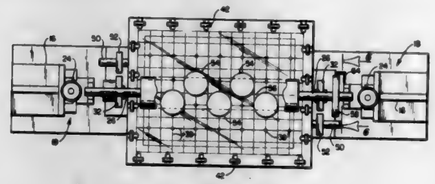
pivoting the panel on the pins to a substantially horizontal position,

placing a flexible printing plate face down on the upper side of the panel,

drawing a vacuum on the under side of the panel to thereby hold the plate in place on the panel,

pivoting the panel about said axis to an orientation such that the operator may view the indicia and the printing surface of the plate through the transparent panel,

adjusting the plate as necessary to align the same according to said indicia,



pivoting the panel to horizontal position with the printing side of the plate facing downward,

applying an adhesive to a print cylinder,

mounting the cylinder with its axis parallel with the upper surface of the porous panel and such that it is aligned with the plate, said cylinder axis lying in a plane perpendicular to said porous panel,

moving the cylinder and panel toward each other with the cylinder axis remaining in the plane and while maintaining the parallel relationship until the cylinder contacts and adheres to said plate,

releasing the vacuum,

drawing the free portion of the flexible plate around the cylinder.

4,451,310

PREPARATION OF LIGHTWEIGHT, INSULATING AND SEMIRIGID OR RIGID ELEMENTS

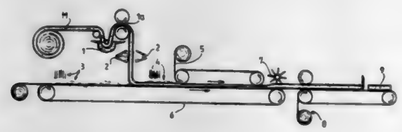
Jean-Claude Lairloup, Brionne, France, assignor to Nobel-Bozel, Puteaux, France

Filed Apr. 9, 1982, Ser. No. 367,131

Claims priority, application France, Apr. 14, 1981, 81 07466

Int. Cl.³ B32B *5/18*

U.S. Cl. 156—78 **13 Claims**



1. A process for preparing lightweight, insulating and semirigid or rigid elements, of the type including panels or parts of variable shapes or thicknesses comprising

impregnating a supple porous material having an inner structure with open cells, with a desired quantity of an isocyanate compound having at least one —NCO group,

then contacting said isocyanate impregnated supple porous material with water, whereby said water and said isocyanate begin to react, the reaction giving a derivative of urea or biuret,

then accelerating the reaction of said isocyanate compound with water by heating, and shaping under pressure the impregnated porous material to provide its final shape.

4,451,311

METHOD FOR MANUFACTURING A DAMPENING ROLL COVER

Tadashi Miyazaki, Showa, and Takao Hasegawa, Kuki, both of Japan, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,265

Claims priority, application Japan, Mar. 27, 1981, 56-46080

Int. Cl.³ B29C *27/20*

U.S. Cl. 156—86 **12 Claims**

1. A method for manufacturing a dampening roll cover which shrinks radially when hot water is applied to it, said dampening roll cover being comprised of hygro-thermally shrinkable fibers which have been preliminarily shrunken, but which are capable of shrinking further to the extent of at least about 10%, comprising:

a. forming a non-woven fibrous fleece comprised of hygro-thermally shrinkable fibers;

b. forming a cylinder from said fibrous fleece;

c. treating the hygro-thermally shrinkable fibers comprising said fibrous fleece with an aqueous solution of a crosslinkable binder;

d. solidifying said binder at temperatures which will not shrink the fibers;

e. partially shrinking the hygro-thermally shrinkable fibers of said cylinder by about 3% to about 50% by exposure to moisture to compact said cylinder of fibrous fleece; and

f. subjecting the compact cylinder to dry heat sufficient to crosslink said binder.

4,451,312

METHOD OF FORMING A LAMINATED FIRE SCREENING PANEL

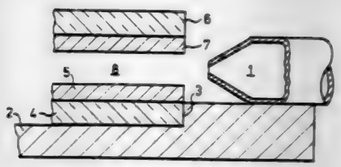
Hans-Henning Nolte, Gelsenkirchen, Fed. Rep. of Germany, assignor to BFG Glassgroup, Paris, France

Filed Mar. 25, 1980, Ser. No. 133,951

Claims priority, application United Kingdom, Apr. 5, 1979, 79/12061

Int. Cl.³ B32B *17/00*

U.S. Cl. 156—99 **13 Claims**



1. A method of forming a laminated light transmitting fire screening panel comprising at least one inter-layer of intumescent material sandwiched between two plies of glazing material, which comprises the steps of assembling the inter-layer and any ply of glazing material which is to be brought into face-to-face contact therewith while there is present therebetween an atmosphere which immediately prior to such contact consists at least in part of one or more materials which is more soluble in the intumescent material than is air, and subjecting the sandwich assembly to heat and/or pressure to bond it together to form the laminate.

4,451,313

PNEUMATIC TIRES

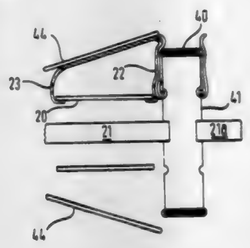
William L. Jackson, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Continuation of Ser. No. 914,722, Jun. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 868,582, Jan. 11, 1978, abandoned. This application Apr. 7, 1982, Ser. No. 366,169

Claims priority, application United Kingdom, Jan. 11, 1977, 1019/77

Int. Cl.³ B29H *17/10, 17/12;* **B60C** *9/02, 9/18*

U.S. Cl. 156—132 **12 Claims**



1. A method of making a pneumatic tire comprising the steps of:

assembling on each of a pair of inflatable cylindrical formers which are in substantial axial alignment a respective tire sidewall component including a respective reinforcing ply having inner and outer ends;

arranging each tire sidewall component so that an axially outer free end portion of said reinforcing ply is uncovered on the associated former and an axially inner opposite end portion of said reinforcing ply terminates at a respective tire bead;

folding said opposite end portion of said reinforcing ply around said tire bead;

assembling a tire breaker structure on a collapsible cylindrical former positionable between said pair of inflatable formers; and

inflating said inflatable formers to bring said uncovered axially outer free end portions of said reinforcing plies of the associated tire sidewall component adjacent to and radially overlapping a respective axial edge of said breaker structure but terminating short of the other tire bead.

7. A method of making a pneumatic tire having a tread reinforced by a breaker, said breaker being connected at each axial edge to a respective sidewall, each sidewall terminating at its radially inner edge in a respective bead and a respective reinforcing ply originating from each bead and extending to and radially overlapping the breaker but terminating short of the other bead comprising the steps of:

assembling on a pair of inflatable cylindrical formers which are of approximately bead diameter and spaced apart in substantial axial alignment, a respective tire sidewall component including a respective reinforcing ply

placing a respective bead core assembly on the axially inner portion of each said inflatable former;

arranging each tire sidewall component so that an axially outer free end portion of said reinforcing ply is uncovered on the associated former and an axially inner opposite end portion of said reinforcement structure terminates at the associated bead core assembly;

folding said opposite end portion of said reinforcing ply around said tire bead core;

assembling a tire breaker structure on a collapsible cylindrical former of larger diameter than and positionable between said pair of inflatable formers;

moving said pair of inflatable formers axially inwardly toward said collapsible cylindrical former;

inflating said pair of inflatable formers so as to stretch the associated tire sidewall component axially and radially outwardly from the associated bead core assembly to which it is secured so as to bring said uncovered axially outer end portion of said reinforcing ply of the associated tire sidewall component adjacent to and radially overlapping a respective axial edge of said breaker structure; and

placing tread rubber over the radial outer surface of the then assembled tire carcass.

4,451,314

METHOD FOR THE MANUFACTURE OF A FLUFFY, LIGHT-WEIGHT, SOFT NONWOVEN FABRIC

Jürgen Knoke, Weinheim; Manfred Jöst, Hemsbach; Bohuslav Tecl, and Erich Fahrbach, both of Weinheim, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Continuation of Ser. No. 268,177, May 29, 1981, abandoned. This application Dec. 3, 1982, Ser. No. 446,688

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032398

Int. Cl.³ B32B *31/16, 5/06*

U.S. Cl. 156—148 **7 Claims**

1. A method for the manufacture of a fluffy, light-weight soft non-woven fabric, comprising the steps of:

(a) preparing a web of staple or endless fibers or mixtures thereof, at least some of which fibers are thermoplastically softenable;

(b) forming said web into a non-woven fabric by spot fusing the thermoplastically softenable fibers by heating portions of said fabric to completely fuse said thermoplastically softenable fibers, thereby causing the fibers of said web to become sufficiently bound together in the form of a non-woven fabric; and

(c) subjecting said non-woven fabric on one or both sides to needle-punching with barbed needles to produce about 20 to 100 punctures per square centimeter of said fabric, the penetration of the barbs of said needles being sufficient to produce a fluffy surface on the side of the fabric through which said needles emerge.

4,451,315

PROCESS FOR PRODUCING A NON-WOVEN FABRIC

Tadashi Miyazaki, Ibaragi, Japan, assignor to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed Oct. 15, 1982, Ser. No. 434,475

Claims priority, application Japan, Nov. 20, 1981, 56-187495

Int. Cl.³ B31F *23/10*

U.S. Cl. 156—220 **18 Claims**

1. A process for preparing a pliable and durable non-woven fabric comprising:

a. printing a crosslinkable bonding agent in a patterned fashion onto one surface of a non-woven fiber assembly,

b. applying heat and pressure to the fiber assembly sufficient to cause the bonding agent on the surface of the fiber assembly to penetrate through the fiber assembly to the surface of the fiber assembly opposite to the surface to which the bonding agent was originally applied thereby densifying portions of the fiber assembly, said heat and pressure being insufficient to crosslink the bonding agent, and

c. applying heat to the fiber assembly sufficient to crosslink the bonding agent and to provide a pliable non-woven fabric having a distinct unevenness between the bonded and unbonded parts, wherein the areas of fiber assembly to which bonding agent has not been applied have a thickness about equal to the original thickness of the fiber assembly.

4,451,316

PROCESS FOR PREPARATION OF METAL VESSELS

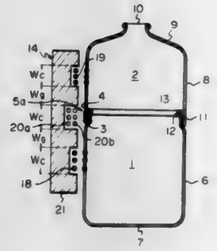
Kazuhisa Ishibashi, Tokyo; Hideo Kurashima, Yokosuka; Hisakazu Yasumuro; Michio Watanabe, both of Yokohama; Tsuneo Imatani, Yokosuka; Kazuo Taira, Tokyo; Seishichi Kobayashi, Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Oct. 21, 1982, Ser. No. 435,887

Claims priority, application Japan, Oct. 26, 1981, 56-170201; Jun. 22, 1982, 57-106220

Int. Cl.³ B29C *19/04*

U.S. Cl. 156—274.6 **5 Claims**



1. A process for the preparation of metal vessels, which comprises lap-bonding both the circumferential end portions of upper and lower members, each consisting of a seamless formed metal cup, through a layer of a hot adhesive interposed therebetween, wherein a high frequency induction heating coil is arranged so that the coil covers a part, smaller than the semicircle, of the circumferential portion to be formed into a seam, said seam consists of said end portions engaged with each other through the hot adhesive layer, applying electricity to the heating coil to induce an eddy current passing in the same or opposite direction from each of the side walls of the upper and lower members through said end portions and the circumferential portion, and the heating coil are rotated relative to each other, whereby the end portions of both the upper and lower members are preferentially heated and a seam is formed by heat bonding.

4,451,317

CONTINUOUS PROCESS FOR PRODUCING REINFORCED RESIN LAMINATES

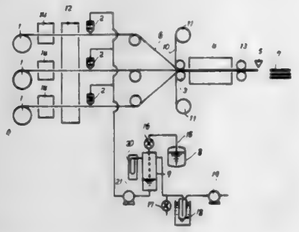
Masayuki Oizumi; Masakazu Uekita, both of Kobe; Masana Goto, Miki; Ichiro Azumi, Ohtsu; Shoji Uozumi; Masaharu Abe, both of Kobe; Yasuo Fushiki, Takatsuki; Minoru Isshiki, Kobe, and Kunio Kawasaki, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 223,402, Jan. 8, 1981, Pat. No. 4,372,800. This application Jun. 2, 1982, Ser. No. 384,438

Claims priority, application Japan, Jan. 8, 1980, 55-1020

Int. Cl.³ C09J *5/02*

U.S. Cl. 156—307.3 **4 Claims**



1. In a continuous process for producing metal clad reinforced resin laminates comprising the steps of impregnating a fibrous cellulosic substrate with a liquid thermosetting unsaturated polyester resin which is free of volatile solvent and is capable of curing without generating liquid and gaseous by-products to a final resin content in the resin-impregnated substrate from 10 to 90% by weight based upon the total weight of said resin-impregnated substrate, laminating a plurality of the resin-impregnated substrates into a unitary member, sandwiching the laminate between a pair of covering sheets, at least one of said pair of covering sheets being a cladding metal foil capable of permanently bonding to said resin-impregnated substrates after the laminate is cured, and curing the laminate while supporting the same between said pair of covering sheets without applying any appreciable pressure, the improvement comprising:

preimpregnating the fibrous cellulosic substrate, prior to impregnation with said liquid resin, with a liquid containing a component selected from the group consisting of (i) a modified aminotriazinemethylol compound having an unsaturated bond capable of copolymerizing with a polymerizable monomer and (ii) an N-methylol compound free of said unsaturated bond and a polyfunctional compound having both a functional group capable of a condensation or addition reaction with the N-methylol compound and an unsaturated bond capable of copolymerizing with a polymerizable monomer.

4,451,318

SYSTEM FOR PREFABRICATING POCKET WELTS AND FACING STRIPS

Joseph W. A. Off, Irving, and Judson H. Early, Dallas, both of Tex., assignors to Haggar Company, Dallas, Tex.

Filed Sep. 21, 1981, Ser. No. 304,095

Int. Cl.³ B26D *5/00;* **B32B** *31/00, 31/04;* **A41D** *11/00*

U.S. Cl. 156—353 **19 Claims**



9. Apparatus for securing fabric segments for forming pocket welts to a strip of fusible adhesive-backed tape comprising:

a supply reel having a length of fusible adhesive-backed tape thereon;

a take-up reel for receiving tape from the supply reel;

guide means extending between the supply reel and the take-up reel for guiding the tape therebetween with the adhesive layer of the tape facing downwardly;

drive means for actuating the take-up reel to continuously exert a force on the tape tending to move the tape along the guide means from the supply reel toward the take-up reel;

clamping means located at a first point along the guide means situated relatively adjacent to the supply reel for normally preventing movement of the tape under the action of the drive means;

fabric attachment means located at a second point along the guide means downstream from the first point and comprising:

(a) a locator block adjacent the tape for positioning a fabric segment in a predetermined orientation below the path of the tape in the guide means;

(b) an anvil normally positioned below a fabric segment situated adjacent said locator block;

(c) means for raising the anvil and thereby lifting the fabric segment upward into engagement with the fusible adhesive layer of the tape in the guide means;

(d) fusible adhesive actuator means normally positioned above the tape in the guide means; and

(e) means for engaging the fusible adhesive actuating

means with the tape at a point opposite the location of the raised anvil to clamp the tape and the fabric segment between the anvil and the fusible adhesive actuator means thereby actuating the fusible adhesive of the tape to bond the fabric segment to the tape;

tape advancing means positioned at a third point along the guide means downstream from the second point and comprising:

(a) opposed jaws positioned on opposite sides of the tape in the guide means;

(b) means for actuating the jaws to clamp the tape therebetween;

(c) means for moving the jaws and the tape clamp therebetween along the path of the tape in the guide means from the third point to a fourth point along the guide means downstream from the third point, the distance between the third and fourth points being indexed to provide a uniform separation between the fabric segments on the tape;

means for releasing the clamping means when the tape advancing means is actuated to move the tape and the fabric segments attached thereto toward the take-up reel;

trimming means located at a fifth point along the path of the tape in the guide means downstream from the fourth point for cutting fabric segments secured to the tape to a predetermined size, the distance between the fifth and fourth points being an integer multiple of the distance between the third and fourth points so that as the tape is moved to receive a fabric segment at the fabric attachment means, a fabric segment is moved into the trimming means;

adhesive depositing means located at a sixth point along the path of the tape in the guide means downstream from the fifth point for depositing adhesive onto the upper surface of trimmed fabric segments secured to the tape, the distance between the sixth and fifth points being an integer multiple of the distance between the third and fourth points so that as the tape is moved to receive a fabric segment at the fabric attachment means, a fabric segment is moved into the adhesive depositing means; and

folding means located at a seventh point along the path of the tape in the guide means downstream from the sixth point for folding a portion of each trimmed fabric segment into engagement with the adhesive previously deposited on the upper surface of the fabric segment to form a pocket welt, the distance between the seventh and sixth points being an integer multiple of the distance between the third and fourth points so that as the tape is moved to receive a fabric segment at the fabric attachment means, a fabric segment is moved into the folding means.

4,451,319

SYSTEM FOR PREFABRICATING POCKET WELTS AND FACING STRIPS

Joseph W. A. Off, Irving, and Judson H. Early, Dallas, both of Tex., assignors to Haggar Company, Dallas, Tex.

Continuation-in-part of Ser. No. 304,095, Sep. 21, 1981. This application Jan. 28, 1982, Ser. No. 343,573

Int. Cl.³ B26D *5/00;* **B32B** *31/00;* **B65H** *25/00;* **A41D** *27/20*

U.S. Cl. 156—353 **17 Claims**

10. An apparatus for prefabricating a string of pocket welts, comprising:

structure for translating a fabric tape along a fabric tape feedpath from an input position to an output position;

a station for placement of a fabric piece for forming a pocket welt proximate the fabric tape along the fabric tape feedpath;

first and second position sensors mounted on said station at a predetermined separation in the direction of the fabric tape feedpath for detecting the presence of a fabric piece, said sensors being positioned at a separation generally equal to the length of the fabric piece along the feedpath so that both sensors detect the fabric piece when the fabric piece is properly positioned at said station to permit accurate placement of a plurality of fabric pieces along the fabric tape;

means for bonding the fabric piece to the fabric tape for transporting the fabric piece with the fabric tape;

a rotatable supply reel containing a length of adhesive tape having an adhesive layer and a backing layer;

an adhesive layer cutting assembly having a cutting wheel for cutting a gap in the adhesive layer of the adhesive tape across the width thereof;

a positioning plate;

a backing separator for separating the backing layer and adhesive layer, said positioning plate and backing separator providing a path for the adhesive tape parallel to and proximate a portion of the fabric tape feedback;

a drive roller;

a pinch roller urged in contact with said drive roller for compressing the backing layer therebetween, said drive roller maintaining a predetermined tension on the backing layer;

means for bonding the adhesive layer of the adhesive tape to the combined fabric tape and fabric piece between said positioning plate and the backing separator;

means for folding the fabric piece and bonding the fabric piece in the folded position with the adhesive layer, said means for folding and bonding including a folding finger extending along the fabric tape feedpath about which the fabric piece is folded;

first and second positioning assemblies provided on either side of the folding finger for centering the fabric tape and fabric piece along a direction transverse to the feedpath for folding and bonding, each of said finger assemblies including:

front and rear fingers, each finger having at least one positioning surface for contacting the fabric tape, said positioning surface extending generally parallel the feedpath;

a base;

front finger plate means for mounting said front finger and slidably mounted on the base for motion transverse the fabric tape feedpath;

rear finger plate means for mounting said rear finger and slidably mounted on the base for motion transverse the fabric tape feedpath;

front and rear actuator means for selectively moving said front and rear finger plate means, respectively, transverse the direction of the fabric tape feedpath;

limit stop means for limiting the motion of said front and rear finger plate means, respectively, to position said fingers with the surfaces thereon centering the fabric tape for folding and bonding.

4,451,320

PACKET-TYPE LAMINATOR

Fred D. Marvel, 1417 E. 2nd St., Tulsa, Okla. 74120

Filed Jan. 11, 1982, Ser. No. 338,427

Int. Cl.³ B30B *15/34*

U.S. Cl. 156—366 **6 Claims**

1. A packet-type laminating machine comprising:

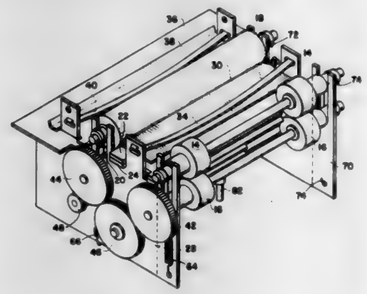
(a) a pair of vertical sidewall members adapted to rest on a lower edge during assembly wherein each of said vertical sidewall members contains a plurality of recesses along the top edge to accept the following items from above during assembly and retain said items in the stated relationship to each other during the operation and said packet-type laminating machine further comprising said items:

(i) a pair of horizontally flat heating platens lying one on top of the other and adapted to accept and heat a packet to be laminated,

(ii) a first pair of vertically stacked rollers positioned behind said platens such that the nip between said rollers is coplanar with and essentially adjacent to the plane of contact between said platens wherein at least one roller contains a driven gear, and

(iii) a horizontally flat metal shelf on the exit side of said rollers and heating platens and essentially coplanar with said nip and plane of contact;

(b) at least one rigid member adapted to attach to said vertical sidewalls and hold them essentially parallel and vertical during assembly and operation;



(c) a motor attached to a sidewall and engaged to said gear such as to drive said roller; and

(d) spring means attached to said vertically stacked rollers such as to hold said pair of rollers under compression.

4,451,321

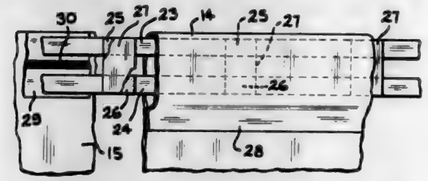
FLEXIBLE VACUUM BAG

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Feb. 16, 1983, Ser. No. 466,970

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—382 **7 Claims**



1. A flexible vacuum bag for use in the lamination of glass sheets with an interposed layer of thermoplastic material, comprising opposite flexible side panels secured together along their edges but having one side edge open to receive the laminations, and magnetic means for sealing said initially open edge to render the bag airtight, said magnetic means including a pair of spaced, parallel, flexible metal strips disposed opposite the outer surface of one of said panels, two rows of permanent magnets secured in spaced relation along said strips, with the magnets in the two rows disposed opposite one another, means magnetically connecting the opposite magnets in the two rows, and a flexible metal strip secured to the inner surface of the second panel opposite the metal strips on the first panel.

4,451,322

APPARATUS FOR FORMING STRUCTURAL SHEETS FROM FIBROUS BIOLOGICAL WASTE

Bolek Dvorak, Calgary, Canada, assignor to Richard A. Moerman and Barry Sullivan, both of Calgary, Canada

Filed Apr. 23, 1982, Ser. No. 371,212

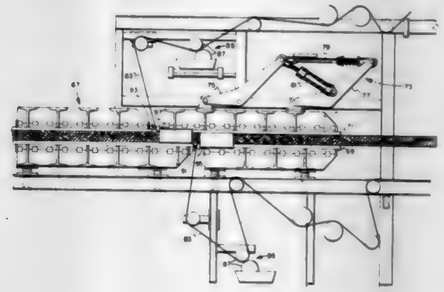
Int. Cl.³ B30B *7/00;* **B29J** *5/00*

U.S. Cl. 156—461 **29 Claims**

1. In an apparatus for forming generally loose fibrous waste matter into a uniformly compacted sheet by the technique of separating a certain volume of the fibrous matter from the remainder thereof, compacting the matter so separated and ramming it through a forming means, and repeating the separating, compacting and ramming operations to form a continuous compacted sheet flowing from the forming means, a precompacting feeder for supplying said fibrous waste matter at a substantially uniform precompacted density from a container of said fibrous matter, said precompacting feeder comprising:

chute means to define a flow path for conducting said fibrous matter from an inlet end at said container to an outlet end at said apparatus;

a plurality of reciprocating compactors speced apart along said flow path adjacent said chute outlet and for precompacting said fibrous matter, said compactors each including a retactile tip on the end thereof which will retract under pressure to reduce stress thereon, each of said compactors being reciprocally operable along an arcuate path of motion between a first position in which it is withdrawn from said flow path, and a second position in which it extends into said flow path, said path of motion being such that movement of said compactors from said first to second positions is in a direction to urge said fibrous matter toward said outlet end; and



actuating means to cause said compactors to reciprocally move between said first and second positions to precompact said loose fibrous matter in said chute, and propel it into said apparatus.

4,451,323

PORTABLE LABEL APPLYING MACHINE

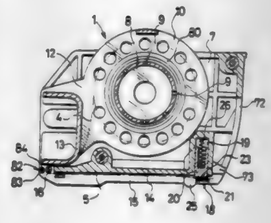
Yo Sato, Tokyo, and Tadao Kashiwaba, Kitagami, both of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Jun. 13, 1983, Ser. No. 503,681

Claims priority, application Japan, Jun. 15, 1982, 57-101442

Int. Cl.³ B65C *9/18, 11/00*

U.S. Cl. 156—541 **12 Claims**



1. A portable label applying machine comprising:

a label cassette comprising a supporting section for supporting a roll of a label strip consisting of labels sequentially adhered on a backing paper strip and for feeding the label strip to a separating section of the cassette; a separating section for receiving the label strip fed thereto and for inverting the backing paper strip alone sufficiently to cause the labels to

separate from the backing paper strip, and a guide section following the separating secton for guiding the backing paper strip which is inverted;

an applier having a manually operable feeding mechanism and a label applying section, the label cassette being detachably mounted on the feeding mechanism; the feeding mechanism engaging the backing paper strip at the guide section for transferring the backing paper strip after the strip is inverted in cooperation with the manual operation of the feeding mechanism so as to separate the labels from the backing paper strip, and the applying section being for applying the labels, which have been separated, to other goods; and

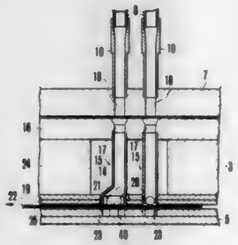
an auxiliary separating member which is mounted forward in the path of the label strip of the position at which the backing paper strip is inverted, the auxiliary separating member being for aiding separation at the separating section.

4,451,324

APPARATUS FOR PLACING CHIP TYPE CIRCUIT ELEMENTS ON A BOARD

Iwao Ichikawa, Kanagawa, and Kenichiro Kaimori, Iwate, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 135,668
Claims priority, application Japan, May 12, 1979, 54-582021
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—562 **12 Claims**



1. An apparatus for placing chip type circuit elements on a board, comprising:

hopper means for storing a plurality of chip type circuit elements;

a plurality of accommodating means for temporarily accommodating circuit elements received from said hopper means, at least two of said accommodating means being oriented in respective different direction with respect to said apparatus;

laterally movable shutter means having an operative position under said accommodating means, in which said shutter means supports said circuit elements in the respective ones of said accommodating means, and an inoperative position, in which said shutter means is removed from said accommodating means to permit discharge of said circuit elements from the latter;

means operative with said shutter means in said operative position for laterally moving said shutter means so as to have components of movement in said different directions for ensuring orientation of the circuit elements in said different directions of the respective accommodating means; and

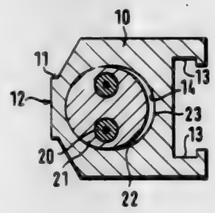
a template located under said shutter means and having a plurality of receiving portions respectively corresponding to said accommodating means and into which the discharged circuit elements are allowed to fall when said shutter means is removed from said accommodating means to said inoperative position.

4,451,325

SEALING JAW FOR FORMING SEAMS IN HEAT-SEALABLE PACKAGING MATERIALS

Wilfried Bubenzer, Engelskirchen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1982, Ser. No. 377,883
Int. Cl.³ B30B *15/34*; H05B *3/40*
U.S. Cl. 156—583.1 **3 Claims**



1. A sealing device for forming seams in heat-sealable packaging materials having a sealing surface and an elongated bore in parallel with said sealing surface in which an electrically-operated heating element is disposed, the improvement comprising a thick-walled sheath composed of a highly heat-conductive metal disposed in the bore of the sealing device and said heating element is disposed within said thick-walled sheath so that an evenly-distributed temperature is transmitted to the sealing surface of said sealing device,

and at least one gap defined by said sheath and said bore of said sealing device on a side of said sheath remote from said sealing surface.

4,451,326

METHOD FOR INTERCONNECTING METALLIC LAYERS

Peter S. Gwozdz, Cupertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 7, 1983, Ser. No. 529,920
Int. Cl.³ C23F *1/03*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **28 Claims**



1. A method for forming multiple conductive layers on a semiconductor device, said method comprising:

(a) defining a first conductive layer, having a preselected interconnect pattern, on the device;

(b) applying a first insulating layer over the first conductive layer, said first insulating layer having an irregular profile corresponding to the first conductive layer;

(c) applying a planarization layer over the first insulating layer, said planarization layer having a smoothed profile relative to that of the first insulating layer;

(d) etching both the planarization layer and the insulating layer to substantially remove the planarization layer and to impart a smoothed profile to the first insulating layer;

(e) forming vias through the first insulating layer at preselected locations;

(f) applying a second metal layer over the second insulating layer so that said second metal layer connects with the first metal layer through the vias; and

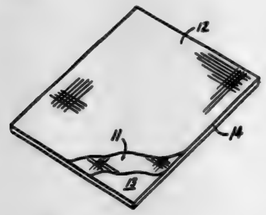
(g) defining a preselected interconnect pattern in the second layer.

4,451,327

PROCESS AND STRUCTURE FOR ETCHING COPPER

Norvell J. Nelson, Palo Alto, Calif., assignor to PSI Star, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 450,685, Dec. 17, 1982. This application May 25, 1983, Ser. No. 497,887
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—646 **42 Claims**



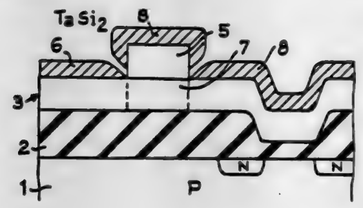
1. A dry process for etching copper, comprising the steps of exposing the copper to a gaseous oxidant in the presence of a catalyst which promotes the reaction of copper with the oxidant, adsorbing oxidized copper produced by the reaction into a receiver, and carrying the oxidized copper away from the reaction in the receiver.

4,451,328

MANUFACTURING TASI-POLYSILICON CONDUCTORS HAVING HIGH-RESISTANCE ELEMENTS BY A LIFTOFF TECHNIQUE

Guy Dubois, Grenoble, France, assignor to Societe pour l'Etude et la Fabrication de Circuits Integres Speciaux - E.F.C.I.S., Grenoble, France

Filed Sep. 27, 1982, Ser. No. 423,722
Claims priority, application France, Oct. 27, 1981, 81 20165
Int. Cl.³ H01L *21/22, 21/308*
U.S. Cl. 156—656 **3 Claims**



1. A process for manufacturing high-resistance elements as part of an integrated circuit production procedure, in which access lines to certain elementary transistor terminals are formed of conducting strips, obtained by superimposing a strip of strongly doped polycrystalline silicon and a strip of metal silicide, such resistors being positioned at places where the integrated circuit surface is coated with a thick layer of oxide, said process comprising the following steps:

depositing on an oxide coated integrated circuit surface a layer of polycrystalline silicon possessing high resistivity;

depositing on said polycrystalline silicon layer at places where resistors are required plugs of photosensitive substance;

doping the polycrystalline silicon to endow it with low resistivity except at places protected by said photosensitive substance;

depositing a silicide over the entire surface of the integrated circuit including the unmasked polycrystalline silicon and the plugs;

removing by chemical lift-off the photosensitive plugs and portions of silicide covering them;

selectively masking and etching said silicide and polycrystalline silicon to form said lines, some at least of which pass over the plug positions.

4,451,329

METHODS AND COMPOSITIONS FOR PRODUCING DECORATIVE FROSTING EFFECTS ON GLASS

Gary R. Batchelor, Millville; Carmen A. Russo, Sr., Mays Landing, and Martin Bradley, Vineland, all of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Aug. 22, 1983, Ser. No. 524,875
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—660 **21 Claims**

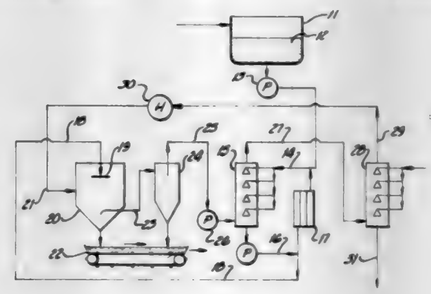
1. Method of selectively etching an image on a glass surface for producing decorative frosting effects, comprising depositing on the surface in the negative of said image a pattern of a crosslinkable resin mask capable, upon crosslinking, of resisting a subsequently applied etchant and also capable, upon crosslinking, of being removed from said glass surface by stripping or hot water or steam treatment, crosslinking said resin, etching said surface with said etchant and removing said crosslinked resin.

4,451,330

PROCESS FOR THE RECOVERY OF ALKALI METAL SALTS FROM AQUEOUS SOLUTIONS THEREOF

Joseph Vitner, Califon, N.J., assignor to Kalama Chemical, Inc., Seattle, Wash.

Filed Sep. 13, 1982, Ser. No. 417,823
Int. Cl.³ B01D *1/16*
U.S. Cl. 159—48.2 **10 Claims**



1. An integrated process for the production of substantially anhydrous, finely-divided particles of an alkali metal salt selected from the group consisting of alkali metal phenates and alkali metal carboxylates that comprises the following sequential steps:

(a) atomizing an aqueous solution containg 50 percent to 75 percent by weight of said alkali metal salt;

(b) contacting the resulting spray with a stream of inert gas that contains less than 0.5 percent by volume of carbon dioxide and that has been heated to a temperature in the range of 250° C. to 500° C. for the time required to effect dehydration and solidification of the alkali metal salt in said spray;

(c) separating substantially anhydrous, finely-divided particles of the alkali metal salt from a hot outlet inert gas stream that contains up to 20 percent, based on the weight of alkali metal salt in the aqueous solution that was atomized in Step (a), of entrained particles of the alkali metal salt;

(d) passing said inert gas stream through a separator, thereby reducing its content of entrained alkali metal salt particles to 3 percent to 4 percent by weight, based on the weight of alkali metal salt in the aqueous solution that was atomized in Step (a);

(e) passing said inert gas stream into a scrubber that contains an aqueous solution that contains 50 percent to 75 percent

by weight of said alkali metal salt and that is maintained at a temperature in the range of 45° C. to 60° C., thereby dissolving said entrained alkali metal salt particles in said alkali metal salt solution and cooling the inert gas stream to a temperature below 75° C.;

(f) cooling the inert gas stream from which entrained salt particles were removed in Step (e) by contacting it with water at a temperature in the range of 5° C. to 20° C., thereby obtaining a dried inert gas stream;

(g) heating the dried inert gas stream to a temperature in the range of 250° C. to 500° C.;

(h) contacting the hot inert gas stream from Step (g) with the atomized aqueous alkali metal salt solution formed in Step (a);

(i) repeating Steps (c) through (h);

(j) removing from the scrubber the aqueous alkali metal salt solution in which particles of alkali metal salt were dissolved in Step (e);

(k) dividing said solution into a first portion that consists of 10 percent to 90 percent of the solution and a second portion that consists of 10 percent to 90 percent of the solution;

(l) cooling said first portion to a temperature in the range of 40° C. to 60° C. and returning it to the scrubber;

(m) feeding said second portion to the atomizer; and

(n) repeating Steps (a) through (c) and Steps (j) through (m).

4,451,331

PROCESS AND APPARATUS FOR PRODUCING PULP

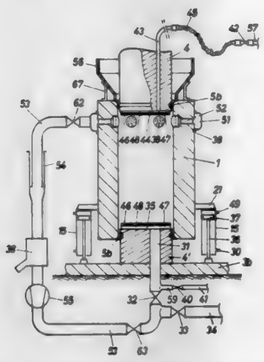
Augustin Raggam, St. Margarethen, and Hermann Rabitsch, Vienna, both of Austria, assignors to Simmering-Graz-Pauker Aktiengesellschaft, Vienna, Austria

Filed Nov. 17, 1981, Ser. No. 322,232

Claims priority, application Austria, Nov. 20, 1980, 5680/80; Oct. 27, 1981, 4564/81

Int. Cl.³ D21C *1/10*

U.S. Cl. 162—18 **10 Claims**



1. A process of producing pulp from impregnated, cellulose-containing starting materials, comprising:

impregnating starting materials in a compacting apparatus with an impregnating liquor under pressure before digesting, said impregnating being effected in the same compacting apparatus as is used for digesting and with an impregnating liquor which contains chemicals in the concentrations required for the digestion in concentratons of 5 to 50%, and under a pressure above 1 bar in order to reduce the unwetted capillary length of the starting material said pressure being applied less than 10 minutes so that the starting materials are impregnated in a cold state said starting materials being compacted in said compacting apparatus before their impregnation so as to reduce their moisture content to less than 50% so that the impregnating liquor can subsequently enter the starting materials;

compacting the impregnated starting materials from the impregnating step above to remove surplus impregnating liquor, thereby obtaining a relatively low hydromodulus of 0.5 to 2;

digesting the impregnated starting materials within a short time of less than 10 minutes, which depends on the digesting temperature, in said compacting apparatus at a digesting temperature of 160° to 300° C.; and

directly supplying heat into the impregnated starting materials by heating of the impregnated starting materials.

4,451,332

METHOD FOR DELIGNIFICATION OF LIGNO-CELLULOSE CONTAINING FIBER MATERIAL WITH AN ALKALI-OXYGEN EXTRACTION STAGE

Göran E. Annergren, Sundsvall; Tjell-Ake Hägglund, Sörberge; Per-Olov Lindblad, Sundsvall; Lars-Åke T. Lindström, and Lars E. Näsman, both of Alnö, all of Sweden, assignors to SCA Development Aktiebolag, Sweden

Continuation of Ser. No. 140,499, Apr. 15, 1980, abandoned. This application Jul. 29, 1982, Ser. No. 403,070

Claims priority, application Sweden, May 11, 1979, 7904148

Int. Cl.³ D21C *9/12, 9/14, 11/04*

U.S. Cl. 162—30.1 **11 Claims**

1. A process for treating ligno-cellulose containing fiber material comprising the steps of bleaching a ligno-cellulose containing fiber material bleached with chlorine, chlorine dioxide or mixtures thereof; mixing said bleached ligno-cellulose containing fiber material at a pulp consistency of greater than 10% up to 18% with an oxygen-containing gas in a mixer arranged immediately before a substantially non-pressurized upward flowing extraction tower to provide a foam of the pulp suspension having said gas dispersed therein in an amount of from about 4 to about 8 kilograms of oxygen per ton of pulp; passing said foam suspension from the mixer to the upward flowing extraction tower; and extracting the pulp suspension in the upward flowing extraction tower for a reaction time of less than about 90 minutes, at a temperature of from about 50° to about 70° C., and at an addition of alkali such that the final pH measured in the pulp suspension is greater than 9.

4,451,333

PROCESS FOR COOKING LIGNOCELLULOSIC MATERIALS INTENDED FOR THE PRODUCTION OF PAPER PULP WITH 1,2,3,4-TETRAHYDRO-9,10-ANTHRACENE-DIOL

Lucien Bourson, Bois Colombes; Serge Delavarenne, Franchéville Le Haut, and Pierre Tellier, Sainte-Foy-Les-Lyon, all of France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 274,757, Jun. 18, 1981, abandoned, which is a continuation of Ser. No. 57,987, Jul. 16, 1979, abandoned. This application May 14, 1982, Ser. No. 378,218

Claims priority, application France, Jul. 27, 1978, 78 22218

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.³ D21C *3/20*

U.S. Cl. 162—77 **4 Claims**

1. A process for cooking lignocellulosic materials which comprises heating the lignocellulosic materials to a temperature between 150° C. and 200° C. in a cooking solution containing caustic soda and 0.01% to 10% by weight of 1,2,3,4-tetrahydro-9,10-anthracene-diol based on the weight of the dry lignocellulosic material to produce a paper pulp.

4,451,334

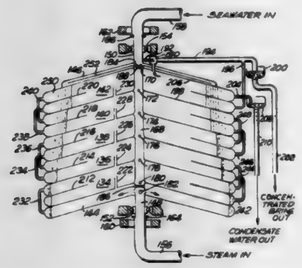
MULTI-EFFECT ROTARY DISTILLATION PROCESS

Joseph A. Ciocca, and Gregory W. Knowles, both of Huntington, N.Y., assignors to Grumman Allied Industries, Inc., Bethpage, N.Y.

Filed Nov. 10, 1981, Ser. No. 320,100

Int. Cl.³ B01D *1/26, 3/08*

U.S. Cl. 203—11 **3 Claims**



1. A thermally driven, multi-effect distillation process comprising the steps of:

(a) introducing liquid to be distilled into a plurality of evaporating and condensing stages and forming thin film evaporating and condensing layers of said liquid in said plurality of stages while passing heat energy through said plurality of stages in a direction countercurrent to the flow of liquid into said stages,

(b) evaporating the liquid in each of said stages and forming condensate and distilland thereof while transferring substantially all of the heat of condensation therefrom to the next downstream evaporating and condensing stage and while maintaining a minimum temperature differential of about 3° F. between each stage of said plurality of stages, and

(c) separately removing the condensate and distilland from each of said stages while rotating said stages about an axis which passes through the points of introduction to said stages of said liquid to be distilled and said heat energy, at a speed of rotation at least sufficient to generate a centrifugal force and disperse said thin films of said distilland, collect said condensate, generate rings or columns of said liquid in said stages and balance and maintain the differential pressures between said stages.

4,451,335

METHOD FOR PRODUCING FULL COLOR IMAGES ON ALUMINUM

Jack L. Woods, 1517 9th St.; Craig P. Woods, 548 Simeron, and Richard L. Woods, 1517 9th St., all of Ogden, Utah 84404

Continuation of Ser. No. 209,526, Nov. 24, 1980, abandoned. This application Jan. 26, 1983, Ser. No. 461,220

Int. Cl.³ C25D *11/18*

U.S. Cl. 204—35 N **8 Claims**

1. A method of decorationg articles of aluminum comprising the steps of

anodizing said aluminum article in an aqueous acid electrolyte consisting essentially of from about 165 to 250 grams per liter sulfuric acid, from about 10 to 30 milliliters per liter of an organic carboxylic acid containing at least one reactive group in the alpha-position wherein said reactive group is a hydroxy, amino, keto or carboxyl group, and from about 10 to 30 milliliters per liter of a polyhydric alcohol of from 3 to 6 carbon atoms, with the temperature of the electrolyte being maintained at between about 60° and 75° F. and the current density being maintained at between about 18 to 48 amps per square foot so as to form an anodized layer on the surface of said aluminum article, said layer having a thickness of between about 0.4 and 1.0 mils;

placing a dry film in intimate contact with said anodized layer, said dry film containing a dye capable of subliming when heated;

heating said dry film sufficiently to cause at least a portion of said dye to sublime and condense within said anodized layer; and

thereafter sealing said anodized layer on the surface of said aluminum article.

4,451,336

ADDITIVE-FREE, FAST PRECIPITATING PALLADIUM ELECTROLYTE BATH AND PROCESS

Frank Vangaever; Jacky Vanhumbeeck, both of Brugge; Laurent Danneels, Varsenare; Luc Boone, Oostkamp, and Luc Demaegd, Drongen, all of Belgium, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 443,011

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148788

Int. Cl.³ C25D *3/50*

U.S. Cl. 204—47 **10 Claims**

1. An additive-free, fast-precipitating electrolyte bath for precipitating palladium layers, said bath being formulated by successively adding to distilled water heated up to about 90° C., phosphoric acid, sufficient ammonia to about neutralize said phosphoric acid and palladium chloride and adjusting the operating pH value of the resultant bath to about 6.5 through 8.5 by additions of ammonia or phosphoric acid as required.

4,451,337

HEAT RECOVERY IN ALUMINIUM-MELTING WORKS

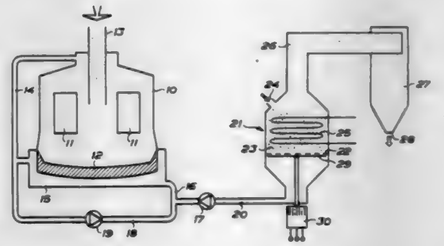
Eyvind Frilund, Hasselvägen 7, Åkarp, Sweden (S-232 02), and Per Holmberg, Hospitalsgatan 12 B, Lund, Sweden (S-223 53)

PCT No. PCT/SE82/00367, 371 Date Jun. 30, 1983, 102(e) Date Jun. 30, 1983, PCT Pub. No. WO83/01631, PCT Pub. Date May 11, 1983

PCT Filed Nov. 4, 1982, Ser. No. 513,967

Int. Cl.³ C25C *3/06, 3/14*

U.S. Cl. 204—67 **2 Claims**



1. A method for heat recovery in a furnace for the manufacture of aluminum by melting electrolysis of alumina, said method comprising the steps of passing furnace gases past a cathode in the furnace for heat exchange therewith while the cathode is being cooled; passing the furnace gases through a bed of alumina while the bed is being fluidized around at least one tube coil for heat exchange between the furnace gases and an external fluid passing through the at least one tube coil; removing entrained solid particles from the furnace gases which have passed through the fluidized bed of alumina, which solid particles are recovered; replenishing the fluidized bed to compensate for material removed therefrom; and supplying the recovered solid particles to the furnace.

4,451,338

PROCESS FOR MAKING A CALCIUM/SODIUM FERRATE ADDUCT BY THE ELECTROCHEMICAL FORMATION OF SODIUM FERRATE

J. Paul Deininger, and Ronald L. Dotson, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 246,789, Mar. 23, 1981, abandoned. This application May 2, 1983, Ser. No. 490,756

Int. Cl.³ C25B *1/30*

U.S. Cl. 204—86 41 Claims

1. A process for producing a calcium/sodium ferrate adduct, utilizing an electrolytic cell having an anolyte chamber containing an anode, a catholyte chamber containing a cathode, and a separator between said chambers, said process comprising the steps of:

(a) maintaining an aqueous mixture of a sodium hydroxide solution and a sodium ferrate-stabilizing proportion of at least one sodium halide salt in said anolyte chamber, said anolyte chamber additionally containing ferric ions;

(b) maintaining an aqueous sodium hydroxide solution in said catholyte chamber;

(c) passing an electric current and impressing a voltage between said anode and said cathode whereby sodium ferrate is formed from said ferric ions in said sodium hydroxide solution in said anolyte chamber;

(d) reacting said sodium ferrate while in said sodium hydroxide solution with a calcium compound to precipitate said adduct from said sodium hydroxide solution; and

(e) recovering said precipitated adduct from said sodium hydroxide solution.

4,451,339

PREPARATION OF BLUE IRON HEXACYANOFERRATE-III PIGMENTS, AND THE PIGMENTS OBTAINED

Joachim Kranz, Ludwigshafen; Wolfgang Habermann, Mainz; Harry Distler, Bobenheim; Helmut Knittel, Ludwigsburg; Karl-Ludwig Hock, Ludwigshafen; Fritz Brunnmueller, Limburgerhof, and Rolf Schneider, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,431

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113777

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—91 8 Claims

1. In a process for the preparation of blue iron hexacyanoferrate-III pigments, wherein the iron-II hexacyanoferate-II compound is prepared, isolated and then oxidized to the blue pigment, the improvement wherein the iron-II-hexacyanoferrate-II compound is prepared by anodic oxidation of metallic iron at pH<7 and at an anode potential of <0.76 V—measured against the standard hydrogen electrode—at from −20° to 150° C., in a reaction medium comprising hydrogen cyanide, in a suitable solvent.

4,451,340

METHOD FOR THE ELECTROLYTIC PRODUCTION OF LEAD

Marco V. Ginatta, Turin, Italy, assignor to Elettrochimica Marco Ginatta SpA, Turin, Italy

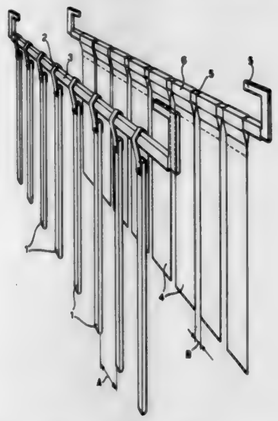
Filed May 26, 1983, Ser. No. 498,425

Claims priority, application Italy, Jun. 4, 1982, 67723 A/82

Int. Cl.³ C25C *1/18*

U.S. Cl. 204—117 20 Claims

1. A method for the production of electrolytic lead from solutions containing lead resulting from both primary extraction processes and scrap processing operations, comprising: electrolyzing the solution between insoluble anodes made of uncoated graphite for oxygen evolution and noncontinuous



cathodes for the production of lead in the presence of cobalt in an electrolyte.

4,451,341

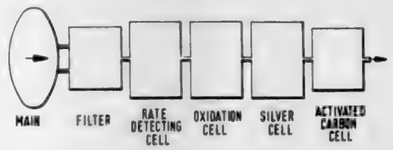
ELECTROLYTIC WATER STERILIZATION SYSTEM

Jeorge Miller, Bogota, Colombia, assignor to Hidrotronic de Colombia, S.A., Colombia

Filed Dec. 29, 1982, Ser. No. 454,499

Int. Cl.³ C02F *1/46*

U.S. Cl. 204—149 12 Claims



1. Electrolytic water sterilization system comprising: a flow rate detecting cell comprising a plurality of electrodes having nonconducting particles situated therebetween for detecting the flow rate of water through the cell in an arrangement wherein the flowing water expands the volume of the nonconducting particles which results in a reduction of the electrical resistance between the electrodes, an oxidation cell comprising electrodes for the production of oxidizing material, a silvering cell comprising electrodes for the production of silver ions, and a pipe connecting a source for the water with the rate detecting cell, the oxidation cell, the silvering cell and the outlet for the sterilized water.

4,451,342

LIGHT DRIVEN PHOTOCATALYTIC PROCESS

Norman N. Lichtin, Newton Center, and Kalambella M. Vijayakumar, Allston, both of Mass., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 3, 1982, Ser. No. 374,559

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 R 14 Claims

1. A method for the light driven photocatalytic reduction of carbon dioxide or the bicarbonate ion to at least one compound which comprises contacting at least one metal compound catalyst selected from the group consisting of of CoO, Co_3O_4, Co_2O_3, Cr_2O_3, Cu_2O, CuO, La-Ni-oxide, platinized La-Ni-oxide, La_2O_3, Nd_2O_3, NiO, PbO, and mixtures and combinations thereof with at least one of carbon dioxide and the bicarbonate ion in the presence of a reducing agent and in the absence of other carbon sources and separate physical electrolyte and electrodes, and conducting said contacting in the presence of light so that the energy of reduction is essentially supplied by said light.

4,451,343

PHOTO-INITIATORS FOR DECARBOXYLATION REACTIONS

Rosemary Bartoszek-Loza, Solon, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Sep. 2, 1983, Ser. No. 528,764

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R 14 Claims

1. A process for the photochemical decarboxylation of an alpha-hydroxy carboxylic acid to form high yields of the corresponding alcohol comprising irradiating a mixture of (a) a solution containing the alpha-hydroxy carboxylic acid and (b) a free radical initiator selected from the group consisting of peroxide and azo compounds.

4,451,344

METHOD OF MAKING EDGE PROTECTED FERRITE CORE

Robert W. Burkhart, Pima, Ariz.; Allen R. Cox, and John D. Hartley, both of Hampshire, England, assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 362,425, Mar. 26, 1982, Pat. No. 4,418,473. This application Jun. 23, 1983, Ser. No. 507,256

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R 20 Claims

1. A process for depositing films on both side surfaces of a very thin substrate comprising the steps of:

placing at least one substrate in a vacuum deposition system such that the exposed side surfaces of the substrate are disposed perpendicular to and spaced from a target of the film material to be deposited;

operating the vacuum deposition system such that a film layer of the target material is simultaneously deposited on all of said exposed side surfaces of said placed substrate; and

removing the substrate from the system after the required film thickness is deposited on said side surfaces from said operated system.

4,451,345

ELECTRODE SUPPORT DEVICE FOR CONTINUOUS ELECTROPLATING BATH

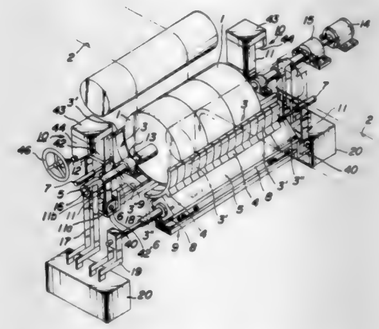
Hiroshi Nemoto; Kazuaki Miyachi, and Akira Komoda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 31, 1983, Ser. No. 528,165

Int. Cl.³ C25D *17/00*

U.S. Cl. 204—206 6 Claims

1. An electrode support device for a continuous electroplating bath, including current supply rotating drums whose parts are immersed in said electroplating bath, a metal strip to be plated being trained about the immersed parts of the rotating drums, and a number of arcuate consumable electrodes arranged side by side along generators of said rotating drums and successively movable on support surfaces of electrode supports so as to supply new consumable electrodes at one ends of the arranged electrodes and remove cosumed electrodes from the other ends, said support device comprising adjusting means for adjusting said electrode supports to remove any unevenness of gaps between said metal strip and said consumable electrodes.



4,451,346

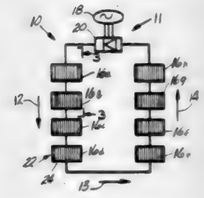
MEMBRANE-ELECTRODE PACK ALKALI CHLORINE CELL

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 128,684, Mar. 15, 1980, abandoned. This application Jun. 25, 1981, Ser. No. 276,763

Int. Cl.³ C25B *9/04, 11/02, 15/08, 15/02*

U.S. Cl. 204—228 10 Claims



1. A monopolar membrane electrolytic cell connected as one of a predetermined number of adjacently positioned electrolytic cells in an electrical series circuit, said cell comprising:

a plurality of vertical, hollow, foraminous, planar anode frames extending in a direction parallel to an overall path of current flow through said cell;

a plurality of vertical, hollow, foraminous, planar cathode frames extending in said direction and alternating interleaved with said anodes;

a plurality of sheets of cation exchange membrane material oriented in said direction, one of said sheets being pressed between each opposite pair of said anodes and cathodes;

sealing means between each of said frames and said sheets;

pressing means for pressing, transversely to said direction, said frames together in a pack against said membranes and sealing means so as to form a substantially fluid-tight cell;

raw material supply conduits and product withdrawal conduits communicating with the interior of each of said hollow anode and cathode frames;

a plurality of substantially horizontal anode conductor rods extending into said anode frames in said direction from a first side of said pressed pack;

a plurality of substantially horizontal cathode conductor rods extending into said cathode frames in said direction from a second side, opposite to said first side, of said pressed pack;

an anode terminal outwardly extending in said direction from said first side of said pack;

a cathode terminal outwardly extending in said direction from said opposite second side of said pack;

an anode current collector adjacent said first side of said pack and oriented transversely to said direction connected to said plurality of anode frames and said anode conductor rods thereby electrically connecting said anode conductor rods to said anode terminal;

a cathode current collector adjacent said opposite second side of said pack and oriented transversely to said direction connected to said plurality of cathode frames and said cathode conductor rods thereby electrically connecting said cathode conductor rods to said cathode terminal;

first intercell connector means connecting said anode terminals of said cell with the cathode terminals of a first of said adjacently positioned electrolytic cells and second intercell connector means connecting said cathode terminals of said cell with the anode terminals of a second of said adjacently positioned cells, said first and second intercell connector means being connected to said adjacently positioned cells in a manner that permits the electrical current to be rapidly and safely disconnected to remove said cell from the series circuit;

the total number of said anode and cathode frames in said pressed pack being within the range of from about 5 to about 50; and

the ratio of thickness of said pressed pack to the height of said cathode and anode frames being no more than approximately 2:1 thereby facilitating disconnecting said first and second intercell connector means between the adjacently positioned electrolytic cells.

4,451,347

FILTER-PRESS TYPE ELECTROLYZER FOR WATER

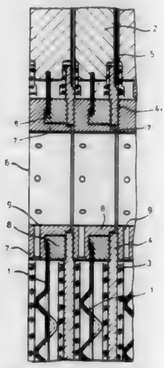
Heinz Wüllenweber, Frankfurt am Main, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,533

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101120

Int. Cl.³ C25B *9/00, 1/10, 1/12, 1/08*

U.S. Cl. 204—258 **4 Claims**



1. In a filter-press-type electrolyzer for water comprising pressure-resisting decomposing cells, each of which comprises an electrolyte chamber divided by a diaphragm into two electrode compartments and enclosed on the outside by two cell frames whose sections are electrically insulated from each other by an interposed sealing ring, and which is separated on the sides from the adjacent cells by metallic cell-separating partitions, at least three ducts, each of which is composed of sections and which respectively serve to supply electrolyte and to discharge hydrogen and oxygen extend through the cells being provided, the sections of the ducts consisting of sleeves which are resistant with respect to the operating conditions and insulated from each other and extend through the cell-separating partitions in openings framed with metal rings, the improvement wherein a metal ring is secured to each of the cell-separating partitions by a gas- and liquid-tight welded joint and the sleeves are slidably fitted in the metal rings.

4,451,348

FUNCTIONAL ELECTRODE

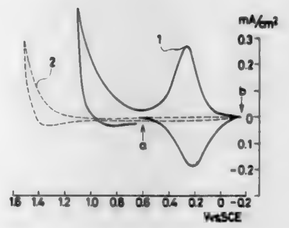
Kingo Itaya, Tagajo; Kimio Shibayama; Shinobu Toshima, both of Sendai; Tatsuaki Ataka, and Koji Iwasa, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,790

Claims priority, application Japan, Jan. 12, 1982, 57-3044

Int. Cl.³ C25B *11/08;* **C25D** *11/34;* **H01M** *4/88*

U.S. Cl. 204—290 R **12 Claims**



1. A functional electrode usable as an electrochromic display electrode, as a catalyst electrode effective to catalyze the evolution of oxygen and chlorine, and the like comprising: a conductor having electric conductivity at least at the surface, and a colored film deposited on the surface of the conductor, wherein said colored film is comprised of a compound of the formula $M^{I}M(III)[M'(II)\ (CN)_6]$ or $M(III)_4\ [M'(II)\ (CN)_6]_3$ wherein M(III) is Fe(III), Ru(III) or Os(III), M'(II) is Fe(II), Ru(II) or Os(II) and M^{I} is an alkali metal cation, with the proviso that said compound does not contain both Fe(III) and Fe(II).

4,451,349

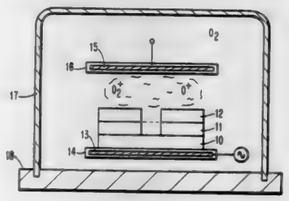
ELECTRODE TREATMENT FOR PLASMA PATTERNING OF POLYMERS

James T. Yeh, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,629

Int. Cl.³ C23C *15/00;* **C23F** *1/00*

U.S. Cl. 204—298 **9 Claims**



1. Polymer etching apparatus, for patterning a film of polymer on a sample, including a reaction chamber having an electrode, portions of which electrode are in the vicinity of the sample being etched, characterized by:

a coating, on portions of electrode in the vicinity of the sample being etched, which portions are to be exposed to accelerated particles which cause sputtering of electrode material, of a layer of material of

the same material as the material being etched,

whereby the coating on the electrode etches at a rate comparable to the etch rate of the film to be etched from the surface of the sample, eliminating the effect of backscattering of electrode material onto the etch areas of the sample.

4,451,350

SENSOR FOR MEASURING DENSITY OF OXYGEN IN MOLTEN METAL

Yutaka Tsuchida; Mikio Mugita, both of Fukuyama; Yutaka Nakano, Funahashi; Naoaki Sasaki, Tokyo; Kenki Ishizawa, Bizen, and Hiroshi Kuroshima, Okayama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo; Osaka Oxygen Industries Ltd., Osaka and Shinagawa Shirorenga Kabushiki Kaisha, Tokyo, all of, Japan

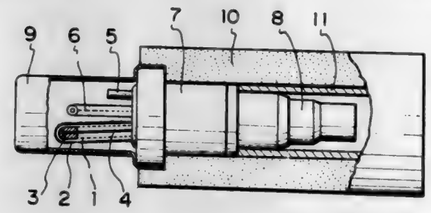
PCT No. PCT/JP81/00214, 371 Date Mar. 29, 1982, 102(e) Date Mar. 29, 1982, PCT Pub. No. WO82/00892, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 3, 1981, Ser. No. 367,227

Claims priority, application Japan, Sep. 5, 1980, 55-122412

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—422 **11 Claims**



1. In an oxygen sensor for measuring the oxygen content of molten metal comprising a solid ion conductive electrolyte having an inner and an outer surface, said solid electrolyte having a protective coating containing a binding agent on the outer surface thereof intended to be immersed in the molten metal being measured,

the improvement comprising said protective coating containing powders of at least one metallic fluoride.

4,451,351

METHOD OF LIQUEFACTION OF CARBONACEOUS MATERIALS

Clifford R. Porter, Arvada, Colo., and Herbert D. Kaesz, Los Angeles, Calif., assignors to Pentanyl Technologies, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 207,714, Nov. 17, 1980, Pat. No. 4,325,802. This application Apr. 19, 1982, Ser. No. 369,773

Int. Cl.³ C10G *1/06, 1/00;* **C10B** *43/00;* **C07C** *1/00*

U.S. Cl. 208—10 **19 Claims**

1. A method of converting carbonaceous materials to liquid products under conditions of temperature and pressure which do not produce significant thermal bond rupture in the carbonaceous materials consisting essentially of:

contacting the carbonaceous material with a solvent/solute system consisting of:

(a) an organic phase solubilizing agent containing more than 50% by weight of a member selected from the group consisting of aromatic phenols, polycyclic phenols, substituted phenols and mixtures thereof; and

(b) an inorganic phase comprising an aqueous solution of a compound having a cation selected from the group consisting of alkali and alkaline-earth metals at a temperature less than about 350° C. and a pressure of at least 400 psig.

4,451,352

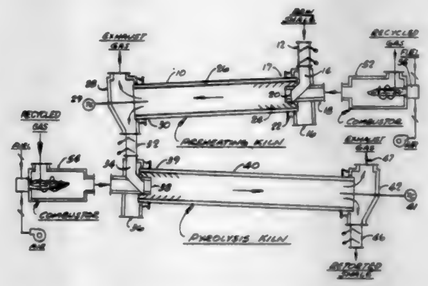
PROCESS OF PRODUCING OIL BY PYROLYSIS

Noel H. Twyman, Canyon Lake, Calif., assignor to Automated Production Systems Corporation, Tustin, Calif.

Filed Jul. 20, 1981, Ser. No. 285,038

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—11 R **12 Claims**



1. A process for recovering or obtaining hydrocarbon compounds from naturally occurring deposits of a mineral matrix interpolated with kerogen which includes heating the raw material employed for a period and at a temperature which together are sufficient so that pyrolysis products from the kerogen are produced and volatilized and then separating these products from the remainder of the mineral matrix in which the improvement comprises:

the heating consisting of two separate heating steps—an initial step and a final step—which are carried out separately from one another by concurrent movement of a hot gas stream and the material being heated through the kiln in which the step is performed with the second step following the first so as to minimize any decrease in the temperature of the heated material as the material passes from one step to the other,

the material being treated being heated during the initial step by contact with a hot gas stream containing insufficient oxygen for there to be any noticeable combustion to occur during this initial step, as the material is agitated for a period and to a temperature which together are sufficient so that if any further heating would occur pyrolysis products of the kerogen would be vaporized to a significant extent,

separating the material heated during the initial step from the hot gas stream used to heat this material,

The material being treated being further heated during the second, final step by contact with a different hot gas stream as this material is agitated for a period and to a temperature which together are sufficient to produce and volatilize substantially all the volatiles which can be obtained or derived from the mineral material being processed, and

then separating this material from the hot gas stream and the volatiles produced during the second final heating step.

4,451,353

SOLVENT DEWAXING WAXY HYDROCARBON DISTILLATES USING A COMBINATION POLY ACRYLATE POLYMER AND POLYMETHACRYLATE POLYMER DEWAXING AID

Cedric L. Briens, Richmond; Bruce M. Sankey, and Patrick C. Ewener, both of Sarnia, all of Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

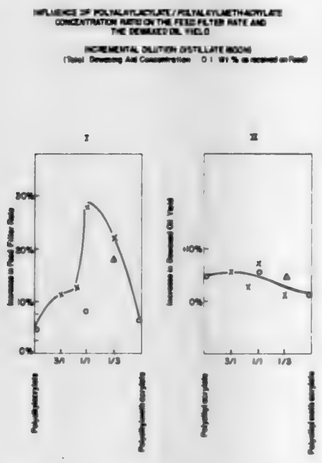
Filed Sep. 29, 1982, Ser. No. 426,676

Int. Cl.³ C10G *73/04*

U.S. Cl. 208—33 **10 Claims**

1. A solvent dewaxing process comprising mixing a waxy hydrocarbon oil distillate with dewaxing solvent and dewaxing aid wherein said dewaxing aid comprises a mixture of:

A. a poly acrylate; and
B. an n-alkyl methacrylate polymer;
wherein components (A) and (B) constituting the dewaxing aid are used in a weight ratio to each other ranging from



about 1/100 to 100/1 of (A)/(B), and chilling said oil/dewaxing solvent/dewaxing aid mixture to form a slurry comprising solid particles of wax and a solution of dewaxed oil and dewaxing solvent and separating said wax from said dewaxed oil solution.

4,451,354
PROCESS FOR UPGRADING HYDROCARBONACEOUS OILS

Gordon F. Stuntz, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Jan. 3, 1983, Ser. No. 454,875
Int. Cl.³ C10G *65/12, 69/02*
U.S. Cl. 208—56 7 Claims



1. A process for upgrading a sulfur-containing heavy hydrocarbonaceous oil feed comprising heavy constituents, including at least 10 volume percent materials boiling above 1050° F., which consists essentially of the steps of:
(a) contacting said heavy oil feed with a hydrorefining catalyst in the presence of added molecular hydrogen in a hydrorefining zone at hydrorefining conditions such as to convert at least a portion of the heavy constituents of said oil to lower boiling hydrocarbons, said hydrorefining conditions including a temperature ranging from about 680° to 775° F. and a hydrogen partial pressure ranging from about 800 to about 1500 psig to produce a hydrorefined oil;
(b) contacting at least a portion of said hydrorefined oil in the presence of a hydrogen donor diluent and of molecular hydrogen in a cracking zone to crack at least an additional portion of said heavy constituents to lower boiling hydrocarbon, said cracking conditions including a temperature ranging from about 775° to 850° F. and a hydrogen partial pressure ranging from about 250 to 1500 psig; and
(c) recovering an upgraded hydrocarbonaceous oil.

4,451,355
VANADIUM PASSIVATION IN A HYDROCARBON CATALYTIC CRACKING PROCESS

Bruce R. Mitchell, Lower Burrell, and Roger F. Vogel, Jefferson Township, Butler County, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Sep. 28, 1983, Ser. No. 536,754
Int. Cl.³ C10G *11/05;* B01J *21/06, 29/06'*
U.S. Cl. 208—113 8 Claims

1. A process for the conversion of a hydrocarbon oil feed having a significant concentration of vanadium to lighter oil products which comprises contacting said feed under conversion conditions with a cracking catalyst containing a calcium-containing additive selected from the group consisting of calcium-titanium, calcium-zirconium, calcium-titanium-zirconium oxides and mixtures thereof.

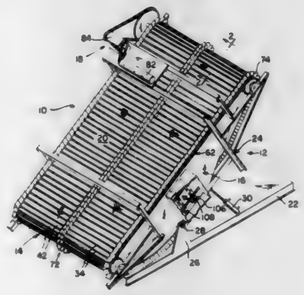
4,451,356
CATALYTIC DEHYDROXYLATION OF PHENOLS

Wim J.M. Pieters, Morristown, N.J., and Gerard M. Prilutski, New Castle, Del., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 218,526, Dec. 22, 1980, abandoned. This application Apr. 23, 1982, Ser. No. 371,455
Int. Cl.³ C10G *17/00, 45/00;* C07C *1/20*
U.S. Cl. 208—263 16 Claims

1. A process for dehydroxylating a phenolic compound comprising contacting said phenolic compound or mixture thereof in the vapor phase with a reducing atmosphere substantially comprising hydrogen sulfide, as the reducing agent, in the presence of a sulfur-tolerant metal sulfide catalyst at elevated temperature, wherein said atmosphere further comprises from about 0.001 to about 15 volume percent hydrogen gas.

4,451,357
APPARATUS FOR DRY PLACER MINING AND METHOD OF OPERATING SAME

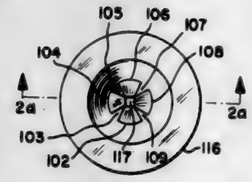
Gordon LaVigne, Box 153 Tiger Star Rt., Colville, Wash. 99114
Filed May 17, 1982, Ser. No. 379,190
Int. Cl.³ B03C *7/08*
U.S. Cl. 209—131 18 Claims



1. Apparatus for dry placer mining to concentrate metallic constituents from a gravel mix comprising same, said apparatus comprising:
a. a frame for supporting and guiding an endless separation belt along a closed path including an upwardly inclined segment for receiving a gravel mix containing a low concentration of metallic constituents;
b. endless separation belt means, including:
(i) a woven mesh belt member having raised loop elements and transversely extending interstices;
(ii) a plurality of riffle members disposed in spaced, generally parallel relationship through selected ones of said interstices; and,
(iii) a composite fabric member secured to the underside of said mesh belt, comprising a layer of air-pervious polymeric foam disposed intermediate upper and lower layers of cloth fabric; and,
c. fluidizing means for passing a fluidizing gas upwardly through said separation belt substantially uniformly along and about said upwardly inclined segment to fluidize said gravel mix and concomitantly establish an electrostatic charge proximate said separation belt; wherein the combined fluidization of gravel and electrostatic charge effectuate a substantial separation of said metallic constituents from said mix and retention of the former proximate said riffles thereby concentrating the metallic constituents for recovery.

4,451,358
NONCIRCULAR REJECTS OUTLET FOR CYCLONE SEPARATOR

David E. Chupka, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio
Continuation of Ser. No. 322,831, Nov. 19, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,191
Int. Cl.³ B04C *5/14*
U.S. Cl. 209—144 9 Claims

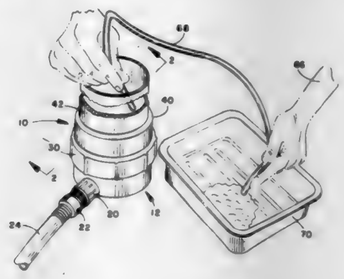


1. In a cyclone separator comprising means forming a separation chamber, a first end thereof having a generally circular cross-section and including a tangential inlet to said separation chamber through which a fluid suspension of material enters, and a central outlet therefrom through which the accepts portion of said fluid suspension exits said separation chamber, the opposite end of said separation chamber tapering toward an outlet of smaller flow area than said chamber through which the rejects portion of said fluid suspension exits said separation chamber, the improvement comprising wall means, said wall means including a plurality of tapering wall portions extending along the longitudinal axis of said separator which define an outlet having a non-circular cross-section, said outlet being continuously open during the operation of said separator.

4,451,359
HYDRAULIC FLOW DISTRIBUTOR IN GOLD SEPARATOR AND METHOD

Daniel Osterberg, 5728 Tarpey Dr., Fresno, Calif. 93727
Filed Mar. 30, 1982, Ser. No. 363,533
Int. Cl.³ B03D *5/68*
U.S. Cl. 209—158 5 Claims

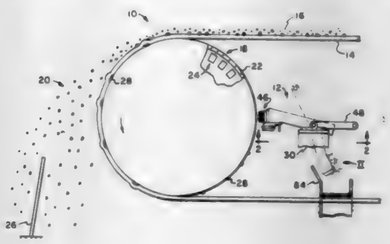
1. A gold separator comprising:
an upright riser tube of uniform cross section defining an upright separation zone;
a flow distributor extending across the entire bottom of said tube, said flow distributor having a body comprised of upper and lower rings, said rings being secured together, a perforated plate supported by said lower ring, a coarse screen supported by said upper ring, a disc of fibrous material positioned adjacent said perforated plate and a fine screen positioned adjacent said coarse screen, said fine screen and said disc of fibrous material being dimensioned to fill the space between said perforated plate and said coarse screen, said flow distributor providing non-turbulent water upflow through said separation zone in said riser, with minimal transverse differences in water flow across said separation zone so that upflowing water can fluidize a bed of heavy concentrates to permit separation thereof;



a base, said base supporting said flow distributor and supporting said upright riser and a water connection on said base for supplying water for upflow through said flow distributor and upflow through said riser tube for providing non-turbulent water upflow to fluidize a bed of heavy concentrates in said separation zone to permit separation thereof.

4,451,360
DEVICE FOR REMOVAL OF MAGNETIC PARTICLES FROM A MAGNETIC SEPARATOR

Robert W. Salmi, Township of Arbo, County of Itasca, Minn., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Jan. 25, 1982, Ser. No. 342,561
Int. Cl.³ B03C *1/18, 1/30*
U.S. Cl. 209—230 20 Claims



1. Apparatus for removing adherent magnetically attractable particles comprising:
a. a surface to which the particles are attracted;
b. source of magnetic force disposed beneath said surface;
c. a cleaning assemblage operatively disposed in relation to said surface, said cleaning assemblage comprising bracket means and a plurality of magnetically soft tines of varying diameters to affect attraction of particles of varying sizes respectively, each of said tines being affixed by one end thereof to said bracket means; and,
d. means for moving said assemblage into a first position in which said tines are disposed substantially normal to said surface and in close proximity with said surface so as to cause said magnetic force to be concentrated on said tines to attract said adherent particles to said tines, and for moving said assemblage to a second position away from said surface for the discharge of the particles from said tines.

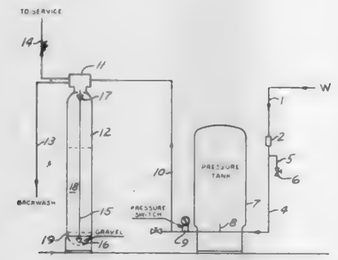
10. An apparatus for separating magnetically attractable particles from particles which are not magnetically attractable which comprises:

a. a continuously moving conveyor belt operably disposed to carry a mixture of said particles to a deposit point;
b. a head pulley having an outer surface operatively engaging said conveyor belt such that said conveyor belt is disposed about said head pulley so as to define upper and lower sections of said conveyor belt, said head pulley being provided with a source of magnetic force operative to radially attract said magnetically attractable particles passing on said conveyor belt over said head pulley; and,
c. means for removing said magnetically attractable particles which have become adhered to said outer surface of said head pulley while said conveyor belt is moving, said removal means comprising:
i. a cleaning assemblage effective to attract said particles to said assemblage; and
ii. means for moving said assemblage into a first position interposed between said upper and lower sections of said conveyor belt which pass over said head pulley and adjacent said outer surface of said head pulley so that in said first position said cleaning assemblage is disposed in close proximity to and substantially normal to said surface for attracting said adherent particles to said cleaning assemblage and for moving said cleaning assemblage to a second position away from said surface for discharge of the attracted particles from said cleaning assemblage.

4,451,361
APPARATUS FOR REMOVING DISSOLVED IRON FROM WATER

Laurene O. Paterson, Box 953, 1219 E. Church St., Adrian, Mich. 49221

Continuation-in-part of Ser. No. 103,322, Dec. 14, 1979, abandoned, Ser. No. 145,657, May 2, 1980, abandoned, and Ser. No. 210,923, Nov. 28, 1980, abandoned. This application Mar. 5, 1982, Ser. No. 355,164
Int. Cl.³ C02F *1/64*
U.S. Cl. 210—136 **19 Claims**

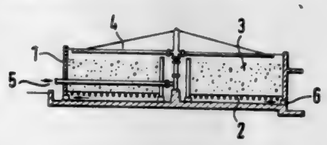


1. Apparatus for removing iron from water which comprises in combination, and in sequential fluid flow connection:
(1) an injector mixer subjecting water having iron therein to high turbulence and high shear to a degree sufficient to colloidalize existing insoluble iron hydrates and form colloidally dispersed iron hydrates from substantially all the dissolved iron present, thereby providing the iron in the form of micelles having a surface charge; said injector-mixer having in sequential fluid communication a nozzle through which a first fluid selected from the group consisting of water, air and oxygen may be passed; a mixing chamber and a diffuser means for raising the pressure of said fluid to that of a downstream system; means for introducing into said chamber a second fluid selected from the group consisting of water, air and oxygen, one of said first and second fluids being water, the other of said first and second fluids being a gas selected from the group consisting of air and oxygen; and auxiliary valving to provide sufficient gas to form colloidally dispersed hydrated iron oxides having a surface charge;
(2) means for maintaining the so-treated water under a pressure within the range from about 10 to 500 psig;
(3) a tank comprising a bed of particulate material having electrostatically charged surface area capable of adsorbing and removing said iron hydrates from the water;
(4) means for passing the water from the injector mixer into the tank and through the bed; and
(5) means for delivering water having low iron residuals from the bed.

4,451,362
FILLING FOR PERCOLATING FILTERS FOR BIOLOGICAL WASTE WATER PURIFICATION

Hans-Hugo Speisberg, Osnabruck, Fed. Rep. of Germany, assignor to Felix Schoeller, Jr., GmbH & Co., KG, Osnabruck, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 277,114, Jun. 25, 1981, abandoned. This application Feb. 17, 1983, Ser. No. 467,258
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047967
Int. Cl.³ B01D *39/04*; C02F *3/04*
U.S. Cl. 210—150 **18 Claims**

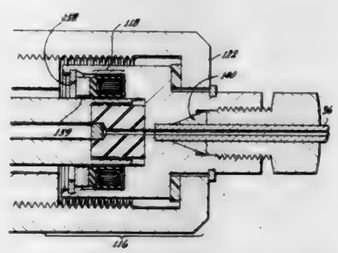


1. A filling for a percolating filter for the biological purification of waste water comprising:
a plurality of flexible, irregularly touching, randomly arranged hanging elongate strips, having a width of up to 8 cm and a length of several meters the thickness of said strips varying between maximum and minimum thicknesses across the width of said strips, said maximum and minimum thicknesses extending longitudinally of the strips between the longitudinal edges thereof and causing said strips to be stressed and curled; and
means supporting said strips in said randomly arranged relationship and such that the longitudinal edges and the longitudinally extending maximum and minimum thicknesses of said strips extend substantially vertically and in the direction of flow of the waste water when the waste water is being purified.

4,451,363
CARTRIDGE FOR LIQUID CHROMATOGRAPH

Robert Brownlee, Los Altos Hills, and Jeremy W. Higgins, Los Altos, both of Calif., assignors to Brownlee Labs Inc., Santa Clara, Calif.

Filed Mar. 3, 1982, Ser. No. 354,394
Int. Cl.³ B01D *13/08*
U.S. Cl. 210—198.2 **6 Claims**

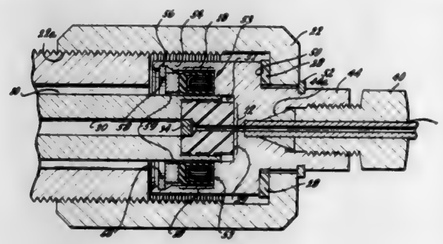


1. In a high-pressure liquid chromatographic system, a replaceable column cartridge for carrying a packing, said cartridge comprising an elongate tube having a concentric bore therethrough, a packing of particulate material disposed in said bore, means forming enlarged first and second recesses concentrically with said bore and in alignment with the bore at each end of the tube, each such recess having a cylindrical sidewall of a diameter larger than the bore and an internally disposed flat bottom wall of annular shape, first and second generally cylindrical seal plugs each having opposing inner and outer parallel faces and dimensioned to slide in a close fit within each respective recess sidewalls and further dimensioned so that, when inserted into the end fitting of a liquid chromatograph, the plugs and cartridge form a self-suporting structure for containing the packing and each plug being adapted to be placed in end-to-end compression resisted solely by the plug surfaces bearing upon the bottom wall of each recess while confined by the recess sidewall, each plug being adapted to bear at its other end in sealed relation upon an end fitting.

4,451,364
HIGH PRESSURE SEAL AND COUPLING

Jeremy W. Higgins, Los Altos, and Robert Brownlee, Los Altos Hills, both of Calif., assignors to Brownlee Labs Inc., Santa Clara, Calif.

Filed Mar. 3, 1982, Ser. No. 354,395
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—198.2 **5 Claims**

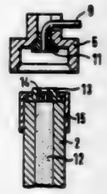


1. Apparatus for coupling a tubular column to a fluid carrying line comprising an end fitting including a body having a bell opening at one end forming a chamber for receiving the end of a tubular column, means connecting the other end of the fitting to the fluid line,
a first seal interposed between the end of the column and the fitting,
means forming a first annular recess formed interiorly in the chamber wall surrounding the column,
a secondary seal of the hydraulic type disposed in said first recess and making circumferential sealing contact to the outer wall of the column,
said end fitting bell having a continuing section extending beyond the first recess and secondary seal,
means forming a second recess or groove formed interiorally in the continuing section,
retaining ring means disposed in said second recess for securing said second seal in position against the secondary seal and against axial movement of the same.

4,451,365
COLUMN CLAMPING DEVICE FOR CHROMATOGRAPHY

Günther Sättler, Reinheim; Werner Gunkel, Rossdorf; Manfred Witzgall, and Reinhard Look, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,667
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143075
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—198.2 **4 Claims**



1. In a device for rapidly changing columns of the type generally used in liquid phase chromatography, said device comprising connectors for each end of a column with respective inlet and outlet for passage into and out of the column of the mobile phase, and the connectors being adapted so that there is no dead volume between column and connector, when connected thereon, due to the combined action of sealing means employed therewith, the improvement wherein said connectors comprise:
upper and lower clamping and sealing elements (3 and 5) having sealing members (11, 20, 23 and 28) extending therefrom and said sealing member shaped to be compatible with the ends of the column to which they are to be sealed against at the inlet and outlets of the column, with said sealing elements having means for passing the liquid phase therethrough, and at least one of said upper and lower clamping and sealing elements (3 and 5) being movable in the axial direction of the column for clamping and unclamping the column; and pressure means for moving at least one of said upper and lower clamping and sealing elements (3 and 5) selectively between an unclamped position and a clamped position at which said pressure means is adapted for exerting a predetermined pressure on the column (2) to ensure substantially complete sealing, and wherein said pressure means comprises a pneumatic cylinder associated with means for moving said at least one of the upper clamping and sealing elements.

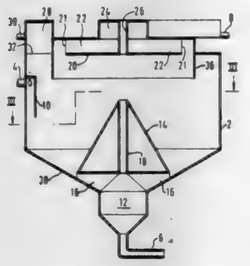
4,451,366
SEPARATOR

Bernard Smisson, Bristol, England, assignor to Hydro Research and Development (UK) Ltd., Bristol, England

Filed Aug. 5, 1981, Ser. No. 290,665
Claims priority, application United Kingdom, Aug. 11, 1980, 8026095
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—209 **11 Claims**

1. A separator comprising:
a substantially closed chamber having a generally cylindrical outer wall and oppositely disposed end walls;
a mixture inlet directed into the chamber to promote within the chamber a primary, circulating flow about a swirl axis extending between the end walls and a secondary, toroidal flow coaxial with the swirl axis;
a first outlet disposed centrally in one of the end walls of the chamber;
a second outlet disposed in the region of the other end wall of the chamber; and
a flow modifying member provided within the chamber

adjacent the first outlet and having a passage therein, the flow modifying member defining with the said one end wall an annular slot which is disposed radially inwardly of the outer wall of the chamber, the flow modifying member being adapted and positioned to cause a portion of the secondary flow to pass radially inwardly, with respect to the swirl axis, through the annular slot and away from the said one end wall through the passage in the flow modifying member.



4,451,367

SEDIMENTATION TANK

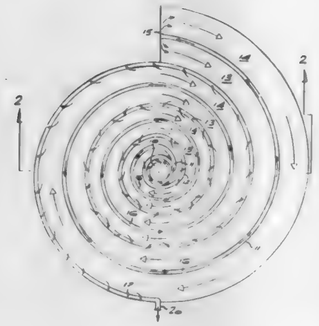
Antonio Ruggeri, Johannesburg, South Africa, assignor to Pasquale Vannucci, Johannesburg, South Africa, a part interest

Continuation of Ser. No. 162,331, Jun. 23, 1980, abandoned. This application Dec. 15, 1981, Ser. No. 330,638

Claims priority, application South Africa, Jun. 28, 1979, 79/3222

Int. Cl.³ C02F *1/52*; B01D *21/01*

U.S. Cl. 210—207 **2 Claims**



1. A sedimentation tank comprising a pair of walls extending from a common pole towards an inlet for flocculated liquid along substantially sprial paths such that the distance between the adjacent turns of each wall, measured along a substantially radial line from the common pole increases with increasing distance away from the common pole, a flocculation flume in one wall and an overflow launder in the second wall, the flume and the launder each having sides the distance between which likewise increases with increasing distance from the common pole, the flocculating flume terminating at the inlet and the launder terminating at a discharge substantially diametrically opposite the inlet.

2. The tank claimed in claim 1 including a mixing well at the common pole for adding flocculating agents which mixing well leads into the flocculating flume.

4,451,368

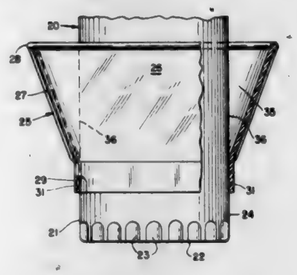
ANNULAR DRIP COLLECTOR AND CAP

Michael N. Pandelena, 15 Old Ferry Rd., Methuen, Mass. 01855, and Peter Strozza, 322 Oak St., Methuen, Mass. 01844

Continuation-in-part of Ser. No. 431,763, Sep. 30, 1982, abandoned. This application Sep. 30, 1983, Ser. No. 537,709

Int. Cl.³ B01D *27/00*

U.S. Cl. 210—238 **11 Claims**



1. In combination with an oil filter cartridge of the type having a cylindrical side wall of generally uniform diameter, a closed end and an opposite, threaded end, for screw-on attachment to a motor block:

a disposable oil drip collector comprising;

a funnel shaped main body having a cylindrical outer closure wall with a central opening substantially equal in diameter to the diameter of said cartridge side wall and sleeved thereon intermediate of the height thereof;

a generally frustro-conical side wall, flaring outwardly from said outer closure wall, at an increasingly spaced distance from said cartridge side wall, and terminating in a rim, having a circular opening of enlarged diameter, substantially greater than the diameter of said cartridge side wall and located beyond the threaded end of said cartridge;

and an annular cap, having a peripheral skirt snap fitted over, and around, said circular rim of said main body, and including an integral, inturned, annular flange with a central circular opening of a diameter substantially equal to the diameter of said cartridge side wall;

said cap and said main body forming an oil spillage reservoir, located adjacent portion of the outside wall of said cartridge and said cap and flange sealing said rim against said motor block to reduce spillage.

4,451,369

FLUID SEPARATION APPARATUS

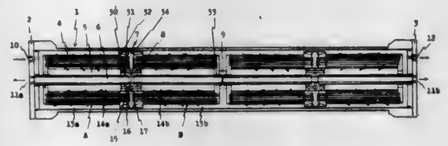
Masaaki Sekino, Otsu; Yoshiyuki Fujita, Kyoto, and Tetsuo Ukai, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Dec. 17, 1981, Ser. No. 331,713

Claims priority, application Japan, Dec. 18, 1980, 55-180171

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.1 **9 Claims**



1. A fluid separation apparatus which comprises at least one pair of unit structures which are arranged uniaxially in series within a cylindrical pressure vessel, each pair of unit structures comprising:

a pair of cylindrical hollow fiber assemblies having a selective permeability;

a pair of cores, each arranged internal to and concentric with a respective one of the cylindrical hollow fiber assemblies;

a pair of permeating fluid pipes, each arranged internal to and concentric with a respective one of the cores;

collecting means connected to one end of each pair of cylindrical hollow fiber assemblies for collecting permeated fluid from the cylindrical hollow fiber assemblies, said collecting means being connected to adjacent ends of their respective cylindrical hollow fiber assemblies; and

fitting means connected to said collecting means and to corresponding ends of each core and permeating fluid pipe, said fitting means being adapted so that the collected permeated fluid passes to the permeating fluid pipes for passage there-through and the remaining fluid passes between the cores.

4,451,370

MEMBRANE SEPARATION ELEMENT

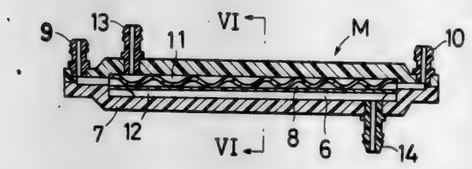
Masataka Murai, and Kiyoshi Ishii, both of Himeji, Japan, assignors to Daicel Chemical Industries Ltd., Hyogo, Japan

Filed Jun. 14, 1982, Ser. No. 388,236

Claims priority, application Japan, Jun. 19, 1981, 56-95469

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.1 **12 Claims**



1. A membrane separation element for filtering a fluid, comprising an inlet, an outlet, and a pair of corrugated semipermeable membranes, each of said membranes having an active surface side and another side, each of said membranes defining a plurality of parallel passages for the fluid to be filtered on the active surface side thereof, and a plurality of parallel passages for the filtrate fluid on the other side thereof, said membranes being placed on each other in such a manner that the passages on the active surface side of one of said membranes face and cross the passages on the active surface side of the other membrane, said membranes being sealed together along a pair of opposite edges which are parallel to the direction in which the fluid to be filtered flows from the inlet to the outlet of said element.

4,451,371

APPARATUS FOR SEPARATING LIQUID FROM A SLURRY

William H. Peck, 5604 W. Prue Rd., San Antonio, Tex. 78240

Filed Jan. 10, 1983, Ser. No. 456,862

Int. Cl.³ B01D *33/00*

U.S. Cl. 210—325 **27 Claims**

1. Apparatus for separating liquid from solids contained in a liquid-solid slurry, which comprises, in combination, driven main shaft means, a centrifugal concentrator, a centrifugal separator, means mounting said concentrator and said separator, respectively, on said shaft means for conjoint rotation about the axis of the shaft means when driven, said concentrator comprising:

a concentrator base plate centrally mounted on said shaft means for rotation about said axis of the shaft means,

a concentrator feed slurry reservoir centrally mounted on said base plate for rotation therewith,

a restrictive reservoir discharge outlet at the perimeter of said reservoir, whereby feed slurry is discharged from the reservoir in a stream nominally to follow a spiral flow path commencing at said outlet and continuing radially therefrom over said base plate, upon rotation of the base plate about said axis to impart centrifugal force to the slurry, and

a spirally curved perforate vane mounted on said base plate for rotation therewith and disposed to intersect said stream at an acute angle to the direction of flow, thereby to cause a fractional portion of the liquid in the slurry stream to pass through the vane therealong while the remainder of the stream travels along the vane to a radially outer concentrator discharge point, whereby the slurry is concentrated,

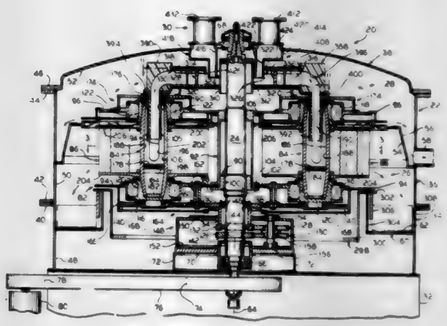
said separator comprising:

a carrier centrally mounted on said shaft means for rotation about said axis of the shaft means conjointly with said concentrator base plate,

a filter basket eccentrically mounted on said carrier for orbital movement about said shaft means axis and for rotation about a centrally disposed basket axis in spaced parallel relation to the shaft means axis,

said filter basket including a base plate normal to and rotatable about said basket axis, and adapted to receive feed slurry on a central region thereof,

said filter basket also including a spirally curved perforate vane mounted on said basket base plate for rotation therewith and extending radially outwardly from said central region,



a separator feed slurry reservoir mounted in juxtaposition to said central region for rotation with said basket base plate, and

a restrictive reservoir discharge outlet at the perimeter of said separator feed slurry reservoir and disposed adjacent to the radially inner end of said basket vane for supplying slurry to the vane adjacent to such end,

whereby feed slurry supplied to said separator feed slurry reservoir is filtered by passage of liquid therefrom through said basket vane commencing adjacent to the inner end of the vane and continuing substantially for the full length of the vane, while solids therefrom are retained on the vane surface for discharge therefrom separately from the filtrate upon rotation of said carrier about said axis of the shaft means at a relatively high rate imparting centrifugal force to said slurry and rotation of said basket about the basket axis at a relatively low rate,

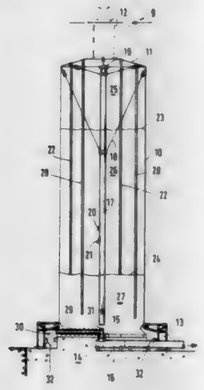
and means for conducting said stream remainder from said concentrator discharge point to said separator feed slurry reservoir.

4,451,372

METHOD AND INSTALLATION FOR PURIFYING CONTAMINATING WATER

Felipe P. Rovira, Soria, Spain, assignor to D. Felipe Pineda S.A., Soria, Spain

Filed Sep. 23, 1981, Ser. No. 304,995
Claims priority, application Spain, Sep. 23, 1980, 495.266
Int. Cl.³ C02F 3/30; C05F 7/00
U.S. Cl. 210—603 **14 Claims**



1. A method of purifying gaseous or liquid or pasty waste, the method comprising the steps of: conveying the waste through a biological filter comprising a filter substrate including solids based on material of organic origin and in various stages of accelerated fermentation, the fermentation being caused by micro-organisms of at least one species resistant to the waste to be treated and capable of decomposing the waste and the filter substrate into harmless solid, gaseous, and liquid products; the filter substrate comprising vertically arranged first, second and third fermentation regions; there being aerobic fermentation in the first and third regions and anaerobic fermentation in the second region; the second region is located between the first and third regions; controlling the fermentation by introducing an oxygen-containing gas into the first and third regions and extracting at least one gas and at least one liquids from the second region so as to maintain the extent of each region and to maintain the temperature and moisture conditions within limits suitable for the process; and extracting decomposed material and harmless solids from the third fermentation region and introducing new filter material to the first fermentation region so that the filter substrate material is renewed by progressive conveyance through the fermentation regions, the renewal rate being such as to ensure complete decomposition of the waste and to maintain survival conditions for the micro-organisms in the three fermentation steps in the filter substrate.

4,451,373

RING CHANNEL AERATION APPARATUS AND METHOD

Paul M. Thayer, Shorewood, Wis., assignor to Water Pollution Control Corp., Milwaukee, Wis.

Continuation-in-part of Ser. No. 140,533, Apr. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 62,880, Aug. 1, 1978, abandoned. This application Oct. 19, 1981, Ser. No. 312,462
Int. Cl.³ C02F 3/12
U.S. Cl. 210—626 **133 Claims**

133. A method of aerating wastewater with flexible allocation of horsepower consumption between circulation and aeration, said method comprising:

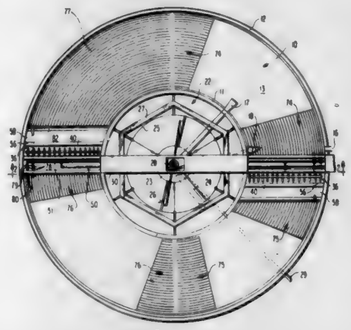
inducing circulation of wastewater in a loop channel along a horizontal flow path at a circulation rate which averages less than about one foot per second over the transverse cross-section of said channel,

by discharging gas into said wastewater through gas discharge means for causing upward and forward motion of the wastewater as it passes through and exits at least one propulsion zone, said zone or zones,

being located in and extending transversely of said flow path, and

occupying a minor portion of the length of said flow path;

bubbling oxidative process gas into the wastewater along said flow path outside said propulsion zone(s) through



horizontally non-propulsive bubble release means having an oxygen transfer efficiency of at least about six;

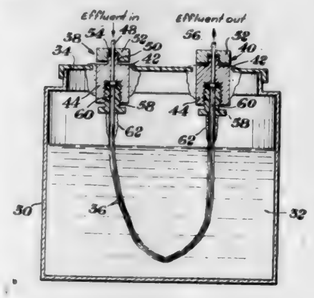
applying about 0.5 to about 5 adiabatic horsepower per million gallons of daily plant throughput for inducing said circulation, while varying the rate of release of oxidative process gas in response to the BOD of the wastewater and independently of the rate of discharge through said gas discharge means, and maintaining the ratio of said horsepower relative to the total of said horsepower plus the adiabatic horsepower consumed in non-propulsive bubbling of process gas in the wastewater in the range of about 0.01 to about 0.35.

4,451,374

LIQUID CHROMATOGRAPHIC METHOD AND POST-COLUMN EFFLUENT TREATMENT FOR DETECTION AND SEPARATION AT OPTIMIZED PH

Dennis P. Peterson, Midland, and James C. Davis, East Lansing, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 274,127, Jun. 16, 1981, abandoned, which is a continuation of Ser. No. 183,526, Sep. 2, 1980, abandoned. This application Feb. 14, 1983, Ser. No. 465,976
Int. Cl.³ B01D 15/08
U.S. Cl. 210—656 **8 Claims**



5. Method of analyzing samples by liquid chromatography comprising adding sample to a silica based chromatographic column means, adding eluent to the chromatographic column means effective to chromatographically displace species of the sample from the chromatographic column means, whereby chromatographically displaced sample species appear ultimately in the effluent of the chromatographic column means, the eluent being at a pH in the range nondetrimental to the silica chromatographic column means, the improvement which comprises feeding the effluent of the chromatographic column means through the internal bore of a hollow fiber membrane, ultimately to a liquid chromatographic detector, and prior to detection, using the hollow fiber membrane for permeation transfer of a mobile reagent into the effluent of the chromatographic column means to enhance the sensitivity of detection of the method by effecting a pH change in the effluent.

4,451,375

IODINE ADSORPTION VIA PICOLYLAMINE ION EXCHANGE RESINS

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1983, Ser. No. 526,303
Int. Cl.³ B01J 41/04
U.S. Cl. 210—670 **4 Claims**

1. A method of extracting iodide ions from an aqueous medium comprising:

(a) contacting an acidic aqueous medium containing iodide ions with a polymer bearing a plurality of moieties each containing at least one picolylamine group;

(b) separating the polymer from the aqueous medium; and

(c) contacting the polymer with a base so as to elute iodide adsorbed by the polymer.

4,451,376

MULTI-FUNCTIONAL HYPOBROMIDE PRECURSORS

John D. Sharp, Brookfield, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 28, 1983, Ser. No. 518,181
Int. Cl.³ C02F 1/50
U.S. Cl. 210—701 **3 Claims**

1. An improved method for treating alkaline industrial process waters to control the growth and deposit of microorganisms which comprises adding to such waters a combination of a water-soluble anionic polymeric dispersant having a molecular weight not greater than 50,000 and hypobromous acid, said hypobromous acid having been produced by contacting a solution containing both:

(a) a water-soluble inorganic bromide, and

(b) an anionic polymeric dispersant

with a second solution of a chlorine containing oxidant chosen from the group consisting of an inorganic hypochlorite salt, hypochlorous acid, and chlorine.

4,451,377

PROCESS FOR CLEANING AN OIL-CONTAMINATED BRINE CONTAINING PARTICULATE DRILL CUTTING SOLIDS

S. Roy Luxemburg, 10530-424 Florida Blvd., Baton Rouge, La. 70815

Filed Feb. 5, 1982, Ser. No. 346,202
Int. Cl.³ B01D 21/01
U.S. Cl. 210—708 **6 Claims**

1. A process for cleaning an oil-contaminated brine containing particulate drill cutting solids, said brine being selected from the group consisting of completion fluids and packer fluids which comprises

admixing together said oil-contaminated brine, and an aqueous solution containing a sufficient amount of a water soluble polymer selected from the group consisting of polyacrylamides, poly (acrylic acid), poly (ethylene oxide) resins, polyvinyl alcohol, carboxymethylcellulose, carrageenan gums, and guar gums, and a filter aid capable of forming an oil-free filtercake containing said particulate drill cutting solids, to demulsify the oil of said brine, and filtering said particulate drill cutting solids from the admixture and forming said oil-free filtercake while passing the oil through the filter with the brine, separating the oil and brine into a floating oil layer and a lower clear oil-free brine, and then removing said oil layer from said brine.

4,451,378

ISOLATION OF 3-ISOPROPYL-2,1,3-BENZOTHIADIAZIN-4-ONE-2,2-DIOXIDE FROM WASTE WATER FROM ITS PREPARATION

Hanspeter Hansen; Hans Merkle, and Albrecht Mueller, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 14, 1982, Ser. No. 434,369
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1981, 3141428
Int. Cl.³ C02F 1/54
U.S. Cl. 210—725 **1 Claim**

1. A process for isolating 3-isopropyl-2,1,3-benzothiadizin-4-one-2,2-dioxide (bentazone) from waste water containing bentazone which comprises:

(a) adjusting the pH of said waste water to a pH in the range of 7.5 to 9.5 and adding about 0.2 to 0.5% by volume, based on the waste water, of about a 40 to 60% by weight aqueous solution of an alkali metal salt or ammonium salt of bentazone;

(b) heating the mixture for about 15 to 30 minutes, at a temperature in the range of 75° to 115° C.;

(c) cooling said mixture to a temperature in the range of 5° to 30° C.; and

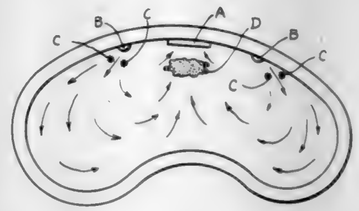
(d) adjusting the pH of the cooled mixture to a pH in the range of 1 to 3 with a mineral acid, to precipitate the bentazone in a free form, thereby allowing the filtration of said precipitate.

4,451,379

METHOD FOR CLEANING THE SURFACE OF SWIMMING POOLS

Richard Levy, P.O. Box 6313, Ft. Myers, Fla. 33906

Continuation-in-part of Ser. No. 297,001, Aug. 27, 1981, abandoned. This application Jun. 1, 1983, Ser. No. 498,684
Int. Cl.³ C02F 1/52, 1/54
U.S. Cl. 210—728 **12 Claims**



1. A method for cleaning leaves, pieces of bark, and other solid, semi-solid debris and scum from a swimming pool, filled with water comprising forming on the surface of the water in the pool an approximately monomolecular film of a nonionic autophobic liquid organic material having an HLB number of 10 or less, a boiling point of 170° C. or higher, bulk viscosity less than 1000 centistokes under conditions or use by applying the organic material at a level of 2–20 $\mu l/m^2$ of water surface, which monomolecular film pushes the surface scum and debris to a preselected region of the pool of water and compacts the suurface scum and debris, and removing the thus-compacted surface scum and debris with a compacted scum and debris

removal device positioned at a remote end of the pool from where said autophobic material is place in said pool.

4,451,380

WASTE DISPOSAL

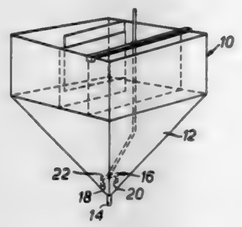
Derek W. Spence, 1 Saltaire Rd., Eldwick, Bingley, West Yorkshire, England

Filed Dec. 3, 1981, Ser. No. 327,224

Claims priority, application United Kingdom, Dec. 6, 1980, 8039183

Int. Cl.³ B01D *21/24*

U.S. Cl. 210—739 **9 Claims**



1. An apparatus for separating heavy solids from an effluent which comprises a tank and a solids discharge outlet communicating therewith, an ultra-sonic sensor located at a predetermined distance from the outlet, and means responsive to the output of the sensor for opening the discharge outlet when the solids concentration exceeds a present limit, the sensor being shielded from aggregates of solids falling through the effluent.

4,451,381

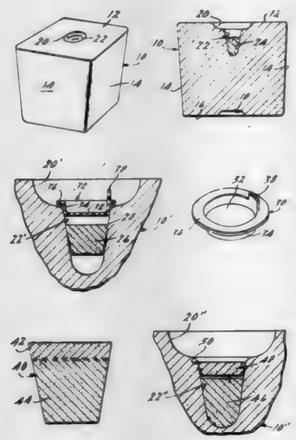
COMPOSITE PLUG FOR STAKE-HOLE OF SALT BLOCKS, SALT BLOCK PRODUCT, AND METHOD OF USING SAME

John F. Heiss, St. Clair, and Richard Kolasinski, Richmond, both of Mich., assignors to Diamond Crystal Salt Company, St. Clair, Mich.

Filed Jul. 26, 1982, Ser. No. 402,096

Int. Cl.³ B65D *85/84*; B32B *9/04*

U.S. Cl. 252—1 **19 Claims**



1. A salt block suitable for use in forming a brine for regenerating and rejuvenating water conditioning ion exchange beds comprising an integral mass of salt in the form of a three dimensional block, a stake hole extending inwardly of one surface of said block into the interior thereof, and a mass of a water soluble rejuvenating agent disposed in said stake hole and positioned inwardly of said one surface.

15. A plug suitable for insertion in an aperture formed in an integral mass of salt for regenerating and rejuvenating water conditioning ion exchange beds comprising a composite mass including a first portion comprised of a water soluble material and a second portion integrally attached to said first portion comprised of a water soluble rejuvenating agent.

19. A method for generating a brine suitable for regenerating and rejuvenating water conditioning ion exchange resins which comprises the steps of providing an integral mass of salt in the form of a three-dimensional block having a stake hole extending inwardly of one surface thereof in which a mass of a water soluble rejuvenating agent is disposed, and contacting said block and said rejuvenating agent with an aqueous liquid to effect dissolution of said salt and said rejuvenating agent to form a brine.

4,451,382

SEWING THREAD LUBRICANTS

John T. Childers, Matthews, N.C., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Jun. 27, 1983, Ser. No. 508,445

Int. Cl.³ D06M *3/38, 13/00*

U.S. Cl. 252—8.6 **14 Claims**

1. A sewing thread lubricant composition comprising:

(a) from about 10 parts to about 60 parts by weight of a hardened coconut oil having a melt point of greater than 25° C.;

(b) from about 10 parts to about 60 parts by weight of a member selected from the group consisting of hydrogenated castor oil and hydrogenated tallow oil and mixtures thereof, said member having a melt point of greater than 30° C.; and

(c) from about 0 parts to about 60 parts by weight of a normally solid paraffin wax.

4,451,383

RECYCLABLE HOT PAD

Gustaf O. Arrhenius, La Jolla, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 866,695, Jan. 3, 1978, Pat. No. 4,331,556. This application Sep. 13, 1979, Ser. No. 74,955

Int. Cl.³ C09K *5/06*; F24J *3/04*

U.S. Cl. 252—70 **4 Claims**

1. In a method of providing for the formation of crystallites or crystal aggregates of a controlled size and of generating heat at a controlled temperature as a result of the formation of the crystallites or crystal aggregates,

providing a melt from sodium thiosulfate pentahydrate with properties of crystallizing in a particular melting temperature interval into a monolithic aggregate,

providing a liquid additive material selected from the group consisting of monohydric alcohols, diols and triols and having properties of absorbing on the surface of the crystals and being occluded in the crystals to control the size of the crystallites ultimately produced where the liquid additive material has a weight to approximately ten percent (10%) of the weight of the melt,

mixing the melt and the liquid additive material in a percentage of the liquid additive material of approximately ten percent (10%) by weight in the mixture to maintain the temperature of crystallization of the mixture at approximately 104° F. and to inhibit the spontaneous crystallization of the mixture at ambient temperatures approaching the particular melting temperature interval,

heating the mixture to a temperature at least equal to the melting temperature interval for a sufficient period of time to convert the melt into a liquid form, and

cooling the mixture to a temperature below the melting temperature interval.

3. In a method of providing for the formation of crystallites or crystal aggregates of a controlled size and generating heat,

providing sodium thiosulphate pentahydrate having properties of crystallizing into a monolithic mass when nucleated and having properties of providing such crystallization in a melting temperature interval,

providing a liquid additive material selected from a group consisting of a monohydric alcohol, diol or triol and having properties of occlusion in the growing crystals and exsolving to separate the growing crystals and limit their size,

providing a surface active material selected from a group consisting of sulfates, phosphates, phosphonates and sulfonates and having properties of reducing the surface tension of the liquid additive material on the growing crystals,

mixing the melt, the liquid additive material in a weight to approximately ten percent (10%) by weight of the mixture and the surface active material in a weight to approximately five percent (5%) by weight of the mixture, and

heating the mixture to a temperature at least equal to the melting temperature interval for a sufficient period of time to convert the mixture to the liquid state, and

cooling the mixture to a temperature below the melting temperature interval without nucleating the melt in the mixture.

4,451,384

HALOFORMAMIDINES BLEACHING AGENT ACTIVATOR FUNCTIONING TO RELEASE ACTIVE OXYGEN

Jean Malafosse, Sassenage, France, assignor to L'Air Liquide - Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

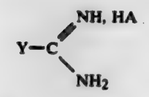
Filed Oct. 7, 1981, Ser. No. 309,503

Claims priority, application France, Oct. 24, 1980, 80 22754

Int. Cl.³ C11D *3/26, 7/54*

U.S. Cl. 252—102 **13 Claims**

4. Stable solid bleaching composition made up by the association of a water-soluble powdery solid derivative releasing hydrogen peroxide in an alkaline aqueous solution and an amidine activator functional at regular or moderate temperature to release active oxygen, said amidine activator being selected from the formula:



wherein Y is halogen, HA being an inorganic acid, said amidine activator being present in sufficient amount to activate the release of hydrogen peroxide at regular or moderate temperature.

8. Stable solid bleaching composition according to claim 4 wherein it further contains detergents.

4,451,385

AGENT FOR REDUCING DETERGENT IRRITATION TO SKIN AND EYES

Edward A. Tavss, Kendall Park; Edward Eigen, East Brunswick, and Kenneth F. Clark, Hazlet, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 15, 1982, Ser. No. 357,917

Int. Cl.³ C07G *7/00*; C08H *1/06*

U.S. Cl. 252—132 **10 Claims**

1. A water-soluble, partially hydrolyzed protein fraction having an isoionic point greater than 7, a Bloom gel value of zero and a molecular weight of about 600 to 12,000, obtained by extraction from a partially hydrolyzed protein mixture and isolation by ion exchange treatment with an anion exchange resin using an optimum weight ratio of resin to partially hydrolyzed protein of approximately 20:1 followed by dialysis.

2. A substantially non-irritating, liquid, detergent composition comprising an aqueous vehicle containing 10% to 50% by weight of a water-soluble, anionic surfactant and about 0.2–5% by weight of a partially hydrolyzed, protein fraction having an isoionic point greater than 7, a Bloom gel value of zero and a molecular weight of about 600 to 12,000 obtained by extraction from a partially hydrolyzed protein mixture and isolation by ion exchange treatment with an anion exchange resin followed by dialysis.

4,451,386

DETERGENT TABLET

David P. Joshi, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 747,585, Dec. 6, 1976, Pat. No. 4,370,250. This application Sep. 29, 1982, Ser. No. 427,987

Int. Cl.³ C11D *3/075, 3/08, 11/02, 17/00*

U.S. Cl. 252—135 **21 Claims**



1. A cleaning tablet comprising a detergent composition produced by:

(a) hydrating a first quantity of anhydrous phosphate builder salt to the maximum in the presence of an alkali metal silicate using sufficient water to form a hydrated slurry;

(b) adding a second quantity of anhydrous phosphate builder salt to said hydrated slurry to form a crutcher mix;

(c) spray drying said crutcher mix to form a particulate material, the weight ratio of said first quantity of builder salt to said alkali metal silicate being from about 1.5 to about 5 and the weight ratio of said first quantity of builder salt to said second quantity of builder salt being from about 0.3 to about 0.7;

(d) combining said particulate material with from about 2 to about 40 percent by weight of an organic material chosen from the group consisting of, nonionic surface active agents and mixtures thereof;

(e) compressing said particulate material to form coherent tablets

said particulate material prior to tableting having a flowability of at least about 70% that of clean dry sand, said particulate material comprising:

from about 60 to 88 percent by weight of spray dried base beads having detergent building properties, comprising from about 45 to about 85% bt weight of an alkali metal phosphate wherein from about 30 to about 60 percent of the phosphate is hydrated and the remainder is anhydrous, from about 5 to about 15 percent by weight of a sodium silicate having an $Na_2O:SiO_2$ ratio of from about 1:1.6 to about 1:3.4 and from about 5 to about 15% water, wherein a portion of the water is present as water of hydration in the hydrated phosphate, the beads being essentially free of organic surfactant, organic detergent or soap, when spray dried;

from about 12 to about 40 percent by weight of a nonionic polyethoxylated synthetic organic detergent;

said beads having a structure of microcrystals and amorphous solid interconnected as an irregular network within the beads, the network defining interconnected irregularly shaped passageways, said passageways comprising a reticular void space within the beads and interconnecting to discrete openings on the external surface of the beads;

the nonionic detergent being applied to the external surfaces of the spray dried beads and being substantially absorbed into the internal passageways of the beads to produce the granular detergent;

the beads, before tableting, having a specific gravity of from about 0.5 to about 0.8;

at least 90% of the beads and the granular detergent having a particle size distributed between 20 mesh and 200 mesh U.S. sieve series, and

the beads, during tableting, being subjected to compression forces of between about ¾ ton to about 3 tons per square inch.

13. A method for producing cleaning tablets comprising hydrating a first quantity of anhydrous phosphate builder salt in the presence of a second quantity of alkali metal silicate to form a hydrated aqueous slurry; adding a third quantity of anhydrous phosphate builder salt to said hydrated slurry to form a crutcher mix; spray drying said crutcher mix to form a particulate material, the weight ratio of said first quantity to said second quantity being from about 1.5 to about 5, the weight ratio of said first quantity to said third quantity being from about 0.3 to about 0.7, combining said particulate with from about 2 to about 40 percent by weight of a liquid or liquifiable organic surface active agent to form detergent beads, compressing said material to form coherent tablets and wherein said hydrating step is performed at a temperature suitable for hydrating said first quantity of phosphate builder salt and said slurry is raised to a temperature that would inhibit hydration of said third quantity of phosphate builder salt.

4,451,387

SUDS CONTROL AGENTS AND DETERGENT COMPOSITIONS CONTAINING THEM

Loui H. T. Tai, Santes, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Aug. 19, 1982, Ser. No. 409,398
Int. Cl.³ C11D *10/06*
U.S. Cl. 252—174.15 **6 Claims**

1. A detergent composition comprising an anionic surfactant and an effective amount of a suds control agent, characterized in that the sud control agent comprises:

(i) a core of gelatinized starch, in an amount from about 45 to 55%;

(ii) a silicon oil composition, in an amount from about 35 to 50%, sorbed thereon, the silicone oil composition being a mixture of silicone oil and hydrophobic silica; and

(iii) the silicone sorbed core coated with a wax in an amount of from about 7 to 15%;

the percentage being based on the total weight of the agent.

4,451,388

PREPARATION OF ALUMINUM OXIDE COATED SILICA SOLS USING ULTRAFILTRATION

Charles C. Payne, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Nov. 2, 1981, Ser. No. 317,041
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—313 S **5 Claims**

1. A method of producing alumina coated silica sols which comprises:

A. Mixing a concentrated deionized silica sol with a concentrated solution of trivalent acidic aluminum salts to obtain a premix,

B. Heating this premix to at least 90° C. for from 1 to 15 minutes to form an alumina reacted silica sol solution,

C. Cooling this alumina reacted silica sol solution to at least 180° F. to form a cooled alumina reacted silica sol solution,

D. Diluting this cooled alumina reacted silica sol solution with deionized water to about 10 weight percent solids to form a diluted alumina reacted silica sol,

E. Exposing the diluted alumina reacted silica sol to ultrafiltration through a membrane having a molecular weight cutoff of about 30,000, and

F. Adding distilled or deionized water to the diluted alumina reacted silica sol during step E to wash dissolved salts from said diluted alumina reacted silica sol to form a dilute alumina coated silica sol having a pH from about 4–5 and a conductivity of from 2000–4000 micromhos, and

G. Concentrating this dilute alumina coated silica sol to at least 30 weight percent solids,

thereby obtaining said alumina coated silica sols.

4,451,389

AQUEOUS GELS

Elmer E. Clear, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 152,227, May 22, 1980, Pat. No. 4,321,968.
This application Jan. 28, 1982, Ser. No. 343,641
Int. Cl.³ E21B *43/22, 43/26*; C09K *7/02*
U.S. Cl. 252—315.3 **12 Claims**

1. A gelled aqueous brine composition which comprises

(a) an aqueous brine solution having at least 1,000 ppm divalent cations,

(b) a water thickening amount of carboxymethylhydroxyethyl cellulose (CHMEC) characterized by a degree of substitution (DS) ranging from about 0.1 to about 1 and a molar substitution (MS) ranging from about 1 to about 4, and

(c) an amount of an alkaline earth metal hydroxide sufficient to cause gelation and form said gelled composition.

4,451,390

COMPOSITIONS FOR THE CONTROL OF UNWANTED FOAM AND THEIR USE

William T. Flannigan, Lancashire, England, assignor to Imperial Chemical Industries Inc., London, England

Filed Jun. 21, 1982, Ser. No. 390,772
Claims priority, application United Kingdom, Sep. 30, 1981, 8129520
Int. Cl.³ B01D *19/04*
U.S. Cl. 252—321 **6 Claims**

1. A composition for the control of unwanted foaming comprising in percent by weight:

(a) 20–60% Soya bean oil,

(b) 15–50% mineral oil,

(c) 1–10% finely divided silica,

(d) 5–25% unsubstituted fatty acid monoester of glycerol, and

(e) 3–20% unsubstituted fatty acid ester of a polyoxyalkylated sorbitan.

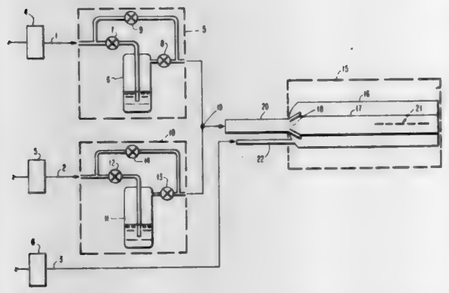
5. A process for the control of unwanted foam which comprises incorporating a composition as claimed in claim 1 in the material generating the unwanted foam.

4,451,391

CONDUCTIVE SILICON CARBIDE

John C. Marinace, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1982, Ser. No. 423,491
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—512 **9 Claims**



1. A body of electrically conductive material consisting only of silicon, carbon and the element germanium in a range between 0.01% and 0.03%.

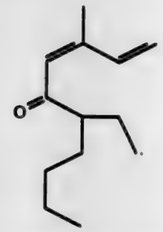
4,451,392

SYNTHESIS OF TRICONJUGATED DIENONES AND NOVEL INTERMEDIATES USED IN SAID PROCESS

William J. Evers, Locust; Gilbert Stork, Englewood; Barja D. Mookherjee, Holmdel, and Howard H. Heinsohn, Jr., Freehold, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

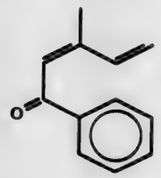
Filed Sep. 30, 1982, Ser. No. 431,268
Int. Cl.³ A61K *7/46*; C11B *9/00*
U.S. Cl. 252—522 R **4 Claims**

1. The compound having the structure:



2. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes, comprising the step of intimately admixing with said consumable material an aroma augmenting or enhancing quantity of at least one compound having a structure selected from the group of:

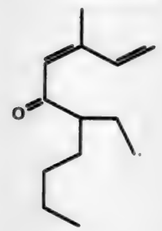
(i)



and

-continued

(ii)

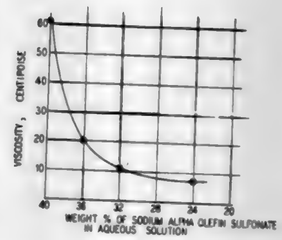


4,451,393

CLEANER FOR OVENS AND THE LIKE USING SODIUM ALPHA OLEFIN SULFONATE, SODIUM HYDROXIDE, AND SODIUM SILICATE

Henry Watanabe, Vernon Hills, and Andrew Shultz, Deerfield, both of Ill., assignors to Stepan Chemical Company, Northfield, Ill.

Filed Aug. 11, 1982, Ser. No. 407,154
Int. Cl.³ C11D *1/14, 3/08, 11/00*
U.S. Cl. 252—536 **23 Claims**



1. A homogeneous composition for oven cleaning and the like comprising on a 100 weight percent total composition basis:

(A) from about 2 to 36.8 weight percent of a sodium alpha olefin sulfonate derived from at least one alpha olefin containing from 12 to 18 carbon atoms per molecule,

(B) from about 0.1 to 1.9 weight percent of salt selected from the group consisting of sodium chloride and sodium sulfate,

(C) from about 1 to 12.5 weight percent of sodium hydroxide,

(D) from about 2.3 to 23.5 weight percent of sodium silicate having an SiO_2 to Na_2O weight ratio of 3.2:1 to 1:2, and

(E) from about 26 to 94 weight percent of water,

said composition being further characterized by

(1) having said components (A), (B), (C) and (D) each substantially completely dissolved in said water, and

(2) having the sum of the respective weight percentages of each of said components (A), (B), (C) and (D) at least such that the viscosity of the resulting such composition is at least about 1000 centipoises as measured with a Brookfield viscometer using a #3 spindle at 60 revolutions per minute at about 24° C.

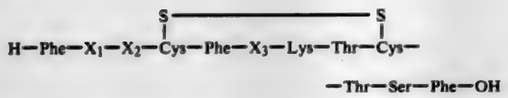
4,451,394

DODECAPEPTIDES PREVENTING GLUCOSE AND TRIGLYCERIDE ASSIMILATION

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,493
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 S **4 Claims**

1. A compound of the formula:



where
X_1 is either D- or L- Lys, Arg, His or Orn;
X_2 is either D- or L- Asn, His, Glu, Asp, Tyr, Trp or Phe;
X_3 is either D- or L- Trp;
the linear precursor intermediates thereof and pharmaceutically acceptable salts and amides thereof.

4,451,395

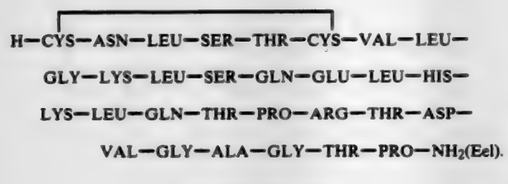
DES-SERINE^2-DES-TYROSINE^{22} CALCITONIN

Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Nov. 8, 1982, Ser. No. 440,113
Int. Cl.^{3} C07C *103/52*
U.S. Cl. 260—112.5 T **4 Claims**

1. [Des-X^2-Des-Y^{22}] eel, bovine, porcine, ovine, rat, or human calcitonin wherein
X is serine or glycine, and
Y is phenylalanine or tyrosine.

2. A peptide having the structure:



4,451,396

PROCESS FOR INHIBITING UNDESIRED THIOL REACTIONS DURING CYANOGEN BROMIDE CLEAVAGE OF PEPTIDES

Richard D. Di Marchi, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 1, 1983, Ser. No. 519,169
Int. Cl.^{3} C07G *7/00*; C07C *103/52*; A61K *37/26*
U.S. Cl. 260—112 R **7 Claims**

1. A process for inhibiting undesired thiol reactions of thiol-containing peptides during methionyl cleavage of said peptides using CNBr, which comprises carrying out said cleavage in the presence of thiosulfate ion.

4,451,397

METHOD OF PREPARING COLLAGEN PRODUCTS

Alain R. Huc, Ste-Foy-les-Lyons; Roland L. Allard, Saint-Chamond, and Christian L. Chavrier, Caluire, all of France, assignors to Centre Technique du Cuir, Lyons, France

Filed Nov. 22, 1982, Ser. No. 443,759
Claims priority, application France, Nov. 30, 1981, 81 22691
Int. Cl.^{3} C07G *7/00*; C08H *1/00, 1/06*
U.S. Cl. 260—123.7 **6 Claims**

1. A method of preparing a collagen mucopolysaccharide composition in the form of a clear solution which comprises the steps of:
(a) contacting ground collagenous material with an alkali solution having a pH of 14 for a prolonged time period to form a collagenous mixture;
(b) acidifying the collagenous mixture formed during step (a) to a pH of 2 to form decrosslinked collagen in the form of a solution or gel; and
(c) combining the decrosslinked collagen in the form of a solution or gel with a solution of a glycosaminoglycan, and then bringing the pH of the combined solutions to 7 by addition of alkali, thereby producing the desired product.

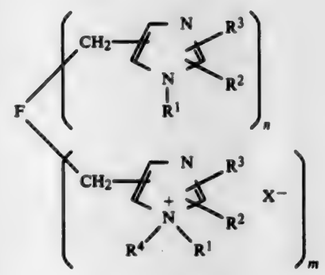
4,451,398

DYES CONTAINING IMIDAZOLYMETHYLENE GROUPS

Manfred Patsch, Wachenheim, and Manfred Ruske, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 233,479
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1980, 3006013; Nov. 26, 1980, 3044563
Int. Cl.^{3} C09B *1/00, 15/00, 25/00, 29/00*
U.S. Cl. 260—154 **10 Claims**

1. A dye of the formula:



where R^1 is hydrogen, C_1–C_6-alkyl or C_2–C_6-alkenyl, R^2 and R^3 independently of one another are hydrogen, C_1–C_5-alkyl or C_2–C_5-alkenyl, R^4 is C_1–C_{12}-alkyl or hydroxy-C_2–C_4-alkyl, X^- is one equivalent of an anion, F is an (m+n)-valent radical of a monoazo dye, a polyazo dye, a quinophthalone, a bis-dioxazine, a compound of the 5,6-arylo-2-pyrone series, a naphtholactam dye, a triphenylmethane dye, a xanthene dye, a phthalocyanine, an indigoid, and anthraquinone dye containing one or more phenyl or naphthyl groups, a more highly fused carbonyl-containing dye, a quinacridone, a perylene-3,4,9,10-tetracarboxylic acid diimide, an anthrapyrimidine, a pyrazoloanthrone, a diaminonaphthoquinone, a naphthazarine or a naphthalene-1,4,5,8-tetracarboxylic acid diimide, m is from 0 to 5 and n is from 0 to 5, with $1 \leqq (m+n) \leqq 5$, wherein the methylene group which links the imidazole radical to the dye F being attached on one side to a carbon atom of an aromatic ring of dye F and on the other side to one of the three carbon atoms of the imidazole ring.

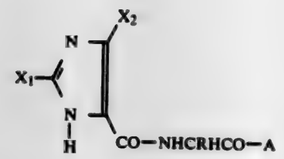
4,451,399

IMIDAZOLECARBOXYLIC ACID DERIVATIVES

Naohiko Yasuda, Yokosuka; Masaru Okutsu, Yamato; Hisao Iwagami, Kawasaki; Teruaki Nakamiya, Tokyo, and Ichiro Takase, Kawasaki, all of Japan, assignors to Ajinomoto Company, Inc., Tokyo, Japan

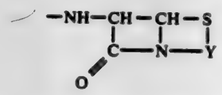
Continuation of Ser. No. 170,928, Jul. 21, 1980, abandoned. This application Nov. 30, 1982, Ser. No. 445,663
Claims priority, application Japan, Jul. 20, 1979, 54-92940
Int. Cl.^{3} C07D *499/70, 501/36*
U.S. Cl. 260—239.1 **10 Claims**

1. A compound having the formula (I):



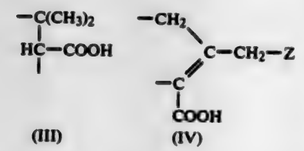
(I)

wherein
X_1 is selected from the group consisting of hydrogen, halogen, hydroxyl, alkyloxy, aralkyloxy, aryloxy, mercapto, alkylthio, aralkylthio, arylthio, alkylsulfonyl, aralkylsulfonyl, arylsulfonyl, alkylsulfinyl, aralkylsulfinyl, arylsulfinyl, amino, mono- or di-alkylamino, -aralkylamino or -arylamino, acylamino, sulfonyl, nitro, alkyl, aralkyl and aryl;
X_2 is selected from the group consisting of hydrogen, halogen, nitro, amino, acylamino, mono- or di-alkylcarbamoyl, -aralkylcarbamoyl or -arylcarbamoyl, alkyl, aralkyl, aryl, and morpholino-4-carbonyl;
R is selected from the group consisting of hydrogen, alkyl, aralkyl, and aryl; and
A is an organic residue of the formula (II):



(II)

wherein Y is an organic residue having one of the following formulas (III) or (IV):



(III) (IV)

wherein
the carbon atom which combines with the COOH combines with nitrogen atom in Y, and
Z is selected from the group consisting of hydrogen, acyloxy, carbamoyloxy, 5-(1-methyltetrazolyl)-thio, 5-(1-(2-sulfoethyl)tetrazolyl)thio, 2-(1,3,4-thiadiazolyl)thio, and quaternary ammonium which may be unsubstituted or substituted by sulfoethyl or carboxymethyl,
or a pharmaceutically acceptable salt thereof.

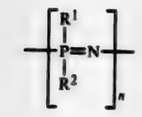
4,451,400

PHOSPHAZENES USEFUL AS STABILIZERS IN POLYMERS

Hartmut Wiezer, Gersthofen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

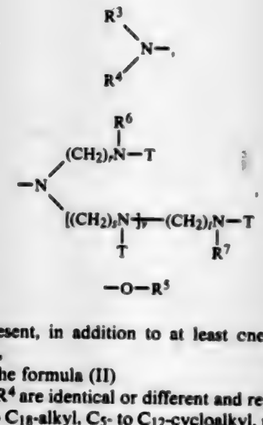
Filed May 7, 1982, Ser. No. 375,889
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118962
Int. Cl.^{3} C07D *251/70, 401/12*
U.S. Cl. 260—244.4 **1 Claim**

1. A phosphazene, substituted by piperidyl groups, of the formula (I)



(I)

in which
n is an integer from 3 to 100,
R^1 and R^2 are identical or different and represent a group of the formulae (II), (III), or (IV)

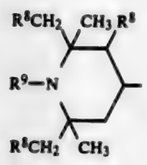


(II)

(III)

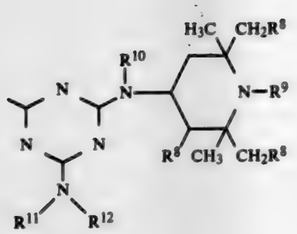
(IV)

or represent, in addition to at least one of these groups, halogen,
and in the formula (II)
R^3 and R^4 are identical or different and represent hydrogen, C_1- to C_{18}-alkyl, C_5- to C_{12}-cycloalkyl, phenyl, which can be substituted by Cl, CH_3O- or C_1- to C_4-alkyl, or C_7- to C_9-phenylalkyl or they denote a group of the formula (V)



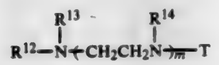
(V)

in which
R^8 represents hydrogen or methyl and
R^9 represents hydrogen, C_1- to C_4-alkyl which can be substituted by up to two OH groups, 2,3-epoxypropyl, allyl or benzyl,
R^3 additionally represents C_3- to C_{21}-alkoxyalkyl or
R^3 and R^4 together with the N atom linking them represent a pyrrolidine ring or a piperidine, morpholine or hexamethyleneimine ring which can also be substituted by up to 4 C_1- to C_4-alkyl groups,
and in the formula (III)
r, s and t are identical or different integers from 2 to 6, v represents an integer from 0 to 3, and
R^6 and R^7 represent identical or different radicals R^5 or represent a group of the formula (V) and
T has the meaning of a group of the formula (VI)

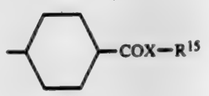


(VI)

in which
R^8 and R^9 have the meanings indicated above,
R^{10} and R^{11} are identical or different radicals having the meaning of R^3 and
R^{12} is a radical having the meaning of R^4,
and in the formula (IV)
R^5 represents a radical R^4 or a group of the formula (VII) or (VIII),



(VII)



(VIII)

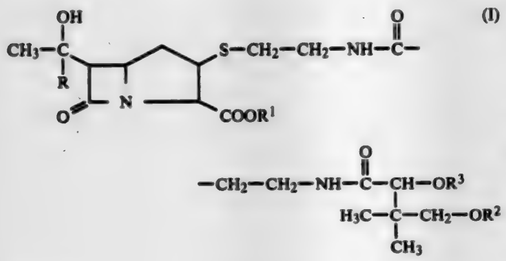
in which
X represents 0 or NR^3, with R^3 as indicated above and
R^{15} represents CH_3, C_2H_5 or a group of the formula (V),
m is 0 or 1,
T is a radical of the formula (VI),
R^{12} is C_2- to C_6-alkylene,
R^{13} is a radical R^4 or T and
R^{14} is a radical R^4 and the formula (I) must contain at least one group of the formula (V).

4,451,401
ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

Mitsuyasu Okabe, Fujisawa; Takeo Yoshioka, Ayase; Yasuo Fukagawa, Kamakura; Rokuro Okamoto, Fujisawa; Kageaki Kouno, Tokyo, and Tomoyuki Ishikura, Chigasaki, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1982, Ser. No. 394,166
Claims priority, application Japan, Jul. 1, 1981, 56-101162; Feb. 4, 1982, 57-15490
Int. Cl.³ C07D *487/04*
U.S. Cl. 260—245.2 T **7 Claims**

1. A compound represented by the following formula



(I)

wherein

R represents a hydrogen atom or a methyl group,
R^1 represents a hydrogen atom or an ester residue, and
R^2 and R^3 represent hydrogen atoms respectively, or taken together, a group of the formula



in which each of R^4 and R^5 represents a hydrogen atom, a lower alkyl group or a phenyl group,
or its salt.

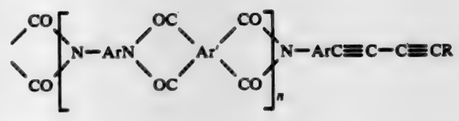
4,451,402
ADDITION PRODUCTS OF DI-ACETYLENE-TERMINATED POLYIMIDE WITH A DIARYL CONJUGATED BUTADIYNE

Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Continuation-in-part of Ser. No. 199,614, Dec. 29, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,869
Int. Cl.³ C07D *209/34, 471/00;* C08F *22/40*
U.S. Cl. 548—461 **23 Claims**

1. The Diels-Alder addition product of a polyimide of the formula:





wherein:
Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;
Ar is a divalent aromatic radical;
n is zero or an integer having a value of one to 20; and
R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;
and a dienophile of the formula:

$$Ar^{\circ}-C\equiv C-C\equiv C-Ar^{\circ}$$

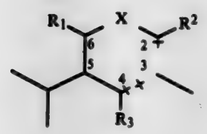
wherein Ar° is a monovalent aromatic radical.

4,451,403
SUBSTITUTED METHYL ISOPROPYL OXOCYCLOHEXANE DERIVATIVES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

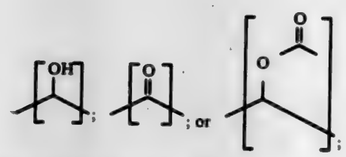
Philip T. Klemarczyk, Old Bridge, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 343,571
Int. Cl.³ C07C *50/02, 35/18;* A61K *1/46;* C07C *69/025*
U.S. Cl. 260—396 N **3 Claims**

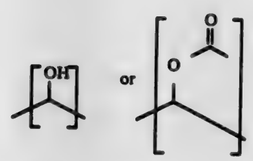
1. A substituted methyl isopropyl oxocyclohexane derivative defined according to the structure:



wherein at least one of the lines [++++] is a carbon-carbon single bond and the other of the lines [++++] is a carbon-carbon single bond or a carbon-carbon double bond; wherein X represents the moiety:



wherein when the moiety X has the structure:



then one of the lines:

[++++]

is a carbon-carbon double bond and the other of the lines:

[++++]

is a carbon-carbon single bond and when the moiety X has the structure:



then both of the lines:

[++++]

represent carbon-carbon single bonds; wherein one of R_1, R_2 or R_3 is 2-methyl-1-propenyl or 2-methyl-1-propylidenyl; and the other of R_1, R_2 or R_3 is hydrogen; with the provisos that:
(i) when the line:

[++++]

at the 3-4 position represents a carbon-carbon double bond R_3 is hydrogen or 2-methyl-1-propenyl; and
(ii) when the line;

[++++]

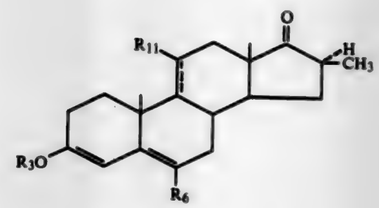
at the 2-3 position is a carbon-carbon double bond, R_2 is hydrogen or 2-methyl-1-propenyl.

4,451,404
16β-METHYL STEROID PROCESS

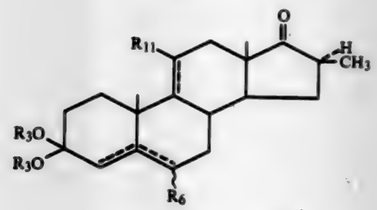
Verlan H. Van Rheenen, Portage, and Joseph M. Timko, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 9, 1983, Ser. No. 465,141
Int. Cl.³ C07J *1/00, 9/00*
U.S. Cl. 260—397.45 **26 Claims**

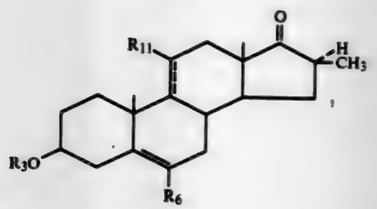
1. A process for the preparation of 16β-methyl-17-keto steroids selected from the group consisting of



(IVAa)

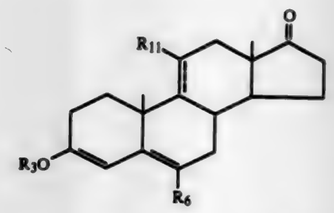


(IVAb)

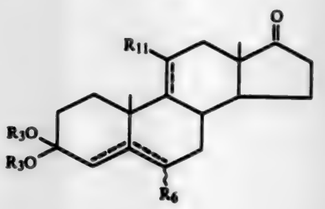


(IVCa)

which comprises
(I) contacting a 17-keto steroid selected from the group consisting of



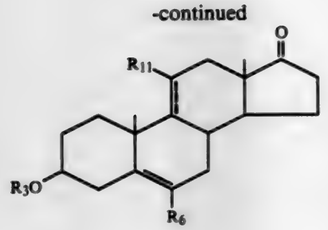
(IAa)



(IAb)

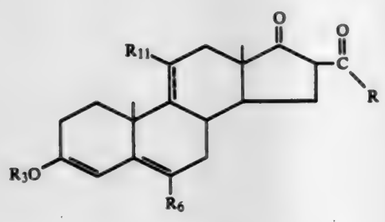
-continued

(ICa)

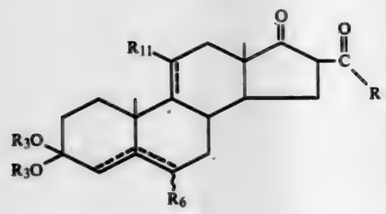


with a C_{16} activating agent in the presence of an alkali metal alkoxide to produce an anion of a 16-substituted steroid of the formula

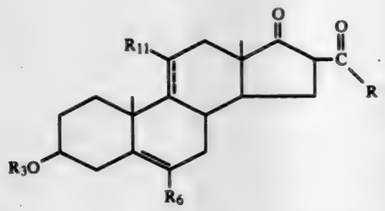
(IIAa)



(IIAb)

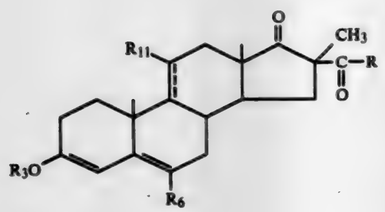


(IICa)



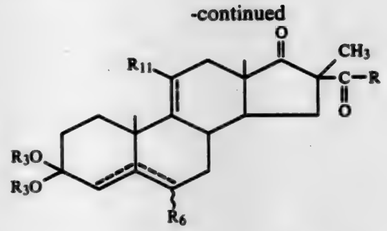
(2) contacting the anion of the 16-substituted steroid (II) from step (1) with a methylating agent to produce a 16-methyl-16-substituted steroid of the formula

(IIIAa)

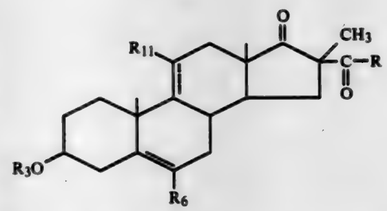


-continued

(IIIAb)



(IIICa)



and

(IIAa) (3) contacting the 16-methyl-16-substituted steroid (III) from step (2) with a strong base in an alcohol containing solvent where

R is a hydrogen atom or —CO—OR′ or —OR′;

R′ is alkyl of 1 through 5 carbon atoms;

R_3 is alkyl of 1 through 5 carbon atoms;

R_6 is a hydrogen or fluorine atom,

R_{11} is a hydrogen atom, nothing ($\Delta^{9(11)}$), or a hydroxyl group (α or β);

~indicates that the attached group can be in either the α or β configuration; and

is a single or double bond.

25. 3-Methoxy-16-methyl-16-(methyloxalyl)androst-3,5,9(11)-trien-17-one.

4,451,405

11α-AMINO-3β-HYDROXY-ANDROSTANES

Gordon H. Phillipps, Wembley; David C. Humber, Ealing; David B. Ewan, Northolt, and Barry A. Coomber, Pinner, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 353,068, Mar. 1, 1982. This application Dec. 6, 1982, Ser. No. 447,190

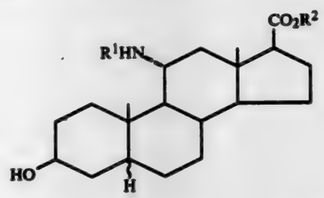
Claims priority, application United Kingdom, Mar. 2, 1981, 8106486

Int. Cl.³ A61K *31/56*

U.S. Cl. 260—397.1 **13 Claims**

1. Compounds of the formula

(I)



wherein R^1 is a C_{1-8} alkyl group or a C_{3-7} cycloalkyl group and R^2 is a C_{1-6} alkyl group or a C_{3-6} cycloalkyl group and the D-homo analogues thereof having the group $—CO_2R^2$ (wherein R^2 is as defined above) at the 17$\alpha\beta$-position, and acid addition salts thereof.

4,451,406

N-SUBSTITUTED IMIDO-DICARBOXYLIC ACID DIARYL ESTER METHOD OF PREPARATION

Karlfried Dickoré, Leverkusen, and Engelbert Kühle, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 350,057, Feb. 18, 1982, which is a division of Ser. No. 233,248, Feb. 10, 1981, abandoned. This application Aug. 5, 1983, Ser. No. 520,704

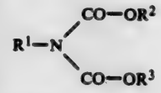
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006226

Int. Cl.³ C07C *125/067*

U.S. Cl. 260—465 D **13 Claims**

1. Process for the production of N-substituted imido-dicarboxylic acid diaryl ester compound of the formula

(I)



which comprises reacting a carbamic acid aryl ester of the formula:

$R^1—NH—CO—OR^2$ (II)

with a carbonic acid aryl ester halide of the formula

$X—CO—OR^3$ (III)

wherein

R^1 is an optionally substituted aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic radical; and

R^2 and R^3 can be identical or different and represent an optionally substituted aryl radical; and

X is a halogen; in the absence of an acid-binding agent, at temperatures ranging from about 170° C. to about 250° C.

4,451,407

CARBONYLATION OF OLEFINICALLY UNSATURATED COMPOUNDS

Frederick A. Pesa, Aurora, and Thomas A. Haase, University Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

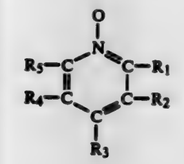
Continuation of Ser. No. 170,308, Jul. 16, 1980, Pat. No. 4,331,612, which is a continuation-in-part of Ser. No. 973,069, Dec. 28, 1978, abandoned. This application Dec. 18, 1981, Ser. No. 332,059

The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.³ C07C *120/00, 121/16*

U.S. Cl. 260—465.4 **21 Claims**

1. A process for the production of an oxygenated organic compound containing a nitrogen moiety wherein the straight chain product predominates comprising contacting an olefinically unsaturated compound in the liquid phase with carbon monoxide and a compound containing a replaceable hydrogen atom at a temperature of about 50° C. to about 150° C. in the presence of a catalyst comprising at least one of cobalt carbonyl and ruthenium carbonyl and a promoter ligand represented by the following structure:



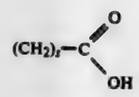
wherein R_1, R_2, R_3, R_4, and R_5 are each independently selected from the group consisting of:

(1) H;

(2) C_{1-10} alkyls;

(3) $(CH_2)_q$ OH wherein q is 0–10;

(4)



wherein s is 0–10; and

(5) $O(CH_2)_t CH_3$ wherein t is 0–10; and

wherein R_1 and R_2 may comprise a five to eight membered carbocyclic fused ring optionally substituted with C_{1-10} alkyls;

wherein the compound containing a replaceable hydrogen atom is represented by the following formula:

H—Y

wherein Y is selected from the group consisting of:

(1) OR_{14} wherein R_{14} is a C_{1-30} alkyl;

(2)



wherein R_{15} and R_{16} are each independently selected from C_{1-10} alkyls; and

(3) H;

wherein the olefinically unsaturated compound has the following structure:

$R_{11}CH=CHR_{12}$

wherein R_{11} and R_{12} are each independently selected from:

(1) hydrogen (either R_{11} or R_{12} but not both);

(2) C_{1-30} alkyl;

(3) $—(CH_2)_p—CN$, wherein p is 0–3: and

(4) $—(CH_2)_q—OR_{13}$, wherein q is 1–30 and R_{13} is hydrogen, methyl, or ethyl; and

(5) $—(CH_2)_n—COOR_{17}$, wherein n is 0.5 and R_{17} is hydrogen, methyl or ethyl, with the proviso that at least one of R_{11} and R_{12} contains a nitrile moiety; and,

wherein the molar ration of the compound containing a replaceable hydrogen atom to the olefinically unsaturated compound is 0.5:1 to 100:1.

4,451,408

PROCESS OF PREPARING SULFONIUM ORGANOSULFONATES

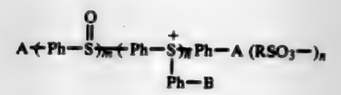
Gary R. Buske, and Richard G. Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 346,691, Feb. 8, 1982. This application Dec. 27, 1982, Ser. No. 453,312

Int. Cl.³ C07C *143/02, 143/26, 143/28*

U.S. Cl. 260—505 R **15 Claims**

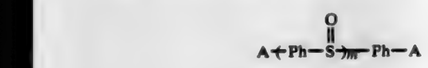
1. A process for preparing triarylsulfonium complex salts corresponding to the formula:



wherein

Ph is phenylene, diphenylene or oxydiphenylene;

A and B independently each occurrence are hydrogen, C_{1-4} alkyl, phenyl, C_{1-4} alkoxy or phenoxy;
R is lower alkyl, phenyl or tolyl;
m is an integer greater than or equal to zero, equal to the number of sulfoxide moieties in the complex salt; and
n is an integer greater than or equal to one, equal to the number of sulfonium moieties in the complex salt
comprising contacting a diarylsulfoxide or polymeric arylsulfoxide corresponding to the formula



with an aromatic compound of the formula B—Ph—H in the presence of an organosulfonic acid of the formula RSO_3H at elevated temperatures
wherein
A, Ph, B and R are as previously defined; and
m' is an integer greater than or equal to one, equal to the number of sulfoxide moieties in the compound.

4,451,409

SULFONIUM ORGANOSULFONATES

Gary R. Buske, and Richard G. Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

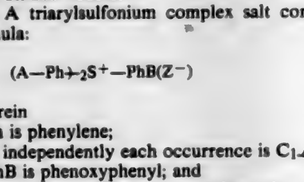
Filed Feb. 8, 1982, Ser. No. 346,691
Int. Cl.³ C07C *147/14, 149/46*
U.S. Cl. 260—513 R **9 Claims**

1. A triarylsulfonium complex salt corresponding to the formula:



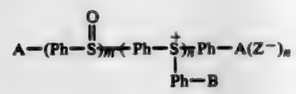
wherein
Ph is phenylene;
A independently each occurrence is C_{1-4} alkyl or phenoxy;
PhB is phenoxyphenyl; and
Z^- is a counterion selected from the group consisting of RSO_3^-, BF_4^-, PF_6^-, AsF_6^- and SbF_6^- where R is lower alkyl, phenyl or tolyl.

5. A polymeric triarylsulfonium complex salt corresponding to the formula



wherein
Ph is phenylene, diphenylene or oxydiphenylene;
Z^- is a counterion selected from the group consisting of RSO_3^-, BF_4^-, PF_6^-, AsF_6^- and SbF_6^- where R is lower alkyl, phenyl or tolyl;
A and B independently each occurrence are hydrogen, C_{1-4} alkyl, phenyl, alkoxy or phenoxy;
m is an integer greater than or equal to zero, equal to the number of sulfoxide moieties in the complex salt; and
n is an integer greater than or equal to one, equal to the number of sulfonium moieties in the complex salt;
provided that m+n is from about 2 to about 30 and the ratio of m/n is from about 95/5 to about 10/90.

8. A polymeric triarylsulfonium complex salt corresponding to the formula



wherein
Ph is oxydiphenylene;
Z^- is a counterion selected from the group consisting of RSO_3^-, BF_4^-, PF_6^-, AsF_6^- and SbF_6^- where R is lower alkyl, phenyl or tolyl;
A and B independently each occurrence are hydrogen, C_{1-4} alkyl, phenyl, alkoxy or phenoxy;
m is an integer greater than or equal to zero, equal to the number of sulfoxide moieties in the complex salt; and
n is an integer greater than or equal to one, equal to the number of sulfonium moieties in the complex salt;
provided that m+n is from about 2 to about 30.

4,451,410

PROCESS FOR PREPARING CONDENSED POLYALKOXYPHOSPHAZENE

Osamu Shibuta, Tokushima; Tetuo Hasegawa, and Jun Ogawa, both of Naruto, all of Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Sep. 1, 1982, Ser. No. 413,686
Claims priority, application Japan, Sep. 5, 1981, 56-140127
Int. Cl.³ C07F *9/40*
U.S. Cl. 260—973 **9 Claims**

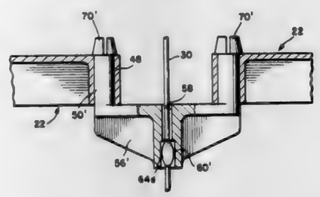
1. A process for preparing a condensed polyalkoxyphosphazene which comprises the steps of (A) reacting a phosphonitrilic halide oligomer with an alcohol in a solvent in the presence of an alkali metal carbonate to produce a condensed partially alkoxy-substituted phosphazene having a residual active halogen concentration of 6 to 25% by weight, the phosphonitrilic halide oligomer being a cyclic oligomer, a linear oligomer or the mixture thereof, (B) removing water from the reaction mixture containing the condensed partially alkoxy-substituted phosphazene by distillation, and (C) reacting the condensed partially alkoxy-substituted phosphazene with an excess amount of an alkali metal alkoxide based on the residual active halogen of the condensed partially alkoxy-substituted phosphazene in a solvent at a temperature of 50° to 120° C.

4,451,411

SUPPORT MEANS FOR TRANSVERSE FILL FOR COOLING TOWERS

Marcel R. Lefevre, Somerville, N.J., assignor to Research-Cottrell, Somerville, N.J.

Filed Sep. 28, 1982, Ser. No. 426,062
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—111 **6 Claims**



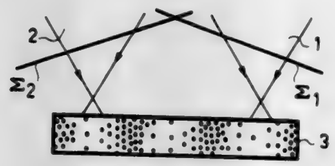
1. In a liquid cooling tower construction consisting of a housing having a lower air inlet and an upper air outlet, an array of vertically stacked horizontally positioned fill sheets or grids within the housing between the lower air inlet and the upper air outlet, the improvement comprising means for supporting said array of fill sheets or grids in their vertically stacked arrangement, fill sheet or grid support bracket means having at least a pair of arms, each of the arms being provided with means engagable with a fill sheet or grid, an opening through each bracket means between the means engagable with a fill sheet or grid, each of the openings through the bracket means having at least one recess at the lower end thereof and a slot communicating with the opening and communicating with an outer wall of the bracket means, an elongate hanger member having a diameter less than the width of the slot in the bracket means and an enlarged member on the elongate hanger member receivable in the at least one recess in the bracket means.

4,451,412

PROCESS FOR PRODUCING DIFFRACTING PHASE STRUCTURES

Brigitte Loiseaux; Jean P. Huignard; Jean C. Dubois, and Armand Eranian, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 29, 1982, Ser. No. 428,162
Claims priority, application France, Jan. 12, 1982, 82 00371
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.3 **10 Claims**



1. A process for producing diffracting phase structures comprising a medium formed of microballs of dielectric material in suspension in a liquid, in which two light waves interfere, the said process comprising one stage during which these two light waves are made to interfere in the medium, thereby recording their interference network in the medium, and, the liquid being polymerizable, a second stage in which the medium is solidified by exposing it to energy radiation, thereby fixing the interference network in situ.

4,451,413

JACKETING STEEL TUBES AND PIPES

Walter Stucke, Ratingen, and Karl-Heinz Glissmann, Essen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,134
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3047429
Int. Cl.³ B29H *5/26*
U.S. Cl. 264—26 **4 Claims**

1. A method of jacketing a steel pipe by means of a dual nozzle extruding device, wherein an inner hose is extruded of a granulated ethylene copolymer to act as an adhesive, and an outer hose of a thermoplastic is extruded as the jacket proper, the improvement comprising said copolymer including acrylic acid and acrylic acid ester
pre-drying the copolymer in air having a dew point below −30° C. at a temperature of about 70° C. and for approximately one hour
the thermoplastic and the copolymer, being extruded at the same speed at a temperature between 140° C. and 170° C., the speed being selected to be the higher, the higher the temperature of the thermoplastic and the copolymer in the dual nozzle head, accordingly the speed being at least 5 cm/sec. for a 140° C. head temperature, and at least 10 cm/sec. for a 175° C. head temperature.

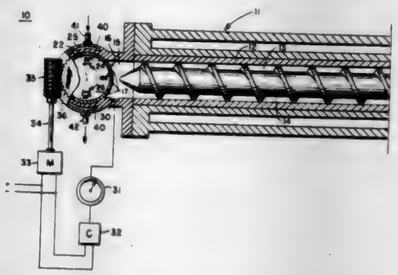
4,451,414

APPARATUS AND METHOD FOR CONTROLLING EXTRUSION BACK PRESSURE UTILIZING A SINGLE SLEEVE DIE

Paul H. Rossiter, Royersford, Pa., assignor to Welding Engineers, Inc., King of Prussia, Pa.

Filed Jun. 28, 1982, Ser. No. 393,051
Int. Cl.³ B29F *3/04*
U.S. Cl. 264—40.5 **4 Claims**

1. In a face cutting apparatus having an extrudate feed means with an extrudate delivery end, a die means and a cutter means, an apparatus for controlling extrusion back pressure comprising:
a. a die having a plurality of extrusion orifices through which an extrudate is adapted to be extruded and having a varying orifice density along the length of the die;
b. pressure sensing means for sensing the pressure adjacent said delivery end; and
c. means for moving said die relative to said delivery end in response to changes in the pressure adjacent said delivery end to align a die area of differing orifice density with said delivery end in order to adjust the extrudate flow rate and the extrusion back pressure.



4. A method for controlling extrusion back pressure, in a face cutting apparatus having an extrudate feed with an extrudate delivery end, a die and a cutter, comprising:
a. sensing the pressure adjacent said delivery end;
b. operatively positioning the die downstream from said delivery end, said die having a plurality of extrusion orifices through which an extrudate is adapted to be extruded, and having a varying orifice density along the length of the die; and
c. moving said die relative to said delivery end in response to changes in the pressure adjacent said delivery end to align a die area of differing orifice density with said delivery end in order to adjust the extrudate flow rate and the extrusion back pressure.

4,451,415

METHOD FOR MANUFACTURE OF FOAMED CERAMIC ARTICLE

Shoji Terada, Nagoya, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

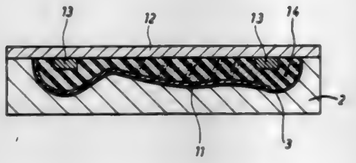
Filed Jul. 13, 1982, Ser. No. 397,778
Claims priority, application Japan, Jul. 16, 1981, 56-111261
Int. Cl.³ B29H *7/20*
U.S. Cl. 264—43 **9 Claims**

1. A method for the manufacture of a foamed ceramic article, adding to a powdered feldspar group mineral a foaming agent consisting of 0.1 to 10% by weight of powdered hexagonally crystalline boron nitride, sintering the resultant mixture at a temperature high enough for said feldspar group mineral to be fused and swelled, and thereafter cooling the sintered mixture, said feldspar group mineral being at least one member selected from the group consisting of orthoclase, soda feldspar, anorthite, and microcline.

4,451,416
METHOD OF PRODUCING A COMPOSITE FOAMED RESIN TORSO AND HEAD SECTION OF A HUMAN SUMMARY FOR MEDICAL TRAINING PURPOSES

Paul Burtscher, Dübendorf, Switzerland, assignor to Zurcher Kantonalbank, Zurich, Switzerland

Filed Aug. 10, 1981, Ser. No. 291,591
Claims priority, application Switzerland, Aug. 13, 1980, 6119/80
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—46.6 10 Claims



1. A method of producing the torso and head section of a human dummy intended for medical training purposes, comprising the steps of:

providing a skin-shaped hull made of an elastomeric material and corresponding to the human skin section covering the torso and head of a human body;

applying a rigidly setting pourable compound on to the inner surface of said skin-shaped elastomeric hull and permitting said rigidly setting compound to solidify to a rigid shell-like body;

removing said elastomeric hull from said soldified shell-like body;

forming a master model by cutting and machining said shell-like body so as to produce a model of the torso and skull sections of a human skeleton in which at least surface areas extending laterally to outer and inner surfaces of said rigid shell-like body have a contour which is similar to a contour of corresponding natural bone sections of said human skeleton, so that said master model has a form of at least the projection of the torso and skull sections of a human skeleton;

inserting said master model into said elastomeric skin-like hull, said master model keeping said skin-like hull in a spread open state such that it defines a void,

injecting an elastomerically setting pourable compound into said void defined by said elastomeric skin-like hull stretched over said master model and of letting said elastomerically setting compound solidify to an elastomerically yielding negative mold form of said master model;

removing said master model from said elastomerically yielding negative mold form;

inserting said negative mold form into said elastomeric hull to define a void space between said negative mold form and said elastomeric hull;

casting a rigidly setting pourable compound into the void space defined by said negative mold form and said elastomeric hull;

permitting said rigidly setting compound to solidify to a final skeleton section;

removing said negative mold form from said final skeleton section, said elastomeric hull remaining stretched thereover; and

locating casting cores in an innder void space defined by said elastomeric hull stretched over said final skeleton section;

injecting a foamed material into said inner void space,; and

permitting said foamed material to set whereby said inner void space is provided with voids for protectively receiving and surrounding apparatuses associated with said medical training purposes.

4,451,417
METHOD OF PRODUCING EXTRUDED PLATE-LIKE POLYSTYRENE FOAM

Hiroyuki Akiyama; Hidewo Hatakeyama, both of Hiratsuka; Nobuyoshi Shimoyashiki, Kanuma; Yoshiaki Momose, Hiratsuka, and Fusao Imai, Kanuma, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

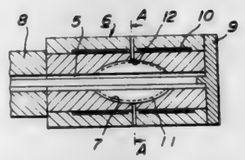
Filed Dec. 16, 1982, Ser. No. 450,218
Claims priority, application Japan, Dec. 25, 1981, 56-209318
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—53 3 Claims

1. In a method of producing a plate-like polystyrene resin foam by extruding a molten mixture of a polystyrene resin and a volatile blowing agent from an extruder into a zone kept at a lower pressure than the inside of the extruder, the improvement which comprises extruding a mixture of a polystyrene resin having a weight average molecular weight, measured by gel permeation chromatography, of 20×10^4 to 35×10^4 with from 8 to 17 parts by weight per 100 parts by weight of the polystyrene resin of a volatile blowing agent which is a mixture consisting of 50 to 80% by weight of dichlorodifluoromethane and 50 to 20% by weight of ethyl chloride from said extruder into said zone kept at a lower pressure than the inside of the extruder, said plate-like polystrene resin foam having a heat conduction resistance R, determined for a 25 mm-thick specimen kept at an average temperature of 75° C., of at least 5.

4,451,418
METHOD FOR FORMING A GREEN BODY OF CERAMIC ARC TUBES USED FOR A METAL VAPOR DISCHARGE LAMP AND A MOLDING DIE FOR FORMING SAID TUBE

Mamoru Furuta, Toyoake; Yoshio Maeno, and Kazuo Kobayashi, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jul. 30, 1982, Ser. No. 403,401
Claims priority, application Japan, Aug. 4, 1981, 56-121316
Int. Cl.³ C04B *35/64*
U.S. Cl. 264—63 5 Claims

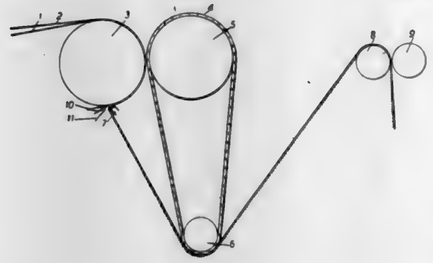


1. A method for forming a green body of a ceramic green arc tube for a metal vapor discharge lamp wherein an outer diameter of an arc discharging portion is larger than that of end portions of the arc tube which hold discharging electrodes, comprising: preparing a stiff plastic body consisting essentially of a ceramic material, having alumina as a major component, and a binder having a thermal gelatinizing organic substance as a major component; forming the prepared body into a straight tubular body by an extrusion means; placing the tubular body into an inner cavity of a modding die having an inner portion corresponding to a desired outer shape of the ceramic arc tube, wherein the molding die has been previously heated; closing one end portion of the tubular body; applying a compressed fluid from another opened end portion of the tubular body into the inside of the tubular body to inflate the central portion of tubular body until the green body contacts the inner portion of the molding die; hardening and drying the inflated green body with the heat of the previously heated molding die; and ejecting the dried body from the die.

4,451,419
APPARATUS AND PROCESS FOR THE PRODUCTION OF PILE SURFACE ARTICLES

Donald J. Bye, Runcorn; Harold P. Stanistreet, Iontypool, both of England, and Werner Lindenstruth, Oestringen, Fed. Rep. of Germany, assignors to Imperial Chemical Industries, PLC, London, England

Continuation of Ser. No. 611,243, Sep. 8, 1975, Pat. No. 4,436,687, which is a continuation of Ser. No. 417,597, Nov. 20, 1973, abandoned. This application Jan. 17, 1980, Ser. No. 112,919
Claims priority, application United Kingdom, Dec. 4, 1972, 55831/72
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—164 10 Claims



1. In a process for the production of a pile surfaced thermoplastic material comprising feeding a high porosity backing and a thermoplastic material to a substantially smooth surfaced roll in a manner such as to hold the front of the backing against the thermoplastic material and to hold the thermoplastic material in contact with the roll while holding the roll at a temperature above the softening point of the thermoplastic so that the thermoplastic bonds to the backing and adheres to the surface, separating the resulting laminate of the backing and the thermoplastic material from the heated surface so that fibrils are drawn out from the thermoplastic material between the backing and the surface in a fibril forming area, cooling the fibrils so formed to below the softening temperature of the thermoplastic and disjoining the fibrils from the heated surface the improvement wherein the thermoplastic material is hauled off sharply at an angle greater than 90 degrees from the heated surface along an edge extending across the width of the roll, said edge being provided by a rod or bar having a slot or holes therein and having a radius of curvature of between 1 and 8 millimeters at the point where the backing passes thereover, said rod or bar being positioned transverse to the direction of movement of the material and at a distance from the surface of the roll greater than the combined thickness of the thermoplastic material and the backing, said rod or bar fixing the point at which the thermoplastic separates from the surface and thereby controlling the direction of the path of the material as it moves away from the heated surface, said rod or bar being of a shape such that a stream of cooling fluid is directed through the slot or holes in the rod or bar into the back of the backing.

4,451,420
SYNTACTIC PHASE EXTRUSION

Herbert W. Keuchel, 765 Forestview Dr., Tallmage, Ohio 44278

Filed Feb. 25, 1981, Ser. No. 238,269
Int. Cl.³ D01D *5/20*
U.S. Cl. 264—167 6 Claims

1. A process for providing a mixture of polymeric phases which consist of

separately providing a plurality of fluid polymeric materials having different phases;

separately and sequentially injecting pulses of said plurality of fluid polymeric materials into a plurality of flow channels so as to provide polymeric components having alternate phase characteristics;

discharging said fluid components from said flow channels;

combining said fluid components in a common reservoir so as to form a mosaic-like dispersion; and

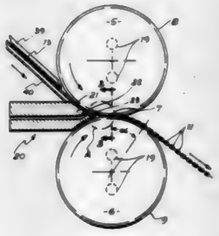


flowing said mosaic-like dispersion from said reservoir through a shaping device so as to provide a mosaic structure.

4,451,421
CONTINUOUS CASTING OF STRINGERS FOR SLIDING CLASP FASTENERS

Arthur L. Jones, Glenbrook, and Ronald G. Seeney, Kingswood, both of Australia, assignors to Scovil, Inc., Waterbury, Conn.

Continuation of Ser. No. 272,975, Jun. 12, 1981, abandoned, which is a continuation of Ser. No. 142,979, Apr. 23, 1980, abandoned, which is a continuation of Ser. No. 902,545, May 2, 1978, abandoned. This application Sep. 30, 1982, Ser. No. 429,202
Claims priority, application Australia, May 4, 1977, PC9975
Int. Cl.³ B29D *23/05*
U.S. Cl. 264—167 4 Claims



1. In an improved method of continuous casting a row of thermoplastic slide fastener interlocking elements upon a longitudinal edge of a stringer tape of indefinite length by an extrusion nozzle having an orifice and supplying thermoplastic material in advance of a nip between a pair of rotatable casting rollers, each having peripheral cavities for the casting of said interlocking elements, said improved method comprising the steps of:

driving said pair of casting rollers at a relatively high speed while at the same time insuring adequate solidification of said interlocking elements before removal therefrom by drawing said stringer tape between said nozzle and a first one of said rollers and to a first side of said nip during extrusion of said thermoplastic material, from said orifice initially into the cavities of said first roller in advance of said nip for initially solidifying the portions of said interlocking elements on the upper surface of said stringer tape and subsequently into the cavities of the second one of said rollers, and delaying the removal of said stringer tape by recovering said stringer from the other side of said nip at such an angle with respect to said second roller of from about 30° to about 45°, such that said interlocking ele-

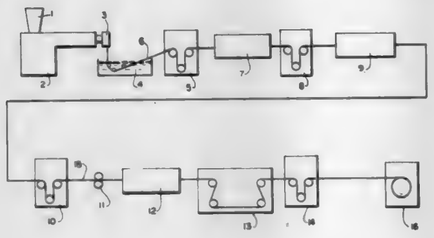
ments cast on said stringer tape are separated from the cavities of said first roller before they are separated from the cavities of said second roller and said interlocking elements further remaining in the cavities and in contact with said second roller for the 30°–45° angular segment portion of its rotation, thereby providing sufficient time for hardening of the portions of the interlocking elements on the lower surface of said stringer tape.

4,451,422

METHOD FOR PRODUCING POLYETHYLENE TEREPHTHALATE PACKING MATERIAL

Ryosuki Yui; Ketsuke Kume; Masaaki Hashi, all of Neagarimachi, and Junji Niikura, Kanazawa, all of Japan, assignors to Sekisui Jushi Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 210,859, Nov. 26, 1980, abandoned. This application Apr. 28, 1982, Ser. No. 372,543
Claims priority, application Japan, Nov. 30, 1979, 54-155753; Mar. 3, 1980, 55-26885
Int. Cl.³ B29D *7/24*
U.S. Cl. 264—178 R **2 Claims**



1. A method of producing a polyethylene terephthalate packing band which comprises melt-extruding through an extrusion die a polyethylene terephthalate dried to a moisture content of up to 0.02% and having an intrinsic viscosity of 0.90 to 1.20, cooling the molten resin into a first water tank to give a ribbon, subjecting the ribbon to first-stage stretching at a temperature of 85° to 100° C. to a draft of 3 to 4.5 times and to second-stage stretching at a high temperature of 250° to 350° C. to give a total cumulative longitudinal draft of 4.6 to 6 times.

4,451,423

PROCESS FOR THE PRODUCTION OF FLAME RESISTANT MOULDED POLYMER ARTICLES

Ulrich Reinehr; Toni Herbertz, and Günter Spilgies, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,402
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1981, 3140274
Int. Cl.³ C08K *3/22, 3/16*
U.S. Cl. 264—182 **7 Claims**

1. A process for the production of polyacrylonitrile filaments which contain antimony trioxide comprising adding antimony halide to a solution of a halogen-containing acrylonitrile polymer in an organic solvent, said antimony halide added in a quantity of from 1 to 10% by weight, based on the polymer content, spinning the solution to form filaments and contacting said filaments with water.

4,451,424

METHOD OF GELLING CAST, POLYSULFONE MEMBRANES

Thomas A. Tweddle, Orleans; William L. Thayer, Ottawa; Oleh Kutowy, North Gower, and Srinivasa Sourirajan, Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 10, 1982, Ser. No. 417,494
Claims priority, application Canada, Feb. 10, 1982, 395978
Int. Cl.³ B29D *7/06*
U.S. Cl. 264—216 **8 Claims**

1. In a method of gelling cast, polysulfone films to form reverse osmosis and ultrafiltration membranes, wherein the cast film is gelled using water as a gelation liquid, the improvement comprising, partially gelling the film with at least one mineral acid at a stage no later than when the film is gelled with the water.

4,451,425

METHOD FOR INJECTION MOLDING POLYURETHANE USING INTERNAL RELEASE AGENTS

Louis W. Meyer, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 28, 1983, Ser. No. 462,154
Int. Cl.³ B29C *5/00*; B29F *1/00*
U.S. Cl. 264—300 **5 Claims**

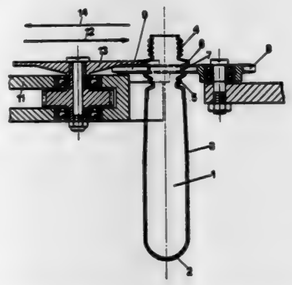
1. In a process for the preparation of molded articles by injecting a polyurethane-forming composition containing at least one active hydrogen-containing material containing an average of more than one active hydrogen atom per molecule and at least one material containing an average of more than one -NCO group per molecule into a mold and thereafter removing a resultant polyurethane molded article therefrom; the improvement which comprises employing as said polyurethane-forming composition one which contains an effective amount of, as a mold release agent, at least one hydroxylated lecithin.

4,451,426

PROCESS FOR BLOW-MOLDING A HOLLOW ARTICLE FROM A PREFORM MADE FROM A THERMOPLASTIC

José Branchadell, Wezembeek-Oppem, Belgium, assignor to SOLVAY & Cie, Brussels, Belgium

Filed Feb. 18, 1982, Ser. No. 350,098
Claims priority, application France, Feb. 23, 1981, 81 03708
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—535 **3 Claims**



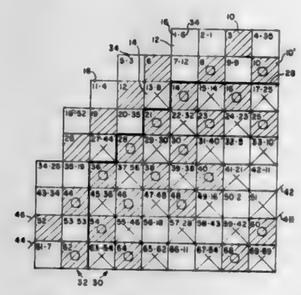
1. Process for blow-moulding a hollow article, comprising: moulding, from a thermoplastic, a preform having a body of cylindrical general shape surmounted by a profiled false neck possessing a circular toothed collar located in a plane at right angles to the longitudinal axis of the preform; thermally conditioning the preform while causing the preform to rotate about its longitudinal axis by means of a toothed drive member cooperating with the circular toothed collar; and then blow-moulding the desired final hollow article from the conditioned preform.

4,451,427

IN-CORE FUEL MANAGEMENT FOR NUCLEAR REACTOR

Malcolm F. Ross, Bloomfield, and Sidney Visner, W. Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 874,955, Feb. 3, 1978, abandoned. This application Nov. 21, 1980, Ser. No. 209,165
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—267 **19 Claims**



18. In a pressurized water power reactor having about 241 elongated, square fuel assemblies supported side-by-side to form a generally cylindrical stationary core, the core having produced power for at least three previous burnup cycles of at least 10,000 MWD/T each, a method for refueling the core comprising the steps of:

(a) permanently removing from the core assemblies having experienced at least three burnup cycles;

(b) figuratively dividing the core into a generally cylindrical inner region consisting of about 145 assembly locations and a generally annular outer region consisting of the remaining assembly locations;

(c) inserting fresh assemblies having permanent burnable poison lattice shims into the inner region and relocating burned assemblies to form a checkerboarded inner region having

(1) a first checkerboard component consisting substantially entirely of about equal numbers of fresh assemblies and assemblies having burned through only one previous burnup cycle,

(2) a second checkerboard component consisting substantially entirely of assemblies having burned through at least two previous burnup cycles,

(d) inserting fresh assemblies into the outer region and relocating burned assemblies to form a checkerboarded outer region having

(1) a third component consisting substantially entirely of fresh assemblies

(2) a fourth component consisting of assemblies having experienced at least one burnup cycle, wherein

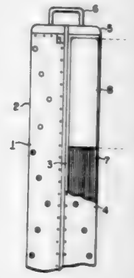
(3) about half the core peripheral locations are occupied by fresh assemblies.

4,451,428

CONTROL RODS AND METHOD OF PRODUCING SAME

Eiichi Nishimura; Shunsuke Uchida, both of Hitachi; Masao Kitamura, Hitachiota; Koichi Saito, Hitachi; Eishi Ibe, Katsuta, and Tatsuo Hayashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 2, 1981, Ser. No. 222,060
Claims priority, application Japan, Jan. 7, 1980, 55-112
Int. Cl.³ G21C *7/10*
U.S. Cl. 376—333 **16 Claims**



5. A control rod for a nuclear reactor comprising an absorber rod means extending in the direction of insertion of the control rod in a reactor core, said absorber rod means being charged with a material having a large neutron absorption cross section for causing an (n, α) reaction to take place upon absorbing neutrons, and neutron absorbing plates extending in the insertion direction of the control rod and being arranged at a forward end portion of the control rod, said neutron absorbing plates being formed of an alloy of a material of a large neutron absorption cross section and a material of a small neutron absorption cross section for causing an (n, Y) reaction to take place upon absorbing neutrons, the mixing ratio of said material of small neutron absorption cross section to said material of large neutron absorption cross section in said alloy being continuously varied in the insertion direction from at least a predetermined position along the extent of a major portion of said neutron absorbing plates and becoming increasingly higher toward the forward end of the control rod, said neutron absorbing plates having a volume which exhibits substantially no decrease along the extent of said neutron absorbing plates in the insertion direction and said material charged in said absorber rod means and said material of said neutron absorbing plate have substantially the same neutron absorbing capacity in an area between the absorber rod means and the neutron absorbing plate.

4,451,429

PULVERIZING SPUTTERED DEPOSITS TO MAKE POWDERED METAL

Morris Berg, Champaign, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 8, 1982, Ser. No. 396,355
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—33 **6 Claims**

1. A method of making a metal powder from a mass of ductile metal that cannot be readily mechanically comminuted comprising the steps of sputtering the mass of ductile metal into a vacuum environment to produce a brittle deposit of the metal, gathering at least some of the brittle metal deposit, and pulverizing it into metal particles.

4,451,430

METHOD OF PRODUCING COPPER ALLOY BY MELTING TECHNIQUE

Seika Matidori; Koichi Teshima, both of Tokyo, and Masato Sakai, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawaski, Japan

Continuation of Ser. No. 374,910, May 4, 1982, abandoned, which is a continuation of Ser. No. 175,014, Aug. 7, 1980, abandoned. This application Sep. 23, 1983, Ser. No. 534,634
Claims priority, application Japan, Aug. 7, 1979, 54-99884
Int. Cl.³ C22C *1/06, 9/00*
U.S. Cl. 420—492 **7 Claims**

1. A method of producing a zirconium-containing alloy by melting copper, together with other alloying ingredients, in an air atmosphere, and adding the zirconium in two separate steps to assure uniform dispersion within the melt, said method comprising the successive steps of:

(a) melting from about 85 to about 95% by weight of copper of the total copper content in a crucible in air;

(b) introducing only zirconium in at least a deoxidizing amount to the copper melt; thereafter

(c) introducing an alloying amount of zirconium to the substantially deoxidizing melt of step (b), thereby dispersing the thus added zirconium uniformly throughout the melt; and

(d) adding the remaining amount of copper of about 5 to about 15% by weight to the melt, thereby rapidly cooling the melt to a casting temperature and minimizing the loss of zirconium added in step (b), the melt being substantially exposed to an air atmosphere during steps (a), (b), (c) and (d).

4,451,431

MOLYBDENUM-CONTAINING HIGH TEMPERATURE COATINGS FOR NICKEL- AND COBALT-BASED SUPERALLOYS

Subhash K. Naik, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Oct. 25, 1982, Ser. No. 436,469
Int. Cl.³ B32B *15/04*
U.S. Cl. 420—588 **26 Claims**

1. An article of manufacture comprised of a superalloy substrate coated with a high temperature coating composition consisting, essentially of from about 10% to about 40%, by weight, chromium; from about 0.5% to about 9% by weight, molybdenum; from about 10% to about 35%, by weight, cobalt; from about 5% to about 20%, by weight, aluminum; from about 0.1% to about 1% by weight, yttrium; and the balance nickel, the nickel or nickel plus cobalt content, in percent by weight, being equal to or greater than percent by weight molybdenum divided by 0.18.

4,451,432

Patent Not Issued For This Number

4,451,433

AUTOMATIC CHEMICAL ANALYZER

Katsuji Yamashita; Hiroshi Umetsu, both of Katsuta; Hirotaka Sato, Hitachi; Yoshio Matsuoka, and Kei Kida, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 319,078
Claims priority, application Japan, Nov. 10, 1980, 55-158664
Int. Cl.³ G01F *23/24;* G01N *35/02, 35/06*
U.S. Cl. 422—63 **12 Claims**

1. An automatic chemical analyzer comprising:

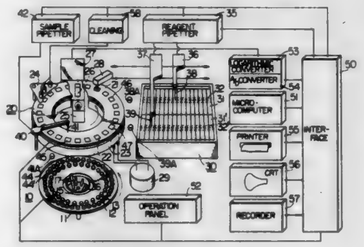
a reaction vessel for retaining a sample and reaction solution;

first pipetting means having a first pipetting tube for sucking the sample therein from a sample container and transporting the sample sucked in said first pipetting tube into said reaction vessel;

a reagent container containing the reagent solution;

second vertically movable pipetting means having a second pipetting tube for sucking the reagent solution therein from said reagent container and transporting the reagent solution sucked in said second pipetting tube into said reaction vessel;

sensor means for sensing a liquid level of the reagent solution in said reagent container, said sensor means being vertically movable with the movement of said second pipetting tube, said sensor means including a pair of electrically conductive members, one of which is said second pipetting tube and the other of which is a probe having a lower end positioned above an open end of said second pipetting tube;



pulse motor means for vertically moving said sensor means;

means for producing a detection signal when the probe of said sensor means is brought into contact with the reagent solution in said reagent container;

means for obtaining information relating to the amount of the reagent solution remaining in said reagent container based on the position of said sensor means within said reagent container when said sensor means produces said detection signal;

means for displaying the information relating to the amount of the remaining reagent solution; and

measuring means for measuring physical characteristics of the reaction solution in said reaction vessel.

4,451,434

TRANSPARENT OPTICAL CONTAINER FOR NON-DESTRUCTIVE BIOLOGICAL FLUID ASSAY

Hiram Hart, 3450 Wayne Ave., Bronx, N.Y. 10467

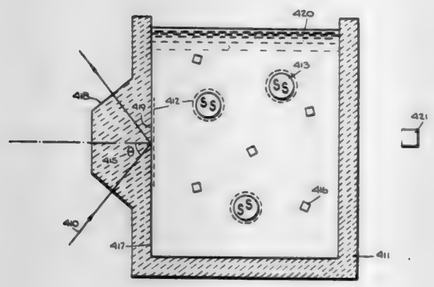
Division of Ser. No. 890,325, Mar. 27, 1978, Pat. No. 4,271,139. This application Jul. 17, 1980, Ser. No. 169,717
Int. Cl.³ G01N *33/54, 21/03*
U.S. Cl. 422—102 **7 Claims**

1. A transparent optical container system for use in the non-destructive biological fluid assay of immunological attractive material by excitement of scintillating particulates and the measurement of said excitement, the improvement wherein:

said transparent container having a side provided with a section forming a quadrilateral prism,

said prism having an interface base provided with immunological linking material for attachment to said scintillating particulates,

said prism inherently providing an angle of incidence greater than the critical angle for an electromagnetic beam of radiation,



said prism inherently providing on said interface base a substantially complete reflection of said electromagnetic beam of radiation exciting said scintillating particulates attached to said immunological material,

a measure of said excitement correlated to a measure of said attached immunological linking material.

4,451,435

APPARATUS FOR CLEANING AIR LOADED WITH POLLUTANTS

Heinz Hölter, Beisenstr. 39-41, 4390 Gladbeck; Heinrich Igelbüscher, Gladbeck; Heinrich Gresch, Dortmund-Wickede, and Heribert Dewert, Gladbeck, all of Fed. Rep. of Germany, assignors to Heinz Hölter, Gladbeck, Fed. Rep. of Germany

PCT No. PCT/EP81/00153, 371 Date Jun. 4, 1982, 102(e) Date Jun. 4, 1982, PCT Pub. No. WO82/01348, PCT Pub. Date Apr. 29, 1982
PCT Filed Sep. 30, 1981, Ser. No. 387,853
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1980, 3039238; Nov. 11, 1980, 3042455; Jan. 31, 1981, 3103302; Jan. 31, 1981, 3103303; Jul. 9, 1981, 3127129
Int. Cl.³ B01D *53/36*
U.S. Cl. 422—171 **15 Claims**

1. An apparatus for cleaning pollutant-laden air to be admitted to a person-occupied enclosure, comprising:

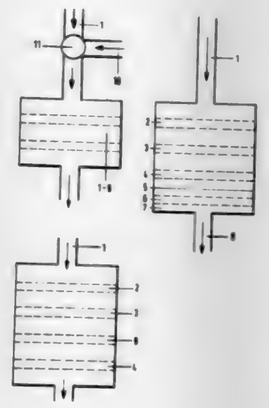
a partial heating stage traversed by said air for raising the temperature thereof above an incoming-air temperature to a temperature level at which absorption of pollutants from the air is promoted;

a housing provided with a multilayer gas filter downstream of said partial heating stage, said multilayer gas filter including

a sorption mass for the absorption of pollutants from the air at said temperature level, and

a catalyst mass for reaction of other pollutants in said air at a temperature higher than said level to remove said other pollutants, said sorption and catalyst masses being traversed in succession by the air;

a further heating stage in the path of said air between said masses and upstream of said catalyst mass for heating said air to said temperature higher than said level for reaction in said catalyst mass; and



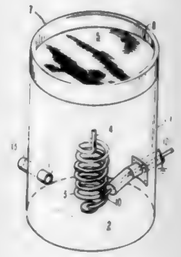
cooling means downstream of said filter for cooling the air before it is admitted to said enclosure.

4,451,436

NITROGEN FIXATION BY PLASMA AND CATALYST

Louis R. O'Hare, 1700 Banyan #3, Fort Collins, Colo. 80526

Filed Feb. 1, 1983, Ser. No. 462,367
Int. Cl.³ C01B *21/20*
U.S. Cl. 422—186.29 **18 Claims**



1. A gas phase chemical reaction system comprising:

(1) gas particle excitation means capable of placing into chemically excited states gas molecules and atoms with an electric discharge in the form of a plasma from a single electrode discharge with the electrode receiving very high radio frequency current at very high impedance and having a radio frequency shield to prevent electromagnetic radiation energy loss, and

(2) catalyst contacting and ultraviolet radiation shielding means in the form of a mass of opaque catalytic substance capable of being contacted in such a way by a gas stream containing excited gas species from said excitation means that the excited gas particles are shielded by the catalytic material when they move from the area of the electric excitation and ultraviolet radiation into and through small openings in the catalytic material, said openings being in such a direction as to interpose the catalytic material between the ultraviolet radiation and the gas stream flowing through the catalytic bed, and

(3) first reaction product concentration means in the form of a bed of absorbtive material capable of absorbing product gases from a gas stream flowing from said catalyst contacting means,

(4) reactant and product gas circulation means in the form of a pump capable of cycling gas through a chamber containing the single electrode excitation means and through the catalyst contacting means as well as through the first product absorbtion means and back to the excitation means.

4,451,437

METHOD FOR SEPARATING DIFFERENT ISOTOPES IN COMPOUNDS BY MEANS OF LASER RADIATION

Gustav Meyer-Kretschmer, Jülich; Heinz Jetter, Feldkirchen, and Peter Toennies, Göttingen, all of Fed. Rep. of Germany, assignors to URANIT Uran-Isotopentrennungs-GmbH, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 051,240, Jun. 22, 1979, abandoned. This application Jan. 5, 1982, Ser. No. 337,187

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829881

Int. Cl.³ B01D *59/00, 59/50*

U.S. Cl. 423—3 **7 Claims**

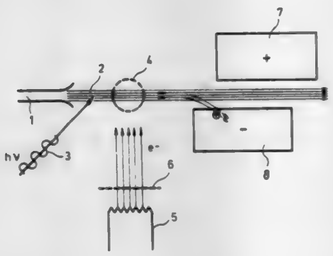
1. A method for separating uranium isotopes of uranium hexafluoride having molecules in the gaseous state comprising the steps of:

(a) mixing said uranium hexafluoride with an inert additive gas;

(b) cooling the resulting mixture by adiabatic expansion to a temperature below 50° K.;

(c) exciting said uranium hexafluoride molecules with laser radiation having a frequency which is selective for a predetermined uranium isotope;

(d) interacting said uranium hexafluoride molecules with electrons having energies in excess of 14 electron volts



thereby producing positive ions by electron bombardment; and

(e) separating said ionized uranium hexfluoride molecules from the nonionized molecules.

4,451,438

PROCESS FOR RECOVERING NIOBIUM AND/OR TANTALUM METAL COMPOUNDS FROM SUCH ORES FURTHER CONTAINING COMPLEXES OF URANIUM, THORIUM, TITANIUM AND/OR RARE EARTH METALS

Wilfried Floeter, Erftstadt; Gerhard Schoening, and Klaus Schroeer, both of Bonn, all of Fed. Rep. of Germany, assignors to Herman C. Starck Berlin, Berlin and Uranerzbergbau-GmbH, Bonn, both of, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,244

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211286

Int. Cl.³ C01G *43/00, 33/00, 35/00;* **C01F** *15/00*

U.S. Cl. 423—20 **11 Claims**

1. A process for recovering tantalum and/or niobium metal compounds substantially free of radioactive contamination from an ore containing one or more compounds of said metal or metals and further containing at least one complex of a member selected from the group consisting of uranium, thorium, radium, titanium, and rare earth metals, wherein the crushed ore is first decomposed with hydrofluoric acid at an elevated temperature for more than three hours with substantially all the uranium, thorium, and radium compounds remaining in the residue, and substantially all the tantalum and/or niobium being dissolved as complexes with fluoride, and subsequently said hydrofluoric solution is further treated in an appropriate manner to recover niobium and/or tantalum compounds in said ore.

4. A process according to claim 1, wherein the solid residue is decomposed with concentrated sulfuric acid under oxidizing conditions to convert the elements uranium and thorium into water-soluble compounds, whereupon the solution is further treated in an appropriate manner to recover uranium and thorium.

4,451,439

PROCESS FOR THE PURIFICATION OF SOLUTIONS CONTAINING A SODIUM OR POTASSIUM CARBONATE, SULPHATE, AND POSSIBLY HYDROXIDE, AND AT LEAST ONE OF THE METALS VANADIUM, URANIUM AND MOLYBDENUM

Pierre Maurel, Aix-en-Provence; Bernard Bosca, Gardanne, and Francois Nicolas, Aix-en-Provence, all of France, assignors to Pechiney, Lyon, France

Continuation of Ser. No. 946,025, Sep. 26, 1978, abandoned. This application Nov. 23, 1981, Ser. No. 324,060

Claims priority, application France, Sep. 30, 1977, 77 30176; Aug. 18, 1978, 78 24843; Aug. 18, 1978, 78 24844

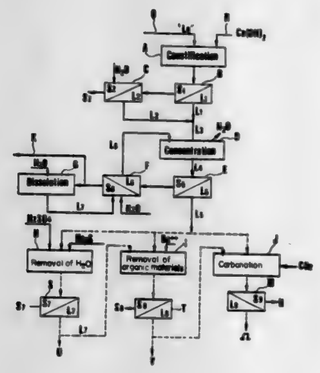
Int. Cl.³ C01G *39/06;* **C01F** *11/18;* **C01D** *5/00*

U.S. Cl. 423—55 **18 Claims**

1. A process for the purification of an aqueous solution wherein said aqueous solution initially contains (1) a sulphate,

a carbonate and a hydroxide or hydrogen carbonate of one of the alkali metals sodium or potassium, and (2) at least one of the metals selected from the group consisting of vanadium, uranium and molybdenum in the form of sodium or potassium salts, and (3) inorganic and/or organic impurities, said process comprising the steps of:

(a) reacting at a temperature up to the boiling point temperature of said aqueous solution containing the metal salts with lime added to the solution in an amount within the range of 0.1 to 20 times the stoichiometric amount required to convert any carbonates to hydroxides plus the amount taken up in the precipitation of insoluble compounds of calcium to form a precipitate of calcium carbonate and other insoluble organic and inorganic calcium salts in a hydroxide-enriched liquor;



(b) separating the precipitate from the hydroxide-enriched liquor;

(c) washing the separated precipitate to form a wash liquor;

(d) mixing said wash liquor and said hydroxide-enriched liquor;

(e) concentrating the hydroxide-enriched liquor and wash liquor mixture to a hydroxide content which does not exceed 50% by weight to precipitate alkali metal sulphate, leaving a mother liquor; and

(f) separating the alkali metal sulphate precipitate from the mother liquor.

4,451,440

UTILIZATION OF ION EXCHANGE RESIN IN THE PROCESSING OF KAOLINS

Thomas D. Thompson, III, Upper Black Eddy, Pa., assignor to Georgia Kaolin Company, Inc., Elizabeth, N.J.

Filed Oct. 28, 1982, Ser. No. 437,610

Int. Cl.³ C01G *15/00*

U.S. Cl. 423—112 **8 Claims**

1. A method of processing naturally occurring kaolin clay, comprising:

(a) preparing an aqueous suspension of crude kaolin clay having a solids content of at least about 50%;

(b) fractionating said kaolin suspension into a fine particle clay slip and a coarse particle residue;

(c) reacting the fine particle clay slip with an aqueous bleaching agent and an ion exchange resin saturated with sodium cations and an ion exchange resin saturated with phosphate anions; and

(d) drying the reacted fine particle clay slip to a preselected solids content.

4,451,441

METHOD FOR EXHAUST GAS TREATMENT

Michael V. Ernest, Baltimore, and James M. Maselli, Columbia, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 394,220, Jun. 21, 1982, Pat. No. 4,426,320, which is a continuation of Ser. No. 228,832, Jan. 27, 1981, abandoned. This application Sep. 9, 1983, Ser. No. 523,511

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—213.2 **5 Claims**

1. A method for removing carbon and lead particles from internal combustion engine exhaust gases comprising passing the gases through a coarse ceramic foam filter having a pore size of from about 2 to about 20 pores per 25 millimeters in length and then through a fine ceramic foam filter having a pore size of from about 15 to about 50 pores per 25 millimeters in length.

3. The method of claim 1 in which the filters further comprise a carbon combustion catalyst material deposited on the filters.

4,451,442

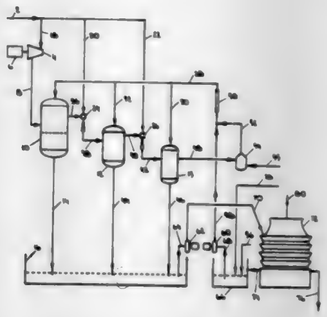
REMOVAL OF HYDROGEN SULFIDE FROM FLUID STREAMS WITH MINIMUM PRODUCTION OF SOLIDS

Gaines C. Jeffrey, Houston; Lance A. Cooper, Lake Jackson, both of Tex., and Sharon S. Whipple, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 21, 1982, Ser. No. 390,617

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—224 **15 Claims**



1. A continuous process for removing hydrogen sulfide from a fluid stream containing hydrogen sulfide which comprises

(A) contacting said stream in a first reaction zone with an aqueous solution at a pH range suitable for removing hydrogen sulfide whereby said solution contains an effec-

tive amount of a polyvalent metal chelate and an effective amount of an oxidizing agent capable of oxidizing elemental sulfur to soluble sulfur compounds whereby said hydrogen sulfide is converted to free sulfur and then to soluble sulfur compounds and said polyvalent metal chelate is reduced to a lower oxidation state metal chelate,

(B) contacting said solution containing reduced polyvalent metal chelate in a second reaction zone with a oxygen containing gas stream whereby said metal chelate is continuously reoxidized, and

(C) continuously recirculating said reoxidized solution back to said first reaction zone.

4,451,443

CAUSTICIZATION METHOD

Stephen C. Libby, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 28, 1982, Ser. No. 402,510
Int. Cl.³ C01F 5/24
U.S. Cl. 423—432 **5 Claims**

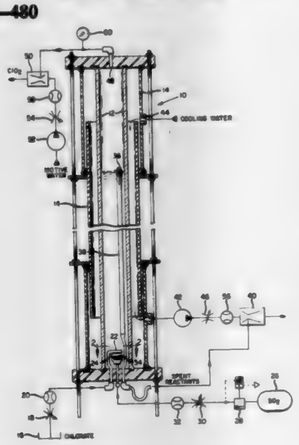
1. The causticization method comprising the steps of calcining limestone in the presence of additive means for producing lime of increased lime efficiency relative to the lime that would result from calcining said limestone without the presence of said additive means, said additive means comprising an alkali metal compound, said lime efficiency being determined on a sodium carbonate solution for which conditions, other than the character of the lime, are fixed, and subsequently feeding the lime of increased lime efficiency into said sodium carbonate solution for producing sodium hydroxide and calcium carbonate from the sodium carbonate.

4,451,444

METHOD AND APPARATUS FOR PRODUCING CHLORINE DIOXIDE

Paul W. Santillie, Richland, and Daniel M. Ramras, Seattle, both of Wash., assignors to Lamb-Weston, Inc., Portland, Oreg.

Filed Oct. 21, 1981, Ser. No. 313,256
Int. Cl.³ C01B 11/02
U.S. Cl. 423—480 **7 Claims**



1. A process for the continuous production of gaseous chlorine dioxide by the reaction between gaseous sulfur dioxide and an aqueous solution of a metallic chlorate, said method comprising:

(a) supplying a flow of an aqueous solution of a metallic chlorate to the bottom of a reaction chamber;

(b) supplying a flow of gaseous sulfur dioxide to the bottom of said reaction chamber and thereby bringing said sulfur dioxide into contact with said aqueous solution;

(c) withdrawing from the top of said reaction chamber gaseous chloride dioxide; and

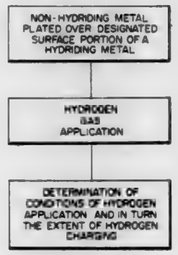
(d) withdrawing from said reaction chamber, at an intermediate location, liquid remaining after said contact between said sulfur dioxide and said aqueous solution.

4,451,445

METHOD FOR CONTROLLED HYDROGEN CHARGING OF METALS

Bo-Ching Cheng, and Ronald B. Adamson, both of Fremont, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 31, 1982, Ser. No. 413,534
Int. Cl.³ C01B 6/02
U.S. Cl. 423—645 **11 Claims**



1. A method for the controlled hydrogen charging of hydride forming metals for forming hydrides therein, comprising the steps of:

a. applying a thin layer of a thickness of about 10 to about 15 microns of copper over the surface of a hydride forming metal comprising zirconium and its alloys;

b. subjecting the surface of the hydride forming metal with the layer of copper thereon to hydrogen gas while exposed to an ambient temperature of about 200° to about 400° C.; and

c. determining the amount of hydrogen gas diffused through the thin layer of copper and into the hydride forming metal based upon the measurement of the ambient temperature of the hydrogen gas application, the copper layer thickness, and the duration of exposure to hydrogen gas.

4,451,446

PROCESS FOR THE PREPARATION OF POLYSACCHARIDE-PROTEIN COMPLEXES FROM BACTERIAL CAPSULES, OBTAINED PRODUCTS AND IMMUNOGENIC COMPOSITIONS CONTAINING THEM

Jean Vandevelde, Ottignies-Louvain-la-Neuve, and Robert De Neys, Rixensart, both of Belgium, assignors to Smithkline-Rit, Belgium

Filed Mar. 4, 1982, Ser. No. 354,878
Int. Cl.³ A61K 39/102, 37/00; C07G 7/00
U.S. Cl. 424—92 **13 Claims**

1. A process for preparing immunogenic lipopolysaccharide-free bacterial capsular polysaccharide-protein noncovalent complex from bacteria suspended in an aqueous medium which comprises inactivation of the bacteria by the addition of a quaternary ammonium salt immediately followed by collection of the insoluble fraction, take-up with a 0.2 to 2 N aqueous solution of a non toxic alkali- or alkaline-earth metal salt, precipitation of contaminants by addition of 5 to 40% (vol/vol) of a water-miscible alcohol, removal of the quaternary ammonium salt from the solution by addition of a water soluble iodide, sulfocyanide or benzoate and separation of the precipitate to yield an aqueous solution from which the immunogenic lipopolysaccharide-protein noncovalent complex is isolated.

10. An immunogenic lipopolysaccharide-free capsular polysaccharide-protein noncovalent complex of Haemophilus influenzae type b prepared by the process of claim 1 wherein the polysaccharide moiety is polyribosylribitol phosphate and wherein the protein moiety presents one methionine residue per molecule and which, when tested by sodium dodecyl sulfate polyacrylamide gel electrophoresis, shows two spots corresponding to 90 and 10% (wt/wt) of polypeptides accounting for the protein present in the complex, the main fraction being hydrophobic and of a molecular weight of 41,000 daltons, the total amount of protein in the complex being at least 30% of the complex weight.

12. A meningitis vaccine comprising an effective dose of the polysaccharide-protein complex of claim 10 in freeze-dried form with a stabilizer.

4,451,447

PHARMACEUTICAL FORMULATIONS

Murray A. Kaplan, Syracuse, and Alphonse P. Granatek, Baldwinsville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 135,373, Mar. 31, 1980, abandoned. This application Dec. 24, 1981, Ser. No. 334,206
Int. Cl.³ A61K 33/24
U.S. Cl. 424—131 **3 Claims**

1. A sterile, stable, concentrated solution of cisplatin in a sealed container, said solution containing from about 10 to about 15 mg of cisplatin per ml and from about 10 to about 15 mg of NaCl per ml in a solvent medium consisting of about 90% of a polyethylene glycol having an average molecular weight of from about 350 to about 450 and about 10% water.

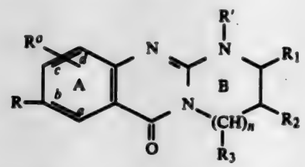
4,451,448

1-SUBSTITUTED TRICYCLIC QUINAZOLINONES USEFUL AS TRANQUILIZERS

Goetz E. Hardtmann, Morristown, and William J. Houlihan, Mt. Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 401,647, Jul. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 302,484, Sep. 16, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,281
Int. Cl.³ A61K 31/505; C07D 487/04
U.S. Cl. 424—251 **29 Claims**

1. A compound of the formula:



wherein

R^o is hydrogen, halo of atomic weight of from 18 to 80, or alkyl of 1 to 3 carbon atoms,

R is halo of atomic weight of from 18 to 80, alkyl of 1 to 4 carbon atoms or trifluoromethyl,

R′ is alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, norbornyl, alkyl of 1 to 3 carbon atoms substituted by cycloalkyl of 3 to 7 carbon atoms or $—CH_2(F_xALK)$ wherein

X is 1 to 3 and ALK is alkyl of 1 to 4 carbon atoms,

R_1, R_2 and R_3 are each independently hydrogen or alkyl of 1 or 2 carbon atoms, and n is 0 or 1,

or a pharmaceutically acceptable acid addition salt thereof.

15. The method of tranquilizing a mammal comprising administering to a mammal a tranquilizing effective amount of a compound of claim 1.

29. A pharmaceutical composition comprising an inert pharmaceutically acceptable carrier and a tranquilizing effective amount of a compound of claim 1.

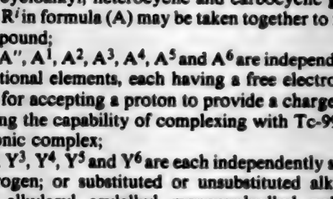
4,451,449

XANTHINE DERIVATIVES, AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Joachim E. Goring, Gronau, Fed. Rep. of Germany, assignor to Johanna Wuelfing, Fed. Rep. of Germany

Continuation of Ser. No. 135,284, Mar. 31, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 278,569
Claims priority, application United Kingdom, Apr. 5, 1979, 7912050
Int. Cl.³ C07D 239/95; A61K 31/52
U.S. Cl. 424—253 **13 Claims**

1. A compound having the formula (III):



(III)

wherein R^1 and R^2 are are lower alkyl or taken together are C_2–C_4 alkylene.

4,451,450

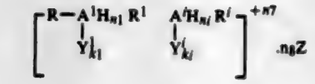
CATIONIC COMPOUNDS USEFUL FOR MAKING RADIODIAGNOSTIC AGENTS

Vinayakam Subramanyam, Westwood, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Filed Oct. 15, 1981, Ser. No. 311,770
Int. Cl.³ A61K 43/00, 49/00; C07F 9/66, 9/90
U.S. Cl. 424—1.1 **36 Claims**

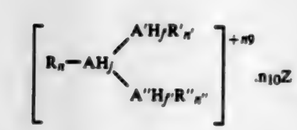
1. A normally solid, hydrophilic compound capable of binding with Tc-99m to form a cationic complex and having a formula selected from:

(A)



or

(B)



wherein:

R, R′, R″, R^1, R^2, R^3, R^4, R^5 and R^6 are each independently selected from hydrogen; or substituted or unsubstituted alkyl, alkylene, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic group; and R plus R^i in formula (A) may be taken together to form a cyclic compound;

A, A′, A″, A^1, A^2, A^3, A^4, A^5 and A^6 are independently neutral functional elements, each having a free electron pair available for accepting a proton to provide a charged ligand and having the capability of complexing with Tc-99m to form a cationic complex;

Y^1, Y^2, Y^3, Y^4, Y^5 and Y^6 are each independently selected from hydrogen; or substituted or unsubstituted alkyl, alkylene, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

Z is an anion;

i is an integer from 0 to 6;

j, j′ and j″ are each independently 0 or 1;

k^1, k^2, k^3, k^4, k^5 and k^6 are each independently 0 or 1;

n, n' and n'' are each independently the integer 1 or 2;
n_1, n_2, n_3, n_4, n_5, n_6, are independently 0 or 1;
n_7 and n_8 are each an integer from 1 to 6; and
n_9 and n_{10} are each an integer from 1 to 3.

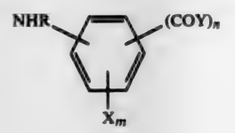
4,451,451

RADIOPHARMACEUTICAL COMPOSITION BASED ON TECHNETIUM-99M AND REAGENT FOR MAKING IT

John Rimmer, Amersham, England, assignor to Amersham International plc, England

Filed Oct. 26, 1982, Ser. No. 436,689
Claims priority, application United Kingdom, Oct. 30, 1981, 8132778
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 12 Claims

1. A composition comprising technetium-99m present in a valency state greater than 0 and less than 7, stabilized by means of a stabilizing agent having the general formula:



where
R is C1–C6 alkyl or hydrogen,
X is C1–C6 alkyl or OH,
m is 0, 1 or 2,
Y is OH or —NH.CH_2.COOH,
n is 1 or 2
or a salt, ester or amide thereof.

4,451,452

PHARMACEUTICAL COMPOSITIONS CONTAINING BIODEGRADABLE POLYMERS

Heinrich Deibig, Frankfurt; Roland Reiner, Eschborn, both of Fed. Rep. of Germany, and Hendricus B. A. Welle, Maarssen, Netherlands, assignors to Sandoz Ltd., Basel, Switzerland

Filed Nov. 23, 1981, Ser. No. 323,733
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045135
Int. Cl.³ A61K *31/74, 31/78*
U.S. Cl. 424—78 8 Claims

1. A pharmaceutical composition comprising an effective amount of a parenterally effective drug in an injectable preparation in a sterile carrier liquid which preparation is an intimate mixture of a solid solution or dispersion of drug in a matrix of a biodegradable polymer or wholly or partly microencapsulated by a biodegradable polymer, said biodegradable polymer being a pharmacologically acceptable water-soluble polymer having hydroxy groups attached to the polymer chain, in which less than all of said hydroxy groups are esterified by residues of pharmacologically acceptable mono- or di-carboxylic acids, the degree of esterification being such that said biodegradable polymer is water-swellable but water-insoluble under physiological conditions.

4,451,453

METHOD FOR TREATING CONTACT DERMATITIS

George E. Lay, Fountaintown, Ind., and Daniel H. Haigh, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 13, 1982, Ser. No. 367,844
Int. Cl.³ A61K *31/78*
U.S. Cl. 424—81 7 Claims

1. A method of controlling and treating dermatitis in humans caused by exposure of the skin to a plant of the genus Rhus which comprises the topical application of an effective amount of an allergen-imbibing, allergen-retaining polymer wherein said polymer is a crosslinked copolymer of isobornyl acrylate, isobornyl methacrylate, styrene, or alkylstyrene and at least one ester of a C_8 to C_{20} fatty alcohol with acrylic or methacrylic acid, crosslinked with a polyethylenically unsaturated crosslinking agent.

4,451,454

PROPHYLAXIS AND TREATMENT OF THROMBOEMBOLIC DISORDERS IN MAN AND IN WARM-BLOODED ANIMALS WITH BICARBONATE SALTS OF ALKALI METALS

Dennis W. Wong, 2853 Sunnyglen Rd., Torrance, Calif. 90505

Filed Jun. 16, 1981, Ser. No. 274,386
Int. Cl.³ A61K *33/00*
U.S. Cl. 424—127 15 Claims

11. A method of prevention of blood coagulation in man or in warm-blooded animals which comprises administering internally to said host a bicarbonate salt of an alkali metal at a dose of 0.05–4 mEq(5–350 mg)/kg body weight, said bicarbonate salt being selected from the group consisting of sodium bicarbonate and potassium bicarbonate.

4,451,455

α-AMYLASE INACTIVATOR, A PROCESS FOR ITS PREPARATION, AN AGENT BASED ON THIS INACTIVATOR AND ITS USE

László Vértesy, Eppstein; Miroslav Mracek, Frankfurt am Main; Gerhard Braunitzer, and Heinz Aschauer, both of Munich, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,444
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038130; Feb. 26, 1981, 3107106
Int. Cl.³ A61K *37/02*; C07C *103/52*; C12P *21/00, 21/02*
U.S. Cl. 424—177 9 Claims

1. An α-amylase inactivator which is a member selected from the group consisting of (1) a first peptide, HOE 467-A, having a molecular weight of 7958, an isoelectric point of 4.35±0.15, the following amino acid composition

Asp 6	Glu 7	Ala 7		Tyr 6	Lys 1
Thr 8	Pro 3	Val 8	Ile 2		Arg 3
Ser 5	Gly 7	Cys 4	Leu 4	His 2	Trp 1

and the following amino acid sequence having a disulfide bridge between Cys 11 and Cys 27 and between Cys 45 and Cys 73: Asp-Thr-Thr-Val-Ser-Glu-Pro-Ala-Pro-Ser-Cys-Val-Thr-Leu-Tyr-Gln-Ser-Trp-Arg-Tyr-Ser-Gln-Ala-Asp-Asn-Gly-Cys-Ala-Glu-Thr-Val-Thr-Val-Lys-Val-Val-Tyr-Glu-Asp-Asp-Thr-Glu-Gly-Leu-Cys-Tyr-Ala-Val-Ala-Pro-Gly-Gln-Ile-Thr-Thr-Val-Gly-Asp-Gly-Tyr-Ile-Gly-Ser-His Gly-His-Ala-Arg-Tyr-Leu-Ala-Arg-Cys-Leu, and a second peptide, HOE 467-B, which is a degradation product of said first peptide, said degradation shortening the N-terminal end of said first peptide to produce said second peptide, said degradation product having an isoelectric point of 4.53±0.15 and the following amino acid composition

Asp 5	Glu 6–7	Ala 7		Tyr 6	Lys 1
Thr 6–8	Pro 3	Val 7–8	Ile 2		Arg 3
Ser 4–5	Gly 7	Cys 4	Leu 4	His 2	Trp 1

and comprising six components respectively of the following amino acid sequences each having disulfide bridges as noted:

(a) Thr-Thr-Val-Ser-Glu-Pro-Ala-Pro-Ser-Cys-Val-Thr-Leu-Tyr-Gln-Ser-Trp-Arg-Tyr-Ser-Gln-Ala-Asp-Asn-Gly-Cys-Ala-Glu-Thr-Val-Thr-Val-Lys-Val-Val-Tyr-Glu-Asp-Asp-Thr-Glu-Gly-Leu-Cys-Tyr-Ala-Val-Ala-Pro-Gly-Gln-Ile-Thr-Thr-Val-Gly-Asp-Gly-Tyr-Ile-Gly-Ser-His-Gly-His-Ala-Arg-Tyr-Leu-Ala-Arg-Cys-Leu, with a disulfide bridge between Cys 10 and Cys 26 and between Cys 44 and Cys 72;

(b) Thr-Val-Ser-Glu-Pro-Ala-Pro-Ser-Cys-Val-Thr-Leu-Tyr-Gln-Ser-Trp-Arg-Tyr-Ser-Gln-Ala-Asp-Asn-Gly-Cys-Ala-Glu-Thr-Val-Thr-Val-Lys-Val-Val-Tyr-Glu-Asp-Asp-Thr-Glu-Gly-Leu-Cys-Tyr-Ala-Val-Ala-Pro-Gly-Gln-Ile-Thr-Thr-Val-Gly-Asp-Gly-Tyr-Ile-Gly-Ser-His-Gly-His Ala-Arg-Tyr-Leu-Ala-Arg-Cys-Leu, with a disulfide bridge between Cys 9 and Cys 25 and between Cys 43 and Cys 71;

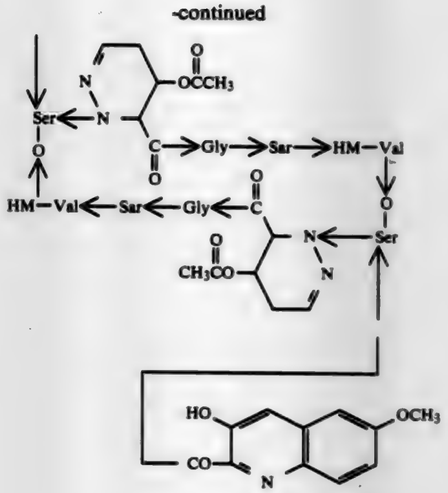
(c) Val-Ser-Glu-Pro-Ala-Pro-Ser-Cys-Val-Thr-Leu-Tyr-Gln-Ser-Trp-Arg-Tyr-Ser-Gln-Ala-Asp-Asn-Gly-Cys-Ala-Glu-Thr-Val-Thr-Val-Lys-Val-Val-Tyr-Glu-Asp-Asp-Thr-Glu-Gly-Leu-Cys-Tyr-Ala-Val-Ala-Pro-Gly-Gln-Ile-Thr-Thr-Val-Gly-Asp-Gly-Tyr-Ile-Gly-Ser-His-Gly-His-Ala Arg-Tyr-Leu-Ala-Arg-Cys-Leu, with a disulfide bridge between Cys 8 and Cys 24 and between Cys 42 and Cys 70;

(d) Ser-Glu-Pro-Ala-Pro-Ser-Cys-Val-Thr-Leu-Tyr-Gln-Ser-Trp-Arg-Tyr-Ser-Gln-Ala-Asp-Asn-Gly-Cys-Ala-Glu-Thr-Val-Thr-Val-Lys-Val-Val-Tyr-Glu-Asp-Asp-Thr-Glu-Gly-Leu-Cys-Tyr-Ala-Val-Ala-Pro-Gly-Gln-ILe-Thr-Thr-Val-Gly-Asp-Gly-Tyr-Ile-Gly-Ser-His-Gly-His-Ala-Arg Tyr-Leu-Ala-Arg-Cys-Leu, with a disulfide bridge between Cys 7 and Cys 23 and between Cys 41 and Cys 69;

(e) Glu-Pro-Ala-Pro-Ser-Cys-Val-Thr-Leu-Tyr-Gln-Ser-Trp-Arg-Tyr-Ser-Gln-Ala-Asp-Asn-Gly-Cys-Ala-Glu-Thr-Val-Thr-Val-Lys-Val-Val-Tyr-Glu-Asp-Asp-Thr-Glu-Gly-Leu-Cys-Tyr-Ala-Val-Ala-Pro-Gly-Gln-Ile-Thr-Thr-Val-Gly-Asp-Gly-Tyr-Ile-Gly-Ser-His-Gly-His-Ala-Arg Tyr-Leu-Ala-Arg-Cys-Leu, with a disulfide bridge between Cys 6 and Cys 22 and between Cys 40 and Cys 68; and

(f) Pro-Ala-Pro-Ser-Cys-Val-Thr-Leu-Tyr-Gln-Ser-Trp-Arg-Tyr-Ser-Gln-Ala-Asp-Asn-Gly-Cys-Ala-Glu-Thr-Val-Thr-Val-Lys-Val-Val-Tyr-Glu-Asp-Asp-Thr-Glu-Gly-Leu-Cys-Tyr-Ala-Val-Ala-Pro-Gly-Gln-Ile-Thr-Thr-Val-Gly-Asp-Gly-Tyr-Ile-Gly-Ser-His-Gly-His-Ala-Arg-Tyr-Leu Ala-Arg-Cys-Leu, with a disulfide bridge between Cys 5 and Cys 21 and between Cys 39 and Cys 67.

-continued



4,451,457

CYCLODEXTRIN AND METHOD FOR PROMOTING THE PROLIFERATION OF INTESTINAL BIFIDOBACTERIA

Chikao Yoshikumi, Kunitachi; Katsuo Sakurai, Hino; Yoshio Omura, Funabashi; Mayumi Nohara, Ryugasaki; Takao Ando, Nerima, and Isamu Motokawa, Hino, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Filed Feb. 10, 1982, Ser. No. 347,726
Claims priority, application Japan, Feb. 18, 1981, 56-22620
Int. Cl.³ A61K *31/715*
U.S. Cl. 424—180 5 Claims

1. A method for promoting the proliferation of bacteria of the genus Bifidobacterium in the intestines of animals which comprises administering cyclodextrin to animals at the rate of 0.01 to 1 g per kg of body weight per day.

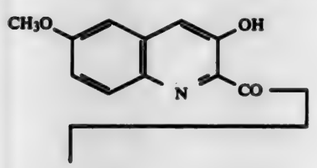
4,451,456

ANTITUMOR ANTIBACTERIAL AGENTS

Hideo Koshiyama, Musashino; Fumihide Sakai, Yokohama, and Hiroaki Ohkuma, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 122,626, Mar. 6, 1980, Pat. No. 4,360,458, which is a continuation-in-part of Ser. No. 026,488, Apr. 2, 1979, abandoned. This application Jun. 21, 1982, Ser. No. 390,149
The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.
Int. Cl.³ A61K *37/00*; C07C *103/52*; C07G *7/00*
U.S. Cl. 424—177 4 Claims

1. The pharmaceutical antitumor antibiotic composition in sterile injectible form comprising a pharmaceutical carrier substance, and BBM-928A having the formula



4,451,458

METHOD FOR THE TREATMENT OF POST-OPERATIVE THROMBOSIS

Hans Bühlmann, and Dieter Welzel, both of Nuremberg, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 119,583, Feb. 7, 1980, abandoned, which is a continuation of Ser. No. 942,807, Sep. 15, 1978, abandoned, which is a continuation of Ser. No. 890,165, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 703,256, Jul. 7, 1976, abandoned. This application May 17, 1982, Ser. No. 379,272
Int. Cl.³ A61K *31/725, 31/48*
U.S. Cl. 424—183 3 Claims

1. A method for the prophylactic treatment of post-operative thrombosis in mammals, comprising parenterally administering dihydroergotamine in conjunction with heparin, wherein the administration is effected with a unit dose comprising about 0.5 mg. of dihydroergotamine and about 2500–5000 I.U. of heparin and said doses are administered two to four times daily.

4,451,459
BIOLOGICALLY ACTIVE EXTRACTS FROM *MYRCIA FALLAX* (MYRTACEAE) PERU AND METHOD OF OBTAINING SAME

Sidney M. Hecht, Charlottesville, Va., assignor to Wofor AG, Switzerland

Continuation of Ser. No. 280,086, Jul. 2, 1981, abandoned. This application Jul. 23, 1982, Ser. No. 401,306

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **9 Claims**

1. Biologically active materials from the plant *Myrica fallax*, Myrtaceae, Peru, the materials being produced by the process comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to about 2.0, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0, and a third solvent having a dielectric constant at 20° to 25° C. of from about 15 to 35, each extraction step being conducted for a period of 1 to 10 days, all extractions steps being conducted at room temperature, and recovering the biologically active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx from the extract of the third solvent.

5. A process of obtaining biologically active materials from the plant *Myrica fallax*, Myrtaceae, Peru, comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to 20, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0 and a third solvent having a dielectric constant at 20° to 25° C. of from about 15 to 35, each extraction step being conducted for a period of 1 to 10 days, all of the extraction steps being conducted for a period of 1 to 10 days, all of the extraction steps being conducted at room temperature, and recovering the biologically active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx from the extract of the third solvent.

4,451,460
METHOD AND MEANS FOR REPELLING ANIMALS

Helge Hansen; Borje Nystrom, both of Stavanger, and Eyvin Torneng, Hinna, all of Norway, assignors to Nordtend A/S, Stavanger, Norway

PCT No. PCT/NO82/00039, 371 Date Feb. 23, 1983, 102(e) Date Feb. 23, 1983, PCT Pub. No. WO83/00417, PCT Pub. Date Feb. 17, 1983

PCT Filed Jul. 2, 1982, Ser. No. 474,588

Claims priority, application Norway, Jul. 31, 1981, 812613

Int. Cl.³ A01N *45/00*

U.S. Cl. 424—238 **9 Claims**

1. A method for repelling animals by placing smelling repellent substances in the area from which the animals are to be kept off, characterized by the use as a repellent substances of one or more steroids which are synthetic or have been extracted from naturally occurring materials and which are of the type occurring on human skin or hair or in human sweat or urine and/or of one or more of the derivatives thereof obtainable by subjecting the steroids to air, moisture or micro-organisms in such a manner as to provide in the air a concentration perceptible to the sense of smell of the animals, said steroids being selected from the group consisting of testosterone, androsterone, dehydroepiandrosterone, 11-ketoaetiocholanalone, i-androstanalone, oestrone and androstenol.

4,451,461
10-(1-AZA-[2,2,2)-BICYCLO-3-OCTYL]-10H-2-PHENOTHIAZINESULFONAMIDE AND DERIVATIVES THEREOF

Marie-Christine Dubroeucq, Enghien-les-Bains, and Jean E. M. A. Rataud, Paris, both of France, assignors to Pharmindustrie, Gennevilliers, France

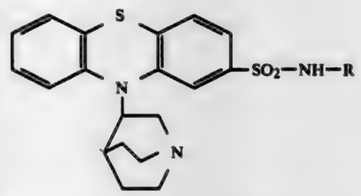
Filed Jul. 6, 1982, Ser. No. 395,235

Claims priority, application France, Jul. 10, 1981, 81 13602

Int. Cl.³ A61K *31/54*; C07D *453/00*

U.S. Cl. 424—246 **7 Claims**

1. 10-[1-aza-(2,2,2)-bicyclo-3-octyl]-10H-2-phenothiazinesulfonamides of the formula



(I)

wherein R represents methyl.

7. A method of treating a mammal afflicted with duodenal or gastric ulcers and to inhibit gastric secretion which comprises administering to said mammal a pharmaceutically effective amount of a composition containing a compound according to claim 1 or a pharmaceutically acceptable salt thereof in a pharmaceutically acceptable carrier therefor.

4,451,462
METHOD OF TREATING INFLAMMATION AND PAIN USING HETERAMINO BENZOFURANS

Paul Wenk, Allschwil; Werner Breitenstein, and Marcus Baumann, both of Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

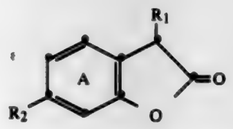
Continuation of Ser. No. 435,595, Oct. 21, 1982, Pat. No. 4,426,380. This application Oct. 17, 1983, Ser. No. 542,334

Claims priority, application Switzerland, Oct. 28, 1981, 6882/81

Int. Cl.³ A61K *31/445, 31/535*

U.S. Cl. 424—248.55 **11 Claims**

1. A method for treating inflammation and pain in warm-blooded animals comprising treating warm-blooded animals in need of such treatment with an effective amount of benzofuranones of the general formula



(I)

in which R_1 represents hydrogen or an aliphatic radical, R_2 represents an amino group di-substituted by a divalent hydrocarbon radical, and the aromatic ring A may be additionally substituted, and their salts and/or isomers.

4,451,463
ALCOHOL DERIVATIVES

Michael S. Large, Congleton, England, assignor to Imperial Chemical Industries PLC, London, England

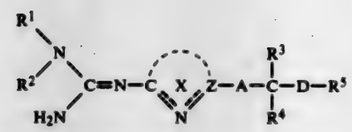
Filed Mar. 1, 1982, Ser. No. 353,416

Claims priority, application United Kingdom, Mar. 24, 1981, 8109217

Int. Cl.³ C07D *239/42, 239/34*; A61K *31/51*

U.S. Cl. 424—249 **10 Claims**

1. A guanidine derivative of the formula I:



I

in which R^1 and R^2, which may be the same or different, are hydrogen or branched or unbranched 1-10C alkyl, 3-8 C cycloalkyl or 4-14C cycloalkylalkyls, each alkyl, cycloalkyl or cycloalkylalkyl being optionally substituted by one or more halogens selected from fluorine, chlorine and bromine, provided that at least one of R^1 and R^2 is a halogen-substituted alkyl, cycloalkyl or cycloalkylalkyl, and provided that there is no halogen substituent on the carbon of the alkyl, cycloalkyl or cycloalkylalkyl which is directly attached to the nitrogen atom;

ring X is selected from pyrazine, pyridine, pyrimidine and 1,3,5-triazine and which ring may, where possible, carry one or two optional substituents, the optional substituents on ring X being selected from fluorine, chlorine, bromine, 1-6C alkyl, 1-6C alkoxy, 1-6C alkylthio, trifluoromethyl, hydroxy and amino;

—A— is a 1-8C alkylene chain which is optionally substituted by one or two 1-3C alkyls and into which is optionally inserted, as part of the backbone of the chain, an NH or a 1-6C N-alkyl or one or two groups selected from oxygen, sulphur, cis and trans vinylene, ethynylene, phenylene and 5-7C cycloalkylene, provided that no two insertions selected from oxygen, sulphur, NH and N-alkyl are directly attached one to the other and provided that when the optional insertion is NH or N-alkyl, that insertion is directly attached to ring X, or —A— is 5-7C cycloalkylene; R^3 is hydrogen, 1-6C alkyl, 3-8C cycloalkyl, 4-12C cycloalkylalkyl, 3-6C alkenyl, 3-6C alkynyl or 2-8C alkoxyalkyl; R^4 is hydrogen or 1-6C alkyl; or A—CR^3R^4 is oxy-1,4-cyclohexylene; D is oxygen or sulphur; R^5 is hydrogen, 1-6C alkyl, 1-6C alkanoyl, phenyl, 7-11C phenylalkyl or benzoyl, the phenyl, penylalkyl and benzoyls each being optionally substituted by one or two substituents selected by one or two substituents selected from fluorine, chlorine, bromine, 1-6C alkyl, 1-6C alkoxy, 1-6C alkylthio, cyano, trifluoromethyl, hydroxy and amino:

and the pharmaceutically-acceptable acid-addition salts thereof.

4,451,464
TRIFLUOROMETHYL SUBSTITUTED TRICYCLIC QUINAZOLINONES USEFUL AS TRANQUILIZERS

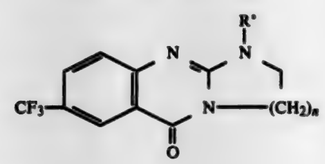
Goetz E. Hardtmann, Morristown, and William J. Houlihan, Mt. Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 401,649, Jul. 26, 1982, abandoned, which is a continuation of Ser. No. 302,486, Sep. 16, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,282

Int. Cl.³ A61K *31/505*; C07D *487/04*

U.S. Cl. 424—251 **19 Claims**

1. A compound of the formula:



wherein

R^6 is alkyl of 1 to 8 carbon atoms, and

n is 1 to 2,

or a pharmaceutically acceptable acid addition salt thereof.

8. A pharmaceutical composition comprising an inert pharmaceutically acceptable carrier and a tranquilizing effective amount of claim 1.

13. The method of tranquilizing a mammal comprising administering to a mammal a tranquilizing effective amount of a compound of claim 1.

4,451,465
ANTI-OBESITY AGENTS

Alan C. White, Windsor, and Michael G. Wyllie, Maidenhead, both of England, assignors to John Wyeth & Brother Ltd., Maidenhead, England

Filed Jun. 22, 1982, Ser. No. 391,071

Claims priority, application United Kingdom, Jul. 7, 1981, 8120961

Int. Cl.³ A61K *31/505*

U.S. Cl. 424—251 **3 Claims**

1. A method of treating or preventing obesity in mammals which comprises orally administering to a mammal in need thereof an amount effective to reduce weight gain or cause weight loss, as desired, in said mammal of 2,3,4,10-tetrahydro-3,3-dimethyl-10-phenylpyrimido[1,2-a]indole-10-ol or a pharmaceutically acceptable acid addition salt thereof.

4,451,466
USE OF PYRROLOQUINAZOLINEDIAMINES AS PESTICIDES

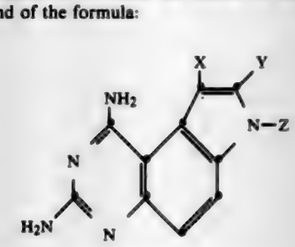
Charles A. Horne; Stephen A. Salvo; Kurt G. R. Sundelin, all of Modesto, Calif., and Steven A. Roman, Fulshear, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 2, 1982, Ser. No. 394,968

Int. Cl.³ A01N *43/54, 43/84, 43/86, 43/88*

U.S. Cl. 424—251 **1 Claim**

1. A method for protecting plants from insects which feed upon the foliage of plants, which comprises applying to the foliage of a plant to be protected an amount effective to either kill the insects or to cause the insects to stop feeding of a compound of the formula:



(I)

and acid addition salts thereof, wherein

(A) X is hydrogen, Y is hydrogen, halogen, alkyl of from one to six carbon atoms, or phenyl, and

Z is one of

(i) hydrogen;

(ii) straight-chain or branched-chain alkyl of up to eight carbon atoms;

(iii) a moiety R— or R—A—, wherein A is alkylene of from one to three carbon atoms with from one to two carbon atoms in the linking chain, and R is one of

(a) phenyl; naphthalenyl;

(b) phenyl substituted by alkanoyl of from two to six carbon atoms, aminocarbonyl, alkoxycarbonyl of from two to six carbon atoms, alkylsulfonyl of from one to three carbon atoms, or by from one to four substituents selected from halogen; nitro; amino; cyano; trifluoromethyl; trifluoromethoxy; or alkyl, alkoxy and alkylthio of from one to four carbon atoms each;

(c) pyridinyl, thienyl, thiazolyl, isoxazolyl, quinolyl, pyrimidinyl, pyrazinyl, quinoxalinyl, or any of these substituted by from one to three substituents selected from halogen, nitro, trifluoromethyl, phenyl, and alkyl of from one to four carbon atoms; 1-benzo[b]-thienyl;

(iv) cycloalkyl of from three to six carbon atoms;

(v) phenylsulfonyl or phenylsulfonyl substituted by from one to three substituents selected from halogen, and alkyl of from one to four carbon atoms;

(B) X and Y together represent an alkylene moiety of from one to four carbon atoms, which may be substituted by one to three substituents selected from halogen, alkyl, alkoxy and alkylthio of from one to six carbon atoms, and Z is as defined in (A).

4,451,467

4(3H)-QUINAZOLINONE DERIVATIVES, PROCESS FOR PRODUCTION THEREOF, AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAID COMPOUNDS

Masayuki Ishikawa, 14-13, Akazutsumi 3-chome, Setagaya-ku, Tokyo, Japan; Yukuo Eguchi, Chiba, Japan; Soyao Moriguchi, Yokohama, Japan, and Hisashi Ebisawa, Chofu, Japan, assignors to Masayuki Ishikawa, Tokyo, Japan

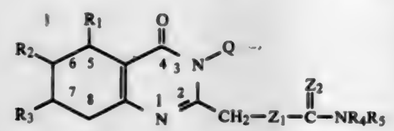
Filed Jan. 6, 1982, Ser. No. 337,454

Claims priority, application Japan, Jan. 16, 1981, 56-3904; Aug. 4, 1981, 56-121379; Sep. 18, 1981, 56-146301

Int. Cl.³ A61K *31/505*; C07D *401/12, 239/90*

U.S. Cl. 424—251 **19 Claims**

1. A 4(3H)-quinazolinone compound of the formula (I)



(I)

wherein

R_1 and R_3, independently from each other, represent lower alkyl;

R_2 represents lower alkoxycarbonyl;

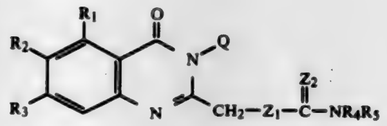
Q represents phenyl or phenyl substituted by one, two or three members selected from the group consisting of halogen atoms, lower alkyl, lower alkoxy, di(lower)alkylamino, methylenedioxy, trifluoromethyl, hydroxyl, and nitro;

R_4 represents a hydrogen atom or lower alkyl;

R_5 represents a member selected from the group consisting of a hydrogen atom, cyclohexyl cyclohexymethyl alkyl, lower, lower halogenoalkyl, lower alkenyl, cyclohexenyl, (lower)alkoxy(lower)alkyl, hydroxy(lower)alkyl, (lower-)alkylthio(lower)alkyl, (lower)alkylsulfinyl(lower)alkyl, (lower)alkylsulfonyl(lower)alkyl, di(lower)alkylamino(-lower)alkyl, benzyl, phenethyl, pyridyl(lower)alkyl, furfuryl, phenyl, and phenyl substituted by a member selected from the group consisting of halogen atoms, lower alkyl, and lower alkoxy; and

Z_1 and Z_2, independently from each other, represent an oxygen or sulfur atom; and the pharmaceutically acceptable acid addition salts thereof.

19. A pharmaceutical composition suitable for the treatment of hypotension composed of an effective amount of a 4(3H)-quinazolinone compound and a pharmaceutically acceptable diluent or carrier, said 4(3H)-quinazolinone compound being selected from the group consisting of the compounds of the following formula



(I)

wherein

R_1 and R_3, independently from each other, represent lower alkyl;

R_2 represents lower alkoxycarbonyl;

Q represents phenyl or phenyl substituted by one, two or three members selected from the group consisting of halogen atoms, lower alkyl, lower alkoxy, di(lower)alkylamino, methylenedioxy, trifluoromethyl, hydroxyl, and nitro;

R_4 represents a hydrogen atom or lower alkyl;

R_5 represents a member selected from the group consisting of a hydrogen atom, lower alkyl, cyclohexyl, cyclohexymethyl, halogenoalkyl, lower alkenyl, lower cyclohexenyl (lower)alkoxy(lower)alkyl, hydroxyl(lower)alkyl, (lower)alkylthio(lower)alkyl, (lower)alkylsulfinyl(lower)alkyl, (lower)alkylsulfonyl(lower)alkyl, di(lower)alkylamino(lower)alkyl, benzyl, phenetyl, pyridyl(lower)alkyl, furfuryl, phenyl, and phenyl substituted by a member selected from the group consisting of halogen atom, lower alkyl, and lower alkoxy; and

Z_1 and Z_2, independently from each other, represent an oxygen or sulfur atom and the pharmaceutically acceptable acid addition salts thereof.

4,451,468

ACIDIFEROUS 17-NORMAL-PENTYL SPARTEINE TARTARIC AND FUMARIC ACID SALTS PHARMACEUTICAL COMPOSITIONS THEREOF

Bernd Hachmeister, Hanover; Wolfgang Milkowski, Burgdorf; Ulrich Kühl, Hanover; Gerd Buschmann, Hanover, and Renke Budden, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

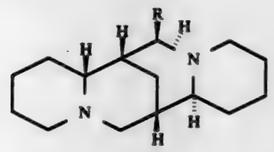
Continuation of Ser. No. 103,077, Dec. 12, 1979, abandoned. This application Sep. 30, 1981, Ser. No. 307,189

Claims priority, application European Pat. Off., Sep. 6, 1979, EP 79103315.2

Int. Cl.³ A61K *31/435*; C07D *471/22*

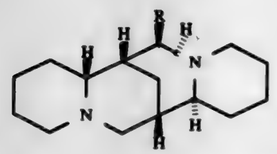
U.S. Cl. 424—256 **7 Claims**

1. An acidiferous acid addition salt of 17-β-n-pentyl sparteine of the following formula:



wherein R is n-pentyl and a dicarboxylic acid selected from the group consisting of tartaric acid, and fumaric acid wherein the ratio of moles of acid to moles of base in said salt is between 2.1 and 3.5 moles of acid for each mole of base.

5. A stable, pharmacologically active 17-β-n-pentyl sparteine composition useful in the treating of cardiac rhythm disorders comprising a pharmacologically acceptable carrier and a pharmaceutically effective amount of the acidiferous acid addition salt of 17-β-n-pentyl sparteine of the following formula:



wherein R is n-pentyl and a dicarboxylic acid selected from the group consisting of tartaric acid, and furmaric acid wherein the ratio of moles of acid to moles of base in said salt is between 2.1 and 3.5 moles of acid for each mole of base.

4,451,469

SELECTED 6-ALKYL-AND 4,6-DIALKYL-2(1H)-PYRIDINONES AS CARDIOTONICS

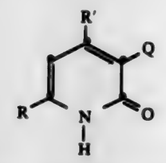
Baldev Singh, East Greenbush, and George Y. Lesher, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Dec. 16, 1982, Ser. No. 450,261

Int. Cl.³ A61K *31/44*

U.S. Cl. 424—263 **10 Claims**

1. A cardiotonic composition for increasing cardiac contractility, said composition comprising a pharmaceutically acceptable inert carrier and, as the active component thereof, a cardiotonically effective amount of 3-Q-4-R'-6-R-2(1H)pyridinone having the formula



where Q is hydrogen or cyano, R' is hydrogen, methyl, ethyl or n-propyl, and R is methyl, ethyl or n-propyl.

4,451,470

ANALGESIC, ANTAGONIST, AND/OR ANORECTIC 14-FLUOROMORPHINANS

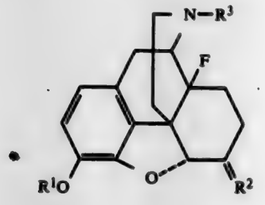
Venkat Ganti, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 6, 1982, Ser. No. 395,597

Int. Cl.³ A61K *31/485*; C07D *489/06*

U.S. Cl. 424—260 **8 Claims**

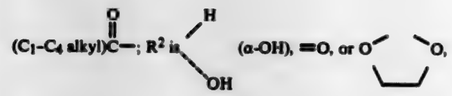
1. A compound having the formula:



I

wherein

R^1 is —H, —CH_3 or



or (O—C_1 to C_6 alkyl)$_2$; and

R^3 is C_1–C_5 alkyl,



allyl or 3,3-dimethylallyl;

or a pharmaceutically suitable salt thereof.

7. A pharmaceutical composition consisting essentially of a suitable pharmaceutical carrier and an effective analgesic amount or antagonist amount or anorexigenic amount of a compound of claim 1, or claim 2, or claim 3, or claim 4, or claim 5, or claim 6.

8. A method of producing analgesia or narcotic withdrawal or an anorexigenic effect in a mammal comprising administering to a mammal an analgesic effective amount or a narcotic antagonist effective amount or an anorexigenic effective amount of a compound of claim 1, or claim 2, or claim 3, or claim 4, or claim 5, or claim 6.

4,451,471

CERTAIN 2,4,5-TRI-SUBSTITUTED THIAZOLES, PHARMACEUTICAL COMPOSITIONS CONTAINING SAME AND METHODS OF USING SAME

Pier G. Ferrini, Binningen, and Richard Göschke, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

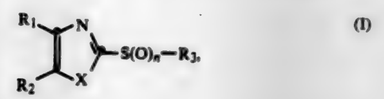
Filed Mar. 8, 1982, Ser. No. 355,989

Claims priority, application Switzerland, Mar. 18, 1981, 1838/81

Int. Cl.³ C07D *417/04*; A61K *31/44*

U.S. Cl. 424—263 **26 Claims**

1. A novel 2,4,5-trisubstituted thiazole of the formula



(I)

in which at least one of the radicals R_1 and R_2 represents optionally N-oxidised pyridyl and the other represents phenyl which is unsubstituted or substituted by lower alkyl, lower alkoxy, hydroxy, halogen or lower alkanoyloxy, lower alkylthio, lower alkanesulphinyl, lower alkanesulphonyl, amino, mono- or di-lower alkylamino, nitro and/or by trifluoromethyl, X represents thio, n represents 0, 1 or 2, R_3 represents lower alkyl, lower alkenyl or lower alkynyl, mono- or di-lower alkoxy-lower alkyl, lower alkylenedioxy-lower alkyl, lower alkanoyloxy-lower alkyl carrying the lower alkanoyloxy group in a position higher than the α-position, polyhalo-lower alkyl, hydroxy-lower alkyl wherein the hydroxy group is at a position higher than the α-position, oxo-lower alkyl carrying the oxo group in a position higher than the α-position, or phenyl-lower alkyl that is unsubstituted or substituted as indicated for R_1 and R_2, or a pharmaceutically acceptable salt thereof.

4,451,472

INHIBITION OF THROMBOXANE SYNTHETASE WITH 3-(HETEROALKYL)-INDOLYL-ACRYLIC ACID DERIVATIVES

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

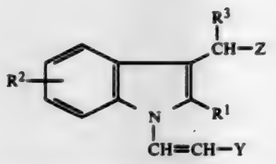
Filed Jul. 2, 1982, Ser. No. 394,554

Claims priority, application United Kingdom, Jul. 7, 1981, 8120878; May 13, 1982, 8213864

Int. Cl.³ A61K *31/415*; C07D *403/06*

U.S. Cl. 424—263 **15 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable acid addition or base salt thereof, wherein

R^1 is hydrogen or alkyl of 1–4 carbon atoms;

R^2 is hydrogen, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms or halogen;

R^3 is hydrogen or methyl;

Y is carboxy, carbalkoxy having 1–4 carbon atoms in the alkyl group or carboxamido; and

Z is 1-imidazolyl or 3-pyridyl.

4,451,473

3,7-DIAZABICYCLO [3.3.1] NONANES HAVING ANTI-ARRHYTHMIC ACTIVITY

Károly Nádor; Gábor Kraiss; Katalin Sinkó; Margit Paroczai; Egon Kárpáti, and László Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

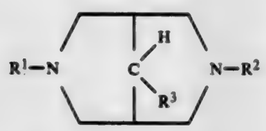
Filed Jul. 16, 1982, Ser. No. 398,801

Claims priority, application Hungary, Jul. 20, 1981, 2112/81

Int. Cl.³ C07D *471/08;* A61K *31/44*

U.S. Cl. 424—256 **11 Claims**

1. A bicyclic compound of the formula (I)



wherein

R^1 and R^2 are each C_{1-6} alkyl and

R^3 is an etherified hydroxy group of the formula —OR^4, wherein

R^4 is benzyl, benzhydryl or phenyl which can have a phenyl or a trihalomethyl substituent or a halogen substituent, or

R^3 is an esterified hydroxy group of the formula —O-CO—R^5 selected from the group which consists of:

a phenyl-(C_1-5 alkyl)-carbonyloxy group,

a cinnamoyloxy group which can have a halogen or one to three C_{1-4} alkoxy substituents,

a benzoyloxy group which can have a C_{1-4} alkyl, phenyl or trihalomethyl substituent or one or two C_{1-4} alkoxy substituents, one or two halo substituents and/or a nitro substituent,

a benzyloyloxy group,

a xanthene-9-carbonyloxy group,

a naphthoyloxy group, or a thenoyloxy, nicotinoyloxy, or furoyloxy group each of which can have a halo substituent on the ring,

or a stereoisomer or a pharmaceutically acceptable acid addition salt thereof.

4,451,474

T-BUTYL-PHENOXY-ALKYLENE ESTERS OF BENZOIC AND NICOTINIC ACIDS, COMPOSITIONS CONTAINING SAME AND THEIR ANTIHISTAMINIC METHOD OF USE

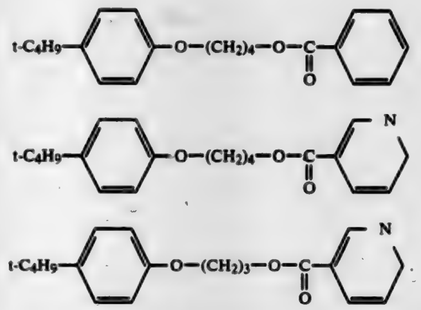
Frank M. Berger, 190 East 72nd St., New York, N.Y. 10031; Joseph I. DeGraw, Jr., and Howard L. Johnson, both of Sunnyvale, Calif., assignors to Frank M. Berger, New York, N.Y.

Continuation-in-part of Ser. No. 114,183, Jan. 22, 1980, abandoned. This application Dec. 3, 1981, Ser. No. 327,141

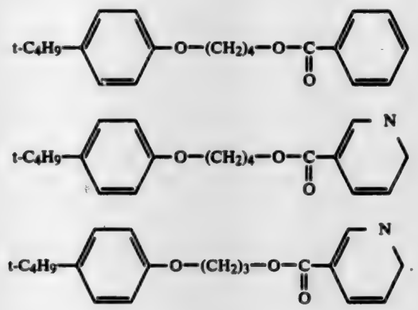
Int. Cl.³ C07D *213/55;* C07C *69/78;* A61K *31/455*

U.S. Cl. 424—266 **11 Claims**

5. A method for the antihistaminic treatment of animals in need of said treatment which comprises administering to the animal an amount therapeutically effective as an antihistamine of a p-alkyl phenoxy alcohol ester selected from the group consisting of:



8. A phenoxy alkanol ester selected from the group consisting of:



4,451,475

CYCLIC SULPHENAMIDE COMPOUNDS, THEIR PRODUCTION AND THEIR MEDICINAL USE

Wolf-Dieter Busse, Wuppertal; Edmund Krauthausen, Cologne, and Mithat Mardin, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

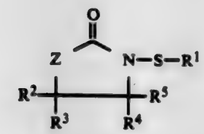
Filed Apr. 14, 1982, Ser. No. 368,329

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118129

Int. Cl.³ C07D *263/22, 277/14;* A61K *31/42, 31/425*

U.S. Cl. 424—270 **18 Claims**

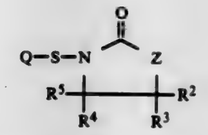
1. A compound which is a sulphenamides of the formula



wherein

Z denotes oxygen or sulphur,

R^1 represents a radical of the general formula



wherein

Z has the abovementioned meaning and

R^1 to R^5 have the meanings given below, and

Q represents an alkylene radical with 1 to 12 carbon atoms, in which the alkylene radical is optionally interrupted by one or more oxygen, sulphur or nitrogen atoms, or represents a cycloalkylene radical with 5 to 12 carbon atoms, arylene with 6 to 10 carbon atoms or an alkylene-cycloalkylene-alkylene or alkylene-arylene-alkylene radical, or

R^1 represents an alkenyl or alkynyl group with 2 to 12 carbon atoms, an aralkyl group with 7 to 11 carbon atoms, a cycloalkyl group with 5 to 8 carbon atoms or an aryl group with 6 to 14 carbon atoms; each of the abovementioned groups optionally being substituted by up to 5 identical or different substituents selected from alkoxy, alkyl, aralkyl, cycloalkyl, aryl, aryloxy, arylthio, alkylthio, carboxyl, carbalkoxy, cyano, carbamoyl, sulphonyl, halogenoalkyl, halogenoalkoxy, halogen, amino and amino by C_1–C_4-alkyl or benzyl, and

each R^2 and R^5 represent, independently of each other, a hydrogen atom, an alkyl group with 1 to 8 carbon atoms, a cycloalkyl group, with 5 to 8 carbon atoms, an aralkyl group with 7 to 10 carbon atoms, an aryl group with 6 or 10 carbon atoms, an alkoxy group with 1 to 12 carbon atoms, an aralkoxy group with 7 to 10 carbon atoms, an aryloxy group with 6 or 10 carbon atoms, an alkylthio group with 1 to 12 carbon atoms, a benzylthio group, an arylthio group with 6 or 10 carbon atoms, or an amino group which is substituted by alkyl, benzyl and/or aryl, or

R^2 together with R^4 forms a direct bond or an alkylene radical with 3 to 6 carbon atoms, or

R^2 and R^3 together represent an alkylidene radical with 1 to 4 carbon atoms, an aralkylidene radical with 7 to 10 carbon atoms, or an oxo, thiono or imino radical, or the radicals R^2 and R^3, together with the carbon atoms to which they are bonded, form a cycloalkyl radical with 5 to 8 ring members, or

R^4 and R^5 together represent an alkylidene radical with 1 to 4 carbon atoms, an aralkylidene radical with 7 to 10 carbon atoms, or an oxo or imino radical, or

the radicals R^4 and R^5 or R^2 and R^3, together with the carbon atom to which they are bonded, form a cycloalkyl radical with 5 to 8 ring members, or

the radicals R^2 to R^5, together with the carbon atoms to which they are bonded, form an, fused-on benzene ring.

4,451,476

ISOXAZOLES AS ANTIVIRAL AGENTS

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

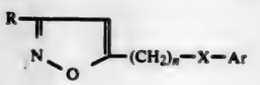
Continuation-in-part of Ser. No. 449,060, Dec. 13, 1982, abandoned. This application Oct. 17, 1983, Ser. No. 542,871

Int. Cl.³ A61K *31/42;* C07D *261/08*

U.S. Cl. 424—272 **20 Claims**

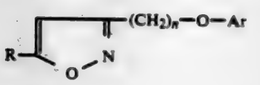
1. A compound having the formula

(I)



or

(Ia)



wherein:

R is alkyl of 1 to 3 carbon atoms;

X is O or CH_2;

n is an integer from 4 to 8; and

Ar is phenyl or phenyl substituted by one or two substituents selected from the group consisting of halogen, lower-alkyl, lower-alkoxy, nitro, cyano, carboxy, lower-alkoxycarbonyl, lower-alkanoyl, 1-oximino-lower-alkyl, hydrazinocarbonyl, carbamyl and N,N-di-lower-alkylcarbamyl.

4,451,477

BENDAZAC TREATMENT OF CATARACT

Bruno Silvestrini, and Leandro Baiocchi, both of Rome, Italy, assignors to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

Filed Jun. 8, 1982, Ser. No. 386,468

Claims priority, application Italy, Nov. 27, 1981, 49790 A/81

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 N **11 Claims**

1. A method for the treatment of cataracts in a human comprising administering to said human a therapeutically effective amount of bendazac.

4,451,478

IMIDAZOLE COMPOUNDS

Lionel N. Simon, Santa Ana, Calif.; Hans-Rudolf Mueller, Beckenwaildli, and Hans Zutter, Stauffacherstrasse, both of Switzerland, assignors to Newport Pharmaceuticals International, Inc., Newport Beach, Calif.

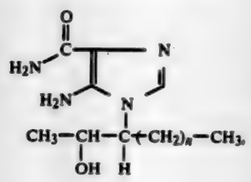
Filed Mar. 12, 1982, Ser. No. 357,679

Int. Cl.³ C07D *231/10;* A61K *31/415*

U.S. Cl. 424—273 R **4 Claims**

1. A compound having the formula

(I.)



4,451,479

THERAPEUTICALLY ACTIVE 3-AMINO-1-HALOGENATED PHENYL-2-PYRAZOLINES AND THEIR C4 AND C5 ANALOGS

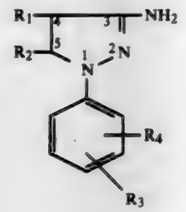
John P. Dusza, Nanuet, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 282,700, Jul. 13, 1981, abandoned. This application Oct. 4, 1982, Ser. No. 432,607

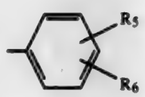
Int. Cl.³ A61K *31/415;* A01N *43/56;* C07D *231/06*

U.S. Cl. 424—273 P **58 Claims**

1. A method of meliorating inflammation in a mammal which comprises administering to said mammal an effective anti-inflammatory amount of a compound selected from those of the formula:

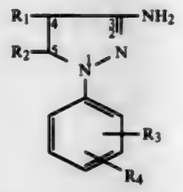


wherein R_1 is hydrogen or lower alkyl (C_1–C_4); R_2 is phenyl or



where R_5 and R_6 are the same or different and are hydrogen, halogen or lower alkyl (C_1–C_4) with the proviso that R_5 and R_6 cannot both be hydrogen; R_3 and R_4 are the same or different and are hydrogen or halogen with the proviso that R_3 and R_4 cannot both be hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

13. A method of treating bacterial and/or fungal infections in a mammal which comprises administering to said mammal an effective antibacterial and/or antifungal amount of a compound selected from those of the formula:

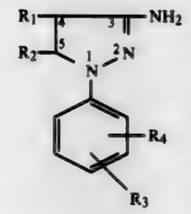


wherein R_1 is hydrogen or lower alkyl (C_1–C_4); R_2 is hydrogen, lower alkyl (C_1–C_4), phenyl or



where R_5 and R_6 are the same or different and are hydrogen, halogen or lower alkyl (C_1–C_4) with the proviso that R_5 and R_6 cannot both be hydrogen; R_3 and R_4 are the same or different and are hydrogen or halogen with the proviso that R_3 and R_4 cannot both be hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

58. A method of preventing the onset of asthmatic symptoms or allergic diseases in a mammal which comprises administering to said mammal an effective prophylactic amount for the prevention of asthmatic symptoms or allergic diseases of a compound selected from those of the formula:



wherein R_1 is hydrogen or lower alkyl (C_1–C_4); R_2 is phenyl or



where R_5 and R_6 are the same or different and are hydrogen, halogen or lower alkyl (C_1–C_4) with the proviso that R_5 and R_6 cannot both be hydrogen; R_3 and R_4 are the same or different and are hydrogen or halogen with the proviso that R_3 and R_4 cannot both be hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

4,451,480

METHOD OF TREATING ACNE USING OZONIZED MATERIALS

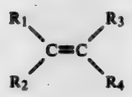
Richard L. DeVillez, New Braunfels, Tex., assignor to James Howard Brown, Scottsdale, Ariz.

Filed Apr. 16, 1982, Ser. No. 369,163

Int. Cl.³ A61K *31/335*

U.S. Cl. 424—278 **5 Claims**

1. A method for treating acne which comprises applying topically to an affected area an effective amount of an ozonide of fixed oils, esters, fatty acids, alcohols and ethers containing an olefin of the general formula;



wherein: R_3 and/or R_4 may by hydrogen or:

$-(CH_2)_n-CH_3$; $-(CH_2)_n-CH_2OH$; $-(CH_2)_n-COOH$;

$$-(CH_2)_n-\overset{O}{\overset{\|}{C}}-O-R_5;\ -(CH_2)_n-CH_2-OR_5$$

where $R_5=(CH_2)_n-CH_3$ and n = an integer from 0 to 12; with R_1 and R_2 being any value given for R_3 and R_4 with the proviso that R_1 and R_2 cannot both equal H and also R_3 and R_4 cannot both equal H.

4,451,481

M-4 AND ISOM-4 DERIVATIVES AND COMPOSITIONS CONTAINING THEM

Akira Terahara, and Minoru Tanaka, both of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

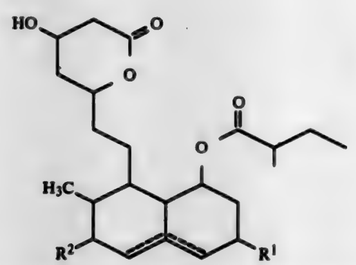
Filed May 5, 1982, Ser. No. 375,333

Claims priority, application Japan, May 11, 1981, 56-70497

Int. Cl.³ C07D *309/30;* A61K *31/365*

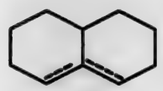
U.S. Cl. 424—279 **6 Claims**

1. The dihydro-M-4 and dihydro-isoM-4 lactones of the formula (I):

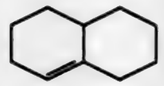


(I)

wherein one of R^1 and R^2 represents a hydrogen atom and the other represents a hydroxy group and wherein the structure shown

as  represents

a structure of formula  or



4,451,482

METHOD OF PREVENTING OR AMELIORATING PYRETHROID SKIN SENSORY STIMULATION

Stuart Z. Cagen, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 22, 1982, Ser. No. 371,023

Int. Cl.³ A01N *43/16;* A61K *31/355*

U.S. Cl. 424—284 **11 Claims**

1. A method of preventing or ameliorating pyrethroid skin sensory stimulation and associated enhanced sensitivity to other stimulation which comprises applying to the skin of a human or an animal a composition comprising an effective amount of α-tocopherol or ester thereof optionally in a pharmaceutically-acceptable carrier.

4,451,483

2,3,4-TRINOR-M-INTER-PHENYLENE-PROSTAGLANDIN DERIVATIVES AND COMPOSITIONS AND METHOD FOR INHIBITING BLOOD PLATELET AGGREGATION

István Székely, Dunakeszi; Krisztina Kékesi, Debrecen; Mariann Lovász neé Gáspár, Budapest; Sandor Botár, Budapest; Pál Hadházy, Budapest; István Rákóczi, Budapest; László Muszbek, Debrecen; Judit Skopál, Budapest; István Stadler, Budapest; Károly Horváth, Budapest; Gábor Kovács, Budapest, and Peter Körmöczy, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

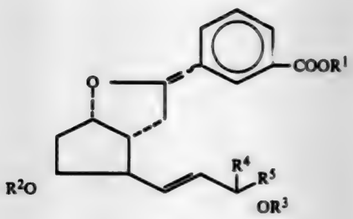
Filed Apr. 9, 1982, Ser. No. 367,068

Claims priority, application Hungary, Apr. 14, 1981, 962/81; Apr. 14, 1981, 963/81; Apr. 14, 1981, 964/81

Int. Cl.³ A61K *31/34;* C07D *307/935*

U.S. Cl. 424—285 **24 Claims**

1. A 2,3,4-trinor-1,5-inter-m-phenylene-prostacycline derivative of the formula (I)



(I)

wherein

R^1 is hydrogen, C_{1-4}alkyl, an alkali metal cation or a primary, secondary, tertiary or quaternary ammonium cation, R^2 and R^3 each are hydrogen or C_{1-4}alkanoyl, benzoyl, tetrahydropyranyl, ethoxyethyl or tri-(C_{1-4}alkyl)-silyl,

R^4 is hydrogen or C_{1-4} alkyl, and

R^5 is hexyl, heptyl, phenoxymethyl or m-trifluoromethyl-phenoxymethyl, or

R^5 represents a group of the formula



and

Z is amino, or unsubstituted or halo-substituted C_{1-4} alkanoylamino, benzoylamino or tosylamino, and

R^6 is C_{4-6}alkyl, phenyl or benzyl.

24. A method of inhibiting blood platelet aggregation in a susceptible subject which comprises administering to said subject an effective amount of a compound as defined in claim 1.

4,451,484

INSECTICIDAL 2,2'-BRIDGED[1,1'-BIPHENYL]-3-YLMETHYL ESTERS

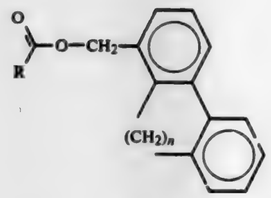
Ernest L. Plummer, North Tonawanda, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 259,111, Apr. 30, 1981, abandoned. This application Apr. 15, 1982, Ser. No. 368,606

Int. Cl.³ C07C *69/743, 69/747;* A01N *53/00*

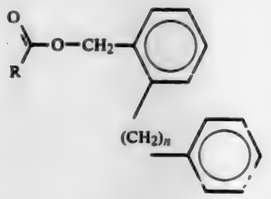
U.S. Cl. 424—305 **35 Claims**

1. Insecticidal and acaricidal 2,2'-bridged[1,1'-biphenyl]-3-ylmethyl pyrethroid esters of the formula



wherein n is 1–4 and R is selected from 3-(2,2-dihaloethenyl)-2,2-dimethylcyclopropyl; 3-(cyclopentylidenemethyl)-2,2-dimethylcyclopropyl; 3-(2-methyl-1-propenyl)-2,2-dimethylcyclopropyl; 3-(1,2-dibromo-2,2-dichloroethyl)-2,2-dimethylcyclopropyl; 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl; 3-(3-chloro-2,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl; 3-(2,3-dichloro-3,3-difluoro-1-propenyl)-2,2-dimethylcyclopropyl; 2,2,3,3-tetramethylcyclopropyl; 2,2-dichloro-3,3-dimethylcyclopropyl; 3-(1,2,2,2-tetrabromoethyl)-2,2-dimethylcyclopropyl; 2,2-dichloro-1-(4-ethoxyphenyl)-cyclopropyl; 2-(2-chloro-α,α,α-trifluoro-p-toluidino)-3-methylbutyl; and 4-chloro-α-(1-methylethyl)-phenylmethyl.

25. An insecticidal or acaricidal composition comprising in admixture with an agriculturally acceptable carrier an insecticidally or acaricidally effective amount of at least one compound of the formula



wherein n is 1–4 and R is selected from 3-(2,2-dihaloethenyl)-2,2-dimethylcyclopropyl; 3-(cyclopentylidenemethyl)-2,2-dimethylcyclopropyl; 3-(2-methyl-1-propenyl)-2,2-dimethylcyclopropyl; 3-(1,2-dibromo-2,2-dichloroethyl)-2,2-dimethylcyclopropyl; 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl; 3-(3-chloro-2,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl; 3-(2,3-dichloro-3,3-difluoro-1-propenyl)-2,2-dimethylcyclopropyl; 2,2,3,3-tetramethylcyclopropyl; 2,2-dichloro-3,3-dimethylcyclopropyl; 3-(1,2,2,2-tetrabromoethyl)-2,2-dimethylcyclopropyl; 2,2-dichloro-1-(4-ethoxyphenyl)-cyclopropyl; 2-(2-chloro-α,α,α-trifluoro-p-toluidino)-3-methylbutyl; and 4-chloro-α-(1-methylethyl)-phenylmethyl.

4,451,485

TREATMENT OF CARDIO-VASCULAR DISEASES WITH 3-(2,2,2-TRIMETHYLHYDRAZINIUM) PROPIONATE DIHYDRATE

Ivars Y. Kalvinsh, poselok Salaspils; Alexei V. Vinogradov, Moscow; Maris M. Veveris, Riga; Inna I. Makarova, Moscow; Anatoly S. Birman, Riga; Georgy V. Barmotin, Moscow, and Oleg N. Akifiev, Riga, all of U.S.S.R., assignors to Institu Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR, Riga, U.S.S.R.

Filed Sep. 17, 1982, Ser. No. 419,454

Claims priority, application U.S.S.R., Sep. 17, 1981, 3374766

Int. Cl.³ A61K *31/205*

U.S. Cl. 424—316 **4 Claims**

1. A method of treating cardiovascular disease in warm blooded animals comprising administering to said warm blooded animals an effective amount of a composition possessing antiarrhythmic and antianginal activity which comprises the compound 3-(2,2,2-trimethylhydrazinium)propionate dihydrate having the formula:

$$(CH_3)_3N^+NHCH_2CH_2COO^-.2H_2O$$

and a pharmaceutically acceptable diluent.

4,451,486

ANIMAL FEED SUPPLEMENT HAVING REDUCED CORROSION CHARACTERISTICS

Joseph W. Baker, St. Louis, Mo.; Dennis L. Mansfield, Nitro, W. Va., and David J. Weinkauff, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 72,541, Sep. 4, 1979, Pat. No. 4,353,924. This application Sep. 27, 1982, Ser. No. 466,750

The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **6 Claims**

1. An animal feed supplement having reduced metal corrosion characteristics comprising an aqueous solution containing 87–90 percent by weight 2-hydroxy-4-(methylthio)-butanoic acid prepared by hydrolyzing MHA-nitrile in aqueous mineral acid, said solution having been neutralized such that said supplement contains essentially no free mineral acid.

4,451,487

PROCESS FOR THE PURIFICATION OR ENRICHMENT OF BIOLOGICALLY ACTIVE PROTEINS

Hellmuth Vetter, Tutzing; Peter Scheibe, Munich; Waldemar Thum, and Gotthilf Näher, both of Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH., Mannheim, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,277

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119453

Int. Cl.³ C12N *9/00*

U.S. Cl. 435—183 **11 Claims**

1. Process for the purification or enrichment of a biologically active protein which process comprising mixing an aqueous solution containing the protein at a pH value below its isoelectric point with an arylsulphonic acid azo dyestuff having two sulphonate groups separated from one another by 8 to 10 double bonds in a resonance relationship, including at least one N=N double bond, in sufficient amount result in precipitation of at least the major part of the biological activity of the desired active protein, separating off the precipitate, and bringing the active protein again into solution at a pH value above its isoelectric point.

4,451,488

FOOD BAR

Milton L. Cook, Algonquin; William L. Keyser, East Dundee; Paul Swanson, Crystal Lake, all of Ill.; Michael W. Zielke, Lowell, Mich., and Walter J. Zielinski, Ingleside, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 276,393, Jun. 22, 1981, abandoned, Continuation-in-part of Ser. No. 233,382, Jun. 22, 1981, abandoned. This application Sep. 2, 1983, Ser. No. 510,474

Int. Cl.³ A23L *1/10, 1/34*

U.S. Cl. 426—89 **10 Claims**

1. In a, dry, ready to eat food bar of the type containing (a) a mixture of dry ingredients selected from the group consisting of grains, fruits, nuts, chocolate chips, and vegetables; (b) flavorings and salt; (c) antioxidant; (d) shortening; (e) sugar; and (f) at least about 3% glycerol; and having a moisture content in the range 4–8%, a water activity between about 0.2 to about 0.55 and a soft chewy texture, the improvement wherein:

sorbitol is present in a ratio 1:1 to 1:5, based on the weight of the glycerol, to mask the bitter flavor of the glycerol.

4,451,489

SUGAR BEET PULP BULKING AGENT AND PROCESS

Robert J. Beale, New Rochelle; Allen G. W. Bradbury, Tarrytown; Darrell G. Medcalf, Chappequa, and William R. Romig, Yorktown Heights, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,406

Int. Cl.³ A23L *1/277*

U.S. Cl. 426—254 **20 Claims**

1. A process for producing a sugar beet pulp bulking agent from peeled whole sugar beet slices or particles, or spent sugar beet cossettes which comprises:

(a) placing said peeled cossettes, particles or slices into a stabilizer solution of a water-soluble sulfite, bisulfite or metabisulfite in an effective concentration to prevent enzymatic and non-enzymatic darkening of the sugar beet pulp;

(b) washing the thusly stabilized cossettes, particles or slices with water to remove substantially all of the soluble carbohydrates;

(c) contacting the water-washed cossettes, particles or slices with an alcoholic solution to remove substantially all of the color and flavor constituents; and

(d) removing water and alcohol from said cossettes, particles or slices to produce a bland, decolorized and odorless sugar beet pulp bulking agent.

4,451,490

HIGH QUALITY, REDUCED-CALORIE CAKE CONTAINING CELLULOSE AND PROCESS THEREOF

Jerry E. Silverman, Hamilton Square, N.J.; John R. Frost, Beacon, N.Y.; Elizabeth Hegedus, Tarrytown, N.Y., and Martin Glicksman, Valley Cottage, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,403

Int. Cl.³ A21D *13/08*

U.S. Cl. 426—553 **12 Claims**

1. A cake comprising: 40–65% water, 5–30% cake flour, 0–25% sugar, 1–6% shortening, 0–10% egg white solids, 0.5–6% leavening agent, 0–2% emulsifier, 2–20% cellulose flour, and 0–5% gum, and less than 2.0 calories per gram.

4,451,491

MIX FOR THE PREPARATION OF BREAD AND CAKE PRODUCTS

Moshe Trop, and Avinoam Livne, both of Beer Sheva, Israel, assignors to Ben-Gurion University of The Negev Research and Development Authority, Israel

Filed Jul. 27, 1981, Ser. No. 287,179

Claims priority, application Israel, Jul. 28, 1980, 60685

Int. Cl.³ A21D *10/00*

U.S. Cl. 426—555 **8 Claims**

1. A mix for the preparation of bread and cake products comprising a non-wheat-based starch, a gluten-substitute gum, and an emulsified-fat, powdered whipping agent, said non-wheat-based starch being present in an amount of about 50 to 80 wt. % of said mix, said gluten-substitute gum being present in sufficient amount to create viscosity in and form a coherent dough system upon the addition of water, and able to retain leavening gas formed during preparation of said dough; and said whipping agent being present in sufficient amounts to propagate seeding cells in a dough formed from said mix, and also increase the gas retention properties of the dough, and wherein said products are produced in the substantial absence of wheat flour.

4,451,492

REAL CREAM FROZEN WHIPPED TOPPING COMPOSITION

William J. Dell, Howell, N.J.; Alexander A. Goncalves, Yardley, Pa.; William E. Flango, Hamilton Square, N.J.; Thomas E. Guhl, Jamesburg, N.J.; Lawrence H. Freed, Plainsboro, N.J.; John T. Oppy, Allentown, N.J.; Suzanne Baratta, Plainsboro, N.J., and Andre J. Eydt, New York, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,283

Int. Cl.³ A23C *13/14;* A23G *9/00*

U.S. Cl. 426—564 **8 Claims**

1. A process for making a freeze-thaw stable, edible foam comprising the steps of:

(a) adding a dairy ingredient comprising milk fat to a mixing vessel;

(b) adding a food approved, calcium chelating salt to the mixing vessel, wherein said salt:

(i) is essentially free of calcium;

(ii) is the salt of a phosphorous oxyacid;

(iii) has a pK_a between 2 and about 9;

(iv) the amount of said salt added is between about 0.001% and about 1% of the total ingredients in the mixing vessel, by weight, and said amount of chelating salt is effective to impart freeze-thaw stability to the foam;

(c) solubilizing and dispersing the ingredients within said mixing vessels;

(d) homogenizing said solubilized and dispersed ingredients at a pressure of at least 6000 p.s.i.g. so as to form an emulsion; and

(e) whipping and aerating said emulsion to an overrun of at least about 150% by volume.

4,451,493

SALAD DRESSINGS OF THE SEPARATING TYPE

Donald E. Miller, Strongsville, and Charles E. Werstak, Medina, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 356,258

Int. Cl.³ A23L *1/24;* A23D *5/00, 5/02*

U.S. Cl. 426—602 **8 Claims**

1. A packaged, flavored, non-homogenized oil-and-water salad dressing of the separating type, which has improved limited stability during usage upon hand shaking of the salad dressing yet reverts to phase separation after use of such dressing, comprising in parts by weight;

about 30–80 parts water;

about 20–70 parts of a normally liquid hydrogenated vegetable oil;

flavoring amounts of water or oil soluble or dispersible salad dressing flavor components; and

an emulsifying amount of a food grade polyglycerol ester emulsifier having an HLB value in the range of about 10–16, said emulsifying amount being sufficient to achieve said improved limited stability, said amount of polyglycerol ester being less than a flavoring amount.

4,451,494

SODIUM-FREE SALT SUBSTITUTE

Charles F. Roan, III, Rte. 1, Box 722, Lake Geneva, Wis. 53147

Filed Sep. 10, 1982, Ser. No. 416,631

Int. Cl.³ A23L *1/237*

U.S. Cl. 426—649 **10 Claims**

1. An edible, substantially sodium-free salt substitute composition which comprises: (a) from about 0.1% to about 2% by weight of hydrolyzed collagenous animal protein having an average molecular weight of from about 500 to about 5000, an amino nitrogen content of from about 1% to about 2% and a total nitrogen content of from about 15% to about 17%, and (b) from about 98% to about 99.9% by weight of potassium chloride.

4,451,495
INCREASING MAGNETIC PARTICLE CONCENTRATION IN MAGNETIC COATINGS

Andrew M. Homola, Morgan Hill; Max R. Lorenz, San Jose, and Heinrich Sussner, Monte Sereno, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

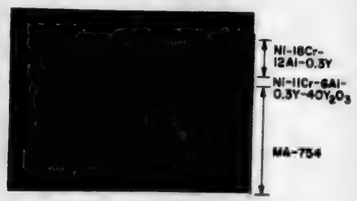
Filed Aug. 30, 1982, Ser. No. 412,675
Int. Cl.³ B05D 1/06, 5/12
U.S. Cl. 427—27 4 Claims

1. A method for applying a magnetic coating to a substrate comprising the steps of:
- coating said substrate with an active coating material having an electrostatic charge to form an active layer,
- applying a coating of colloidal silica particles on magnetic particles, said silica-coated magnetic particles being dispersed in an electrolyte, said electrolyte containing sodium chloride,
- adjusting the concentration of said electrolyte in said dispersion to reduce the coulombic repulsive forces between adjacent silica-coated magnetic particles to permit closer spacing between said particles,
- and applying said coated magnetic particles to said active layer,
- said silica-coated magnetic particles having an electrostatic charge thereon opposite to the charge on said active coating material, whereby said silica-coated magnetic particles are electrostatically attracted to and bonded to said active material to form a magnetic layer,

4,451,496
COATING WITH OVERLAY METALLIC-CERMET ALLOY SYSTEMS

Michael A. Gedwill, North Olmsted; Stanley R. Levine, and Thomas K. Glasgow, both of Rocky River, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 403,378, Jul. 30, 1982, Pat. No. 4,446,199.
This application Jan. 7, 1983, Ser. No. 456,460
Int. Cl.³ B05D 1/08
U.S. Cl. 427—34 19 Claims

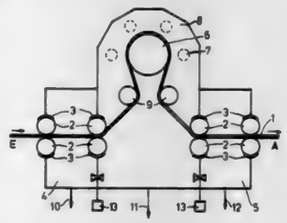


1. A method of coating nickel-base and cobalt-base alloy substrate surfaces comprising the steps of
- forming cermet powders by mechanically alloying elemental metallic powders selected from the group consisting of nickel-base, cobalt-base and iron base alloy constituents and refractory oxide powders,
- arc-plasma spraying said cermet powders onto said surfaces to form a base coating having said refractory oxide dispersed therein, said dispersed oxide comprising between about 10 volume percent and about 75 volume percent of said base coating,
- arc-plasma spraying powders of an alloy selected from the group consisting of nickel-base, cobalt-base, and iron base alloys onto said base coating to form an oxidation, hot corrosion, erosion resistant top coating, and
- heat treating the coated substrate to improve the bonding of the base coating and the top coating to said substrate.

4,451,497
PROCESS FOR THE PRETREATMENT OF PHOTOGRAPHIC SUBSTRATES

Friedrich Dolezalek, Groebenzell; Günther Koepke, Odenthal, and Ulrich Rendelmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 20, 1982, Ser. No. 410,137
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1981, 3134615
Int. Cl.³ C03C 1/74; B05D 7/04, 3/06
U.S. Cl. 427—39 6 Claims

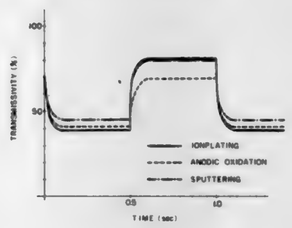


1. A process of preparing a substrate for a photographic emulsion to enhance adhesion of photographic emulsion to the substrate surface during subsequent coating with photographic emulsion wherein the substrate surface is treated to minimize electrostatic residual charge said process including the steps of passing the substrate web into a treatment chamber having a pressure reduced to from 100 to 1000 mbar below atmospheric pressure, wherein the web is first passed through means for maintaining the reduced pressure, exposing a surface of the substrate web in the treatment chamber to apparatus providing corona discharge to reduce electrostatic residual charge on the surface, and then passing the exposed substrate web through another means for maintaining the reduced pressure in the treatment chamber.

4,451,498
METHOD FOR MAKING OXIDE BASED ELECTROCHROMIC DISPLAY DEVICES

Eigo Hashimoto, Sakado, and Takanori Nanya, Sayama, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,823
Claims priority, application Japan, Nov. 5, 1980, 55-155585
Int. Cl.³ G02F 1/17
U.S. Cl. 427—38 3 Claims



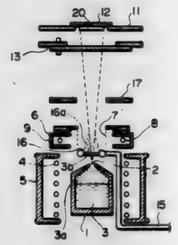
1. A method of manufacturing an oxide based electrochromic display device comprising the steps of:
- forming a pair of electrodes at least one of which is transparent on a pair of substrates at least one of which is transparent by physical vapor deposition in an arrangement in which said pair of electrodes are positioned opposite;
- forming an anodic electrochromic material layer on one of said pair of electrodes by reactive ion plating in which one material selected from the group consisting of iridium, rhodium and nickel is evaporated to produce an oxide and deposit it in an atmosphere including oxygen and water vapor; and
- disposing an ion permeable insulating layer between said electrochromic material layer and the other electrode of said pair of electrodes.

3. A method of manufacturing an oxide based electrochromic display device comprising the ordered steps of:
- forming a first electrode on a transparent substrate by physical vapor deposition;
- forming one layer of an anodic electrochromic material layer and a cathodic electrochromic material layer on the top surface of said first electrode;
- forming an ion permeable insulating layer on the top surface of said one layer by physcial vapor deposition;
- forming another layer of anodic electrochromic material layer and cathodic material on the top surface of said ion permeable insulating layer; and
- forming a second electrode on the top surface of another layer by physical vapor deposition;
- said anodic electrochromic material layers being formed by evaporated reactive ion plating in an atmosphere including oxygen and water vapor.

4,451,499
METHOD FOR PRODUCING A BERYLLIUM OXIDE FILM

Kiyoshi Morimoto, Mobara; Toshinori Takagi, Nagaokakyo, and Hiroshi Watanabe, Mobara, all of Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Continuation of Ser. No. 168,103, Jul. 14, 1980, abandoned. This application Jul. 29, 1982, Ser. No. 403,151
Claims priority, application Japan, Jul. 24, 1979, 54-93166
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.
Int. Cl.³ B05D 5/12
U.S. Cl. 427—38 6 Claims

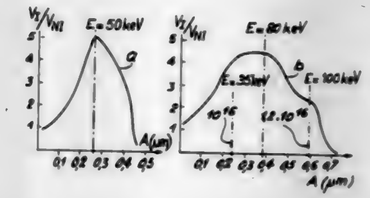


1. A method for preparing a film of beryllium oxide comprising:
- heating metallic beryllium in a closed crucible having at least one injection nozzle, thereby vaporizing said beryllium metal;
- injecting said vapor through said nozzle into an evacuated chamber, whereby a stream of beryllium atoms is produced, while simultaneously injecting oxygen into said chamber around said stream to provide an atmosphere of oxygen having a pressure not greater than 10^{-2} of the vapor pressure in said crucible;
- ionizing at least part of said vapor stream by irradiating said vapor stream with electron beams whereby a vapor stream containing ionized and unionized atoms is produced; and
- permitting said vapor stream containing ionized and unionized atoms to impinge on a substrate surface together with said oxygen thereby forming a film of beryllium oxide on said substrate.

4,451,500
PROCESS FOR OBTAINING A HOMOGENEOUS PLANAR MAGNETIZATION LAYER IN A FERRIMAGNETIC GARNET

Philippe Gerard, Saint Ismier; Hubert Jouve, Biviers, and Michel Madore, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 13, 1982, Ser. No. 417,597
Claims priority, application France, Sep. 21, 1981, 81 17763
Int. Cl.³ B05D 3/06
U.S. Cl. 427—38 10 Claims

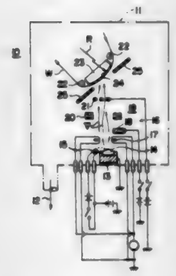


1. A process making it possible to obtain at least one homogeneous planar magnetization layer in a ferrimagnetic garnet film obtained by liquid phase epitaxy in a solvent on a monocrystalline amagnetic substrate, wherein in said film at least one implantation of ions takes place, with the exception of the ions of gaseous elements and with the exception of the ions of the metallic elements involved in the composition of the solvent, this taking place at a dose making it possible to render the implanted part of the garnet film amorphous, and wherein the film and the substrate are annealed in order to crystallize in monocrystalline form that part of the film rendered amorphous by implantation.

4,451,501
METHOD OF MAKING A MAGNETIC RECORDING MEDIUM

Makoto Nagao; Akira Nahara, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 15, 1982, Ser. No. 368,861
Claims priority, application Japan, Apr. 24, 1981, 56-62055
Int. Cl.³ B05D 3/06, 5/12; H01F 10/02
U.S. Cl. 427—40 4 Claims



1. A method of making a magnetic recording medium comprising, in a vacuum, moving a flexible substrate obliquely downwardly along a convex course in sliding contact with a curved surface of a fixed curved, finely oscillating guiding means in such a manner that said flexible substrate intersects a flow of vapor obtained by heating and evaporating a magnetic metal deposition material, passing a coolant inside said fixed curved guiding means to cool said flexible substrate, thereby

forming a thin film of said magnetic metal on the convex surface of said substrate.

4,451,502

METHOD FOR MANUFACTURING MAGNETIC RECORDING MEDIUM

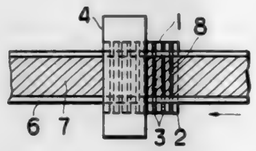
Kazuo Takada, 207 Toride, and Shinji Umeki, 1113-16 Iwamurata, both of Saku-shi, Nagano-ken, Japan

Continuation of Ser. No. 231,865, Feb. 5, 1981, abandoned. This application Aug. 20, 1982, Ser. No. 409,952

Claims priority, application Japan, Jan. 28, 1980, 55-7812

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—48 **5 Claims**



1. A method for manufacturing a magnetic recording medium including the steps of applying a magnetic coating which contains magnetic particles to a support, subjecting said support having the magnetic coating thereon to magnetic orientation treatment while the magnetic coating is still in fluid condition and thereafter drying the magnetic coating, characterized in that said magnetic orientation is effected by passing said support having the undried magnetic coating thereon through a magnetic orientation field generated from magnetic field generating means which comprises permanent or DC magnets and an array of a plurality of parallel elongated members of a soft magnetic material all members of the plurality being spaced from and in a plane between said magnets, said elongated members being arranged in a plane close to said support, said elongated members extending traversely of the direction of movement of said support, there being a gap between all adjacent members, and said members being adapted to be magnetized by said magnets whereby said magnetic elongated members of soft magnetic material modify the magnetic field from said permanent or DC magnets to form a magnetic orientation field having periodic variations at intervals along said support so that said magnetic particles are subjected to alternate magnetic fields as they pass by each of the parallel elongated members so that said particles are alternately oriented vertically with respect to the movement of said support and in the direction of said support as they move through successive alternate magnetic fields.

4,451,503

PHOTO DEPOSITION OF METALS WITH FAR UV RADIATION

Samuel E. Blum, White Plains; Karen H. Brown, Yorktown Heights, and Rangaswamy Srinivasan, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,998

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—53.1 **16 Claims**

1. A method for photodeposition of a refractory metal onto a substrate, comprising the steps of:

producing a carbonyl compound vapor of said metal in the vicinity of said substrate,

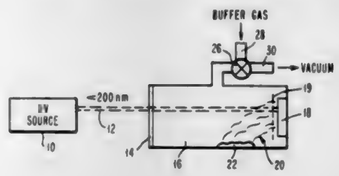
directing ultraviolet light of wavelengths less than 200 nm onto said vapor to photodecompose said vapor to release atoms of said metal in the vicinity of or on said substrate, and

condensing said metal atoms onto said substrate to form a continuous refractory metal layer thereon.

12. A method for forming a GaAs Mesfet, comprising the steps of:

introducing an impurity into a body of GaAs to form a doped layer therein,

photodepositing a layer of tungsten onto said doped layer to form a gate electrode by photodecomposing a carbonyl compound vapor of tungsten with ultraviolet light of



wavelengths less than 200 nm in the vicinity of or on said doped layer to free tungsten atoms which then condense onto said doped layer in a first region thereof defined by said ultraviolet radiation,

forming additional more highly doped regions in said doped layer surrounding said first region, and

forming source and drain contacts to said additionally doped regions.

4,451,504

PROCESS FOR APPLYING PHOSPHOR TO THE APERTURE MASK OF A CATHODE RAY TUBE

Anthony V. Gallaro, Auburn, and Gordon T. Foreman, Seneca Falls, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed May 20, 1983, Ser. No. 496,358

Int. Cl.³ B05D *3/02, 1/32, 1/02*

U.S. Cl. 427—64 **11 Claims**

1. A process for applying phosphor to the aperture mask of cathode ray tube, the process comprising the steps of:

(a) coating at least a portion of the mask with a composition comprising a dispersion of fine particle size phosphor in a binder-containing coating vehicle; and

(b) baking the aperture mask to remove the vehicle and leave an adherent phosphor layer on the mask.

4,451,505

METHOD OF PRODUCING PRINTED CIRCUIT BOARDS

Johannes M. Jans, Evreux, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 20, 1982, Ser. No. 380,165

Claims priority, application Netherlands, May 29, 1981, 8102620

Int. Cl.³ B05D *3/06, 3/10, 1/06*

U.S. Cl. 427—98 **3 Claims**

1. In a method of producing a printed circuit board on an insulating or non-insulating substrate supplied with a thermosetting adhesive layer, comprising roughening the surface of said adhesive layer, contacting said roughened surface with a liquid capable of providing said roughened surface with metal nuclei capable of being intensified to form a metal layer by an electroless metal plating solution, exposing said metal nuclei to an electroless metal plating solution thereby forming a metal layer on said roughened surface and then heating the resultant assembly, the improvement comprising roughening the surface of said adhesive layer by spraying the surface of said adhesive layer with a suspension of hard particles having a particle size of between 50 and 200 μm, spraying the thus roughened surface with a suspension of particles of a light sensitive semiconductor metal oxide, which metal oxide, after exposure to light, is capable of releasing copper and/or a metal nobler than copper from a solution of the relevant metal salt, the spraying with the suspension of said metal oxide particles being carried

out in such a manner that said metal oxide particles reach said roughened surface in a substantially dry state without drops of the suspension liquid being deposited on said surface, thus providing said roughened surface with a uniformly distributed layer of said metal oxide particles, exposing said layer to light and, either before or after said layer is exposed to light, spraying said layer with a solution of a salt of copper or a metal nobler than copper in a manner such that the particles of said salt reach said layer in a substantially dry state without drops of the liquid of said solution being deposited on said layer, thereby forming metal nuclei in exposed areas of said layer.

4,451,506

SIDE SEAM-COATED WELDED CANS AND PROCESS FOR PREPARATION THEREOF

Seishichi Kobayashi, Yokohama; Tatsuo Mori, Kawasaki; Tetsuo Miyazawa, Yokohama; Kazuo Taira, Tokyo; Makoto Horiguchi, Fujisawa, and Susumu Takahashi, Yamato, all of Japan, assignors to Toyo Seikan Kaisha Ltd, Tokyo, Japan

Division of Ser. No. 164,148, Jun. 30, 1980, Pat. No. 4,382,525. This application Sep. 24, 1982, Ser. No. 422,589

Claims priority, application Japan, Jun. 30, 1979, 54-82017; Feb. 13, 1980, 55-15515

Int. Cl.³ B05D *1/02*; B65D *7/38*

U.S. Cl. 427—239 **6 Claims**

1. A process for the preparation of side seam-coated welded cans, which comprises applying a resin paint to a welded can body having a seam formed on the side face thereof at least on one surface of said seam and baking the coated paint to form a coating covering said side seam, wherein said resin paint comprises a dispersion medium composed of a solution of a thermosetting resin and a dispersed phase of resin particles having a number average particle size of 0.1 to 80 μm and being composed of a thermoplastic resin having a softening point of 50° to 300° C. as determined according to the ring and ball method, the volume ratio of the thermosetting resin to the thermoplastic resin in the coating ranges (A) from 95/5 to 25/75 wherein the thermosetting resin forms the continuous phase and the thermoplastic resin forms the dispersed phase or (B) from 20/80 to 1/99 wherein the thermoplastic resin forms the continuous phase and the thermosetting resin forms the dispersed phase, and the paint coated on the side seam is baked under such conditions that evaporation of a solvent in the solution of the dispersion medium is first caused and softening of the thermoplastic resin is then caused, the thermoplastic polymer containing in the main chain or side chain a carboxyl group derived from a carboxylic acid, a carboxylic acid salt, a carboxylic acid anhydride, a carboxylic acid ester, a carboxylic acid amide, a carbonic acid ester, urea, or urethane, the carboxyl groups having a concentration of 12 to 1400 meg per 100 g of the polymer.

4,451,507

AUTOMATIC LIQUID DISPENSING APPARATUS FOR SPINNING SURFACE OF UNIFORM THICKNESS

John P. Beltz, Willingboro, and Kenneth W. Hang, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,835

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—240 **13 Claims**

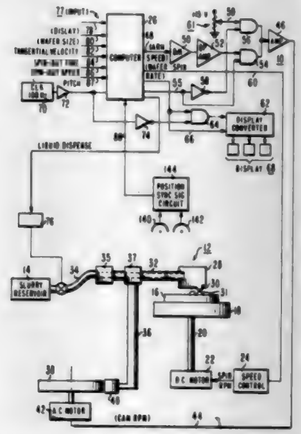
1. In a system for automatically coating material on a rotating surface having means for dispensing viscous liquid containing the coating material on said surface through a dispenser nozzle supported by an arm, and means for moving said arm and said nozzle radially over said surface whereby the liquid is dispensed over said surface along a spiral path, characterized by

means for varying the angular rotation velocity (ω) of said surface as a function of the radial position (R) of said dispensing nozzle such that the tangential velocity (V_t) determined by $R \times \omega$ is substantially constant over said surface,

means for varying the rate of radial movement of said nozzle to maintain a substantially constant pitch of the spiral path; and

means for controlling the flow of said liquid through said nozzle at a substantially constant flow rate proportional to said tangential velocity whereby the liquid is dispensed so that the volume per square of material over said surface is constant.

8. A method for automatically coating a material on a rotating surface including the step of dispensing a viscous liquid containing the coating material through a nozzle moved radially over the surface whereby the liquid is dispensed over the surface along a spiral path, characterized by the steps of:



varying the angular rotation velocity (ω) of said surface as a function of the radial position (R) of said dispensing nozzle such that the tangential velocity (V_t) = $R \times (\omega)$ is substantially constant over said surface,

varying the rate of radial movement of said nozzle to maintain a substantially constant pitch of the spiral path; and

controlling the flow of liquid through said nozzle to a substantially constant value,

whereby the liquid is dispensed so that the volume per square of material over said surface is constant.

4,451,508

HARD FACING OF METAL SUBSTRATES USING MATERIAL CONTAINING VC AND IMPROVED FLUX COMPOSITIONS THEREFOR

Harry J. Brown, Utica, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1982, Ser. No. 393,226

Int. Cl.³ B23K *9/00*

U.S. Cl. 427—423 **14 Claims**

1. In a method for hard facing a surface of an iron or iron base alloy substrate by providing molten iron or iron base alloy on a portion of said surface and applying to the molten metal a hard facing material containing vanadium carbide and a flux therefor, the improvement which comprises employing as the flux a composition containing nickel boron or calcium silicon.

4,451,509
RADIATION-HARDENABLE AQUEOUS BINDER EMULSIONS OF ACRYLATE PREPOLYMER WITH UNSATURATED POLYESTER EMULSIFIER HAVING BENZYLOXY AND ALKYLENE-OXY GROUPS

Walter Frank, Rain/Lech; Otto Bendszus, Krefeld; Jürgen Meixner, Krefeld; Hans J. Freier, Krefeld, and Hans-Joachim Traenckner, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 3, 1983, Ser. No. 455,222
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1982, 3200907
Int. Cl.³ C08F *2/50*; B05D *3/06*; B32B *27/40*
U.S. Cl. 427—54.1 **4 Claims**

1. An aqueous radiation-hardenable emulsion which comprises:

(A) from 90 to 50%, by weight, of at least one acrylate prepolymer containing, per 100 g, from 0.2 to 0.65 mols of (meth)acryloyloxy groups and having a viscosity (20° C.) of from 500 to 300,000 mPas;

(B) from 10 to 50%, by weight, of at least one emulsifier polyester having a viscosity (20° C.) of from 2000 to 200,000 mPas and containing, per 100 g:

(1) from 0.06 to 0.28 mols of condensed units of at least one α,β-mono-olefinically unsaturated dicarboxylic acid;

(2) from 0.04 to 0.34 mols of benzyloxy groups; and

(3) from 30 to 80%, by weight, based on (B), of alkyleneoxy groups;

the sum of (A) and (B) amounting to 100%;

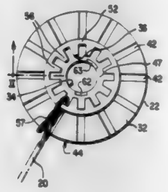
(C) from 25 to 400%, by weight, of water; and

(D) from 0 to 10%, by weight, of at least one photoinitiator; the contents of (C) and (D) being based on the sum of (A) and (B).

4,451,510
AUTOMATIC ARTIFICIAL TREE

Pierre U. Boisvert, Granby, and Jean-Daniel Bapst, Ste-Cécile de Milton, both of Canada, assignors to Barcana Ltee, Quebec, Canada

Filed Feb. 26, 1982, Ser. No. 352,590
Claims priority, application Canada, Jan. 18, 1982, 394375
Int. Cl.³ A47G *33/06*
U.S. Cl. 428—8 **10 Claims**

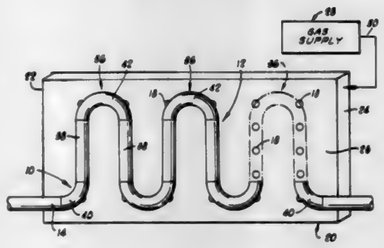


1. An automatic artificial tree comprising at least one main section, said main section comprising vertically extending support means, a plurality of branch holders of hollow construction mounted to said support means, coaxially thereof, a plurality of branches pivoted to said branch holders for projecting radially and generally perpendicularly of said support means when said main section is in its normal upright position but free to fold to a collapsed position generally parallel to said support means when said main section is upside-down, each branch holder comprising a branch holding ring and a tubular spacer, depending from said ring in fixed relationship thereto, each branch holding ring comprising a generally planar disc-shaped body of rigid material, with a central hole for including said support means, a coaxial fulcrum ring on the upper surface of said disc-shaped body, a plurality of radially extending branch receiving slots on said upper surface below said fulcrum ring, said slots having laterally confining means, each branch having the tip of its inner end bent upwardly behind said fulcrum ring at such an angle that upon movement of the tree to an upright position, the bent inner end is free to swing down about the fulcrum ring until the branch rests in its respective slot.

4,451,511
SYSTEM FOR PROTECTING GLASS STRUCTURES IN A COMBUSTION ZONE

John C. Magyar, Hamilton, Miss., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Jul. 30, 1982, Ser. No. 403,560
Int. Cl.³ B05D *1/00*; B32B *1/08*
U.S. Cl. 428—35 **17 Claims**



1. A process for substantially protecting from devitrification a glass structure having an outside surface disposed within a combustion zone comprising the steps of:

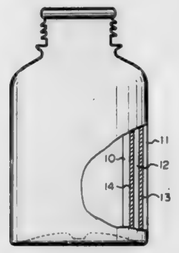
providing a source of heat refractory material substantially opaque and non-reflective to visible light and substantially resistant to chipping, blistering, cracking and peeling at temperatures of up to about 2500 degrees farenheit; and

applying the heat refractory material to the outside surface of the glass structure to be protected substantially to reduce devitrification of the glass structure at relatively high temperatures.

4,451,512
MULTI-LAYER PLASTIC VESSEL

Jinichi Yazaki, Tokyo; Kozaburo Sakano, Kawasaki, and Junichi Matsuo, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 507,461
Claims priority, application Japan, Feb. 8, 1983, 58-18036
Int. Cl.³ B65D *23/00*
U.S. Cl. 428—36 **16 Claims**



1. A multi-layer plastic vessel comprising a laminate including at least one layer composed mainly of a moisture-resistant thermoplastic resin, at least one layer composed mainly of an ethylene-vinyl alcohol copolymer and a thermoplastic resin adhesive layer interposed between both the resin layers, wherein said adhesive layer is composed of a composition comprising an acid- or acid anhydride-modified olefin resin and an epoxidized unsaturated carboxylic acid ester.

4,451,513
Patent Not Issued For This Number

4,451,514
AUTOMOTIVE HEAT REFLECTOR SHIELD

Brion L. Hunt, One Drayton St., Savannah, Ga. 31401

Filed Dec. 24, 1981, Ser. No. 334,223
Int. Cl.³ B60J *7/08*
U.S. Cl. 428—71 **5 Claims**



1. An automotive heat reflector shield for excluding sun rays, having a minimum angle of incidence of 45°, from penetrating an automobile roof equipped with a transparent roof construction and having an interior rim therein, comprising in combination,

a shell member made of a rigid, high impact strength plastic, a shallow flat depression on said shell member,

means constituting a thermally and acoustically insulating layer carried within the boundaries of said shallow flat depression of said shell member,

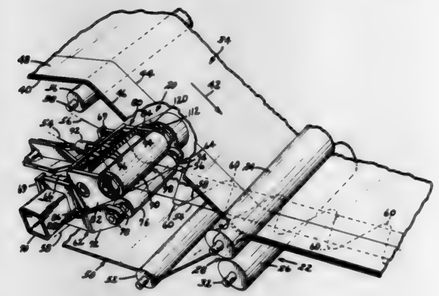
a thermal and light reflecting surface layer on the outer surface of said thermal and acoustic insulating layer, and

attachment means for temporarily supporting said shell member on said interior rim and the interior surface of said automobile roof to cover said transparent roof construction, said attachment means including a peripheral extension of said shell member and intergal therewith.

4,451,515
NETWORK REINFORCING FORMING APPARATUS AND METHOD

Victor H. Clausen, and Charles E. Asbury, both of Vancouver, Wash., assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Nov. 19, 1981, Ser. No. 322,893
Int. Cl.³ B32B *3/28*, *3/02*
U.S. Cl. 428—112 **9 Claims**



1. A corrugated board product comprising:

(a) a first liner sheet;

(b) a second liner sheet;

(c) corrugated flutes adhered to said first liner sheet;

(d) means for adhering said second liner sheet to said corrugated flutes, said corrugated flutes positioned between said first and second liner sheets;

(e) wherein said product thereby formed is scored to bifurcate said product into two portions, one on either side of said scoring, defining planes, the angle between which can be varied by pivoting one of said portions relative to the other of said portions about said scoring; and

(f) a reinforcing filament network sandwiched between said corrugated flutes and said second liner sheet, said network including:

(i) a pair of generally linearly extending filaments straddling said scoring; and

(ii) a serpentine filament extending in a direction in which said generally linearly extending filaments run and sinuating across said pair of generally linearly extending filaments, said serpentine filament being bonded to said pair of linearly extending filaments.

4,451,516
LOW THERMAL EXPANSION CERAMIC ARTICLE

Kiminari Kato, Nagoya, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Aug. 31, 1981, Ser. No. 298,110
Claims priority, application Japan, Sep. 3, 1980, 55-121202
Int. Cl.³ B32B *3/12*
U.S. Cl. 428—116 **1 Claim**

1. A low thermal expansion ceramic article having a thermal expansion coefficient of not higher than 2.5×10^{-6}/°C. within the temperature range of 40°-800° C., comprising cell structured ceramic parts consisting of thin walls bonded to bulk-structured parts having a large thickness through glass-ceramics consisting essentially of 10-20% by weight of MgO, 22.3-40% by weight of $A_{12}O_3$, 40-60% by weight of SiO_2, 0.1-3% by weight of BaO, 0.01-1% by weight of ZrO_2 and not more than 10% by weight of impurities.

4,451,517
CERAMIC HONEYCOMB CATALYST SUPPORT COATED WITH ACTIVATED ALUMINA

Kazuhiro Inoguchi; Kunio Okamoto, both of Okazaki, and Keiichiro Isomura, Takahama, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 15, 1982, Ser. No. 398,713
Claims priority, application Japan, Jul. 18, 1981, 56-112657
Int. Cl.³ B32B *3/12*
U.S. Cl. 428—116 **5 Claims**



1. A ceramic honeycomb catalyst support having a honey-

comb structure with an activated alumina coating thereon, adapted for purifying exhaust gases and exhibiting improved resistance to thermal shock, said honeycomb structure formed of a ceramic material having a coefficient of thermal expansion below that of activated alumina, said honeycomb structure having a matrix of thin walls forming a multiplicity of open ended cells or passages defined by the thin walls extending from one end of the honeycomb to the other end,

said honeycomb structure having in the surface walls thereof a multiplicity of minute pores and a multiplicity of fine cracks of a width smaller than said minute pores, said fine cracks and minute pores formed during the fabrication of the honeycomb structure, and a layer of activated alumina adhered onto the surfaces of said thin walls, said fine cracks being substantially completely devoid of said activated alumina such that the area within said fine cracks is unfilled and are free to act as buffer zones to absorb deformation of the honeycomb structure as it expands when heated.

4,451,518

REINFORCING MEMBER

Toshikatu Miura; Hiroto Kikuchi; Yukio Okada, and Tsutomu Yoshioka, all of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

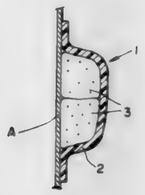
Filed Mar. 9, 1982, Ser. No. 356,452

Claims priority, application Japan, Mar. 16, 1981, 56-37576

The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.

Int. Cl.³ B32B *5/20, 3/10*

U.S. Cl. 428—137 **7 Claims**



1. A reinforcing member including:

a reinforcing resin layer, which is elastic in its semi-hardened or unhardened state before being applied to an object to be reinforced, and which is hardenable to a rigid state;

an expandable member fixed along the reinforcing resin layer;

the expandable member being narrower than the reinforcing resin layer;

the expandable member being elastic at least before the reinforcing member is applied to the object;

the expandable member being expandable to form a bead-like projection before the reinforcing resin layer hardens;

the expandable member consisting of at least two divided pieces so as to selectively enlarge the dimensions thereof;

the reinforcing resin layer having its edge portions extending beyond the expandable member, the underside of the edge portions thereof being adapted to adhere to the object;

the reinforcing resin layer including fibers for reinforcing the resin layer.

4,451,519

DRAWING MATERIAL BACKING FOR MAKING TECHNICAL AND DIAGRAMMATIC DRAWINGS

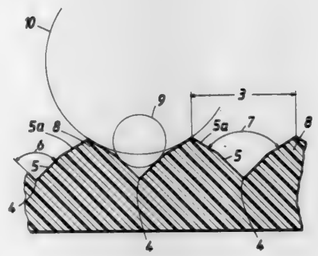
Hans Irrgeher, Dauphinestrasse 144, A-4020 Linz, Austria

Filed Dec. 23, 1982, Ser. No. 452,796

Claims priority, application European Pat. Off., Dec. 29, 1981, 81890212.4

Int. Cl.³ B32B *3/30, 3/28*

U.S. Cl. 428—167 **3 Claims**



1. A drawing material backing for making technical and diagrammatic drawings, comprising a flexible plastic sheeting provided on one side with an impressed orthogonal grid consisting of intersecting fine V-shaped guiding grooves uniformly spaced apart 0.5 or 1 millimeter and defining pyramid-shaped embossed elevations, the grooves having a bottom and side faces including a steep angle next to the bottom of the groove and a flatter angle in their upper portion so that the embossed elevations have the shape of pyramids having angled sides.

4,451,520

SPOT BONDED PATTERN FOR NON-WOVEN FABRICS

Bohuslav Tecl; Erich Fahrbach; Jürgen Knoke, and Hans C. Assent, all of Weinheim, Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

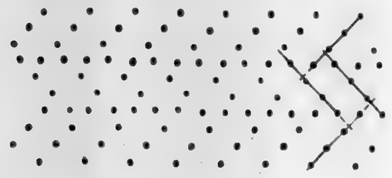
Filed Dec. 22, 1982, Ser. No. 452,069

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216099

Int. Cl.³ B32B *27/14*

U.S. Cl. 428—198 **13 Claims**

1. A fabric comprising a non-woven fabric wherein the fibers of said fabric are bonded together by a bonding agent and/or autogenously in a plurality of equally spaced-apart spots, wherein the spots are the same size and are combined in a plurality of identical groups of not less than three nor more than five identical spots, each of said groups of spots being spaced apart from each other, and each of said spots within each group being positioned along a curve or straight line wherein the steady extension of said line beyond the end-spots of said group positioned along said line intersects an adjacent line along which an adjacent group of spots is positioned at a point outside the midpoint of the adjacent line, and wherein the ratio of the distance separating the spots within each group of



spots to the distance from an end-spot in each group to the next adjacent line along which an adjacent group of spots is positioned, is about 0.5 to about 3.0.

4,451,521

SECURITY PAPER WITH AUTHENTICITY FEATURES IN THE FORM OF SUBSTANCES LUMINESCING ONLY IN THE INVISIBLE REGION OF THE OPTICAL SPECTRUM AND PROCESS FOR TESTING THE SAME

Wittich Kaule, Gauting, and Gerhard Stenzel, Munich, both of Fed. Rep. of Germany, assignors to Gao Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

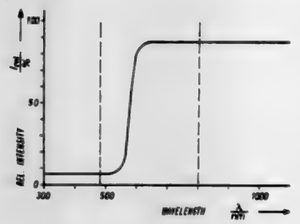
PCT No. PCT/DE81/00081, 371 Date Oct. 23, 1981, 102(e) Date Oct. 23, 1981, PCT Pub. No. WO81/03510, PCT Pub. Date Dec. 10, 1981

PCT Filed May 29, 1981, Ser. No. 314,842

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020599

Int. Cl.³ B32B *23/00, 3/00;* **G01J** *1/00;* **D21H** *5/10*

U.S. Cl. 428—199 **28 Claims**



1. Security document with authenticity characteristics comprising: a substrate and a luminescing substance, wherein the luminescing substance is constructed to exhibit, when excited, luminescence emission only in the invisible region of the optical spectrum, said luminescing substance comprising a luminophore combined with an absorbing material having an absorption spectrum which includes a portion of the visible spectrum in which said luminophore emits radiation.

4,451,522

TRANSFERABLE ENAMEL SHEET AND METHOD AND APPARATUS FOR ITS FABRICATION

Hubertus M. de Vroom, Warmond, Netherlands, assignor to Nordipa AG, Schwerzenbach, Switzerland

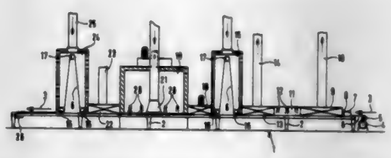
Continuation-in-part of Ser. No. 205,301, Nov. 10, 1980, abandoned. This application Oct. 27, 1981, Ser. No. 315,295

Claims priority, application Netherlands, Oct. 29, 1980, 8005935

Int. Cl.³ B32B *3/18;* **B41M** *3/14*

U.S. Cl. 428—201 **22 Claims**

1. In a transferable enamel sheet formed as a laminate including a carrier film, a silicone release layer applied thereon, an enamel layer and a pressure sensitive adhesive layer, the improvement of a neutralization layer of wax-like consistency applied to the release layer, said neutralization layer being comprised of a mixture of branched and unbranched hydrocarbon chains with an average length of 30 carbon atoms and a COOH group at several locations in the chain.



4,451,523

CONFORMAL COATING SYSTEMS

Larry A. Nativi, Rocky Hill, and Kris Kadziela, East Hartford, both of Conn., assignors to Loctite Corporation, Newington, Conn.

Continuation-in-part of Ser. No. 441,165, Nov. 11, 1982, abandoned. This application Aug. 31, 1983, Ser. No. 528,286

Int. Cl.³ B05D *3/06*

U.S. Cl. 428—209 **16 Claims**

1. An essentially solvent-free one-part coating composition, especially useful for conformal coating, comprising:

(1) at least one urethane-acrylate or urethane-methacrylate compound;

(2) an acrylate or methacrylate compound containing an allylic group;

(3) a non-allylic acrylate or methacrylate diluent;

(4) a polymerization initiator of the photoinitiator type; and

(5) a metal drier.

4,451,524

POLYPROPYLENE STRAP AND METHOD OF MANUFACTURING THE SAME

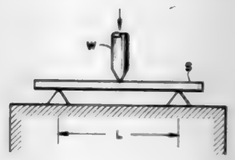
Hiroyuki Matsumoto, Tokyo, Japan, assignor to Tsukasa Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,382

Claims priority, application Japan, Jan. 14, 1983, 58-3305

Int. Cl.³ B32B *7/02, 9/00;* **D01D** *5/12*

U.S. Cl. 428—213 **2 Claims**



1. A polypropylene strap formed from a single polypropylene sheet in which both surface layers are stretched at a low draw ratio of 1.2–3 and an inner portion is stretched at a high draw ratio of 10–18.

4,451,525

PRODUCTS HAVING COMPOUND MEMBRANE

Shiyouzou Kawazoe; Zenichi Ueda; Toshihiko Sugimoto, and Takahiko Moriuchi, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 18, 1981, Ser. No. 244,929

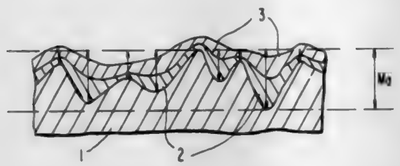
Claims priority, application Japan, Mar. 19, 1980, 55-35475

Int. Cl.³ B32B *7/02, 15/08*

U.S. Cl. 428—213 **10 Claims**

1. A product with a compound membrane which comprises a transparent molded substrate having a maximum surface

roughness of about 50 to 20,000 Å, a metal membrane having an average thickness of about 50 to 300 Å which is equal to or less than the maximum surface roughness of the molded sub-



strate on said molded substrate and a dielectric membrane having a thickness of 100 to 60,00 Å and having a refractive index of about 1.3 or more for visible light and a visible light transmittance of about 50% or more on said metal membrane.

4,451,526

MULTILAYER COMPOSITE MATERIAL, ESPECIALLY FOR CLOSURES FOR PLASTIC CONTAINERS

Bruno Claude, Montivilliers; Jean-Jacques Labaig, Le Havre, and Christian Martinez, Harfleur, all of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Aug. 20, 1982, Ser. No. 410,035
Claims priority, application France, Aug. 26, 1981, 81 16315
Int. Cl.³ B32B *7/02, 27/08*
U.S. Cl. 428—216 **8 Claims**

1. A multilayer composite material intended in particular for the manufacture of covers or caps for the closure of a container, said composite material comprising

(a) a metal foil,

(b) a polyolefin film, and

(c) an adhesive layer bonding the metal foil and the polyolefin film together and formed of two compounds A and B, compound A being a copolymer of an aliphatic monoolefin and an unsaturated monoethylenic carboxylic acid having good adhesion for the metal foil and the polyolefin film, and compound B being a compound effective to reduce the adhesion of compound A for the metal foil and/or the polyolefin film, the improvement in said composite material comprising said metal foil having a thickness between 25 and 75 microns; said polyofin film having a thickness between 10 and 30 microns; and said adhesive layer having a thickness between 0.5 and 6 microns.

4,451,527

CONFORMABLE METAL-CLAD LAMINATE

Murray Olyphant, Jr., Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 28, 1981, Ser. No. 287,773
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—220 **7 Claims**

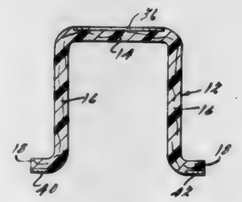
1. In a metal clad laminate of at least about 20 mils dielectric thickness having a metallic foil on at least one surface thereof and containing at least one low-loss dielectric soft polymeric material having a room temperature elongation of at least about 75 percent and a tensile modulus of less than about 120,000 psi and wherein the polymer must have a dielectric loss tangent of less than 0.001 in the frequency range of from about 1 to about 10^{G}Hz and at least two layers of glass cloth reinforcement, the improvement comprising the separation of said metallic foil from the nearest of said layers of glass cloth reinforcement with at least about 7 mils of said soft polymeric material.

4,451,528

COMPOSITE FIBER REINFORCED MEMBER AND METHOD

Charles J. Krause, Nicholesville, Ky., assignor to NI Industries, Inc., Novi, Mich.

Continuation of Ser. No. 249,107, Mar. 30, 1981, abandoned, which is a division of Ser. No. 124,353, Feb. 25, 1980, Pat. No. 4,305,903. This application Sep. 16, 1982, Ser. No. 418,807
Int. Cl.³ B32B *27/36*
U.S. Cl. 428—287 **12 Claims**



1. A composite fiber reinforced article comprising a body comprised of a cured thermosetting resin incorporating glass fibers therein, said body having integrally bonded over at least one localized area thereof, a surface stratum comprised of a cured compatible thermosetting resin having high-strength graphite fibers therein.

4,451,529

COATED POLYSTYRENE FOAMS AND COMPOSITIONS AND PROCESSES FOR THE PRODUCTION THEREOF

Stuart R. Kerr, III, Pomona, and Milton Meshirer, Riverdale, both of N.Y., assignors to Beacon Chemical Company, Inc., Mount Vernon, N.Y.

Filed Apr. 9, 1982, Ser. No. 367,043
Int. Cl.³ B05D *3/06*
U.S. Cl. 428—319.3 **12 Claims**

1. A process for producing expanded polystyrene articles having at least one surface thereof coated with a tough, durable, impact resistant solvent-resistant integument, the process comprising covering the surface of the article with a UV-curable coating composition and irradiating the covered surface with ultra-voilet or electron beam radiation to cure the composition and form the integument, the composition comprising a UV-curable diacrylate oligomer, an acrylate-terminated reactive diluent, and a photoinitiator, the inert diluent being present in an amount to provide a viscosity of from 800 to 20,000 centipoise, at room temperature, to the coating composition and the oligomer and diluent being inert to the polystyrene.

4,451,530

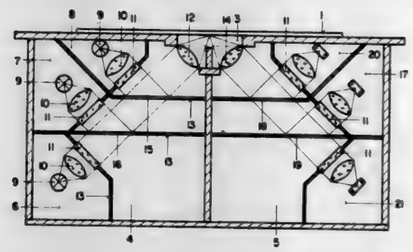
SECURITY PAPER WITH AUTHENTICITY FEATURES IN THE FORM OF LUMINESCING SUBSTANCES

Wittich Kaule, Gauting; Gerhard Schwenk, Puchheim, and Gerhard Stenzel, Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH., Munich, Fed. Rep. of Germany

PCT No. PCT/DE81/00079, 371 Date Oct. 23, 1981, 102(e) Date Oct. 23, 1981, PCT Pub. No. WO81/03508, PCT Pub. Date Dec. 10, 1981
PCT Filed May 29, 1981, Ser. No. 314,843
Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020652
Int. Cl.³ B32B *5/16*; G01J *1/42*
U.S. Cl. 428—323 **22 Claims**

1. Security document with authenticity features comprising: a substrate material supporting a luminescing substance, having a known emission spectrum and a known excitation spectrum, said luminescing substance comprising a luminophore and an absorbing substance, said absorbing substance having an

absorption spectrum which partly overlaps at least one of said known emission spectrum and said known excitation spectrum of the luminophore whereby said luminescing substance has an



emission spectrum which is characteristically altered from said known emission spectrum whereby said characteristically altered portion of the spectrum is used for authentication of the security document.

4,451,531

MAGNETIC RECORDING MEDIUM AND METHOD

Yukihiro Isobe, 3204, Irisawa, Usada-machi, Minamisaku-gun, Nagano-ken; Kazushi Tanaka, 438-1, Otsu, Komoro-shi, Nagano-ken; Masaharu Nishimatsu, 2494-16, Mikageshinden, Komoro-shi, Nagano-ken; Osamu Shinoura, 3272, Nakagomi, Saku-shi, Nagano-ken, and Yuichi Kubota, 197-46, Mukaida, Hei, Komoro-shi, Nagano-ken, all of Japan

Filed Jun. 1, 1982, Ser. No. 384,063
Claims priority, application Japan, Jun. 5, 1981, 56-85689
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—329 **15 Claims**

1. A magnetic recording medium which comprises a film base, a magnetic coating layer provided on a surface of the film base and a backing layer provided on the other surface of the film base having a tensile modulus at 100% elongation from 25 to 300 kg/cm^2 and containing an abrasive powder having a hardness of at least 4 in the Mohs scale dispersed in a matrix of a radiation-sensitive polymeric binder cured by the irradiation with a high energy radiation, the amount of abrasive powder being from 5 to 350 parts by weight per 100 parts of polymeric binder.

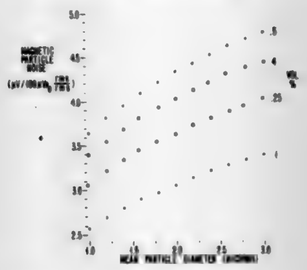
4,451,532

MAGNETIC RECORDING COMPOSITION EMPLOYING MONO-DISPERSED SPHERICAL LOAD-BEARING PARTICLES

Vincent M. DePalma; Reginald J. Dilley; Mary F. Doerner, all of San Jose, and Daniel A. Nepela, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1981, Ser. No. 268,415
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—336 **4 Claims**

1. A magnetic recording medium comprising magnetic particles and non-magnetic load-bearing particles disposed in a binder as a coating on a substrate, substantially all of said load-bearing particles being a monodispersion of spherical particles, the diameter of substantially all of said spherical



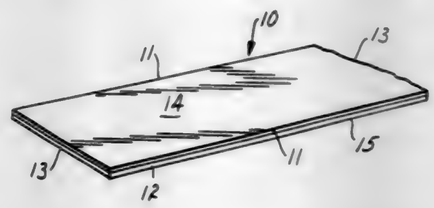
load-bearing particles exceeding said coating thickness by not more than 20 percent.

4,451,533

DISPENSABLE POLYPROPYLENE ADHESIVE-COATED TAPE

Roy Wong, White Bear Lake; James J. Pedginski, Stillwater, and Andrew H. Wong, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1983, Ser. No. 465,162
Int. Cl.³ B32B *27/06*; C09J *7/02*
U.S. Cl. 428—337 **13 Claims**



1. In a tape comprising a biaxially oriented elongate polypropylene film backing having a thickness of less than about 0.005 centimeters and a layer of adhesive coated on one surface of the backing, the improvement wherein the backing will break before it can be stretched in its longitudinal direction by about 30 percent, and can be stretched by at least 40 percent in its transverse direction before breaking to provide a tape that can be easily manually dispensed from a dispenser.

4,451,534

SYNTHETIC FIBERS IMPARTED WITH AN IRREGULAR SURFACE AND A PROCESS FOR THEIR PRODUCTION

Takao Akagi; Shinji Yamaguchi; Katsura Maeda, all of Kurashiki, and Kazuo Yamamoto, Nishinomiya, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 3, 1982, Ser. No. 438,981
Claims priority, application Japan, Nov. 9, 1981, 56-180464
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—372 **6 Claims**

1. A surface-modified synthetic fiber formed by plasma irradiating a synthetic fiber containing fine particles in which recesses and projections are formed on the surface of the synthetic fiber, said recesses being formed by being etched with plasma in the portion not shielded by the fine particles, said projections being formed by not being etched in the portion shielded by the fine particles, the synthetic fiber being imparted with a nondirectional irregular surface such that the distance between the center points of adjacent projections is between approximately 0.03 and 1 microns and the number of

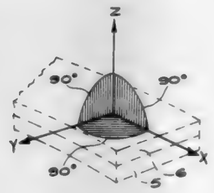
projections is between approximately 1 and 200 per square micron, said synthetic fiber containing 0.1–10% by weight of said fine particles, said fine particles having an average single particle size of less than 200 millimicrons prior to incorporation into said synthetic fiber, said fine particles being effective to impart said nondirectional irregular surface to said synthetic fiber upon plasma etching.

4,451,535

MAGNETIC RECORDING ELEMENTS, PROCESS FOR MAKING THE SAME AND THEIR USE IN RECORDING

Bernard J. Pingaud, Vincennes, and Claude Poncet, Noisy-le-Grand, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,483
Claims priority, application France, Jul. 16, 1980, 80 401064
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—329 **14 Claims**



1. A magnetic recording element comprising a layer containing acicular magnetic particles dispersed in a binder,
said particles having magnetocrystalline anistropy, shape anisotropy which provides a preferred axis of magnetization, and coercivities of at least 450 Oersteds,
said particles being in the form of a distribution imparting to said layer magnetic isotropy as to coercivity and intensity of remanent magnetization.

7. A magnetic recording element comprising a layer containing acicular magnetic particles dispersed in a binder,
said particles having magnetocrystalline anisotropy, shape anisotropy which provides a preferred axis of magnetization, and coercivities of at least 450 Oersteds,
said particles being in the form of a distribution having spherically symmetrical intrinsic magnetic properties, whereby said layer (a) has coercivities that are substantially the same in three orthogonal directions and (b) is capable of supporting intensities of remanent magnetization that are also substantially the same in three orthogonal directions.

4,451,536

HEAT DISTORTION-RESISTANT THERMOPLASTIC SEMI-CONDUCTIVE COMPOSITION

Anthony Barlow, and Lawrence A. Meeks, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,560
Int. Cl.³ C08K *3/04*; H01B *17/64*
U.S. Cl. 428—383 **21 Claims**

1. A heat distortion-resistant non-crosslinked thermoplastic semiconductive composition comprising a copolymer selected from the group consisting of ethylene-vinyl acetate copolymer and ethylene-acrylate ester copolymer, an admixture of high density polyethylene and linear low density polyethylene and carbon black, said ethylene copolymer being present in an amount of from about 20 to about 60 weight percent, said admixture of polyethylene homopolymers being present in an amount of from about 10 to about 45 weight percent with the low density polymer constituting about 40 to about 75 percent of said admixture, all other percentages being based on the weight of the total composition and the carbon black concentration being present in a conductive amount.

18. An insulated electrical conductor comprising an electrically conductive core, a layer of insulative material immediately surrounding said core, and a semi-conductive shield comprising the composition of claim 1 surrounding said insulative layer.

4,451,537

ASBESTOS COMPOSITION HAVING ORGANO-SILANE COATING

Robert J. Kennedy, Sr., Niagara Falls; Robert J. Kennedy, Jr., and Sundaresan Ramachandran, both of N. Tonawanda, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1981, Ser. No. 279,157
Int. Cl.³ B32B *5/16*; B05D *1/18*; C07F *7/10*
U.S. Cl. 428—391 **6 Claims**

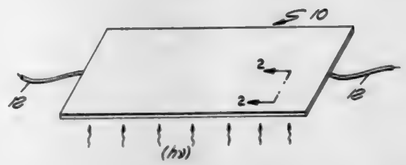
1. An asbestos base material comprising opened chrysotile asbestos having an outer octahedral magnesia layer and an organo-silane coating bonded thereto and overlying the asbestos base material.

4,451,538

HIGH HYDROGEN AMORPHOUS SILICON

David P. Tanner, Thousand Oaks, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 13, 1983, Ser. No. 494,199
Int. Cl.³ B32B *9/04*
U.S. Cl. 428—447 **14 Claims**



1. A process of forming amorphous silicon from a glow discharge comprising the steps of:
providing a gas atmosphere containing H_2 and SiH_4 in a ratio of at least approximately 9 to 1, at a flow rate of no more than 10^{-3} SCCM per cubic centimeter;
establishing a glow discharge by discharging electrical power through the atmosphere at a density of no more than 0.08 watts per square centimeter; and
exposing a substrate to the glow discharge to deposit amorphous Si:H thereon.

4,451,539

SURFACING FOILS FOR COATING PLASTICS PARTS

Antoine Vallee, and Michel Goguelin, both of Charavines, France, assignors to Arjomari-Prioux, France

Filed Jun. 28, 1982, Ser. No. 392,678
Claims priority, application France, Jul. 2, 1981, 81 13029
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—515 **4 Claims**

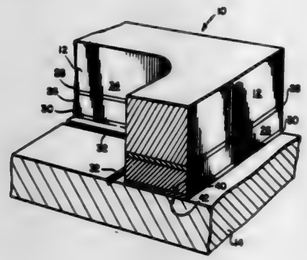
1. A surfacing foil composition for coating a plastic article which foil comprises from 30% to 90% by weight of at least one polyolefin dough; from 2% to 15% by weight of a binder; 0.5% to 5% by weight by at least one flocculant and the remainder comprising at least one powder element selected from the group consisting of thermoplastics, thermoplastic elastomers, fillers, carbon and pigments.

4,451,540

SYSTEM FOR PACKAGING OF ELECTRONIC CIRCUITS

Phillips C. Baird, Lakeville, and Raymond J. Duff, South Dartmouth, both of Mass., assignors to Isotronics, Inc., New Bedford, Mass.

Filed Aug. 30, 1982, Ser. No. 413,169
Int. Cl.³ H01L *23/02*
U.S. Cl. 428—615 **8 Claims**



1. A flat pack carrier for housing electronic components comprising a sandwich of a frame of nickel, cobalt, and iron, a first braze layer, a copper ring, a second braze layer, and a base of an alloy of tungsten and copper, said flat pack carrier having been formed in a brazing step which includes the steps of providing a sandwich structure of a frame, a braze, a ring, a braze and a copper tungsten alloy base, raising the temperature of said sandwich structure to the melting point of the braze having the highest melting point, and cooling said sandwich structure below the melting point of the braze having the lowest melting point such that the frame is brazed to the ring, such that the ring is brazed to the base, and such that the braze does not flash out over the base during brazing due to the higher thermal conductivity of said ring and base and because the base and ring reach the same temperature at substantially the same time during the brazing process.

4,451,541

SOLDERING COMPOSITION AND METHOD OF USE

Roy E. Beal, Naperville, Ill., assignor to Copper Development Association, Inc., Birmingham, Mich.

Continuation of Ser. No. 193,596, Sep. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 97,950, Nov. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 24,001, Mar. 26, 1979, abandoned. This application Jan. 7, 1983, Ser. No. 456,517
Int. Cl.³ B23K *35/28*; B32B *15/01*
U.S. Cl. 428—658 **20 Claims**

1. A zinc-based composition useful for soldering or joining copper or copper alloy surfaces comprising from 0 to about 3.0% copper, from about 0.3 to about 3.0% chromium, from about 0.3 to about 3.0% titanium, from 0 to about 5.0% nickel, from about 0.01 to about 1.0% lead, from about 0.01 to about 20% tin, and the balance zinc, said composition being essentially free of cadmium and containing less than 1% manganese and no more than very minor amounts of aluminum.

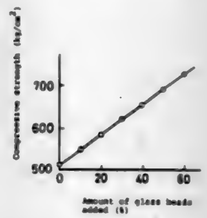
9. An article of manufacture comprising a plurality of copper or copper alloy surfaces joined by a zinc-based composition as the soldering material comprised of from 0 to about 3.0% copper, 0 to about 3.0% chromium, 0 to about 3.0% titanium, 0 to about 5.0% nickel, from about 0.01 to about 5.0% lead, from about 0.01 to about 20% tin and the balance zinc.

4,451,542

CELL WITH GASKET COMPRISING GLASS BEADS

Osamu Ishida; Yoshio Uetani, and Seiichi Matsushima, all of Osaka, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Dec. 8, 1981, Ser. No. 328,665
Claims priority, application Japan, Dec. 8, 1980, 55-172891
Int. Cl.³ H01M *2/08*
U.S. Cl. 429—174 **9 Claims**



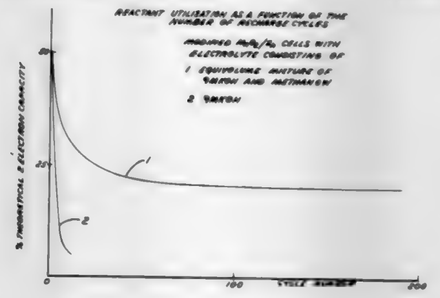
1. A cell comprising in combination:
a positive can having an opening defined by a lateral circumferential edge for receiving an electrolyte,
a negative collector having a peripheral portion fitted in said opening of said positive can defining a space between said peripheral portion and said lateral circumferential edge of said positive can, and
a gasket means set in said space between said lateral edge of said positive can and said peripheral portion of said negative collector so as to prevent the leakage of said electrolyte from said cell, said gasket comprising a synthetic resin composition including galss beads having an average particle size of 2 to 60 μm in an amount of from 5 to 50% by weight of said composition.

4,451,543

RECHARGEABLE ZINC/MANGANESE DIOXIDE CELL

Matthew A. Dzieciuch, Dearborn Heights; Halina S. Wroblowa, West Bloomfield, and Joseph T. Kummer, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 29, 1983, Ser. No. 537,206
Int. Cl.³ H01M *6/04*
U.S. Cl. 429—206 **2 Claims**



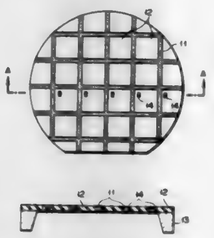
1. A rechargeable cell which is characterized by:
a positive electrode formed from a manganese oxide electrode material which contains a heavy metal selected from the group consisting of lead, bismuth, and mixtures of bismuth and lead;
a negative electrode of zinc;
a separator between said positive electrode and said negative electrode; and
an alkaline electrolyte consisting essentially of an organic alcohol material and an alkaline hydroxide in contact with both said positive electrode and said negative electrode.

4,451,544

MASK STRUCTURE FOR X-RAY LITHOGRAPHY AND METHOD FOR MANUFACTURING THE SAME

Katsuhiro Kawabuchi, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 17, 1982, Ser. No. 389,388
Claims priority, application Japan, Jun. 24, 1981, 56-97705
Int. Cl.³ G03F 9/00
U.S. Cl. 430—5 11 Claims



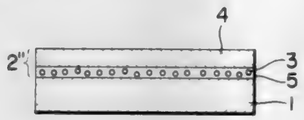
1. A mask structure for X-ray lithography, comprising;
a mask substrate of an X-ray transmitting material;
a lattice-shaped metal film for reinforcing said mask substrate, and which is embedded in a lattice-shaped slit formed corresponding to the positions of the dicing lines of the mask structure;
a mask pattern of an X-ray absorbing material which is formed on one of a surface of said mask substrate and in said substrate, and in the area surrounded by said lattice-shaped metal film; and
a support ring for supporting a rear periphery of said mask substrate.

4,451,545

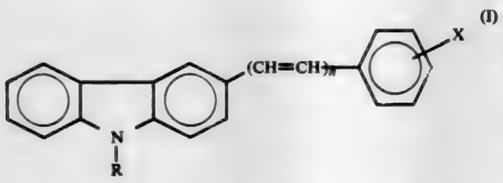
ELECTROPHOTOGRAPHIC ELEMENT WITH CARBAZOLE DERIVATIVE

Mitsuru Hashimoto, and Kiyoshi Sakai, both of Numazu, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1982, Ser. No. 422,401
Claims priority, application Japan, Oct. 3, 1981, 56-157883
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—59 18 Claims



1. An electrophotographic element comprising an electrically conductive substrate and a photosensitive layer superposed thereon, wherein said photosensitive layer is a double layer that comprises a charge carrier generating sub-layer consisting essentially of a charge carrier generating material and a charge transfer sub-layer containing a carbazole derivative compound having the following formula (I):



(I)

wherein R is lower alkyl; X is hydrogen, lower alkyl, lower alkoxy, amino or amino substituted with lower alkyl or benzyl; and n is 1 or 2.

4,451,546

PHOTOSENSITIVE MEMBER

Takao Kawamura, Senboku Seiwadai Koporasu 717-Go, 398-1, Tsujino, Sakai-Shi, Osaka-Fu, and Masazumi Yoshida, Amagasaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha; Takao Kawamura, both of Osaka and Kyocera Corporation, Kyoto, all of, Japan

Filed Mar. 7, 1983, Ser. No. 473,004
Claims priority, application Japan, Mar. 31, 1982, 57-54567
Int. Cl.³ G03G 5/08, 5/14, 5/024
U.S. Cl. 430—69 4 Claims



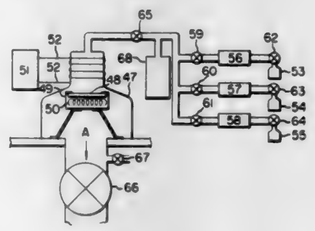
1. A photosensitive member which comprises an electrically conductive substrate, an amorphous silicon semiconductor layer, an amorphous silicon-germanium photoconductive layer having a thickness of about 0.1 to 3 microns and an amorphous silicon photoconductive layer having a thickness of about 0.1 to 3 microns.

4,451,547

ELECTROPHOTOGRAPHIC α-Si(H) MEMBER AND PROCESS FOR PRODUCTION THEREOF

Yutaka Hirai, Tokyo; Toshiyuki Komatsu, Kawasaki; Katsumi Nakagawa, Tokyo; Teruo Misumi, Toride, and Tadaji Fukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 971,114, Dec. 19, 1978, Pat. No. 4,265,991.
This application Dec. 8, 1980, Ser. No. 214,045
Claims priority, application Japan, Dec. 22, 1977, 52-154629; Jan. 23, 1978, 53-5958
Int. Cl.³ G03G 5/082
U.S. Cl. 430—128 21 Claims



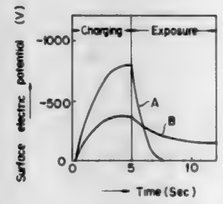
1. A process for preparing an electrophotographic photosensitive member comprising a substrate for electrophotography and a photoconductive layer comprising amorphous silicon and containing an effective amount of hydrogen to provide high dark resistance and high SN ratio for electrophotographic processing, which comprises:
(a) subjecting a substrate suitable for electrophotography to a reduced pressure in an evacuable system,
(b) introducing gaseous material containing sources of silicon and hydrogen into said system under said reduced pressure,
(c) causing an electrical discharge in said gaseous material so as to form a photoconductive layer comprising hydrogenated amorphous silicon on the substrate wherein the temperature of said substrate is maintained with the range from 50° to 350° C., and,
(d) after said layer is formed, maintaining the layer under reduced pressure until the temperature of the substrate drops to or below a predetermined temperature.

4,451,548

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Akira Kinoshita; Osamu Sasaki; Kiyoshi Sawada, and Satoshi Goto, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 353,889
Claims priority, application Japan, Mar. 13, 1981, 56-36167
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—79 11 Claims



1. An electrophotographic photoreceptor comprising, a light sensitive layer on a conductive support, said light sensitive layer containing a carrier generation material and a carrier transport material comprising a carbazole derivative represented by formula I:



I

where each of R_1 and R_2 represents a hydrogen, a halogen, a hydroxy group, a substituted or unsubstituted alkyl group, an alkoxy group, an aryloxy group, a substituted amino group, or a substituted or unsubstituted aryl group; each of R_3 and R_4 represents a substituted or unsubstituted aryl group; and Ar represents a substituted or unsubstituted arylene group, or a divalent heterocyclic aromatic group, except pyridine.

4,451,549

LAMINATED PHOTOSENSITIVE PLATE FOR ELECTROPHOTOGRAPHY AND PROCESS FOR PREPARATION THEREOF

Yoshiaki Kato, Hirakata, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 233,688, Feb. 12, 1981, abandoned.
This application Dec. 30, 1982, Ser. No. 454,675
Claims priority, application Japan, Feb. 13, 1980, 55-15515
Int. Cl.³ G03G 5/06
U.S. Cl. 430—134 5 Claims

1. A process for the preparation of laminated photosensitive plates for electrophotography, which comprises coating on a conductive substrate a coating composition formed by dissolving a vinyl pyrrolidone type polymer and an electron-receptive substance in a halogenated aliphatic hydrocarbon solvent and dispersing a photoconductive organic pigment in the solution, drying the coated composition to form a layer comprised of a matrix comprising the vinyl pyrrolidone type polymer and the electron-receptive substance and the photoconductive organic pigment dispersed in the matrix, coating on the so-formed layer a solution of polymer of N-vinyl carbazole or a derivative thereof an electron-donative polymer in a solvent selected from the group consisting of cyclic ethers, halogenated aromatic hydrocarbons and aromatic hydrocarbon/ketone mixed solvents, and drying the coated solution to form a layer of the electron-donative polymer.

4,451,550

VESICULAR FILM AND COMPOSITION WITH PHENOXY RESIN MATRIX

Everett W. Bennett, Longmeadow, and Ahmad Arfaei, Holyoke, both of Mass., assignors to James River Graphics, Inc., South Hadley, Mass.

Filed Jul. 29, 1982, Ser. No. 403,108
Int. Cl.³ G03C 1/52, 1/60, 1/72
U.S. Cl. 430—176 33 Claims

1. In a vesicular film element comprising a film support and a coating therefor including a matrix resin and an imaging amount of a photosensitive vesiculating agent adapted to generate gas vescicles upon exposure to radiation and subsequent heat-actuated development, the improvement which comprises, as the matrix resin for the photosensitive vesiculating agent, a coatable, highly branched, ungelled, monofunctional comonomer endblocked, non-linear phenoxy resin of random structure devoid of regularly recurring units, with the average distance between the branch sites thereof being essentially of the same order of magnitude as the average branch length.

31. A composition of matter comprising a phenoxy matrix resin and an imaging amount of a photosensitive vesiculating agent adapted to generate gas vesicles upon exposure to radiation and subsequent heat-actuated development, wherein the phenoxy resin comprises the non-linear, ungelled, highly long-chain branched reaction product of
(i) at least one dihydric phenol,
(ii) an epoxy compound having two epoxy groups,
(iii) an epoxy or phenolic branching agent having a functionality greater than 2,
wherein the amount of branching agent employed is sufficient to provide at least 10 mole percent branch sites in the polymer resin, and
(iv) a monofunctional phenol or epoxide as an endblocker compound.

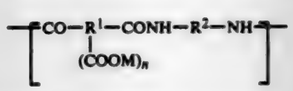
4,451,551

RADIATION-SENSITIVE POLY(AMIC ACID) POLYMER COMPOSITION

Fumio Kataoka; Fusaji Shoji, both of Yokohama; Isao Obara, Kamakura; Hitoshi Yokono, Katsuta; Tokio Isogai, Fujisawa, and Mitumasa Kojima, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, both of Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,875
Claims priority, application Japan, Dec. 17, 1980, 55-177200; Jun. 24, 1981, 56-96489; Jun. 24, 1981, 56-96493; Jun. 24, 1981, 56-96494; Oct. 19, 1981, 56-165806
Int. Cl.³ G03C 1/68
U.S. Cl. 430—270 21 Claims

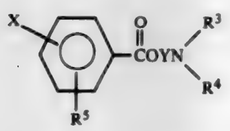
1. A light- or radiation-sensitive polymer composition comprising
(a) a poly(amic acid) having as a major component a repeating unit of the formula:



(1)

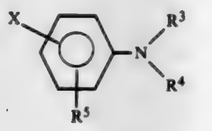
wherein R^1 is a trivalent or tetravalent organic group having at least 2 carbon atoms; R^2 is a divalent organic group having at least 2 carbon atoms; M is hydrogen or an ammonium ion; and n is an integer of 1 or 2, and

(b) one or more light- or radiation-sensitive compounds having an amino group and an aromatic azide group or aromatic sulfonylazide group in one molecule selected from the group consisting of a compound of the formula:



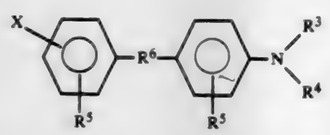
(2)

wherein X is $-N_3$ or $-SO_2N_3$; Y is an alkylene group; and R^3, R^4 and R^5 are independently hydrogen or a lower alkyl group; a compound of the formula:



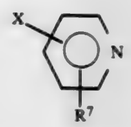
(3)

wherein X is $-N_3$ or $-SO_2N_3$; and R^3, R^4 and R^5 are independently hydrogen or a lower alkyl group; a compound of the formula:



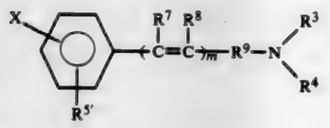
(4)

wherein X is $-N_3$ or $-SO_2N_3$; R^3, R^4 and R^5 are independently hydrogen or a lower alkyl group; a compound of the formula:



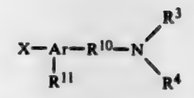
(5)

wherein X is $-N_3$ or $-SO_2N_3$; and R^7 is hydrogen or a lower alkyl group; a compound of the formula:



(6)

wherein X is $-N_3$ or $-SO_2N_3$; R^3 and R^4 are independently hydrogen or a lower alkyl group; $R^{5'}$ is hydrogen, halogen, a nitro group, a lower alkoxy group, a lower alkyl group or a cyano group; R^7 is hydrogen or a lower alkyl group; R^8 is hydrogen, halogen, a cyano group or a lower alkyl group; R^9 is a divalent organic group bonding to the N atom and the moiety having an unsaturated bonding; and m is an integer of 1 to 3; and a compound of the formula:



(7)

wherein X is $-N_3$ or $-SO_2N_3$; Ar is an aromatic group selected from a benzene ring which may be fused one and a heterocyclic ring; R^3 and R^4 are independently hydrogen or a lower alkyl group; R^{10} is a divalent organic group bonding to the Ar and the N atom; and R^{11} is hydrogen, halogen, a lower alkyl group, a lower alkoxy group, a nitro group, a carboxyl group, or a sulfonic acid group; in an amount of 0.05 to 5 times the equivalent of the total COOM groups of the repeating units of the formula (1) of component (a).

4,451,552

FORMATION OF PRINT SURFACES

Alan R. Gamson, and Phillip R. Kellner, both of London, England, assignors to Crosfield Electronics Limited, London, England

Filed Feb. 5, 1982, Ser. No. 346,324

Claims priority, application United Kingdom, Feb. 6, 1981, 8103775

Int. Cl.³ G03F 7/02

U.S. Cl. 430—302 **11 Claims**

1. A process for forming a print surface from a layer of photocurable resin by holding against the resin layer a photomask comprising a transparent sheet carrying an image surface that is in contact with the resin layer and that comprises an image-wise distribution of opaque material bonded to the sheet by an organic binder, illuminating the sheet and thereby subjecting the resin layer to image-wise photoexposure, removing the sheet and developing the resin layer, characterised in that the resin layer releases a softener that can soften the organic binder and adhesion of the opaque material to the resin layer is substantially prevented by a substantially clear film that covers the image surface and that is substantially impermeable to the softener and that is less than 25 microns thick.

4,451,553

HALOGEN FINISHING OF FLEXOGRAPHIC PRINTING PLATES CONTAINING BUTADIENE/ACRYLONITRILE COPOLYMERS

Michael G. Fickes, Colts Neck, and Bohdan Rakoczy, East Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 386,910, Jun. 10, 1982, abandoned. This application Mar. 4, 1983, Ser. No. 472,103

Int. Cl.³ G03C 5/00

U.S. Cl. 430—306 **9 Claims**

1. A process for providing an improved solvent resistant surface to a relief photosensitive flexographic printing plate wherein the areas in relief are prepared by imagewise exposure with actinic radiation and liquid development of unexposed areas of a layer of a photosensitive, elastomeric composition comprising a high molecular weight butadiene/acrylonitrile copolymer having a number average molecular weight of 20,000 to 75,000, an acrylonitrile content of 10 to 50% by weight and a carboxyl content of 0 to 15% by weight and a nongaseous ethylenically unsaturated compound containing at least one terminal ethylenic group, the process comprising, in either order,

(1) postexposing the developed surface to a source of actinic radiation, and

(2) contacting the developed surface in succession with two aqueous halogen solutions, the first halogen solution being either an aqueous solution having a free bromine concentration of 0.01 to 3.5% by weight, with contact for about 15 seconds to 20 minutes, or an aqueous solution having a free iodine concentration of 0.2 to 10% by weight, with contact for about 1.0 to 10 minutes, followed by the second halogen solution of chlorine equivalent to that supplied by an aqueous solution, 0.01 to 1.0 molar in NaOCl and 0.012 to 1.2 molar in HCl, with contact for about 15 seconds to 5 minutes.

4,451,554

METHOD OF FORMING THIN-FILM PATTERN

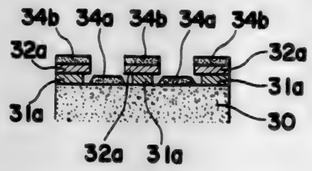
Kohbei Kishi, Nara; Hiroaki Kato; Masataka Matsuura, both of Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka and Japan Electronic Industry Development Association, Tokyo, both of, Japan

Continuation of Ser. No. 205,879, Nov. 10, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 403,325

Claims priority, application Japan, Nov. 9, 1979, 54-145760

Int. Cl.³ C23F 1/02; B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 430—313 **4 Claims**



1. A method suited for the manufacture of a thin-film transistor or a thin-film capacitor which comprises the steps of:

forming a first metal coating on a surface of a substrate;

forming a photo resist coating on the first metal coating formed on the substrate;

exposing the photo resist coating selectively to light by the use of a patterned mask;

developing a portion of the photo resist coating which has not been exposed to light to form in an imagewise configuration a photo resist layer resting on the first metal coating;

immersing the substrate into a first etchant bath to remove that portion of the first metal coating which is uncovered by the photo resist layer and to produce an undercut area beneath said photo resist coating in the still covered areas, thereby leaving a first metal layer between the photo resist layer and the substrate with a portion of the photo resist layer protruding beyond the remaining portion of the first metal coating to produce an umbrella effect;

forming second metal layers to a thickness smaller than the thickness of the first metal coating on the top of the photo resist layer and also in an imagewise configuration on a portion of the substrate surface around the first metal layer in those areas from which the portion of the first metal coating was initially removed such that said second metal image configuration is discontinuous with said first metal coating beneath said photo resist and has sloping sides;

contacting the substrate with a solvent to remove the photo resist layer together with the second metal layer formed on the top thereof; and

immersing the substrate into a second etchant bath to remove that portion of the first metal layer originally formed and still remaining on the substrate surface while not etching the second metal which has been deposited in an imagewise configuration.

4,451,555

ANTIFOGGING COMPOUNDS AND THEIR USE IN SILVER HALIDE PHOTOGRAPHY

Robert J. Pollet, Vremde; Antoon L. Vandenberghe, Hove, and Roger A. Spriet, Edegem, all of Belgium, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed Nov. 25, 1981, Ser. No. 324,805

Claims priority, application United Kingdom, Dec. 9, 1980, 8039457

Int. Cl.³ G03C 1/34

U.S. Cl. 430—445 **8 Claims**

1. A photographic material comprising one or more hydrophilic colloid layers including at least one silver halide emulsion layer, at least one of said layers containing in an amount sufficient to inhibit fog a 1-phenyl-5-mercaptotetrazole compound or a precursor thereof, wherein the phenyl group bears a substituent comprising at least one thioether function.

4,451,556

TELLURIUM IMAGING COMPOSITION INCLUDING BASE

Terry T. Yu, Mt. Clemens, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 28, 1982, Ser. No. 392,579

Int. Cl.³ G03C 5/24

U.S. Cl. 430—346 **55 Claims**

1. A film for forming an image made from an image forming composition which image forming composition comprises:

(a) a tellurium imaging compound;

(b) a reductant precursor which will abstract labile hydrogen from a hydrogen donor under the influence of activating radiation to become a reducing agent with respect to the image forming tellurium compound;

(c) a masked reducing agent which ionizes under the influence of a base;

(d) a source of labile hydrogen for reaction with said reductant precursor;

(e) an inorganic base which is capable of ionizing the masked reducing agent, said base being present in an amount of ionize at least a portion of the masked reducing agent present in the composition; and

(f) a matrix in which said tellurium compound, reductant precursor, masked reducing agent, source of labile hydrogen and base are combined in amounts effective to form a composition which may be applied to a substrate.

4,451,557

PHOTOGRAPHIC SPEED INCREASING AND LATENT IMAGE STABILIZING COMPOUNDS, SILVER HALIDE EMULSIONS, AND PHOTOGRAPHIC ELEMENTS

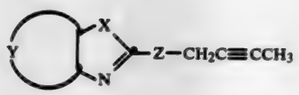
Roger Lok, Hilton; John P. Freeman, Rochester, and William N. Baum, Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,794, Nov. 12, 1981, Pat. No. 4,378,426. This application Feb. 14, 1983, Ser. No. 466,244

Int. Cl.³ G03C 1/46, 1/06

U.S. Cl. 430—505 **16 Claims**

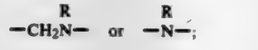
11. In a color photographic element comprising a support bearing at least one blue-sensitive silver halide emulsion layer having associated therewith a yellow dye-forming coupler, at least one green-sensitive silver halide emulsion layer having associated therewith a magenta dye-forming coupler, and at least one red-sensitive silver halide emulsion layer having associated therewith a cyan dye-forming coupler, the improvement wherein at least one of the silver halide emulsion layers contains a latent image stabilizing amount of a compound represented by the formula:



wherein:

X and Y complete a heterocyclic nucleus chosen from the class consisting of benzoxazole, benzothiazole, benzoselenazole, and benzimidazole;

Z is



and

R is hydrogen or lower alkyl.

4,451,558

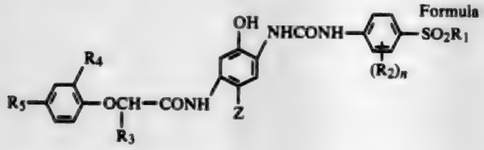
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroshi Sugita; Satoshi Kawakatsu, and Yutaka Kaneko, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,270
Claims priority, application Japan, Jun. 10, 1982, 57-100087
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—546 **11 Claims**

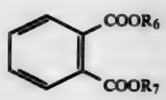
1. A silver halide color photographic light-sensitive material comprising a support provided thereon a hydrophilic colloidal layer containing at least one kind of phenol cyan coupler having the Formula [I] in which an ureido radical is 2-position and being dispersed by making use of a phthalic ester having the Formula [II]:

Formula [I]



wherein R_1 represents a straight or branched alkyl, cycloalkyl radical, R_2 represents a hydrogen atom, a halogen atom or a monovalent organic radical, R_3 represents a straight or branched alkyl radical, R_4 and R_5 each represents a branched alkyl radical, Z represents a hydrogen atom or a radical capable of eliminating in a coupling reaction with an oxidation product of a color developing agent, n represents an integer of 0 to 3;

Formula [II]



wherein R_6 and R_7 each represent an alkyl, alkenyl, aryl or cycloalkyl radical.

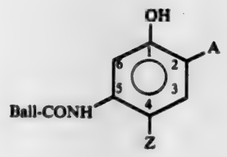
4,451,559

SILVER HALIDE PHOTOSENSITIVE MATERIALS FOR COLOR PHOTOGRAPHY

Ryosuke Sato; Katsunori Kato; Takashi Sasaki, and Hiroshi Sugita, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

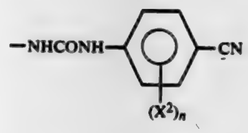
Continuation of Ser. No. 385,096, Jun. 4, 1982, abandoned. This application Aug. 12, 1983, Ser. No. 522,818
Claims priority, application Japan, Jun. 11, 1981, 56-90334; Jun. 11, 1981, 56-90335; Jun. 11, 1981, 56-90336
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—552 **3 Claims**

1. A silver halide photosensitive material for color photography which comprises a phenol type cyan coupler having the formula

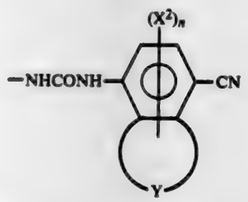


wherein

A has the formula



or



X^2 is an alkyl group, a halogen atom, a hydroxyl group, a nitro group, an acyloxy group, an alkoxy group or an acyl group;

Y is a non-metallic group forming a 5- or 6-membered condensed ring;

Z is a hydrogen atom or a removable group upon coupling reaction with an oxidized product of a color developing agent;

Ball is a ballast group; and

n is an integer of 1 to 4 inclusive.

4,451,560

CHEMICAL SENSITIZATION OF SILVER HALIDE GRAINS

Arthur M. Gerber, Belmont, and Judith Loucka, Newton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 15, 1982, Ser. No. 441,687
Int. Cl.³ G03C *1/28*
U.S. Cl. 430—567 **33 Claims**

1. A method for forming a photosensitive element which comprises contacting silver halide in a plurality of spaced depressions in a surface with a mixture of a silver halide solvent and a chemically sensitized fine-grain silver halide emulsion, thereby forming a chemically sensitized single effective silver halide grain in substantially each depression.

4,451,561

HEAT-DEVELOPMENT-TYPE IMAGE RECORDING MATERIAL

Shigeto Hirabayashi, Hachioji; Toyoaki Masukawa, Hinode; Wataru Ishikawa, Hachioji, and Tetsuya Harada, Chofu, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Apr. 22, 1983, Ser. No. 487,729
Claims priority, application Japan, Apr. 28, 1982, 57-73215
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—619 **10 Claims**

1. A heat-development-type image recording material comprising on a support a heat-development-type image recording layer containing

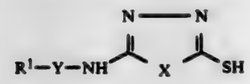
(a) an organic silver salt,

(b) a reducing agent,

(c) a binder, and

(d) at least one compound of following formula [I]:

Formula [I]



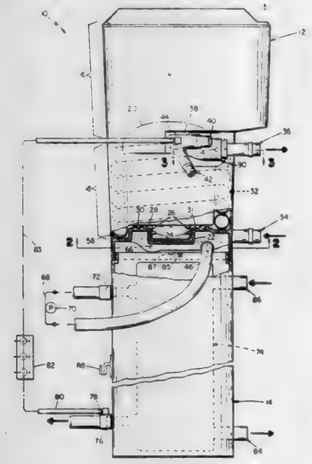
wherein R^1 represents a hydrogen atom, a hydroxy radical or a substituted or unsubstituted alkyl, alkenyl, aryl or alkoxy radical; Y represents a sulfonyl or a carbonyl radical; and X represents a sulfur atom or $=N-R^2$ wherein R^2 is a hydrogen atom, an amino radical or a substituted or unsubstituted alkyl, aryl or alkenyl radical.

4,451,562

BLOOD OXYGENATOR

Roger J. Elgas, Littleton, and Timothy M. Gordon, Morrison, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Apr. 26, 1982, Ser. No. 371,973
Int. Cl.³ A61M *1/03*
U.S. Cl. 435—2 **8 Claims**



1. Blood oxygenating apparatus comprising

a fluid flow mass transfer device including a microporous membrane sealed to the interior surface of a housing to define a plurality of parallel blood and air channels separated by said membrane, blood inflow and outflow ports communicating with said blood channels, and air inflow and outflow ports communicating with said air channels, said blood inflow port communicating with the upper end of said membrane,

said blood outflow port communicating with the lower end of said membrane,

a support holding said device with said blood inflow port located above said blood outflow port to cause any air bubbles introduced into said blood inflow port to have, owing to their buoyancy, a velocity through said blood channels that is slower than the bulk flow of blood flowing through said blood channels,

means to supply air to said air inflow port at a first pressure, and

pumping means to supply blood to said blood inflow port at a pressure sufficiently higher than said first pressure to cause substantially all said bubbles to completely pass through the pores of said microporous membrane to the air side of the membrane prior to being carried to the blood outlet port by the flow of blood.

5. A method of oxygenating blood comprising

providing a fluid flow mass transfer device including a microporous membrane sealed to the interior surface of a housing to define a plurality of parallel blood and air channels separated by said membrane, blood inflow and outflow ports communicating with said blood channels, and air inflow and outflow ports communicating with said air channels, said blood inflow port communicating with the upper end of said membrane, said blood outflow port communicating with the lower end of said membrane,

supporting said device with said blood inflow port located above said blood outflow port to cause and air bubbles introduced into said blood inflow port to have, owing to buoyancy, a velocity through said blood channels that is slower than the bulk flow of blood flowing through said channels,

supplying air to said air inlet port at a first pressure, and

pumping blood to said blood inlet port at a pressure sufficiently higher than said first pressure to cause substantially all said bubbles to completely pass through the pores of said microporous membrane to the air side of the membrane prior to being carried to the blood outflow port by the flow of blood.

4,451,563

METHOD FOR INCREASING THE SENSITIVITY OF ASSAYS

Richard A. Kaufman, 812 Stonegate La., Stanhope, N.J. 07874

Filed Aug. 28, 1981, Ser. No. 297,483
Int. Cl.³ C12Q *1/34, 1/38, 1/40, 1/42, 1/44, 1/54*
U.S. Cl. 435—21 **10 Claims**

1. In an enzymatic method for the kinetic analysis of biological fluids in which the hydrolysis of a nitrophenol indicator from its respective substrate is effected at or about neutral pH, the improvement comprising:

adding to said biological fluid a sensitization effective amount of cyclodextrin so as to effect a hypochromic shift in the wavelength in the unionized homologue of indicator compound thereby increasing the proportion of ionized homologue indicator in said biological fluid; and,

measuring the level of ionized indicator in the biological fluid at the absorbance maxima of said ionized indicator.

2. In an enzymatic method for the kinetic analysis of biological fluids for alkaline phosphatase in which the hydrolysis of a nitrophenol indicator from its respective substrate is effected at a pH which produces the optimum rate of hydrolysis, the improvement comprising:

adding to said biological fluid a sensitization effective amount of cyclodextrin so as to effect a shift in the absorbance maxima of the indicator and thereby reduce interference caused by the nitrophenol labeled substrate; and

measuring the level of indicator in the biological fluid at the absorbance maxima of said indicator.

3. In an enzymatic method for the analysis of biological fluids in which the hydrolysis of a nitrophenol indicator from its respective substrate produces a chromopore which has an absorbance maxima within a range of absorbance of interfer-

ring substances also present within said biological fluid, the improvement comprising:

adding to said biological fluid a sensitization effective amount of cyclodextrin so as to effect a shift in the absorbance maxima of the indicator and thereby reduce the interference caused by other substances within said fluid having appreciable absorbance within the same range of absorbance of the indicator compound prior to shift of its absorbance maxima by said cyclodextrin; and

measuring the level of indicator in the biological fluid at the absorbance maxima of said indicator.

4. In an enzymatic method for the kinetic analysis of biological fluids for amylase activity in which the enzymatic hydrolysis of a nitrophenol indicator from a nitrophenol oligoglycoside substrate produces a chromophore which can be correlated with the level of amylase activity in said biological fluid, the improvement comprising:

adding to said biological fluid a sensitization effective amount of cyclodextrin so as to effect an increase in the proportion of chromophore at the optimum pH for the conduct of such analysis; and

measuring the level of chromophore in the biological fluid at the absorbance maxima of said chromophore advantage.

4,451,564

TRANSFORMATION OF STEROLS BY FERMENTATION

Alfred Struve, Hilden; Frank F. Hill, Mettmann-Obschwarzbach, and Joachim Schindler, Hilden, all of Fed. Rep. of Germany, assignors to Henkel KGaA, Düsseldorf, Fed. Rep. of Germany

Division of Ser. No. 183,622, Sep. 2, 1980, Pat. No. 4,374,776. This application Aug. 2, 1982, Ser. No. 404,456

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936125

Int. Cl.³ C12P *33/16*

U.S. Cl. 435—55 **6 Claims**

1. A process for preparing 17-C-steroid-α-propionic acid compounds which comprises the steps of:

(a) incubating and culturing a microorganism capable of selectively degrading side chains at the C-17 position of a steroid without substantially degrading the steroid rings and not degrading an α-propionic acid radical at said C-17 position in an aqueous culture medium; and

(b) adding to the aqueous culture medium from step (a) sterol concentrates obtained by distillation of residues of fat processing after transesterification with a lower alkanol and having a saponification number of 50 to 170 and an OH-number (unsaponified) of 40 to 150, comprising up to about 50 percent by weight of sterol compounds, up to about 50 percent by weight of methyl esters of fatty acids that are primarily hydroxylated, and small amounts of partial glycerides.

4,451,565

ENZYME-MEDIATED SYNTHESIS OF ESTERS AND LACTONES

Ian Gatfield, Hoexter, and Theodor Sand, Holzminden, both of Fed. Rep. of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Fed. Rep. of Germany

Filed Feb. 19, 1982, Ser. No. 350,519

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108927

Int. Cl.³ C12P *17/00, 7/00, 7/62;* C12R *1/785*

U.S. Cl. 435—117 **5 Claims**

1. In the enzyme-mediated synthesis of an ester or lactone of at least one carboxylic acid of the formula

$$R—CH_2—CH_2—COOH$$

wherein

R is a hydrogen atom, or a hydrocarbon radical which has 1 to 21 carbon atoms and which can be substituted by hydroxyl groups or alkoxyl groups with 1 to 10 carbon atoms, wherein such acid is reacted with at least one primary or secondary alcohol having from 1 to 15 carbon atoms in the presence of an esterase derived from Mucor miehei the improvement comprising effecting the reaction in the absence of water other than that formed in the reaction.

4,451,566

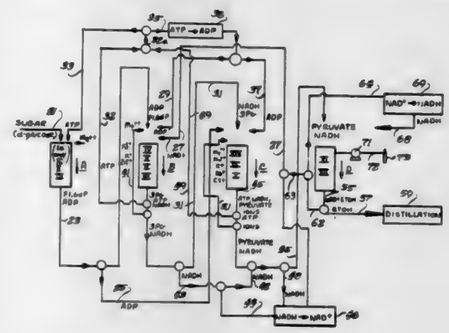
METHODS AND APPARATUS FOR ENZYMATICALLY PRODUCING ETHANOL

Donald B. Spencer, 2813 Wall St., Waukegan, Ill. 60085

Filed Dec. 4, 1981, Ser. No. 327,349

Int. Cl.³ C12P *7/14*

U.S. Cl. 435—162 **18 Claims**



1. A method of producing ethanol comprising

providing a first reaction zone containing an enzymatic protein selected from the group consisting of hexokinase and glucokinase plus the enzymatic proteins phosphoglucose isomerase and phosphofructokinase,

providing a second reaction zone containing the enzymatic proteins aldose, triose phosphate isomerase, glyceraldehyde-3-phosphate dehydrogenase, and phosphoglycerate kinase,

providing a third reaction zone containing the enzymatic proteins phosphoglyceromutase, enolase and pyruvate kinase,

providing a fourth reaction zone containing the enzymatic proteins pyruvate decarboxylase and alcohol dehydrogenase,

retaining said enzymatic proteins in their respective reaction zones,

passing a fermentable sugar solution successively through said reaction zones,

adding coenzymes and cofactors to said reaction zones as required for the enzymatic proteins in each zone to perform their catalytic functions, and

recovering ethanol from the fourth reaction zone.

18. A system for enzymatically converting sugar to ethanol comprising

a plurality of reaction chambers containing enzymatic proteins arranged in sequence for conversion of sugar to ethanol by the glycolytic pathway,

said reaction chambers in total containing an enzymatic protein selected from the group consisting of hexokinase and glucokinase, plus the enzymatic proteins phosphoglucose isomerase, phosphofructokinase, aldolase, triose phosphate isomerase, glyceraldehyde-3-phosphate dehydrogenase, phosphoglycerate kinase, phosphoglyceromutase, enolase, pyruvate kinase, pyruvate decarboxylase and alcohol dehydrogenase,

means for retaining said enzymatic proteins in each of said chambers,

the enzymatic proteins phosphoglucose isomerase and phosphofructokinase being grouped together in one chamber, the enzymatic proteins aldolase, triose phophate isomerase, glyceraldehyde-3-phosphate dehydrogenase and phosphoglycerate kinase being grouped together in another chamber, phosphoglyceromutase, enolase and pyruvate kinase being grouped together in another chamber.

4,451,567

METHOD FOR PRETREATMENT OF CELLULOSIC MATERIALS

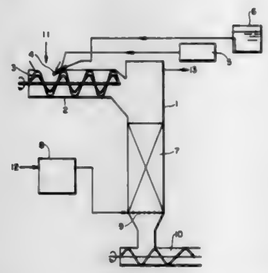
Tadashi Ishibashi; Masahiko Ishida, and Yoji Odawara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,467

Claims priority, application Japan, Jul. 31, 1980, 55-104285

Int. Cl.³ C12P *19/14*

U.S. Cl. 435—170 **15 Claims**



1. A method for biologically or enzymatically converting lignocellulosic materials, which comprises wetting a lignocellulosic material with an alkaline aqueous solution of an alkali metal or alkaline earth metal compound and then contacting the wetted lignocellulosic material with ozone in the state of gas-solid contact, wherein the water content of said wetted lignocellulosic material is 10 to 80% by weight and the content of alkali metal or alkaline earth metal compound is 0.001 to 10% by weight based on the total weight of the alkaline aqueous solution and the cellulosic material, to make loose the lignin from the lignocellulosic material without the lignin going into solution, and wherein the wetted lignocellulosic material is contacted with ozone without the lignin, loosened by the treatment with the aqueous liquid of alkali metal or alkaline earth metal compound, having previously gone into solution, to decompose the loose lignin, and subjecting the treated lignocellulosic material to biological or enzymatic decomposition treatment.

4,451,568

COMPOSITION FOR BINDING BIOACTIVE SUBSTANCES

Michel Schneider, Troinex; Pierre Chevreux, Ferney-Voltaire, and Christian Guillot, Saint Nicolas le Vieux, all of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/CH80/00138, 371 Date Jul. 13, 1981, 102(e) Date Jul. 13, 1981, PCT Pub. No. WO81/01412, PCT Pub. Date May 28, 1981

PCT Filed Nov. 13, 1980, Ser. No. 285,182

Int. Cl.³ C12N *11/06, 11/08;* E08F *2/46*

U.S. Cl. 435—181 **19 Claims**

1. An acrylic-acid-based photopolymerizable composition capable of binding bioactive substances after being photopolymerized comprising:

10 to 70 percent by weight of acrylic acid, and

(i) 0.5 to 10 percent by weight of at least one photoinitiator which is an aromatic ketone compound;

(ii) 0.5 to 15 percent by weight of at least one photopolymerization activator and adhesion promotor which is an amino-alcohol, acrylate, or methacrylate; and

(iii) an effective amount up to 50 percent by weight of at least one copolymerizable olefinic monomer having a double bond, which is copolymerizable with the acrylic acid and which has a reactive functional group capable of binding bioactive substances, said monomers being selected from the group consisting of N-hydroxysuccinimide acrylate, N-hydroxysuccinimide amidocaproate, epoxypropyl acrylate and 2-isocyanato-ethyl acrylate, said effective amount being an amount to provide sufficient reactive functional groups to bind said bioactive substances.

4,451,569

STABLE ENZYME COMPOSITION

Setsuo Kobayashi; Kazuo Beppu; Hiroshi Shimizu; Satoshi Ogawa, all of Otsu, and Ryotaro Kotani, Moriyama, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Jul. 1, 1982, Ser. No. 394,165

Claims priority, application Japan, Jul. 6, 1981, 56-106130

Int. Cl.³ C12N *9/96, 9/08*

U.S. Cl. 435—188 **8 Claims**

1. A stable enzyme composition in freeze-dried form comprising glutathione peroxidase and at least one stabilizer compound selected from the group consisting of pentoses, hexoses, pentahydric sugar alcohols, hexahydric sugar alcohols and disaccharides.

4,451,570

IMMUNOGLOBULIN-SECRETING HUMAN HYBRIDOMAS FROM A CULTURED HUMAN LYMPHOBLASTOID CELL LINE

Ivor Royston, La Jolla; Harold Handley, Cardiff; J. Edwin Seegmiller, La Jolla, and Linda F. Thompson, San Diego, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 26, 1981, Ser. No. 247,652

Int. Cl.³ C12N *5/00, 15/00, 5/02;* C12R *1/91*

U.S. Cl. 435—240 **2 Claims**

1. A HAT sensitive human lymphoblastoid B-cell line UC 729-6, ATCC-CRl 8061.

4,451,571

PREPARATION OF SAMPLES FOR VITAMIN B12 AND/OR FOLATE ASSAY AND ASSAY

Robert H. Allen, Englewood, Colo., assignor to University Patents, Inc., Norwalk, Conn.

Filed Apr. 6, 1981, Ser. No. 251,249

Int. Cl.³ G01N *33/56, 33/82, 1/00*

U.S. Cl. 436—505 **23 Claims**

1. A composition for use in the preparation of a clinical sample for the determination of vitamin B_{12} or folate by competitive binding assay which comprises:

(A) a material in an amount sufficient to bind with endogenous vitamin B_{12} binding protein present in said clinical sample, said material comprising a vitamin B_{12} analog which does not bind with intrinsic factor nor interfere with the ability of intrinsic factor to bind with vitamin B_{12}, said analog being selected from the group cobinamide, CN—Cbl—(Cbde—OH), and (3,5,6 Me_3 BZA) (CN, OH) Cbα; and

(B) at least two components which are capable of destroying and/or inhibiting endogenous binding protein and intrinsic factor antibodies; said material and said components being present in a combined amount sufficient to release all bound vitamin B_{12} from endogenous binding protein, and said endogenous binding protein component and intrinsic factor antibody blocking component are present in a combined amount sufficient to destroy and/or inhibit substantially all endogenous binding protein and intrinsic factor blocking antibodies present in the clinical sample.

18. A method of preparing a human blood serum sample for vitamin B_{12} competitive binding assay which comprises: treating the sample with a vitamin B_{12} analogue, dithiothreitol at a

concentration in the range of about 0.04 N to about 0.10 N and sodium hydroxide at a concentration in the range of about 0.3 N to about 1.0 N; and incubating said mixture under ambient conditions.

4,451,572

PRODUCTION OF SURFACE MODIFIED ZEOLITES FOR SHAPE SELECTIVE CATALYSIS

Ian A. Cody, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 331,262, Dec. 16, 1981, Pat. No. 4,390,414. This application Mar. 21, 1983, Ser. No. 477,434

Int. Cl.³ B01J *29/12, 31/02*

U.S. Cl. 502—62 **19 Claims**

1. A method for surface modifying a large pore zeolite so as to produce a material retaining sufficient catalytically active sites to be suitable for use as a catalyst, which method comprises chemically modifying said large pore zeolite by reacting said zeolite under anhydrous conditions with an organosilane wherein the starting zeolite to be modified possesses sites some of which are available for reaction with the organosilane and wherein some of the sites have been protected to prevent reaction with the organosilane and wherein the organosilane is capable of entering into the channels of the zeolite and reacting with the available reactive sites present therein as well as reacting with reactive sites present on the external surface of said zeolite.

2. The method of claim 1 wherein the protected sites which are prevented from reacting with the organosilane have been produced by the procedure of first calcining and cooling a cation exchanged zeolite either or both of such steps of calcination and cooling being conducted in the presence of a moist atmosphere followed by calcining and cooling under anhydrous conditions to yield a mixed population of protected, available and catalytically active sites on the zeolite prior to reacting said zeolite under anhydrous conditions with the organosilane.

4,451,573

CATALYST FOR POLYMERIZATION OF OLEFINS

Tadashi Ikegami; Katsuhiko Takaya, and Haruyuki Yoneda, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 4, 1982, Ser. No. 385,221

Claims priority, application Japan, Jun. 2, 1981, 56-83828; Jun. 3, 1981, 56-84308; Jul. 1, 1981, 56-101308

Int. Cl.³ C08F *4/64, 4/68, 4/62*

U.S. Cl. 502—113 **22 Claims**

1. A catalyst for polymerizing olefins comprising:

(A) a solid catalyst component obtained by calcining a product produced by reacting (a) at least one compound selected from an amine compound, a phosphoric acid amide, a hydrocarbyloxy compound of titanium, vanadium, hafnium or zirconium, and a germanium compound having the general formula:

$$R^1R^2R^3R^4Ge$$

wherein (i) R^1, R^2 and R^3 are each independently a hydrocarbon group having 1 through 10 carbon atoms, and R^4 is a hydrogen atom, a halogen atom, a —OH group, or a —O-$GeR^1R^2R^3$ group or (ii) R^1, R^2, R^3 and R^4 are each independently $—OR^5$ wherein R^5 is a hydrocarbon group having 1 through 10 carbon atoms, or a halogen atom, and a tin compound having the general formula:

$$R^1R^2R^3R^6Sn$$

wherein R^1, R^2 and R^3 are the same as defined above and R^6 is a halogen atom, or a —OH group, with (b) at least one chromium compound (I) in the absence of a carrier and then supporting the reaction product on an inorganic oxide carrier, or (II) effecting the reaction in the presence of an inorganic oxide whereby the product forms on the carrier; and,

(B) an organometallic compound component selected from the following groups (1) through (5):

(1) a hydrocarbon-soluble organomagnesium component having the general formula:

$$M_\alpha Mg_\beta R^7_p R^8_q X_r Y_s$$

wherein M is an element selected from aluminum, boron, beryllium, zinc and lithium; R^7 and R^8 are the same or different hydrocarbon groups having 1 to 20 carbon atoms; X and Y are the same or different groups selected from OR^9, $OSiR^{10}R^{11}R^{12}$, $NR^{13}R^{14}$, or SR^{15} wherein R^9, R^{10}, R^{11}, R^{12}, R^{13}, and R^{14} are each independently a hydrogen atom, or a hydrocarbon group having 1 to 20 carbon atoms, and R^{15} is a hydrocarbon group having 1 to 20 carbon atoms; α is zero or greater than zero, β is greater than zero and p, q, r, and s are each zero or greater than zero and both p and q are not zero at the same time and have the relationship $p+q+r+s=m\alpha+2\beta$ wherein m has a valency of M;

(2) an organoaluminum component obtained by reacting (i) one mole of a trialkylaluminum compound with (ii) 0.1 to 2 moles of a carbinol having 1 to 10 carbon atoms, 0.1 to 5 moles of a silanol or siloxane, or a mixture thereof;

(3) a component comprising said hydrocarbon-soluble organomagnesium component (1) and said organoaluminum component (2);

(4) a component comprising said hydrocarbon-soluble organomagnesium component (1) and an organoboron, organozinc, or organolithium compound; and

(5) a component comprising said organo-aluminum component (2) and an organoboron, organozinc, or organolithium compound.

4,451,574

POLYMERIZATION CATALYST

Burnett H. Johnson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 307,134, Sep. 30, 1981, abandoned. This application Jan. 31, 1983, Ser. No. 461,602

Int. Cl.³ C08F *4/64*

U.S. Cl. 502—115 **22 Claims**

1. A catalyst component for the polymerization of alpha-olefins comprising the solid reaction product obtained by contacting in an inert solvent an inert solid porous particulate support material, (A) at least one organometallic compound of a Group IIA, IIB and IIIA metal, (B) at least one transition metal compound of a Group IVB, VB, VIB, VIIB and VIII metal, and at any stage of the contacting, (C) a sufficient amount of a halogen or interhalogen compound such that after said solid oxide is contacted with said organometallic compound and said transition metal compound halogen or interhalogen compound is available.

2. The catalyst component of claim 1 wherein the inert solid particulate porous support material is a solid oxide support of a Group IIA, IIIA, IVA and IVB metal or a finely divided polyolefin and is contacted in separate stages with (A) the organometallic compound represented by the formula:

$$Me^{II}_x Me^{III}_y R_z X_{2x+3y-z}$$

wherein Me^{II} is Group IIA or IIB metal or mixture thereof and Me^{III} is a Group IIIA metal or mixtures thereof, R is a hydrocarbyl group having from 1 to about 20 carbon atoms, X is a halogen or alkoxide or mixtures thereof, the ratio of $y/x+y$ is from 0 to 1, z has a value within the range of 1 to $2x+3y$, (B) the transition metal compound or mixtures thereof represented by the formula $TrX'_{4-q}(OR')_q$, $TrX'_{4-q}R''_q$, VOX'_3 or $VO(OR')_3$ wherein Tr is a transition metal, R' is a hydrocarbyl group having from 1 to 20 carbon atoms, R'' is an aryl group or aralkyl group, having from 1 to 20 carbon atoms and 1,3-cyclopentadienyls, X' is halogen and q is 0 or a number equal to or less than 4, and (C) the halogen or interhalogen is chlorine or bromine.

4,451,575

ACTIVATORS FOR ZIEGLER TYPE POLYMERIZATION CATALYSTS USING BIS(TRICHLOROMETHYL) SULFONE

Walter Nudenberg, Newtown; Yong S. Rim, Woodbridge, and Demetreos N. Matthews, Bethany, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 10, 1982, Ser. No. 440,684

Int. Cl.³ C08F *4/68*

U.S. Cl. 502—122 **6 Claims**

1. A catalyst composition comprising an activator in combination with a primary catalyst system, wherein said primary catalyst system is a hydrocarbon soluble catalyst formed by the interaction of an alkyl aluminum halide and vanadium oxychloride, vanadium tetrachloride, an alkyl vanadate, or an alkyl chlorovanadate, and said activator is bis(trichloromethyl) sulfone.

4,451,576

MOLECULAR WEIGHT DISTRIBUTION AND MICROSTRUCTURE MODIFIERS FOR ELASTOMERS

Delmar F. Lohr, Akron, Ohio, and Donald N. Schulz, Annandale, N.J., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

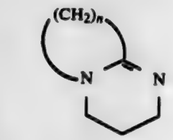
Continuation of Ser. No. 262,664, May 11, 1981, abandoned. This application Jun. 17, 1983, Ser. No. 505,161

Int. Cl.³ C08F *4/48*

U.S. Cl. 502—155 **5 Claims**

1. An elastomeric molecular weight distribution modifier, comprising:

a modifier compound having the formula



where n is from 3 to 6;

said compound utilized in the polymerization of elastomer-forming monomers and,

an organo-lithium compound, said modifier modifying said organo-lithium compound to produce a broad molecular weight distribution in an elastomer of from about 1.7 to about 30.

4,451,577

CATALYST COMPOSITION AND METHOD FOR CURING FURAN-BASED FOUNDRY BINDERS

William W. Coss, Richmond, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed May 6, 1981, Ser. No. 261,319

Int. Cl.³ B01J *31/30, 31/26, 31/02*; B22C *1/22*

U.S. Cl. 502—167 **4 Claims**

1. A catalyst composition comprising:

a. at least one salt of a strong acid in solution and,

b. at least one water dispersible polyvinyl alcohol having a viscosity between 1 and 6 centipoise inclusive at 4 percent solids at 20° C. and having a molecular weight average between about 2,000 and 10,000.

2. The catalyst composition of claim 1 wherein the salt is selected from the group consisting of:

aluminum methane sulfonate, aluminum toluene sulfonate, aluminum xylene sulfonate, aluminum phenol sulfonate, copper toluene sulfonate, copper xylene sulfonate, copper phenol sulfonate, copper methane sulfonate, urea-phenol sulfonate, urea-toluene sulfonate, urea-methane sulfonate, urea-xylene sulfonate, iron phenol sulfonate, iron toluene sulfonate, iron xylene sulfonate, iron methane sulfonate, ammonium chloride, ammonium sulfate, ammonium nitrate, aluminum chloride, aluminum nitrate, aluminum sulfate, copper chloride, copper nitrate and copper sulfate.

3. A storage stable catalyst composition comprising:

a. 35 to 45 percent, inclusive, of at least one salt of a strong acid,

b. 45 to 60 percent, inclusive, water; and

c. 5 to 10 percent of at least one water dispersible polyvinyl alcohol having a viscosity between 1 and 6 centipoise, inclusive, at 4 percent solids at 20° C. and having a molecular weight average between about 2,000 and 10,000.

wherein all percents are based on the weight of the catalyst composition.

4,451,578

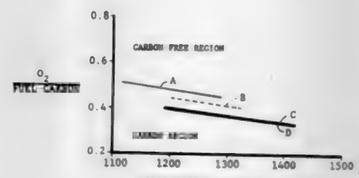
IRON OXIDE CATALYST FOR STEAM REFORMING

Herbert J. Setzer, Ellington; John A. S. Bett, Hamden, and Roger R. Lesieur, Enfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 26, 1982, Ser. No. 372,252

Int. Cl.³ B01J *21/04, 23/10, 23/74*

U.S. Cl. 502—303 **1 Claim**



1. A high activity steam reforming catalyst specifically adapted for use in autothermal and tubular steam reforming systems which substantially eliminates carbon plugging in such reforming systems and allows autothermal reformers to operate at reduced oxygen to carbon ratios with heavier distillate hydrocarbons such as No. 2 fuel oil comprising iron oxide deposited on lanthanum stabilized alumina substrate material in an amount of about 20% to about 30% by weight.

4,451,579

MIXED METAL OXIDE CATALYST FOR PRODUCING LOW MOLECULAR WEIGHT HYDROCARBONS FROM CARBON MONOXIDE AND HYDROGEN

Michael F. Lemanski, Cleveland, and Wayne R. Kliewer, North Randall, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 8, 1982, Ser. No. 440,120

Int. Cl.³ B01J *23/02, 23/12, 23/24, 23/72*

U.S. Cl. 502—306 **8 Claims**

1. A mixed metal oxide catalyst prepared by the process comprising:

(a) adding at least one compound selected from copper chromate, copper molybdate and copper tungstate to a solution containing a decomposable salt selected from the salts of thorium and uranium;

(b) heating such solution to an elevated temperature;

(c) adding a decomposable salt selected from the alkali or alkaline earth metals to said solution;

(d) adjusting the pH of said solution to at least 7.5;

(e) neutralizing said solution;

(f) recovering the precipitate; and

(g) calcining said precipitate.

4,451,580

METHOD OF PREPARING A SUPPORTED CATALYST

Graham Butler, Wantage, and Christopher J. Wright, Abingdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 27, 1982, Ser. No. 424,236

Claims priority, application United Kingdom, Oct. 1, 1981, 8129669

Int. Cl.³ B01J *21/04, 23/46, 23/74*

U.S. Cl. 502—335 11 Claims

1. A method of preparing a supported catalyst comprising the steps of:

(i) providing an aqueous hydrolysis solution containing, as a first constituent, one or more compounds each being hydrolysable to a hydroxide convertible to a catalytically active component under the conditions of step (v) below, and containing, as a second constituent, one or more compounds each being hydrolysable to a hydroxide convertible to a ceramic oxide under the conditions of step (v) below;

(ii) providing said aqueous hydrolysis solution in an aqueous hydrolysis agent solution comprising a co-hydrolysis agent to effect hydrolysis of said first and second hydrolysable constituents under conditions such that an aqueous dispersion comprising an intimate mixture of said hydroxides is produced;

(iii) converting the aqueous dispersion to a thixotropic dispersion by a process including aging the aqueous dispersion by subjecting it to a heat treatment to give a gel;

(iv) contacting the thixotropic dispersion with a substrate to produce a coating thereon; and

(v) firing to convert said hydroxides to said catalytically active component and to said ceramic oxide thereby to produce a catalytically active coating on the substrate.

4,451,581

ION EXCHANGE RESIN

Brian A. Bolto, Mitcham, and Mervyn B. Jackson, West Brunswick, both of Australia, assignors to ICI Australia Ltd., Victoria and Commonwealth Scientific and Industrial Research Organization, Campbell, both of, Australia

PCT No. PCT/AU82/00037, 371 Date Sep. 27, 1982, 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/03398, PCT Pub. Date Oct. 14, 1982

PCT Filed Mar. 22, 1982, Ser. No. 432,919

Claims priority, application Australia, Mar. 27, 1981, PE8173

Int. Cl.³ B01J *39/18, 43/00*

U.S. Cl. 521—28 16 Claims

1. A thermally regenerable amphoteric ion-exchange resin comprising an acidic ion-exchange polymeric component and a basic ion-exchange polymeric component, characterized in that the basic polymeric component is a polyetheramine which is prepared from a poly(α-halo-epoxyalkane) or a copolymer thereof, by treatment with an aminating agent selected from the group consisting of methylamine, ethylamine, dimethylamine, diethylamine, methylethylamine, pyrrolidine, piperidine and homopiperidine, and a crosslinking agent which is a diamine or a salt thereof.

4,451,582

PREPARATION OF INSOLUBLE, ONLY SLIGHTLY SWELLABLE POLYMERS OF BASIC VINYL-HETEROCYCLIC COMPOUNDS

Walter Denzinger, Speyer; Hans-Helmut Goertz, Ludwigshafen; Axel Sanner, Frankenthal, and Heinrich Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 4, 1983, Ser. No. 472,242

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209224

Int. Cl.³ C08F *126/06, 226/06, 8/10;* B01J *39/20*

U.S. Cl. 521—38 18 Claims

1. A process for the preparation of insoluble, only slightly water-swellable, granular polymers of a basic vinyl-heterocyclic compound having a pKa of greater than 4, and of their copolymers with up to 30% by weight of copolymerizable monomers selected from the group consisting of styrene, acrylic esters, vinyl esters, acrylomide and N-vinyl-lactams, by polymerizing the monomers, wherein the following measures are employed simultaneously:

(a) 0.1–10% by weight, based on the total amount of monomer, of a crosslinking agent which crosslinks through its double bonds is employed,

(b) oxygen organic solvent is excluded and

(c) polymerization by irradiation or initiators are excluded.

4,451,583

RECYCLING OF FLEXIBLE POLYURETHANE FOAM SCRAP

Edwin T. Chesler, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jan. 26, 1982, Ser. No. 342,859

Int. Cl.³ C08G *18/02;* C08J *9/16, 9/36*

U.S. Cl. 521—49.5 23 Claims

1. In a process for preparing a flexible polyurethane foam from a foam forming reaction mixture comprising a polyol, an organic polyisocyanate, a foaming agent and a reaction catalyst, the improvement comprising blending in said reaction mixture a proportion of comminuted, flexible polyurethane foam scrap having a maximum particle size of less than about 600 microns to form a suspension in said reaction mixture, said proportion of scrap being from about 3 to about 40 parts, by weight, based on 100 parts of total polyol weight.

4,451,584

MOLDING COMPOUND FOR MOLDING BODY PORTIONS AND PROCESS FOR PRODUCING THIS MOLDING COMPOUND

Philipp Schaefer, Oberstrasse 16, D-3000 Hannover 1, Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 381,000

Int. Cl.³ B68G *1/00, 11/04;* C08L *27/08, 83/04*

U.S. Cl. 521—54 7 Claims

1. A molding compound for molding body portions, said molding compound consisting of a silicone being initially liquid or pasty and, respectively, kneadable and solidifying to a rubber-like consistency after a certain time interval when having added a hardener, the silicone being added, prior to solidifying, with pressure-elastic hollow microspheres of a diameter between 0.01 and 0.1 mm, the thin shells of which consist of a vinylidene chloride copolymer and the interior of which contains a gas, the microspheres being present in the compound in an amount between 10 and 85 percent by volume.

4,451,585

RESIN-IMPREGNATED FIBRE COMPOSITE MATERIALS AND A PROCESS FOR THEIR MANUFACTURE

Bengt Andersson, Söråker, Sweden, assignor to KemaNord AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 345,624, Feb. 4, 1982, abandoned. This application Jun. 9, 1982, Ser. No. 386,614

Claims priority, application Sweden, Feb. 5, 1981, 8100819

Int. Cl.³ C08J *9/32*

U.S. Cl. 521—59 10 Claims

1. A method for producing a fibre composite material containing fibres, expanded thermoplastic microspheres and a resin of curable type, comprising the steps of

(a) dispersing in a room separate and free fibres,

(b) applying to the dispersed and free fibres

(1) a curable resin and

(2) unexpanded thermoplastic microspheres containing a volatile, liquid blowing agent,

(c) heating the unexpanded thermoplastic microspheres until they expand and

(d) collecting an agglomerate of fibres, expanded microspheres and resin.

4,451,586

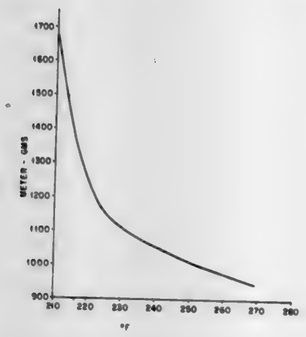
PROCESS AND APPARATUS FOR MANUFACTURING FLAME RETARDANT FLEXIBLE FOAMED ARTICLES

Alonzo H. Searl, Fort Worth; Granville J. Hahn, and Raleigh N. Rutledge, both of Big Spring, all of Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Jun. 30, 1982, Ser. No. 393,973

Int. Cl.³ C08J *9/00, 9/02*

U.S. Cl. 521—88 6 Claims



1. A foamed fire-retardant polymer article having improved impermeability and flexibility, said article comprising:

a polymer exhibiting high impermeability;

an elastomer blended with said polymer and having a solubility parameter close to that of said polymer;

a fire-retardant blended with said polymer and elastomer; and,

said polymer/elastomer/fire-retardant blend having a closed-cell structure.

4,451,587

POLYURETHANE FOAM AND ITS PRODUCTION

Akizo Keshi, Takatsuki, and Katsuhisa Kodama, Nishinomiya, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

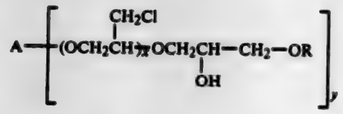
Filed Sep. 23, 1982, Ser. No. 422,435

Claims priority, application Japan, Oct. 22, 1981, 56-169519

Int. Cl.³ C08G *18/14, 18/50*

U.S. Cl. 521—171 14 Claims

1. A polyurethane foam produced by the reaction of a polyisocyanate and a polyether polyol in the presence of a catalyst, a cell regulating agent and a blowing agent comprising water, the polyether polyol of which consists of a halogenated polyether polyol (I) of the general formula:



wherein x is a number of 0 to 7; y is a number of 2 to 3; A is a saturated or unsaturated, brominated polyol residue having a number of functional groups of y; and R is hydrogen or an alkyl group having 1 to 5 carbon atoms and (II) polyether polyol having a number of functional groups of 2 to 8, a weight ratio of the added amounts of propylene oxide and ethylene oxide within the range of 75 to 95/25 to 5 and a hydroxyl number of about 20 to 100 mgKOH/g, whereby the weight ratio of (I) to (II) is 95 to 25/5 to 75 and the amount of water is 5 to 20 parts by weight against 100 parts by weight of the polyol component.

4,451,588

HIGH LOAD BEARING POLYURETHANE FOAMS MADE FROM MIXED INITIATOR POLYETHER POLYOLS

George P. Speranza; Michael Cuscurida, and Bruce W. Peterson, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 26, 1983, Ser. No. 517,196

Int. Cl.³ C08G *18/14, 18/48*

U.S. Cl. 521—175 12 Claims

1. A method for producing a flexible polyurethane foam having improved load bearing properties comprising reacting an organic polyisocyanate with a mixed initiator polyether polyol in the presence of a catalytic amount of a polyurethane formation catalyst and a blowing agent, where the polyol is made by reacting

a. one or more alkylene oxides with

b. a mixture of initiators consisting essentially of

(1) 60 to 90 wt.% of a trifunctional partially alkoxylated initiator, and

(2) 10 to 40 wt.% of a secondary partially alkoxylated initiator having an active hydrogen functionality of from 4 to 8.

4,451,589

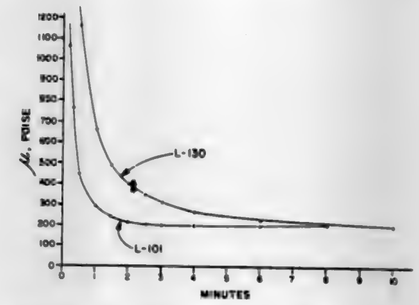
METHOD OF IMPROVING PROCESSABILITY OF POLYMERS AND RESULTING POLYMER COMPOSITIONS

Michael T. Morman, Appleton, and Tony J. Wisneski, Kimberly, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 273,938, Jun. 15, 1981, abandoned. This application Mar. 7, 1983, Ser. No. 472,524

Int. Cl.³ C08L *91/06*

U.S. Cl. 523—124 19 Claims



1. Method of producing polymer pellets having improved extrusion characteristics comprising the steps of:

(a) providing a high weight average molecular weight polymer selected from the group consisting of polymers and copolymers of propylene and butylene,

(b) adding to said polymer a free radical generating prodegradant having a half-life in said polymer of at least about one-half minute at pelletizing extrusion temperatures, and

(c) pelletizing said polymer under conditions wherein greater than about 50% of that added and at least about 0.01% by weight of said prodegradant remains available for further degradation after pelletizing.

4,451,590

ORGANIC FRICTION MATERIAL

Hiroto Fujimaki, Kokubunji; Shigetoshi Ajima, and Kazuhiro Watanabe, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 382,729, May 27, 1982, Pat. No. 4,386,168. This application Mar. 21, 1983, Ser. No. 477,486
Claims priority, application Japan, Jun. 10, 1981, 56-89032
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.
Int. Cl.³ C08K 3/08, 3/04
U.S. Cl. 523—155 5 Claims

1. An organic friction material comprising 5 to 25% by volume of metal fiber, 3 to 40% by volume of activated carbon, 3 to 15% by volume of carbon fiber, 7 to 47% by volume of an organic and inorganic filling material and 10 to 30% by volume of phenolic resin.

4,451,591

TWO-COMPONENT HIGH SOLIDS COATING FOR RUSTY STEELS

Henry A. Kozak, Edison, and Tony Y. Liu, East Windsor, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,836
Int. Cl.³ C08L 63/02
U.S. Cl. 523—177 3 Claims

1. A two-component composition consisting essentially of a Component A and a Component B, said components intended for mixing in a volume ratio of from about 2:1 to 1:2 wherein:

the weight percent ranges and the ingredients in Componant A are:

Ingredients	Wt. %
a diglycidyl ether of Bisphenol A having an epoxy equivalent weight of 185–192	50–80
leafing aluminum paste comprising 68% of said flakes in 92 vol. % aliphatic hydrocarbon boiling at 150–175° C. and 8 vol. % aromatic hydrocarbon boiling at 150–175° C.	25–35
Coumarone-Indene Resin	3–25
Organic wax thixotropic agent	0.1–2.0
Silica gel moisture scavanger	0.1–2.0

the weight percent ranges and the ingredients in Component B are:

Ingredients	Wt. %
Fatty acid resin is an amidoamine comprising the reaction product of an ethylenically unsaturated fatty acid and alkenyl polyamine	30–45
Fatty acid diamine salt is selected from N—tallow-1,3-propane diamine mono-octadecenoate and N—tallow-1,3-propane diamine dioctadecenoate	3–6
Coumarone-Indene Resin, softening point of about 50° F.	3–25
Organic wax thixotropic agent	0.1–2
Microcystalline silica and magnesium silicate filler	33–56
Pigment selected from zinc phosphate and zinc chromate	1–6
Supplemental curing agent selected from dimethylamino-phenol and 2,4,6-tris(dimethylaminomethyl)phenol	0.5–3.

4,451,592

RESIN MODIFICATION FOR GLASS FIBER ADHERENCE

Denny E. Black; David W. Garrett, both of Newark, and Thomas A. Coakley, Heath, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 6, 1983, Ser. No. 455,788
Int. Cl.³ C08K 5/09
U.S. Cl. 523—206 10 Claims

1. A method of improving the adherence between an uncured polyolefin resin and a sized glass fiber incorporated into said uncured resin as reinforcement and having on its surface a coating comprising the residue obtained by removing water from an aqueous composition comprising an oxidized polyolefin, a carboxylated high molecular weight elastomer and a silane which method comprises forming a mixture comprising an uncured polyolefin resin and said sized glass fiber and at least one acid selected from the group consisting of substituted benzoic acids, benzenedicarboxylic acids, benzenetricarboxylic acids, benzenetetracarboxylic acids, benzenepentacarboxylic acids, benzenehexacarboxylic acids, cyclohexanedicarboxylic acids, fatty acids, aliphatic diacids, benzenediacrylic acids, benzenediacetic acids, naphthoic acids, naphthalenedicarboxylic acids and naphthalenedisulfonic acids, said acid being added in an amount sufficient to increase the tensile strength of the glass-containing polyolefin resin after curing to a tensile strength greater than the tensile strength of the glass-containing cured resin in the absence of said acid, and molding said mixture to cure said uncured resin, and to incorporate said glass in said cured resin in reinforcing relationship.

4,451,593

PROCESS FOR FINISHING RESIN USING REDUCED ENERGY INPUT

Antonios Nicholakopoulos, Mercerville; Grace M. Gill, S. Somerville, and Robert P. Nadin, Wharton, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 249,651, Mar. 31, 1981, abandoned. This application Jul. 26, 1982, Ser. No. 401,717
Int. Cl.³ C08J 3/12
U.S. Cl. 523—322 8 Claims

1. An improved process for finishing particulate resin by continuously feeding said resin into a finisher and mechanically working said resin in said finisher to provide finished resin having an elevated temperature, thereafter discharging said finished resin from said finisher, the improvement comprising operating said finisher at a volume utilization of between about 40 and about 95 volume percent at a tip velocity of between 500 and about 800 inches per second and a superficial mixing intensity of 0.7 to 1.1 kilowatts per liter.

4,451,594

FILM FORMER EMULSIFICATION

Leslie E. Campbell, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 10, 1983, Ser. No. 474,081
Int. Cl.³ C08K 5/06
U.S. Cl. 523—336 6 Claims

1. A method of producing an aqueous emulsion of an unsaturated diallylphthalate-based resin which comprises:

a. mixing said resin with an emulsifying agent comprising a poly(oxypropylene) poly(oxyethylene) to form a first composite;

b. adding water to said first composite to form a second composite;

c. agitating said second composite to form an emulsion in which the aqueous phase is the continuous phase.

4,451,595

HETEROGENEOUS RUBBER COMPOSITIONS MADE FROM CHEMICALLY SIMILAR BLENDS

Biing-Lin Lee, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 24, 1983, Ser. No. 460,689
Int. Cl.³ C08K 3/04
U.S. Cl. 523—351 20 Claims

1. A process for making a crack growth resistant rubber composition, comprising the steps of:

(a) forming a heterogeneous rubber composition comprising by weight approximately 100 total parts of a rubber, and from about 60 to about 95 total parts of a carbon black, said rubber composition formed by

(b) separately forming a minor fraction comprising one or more rubber compounds, and carbon black, said rubber compound selected from the group consisting of nitrile rubber, a polymer made from a conjugated diene having from 4 to 12 carbon atoms, and a copolymer made from monomers selected from the group consisting of conjugated dienes having from 4 to 12 carbon atoms and vinyl substituted aromatics having from 8 to 12 carbon atoms, said minor fraction containing from about 10 to about 50 parts by weight of said rubber, and an amount of carbon black ranging from about 2.5 parts by weight to about 37.5 parts by weight;

(c) separately forming a major fraction comprising an identical one or more rubber compounds and a similar carbon black as in said minor fraction, said major fraction having a range of said rubber ranging from about 50 to about 90 parts by weight and an amount of said carbon black ranging from about 22.5 to about 92.5 parts by weight;

(d) separately mixing and heating at least one of said fractions; and

(e) mixing together under heat said major fraction and said minor fraction to produce said heterogeneous rubber composition.

4,451,596

WATER-DILUTABLE LACQUER BINDERS BASED UPON ALKYD AND ACRYLATE RESINS

Hans-Christoph Wilk, Neuss, and Bernd Wegemund, Haan, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 330,275, Dec. 14, 1981, abandoned. This application Sep. 7, 1982, Ser. No. 415,067
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132937
Int. Cl.³ C08L 67/06
U.S. Cl. 523—501 23 Claims

1. A method for the preparation of water-dilutable resin preparations based upon alkyd and acrylate resins which comprises the steps of:

(a) preparing an aqueous alkyd resin dispersion wherein the alkyd resin has an acid number of from about 5 to 40 and a hydroxyl number of from about 150 to 300 and the dispersion has a solids content of from about 30 to 90 percent by weight by reacting an alkyd resin having an acid number of from about 30 to 100 with glycidol, glycerol, or a mixture thereof until the acid number is from about 5 to 40; and

(b) polymerizing monomers of acrylic acid derivatives and/or methacrylic acid derivatives in the dispersion from step (a) to obtain a total solids content of from about 30 to 80 percent by weight, the weight ratio of alkyd resin to acrylate resin being from about 1:4 to 9:1.

4,451,597

HIGH SOLIDS COLOR COAT CONTAINING ALCOHOL SOLUBLE CELLULOSE ACETATE BUTYRATE

Claus Victorius, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 15, 1982, Ser. No. 441,745
Int. Cl.³ C08L 1/14; C08B 21/08; B32B 5/16, 27/08
U.S. Cl. 524—39 19 Claims

1. An acrylic color coat enamel coating composition comprising about 25–50% by weight of a binder of film-forming constituents and correspondingly about 50–75% by weight of a volatile organic solvent carrier at spray viscosity and containing in addition about 2–150% by weight, based on the weight of the binder, of pigment; wherein the binder of film-forming constituents consists essentially of about 20–70% by weight, based on the weight of the binder, of an acrylic polymer consisting essentially of 50–90% by weight of an alkyl methacrylate or an alkyl acrylate each having 1–12 carbon atoms in the alkyl groups or a mixture thereof and 10–50% by weight of a hydroxyalkyl acrylate or a hydroxyalkyl methacrylate each having 2–4 carbon atoms in the hydroxyalkyl groups or a mixture thereof and in which the acrylic polymer has a weight average molecular weight of about 2500–25,000 and a glass transition temperature of about −20° C. to +25° C.; about 0–40% by weight, based on the weight of the binder, of a hydroxy-terminated polyester urethane resin; about 25–40% by weight, based on the weight of the binder, of an alkylated melamine formaldehyde crosslinking agent; and about 4–20% by weight, based on the weight of the binder, of a rheology control agent consisting essentially of an alcohol soluble cellulose acetate butyrate having a butyryl content of about 45–50% by weight, a hydroxy content of about 4–5% by weight and a viscosity of about 0.2–0.4 second.

4,451,598

COMPOSITIONS FOR SEALING PRODUCTS

Jean C. Decroix, Arras, France, assignor to Societe Chimique des Charbonnages S.A., Paris la Defense, France

Filed Jun. 2, 1983, Ser. No. 503,401
Claims priority, application France, Jun. 3, 1982, 82 9631
Int. Cl.³ C08L 31/00
U.S. Cl. 524—69 8 Claims

1. A composition for sealing products comprising:

(a) from 35 to 95 weight percent of at least one distillation product selected from the group consisting of bitumens and soft pitches; and

(b) from 5 to 65 weight percent of a terpolymer having a melt index between 1 and 10 dg/min and comprising: (i) from 88 to 98.7 mole percent of units derived from ethylene, (ii) from 1 to 10 mole percent of units derived from an ester selected from the group consisting of alkyl acrylates and methacrylates, wherein said alkyl group contains from 1 to 6 carbon atoms, and (iii) from 0.3 to 3 mole percent of units derived from maleic anhydride.

4,451,599

PLASTICIZED EVOH AND PROCESS AND PRODUCTS UTILIZING SAME

Thomas W. Odorzynski, Green Bay, and Jack E. Knott, II, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 249,975, Apr. 1, 1981, abandoned. This application Apr. 19, 1982, Ser. No. 369,420
Int. Cl.³ C08K 5/43
U.S. Cl. 524—169 3 Claims

1. An ethylene vinyl alcohol copolymer resin blend that is extrudable to produce a film of uniform caliber and excellent oxygen barrier properties, consisting essentially of about 95 to 80 weight percent of ethylene vinyl alcohol copolymer having a molecular weight of about 15,000 to 30,000 and a melting point temperature of about 325 degrees to 375 degrees Fahrenheit, and conversely about 5 to 20 weight percent of a plasticiz-

ing agent selected from the group consisting of aromatic sulfonamide plasticizers and is selected from the class consisting of o-p-toluene sulfonamide, N-ethyl-o, p-toluene-sulfonamide and ethylbenzene sulfonamide polyethyl oxazoline, polyvinyl pyrrolidone, polyvinyl formaldehyde, and polyamides having melting point temperatures below about 400 degrees Fahrenheit, said plasticizers being compatible with said copolymer and capable of intermolecular hydrogen bonding therewith.

4,451,600

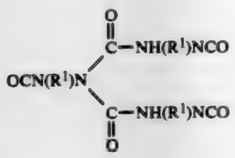
ADDITIVE FOR COATING COMPOSITIONS

Grant C. Fry, Lake Orion, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1982, Ser. No. 451,249
Int. Cl.³ C08K *5/39, 5/98, 5/29, 5/12*
U.S. Cl. 524—196 **12 Claims**

1. An additive for coating compositions which comprises about:

(A) 20–50% by weight of a polyisocyanate having the formula



where R^1 is $(CH_2)_6$,

(B) 1–15% by weight of polyethylene glycol diethyl hexoate,

(C) 1–10% by weight of a blend of ultraviolet light stabilizers comprising a benzotriazole ultraviolet light stabilizer and a hindered amine light stabilizer, and

(D) 25–78% by weight of organic solvent.

4,451,601

GLASS-FILLED POLYARYLENE SULFIDE COMPOSITIONS CONTAINING ORGANOSILANES

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 300,859, Sep. 10, 1981, abandoned. This application Feb. 9, 1983, Ser. No. 465,079
Int. Cl.³ C08K *5/54*
U.S. Cl. 524—263 **19 Claims**

1. A composition comprising: glass-filled polyarylene sulfide and at least one organosilane in an amount sufficient to decrease the flow rate of said polyarylene sulfide upon heating of the composition to a temperature at least about the melting point of said polyarylene sulfide; wherein said at least one organosilane is selected from the group consisting of
1-Benzylchloro-2-trimethoxysilylethane,
2-p-Sulfoxylazylethyltrimethoxysilane, and
(p-Aminophenyl)trimethoxysilane.

4,451,602

ONE COMPONENT ROOM TEMPERATURE SETTING COMPOSITION

Hisao Furukawa, and Yasushi Kato, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 27, 1982, Ser. No. 402,221
Claims priority, application Japan, Jul. 27, 1981, 56-118354
Int. Cl.³ C08K *5/54;* **C08L** *43/00, 83/00*
U.S. Cl. 524—266 **5 Claims**

1. A one component room temperature setting composition which comprises:

(A) a vinyl polymer having on the polymer chain end or the side chain thereof at least one silyl group having a hydrolyzable group per one polymer molecule, the main chain of the vinyl polymer consisting essentially of a polymer of a vinyl compound; the silyl group-containing vinyl polymer (A) having a number average molecular weight of 1,000 to 10,000 and containing as a comonomer, 0.1 to 10% by weight of units of a vinyl compound having active hydrogen in the form of a group selected from the group consisting of a carboxyl group, an hydroxyl group, an amino group and an acid amido group,

(B) 0.005 to 10 parts of a hardener,

(C) 0 to 200 parts of a pigment,

(D) 0.1 to 100 parts of at least one member selected from the group consisting of a hydrolyzable silicon compound of the general formula:

$$X_{4-n}{}^1—Si—R_n{}^2$$

wherein R^2 is an organic group bonded to the silicon atom through a carbon atom, X^1 is a hydrolyzable group selected from the group consisting of an alkoxyl group, an alkoxy-alkoxyl group, a phenoxy group, an acyloxyl group, a ketoxymate group, an amino group, an aminoxy group, an acid amide group and an alkenyloxy group, and n is 0 or an integer of 1 to 3, and a partial hydrolysis product of the hydrolyzable silicon compound, and

(E) 0 to 500 parts of a solvent, said parts being parts by weight per 100 parts by weight of the component (A).

4,451,603

ABRASION-RESISTANT COATINGS

Kazys Sekmakas, Palatine, and Ronald L. Richards, Oak Park, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jun. 10, 1982, Ser. No. 387,252
Int. Cl.³ C08L *91/06*
U.S. Cl. 524—279 **9 Claims**

1. A coating composition selected from solvent solution coating compositions and aqueous coating compositions comprising:

(1) a polyol component which is an adduct of at least a stoichiometric proportion of ethylene oxide or propylene oxide with a bisphenol;

(2) a solution copolymer containing from 40% to 70% of isobutyl acrylate with 3% to 20% of hydroxy alkyl ester of a monoethylenic carboxylic acid, up to about 20% of monoethylenic carboxylic acid, and any balance consisting essentially of monomer containing a single ethylenic group and no other reactive group; and

(3) aminoplast resin, said polyol constituting from 20% to 40% of said components (1), (2) and (3), said copolymer being present in an amount of from 85% to 150% of the polyol, and the balance of said components (1), (2) and (3) being said aminoplast resin, and carnauba wax in an amount of from 1 to 10 pounds of wax solids per 100 gallons of coating composition.

4,451,604

STABILIZED POLYOLEFIN COMPOSITIONS

Kenneth R. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 264,530, May 18, 1981, abandoned. This application Oct. 8, 1982, Ser. No. 433,751
Int. Cl.³ C08K *5/10;* **C08L** *5/13, 23/04, 23/10*
U.S. Cl. 524—312 **11 Claims**

1. Composition of matter comprising a mixture of

(a) 100 parts by weight of an ethylene polymer having 0 to 10 molecular percent of a comonomer selected from the group of olefins of 3 to 8 carbon atoms, said polymer containing Ti as catalyst residue,

(b) 0.002 to 0.2 parts by weight of a phenolic stabilizer,

(c) 0.001 to less than 0.05 parts by weight of one or more glycerides of fatty acids, said glycerides reducing the discoloration effects occurring within the composition,

said composition being free of organic phosphite.

4,451,605

SOLVENT-BASED, ONE-PART, FILLED POLYURETHANE FOR FLEXIBLE PARTS

John J. Theodore, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 7, 1982, Ser. No. 375,954
Int. Cl.³ C08K *3/34, 3/26, 3/08, 3/22*
U.S. Cl. 524—423 **5 Claims**

1. A one-part composition curable upon solvent evaporation having particular utility in providing a putty for use in filling recessed areas in flexible parts of damaged auto bodies and the like, said composition having a viscosity in the range of 50,000 to 450,000 cps and comprising by volume:

(a) 6–25 parts of a binder comprising substantially non-reactive solvent-soluble polyurethane having an elongation at break value of at least 175%;

(b) 43–68 parts solvent for said binder, which solvent will not substantially swell the flexible part being repaired; and

(c) 20–42 parts by volume talc filler having an average particle size less than about 20 microns.

4,451,606

COPOLYMERIC NUCLEATING AGENT FOR POLYESTER

Richard W. Campbell, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 23, 1983, Ser. No. 469,076
Int. Cl.³ C08G *63/70, 63/76*
U.S. Cl. 524—445 **35 Claims**

1. A method for effecting, promoting and hastening the crystallization of thermoplastic polyester compositions which comprises admixing an effective, nucleating amount of a nucleating copolymer of a poly(alkylene terephthalate) and a sulfonate salt of an aromatic dicarboxylic acid or derivative thereof with a thermoplastic polyester.

4,451,607

POLY(ARYLENE SULFIDE) COMPOSITIONS

Rodrigo A. Garcia, Pasadena, Tex., and Robert J. Martinovich, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 27, 1983, Ser. No. 461,321
Int. Cl.³ C08K *3/40*
U.S. Cl. 524—494 **19 Claims**

11. A method for increasing the crystallinity of poly(arylene sulfide) comprising melt-blending therewith a crystallinity increasing amount of hydrogenated conjugated diene/monovinyl aromatic block copolymer said amount being in a range of up to about 5 weight percent of the total composition said block copolymer having been produced by sequential polymerization of about 10 to about 90 parts by weight conjugated diene with about 90 to about 10 parts by weight monovinyl substituted aromatic hydrocarbon and subsequent hydrogenation of at least 80 percent of the aliphatic double bonds while not more than 25 percent of the aromatic double bonds have been hydrogenated.

13. A method of claim 11 wherein said composition contains up to about 65 percent by weight of filler.

14. A method of claim 13 wherein said filler is fiberglass.

4,451,608

AMPHOTERIC ACRYLIC ESTER BASED LATEXES

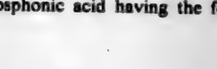
Kenneth Drake, and Richard A. Hammock, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1982, Ser. No. 393,546
Int. Cl.³ C08L *33/06*
U.S. Cl. 524—560 **10 Claims**

1. An aqueous amphoteric latex formed by reacting a base polymer latex containing

(I) up to about 55 weight percent solids comprised of:

(a) from about 65 to about 90 weight percent of acrylic esters and/or methacrylic esters of the formula:



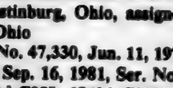
wherein R is hydrogen or methyl and R′ is aryl or alkyl of from 1 to 12 carbon atoms;

(b) from about 10 to about 35 weight percent acrylic acid and/or methacrylic acid;

(c) from 0 to about 25 weight percent of pH neutral monomers capable of polymerizing with acrylic esters and/or methacrylic esters; and

(d) from about 0.5 to about 2 weight percent of a chain transfer agent, wherein the weight percents of components (a), (b), (c) and (d) are based upon the total weight of monomers in the base polymer; and

(II) at least about 45 weight percent water; with from about 25 to about 75 mole percent, based on the number of moles of acrylic acid and/or methacrylic acid in the base polymer, of an alkylene imine of the formula:



wherein R″ is hydrogen or linear or branched alkyl of from 1 to 5 carbon atoms.

4,451,609

FLAME-RETARDED ACOUSTIC DIAPHRAGM

Fumio Kawahara; Masanori Takahashi, and Katsuyoshi Kumagai, all of Yamagata, Japan, assignors to Pioneer Electronic Corporation, Tokyo and Mogami Denki Kabushiki Kaisha, Yamagata, both of, Japan

Filed Jun. 24, 1982, Ser. No. 391,962
Claims priority, application Japan, Jun. 26, 1981, 56-98417
Int. Cl.³ G10K *13/00;* **H04R** *7/00*
U.S. Cl. 524—708 **10 Claims**

1. A flame-retarded acoustic diaphragm comprising a cone composed of fibrous cellulose, impregnated with an admixture of a low formaldehyde content melamine resin as a binder and an organic phosphorus- and nitrogen-containing compound, as a flame retardent impregnated therein, said organic phosphorus- and nitrogen-containing compound being selected from derivatives of phosphonic acid having the formula as follows:



wherein R^1, R^2 and R^3 are alkyl and m and n are integers, said flame retardent being present in an amount sufficient to retard flames on over heating of said diaphragm and said melamine resin being present in an amount sufficient to firmly bind said flame retardent to said diaphragm.

4,451,610

PREPARATION OF CURABLE SOLID POLYESTER RESIN PELLETS AND POWDERS

Jon E. Collister, Austinburg, Ohio, assignor to Premix, Inc., North Kingsville, Ohio

Continuation of Ser. No. 47,330, Jun. 11, 1979, abandoned. This application Sep. 16, 1981, Ser. No. 302,814
Int. Cl.³ C08L *67/06;* **C08K** *3/22*
U.S. Cl. 525—19 **20 Claims**

1. A method of preparing curable solid polyester resin pel-

lets and powders which are suitable for use in injection, compression or transfer molding operations comprising

(a) preparing a liquid mixture consisting essentially of an unsaturated polyester resin, at least one monomeric unsaturated polymerizable material containing a terminal ethylene group, and an alkaline earth metal oxide or hydroxide in an amount effective to provide a viscosity for said mixture characterized by a plateau region in the viscoelastic spectrum of said mixture,

(b) allowing the liquid mixture to stand until the alkaline earth metal oxide or hydroxide and the polyester co-react, and a desired increase in viscosity characterized by a plateau region in the viscoelastic spectrum of said mixture has been attained, then

(c) dispersing in the mixture obtained in (b) with high shear mixing, a polymerization initiator and a filler, fibrous reinforcing material, pigment or mold release agent, or mixture thereof, the temperature of said mixture being increased during step (c) to a level suitable for extrusion,

(d) maintaining the temperature of the mixture obtained in step (c) at a level suitable for extrusion and extruding said mixture to form dry, free-flowing pellets or powders.

4,451,611

PROCESS FOR FORMING BLEND OF POLYALKYLENE TEREPHTHALATE AND WHOLLY AROMATIC POLYESTER WHICH EXHIBITS AN ANISOTROPIC MELT PHASE

David E. Cincotta, South Orange, and Frank M. Berardinelli, Millington, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 15, 1981, Ser. No. 330,988
Int. Cl.³ C08L *67/04*
U.S. Cl. 525—51 **22 Claims**

1. A process for producing a polymer blend which exhibits an anisotropic melt phase and is capable of forming shaped articles having satisfactory mechanical properties, said process comprising the steps of:

(a) post-polymerizing a melt processable wholly aromatic polyester which is capable of forming an anisotropic melt phase apart from said blend, said post-polymerizing step being conducted at a temperature and for a period of time sufficient to increase the inherent viscosity of said wholly aromatic polyester by at least approximately 50 percent, and

(b) subsequently intimately mixing together approximately 85 to 95 percent by weight of said wholly aromatic polyester and approximately 5 to 15 percent by weight of a polyalkylene terephthalate,

wherein said resulting polymer blend is capable of forming shaped articles which exhibit a tensile strength, a flexural strength, and a notched Izod impact strength which each exceed that exhibited by the composition in the absence of the polyalkylene terephthalate component.

4,451,612

CONTINUOUS PROCESS FOR THE PREPARATION OF RUBBER MODIFIED POLYMERS

Jerry C. Wang, Lodi, and Michael R. Stepanian, Ridgewood, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

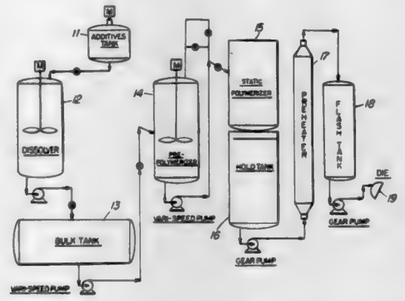
Continuation of Ser. No. 189,424, Sep. 22, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,402
Int. Cl.³ C08F *279/02*
U.S. Cl. 525—53 **8 Claims**

1. A continuous process for the manufacture of high impact polystyrene resin by bulk polymerization which process comprises:

(a) preparing a solution of styrene monomer and rubber;

(b) Prepolymerizing said solution with controlled high shear agitation;

(c) passing said solution to at least one static final stage polymerizer wherein the polymer mass is kept in a state of free flow by gravitational force without agitation and moves downward in essentially plug flow manner, whereby the polymer mass moves uniformly in one direction in the absence of end to end or back mixing, with increasing polymer conversion in the forward direction, wherein said at least one final stage polymerizer consists essentially of at least one shell and tube heat exchanger, said exchanger having a shell in the form of a vertical tower, said shell being installed with multiple heat-exchanger tubes throughout the entire operating volume of said shell, whereby according to said step (c) heat



transfer oil flows on the inside of said heat-exchanger tubes, while said solution being subjected to polymerization occupies the void space outside said heat-exchanger tubes and within the confines of said shell;

(d) passing the product stream from said final stage polymerizer to a preheater;

(e) passing said preheated product stream from said preheater to a devolatilization chamber wherein unreacted monomer and diluent are flashed off; and

(f) finally passing the high impact polystyrene polymer through an extrusion die whereupon solidified high impact polystyrene polymer is produced.

4,451,613

ETHYLENICALLY-UNSATURATED DEXTRIN OLIGOMERS

Alan D. Rousseau, and Laurence W. Reilly, Jr., both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 3, 1983, Ser. No. 471,781
Int. Cl.³ C08L *3/00*
U.S. Cl. 525—54.31 **11 Claims**

1. A photocurable, ethylenically-unsaturated oligomer comprising the reaction product of

(1) 100 parts by weight of a dextrin compound, said dextrin compound being non-gelling at temperatures up to 98° C. when heated in the presence of water, N-methylolacrylamide, and carboxylic acid,

(2) 35 to 70 parts by weight of at least one ethylenically-unsaturated monomer capable of reacting with at least one hydroxyl group of the dextrin compound,

said oligomer having an average in the range of 0.20 to 0.45 ethylenically-unsaturated moiety per every anhydroglucose unit and an equivalent weight of 440 to 990, and at least 75 weight percent of said oligomer is water soluble at 20° C. in a concentration of at least 2.5 percent by weight.

4,451,614

PROCESS FOR THE PRODUCTION OF POURABLE, TACK-FREE VINYL CHLORIDE GRAFT POLYMERS

Karsten Flatau, Haltern, Fed. Rep. of Germany, assignor to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed Aug. 19, 1982, Ser. No. 409,465
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132694
Int. Cl.³ C08F *00/00*
U.S. Cl. 525—80 **8 Claims**

1. A process for producing a pourable, tack-free vinyl chloride graft polymer of an ethylene-vinyl acetate copolymer and vinyl chloride, having more than 30% by weight of ethylene-vinyl acetate copolymer content, comprising

adding to a suspension of the vinyl chloride graft polymer 0.5–10% by weight, based on the weight of the graft polymer, of polyvinyl chloride prepared by emulsion or microsuspension polymerization in the form of a latex and having a K value of 50–90,

effecting thermal precipitation of the polyvinyl chloride onto the graft polymer by maintaining the mixture of polyvinyl chloride and graft polymer, with stirring for 10–60 minutes, at a temperature of 30°–90° C., and

separating the graft polymer with the polyvinyl chloride precipitated thereon from the mixture.

4,451,615

POLYISOPRENE TOUGHENED ADHESIVE COMPOSITION

Ronald S. Charnock, Castletown, Ireland, assignor to Loctite (Ireland) Limited, Tallaght, Ireland

Continuation of Ser. No. 262,654, Apr. 11, 1981, abandoned. This application Mar. 16, 1983, Ser. No. 473,984
Claims priority, application Ireland, May 9, 1980, 964/80; Jul. 11, 1980, 1449/80
Int. Cl.³ C08F *279/02*
U.S. Cl. 525—98 **16 Claims**

1. In a two-component adhesive composition of the type having a first component comprising a solution of polymer in at least one polymerizable monomer in combination with an adhesion promoter and a free radical catalyst system, and a second component comprising an activator, an improved composition providing increased high temperature resistance in the cured adhesive wherein: said polymer is present at levels of 20% or more of the total composition and is selected from the class of isoprene block copolymer rubbers having a molecular weight in excess of 5,000; and said monomer is an acrylate ester.

4,451,616

PROCESS FOR PREPARATION OF FILTER-CONTAINING POLYTETRAFLUOROETHYLENE FINE POWDER

Shoji Kawachi, Hyogo; Toshinori Kadowaki, and Katsutoshi Yamamoto, both of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 24, 1980, Ser. No. 171,907
Claims priority, application Japan, Jul. 24, 1979, 54-94460
Int. Cl.³ C08K *5/02*; C08J *3/16*
U.S. Cl. 525—178 **7 Claims**

1. A process for the preparation of a filled material containing polytetrafluoroethylene fine powder having good flowability, by coagulating polytetrafluoroethylene together with at least one filled material selected from the group consisting of polyimide resins, polyamide-imide resins, and polyamide resins, from their aqueous dispersion, the improvement which comprises adding a water-insoluble organic liquid having a boiling point of from 30° to 150° C. and a surface tension of not more than 35 dyne/cm at 20° C. to the aqueous dispersion under agitation at any stage after the initiation of the coagulation to the end of the coagulation.

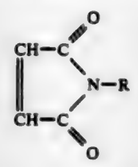
4,451,617

MISCIBLE POLYBLEND AND MOLDED ARTICLE PRODUCED THEREFROM

Bi L. Khac, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 16, 1982, Ser. No. 408,377
Int. Cl.³ C08L *39/04*
U.S. Cl. 525—203 **7 Claims**

1. A miscible polyblend comprising a first and a second copolymer, the first copolymer consists of an α,β-ethylenically unsaturated dicarboxylic acid or its anhydride copolymerized with a monovinyl-substituted aryl hydrocarbon monomer and, the second copolymer consists of an imide derivative of maleic anhydride and having the general formula:



wherein R represents $-CH_3$, $-CH_2H_5$, $-C(CH_3)_3$, a phenyl or substituted phenyl group or a cycloalkyl or substituted cycloalkyl group copolymerized with a monovinyl substituted aryl hydrocarbon monomer.

4,451,618

BLOCK COPOLYMERS AND PROCESS FOR THEIR PREPARATION

Yoshihisa Okamoto, Sagamore Hills, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 29, 1982, Ser. No. 427,370
Int. Cl.³ C08F *297/00*; C08G *65/12*
U.S. Cl. 525—349 **18 Claims**

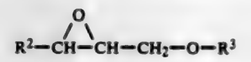
1. A block copolymer of a hydroxyl-terminated prepolymer (HTP) and an oxirane monomer, said block copolymer having the structure

$$R^1—O—[A]_a—H]_b \quad \text{(III)}$$

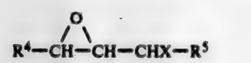
wherein,

R^1 represents the residue of said HTP which originally contains from 1 to about 4 terminal aliphatic hydroxyl groups;

A represents the residue of a single ring-openable oxirane monomer selected from the group consisting of (i) an aliphatic or aromatic glycidyl ether having the structure


(I)

wherein R^2 and R^3 is each independently selected from the group consisting of hydrogen, alkyl having from 1 to about 40 carbon atoms, haloalkyl, alkenyl having from 2 to about 40 carbon atoms, haloalkenyl, alkoxyalkyl having from 1 to about 40 carbon atoms, aryl (Ar) or substituted aryl (Ar-Q), wherein Q is selected from the group consisting of alkyl, haloalkyl each having from 1 to about 10 carbon atoms, alkenyl and haloalkenyl each having from 2 to about 10 carbon atoms; and, (ii) a haloalkyl epoxide having the structure


(II)

wherein

X is halogen atom and R^4 and R^5 is each independently

selected from the group consisting of hydrogen and alkyl having from 1 to about 4 carbon atoms;
so that the molecular weight of the resulting block copolymer is directly proportional to the amount of monomer converted; and,
a represents an integer in the range from about 5 to about 100;
b represents an integer in the range from 1 to about 4;
so that the molecular weight of each of the segments of the copolymer is in the range from about 500 to about 10,000, and the molecular weight of the block copolymer is in the range from about 500 to about 500,000.

6. The block copolymer of claim 1 wherein segment A, and, optionally, R^1, contains a reactive halogen capable of an addition reaction with an amine to yield an aminated block copolymer.

11. A process for the manufacture of a block copolymer having the structure (III) of a hydroxyl-terminated prepolymer (HTP) and an oxirane monomer, which process comprises,
(i) polymerizing, a HTP with a single oxirane monomer selected from the group consisting of an acyclic glycidyl ether, a cyclic glycidyl ether, and a haloalkyl epoxide, in the presence of at least 0.001 part per 100 parts by weight of oxirane reactants of a catalyst selected from the group consisting of an HMF_6 acid, and, an oxonium salt of the HMF_6 acid, wherein M is an element selected from the group consisting of phosphorus, arsenic and antimony, at a temperature in the range from about 0° C. to about 100° C., and,
(ii) recovering said block copolymer which is formed in an amount directly proportional to the conversion of monomer.

4,451,619

METHOD OF HYDROPHILIZING OR HYDROPHOBIZING POLYMERS

Steven M. Heilmann, North St. Paul; Jerald K. Rasmussen, Stillwater, and Frederick J. Palensky, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 30, 1982, Ser. No. 429,986
Int. Cl.³ C08F 8/30
U.S. Cl. 525—379 **9 Claims**

1. A method for preparing thermoplastic, processable, hydrophilic- or hydrophobic-modified polymers comprising the steps:
(a) interpolymerizing at a temperature in the range of room temperature to 100° C. in the presence of an amount of free radical initiator in the range of 0.01 to 5.0 weight percent
(1) 1 to 50 mole percent of an alkenyl azlactone monomer,
(2) 50 to 99 mole percent of at least one free radical addition polymerizable monomer, to form an interpolymer, said monomer being selected from the group consisting of vinyl aromatic compounds, α,β-unsaturated carboxylic acids and their derivatives, vinyl esters of carboxylic acids, vinyl halides, olefins, N-vinyl compounds, vinyl ketones, and vinyl aldehydes;
(b) reacting in a ring-opening reaction at room or moderate temperatures in an unreactive solvent said resulting interpolymer with 0.1 to 1.0 equivalents, based on polymer-bound azlactone, of an alcohol- or amino-functional hydrophilic or hydrophobic nucleophile having a molecular weight greater than 100, said hydrophilic nucleophile having a Hydrophilicity Index greater than 30 or said hydrophobic nucleophile having a Hydrophilicity Index less than 20, and having the formula

HXG

wherein
H is hydrogen,
X is equal to —O—, or



and wherein R^8 is equal to H, G, or G', wherein G' is any other hydrophilic or hydrophobic group other than G, or an alkyl group having from 1 to 4 carbon atoms,
G is any hydrophilic group such that its Hydrophilicity Index has a value of at least 30 or G is any hydrophobic group such that its Hydrophilicity Index has a value of 20 or less, and G' is equal to G or can differ from G, provided that G' is alike in kind with G and the Hydrophilicity Index for the hydrophilic group or the hydrophobic group falls within the respective limitations for G;
with the proviso that said reacting step takes place in the presence of 0.01 to 5.0 weight percent of a Bronsted or Lewis acid catalyst when said hydrophilic nucleophile is alcohol-functional; and
(c) recovering the resulting hydrophilic- or hydrophobic-modified polymer.

4,451,620

DIETHANOLAMINE SALT OF SULPHAMIC ACID AS A CURING ACCELERATOR FOR AMINOPLAST RESINS

Steffen Piesch, Oberursel, and Peter Dörries, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,723
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218231
Int. Cl.³ C08G 6/00; C08L 61/02
U.S. Cl. 525—398 **12 Claims**

1. In the process for curing modified aminoplast resins containing at least 3% by weight, relative to solid resin, of a modifying agent and at least one latent curing agent by the application of heat, the improvement comprises said curing agent comprises diethanolammonium sulphamate.

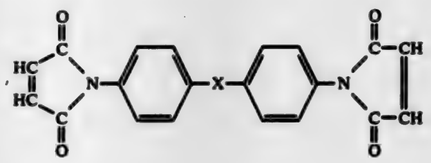
4,451,621

HEAT RESISTANT RESIN COMPOSITION COMPRISING MODIFIED POLYAMIDE-IMIDE RESIN HAVING CARBOXYL GROUPS

Kazuya Yonezawa; Kazuaki Kira; Hiroshi Wakabayashi, and Hirosaku Nagano, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 167,335, Jul. 9, 1980, Pat. No. 4,387,192.
This application Dec. 23, 1982, Ser. No. 452,432
Claims priority, application Japan, Jul. 13, 1979, 54-89626
Int. Cl.³ C08G 73/10
U.S. Cl. 525—426 **2 Claims**

1. A heat resistant resin composition comprising the reaction product of (1) a polyamide imide resin having carboxyl groups produced from at least one aromatic polycarboxylic acid anhydride having at least three functional carboxyl groups and at least one organic diisocyanate, (2) a compound selected from the group consisting of N-methylolated acrylamide, N-methoxymethylacrylamide, N-butoxymethylacrylamide, N-methylolated methacrylamide and N-butoxymethylmethacrylamide, and (3) a bismaleimide represented by the formula



where X is CH_2, O, SO_2, S or $C(CH_3)_2$; said compound (2) being used in an amount of 1.0 to 5.0 mol equivalent weights per mole equivalent weight of the carboxyl groups in the polyamide imide resin and the bismaleimide, and (3) being used in an amount of 5 to 50% by weight per 100% by weight of the unmodified polyamide imide resin.

4,451,622

URETHANE PREPOLYMERS CROSSLINKED WITH AMINO CROSSLINKING AGENTS

Edward DiDomenico, Jr., Anoka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Apr. 12, 1983, Ser. No. 484,248
Int. Cl.³ C08L 75/04
U.S. Cl. 525—456 **8 Claims**

1. A composition of matter comprising (i) a hydroxy-terminated urethane prepolymer derived from a polyisocyanate and a polyol selected from the group consisting of hydroxymethyl polyols of the formulae:

$$H(CH_2)_hCH(CH_2OH)(CH_2)_kCH_2OH \quad (I)$$

and

$$CH_3(CH_2)_m[C(CH_2OH)_2]_n(CH_2)_p[C(CH_2OH)_2]_q(-CH_2)_r[C(CH_2OH)_2]_s(CH_2)_tCH_2OH \quad (II)$$

wherein n plus q plus s are integers, the sum of which is from 1 to 3; n, q and s are 0 or 1; m through t are integers, the sum of which is 12 to 20; and h and k are non-zero integers, the sum of which is 12 to 20 and (ii) a methylolamino compound.

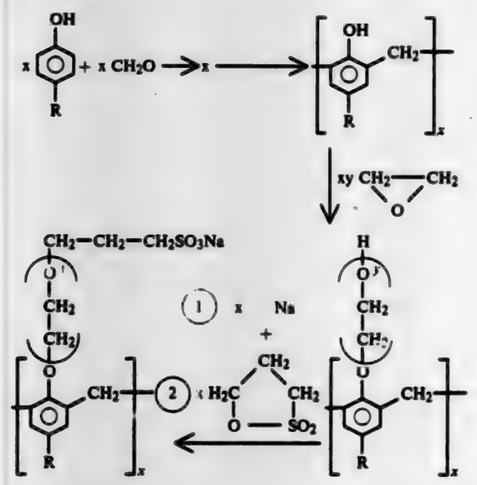
4,451,623

WATER SOLUBLE PHENOLIC-FORMALDEHYDE POLYMER WHICH IS A SURFACTANT MOBILITY CONTROL AGENT IN OIL RECOVERY

Catherine S. H. Chen, Berkeley Heights, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 225,573, Jan. 16, 1981, Pat. No. 4,374,740.
This application Sep. 22, 1982, Ser. No. 421,592
Int. Cl.³ C08G 8/28, 8/36
U.S. Cl. 525—505 **8 Claims**

1. A process for manufacturing water-soluble polymers that thicken water comprising the following general reaction:



R is alkyl having from about 1 to 30 carbon atoms or aryl or alkylaryl,
x is 100 to 1000 and
y is 2 to 10.

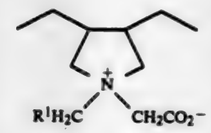
4,451,624

POLYMERS, PREPARATION AND USE

John G. B. Howes, Hertford Heath, England, assignor to Smith and Nephew Associated Companies Ltd., England

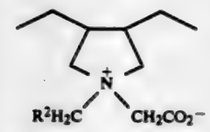
Filed Dec. 11, 1981, Ser. No. 330,013
Claims priority, application United Kingdom, Dec. 12, 1980, 8039934
Int. Cl.³ C08F 210/00
U.S. Cl. 526—292.2 **8 Claims**

1. A polymer consisting essentially of 55 to 90% by weight of the formula (A):



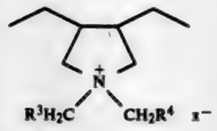
(A)

wherein R^1 is a hydrogen atom or an alkyl group of 1 to 3 carbon atoms; 10 to 45% of units of the formulae (B) and (C): up to 22% by weight of units of formula (B):



(B)

and 10 to 35% by weight of units of formula (C):



(C)

wherein R^2 is a hydrocarbon group of 5 to 19 carbon atoms, R^3 is a hydrogen atom or an alkyl group of 1 to 3 carbon atoms, R^4 is a hydrocarbon group of 5 to 19 carbon atoms and X^- is an anion.

4,451,625

REDUCTION OF WALL FOULING IN THE SUSPENSION POLYMERIZATION OF VINYL CHLORIDE HOMOPOLYMER

John T. C. Cheng, and Michael Langsam, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 5, 1982, Ser. No. 405,638
Int. Cl.³ C08F 2/20
U.S. Cl. 526—62 **9 Claims**

1. In a suspension polymerization process wherein vinyl chloride monomer, water, a suspension agent and a monomer soluble polymerization catalyst is charged in stainless steel reactor at an initial pH above 6.0 and subsequently polymerized at an elevated temperature to produce a vinyl chloride homopolymer, the method for reducing wall fouling in the stainless steel reactor which comprises wetting the internal reactor surfaces with a solution consisting essentially of a solvent and
(a) 5 to 50 wt % alkali metal hydroxide,
(b) 0.01 to 1 wt % free radical inhibitor, and
(c) 0.01 to 1 wt % surface active agent.

4,451,626
PROCESS FOR POLYMERIZING ALPHA-OLEFINS

Randall S. Shipley, Alvin, and Donald F. Birkelbach, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 313,869, Oct. 22, 1981, abandoned. This application Mar. 30, 1983, Ser. No. 480,559
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—122 35 Claims

1. A process for polymerizing one or more polymerizable α-olefins which process comprises conducting the polymerization under Ziegler polymerization conditions in the presence of a catalyst which is a catalytic reaction product of

(A) a reaction product or complex formed from the admixture of

(1) the reaction product or complex formed by mixing

(a) at least one transition metal compound represented by the empirical formulae $Tm(OR)_4$ or $TM(OR)_{x-2}O$ wherein Tm is a transition metal selected from groups IVB, VB or VIB; each R is independently a hydrocarbyl group, having from 1 to about 20 carbon atoms; and x has a value equal to the valence of Tm; and

(b) at least one oxygen-containing compound selected from the group consisting of molecular oxygen, air, alcohols, ketones, aldehydes, carboxylic acids, esters of carboxylic acids, peroxides, water and mixtures thereof; and

(2) at least one reducing alkylating agent represented by the empirical formula $M'R_{a-b}X_b$ wherein M' is a metal selected from Mg or Li; X is a halogen; each R is independently an alkyl group having from 1 to about 20 carbon atoms; a has a value equal to the valence of metal M' and b has a value of from zero up to the valence of the metal M' minus 1; and wherein said mixture of (1) and (2) is subjected to a temperature of from about −50° C. to about 110° C. for a time sufficient to effect a color change;

(B) a magnesium halide resulting from the reaction of

(1) an organomagnesium compound represented by the empirical formula $MgR''_2.xMR''_y$ wherein M is aluminum or zinc, each R'' is independently a hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms, x has a value from zero to 10 and y has a value corresponding to the valence of M; with

(2) a halide source selected from

(a) an active non-metallic halide, said non-metallic halide corresponding to the empirical formula R'X wherein R' is hydrogen or a hydrocarbyl group such that the hydrocarbyl halide is at least as active as sec-butyl chloride and does not poison the catalyst and X is halogen or

(b) a metallic halide corresponding to the empirical formula $MR_{y-a}X_a$ wherein M is a metal of Group IIIA or IVA of Mendeleev's Periodic Table of Elements, R is a monovalent hydrocarbyl radical, x is halogen, y is a number corresponding to the valence of M and a is a number of 1 to y; and

(C) when the organomagnesium component and/or the halide source provides insufficient quantities of aluminum, an aluminum compound is added which is represented by the empirical formula $AlR_{y'}X_{y''}$ wherein R and X are as defined above and y' and y'' each have a value of from zero to three with the sum of y' and y'' being three; and

wherein the components are employed in quantities which provide an atomic ratio of the elements Mg:Tm of from about 1:1 to about 200:1; M':Tm of from about 0.1:1 to about 5:1; O:Tm of from about 0.1:1 to about 4:1; Al:Tm of from about 0.1:1 to about 200:1 and an excess X:Al of from about 0.0005:1 to about 5:1.

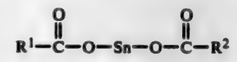
4,451,627
ADDITION POLYMERIZABLE URETHANE-BASED ANAEROBIC ADHESIVES MADE FROM TIN (II) ORGANOESTERS

Kurt C. Frisch, Jr.; Michele R. Lock, both of Midland City, and Gregory J. Stuk, Ann Arbor, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 7, 1982, Ser. No. 415,076
Int. Cl.³ C08F 4/06
U.S. Cl. 526—192 14 Claims

1. An adhesive comprising

a. the reaction product of (1) an isocyanate compound, and (2) an active hydrogen compound, wherein one of (1) or (2) has an addition polymerizable double bond, and the other is polyfunctional, or both (1) and (2) have addition polymerizable double bonds, said reaction product having been formed in the presence of a catalytic amount of a tin (II) organoester according to the formula



wherein R^1 and R^2 each separately denote a hydrogen or an organic radical;

b. a curing amount of a polymerization initiator; and

c. a stabilizing amount of a polymerization inhibitor.

4,451,628
PROCESS FOR PREPARING LOW MOLECULAR WEIGHT WATER-SOLUBLE POLYMERS BY COPOLYMERIZING WITH WATER-SOLUBLE MONOMERS A CALCULATED QUANTITY OF METHALLYLSULFONATE MONOMER

Laurence G. Dammann, Crestwood, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,249
Int. Cl.³ C08F 2/16, 2/38
U.S. Cl. 526—225 11 Claims

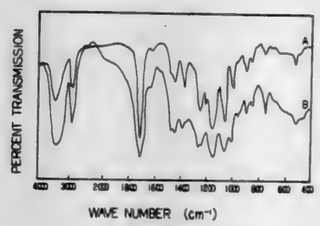
1. A process for preparing a water-soluble polymer of controlled low molecular weight which comprises copolymerizing a mixture comprising water-soluble monomers, which includes between about 0.01–5 weight percent alkali metal methallylsulfonate or methallylsulfonic acid based on the weight of monomers, in an aqueous medium under free radical polymerization conditions wherein the molecular weight of the resulting water-soluble polymer is inversely proportional to the amount of alkali metal methallylsulfonate or methallylsulfonic acid.

4,451,629
CONTACT LENS AND PROCESS FOR PREPARING THE SAME

Kyoichi Tanaka, Nagoya; Shinji Kanome, Kuwana; Tatsutoshi Nakajima, , Nagoya; Kazuhiko Nakada, Nagoya, and Nobuyuki Toyoshima, Nagoya, all of Japan, assignors to Toyo Contact Lens Co., Ltd., Nagoya, Japan

Filed Jan. 5, 1982, Ser. No. 337,170
Claims priority, application Japan, Jan. 12, 1981, 56-3681; Oct. 15, 1981, 56-165224
Int. Cl.³ C08F 16/38; G02C 7/04
U.S. Cl. 526—238.23 6 Claims

1. A water-absorptive contact lens made of a copolymer comprising acrylate or methacrylate units having saccharides as side chains and units of at least one member selected from



the group consisting of a hydrophilic monomer and a hydrophobic monomer.

4,451,630
HYDROGEL CONTACT LENSES FOR PERMANENT WEAR

Ivor B. Atkinson, 90 Queens Dr., and Barry C. Holdstock, Flat 12, Kingston Ct., 82 Maple Rd., both of Surbiton, Surrey, England

Filed Jun. 16, 1983, Ser. No. 505,419
Claims priority, application United Kingdom, Apr. 29, 1983, 8311788
Int. Cl.³ C08F 26/06, 126/06, 226/06
U.S. Cl. 526—261 3 Claims

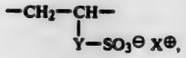
1. A process for the preparation of a contact lens comprising a hydrogel having a water content from about 50% to 85% by weight of water, which process comprises polymerizing, in the presence of an azo type initiator, a monomer mixture comprising from 25% to 50% by weight of N-vinyl pyrrolidone, up to 5% by weight of methacrylic or acrylic acid, 0.1 to 1% by weight of 1,3,5-tris(propenoxy)-2,4,6-triazine (TPT), or perhydro-2,4,6,-triketo-1,3,5-tris(propene-2)-1,3,5-triazine (T.T.P.T.), as a cross-linking monomer, the balance being essentially hydroxy alkyl acrylate or methacrylate, wherein the alkyl group is ethyl or propyl and subsequently swelling in aqueous medium.

4,451,631
AGENT AND METHOD FOR DEOILING SAND AND ROCK MASSES

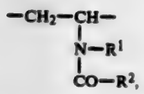
Friedrich Engelhardt; Hermann Schmitz, both of Frankfurt am Main; Walter Gulden, Hofheim, and Jörg Hax, Wiesbaden, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 283,497, Jul. 15, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,277
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027422
Int. Cl.³ C08F 228/00
U.S. Cl. 526—287 9 Claims

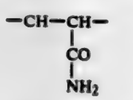
1. Clay-free agent for deoiling sand or rock masses containing mineral oil which comprises an aqueous solution of 20 to 5,000 ppm of a water-soluble copolymer consisting essentially of a random distribution of 5 to 60% by weight of units of the formula



2 to 40% by weight of units of the formula



and 38 to 93% by weight of units of the formula



and hydrolysates thereof

wherein

R^1 and R^2 are identical or different and each is hydrogen, methyl, ethyl, or together are trimethylene;

Y is —CO—NH—$C(CH_3)_2$—CH_2— or a direct bond;

and $X^{\oplus}$ is a cation.

4,451,632
HIGH VINYLIDENE CHLORIDE CONTENT INTERPOLYMER COATING RESINS AND METHOD OF PREPARATION

Dale S. Gibbs, and Warren L. Treptow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 277,305, Jun. 25, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,442
Int. Cl.³ C08F 14/08
U.S. Cl. 526—317 14 Claims

1. A process for preparing, in aqueous emulsion, controlled interpolymer compositions having polymerized therein (a) from about 86 to about 92 mole percent vinylidene chloride; (b) from about 14 to about 8 mole percent of a mixture of methyl methacrylate and a comonomer selected from the group consisting of acrylonitrile, methacrylic acid, and methacrylonitrile, said mixture of methyl methacrylate and the comonomer having a molar ratio of the comonomer to methyl methacrylate of from about 0.2:1 to 5:1; and (c) from about 0.5 to about 1.0 weight percent itaconic acid based on weight of (a) plus (b); said interpolymer compositions having a relative viscosity of from about 1.3 to about 1.7 at 25° C. as a 1 percent solution in tetrahydrofuran; said interpolymer compositions being capable of forming generally haze-free solutions when present in an amount of about 20 percent solids in a solvent mixture, said solvent mixture comprising about 65 weight percent tetrahydrofuran based on solvent mixture weight, and about 35 weight percent toluene based on solvent mixture weight, said process comprising the sequential steps of:

(A) initiating emulsion polymerization by forming a seed latex, the seed latex being formed in a batch emulsion polymerization process which comprises:

(1) adding a first monomer charge to an aqueous emulsion polymerization medium, the first monomer charge comprising from about 3 to about 8 weight percent of a principal mixture of monomers, the principal mixture of monomers comprising from about 86 to about 92 mole percent vinylidene chloride and from about 14 to about 8 mole percent of a comonomer mixture of methyl methacrylate and a comonomer selected from the group consisting of acrylonitrile, methacrylic acid, and methacrylonitrile, said comonomer mixture having a molar ratio of the comonomer to methyl methacrylate of from about 0.2:1 to about 5:1, the polymerization medium comprising water, an emulsifier and from about 0.5 to about 1.0 weight percent itaconic acid based on the principal mixture of monomers;

(2) adding a polymerization initiator to said emulsion polymerization medium, the initiator being added at a generally constant rate;

(3) continuing seed latex formation under autogenous

pressure until a pressure drop in vapor pressure of monomers in the polymerization medium of from about 1.8 to about 2.2 pounds per square inch occurs;

(B) continuing polymerization under autogenous pressure by adding to the emulsion polymerization medium:

(1) a second monomer charge in an amount between about 85 and 92 weight percent of the principal mixture of monomers as in (A)(1), said second monomer charge being added at a generally constant rate, the rate being sufficient to continually provide an excess of unreacted monomers in the polymerization medium, said excess being generally from about 2 to about 10 weight percent based on weight of the polymerization medium; and

(2) the polymerization initiator at generally the same constant rate of addition as in (A)(2); and

(C) generally immediately following addition of all of the second monomer charge, finishing polymerization in a predetermined time interval T, the time interval T having at least a first portion and a second portion, by:

(1) continuing to add the polymerization initiator at generally the same constant rate of addition as in (A)(2) and (B)(2), the initiator being added throughout the time interval T; and

(2) adding a third monomer charge in an amount between about 2 and 12 weight percent of the principal mixture of monomers as in (A)(1), said third monomer charge being added over the first portion of the time interval T in such a manner that the vapor pressure of monomers in the emulsion polymerization medium is reduced smoothly as reflected by a time-pressure curve wherein time is plotted on the abscissa and pressure is plotted on the ordinate, the time-pressure curve being generally free of discontinuities from the beginning of the time interval T to the end thereof and having a shape, the shape being that of a line which is generally concave downward.

4,451,633

OLEFIN POLYMERIZATION

Thomas F. Brownscombe, and Carl L. Willis, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 19, 1982, Ser. No. 409,744
Int. Cl.³ C08F 2/02
U.S. Cl. 526—348.6 **23 Claims**

1. A method for producing an olefin polymer article which comprises substantially completely polymerizing an olefinic monomer feed selected from the group consisting of ethylene, C_3 to C_{12} aliphatic and cycloaliphatic alpha monoolefins, and mixtures thereof in contact with a coordination catalyst in a mold having the shape of the article, at conditions under which the polymer is produced as a coherent, useful article in the shape of the interior of the mold.

4,451,634

SILICONE ELASTOMER COMPOSITIONS SUITABLE FOR ULTRAVIOLET RAY CURING

Masayuki Hatanaka, Ora, and Atsushi Kurita, Ota, both of Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Jan. 12, 1983, Ser. No. 457,348
Int. Cl.³ C08G 77/06
U.S. Cl. 528—24 **9 Claims**

1. Silicone elastomeric compositions suitable for ultraviolet ray curing comprising:

(A) 100 parts by weight of a polyorganosiloxane of the general formula:

$$(CH_3)_2R^1SiO—R_2^2SiO)_aSiR^1(CH)_2 \quad (1)$$

wherein R^1 represents hydrogen or a monovalent radical selected from the group consisting of methyl, vinyl, and hydroxy, R^2 represents hydrogen or a substituted or unsubstituted monovalent hydrocarbon radical, 0.02–49.95% based on the total number of R^1 and R^2 groups are vinyl radicals 0.05–49.98% based on the total number of R^1 and R^2 groups are hydrogen and n represents a number from 10–10,000

(B) 0.5–10 parts by weight of a polyorganosiloxane having an average formula:

$$(CH_2{=}CH)_aSiO\frac{4-a-b}{2}$$

wherein R^3 represents a substituted or unsubstituted monovalent hydrocarbon radical other than vinyl, a represents a number of $0.01 \leq a \leq 1$ in an average, and b represents a number of $0 \leq b < 3$ in an average, and a+b being a number from 1 to 3 inclusive, and

(C) 0.1–10.0 parts by weight a peroxyester of the general formula:

$$R^4—O—O—\overset{O}{\overset{\|}{C}}—R^5$$

wherein R^4 represents a substituted or unsubstituted monovalent aliphatic hydrocarbon group and R^5 represents a substituted or unsubstituted monovalent aromatic hydrocarbon radical.

4,451,635

POLYURETHANE QUATERNARY AMMONIUM SALTS

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Filed Mar. 8, 1982, Ser. No. 355,938
Int. Cl.³ C08G 18/42
U.S. Cl. 528—71 **2 Claims**

1. A water soluble polyurethane quaternary ammonium salt characterized by having present in the polymer backbone hydroxyl groups and at least one substituent selected from the group consisting of carboxylate radicals and carboxyl radicals and the anion is a chloride ion.

2. A water soluble polyurethane quaternary ammonium salt characterized by having present in the polymer backbone hydroxyl groups and at least one substituent selected from the group consisting of carboxylate radicals and carboxyl radicals and the ion is a sulfate ion.

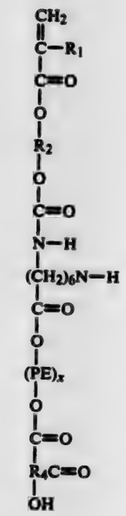
4,451,636

POLYMER COMPOSITION HAVING TERMINAL ALKENE AND TERMINAL CARBOXYL GROUPS

Jung-Hsien Tsao, Marietta, and Paul R. Hein, Atlanta, both of Ga., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 225,809, Jan. 16, 1981, Pat. No. 4,422,914. This application Sep. 29, 1982, Ser. No. 426,391
Int. Cl.³ C08G 18/10; C08F 283/00
U.S. Cl. 528—75 **9 Claims**

1. A polymer composition suitable for use as a hot melt having the formula:



wherein R_1 is hydrogen, methyl or ethyl, R_2 is alkyl of from 1 to 6 carbon atoms, -(PE)- is selected from the group consisting of polyethers, polyesters and mixtures thereof, x is an integer of from 2 to 50 and R_4 is alkyl, alkene, aryl or alicyclic.

4,451,638

PROCESS FOR THE PRODUCTION OF ALKALI METAL POLYESTER SILICATE RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 010,061, Feb. 7, 1979, Pat. No. 4,200,697, which is a continuation-in-part of Ser. No. 794,915, May 9, 1977, Pat. No. 4,125,498, which is a continuation-in-part of Ser. No. 653,727, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 562,201, Apr. 14, 1975, abandoned. This application Feb. 19, 1980, Ser. No. 122,015
Int. Cl.³ C08G 65/38
U.S. Cl. 528—205 **6 Claims**

1. The process for the production of alkali metal polyester silicate resinous product by the following steps:

(a) mixing 1 to 10 parts by weight of alkali metal silicate, 10 to 30 parts by weight of a polyhydroxyl organic compound and 10 to 30 parts by weight of a polycarboxylic acid and/or a polycarboxylic acid anhydride,

(b) heating the mixture at a temperature between the melting temperature of the polycarboxylic acid and the boiling temperature of the polyhydroxyl organic compound while agitating for 20 to 90 minutes, thereby

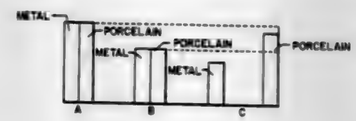
(c) producing an alkali metal polyester silicate resinous product.

4,451,639

DENTAL ALLOYS FOR PORCELAIN-FUSED-TO-METAL RESTORATIONS

Arun Prasad, Cheshire, Conn., assignor to Jeneric Industries, Inc., Wallingford, Conn.

Continuation-in-part of Ser. No. 400,481, Jul. 21, 1982, abandoned. This application Aug. 31, 1983, Ser. No. 528,227
Int. Cl.³ C22C 5/04, 30/02
U.S. Cl. 420—464 **20 Claims**



1. A grain-refined palladium based dental alloy for porcelain-fused-to-metal restorations consisting essentially of, on a weight basis, about 35–85% palladium, 0–12% copper, 5–15% gallium, 0–50% gold, 0–13% cobalt, 0.1–0.5% ruthenium, rhenium or mixtures thereof, and an effective amount of aluminum up to about 5% and an effective amount of zinc up to about 0.5% for the purpose of essentially eliminating the formation of bubbles in the porcelain during he porcelain firing process, the total of the constituents being 100%, wherein the components of the alloy are combined in a protective environment.

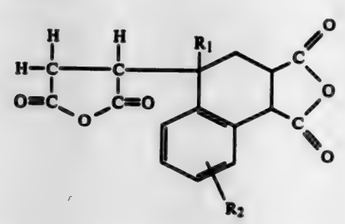
4,451,637

EPOXY RESIN COMPOSITION

Motoyuki Yamato, Oiso, and Tadao Natsuume, Yokosuka, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 463,024
Claims priority, application Japan, Feb. 8, 1982, 57-18372
Int. Cl.³ C08G 59/42
U.S. Cl. 528—115 **8 Claims**

1. A heat-curable epoxy resin composition comprising (A) an epoxy resin and (B) an acid anhydride curing agent liquid at 20° C. composed of, based on acid anhydride equivalents, of 10 to 70% of a tetrabasic acid anhydride represented by the following formula



wherein

R_1 represents hydrogen or a methyl group, and

R_2 represents hydrogen or a lower alkyl group,

and 30 to 90% of a liquid alicyclic dibasic acid anhydride.

4,451,640

PROCESS FOR PRODUCING AROMATIC SULFIDE POLYMER

Zenya Shiiki, and Yukichika Kawakami, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 435,214, Oct. 19, 1982. This application Sep. 16, 1983, Ser. No. 532,759
Claims priority, application Japan, Oct. 20, 1981, 56-167573
Int. Cl.³ C08G 12/20
U.S. Cl. 528—265 **6 Claims**

1. A process for producing an aromatic sulfide polymer, comprising the step of

reacting one gram-equivalent of elementary sulfur, 0.7 to 1.3 gram-equivalents of a polyhalogen-substituted aromatic compound, 0.6 to 1.4 gram-equivalents of an aldehyde or a condensate thereof and 1.2 to 2.5 gram-equivalents of a

caustic alkali in 0.02 to 5 liters of an organic solvent at a temperature of 100° to 300° C.

4,451,641

RADIATION-RESISTANT CONTAINER MATERIAL OF POLY(TETRAMETHYLENE TEREPHTHALATE)

Bobby J. Sublett, Kingsport, and Samuel D. Hilbert, Jonesboro, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,462
Int. Cl.³ C08G *63/48*
U.S. Cl. 528—295.5 **4 Claims**

1. A container characterized by improved resistance to gamma radiation comprising a copolyester derived from 100 mole % of a dicarboxylic acid component and 100 mole % of a glycol component, said copolyester consisting essentially of repeat units from terephthalic acid and 1,4-butanediol and about 15–50 mole % based on the total of 200 mole % of at least one compound selected from the group consisting of dimer acid and dimer glycol.

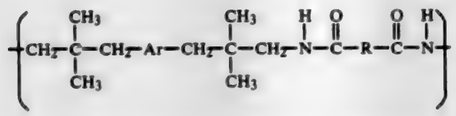
4,451,642

BIS(AMINONEOPENTYL) AROMATICS AND POLYAMIDES DERIVED THEREFROM

August H. Frazer, and John F. Harris, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 266,058, May 21, 1981, which is a continuation-in-part of Ser. No. 804,853, Jun. 8, 1977, abandoned. This application Sep. 20, 1982, Ser. No. 420,511
Int. Cl.³ C08G *69/26*
U.S. Cl. 528—347 **3 Claims**

1. Thermally stable, rigid polyamide having a repeating unit of the formula



in which Ar is arylene selected from the group consisting of 1,2-phenylene, 1,3-phenylene, 1,4-phenylene, 2,2′-biphenylene, 3,3′-biphenylene, 4,4′-biphenylene and 2,6-naphthylene, said arylene being unsubstituted or substituted with methyl or chloro, and R is Ar, alkylene of 1 to 20 carbon atoms, or oxygen-interrupted alkylene of 3 to 20 carbon atoms.

4,451,643

PRODUCTION OF ARYLENE SULFIDE POLYMER BEADS

James T. Edmonds, Jr., and Fred T. Sherk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 6, 1983, Ser. No. 456,185
Int. Cl.³ C08G *75/14*
U.S. Cl. 528—387 **8 Claims**

1. A method for producing arylene sulfide polymer in bead form comprising contacting lithium N-methyl-4-aminobutyrate (LiMAB) with at least one polyhalo aromatic compound and hydrogen sulfide (H_2S) in the presence of n-methyl-2-phrrolidone (NMP) under polymerization conditions including agitation of the reaction mixture wherein said LiMAB is present in a product mixture produced by the contacting of LiOH with NMP with the contacting compounds in a ratio of NMP:LiOH of about 2:1 to about 2.5:1 and said H_2S is then contacted with the product mixture in a ratio of initial NMP:H_2S of about 4.5:1 to about 5:1 and an LiOH:H_2S ratio of about 1.5:1 to about 2.5:1.

4,451,644

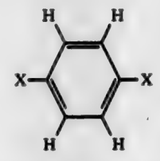
PROCESS FOR THE PRODUCTION OF POLYARYLENE (SULPHIDES) HAVING AN INCREASED THERMAL AND CHEMICAL RESISTANCE AND AN IMPROVED COLOR QUALITY

Edgar Ostlinning, Duesseldorf; Karsten Idel, Krefeld; Otto Neuner, Bergisch-Gladbach, and Ludwig Bottenbruch, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

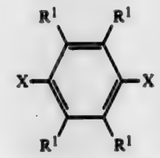
Filed Feb. 8, 1983, Ser. No. 465,010
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3205995
Int. Cl.³ C08G *75/14*
U.S. Cl. 528—388 **4 Claims**

1. A process for the production of a high molecular weight, branched polyarylene sulphide which comprises reacting

(a) at least one dihalogen benzene, from 50 to 100 mol % of which corresponds to the formula



and from 0 to 50 mol % of which corresponds to the formula



wherein X represents fluorine, chlorine, bromine or iodine, and each R^1 is the same or different and represents hydrogen, C_1–C_{20} alkyl, C_5–C_{20} cycloalkyl, C_6–C_{24} aryl, C_7–C_{24} alkaryl or C_7–C_{24} aralkyl or two adjacent radicals are joined to complete an aromatic or heterocyclic ring and the other two R^1 radicals are either joined to complete an aromatic or heterocyclic ring or are each hydrogen, or the aforesaid alkyl, cycloalkyl, aryl, alkaryl or aralkyl radicals, at least one radical R^1 being other than hydrogen,

(b) from 0.2 to 2.4 mol % based on (a) of a compound of the formula ArX_n wherein Ar represents an aromatic or heterocyclic radical having from 6 to 24 carbon atoms, X is as aforesaid and n is 3 or 4 and

(c) at least one alkali metal sulphide, or a mixture thereof with an alkali metal hydroxide, the mol ratio of (a+b):c being from 0.85:1 to 1.15:1, in

(d) at least one cyclic urea which is completely alkylated on each nitrogen atom, the mol ratio of (c) to (d) ranging from 1:2 to 1:15, at a temperature of from 250° to 290° C. and a pressure of from 4 to 20 bars.

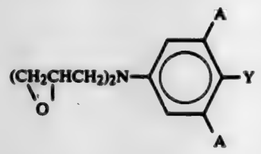
4,451,645

EPOXY COMPOUNDS

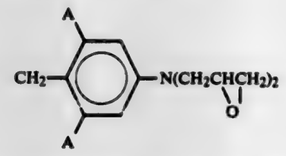
Peter Johncock, Farnborough, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sep. 24, 1982, Ser. No. 423,318
Claims priority, application United Kingdom, Oct. 1, 1981, 8129618
Int. Cl.³ C08G *59/28, 59/30, 59/32*
U.S. Cl. 528—391 **22 Claims**

1. An epoxy compound including one or two aromatic rings, one N-diglycidyl group per aromatic ring and one or two halogen or polyfluoroalkyl or polyfluoroalkoxy groups per aromatic ring, the epoxy compound having the general formula:



in which Y is selected from A and



each A being independently selected from halogen, a polyfluoroalkyl group, or a polyfluoroalkoxy group and H, at least one of the groups A per aromatic ring being a halogen, a polyfluoroalkyl or a polyfluoroalkoxy group.

4,451,646

HIGH MOLECULAR WEIGHT POLYMERIC PERFLUORINATED COPOLYETHERS AND PROCESS FOR THEIR PREPARATION FROM TETRAFLUOROETHYLENE

Dario Sianesi; Adolfo Pasetti, and Giorgio Belardinelli, all of Milan, Italy, assignors to Montedison, S.p.A., Milan, Italy

Continuation of Ser. No. 786,477, Apr. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 277,412, Aug. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 702,533, Feb. 2, 1968, Pat. No. 3,715,378. This application May 29, 1979, Ser. No. 42,863
Claims priority, application Italy, Feb. 9, 1967, 12460 A/67; Aug. 5, 1971, 27198 A/71
Int. Cl.³ C08G *63/76, 67/00*
U.S. Cl. 528—401 **3 Claims**

1. A high molecular weight perfluorinated polymeric copolyether, the macromolecules of which have a chain structure consisting essentially of —CF_2—CF_2—O— and —CF_2—O— repeating units, said perfluorinated polymeric copolyether having a molecular weight of from 22,000 to about 75,000, said repeating units being randomly distributed along the chain and linked one to another either directly or through an oxygen atom in which latter case a peroxy group is present along the chain, the ratio of the total —CF_2—CF_2—O units to the total —CF_2—O— units being between about 0.2 and 25, the peroxidic oxygen content being up to 10 parts by weight per 100 parts of the copolyether, and the average sum of all the repeating units present along the chain being from 220 to 624.

4,451,647

HEPARINIZED POLYORGANOPHOSPHAZENES

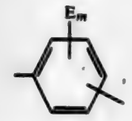
Harry R. Allcock, and Thomas X. Neenan, both of State College, Pa., assignors to Research Corporation, New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,344
Int. Cl.³ A61K *31/725;* C08B *37/10*
U.S. Cl. 536—21 **24 Claims**

1. A polyphosphazene-bound heparin complex, comprising:

a polymeric phosphazene backbone,

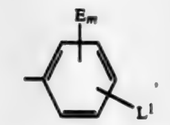
a quaternary ammonium ion covalently attached to said backbone through a divalent organic radical attached at one end to the nitrogen atom of said ion and at the other end to a phosphorus atom of said backbone, and heparin ionically bound to said quaternary ammonium ion, wherein said divalent organic radical has the formula —AL— or —AM—, wherein A represents —O— or —NH—, L represents a divalent C_2–C_{12} alkyl group or a divalent C_2–C_{12} alkyl group substituted by a halogen atom or —CN or interrupted by —O— or a divalent organic functional group of the formula —COO—, —CONR—, —RC=CR—, —C≡C—,



or —CO—, wherein each R independently represents hydrogen or a C_1–C_4 alkyl group, m is an integer from 0 to 4, and each E independently represents a halogen atom, —NO_2, —CN, or —R, and M represents a divalent aryl radical of the formula



wherein n is 1 or 2, or



wherein L^1 is L or —CH_2—, and A is directly bonded to a phosphorous atom of said backbone.

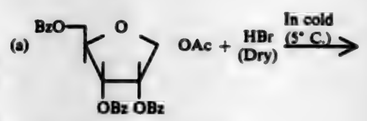
4,451,648

PROCESS FOR THE PRODUCTION OF 2-β-D-RIBOFURANOSYLTHIAZOLE-4-CARBOXAMIDE

Jack L. Parsons, East Aurora; Dan Vizine, Tonawanda, both of N.Y.; Mark Sumner, Chatham, N.J.; Suresh Marathe, Tonawanda, N.Y., and Henryk Dubicki, Lancaster, N.Y., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

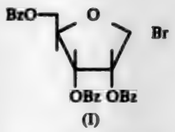
Filed Aug. 19, 1981, Ser. No. 294,368
Int. Cl.³ C07G *37/00;* C07H *37/00;* C08B *37/00*
U.S. Cl. 536—54 **8 Claims**

1. A multi-step process for the production of 2-β-D-ribofuranosylthiazole-4-carboxamide (NSC-D286193) utilizing the following steps:



Tri-O—benzoyl-α-acetyl-D-ribofuranose

-continued



2,3,5-Tri-O—benzoyl-D-ribofuranosyl bromide

(I)

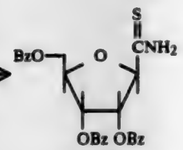
(b) (I) + $Hg(CN)_2$ —Dry CH_2Cl_2→



2,3,5-Tri-O—benzoyl-β-D-ribofuranosyl cyanide

(II)

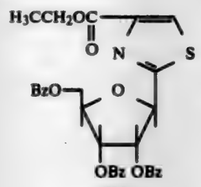
(c) (II) + H_2S →



2,5-Anhydro-3,4,6-tri-O—benzoyl-D-allonthioamide

(III)

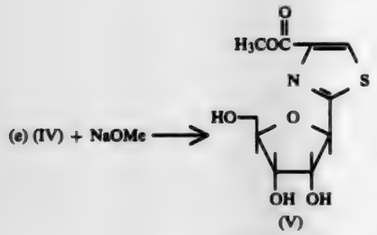
(d) (III) + $BrCH_2C(=O)COCH_2CH_3$ —Cationic exchange resin, Na+ form→



Thiazole-4-carboxylic acid, 2-(2',3',5'-tri-O—benzoyl-β-D-ribofuranosyl)-, ethyl ester

(IV)

(e) (IV) + NaOMe →

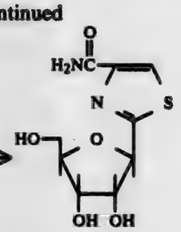


2-β-D-ribofurano-sylthiazole-4-carboxylic acid, methyl ester

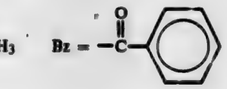
(V)

-continued

(f) (V) + NH_3/MeOH —0° C.→



2-β-D-ribofuranosyl-thiazole-4-carboxamide

Where: Ac =  Bz = 

8. The compound 2-β-D-ribofuranosylthiazole-4-carboxylic acid, methyl ester.

4,451,649

PROCESS FOR THE PRODUCTION OF HYDROXYPROPYL STARCH

Helwig Teubner, Hanau, and Wilhelm Oppermann, Bomlitz, both of Fed. Rep. of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 428,853

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1981, 3141499

Int. Cl.³ C08B 31/12

U.S. Cl. 536—111 **5 Claims**

1. A process for the production of hydroxypropyl starch having a molar substitution degree of 0.4 to 0.8, said process comprising etherifying starch in the presence of water with an excess of propylene oxide, the water content, based on propylene oxide and water, being 10–20%, by weight, and the amount of propylene oxide present being 3–10 moles per mole of starch.

4,451,650

PYRIDO[4,3-b][1,4]OXAZINES AND PYRIDO[4,3-b][1,4]THIAZINES

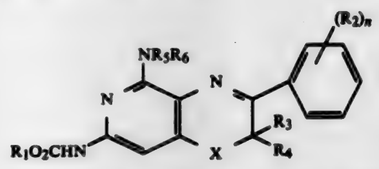
Carroll G. Temple, Jr.; John A. Montgomery; Robert D. Elliott, and Glynn P. Wheeler, all of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed Oct. 26, 1982, Ser. No. 436,667

Int. Cl.³ C07D 498/04, 513/04

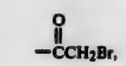
U.S. Cl. 544—105 **21 Claims**

1. 2H-Pyrido[4,3-b][1,4]oxazines and 2H-pyrido[4,3-b][1,4]thiazines having the formula:



wherein n has a value of 1, 2 or 3; X is oxygen or sulfur; R_1 is a lower alkyl group; R_2 is a member selected from the group consisting of hydrogen, alkyl radicals having from about one to about 12 carbon atoms; alkenyl radicals having from about two to about 15 carbon atoms; cycloalkyl radicals having from about three to about 20 carbon atoms; aryl, aralkyl and alkaryl radicals having from about six to about 20 carbon atoms; a halogen radical; a hydroxyl group; an amino group; an alkoxy

or aryloxy group, a carboxyl group or an alkylcarboxyl group having from about one to about 10 carbon atoms; an alkylthio group or an arylthio group having from about one to about 20 carbon atoms; a sulfonic acid group or alkyl- or arylsulfonyl group having from about one to about 20 carbon atoms; an alkyl- or arylsulfinyl group having from about one to about 20 carbon atoms; an alkyl- or aryl mono- or diamino group having froom about one to about 20 carbon atoms; a hydrocarbyl group as defined above carrying halogen, hydroxyl, amino, alkoxy or aryloxy; nitro; when taken together with the aromatic ring to which it is attached, a fused ring structure; and, when taken together with R_3, an alkylene radical containing from about one to about 12 carbon atoms; R_3 is hydrogen, methyl, phenyl or, when taken with R_2, an alkylene radical as previously defined; R_4 is hydrogen or methyl; R_3 and R_4, when taken together are the radical =O; and R_5 and R_6 are both hydrogen, or one is hydrogen and the other is the radical



or when taken together are the radical $=CHN(CH_3)_2$.

4,451,651

PREPARATION OF ISOCYANURIC ESTERS

Johannes Brand, Schalkhaar, Netherlands, assignor to Akzo NV, Arnhem, Netherlands

Filed Nov. 4, 1982, Ser. No. 439,140

Claims priority, application Netherlands, Nov. 4, 1981, 8104978

Int. Cl.³ C07D 251/34

U.S. Cl. 544—221 **5 Claims**

1. A process of preparing isocyanuric esters by catalytic isomerization of the corresponding cyanurates in the absence of a solvent that dissolves in the isocyanuric esters, characterized in that as catalyst one or more compounds of the following formulae are used:

$$[R_nNH_{4-n}]^+X^-, \quad (1)$$

wherein n=1, 2, 3 of 4,

$$[R_pPH_{4-p}]^+X^-, \quad (2)$$

wherein p=3 of 4,

$$[R'C_5H_4NR'']^+X^-, \quad (3)$$

wherein C_5H_4N is a pyridine ring,

$$[R_1R_2R_3S]^+X^-, \quad (4)$$

wherein X=halogen or hydroxide,

R=an alkyl group having 1–18 carbon atoms, an alkenyl group having 1–18 carbon atoms, a phenyl group or benzyl group, with the compounds 1 and 2 containing not more than one phenyl group or benzyl group,

R'=hydrogen, an alkyl group having 1 to 4 carbon atoms or an alkenyl group having 1 to 4 carbon atoms,

R''=an alkyl group having 1 to 18 carbon atoms, or an alkenyl group having 1 to 18 carbon atoms,

R_1, R_2 and R_3=an alkyl group having 1 to 18 carbon atoms, an alkenyl group having 1 to 18 carbon atoms or phenyl.

4,451,652

SUBSTITUTED THEOPHYLLINE SALTS

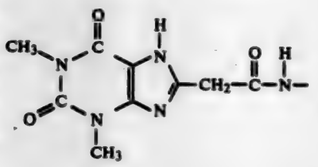
Charles A. Flentge, Vernon Hills, and Curtis L. Kirkemo, Gurnee, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 24, 1982, Ser. No. 380,981

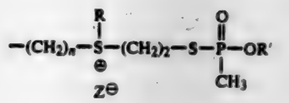
Int. Cl.³ C07F 9/65

U.S. Cl. 544—229 **5 Claims**

1. A compound of the formula:



(II)



wherein

n is an integer of from 2 to 6;

R and R' are independently C_1–C_4 alkyl; and

Z is a biologically compatible counter ion.

4,451,653

HETEROCYCLIC SUBSTITUTED TRIAZOLYL PHOSPHOROUS COMPOUNDS

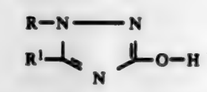
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 260,527, May 4, 1981, Pat. No. 4,400,516, which is a continuation-in-part of Ser. No. 951,923, Oct. 13, 1978, abandoned. This application Nov. 12, 1982, Ser. No. 440,934

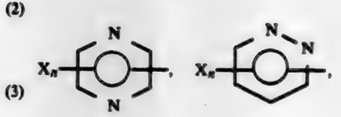
Int. Cl.³ C07D 237/30, 241/10

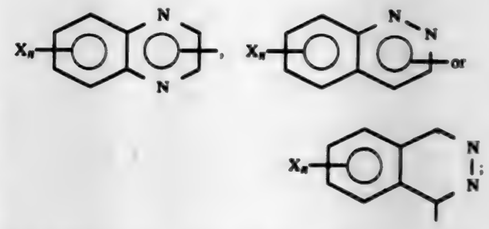
U.S. Cl. 544—238 **7 Claims**

1. A compound corresponding to the formula



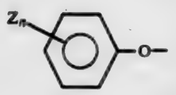
wherein R represents a nitrogen containing heterocyclic radical corresponding to the formulae





each X independently represents chloro, fluoro, bromo, nitro, alkyl of 1 to 4 carbon atoms, amino, mono- or dialkylamino wherein each alkyl group independently contains from 1 to 4

carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, cyano, trifluoromethyl, trichloromethyl, phenoxy or substituted phenoxy of the formula



wherein each Z independently represents chloro, fluoro, bromo, nitro, cyano, alkoxy of 1 to 4 carbon atoms or alkylthio of 1 to 4 carbon atoms, with the proviso that when either n is 2 or 3, all X groups are sterically compatible with each other and all Z groups are sterically compatible with each other; Y represents oxygen or sulfur; each n can independently represent an integer of from 0 to 3, inclusive; R^1 represents hydrogen, chloro, fluoro, bromo, alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, phenylthio, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, thiocyanato, trifluoromethyl, trichloromethyl, amino, mono- or dialkylamino wherein each alkyl group independently contains from 1 to 4 carbon atoms.

4,451,654

CONDITIONING OF FINELY DIVIDED CRUDE ORGANIC PIGMENTS

Fritz Graser, Ludwigshafen, and Gerhard Wickenhaeuser, Birkenheide, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 240,947, Mar. 5, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 380,042

Int. Cl.³ C09B *47/04, 47/30*

U.S. Cl. 546—34 **3 Claims**

1. A process for conditioning a crude organic pigment selected from the group consisting of phthalocyanine pigments, anthraquinone pigments, perylenetetracarboxylic acid diimides, quinophthalone pigments, indanthrone pigments, pyranthrone pigments, flavanthrone pigments, violanthrone pigments, isoviolanthrone pigments, quinacridone pigments, thioindigo pigments and indigo pigments, comprising:

recrystallizing said pigment as a finely divided material of agglomerates of a size ranging from 1–200 μm, the primary particles which constitute said agglomerates being of ≦0.2 μm, in a hot organic liquid selected from the group consisting of a C_3–C_5-alkane, a C_3–C_5-alkene and a C_1–C_3-chloroalkane in the critical or supercritical state up to 250° C.

4,451,655

PROCESS FOR PREPARING CARBOLINE DERIVATIVES AND COMPOUNDS USED IN THEIR PREPARATION

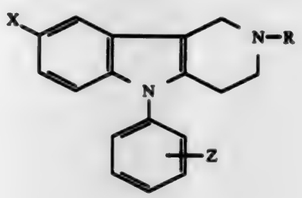
Berkeley W. Cue, Jr., Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 17, 1982, Ser. No. 378,945

Int. Cl.³ C07D *471/04*

U.S. Cl. 546—85 **14 Claims**

1. A process for preparing a 2-substituted-5-aryl-1,2,3,4-tetrahydro-γ-carboline compound of the formula:

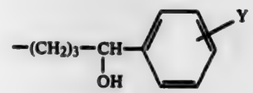


wherein

X is hydrogen, fluorine, chlorine or bromine;

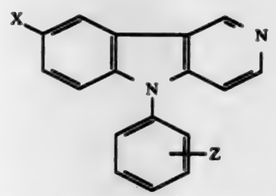
Z is hydrogen, fluorine, chlorine or methoxy; and

R is of the formula

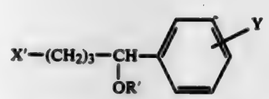


wherein Y is hydrogen, methyl, fluorine or chlorine, which comprises

(a) contacting a corresponding 5-aryl-γ-carboline of the formula



wherein X and Z are each as previously defined, in a reaction-inert polar organic aprotic solvent with at least an equimolar amount of an aralkyl halide of the formula



wherein X′ is chlorine or bromine, Y is as aforesaid and R′ is 2-tetrahydropyranyl, in the presence of a substantially equimolar amount of sodium iodide with respect to said aralkyl halide at a temperature ranging from at least about 60° C. up to the reflux temperature of the reaction mixture until the quaternization reaction to form the desired quaternary carbolinium iodide salt intermediate is substantially complete; and thereafter

(b) subjecting the quaternary carbolinium salt formed in step (a) to the reducing action of an alkali metal hydride in a reaction-inert polar organic protic solvent at a temperature that is in the range of from about 10° C. up to about 35° C. until the reduction reaction to form the desired final product is substantially complete.

4,451,656

IMIDAZOLINE ADDITION COMPOUNDS

Erwin Dietz, Kelkheim, and Albert Münkel, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

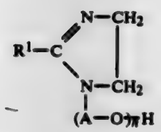
Filed Sep. 3, 1982, Ser. No. 414,813

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135327

Int. Cl.³ C07D *233/18*

U.S. Cl. 548—352 **5 Claims**

1. An addition compound, obtainable from a hydroxyalkylimidazoline of the formula



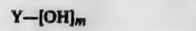
(1)

in which R^1 represents an alkyl, alkenyl or alkapolyenyl radical having 6 to 30 C atoms, A represents an alkylene radical having 2 to 6 C atoms and n represents a number from 1 to 20, a diisocyanate of the formula



(2)

wherein X represents a bivalent aromatic or araliphatic radical having 6 to 20 C atoms and a polyol of the formula



(3)

in which m represents a whole number from 2 to 6 and Y represents an aliphatic radical having at least 2 C atoms, which can be interrupted by —O—,



and —CO— groups and their combinations.

4,451,657

3,5- AND 5,5-BIS(3-INDOLYL)-2-(5H)FURANONES

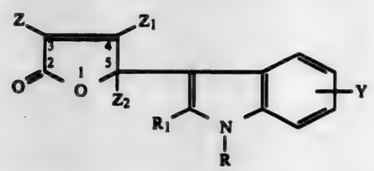
Nathan N. Crounse, Cincinnati, and Paul J. Schmidt, Sharonville, both of Ohio, assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Continuation-in-part of Ser. No. 829,002, Aug. 30, 1977, abandoned, which is a division of Ser. No. 651,607, Jan. 22, 1976, Pat. No. 4,075,224. This application Nov. 16, 1979, Ser. No. 94,794

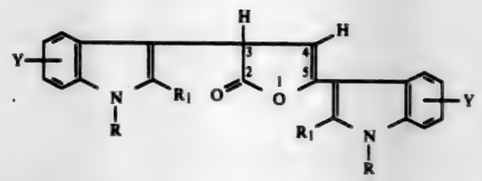
Int. Cl.³ C07D *405/07*

U.S. Cl. 548—456 **11 Claims**

1. A compound selected from the group consisting of 3-Z-4-Z_1-5-Z_2-5-(1-R-2-R_1-5/6-Y-3-indolyl)-2(5H)-furanones having the formula

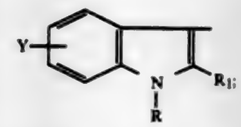


and 3,5-bis(1-R-2-R_1-5/6-Y-3-indolyl)-2(3H)-furanones having the formula



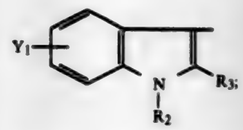
wherein:

Z when Z_1 is chlorine and Z_2 is other than hydrogen, represents chlorine, or when Z_1 and Z_2 are hydrogen, represents a monovalent 1-R-2-R_1-5/6-Y-3-indolyl moiety of the formula



Z_1 represents hydrogen or when Z is chlorine and Z_2 is other than hydrogen, represents chlorine;

Z_2 represents hydrogen or when Z is chlorine, a monovalent 1-R_2-2-R_3-5/6-Y_1-3-indolyl moiety of the formula



R represents hydrogen, non-tertiary alkyl of one to eight carbon atoms, alkenyl of two to four carbon atoms, benzyl or benzyl substituted in the benzene ring by one or two of halo or alkyl of one to three carbon atoms;

R_2 represents non-tertiary alkyl of one to eight carbon atoms, alkenyl of two to four carbon atoms, benzyl or benzyl substituted in the benzene ring by one or two of halo or alkyl of one to three carbon atoms;

R_1 and R_3 represent hydrogen, alkyl of one to three carbon atoms or phenyl; and

Y and Y_1 represent one or two of hydrogen, alkyl of one to three carbon atoms, alkoxy of one to three carbon atoms, halo or nitro.

4,451,658

PROCESS FOR PRODUCING SUBSTITUTED PYRROLES

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 209,950, Nov. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 203,052, Nov. 3, 1980, abandoned. This application Dec. 9, 1982, Ser. No. 448,314

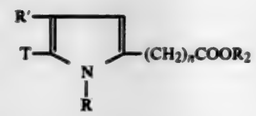
Int. Cl.³ C07D *207/333*

U.S. Cl. 548—562 **30 Claims**

1. A process which comprises contacting one molar proportion of a 2,3-disubstituted pyrrole corresponding to the formula:



with a mixture of about 2–15 molar proportions of a strong mineral acid and amounts of an R_1OH alkanol and water such as to provide an acid/alkanol mol ratio of about 0.5–6/1 and an acid/water mol ratio of about 0.3–10/1 at a temperature of about 40°–100° C., so as to form a pyrrole monoester corresponding to the formula:



in which formulas n is an integer of 1–6; R, R', R_1, and R_2 are independently selected from lower alkyl groups; T is hydrogen or an aroyl group; and X and Z are independently selected from —COOH, —$COOR_3$, and —COOM, wherein R_3 is a lower alkyl group and M is sodium or potassium.

4,451,659

METHOD OF MAKING KNOWN AND PREVIOUSLY UNAVAILABLE PYRYLIUM SALTS

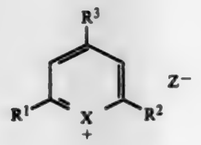
Kevin T. Potts, Schenectady, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Apr. 2, 1982, Ser. No. 364,893

Int. Cl.³ C07D *309/32*; C07F *5/02*

U.S. Cl. 549—4 **11 Claims**

1. A method of preparing a salt having the general formula:



where X is oxygen;

R^1 and R^2 represent a branched or unbranched alkyl radical chain up to 15 carbon atoms; an aromatic group optionally substituted by alkyl radicals with from 1 to about 15 carbon atoms, alkoxy radicals having 1 to about 4 carbon atoms, or substituted amino radicals with 1 to 2 carbon radicals containing 1 to about 4 carbon atoms; a heterocyclic group optionally substituted by alkyl radicals with about 1 to 15 carbon atoms, alkoxy radicals having from 1 to about 4 carbon atoms or substituted amino radicals having 1 to 2 carbon radicals containing 1 to about 4 carbon atoms; 3-bromo phenyl; 5-chloro-2-thienyl; or 5-bromo-2-thienyl;

R^3 is a thioalkyl radical with from 1 to about 4 carbon atoms, thiobenzyl, thioaryl, thiocycloalkyl radicals and thioheteryl radicals; and

Z^- is an anionic function;

the method comprising:

condensing a methyl ketone with a carbon disulfide in the presence of sodium hydride;

treating the resulting product with alkyl halides or alkyl sulfate containing about 1 to 4 carbon atoms, to form α-oxoketenedithioacetal;

condensing the α-oxoketenedithioacetal with the same or another methyl ketone in the presence of two equivalents of a strong base to form a 1,5-enedione with an acid of the anionic function to form a salt.

4,451,660

NITROTHIOPHENES, FUNGICIDAL AND/OR BACTERICIDAL COMPOSITIONS CONTAINING NITROTHIOPHENES, AND USE THEREOF

Hendrik Dolman, and Johannes Kuipers, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

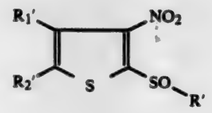
Continuation-in-part of Ser. No. 217,172, Dec. 16, 1980, abandoned. This application Mar. 25, 1982, Ser. No. 361,758

Claims priority, application Netherlands, Dec. 19, 1979, 7909124

Int. Cl.³ C07D *333/00*; A01N *43/02*

U.S. Cl. 549—63 **6 Claims**

1. A compound of the formula



wherein

R' is C_1–C_4 alkyl,

R_1' is a hydrogen atom or C_1–C_4 alkyl, and

R_2' is a hydrogen atom or an acetyl group.

4,451,661

PREPARATION OF GAMMA-PYRONE INTERMEDIATES

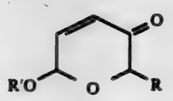
Paul D. Weeks, Gales Ferry, and Robert P. Allingham, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 371,932, Apr. 26, 1982, Pat. No. 4,390,709, which is a division of Ser. No. 741,112, Nov. 11, 1976, Pat. No. 4,342,697, which is a continuation-in-part of Ser. No. 608,452, Aug. 28, 1975, abandoned. This application Mar. 24, 1983, Ser. No. 478,507

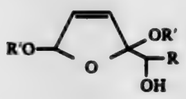
Int. Cl.³ C07D *309/22*

U.S. Cl. 549—417 **6 Claims**

1. A process for preparing a compound of the formula:



wherein R is hydrogen, lower alkyl of 1 to 6 carbon atoms, lower alkenyl of 2 to 6 carbon atoms, phenyl or benzyl; and R' is lower alkyl of 1 to 6 carbon atoms which comprises contacting a compound of the formula



wherein R and R' are defined as above at −10° to 50° C. with an essentially anhydrous acid selected from the group consisting of formic acid, trifluoroacetic acid, p-toluenesulfonic acid, methanesulfonic acid, citric acid, oxalic acid, chloroacetic acid, sulfuric acid, hydrochloric acid, phosphoric acid and hydrofluoric acid.

4,451,662

PROCESS FOR PREPARING 2,3-DIHYDRO-2,2-DIMETHYL-7-HYDROXYBENZOFURAN

Tsukasa Maekawa, and Takeshi Gondo, both of Tokushima, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

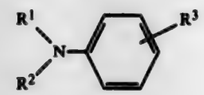
Filed Jun. 11, 1982, Ser. No. 387,604

Claims priority, application Japan, Sep. 1, 1981, 56-138240; Apr. 7, 1982, 57-58745

Int. Cl.³ C07D *307/86*

U.S. Cl. 549—462 **10 Claims**

1. A process for preparing 2,3-dihydro-2,2-dimethyl-7-hydroxybenzofuran which comprises subjecting o-methallyloxyphenol to a rearrangement and cyclization in the presence of, as a catalyst, aluminum halide and N-substituted aniline derivative of the formula



(I)

wherein

R^1 and R^2 are each alkyl having 1 to 6 carbon atoms or phenyl, or are joined together to form alkylene having 5 to 7 carbon atoms,

R^3 is hydrogen or alkyl having 1 to 3 carbon atoms, or a complex of both these compounds.

4,451,663

CARBAMATE INTERMEDIATES FOR BRONCHOSPASMOLYTICS

O. A. Torsten Olsson; Leif A. Svensson, both of Lund, and Kjell I. L. Wetterlin, Sandby, all of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

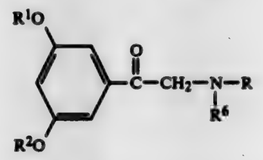
Division of Ser. No. 279,672, Jul. 1, 1981, Pat. No. 4,419,364. This application Jul. 6, 1982, Ser. No. 395,650

Claims priority, application United Kingdom, Jul. 9, 1980, 8022439; May 29, 1981, 8116441

Int. Cl.³ C07C *125/04*, *125/067*

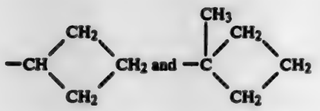
U.S. Cl. 560—29 **2 Claims**

1. A compound of the formula



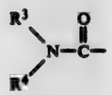
wherein

R is selected from the group consisting of $—C(CH_3)_3$,



R^1 is selected from the group consisting of H and R^2,

R^2 represents the radical of the formula

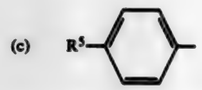


wherein

R^3 is selected from the group consisting of

(a) H

(b) alkyl groups containing 1–3 carbon atoms

(c) 

wherein R^5 is selected from the group consisting of

(a) OH

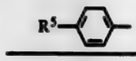
(b) alkoxy groups containing 1–3 carbon atoms and

wherein

R^4 is selected from the group consistin of

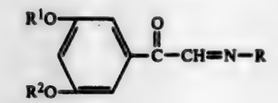
(a) H

(b) alkyl groups containing 1–3 carbon atoms with the proviso that R^3 and R^4 are combined as follows:

when R^3 is	then R^4 is
H	H
alkyl group of 1–3 carbon atoms	H or an alkyl group of 1–3 carbon atoms
	H

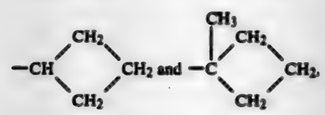
wherein R^6 is hydrogen or a mono or bicyclic aralkyl group containing not more than 11 carbon atoms.

2. A compound of formula



wherein

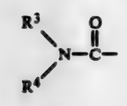
R is selected from the group consisting of $—C(CH_3)_3$,



wherein

R^1 is selected from the group consisting of H and R^2,

R^2 represents the radical of the formula

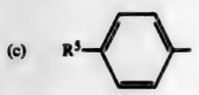


wherein

R^3 is selected from the group consisting of

(a) H

(b) alkyl groups containing 1–3 carbon atoms

(c) 

wherein R^5 is selected from the group consisting of

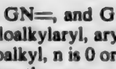
(a) OH

(b) alkoxy groups containing 1-3 carbon atoms and wherein

R^4 is selected from the group consisting of

(a) H

(b) alkyl groups containing 1-3 carbon atoms with the proviso that R^3 and R^4 are combined as follows:

when R^3 is	then R^4 is
H	H
alkyl group of 1-3 carbon atoms	H or an alkyl group of 1-3 carbon atoms
	H

4,451,664

PROCESS OF MANUFACTURING DIARYL ESTERS OF DICARBOXYLIC ACIDS

Gautam R. Ranade, Grand Island, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,792

Int. Cl.³ C07C *67/08*

U.S. Cl. 560—86 **10 Claims**

1. In a process for preparing esters which comprises reacting a monohydroxy aromatic compound with at least one dicarboxylic acid in a reactor having a distillation means, said acid being represented by the formula:



wherein X is oxygen or sulfur, Z is alkylene, —Ar— or —Ar—Y—Ar— wherein Ar is aromatic, Y is alkylene of 1 to 10 carbon atoms, haloalkylene, —O—, —SO—, $-SO_2-$, $-SO_3-$, —CO—,

or GN=, and G is alkyl, haloalkyl, aryl, haloaryl, alkylaryl, haloalkylaryl, arylalkyl, haloarylalkyl, cycloalkyl and halocycloalkyl, n is 0 or 1, and R_1 and R_2 are independently selected from the group consisting of hydrogen and lower alkyl, said reaction being conducted at a temperature between about 220° to about 300° C., continuously removing a by-product of said reaction comprising water and/or lower alkyl alcohol(s) in admixture with said monohydroxy aromatic compound from said reactor through said distillation means, and supplying to said reactor a make-up amount of said monohydroxy aromatic compound, the improvement which comprises using as said make-up material a monohydroxy aromatic compound containing no more than about 100 ppm of water.

4,451,665

PROCESS FOR DIMERIZING ACRYLATES AND METHACRYLATES

William A. Nugent, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1982, Ser. No. 454,575

Int. Cl.³ C07C *67/343*

U.S. Cl. 560—202 **10 Claims**

1. Catalytic dimerization process comprising contacting, at about 0° to about 150° C., a lower alkyl acrylate or lower alkyl methacrylate, with lower alkyl being alkyl of 1 to 8 carbon atoms, with the catalyst which is the palladium complex of the formula $(RCN)_4PdX_2$ wherein R is hydrocarbyl which contains no carbon-carbon unsaturation other than aromatic unsaturation and X is an anion which is incapable of displacing RCN from the cationic moiety of the palladium complex, to produce dimer of the lower alkyl acrylate or methacrylate.

4,451,666

SYNTHESIS OF OXALATE ESTERS BY THE OXIDATIVE CARBONYLATION OF ALCOHOLS WITH A HETEROGENEOUS MANGANESE PROMOTED PD-V-P CATALYST

John A. Sofranko, and Anne M. Gaffney, both of West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 6, 1982, Ser. No. 405,911

Int. Cl.³ C07C *67/36*

U.S. Cl. 560—204 **13 Claims**

1. A process for the preparation of dialkyl oxalates by the oxidative carbonylation of a liquid saturated monohydric aliphatic or alicyclic alcohol containing from 1 to 20 carbon atoms with a mixture of carbon monoxide and oxygen or an oxygen-containing gas at a temperature of from about 40° C. to 150° C. and a total pressure of between about 500 psig and 6000 psig in the presence of a catalytic amount of an essentially insoluble tetra-metallic-containing heterogeneous catalyst comprising palladium or a salt thereof in combination with a crystalline vanadium oxide-phosphorus oxide-manganese oxide containing compound said catalyst containing as the metals an atomic ratio of palladium to vanadium to phosphorus to manganese of from about 0.003:1:0.5:0.1 to about 0.32:1:5:5 and recovering the desired dialkyl oxalate.

4,451,667

PREPARATION OF ACRYLATE ESTERS FROM VINYL HALIDES AND ORGANIC CARBONATES

Robert T. Klun, and Thomas W. Regulski, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 26, 1982, Ser. No. 411,725

Int. Cl.³ C07C *67/36*

U.S. Cl. 560—207 **9 Claims**

1. A process for the preparation of acrylate esters comprising contacting a vinyl halide with carbon monoxide and an organic carbonate in the presence of an effective amount of a group VIII metal catalyst.

4,451,668

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER TRANSITION METAL BORATES IN THE PRESENCE OF ACETIC ANHYDRIDE

John R. Sanderson, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,664

Int. Cl.³ C07C *67/05*

U.S. Cl. 560—246 **17 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and acetic anhydride, wherein the improvement comprises conducting the reaction in the presence of a transition metal borate catalyst.

4,451,669

POLYIMIDE DERIVATIVES HAVING TERMINAL ACETYLENIC GROUPS

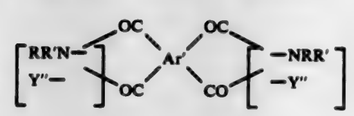
Gaetano F. D'Alelio, South Bend, Ind., and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Division of Ser. No. 115,485, Jan. 25, 1980, Pat. No. 4,321,198. This application Nov. 16, 1981, Ser. No. 322,079

Int. Cl.³ C07C *101/42*

U.S. Cl. 562—442 **14 Claims**

1. A hemi-acid compound of the formula:



wherein:

Ar′ is a tetravalent aromatic benzenoid radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical except that in the case of the Ar′ being a naphthalene radical one or both pairs of the carbonyl groups may be attached to peri carbon atoms;

R′ is an organic moiety containing 2 to 14 carbon atoms and having a terminal —C≡CH structure, said organic moiety consisting of a hydrocarbon radical or two or three hydrocarbon radicals joined by —O—, $-SO_2-$ or —COO— groups;

R is an organic moiety containing one to 20 carbon atoms; said organic moiety consisting of a hydrocarbon radical or two or three hydrocarbon radicals joined by —O—, $-SO_2-$ or —COO— groups;

Y″ is —OH or X; and

X is a halogen.

4,451,670

PREPARATION OF ISOBUTYRYL FLUORIDE

Dace Grote; Robert A. Grimm, and Richard V. Norton, all of Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 2, 1982, Ser. No. 438,443

Int. Cl.³ C07C *51/10, 51/04*

U.S. Cl. 562—606 **3 Claims**

1. The process for preparing isobutyryl fluoride consisting of contacting isopropyl fluoride, carbon monoxide and anhydrous hydrogen fluoride at a temperature in the range of from 0° C. to 80° C. and at a pressure in the range of from 150 to 700 psi.

4,451,671

CATIONIC ETHYLENE OXIDE/PROPYLENE OXIDE AND ETHYLENE OXIDE/BUTYLENE OXIDE POLYMERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Helmut Diery, Kelkheim; Norbert Wester, Hofheim am Taunus, and Martin Hille, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

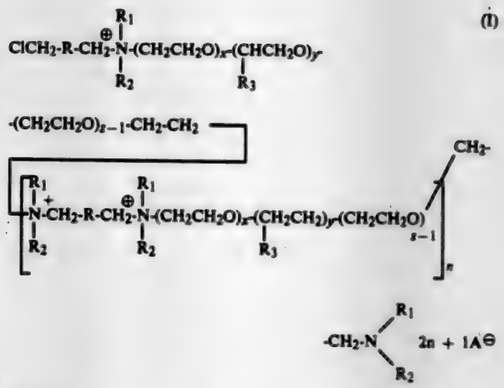
Filed Aug. 30, 1982, Ser. No. 412,527

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136212

Int. Cl.³ C07C *91/26*

U.S. Cl. 564—286 **2 Claims**

1. A compound of the formula



wherein R is phenylene, R_1 and R_2 denote C_1-C_4-alkyl, R_3 denotes methyl or ethyl, x and z together denote a number from 2 to 360, y denotes a number from 15 to 70, preferably n denotes a number from 1 to 10 and A^- denotes an anion.

4,451,672

PREPARATION OF KETONES FROM 1,2-EPOXIDES

Roger A. Grey, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 31, 1983, Ser. No. 462,253

Int. Cl.³ C07C *45/58*

U.S. Cl. 568—384 **2 Claims**

1. An improved process for the preparation of methyl ethyl ketone by adding 1,2-butylene oxide to an alkanol solution of dicobalt octacarbonyl, thereby effecting a rearrangement of the epoxide to the ketone, the improvement comprising using tertiary butyl alcohol as the alkanol solent.

4,451,673

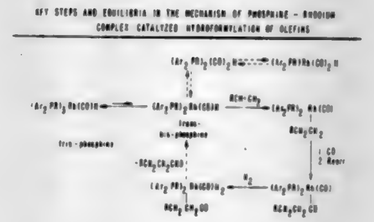
TRIHYDROCARBYL SILYL SUBSTITUTED ALKYL DIARYL PHOSPHINE TRANSITION METAL COMPLEXES AND THEIR USE AS HOMOGENEOUS ISOMERIZATION HYDROFORMYLATION CATALYSTS

Alexis A. Oswald, Mountainside, N.J.; Torris G. Jermansen, Staten Island, N.Y.; Andrew A. Westner, Paramus, and I-Der Huang, Upper Saddle River, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 295,193, Aug. 21, 1981, which is a continuation-in-part of Ser. No. 192,810, Oct. 1, 1980, which is a division of Ser. No. 11,238, Feb. 12, 1979, Pat. No. 4,298,541. This application Sep. 29, 1982, Ser. No. 426,662

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **5 Claims**



1. A combined isomerization-hydroformylation process for converting an internal C_n olefin to C_{n+1} terminal aldehyde comprising reacting said internal C_n olefin with CO and H_2 at a temperature in the range of about 150° and 200° C. and a total

pressure in the range of about 500 to 2000 psia in the presence of a homogeneous, non-charged catalyst complex of the formula:

$$[(Ar_2PQ)_4SiR_{4-y}]_g(CoX_n)_s$$

wherein Ar is a substituted or unsubstituted C_6 to C_{10} aromatic radical, Q is an unsubstituted or substituted C_1 to C_{30} saturated open chain alkylene radical; R is an unsubstituted or monosubstituted C_1 to C_{10} hydrocarbyl radical, X is an anion or organic ligand, excluding halogen, satisfying the valence and coordination sites of the metal, y is 1 to 6, g is 1 to 6 with the proviso that g times y is 1 to 6, g is 1 to 6, n is 2 to 6, s is 1 to 3, said substituents on said aromatic radical, on said alkylene radical and on said hydrocarbyl radical, being chemically unreactive with materials used in and the products of the hydroformylation reaction.

4,451,674

SUBSTITUTED BENZENE DERIVATIVES HAVING AT LEAST ONE BENZENE RING SUBSTITUTED BY 3,3,3-TRIFLUOROPROPYL GROUP AND PROCESS FOR THEIR PRODUCTION

Yoshiro Kobayashi, Tokyo; Itsumaro Kumadaki, Hachioji; Masaaki Takahashi, Tokyo, and Takashi Yamauchi, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

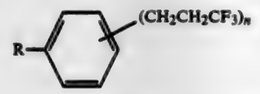
Continuation-in-part of Ser. No. 233,714, Feb. 12, 1981, abandoned. This application Aug. 30, 1982, Ser. No. 412,963

Claims priority, application Japan, Feb. 22, 1980, 55-21094; Nov. 21, 1980, 55-164435; Dec. 29, 1980, 55-186563; Dec. 29, 1980, 55-186564

Int. Cl.³ C07C *43/263, 21/24, 17/32*

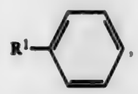
U.S. Cl. 568—639 **16 Claims**

1. A trifluoropropyl derivative of mono-substituted benzene represented by the general formula:



wherein R is halogen atom, trifluoromethyl-, n-octyl-, n-dodecyl- or phenoxy group not substituted or mono-substituted by 3,3,3-trifluoropropyl group, and n is an integer of 1,2 or 3, with the proviso that the total number of 3,3,3-trifluoropropyl group in said trifluoropropyl derivative of mono-substituted benzene is at most 3.

15. A process for producing a substituted benzene derivative having at least one benzene ring substituted by at least one 3,3,3-trifluoropropyl group which comprises bringing mono-substituted benzene represented by the formula



wherein R^1 is halogen atom, trifluoromethyl-, n-octyl, n-dodecyl or a phenoxy group, into reaction with 3,3,3-trifluoropropylene in the presence of an acid catalyst selected from the group consisting of hydrogen fluoride, boron trifluoride and a mixture thereof.

4,451,675

PREPARATION OF ALKYLIDENEBIS(DIBROMOPHENOL)

Charles T. Bounds, Magnolia, Ark., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 16, 1982, Ser. No. 398,747

Int. Cl.³ C07C *39/16, 37/62*

U.S. Cl. 568—726 **11 Claims**

1. A process for preparing alkylidenebis(dibromophenol) comprising

(a) dissolving alkylidenediphenol in between about 17 and 25 moles of methanol for each mole of alkylidenephenol wherein the methanol has less than about 5 percent by weight of water therein;

(b) adding to the solution between about 4.0 and 4.1 moles of bromine per mole of alkylidenediphenol at an elevated temperature wherein the bromine is added over a time period of less than about 0.5 hours;

(c) adding water to precipitate the alkylidenebis(dibromophenol) remaining in solution after the addition of the bromine in step (b) is completed;

(d) separating the alkylidenebis(dibromophenol) from the methanol solution wherein the alkylidenebis(dibromophenol) prepared has an APHA color number of 20 or less.

4,451,676

CHEMICAL PROCESS FOR THE PREPARATION OF PARA-ALKENYL PHENOL

Charles R. Everly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 27, 1982, Ser. No. 412,151

Int. Cl.³ C07C *39/18*

U.S. Cl. 568—780 **18 Claims**

1. A process for preparing a para-alkenyl phenol which comprises reacting at a temperature of from about 50° C. to about 250° C. an alkylated phenol having a replaceable hydrogen atom at the 4-position and at least one hydrocarbyl substituent ortho to the hydroxy group with an aliphatic aldehyde having from 2 carbon atoms up to at least 20 carbon atoms in the molecule and a secondary amine and separating the para-alkenyl phenol from the reaction mixture.

4,451,677

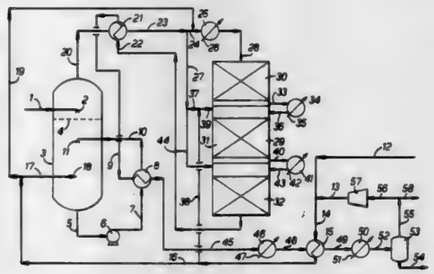
MULTISTAGE ALDEHYDE HYDROGENATION

Michael W. Bradley, Marton; Andrew G. Hiles, Sutton, and John W. Kippax, Ingleby Greenhow, all of England, assignors to Davy McKee (London) Limited, London, England

Continuation-in-part of Ser. No. 294,520, Aug. 20, 1981, abandoned. This application Aug. 20, 1982, Ser. No. 409,931

Int. Cl.³ C07C *29/14*

U.S. Cl. 568—881 **37 Claims**



1. A process for hydrogenating an aldehyde to a corresponding alcohol which comprises providing a plurality of adiabatically operated catalytic stages arranged one after another, including a first catalytic stage and one or more other catalytic stages including a final catalytic stage, each catalytic stage containing a charge of a hydrogenation catalyst effective for vapour phase catalytic hydrogenation of aldehydes, supplying to the first catalytic stage at a temperature at least as high as the threshold temperature for the hydrogenation reaction a first vaporous mixture comprising vaporous aldehyde and excess hydrogen, allowing catalytic hydrogenation to occur substantially adiabatically in the first catalytic stage so as to convert to corresponding alcohol substantially all aldehyde supplied to the first catalytic stage, supplying to the, or to each, other catalytic stage a vaporous mixture comprising (a) a substantially aldehyde free intermediate product mixture comprising unreacted hydrogen and corresponding alcohol recovered from the preceding catalytic stage and (b) supplementary vaporous material that is richer in aldehyde than the first vaporous mixture and is selected from vaporous aldehyde and mixtures of vaporous aldehyde with hydrogen at a hydrogen:aldehyde molar ratio less than that of the first vaporous mixture, the vaporous mixture supplied to the, or to each, other catalytic stage being in each case at a temperature at least as high as the threshold temperature for the hydrogenation reaction, allowing catalytic hydrogenation to occur substantially adiabatically in the, or in each, other catalytic stage, thereby to convert to corresponding alcohol substantially all aldehyde supplied to that stage, and recovering from the final catalytic stage a substantially aldehyde-free vaporous reaction mixture containing corresponding alcohol.

4,451,678

PROCESS FOR PRODUCING ETHANOL

Nobuo Isogai; Motoyuki Hosokawa; Takashi Okawa; Natsuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,267

Claims priority, application Japan, Apr. 16, 1982, 57-62345

Int. Cl.³ C07C *31/08, 29/00*

U.S. Cl. 568—902 **9 Claims**

1. A process for producing ethanol which comprises reacting methanol, carbon monoxide and hydrogen in the presence of (a) a catalyst comprising cobalt or a cobalt compound and an alkyl phosphine as an effective component and (b) a co-catalyst comprising hydrochloric acid and in the absence of an iodide.

4,451,679

ALCOHOLS AND ALDEHYDES PREPARED FROM OLEFINS AND SYNTHESIS GAS

John F. Knifton, Austin; Jiang-Jen Lin, Round Rock; Robert A. Grigsby, Jr., Georgetown, and Walter H. Brader, Jr., Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,812

The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

Int. Cl.³ C07C *27/22*

U.S. Cl. 568—909 **28 Claims**

1. An oxo process for preparing alcohols and aldehydes, particularly aliphatic alcohols which comprises the steps of contacting a variety of C_2–C_{30} terminal and internal olefins plus synthesis gas with a catalyst system comprising a ruthenium-containing compound derivative dispersed in low-melting quaternary compound selected from the group consisting of quaternary phosphonium bases, quaternary phosphonium salts, quaternary ammonium bases and quaternary salts and heating resultant reaction mixture under a pressure of 100 psi or greater at a temperature of at least 50° C.

4,451,680

ALCOHOLS PREPARED FROM OLEFINS AND SYNTHESIS GAS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,813

The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

Int. Cl.³ C07C *27/22*

U.S. Cl. 568—909 **23 Claims**

1. An oxo process for preparing alcohols and aldehydes, particularly aliphatic alcohols which comprises the steps of contacting a variety of C_2–C_{30} terminal and internal olefins plus synthesis gas with a catalyst system comprising a ruthenium-containing compound derivative in conjunction with one or more bidentate or multidentate phosphine promoters dispersed in a low-melting quaternary phosphinium salt, and heating the resultant reaction mixture under a pressure of 100 psi or greater at a temperature of at least 50° C.

4,451,681

METHODS OF PREPARING PENTANITROTOLUENE

Ronald L. Atkins; Richard A. Hollins; William P. Norris; Arnold T. Nielsen, all of Ridgecrest, Calif., and William S. Wilson, Greensborough, Australia, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1983, Ser. No. 456,672

Int. Cl.³ C07C *79/10*

U.S. Cl. 568—932 **12 Claims**

1. A process for preparing pentanitrotoluene comprising the steps of:

preparing an aminodinitrotoluene from a precursor;

nitrating said aminodinitrotoluene to form a nitramine;

converting said nitramine to an aminotetranitrotoluene; and

oxidizing said aminotetranitrotoluene to form pentanitrotoluene.

4,451,682

PROCESS FOR THE PREPARATION OF TRUE ACETYLENE HYDROCARBONS HAVING A PERFLUORINATED CHAIN

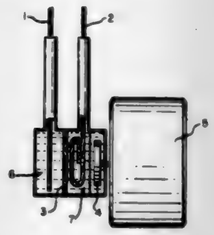
Patrick Calas, Montpellier; Patrice Moreau, Saint Gely Du Fesc, and Auguste Commeyras, Clapiers, all of France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Dec. 2, 1982, Ser. No. 446,387

Claims priority, application France, Dec. 29, 1981, 81 24364

Int. Cl.³ C07C *17/33*

U.S. Cl. 570—142 **4 Claims**



1. Process for the preparation of true acetylene hydrocarbons with a perfluoroalkyl chain comprising dehydroiodinating the trans iodohydrin



wherein R_F is a straight or branched perfluoroalkyl chain, C_nF_{2n+1}—, n is 1 to 20, and R and R′ are identical or different alkyl radicals in the presence of alkali metal hydroxide in an alcohol medium to obtain the corresponding acetylenic alcohol, and distillating the acetylenic alcohol in the presence of solid alkali metal hydroxide to obtain $R_FC{\equiv}CH$.

4,451,683

CATALYST, CATALYST SUPPORT AND OXYCHLORINATION PROCESS

Phineas Davies, Middlesbrough; James R. Jennings, Yarm, and Jack Wolstenholme, Northwich, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jan. 8, 1982, Ser. No. 337,998

Claims priority, application United Kingdom, Jan. 15, 1981, 8101137; Jul. 14, 1981, 8121714

Int. Cl.³ C07C *17/02*

U.S. Cl. 570—224 **13 Claims**

1. An oxychlorination catalyst comprising a copper compound, magnesium oxide and aluminium oxide, characterised in that the copper compound is present as a distinct phase on a support comprising magnesium oxide and aluminium oxide, at least part of said magnesium oxide being in chemical combination with said alumina as a result of calcination of said support at a temperature in the range 400°-900° C.

4,451,684

CO-OLIGOMERIZATION OF OLEFINS

Joseph Z. Pasky, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 27, 1982, Ser. No. 402,490

Int. Cl.³ C07C *3/02*

U.S. Cl. 585—329 **5 Claims**

1. A process for the preparation of C_{20}–C_{40} branched-chain olefins by the co-oligomerization of a propylene oligomer feedstock having from 12 to 18 carbon atoms with C_5–C_6 olefins which comprises:

(a) contacting the propylene oligomer feedstock having from 12 to 18 carbon atoms with a C_5–C_6 olefin feedstock in a reaction zone in the presence of a boron trifluoride-alkanol catalyst;

(b) maintaining the temperature in the reaction zone between about 0° C. and 80° C.; and

(c) maintaining the pressure in the reaction zone between about 0 psig and 200 psig.

4,451,685

PROCESS TO CONVERT C_2-C_3 OLEFINS TO A GASOLINE BLENDING STOCK

Thomas D. Nevitt, Naperville, and Norman F. Jerome, Elmhurst, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 422,744, Sep. 24, 1982, abandoned. This application Apr. 15, 1983, Ser. No. 485,228

Int. Cl.³ C07C *3/00, 3/03, 3/62*

U.S. Cl. 585—415 **15 Claims**

1. A process to convert C_2–C_3 olefin to gasoline blending stock products comprising contacting C_2–C_3 olefin with an AMS-1B crystalline borosilicate catalyst composition which is in the hydrogen form or onto which has been placed one or more catalytically active materials selected from the group consisting of copper, lanthanum and zinc at a temperature of about 300° to about 500° C., a pressure of about 2 to about 40 atomospheres, a hydrogen to hydrocarbon molar ratio of 0.1 to about 10 and a weight hourly space velocity of about 0.3 to about 5 hr^{-1}.

4,451,686

DEHYDROGENATION PROCESS

Georges E. M. J. De Clippeleir; Raymond M. Cahen, both of Brussels, and Francisco A. Martins Mendes Cerejo, Ecaussinnes, all of Belgium, assignors to Cosden Technology, Inc., Dallas, Tex.

Filed May 9, 1983, Ser. No. 492,527

Int. Cl.³ C07C *5/36*

U.S. Cl. 585—444 **22 Claims**

1. A process for producing vinylaromatic hydrocarbons by dehydrogenation of alkylaromatic hydrocarbons on a crystalline silica which has been calcined under inert atmosphere and which contains from about 0.05 to about 1 wt% of alkali metal oxides.

4,451,687

CATALYST FOR THE HYDRODEALKYLATION OF ALKYLAROMATIC COMPOUNDS

Francis P. Daly, Haddonfield, N.J., and Frederick C. Wilhelm, West Chester, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 395,192, Jul. 6, 1982. This application Oct. 7, 1983, Ser. No. 540,214

Int. Cl.³ C07C *3/58*

U.S. Cl. 585—489 **10 Claims**

1. A process for the hydrodealkylation of an alkylaromatic hydrocarbon to the aromatic hydrocarbon which comprises contacting an alkylaromatic hydrocarbon feed stream with hydrogen under hydrodealkylation conversion conditions in the presence of a catalyst comprising a gamma-alumina impregnated with about 8 to 12 wt% chromium oxide and about 0.3 to 0.6 wt% sodium oxide, the catalyst having a surface area from 175 to 275 m^2/g and a pore volume from 0.05 to 1.2 cc/g.

4,451,688

PROCESS FOR PREPARING POLYOLEFINS

Nobuyuki Kuroda, Yokohama; Toru Nakamura, Kawasaki; Yutaka Shikatani, Yokohama; Kazuo Matsuura, Tokyo, and Mituji Miyoshi, Fujisawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,829

Claims priority, application Japan, Dec. 3, 1981, 56-193687; Dec. 28, 1981, 56-209878

Int. Cl.³ C07C *3/21, 3/10*

U.S. Cl. 585—524 **9 Claims**

1. A process for preparing a polyolefin, characterized by polymerizing at least one olefin in the presence of a catalyst, said catalyst comprising the combination of:

[I] a solid substance obtained by the reaction of at least the following two components:

(i) at least one magnesium compound represented by the general formula $R^1_m(OR^2)_nMgX_{2-m-n}$ wherein R^1 and R^2 are each a hydrocarbon radical having 1 to 24 carbon atoms, X is a halogen atom, m is $0 \leqq m \leqq 2$ and n is $0 \leqq n \leqq 2$, provided $0 \leqq m+n \leqq 2$, and

(ii) a titanium compound and/or a vanadium compound;

[II] a silicon compound represented by general formula $R'_mSi(OR'')_nX_{4-m-n}$ wherein R′ and R″ are each hydrocarbon radical having 1 to 24 carbon atoms, X is a halogen atom, m is $0 \leqq m < 4$ and n is $0 < n \leqq 4$, provided $0 < m+n \leqq 4$; and

[III] an organometallic compound, wherein said catalyst comprises a product obtained by pre-reacting said silicon compound [II] and said organometallic compound [III].

4,451,689

CO-DIMERIZATION OF OLEFINS

Joseph Z. Pasky, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 27, 1982, Ser. No. 402,492

Int. Cl.³ C07C *3/02*

U.S. Cl. 585—525 **7 Claims**

1. A process for the preparation of C_{18}–C_{42} branched-chain olefins by the co-dimerization of C_9–C_{21} branched-chain internal olefins which comprises:

(a) contacting a low molecular weight propylene oligomer feedstock having from 9 to 21 carbon atoms in a reaction zone with a catalyst selected from the group consisting of hydrogen fluoride, and aluminum chloride;

(b) maintaining the temperature in the reaction zone between about 0° C. and 75° C.; and

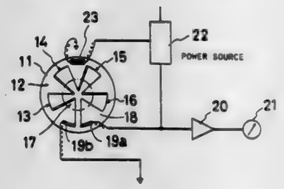
(c) maintaining the pressure in the reaction zone between about 0 psig to about 100 psig.

4,451,690

METHOD OF COMPENSATING A TEMPERATURE OF A THERMOPILE

Masaharu Ishida, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Aug. 30, 1982, Ser. No. 413,063
Claims priority, application Japan, Sep. 23, 1981, 56-151115
Int. Cl.³ H01L *35/34*
U.S. Cl. 136—201 1 Claim



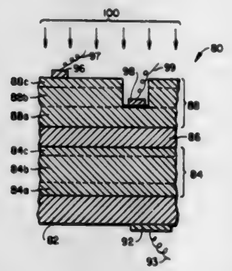
1. A temperature compensating method for a thermopile, wherein a heat sensitive portion is cooled or heated by Peltier's effect owing to an electric current therethrough from the outside and said electric current passing through said thermopile is simultaneously controlled in dependence upon a circumferential temperature of said thermopile.

4,451,691

THREE-TERMINAL TERNARY III-V MULTICOLOR SOLAR CELLS AND PROCESS OF FABRICATION

Lewis M. Fraas, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 352,680, Feb. 26, 1982, Pat. No. 4,404,421. This application Sep. 27, 1982, Ser. No. 424,937
The portion of the term of this patent subsequent to Sep. 13, 1900, has been disclaimed.
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—249 8 Claims



1. A three-terminal two-color solar cell comprising:
a conductive substrate;
a layer of $GaAs_{1-y}Sb_y$ having regions of differing conductivity forming a homojunction therein contacting said substrate and lattice matching the substrate to within about ±1%;
a transition layer of GaAs contacting the surface of said GaAsSb layer opposite to the surface contacting said substrate;
a layer of $GaAs_{1-x}P_x$ having regions of differing conductivity forming a homojunction therein and having a larger bandgap than said GaAsSb layer, said GaAsP layer contacting the surface of said transition layer opposite to said surface contacting said GaAsSb layer; and
means forming electrical contacts to said substrate, the incident surface of said GaAsP layer and the GaAsP region below the homojunction in said layer.

4,451,692

METHOD OF MANUFACTURING A LONGITUDINALLY WATERTIGHT CABLE AND LONGITUDINALLY WATERTIGHT CABLE THUS OBTAINED

Adrianus M. M. Classens, Delft; Frederik W. Aalbertsberg, and Hendrika G. Van Marle, both of Waddinxveen, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 219,159, Dec. 22, 1980, abandoned.
This application Aug. 2, 1982, Ser. No. 404,155
Claims priority, application Netherlands, Jan. 8, 1980, 8000084
Int. Cl.³ B32B *25/20;* H01B *7/28*
U.S. Cl. 174—23 C 5 Claims

1. In a method of manufacturing a longitudinally watertight cable comprising positioning a number of conductors within a sheath, filling the space between the conductors mutually and between the conductors and the sheath with a liquid sealing mixture comprising 15–25% by weight of a vulcanizable silicone rubber, a diluent and a filler, said liquid sealing mixture being convertable to a watertight seal by vulcanization of the silicone rubber, then vulcanizing said silicone rubber to thereby convert said sealing mixture to a watertight seal between said conductors and between said conductors mutually, the improvement wherein the vulcanizable silicone rubber is a multicomponent silicone rubber vulcanizable at room temperature through an addition reaction in which no low molecular weight reaction products are formed, the diluent is a silicone oil and the filler is a salt of a higher fatty acid or a mixture of higher fatty acids with a bivalent or trivalent metal, said salt being present in an amount about at least 35% by weight.

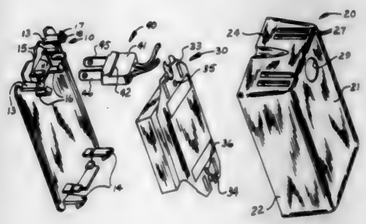
5. A longitudinally watertight cable obtained by the method of claim 1.

4,451,693

COMBINED BALLAST CONTAINER AND WALL PLUG FOR PORTABLE ELECTRICAL EQUIPMENT

Gary W. Vest, 4480 Broadview Rd., Cleveland, Ohio 44109

Filed Mar. 22, 1982, Ser. No. 360,408
Int. Cl.³ H05K *5/00*
U.S. Cl. 174—52 R 7 Claims



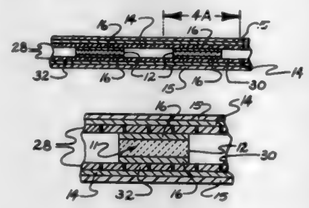
1. An electrical component and housing module for an electrical appliance circuit adapted to be plugged into a conventional electrical wall outlet comprising:
a relatively flat base plate formed of a dielectric material and defining an opening;
a cover formed of dielectric material and having walls defining a plurality of ventilation slots, said cover being adapted for assembly with said base plate to define therewith a protective enclosure;
first resilient means on said base plate cooperating with said slots for securing said cover to said base plate;
an electrical circuit component secured in said enclosure and forming a part of said electrical appliance circuit;
a wall-plug-type connector electrically connected to said circuit component and having an insulating body located in said enclosure and contact prongs extending through said opening; and
second resilient means on said base plate adjacent said opening cooperating with said insulating body for securing said connector to said base plate.

4,451,694

MINIATURIZED HIGH CAPACITANCE BUS BAR ASSEMBLY

William P. Harper, Phoenix, and Donald H. DeVries, Mesa, both of Ariz., assignors to Rogers Corporation, Rogers, Conn.

Division of Ser. No. 249,640, Mar. 31, 1981, Pat. No. 4,401,843.
This application Nov. 12, 1982, Ser. No. 440,752
Int. Cl.³ H01B 7/00
U.S. Cl. 174—72 B **2 Claims**



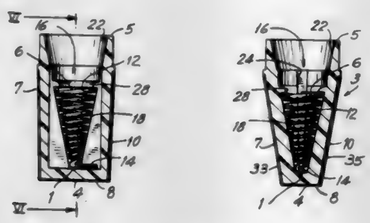
2. A high capacitance bus bar assembly comprising:
at least two spatially separated bus bar conductors having inwardly facing planar surfaces;
a plurality of capacitors, said capacitors being arranged linearly and positioned between said bus bar conductors, said capacitors each comprising a dielectric material disposed between a pair of oppositely disposed planar conductive outer surfaces, said conductive outer surfaces of said capacitors being in electrical contact with respective of said bus bar conductor inwardly facing surfaces;
elastomeric strip means, said strip means being positioned between said capacitors conductive surfaces and said bus bar conductor inwardly facing surfaces, said strip means comprising alternating bands of conductive and non-conductive materials, said conductive material establishing electrical contact between said capacitors conductive surfaces and said bus bar conductor inwardly facing surfaces; and
means for securing said bus bar conductors, said capacitors and said elastomeric strip means in an assembly.

4,451,695

CONNECTOR ASSEMBLY

Richard R. Fink, Basking Ridge, N.J., assignor to Heyman Manufacturing Co., Kenilworth, N.J.

Filed Apr. 16, 1982, Ser. No. 369,238
Int. Cl.³ H01R 4/12
U.S. Cl. 174—87 **11 Claims**



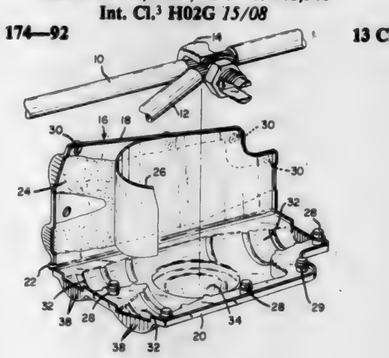
1. A nylon connector assembly for metallic wires comprising:
a tapered spring coil member of stiff wire having a distended end at its apex projecting to the outside of said member in a direction in a plane vertical to the coil axis, said tapered spring coil member in a conical configuration, and said distended end comprising a short straight portion of said spring coil member's wire;
a nylon thermoplastic member having an elongated shell with a central bore, said bore having two ends, said bore closed at one end by an end wall and open at its other end, said open end of said bore substantially circular, the inside of said bore substantially tapered and adapted to house said tapered spring coil member, two grooves in the tapered inside wall of said bore, said grooves disposed substantially beginning nearest to the largest diameter of said taper of said bore coinciding with the wide base of said spring coil member within a plane passing through the central axis of said bore, and said grooves adapted to provide space and guidance during insertion and locking for said distended end of said tapered spring coil member, said closed end of said bore having a substantially elongated form, the outside wall of the nylon thermoplastic member near said closed end wall substantially corresponding to a surface generated by straight lines connecting the substantially circular bore opening and the elongated form of the end wall, providing a gripping surface on said thermoplastic member; and
a protrusion provided after the insertion of said coil spring member near said open end of said bore, said protrusion comprising a frozen ultrasonic weld line so shaped and dimensioned to retain a prior inserted tapered spring coil member at its wide base whereby said tapered coil spring is undislodgeable from said bore.

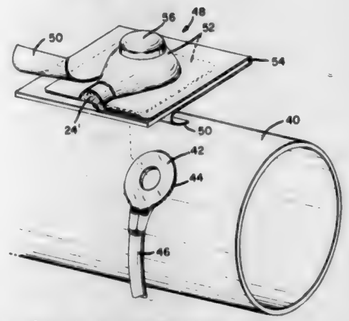
4,451,696

TOOLLESS SPLICE SEALANT DEVICE

Ernest L. Beinhaur, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 15, 1982, Ser. No. 441,340
Int. Cl.³ H02G 15/08
U.S. Cl. 174—92 **13 Claims**





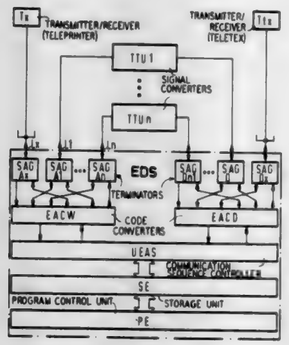
1. A splice sealant device, comprising:
a cable splice covering;
at least one cable channel means disposed in said splice covering receiving at least one cable;
flowable sealant contained in said cable splice covering; and
at least one compression button means disposed on said splice covering, said compression button means being compressible for hydraulically urging the flowable sealant to flow through said channel, thereby adapted to substantially fill all voids around the cable so as to form an insulating seal therearound.

4,451,697

METHOD FOR ESTABLISHING CONNECTIONS BETWEEN SUBSCRIBER STATIONS WHICH OPERATE WITH DIFFERENT TRANSMISSION PROCEDURES BY WAY OF SIGNAL CONVERTERS INCLUDING BUSY-FREE CONTROL

Dietmar Franz, Puchheim, and Norbert Torggler, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,626
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030887
Int. Cl.³ H04L 11/06, 11/20
U.S. Cl. 178—3 **1 Claim**



1. A method for establishing connections from subscriber stations and transmissions lines which are connected to a data exchange system and which process and transmit signals in accordance with different procedures to signal converters which are likewise connected to the data exchange system, and whose status signals, which indicate the free state or the engaged state, are stored in the data exchange system, wherein, on the occurrence of a connection request from a subscriber station or via a transmission line for the establishment of a connection to a signal converter, the presence of free status signals in the data exchange system is determined, and wherein, upon the seizure of the signal converter in question, a free status signal indicating the free state of a signal converter is charged into a busy state signal which is not reconverted into a free state signal until the signal converter in question again becomes available, comprising the steps of:
providing the free state signal as a control signal and separately storing the same in the signal converter;
transmitting the signal supplied for signal conversion and then emitting the free state signal from the signal converter, along with an accompanying signal indicating the end of signal transmission, to the data exchange system;
converting the busy state signal indicating the busy state of the signal converter to a free state signal and storing the same in the data exchange system; and
supplying to the data exchange system from the signal converter a control signal indicative of the busy state in the event that the signal converter is not serviceable.

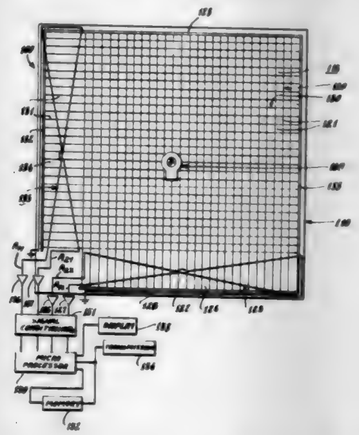
4,451,698

COORDINATE DIGITIZING DEVICE

Albert L. Whetstone, Stratford, and Kerry L. Shaklee, Fairfield, both of Conn., assignors to Display Interface Corporation, Milford, Conn.

Filed Nov. 12, 1982, Ser. No. 440,848
Int. Cl.³ G08C 21/00
U.S. Cl. 178—19 **37 Claims**

1. A coordinate digitizer comprising:
(A) a first grid including a first plurality of conductive grid wires deployed spaced-apart on a data surface and end busses connecting the respective ends of the first grid wires;
(B) an inductor adapted for movement to positions of interest on said data surface and for inducing electrical signals into said first grid; and
(C) a first conductive receptor loop deployed proximate said first grid and configured to have induced therein from said first grid electrical signals which vary according to the position of the inductor on the data surface;



wherein, upon application of an alternating electrical input signal to said inductor, the inductor induces alternating electrical signals into said first grid, said electrical signals being distributed in the first grid wires according to the position of the inductor on the data surface, and the alternating electrical signals in the first grid induce an electrical output signal in the first receptor loop which varies according to the position of the inductor on the data surface, whereby the position of the inductor can be determined from the output signal in the first receptor loop.

4,451,699

COMMUNICATIONS SYSTEM AND NETWORK

Elliot L. Gruenberg, West New York, N.J., assignor to Broad-Com, Inc., West New York, N.J.

Continuation-in-part of Ser. No. 108,552, Dec. 31, 1979, Pat. No. 4,337,376. This application Jun. 16, 1982, Ser. No. 389,033
The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.
Int. Cl.³ H04M 11/00; H04B 7/14, 7/20, 17/00
U.S. Cl. 179—2 EB **10 Claims**



9. A method for establishing a communications highway between at least two subscriber stations, with each subscriber station being associated with at least one node station, the method comprising the steps of; establishing a first retrodirec-

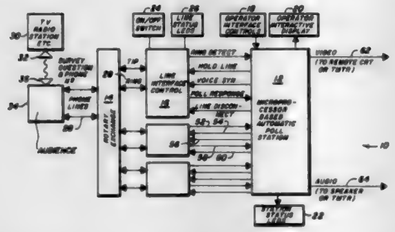
tive loop between one of said subscriber stations and an associated node station, establishing a second retrodirective loop between the other of said subscriber stations and an associated node station, establishing a third retrodirective loop between two node stations and transferring information between said subscriber stations via said first, second and third retrodirective loops, said first, second and third retrodirective loops being interdependent and being established substantially simultaneously.

4,451,700

AUTOMATIC AUDIENCE SURVEY SYSTEM

Marvin A. Kempner, Lighthouse Point, and Robert E. Elder, Pompano Beach, both of Fla., assignors to M. A. Kempner, Inc., Pompano Beach, Fla.

Filed Aug. 27, 1982, Ser. No. 412,079
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 AS **34 Claims**



1. A telephone based single phone number accessed automatic audience survey system for obtaining information representative of the opinion of an audience regarding a question of interest from a plurality of individuals of said audience, comprising in combination:

a first means for holding a plurality of phone lines in an off-hook condition in response to individuals of said audience calling said single phone number;

a second means operatively connected to said plurality of phone lines in said off-hook condition for providing a voice-message to each of said plurality of phone lines simultaneously which asks each such individual for a response in one of at least two selectable categories in regard to said question of interest;

a third means operatively connected to said phone lines in said off-hook condition for storing data in preselected data latches that respectively correspond to said selectable categories in accordance with the particular responses of the individuals; and

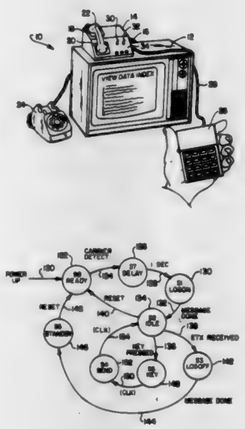
a fourth means connected to said preselected data latches for tabulating said data representative of the particular responses of the individuals of said audience to provide composite data representative of the opinion of said audience.

4,451,701

VIEWDATA SYSTEM AND APPARATUS

Mark W. Bendig, Columbus, Ohio, assignor to OCLC Online Computer Library Center, Incorporated, Dublin, Ohio

Continuation of Ser. No. 202,189, Oct. 30, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,701
Int. Cl.³ H04M *11/08*
U.S. Cl. 179—2 TV **17 Claims**



1. A viewdata system for disseminating information from the data base of a host computer by telephonic communication, comprising:

a host computer responsive to the establishment of telephone communication therewith from along a telephonic linkage for sending a carrier signal along said linkage, and having selectable programs each accessible for interactive communication along said telephonic linkage upon receipt of a predetermined logon sequence of characters transmitted thereto by telephone communication;

a decoder comprising:

coupling means for establishing a first level of communication by said telephonic linkage with said host computer wherein said carrier signal is received therefrom, and for subsequently effecting the telephonic reception from and transmission of data signals to said host computer;

keypad means having a plurality of manually actuable keys, each being identified with and corresponding to a function serving to interactively communicate with said host computer;

memory means for retaining first binary data representing a said logon sequence of characters selected for deriving a second level of communication with said host computer to effect access to a selected said program thereof, and retaining second binary data representing the said functions of said keypad means keys;

circuit means responsive to said coupling means reception of said carrier signal for commencing a finite delay interval of predetermined duration, and responsive at the termination of said delay to address said memory means first binary data and effect the transmission thereof by said coupling means so as to carry out said second level of communication, said circuit means thereafter being responsive to a said actuation of said keypad means keys for addressing said memory means second binary data corresponding therewith and effecting the transmission thereof by said coupling means to said host computer, and responsive to said data signals received by said coupling means from said host computer for generating output signals corresponding therewith; and

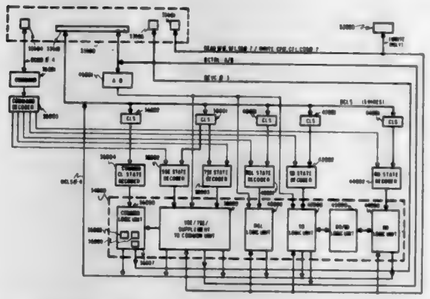
modulator means, having an output connectable with the input of a visual readout display, for modulating said output signals with a select carrier to effect a display of character images corresponding therewith at said readout display.

4,451,702

ARRANGEMENT OF INTERACTIVE TELEPHONE SWITCHING PROCESSORS FOR PERFORMING TIMING ANALYSES OF PORT EVENTS

Barrie Brightman, Fern Park; Thomas E. Ellis, Altamonte Springs, both of Fla.; James E. Jones, Littleton, Colo.; Pedro A. Lenk, Fern Park, Fla.; Jayantkumar R. Shah, Longwood, Fla.; William H. Stewart, Longwood, Fla., and John W. Woodward, Longwood, Fla., assignors to Stromberg-Carlson Corporation, Lake Mary, Fla.

Continuation of Ser. No. 63,601, Aug. 2, 1979, abandoned, which is a continuation of Ser. No. 924,882, Jul. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 864,401, Dec. 27, 1977, abandoned. This application Jun. 18, 1981, Ser. No. 275,072
Int. Cl.³ H04M *3/22;* H04Q *3/54*
U.S. Cl. 179—18 ES **19 Claims**



15. A common control for a telephone switching system that includes a plurality of port means for establishing communications over telephone lines by means of voice signals and supervisory signals, said common control comprising:

A. a port event processor that connects to each said port means and that includes:

(i) first selectively adjustable timing means for detecting the presence of a supervisory signal at a said port means for a variable minimum period of time, and

(ii) second selectively adjustable timing means for detecting the presence of a supervisory signal at a port means for a variable maximum period of time, and

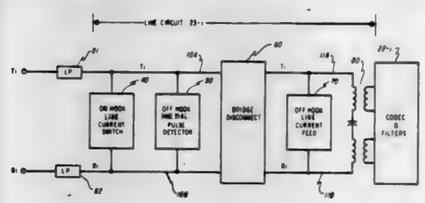
B. a call control processor connected to said port event processor for independently adjusting said first timing and second timing means thereby to alter respectively the variable minimum and variable maximum periods of time.

4,451,703

ALL ELECTRONIC INTERFACE FOR TELEPHONY SYSTEM

Barrie Brightman, and Frank Niertit, both of Casselberry, Fla., assignors to Stromberg-Carlson Corporation, Lake Mary, Fla.

Filed Dec. 30, 1981, Ser. No. 335,648
Int. Cl.³ H04M *3/22*
U.S. Cl. 179—18 FA **13 Claims**



11. A line circuit for interconnecting a subscriber line having a far end connected to a subscriber set and a switching system and for coupling intelligence signals, including voice signals, therebetween in a telephony system, the subscriber line including both tip and ring conductors, the line circuit comprising:

A. connection means including:

i. tip and ring bilateral current gate means connected to said tip and ring conductors respectively for selectively coupling intelligence signals therethrough, each of said tip and ring bilateral current gate means including a plurality of diodes connected to form (a) input and output junctions that define a unidirectional current path through said bilateral current gate means and (b) balance point junctions that connect in the path of the intelligence signals; and

ii. bias current means connected to the switching system and the tip and ring bilateral current gate means for providing bias current to said tip and ring bilateral current gate means in response to an enabling signal from the switching system, thereby to forward bias said diodes and enable the tip and ring bilateral current gate means to couple intelligence signals therethrough;

B. a hook switch condition detector connected to the tip and ring conductors between said connection means and the subscriber set, said hook switch condition detector including means responsive to the subscriber set going off-hook for generating an off-hook signal indicating that the subscriber set has gone off-hook; and

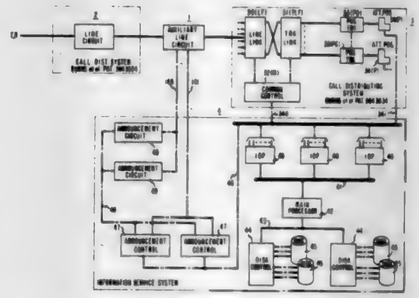
C. a power source connected to the tip and conductors between said connection means and the subscriber set for energizing the subscriber line.

4,451,704

SWITCHING SYSTEM AUXILIARY LINE TRANSFER CIRCUIT

Max D. Winkelman, Westerville, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 2, 1982, Ser. No. 364,787
Int. Cl.³ H04M *3/22, 3/50;* H04Q *3/64*
U.S. Cl. 179—18 F **21 Claims**



1. A switching system (3) for interconnecting lines with attendant positions, the switching system associated with an announcement circuit (47, 49) and comprising

line circuits (1, 2) coupled to the lines and responsive to a seized one of the lines for connecting the seized line through the switching system with the attendant positions characterized in that

said line circuits comprise

means (100, 101, 102, 103, 117, 1402) for transferring said seized line from the switching system to the announcement circuit, and

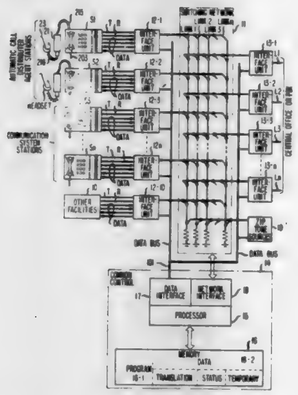
means (104, 105, 116, 1412, 1413) for releasing the announcement circuit and reconnecting said seized line through the switching system with the attendant positions.

4,451,705

CALL COMPLETION CIRCUIT AND METHOD

Edmund T. Burke, West Long Branch; Patrick H. Gorman, II, Little Silver; James A. Henderson, Jr., Neptune, and Nicholas K. Smith, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 28, 1982, Ser. No. 383,315
Int. Cl.³ H04Q *3/64, 3/72*
U.S. Cl. 179—27 D **8 Claims**



6. An automatic call distributing system having a plurality of terminals, each terminal having an identity used by said system for the completion of communication connections thereto, said system comprising

means for accepting from an attendant at any terminal a unique identification code assigned to that attendant,

means for temporarily associating an accepted attendant identification code from a particular terminal with said particular terminal,

means including said temporarily associated attendant identification code for assigning said terminals to splits, and

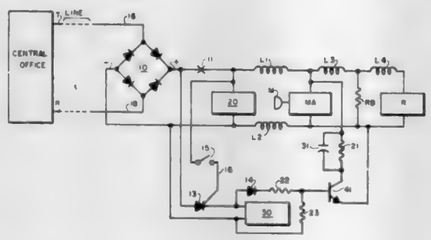
means for completing calls to a particular terminal in accordance with the availability of said terminal to answer said calls.

4,451,706

TELEPHONE SUBSTATION TRANSMITTER MUTING CIRCUIT

Eduard F. B. Boeckmann, Huntsville, Ala., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 20, 1982, Ser. No. 451,589
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R **10 Claims**



1. A transmitter muting circuit for use in a subscriber substation said subscriber station including a hold circuit and a transmission circuit having a positive and a negative terminal, a handset transmitter, and a hookswitch contact, said contact connecting said transmission circuit to a central office and a central office battery via a subscriber line completing a loop circuit extending over said subscriber line for transmission of battery current and voltage to said transmission circuit, said transmitter muting circuit comprising:

first switching means manually operated connecting said hold circuit to said loop circuit activating said hold circuit and seizing said subscriber line; and,

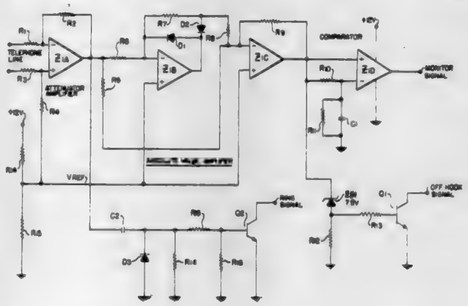
second switching means connecting a transmitter muting path across said handset transmitter in response to said first switching means, muting said handset transmitter.

4,451,707

RING DETECTOR AND TELEPHONE LINE MONITORING SYSTEM FOR TELEPHONE ANSWERING INSTRUMENT

Bradford E. Hanscom, Downey, Calif., assignor to T.A.D. Avanti, Inc., Compton, Calif.

Continuation-in-part of Ser. No. 381,185, May 24, 1982, abandoned. This application Jul. 25, 1983, Ser. No. 517,005
Int. Cl.³ H04M *1/64*
U.S. Cl. 179—84 R **12 Claims**



1. A monitoring system to be connected to a telephone line to control the operation of a telephone answering system, said telephone answering system being activated by ring signals received over the telephone line, and said monitoring system responding to the direct current voltage level of the telephone line, said monitoring system including in combination: an input attenuator amplifier circuit having a gain of less than unity for producing an output voltage which is a fraction of the line voltage of the telephone line; means connecting said input attenuator amplifier circuit to the telephone line; an absolute value amplifier circuit having a gain greater than unity connected to the output of said attenuator amplifier circuit for producing a single polarity output in response to outputs from said attenuator amplifier of positive or negative polarity; and an output circuit connected to the output of said absolute value amplifier for providing an output signal when the telephone line voltage drops below a particular value to prevent the telephone answering system from responding to spurious ring signals received over the telephone line during the continuance of said output signal.

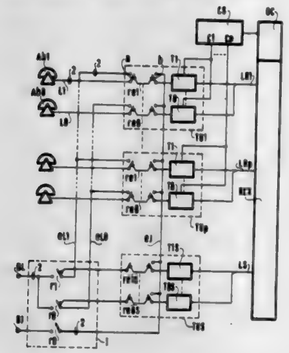
4,451,708

SPARE SUBSCRIBER TERMINAL APPARATUS

Marc Kemler; Christian Coppens, and Michel Billot, all of Velizy, France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Apr. 5, 1982, Ser. No. 365,851
Claims priority, application France, Apr. 3, 1981, 81 06811
Int. Cl.³ H04Q *1/20*
U.S. Cl. 179—98 **4 Claims**

1. Spare subscriber terminal apparatus for use in a telecommunications system, including: a plurality of subscriber lines; subscriber terminals for interfacing respective subscriber lines to the rest of the system; subscriber line test means provided with a subscriber line test bus; subscriber terminal test means provided with a junctor test bus; a test relay associated with each subscriber terminal and having first switching means associated with each subscriber line to connect it selectively to its corresponding subscriber terminal or to said subscriber line test means, and second switching means associated with each subscriber terminal to connect it selectively to its corresponding subscriber line or said subscriber terminal test means; the subscriber terminals being organized in terminal units each of which comprises a plurality of subscriber terminals, and terminal units being organized in groups each of which comprises a plurality of terminal units; wherein the spare subscriber terminal apparatus comprises a spare terminal unit and a test means isolator per group, said isolator including third switching means for selectively connecting an extension of said sub-



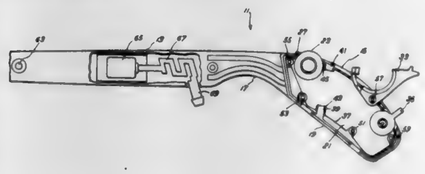
scriber line test bus having sufficient connections for parallel connection to all the subscriber lines of any one terminal unit either to said line test bus, and hence to said subscriber line test means, or else to the subscriber terminals of the spare terminal unit, whereby said extension of the subscriber line test bus may be switched to connect the spare terminal unit to the subscriber lines of a faulty terminal unit while isolating the subscriber line test bus from said extension of the line test bus, said test means isolator further including switching means to isolate said junctor test bus from an extension of the junctor test bus, said extension of said junctor test bus being connected to all the subscriber terminals of the terminal units, while said extension of the line test bus is being used to connect the spare terminal unit to subscriber lines.

4,451,709

EYE GLASS HEARING AIDS

Ronald Waxman, Highland Park, Ill., assignor to Beltone Electronics Corporation, Chicago, Ill.

Filed Dec. 21, 1981, Ser. No. 333,032
Int. Cl.³ G02C *11/06*
U.S. Cl. 179—107 S **9 Claims**



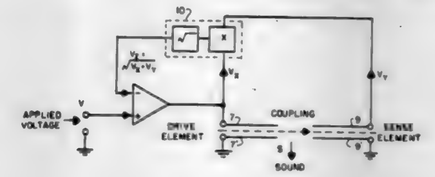
1. In an eye glass hearing aid having a paddle portion for placement behind the wearer's ear and for resting against the wearer's head, electrical circuitry housed within the paddle portion, an aperture positioned atop the paddle portion for providing a channel of communication to the electrical circuitry within the paddle portion, a control element positioned within the aperture and connected to the circuitry, said control element being controllable by the wearer in order to provide a controlling function with respect to the electrical circuitry, the improvement comprising a sweat guard positioned relative to the aperture for preventing moisture on the topside of the paddle from moving into the aperture during wearing of the hearing aid by the wearer, said sweat guard including a blocking member positioned adjacent at least a portion of the aperture, said blocking member providing a barrier raised above the topside of the paddle for blocking moisture on the topside of the paddle from running into the aperture.

4,451,710

PRECISELY STABILIZED PIEZOELECTRIC RECEIVER

Michael G. C. Taylor, Herentals, and Marc H. L. Buerman, Deurne, both of Belgium, assignors to GTE Atea NV, Herentals, Belgium

Filed Sep. 1, 1982, Ser. No. 413,928
Int. Cl.³ H04R *1/22*
U.S. Cl. 179—110 A **14 Claims**



1. In combination an electro-acoustic transducer comprising:

a vibratable diaphragm of a film polymer having piezoelectric properties;

a first pair of electrically conductive areas disposed on opposing overlapping surfaces of said film;

a second pair of electrically conductive areas disposed on opposing overlapping surfaces of said film, remote from said first pair of electrically conductive areas;

separate electrodes for each of said electrically conductive areas;

an amplifier including an inverting input, a non-inverting input and an output;

said amplifier output connected to said first pair of electrically conductive areas;

second means comprising an electronic network connecting said amplifier signal input to said electrodes of each said first and said second pair of electrically conductive areas and operated to output the square root of the product of the signals from said first and said second pair of electrically conductive areas with a polarity identical to that of the said signals;

said amplifier operated upon the application of an electrical signal at said non-inverting input to drive said first pair of electrically conductive areas to stimulate said diaphragm into a corresponding acoustic vibration; and

said second pair of electrically conductive areas operated to produce a corresponding electrical signal via said second means to control said amplifier output level.

4,451,711

READILY PORTABLE SPEAKER ENCLOSURE

Mark Jackson, 144-10 106th Ave., Jamaica, N.Y. 11435

Filed May 7, 1981, Ser. No. 261,382
Int. Cl.³ A47B *87/00*
U.S. Cl. 179—146 E **8 Claims**

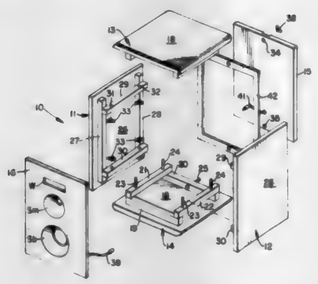
1. A readily portable speaker enclosure, comprising:

a plurality of walls having inner and outer surfaces and including a top, a bottom, opposite sides and a back;

a speaker board carrying at least one speaker;

clamping means on the top, bottom, opposite sides and back to readily releasably secure the top, bottom, opposite sides and back together, the clamping means includes reinforcing fastening strips disposed on the inner surfaces of the top, bottom and opposite sides, adjacent the edges thereof,

when the walls are assembled together, and quick-connect disconnect fastening means for fastening the reinforcing fastening strips to one another; and

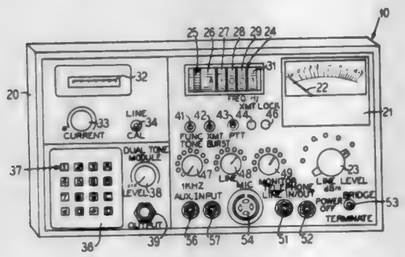


means on the top, bottom and opposite sides to securely hold the speaker board in position to form part of the enclosure when the top, bottom and opposite sides are separated.

4,451,712
TESTER FOR REMOTE CONTROLLED RADIO SYSTEMS

Richard F. Kovarik, Bridgeview, Ill., assignor to Industrial Electronics Service Co., Schaumburg, Ill.

Filed May 19, 1982, Ser. No. 380,000
Int. Cl.³ H04B *3/46*
U.S. Cl. 179—175.3 R **10 Claims**



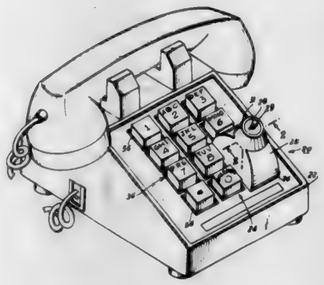
1. A remote systems tester comprising a guard tone generator, a function tone generator, means for adjusting the level of either the guard tone or the function tone such that when either level is set the amplitude relationship will be automatically established so that the function and second guard tones will be at lower levels than the initial guard tone, and means for sequentially connecting the outputs of said guard tone generator and said function tone generator to the communication lines to be tested.

4,451,713
PUSHBUTTON LOCK

James M. Wittes, 40 Palisade Rd., Linden, N.J. 07036

Filed Feb. 4, 1981, Ser. No. 231,494
Int. Cl.³ H04M *1/66*
U.S. Cl. 179—189 D **19 Claims**

1. A pushbutton locking device comprising a housing, gripping means in said housing drivable for gripping at least two opposite sides of at least one pushbutton in an array of side-by-side pushbuttons, each of which is actuatable by being pushed in a given direction, said housing being adapted to cover at least each pushbutton which is gripped, drive means having a driving element disposed above and overlying said gripping means and operable for driving said gripping means into engagement with said sides of said one pushbutton, and lock means for selectively locking said drive means to prevent disengagement of said gripping means from said pushbutton, said lock means being mounted substantially within the space

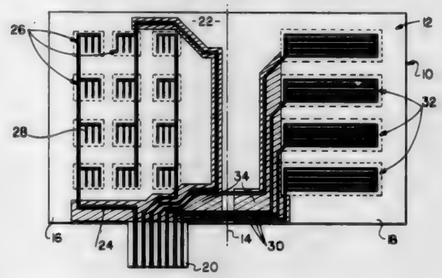


directly above that defined by the nearest edges of the pushbuttons adjacent the pushbutton or pushbuttons gripped.

4,451,714
SPACERLESS KEYBOARD SWITCH CIRCUIT ASSEMBLY,

Franklin N. Eventoff, 2351 Lake View Ave., Los Angeles, Calif. 90039

Filed Feb. 9, 1983, Ser. No. 465,088
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **16 Claims**



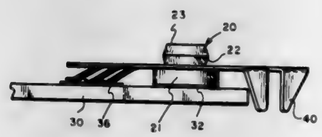
1. A switch circuit assembly comprising:
a unitary base member having a front surface and having a fold line for dividing the base member into a first section and a second section;
a plurality of first conductor traces on the front surface of the base member extending along preselected paths on the first section;
a plurality of second conductor traces on the front surface of the base member extending along preselected paths on the first section, across the fold line and along the second section;
at least one first switch contact on the front surface of the base member on the first section, each first switch contact electrically coupled to at least one of the first conductor traces;
at least one second switch contact on the front surface of the base member on the second section, each second switch contact electrically coupled to at least one of the second traces, each first switch contact being located to face at least one of the second switch contacts when the base member is folded along the fold line;
an insulative layer applied over selected regions of the base member to cover selected regions of at least one of the first and second conductor traces to insulate the first conductor traces from the second conductor traces when the base member is folded with the first and second sections in touching relationship to each other;

each of the switch contacts on at least one of the first and second sections comprising;
a conductor ply, and
a pressure sensitive layer applied over the conductor ply, the pressure sensitive layer comprising a semiconducting material applied to be in intimate electrically conducting contact with the conductor ply, the pressure sensitive layer defining a first exposed surface with a multiplicity of microprotrusions of the semiconducting material extending therefrom for providing a multiplicity of surface contact locations, the other of the first and second contacts facing the first exposed surface defining at least one facing contact, the junction between the first exposed surface and its facing contact defining a surface junction, said surface junction being electrically non-conductive when the first exposed surface noncompressively touches the facing contact and being conductive when the first exposed surface compressively touches the facing contact.

4,451,715
SWITCHING DEVICE FOR THICK/THIN FILM CIRCUITS

Wayne E. Neese, Hoffman Estates, Ill., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 3, 1982, Ser. No. 384,683
Int. Cl.³ H01H *19/54*
U.S. Cl. 200—11 G **6 Claims**

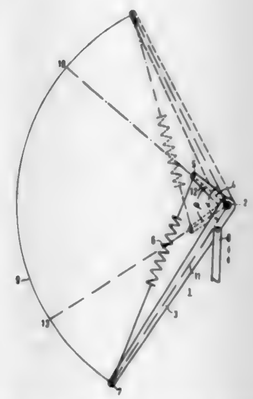


1. An electrical switching device arranged to connect a plurality of electrical film circuits together, said plurality of electrical film circuits deposited on an appropriate substrate and each including at least one contact pad, said switching device comprising:
a mounting element located adjacent to and equidistant from each contact pad, said mounting element including a pivot pin having a base section with a bottom surface fixedly mounted to said substrate and a head section extending from a top surface of said base section, said head section being wider at the midsection and tapering into a narrower width away from said midsection; and
a contact element including electrical contact means formed on the periphery of said contact element, said contact element including a centrally located orifice and a plurality of kerfs extending radially from said orifice, said orifice arranged to slip over said pivot pin head section with said kerfs allowing said orifice to expand fitting said contact element over said pivot and resting on said base section top surface allowing said contact element to be manually rotatable into at least a first position, whereby in said first position, said electrical contact means communicate with a different contact pad connecting at least two of said electrical circuits forming a first connected set.

4,451,716
ELASTIC-SPRING DRIVE FOR THE MOVABLE CONTACT OF AN ELECTRIC GROUNDING OR DISCONNECT SWITCH

Dieter Lorenz, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,815
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136771
Int. Cl.³ H01H *21/42*
U.S. Cl. 200—67 A **1 Claim**

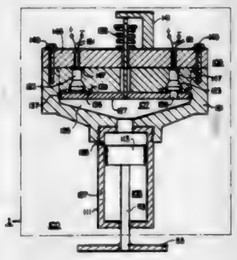


1. An elastic-spring drive for a movable contact of an electric switch comprising a drive shaft adapted to be coupled to the movable contact of the switch by at least one lever, a drive lever rigidly connected to the drive shaft, a cocking lever rotatably connected to the drive shaft, a spring flexibly connected at one end to the cocking lever at a first distance from the axis of the drive shaft and flexibly connected at the other end to the drive lever at a second distance from the axis of the drive shaft, said first distance being greater than said second distance, and an actuating lever coupled to the cocking lever to rotate the cocking lever upon movement of the actuating lever.

4,451,717
CIRCUIT INTERRUPTER OPERATING MECHANISM HAVING A CHEMICAL OPERATOR WITH STATIONARY COMBUSTION CHAMBERS

Ronald W. Crookston, Penn Township, Westmoreland County, and Ivan T. Burney, Plum, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1982, Ser. No. 339,604
Int. Cl.³ H01G *33/42*
U.S. Cl. 200—82 B **10 Claims**



1. An electric circuit interrupter, comprising:
(a) a pair of separable contacts;
(b) operating means operatively connected to the contacts for opening and closing the contacts;

(c) drive means for driving the operating means including a drive cylinder and a drive piston, said drive piston having a drive rod operatively connected to said operating means; and

(d) pressure generating means for generating an expulsion of gaseous medium into said drive cylinder, said pressure generating means including a housing having multiple stationary combustion chambers and directing means for selectively directing the expulsion of gaseous medium from any one of said multiple combustion chambers away from the remainder of said multiple combustion chambers and into said drive cylinder.

4,451,718

CIRCUIT BREAKER

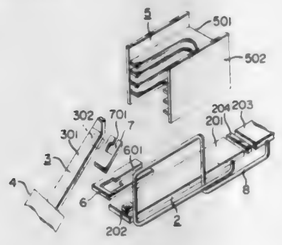
Shinji Yamagata; Fumiyuki Hisatsune; Junichi Terachi; Kiyomi Yamamoto, all of Fukuyama; Hajimu Yoshiyasu, Itami, and Yuichi Wada, Kawanishi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 351,314

Claims priority, application Japan, Feb. 27, 1981, 56-28897[U]; Feb. 27, 1981, 56-28899[U]; Feb. 27, 1981, 56-28903[U]; Mar. 2, 1981, 56-30058[U]

Int. Cl.³ H01H *33/18*

U.S. Cl. 200—147 R **12 Claims**



1. A circuit breaker comprising:

a pair of contactors each having a conductor having a contact affixed thereto;

means for operating said contactors to open and close an electrical circuit therethrough;

arc shields having a resistivity greater than that of said conductors and mounted on each of said contactors and surrounding said contacts for suppressing the spread of an arc generated between said contacts when said contacts are separated to open the electrical circuit;

at least one of said contactors having an arc travel path therealong having a resistivity smaller than that of said arc shields and disposed at one end thereof in the vicinity of said contacts for leading the arc along said arc travel path away from said contacts; and

a magnetic driving means adjacent said contactors for generating a magnetic field that links with the magnetic field of the arc drawn across the contacts of said contactors when said contactors are operated to open the electrical circuit for driving the arc along said arc travel path.

4,451,719

PUSHBUTTON SWITCH FOR A TIMEPIECE

Rainer Lauterburg, Reinach, Switzerland, and Hans Geiger, Hasel, Fed. Rep. of Germany, assignors to Societe Suisee pour l'Industrie Horlogere Management Services, S.A., Bienne, Switzerland

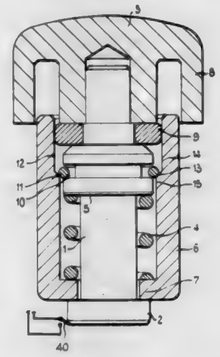
Filed Mar. 20, 1979, Ser. No. 22,233

Claims priority, application France, Mar. 24, 1978, 78 09966

Int. Cl.³ H01H *3/12*

U.S. Cl. 200—159 R **4 Claims**

1. A finger pushbutton switch for an electronic timepiece such as a chronograph, comprising a stem means capable of an axial displacement relative to guide means fixed to the timepiece casing when urged by the finger of an operator against the force of a return spring, said axial displacement changing the state of electrical contact means, wherein elastic means is interposed between an element of said stem means and an element of said guide means and is axially retained within an opening provided in one of said elements, a contact surface for said elastic means being provided in the other of said elements for contacting said elastic means, and thereby changing its shape upon further axial movement of said stem means, said contact surface exhibiting an axial discontinuity or variation in form, relative to the relaxed shape of said elastic means, sufficient to effect a snap or toggle action in the relative displacement between the stem means and guide means whenever the elastic means traverses said discontinuity or variation on said contact surface in a first direction due to the urging of said operator to thereby change the state of said electrical contact means and in a second direction due to urging of said spring to thereby change the state of said electrical contact means; wherein said guide means comprises a tube fixed within the timepiece casing, and wherein said elastic means comprises an annular spring axially retained within the groove provided in the stem means, the outer edge of said spring being supported on a ramp in truncated cone form provided on the interior wall of said tube.



4,451,720

DEVICE FOR MOUNTING AN ELECTRIC DEVICE, IN PARTICULAR A CAM SWITCH ON A MOUNTING PLATE

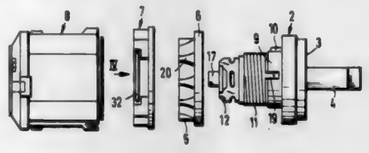
Bernd Ludwig, Marienheide, Fed. Rep. of Germany, assignor to Starkstrom Gummersbach GmbH, Marienheide, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,403

Claims priority, application European Pat. Off., Sep. 15, 1981, 81107259.4

Int. Cl.³ H01H *9/02*

U.S. Cl. 200—296 **6 Claims**



1. Device for mounting an electric apparatus, in particular a switch, on a mounting plate which is provided with a bore, comprising a coupling plate provided with a spring clip, said spring clip being displaceable either out of the coupling plate or into the coupling plate, said coupling plate being secured to a part of the apparatus facing the mounting plate; an insert housing insertable through said bore, said housing including actuating means for controlling said apparatus, said actuating means having a connecting part inserted through the bore provided on its outside with notches; said spring clip when displaced into the coupling plate being engageable with said notches, and said housing being provided with a resilient retaining device connectable to the edge of the bore.

4,451,721

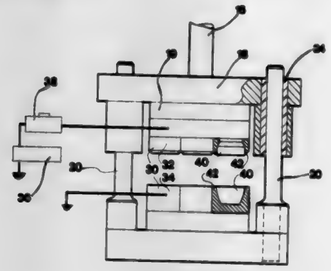
METHOD FOR HIGH FREQUENCY WELDING FLANGELESS THERMOPLASTIC SHELLS

Georg Nemeskeri, Chester, Canada, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 74,035, Sep. 10, 1979, abandoned. This application Jul. 26, 1982, Ser. No. 426,191

Int. Cl.³ H05B *6/54*

U.S. Cl. 219—10.43 **6 Claims**



1. A method for welding together two substantially rigid thermoplastic subshells of the type having flanges with congruent proximal edges to form a flangeless thermoplastic shell, comprising:

applying clamping pressure to clamp the subshell flanges together between a pair of facing electrodes, the proximal edges of such flanges being aligned;

while continuing such clamping pressure, applying a dielectric field to the flanges, said field being most concentrated at the proximal edges, to soften and fuse said flanges together at or near the proximal edges, said continued clamping pressure producing further clamping movement whereby some softened flange material is displaced to form a bead inside the proximal edge location;

terminating application of the dielectric field; and

thereafter continuing such clamping movement of said electrodes to substantially sever the flanges from the flangeless shell at said proximal edges.

4,451,722

FUSING MACHINE

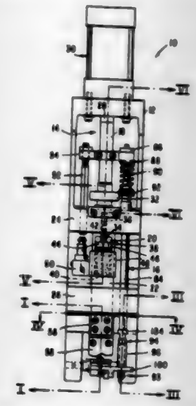
Charles F. Szantho, Roselle Park, and Edward D. Riordan, S. Somerville, both of N.J., assignors to Joyal Products, Inc., Linden, N.J.

Division of Ser. No. 203,446, Nov. 3, 1980, Pat. No. 4,371,772. This application Apr. 1, 1982, Ser. No. 364,218

Int. Cl.³ B23K *9/28*

U.S. Cl. 219—86.25 **5 Claims**

1. A fusing machine, comprising a frame and a fusing electrode assembly mounted for reciprocating movement relative to said frame, said fusing electrode assembly including a fusing electrode shaft, said fusing electrode shaft having a first key way formed therein parallel to the direction of reciprocation of said fusing electrode assembly, and holding means attached to said fusing electrode shaft for releasably holding a fusing electrode, said holding means including a first holding member, said first holding member including a first key mating with said first key way to rigidly attach said fusing electrode shaft to said first holding member and a second key extending parallel to the direction of reciprocation of said fusing electrode assembly, and a second holding member, said second holding member including receiving means for releasably receiving said fusing electrode and a second key way mating with said second key to rigidly attach said first holding member to said second holding member, whereby said first and second keys cooperate with said first and second key ways, respectively, to rigidly support said fusing electrode and to thereby facilitate its proper alignment and positioning during a fusing operation.



4,451,723

ARC-WELDING DEVICE USED TO SECURE STUDS ON METALLIC ELEMENTS UNDERWATER

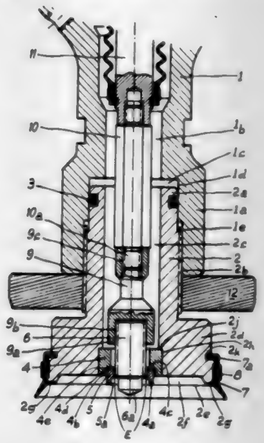
Jean-Pierre Gres, Aix-en-Provence, and Jean-Pierre G. Icard, Marseille, both of France, assignors to Societe Anonyme dite: Compagnie Maritime d'Expertises S.A., France

Filed May 26, 1982, Ser. No. 382,096

Claims priority, application France, May 26, 1981, 81 10677

Int. Cl.³ B23K *9/20*

U.S. Cl. 219—98 **3 Claims**



1. Arc-welding device to attach a stud to a metallic element immersed in a liquid, comprising a head including means forming a substantially cylindrical chamber surrounding a fusion area where said stud contacts said metallic element, a stud carrier concentrically arranged in said chamber, a dielectric refactory ring arranged around one end of said stud and retained in said chamber by a ferrule holder, flexible skirt means affixed to said head at one circular edge and arranged around the periphery of said chamber, the other circular edge of said flexible skirt means tapering to a thin peripheral rim, said

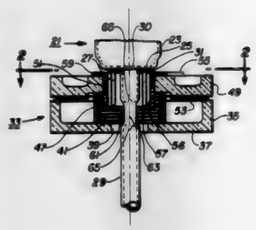
flexible skirt means being formed to flare outwardly to said other circular edge to a diameter greater than a diameter at said one circular edge forming a truncated cone that diverges from a base of said chamber, said thin peripheral rim being adapted to sealingly contact a surface of said metallic element for attachment of said stud thereto, means in fluid communication with said chamber to insufflate said chamber for expelling all liquid therein by causing said thin peripheral rim of said skirt to lift and for maintaining a gaseous environment favorable to welding said studs, and means for forming a depression in said chamber following said liquid being expelled therefrom, whereby the pressure in said chamber is less than the pressure outside said chamber so that said skirt is maintained in contact with said surface of said metallic element.

4,451,724
Patent Not Issued For This Number

4,451,725
ELECTRICAL HEATING UNIT FOR SEALING VACUUM ELECTRON TUBES

James Mount, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,620
Int. Cl.[3] F27B 5/14; F27D 11/02
U.S. Cl. 219—390 4 Claims

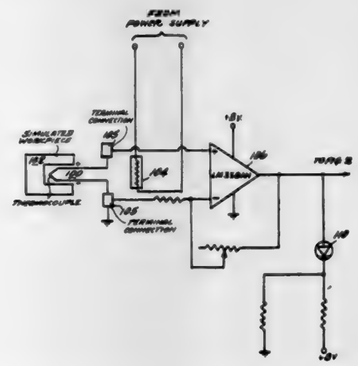


1. An electrical heating unit for sealing vacuum electron tubes of the type having a glass stem, a glass exhaust tubulation extending from said stem and a plurality of electrically-conducting leads extending from said stem in a circular array around said tubulation, said unit including
(a) a cylindrical resistance heating coil,
(b) an electrically-insulating support for said coil,
(c) cylindrical heat-shielding means located within and spaced from said heating coil in a substantially concentric relationship,
(d) a support plate adjacent one end of said coil and having an aperture therein permitting said leads to be positioned within said heat-shielding means,
(e) and means for securing elements (a) through (d) together as a unit.
characterized in that said heat-shielding means comprises a unitary member of heat-conducting material including (i) a hollow cylindrical body adapted to receive said leads therein, (ii) an outwardly-extending flange at one end of said body and (iii) an inwardly-extending flange at the other end of said body, said outwardly-extending flange having an outer size that is larger than said support plate aperture, said inwardly-extending flange having an inner size that is smaller than the diameter of said circular array of leads and larger than the diameter of said tubulation, and said body has a height that is less than the length of the longest of said leads.

4,451,726
KILN TEMPERATURE CONTROL DEVICE

Frank H. Anthony, 1709 N. Hullen, Metarie, La. 70001, and Vernon W. Coy, Metarie, La., assignors to Frank H. Anthony, Metarie, La.

Division of Ser. No. 66,296, Aug. 13, 1979, Pat. No. 4,367,399.
This application May 24, 1982, Ser. No. 381,371
Int. Cl.[3] G01K 7/04
U.S. Cl. 219—413 1 Claim



1. A kiln temperature controller for controlling the temperature of a kiln while firing ceramic ware having predetermined wall thickness, said controller comprising:
a temperature sensor housed within ceramic material having a wall thickness approximately equal to one-half the expected wall thickness of ceramic ware to be fired in the kiln so as to approximately sense the internal temperature of the ceramic ware being fired in said kiln, and
kiln heating means connected to be controlled by said temperature sensor.

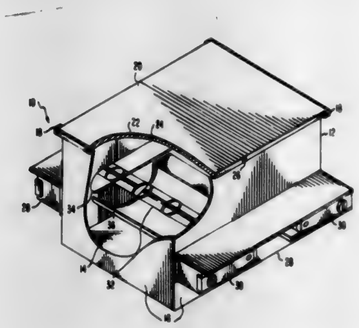
4,451,727
HEATING FIXTURE

Donald P. Marinelli, Hamilton Square, and Ivan Ladany, Stockton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1981, Ser. No. 326,154
Int. Cl.[3] H05B 3/68
U.S. Cl. 219—464 3 Claims

1. In a heating fixture comprising an energy source,

support means disposed to absorb energy from said energy source for heating said support means and a workpiece thereon, and
an enclosed support frame including mounting means for

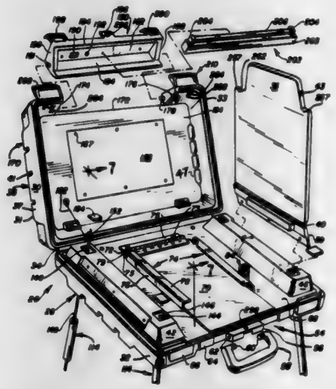


said energy source and said support means; wherein the improvement comprises a non-porous, ridid, heat conductive, vitreous carbon plate ground to a desired degree of flatness as the support means and being mounted on said support frame for said energy source.

4,451,728
SELF-CONTAINED PORTABLE VOTING BOOTH APPARATUS

Richard H. McKay, Chicago, and Geoffrey R. Ryan, Glen Ellyn, both of Ill., assignors to Frank Thornber Co., Chicago, Ill.

Filed Feb. 1, 1982, Ser. No. 344,628
Int. Cl.[3] G07C 13/00
U.S. Cl. 235—50 R 49 Claims

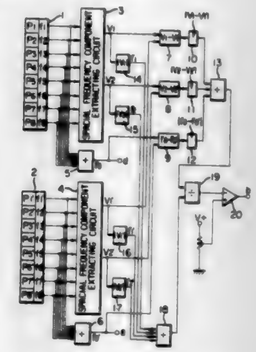


1. A self-contained portable voting booth apparatus which can be used for paper and vote recording device balloting and can be readily set up at any desired voting site, comprising a carrying case having a pair of hinged top and bottom case sections, the improvement wherein said bottom case section is provided with surface means for supporting a paper ballot, including securing means mounted on said surface means for pivotally securing a vote recording device, whereby said securing means is pivotable to a non-use position whenever said apparatus is used for paper balloting.

4,451,729
AUTOMATIC FOCUSING DEVICE AND LENS MOTOR CONTROL

Tadao Takagi, Yokohama, and Nobuo Okabe, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,804
Claims priority, application Japan, Jul. 28, 1981, 56-117089
Int. Cl.[3] G01J 1/36
U.S. Cl. 250—204 11 Claims



1. A device for automatically focusing an objective lens, comprising:
(a) detecting means capable of detecting the positional relation of said objective lens with respect to an in-focus position at which an image of an object is formed on a predetermined focal plane;
(b) means including an electric motor for moving said objective lens toward said in-focus position; and
(c) control means for controlling the driving of said motor in response to said detecting means, said control means including a power supply circuit means adapted, when operative, for connecting said motor to a power source, a braking circuit means adapted, when operative, for short-circuiting said motor, means for rendering said power supply circuit means operative continuously when said image is far from said focal plane, and means for alternately rendering said power supply circuit means and said braking circuit means operative when said image is close to said focal plane to thereby decelerate said motor when said objective lens is within a predetermined range near said in-focus position.

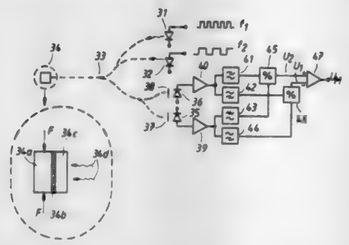
4,451,730
OPTICAL MEASURING APPARATUS FOR MEASURING FORCE OR PRESSURE

Torgny Brogardh; Olof Engström, and Christer Ovren, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Continuation of Ser. No. 226,829, Jan. 21, 1981, abandoned. This application May 9, 1983, Ser. No. 492,651
Claims priority, application Sweden, Jan. 24, 1980, 8000558
Int. Cl.[3] G01D 5/26
U.S. Cl. 250—227 34 Claims

1. An optical measuring apparatus for measuring a force, comprising at least one light source, an optical fiber system comprising at least one optical fiber for conducting at least one frequency of light from and to a sensing means, and a detector system, wherein said sensing means comprises a material having force-dependent photo-luminescent properties, such that a wavelength shift of the entire spectrum of the emitted photo-luminescent light from said sensing means is produced within

at least two different wavelength ranges as a function of the force applied to said sensing means, said optical fiber system directing said photo-luminescent light from said sensing means



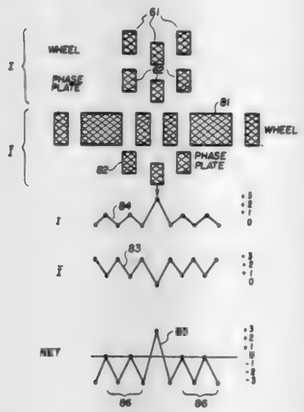
to said detector system, and said detector system including means for detecting said photo-luminescent light within said at least two different wavelength ranges.

4,451,731

APPARATUS AND METHOD FOR MODULATING LIGHT TO GENERATE AN INDEX PULSE

Mark Leonard, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 10, 1981, Ser. No. 291,666
Int. Cl.³ G01D *5/38*
U.S. Cl. 250—237 SE **9 Claims**



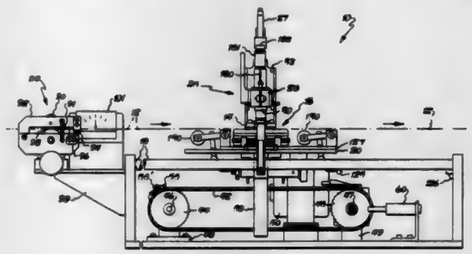
1. An apparatus for modulating light comprising:
a first track having a first select pattern of alternating non-transmissive and nonuniformly aligned transmissive sections for modulating light;
a second track having a second select pattern of alternating and non-transmissive and nonuniformly aligned transmissive sections for modulating light transmitted by said first track, said second select pattern nonprogressively becoming substantially coincident with a portion of said first select pattern when said tracks move past each other; and
means for causing said tracks to move past each other.

4,451,732

APPARATUS FOR MEASURING THICKNESS OF COATING ON CONTINUOUSLY MOVING MATERIAL

Jerry J. Spongr, Tonawanda, and Byron E. Sawyer, N. Tonawanda, both of N.Y., assignors to Twin City International, Inc., Amherst, N.Y.

Filed May 20, 1982, Ser. No. 380,250
Int. Cl.³ G01N *23/225*
U.S. Cl. 250—308 **12 Claims**



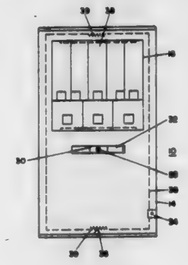
1. In an apparatus for measuring coating thickness on strip material moving along a predetermined path, the apparatus including a shuttle carrying a measuring probe having coating thickness sensing means and carrying a supporting surface for supporting the strip material during the time the thickness measurement is being made, drive means for reciprocating the shuttle along a preselected segment of the path traveled by the strip material, means for selectively engaging and disengaging the supporting surface and the moving strip so that the shuttle is driven by the strip for synchronous movement therewith during engagement thereof and is driven independently of the strip during disengagement thereof, and means for operatively coupling and uncoupling the probe and the moving strip while the shuttle and the strip are engaged, the improvement comprising said supporting surface positioned for angular inclination relative to the plane in which the major transverse surface of said strip lies and about an axis substantially parallel to the longitudinal axis of the strip, and means for selectively inclining said surface a predetermined amount while said strip is in driving contact with said supporting surface to properly position for measurement that portion of the coated area desired to be measured.

4,451,733

INFRARED INTRUSION DETECTOR WITH OPTICAL PATTERN LOCATORS

Ronald G. Avery, Bethel, and William G. Kahl, Jr., Brookfield, both of Conn., assignors to Cerberus AG, Mannedorf, Switzerland

Filed May 17, 1982, Ser. No. 378,995
Int. Cl.³ G01J *5/04, 5/08*
U.S. Cl. 250—342 **9 Claims**



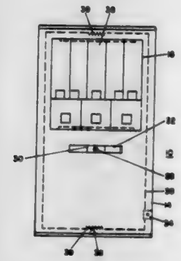
1. In a passive infrared intrusion detector wherein an infrared detecting element and a light source are enclosed within an enclosure having an aperture formed in one wall, said one wall comprising a removeable cover, and wherein a lens unit is provided in said aperture, the improvement wherein said removeable cover is mountable in a closed position and in a partially open position, wherein there is provided a tamper switch to detect movement of said cover from said closed to said partially open position, and wherein there is provided means responsive to operation of said tamper switch for illuminating said light source, whereby said light source can be used to orient said detector with the cover in the partially open position.

4,451,734

INFRARED INTRUSION SENSOR WITH SELECTABLE RADIATION PATTERNS

Herbert N. St. Jean, New Milford, and Richard Settanni, Bethel, both of Conn., assignors to Cerberus AG, Mannedorf, Switzerland

Filed May 17, 1982, Ser. No. 379,139
Int. Cl.³ G01J *5/08*
U.S. Cl. 250—342 **3 Claims**



1. In a passive infrared intrusion detector wherein an infrared detecting element is enclosed within an enclosure having an aperture formed in one wall of said enclosure, and wherein a lens unit is provided in said aperture, the improvement wherein said aperture is provided on one half of said wall, wherein said lens unit includes first and second lens portions, each corresponding in size to said aperture, and each for focusing radiation onto said detecting element from different patterns of sensitivity, and wherein said lens unit is mountable to said enclosure in at least two orientations, each of said orientations causing a different one of said lens portions to be positioned in said aperture.

4,451,735

CRYOGENIC RADIATION DETECTOR WITH HIGH-DENSITY CONDUCTOR ARRAY

Heinz K. Diedrich; Giovanni Greco, and Domenico Fanti, all of Rome, Italy, assignors to Selenia, Industrie Elettroniche Associate, S.p.A., Rome, Italy

Filed Feb. 8, 1982, Ser. No. 347,035
Claims priority, application Italy, Feb. 9, 1981, 47753 A/81
Int. Cl.³ G01J *5/02*
U.S. Cl. 250—352 **11 Claims**

1. A radiation detector comprising:
an evacuated container with an external boundary partly constituted by two axially aligned generally cylindrical metallic peripheral wall sections;
a cooled metallic cylinder extending axially within said wall sections and defining therewith an annular space, said cylinder having a closed end disposed in a transverse plane;
photoelectric transducer means including a multiplicity of radiation-sensing elements disposed on said closed end in a central area of said container and confronted by a radiation-transparent window thereof parallel to said transverse plane;
a stack of annular ceramic layers surrounding said cylinder at a location axially offset from said transverse plane, said stack being sintered into a solid body which forms part of a hermetic seal joining said wall sections to each other;
a multiplicity of thin conductor strips radially arrayed on a surface of at least one of said layers extending inward from said wall sections toward said cylinder, each conductor strip being partly overlain by an adjoining layer of said stack leaving an inner and an outer end of the strip exposed; and



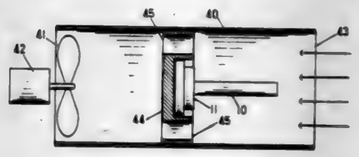
a multiplicity of metallic leads in said space galvanically connecting the exposed inner ends of said conductor strips to respective radiation-sensing elements of said transducer means, each of said leads including a metal pin extending axially from the inner end of the respective strip to substantially said transverse plane and further including a radially oriented wire substantially thinner than said pin extending from a tip of said pin to a respective radiation-sensing element across a narrow annular gap separating the pins of said leads from said cylinder, said wire normally having a curvature sufficient to enable its contraction at cryogenic temperatures.

4,451,736

METHOD AND APPARATUS FOR MEASURING AIR ION CONCENTRATIONS

John R. Cameron, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

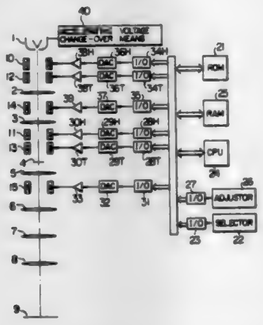
Filed Apr. 16, 1982, Ser. No. 369,006
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—376 **14 Claims**



1. A method of determining the relative concentration of ions in air, comprising the steps of:
(a) providing an electret formed of a dielectric material which can carry charge;
(b) charging the electret to a selected charge level;

(c) covering the charged electret with an enclosure so that the electret is shielded from ambient atmosphere;
(d) exposing the electret to ambient atmosphere for a selected period of time by removing the enclosure, and thereafter covering the electret with the enclosure again;
(e) removing the enclosure, and, immediately thereafter,
(f) measuring the charge remaining on the electret, the difference between the initial charge and the measured charge being related to the quantity of ions collected by the electret during exposure.

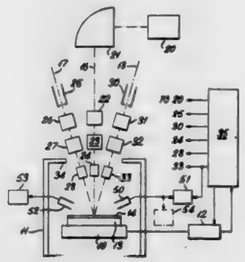
4,451,737
ELECTRON BEAM CONTROL DEVICE FOR ELECTRON MICROSCOPES
Shigeto Isakozawa, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 24, 1982, Ser. No. 391,917
Claims priority, application Japan, Jun. 24, 1981, 56-96509
Int. Cl.³ H01J *37/26*
U.S. Cl. 250—311 **11 Claims**



1. An electron beam control device for an electron microscope, comprising:
deflection means for deflecting an electron beam;
storage means for storing therein digital signals corresponding to observation modes for deflecting said electron beam;
means for specifying one of said observation modes and for reading one of said digital signals corresponding to the specified observation mode out of said storage means;
means for converting the read-out digital signal into an analog signal; and
means for controlling said deflection means on the basis of said analog signal.

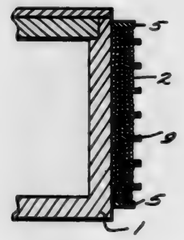
4,451,738
MICROCIRCUIT FABRICATION
Kenneth C. A. Smith, Cambridge, England, assignor to National Research Development Corporation, London, England
Filed Jul. 24, 1981, Ser. No. 286,715
Claims priority, application United Kingdom, Jul. 28, 1980, 8024640
Int. Cl.³ H01J *37/00*
U.S. Cl. 250—492.2 **16 Claims**

1. An apparatus for microcircuit fabrication comprising means for presenting a substrate for exposure during an exposure interval, means for producing independently of each other at least one ion beam and at least one electron beam, the axes of the beams being relatively inclined for substantial convergence at the substrate, means for focusing each ion beam on the surface of the substrate at a higher resolution, means for focusing each electron beam on the surface of the substrate at a lower resolution and means for scanning simultaneously said electron and ion beam across the surface to produce during the



exposure interval a respective portion of a desired exposure pattern.

4,451,739
CONTAINER FOR RADIOACTIVE MATERIALS
Richard Christ, August-Bebel-Strasse 20, 6454 Bruchköbel, and Hartmut Kroll, Gaussstrasse 6, 6450 Hanau, both of Fed. Rep. of Germany
Filed Mar. 4, 1981, Ser. No. 240,379
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3008992
Int. Cl.³ G21F *5/00, 3/00*
U.S. Cl. 250—506.1 **7 Claims**

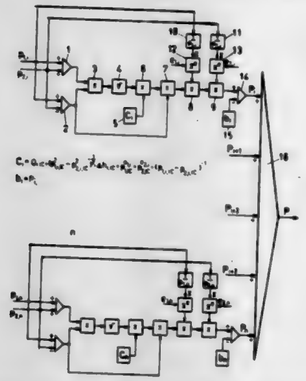


1. A container for radioactive material having an interior for receiving radioactive material and an exterior surface, at least part of said exterior surface having gamma ray absorbing means removably mounted thereon to a depth sufficient to absorb gamma radiation from the radioactive material disposed within said container, said gamma ray absorbing means comprising wire means wrapped around the exterior surface of said container with a plurality of wraps, and said container also being provided with cooling flanges which are at least partially embedded in said wire means.

4,451,740
DEVICE FOR DETERMINING THE POWER OUTPUT OF A TURBO-GROUP DURING DISTURBANCES IN THE ELECTRICITY SUPPLY NETWORK
Karel Skala, Windisch, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Jul. 12, 1982, Ser. No. 397,206
Claims priority, application Switzerland, Jul. 13, 1981, 4565/81
Int. Cl.³ F01K *13/02*
U.S. Cl. 290—40 C **3 Claims**

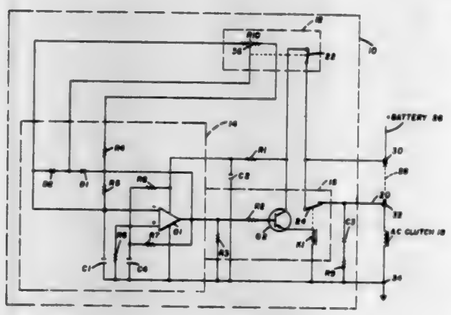
1. Device for determining the power output of a turbo-group during disturbances in the electricity supply network, the turbo-group being subdivided into n turbine-sections, a pressure-measuring point for the working-medium pressure being provided, in each case, at the beginning and the end of each

turbine-section, in general for monitoring operation, the turbo-group also possessing an automatic control unit (25) and control elements (26), for regulating the power output during normal, undisturbed operation, and featuring a switch-over relay (24), which can be actuated by a signal which is triggered by the disturbance, this relay being designed to activate the device (18) when a disturbance occurs, the turbo-group also featuring pressure-signal lines (19,20,21), which are designed to be pressurized from the above-mentioned pressure-measuring points thereon, while the device (18) features n groups of computing elements, each of which is individually assigned to one of the n turbine-sections, the computer elements (1-16,



28-36) of each group in the device being structured in a manner such that, when a disturbance occurs, they process the pressures ($p_{1,i}$, $p_{2,i}$, $p_{1,i+1}$, $p_{2,i+1}$, . . . $p_{1,n}$, $p_{2,n}$)which are supplied by the pressure-signal lines (19, 20, 21), as input variables, to generate an output signal representing the instantaneous power output $P_i(t)$ of a turbine-section (i), in which device an adder (16;36) is provided, which combines the $P_i(t)$ output signals to generate a resulting output signal representing the instantaneous total power output P(t) of the turbo-group, this signal being intended to be supplied to the automatic control unit (25) of the turbo-group (17), in order to sustain the regulating function throughout the duration of the event producing the disturbance.

4,451,741
ELECTRONIC CONTROL FOR AN AUTOMOBILE AIR CONDITIONER
George H. Brower, 1628 English Pl., Crofton, Md. 21114
Filed Nov. 8, 1982, Ser. No. 439,761
Int. Cl.³ H01N *43/06*
U.S. Cl. 307—10 R **7 Claims**

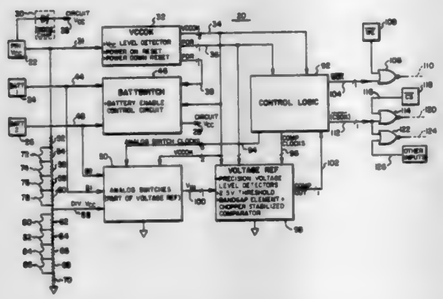


1. An electronic control for an air conditioner, comprising:
an adjustable range control means, said adjustable range control means being a potentiometer, said potentiometer having a range of operation, said adjustable range control means having a knob-like switch means therewith, said knob-like switch means serving as a main switch for turning on said electronic control for an air conditioner, said knob-like switch means further being connected to and serving as a means of adjusting said potentiometer through its said range of operation, said knob-like switch means being capable of remaining in an "on" contact mode while serving as said means of adjusting said potentiometer through its said range of operation;
an interval timer means, said interval timer means being electrically connected to said adjustable control means;
a relay driver means, said relay driver means being electrically connected to said interval timer means;
an electrical wiring circuit, said electrical wiring circuit interconnecting said adjustable range control means, said interval timer means, and said relay driver means;
an enclosure means, said enclosure means housing and enclosing said adjustable range control means, said interval timer means, said relay driver means, and said electrical wiring circuit, said enclosure means having three electrical connection means, said three electrical connection means being externally located on said enclosure means and each being electrically connected to said electrical wiring circuit, and an operational amplifier, a first resistor, a second resistor, a third resistor, a fourth resistor, a fifth resistor, a sixth resistor, and a seventh resistor, a first capacitor, a second capacitor, and a third capacitor, a first diode, and a second diode, said interval timer means being centered around said operational amplifier, said interval timer means having power supplied to it through said first resistor, said first resistor in conjunction with said first capacitor forming a filter network for said operational amplifier as power is supplied to it, said operational amplifier operating as a free running multivibrator with a constant frequency determined by said second capacitor and said second resistor, said interval timer functioning as a low frequency pulse generator, a variable pulse width being determined by said potentiometer and said first and second diodes, said operational amplifier having an output voltage held to a high state due to feedback of positive voltage through said third resistor and a resistor divider network formed by said fourth and fifth resistors, said third, fourth and fifth resistors being connected to the non-inverting input side of said operational amplifier, said third capacitor serving as a filter to noise spikes and to stabilize a high gain of the circuit of said operational amplifier, said sixth resistor being connected in series with said potentiometer for discharge of said second capacitor when reaching a full charge, said seventh resistor providing a fixed load for said operational amplifier.

4,451,742
POWER SUPPLY CONTROL FOR INTEGRATED CIRCUIT
Cecil J. Aswell, Coppell, Tex., assignor to Mostek Corporation, Carrollton, Tex.
PCT No. PCT/US81/00705, 371 Date May 27, 1981, 102(e) Date May 27, 1981, PCT Pub. No. WO80/02644, PCT Pub. Date Dec. 11, 1980
Continuation of Ser. No. 282,179, May 27, 1981, abandoned. This PCT application May 27, 1981, Ser. No. 560,253
Int. Cl.³ H02J *9/06*
U.S. Cl. 307—66 **15 Claims**

1. A method for providing power to an integrated circuit from one of a plurality of sources, comprising the steps of:
providing a primary power source and first and second backup power sources;
comparing the voltages of said first and said second backup power sources to select the backup power source having the higher voltage;
connecting the one of said backup power sources having the higher voltage to supply power to said integrated circuit

when the voltage of said primary power source is less than a first predetermined voltage; and



disabling input signals to said integrated circuit when the voltage of the power source connected thereto is less than a second predetermined voltage.

4,451,743

DC-TO-DC VOLTAGE CONVERTER

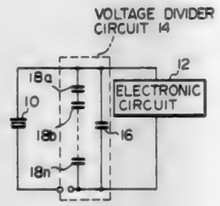
Fuminori Suzuki, and Singo Ichikawa, both of Tanashi, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 328,990

Claims priority, application Japan, Dec. 29, 1980, 55-186857; Dec. 29, 1980, 55-186858; Dec. 29, 1980, 55-186859; Jan. 23, 1981, 56-9180; Jan. 23, 1981, 56-9181

Int. Cl.³ H02M *3/18*

U.S. Cl. 307—110 **10 Claims**



6. A DC-to-DC converter circuit for converting the voltage of a battery for thereby producing a power supply voltage to be applied to a load, comprising:

a main capacitor, said main capacitor being fixedly connected in parallel with said load;

a set of n auxiliary capacitors each having a value of capacitance equal to that of said main capacitor wherein "n" is an integer;

a source of switching signals provided by said load; and a plurality of electronic switch means responsive to said switching signals for controlling the interconnection conditions between said main capacitor, said auxiliary capacitors, said load and said battery such as to repetitively and alternately establish a first operating condition in which said n auxiliary capacitors are connected in parallel with one another and are connected in series with said main capacitor and a second operating condition in which said n auxiliary capacitors are connected in series with one another and are collectively connected in parallel with said main capacitor, to thereby establish a value of said power supply voltage which is substantially equal to said battery voltage multiplied by a factor which is a function of n, during said first operating condition said auxiliary capacitors being connected in parallel with one another and being connected as a group in series with said main capacitor across said battery to be charged therefrom, and during said second operating condition, said auxiliary capacitors being disconnected from said battery and being connected in series with one another and connected as a series-connected group in parallel with said main capacitor, to thereby establish a value of said supply voltage which is substantially equal to said battery voltage multiplied by a factor $n/(n-1)$.

4,451,744

MONOLITHIC INTEGRATED REFERENCE VOLTAGE SOURCE

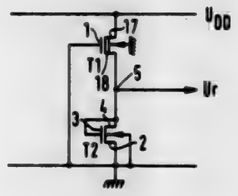
Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,888

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108726

Int. Cl.³ G05F *3/16*; H01L *29/78*

U.S. Cl. 307—297 **1 Claim**



1. A monolithic integrated reference voltage source, comprising:

a substrate;

a first depletion-type MOSFET formed in said substrate and having drain, source and gate electrodes, said drain electrode adapted to be connected to a supply potential, and the gate electrode adapted to be connected to a reference potential;

a second enhancement-type MOSFET formed in said substrate and having drain, source and gate electrodes, said drain electrode being connected to the source electrode of the first MOSFET, the gate electrode being connected to the drain electrode of the second MOSFET, and the source electrode being connected to the reference potential; and

a reference voltage output connected to the connection between the source and drain electrodes of said first and second MOSFETs, said MOSFETs having a gate oxide layer with a thickness lying in the range of between 0.060 and 0.066 microns, said substrate having a doping level below the gate of said second MOSFET within the range of 5 to $7 \cdot 10^{14}$ cm^{-3}, and the substrate surface below the gate of said first MOSFET having implanted donators in the range of 0.75 to $1.25 \cdot 10^{12}$ cm^{-2}, said MOSFETs further having conducting channels having widths W and lengths L such that the ratio of the width-to-length ratio of the first MOSFET to the width-to-length ratio of the second MOSFET lies in a range between 1.10 and 1.40.

4,451,745

ADDRESS BUFFER CIRCUIT WITH LOW POWER CONSUMPTION

Hideo Itoh, and Kenji Agatsuma, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 8, 1980, Ser. No. 214,205

Claims priority, application Japan, Dec. 19, 1979, 54-165232

Int. Cl.³ H03K *19/092, 17/687*

U.S. Cl. 307—475 **4 Claims**

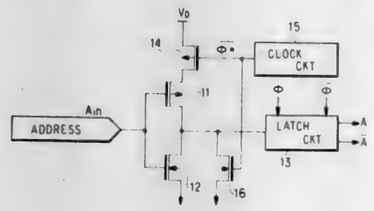
1. An address buffer circuit including:

an inverter having an input for receiving an address signal, an output for providing an inversion signal being the inverted received address signal and a power source terminal for receiving power from a power source;

a transistor connected in series between the power source terminal of the power source and having a gate electrode;

a clock circuit, operatively connected to the gate electrode, for generating a first internal clock signal for turning ON the transistor only in a first time period and for generating a second internal clock signal at least during the first time period;

a latch circuit operatively connected to the output of the inverter for latching the inversion signal in response to said second internal clock signal.



4,451,746

NON-LINEAR EMPHASIS CIRCUIT

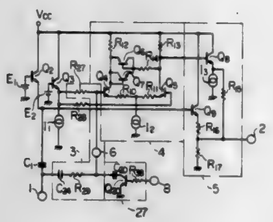
Koichi Hirose, Katsuta, and Kazuo Kondo, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,811

Claims priority, application Japan, Jul. 4, 1980, 55-90528

Int. Cl.³ H03B *1/04*; G06G *7/12*

U.S. Cl. 307—494 **11 Claims**



1. A non-linear emphasis circuit capable of effecting an emphasis the degree of which is variable depending on the level of an input signal to the emphasis circuit, comprising:

a high-pass filter for receiving an input signal;

a compressor arranged to be supplied with the output of said high-pass filter, the gain of said compressor being variable responsive to the output of said high-pass filter and having a tendency to decrease and increase responsive to an increase and a decrease of the output of said high-pass filter, respectively;

an adder arranged to be supplied with said input signal and the output of said compressor and having means for adding them at a predetermined rate for producing an emphasized output signal; and

a switching circuit in electrical connection with said high-pass filter for disabling the latter.

4,451,747

HIGH SPEED CLAMP CIRCUIT

Lucien M. Rucker, III, Arlington, Tex., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 8, 1982, Ser. No. 337,989

Int. Cl.³ H03K *5/08*

U.S. Cl. 307—549 **8 Claims**



1. A circuit in which the magnitude of the voltage at an output terminal does not exceed a particular value related to a reference voltage comprising

(1) first and second transistors of opposite polarity having the base of the first transistor connected to the emitter of the second transistor;

(2) a first resistance means connected between the collector and base of the first transistor and a second resistance means connected between the emitter and base of the first transistor;

(3) a first voltage level terminal connected to the collector of the first transistor;

(4) a voltage output terminal connected to the emitter of the first transistor;

(5) a reference voltage terminal connected to the base of the second transistor.

4,451,748

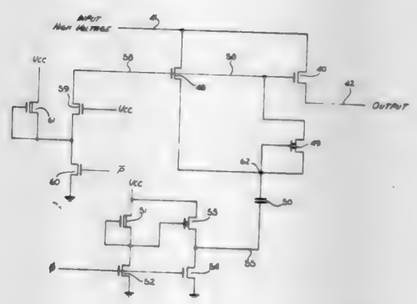
MOS HIGH VOLTAGE SWITCHING CIRCUIT

Daniel Amrany, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 15, 1982, Ser. No. 339,790

Int. Cl.³ H03K *17/10, 17/687*

U.S. Cl. 307—578 **12 Claims**



1. In an integrated circuit employing a first potential and a higher second potential, a circuit for switching said second potential with a control signal which is lower in potential than said second potential, comprising:

a capacitor;

charging and discharging means coupled to one terminal of said capacitor, for charging and discharging said capacitor, said charging and discharging means being coupled to, and powered exclusively from, said first potential;

a first field-effect transistor having two current-conducting

terminals and a gate, one of said terminals coupled to receive said second potential;

a second field-effect transistor having two current-conducting terminals and a gate, one of said terminals coupled to said gate of said first transistor, and the other of said terminals of said second transistor coupled to the other of said terminals of said capacitor, and the gate coupled to effect a self-bias operation;

a third field-effect transistor having two current-conducting terminals and a gate, one of said terminals coupled to receive said second potential on one of said terminals, the other of said terminals being coupled to said other of said terminals of said capacitor, said gate of said third transistor being coupled to said gate of said first transistor; and

switching means coupled to receive said control signal and coupled to said gates of said first and third transistors, for controlling the output from said circuit,

whereby said second potential is switched at the other of said terminals of said first transistor with said circuit being exclusively powered from said first potential.

4,451,749

AC GENERATOR

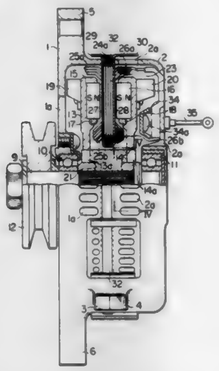
Kenji Kanayama, Kariya; Hidekuni Sugi, Nagoya; Shuzo Kinkori, Okazaki, and Kouzi Kawasumi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 25, 1982, Ser. No. 411,361

Claims priority, application Japan, Sep. 11, 1981, 56-144436; Nov. 13, 1981, 56-182745

Int. Cl.³ H02K *9/06*

U.S. Cl. 310—62 **20 Claims**



1. An alternating current generator comprising:

a pair of cup-shaped housings, each including a plurality of mounting portions at the outer peripheral side thereof, said pair of housings being fixed mutually by said mounting portions, each of said housings further including a plurality of air holes for allowing the cooling air to flow in at the bottom thereof and a plurality of air holes for blowing out the cooling air at the peripheral edge thereof;

an annular multiphase armature coil arranged in said housings and including annular and substantially flat portions at the ends thereof, said multiphase armature coil including a plurality of winding portions arranged equidistantly along the periphery thereof the winding portion for a given phase including an outer peripheral part extending straight outward radially, said outer peripheral part extending straight being held by the inner ends of said housings, the winding portions for the other phases including outer peripheral parts bent in a direction substantially perpendicular to the plane containing said flat annular portions outside thereof;

a shaft supported rotatably by said housings;

a pair of discs of magnetic material fixed on said shaft and arranged on the both sides of said armature coil;

a plurality of magnets fixed on said discs and arranged equidistantly along the periphery of each of said discs in opposed relation to said flat annular portion of said armature coil;

a pair of fans fixed on said discs on the other side thereof with respect to said magnets; and

a fan fixed on said shaft and arranged between said pair of discs, said fan including a plurality of blades extending in radial direction; and

a plurality of through holes formed in said discs and opened to a space defined by said pair of discs between adjacent ones of said blades.

4,451,750

PROTECTIVE ARRANGEMENT FOR A PLUG-CONNECTED ELECTRIC MOTOR SEALED AGAINST PRESSURE, VAPORS AND RADIATION

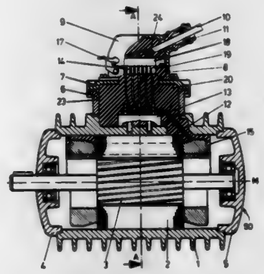
Dieter Heuer, Wenden, and Georg Schmiedke, Friedberg, both of Fed. Rep. of Germany, assignors to Elektro-Mechanik GmbH, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,042

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 8102601[U]

Int. Cl.³ H02K *5/10*

U.S. Cl. 310—88 **5 Claims**



1. An electric motor construction for nuclear plants, comprising: a housing; a motor rotor rotatably mounted in said housing; a stator with a plurality of grooves and stator windings, said stator disposed in said housing and around said rotor; said housing having a wall with an opening therein; a terminal box plug connected to said stator windings mounted on said wall around said opening including upper and lower interengageable connector parts with a plurality of cables extending through said upper and lower interengageable connector parts; a sealing gasket between said upper and lower interengageable parts; said stator windings having lead wires leading from said housing to said connector parts and connected to said cables at a connection; first continuous sealing compound resistant to humidity, vapor and gamma radiation, embedding said stator windings, said lead wires, said connection, at least a part of said cables and filling said grooves, said first continuous sealing compound extending from said housing into said connector parts; and a second continuous sealing compound resistant to humidity, vapor and gamma radiation, embedding upper portions of said cables in said upper interengageable connector part above said gasket, said first continuous sealing compound extending in said lower interengageable connector part up to said gasket and said second continuous sealing compound filling an upper portion of said upper interengageable connector part and extends down to a location above said gasket.

4,451,751

THREE-PHASE WINDING FOR A HIGH-VOLTAGE MACHINE

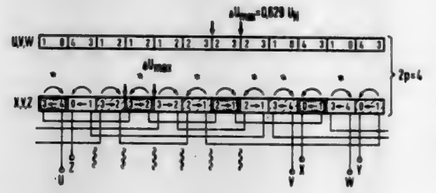
Herbert Auinger, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,077

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141239

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—184 **9 Claims**



1. In a three-phase winding for a high voltage machine with any number of poles 2p=4 and Y connected legs, formed of coil groups, each leg having two winding ends to provide a total of six winding ends, with the coil groups alternatingly connected in opposite directions, and connected in the same and the opposite sense with respect to the magnetization and potential direction to form "with" and "counter" coil groups which are distributed along the circumference and connected in series in such a manner that a reduction of the maximum voltages present between adjacent coil sides at the phase transitions is obtained, the improvement comprising an asymmetrically distributed arrangement and series connection of the individual coil groups of the three winding legs along the circumference such that upon reversal of the Y connections, the maximum voltages present at the phase transitions remain unchanged, the six winding ends being arranged physically side-by-side within a pole pair, the sums of the absolute values of the adjacent potential being at most $|U_1|+|U_2|=(3p-2)U_{SG}$ at the phase transitions which occur when the respective 2p coil groups of a leg are connected in series, where U_{SG} is the voltage of a coil group, whereby generally four and up to six wiring connections are installed side-by-side only over individual short sections of the circumference, to connect the individual coil groups on the coil head side.

4,451,752

STATOR OF D.C. ROTARY MACHINE

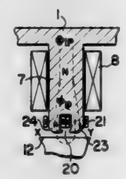
Kazuo Tahara; Takayuki Matsui; Haruo Koharagi, all of Hitachi; Seizi Yamashita, Katsuta, and Noriyoshi Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 387,203

Claims priority, application Japan, Jun. 12, 1981, 56-89633

Int. Cl.³ H02K *23/22*

U.S. Cl. 310—186 **14 Claims**



1. A stator of a D.C. rotary machine comprising an annular yoke, a plurality of main pole cores disposed along the inner periphery of said yoke in a relation equally spaced apart by a predetermined distance from each other in the circumferential direction of said yoke, a main pole winding wound around each of said main pole cores, a plurality of interpole cores disposed also along the inner periphery of said yoke at positions intermediate between said circumferentially spaced main pole cores, and an interpole winding wound around each of said interpole cores, wherein magnetic flux adjusting means is provided adjacent to the radially inner end of each of said interpole cores for adjusting the magnetic flux passing through the half of the circumferential width of said interpole core, said magnetic flux adjusting means being formed by disposing interpole compensation windings circumferentially respectively biased toward the opposite sides of said interpole core relative to the circumferential center of said interpole core, each of said interpole compensation windings being supplied with an exciting current in a manner so that the intensity of the magnetic flux passing through the radially inner end of said interpole cores is substantially uniform along the end face of said interpole cores.

4,451,753

PIEZOELECTRIC DEVICE WITH SURFACE CHARGE SHUNT

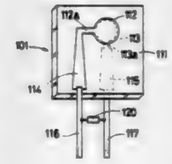
Toshio Ogawa, 8-89, Ooharanonishisakaidani-cho 3-chome, Nishikyo-ku, Kyoto-shi, Kyoto-fu, and Kikuo Wakino, 100-78, Mozume-cho, Kitanoguchi, Muko-shi, Kyoto-fu, both of Japan

Filed Jul. 15, 1980, Ser. No. 169,219

Claims priority, application Japan, Sep. 13, 1979, 54-118563; Oct. 2, 1979, 54-137067; Apr. 14, 1980, 55-49492; May 14, 1980, 55-64226

Int. Cl.³ H04R *17/00*

U.S. Cl. 310—315 **13 Claims**



1. A piezoelectric device, comprising:

a ferroelectric plate which is polarized in a polarization axis direction and which has first and second opposing surfaces intersecting said polarization axis direction;

first and second bulk wave electrodes formed on said first and second surfaces of said ferroelectric plate, respectively, said first and second electrodes cooperating with each other and with said ferroelectric plate to define a bulk wave piezoelectric component; and

first and second withdrawing means connected to said first and second bulk wave electrodes, respectively;

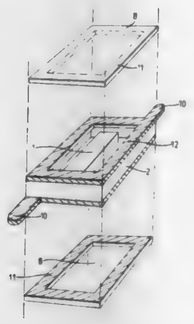
a resistive resin material covering at least part of said ferroelectric plate and being in electrical contact with said first and second withdrawing means such that said resin material shunts an electric charge produced by the pyroelectric effect on said two surfaces of said ferroelectric plate, said resin material having a resistance of between 1k and 1000M ohms, the resistance value of said resistive resin material being selected to be smaller than the inherent resistance of said ferroelectric plate in said polarization axis direction.

4,451,754

HIGH FREQUENCY PIEZOELECTRIC RESONATOR

Silvano Stolz, Bienne, and Raymond Huguenin, Preles, both of Switzerland, assignors to Dryan-Fordahl Technologies S.A., Bienne, Switzerland

Filed Nov. 2, 1979, Ser. No. 90,842
Claims priority, application France, Nov. 16, 1978, 78 33350
Int. Cl.³ H01L 41/08
U.S. Cl. 310—348 5 Claims



1. Piezoelectric bar resonator adapted to vibrate in the thickness shear mode and employing the energy trapping pinciple, wherein a resonant element and a support therefor are blanked from a thin slab of piezoelectric material to form a single planar element of which the central portion comprises the resonant element in bar form and a surrounding portion forms a framework support, the two portions remaining attached to one another by at least one of the ends of the bar, and the upper and lower surfaces of the framework support being attached to first and second cover members at attaching zones that surround said central portion on opposite sides of said thin slab; wherein the cover members are of electrically insulating material, the framework support having on its upper and lower surfaces a thick metallic layer on which the cover members are supported, the metallic layers having externally projecting tabs serving as electrical connecting terminals to the resonator.

4,451,755

ACCELERATION SENSITIVITY REDUCTION METHOD

John R. Vig, Colts Neck, and Raymond L. Filler, Freehold, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 18, 1982, Ser. No. 434,998
Int. Cl.³ H01L 41/08
U.S. Cl. 310—361 3 Claims

1. Method of reducing the average acceleration sensitivity of a 10 megahertz, third-overtone AT-cut quartz crystal plate resonator from 3.5×10^{-9}/g to 7×10^{-10}/g comprising replacing a 2 diopter contour plano-convex quartz crystal plate with an 0.62 diopter contour plano-convex quartz crystal plate.

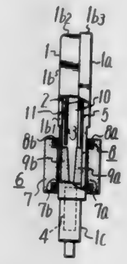
4,451,756

FLAT CATHODE RAY TUBE

Hiroki Sato, Chiba; Takao Nakano, Yokohama; Masato Hatanaka, Koshigaya; Toshio Ohhoshi, Yokohama, and Sakae Tanaka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,455
Claims priority, application Japan, Nov. 25, 1980, 55-165568
Int. Cl.³ H01J 29/70
U.S. Cl. 313—422 25 Claims

1. A cathode ray tube, comprising:
an evacuated envelope having at least one transparent flat portion;
a fluorescent target arranged on the inner surface of said flat portion;
an electron gun within said envelope in laterally spaced relation to said fluorescent target for emitting an electron beam along a path parallel with the surface of said flat portion;
first deflecting means comprising said fluorescent target and a back electrode in said envelope for impinging said electron beam upon said fluorescent target;
second deflecting means for deflecting said electron beam vertically comprising a pair of plates arranged in said envelope to pass said electron beam therebetween, one of



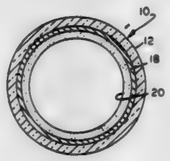
said pair of plates connected to said back electrode, and a vertical deflection signal applied to the other one of said pair of plates for deflecting said electron beam vertically on said fluorescent target and for dynamic focusing said electron beam;
third deflecting means for deflecting said electron beam laterally comprising external means arranged adjacent to said envelope for generating magnetic flux and concentrating said magnetic flux on said electron beam between said pair of plates, and deflecting said electron beam laterally on the said surface of said fluorescent target, thereby to produce an image on said fluorescent target.

4,451,757

FLUORESCENT LAMP HAVING IMPROVED MAINTENANCE

Costas C. Lagos, Danvers, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 25, 1982, Ser. No. 342,531
Int. Cl.³ H01J 1/70; B05D 5/06
U.S. Cl. 313—489 4 Claims



1. A fluorescent lamp comprised of a tubular glass envelope having electrodes sealed in the ends thereof and having in its interior a luminescent material of a given weight, said luminescent material including a substantially homogeneous dispersion of a metallic borate in an amount effective to increase the lumen maintenance of said lamp, said borate having the general formula

$$MB_2O_2ZH_2O$$

where
M=Na; Ba; Zn; or Ca; and
when M=Na, then x=4, y=7, and Z=10;

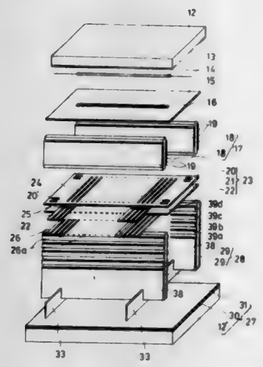
when M=Ba, then x=2, y=4, and Z=1;
when M=Zn, then x=4, y=9, and Z=5;
when M=Ca, then x=4, y=7, and Z=0; and
wherein said borate comprises from about 0.02 to about 0.12% by weight of said luminescent material.

4,451,758

PICTURE IMAGE DISPLAY DEVICE INCLUDING A ROW OF PARALLEL CONTROL ELECTRODES

Masanori Watanabe, Katano; Kinzo Nonomura, Hirakata, and Yoshinobu Takesako, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 29, 1981, Ser. No. 288,208
Claims priority, application Japan, Aug. 4, 1980, 55-107468; Dec. 19, 1980, 55-180693
Int. Cl.³ H01J 29/74, 31/00
U.S. Cl. 313—495 8 Claims



1. A picture image display device comprising:
a flat type vacuum enclosure having a transparent face panel containing therein the following disposed in the following order:
a row of parallel disposed linear thermionic cathodes to produce electron emission,
an electron beam extracting electrode means which has through-openings to pass electrons of said electron emission therethrough, to form a predetermined number of electron beams of predetermined shapes out of said electron emission,
a row of first deflection electrodes disposed parallel to said linear thermionic cathodes,
control electrode means comprising a row of linear electrodes disposed parallel to each other in a direction perpendicular to those of said linear thermionic cathodes,
a row of second deflection electrodes disposed parallel to each other and also parallel to said control electrode means, and
a phosphor screen and an anode of thin metal film thereon formed on the inner face of said face panel.

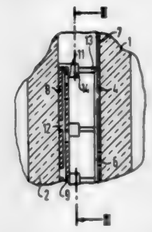
4,451,759

FLAT VIEWING SCREEN WITH SPACERS BETWEEN SUPPORT PLATES AND METHOD OF PRODUCING SAME

Hinrich Heynisch, Gräfelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,158
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036671
Int. Cl.³ H01J 9/24, 29/86
U.S. Cl. 313—495 7 Claims

1. Flat viewing screen having a matrix of selectively addressable picture elements, comprising two mutually parallel support plates of glass being vacuum-tightly connected to each other and having sides facing each other, at least one separately addressable electrode disposed on each of said sides, a multiplicity of spacers each being assigned to one picture element for spacing said support plates from each other, each



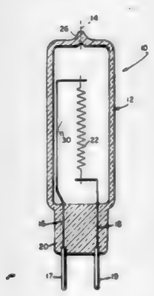
spacer including a pin being integral with and protruding from one of said support plates and a hollow cylinder having an inner surface and a bottom and being integral with and protruding from the other of said support plates, each pin being inserted into one hollow cylinder at a space from said inner surface and contacting said bottom of said hollow cylinder.

4,451,760

LONG LIFE INCANDESCENT TUNGSTEN-HALOGEN LAMP

Robert M. Griffin, South Hamilton, and Roy C. Martin, Salem, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 28, 1982, Ser. No. 372,508
Int. Cl.³ H01K 1/08, 1/56
U.S. Cl. 313—557 8 Claims

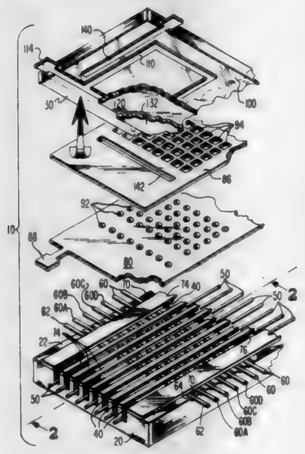


1. A tungsten-halogen lamp comprising: a light transmitting, hermetically sealed, glass envelope having a longitudinal axis; two lead-in wires sealed in said envelope and extending internally and externally thereof, one of said lead-in wires being long and the other being short, and said lead-in wires being substantially molybdenum or tungsten; a tungsten filament attached to said lead-in wires and extending substantially along said longitudinal axis; a fill gas within said envelope, said fill gas comprising krypton, nitrogen and a halogen; and means within said lamp for reducing sag and halogen corrosion of said filament, said means being copper; said copper being attached to said long lead-in wire.

4,451,761
GLASS COMPOSITION AND GAS-FILLED DISPLAY PANEL INCORPORATING THE GLASS AS AN INSULATING LAYER

Nicholas W. Kay, Mine Hill, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 13, 1982, Ser. No. 339,117
Int. Cl.³ H01J 17/49; C03C 3/10; 501 76
U.S. Cl. 313—586 6 Claims



1. A glass composition including PbO, SiO_2, B_2O_3, BaO, ZnO, Al_2O_3, and Na_2O, said glass composition, when fired on a soda-lime substrate, forming a glass layer having a thermal coefficient of expansion similar to that of soda-lime glass, a dielectric constant of at least 9, light transmissivity of at least 85%, and heatable to about 600° C. without distortion of the soda-lime substrate.

4. A display panel comprising

a gas-filled envelope,

said envelope being made up of a base plate and a face plate sealed together hermetically, said face plate comprising a soda-lime glass,

an array of rows and columns of scanning cells associated with said base plate and including an array of scan anodes and scan cathodes disposed at an angle to each other,

an array of rows and columns of display cells disposed adjacent to said scanning cells and in operative relation therewith,

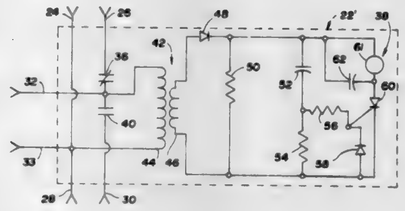
said display cells being defined by an apertured plate electrode and a large-area transparent electrode disposed on said face plate and covered with a layer of insulating glass, said insulating glass being compatible with soda-lime glass and being made from a glass composition including PbO in the range of 51 to 55 percent by weight, SiO_2 in the range of 12 to 16 percent by weight, B_2O_3 in the range of 10 to 15 percent by weight, BaO in the range of 8 to 12 percent by weight, ZnO in the range of 0 to 4 percent by weight, Al_2O_3 in the range of 0.5 to 2.5 percent by weight, and Na_2O in the range of 0.5 to 2.0 percent by weight.

4,451,762
CONTROL CIRCUIT AND SYSTEM FOR PROVIDING EMERGENCY LIGHTING

Don A. Forte, Newark, Ohio, and Michael B. Aldava, Tujunga, Calif., assignors to Manville Service Corporation, Denver, Colo.

Filed Jun. 18, 1982, Ser. No. 389,806
Int. Cl.³ H05B 39/10
U.S. Cl. 315—87 9 Claims

1. In a system for providing normal and emergency lighting from a single source of electrical power capable of providing input power alternately in the form of a normal power signal and an emergency power signal during interruption of the normal power signal, the system including a first lamp capable of being energized by the normal power signal and an emergency lamp capable of being energized by the emergency power signal, a control circuit adapted to alternately receive the normal and emergency power signals, said control circuit comprising:



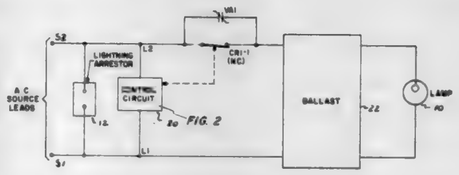
a detection circuit for determining which one of said power signals is being received, and

an electrically controlled switching circuit coupled to said detection circuit for selectively and automatically removing input power from the first lamp and coupling the input power to the emergency lamp during emergency operating conditions.

4,451,763
ELECTRONIC LAMP CONTROL APPARATUS

Gregory L. Sodini, Memphis, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 374,983
Int. Cl.³ H05B 37/02
U.S. Cl. 315—159 2 Claims

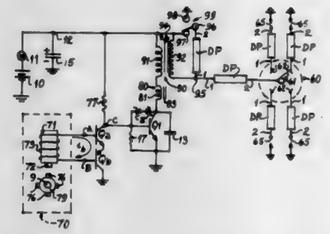


1. A control circuit for an outdoor luminaire including a lamp having a photoelectric cell controlled turn off and turn on, a power supply circuit for providing said photoelectric cell and said lamp, first bistable means for illuminating said lamp when the ambient light on said cell is below a predetermined level, a solid state clock powered by said power supply, said clock settable to emit an output pulse at a time set on said clock, a second bistable means, means coupling said second bistable means to said clock to set said second bistable means in response to said output pulse from said clock, a switch responsive to the setting of said second bistable means to switch said first bistable means and shut off said first bistable means, and timing means coupled to said second bistable means to initiate a timing cycle responsive to the setting of said second bistable means, and said timing means operative at the end of a timed cycle to reset said second bistable means and switch said first bistable means.

4,451,764
IGNITION SYSTEM HIGH VOLTAGE CABLE WITH MINIMIZED RADIO INTERFERENCE

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed May 5, 1983, Ser. No. 491,750
Int. Cl.³ H05B 37/02, 39/04, 41/36
U.S. Cl. 315—209 R 4 Claims



1. A transmission cable, in an ignition system having an ignition transformer and an electrical igniter, for enabling ignition current to be fed to said igniter, said cable comprising:

an insulating core elongated along the length of the cable and substantially constituting the axis of elongation of the cable;

first inductive means, wound in a first direction substantially over the entire length of the core; and

second inductive means, electrically insulated from and wound over substantially the entire length of the first means in a second direction opposite to the first direction, said first and second inductive means being connected in parallel for passing ignition current therethrough between the transformer and igniter, said first and second inductive means being coaxial windings each of which comprise turns of insulated wire, said turns being wound in a plane substantially perpendicular to the axis of elongation and in close proximity to each other.

3. A transmission cable within an ignition system, said system having an ignition transformer and an electrical igniter, for enabling ignition current to be fed to said igniter, said cable comprising:

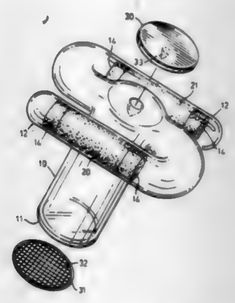
a distributed parameter component having a first electrically conductive elongated member and a second electrically conductive elongated member insulated from the first member, said component having a first end and a second end opposite from the first end, the first member being terminated at said first end and the second member being terminated at said second end, said first member being unterminated at said second end and said second member being unterminated at said first end, said terminated ends electrically coupling the transformer to the igniter, said members being straight and substantially parallel to each other.

4,451,765
RESONANCE LAMP

Lawrence H. Gray, Tottenham, Canada, assignor to Moniteq Ltd., Concord, Canada

Filed May 24, 1982, Ser. No. 381,649
Int. Cl.³ H05B 41/24
U.S. Cl. 315—248 8 Claims

1. A resonance lamp system comprising a hollow body of dielectric material defining a main lamp cavity free of internal obstructions, and at least one side arm having a cavity communicating with the main lamp cavity, one such side arm containing a getter, a high purity rare gas filling the body and having a pressure greater than 2 Torr, a window in the body at at least one end of the main lamp cavity transverse to an optical axis of the latter and transparent to light of desired wavelengths to be produced by the lamp, first and second electrodes in planes transverse to said optical axis outside and at opposite ends of the main lamp cavity, a source of electrical energy at radio frequency, and a matching network connecting the source to

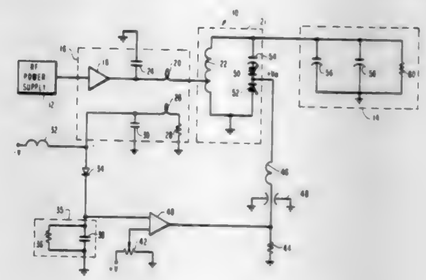


said electrodes whereby to incorporate the electrodes into a high-Q circuit resonant at the frequency of the source.

4,451,766
RADIO FREQUENCY LASER PUMPING SYSTEM

Ellwyn R. Angle, Lomita, and John L. Wilkerson, Torrance, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 3, 1982, Ser. No. 373,936
Int. Cl.³ H01J 61/56
U.S. Cl. 315—248 10 Claims



1. An improved laser power supply including

variable impedance matching means for matching the impedance of a laser cavity with a source of RF energy;

means for sensing a change in the impedance of said laser cavity;

means for changing the impedance of said variable impedance matching means in response to the sensed change in the impedance of said laser cavity;

whereby the RF source is optimally coupled to said laser cavity to enhance start-up and facilitate an optimal energy transfer.

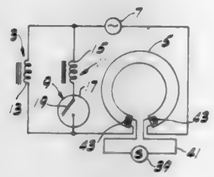
4,451,767
TEMPERATURE SENSITIVE BALLAST CIRCUIT FOR A FLUORESCENT LAMP

Charles D. Goralnik, 200 Brynwyck Pl., St. Louis County, Mo. 63141

Filed Feb. 22, 1982, Ser. No. 351,158
Int. Cl.³ H05B 41/14
U.S. Cl. 315—309 13 Claims

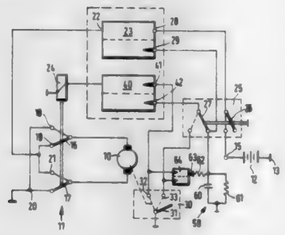
1. A ballast circuit for a fluorescent lamp including a gaseous discharge light bulb which for a given input power produces a decreasing amount of light as the bulb temperature decreases below a designed operating temperature at which the amount of light produced is a maximum, the ballast circuit comprising:

means for sensing the ambient temperature in the vicinity of the bulb;
the ballast circuit being adapted to be connected in series with the bulb and having
multi-stage impedance means controlled by said sensing means for imposing a predetermined impedance in the circuit when the ambient temperature is above a threshold



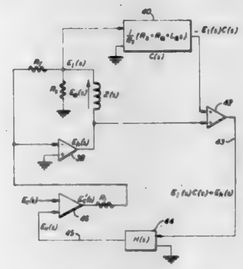
temperature which is generally a predetermined number of degrees below said designed operating temperature, and for imposing a lower impedance when the ambient temperature is below said threshold temperature to increase the bulb current and thus the light output of the bulb, whereby the light output of the bulb is maintained for ambient temperatures below said threshold temperature.

4,451,768
WINDSHIELD WIPER CONTROL CIRCUIT
Alfred Kohler, and Horst Rachner, both of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Jul. 14, 1982, Ser. No. 398,426
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129192
Int. Cl.³ H02P *1/04*
U.S. Cl. 318—443 **5 Claims**



1. In a windshield wiper assembly comprising:
a voltage source;
at least one wiper;
an electric motor coupled to said at least one wiper and connectable to said voltage source;
an operating switch;
a switching stage for controlling said electric motor in response to the state of said operating switch such that when said operating switch is in a first state said electric motor is coupled to said voltage source for moving said at least one wiper in pendulum fashion between two reversing positions within a wiping area, and when said operating switch is in a second state said electric motor moves said at least one wiper to a depressed parking position wherein said electric motor is uncoupled from said voltage source;
at least one position switch activated by said electric motor for generating a first switching signal when said wiper is at one of said reversing positions adjacent said depressed parking position; the improvement wherein:
said switching stage comprises a timing element coupled to said at least one position switch and operable such that after said operating switch is placed in said second state said electric motor remains connected to said voltage source and said first switching signal triggers said timing element, said switching stage being responsive to said timing element such that said electric motor is disconnected from said voltage source only after a delay time determined by said timing element.

4,451,769
ELECTRONIC COMPENSATOR FOR AN ELECTROHYDRAULIC SERVOVALVE
George E. Minnich, Vestal, and Clark L. Applegate, Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.
Filed Dec. 7, 1981, Ser. No. 328,058
Int. Cl.³ G05D *17/00*
U.S. Cl. 318—689 **7 Claims**

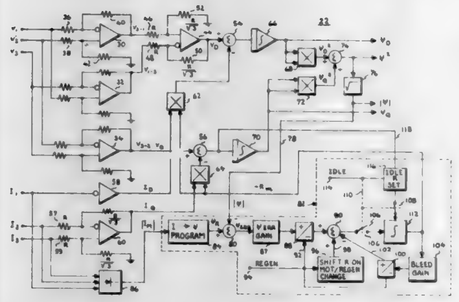


1. Apparatus for modifying an input control signal to produce a drive signal controlling a driveable physical element in the form of a servo-valve driven by a torque motor having a frequency variable response characteristic, comprising:
means to provide a feedback control signal that corresponds to the dynamic motion of said physical element and that includes means to determine a difference voltage between a first voltage across the armature of said torque motor when it is moving and a second voltage when it is not moving;
compensation means responsive to said feedback control signal for compensating said element so as to avoid resonance of said element; and
feedback means connected to said compensation means for producing a modified control signal.

4,451,770
METHOD AND APPARATUS FOR DETERMINING THE RESISTANCE OF AN AC MOTOR STATOR
Fred H. Boettner, Salem; John H. Cutler, Roanoke, and Loren H. Walker, Salem, all of Va., assignors to General Electric Company, Salem, Va.
Filed May 11, 1983, Ser. No. 493,405
Int. Cl.³ H02P *3/18*
U.S. Cl. 318—757 **24 Claims**

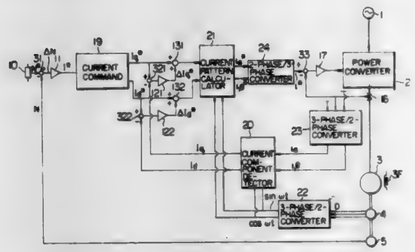
1. A system for deriving a signal proportional to the stator resistance of an alternating current motor, capable of operating in motoring and regenerative modes, provided with electrical power from a polyphase alternating current power source comprising:
(a) means to develop voltage signals and current signals representing, respectively, the voltage and current supplied to said motor from said source;
(b) means response to said voltage signals, said current signals and said signal proportional to the stator resistance of said motor to develop a calculated flux signal representing the magnitude of the actual flux developed by the motor;
(c) means responsive to said current signals to develop a signal representing the anticipated motor flux resulting from said current;

(d) means to combine said calculated flux signal and said anticipated flux signal to provide a flux error signal;
(e) means to determine the polarity of said flux error signal, as a function of whether said motor is in the motoring or



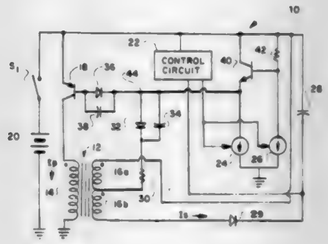
regenerative mode of operation, to provide an adjusted flux error signal; and,
(f) means to integrate said adjusted flux error signal to thereby develop said signal proportional to the stator resistance of said alternating current motor.

4,451,771
APPARATUS FOR CONTROLLING AC MOTOR
Hiroshi Nagase, Hitachi; Hisakazu Ninomiya, Funabashi, and Satoshi Ibori, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 14, 1983, Ser. No. 458,057
Claims priority, application Japan, Jan. 18, 1982, 57-5017
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—800 **3 Claims**



1. A control apparatus for an AC motor comprising:
(a) an AC motor driven by a power converter;
(b) current command means for producing a current command signal to instruct the magnitude of a motor current to be supplied to said AC motor;
(c) current pattern calculating means for obtaining a current pattern signal based on a sinusoidal signal which determines a phase of said motor current;
(d) current control means for controlling said power converter so as to cause said motor current to agree with said current pattern signal;
(e) current detecting means for detecting said motor current to produce a current detecting signal;
in which said apparatus further comprises;
(f) current correction control means for obtaining a current deviation of said current detecting signal from said current command signal so as to produce a current correction signal proportional to said current deviation and adding said current correction signal to said current command signal so as to apply the sum to said current pattern calculating means.

4,451,772
PASSIVE CLAMP FOR ON/OFF CONTROL OF A CAPACITOR CHARGER
Gregory D. Moberg, and Lynn R. Hudson, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 9, 1982, Ser. No. 416,537
Int. Cl.³ H02P *13/22*
U.S. Cl. 320—1 **5 Claims**

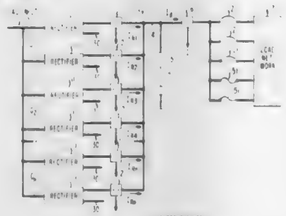


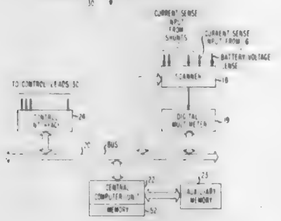
1. In a D.C. to D.C. converter adapted to be energized by a power supply, the converter comprising a transformer including a primary winding and a secondary winding, a capacitor coupled to the secondary winding for accumulating electric energy, first transistor switching means having a base electrode and an emitter electrode, the switching means being coupled in series with the power supply and the primary winding for periodically interrupting power supply current to the primary winding, and a control circuit for detecting the charge status of the capacitor, the control circuit being arranged to produce a converter ON signal and a converter OFF signal, the improvement comprising:
second transistor switching means having a base electrode, a collector electrode and an emitter electrode;
current regulating means connected between the control circuit and the base electrode of said second transistor switching means, said current regulating means being adapted to assume a first state in response to the converter ON signal and a second state in response to the converter OFF signal;
semiconductor means connected between the base electrode of the first transistor switching means and the emitter electrode of said second transistor switching means, and providing a first predetermined voltage at the emitter electrode of said second transistor switching means when said current regulating means assumes its first state; and
a resistor connected between the power supply and the junction between the base electrode of said second transistor switching means and said current regulating means, the size of said resistor being such that (1) when said current regulating means is in said first state a second predetermined voltage is developed at the base electrode of said second transistor switching means, the difference between said first and second voltages rendering said second switching means non-conductive, and (2) when said current regulating means is in said second state, the first transistor switching means is turned off and said second transistor switching means assumes a stand-by state in which electrical noise of a particular polarity and sufficient magnitude may cause the first and second transistor switching means turn on, but in which the voltage drop across the emitter-base junction of the first transistor switching means is clamped by the collector-emitter voltage of the second transistor switching means at a low level that is insufficient to drive the first transistor switching means into heavy conduction, whereby the first transistor switching means turns off once such noise terminates.

4,451,773
RECTIFIER CONTROL SYSTEM FOR A DC POWER PLANT SYSTEM

Thomas V. Papathomas, Madison, N.J.; Rudolph Scuderi, deceased, late of Mountain Lakes, N.J.; by May S. White, co-executrix, and by Camille D'Ambrose, co-executrix, both of Amsterdam, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 2, 1982, Ser. No. 365,017
Int. Cl.³ H02J 7/04; H02M 7/08
U.S. Cl. 320—59 **28 Claims**





1. A method of controlling an ON/OFF operational state of individual rectifiers in a power plant system to maximize power efficiency of the power plant system comprising the steps of

determining a present load current demand for a load energized by the power plant system,

determining a sum of rated current capacities of rectifiers presently operating,

periodically comparing the present load current demand with the sum of rated current capacities of presently operating rectifiers and establishing a difference value between the sum of rated current capacities and the load current demand,

periodically responding to the difference value between the load current demand and the sum of rated current capacities of presently operating rectifiers by changing an operational state of a sufficient number of rectifiers selected with specific rated capacities so as to have a sum of rated current capacities of subsequently operating rectifiers substantially equal to the load current demand.

4,451,774
VEHICLE MOUNTED VOLTAGE REGULATOR

Yoshio Akita, Chiryu; Takanori Teshima, Kariya; Toshinori Maruyama, Iwakura, and Koshi Torii, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 3, 1982, Ser. No. 354,432
Claims priority, application Japan, Mar. 6, 1981, 56-32860; Apr. 20, 1981, 56-60479
Int. Cl.³ H02J 7/24
U.S. Cl. 320—64 **11 Claims**

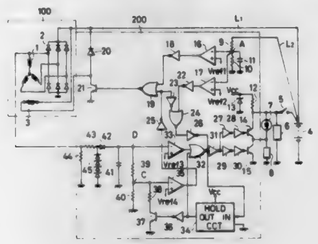
1. A voltage regulator for a storage battery coupled to an alternator through a recitifer, said alternator being driven by an engine mounted on a vehicle, comprising:

first detecting means for detecting when the voltage of said battery reduces below a higher reference level;

second detecting means for detecting when the voltage of said battery reduces below a lower reference level;

third detecting means for detecting when the voltage generated by said alternator rises above a predetermined level, said third detecting means comprising comparator means for comparing the alternator voltage with a variable reference level which is variable in response to the absence and presence of said warning signal and generating a comparator output when said alternator voltage is lower than said variable reference level;

logic gate means for generating a warning signal in response to outputs from said second and third detecting means;



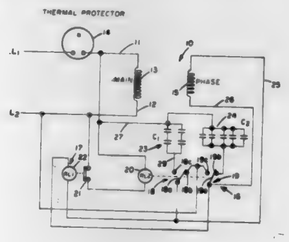
a semiconductor switching element for supplying said alternator voltage to a field coil of said alternator; and

switching control means for controlling said switching element in response to said first detecting means and to said comparator output to cause said switching element to operate said alternator in a high output state and controlling said switching element in response to said logic gate means to operate said alternator in a low output state.

4,451,775
MOTOR/GENERATOR STARTING CIRCUIT

Graham R. Phillips, St. Louis, and Norvell G. Pradot, Imperial, both of Mo., assignors to Century Electric, Inc., St. Louis, Mo.

Filed Aug. 12, 1981, Ser. No. 292,336
Int. Cl.³ H02P 9/06, 9/46
U.S. Cl. 322—10 **12 Claims**



1. A circuit for controlling an electrodynamic machine having a main winding and a phase winding for starting the machine in a motoring mode and switching to a generating mode as an incident of the machine reaching a preselected speed, said circuit comprising:

means for energizing the main winding;

first capacitor means;

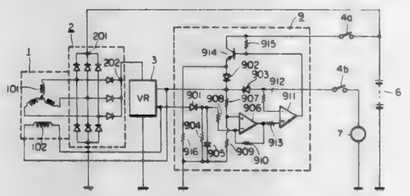
second capacitor means having a capacitance lower than that of said first capacitor means; and

control means for energizing the phase winding in a first direction of connection in series with said first capacitor means for causing said machine to operate in a motoring mode, and discontinuing energization of the phase winding in said first direction of connection and energizing the phase winding in a second direction of connection opposite to said first direction and in series with said second capacitor means as an incident of said machine reaching said preselected speed to cause said machine to operate in a generating mode.

4,451,776
CHARGING GENERATOR CONTROL SYSTEM

Yoshiyuki Iwaki, Himeji; Mitsuyoshi Yokota, and Akio Matsumoto, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 23, 1983, Ser. No. 497,018
Claims priority, application Japan, May 31, 1982, 57-81812[U]
Int. Cl.³ H02P 9/10, 9/14
U.S. Cl. 322—22 **7 Claims**



1. A charging generator control system comprising:

a generator which includes a field winding, and an armature winding being in three-phase connection to generate an A.C. output;

a rectifier which rectifies the A.C. output from said armature winding of said generator;

a battery which is charged with a D.C. output from said rectifier and which can supply an exciting current to said field winding;

a separately-exciting power source which generates a D.C. voltage having magnitude independent of the generator output and which can supply an exciting current to said field winding;

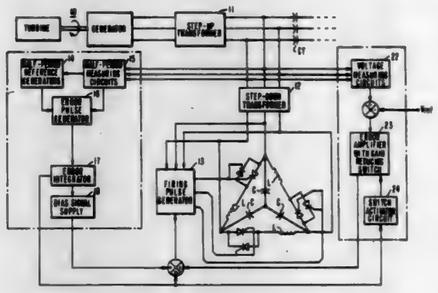
a voltage regulator which controls the exciting current flowing through said field winding of said generator, thereby to control the output voltage of said generator to be a predetermined value; and

a switching circuit which changes-over between said battery and said separately-exciting power source, depending upon a rotating speed of said generator, a condition of a load and a capacity of said separately-exciting power source, as the exciting current sources of said field winding.

4,451,777
STATIC VAR GENERATION FOR TRANSMISSION LINE COMPENSATION

Laszlo Gyugyi, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 10, 1981, Ser. No. 300,842
Int. Cl.³ H02J 3/16
U.S. Cl. 323—210 **2 Claims**



1. A static VAR generator and network stabilizer, comprising:

(a) a reactance means disposed for connection into an AC network;

(b) a VAR monitoring means for monitoring the reactive requirements of said AC network;

(c) a frequency monitoring means for measuring the period of the network voltage cycle and comparing it to the period of a reference voltage cycle to detect subsynchronous resonance in said AC network;

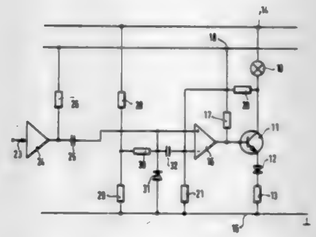
(d) a control means connected to said reactance means and said VAR monitoring means for connection of said reactance means into said AC network in response to the reactive requirements of said AC network; and

(e) said control means connected to said reactance means and said frequency monitoring means for connection of said reactance means into said AC network to dampen subsynchronous resonance in said AC network.

4,451,778
SHORT-CIRCUIT-RESISTANT TRIGGER CIRCUIT LAYOUT FOR AN ELECTRICAL CONSUMER

Werner Fischer, Ditzingen, and Johannes Locher, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 382,451
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128116
Int. Cl.³ G05F 1/56
U.S. Cl. 323—282 **3 Claims**



1. A short-circuit-protection trigger circuit layout for an electrical consumer, the consumer being connected in series with a switching transistor, comprising:

an operational amplifier connected to the switching transistor for raising and lowering the conductivity thereof;

a voltage divider comprising resistor means connected in parallel to the switching transistor;

means for providing an average constant potential; and

means for providing a dynamic switching signal, wherein:

(i) one input of the operational amplifier is connected to the junction point of the voltage divider; and

(ii) the other input of the operational amplifier is connected to the means for providing an average constant potential and to the means for providing a dynamic switching signal.

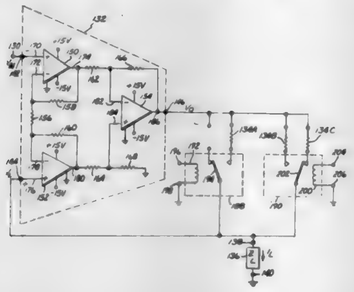
4,451,779
VOLTAGE CONTROLLED CURRENT SOURCE

Jonathan P. Griep, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 22, 1982, Ser. No. 370,694
Int. Cl.³ G05F 3/08
U.S. Cl. 323—312 **8 Claims**

1. A voltage controlled current source for providing a desired load current through a selected load impedance means which is a function of a provided input voltage taken with respect to a provided reference voltage and which load current is substantially independent of that impedance value chosen for the load impedance means, the voltage controlled current source comprising:

a high input impedance unity gain amplifier means having a first input, a second input and an output, the first input adapted to receive the input voltage and the second input adapted to receive that load voltage provided by flow of the load current through the load impedance means, the amplifier means providing an output voltage at the output thereof which is substantially equal to that difference



occurring between the load voltage and the input voltage as provided; and

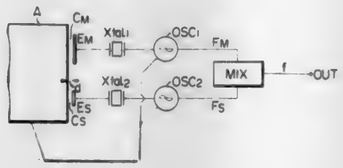
a resistance means adapted to be electrically connected in a series current path with the load impedance means between the output of the amplifier means and the reference voltage so that load current values are substantially equal to values of the input voltage provided divided by that value of resistance selected for the resistance means.

4,451,780

NON-CONTACT TYPE MICRODISPLACEMENT METER

Hiroomi Ogasawara, 3821-4, Yamakita, Yamakitamachi, Ashigarakami-gun, Kanagawa-ken, Japan

Filed Sep. 21, 1981, Ser. No. 304,415
Claims priority, application Japan, Sep. 26, 1980, 55-134029
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **9 Claims**



1. A non-contact type microdisplacement indicating circuit for determining the displacement of an object comprising:

a main electrode having an area A_M;

an auxiliary electrode having an area A_S;

means positioning said main electrode to confront the object at a distance d_M, to form therewith a first capacitor having a capacitance C_M, which is a function of A_M and d_M, and positioning said auxiliary electrode to confront the object at a distance d_S, to form therewith a second capacitor having a capacitance C_S, which is a function of A_S and d_S;

a first oscillator circuit having said first capacitor incorporated therein as a frequency varying component;

a second oscillator circuit having said first capacitor incorporated therein as a frequency varying component; and

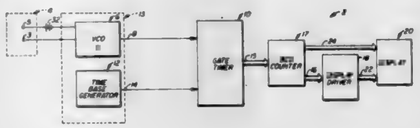
a mixer coupled to said first and second oscillator circuits for providing a frequency difference signal determined by the difference in the frequencies of said first and second oscillator circuits.

4,451,781

MOISTURE TESTER

James W. Anderson, Tulelake, Calif., assignor to Sarah Anderson, Tulelake, Calif., a part interest

Filed May 20, 1981, Ser. No. 265,279
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—65 R **5 Claims**



1. An instrument for producing a digitized signal respresentative of the moisture content of a product over a range of moisture contents, comprising:

a probe having spaced-apart electrodes for contact with said product;

converter means, electrically coupled to said electrodes of said probe, for producing a first signal at a first output having a first frequency generally proportional to the resistance across said electrodes;

clock means for producing a standard frequency signal at a second output;

a gate timer circuit electrically connected to said first and second outputs; and

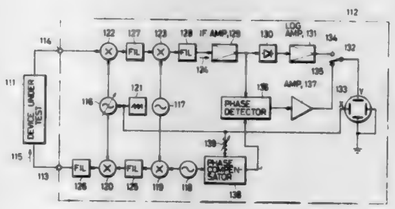
digital counter circuit means, electrically coupled to said gate timer circuit, for producing a digitized output signal at a third output, said digitized output signal being a digital representation of a value proportional to the resistance across said electrodes.

4,451,782

SPECTRUM ANALYZER

Hitoshi Ashida, Higashimatsuyama, Japan, assignor to Takeda Riken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,090
Claims priority, application Japan, Oct. 8, 1980, 55-141035
Int. Cl.³ G01R *23/16*
U.S. Cl. 324—77 C **22 Claims**



1. A spectrum analyzer for analyzing the amplitude and phase characteristics of a device under test as a function of frequency, said device being connected between a measuring signal output terminal and an input terminal of the spectrum analyzer, said analyzer comprising:

means for repeatedly generating a sweep control signal,

a sweep oscillator controlled by the sweep control signal to repeat a continuous sweeping of its oscillation frequency to repeatedly output a frequency swept signal,

a first frequency converter connected to the output of the sweep oscillator, for frequency mixing said frequency swept signal and an input signal from said device under test applied to said input terminal, and to output a corresponding signal;

a first detector connected via a first path to the output of the first frequency converter for detecting a signal corresponding to the amplitude of the output of the first frequency converter;

a first oscillator outputting an oscillating signal at a frequency equal to the frequency of a signal in said first path;

a second frequency converter for frequency mixing a signal corresponding to the output from said first oscillator and said frequency swept signal, and for producing a measuring signal to be supplied to said measuring signal output terminal, said second signal having the same frequency as said output from said first frequency converter; and

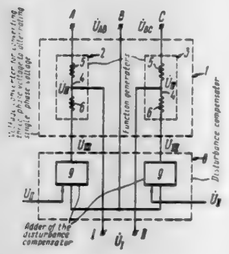
a second detector for detecting the phase difference between two inputs thereto, these inputs being a signal that is taken-out from said first path and corresponds to said output of said first frequency converter and a reference signal of the same frequency as said taken-out signal, said reference signal being derived from the output of said first oscillator.

4,451,783

METHOD OF DETECTING SYMMETRICAL COMPONENTS OF SUPPLY-LINE THREE-PHASE VOLTAGE AND DEVICE FOR CARRYING OUT SAME

Anatoly K. Shidlovsky; Sergei G. Taranov; Voldmir V. Braiko, all of Kiev; Isaak P. Grinberg, Zhitomir; Jury F. Tesik, and Oleg L. Karasinsky, both of Kiev, all of U.S.S.R., assignors to Institut Elektrodinamiki Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Sep. 3, 1981, Ser. No. 299,088
Int. Cl.³ G01R *25/00*
U.S. Cl. 324—86 **16 Claims**



1. A method of detecting symmetrical components of a three-phase supply-line voltage, comprising:

converting said supply-line three-phase voltage to alternating single-phase voltage with the aid of at least two function generators coupled to different lines of said three-phase supply line, with at least one of said function generators being an active-reactive circuit comprising an active element and exhibiting inductive or capacitive reactance which can be electrically varied, said voltage conversion being effected by altering the supply-line linear voltage in amplitude and phase with the aid of said active-reactive circuits,

subsequently summing the output voltages of said function generators to produce voltages comprising symmetrical components of said three-phase voltage,

generating a control signal proportional to a perturbation in the output voltages of said active-reactive circuits due to an electrical or environmental disturbance, said control signal being equal to the difference in voltage drops between elements in each active-reactive circuit,

compensating said disturbance by summing said control signal and voltage drop across one of said elements in each active-reactive circuit, and

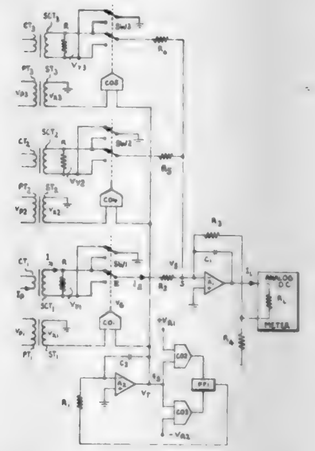
displaying or communicating a signal corresponding to the amplitude of at least one of said voltages comprising symmetrical components of said three phase voltage.

4,451,784

ELECTRONIC WATT TRANSDUCER CIRCUIT WITH CONSTANT DC CURRENT OUTPUT PROPORTIONAL TO WATTS

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Somersworth, N.H.

Filed Oct. 21, 1981, Ser. No. 313,275
Int. Cl.³ G01R *7/00*
U.S. Cl. 324—142 **13 Claims**



1. In an electronic energy consuption wattmeter for monitoring alternating current electrical energy consumption, the improvement comprising:

first transformer means having a primary winding excited by the voltage to be measured and a secondary winding providing a voltage related signal proportional thereto;

second transformer means having a primary winding excited by the current to be measured and a secondary winding providing a current related signal proportional thereto;

pulse-width modulator means operatively connected to receive said voltage related signal and responsive to a repetitive sampling signal for producing repetitive modulated output pulse signals having instantaneous pulse widths proportional to the corresponding instantaneous magnitude of said voltage related signal;

double-pole double-throw electronic switch multiplier means operatively connected to be automatically switched between first and second operating states in response to said repetitive modulated output pulse signals;

said electronic switch multiplier means having first and second inputs connected across the secondary winding of the second transformer means and having a switch output which is controllably and alternatively connected to said first switch input during said first switch operating state and to said second switch input during said second operating state, respectively, in response to said modulated output signals from said pulse width modulator means whereby the resultant output electrical signal pulses across said switch output comprise alternating polarity pulse width and amplitude modulated signal pulses having instantaneous pulse widths proportional to said voltage related signal and instantaneous amplitudes proportional to said current related signal and a D.C. component proportional to the product of said voltage related signal and current related signal and hence to the power consumption represented by the electric voltage and electric current being monitored; and

averaging type current-to-current converter means connected to the output from said electronic switch multiplier means and supplied with the alternating polarity resultant pulse width and amplitude modulated output signal pulses

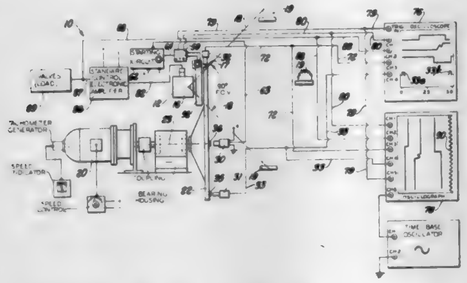
for averaging the output signal pulses over a full cycle of the alternating current electric energy being monitored and providing an output analog direct current electric signal proportional to watts.

4,451,785

TESTING SYSTEM FOR ELECTRO-OPTICAL RADIATION DETECTORS

Edward J. Rozniecki, and Donald R. Wittbrodt, both of Macomb, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 27, 1981, Ser. No. 325,471
Int. Cl.³ G01R *31/00*
U.S. Cl. 324—158 R **8 Claims**



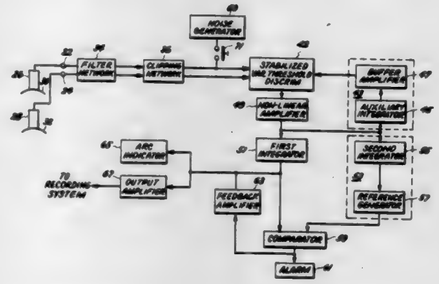
1. Mechanism for testing the electrical response time of an optical radiation detector (12) designed to have a sighting window (16) exposed to radiation for generating an electrical output signal after a predetermined exposure time to a given type of radiation: said testing mechanism comprising an electrically-operated shutter (58) positioned in close proximity to the sighting window of the detector for normally shielding the detector from a test radiation source (19); electric means (59) for opening the shutter; a rotary disc (22) positioned in close proximity to the shutter for interrupting the flow of radiant energy from the aforementioned test radiation source to the shutter; motor means (20) for rotating the disc around an axis spaced from a line of sight taken through the detector window and shutter; said disc having an opening (24) offset from the disc rotational axis, whereby said opening passes across the shutter once during each revolution of the disc; the disc opening having a leading edge (25) and a trailing edge (27); electric means (30,36) for generating a first start signal when the disc is in a known position shielding the shutter from the radiation source; a manually-controlled circuit (62) interconnecting the start signal means and shutter opening means (59), whereby the shutter undergoes an opening action while the disc is shielding the shutter from the test radiation source; means (32) for generating a second electric signal when the leading edge of the disc opening (24) is passing across the shutter line of sight, thereby signalling the precise moment when the detector under test begins to be exposed to the test radiation source; and third electric signal means (88) connected with the electrical output of the detector under test, said last mentioned electric signal means providing a third signal representing the moment when the detector has generated a useful output signal resulting from exposure to the test radiation source; the elapsed time between the second and third signals constituting the response time of the detector under test; the aforementioned disc opening (24) having a sufficient circumferential length, measured from its leading edge to its trailing edge, that satisfactory detector response times are achieved while the disc opening is in optical communication with the shutter line of sight.

4,451,786

HIGH SENSITIVITY BRUSH ARCING MONITOR FOR A DYNAMOELECTRIC MACHINE

Fred H. Sawada, Scotia; James S. Bishop, and Llewellyn A. Blaize, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,238
Int. Cl.³ G01R *31/02*; G08B *21/00*
U.S. Cl. 324—158 MG **10 Claims**



1. In apparatus for monitoring arcing of brushes in an electrical generator, such apparatus being of the type including means receiving from at least one brush a composite signal comprised of high frequency brush arcing components, low frequency components, noise spikes, and high frequency background noise whose amplitude depends upon generator loading; signal conditioning means removing said low frequency components and attenuating said noise spikes to a preselected amplitude to provide a conditioned signal; a discriminator network having a signal threshold limiting said conditioned signal to signal components of one polarity above said threshold; an amplifier producing an amplified signal from the conditioned signal from said discriminator; and a first integrator integrating said amplified signal to produce a first integrated signal indicative of brush arcing; an improvement comprising:

a feedback network including an auxiliary integrator for integrating said amplified signal to provide a feedback bias signal indicative of the background noise contained in said amplified signal, and a buffer amplifier for applying said feedback bias signal to said discriminator, said discriminator being responsive to said feedback bias signal to vary said threshold level up or down as a function of said signal.

4,451,787

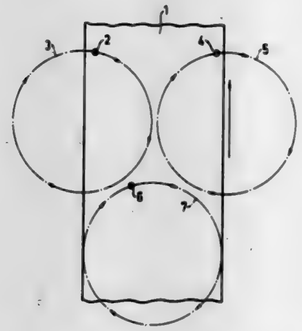
METHOD AND APPARATUS TO DETECT RANDOMLY DISTRIBUTED DISCONTINUITIES IN DIFFERENT DIRECTIONS IN A LONGITUDINALLY MOVING WEB USING ROTATING PROBES IN OVERLAPPED PATHS

Karl-Gunnar Bergstrand, 82 Sikvägen, Frösön, Sweden (S-832 00), assignor to Karl-Gunnar Bergstrand, Frösön and Bergstrand Kvalitetskontroll AB, Östersund, both of, Sweden

PCT No. PCT/SE80/00135, 371 Date Jan. 7, 1981, 102(e) Date Jan. 7, 1981, PCT Pub. No. WO80/02594, PCT Pub. Date Nov. 27, 1980
PCT Filed May 9, 1980, Ser. No. 229,585
Claims priority, application Sweden, May 11, 1979, 7904155
Int. Cl.³ G01N *27/72*; G01R *33/12*
U.S. Cl. 324—242 **8 Claims**

1. A method for detecting laterally, longitudinally and randomly distributed discontinuities in a longitudinally moving web of material by means of probes sensitive to such discontinuities, said method comprising moving a plurality of said probes in circular paths of substantially equal radii across the moving web in planes disposed substantially parallel to the plane of the web, said plurality of probes including at least first and second probes which each define a path of travel across at least a portion of said web, said first and second probes being

rotated while mutually displaced longitudinally with reference to the direction of web travel, and while mutually displaced laterally with reference to the direction of web travel by a distance of one radius such that one-half of the circular path of said first probe laterally overlaps one-half of the circular path of the second probe to an extent sufficient to cover at least a



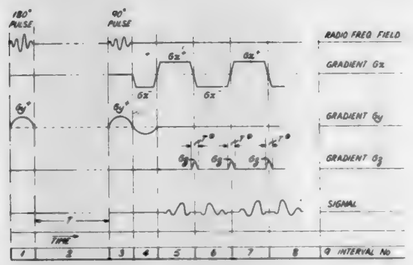
portion of the width of said web, the number of said probes being such that the entire width of said web travels past laterally overlapped half-circular paths, the direction of travel of said first probe being different from that of said second probe with respect to a given discontinuity on said web so that such discontinuity is detected in both of said two directions of travel of said probes.

4,451,788

METHODS OF PRODUCING IMAGE INFORMATION FROM OBJECTS

William A. Edelstein, Schenectady, N.Y.; James M. S. Hutchison; Glyn Johnson, both of Aberdeen, Scotland; Thomas W. T. Redpath, Stonehaven, Scotland, and John R. Mallard, Aberdeen, Scotland, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB81/00045, 371 Date Nov. 9, 1981, 102(e) Date Nov. 9, 1981, PCT Pub. No. WO81/02789, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 13, 1981, Ser. No. 320,951
Claims priority, application United Kingdom, Mar. 14, 1980, 8008773
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **12 Claims**



1. A method of deriving image information from an object using nuclear magnetic resonance signals comprising subjecting an object to a continuous static magnetic field along an axis and carrying out the following sequence of steps:

(1) exciting nuclear spins in a selected plane,

(2) applying a first gradient of the magnetic field which has a gradient direction parallel to the said plane together with a second gradient of the magnetic field having a gradient direction perpendicular to the said plane,

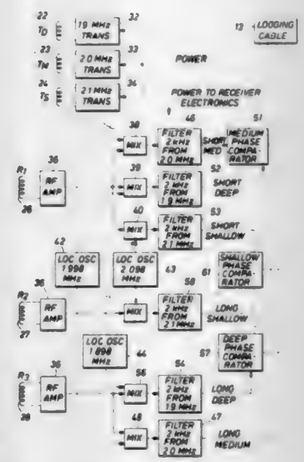
(3) repeatedly applying the said first gradient with successive reversals of gradient direction, applying the third gradient of the magnetic field which has a gradient direction parallel to the said plane and orthogonal to the direction of the first gradient during each successive reversal of said first gradient, and holding the said first gradient with its successively reversed gradient directions for time intervals during which successive echoing free induction decay signals are read out.

4,451,789

LOGGING TOOL AND METHOD FOR MEASURING RESISTIVITY OF DIFFERENT RADIAL ZONES AT A COMMON DEPTH OF MEASUREMENT

Richard A. Meador, Spring, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,209
Int. Cl.³ G01V *3/30*
U.S. Cl. 324—338 **15 Claims**



7. Apparatus for measuring parameters in the environment surrounding a borehole, including an elongated housing for passing into the borehole, comprising:

a plurality of transmitting means mounted in a spaced longitudinal configuration on said housing;

means for operating each of said transmitting means at a different frequency;

a plurality of pairs of receiving means spaced a measured distance from said transmitting means and arranged in a spaced longitudinal configuration on said housing;

local frequency generating means for generating a plurality of local frequencies, each local frequency corresponding to a transmitting frequency;

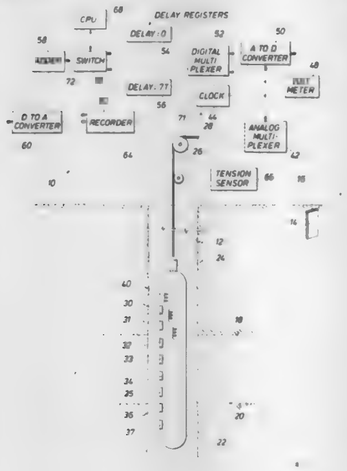
a plurality of separate mixing means associated with each receiver of said receiving pair means for separately mixing one or more of the frequencies received at each receiving means with a different local frequency; and

separate filter means associated with each of said mixing means for receiving the output of the mixing means and outputing a signal derived from one of the transmitting means and at a frequency common to the output of each of the separate filter means.

4,451,790
SPONTANEOUS POTENTIAL LOG APPARATUS WITH RANDOMLY OCCURRING NOISE CANCELLATION

Frank R. Bravenec, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 10, 1981, Ser. No. 319,842
Int. Cl.³ G01V 3/26, 3/34
U.S. Cl. 324—351 10 Claims



1. Detection apparatus to be moved through a fluid filled well bore for testing the well bore as the well bore passes through a plurality of formations in the earth for spontaneous potential resulting from electrochemical potential differences in the formations relative to a reference electrode near the earth's surface, the apparatus comprising:

(a) multiple redundant spontaneous potential measurement electrodes aligned at known longitudinally spaced distances along a sonde and being adapted to traverse a well bore and being in electrical contact with the borehole fluid, each of said electrodes measuring a potential difference relative to the reference electrode of the spontaneous potential of the earth's formations along the well bore and generating an output signal representative thereof;

(b) signal processing means connected to said multiple spontaneous potential electrodes for receiving said output signals therefrom and for shifting signals therefrom to an alignment on a base such that a signal from a specific formation from a single spontaneous potential electrode is aligned with a signal from another spontaneous potential electrode for the same formation; and

(c) summing means provided with said shifted and aligned signals of said signal processing means for adding said shifted and aligned signals in a manner that reinforces signals from the specific formation from multiple spontaneous potential electrodes and substantially tends to cancel randomly occurring noise on individual ones of said output signals.

4,451,791
METHOD AND APPARATUS FOR ELECTRICALLY TESTING ELEMENTS OF MULTI-CELL BATTERIES

Stuart S. Ostroff, Abington, and William G. Bevan, Birdsboro, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Mar. 17, 1982, Ser. No. 359,014
Int. Cl.³ G01N 27/46
U.S. Cl. 324—434 8 Claims

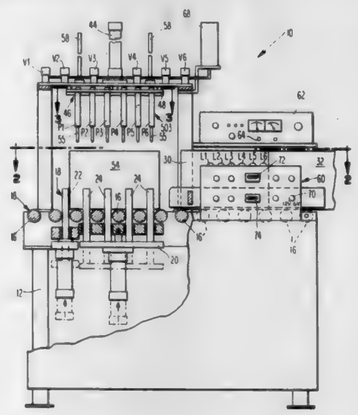
1. An apparatus for electrically testing individual elements of multi-cell batteries comprising:

means for individually locating multi-cell batteries at a selected test location, and

means for testing each element of each multi-cell battery when located at said test location for electrical leakage including

an array of probe means, at least one for each battery cell,

fault detector means having fault indicator means responsive to a detected fault,



means for advancing said array of probe means to a testing position such that each element of a battery positioned in said test location is engaged by one of said probe means,

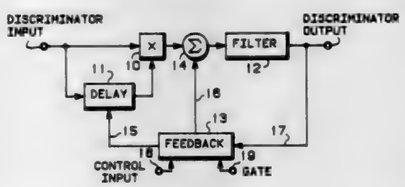
means for sequentially associating individual ones of said probe means with said fault detector means thereby sequentially electrically testing the elements of the battery, and

means for marking the battery to indentify individual faulty elements responsive to selected faults detected by said fault detector means.

4,451,792
AUTO-TUNED FREQUENCY DISCRIMINATOR

Michael J. Gay, Coppet, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 23, 1981, Ser. No. 314,162
Int. Cl.³ H03D 1/02, 1/18, 1/20
U.S. Cl. 329—145 12 Claims

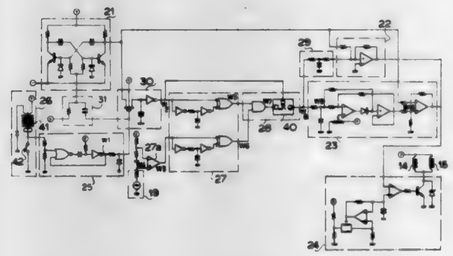


1. An auto-tuned frequency discriminator having an input and an output, the frequency discriminator being fully integrable on a signal integrated circuit and comprising: a multiplier circuit having a first input coupled to the input of the frequency discriminator, a second input, and an output which is proportional to the first input times the second input; a delay means having an input coupled to the input of the frequency discriminator, an output coupled to the second input of the multiplier circuit, and at least one control input, the delay means providing an output signal which is a delayed version of the delay means input signal, the amount of delay being variable in response to the at least one control input; a filter having an input coupled to the output of the multiplier circuit and an output coupled to the output of the frequency discriminator such that high frequency components are filtered from the output of the frequency discriminator; a feedback means having an input coupled to the output of the filter and at least one output coupled to the at least one control input of the delay means so that the variable delay is responsive to the output of the filter; and a summing means having a first input coupled to the output of the multiplier, a second input, and an output coupled to the input of the filter, thereby coupling the output of the multiplier to the input of the filter; and the feedback means further including a second output coupled to the second input of the summing means.

4,451,793
CONTROL SYSTEM

Masaaki Ohgami, Musashino, and Fujio Matsui, Mitaka, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,374
Claims priority, application Japan, Aug. 2, 1979, 54-98855
Int. Cl.³ H03K 3/023, 5/08
U.S. Cl. 328—69 20 Claims



1. A feedback control system comprising

a dither signal generating circuit means for producing a periodical dither signal having a pattern of pulses having a period which comprises a plurality of alternating positive excursions and negative excursions,

at least one of said positive excursions being lower than another of said positive excursions and at least one of said negative excursions being shallower than another of said negative excursions, said dither signal defining a center line having a level,

shift control circuit means for shifting the level of the center line of said dither signal so as to provide a shifted dither signal from time to time,

driving circuit means operatively connected to said shift control circuit means for producing a driving output depending on said dither signal,

actuator means operatively connected to said driving output for producing a controlled output,

output means including detecting means for sensing the controlled output and, means for distinguishing higher values of said controlled output from lower values of said controlled output, and providing an output signal, said higher values being higher than a desired value, said lower values being lower than said desired value,

comparing circuit means for comparing said output signal with reference pulses having the same period as that of corresponding of said pulses of said dither signal and for producing a control signal corresponding to said dither signal but said control signal omitting corresponding portions of the dither signal from time to time dependent on said output signal,

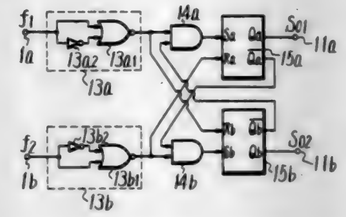
a shift signal generating circuit means for producing a shift signal dependent on said control signal for shifting the level of said center line of said dither signal from time to time via said shift control circuit means, and

amplitude control circuit means for decreasing the amplitude of said dither signal fed to said driving circuit means when said comparing circuit means produces said control signal such that the latter represents a position of said controlled output such that said desired value is between level-wise closest of said at least one of said positive excursions and of said at least one of said negative excursions respectively, whereby the amplitude of the controlled output is decreased.

4,451,794
PHASE COMPARATOR

Takaaki Yamada, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 363,030
Claims priority, application Japan, Apr. 2, 1981, 56-49846
Int. Cl.³ H03D 13/00
U.S. Cl. 328—134 14 Claims



1. A phase comparator comprising: a first signal input terminal supplied with a reference signal;

a second signal input terminal supplied with an input signal to be compared with said reference signal;

a first trigger pulse oscillator having an input and an output, the input of which is connected to said first signal input terminal to produce a trigger pulse having a predetermined pulse width at its output;

a second trigger pulse oscillator having an input and an output, the input of which is connected to said second signal input terminal to produce a trigger pulse having a predetermined pulse width at its output;

a first gate circuit means having a pair of input terminals and an output terminal, one of the pair of input terminals of which is connected to the output of said first trigger pulse oscillator;

a second gate circuit means having a pair of input terminals and an output terminal, one of the pair of input terminals of which is connected to the output of said second trigger pulse oscillator;

a first bi-stable circuit means having set and reset signal input terminals, and non-inverted and inverted output terminals, the set signal input terminal of which is connected to the output terminal of said first gate circuit means;

a second bi-stable circuit means having set and reset signal input terminals, and non-inverted and inverted output terminals, the set signal input termnal of which is connected to the output terminal of said second gate circuit means;

a first gate control means connected between the inverted output terminal of said second bi-stable circuit means and the other of the pair of the input terminals of said first gate circuit means;

a second gate control means connected between the inverted output terminal of said first bi-stable circuit means and the other of the pair of the input terminals of said second gate circuit means;

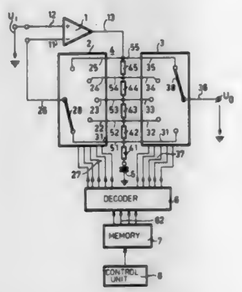
a first resetting means for supplying the reference signal of said first signal input terminal to the reset signal input terminal of said second bi-stable circuit means; and

a second resetting means for supplying the input signal of said second signal input terminal to the reset signal input terminal of said first bi-stable circuit means.

4,451,795
CIRCUIT ARRANGEMENT WITH CONTROLLABLE TRANSFER CHARACTERISTIC AT HIGHER FREQUENCIES

Ernst A. Kilian, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 11, 1981, Ser. No. 301,159
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1980, 3037986
Int. Cl.³ H03F *1/34;* H03G *3/30*
U.S. Cl. 330—107 9 Claims



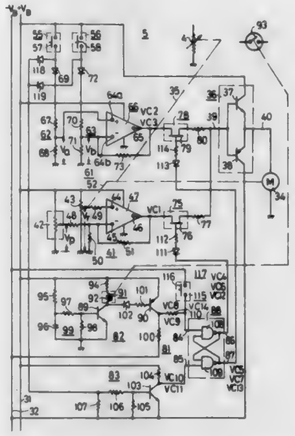
1. A circuit arrangement for transferring signals over a frequency spectrum having a low frequency end and a high frequency end and which includes means for adjusting its frequency transfer characteristic at the high frequency end comprising, an amplifier with variable frequency-dependent negative feedback and having an inverting and a non-inverting input, a signal input terminal coupled to the non-inverting input of said amplifier, a signal output terminal, an arrangement including a capacitor connected in series with a resistor chain voltage divider having a plurality of tappings, means connecting said series arrangement between an output of the amplifier and a point of reference voltage, a first switch which selectively couples said tappings on the resistor chain to the inverting input of the amplifier, and a second switch which selectively couples each of said tappings on the resistor chain to the signal output terminal independently of the setting of the first switch.

4,451,796
VOLUME CONTROL APPARATUS

Satoshi Yasumura, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,458
Claims priority, application Japan, Sep. 8, 1980, 55-127427[U]
Int. Cl.³ H03G *3/20;* H03F *21/00*
U.S. Cl. 330—127 4 Claims

1. A volume control apparatus comprising:
a manually operable presetting variable resistor;
first and second selectively operable manual switching means;
a motor for driving a volume control variable resistor;
a motor drive circuit for driving the motor;
a first means for generating a first control signal for controlling the motor drive circuit to drive the motor so that the volume control variable resistor may be set by the motor to a position corresponding to a preset position of the presetting variable resistor;
a second means for generating a second control signal for controlling the motor drive circuit to drive the motor so that during a selective operation of the first switching means, the volume control variable resistor may be operated by the motor in a first direction in response to the selective operation of the first switching means, and for generating a third control signal for controlling the motor drive circuit to drive the motor so that during a selective operation of the second switching means, the volume control variable resistor may be operated in a second direction in response to the selective operation of the second switching means;
a third means for supplying the motor drive circuit with the first control signal from the first means;
a fourth means for selectively supplying the motor drive circuit with the second and third control signals from the second means; and

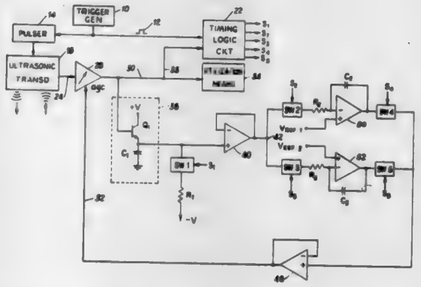


a fifth means for generating fourth and fifth control signals for controlling, upon each a power supply, the third and fourth means to be operative and inoperative, respectively, in accordance with the power supplied, and for generating sixth and seventh control signals for controlling, after the power supply, the third and fourth means to be inoperative and operative, respectively, in accordance with the selective operation of the first and second switching means.

4,451,797
AGC CONTROLLER FOR PULSED SYSTEM

James A. Bains, Jr., Pearland, Tex., assignor to AMF Inc., White Plains, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,829
Int. Cl.³ H03G *3/20*
U.S. Cl. 330—134 10 Claims

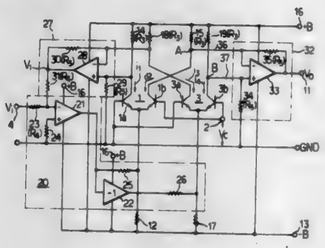


1. Apparatus for controlling the gain of a controllable gain amplifier that has a signal input and an agc input to produce output signals having predetermined magnitudes in response to respective successively occurring input signals that recur in sequence, said apparatus comprising,
means for coupling said recurring successively occurring input signals to the signal input of said controllable gain amplifier, said amplifier producing corresponding successively occurring output signals in response thereto,
means for providing a plurality of selectable agc loops for said amplifier,
means for sampling the magnitudes of desired ones of the successively occurring output signals during each recurrence of successively occurring output signals from the amplifier,
means responsive to said desired ones of the output signals from said amplifier for coupling each sampled output signals to a succession of signals to a respective one of the agc loops,
means in each of said loops for producing and holding an agc signal relating to the magnitude of the sampled signal coupled thereto,
means responsive to sampled amplifier output signals for coupling a respective one or more feedback loop to the agc input of said amplifier to provide an agc signal thereto that was produced by a desired signal of the previously received succession of signals that had the same relative position in the succession as the next to be received desired signal in the present succession, whereby said amplifier is properly conditioned to receive the next desired signal.

4,451,798
GAIN-CONTROLLED AMPLIFIER

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 13, 1982, Ser. No. 408,130
Claims priority, application Japan, Aug. 14, 1981, 56-127543
Int. Cl.³ H03F *3/45;* H03G *3/20*
U.S. Cl. 330—254 10 Claims

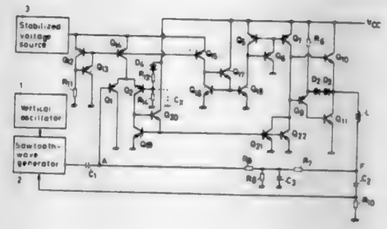


1. A gain-controlled amplifier whose gain is controlled by a control voltage applied thereto comprising:
an input signal terminal for receiving an input signal;
a first bipolar transistor pair having first and second transistors of same conductivity types each transistor having a base, an emitter, and a collector, both emitters being joined together to form a first joined emitter;
a second bipolar transistor pair having third and fourth transistors of said same conductivity types each transistor having a base, an emitter, and a collector, both emitters being joined together to form a second joined emitter;
drive circuit means coupled between said input signal terminal and said first and second joined emitters for amplifying said input signal applied to said input signal terminal and driving said first and second joined emitters in opposite phase to each other;
first signal generating means for generating a first signal representing a current difference between collector currents of said first and third transistors;
second signal generating means for generating a second signal representing a current difference between collector currents of said second and fourth transistors;
negative feedback circuit means for negative-feeding back one of outputs of sad first and second signal generating means to an input side of said drive circuit means; and
output signal circuit means coupled to derive the other of outputs of said first and second signal generating means therefrom as an output signal of said gain-controlled amplifier;
said bases of said first and third transistors being joined together to form a first control voltage input terminal;
said bases of said second and fourth transistors being joined together to form a second control voltage input terminal;
said control voltage being applied across said first and second control voltage input terminals;
said first joined emitter being driven in an opposite phase in relation to said first signal from said negative feedback circuit means; and
said second joined emitter being driven in a same phase in relation to said first signal from said negative feedback circuit means.

4,451,799
B-CLASS COMPLEMENTARY CIRCUIT

Osamu Fujita, Chigasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 24, 1981, Ser. No. 286,714
Claims priority, application Japan, Jul. 30, 1980, 55-105463
Int. Cl.³ H03F *3/45, 3/26*
U.S. Cl. 330—255 7 Claims



1. A B-class complementary circuit comprising an output stage of B-class complementary construction, a driving stage for driving said output stage and having a constant-current load circuit, and a predriving circuit including a differential amplifier, wherein:
said differential amplifier is connected to a reference voltage means by its first input terminal, to a sawtooth-wave voltage signal generator by its second input terminal and to an input end of said driving stage by its output terminal, said differential amplifier being fed with a constant current from a first current-mirror circuit controlled by a stabilized voltage source, and said constant-current load circuit is connected to a second current-mirror circuit which has the same construction as said first current-mirror circuit through at least one stage of a third current-mirror circuit, characterized in that
said first current-mirror circuit comprises an emitter-grounded primary transistor, an emitter-grounded secondary transistor, and a collector-grounded auxiliary transistor, said secondary transistor being connected to supply said constant current to said differential amplifier, and said auxiliary transistor being connected by its base to the collector of said primary transistor and by its emitter commonly to the base of said primary transistor and the base of said secondary transistor,
said second current-mirror circuit comprises said primary transistor and said auxiliary transistor of said first current-mirror circuit, and a second current-mirror emitter-grounded secondary transistor, which is connected by its base to the base of said primary transistor and the emitter of said auxiliary transistor,
said third current-mirror circuit stage comprises third current-mirror emitter-grounded primary transistor, which is collector-to-collector series-connected to said second current-mirror secondary transistor, a third current-mirror emitter-grounded secondary transistor and a third

current-mirror collector-grounded auxiliary transistor, which is connected by its base to the collector of said third current-mirror primary transistor and by its emitter commonly to the bases of said third current-mirror primary transistor and by its emitter commonly to the bases of said third current-mirror primary transistor and said third current-mirror secondary transistor, and

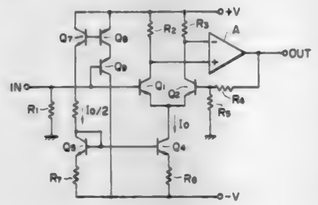
said driving stage comprises a driving stage emitter grounded primary transistor connected by its collector to said differential amplifier output terminal, driving stage emitter-grounded secondary transistors constituting active elements of said driving stage, and a driving stage collector-grounded auxiliary transistor, which is connected by its base to the collector of said driving stage primary transistor and by its emitter commonly to the bases of said driving stage primary transistor and said driving stage secondary transistors.

4,451,800

INPUT BIAS ADJUSTMENT CIRCUIT FOR AMPLIFIER

Akira Nishioka, and Yoshihiro Kawanabe, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,464
Claims priority, application Japan, Sep. 27, 1980, 55-134764
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—261 **3 Claims**



1. In a feedback type amplifier circuit having a differential amplifier circuit including a pair of differential transistors of one conductivity type, an input bias adjustment circuit, comprising:

current means for producing a current having a predetermined ratio to DC currents flowing in said differential transistors;

a first transistor (Q_7) of said one conductivity type and connected in series with said current means, said first transistor having a base;

a second transistor (Q_8) of opposite conductivity type from said first transistor and having a base coupled to said first transistor base in such a way that said first and second transistors have equal base currents; and

a third transistor (Q_9) of said opposite conductivity type and coupled in series with said second transistor, the base current of said third transistor being coupled to a base of at least one of said differential transistors.

4,451,801

WIDEBAND LINEAR CARRIER CURRENT AMPLIFIER

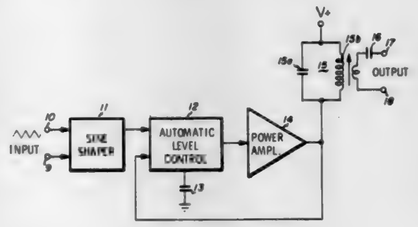
Dennis M. Monticelli, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 24, 1981, Ser. No. 295,905
Int. Cl.³ H03F *3/20*; H04M *11/04*
U.S. Cl. 330—278 **9 Claims**

1. An amplifier circuit for supplying a carrier current signal to an AC power line, said circuit comprising:

a high gain current amplifier having an input, an output and a current gain n, wherein said amplifier has one stage of phase inversion, between its input and an output thereof, a series resistor in said output and a shunt resistor coupled between said output and said input to provide negative feedback;

an output circuit for coupling said amplifier output to said AC power line; and



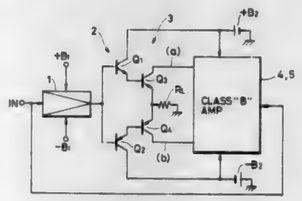
an automatic level control section responsive to the level of signal at said output and coupled to said amplifier input so that said level of signal is maintained constant.

4,451,802

POWER AMPLIFIER

Hirosi Koinuma, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,311
Claims priority, application Japan, Jun. 17, 1981, 56-93613
Int. Cl.³ H03F *3/26*
U.S. Cl. 330—297 **5 Claims**



1. A power amplifier comprising:

a class A power amplifier circuit including a pair of power amplifying elements having power supply terminals and output terminals wherein said power amplifying elements drive a load connected to said output terminals in response to control signals, amplifying elements serving as drivers for said power amplifying elements wherein said amplifying elements provide said control signals to said power amplifying elements, a voltage source connected between said power supply terminals of said power amplifying elements, and a voltage amplifying stage for receiving an input signal and for supplying an amplified output signal to said amplifying elements, said amplifying elements providing said control signals to said power amplifying elements in accordance with said amplified output signal;

a class B amplifier circuit drivable by said input signal supplied to said voltage amplifying stage and including a pair of output amplifying elements arranged in a push-pull connection and having at least one output connected to said voltage source; and

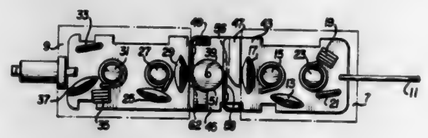
a power supply connected to supply operating power to said output amplifying elements and to said amplifying elements.

4,451,803

SPLIT TUNING FILTER

Timothy M. Holdsworth, Clay; Joseph P. Hesler, Liverpool, and George W. DuBois, Mexico, all of N.Y., assignors to Eagle Comtronics, Inc., Clay, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,245
Int. Cl.³ H03H *7/01, 1/00*
U.S. Cl. 333—12 **22 Claims**



1. An electrical signal filter comprising:

a single component circuit board for mounting and electrically interconnecting electrical filter components on at least one of an upper and lower surface thereof;

a first filter section formed by electrical filter components and provided on a first area of said single circuit board;

a second filter section formed by electrical filter components and provided on a second area of said circuit board, said first and second filter sections being electrically interconnected by a conductor and said first and second filter sections being spaced from one another to form an isolation area through which said conductor passes;

a metallic container which receives said single circuit board to form a housing about said circuit board; and

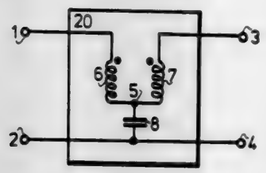
a pair of metallic members attached to said circuit board and spaced by a predetermined amount at positions on opposite sides of said isolation area, each of said metallic structures being constructed and arranged to form a guide for positioning and mounting said single circuit board within said metallic container such as to form a first cavity enclosing said first filter section, a second cavity enclosing said second filter section, and a third cavity defining said isolation area which separates said first and second cavity.

4,451,804

FOUR-TERMINAL NETWORK

György Veisz, Raday u. 34, Eng. El., Budapest IX; Gábor Dávid, Holdvilag u. 1., Budapest XI; Peter Kòszeghy, Damjanich u. 27/a., Budapest VII, and Lajos Szekely, Bajcsy-Zsilinszky ut 21., Budapest VI, all of Hungary

Filed May 3, 1982, Ser. No. 374,200
Claims priority, application Hungary, Sep. 1, 1981, 2517/81
Int. Cl.³ H03H *7/09*
U.S. Cl. 333—177 **7 Claims**



1. A four-terminal network, comprising:

a first input terminal;

a second input terminal;

a first output terminal;

a second output terminal connected to said first input terminal at an intermediate point;

a first inductance winding having one end connected to said first input terminal, an opposite end and a plurality of turns for conducting current;

a second inductance winding having one end connected to said first output terminal, an opposite end connected to said opposite end of said first inductance winding at a common point, and a plurality of turns; and

a condenser connected between said common point and said intermediate point;

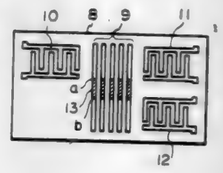
said first and second inductance windings being selected to have substantially identical inductance, to be disposed clearly adjacent each other with each turn of said first inductance winding being adjacent a respective turn of said second inductance winding, said turns of said first and second inductance windings being disposed so that current flows in said first inductance winding in a direction opposite to the direction in which current flows in said second inductance winding, and said first and second inductance windings extending parallel to each other.

4,451,805

SURFACE ACOUSTIC WAVE FILTER

Masaaki Ono; Yoshiro Fujiwara, and Masanobu Yanagisawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 23, 1982, Ser. No. 371,502
Claims priority, application Japan, Apr. 28, 1981, 56-60654[U]
Int. Cl.³ H03H *9/76, 9/64, 9/145*
U.S. Cl. 333—195 **17 Claims**



1. A surface acoustic wave filter comprising:

a substrate of a piezoelectric material;

a multistrip coupler, formed on said substrate and having first and second sides, comprising a plurality of parallel conductive strips each of which has a middle portion made of a photoconductive material;

at least one input transducer formed on said first side of said multistrip coupler; and

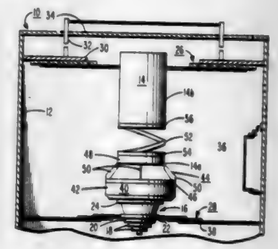
at least one output transducer formed on said second side of said multistrip coupler.

4,451,806

TUNING MEANS FOR A TRANSMISSON LINE CAVITY

Claude E. Doner, New Providence, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,664
Int. Cl.³ H01P *7/04*
U.S. Cl. 333—224 **6 Claims**



1. In a transmission line cavity comprising an outer conductor and a hollow cylindrical center conductor, said cavity

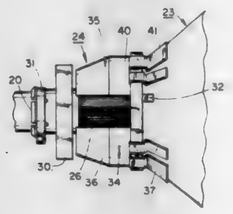
being in combination with an excitation means for establishing electromagnetic waves within said cavity, the improvement wherein said center conductor has a discontinuity therein, said discontinuity being bridged by at least one discrete conductive member to provide an incrementally variable series inductance for changing the resonant frequency of said cavity and to provide a current carrying path along said center conductor.

4,451,807

TELEVISION RASTER PINCUSHION DISTORTION CORRECTION DEVICE

Kenneth W. McGlashan, Indianapolis, and John R. Archer, Carmel, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,832
Int. Cl.³ H01F *3/12*
U.S. Cl. 335—211 **10 Claims**



1. A deflection yoke comprising:
a magnetically permeable core;
a pair of deflection coils toroidally wound on said core and adapted for coupling to a source of deflection signals for producing a deflection field encircled by said core and producing a stray field external to said core; and
field shaping apparatus comprising:
magnetically permeable flux directing means disposed at the front of said yoke for forming an electromagnetic field at the front of said yoke for influencing the movement of an electron beam;
magnetically permeable flux gathering means located within said stray field and coupled to said flux directing means, said flux gathering means extending along substantially the entire length of said deflection coils and encircling a significant portion of said coils.

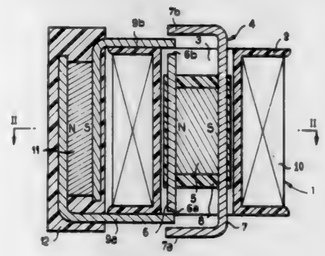
4,451,808

ELECTROMAGNET EQUIPPED WITH A MOVING SYSTEM INCLUDING A PERMANENT MAGNET AND DESIGNED FOR MONOSTABLE OPERATION

Gerard Koehler, Ville d'Avray, France, assignor to La Telemecanique Electrique, Nanterre Cedex, France

Filed Jan. 18, 1983, Ser. No. 458,907
Claims priority, application France, Jan. 20, 1982, 82 00792
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—229 **19 Claims**

1. An electromagnet equipped with a moving system including a permanent magnet and designed for monostable operation, comprising at least one coil which partly surrounds a magnetic circuit consisting of a fixed yoke and a movable armature, said armature being constituted by a permanent magnet having pole faces adapted to carry pole-pieces which project on each side of the axis of magnetization of the magnet so as to constitute in conjunction with the end portions of the fixed yoke two air-gap zones in which magnetic forces are developed and tend to displace the armature to either of its two end positions according as the coil is energized in a suitable direction or is not energized, wherein said electromagnet comprises a second permanent magnet interposed within the fixed yoke with a polarity such that said armature is urged towards



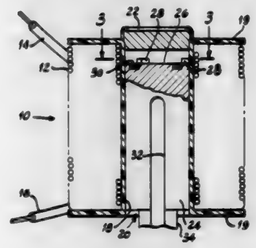
the end or so-called rest position when the coil is not energized.

4,451,809

ELECTROMAGNETIC DEVICE

Keith E. Zukausky, Hanover, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 8, 1982, Ser. No. 355,833
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—255 **12 Claims**



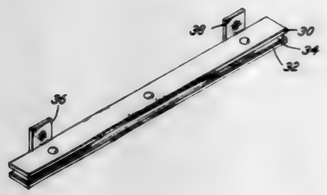
1. An electromagnetic actuator comprising:
(a) coil means defining one or more turns of conductor material having a relatively high electrical conductivity;
(b) pole piece means including a member formed of material of relatively high magnetic permeability and disposed centrally with respect to said coil turn;
(c) armature means disposed centrally with respect to said coil turn, said armature means including a member formed of material of high magnetic permeability disposed in axially spaced arrangement with respect to said pole piece means, and armature member having provided thereon a plurality of peripherally spaced lugs extending axially therefrom about the periphery thereof, with the area of the lugs in a direction transverse to the longitudinal dimension of the armature being small with respect to the transverse section area of the armature such that, upon a desired current flowing through said coil means, said lugs become magnetically saturated and,
(d) upon flowing an alternating electrical current through said coil means, a force is applied to said armature means causing said armature member to move toward said pole piece means until further movement thereof is arrested by said lugs contacting said pole piece means thereby preventing rocketing or orbiting.

4,451,810

MAGNETIC TOOL HOLDER

Merrill R. Miller, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa

Filed Feb. 7, 1983, Ser. No. 464,407
Int. Cl.³ H01F *7/20*
U.S. Cl. 335—285 **2 Claims**



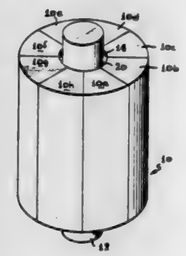
1. An improved magnetic tool holder comprising, in combination:
a pair of equally sized, generally rectangular, metal plates;
a single magnetic bar having longitudinal and width dimensions slightly less than the corresponding dimensions of the plates, said bar comprised of a flexible material impregnated with a magnetic powder material;
at least two L-shaped bracket members having a support leg longer than the cumulative thickness of the plates and bar and a fastening leg having a length slightly less than the width of the plates; and
at least two fasteners connected entirely through a series of aligned openings in an assembly stack of the plates with the bar therebetween and the fastening leg against one plate and with the support leg positioned against the longitudinal aligned edges of the plates and bar, each support leg spaced laterally from the other, each support leg extending transversely from the assembly stack and including an opening for attachment and support of the holder, one fastener being associated with each bracket member to maintain the holder in assembled condition.

4,451,811

MAGNET STRUCTURE

George J. Hoffman, Malibu, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Division of Ser. No. 62,197, Jul. 30, 1979, abandoned, and Ser. No. 209,628, Nov. 24, 1980. This application Sep. 27, 1982, Ser. No. 424,570
Int. Cl.³ H01F *7/02*
U.S. Cl. 335—302 **4 Claims**



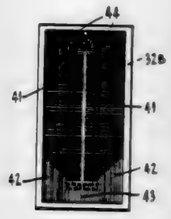
1. A permanent magnet comprising:
a two-poled permanent magnet structure having a circularly cylindrical bore therethrough, the interior of said bore forming one of said poles, said bore having an axis of symmetry;
said structure being divided circumferentially of said bore into a plurality of substantially contacting circumferential segments each having an inner surface which is a circumferential segment of the cylindrical surface of said bore;
all of said segments being magnetized along their entire length and about the entire portions of said circumference with their internal magnetizations identically poled in a radical direction relative to said axis and their pole strengths to be substantially equal, to cause substantially the entire surface of said circumferential segments of said bore to become identically and substantially uniformly poled magnetic pole faces of said segments.

4,451,812

ELECTROSTATIC SHIELD

Valentino F. Vescovi, Macleod, and Arthur W. Richards, Plenty, both of Australia, assignors to Sphere Investments Limited, Nassau, The Bahamas

Continuation of Ser. No. 154,295, May 29, 1980, abandoned. This application Apr. 27, 1982, Ser. No. 372,371
Claims priority, application South Africa, Jun. 19, 1979, 79/3030
Int. Cl.³ H01F *15/04*
U.S. Cl. 336—84 C **4 Claims**



1. An electrostatically shielded conductor unit comprising an electrically insulating plate having a first face and an opposite face, a coil having a longitudinal axis and formed in a path of generally rectangular configuration in the plane of said first face formed on said first face by a printed circuit technique, the longitudinal axis extending along the coil and following the rectangular configuration, an electrostatic shield in the form of a sheet-like array of closely spaced elongate conductors disposed so that where elongate conductors cross the coil, they all do so at right angles to the longitudinal axis thereof, said conductors being formed on said opposite face of said plate by a printed circuit technique, and means for connecting the elongate conductors to a common potential.

4,451,813

VACUUM FUSE HAVING MAGNETIC FLUX GENERATING MEANS FOR MOVING ARC

Kengo Hirose, and Norio Kudo, both of Tokyo, Japan, assignors to Japan Radio Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 272,208, Jun. 10, 1981, abandoned, which is a continuation of Ser. No. 70,412, Aug. 28, 1979, abandoned. This application Feb. 22, 1983, Ser. No. 468,677
Int. Cl.³ H01H *85/38*
U.S. Cl. 337—17 **18 Claims**

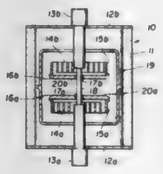
1. In a vacuum fuse comprising a sealed evacuated dielectric housing, first and second electrically conductive members fixedly supported by and through the dielectric housing and arranged so that inner ends of said first and second conductive members confront one another to form a predetermined fixed space therebetween, first and second arcing electrode means disposed at respective inner ends of said first and second conductive members to define a fixed gap between entirely continuous, non-interrupted annular confronting surfaces thereof, said first and second arcing electrode means being electrically connected with respective first and second conductive members, and an electrically conductive fusible element means connected between said first and second conductive members

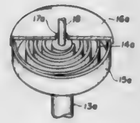
and bridging said fixed gap between said first and second arcing electrode means,

the improvement which comprises in combination:

said confronting surfaces of said first and second arcing electrode means each being substantially flat;

at least one coil means having an inner connecting end and an outer connecting end, said coil means being mounted on the inner end of at least said first electrically conductive member, said inner connecting end of said coil means being electrically connected to said first electrically conductive member and said outer connecting end thereof being electrically connected to a peripheral edge of the confronting surface of said first arcing electrode means, said at least one coil means forming said electrical connection between said first arcing electrode means and said first electrically conductive member and supporting said first arcing electrode means, said coil means being formed so that magnetic flux is produced in said fixed gap by arc current flowing through said at least one coil means when





an arc is produced between the confronting surfaces of said first and second arcing electrode means at a time when said fusible element means melts, said magnetic flux being sufficient to cause said arc to move toward and extinguish at said peripheral edge as said arc is confined solely within said fixed gap between said entirely continuous substantially flat annular confronting surfaces, and

said first arcing electrode means having a substantially central hole in the entirely continuous annular confronting surface thereof through which hole said fusible element means extends without contacting said first arcing electrode means to connect directly with said first conductive member, so that current flow through said at least one coil means is prevented before said fusible element means melts, and said arc current is directed to the peripheral edge of the confronting surface of said first arcing electrode means through said at least one coil means at a time when said fusible element means melts to produce an arc between said entirely continuous substantially flat annular confronting surfaces.

4,451,814

NON-RESETTABLE THERMAL FUSE

Leon G. Barry, and Willis E. Rieman, both of Shelby, N.C., assignors to Fasco Controls Corporation, Shelby, N.C.

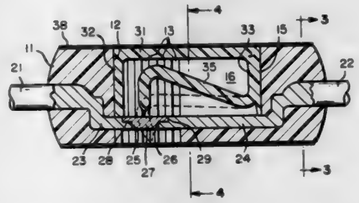
Filed Jun. 14, 1982, Ser. No. 387,968

Int. Cl.³ H01H *37/76*

U.S. Cl. 337—407 **9 Claims**

1. A thermal fuse, comprising a dielectric housing having therein a sealed chamber, a pair of spaced wire leads projecting from opposite ends, respectively, of said housing, a fusible metal alloy link positioned in said chamber and operative normally to form at least part of an electrical connection between said pair of leads, a flexible, preloaded spring element engaged with said link normally to exert a predetermined stress thereon, and operative, when the ambient temperature of said link exceeds a predetermined temperature range, suddenly to interrupt said electrical connection between said leads, said spring element being a sinuous metal wire fixed at one end to one of said leads, and releasably secured under tension at its opposite end to a stationary surface in said chamber by said link, and in electrical connection with the other of said leads,

a metal cover secured over an opening in one end of said chamber,



said alloy link being secured to the inside of said cover to face said chamber and said other lead is secured to the outside of said cover, and

said sinuous metal wire being integral at said one end thereof with said one lead, and having said opposite end thereof embedded in said alloy link to be held in tension thereby until the ambient temperature of said link exceeds said predetermined temperature range.

4,451,815

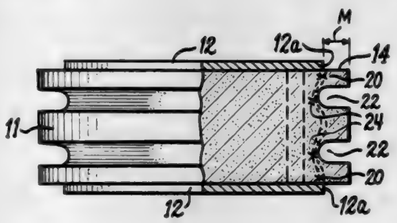
ZINC OXIDE VARISTOR HAVING REDUCED EDGE CURRENT DENSITY

Eugene C. Sakshaug, Lanesborough, and James S. Kresge, Pittsfield, both of Mass., assignors to General Electric Company, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,908

Int. Cl.³ H01C *7/12*

U.S. Cl. 338—21 **6 Claims**



1. A zinc oxide varistor comprising:

a disc-shaped sintered body having opposed faces and circumferential rim;

an electrode applied to each said face, the edges of said electrodes being spaced from the edges of said body to leave circumferential marginal portions of said faces devoid of electrode material; and

at least one circumferential groove created in said rim, the depth of said groove being approximately equal to the width of said electrode-free marginal face portions.

4,451,816

GAS MONITOR

Geoffrey W. Ball, Apple Patch, Bellingdon, Chesham, Buckinghamshire, England

Filed Dec. 31, 1981, Ser. No. 336,403

Claims priority, application United Kingdom, Dec. 31, 1980, 8041552

Int. Cl.³ H01L *7/00*

U.S. Cl. 338—34 **9 Claims**



1. A gas monitor comprising:

a tape having a base carrying a layer of gas absorbant material capable of recording magnetic signals,

both the base and the layer of gas absorbant material being capable of being heated to a temperature at which any gas absorbed by the gas absorbant material is driven off without being damaged.

4,451,817

DYNAMOMETER TRANSDUCER UTILIZING AN AMORPHOUS METAL

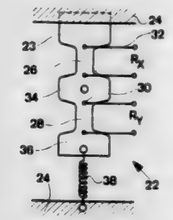
Hans-Rudolf Zulliger, Uetikon, Switzerland, assignor to Mettler Instrumente AG, Greifensee-Zurich, Switzerland

Filed Sep. 27, 1982, Ser. No. 424,056

Claims priority, application Switzerland, Mar. 25, 1982, 1830/82

Int. Cl.³ H01L *10/10*

U.S. Cl. 338—47 **6 Claims**



1. In transducing apparatus having a member having a load-dependent deformation, and means for generating an electrical signal in response to said deformation, the improvement comprising

a band-shaped measuring element made of amorphous metal constituting said member, said band-shaped measuring element having a length varying as a function of load applied thereto, said change in length constituting said load dependent deformation.

4,451,818

MINIATURE CONNECTOR FOR A CIRCUIT BOARD EDGE

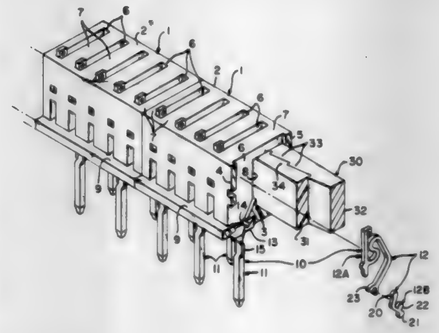
Dimitry Grabbe, Lisbon Falls, Me.; Johannes C. W. Bakermans, Harrisburg, Pa.; Nicola Cosmo, Harrisburg, Pa., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 6, 1982, Ser. No. 395,387

Int. Cl.³ H07R *9/09*

U.S. Cl. 339—75 MP **10 Claims**

1. A miniature circuit board edge connector assembly comprises an insulative housing, conductive posts projecting from the housing, spring contacts received by the housing and connected with the posts and adapted for resilient flexure toward corresponding circuit conductors on a circuit board that is received by the housing, and a moveable cam received by the housing and adapted for flexing resiliently the spring contacts, characterized in that; the spring contacts include conductor portions, pivot connections between the conductor portions and corresponding posts and the conductor portions being



pivotal about the pivot connections toward and into engagement with corresponding circuit conductors, and circuit paths are established along the conductor portions from the circuit conductors to corresponding posts, the circuit paths being shorter than the lengths of the spring contacts.

4,451,819

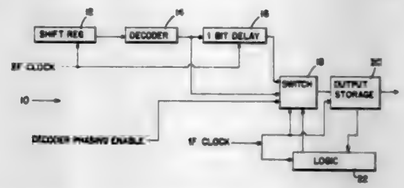
METHOD AND APPARATUS FOR DECODING BINARY DATA

Robert L. Beckenhauer, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Jun. 22, 1981, Ser. No. 275,682

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **12 Claims**



1. A method of converting input data bit signals representative of binary data in one form entering an apparatus at a first fixed rate to output bit signals representative of the same data in another form exiting said apparatus at a second fixed rate according to a code, wherein according to said code there are more bit signals of the data in said one form than the bit signals of the same data in said another form, said method comprising:

inputting a stream of known input bit signals into a register means of said apparatus;

decoding said known input bit signals into output bit signals and storing them in an output means;

comparing the decoded output bit signals to anticipated output bit signals that correspond to the binary data of the known input bit signals according to said code;

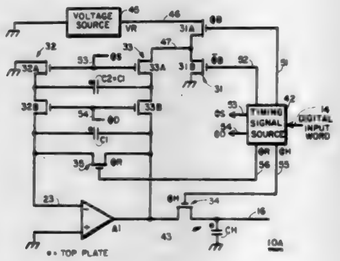
selecting a predetermined delay to be inserted in the path from said register means to said output means such that the decoded output bit signals are in phase with the anticipated output bit signals, and then applying the input data bit signals to said register means whereby the inserted delay will then cause properly decoded output data bit signals to be stored in said output means.

4,451,820

CHARGE REDISTRIBUTION INTEGRATABLE D/A CONVERTOR

Christopher W. Kapral, San Carlos, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Aug. 27, 1981, Ser. No. 296,733
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **7 Claims**



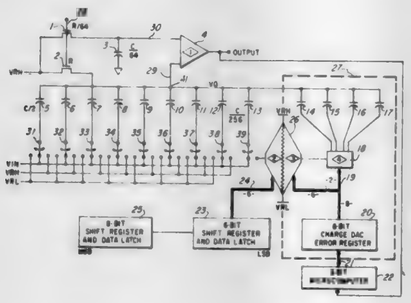
1. An integratable digital to analog converter comprising:
first and second capacitors having capacitances of the same values, and having one and other sides thereof;
a differential input operational amplifier means having an inverting input terminal and an output terminal electrically connected to one and other sides, respectively, of said first capacitor and having a non-inverting input electrically connected to ground for impressing a virtual ground potential on said inverting input terminal;
first switch means sequentially responsive to each binary bit in a digital input word for impressing onto a first bus line one of a prescribed voltage from a voltage source and the ground reference voltage which may correspond to a binary one and zero in the associated bit position; and
second switch means operative for each bit cycle of the digital input word in said first switch means for first connecting said one and other sides of said second capacitor to ground and said bus line, respectively, for sampling the bus voltage, and then connecting said one and other sides of said second capacitor to associated sides of said first capacitor for redistributing the sampled charge-voltage on said second capacitor and any charge-voltage on said first capacitor between these capacitors.

4,451,821

COMBINATION OF ANALOG TO DIGITAL CONVERTER AND ERROR CORRECTION CIRCUIT

John C. Domogalla, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 3, 1981, Ser. No. 317,716
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **4 Claims**



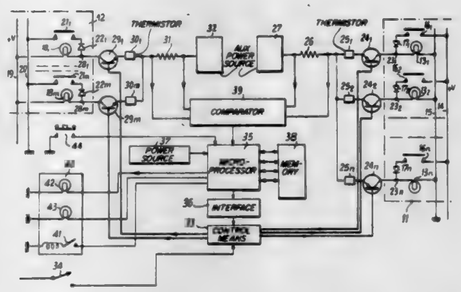
1. In a combination of an analog to digital converter having a comparator means with a first and second terminal for comparing signals on the first terminal to signals on the second terminal—first and second reference terminal means for providing a first and second reference signal to the analog to digital converter—an analog input means for receiving an analog signal for conversion to a digital signal—a plurality of capacitors means connected in a capacitor array each with a first and second side the first side being connected to a node—the plurality of capacitors having the first side connected together and to the first terminal, for redistributing of charge representative of the analog signal—sampling switch means for obtaining a digital representation of the analog signals, and includes; a first switch means for selectively connecting and disconnecting the reference terminal means to the second terminal, a second switch means for selectively connecting and disconnecting the reference terminal means to the first side of the capacitor array, a third switch means for selectively connecting and disconnecting each second side of the plurality of capacitors between the reference terminal means and the analog input means, and switch control means for controlling the selective connection and disconnection of the first, second and third switch means to the reference terminal, disconnecting the first and second switch means from the reference terminal and connecting the third switch means from the reference terminal means to the analog input means and an error corrector means for compensating for anomalies in each member of the plurality of capacitors, the error correction means comprises
reference capacitor connected to the second terminal;
supplemental charge circuitry means connected in parallel to the capacitor array for adjusting the charge stored in the capacitor array;
error control means for controlling of the adjustment of the charge stored in the capacitor array; and
register means for retaining the charge adjustment of each member capacitor of the plurality of capacitors.

4,451,822

DEVICE FOR AUTOMATICALLY CHECKING A PLURALITY OF ELECTRIC INDICATOR LIGHTS

Bernard P. Verse, Blagnac; Alain Y. Geoffroy, Tournefeuille, and Pierre Gentet, Colomiers, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Aug. 26, 1981, Ser. No. 296,365
Claims priority, application France, Sep. 17, 1980, 80 19997
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—642 **9 Claims**



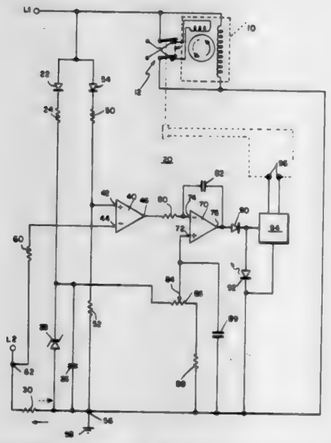
1. A device for checking a plurality of electric indicator lights connected in a plurality of parallel circuits across a common power supply, each circuit including one of said lights in series with a diode, said device comprising:
a plurality of controlled switches each of which has one side adapted to be connected to one of said circuits at a point between said light and said diode;
an auxiliary power source having a plurality of outputs, each output being connected to the other side of one of said switches in a circuit including the light associated with said one switch;
control means for sequentially actuating said controlled switches;
current measuring means for measuring the current flowing through each of said lights when its associated switch is closed to complete a circuit therethrough; and
comparison means responsive to said current measuring means for comparing said measured current with a predetermined reference current corresponding to normal functioning of each said lamp.

4,451,823

OVERLOAD SENSING CIRCUIT FOR A MOTOR

Paul E. Penn, and John W. Waymire, both of Indianapolis, Ind., assignors to Dart Controls, Inc., Zionsville, Ind.

Filed Aug. 7, 1981, Ser. No. 290,817
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—648 **12 Claims**



1. In combination with an electric motor, an alternating signal source for driving the motor and supply lines connecting the motor to the signal source, a circuit for sensing an overload condition of the motor comprising means for providing a voltage signal indicative of changes in the motor current, means for measuring the phase relationship between the signal source voltage and the voltage signal indicative of motor current, the measuring means providing an output signal having first and second levels wherein the relative time durations of the first and second signal levels correspond to the phase relationship between the signal source voltage and the voltage signal indicative of motor current, means for selecting a reference phase relationship indicative of a load limit for the motor, and means for comparing the output signal to the reference phase relationship and for providing a signal to indicate an overload condition of the motor when the reference phase relationship is greater than the measured phase relationship.

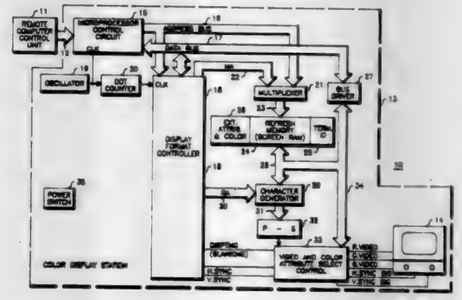
4,451,824

COLOR CONVERGENCE DATA PROCESSING IN A CRT COLOR DISPLAY STATION

David J. Thayer, Elgin; James J. Krause, Hanover Park, and John R. Welk, Addison, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1982, Ser. No. 390,580
Int. Cl.³ G09G *1/00*
U.S. Cl. 340—720 **16 Claims**

1. In a CRT information display system in which a CRT display station receives electrical convergence control signals from a control unit, effectively stores them and then allows the reading back of the stored convergence control signals, and in which a screen display RAM is provided for receiving and storing video character control signals which define a video character pattern to be visually displayed, the improvement comprising said display station including the combination of:
a preconverged CRT on which a video character pattern is to be displayed,
means for receiving and storing said electrical convergence control signals in predetermined storage locations in said display station while preventing said stored convergence control signals from controlling convergence of said CRT,



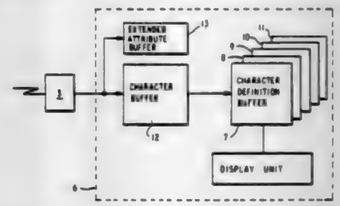
means for receiving and storing said video character control signals in predetermined storage locations in said screen RAM, and
means for providing a predetermined visually displayed character pattern on said CRT in accordance with said stored video character control signals in said screen RAM while effectively preventing said stored convergence control signals from controlling convergence of said CRT.

4,451,825

DIGITAL DATA DISPLAY SYSTEM

Stephen T. Hall, Eastleigh; Raymond Hardiman, Chandlers Ford; Peter W. Johnson, Winchester; Peter Quarendon, Braishfield, and Harold W. Tuffill, Littleton, all of England, assignors to International Business Machine Corporation, Armonk, N.Y.

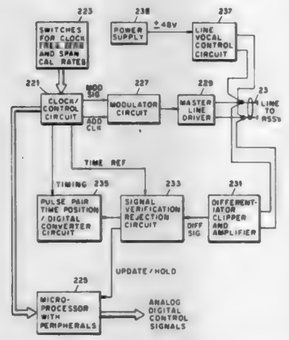
Continuation of Ser. No. 189,526, Sep. 22, 1980. This application Dec. 9, 1982, Ser. No. 448,159
Claims priority, application United Kingdom, Sep. 27, 1979, 7933533
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—750 **9 Claims**



1. A digital data display system for presenting a graphical picture on an output device in which the area or screen from which the picture is to be viewed is notionally divided into a plurality of character cells each of which comprises a predetermined number of picture elements (pels), the system comprising
first means for creating, in response to input information, a first level description of all the elements of a picture to be presented,

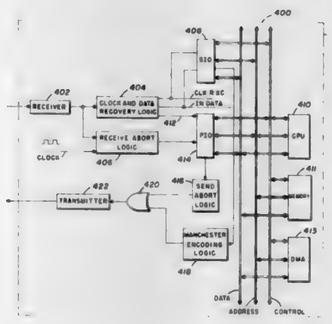
second means for storing a screen definition table having an entry for each character cell of the display area,
third means for calculating for each element of the picture, the pattern of pels in associated character cells required to display the elements, storing the calculated pattern in a table in a character cell store and associating the respective entry in the screen definition table with the required pattern in the character cell store,
fourth means to determine when a particular character cell pattern has already been calculated as required for a picture and to associate the respective screen definition table entries with only one copy of the particular character cell pattern, and
fifth means for transferring the screen definition table to a screen definition buffer store and the character cell pattern table to a character cell buffer store in the display device,
whereby the contents of the screen definition buffer store and character cell buffer store control the construction of a picture presented by the display device.

4,451,826
SINGLE TRANSMISSION LINE DATA ACQUISITION SYSTEM
George E. Fasching, Morgantown, W. Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 18, 1981, Ser. No. 303,674
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.07 **4 Claims**



1. A single transmission line multiple channel data acquisition system, comprising:
a master station means for generating address pulses at a selected frequency for separately sequentially addressing a plurality of cycle responsive data channels during a scanning sequence and receiving quantitative data values corresponding to the addressed one of said channels during an address pulse cycle period;
a plurality of remote station/sensor means corresponding to said plurality of data channels, each remote station/sensor means including a power storage means responsive to a supply voltage applied to an input of said remote station/-sensor means for storing electrical energy to power said remote station/sensor means, a presettable address counter means for counting said address pulses received at said input thereof to determine when the channel is addressed in accordance with a preselected count of said address pulses and transmitting circuit means for measuring and transmitting the addressed channel quantitative data value in the form of a pulse position coded signal at an output of said remote station/sensor means;
a transmission line connected between said master station and the input and output of each of said plurality of remote station/sensor means for transmitting said address pulses to each of said plurality of remote station/sensor means and said pulse position coded signals from each of said plurality of remote station/sensor means to said master station means; and
means for automatically maintaining a constant supply voltage on said transmission line for charging each power storage means of each of said remote station/sensor means independent of the number of said plurality of remote station/sensor means.

4,451,827
LOCAL AREA COMMUNICATION NETWORK
Steven A. Kahn, Silver Spring; Robert L. Stewart, Wheaton, and Stephen G. Tolchin, Rockville, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.
Filed Sep. 22, 1981, Ser. No. 304,636
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.52 **27 Claims**



1. A communications network for a distributed data processing system comprising:
a plurality of network nodes, each network node comprising an incoming link on which a data signal to the corresponding network node is received and at least one network node further comprising an outgoing link on which a data signal from the at least one network node is transmitted; and
means, interposed between the network nodes, for coupling the outgoing link of a network node to the incoming links of only all the other network nodes, such that a data signal on an outgoing link of a particular network node does not enter the incoming link of the particular network node.

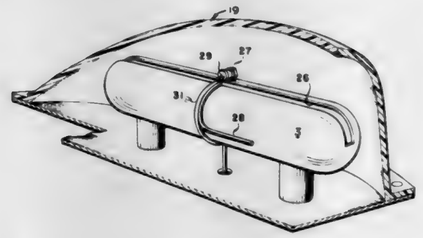
4,451,828
LINEARITY ADJUSTMENT OF SPACECRAFT TUBULAR SPAR-TYPE MEMBERS
William V. Fuldner, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 20, 1981, Ser. No. 294,738
Int. Cl.³ H01Q *1/28, 1/08*
U.S. Cl. 343—872 **18 Claims**



1. An apparatus for preventing distortion of a spar-type member extending outwardly from an orbiting spacecraft due to unequal heat application from an external source, said apparatus comprising:

two electrically resistive strip heating elements attached to said member, said two elements positioned at opposite sides of the cross-section of said member;
means for sensing the temperature of said member at points adjacent each of said elements; and
means responsive to said temperature sensing means for providing an electric current to a selected one of said elements when a temperature difference between said points is sensed, to thereby equalize the temperature of said member at said points adjacent said elements.

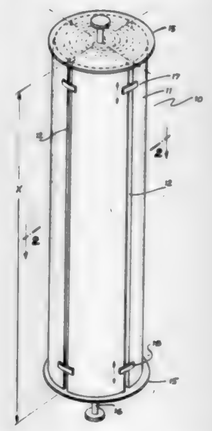
4,451,829
CIRCULARLY POLARIZED ANTENNA FORMED OF A SLOTTED CYLINDRICAL DIPOLE
Clarence W. Stuckey, Jr., Sepulveda, Calif., and Robert A. Meyers, deceased, late of Riverside, Calif. (by Carol Mae Meyers, executrix), assignors to Lockheed Corporation, Burbank, Calif.
Filed Jun. 25, 1979, Ser. No. 51,370
Int. Cl.³ H01Q *1/28, 13/12, 21/29*
U.S. Cl. 343—705 **12 Claims**



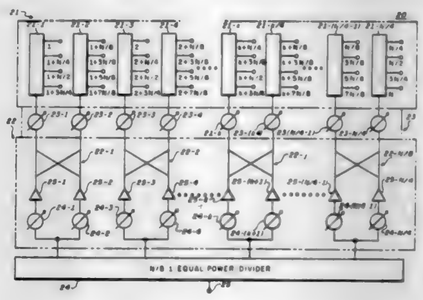
1. An antenna comprising:
a hollow conductive cylinder;
conductive walls enclosing the ends of said cylinder;
means defining a narrow longitudinal slot extending along the length of said cylinder;
means for electrically coupling a first transmission line directly across said slot; and,
means for electrically coupling a second transmission line across the midpoint of the longitudinal axis of said cylinder whereby said cylinder functions as a dipole.

4,451,830
VHF OMNI-RANGE NAVIGATION SYSTEM ANTENNA
James G. Lucas, Wahroonga; Alan C. Young, West Pennant Hills, and Paul M. Hinds, Newtown, all of Australia, assignors to The Commonwealth of Australia, Australia
Filed Jul. 6, 1981, Ser. No. 280,180
Claims priority, application Australia, Dec. 17, 1980, PE6964
Int. Cl.³ H01Q *13/12, 13/18*
U.S. Cl. 343—768 **13 Claims**

1. A VOR antenna comprising a cylinder having four orthogonally disposed slots formed within the peripheral wall thereof, the slots extending in the direction of the longitudinal axis of the cylinder and being spaced-apart around the periphery of the cylinder, each slot being backed by a separate cavity which has a depth extending into the cylinder from the slot, the depth of each cavity being effectively greater than the radial dimension of the cylinder, and the cavities being configured to locate wholly within the cylinder.



4,451,831
CIRCULAR ARRAY SCANNING NETWORK
John J. Stangel, Mahopac; John C. Herper, Glen Cove, and Carl Rothenberg, North Bellmore, all of N.Y., assignors to Sperry Corporation, New York, N.Y.
Filed Jun. 29, 1981, Ser. No. 278,252
Int. Cl.³ H01Q *3/40*
U.S. Cl. 343—374 **8 Claims**



1. An antenna system for scanning a beam through selected spatial positions comprising:
an array of arcuately disposed antenna elements;
switch means coupled to said array for selecting elements therefrom to form selected sub-arrays;
means responsive to signals coupled to first terminal means thereof for providing substantially uniformly distributed signals to second terminal means thereof; and
variable distribution means having a plurality of input ports coupled to said second terminal means of said uniform distribution means and a multiplicity if ouput ports coupled to said switch means for varying signal coupling coefficients between said selected elements and said uniform distribution means, thereby establishing selectable aperture distributions for said sub-arrays, said variable distribution means including:
first coupler means having first and second input means coupled to said plurality of input ports and having first and second output means coupled to said switch means for coupling signals incident to said first input means thereof

to said first and second output means with a predetermined amplitude ratio and a predetermined phase difference therebetween and for coupling signals incident to said second input means thereof to said first and second output means with said predetermined amplitude ratio and a phase difference therebetween that is opposite said predetermined phase difference; and

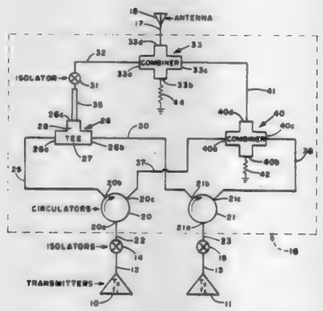
first and second variable phase shift means having output ports coupled respectively to said first and second input means of said first coupler means and input ports coupled to said uniform distribution means for providing phase shifts to signals incident to said first and second input means of said coupler means to aportion said incident signal between said first and second output means of said coupler means in accordance with desired amplitude ratios.

4,451,832

RADIO FREQUENCY TRANSMITTER COUPLING CIRCUIT

Francis H. Stites, Wayland, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 22, 1982, Ser. No. 360,878
Int. Cl.³ H01Q *5/00*
U.S. Cl. 343—858 **11 Claims**



1. A circuit for coupling an antenna to the outputs of at least two transmitters comprising

first and second circulators, each of said circulators having first, second and third ports nonreciporcally connected in that order,

a connector and a first power combiner, said connector and said combiner each having first and second input ports and a third output port, said connector having a predetermined impedance mismatch between said output port thereof and each of said input ports thereof characterized by a 3 to 1 voltage standing wave ratio of said output port thereof relative to said input ports thereof, said combiner producing at said third port thereof the sum of the signal power incident on said first and second ports thereof,

the first and second ports of said connector being connected with equal phase delays to the second ports, respectively, of said first and second circulators, the first and second ports of said combiner being connected to the third ports, respectively, of said first and second circulators, with phase delays equal to each other and to each of the first named phase delays,

a second power combiner having first and second input ports and a third output port, said second combiner producing at the third port thereof the sum of signal power incident on said input ports thereof,

said third ports of said connector and said first combiner being connected to said first and second ports, respectively, of said second combiner,

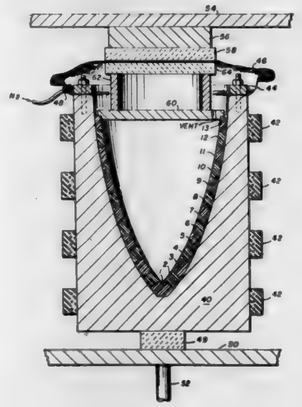
said antenna being connected to said third port of said second combiner.

4,451,833

RADOME FORMED OF SEGMENTED RINGS OF FIBER-PTFE COMPOSITE

G. Robert Traut, South Killingly, Conn., assignor to Rogers Corporation, Rogers, Conn.

Division of Ser. No. 149,952, May 15, 1980, Pat. No. 4,364,884.
This application Jan. 18, 1982, Ser. No. 339,839
Int. Cl.³ H01Q *1/40*
U.S. Cl. 343—872 **2 Claims**



1. A radome blank comprising:

a tip portion, said tip portion being symmetrical with respect to the radome axis and being continuous, said tip portion being formed with an annular planar surface area, said planar surface area defining a frustoconical shape; and

a tubular portion extending from and integral with said tip portion, said tubular portion being coaxial with said tip portion and terminating at an annular surface having a radius greater than said tip portion annular surface area, said tubular portion being formed a plurality of ring-shaped segments, said segments each having a different average outer diameter, abutting surfaces of said segments being perpendicular to the radome outer surface, extensions of said abutting surfaces intersecting said axis at an angle of other than 90°;

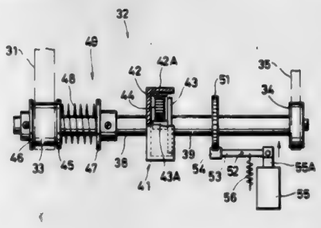
said tip and tubular portions being comprised of a fiber-polytetrafluoroethylene composite and said segments being diffusion bonded to form an integral structure.

4,451,834

TRANSFER TYPE HEAT SENSITIVE RECORDING DEVICE

Hisao Nakajima, and Fujio Moriguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1982, Ser. No. 409,221
Claims priority, application Japan, Aug. 19, 1981, 56-128772
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **4 Claims**



1. A transfer type heat sensitive recording device comprising

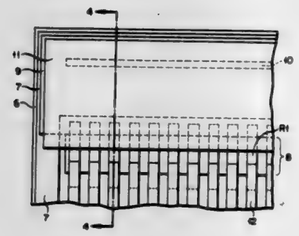
recording means for transferring ink from an ink donor sheet to a recording sheet superimposed thereon by applying thermal pulses, separating means for separating said recording sheet from said ink donor sheet after said thermal transfer recording has been effected, ink donor sheet conveying means for continuously conveying an indeterminate length donor sheet through said recording section and said separating means and for stopping the conveyance of said ink donor sheet when the rear edge of said recording sheet is separated from said ink donor sheet by said separating means, recording sheet supplying means for supplying a recording sheet having a finite length, recording sheet discharge means for discharging said recording sheet after separation by said separating means and a drive force accumulating mechanism for accumulating a portion of the drive force for said ink donor sheet conveying means when said ink donor sheet conveying means is operated and which continues to drive said recording sheet discharge means for a predetermined time subsequent to the stopping of said ink donor sheet conveying means to complete the discharge of said recording sheet.

4,451,835

THERMAL RECORDING DEVICE

Tamio Saito, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 14, 1982, Ser. No. 434,390
Claims priority, application Japan, Oct. 19, 1981, 56-166742
Int. Cl.³ G01D *15/10*; H05B *1/00*
U.S. Cl. 346—76 PH **2 Claims**



1. A thermal recording device comprising:

a thermal head section which includes at least one recording unit for recording data on a thermal sensitive medium, said recording unit including a plurality of resistive elements formed on a surface of an insulation member, and a common electrode formed on said surface for connecting one end of each of said resistive elements corresponding to said recording unit; and

a drive section connected between said common electrode and the other end of each of said resistive elements for selectively feeding current into said resistive elements according to data to be recorded; wherein

said thermal head section comprises an insulation layer provided on said common electrode and having an opening which is provided at a position on said common electrode, and a conductive layer provided on said insulation layer for coupling said common electrode with said one end of each of said resistive elements, through said opening.

4,451,836

OPTICAL DISC WRITE/READ APPARATUS

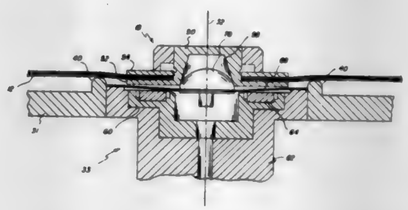
Eric M. Leonard; Frederick F. Geyer, both of Rochester, and George M. Myers, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 14, 1982, Ser. No. 434,204
Int. Cl.³ G01D *15/32*
U.S. Cl. 346—137 **4 Claims**

1. Optical disc write and/or read apparatus adapted for use with an optical disc assembly including (1) a flexible, disc-shaped support carrying a record layer with an annular storage region, (2) an annular retaining ring engaging said support around its peripheral region, and (3) a central hub; said apparatus comprising:

(a) lens means for focusing light at a focal plane normal to a predetermined axis;

(b) disc assembly receiving structure having (1) an annular locating surface rotatable about said axis in a plane normal



to said axis, and (2) means for mounting the central hub of a disc assembly such that an annular area of the disc assembly support radially inward of said storage region is in a predetermined abutting force against the locating surface of said receiving structure to provide firm contact between the disc assembly support and said locating surface.

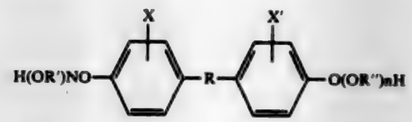
4,451,837

CONDUCTIVE SINGLE COMPONENT MAGNETIC TONER FOR USE IN ELECTRONIC PRINTING DEVICES

Robert J. Gruber, Pittsford, and John F. Knapp, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 188,487, Sep. 18, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,662
Claims priority, application Spain, Sep. 17, 1981, 505,586; United Kingdom, Sep. 18, 1981, 8128306
Int. Cl.³ G03G *13/00*
U.S. Cl. 346—153.1 **3 Claims**

1. A process for developing images in electronic printing systems which process consists of forming an electronic image in an electronic printing device, followed by developing the image with a conductive single component magnetic dry toner composition of a conductivity of from 10^{-6} to 10^{-8} $(ohms/cm)^{-1}$, and a fusing temperature of from about 95 degrees Centigrade to about 130 degrees Centigrade, comprises of a magnetic material present in an amount of from about 40 percent by weight to about 80 percent by weight, and from about 20 percent by weight to about 60 percent by weight of a polyester resin, comprised of the polymeric esterification product of a dicarboxylic acid and a diol comprising a diphenol of the formula:



wherein R is selected from substituted and unsubstituted alkylene radicals containing from about 2 to about 12 carbon atoms, alkylidene radicals containing from 1 to about 12 carbon atoms, and cycloclkylidene radicals containing from about 3 to about 12 carbon atoms; R' and R'' are selected from substituted and unsubstituted alkylene radicals containing from about 2 to about 12 carbon atoms, alkylene arylene radicals containing from about 8 to about 12 carbon atoms and arylene radicals; X and X' are selected from hydrogen or alkyl radicals containing from 1 to about 4 carbon atoms; and each n is a number of from 0 (zero) to 4, and a conductive carbon black present in an amount of from about 0.5 percent to about 4 percent, which

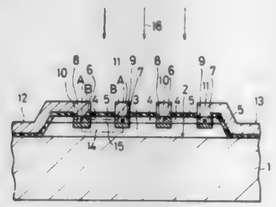
carbon black is adhered to or embedded in the surface of the polyester magnetic mixture.

4,451,838

SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE

Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,781
Claims priority, application Japan, Dec. 30, 1979, 54-171477
Int. Cl.³ H01L *45/00, 29/161, 27/14, 29/12*
U.S. Cl. 357—2 **10 Claims**



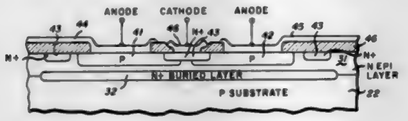
1. A semiconductor photoelectric conversion device comprising:
a supporting member;
a first semiconductor layer formed on the supporting member;
a second semiconductor layer formed on the first semiconductor layer;
P type and N type semiconductor regions formed in the second semiconductor layer; and
first and second electrodes formed over the second semiconductor layer and contacting P type and N type semiconductor regions;
wherein the first and second semiconductor layers are formed of amorphous or semi-amorphous semiconductor and are intrinsic;
wherein the second semiconductor layer has a larger energy gap than the first semiconductor layer, and
wherein the P type and N type semiconductor regions are spaced apart and are in contact with the first semiconductor layer.

4,451,839

BILATERAL ZENER TRIM

Carl T. Nelson, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 186,797, Sep. 12, 1980, abandoned. This application Apr. 19, 1983, Ser. No. 486,153
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 **7 Claims**



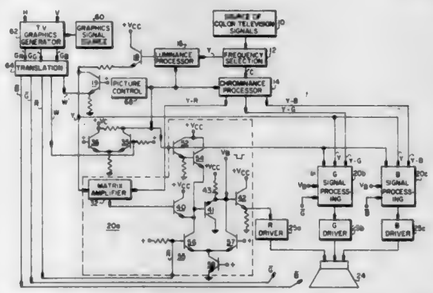
1. A back to back diode structure for use in the trimming of a monolithic semiconductor integrated circuit in which one or more of a plurality of trimming resistors may be shorted out by passing a relatively large current through a selected parallel connected diode, said back to back diodes being contactable in pairs with the selection of which one of said pair will be shorted out being determined by the polarity of said relatively large current wherein the reverse biased one of said pair will be damaged and thereby shorted and wherein the forward biased one of said pair will pass said relatively large current without damage, said structure comprising:
a semiconductor body of one conductivity type;
first and second spaced apart regions of opposite conductivity type arrayed in said body,
a third region of said one conductivity type located to overlap said first and second regions in selected portions thereof, thereby to create said back to back diode structure in said selected portions;
an extension of said third region surrounding said first and second regions and spaced therefrom except in said selected portions whereby said diodes have enhanced conductivity around their perimeters when forward biased so as to minimize damage thereto in passing said relatively large current; and
means for making electrical connection to said first, second and third regions.

4,451,840

PICTURE CONTROL FOR TELEVISION RECEIVER ON-SCREEN DISPLAY

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1981, Ser. No. 325,049
Int. Cl.³ H04N *5/22*
U.S. Cl. 358—22 **5 Claims**



1. In a video signal processing system including a color kinescope for displaying a color image in response to signals applied to plural intensity control electrodes thereof, and plural signal paths for respectively coupling image representative signals to said kinescope control electrodes; apparatus comprising:
means for providing image representative color graphics information signals including a graphics drive signal and plural graphics blanking signals;
means for coupling said graphics drive signal in common to each of said signal paths for enabling said kinescolpe to display graphics information;
means for respectively coupling said plural graphics blanking signals to said plural signal paths for blanking selected outputs of said signal paths to thereby determine the color of displayed graphics information; and
control means for varying the level of said common graphics drive signal to thereby control the contrast of displayed graphics information.

4,451,841

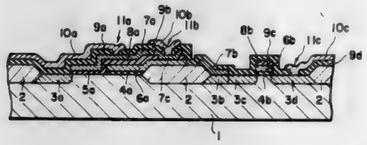
SEMICONDUCTOR DEVICE WITH MULTI-LAYERED ELECTRODES

Ryoichi Hori, Tokyo; Masaharu Kubo, Hachioji; Norikazu Hashimoto, Tokorozawa; Shigeru Nishimatsu, Kokubunji, and Kiyoo Itoh, Higashi-Kurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 880,618, Feb. 23, 1978, Pat. No. 4,270,262. This application Jan. 15, 1981, Ser. No. 225,268
Claims priority, application Japan, Mar. 4, 1977, 52-22681
Int. Cl.³ H01L *29/78, 27/02, 29/34, 29/04*
U.S. Cl. 357—23.6 **22 Claims**

1. A semiconductor device comprising:
(a) a first field-effect circuit element formed in a surface region of a semiconductor substrate, said first field-effect circuit element including a first gate insulating layer in a first part of the surface region of said substrate, a first gate electrode which is disposed on said first gate insulating layer and which is made of a first conductive layer, and a first interlayer insulating layer which is disposed on said first gate electrode and which has a first opening penetrating a part of said first inter-layer insulating layer;

(b) a second field-effect circuit element formed in the surface region of said semiconductor substrate, said second field-effect circuit element including a second gate insulating layer in a second part of the surface region of said substrate, a second gate electrode which is made of a second conductive layer disposed so that a first part of said second gate electrode overlies said second gate insulating layer and a second part of said second gate electrode overlies said first inter-layer insulating layer at a position other than said first opening;



(c) a second inter-layer insulating layer disposed on said second gate electrode and having a second penetrant opening at a predetermined position,
(d) a first interconnection conductor disposed in said second opening and connected with said second gate electrode,
(e) a subsidiary interconnection conductive layer disposed in said first opening, connected with said first gate electrode, and electrically isolated from said second electrode,
(f) a third inter-layer insulating layer disposed on said first inter-layer insulating layer, and having a third opening, and
(g) a second interconnection conductor disposed in said third opening and connected with said subsidiary interconnection conductive layer, said second interconnection conductor and said subsidiary interconnection conductive layer being formed of different conductive materials, said second interconnection conductor forming an interconnection for said first gate electrode.

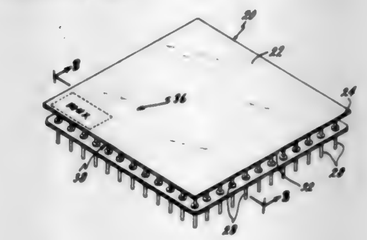
4,451,842

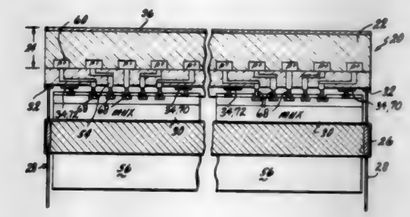
LARGE SCALE INTEGRATED FOCAL PLANE

Dieter H. Pommerrenig, El Toro, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 29, 1980, Ser. No. 220,676
Int. Cl.³ H01L *27/14, 29/78, 23/48, 25/04*
U.S. Cl. 357—30 **15 Claims**

1. A wafer of properly doped photoconductive semiconductor material having a front and rear surface and a first plurality of charge coupled device multiplexers having input terminals;
said front surface being transparent to electromagnetic energy in the frequency range of photoconductivity of said wafer and being electrically conductive to electromagnetic energy of at least some lower frequency;
heat sink means in good thermal contact with said wafer rear surface;
said rear surface having a second plurality of photodetectors integral with said wafer and disposed uniformly thereover in such a fashion that distance between adjacent photodetectors is greater than the distance between adjacent input terminals of said multiplexers, distance between detectors closest to a rear surface edge and the edge itself being half the distance between adjacent detectors;
an insulative layer deposited over said rear surface having electrically conductive columns thereon so disposed as to be directly opposite said input terminals of said multiplexers; and





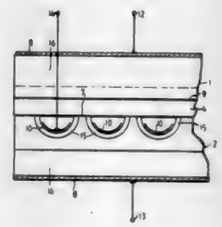
electrical conductor means coupling said photodetectors to said conductive columns, said conductive columns being mechanically bonded and electrically coupled to said input terminals.

4,451,843

BIPOLAR TRANSISTOR WITH A PLURALITY OF PARALLELLY CONNECTED BASE-COLLECTOR JUNCTIONS FORMED BY PLASTIC DEFORMATION OF THE CRYSTAL LATTICE

Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Higratherm Electric GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,560
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926785
Int. Cl.³ H01L *29/72*
U.S. Cl. 357—36 **15 Claims**



1. A bipolar transistor having a collector-base p/n junction produced by means of plastic deformation comprising: a p-doped and an n-doped monocrystalline semiconductor plate, disc or chip; both semiconductor plates, discs or chips have a structure comprising parallel ridges on one main face; one semiconductor disc forms a base region and contains an opposite conductivity type emitter region on its opposite main face so as to form an emitter-base p/n junction; the side surfaces of the ridges in the other semiconductor plate, disc or chip have a highly doped surface layer with the type of conductivity of the base region; both semiconductor discs are assembled, by mechanical pressure, so that the ridges of the structured faces of both plates, discs or chips cross and touch; and the surfaces

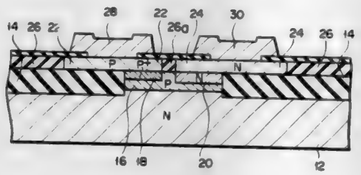
of said ridges which are in contact are connected together and form electrically parallel base-collector p/n junctions of equal area as a result of plastic deformation of the semiconductor lattice.

4,451,844

POLYSILICON EMITTER AND BASE CONTACTS SEPARATED BY LIGHTLY DOPED POLY SEPARATOR

Shigeru Komatsu, Yokohama, and Michio Nakamura, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 4, 1981, Ser. No. 289,961
Claims priority, application Japan, Aug. 20, 1980, 55-114211
Int. Cl.³ H01L *23/50, 23/52*
U.S. Cl. 357—59 **5 Claims**



1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
an insulation layer of a predetermined pattern for selectively covering the substrate;
a first region of a second conductivity type formed in that area of the substrate which is defined by the insulation layer;
a second region of the second conductivity type having a high impurity concentration and formed in the first region;
a third region of the first conductivity type formed in the first region; and
a polycrystalline silicon layer formed on the major surface of the substrate, said polycrystalline silicon layer comprising a first portion of the second conductivity type contacting the second region, a second portion of the first conductivity type contacting the third region and a third portion contacting the first region, said first and second portions having high impurity concentrations constituting first and second contacting electrodes, respectively, and the third portion having a low impurity concentration and constituting a separation portion for insulating the first and second portions from each other.

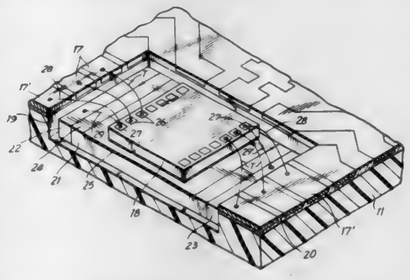
4,451,845

LEAD FRAME DEVICE INCLUDING CERAMIC ENCAPSULATED CAPACITOR AND IC CHIP

Elliott Philofsky, Myrtle Beach, S.C.; Ward Parkinson, and Dennis Wilson, both of Boise, Id., assignors to AVX Corporation, Great Neck, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,411
Int. Cl.³ H01L *23/28, 27/02, 23/48, 23/16*
U.S. Cl. 357—72 **3 Claims**

1. As a new article of manufacture, an integrated circuit device comprising a ceramic container including a lower shell half having a perimetral upper surface surrounding an upwardly facing central recess area and an upper shell half having a downwardly facing central recess area registering with the recess area of said lower shell half, said shell halves being bonded together along a planar parting line coincident with said upper surface of said lower shell half and together defining a chamber having a floor portion in said lower shell half, a ceramic chip capacitor bonded to said floor portion of said chamber, said capacitor including an upper surface portion and end terminations, an IC chip having an undersurface portion bonded to said upper surface portion of said capacitor, said chip including a pair of power supply input terminals, each said terminal being in proximate spaced relation to a respective one of said end terminations, a plurality of mutually spaced planar conductor members forming elements of an elongate lead frame sub-assembly interposed between said shells at said planar parting line, said conductor members being bonded to said upper surface of said lower shell half by a layer of low temperature melting insulating compound, the spaces between said conductor members being filled with increments of said insulating compound whereby the upper surface of said com-



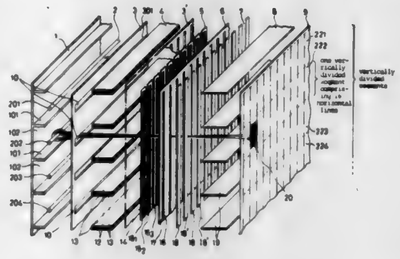
pound and the upper surfaces of said conductor members are in substantially co-planar alignment, said conductor members having inner end portions defining border portions of the said chamber and having outer end portions extending externally of said container, a first pair of connectors disposed within said chamber, each extending between a respective one of said power supply input terminals and end terminations, and a second pair of connectors within said chamber, each connecting one of said power supply input terminals with a different one of said conductor members.

4,451,846

COLOR IMAGE DISPLAY APPARATUS

Sadahiro Iyehara, Suita; Mitsuya Masuda, Kyoto; Shizuo Inohara, Toyonaka; Minoru Ueda, Takatsuki, and Keisuke Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 28, 1982, Ser. No. 343,751
Claims priority, application Japan, Feb. 10, 1981, 56-18781; Feb. 13, 1981, 56-20618
Int. Cl.³ H04N *9/12, 9/16*
U.S. Cl. 358—56 **9 Claims**



1. A color image display apparatus comprising:
a color phosphor screen comprising a first predetermined number of horizontally divided sections each comprising a set of regions of primary color phosphors,
an electron beam source for in-turn emitting a second predetermined number of horizontal rows of electron beams, each row having said first predetermined number of electron beams, producing one horizontal line on said color screen,

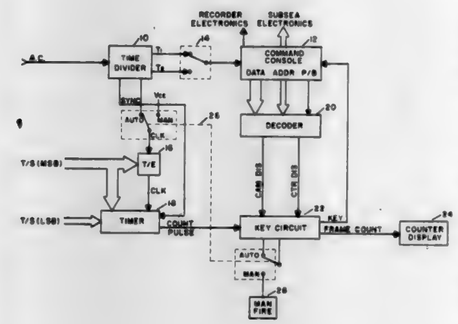
a horizontal deflection means for selective impingements of said electron beams on said regions in turn selected corresponding kinds of primary color phosphors at one time, in turn changing colors of said horizontally divided sections,
a vertical deflection means for vertically deflecting said electron beams in such a manner that electron beams of a horizontal row impinges said phosphor screen in one vertically divided segment which is corresponding to said one horizontal row, thereby vertically moving said one horizontal row, thereby vertically moving said one horizontal line in said vertically divided segment,
an electron beam control means for simultaneous controlling of intensities of respective electron beams responding to a color video signal for said selected kind of primary color, to produce a line-at-a-time displaying of a color video picture,
a flat shaped vacuum enclosure containing the above-mentioned components therein, one end face thereof forming a screen face in which said color phosphor screen is provided, and
said electron beam control means comprising a sample-hold means for sample-holding color video signals, corresponding to said horizontally divided sections, and a memory for storing output signals of said sample-hold means and electronic-switch means each for feeding a signal of an in-turn selected primary color out of said stored output signals at one time to said electron beam control means, to produce said line-at-a-time displaying.

4,451,847

AUTOMATIC STROBE/CAMERA CONTROL UNIT

Virgel J. Young, Picayune, and Harry S. Myers, Jr., Long Beach, both of Miss., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 17, 1982, Ser. No. 389,521
Int. Cl.³ H04N *3/00*
U.S. Cl. 358—99 **3 Claims**



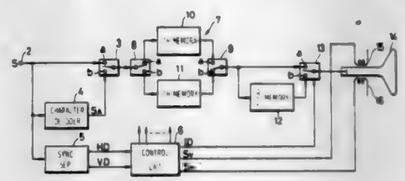
1. An automatic control unit for operating remote apparatus comprising:
mean for generating a plurality of timing signals from an a. c. input signal, said timing signals including a clock pulse signal and a long interval pulse for external use;
a timer to which said clock pulse signal from said generating means is input, said timer having means for counting the pulses of said clock pulse signal and means for comparing the resulting count with a preselected count equivalent to a predetermined rate for providing output pulses at said predetermined rate;
means for inhibiting said clock pulse signal from said generating means from being input to said timer when said preselected count is less than a predetermined minimum value;
a decoder to receive command data, said decoder outputting a command function which is determined by said command data;
a key circuit controlled by said command function from said decoder, said key circuit providing a key closure signal to operate said remote apparatus and/or a frame count pulse for each of said output pulses depending upon said command function; and
a counter display to count and display said frame count pulses from said key circuit.

4,451,848

TELEVISION RECEIVER INCLUDING A CIRCUIT FOR DOUBLING LINE SCANNING FREQUENCY

Takashi Okada, and Yutaka Tanaka, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,944
Claims priority, application Japan, Dec. 26, 1980, 55-189300
Int. Cl.³ H04N *3/27, 5/02*
U.S. Cl. 358—140 **1 Claim**



1. A television receiver comprising: an input terminal for receiving first video signals which include character information signals during vertical blanking periods where a character signal of an odd interlaced field is identical with a character signal of a succeeding even field; a character decoder connected to said input terminal for detecting said information signals and converting the same to second video signals, first switching means connected to said input terminal and said character decoder for switchably selecting one of said first and second video signals, a scanning converter connected to said first switching means for doubling the frequency of the selected video signals, a display means, means for supplying said frequency doubled video signals to said display means for a visual display, including field identification means connected to said input terminal for detecting odd fields from even fields, and control means connected to said field identification means and said display means for controlling the scanning of said display means such that the scanning of the lines of said odd fields are substantially delayed by H/2 where H is the normal horizontal scanning period with respect to those of said even fields, and wherein said means for supplying said frequency doubled video signals includes a delay circuit of H/2 connected to said scanning converter and second switching means for switchably supplying one of the input and output signals of said delay circuit to said display means and wherein said control means controls said second switching means and wherein an interlaced signal is converted to a non-interlaced signal and wherein corresponding lines of the even and odd fields beginning with the first line in each field are superimposed and each such superimposed line is scanned twice on said display means.

4,451,849

PLURAL OPERATING MODE AMBIENT LIGHT RESPONSIVE TELEVISION PICTURE CONTROL

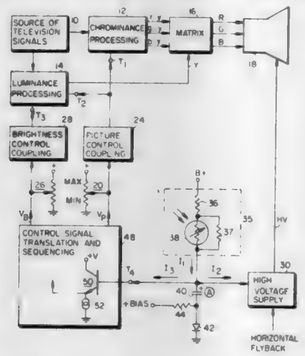
Jack S. Fuhrer, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,415
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—161 **9 Claims**

1. In a video signal display system including a video signal processing channel; an image reproducing device for producing a picture display on a viewing screen in response to output

video signals from said signal channel; and manually adjustable picture contrast control means for manually controlling the gain of said signal channel; automatic picture contrast control apparatus for automatically controlling the gain of said signal channel, comprising:

sensing means for providing output signals representative of the ambient light level striking said display screen, and representative of the average video signal level; and



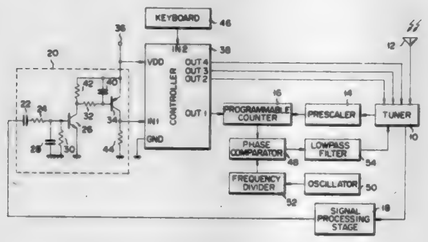
threshold control means independently operative of the setting of said manual contrast control means and responsive to said representative signals for selectively providing to said video channel an automatic contrast control voltage for reducing picture contrast proportionally with reduced ambient light levels when a prescribed combination of ambient light level and average video signal level causes an operating threshold of said control means to be exceeded.

4,451,850

CHANNEL SELECTING DEVICE

Kazuhiro Kamemoto, Kumagaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 31, 1981, Ser. No. 289,077
Claims priority, application Japan, Aug. 5, 1980, 55-107284
Int. Cl.³ H04N *5/44*
U.S. Cl. 358—191.1 **3 Claims**



1. A channel selecting device comprising:

tuner means, including a local oscillator, for receiving transmission signals;

channel number setting means for specifying a channel number;

means, connected to said tuner, for discriminating a broadcast signal;

variable frequency dividing means, connected to said tuner, for dividing the frequency of an output signal from the local oscillator according to the set channel number;

frequency dividing ratio setting means for setting a frequency dividing ratio of said variable frequency dividing means at a first value so as to make the frequency of the local oscillator lower than a predetermined frequency corresponding to the set channel number when a channel number is set for setting the ratio at a second value so as to make the frequency of the local oscillator equal to the predetermined frequency corresponding to the channel number when said discriminator means discriminates a broadcast signal;

means for generating a reference signal at a reference frequency; and

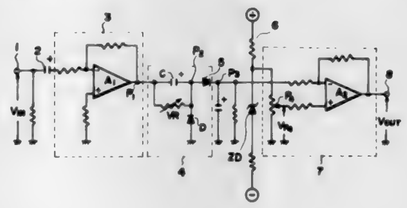
means for comparing the phase of an output signal from said variable frequency dividing means and a phase of an output signal from said reference signal generating means and for controlling the frequency of the local oscillator according to the phase difference therebetween.

4,451,851

AUTOMATIC DIAPHRAGM CONTROL DEVICE FOR A CLOSED CIRCUIT TELEVISION CAMERA

Masayuki Arai, and Terumi Ogasawara, both of Nerima, Japan, assignors to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,536
Claims priority, application Japan, Aug. 3, 1981, 56-121556
Int. Cl.³ H04N *5/26*
U.S. Cl. 358—228 **9 Claims**



1. An automatic diaphragm control device for use with a closed circuit television camera, said television camera producing a video output signal, comprising:

polarity inversible amplifier means responsive to said video output signal for inverting and amplifying said video output signal thereby producing an inverted video output signal;

voltage doubling rectifier means connected to said polarity inversible amplifier means for rectifying said inverted video output signal thereby producing a DC voltage, said voltage doubling rectifier means including voltage doubling means for providing a voltage doubling function and adjusting means connected in parallel with the voltage doubling means for adjusting the voltage across said voltage doubling means thereby effecting changeover of said voltage doubling rectifier means between an average light measuring mode and a peak light measuring mode whereby said voltage doubling rectifier operates in an average mode when set in the average light measuring mode and operates in a peak mode when set in the peak mode; and

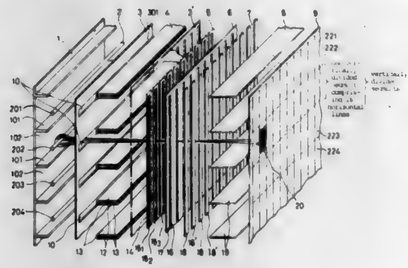
comparator means responsive to said DC voltage and to a separately provided reference voltage for comparing the DC voltage with the reference voltage and for developing a diaphragm control signal in response thereto.

4,451,852

IMAGE DISPLAY APPARATUS

Mitsuya Masuda, Kyoto; Sadahiro Iyehara, Suita; Shizuo Inohara, Toyonaka; Minoru Ueda, Takatsuki, and Keisuke Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 28, 1982, Ser. No. 343,755
Claims priority, application Japan, Feb. 10, 1981, 56-18782; Jun. 18, 1981, 56-94993
Int. Cl.³ H04N *9/12, 5/66;* H01J *31/10*
U.S. Cl. 358—230 **11 Claims**



1. An image display apparatus comprising:

a phosphor screen having a phosphor layer for emitting light at impingement by an electron beam,

an electron beam source for in-turn emitting a predetermined number of horizontal rows of electron beams, for producing horizontal lines of image on said phosphor screen,

a vertical deflection means for vertical deflections of said electron beams of said horizontal rows in a manner that electron beams of a horizontal row impinging said phosphor screen at one vertically divided segment of said phosphor screen corresponding to one of said horizontal rows are simultaneously driven vertically, thereby vertically moving one of said horizontal lines in said vertically divided segment,

a flat shaped vacuum enclosure containing the above-mentioned components therein, one end face thereof forming a screen face in which the phosphor screen is provided, and

an adjusting means for adjusting pitches of horizontal lines produced in said vertically divided segment by adjusting a vertical deflection signal which is impressed on said vertical deflection means for deflecting said electron beams vertically, for respective vertically divided segments.

4,451,853

IMAGE DATA TRANSMISSION PROCESS

Harukiko Moriguchi; Masami Kurata, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1982, Ser. No. 349,106
Claims priority, application Japan, Feb. 20, 1981, 56-23138
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—281 **1 Claim**



1. A method for transmitting image information within a building, comprising the steps of:

scanning a document to be transmitted and producing a binary signal indicative of image information contained on said document;

producing a modulation signal in response to said binary signal, said modulation signal having a frequency of substantially 300 KHz for a first state of said binary signal and a frequency of 400 KHz for a second state of said binary signal;

amplifying said modulation signal to a power of 10 mW;

low-pass filtering the amplified modulation signal with a cut-off frequency of 450 KHz;

coupling the filtered and amplified modulation signal to an electrical power transmission line in said building at a first location;

at a second location in said building, coupling said electric power transmission line to a second filter;

amplifying an output of said second filter;

demodulating the amplified filtered signal received from said electric power transmission line at said second location; and

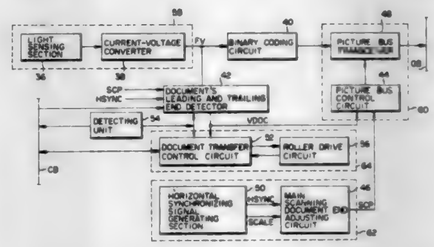
producing a recorded image in response to the demodulated signal.

4,451,854

PICTURE INFORMATION INPUT APPARATUS

Junichi Daigo, Nagareyama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 27, 1981, Ser. No. 315,657
Claims priority, application Japan, Oct. 31, 1980, 55-153232; Oct. 31, 1980, 55-153251
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—282 **4 Claims**



1. A picture information input apparatus for reading information from an object comprising:

transfer means for transferring an object to be read from an input position to a scanning position;

optical scanning means for scanning said object at said scanning position with radiation, and producing a synchronizing signal in synchronism with said scanning;

optical converting means for converting radiation reflected from said object into an analog information signal;

binary coding means for coding said analog signal from said optical converting means into white and black picture information;

detection means for generating an object present signal indicative of the presence or absence of said object;

leading and trailing edge detecting means for detecting the leading and trailing edges of said object and providing an edge read out signal indicative thereof, said edge detecting means comprising:

(a) first counter means for carrying out a specified count of said white information in a scanning direction of said object;

(b) first timer means for measuring a time from when said object is at said initial position to when a scanned portion thereof is reached;

(c) second counter means for measuring the duration of an object presence signal indicating the absence of an object the maximum time of said second counter means corresponding to a predetermined maximum permitted hole diameter of the object;

(d) third counter means, having a "set" input coupled to

an output of said second counter means, for determining a time difference between a time measured by said second counter means and the transfer time between the presence/absence detection of the objeft and the arrival of said object at said scanning section; and

(e) latch means for receiving either a signal from said first counter means or a signal from said first timer means as a leading edge detection signal, and receiving a signal from said third counter means as the leading edge detection means;

drive means for driving said transfer means in accordance with said object present signal from said detecting means and the read out signal from said leading and trailing edge detecting means; and

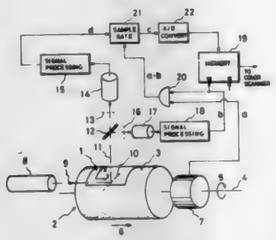
picture data transmitting means for transmitting binary picture information from said binary coding means in accordance with said synchronizing signal from said optical scanning means from when said leading edge detection signal is latched by said latch means to when said trailing edge detection signal is latched by said latching means.

4,451,855

RELATION DENSITY CALCULATION SYSTEM

Masahiko Konagaya, Kobe, Japan, assignor to Konan Camera Research Institute, Hyogo, Japan

Filed Sep. 4, 1981, Ser. No. 299,590
Claims priority, application Japan, Sep. 9, 1980, 55-125623
Int. Cl.³ H04N 1/06, 1/40
U.S. Cl. 358—289 **3 Claims**



1. A relative density calculation system for a transparent image, said image secured by a surrounding frame carried on a support drum, said system comprising: means for scanning said transparent image using both visible and infrared light, first and second transducer means responsive to said visible and infrared light passed through said transparent image, respectively, said first and second transducer means producing first and second electric signals representative of the magnitudes of said visible and infrared light, respectively, A/D converter means for digitizing said first electric signal, and memory means, responsive to said second electric signal, for storing said digitized first electric signal, whereby the content of said memory is representative of the relative density calculation of said image.

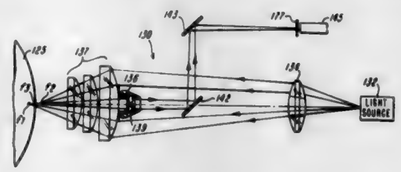
4,451,856

ENGRAVING AND SCANNING APPARATUS

Lester W. Buechler, Dayton, Ohio, assignor to Ohio Electronic Engravers, Inc., Dayton, Ohio

Division of Ser. No. 56,623, Jul. 11, 1979, Pat. No. 4,357,653. This application Sep. 24, 1982, Ser. No. 422,653
Int. Cl.³ H04N 1/24
U.S. Cl. 358—299 **7 Claims**

1. Apparatus adapted for engraving the surface of a gravure printing cylinder, comprising an engraving head, means supporting said head for relative movement adjacent the surface, said head including a shaft and an engraving stylus, means on said shaft and supporting said stylus eccentrically of the axis of said shaft, means supporting said shaft and said stylus for oscillation, power operated drive means for oscillating said shaft and said stylus, a copy scanner having a light source, optical means for concentrating light rays on the copy being scanned and for also detecting the light rays reflected by the copy, and



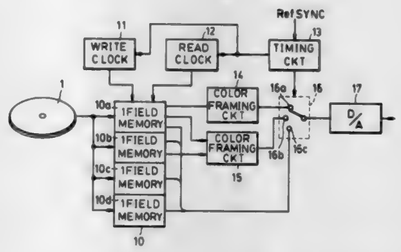
said optical means being effective to produce two spaced illumination focal points and a copy pickup focal point spaced between the illumination points.

4,451,857

STILL PICTURE REPRODUCING APPARATUS

Tsuneo Mikado, Tokyo, Japan, assignor to Nippon Television Industry Corporation, Tokyo, Japan

Filed Jan. 11, 1982, Ser. No. 338,649
Claims priority, application Japan, Jan. 19, 1981, 56-7072
Int. Cl.³ H04N 5/76
U.S. Cl. 358—312 **7 Claims**



1. A still picture reproducing apparatus comprising:

(a) means for reproducing still picture information having a 4-field sequence of NTSC system from a recording medium, with the time base of reproduced still picture information being extended from the time base of a normal video signal;

(b) a memory for storing reproduced still picture information of four fields;

(c) a memory read control means for reading out the contents of said memory, with picture information being compressed in time so that the normal time base is restored;

(d) a color framing circuit for producing an NTSC color video signal having the 4-field sequence from a memory output for at least one field; and

(e) a switch circuit for selecting one of the output from said color framing circuit and the output for four fields from said memory.

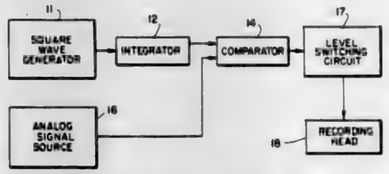
4,451,858

ANALOG RECORDING SYSTEM

Clark E. Johnson, Jr., Minneapolis, Minn., assignor to Vertimag Systems Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 233,181, Feb. 10, 1981, which is a continuation of Ser. No. 966,357, Dec. 4, 1978, abandoned. This application Jan. 18, 1982, Ser. No. 339,987
Int. Cl.³ G11B 5/00
U.S. Cl. 360—32 **8 Claims**

1. A method for recording an analog signal, comprising generating a squarewave having positive and negative portions, said generating including a modulating of the squarewave by the analog signal with the average of the positive and negative portions of said squarewave being substantially proportional to the instantaneous value of said analog signal, and recording by vertical recording on magnetic tape having an



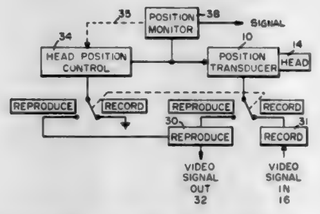
easy axis of magnetization perpendicular to the surface of the tape a plurality of squarewave cycles per unit of recording tape equal to the length of the gap of a playback head means for playing back said magnetic tape, whereby the output of said playback head means is the average of a plurality of squarewave cycles under said gap at any time.

4,451,859

MAGNETIC VIDEO HEAD POSITION CONTROL

Stan L. Noel, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,736
Int. Cl.³ G11B 5/52, 21/00
U.S. Cl. 360—75 **17 Claims**



1. Apparatus for controlling the position of a positionable magnetic head, said apparatus comprising:

a positionable magnetic head;

means for applying a constant potential to said positionable magnetic head so that the positionable magnetic head is rigidly held in a fixed position;

means for comparing said constant potential with a predefined voltage; and,

means for producing an output if said constant potential differs from said predefined voltage.

4,451,860

TRACKING-ERROR CORRECTING SYSTEM IN A VIDEO REPRODUCING APPARATUS

Masahiro Honjo, and Masao Tomita, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 6, 1981, Ser. No. 309,497
Claims priority, application Japan, Oct. 9, 1980, 55-141209; Jan. 16, 1981, 56-5273; Jun. 12, 1981, 56-91181
Int. Cl.³ G11B 5/58
U.S. Cl. 360—77 **8 Claims**

1. A tracking-error correcting system in a video reproducing apparatus, comprising:

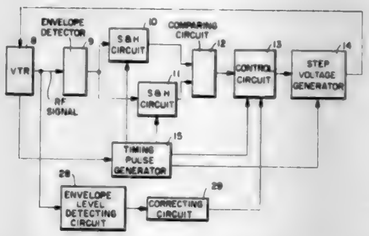
an envelope detecting means for detecting an envelope of a reproduced video signal;

two sampling and holding means each for sampling and holding an output signal from said envelope detecting means at a predetermined timing in each frame;

a timing pulse generating means for generating a sampling pulse which is supplied once to one of said two sampling and holding means at said predetermined timing in each frame and for generating clock signals, said sampling pulse being supplied alternatingly to said two sampling and holding means so that each of said two sampling and holding menas carries out its sampling operation at said predetermined timing in every two frames;

a comparing means for comparing output signals from said two sampling and holding means;

a control voltage generating means for generating a control



voltage which varies step by step for controlling movement of a reproducing head; and

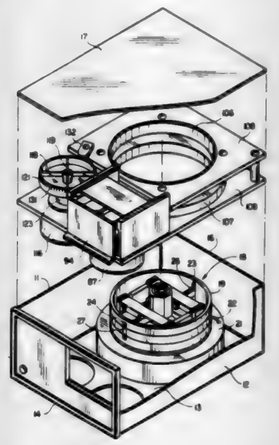
a controlling means for controlling said control voltage generating means by signals from said comparing means and said timing pulse generating means, whereby said control voltage generating means changes said control voltage by one step in each frame for causing said reproducing head to move one step in a direction to increase the amplitude of said envelope when reproducing head is not in contact with a magnetic tape.

4,451,861

MAGNETIC TAPE APPARATUS HAVING MEANS FOR LEADING MAGNETIC TAPE FROM A SUPPLY REEL TO A TAKE-UP REEL

Paul A. Gilovich, Saratoga, and James S. Toreson, Mountain View, both of Calif., assignors to Microcomputer Systems, Inc., Sunnyvale, Calif.

Division of Ser. No. 151,394, May 19, 1980, Pat. No. 4,354,211. This application Apr. 16, 1982, Ser. No. 369,206
Int. Cl.³ G11B 5/08
U.S. Cl. 360—84 **1 Claim**



1. A magnetic tape apparatus comprising a drum, means for supporting and rotating said drum about its axis, at least one transducer extending past the surface of said drum and adapted to rotate therewith, means for moving the transducer along

said drum parallel to the axis, a take-up reel disposed adjacent said drum, take-up reel drive means for driving said take-up reel, means for receiving a tape supply reel disposed in a housing, supply reel drive means for driving the supply reel, said means for receiving the supply reel housing being adapted to bring the supply reel into engagement with the supply reel drive means, and leader means extending from said take-up reel to said means for receiving the supply reel to engage the tape in the supply reel when the supply reel is brought into engagement with the drive means and serving to draw the tape from the supply reel housing over said drum to said take-up reel.

4,451,862

MAGNETIC HEAD MOUNTING MECHANISM FOR AUTOMATIC AZIMUTH CONTROL

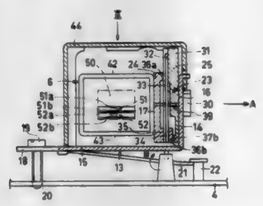
Albert M. A. Rijckaert, Eindhoven, Netherlands; Henricus M. Ruyten, Vienna, Austria; Johannes F. Hoefnagels, and Johannes J. M. Schoenmakers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 187,657, Sep. 16, 1980. This application Dec. 29, 1982, Ser. No. 454,212

Claims priority, application Netherlands, Sep. 28, 1979, 7907218

Int. Cl.³ G11B *5/56, 21/24*

U.S. Cl. 360—109 **30 Claims**



1. An apparatus for recording and/or reproducing information on a magnetic tape, comprising a frame portion, at least one head support arranged on said frame portion, a magnetic head having an air gap and carried on said head support, a magnetic shield for said head, and means for positioning the magnetic head with respect to the head support, said means comprising an electromechanical deflection element rigidly connected to the head support and having mounting portions, a mounting portion being connected to the magnetic head such that the magnetic head may be pivoted by the deflection element relative to the head support in order to adjust the azimuth angle position of the magnetic head,

characterized in that said shield encloses both the magnetic head and the deflection element, the deflection element being disposed in a space bounded by a wall of the magnetic head, and

said means further includes first and second holders for the deflection element, one of said holders being fixedly secured to the magnetic head and the other holder being fixedly secured to the head support, each said mounting portion of the deflection element being adjacent an opposite edge of the element and rigidly fixed to a respective one of said holders; a stop rigidly connected to the magnetic head; and another stop rigidly connected to the head support, said stops being so arranged that pivotal movement of the magnetic head relative to the head support is limited in both directions.

4,451,863

INFORMATION REPRODUCING APPARATUS BASED ON OPTO-MAGNETIC EFFECT

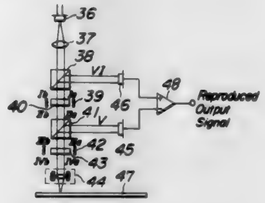
Tuneo Yanagida, and Kiichi Kato, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Japan

Filed Feb. 26, 1982, Ser. No. 352,525

Claims priority, application Japan, Mar. 5, 1981, 56-31517

Int. Cl.³ G11B *5/32, 7/00*

U.S. Cl. 360—114 **11 Claims**



1. An information reproducing apparatus for reading out information recorded on a reflective record medium based on an opto-magnetic effect, the apparatus comprising

a light source for generating a collimated light beam;

a first polarizing beam splitter arranged to receive the collimated light beam and having a polarizing axis extending in a given direction for converting the collimated light beam therethrough into a linearly polarized light beam;

a first Faraday element arranged to receive the light beam transmitted through the first beam splitter for rotating the polarizing direction of the linearly polarized light beam by an angle $\pi/4$;

a second polarizing beam splitter arranged to receive the light beam transmitted through the first Faraday element and having a polarizing axis slanted by an angle $\pi/4$ with respect to the polarizing axis of the first beam splitter;

a pick-up device arranged to receive the light beam transmitted through the second beam splitter for projecting and converging the light beam onto the reflective record medium and for picking up the reflected beam and passing it back to the first and second beam splitters;

a first photodetector arranged to receive the light beam reflected by the record medium and the second beam splitter; and

a second photodetector arranged to receive the light beam reflected by the record medium, transmitted through the second beam splitter and reflected by the first beam splitter.

4,451,864

MAGNETIC-TAPE CASSETTE

Arnold Prodinger, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,154

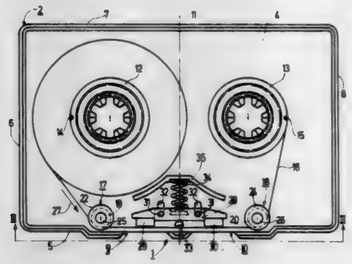
Claims priority, application Austria, Mar. 9, 1982, 941/82

Int. Cl.³ G11B *15/60*; G03B *1/04*

U.S. Cl. 360—130.33 **3 Claims**

1. A magnetic-tape cassette for storing information in the form of a plurality of information tracks on a magnetic tape, each track extending over less than the entire width of the tape, comprising a cassette side wall having at least one aperture therethrough, two winding hubs and a length of magnetic-tape wound on said hubs and extending past said aperture, an elastic pressure element located in the cassette, a support on which said element is arranged, and means for pressing said element against the tape so that the tape is pressed resiliently against the head face of a magnetic head which has been inserted through the aperture in such a way that the head face engages the magnetic-tape over the full tape width,

characterized by comprising two said pressure elements, each pressure element engaging only a part of the width of



the magnetic tape, the track to be scanned extending in said part.

4,451,865

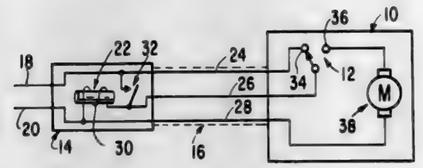
ELECTRICAL CUTOUT FOR UNDER VOLTAGE OR POWER LOSS CONDITIONS

Richard C. Warner, Morris Plains, N.J., and Thomas C. Laughon, Alpharette, Ga., assignors to The Singer Company, Stamford, Conn.

Continuation of Ser. No. 264,887, May 18, 1981, abandoned. This application Nov. 17, 1982, Ser. No. 442,488

Int. Cl.³ H02H *3/24, 7/09*

U.S. Cl. 361—23 **4 Claims**



1. In an electrically powered device, means for preventing the accidental starting-up of such a device by an ON-OFF switch being held in the ON state while the line cord is being plugged into the power socket, said means comprising no more than a single pair of current interrupting contacts electrically connected with said ON-OFF switch requiring that the ON-OFF switch be in or subsequently returned to the OFF position when power is applied to the tool, before the tool will respond to the ON-OFF switch being in the ON position; said ON-OFF switch comprising a single-pole, double-throw switch, having a guaranteed BREAK-BEFORE-MAKE characteristic and said current interrupting means comprises a relay having no more than a single MAKE (normally open) contact, the power being applied through line cord contacts connected across the relay coil through the trigger ON-OFF switch OFF contacts when the tool is plugged into the power supply with the switch in the OFF position.

4,451,866

METAL STRUCTURE GROUNDING SAFETY SYSTEM

Jean-Pierre Cinquin, Siccieu Saint-Julien, 38460 Cremieu; Jacques Danthony, 16ter Rue Greuze, 69100 Villeurbanne, and Charles Mulertt, 105 Rue Tete d'Or, 69006 Lyon, all of France

Filed Apr. 13, 1982, Ser. No. 367,854

Claims priority, application France, Apr. 15, 1981, 81 07739

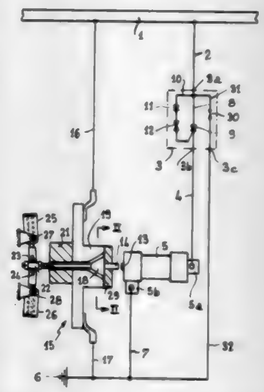
Int. Cl.³ H02H *9/04, 9/06*

U.S. Cl. 361—56 **4 Claims**

1. A system for grounding a metal structure if it should become electrically live to prevent risk of electrocution, comprising in combination:

(a) voltage detector means having an output and having an input connected to the structure and including semiconductor means having a low conduction threshold voltage;

(b) fuse cartridge means having a plunger rendered operative when the cartridge means is blown, said fuse cartridge means being connected to said output so that it is mounted in series with said semiconductor means between said structure and ground;



(c) a short-circuiting switch connected directly between said structure and ground, said switch being normally open;

(d) means actuated by said plunger to close said switch when said fuse cartridge means is blown; and

(e) spark gap means connected directly between said structure and ground, said spark gap means having a striking voltage not exceeding 100 volts.

4,451,867

ELECTRICALLY ACTUABLE IGNITION ASSEMBLY

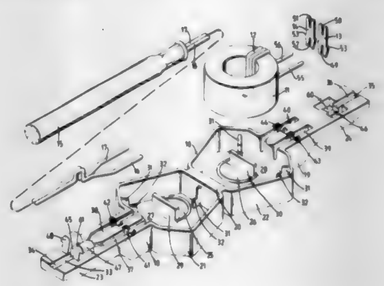
James Robertson, Irvine, Scotland, assignor to Imperial Chemical Industries PLC, London, England

Filed Sep. 7, 1982, Ser. No. 415,542

Claims priority, application United Kingdom, Sep. 28, 1981, 8129283

Int. Cl.³ F42C *11/00*; H01R *9/08*

U.S. Cl. 361—248 **11 Claims**



1. An electrically actuable ignition assembly comprising an encased resistive electric ignition element having two terminals and a length of electrical leading wire connected to each terminal, said wire lengths extending outside the case, the portions of wire outside the case being fully insulated, a transformer ring core having an insulated length of electrical conductor wire wound thereon as a secondary winding, and two electrically conducting metal contact elements each electrically connecting an end-portion of the secondary winding to a corresponding one of said lengths of electrical leading wire to complete an electrical circuit across said terminals, said

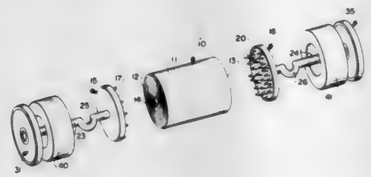
contact elements having portions penetrating the insulating layer on the respective wires and contacting the wire.

4,451,868

ELECTRICAL CAPACITOR

Stephen A. James, Hennepin County, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 15, 1982, Ser. No. 398,484
Int. Cl.³ H01G 1/14
U.S. Cl. 361—306 2 Claims



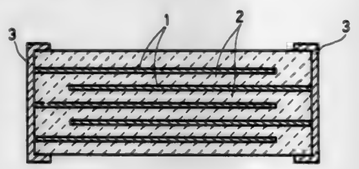
1. In a wound capacitor, in combination:
a capacitance roll including electrodes spaced by dielectric layers, the electrodes projecting separately to opposite ends of the roll;
a pair of discs at the ends of said roll and shaped to conform with the ends of said roll, each said disc having a first, roughened surface for intimately engaging the electrode at the end of said roll, and having a conductor extending generally axially away from a second surface thereof, each conductor having a strain relief offset spaced from said disc;
a housing for said capacitor comprising a tube with end closures and out of contact with said offset;
and means maintaining said discs in contact with the ends of said roll, including a tubular insulating spacer between each disc and the adjacent end closure of the tube and out of contact with said offset.

4,451,869

LAMINATED CERAMIC CAPACITOR

Yukio Sakabe, Kyoto; Goro Nishioka, Yawata; Yoshimasa Azuma, Kyoto, and Susumu Mori, Fukui, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 5, 1983, Ser. No. 491,887
Claims priority, application Japan, Apr. 4, 1983, 58-59852
Int. Cl.³ H01G 1/00, 4/12
U.S. Cl. 361—309 4 Claims



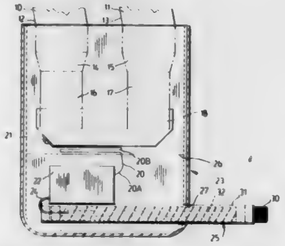
1. A laminated ceramic capacitor wherein a plurality of internal electrodes are formed in a laminated state with ceramic layers mutually held between each of two of the internal electrodes to give electrostatic capacity, and a pair of external electrodes are connected to the associated ones of said internal electrodes for taking out the electrostatic capacity, said laminated ceramic capacitor characterized by said ceramic layers being of non-reducing ceramics, said internal electrodes being composed of a base metal, and said external electrodes being of fired copper including zinc borosilicate glass.

4,451,870

CAPACITIVE SIGNAL COUPLER

Palmer Lonseth; Neil R. Selkirk, and Donald G. Moorby, all of Peterborough, Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada

Filed Nov. 22, 1982, Ser. No. 443,565
Claims priority, application Canada, Dec. 4, 1981, 391540
Int. Cl.³ H01G 9/00; H01L 27/02
U.S. Cl. 361—433 6 Claims



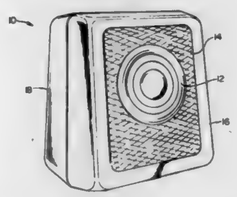
1. A capacitive signal coupler for coupling signals indicative of corona discharge from stator conductors of a dynamoelectric machine to a monitor system, comprising
insulating means for covering and insulating the ends of stator conductors connected by a connector,
a capacitor encapsulated in said insulation means and having first and second leads, said first lead being arranged for connection to said connector,
a high voltage fuse having a first and a second terminal means, and
means for connecting said first terminal means with said second lead.

4,451,871

SAFETY LIGHT OR THE LIKE WITH HIGH CURRENT DRIVE

J. Darrell Kirkley, and Joe C. Weaver, both of Dallas, Tex., assignors to Jog-O-Lite, Inc., Dallas, Tex.

Filed Sep. 29, 1982, Ser. No. 428,113
Int. Cl.³ F21L 7/00
U.S. Cl. 362—186 8 Claims



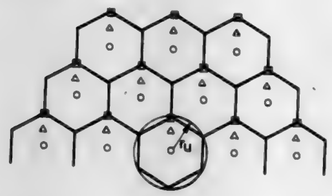
1. A safety light for athletes or the like to be recognized by oncoming vehicles comprising:
(a) a housing having a first lens member disposed therein and adapted to contain battery means;
(b) light generating means being contained within said housing for generating intermittened bursts of light which are visible exterior of said housing through said first lens member, said light generating means including a light source means having a predetermined maximum current rating and a position sensor means coupled in a series circuit with said battery means and said light source means, said position sensor means being positioned in said housing to normally provide an open circuit and to provide intermittent curent from said battery means to said light source means only when said housing is jiggled, and
(c) current control means in said series circuit with said light source and battery means, said current control means providing predetermined current flow from said battery means through said light source means which is in excess of said predetermined maximum current rating.

4,451,872

PROCESS FOR THE MOST UNIFORM ILLUMINATION OF A SURFACE BY A COLLIMATED BEAM OF RAYS AND ARRANGEMENT FOR LASER DIAGNOSTIC

Heinz Hartwig, Niederzier, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,544
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044470
Int. Cl.³ F21V 5/02
U.S. Cl. 362—251 4 Claims



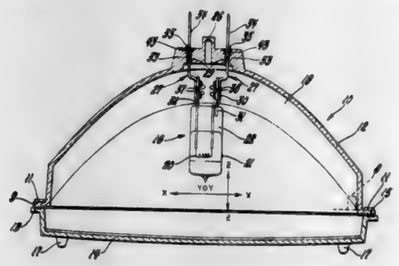
1. Arrangement for the illumination of a target surface wherein the light intensities at each point of this surface are uniform, including projecting a collimated beam of light with arbitrary local distribution of the light intensities towards said surface; comprising a light source for projecting a collimated beam of light; a target surface receiving said beam of light and being illuminated thereby; a generally planoconvex polyhedral lens interposed in the path of the light beam at a distance from the target surface to be illuminated corresponding to the focal distance of said lens, the planar surface of said planoconvex lens being oriented to extend perpendicular to the direction of said light beam, said lens having the convex polyhedral surface thereof composed of congruent plane surface elements.

4,451,873

REFLECTOR FOR A SEALED BEAM LAMP

David O. Tyler, Anderson, and George M. Gasparovic, Pendleton, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 128,674, Mar. 10, 1980. This application Mar. 29, 1982, Ser. No. 362,617
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 3 Claims



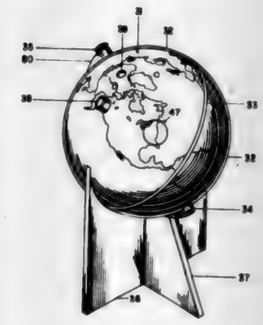
1. A reflector for supporting a tungsten-halogen lamp assembly having a light bulb connected to a plurality of terminals, said reflector including a parabolic reflective portion integrally formed with an upper wall and a lower wall, the rear central portion of said parabolic reflective portion being integrally formed with a boss having a substantially uniform thickness greater than the thickness of said parabolic reflective portion adjacent said boss, at least two cavities formed in the exterior portion of said boss; an opening formed in each of said cavities for receiving one of said terminals, each of said cavities being generally concave and stepped in cross-section and totally surrounds the associated opening, each of said openings being sized slightly larger than the cross-sectional configuration of said one of said terminals for allowing pivotal movement of said lamp assembly when said lamp assembly is being optically aimed relative to said reflector; said cavities adapted to accommodate an adhesive for fixing said terminals to said reflector after said lamp assembly is optically aimed.

4,451,874

EARTH PHOTO GLOBE

Jon Friedman, 312 Prince St., Freeport, N.Y. 11520

Division of Ser. No. 128,624, Mar. 10, 1980, Pat. No. 4,334,867, which is a division of Ser. No. 27,937, Apr. 6, 1979, Pat. No. 4,276,561. This application Sep. 14, 1981, Ser. No. 302,172
Int. Cl.³ F21V 3/00
U.S. Cl. 362—285 11 Claims



1. A globe and support assembly therefor, comprising:
an arcuate support arm extending through at least 180°,
a base for said support arm,
a fixed mount situated on said support arm near one end thereof,
an adjustable mount situated on said support arm diametrically opposite said fixed mount and comprising a mounting bracket threadingly connected to said support arm and thereby threadingly moveable toward or away from said fixed mount,
said fixed and adjustable mounts each being independent from said globe and each having a globe engaging surface adapted respectively for clamping against the undisturbed outer surface of said globe, said globe being disposable within the arc of said support arm so that movement of said adjustable mount toward said fixed mount will clamp said globe between the globe engaging surfaces of said fixed and adjustable mounts, said globe being disposable at any orientation within said support assembly so that said mounts will clamp the outer surface of said globe either at the poles thereof or at any other set of diametrically opposite points.

4,451,875

POSTER PANEL LIGHTING FIXTURE

Herbert A. Odle; John D. Green, and Jan Shadwick, all of Newark, Ohio, assignors to Manville Service Corporation, Denver, Colo.

Filed Mar. 2, 1982, Ser. No. 353,997
Int. Cl.³ F21V 7/00
U.S. Cl. 362—297 9 Claims

1. A lighting fixture for mounting in front of a large panel

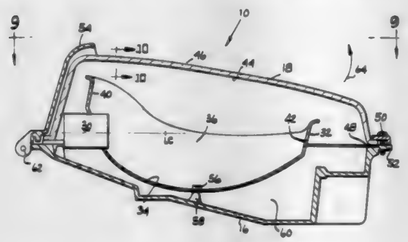
such as an advertising billboard and for illuminating the panel, the panel being of the type having a horizontal length approximately two times as long as its vertical length, comprising:

(a) a lamp housing;

(b) a generally horizontally positioned lamp contained within the lamp housing;

(c) means, attached to the lamp, for lighting the lamp;

(d) a reflector positioned on one side of the lamp and designed to reflect the light radiating from the lamp, the



reflector having a first generally linear translated bottom parabolic surface and further having two side surfaces formed parabolic in one direction through a horizontal section of the side surface; and

(e) a refractor, positioned on the lamp housing, to totally enclose the lamp from outside weather elements, the refractor comprising in part a combination of prism elements designed for three-phase light control of stray light and designed to refract, to reflect and finally to refract the stray light radiating from the lamp.

4,451,876

SWITCHING REGULATOR

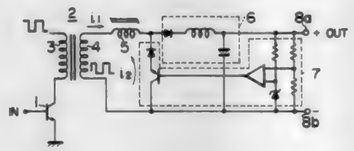
Yasunobu Ogata, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Filed May 19, 1982, Ser. No. 379,861

Claims priority, application Japan, Jun. 19, 1981, 56-94781; Jun. 19, 1981, 56-94782; Jun. 19, 1981, 56-94783

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **6 Claims**



1. A switching regulator of a magnetic amplifier type comprising:

a switching element connected in series with a primary winding of a transformer to be periodically turned on-off,

a saturable reactor including a core and coil wound around said core, said core including a sheet wound in spiral form, said saturable reactor being connected in series with a secondary winding of said transformer,

a rectifier circuit connected in series with said saturable reactor, and

a control circuit controlling a current of said saturable reactor for maintaining constant DC output voltage appearing across output terminals of said rectifier circuit, wherein the core of said magnetic material is formed of amorphous magnetic material having its sheet thickness lying within the range of 4 μm to 60 μm, and wherein said amorphous metallic magnetic material has a composition expressed by:

$M_aM'_bX_c$

where

M: at least one of Fe and Co,

M': a metallic element other than Fe and Co,

X: a nonmetallic element, in the conditions of $a \geqq 50$, $b \leqq 30$, $3 \leqq 30$, and

$a+b+c=100$.

4,451,877

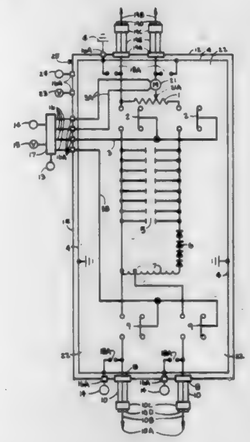
BATTERY SYSTEM

Paul F. Pugh, 4082 Sequoyah Rd., Oakland, Calif. 94605

Filed Sep. 10, 1981, Ser. No. 300,798

Int. Cl.³ H02M *3/18*

U.S. Cl. 363—59 **9 Claims**



1. A battery system comprising:

input conductors with insulation;

input switches connected in series to said conductors;

a step-up voltage transformer connected in parallel to said input switches;

rectifiers connected in series to said transformer to produce a direct current (DC) voltage (DCV);

a plurality of condenser plates connected in parallel to said rectifiers which are charged to a very high DCV;

output switches connected in series to said condenser plates;

an output variable resistor connected in parallel to said condenser plates;

an enclosure for said conductors, said input and output switches, said transformer, said rectifiers, said condenser plates, said output resistor;

said enclosure pressurized with an insulating gas; and

external controls for said switches and said resistor sealed in said enclosure.

4,451,878

PROCESS CONTROL APPARATUS

Takashi Shigemasa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 14, 1981, Ser. No. 283,173

Claims priority, application Japan, Jul. 18, 1980, 55-97596; Jul. 18, 1980, 55-97597; Jul. 18, 1980, 55-97598; Jul. 18, 1980, 55-97599; Jul. 18, 1980, 55-97600; Aug. 19, 1980, 55-113030; Nov. 28, 1980, 55-166793

Int. Cl.³ G05B *13/04, 17/02*

U.S. Cl. 364—151 **11 Claims**

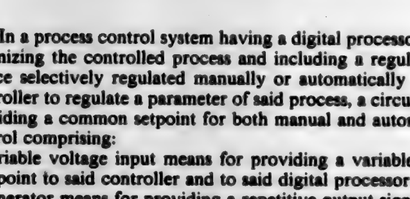
1. A process control apparatus comprising:

set-point signal generating means for generating a set-point signal of an output of said process;

controller means for controlling a process input of said process in accordance with control constants and a control error which is a difference between the set-point signal and said process output;

identification signal generating means for superimposing a persistently exciting identification signal on said process input;

identifying means for identifying a pulse transfer function of said process in accordance with said process input on which the persistently exciting identification signal is superimposed and said process output;



calculating means for calculating an S-transfer function of said process from the pulse transfer function identified by said identifying means; and

control constant generating means for tuning the control constants in said controller means in accordance with a result of model-matching of the S-transfer function calculated by said calculating means with an S-transfer function of a reference process model.

4,451,879

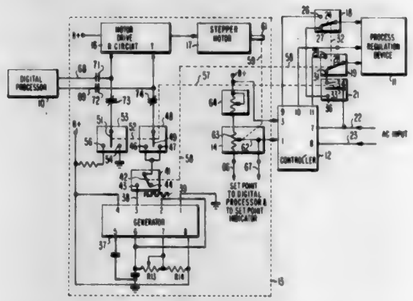
CIRCUIT FOR PROVIDING A COMMON SETPOINT FOR MANUAL AND AUTOMATIC REGULATION OF A PROCESS CONTROL SYSTEM

Norman D. Welch, and John W. Woestman, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 14, 1981, Ser. No. 311,260

Int. Cl.³ G05B *7/02*

U.S. Cl. 364—181 **4 Claims**



1. In a process control system having a digital processor for optimizing the controlled process and including a regulation device selectively regulated manually or automatically by a controller to regulate a parameter of said process, a circuit for providing a common setpoint for both manual and automatic control comprising:

variable voltage input means for providing a variable setpoint to said controller and to said digital processor;

generator means for providing a repetitive output signal;

means for varying said variable voltage input means to vary said setpoint, said means for varying being selectively responsive to said digital processor and to said repetitive output signal;

switch means for selecting said manual and automatic control whereby said means for varying is responsive to said digital processor during automatic control and is responsive to said repetitive output signal during manual control,

said switch means including a first plurality of switches arranged between said controller and said regulation device and a second plurality of switches arranged between said generator means and said means for varying, one portion of said first and second pluralities of switches being simultaneously actuatable for automatic control and another portion of said first and second pluralities of switches being simultaneously actuatable for manual control.

4,451,880

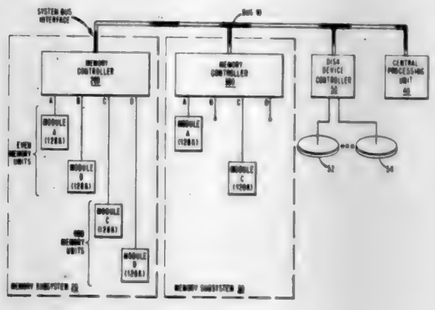
MEMORY CONTROLLER WITH INTERLEAVED QUEUING APPARATUS

Robert B. Johnson, Billerica, and Chester M. Nibby, Jr., Peabody, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 31, 1980, Ser. No. 202,821

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **29 Claims**



22. A memory controller for use in a system including a plurality of request generating units coupled to a bus in common with said controller, said controller being coupled to a plurality of memory modules and said controller being operative to control the operation of said plurality of memory modules in response to a plurality of different types of memory requests generated by said units, said requests including predetermined types of requests, each of which is coded to specify a predetermined type of memory operation requiring the read out of a plurality of data word pairs over successive memory cycles of operation, said controller comprising:

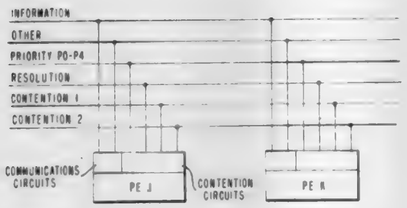
a pair of queue circuit means each circuit means being coupled in common to said plurality of memory modules and to said bus for receiving and storing a different one of said plurality of different types of memory requests, each of said queue circuit means being operative to store each request for the number of memory cycles to complete the processing thereof and said each queue circuit means in response to each request being operative to control the operation of said plurality of memory modules as required for said processing of said requests stored therein; and,

queue control means coupled to each of said pair of queue circuit means and to said bus, said queue control means including tristate control circuit means responsive to signals received from said bus indicative of the type of requests stored and the occupancy of said pair of queue circuit means for alternately enabling different ones of said pair of queue circuits for controlling the operation of said plurality of memory modules for concurrently processing said different ones of said memory requests during alternate memory cycles of operation so as to eliminate delays in processing memory request requiring only a single memory cycle of operation to complete.

4,451,881
DATA PROCESSING SYSTEM BUS FOR MULTIPLE INDEPENDENT USERS

Donald G. Grice, Kingston, and Frank E. Howley, Poughkeepsie, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 3, 1981, Ser. No. 317,824
Int. Cl.³ G06F 3/04, 15/16, 9/46
U.S. Cl. 364—200 12 Claims



1. A bus system for a plurality of processing elements (PE's) comprising,

an Information Bus and means connecting each PE to communicate on the Information Bus,

1a multi line priority bus for use in determining priority among a group of PE's contending for access to said Information Bus, means in each PE for providing a unique multi bit priority code, means in each PE for defining a sequence of contention stages, including a first stage for which one or more PE's initiate a contention sequence and a last stage in which one contending PE is assigned access to said Information Bus, means in each PE operable at each stage to put a corresponding part of said priority code on the priority bus and means in each PE to compare the code part of the PE with code parts of other PE's on the bus during the same stage of contention and to signal the PE to drop out of the contention sequence if it is NOT HIGH,

a further plurality of lines for use in defining a group composed of PE's that initiate a contention sequence, one or more contention sequences among members of a group constituting a group contention period, and for use in allowing access to said priority bus to all members of the group (GROUP MODE) or a selected one (TOP MODE) or selected ones (TASK MODE) of a group during a group contention period and

means in each PE for signalling on a first of said further plurality of lines (RESOLUTION) its use or non-use of the Information Bus and for signalling on a second of said lines (CONTENTION 1) that it is in a process of contention for access to the Information Bus and for signalling on a third of said lines (CONTENTION 2) that it is contending as a member of a group to be given access to the bus during the group contention period

means in each PE for detecting the corresponding signals of other PE's on said further plurality of lines and

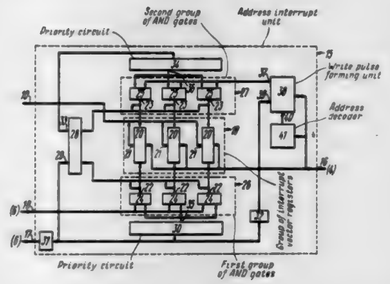
means in each PE responsive to said detecting means and operable when a PE is a member of the group to inititate a next contention sequence on the fall of the signal on said first and second lines, and means to prevent a PE from entering contention during a group contention period unless it is a member of the group initiating the sequence,

whereby each PE handles access to the bus equally without a separate controlling element.

4,451,882
DATA PROCESSING SYSTEM

Valery L. Dshkhunian, K-482, korpus 338-A, kv. 73; Eduard E. Ivanov, 14 Parkovaya ulitsa, 16, kv. 6; Sergei S. Kovalenko, K-498, korpus 421, kv. 3; Pavel R. Mashevich, K-482, korpus 338-A, kv. 139; Alexei A. Ryzhov, K-527, korpus 848, kv. 63; Vyacheslav V. Telenkov, K-527, korpus 811, kv. 75, and Jury E. Chicherin, K-460, korpus 161, kv. 31, all of Moscow, U.S.S.R.

Filed Nov. 20, 1981, Ser. No. 323,276
Int. Cl.³ G06F 9/18, 9/16, 15/16
U.S. Cl. 364—200 3 Claims



1. A data processing system for handling multiple tasks and comprising: at least two processors intended for data processing; a memory unit for storing programs and data; an input-/output unit; and a data address and control signal transmission line connected to said processors, said memory unit and said input/output unit;

wherein each of said processors comprises:

an arithmetic-logic unit performing arithmetic and logic operations in the course of data processing and having a control input and an input/output means;

a scratch pad memory storing intermediate results in the course of data processing and having a control input;

a processor status register storing the current status word of said processor and having a control input, and output and an input/output means connected to said input/output means of said arithmetic-logic unit;

an interface means to ensure interaction between said processor and said memory unit, said input/output unit and each of the processors over said data address and control signal transmission line, and having a control input and an input/output means connected to said data address and control signal transmission line;

an address interrupt unit to interrupt the execution of a program by said processor through using means for addressing memory locations of the processor, and having an input/output means connected to said data address and control signal transmission line, an input, a first output and a second output;

a control unit to form signals to control said arithmetic-logic unit, said scratch pad memory, said interface means, said processor status register and said address interrupt unit in the course of data processing, and having a first control output connected to said control inputs of said arithmetic-logic unit, said scratch pad memory, said interface means and said processor status register, a first input connected to said output of said processor status register, a second input connected to said second output of said address interrupt unit, and a second control output connected to said input of said address interrupt unit; and

a processor data bus to interconnect said arithmetic-logic unit, said scratch pad memory, said processor status register and said interface means, and connected to said first output of said address interrupt unit;

wherein said address interrupt unit comprises:

a group of interrupt vector registers, each of said interrupt vector registers having an input connected to said input-/output means of said address interrupt unit, an output connected to said first output of said address interrupt unit, a first control input and a second control input;

a first group of AND gates, each of said AND gates having an output connected to said first control input of a respective register of said group of interrupt vector registers, a first input, and a second input connected to said input of said address interrupt unit;

a second group of AND gates, each of said AND gates having an output connected to said second control input of a respective register of said group of interrupt vector registers, a first input, and a second input;

a first priority circuit having an output connected to said first input of each of said AND gates of said first group of AND gates, and an input;

a second priority circuit having an output connected to said first input of each of said AND gates of said second group of AND gates, and an input;

an AND gate having an input and an output;

an OR gate having an output connected to said second output of said address interrupt unit, and an input;

a status register having a first input connected to said outputs of each of said AND gates of said first group of AND gates, a second input connected to said outputs of each of said AND gates of said second group of AND gates, a first output connected to said input of said first priority circuit, to said input of said AND gate and to said input of said OR gate, and a second output connected to said input of said second priority circuit;

a write pulse forming unit having a first input connected to said output of said AND gate, an output connected to said second input of each of said AND gates of said second group of AND gates, an input/output means connected to said input/output means of said address interrupt unit, and a second input; and

an address decoder having an output connected to said second input of said write pulse forming unit, and an input connected to said input/output means of said address interrupt unit.

4,451,883
BUS SOURCING AND SHIFTER CONTROL OF A CENTRAL PROCESSING UNIT

Philip E. Stanley, Westboro; William E. Woods, Natick; Richard A. Lemay, Carlisle, and David E. Cushing, Chelmsford, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 1, 1981, Ser. No. 326,260
Int. Cl.³ G06F 9/12, 9/20
U.S. Cl. 364—200 12 Claims

1. A central processing unit for receiving instruction signals and operand signals from a memory subsystem and performing a shifting operation on said operand signals in accordance with said instruction signals, said central processing unit comprising:

a control store responsive to said instruction signals for generating a plurality of control signals;

shift distance control means including storage means responsive to a first plurality of said plurality of control signals for generating a plurality of shift control signals,

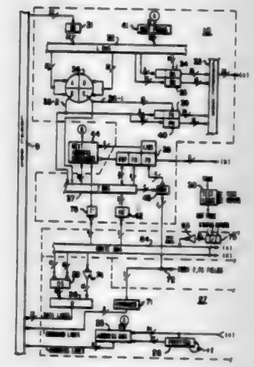
and logic means responsive to said plurality of shift control signals for generating a plurality of shift signals indicative of a number of bit positions said operand signals are shifted during said shifting operation;

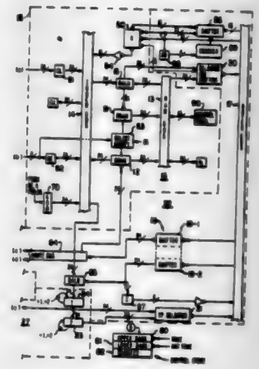
selector means coupled to a first bus for storing said operand signals received from said memory subsystem and responsive to said plurality of shift control signals for generating a plurality of first bus signals representative of said operand signals for transfer over said first bus;

shifting means coupled to said first bus and receiving said plurality of first bus signals representative of a first operand word and responsive to said plurality of shift signals in a first state for generating a plurality of multiplexer signals representative of said first operand word;

register means responsive to said plurality of shift control signals for storing said plurality of multiplexer signals and generating a plurality of register signals during a first cycle of said control store operation;

said shifting means further receiving said plurality of first bus signals representative of a second operand word and said plurality of register signals representative of said first operand word and responsive to said plurality of shift signals in a second state for transferring said second operand word to a second bus and generating a plurality of second bus signals shifted from said first bus signals and generating said plurality of multiplexer signals shifted from said register signals by the number of bit positions specified by said plurality of shift signals in said second state during a second cycle of said control store operation; and





shift end means for receiving a plurality of first end signals of said plurality of first bus signals representative of said second operand word and a plurality of second end signals of said plurality of register signals and responsive to a second plurality of control signals indicative of a type of shift and said plurality of shift control signals for generating first shift end signals representative of said plurality of first end signals and second shift end signals representative of said plurality of second end signals when said second plurality of control signals indicates a circular shift,

and generating said first and said second shift end signals at binary ZERO when said second plurality of control signals indicates an open shift;

said shifting means being responsive for shifting said first shift end signals for generating said plurality of multiplexer signals and shifting said second shift end signals for

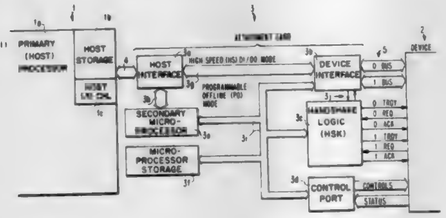
generating said plurality of second bus signals during said second cycle of operation wherein said plurality of second bus signals and said plurality of multiplexer signals are shifted from said plurality of first bus signals and said plurality of register signals by the number of bit positions specified by said plurality of shift signals in said second state.

4,451,884

CYCLE STEALING I/O CONTROLLER WITH PROGRAMMABLE OFFLINE MODE OF OPERATION

Chester A. Heath, and Richard G. VanDuren, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1982, Ser. No. 345,101
Int. Cl.³ G06F *9/22, 13/00, 15/06, 15/20*
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system containing a primary processing subsystem, a peripheral device and a secondary processing subsystem interfacing between said primary subsystem and device, an improved secondary subsystem comprising:

means for storing primary commands received from said primary subsystem;

means responsive to the setting of a mode bit in each said stored primary command for conditioning said secondary subsystem to operate in either a high speed mode or a programmable offline mode;

means rendered effective when said secondary subsystem is operating in said high speed mode for transferring data at high speeds between said device and a memory in said primary subsystem;

means for storing an array of multiple secondary commands; and

means rendered effective when said secondary subsystem is operating in said programmable offline mode for causing said secondary subsystem to perform a program of secondary data processing operations defined by commands in said stored array; said secondary operations being conducted in an offline relationship to operations concurrently being conducted in said primary subsystem, and permitting said secondary subsystem to exchange data with either said device or a memory in said primary subsystem and to process said data without assistance or direction from said primary subsystem.

4,451,885

BIT OPERATION METHOD AND CIRCUIT FOR MICROCOMPUTER

Isadore S. Gerson, Austin, and Willard S. Briggs, Carrollton, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Mar. 1, 1982, Ser. No. 353,602
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—200 **3 Claims**

1. A bit operation method for a microcomputer which has an arithmetic logic unit (ALU) connected to communicate through a bus, the method comprising the steps of:

(a) loading a bit test instruction into an instruction register,

(b) transferring a first operand from a first register to a bit test circuit,

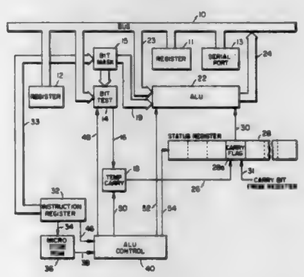
(c) transferring a first mask word from said instruction register to said bit test circuit,

(d) selecting a bit from said first operand by operation of said bit test circuit in accordance with said first mask word,

(e) transferring said selected bit from said bit test circuit to a selected bit location,

(f) loading a bit copy instruction into said instruction register to carry out a bit copy from said first operand to a second operand,

(g) transferring said second operand from a second register to said ALU,



(h) transferring a second mask word from said instruction register to said ALU,

(i) transferring said selected bit from said bit location to said ALU,

(j) entering said selected bit into said second operand in accordance with said second mask word by operation of said ALU, and

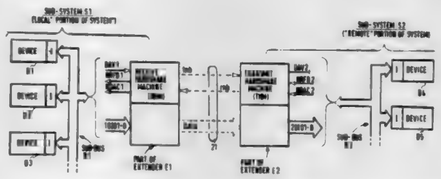
(k) transferring said second operand, having said selected bit therein, from said ALU through said bus to said second register thereby copying said selected bit from said first operand to said second operand in response to said instruction.

4,451,886

BUS EXTENDER CIRCUITRY FOR DATA TRANSMISSION

David H. Guest, Balerno, and Peter R. Roubaud, Kirkliston, both of Scotland, assignors to Hewlett-Packard Limited, South Queensferry, Scotland

Continuation of Ser. No. 258,219, Apr. 27, 1981, abandoned.
This application May 26, 1983, Ser. No. 498,038
Claims priority, application United Kingdom, Apr. 30, 1980, 8014288
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **12 Claims**



1. An extender circuit for transmitting a byte of data across a distance between a first sub-bus and a second sub-bus, the extender circuit comprising:

first handshake means coupled to the first sub-bus;

second handshake means, coupled to the first handshake means and to the second sub-bus, for determining that the second sub-bus is ready for the byte of data and for so indicating to the first handshake means;

transmission means for carrying the byte of data across the distance;

first data means, coupled to the first handshake means and controlled thereby, for selectably coupling the first sub-bus to the transmission means;

second data means, coupled to the second handshake means and controlled thereby, for selectably coupling the second sub-bus to the transmission means;

wherein the first handshake means is operative for receiving an indication from the second handshake means that the second sub-bus is ready for the byte of data, for indicating to the first sub-bus that the second sub-bus is ready for the byte of data, for determining that the byte of data is present on the first sub-bus and, responsive to said reception and determination, for causing the first data means to couple the first sub-bus to the transmission means and for thereafter indicating to the second handshake means that the byte of data is present on the transmission means; and

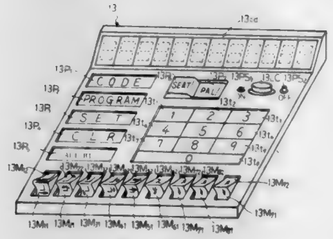
wherein the second handshake means is further operative for receiving an indication from the first handshake means that the byte of data is present on the transmission means and, responsive thereto, for causing the second data means to couple the transmission means to the second sub-bus and thereafter for indicating to the second sub-bus that the byte of data is present on the transmission means.

4,451,887

SYSTEM FOR CONTROLLING A DOOR AND DRIVER'S SEAT OF VEHICLE

Kuniyoshi Harada, Takahama; Nobuyasu Suzumura, and Naofumi Fujie, both of Tokyo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 29, 1981, Ser. No. 268,526
Claims priority, application Japan, Jun. 13, 1980, 55-79815
Int. Cl.³ G06F *15/20*; B60N *1/02*
U.S. Cl. 364—424 **5 Claims**



1. A system for controlling a door and driver's seat of a vehicle comprising:

a portable code emitter including a plurality of switches and a code generator for producing a code indicative of a particular switch operated;

a receiver mounted on a vehicle for receiving said code;

a plurality of key switches mounted on said vehicle for indicating and instructing a code, a registration command and an attitude information store command;

an automatic seat adjusting mechanism mounted on said vehicle and including at least one electric motor;

driver means for energizing each of said motors of said seat adjusting mechanism;

an attitude information generator connected to said seat adjusting mechanism for producing a signal indicative of the attitude of a seat;

a door lock controlling device mounted on said vehicle; and

an electronic control unit connected to said receiver, said plurality of key switches said driver means, said attitude information generator and said door lock controlling device;

said electronic control unit comprising electronic processor means and memory means including a read only memory, a read-write memory and a non-volatile, read-write memory;

said electronic control unit storing said code indicated with said key switches as a door unlocking code at a predetermined address of the non-volatile, read-write memory in response to a registration command entered with said key switches;

said electronic control unit storing the attitude information produced by said attitude information generator at an address of the non-volatile, read-write memory in response to an attitude information store command entered with said key switches, the address corresponding to said door unlocking code stored in the non-volatile, read-write memory; and

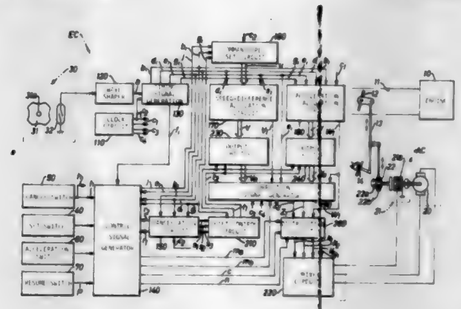
said electronic control unit energizing said door lock controlling device for an unlocking operation when the portable code emitter produces a code which coincides with said door unlocking code stored in the non-volatile, read-write memory, reading out the attitude information at the address corresponding to said door unlocking code and energizing the driving means for establishing the attitude of the seat as indicated by the read attitude information.

4,451,888

SPEED CONTROL METHOD AND APPARATUS FOR AUTOMOTIVE VEHICLES

Akira Kuno, Oobu; Takeshi Matsui, and Yoshio Shinoda, both of Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 6, 1981, Ser. No. 232,221
Claims priority, application Japan, Feb. 18, 1980, 55-19628
Int. Cl.³ B60K *31/00*; F02D *5/00*
U.S. Cl. 364—426 **5 Claims**



1. A speed control apparatus for an automotive vehicle driven by an internal combustion engine under control of control means for controlling the quantity of fuel supplied into said engine, the control apparatus comprising:

first means for repetitively producing a timing signal with a period of time responsive to the actual speed of the vehicle;

second means for producing a command signal indicative of a predetermined period of time defined by a desired speed of the vehicle;

third means responsive to the timing signal for calculating a first time difference between the predetermined period of time and the actual period of time of the timing signal and for producing a first difference binary coded signal indicative of an absolute value of the calculated first time difference and a first sign signal indicative of one of positive and negative signs of the calculated first time difference;

fourth means responsive to the timing signal for calculating a second time difference between the respective actual periods of time of the preceding and following timing signals and for producing a second difference binary coded signal indicative of an absolute value of the calcu-

lated second time difference and a second sign signal indicative of one of positive and negative signs of the calculated second time difference;

fifth means responsive to the timing signal for generating a first shift control signal when the actual period of time of the timing signal represents a value in a predetermined low speed range and for generating a second shift control signal when the actual period of time of the timing signal represents a value in a predetermined high speed range;

sixth means responsive to the first shift control signal for detecting the absolute value of the first difference binary coded signal in its low resolving power related to the predetermined low speed range and for producing a first detected signal indicative of the detected absolute value, said sixth means being responsive to the second shift control signal for detecting the absolute value of the first difference binary coded signal in its high resolution related to the predetermined high speed range and for producing a second detected signal indicative of the detected absolute value;

seventh means responsive to the first shift control signal for detecting the absolute value of the second difference binary coded signal in its low resolving power related to the predetermined low speed range and for producing a third detected signal indicative of the detected absolute value, said seventh means being responsive to the second shift control signal for detecting the absolute value of the second difference binary coded signal in its high resolving power related to the predetermined high speed range and for producing a fourth detected signal indicative of the detected absolute value;

eighth means responsive to the timing signal for calculating either one of the sum of values of the first and third detected signals or the sum of values of the second and fourth detected signals when respective signs of the first and second sign signals are identical to each other and for calculating either one of the difference between values of the first and third detected signals or the difference between values of the second and fourth detected signals when respective signs of the first and second sign signals are opposite to each other, said eighth means selectively producing first and second correction signals respectively indicative of the calculated sum and the calculated difference;

ninth means responsive to the timing signal and one of the first and second correction signals for selectively producing first and second output signals respectively in relation to the positive and negative signs of the second sign signal; and

actuator means for actuating said control means respectively in response to the first and second output signals to increase and decrease the quantity of fuel supplied into said engine.

4,451,889

ANTI-LOCK DEVICE FOR REGULATING THE BRAKE PRESSURE OF VEHICLE BRAKES

Heinrich Beckmann; Jens Ottersbach, both of Minden; Willibald Roider, Neufahrn, and Eckart Saumweber, Gauting, all of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

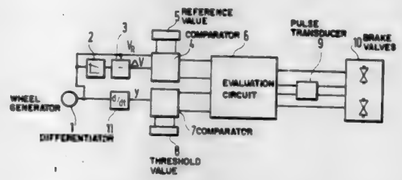
Filed Sep. 30, 1981, Ser. No. 306,887

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039574; Feb. 11, 1981, 3104876

Int. Cl.³ B60T *8/02*

U.S. Cl. 364—426 **5 Claims**

1. An anti-lock device for vehicle brakes comprising means connected to a wheel of a vehicle for generating a signal indicative of the wheel speed, means for generating a reference signal indicative of the speed of the vehicle, differentiating means for generating a proportional signal being proportional to one of the acceleration and deceleration of the wheel, comparator means for comparing the wheel speed signals, the reference signals and the proportional signals with predetermined threshold values and having an output, and an evaluation circuit connected to the output of said comparator means



to maintain the brake pressure constant during a start phase of the braking operation after the wheel acceleration falls below a first negative acceleration threshold.

4,451,890

AUTOMATIC SPEED CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

Kouichi Suzuki, and Kazuyuki Mori, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

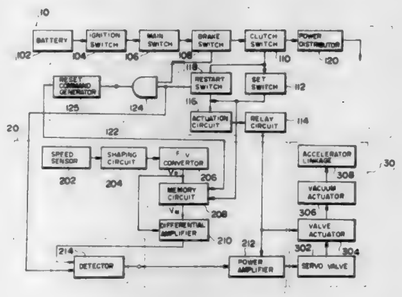
Filed Jan. 15, 1981, Ser. No. 225,371

Claims priority, application Japan, Jan. 18, 1980, 55/3657

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ B60K *31/00*

U.S. Cl. 364—426 **22 Claims**



20. A system for automatically controlling the speed of a vehicle including acceleration means, deceleration means, such as a brake or clutch, and speed sensing means comprising memory means; set switch means coupled to the deceleration means; said set switch means, when activated, being responsive to the deceleration means for setting a desired speed for the vehicle into the memory means; means connected to be responsive to the memory means and the speed sensing means for deriving an error signal indicative of the deviation between the desired set speed and the sensed speed; a power amplifier connected to provide a signal to said acceleration means and having a power supply terminal associated therewith; a logic circuit responsive to the error signal and a logic signal, the logic circuit coupling the error signal to and decoupling the error signal from an input of the power amplifier in response to the logic signal respectively having first and second values; a power supplying circuit for selectively supplying power to and removing power from the power supply terminal; a resume switch means having a normal off state and an operator activated on state, said resume switch means normally being in said operator activated on state only for the duration of operator activation; the power supplying circuit being connected to be responsive to the set switch means, the resume switch means and the deceleration means so that the power is continuously supplied to the power supply terminal in response to activation of the set switch means and in response to changing of the resume switch means state from the on state to the normal off state and so that power is removed from the power supply terminal in response to activation of the deceleration means; and means responsive to the resume switch means being respectively in the off and on states for deriving the first and second logic values, whereby in response to the resume switch means being defective so that it remains in the on state after termination of operator activation and after deactivation of the decelerator means, no error signal is supplied by the amplifier to the accelerator means.

4,451,891

DIGITAL SEMICONDUCTOR INTEGRATED CIRCUIT AND DIGITAL CONTROL SYSTEM USING THE SAME

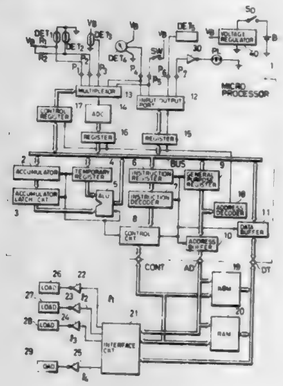
Shirou Baba, Tachikawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 5, 1981, Ser. No. 231,923

Claims priority, application Japan, Feb. 20, 1980, 55-18986

Int. Cl.³ G05B *11/01*; G06F *15/00*

U.S. Cl. 364—431.12 **6 Claims**



1. An integrated circuit having a plurality of external terminals for coupling signals to and from said circuit comprising:

a digital signal input circuit contained within said circuit having at least one digital signal input coupled to one or more of said plurality of external terminals and at least one digital signal output coupled to one of said external terminals;

an analog signal input circuit contained within said circuit having at least one analog signal input coupled to one or more of said plurality of external terminals;

at least one of said external terminals being coupled in common to said analog and said digital signal input circuits;

control means for selectively coupling either analog input signals applied to said one or more common terminals to said analog input signal circuit or digital input signals applied to said one or more common terminals to said digital input signal circuit; and

an internal bus line; and wherein

said digital signal input circuit has a switching means for selectively coupling said digital signal inputs to said internal bus line;

said analog signal input circuit has switching means for selectively coupling said analog signal inputs to said internal bus line; and

the switching states of the digital and analog signal switching means being controlled by said control means.

4,451,892

METHOD OF AND APPARATUS FOR MEASURING DISTANCES IN NUMERICALLY CONTROLLED MACHINE TOOLS

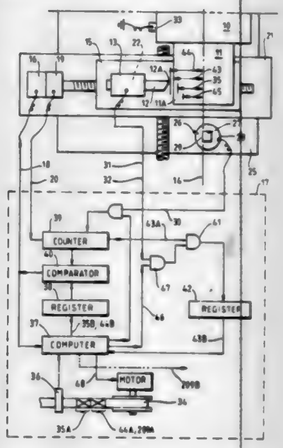
David R. McMurtry, 'Undercroft', Tabernacle Pitch, Wotton-Under-Edge, Gloucestershire, England

Filed Jan. 27, 1981, Ser. No. 229,052

Claims priority, application United Kingdom, Jan. 31, 1980, 8003285

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—474 **13 Claims**



13. A numerically controlled machine tool comprising

a first member for supporting a workpiece;

a second member for supporting a cutting tool, said cutting tool being provided for machining the surface of said workpiece to a desired distance from a datum plane;

motor means for displacing said first and second members with respect to each other;

storage means for storing a first signal corresponding to said desired distance from said datum plane;

position detection means for generating a second signal corresponding to the displacements of said first and second members relative to each other;

comparator means having inputs coupled to the outputs of said storage and position detection means and an output coupled to said motor means, said comparator means driving said motor means to displace said first and second members with respect to each other until said first and second signals are equal;

sensing means coupled to said first and second members for determining when said cutting tool and workpiece became disengaged from each other, said sensing means generating a third signal corresponding to the distance of the surface of said workpiece from said datum plane upon said disengagement;

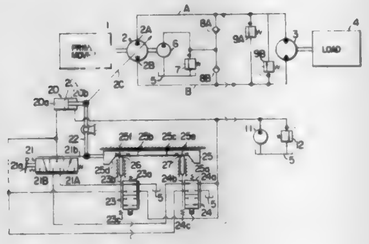
computer means coupled to said storage and sensing means for generating a deflection signal corresponding to the difference between said third and first signals, said difference being a deflection signal corresponding to the relative deflection between said cutting tool and said workpiece, said computer means further generating a fourth signal equal to the difference between said first signal and said deflection signal and inputting said fourth signal to said storage means, whereby said comparator drives said motor means to displace said first and second members with respect to each other until said fourth and second signals are equal to each other, said cutting tool thereby machining the surface of said workpiece to the desired distance from said datum plane.

4,451,893

CONTROL METHOD AND CONTROL SYSTEM FOR HYDROSTATIC DRIVE SYSTEM

Eiki Izumi; Hiroshi Watanabe; Yukio Aoyagi; Kazuo Honma, and Kichio Nakajima, all of Ibaraki, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 311,969
Claims priority, application Japan, Oct. 17, 1980, 55-144280
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—494 **10 Claims**



1. A control method for a hydrostatic drive system including a variable displacement hydraulic pump and a hydraulic actuator connected together to provide a closed hydraulic fluid circuit, wherein a target value for the flow rate of the variable displacement hydraulic pump is set and control of the pump is effected to bring the flow rate of the pump to the target value level, characterized in that said method comprises the steps of:

sensing a current flow rate of the hydraulic pump, a current discharge pressure of the pump and a current suction pressure thereof; and

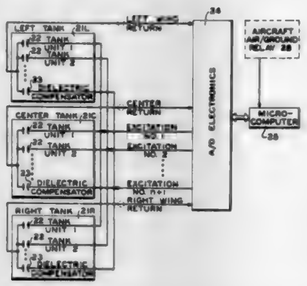
controlling a rate of change in the flow rate of the hydraulic pump in such a manner that the discharge pressure does not exceed a first set of preset values with respect to the flow rate of the pump when the target value lies in a direction in which the flow rate of the pump is increased and the suction pressure does not exceed a second set of preset values with respect to the flow rate of the pump when the target value lies in a direction in which the flow rate of the pump is decreased.

4,451,894

LIQUID GAGING SYSTEM MULTIPLEXING

William R. Dougherty, St. Anthony; Dwight D. Colby, Roseville; Jerome A. Fahley, Fridley, and Martin J. Van Dyke, Brooklyn Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 149,798, May 14, 1980, abandoned. This application May 25, 1983, Ser. No. 496,984
Int. Cl.³ G01F *23/00*
U.S. Cl. 364—509 **35 Claims**



1. In a liquid gaging system, apparatus for monitoring individual sensors one at a time, comprising:

a plurality of sensors, each sensor providing a range of liquid measurement signals relating to liquid depth at a particular location in a tank; and

means for selectively monitoring individual sensors one at a time for a unique signal in the range relating to actual liquid depth at the particular location in the tank, the means for selectively monitoring being connected to the sensors.

4,451,895

INTERACTIVE COMPUTER AIDED DESIGN SYSTEM

Joseph Sliwkowski, Sudbury, Mass., assignor to Telesis Corporation of Delaware, Inc., Wilmington, Del.

Continuation of Ser. No. 167,821, Jul. 17, 1980. This application Jun. 9, 1983, Ser. No. 501,550
Int. Cl.³ G06F *3/37, 3/153*
U.S. Cl. 364—521 **11 Claims**



1. A computer aided design system for creating a design on a graphics screen by instructions entered through a separated function screen comprising:

a work station having a work surface including within said surface a function screen and further having, extending vertically above said surface, a graphics screen, separate from said function screen, for displaying a design in creation;

means for driving a portion of said function screen to display a mode selection including a selection of a keyboard mode, a position denoting mode and plural other modes for symbol and associated parameter selection and for driving other portions of said function screen with selectable design information associated with a selected mode;

point and pick means for selecting a point and corresponding mode or associated design information on said function screen;

means responsive to selection of a point on said function screen portion corresponding to one of said mode selections for changing the display mode of said function screen to produce a display enabling point and pick selection of information corresponding to the mode selected wherein,

the selection of the keyboard mode results in the display of a simulated keyboard from which point and pick selection of keyboard character design information may be made, and

the selection of the position mode results in the availability of the function screen to be used to select position design information thereon with said point and pick means that designates corresponding positions on the graphics screen, and wherein

the selection of one or more symbol selection modes by said point and pick means results in the function screen displaying selections of graphic element design information and parameters associated therewith;

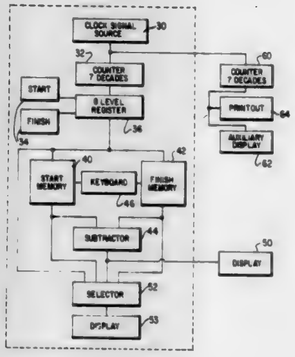
said system further including a means for producing design displays on said graphics screen in response to mode and associated design information selections made through said function screen by operation of said point and pick means.

4,451,896

ELECTRONIC CHRONOMETER

Andre Pomerleau, and Jean-Francoys Brousseau, both of Quebec, Canada, assignors to Universite Laval, Ste-Foy, Canada

Filed Jul. 14, 1981, Ser. No. 283,138
Claims priority, application Canada, Jul. 14, 1980, 356151
Int. Cl.³ G06F *15/28*
U.S. Cl. 364—569 **17 Claims**



1. A numerical timing apparatus for sporting events such as marathons and the like races involving a large number of participants progressing on the same track between a starting gate and a finish line but not necessarily crossing the starting gate simultaneously, comprising:

a. signal means to produce an electrical signal which coincides in time with the lowering of the starting gate for one or more participants or the crossing of the finish line by any participant;

b. a multiple level register intended for the temporary registration of all starting times and of all finish times, including those happening in close succession;

c. an oscillator and decade counters group for producing a clock signal throughout said competition, said clock signal incorporating time information and being adapted to be applied to said register in response to said electrical signal;

d. starting time memory means coupled to the output of said register and used to store every starting time registered;

e. finish time memory means coupled to the output of the said register for storing every finish time registered in said register;

f. manual keying address means associated with said starting time and finish time memory means and operated throughout said sporting event for keying in the participant's identification codes whose recorded times are being retrieved from said register and stored in one of said memory means;

g. means for the subtraction of digital values intended for selectively subtracting for any one of said participants the starting time stored in said starting memory means from the current clock signal, or alternatively, from the participant's registered or stored finish time; and

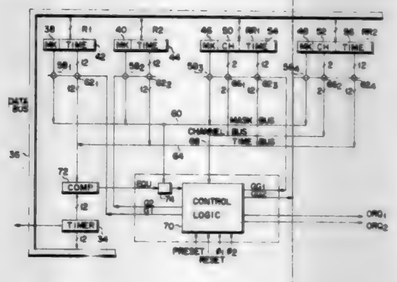
h. means for decoding and displaying the data furnished by said subtraction means thereby giving a visual indication of the track time of any one of the participants during the competition, and the final time when that participant crosses the finish line.

4,451,897

CONTROL DEVICE WITH MODE FLAGS FOR DEDICATING MEMORY SEGMENTS AS EITHER SCRATCHPAD OR TIMING CONTROL REGISTERS

Yutaka Murao, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 18, 1981, Ser. No. 274,808
Claims priority, application Japan, Jun. 23, 1980, 55-84906
Int. Cl.³ G06F *3/00, 13/00, 15/20*
U.S. Cl. 364—900 **22 Claims**



1. An output control device for requesting output control signals on a plurality of output channels, comprising:

(A) storing means for storing output time data designating the desired time to produce an output control signal and mask data designating whether said storing means is dedicated for use as a register which holds said output time data or is free to be used as working random access memory;

(B) first means connected to said storing means for retrieving said mask data and said output time data stored in said storing means;

(C) a timer for producing a value representative of absolute time;

(D) comparing means connected to said timer and said storing means for comparing the contents of said timer with said output time data retrieved by said first means and for issuing a coincidence detection signal in response to a coincidence of the contents of said timer and said retrieved output time data; and

(E) second means connected to said storing means and said comparing means for determining whether to use said storing means as a register which holds said output time data or as a working random access memory in response to said mask data.

4,451,898

ASYNCHRONOUS INTERFACE MESSAGE TRANSMISSION USING SOURCE AND RECEIVE DEVICES

David W. Palermo; David W. Ricci, both of Los Altos, Calif.; Joe E. Marriott, and Thomas J. Heger, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 9, 1981, Ser. No. 319,559
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—900 **33 Claims**

1. A process of transferring message frames of at least a first type and a second type in a linear interface of the type in which at least one receiver is connected to a source in a linear configuration, in which the source has an output port connected to an input port of a first receiver, in which any other receivers each has an input port connected to an output port of a preceeding receiver in the configuration so that message frames pass from the source along the linear interface to a last receiver, said process comprising the steps of:

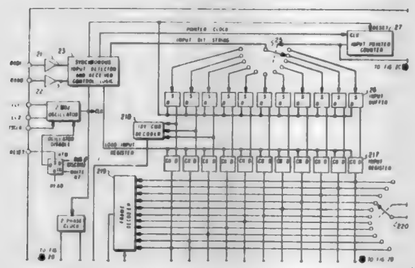
transmitting a message frame from the source to the first receiver;

each receiver other than the last one passing the message

frame on to its succeeding receiver in the linear configuration;

when the first receiver is ready to accept another message frame, transmitting a Ready signal in the direction from the first receiver toward the last receiver;

at each receiver other than the first and last ones, when that receiver is ready to accept another message frame and has also received a Ready signal from the preceding receiver



in the linear configuration, transmitting a Ready signal to its succeeding receiver in the linear configuration; and

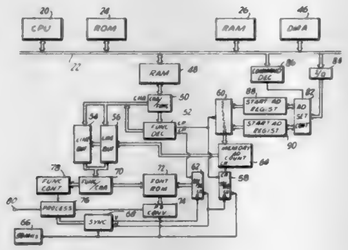
controlling the source to transmit a succeeding message frame only if the last receiver has received a Ready signal and is ready itself to receive another message frame, thereby transmitting said succeeding message frame only when all receivers are ready to accept another message frame.

4,451,899

DISPLAY APPARATUS FOR SIMULTANEOUS DISPLAY OF CHARACTER INFORMATION HAVING DIFFERENT CHARACTER PITCHES

Isao Yamazaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,546
Claims priority, application Japan, Dec. 16, 1980, 55-177736
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **10 Claims**



1. Information processing apparatus comprising:

memory means for storing character information organized in blocks of data, and character pitch information corresponding to said character information associated with each of said blocks;

means for reading said character information and said character pitch information from said memory means;

display means for simultaneously displaying lines of characters corresponding to said character information, with each of said lines having a selected one of a plurality of character pitches and each of said blocks of character information corresponding to a respective one of said lines of characters; and

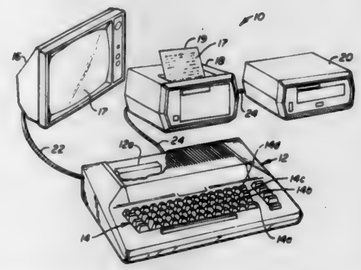
control means for controlling said display means in response to said character information and character pitch information read by said means for reading so that each of said lines of characters displayed on said display means has its selected character pitch determined by the character pitch information associated with said respective block.

4,451,900

METHOD AND APPARATUS FOR TEXT EDITING DISPLAY

Steven T. Mayer, Essex, Conn., and Lawrence D. Emmons, Grass Valley, Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Dec. 29, 1981, Ser. No. 335,471
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—900 **31 Claims**



1. In a word processing system of the type including means for operating a printer for printing text material on a page of recording material in the form of a plurality of characters arranged in a predetermined format and a video display unit for viewing at least selected portions of the text material, a method of providing a view on the video display unit of an overall format of the text as it will appear in printed form, the method comprising the step of:

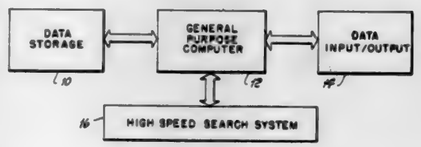
displaying on the video display unit the text material in the form of a graphic representation thereof, the graphic representation including a plurality of display elements each corresponding to one of the characters contained in the text material, the display elements being located within the graphic representation to correspond to the locations of the characters within the format.

4,451,901

HIGH SPEED SEARCH SYSTEM

Donald W. Wolfe, Ormond Beach, and Richard W. Dye, Jr., Port Orange, both of Fla., assignors to General Electric Company, Philadelphia, Pa.

Filed Jan. 21, 1982, Ser. No. 341,530
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **9 Claims**



1. A high speed search system for operation in conjunction with a general purpose computer having a data storage device containing records in the form of digitized information and a data input/output terminal connected to it comprising:

interface means for receiving queries and commands from said data input/output terminal and a portion of the digitized information from said data storage device;

said interface means also transmitting search results to said data input/output terminal;

a query processor;

a symbol logic unit;

buffer memory means for containing said portion of the digitized information from said interface means, and applying said portion to said symbol logic unit and said query processor;

each of said records having zones identified therein;

said query processor receiving (a) a query defining data to be located, and (b) all the digitized information from said buffer memory means;

control and timing means for receiving said queries and commands from said interface means;

said symbol logic unit receiving said digitized information from said buffer memory means, recognizing control character sequences and applying corresponding control signals to said query processor; and

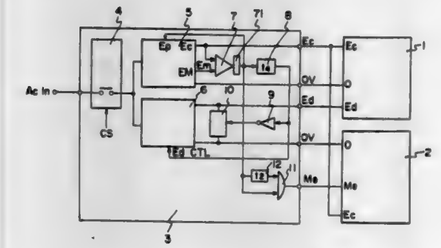
said query processor searching only that portion of said digitized information from said buffer memory means as is contained in the zones and records it has been directed to search, and providing search results to said interface means.

4,451,902

POWER SOURCE DEVICE FOR BUBBLE MEMORY UNIT

Ryoji Imazeki; Masayuki Hattori, both of Hachioji, and Shigeo Nakamura, Hino, all of Japan, assignors to Fanuc Ltd., Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,268
Claims priority, application Japan, Jul. 14, 1980, 55-95975
Int. Cl.³ G11C *19/08*; H02M *3/335*
U.S. Cl. 365—1 **8 Claims**



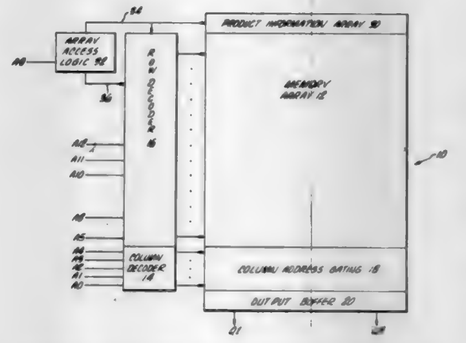
1. In an improved power source device for a bubble memory unit having a bubble memory part and a control part, the power source device being of the type which uses A.C. power and which produces a supply voltage for controlling the bubble memory part and the control part, a supply voltage for driving the bubble memory part, and a memory enable signal to be applied to the control part, the improvement comprising: the supply voltage for controlling the bubble memory part and the control part is produced by a stabilized D.C. power source circuit which employs a switching regulator means for regulating the output of the D.C. power source circuit by using pulse width modulated chopping pulses which have an upper-limit pulse width value during ordinary voltage control when the A.C. power is "on," and which is provided with means for expanding the chopping pulse width in excess of its upperlimit value during ordinary voltage control when the output voltage value of said supply voltage for controlling the bubble memory and control parts has become lower than a predetermined value, so that the pulse width is made greater than in the ordinary voltage control, permitting said bubble memory unit to be reliably refreshed when the A.C. power is turned "off".

4,451,903

METHOD AND DEVICE FOR ENCODING PRODUCT AND PROGRAMMING INFORMATION IN SEMICONDUCTORS

Larry T. Jordan, Pleasanton, Calif., assignor to Seeq Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 301,592, Sep. 14, 1981, abandoned. This application Sep. 18, 1981, Ser. No. 303,374
Int. Cl.³ G11C *17/00*
U.S. Cl. 365—94 **9 Claims**



1. A device for providing semiconductor product information to a user through electrical interrogation comprising

a primary circuit disposed upon a semiconductor chip,

a product information array disposed on the semiconductor chip adjacent said primary circuit, said product information array including information sufficient to identify at least the manufacturer of the chip,

access means for receiving first and second signals and for selecting said primary circuit in response to said first signal, said access means including a logic circuit means responsive to said second signal for selecting said product information array while simultaneously preventing access to said primary circuit,

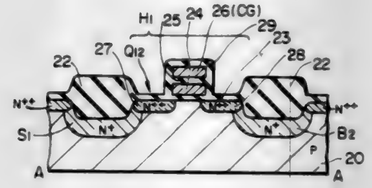
output means for providing output signals representative of the information stored in said product information array.

4,451,904

SEMICONDUCTOR MEMORY DEVICE

June Sugiura, Musashino; Yasunobu Kosa, Kodaira; Kazuhiro Komori, Kodaira; Ken Uchida, Kodaira, and Shinji Shimizu, Houya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,086
Claims priority, application Japan, Feb. 1, 1980, 55-9929
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 **6 Claims**



1. In a semiconductor memory formed on a semiconductor substrate with a major planar surface comprising a plurality of MOS type memory cells each having a source, control gate and drain arranged in an array of rows and columns; a plurality of row conductive layers each of which is electrically connected to the control gates of said MOS type memory cells

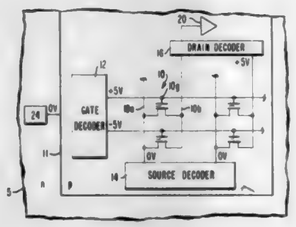
located along a corresponding row; and a plurality of column conductive layers, adjacent column conductive layers being electrically connected to the source and drain respectively of each MOS type memory cell interposed therebetween, the improvement comprising: a thick insulating layer which is formed by selectively oxidizing said major planar surface of said semiconductor substrate so as to leave at least areas of said major surface which are arrayed along said rows, said thick insulating layer having portions which extend along said columns, said areas interposed between adjacent thick insulating layer portions; said plural MOS type memory cells being formed at said areas; said plurality of column conductive layers being respectively constructed of semiconductor layers which are formed in said semiconductor substrate beneath and along said thick insulating layer portions and which are self-aligned with said thick insulating layer portions; and said plural row conductive layers extending respectively across and above said thick insulating layer portions.

4,451,905

ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY CELL HAVING A SINGLE TRANSISTOR

Norman E. Moyer, Balboa, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 28, 1981, Ser. No. 334,946
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 **18 Claims**



8. A memory comprising:

a plurality of floating gate tunneling semiconductor field effect transistors organized in an array of rows and columns, each of said rows and columns comprising a plurality of said transistors, each of said columns including common source and drain diffusions of a first conductivity-type and each of said rows including a common overlying control gate electrode, each of said transistors having an individual insulated floating gate and a thin region in the insulation thereof permitting tunneling of electrons between said floating gate and the corresponding one of said source diffusions; and

means for reading, including:

means for applying a particular voltage to the overlying control electrode of a selected row and a dufferent voltage to the overlying control electrodes of unselected rows, wherein said different voltage is sufficient to turn off transistors having charged floating gates, and

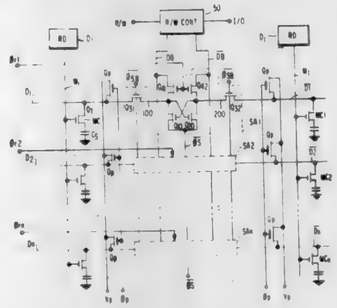
means for sensing the change in source-to-drain current of the drain diffusion of a selected one of said columns.

4,451,906

DYNAMIC TYPE MEMORY DEVICE HAVING IMPROVED OPERATION SPEED

Hiroaki Ikeda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1981, Ser. No. 303,321
Claims priority, application Japan, Sep. 18, 1980, 55-129497
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—205 **10 Claims**



1. A semiconductor memory device comprising first and second bit lines, a sense amplifier having a first input terminal and a second input terminal, a plurality of memory cells, address means for addressing the memory cells thereby causing a potential difference between said first and second bit lines, a first data line, a second data line, a write circuit coupled to said first and second data lines for operatively supplying said first and second data lines with a pair of true and complementary write signals when a write operation is conducted, a first control gate coupled between said first input terminal and said first bit line, a second control gate coupled between said second input terminal and said second bit line, said first bit line and said first input terminal being coupled only by said first control gate, said second bit line and said second input terminal being coupled only by said second control gate, a first selection gate coupled between said first input terminal and said first data line, a second selection gate coupled between said second input terminal and said second data line, means for selectively conducting said first and second selection gates to thereby apply said pair of write signals to said first and second input terminals, means for determining a state of said sense amplifier in accordance with said pair of write signals applied through said first and second selection gates, means for operatively opening said first and second selection gates from a first time point in said write operation, means for operatively closing said first and second control gates at least from said first point to a second time point when the logic state of said sense amplifier is determined in accordance with said write signal, and means for opening said first and second control gates after said second time point, wherein said write signals are applied to said first and second input terminals when said first and second input terminals are isolated from said first and second bit lines by the closed first and second control gates.

4,451,907

PULL-UP CIRCUIT FOR A MEMORY

William J. Donoghue, Round Rock, and Rodney C. Tesch, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1981, Ser. No. 314,816
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—203 **9 Claims**

6. A memory circuit comprising:

a column conductor;

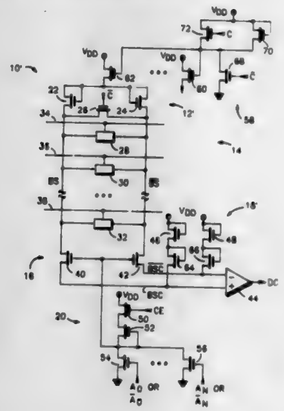
a plurality of memory cells, each memory cell coupled to said column conductor;

a diode-connected transistor coupled between the column conductor and a supply node;

a pull-up transistor coupled between the supply node and a first power supply terminal;

a bit sense common line;

a coupling transistor having a first current electrode coupled to the bit sense common line, a second current electrode coupled to the column conductor, and a control electrode for receiving a decoder signal; and



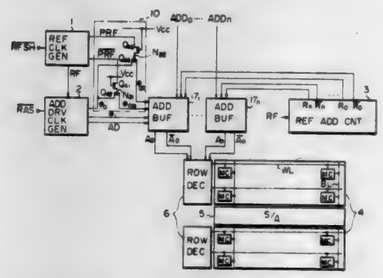
a column decoder having an output for providing the decoder signal to the control electrode of the coupling transistor in response to a predetermined address and a chip enable signal, wherein said column decoder has a chip enable transistor which is coupled between the output and the first power supply terminal and which is activated in response to the chip enable signal for enabling the column decoder to provide the decoder signal in response to the predetermined address.

4,451,908

ADDRESS BUFFER

Yoshihiro Takemae, Yokohama; Shigeki Nozaki; Katsuhiko Kabashima, both of Kawasaki; Seiji Enomoto, Yokohama, and Tsutomu Mezawa, Aizuwakamatsu, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 3, 1982, Ser. No. 354,499
Claims priority, application Japan, Mar. 5, 1981, 56-31750
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 **7 Claims**



1. An address buffer, for a dynamic memory, having a normal operation mode and a refresh operation mode, the dynamic memory including an address drive clock generator, operatively connected to receive an external address or internal refresh address, for generating a timing clock signal, and a refresh clock generator, operatively connected to the address drive clock generator, for generating an external address timing clock or an internal refresh address timing clock, comprising:

a flip-flop, having a first input/output terminal operatively connected to receive the external address or the internal refresh address and a second input/output terminal operatively connected to receive a reference voltage, said flip-flop latched in either one of two states in dependence upon the external address or the internal refresh address supplied alternately;

an output circuit, operatively connected to said flip-flop, providing an output address and an inverted output address;

a first circuit, operatively connected to said first input/output terminal of said flip-flop and operatively connected to receive the external address and the external address timing clock, for receiving the external address upon receipt of the external address timing clock;

a switcher, operatively connected to the refresh drive clock generator and the address drive clock generator, for receiving the external address timing clock and the internal refresh timing clock and operatively connected to said first input circuit, for transferring to said first input circuit the external address timing clock during the normal operation mode and the internal refresh address timing clock during the refresh operation mode by switching said timing clock signal of the address drive clock generator;

a second input circuit, operatively connected to said second input/output terminal of said flip-flop, for receiving the reference voltage upon receipt of the external address timing clock; and

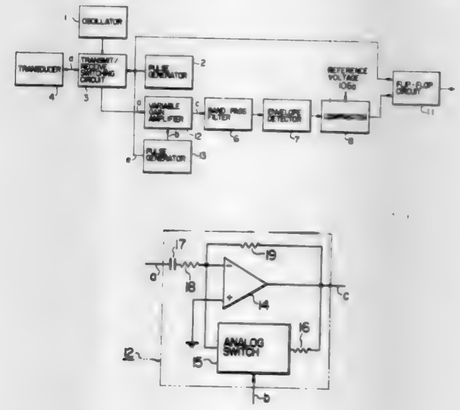
a third input circuit, operatively connected to receive the internal refresh address clock and the internal refresh address and operatively connected in parallel to said first input circuit, for receiving the internal refresh address upon receipt of the internal refresh address timing clock.

4,451,909

ULTRASONIC WAVE DISTANCE DETECTION SYSTEM

Masao Kodera, and Shigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 11, 1981, Ser. No. 329,826
Claims priority, application Japan, Dec. 18, 1980, 55-178038
Int. Cl.³ G01S *15/10, 7/52*
U.S. Cl. 367—99 **4 Claims**



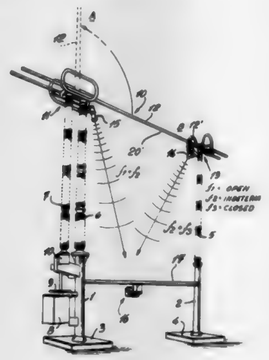
1. An ultrasonic wave distance detection system comprising:

ultrasonic wave transducer means for sending and receiving ultrasonic wave pulses;

oscillator means for generating carrier waves of a carrier frequency available for said ultrasonic wave pulses;

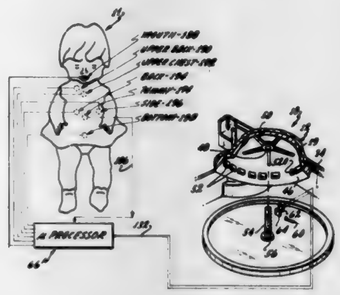
first pulse generator means for generating transmit/receive switching signals;
second pulse generator means for generating gain control signals of a selected pulse width in synchronization with said transmit/receive switching signal;
variable gain amplifier means comprising an operational amplifier having an inverted input terminal and an output terminal, an analog switch coupled to said inverted input terminal and responsive to said gain control signal, a series circuit including a capacitor and an input resistor connected with said inverted input terminal, and a feedback resistor connected between said inverted input terminal and said output terminal of the operational amplifier, said variable gain amplifier means for controlling the gain of signals applied to said amplifier means in accordance with said gain control signal; and
transmit/receive switching circuit means for effecting selective changeover between said transducer means, oscillator means, first pulse generator means and amplifier means in response to the switching signal; and
detecting circuit means for detecting the presence of an obstacle according to the output of said amplifier means;
wherein the gain of said variable gain amplifier means is decreased at the beginning of reception of the ultrasonic wave pulses.

4,451,910
ULTRASONIC POSITION MONITOR FOR HV DISCONNECT SWITCH
Julien Simard, Brossard, Canada, assignor to Hydro-Quebec, Montreal, Canada
Filed Feb. 22, 1982, Ser. No. 351,152
Claims priority, application Canada, Dec. 24, 1981, 393193
Int. Cl.³ G08B *21/00*
U.S. Cl. 367—199 **15 Claims**



1. A signalling system for use with an electric disconnect switch having at least one movable contact and at least one fixed contact, the said system comprising a transmission system coupled to said fixed contact of said disconnect switch for the transmission of at least one ultrasonic signal indicative of the relative position of the movable contact with relation to the said fixed contact, and a receiver system for receiving said at least one ultrasonic signal transmitted by said transmission system, said receiver generating an output signal representative of the relative position of said movable contact with respect to said fixed contact.

4,451,911
INTERACTIVE COMMUNICATING TOY FIGURE DEVICE
George J. Klose, Lomita; Janice E. Rosenthal, Manhattan Beach; Thomas G. Schneider, Venice, and Robert F. Schroeder, Long Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 3, 1982, Ser. No. 345,285
Int. Cl.³ A63H *3/28, 33/26;* G11B *17/22*
U.S. Cl. 369—31 **9 Claims**

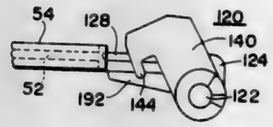


1. An interactive communicating device comprising:
(1) a housing in the shape of a figure toy;
(2) means mounted in said housing for storing a plurality of audible messages;
(3) play means connected to said message storing means for selectively playing individual ones of said plurality of audible messages;
(4) a plurality of switches located on said housing; and
(5) control means including a central processor, having a stored program of coded instructions, coupled to said plurality of switches and said play means, said control means also including:
(a) means for operating said device in a first mode in which each of said switches within said plurality of switches causes said play means to play a particular respective one of said audible messages;
(b) means for operating said device in a second mode in which a plurality of problem-solution pairs exist wherein a selected one of said messages is played announcing a problem and a corresponding one of said switches is exclusively selected to effect the corresponding proper solution upon activation by the user, including means for establishing a respective weighted probability of the occurrence of the announcement of each of said problems, and selection of said selected message is thereby established; and
(c) mode control means for changing between said first and said second modes of operation.

4,451,912
RECORD EXTRACTION MECHANISM FOR DISC PLAYER
Thomas F. Kirschner, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Filed May 3, 1982, Ser. No. 374,378
Int. Cl.³ G11B *25/04*
U.S. Cl. 369—77.2 **12 Claims**

1. A record extraction mechanism for use with a caddy consisting of a record retaining spine removably located inside an outer sleeve; said spine having an opening into which a record is received forming a record/spine assembly; said spine further having a finger for releasably locking said spine to said sleeve; said mechanism comprising:
(A) a housing having an input slot through which a caddy is inserted into said housing along a path;

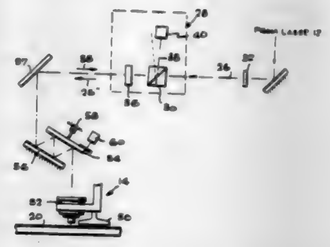
(B) a shaft mounted in said housing away from said input slot at right angles to, and offset from, said caddy insertion path;
(C) a spine releasing member movably mounted on said offset shaft, and having an end thereof disposed in said caddy insertion path when said spine releasing member occupies an initial position; said end of said spine releasing member engaging and deflecting said spine locking finger to release said spine from said sleeve when a caddy is inserted into said housing; said spine releasing member having an actuating portion and a further portion;
(D) a spine latching member movably mounted on said offset shaft, and having an end thereof arranged in said caddy insertion path when said spine latching member is disposed at an initial position; said end of said spine latching member hookingly engaging said spine to secure it in place when a caddy is inserted into said housing, so that said record/spine assembly is retained inside said housing upon the subsequent withdrawal of said sleeve; engagement of said spine latching member with said spine during said caddy insertion deflecting said latching member from said initial position thereof to an intermediate position;
(E) biasing means for yieldably maintaining said end of said spine latching member into engagement with said spine;



said biasing means additionally serving to locate said spine latching member and spine releasing member against a stop, disposed in said housing, in the absence of occupation of said housing by a record/spine assembly; and
(F) means for urging said spine releasing member and said spine latching member together for causing said spine releasing member to follow said deflected spine latching member to an interim position when said sleeve is withdrawn from said housing; said further portion of said spine releasing member, occupying said interim position, being disposed in said caddy insertion path;
an empty sleeve, reinserted into said housing to retrieve said record/spine assembly, contacting and forcing said further portion of said deflected spine releasing member to move away from said spine; said actuating portion of said spine releasing member, in turn, engaging said spine latching member to cause it to rotate in a manner disengaging said spine from said housing during said reinsertion;
wherein said spine latching member has a cutout in which said actuating portion of said spine releasing member is received; said actuating portion engaging a wall defining said cutout when said spine releasing member is rotated away from said interim position to effect said disengagement of said spine in response to said reinsertion.

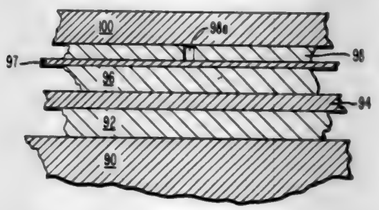
4,451,913
VIDEO DISC READ BACK SCANNER
James E. Elliott, San Pedro, Calif., assignor to Discovision Associates, Costa Mesa, Calif.
Continuation of Ser. No. 924,538, Jul. 14, 1978, Pat. No. 4,282,598, which is a continuation-in-part of Ser. No. 812,180, Jul. 1, 1977, abandoned, which is a continuation of Ser. No. 662,238, Feb. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 465,823, May 1, 1979, Pat. No. 3,944,727, Ser. No. 299,893, Oct. 24, 1972, Pat. No. 3,829,622.
This application Aug. 3, 1981, Ser. No. 290,261
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—110 **3 Claims**

1. Apparatus arranged to read indicia in an information track on a reflective surface of a disc, comprising:
a laser source means for producing a polarized, collimated reading beam of light radiation having its direction of polarization aligned along a predetermined angular orientation with respect to the optical axis;
beam directing means for directing such reading beam from said source means along a reading beam path, and for impinging said beam upon said information track;
optical means for causing said reading beam reflected by said information track to retrace at least a portion of said reading beam path;
sensing means for receiving said reflected beam from said information track;
said beam directing means including:
a beam splitting prism having its angular orientation aligned with the orientation of light in said reading beam for



passing all of said reading beam from said source to said information track;
a quarter wave plate positioned between said beam splitting prism and said information track for shifting the plane of polarization of the reading beam and the reflected beam a total of 90° after the two passages through the quarter wave plate; and
said beam splitting prism being aligned with the direction of polarization of said reflected beam for directing substantially all of said reflected beam out of the common path and towards said sensing means, whereby any of said reflected beam reaching said laser source means being cross polarized with respect to said polarized, collimated reading beam.

4,451,914
OPTICAL STORAGE SYSTEM EMPLOYING A MULTI-LAYER OPTICAL MEDIUM
Edward V. LaBudde, Newbury Park; Miguel A. Capote, Westlake Village; Shiuh Chao, Hawthorne, and Neville K. S. Lee, Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Apr. 15, 1982, Ser. No. 368,668
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—109 **20 Claims**



18. In an optical storage system, the combination comprising:
an optical recording medium;
means for providing a recording laser beam having a predetermined wavelength;

means for modulating said recording beam in accordance with applied data;
means for focusing the modulated beam upon said recording medium; and
means providing for relative movement between the focused recording laser beam and said recording medium;
said recording medium comprising a plurality of layers including a reflective layer, a fluorinated hydrocarbon polymer spacer layer overlaying said reflective layer, a nucleation layer overlaying said fluorinated hydrocarbon polymer spacer layer, and a tellurium absorber layer overlaying said nucleation layer, the thicknesses and optical characteristics of said layers being chosen so that unrecorded regions of said medium exhibit an anti-reflection condition at said predetermined wavelength, said medium being adapted so that during relative movement between the modulated focused laser beam and said medium optically detectable changes are produced in said absorbing layer which disturb said anti-reflective condition at predetermined regions of said medium in a manner representative of applied data, said fluorinated hydrocarbon polymer spacer layer being chosen to reduce heat loss from the absorber layer during the production of an optically detectable change by said recording laser beam, and said nucleation layer being chosen to have a melting point and thickness such that it also serves as a heat insulator layer between said absorber layer and said spacer layer during formation of said optically detectable change.

4,451,915

OPTICAL STORAGE SYSTEM EMPLOYING A MULTI-LAYER OPTICAL MEDIUM

Edward V. LaBudde, Newbury Park; Miguel A. Capote, Westlake Village; Shiuh Chao, Hawthorne, and Neville K. S. Lee, Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 15, 1982, Ser. No. 368,667
Int. Cl.³ G11B *7/24*
U.S. Cl. 369—109 **12 Claims**

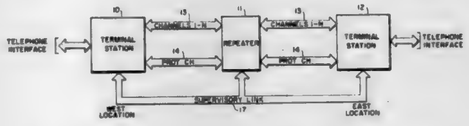
5. In an optical storage system, the combination comprising:
an optical recording medium;
means for providing a recording laser beam having a predetermined wavelength;
means for modulating said recording beam in accordance with applied data;
means for focusing the modulated beam upon said recording medium; and
means providing for relative movement between the focused recording laser beam and said recording medium;
said recording medium comprising a plurality of layers including a reflective layer, a fluorinated hydrocarbon polymer spacer layer overlaying said reflective layer, and a gold absorber layer of 150 Angstroms or less overlaying said fluorinated hydrocarbon polymer spacer layer, the thicknesses and optical characteristics of said layers being chosen so that unrecorded regions of said medium exhibit an anti-reflection condition at said predetermined wavelength, said medium being adapted so that during relative movement between the modulated focused laser beam and said medium optically detectable changes are produced in said absorbing layer which disturb said anti-reflective condition at predetermined regions of said medium in a manner representative of applied data, said fluorinated hydrocarbon polymer spacer layer acting to reduce heat loss from the absorber layer during the production of an optically detectable change by said recording laser beam.

4,451,916

REPEATERED, MULTI-CHANNEL FIBER OPTIC COMMUNICATION NETWORK HAVING FAULT ISOLATION SYSTEM

Paul W. Casper, Melbourne; Norman C. Seiler, West Melbourne, both of Fla.; Thomas J. Nixon, Gaithersburg, Md.; George A. Waschka, Jr., Melbourne, Fla.; Charles R. Patisaul, Melbourne, Fla.; James W. Toy, Melbourne, Fla.; Willie T. Burton, Jr., Palm Bay, Fla.; W. B. Ashley, Manhattan Beach, Calif.; Fred J. Orlando, Jr., West Melbourne, Fla.; Ronald R. Giri, Melbourne, Fla.; Peter H. Halpern, Longwood, Fla.; J. Richard Jones, Melbourne, Fla., and Harold Iley, Huntsville, Ala., assignors to Harris Corporation, Melbourne, Fla.

Filed May 12, 1980, Ser. No. 149,291
Int. Cl.³ H04J *3/12*
U.S. Cl. 370—16 **104 Claims**



1. In a communication network wherein signals are conveyed between first and second stations over a first communication link having at least one repeater station disposed between said first and second stations, a method for isolating a fault occurring on said link comprising the steps of:
(a) transmitting a first prescribed encoded signal sequence over said communication link;
(b) selectively monitoring, at respective stations along said link, a prescribed signal transmission characteristic of the respectively monitored stations along said link; and
(c) in response to a prescribed change in the signal transmission characteristic of said link at one of said monitored stations, representative of the existence of a fault in said link at said one of said monitored stations, transmitting from said one of said monitored stations a signal representative of said change in signal transmission characteristic, so as to identify said fault as being associated with that monitored station along said link that introduces said prescribed change in said signal transmission characteristic.

4,451,917

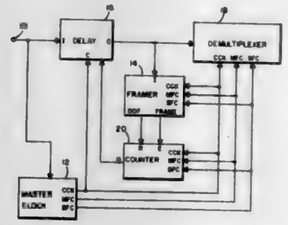
METHOD AND APPARATUS FOR PULSE TRAIN SYNCHRONIZATION IN PCM TRANSCEIVERS

Calvin H. DeCoursey, Reno, Nev., assignor to Lynch Communication Systems, Inc., Reno, Nebr.

Filed Jan. 15, 1981, Ser. No. 225,194
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—108 **7 Claims**

5. A method of synchronizing a received PCM pulse train with fixed clocks running at the bit rate and frame rate of said received pulse train, respectively, for demultiplexing said pulse train in synchronism with said frame rate clock, comprising the steps of:
(a) variably delaying said pulse train;
(b) counting the number of bit-rate clock pulse intervals occurring between a frame pulse of said delayed pulse train and a pulse of said frame-rate clock;

(c) adjusting said variable delay to correspond to the sum of the bit rate clock pulse intervals so counted; and



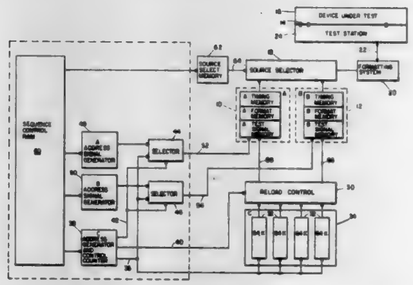
(d) demultiplexing said delayed pulse train in accordance with said frame-rate clock.

4,451,918

TEST SIGNAL RELOADER

Garry C. Gillette, Westlake Village, Calif., assignor to Teradyne, Inc., Boston, Mass.

Filed Oct. 9, 1981, Ser. No. 309,982
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—27 **8 Claims**



1. Apparatus for providing a continuous sequence of test data for testing LSI devices, each of said devices having a multiplicity of pins, comprising
a plurality of memory elements associated with each of said pins, for storing said test data,
a random access storage element having higher capacity and lower speed than each of said memory elements, for storing said test data,
test sequence control circuitry for routing said test data selectably from any one of said memory elements to its associated said pin, and
reloading circuitry for causing a portion of said test data stored in said storage element to be selectably addressed and loaded into any one of said memory elements which is not providing said test data to said pins.

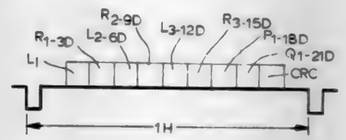
4,451,919

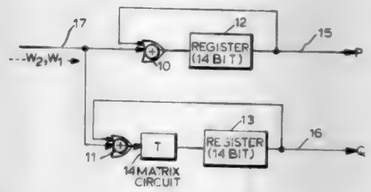
DIGITAL SIGNAL PROCESSOR FOR USE IN RECORDING AND/OR REPRODUCING EQUIPMENT

Ryoichi Wada, Habikino; Mitsuharu Tsuchiya; Takanori Senoo, both of Katano, and Kanji Odagi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 97,549, Nov. 26, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,207
Claims priority, application Japan, Nov. 28, 1978, 53-147456
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 **2 Claims**

1. A digital signal processor for use in recording equipment which converts an analog signal into a pulse-code modulation signal and records said pulse-code modulation signal, said processor comprising:
a data input terminal to which are inputted a plurality of data words, composing a series of data sets, each data set being composed of K data words (K denotes an integer), each data word being composed of G data bits (G denotes an integer);





a first check code generating means coupled to said data input terminal for generating in each data set a G bit first check code by combining corresponding bits of all positions of respective data words in each data set via a modulo 2 summation expressed as:

$$\sum_{i=1}^{K} W_i = (w_{11} \oplus w_{21} \oplus \ldots \oplus w_{k1},\ w_{12} \oplus w_{22} \oplus \ldots \oplus w_{k2},$$

$$\ldots,\ w_{1G} \oplus w_{2G} \oplus \ldots \oplus w_{kG})$$

where W_i is said data word and $W_i=(w_{i1}, W_{i2}, \ldots, w_{iG})$, w_{ij} $(j=1, 2, \ldots, G)$ is a bit of 0 or 1, and

$$\sum_{i=1}^{K}$$

means the modulo 2 summation of K data words;
a second check code generating means coupled to said data input terminal for generating in each data set a G bit second check code which is the modulo 2 sum of the current word and the previous result being multiplied by matrix T to generate the current sum, said second check code being expressed as:

$$\sum_{i=1}^{k} T^{k-i+1} W_i$$

where, T is an associated matrix of a G-th order polynomial;
a memory means coupled to both said first check code generating means and said second check code generating means for (a) temporarily storing said series of data sets, corresponding first check codes and corresponding second check codes, and (b) constructing data blocks each composed of K data words, one first check code and one second check code, the first data word of said data block being the first data word of the first set of the stored data sets, the second word of said data block being the second data word of the second data set of the stored data sets, . . . , the Kth data word of said data block being the Kth data word of the Kth data set of the stored data sets, said

one first check code being the first check code generated from the (K+1)th data set of the stored data sets, and said one second check code being the second check code generated from the (K+2)th data set of the stored data sets; and

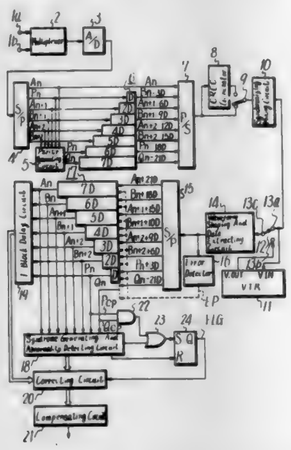
a third check code generating means coupled to said memory means for generating from each of said data blocks a third check code which is a redundant word for error detection, said third check code being located at a position next to the second check code in said each data block on a time axis, said each data block including said third check code being said pulse-code modulation signal to be recorded.

4,451,920

PCM SIGNAL PROCESSING APPARATUS

Susumu Hoshimi, Yokohama, and Tadashi Kojima, Yokosuka, both of Japan, assignors to Sony Corporation and Tokyo Shibaura Denki Kabushiki Kaisha, both of, Japan

Filed Nov. 25, 1981, Ser. No. 324,816
Claims priority, application Japan, Dec. 1, 1980, 55-169410
Int. Cl.³ G06F 11/10; G11B 5/00
U.S. Cl. 371—40 **5 Claims**



1. Means for correcting a PCM signal comprising time interleaved binary data words and error correction and error detection words comprising, an error detecting circuit receiving the incoming PCM signal, a time de-interleaver means receiving the incoming PCM signal and separating it to a plurality of parallel binary data and error correction and error detection words, a syndrome and abnormal detecting circuit receiving the output of said time de-interleaver means, a data correcting circuit receiving inputs from said de-interleaver and said syndrome and abnormal detecting circuit, and including a flip-flop for producing a flag which is supplied to said data correcting circuit and receiving an input from said syndrome and abnormal detecting circuit.

4,451,921

PCM SIGNAL PROCESSING CIRCUIT

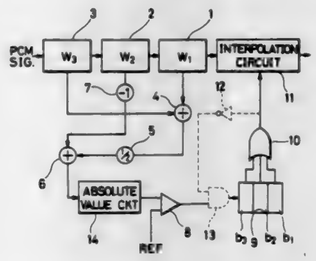
Kentaro Odaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 4, 1981, Ser. No. 289,970
Claims priority, application Japan, Aug. 6, 1980, 55-107937
Int. Cl.³ G06F 11/00, 11/26
U.S. Cl. 371—48 **6 Claims**

1. A pulse code modulation signal processing circuit for detecting errors in pulse code modulated signal words, the detected errors being used to control an associated interpolation circuit for correcting these errors comprising:

a first shift register capable of storing plural data words having a series input terminal, a series output terminal, and plural parallel output terminals, said first shift register receiving at its series input terminal a pulse code modulated signal structured into successive data words, said first shift register series output terminal being connected in series to an input terminal of an interpolation circuit, which subsequently corrects errors in data words outputted from said first shift register upon operation of said interpolation circuit;

a detection circuit connected to said plural parallel output terminals of said first shift register for detecting a data error in at least one data word stored in said first shift register by comparing data contained in said stored plural data words in said first shift register by using a linear prediction method, said detection circuit further outputting a discrete signal indicating whether or not an error is present in said one data word in said first shift register;



a second shift register connected to the output of said detection circuit having the capacity for storing plural designation bits, each designation bit corresponding to a designated data word in said first shift register, said second shift register receiving said discrete output signal from said detection circuit and shifting one designation bit position each time said discrete output signal is received;

a control circuit connected to parallel outputs of said second shift register and to said interpolation circuit, said control circuit turning on said interpolation circuit whenever any one of said plural designation bits stored in said second shift register indicates data word error, and turning off said interpolation circuit whenever none of the plural designation bits stored in said second shift register indicates data word error.

4,451,922

TRANSMISSION LOGIC PARITY CIRCUIT

Ziba T. Dearden, Manassas, and Yogi K. Puri, Vienna, both of Va., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,706
Int. Cl.³ G06F 11/10; H04L 1/10
U.S. Cl. 371—49 **3 Claims**

1. A parity circuit for determining whether an odd or even number of binary bits having an even number of binary bits having a value of one, are present, at an n-bit plurality of binary operand bit inputs, comprising:

n-stages of sequentially connected steering cells, each said cell including a true-value binary bit operand input and a complementary-value binary bit operand input for one said plurality of operand bit inputs, a first and a second indicating potential input terminals and a first and a second indicating potential output terminals;

said first indicating potential input terminal of an i-th cell connected to said first indicating potential output terminal of the next preceding i+1th cell and said second indicating potential input terminal of said i-th cell connected to said second indicating potential output terminal of said next preceding i+1th cell;

a first FET device in each said cell having its drain connected to said first indicating potential input terminal thereof, its source connected to said first indicating potential output terminal thereof, and its gate connected to said complementary-value binary bit operand input thereof;

a second FET device in each said cell having its drain connected to said second indicating potential input terminal thereof, its source connected to said first indicating potential output terminal thereof, and its gate connected to said true-value binary bit operand input thereof;

a third FET device in each said cell having its drain connected to said first indicating potential input terminal thereof, its source connected to said second indicating potential output terminal thereof, and its gate connected to said true-value binary bit operand input thereof;

a fourth FET device in each said cell having its drain connected to said second indicating potential input terminal thereof, its source connected to said second indicating potential output terminal thereof, and its gate connected to said complementary-value binary bit operand input thereof;

said first FET device in each of said cells forming a conductive path between said first indicating potential input terminal and said first indicating potential output terminal and said fourth FET device in the same cell forming a conductive path between said second indicating potential input terminal and said second indicating potential output terminal when said complementary-value binary bit operand input in the same cell is active;

said third FET device in each of said cells forming a conductive path between said first indicating potential input terminal and said second indicating potential output terminal and said second FET device in the same cell forming a conductive path between said second indicating potential input terminal and said first indicating potential output terminal when said true-value binary bit operand input in the same cell is active;

said first indicating potential input terminal in a first one of said cells in said sequence having a first DC potential continuously applied to it corresponding to a binary one bit value and said second indicating potential input terminal in said first one of said cells having a second DC potential continuously applied to it corresponding to a binary zero bit value said first DC potential being different from said second DC potential;

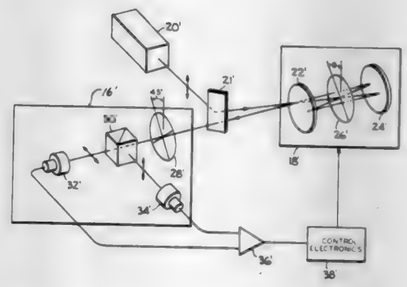
said second indicating potential output terminal in a last one of said cells in said sequence outputting a signal corresponding to said first DC potential in response to an odd number of said cells having their respective true-value binary bit operand input active indicating an odd parity and said second indicating potential output terminal in said last cell outputting a signal corresponding to said second DC potential in response to an even number of said cells having their respective true-value binary bit operand input active indicating an even parity.

4,451,923

METHOD OF AND APPARATUS FOR MEASURING OPTICAL FREQUENCY VARIATIONS

Theodor W. Hansch, 15100 Oak Creek Dr., (Apt. 405), Palo Alto, Calif, 94304, and Bernard J. Couillaud, 26 rue Ernest Renaut, Talence, France

Filed Dec. 1, 1980, Ser. No. 211,910
Int. Cl.³ H01S 3/13
U.S. Cl. 372—32 **5 Claims**



1. The method of frequency stabilizing a tunable laser which comprises the steps of

positioning a resonant passive optical cavity to receive a laser beam so that a perpendicular component is directly reflected but a parallel component enters the cavity for indirect reflection therefrom,

disposing an intracavity anisotropic optical element in said cavity at an angle relative to a polarization axis of the incident laser beam to produce a phase shift of an indirectly reflected parallel component relative to a directly reflected perpendicular component, thus to provide a frequency-dependent phase shift between said two reflected components, resulting in an elliptical polarization correlated with any frequency deviation from cavity resonance,

detecting the amount of ellipticity to provide an error signal, and

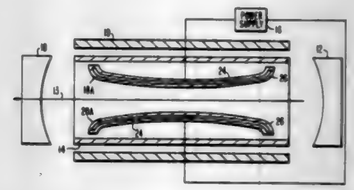
adjusting the laser frequency an amount determined by the amplitude of such error signal.

4,451,924

MERCURY HALIDE LASERS UTILIZING ELECTRODES COATED WITH A GETTER

Chi-Sheng Liu, Monroeville, and Chikara Hirayama, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 19, 1982, Ser. No. 379,811
Int. Cl.³ H01S 3/22
U.S. Cl. 372—59 **7 Claims**



1. A laser comprising:

(a) an enclosure for containing a gaseous compound lasing medium in a laser cavity, said gaseous compound having a tendency to disassociate into its individual components during normal operation;

(b) electrode means for exciting said lasing medium; and

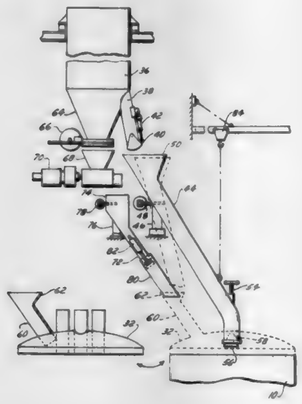
(c) means for reducing the chemical reaction between said electrode means and selected ones of said individual components of said lasing medium which become disassociated during normal operations of said laser, comprising a mercury amalgam layer affixed to at least a portion of the surface of said electrode means.

4,451,925

CHARGING SYSTEM FOR ELECTRIC ARC FURNACES

E. Jorge Sandoval, Guadalupe, Mexico, assignor to Hylsa, S.A., Monterrey, Mexico

Filed Sep. 13, 1982, Ser. No. 417,213
Int. Cl.³ F27D *3/10*
U.S. Cl. 373—81 **18 Claims**



1. Apparatus for charging an electric arc furnace with a relatively free-flowing charge of iron-containing particles with improved distribution of the charge of particles within the furnace, the electric arc furnace having a roof laterally movable to selectively open and cover the top of the furnace, comprising

hopper means containing a supply of said iron-containing particles disposed at a location elevated with respect to said furnace;

a first chute movable with respect to said furnace when said roof is moved to open the furnace and having an upper end to receive said particles from said hopper and a lower end to feed said particles into said furnace;

distributor means disposed at the lower end of said first chute to distribute said particles exiting said first chute in a predetermined pattern within said furnace;

a second chute affixed to the furnace roof having an upper end to receive said iron-containing particles and a lower end communicating through said roof with the interior of said furnace; and

coupling means for coupling said hopper means with said second chute, when said roof is in place to cover the top of said furnace, to permit continuous charging of said furnace during operation.

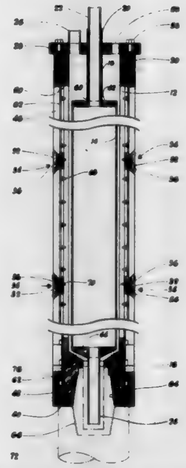
4,451,926

COMPOSITE ELECTRODE FOR ARC FURNACE

Grady R. Hogg, Jr., Elizabethton, and Nathan S. Tanner, Johnson City, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Aug. 3, 1982, Ser. No. 404,827
Int. Cl.³ H05B *7/08*
U.S. Cl. 373—93 **5 Claims**

1. In a composite liquid-cooled arc furnace electrode comprising a metal cylindrical upper section, a metal connecting nipple, and a graphite lower section, the improvement comprising arcuate graphite segments protecting the exterior of said upper section, the top and bottom of said segments being beveled and held in place by circular metal rings having a complementary bevel angle to said segments and attached to said upper section in a relationship such that when a force is applied radially inward to said segments a mechanical and electrical bond is established between said segments and said



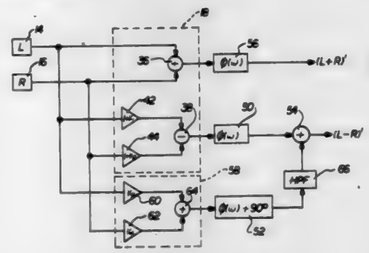
upper section thereby providing an electrical current path into said electrode, the dimensions of said segments being such that when no radial force is applied, said segments fall away from said upper section a predetermined radial distance, leaving an insulating air gap between said segments and said upper section held in that position by said rings.

4,451,927

SEPARATION CORRECTION METHOD AND APPARATUS FOR PLURAL CHANNEL TRANSMISSION SYSTEM

David L. Hershberger, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 24, 1982, Ser. No. 361,572
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—15 **33 Claims**



1. Apparatus comprising

means for providing first and second signals to be communicated over different channels of a plural channel communication system,

means responsive to said second signal for providing two modified second signals therefrom, said signals being phase shifted relative to one another by a fixed amount,

means for selectively adjusting the relative gains of said two modified second signals,

means for combining said two modified second signals so as to provide a combined signal to be communicated over a

channel of said plural channel communication system in place of said second signal.

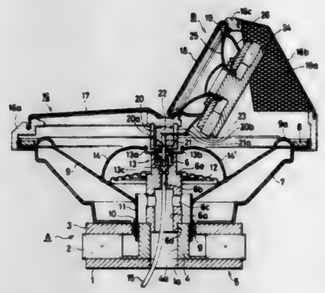
29. In a stereo AM radio broadcasting system including left (L) and right (R) audio signal sources which provide audio signals to be modulated onto an RF carrier signal for transmission to a remote radio receiver, a matrix circuit to which said left and right audio signal sources are connected for adding and subtracting said signals to provide sum (L+R) and difference (L−R) signals, dynamic gain varying means responsive to the difference signal for dynamically varying its gain to provide a varying gain difference signal, and a quadrature AM transmitter for modulating the sum and varying-gain difference signals onto the in-phase and quadrature-phase carrier components, respectively, of a quadrature AM signal, the improvement comprising processing means responsive to said sum and varying gain difference signals for deriving a modified varying gain difference signal therefrom for application to the quadrature AM transmitter in place of said varying gain difference signal, said modified signal corresponding generally to said varying gain difference signal but also including a first selective gain component corresponding to the sum of said sum signal and said varying gain difference signal and a second selective gain component corresponding to the difference between said sum signal and said varying gain difference signal.

4,451,928

MULTI-SPEAKER SYSTEM FOR USE IN AUTOMOBILES

Fumio Murayama, Yamagata, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,190
Claims priority, application Japan, Sep. 22, 1981, 56-139798[U]
Int. Cl.³ H04R *1/02*
U.S. Cl. 381—86 **12 Claims**



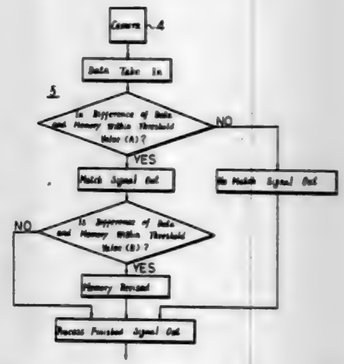
1. A multi-speaker system, comprising; a low-frequency loudspeaker, midrange and/or high-frequency loudspeakers mounted on the low-frequency loudspeaker, the low-frequency loudspeaker having a magnetic circuit including a center pole having a through hole extending in a direction in which sound is radiated from the low-frequency loudspeaker, and an external input lead wire extending through said through hole toward a distal end of said center pole and divided at said distal end into branches toward said low-frequency loudspeaker and said midrange and/or high-frequency loudspeakers.

4,451,929

PATTERN DISCRIMINATION METHOD

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Japan

Continuation-in-part of Ser. No. 109,969, Jan. 7, 1980, abandoned. This application Feb. 26, 1982, Ser. No. 352,809
Claims priority, application Japan, Nov. 10, 1978, 53-138578
Int. Cl.³ G06K *9/66*
U.S. Cl. 382—15 **2 Claims**



1. A method of pattern discrimination in a pattern inspection apparatus of the type having a light source for illuminating an object to be inspected, a video camera effective to produce an electrical signal corresponding to said object, and a pattern discrimination system for comparing data from said electrical signal with standard data memorized from a standard subject of a type to be recognized to determine whether said object is of the same type as said standard subject comprising the steps of:

setting a first threshold A for determining whether or not said data from said electrical signal contains characteristics sufficiently close to said standard data to judge said object to be of the same type as said standard subject;

setting a second threshold B smaller than said first threshold A for determining whether or not said data from said electrical signal contains characteristics sufficiently close to said standard data to judge said object to be substantially identical to said standard subject;

determining a difference between said characteristics of said data and said standard data;

producing a match signal if said difference is less than said first threshold A; and

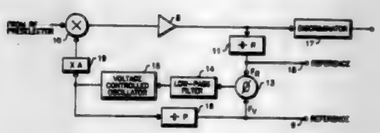
replacing said standard data with said data if said difference is less than said second threshold B.

4,451,930

PHASE-LOCKED RECEIVER WITH DERIVED REFERENCE FREQUENCY

Ronald H. Chapman, Wheaton, and Andrew F. Peterson, Schaumburg, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Aug. 2, 1982, Ser. No. 403,972
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—260 **14 Claims**



1. An improved phase-locked receiver for deriving a refer-

ence signal from a received RF carrier signal, including in combination:

means for converting the received RF carrier signal into a desired IF frequency;

means coupled to said converting means for amplifying said IF frequency;

frequency multiplying means coupled to said frequency converting means;

first frequency divider means coupled to said amplifying means;

phase-locked loop means including phase detector means, low pass filter means and voltage controlled oscillator means and coupled between said frequency multiplying means and said first divider means;

said first divider means providing a first input to said phase detector means; and

second frequency divider means coupled between said frequency multiplying means and a second input of said phase detector means, whereby, a derived reference signal is provided at a terminal of said phase-locked receiver.

DESIGN PATENTS

GRANTED MAY 29, 1984

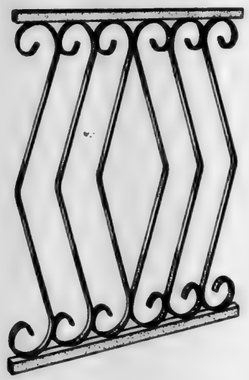
ERRATA

For CLASS	See PATENT NO.
D25–055	274,004
D25–087	274,005
D25–038	274,006
D26–093	274,007
D28–007	274,008
D28–039	274,009
D28–047	274,010
D32–001	274,011
D34–040	274,012
D34–014	274,013
D34–021	274,014
D26–138	274,068

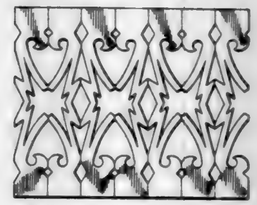
274,004
DRAIN BOX
Joseph N. Argentina, 235 Meyner Dr., Bellmawr, N.J. 08031
Filed Jun. 28, 1982, Ser. No. 393,190
Term of patent 14 years
U.S. Cl. D25—55



274,005
GRILL
Harvey Porter, Narberth, and Rubina M. Long, Philadelphia, both of Pa., assignors to Royal Factories, Inc., Philadelphia, Pa.
Filed Jun. 10, 1982, Ser. No. 386,903
Term of patent 14 years
U.S. Cl. D25—87



274,006
FENCING
John Djurina, 3300 W. Layton Ave., Milwaukee, Wis. 53221
Filed Jan. 8, 1982, Ser. No. 338,578
Term of patent 14 years
U.S. Cl. D25—38



274,007
LAMP
Eli Lengacher, Rte. 3, Box 559, Grabill, Ind. 46741
Filed Jan. 22, 1982, Ser. No. 341,593
Term of patent 14 years
U.S. Cl. D26—93



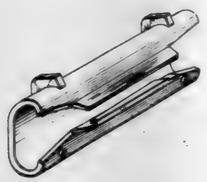
274,008
ADJUSTABLE COSMETIC APPLICATOR
Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236, and Henry J. Cassai, 95-15 107 St., Ozone Park, N.Y. 11416
Filed Jul. 6, 1982, Ser. No. 395,494
Term of patent 14 years
U.S. Cl. D28—7



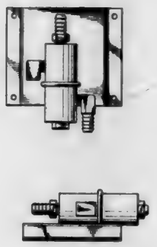
274,009
HAIR CLIP
Richard Caruso, 7801 Montgomery Ave., Elkins Park, Pa. 19117
Filed Feb. 12, 1982, Ser. No. 348,546
Term of patent 14 years
U.S. Cl. D28—39



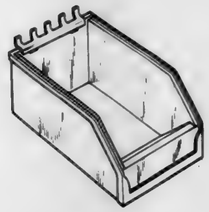
274,010
SLEEVE FOR A DISPOSABLE SAFETY RAZOR
Clemens A. Iten, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Sep. 30, 1981, Ser. No. 307,192
Term of patent 14 years
U.S. Cl. D28—47



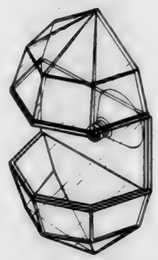
274,011
FOAM GENERATOR FOR A CLEANING MACHINE
Thomas G. Lafferty, 916 Oak Grove Rd., North Little Rock, Ark. 72118
Filed Dec. 10, 1980, Ser. No. 215,124
Term of patent 14 years
U.S. Cl. D32—01



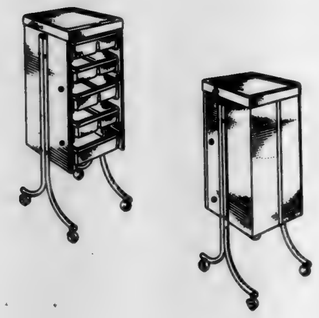
274,012
BIN FOR MERCHANDISE
Robert F. Williams, 9505 E. Atherton Rd., Davison, Mich. 48423
Filed Dec. 4, 1981, Ser. No. 327,403
Term of patent 14 years
U.S. Cl. D34—40



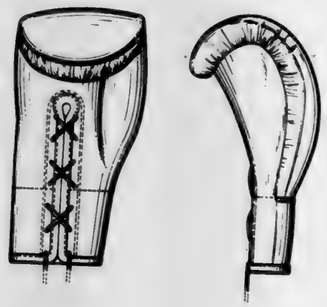
274,013
BIRD FEEDER
George C. Sun, One Cherry Hill, Cherry Hill, N.J. 08002
Filed Apr. 16, 1982, Ser. No. 369,202
Term of patent 14 years
U.S. Cl. D30—14



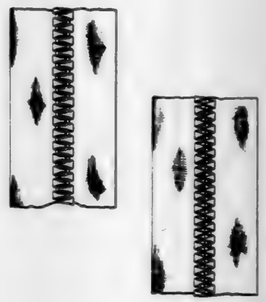
274,014
MOBILE STORAGE UNIT
Kenneth Reiner, Long Beach, Calif., assignor to Kayline Enterprises, Inc., Long Beach, Calif.
Filed Aug. 13, 1981, Ser. No. 292,600
Term of patent 14 years
U.S. Cl. D34—21



274,015
BOXING GLOVE
John C. Golomb, Brooklyn, N.Y., assignor to Everlast World's Boxing Headquarters Corp., Bronx, N.Y.
Filed Aug. 7, 1981, Ser. No. 291,187
Term of patent 14 years
U.S. Cl. D2—361



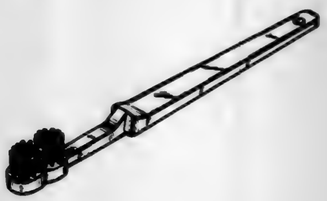
274,016
SLIDE FASTENER CHAIN
Kazumi Kasai, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Apr. 2, 1981, Ser. No. 250,277
Claims priority, application Japan, Aug. 11, 1980, 55-32776
Term of patent 14 years
U.S. Cl. D2—415



274,017
CUFF LINK
Philip L. Engelhardt, 200 E. 74th St., New York, N.Y. 10021
Division of Des. Ser. No. 41,200, May 21, 1979, Pat. No. D. 263,765.
This application Nov. 9, 1981, Ser. No. 319,656
Term of patent 14 years
U.S. Cl. D2—422



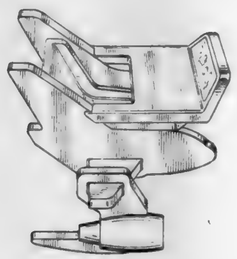
274,018
TOOTHBRUSH
Soichiro Usui, One Hook Rd., Rye, N.Y. 10580
Filed Dec. 21, 1981, Ser. No. 332,811
Term of patent 14 years
U.S. Cl. D4—25



274,019
COMBINED CHAIR BACK COVER AND PERSONAL ARTICLE HOLDER
Ronald Stead, and Eunice L. Stead, both of 4244 E. Francis Rd., Mt. Morris, Mich. 48458
Filed Nov. 4, 1981, Ser. No. 318,029
Term of patent 14 years
U.S. Cl. D6—4



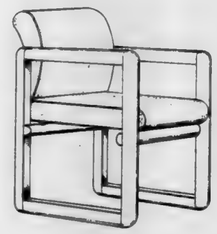
274,020
COMBINED SEAT AND DETACHABLE TRAY FOR A CHILD
Bruce E. Byers, 2405 Dunwoody Ave., Wayzata, Minn. 55391
Filed Oct. 13, 1981, Ser. No. 310,647
Term of patent 14 years
U.S. Cl. D6—12



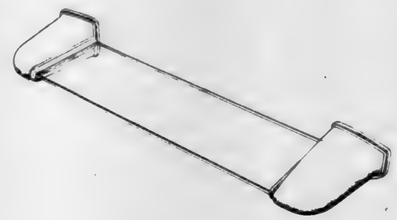
274,021
ARM CHAIR
Donald C. Petitt, 207 W. 86th St., New York, N.Y. 10024
Filed Nov. 9, 1981, Ser. No. 319,547
Term of patent 14 years
U.S. Cl. D6—31



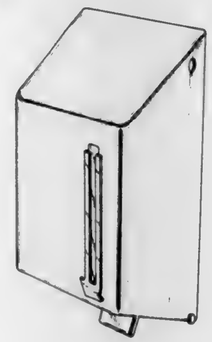
274,022
CHAIR
John W. Caldwell, San Marino, Calif., assignor to Pacific Furniture Manufacturing Company, Compton, Calif.
Filed Jul. 6, 1981, Ser. No. 280,655
Term of patent 14 years
U.S. Cl. D6—69



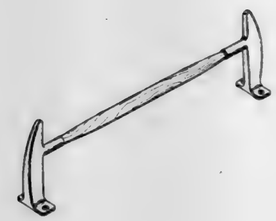
274,023
BATHROOM SHELF
Jersy Boroch, Saint Ismier, France, assignor to Allibert S.A., Grenoble, France
Filed Apr. 15, 1982, Ser. No. 368,820
Claims priority, application Hague, Oct. 15, 1981, DM 000/978
Term of patent 14 years
U.S. Cl. D6—86



274,024
LIQUID SOAP DISPENSER
André Vignot, Coubron, France, assignor to Laboratoires Prodene-Klint, Vaujours, France
Filed Aug. 25, 1981, Ser. No. 296,224
Claims priority, application France, Mar. 20, 1981, 811036
Term of patent 14 years
U.S. Cl. D6—95



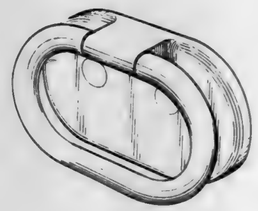
274,025
TOWEL-TIE BAR
J. Edward Dobbs, III, Selma, Ala., assignor to Golden Eagle Enterprises Inc., Selma, Ala.
Filed Feb. 11, 1982, Ser. No. 348,077
Term of patent 14 years
U.S. Cl. D6—99



274,026
WALL-MOUNTED TOWEL RACK
Jersy Boroch, Saint Ismier, France, assignor to Allibert S.A., Grenoble, France
Filed Apr. 15, 1982, Ser. No. 368,821
Claims priority, application Hague, Oct. 15, 1981, DM 000/978
Term of patent 14 years
U.S. Cl. D6—99



274,027
TOWEL HOLDER
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, Australia
Filed Dec. 3, 1982, Ser. No. 446,646
Claims priority, application Australia, Oct. 12, 1982, 1816/82
Term of patent 14 years
U.S. Cl. D6—99



274,028
BEVERAGE DISPENSER
Robina E. Jeans, Ledbury, England, assignor to Cadbury Schweppes PLC, London, England
Filed Nov. 2, 1981, Ser. No. 317,290
Term of patent 14 years
U.S. Cl. D7—308



274,029
COFFEE MAKING MACHINE
Donald L. Daugherty, Sherman, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.
Filed Nov. 4, 1981, Ser. No. 318,131
Term of patent 14 years
U.S. Cl. D7—309



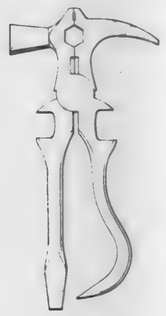
274,030
COVER FOR A FOOD STORAGE CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 9, 1982, Ser. No. 356,603
Term of patent 14 years
U.S. Cl. D7—391



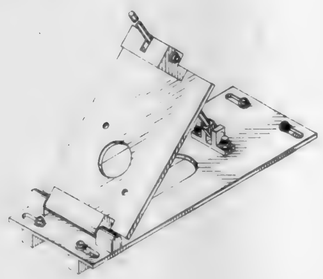
274,031
LIQUOR DISPENSING HEAD
Heiko T. de Man, Gualala, Calif., assignor to Gamble, Inc., Portland, Oreg.
Filed Mar. 8, 1982, Ser. No. 356,070
Term of patent 14 years
U.S. Cl. D7—398



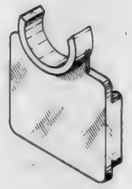
274,032
MULTI-PURPOSE HAND TOOL
Kwok C. Lai, 9-11, Cheong Wing Rd., Tung Chun Industrial Bldg., Block E, 23rd Floor, Kwai Chung, Hong Kong
Filed Feb. 24, 1982, Ser. No. 351,931
Claims priority, application United Kingdom, Oct. 6, 1981, 1 002 865
Term of patent 14 years
U.S. Cl. D8—55

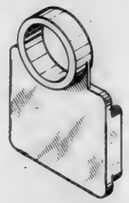


274,033
DRILL GUIDE
Lawrence L. Miller, 2030 S. Irving, Denver, Colo. 80219
Filed Jul. 20, 1981, Ser. No. 285,069
Term of patent 14 years
U.S. Cl. D8—71

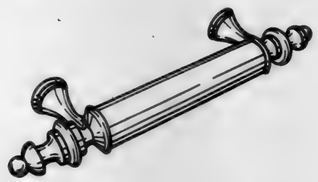


274,034
WORK PIECE PROTECTING PAD FOR USE ON A BAR CLAMP, OR SIMILAR ARTICLE
Erciel F. Lacina, 17645 Arrow Blvd., Fontana, Calif. 92335
Filed Jan. 19, 1982, Ser. No. 340,745
Term of patent 14 years
U.S. Cl. D8—72

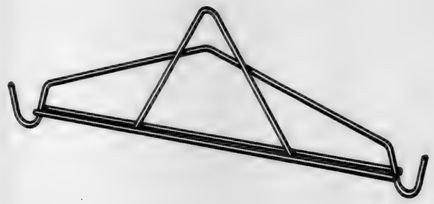




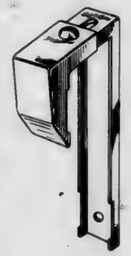
274,035
PULL
Valentin Pawlow, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Dec. 21, 1981, Ser. No. 333,033
Term of patent 14 years
U.S. Cl. D8—316



274,036
GAMBREL HANGER FOR LARGE ANIMAL
Eugene C. Schraml, Brookfield, Wis., assignor to G & R Machine & Vending, Inc., Brookfield, Wis.
Filed Jun. 23, 1982, Ser. No. 391,337
Term of patent 14 years
U.S. Cl. D8—370



274,037
HANGER BRACKET FOR POCKET FILE
Phillip A. Crim, Clark County; Larry S. Hawkins, Frederick County, and Michael J. Szablak, Winchester, all of Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Aug. 17, 1981, Ser. No. 293,379
Term of patent 14 years
U.S. Cl. D8—373



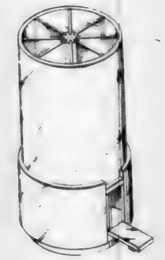
274,038
PELICAN HOOK
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.
Filed Sep. 2, 1981, Ser. No. 298,650
Term of patent 14 years
U.S. Cl. D8—382



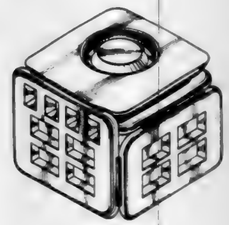
274,039
BOTTLE
Nusri M. Abraham, Cornwall, Canada, assignor to Corbron Foundries, Cornwall, Canada
Filed Sep. 9, 1981, Ser. No. 300,704
Claims priority, application Canada, Jun. 17, 1981, 17-06-81-2
Term of patent 14 years
U.S. Cl. D9—323



274,040
VITAMIN DISPENSER
Brad J. Ridgley, 16881 Oakview Dr., Encino, Calif. 91436
Filed Dec. 24, 1981, Ser. No. 334,314
Term of patent 14 years
U.S. Cl. D9—339



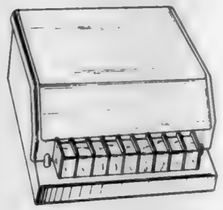
274,041
CORNER PAD
Hideo Kato, Tokyo, Japan, assignor to Fukuoka Paper Manufacturing Co., Ltd., Fukuoka, Japan
Filed Oct. 26, 1981, Ser. No. 315,069
Claims priority, application Japan, Jul. 11, 1981, 56/030474
Term of patent 14 years
U.S. Cl. D9—434



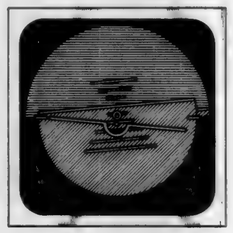
274,042
TRAVELING CLOCK
Giovanni Bulgari, Rome, Italy, assignor to Anthos S.A., Geneva, Switzerland
Filed Dec. 18, 1981, Ser. No. 332,224
Claims priority, application Hague, Jun. 25, 1981, DM/000 831
Term of patent 14 years
U.S. Cl. D10—18



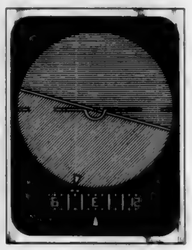
274,043
DIFFERENTIAL TEMPERATURE CONTROL
Larry W. Paine, 2345 Pebble Beach Dr., Evergreen, Colo. 80439
Filed Mar. 16, 1982, Ser. No. 408,112
Term of patent 14 years
U.S. Cl. D10—50



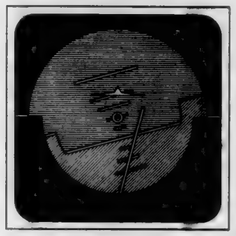
274,044
ATTITUDE DIRECTOR INDICATOR
Donald F. Schmidt, Cedar Rapids, Iowa, and Siegfried Knemeyer, deceased, late of Yellow Springs, Ohio (by Doris R. Knemeyer, administrator), assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 27, 1982, Ser. No. 343,067
Term of patent 14 years
U.S. Cl. D10—74



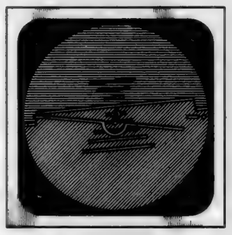
274,045
ATTITUDE DIRECTOR INDICATOR
Donald F. Schmidt, Cedar Rapids, Iowa, and Siegfried Knemeyer, deceased, late of Yellow Springs, Ohio (by Doris R. Knemeyer, administrator), assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 27, 1982, Ser. No. 343,068
Term of patent 14 years
U.S. Cl. D10—74



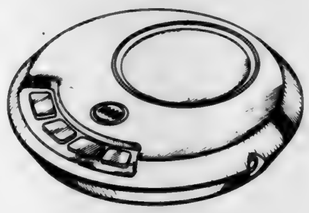
274,046
ATTITUDE DIRECTOR INDICATOR
Donald F. Schmidt, Cedar Rapids, Iowa, and Siegfried Knemeyer, deceased, late of Yellow Springs, Ohio (by Doris R. Knemeyer, administrator), assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 27, 1982, Ser. No. 343,069
Term of patent 14 years
U.S. Cl. D10—74



274,047
ATTITUDE DIRECTOR INDICATOR
Donald F. Schmidt, Cedar Rapids, Iowa, and Siegfried Knemeyer, deceased, late of Yellow Springs, Ohio (by Doris R. Knemeyer, administrator), assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 27, 1982, Ser. No. 343,070
Term of patent 14 years
U.S. Cl. D10—74



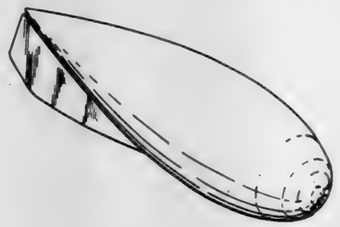
274,048
ELECTRONIC ALARM
Ka W. Wong, Ngau Tau Kok, and Albert K. H. Au, Wanchai, both of China, assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 30, 1981, Ser. No. 335,954
Term of patent 14 years
U.S. Cl. D10—106



274,049
WIND CHIME
Vera Stilson, 4006 Main St., Erie, Pa. 16511
Filed Oct. 10, 1980, Ser. No. 196,105
Term of patent 14 years
U.S. Cl. D10—116



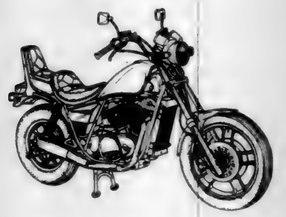
274,050
TOWABLE BUOYANT BODY
Helge Brandsaeter, Stabekk, Norway, assignor to Geophysical Company of Norway A/S, Hovik, Norway
Filed Feb. 19, 1981, Ser. No. 235,952
Claims priority, application Norway, Jan. 22, 1981, 61686
Term of patent 14 years
U.S. Cl. D12—300



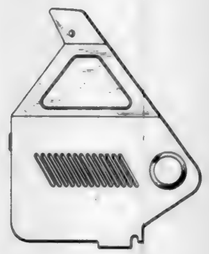
274,051
VEHICLE TIRE
Shinichiro Ohkuni, Tokyo, and Hideaki Nishio, Saitama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Nov. 25, 1981, Ser. No. 324,888
Claims priority, application Japan, May 29, 1981, 56-22942
Term of patent 14 years
U.S. Cl. D12—146



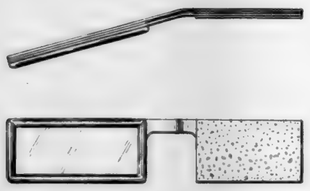
274,052
MOTORCYCLE
Masato Iwakura, Asaka; Mutsuo Hirose, and Toshiyuki Yamada, both of Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 17, 1982, Ser. No. 450,731
Claims priority, application Japan, Jun. 22, 1982, 57/28084
Term of patent 14 years
U.S. Cl. D12—110



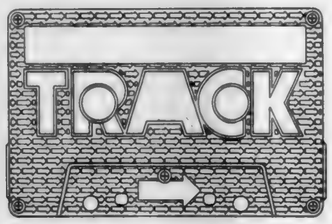
274,053
MOTORCYCLE SIDE COVER
Alwin J. Stahel, Saint Paul, Minn., assignor to Drag Specialties, Inc., Minneapolis, Minn.
Filed Jul. 1, 1981, Ser. No. 279,576
Term of patent 14 years
U.S. Cl. D12—126



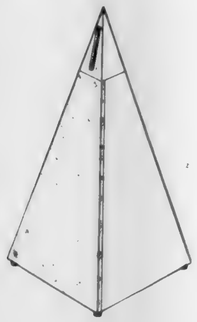
274,054
ADJUSTABLE WING MIRROR ATTACHABLE TO THE REAR VIEW MIRROR OF AN AUTOMOBILE, OR SIMILAR ARTICLE
Robert C. Barows, P.O. Box 543, Lake Arrowhead, Calif. 92352
Filed Nov. 30, 1981, Ser. No. 325,973
Term of patent 14 years
U.S. Cl. D12—187



274,055
TAPE CARTRIDGE
Anders Wester, Malmö, Sweden, assignor to Track Tape AB, Sweden
Filed Dec. 1, 1981, Ser. No. 326,372
Claims priority, application Sweden, Jun. 2, 1981, 811273
Term of patent 14 years
U.S. Cl. D14—11



274,056
COMBINED SPEAKER HOUSING AND LIGHT DISPLAY
Fritz Myer, 135 Park Pl., Battle Creek, Mich. 49015
Filed Aug. 20, 1981, Ser. No. 294,727
Term of patent 14 years
U.S. Cl. D14—33

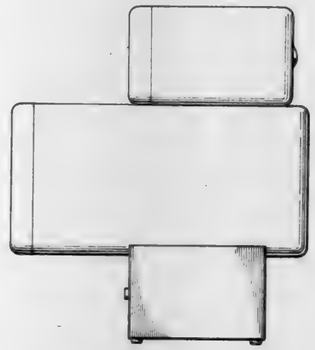


274,057
AUDIO SPEAKER CABINET
Dale Carter, 5004 West Huron, Chicago, Ill. 60644
Filed Jan. 11, 1982, Ser. No. 338,633
Term of patent 14 years
U.S. Cl. D14—33

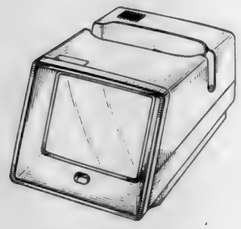


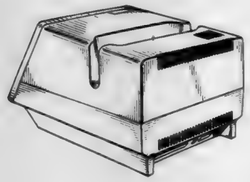
274,058
LOUDSPEAKER
Bill Gross, 1244 E. Colorado Blvd., Pasadena, Calif. 91106
Filed Dec. 22, 1981, Ser. No. 333,624
Term of patent 14 years
U.S. Cl. D14—34



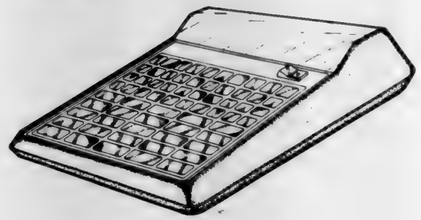


274,059
HOUSING FOR A GRAPHIC TELEPHONE
Jack P. Hall; Richard Fayram, both of Palo Alto, and Jeffrey Muscatine, San Jose, all of Calif., assignors to Harris Corporation, Melbourne, Fla.
Filed Feb. 25, 1982, Ser. No. 352,243
Term of patent 14 years
U.S. Cl. D14—54

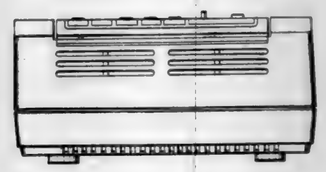


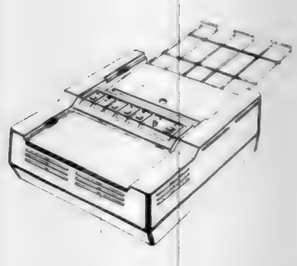


274,060
PATIENT COMMUNICATOR
W. Fletcher Bennet, Groton, Mass., assignor to Sontek Industries, Inc., Dallas, Tex.
Filed Dec. 2, 1981, Ser. No. 326,492
Term of patent 14 years
U.S. Cl. D14—68

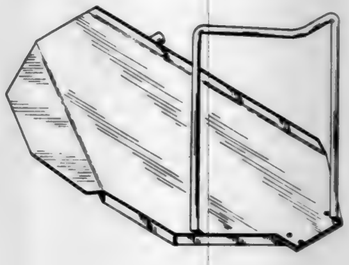


274,061
FACSIMILE TRANSCEIVER
Masatsugu Suzuki, and Naotoshi Iwasa, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Aug. 21, 1981, Ser. No. 294,902
Term of patent 14 years
U.S. Cl. D14—94

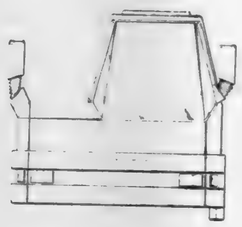


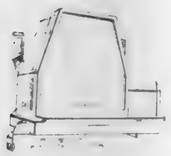


274,062
CROPPER PLATFORM FOR A TOBACCO HARVESTING MACHINE
Elmer K. Hansen, 801 S. Martha, Sioux City, Iowa 51106
Filed Nov. 30, 1981, Ser. No. 326,113
Term of patent 14 years
U.S. Cl. D15—27



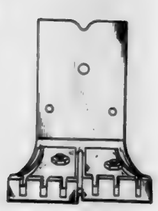
274,063
YARD TRACTOR CAB
Ronald V. Skaff, Sausalito, and William Giobbi, Tiburon, both of Calif., assignors to A G Motor Corp., Fresno, Calif.
Filed Feb. 23, 1982, Ser. No. 351,497
Term of patent 14 years
U.S. Cl. D15—30





274,064
TAILPIECE FOR GUITAR
Yoshihiro Hoshino, Nagoya, Japan, assignor to Hoshino Gakki Co., Ltd., Nagoya, Japan
Filed Dec. 24, 1981, Ser. No. 334,176
Term of patent 14 years
U.S. Cl. D17—21

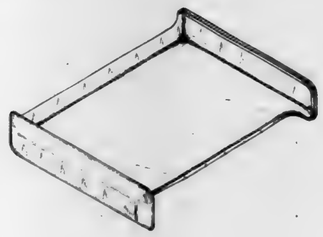




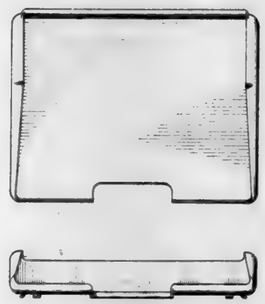
274,065
COMBINED HOLDER FOR VISITING CARDS, MEMO SHEETS AND A WRITING INSTRUMENT
Maurice Goutchat, 7, Grande Rue, 78850 Thiverval, France
Filed Dec. 3, 1981, Ser. No. 326,449
Claims priority, application France, Aug. 24, 1981, 81 2948
Term of patent 14 years
U.S. Cl. D19—78



274,066
DESK TRAY
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Apr. 15, 1982, Ser. No. 368,713
Term of patent 14 years
U.S. Cl. D19—92



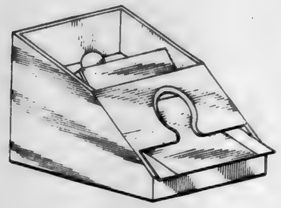
274,067
PAPER TRAY
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Jun. 21, 1982, Ser. No. 390,343
Term of patent 14 years
U.S. Cl. D19—92



274,068
GLASS ROSETTE FOR ENCLOSING CHANDELIER SOCKETS AND LIGHTBULBS OR THE LIKE
Igor Sverdlin, 1213 Neilson St., Apt. 5E, Far Rockaway, N.Y. 11691
Filed Dec. 14, 1981, Ser. No. 330,149
Term of patent 14 years
U.S. Cl. D26—138



274,069
DISPENSER FOR PLAYING CARDS OR THE LIKE
Stephen J. Fromm, 533 N. Shore Rd., Absecon, N.J. 08201
Filed Jul. 2, 1981, Ser. No. 279,766
Term of patent 14 years
U.S. Cl. D21—57



274,070
BALL TOY
Hansan Ma, Hoffman Estates, Ill., assignor to Milton Bradley International, Inc., Springfield, Mass.
Filed Feb. 12, 1982, Ser. No. 348,443
Term of patent 14 years
U.S. Cl. D21—59



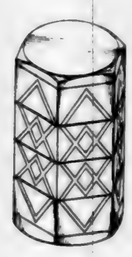
274,071
CHILD'S CRIB TOY
Norman R. Emms, Welwyn Garden City, England, and Peter D. Bryant, St. Helier, Channel Islands, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Mar. 19, 1982, Ser. No. 359,688
Claims priority, application United Kingdom, Dec. 3, 1981, 1003969
Term of patent 14 years
U.S. Cl. D21—149



274,072
CHILD'S CRIB TOY
Norman R. Emms, Welwyn Garden City, England, and Peter D. Bryant, St. Helier, Channel Islands, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Mar. 19, 1982, Ser. No. 359,693
Claims priority, application United Kingdom, Dec. 3, 1981, 1003970
Term of patent 14 years
U.S. Cl. D21—63



274,073
HEXAGONAL TWIST PUZZLE OR THE LIKE
Tonney Tung, Taipei, Taiwan, assignor to J.A.R. Sales, Inc., Santa Monica, Calif.
Filed Feb. 16, 1982, Ser. No. 349,178
Term of patent 14 years
U.S. Cl. D21—107

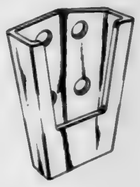


274,074
SECTIONAL PUZZLE
Randy G. Brunko, R.R. #1, Bertha, Minn. 56437
Filed Jul. 1, 1982, Ser. No. 394,271
Term of patent 14 years
U.S. Cl. D21—107

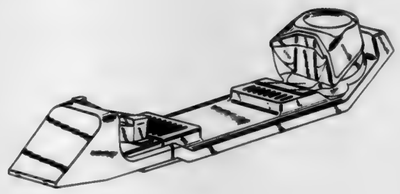


274,075
PULL TOY
Walter P. Doe, 292 Center St., East Aurora, N.Y. 14052
Filed Dec. 14, 1981, Ser. No. 330,219
Term of patent 14 years
U.S. Cl. D21—150

274,076
SUPPORT FOR DOORWAY EXERCISER OR SIMILAR ARTICLE
Jack V. Miller, Sierra Madre, Calif., assignor to Gravity Guidance, Inc., Pasadena, Calif.
Filed Aug. 10, 1981, Ser. No. 291,437
Term of patent 14 years
U.S. Cl. D21—191



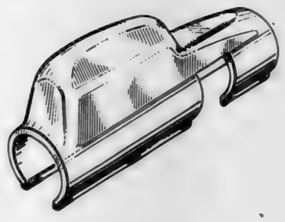
274,077
SKI BINDING
Hermann R. Segers, Munich, and Herbert H. Schultes, Fürstenfeldbruck, both of Fed. Rep. of Germany, assignors to Marker-Patentverwertungsgesellschaft mbH., Baar, Switzerland
Filed Aug. 4, 1981, Ser. No. 290,010
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, MR12400
Term of patent 14 years
U.S. Cl. D21—230



274,078
WATER WALKER
Fred N. Bland, Rte. 2, Box 103 K, Joelton, Tenn. 37080
Filed Nov. 12, 1981, Ser. No. 320,667
Term of patent 14 years
U.S. Cl. D21—238



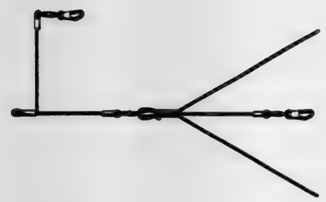
274,079
COVER FOR A RIFLE SIGHT
Ronald J. Schuster, P.O. Box 92, Claremont, Minn. 55924
Filed Feb. 8, 1982, Ser. No. 346,491
Term of patent 14 years
U.S. Cl. D22—7



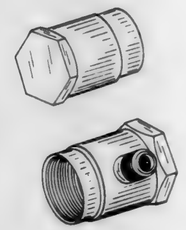
274,080
COMBINED FISH HOOK SET AND FISH LINE SNUBBER
Dale E. Hall, 9255 Defiance Cir., Sacramento, Calif. 95827
Filed May 10, 1982, Ser. No. 376,990
Term of patent 14 years
U.S. Cl. D22—30



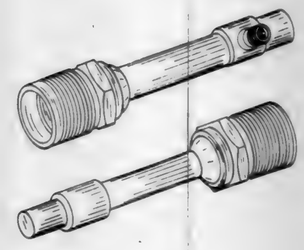
274,081
BOTTOM BOUNCER FOR TROLLING
Ronald E. Smith, P.O. Box 772, R.R. 1, Mitchell, S. Dak. 57301
Filed Jul. 9, 1982, Ser. No. 396,630
Term of patent 14 years
U.S. Cl. D22—30



274,082
SAFETY FLUSH VALVE FITTING FOR AUTOMOTIVE AIR CONDITIONER
Harrison Burruss, 3120 Teton Cir., Huntsville, Ala. 35810
Filed Aug. 17, 1981, Ser. No. 293,287
Term of patent 14 years
U.S. Cl. D23—21



274,083
SAFETY FLUSH VALVE FITTING FOR AUTOMOTIVE AIR CONDITIONER
Harrison Burruss, 3120 Teton Cir., Huntsville, Ala. 35810
Filed Aug. 17, 1981, Ser. No. 293,288
Term of patent 14 years
U.S. Cl. D23—21



274,084
VALVE HANDWHEEL
Sori Yanagi, Tokyo, Japan, assignor to Kitz Corporation, Tokyo, Japan
Filed Sep. 3, 1981, Ser. No. 299,100
Term of patent 14 years
U.S. Cl. D23—30



274,085
VALVE HANDWHEEL
Sori Yanagi, Tokyo, Japan, assignor to KITZ Corporation, Tokyo, Japan
Filed Sep. 3, 1981, Ser. No. 299,138
Term of patent 14 years
U.S. Cl. D23—30



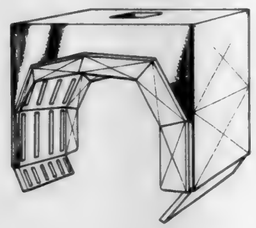
274,086
VALVE HANDWHEEL
Sori Yanagi, Tokyo, Japan, assignor to NSK-Warner K.K., Tokyo, Japan
Filed Sep. 3, 1981, Ser. No. 299,145
Claims priority, application Japan, Dec. 26, 1979, 54-445
Term of patent 14 years
U.S. Cl. D23—30



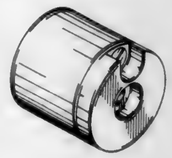
274,087
VALVE HANDWHEEL
Sori Yanagi, Tokyo, Japan, assignor to KITZ Corporation, Tokyo, Japan
Filed Sep. 3, 1981, Ser. No. 299,583
Term of patent 14 years
U.S. Cl. D23—30

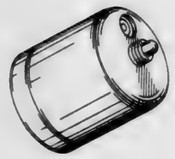


274,088
TRAVELLING CARRIER FOR HEATING ELEMENTS IN A PAINT SPRAY BOOTH
Hans E. Nilsson, Henan, and Ake Carlsson, Trollhättan, both of Sweden, assignors to Infrarodteknik AB, Vanersborg, Sweden
Filed Dec. 2, 1981, Ser. No. 326,404
Term of patent 14 years
U.S. Cl. D23—77



274,089
LASER FOR WEAPON SIMULATOR SYSTEM
James F. Morris, Jr., Apopka; Ramon Visovatti, Orlando, and Richard J. Wangler, Maitland, all of Fla., assignors to International Laser Systems, Inc., Orlando, Fla.
Filed Jan. 4, 1982, Ser. No. 337,030
Term of patent 14 years
U.S. Cl. D24—8

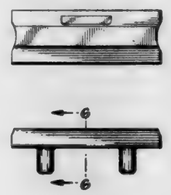




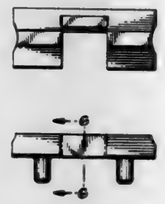
274,090
TRANSVERSE TIBIAL CUTTING JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,007
Term of patent 14 years
U.S. Cl. D24—26



274,091
FEMORAL CHAMFER CUTTING JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,008
Term of patent 14 years
U.S. Cl. D24—26



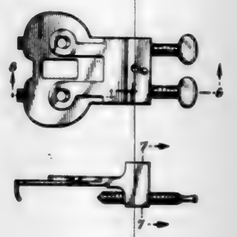
274,092
FEMORAL CHAMFER CUTTING JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,009
Term of patent 14 years
U.S. Cl. D24—26



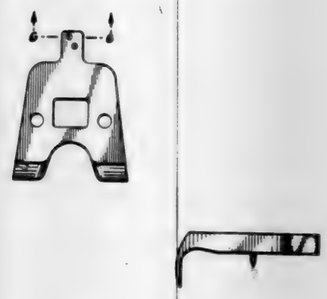
274,093
FEMORAL SPACER/TENSOR JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,011
Term of patent 14 years
U.S. Cl. D24—26



274,094
TIBIAL POSITIONING/FIXATION JIG FOR THE IMPLANATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,113
Term of patent 14 years
U.S. Cl. D24—26



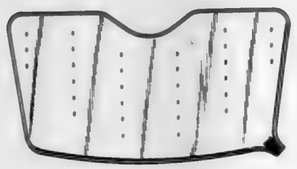
274,095
FEMORAL DRILL JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,125
Term of patent 14 years
U.S. Cl. D24—26



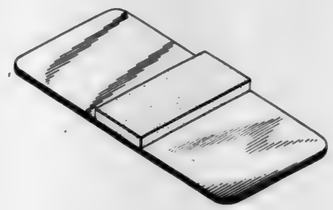
274,096
SURGICAL FORCEPS
George V. Shutt, 918 Willow Springs La., Glendora, Calif. 91740
Filed Feb. 16, 1982, Ser. No. 348,696
Term of patent 14 years
U.S. Cl. D24—27



274,097
HEAT THERAPEUTIC BELT
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Kenshiun Ishii, both of Tokyo, all of Japan, assignors to Combi Co. Ltd., Tokyo, Japan
Filed Jun. 30, 1981, Ser. No. 279,272
Term of patent 14 years
U.S. Cl. D24—34



274,098
DISPOSABLE SWAB APPLICATOR PACKAGE WITH STANDBY RESERVOIR
Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566
Division of Ser. No. 246,379, Mar. 23, 1981. This application Aug. 18, 1983, Ser. No. 524,419
Term of patent 14 years
U.S. Cl. D24—34



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF MAY, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. R. Wilfley and Sons, Inc.: *See—*
Weber, Richard B.; Wilfley, George M.; and Wilfley, George M., 4,451,155, Cl. 366-265.000.
AAKAC Industries, Inc.: *See—*
Williams, John E., Jr., 4,451,065, Cl. 280-284.000.
Aalbertsberg, Frederik W.: *See—*
Classens, Adrianus M. M.; Aalbertsberg, Frederik W.; and Van Marle, Hendrika G., 4,451,692, Cl. 174-23.00C.
AB Stil-Industri: *See—*
Sylven, Hans, 4,451,060, Cl. 280-801.000.
Abbott Laboratories: *See—*
Bujan, Albert F.; and Harms, Jack L., 4,451,255, Cl. 604-157.000.
Flentge, Charles A.; and Kirkemo, Curtis L., 4,451,652, Cl. 544-229.000.
Abe, Masaharu: *See—*
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Ishiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.
Abe, Seiko; Igashira, Toshihiko; and Watanabe, Kazuhide, to Nippon Soken, Inc. Fuel evaporator for internal combustion engine. 4,450,823, Cl. 123-549.000.
ABL Engineering Ltd.: *See—*
Driedger, Klaus U., 4,450,657, Cl. 52-79.900.
Ace Orthopedic Manufacturing, Inc.: *See—*
Fischer, David A., 4,450,834, Cl. 128-92.0EB.
Acker, Richard C., to Teledyne Republic Manufacturing. Pilot-operated valve. 4,450,869, Cl. 137-625.480.
Acomb, Byron H., to Union Carbide Corporation. Gas pressure reducing regulator. 4,450,858, Cl. 137-505.370.
Adachi, Takeshi: *See—*
Nakada, Akira; and Adachi, Takeshi, 4,450,745, Cl. 84-1.190.
Adam, Fritz G., to ITT Industries, Inc. Monolithic integrated reference voltage source. 4,451,744, Cl. 307-297.000.
Adamson, Ronald B.: *See—*
Cheng, Bo-Ching; and Adamson, Ronald B., 4,451,445, Cl. 423-645.000.
Advanced Micro Devices, Inc.: *See—*
Gwozdz, Peter S., 4,451,326, Cl. 156-643.000.
Advanced Semiconductor Materials Die Bonding, Inc.: *See—*
Lange, Bradley N., 4,451,197, Cl. 414-737.000.
Advanced Semiconductor Materials N.V.: *See—*
Hartemink, Gerrit A., 4,450,718, Cl. 73-202.000.
Advanced Sports Corp.: *See—*
Wood, Robert L., 4,451,240, Cl. 441-129.000.
Agatsuma, Kenji: *See—*
Itoh, Hideo; and Agatsuma, Kenji, 4,451,745, Cl. 307-475.000.
Agency of Industrial Science and Technology: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,451,678, Cl. 568-902.000.
Terada, Shoji, 4,451,415, Cl. 264-43.000.
Agfa-Gevaert Aktiengesellschaft: *See—*
Dolezalek, Friedrich; Koepke, Gunther; and Rendelmann, Ulrich, 4,451,497, Cl. 427-39.000.
Engelsmann, Dieter; Lippl, Leo; Nicko, Reinhard; Stiefel, Peter; and Lermann, Peter, 4,451,011, Cl. 242-71.000.
AGFA-GEVAERT, N.V.: *See—*
Pollet, Robert J.; Vandenberghe, Antoon L.; and Spriet, Roger A., 4,451,555, Cl. 430-445.000.
Air Products and Chemicals, Inc.: *See—*
Cheng, John T. C.; and Langsam, Michael, 4,451,625, Cl. 526-62.000.
Daly, Francis P.; and Wilhelm, Frederick C., 4,451,687, Cl. 585-489.000.
Klee, David J.; and Nelson, Peter C., 4,451,002, Cl. 236-101.00R.
Aisin Seiki Kabushiki Kaisha: *See—*
Harada, Kuniyoshi; Suzumura, Nobuyasu; and Fujie, Naofumi, 4,451,887, Cl. 364-424.000.
Ajima, Shigetoshi: *See—*
Fujimaki, Hiroto; Ajima, Shigetoshi; and Watanabe, Kazuhiro, 4,451,590, Cl. 523-155.000.
Ajinomoto Company, Inc.: *See—*
Yasuda, Naohiko; Okutsu, Masaru; Iwagami, Hisao; Nakamiya, Teruaki; and Takase, Ichiro, 4,451,399, Cl. 260-239.100.
Akagi, Takao; Yamaguchi, Shinji; Maeda, Katsura; and Yamamoto, Kazuo, to Kuraray Co., Ltd. Synthetic fibers imparted with an irregular surface and a process for their production. 4,451,534, Cl. 428-372.000.
Akashi, Goro: *See—*
Nagao, Makoto; Nahara, Akira; and Akashi, Goro, 4,451,501, Cl. 427-40.000.
Akiflev, Oleg N.: *See—*
Kalvinsh, Ivars Y.; Vinogradov, Alexei V.; Veveris, Maris M.; Makarova, Inna I.; Birman, Anatoly S.; Barmotin, Georgy V.; and Akiflev, Oleg N., 4,451,485, Cl. 424-316.000.
Akita, Shigeyuki: *See—*
Kodera, Masao; and Akita, Shigeyuki, 4,451,909, Cl. 367-99.000.
Akita, Yoshio; Teshima, Takanori; Maruyama, Toshinori; and Torii, Koshi, to Nippondenso Co., Ltd. Vehicle mounted voltage regulator. 4,451,774, Cl. 320-64.000.
Akiyama, Hiroyuki; Hatakeyama, Hidewo; Shimoyashiki, Nobuyoshi; Momose, Yoshiaki; and Imai, Fusao, to Japan Styrene Paper Corporation. Method of producing extruded plate-like polystyrene foam. 4,451,417, Cl. 264-53.000.
Aktiebolaget Draco: *See—*
Olsson, O. A. Torsten; Svensson, Leif A.; and Wetterlin, Kjell I. L., 4,451,663, Cl. 560-29.000.
Akzo NV: *See—*
Brand, Johannes, 4,451,651, Cl. 544-221.000.
Alberta Research Council: *See—*
Sacuta, Aleksy, 4,450,909, Cl. 166-248.000.
Aldava, Michael B.: *See—*
Forte, Don A.; and Aldava, Michael B., 4,451,762, Cl. 315-87.000.
Alexander, William H.; and Burger, Joe R., to Vapor Corporation. Lubricated split plug valve. 4,450,854, Cl. 137-246.120.
Alexandre, Claude, to R.M.S. Ingenierie et Financiere. Force sensing device for measurement apparatus. 4,450,922, Cl. 177-211.000.
Alexeenko, Natalia V.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.
Alfio, Po, to Angelo Po Grandi Impianti S.p.A. Automatic machine for cooking soup-paste, rice, pot herbs or other food-stuffs in water. 4,450,757, Cl. 99-327.000.
Alioa, Daniel; and Stevens, Richard E. Hand cart. 4,451,053, Cl. 280-47.260.
Allard, Roland L.: *See—*
Huc, Alain R.; Allard, Roland L.; and Chavrier, Christian L., 4,451,397, Cl. 260-123.700.
Allcock, Harry R.; and Neenan, Thomas X., to Research Corporation. Heparinized polyorganophosphazenes. 4,451,647, Cl. 536-21.000.
Allen, Joseph C.; Gillespie, Robert E.; and Burnett, David B., to Texaco Inc. Superheated solvent method for recovering viscous petroleum. 4,450,913, Cl. 166-303.000.
Allen, Robert H., to University Patents, Inc. Preparation of samples for vitamin B12 and/or folate assay and assay. 4,451,571, Cl. 436-505.000.
Allied Corporation: *See—*
Belden, Reed H.; Li, Hsin L.; and Sawheny, Dulari L., 4,450,891, Cl. 164-463.000.
Li, Hsin L.; Oswald, Hendrikus J.; and Liland, Alfred L., 4,450,607, Cl. 28-257.000.
Li, Hsin L., 4,450,997, Cl. 226-97.000.
Allied Gator, Inc.: *See—*
Ramun, Michael; and Ramun, John, 4,450,625, Cl. 30-134.000.
Allingham, Robert P.: *See—*
Weeks, Paul D.; and Allingham, Robert P., 4,451,661, Cl. 549-417.000.
Allison, William D. Vehicle suspension system. 4,451,054, Cl. 280-104.000.
Alper, Daniel D., to Burroughs Corp. Constant spacing document feeder. 4,451,027, Cl. 271-10.000.
Alt, Gerhard H., to Monsanto Company. Herbicidal 2-haloacetanilides. 4,451,285, Cl. 71-105.000.
Aluminum Company of America: *See—*
Libby, Stephen C., 4,451,443, Cl. 423-432.000.
Prescott, Ernest; and Cochran, William C., 4,451,302, Cl. 148-13.100.
American Can Company: *See—*
Bauer, Carl F.; Hussey, James H.; and Langston, Benny, 4,451,287, Cl. 75-24.000.
Odorzynski, Thomas W.; and Knott, Jack E., II, 4,451,599, Cl. 524-169.000.
American Cyanamid Company: *See—*
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,451,479, Cl. 424-273.00P.
American Home Products Corporation: *See—*
Sarantakis, Dimitrios, 4,451,394, Cl. 260-112.50S.
American Hospital Supply Corporation: *See—*
Arrhenius, Gustaf O., 4,451,383, Cl. 252-70.000.

American Interpac Corporation: *See—*
Herrera-Gutierrez, Jesus, 4,451,246, Cl. 493-215.000.
American Safety Equipment Corporation: *See—*
Ziv, Avraham, 4,451,062, Cl. 280-806.000.
Amersham International plc: *See—*
Rimmer, John, 4,451,451, Cl. 424-1.100.
AMF Inc.: *See—*
Bains, James A., Jr., 4,451,797, Cl. 330-134.000.
AMP Incorporated: *See—*
Beinhaur, Ernest L., 4,451,696, Cl. 174-92.000.
Bianchi, Edward A., 4,450,621, Cl. 29-828.000.
Bricker, Harry C., Jr.; Gutter, David H.; and Stull, Robert S., 4,451,099, Cl. 339-14.00R.
Dola, Frank P.; and Lauterbach, John H., 4,451,107, Cl. 339-143.00R.
Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, 4,451,818, Cl. 339-75.0MP.
Ampex Corporation: *See—*
Noel, Stan L., 4,451,859, Cl. 360-75.000.
Amrany, Daniel, to Intel Corporation. MOS High voltage switching circuit. 4,451,748, Cl. 307-578.000.
Anahara, Meiji: *See—*
Kawabata, Susumu; Niimi, Hiroshi; Anahara, Meiji; Suzuki, Yoshihisa; and Omori, Hiroshi, 4,450,678, Cl. 57-333.000.
Ancona, Frank A. Bottom fishing lure. 4,450,645, Cl. 43-42.250.
Anderson, Carl P., to Ricoh Systems, Inc. Electrophotographic copying apparatus having an automatic feed arrangement and an end-of-feed sensing assembly. 4,451,138, Cl. 355-14.0SH.
Anderson, James W., to Anderson, Sarah, a part interest. Moisture tester. 4,451,781, Cl. 324-65.00R.
Anderson, Sarah: *See—*
Anderson, James W., 4,451,781, Cl. 324-65.00R.
Andersson, Bengt, to KemaNord AB. Resin-impregnated fibre composite materials and a process for their manufacture. 4,451,585, Cl. 521-59.000.
Ando, Ken; Tanaka, Masaaki; and Kawagoe, Michio, to Toyota Jidosha Kabushiki Kaisha. Exhaust gas recirculation control system with atmospheric pressure compensation valve. 4,450,824, Cl. 123-569.000.
Ando, Takao: *See—*
Yoshikumi, Chikao; Sakurai, Katsuo; Omura, Yoshio; Nohara, Mayumi; Ando, Takao; and Motokawa, Isamu, 4,451,457, Cl. 424-180.000.
Andoh, Akiwo: *See—*
Ohkubo, Tadahiko; Endo, Tetsuhiko; and Andoh, Akiwo, 4,451,007, Cl. 242-18.00R.
Andreev, Anatoly A.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.
Andreini, Rockne J., to Union Carbide Corporation. Method for producing low hydrogen content in steels produced by subsurface pneumatic refining. 4,451,288, Cl. 75-60.000.
Angelo Po Grandi Impianti S.p.A.: *See—*
Alfio, Po, 4,450,757, Cl. 99-327.000.
Angle, Ellwyn R.; and Wilkerson, John L., to Hughes Aircraft Company. Radio frequency laser pumping system. 4,451,766, Cl. 315-248.000.
Annergren, Goran E.; Hagglund, Tjell-Ake; Lindblad, Per-Olov; Lindstrom, Lars-Ake T.; and Nasman, Lars E., to SCA Development Aktiebolag. Method for delignification of ligno-cellulose containing fiber material with an alkali-oxygen extraction stage. 4,451,332, Cl. 162-30.100.
Anthony, Frank H.; and Coy, Vernon W., to Anthony, Frank H. Kiln temperature control device. 4,451,726, Cl. 219-413.000.
Aoki, Hideki: *See—*
Okuda, Kensuke; Nagai, Hirosi; Fujimaki, Hiroto; Tomonaga, Atsushi; and Aoki, Hideki, 4,451,235, Cl. 433-201.000.
Aoyagi, Kenichi: *See—*
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, 4,450,803, Cl. 123-308.000.
Aoyagi, Yukio: *See—*
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,451,893, Cl. 364-494.000.
Aoyama, Kikuro, to Nippon Gakki Seizo Kabushiki Kaisha. Muffler assembly for a piano. 4,450,747, Cl. 84-220.000.
Applegate, Clark L.: *See—*
Minnich, George E.; and Applegate, Clark L., 4,451,769, Cl. 318-689.000.
Arai, Masayuki; and Ogasawara, Terumi, to Asahi Seimitsu Kabushiki Kaisha. Automatic diaphragm control device for a closed circuit television camera. 4,451,851, Cl. 358-228.000.
Archer, John R.: *See—*
McGlashan, Kenneth W.; and Archer, John R., 4,451,807, Cl. 335-211.000.
Ares, Inc.: *See—*
Gillum, Richard R., 4,450,750, Cl. 89-33.0SF.
Arfaei, Ahmad: *See—*
Bennett, Everett W.; and Arfaei, Ahmad, 4,451,550, Cl. 430-176.000.
Arimatsu, Toshio, to Sumitomo Rubber Industries, Ltd. Method for measuring hardness of rubber and plastics and a hardness tester for use therein. 4,450,713, Cl. 73-81.000.
Arjomari-Prioux: *See—*
Vallee, Antoine; and Goguelin, Michel, 4,451,539, Cl. 428-515.000.
Armco Inc.: *See—*
Cowan, William S., 4,451,170, Cl. 403-57.000.
Galle, Edward M., Jr., 4,451,056, Cl. 285-3.000.
Armour Pharmaceutical Company: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,451,395, Cl. 260-112.50T.
Arnold, Bruce C., to Twin Disc, Incorporated. Shaft brake for marine propulsion system. 4,451,238, Cl. 440-75.000.
Arrhenius, Gustaf O., to American Hospital Supply Corporation. Recyclable hot pad. 4,451,383, Cl. 252-70.000.
Arrow Machine, Inc.: *See—*
Ricard, Paul R.; and Goclowski, Charles, 4,450,707, Cl. 72-389.000.
Arvidsson, Ulf K.; and Gidlund, Per A. L., to Atlas Copco Aktiebolag. Power operated percussion tool having gripping means. 4,450,921, Cl. 173-162.00H.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ikegami, Tadashi; Takaya, Katsuhiko; and Yoneda, Haruyuki, 4,451,573, Cl. 502-113.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Sato, Shigetada, 4,451,125, Cl. 350-465.000.
Asahi Seimitsu Kabushiki Kaisha: *See—*
Arai, Masayuki; and Ogasawara, Terumi, 4,451,851, Cl. 358-228.000.
Asano, Yoshio: *See—*
Wada, Chuzoh; Matsuda, Yoshikazu; and Asano, Yoshio, 4,451,228, Cl. 431-76.000.
Asbury, Charles E.: *See—*
Clausen, Victor H.; and Asbury, Charles E., 4,451,515, Cl. 428-112.000.
Aschauer, Heinz: *See—*
Vertesy, Laszlo; Mracek, Miroslav; Braunitzer, Gerhard; and Aschauer, Heinz, 4,451,455, Cl. 424-177.000.
ASEA Aktiebolag: *See—*
Brogardh, Torgny; Engstrom, Olof; and Ovren, Christer, 4,451,730, Cl. 250-227.000.
Ashida, Hitoshi, to Takeda Riken Kogyo Kabushiki Kaisha. Spectrum analyzer. 4,451,782, Cl. 324-77.00C.
Ashland Oil, Inc.: *See—*
Grote, Dace; Grimm, Robert A.; and Norton, Richard V., 4,451,670, Cl. 562-606.000.
Ashley, Jonathan J. Tabular puzzle. 4,451,040, Cl. 273-153.00S.
Ashley, W. B.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.
Asnis, Stanley E.; and Borzone, Rocco R., to Howmedica, Inc. Method and system for inserting a surgical wire. 4,450,835, Cl. 128-92.0EB.
Assent, Hans C.: *See—*
Tecl, Bohuslav; Fahrbach, Erich; Knoke, Jurgen; and Assent, Hans C., 4,451,520, Cl. 428-198.000.
Aswell, Cecil J., to Mostek Corporation. Power supply control for integrated circuit. 4,451,742, Cl. 307-66.000.
AT&T Technologies, Inc.: *See—*
Hodgson, Sten E.; and Gemra, Richard J., 4,451,104, Cl. 339-99.00R.
Ataka, Tatsuaki: *See—*
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,451,348, Cl. 204-290.00R.
Atanassov, Haralampi A.: *See—*
Makedonski, Boris G.; and Atanassov, Haralampi A., 4,451,269, Cl. 51-303.000.
Atari, Inc.: *See—*
Mayer, Steven T.; and Emmons, Lawrence D., 4,451,900, Cl. 364-900.000.
Atchley, Frank W. Surgical aspirator with poppet control valve. 4,451,257, Cl. 604-119.000.
Atkins, Ronald L.; Hollins, Richard A.; Norris, William P.; Nielsen, Arnold T.; and Wilson, William S., to United States of America, Navy. Methods of preparing pentanitrotoluene. 4,451,681, Cl. 568-932.000.
Atkinson, Ivor B.; and Holdstock, Barry C. Hydrogel contact lenses for permanent wear. 4,451,630, Cl. 526-261.000.
Atlantic Richfield Company: *See—*
Grey, Roger A., 4,451,672, Cl. 568-384.000.
Khac, Bi L., 4,451,617, Cl. 525-203.000.
Lichtin, Norman N.; and Vijayakumar, Kalambella M., 4,451,342, Cl. 204-157.10R.
Sofranko, John A.; and Gaffney, Anne M., 4,451,666, Cl. 560-204.000.
Tanner, David P., 4,451,538, Cl. 428-447.000.
Atlas Copco Aktiebolag: *See—*
Arvidsson, Ulf K.; and Gidlund, Per A. L., 4,450,921, Cl. 173-162.00H.
Audi Nsu Auto Union Aktiengesellschaft: *See—*
Schaper, Siefried, 4,450,610, Cl. 29-156.50R.
Auinger, Herbert, to Siemens Aktiengesellschaft. Three-phase winding for a high-voltage machine. 4,451,751, Cl. 310-184.000.
Auto-Systems & Service, Inc.: *See—*
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W., 4,450,739, Cl. 83-23.000.
Automated Production Systems Corporation: *See—*
Twyman, Noel H., 4,451,352, Cl. 208-11.00R.

Avco Corporation: *See—*
Libertini, Zoltan L.; and Hartel, Edward O., 4,451,200, Cl. 415-110.000.
Naik, Subhash K., 4,451,431, Cl. 420-588.000.
Avery, Ronald G.; and Kahl, William G., Jr., to Cerberus AG. Infrared intrusion detector with optical pattern locators. 4,451,733, Cl. 250-342.000.
AVX Corporation: *See—*
Philofsky, Elliott; Parkinson, Ward; and Wilson, Dennis, 4,451,845, Cl. 357-72.000.
Awano, Toshimi: *See—*
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,041, Cl. 273-167.00H.
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,042, Cl. 273-171.000.
Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A.: *See—*
Silvestrini, Bruno; and Baiocchi, Leandro, 4,451,477, Cl. 424-273.00N.
Azuma, Yoshimasa: *See—*
Sakabe, Yukio; Nishioka, Goro; Azuma, Yoshimasa; and Mori, Susumu, 4,451,869, Cl. 361-309.000.
Azumi, Ichiro: *See—*
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.
B. F. Goodrich Company, The: *See—*
Genovese, David E., 4,451,016, Cl. 244-107.000.
Lee, Biing-Lin, 4,451,595, Cl. 523-351.000.
Okamoto, Yoshihisa, 4,451,618, Cl. 525-349.000.
Baba, Shirou, to Hitachi, Ltd. Digital semiconductor integrated circuit and digital control system using the same. 4,451,891, Cl. 364-431.120.
Babcock & Wilcox Company, The: *See—*
Keyes, Marion A., IV; and Salmen, Richard A., deceased, 4,450,722, Cl. 73-293.000.
Orcutt, Donald R., 4,450,872, Cl. 138-149.000.
Babczinski, Peter: *See—*
Knops, Hans-Joachim; Babczinski, Peter; Eue, Ludwig; and Schmidt, Robert, 4,451,282, Cl. 71-92.000.
Bader Brothers Limited: *See—*
Bader, Robert, 4,450,638, Cl. 40-158.00R.
Bader, Robert, to Bader Brothers Limited. Photograph display device. 4,450,638, Cl. 40-158.00R.
Bagshaw, David P.: *See—*
Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T., 4,450,868, Cl. 137-625.290.
Bailey, Alfred J., to Massey-Ferguson Services N.V. Seed drills. 4,450,779, Cl. 111-52.000.
Bailey, Hillard W. Nutcracker table. 4,450,761, Cl. 99-580.000.
Bains, James A., Jr., to AMF Inc. AGC Controller for pulsed system. 4,451,797, Cl. 330-134.000.
Baiocchi, Leandro: *See—*
Silvestrini, Bruno; and Baiocchi, Leandro, 4,451,477, Cl. 424-273.00N.
Baird, Phillips C.; and Duff, Raymond J., to Isotronics, Inc. System for packaging of electronic circuits. 4,451,540, Cl. 428-615.000.
Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., to Monsanto Company. Animal feed supplement having reduced corrosion characteristics. 4,451,486, Cl. 424-317.000.
Baker Oil Tools, Inc.: *See—*
Callihan, Rudy B.; and Stone, Lyndon R., 4,450,912, Cl. 166-289.000.
Baker, Wilfred E.: *See—*
Sperrazza, Joseph; Liu, James C. C.; and Baker, Wilfred E., 4,451,178, Cl. 405-258.000.
Bakermans, Johannes C. W.: *See—*
Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, 4,451,818, Cl. 339-75.0MP.
Balazs, Janos; Bano, Tibor; Kollar, Arpad; Kovacs, Tibor; Lengyel, Denes; and Mozer, Ferenc, to Richter Gedeon Vegyeszeti Gyar Rt. Apparatus for producing tempered plate parts. 4,450,608, Cl. 29-33.00R.
Ball, Geoffrey W. Gas monitor. 4,451,816, Cl. 338-34.000.
Bandura, Vitaly: *See—*
Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., 4,450,619, Cl. 29-564.100.
Bank, Willaim: *See—*
Shapiro, Jay B.; and Bank, Willaim, 4,450,640, Cl. 40-596.000.
Banks, Ridgway M. Single wire nitinol engine. 4,450,686, Cl. 60-527.000.
Bano, Tibor: *See—*
Balazs, Janos; Bano, Tibor; Kollar, Arpad; Kovacs, Tibor; Lengyel, Denes; and Mozer, Ferenc, 4,450,608, Cl. 29-33.00R.
Bansal, Anil: *See—*
Cheney, Richard F.; Bansal, Anil; and Kimmel, Edward R., 4,450,724, Cl. 73-432.00R.
Bapst, Jean-Daniel: *See—*
Boisvert, Pierre U.; and Bapst, Jean-Daniel, 4,451,510, Cl. 428-8.000.
Barabas, Eugene S., to GAF Corporation. Rust removal process. 4,451,296, Cl. 134-4.000.
Baratta, Suzanne: *See—*
Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., 4,451,492, Cl. 426-564.000.
Barber, James C., to James C. Barber and Associates, Inc. Production of fluid fertilizer from phosphorus furnace waste stream. 4,451,277, Cl. 71-36.000.
Barcana Ltee: *See—*
Boisvert, Pierre U.; and Bapst, Jean-Daniel, 4,451,510, Cl. 428-8.000.
Barclay, John D.; and Harmon, Rawson B., Jr., to Barclay, John D.; Harmon, Rawson B., Jr.; and McIntosh, John N. Additive for improving performance of liquid hydrocarbon fuels. 4,451,266, Cl. 44-53.000.
Barlow, Anthony; and Meeks, Lawrence A., to National Distillers and Chemical Corporation. Heat distortion-resistant thermoplastic semiconductive composition. 4,451,536, Cl. 428-383.000.
Barmotin, Georgy V.: *See—*
Kalvinsh, Ivars Y.; Vinogradov, Alexei V.; Veveris, Maris M.; Makarova, Inna I.; Birman, Anatoly S.; Barmotin, Georgy V.; and Akifiev, Oleg N., 4,451,485, Cl. 424-316.000.
Barney, George M.; and Michaelis, Paul R., to Texas Instruments Incorporated. Miniature biofeedback instrument. 4,450,843, Cl. 128-690.000.
Barrows, Robert E.: *See—*
Davenport, Henry A.; and Barrows, Robert E., 4,450,938, Cl. 184-42.000.
Barry, Leon G.; and Rieman, Willis E., to Fasco Controls Corporation. Non-resettable thermal fuse. 4,451,814, Cl. 337-407.000.
Barthe, Marie-Pierre; Battigelli, Jean A.; and Bouquet, Francois. Method and apparatus for glass fiberization. 4,451,276, Cl. 65-6.000.
Bartoszek-Loza, Rosemary, to Standard Oil Company, The. Photoinitiators for decarboxylation reactions. 4,451,343, Cl. 204-158.00R.
BASF Aktiengesellschaft: *See—*
Denzinger, Walter; Goertz, Hans-Helmut; Sanner, Axel; and Hartmann, Heinrich, 4,451,582, Cl. 521-38.000.
Graser, Fritz; and Wickenhaeuser, Gerhard, 4,451,654, Cl. 546-34.000.
Hansen, Hanspeter; Merkle, Hans; and Mueller, Albrecht, 4,451,378, Cl. 210-725.000.
Kranz, Joachim; Habermann, Wolfgang; Distler, Harry; Knittel, Helmut; Hock, Karl-Ludwig; Brunnmueller, Fritz; and Schneider, Rolf, 4,451,339, Cl. 204-91.000.
Patsch, Manfred; and Ruske, Manfred, 4,451,398, Cl. 260-154.000.
Wisseroth, Karl, 4,451,088, Cl. 299-11.000.
BASF Farben + Fasern AG: *See—*
Meisner, Roland A., 4,450,785, Cl. 118-626.000.
Basinger, Richard A.: *See—*
Hemmerle, Clayton J.; and Basinger, Richard A., 4,450,884, Cl. 160-371.000.
Basista, Heinrich; and Glatzel, Erhard, to Carl-Zeiss-Stiftung. Photographic lens of continuously variable focal length. 4,451,124, Cl. 350-427.000.
Basrai, Habil S.; and Rajagopal, Ganesh, to Ford Motor Company. Electro-hydraulic proportional actuator. 4,450,753, Cl. 91-35.000.
Batchelor, Gary R.; Russo, Carmen A., Sr.; and Bradley, Martin, to Wheaton Industries. Methods and compositions for producing decorative frosting effects on glass. 4,451,329, Cl. 156-660.000.
Batiuk, Walter. Method of improving the corrosion resistance of chemical conversion coated aluminum. 4,451,304, Cl. 148-6.270.
Battelle Memorial Institute: *See—*
Schneider, Michel; Chevreux, Pierre; and Guillot, Christian, 4,451,568, Cl. 435-181.000.
Batterson, William D.: *See—*
Striese, Jim G.; Iafrei, John E.; and Batterson, William D., 4,451,071, Cl. 292-341.180.
Battigelli, Jean A.: *See—*
Barthe, Marie-Pierre; Battigelli, Jean A.; and Bouquet, Francois, 4,451,276, Cl. 65-6.000.
Bauer, Carl F.; Hussey, James H.; and Langston, Benny, to American Can Company. Flux in recovery of aluminum in reverberatory furnace. 4,451,287, Cl. 75-24.000.
Bauer, Richard, Jr.: *See—*
Tupper, Myron D.; and Bauer, Richard, Jr., 4,450,738, Cl. 82-82.000.
Baugh, John L.; and Montgomery, James W., to Hughes Tool Company. Device for tapping and plugging a fluid conductor. 4,450,857, Cl. 137-318.000.
Baum, William N.: *See—*
Lok, Roger; Freeman, John P.; and Baum, William N., 4,451,557, Cl. 430-505.000.
Baumann, Horst: *See—*
Willmund, Wolf-Dieter; Biermann, Manfred; Baumann, Horst; Friese, Hans-Herbert; and Pieper, Friedrich, 4,451,261, Cl. 8-94.220.
Baumann, Marcus: *See—*
Wenk, Paul; Breitenstein, Werner; and Baumann, Marcus, 4,451,462, Cl. 424-248.550.
Baxter Travenol Laboratories, Inc.: *See—*
Geissler, Ulrich C.; Grode, Gerald A.; Stith, William J.; and Williams, Ronald A., 4,451,259, Cl. 604-408.000.
Bayer Aktiengesellschaft: *See—*
Busse, Wolf-Dieter; Krauthausen, Edmund; and Mardin, Mithat, 4,451,475, Cl. 424-270.000.
Dickore, Karlfried; and Kuhle, Engelbert, 4,451,406, Cl. 260-465.00D.
Elbe, Hans-Ludwig; Kramer, Wolfgang; Buchel, Karl H.; Lurssen, Klaus; Reinecke, Paul; and Scheinpflug, Hans, 4,451,281, Cl. 71-92.000.

Frank, Walter; Bendszus, Otto; Meixner, Jurgen; Freier, Hans J.; and Traenckner, Hans-Joachim, 4,451,509, Cl. 427-54.100.

Knops, Hans-Joachim; Babczinski, Peter; Eue, Ludwig; and Schmidt, Robert, 4,451,282, Cl. 71-92.000.

Ostlinning, Edgar; Idel, Karsten; Neuner, Otto; and Bottenbruch, Ludwig, 4,451,644, Cl. 528-388.000.

Reinehr, Ulrich; Herbertz, Toni; and Spilgies, Gunter, 4,451,423, Cl. 264-182.000.

BBC Brown, Boveri & Company, Limited: *See*—
Skala, Karel, 4,451,740, Cl. 290-40.00C.

Beacon Chemical Company, Inc.: *See*—
Kerr, Stuart R., III; and Meshirer, Milton, 4,451,529, Cl. 428-319.300.

Beal, Roy E., to Copper Development Association, Inc. Soldering composition and method of use. 4,451,541, Cl. 428-658.000.

Beale, Robert J.; Bradbury, Allen G. W.; Medcalf, Darrell G.; and Romig, William R., to General Foods Corporation. Sugar beet pulp bulking agent and process. 4,451,489, Cl. 426-254.000.

Beard, Walter C. Viscous flow tilt valve for pressurized container. 4,450,984, Cl. 222-402.220.

Beard, Walter C. Reclosable valve with separate internal seal means and seal removing means therefor. 4,450,985, Cl. 222-402.220.

Beavers, Allan E., to T. A. Pelsue Company. Free-standing collapsible tent frame structure and hub assembly therefor. 4,450,851, Cl. 135-109.000.

Beckenhauer, Robert L., to Memorex Corporation. Method and apparatus for decoding binary data. 4,451,819, Cl. 340-347.0DD.

Beckman Instruments, Inc.: *See*—
Oh, Chan S.; and Kramer, Gordon, 4,451,122, Cl. 350-334.000.

Beckmann, Heinrich; Ottersbach, Jens; Roider, Willibald; and Saumweber, Eckart, to Knorr-Bremse GmbH. Anti-lock device for regulating the brake pressure of vehicle brakes. 4,451,889, Cl. 364-426.000.

Bedenbender, John W.: *See*—
Weber, Richard M.; and Bedenbender, John W., 4,450,928, Cl. 181-121.000.

Bedford, Keith: *See*—
Walker, Stephen E.; Bedford, Keith; and Eaves, Terence, 4,450,877, Cl. 141-1.000.

Bedrosian, Elliot P., to Siecor Corporation. Telephone cable reel. 4,451,013, Cl. 242-118.400.

Beers, David G.: *See*—
Sharpe, Verlos G.; and Beers, David G., 4,450,692, Cl. 62-233.000.

Behrend, Lothar; Knothe, Erich; Melcher, Franz-Josef; and Ober, Jurgen, to Sartorius GmbH. Electronic weighing scale. 4,450,923, Cl. 177-212.000.

Behrend, Lothar; Knothe, Eric; Melcher, Franz-Josef; and Ober, Jurgen, to Sartorius GmbH. Electronic weighing scale. 4,450,924, Cl. 177-212.000.

Beinhaur, Ernest J. , to AMP Incorporated. Toolless splice sealant device. 4,451,696, Cl. 174-92.000.

Belardinelli, Giorgio: *See*—
Sianesi, Dario; Pasetti, Adolfo; and Belardinelli, Giorgio, 4,451,646, Cl. 528-401.000.

Belden, Reed H.; Li, Hsin L.; and Sawheny, Dulari L., to Allied Corporation. Method of and apparatus for continuous casting using an auxiliary graphite chill roll. 4,450,891, Cl. 164-463.000.

Belinkoff, Irving R.; and Satkunas, Bruno. Rotary cooking device. 4,450,758, Cl. 99-332.000.

Bell, Michael. Boots with quick release means. 4,450,634, Cl. 36-138.000.

Bell Telephone Laboratories, Incorporated: *See*—
Burke, Edmund T.; Gorman, Patrick H., II; Henderson, James A., Jr.; and Smith, Nicholas K., 4,451,705, Cl. 179-27.00D.

Fuls, Ellis N.; Lifshitz, Nadia; and Vaidya, Sheila, 4,450,620, Cl. 29-571.000.

Papathomas, Thomas V.; Scuderi, Rudolph, deceased; White, May S., co-executrix; and D'Ambrose, Camille, co-executrix, 4,451,773, Cl. 320-59.000.

Rucker, Lucien M., III, 4,451,747, Cl. 307-549.000.

Winkelman, Max D., 4,451,704, Cl. 179-18.00F.

Bell, William T., to Schlumberger Technical Corporation. Shaped charge and method of making it. 4,450,768, Cl. 102-307.000.

Bellamy, Robert L., Jr.; Bersot, James D.; Leonard Thomas K.; and Muse, Richard R., to International Business Machines Corporation. Fastening element and a fastener assembly using the same. 4,451,190, Cl. 411-337.000.

Beltone Electronics Corporation: *See*—
Waxman, Ronald, 4,451,709, Cl. 179-107.00S.

Beltz, John P.; and Hang, Kenneth W., to RCA Corporation. Automatic liquid dispensing apparatus for spinning surface of uniform thickness. 4,451,507, Cl. 427-240.000.

Ben-Gurion University of The Negev Research and Development Authority: *See*—
Trop, Moshe; and Livne, Avinoam, 4,451,491, Cl. 426-555.000.

Bend Research, Inc.: *See*—
Roman, Ian C., 4,451,270, Cl. 55-38.000.

Bendig, Mark W., to OCLC Online Computer Library Center, Incorporated. Viewdata system and apparatus. 4,451,701, Cl. 179-2.0TV.

Bendix Corporation, The: *See*—
Vick, Ralph L., 4,450,870, Cl. 138-31.000.

Bendszus, Otto: *See*—
Frank, Walter; Bendszus, Otto; Meixner, Jurgen; Freier, Hans J.; and Traenckner, Hans-Joachim, 4,451,509, Cl. 427-54.100.

Bennes Marrel: *See*—
Tardy, Maurice, 4,450,865, Cl. 137-625.600.

Bennett, Everett W.; and Arfaei, Ahmad, to James River Graphics, Inc. Vesicular film and composition with phenoxy resin matrix. 4,451,550, Cl. 430-176.000.

Benael, James B. Pole type speaker support structure. 4,451,019, Cl. 248-1.000.

Bensley, Douglas W. Footwear. 4,450,632, Cl. 36-17.0PW.

Beppu, Kazuo: *See*—
Kobayashi, Setsuo; Beppu, Kazuo; Shimizu, Hiroshi; Ogawa, Satoshi; and Kotani, Ryotaro, 4,451,569, Cl. 435-188.000.

Berardinelli, Frank M.: *See*—
Cincotta, David E.; and Berardinelli, Frank M., 4,451,611, Cl. 525-51.000.

Berg, Morris, to General Motors Corporation. Pulverizing sputtered deposits to make powdered metal. 4,451,429, Cl. 419-33.000.

Berger, Frank M.; DeGraw, Joseph I., Jr.; and Johnson, Howard L., to Berger, Frank M. T-Butyl-phenoxy-alkylene esters of benzoic and nicotinic acids, compositions containing same and their antihistaminic method of use. 4,451,474, Cl. 424-266.000.

Bergman, Ulf C., to Mechanical Technology Inc. Safety valve. 4,450,859, Cl. 137-516.290.

Bergougnou, Maurice A.: *See*—
Meunier, Georges; and Bergougnou, Maurice A., 4,450,895, Cl. 165-1.000.

Bergstrand, Karl-Gunnar, to Bergstrand, Karl-Gunnar; and Bergstrand Kvalitetskontroll AB. Method and apparatus to detect randomly distributed discontinuities in different directions in a longitudinally moving web using rotating probes in overlapped paths. 4,451,787, Cl. 324-242.000.

Bergstrand Kvalitetskontroll AB: *See*—
Bergstrand, Karl-Gunnar, 4,451,787, Cl. 324-242.000.

Bernstein, Seymour: *See*—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,451,479, Cl. 424-273.00P.

Bersot, James D.: *See*—
Bellamy, Robert L., Jr.; Bersot, James D.; Leonard Thomas K.; and Muse, Richard R., 4,451,190, Cl. 411-337.000.

Best, Gerd; and Weikert, Norbert B., to Krampe & Co Fertigung in Bergbaubedarf GmbH. Cutting roller. 4,451,092, Cl. 299-81.000.

Bethlehem Steel Corp.: *See*—
Kopnicky, Robert J., 4,450,736, Cl. 81-463.000.

Lamphier, Larry N.; and Meyers, Walter A., 4,451,172, Cl. 405-49.000.

Larson, Duane B.; and Westermeier, Richard J., 4,450,702, Cl. 72-250.000.

Bett, John A. S.: *See*—
Setzer, Herbert J.; Bett, John A. S.; and Lesieur, Roger R., 4,451,578, Cl. 502-303.000.

Bevan, William G.: *See*—
Ostroff, Stuart S.; and Bevan, William G., 4,451,791, Cl. 324-434.000.

Beverskog, Sven: *See*—
Jakobsson, Per-Olof; and Beverskog, Sven, 4,450,899, Cl. 165-39.000.

BFG Glassgroup: *See*—
Nolte, Hans-Henning, 4,451,312, Cl. 156-99.000.

Bianchi, Edward A., to AMP Incorporated. Method and tool for preparing coaxial cable and for positioning coaxial connector therewith. 4,450,621, Cl. 29-828.000.

BICC Public Limited Company: *See*—
Verne, Stefan, 4,451,306, Cl. 156-51.000.

Biermann, Manfred: *See*—
Willmund, Wolf-Dieter; Biermann, Manfred; Baumann, Horst; Friese, Hans-Herbert; and Pieper, Friedrich, 4,451,261, Cl. 8-94.220.

Bies, Sylvester W.; Fazio, Martin V.; and Matyczyk, George, to Stanley Works, The. Display bracket for socket drive units and package employing same. 4,450,961, Cl. 206-349.000.

Billot, Michel: *See*—
Kemler, Marc; Coppens, Christian; and Billot, Michel, 4,451,708, Cl. 179-98.000.

Birkelbach, Donald F.: *See*—
Shipley, Randall S.; and Birkelbach, Donald F., 4,451,626, Cl. 526-122.000.

Birman, Anatoly S.: *See*—
Kalvinsh, Ivars Y.; Vinogradov, Alexei V.; Veveris, Maris M.; Makarova, Inna I.; Birman, Anatoly S.; Barmotin, Georgy V.; and Akifiev, Oleg N., 4,451,485, Cl. 424-316.000.

Bishop, James S.: *See*—
Sawada, Fred H.; Bishop, James S.; and Blaize, Llewellyn A., 4,451,786, Cl. 324-158.0MG.

Black Clawson Company, The: *See*—
Chupka, David E., 4,451,358, Cl. 209-144.000.

Phelps, Richard W., 4,450,630, Cl. 34-116.000.

Black & Decker Inc.: *See*—
Dynie, Ernest R., 4,450,672, Cl. 56-16.700.

Black, Denny E.; Garrett, David W.; and Coakley, Thomas A., to Owens-Corning Fiberglas Corporation. Resin modification for glass fiber adherence. 4,451,592, Cl. 523-206.000.

Blackwell, Jennings P., to Phillips Petroleum Company. Glass-filled polyarylene sulfide compositions containing organosilanes. 4,451,601, Cl. 524-263.000.

Blaize, Llewellyn A.: *See*—
Sawada, Fred H.; Bishop, James S.; and Blaize, Llewellyn A., 4,451,786, Cl. 324-158.0MG.

Bliss & Laughlin Industries, Inc.: *See*—
Mower, Morris F.; and Johnson, Eugene R., 4,451,223, Cl. 425-458.000.

Bliven, David L., to Dresser Industries, Inc. Apparatus for sealing between a shaft and housing with multiple land members and seal members. 4,451,046, Cl. 277-3.000.

Blount, David H. Process for the production of alkali metal polyester silicate resinous products. 4,451,638, Cl. 528-205.000.

Blue Giant Equipment of Canada Ltd.: *See*—
Larsen, Kurt K., 4,450,598, Cl. 14-71.100.

Blum, Samuel E.; Brown, Karen H.; and Srinivasan, Rangaswamy, to International Business Machines Corporation. Photo deposition of metals with far UV radiation. 4,451,503, Cl. 427-53.100.

Blumer, Kurt: *See*—
Bullis, Douglas E.; and Blumer, Kurt, 4,450,661, Cl. 42-6.000.

Bocci, Giorgio; Dardano, Alberto; Levaggi, Vittorio; and Milani, Ambrogio, to Italimpianti Societa Impianti p.A. Radiant flat flame burner. 4,451,230, Cl. 431-284.000.

Bocker, Dietrich: *See*—
Wolfrum, Erhard; Erken, Manfred; and Bocker, Dietrich, 4,450,777, Cl. 110-342.000.

Boeckmann, Eduard F. B., to GTE Automatic Electric Inc. Telephone substation transmitter muting circuit. 4,451,706, Cl. 179-81.00R.

Boehm, Peter, to ITT Industries, Inc. Brake booster for automotive vehicles. 4,450,688, Cl. 60-554.000.

Boehringer Mannheim GmbH.: *See*—
Vetter, Hellmuth; Scheibe, Peter; Thum, Waldemar; and Naher, Gotthilf, 4,451,487, Cl. 435-183.000.

Boeing Company, The: *See*—
Hapke, Donald W., 4,451,015, Cl. 244-15.000.

Whitener, Philip C., 4,450,661, Cl. 52-206.000.

Boettcher, William C.; Volkmer, Richard B.; and Wehde, Wayne R., to D.O.V.E. Equipment Corporation. Portion control liquid dispenser. 4,450,987, Cl. 222-641.000.

Boettner, Fred H.; Cutler, John H.; and Walker, Loren H., to General Electric Company. Method and apparatus for determining the resistance of an AC motor stator. 4,451,770, Cl. 318-757.000.

Boev, Kiril K.: *See*—
Petrov, Georgi M.; Boev, Kiril K.; Fidelski, Igor A.; and Pirgov, Yordan T., 4,450,675, Cl. 57-6.000.

Bogar, Earl M., Jr. Gun rack for motor vehicles. 4,450,989, Cl. 224-42.45R.

Boisvert, Pierre U.; and Bapst, Jean-Daniel, to Barcana Ltee. Automatic artificial tree. 4,451,510, Cl. 428-8.000.

Bolstad, James J. Backpack frame convertible to a chair and conversion assembly therefor. 4,450,990, Cl. 224-155.000.

Bolto, Brian A.; and Jackson, Mervyn B., to ICI Australia Ltd.; and Commonwealth Scientific and Industrial Research Organization. Ion exchange resin. 4,451,581, Cl. 521-28.000.

Boone, Luc: *See*—
Vangaever, Frank; Vanhumbeeck, Jacky; Danneels, Laurent; Boone, Luc; and Demaegd, Luc, 4,451,336, Cl. 204-47.000.

Borg-Warner Corporation: *See*—
Lamarche, Paul E., 4,451,244, Cl. 464-68.000.

Bornstein, Norman S.: *See*—
Smeggil, John G.; Bornstein, Norman S.; and Brown, Clyde O., 4,451,299, Cl. 148-1.000.

Borzone, Rocco R.: *See*—
Asnis, Stanley E.; and Borzone, Rocco R., 4,450,835, Cl. 128-92.0EB.

Bos, Johannes G. G.; Pollaert, Hendricus J. P. M.; and Sijben, Johannes L. H. Back rotation device for a cable stranding machine. 4,450,674, Cl. 57-6.000.

Bosca, Bernard: *See*—
Maurel, Pierre; Bosca, Bernard; and Nicolas, Francois, 4,451,439, Cl. 423-55.000.

Bosne, Jacques G. P. E., to Hamon-Sobelco, S.A. Heat exchanger in particular for an atmospheric cooling tower. 4,450,902, Cl. 165-82.000.

Botar, Sandor: *See*—
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.

Bottenbruch, Ludwig: *See*—
Ostlinning, Edgar; Idel, Karsten; Neuner, Otto; and Bottenbruch, Ludwig, 4,451,644, Cl. 528-388.000.

Bounds, Charles T., to Dow Chemical Company, The. Preparation of alkylidenebis(dibromophenol). 4,451,675, Cl. 568-726.000.

Bouquet, Francois: *See*—
Barthe, Marie-Pierre; Battigelli, Jean A.; and Bouquet, Francois, 4,451,276, Cl. 65-6.000.

Bourson, Lucien; Delavarenne, Serge; and Tellier, Pierre, to PCUK Produits Chimiques Ugine Kuhlmann. Process for cooking lignocellulosic materials intended for the production of paper pulp with 1,2,3,4-tetrahydro-9,10-anthracenediol. 4,451,333, Cl. 162-77.000.

Bouteille, Daniel. Compressed gas saving device. 4,450,861, Cl. 137-553.000.

Bower, Arnold B., Jr., to Hughes Tool Company. Method and apparatus for affixing a roof bolting plate to a mine roof. 4,451,179, Cl. 405-260.000.

Boyarunas, Albert M.: *See*—
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Saporhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Bozzelli, John C.: *See*—
Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; Newton, Kevin H.; and Bozzelli, John C., 4,450,978, Cl. 221-13.000.

Bradbury, Allen G. W.: *See*—
Beale, Robert J.; Bradbury, Allen G. W.; Medcalf, Darrell G.; and Romig, William R., 4,451,489, Cl. 426-254.000.

Brader, Walter H., Jr.: *See*—
Knifton, John F.; Lin, Jiang-Jen; Grigsby, Robert A., Jr.; and Brader, Walter H., Jr., 4,451,679, Cl. 568-909.000.

Bradley, Martin: *See*—
Batchelor, Gary R.; Russo, Carmen A., Sr.; and Bradley, Martin, 4,451,329, Cl. 156-660.000.

Bradley, Michael W.; Hiles, Andrew G.; and Kippax, John W., to Davy McKee (London) Limited. Multistage aldehyde hydrogenation. 4,451,677, Cl. 568-881.000.

Braiko, Voldmir V.: *See*—
Shidlovsky, Anatoly K.; Taranov, Sergei G.; Braiko, Voldmir V.; Grinberg, Isaak P.; Tesik, Jury F.; and Karasinsky, Oleg L., 4,451,783, Cl. 324-86.000.

Branchadell, Jose , to SOLVAY & Cie. Process for blow-molding a hollow article from a preform made from a thermoplastic. 4,451,426, Cl. 264-535.000.

Brand, Johannes, to Akzo NV. Preparation of isocyanuric esters. 4,451,651, Cl. 544-221.000.

Braunitzer, Gerhard: *See*—
Vertesy, Laszlo; Mracek, Miroslav; Braunitzer, Gerhard; and Aschauer, Heinz, 4,451,455, Cl. 424-177.000.

Bravenec, Frank R., to Halliburton Company. Spontaneous potential log apparatus with randomly occurring noise cancellation. 4,451,790, Cl. 324-351.000.

Breitenstein, Werner: *See*—
Wenk, Paul; Breitenstein, Werner; and Baumann, Marcus, 4,451,462, Cl. 424-248.550.

Brendle, David A. Merchandise display device. 4,450,775, Cl. 108-64.000.

Bricker, Harry C., Jr.; Gutter, David H.; and Stull, Robert S., to AMP Incorporated. Electrical connector having commoning member. 4,451,099, Cl. 339-14.00R.

Briens, Cedric L.; Sankey, Bruce M.; and Ewener, Patrick C., to Exxon Research and Engineering Co. Solvent dewaxing waxy hydrocarbon distillates using a combination poly acrylate polymer and polymethacrylate polymer dewaxing aid. 4,451,353, Cl. 208-33.000.

Briggs, Douglas V. Feed tub. 4,450,791, Cl. 119-61.000.

Briggs, Willard S.: *See*—
Gerson, Isadore S.; and Briggs, Willard S., 4,451,885, Cl. 364-200.000.

Brightman, Barrie; Ellis, Thomas E.; Jones, James E.; Lenk, Pedro A.; Shah, Jayantkumar R.; Stewart, William H.; and Woodward, John W., to Stromberg-Carlson Corporation. Arrangement of interactive telephone switching processors for performing timing analyses of port events. 4,451,702, Cl. 179-18.0ES.

Brightman, Barrie; and Nierut, Frank, to Stromberg-Carlson Corporation. All electronic interface for telephony system. 4,451,703, Cl. 179-18.0FA.

Bristol-Myers Company: *See*—
Kaplan, Murray A.; and Granatek, Alphonse P., 4,451,447, Cl. 424-131.000.

Koshiyama, Hideo; Sakai, Fumihide; and Ohkuma, Hiroaki, 4,451,456, Cl. 424-177.000.

British Aluminium Company Limited, The: *See*—
Wilkins, Rennie F. T., 4,450,887, Cl. 164-154.000.

British Nuclear Fuels Limited: *See*—
Watson, Eric; and Hunter, Eric, 4,451,173, Cl. 405-53.000.

BroadCom, Inc.: *See*—
Gruenberg, Elliot L., 4,451,699, Cl. 179-2.0EB.

Brogardh, Torgny; Engstrom, Olof; and Ovren, Christer, to ASEA Aktiebolag. Optical measuring apparatus for measuring force or pressure. 4,451,730, Cl. 250-227.000.

Brooks, William R.; and Heinzel, Irving C. Method of dimensioning a polyurethane foam bandage. 4,450,833, Cl. 128-90.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Ishikawa, Michio; and Sasaki, Kiyoshi, 4,451,187, Cl. 409-187.000.

Broughton, Ralph W. Theft prevention step ladder. 4,450,937, Cl. 182-206.000.

Broussard, Baron T. Slip elevator. 4,450,606, Cl. 188-67.000.

Brousseau, Jean-Francoys: *See*—
Pomerleau, Andre; and Brousseau, Jean-Francoys, 4,451,896, Cl. 364-569.000.

Brouwer, Charles W.; and Cowan, Larry C., to Leesona Corporation. Yarn clamp. 4,450,874, Cl. 139-429.000.

Brower, George H. Electronic control for an automobile air conditioner. 4,451,741, Cl. 307-10.00R.

Brown, Clyde O.: *See*—
Smeggil, John G.; Bornstein, Norman S.; and Brown, Clyde O., 4,451,299, Cl. 148-1.000.

Brown, Harry J., to Union Carbide Corporation. Hard facing of metal substrates using material containing WC and improved flux compositions therefor. 4,451,508, Cl. 427-423.000.

Brown, James Howard: *See*—
DeVillez, Richard L., 4,451,480, Cl. 424-278.000.

Brown, Karen H.: *See*—
Blum, Samuel E.; Brown, Karen H.; and Srinivasan, Rangaswamy, 4,451,503, Cl. 427-53.100.

Brown, Wade R., to Eaton Corporation. Series connected solenoid appliance control valve assembly. 4,450,863, Cl. 137-613.000.

Brownlee Labs Inc.: *See—*
Brownlee, Robert; and Higgins, Jeremy W., 4,451,363, Cl. 210-198.200.
Higgins, Jeremy W.; and Brownlee, Robert, 4,451,364, Cl. 210-198.200.

Brownlee, Robert; and Higgins, Jeremy W., to Brownlee Labs Inc. Cartridge for liquid chromatograph. 4,451,363, Cl. 210-198.200.

Brownlee, Robert: *See—*
Higgins, Jeremy W.; and Brownlee, Robert, 4,451,364, Cl. 210-198.200.

Brownscombe, Thomas F.; and Willis, Carl L., to Shell Oil Company. Olefin polymerization. 4,451,633, Cl. 526-348.600.

Bruhnke, Ulrich; Christoph, Bernd; Harloff, Bernd; and Krakat, Hans, to Daimler-Benz Aktiengesellschaft. Structurally reinforced motor vehicle bodies. 4,451,077, Cl. 296-185.000.

Brunner, Karlheinz: *See—*
Ostkamp, Willi; Brunner, Karlheinz; and Wibbelt, Friedrich, 4,451,247, Cl. 494-52.000.

Brunnmueller, Fritz: *See—*
Kranz, Joachim; Habermann, Wolfgang; Distler, Harry; Knittel, Helmut; Hock, Karl-Ludwig; Brunnmueller, Fritz; and Schneider, Rolf, 4,451,339, Cl. 204-91.000.

Brunswick Corporation: *See—*
Puryear, John W.; and Callan, Arthur D., 4,451,012, Cl. 242-84.20A.

Bryan, George D., Jr.: *See—*
Robertson, Field I., Jr.; and Bryan, George D., Jr., 4,450,700, Cl. 72-115.000.

Bubenzer, Wilfried, to Robert Bosch GmbH. Sealing jaw for forming seams in heat-sealable packaging materials. 4,451,325, Cl. 156-583.100.

Buchel, Karl H.: *See—*
Elbe, Hans-Ludwig; Kramer, Wolfgang; Buchel, Karl H.; Lurssen, Klaus; Reinecke, Paul; and Scheinpflug, Hans, 4,451,281, Cl. 71-92.000.

Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W., to Auto-Systems & Service, Inc. Method and apparatus for transferring slugs from a conveyor to a slug cutting device. 4,450,739, Cl. 83-23.000.

Budden, Renke: *See—*
Hachmeister, Bernd; Milkowski, Wolfgang; Kuhl, Ulrich; Buschmann, Gerd; and Budden, Renke, 4,451,468, Cl. 424-256.000.

Buechler, Lester W., to Ohio Electronic Engravers, Inc. Engraving and scanning apparatus. 4,451,856, Cl. 358-299.000.

Buerman, Marc H. L.: *See—*
Taylor, Michael G. C.; and Buerman, Marc H. L., 4,451,710, Cl. 179-110.00A.

Buhlmann, Hans; and Welzel, Dieter, to Sandoz Ltd. Method for the treatment of post-operative thrombosis. 4,451,458, Cl. 424-183.000.

Bujan, Albert F.; and Harms, Jack L., to Abbott Laboratories. Dual flow rate intravenous administration set with single pump chamber. 4,451,255, Cl. 604-157.000.

Bullis, Douglas E.; and Blumer, Kurt, to Remington Arms Company, Inc. Magazine floor plate latch for bolt action rifles. 4,450,641, Cl. 42-6.000.

Bunnell Plastics, Inc.: *See—*
Gamble, James E., 4,450,631, Cl. 34-110.000.

Burckhardt, Christoph: *See—*
Thoma, Frank; Hoffmann, Karl-Heinz; and Burckhardt, Christoph, 4,450,818, Cl. 123-502.000.

Buresh, Lloyd V.; Hammond, Garth D.; Koval, Emil J.; and McCormick, Vernon R., to Rockwell International Corporation. Connector assembly. 4,451,103, Cl. 339-93.00R.

Burger, Joe R.: *See—*
Alexander, William H.; and Burger, Joe R., 4,450,854, Cl. 137-246.120.

Burke, Edmund T.; Gorman, Patrick H., II; Henderson, James A., Jr.; and Smith, Nicholas K., to Bell Telephone Laboratories, Incorporated. Call completion circuit and method. 4,451,705, Cl. 179-27.00D.

Burkhart, Robert W.; Cox, Allen R.; and Hartley, John D., to International Business Machines Corp. Method of making edge protected ferrite core. 4,451,344, Cl. 204-192.00R.

Burndy Corporation: *See—*
Collier, John C., 4,450,624, Cl. 29-881.000.

Burnett, David B.: *See—*
Allen, Joseph C.; Gillespie, Robert E.; and Burnett, David B., 4,450,913, Cl. 166-303.000.

Burney, Ivan T.: *See—*
Crookston, Ronald W.; and Burney, Ivan T., 4,451,717, Cl. 200-82.00B.

Burr, Robert P., to Kollmorgen Technologies Corporation. Process for the manufacture of circuit boards. 4,450,623, Cl. 29-850.000.

Burroughs Corp.: *See—*
Alper, Daniel D., 4,451,027, Cl. 271-10.000.
Kay, Nicholas W., 4,451,761, Cl. 313-586.000.
LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., 4,451,914, Cl. 369-109.000.
LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., 4,451,915, Cl. 369-109.000.

Burton, Willie T., Jr.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Burtscher, Paul, to Zurcher Kantonalbank. Method of producing a composite foamed resin torso and head section of a human summary for medical training purposes. 4,451,416, Cl. 264-46.600.

Buschmann, Gerd: *See—*
Hachmeister, Bernd; Milkowski, Wolfgang; Kuhl, Ulrich; Buschmann, Gerd; and Budden, Renke, 4,451,468, Cl. 424-256.000.

Buschor, Josef J.; Long, James C.; and Schmidt, Dieter K., to Five X Corporation. Machine for transporting and stacking loaded cartons. 4,450,949, Cl. 198-422.000.

Buske, Gary R.; and Pews, Richard G., to Dow Chemical Company, The. Process of preparing sulfonium organosulfonates. 4,451,408, Cl. 260-505.00R.

Buske, Gary R.; and Pews, Richard G., to Dow Chemical Company, The. Sulfonium organosulfonates. 4,451,409, Cl. 260-513.00R.

Busse, Wolf-Dieter; Krauthausen, Edmund; and Mardin, Mithat, to Bayer Aktiengesellschaft. Cyclic sulphenamide compounds, their production and their medicinal use. 4,451,475, Cl. 424-270.000.

Butler, Graham; and Wright, Christopher J., to United Kingdom Atomic Energy Authority. Method of preparing a supported catalyst. 4,451,580, Cl. 502-335.000.

Butt, Alan G., to Trane Company, The. Plate type heat exchanger with transverse hollow slotted bar. 4,450,903, Cl. 165-110.000.

Buttner, Kurt, to Okoma Maschinenfabrik GmbH. Roller table for woodworking machines. 4,450,881, Cl. 144-84.000.

Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, to Imperial Chemical Industries, PLC. Apparatus and process for the production of pile surface articles. 4,451,419, Cl. 264-164.000.

Cagen, Stuart Z., to Shell Oil Company. Method of preventing or ameliorating pyrethroid skin sensory stimulation. 4,451,482, Cl. 424-284.000.

Cahen, Raymond M.: *See—*
De Clippeleir, Georges E. M. J.; Cahen, Raymond M.; and Martins Mendes Cerejo, Francisco A., 4,451,686, Cl. 585-444.000.

Calas, Patrick; Moreau, Patrice; and Commeyras, Auguste, to PCUK Produits Chimiques Ugine Kuhlmann. Process for the preparation of true acetylene hydrocarbons having a perfluorinated chain. 4,451,682, Cl. 570-142.000.

California Interface and Software Limited Partnership: *See—*
Hall, John S.; and Phelps, Barry C., 4,451,068, Cl. 283-75.000.

Callan, Arthur D.: *See—*
Puryear, John W.; and Callan, Arthur D., 4,451,012, Cl. 242-84.20A.

Callihan, Rudy B.; and Stone, Lyndon R., to Baker Oil Tools, Inc. Method and apparatus for well cementing through a tubular member. 4,450,912, Cl. 166-289.000.

Cameron, John R., to Wisconsin Alumni Research Foundation. Method and apparatus for measuring air ion concentrations. 4,451,736, Cl. 250-376.000.

Campbell, Leslie E., to Owens-Corning Fiberglas Corporation. Film former emulsification. 4,451,594, Cl. 523-336.000.

Campbell, Richard W., to General Electric Company. Copolymeric nucleating agent for polyester. 4,451,606, Cl. 524-445.000.

Canadian General Electric Company Limited: *See—*
Lonseth, Palmer; Selkirk, Neil R.; and Moorby, Donald G., 4,451,870, Cl. 361-433.000.

Canadian Patents & Development Limited: *See—*
Tweddle, Thomas A.; Thayer, William L.; Kutowy, Oleh; and Sourirajan, Srinivasa, 4,451,424, Cl. 264-216.000.

Canfield, Henry A. Removable storage cover for truck beds. 4,451,075, Cl. 296-37.600.

Cannon, Fleming V., Jr.; and Casteel, Frankie E., to Dover Corporation. Wheel lift apparatus. 4,451,193, Cl. 414-563.000.

Canon Kabushiki Kaisha: *See—*
Fushimoto, Hideo, 4,451,121, Cl. 350-331.00R.
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,451,547, Cl. 430-128.000.
Ikari, Hideo; and Hirohata, Michio, 4,451,129, Cl. 354-477.000.
Shimizu, Seiichi, 4,451,131, Cl. 354-286.000.
Tanioka, Hiroshi; Ishida, Masato; and Inuzuka, Tsuneki, 4,451,136, Cl. 355-14.0SH.

Capote, Miguel A.: *See—*
LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., 4,451,914, Cl. 369-109.000.
LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., 4,451,915, Cl. 369-109.000.

Caray, Andre , to VALEO. Diaphragm clutch cover assembly. 4,450,945, Cl. 192-89.00B.

Carl Freudenberg, Firma: *See—*
Knoke, Jurgen; Jost, Manfred; Tecl, Bohuslav; and Fahrbach, Erich, 4,451,314, Cl. 156-148.000.
Miyazaki, Tadashi; and Hasegawa, Takao, 4,451,311, Cl. 156-86.000.
Miyazaki, Tadashi, 4,451,315, Cl. 156-220.000.
Tecl, Bohuslav; Fahrbach, Erich; Knoke, Jurgen; and Assent, Hans C., 4,451,520, Cl. 428-198.000.

Carl Schmale KG: *See—*
Freermann, Johannes, 4,450,780, Cl. 112-147.000.

Carl-Zeiss-Stiftung: *See—*
Basista, Heinrich; and Glatzel, Erhard, 4,451,124, Cl. 350-427.000.

Carlson, John H.: *See—*
Farley, Wilbur H.; Kotek, Alfred J.; and Carlson, John H., 4,451,098, Cl. 308-201.000.

Carmien, Joseph A. Flexible core for tool handles. 4,451,073, Cl. 294-57.000.

Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, to Harris Corporation. Repeatered, multi-channel fiber optic communication network having fault isolation system. 4,451,916, Cl. 370-16.000.

Cassella Aktiengesellschaft: *See—*
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, 4,451,631, Cl. 526-287.000.
Piesch, Steffen; and Dorries, Peter, 4,451,620, Cl. 525-398.000.

Casteel, Frankie E.: *See—*
Cannon, Fleming V., Jr.; and Casteel, Frankie E., 4,451,193, Cl. 414-563.000.

Castro, Robert J. Archery rack. 4,450,967, Cl. 211-13.000.

Casull, Richard J. Belt buckle-mini-revolver combination. 4,450,992, Cl. 224-163.000.

Catan, Robert S., to Dynaforce Corporation. Air blower arrangement for producing air screen and related method. 4,450,755, Cl. 98-36.000.

Caterpillar Tractor Co.: *See—*
Morris, Hugh C., 4,450,941, Cl. 192-3.310.
Vidal-Meza, Gonzalo D., 4,450,705, Cl. 72-379.000.

Cauldwell, Jack D., to Purity Packaging Corporation. Apparatus and process for aligning a plate and mounting it on a print cylinder. 4,451,309, Cl. 156-64.000.

Celanese Corporation: *See—*
Cincotta, David E.; and Berardinelli, Frank M., 4,451,611, Cl. 525-51.000.
Dammann, Laurence G., 4,451,628, Cl. 526-225.000.

Centralen Mashinostroitelen Institute: *See—*
Makedonski, Boris G.; and Atanassov, Haralampi A., 4,451,269, Cl. 51-303.000.

Centre Technique du Cuir: *See—*
Huc, Alain R.; Allard, Roland L.; and Chavrier, Christian L., 4,451,397, Cl. 260-123.700.

Century Electric, Inc.: *See—*
Phillips, Graham R.; and Prudot, Norvell G., 4,451,775, Cl. 322-10.000.

Cerberus AG: *See—*
Avery, Ronald G.; and Kahl, William G., Jr., 4,451,733, Cl. 250-342.000.
St. Jean, Herbert N.; and Settanni, Richard, 4,451,734, Cl. 250-342.000.

Cerceo, Chris A.; Kaufman, Jeanie F.; and Kaufman, Martin H. Dental physio-tape. 4,450,849, Cl. 132-89.000.

Champion International Corporation: *See—*
Webinger, George P., 4,451,001, Cl. 229-40.000.

Champion Spark Plug Italiana, S.p.A.: *See—*
Maiocco, Guiseppe A., 4,450,602, Cl. 15-250.320.

Chao, Shiuh: *See—*
LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., 4,451,914, Cl. 369-109.000.
LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., 4,451,915, Cl. 369-109.000.

Chapman, Ronald H.; and Peterson, Andrew F., to Motorola Inc. Phase-locked receiver with derived reference frequency. 4,451,930, Cl. 455-260.000.

Chapman, William A., Jr.; and Crowley, John J., to Westvaco Corporation. Rotary envelope cutting apparatus. 4,450,740, Cl. 83-303.000.

Charhut, Frank J., to Chicago-Allis Mfg. Corp. Face seal. 4,451,049, Cl. 277-42.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Magee, Robert J., 4,451,148, Cl. 356-138.000.

Charnock, Ronald S., to Loctite (Ireland) Limited. Polyisoprene toughened adhesive composition. 4,451,615, Cl. 525-98.000.

Chavrier, Christian L.: *See—*
Huc, Alain R.; Allard, Roland L.; and Chavrier, Christian L., 4,451,397, Cl. 260-123.700.

Chemische Werke Huels, AG: *See—*
Flatau, Karsten, 4,451,614, Cl. 525-80.000.
Mueller, Dieter J., 4,451,301, Cl. 148-6.15R.

Chen, Catherine S. H., to Mobil Oil Corporation. Water soluble phenolic-formaldehyde polymer which is a surfactant mobility control agent in oil recovery. 4,451,623, Cl. 525-505.000.

Chen, Yung J.: *See—*
McNeill, William H.; and Chen, Yung J., 4,451,123, Cl. 350-386.000.

Cheney, Richard F.; Bansal, Anil; and Kimmel, Edward R. Method for determining the size of metal carbide grains in cemented carbides. 4,450,724, Cl. 73-432.00R.

Cheng, Bo-Ching; and Adamson, Ronald B., to General Electric Company. Method for controlled hydrogen charging of metals. 4,451,445, Cl. 423-645.000.

Cheng, Chen-Yen; and Cheng, Sing-Wang. Distillative freezing process for separating volatile mixtures and apparatuses for use therein. 4,451,273, Cl. 62-12.000.

Cheng, John T. C.; and Langsam, Michael, to Air Products and Chemicals, Inc. Reduction of wall fouling in the suspension polymerization of vinyl chloride homopolymer. 4,451,625, Cl. 526-62.000.

Cheng, Sing-Wang: *See—*
Cheng, Chen-Yen; and Cheng, Sing-Wang, 4,451,273, Cl. 62-12.000.

Chesler, Edwin T., to Olin Corporation. Recycling of flexible polyurethane foam scrap. 4,451,583, Cl. 521-49.500.

Chevreux, Pierre: *See—*
Schneider, Michel; Chevreux, Pierre; and Guillot, Christian, 4,451,568, Cl. 435-181.000.

Chevron Research Company: *See—*
Fraas, Lewis M., 4,451,691, Cl. 136-249.000.
Jessel, Alfred J., 4,450,798, Cl. 123-41.410.
Mitchell, David S., 4,451,184, Cl. 406-105.000.
Pasky, Joseph Z., 4,451,684, Cl. 585-329.000.
Pasky, Joseph Z., 4,451,689, Cl. 585-525.000.

Chicago-Allis Mfg. Corp.: *See—*
Charhut, Frank J., 4,451,049, Cl. 277-42.000.

Chicherin, Jury E.: *See—*
Dshkhunian, Valery L.; Ivanov, Eduard E.; Kovalenko, Sergei S.; Mashevich, Pavel R.; Ryzhov, Alexei A.; Telenkov, Vyacheslav V.; and Chicherin, Jury E., 4,451,882, Cl. 364-200.000.

Chichester, Willard L.; and Davis, Dean E., to Clark Equipment Company. Auxiliary release device for a hydraulic pressure releasable brake. 4,451,095, Cl. 303-71.000.

Childers, John T., to Henkel Corporation. Sewing thread lubricants. 4,451,382, Cl. 252-8.600.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Pakoczi, Istvan; Muzsbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,488, Cl. 424-285.000.

Christ, Richard; and Kroll, Hartmut. Container for radioactive materials. 4,451,739, Cl. 250-506.100.

Christoph, Bernd: *See—*
Bruhnke, Ulrich; Christoph, Bernd; Harloff, Bernd; and Krakat, Hans, 4,451,077, Cl. 296-185.000.

Chumachenko, Boris A.: *See—*
Erasov, Fedor N.; Chumachenko, Boris A.; and Potaichuk, Vladimir M., 4,451,216, Cl. 418-61.00B.

Chupka, David E., to Black Clawson Company, The. Noncircular rejects outlet for cyclone separator. 4,451,358, Cl. 209-144.000.

Ciba-Geigy Corporation: *See—*
Ferrini, Pier G.; and Goschke, Richard, 4,451,471, Cl. 424-263.000.
Maier, Ludwig; Rempfler, Hermann; and Durr, Dieter, 4,451,284, Cl. 71-94.000.
Martin, Henry, 4,451,286, Cl. 71-107.000.
Mayer, Fritz; and Holtermann, Svein, 4,451,262, Cl. 8-125.000.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,451,279, Cl. 71-93.000.
Wenk, Paul; Breitenstein, Werner; and Baumann, Marcus, 4,451,462, Cl. 424-248.550.

Cincotta, David E.; and Berardinelli, Frank M., to Celanese Corporation. Process for forming blend of polyalkylene terephthalate and wholly aromatic polyester which exhibits an anisotropic melt phase. 4,451,611, Cl. 525-51.000.

Cinquin, Jean-Pierre; Danthony, Jacques; and Mulertt, Charles. Metal structure grounding safety system. 4,451,866, Cl. 361-56.000.

Ciocca, Joseph A.; and Knowles, Gregory W., to Grumman Allied Industries, Inc. Multi-effect rotary distillation process. 4,451,334, Cl. 203-11.000.

Citizen Watch Co., Ltd.: *See—*
Hashimoto, Eigo; and Nanya, Takanori, 4,451,498, Cl. 427-38.000.
Suzuki, Fuminori; and Ichikawa, Singo, 4,451,743, Cl. 307-110.000.

Clabby, Merlyn L., deceased; and Sheppard, Patrick J., executor. Disposable razor dispenser. 4,450,980, Cl. 221-281.000.

Clark Equipment Company: *See—*
Chichester, Willard L.; and Davis, Dean E., 4,451,095, Cl. 303-71.000.

Clark, James M.; and Small, Tony M., to Halliburton Company. Cleaning system for packer removal. 4,450,907, Cl. 166-223.000.

Clark, Kenneth F.: *See—*
Tavss, Edward A.; Eigen, Edward; and Clark, Kenneth F., 4,451,385, Cl. 252-132.000.

Clark, Robert W., Jr. Thermally powered, gravitationally assisted heat transfer systems. 4,450,690, Cl. 62-116.000.

Classens, Adrianus M. M.; Aalbertsberg, Frederik W.; and Van Marle, Hendrika G., to U.S. Philips Corporation. Method of manufacturing a longitudinally watertight cable and longitudinally watertight cable thus obtained. 4,451,692, Cl. 174-23.00C.

Claude, Bruno; Labaig, Jean-Jacques; and Martinez, Christian, to Compagnie Francaise de Raffinage. Multilayer composite material, especially for closures for plastic containers. 4,451,526, Cl. 428-216.000.

Claude, Jean, to Technigaz. Method of and device for remotely detecting leaks in a fluid-conveying pipe-line submerged within an ambient fluid and pipe-line provided with such a detection device. 4,450,711, Cl. 73-40.50R.

Clausen, Victor H.; and Asbury, Charles E., to H. B. Fuller Company. Network reinforcing forming apparatus and method. 4,451,515, Cl. 428-112.000.

Clayburn Refractories, Inc.: *See—*
Trumbull, James L.; and Gillam, William A., 4,450,666, Cl. 52-749.000.

Clear, Elmer E., to Phillips Petroleum Company. Aqueous gels. 4,451,389, Cl. 252-315.300.

Clendenin, Joseph G. Passive diversionary fluid collecting and debris separating apparatus. 4,450,654, Cl. 52-12.000.

Coachmen Industries, Inc.: *See—*
Snyder, Steven A., 4,451,063, Cl. 280-163.000.

Coakley, Thomas A.: *See—*
Black, Denny E.; Garrett, David W.; and Coakley, Thomas A., 4,451,592, Cl. 523-206.000.

Cobe Laboratories, Inc.: *See—*
Elgas, Roger J.; and Gordon, Timothy M., 4,451,562, Cl. 435-2.000.

Cochran, William C.: *See—*
Prescott, Ernest; and Cochran, William C., 4,451,302, Cl. 148-13.100.

Cody, Ian A., to Exxon Research and Engineering Co. Production of surface modified zeolites for shape selective catalysis. 4,451,572, Cl. 502-62.000.

Cohen, Gordon S., to Jeneric Industries, Inc. Dental capsule. 4,450,957, Cl. 206-220.000.

Cohen, Marvin C. Rectal hygiene system. 4,450,596, Cl. 4-447.000.

Colburn, Lyle W.; Potter, Craig W.; and Romesberg, Floyd E., to Dow Chemical Company, The. Manufacture of draw-redraw cans using film laminated or extrusion coated steel sheet material. 4,450,977, Cl. 220-458.000.

Colby, Dwight D.: *See—*
Dougherty, William R.; Colby, Dwight D.; Fahley, Jerome A.; and Van Dyke, Martin J., 4,451,894, Cl. 364-509.000.

Cole, Albert, to Thermoforce Limited. Temperature responsive actuating device. 4,450,687, Cl. 60-530.000.

Colgate-Palmolive Company: *See—*
Joshi, David P., 4,451,386, Cl. 252-135.000.
Tavss, Edward A.; Eigen, Edward; and Clark, Kenneth F., 4,451,385, Cl. 252-132.000.

Colgate Research & Development Co.: *See—*
Colgate, Stirling A., 4,451,201, Cl. 415-181.000.

Colgate, Stirling A., to Colgate Research & Development Co. Gas turbine. 4,451,201, Cl. 415-181.000.

Collier, John C., to Burndy Corporation. Method of forming electrical connectors. 4,450,624, Cl. 29-881.000.

Collins, Edmond R. Hitch assembly. 4,451,066, Cl. 280-508.000.

Collister, Jon E., to Premix, Inc. Preparation of curable solid polyester resin pellets and powders. 4,451,610, Cl. 525-19.000.

Combustion Engineering, Inc.: *See—*
Ross, Malcolm F.; and Visner, Sidney, 4,451,427, Cl. 376-267.000.

Commeyras, Auguste: *See—*
Calas, Patrick; Moreau, Patrice; and Commeyras, Auguste, 4,451,682, Cl. 570-142.000.

Commissariat a l'Energie Atomique: *See—*
Gerard, Philippe; Jouve, Hubert; and Madore, Michel, 4,451,500, Cl. 427-38.000.
Levos, Christian; Perie, Daniel; and Gex, Jean-Francois, 4,450,730, Cl. 73-864.610.

Commonwealth of Australia, The: *See—*
Lucas, James G.; Young, Alan C.; and Hinds, Paul M., 4,451,830, Cl. 343-768.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Bolto, Brian A.; and Jackson, Mervyn B., 4,451,581, Cl. 521-28.000.

Communication Systems, Inc.: *See—*
Wiseheart, Ronald W.; and Meyer, Daniel, 4,451,106, Cl. 339-123.000.

Compagnie Francaise de Raffinage: *See—*
Claude, Bruno; Labaig, Jean-Jacques; and Martinez, Christian, 4,451,526, Cl. 428-216.000.

Compagnie Francaise d'Emballages et de Conditionnement - COFREC: *See—*
Paillet, Bernard, 4,450,965, Cl. 206-528.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Kemler, Marc; Coppens, Christian; and Billot, Michel, 4,451,708, Cl. 179-98.000.

Concast, A.G.: *See—*
Heinemann, Wilfried; and Rummel, Theodor, 4,450,892, Cl. 164-467.000.

Connelly, Kathleen G., to United States of America, Puerto Rico. Convertible shoe. 4,450,633, Cl. 36-101.000.

Conoco Inc.: *See—*
Goldsmith, Riley G., 4,451,177, Cl. 405-195.000.

Contracap, Inc.: *See—*
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,450,836, Cl. 128-127.000.

Cook, Milton L.; Keyser, William L.; Swanson, Paul; Zielke, Michael W.; and Zielinski, Walter J., to Quaker Oats Company, The. Food bar. 4,451,488, Cl. 426-89.000.

Coomber, Barry A.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, David B.; and Coomber, Barry A., 4,451,405, Cl. 260-397.100.

Coope, Robert L., to Stevens Engineering, Inc. Clamping device. 4,451,026, Cl. 269-24.000.

Cooper, Lance A.: *See—*
Jeffrey, Gaines C.; Cooper, Lance A.; and Whipple, Sharon S., 4,451,442, Cl. 423-224.000.

Copeland Corporation: *See—*
Francis, Woodie R.; and Fogt, James F., 4,450,860, Cl. 137-543.190.

Coppens, Christian: *See—*
Kemler, Marc; Coppens, Christian; and Billot, Michel, 4,451,708, Cl. 179-98.000.

Copper Development Association, Inc.: *See—*
Beal, Roy E., 4,451,541, Cl. 428-658.000.

Cordis Corporation: *See—*
Zick, Gregory L.; and Saulson, Stanley H., 4,450,842, Cl. 128-635.000.

Corey, John A., to Mechanical Technology Incorporated. Dynamically balanced, hydraulically driven compressor/pump apparatus for resonant free piston Stirling engines. 4,450,685, Cl. 60-520.000.

Cosden Technology, Inc.: *See—*
De Clippeleir, Georges E. M. J.; Cahen, Raymond M.; and Martins Mendes Cerejo, Francisco A., 4,451,686, Cl. 585-444.000.

Searl, Alonzo H.; Hahn, Granville J.; and Rutledge, Raleigh N., 4,451,586, Cl. 521-88.000.

Cosmo, Nicola: *See—*
Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, 4,451,818, Cl. 339-75.0MP.

Cosner, Charles G.: *See—*
Ulry, Donald C.; Cosner, Charles G.; and Ryan, Thomas D., 4,451,264, Cl. 8-508.000.

Coss, William W., to Quaker Oats Company, The. Catalyst composition and method for curing furan-based foundry binders. 4,451,577, Cl. 502-167.000.

Cotsworth, Robert P.: *See—*
Orlander, Michael; Cotsworth, Robert P.; and MacKenzie, Peter A., 4,451,221, Cl. 425-8.000.

Couillaud, Bernard J.: *See—*
Hansch, Theodor W.; and Couillaud, Bernard J., 4,451,923, Cl. 372-32.000.

Cousineau, Bernard L. Drill attachment. 4,450,919, Cl. 173-29.000.

Cowan, Larry C.: *See—*
Brouwer, Charles W.; and Cowan, Larry C., 4,450,874, Cl. 139-429.000.

Cowan, William S., to Armco Inc. Apparatus for connecting a tension member to an under-water anchoring base. 4,451,170, Cl. 403-57.000.

Cox, Allen R.: *See—*
Burkhart, Robert W.; Cox, Allen R.; and Hartley, John D., 4,451,344, Cl. 204-192.00R.

Cox, Theodore W. Fishing net. 4,450,643, Cl. 43-12.000.

Coy, Vernon W.: *See—*
Anthony, Frank H.; and Coy, Vernon W., 4,451,726, Cl. 219-413.000.

CPG Products Corp.: *See—*
Van Sickle, James R., 4,450,772, Cl. 104-295.000.

Crain, Scott L. Mud bucket. 4,450,905, Cl. 166-85.000.

Crookston, Ronald W.; and Burney, Ivan T., to Westinghouse Electric Corp. Circuit interrupter operating mechanism having a chemical operator with stationary combustion chambers. 4,451,717, Cl. 200-82.00B.

Crosfield Electronics Limited: *See—*
Gamson, Alan R.; and Kellner, Phillip R., 4,451,552, Cl. 430-302.000.

Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. Inhibition of thromboxane synthetase with 3-(heteroalkyl)-indolyl-acrylic acid derivatives. 4,451,472, Cl. 424-263.000.

Crounse, Nathan N.; and Schmidt, Paul J., to Hilton-Davis Chemical Co., The. 3,5- And 5,5-bis(3-indolyl)-2-(5H)furanones. 4,451,657, Cl. 548-456.000.

Crowley, John J.: *See—*
Chapman, William A., Jr.; and Crowley, John J., 4,450,740, Cl. 83-303.000.

CTB, Inc.: *See—*
Nilsen, Norman P.; and Novey, Richard T., 4,450,789, Cl. 119-18.000.

Cue, Berkeley W., Jr., to Pfizer Inc. Process for preparing carboline derivatives and compounds used in their preparation. 4,451,655, Cl. 546-85.000.

Cummins Engine Company, Inc.: *See—*
Morris, Corydon E.; and Jaliwala, Salim A., 4,450,783, Cl. 123-458.000.
Thedens, Kevin J.; and Roettgen, Leslie A., 4,450,801, Cl. 123-198.00F.

Currah, Walter E., Jr. Wind driven power plant-structural support. 4,451,199, Cl. 415-2.00A.

Curry, Norman R. Transport converter dolly with forced steering. 4,451,058, Cl. 280-423.00A.

Cuscurida, Michael: *See—*
Speranza, George P.; Cuscurida, Michael; and Peterson, Bruce W., 4,451,588, Cl. 521-175.000.

Cushing, David E.: *See—*
Stanley, Philip E.; Woods, William E.; Lemay, Richard A.; and Cushing, David E., 4,451,883, Cl. 364-200.000.

Cutler, John H.: *See—*
Boettner, Fred H.; Cutler, John H.; and Walker, Loren H., 4,451,770, Cl. 318-757.000.

D. Felipe Pineda S.A.: *See—*
Rovira, Felipe P., 4,451,372, Cl. 210-603.000.

D.O.V.E. Equipment Corporation: *See—*
Boettcher, William C.; Volkmer, Richard B.; and Wehde, Wayne R., 4,450,987, Cl. 222-641.000.

Dahlberg, Reinhard, to Higratherm Electric GmbH. Bipolar transistor with a plurality of parallelly connected base-collector junctions formed by plastic deformation of the crystal lattice. 4,451,843, Cl. 357-36.000.

Daicel Chemical Industries Ltd.: *See—*
Murai, Masataka; and Ishii, Kiyoshi, 4,451,370, Cl. 210-321.100.

Daigo, Junichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Picture information input apparatus. 4,451,854, Cl. 358-282.000.

Daikin Kogyo Co., Ltd.: *See—*
Kawachi, Shoji; Kadowaki, Toshinori; and Yamamoto, Katsutoshi, 4,451,616, Cl. 525-178.000.

Daimler-Benz Aktiengesellschaft: *See—*
Bruhnke, Ulrich; Christoph, Bernd; Harloff, Bernd; and Krakat, Hans, 4,451,077, Cl. 296-185.000.
Hornig, Rudolf; and Worner, Gunter, 4,451,245, Cl. 464-181.000.
Scheurenbrand, Dieter, 4,450,880, Cl. 141-285.000.
Thoma, Frank; Hoffmann, Karl-Heinz; and Burckhardt, Christoph, 4,450,818, Cl. 123-502.000.

Zeilinger, Karl, 4,450,799, Cl. 123-90.530.

D'Alelio, Gaetano F.; and Waitkus, Phillip A., to Plastics Engineering Company. Polyimide derivatives having terminal acetylenic groups. 4,451,669, Cl. 562-442.000.

D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Addition products of di-acetylene-terminated polyimide with a diaryl conjugated butadiyne. 4,451,402, Cl. 548-461.000.

Dalton, John J.: *See—*
Sadler, Thomas H.; and Dalton, John J., 4,450,873, Cl. 138-174.000.

Daly, Francis P.; and Wilhelm, Frederick C., to Air Products and Chemicals, Inc. Catalyst for the hydrodealkylation of alkylaromatic compounds. 4,451,687, Cl. 585-489.000.

D'Ambrose, Camille, co-executrix: *See—*
Papathomas, Thomas V.; Scuderi, Rudolph, deceased; White, May S., co-executrix; and D'Ambrose, Camille, co-executrix, 4,451,773, Cl. 320-59.000.

Dammann, Laurence G., to Celanese Corporation. Process for preparing low molecular weight water-soluble polymers by copolymerizing with water-soluble monomers a calculated quantity of methallylsulfonate monomer. 4,451,628, Cl. 526-225.000.

Dana Corporation: *See—*
Long, Thomas F., Jr., 4,450,943, Cl. 192-70.200.

Danford, Jack D. Discing tool positionable to be transported. 4,450,918, Cl. 172-583.000.

D'Angelo, Severino; and Moore, Max J., to Horiba Instruments Incorporated. Vehicle force measurement system. 4,450,728, Cl. 73-862.280.

Danmar Products, Inc.: *See—*
Marchello, John L., 4,451,083, Cl. 297-195.000.

Danneels, Laurent: *See—*
Vangaever, Frank; Vanhumbeeck, Jacky; Danneels, Laurent; Boone, Luc; and Demaegd, Luc, 4,451,336, Cl. 204-47.000.

Danthony, Jacques: *See—*
Cinquin, Jean-Pierre; Danthony, Jacques; and Mulertt, Charles, 4,451,866, Cl. 361-56.000.

Dantzig, Jonathan A.: *See—*
Winter, Joseph; Tyler, Derek E.; and Dantzig, Jonathan A., 4,450,893, Cl. 164-468.000.

Dardano, Alberto: *See—*
Bocci, Giorgio; Dardano, Alberto; Levaggi, Vittorio; and Milani, Ambrogio, 4,451,230, Cl. 431-284.000.

Dario Manuli S.p.A.: *See—*
Grossi, Renzo, 4,450,668, Cl. 53-176.000.

Dart Controls, Inc.: *See—*
Penn, Paul E.; and Waymire, John W., 4,451,823, Cl. 340-648.000.

D'Augustine, Frank T.; Terry, Malcolm E.; Welsh, Hugh F.; and Payne, Frank A., to RCA Corporation. Automatic mask-frame inserter. 4,451,243, Cl. 445-68.000.

Davenport, Henry A.; and Barrows, Robert E., to Ingersoll-Rand Company. Air line lubricator. 4,450,938, Cl. 184-42.000.

David, Gabor: *See—*
Veisz, Gyorgy; David, Gabor; Koszeghy, Peter; and Szekely, Lajos, 4,451,804, Cl. 333-177.000.

Davies, Phineas; Jennings, James R.; and Wolstenholme, Jack, to Imperial Chemical Industries PLC. Catalyst, catalyst support and oxychlorination process. 4,451,683, Cl. 570-224.000.

Davis, Dean E.: *See—*
Chichester, Willard L.; and Davis, Dean E., 4,451,095, Cl. 303-71.000.

Davis, James C.: *See—*
Peterson, Dennis P.; and Davis, James C., 4,451,374, Cl. 210-656.000.

Davis, Max L. Tractor muffler structure. 4,450,934, Cl. 181-228.000.

Davis, Thomas A. Cover plate for an electrical receptacle. 4,451,101, Cl. 339-44.00M.

Davy McKee (London) Limited: *See—*
Bradley, Michael W.; Hiles, Andrew G.; and Kippax, John W., 4,451,677, Cl. 568-881.000.

Day, Joseph G.: *See—*
Hill, John; and Day, Joseph G., 4,451,290, Cl. 75-63.000.

Dean, E. Keith; and Emmons, Phillips C. Thermal barrier. 4,450,660, Cl. 52-202.000.

Dearden, Ziba T.; and Puri, Yogi K., to International Business Machines Corporation. Transmission logic parity circuit. 4,451,922, Cl. 371-49.000.

deBin, Rene F. Manufacture of thermoplastic bags. 4,451,249, Cl. 493-204.000.

Deckler, Harry C., to White Farm Equipment Company. Seed metering means. 4,450,979, Cl. 221-263.000.

De Clippeleir, Georges E. M. J.; Cahen, Raymond M.; and Martins Mendes Cerejo, Francisco A., to Coeden Technology, Inc. Dehydrogenation process. 4,451,686, Cl. 585-444.000.

DeCoursey, Calvin H., to Lynch Communication Systems, Inc. Method and apparatus for pulse train synchronization in PCM transceivers. 4,451,917, Cl. 370-108.000.

Decroix, Jean C., to Societe Chimique des Charbonnages S.A. Compositions for sealing products. 4,451,598, Cl. 524-69.000.

Dectron Inc.: *See—*
Taylor, John H., 4,450,691, Cl. 62-140.000.

Decuq, Guy; and Mouterde, Anne, to Verdol S.A. Package-lifting system in an unwinding or twisting machine. 4,451,006, Cl. 242-18.0DD.

Deere & Company: *See—*
Love, Mahlon L., 4,450,671, Cl. 56-14.600.
Wohlford, William P., 4,451,097, Cl. 305-40.000.

DeGraw, Joseph I., Jr.: *See—*
Berger, Frank M.; DeGraw, Joseph I., Jr.; and Johnson, Howard L., 4,451,474, Cl. 424-266.000.

DeHaai, Kermit M. Self-propelled disk harrow. 4,450,915, Cl. 172-55.000.

Deibig, Heinrich; Reiner, Roland; and Welle, Hendricus B. A., to Sandoz Ltd. Pharmaceutical compositions containing biodegradable polymers. 4,451,452, Cl. 424-78.000.

Deininger, J. Paul; and Dotson, Ronald L., to Olin Corporation. Process for making a calcium/sodium ferrate adduct by the electrochemical formation of sodium ferrate. 4,451,338, Cl. 204-86.000.

DeKezel, James A.; and Lerschen, James R. Buoyant water fowl decoy. 4,450,642, Cl. 43-3.000.

Delavarenne, Serge: *See—*
Bourson, Lucien; Delavarenne, Serge; and Tellier, Pierre, 4,451,333, Cl. 162-77.000.

Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., to General Foods Corporation. Real cream frozen whipped topping composition. 4,451,492, Cl. 426-564.000.

Demaegd, Luc: *See—*
Vangaever, Frank; Vanhumbeeck, Jacky; Danneels, Laurent; Boone, Luc; and Demaegd, Luc, 4,451,336, Cl. 204-47.000.

de Mena, Henry F.; and Tanoff, Michael A., to Exxon Research and Engineering Co. Control scheme and apparatus for a cogeneration boiler. 4,451,003, Cl. 236-14.000.

De Neys, Robert: *See—*
Vandevelde, Jean; and De Neys, Robert, 4,451,446, Cl. 424-92.000.

Denzinger, Walter; Goertz, Hans-Helmut; Sanner, Axel; and Hartmann, Heinrich, to BASF Aktiengesellschaft. Preparation of insoluble, only slightly swellable polymers of basic vinyl-heterocyclic compounds. 4,451,582, Cl. 521-38.000.

DePalma, Vincent M.; Dilley, Reginald J.; Doerner, Mary F.; and Nepela, Daniel A., to International Business Machines Corporation. Magnetic recording composition employing mono-dispersed spherical load-bearing particles. 4,451,532, Cl. 428-336.000.

DeSoto, Inc.: *See—*
Sekmakas, Kazys; and Richards, Ronald L., 4,451,603, Cl. 524-279.000.

Dessenoix, Pierre: *See—*
Dessenoix, Robert; and Dessenoix, Pierre, 4,450,853, Cl. 137-212.000.

Dessenoix, Robert; and Dessenoix, Pierre. Assembly for drawing off a liquid by means of a gas under pressure. 4,450,853, Cl. 137-212.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Flute chorus generator for a polyphonic tone synthesizer. 4,450,746, Cl. 84-1.240.

Development Finance Corp. of New Zealand: *See—*
Lustig, Thomas P., 4,450,762, Cl. 99-584.000.

DeVillez, Richard L., to Brown, James Howard. Method of treating acne using ozonized materials. 4,451,480, Cl. 424-278.000.

DeVries, Donald H.: *See—*
Harper, William P.; and DeVries, Donald H., 4,451,694, Cl. 174-72.00B.

de Vroom, Hubertus M., to Nordips AG. Transferable enamel sheet and method and apparatus for its fabrication. 4,451,522, Cl. 428-201.000.

Dewert, Heribert: *See—*
Holter, Heinz; Igelbuscher, Heinrich; Gresch, Heinrich; and Dewert, Heribert, 4,451,435, Cl. 422-171.000.

Diamond Crystal Salt Company: *See—*
Heiss, John F.; and Kolasinski, Richard, 4,451,381, Cl. 252-1.000.

Diana, Guy D., to Sterling Drug Inc. Isoxazoles as antiviral agents. 4,451,476, Cl. 424-272.000.

Dickinson, Roger P.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 4,451,472, Cl. 424-263.000.

Dickore, Karlfried; and Kuhle, Engelbert, to Bayer Aktiengesellschaft. N-Substituted imido-dicarboxylic acid diaryl ester method of preparation. 4,451,406, Cl. 260-465.00D.

DiDomenico, Edward, Jr., to Henkel Corporation. Urethane prepolymers crosslinked with amino crosslinking agents. 4,451,622, Cl. 525-456.000.

Diebold Incorporated: *See—*
Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; Newton, Kevin H.; and Bozzelli, John C., 4,450,978, Cl. 221-13.000.

Diedrich, Heinz K.; Greco, Giovanni; and Fanti, Domenico, to Selenia, Industrie Elettroniche Associate, S.p.A. Cryogenic radiation detector with high-density conductor array. 4,451,735, Cl. 250-352.000.

Diery, Helmut; Wester, Norbert; and Hille, Martin, to Hoechst Aktiengesellschaft. Cationic ethylene oxide/propylene oxide and ethylene oxide/butylene oxide polymers, a process for their preparation and their use. 4,451,671, Cl. 564-286.000.

Diesel Kiki Company, Ltd.: *See—*
Takefuta, Hideyasu; and Shinoda, Akira, 4,450,942, Cl. 192-48.900.

Dietz, Erwin; and Munkel, Albert, to Hoechst Aktiengesellschaft. Imidazoline addition compounds. 4,451,656, Cl. 548-352.000.

Dilley, Reginald J.: *See—*
DePalma, Vincent M.; Dilley, Reginald J.; Doerner, Mary F.; and Nepela, Daniel A., 4,451,532, Cl. 428-336.000.

Dillon Company, The: *See—*
Dillon, Thomas J., 4,450,617, Cl. 29-430.000.

Dillon, Thomas J., to Dillon Company, The. System for and assembly of a prefabricated home module. 4,450,617, Cl. 29-430.000.

Di Marchi, Richard D., to Eli Lilly and Company. Process for inhibiting undesired thiol reactions during cyanogen bromide cleavage of peptides. 4,451,396, Cl. 260-112.00R.

Dinius, Harold B.; and Huizenga, John R., to Eli Lilly and Company. Implant system. 4,451,254, Cl. 604-62.000.

Discount, Dennis: *See—*
Venning, Scott; and Discount, Dennis, 4,450,821, Cl. 123-525.000.

Discovision Associates: *See—*
Elliott, James E., 4,451,913, Cl. 369-110.000.

Display Interface Corporation: *See—*
Whetstone, Albert L.; and Shaklee, Kerry L., 4,451,698, Cl. 178-19.000.

Distler, Harry: *See—*
Kranz, Joachim; Habermann, Wolfgang; Distler, Harry; Knittel, Helmut; Hock, Karl-Ludwig; Brunnmueller, Fritz; and Schneider, Rolf, 4,451,339, Cl. 204-91.000.

Dixi S.A. Usine 4: *See—*
Remy, Jean-Claude, 4,450,826, Cl. 125-11.00N.

Dobes, Karel; Fuchs, Peter; and Rudolf, Otmar. Refractometer. 4,451,147, Cl. 356-135.000.

Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., to Energy Conversion Devices, Inc. Grooved gas gate. 4,450,786, Cl. 118-719.000.

Doerner, Mary F.: *See—*
DePalma, Vincent M.; Dilley, Reginald J.; Doerner, Mary F.; and Nepela, Daniel A., 4,451,532, Cl. 428-336.000.

Dola, Frank P.; and Lauterbach, John H., to AMP Incorporated. High speed modular connector for printed circuit boards. 4,451,107, Cl. 339-143.00R.

Dolezalek, Friedrich; Koepke, Gunther; and Rendelmann, Ulrich, to Agfa-Gevaert Aktiengesellschaft. Process for the pretreatment of photographic substrates. 4,451,497, Cl. 427-39.000.

Dolman, Hendrik; and Kuipers, Johannes, to Duphar International Research B.V. Nitrothiophenes, fungicidal and/or bactericidal compositions containing nitrothiophenes, and use thereof. 4,451,660, Cl. 549-63.000.

Domogalla, John C., to Texas Instruments Incorporated. Combination of analog to digital converter and error correction circuit. 4,451,821, Cl. 340-347.0AD.

Doner, Claude E., to RCA Corporation. Tuning means for a transmisson line cavity. 4,451,806, Cl. 333-224.000.

Donoghue, William J.; and Tesch, Rodney C., to Motorola, Inc. Pull-up circuit for a memory. 4,451,907, Cl. 365-203.000.

Donovan, John S. Gas operated automatic weapon. 4,450,752, Cl. 89-142.000.

Dorosz, Adolph S.: *See—*
Wickers, Francis A.; and Dorosz, Adolph S., 4,450,781, Cl. 112-262.100.

Dorries, Peter: *See—*
Piesch, Steffen; and Dorries, Peter, 4,451,620, Cl. 525-398.000.

Dotson, Ronald L.: *See—*
Deininger, J. Paul; and Dotson, Ronald L., 4,451,338, Cl. 204-86.000.

Dougherty, William R.; Colby, Dwight D.; Fahley, Jerome A.; and Van Dyke, Martin J., to Honeywell Inc. Liquid gaging system multiplexing. 4,451,894, Cl. 364-509.000.

Dover Corporation: *See—*
Cannon, Fleming V., Jr.; and Casteel, Frankie E., 4,451,193, Cl. 414-563.000.
Wood, Chester W., 4,450,879, Cl. 141-209.000.

Dow Chemical Company, The: *See—*
Bounds, Charles T., 4,451,675, Cl. 568-726.000.
Buske, Gary R.; and Pews, Richard G., 4,451,408, Cl. 260-505.00R.
Buske, Gary R.; and Pews, Richard G., 4,451,409, Cl. 260-513.00R.
Colburn, Lyle W.; Potter, Craig W.; and Romesberg, Floyd E., 4,450,977, Cl. 220-458.000.
Frisch, Kurt C., Jr.; Lock, Michele R.; and Stuk, Gregory J., 4,451,627, Cl. 526-192.000.
Gibbs, Dale S.; and Treptow, Warren L., 4,451,632, Cl. 526-317.000.
Grinstead, Robert R., 4,451,375, Cl. 210-670.000.
Jeffrey, Gaines C.; Cooper, Lance A.; and Whipple, Sharon S., 4,451,442, Cl. 423-224.000.
Klun, Robert T.; and Regulski, Thomas W., 4,451,667, Cl. 560-207.000.
Lay, George E.; and Haigh, Daniel H., 4,451,453, Cl. 424-81.000.
Meyer, Louis W., 4,451,425, Cl. 264-300.000.
Pawloski, Chester E., 4,451,653, Cl. 544-238.000.
Peterson, Dennis P.; and Davis, James C., 4,451,374, Cl. 210-656.000.
Shipley, Randall S.; and Birkelbach, Donald F., 4,451,626, Cl. 526-122.000.

Drake, Kenneth; and Hammock, Richard A., to Union Carbide Corporation. Amphoteric acrylic ester based latexes. 4,451,608, Cl. 524-560.000.

Dresser Industries, Inc.: *See—*
Bliven, David L., 4,451,046, Cl. 277-3.000.
Elphick, James, 4,450,914, Cl. 166-325.000.

Driedger, Klaus U., to ABL Engineering Ltd. Pre-fabricated grain elevator. 4,450,657, Cl. 52-79.900.

Drozhin, Vitaly F.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Dryan-Fordahl Technologies S.A.: *See—*
Stolz, Silvano; and Huguenin, Raymond, 4,451,754, Cl. 310-348.000.

Drysdale, William H.: *See—*
Kirkendall, Richard D.; Drysdale, William H.; and Kokinakis, Louis D., 4,450,770, Cl. 102-523.000.

Dshkhunian, Valery L.; Ivanov, Eduard E.; Kovalenko, Sergei S.; Mashevich, Pavel R.; Ryzhov, Alexei A.; Telenkov, Vyacheslav V.; and Chicherin, Jury E. Data processing system. 4,451,882, Cl. 364-200.000.

Dubicki, Henryk: *See—*
Parsons, Jack L.; Vizine, Dan; Sumner, Mark; Marathe, Suresh; and Dubicki, Henryk, 4,451,648, Cl. 536-54.000.

DuBois, George W.: *See—*
Holdsworth, Timothy M.; Hesler, Joseph P.; and DuBois, George W., 4,451,803, Cl. 333-12.000.

Dubois, Guy, to Societe pour l'Etude et la Fabrication de Circuits Integres Speciaux - E.F.C.I.S. Manufacturing TaSi-polysilicon conductors having high-resistance elements by a liftoff technique. 4,451,328, Cl. 156-656.000.

Dubois, Jean C.: *See—*
Loiseaux, Brigitte; Huignard, Jean P.; Dubois, Jean C.; and Eranian, Armand, 4,451,412, Cl. 264-1.300.

Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., to Pharmindustrie. 10-(1-Aza-[2,2,2)-bicyclo-3-octyl]-10H-2-phenothiazinesulfonamide and derivatives thereof. 4,451,461, Cl. 424-246.000.

Duester, Everett L., to John Thomas Batts, Inc. Hanger with size indicator panel. 4,450,639, Cl. 40-322.000.

Duff, Raymond J.: *See—*
Baird, Phillips C.; and Duff, Raymond J., 4,451,540, Cl. 428-615.000.

Dunlop Limited: *See—*
Jackson, William L., 4,451,313, Cl. 156-132.000.

Dunwoody, John A. Fly trap gun. 4,450,649, Cl. 43-135.000.

Duphar International Research B.V.: *See—*
Dolman, Hendrik; and Kuipers, Johannes, 4,451,660, Cl. 549-63.000.

Du Pont de Nemours, E. I., and Company: *See—*
Fickes, Michael G.; and Rakoczy, Bohdan, 4,451,553, Cl. 430-306.000.
Frazer, August H.; and Harris, John F., Jr., 4,451,642, Cl. 528-347.000.
Fry, Grant C., 4,451,600, Cl. 524-196.000.
Ganti, Venkat, 4,451,470, Cl. 424-260.000.
Nugent, William A., 4,451,665, Cl. 560-202.000.
Romanauskas, William A., 4,451,250, Cl. 494-85.000.
Victorius, Claus, 4,451,597, Cl. 524-39.000.
Williams, John F., 4,451,248, Cl. 494-84.000.

Durr, Dieter: *See—*
Maier, Ludwig; Rempfler, Hermann; and Durr, Dieter, 4,451,284, Cl. 71-94.000.

Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, to American Cyanamid Company. Therapeutically active 3-amino-1-halogenated phenyl-2-pyrazolines and their C4 and C5 analogs. 4,451,479, Cl. 424-273.00P.

Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T. Freeze protection apparatus for solar collectors. 4,450,868, Cl. 137-625.290.

Duval, Henry H. Method for restructuring railway roadbeds. 4,451,180, Cl. 405-269.000.

Dvorak, Bolek, to Moerman, Richard A.; and Sullivan, Barry. Apparatus for forming structural sheets from fibrous biological waste. 4,451,322, Cl. 156-461.000.

Dye, Richard W., Jr.: *See—*
Wolfe, Donald W.; and Dye, Richard W., Jr., 4,451,901, Cl. 364-900.000.

Dynaforce Corporation: *See—*
Catan, Robert S., 4,450,755, Cl. 98-36.000.

Dynie, Ernest R., to Black & Decker Inc. Pulley mounting means for power lawn rake. 4,450,672, Cl. 56-16.700.

Dzewaltowski, Victor F.: *See—*
Reda, Kazimierz J.; Dzewaltowski, Victor F.; Millay, Lawrence I.; and Hobbs, Robert N., 4,450,651, Cl. 51-5.00D.

Dzieciuch, Matthew A.; Wroblowa, Halina S.; and Kummer, Joseph T., to Ford Motor Company. Rechargeable zinc/manganese dioxide cell. 4,451,543, Cl. 429-206.000.

E. R. Squibb & Sons, Inc.: *See—*
Jensen, Ole R., 4,451,258, Cl. 604-333.000.

Eagle Comtronics, Inc.: *See—*
Holdsworth, Timothy M.; Hesler, Joseph P.; and DuBois, George W., 4,451,803, Cl. 333-12.000.

Early, Judson H.: *See—*
Off, Joseph W. A.; and Early, Judson H., 4,451,318, Cl. 156-353.000.
Off, Joseph W. A.; and Early, Judson H., 4,451,319, Cl. 156-353.000.

Eastman, George Y.: *See—*
Shaubach, Robert M.; Eastman, George Y.; and Roehm, Vincent P., 4,451,210, Cl. 417-52.000.

Eastman Kodak Company: *See—*
Farley, Ronald W., 4,451,137, Cl. 355-14.00C.
Foote, James C., Jr., 4,450,950, Cl. 198-478.000.
Leonard, Eric M.; Geyer, Frederick F.; and Myers, George M., 4,451,836, Cl. 346-137.000.

Lok, Roger; Freeman, John P.; and Baum, William N., 4,451,557, Cl. 430-505.000.
Meyers, John J.; and Pulver, John C., 4,451,119, Cl. 350-310.000.
Moberg, Gregory D.; and Hudson, Lynn R., 4,451,772, Cl. 320-1.000.
Pingaud, Bernard J.; and Poncet, Claude, 4,451,535, Cl. 428-329.000.
Sublett, Bobby J.; and Hilbert, Samuel D., 4,451,641, Cl. 528-295.500.

Eaton Corporation: *See—*
Brown, Wade R., 4,450,863, Cl. 137-613.000.
Zukausky, Keith E., 4,450,696, Cl. 68-18.0FA.
Zukausky, Keith E., 4,451,809, Cl. 335-255.000.

Eaves, Terence: *See—*
Walker, Stephen E.; Bedford, Keith; and Eaves, Terence, 4,450,877, Cl. 141-1.000.

Ebisawa, Hisashi: *See—*
Ishikawa, Masayuki; Eguchi, Yukuo; Moriguchi, Soyao; and Ebisawa, Hisashi, 4,451,467, Cl. 424-251.000.

Edak AG: *See—*
Sieber, Willi, 4,450,963, Cl. 206-521.000.

Eddins, Fred D.: *See—*
Holden, John E.; Eddins, Fred D.; and Kimbrough, Richard W., 4,450,650, Cl. 46-17.000.

Edelstein, William A.; Hutchison, James M. S.; Johnson, Glyn; Redpath, Thomas W. T.; and Mallard, John R., to National Research Development Corporation. Methods of producing image information from objects. 4,451,788, Cl. 324-309.000.

Edmonds, James T., Jr.; and Sherk, Fred T., to Phillips Petroleum Company. Production of arylene sulfide polymer beads. 4,451,643, Cl. 528-387.000.

Eguchi, Shinsuke: *See—*
Fujioka, Kazuyoshi; and Eguchi, Shinsuke, 4,450,944, Cl. 192-70.120.

Eguchi, Yukuo: *See—*
Ishikawa, Masayuki; Eguchi, Yukuo; Moriguchi, Soyao; and Ebisawa, Hisashi, 4,451,467, Cl. 424-251.000.

Eheim, Franz; and Hofer, Gerald, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,450,805, Cl. 123-387.000.

Eigen, Edward: *See—*
Tavss, Edward A.; Eigen, Edward; and Clark, Kenneth F., 4,451,385, Cl. 252-132.000.

Elbe, Hans-Ludwig; Kramer, Wolfgang; Buchel, Karl H.; Lurssen, Klaus; Reinecke, Paul; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Fungicidal and plant growth-regulating 1-azolyl-2-oximinobutane and use. 4,451,281, Cl. 71-92.000.

Elder, Robert E.: *See—*
Kempner, Marvin A.; and Elder, Robert E., 4,451,700, Cl. 179-2.0AS.

Elektro-Mechanik GmbH: *See—*
Heuer, Dieter; and Schmiedke, Georg, 4,451,750, Cl. 310-88.000.

Elettrochimica Marco Ginatta SpA: *See—*
Ginatta, Marco V., 4,451,340, Cl. 204-117.000.

Elgas, Roger J.; and Gordon, Timothy M., to Cobe Laboratories, Inc. Blood oxygenator. 4,451,562, Cl. 435-2.000.

Eli Lilly and Company: *See—*
Di Marchi, Richard D., 4,451,396, Cl. 260-112.00R.
Dinius, Harold B.; and Huizenga, John R., 4,451,254, Cl. 604-62.000.

Elliott, Denvier D., Jr. Golf training aid. 4,451,044, Cl. 273-189.00A.

Elliott, James E., to Discovision Associates. Video disc read back scanner. 4,451,913, Cl. 369-110.000.

Elliott, Robert D.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,451,650, Cl. 544-105.000.

Ellis, Alan E. H. Security devices for rotatable members and fluid flow control valves incorporating such devices. 4,450,697, Cl. 70-178.000.

Ellis, Thomas E.: *See—*
Brightman, Barrie; Ellis, Thomas E.; Jones, James E.; Lenk, Pedro A.; Shah, Jayantkumar R.; Stewart, William H.; and Woodward, John W., 4,451,702, Cl. 179-18.0ES.

Elphick, James, to Dresser Industries, Inc. Well treatment valve. 4,450,914, Cl. 166-325.000.

Emmons, Lawrence D.: *See—*
Mayer, Steven T.; and Emmons, Lawrence D., 4,451,900, Cl. 364-900.000.

Emmons, Phillips C.: *See—*
Dean, E. Keith; and Emmons, Phillips C., 4,450,660, Cl. 52-202.000.

Empak Inc.: *See—*
Johnson, Douglas M., 4,450,960, Cl. 206-334.000.

Endo, Tetsuhiko: *See—*
Ohkubo, Tadahiko; Endo, Tetsuhiko; and Andoh, Akiwo, 4,451,007, Cl. 242-18.00R.

Energy Conversion Devices, Inc.: *See—*
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,450,786, Cl. 118-719.000.
Yu, Terry T., 4,451,556, Cl. 430-346.000.

Energy Innovation Enterprises, Ltd.: *See—*
Gaunt, John; and Gregory, Kenneth E., 4,450,721, Cl. 73-290.00B.

Engel, Rolf R., to Minneapolis Medical Research Foundation, Inc. Device for shielding human skin from ambient light to facilitate tests performed thereon. 4,450,845, Cl. 128-743.000.

Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, to Cassella Aktiengesellschaft. Agent and method for deoiling sand and rock masses. 4,451,631, Cl. 526-287.000.

Engelmohr, Gustav O., to Siemens Gammasonics, Inc. Method and apparatus for forming collimator strips. 4,450,706, Cl. 72-385.000.

Engelsmann, Dieter; Lippl, Leo; Nicko, Reinhard; Stiefel, Peter; and Lermann, Peter, to Agfa-Gevaert Aktiengesellschaft. Film winding spool for photographic camera. 4,451,011, Cl. 242-71.000.

Engstrom, Olof: *See—*
Brogardh, Torgny; Engstrom, Olof; and Ovren, Christer, 4,451,730, Cl. 250-227.000.

Enomoto, Michitoshi; and Shimizu, Yasuo, to Nakamura Kinzoku Kogyosho, Inc. Method of producing suction manifolds for automobile engines. 4,450,886, Cl. 164-75.000.

Enomoto, Seiji: *See—*
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; Enomoto, Seiji; and Mezawa, Tsutomu, 4,451,908, Cl. 365-222.000.

Ephraim, Bernard. Keyboard carrier. 4,450,993, Cl. 224-265.000.

Eranian, Armand: *See—*
Loiseaux, Brigitte; Huignard, Jean P.; Dubois, Jean C.; and Eranian, Armand, 4,451,412, Cl. 264-1.300.

Erasov, Fedor N.; Chumachenko, Boris A.; and Potaichuk, Vladimir M., to Zaporozhsky Konstruktorsko-Tekhnologichesky Institut Selskokhozyaistvennogo Mashinostroenia. Planetary hydraulic motor with stator gear hinged to a housing. 4,451,216, Cl. 418-61.00B.

Erken, Manfred: *See—*
Wolfrum, Erhard; Erken, Manfred; and Bocker, Dietrich, 4,450,777, Cl. 110-342.000.

Ernest, Michael V.; and Maselli, James M., to W. R. Grace & Co. Method for exhaust gas treatment. 4,451,441, Cl. 423-213.200.

Ernst, Helmut; Gehrhardt, Karl-Heinz; Uhl, Leopold; and Wolert, Hartmut, to Metallgesellschaft Aktiengesellschaft. Nozzle block for rotary kilns. 4,451,232, Cl. 432-103.000.

ETA S.A. Fabriques d'Ebauches: *See—*
Fluck, Josef, 4,451,160, Cl. 368-290.000.
Muller, Jacques, 4,451,161, Cl. 368-220.000.

Ethicon, Inc.: *See—*
Mericle, Robert W.; and Transue, James A., 4,450,840, Cl. 128-325.000.
Transue, James A., 4,450,839, Cl. 128-325.000.

Ethyl Corporation: *See—*
Everly, Charles R., 4,451,676, Cl. 568-780.000.
Stahly, G. Patrick, 4,451,658, Cl. 548-562.000.

Eue, Ludwig: *See—*
Knops, Hans-Joachim; Babczinski, Peter; Eue, Ludwig; and Schmidt, Robert, 4,451,282, Cl. 71-92.000.

Eventoff, Franklin N. Spacerless keyboard switch circuit assembly. 4,451,714, Cl. 200-5.00A.

Everly, Charles R., to Ethyl Corporation. Chemical process for the preparation of para-alkenyl phenol. 4,451,676, Cl. 568-780.000.

Evers, William J.; Stork, Gilbert; Mookherjee, Barja D.; and Heinsohn, Howard H., Jr., to International Flavors & Fragrances Inc. Synthesis of triconjugated dienones and novel intermediates used in said process. 4,451,392, Cl. 252-522.00R.

Ewan, David B.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, David B.; and Coomber, Barry A., 4,451,405, Cl. 260-397.100.

Ewener, Patrick C.: *See—*
Briens, Cedric L.; Sankey, Bruce M.; and Ewener, Patrick C., 4,451,353, Cl. 208-33.000.

Ex-Cell-O Corporation: *See—*
Reda, Kazimierz J.; Dzewaltowski, Victor F.; Millay, Lawrence I.; and Hobbs, Robert N., 4,450,651, Cl. 51-5.00D.

Exxon Research and Engineering Co.: *See—*
Briens, Cedric L.; Sankey, Bruce M.; and Ewener, Patrick C., 4,451,353, Cl. 208-33.000.
Cody, Ian A., 4,451,572, Cl. 502-62.000.
de Mena, Henry F.; and Tanoff, Michael A., 4,451,003, Cl. 236-14.000.
Johnson, Burnett H., 4,451,574, Cl. 502-115.000.
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,451,673, Cl. 568-454.000.
Pieters, Wim J.M.; and Prilutski, Gerard M., 4,451,356, Cl. 208-263.000.
Stuntz, Gordon F., 4,451,354, Cl. 208-56.000.

Eydt, Andre J.: *See—*
Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., 4,451,492, Cl. 426-564.000.

F.I.S., s.r.l. Macchinari Per Imballaggi: *See—*
Grossi, Renzo, 4,450,668, Cl. 53-176.000.

Faber, Manfred: *See—*
Troeder, Christoph; Faber, Manfred; and Seigert, Peter, 4,450,729, Cl. 73-862.340.

Fache, Jean-Paul: *See—*
Le Cann, Robert; and Fache, Jean-Paul, 4,450,953, Cl. 198-778.000.

Fahley, Jerome A.: *See—*
Dougherty, William R.; Colby, Dwight D.; Fahley, Jerome A.; and Van Dyke, Martin J., 4,451,894, Cl. 364-509.000.

Fahrbach, Erich: *See—*
Knoke, Jurgen; Jost, Manfred; Tecl, Bohuslav; and Fahrbach, Erich, 4,451,314, Cl. 156-148.000.
Tecl, Bohuslav; Fahrbach, Erich; Knoke, Jurgen; and Assent, Hans C., 4,451,520, Cl. 428-198.000.

Fanti, Domenico: *See—*
Diedrich, Heinz K.; Greco, Giovanni; and Fanti, Domenico, 4,451,735, Cl. 250-352.000.

Fanuc Ltd.: *See—*
Imazeki, Ryoji; Hattori, Masayuki; and Nakamura, Shigeo, 4,451,902, Cl. 365-1.000.

Farley, Ronald W., to Eastman Kodak Company. Adjusting copier copy contrast and density during production runs. 4,451,137, Cl. 355-14.00C.

Farley, Wilbur H.; Kotek, Alfred J.; and Carlson, John H., to USM Corporation. Ball separator assembly. 4,451,098, Cl. 308-201.000.

Fasching, George E., to United States of America, Energy. Single transmission line data acquisition system. 4,451,826, Cl. 340-825.070.

Fasco Controls Corporation: *See—*
Barry, Leon G.; and Rieman, Willis E., 4,451,814, Cl. 337-407.000.

Fazio, Martin V.: *See—*
Bies, Sylvester W.; Fazio, Martin V.; and Matyczyk, George, 4,450,961, Cl. 206-349.000.

Featherstone, Elmer F. Card holder. 4,450,955, Cl. 206-39.600.

Felix Schoeller, Jr., GmbH & Co., KG: *See—*
Spelsberg, Hans-Hugo, 4,451,362, Cl. 210-150.000.

Ferreira, Americo S. Toothpaste dispenser. 4,450,982, Cl. 222-93.000.

Ferrigno, Elisa L. Artificial fingernail forming method, composition and kit. 4,450,848, Cl. 132-73.000.

Ferrini, Pier G.; and Goschke, Richard, to Ciba-Geigy Corporation. Certain 2,4,5-tri-substituted triazoles, pharmaceutical compositions containing same and methods of using same. 4,451,471, Cl. 424-263.000.

Fesmire, Charles E. Steer or calf legs practice roping device. 4,451,045, Cl. 273-338.000.

Fickes, Michael G.; and Rakoczy, Bohdan, to Du Pont de Nemours, E. I., and Company. Halogen finishing of flexographic printing plates containing butadiene/acrylonitrile copolymers. 4,451,553, Cl. 430-306.000.

Fidelski, Igor A.: *See—*
Petrov, Georgi M.; Boev, Kiril K.; Fidelski, Igor A.; and Pirgov, Yordan T., 4,450,675, Cl. 57-6.000.

Filhol, Stuart J. Dental anchoring means. 4,451,237, Cl. 433-225.000.

Filler, Raymond L.: *See—*
Vig, John R.; and Filler, Raymond L., 4,451,755, Cl. 310-361.000.

Fink, Richard R., to Heyman Manufacturing Co. Connector assembly. 4,451,695, Cl. 174-87.000.

Firestone Tire & Rubber Company, The: *See—*
Lohr, Delmar F.; and Schulz, Donald N., 4,451,576, Cl. 502-155.000.

Firmin, Daniel. Apparatus for measuring the weight of the drill string. 4,450,906, Cl. 166-113.000.

Fischer, Artur. Hinge joint for hollow panels for covering swimming pools or the like. 4,450,883, Cl. 160-229.00R.

Fischer, David A., to Ace Orthopedic Manufacturing, Inc. External fixation device. 4,450,834, Cl. 128-92.0EB.

Fischer, Werner; and Locher, Johannes, to Robert Bosch GmbH. Short-circuit-resistant trigger circuit layout for an electrical consumer. 4,451,778, Cl. 323-282.000.

Fitzpatrick, John. Method and apparatus for rejuvenating rubber balls and the like. 4,450,667, Cl. 53-127.000.

Five X Corporation: *See—*
Buschor, Josef J.; Long, James C.; and Schmidt, Dieter K., 4,450,949, Cl. 198-422.000.

Flakt Aktiebolag: *See—*
Jakobsson, Per-Olof; and Beverskog, Sven, 4,450,899, Cl. 165-39.000.

Flanders Filters, Inc.: *See—*
Wood, Joseph A., 4,450,964, Cl. 206-527.000.

Flango, William E.: *See—*
Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., 4,451,492, Cl. 426-564.000.

Flanigan, Richard J.: *See—*
Hitchcock, Lonnie G.; and Flanigan, Richard J., 4,450,882, Cl. 144-145.00A.

Flannigan, William T., to Imperial Chemical Industries Inc. Compositions for the control of unwanted foam and their use. 4,451,390, Cl. 252-321.000.

Flatau, Karsten, to Chemische Werke Huels, AG. Process for the production of pourable, tack-free vinyl chloride graft polymers. 4,451,614, Cl. 525-80.000.

Flentge, Charles A.; and Kirkemo, Curtis L., to Abbott Laboratories. Substituted theophylline salts. 4,451,652, Cl. 544-229.000.

Fletcher Engineering, Inc.: *See—*
Fletcher, J. Lawrence, 4,450,653, Cl. 51-211.00R.

Fletcher, J. Lawrence, to Fletcher Engineering, Inc. Knife sharpener. 4,450,653, Cl. 51-211.00R.

Flocke, Gunter; Jutte, Hans; Linde, Klaus; Klamke, Winfried; and Hampel, Werner, to Gewerkschaft Eisenhutte Westfalia. Apparatus for and method of driving tunnels. 4,451,176, Cl. 405-146.000.

Floeter, Wilfried; Schoening, Gerhard; and Schroeer, Klaus, to Herman C. Starck Berlin; and Uranerzbergbau-GmbH. Process for recovering niobium and/or tantalum metal compounds from such ores further containing complexes of uranium, thorium, titanium and/or rare earth metals. 4,451,438, Cl. 423-20.000.

Florer, Richard: *See—*
Snyder, Larry L.; and Florer, Richard, 4,450,976, Cl. 220-343.000.

Fluck, Josef, to ETA S.A. Fabriques d'Ebauches. Watch with a push button. 4,451,160, Cl. 368-290.000.

FMC Corporation: *See—*
Plummer, Ernest L., 4,451,484, Cl. 424-305.000.

Fogt, James F.: *See—*
Francis, Woodie R.; and Fogt, James F., 4,450,860, Cl. 137-543.190.

Folser, Karl: *See—*
Theurer, Josef; and Folser, Karl, 4,450,771, Cl. 104-1.00R.

Fontainas, Luc M.: *See—*
Van Hecke, Michel C.; and Fontainas, Luc M., 4,451,289, Cl. 75-63.000.

Foote, James C., Jr., to Eastman Kodak Company. Work piece transfer mechanism. 4,450,950, Cl. 198-478.000.

Force, Shirley M. Offset press attachment. 4,450,629, Cl. 33-184.500.

Ford, Brian R.: *See—*
Teeter, Dennis P.; and Ford, Brian R., 4,451,030, Cl. 271-265.000.

Ford Motor Company: *See—*
Basrai, Habil S.; and Rajagopal, Ganesh, 4,450,753, Cl. 91-35.000.
Dzieciuch, Matthew A.; Wroblowa, Halina S.; and Kummer, Joseph T., 4,451,543, Cl. 429-206.000.

Foreman, Gordon T.: *See—*
Gallaro, Anthony V.; and Foreman, Gordon T., 4,451,504, Cl. 427-64.000.

Forestier, Alexandre; and Lardellier, Alain M. J., to S.N.E.C.M.A. Turbine bearing. 4,451,110, Cl. 308-184.00R.

Formulabs Industrial Inks, Inc.: *See—*
Ulry, Donald C.; Cosner, Charles G.; and Ryan, Thomas D., 4,451,264, Cl. 8-508.000.

Forster, Karl-Heinz; Johne, Hans; Schuck, Helmut; and Friedrich, Ludwig, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Remote control system for ink zones in printing machines. 4,450,767, Cl. 101-365.000.

Forte, Don A.; and Aldava, Michael B., to Manville Service Corporation. Control circuit and system for providing emergency lighting. 4,451,762, Cl. 315-87.000.

Fraas, Lewis M., to Chevron Research Company. Three-terminal ternary III-V multicolor solar cells and process of fabrication. 4,451,691, Cl. 136-249.000.

Francis, Thomas E. Earth clod pulverizer. 4,450,916, Cl. 172-147.000.

Francis, Woodie R.; and Fogt, James F., to Copeland Corporation. Discharge valve guide. 4,450,860, Cl. 137-543.190.

Franck, Klaus; and Sauer, Werner, to Wilkhahn & Hahne GmbH & Company. Chair. 4,451,085, Cl. 297-285.000.

Frank Thornber Co.: *See—*
McKay, Richard H.; and Ryan, Geoffrey R., 4,451,728, Cl. 235-50.00R.

Frank, Walter; Bendszus, Otto; Meixner, Jurgen; Freier, Hans J.; and Traenckner, Hans-Joachim, to Bayer Aktiengesellschaft. Radiation-hardenable aqueous binder emulsions of acrylate prepolymer with unsaturated polyester emulsifier having benzyloxy and alkylene-oxy groups. 4,451,509, Cl. 427-54.100.

Franz, Dietmar; and Torggler, Norbert, to Siemens Aktiengesellschaft. Method for establishing connections between subscriber stations which operate with different transmission procedures by way of signal converters including busy-free control. 4,451,697, Cl. 178-3.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Folser, Karl, 4,450,771, Cl. 104-1.00R.

Frazer, August H.; and Harris, John F., Jr., to Du Pont de Nemours, E. I., and Company. Bis(aminoneopentyl) aromatics and polyamides derived therefrom. 4,451,642, Cl. 528-347.000.

Frechette, Thomas E.; and Reuter, Helge H., to Triumph-Adler A.G. fur Buround Informationstechnik. Inked ribbon cartridge with ribbon drag device. 4,451,166, Cl. 400-208.000.

Freed, Lawrence H.: *See—*
Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., 4,451,492, Cl. 426-564.000.

Freeman, John P.: *See—*
Lok, Roger; Freeman, John P.; and Baum, William N., 4,451,557, Cl. 430-505.000.

Freermann, Johannes, to Carl Schmale KG. Feeder for automatic selvedging apparatus. 4,450,780, Cl. 112-147.000.

Freese, Uwe E.: *See—*
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,450,836, Cl. 128-127.000.

Freier, Hans J.: *See—*
Frank, Walter; Bendszus, Otto; Meixner, Jurgen; Freier, Hans J.; and Traenckner, Hans-Joachim, 4,451,509, Cl. 427-54.100.

Frey, Otto: *See—*
Niederer, Peter G.; and Frey, Otto, 4,450,592, Cl. 3-1.912.

Friedman, Jon. Earth photo globe. 4,451,874, Cl. 362-285.000.

Friedrich, Ludwig: *See—*
Forster, Karl-Heinz; Johne, Hans; Schuck, Helmut; and Friedrich, Ludwig, 4,450,767, Cl. 101-365.000.

Friese, Hans-Herbert: *See—*
Willmund, Wolf-Dieter; Biermann, Manfred; Baumann, Horst; Friese, Hans-Herbert; and Pieper, Friedrich, 4,451,261, Cl. 8-94.220.

Frigofrance S.A.: *See—*
Le Cann, Robert; and Fache, Jean-Paul, 4,450,953, Cl. 198-778.000.

Frilund, Eyvind; and Holmberg, Per. Heat recovery in aluminium-melting works. 4,451,337, Cl. 204-67.000.

Frisch, Kurt C., Jr.; Lock, Michele R.; and Stuk, Gregory J., to Dow Chemical Company, The. Addition polymerizable urethane-based anaerobic adhesives made from tin (II) organoesters. 4,451,627, Cl. 526-192.000.

Fritz, William E.; and McComb, Ronald J., to Youngstown Steel Door Co., The. Sliding gate for a railroad hopper car. 4,450,773, Cl. 105-282.00A.

Fromson, Howard A.; and Gracia, Robert F., to Fromson, Howard A. Apparatus and process for making lithographic printing plate with reinforced image. 4,451,145, Cl. 355-100.000.

Frost, John R.: *See—*
Silverman, Jerry E.; Frost, John R.; Hegedus, Elizabeth; and Glicksman, Martin, 4,451,490, Cl. 426-553.000.

Fruengel, Frank. Method of and a device for adjusting a high-speed photographic arrangement. 4,451,128, Cl. 352-84.000.

Fry, Grant C., to Du Pont de Nemours, E. I., and Company. Additive for coating compositions. 4,451,600, Cl. 524-196.000.

Fuchs, Peter: *See—*
Dobes, Karel; Fuchs, Peter; and Rudolf, Otmar, 4,451,147, Cl. 356-135.000.

Fudatsuji, Toshiharu; Imagi, Tsutomu; and Miura, Hiroshi, to Fujitsu Limited. Ink ribbon folding mechanism for a printing apparatus. 4,451,165, Cl. 400-196.100.

Fuhrer, Jack S., to RCA Corporation. Plural operating mode ambient light responsive television picture control. 4,451,849, Cl. 358-161.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Makishima, Sadao, 4,450,734, Cl. 74-665.00F.
Ohgami, Masaaki; and Matsui, Fujio, 4,451,793, Cl. 328-69.000.

Fuji Photo Film Co., Ltd.: *See—*
Kishimoto, Shinzo, 4,451,132, Cl. 354-324.000.
Nagao, Makoto; Nahara, Akira; and Akashi, Goro, 4,451,501, Cl. 427-40.000.
Takenaka, Yuji; and Yoshikawa, Sumio, 4,451,142, Cl. 355-55.000.

Fuji Xerox Co., Ltd.: *See—*
Moriguchi, Harukiko; Kurata, Masami; and Ohmori, Takashi, 4,451,853, Cl. 358-281.000.
Nakajima, Hisao; and Moriguchi, Fujio, 4,451,834, Cl. 346-76.0PH.

Fujie, Naofumi: *See—*
Harada, Kuniyoshi; Suzumura, Nobuyasu; and Fujie, Naofumi, 4,451,887, Cl. 364-424.000.

Fujimaki, Hiroto; Ajima, Shigetoshi; and Watanabe, Kazuhiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Organic friction material. 4,451,590, Cl. 523-155.000.

Fujimaki, Hiroto: *See—*
Okuda, Kensuke; Nagai, Hirosi; Fujimaki, Hiroto; Tomonaga, Atsushi; and Aoki, Hideki, 4,451,235, Cl. 433-201.000.

Fujioka, Kazuyoshi; and Eguchi, Shinsuke, to Nissan Motor Co., Ltd. Wet type multiple disc clutch. 4,450,944, Cl. 192-70.120.

Fujisawa, Kazuo: *See—*
Yamaguchi, Hisao; Fujisawa, Kazuo; Kadowaki, Takashi; Itoh, Susumu; Sasaki, Soji; and Sato, Ichiya, 4,450,725, Cl. 73-643.000.

Fujisawa, Shigenori: *See—*
Kitamura, Minoru; Soejima, Toshiyuki; Hayashi, Tsutomu; Matsui, Hideo; and Fujisawa, Shigenori, 4,451,293, Cl. 75-257.000.

Fujita, Osamu, to Matsushita Electric Industrial Co., Ltd. B-Class complementary circuit. 4,451,799, Cl. 330-255.000.

Fujita, Yoshiyuki: *See—*
Sekino, Masaaki; Fujita, Yoshiyuki; and Ukai, Tetsuo, 4,451,369, Cl. 210-321.100.

Fujitsu Limited: *See—*
Fudatsuji, Toshiharu; Imagi, Tsutomu; and Miura, Hiroshi, 4,451,165, Cl. 400-196.100.
Itoh, Hideo; and Agatsuma, Kenji, 4,451,745, Cl. 307-475.000.
Ono, Masaaki; Fujiwara, Yoshiro; and Yanagisawa, Masanobu, 4,451,805, Cl. 333-195.000.
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; Enomoto, Seiji; and Mezawa, Tsutomu, 4,451,908, Cl. 365-222.000.

Fujiwara, Yoshiro: *See—*
Ono, Masaaki; Fujiwara, Yoshiro; and Yanagisawa, Masanobu, 4,451,805, Cl. 333-195.000.

Fukagawa, Yasuo: *See—*
Okabe, Mitsuyasu; Yoshioka, Takeo; Fukagawa, Yasuo; Okamoto, Rokuro; Kouno, Kageaki; and Ishikura, Tomoyuki, 4,451,401, Cl. 260-245.20T.

Fukuchi, Masakazu; Oishi, Keiji; and Yamazaki, Yoshio, to Konishiroku Photo Industry Co., Ltd. Magnetic-brush developing device. 4,451,134, Cl. 355-3.0DD.

Fukuda, Tadaji: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,451,547, Cl. 430-128.000.

Fukuoka, Takashi; Nagao, Yoshiaki; and Tanaka, Hiroyuki, to Kioritz Corporation. Suction silencer. 4,450,933, Cl. 181-229.000.

Fuldner, William V., to RCA Corporation. Linearity adjustment of spacecraft tubular spar-type members. 4,451,828, Cl. 343-872.000.

Fuls, Ellis N.; Lifshitz, Nadia; and Vaidya, Sheila, to Bell Telephone Laboratories, Incorporated. Fabrication of MOS integrated circuit devices. 4,450,620, Cl. 29-571.000.

Furuhashi, Yasuhiro; Ishikawa, Naozi; and Kawai, Shizuo, to Nippondenso Co., Ltd. Device for adjusting injection timing of a distribution-type fuel injection pump. 4,450,819, Cl. 123-502.000.

Furukawa, Hisao; and Kato, Yasushi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. One component room temperature setting composition. 4,451,602, Cl. 524-266.000.

Furuta, Mamoru; Maeno, Yoshio; and Kobayashi, Kazuo, to NGK Insulators, Ltd. Method for forming a green body of ceramic arc tubes used for a metal vapor discharge lamp and a molding die for forming said tube. 4,451,418, Cl. 264-63.000.

Fushiki, Yasuo: *See—*
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.

Fushimoto, Hideo, to Canon Kabushiki Kaisha. Electronic appliance. 4,451,121, Cl. 350-331.00R.

Futaba Denshi Kogyo Kabushiki Kaisha: *See—*
Morimoto, Kiyoshi; Takagi, Toshinori; and Watanabe, Hiroshi, 4,451,499, Cl. 427-38.000.

GAF Corporation: *See—*
Barabas, Eugene S., 4,451,296, Cl. 134-4.000.
Randall, David I., 4,451,278, Cl. 71-66.000.

Gaffney, Anne M.: *See—*
Sofranko, John A.; and Gaffney, Anne M., 4,451,666, Cl. 560-204.000.

Gagelin, Martin J., to Lear Siegler, Inc. Integral cylinder lift mechanism. 4,451,052, Cl. 280-43.230.

Gallaro, Anthony V.; and Foreman, Gordon T., to North American Philips Consumer Electronics Corp. Process for applying phosphor to the aperture mask of a cathode ray tube. 4,451,504, Cl. 427-64.000.

Galle, Edward M., Jr., to Armco Inc. Remotely operated underwater tension connector. 4,451,056, Cl. 285-3.000.

Gamble, James E., to Bunnell Plastics, Inc. Heated can rolls of high thermal efficiency. 4,450,631, Cl. 34-110.000.

Gamson, Alan R.; and Kellner, Phillip R., to Crosfield Electronics Limited. Formation of print surfaces. 4,451,552, Cl. 430-302.000.

Ganti, Venkat, to Du Pont de Nemours, E. I., and Company. Analgesic, antagonist, and/or anorectic 14-fluoromorphinans. 4,451,470, Cl. 424-260.000.

Gao Gesellschaft fur Automation und Organisation mbH: *See—*
Kaule, Wittich; and Stenzel, Gerhard, 4,451,521, Cl. 428-199.000.
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,451,530, Cl. 428-323.000.

Garavuso, Gerald M.: *See—*
Holmes, Maurice F.; and Garavuso, Gerald M., 4,451,028, Cl. 271-11.000.

Garcia, Rodrigo A.; and Martinovich, Robert J., to Phillips Petroleum Company. Poly(arylene sulfide) compositions. 4,451,607, Cl. 524-494.000.

Gardner, Peter C., to H. Cameron Gardner Ltd.; and Massey-Ferguson Services N.V. Wheeled industrial/agricultural tractors. 4,450,925, Cl. 180-89.100.

Garrett Corporation, The: *See—*
Glaser, Jerry, 4,451,163, Cl. 384-106.000.

Garrett, David W.: *See—*
Black, Denny E.; Garrett, David W.; and Coakley, Thomas A., 4,451,592, Cl. 523-206.000.

Gasparovic, George M.: *See—*
Tyler, David O.; and Gasparovic, George M., 4,451,873, Cl. 362-267.000.

Gatfield, Ian; and Sand, Theodor, to Haarmann & Reimer GmbH. Enzyme-mediated synthesis of esters and lactones. 4,451,565, Cl. 435-117.000.

Gattuso, David A.: *See—*
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,450,786, Cl. 118-719.000.

Gaunt, John; and Gregory, Kenneth E., to Energy Innovation Enterprises, Ltd. Apparatus for indicating quantity of liquified gas contained in a storage container. 4,450,721, Cl. 73-290.00B.

Gavrilko, Igor V.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Gay, Michael J., to Motorola, Inc. Auto-tuned frequency discriminator. 4,451,792, Cl. 329-145.000.

Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Schupphaus, Herbert, 4,451,090, Cl. 299-43.000.
Schupphaus, Herbert; and Knorr, Volker, 4,451,091, Cl. 299-43.000.

Gebr. Happich GmbH: *See—*
Viertel, Lothar; and Kaiser, Peter, 4,451,076, Cl. 296-97.00K.

Gedwill, Michael A.; Levine, Stanley R.; and Glasgow, Thomas K., to United States of America, National Aeronautics and Space Administration. Coating with overlay metallic-cermet alloy systems. 4,451,496, Cl. 427-34.000.

Gefitec S.A.: *See—*
Posso, Patrick, 4,451,020, Cl. 248-183.000.

Gehrhardt, Karl-Heinz: *See—*
Ernst, Helmut; Gehrhardt, Karl-Heinz; Uhl, Leopold; and Wolert, Hartmut, 4,451,232, Cl. 432-103.000.

Geiger, Hans: *See—*
Lauterburg, Rainer; and Geiger, Hans, 4,451,719, Cl. 200-159.00R.

Geissler, Ulrich C.; Grode, Gerald A.; Stith, William J.; and Williams, Ronald A., to Baxter Travenol Laboratories, Inc. Blood storage method. 4,451,259, Cl. 604-408.000.

Gellert, Jobst U. Injection molding hot tip seal. 4,450,999, Cl. 228-176.000.

Gemra, Richard J.: *See—*
Hodgson, Sten E.; and Gemra, Richard J., 4,451,104, Cl. 339-99.00R.

Genakis, Joseph M. Pin tumbler lock. 4,450,699, Cl. 70-364.00A.

General Battery Corporation: *See—*
Ostroff, Stuart S.; and Bevan, William G., 4,451,791, Cl. 324-434.000.

General Electric Company: *See—*
Boettner, Fred H.; Cutler, John H.; and Walker, Loren H., 4,451,770, Cl. 318-757.000.
Campbell, Richard W., 4,451,606, Cl. 524-445.000.

Cheng, Bo-Ching; and Adamson, Ronald B., 4,451,445, Cl. 423-645.000.
Harding, James H., 4,451,224, Cl. 425-548.000.
Hatanaka, Masayuki; and Kurita, Atsushi, 4,451,634, Cl. 528-24.000.
Kaswinkel, K. D.; and Wynn, M. J., 4,451,297, Cl. 134-9.000.
Milkovic, Miran, 4,451,784, Cl. 324-142.000.
Sakshaug, Eugene C.; and Kresge, James S., 4,451,815, Cl. 338-21.000.
Sawada, Fred H.; Bishop, James S.; and Blaize, Llewellyn A., 4,451,786, Cl. 324-158.0MG.
Wolfe, Donald W.; and Dye, Richard W., Jr., 4,451,901, Cl. 364-900.000.

General Foods Corporation: *See—*
Beale, Robert J.; Bradbury, Allen G. W.; Medcalf, Darrell G.; and Romig, William R., 4,451,489, Cl. 426-254.000.
Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., 4,451,492, Cl. 426-564.000.
Silverman, Jerry E.; Frost, John R.; Hegedus, Elizabeth; and Glicksman, Martin, 4,451,490, Cl. 426-553.000.

General Motors Corporation: *See—*
Berg, Morris, 4,451,429, Cl. 419-33.000.
Koivunen, Erkki A.; and Sherman, James F., 4,450,735, Cl. 74-781.00R.
Striese, Jim G.; Iafret, John E.; and Batterson, William D., 4,451,071, Cl. 292-341.180.
Tyler, David O.; and Gasparovic, George M., 4,451,873, Cl. 362-267.000.

General Signal Corporation: *See—*
Smith, Barry L.; and Petit, William A., 4,451,018, Cl. 246-122.00R.

Genovese, David E., to B. F. Goodrich Company, The. Auxiliary flotation system. 4,451,016, Cl. 244-107.000.

Gensike, Karl H., to Photomatrix Corporation. Automatic loader for microfiche duplicators. 4,451,144, Cl. 355-99.000.

Gentet, Pierre: *See—*
Verse, Bernard P.; Geoffroy, Alain Y.; and Gentet, Pierre, 4,451,822, Cl. 340-642.000.

Gentile, Anthony L.: *See—*
Pinnow, Douglas A.; Gentile, Anthony L.; Standlee, Arlie G.; and Timper, Arthur J., 4,451,116, Cl. 350-96.340.

Geoffroy, Alain Y.: *See—*
Verse, Bernard P.; Geoffroy, Alain Y.; and Gentet, Pierre, 4,451,822, Cl. 340-642.000.

Georgia Kaolin Company, Inc.: *See—*
Thompson, Thomas D., III, 4,451,440, Cl. 423-112.000.

Georgiev, Todor G.: *See—*
Popov, Marin A.; and Georgiev, Todor G., 4,451,294, Cl. 106-75.000.

Gerard, Philippe; Jouve, Hubert; and Madore, Michel, to Commissariat a l'Energie Atomique. Process for obtaining a homogeneous planar magnetization layer in a ferrimagnetic garnet. 4,451,500, Cl. 427-38.000.

Gerber, Arthur M.; and Loucks, Judith, to Polaroid Corporation. Chemical sensitization of silver halide grains. 4,451,560, Cl. 430-567.000.

Gerry, Martin E. Ignition system high voltage cable with minimized radio interference. 4,451,764, Cl. 315-209.00R.

Gerson, Isadore S.; and Briggs, Willard S., to Mostek Corporation. Bit operation method and circuit for microcomputer. 4,451,885, Cl. 364-200.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Flocke, Gunter; Jutte, Hans; Linde, Klaus; Klamke, Winfried; and Hampel, Werner, 4,451,176, Cl. 405-146.000.
Trumper, Thomas; Rosenberg, Harry; and Weirich, Walter, 4,451,181, Cl. 405-302.000.

Gex, Jean-Francois: *See—*
Levos, Christian; Perie, Daniel; and Gex, Jean-Francois, 4,450,730, Cl. 73-864.610.

Geyer, Frederick F.: *See—*
Leonard, Eric M.; Geyer, Frederick F.; and Myers, George M., 4,451,836, Cl. 346-137.000.

Gibbs, Dale S.; and Treptow, Warren L., to Dow Chemical Company, The. High vinylidene chloride content interpolymer coating resins and method of preparation. 4,451,632, Cl. 526-317.000.

Gibson, Duane E.: *See—*
Herd, David P.; and Gibson, Duane E., 4,451,047, Cl. 277-26.000.

Gidlund, Per A. L.: *See—*
Arvidsson, Ulf K.; and Gidlund, Per A. L., 4,450,921, Cl. 173-162.00H.

Gill, Grace M.: *See—*
Nicholakopoulos, Antonios; Gill, Grace M.; and Nadin, Robert P., 4,451,593, Cl. 523-322.000.

Gillam, William A.: *See—*
Trumbull, James L.; and Gillam, William A., 4,450,666, Cl. 52-749.000.

Gillespie, Robert E.: *See—*
Allen, Joseph C.; Gillespie, Robert E.; and Burnett, David B., 4,450,913, Cl. 166-303.000.

Gillette, Garry C., to Teradyne, Inc. Test signal reloader. 4,451,918, Cl. 371-27.000.

Gillum, Richard R., to Ares, Inc. Dual shell feeding apparatus, with shell accumulators, for automatic guns. 4,450,750, Cl. 89-33.0SF.

Gilovich, Paul A.; and Toreson, James S., to Microcomputer Systems, Inc. Magnetic tape apparatus having means for leading magnetic tape from a supply reel to a take-up reel. 4,451,861, Cl. 360-84.000.

Gin, Abram. Device for yoga exercising. 4,451,034, Cl. 272-93.000.

Ginatta, Marco V., to Elettrochimica Marco Ginatta SpA. Method for the electrolytic production of lead. 4,451,340, Cl. 204-117.000.

Giordani, Pietro. Seat for a baby's push chair. 4,451,082, Cl. 297-90.000.

Giri, Ronald R.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Glaser, Jerry, to Garrett Corporation, The. Foil bearing mounting carrier. 4,451,163, Cl. 384-106.000.

Glasgow, Thomas K.: *See—*
Gedwill, Michael A.; Levine, Stanley R.; and Glasgow, Thomas K., 4,451,496, Cl. 427-34.000.

Glass, Michael T.: *See—*
Glass, William T.; and Glass, Michael T., 4,450,975, Cl. 220-18.000.

Glass, William T.; and Glass, Michael T., to Mark Designs International, Inc. Wall-mounted ash tray. 4,450,975, Cl. 220-18.000.

Glatzel, Erhard: *See—*
Basista, Heinrich; and Glatzel, Erhard, 4,451,124, Cl. 350-427.000.

Glaxo Group Limited: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, David B.; and Coomber, Barry A., 4,451,405, Cl. 260-397.100.

Glicksman, Martin: *See—*
Silverman, Jerry E.; Frost, John R.; Hegedus, Elizabeth; and Glicksman, Martin, 4,451,490, Cl. 426-553.000.

Glissmann, Karl-Heinz: *See—*
Stucke, Walter; and Glissmann, Karl-Heinz, 4,451,413, Cl. 264-26.000.

Global Marine Inc.: *See—*
Wetmore, Sherman B., 4,451,174, Cl. 405-196.000.

Goclowski, Charles: *See—*
Ricard, Paul R.; and Goclowski, Charles, 4,450,707, Cl. 72-389.000.

Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., to University Patents, Inc.; and Contracap, Inc. Custom valved cervical cap with deformable margin. 4,450,836, Cl. 128-127.000.

Goertz, Hans-Helmut: *See—*
Denzinger, Walter; Goertz, Hans-Helmut; Sanner, Axel; and Hartmann, Heinrich, 4,451,582, Cl. 521-38.000.

Goguelin, Michel: *See—*
Vallee, Antoine; and Goguelin, Michel, 4,451,539, Cl. 428-515.000.

Goldsmith, Riley G., to Conoco Inc. Guideline system for positioning subsea equipment. 4,451,177, Cl. 405-195.000.

Gondo, Takeshi: *See—*
Maekawa, Tsukasa; and Gondo, Takeshi, 4,451,662, Cl. 549-462.000.

Gonsalves, Alexander A.: *See—*
Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., 4,451,492, Cl. 426-564.000.

Goode, Robert C. Digital watch magnifying element. 4,451,117, Cl. 350-114.000.

Goodman, Joseph E., to Jofax Industries, Inc. Combination direct-/reverse image copy machine. 4,451,143, Cl. 355-66.000.

Goodrich, Michael J., to Kelsey-Hayes Company. Powder dispensing assembly. 4,450,983, Cl. 222-196.000.

Goralnik, Charles D. Temperature sensitive ballast circuit for a fluorescent lamp. 4,451,767, Cl. 315-309.000.

Gordon, Timothy M.: *See—*
Elgas, Roger J.; and Gordon, Timothy M., 4,451,562, Cl. 435-2.000.

Goring, Joachim E., to Wuelfing, Johanna. Xanthine derivatives, and their use in pharmaceutical compositions. 4,451,449, Cl. 424-253.000.

Gorman, Patrick H., II: *See—*
Burke, Edmund T.; Gorman, Patrick H., II; Henderson, James A., Jr.; and Smith, Nicholas K., 4,451,705, Cl. 179-27.00D.

Goschke, Richard: *See—*
Ferrini, Pier G.; and Goschke, Richard, 4,451,471, Cl. 424-263.000.

Gossling Development Corporation: *See—*
Manzi, Joseph, 4,451,035, Cl. 272-137.000.

Goto, Masana: *See—*
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.

Goto, Satoshi: *See—*
Kinoshita, Akira; Sasaki, Osamu; Sawada, Kiyoshi; and Goto, Satoshi, 4,451,548, Cl. 430-79.000.

Gougeon, Jacques. Fabric made chair for facilitating transportation of a disabled person. 4,450,991, Cl. 224-159.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Polyurethane quaternary ammonium salts. 4,451,635, Cl. 528-71.000.

Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, to AMP Incorporated. Miniature connector for a circuit board edge. 4,451,818, Cl. 339-75.0MP.

Grabchenko, Anatoly I.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Gracia, Robert F.: *See—*
Fromson, Howard A.; and Gracia, Robert F., 4,451,145, Cl. 355-100.000.

Graco Inc.: *See—*
O'Connell, William F., 4,450,954, Cl. 198-793.000.

Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; Newton, Kevin H.; and Bozzelli, John C., to Diebold Incorporated. Apparatus for retrieving paper money bills presented but not picked up at automatic teller machine bill delivery station. 4,450,978, Cl. 221-13.000.

Grage, Ludger; and Ryseck, Werner, to Siemens Aktiengesellschaft. Test device for determining the extinction value of a laser range finder. 4,451,146, Cl. 356-5.000.

Granatek, Alphonse P.: *See—*
Kaplan, Murray A.; and Granatek, Alphonse P., 4,451,447, Cl. 424-131.000.

Graser, Fritz; and Wickenhaeuser, Gerhard, to BASF Aktiengesellschaft. Conditioning of finely divided crude organic pigments. 4,451,654, Cl. 546-34.000.

Gray, Lawrence H., to Moniteq Ltd. Resonance lamp. 4,451,765, Cl. 315-248.000.

Graziano, Nick. Anti-theft device for automobile tops. 4,450,695, Cl. 70-168.000.

Great Lakes Carbon Corporation: *See—*
Hogg, Grady R., Jr.; and Tanner, Nathan S., 4,451,926, Cl. 373-93.000.

Greco, Giovanni: *See—*
Diedrich, Heinz K.; Greco, Giovanni; and Fanti, Domenico, 4,451,735, Cl. 250-352.000.

Green, John D.: *See—*
Odle, Herbert A.; Green, John D.; and Shadwick, Jan, 4,451,875, Cl. 362-297.000.

Green, Kenneth E.; and Talbourdet, John A., to Honeywell Inc. Cryogenic cooler thermal coupler. 4,450,693, Cl. 62-514.00R.

Greenhaw, Cleo; and Smotone, Marvin. Bottom line work piece holders. 4,451,168, Cl. 400-623.000.

Gregory, Kenneth E.: *See—*
Gaunt, John; and Gregory, Kenneth E., 4,450,721, Cl. 73-290.00B.

Gregory, Raymond S., to Medishield Corporation Limited, The. Gas switching device. 4,450,852, Cl. 137-114.000.

Gres, Jean-Pierre; and Icard, Jean-Pierre G., to Societe Anonyme dite: Compagnie Maritime d'Expertises S.A. Arc-welding device used to secure studs on metallic elements underwater. 4,451,723, Cl. 219-98.000.

Gresch, Heinrich: *See—*
Holter, Heinz; Igelbuscher, Heinrich; Gresch, Heinrich; and Dewert, Heribert, 4,451,435, Cl. 422-171.000.

Grey, Roger A., to Atlantic Richfield Company. Preparation of ketones from 1,2-epoxides. 4,451,672, Cl. 568-384.000.

Grice, Donald G.; and Howley, Frank E., to International Business Machines Corp. Data processing system bus for multiple independent users. 4,451,881, Cl. 364-200.000.

Griep, Jonathan P., to Honeywell Inc. Voltage controlled current source. 4,451,779, Cl. 323-312.000.

Griffin, Robert L.: *See—*
Onken, Donald R.; and Griffin, Robert L., 4,450,828, Cl. 126-343.50A.

Griffin, Robert M.; and Martin, Roy C., to GTE Products Corporation. Long life incandescent tungsten-halogen lamp. 4,451,760, Cl. 313-557.000.

Grigsby, Robert A., Jr.: *See—*
Knifton, John F.; Lin, Jiang-Jen; Grigsby, Robert A., Jr.; and Brader, Walter H., Jr., 4,451,679, Cl. 568-909.000.

Grimm, Gerold; Kemmner, Ulrich; Knapp, Heinrich; and Rose, Klaus, to Robert Bosch GmbH. Device for controlling a flowthrough cross section in a control line. 4,450,866, Cl. 137-625.340.

Grimm, Robert A.: *See—*
Grote, Dace; Grimm, Robert A.; and Norton, Richard V., 4,451,670, Cl. 562-606.000.

Grinberg, Isaak P.: *See—*
Shidlovsky, Anatoly K.; Taranov, Sergei G.; Braiko, Voldmir V.; Grinberg, Isaak P.; Tesik, Jury F.; and Karasinsky, Oleg L., 4,451,783, Cl. 324-86.000.

Grinstead, Robert R., to Dow Chemical Company, The. Iodine adsorption via picolylamine ion exchange resins. 4,451,375, Cl. 210-670.000.

Grode, Gerald A.: *See—*
Geissler, Ulrich C.; Grode, Gerald A.; Stith, William J.; and Williams, Ronald A., 4,451,259, Cl. 604-408.000.

Grossi, Renzo, to Dario Manuli S.p.A.; and F.I.S., s.r.l. Macchinari Per Imballaggi, a part interest. Automatic packaging machine. 4,450,668, Cl. 53-176.000.

Grot, Arnold S., to United Technologies Corporation. Mold having a helix for casting single crystal articles. 4,450,889, Cl. 164-361.000.

Grote, Dace; Grimm, Robert A.; and Norton, Richard V., to Ashland Oil, Inc. Preparation of isobutyryl fluoride. 4,451,670, Cl. 562-606.000.

Gruber, Robert J.; and Knapp, John F., to Xerox Corporation. Conductive single component magnetic toner for use in electronic printing devices. 4,451,837, Cl. 346-153.100.

Gruenberg, Elliot L., to BroadCom, Inc. Communications system and network. 4,451,699, Cl. 179-2.0EB.

Grumman Allied Industries, Inc.: *See—*
Ciocca, Joseph A.; and Knowles, Gregory W., 4,451,334, Cl. 203-11.000.

GSE, Inc.: *See—*
Reinholm, James H.; and Marcinkiewicz, Eugene J., 4,450,727, Cl. 73-862.230.

GTE Atea NV: *See—*
Taylor, Michael G. C.; and Buerman, Marc H. L., 4,451,710, Cl. 179-110.00A.

GTE Automatic Electric Inc.: *See—*
Boeckmann, Eduard F. B., 4,451,706, Cl. 179-81.00R.

Kapral, Christopher W., 4,451,820, Cl. 340-347.0DA.
Neese, Wayne E., 4,451,715, Cl. 200-11.00G.

GTE Laboratories Incorporated: *See—*
McNeill, William H.; and Chen, Yung J., 4,451,123, Cl. 350-386.000.

GTE Products Corporation: *See—*
Griffin, Robert M.; and Martin, Roy C., 4,451,760, Cl. 313-557.000.
Lagos, Costas C., 4,451,757, Cl. 313-489.000.
Stites, Francis H., 4,451,832, Cl. 343-858.000.

Guest, David H.; and Roubaud, Peter R., to Hewlett-Packard Limited. Bus extender circuitry for data transmission. 4,451,886, Cl. 364-200.000.

Guhl, Thomas E.: *See—*
Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., 4,451,492, Cl. 426-564.000.

Guillot, Christian: *See—*
Schneider, Michel; Chevreux, Pierre; and Guillot, Christian, 4,451,568, Cl. 435-181.000.

Gulden, Walter: *See—*
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, 4,451,631, Cl. 526-287.000.

Gulf Research & Development Company: *See—*
Mitchell, Bruce R.; and Vogel, Roger F., 4,451,355, Cl. 208-113.000.

Gunkel, Werner: *See—*
Sattler, Gunther; Gunkel, Werner; Witzgall, Manfred; and Look, Reinhard, 4,451,365, Cl. 210-198.200.

Gustavus, David C. Portable adjustable roof platform. 4,450,935, Cl. 182-45.000.

Gutter, David H.: *See—*
Bricker, Harry C., Jr.; Gutter, David H.; and Stull, Robert S., 4,451,099, Cl. 339-14.00R.

Gwozdz, Peter S., to Advanced Micro Devices, Inc. Method for interconnecting metallic layers. 4,451,326, Cl. 156-643.000.

Gygax, Johannes, to ITT Industries, Inc. Brake system antilocking mechanism. 4,451,096, Cl. 303-109.000.

Gyugyi, Laszlo, to Westinghouse Electric Corp. Static VAR generation for transmission line compensation. 4,451,777, Cl. 323-210.000.

H. B. Fuller Company: *See—*
Clausen, Victor H.; and Asbury, Charles E., 4,451,515, Cl. 428-112.000.

H. Cameron Gardner Ltd.: *See—*
Gardner, Peter C., 4,450,925, Cl. 180-89.100.

Haarmann & Reimer GmbH: *See—*
Gatfield, Ian; and Sand, Theodor, 4,451,565, Cl. 435-117.000.

Haase, Thomas A.: *See—*
Pesa, Frederick A.; and Haase, Thomas A., 4,451,407, Cl. 260-465.400.

Habermann, Wolfgang: *See—*
Kranz, Joachim; Habermann, Wolfgang; Distler, Harry; Knittel, Helmut; Hock, Karl-Ludwig; Brunnmueller, Fritz; and Schneider, Rolf, 4,451,339, Cl. 204-91.000.

Hachmeister, Bernd; Milkowski, Wolfgang; Kuhl, Ulrich; Buschmann, Gerd; and Buddon, Renke, to Kali-Chemie Pharma GmbH. Acidiferous 17-normal-pentyl sparteine tartaric and fumaric acid salts pharmaceutical compositions thereof. 4,451,468, Cl. 424-256.000.

Hadhazy, Pal: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.

Haggar Company: *See—*
Off, Joseph W. A.; and Early, Judson H., 4,451,318, Cl. 156-353.000.
Off, Joseph W. A.; and Early, Judson H., 4,451,319, Cl. 156-353.000.

Hagglund, Tjell-Ake: *See—*
Annergren, Goran E.; Hagglund, Tjell-Ake; Lindblad, Per-Olov; Lindstrom, Lars-Ake T.; and Nasman, Lars E., 4,451,332, Cl. 162-30.100.

Hahn, Granville J.: *See—*
Searl, Alonzo H.; Hahn, Granville J.; and Rutledge, Raleigh N., 4,451,586, Cl. 521-88.000.

Hahnel, Thomas, to Messerschmitt-Bolkow-Blohm G.m.b.H. Ram jet engines and rotary gas flow valve therefor. 4,450,679, Cl. 60-251.000.

Haig, David E., to Jacobs, Abe. Precision material filling systems. 4,450,981, Cl. 222-61.000.

Haigh, Daniel H.: *See—*
Lay, George E.; and Haigh, Daniel H., 4,451,453, Cl. 424-81.000.

Hajime Industries Ltd.: *See—*
Yoshida, Hajime, 4,451,929, Cl. 382-15.000.

Hake, Kenneth A., to Kent Manufacturing Company, Inc. Self-leveling arrangement for agricultural implement frame. 4,450,917, Cl. 172-328.000.

Hall, Fred W.; and Retelsdorf, Hans-Joachim. Sintered hardmetals. 4,451,292, Cl. 75-238.000.

Hall, John S.; and Phelps, Barry C., to California Interface and Software Limited Partnership. Engraved image identification card with opaque cover layer. 4,451,068, Cl. 283-75.000.

Hall, Stephen T.; Hardiman, Raymond; Johnson, Peter W.; Quarendon, Peter; and Tuffill, Harold W., to International Business Machine Corporation. Digital data display system. 4,451,825, Cl. 340-750.000.

Halliburton Company: *See—*
Bravenec, Frank R., 4,451,790, Cl. 324-351.000.
Clark, James M.; and Small, Tony M., 4,450,907, Cl. 166-223.000.

Halpern, Peter H.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Hamilton, Steven P. Method of installing a camshaft. 4,450,609, Cl. 29-156.40R.

Hammock, Richard A.: *See—*
Drake, Kenneth; and Hammock, Richard A., 4,451,608, Cl. 524-560.000.

Hammond, Garth D.: *See—*
Buresh, Lloyd V.; Hammond, Garth D.; Koval, Emil J.; and McCormick, Vernon R., 4,451,103, Cl. 339-93.00R.

Hamon-Sobelco, S.A.: *See—*
Bosne, Jacques G. P. E., 4,450,902, Cl. 165-82.000.

Hampel, Werner: *See—*
Flocke, Gunter; Jutte, Hans; Linde, Klaus; Klamke, Winfried; and Hampel, Werner, 4,451,176, Cl. 405-146.000.

Hanaoka, Tadashi; Umezu, Hiroaki; and Shigaraki, Ginichi, to Misawa Homes K.K. Horizontal force resisting building structure and attachment for attaching walls to same. 4,450,659, Cl. 52-167.000.

Handley, Harold: *See—*
Ryston, Ivor; Handley, Harold; Seegmiller, J. Edwin; and Thompson, Linda F., 4,451,570, Cl. 435-240.000.

Hang, Kenneth W.: *See—*
Beltz, John P.; and Hang, Kenneth W., 4,451,507, Cl. 427-240.000.

Hanks, James V., to Horton Manufacturing, Co. Combination friction ring and mount therefor for clutches, brakes and the like. 4,450,947, Cl. 192-107.00R.

Hanmyo, Masayuki: *See—*
Taguchi, Kiyomi; Hanmyo, Masayuki; and Ishikawa, Masaru, 4,450,894, Cl. 164-484.000.

Hansch, Theodor W.; and Couillaud, Bernard J. Method of and apparatus for measuring optical frequency variations. 4,451,923, Cl. 372-32.000.

Hanscom, Bradford E., to T.A.D. Avanti, Inc. Ring detector and telephone line monitoring system for telephone answering instrument. 4,451,707, Cl. 179-84.00R.

Hansen, Hanspeter; Merkle, Hans; and Mueller, Albrecht, to BASF Aktiengesellschaft. Isolation of 3-isopropyl-2,1,3-benzothiadiazin-4-one-2,2-dioxide from waste water from its preparation. 4,451,378, Cl. 210-725.000.

Hansen, Helge; Nystrom, Borje; and Torneng, Eyvin, to Nordtend A/S. Method and means for repelling animals. 4,451,460, Cl. 424-238.000.

Hapke, Donald W., to Boeing Company, The. Jet engine two dimensional, asymmetric afterburner nozzle. 4,451,015, Cl. 244-15.000.

Harada, Kuniyoshi; Suzumura, Nobuyasu; and Fujie, Naofumi, to Aisin Seiki Kabushiki Kaisha. System for controlling a door and driver's seat of vehicle. 4,451,887, Cl. 364-424.000.

Harada, Tetsuya: *See—*
Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, 4,451,561, Cl. 430-619.000.

Harada, Yutaka; and Takai, Kouji, to Tokyo Shibaura Denki Kabushiki Kaisha. Transfer apparatus. 4,451,196, Cl. 414-733.000.

Harasym, Michael F.; and Lanza, Benjamin A. Apparatus for unplugging a vessel discharge port. 4,450,986, Cl. 222-591.000.

Hardiman, Raymond: *See—*
Hall, Stephen T.; Hardiman, Raymond; Johnson, Peter W.; Quarendon, Peter; and Tuffill, Harold W., 4,451,825, Cl. 340-750.000.

Harding, James H., to General Electric Company. Mold device for making plastic articles from resin. 4,451,224, Cl. 425-548.000.

Hardtmann, Goetz E.; and Houlihan, William J., to Sandoz, Inc. 1-Substituted tricyclic quinazolinones useful as tranquilizers. 4,451,448, Cl. 424-251.000.

Hardtmann, Goetz E.; and Houlihan, William J., to Sandoz, Inc. Trifluoromethyl substituted tricyclic quinazolinones useful as tranquilizers. 4,451,464, Cl. 424-251.000.

Harloff, Bernd: *See—*
Bruhnke, Ulrich; Christoph, Bernd; Harloff, Bernd; and Krakat, Hans, 4,451,077, Cl. 296-185.000.

Harman, Sherman M. Means and method for administering medicinals. 4,451,253, Cl. 604-60.000.

Harmon, Rawson B., Jr.: *See—*
Barclay, John D.; and Harmon, Rawson B., Jr., 4,451,266, Cl. 44-53.000.

Harms, Jack L.: *See—*
Bujan, Albert F.; and Harms, Jack L., 4,451,255, Cl. 604-157.000.

Harper, William P.; and DeVries, Donald H., to Rogers Corporation. Miniaturized high capacitance bus bar assembly. 4,451,694, Cl. 174-72.00B.

Harris Corporation: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.
Hershberger, David L., 4,451,927, Cl. 381-15.000.

Harris, Jimmy W.: *See—*
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W., 4,450,739, Cl. 83-23.000.

Harris, John F., Jr.: *See—*
Frazer, August H.; and Harris, John F., Jr., 4,451,642, Cl. 528-347.000.

Hart, Hiram. Transparent optical container for non-destructive biological fluid assay. 4,451,434, Cl. 422-102.000.

Hartel, Edward O.: *See—*
Libertini, Zoltan L.; and Hartel, Edward O., 4,451,200, Cl. 415-110.000.

Hartemink, Gerrit A., to Advanced Semiconductor Materials N.V. Flow meter including improved laminar flow restrictor device therefor. 4,450,718, Cl. 73-202.000.

Hartley, John D.: *See—*
Burkhart, Robert W.; Cox, Allen R.; and Hartley, John D., 4,451,344, Cl. 204-192.00R.

Hartman, Kathy J.: *See—*
Shu, Winston R.; and Hartman, Kathy J., 4,450,911, Cl. 166-263.000.

Hartmann, Heinrich: *See—*
Denzinger, Walter; Goertz, Hans-Helmut; Sanner, Axel; and Hartmann, Heinrich, 4,451,582, Cl. 521-38.000.

Hartwig, Heinz, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Process for the most uniform illumination of a surface by a collimated beam of rays and arrangement for laser diagnostic. 4,451,872, Cl. 362-251.000.

Harvey Hubbell Incorporated: *See—*
Jaconette, Frank C., 4,451,100, Cl. 339-14.00R.
Neuroth, David H.; and Smith, Robert F., Jr., 4,451,305, Cl. 156-49.000.

Hase, Osamu: *See—*
Yamamoto, Satoshi; Hase, Osamu; and Kawata, Tamostu, 4,451,271, Cl. 55-84.000.

Hasegawa, Manshiro: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takahashi, Akira; Hasegawa, Manshiro; and Tsuchida, Hisashi, 4,450,885, Cl. 164-47.000.

Hasegawa, Shumpei: *See—*
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,450,680, Cl. 60-274.000.
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,450,812, Cl. 123-438.000.

Hasegawa, Takao: *See—*
Miyazaki, Tadashi; and Hasegawa, Takao, 4,451,311, Cl. 156-86.000.

Hasegawa, Tetuo: *See—*
Shibuta, Osamu; Hasegawa, Tetuo; and Ogawa, Jun, 4,451,410, Cl. 260-973.000.

Hashi, Masaaki: *See—*
Yui, Ryosuki; Kume, Ketsuke; Hashi, Masaaki; and Niikura, Junji, 4,451,422, Cl. 264-178.00R.

Hashimoto, Eigo; and Nanya, Takanori, to Citizen Watch Co., Ltd. Method for making oxide based electrochromic display devices. 4,451,498, Cl. 427-38.000.

Hashimoto, Mitsuru; and Sakai, Kiyoshi, to Ricoh Co., Ltd. Electrophotographic element with carbazole derivative. 4,451,545, Cl. 430-59.000.

Hashimoto, Norikazu: *See—*
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,451,841, Cl. 357-23.600.

Hashimoto, Shunichi: *See—*
Sanemitsu, Yuzuru; Shiroshita, Masao; Hashimoto, Shunichi; Katoh, Haruhiko; and Matsumoto, Hiroshi, 4,451,283, Cl. 71-93.000.

Haskel, Inc.: *See—*
Kelly, John W., 4,450,612, Cl. 72-62.000.

Hata, Masahiko: *See—*
Matsuda, Yoshio; Hata, Masahiko; and Ogihara, Toru, 4,450,694, Cl. 66-193.000.

Hatakeyama, Hidewo: *See—*
Akiyama, Hiroyuki; Hatakeyama, Hidewo; Shimoyashiki, Nobuyoshi; Momose, Yoshiaki; and Imai, Fusao, 4,451,417, Cl. 264-53.000.

Hatanaka, Masato: *See—*
Sato, Hiroki; Nakano, Takao; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,451,756, Cl. 313-422.000.

Hatanaka, Masayuki; and Kurita, Atsushi, to General Electric Company. Silicone elastomer compositions suitable for ultraviolet ray curing. 4,451,634, Cl. 528-24.000.

Hatcher, Kelsey W.: *See—*
Ream, Norman E., 4,450,837, Cl. 128-201.270.

Hattori, Masayuki: *See—*
Imazeki, Ryoji; Hattori, Masayuki; and Nakamura, Shigeo, 4,451,902, Cl. 365-1.000.

Hattori, Motonobu; Tamuro, Yasuharu; Ishibashi, Akira; and Nandoh, Kenji, to Hitachi, Ltd. Method and apparatus for controlling AC motor. 4,451,112, Cl. 318-778.000.

Hattori, Yoshiyuki: *See—*
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,451,213, Cl. 417-366.000.

Hauser, Kurt, to Sueddeutsche Kuehlerfabrik, Julius Fr. Behr GmbH & Co. KG. Axial cooling fan for internal combustion engines. 4,451,202, Cl. 416-214.00R.

Hauserman, Inc.: *See—*
Legeai, Gilbert E., 4,450,658, Cl. 52-126.300.

Hax, Jorg: *See—*
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, 4,451,631, Cl. 526-287.000.

Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, to Mizuno Corporation. Golf club head and a method for manufacturing the same. 4,451,041, Cl. 273-167.00H.

Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, to Mizuno Corporation. Golf club head of carbon fiber reinforced plastic. 4,451,042, Cl. 273-171.000.

Hayashi, Tatsuo: *See—*
Nishimura, Eiichi; Uchida, Shunsuke; Kitamura, Masao; Saito, Koichi; Ibe, Eishi; and Hayashi, Tatsuo, 4,451,428, Cl. 376-333.000.

Hayashi, Tsutomu: *See—*
Kitamura, Minoru; Soejima, Toshiyuki; Hayashi, Tsutomu; Matsui, Hideo; and Fujisawa, Shigenori, 4,451,293, Cl. 75-257.000.

Hayashi, Yoshimasa, to Nissan Motor Co. Ltd. Internal combustion engine with engine knock sensor. 4,450,709, Cl. 73-35.000.

Hayn, Peter W.: *See—*
Mathewes, Wolfgang; and Hayn, Peter W., 4,451,272, Cl. 55-390.000.

Haynes, Hendrick W. Engine fuel conditioner and monitor. 4,450,820, Cl. 123-514.000.

Heath, Chester A.; and VanDuren, Richard G., to International Business Machines Corporation. Cycle stealing I/O controller with programmable offline mode of operation. 4,451,884, Cl. 364-200.000.

Hecht, Sidney M., to Wofor AG. Biologically active extracts from *Myrcia fallax* (Myrtaceae) Peru and method of obtaining same. 4,451,459, Cl. 424-195.000.

Heckler & Koch GmbH: *See—*
Thevis, Paul, 4,450,751, Cl. 89-129.00B.

Hedman, Gunnar: *See—*
Hedman, Rolf E.; and Hedman, Gunnar, 4,450,830, Cl. 126-450.000.

Hedman, Rolf E.; and Hedman, Gunnar. Solar heat device. 4,450,830, Cl. 126-450.000.

Hegedus, Elizabeth: *See—*
Silverman, Jerry E.; Frost, John R.; Hegedus, Elizabeth; and Glicksman, Martin, 4,451,490, Cl. 426-553.000.

Heger, Thomas J.: *See—*
Palermo, David W.; Ricci, David W.; Marriott, Joe E.; and Heger, Thomas J., 4,451,898, Cl. 364-900.000.

Heilmann, Steven M.; Rasmussen, Jerald K.; and Palensky, Frederick J., to Minnesota Mining and Manufacturing Company. Method of hydrophilizing or hydrophobizing polymers. 4,451,619, Cl. 525-379.000.

Hein, Paul R.: *See—*
Tsao, Jung-Hsien; and Hein, Paul R., 4,451,636, Cl. 528-75.000.

Heinemann, Wilfried; and Rummel, Theodor, to Concast, A.G. Method and apparatus for continuous casting of metallic strands in a closed pouring system. 4,450,892, Cl. 164-467.000.

Heinrich Berndes GmbH: *See—*
Kloppsteck, Gerd, 4,451,156, Cl. 368-10.000.

Heinsohn, Howard H., Jr.: *See—*
Evers, William J.; Stork, Gilbert; Mookherjee, Barja D.; and Heinsohn, Howard H., Jr., 4,451,392, Cl. 252-522.00R.

Heinzel, Irving C.: *See—*
Brooks, William R.; and Heinzel, Irving C., 4,450,833, Cl. 128-90.000.

Heiss, John F.; and Kolasinski, Richard, to Diamond Crystal Salt Company. Composite plug for stake-hole of salt blocks, salt block product, and method of using same. 4,451,381, Cl. 252-1.000.

Hemmerle, Clayton J.; and Basinger, Richard A. Surface defining slats and articles utilizing same. 4,450,884, Cl. 160-371.000.

Henderson, James A., Jr.: *See—*
Burke, Edmund T.; Gorman, Patrick H., II; Henderson, James A., Jr.; and Smith, Nicholas K., 4,451,705, Cl. 179-27.00D.

Henkel Corporation: *See—*
Childers, John T., 4,451,382, Cl. 252-8.600.
DiDomenico, Edward, Jr., 4,451,622, Cl. 525-456.000.

Henkel KGaA: *See—*
Struve, Alfred; Hill, Frank F.; and Schindler, Joachim, 4,451,564, Cl. 435-55.000.
Willmund, Wolf-Dieter; Biermann, Manfred; Baumann, Horst; Friese, Hans-Herbert; and Pieper, Friedrich, 4,451,261, Cl. 8-94.220.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Wilk, Hans-Christoph; and Wegemund, Bernd, 4,451,596, Cl. 523-501.000.

Herbertz, Toni: *See—*
Reinehr, Ulrich; Herbertz, Toni; and Spilgies, Gunter, 4,451,423, Cl. 264-182.000.

Herbulot, Jean, to Valeo. Brake with heat shield. 4,450,940, Cl. 188-71.300.

Herd, David P.; and Gibson, Duane E., to Smith International, Inc. Seal. 4,451,047, Cl. 277-26.000.

Herman C. Starck Berlin: *See—*
Floeter, Wilfried; Schoening, Gerhard; and Schroeer, Klaus, 4,451,438, Cl. 423-20.000.

Herper, John C.: *See—*
Stangel, John J.; Herper, John C.; and Rothenberg, Carl, 4,451,831, Cl. 343-374.000.

Herrera-Gutierrez, Jesus, to American Interpac Corporation. Means and methods of making bags with spouts. 4,451,246, Cl. 493-215.000.

Hershberger, David L., to Harris Corporation. Separation correction method and apparatus for plural channel transmission system. 4,451,927, Cl. 381-15.000.

Hesler, Joseph P.: *See—*
Holdsworth, Timothy M.; Hesler, Joseph P.; and DuBois, George W., 4,451,803, Cl. 333-12.000.

Heuer, Dieter; and Schmiedke, Georg, to Elektro-Mechanik GmbH. Protective arrangement for a plug-connected electric motor sealed against pressure, vapors and radiation. 4,451,750, Cl. 310-88.000.

Hewlett, Clarence W., Jr. Magic octahedron. 4,451,039, Cl. 273-153.00S.

Hewlett-Packard Company: *See—*
Leonard, Mark, 4,451,731, Cl. 250-237.0SE.
Palermo, David W.; Ricci, David W.; Marriott, Joe E.; and Heger, Thomas J., 4,451,898, Cl. 364-900.000.

Hewlett-Packard Limited: *See—*
Guest, David H.; and Roubaud, Peter R., 4,451,886, Cl. 364-200.000.

Heyman Manufacturing Co.: *See—*
Fink, Richard R., 4,451,695, Cl. 174-87.000.

Heyne, Jurgen E.: *See—*
Schaeffler, Georg; Spiess, Karl; Heyne, Jurgen E.; and Krost, Manfred, 4,450,704, Cl. 72-356.000.

Heynisch, Hinrich, to Siemens Aktiengesellschaft. Flat viewing screen with spacers between support plates and method of producing same. 4,451,759, Cl. 313-495.000.

Hidden Valley Associates, Inc.: *See—*
Phillips, Edward H., 4,451,209, Cl. 417-38.000.

Hidrotronic de Colombia, S.A.: *See—*
Miller, Jeorge, 4,451,341, Cl. 204-149.000.

Higgins, Jeremy W.; and Brownlee, Robert, to Brownlee Labs Inc. High pressure seal and coupling. 4,451,364, Cl. 210-198.200.

Higgins, Jeremy W.: *See—*
Brownlee, Robert; and Higgins, Jeremy W., 4,451,363, Cl. 210-198.200.

Higratherm Electric GmbH: *See—*
Dahlberg, Reinhard, 4,451,843, Cl. 357-36.000.

Hilbert, Samuel D.: *See—*
Sublett, Bobby J.; and Hilbert, Samuel D., 4,451,641, Cl. 528-295.500.

Hiles, Andrew G.: *See—*
Bradley, Michael W.; Hiles, Andrew G.; and Kippax, John W., 4,451,677, Cl. 568-881.000.

Hill, Frank F.: *See—*
Struve, Alfred; Hill, Frank F.; and Schindler, Joachim, 4,451,564, Cl. 435-55.000.

Hill, Jeffrey A.: *See—*
Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; Newton, Kevin H.; and Bozzelli, John C., 4,450,978, Cl. 221-13.000.

Hill, John; and Day, Joseph G., to Matthey Rustenburg Refiners (Proprietary) Limited. Recovery of platinum group metals from scrap and residues. 4,451,290, Cl. 75-63.000.

Hill Top Research, Inc.: *See—*
Quisno, Robert A., 4,450,844, Cl. 128-743.000.

Hille, Martin: *See—*
Diery, Helmut; Wester, Norbert; and Hille, Martin, 4,451,671, Cl. 564-286.000.

Hills, Richard E., to Pittsburgh-Des Moines Corporation. Removable condensate collector for elevated water storage facilities. 4,450,855, Cl. 137-312.000.

Hilton-Davis Chemical Co., The: *See—*
Crounse, Nathan N.; and Schmidt, Paul J., 4,451,657, Cl. 548-456.000.

Hinds, Paul M.: *See—*
Lucas, James G.; Young, Alan C.; and Hinds, Paul M., 4,451,830, Cl. 343-768.000.

Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, to Konishiroku Photo Industry Co., Ltd. Heat-development-type image recording material. 4,451,561, Cl. 430-619.000.

Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Electrophotographic α-Si(H) member and process for production thereof. 4,451,547, Cl. 430-128.000.

Hiraki, Shunichi; Kikuchi, Kiyoshi; Yawata, Shigeo; and Miyagawa, Masafumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Diffusion of aluminum. 4,451,303, Cl. 148-187.000.

Hiraoka, Kunizo. Apparatus for producing concrete pipes. 4,451,222, Cl. 425-432.000.

Hirata, Kazuo; and Takagi, Masao, to Kubota, Ltd. Apparatus for controlling agricultural tractor. 4,450,927, Cl. 180-330.000.

Hirayama, Chikara: *See—*
Liu, Chi-Sheng; and Hirayama, Chikara, 4,451,924, Cl. 372-59.000.

Hirohata, Michio: *See—*
Ikari, Hideo; and Hirohata, Michio, 4,451,129, Cl. 354-477.000.

Hirose, Kengo; and Kudo, Norio, to Japan Radio Company, Ltd. Vacuum fuse having magnetic flux generating means for moving arc. 4,451,813, Cl. 337-17.000.

Hirose, Koichi; and Kondo, Kazuo, to Hitachi, Ltd. Non-linear emphasis circuit. 4,451,746, Cl. 307-494.000.

Hirsch, Jacob, to Hirsch, M. David. Sail line stopper. 4,450,603, Cl. 24-132.00R.

Hirsch, M. David: *See—*
Hirsch, Jacob, 4,450,603, Cl. 24-132.00R.

Hisatsune, Fumiyuki: *See—*
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,451,718, Cl. 200-147.00R.

Hitachi Chemical Company: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitumasa, 4,451,551, Cl. 430-270.000.

Hitachi Construction Machinery Co., Ltd.: *See—*
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,451,893, Cl. 364-494.000.

Hitachi, Ltd.: *See—*
Baba, Shirou, 4,451,891, Cl. 364-431.120.
Hattori, Motonobu; Tamuro, Yasuharu; Ishibashi, Akira; and Nandoh, Kenji, 4,451,112, Cl. 318-778.000.
Hirose, Koichi; and Kondo, Kazuo, 4,451,746, Cl. 307-494.000.
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,451,841, Cl. 357-23.600.
Isakozawa, Shigeto, 4,451,737, Cl. 250-311.000.
Ishibashi, Tadashi; Ishida, Masahiko; and Odawara, Yoji, 4,451,567, Cl. 435-170.000.
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitumasa, 4,451,551, Cl. 430-270.000.
Miyazawa, Hideo; and Kitamura, Junzo, 4,451,242, Cl. 445-65.000.
Mouri, Yasunori, 4,450,815, Cl. 123-479.000.
Nagase, Hiroshi; Ninomiya, Hisakazu; and Ibori, Satoshi, 4,451,771, Cl. 318-800.000.
Nishimura, Eiichi; Uchida, Shunsuke; Kitamura, Masao; Saito, Koichi; Ibe, Eishi; and Hayashi, Tatsuo, 4,451,428, Cl. 376-333.000.
Nishimura, Yutaka; Ohyama, Yoshishige; and Sugiura, Noboru, 4,450,719, Cl. 73-204.000.
Sugiura, June; Kosa, Yasunobu; Komori, Kazuhiro; Uchida, Ken; and Shimizu, Shinji, 4,451,904, Cl. 365-182.000.
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Yamashita, Seizi; and Takahashi, Noriyoshi, 4,451,752, Cl. 310-186.000.
Takano, Yoshiya; and Hoshi, Yoshikazu, 4,450,813, Cl. 123-450.000.
Yamaguchi, Hisao; Fujisawa, Kazuo; Kadowaki, Takashi; Itoh, Susumu; Sasaki, Soji; and Sato, Ichiya, 4,450,725, Cl. 73-643.000.
Yamashita, Katsuji; Umetsu, Hiroshi; Sato, Hirotaka; Matsuoka, Yoshio; and Kida, Kei, 4,451,433, Cl. 422-63.000.

Hitachi Maxell, Ltd.: *See—*
Ishida, Osamu; Uetani, Yoshio; and Matsushima, Seiichi, 4,451,542, Cl. 429-174.000.

Hitachi Metals, Ltd.: *See—*
Ogata, Yasunobu, 4,451,876, Cl. 363-21.000.

Hitchcock, Lonnie G.; and Flanigan, Richard J. Automatic shaper. 4,450,882, Cl. 144-145.00A.

Hitt, Dale. Lathe tool. 4,450,737, Cl. 82-24.00R.

Hitzman, Donald O., to Phillips Petroleum Company. Enhanced oil recovery process using microorganisms. 4,450,908, Cl. 166-246.000.

Hobbs, Robert N.: *See—*
Reda, Kazimierz J.; Dzewaltowski, Victor F.; Millay, Lawrence I.; and Hobbs, Robert N., 4,450,651, Cl. 51-5.00D.

Hock, Karl-Ludwig: *See—*
Kranz, Joachim; Habermann, Wolfgang; Distler, Harry; Knittel, Helmut; Hock, Karl-Ludwig; Brunnmueller, Fritz; and Schneider, Rolf, 4,451,339, Cl. 204-91.000.

Hodge, Malcolm H.: *See—*
Leiby, John J.; Hodge, Malcolm H.; and Larkin, Joseph F., 4,450,995, Cl. 225-2.000.

Hodgson, Sten E.; and Gemra, Richard J., to AT&T Technologies, Inc. Apparatus for splicing electric wires. 4,451,104, Cl. 339-99.00R.

Hoechst Aktiengesellschaft: *See—*
Diery, Helmut; Wester, Norbert; and Hille, Martin, 4,451,671, Cl. 564-286.000.
Dietz, Erwin; and Munkel, Albert, 4,451,656, Cl. 548-352.000.
Oppitz, Peter; Schulze-Braucks, Manfred; and Tesche, Rolf, 4,451,263, Cl. 8-500.000.
Vertesy, Laszlo; Mracek, Miroslav; Braunitzer, Gerhard; and Aschauer, Heinz, 4,451,455, Cl. 424-177.000.
Walker, Stephen E.; Bedford, Keith; and Eaves, Terence, 4,450,877, Cl. 141-1.000.
Wiezer, Hartmut, 4,451,400, Cl. 260-244.400.

Hoefnagels, Johannes F.: *See—*
Rijckaert, Albert M. A.; Ruyten, Henricus M.; Hoefnagels, Johannes F.; and Schoenmakers, Johannes J. M., 4,451,862, Cl. 360-109.000.

Hoenstine, James M.; and Ray, Thomas E. Hydroplane apparatus. 4,451,239, Cl. 441-66.000.

Hofer, Gerald: *See—*
Eheim, Franz; and Hofer, Gerald, 4,450,805, Cl. 123-387.000.

Hoffman, George J., to Litton Systems, Inc. Magnet structure. 4,451,811, Cl. 335-302.000.

Hoffman, Kevin R.: *See—*
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,450,786, Cl. 118-719.000.

Hoffmann, Helmuth, to Hydrotechnik GmbH. Turbine rotor for a flow meter. 4,451,207, Cl. 416-237.00R.

Hoffmann, Karl-Heinz: *See—*
Thoma, Frank; Hoffmann, Karl-Heinz; and Burckhardt, Christoph, 4,450,818, Cl. 123-502.000.

Hogg, Grady R., Jr.; and Tanner, Nathan S., to Great Lakes Carbon Corporation. Composite electrode for arc furnace. 4,451,926, Cl. 373-93.000.

Holden, John E.; Eddins, Fred D.; and Kimbrough, Richard W. Action play toy. 4,450,650, Cl. 46-17.000.

Holdstock, Barry C.: *See—*
Atkinson, Ivor B.; and Holdstock, Barry C., 4,451,630, Cl. 526-261.000.

Holdsworth, Timothy M.; Hesler, Joseph P.; and DuBois, George W., to Eagle Comtronics, Inc. Split tuning filter. 4,451,803, Cl. 333-12.000.

Holland, Chester R. Coupon organizer. 4,450,994, Cl. 224-277.000.

Hollins, Richard A.: *See—*
Atkins, Ronald L.; Hollins, Richard A.; Norris, William P.; Nielsen, Arnold T.; and Wilson, William S., 4,451,681, Cl. 568-932.000.

Hollis Engineering, Inc.: *See—*
Stephens, David E., 4,451,000, Cl. 228-20.000.

Holmberg, Per: *See—*
Frilund, Eyvind; and Holmberg, Per, 4,451,337, Cl. 204-67.000.

Holmes, Maurice F.; and Garavuso, Gerald M., to Xerox Corporation. Sheet feeding apparatus. 4,451,028, Cl. 271-11.000.

Holter, Heinz; Igelbuscher, Heinrich; Gresch, Heinrich; and Dewert, Heribert, to Holter, Heinz. Apparatus for cleaning air loaded with pollutants. 4,451,435, Cl. 422-171.000.

Holtermann, Svein: *See—*
Mayer, Fritz; and Holtermann, Svein, 4,451,262, Cl. 8-125.000.

Homola, Andrew M.; Lorenz, Max R.; and Sussner, Heinrich, to International Business Machines Corporation. Increasing magnetic particle concentration in magnetic coatings. 4,451,495, Cl. 427-27.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ikenoya, Yasuo; and Ishida, Yoichi, 4,450,683, Cl. 60-290.000.
Ito, Hiroshi; Yoshio, Toshihiko; and Nagashima, Masao, 4,450,611, Cl. 29-156.8FC.
Otani, Junji; Ikenoya, Yasuo; and Kato, Hiroshi, 4,450,684, Cl. 60-290.000.
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,450,680, Cl. 60-274.000.
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,450,812, Cl. 123-438.000.
Sakurai, Yoshimi, 4,451,105, Cl. 339-113.00R.

Honda, Keith T.; Smith, Stephen L.; and Voyer, Peter E., to United Technologies Corporation. Rotor blade assembly. 4,451,205, Cl. 416-219.00R.

Honeywell Inc.: *See—*
Dougherty, William R.; Colby, Dwight D.; Fahley, Jerome A.; and Van Dyke, Martin J., 4,451,894, Cl. 364-509.000.
Green, Kenneth E.; and Talbourdet, John A., 4,450,693, Cl. 62-514.00R.
Griep, Jonathan P., 4,451,779, Cl. 323-312.000.
James, Stephen A., 4,451,868, Cl. 361-306.000.
Landis, William R.; and Patton, Paul B., 4,451,225, Cl. 431-14.000.
Landis, William R.; and Patton, Paul B., 4,451,226, Cl. 431-15.000.
Landis, William R.; and Patton, Paul B., 4,451,227, Cl. 431-18.000.

Honeywell Information Systems Inc.: *See—*
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,451,880, Cl. 364-200.000.
Stanley, Philip E.; Woods, William E.; Lemay, Richard A.; and Cushing, David E., 4,451,883, Cl. 364-200.000.

Honjo, Masahiro; and Tomita, Masao, to Matsushita Electric Industrial Co., Ltd. Tracking-error correcting system in a video reproducing apparatus. 4,451,860, Cl. 360-77.000.

Honma, Kazuo: *See—*
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,451,893, Cl. 364-494.000.

Honma, Takao; Matsukura, Nobuaki; Murakami, Keisuke; and Matsuda, Susumu, to Tokyo Electric Co., Ltd. Printing device with swing-away cutter arrangement. 4,451,167, Cl. 400-621.000.

Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, to Hitachi, Ltd. Semiconductor device with multi-layered electrodes. 4,451,841, Cl. 357-23.600.

Horiba Instruments Incorporated: *See—*
D'Angelo, Severino; and Moore, Max J., 4,450,728, Cl. 73-862.280.

Horiba, Ltd.: *See—*
Ishida, Masaharu, 4,451,690, Cl. 136-201.000.

Horiguchi, Makoto: *See—*
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,451,506, Cl. 427-239.000.

Horne, Charles A.; Salvo, Stephen A.; Sundelin, Kurt G. R.; and Roman, Steven A., to Shell Oil Company. Use of pyrroloquinazolinediamines as pesticides. 4,451,466, Cl. 424-251.000.

Hornig, Rudolf; and Worner, Gunter, to Daimler-Benz Aktiengesellschaft. Coupling connection for a fiber reinforced synthetic resin pipe. 4,451,245, Cl. 464-181.000.

Horton Manufacturing, Co.: *See—*
Hanks, James V., 4,450,947, Cl. 192-107.00R.

Horvath, Karoly: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.

Hoshi, Yoshikazu: *See—*
Takano, Yoshiya; and Hoshi, Yoshikazu, 4,450,813, Cl. 123-450.000.

Hoshimi, Susumu; and Kojima, Tadashi, to Sony Corporation; and Tokyo Shibaura Denki Kabushiki Kaisha. PCM Signal processing apparatus. 4,451,920, Cl. 371-40.000.

Hosokawa, Motoyuki: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,451,678, Cl. 568-902.000.

Hotchkin, Peter, to R. T. French Co., The. Tank dispenser with end-of-life indicator. 4,450,594, Cl. 4-228.000.

Houlihan, William J.: *See—*
Hardtmann, Goetz E.; and Houlihan, William J., 4,451,448, Cl. 424-251.000.
Hardtmann, Goetz E.; and Houlihan, William J., 4,451,464, Cl. 424-251.000.

Howes, John G. B., to Smith and Nephew Associated Companies Ltd. Polymers, preparation and use. 4,451,624, Cl. 526-292.200.

Howley, Frank E.: *See—*
Grice, Donald G.; and Howley, Frank E., 4,451,881, Cl. 364-200.000.

Howmedica, Inc.: *See—*
Asnis, Stanley E.; and Borzone, Rocco R., 4,450,835, Cl. 128-92.0EB.

Huang, I-Der: *See—*
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,451,673, Cl. 568-454.000.

Hubmann, Max: *See—*
Weikl, Andreas; and Hubmann, Max, 4,451,256, Cl. 604-164.000.

Huc, Alain R.; Allard, Roland L.; and Chavrier, Christian L., to Centre Technique du Cuir. Method of preparing collagen products. 4,451,397, Cl. 260-123.700.

Huckebrink, Wilhelm, to Westfalia Separator AG. Electropneumatic valve control. 4,450,864, Cl. 137-624.130.

Hudson, Lynn R.: *See—*
Moberg, Gregory D.; and Hudson, Lynn R., 4,451,772, Cl. 320-1.000.

Hughes Aircraft Company: *See—*
Angle, Ellwyn R.; and Wilkerson, John L., 4,451,766, Cl. 315-248.000.
Moyer, Norman E., 4,451,905, Cl. 365-185.000.
Pinnow, Douglas A.; Gentile, Anthony L.; Standlee, Arlie G.; and Timper, Arthur J., 4,451,116, Cl. 350-96.340.

Hughes Tool Company: *See—*
Baugh, John L.; and Montgomery, James W., 4,450,857, Cl. 137-318.000.
Bower, Arnold B., Jr., 4,451,179, Cl. 405-260.000.
Shepherd, William L., 4,451,162, Cl. 384-95.000.

Huguenin, Raymond: *See—*
Stolz, Silvano; and Huguenin, Raymond, 4,451,754, Cl. 310-348.000.

Huignard, Jean P.: *See—*
Loiseaux, Brigitte; Huignard, Jean P.; Dubois, Jean C.; and Eranian, Armand, 4,451,412, Cl. 264-1.300.

Huignard, Jean-Pierre, to Thomson-CSF. Optical device for sustaining a radiant energy pulse which circulates within a monomode wave guide a gyrometer and a hydrophone equipped with said optical device. 4,451,151, Cl. 356-345.000.

Huizenga, John R.: *See—*
Dinius, Harold B.; and Huizenga, John R., 4,451,254, Cl. 604-62.000.

Hull, James R. Convertible bed. 4,450,597, Cl. 5-2.00R.

Humber, David C.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, David B.; and Coomber, Barry A., 4,451,405, Cl. 260-397.100.

Hunt, Brion L. Automotive heat reflector shield. 4,451,514, Cl. 428-71.000.

Hunt, William C., III, to Mobil Oil Corporation. Thermal recovery of viscous oil from a dipping reservoir. 4,450,910, Cl. 166-261.000.

Hunter, Eric: *See—*
Watson, Eric; and Hunter, Eric, 4,451,173, Cl. 405-53.000.

Hussey, James H.: *See—*
Bauer, Carl F.; Hussey, James H.; and Langston, Benny, 4,451,287, Cl. 75-24.000.

Hutchison, James M. S.: *See—*
Edelstein, William A.; Hutchison, James M. S.; Johnson, Glyn; Redpath, Thomas W. T.; and Mallard, John R., 4,451,788, Cl. 324-309.000.

Hutchison, Marion E. Mulching mower. 4,450,673, Cl. 56-17.500.

Hydro-Quebec: *See—*
Simard, Julien, 4,451,910, Cl. 367-199.000.

Hydro Research and Development (UK) Ltd.: *See—*
Smisson, Bernard, 4,451,366, Cl. 210-209.000.

Hydrotechnik GmbH: *See—*
Hoffmann, Helmuth, 4,451,207, Cl. 416-237.00R.

Hylsa, S.A.: *See—*
Sandoval, E. Jorge, 4,451,925, Cl. 373-81.000.

Iafret, John E.: *See—*
Striese, Jim G.; Iafret, John E.; and Batterson, William D., 4,451,071, Cl. 292-341.180.

Iantorno, James, to Sealectro Corporation. Molded shorting jack. 4,450,622, Cl. 29-842.000.

Ibe, Eishi: *See—*
Nishimura, Eiichi; Uchida, Shunsuke; Kitamura, Masao; Saito, Koichi; Ibe, Eishi; and Hayashi, Tatsuo, 4,451,428, Cl. 376-333.000.

Ibori, Satoshi: *See—*
Nagase, Hiroshi; Ninomiya, Hisakazu; and Ibori, Satoshi, 4,451,771, Cl. 318-800.000.

Ibuki, Noritaka; and Kawai, Shizuo, to Nippondenso Co., Ltd. Method and apparatus for controlling fuel injection timing for compression ignition engines. 4,450,817, Cl. 123-501.000.

Icard, Jean-Pierre G.: *See—*
Gres, Jean-Pierre; and Icard, Jean-Pierre G., 4,451,723, Cl. 219-98.000.

Ichikawa, Iwao; and Kaimori, Kenichiro, to Sony Corporation. Apparatus for placing chip type circuit elements on a board. 4,451,324, Cl. 156-562.000.

Ichikawa, Sadao, to NGK Spark Plug Co., Ltd. Controller for internal combustion engine. 4,450,811, Cl. 123-425.000.

Ichikawa, Singo: *See—*
Suzuki, Fuminori; and Ichikawa, Singo, 4,451,743, Cl. 307-110.000.

ICI Australia Ltd.: *See—*
Bolto, Brian A.; and Jackson, Mervyn B., 4,451,581, Cl. 521-28.000.

Idel, Karsten: *See—*
Ostlinning, Edgar; Idel, Karsten; Neuner, Otto; and Bottenbruch, Ludwig, 4,451,644, Cl. 528-388.000.

Igarashi, Hiroshi: *See—*
Yamashita, Mitsuyasu; Igarashi, Hiroshi; and Koga, Shosuke, 4,450,931, Cl. 181-198.000.

Igashira, Toshihiko: *See—*
Abe, Seiko; Igashira, Toshihiko; and Watanabe, Kazuhide, 4,450,823, Cl. 123-549.000.
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; and Kawai, Hisasi, 4,450,825, Cl. 123-569.000.

Igelbuscher, Heinrich: *See—*
Holter, Heinz; Igelbuscher, Heinrich; Gresch, Heinrich; and Dewert, Heribert, 4,451,435, Cl. 422-171.000.

Iijima, Tetsuya; and Takahashi, Seiichi, to Nissan Motor Company, Limited. Air-conditioning method and system for an automotive vehicle. 4,450,897, Cl. 165-2.000.

Ikari, Hideo; and Hirohata, Michio, to Canon Kabushiki Kaisha. Camera having a plurality of built-in lenses. 4,451,129, Cl. 354-477.000.

Ikeda, Hiroaki, to Nippon Electric Co., Ltd. Dynamic type memory device having improved operation speed. 4,451,906, Cl. 365-205.000.

Ikegami, Tadashi; Takaya, Katsuhiko; and Yoneda, Haruyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Catalyst for polymerization of olefins. 4,451,573, Cl. 502-113.000.

Ikenoya, Yasuo; and Ishida, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning system for internal combustion engines. 4,450,683, Cl. 60-290.000.

Ikenoya, Yasuo: *See—*
Otani, Junji; Ikenoya, Yasuo; and Kato, Hiroshi, 4,450,684, Cl. 60-290.000.

Ikeura, Kenji: *See—*
Sawamoto, Kunifumi; Morita, Tatsuo; Ikeura, Kenji; and Yamaguchi, Hiroshi, 4,450,814, Cl. 123-478.000.

Ikuta, Yasuhiro: *See—*
Wada, Hiroki; and Ikuta, Yasuhiro, 4,450,810, Cl. 123-425.000.

Iley, Harold: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Ilzuka, Takao: *See—*
Takada, Takuzo; Sugirua, Hiroaki; and Ilzuka, Takao, 4,450,878, Cl. 141-48.000.

Imagi, Tsutomu: *See—*
Fudatsuji, Toshiharu; Imagi, Tsutomu; and Miura, Hiroshi, 4,451,165, Cl. 400-196.100.

Imai, Fusao: *See—*
Akiyama, Hiroyuki; Hatakeyama, Hidewo; Shimoyashiki, Nobuyoshi; Momose, Yoshiaki; and Imai, Fusao, 4,451,417, Cl. 264-53.000.

Imatani, Tsuneo: *See—*
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,451,316, Cl. 156-274.600.

Imazeki, Ryoji; Hattori, Masayuki; and Nakamura, Shigeo, to Fanuc Ltd. Power source device for bubble memory unit. 4,451,902, Cl. 365-1.000.

Imperial Chemical Industries Inc.: *See—*
Flannigan, William T., 4,451,390, Cl. 252-321.000.

Imperial Chemical Industries, PLC: *See—*
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,451,419, Cl. 264-164.000.
Davies, Phineas; Jennings, James R.; and Wolstenholme, Jack, 4,451,683, Cl. 570-224.000.
Large, Michael S., 4,451,463, Cl. 424-249.000.
Robertson, James, 4,451,867, Cl. 361-248.000.

Inagaki, Mitsuo: *See—*
Ito, Seitoku; Takeda, Kenji; Inagaki, Mitsuo; and Motoda, Nobuo, 4,451,220, Cl. 418-255.000.

Incom International Inc.: *See—*
McCloskey, John A., 4,450,703, Cl. 72-342.000.

Industrial Electronics Service Co.: *See—*
Kovarik, Richard F., 4,451,712, Cl. 179-175.30R.

Industrial Research Products, Inc.: *See—*
Killion, Mead C., 4,450,930, Cl. 181-158.000.

Ingersoll-Rand Company: *See—*
Davenport, Henry A.; and Barrows, Robert E., 4,450,938, Cl. 184-42.000.
Krasnoff, Eugene L.; and Lindeboom, Herman, 4,450,920, Cl. 173-80.000.

Inoguchi, Kazuhiro; Okamoto, Kunio; and Isomura, Keiichiro, to Nippon Soken, Inc. Ceramic honeycomb catalyst support coated with activated alumina. 4,451,517, Cl. 428-116.000.

Inohara, Shizuo: *See—*
Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,846, Cl. 358-56.000.
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,852, Cl. 358-230.000.

Inomata, Takehiro; and Oyabu, Nobuya, to Komori Printing Machinery Co., Ltd. Unit-to-unit register adjusting apparatus of multicolor printing machine. 4,450,766, Cl. 101-183.000.

Inoue, Nori, to Tokai Electric Wire Company Limited. Connector terminal. 4,451,109, Cl. 339-258.00S.

Institu Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR: *See*—
Kalvinsh, Ivars Y.; Vinogradov, Alexei V.; Veveris, Maris M.; Makarova, Inna I.; Birman, Anatoly S.; Barmotin, Georgy V.; and Akifiev, Oleg N., 4,451,485, Cl. 424-316.000.

Institut Elektrodinamiki Akademii Nauk Ukrainskoi SSR: *See*—
Shidlovsky, Anatoly K.; Taranov, Sergei G.; Braiko, Voldmir V.; Grinberg, Isaak P.; Tesik, Jury F.; and Karasinsky, Oleg L., 4,451,783, Cl. 324-86.000.

Institute PO Obleklo I Textil: *See*—
Petrov, Georgi M.; Boev, Kiril K.; Fidelski, Igor A.; and Pirgov, Yordan T., 4,450,675, Cl. 57-6.000.

Intel Corporation: *See*—
Amrany, Daniel, 4,451,748, Cl. 307-578.000.

Interlake, Inc.: *See*—
Strom, Hubert, 4,450,936, Cl. 182-92.000.

Intermedicat GmbH: *See*—
Weikl, Andreas; and Hubmann, Max, 4,451,256, Cl. 604-164.000.

International Business Machine Corporation: *See*—
Hall, Stephen T.; Hardiman, Raymond; Johnson, Peter W.; Quarendon, Peter; and Tuffill, Harold W., 4,451,825, Cl. 340-750.000.

International Business Machines Corporation: *See*—
Bellamy, Robert L., Jr.; Bersot, James D.; Leonard Thomas K.; and Muse, Richard R., 4,451,190, Cl. 411-337.000.
Blum, Samuel E.; Brown, Karen H.; and Srinivasan, Rangaswamy, 4,451,503, Cl. 427-53.100.
Burkhart, Robert W.; Cox, Allen R.; and Hartley, John D., 4,451,344, Cl. 204-192.00R.
Dearden, Ziba T.; and Puri, Yogi K., 4,451,922, Cl. 371-49.000.
DePalma, Vincent M.; Dilley, Reginald J.; Doerner, Mary F.; and Nepela, Daniel A., 4,451,532, Cl. 428-336.000.
Grice, Donald G.; and Howley, Frank E., 4,451,881, Cl. 364-200.000.
Heath, Chester A.; and VanDuren, Richard G., 4,451,884, Cl. 364-200.000.
Homola, Andrew M.; Lorenz, Max R.; and Sussner, Heinrich, 4,451,495, Cl. 427-27.000.
Marinace, John C., 4,451,391, Cl. 252-512.000.
Yeh, James T., 4,451,349, Cl. 204-298.000.

International Flåvors & Fragrances Inc.: *See*—
Evers, William J.; Stork, Gilbert; Mookherjee, Barja D.; and Heinsohn, Howard H., Jr., 4,451,392, Cl. 252-522.00R.
Klemarczyk, Philip T., 4,451,403, Cl. 260-396.00N.

International Telephone and Telegraph Corporation: *See*—
Sodini, Gregory L., 4,451,763, Cl. 315-159.000.
Winter, Joseph; Tyler, Derek E.; and Dantzig, Jonathan A., 4,450,893, Cl. 164-468.000.

Inuzuka, Tsuneki: *See*—
Tanioka, Hiroshi; Ishida, Masato; and Inuzuka, Tsuneki, 4,451,136, Cl. 355-14.0SH.

Ipnar, Albert J.: *See*—
Ostergren, William F.; and Ipnar, Albert J., 4,451,004, Cl. 239-658.000.

Irrgeher, Hans. Drawing material backing for making technical and diagrammatic drawings. 4,451,519, Cl. 428-167.000.

Isakozawa, Shigeto, to Hitachi, Ltd. Electron beam control device for electron microscopes. 4,451,737, Cl. 250-311.000.

Ishibashi, Akira: *See*—
Hattori, Motonobu; Tamuro, Yasuharu; Ishibashi, Akira; and Nandoh, Kenji, 4,451,112, Cl. 318-778.000.

Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Process for preparation of metal vessels. 4,451,316, Cl. 156-274.600.

Ishibashi, Tadashi; Ishida, Masahiko; and Odawara, Yoji, to Hitachi, Ltd. Method for pretreatment of cellulosic materials. 4,451,567, Cl. 435-170.000.

Ishida, Masaharu, to Horiba, Ltd. Method of compensating a temperature of a thermopile. 4,451,690, Cl. 136-201.000.

Ishida, Masahiko: *See*—
Ishibashi, Tadashi; Ishida, Masahiko; and Odawara, Yoji, 4,451,567, Cl. 435-170.000.

Ishida, Masato: *See*—
Tanioka, Hiroshi; Ishida, Masato; and Inuzuka, Tsuneki, 4,451,136, Cl. 355-14.0SH.

Ishida, Osamu; Uetani, Yoshio; and Matsushima, Seiichi, to Hitachi Maxell, Ltd. Cell with gasket comprising glass beads. 4,451,542, Cl. 429-174.000.

Ishida, Yoichi: *See*—
Ikenoya, Yasuo; and Ishida, Yoichi, 4,450,683, Cl. 60-290.000.

Ishii, Kiyoshi: *See*—
Murai, Masataka; and Ishii, Kiyoshi, 4,451,370, Cl. 210-321.100.

Ishikawa, Masaru: *See*—
Taguchi, Kiyomi; Hanmyo, Masayuki; and Ishikawa, Masaru, 4,450,894, Cl. 164-484.000.

Ishikawa, Masayuki; Eguchi, Yukuo; Moriguchi, Soyao; and Ebisawa, Hisashi, to Ishikawa, Masayuki. 4(3H)-Quinazolinone derivatives, process for production thereof, and pharmaceutical compositions comprising said compounds. 4,451,467, Cl. 424-251.000.

Ishikawa, Michio; and Sasaki, Kiyoshi, to Brother Kogyo Kabushiki Kaisha. Machine tool. 4,451,187, Cl. 409-187.000.

Ishikawa, Naozi: *See*—
Furuhashi, Yasuhiro; Ishikawa, Naozi; and Kawai, Shizuo, 4,450,819, Cl. 123-502.000.

Ishikawa, Wataru: *See*—
Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, 4,451,561, Cl. 430-619.000.

Ishikura, Tomoyuki: *See*—
Okabe, Mitsuyasu; Yoshioka, Takeo; Fukagawa, Yasuo; Okamoto, Rokuro; Kouno, Kageaki; and Ishikura, Tomoyuki, 4,451,401, Cl. 260-245.20T.

Ishizawa, Kenki: *See*—
Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, 4,451,350, Cl. 204-422.000.

Isobe, Yukihiro; Tanaka, Kazushi; Nishimatsu, Masaharu; Shinoura, Osamu; and Kubota, Yuichi. Magnetic recording medium and method. 4,451,531, Cl. 428-329.000.

Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, to Agency of Industrial Science and Technology. Process for producing ethanol. 4,451,678, Cl. 568-902.000.

Isogai, Tokio: *See*—
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitumasa, 4,451,551, Cl. 430-270.000.

Isomura, Keiichiro: *See*—
Inoguchi, Kazuhiro; Okamoto, Kunio; and Isomura, Keiichiro, 4,451,517, Cl. 428-116.000.

Isotronics, Inc.: *See*—
Baird, Phillips C.; and Duff, Raymond J., 4,451,540, Cl. 428-615.000.

Isshiki, Minoru: *See*—
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.

Italimpianti Societa Impianti p.A.: *See*—
Bocci, Giorgio; Dardano, Alberto; Levaggi, Vittorio; and Milani, Ambrogio, 4,451,230, Cl. 431-284.000.

Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, to Kabushiki Kaisha Daini Seikosha. Functional electrode. 4,451,348, Cl. 204-290.00R.

Ito, Hiroshi; Yoshio, Toshihiko; and Nagashima, Masao, to Honda Giken Kogyo Kabushiki Kaisha. Method of manufacturing a blade wheel. 4,450,611, Cl. 29-156.8FC.

Ito, Seitoku; Takeda, Kenji; Inagaki, Mitsuo; and Motoda, Nobuo, to Nippon Soken, Inc. Rotary compressor with clearance between movable vanes and slits of the rotor. 4,451,220, Cl. 418-255.000.

Ito, Takashi: *See*—
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,041, Cl. 273-167.00H.
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,042, Cl. 273-171.000.

Ito, Yoshimasa: *See*—
Kikuchi, Akira; Sawano, Susumu; and Ito, Yoshimasa, 4,451,195, Cl. 414-732.000.

Itoh, Hideo; and Agatsuma, Kenji, to Fujitsu Limited. Address buffer circuit with low power consumption. 4,451,745, Cl. 307-475.000.

Itoh, Kiyoo: *See*—
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,451,841, Cl. 357-23.600.

Itoh, Susumu: *See*—
Yamaguchi, Hisao; Fujisawa, Kazuo; Kadowaki, Takashi; Itoh, Susumu; Sasaki, Soji; and Sato, Ichiya, 4,450,725, Cl. 73-643.000.

ITT Industries, Inc.: *See*—
Adam, Fritz G., 4,451,744, Cl. 307-297.000.
Boehm, Peter, 4,450,688, Cl. 60-554.000.
Gygax, Johannes, 4,451,096, Cl. 303-109.000.
Kohler, Alfred; and Rachner, Horst, 4,451,768, Cl. 318-443.000.

Ivanov, Eduard E.: *See*—
Dshkhunian, Valery L.; Ivanov, Eduard E.; Kovalenko, Sergei S.; Mashevich, Pavel R.; Ryzhov, Alexei A.; Telenkov, Vyacheslav V.; and Chicherin, Jury E., 4,451,882, Cl. 364-200.000.

Iwagami, Hisao: *See*—
Yasuda, Naohiko; Okutsu, Masaru; Iwagami, Hisao; Nakamiya, Teruaki; and Takase, Ichiro, 4,451,399, Cl. 260-239.100.

Iwaki, Yoshiyuki; Yokota, Mitsuyoshi; and Matsumoto, Akio, to Mitsubishi Denki Kabushiki Kaisha. Charging generator control system. 4,451,776, Cl. 322-22.000.

Iwasa, Koji: *See*—
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,451,348, Cl. 204-290.00R.

Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, to Matsushita Electric Industrial Co., Ltd. Color image display apparatus. 4,451,846, Cl. 358-56.000.

Iyehara, Sadahiro: *See*—
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,852, Cl. 358-230.000.

Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, to Hitachi Construction Machinery Co., Ltd. Control method and control system for hydrostatic drive system. 4,451,893, Cl. 364-494.000.

J. A. Wilson Display Ltd.: *See*—
Shepherd, Charles G., 4,450,970, Cl. 211-189.000.

Jackson, Mark. Readily portable speaker enclosure. 4,451,711, Cl. 179-146.00E.

Jackson, Mervyn B.: *See*—
Bolto, Brian A.; and Jackson, Mervyn B., 4,451,581, Cl. 521-28.000.

Jackson, William L., to Dunlop Limited. Pneumatic tires. 4,451,313, Cl. 156-132.000.

Jacobs, Abe: *See*—
Haig, David E., 4,450,981, Cl. 222-61.000.

Jaconette, Frank C., to Harvey Hubbell Incorporated. Grounding latch apparatus for electrical connectors. 4,451,100, Cl. 339-14.00R.

Jakobsson, Per-Olof; and Beverskog, Sven, to Flakt Aktiebolag. Method of regulating an outdoor steam condensor and apparatus for performing said method. 4,450,899, Cl. 165-39.000.

Jaliwala, Salim A.: *See*—
Morris, Corydon E.; and Jaliwala, Salim A., 4,450,783, Cl. 123-458.000.

James C. Barber and Associates, Inc.: *See*—
Barber, James C., 4,451,277, Cl. 71-36.000.

James River Graphics, Inc.: *See*—
Bennett, Everett W.; and Arfaei, Ahmad, 4,451,550, Cl. 430-176.000.

James, Stephen A., to Honeywell Inc. Electrical capacitor. 4,451,868, Cl. 361-306.000.

Jans, Johannes M., to U.S. Philips Corporation. Method of producing printed circuit boards. 4,451,505, Cl. 427-98.000.

Janssen, Norbert G. L. M., to Stamicarbon B.V. Heat recovery attachment for a heating apparatus. 4,450,901, Cl. 165-47.000.

Japan Electronic Industry Development Association: *See*—
Kishi, Kohhei; Kato, Hiroaki; Matsuura, Masataka; and Wada, Tomio, 4,451,554, Cl. 430-313.000.

Japan Radio Company, Ltd.: *See*—
Hirose, Kengo; and Kudo, Norio, 4,451,813, Cl. 337-17.000.

Japan Styrene Paper Corporation: *See*—
Akiyama, Hiroyuki; Hatakeyama, Hidewo; Shimoyashiki, Nobuyoshi; Momose, Yoshiaki; and Imai, Fusao, 4,451,417, Cl. 264-53.000.

Jean Walterscheid GmbH: *See*—
Troeder, Christoph; Faber, Manfred; and Seigert, Peter, 4,450,729, Cl. 73-862.340.

Jeffrey, Gaines C.; Cooper, Lance A.; and Whipple, Sharon S., to Dow Chemical Company, The. Removal of hydrogen sulfide from fluid streams with minimum production of solids. 4,451,442, Cl. 423-224.000.

Jeffrey, Louis D. Self supporting mouth speculum for horses, mules, and other animals. 4,450,831, Cl. 128-14.000.

Jeneric Industries, Inc.: *See*—
Cohen, Gordon S., 4,450,957, Cl. 206-220.000.
Prasad, Arun, 4,450,958, Cl. 206-222.000.
Prasad, Arun, 4,451,639, Cl. 420-464.000.

Jennings, James R.: *See*—
Davies, Phineas; Jennings, James R.; and Wolstenholme, Jack, 4,451,683, Cl. 570-224.000.

Jensen, Ole R., to E. R. Squibb & Sons, Inc. Ostomy bag with an adjustable vent. 4,451,258, Cl. 604-333.000.

Jermansen, Torris G.: *See*—
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,451,673, Cl. 568-454.000.

Jerome, Norman F.: *See*—
Nevitt, Thomas D.; and Jerome, Norman F., 4,451,685, Cl. 585-415.000.

Jessel, Alfred J., to Chevron Research Company. Engine intake valve with heat pipe. 4,450,798, Cl. 123-41.410.

Jetter, Heinz: *See*—
Meyer-Kretschmer, Gustav; Jetter, Heinz; and Toennies, Peter, 4,451,437, Cl. 423-3.000.

Jofax Industries, Inc.: *See*—
Goodman, Joseph E., 4,451,143, Cl. 355-66.000.

Jog-O-Lite, Inc.: *See*—
Kirkley, J. Darrell; and Weaver, Joe C., 4,451,871, Cl. 362-186.000.

John Thomas Batts, Inc.: *See*—
Duester, Everett L., 4,450,639, Cl. 40-322.000.

John Wyeth & Brother Ltd.: *See*—
White, Alan C.; and Wyllie, Michael G., 4,451,465, Cl. 424-251.000.

Johncock, Peter, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Epoxy compounds. 4,451,645, Cl. 528-391.000.

Johne, Hans: *See*—
Forster, Karl-Heinz; Johne, Hans; Schuck, Helmut; and Friedrich, Ludwig, 4,450,767, Cl. 101-365.000.

Johns Hopkins University, The: *See*—
Kahn, Steven A.; Stewart, Robert L.; and Tolchin, Stephen G., 4,451,827, Cl. 340-825.520.

Johnson, Burnett H., to Exxon Research & Engineering Co. Polymerization catalyst. 4,451,574, Cl. 502-115.000.

Johnson, Clark E., Jr., to Vertimag Systems Corporation. Analog recording system. 4,451,858, Cl. 360-32.000.

Johnson, Douglas M., to Empak Inc. Package. 4,450,960, Cl. 206-334.000.

Johnson, Eugene R.: *See*—
Mower, Morris F.; and Johnson, Eugene R., 4,451,223, Cl. 425-458.000.

Johnson, Glyn: *See*—
Edelstein, William A.; Hutchison, James M. S.; Johnson, Glyn; Redpath, Thomas W. T.; and Mallard, John R., 4,451,788, Cl. 324-309.000.

Johnson, Howard L.: *See*—
Berger, Frank M.; DeGraw, Joseph I., Jr.; and Johnson, Howard L., 4,451,474, Cl. 424-266.000.

Johnson, Peter W.: *See*—
Hall, Stephen T.; Hardiman, Raymond; Johnson, Peter W.; Quarendon, Peter; and Tuffill, Harold W., 4,451,825, Cl. 340-750.000.

Johnson, Robert B.; and Nibby, Chester M., Jr., to Honeywell Information Systems Inc. Memory controller with interleaved queuing apparatus. 4,451,880, Cl. 364-200.000.

Johnston, Christian W.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,451,635, Cl. 528-71.000.

Jones, Arthur L.; and Seeney, Ronald G., to Scovil, Inc. Continuous casting of stringers for sliding clasp fasteners. 4,451,421, Cl. 264-167.000.

Jones, J. Richard: *See*—
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Jones, James E.: *See*—
Brightman, Barrie; Ellis, Thomas E.; Jones, James E.; Lenk, Pedro A.; Shah, Jayantkumar R.; Stewart, William H.; and Woodward, John W., 4,451,702, Cl. 179-18.0ES.

Jordan, Larry T., to Seeq Technology, Inc. Method and device for encoding product and programming information in semiconductors. 4,451,903, Cl. 365-94.000.

Joseph, Joseph P.: *See*—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,451,479, Cl. 424-273.00P.

Joshi, David P., to Colgate-Palmolive Company. Detergent tablet. 4,451,386, Cl. 252-135.000.

Jost, Manfred: *See*—
Knoke, Jurgen; Jost, Manfred; Tecl, Bohuslav; and Fahrbach, Erich, 4,451,314, Cl. 156-148.000.

Jouve, Hubert: *See*—
Gerard, Philippe; Jouve, Hubert; and Madore, Michel, 4,451,500, Cl. 427-38.000.

Joyal Products, Inc.: *See*—
Szantho, Charles F.; and Riordan, Edward D., 4,451,722, Cl. 219-86.250.

Jungkind, Roland: *See*—
Knabel, Walter; Wagner, Ludwig; and Jungkind, Roland, 4,451,059, Cl. 280-632.000.

Jutte, Hans: *See*—
Flocke, Gunter; Jutte, Hans; Linde, Klaus; Klamke, Winfried; and Hampel, Werner, 4,451,176, Cl. 405-146.000.

Kabashima, Katsuhiko: *See*—
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; Enomoto, Seiji; and Mezawa, Tsutomu, 4,451,908, Cl. 365-222.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,451,348, Cl. 204-290.00R.

Kabushiki Kaisha Hosakawa Funtai Kogaku Kenkyosho: *See*—
Urayama, Kiyoshi, 4,451,005, Cl. 241-40.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Takahashi, Tomoyuki, 4,451,079, Cl. 296-190.000.

Kabushiki Kaisha Sankyo Seiko Seisakusho: *See*—
Kitamura, Yoshio, 4,450,939, Cl. 185-39.000.

Kabushiki Kaisha Sanshin Seisakusho: *See*—
Yagishita, Aisaburo; Mori, Noboru; Kusumi, Kinshiro; and Tsugi, Yoshio, 4,451,298, Cl. 134-10.000.

Kabushiki Kaisha Sato: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,451,323, Cl. 156-541.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kawabata, Susumu; Niimi, Hiroshi; Anahara, Meiji; Suzuki, Yoshihisa; and Omori, Hiroshi, 4,450,678, Cl. 57-333.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kawabata, Susumu; Niimi, Hiroshi; Anahara, Meiji; Suzuki, Yoshihisa; and Omori, Hiroshi, 4,450,678, Cl. 57-333.000.

Kadowaki, Takashi: *See*—
Yamaguchi, Hisao; Fujisawa, Kazuo; Kadowaki, Takashi; Itoh, Susumu; Sasaki, Soji; and Sato, Ichiya, 4,450,725, Cl. 73-643.000.

Kadowaki, Toshinori: *See*—
Kawachi, Shoji; Kadowaki, Toshinori; and Yamamoto, Katsutoshi, 4,451,616, Cl. 525-178.000.

Kadziela, Kris: *See*—
Nativi, Larry A.; and Kadziela, Kris, 4,451,523, Cl. 428-209.000.

Kaesz, Herbert D.: *See*—
Porter, Clifford R.; and Kaesz, Herbert D., 4,451,351, Cl. 208-10.000.

Kagamiyama, Rokuro. Rotary piston type fluid machine. 4,451,214, Cl. 418-11.000.

Kahl, William G., Jr.: *See*—
Avery, Ronald G.; and Kahl, William G., Jr., 4,451,733, Cl. 250-342.000.

Kahn, Steven A.; Stewart, Robert L.; and Tolchin, Stephen G., to Johns Hopkins University, The. Local area communication network. 4,451,827, Cl. 340-825.520.

Kaimori, Kenichiro: *See*—
Ichikawa, Iwao; and Kaimori, Kenichiro, 4,451,324, Cl. 156-562.000.

Kaiser, Peter: *See*—
Viertel, Lothar; and Kaiser, Peter, 4,451,076, Cl. 296-97.00K.

Kakeno, Nobuhiko: *See*—
Kinoshita, Takahiko; Kakeno, Nobuhiko; and Miura, Nobuhiro, 4,450,807, Cl. 123-403.000.

Kalama Chemical, Inc.: *See*—
Vitner, Joseph, 4,451,330, Cl. 159-48.200.

Kali-Chemie Pharma GmbH: *See*—
Hachmeister, Bernd; Milkowski, Wolfgang; Kuhl, Ulrich; Buschmann, Gerd; and Budden, Renke, 4,451,468, Cl. 424-256.000.

Kalvinsh, Ivars Y.; Vinogradov, Alexei V.; Veveris, Maris M.; Makarova, Inna I.; Birman, Anatoly S.; Barmotin, Georgy V.; and Akifiev, Oleg N., to Institu Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR. Treatment of cardio-vascular diseases with 3-(2,2,2-trimethylhydrazinium) propionate dihydrate. 4,451,485, Cl. 424-316.000.

Kamemoto, Kazuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Channel selecting device. 4,451,850, Cl. 358-191.100.

Kamiya, Shigeru: *See—*
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,681, Cl. 60-286.000.
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,682, Cl. 60-286.000.

Kamiyama, Shinichi: *See—*
Yanagawa, Nobuyuki; and Kamiyama, Shinichi, 4,451,139, Cl. 355-15.000.

Kamp, Ewald A., to Union Carbide Corporation. Safety blade for severing stretchable film. 4,450,996, Cl. 225-43.000.

Kanayama, Kenji; Sugi, Hidekuni; Kinkori, Shuzo; and Kawasumi, Kouzi, to Nippondenso Co., Ltd. AC Generator. 4,451,749, Cl. 310-62.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Furukawa, Hisao; and Kato, Yasushi, 4,451,602, Cl. 524-266.000.
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, 4,451,621, Cl. 525-426.000.

Kaneko, Yutaka: *See—*
Sugita, Hiroshi; Kawakatsu, Satoshi; and Kaneko, Yutaka, 4,451,558, Cl. 430-546.000.

Kanome, Shinji: *See—*
Tanaka, Kyoichi; Kanome, Shinji; Nakajima, Tatsutoshi; Nakada, Kazuhiko; and Toyoshima, Nobuyuki, 4,451,629, Cl. 526-238.230.

Kaplan, Murray A.; and Granatek, Alphonse P., to Bristol-Myers Company. Pharmaceutical formulations. 4,451,447, Cl. 424-131.000.

Kapral, Christopher W., to GTE Automatic Electric Incorporated. Charge redistribution integratable D/A convertor. 4,451,820, Cl. 340-347.0DA.

Karasinsky, Oleg L.: *See—*
Shidlovsky, Anatoly K.; Taranov, Sergei G.; Braiko, Voldmir V.; Grinberg, Isaak P.; Tesik, Jury F.; and Karasinsky, Oleg L., 4,451,783, Cl. 324-86.000.

Karpati, Egon: *See—*
Nador, Karoly; Kraiss, Gabor; Sinko, Katalin; Paroczai, Margit; Karpati, Egon; and Szporny, Laszlo, 4,451,473, Cl. 424-256.000.

Kashiwaba, Tadao: *See—*
Sato, Yo; and Kashiwaba, Tadao, 4,451,323, Cl. 156-541.000.

Kashiwabara, Mikio, to Messrs. Muse Mannequin Co., Ltd. Folding rack. 4,450,971, Cl. 211-201.000.

Kast, Michael A.: *See—*
Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T., 4,450,868, Cl. 137-625.290.

Kaswinkel, K. D.; and Wynn, M. J., to General Electric Company. Method for removing inorganic particulate solids from battery strip. 4,451,297, Cl. 134-9.000.

Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitumasa, to Hitachi, Ltd.; and Hitachi Chemical Company. Radiation-sensitive poly(amic acid) polymer composition. 4,451,551, Cl. 430-270.000.

Kato, Hiroaki: *See—*
Kishi, Kohhei; Kato, Hiroaki; Matsuura, Masataka; and Wada, Tomio, 4,451,554, Cl. 430-313.000.

Kato, Hiroshi: *See—*
Otani, Junji; Ikenoya, Yasuo; and Kato, Hiroshi, 4,450,684, Cl. 60-290.000.

Kato, Katsunori: *See—*
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,451,559, Cl. 430-552.000.

Kato, Kiichi: *See—*
Yanagida, Tuneo; and Kato, Kiichi, 4,451,863, Cl. 360-114.000.

Kato, Kiminari, to NGK Insulators, Ltd. Low thermal expansion ceramic article. 4,451,516, Cl. 428-116.000.

Kato, Yasushi: *See—*
Furukawa, Hisao; and Kato, Yasushi, 4,451,602, Cl. 524-266.000.

Kato, Yoshiaki, to Mita Industrial Co., Ltd. Laminated photosensitive plate for electrophotography and process for preparation thereof. 4,451,549, Cl. 430-134.000.

Katoh, Haruhiko: *See—*
Sanemitsu, Yuzuru; Shiroshita, Masao; Hashimoto, Shunichi; Katoh, Haruhiko; and Matsumoto, Hiroshi, 4,451,283, Cl. 71-93.000.

Katz, Harry, to Vinyl Improvement Products Company. Interlocking building siding. 4,450,665, Cl. 52-522.000.

Kaufman, Jeanie F.: *See—*
Cerceo, Chris A.; Kaufman, Jeanie F.; and Kaufman, Martin H., 4,450,849, Cl. 132-89.000.

Kaufman, Martin H.: *See—*
Cerceo, Chris A.; Kaufman, Jeanie F.; and Kaufman, Martin H., 4,450,849, Cl. 132-89.000.

Kaufman, Richard A. Method for increasing the sensitivity of assays. 4,451,563, Cl. 435-21.000.

Kaule, Wittich; and Stenzel, Gerhard, to Gao Gesellschaft fur Automation und Organisation mbH. Security paper with authenticity features in the form of substances luminescing only in the invisible region of the optical spectrum and process for testing the same. 4,451,521, Cl. 428-199.000.

Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, to GAO Gesellschaft fur Automation und Organisation mbH. Security paper with authenticity features in the form of luminescing substances. 4,451,530, Cl. 428-323.000.

Kawabata, Susumu; Niimi, Hiroshi; Anahara, Meiji; Suzuki, Yoshihisa; and Omori, Hiroshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Air nozzle utilized for fasciated yarn spinning. 4,450,678, Cl. 57-333.000.

Kawabuchi, Katsuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Mask structure for X-ray lithography and method for manufacturing the same. 4,451,544, Cl. 430-5.000.

Kawachi, Shoji; Kadowaki, Toshinori; and Yamamoto, Katsutoshi, to Daikin Kogyo Co., Ltd. Process for preparation of filter-containing polytetrafluoroethylene fine powder. 4,451,616, Cl. 525-178.000.

Kawagoe, Michio: *See—*
Ando, Ken; Tanaka, Masaaki; and Kawagoe, Michio, 4,450,824, Cl. 123-569.000.

Kawahara, Fumio; Takahashi, Masanori; and Kumagai, Katsuyoshi, to Pioneer Electronic Corporation; and Mogami Denki Kabushiki Kaisha. Flame-retarded acoustic diaphragm. 4,451,609, Cl. 524-708.000.

Kawai, Hisasi: *See—*
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; and Kawai, Hisasi, 4,450,825, Cl. 123-569.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,450,746, Cl. 84-1.240.

Kawai, Shizuo: *See—*
Furuhashi, Yasuhiro; Ishikawa, Naozi; and Kawai, Shizuo, 4,450,819, Cl. 123-502.000.
Ibuki, Noritaka; and Kawai, Shizuo, 4,450,817, Cl. 123-501.000.

Kawakami, Yukichika: *See—*
Shiiki, Zenya; and Kawakami, Yukichika, 4,451,640, Cl. 528-265.000.

Kawakatsu, Satoshi: *See—*
Sugita, Hiroshi; Kawakatsu, Satoshi; and Kaneko, Yutaka, 4,451,558, Cl. 430-546.000.

Kawamura, Takao; and Yoshida, Masazumi, to Minolta Camera Kabushiki Kaisha; Kawamura, Takao; and Kyocera Corporation. Photosensitive member. 4,451,546, Cl. 430-69.000.

Kawanabe, Yoshihiro: *See—*
Nishioka, Akira; and Kawanabe, Yoshihiro, 4,451,800, Cl. 330-261.000.

Kawasaki, Kunio: *See—*
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.

Kawasaki Steel Corporation: *See—*
Nemoto, Hiroshi; Miyachi, Kazuaki; and Komoda, Akira, 4,451,345, Cl. 204-206.000.

Kawasumi, Kouzi: *See—*
Kanayama, Kenji; Sugi, Hidekuni; Kinkori, Shuzo; and Kawasumi, Kouzi, 4,451,749, Cl. 310-62.000.

Kawata, Tamostu: *See—*
Yamamoto, Satoshi; Hase, Osamu; and Kawata, Tamostu, 4,451,271, Cl. 55-84.000.

Kawazoe, Shiyouzou; Ueda, Zenichi; Sugimoto, Toshihiko; and Moriuchi, Takahiko, to Nitto Electric Industrial Co., Ltd. Products having compound membrane. 4,451,525, Cl. 428-213.000.

Kay, Nicholas W., to Burroughs Corporation. Glass composition and gas-filled display panel incorporating the glass as an insulating layer. 4,451,761, Cl. 313-586.000.

Keats, Kevin; and Kurelek, John, to Koehring Canada Limited. Integral heel tree length grapple. 4,451,194, Cl. 414-731.000.

Kekesi, Krisztina: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.

Keller, Roger H.: *See—*
Matthews, John B.; and Keller, Roger H., 4,450,962, Cl. 206-447.000.

Kellner, Phillip R.: *See—*
Gamson, Alan R.; and Kellner, Phillip R., 4,451,552, Cl. 430-302.000.

Kelly, John W., to Haskel, Inc. Swaging apparatus for radially expanding tubes to form joints. 4,450,612, Cl. 72-62.000.

Kelsey-Hayes Company: *See—*
Goodrich, Michael J., 4,450,983, Cl. 222-196.000.

KemaNord AB: *See—*
Andersson, Bengt, 4,451,585, Cl. 521-59.000.

Kemler, Marc; Coppens, Christian; and Billot, Michel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Spare subscriber terminal apparatus. 4,451,708, Cl. 179-98.000.

Kemmner, Ulrich: *See—*
Grimm, Gerold; Kemmner, Ulrich; Knapp, Heinrich; and Rose, Klaus, 4,450,866, Cl. 137-625.340.

Kempner, Marvin A.; and Elder, Robert E., to M. A. Kempner, Inc. Automatic audience survey system. 4,451,700, Cl. 179-2.0AS.

Kennedy, Robert J., Jr.: *See—*
Kennedy, Robert J., Sr.; Kennedy, Robert J., Jr.; and Ramachandran, Sundaresan, 4,451,537, Cl. 428-391.000.

Kennedy, Robert J., Sr.; Kennedy, Robert J., Jr.; and Ramachandran, Sundaresan, to Union Carbide Corporation. Asbestos composition having organo-silane coating. 4,451,537, Cl. 428-391.000.

Kent Manufacturing Company, Inc.: *See—*
Hake, Kenneth A., 4,450,917, Cl. 172-328.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Hartwig, Heinz, 4,451,872, Cl. 362-251.000.

Kerr-McGee Chemical Corporation: *See—*
Magyar, John C., 4,451,511, Cl. 428-35.000.

Kerr, Stuart R., III; and Meshirer, Milton, to Beacon Chemical Company, Inc. Coated polystyrene foams and compositions and processes for the production thereof. 4,451,529, Cl. 428-319.300.

Keshi, Akizo; and Kodama, Katsuhisa, to Takeda Chemical Industries, Ltd. Polyurethane foam and its production. 4,451,587, Cl. 521-171.000.

Ketcham, William P.: *See—*
Selwyn, Stephen; and Ketcham, William P., 4,451,158, Cl. 368-63.000.

Keuchel, Herbert W. Syntactic phase extrusion. 4,451,420, Cl. 264-167.000.

Keyes, Marion A., IV; and Salmen, Richard A., deceased (by Salmen, Marie P., executrix), to Babcock & Wilcox Company, The. Water level gauge with fault detector. 4,450,722, Cl. 73-293.000.

Keyser, William L.: *See—*
Cook, Milton L.; Keyser, William L.; Swanson, Paul; Zielke, Michael W.; and Zielinski, Walter J., 4,451,488, Cl. 426-89.000.

Khac, Bi L., to Atlantic Richfield Company. Miscible polyblend and molded article produced therefrom. 4,451,617, Cl. 525-203.000.

Khosropour, Mostafa M.; and Learn, Thomas C., to Nelson Industries, Inc. Heat recovery muffler. 4,450,932, Cl. 181-211.000.

Khristov, Vladimir A.: *See—*
Shibanov, Dmitry A.; Onufriev, Inokenty A.; Khristov, Vladimir A.; and Sergeev, Evgeny A., 4,450,888, Cl. 164-183.000.

Kida, Kei: *See—*
Yamashita, Katsuji; Umetsu, Hiroshi; Sato, Hirotaka; Matsuoka, Yoshio; and Kida, Kei, 4,451,433, Cl. 422-63.000.

Kikuchi, Akira; Sawano, Susumu; and Ito, Yoshimasa, to Tokico Ltd. Arm for a program controlled manipulator. 4,451,195, Cl. 414-732.000.

Kikuchi, Hiroto: *See—*
Miura, Toshikatu; Kikuchi, Hiroto; Okada, Yukio; and Yoshioka, Tsutomu, 4,451,518, Cl. 428-137.000.

Kikuchi, Kiyoshi: *See—*
Hiraki, Shunichi; Kikuchi, Kiyoshi; Yawata, Shigeo; and Miyagawa, Masafumi, 4,451,303, Cl. 148-187.000.

Kilian, Ernst A., to U.S. Philips Corporation. Circuit arrangement with controllable transfer characteristic at higher frequencies. 4,451,795, Cl. 330-107.000.

Killion, Mead C., to Industrial Research Products, Inc. Microphone with stepped response. 4,450,930, Cl. 181-158.000.

Kimberly-Clark Corporation: *See—*
Morman, Michael T.; and Wisneski, Tony J., 4,451,589, Cl. 523-124.000.

Kimbrough, Richard W.: *See—*
Holden, John E.; Eddins, Fred D.; and Kimbrough, Richard W., 4,450,650, Cl. 46-17.000.

Kimmel, Edward R.: *See—*
Cheney, Richard F.; Bansal, Anil; and Kimmel, Edward R., 4,450,724, Cl. 73-432.00R.

Kindlmann, Peter J.: *See—*
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., 4,450,890, Cl. 164-452.000.

King Industrial Products Co., Inc.: *See—*
King, Joseph S., 4,450,708, Cl. 72-481.000.

King, Joseph S., to King Industrial Products Co., Inc. Universal, adjustable bending form for shaping electrical windings. 4,450,708, Cl. 72-481.000.

Kinkori, Shuzo: *See—*
Kanayama, Kenji; Sugi, Hidekuni; Kinkori, Shuzo; and Kawasumi, Kouzi, 4,451,749, Cl. 310-62.000.

Kinoshita, Akira; Sasaki, Osamu; Sawada, Kiyoshi; and Goto, Satoshi, to Konishiroku Photo Industry Co., Ltd. Electrophotographic photoreceptor. 4,451,548, Cl. 430-79.000.

Kinoshita, Takahiko; Kakeno, Nobuhiko; and Miura, Nobuhiro, to Toyota Jidosha Kabushiki Kaisha. Suction air throttling device of diesel engine. 4,450,807, Cl. 123-403.000.

Kioritz Corporation: *See—*
Fukuoka, Takashi; Nagao, Yoshiaki; and Tanaka, Hiroyuki, 4,450,933, Cl. 181-229.000.

Kippax, John W.: *See—*
Bradley, Michael W.; Hiles, Andrew G.; and Kippax, John W., 4,451,677, Cl. 568-881.000.

Kira, Kazuaki: *See—*
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, 4,451,621, Cl. 525-426.000.

Kircher, Morton S., to Olin Corporation. Membrane-electrode pack alkali chlorine cell. 4,451,346, Cl. 204-228.000.

Kirkemo, Curtis L.: *See—*
Flentge, Charles A.; and Kirkemo, Curtis L., 4,451,652, Cl. 544-229.000.

Kirkendall, Richard D.; Drysdale, William H.; and Kokinakis, Louis D., to United States of America, Army. Pivot ring for a discarding sabot. 4,450,770, Cl. 102-523.000.

Kirkley, J. Darrell; and Weaver, Joe C., to Jog-O-Lite, Inc. Safety light or the like with high current drive. 4,451,871, Cl. 362-186.000.

Kirschner, Thomas F., to RCA Corporation. Record extraction mechanism for disc player. 4,451,912, Cl. 369-77.200.

Kis France: *See—*
Thebault, Claude, 4,451,141, Cl. 355-28.000.

Kishi, Kohhei; Kato, Hiroaki; Matsuura, Masataka; and Wada, Tomio, to Sharp Kabushiki Kaisha; and Japan Electronic Industry Development Association. Method of forming thin-film pattern. 4,451,554, Cl. 430-313.000.

Kishimoto, Shinzo, to Fuji Photo Film Co., Ltd. Color photographic processing apparatus including a reverse osmosis apparatus. 4,451,132, Cl. 354-324.000.

Kitamura, Junzo: *See—*
Miyazawa, Hideo; and Kitamura, Junzo, 4,451,242, Cl. 445-65.000.

Kitamura, Masao: *See—*
Nishimura, Eiichi; Uchida, Shunsuke; Kitamura, Masao; Saito, Koichi; Ibe, Eishi; and Hayashi, Tatsuo, 4,451,428, Cl. 376-333.000.

Kitamura, Minoru; Soejima, Toshiyuki; Hayashi, Tsutomu; Matsui, Hideo; and Fujisawa, Shigenori, to Quigley Company, Inc. Slag-forming agent and process for producing the agent. 4,451,293, Cl. 75-257.000.

Kitamura, Yoshio, to Kabushiki Kaisha Sankyo Seiko Seisakusho. Music box operation stopping mechanism. 4,450,939, Cl. 185-39.000.

Kitt, Robert A.; and Wirts, Harold L., to Mossberg Industries, Inc. Wire storing and dereeling apparatus. 4,451,014, Cl. 242-128.000.

Klamke, Winfried: *See—*
Flocke, Gunter; Jutte, Hans; Linde, Klaus; Klamke, Winfried; and Hampel, Werner, 4,451,176, Cl. 405-146.000.

Klee, David J.; and Nelson, Peter C., to Air Products and Chemicals, Inc. Temperature actuated valve and phase separation method. 4,451,002, Cl. 236-101.00R.

Klemarczyk, Philip T., to International Flavors & Fragrances Inc. Substituted methyl isopropyl oxocyclohexane derivatives, organoleptic uses thereof and process for preparing same. 4,451,403, Cl. 260-396.00N.

Kliewer, Wayne R.: *See—*
Lemanski, Michael F.; and Kliewer, Wayne R., 4,451,579, Cl. 502-306.000.

Kling, Miguel. Fume exhauster device. 4,450,756, Cl. 98-115.00R.

Klockner-Humboldt-Deutz AG: *See—*
Kotauschek, Walter, 4,450,800, Cl. 123-193.0CH.

Kloppsteck, Gerd, to Heinrich Berndes GmbH. Frying pan lid. 4,451,156, Cl. 368-10.000.

Klose, George J.; Rosenthal, Janice E.; Schneider, Thomas G.; and Schroeder, Robert F., to Mattel, Inc. Interactive communicating toy figure device. 4,451,911, Cl. 369-31.000.

Klun, Robert T.; and Regulski, Thomas W., to Dow Chemical Company, The. Preparation of acrylate esters from vinyl halides and organic carbonates. 4,451,667, Cl. 560-207.000.

Knabel, Walter; Wagner, Ludwig; and Jungkind, Roland, to MARKER-Patentverwertungsgesellschaft mbH. Heelholder for safety ski bindings. 4,451,059, Cl. 280-632.000.

Knapp, Heinrich: *See—*
Grimm, Gerold; Kemmner, Ulrich; Knapp, Heinrich; and Rose, Klaus, 4,450,866, Cl. 137-625.340.

Knapp, John F.: *See—*
Gruber, Robert J.; and Knapp, John F., 4,451,837, Cl. 346-153.100.

Knifton, John F.; Lin, Jiang-Jen; Grigsby, Robert A., Jr.; and Brader, Walter H., Jr., to Texaco Inc. Alcohols and aldehydes prepared from olefins and synthesis gas. 4,451,679, Cl. 568-909.000.

Knifton, John F., to Texaco Inc. Alcohols prepared from olefins and synthesis gas. 4,451,680, Cl. 568-909.000.

Knipsm "Zavodproekt": *See—*
Popov, Marin A.; and Georgiev, Todor G., 4,451,294, Cl. 106-75.000.

Knittel, Helmut: *See—*
Kranz, Joachim; Habermann, Wolfgang; Distler, Harry; Knittel, Helmut; Hock, Karl-Ludwig; Brunnmueller, Fritz; and Schneider, Rolf, 4,451,339, Cl. 204-91.000.

Knoke, Jurgen; Jost, Manfred; Tecl, Bohuslav; and Fahrbach, Erich, to Carl Freudenberg, Firma. Method for the manufacture of a fluffy, light-weight, soft nonwoven fabric. 4,451,314, Cl. 156-148.000.

Knoke, Jurgen: *See—*
Tecl, Bohuslav; Fahrbach, Erich; Knoke, Jurgen; and Assent, Hans C., 4,451,520, Cl. 428-198.000.

Knops, Hans-Joachim; Babczinski, Peter; Eue, Ludwig; and Schmidt, Robert, to Bayer Aktiengesellschaft. Herbicidally active novel hetero-substituted pyrid-4-one derivatives. 4,451,282, Cl. 71-92.000.

Knorr-Bremse GmbH: *See—*
Beckmann, Heinrich; Ottersbach, Jens; Roider, Willibald; and Saumweber, Eckart, 4,451,889, Cl. 364-426.000.

Knorr, Volker: *See—*
Schupphaus, Herbert; and Knorr, Volker, 4,451,091, Cl. 299-43.000.

Knothe, Eric: *See—*
Behrend, Lothar; Knothe, Eric; Melcher, Franz-Josef; and Ober, Jurgen, 4,450,924, Cl. 177-212.000.

Knothe, Erich: *See—*
Behrend, Lothar; Knothe, Erich; Melcher, Franz-Josef; and Ober, Jurgen, 4,450,923, Cl. 177-212.000.

Knott, Jack E., II: *See—*
Odorzynski, Thomas W.; and Knott, Jack E., II, 4,451,599, Cl. 524-169.000.

Knowles, Gregory W.: *See—*
Ciocca, Joseph A.; and Knowles, Gregory W., 4,451,334, Cl. 203-11.000.

Kobayashi Institute of Physical Research: *See—*
Yamashita, Mitsuyasu; Igarashi, Hiroshi; and Koga, Shosuke, 4,450,931, Cl. 181-198.000.

Kobayashi, Kazuo: *See—*
Furuta, Mamoru; Maeno, Yoshio; and Kobayashi, Kazuo, 4,451,418, Cl. 264-63.000.

Kobayashi, Nobuyuki: *See—*
Moriyama, Eiichi; and Kobayashi, Nobuyuki, 4,450,808, Cl. 123-417.000.

Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, to Toyo Seikan Kaisha Ltd. Side seam-coated welded cans and process for preparation thereof. 4,451,506, Cl. 427-239.000.

Kobayashi, Seishichi: *See—*
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,451,316, Cl. 156-274.600.

Kobayashi, Setsuo; Beppu, Kazuo; Shimizu, Hiroshi; Ogawa, Satoshi; and Kotani, Ryotaro, to Toyo Boseki Kabushiki Kaisha. Stable enzyme composition. 4,451,569, Cl. 435-188.000.

Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Substituted benzene derivatives having at least one benzene ring substituted by 3,3,3-trifluoropropyl group and process for their production. 4,451,674, Cl. 568-639.000.

Koch Process Systems, Inc.: *See—*
O'Brien, John V., 4,451,274, Cl. 62-17.000.

Kocher, Erich J., to Vilter Manufacturing Corporation. Means for releasably securing hand-wheel to valve spindle. 4,450,856, Cl. 137-315.000.

Kodama, Katsuhisa: *See—*
Keshi, Akizo; and Kodama, Katsuhisa, 4,451,587, Cl. 521-171.000.

Kodera, Masao; and Akita, Shigeyuki, to Nippon Soken, Inc. Ultrasonic wave distance detection system. 4,451,909, Cl. 367-99.000.

Koehler, Gerard, to La Telemecanique Electrique. Electromagnet equipped with a moving system including a permanent magnet and designed for monostable operation. 4,451,808, Cl. 335-229.000.

Koehring Canada Limited: *See—*
Keats, Kevin; and Kurelek, John, 4,451,194, Cl. 414-731.000.

Koepke, Gunther: *See—*
Dolezalek, Friedrich; Koepke, Gunther; and Rendelmann, Ulrich, 4,451,497, Cl. 427-39.000.

Koga, Shosuke: *See—*
Yamashita, Mitsuyasu; Igarashi, Hiroshi; and Koga, Shosuke, 4,450,931, Cl. 181-198.000.

Koharagi, Haruo: *See—*
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Yamashita, Seizi; and Takahashi, Noriyoshi, 4,451,752, Cl. 310-186.000.

Kohler, Alfred; and Rachner, Horst, to ITT Industries, Inc. Windshield wiper control circuit. 4,451,768, Cl. 318-443.000.

Koinuma, Hirosi, to Pioneer Electronic Corporation. Power amplifier. 4,451,802, Cl. 330-297.000.

Koivunen, Erkki A.; and Sherman, James F., to General Motors Corporation. Planetary transmission with a spring applied centrifugally sensitive clutch. 4,450,735, Cl. 74-781.00R.

Kojima, Mitumasa: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitumasa, 4,451,551, Cl. 430-270.000.

Kojima, Tadashi: *See—*
Hoshimi, Susumu; and Kojima, Tadashi, 4,451,920, Cl. 371-40.000.

Kokinakis, Louis D.: *See—*
Kirkendall, Richard D.; Drysdale, William H.; and Kokinakis, Louis D., 4,450,770, Cl. 102-523.000.

Kolasinski, Richard: *See—*
Heiss, John F.; and Kolasinski, Richard, 4,451,381, Cl. 252-1.000.

Kolecki, Jerzy. Propeller. 4,451,208, Cl. 416-237.000.

Kollar, Arpad: *See—*
Balazs, Janos; Bano, Tibor; Kollar, Arpad; Kovacs, Tibor; Lengyel, Denes; and Mozer, Ferenc, 4,450,608, Cl. 29-33.00R.

Kollmorgen Technologies Corporation: *See—*
Burr, Robert P., 4,450,623, Cl. 29-850.000.

Komatsu, Shigeru; and Nakamura, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Polysilicon emitter and base contacts separated by lightly doped poly separator. 4,451,844, Cl. 357-59.000.

Komatsu, Toshiyuki: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,451,547, Cl. 430-128.000.

Komoda, Akira: *See—*
Nemoto, Hiroshi; Miyachi, Kazuaki; and Komoda, Akira, 4,451,345, Cl. 204-206.000.

Komori, Kazuhiro: *See—*
Sugiura, June; Kosa, Yasunobu; Komori, Kazuhiro; Uchida, Ken; and Shimizu, Shinji, 4,451,904, Cl. 365-182.000.

Komori Printing Machinery Co., Ltd.: *See—*
Inomata, Takehiro; and Oyabu, Nobuya, 4,450,766, Cl. 101-183.000.

Konagaya, Masahiko, to Konan Camera Research Institute. Relation density calculation system. 4,451,855, Cl. 358-289.000.

Konan Camera Research Institute: *See—*
Konagaya, Masahiko, 4,451,855, Cl. 358-289.000.

Kondo, Kazuo: *See—*
Hirose, Koichi; and Kondo, Kazuo, 4,451,746, Cl. 307-494.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fukuchi, Masakazu; Oishi, Keiji; and Yamazaki, Yoshio, 4,451,134, Cl. 355-3.0DD.
Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, 4,451,561, Cl. 430-619.000.
Kinoshita, Akira; Sasaki, Osamu; Sawada, Kiyoshi; and Goto, Satoshi, 4,451,548, Cl. 430-79.000.
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,451,559, Cl. 430-552.000.
Sugita, Hiroshi; Kawakatsu, Satoshi; and Kaneko, Yutaka, 4,451,558, Cl. 430-546.000.

Kopnicky, Robert J., to Bethlehem Steel Corp. Impact-actuated gripping tool. 4,450,736, Cl. 81-463.000.

Kopp, Walter; and Saalmueller, Karl-Heinz, to Siemens Aktiengesellschaft. Device for removing the developer mix from a developing station. 4,451,133, Cl. 355-3.0DD.

Kormoczy, Peter: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.

Korsunsky, Iosif: *See—*
Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, 4,451,818, Cl. 339-75.0MP.

Kosa, Yasunobu: *See—*
Sugiura, June; Kosa, Yasunobu; Komori, Kazuhiro; Uchida, Ken; and Shimizu, Shinji, 4,451,904, Cl. 365-182.000.

Koshiyama, Hideo; Sakai, Fumihide; and Ohkuma, Hiroaki, to Bristol-Myers Company. Antitumor antibacterial agents. 4,451,456, Cl. 424-177.000.

Koszeghy, Peter: *See—*
Veisz, Gyorgy; David, Gabor; Koszeghy, Peter; and Szekely, Lajos, 4,451,804, Cl. 333-177.000.

Kotani, Ryotaro: *See—*
Kobayashi, Setsuo; Beppu, Kazuo; Shimizu, Hiroshi; Ogawa, Satoshi; and Kotani, Ryotaro, 4,451,569, Cl. 435-188.000.

Kotauschek, Walter, to Klockner-Humboldt-Deutz AG. Light metal cylinder head for internal combustion engine. 4,450,800, Cl. 123-193.0CH.

Kotek, Alfred J.: *See—*
Farley, Wilbur H.; Kotek, Alfred J.; and Carlson, John H., 4,451,098, Cl. 308-201.000.

Kotlyar, Anatoly M.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Kouno, Kageaki: *See—*
Okabe, Mitsuyasu; Yoshioka, Takeo; Fukagawa, Yasuo; Okamoto, Rokuro; Kouno, Kageaki; and Ishikura, Tomoyuki, 4,451,401, Cl. 260-245.20T.

Kovacs, Gabor: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.

Kovacs, Tibor: *See—*
Balazs, Janos; Bano, Tibor; Kollar, Arpad; Kovacs, Tibor; Lengyel, Denes; and Mozer, Ferenc, 4,450,608, Cl. 29-33.00R.

Koval, Emil J.: *See—*
Buresh, Lloyd V.; Hammond, Garth D.; Koval, Emil J.; and McCormick, Vernon R., 4,451,103, Cl. 339-93.00R.

Kovalenko, Sergei S.: *See—*
Dshkhunian, Valery L.; Ivanov, Eduard E.; Kovalenko, Sergei S.; Mashevich, Pavel R.; Ryzhov, Alexei A.; Telenkov, Vyacheslav V.; and Chicherin, Jury E., 4,451,882, Cl. 364-200.000.

Kovarik, Richard F., to Industrial Electronics Service Co. Tester for remote controlled radio systems. 4,451,712, Cl. 179-175.30R.

Kowalski, Jerome R., to Mohasco Corporation. Headrest for a reclining chair. 4,451,081, Cl. 297-61.000.

Kozak, Henry A.; and Liu, Tony Y., to Mobil Oil Corporation. Two-component high solids coating for rusty steels. 4,451,591, Cl. 523-177.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Mathewes, Wolfgang; and Hayn, Peter W., 4,451,272, Cl. 55-390.000.

Krahn, Margot: *See—*
Riesenberg, Horst; and Krahn, Margot, 4,451,126, Cl. 350-520.000.

Kraiss, Gabor: *See—*
Nador, Karoly; Kraiss, Gabor; Sinko, Katalin; Paroczai, Margit; Karpati, Egon; and Szporny, Laszlo, 4,451,473, Cl. 424-256.000.

Krakat, Hans: *See—*
Bruhnke, Ulrich; Christoph, Bernd; Harloff, Bernd; and Krakat, Hans, 4,451,077, Cl. 296-185.000.

Kramer, Gordon: *See—*
Oh, Chan S.; and Kramer, Gordon, 4,451,122, Cl. 350-334.000.

Kramer, Wolfgang: *See—*
Elbe, Hans-Ludwig; Kramer, Wolfgang; Buchel, Karl H.; Lurssen, Klaus; Reinecke, Paul; and Scheinpflug, Hans, 4,451,281, Cl. 71-92.000.

Krampe & Co Fertigung in Bergbaubedarf GmbH: *See—*
Best, Gerd; and Weikert, Norbert B., 4,451,092, Cl. 299-81.000.

Kranz, Joachim; Habermann, Wolfgang; Distler, Harry; Knittel, Helmut; Hock, Karl-Ludwig; Brunnmueller, Fritz; and Schneider, Rolf, to BASF Aktiengesellschaft. Preparation of blue iron hexacyanoferrate-III pigments, and the pigments obtained. 4,451,339, Cl. 204-91.000.

Krasnoff, Eugene L.; and Lindeboom, Herman, to Ingersoll-Rand Company. Hydraulic reciprocating machines. 4,450,920, Cl. 173-80.000.

Krause, Charles J., to NI Industries, Inc. Composite fiber reinforced member and method. 4,451,528, Cl. 428-287.000.

Krause, James J.: *See—*
Thayer, David J.; Krause, James J.; and Welk, John R., 4,451,824, Cl. 340-720.000.

Krauthausen, Edmund: *See—*
Busse, Wolf-Dieter; Krauthausen, Edmund; and Mardin, Mithat, 4,451,475, Cl. 424-270.000.

Kresge, James S.: *See—*
Sakshaug, Eugene C.; and Kresge, James S., 4,451,815, Cl. 338-21.000.

Kroll, Hartmut: *See—*
Christ, Richard; and Kroll, Hartmut, 4,451,739, Cl. 250-506.100.

Krost, Manfred: *See—*
Schaeffler, Georg; Spiess, Karl; Heyne, Jurgen E.; and Krost, Manfred, 4,450,704, Cl. 72-356.000.

Kubo, Masaharu: *See—*
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,451,841, Cl. 357-23.600.

Kubota, Ltd.: *See—*
Hirata, Kazuo; and Takagi, Masao, 4,450,927, Cl. 180-330.000.

Kubota, Yuichi: *See—*
Isobe, Yukihiro; Tanaka, Kazushi; Nishimatsu, Masaharu; Shinoura, Osamu; and Kubota, Yuichi, 4,451,531, Cl. 428-329.000.

Kudo, Norio: *See—*
Hirose, Kengo; and Kudo, Norio, 4,451,813, Cl. 337-17.000.

Kuhl, Ulrich: *See—*
Hachmeister, Bernd; Milkowski, Wolfgang; Kuhl, Ulrich; Buschmann, Gerd; and Budden, Renke, 4,451,468, Cl. 424-256.000.

Kuhle, Engelbert: *See—*
Dickore, Karlfried; and Kuhle, Engelbert, 4,451,406, Cl. 260-465.00D.

Kuipers, Johannes: *See—*
Dolman, Hendrik; and Kuipers, Johannes, 4,451,660, Cl. 549-63.000.

Kumadaki, Itsumaro: *See—*
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,451,674, Cl. 568-639.000.

Kumagai, Katsuyoshi: *See—*
Kawahara, Fumio; Takahashi, Masanori; and Kumagai, Katsuyoshi, 4,451,609, Cl. 524-708.000.

Kume, Ketsuke: *See—*
Yui, Ryosuki; Kume, Ketsuke; Hashi, Masaaki; and Niikura, Junji, 4,451,422, Cl. 264-178.00R.

Kummer, Joseph T.: *See—*
Dzieciuch, Matthew A.; Wroblowa, Halina S.; and Kummer, Joseph T., 4,451,543, Cl. 429-206.000.

Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, to Nippon Soken, Inc. Speed control method and apparatus for automotive vehicles. 4,451,888, Cl. 364-426.000.

Kuraray Co., Ltd.: *See—*
Akagi, Takao; Yamaguchi, Shinji; Maeda, Katsura; and Yamamoto, Kazuo, 4,451,534, Cl. 428-372.000.

Kurashima, Hideo: *See—*
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,451,316, Cl. 156-274.600.

Kurata, Masami: *See—*
Moriguchi, Harukiko; Kurata, Masami; and Ohmori, Takashi, 4,451,853, Cl. 358-281.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Fujimaki, Hiroto; Ajima, Shigetoshi; and Watanabe, Kazuhiro, 4,451,590, Cl. 523-155.000.
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,451,674, Cl. 568-639.000.
Okuda, Kensuke; Nagai, Hirosi; Fujimaki, Hiroto; Tomonaga, Atsushi; and Aoki, Hideki, 4,451,235, Cl. 433-201.000.
Shiiki, Zenya; and Kawakami, Yukichika, 4,451,640, Cl. 528-265.000.
Yoshikumi, Chikao; Sakurai, Katsuo; Omura, Yoshio; Nohara, Mayumi; Ando, Takao; and Motokawa, Isamu, 4,451,457, Cl. 424-180.000.

Kurelek, John: *See—*
Keats, Kevin; and Kurelek, John, 4,451,194, Cl. 414-731.000.

Kurherr Motoren A.G.: *See—*
Kurherr, Waldemar H., 4,451,219, Cl. 418-138.000.

Kurherr, Waldemar H., to Kurherr Motoren A.G. Valveless bi-chamber rotary steam engine with turbine effect. 4,451,219, Cl. 418-138.000.

Kurita, Atsushi: *See—*
Hatanaka, Masayuki; and Kurita, Atsushi, 4,451,634, Cl. 528-24.000.

Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mituji, to Nippon Oil Company, Limited. Process for preparing polyolefins. 4,451,688, Cl. 585-524.000.

Kuroshima, Hiroshi: *See—*
Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, 4,451,350, Cl. 204-422.000.

Kurt Lachenmeier ApS: *See—*
Lachenmeier, Kurt; and Simonson, Peter, 4,451,233, Cl. 432-224.000.

Kusumi, Kinshiro: *See—*
Yagishita, Aisaburo; Mori, Noboru; Kusumi, Kinshiro; and Tsugi, Yoshio, 4,451,298, Cl. 134-10.000.

Kutowy, Oleh: *See—*
Tweddle, Thomas A.; Thayer, William L.; Kutowy, Oleh; and Sourirajan, Srinivasa, 4,451,424, Cl. 264-216.000.

Kyocera Corporation: *See—*
Kawamura, Takao; and Yoshida, Masazumi, 4,451,546, Cl. 430-69.000.

La Telemecanique Electrique: *See—*
Koehler, Gerard, 4,451,808, Cl. 335-229.000.

Labaig, Jean-Jacques: *See—*
Claude, Bruno; Labaig, Jean-Jacques; and Martinez, Christian, 4,451,526, Cl. 428-216.000.

LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., to Burroughs Corporation. Optical storage system employing a multi-layer optical medium. 4,451,914, Cl. 369-109.000.

LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., to Burroughs Corporation. Optical storage system employing a multi-layer optical medium. 4,451,915, Cl. 369-109.000.

Lachenmeier, Kurt; and Simonson, Peter, to Kurt Lachenmeier ApS. Apparatus for the shrinking of wrapping foils. 4,451,233, Cl. 432-224.000.

Ladany, Ivan: *See—*
Marinelli, Donald P.; and Ladany, Ivan, 4,451,727, Cl. 219-464.000.

Lagendijk, Johannes. Suspended roof. 4,450,656, Cl. 52-63.000.

Lagos, Costas C., to GTE Products Corporation. Fluorescent lamp having improved maintenance. 4,451,757, Cl. 313-489.000.

L'Air Liquide - Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Malafosse, Jean, 4,451,384, Cl. 252-102.000.

Lairloup, Jean-Claude, to Nobel-Bozel. Preparation of lightweight, insulating and semirigid or rigid elements. 4,451,310, Cl. 156-78.000.

Lamarche, Paul E., to Borg-Warner Corporation. Series vibration damper with non-symmetrical curve. 4,451,244, Cl. 464-68.000.

Lamb-Weston, Inc.: *See—*
Santillie, Paul W.; and Ramras, Daniel M., 4,451,444, Cl. 423-480.000.

Lamphier, Larry N.; and Meyers, Walter A., to Bethlehem Steel Corp. Open top drain. 4,451,172, Cl. 405-49.000.

Landis, William R.; and Patton, Paul B., to Honeywell Inc. Flame safeguard sequencer having interlock checking means. 4,451,225, Cl. 431-14.000.

Landis, William R.; and Patton, Paul B., to Honeywell Inc. Flame safeguard sequencer having safe start check. 4,451,226, Cl. 431-15.000.

Landis, William R.; and Patton, Paul B., to Honeywell Inc. Flame safeguard sequencer having switch test functions. 4,451,227, Cl. 431-18.000.

Lange, Bradley N., to Advanced Semiconductor Materials Die Bonding, Inc. Object detection apparatus and method. 4,451,197, Cl. 414-737.000.

Langley, Kenneth R., to Rolls Royce Limited. Turbomachine rotor blade fixings. 4,451,203, Cl. 416-213.000.

Langsam, Michael: *See—*
Cheng, John T. C.; and Langsam, Michael, 4,451,625, Cl. 526-62.000.

Langston, Benny: *See—*
Bauer, Carl F.; Hussey, James H.; and Langston, Benny, 4,451,287, Cl. 75-24.000.

Lanza, Benjamin A.: *See—*
Harasym, Michael F.; and Lanza, Benjamin A., 4,450,986, Cl. 222-591.000.

Lappo, Viktor G.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Lardellier, Alain M. J.: *See—*
Forestier, Alexandre; and Lardellier, Alain M. J., 4,451,110, Cl. 308-184.00R.

Large, Michael S., to Imperial Chemical Industries PLC. Alcohol derivatives. 4,451,463, Cl. 424-249.000.

Larkin, Joseph F.: *See—*
Leiby, John J.; Hodge, Malcolm H.; and Larkin, Joseph F., 4,450,995, Cl. 225-2.000.

Larsen, Kurt K., to Blue Giant Equipment of Canada Ltd. Lip construction for dock leveller. 4,450,598, Cl. 14-71.100.

Larson, Duane B.; and Westermeier, Richard J., to Bethlehem Steel Corp. Cobble suppressing means. 4,450,702, Cl. 72-250.000.

Lasurdo, Mary H., to Trovato, Susan Ann, a part interest. Picture frame. 4,450,636, Cl. 40-152.000.

Laughon, Thomas C.: *See—*
Warner, Richard C.; and Laughon, Thomas C., 4,451,865, Cl. 361-23.000.

Lauterbach, John H.: *See—*
Dola, Frank P.; and Lauterbach, John H., 4,451,107, Cl. 339-143.00R.

Lauterburg, Rainer; and Geiger, Hans, to Societe Suisee pour l'Industrie Horlogere Management Services, S.A. Pushbutton switch for a timepiece. 4,451,719, Cl. 200-159.00R.

LaVigne, Gordon. Apparatus for dry placer mining and method of operating same. 4,451,357, Cl. 209-131.000.

Lawson, Louis L. Foot-rest device for motorcycles. 4,451,057, Cl. 280-291.000.

Lay, George E.; and Haigh, Daniel H., to Dow Chemical Company, The. Method for treating contact dermatitis. 4,451,453, Cl. 424-81.000.

Leal, Vitervo. Fishing lure. 4,450,644, Cl. 43-42.200.

Lear Siegler, Inc.: *See—*
Gagelin, Martin J., 4,451,052, Cl. 280-43.230.

Learn, Thomas C.: *See—*
Khosropour, Mostafa M.; and Learn, Thomas C., 4,450,932, Cl. 181-211.000.

Le Cann, Robert; and Fache, Jean-Paul, to Frigofrance S.A. Helically guided endless belt conveyor. 4,450,953, Cl. 198-778.000.

Lee, Biing-Lin, to B. F. Goodrich Company, The. Heterogeneous rubber compositions made from chemically similar blends. 4,451,595, Cl. 523-351.000.

Lee, Neville K. S.: *See—*
LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., 4,451,914, Cl. 369-109.000.
LaBudde, Edward V.; Capote, Miguel A.; Chao, Shiuh; and Lee, Neville K. S., 4,451,915, Cl. 369-109.000.

Lee, Robert E. Propulsion means actuated by weight. 4,451,055, Cl. 280-221.000.

Leesona Corporation: *See—*
Brouwer, Charles W.; and Cowan, Larry C., 4,450,874, Cl. 139-429.000.

Lefaucheux, Jean-Louis J. R.; Martin, Claude; and Mokrani, Edmond E. A., to Societe Anonyme de Telecommunications. Process and device for measuring the pressure of tires, particularly for aircraft. 4,450,716, Cl. 73-146.500.

Lefevre, Marcel R., to Research-Cottrell. Support means for transverse fill for cooling towers. 4,451,411, Cl. 261-111.000.

Legeai, Gilbert E., to Hauserman, Inc. Unitized partition wall system. 4,450,658, Cl. 52-126.300.

Leiby, John J.; Hodge, Malcolm H.; and Larkin, Joseph F., to TRW Inc. Scribing machine for optical fibers and method. 4,450,995, Cl. 225-2.000.

Leiponen, Matti O., to Outokumpu Oy. Method and apparatus for converting matte, particularly high-grade matte. 4,451,291, Cl. 75-73.000.

LeLoux, Arnoldus W. J., to Wavin B.V. Method and device for making seals in tubular web provided with side gussets. 4,451,308, Cl. 156-64.000.

Lemanski, Michael F.; and Kliewer, Wayne R., to Standard Oil Company, The. Mixed metal oxide catalyst for producing low molecular weight hydrocarbons from carbon monoxide and hydrogen. 4,451,579, Cl. 502-306.000.

Lemay, Richard A.: *See—*
Stanley, Philip E.; Woods, William E.; Lemay, Richard A.; and Cushing, David E., 4,451,883, Cl. 364-200.000.

Lengyel, Denes: *See—*
Balazs, Janos; Bano, Tibor; Kollar, Arpad; Kovacs, Tibor; Lengyel, Denes; and Mozer, Ferenc, 4,450,608, Cl. 29-33.00R.

Lenhart, Ronald A., to Precision Metal Fabricators, Inc. Air transport system. 4,451,182, Cl. 406-86.000.

Lenk, Pedro A.: *See—*
Brightman, Barrie; Ellis, Thomas E.; Jones, James E.; Lenk, Pedro A.; Shah, Jayantkumar R.; Stewart, William H.; and Woodward, John W., 4,451,702, Cl. 179-18.0ES.

Leonard, Eric M.; Geyer, Frederick F.; and Myers, George M., to Eastman Kodak Company. Optical disc write/read apparatus. 4,451,836, Cl. 346-137.000.

Leonard, Mark, to Hewlett-Packard Company. Apparatus and method for modulating light to generate an index pulse. 4,451,731, Cl. 250-237.0SE.

Leonard Thomas K.: *See—*
Bellamy, Robert L., Jr.; Bersot, James D.; Leonard Thomas K.; and Muse, Richard R., 4,451,190, Cl. 411-337.000.

Lerch, John A. Dry acetylene generator. 4,451,268, Cl. 48-3.00A.

Lermann, Peter: *See—*
Engelsmann, Dieter; Lippl, Leo; Nicko, Reinhard; Stiefel, Peter; and Lermann, Peter, 4,451,011, Cl. 242-71.000.

Lerschen, James R.: *See—*
DeKezel, James A.; and Lerschen, James R., 4,450,642, Cl. 43-3.000.

Lesher, George Y.: *See—*
Singh, Baldev; and Lesher, George Y., 4,451,469, Cl. 424-263.000.

Lesieur, Roger R.: *See—*
Setzer, Herbert J.; Bett, John A. S.; and Lesieur, Roger R., 4,451,578, Cl. 502-303.000.

Levaggi, Vittorio: *See—*
Bocci, Giorgio; Dardano, Alberto; Levaggi, Vittorio; and Milani, Ambrogio, 4,451,230, Cl. 431-284.000.

Lever Brothers Company: *See—*
Tai, Loui H. T., 4,451,387, Cl. 252-174.150.

Levine, Stanley R.: *See—*
Gedwill, Michael A.; Levine, Stanley R.; and Glasgow, Thomas K., 4,451,496, Cl. 427-34.000.

Levos, Christian; Perie, Daniel; and Gex, Jean-Francois, to Commissariat a l'Energie Atomique. Liquid sampler wherein solution to be sampled is used as retrievable sampler wash. 4,450,730, Cl. 73-864.610.

Levy, Richard. Method for cleaning the surface of swimming pools. 4,451,379, Cl. 210-728.000.

Lew, Hyok S. Device for imposing the linear and angular movement to the valve stem. 4,450,732, Cl. 74-107.000.

Li, Hsin L.; Oswald, Hendrikus J.; and Liland, Alfred L., to Allied Corporation. Method for texturizing continuous filaments. 4,450,607, Cl. 28-257.000.

Li, Hsin L., to Allied Corporation. Winder string-up aspirator. 4,450,997, Cl. 226-97.000.

Li, Hsin L.: *See—*
Belden, Reed H.; Li, Hsin L.; and Sawheny, Dulari L., 4,450,891, Cl. 164-463.000.

Libby, Stephen C., to Aluminum Company of America. Causticization method. 4,451,443, Cl. 423-432.000.

Libertini, Zoltan L.; and Hartel, Edward O., to Avco Corporation. Air and oil cooled bearing package. 4,451,200, Cl. 415-110.000.

Lichtin, Norman N.; and Vijayakumar, Kalambella M., to Atlantic Richfield Company. Light driven photocatalytic process. 4,451,342, Cl. 204-157.10R.

Lifshitz, Nadia: *See—*
Fuls, Ellis N.; Lifshitz, Nadia; and Vaidya, Sheila, 4,450,620, Cl. 29-571.000.

Liland. Alfred L.: *See—*
Li, Hsin L.; Oswald, Hendrikus J.; and Liland, Alfred L., 4,450,607, Cl. 28-257.000.

Liljequist, Jon L. Mechanical arrangements for piston-crankshaft devices. 4,450,754, Cl. 92-138.000.

Lin, Jiang-Jen: *See—*
Knifton, John F.; Lin, Jiang-Jen; Grigsby, Robert A., Jr.; and Brader, Walter H., Jr., 4,451,679, Cl. 568-909.000.

Lindblad, Per-Olov: *See—*
Annergren, Goran E.; Hagglund, Tjell-Ake; Lindblad, Per-Olov; Lindstrom, Lars-Ake T.; and Nasman, Lars E., 4,451,332, Cl. 162-30.100.

Linde, Klaus: *See—*
Flocke, Gunter; Jutte, Hans; Linde, Klaus; Klamke, Winfried; and Hampel, Werner, 4,451,176, Cl. 405-146.000.

Lindeboom, Herman: *See—*
Krasnoff, Eugene L.; and Lindeboom, Herman, 4,450,920, Cl. 173-80.000.

Lindenstruth, Werner: *See—*
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,451,419, Cl. 264-164.000.

Lindstrom, Lars-Ake T.: *See—*
Annergren, Goran E.; Hagglund, Tjell-Ake; Lindblad, Per-Olov; Lindstrom, Lars-Ake T.; and Nasman, Lars E., 4,451,332, Cl. 162-30.100.

Lineberry, Cletus E.: *See—*
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W., 4,450,739, Cl. 83-23.000.

Lippl, Leo: *See—*
Engelsmann, Dieter; Lippl, Leo; Nicko, Reinhard; Stiefel, Peter; and Lermann, Peter, 4,451,011, Cl. 242-71.000.

Lisle Corporation: *See—*
Miller, Merrill R., 4,451,810, Cl. 335-285.000.

Litton Systems, Inc.: *See—*
Hoffman, George J., 4,451,811, Cl. 335-302.000.

Liu, Chi-Sheng; and Hirayama, Chikara, to Westinghouse Electric Corp. Mercury halide lasers utilizing electrodes coated with a getter. 4,451,924, Cl. 372-59.000.

Liu, James C. C.: *See—*
Sperrazza, Joseph; Liu, James C. C.; and Baker, Wilfred E., 4,451,178, Cl. 405-258.000.

Liu, Tony Y.: *See—*
Kozak, Henry A.; and Liu, Tony Y., 4,451,591, Cl. 523-177.000.

Livne, Avinoam: *See—*
Trop, Moshe; and Livne, Avinoam, 4,451,491, Cl. 426-555.000.

Llumar Star Kites: *See—*
Mellinger, Ellis, 4,450,784, Cl. 114-39.000.

Locher, Johannes: *See—*
Fischer, Werner; and Locher, Johannes, 4,451,778, Cl. 323-282.000.

Lock, Michele R.: *See—*
Frisch, Kurt C., Jr.; Lock, Michele R.; and Stuk, Gregory J., 4,451,627, Cl. 526-192.000.

Lockheed Corporation: *See—*
Stuckey, Clarence W., Jr.; and Meyers, Robert A., deceased, 4,451,829, Cl. 343-705.000.

Loctite Corporation: *See—*
Nativi, Larry A.; and Kadziela, Kris, 4,451,523, Cl. 428-209.000.

Loctite (Ireland) Limited: *See—*
Charnock, Ronald S., 4,451,615, Cl. 525-98.000.

Loeb, Marvin P.: *See—*
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,450,836, Cl. 128-127.000.

Lohr, Delmar F.; and Schulz, Donald N., to Firestone Tire & Rubber Company, The. Molecular weight distribution and microstructure modifiers for elastomers. 4,451,576, Cl. 502-155.000.

Loiseaux, Brigitte; Huignard, Jean P.; Dubois, Jean C.; and Eranian, Armand, to Thomson-CSF. Process for producing diffracting phase structures. 4,451,412, Cl. 264-1.300.

Lok, Roger; Freeman, John P.; and Baum, William N., to Eastman Kodak Company. Photographic speed increasing and latent image stabilizing compounds, silver halide emulsions, and photographic elements. 4,451,557, Cl. 430-505.000.

Long, James C.: *See—*
Buschor, Josef J.; Long, James C.; and Schmidt, Dieter K., 4,450,949, Cl. 198-422.000.

Long, Thomas F., Jr., to Dana Corporation. Helical spline clutch plate separator. 4,450,943, Cl. 192-70.200.

Lonseth, Palmer; Selkirk, Neil R.; and Moorby, Donald G., to Canadian General Electric Company Limited. Capacitive signal coupler. 4,451,870, Cl. 361-433.000.

Look, Reinhard: *See—*
Sattler, Gunther; Gunkel, Werner; Witzgall, Manfred; and Look, Reinhard, 4,451,365, Cl. 210-198.200.

Lorenz, Dieter, to Siemens Aktiengesellschaft. Elastic-spring drive for the movable contact of an electric grounding or disconnect switch. 4,451,716, Cl. 200-67.00A.

Lorenz, Howard I., to Pool Company. Method and arrangement of transporting aggregate, fragmented material and the like. 4,451,183, Cl. 406-94.000.

Lorenz, Max R.: *See—*
Homola, Andrew M.; Lorenz, Max R.; and Sussner, Heinrich, 4,451,495, Cl. 427-27.000.

Loucks, Judith: *See—*
Gerber, Arthur M.; and Loucks, Judith, 4,451,560, Cl. 430-567.000.

Lovasz nee Gaspar, Mariann: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.

Love, Mahlon L., to Deere & Company. Combine harvester with modified feeder house. 4,450,671, Cl. 56-14.600.

Love, Samuel D. Andiron mounting system. 4,450,827, Cl. 126-298.000.

Lucas, James G.; Young, Alan C.; and Hinds, Paul M., to Commonwealth of Australia, The. VHF Omni-range navigation system antenna. 4,451,830, Cl. 343-768.000.

Ludwig, Bernd, to Starkstrom Gummersbach GmbH. Device for mounting an electric device, in particular a cam switch on a mounting plate. 4,451,720, Cl. 200-296.000.

Lurssen, Klaus: *See—*
Elbe, Hans-Ludwig; Kramer, Wolfgang; Buchel, Karl H.; Lurssen, Klaus; Reinecke, Paul; and Scheinpflug, Hans, 4,451,281, Cl. 71-92.000.

Lustig, Thomas P., to Development Finance Corp. of New Zealand. Onion peeling means. 4,450,762, Cl. 99-584.000.

Luxemburg, S. Roy. Process for cleaning an oil-contaminated brine containing particulate drill cutting solids. 4,451,377, Cl. 210-708.000.

Lynch Communication Systems, Inc.: *See—*
DeCoursey, Calvin H., 4,451,917, Cl. 370-108.000.

Lynell Medical Technology Inc.: *See—*
Poler, Stanley, 4,450,593, Cl. 3-13.000.

Lyothier, Robert M.: *See—*
Philippe, Jean-Jacques; and Lyothier, Robert M., 4,451,206, Cl. 416-228.000.

M. A. Kempner, Inc.: *See—*
Kempner, Marvin A.; and Elder, Robert E., 4,451,700, Cl. 179-2.0AS.

M.A.N. Roland Druckmaschinen Aktiengesellschaft: *See—*
Wildmann, Wolfgang; and Melzer, Rudolf, 4,451,029, Cl. 271-236.000.

MacKenzie, Peter A.: *See—*
Orlander, Michael; Cotsworth, Robert P.; and MacKenzie, Peter A., 4,451,221, Cl. 425-8.000.

Madore, Michel: *See—*
Gerard, Philippe; Jouve, Hubert; and Madore, Michel, 4,451,500, Cl. 427-38.000.

Maeda, Katsura: *See—*
Akagi, Takao; Yamaguchi, Shinji; Maeda, Katsura; and Yamamoto, Kazuo, 4,451,534, Cl. 428-372.000.

Maeda, Kouzo, to Nissan Motor Co., Ltd. Vehicle seat assembly having a door stopper. 4,451,078, Cl. 296-188.000.

Maekawa, Tsukasa; and Gondo, Takeshi, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing 2,3-dihydro-2,2-dimethyl-7-hydroxybenzofuran. 4,451,662, Cl. 549-462.000.

Maeno, Yoshio: *See—*
Furuta, Mamoru; Maeno, Yoshio; and Kobayashi, Kazuo, 4,451,418, Cl. 264-63.000.

Magee, Robert J., to Charles Stark Draper Laboratory, Inc., The. Optical angular interval marker. 4,451,148, Cl. 356-138.000.

Magic Chef, Inc.: *See—*
Sharpe, Verlos G.; and Beers, David G., 4,450,692, Cl. 62-233.000.

Magyar, John C., to Kerr-McGee Chemical Corporation. System for protecting glass structures in a combustion zone. 4,451,511, Cl. 428-35.000.

Maida, Osamu, to Nippon Kogaku K.K. Film take-up apparatus in camera usable together with a film magazine device. 4,451,150, Cl. 354-173.110.

Maier, Ludwig; Rempfler, Hermann; and Durr, Dieter, to Ciba-Geigy Corporation. Derivatives of 2-nitro-4- or -5-pyridyloxyphenylphosphonic acid, the preparation thereof, the use thereof as herbicides and/or plant growth regulators. 4,451,284, Cl. 71-94.000.

Maillefer S.A.: *See—*
Veyrassat, Louis; and Meisser, Marc, 4,451,008, Cl. 242-25.00A.

Maiocco, Guiseppe A., to Champion Spark Plug Italiana, S.p.A. Wiper bridge and connector. 4,450,602, Cl. 15-250.320.

Makarova, Inna I.: *See—*
Kalvinsh, Ivars Y.; Vinogradov, Alexei V.; Veveris, Maris M.; Makarova, Inna I.; Birman, Anatoly S.; Barmotin, Georgy V.; and Akifiev, Oleg N., 4,451,485, Cl. 424-316.000.

Makedonski, Boris G.; and Atanassov, Haralampi A., to Centralen Mashinostroitelen Institute. Polishing composition for centrifugal magnetic-abrasive machines. 4,451,269, Cl. 51-303.000.

Makishima, Sadao, to Fuji Jukogyo Kabushiki Kaisha. Transmission apparatus for a four-wheel drive motor vehicle. 4,450,734, Cl. 74-665.00F.

Malafosse, Jean, to L'Air Liquide - Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Haloformamidines bleaching agent activator functioning to release active oxygen. 4,451,384, Cl. 252-102.000.

Mallard, John R.: *See—*
Edelstein, William A.; Hutchison, James M. S.; Johnson, Glyn; Redpath, Thomas W. T.; and Mallard, John R., 4,451,788, Cl. 324-309.000.

Maltese, Peter C. Adjustable weight fishing device. 4,450,646, Cl. 43-43.140.

Mann, John B. Winding mechanism. 4,451,009, Cl. 242-54.00R.

Mannesmann AG: *See—*
Stucke, Walter; and Glissmann, Karl-Heinz, 4,451,413, Cl. 264-26.000.

Mansfield, Dennis L.: *See—*
Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,451,486, Cl. 424-317.000.

Manville Service Corporation: *See—*
Forte, Don A.; and Aldava, Michael B., 4,451,762, Cl. 315-87.000.
Odle, Herbert A.; Green, John D.; and Shadwick, Jan, 4,451,875, Cl. 362-297.000.
Sadler, Thomas H.; and Dalton, John J., 4,450,873, Cl. 138-174.000.

Manzi, Joseph, to Gossling Development Corporation. Pull and release exercise device. 4,451,035, Cl. 272-137.000.

Marano, Vincent: *See—*
Vines, Harvey L.; and Marano, Vincent, 4,451,275, Cl. 62-28.000.

Marathe, Suresh: *See—*
Parsons, Jack L.; Vizine, Dan; Sumner, Mark; Marathe, Suresh; and Dubicki, Henryk, 4,451,648, Cl. 536-54.000.

Marchello, John L., to Danmar Products, Inc. Bicycle saddle cover pad. 4,451,083, Cl. 297-195.000.

Marcinkiewicz, Eugene J.: *See—*
Reinholm, James H.; and Marcinkiewicz, Eugene J., 4,450,727, Cl. 73-862.230.

Mardin, Mithat: *See—*
Busse, Wolf-Dieter; Krauthausen, Edmund; and Mardin, Mithat, 4,451,475, Cl. 424-270.000.

Marinace, John C., to International Business Machines Corporation. Conductive silicon carbide. 4,451,391, Cl. 252-512.000.

Marinelli, Donald P.; and Ladany, Ivan, to RCA Corporation. Heating fixture. 4,451,727, Cl. 219-464.000.

Mark Designs International, Inc.: *See—*
Glass, William T.; and Glass, Michael T., 4,450,975, Cl. 220-18.000.

MARKER-Patentverwertungsgesellschaft mbH: *See—*
Knabel, Walter; Wagner, Ludwig; and Jungkind, Roland, 4,451,059, Cl. 280-632.000.

Marldon (Engineering Specialties) Limited: *See—*
Wardley, George, 4,450,731, Cl. 74-25.000.

Marriott, Joe E.: *See—*
Palermo, David W.; Ricci, David W.; Marriott, Joe E.; and Heger, Thomas J., 4,451,898, Cl. 364-900.000.

Marrs, Ralph E. Acoustic energy systems. 4,450,929, Cl. 181-146.000.

Marsh, Elizabeth A., executrix: *See—*
Marsh, William E., Jr., deceased; and Marsh, Elizabeth A., executrix, 4,450,969, Cl. 211-189.000.

Marsh, William E., Jr., deceased; and by Marsh, Elizabeth A., executrix. Top-gate assembly. 4,450,969, Cl. 211-189.000.

Marshall, William R., to United States of America, Administrator, National Aeronautics and Space Administration. Three stage rocket vehicle with parallel staging. 4,451,017, Cl. 244-172.000.

Martin, Claude: *See—*
Lefaucheux, Jean-Louis J. R.; Martin, Claude; and Mokrani, Edmond E. A., 4,450,716, Cl. 73-146.500.

Martin, Geoffrey S., to Vas-Cath of Canada Limited. Cannula. 4,451,252, Cl. 604-43.000.

Martin, Henry, to Ciba-Geigy Corporation. Compositions, which influence plant growth and protect plants based on oxime ethers and oxime esters. 4,451,286, Cl. 71-107.000.

Martin, Henry: *See—*
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,451,279, Cl. 71-93.000.

Martin, Jose L. Hydraulic trailer brake. 4,451,094, Cl. 303-10.000.

Martin, Roy C.: *See—*
Griffin, Robert M.; and Martin, Roy C., 4,451,760, Cl. 313-557.000.

Martinez, Christian: *See—*
Claude, Bruno; Labaig, Jean-Jacques; and Martinez, Christian, 4,451,526, Cl. 428-216.000.

Martinovich, Robert J.: *See—*
Garcia, Rodrigo A.; and Martinovich, Robert J., 4,451,607, Cl. 524-494.000.

Martins Mendes Cerejo, Francisco A.: *See—*
De Clippeleir, Georges E. M. J.; Cahen, Raymond M.; and Martins Mendes Cerejo, Francisco A., 4,451,686, Cl. 585-444.000.

Maruyama, Toshinori: *See—*
Akita, Yoshio; Teshima, Takanori; Maruyama, Toshinori; and Torii, Koshi, 4,451,774, Cl. 320-64.000.

Marvel, Fred D. Packet-type laminator. 4,451,320, Cl. 156-366.000.

Maselli, James M.: *See—*
Ernest, Michael V.; and Maselli, James M., 4,451,441, Cl. 423-213.200.

Mashevich, Pavel R.: *See—*
Dshkhunian, Valery L.; Ivanov, Eduard E.; Kovalenko, Sergei S.; Mashevich, Pavel R.; Ryzhov, Alexei A.; Telenkov, Vyacheslav V.; and Chicherin, Jury E., 4,451,882, Cl. 364-200.000.

Massey-Ferguson Services N.V.: *See—*
Bailey, Alfred J., 4,450,779, Cl. 111-52.000.
Gardner, Peter C., 4,450,925, Cl. 180-89.100.
Quick, Donald J., 4,450,778, Cl. 111-3.000.

Masters, Gilbert M.: *See—*
Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T., 4,450,868, Cl. 137-625.290.

Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, to Matsushita Electric Industrial Co., Ltd. Image display apparatus. 4,451,852, Cl. 358-230.000.

Masuda, Mitsuya: *See—*
Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,846, Cl. 358-56.000.

Masukawa, Toyoaki: *See—*
Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, 4,451,561, Cl. 430-619.000.

Mathewes, Wolfgang; and Hayn, Peter W., to Kraftwerk Union Aktiengesellschaft. Moving bed filter, especially an adsorption filter. 4,451,272, Cl. 55-390.000.

Matidori, Seika; Teshima, Koichi; and Sakai, Masato, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of producing copper alloy by melting technique. 4,451,430, Cl. 420-492.000.

Matsuda, Susumu: *See—*
Honma, Takao; Matsukura, Nobuaki; Murakami, Keisuke; and Matsuda, Susumu, 4,451,167, Cl. 400-621.000.

Matsuda, Yoshikazu: *See—*
Wada, Chuzoh; Matsuda, Yoshikazu; and Asano, Yoshio, 4,451,228, Cl. 431-76.000.

Matsuda, Yoshio; Hata, Masahiko; and Ogihara, Toru, to Yoshida Kogyo K.K. Warp-knit stringer tape for slide fastener. 4,450,694, Cl. 66-193.000.

Matsuda, Yutaka: *See—*
Naito, Takao; Matsuda, Yutaka; and Nishimori, Yuzo, 4,450,948, Cl. 198-389.000.

Matsui, Fujio: *See—*
Ohgami, Masaaki; and Matsui, Fujio, 4,451,793, Cl. 328-69.000.

Matsui, Hideo: *See—*
Kitamura, Minoru; Soejima, Toshiyuki; Hayashi, Tsutomu; Matsui, Hideo; and Fujisawa, Shigenori, 4,451,293, Cl. 75-257.000.

Matsui, Kazuma: *See—*
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,451,213, Cl. 417-366.000.

Matsui, Takayuki: *See—*
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Yamashita, Seizi; and Takahashi, Noriyoshi, 4,451,752, Cl. 310-186.000.

Matsui, Takeshi: *See—*
Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, 4,451,888, Cl. 364-426.000.

Matsukura, Nobuaki: *See—*
Honma, Takao; Matsukura, Nobuaki; Murakami, Keisuke; and Matsuda, Susumu, 4,451,167, Cl. 400-621.000.

Matsumoto, Akio: *See—*
Iwaki, Yoshiyuki; Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,451,776, Cl. 322-22.000.

Matsumoto, Hiroshi: *See—*
Sanemitsu, Yuzuru; Shiroshita, Masao; Hashimoto, Shunichi; Katoh, Haruhiko; and Matsumoto, Hiroshi, 4,451,283, Cl. 71-93.000.

Matsumoto, Hiroyuki, to Tsukasa Kasei Kogyo Kabushiki Kaisha. Polypropylene strap and method of manufacturing the same. 4,451,524, Cl. 428-213.000.

Matsuo, Junichi: *See—*
Yazaki, Jinichi; Sakano, Kozaburo; and Matsuo, Junichi, 4,451,512, Cl. 428-36.000.

Matsuoka, Yoshio: *See—*
Yamashita, Katsuji; Umetsu, Hiroshi; Sato, Hirotaka; Matsuoka, Yoshio; and Kida, Kei, 4,451,433, Cl. 422-63.000.

Matsushima, Seiichi: *See—*
Ishida, Osamu; Uetani, Yoshio; and Matsushima, Seiichi, 4,451,542, Cl. 429-174.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Fujita, Osamu, 4,451,799, Cl. 330-255.000.
Honjo, Masahiro; and Tomita, Masao, 4,451,860, Cl. 360-77.000.
Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,846, Cl. 358-56.000.
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,852, Cl. 358-230.000.
Naito, Takao; Matsuda, Yutaka; and Nishimori, Yuzo, 4,450,948, Cl. 198-389.000.
Wada, Chuzoh; Matsuda, Yoshikazu; and Asano, Yoshio, 4,451,228, Cl. 431-76.000.
Wada, Ryoichi; Tsuchiya, Mitsuharu; Senoo, Takanori; and Odagi, Kanji, 4,451,919, Cl. 371-38.000.
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, 4,451,758, Cl. 313-495.000.

Matsuura, Kazuo: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mituji, 4,451,688, Cl. 585-524.000.

Matsuura, Masataka: *See—*
Kishi, Kohhei; Kato, Hiroaki; Matsuura, Masataka; and Wada, Tomio, 4,451,554, Cl. 430-313.000.

Mattel, Inc.: *See—*
Klose, George J.; Rosenthal, Janice E.; Schneider, Thomas G.; and Schroeder, Robert F., 4,451,911, Cl. 369-31.000.

Matthews, Demetreos N.: *See—*
Nudenberg, Walter; Rim, Yong S.; and Matthews, Demetreos N., 4,451,575, Cl. 502-122.000.

Matthews, John B.; and Keller, Roger H., to Russell Matthews Industries Limited. Packaging or containing of bituminous products. 4,450,962, Cl. 206-447.000.

Matthey Rustenburg Refiners (Proprietary) Limited: *See—*
Hill, John; and Day, Joseph G., 4,451,290, Cl. 75-63.000.

Matyczyk, George: *See—*
Bies, Sylvester W.; Fazio, Martin V.; and Matyczyk, George, 4,450,961, Cl. 206-349.000.

Maurel, Pierre; Bosca, Bernard; and Nicolas, Francois, to Pechiney. Process for the purification of solutions containing a sodium or potassium carbonate, sulphate, and possibly hydroxide, and at least one of the metals vanadium, uranium and molybdenum. 4,451,439, Cl. 423-55.000.

Mauro, Dominic R.: *See—*
Sinclair, Bernard J.; and Mauro, Dominic R., 4,451,036, Cl. 273-26.00R.

Max, John K. Flowmeter connecting rod assembly. 4,450,720, Cl. 73-247.000.

Mayer, Fritz; and Holtermann, Svein, to Ciba-Geigy Corporation. After-treatment of finished, cellulose-containing fibrous materials with liquid ammonia. 4,451,262, Cl. 8-125.000.

Mayer, Steven T.; and Emmons, Lawrence D., to Atari, Inc. Method and apparatus for text editing display. 4,451,900, Cl. 364-900.000.

McCain Manufacturing Corporation: *See—*
McCain, William B.; and Nelson, Thomas A., 4,451,031, Cl. 271-303.000.

McCain, William B.; and Nelson, Thomas A., to McCain Manufacturing Corporation. Signature machines. 4,451,031, Cl. 271-303.000.

McCall, Francis J. Electrical pulse acupressure apparatus and method of making same. 4,450,846, Cl. 128-789.000.

McCloskey, John A., to Incom International Inc. Rod ends and blanks and method and apparatus for making same. 4,450,703, Cl. 72-342.000.

McComb, Ronald J.: *See—*
Fritz, William E.; and McComb, Ronald J., 4,450,773, Cl. 105-282.00A.

McCormick, Vernon R.: *See—*
Buresh, Lloyd V.; Hammond, Garth D.; Koval, Emil J.; and McCormick, Vernon R., 4,451,103, Cl. 339-93.00R.

McGlashan, Kenneth W.; and Archer, John R., to RCA Corporation. Television raster pincushion distortion correction device. 4,451,807, Cl. 335-211.000.

McIntosh, John N.: *See—*
Barclay, John D.; and Harmon, Rawson B., Jr., 4,451,266, Cl. 44-53.000.

McKay, Richard H.; and Ryan, Geoffrey R., to Frank Thornber Co. Self-contained portable voting booth apparatus. 4,451,728, Cl. 235-50.00R.

McKelvey, Harold E., to Shatterproof Glass Corporation. Flexible vacuum bag. 4,451,321, Cl. 156-382.000.

McKenna, William A. Crutch for use on an icy surface. 4,450,850, Cl. 135-78.000.

McMurtry, David R. Method of and apparatus for measuring distances in numerically controlled machine tools. 4,451,892, Cl. 364-474.000.

McNamee, Patrick M. Tile mounting process and product. 4,450,664, Cl. 52-385.000.

McNeill, William H.; and Chen, Yung J., to GTE Laboratories Incorporated. High frequency light modulation device. 4,451,123, Cl. 350-386.000.

Mead Corporation, The: *See—*
Wood, Prentice J., 4,450,956, Cl. 206-188.000.

Meador, Richard A., to NL Industries, Inc. Logging tool and method for measuring resistivity of different radial zones at a common depth of measurement. 4,451,789, Cl. 324-338.000.

Mechanical Technology Inc.: *See—*
Bergman, Ulf C., 4,450,859, Cl. 137-516.290.
Corey, John A., 4,450,685, Cl. 60-520.000.

Medcalf, Darrell G.: *See—*
Beale, Robert J.; Bradbury, Allen G. W.; Medcalf, Darrell G.; and Romig, William R., 4,451,489, Cl. 426-254.000.

Medishield Corporation Limited, The: *See—*
Gregory, Raymond S., 4,450,852, Cl. 137-114.000.

Medtronic, Inc.: *See—*
Nettekoven, William S., 4,450,710, Cl. 73-37.000.

Meeks, Lawrence A.: *See—*
Barlow, Anthony; and Meeks, Lawrence A., 4,451,536, Cl. 428-383.000.

Meisel, Mark. Bicycle bag system. 4,450,988, Cl. 224-32.00A.

Meisner, Roland A., to BASF Farben + Fasern AG. Apparatus for coating objects electrostatically. 4,450,785, Cl. 118-626.000.

Meisser, Marc: *See—*
Veyrassat, Louis; and Meisser, Marc, 4,451,008, Cl. 242-25.00A.

Meixner, Jurgen: *See—*
Frank, Walter; Bendszus, Otto; Meixner, Jurgen; Freier, Hans J.; and Traenckner, Hans-Joachim, 4,451,509, Cl. 427-54.100.

Melcher, Franz-Josef: *See—*
Behrend, Lothar; Knothe, Erich; Melcher, Franz-Josef; and Ober, Jurgen, 4,450,923, Cl. 177-212.000.
Behrend, Lothar; Knothe, Eric; Melcher, Franz-Josef; and Ober, Jurgen, 4,450,924, Cl. 177-212.000.

Melchiori, Remo, Jr. Tensioned structure with adjustably movable columns and beams. 4,450,662, Cl. 52-223.00R.

Mellinger, Ellis, to Llumar Star Kites. Hand-carryable flying sailboat. 4,450,784, Cl. 114-39.000.

Melone, Robert R., to Smith Investment Company. Quick connect fluid coupling. 4,451,069, Cl. 285-86.000.

Melzer, Rudolf: *See—*
Wildmann, Wolfgang; and Melzer, Rudolf, 4,451,029, Cl. 271-236.000.

Memorex Corporation: *See—*
Beckenhauer, Robert L., 4,451,819, Cl. 340-347.0DD.

Memorial Hospital for Cancer and Allied Diseases: *See—*
Miodownik, Saul, 4,450,838, Cl. 128-204.230.

Mercado Rehabilitering AB: *See—*
Seven, Regnell, 4,451,086, Cl. 297-312.000.

Mercer, Scott A.: *See—*
Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; Newton, Kevin H.; and Bozzelli, John C., 4,450,978, Cl. 221-13.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Sattler, Gunther; Gunkel, Werner; Witzgall, Manfred; and Look, Reinhard, 4,451,365, Cl. 210-198.200.

Mericle, Robert W.; and Transue, James A., to Ethicon, Inc. Ligating clip with flanged base having a recessed engaging face. 4,450,840, Cl. 128-325.000.

Merkle, Hans: *See—*
Hansen, Hanspeter; Merkle, Hans; and Mueller, Albrecht, 4,451,378, Cl. 210-725.000.

Merriss, Charles E. Rear view mirror extension assembly. 4,451,021, Cl. 248-480.000.

Meshirer, Milton: *See—*
Kerr, Stuart R., III; and Meshirer, Milton, 4,451,529, Cl. 428-319.300.

Messerschmitt-Bolkow-Blohm G.m.b.H.: *See—*
Hahnel, Thomas, 4,450,679, Cl. 60-251.000.

Mesars. Muse Mannequin Co., Ltd.: *See—*
Kashiwabara, Mikio, 4,450,971, Cl. 211-201.000.

Metallbau Treiber KG: *See—*
Treiber, Josef; and Reichmann, Walter, 4,450,701, Cl. 72-181.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Ernst, Helmut; Gehrhardt, Karl-Heinz; Uhl, Leopold; and Wolert, Hartmut, 4,451,232, Cl. 432-103.000.
Wullenweber, Heinz, 4,451,347, Cl. 204-258.000.

Metallurgie Hoboken-Overpelt: *See—*
Van Hecke, Michel C.; and Fontainas, Luc M., 4,451,289, Cl. 75-63.000.

Mettler Instrumente AG: *See—*
Zulliger, Hans-Rudolf, 4,451,817, Cl. 338-47.000.

Meunier, Georges; and Bergougnou, Maurice A., to Tunzini-Nessi Enterprises D'Equipements. Process and apparatus for heating or cooling light solid particles. 4,450,895, Cl. 165-1.000.

Meyer, Daniel: *See—*
Wiseheart, Ronald W.; and Meyer, Daniel, 4,451,106, Cl. 339-123.000.

Meyer-Kretschmer, Gustav; Jetter, Heinz; and Toennies, Peter, to URANIT Uran-Isotopentrennungs-GmbH. Method for separating different isotopes in compounds by means of laser radiation. 4,451,437, Cl. 423-3.000.

Meyer, Louis W., to Dow Chemical Company, The. Method for injection molding polyurethane using internal release agents. 4,451,425, Cl. 264-300.000.

Meyer, Marcus F. Reusable rod assembly for mounting boxed rolls of material. 4,451,010, Cl. 242-55.530.

Meyers, Carol Mae, executrix: *See—*
Stuckey, Clarence W., Jr.; and Meyers, Robert A., deceased, 4,451,829, Cl. 343-705.000.

Meyers, John J.; and Pulver, John C., to Eastman Kodak Company. Composite mirror and method of construction. 4,451,119, Cl. 350-310.000.

Meyers, Robert A., deceased: *See—*
Stuckey, Clarence W., Jr.; and Meyers, Robert A., deceased, 4,451,829, Cl. 343-705.000.

Meyers, Walter A.: *See—*
Lamphier, Larry N.; and Meyers, Walter A., 4,451,172, Cl. 405-49.000.

Mezawa, Tsutomu: *See—*
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; Enomoto, Seiji; and Mezawa, Tsutomu, 4,451,908, Cl. 365-222.000.

Michaelis, Paul R.: *See—*
Barney, George M.; and Michaelis, Paul R., 4,450,843, Cl. 128-690.000.

Microcomputer Systems, Inc.: *See—*
Gilovich, Paul A.; and Toreson, James S., 4,451,861, Cl. 360-84.000.

Microdot Inc.: *See—*
Repella, James A., 4,450,614, Cl. 29-417.000.
Repella, James A., 4,451,050, Cl. 277-134.000.

Mid Coast Electronics: *See—*
Zuniga, Michael A., 4,451,113, Cl. 339-12.00R.

Mikado, Tsuneo, to Nippon Television Industry Corporation. Still picture reproducing apparatus. 4,451,857, Cl. 358-312.000.

Mil Mutzarim Techniim B.M.: *See—*
Zakai, Avi, 4,451,023, Cl. 251-5.000.

Milani, Ambrogio: *See—*
Bocci, Giorgio; Dardano, Alberto; Levaggi, Vittorio; and Milani, Ambrogio, 4,451,230, Cl. 431-284.000.

Milkovic, Miran, to General Electric Company. Electronic watt transducer circuit with constant DC current output proportional to watts. 4,451,784, Cl. 324-142.000.

Milkowski, Wolfgang: *See—*
Hachmeister, Bernd; Milkowski, Wolfgang; Kuhl, Ulrich; Buschmann, Gerd; and Budden, Renke, 4,451,468, Cl. 424-256.000.

Millay, Lawrence I.: *See—*
Reda, Kazimierz J.; Dzewaltowski, Victor F.; Millay, Lawrence I.; and Hobbs, Robert N., 4,450,651, Cl. 51-5.00D.

Miller, Donald E.; and Werstak, Charles E., to SCM Corporation. Salad dressings of the separating type. 4,451,493, Cl. 426-602.000.

Miller, Jeorge, to Hidrotronic de Colombia, S.A. Electrolytic water sterilization system. 4,451,341, Cl. 204-149.000.

Miller, Merrill R., to Lisle Corporation. Magnetic tool holder. 4,451,810, Cl. 335-285.000.

Mills, Kenneth R., to Phillips Petroleum Company. Stabilized polyolefin compositions. 4,451,604, Cl. 524-312.000.

Ministry of International Trade & Industry: *See—*
Terada, Shoji, 4,451,415, Cl. 264-43.000.

Minneapolis Medical Research Foundation, Inc.: *See—*
Engel, Rolf R., 4,450,845, Cl. 128-743.000.

Minnesota Mining and Manufacturing Company: *See—*
Heilmann, Steven M.; Rasmussen, Jerald K.; and Palensky, Frederick J., 4,451,619, Cl. 525-379.000.
Mitra, Sumita B., 4,451,260, Cl. 604-890.000.
Olyphant, Murray, Jr., 4,451,527, Cl. 428-220.000.
Rousseau, Alan D.; and Reilly, Laurence W., Jr., 4,451,613, Cl. 525-54.310.
Theodore, John J., 4,451,605, Cl. 524-423.000.
Wong, Roy; Pedginski, James J.; and Wong, Andrew H., 4,451,533, Cl. 428-337.000.

Minnich, George E.; and Applegate, Clark L., to Singer Company, The. Electronic compensator for an electrohydraulic servovalve. 4,451,769, Cl. 318-689.000.

Minolta Camera Kabushiki Kaisha: *See—*
Kawamura, Takao; and Yoshida, Masazumi, 4,451,546, Cl. 430-69.000.

Minster Machine Company: *See—*
Olding, Michael J.; and Schoch, Daniel A., 4,450,946, Cl. 192-0.084.

Miodownik, Saul, to Memorial Hospital for Cancer and Allied Diseases. Jet ventilator control system. 4,450,838, Cl. 128-204.230.

Misawa Homes K.K.: *See—*
Hanaoka, Tadashi; Umezu, Hiroaki; and Shigaraki, Ginichi, 4,450,659, Cl. 52-167.000.

Misumi, Teruo: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,451,547, Cl. 430-128.000.

Mita Industrial Co., Ltd.: *See—*
Kato, Yoshiaki, 4,451,549, Cl. 430-134.000.

Mitchell, Bruce R.; and Vogel, Roger F., to Gulf Research & Development Company. Vanadium passivation in a hydrocarbon catalytic cracking process. 4,451,355, Cl. 208-113.000.

Mitchell, David S., to Chevron Research Company. Apparatus and method for feeding pulverized hydrocarbonaceous solids into a high pressure reactor. 4,451,184, Cl. 406-105.000.

Mitra, Sumita B., to Minnesota Mining and Manufacturing Company. Sustained release oral medicinal delivery device. 4,451,260, Cl. 604-890.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Iwaki, Yoshiyuki; Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,451,776, Cl. 322-22.000.
Ogawa, Koji; Taguchi, Hiroaki; Tsutsumi, Takao; Yasuda, Yoshinori; and Takase, Akio, 4,451,043, Cl. 273-186.00R.
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,451,718, Cl. 200-147.00R.

Mitsui Engineering & Shipbuilding Co. Ltd.: *See—*
Yamato, Isao; and Yamada, Tominori, 4,451,212, Cl. 417-313.000.

Miura, Hiroshi: *See—*
Fudatsuji, Toshiharu; Imagi, Tsutomu; and Miura, Hiroshi, 4,451,165, Cl. 400-196.100.

Miura, Nobuhiro; and Takahashi, Kazushi, to Toyota Jidosha Kabushiki Kaisha. Intake air throttle device of a diesel engine. 4,450,806, Cl. 123-401.000.

Miura, Nobuhiro: *See—*
Kinoshita, Takahiko; Kakeno, Nobuhiko; and Miura, Nobuhiro, 4,450,807, Cl. 123-403.000.

Miura, Toshikatu; Kikuchi, Hiroto; Okada, Yukio; and Yoshioka, Tsutomu, to Nissan Motor Company, Limited. Reinforcing member. 4,451,518, Cl. 428-137.000.

Miyachi, Kazuaki: *See—*
Nemoto, Hiroshi; Miyachi, Kazuaki; and Komoda, Akira, 4,451,345, Cl. 204-206.000.

Miyagawa, Masafumi: *See—*
Hiraki, Shunichi; Kikuchi, Kiyoshi; Yawata, Shigeo; and Miyagawa, Masafumi, 4,451,308, Cl. 148-187.000.

Miyazaki, Tadashi; and Hasegawa, Takao, to Carl Freudenberg, Firma. Method for manufacturing a dampening roll cover. 4,451,311, Cl. 156-86.000.

Miyazaki, Tadashi, to Carl Freudenberg, Firma. Process for producing a non-woven fabric. 4,451,315, Cl. 156-220.000.

Miyazawa, Hideo; and Kitamura, Junzo, to Hitachi, Ltd. Method of conveying panel and shadow mask and pallet for holding panel and shadow mask and apparatus for removing shadow mask from panel. 4,451,242, Cl. 445-65.000.

Miyazawa, Tetsuo: *See—*
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,451,506, Cl. 427-239.000.

Miyoshi, Mituji: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mituji, 4,451,688, Cl. 585-524.000.

Mizuno Corporation: *See—*
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,041, Cl. 273-167.00H.
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,042, Cl. 273-171.000.

Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takahashi, Akira; Hasegawa, Manshiro; and Tsuchida, Hisashi, 4,450,885, Cl. 164-47.000.

Moberg, Gregory D.; and Hudson, Lynn R., to Eastman Kodak Company. Passive clamp for on/off control of a capacitor charger. 4,451,772, Cl. 320-1.000.

Mobil Oil Corporation: *See—*
Chen, Catherine S. H., 4,451,623, Cl. 525-505.000.
Hunt, William C., III, 4,450,910, Cl. 166-261.000.
Kozak, Henry A.; and Liu, Tony Y., 4,451,591, Cl. 523-177.000.
Shu, Winston R.; and Hartman, Kathy J., 4,450,911, Cl. 166-263.000.
Wang, Jerry C.; and Stepanian, Michael R., 4,451,612, Cl. 525-53.000.

Moe, Per H. Arrangement in or relating to a power plant. 4,450,689, Cl. 60-641.700.

Moerman, Richard A.: *See—*
Dvorak, Bolek, 4,451,322, Cl. 156-461.000.

Moffitt, Merritt L., Jr. Half-reader sunglasses. 4,451,127, Cl. 351-47.000.

Mogami Denki Kabushiki Kaisha: *See—*
Kawahara, Fumio; Takahashi, Masanori; and Kumagai, Katsuyoshi, 4,451,609, Cl. 524-708.000.

Mohasco Corporation: *See—*
Kowalski, Jerome R., 4,451,081, Cl. 297-61.000.

Mokrani, Edmond E. A.: *See—*
Lefaucheux, Jean-Louis J. R.; Martin, Claude; and Mokrani, Edmond E. A., 4,450,716, Cl. 73-146.500.

Momose, Yoshiaki: *See—*
Akiyama, Hiroyuki; Hatakeyama, Hidewo; Shimoyashiki, Nobuyoshi; Momose, Yoshiaki; and Imai, Fusao, 4,451,417, Cl. 264-53.000.

Monitek, Inc.: *See—*
Topol, George J.; and Trent, Chadwick L., 4,451,152, Cl. 356-440.000.

Moniteq Ltd.: *See—*
Gray, Lawrence H., 4,451,765, Cl. 315-248.000.

Monogram Industries, Inc.: *See—*
Pratt, John D., 4,451,189, Cl. 411-34.000.

Monsanto Company: *See—*
Alt, Gerhard H., 4,451,285, Cl. 71-105.000.
Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,451,486, Cl. 424-317.000.
Walsh, Robert J., 4,450,652, Cl. 51-131.400.

Montag, Bernhard: *See—*
Opitz, Heinrich; Montag, Bernhard; Urban, Gerd; and Turk, Wilfried, 4,450,896, Cl. 165-1.000.

Montedison, S.p.A.: *See—*
Sianesi, Dario; Pasetti, Adolfo; and Belardinelli, Giorgio, 4,451,646, Cl. 528-401.000.

Montgomery, James W.: *See—*
Baugh, John L.; and Montgomery, James W., 4,450,857, Cl. 137-318.000.

Montgomery, John A.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,451,650, Cl. 544-105.000.

Montgomery, Preston D. Hide press and method for shipping hides. 4,450,764, Cl. 100-37.000.

Monticelli, Dennis M., to National Semiconductor Corporation. Wide-band linear carrier current amplifier. 4,451,801, Cl. 330-278.000.

Mookherjee, Barja D.: *See—*
Evers, William J.; Stork, Gilbert; Mookherjee, Barja D.; and Heinsohn, Howard H., Jr., 4,451,392, Cl. 252-522.00R.

Moorby, Donald G.: *See—*
Lonseth, Palmer; Selkirk, Neil R.; and Moorby, Donald G., 4,451,870, Cl. 361-433.000.

Moore, James C., to Teledyne Industries, Inc. Diverter valve and actuator assembly. 4,450,867, Cl. 137-625.440.

Moore, Max J.: *See—*
D'Angelo, Severino; and Moore, Max J., 4,450,728, Cl. 73-862.280.

Moreau, Patrice: *See—*
Calas, Patrick; Moreau, Patrice; and Commeyras, Auguste, 4,451,682, Cl. 570-142.000.

Mori, Kazuyuki: *See—*
Suzuki, Kouichi; and Mori, Kazuyuki, 4,451,890, Cl. 364-426.000.

Mori, Noboru: *See—*
Yagishita, Aisaburo; Mori, Noboru; Kusumi, Kinshiro; and Tsugi, Yoshio, 4,451,298, Cl. 134-10.000.

Mori, Susumu: *See—*
Sakabe, Yukio; Nishioka, Goro; Azuma, Yoshimasa; and Mori, Susumu, 4,451,869, Cl. 361-309.000.

Mori, Tatsuo: *See—*
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,451,506, Cl. 427-239.000.

Moriguchi, Fujio: *See—*
Nakajima, Hisao; and Moriguchi, Fujio, 4,451,834, Cl. 346-76.0PH.

Moriguchi, Harukiko; Kurata, Masami; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Image data transmission process. 4,451,853, Cl. 358-281.000.

Moriguchi, Soyao: *See—*
Ishikawa, Masayuki; Eguchi, Yukuo; Moriguchi, Soyao; and Ebisawa, Hisashi, 4,451,467, Cl. 424-251.000.

Morimoto, Hiroyuki, to Shindaiwa Kogyo Co., Ltd. Device for determining a correct sawing position for a portable rotary sawing machine. 4,450,627, Cl. 30-391.000.

Morimoto, Kiyoshi; Takagi, Toshinori; and Watanabe, Hiroshi, to Futaba Denshi Kogyo Kabushiki Kaisha. Method for producing a beryllium oxide film. 4,451,499, Cl. 427-38.000.

Morita, Deen I.; and Morita, Mark K. Water saving system. 4,450,829, Cl. 126-362.000.

Morita, Kiyoshi, to Yamashina Seiko-Sho, Ltd. Method of ensuring the tightness of a bolt and a nut. 4,450,616, Cl. 29-446.000.

Morita, Mark K.: *See—*
Morita, Deen I.; and Morita, Mark K., 4,450,829, Cl. 126-362.000.

Morita, Tatsuo: *See—*
Sawamoto, Kunifumi; Morita, Tatsuo; Ikeura, Kenji; and Yamaguchi, Hiroshi, 4,450,814, Cl. 123-478.000.

Moriuchi, Takahiko: *See—*
Kawazoe, Shiyouzou; Ueda, Zenichi; Sugimoto, Toshihiko; and Moriuchi, Takahiko, 4,451,525, Cl. 428-213.000.

Moriyama, Eiichi; and Kobayashi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing control device. 4,450,808, Cl. 123-417.000.

Morman, Michael T.; and Wisneski, Tony J.. to Kimberly-Clark Corporation. Method of improving processability of polymers and resulting polymer compositions. 4,451,589, Cl. 523-124.000.

Morris, Corydon E.; and Jaliwala, Salim A., to Cummins Engine Company, Inc. Electronically controlled fuel pump. 4,450,783, Cl. 123-458.000.

Morris, Hugh C., to Caterpillar Tractor Co. Control system for converter lock-up and simultaneous pressure reduction. 4,450,941, Cl. 192-3.310.

Moser, Franz, to Werkzeugmaschinenfabrik Oerlikon Buhrle AG. Dummy ammunition. 4,450,769, Cl. 102-444.000.

Moser, Franz; and Visek, Tomas, to Steyr-Daimler Puch Aktiengesellschaft. Crank drive for diesel engine. 4,450,797, Cl. 123-78.00F.

Mossberg Industries, Inc.: *See—*
Kitt, Robert A.; and Wirts, Harold L., 4,451,014, Cl. 242-128.000.

Mostek Corporation: *See—*
Aswell, Cecil J., 4,451,742, Cl. 307-66.000.
Gerson, Isadore S.; and Briggs, Willard S., 4,451,885, Cl. 364-200.000.

Motoda, Nobuo: *See—*
Ito, Seitoku; Takeda, Kenji; Inagaki, Mitsuo; and Motoda, Nobuo, 4,451,220, Cl. 418-255.000.

Motokawa, Isamu: *See—*
Yoshikumi, Chikao; Sakurai, Katsuo; Omura, Yoshio; Nohara, Mayumi; Ando, Takao; and Motokawa, Isamu, 4,451,457, Cl. 424-180.000.

Motomak Motorenbau, Maschinen- Und Werkzeugfabrik, Konstruktionen GmbH: *See—*
Schaeffler, Georg; Spiess, Karl; Heyne, Jurgen E.; and Krost, Manfred, 4,450,704, Cl. 72-356.000.

Motorola Inc.: *See—*
Chapman, Ronald H.; and Peterson, Andrew F., 4,451,930, Cl. 455-260.000.
Donoghue, William J.; and Tesch, Rodney C., 4,451,907, Cl. 365-203.000.
Gay, Michael J., 4,451,792, Cl. 329-145.000.
Thayer, David J.; Krause, James J.; and Welk, John R., 4,451,824, Cl. 340-720.000.

Motosugi, Katsuhiko: *See—*
Sumiyoshi, Masaharu; and Motosugi, Katsuhiko, 4,450,793, Cl. 123-52.0MB.

Mount, James, to RCA Corporation. Electrical heating unit for sealing vacuum electron tubes. 4,451,725, Cl. 219-390.000.

Mouri, Yasunori, to Hitachi, Ltd. Internal combustion engine control apparatus. 4,450,815, Cl. 123-479.000.

Mouterde, Anne: *See—*
Decuq, Guy; and Mouterde, Anne, 4,451,006, Cl. 242-18.0DD.

Mower, Morris F.; and Johnson, Eugene R., to Bliss & Laughlin Industries, Inc. Corner finishing tool. 4,451,223, Cl. 425-458.000.

Moyer, Norman E., to Hughes Aircraft Company. Electrically erasable programmable read-only memory cell having a single transistor. 4,451,905, Cl. 365-185.000.

Mozer, Ferenc: *See—*
Balazs, Janos; Bano, Tibor; Kollar, Arpad; Kovacs, Tibor; Lengyel, Denes; and Mozer, Ferenc, 4,450,608, Cl. 29-33.00R.

Mracek, Miroslav: *See—*
Vertesy, Laszlo; Mracek, Miroslav; Braunitzer, Gerhard; and Aschauer, Heinz, 4,451,455, Cl. 424-177.000.

Mueller, Albrecht: *See—*
Hansen, Hanspeter; Merkle, Hans; and Mueller, Albrecht, 4,451,378, Cl. 210-725.000.

Mueller, Dieter J., to Chemische Werke Huels AG. Organic phosphating solution for the phosphating of metallic surfaces. 4,451,301, Cl. 148-6.15R.

Mueller, Hans-Rudolf: *See—*
Simon, Lionel N.; Mueller, Hans-Rudolf; and Zutter, Hans, 4,451,478, Cl. 424-273.00R.

Muellner, James M., to Smarte Carte, Inc. Nestable cart anti-reversing apparatus. 4,450,968, Cl. 211-17.000.

Mugita, Mikio: *See—*
Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, 4,451,350, Cl. 204-422.000.

Mulertt, Charles: *See—*
Cinquin, Jean-Pierre; Danthony, Jacques; and Mulertt, Charles, 4,451,866, Cl. 361-56.000.

Muller, Jacques, to ETA S.A. Fabriques d'Ebauches. Movement for an electronic watch with analogue display. 4,451,161, Cl. 368-220.000.

Mumford, Eustace H., to Owens-Illinois, Inc. Multiple gob shearing mechanism operating in a straight line. 4,450,741, Cl. 83-623.000.

Munkel, Albert: *See—*
Dietz, Erwin; and Munkel, Albert, 4,451,656, Cl. 548-352.000.

Munroe, Warren T. Lightweight drawer support assembly having combination locking mechanism and common vertical drawer support. 4,451,111, Cl. 312-221.000.

Murai, Masataka; and Ishii, Kiyoshi, to Daicel Chemical Industries Ltd. Membrane separation element. 4,451,370, Cl. 210-321.100.

Murakami, Keisuke: *See—*
Honma, Takao; Matsukura, Nobuaki; Murakami, Keisuke; and Matsuda, Susumu, 4,451,167, Cl. 400-621.000.

Murao, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Control device with mode flags for dedicating memory segments as either scratchpad or timing control registers. 4,451,897, Cl. 364-900.000.

Murata Manufacturing Co., Ltd.: *See—*
Sakabe, Yukio; Nishioka, Goro; Azuma, Yoshimasa; and Mori, Susumu, 4,451,869, Cl. 361-309.000.

Murayama, Fumio, to Pioneer Electronic Corporation. Multi-speaker system for use in automobiles. 4,451,928, Cl. 381-86.000.

Murray, Lawrence K., to Phillips Petroleum Company. Drying of particulate material. 4,451,231, Cl. 432-13.000.

Muse, Richard R.: *See—*
Bellamy, Robert L., Jr.; Bersot, James D.; Leonard Thomas K.; and Muse, Richard R., 4,451,190, Cl. 411-337.000.

Muszbek, Laszlo: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.

Mutsuro, Hideaki: *See—*
Yamashita, Hiromichi; Watari, Yoshiharu; Mutsuro, Hideaki; and Takagi, Kenji, 4,451,175, Cl. 405-50.000.

Myers, George M.: *See—*
Leonard, Eric M.; Geyer, Frederick F.; and Myers, George M., 4,451,836, Cl. 346-137.000.

Myers, Harry S., Jr.: *See—*
Young, Virgel J.; and Myers, Harry S., Jr., 4,451,847, Cl. 358-99.000.

Nadin, Robert P.: *See—*
Nicholakopoulos, Antonios; Gill, Grace M.; and Nadin, Robert P., 4,451,593, Cl. 523-322.000.

Nador, Karoly; Kraiss, Gabor; Sinko, Katalin; Paroczai, Margit; Karpati, Egon; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar Rt. 3,7-Diazabicyclo [3.3.1] nonanes having anti-arrhythmic activity. 4,451,473, Cl. 424-256.000.

Nagai, Hirosi: *See—*
Okuda, Kensuke; Nagai, Hirosi; Fujimaki, Hiroto; Tomonaga, Atsushi; and Aoki, Hideki, 4,451,235, Cl. 433-201.000.

Nagano, Hirosaku: *See—*
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, 4,451,621, Cl. 525-426.000.

Nagao, Makoto; Nahara, Akira; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Method of making a magnetic recording medium. 4,451,501, Cl. 427-40.000.

Nagao, Yoshiaki: *See—*
Fukuoka, Takashi; Nagao, Yoshiaki; and Tanaka, Hiroyuki, 4,450,933, Cl. 181-229.000.

Nagase, Hiroshi; Ninomiya, Hisakazu; and Ibori, Satoshi, to Hitachi, Ltd. Apparatus for controlling AC motor. 4,451,771, Cl. 318-800.000.

Nagashima, Masao: *See—*
Ito, Hiroshi; Yoshio, Toshihiko; and Nagashima, Masao, 4,450,611, Cl. 29-156.8FC.

Nagy, Bela A. Transparent sphere with moveable dividers and pieces. 4,451,038, Cl. 273-110.000.

Nahara, Akira: *See—*
Nagao, Makoto; Nahara, Akira; and Akashi, Goro, 4,451,501, Cl. 427-40.000.

Naher, Gotthilf: *See—*
Vetter, Hellmuth; Scheibe, Peter; Thum, Waldemar; and Naher, Gotthilf, 4,451,487, Cl. 435-183.000.

Naik, Subhash K., to Avco Corporation. Molybdenum-containing high temperature coatings for nickel- and cobalt-based superalloys. 4,451,431, Cl. 420-588.000.

Naito, Hiroyuki: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takahashi, Akira; Hasegawa, Manshiro; and Tsuchida, Hisashi, 4,450,885, Cl. 164-47.000.

Naito, Takao; Matsuda, Yutaka; and Nishimori, Yuzo, to Matsushita Electric Industrial Company, Limited. Apparatus for supplying headed parts. 4,450,948, Cl. 198-389.000.

Nakada, Akira; and Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with plural tone production channels. 4,450,745, Cl. 84-1.190.

Nakada, Kazuhiko: *See—*
Tanaka, Kyoichi; Kanome, Shinji; Nakajima, Tatsutoshi; Nakada, Kazuhiko; and Toyoshima, Nobuyuki, 4,451,629, Cl. 526-238.230.

Nakagawa, Katsumi: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,451,547, Cl. 430-128.000.

Nakajima, Hisao; and Moriguchi, Fujio, to Fuji Xerox Co., Ltd. Transfer type heat sensitive recording device. 4,451,834, Cl. 346-76.0PH.

Nakajima, Kichio: *See—*
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,451,893, Cl. 364-494.000.

Nakajima, Tatsutoshi: *See—*
Tanaka, Kyoichi; Kanome, Shinji; Nakajima, Tatsutoshi; Nakada, Kazuhiko; and Toyoshima, Nobuyuki, 4,451,629, Cl. 526-238.230.

Nakamiya, Teruaki: *See—*
Yasuda, Naohiko; Okutsu, Masaru; Iwagami, Hisao; Nakamiya, Teruaki; and Takase, Ichiro, 4,451,399, Cl. 260-239.100.

Nakamura Kinzoku Kogyosho, Inc.: *See—*
Enomoto, Michitoshi; and Shimizu, Yasuo, 4,450,886, Cl. 164-75.000.

Nakamura, Michio: *See—*
Komatsu, Shigeru; and Nakamura, Michio, 4,451,844, Cl. 357-59.000.

Nakamura, Shigeo: *See—*
Imazeki, Ryoji; Hattori, Masayuki; and Nakamura, Shigeo, 4,451,902, Cl. 365-1.000.

Nakamura, Toru: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mituji, 4,451,688, Cl. 585-524.000.

Nakamura, Toshiaki: *See—*
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,451,213, Cl. 417-366.000.

Nakano, Takao: *See—*
Sato, Hiroki; Nakano, Takao; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,451,756, Cl. 313-422.000.

Nakano, Yutaka: *See—*
Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, 4,451,350, Cl. 204-422.000.

Nalco Chemical Company: *See—*
Payne, Charles C., 4,451,388, Cl. 252-313.00S.
Sharp, John D., 4,451,376, Cl. 210-701.000.

Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, to Suzuki Kogyo Kabushiki Kaisha. Internal combustion engine. 4,450,803, Cl. 123-308.000.

Nandoh, Kenji: *See—*
Hattori, Motonobu; Tamuro, Yasuharu; Ishibashi, Akira; and Nandoh, Kenji, 4,451,112, Cl. 318-778.000.

Nanya, Takanori: *See—*
Hashimoto, Eigo; and Nanya, Takanori, 4,451;498, Cl. 427-38.000.

Napadov, Mikhail A.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Narasaka, Shin: *See—*
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,450,680, Cl. 60-274.000.
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,450,812, Cl. 123-438.000.

Nasman, Lars E.: *See—*
Annergren, Goran E.; Hagglund, Tjell-Ake; Lindblad, Per-Olov; Lindstrom, Lars-Ake T.; and Nasman, Lars E., 4,451,332, Cl. 162-30.100.

Nathan, Norman. Mobile air conditioning unit. 4,450,900, Cl. 165-42.000.

National Distillers and Chemical Corporation: *See—*
Barlow, Anthony; and Meeks, Lawrence A., 4,451,536, Cl. 428-383.000.

National Research Development Corporation: *See—*
Edelstein, William A.; Hutchison, James M. S.; Johnson, Glyn; Redpath, Thomas W. T.; and Mallard, John R., 4,451,788, Cl. 324-309.000.
Smith, Kenneth C. A., 4,451,738, Cl. 250-492.200.

National Semiconductor Corporation: *See—*
Monticelli, Dennis M., 4,451,801, Cl. 330-278.000.
Nelson, Carl T., 4,451,839, Cl. 357-13.000.

National Slag Limited: *See—*
Orlander, Michael; Cotsworth, Robert P.; and MacKenzie, Peter A., 4,451,221, Cl. 425-8.000.

Nativi, Larry A.; and Kadziela, Kris, to Loctite Corporation. Conformal coating systems. 4,451,523, Cl. 428-209.000.

Natsuume, Tadao: *See—*
Yamato, Motoyuki; and Natsuume, Tadao, 4,451,637, Cl. 528-115.000.

Nederlandse Kuntstofindustrie Soesterberg: *See—*
van Olst, Gijsbrecht H. J., 4,451,032, Cl. 272-56.5SS.
Neenan, Thomas X.: *See—*
Allcock, Harry R.; and Neenan, Thomas X., 4,451,647, Cl. 536-21.000.
Neese, Wayne E., to GTE Automatic Electric Inc. Switching device for thick/thin film circuits. 4,451,715, Cl. 200-11.00G.
Nelson, Carl T., to National Semiconductor Corporation. Bilateral zener trim. 4,451,839, Cl. 357-13.000.
Nelson Industries, Inc.: *See—*
Khosropour, Mostafa M.; and Learn, Thomas C., 4,450,932, Cl. 181-211.000.
Nelson, Norvell J., to PSI Star, Inc. Process and structure for etching copper. 4,451,327, Cl. 156-646.000.
Nelson, Peter C.: *See—*
Klee, David J.; and Nelson, Peter C., 4,451,002, Cl. 236-101.00R.
Nelson, Thomas A.: *See—*
McCain, William B.; and Nelson, Thomas A., 4,451,031, Cl. 271-303.000.
Nemeskeri, Georg, to S. C. Johnson & Son, Inc. Method for high frequency welding flangeless thermoplastic shells. 4,451,721, Cl. 219-10.430.
Nemoto, Hiroshi; Miyachi, Kazuaki; and Komoda, Akira, to Kawasaki Steel Corporation. Electrode support device for continuous electroplating bath. 4,451,345, Cl. 204-206.000.
Nepela, Daniel A.: *See—*
DePalma, Vincent M.; Dilley, Reginald J.; Doerner, Mary F.; and Nepela, Daniel A., 4,451,532, Cl. 428-336.000.
Nestegard, Sander C. Upper body exerciser for a stationary bicycle and a bicycle including the same. 4,451,033, Cl. 272-73.000.
Nettekoven, William S., to Medtronic, Inc. Device for testing heart valve prostheses. 4,450,710, Cl. 73-37.000.
Neuner, Otto: *See—*
Ostlinning, Edgar; Idel, Karsten; Neuner, Otto; and Bottenbruch, Ludwig, 4,451,644, Cl. 528-388.000.
Neuroth, David H.; and Smith, Robert F., Jr., to Harvey Hubbell Incorporated. Apparatus and method for producing an insulated connection between electrical cables. 4,451,305, Cl. 156-49.000.
Nevitt, Thomas D.; and Jerome, Norman F., to Standard Oil Company (Indiana). Process to convert C_2-C_3 olefins to a gasoline blending stock. 4,451,685, Cl. 585-415.000.
New England Nuclear Corporation: *See—*
Subramanyam, Vinayakam, 4,451,450, Cl. 424-1.100.
Newport Pharmaceuticals International, Inc.: *See—*
Simon, Lionel N.; Mueller, Hans-Rudolf; and Zutter, Hans, 4,451,478, Cl. 424-273.00R.
Newton, Kevin H.: *See—*
Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; Newton, Kevin H.; and Bozzelli, John C., 4,450,978, Cl. 221-13.000.
NGK Insulators, Ltd.: *See—*
Furuta, Mamoru; Maeno, Yoshio; and Kobayashi, Kazuo, 4,451,418, Cl. 264-63.000.
Kato, Kiminari, 4,451,516, Cl. 428-116.000.
Yamashita, Mitsuyasu; Igarashi, Hiroshi; and Koga, Shosuke, 4,450,931, Cl. 181-198.000.
NGK Spark Plug Co., Ltd.: *See—*
Ichikawa, Sadao, 4,450,811, Cl. 123-425.000.
NI Industries, Inc.: *See—*
Krause, Charles J., 4,451,528, Cl. 428-287.000.
Nibby, Chester M., Jr.: *See—*
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,451,880, Cl. 364-200.000.
Nicholakopoulos, Antonios; Gill, Grace M.; and Nadin, Robert P., to Union Carbide Corporation. Process for finishing resin using reduced energy input. 4,451,593, Cl. 523-322.000.
Nicholson, Kalina: *See—*
Nicholson, Peter; and Nicholson, Kalina, 4,451,114, Cl. 350-3.750.
Nicholson, Peter; and Nicholson, Kalina. Method for recording and reconstructing pulse laser holograms in color. 4,451,114, Cl. 350-3.750.
Nicholson, Terence P. Cylinder head gaskets. 4,451,051, Cl. 277-235.00B.
Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Tholen, Antonius H. L., to U.S. Philips Corporation. Detachable coupling for optical fibres. 4,451,115, Cl. 350-96.180.
Nicko, Reinhard: *See—*
Engelsmann, Dieter; Lippl, Leo; Nicko, Reinhard; Stiefel, Peter; and Lermann, Peter, 4,451,011, Cl. 242-71.000.
Nicolas, Francois: *See—*
Maurel, Pierre; Bosca, Bernard; and Nicolas, Francois, 4,451,439, Cl. 423-55.000.
Niederer, Peter G.; and Frey, Otto, to Sulzer Brothers Limited. Joint socket for a hip joint prosthesis. 4,450,592, Cl. 3-1.912.
Nielsen, Arnold T.: *See—*
Atkins, Ronald L.; Hollins, Richard A.; Norris, William P.; Nielsen, Arnold T.; and Wilson, William S., 4,451,681, Cl. 568-932.000.
Niertit, Frank: *See—*
Brightman, Barrie; and Niertit, Frank, 4,451,703, Cl. 179-18.0FA.
Niikura, Junji: *See—*
Yui, Ryosuki; Kume, Ketsuke; Hashi, Masaaki; and Niikura, Junji, 4,451,422, Cl. 264-178.00R.
Niimi, Hiroshi: *See—*
Kawabata, Susumu; Niimi, Hiroshi; Anahara, Meiji; Suzuki, Yoshihisa; and Omori, Hiroshi, 4,450,678, Cl. 57-333.000.
Niki, Motohiro. Cage for rearing small animals for experiments. 4,450,788, Cl. 119-18.000.
Nilsen, Norman P.; and Novey, Richard T., to CTB, Inc. Cup waterer and cage mount. 4,450,789, Cl. 119-18.000.
Ninomiya, Hisakazu: *See—*
Nagase, Hiroshi; Ninomiya, Hisakazu; and Ibori, Satoshi, 4,451,771, Cl. 318-800.000.
Nippon Electric Co., Ltd.: *See—*
Ikeda, Hiroaki, 4,451,906, Cl. 365-205.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Aoyama, Kikuro, 4,450,747, Cl. 84-220.000.
Nakada, Akira; and Adachi, Takeshi, 4,450,745, Cl. 84-1.190.
Sugiura, Toshio, 4,450,742, Cl. 84-1.030.
Yokoyama, Kenji, 4,451,798, Cl. 330-254.000.
Nippon Hoso Kyokai: *See—*
Taketoshi, Kazuhisa; and Ogusu, Chihaya, 4,451,241, Cl. 445-33.000.
Nippon Kinzoku Co., Ltd.: *See—*
Oowada, Tetsuya, 4,450,604, Cl. 24-652.000.
Nippon Kogaku K.K.: *See—*
Maida, Osamu, 4,451,150, Cl. 354-173.110.
Takagi, Tadao; and Okabe, Nobuo, 4,451,729, Cl. 250-204.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Taguchi, Kiyomi; Hanmyo, Masayuki; and Ishikawa, Masaru, 4,450,894, Cl. 164-484.000.
Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, 4,451,350, Cl. 204-422.000.
Nippon Oil Company, Limited: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mituji, 4,451,688, Cl. 585-524.000.
Nippon Soken, Inc.: *See—*
Abe, Seiko; Igashira, Toshihiko; and Watanabe, Kazuhide, 4,450,823, Cl. 123-549.000.
Inoguchi, Kazuhiro; Okamoto, Kunio; and Isomura, Keiichiro, 4,451,517, Cl. 428-116.000.
Ito, Seitoku; Takeda, Kenji; Inagaki, Mitsuo; and Motoda, Nobuo, 4,451,220, Cl. 418-255.000.
Kodera, Masao; and Akita, Shigeyuki, 4,451,909, Cl. 367-99.000.
Kuno, Akira; Matsui, Takeshi; and Shinoda. Yoshio, 4,451,888, Cl. 364-426.000.
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,681, Cl. 60-286.000.
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,682, Cl. 60-286.000.
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; and Kawai, Hisasi, 4,450,825, Cl. 123-569.000.
Nippon Television Industry Corporation: *See—*
Mikado, Tsuneo, 4,451,857, Cl. 358-312.000.
Nippon Zeon Co., Ltd.: *See—*
Yamato, Motoyuki; and Natsuume, Tadao, 4,451,637, Cl. 528-115.000.
Nippondenso Co., Ltd.: *See—*
Akita, Yoshio; Teshima, Takanori; Maruyama, Toshinori; and Torii, Koshi, 4,451,774, Cl. 320-64.000.
Furuhashi, Yasuhiro; Ishikawa, Naozi; and Kawai, Shizuo, 4,450,819, Cl. 123-502.000.
Ibuki, Noritaka; and Kawai, Shizuo, 4,450,817, Cl. 123-501.000.
Kanayama, Kenji; Sugi, Hidekuni; Kinkori, Shuzo; and Kawasumi, Kouzi, 4,451,749, Cl. 310-62.000.
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,451,213, Cl. 417-366.000.
Nishimatsu, Masaharu: *See—*
Isobe, Yukihiro; Tanaka, Kazushi; Nishimatsu, Masaharu; Shinoura, Osamu; and Kubota, Yuichi, 4,451,531, Cl. 428-329.000.
Nishimatsu, Shigeru: *See—*
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,451,841, Cl. 357-23.600.
Nishimori, Yuzo: *See—*
Naito, Takao; Matsuda, Yutaka; and Nishimori, Yuzo, 4,450,948, Cl. 198-389.000.
Nishimura, Eiichi; Uchida, Shunsuke; Kitamura, Masao; Saito, Koichi; Ibe, Eishi; and Hayashi, Tatsuo, to Hitachi, Ltd. Control rods and method of producing same. 4,451,428, Cl. 376-333.000.
Nishimura, Yutaka; Ohyama, Yoshishige; and Sugiura, Noboru, to Hitachi, Ltd. Air flow meter. 4,450,719, Cl. 73-204.000.
Nishioka, Akira; and Kawanabe, Yoshihiro, to Pioneer Electronic Corporation. Input bias adjustment circuit for amplifier. 4,451,800, Cl. 330-261.000.
Nishioka, Goro: *See—*
Sakabe, Yukio; Nishioka, Goro; Azuma, Yoshimasa; and Mori, Susumu, 4,451,869, Cl. 361-309.000.
Nissan Motor Co., Ltd.: *See—*
Fujioka, Kazuyoshi; and Eguchi, Shinsuke, 4,450,944, Cl. 192-70.120.
Hayashi, Yoshimasa, 4,450,709, Cl. 73-35.000.
Iijima, Tetsuya; and Takahashi, Seiichi, 4,450,897, Cl. 165-2.000.
Maeda, Kouzo, 4,451,078, Cl. 296-188.000.
Miura, Toshikatu; Kikuchi, Hiroto; Okada, Yukio; and Yoshioka, Tsutomu, 4,451,518, Cl. 428-137.000.
Sawamoto, Kunifumi; Morita, Tatsuo; Ikeura, Kenji; and Yamaguchi, Hiroshi, 4,450,814, Cl. 123-478.000.
Suzuki, Isao, 4,450,926, Cl. 180-312.000.
Suzuki, Kouichi; and Mori, Kazuyuki, 4,451,890, Cl. 364-426.000.
Tamamushi, Masahiro, 4,451,087, Cl. 297-468.000.
Tanino, Mikio, 4,450,898, Cl. 165-25.000.

Nitta, Masao. Liquefied gas lighter with ball-pointed pen. 4,451,229, Cl. 431-253.000.
Nitto Electric Industrial Co., Ltd.: *See—*
Kawazoe, Shiyouzou; Ueda, Zenichi; Sugimoto, Toshihiko; and Moriuchi, Takahiko, 4,451,525, Cl. 428-213.000.
Nix, Ceoma. Mobility aid. 4,451,080, Cl. 297-4.000.
Nixon, Thomas J.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.
NL Industries, Inc.: *See—*
Meador, Richard A., 4,451,789, Cl. 324-338.000.
Nobel-Bozel: *See—*
Lairloup, Jean-Claude, 4,451,310, Cl. 156-78.000.
Noel, Stan L., to Ampex Corporation. Magnetic video head position control. 4,451,859, Cl. 360-75.000.
Noeller, Hans G. Polarization fluoroimmunoassay apparatus. 4,451,149, Cl. 356-317.000.
Nohara, Mayumi: *See—*
Yoshikumi, Chikao; Sakurai, Katsuo; Omura, Yoshio; Nohara, Mayumi; Ando, Takao; and Motokawa, Isamu, 4,451,457, Cl. 424-180.000.
Nolte, Hans-Henning, to BFG Glassgroup. Method of forming a laminated fire screening panel. 4,451,312, Cl. 156-99.000.
Nonomura, Kinzo: *See—*
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, 4,451,758, Cl. 313-495.000.
Nordipa AG: *See—*
de Vroom, Hubertus M., 4,451,522, Cl. 428-201.000.
Nordtend A/S: *See—*
Hansen, Helge; Nystrom, Borje; and Torneng, Eyvin, 4,451,460, Cl. 424-238.000.
Norlin Industries, Inc.: *See—*
Shaw, Timothy P.; and Wechter, Abraham J., 4,450,748, Cl. 84-191.000.
Norris, William P.: *See—*
Atkins, Ronald L.; Hollins, Richard A.; Norris, William P.; Nielsen, Arnold T.; and Wilson, William S., 4,451,681, Cl. 568-932.000.
North American Philips Consumer Electronics Corp.: *See—*
Gallaro, Anthony V.; and Foreman, Gordon T., 4,451,504, Cl. 427-64.000.
Norton, Richard V.: *See—*
Grote, Dace; Grimm, Robert A.; and Norton, Richard V., 4,451,670, Cl. 562-606.000.
Novey, Richard T.: *See—*
Nilsen, Norman P.; and Novey, Richard T., 4,450,789, Cl. 119-18.000.
Nozaki, Shigeki: *See—*
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; Enomoto, Seiji; and Mezawa, Tsutomu, 4,451,908, Cl. 365-222.000.
NPO "Viilitmash": *See—*
Shibanov, Dmitry A.; Onufriev, Inokenty A.; Khristov, Vladimir A.; and Sergeev, Evgeny A., 4,450,888, Cl. 164-183.000.
NSK Warner Kabushiki Kaisha: *See—*
Oowada, Tetsuya, 4,450,604, Cl. 24-652.000.
Nudenberg, Walter; Rim, Yong S.; and Matthews, Demetreos N., to Uniroyal, Inc. Activators for Ziegler type polymerization catalysts using bis(trichloromethyl) sulfone. 4,451,575, Cl. 502-122.000.
Nugent, William A., to Du Pont de Nemours, E. I., and Company. Process for dimerizing acrylates and methacrylates. 4,451,665, Cl. 560-202.000.
Nystrom, Borje: *See—*
Hansen, Helge; Nystrom, Borje; and Torneng, Eyvin, 4,451,460, Cl. 424-238.000.
Obara, Isao: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitumasa, 4,451,551, Cl. 430-270.000.
Ober, Jurgen: *See—*
Behrend, Lothar; Knothe, Erich; Melcher, Franz-Josef; and Ober, Jurgen, 4,450,923, Cl. 177-212.000.
Behrend, Lothar; Knothe, Eric; Melcher, Franz-Josef; and Ober, Jurgen, 4,450,924, Cl. 177-212.000.
O'Brien, John V., to Koch Process Systems, Inc. Distillative separation of methane and carbon dioxide. 4,451,274, Cl. 62-17.000.
Occidental Chemical Corporation: *See—*
Ranade, Gautam R., 4,451,664, Cl. 560-86.000.
OCLC Online Computer Library Center, Incorporated: *See—*
Bendig, Mark W., 4,451,701, Cl. 179-2.0TV.
O'Connell, William F., to Graco Inc. Electrostatic spray support. 4,450,954, Cl. 198-793.000.
Odagi, Kanji: *See—*
Wada, Ryoichi; Tsuchiya, Mitsuharu; Senoo, Takanori; and Odagi, Kanji, 4,451,919, Cl. 371-38.000.
Odaka, Kentaro, to Sony Corporation. PCM Signal processing circuit. 4,451,921, Cl. 371-48.000.
Odawara, Yoji: *See—*
Ishibashi, Tadashi; Ishida, Masahiko; and Odawara, Yoji, 4,451,567, Cl. 435-170.000.
Odle, Herbert A.; Green, John D.; and Shadwick, Jan, to Manville Service Corporation. Poster panel lighting fixture. 4,451,875, Cl. 362-297.000.
Odorzynski, Thomas W.; and Knott, Jack E., II, to American Can Company. Plasticized EVOH and process and products utilizing same. 4,451,599, Cl. 524-169.000.
Off, Joseph W. A.; and Early, Judson H., to Haggar Company. System for prefabricating pocket welts and facing strips. 4,451,318, Cl. 156-353.000.
Off, Joseph W. A.; and Early, Judson H., to Haggar Company. System for prefabricating pocket welts and facing strips. 4,451,319, Cl. 156-353.000.
Office Nationale d'Etudes et de Recherches Aerospatiales: *See—*
Philippe, Jean-Jacques; and Lyothier, Robert M., 4,451,206, Cl. 416-228.000.
Ogasawara, Hiroomi. Non-contact type microdisplacement meter. 4,451,780, Cl. 324-61.00R.
Ogasawara, Terumi: *See—*
Arai, Masayuki; and Ogasawara, Terumi, 4,451,851, Cl. 358-228.000.
Ogata, Yasunobu, to Hitachi Metals, Ltd. Switching regulator. 4,451,876, Cl. 363-21.000.
Ogawa, Jun: *See—*
Shibuta, Osamu; Hasegawa, Tetuo; and Ogawa, Jun, 4,451,410, Cl. 260-973.000.
Ogawa, Koji; Taguchi, Hiroaki; Tsutsumi, Takao; Yasuda, Yoshinori; and Takase, Akio, to Mitsubishi Denki Kabushiki Kaisha. Golf trainer. 4,451,043, Cl. 273-186.00R.
Ogawa, Satoshi: *See—*
Kobayashi, Setsuo; Beppu, Kazuo; Shimizu, Hiroshi; Ogawa, Satoshi; and Kotani, Ryotaro, 4,451,569, Cl. 435-188.000.
Ogawa, Toshio; and Wakino, Kikuo. Piezoelectric device with surface charge shunt. 4,451,753, Cl. 310-315.000.
Ogihara, Toru: *See—*
Matsuda, Yoshio; Hata, Masahiko; and Ogihara, Toru, 4,450,694, Cl. 66-193.000.
Ogusu, Chihaya: *See—*
Taketoshi, Kazuhisa; and Ogusu, Chihaya, 4,451,241, Cl. 445-33.000.
Oh, Chan S.; and Kramer, Gordon, to Beckman Instruments, Inc. Multicompartment electro-optic display device. 4,451,122, Cl. 350-334.000.
O'Hare, Louis R. Nitrogen fixation by plasma and catalyst. 4,451,436, Cl. 422-186.290.
O'Hare, Thomas J. Mobile pushing exerciser. 4,451,037, Cl. 273-55.00R.
Ohgami, Masaaki; and Matsui, Fujio, to Fuji Jukogyo Kabushiki Kaisha. Control system. 4,451,793, Cl. 328-69.000.
Ohhoshi, Toshio: *See—*
Sato, Hiroki; Nakano, Takao; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,451,756, Cl. 313-422.000.
Ohio Electronic Engravers, Inc.: *See—*
Buechler, Lester W., 4,451,856, Cl. 358-299.000.
Ohkubo, Tadahiko; Endo, Tetsuhiko; and Andoh, Akiwo, to Toray Industries, Inc. Yarn winding apparatus. 4,451,007, Cl. 242-18.00R.
Ohkuma, Hiroaki: *See—*
Koshiyama, Hideo; Sakai, Fumihide; and Ohkuma, Hiroaki, 4,451,456, Cl. 424-177.000.
Ohmori, Takashi: *See—*
Moriguchi, Harukiko; Kurata, Masami; and Ohmori, Takashi, 4,451,853, Cl. 358-281.000.
Ohnishi, Shunsaku: *See—*
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,451,213, Cl. 417-366.000.
Ohyama, Yoshishige: *See—*
Nishimura, Yutaka; Ohyama, Yoshishige; and Sugiura, Noboru, 4,450,719, Cl. 73-204.000.
Oishi, Keiji: *See—*
Fukuchi, Masakazu; Oishi, Keiji; and Yamazaki, Yoshio, 4,451,134, Cl. 355-3.0DD.
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Continuous process for producing reinforced resin laminates. 4,451,317, Cl. 156-307.300.
Okabe, Mitsuyasu; Yoshioka, Takeo; Fukagawa, Yasuo; Okamoto, Rokuro; Kouno, Kageaki; and Ishikura, Tomoyuki, to Sanraku-Ocean Co., Ltd. Antibiotics and process for production thereof. 4,451,401, Cl. 260-245.20T.
Okabe, Nobuo: *See—*
Takagi, Tadao; and Okabe, Nobuo, 4,451,729, Cl. 250-204.000.
Okada, Takashi; and Tanaka, Yutaka, to Sony Corporation. Television receiver including a circuit for doubling line scanning frequency. 4,451,848, Cl. 358-140.000.
Okada, Yukio: *See—*
Miura, Toshikatu; Kikuchi, Hiroto; Okada, Yukio; and Yoshioka, Tsutomu, 4,451,518, Cl. 428-137.000.
Okamoto, Kunio: *See—*
Inoguchi, Kazuhiro; Okamoto, Kunio; and Isomura, Keiichiro, 4,451,517, Cl. 428-116.000.
Okamoto, Rokuro: *See—*
Okabe, Mitsuyasu; Yoshioka, Takeo; Fukagawa, Yasuo; Okamoto, Rokuro; Kouno, Kageaki; and Ishikura, Tomoyuki, 4,451,401, Cl. 260-245.20T.
Okamoto, Yoshihisa, to B. F. Goodrich Company, The. Block copolymers and process for their preparation. 4,451,618, Cl. 525-349.000.
Okawa, Takashi: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,451,678, Cl. 568-902.000.

Okoma Maschinenfabrik GmbH: *See—*
Buttner, Kurt, 4,450,881, Cl. 144-84.000.

Okuda, Kensuke; Nagai, Hirosi; Fujimaki, Hiroto; Tomonaga, Atsushi; and Aoki, Hideki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for preparing an artificial dental root. 4,451,235, Cl. 433-201.000.

Okumura, Masanobu, to Olympus Optical Company Limited. Toner concentration detecting device. 4,451,135, Cl. 355-3.0DD.

Okutsu, Masaru: *See—*
Yasuda, Naohiko; Okutsu, Masaru; Iwagami, Hisao; Nakamiya, Teruaki; and Takase, Ichiro, 4,451,399, Cl. 260-239.100.

Olding, Michael J.; and Schoch, Daniel A., to Minster Machine Company. Press speed control and indication system. 4,450,946, Cl. 192-0.084.

Olin Corporation: *See—*
Chesler, Edwin T., 4,451,58[illegible] Cl. 521-49.500.
Deininger, J. Paul; and Dotson, Ronald L., 4,451,338, Cl. 204-86.000.
Kircher, Morton S., 4,451,346, Cl. 204-228.000.
Owens, William F., 4,450,847, Cl. 131-365.000.
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., 4,450,890, Cl. 164-452.000.

Olsson, O. A. Torsten; Svensson, Leif A.; and Wetterlin, Kjell I. L., to Aktiebolaget Draco. Carbamate intermediates for bronchospasmolytics. 4,451,663, Cl. 560-29.000.

Olympus Optical Company Limited: *See—*
Okumura, Masanobu, 4,451,135, Cl. 355-3.0DD.
Yanagida, Tuneo; and Kato, Kiichi, 4,451,863, Cl. 360-114.000.

Olyphant, Murray, Jr., to Minnesota Mining and Manufacturing Company. Conformable metal-clad laminate. 4,451,527, Cl. 428-220.000.

Omori, Hiroshi: *See—*
Kawabata, Susumu; Niimi, Hiroshi; Anahara, Meiji; Suzuki, Yoshihisa; and Omori, Hiroshi, 4,450,678, Cl. 57-333.000.

Omura, Yoshio: *See—*
Yoshikumi, Chikao; Sakurai, Katsuo; Omura, Yoshio; Nohara, Mayumi; Ando, Takao; and Motokawa, Isamu, 4,451,457, Cl. 424-180.000.

Onaka, Hidemi; and Uchitani, Nobuki, to Toyota Jidosha Kabushiki Kaisha. Ignition timing control system for an internal-combustion engine. 4,450,809, Cl. 123-421.000.

Onken, Donald R.; and Griffin, Robert L. Truck having equipment for on-site heating and collecting used grease from containers. 4,450,828, Cl. 126-343.50A.

Ono, Masaaki; Fujiwara, Yoshiro; and Yanagisawa, Masanobu, to Fujitsu Limited. Surface acoustic wave filter. 4,451,805, Cl. 333-195.000.

Onufriev, Inokenty A.: *See—*
Shibanov, Dmitry A.; Onufriev, Inokenty A.; Khristov, Vladimir A.; and Sergeev, Evgeny A., 4,450,888, Cl. 164-183.000.

Oowada, Tetsuya, to Nippon Kinzoku Co., Ltd.; and NSK Warner Kabushiki Kaisha. Buckle for seat belt. 4,450,604, Cl. 24-652.000.

Opitz, Heinrich; Montag, Bernhard; Urban, Gerd; and Turk, Wilfried, to Siemens Aktiengesellschaft. Method and apparatus for heat exchange at solid surfaces. 4,450,896, Cl. 165-1.000.

Oppermann, Wilhelm: *See—*
Teubner, Helwig; and Oppermann, Wilhelm, 4,451,649, Cl. 536-111.000.

Oppitz, Peter; Schulze-Braucks, Manfred; and Tesche, Rolf, to Hoechst Aktiengesellschaft. Process for dyeing and finishing tubular textile material: alignment of flattened edges displaced to avoid edge markings. 4,451,263, Cl. 8-500.000.

Oppy, John T.: *See—*
Dell, William J.; Gonsalves, Alexander A.; Flango, William E.; Guhl, Thomas E.; Freed, Lawrence H.; Oppy, John T.; Baratta, Suzanne; and Eydt, Andre J., 4,451,492, Cl. 426-564.000.

Orcutt, Donald R., to Babcock & Wilcox Company, The. Fiber pipe protection for water cooled pipes in reheat furnaces. 4,450,872, Cl. 138-149.000.

Orlander, Michael; Cotsworth, Robert P.; and MacKenzie, Peter A., to National Slag Limited. Apparatus for the pelletization of heat-liquifiable solid materials. 4,451,221, Cl. 425-8.000.

Orlando, Fred J., Jr.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Orlowski, Ronald C.; and Seyler, Jay K., to Armour Pharmaceutical Company. Des-serine^2-des-tyrosine^{22} calcitonin. 4,451,395, Cl. 260-112.50T.

Osaka Oxygen Industries Ltd.: *See—*
Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, 4,451,350, Cl. 204-422.000.

O'Shaughnessy, Brenda: *See—*
O'Shaughnessy, Kevin, 4,450,712, Cl. 73-61.00R.

O'Shaughnessy, Kevin, to O'Shaughnessy, Brenda. Pulp consistancy measurement. 4,450,712, Cl. 73-61.00R.

Osterberg, Daniel. Hydraulic flow distributor in gold separator and method. 4,451,359, Cl. 209-158.000.

Ostergren, William F.; and Ipnar, Albert J., to Sperry Corporation. Flail head. 4,451,004, Cl. 239-658.000.

Osterholm, Jewell L., to Thomas Jefferson University. Stroke treatment utilizing extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,450,841, Cl. 128-632.000.

Osterholm, Jewell L., to Thomas Jefferson University. Stroke treatment utilizing extravascular circulation of oxygenated synthetic nutrients to treat tissue hypoxic and ischemic disorders. 4,451,251, Cl. 604-24.000.

Ostkamp, Willi; Brunner, Karlheinz; and Wibbelt, Friedrich, to Westfalia Separator AG. Continuous, completely jacketed, countercurrent centrifugal extractor. 4,451,247, Cl. 494-52.000.

Ostlinning, Edgar; Idel, Karsten; Neuner, Otto; and Bottenbruch, Ludwig, to Bayer Aktiengesellschaft. Process for the production of polyarylene (sulphides) having an increased thermal and chemical resistance and an improved color quality. 4,451,644, Cl. 528-388.000.

Ostroff, Stuart S.; and Bevan, William G., to General Battery Corporation. Method and apparatus for electrically testing elements of multicell batteries. 4,451,791, Cl. 324-434.000.

Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, to Exxon Research and Engineering Co. Trihydrocarbyl silyl substituted alkyl diaryl phosphine transition metal complexes and their use as homogeneous isomerization hydroformylation catalysts. 4,451,673, Cl. 568-454.000.

Oswald, Hendrikus J.: *See—*
Li, Hsin L.; Oswald, Hendrikus J.; and Liland, Alfred L., 4,450,607, Cl. 28-257.000.

Otani, Junji; Ikenoya, Yasuo; and Kato, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning system for internal combustion engine. 4,450,684, Cl. 60-290.000.

Otsuka Chemical Co., Ltd.: *See—*
Shibuta, Osamu; Hasegawa, Tetuo; and Ogawa, Jun, 4,451,410, Cl. 260-973.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*
Maekawa, Tsukasa; and Gondo, Takeshi, 4,451,662, Cl. 549-462.000.

Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio control system for internal combustion engines, having secondary air supply control. 4,450,680, Cl. 60-274.000.

Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Electric control system for internal combustion engines, having fail safe function for engine condition detecting sensors. 4,450,812, Cl. 123-438.000.

Ottersbach, Jens: *See—*
Beckmann, Heinrich; Ottersbach, Jens; Roider, Willibald; and Saumweber, Eckart, 4,451,889, Cl. 364-426.000.

Outokumpu Oy: *See—*
Leiponen, Matti O., 4,451,291, Cl. 75-73.000.

Ovren, Christer: *See—*
Brogardh, Torgny; Engstrom, Olof; and Ovren, Christer, 4,451,730, Cl. 250-227.000.

Owens-Corning Fiberglas Corporation: *See—*
Black, Denny E.; Garrett, David W.; and Coakley, Thomas A., 4,451,592, Cl. 523-206.000.
Campbell, Leslie E., 4,451,594, Cl. 523-336.000.
Uffner, William E.; and White, Robert N., 4,451,171, Cl. 404-31.000.

Owens-Illinois, Inc.: *See—*
Mumford, Eustace H., 4,450,741, Cl. 83-623.000.

Owens, William F., to Olin Corporation. Wrapper for smoking articles and method. 4,450,847, Cl. 131-365.000.

Oyabu, Nobuya: *See—*
Inomata, Takehiro; and Oyabu, Nobuya, 4,450,766, Cl. 101-183.000.

Oye, Toshimi. Dental articulator device. 4,451,234, Cl. 433-54.000.

Padalka, Valentin G.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Pailler, Yves. Two stroke engine. 4,450,794, Cl. 123-74.00R.

Paillet, Bernard, to Compagnie Francaise d'Emballages et de Conditionnement - COFREC. Container for pharmaceutical ampules or the like. 4,450,965, Cl. 206-528.000.

Palensky, Frederick J.: *See—*
Heilmann, Steven M.; Rasmussen, Jerald K.; and Palensky, Frederick J., 4,451,619, Cl. 525-379.000.

Palermo, David W.; Ricci, David W.; Marriott, Joe E.; and Heger, Thomas J., to Hewlett-Packard Company. Asynchronous interface message transmission using source and receive devices. 4,451,898, Cl. 364-900.000.

Panchokha, Vasily P.: *See—*
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.

Pandelena, Michael N.; and Strozza, Peter. Annular drip collector and cap. 4,451,368, Cl. 210-238.000.

Papathomas, Thomas V.; Scuderi, Rudolph, deceased; by White, May S., co-executrix; and by D'Ambrose, Camille, co-executrix, to Bell Telephone Laboratories, Incorporated. Rectifier control system for a DC power plant system. 4,451,773, Cl. 320-59.000.

Parkinson, Ward: *See—*
Philofsky, Elliott; Parkinson, Ward; and Wilson, Dennis, 4,451,845, Cl. 357-72.000.

Parma, Agustin M. Internal combustion engines and rotary volumetric compressors. 4,450,802, Cl. 123-245.000.

Paroczai, Margit: *See—*
Nador, Karoly; Kraiss, Gabor; Sinko, Katalin; Paroczai, Margit; Karpati, Egon; and Szporny, Laszlo, 4,451,473, Cl. 424-256.000.

Parron, Ivan: *See—*
Rosenthal, Michael R.; and Parron, Ivan, 4,450,655, Cl. 52-36.000.

Parsons, Jack L.; Vizine, Dan; Sumner, Mark; Marathe, Suresh; and Dubicki, Henryk, to United States of America, Health and Human Services. Process for the production of 2-β-D-ribofuranosylthiazole-4-carboxamide. 4,451,648, Cl. 536-54.000.

Pasetti, Adolfo: *See—*
Sianesi, Dario; Pasetti, Adolfo; and Belardinelli, Giorgio, 4,451,646, Cl. 528-401.000.

Pask, George, to Rolls-Royce Limited. Aerofoil blade mounting. 4,451,204, Cl. 416-215.000.

Pasky, Joseph Z., to Chevron Research Company. Co-oligomerization of olefins. 4,451,684, Cl. 585-329.000.

Pasky, Joseph Z., to Chevron Research Company. Co-dimerization of olefins. 4,451,689, Cl. 585-525.000.

Paterson, Laurene O. Apparatus for removing dissolved iron from water. 4,451,361, Cl. 210-136.000.

Patisaul, Charles R.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Patsch, Manfred; and Ruske, Manfred, to BASF Aktiengesellschaft. Dyes containing imidazolymethylene groups. 4,451,398, Cl. 260-154.000.

Patton, Paul B.: *See—*
Landis, William R.; and Patton, Paul B., 4,451,225, Cl. 431-14.000.
Landis, William R.; and Patton, Paul B., 4,451,226, Cl. 431-15.000.
Landis, William R.; and Patton, Paul B., 4,451,227, Cl. 431-18.000.

Paurat, Friedrich W.; and Paurat, Roland. Coal-mining machine. 4,451,089, Cl. 299-43.000.

Paurat, Roland: *See—*
Paurat, Friedrich W.; and Paurat, Roland, 4,451,089, Cl. 299-43.000.

Pawloski, Chester E., to Dow Chemical Company, The. Heterocyclic substituted triazolyl phosphorous compounds. 4,451,653, Cl. 544-238.000.

Payne, Charles C., to Nalco Chemical Company. Preparation of aluminum oxide coated silica sols using ultrafiltration. 4,451,388, Cl. 252-313.00S.

Payne, Charles L. Tool for use in line boring of diesel engine blocks. 4,451,186, Cl. 408-54.000.

Payne, Frank A.: *See—*
D'Augustine, Frank T.; Terry, Malcolm E.; Welsh, Hugh F.; and Payne, Frank A., 4,451,243, Cl. 445-68.000.

PCUK Produits Chimiques Ugine Kuhlmann: *See—*
Bourson, Lucien; Delavarenne, Serge; and Tellier, Pierre, 4,451,333, Cl. 162-77.000.
Calas, Patrick; Moreau, Patrice; and Commeyras, Auguste, 4,451,682, Cl. 570-142.000.

Pechiney: *See—*
Maurel, Pierre; Bosca, Bernard; and Nicolas, Francois, 4,451,439, Cl. 423-55.000.

Peck, William H. Apparatus for separating liquid from a slurry. 4,451,371, Cl. 210-325.000.

Pedginski, James J.: *See—*
Wong, Roy; Pedginski, James J.; and Wong, Andrew H., 4,451,533, Cl. 428-337.000.

Penn, Paul E.; and Waymire, John W., to Dart Controls, Inc. Overload sensing circuit for a motor. 4,451,823, Cl. 340-648.000.

Penta-Ocean Construction Co., Ltd.: *See—*
Yamashita, Hiromichi; Watari, Yoshiharu; Mutsuro, Hideaki; and Takagi, Kenji, 4,451,175, Cl. 405-50.000.

Pentanyl Technologies, Inc.: *See—*
Porter, Clifford R.; and Kaesz, Herbert D., 4,451,351, Cl. 208-10.000.

Perez, Robert. Tool for scarifying concrete. 4,451,093, Cl. 299-88.000.

Perie, Daniel: *See—*
Levos, Christian; Perie, Daniel; and Gex, Jean-Francois, 4,450,730, Cl. 73-864.610.

Perkins, Robert D. Tricycle. 4,451,064, Cl. 280-259.000.

Pesa, Frederick A.; and Hasse, Thomas A., to Standard Oil Company, The. Carbonylation of olefinically unsaturated compounds. 4,451,407, Cl. 260-465.400.

Peterson, Andrew F.: *See—*
Chapman, Ronald H.; and Peterson, Andrew F., 4,451,930, Cl. 455-260.000.

Peterson, Bruce W.: *See—*
Speranza, George P.; Cuscurida, Michael; and Peterson, Bruce W., 4,451,588, Cl. 521-175.000.

Peterson, Dennis P.; and Davis, James C., to Dow Chemical Company, The. Liquid chromatographic method and post-column effluent treatment for detection and separation at optimized pH. 4,451,374, Cl. 210-656.000.

Petit, William A.: *See—*
Smith, Barry L.; and Petit, William A., 4,451,018, Cl. 246-122.00R.

Petrov, Georgi M.; Boev, Kiril K.; Fidelski, Igor A.; and Pirgov, Yordan T., to Institute PO Obleklo I Textil. Method of and apparatus for the production of fancy yarns. 4,450,675, Cl. 57-6.000.

Petty, William E., Sr. Gate latch. 4,451,072, Cl. 292-128.000.

Pews, Richard G.: *See—*
Buske, Gary R.; and Pews, Richard G., 4,451,408, Cl. 260-505.00R.
Buske, Gary R.; and Pews, Richard G., 4,451,409, Cl. 260-513.00R.

Pfaller, Egon: *See—*
Winkler, Ottmar; and Pfaller, Egon, 4,451,215, Cl. 418-23.000.

Pfizer Inc.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 4,451,472, Cl. 424-263.000.
Cue, Berkeley W., Jr., 4,451,655, Cl. 546-85.000.
Weeks, Paul D.; and Allingham, Robert P., 4,451,661, Cl. 549-417.000.

Pharmindustrie: *See—*
Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., 4,451,461, Cl. 424-246.000.

Phelps, Barry C.: *See—*
Hall, John S.; and Phelps, Barry C., 4,451,068, Cl. 283-75.000.

Phelps, Richard W., to Black Clawson Company, The. Paper machine drying section. 4,450,630, Cl. 34-116.000.

Philippe, Jean-Jacques; and Lyothier, Robert M., to Office Nationale d'Etudes et de Recherches Aerospatiales; and Societe Nationale Industrielle Aerospatiale. Blade end for rotary wing of an aircraft and rotary wing provided with such blade ends. 4,451,206, Cl. 416-228.000.

Phillipps, Gordon H.; Humber, David C.; Ewan, David B.; and Coomber, Barry A., to Glaxo Group Limited. 11α-Amino-3β-hydroxy-androstanes. 4,451,405, Cl. 260-397.100.

Phillips, Edward H., to Hidden Valley Associates, Inc. Method and apparatus for pumping subterranean fluids. 4,451,209, Cl. 417-38.000.

Phillips, Graham R.; and Prudot, Norvell G., to Century Electric, Inc. Motor/generator starting circuit. 4,451,775, Cl. 322-10.000.

Phillips Petroleum Company: *See—*
Blackwell, Jennings P., 4,451,601, Cl. 524-263.000.
Clear, Elmer E., 4,451,389, Cl. 252-315.300.
Edmonds, James T., Jr.; and Sherk, Fred T., 4,451,643, Cl. 528-387.000.
Garcia, Rodrigo A.; and Martinovich, Robert J., 4,451,607, Cl. 524-494.000.
Hitzman, Donald O., 4,450,908, Cl. 166-246.000.
Mills, Kenneth R., 4,451,604, Cl. 524-312.000.
Murray, Lawrence K., 4,451,231, Cl. 432-13.000.
Scott, Richard L., 4,450,723, Cl. 73-432.0PS.
Volz, Herbert A., 4,450,904, Cl. 165-162.000.
Wiley, Bruce F., 4,450,717, Cl. 73-151.000.

Philofsky, Elliott; Parkinson, Ward; and Wilson, Dennis, to AVX Corporation. Lead frame device including ceramic encapsulated capacitor and IC chip. 4,451,845, Cl. 357-72.000.

Photomatrix Corporation: *See—*
Gensike, Karl H., 4,451,144, Cl. 355-99.000.

Pick, Steve J. High speed shaft seal. 4,451,048, Cl. 277-27.000.

Pickios, Anthony G. Method of fabricating a hand calculator. 4,450,615, Cl. 29-437.000.

Pieper, Friedrich: *See—*
Willmund, Wolf-Dieter; Biermann, Manfred; Baumann, Horst; Friese, Hans-Herbert; and Pieper, Friedrich, 4,451,261, Cl. 8-94.220.

Piesch, Steffen; and Dorries, Peter, to Cassella Aktiengesellschaft. Diethanolamine salt of sulphamic acid as a curing accelerator for aminoplast resins. 4,451,620, Cl. 525-398.000.

Pieters, Wim J.M.; and Prilutski, Gerard M., to Exxon Research and Engineering Co. Catalytic dehydroxylation of phenols. 4,451,356, Cl. 208-263.000.

Pingaud, Bernard J.; and Poncet, Claude, to Eastman Kodak Company. Magnetic recording elements, process for making the same and their use in recording. 4,451,535, Cl. 428-329.000.

Pinnow, Douglas A.; Gentile, Anthony L.; Standlee, Arlie G.; and Timper, Arthur J., to Hughes Aircraft Company. Infrared transmitting fiber optical waveguide extruded from halides of the metal thallium and the method of preparation. 4,451,116, Cl. 350-96.340.

Pioneer Electronic Corporation: *See—*
Kawahara, Fumio; Takahashi, Masanori; and Kumagai, Katsuyoshi, 4,451,609, Cl. 524-708.000.
Koinuma, Hirosi, 4,451,802, Cl. 330-297.000.
Murayama, Fumio, 4,451,928, Cl. 381-86.000.
Nishioka, Akira; and Kawanabe, Yoshihiro, 4,451,800, Cl. 330-261.000.

Pirgov, Yordan T.: *See—*
Petrov, Georgi M.; Boev, Kiril K.; Fidelski, Igor A.; and Pirgov, Yordan T., 4,450,675, Cl. 57-6.000.

Pittsburgh-Des Moines Corporation: *See—*
Hills, Richard E., 4,450,855, Cl. 137-312.000.

Plastics Engineering Company: *See—*
D'Alelio, Gaetano F.; and Waitkus, Phillip A., 4,451,669, Cl. 562-442.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,451,402, Cl. 548-461.000.

Plummer, Ernest L., to FMC Corporation. Insecticidal 2,2'-bridged[1,1'-biphenyl]-3-ylmethyl esters. 4,451,484, Cl. 424-305.000.

PMC Corporation: *See—*
Wilson, Donald C., 4,450,760, Cl. 99-536.000.

Polaroid Corporation: *See—*
Gerber, Arthur M.; and Loucks, Judith, 4,451,560, Cl. 430-567.000.

Poler, Stanley, to Lynell Medical Technology Inc. Intraocular and contact lens construction. 4,450,593, Cl. 3-13.000.

Pollaert, Hendricus J. P. M.: *See—*
Bos, Johannes G. G.; Pollaert, Hendricus J. P. M.; and Sijben, Johannes L. H., 4,450,674, Cl. 57-6.000.

Pollet, Robert J.; Vandenberghe, Antoon L.; and Spriet, Roger A., to AGFA-GEVAERT, N.V. Antifogging compounds and their use in silver halide photography. 4,451,555, Cl. 430-445.000.
Pomerleau, Andre; and Brousseau, Jean-Francoys, to Universite Laval. Electronic chronometer. 4,451,896, Cl. 364-569.000.
Pommerrenig, Dieter H., to Rockwell International Corporation. Large scale integrated focal plane. 4,451,842, Cl. 357-30.000.
Poncet, Claude: *See—*
Pingaud, Bernard J.; and Poncet, Claude, 4,451,535, Cl. 428-329.000.
Pool Company: *See—*
Lorenz, Howard I., 4,451,183, Cl. 406-94.000.
Popov, Marin A.; and Georgiev, Todor G., to Knipsm "Zavodproekt". Water resistant and heat insulating material and method of making same. 4,451,294, Cl. 106-75.000.
Portec, Inc.: *See—*
Smith, Ryan M.; and Stoller, David A., Sr., 4,451,188, Cl. 410-42.000.
Porter, Clifford R.; and Kaesz, Herbert D., to Pentanyl Technologies, Inc. Method of liquefaction of carbonaceous materials. 4,451,351, Cl. 208-10.000.
Posso, Patrick, to Gefitec S.A. Platform for a camera or cine camera stand. 4,451,020, Cl. 248-183.000.
Potaichuk, Vladimir M.: *See—*
Erasov, Fedor N.; Chumachenko, Boris A.; and Potaichuk, Vladimir M., 4,451,216, Cl. 418-61.00B.
Potter, Craig W.: *See—*
Colburn, Lyle W.; Potter, Craig W.; and Romesberg, Floyd E., 4,450,977, Cl. 220-458.000.
Potters, Cornelis J. T.: *See—*
Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Tholen, Antonius H. L., 4,451,115, Cl. 350-96.180.
Potts, Kevin T., to Rensselaer Polytechnic Institute. Method of making known and previously unavailable pyrylium salts. 4,451,659, Cl. 549-4.000.
Prasad, Arun, to Jeneric Industries, Inc. Self-actuated dental capsule. 4,450,958, Cl. 206-222.000.
Prasad, Arun, to Jeneric Industries, Inc. Dental alloys for porcelain-fused-to-metal restorations. 4,451,639, Cl. 420-464.000.
Pratscher, Andrew J. Industrial rodent killing device. 4,450,648, Cl. 43-64.000.
Pratt, John D., to Monogram Industries, Inc. Bulb rivet. 4,451,189, Cl. 411-34.000.
Precision Metal Fabricators, Inc.: *See—*
Lenhart, Ronald A., 4,451,182, Cl. 406-86.000.
Premix, Inc.: *See—*
Collister, Jon E., 4,451,610, Cl. 525-19.000.
Prescott, Ernest; and Cochran, William C., to Aluminum Company of America. Aluminum nitriding by laser. 4,451,302, Cl. 148-13.100.
Presto Lock, Inc.: *See—*
Scelba, Stephen S., 4,450,698, Cl. 70-312.000.
Prewo, Karl M.: *See—*
Stalcup, Robert K.; Sigman, Warren R.; and Prewo, Karl M., 4,451,118, Cl. 350-310.000.
Prilutski, Gerard M.: *See—*
Pieters, Wim J.M.; and Prilutski, Gerard M., 4,451,356, Cl. 208-263.000.
Prodinger, Arnold, to U.S. Philips Corporation. Magnetic-tape cassette. 4,451,864, Cl. 360-130.330.
Prohaska, Werner; and Romann, Peter, to Robert Bosch GmbH. Apparatus for measuring the mass of a flowing medium. 4,450,714, Cl. 73-118.100.
Prudot, Norvell G.: *See—*
Phillips, Graham R.; and Prudot, Norvell G., 4,451,775, Cl. 322-10.000.
Pryde, Everett H.: *See—*
Schwab, Arthur W.; and Pryde, Everett H., 4,451,267, Cl. 44-53.000.
PSI Star, Inc.: *See—*
Nelson, Norvell J., 4,451,327, Cl. 156-646.000.
Pugh, Paul F. Battery system. 4,451,877, Cl. 363-59.000.
Pulver, John C.: *See—*
Meyers, John J.; and Pulver, John C., 4,451,119, Cl. 350-310.000.
Puri, Yogi K.: *See—*
Dearden, Ziba T.; and Puri, Yogi K., 4,451,922, Cl. 371-49.000.
Purity Packaging Corporation: *See—*
Cauldwell, Jack D., 4,451,309, Cl. 156-64.000.
Puryear, John W.; and Callan, Arthur D., to Brunswick Corporation. Fishing line control device. 4,451,012, Cl. 242-84.20A.
Quaker Oats Company, The: *See—*
Cook, Milton L.; Keyser, William L.; Swanson, Paul; Zielke, Michael W.; and Zielinski, Walter J., 4,451,488, Cl. 426-89.000.
Coss, William W., 4,451,577, Cl. 502-167.000.
Quarendon, Peter: *See—*
Hall, Stephen T.; Hardiman, Raymond; Johnson, Peter W.; Quarendon, Peter; and Tuffill, Harold W., 4,451,825, Cl. 340-750.000.
Quick, Donald J., to Massey-Ferguson Services N.V. Sugar cane billet planter. 4,450,778, Cl. 111-3.000.
Quigley Company, Inc.: *See—*
Kitamura, Minoru; Soejima, Toshiyuki; Hayashi, Tsutomu; Matsui, Hideo; and Fujisawa, Shigenori, 4,451,293, Cl. 75-257.000.
Quisno, Robert A., to Hill Top Research, Inc. Patch system for use on the skin. 4,450,844, Cl. 128-743.000.
R.M.S. Ingenierie et Financiere: *See—*
Alexandre, Claude, 4,450,922, Cl. 177-211.000.
R. T. French Co., The: *See—*
Hotchkin, Peter, 4,450,594, Cl. 4-228.000.
Rabitsch, Hermann: *See—*
Raggam, Augustin; and Rabitsch, Hermann, 4,451,331, Cl. 162-18.000.
Rachner, Horst: *See—*
Kohler, Alfred; and Rachner, Horst, 4,451,768, Cl. 318-443.000.
Raggam, Augustin; and Rabitsch, Hermann, to Simmering-Graz-Pauker Aktiengesellschaft. Process and apparatus for producing pulp. 4,451,331, Cl. 162-18.000.
Rajagopal, Ganesh: *See—*
Basrai, Habil S.; and Rajagopal, Ganesh, 4,450,753, Cl. 91-35.000.
Rakoczi, Istvan: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.
Rakoczy, Bohdan: *See—*
Fickes, Michael G.; and Rakoczy, Bohdan, 4,451,553, Cl. 430-306.000.
Ramachandran, Sundaresan: *See—*
Kennedy, Robert J., Sr.; Kennedy, Robert J., Jr.; and Ramachandran, Sundaresan, 4,451,537, Cl. 428-391.000.
Ramras, Daniel M.: *See—*
Santillie, Paul W.; and Ramras, Daniel M., 4,451,444, Cl. 423-480.000.
Ramun, John: *See—*
Ramun, Michael; and Ramun, John, 4,450,625, Cl. 30-134.000.
Ramun, Michael; and Ramun, John, to Allied Gator, Inc. Material handling and shearing attachment for a backhoe. 4,450,625, Cl. 30-134.000.
Ranade, Gautam R., to Occidental Chemical Corporation. Process of manufacturing diaryl esters of dicarboxylic acids. 4,451,664, Cl. 560-86.000.
Randall, David I., to GAF Corporation. 1-Hydroxyanthraquinone aquatic herbicide. 4,451,278, Cl. 71-66.000.
Rantapaa, Larry A. Pedal extension device. 4,450,733, Cl. 74-562.000.
Rappaport, Mark J. Internal anti-proratory plug assembly and process of installing the same. 4,450,591, Cl. 3-1.900.
Rapparini, Gino. Line of continuous working packaging machines for rectangular prismatic packages. 4,450,669, Cl. 53-551.000.
Rasmussen GmbH: *See—*
Sauer, Heinz, 4,451,070, Cl. 285-242.000.
Rasmussen, Jerald K.: *See—*
Heilmann, Steven M.; Rasmussen, Jerald K.; and Palensky, Frederick J., 4,451,619, Cl. 525-379.000.
Rataud, Jean E. M. A.: *See—*
Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., 4,451,461, Cl. 424-246.000.
Ray, Thomas E.: *See—*
Hoenstine, James M.; and Ray, Thomas E., 4,451,239, Cl. 441-66.000.
RCA Corporation: *See—*
Beltz, John P.; and Hang, Kenneth W., 4,451,507, Cl. 427-240.000.
D'Augustine, Frank T.; Terry, Malcolm E.; Welsh, Hugh F.; and Payne, Frank A., 4,451,243, Cl. 445-68.000.
Doner, Claude E., 4,451,806, Cl. 333-224.000.
Fuhrer, Jack S., 4,451,849, Cl. 358-161.000.
Fuldner, William V., 4,451,828, Cl. 343-872.000.
Kirschner, Thomas F., 4,451,912, Cl. 369-77.200.
Marinelli, Donald P.; and Ladany, Ivan, 4,451,727, Cl. 219-464.000.
McGlashan, Kenneth W.; and Archer, John R., 4,451,807, Cl. 335-211.000.
Mount, James, 4,451,725, Cl. 219-390.000.
Shanley, Robert L., II, 4,451,840, Cl. 358-22.000.
Weakliem, Herbert A.; and Vossen, John L., Jr., 4,450,787, Cl. 118-723.000.
Welch, Norman D.; and Woestman, John W., 4,451,879, Cl. 364-181.000.
Ream, Norman E., to Hatcher, Kelsey W. Underwater breathing apparatus. 4,450,837, Cl. 128-201.270.
Reap, James D. Combined time and temperature indicating device. 4,451,157, Cl. 368-11.000.
Reda, Kazimierz J.; Dzewaltowski, Victor F.; Millay, Lawrence I.; and Hobbs, Robert N., to Ex-Cell-O Corporation. Stationary grinding wheel dressing unit. 4,450,651, Cl. 51-5.00D.
Redpath, Thomas W. T.: *See—*
Edelstein, William A.; Hutchison, James M. S.; Johnson, Glyn; Redpath, Thomas W. T.; and Mallard, John R., 4,451,788, Cl. 324-309.000.
Regulski, Thomas W.: *See—*
Klun, Robert T.; and Regulski, Thomas W., 4,451,667, Cl. 560-207.000.
Reh, Chuan. Electrical plug. 4,451,102, Cl. 339-74.00R.
Reichmann, Walter: *See—*
Treiber, Josef; and Reichmann, Walter, 4,450,701, Cl. 72-181.000.
Reilly, Laurence W., Jr.: *See—*
Rousseau, Alan D.; and Reilly, Laurence W., Jr., 4,451,613, Cl. 525-54.310.
Reinecke, Paul: *See—*
Elbe, Hans-Ludwig; Kramer, Wolfgang; Buchel, Karl H.; Lursaen, Klaus; Reinecke, Paul; and Scheinpflug, Hans, 4,451,281, Cl. 71-92.000.
Reinehr, Ulrich; Herbertz, Toni; and Spilgies, Gunter, to Bayer Aktiengesellschaft. Process for the production of flame resistant moulded polymer articles. 4,451,423, Cl. 264-182.000.

Reiner, Roland: *See—*
Deibig, Heinrich; Reiner, Roland; and Welle, Hendricus B. A., 4,451,452, Cl. 424-78.000.
Reinholm, James H.; and Marcinkiewicz, Eugene J., to GSE, Inc. Digital retorque measuring apparatus. 4,450,727, Cl. 73-862.230.
Rembold, Helmut, to Robert Bosch GmbH. Vane-piston pump. 4,451,218, Cl. 418-137.000.
Remington Arms Company, Inc.: *See—*
Bullis, Douglas E.; and Blumer, Kurt, 4,450,641, Cl. 42-6.000.
Rempfler, Hermann: *See—*
Maier, Ludwig; Rempfler, Hermann; and Durr, Dieter, 4,451,284, Cl. 71-94.000.
Remy, Jean-Claude, to Dixi S.A. Usine 4. Tool for truing up grinding wheels. 4,450,826, Cl. 125-11.00N.
Rendelmann, Ulrich: *See—*
Dolezalek, Friedrich; Koepke, Gunther; and Rendelmann, Ulrich, 4,451,497, Cl. 427-39.000.
Rensselaer Polytechnic Institute: *See—*
Potts, Kevin T., 4,451,659, Cl. 549-4.000.
Repella, James A., to Microdot Inc. Method of making a polytetrafluoroethylene hydrodynamic seal. 4,450,614, Cl. 29-417.000.
Repella, James A., to Microdot Inc. Bi-directional hydrodynamic slitted seal. 4,451,050, Cl. 277-134.000.
Research Corporation: *See—*
Allcock, Harry R.; and Neenan, Thomas X., 4,451,647, Cl. 536-21.000.
Research-Cottrell: *See—*
Lefevre, Marcel R., 4,451,411, Cl. 261-111.000.
Retelsdorf, Hans-Joachim: *See—*
Hall, Fred W.; and Retelsdorf, Hans-Joachim, 4,451,292, Cl. 75-238.000.
Reuter, Helge H.: *See—*
Frechette, Thomas E.; and Reuter, Helge H., 4,451,166, Cl. 400-208.000.
Reynolds Metals Company: *See—*
Robertson, Field I., Jr.; and Bryan, George D., Jr., 4,450,700, Cl. 72-115.000.
Rheinische Braunkohlenwerke AG: *See—*
Wolfrum, Erhard; Erken, Manfred; and Bocker, Dietrich, 4,450,777, Cl. 110-342.000.
Rheintechnik, Weiland & Kasper KG: *See—*
Weiland, Werner, 4,450,792, Cl. 119-126.000.
Ricard, Paul R.; and Goclowski, Charles, to Arrow Machine, Inc. Hardened metal workpiece straightening machine. 4,450,707, Cl. 72-389.000.
Ricci, David W.: *See—*
Palermo, David W.; Ricci, David W.; Marriott, Joe E.; and Heger, Thomas J., 4,451,898, Cl. 364-900.000.
Richards, Arthur W.: *See—*
Vescovi, Valentino F.; and Richards, Arthur W., 4,451,812, Cl. 336-84.00C.
Richards, Ronald L.: *See—*
Sekmakas, Kazys; and Richards, Ronald L., 4,451,603, Cl. 524-279.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Balazs, Janos; Bano, Tibor; Kollar, Arpad; Kovacs, Tibor; Lengyel, Denes; and Mozer, Ferenc, 4,450,608, Cl. 29-33.00R.
Nador, Karoly; Kraiss, Gabor; Sinko, Katalin; Paroczai, Margit; Karpati, Egon; and Szporny, Laszlo, 4,451,473, Cl. 424-256.000.
Ricoh Co., Ltd.: *See—*
Hashimoto, Mitsuru; and Sakai, Kiyoshi, 4,451,545, Cl. 430-59.000.
Saito, Kinzi, 4,451,140, Cl. 355-15.000.
Umezawa, Michio, 4,451,169, Cl. 400-631.000.
Yanagawa, Nobuyuki; and Kamiyama, Shinichi, 4,451,139, Cl. 355-15.000.
Ricoh Systems, Inc.: *See—*
Anderson, Carl P., 4,451,138, Cl. 355-14.0SH.
Ridenour, Ralph G. Tube fitting assembly method with deformable seal. 4,450,618, Cl. 29-509.000.
Rieman, Willis E.: *See—*
Barry, Leon G.; and Rieman, Willis E., 4,451,814, Cl. 337-407.000.
Riesenberg, Horst; and Krahn, Margot. Survey objective. 4,451,126, Cl. 350-520.000.
Rijckaert, Albert M. A.; Ruyten, Henricus M.; Hoefnagels, Johannes F.; and Schoenmakers, Johannes J. M., to U.S. Philips Corporation. Magnetic head mounting mechanism for automatic azimuth control. 4,451,862, Cl. 360-109.000.
Rim, Yong S.: *See—*
Nudenberg, Walter; Rim, Yong S.; and Matthews, Demetreos N., 4,451,575, Cl. 502-122.000.
Rimmer, John, to Amersham International plc. Radiopharmaceutical composition based on technetium-99m and reagent for making it. 4,451,451, Cl. 424-1.100.
Riordan, Edward D.: *See—*
Szantho, Charles F.; and Riordan, Edward D., 4,451,722, Cl. 219-86.250.
Roan, Charles F., III. Sodium-free salt substitute. 4,451,494, Cl. 426-649.000.
Robert Bosch GmbH: *See—*
Bubenzer, Wilfried, 4,451,325, Cl. 156-583.100.
Eheim, Franz; and Hofer, Gerald, 4,450,805, Cl. 123-387.000.
Fischer, Werner; and Locher, Johannes, 4,451,778, Cl. 323-282.000.
Grimm, Gerold; Kemmner, Ulrich; Knapp, Heinrich; and Rose, Klaus, 4,450,866, Cl. 137-625.340.
Prohaska, Werner; and Romann, Peter, 4,450,714, Cl. 73-118.100.
Rembold, Helmut, 4,451,218, Cl. 418-137.000.
Sumal, Jaihind S., 4,450,715, Cl. 73-118.100.
Roberts, James E., Jr. Dispensing container. 4,451,164, Cl. 400-196.000.
Robertson, Field I., Jr.; and Bryan, George D., Jr., to Reynolds Metals Company. Method and apparatus for necking and flanging container bodies. 4,450,700, Cl. 72-115.000.
Robertson, James, to Imperial Chemical Industries PLC. Electrically actuable ignition assembly. 4,451,867, Cl. 361-248.000.
Robinson, Richard L. Weed cutter for boat motor. 4,450,670, Cl. 56-8.000.
Rocks, Joseph C. Printing press blanket gauge. 4,450,628, Cl. 33-172.00E.
Rockwell International Corporation: *See—*
Buresh, Lloyd V.; Hammond, Garth D.; Koval, Emil J.; and McCormick, Vernon R., 4,451,103, Cl. 339-93.00R.
Pommerrenig, Dieter H., 4,451,842, Cl. 357-30.000.
Rockwell-Rimoldi S.p.A.: *See—*
Torre, Giancarlo D., 4,451,191, Cl. 414-118.000.
Roehm, Vincent P.: *See—*
Shaubach, Robert M.; Eastman, George Y.; and Roehm, Vincent P., 4,451,210, Cl. 417-52.000.
Roettgen, Leslie A.: *See—*
Thedens, Kevin J.; and Roettgen, Leslie A., 4,450,801, Cl. 123-198.00F.
Rogers, Burton L., to Syntex (U.S.A.) Inc. Pinch valve assembly. 4,450,862, Cl. 137-595.000.
Rogers Corporation: *See—*
Harper, William P.; and DeVries, Donald H., 4,451,694, Cl. 174-72.00B.
Traut, G. Robert, 4,451,833, Cl. 343-872.000.
Roider, Willibald: *See—*
Beckmann, Heinrich; Ottersbach, Jens; Roider, Willibald; and Saumweber, Eckart, 4,451,889, Cl. 364-426.000.
Rolls Royce Limited: *See—*
Langley, Kenneth R., 4,451,203, Cl. 416-215.000.
Pask, George, 4,451,204, Cl. 416-215.000.
Roman, Ian C., to Bend Research, Inc. Absorption process for producing oxygen and nitrogen and solution therefor. 4,451,270, Cl. 55-38.000.
Roman, Steven A.: *See—*
Horne, Charles A.; Salvo, Stephen A.; Sundelin, Kurt G. R.; and Roman, Steven A., 4,451,466, Cl. 424-251.000.
Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Inside adapter for a sample container. 4,451,250, Cl. 494-85.000.
Romann, Peter: *See—*
Prohaska, Werner; and Romann, Peter, 4,450,714, Cl. 73-118.100.
Romesberg, Floyd E.: *See—*
Colburn, Lyle W.; Potter, Craig W.; and Romesberg, Floyd E., 4,450,977, Cl. 220-458.000.
Romig, William R.: *See—*
Beale, Robert J.; Bradbury, Allen G. W.; Medcalf, Darrell G.; and Romig, William R., 4,451,489, Cl. 426-254.000.
Rose, Klaus: *See—*
Grimm, Gerold; Kemmner, Ulrich; Knapp, Heinrich; and Rose, Klaus, 4,450,866, Cl. 137-625.340.
Rosenberg, Harry: *See—*
Trumper, Thomas; Rosenberg, Harry; and Weirich, Walter, 4,451,181, Cl. 405-302.000.
Rosenthal, Janice E.: *See—*
Klose, George J.; Rosenthal, Janice E.; Schneider, Thomas G.; and Schroeder, Robert F., 4,451,911, Cl. 369-31.000.
Rosenthal, Michael R.; and Parron, Ivan. Vertically slotted panel. 4,450,655, Cl. 52-36.000.
Ross, Malcolm F.; and Visner, Sidney, to Combustion Engineering, Inc. In-core fuel management for nuclear reactor. 4,451,427, Cl. 376-267.000.
Rossiter, Paul H., to Welding Engineers, Inc. Apparatus and method for controlling extrusion back pressure utilizing a single sleeve die. 4,451,414, Cl. 264-40.500.
Rothenberg, Carl: *See—*
Stangel, John J.; Herper, John C.; and Rothenberg, Carl, 4,451,831, Cl. 343-374.000.
Roubaud, Peter R.: *See—*
Guest, David H.; and Roubaud, Peter R., 4,451,886, Cl. 364-200.000.
Rousseau, Alan D.; and Reilly, Laurence W., Jr., to Minnesota Mining and Manufacturing Company. Ethylenically-unsaturated dextrin oligomers. 4,451,613, Cl. 525-54.310.
Rovira, Felipe P., to D. Felipe Pineda S.A. Method and installation for purifying contaminating water. 4,451,372, Cl. 210-603.000.
Roziecki, Edward J.; and Wittbrodt, Donald R., to United States of America, Army. Testing system for electro-optical radiation detectors. 4,451,785, Cl. 324-158.00R.
Rucker, Lucien M., III, to Bell Telephone Laboratories, Incorporated. High speed clamp circuit. 4,451,747, Cl. 307-549.000.
Rudolf, Otmar: *See—*
Dobes, Karel; Fuchs, Peter; and Rudolf, Otmar, 4,451,147, Cl. 356-135.000.
Ruggeri, Antonio, to Vannucci, Pasquale, a part interest. Sedimentation tank. 4,451,367, Cl. 210-207.000.
Rummel, Theodor: *See—*
Heinemann, Wilfried; and Rummel, Theodor, 4,450,892, Cl. 164-467.000.
Ruschek, Gerhard: *See—*
Sauerschell, Wolfgang; Wietschorke, Stephan; and Ruschek, Gerhard, 4,450,804, Cl. 123-366.000.

Ruske, Manfred: *See*—
Patsch, Manfred; and Ruske, Manfred, 4,451,398, Cl. 260-154.000.
Ruskin, Henry. Staple-driving tools. 4,450,998, Cl. 227-8.000.
Russ, Norman. Easy-frame. 4,450,637, Cl. 40-152.000.
Russell Matthews Industries Limited: *See*—
Matthews, John B.; and Keller, Roger H., 4,450,962, Cl. 206-447.000.
Russo, Carmen A., Sr.: *See*—
Batchelor, Gary R.; Russo, Carmen A., Sr.; and Bradley, Martin, 4,451,329, Cl. 156-660.000.
Ruti-te Strake B.V.: *See*—
van Mullekom, Hubert P., 4,450,876, Cl. 139-435.000.
Rutledge, Raleigh N.: *See*—
Searl, Alonzo H.; Hahn, Granville J.; and Rutledge, Raleigh N., 4,451,586, Cl. 521-88.000.
Ruyten, Henricus M.: *See*—
Rijckaert, Albert M. A.; Ruyten, Henricus M.; Hoefnagels, Johannes F.; and Schoenmakers, Johannes J. M., 4,451,862, Cl. 360-109.000.
Ryan, Bobby W.; Rye, Rufus A.; and Snyder, James L., to WFI International, Inc. Method of manufacturing acute angled vessel connector. 4,450,613, Cl. 29-157.00T.
Ryan, Geoffrey R.: *See*—
McKay, Richard H.; and Ryan, Geoffrey R., 4,451,728, Cl. 235-50.00R.
Ryan, Thomas D.: *See*—
Ulry, Donald C.; Cosner, Charles G.; and Ryan, Thomas D., 4,451,264, Cl. 8-508.000.
Rye, Rufus A.: *See*—
Ryan, Bobby W.; Rye, Rufus A.; and Snyder, James L., 4,450,613, Cl. 29-157.00T.
Ryseck, Werner: *See*—
Grage, Ludger; and Ryseck, Werner, 4,451,146, Cl. 356-5.000.
Ryston, Ivor; Handley, Harold; Seegmiller, J. Edwin; and Thompson, Linda F., to University of California, The Regents of the. Immunoglobulin-secreting human hybridomas from a cultured human lymphoblastoid cell line. 4,451,570, Cl. 435-240.000.
Ryzhov, Alexei A.: *See*—
Dshkhunian, Valery L.; Ivanov, Eduard E.; Kovalenko, Sergei S.; Mashevich, Pavel R.; Ryzhov, Alexei A.; Telenkov, Vyacheslav V.; and Chicherin, Jury E., 4,451,882, Cl. 364-200.000.
S. C. Johnson & Son, Inc.: *See*—
Nemeskeri, Georg, 4,451,721, Cl. 219-10.430.
S.N.E.C.M.A.: *See*—
Forestier, Alexandre; and Lardellier, Alain M. J., 4,451,110, Cl. 308-184.00R.
Saalmueller, Karl-Heinz: *See*—
Kopp, Walter; and Saalmueller, Karl-Heinz, 4,451,133, Cl. 355-3.0DD.
Saccomanno, Geno. Water saving liquid waste disposal system for use with a water closet or the like. 4,450,595, Cl. 4-301.000.
Sacuta, Aleksy, to Alberta Research Council. Combination solvent injection electric current application method for establishing fluid communication through heavy oil formation. 4,450,909, Cl. 166-248.000.
Sadler, Thomas H.; and Dalton, John J., to Manville Service Corporation. Reinforced plastic composite structure. 4,450,873, Cl. 138-174.000.
St. Jean, Herbert N.; and Settanni, Richard, to Cerberus AG. Infrared intrusion sensor with selectable radiation patterns. 4,451,734, Cl. 250-342.000.
St. Joseph Bank and Trust Company, executor: *See*—
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,451,402, Cl. 548-461.000.
Saito, Kinzi, to Ricoh Company, Ltd. Cleaning blade unit. 4,451,140, Cl. 355-15.000.
Saito, Koichi: *See*—
Nishimura, Eiichi; Uchida, Shunsuke; Kitamura, Masao; Saito, Koichi; Ibe, Eishi; and Hayashi, Tatsuo, 4,451,428, Cl. 376-333.000.
Saito, Tamio, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermal recording device. 4,451,835, Cl. 346-76.0PH.
Saito, Yasunori: *See*—
Sakamoto, Katsuji; and Saito, Yasunori, 4,450,676, Cl. 57-6.000.
Sakabe, Yukio; Nishioka, Goro; Azuma, Yoshimasa; and Mori, Susumu, to Murata Manufacturing Co., Ltd. Laminated ceramic capacitor. 4,451,869, Cl. 361-309.000.
Sakai, Fumihide: *See*—
Koshiyama, Hideo; Sakai, Fumihide; and Ohkuma, Hiroaki, 4,451,456, Cl. 424-177.000.
Sakai, Kiyoshi: *See*—
Hashimoto, Mitsuru; and Sakai, Kiyoshi, 4,451,545, Cl. 430-59.000.
Sakai, Masato: *See*—
Matidori, Seika; Teshima, Koichi; and Sakai, Masato, 4,451,430, Cl. 420-492.000.
Sakamoto, Katsuji; and Saito, Yasunori, to Sumitomo Electric Industries, Ltd. Apparatus for stranding optical fiber cores while slackening them. 4,450,676, Cl. 57-6.000.
Sakano, Kozaburo: *See*—
Yazaki, Jinichi; Sakano, Kozaburo; and Matsuo, Junichi, 4,451,512, Cl. 428-36.000.
Sakshaug, Eugene C.; and Kresge, James S., to General Electric Company. Zinc oxide varistor having reduced edge current density. 4,451,815, Cl. 338-21.000.
Sakurai, Katsuo: *See*—
Yoshikumi, Chikao; Sakurai, Katsuo; Omura, Yoshio; Nohara, Mayumi; Ando, Takao; and Motokawa, Isamu, 4,451,457, Cl. 424-180.000.
Sakurai, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Electrical connector device. 4,451,105, Cl. 339-113.00R.
Salmen, Marie P., executrix: *See*—
Keyes, Marion A., IV; and Salmen, Richard A., deceased, 4,450,722, Cl. 73-293.000.
Salmen, Richard A., deceased: *See*—
Keyes, Marion A., IV; and Salmen, Richard A., deceased, 4,450,722, Cl. 73-293.000.
Salmi, Robert W., to United States Steel Corporation. Device for removal of magnetic particles from a magnetic separator. 4,451,360, Cl. 209-230.000.
Salvo, Stephen A.: *See*—
Horne, Charles A.; Salvo, Stephen A.; Sundelin, Kurt G. R.; and Roman, Steven A., 4,451,466, Cl. 424-251.000.
Sanchez, Adon: *See*—
Stansbury, Benjamin H., Jr., 4,450,790, Cl. 119-51.120.
Sand, Theodor: *See*—
Gatfield, Ian; and Sand, Theodor, 4,451,565, Cl. 435-117.000.
Sanderson, Edward T. Material handling device. 4,451,198, Cl. 414-779.000.
Sanderson, John R.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over transition metal borates in the presence of acetic anhydride. 4,451,668, Cl. 560-246.000.
Sandoval, E. Jorge, to Hylsa, S.A. Charging system for electric arc furnaces. 4,451,925, Cl. 373-81.000.
Sandoz, Inc.: *See*—
Hardtmann, Goetz E.; and Houlihan, William J., 4,451,448, Cl. 424-251.000.
Hardtmann, Goetz E.; and Houlihan, William J., 4,451,464, Cl. 424-251.000.
Sandoz Ltd.: *See*—
Buhlmann, Hans; and Welzel, Dieter, 4,451,458, Cl. 424-183.000.
Deibig, Heinrich; Reiner, Roland; and Welle, Hendricus B. A., 4,451,452, Cl. 424-78.000.
Sanemitsu, Yuzuru; Shiroshita, Masao; Hashimoto, Shunichi; Katoh, Haruhiko; and Matsumoto, Hiroshi, to Sumitomo Chemical Company, Limited. 5-Oxo-2,5-dihydro-1,2,4-triazines. 4,451,283, Cl. 71-93.000.
Sankey, Bruce M.: *See*—
Briens, Cedric L.; Sankey, Bruce M.; and Ewener, Patrick C., 4,451,353, Cl. 208-33.000.
Sankyo Company Limited: *See*—
Terahara, Akira; and Tanaka, Minoru, 4,451,481, Cl. 424-279.000.
Sanner, Axel: *See*—
Denzinger, Walter; Goertz, Hans-Helmut; Sanner, Axel; and Hartmann, Heinrich, 4,451,582, Cl. 521-38.000.
Sanraku-Ocean Co., Ltd.: *See*—
Okabe, Mitsuyasu; Yoshioka, Takeo; Fukagawa, Yasuo; Okamoto, Rokuro; Kouno, Kageaki; and Ishikura, Tomoyuki, 4,451,401, Cl. 260-245.20T.
Santillie, Paul W.; and Ramras, Daniel M., to Lamb-Weston, Inc. Method and apparatus for producing chlorine dioxide. 4,451,444, Cl. 423-480.000.
Sapozhnikov, Abram L.: *See*—
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.
Sarantakis, Dimitrios, to American Home Products Corporation. Dodecapeptides preventing glucose and triglyceride assimilation. 4,451,394, Cl. 260-112.50S.
Sartorius GmbH: *See*—
Behrend, Lothar; Knothe, Erich; Melcher, Franz-Josef; and Ober, Jurgen, 4,450,923, Cl. 177-212.000.
Behrend, Lothar; Knothe, Eric; Melcher, Franz-Josef; and Ober, Jurgen, 4,450,924, Cl. 177-212.000.
Sasaki, Kiyoshi: *See*—
Ishikawa, Michio; and Sasaki, Kiyoshi, 4,451,187, Cl. 409-187.000.
Sasaki, Naoaki: *See*—
Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, 4,451,350, Cl. 204-422.000.
Sasaki, Osamu: *See*—
Kinoshita, Akira; Sasaki, Osamu; Sawada, Kiyoshi; and Goto, Satoshi, 4,451,548, Cl. 430-79.000.
Sasaki, Soji: *See*—
Yamaguchi, Hisao; Fujisawa, Kazuo; Kadowaki, Takashi; Itoh, Susumu; Sasaki, Soji; and Sato, Ichiya, 4,450,725, Cl. 73-643.000.
Sasaki, Takashi: *See*—
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,451,559, Cl. 430-552.000.
Satkunas, Bruno: *See*—
Belinkoff, Irving R.; and Satkunas, Bruno, 4,450,758, Cl. 99-332.000.
Sato, Hiroki; Nakano, Takao; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, to Sony Corporation. Flat cathode ray tube. 4,451,756, Cl. 313-422.000.

Sato, Hirotaka: *See*—
Yamashita, Katsuji; Umetsu, Hiroshi; Sato, Hirotaka; Matsuoka, Yoshio; and Kida, Kei, 4,451,433, Cl. 422-63.000.
Sato, Ichiya: *See*—
Yamaguchi, Hisao; Fujisawa, Kazuo; Kadowaki, Takashi; Itoh, Susumu; Sasaki, Soji; and Sato, Ichiya, 4,450,725, Cl. 73-643.000.
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photosensitive materials for color photography. 4,451,559, Cl. 430-552.000.
Sato, Shigetada, to Asahi Kogaku Kogyo Kabushiki Kaisha. Behind aperture lens system. 4,451,125, Cl. 350-465.000.
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, to Nippon Soken, Inc. Carbon particulates cleaning device for diesel engine. 4,450,681, Cl. 60-286.000.
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, to Nippon Soken, Inc. Carbon particulates cleaning device for diesel engine. 4,450,682, Cl. 60-286.000.
Sato, Yasutoshi; and Ueno, Keiji, to Sumitomo Electric Industries, Ltd. Heat-ahrinkable tubes. 4,450,871, Cl. 138-140.000.
Sato, Yo; and Kashiwaba, Tadao, to Kabushiki Kaisha Sato. Portable label applying machine. 4,451,323, Cl. 156-541.000.
Sattler, Gunther; Gunkel, Werner; Witzgall, Manfred; and Look, Reinhard, to Merck Patent Gesellschaft mit beschrankter Haftung. Column clamping device for chromatography. 4,451,365, Cl. 210-198.200.
Sauer, Heinz, to Rasmussen GmbH. Hose coupling. 4,451,070, Cl. 285-242.000.
Sauer, Werner: *See*—
Franck, Klaus; and Sauer, Werner, 4,451,085, Cl. 297-285.000.
Sauerschell, Wolfgang; Wietschorke, Stephan; and Ruschek, Gerhard, to VDO Adolf Schindling AG. Apparatus for increasing idling speed. 4,450,804, Cl. 123-366.000.
Sauger, Lawrence M. Ready pad for concrete. 4,451,022, Cl. 249-2.000.
Saulson, Stanley H.: *See*—
Zick, Gregory L.; and Saulson, Stanley H., 4,450,842, Cl. 128-635.000.
Saumweber, Eckart: *See*—
Beckmann, Heinrich; Ottersbach, Jens; Roider, Willibald; and Saumweber, Eckart, 4,451,889, Cl. 364-426.000.
Sawada, Fred H.; Bishop, James S.; and Blaize, Llewellyn A., to General Electric Company. High sensitivity brush arcing monitor for a dynamoelectric machine. 4,451,786, Cl. 324-158.0MG.
Sawada, Kiyoshi: *See*—
Kinoshita, Akira; Sasaki, Osamu; Sawada, Kiyoshi; and Goto, Satoshi, 4,451,548, Cl. 430-79.000.
Sawamoto, Kunifumi; Morita, Tatsuo; Ikeura, Kenji; and Yamaguchi, Hiroshi, to Nissan Motor Company, Limited. Air-fuel ratio control apparatus and method for an internal combustion engine with a turbocharger. 4,450,814, Cl. 123-478.000.
Sawano, Susumu: *See*—
Kikuchi, Akira; Sawano, Susumu; and Ito, Yoshimasa, 4,451,195, Cl. 414-732.000.
Sawheny, Dulari L.: *See*—
Belden, Reed H.; Li, Hsin L.; and Sawheny, Dulari L., 4,450,891, Cl. 164-463.000.
Sawyer, Byron E.: *See*—
Spongr, Jerry J.; and Sawyer, Byron E., 4,451,732, Cl. 250-308.000.
Saylor, Millard P. Apparatus for forming wire connection. 4,450,763, Cl. 100-31.000.
SCA Development Aktiebolag: *See*—
Annergren, Goran E.; Hagglund, Tjell-Ake; Lindblad, Per-Olov; Lindstrom, Lars-Ake T.; and Nasman, Lars E., 4,451,332, Cl. 162-30.100.
Scanlon, Barry. Vehicular airfoils. 4,451,074, Cl. 296-1.00S.
Scelba, Stephen S., to Presto Lock, Inc. Combination locks. 4,450,698, Cl. 70-312.000.
Schaefer, Philipp. Molding compound for molding body portions and process for producing this molding compound. 4,451,584, Cl. 521-54.000.
Schaeffler, Georg; Spiess, Karl; Heyne, Jurgen E.; and Krost, Manfred, to Motomak Motorenbau, Maschinen- Und Werkzeugfabrik, Konstruktionen GmbH. Metal sleeve production. 4,450,704, Cl. 72-356.000.
Schaich, Josef. Four-stroke piston engine. 4,450,795, Cl. 123-79.00C.
Schaich, Josef. Four-stroke piston engine. 4,450,796, Cl. 123-79.00C.
Schaper, Siefried, to Audi Nsu Auto Union Aktiengesellschaft. Method of making a piston. 4,450,610, Cl. 29-156.50R.
Schaty, Harald, to USM Corporation. Pipe clip. 4,450,605, Cl. 24-457.000.
Scheibe, Peter: *See*—
Vetter, Hellmuth; Scheibe, Peter; Thum, Waldemar; and Naher, Gotthilf, 4,451,487, Cl. 435-183.000.
Scheinpflug, Hans: *See*—
Elbe, Hans-Ludwig; Kramer, Wolfgang; Buchel, Karl H.; Lursaen, Klaus; Reinecke, Paul; and Scheinpflug, Hans, 4,451,281, Cl. 71-92.000.
Scheller, Hans U.; and Scheller, Karl A., to Wurttembergische Parfumerie-Fabrik GmbH. Electric toothbrush. 4,450,599, Cl. 15-22.00R.
Scheller, Karl A.: *See*—
Scheller, Hans U.; and Scheller, Karl A., 4,450,599, Cl. 15-22.00R.
Schempp, Heinrich: *See*—
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,451,279, Cl. 71-93.000.
Scheurenbrand, Dieter, to Daimler-Benz Aktiengesellschaft. Filler pipe for a fuel tank. 4,450,880, Cl. 141-285.000.
Schindler, Joachim: *See*—
Struve, Alfred; Hill, Frank F.; and Schindler, Joachim, 4,451,564, Cl. 435-55.000.
Schlumberger Technical Corporation: *See*—
Bell, William T., 4,450,768, Cl. 102-307.000.
Schmidt, Dieter K.: *See*—
Buschor, Josef J.; Long, James C.; and Schmidt, Dieter K., 4,450,949, Cl. 198-422.000.
Schmidt, Earl A. Bait holder for leeches. 4,450,647, Cl. 43-55.000.
Schmidt, Paul J.: *See*—
Crounse, Nathan N.; and Schmidt, Paul J., 4,451,657, Cl. 548-456.000.
Schmidt, Robert: *See*—
Knops, Hans-Joachim; Babczinski, Peter; Eue, Ludwig; and Schmidt, Robert, 4,451,282, Cl. 71-92.000.
Schmiedke, Georg: *See*—
Heuer, Dieter; and Schmiedke, Georg, 4,451,750, Cl. 310-88.000.
Schmitz, Hermann: *See*—
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, 4,451,631, Cl. 526-287.000.
Schneider, Michel; Chevreux, Pierre; and Guillot, Christian, to Battelle Memorial Institute. Composition for binding bioactive subetances. 4,451,568, Cl. 435-181.000.
Schneider, Rolf: *See*—
Kranz, Joachim; Habermann, Wolfgang; Distler, Harry; Knittel, Helmut; Hock, Karl-Ludwig; Brunnmueller, Fritz; and Schneider, Rolf, 4,451,339, Cl. 204-91.000.
Schneider, Thomas G.: *See*—
Klose, George J.; Rosenthal, Janice E.; Schneider, Thomas G.; and Schroeder, Robert F., 4,451,911, Cl. 369-31.000.
Schoch, Daniel A.: *See*—
Olding, Michael J.; and Schoch, Daniel A., 4,450,946, Cl. 192-0.084.
Schoening, Gerhard: *See*—
Floeter, Wilfried; Schoening, Gerhard; and Schroeer, Klaus, 4,451,438, Cl. 423-20.000.
Schoenmakers, Johannes J. M.: *See*—
Rijckaert, Albert M. A.; Ruyten, Henricus M.; Hoefnagels, Johannes F.; and Schoenmakers, Johannes J. M., 4,451,862, Cl. 360-109.000.
Schoenung, Bernhard: *See*—
von Ronai-Horvath, Michael; Schoenung, Bernhard; and Seebo, Kurt, 4,450,677, Cl. 57-81.000.
Schonwald, Siegfried, to Siemens Aktiengesellschaft. Radial piston compressor and drive motor coupling arrangement. 4,451,211, Cl. 417-271.000.
Schroeder, Robert F.: *See*—
Klose, George J.; Rosenthal, Janice E.; Schneider, Thomas G.; and Schroeder, Robert F., 4,451,911, Cl. 369-31.000.
Schroeer, Klaus: *See*—
Floeter, Wilfried; Schoening, Gerhard; and Schroeer, Klaus, 4,451,438, Cl. 423-20.000.
Schuck, Helmut: *See*—
Forster, Karl-Heinz; Johne, Hans; Schuck, Helmut; and Friedrich, Ludwig, 4,450,767, Cl. 101-365.000.
Schulz, Donald N.: *See*—
Lohr, Delmar F.; and Schulz, Donald N., 4,451,576, Cl. 502-155.000.
Schulze-Braucks, Manfred: *See*—
Oppitz, Peter; Schulze-Braucks, Manfred; and Tesche, Rolf, 4,451,263, Cl. 8-500.000.
Schupphaus, Herbert, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Advancing apparatus for coal-mining machine in underground mine. 4,451,090, Cl. 299-43.000.
Schupphaus, Herbert; and Knorr, Volker, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Track for a longwall mining machine. 4,451,091, Cl. 299-43.000.
Schwab, Arthur W., to United States of America, Agriculture. Diesel fuel-aqueous alcohol microemulsions. 4,451,265, Cl. 44-51.000.
Schwab, Arthur W.; and Pryde, Everett H., to United States of America, Agriculture. Microemulsions from vegetable oil and aqueous alcohol with trialkylamine surfactant as alternative fuel for diesel engines. 4,451,267, Cl. 44-53.000.
Schwenk, Gerhard: *See*—
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,451,530, Cl. 428-323.000.
SCM Corporation: *See*—
Miller, Donald E.; and Werstak, Charles E., 4,451,493, Cl. 426-602.000.
Scott, Richard L., to Phillips Petroleum Company. Multi-sample surface area measurement. 4,450,723, Cl. 73-432.0PS.
Scovil, Inc.: *See*—
Jones, Arthur L.; and Seeney, Ronald G., 4,451,421, Cl. 264-167.000.
Scuderi, Rudolph, deceased: *See*—
Papathomas, Thomas V.; Scuderi, Rudolph, deceased; White, May S., co-executrix; and D'Ambrose, Camille, co-executrix, 4,451,773, Cl. 320-59.000.
Sealectro Corporation: *See*—
Iantorno, James, 4,450,622, Cl. 29-842.000.
Searl, Alonzo H.; Hahn, Granville J.; and Rutledge, Raleigh N., to Cosden Technology, Inc. Process and apparatus for manufacturing flame retardant flexible foamed articles. 4,451,586, Cl. 521-88.000.
Seebo, Kurt: *See*—
von Ronai-Horvath, Michael; Schoenung, Bernhard; and Seebo, Kurt, 4,450,677, Cl. 57-81.000.

Seegmiller, J. Edwin: *See—*
Ryston, Ivor; Handley, Harold; Seegmiller, J. Edwin; and Thompson, Linda F., 4,451,570, Cl. 435-240.000.
Seeley, Wayne C., to Simmons Universal Corporation. Backrest height adjustment for office chair. 4,451,084, Cl. 297-353.000.
Seeney, Ronald G.: *See—*
Jones, Arthur L.; and Seeney, Ronald G., 4,451,421, Cl. 264-167.000.
Seeq Technology, Inc.: *See—*
Jordan, Larry T., 4,451,903, Cl. 365-94.000.
Seigert, Peter: *See—*
Troeder, Christoph; Faber, Manfred; and Seigert, Peter, 4,450,729, Cl. 73-862.340.
Seiko Instruments & Electronics Ltd.: *See—*
Tanaka, Mitsunori, 4,451,159, Cl. 368-69.000.
Seiler, Norman C.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; and Kawai, Hisasi, to Nippon Soken, Inc. EGR Control system for diesel engine. 4,450,825, Cl. 123-569.000.
Sekino, Masaaki; Fujita, Yoshiyuki; and Ukai, Tetsuo, to Toyo Boseki Kabushiki Kaisha. Fluid separation apparatus. 4,451,369, Cl. 210-321.100.
Sekisui Jushi Kabushiki Kaisha: *See—*
Yui, Ryosuki; Kume, Ketsuke; Hashi, Masaaki; and Niikura, Junji, 4,451,422, Cl. 264-178.00R.
Sekmakas, Kazys; and Richards, Ronald L., to DeSoto, Inc. Abrasion-resistant coatings. 4,451,603, Cl. 524-279.000.
Selenia, Industrie Elettroniche Associate, S.p.A.: *See—*
Diedrich, Heinz K.; Greco, Giovanni; and Fanti, Domenico, 4,451,735, Cl. 250-352.000.
Selkirk, Neil R.: *See—*
Lonseth, Palmer; Selkirk, Neil R.; and Moorby, Donald G., 4,451,870, Cl. 361-433.000.
Selwyn, Stephen; and Ketcham, William P., to Ketcham, William P. Countdown timer. 4,451.158, Cl. 368-63.000.
Senoo, Takanori: *See—*
Wada, Ryoichi; Tsuchiya, Mitsuharu; Senoo, Takanori; and Odagi, Kanji, 4,451,919, Cl. 371-38.000.
Seppo, Seppanen. Flow-operated measuring apparatus. 4,450,726, Cl. 73-861.350.
Sergeev, Evgeny A.: *See—*
Shibanov, Dmitry A.; Onufriev, Inokenty A.; Khristov, Vladimir A.; and Sergeev, Evgeny A., 4,450,888, Cl. 164-183.000.
Settanni, Richard: *See—*
St. Jean, Herbert N.; and Settanni, Richard, 4,451,734, Cl. 250-342.000.
Setzer, Herbert J.; Bett, John A. S.; and Lesieur, Roger R., to United Technologies Corporation. Iron oxide catalyst for steam reforming. 4,451,578, Cl. 502-303.000.
Seven, Regnell, to Mercado Rehabilitering AB. Seat for a chair for persons having hip and/or leg stiffness. 4,451,086, Cl. 297-312.000.
Seyler, Jay K.: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,451,395, Cl. 260-112.50T.
Shadwick, Jan: *See—*
Odle, Herbert A.; Green, John D.; and Shadwick, Jan, 4,451,875, Cl. 362-297.000.
Shah, Jayantkumar R.: *See—*
Brightman, Barrie; Ellis, Thomas E.; Jones, James E.; Lenk, Pedro A.; Shah, Jayantkumar R.; Stewart, William H.; and Woodward, John W., 4,451,702, Cl. 179-18.0ES.
Shaklee, Kerry L.: *See—*
Whetstone, Albert L.; and Shaklee, Kerry L., 4,451,698, Cl. 178-19.000.
Shanley, Robert L., II, to RCA Corporation. Picture control for television receiver on-screen display. 4,451,840, Cl. 358-22.000.
Shapiro, Jay B.; and Bank, Willaim. Sign letter structure. 4,450,640, Cl. 40-596.000.
Sharp, John D., to Nalco Chemical Company. Multi-functional hypobromide precursors. 4,451,376, Cl. 210-701.000.
Sharp Kabushiki Kaisha: *See—*
Kishi, Kohhei; Kato, Hiroaki; Matsuura, Masataka; and Wada, Tomio, 4,451,554, Cl. 430-313.000.
Tanimoto, Akira, 4,450,743, Cl. 84-1.030.
Sharpe, Verlos G.; and Beers, David G., to Magic Chef, Inc. Apparatus for making frozen food products. 4,450,692, Cl. 62-233.000.
Shatterproof Glass Corporation: *See—*
McKelvey, Harold E., 4,451,321, Cl. 156-382.000.
Shaubach, Robert M.; Eastman, George Y.; and Roehm, Vincent P., to Thermacore, Inc. Diaphragm vapor pump. 4,451,210, Cl. 417-52.000.
Shaw, Timothy P.; and Wechter, Abraham J., to Norlin Industries, Inc. Solid body guitar with sealed cavity. 4,450,748, Cl. 84-291.000.
Shell Oil Company: *See—*
Brownscombe, Thomas F.; and Willis, Carl L., 4,451,633, Cl. 526-348.600.
Cagen, Stuart Z., 4,451,482, Cl. 424-284.000.
Horne, Charles A.; Salvo, Stephen A.; Sundelin, Kurt G. R.; and Roman, Steven A., 4,451,466, Cl. 424-251.000.
Shelstad, Richard J. Gantry washing device for tractor-trailer trucks. 4,450,600, Cl. 15-53.00A.
Shepherd, Charles G., to J. A. Wilson Display Ltd. Display panels. 4,450,970, Cl. 211-189.000.
Shepherd, Larry M. Felling wedge. 4,451,024, Cl. 254-104.000.
Shepherd, William L., to Hughes Tool Company. Spaced button thrust surface for earth boring bit. 4,451,162, Cl. 384-95.000.
Sheppard, Patrick J., executor: *See—*
Clabby, Merlyn L., deceased; and Sheppard, Patrick J., executor, 4,450,980, Cl. 221-281.000.
Sherk, Fred T.: *See—*
Edmonds, James T., Jr.; and Sherk, Fred T., 4,451,643, Cl. 528-387.000.
Sherman, James F.: *See—*
Koivunen, Erkki A.; and Sherman, James F., 4,450,735, Cl. 74-781.00R.
Shibanov, Dmitry A.; Onufriev, Inokenty A.; Khristov, Vladimir A.; and Sergeev, Evgeny A., to NPO "Viilitmash". Moulding plant. 4,450,888, Cl. 164-183.000.
Shibayama, Kimio: *See—*
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,451,348, Cl. 204-290.00R.
Shibuta, Osamu; Hasegawa, Tetuo; and Ogawa, Jun, to Otsuka Chemical Co., Ltd. Process for preparing condensed polyalkoxyphosphazene. 4,451,410, Cl. 260-973.000.
Shidlovsky, Anatoly K.; Taranov, Sergei G.; Braiko, Voldmir V.; Grinberg, Isaak P.; Tesik, Jury F.; and Karasinsky, Oleg L., to Institut Elektrodinamiki Akademii Nauk Ukrainskoi SSR. Method of detecting symmetrical components of supply-line three-phase voltage and device for carrying out same. 4,451,783, Cl. 324-86.000.
Shigaraki, Ginichi: *See—*
Hanaoka, Tadashi; Umezu, Hiroaki; and Shigaraki, Ginichi, 4,450,659, Cl. 52-167.000.
Shigemasa, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Process control apparatus. 4,451,878, Cl. 364-151.000.
Shiiki, Zenya; and Kawakami, Yukichika, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing aromatic sulfide polymer. 4,451,640, Cl. 528-265.000.
Shikatani, Yutaka: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mituji, 4,451,688, Cl. 585-524.000.
Shimizu, Hiroshi: *See—*
Kobayashi, Setsuo; Beppu, Kazuo; Shimizu, Hiroshi; Ogawa, Satoshi; and Kotani, Ryotaro, 4,451,569, Cl. 435-188.000.
Shimizu, Seiichi, to Canon Kabushiki Kaisha. Interchangeable camera lens assembly. 4,451,131, Cl. 354-286.000.
Shimizu, Shinji: *See—*
Sugiura, June; Kosa, Yasunobu; Komori, Kazuhiro; Uchida, Ken; and Shimizu, Shinji, 4,451,904, Cl. 365-182.000.
Shimizu, Yasuo: *See—*
Enomoto, Michitoshi; and Shimizu, Yasuo, 4,450,886, Cl. 164-75.000.
Shimoyashiki, Nobuyoshi: *See—*
Akiyama, Hiroyuki; Hatakeyama, Hidewo; Shimoyashiki, Nobuyoshi; Momose, Yoshiaki; and Imai, Fusao, 4,451,417, Cl. 264-53.000.
Shinagawa Shirorenga Kabushiki Kaisha: *See—*
Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, 4,451,350, Cl. 204-422.000.
Shindaiwa Kogyo Co., Ltd.: *See—*
Morimoto, Hiroyuki, 4,450,627, Cl. 30-391.000.
Shinoda, Akira: *See—*
Takefuta, Hideyasu; and Shinoda, Akira, 4,450,942, Cl. 192-48.900.
Shinoda, Yoshio: *See—*
Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, 4,451,888, Cl. 364-426.000.
Shinoura, Osamu: *See—*
Isobe, Yukihiro; Tanaka, Kazushi; Niahimatsu, Masaharu; Shinoura, Osamu; and Kubota, Yuichi, 4,451,531, Cl. 428-329.000.
Shipley, Randall S.; and Birkelbach, Donald F., to Dow Chemical Company, The. Process for polymerizing alpha-olefins. 4,451,626, Cl. 526-122.000.
Shiroshita, Masao: *See—*
Sanemitsu, Yuzuru; Shiroshita, Masao; Hashimoto, Shunichi; Katoh, Haruhiko; and Matsumoto, Hiroshi, 4,451,283, Cl. 71-93.000.
Shoji, Fusaji: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitumasa, 4,451,551, Cl. 430-270.000.
Shu, Winston R.; and Hartman, Kathy J., to Mobil Oil Corporation. Viscous oil recovery method. 4,450,911, Cl. 166-263.000.
Shubb, Richard. Electric pickup device for a musical instrument such as a banjo. 4,450,744, Cl. 84-1.160.
Shultz, Andrew: *See—*
Watanabe, Henry; and Shultz, Andrew, 4,451,393, Cl. 252-536.000.
Shwayder, Warren M. Sweeper drag shoe. 4,450,601, Cl. 15-246.000.
Shwayder, Warren M. Level adjustable skid shoe for plow blades. 4,450,635, Cl. 37-271.000.
Sianesi, Dario; Pasetti, Adolfo; and Belardinelli, Giorgio, to Montedison, S.p.A. High molecular weight polymeric perfluorinated copolyethers and process for their preparation from tetrafluoroethylene. 4,451,646, Cl. 528-401.000.
Sieber, Willi, to Edak AG. Portable protective housing for sensitive apparatus such as electrical and electronic equipment. 4,450,963, Cl. 206-521.000.

Siecor Corporation: *See—*
Bedrosian, Elliot P., 4,451,013, Cl. 242-118.400.
Siemens Aktiengesellschaft: *See—*
Auinger, Herbert, 4,451,751, Cl. 310-184.000.
Franz, Dietmar; and Torggler, Norbert, 4,451,697, Cl. 178-3.000.
Grage, Ludger; and Ryseck, Werner, 4,451,146, Cl. 356-5.000.
Heynisch, Hinrich, 4,451,759, Cl. 313-495.000.
Kopp, Walter; and Saalmueller, Karl-Heinz, 4,451,133, Cl. 355-3.0DD.
Lorenz, Dieter, 4,451,716, Cl. 200-67.00A.
Opitz, Heinrich; Montag, Bernhard; Urban, Gerd; and Turk, Wilfried, 4,450,896, Cl. 165-1.000.
Schonwald, Siegfried, 4,451,211, Cl. 417-271.000.
Sommer, Alfons, 4,450,959, Cl. 206-332.000.
Vangaever, Frank; Vanhumbeeck, Jacky; Danneels, Laurent; Boone, Luc; and Demaegd, Luc, 4,451,336, Cl. 204-47.000.
Siemens Gammasonics, Inc.: *See—*
Engelmohr, Gustav O., 4,450,706, Cl. 72-385.000.
Sigman, Warren R.: *See—*
Stalcup, Robert K.; Sigman, Warren R.; and Prewo, Karl M., 4,451,118, Cl. 350-310.000.
Sijben, Johannes L. H.: *See—*
Bos, Johannes G. G.; Pollaert, Hendricus J. P. M.; and Sijben, Johannes L. H., 4,450,674, Cl. 57-6.000.
Silverman, Jerry E.; Frost, John R.; Hegedus, Elizabeth; and Glicksman, Martin, to General Foods Corporation. High quality, reduced-calorie cake containing cellulose and process thereof. 4,451,490, Cl. 426-553.000.
Silvestrini, Bruno; and Baiocchi, Leandro, to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A. Bendazac treatment of cataract. 4,451,477, Cl. 424-273.00N.
Simard, Julien, to Hydro-Quebec. Ultrasonic position monitor for HV disconnect switch. 4,451,910, Cl. 367-199.000.
Simmering-Graz-Pauker Aktiengesellschaft: *See—*
Raggam, Augustin; and Rabitsch, Hermann, 4,451,331, Cl. 162-18.000.
Simmons Universal Corporation: *See—*
Seeley, Wayne C., 4,451,084, Cl. 297-353.000.
Simon, Lionel N.; Mueller, Hans-Rudolf; and Zutter, Hans, to Newport Pharmaceuticals International, Inc. Imidazole compounds. 4,451,478, Cl. 424-273.00R.
Simonson, Peter: *See—*
Lachenmeier, Kurt; and Simonson, Peter, 4,451,233, Cl. 432-224.000.
Simson, Dionizy; and Walch, Hansjorg, to Sulzer Brothers Ltd. Control device for the nozzles of a jet insertion power loom. 4,450,875, Cl. 139-435.000.
Sinclair, Bernard J.; and Mauro, Dominic R. Batting practice device. 4,451,036, Cl. 273-26.00R.
Singer Company, The: *See—*
Minnich, George E.; and Applegate, Clark L., 4,451,769, Cl. 318-689.000.
Warner, Richard C.; and Laughon, Thomas C., 4,451,865, Cl. 361-23.000.
Singh, Baldev; and Lesher, George Y., to Sterling Drug Inc. Selected 6-alkyl-and 4,6-dialkyl-2(1H)-pyridinones as cardiotonics. 4,451,469, Cl. 424-263.000.
Sinko, Katalin: *See—*
Nador, Karoly; Kraiss, Gabor; Sinko, Katalin; Paroczai, Margit; Karpati, Egon; and Szporny, Laszlo, 4,451,473, Cl. 424-256.000.
Skala, Karel, to BBC Brown, Boveri & Company, Limited. Device for determining the power output of a turbo-group during disturbances in the electricity supply network. 4,451,740, Cl. 290-40.00C.
SKF Kugellagerfabriken GmbH: *See—*
von Ronai-Horvath, Michael; Schoenung, Bernhard; and Seebo, Kurt, 4,450,677, Cl. 57-81.000.
Winkler, Ottmar; and Pfaller, Egon, 4,451,215, Cl. 418-23.000.
Skidmore, Donald D. Data-terminal service outlet. 4,451,108, Cl. 339-177.00R.
Skopal, Judit: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.
Sliwkowski, Joseph, to Telesis Corporation of Delaware, Inc. Interactive computer aided design system. 4,451,895, Cl. 364-521.000.
Small, Tony M.: *See—*
Clark, James M.; and Small, Tony M., 4,450,907, Cl. 166-223.000.
Smarte Carte, Inc.: *See—*
Mueliner, James M., 4,450,968, Cl. 211-17.000.
Smeggil, John G.; Bornstein, Norman S.; and Brown, Clyde O., to United Technologies Corporation. High temperature coatings by surface melting. 4,451,299, Cl. 148-1.000.
Smisson, Bernard, to Hydro Research and Development (UK) Ltd. Separator. 4,451,366, Cl. 210-209.000.
Smith, Barry L.; and Petit, William A., to General Signal Corporation. Non contact isolated current detector. 4,451,018, Cl. 246-122.00R.
Smith International, Inc.: *See—*
Herd, David P.; and Gibson, Duane E., 4,451,047, Cl. 277-26.000.
Smith Investment Company: *See—*
Melone, Robert R., 4,451,069, Cl. 285-86.000.
Smith, Kenneth C. A., to National Research Development Corporation. Microcircuit fabrication. 4,451,738, Cl. 250-492.200.
Smith and Nephew Associated Companies Ltd.: *See—*
Howes, John G. B., 4,451,624, Cl. 526-292.200.
Smith, Nicholas K.: *See—*
Burke, Edmund T.; Gorman, Patrick H., II; Henderson, James A., Jr.; and Smith, Nicholas K., 4,451,705, Cl. 179-27.00D.
Smith, Robert F., Jr.: *See—*
Neuroth, David H.; and Smith, Robert F., Jr., 4,451,305, Cl. 156-49.000.
Smith, Ryan M.; and Stoller, David A., Sr., to Portec, Inc. Coil car with shiftable trough assemblies. 4,451,188, Cl. 410-42.000.
Smith, Stephen L.: *See—*
Honda, Keith T.; Smith, Stephen L.; and Voyer, Peter E., 4,451,205, Cl. 416-219.00R.
Smithkline-Rit: *See—*
Vandevelde, Jean; and De Neys, Robert, 4,451,446, Cl. 424-92.000.
Smotone, Marvin: *See—*
Greenhaw, Cleo; and Smotone, Marvin, 4,451,168, Cl. 400-623.000.
Snyder Industries, Inc.: *See—*
Snyder, Larry L.; and Florer, Richard, 4,450,976, Cl. 220-343.000.
Snyder, James L.: *See—*
Ryan, Bobby W.; Rye, Rufus A.; and Snyder, James L., 4,450,613, Cl. 29-157.00T.
Snyder, Larry L.; and Florer, Richard, to Snyder Industries, Inc. Wheeled molded container with hinged lid. 4,450,976, Cl. 220-343.000.
Snyder, Steven A., to Coachmen Industries, Inc. Running board construction. 4,451,063, Cl. 280-163.000.
Societe Anonyme de Telecommunications: *See—*
Lefaucheux, Jean-Louis J. R.; Martin, Claude; and Mokrani, Edmond E. A., 4,450,716, Cl. 73-146.500.
Societe Anonyme dite: Compagnie Maritime d'Expertises S.A.: *See—*
Gres, Jean-Pierre; and Icard, Jean-Pierre G., 4,451,723, Cl. 219-98.000.
Societe Chimique des Charbonnages S.A.: *See—*
Decroix, Jean C., 4,451,598, Cl. 524-69.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Philippe, Jean-Jacques; and Lyothier, Robert M., 4,451,206, Cl. 416-228.000.
Verse, Bernard P.; Geoffroy, Alain Y.; and Gentet, Pierre, 4,451,822, Cl. 340-642.000.
Societe pour l'Etude et la Fabrication de Circuits Integres Speciaux - E.F.C.I.S.: *See—*
Dubois, Guy, 4,451,328, Cl. 156-656.000.
Societe Suisee pour l'Industrie Horlogere Management Services, S.A.: *See—*
Lauterburg, Rainer; and Geiger, Hans, 4,451,719, Cl. 200-159.00R.
Sodini, Gregory L., to International Telephone and Telegraph Corporation. Electronic lamp control apparatus. 4,451,763, Cl. 315-159.000.
Soejima, Toshiyuki: *See—*
Kitamura, Minoru; Soejima, Toshiyuki; Hayashi, Tsutomu; Matsui, Hideo; and Fujisawa, Shigenori, 4,451,293, Cl. 75-257.000.
Sofranko, John A.; and Gaffney, Anne M., to Atlantic Richfield Company. Synthesis of oxalate esters by the oxidative carbonylation of alcohols with a heterogeneous manganese promoted Pd-V-P catalyst. 4,451,666, Cl. 560-204.000.
SOLVAY & Cie: *See—*
Branchadell, Jose , 4,451,426, Cl. 264-535.000.
Sommer, Alfons, to Siemens Aktiengesellschaft. Packaging for electrical components. 4,450,959, Cl. 206-332.000.
Sony Corporation: *See—*
Hoshimi, Susumu; and Kojima, Tadashi, 4,451,920, Cl. 371-40.000.
Ichikawa, Iwao; and Kaimori, Kenichiro, 4,451,324, Cl. 156-562.000.
Odaka, Kentaro, 4,451,921, Cl. 371-48.000.
Okada, Takashi; and Tanaka, Yutaka, 4,451,848, Cl. 358-140.000.
Sato, Hiroki; Nakano, Takao; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,451,756, Cl. 313-422.000.
Yamada, Takaaki, 4,451,794, Cl. 328-134.000.
Yamazaki, Isao, 4,451,899, Cl. 364-900.000.
Sourirajan, Srinivasa: *See—*
Tweddle, Thomas A.; Thayer, William L.; Kutowy, Oleh; and Sourirajan, Srinivasa, 4,451,424, Cl. 264-216.000.
Southern Research Institute: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,451,650, Cl. 544-105.000.
Spelsberg, Hans-Hugo, to Felix Schoeller, Jr., GmbH & Co., KG. Filling for percolating filters for biological waste water purification. 4,451,362, Cl. 210-150.000.
Spence, Derek W. Waste disposal. 4,451,380, Cl. 210-739.000.
Spencer, Donald B. Methods and apparatus for enzymatically producing ethanol. 4,451,566, Cl. 435-162.000.
Spera, Vittorio, to Speral Aluminium Inc. Hand railing assembly. 4,451,025, Cl. 256-65.000.
Speral Aluminium Inc.: *See—*
Spera, Vittorio, 4,451,025, Cl. 256-65.000.
Speranza, George P.; Cuscurida, Michael; and Peterson, Bruce W., to Texaco Inc. High load bearing polyurethane foams made from mixed initiator polyether polyols. 4,451,588, Cl. 521-175.000.
Sperrazza, Joseph; Liu, James C. C.; and Bakes, Wilfred E., to United States of America, Army. Method for dispersing or arresting lava flow. 4,451,178, Cl. 405-258.000.
Sperry Corporation: *See—*
Ostergren, William F.; and Ipnar, Albert J., 4,451,004, Cl. 239-658.000.
Stangel, John J.; Herper, John C.; and Rothenberg, Carl, 4,451,831, Cl. 343-374.000.

Sphere Investments Limited: *See—*
Vescovi, Valentino F.; and Richards, Arthur W., 4,451,812, Cl. 336-84.00C.
Spiess, Karl: *See—*
Schaeffler, Georg; Spiess, Karl; Heyne, Jurgen E.; and Krost, Manfred, 4,450,704, Cl. 72-356.000.
Spilgies, Gunter: *See—*
Reinehr, Ulrich; Herbertz, Toni; and Spilgies, Gunter, 4,451,423, Cl. 264-182.000.
Spongr, Jerry J.; and Sawyer, Byron E., to Twin City International, Inc. Apparatus for measuring thickness of coating on continuously moving material. 4,451,732, Cl. 250-308.000.
Spriet, Roger A.: *See—*
Pollet, Robert J.; Vandenberghe, Antoon L.; and Spriet, Roger A., 4,451,555, Cl. 430-445.000.
Sprouse, James H., to Standard Concrete Materials, Inc. Cements, mortars and concretes. 4,451,295, Cl. 106-89.000.
Srinivasan, Rangaswamy: *See—*
Blum, Samuel E.; Brown, Karen H.; and Srinivasan, Rangaswamy, 4,451,503, Cl. 427-53.100.
Stadler, Istvan: *See—*
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, 4,451,483, Cl. 424-285.000.
Stahly, G. Patrick, to Ethyl Corporation. Process for producing substituted pyrroles. 4,451,658, Cl. 548-562.000.
Stahnke, Wayne L. Method and apparatus for recording and reproducing pedalling effects in a piano performance. 4,450,749, Cl. 84-462.000.
Stalcup, Robert K.; Sigman, Warren R.; and Prewo, Karl M., to United Technologies Corporation. Composite laser mirror. 4,451,118, Cl. 350-310.000.
Stamicarbon B.V.: *See—*
Janssen, Norbert G. L. M., 4,450,901, Cl. 165-47.000.
Standard Concrete Materials, Inc.: *See—*
Sprouse, James H., 4,451,295, Cl. 106-89.000.
Standard Oil Company, The: *See—*
Bartoszek-Loza, Rosemary, 4,451,343, Cl. 204-158.00R.
Lemanski, Michael F.; and Kliewer, Wayne R., 4,451,579, Cl. 502-306.000.
Pesa, Frederick A.; and Haase, Thomas A., 4,451,407, Cl. 260-465.400.
Standard Oil Company (Indiana): *See—*
Nevitt, Thomas D.; and Jerome, Norman F., 4,451,685, Cl. 585-415.000.
Standlee, Arlie G.: *See—*
Pinnow, Douglas A.; Gentile, Anthony L.; Standlee, Arlie G.; and Timper, Arthur J., 4,451,116, Cl. 350-96.340.
Stangel, John J.; Herper, John C.; and Rothenberg, Carl, to Sperry Corporation. Circular array scanning network. 4,451,831, Cl. 343-374.000.
Stanistreet, Harold P.: *See—*
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,451,419, Cl. 264-164.000.
Stanley, Philip E.; Woods, William E.; Lemay, Richard A.; and Cushing, David E., to Honeywell Information Systems Inc. Bus sourcing and shifter control of a central processing unit. 4,451,883, Cl. 364-200.000.
Stanley Works, The: *See—*
Bies, Sylvester W.; Fazio, Martin V.; and Matyczyk, George, 4,450,961, Cl. 206-349.000.
Stansbury, Benjamin H., Jr., to Sanchez, Adon. Animal feeding apparatus. 4,450,790, Cl. 119-51.120.
Stape, Frank R. Chimney obstruction detection apparatus. 4,451,120, Cl. 350-319.000.
Starkstrom Gummersbach GmbH: *See—*
Ludwig, Bernd, 4,451,720, Cl. 200-296.000.
Stauffer Chemical Company: *See—*
Teach, Eugene G., 4,451,280, Cl. 71-90.000.
Steibel, James P. Stand for fowl roasting. 4,450,759, Cl. 99-419.000.
Steiner, Hansruedi, to Widmer & Ernst AG. Fire grate for a combustion furnace. 4,450,952, Cl. 198-773.000.
Stenzel, Gerhard: *See—*
Kaule, Wittich; and Stenzel, Gerhard, 4,451,521, Cl. 428-199.000.
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,451,530, Cl. 428-323.000.
Stepan Chemical Company: *See—*
Watanabe, Henry; and Shultz, Andrew, 4,451,393, Cl. 252-536.000.
Stepanian, Michael R.: *See—*
Wang, Jerry C.; and Stepanian, Michael R., 4,451,612, Cl. 525-53.000.
Stephens, David E., to Hollis Engineering, Inc. Soldering apparatus exhaust system. 4,451,000, Cl. 228-20.000.
Sterling Drug Inc.: *See—*
Diana, Guy D., 4,451,476, Cl. 424-272.000.
Singh, Baldev; and Lesher, George Y., 4,451,469, Cl. 424-263.000.
Stevens Engineering, Inc.: *See—*
Coope, Robert L., 4,451,026, Cl. 269-24.000.
Stevens, Richard E.: *See—*
Alioa, Daniel; and Stevens, Richard E., 4,451,053, Cl. 280-47.260.
Stevenson, Robert L. Industrial furnace. 4,450,776, Cl. 110-233.000.
Stewart, Robert L.: *See—*
Kahn, Steven A.; Stewart, Robert L.; and Tolchin, Stephen G., 4,451,827, Cl. 340-825.520.
Stewart, William H.: *See—*
Brightman, Barrie; Ellis, Thomas E.; Jones, James E.; Lenk, Pedro A.; Shah, Jayantkumar R.; Stewart, William H.; and Woodward, John W., 4,451,702, Cl. 179-18.0ES.
Steyr-Daimler Puch Aktiengesellschaft: *See—*
Moser, Franz; and Visek, Tomas, 4,450,797, Cl. 123-78.00F.
Stiefel, Peter: *See—*
Engelsmann, Dieter; Lippl, Leo; Nicko, Reinhard; Stiefel, Peter; and Lermann, Peter, 4,451,011, Cl. 242-71.000.
Stites, Francis H., to GTE Products Corporation. Radio frequency transmitter coupling circuit. 4,451,832, Cl. 343-858.000.
Stith, William J.: *See—*
Geissler, Ulrich C.; Grode, Gerald A.; Stith, William J.; and Williams, Ronald A., 4,451,259, Cl. 604-408.000.
Stoller, David A., Sr.: *See—*
Smith, Ryan M.; and Stoller, David A., Sr., 4,451,188, Cl. 410-42.000.
Stolz, Silvano; and Huguenin, Raymond, to Dryan-Fordahl Technologies S.A. High frequency piezoelectric resonator. 4,451,754, Cl. 310-348.000.
Stone, Lyndon R.: *See—*
Callihan, Rudy B.; and Stone, Lyndon R., 4,450,912, Cl. 166-289.000.
Stork, Gilbert: *See—*
Evers, William J.; Stork, Gilbert; Mookherjee, Barja D.; and Heinsohn, Howard H., Jr., 4,451,392, Cl. 252-522.00R.
Striese, Jim G.; Iafret, John E.; and Batterson, William D., to TRW Inc.; and General Motors Corporation. Adjustable strike. 4,451,071, Cl. 292-341.180.
Strom, Hubert, to Interlake, Inc. Removable step for pallet rack. 4,450,936, Cl. 182-92.000.
Stromberg-Carlson Corporation: *See—*
Brightman, Barrie; Ellis, Thomas E.; Jones, James E.; Lenk, Pedro A.; Shah, Jayantkumar R.; Stewart, William H.; and Woodward, John W., 4,451,702, Cl. 179-18.0ES.
Brightman, Barrie; and Niertit, Frank, 4,451,703, Cl. 179-18.0FA.
Strozza, Peter: *See—*
Pandelena, Michael N.; and Strozza, Peter, 4,451,368, Cl. 210-238.000.
Struve, Alfred; Hill, Frank F.; and Schindler, Joachim, to Henkel KGaA. Transformation of sterols by fermentation. 4,451,564, Cl. 435-55.000.
Stucke, Walter; and Glissmann, Karl-Heinz, to Mannesmann AG. Jacketing steel tubes and pipes. 4,451,413, Cl. 264-26.000.
Stuckey, Clarence W., Jr.; and Meyers, Robert A., deceased (by Meyers, Carol Mae, executrix), to Lockheed Corporation. Circularly polarized antenna formed of a slotted cylindrical dipole. 4,451,829, Cl. 343-705.000.
Stuk, Gregory J.: *See—*
Frisch, Kurt C., Jr.; Lock, Michele R.; and Stuk, Gregory J., 4,451,627, Cl. 526-192.000.
Stull, Robert S.: *See—*
Bricker, Harry C., Jr.; Gutter, David H.; and Stull, Robert S., 4,451,099, Cl. 339-14.00R.
Stuntz, Gordon F., to Exxon Research and Engineering Co. Process for upgrading hydrocarbonaceous oils. 4,451,354, Cl. 208-56.000.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, to Ciba-Geigy Corporation. Sulfur-containing oxime compounds, processes for producing them, and their use for protecting cultivated plants. 4,451,279, Cl. 71-93.000.
Sublett, Bobby J.; and Hilbert, Samuel D., to Eastman Kodak Company. Radiation-resistant container material of poly(tetramethylene terephthalate). 4,451,641, Cl. 528-295.500.
Subramanyam, Vinayakam, to New England Nuclear Corporation. Cationic compounds useful for making radiodiagnostic agents. 4,451,450, Cl. 424-1.100.
Sueddeutsche Kuehlerfabrik, Julius Fr. Behr GmbH & Co. KG: *See—*
Hauser, Kurt, 4,451,202, Cl. 416-214.00R.
Sugahara, Yujiro; Naito, Hiroyuki; Takahashi, Akira; Hasegawa, Manshiro; and Tsuchida, Hisashi, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Process for preparation of granules of low-melting-point metals. 4,450,885, Cl. 164-47.000.
Sugi, Hidekuni: *See—*
Kanayama, Kenji; Sugi, Hidekuni; Kinkori, Shuzo; and Kawasumi, Kouzi, 4,451,749, Cl. 310-62.000.
Sugimoto, Toshihiko: *See—*
Kawazoe, Shiyouzou; Ueda, Zenichi; Sugimoto, Toshihiko; and Moriuchi, Takahiko, 4,451,525, Cl. 428-213.000.
Sugirua, Hiroaki: *See—*
Takada, Takuzo; Sugirua, Hiroaki; and Ilzuka, Takao, 4,450,878, Cl. 141-48.000.
Sugita, Hiroshi; Kawakatsu, Satoshi; and Kaneko, Yutaka, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic light-sensitive material. 4,451,558, Cl. 430-546.000.
Sugita, Hiroshi: *See—*
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,451,559, Cl. 430-552.000.
Sugiura, June; Kosa, Yasunobu; Komori, Kazuhiro; Uchida, Ken; and Shimizu, Shinji, to Hitachi, Ltd. Semiconductor memory device. 4,451,904, Cl. 365-182.000.
Sugiura, Noboru: *See—*
Nishimura, Yutaka; Ohyama, Yoshishige; and Sugiura, Noboru, 4,450,719, Cl. 73-204.000.
Sugiura, Toshio, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments having automatic ensemble function based on scale mode. 4,450,742, Cl. 84-1.030.

Sullivan, Barry: *See—*
Dvorak, Bolek, 4,451,322, Cl. 156-461.000.
Sulzer Brothers Limited: *See—*
Niederer, Peter G.; and Frey, Otto, 4,450,592, Cl. 3-1.912.
Simson, Dionizy; and Walch, Hansjorg, 4,450,875, Cl. 139-435.000.
Sumal, Jaihind S., to Robert Bosch GmbH. Method for measuring the flow of a medium. 4,450,715, Cl. 73-118.100.
Sumitomo Chemical Company, Limited: *See—*
Sanemitsu, Yuzuru; Shiroshita, Masao; Hashimoto, Shunichi; Katoh, Haruhiko; and Matsumoto, Hiroshi, 4,451,283, Cl. 71-93.000.
Sumitomo Electric Industries, Ltd.: *See—*
Sakamoto, Katsuji; and Saito, Yasunori, 4,450,676, Cl. 57-6.000.
Sato, Yasutoshi; and Ueno, Keiji, 4,450,871, Cl. 138-140.000.
Sumitomo Metal Industries, Ltd.: *See—*
Yamaguchi, Hisao; Fujisawa, Kazuo; Kadowaki, Takashi; Itoh, Susumu; Sasaki, Soji; and Sato, Ichiya, 4,450,725, Cl. 73-643.000.
Sumitomo Rubber Industries, Ltd.: *See—*
Arimatsu, Toshio, 4,450,713, Cl. 73-81.000.
Sumiyoshi, Masaharu; and Motosugi, Katsuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of an internal combustion engine. 4,450,793, Cl. 123-52.0MB.
Sumner, Mark: *See—*
Parsons, Jack L.; Vizine, Dan; Sumner, Mark; Marathe, Suresh; and Dubicki, Henryk, 4,451,648, Cl. 536-54.000.
Sundelin, Kurt G. R.: *See—*
Horne, Charles A.; Salvo, Stephen A.; Sundelin, Kurt G. R.; and Roman, Steven A., 4,451,466, Cl. 424-251.000.
Sussner, Heinrich: *See—*
Homola, Andrew M.; Lorenz, Max R.; and Sussner, Heinrich, 4,451,495, Cl. 427-27.000.
Suzuki, Fuminori; and Ichikawa, Singo, to Citizen Watch Company Limited. DC-to-DC Voltage converter. 4,451,743, Cl. 307-110.000.
Suzuki, Isao, to Nissan Motor Co., Ltd. Vehicle body. 4,450,926, Cl. 180-312.000.
Suzuki Kogyo Kabushiki Kaisha: *See—*
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, 4,450,803, Cl. 123-308.000.
Suzuki, Kouichi; and Mori, Kazuyuki, to Nissan Motor Company, Limited. Automatic speed control system for an automotive vehicle. 4,451,890, Cl. 364-426.000.
Suzuki, Yoshihisa: *See—*
Kawabata, Susumu; Niimi, Hiroshi; Anahara, Meiji; Suzuki, Yoshihisa; and Omori, Hiroshi, 4,450,678, Cl. 57-333.000.
Suzumura, Nobuyasu: *See—*
Harada, Kuniyoshi; Suzumura, Nobuyasu; and Fujie, Naofumi, 4,451,887, Cl. 364-424.000.
Svensson, Leif A.: *See—*
Olsson, O. A. Torsten; Svensson, Leif A.; and Wetterlin, Kjell I. L., 4,451,663, Cl. 560-29.000.
Swanson, Paul: *See—*
Cook, Milton L.; Keyser, William L.; Swanson, Paul; Zielke, Michael W.; and Zielinski, Walter J., 4,451,488, Cl. 426-89.000.
Sylven, Hans, to AB Stil-Industri. Device for vehicle safety belts. 4,451,060, Cl. 280-801.000.
Syntex (U.S.A.) Inc.: *See—*
Rogers, Burton L., 4,450,862, Cl. 137-595.000.
Szanati, Jules J. Conveyor lift. 4,450,951, Cl. 198-482.000.
Szantho, Charles F.; and Riordan, Edward D., to Joyal Products, Inc. Fusing machine. 4,451,722, Cl. 219-86.250.
Szekely, Istvan; Kekesi, Krisztina; Lovasz nee Gaspar, Mariann; Botar, Sandor; Hadhazy, Pal; Rakoczi, Istvan; Muszbek, Laszlo; Skopal, Judit; Stadler, Istvan; Horvath, Karoly; Kovacs, Gabor; and Kormoczy, Peter, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. 2,3,4-Trinor-m-inter-phenylene-prostaglandin derivatives and compositions and method for inhibiting blood platelet aggregation. 4,451,483, Cl. 424-285.000.
Szekely, Lajos: *See—*
Veisz, Gyorgy; David, Gabor; Koszeghy, Peter; and Szekely, Lajos, 4,451,804, Cl. 333-177.000.
Szporny, Laszlo: *See—*
Nador, Karoly; Kraiss, Gabor; Sinko, Katalin; Paroczai, Margit; Karpati, Egon; and Szporny, Laszlo, 4,451,473, Cl. 424-256.000.
T.A.D. Avanti, Inc.: *See—*
Hanscom, Bradford E., 4,451,707, Cl. 179-84.00R.
T. A. Pelsue Company: *See—*
Beavers, Allan E., 4,450,851, Cl. 135-109.000.
Taguchi, Hiroaki: *See—*
Ogawa, Koji; Taguchi, Hiroaki; Tautsumi, Takao; Yasuda, Yoshinori; and Takase, Akio, 4,451,043, Cl. 273-186.00R.
Taguchi, Kiyomi; Hanmyo, Masayuki; and Ishikawa, Masaru, to Nippon Kokan Kabushiki Kaisha. Method for horizontal type continuous casting. 4,450,894, Cl. 164-484.000.
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Yamashita, Seizi; and Takahashi, Noriyoshi, to Hitachi, Ltd. Stator of D.C. rotary machine. 4,451,752, Cl. 310-186.000.
Tai, Loui H. T., to Lever Brothers Company. Suds control agents and detergent compositions containing them. 4,451,387, Cl. 252-174.150.
Taira, Kazuo: *See—*
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,451,316, Cl. 156-274.600.
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,451,506, Cl. 427-239.000.
Takada, Juichiro. Belt transfer arrangement for a passive vehicle restraint belt system. 4,451,061, Cl. 280-802.000.
Takada, Kazuo; and Umeki, Shinji. Method for manufacturing magnetic recording medium. 4,451,502, Cl. 427-48.000.
Takada, Takuzo; Sugirua, Hiroaki; and Ilzuka, Takao, to Yoshino Kogyosho Co., Ltd. Apparatus for filling a high temperature liquid into a biaxially oriented, saturated polyester bottle, a device for cooling said bottle. 4,450,878, Cl. 141-48.000.
Takagi, Kenji: *See—*
Yamashita, Hiromichi; Watari, Yoshiharu; Mutsuro, Hideaki; and Takagi, Kenji, 4,451,175, Cl. 405-50.000.
Takagi, Masao: *See—*
Hirata, Kazuo; and Takagi, Masao, 4,450,927, Cl. 180-330.000.
Takagi, Shigeru: *See—*
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,681, Cl. 60-286.000.
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,682, Cl. 60-286.000.
Takagi, Tadao; and Okabe, Nobuo, to Nippon Kogaku K.K. Automatic focusing device and lens motor control. 4,451,729, Cl. 250-204.000.
Takagi, Toshinori: *See—*
Morimoto, Kiyoshi; Takagi, Toshinori; and Watanabe, Hiroshi, 4,451,499, Cl. 427-38.000.
Takahashi, Akira: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takahashi, Akira; Hasegawa, Manshiro; and Tsuchida, Hisashi, 4,450,885, Cl. 164-47.000.
Takahashi, Kazushi: *See—*
Miura, Nobuhiro; and Takahashi, Kazushi, 4,450,806, Cl. 123-401.000.
Takahashi, Masaaki: *See—*
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,451,674, Cl. 568-639.000.
Takahashi, Masanori: *See—*
Kawahara, Fumio; Takahashi, Masanori; and Kumagai, Katsuyoshi, 4,451,609, Cl. 524-708.000.
Takahashi, Noriyoshi: *See—*
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Yamashita, Seizi; and Takahashi, Noriyoshi, 4,451,752, Cl. 310-186.000.
Takahashi, Seiichi: *See—*
Iijima, Tetsuya; and Takahashi, Seiichi, 4,450,897, Cl. 165-2.000.
Takahashi, Susumu: *See—*
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,451,506, Cl. 427-239.000.
Takahashi, Tomoyuki, to Kabushiki Kaisha Komatsu Seisakusho. Operator's cab in a construction vehicle. 4,451,079, Cl. 296-190.000.
Takai, Kouji: *See—*
Harada, Yutaka; and Takai, Kouji, 4,451,196, Cl. 414-733.000.
Takano, Yoshiya; and Hoshi, Yoshikazu, to Hitachi, Ltd. Distribution type fuel injection pump. 4,450,813, Cl. 123-450.000.
Takase, Akio: *See—*
Ogawa, Koji; Taguchi, Hiroaki; Tsutsumi, Takao; Yasuda, Yoshinori; and Takase, Akio, 4,451,043, Cl. 273-186.00R.
Takase, Ichiro: *See—*
Yasuda, Naohiko; Okutsu, Masaru; Iwagami, Hisao; Nakamiya, Teruaki; and Takase, Ichiro, 4,451,399, Cl. 260-239.100.
Takaya, Katsuhiko: *See—*
Ikegami, Tadashi; Takaya, Katsuhiko; and Yoneda, Haruyuki, 4,451,573, Cl. 502-113.000.
Takeda Chemical Industries, Ltd.: *See—*
Keshi, Akizo; and Kodama, Katsuhisa, 4,451,587, Cl. 521-171.000.
Takeda, Kenji: *See—*
Ito, Seitoku; Takeda, Kenji; Inagaki, Mitsuo; and Motoda, Nobuo, 4,451,220, Cl. 418-255.000.
Takeda Riken Kogyo Kabushiki Kaisha: *See—*
Ashida, Hitoshi, 4,451,782, Cl. 324-77.00C.
Takefuta, Hideyasu; and Shinoda, Akira, to Diesel Kiki Company, Ltd. Variable speed rotary torque transmission device. 4,450,942, Cl. 192-48.900.
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, to Nippondenso Co., Ltd. Electrically operated fuel pump device having a regenerative component. 4,451,213, Cl. 417-366.000.
Takemae, Yoshihiro; Nozaki, Shigeki; Kabashima, Katsuhiko; Enomoto, Seiji; and Mezawa, Tsutomu, to Fujitsu Limited. Address Buffer. 4,451,908, Cl. 365-222.000.
Takenaka, Yuji; and Yoshikawa, Sumio, to Fuji Photo Film Co., Ltd. Method of and apparatus for detecting initial position of easel and lens in photographic apparatus. 4,451,142, Cl. 355-55.000.
Takesako, Yoshinobu: *See—*
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, 4,451,758, Cl. 313-495.000.
Taketoshi, Kazuhisa; and Ogusu, Chihaya, to Nippon Hoso Kyokai. Method of manufacturing a TV camera tube. 4,451,241, Cl. 445-33.000.
Takeuchi, Yukihisa: *See—*
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,681, Cl. 60-286.000.
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,682, Cl. 60-286.000.
Takimoto, Toshiyuki; and Yaegashi, Takehisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the fuel injection amount of an internal combustion engine. 4,450,816, Cl. 123-492.000.

Talbourdet, John A.: *See—*
Green, Kenneth E.; and Talbourdet, John A., 4,450,693, Cl. 62-514.00R.

Tamamushi, Masahiro, to Nissan Motor Co., Ltd. Anchoring structure for a self-standing seat belt unit. 4,451,087, Cl. 297-468.000.

Tamuro, Yasuharu: *See—*
Hattori, Motonobu; Tamuro, Yasuharu; Ishibashi, Akira; and Nandoh, Kenji, 4,451,112, Cl. 318-778.000.

Tanaka, Hiroyuki: *See—*
Fukuoka, Takashi; Nagao, Yoshiaki; and Tanaka, Hiroyuki, 4,450,933, Cl. 181-229.000.

Tanaka, Kazushi: *See—*
Isobe, Yukihiro; Tanaka, Kazushi; Nishimatsu, Masaharu; Shinoura, Osamu; and Kubota, Yuichi, 4,451,531, Cl. 428-329.000.

Tanaka, Kyoichi; Kanome, Shinji; Nakajima, Tatsutoshi; Nakada, Kazuhiko; and Toyoshima, Nobuyuki, to Toyo Contact Lens Co., Ltd. Contact lens and process for preparing the same. 4,451,629, Cl. 526-238.230.

Tanaka, Masaaki: *See—*
Ando, Ken; Tanaka, Masaaki; and Kawagoe, Michio, 4,450,824, Cl. 123-569.000.

Tanaka, Minoru: *See—*
Terahara, Akira; and Tanaka, Minoru, 4,451,481, Cl. 424-279.000.

Tanaka, Mitsunori, to Seiko Instruments & Electronics Ltd. Electronic watch. 4,451,159, Cl. 368-69.000.

Tanaka, Sakae: *See—*
Sato, Hiroki; Nakano, Takao; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,451,756, Cl. 313-422.000.

Tanaka, Takeshi: *See—*
Sekiguchi, Kiyonori; Igashira, Toshihiko; Tanaka, Takeshi; and Kawai, Hisasi, 4,450,825, Cl. 123-569.000.

Tanaka, Yutaka: *See—*
Okada, Takashi; and Tanaka, Yutaka, 4,451,848, Cl. 358-140.000.

Tanimoto, Akira, to Sharp Kabushiki Kaisha. Electronic musical instrument with musical information input means. 4,450,743, Cl. 84-1.030.

Tanino, Mikio, to Nissan Motor Company, Limited. Air conditioner for automotive vehicle. 4,450,898, Cl. 165-25.000.

Tanioka, Hiroshi; Ishida, Masato; and Inuzuka, Tsuneki, to Canon Kabushiki Kaisha. Feed control for copying apparatus. 4,451,136, Cl. 355-14.0SH.

Tanner, David P., to Atlantic Richfield Company. High hydrogen amorphous silicon. 4,451,538, Cl. 428-447.000.

Tanner, Nathan S.: *See—*
Hogg, Grady R., Jr.; and Tanner, Nathan S., 4,451,926, Cl. 373-93.000.

Tanoff, Michael A.: *See—*
de Mena, Henry F.; and Tanoff, Michael A., 4,451,003, Cl. 236-14.000.

Taranov, Sergei G.: *See—*
Shidlovsky, Anatoly K.; Taranov, Sergei G.; Braiko, Voldmir V.; Grinberg, Isaak P.; Tesik, Jury F.; and Karasinsky, Oleg L., 4,451,783, Cl. 324-86.000.

Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L. Dental prosthesis and method for making same. 4,451,236, Cl. 433-207.000.

Tardy, Maurice, to Bennes Marrel. Hydraulic power slide valve, especially designed for public work equipment. 4,450,865, Cl. 137-625.600.

Tavss, Edward A.; Eigen, Edward; and Clark, Kenneth F., to Colgate-Palmolive Company. Agent for reducing detergent irritation to skin and eyes. 4,451,385, Cl. 252-132.000.

Taylor, John H., to Dectron Inc. Frost detecting device. 4,450,691, Cl. 62-140.000.

Taylor, Michael G. C.; and Buerman, Marc H. L., to GTE Atea NV. Precisely stabilized piezoelectric receiver. 4,451,710, Cl. 179-110.00A.

Teach, Eugene G., to Stauffer Chemical Company. Dithiane and dithiolane herbicide antidotes. 4,451,280, Cl. 71-90.000.

Technigaz: *See—*
Claude, Jean, 4,450,711, Cl. 73-40.50R.

Tecl, Bohuslav; Fahrbach, Erich; Knoke, Jurgen; and Assent, Hans C., to Carl Freudenberg, Firma. Spot bonded pattern for non-woven fabrics. 4,451,520, Cl. 428-198.000.

Tecl, Bohuslav: *See—*
Knoke, Jurgen; Jost, Manfred; Tecl, Bohuslav; and Fahrbach, Erich, 4,451,314, Cl. 156-148.000.

Teeter, Dennis P.; and Ford, Brian R., to Xerox Corporation. Document storage chamber for coupling asynchronously operated document feeding devices. 4,451,030, Cl. 271-265.000.

Teijin Limited: *See—*
Yamashita, Hiromichi; Watari, Yoshiharu; Mutsuro, Hideaki; and Takagi, Kenji, 4,451,175, Cl. 405-50.000.

Teledyne Industries, Inc.: *See—*
Moore, James C., 4,450,867, Cl. 137-625.440.

Teledyne Republic Manufacturing: *See—*
Acker, Richard C., 4,450,869, Cl. 137-625.480.

Telenkov, Vyacheslav V.: *See—*
Dshkhunian, Valery L.; Ivanov, Eduard E.; Kovalenko, Sergei S.; Mashevich, Pavel R.; Ryzhov, Alexei A.; Telenkov, Vyacheslav V.; and Chicherin, Jury E., 4,451,882, Cl. 364-200.000.

Telesis Corporation of Delaware, Inc.: *See—*
Sliwkowski, Joseph, 4,451,895, Cl. 364-521.000.

Tellier, Pierre: *See—*
Bourson, Lucien; Delavarenne, Serge; and Tellier, Pierre, 4,451,333, Cl. 162-77.000.

Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., to Southern Research Institute. Pyrido[4,3-b][1,4]oxazines and pyrido[4,3-b][1,4]thiazines. 4,451,650, Cl. 544-105.000.

Terachi, Junichi: *See—*
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,451,718, Cl. 200-147.00R.

Terada, Shoji, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for manufacture of foamed ceramic article. 4,451,415, Cl. 264-43.000.

Teradyne, Inc.: *See—*
Gillette, Garry C., 4,451,918, Cl. 371-27.000.

Terahara, Akira; and Tanaka, Minoru, to Sankyo Company Limited. M-4 And IsoM-4 derivatives and compositions containing them. 4,451,481, Cl. 424-279.000.

Terry, Malcolm E.: *See—*
D'Augustine, Frank T.; Terry, Malcolm E.; Welsh, Hugh F.; and Payne, Frank A., 4,451,243, Cl. 445-68.000.

Tesch, Rodney C.: *See—*
Donoghue, William J.; and Tesch, Rodney C., 4,451,907, Cl. 365-203.000.

Tesche, Rolf: *See—*
Oppitz, Peter; Schulze-Braucks, Manfred; and Tesche, Rolf, 4,451,263, Cl. 8-500.000.

Teshima, Koichi: *See—*
Matidori, Seika; Teshima, Koichi; and Sakai, Masato, 4,451,430, Cl. 420-492.000.

Teshima, Takanori: *See—*
Akita, Yoshio; Teshima, Takanori; Maruyama, Toshinori; and Torii, Koshi, 4,451,774, Cl. 320-64.000.

Tesik, Jury F.: *See—*
Shidlovsky, Anatoly K.; Taranov, Sergei G.; Braiko, Voldmir V.; Grinberg, Isaak P.; Tesik, Jury F.; and Karasinsky, Oleg L., 4,451,783, Cl. 324-86.000.

Teubner, Helwig; and Oppermann, Wilhelm, to Wolff Walsrode Aktiengesellschaft. Process for the production of hydroxypropyl starch. 4,451,649, Cl. 536-111.000.

Texaco Inc.: *See—*
Allen, Joseph C.; Gillespie, Robert E.; and Burnett, David B., 4,450,913, Cl. 166-303.000.
Knifton, John F.; Lin, Jiang-Jen; Grigsby, Robert A., Jr.; and Brader, Walter H., Jr., 4,451,679, Cl. 568-909.000.
Knifton, John F., 4,451,680, Cl. 568-909.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,451,668, Cl. 560-246.000.
Speranza, George P.; Cuscurida, Michael; and Peterson, Bruce W., 4,451,588, Cl. 521-175.000.

Texas Instruments Incorporated: *See—*
Barney, George M.; and Michaelis, Paul R., 4,450,843, Cl. 128-690.000.
Domogalla, John C., 4,451,821, Cl. 340-347.0AD.
Weber, Richard M.; and Bedenbender, John W., 4,450,928, Cl. 181-121.000.

Thayer, David J.; Krause, James J.; and Welk, John R., to Motorola, Inc. Color convergence data processing in a CRT color display station. 4,451,824, Cl. 340-720.000.

Thayer, Paul M., to Water Pollution Control Corp. Ring channel aeration apparatus and method. 4,451,373, Cl. 210-626.000.

Thayer, William L.: *See—*
Tweddle, Thomas A.; Thayer, William L.; Kutowy, Oleh; and Sourirajan, Srinivasa, 4,451,424, Cl. 264-216.000.

Thebault, Claude, to Kis France. Automatic device for the simultaneous printing and development of photographs. 4,451,141, Cl. 355-28.000.

Thedens, Kevin J.; and Roettgen, Leslie A., to Cummins Engine Company, Inc. Water pressure activated override for cylinder deactivator. 4,450,801, Cl. 123-198.00F.

Theodore, John J., to Minnesota Mining and Manufacturing Company. Solvent-based, one-part, filled polyurethane for flexible parts. 4,451,605, Cl. 524-423.000.

Thermacore, Inc.: *See—*
Shaubach, Robert M.; Eastman, George Y.; and Roehm, Vincent P., 4,451,210, Cl. 417-52.000.

Thermoforce Limited: *See—*
Cole, Albert, 4,450,687, Cl. 60-530.000.

Theurer, Josef; and Folser, Karl, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile ballast cleaning machine. 4,450,771, Cl. 104-1.00R.

Thevis, Paul, to Heckler & Koch GmbH. Fire limiter for automatic firearms with hammer blow detonation. 4,450,751, Cl. 89-129.00B.

Tholen, Antonius H. L.: *See—*
Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Tholen, Antonius H. L., 4,451,115, Cl. 350-96.180.

Thoma, Frank; Hoffmann, Karl-Heinz; and Burckhardt, Christoph, to Daimler-Benz Aktiengesellschaft. Hydraulic injection-adjusting device for high pressure injection installations in auto-igniting internal combustion engines. 4,450,818, Cl. 123-502.000.

Thomas Jefferson University: *See—*
Osterholm, Jewell L., 4,450,841, Cl. 128-632.000.
Osterholm, Jewell L., 4,451,251, Cl. 604-24.000.

Thompson, Linda F.: *See—*
Ryston, Ivor; Handley, Harold; Seegmiller, J. Edwin; and Thompson, Linda F., 4,451,570, Cl. 435-240.000.

Thompson, Thomas D., III, to Georgia Kaolin Company, Inc. Utilization of ion exchange resin in the processing of kaolins. 4,451,440, Cl. 423-112.000.

Thomson-CSF: *See—*
Huignard, Jean-Pierre, 4,451,151, Cl. 356-345.000.
Loiseaux, Brigitte; Huignard, Jean P.; Dubois, Jean C.; and Eranian, Armand, 4,451,412, Cl. 264-1.300.

Thum, Waldemar: *See—*
Vetter, Hellmuth; Scheibe, Peter; Thum, Waldemar; and Naher, Gotthilf, 4,451,487, Cl. 435-183.000.

Timko, Joseph M.: *See—*
Van Rheenen, Verlan H.; and Timko, Joseph M., 4,451,404, Cl. 260-397.450.

Timper, Arthur J.: *See—*
Pinnow, Douglas A.; Gentile, Anthony L.; Standlee, Arlie G.; and Timper, Arthur J., 4,451,116, Cl. 350-96.340.

Toennies, Peter: *See—*
Meyer-Kretschmer, Gustav; Jetter, Heinz; and Toennies, Peter, 4,451,437, Cl. 423-3.000.

Toeppen, Thurston. Closure for pressurized containers. 4,450,973, Cl. 215-329.000.

Tokai Electric Wire Company Limited: *See—*
Inoue, Nori, 4,451,109, Cl. 339-258.00S.

Tokico Ltd.: *See—*
Kikuchi, Akira; Sawano, Susumu; and Ito, Yoshimasa, 4,451,195, Cl. 414-732.000.

Tokyo Electric Co., Ltd.: *See—*
Honma, Takao; Matsukura, Nobuaki; Murakami, Keisuke; and Matsuda, Susumu, 4,451,167, Cl. 400-621.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Daigo, Junichi, 4,451,854, Cl. 358-282.000.
Harada, Yutaka; and Takai, Kouji, 4,451,196, Cl. 414-733.000.
Hiraki, Shunichi; Kikuchi, Kiyoshi; Yawata, Shigeo; and Miyagawa, Masafumi, 4,451,303, Cl. 148-187.000.
Hoshimi, Susumu; and Kojima, Tadashi, 4,451,920, Cl. 371-40.000.
Kamemoto, Kazuhiro, 4,451,850, Cl. 358-191.100.
Kawabuchi, Katsuhiro, 4,451,544, Cl. 430-5.000.
Komatsu, Shigeru; and Nakamura, Michio, 4,451,844, Cl. 357-59.000.
Matidori, Seika; Teshima, Koichi; and Sakai, Masato, 4,451,430, Cl. 420-492.000.
Murao, Yutaka, 4,451,897, Cl. 364-900.000.
Saito, Tamio, 4,451,835, Cl. 346-76.0PH.
Shigemasa, Takashi, 4,451,878, Cl. 364-151.000.

Tolchin, Stephen G.: *See—*
Kahn, Steven A.; Stewart, Robert L.; and Tolchin, Stephen G., 4,451,827, Cl. 340-825.520.

Tomita, Masahiro: *See—*
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,681, Cl. 60-286.000.
Sato, Susumu; Takeuchi, Yukihisa; Tomita, Masahiro; Kamiya, Shigeru; and Takagi, Shigeru, 4,450,682, Cl. 60-286.000.

Tomita, Masao: *See—*
Honjo, Masahiro; and Tomita, Masao, 4,451,860, Cl. 360-77.000.

Tomonaga, Atsushi: *See—*
Okuda, Kensuke; Nagai, Hirosi; Fujimaki, Hiroto; Tomonaga, Atsushi; and Aoki, Hideki, 4,451,235, Cl. 433-201.000.

Topol, George J.; and Trent, Chadwick L., to Monitek, Inc. Method for measuring the radiation transmitting properties of a fluid. 4,451,152, Cl. 356-440.000.

Toray Industries, Inc.: *See—*
Ohkubo, Tadahiko; Endo, Tetsuhiko; and Andoh, Akiwo, 4,451,007, Cl. 242-18.00R.

Toreson, James S.: *See—*
Gilovich, Paul A.; and Toreson, James S., 4,451,861, Cl. 360-84.000.

Torggler, Norbert: *See—*
Franz, Dietmar; and Torggler, Norbert, 4,451,697, Cl. 178-3.000.

Torii, Koshi: *See—*
Akita, Yoshio; Teshima, Takanori; Maruyama, Toshinori; and Torii, Koshi, 4,451,774, Cl. 320-64.000.

Torneng, Eyvin: *See—*
Hansen, Helge; Nystrom, Borje; and Torneng, Eyvin, 4,451,460, Cl. 424-238.000.

Torre, Giancarlo D., to Rockwell-Rimoldi S.p.A. Stacked fabric removal and re-locating device. 4,451,191, Cl. 414-118.000.

Tortell, Liliana. Needlework flower stitch. 4,450,782, Cl. 112-266.100.

Toshima, Shinobu: *See—*
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,451,348, Cl. 204-290.00R.

Toy, James W.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Kobayashi, Setsuo; Beppu, Kazuo; Shimizu, Hiroshi; Ogawa, Satoshi; and Kotani, Ryotaro, 4,451,569, Cl. 435-188.000.
Sekino, Masaaki; Fujita, Yoshiyuki; and Ukai, Tetsuo, 4,451,369, Cl. 210-321.100.

Toyo Contact Lens Co., Ltd.: *See—*
Tanaka, Kyoichi; Kanome, Shinji; Nakajima, Tatsutoshi; Nakada, Kazuhiko; and Toyoshima, Nobuyuki, 4,451,629, Cl. 526-238.230.

Toyo Seikan Kaisha, Ltd.: *See—*
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,451,316, Cl. 156-274.600.
Yazaki, Jinichi; Sakano, Kozaburo; and Matsuo, Junichi, 4,451,512, Cl. 428-36.000.

Toyo Seikan Kaisha Ltd: *See—*
Kobayashi, Seishichi; Mori, Tatsuo; Miyazawa, Tetsuo; Taira, Kazuo; Horiguchi, Makoto; and Takahashi, Susumu, 4,451,506, Cl. 427-239.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Yamakage, Tetsuro, 4,451,185, Cl. 408-2.000.

Toyoshima, Nobuyuki: *See—*
Tanaka, Kyoichi; Kanome, Shinji; Nakajima, Tatsutoshi; Nakada, Kazuhiko; and Toyoshima, Nobuyuki, 4,451,629, Cl. 526-238.230.

Toyota Jidosha Kabushiki Kaisha: *See—*
Ando, Ken; Tanaka, Masaaki; and Kawagoe, Michio, 4,450,824, Cl. 123-569.000.
Kinoshita, Takahiko; Kakeno, Nobuhiko; and Miura, Nobuhiro, 4,450,807, Cl. 123-403.000.
Miura, Nobuhiro; and Takahashi, Kazushi, 4,450,806, Cl. 123-401.000.
Onaka, Hidemi; and Uchitani, Nobuki, 4,450,809, Cl. 123-421.000.
Wada, Hiroki; and Ikuta, Yasuhiro, 4,450,810, Cl. 123-425.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Moriyama, Eiichi; and Kobayashi, Nobuyuki, 4,450,808, Cl. 123-417.000.
Sumiyoshi, Masaharu; and Motosugi, Katsuhiko, 4,450,793, Cl. 123-52.0MB.
Takimoto, Toshiyuki; and Yaegashi, Takehisa, 4,450,816, Cl. 123-492.000.

Traenckner, Hans-Joachim: *See—*
Frank, Walter; Bendszus, Otto; Meixner, Jurgen; Freier, Hans J.; and Traenckner, Hans-Joachim, 4,451,509, Cl. 427-54.100.

Trane Company, The: *See—*
Butt, Alan G., 4,450,903, Cl. 165-110.000.

Transue, James A., to Ethicon, Inc. Surgical clip applier with serpentine spring clip feeder. 4,450,839, Cl. 128-325.000.

Transue, James A.: *See—*
Mericle, Robert W.; and Transue, James A., 4,450,840, Cl. 128-325.000.

Traut, G. Robert, to Rogers Corporation. Radome formed of segmented rings of fiber-PTFE composite. 4,451,833, Cl. 343-872.000.

Treiber, Josef; and Reichmann, Walter, to Metallbau Treiber KG. Method of forming slats for venetian blinds. 4,450,701, Cl. 72-181.000.

Trent, Chadwick L.: *See—*
Topol, George J.; and Trent, Chadwick L., 4,451,152, Cl. 356-440.000.

Treptow, Warren L.: *See—*
Gibbs, Dale S.; and Treptow, Warren L., 4,451,632, Cl. 526-317.000.

Trio Kabushiki Kaisha: *See—*
Yasumura, Satoshi, 4,451,796, Cl. 330-127.000.

Triumph-Adler A.G. fur Buround Informationstechnik: *See—*
Frechette, Thomas E.; and Reuter, Helge H., 4,451,166, Cl. 400-208.000.

Troeder, Christoph; Faber, Manfred; and Seigert, Peter, to Jean Walterscheid GmbH. Device for measuring and monitoring the drive of an agricultural implement. 4,450,729, Cl. 73-862.340.

Trop, Moshe; and Livne, Avinoam, to Ben-Gurion University of The Negev Research and Development Authority. Mix for the preparation of bread and cake products. 4,451,491, Cl. 426-555.000.

Trovato, Susan Ann: *See—*
Lasurdo, Mary H., 4,450,636, Cl. 40-152.000.

Trumbull, James L.; and Gillam, William A., to Clayburn Refractories, Inc. Econo bricking ring. 4,450,666, Cl. 52-749.000.

Trumper, Thomas; Rosenberg, Harry; and Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Control systems for mineral mining installations. 4,451,181, Cl. 405-302.000.

TRW Inc.: *See—*
Leiby, John J.; Hodge, Malcolm H.; and Larkin, Joseph F., 4,450,995, Cl. 225-2.000.
Striese, Jim G.; Iafret, John E.; and Batterson, William D., 4,451,071, Cl. 292-341.180.

Tsao, Jung-Hsien; and Hein, Paul R., to W. R. Grace & Co. Polymer composition having terminal alkene and terminal carboxyl groups. 4,451,636, Cl. 528-75.000.

Tsuchida, Hisashi: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Takahashi, Akira; Hasegawa, Manshiro; and Tsuchida, Hisashi, 4,450,885, Cl. 164-47.000.

Tsuchida, Yutaka; Mugita, Mikio; Nakano, Yutaka; Sasaki, Naoaki; Ishizawa, Kenki; and Kuroshima, Hiroshi, to Nippon Kokan Kabushiki Kaisha; Osaka Oxygen Industries Ltd.; and Shinagawa Shirorenga Kabushiki Kaisha. Sensor for measuring density of oxygen in molten metal. 4,451,350, Cl. 204-422.000.

Tsuchiya, Mitsuharu: *See—*
Wada, Ryoichi; Tsuchiya, Mitsuharu; Senoo, Takanori; and Odagi, Kanji, 4,451,919, Cl. 371-38.000.

Tsugi, Yoshio: *See—*
Yagishita, Aisaburo; Mori, Noboru; Kusumi, Kinzhiro; and Tsugi, Yoshio, 4,451,298, Cl. 134-10.000.

Tsukasa Kasei Kogyo Kabushiki Kaisha: *See—*
Matsumoto, Hiroyuki, 4,451,524, Cl. 428-213.000.

Tsutsumi, Takao: *See—*
Ogawa, Koji; Taguchi, Hiroaki; Tsutsumi, Takao; Yasuda, Yoshinori; and Takase, Akio, 4,451,043, Cl. 273-186.00R.
Tuffill, Harold W.: *See—*
Hall, Stephen T.; Hardiman, Raymond; Johnson, Peter W.; Quarendon, Peter; and Tuffill, Harold W., 4,451,825, Cl. 340-750.000.
Tunzini-Nessi Enterprises D'Equipements: *See—*
Meunier, Georges; and Bergougnou, Maurice A., 4,450,895, Cl. 165-1.000.
Tupper, Myron D.; and Bauer, Richard, Jr. Tire splitting apparatus. 4,450,738, Cl. 82-82.000.
Turk, Wilfried: *See—*
Opitz, Heinrich; Montag, Bernhard; Urban, Gerd; and Turk, Wilfried, 4,450,896, Cl. 165-1.000.
Tweddle, Thomas A.; Thayer, William L.; Kutowy, Oleh; and Sourirajan, Srinivasa, to Canadian Patents & Development Limited. Method of gelling cast, polysulfone membranes. 4,451,424, Cl. 264-216.000.
Twin City International, Inc.: *See—*
Spongr, Jerry J.; and Sawyer, Byron E., 4,451,732, Cl. 250-308.000.
Twin Disc, Incorporated: *See—*
Arnold, Bruce C., 4,451,238, Cl. 440-75.000.
Twyman, Noel H., to Automated Production Systems Corporation. Process of producing oil by pyrolysis. 4,451,352, Cl. 208-11.00R.
Tyler, David O.; and Gasparovic, George M., to General Motors Corporation. Reflector for a sealed beam lamp. 4,451,873, Cl. 362-267.000.
Tyler, Derek E.: *See—*
Winter, Joseph; Tyler, Derek E.; and Dantzig, Jonathan A., 4,450,893, Cl. 164-468.000.
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., 4,450,890, Cl. 164-452.000.
Tyndale Plains-Hunter, Ltd.: *See—*
Gould, Francis E.; and Johnston, Christian W., 4,451,635, Cl. 528-71.000.
Uchida, Ken: *See—*
Sugiura, June; Kosa, Yasunobu; Komori, Kazuhiro; Uchida, Ken; and Shimizu, Shinji, 4,451,904, Cl. 365-182.000.
Uchida, Shunsuke: *See—*
Nishimura, Eiichi; Uchida, Shunsuke; Kitamura, Masao; Saito, Koichi; Ibe, Eishi; and Hayashi, Tatsuo, 4,451,428, Cl. 376-333.000.
Uchitani, Nobuki: *See—*
Onaka, Hidemi; and Uchitani, Nobuki, 4,450,809, Cl. 123-421.000.
Ueda, Minoru: *See—*
Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,846, Cl. 358-56.000.
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,852, Cl. 358-230.000.
Ueda, Zenichi: *See—*
Kawazoe, Shiyouzou; Ueda, Zenichi; Sugimoto, Toshihiko; and Moriuchi, Takahiko, 4,451,525, Cl. 428-213.000.
Uekita, Masakazu: *See—*
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.
Ueno, Hiroshi: *See—*
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,451,316, Cl. 156-274.600.
Ueno, Keiji: *See—*
Sato, Yasutoshi; and Ueno, Keiji, 4,450,871, Cl. 138-140.000.
Uetani, Yoshio: *See—*
Ishida, Osamu; Uetani, Yoshio; and Matsushima, Seiichi, 4,451,542, Cl. 429-174.000.
Uffner, William E.; and White, Robert N., to Owens-Corning Fiberglas Corporation. Polyamide as a primer for use with asphaltic membranes. 4,451,171, Cl. 404-31.000.
Uhl, Leopold: *See—*
Ernst, Helmut; Gehrhardt, Karl-Heinz; Uhl, Leopold; and Wolert, Hartmut, 4,451,232, Cl. 432-103.000.
Ukai, Tetsuo: *See—*
Sekino, Masaaki; Fujita, Yoshiyuki; and Ukai, Tetsuo, 4,451,369, Cl. 210-321.100.
Ulry, Donald C.; Cosner, Charles G.; and Ryan, Thomas D., to Formulabs Industrial Inks, Inc. Surface coloring of polyvinyl resins. 4,451,264, Cl. 8-508.000.
Umeki, Shinji: *See—*
Takada, Kazuo; and Umeki, Shinji, 4,451,502, Cl. 427-48.000.
Umetsu, Hiroshi: *See—*
Yamashita, Katsuji; Umetsu, Hiroshi; Sato, Hirotaka; Matsuoka, Yoshio; and Kida, Kei, 4,451,433, Cl. 422-63.000.
Umezawa, Michio, to Ricoh Company, Ltd. Paper loading apparatus. 4,451,169, Cl. 400-631.000.
Umezu, Hiroaki: *See—*
Hanaoka, Tadashi; Umezu, Hiroaki; and Shigaraki, Ginichi, 4,450,659, Cl. 52-167.000.
Ungarean, Gary L.: *See—*
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., 4,450,890, Cl. 164-452.000.
Union Carbide Corporation: *See—*
Acomb, Byron H., 4,450,858, Cl. 137-505.370.
Andreini, Rockne J., 4,451,288, Cl. 75-60.000.
Brown, Harry J., 4,451,508, Cl. 427-423.000.
Drake, Kenneth; and Hammock, Richard A., 4,451,608, Cl. 524-560.000.
Kamp, Ewald A., 4,450,996, Cl. 225-43.000.
Kennedy, Robert J., Sr.; Kennedy, Robert J., Jr.; and Ramachandran, Sundaresan, 4,451,537, Cl. 428-391.000.
Nicholakopoulos, Antonios; Gill, Grace M.; and Nadin, Robert P., 4,451,593, Cl. 523-322.000.
Uniroyal, Inc.: *See—*
Nudenberg, Walter; Rim, Yong S.; and Matthews, Demetreos N., 4,451,575, Cl. 502-122.000.
United Kingdom Atomic Energy Authority: *See—*
Butler, Graham; and Wright, Christopher J., 4,451,580, Cl. 502-335.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Johncock, Peter, 4,451,645, Cl. 528-391.000.
United States of America
Administrator, National Aeronautics and Space Administration: *See—*
Marshall, William R., 4,451,017, Cl. 244-172.000.
Agriculture: *See—*
Schwab, Arthur W., 4,451,265, Cl. 44-51.000.
Schwab, Arthur W.; and Pryde, Everett H., 4,451,267, Cl. 44-53.000.
Army: *See—*
Kirkendall, Richard D.; Drysdale, William H.; and Kokinakis, Louis D., 4,450,770, Cl. 102-523.000.
Rozniecki, Edward J.; and Wittbrodt, Donald R., 4,451,785, Cl. 324-158.00R.
Sperrazza, Joseph; Liu, James C. C.; and Baker, Wilfred E., 4,451,178, Cl. 405-258.000.
Vig, John R.; and Filler, Raymond L., 4,451,755, Cl. 310-361.000.
Energy: *See—*
Fasching, George E., 4,451,826, Cl. 340-825.070.
Health and Human Services: *See—*
Parsons, Jack L.; Vizine, Dan; Sumner, Mark; Marathe, Suresh; and Dubicki, Henryk, 4,451,648, Cl. 536-54.000.
National Aeronautics and Space Administration: *See—*
Gedwill, Michael A.; Levine, Stanley R.; and Glasgow, Thomas K., 4,451,496, Cl. 427-34.000.
Navy: *See—*
Atkins, Ronald L.; Hollins, Richard A.; Norris, William P.; Nielsen, Arnold T.; and Wilson, William S., 4,451,681, Cl. 568-932.000.
Young, Virgel J.; and Myers, Harry S., Jr., 4,451,847, Cl. 358-99.000.
Puerto Rico: *See—*
Connelly, Kathleen G., 4,450,633, Cl. 36-101.000.
U.S. Philips Corporation: *See—*
Classens, Adrianus M. M.; Aalbertsberg, Frederik W.; and Van Marle, Hendrika G., 4,451,692, Cl. 174-23.00C.
Jans, Johannes M., 4,451,505, Cl. 427-98.000.
Kilian, Ernst A., 4,451,795, Cl. 330-107.000.
Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Tholen, Antonius H. L., 4,451,115, Cl. 350-96.180.
Prodinger, Arnold, 4,451,864, Cl. 360-130.330.
Rijckaert, Albert M. A.; Ruyten, Henricus M.; Hoefnagels, Johannes F.; and Schoenmakers, Johannes J. M., 4,451,862, Cl. 360-109.000.
United States Steel Corporation: *See—*
Salmi, Robert W., 4,451,360, Cl. 209-230.000.
United Technologies Corporation: *See—*
Grot, Arnold S., 4,450,889, Cl. 164-361.000.
Honda, Keith T.; Smith, Stephen L.; and Voyer, Peter E., 4,451,205, Cl. 416-219.00R.
Setzer, Herbert J.; Bett, John A. S.; and Lesieur, Roger R., 4,451,578, Cl. 502-303.000.
Smeggil, John G.; Bornstein, Norman S.; and Brown, Clyde O., 4,451,299, Cl. 148-1.000.
Stalcup, Robert K.; Sigman, Warren R.; and Prewo, Karl M., 4,451,118, Cl. 350-310.000.
Universite Laval: *See—*
Pomerleau, Andre; and Brousseau, Jean-Francoys, 4,451,896, Cl. 364-569.000.
University of California, The Regents of the: *See—*
Ryston, Ivor; Handley, Harold; Seegmiller, J. Edwin; and Thompson, Linda F., 4,451,570, Cl. 435-240.000.
University Patents, Inc.: *See—*
Allen, Robert H., 4,451,571, Cl. 436-505.000.
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,450,836, Cl. 128-127.000.
Uozumi, Shoji: *See—*
Oizumi, Masayuki; Uekita, Masakazu; Goto, Masana; Azumi, Ichiro; Uozumi, Shoji; Abe, Masaharu; Fushiki, Yasuo; Isshiki, Minoru; and Kawasaki, Kunio, 4,451,317, Cl. 156-307.300.
Upjohn Company, The: *See—*
Van Rheenen, Verlan H.; and Timko, Joseph M., 4,451,404, Cl. 260-397.450.
Uranerzbergbau-GmbH: *See—*
Floeter, Wilfried; Schoening, Gerhard; and Schroeer, Klaus, 4,451,438, Cl. 423-20.000.
URANIT Uran-Isotopentrennungs-GmbH: *See—*
Meyer-Kretschmer, Gustav; Jetter, Heinz; and Toennies, Peter, 4,451,437, Cl. 423-3.000.
Urayama, Kiyoshi, to Kabushiki Kaisha Hosakawa Funtai Kogaku Kenkyosho. Gas flow type crushing and classifying apparatus. 4,451,005, Cl. 241-40.000.

Urban, Gerd: *See—*
Opitz, Heinrich; Montag, Bernhard; Urban, Gerd; and Turk, Wilfried, 4,450,896, Cl. 165-1.000.
Urban Systems Streetscape, Inc.: *See—*
Winden, Joseph, 4,450,974, Cl. 220-1.00T.
USM Corporation: *See—*
Farley, Wilbur H.; Kotek, Alfred J.; and Carlson, John H., 4,451,098, Cl. 308-201.000.
Schaty, Harald, 4,450,605, Cl. 24-457.000.
Wickers, Francis A.; and Dorosz, Adolph S., 4,450,781, Cl. 112-262.100.
Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., 4,450,619, Cl. 29-564.100.
Vaidya, Sheila: *See—*
Fula, Ellis N.; Lifshitz, Nadia; and Vaidya, Sheila, 4,450,620, Cl. 29-571.000.
VALEO: *See—*
Caray, Andre , 4,450,945, Cl. 192-89.00B.
Herbulot, Jean, 4,450,940, Cl. 188-71.300.
Vallee, Antoine; and Goguelin, Michel, to Arjomari-Prioux. Surfacing foils for coating plastics parts. 4,451,539, Cl. 428-515.000.
Vandenberghe, Antoon L.: *See—*
Pollet, Robert J.; Vandenberghe, Antoon L.; and Spriet, Roger A., 4,451,555, Cl. 430-445.000.
Vandevelde, Jean; and De Neys, Robert, to Smithkline-Rit. Process for the preparation of polysaccharide-protein complexes from bacterial capsules, obtained products and immunogenic compositions containing them. 4,451,446, Cl. 424-92.000.
VanDuren, Richard G.: *See—*
Heath, Chester A.; and VanDuren, Richard G., 4,451,884, Cl. 364-200.000.
Van Dyke, Martin J.: *See—*
Dougherty, William R.; Colby, Dwight D.; Fahley, Jerome A.; and Van Dyke, Martin J., 4,451,894, Cl. 364-509.000.
Vangaever, Frank; Vanhumbeeck, Jacky; Danneels, Laurent; Boone, Luc; and Demaegd, Luc, to Siemens Aktiengesellschaft. Additive-free, fast precipitating palladium electrolyte bath and process. 4,451,336, Cl. 204-47.000.
Van Hecke, Michel C.; and Fontainas, Luc M., to Metallurgie Hoboken-Overpelt. Process for extracting non-ferrous metals from iron-bearing scraps. 4,451,289, Cl. 75-63.000.
Vanhumbeeck, Jacky: *See—*
Vangaever, Frank; Vanhumbeeck, Jacky; Danneels, Laurent; Boone, Luc; and Demaegd, Luc, 4,451,336, Cl. 204-47.000.
Van Marle, Hendrika G.: *See—*
Classens, Adrianus M. M.; Aalbertsberg, Frederik W.; and Van Marle, Hendrika G., 4,451,692, Cl. 174-23.00C.
van Mullekom, Hubert P., to Ruti-te Strake B.V. Method for weaving on a weaving machine operating with a blowing nozzle for a flowing transport fluid. 4,450,876, Cl. 139-435.000.
Vannucci, Pasquale: *See—*
Ruggeri, Antonio, 4,451,367, Cl. 210-207.000.
van Olst, Gijsbrecht H. J., to Nederlandse Kunststofindustrie Soesterberg. Plastic ski slide. 4,451,032, Cl. 272-56.5SS.
Van Rheenen, Verlan H.; and Timko, Joseph M., to Upjohn Company, The. 16β-Methyl steroid process. 4,451,404, Cl. 260-397.450.
Van Sickle, James R., to CPG Products Corp. Tender-mounted sound system for toy steam locomotive. 4,450,772, Cl. 104-295.000.
Van Steenkiste, Roger C. Apparatus for branding milk cartons. 4,450,765, Cl. 101-11.000.
Vapor Corporation: *See—*
Alexander, William H.; and Burger, Joe R., 4,450,854, Cl. 137-246.120.
Vas-Cath of Canada Limited: *See—*
Martin, Geoffrey S., 4,451,252, Cl. 604-43.000.
VCD Fuel Systems: *See—*
Venning, Scott; and Discount, Dennis, 4,450,821, Cl. 123-525.000.
VDO Adolf Schindling AG: *See—*
Sauerschell, Wolfgang; Wietschorke, Stephan; and Ruschek, Gerhard, 4,450,804, Cl. 123-366.000.
VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Forster, Karl-Heinz; Johne, Hans; Schuck, Helmut; and Friedrich, Ludwig, 4,450,767, Cl. 101-365.000.
Veisz, Gyorgy; David, Gabor; Koszeghy, Peter; and Szekely, Lajos. Four-terminal network. 4,451,804, Cl. 333-177.000.
Venning, Scott; and Discount, Dennis, to VCD Fuel Systems. Gaseous fuel delivery system. 4,450,821, Cl. 123-525.000.
Venning, Scott J. Gaseous fuel delivery system. 4,450,822, Cl. 123-525.000.
Verdol S.A.: *See—*
Decuq, Guy; and Mouterde, Anne, 4,451,006, Cl. 242-18.0DD.
Verne, Stefan, to BICC Public Limited Company. Manufacture of coextruded oriented products. 4,451,306, Cl. 156-51.000.
Verse, Bernard P.; Geoffroy, Alain Y.; and Gentet, Pierre, to Societe Nationale Industrielle Aerospatiale. Device for automatically checking a plurality of electric indicator lights. 4,451,822, Cl. 340-642.000.
Vertesy, Laszlo; Mracek, Miroslav; Braunitzer, Gerhard; and Aschauer, Heinz, to Hoechst Aktiengesellschaft. α-Amylase inactivator, a process for its preparation, an agent based on this inactivator and its use. 4,451,455, Cl. 424-177.000.
Vertimag Systems Corporation: *See—*
Johnson, Clark E., Jr., 4,451,858, Cl. 360-32.000.
Vescovi, Valentino F.; and Richards, Arthur W., to Sphere Investments Limited. Electrostatic shield. 4,451,812, Cl. 336-84.00C.
Vest, Gary W. Combined ballast container and wall plug for portable electrical equipment. 4,451,693, Cl. 174-52.00R.
Vetter, Hellmuth; Scheibe, Peter; Thum, Waldemar; and Naher, Gotthilf, to Boehringer Mannheim GmbH. Process for the purification or enrichment of biologically active proteins. 4,451,487, Cl. 435-183.000.
Veveris, Maris M.: *See—*
Kalvinsh, Ivars Y.; Vinogradov, Alexei V.; Veveris, Maris M.; Makarova, Inna I.; Birman, Anatoly S.; Barmotin, Georgy V.; and Akifiev, Oleg N., 4,451,485, Cl. 424-316.000.
Veyrassat, Louis; and Meisser, Marc, to Maillefer S.A. Double wire-winding machine with automatic transfer. 4,451,008, Cl. 242-25.00A.
Vick, Ralph L., to Bendix Corporation, The. Liquid spring accumulator with self-charging means. 4,450,870, Cl. 138-31.000.
Victorius, Claus, to Du Pont de Nemours, E. I., and Company. High solids color coat containing alcohol soluble cellulose acetate butyrate. 4,451,597, Cl. 524-39.000.
Vidal-Meza, Gonzalo D., to Caterpillar Tractor Co. Heat exchanger plate having distortion resistant uniform pleats. 4,450,705, Cl. 72-379.000.
Viertel, Lothar; and Kaiser, Peter, to Gebr. Happich GmbH. Outer support bracket for automobile sun visors. 4,451,076, Cl. 296-97.00K.
Vig, John R.; and Filler, Raymond L., to United States of America, Army. Acceleration sensitivity reduction method. 4,451,755, Cl. 310-361.000.
Vijayakumar, Kalambella M.: *See—*
Lichtin, Norman N.; and Vijayakumar, Kalambella M., 4,451,342, Cl. 204-157.10R.
Villavicencio, Enrique, Jr.; and Villavicencio, Enrique, Sr. Survival kit. 4,450,966, Cl. 206-547.000.
Villavicencio, Enrique, Sr.: *See—*
Villavicencio, Enrique, Jr.; and Villavicencio, Enrique, Sr., 4,450,966, Cl. 206-547.000.
Villeroy & Boch Keramische Werke KG: *See—*
Zimmer, Kurt, 4,451,307, Cl. 156-63.000.
Vilter Manufacturing Corporation: *See—*
Kocher, Erich J., 4,450,856, Cl. 137-315.000.
Vines, Harvey L.; and Marano, Vincent. Nitrogen rejection from natural gas with CO_2 and variable N_2 content. 4,451,275, Cl. 62-28.000.
Vinogradov, Alexei V.: *See—*
Kalvinsh, Ivars Y.; Vinogradov, Alexei V.; Veveris, Maris M.; Makarova, Inna I.; Birman, Anatoly S.; Barmotin, Georgy V.; and Akifiev, Oleg N., 4,451,485, Cl. 424-316.000.
Vinyl Improvement Products Company: *See—*
Katz, Harry, 4,450,665, Cl. 52-522.000.
Visek, Tomas: *See—*
Moser, Franz; and Visek, Tomas, 4,450,797, Cl. 123-78.00F.
Visner, Sidney: *See—*
Ross, Malcolm F.; and Visner, Sidney, 4,451,427, Cl. 376-267.000.
Vitner, Joseph, to Kalama Chemical, Inc. Process for the recovery of alkali metal salts from aqueous solutions thereof. 4,451,330, Cl. 159-48.200.
Vizine, Dan: *See—*
Parsons, Jack L.; Vizine, Dan; Sumner, Mark; Marathe, Suresh; and Dubicki, Henryk, 4,451,648, Cl. 536-54.000.
Vogel, Roger F.: *See—*
Mitchell, Bruce R.; and Vogel, Roger F., 4,451,355, Cl. 208-113.000.
Volkmer, Richard B.: *See—*
Boettcher, William C.; Volkmer, Richard B.; and Wehde, Wayne R., 4,450,987, Cl. 222-641.000.
Volz, Herbert A., to Phillips Petroleum Company. Heat exchanger having means for supporting the tubes in spaced mutually parallel relation and suppressing vibration. 4,450,904, Cl. 165-162.000.
von Ronai-Horvath, Michael; Schoenung, Bernhard; and Seebo, Kurt, to SKF Kugellagerfabriken GmbH. Thread monitor and a slubbing clamping device for draw frames of spinning machines equipped with double upper rollers. 4,450,677, Cl. 57-81.000.
Vossen, John L., Jr.: *See—*
Weakliem, Herbert A.; and Vossen, John L., Jr., 4,450,787, Cl. 118-723.000.
Voyer, Peter E.: *See—*
Honda, Keith T.; Smith, Stephen L.; and Voyer, Peter E., 4,451,205, Cl. 416-219.00R.
W. Haking Enterprises Limited: *See—*
Yan, Chan K., 4,451,130, Cl. 354-82.000.
W. R. Grace & Co.: *See—*
Ernest, Michael V.; and Maselli, James M., 4,451,441, Cl. 423-213.200.
Tsao, Jung-Hsien; and Hein, Paul R., 4,451,636, Cl. 528-75.000.
Wada, Chuzoh; Matsuda, Yoshikazu; and Asano, Yoshio, to Matsushita Electric Industrial Co., Ltd. Burner. 4,451,228, Cl. 431-76.000.
Wada, Hiroki; and Ikuta, Yasuhiro, to Toyota Jidosha Kabushiki Kaisha. Device for controlling spark timing and fuel injection of an internal combustion engine. 4,450,810, Cl. 123-425.000.
Wada, Ryoichi; Tsuchiya, Mitsuharu; Senoo, Takanori; and Odagi, Kanji, to Matsushita Electric Industrial Co., Ltd. Digital signal processor for use in recording and/or reproducing equipment. 4,451,919, Cl. 371-38.000.
Wada, Tomio: *See—*
Kishi, Kohhei; Kato, Hiroaki; Matsuura, Masataka; and Wada, Tomio, 4,451,554, Cl. 430-313.000.
Wada, Yuichi: *See—*
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,451,718, Cl. 200-147.00R.
Waddell, Thomas P. Body weight support system. 4,450,832, Cl. 128-80.00G.

Wagner, Ludwig: *See—*
Knabel, Walter; Wagner, Ludwig; and Jungkind, Roland, 4,451,059, Cl. 280-632.000.

Waitkus, Phillip A.: *See—*
D'Alelio, Gaetano F.; and Waitkus, Phillip A., 4,451,669, Cl. 562-442.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,451,402, Cl. 548-461.000.

Wakabayashi, Hiroshi: *See—*
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, 4,451,621, Cl. 525-426.000.

Wakino, Kikuo: *See—*
Ogawa, Toshio; and Wakino, Kikuo, 4,451,753, Cl. 310-315.000.

Wakui, Natsuko: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,451,678, Cl. 568-902.000.

Walch, Hansjorg: *See—*
Simson, Dionizy; and Walch, Hansjorg, 4,450,875, Cl. 139-435.000.

Walker, Loren H.: *See—*
Boettner, Fred H.; Cutler, John H.; and Walker, Loren H., 4,451,770, Cl. 318-757.000.

Walker, Stephen E.; Bedford, Keith; and Eaves, Terence, to Hoechst Aktiengesellschaft. Pharmaceutical preparations in solid unit dosage form. 4,450,877, Cl. 141-1.000.

Walsh, Robert J., to Monsanto Company. Temperature control for wafer polishing. 4,450,652, Cl. 51-131.400.

Wang, Jerry C.; and Stepanian, Michael R., to Mobil Oil Corporation. Continuous process for the preparation of rubber modified polymers. 4,451,612, Cl. 525-53.000.

Wardley, George, to Marldon (Engineering Specialties) Limited. Traversing unit with balanced load applying means. 4,450,731, Cl. 74-25.000.

Warner, Richard C.; and Laughon, Thomas C., to Singer Company, The. Electrical cutout for under voltage or power loss conditions. 4,451,865, Cl. 361-23.000.

Warnock, Denny F. Apparatus for blending and dispensing a mixture of asphalt emulsion and sand. 4,451,153, Cl. 366-13.000.

Waschka, George A., Jr.: *See—*
Casper, Paul W.; Seiler, Norman C.; Nixon, Thomas J.; Waschka, George A., Jr.; Patisaul, Charles R.; Toy, James W.; Burton, Willie T., Jr.; Ashley, W. B.; Orlando, Fred J., Jr.; Giri, Ronald R.; Halpern, Peter H.; Jones, J. Richard; and Iley, Harold, 4,451,916, Cl. 370-16.000.

Watanabe, Henry; and Shultz, Andrew, to Stepan Chemical Company. Cleaner for ovens and the like using sodium alpha olefin sulfonate, sodium hydroxide, and sodium silicate. 4,451,393, Cl. 252-536.000.

Watanabe, Hiroshi: *See—*
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,451,893, Cl. 364-494.000.
Morimoto, Kiyoshi; Takagi, Toshinori; and Watanabe, Hiroshi, 4,451,499, Cl. 427-38.000.

Watanabe, Kazuhide: *See—*
Abe, Seiko; Igashira, Toshihiko; and Watanabe, Kazuhide, 4,450,823, Cl. 123-549.000.

Watanabe, Kazuhiro: *See—*
Fujimaki, Hiroto; Ajima, Shigetoshi; and Watanabe, Kazuhiro, 4,451,590, Cl. 523-155.000.

Watanabe, Kiyohiko: *See—*
Takei, Toshihiro; Matsui, Kazuma; Hattori, Yoshiyuki; Watanabe, Kiyohiko; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,451,213, Cl. 417-366.000.

Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Picture image display device including a row of parallel control electrodes. 4,451,758, Cl. 313-495.000.

Watanabe, Michio: *See—*
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,451,316, Cl. 156-274.600.

Watanabe, Toshiyasu: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,451,678, Cl. 568-902.000.

Watari, Yoshiharu: *See—*
Yamashita, Hiromichi; Watari, Yoshiharu; Mutsuro, Hideaki; and Takagi, Kenji, 4,451,175, Cl. 405-50.000.

Water Pollution Control Corp.: *See—*
Thayer, Paul M., 4,451,373, Cl. 210-626.000.

Watkins, Norman C. Insulative roof structure. 4,450,663, Cl. 52-309.400.

Watson, Eric; and Hunter, Eric, to British Nuclear Fuels Limited. Storage pond. 4,451,173, Cl. 405-53.000.

Watts, Lewis W., Jr.: *See—*
Sanderson, John R.; and Watts, Lewis W., Jr., 4,451,668, Cl. 560-246.000.

Wavin B.V.: *See—*
LeLoux, Arnoldus W. J., 4,451,308, Cl. 156-64.000.

Waxman, Ronald, to Beltone Electronics Corporation. Eye glass hearing aids. 4,451,709, Cl. 179-107.00S.

Waymire, John W.: *See—*
Penn, Paul E.; and Waymire, John W., 4,451,823, Cl. 340-648.000.

Weakliem, Herbert A.; and Vossen, John L., Jr., to RCA Corporation. Glow discharge plasma deposition of thin films. 4,450,787, Cl. 118-723.000.

Weaver, Joe C.: *See—*
Kirkley, J. Darrell; and Weaver, Joe C., 4,451,871, Cl. 362-186.000.

Weaver, Johnny L. Drafting and drawing table. 4,450,774, Cl. 108-23.000.

Weber, Richard B.; Wilfley, George M.; and Wilfley, George M., to A. R. Wilfley and Sons, Inc. Mixing device. 4,451,155, Cl. 366-265.000.

Weber, Richard M.; and Bedenbender, John W., to Texas Instruments Incorporated. Dual mode seismic source vibrator. 4,450,928, Cl. 181-121.000.

Webinger, George P., to Champion International Corporation. Wrap around sleeve for tapered tub. 4,451,001, Cl. 229-40.000.

Wechter, Abraham J.: *See—*
Shaw, Timothy P.; and Wechter, Abraham J., 4,450,748, Cl. 84-291.000.

Weeks, Paul D.; and Allingham, Robert P., to Pfizer Inc. Preparation of gamma-pyrone intermediates. 4,451,661, Cl. 549-417.000.

Wegemund, Bernd: *See—*
Wilk, Hans-Christoph; and Wegemund, Bernd, 4,451,596, Cl. 523-501.000.

Wehde, Wayne R.: *See—*
Boettcher, William C.; Volkmer, Richard B.; and Wehde, Wayne R., 4,450,987, Cl. 222-641.000.

Weikert, Norbert B.: *See—*
Best, Gerd; and Weikert, Norbert B., 4,451,092, Cl. 299-81.000.

Weikl, Andreas; and Hubmann, Max, to Intermedicat GmbH. Catheter set. 4,451,256, Cl. 604-164.000.

Weiland, Werner, to Rheintechnik, Weiland & Kasper KG. Device for arresting the hind leg of an animal. 4,450,792, Cl. 119-126.000.

Weinkauff, David J.: *See—*
Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,451,486, Cl. 424-317.000.

Weirich, Walter: *See—*
Trumper, Thomas; Rosenberg, Harry; and Weirich, Walter, 4,451,181, Cl. 405-302.000.

Welch, Norman D.; and Woestman, John W., to RCA Corporation. Circuit for providing a common setpoint for manual and automatic regulation of a process control system. 4,451,879, Cl. 364-181.000.

Welding Engineers, Inc.: *See—*
Rossiter, Paul H., 4,451,414, Cl. 264-40.500.

Welk, John R.: *See—*
Thayer, David J.; Krause, James J.; and Welk, John R., 4,451,824, Cl. 340-720.000.

Welle, Hendricus B. A.: *See—*
Deibig, Heinrich; Reiner, Roland; and Welle, Hendricus B. A., 4,451,452, Cl. 424-78.000.

Welsh, Hugh F.: *See—*
D'Augustine, Frank T.; Terry, Malcolm E.; Welsh, Hugh F.; and Payne, Frank A., 4,451,243, Cl. 445-68.000.

Welzel, Dieter: *See—*
Buhlmann, Hans; and Welzel, Dieter, 4,451,458, Cl. 424-183.000.

Wenk, Paul; Breitenstein, Werner; and Baumann, Marcus, to Ciba-Geigy Corporation. Method of treating inflammation and pain using heteramino benzofurans. 4,451,462, Cl. 424-248.550.

Werkzeugmaschinenfabrik Oerlikon Buhrle AG: *See—*
Moser, Franz, 4,450,769, Cl. 102-444.000.

Werstak, Charles E.: *See—*
Miller, Donald E.; and Werstak, Charles E., 4,451,493, Cl. 426-602.000.

Wester, Norbert: *See—*
Diery, Helmut; Wester, Norbert; and Hille, Martin, 4,451,671, Cl. 564-286.000.

Westermeier, Richard J.: *See—*
Larson, Duane B.; and Westermeier, Richard J., 4,450,702, Cl. 72-250.000.

Westfalia Separator AG: *See—*
Huckebrink, Wilhelm, 4,450,864, Cl. 137-624.130.
Ostkamp, Willi; Brunner, Karlheinz; and Wibbelt, Friedrich, 4,451,247, Cl. 494-52.000.

Westinghouse Electric Corp.: *See—*
Crookston, Ronald W.; and Burney, Ivan T., 4,451,717, Cl. 200-82.00B.
Gyugyi, Laszlo, 4,451,777, Cl. 323-210.000.
Liu, Chi-Sheng; and Hirayama, Chikara, 4,451,924, Cl. 372-59.000.

Westner, Andrew A.: *See—*
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,451,673, Cl. 568-454.000.

Westvaco Corporation: *See—*
Chapman, William A., Jr.; and Crowley, John J., 4,450,740, Cl. 83-303.000.

Wetmore, Sherman B., to Global Marine Inc. Monopod jackup drilling system. 4,451,174, Cl. 405-196.000.

Wetterlin, Kjell I. L.: *See—*
Olsson, O. A. Torsten; Svensson, Leif A.; and Wetterlin, Kjell I. L., 4,451,663, Cl. 560-29.000.

WFI International, Inc.: *See—*
Ryan, Bobby W.; Rye, Rufus A.; and Snyder, James L., 4,450,613, Cl. 29-157.00T.

Wheaton Industries: *See—*
Batchelor, Gary R.; Russo, Carmen A., Sr.; and Bradley, Martin, 4,451,329, Cl. 156-660.000.

Wheeler, Glynn P.: *See—*
Temple, Carroll G., Jr.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,451,650, Cl. 544-105.000.

Whetstone, Albert L.; and Shaklee, Kerry L., to Display Interface Corporation. Coordinate digitizing device. 4,451,698, Cl. 178-19.000.

Whipple, Sharon S.: *See—*
Jeffrey, Gaines C.; Cooper, Lance A.; and Whipple, Sharon S., 4,451,442, Cl. 423-224.000.

White, Alan C.; and Wyllie, Michael G., to John Wyeth & Brother Ltd. Anti-obesity agents. 4,451,465, Cl. 424-251.000.

White Farm Equipment Company: *See—*
Deckler, Harry C., 4,450,979, Cl. 221-263.000.

White, Harvey C. Rotary fluid pressure device. 4,451,217, Cl. 418-69.000.

White, May S., co-executrix: *See—*
Papathomas, Thomas V.; Scuderi, Rudolph, deceased; White, May S., co-executrix; and D'Ambrose, Camille, co-executrix, 4,451,773, Cl. 320-59.000.

White, Robert N.: *See—*
Uffner, William E.; and White, Robert N., 4,451,171, Cl. 404-31.000.

Whitehouse, Harry T.: *See—*
Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T., 4,450,868, Cl. 137-625.290.

Whitener, Philip C., to Boeing Company, The. Composite structures window belt and method of making. 4,450,661, Cl. 52-206.000.

Wibbelt, Friedrich: *See—*
Ostkamp, Willi; Brunner, Karlheinz; and Wibbelt, Friedrich, 4,451,247, Cl. 494-52.000.

Wickenhaeuser, Gerhard: *See—*
Graser, Fritz; and Wickenhaeuser, Gerhard, 4,451,654, Cl. 346-34.000.

Wickers, Francis A.; and Dorosz, Adolph S., to USM Corporation. Thread wiping mechanism. 4,450,781, Cl. 112-262.100.

Widmer & Ernst AG: *See—*
Steiner, Hansruedi, 4,450,952, Cl. 198-773.000.

Wieland, Clarence W. Child-resistant container. 4,450,972, Cl. 215-221.000.

Wietschorke, Stephan: *See—*
Sauerschell, Wolfgang; Wietschorke, Stephan; and Ruschek, Gerhard, 4,450,804, Cl. 123-366.000.

Wiezer, Hartmut, to Hoechst Aktiengesellschaft. Phosphazenes useful as stabilizers in polymers. 4,451,400, Cl. 260-244.400.

Wildmann, Wolfgang; and Melzer, Rudolf, to M.A.N. Roland Druckmaschinen Aktiengesellschaft. Arrangement for lateral alignment of sheets. 4,451,029, Cl. 271-236.000.

Wiley, Bruce F., to Phillips Petroleum Company. Downhole sampling apparatus. 4,450,717, Cl. 73-151.000.

Wilfley, George M.: *See—*
Weber, Richard B.; Wilfley, George M.; and Wilfley, George M., 4,451,155, Cl. 366-265.000.
Weber, Richard B.; Wilfley, George M.; and Wilfley, George M., 4,451,155, Cl. 366-265.000.

Wilhelm, Frederick C.: *See—*
Daly, Francis P.; and Wilhelm, Frederick C., 4,451,687, Cl. 585-489.000.

Wilk, Hans-Christoph; and Wegemund, Bernd, to Henkel Kommanditgesellschaft auf Aktien. Water-dilutable lacquer binders based upon alkyd and acrylate resins. 4,451,596, Cl. 523-501.000.

Wilkerson, John L.: *See—*
Angle, Ellwyn R.; and Wilkerson, John L., 4,451,766, Cl. 315-248.000.

Wilkhahn & Hahne GmbH & Company: *See—*
Franck, Klaus; and Sauer, Werner, 4,451,085, Cl. 297-285.000.

Wilkins, Rennie F. T., to British Aluminium Company Limited, The. Direct chill casting apparatus. 4,450,887, Cl. 164-154.000.

Williams, John E., Jr., to AAKAC Industries, Inc. Torsion suspension system for motorcycles. 4,451,065, Cl. 280-284.000.

Williams, John F., to Du Pont de Nemours, E. I., and Company. Centrifuge bowl having rotor windage limited disposed thereon. 4,451,248, Cl. 494-84.000.

Williams, Marvin E. Comprehensive, central scheduling folder for project management. 4,451,067, Cl. 281-31.000.

Williams, Ronald A.: *See—*
Geisaler, Ulrich C.; Grode, Gerald A.; Stith, William J.; and Williams, Ronald A., 4,451,259, Cl. 604-408.000.

Willis, Carl L.: *See—*
Brownscombe, Thomas F.; and Willis, Carl L., 4,451,633, Cl. 526-348.600.

Willmund, Wolf-Dieter; Biermann, Manfred; Baumann, Horst; Friese, Hans-Herbert; and Pieper, Friedrich, to Henkel KGaA. Preparation of lubricating agents for leathers and furs. 4,451,261, Cl. 8-94.220.

Wilson, Dennis: *See—*
Philofsky, Elliott; Parkinson, Ward; and Wilson, Dennis, 4,451,845, Cl. 357-72.000.

Wilson, Donald C., to PMC Corporation. Apparatus for removing rot from potatoes. 4,450,760, Cl. 99-536.000.

Wilson, William S.: *See—*
Atkins, Ronald L.; Hollins, Richard A.; Norris, William P.; Nielsen, Arnold T.; and Wilson, William S., 4,451,681, Cl. 568-932.000.

Winden, Joseph, to Urban Systems Streetscape, Inc. Litter container. 4,450,974, Cl. 220-1.00T.

Winkelman, Max D., to Bell Telephone Laboratories, Incorporated. Switching system auxiliary line transfer circuit. 4,451,704, Cl. 179-18.00F.

Winkler, Ottmar; and Pfaller, Egon, to SKF Kugellagerfabriken GmbH. Rotary piston apparatus. 4,451,215, Cl. 418-23.000.

Winter, Joseph; Tyler, Derek E.; and Dantzig, Jonathan A., to International Telephone and Telegraph Corporation. Method and apparatus for casting metals and alloys. 4,450,893, Cl. 164-468.000.

Wirts, Harold L.: *See—*
Kitt, Robert A.; and Wirts, Harold L., 4,451,014, Cl. 242-128.000.

Wisconsin Alumni Research Foundation: *See—*
Cameron, John R., 4,451,736, Cl. 250-376.000.

Wiseheart, Ronald W.; and Meyer, Daniel, to Communication Systems, Inc. Snap in communications jack and cover plate assembly. 4,451,106, Cl. 339-123.000.

Wisneski, Tony J.: *See—*
Morman, Michael T.; and Wisneski, Tony J., 4,451,589, Cl. 523-124.000.

Wisseroth, Karl, to BASF Aktiengesellschaft. Gaining access to very deep coal seams by carrying explosive in density controlled fluid. 4,451,088, Cl. 299-11.000.

Wittbrodt, Donald R.: *See—*
Rozniecki, Edward J.; and Wittbrodt, Donald R., 4,451,785, Cl. 324-158.00R.

Wittes, James M. Pushbutton lock. 4,451,713, Cl. 179-189.00D.

Witzgall, Manfred: *See—*
Sattler, Gunther; Gunkel, Werner; Witzgall, Manfred; and Look, Reinhard, 4,451,365, Cl. 210-198.200.

Woestman, John W.: *See—*
Welch, Norman D.; and Woestman, John W., 4,451,879, Cl. 364-181.000.

Wofor AG: *See—*
Hecht, Sidney M., 4,451,459, Cl. 424-195.000.

Wohlford, William P., to Deere & Company. Track section including flexors. 4,451,097, Cl. 305-40.000.

Wolert, Hartmut: *See—*
Ernst, Helmut; Gehrhardt, Karl-Heinz; Uhl, Leopold; and Wolert, Hartmut, 4,451,232, Cl. 432-103.000.

Wolfe, Donald W.; and Dye, Richard W., Jr., to General Electric Company. High speed search system. 4,451,901, Cl. 364-900.000.

Wolff Walsrode Aktiengesellschaft: *See—*
Teubner, Helwig; and Oppermann, Wilhelm, 4,451,649, Cl. 536-111.000.

Wolfrum, Erhard; Erken, Manfred; and Bocker, Dietrich, to Rheinische Braunkohlenwerke AG. Process for removing noxious substances containing fluorine and/or sulfur from gaseous or liquid media. 4,450,777, Cl. 110-342.000.

Wolstenholme, Jack: *See—*
Davies, Phineas; Jennings, James R.; and Wolstenholme, Jack, 4,451,683, Cl. 570-224.000.

Wong, Andrew H.: *See—*
Wong, Roy; Pedginski, James J.; and Wong, Andrew H., 4,451,533, Cl. 428-337.000.

Wong, Dennis W. Prophylaxis and treatment of thromboembolic disorders in man and in warm-blooded animals with bicarbonate salts of alkali metals. 4,451,454, Cl. 424-127.000.

Wong, Roy; Pedginski, James J.; and Wong, Andrew H., to Minnesota Mining and Manufacturing Company. Dispensable polypropylene adhesive-coated tape. 4,451,533, Cl. 428-337.000.

Wood, Chester W., to Dover Corporation. Modular fluid dispensing nozzle. 4,450,879, Cl. 141-209.000.

Wood, Jonathan G. Silo unloader. 4,451,192, Cl. 414-306.000.

Wood, Joseph A., to Flanders Filters, Inc. Protective plastic bag and method of utilizing the same to remove articles from a hepa filter housing. 4,450,964, Cl. 206-527.000.

Wood, Prentice J., to Mead Corporation, The. Article carrier. 4,450,956, Cl. 206-188.000.

Wood, Robert L., to Advanced Sports Corp. Aquatic mat. 4,451,240, Cl. 441-129.000.

Woodman, Daniel W., Jr.: *See—*
Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., 4,450,619, Cl. 29-564.100.

Woods, Craig P.: *See—*
Woods, Jack L.; Woods, Craig P.; and Woods, Richard L., 4,451,335, Cl. 204-35.00N.

Woods, Jack L.; Woods, Craig P.; and Woods, Richard L. Method for producing full color images on aluminum. 4,451,335, Cl. 204-35.00N.

Woods, Richard L.: *See—*
Woods, Jack L.; Woods, Craig P.; and Woods, Richard L., 4,451,335, Cl. 204-35.00N.

Woods, William E.: *See—*
Stanley, Philip E.; Woods, William E.; Lemay, Richard A.; and Cushing, David E., 4,451,883, Cl. 364-200.000.

Woodward, John W.: *See—*
Brightman, Barrie; Ellis, Thomas E.; Jones, James E.; Lenk, Pedro A.; Shah, Jayantkumar R.; Stewart, William H.; and Woodward, John W., 4,451,702, Cl. 179-18.0ES.

Worner, Gunter: *See—*
Hornig, Rudolf; and Worner, Gunter, 4,451,245, Cl. 464-181.000.

Worthington, Charles E. Bolt-cutter device. 4,450,626, Cl. 30-226.000.

Wright, Christopher J.: *See—*
Butler, Graham; and Wright, Christopher J., 4,451,580, Cl. 502-335.000.

Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., to USM Corporation. Component inserting machine. 4,450,619, Cl. 29-564.100.

Wroblowa, Halina S.: *See—*
Dzieciuch, Matthew A.; Wroblowa, Halina S.; and Kummer, Joseph T., 4,451,543, Cl. 429-206.000.

Wuelfing, Johanna: *See—*
Goring, Joachim E., 4,451,449, Cl. 424-253.000.

Wullenweber, Heinz, to Metallgesellschaft Aktiengesellschaft. Filter-press type electrolyzer for water. 4,451,347, Cl. 204-258.000.

Wurttembergische Parfumerie-Fabrik GmbH: *See—*
Scheller, Hans U.; and Scheller, Karl A., 4,450,599, Cl. 15-22.00R.

Wyllie, Michael G.: *See—*
White, Alan C.; and Wyllie, Michael G., 4,451,465, Cl. 424-251.000.

Wynn, M. J.: *See*—
Kaswinkel, K. D.; and Wynn, M. J., 4,451,297, Cl. 134-9.000.
Xerox Corporation: *See*—
Gruber, Robert J.; and Knapp, John F., 4,451,837, Cl. 346-153.100.
Holmes, Maurice F.; and Garavuso, Gerald M., 4,451,028, Cl. 271-11.000.
Teeter, Dennis P.; and Ford, Brian R., 4,451,030, Cl. 271-265.000.
Yaegashi, Takehisa: *See*—
Takimoto, Toshiyuki; and Yaegashi, Takehisa, 4,450,816, Cl. 123-492.000.
Yagishita, Aisaburo; Mori, Noboru; Kusumi, Kinshiro; and Tsugi, Yoshio, to Kabushiki Kaisha Sanshin Seisakusho. Method and system for recycling washing liquids and the heat contained therein. 4,451,298, Cl. 134-10.000.
Yamada, Takaaki, to Sony Corporation. Phase comparator. 4,451,794, Cl. 328-134.000.
Yamada, Tominori: *See*—
Yamato, Isao; and Yamada, Tominori, 4,451,212, Cl. 417-313.000.
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker. 4,451,718, Cl. 200-147.00R.
Yamaguchi, Hiroshi: *See*—
Sawamoto, Kunifumi; Morita, Tatsuo; Ikeura, Kenji; and Yamaguchi, Hiroshi, 4,450,814, Cl. 123-478.000.
Yamaguchi, Hisao; Fujisawa, Kazuo; Kadowaki, Takashi; Itoh, Susumu; Sasaki, Soji; and Sato, Ichiya, to Hitachi, Ltd.; and Sumitomo Metal Industries, Ltd. Electromagnetic-acoustic measuring apparatus. 4,450,725, Cl. 73-643.000.
Yamaguchi, Shinji: *See*—
Akagi, Takao; Yamaguchi, Shinji; Maeda, Katsura; and Yamamoto, Kazuo, 4,451,534, Cl. 428-372.000.
Yamakage, Tetsuro, to Toyoda Koki Kabushiki Kaisha. Boring tool holder with probes for measuring bore. 4,451,185, Cl. 408-2.000.
Yamamoto, Katsutoshi: *See*—
Kawachi, Shoji; Kadowaki, Toshinori; and Yamamoto, Katsutoshi, 4,451,616, Cl. 525-178.000.
Yamamoto, Kazuo: *See*—
Akagi, Takao; Yamaguchi, Shinji; Maeda, Katsura; and Yamamoto, Kazuo, 4,451,534, Cl. 428-372.000.
Yamamoto, Keisuke: *See*—
Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,846, Cl. 358-56.000.
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; and Yamamoto, Keisuke, 4,451,852, Cl. 358-230.000.
Yamamoto, Kiyomi: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,451,718, Cl. 200-147.00R.
Yamamoto, Satoshi; Hase, Osamu; and Kawata, Tamostu, to Yukamelamin Company, Limited. Method of separating liquid drops from off gas. 4,451,271, Cl. 55-84.000.
Yamashina Seiko-Sho, Ltd.: *See*—
Morita, Kiyoshi, 4,450,616, Cl. 29-446.000.
Yamashita, Hiromichi; Watari, Yoshiharu; Mutsuro, Hideaki; and Takagi, Kenji, to Teijin Limited; and Penta-Ocean Construction Co., Ltd. Method for improving soft ground by sand drain method and cylindrical bag for use in same. 4,451,175, Cl. 405-50.000.
Yamashita, Katsuji; Umetsu, Hiroshi; Sato, Hirotaka; Matsuoka, Yoshio; and Kida, Kei, to Hitachi, Ltd. Automatic chemical analyzer. 4,451,433, Cl. 422-63.000.
Yamashita, Mitsuyasu; Igarashi, Hiroshi; and Koga, Shosuke, to NGK Insulators, Ltd.; and Kobayashi Institute of Physical Research. Structure for decreasing low frequency air vibration. 4,450,931, Cl. 181-198.000.
Yamashita, Seizi: *See*—
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Yamashita, Seizi; and Takahashi, Noriyoshi, 4,451,752, Cl. 310-186.000.
Yamato, Isao; and Yamada, Tominori, to Mitsui Engineering & Shipbuilding Co. Ltd. Pumping system for oil production. 4,451,212, Cl. 417-313.000.
Yamato, Motoyuki; and Natsuume, Tadao, to Nippon Zeon Co., Ltd. Epoxy resin composition. 4,451,637, Cl. 528-115.000.
Yamauchi, Takashi: *See*—
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,451,674, Cl. 568-639.000.
Yamazaki, Isao, to Sony Corporation. Display apparatus for simultaneous display of character information having different character pitches. 4,451,899, Cl. 364-900.000.
Yamazaki, Shunpei. Semiconductor photoelectric conversion device. 4,451,838, Cl. 357-2.000.
Yamazaki, Yoshio: *See*—
Fukuchi, Masakazu; Oishi, Keiji; and Yamazaki, Yoshio, 4,451,134, Cl. 355-3.0DD.
Yan, Chan K., to W. Haking Enterprises Limited. Disc camera with handle grip cover. 4,451,130, Cl. 354-82.000.
Yanagawa, Nobuyuki; and Kamiyama, Shinichi, to Ricoh Company, Ltd. Cleaning apparatus for photoconductive element. 4,451,139, Cl. 355-15.000.
Yanagida, Tuneo; and Kato, Kiichi, to Olympus Optical Company Limited. Information reproducing apparatus based on opto-magnetic effect. 4,451,863, Cl. 360-114.000.
Yanagisawa, Masanobu: *See*—
Ono, Masaaki; Fujiwara, Yoshiro; and Yanagisawa, Masanobu, 4,451,805, Cl. 333-195.000.
Yarwood, John C.; Ungarean, Gary L.; Kindlmann, Peter J.; and Tyler, Derek E., to Olin Corporation. Process and apparatus for electromagnetic casting of multiple strands having individual head control. 4,450,890, Cl. 164-452.000.
Yasuda, Naohiko; Okutsu, Masaru; Iwagami, Hisao; Nakamiya, Teruaki; and Takase, Ichiro, to Ajinomoto Company, Inc. Imidazolecarboxylic acid derivatives. 4,451,399, Cl. 260-239.100.
Yasuda, Yoshinori: *See*—
Ogawa, Koji; Taguchi, Hiroaki; Tsutsumi, Takao; Yasuda, Yoshinori; and Takase, Akio, 4,451,043, Cl. 273-186.00R.
Yasumura, Satoshi, to Trio Kabushiki Kaisha. Volume control apparatus. 4,451,796, Cl. 330-127.000.
Yasumuro, Hisakazu: *See*—
Ishibashi, Kazuhisa; Kurashima, Hideo; Yasumuro, Hisakazu; Watanabe, Michio; Imatani, Tsuneo; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,451,316, Cl. 156-274.600.
Yawata, Shigeo: *See*—
Hiraki, Shunichi; Kikuchi, Kiyoshi; Yawata, Shigeo; and Miyagawa, Masafumi, 4,451,303, Cl. 148-187.000.
Yazaki, Jinichi; Sakano, Kozaburo; and Matsuo, Junichi, to Toyo Seikan Kaisha, Ltd. Multi-layer plastic vessel. 4,451,512, Cl. 428-36.000.
Yazawa, Kouzou: *See*—
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,041, Cl. 273-167.00H.
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,042, Cl. 273-171.000.
Yeh, James T., to International Business Machines Corporation. Electrode treatment for plasma patterning of polymers. 4,451,349, Cl. 204-298.000.
Yokono, Hitoshi: *See*—
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitumasa, 4,451,551, Cl. 430-270.000.
Yokota, Mitsuyoshi: *See*—
Iwaki, Yoshiyuki; Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,451,776, Cl. 322-22.000.
Yokoyama, Hiroshi: *See*—
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, 4,450,803, Cl. 123-308.000.
Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Gain-controlled amplifier. 4,451,798, Cl. 330-254.000.
Yoneda, Haruyuki: *See*—
Ikegami, Tadashi; Takaya, Katsuhiko; and Yoneda, Haruyuki, 4,451,573, Cl. 502-113.000.
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Heat resistant resin composition comprising modified polyamide-imide resin having carboxyl groups. 4,451,621, Cl. 525-426.000.
Yoshida, Hajime, to Hajime Industries Ltd. Pattern discrimination method. 4,451,929, Cl. 382-15.000.
Yoshida Kogyo K.K.: *See*—
Matsuda, Yoshio; Hata, Masahiko; and Ogihara, Toru, 4,450,694, Cl. 66-193.000.
Yoshida, Masazumi: *See*—
Kawamura, Takao; and Yoshida, Masazumi, 4,451,546, Cl. 430-69.000.
Yoshikawa, Masayuki: *See*—
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,041, Cl. 273-167.00H.
Hayashi, Keijiro; Awano, Toshimi; Yoshikawa, Masayuki; Yazawa, Kouzou; and Ito, Takashi, 4,451,042, Cl. 273-171.000.
Yoshikawa, Sumio: *See*—
Takenaka, Yuji; and Yoshikawa, Sumio, 4,451,142, Cl. 355-55.000.
Yoshikumi, Chikao; Sakurai, Katsuo; Omura, Yoshio; Nohara, Mayumi; Ando, Takao; and Motokawa, Isamu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cyclodextrin and method for promoting the proliferation of intestinal bifidobacteria. 4,451,457, Cl. 424-180.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Takada, Takuzo; Sugirua, Hiroaki; and Ilzuka, Takao, 4,450,878, Cl. 141-48.000.
Yoshio, Toshihiko: *See*—
Ito, Hiroshi; Yoshio, Toshihiko; and Nagashima, Masao, 4,450,611, Cl. 29-156.8FC.
Yoshioka, Takeo: *See*—
Okabe, Mitsuyasu; Yoshioka, Takeo; Fukagawa, Yasuo; Okamoto, Rokuro; Kouno, Kageaki; and Ishikura, Tomoyuki, 4,451,401, Cl. 260-245.20T.
Yoshioka, Tsutomu: *See*—
Miura, Toshikatu; Kikuchi, Hiroto; Okada, Yukio; and Yoshioka, Tsutomu, 4,451,518, Cl. 428-137.000.
Yoshiyasu, Hajimu: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,451,718, Cl. 200-147.00R.
Young, Alan C.: *See*—
Lucas, James G.; Young, Alan C.; and Hinds, Paul M., 4,451,830, Cl. 343-768.000.
Young, Virgel J.; and Myers, Harry S., Jr., to United States of America, Navy. Automatic strobe/camera control unit. 4,451,847, Cl. 358-99.000.
Youngstown Steel Door Co., The: *See*—
Fritz, William E.; and McComb, Ronald J., 4,450,773, Cl. 105-282.00A.
Yu, Terry T., to Energy Conversion Devices, Inc. Tellurium imaging composition including base. 4,451,556, Cl. 430-346.000.
Yui, Ryosuki; Kume, Ketsuke; Hashi, Masaaki; and Niikura, Junji, to Sekisui Jushi Kabushiki Kaisha. Method for producing polyethylene terephthalate packing material. 4,451,422, Cl. 264-178.00R.

Yukamelamin Company, Limited: *See*—
Yamamoto, Satoshi; Hase, Osamu; and Kawata, Tamostu, 4,451,271, Cl. 55-84.000.
Zakai, Avi, to Mil Mutzarim Techniim B.M. Tube-diaphragm valve. 4,451,023, Cl. 251-5.000.
Zaporozhsky Konstruktorsko-Tekhnologichesky Institut Selskokhozyaistvennogo Mashinostroenia: *See*—
Erasov, Fedor N.; Chumachenko, Boris A.; and Potaichuk, Vladimir M., 4,451,216, Cl. 418-61.00B.
Zeilinger, Karl, to Daimler-Benz Aktiengesellschaft. Valve clearance compensator for internal combustion engines. 4,450,799, Cl. 123-90.530.
Zhivkova, Ljudmila V.: *See*—
Tarasov, Jury A.; Zhivkova, Ljudmila V.; Kotlyar, Anatoly M.; Panchokha, Vasily P.; Alexeenko, Natalia V.; Grabchenko, Anatoly I.; Lappo, Viktor G.; Boyarunas, Albert M.; Drozhin, Vitaly F.; Andreev, Anatoly A.; Gavrilko, Igor V.; Napadov, Mikhail A.; Padalka, Valentin G.; and Sapozhnikov, Abram L., 4,451,236, Cl. 433-207.000.
Zick, Gregory L.; and Saulson, Stanley H., to Cordis Corporation. Solid state reference electrode. 4,450,842, Cl. 128-635.000.
Zielinski, Walter J.: *See*—
Cook, Milton L.; Keyser, William L.; Swanson, Paul; Zielke, Michael W.; and Zielinski, Walter J., 4,451,488, Cl. 426-89.000.
Zielke, Michael W.: *See*—
Cook, Milton L.; Keyser, William L.; Swanson, Paul; Zielke, Michael W.; and Zielinski, Walter J., 4,451,488, Cl. 426-89.000.
Zimmer, Kurt, to Villeroy & Boch Keramische Werke KG. Method of applying color relief decorations to ceramic and like products. 4,451,307, Cl. 156-63.000.
Zimmerman, James. Mixing device. 4,451,154, Cl. 366-186.000.
Ziv, Avraham, to American Safety Equipment Corporation. Automatic locking safety belt retraction apparatus with resetting means. 4,451,062, Cl. 280-806.000.
Zukausky, Keith E., to Eaton Corporation. Venturi power supply and actuator system. 4,450,696, Cl. 68-18.0FA.
Zukausky, Keith E., to Eaton Corporation. Electromagnetic device. 4,451,809, Cl. 335-255.000.
Zulliger, Hans-Rudolf, to Mettler Instrumente AG. Dynamometer transducer utilizing an amorphous metal. 4,451,817, Cl. 338-47.000.
Zuniga, Michael A., to Mid Coast Electronics. Magnetic safety receptacle and plug. 4,451,113, Cl. 339-12.00R.
Zurcher Kantonalbank: *See*—
Burtscher, Paul, 4,451,416, Cl. 264-46.600.
Zutter, Hans: *See*—
Simon, Lionel N.; Mueller, Hans-Rudolf; and Zutter, Hans, 4,451,478, Cl. 424-273.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Boeing Company, The: *See—*
Drakeley, George T., Re. 31,591, Cl. 244-110.00B.

Drakeley, George T., to Boeing Company, The. Fuselage tail jet engine thrust reverser and method. Re. 31,591, Cl. 244-110.00B.

Heilenz, Siegfried. Method and apparatus for operating a water-jet pump. Re. 31,592, Cl. 417-54.000.

Mitsui, Michio, to Ransburg Japan, Ltd. Atomization in electrostatic coating. Re. 31,590, Cl. 427-31.000.

Ransburg Japan, Ltd.: *See—*
Mitsui, Michio, Re. 31,590, Cl. 427-31.000.

LIST OF DESIGN PATENTEES

A G Motor Corp.: *See—*
Skaff, Ronald V.; and Giobbi, William, 274,063, Cl. D15-30.000.

Abraham, Nusri M., to Corbron Foundries. Bottle. 274,039, 5-29-84, Cl. D9-323.000.

Allibert S.A.: *See—*
Boroch, Jersy, 274,023, Cl. D6-86.000.
Boroch, Jersy, 274,026, Cl. D6-99.000.

American Safety Razor Company: *See—*
Iten, Clemens A., 274,010, Cl. D28-47.000.

Anthos S.A.: *See—*
Bulgari, Giovanni, 274,042, Cl. D10-18.000.

Argentina, Joseph N. Drain box. 274,004, 5-29-84, Cl. D25-55.000.

Au, Albert K. H.: *See—*
Wong, Ka W.; and Au, Albert K. H., 274,048, Cl. D10-106.000.

Barows, Robert C. Adjustable wing mirror attachable to the rear view mirror of an automobile, or similar article. 274,054, 5-29-84, Cl. D12-187.000.

Bennet, W. Fletcher, to Sontek Industries, Inc. Patient communicator. 274,060, 5-29-84, Cl. D14-68.000.

Bland, Fred N. Water walker. 274,078, 5-29-84, Cl. D21-238.000.

Boroch, Jersy, to Allibert S.A. Bathroom shelf. 274,023, 5-29-84, Cl. D6-86.000.

Boroch, Jersy, to Allibert S.A. Wall-mounted towel rack. 274,026, 5-29-84, Cl. D6-99.000.

Brandsaeter, Helge, to Geophysical Company of Norway A/S. Towable buoyant body. 274,050, 5-29-84, Cl. D12-300.000.

Bridgestone Tire Company Limited: *See—*
Ohkuni, Shinichiro; and Nishio, Hideaki, 274,051, Cl. D12-146.000.

Brunko, Randy G. Sectional puzzle. 274,074, 5-29-84, Cl. D21-107.000.

Bryant, Peter D.: *See—*
Emms, Norman R.; and Bryant, Peter D., 274,071, Cl. D21-149.000.
Emms, Norman R.; and Bryant, Peter D., 274,072, Cl. D21-63.000.

Bulgari, Giovanni, to Anthos S.A. Traveling clock. 274,042, 5-29-84, Cl. D10-18.000.

Bunn-O-Matic Corporation: *See—*
Daugherty, Donald L., 274,029, Cl. D7-309.000.

Burruss, Harrison. Safety flush valve fitting for automotive air conditioner. 274,082, 5-29-84, Cl. D23-21.000.

Burruss, Harrison. Safety flush valve fitting for automotive air conditioner. 274,083, 5-29-84, Cl. D23-21.000.

Byers, Bruce E. Combined seat and detachable tray for a child. 274,020, 5-29-84, Cl. D6-12.000.

Cadbury Schweppes PLC: *See—*
Jeans, Robina E., 274,028, Cl. D7-308.000.

Caldwell, John W., to Pacific Furniture Manufacturing Company. Chair. 274,022, 5-29-84, Cl. D6-69.000.

Carlsson, Ake: *See—*
Nilsson, Hans E.; and Carlsson, Ake, 274,088, Cl. D23-77.000.

Carter, Dale. Audio speaker cabinet. 274,057, 5-29-84, Cl. D14-33.000.

Caruso, Richard. Hair clip. 274,009, 5-29-84, Cl. D28-39.000.

Cassai, Gino H.; and Cassai, Henry J. Adjustable cosmetic applicator. 274,008, 5-29-84, Cl. D28-7.000.

Cassai, Henry J.: *See—*
Cassai, Gino H.; and Cassai, Henry J., 274,008, Cl. D28-7.000.

Combi Co. Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshiun, 274,097, Cl. D24-34.000.

Conti, Rino: *See—*
Daenen, Robert H. C. M.; and Conti, Rino, 274,030, Cl. D7-391.000.

Corbron Foundries: *See—*
Abraham, Nusri M., 274,039, Cl. D9-323.000.

Crim, Phillip A.; Hawkins, Larry S.; and Szablak, Michael J., to Rubbermaid Commercial Products Inc. Hanger bracket for pocket file. 274,037, 5-29-84, Cl. D8-373.000.

Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Cover for a food storage container or the like. 274,030, 5-29-84, Cl. D7-391.000.

Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and Conti, Rino, 274,030, Cl. D7-391.000.

Daugherty, Donald L., to Bunn-O-Matic Corporation. Coffee making machine. 274,029, 5-29-84, Cl. D7-309.000.

de Man, Heiko T., to Gamble, Inc. Liquor dispensing head. 274,031, 5-29-84, Cl. D7-398.000.

Djurina, John. Fencing. 274,006, 5-29-84, Cl. D25-38.000.

Dobbs, J. Edward, III, to Golden Eagle Enterprises Inc. Towel-tie bar. 274,025, 5-29-84, Cl. D6-99.000.

Doe, Walter P. Pull toy. 274,075, 5-29-84, Cl. D21-150.000.

Drag Specialties, Inc.: *See—*
Stahel, Alwin J., 274,053, Cl. D12-126.000.

Eldon Industries, Inc.: *See—*
Evenson, Mel, 274,066, Cl. D19-92.000.
Evenson, Mel, 274,067, Cl. D19-92.000.

Emms, Norman R.; and Bryant, Peter D., to Hestair Kiddicraft Limited. Child's crib toy. 274,071, 5-29-84, Cl. D21-149.000.

Emms, Norman R.; and Bryant, Peter D., to Hestair Kiddicraft Limited. Child's crib toy. 274,072, 5-29-84, Cl. D21-63.000.

Engelhardt, Philip L. Cuff link. 274,017, 5-29-84, Cl. D2-422.000.

Evenson, Mel, to Eldon Industries, Inc. Desk tray. 274,066, 5-29-84, Cl. D19-92.000.

Evenson, Mel, to Eldon Industries, Inc. Paper tray. 274,067, 5-29-84, Cl. D19-92.000.

Everlast World's Boxing Headquarters Corp.: *See—*
Golomb, John C., 274,015, Cl. D2-361.000.

Fayram, Richard: *See—*
Hall, Jack P.; Fayram, Richard; and Muscatine, Jeffrey, 274,059, Cl. D14-54.000.

Fromm, Stephen J. Dispenser for playing cards or the like. 274,069, 5-29-84, Cl. D21-57.000.

Fukuoka Paper Manufacturing Co., Ltd.: *See—*
Kato, Hideo, 274,041, Cl. D9-434.000.

G & R Machine & Vending, Inc.: *See—*
Schraml, Eugene C., 274,036, Cl. D8-370.000.

Gamble, Inc.: *See—*
de Man, Heiko T., 274,031, Cl. D7-398.000.

Geophysical Company of Norway A/S: *See—*
Brandsaeter, Helge, 274,050, Cl. D12-300.000.

Giobbi, William: *See—*
Skaff, Ronald V.; and Giobbi, William, 274,063, Cl. D15-30.000.

Golden Eagle Enterprises Inc.: *See—*
Dobbs, J. Edward, III, 274,025, Cl. D6-99.000.

Golomb, John C., to Everlast World's Boxing Headquarters Corp. Boxing glove. 274,015, 5-29-84, Cl. D2-361.000.

Goutchat, Maurice. Combined holder for visiting cards, memo sheets and a writing instrument. 274,065, 5-29-84, Cl. D19-78.000.

Gravity Guidance, Inc.: *See—*
Miller, Jack V., 274,076, Cl. D21-191.000.

Gross, Bill. Loudspeaker. 274,058, 5-29-84, Cl. D14-34.000.

Hall, Dale E. Combined fish hook set and fish line snubber. 274,080, 5-29-84, Cl. D22-30.000.

Hall, Jack P.; Fayram, Richard; and Muscatine, Jeffrey, to Harris Corporation. Housing for a graphic telephone. 274,059, 5-29-84, Cl. D14-54.000.

Hansen, Elmer K. Cropper platform for a tobacco harvesting machine. 274,062, 5-29-84, Cl. D15-27.000.

Harris Corporation: *See—*
Hall, Jack P.; Fayram, Richard; and Muscatine, Jeffrey, 274,059, Cl. D14-54.000.

Hawkins, Larry S.: *See—*
Crim, Phillip A.; Hawkins, Larry S.; and Szablak, Michael J., 274,037, Cl. D8-373.000.

Hestair Kiddicraft Limited: *See—*
Emms, Norman R.; and Bryant, Peter D., 274,071, Cl. D21-149.000.
Emms, Norman R.; and Bryant, Peter D., 274,072, Cl. D21-63.000.

Hirose, Mutsuo: *See—*
Iwakura, Masato; Hirose, Mutsuo; and Yamada, Toshiyuki, 274,052, Cl. D12-110.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Iwakura, Masato; Hirose, Mutsuo; and Yamada, Toshiyuki, 274,052, Cl. D12-110.000.

Hoshino Gakki Co., Ltd.: *See—*
Hoshino, Yoshihiro, 274,064, Cl. D17-21.000.

Hoshino, Yoshihiro, to Hoshino Gakki Co., Ltd. Tailpiece for guitar. 274,064, 5-29-84, Cl. D17-21.000.

Howmedica, Inc.: *See—*
Kenna, Robert V., 274,090, Cl. D24-26.000.
Kenna, Robert V., 274,091, Cl. D24-26.000.
Kenna, Robert V., 274,092, Cl. D24-26.000.
Kenna, Robert V., 274,093, Cl. D24-26.000.
Kenna, Robert V., 274,094, Cl. D24-26.000.
Kenna, Robert V., 274,095, Cl. D24-26.000.

Infrarodteknik AB: *See—*
Nilsson, Hans E.; and Carlsson, Ake, 274,088, Cl. D23-77.000.

International Laser Systems, Inc.: *See—*
Morris, James F., Jr.; Visovatti, Ramon; and Wangler, Richard J., 274,089, Cl. D24-8.000.

Ishii, Kenshiun: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshiun, 274,097, Cl. D24-34.000.

Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshiun, 274,097, Cl. D24-34.000.

Iten, Clemens A., to American Safety Razor Company. Sleeve for a disposable safety razor. 274,010, 5-29-84, Cl. D28-47.000.

Iwakura, Masato; Hirose, Mutsuo; and Yamada, Toshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 274,052, 5-29-84, Cl. D12-110.000.

Iwasa, Naotoshi: *See—*
Suzuki, Masatsugu; and Iwasa, Naotoshi, 274,061, Cl. D14-94.000.

J.A.R. Sales, Inc.: *See—*
Tung, Tonney, 274,073, Cl. D21-107.000.

Jeans, Robina E., to Cadbury Schweppes PLC. Beverage dispenser. 274,028, 5-29-84, Cl. D7-308.000.

Kasai, Kazumi, to Yoshida Kogyo K.K. Slide fastener chain. 274,016, 5-29-84, Cl. D2-415.000.

Kato, Hideo, to Fukuoka Paper Manufacturing Co., Ltd. Corner pad. 274,041, 5-29-84, Cl. D9-434.000.

Kaufman, Jack W. Disposable swab applicator package with standby reservoir. 274,098, 5-29-84, Cl. D24-34.000.

Kayline Enterprises, Inc.: *See—*
Reiner, Kenneth, 274,014, Cl. D34-21.000.

Kenna, Robert V., to Howmedica, Inc. Transverse tibial cutting jig for the implantation of a prosthetic knee. 274,090, 5-29-84, Cl. D24-26.000.

Kenna, Robert V., to Howmedica, Inc. Femoral chamfer cutting jig for the implantation of a prosthetic knee. 274,091, 5-29-84, Cl. D24-26.000.

Kenna, Robert V., to Howmedica, Inc. Femoral chamfer cutting jig for the implantation of a prosthetic knee. 274,092, 5-29-84, Cl. D24-26.000.

Kenna, Robert V., to Howmedica, Inc. Femoral spacer/tensor jig for the implantation of a prosthetic knee. 274,093, 5-29-84, Cl. D24-26.000.

Kenna, Robert V., to Howmedica, Inc. Tibial positioning/fixation jig for the implanation of a prosthetic knee. 274,094, 5-29-84, Cl. D24-26.000.

Kenna, Robert V., to Howmedica, Inc. Femoral drill jig for the implantation of a prosthetic knee. 274,095, 5-29-84, Cl. D24-26.000.

Keystone Consolidated Industries, Inc.: *See—*
Pawlow, Valentin, 274,035, Cl. D8-316.000.

Kitz Corporation: *See—*
Yanagi, Sori, 274,084, Cl. D23-30.000.
Yanagi, Sori, 274,085, Cl. D23-30.000.
Yanagi, Sori, 274,087, Cl. D23-30.000.

Knemeyer, Doris R., administrator: *See—*
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,044, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,045, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,046, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,047, Cl. D10-74.000.

Knemeyer, Siegfried, deceased: *See—*
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,044, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,045, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,046, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,047, Cl. D10-74.000.

Laboratoires Prodene-Klint: *See—*
Vignot, Andre, 274,024, Cl. D6-95.000.

Lacina, Erciel F. Work piece protecting pad for use on a bar clamp, or similar article. 274,034, 5-29-84, Cl. D8-72.000.

Lafferty, Thomas G. Foam generator for a cleaning machine. 274,011, 5-29-84, Cl. D32-01.000.

Lai, Kwok C. Multi-purpose hand tool. 274,032, 5-29-84, Cl. D8-55.000.

Lengacher, Eli. Lamp. 274,007, 5-29-84, Cl. D26-93.000.

Long, Rubina M.: *See—*
Porter, Harvey; and Long, Rubina M., 274,005, Cl. D25-87.000.

Ma, Hansan, to Milton Bradley International, Inc. Ball toy. 274,070, 5-29-84, Cl. D21-59.000.

Marker-Patentverwertungsgesellschaft mbH.: *See—*
Segers, Hermann R.; and Schultes, Herbert H., 274,077, Cl. D21-230.000.

Mattel, Inc.: *See—*
Wong, Ka W.; and Au, Albert K. H., 274,048, Cl. D10-106.000.

Merry, Carl A., to Schaefer Marine, Inc. Pelican hook. 274,038, 5-29-84, Cl. D8-382.000.

Miller, Jack V., to Gravity Guidance, Inc. Support for doorway exerciser or similar article. 274,076, 5-29-84, Cl. D21-191.000.

Miller, Lawrence L. Drill guide. 274,033, 5-29-84, Cl. D8-71.000.

Milton Bradley International, Inc.: *See—*
Ma, Hansan, 274,070, Cl. D21-59.000.

Morris, James F., Jr.; Visovatti, Ramon; and Wangler, Richard J., to International Laser Systems, Inc. Laser for weapon simulator system. 274,089, 5-29-84, Cl. D24-8.000.

Muscatine, Jeffrey: *See—*
Hall, Jack P.; Fayram, Richard; and Muscatine, Jeffrey, 274,059, Cl. D14-54.000.

Myer, Fritz. Combined speaker housing and light display. 274,056, 5-29-84, Cl. D14-33.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshiun, to Combi Co. Ltd. Heat therapeutic belt. 274,097, 5-29-84, Cl. D24-34.000.

Nilsson, Hans E.; and Carlsson, Ake, to Infrarodteknik AB. Travelling carrier for heating elements in a paint spray booth. 274,088, 5-29-84, Cl. D23-77.000.

Nishio, Hideaki: *See—*
Ohkuni, Shinichiro; and Nishio, Hideaki, 274,051, Cl. D12-146.000.

NSK-Warner K.K.: *See—*
Yanagi, Sori, 274,086, Cl. D23-30.000.

Ohkuni, Shinichiro; and Nishio, Hideaki, to Bridgestone Tire Company Limited. Vehicle tire. 274,051, 5-29-84, Cl. D12-146.000.

Oki Electric Industry Co., Ltd.: *See—*
Suzuki, Masatsugu; and Iwasa, Naotoshi, 274,061, Cl. D14-94.000.

Pacific Furniture Manufacturing Company: *See—*
Caldwell, John W., 274,022, Cl. D6-69.000.

Paine, Larry W. Differential temperature control. 274,043, 5-29-84, Cl. D10-50.000.

Pawlow, Valentin, to Keystone Consolidated Industries, Inc. Pull. 274,035, 5-29-84, Cl. D8-316.000.

Petitt, Donald C. Arm chair. 274,021, 5-29-84, Cl. D6-31.000.

Porter, Harvey; and Long, Rubina M., to Royal Factories, Inc. Grill. 274,005, 5-29-84, Cl. D25-87.000.

Reiner, Kenneth, to Kayline Enterprises, Inc. Mobile storage unit. 274,014, 5-29-84, Cl. D34-21.000.

Ridgley, Brad J. Vitamin dispenser. 274,040, 5-29-84, Cl. D9-339.000.

Rockwell International Corporation: *See—*
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,044, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,045, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,046, Cl. D10-74.000.
Schmidt, Donald F.; and Knemeyer, Siegfried, deceased, 274,047, Cl. D10-74.000.

Royal Factories, Inc.: *See—*
Porter, Harvey; and Long, Rubina M., 274,005, Cl. D25-87.000.

Rubbermaid Commercial Products Inc.: *See—*
Crim, Phillip A.; Hawkins, Larry S.; and Szablak, Michael J., 274,037, Cl. D8-373.000.

Schaefer Marine, Inc.: *See—*
Merry, Carl A., 274,038, Cl. D8-382.000.

Schmidt, Donald F.; and Knemeyer, Siegfried, deceased (by Knemeyer, Doris R., administrator), to Rockwell International Corporation. Attitude director indicator. 274,044, 5-29-84, Cl. D10-74.000.

Schmidt, Donald F.; and Knemeyer, Siegfried, deceased (by Knemeyer, Doris R., administrator), to Rockwell International Corporation. Attitude director indicator. 274,045, 5-29-84, Cl. D10-74.000.

Schmidt, Donald F.; and Knemeyer, Siegfried, deceased (by Knemeyer, Doris R., administrator), to Rockwell International Corporation. Attitude director indicator. 274,046, 5-29-84, Cl. D10-74.000.

Schmidt, Donald F.; and Knemeyer, Siegfried, deceased (by Knemeyer, Doris R., administrator), to Rockwell International Corporation. Attitude director indicator. 274,047, 5-29-84, Cl. D10-74.000.

Schraml, Eugene C., to G & R Machine & Vending, Inc. Gambrel hanger for large animal. 274,036, 5-29-84, Cl. D8-370.000.

Schultes, Herbert H.: *See—*
Segers, Hermann R.; and Schultes, Herbert H., 274,077, Cl. D21-230.000.

Schuster, Ronald J. Cover for a rifle sight. 274,079, 5-29-84, Cl. D22-7.000.

Segers, Hermann R.; and Schultes, Herbert H., to Marker-Patentverwertungsgesellschaft mbH. Ski binding. 274,077, 5-29-84, Cl. D21-230.000.

Shutt, George V. Surgical forceps. 274,096, 5-29-84, Cl. D24-27.000.

Skaff, Ronald V.; and Giobbi, William, to A G Motor Corp. Yard tractor cab. 274,063, 5-29-84, Cl. D15-30.000.

Smith, Ronald E. Bottom bouncer for trolling. 274,081, 5-29-84, Cl. D22-30.000.

Sontek Industries, Inc.: *See*—
Bennet, W. Fletcher, 274,060, Cl. D14-68.000.
Stahel, Alwin J., to Drag Specialties, Inc. Motorcycle side cover. 274,053, 5-29-84, Cl. D12-126.000.
Stead, Eunice L.: *See*—
Stead, Ronald; and Stead, Eunice L., 274,019, Cl. D6-4.000.
Stead, Ronald; and Stead, Eunice L. Combined chair back cover and personal article holder. 274,019, 5-29-84, Cl. D6-4.000.
Stilson, Vern. Wind chime. 274,049, 5-29-84, Cl. D10-116.000.
Sun, George C. Bird feeder. 274,013, 5-29-84, Cl. D30-14.000.
Suzuki, Masatsugu; and Iwasa, Naotoshi, to Oki Electric Industry Co., Ltd. Facsimile transceiver. 274,061, 5-29-84, Cl. D14-94.000.
Sverdlin, Igor. Glass rosette for enclosing chandelier sockets and lightbulbs or the like. 274,068, 5-29-84, Cl. D26-138.000.
Szablak, Michael J.: *See*—
Crim, Phillip A.; Hawkins, Larry S.; and Szablak, Michael J., 274,037, Cl. D8-373.000.
Thompson, Bruce R. Towel holder. 274,027, 5-29-84, Cl. D6-99.000.
Track Tape AB: *See*—
Wester, Anders, 274,055, Cl. D14-11.000.
Tung, Tonney, to J.A.R. Sales, Inc. Hexagonal twist puzzle or the like. 274,073, 5-29-84, Cl. D21-107.000.
Usui, Soichiro. Toothbrush. 274,018, 5-29-84, Cl. D4-25.000.
Vignot, Andre, to Laboratoires Prodene-Klint. Liquid soap dispenser. 274,024, 5-29-84, Cl. D6-95.000.
Visovatti, Ramon: *See*—
Morris, James F., Jr.; Visovatti, Ramon; and Wangler, Richard J., 274,089, Cl. D24-8.000.
Wangler, Richard J.: *See*—
Morris, James F., Jr.; Visovatti, Ramon; and Wangler, Richard J., 274,089, Cl. D24-8.000.
Wester, Anders, to Track Tape AB. Tape cartridge. 274,055, 5-29-84, Cl. D14-11.000.
Williams, Robert F. Bin for merchandise. 274,012, 5-29-84, Cl. D34-40.000.
Wong, Ka W.; and Au, Albert K. H., to Mattel, Inc. Electronic alarm. 274,048, 5-29-84, Cl. D10-106.000.
Yamada, Toshiyuki: *See*—
Iwakura, Masato; Hirose, Mutsuo; and Yamada, Toshiyuki, 274,052, Cl. D12-110.000.
Yanagi, Sori, to Kitz Corporation. Valve handwheel. 274,084, 5-29-84, Cl. D23-30.000.
Yanagi, Sori, to KITZ Corporation. Valve handwheel. 274,085, 5-29-84, Cl. D23-30.000.
Yanagi, Sori, to NSK-Warner K.K. Valve handwheel. 274,086, 5-29-84, Cl. D23-30.000.
Yanagi, Sori, to KITZ Corporation. Valve handwheel. 274,087, 5-29-84, Cl. D23-30.000.
Yoshida Kogyo K.K.: *See*—
Kasai, Kazumi, 274,016, Cl. D2-415.000.

LIST OF PLANT PATENTEES

Espinosa, Gavin, to Monrovia Nursery Co. *Photinia*×fraseri cv. Monstock. 5,237, 5-29-84, Cl. 54.000.

Keller, Emil, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Orchis. 5,238, 5-29-84, Cl. 68.000.

Keller, Emil, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Kathi. 5,239, 5-29-84, Cl. 68.000.
Monrovia Nursery Co.: *See*—
Espinosa, Gavin, 5,237, Cl. 54.000.
Oglevee Associates, Inc.: *See*—
Keller, Emil, 5,238, Cl. 68.000.
Keller, Emil, 5,239, Cl. 68.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 29, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 3
1.9 4,450,591
1.912 4,450,592
13 4,450,593

CLASS 4
228 4,450,594
301 4,450,595
447 4,450,596

CLASS 5
2 R 4,450,597

CLASS 8
94.22 4,451,261
125 4,451,262
500 4,451,263
508 4,451,264

CLASS 14
71.1 4,450,598

CLASS 15
22 R 4,450,599
53 A 4,450,600
246 4,450,601
250.32 4,450,602

CLASS 24
132 R 4,450,603
457 4,450,605
652 4,450,604

CLASS 28
257 4,450,607

CLASS 29
33 R 4,450,608
156.4 R 4,450,609
156.5 R 4,450,610
156.8 FC 4,450,611
157 T 4,450,613
417 4,450,614
430 4,450,617
437 4,450,615
446 4,450,616
509 4,450,618
564.1 4,450,619
571 4,450,620
828 4,450,621
842 4,450,622
850 4,450,623
881 4,450,624

CLASS 30
134 4,450,625
226 4,450,626
391 4,450,627

CLASS 33
172 E 4,450,628
184.5 4,450,629

CLASS 34
110 4,450,631
116 4,450,630

CLASS 36
17 PW 4,450,632
101 4,450,633
138 4,450,634

CLASS 37
271 4,450,635

CLASS 40
152 4,450,636
4,450,637
158 R 4,450,638
322 4,450,639
596 4,450,640

CLASS 42
6 4,450,641

CLASS 43
3 4,450,642
12 4,450,643
42.2 4,450,644
42.25 4,450,645
43.14 4,450,646
55 4,450,647
64 4,450,648
135 4,450,649

CLASS 44
51 4,451,265
53 4,451,266
4,451,267

CLASS 46
17 4,450,650

CLASS 48
3 A 4,451,268

CLASS 51
5 D 4,450,651
131.4 4,450,652
211 R 4,450,653
303 4,451,269

CLASS 52
12 4,450,654
36 4,450,655
63 4,450,656
79.9 4,450,657
126.3 4,450,658
167 4,450,659
202 4,450,660
206 4,450,661
223 R 4,450,662
309.4 4,450,663
385 4,450,664
522 4,450,665
749 4,450,666

CLASS 53
127 4,450,667
176 4,450,668
551 4,450,669

CLASS 55
38 4,451,270
84 4,451,271
390 4,451,272

CLASS 56
8 4,450,670
14.6 4,450,671
16.7 4,450,672
17.5 4,450,673

CLASS 57
6 4,450,674
4,450,675
4,450,676
81 4,450,677
333 4,450,678

CLASS 60
251 4,450,679
274 4,450,680
286 4,450,681
4,450,682
290 4,450,683
4,450,684
520 4,450,685
527 4,450,686
530 4,450,687
554 4,450,688
641.7 4,450,689

CLASS 62
12 4,451,273
17 4,451,274
28 4,451,275
116 4,450,690
140 4,450,691
233 4,450,692
514 R 4,450,693

CLASS 68
6 4,451,276

CLASS 66
193 4,450,694

CLASS 68
18 FA 4,450,696

CLASS 70
168 4,450,695
178 4,450,697
312 4,450,698
364 A 4,450,699

CLASS 71
36 4,451,277
66 4,451,278
90 4,451,280
92 4,451,281
4,451,282
93 4,451,279
4,451,283
94 4,451,284
105 4,451,285
107 4,451,286

CLASS 72
62 4,450,612
115 4,450,700
181 4,450,701
250 4,450,702
342 4,450,703
356 4,450,704
379 4,450,705
385 4,450,706
389 4,450,707
481 4,450,708

CLASS 73
35 4,450,709
37 4,450,710
40.5 R 4,450,711
61 R 4,450,712
81 4,450,713
118.1 4,450,714
4,450,715
146.5 4,450,716
151 4,450,717
202 4,450,718
204 4,450,719
247 4,450,720
290 B 4,450,721
293 4,450,722
432 PS 4,450,723
432 R 4,450,724
643 4,450,725
861.35 4,450,726
862.23 4,450,727
862.28 4,450,728
862.34 4,450,729
864.61 4,450,730

CLASS 74
25 4,450,731
107 4,450,732
562 4,450,733
665 F 4,450,734
781 R 4,450,735

CLASS 75
24 4,451,287
60 4,451,288
63 4,451,289
4,451,290
73 4,451,291
238 4,451,292
257 4,451,293

CLASS 81
463 4,450,736

CLASS 82
24 R 4,450,737
82 4,450,738

CLASS 83
23 4,450,739
303 4,450,740
623 4,450,741

CLASS 84
1.03 4,450,742
4,450,743
1.16 4,450,744
1.19 4,450,745
1.24 4,450,746
220 4,450,747
291 4,450,748
462 4,450,749

CLASS 89
33 SF 4,450,750
129 B 4,450,751
142 4,450,752

CLASS 91
35 4,450,753

CLASS 92
138 4,450,754

CLASS 98
36 4,450,755
115 R 4,450,756

CLASS 99
327 4,450,757
332 4,450,758
419 4,450,759
536 4,450,760
580 4,450,761
584 4,450,762

CLASS 100
31 4,450,763
37 4,450,764

CLASS 101
11 4,450,765
183 4,450,766
365 4,450,767

CLASS 102
307 4,450,768
444 4,450,769
523 4,450,770

CLASS 104
1 R 4,450,771
295 4,450,772

CLASS 105
282 A 4,450,773

CLASS 106
75 4,451,294
89 4,451,295

CLASS 108
23 4,450,774
64 4,450,775

CLASS 110
233 4,450,776
342 4,450,777

CLASS 111
3 4,450,778
52 4,450,779

CLASS 112
147 4,450,780
262.1 4,450,781
266.1 4,450,782

CLASS 114
39 4,450,784

CLASS 118
626 4,450,785
719 4,450,786
723 4,450,787

CLASS 119
18 4,450,788
4,450,789
51.12 4,450,790
61 4,450,791
126 4,450,792

CLASS 123
41.41 4,450,798
52 MD 4,450,793
74 R 4,450,794
78 F 4,450,797
79 C 4,450,795
4,450,796
90.53 4,450,799
193 CH 4,450,800
198 F 4,450,801
245 4,450,802
308 4,450,803
366 4,450,804
387 4,450,805
401 4,450,806
403 4,450,807
417 4,450,808
421 4,450,809
425 4,450,810
4,450,811
438 4,450,812
450 4,450,813
458 4,450,783
478 4,450,814
479 4,450,815
492 4,450,816
501 4,450,817
502 4,450,818
4,450,819
514 4,450,820
525 4,450,821
4,450,822
549 4,450,823
569 4,450,824
4,450,825

CLASS 125
11 N 4,450,826

CLASS 126
298 4,450,827
343.5 A 4,450,828
362 4,450,829
450 4,450,830

CLASS 128
14 4,450,831
80 G 4,450,832
90 4,450,833
92 EB 4,450,834
4,450,835
127 4,450,836
201.27 4,450,837
204.23 4,450,838
325 4,450,839
4,450,840
632 4,450,841
635 4,450,842
690 4,450,843
743 4,450,844
4,450,845
789 4,450,846

CLASS 131
365 4,450,847

CLASS 132
73 4,450,848
89 4,450,849

CLASS 134
4 4,451,296
9 4,451,297
10 4,451,298

CLASS 135
78 4,450,850
109 4,450,851

CLASS 136
201 4,451,690
249 4,451,691

CLASS 137
114 4,450,852
212 4,450,853
246.12 4,450,854
312 4,450,855
315 4,450,856
318 4,450,857
505.37 4,450,858
516.29 4,450,859
543.19 4,450,860
553 4,450,861
595 4,450,862
613 4,450,863
624.13 4,450,864
625.29 4,450,868
625.34 4,450,866
625.44 4,450,867
625.48 4,450,869
625.6 4,450,865

CLASS 138
31 4,450,870
140 4,450,871
149 4,450,872
174 4,450,873

CLASS 139
429 4,450,874
435 4,450,875
4,450,876

CLASS 141
1 4,450,877
48 4,450,878
209 4,450,879
285 4,450,880

CLASS 144
84 4,450,881
145 A 4,450,882

CLASS 148
1 4,451,299
6.15 R 4,451,301
6.27 4,451,304
13.1 4,451,302
187 4,451,303

CLASS 156
49 4,451,305
51 4,451,306
63 4,451,307
64 4,451,308
4,451,309
78 4,451,310
86 4,451,311
99 4,451,312
132 4,451,313
148 4,451,314
220 4,451,315
274.6 4,451,316
307.3 4,451,317
353 4,451,318
4,451,319
366 4,451,320
382 4,451,321
461 4,451,322
541 4,451,323
562 4,451,324
583.1 4,451,325
643 4,451,326
646 4,451,327
656 4,451,328
660 4,451,329

CLASS 159
48.2 4,451,330

CLASS 160
229 R 4,450,883
371 4,450,884

CLASS 162
18 4,451,331
30.1 4,451,332
77 4,451,333

CLASS 164
47 4,450,885
75 4,450,886
154 4,450,887
183 4,450,888
361 4,450,889
452 4,450,890
463 4,450,891
467 4,450,892
468 4,450,893
484 4,450,894

CLASS 168
1 4,450,895
4,450,896
2 4,450,897
25 4,450,898
39 4,450,899
42 4,450,900
47 4,450,901
82 4,450,902
110 4,450,903
162 4,450,904

CLASS 166
85 4,450,905
113 4,450,906
223 4,450,907
246 4,450,908
248 4,450,909
261 4,450,910
263 4,450,911
289 4,450,912
303 4,450,913
325 4,450,914

CLASS 172
55 4,450,915
147 4,450,916
328 4,450,917
583 4,450,918

CLASS 173

29 4,450,919
80 4,450,920
162 H 4,450,921

CLASS 174

23 C 4,451,692
52 R 4,451,693
72 B 4,451,694
87 4,451,695
92 4,451,696

CLASS 177

211 4,450,922
212 4,450,923
4,450,924

CLASS 178

3 4,451,697
19 4,451,698

CLASS 179

2 AS 4,451,700
2 EB 4,451,699
2 TV 4,451,701
18 ES 4,451,702
18 F 4,451,704
18 FA 4,451,703
27 D 4,451,705
81 R 4,451,706
84 R 4,451,707
98 4,451,708
107 S 4,451,709
110 A 4,451,710
146 E 4,451,711
175.3 R 4,451,712
189 D 4,451,713

CLASS 180

89.1 4,430,925
312 4,430,926
330 4,430,927

CLASS 181

121 4,430,928
146 4,430,929
158 4,430,930
198 4,430,931
211 4,430,932
228 4,430,934
229 4,430,933

CLASS 182

45 4,430,935
92 4,430,936
206 4,430,937

CLASS 184

42 4,430,938

CLASS 185

39 4,430,939

CLASS 188

67 4,450,606
71.3 4,450,940

CLASS 192

0.084 4,450,946
3.31 4,450,941
48.9 4,450,942
70.12 4,450,944
70.2 4,450,943
89 B 4,450,945
107 R 4,450,947

CLASS 198

389 4,450,948
422 4,450,949
478 4,450,950
482 4,450,951
773 4,450,952
778 4,450,953
793 4,450,954

CLASS 200

5 A 4,451,714
11 G 4,451,715
67 A 4,451,716
82 B 4,451,717
147 R 4,451,718
159 R 4,451,719
296 4,451,720

CLASS 203

11 4,451,334

CLASS 204

35 N 4,451,335
47 4,451,336
67 4,451,337
86 4,451,338
91 4,451,339
117 4,451,340
149 4,451,341
157.1 R 4,451,342
158 R 4,451,343
192 R 4,451,344
206 4,451,345
228 4,451,346
258 4,451,347
290 R 4,451,348
298 4,451,349
422 4,451,350

CLASS 206

39.6 4,450,955
188 4,450,956
220 4,450,957
222 4,450,958
332 4,450,959
334 4,450,960
349 4,450,961
447 4,450,962
521 4,450,963
527 4,450,964
528 4,450,965
547 4,450,966

CLASS 208

10 4,451,351
11 R 4,451,352
33 4,451,353
56 4,451,354
113 4,451,355
263 4,451,356

CLASS 209

131 4,451,357
144 4,451,358
158 4,451,359
230 4,451,360

CLASS 210

136 4,451,361
150 4,451,362
198.2 4,451,363
4,451,364
4,451,365
207 4,451,367
209 4,451,366
238 4,451,368
321.1 4,451,369
4,451,370
325 4,451,371
603 4,451,372
626 4,451,373
656 4,451,374
670 4,451,375
701 4,451,376
708 4,451,377
725 4,451,378
728 4,451,379
739 4,451,380

CLASS 211

13 4,450,967
17 4,450,968
189 4,450,969
4,450,970
201 4,450,971

CLASS 215

221 4,450,972
329 4,450,973

CLASS 219

10.43 4,451,721
86.25 4,451,722
98 4,451,723
390 4,451,725
413 4,451,726
464 4,451,727

CLASS 220

1 T 4,450,974
18 4,450,975
343 4,450,976
458 4,450,977

CLASS 221

13 4,450,978
263 4,450,979
281 4,450,980

CLASS 222

61 4,450,981
93 4,450,982
196 4,450,983
402.22 4,450,984
4,450,985
4,450,986
391 4,450,987
641 4,450,987

CLASS 224

32 A 4,450,988
42.45 R 4,450,989
155 4,450,990
159 4,450,991
163 4,450,992
265 4,450,993
277 4,450,994

CLASS 225

2 4,450,995
43 4,450,996

CLASS 226

97 4,450,997

CLASS 227

8 4,450,998

CLASS 228

20 4,451,000
176 4,450,999

CLASS 229

40 4,451,001

CLASS 235

50 R 4,451,728

CLASS 236

14 4,451,003
101 R 4,451,002

CLASS 239

658 4,451,004

CLASS 241

40 4,451,005

CLASS 242

18 DD 4,451,006
18 R 4,451,007
25 A 4,451,008
54 R 4,451,009
55.53 4,451,010
71 4,451,011
84.2 A 4,451,012
118.4 4,451,013
128 4,451,014

CLASS 244

15 4,451,015
107 4,451,016
110 B Re.31,591
172 4,451,017

CLASS 246

122 R 4,451,018

CLASS 248

1 4,451,019
183 4,451,020
480 4,451,021

CLASS 249

2 4,451,022

CLASS 250

204 4,451,729
227 4,451,730
237 SE 4,451,731
308 4,451,732
311 4,451,737
342 4,451,733
4,451,734
352 4,451,735
376 4,451,736
492.2 4,451,738
506.1 4,451,739

CLASS 251

5 4,451,023

CLASS 252

1 4,451,381
8.6 4,451,382
70 4,451,383
102 4,451,384
132 4,451,385
135 4,451,386
174.15 4,451,387
313 S 4,451,388
315.3 4,451,389
321 4,451,390
512 4,451,391
522 R 4,451,392
536 4,451,393

CLASS 254

104 4,451,024

CLASS 256

65 4,451,025

CLASS 260

112 R 4,451,396
112.5 S 4,451,394
112.5 T 4,451,395
123.7 4,451,397
154 4,451,398
239.1 4,451,399
244.4 4,451,400
245.2 T 4,451,401
396 N 4,451,403
397.1 4,451,405
397.45 4,451,404
465 D 4,451,406
465.4 4,451,407
505 R 4,451,408
513 R 4,451,409
973 4,451,410

CLASS 261

111 4,451,411

CLASS 264

1.3 4,451,412
26 4,451,413
40.5 4,451,414
43 4,451,415
46.6 4,451,416
53 4,451,417
63 4,451,418
164 4,451,419
167 4,451,420
4,451,421
178 R 4,451,422
182 4,451,423
216 4,451,424
300 4,451,425
535 4,451,426

CLASS 269

24 4,451,026

CLASS 271

10 4,451,027
11 4,451,028
236 4,451,029
265 4,451,030
303 4,451,031

CLASS 272

56.5 SS 4,451,032
73 4,451,033
93 4,451,034
137 4,451,035

CLASS 273

26 R 4,451,036
55 R 4,451,037
110 4,451,038
153 S 4,451,039
4,451,040
167 H 4,451,041
171 4,451,042
186 R 4,451,043
189 A 4,451,044
338 4,451,045

CLASS 277

3 4,451,046
26 4,451,047
27 4,451,048
42 4,451,049
134 4,451,050
235 B 4,451,051

CLASS 280

43.23 4,451,052
47.26 4,451,053
104 4,451,054
163 4,451,063
221 4,451,055
259 4,451,064
284 4,451,065
291 4,451,057
423 A 4,451,058
508 4,451,066
632 4,451,059
801 4,451,060
802 4,451,061
806 4,451,062

CLASS 281

31 4,451,067

CLASS 283

75 4,451,068

CLASS 285

3 4,451,056
86 4,451,069
242 4,451,070

CLASS 290

40 C 4,451,740

CLASS 293

128 4,451,072
341.18 4,451,071

CLASS 294

57 4,451,073

CLASS 296

1 S 4,451,074
37.6 4,451,075
97 K 4,451,076
185 4,451,077
188 4,451,078
190 4,451,079

CLASS 297

4 4,451,080
61 4,451,081
90 4,451,082
195 4,451,083
285 4,451,085
312 4,451,086
353 4,451,084
468 4,451,087

CLASS 299

11 4,451,088
43 4,451,089
4,451,090
4,451,091
81 4,451,092
88 4,451,093

CLASS 303

10 4,451,094
71 4,451,095
109 4,451,096

CLASS 305

40 4,451,097

CLASS 307

10 R 4,451,741
66 4,451,742
110 4,451,743
297 4,451,744
475 4,451,745
494 4,451,746
549 4,451,747
578 4,451,748

CLASS 308

184 R 4,451,110
201 4,451,098

CLASS 310

62 4,451,749
88 4,451,750
184 4,451,751
186 4,451,752
315 4,451,753
348 4,451,754
361 4,451,755

CLASS 312

221 4,451,111

CLASS 313

422 4,451,756
489 4,451,757
495 4,451,758
4,451,759
557 4,451,760
586 4,451,761

CLASS 315

87 4,451,762
159 4,451,763
209 R 4,451,764
248 4,451,765
4,451,766
309 4,451,767

CLASS 318

443 4,451,768
689 4,451,769
757 4,451,770
778 4,451,112
800 4,451,771

CLASS 320

1 4,451,772
59 4,451,773
64 4,451,774

CLASS 322

10 4,451,775
22 4,451,776

CLASS 323

210 4,451,777
282 4,451,778
312 4,451,779

CLASS 324

61 R 4,451,780
65 R 4,451,781
77 C 4,451,782
86 4,451,783
142 4,451,784
158 MG 4,451,786
158 R 4,451,785
242 4,451,787
309 4,451,788
338 4,451,789
351 4,451,790
434 4,451,791

CLASS 328

69 4,451,793
134 4,451,794

CLASS 329

145 4,451,792

CLASS 330

107 4,451,795
127 4,451,796
134 4,451,797
254 4,451,798
255 4,451,799
261 4,451,800
278 4,451,801
297 4,451,802

CLASS 333

12 4,451,803
177 4,451,804
195 4,451,805
224 4,451,806

CLASS 335

211 4,451,807
229 4,451,808
255 4,451,809
285 4,451,810
302 4,451,811

CLASS 336

84 C 4,451,812

CLASS 337

17 4,451,813
407 4,451,814

CLASS 338

21 4,451,815
34 4,451,816
47 4,451,817

CLASS 339

12 R 4,451,113
14 R 4,451,099
4,451,100
44 M 4,451,101
74 R 4,451,102
75 MP 4,451,818
93 R 4,451,103
99 R 4,451,104
113 R 4,451,105
123 4,451,106
143 R 4,451,107
177 R 4,451,108
258 S 4,451,109

CLASS 340

347 AD 4,451,821
347 DA 4,451,820
347 DD 4,451,819
642 4,451,822
648 4,451,823
720 4,451,824
750 4,451,825
825.07 4,451,826
825.52 4,451,827

CLASS 343

374 4,451,831
705 4,451,829
768 4,451,830
858 4,451,832
872 4,451,828
4,451,833

CLASS 346

76 PH 4,451,834
4,451,835
137 4,451,836
153.1 4,451,837

CLASS 350

3.75 4,451,114
96.18 4,451,115
96.34 4,451,116
114 4,451,117
310 4,451,118
4,451,119
319 4,451,120
331 R 4,451,121
334 4,451,122
386 4,451,123
427 4,451,124
465 4,451,125
520 4,451,126

CLASS 351

47 4,451,127

CLASS 352

84 4,451,128

CLASS 354

82 4,451,130
173.11 4,451,150
286 4,451,131
324 4,451,132
477 4,451,129

CLASS 355

3 DD 4,451,133
4,451,134
4,451,135
14 C 4,451,137
14 SH 4,451,136
4,451,138
15 4,451,139
4,451,140

28 4,451,141
55 4,451,142
66 4,451,143
99 4,451,144
100 4,451,145

CLASS 356

5 4,451,146
135 4,451,147
138 4,451,148
317 4,451,149
345 4,451,151
440 4,451,152

CLASS 357

2 4,451,838
13 4,451,839
23.6 4,451,841
30 4,451,842
36 4,451,843
59 4,451,844
72 4,451,845

CLASS 358

22 4,451,840
56 4,451,846
99 4,451,847
140 4,451,848
161 4,451,849
191.1 4,451,850
228 4,451,851
230 4,451,852
281 4,451,853
282 4,451,854
289 4,451,855
299 4,451,856
312 4,451,857

CLASS 360

32 4,451,858
75 4,451,859
77 4,451,860
84 4,451,861
109 4,451,862
114 4,451,863
130.33 4,451,864

CLASS 361

23 4,451,865
56 4,451,866
248 4,451,867
306 4,451,868
309 4,451,869
433 4,451,870

CLASS 362

186 4,451,871
251 4,451,872
267 4,451,873
285 4,451,874
297 4,451,875

CLASS 363

21 4,451,876
59 4,451,877

CLASS 364

151 4,451,878
181 4,451,879
200 4,451,880
4,451,881
4,451,882
4,451,883
4,451,884
4,451,885
4,451,886
424 4,451,887
426 4,451,888
4,451,889
4,451,890
431.12 4,451,891
474 4,451,892
494 4,451,893
509 4,451,894
521 4,451,895
569 4,451,896
900 4,451,897
4,451,898
4,451,899
4,451,900
4,451,901

CLASS 365

1 4,451,902
94 4,451,903
182 4,451,904
185 4,451,905
203 4,451,907
205 4,451,906
222 4,451,908

CLASS 366

13 4,451,153
186 4,451,154
265 4,451,155

CLASS 367

99 4,451,909
199 4,451,910

CLASS 368

10 4,451,156
11 4,451,157
63 4,451,158
69 4,451,159
220 4,451,161
290 4,451,160

CLASS 369

31 4,451,911
77.2 4,451,912
109 4,451,914
4,451,915
110 4,451,913

CLASS 370

16 4,451,916
108 4,451,917

CLASS 371

27 4,451,918
38 4,451,919
40 4,451,920
48 4,451,921
49 4,451,922

CLASS 372

32 4,451,923
59 4,451,924

CLASS 373

81 4,451,925
93 4,451,926

CLASS 376

267 4,451,427
333 4,451,428

CLASS 381

15 4,451,927
86 4,451,928

CLASS 382

15 4,451,929

CLASS 384

95 4,451,162
106 4,451,163

CLASS 400

196 4,451,164
196.1 4,451,165
208 4,451,166
621 4,451,167
623 4,451,168
631 4,451,169

CLASS 403

57 4,451,170

CLASS 404

31 4,451,171

CLASS 405

49 4,451,172
50 4,451,175
53 4,451,173
146 4,451,176
195 4,451,177
196 4,451,174
258 4,451,178
260 4,451,179
269 4,451,180
302 4,451,181

CLASS 406

86 4,451,182
94 4,451,183
105 4,451,184

CLASS 408

2 4,451,185
54 4,451,186

CLASS 409

187 4,451,187

CLASS 410

42 4,451,188

CLASS 411

34 4,451,189
337 4,451,190

CLASS 414

118 4,451,191
306 4,451,192
563 4,451,193
731 4,451,194
732 4,451,195
733 4,451,196
737 4,451,197
779 4,451,198

CLASS 415

2 A 4,451,199
110 4,451,200
181 4,451,201

CLASS 416

214 R 4,451,202
215 4,451,203
4,451,204
219 R 4,451,205
228 4,451,206
237 4,451,208
237 R 4,451,207

CLASS 417

38 4,451,209
52 4,451,210
54 Re.31,592
271 4,451,211
313 4,451,212
366 4,451,213

CLASS 418

11 4,451,214
23 4,451,215
61 B 4,451,216
69 4,451,217
137 4,451,218
138 4,451,219
255 4,451,220

CLASS 419

33 4,451,429

CLASS 420

464 4,451,639
492 4,451,430
588 4,451,431

CLASS 422

63 4,451,433
102 4,451,434
171 4,451,435
186.29 4,451,436

CLASS 423

3 4,451,437
20 4,451,438
55 4,451,439
112 4,451,440
213.2 4,451,441
224 4,451,442
432 4,451,443
480 4,451,444
645 4,451,445

CLASS 424

1.1 4,451,450
4,451,451
78 4,451,452
81 4,451,453
92 4,451,446
127 4,451,454
131 4,451,447
177 4,451,455
4,451,456
180 4,451,457
183 4,451,458
195 4,451,459
238 4,451,460
246 4,451,461
248.55 4,451,462
249 4,451,463
251 4,451,448
4,451,464
4,451,465
4,451,466
4,451,467
253 4,451,449
256 4,451,468
4,451,473
260 4,451,470
263 4,451,469
4,451,471
4,451,472

CLASS 425

266 4,451,474
270 4,451,475
272 4,451,476
273 N 4,451,477
273 P 4,451,479
273 R 4,451,478
278 4,451,480
279 4,451,481
284 4,451,482
285 4,451,483
305 4,451,484
316 4,451,485
317 4,451,486

CLASS 426

8 4,451,488
254 4,451,489
553 4,451,490
555 4,451,491
564 4,451,492
602 4,451,493
649 4,451,494

CLASS 427

27 4,451,495
31 Re.31,590
34 4,451,496
38 4,451,498
4,451,499
4,451,500
39 4,451,497
40 4,451,501
48 4,451,502
53.1 4,451,503
54.1 4,451,509
64 4,451,504
98 4,451,505
239 4,451,506
240 4,451,507
423 4,451,508

CLASS 428

8 4,451,510
35 4,451,511
36 4,451,512
71 4,451,514
112 4,451,515
116 4,451,516
4,451,517
137 4,451,518
167 4,451,519
198 4,451,520
199 4,451,521
201 4,451,522
209 4,451,523
213 4,451,524
4,451,525
216 4,451,526
220 4,451,527
287 4,451,528
319.3 4,451,529
323 4,451,530
329 4,451,531
4,451,532
336 4,451,533
337 4,451,534
372 4,451,536
383 4,451,537
391 4,451,538
447 4,451,539
515 4,451,540
615 4,451,541
658 4,451,542

CLASS 429

174 4,451,543
206 4,451,544

CLASS 430

5 4,451,545
59 4,451,546
69 4,451,548
79 4,451,547
128 4,451,549
134 4,451,550
176 4,451,551
270 4,451,552
302 4,451,553
306 4,451,554
313 4,451,556
346 4,451,555
445 4,451,557
505 4,451,558
546 4,451,559
552 4,451,560
567 4,451,561
619 4,451,562

CLASS 431

14 4,451,225
15 4,451,226
18 4,451,227
76 4,451,228
253 4,451,229
284 4,451,230

CLASS 432

13 4,451,231
103 4,451,232
224 4,451,233

CLASS 433

54 4,451,234
201 4,451,235
207 4,451,236
225 4,451,237

CLASS 435

2 4,451,562
21 4,451,563
55 4,451,564
117 4,451,565
162 4,451,566
170 4,451,567
181 4,451,568
183 4,451,487
188 4,451,569
240 4,451,570

CLASS 436

505 4,451,571

CLASS 440

75 4,451,238

CLASS 441

66 4,451,239
129 4,451,240

CLASS 445

33 4,451,241
65 4,451,242
68 4,451,243

CLASS 485

260 4,451,930

CLASS 464

68 4,451,244
181 4,451,245

CLASS 493

204 4,451,249
215 4,451,246

CLASS 494

52 4,451,247
84 4,451,248
85 4,451,250

CLASS 502

62 4,451,572
113 4,451,573
115 4,451,574
122 4,451,575
155 4,451,576
167 4,451,577
303 4,451,578
306 4,451,579
335 4,451,580

CLASS 521

28 4,451,581
38 4,451,582
49.5 4,451,583
54 4,451,584
59 4,451,585
88 4,451,586
171 4,451,587
175 4,451,588

CLASS 523

124 4,451,589
155 4,451,590
177 4,451,591
206 4,451,592
322 4,451,593
336 4,451,594
351 4,451,595
501 4,451,596

CLASS 524

39 4,451,597
69 4,451,598
169 4,451,599
196 4,451,600
263 4,451,601
266 4,451,602
279 4,451,603
312 4,451,604
423 4,451,605
445 4,451,606
494 4,451,607
560 4,451,608
708 4,451,609

CLASS 525

19 4,451,610
51 4,451,611
53 4,451,612
54.31 4,451,613
80 4,451,614
98 4,451,615
178 4,451,616
203 4,451,617
349 4,451,618
379 4,451,619
398 4,451,620
426 4,451,621
456 4,451,622
505 4,451,623

CLASS 526

62 4,451,625
122 4,451,626
192 4,451,627
225 4,451,628
238.23 4,451,629
261 4,451,630
287 4,451,631
292.2 4,451,624
317 4,451,632
348.6 4,451,633

CLASS 528

24 4,451,634
71 4,451,635
75 4,451,636
115 4,451,637
205 4,451,638
265 4,451,640
295.5 4,451,641
347 4,451,642
387 4,451,643
388 4,451,644
391 4,451,645
401 4,451,646

CLASS 536

21 4,451,647
54 4,451,648
111 4,451,649

CLASS 544

105 4,451,650
221 4,451,651
229 4,451,652
238 4,451,653

CLASS 546

34 4,451,654
85 4,451,655

CLASS 548

352 4,451,656
456 4,451,657
461 4,451,402
562 4,451,658

CLASS 549

4 4,451,659
63 4,451,660
417 4,451,661
462 4,451,662

CLASS 560

29 4,451,663
86 4,451,664
202 4,451,665
204 4,451,666
207 4,451,667
246 4,451,668

CLASS 562

442 4,451,669
606 4,451,670

CLASS 564

286 4,451,671

CLASS 568

384 4,451,672
454 4,451,673
639 4,451,674
726 4,451,675
780 4,451,676
881 4,451,677
902 4,451,678
909 4,451,679
4,451,680
932 4,451,681

CLASS 570

142 4,451,682
224 4,451,683

CLASS 585

329 4,451,684
415 4,451,685
444 4,451,686
489 4,451,687
524 4,451,688
525 4,451,689

CLASS 604

24 4,451,251
43 4,451,252
60 4,451,253
62 4,451,254
119 4,451,257
157 4,451,255
164 4,451,256
333 4,451,258
408 4,451,259
890 4,451,260

CLASSIFICATION OF DESIGNS

D2—	361	274,015		398	274,031			274,047		30	274,063		30	274,080		27	274,096
	415	274,016	D8—	55	274,032		106	274,048	D17—	21	274,064			274,081		34	274,097
	422	274,017		71	274,033		116	274,049	D19—	78	274,065	D23—	21	274,082			274,098
D4—	25	274,018		72	274,034	D12—	110	274,052		92	274,066			274,083	D25—	38	274,006
D6—	4	274,019		316	274,035		126	274,053			274,067		30	274,084		55	274,004
	12	274,020		370	274,036		146	274,051	D21—	57	274,069			274,085		87	274,005
	31	274,021		373	274,037		187	274,054		59	274,070			274,086	D26—	93	274,007
	69	274,022		382	274,038		300	274,050		63	274,072			274,087		138	274,068
	86	274,023	D9—	323	274,039	D14—	11	274,055		107	274,073		77	274,088	D28—	7	274,008
	95	274,024		339	274,040		33	274,056			274,074	D24—	8	274,089		39	274,009
	99	274,025		434	274,041			274,057		149	274,071		26	274,090		47	274,010
		274,026	D10—	18	274,042		34	274,058		150	274,075			274,091	D30—	14	274,013
		274,027		50	274,043		54	274,059		191	274,076			274,092	D32—	01	274,011
D7—	308	274,028		74	274,044		68	274,060		230	274,077			274,093	D34—	21	274,014
	309	274,029			274,045		94	274,061		238	274,078			274,094		40	274,012
	391	274,030			274,046	D15—	27	274,062	D22—	7	274,079			274,095			

CLASSIFICATION OF PLANTS

P.—	54	5,237		58	5,238			5,239									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4 :	4,451,694	4,451,122	4,451,903	10 :	4,450,631		4,450,996	19 :	4,450,673		
6 :	4,450,782	4,451,138	4,451,911		4,451,470		4,451,031		4,450,915		
	4,451,905	4,451,144	4,451,913		4,451,642		4,451,049		4,451,036		
	4,451,923	4,451,149	4,451,914		4,451,665		4,451,069		4,451,097		
01 :	4,450,598	4,451,163	4,451,915	12 :	4,450,655		4,451,120		4,451,103		
	4,451,017	4,451,174	4,451,918		4,450,884		4,451,198		4,451,810		
	4,451,277	4,451,184	4,450,595	08 :	4,451,107		4,451,255	20 :	4,450,905		
	4,451,650	4,451,189	4,450,732		4,451,118		4,451,259		4,450,917		
	4,451,706	4,451,209	4,450,851		4,451,239		4,451,265		4,450,934		
04 :	4,450,690	4,451,223	4,450,873		4,451,297		4,451,267	21 :	4,451,190		
	4,450,937	4,451,257	4,450,918		4,451,346		4,451,287		4,451,224		
	4,451,026	4,451,264	4,451,155		4,451,379		4,451,376		4,451,528		
	4,451,197	4,451,280	4,451,182		4,451,700		4,451,388		4,451,628		
	4,451,344	4,451,295	4,451,351		4,451,702		4,451,393	22 :	4,450,606		
05 :	4,451,675	4,451,326	4,451,436		4,451,703		4,451,395		4,450,906		
06 :	4,450,597	4,451,327	4,451,562		4,451,884		4,451,429		4,450,907		
	4,450,609	4,451,352	4,451,571		4,451,901		4,451,488		4,451,037		
	4,450,612	4,451,359	4,450,637	09 :	4,451,916		4,451,541		4,451,354		
	4,450,653	4,451,363	4,450,667		4,450,591	13 :	4,451,566		4,451,377		
	4,450,654	4,451,364	4,450,703		4,450,956		4,451,577		4,451,572		
	4,450,686	4,451,375	4,450,707		4,451,066		4,451,603		4,451,658		
	4,450,720	4,451,383	4,450,889		4,451,074		4,451,652		4,451,676		
	4,450,728	4,451,445	4,450,890		4,451,143		4,451,685		4,451,726		
	4,450,744	4,451,454	4,450,893		4,451,188		4,451,709	23 :	4,450,623		
	4,450,746	4,451,466	4,450,957		4,451,193		4,451,712		4,451,818		
	4,450,749	4,451,478	4,450,958		4,451,514		4,451,715	24 :	4,450,643		
	4,450,760	4,451,495	4,450,961		4,451,636		4,451,728		4,450,770		
	4,450,765	4,451,532	4,450,984	15 :	4,450,829		4,451,809		4,450,827		
	4,450,784	4,451,538	4,450,985	17 :	4,450,642		4,451,824		4,450,967		
	4,450,789	4,451,570	4,451,100		4,450,644		4,451,927		4,451,152		
	4,450,790	4,451,638	4,451,116		4,450,648		4,451,930		4,451,178		
	4,450,798	4,451,681	4,451,145		4,450,671	18 :	4,450,626		4,451,253		
	4,450,837	4,451,684	4,451,166		4,450,692		4,450,662		4,451,441		
	4,450,846	4,451,689	4,451,200		4,450,695		4,450,736		4,451,741		
	4,450,849	4,451,691	4,451,205		4,450,696		4,450,783		4,451,827		
	4,450,862	4,451,707	4,451,248		4,450,705		4,450,801	25 :	4,450,619		
	4,450,868	4,451,714	4,451,250		4,450,706		4,450,979		4,450,693		
	4,450,870	4,451,731	4,451,299		4,450,754		4,451,014		4,450,699		
	4,450,929	4,451,748	4,451,305		4,450,763		4,451,046		4,450,740		
	4,450,949	4,451,764	4,451,427		4,450,773		4,451,057		4,450,781		
	4,450,972	4,451,766	4,451,431		4,450,775		4,451,217		4,451,000		
	4,450,980	4,451,781	4,451,523		4,450,821		4,451,254		4,451,071		
	4,451,021	4,451,801	4,451,575		4,450,822		4,451,396		4,451,098		
	4,451,038	4,451,811	4,451,578		4,450,828		4,451,402		4,451,123		
	4,451,040	4,451,819	4,451,583		4,450,833		4,451,453		4,451,148		
	4,451,048	4,451,820	4,451,639		4,450,836		4,451,606		4,451,274		
	4,451,053	4,451,829	4,451,655		4,450,863		4,451,669		4,451,342		
	4,451,062	4,451,839	4,451,661		4,450,872		4,451,807		4,451,368		
	4,451,068	4,451,842	4,451,698		4,450,919		4,451,823		4,451,450		
	4,451,073	4,451,859	4,451,733		4,450,930		4,451,840		4,451,540		
	4,451,093	4,451,861	4,451,734		4,450,941		4,451,849		4,451,550		
	4,451,101	4,451,877	4,451,833		4,450,954		4,451,873		4,451,560		
	4,451,113	4,451,898	4,451,900		4,450,993		4,451,912		4,451,757		

	4,451,760		4,451,511		4,450,615		4,450,625		4,450,981		4,451,180
	4,451,815		4,451,847		4,450,622		4,450,664		4,450,986		4,451,183
	4,451,832	29 :	4,450,645		4,450,630		4,450,665		4,450,994		4,451,240
	4,451,880		4,450,652		4,450,636		4,450,708		4,450,995		4,451,246
	4,451,883		4,450,663		4,450,640		4,450,722		4,451,002		4,451,318
	4,451,895		4,450,987		4,450,641		4,450,750		4,451,004		4,451,319
26 :	4,450,601		4,451,186		4,450,670		4,450,844		4,451,065		4,451,371
	4,450,614		4,451,285		4,450,685		4,450,860		4,451,084		4,451,425
	4,450,635		4,451,486		4,450,702		4,450,869		4,451,099		4,451,442
	4,450,639		4,451,767		4,450,755		4,450,879		4,451,127		4,451,480
	4,450,727		4,451,775		4,450,758		4,450,946		4,451,154		4,451,482
	4,450,735	31 :	4,450,831		4,450,835		4,450,951		4,451,157		4,451,574
	4,450,737		4,450,976		4,450,838		4,450,977		4,451,210		4,451,586
	4,450,741	32 :	4,451,044		4,450,848		4,450,978		4,451,243		4,451,588
	4,450,748		4,451,917		4,450,950		4,451,016		4,451,251		4,451,607
	4,450,752	33 :	4,450,791		4,450,973		4,451,067		4,451,275		4,451,626
	4,450,753		4,451,111		4,450,982		4,451,080		4,451,278		4,451,633
	4,450,772	34 :	4,450,607		4,451,018		4,451,164		4,451,302		4,451,668
	4,450,786		4,450,620		4,451,028		4,451,171		4,451,355		4,451,679
	4,450,955		4,450,698		4,451,030		4,451,172		4,451,394		4,451,680
	4,450,974		4,450,787		4,451,034		4,451,309		4,451,414		4,451,742
	4,450,975		4,450,839		4,451,035		4,451,343		4,451,440		4,451,747
	4,450,983		4,450,840		4,451,055		4,451,358		4,451,443		4,451,789
	4,451,022		4,450,891		4,451,108		4,451,407		4,451,597		4,451,790
	4,451,027		4,450,920		4,451,114		4,451,420		4,451,617		4,451,797
	4,451,050		4,450,988		4,451,117		4,451,493		4,451,625		4,451,821
	4,451,054		4,450,997		4,451,119		4,451,496		4,451,647		4,451,871
	4,451,063		4,450,998		4,451,137		4,451,536		4,451,666		4,451,885
	4,451,083		4,451,003		4,451,158		4,451,576		4,451,672		4,451,907
	4,451,095		4,451,104		4,451,334		4,451,579		4,451,696	49 :	4,451,335
	4,451,244		4,451,234		4,451,349		4,451,592		4,451,717	50 :	4,450,651
	4,451,321		4,451,258		4,451,391		4,451,594		4,451,725	51 :	4,450,700
	4,451,361		4,451,296		4,451,434		4,451,595		4,451,777		4,450,916
	4,451,374		4,451,329		4,451,447		4,451,604		4,451,791		4,450,938
	4,451,381		4,451,330		4,451,469		4,451,610		4,451,806		4,451,039
	4,451,404		4,451,356		4,451,474		4,451,618		4,451,828		4,451,179
	4,451,408		4,451,385		4,451,476		4,451,657		4,451,879		4,451,459
	4,451,409		4,451,386		4,451,479		4,451,670		4,451,924		4,451,770
	4,451,543		4,451,392		4,451,484		4,451,693	43 :	4,450,633		4,451,922
	4,451,556		4,451,403		4,451,489		4,451,701	44 :	4,450,874	53 :	Re.31,591
	4,451,600		4,451,411		4,451,503		4,451,704	45 :	4,450,858		4,450,661
	4,451,627		4,451,448		4,451,504		4,451,762		4,451,845		4,450,666
	4,451,632		4,451,464		4,451,508		4,451,856	47 :	4,450,882		4,450,820
	4,451,653		4,451,490		4,451,529		4,451,875		4,451,268		4,450,842
	4,451,667		4,451,492		4,451,537	40 :	4,450,717		4,451,338		4,450,850
	4,451,785		4,451,507		4,451,557		4,450,723		4,451,641		4,451,010
27 :	4,450,647		4,451,553		4,451,648		4,450,904		4,451,763		4,451,015
	4,450,710		4,451,563		4,451,639		4,450,908		4,451,926		4,451,199
	4,450,733		4,451,591		4,451,664		4,451,012	48 :	4,450,613		4,451,288
	4,450,834		4,451,593		4,451,711		4,451,045		4,450,761		4,451,304
	4,450,845		4,451,611		4,451,732		4,451,168		4,450,764		4,451,357
	4,450,947		4,451,612		4,451,769		4,451,231		4,450,768		4,451,444
	4,450,960		4,451,623		4,451,772		4,451,320		4,450,843		4,451,515
	4,450,968		4,451,635		4,451,784		4,451,389		4,450,854	54 :	4,450,660
	4,451,001		4,451,673		4,451,786		4,451,601		4,450,857		4,451,608
	4,451,033		4,451,687		4,451,788		4,451,643		4,450,867		4,451,826
	4,451,106		4,451,695		4,451,803	41 :	4,450,738		4,450,910	55 :	4,450,600
	4,451,225		4,451,699		4,451,831		4,450,776		4,450,911		4,450,759
	4,451,226		4,451,705		4,451,836		4,451,024		4,450,912		4,450,856
	4,451,227		4,451,713		4,451,837		4,451,270		4,450,913		4,450,903
	4,451,260		4,451,722		4,451,874	42 :	4,450,596		4,450,914		4,450,932
	4,451,360		4,451,727		4,451,881		4,450,621		4,450,928		4,450,935
	4,451,527		4,451,755	37 :	4,450,739		4,450,624		4,450,936		4,450,990
	4,451,533		4,451,761		4,450,847		4,450,629		4,450,969		4,451,153
	4,451,613		4,451,773		4,450,964		4,450,634		4,450,989		4,451,238
	4,451,619		4,451,865		4,451,013		4,450,646		4,451,047		4,451,373
	4,451,622	35 :	4,450,774		4,451,019		4,450,649		4,451,056		4,451,494
	4,451,779		4,451,201		4,451,382		4,450,650		4,451,072		4,451,589
	4,451,858		4,451,273		4,451,814		4,450,724		4,451,075		4,451,599
	4,451,868	36 :	4,450,593	38 :	4,451,052		4,450,832		4,451,162		4,451,605
	4,451,894		4,450,594	39 :	4,450,617		4,450,841		4,451,170		4,451,736
28 :	4,451,081		4,450,603		4,450,618		4,450,855		4,451,177	56 :	4,450,992

DESIGN PATENTS

01 :	274,025		274,063		274,057		274,019		274,092		274,098
	274,082		274,066		274,070		274,056		274,093		274,098
	274,083		274,067	18 :	274,007	27 :	274,020		274,094	42 :	274,005
05 :	274,011		274,076	19 :	274,044		274,053		274,095		274,009
06 :	274,014		274,080		274,045		274,074	36 :	274,008		274,049
	274,022		274,096		274,046		274,079		274,015	46 :	274,081
	274,031	08 :	274,033		274,047	34 :	274,004		274,017	47 :	274,078
	274,034		274,043		274,062		274,013		274,018	51 :	274,010
	274,040	12 :	274,089	25 :	274,038		274,069		274,021		274,037
	274,054	17 :	274,029		274,060		274,090		274,068	55 :	274,006
	274,058		274,035	26 :	274,012		274,091		274,075		274,036
	274,059										

PLANT PATENTS

06 :	5,237										

U.S. GOVERNMENT PRINTING OFFICE : O—1984

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM
ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL NO 1042

MAY

1984

MICRO PHOTO DIVISION
BELL & HOWELL

B

END